Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J2E007X
Title: SPECIFICATIONS: 1GR-FE LUBRICATION: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Engine Oil Pressure

at idling	29 kPa (0.3 kgf/cm^2, 4.3 psi) or higher
at 3000 rpm	294 to 588 kPa (3.0 to 6.0 kgf/cm^2, 43 to 85 psi)

Engine Oil Pressure Switch

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - Body ground	Engine stopped	Below 1 Ω
	Engine idling	10 kΩ or higher

Oil Pump

Tip clearance	Standard	0.06 to 0.16 mm (0.00236 to 0.00630 in.)
	Maximum	0.16 mm (0.00630 in.)
Side clearance	Standard	0.030 to 0.075 mm (0.00118 to 0.00295 in.)
	Maximum	0.075 mm (0.00295 in.)
Body clearance	Standard	0.250 to 0.325 mm (0.00984 to 0.0128 in.)
	Maximum	0.325 mm (0.0128 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J2F007X
Title: SPECIFICATIONS: 1GR-FE LUBRICATION: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Drain plug x No. 2 Oil pan		40	408	30
Oil filter x Oil filter bracket		25	255	18
Oil filter drain plug x Oil filter		13	133	10
No. 1 engine under cover x Body		29	296	21
Front bumper cover lower x Body		8.0	82	71 in.*lbf
Engine under cover seal x No. 1 engine under cover		29	296	21
Engine oil pressure switch x Timing chain cover		15	153	11
Oil pump relief valve plug x Oil pump cover		49	500	36
Oil pump cover x Timing chain cover	for screw	10	102	7
	for bolt	9.0	92	80 in.*lbf
Timing chain cover x Cylinder head and Cylinder block	for area 1	47	479	35
	except area 1	23	235	17
Oil pan x Cylinder block	for bolt A, B, C and E, and nut	21	214	15
	for bolt D	10	102	7
Oil strainer x Oil pan		9.0	92	80 in.*lbf
No. 2 oil pan x Oil pan		10	102	7
Cylinder head x camshaft housing	for bolt A and D	10	102	7
	for bolt B and C	21	214	15
Fuel pipe x Cylinder head cover LH		9.0	92	80 in.*lbf
No. 2 Oil Pipe x Cylinder head and Cylinder head cover		65	663	48
No. 1 Oil Pipe x Cylinder head and Cylinder head cover		65	663	48
Crankshaft pulley x Crankshaft		260	2651	192
Oil filter bracket x Timing chain cover		21	214	15
V-ribbed belt tensioner x Timing chain cover		36	367	27

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PART TIGHTENED		N*M	KGF*CM	FT.*LBF
No. 1 idler pulley x Timing chain cover		54	551	40
Water inlet housing x Timing chain cover		10	102	7
Water by-pass pipe x Timing chain cover and Oil filter bracket		10	102	7
Engine oil level dipstick guide x Timing chain cover		10	102	7
Engine oil cooler x Oil filter bracket	for bolt	68	693	50
	for nut	10	102	7

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J4H011X
Title: SPECIFICATIONS: 1GR-FE BATTERY / CHARGING: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Battery	Standard specific gravity		1.25 to 1.29 at 20°C (68°F)
Charging circuit without load	Standard current		10 A or less
	Standard voltage		13.2 to 14.8 V (when engine speed at 2000 rpm)
Charging circuit with load	Standard current		30 A or higher
Generator brush holder	Standard exposed length		9.5 to 11.5 mm (0.374 to 0.453 in.)
	Minimum exposed length		4.5 mm (0.177 in.)
Generator rotor	Standard resistance	Between the slip rings	2.3 to 2.7 Ω at 20°C (68°F)
	Standard diameter		14.2 to 14.4 mm (0.559 to 0.567 in.)
	Minimum diameter		14.0 mm (0.551 in.)



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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002DHP007X
Title: SPECIFICATIONS: 1GR-FE BATTERY / CHARGING: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Retainer plate x Generator drive end frame	2.3	23	20 in.*lbf
Generator coil assembly x Generator drive end frame	5.9	60	52 in.*lbf
Generator brush holder assembly x Generator coil assembly	1.8	18	16 in.*lbf
Generator rear end cover x Generator coil assembly	4.6	46	40 in.*lbf
Cord clip x Generator rear end cover	6.2	63	55 in.*lbf
Generator with clutch pulley x Generator rotor assembly	80 (64)	816 (653)	59 (47)
Generator bracket x Generator assembly	20	204	15
Generator assembly x Timing chain cover	43	438	32
Generator bracket x Cylinder block	20	204	15
Wire harness x Generator assembly	8.0	82	71 in.*lbf
Generator wire x Generator assembly	9.8	100	87 in.*lbf
Wiring harness clamp bracket x Body	8.0	82	71 in.*lbf
No. 2 idler pulley x Timing chain cover	54	551	40
Battery clamp x Body	6.0	61	53 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J2C00LX
Title: SPECIFICATIONS: 1GR-FE COOLING: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Water inlet with thermostat	Standard valve opening temperature		80 to 84°C (176 to 183°F)
	Standard valve lift	at 95°C (203°F)	8.0 mm (0.315 in.) or more
Radiator cap	Standard valve (for brand-new cap)	93 to 123 kPa (1.0 to 1.3 kgf/cm^2, 13.5 to 18 psi)	
	Minimum standard valve (after using cap)	79 kPa (0.8 kgf/cm^2, 11.4 psi)	
Fin for blockage	300 mm (11.8 in.)	2942 to 4903 kPa (30.0 to 50.0 kgf/cm^2, 427 to 711 psi)	
	500 mm (19.7 in.)	4903 to 7845 kPa (50.0 to 80.0 kgf/cm^2, 711 to 1138 psi)	

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J2D00LX
Title: SPECIFICATIONS: 1GR-FE COOLING: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Cylinder block drain cock plug x Cylinder block		13	130	9
No. 2 idler pulley x Timing chain cover		54	551	40
Water inlet housing x Timing chain cover		10	102	7
Water inlet with thermostat x Water inlet housing		9.0	92	80 in.*lbf
Water pump x Timing chain cover	for bolt A	47	479	35
	for bolt B	11	112	8
	for bolt C	23	235	17
Radiator x Radiator support		18	184	13
Fan shroud x Radiator		5.0	51	44 in.*lbf
Fan shroud x Oil cooler tube		5.5	56	49 in.*lbf
Fluid coupling x Fan pulley		21	214	15
Fluid coupling x Fan		10	102	7
Radiator reservoir x Fan shroud		5.0	51	44 in.*lbf
No. 1 engine under cover sub-assembly x Body		29	296	21
Front bumper lower cover x Front bumper		8.0	82	71 in.*lbf
Upper front bumper retainer x Mount bracket, Center brace		8.0	82	71 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000322C006X
Title: SPECIFICATIONS: 1GR-FE EMISSION CONTROL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Purge VSV:

CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	23 to 26 Ω
1 - Body ground	Always	10 MΩ or higher
2 - Body ground		

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1L007X
Title: SPECIFICATIONS: 1GR-FE EMISSION CONTROL: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Canister x Body	20	204	15
Purge VSV x Intake air surge tank	9.0	92	80 in.*lbf
PCV valve sub-assembly x Cylinder head cover sub-assembly LH	27	275	20

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1K009X
Title: SPECIFICATIONS: 1GR-FE ENGINE CONTROL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Camshaft Timing Oil Control Valve:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	6.9 to 7.9 Ω

Crankshaft Position Sensor:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	Cold	1630 to 2740 Ω
	Hot	2065 to 3225 Ω

Engine Coolant Temperature Sensor:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	Approx. 20°C (68°F)	2.32 to 2.59 kΩ
	Approx. 80°C (176°F)	0.310 to 0.326 kΩ

Throttle Body:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 (M+) - 1 (M-)	20°C (68°F)	0.3 to 100 Ω

Knock Sensor:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	120 to 280 kΩ

Accelerator Pedal:

ACCELERATOR PEDAL OPERATION	ACCELERATOR POSITION NO.1	ACCELERATOR POSITION NO.2
Released	0.5 to 1.1 V	1.2 to 2.0 V
Depressed	2.6 to 4.5 V	3.4 to 5.3 V

Air Fuel Ratio Sensor (for Bank 1):

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 (HA1A) - 2 (+B)	20°C (68°F)	1.8 to 3.4 Ω
1 (HA1A) - 4 (A1A-)	Always	10 kΩ or higher

Air Fuel Ratio Sensor (for Bank 2):

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 (HA2A) - 2 (+B)	20°C (68°F)	1.8 to 3.4 Ω
1 (HA2A) - 4 (A2A-)	Always	10 kΩ or higher

Heated Oxygen Sensor (for Bank 1):

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 (HT1B) - 2 (+B)	20°C (68°F)	11 to 16 Ω
1 (HT1B) - 4 (E2)	Always	10 kΩ or higher

Heated Oxygen Sensor (for Bank 2):

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 (HT2B) - 2 (+B)	20°C (68°F)	11 to 16 Ω
1 (HT2B) - 4 (E2)	Always	10 kΩ or higher

Circuit Opening Relay:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
3 - 5	Battery voltage is not applied to terminals 1 and 2	10 kΩ or higher
	Battery voltage is applied to terminals 1 and 2	Below 1 Ω

No. 1 Integration Relay (IG2):

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
IG2 fuse	Always	Below 1 Ω
1E-1 - 1C-4	Battery voltage not applied to terminals 1C- 1 and 1C-3	10 kΩ or higher
	Battery voltage applied to terminals 1C-1 and 1C-3	Below 1 Ω

No. 1 Integration Relay (EFI):

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TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
EFI fuse	Always	Below 1 Ω
1E-1 - 1D-4	Battery voltage not applied to terminals 1D- 2 and 1D-3	10 kΩ or higher
	Battery voltage applied to terminals 1D-2 and 1D-3	Below 1 Ω

No. 1 Integration Relay (A/F):

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A/F fuse	Always	Below 1 Ω
1E-1 - 1D-8	Battery voltage not applied to terminals 1D- 4 and 1D-7	10 kΩ or higher
	Battery voltage applied to terminals 1D-4 and 1D-7	Below 1 Ω

Main Body ECU (Driver Side Junction Block) for ACC Relay:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2B-17 - 2E-1	Battery voltage not applied to terminals 2C- 48 and 2B-4	10 kΩ or higher
	Battery voltage applied to terminals 2C-48 and 2B-4	Below 1 Ω

Main Body ECU (Driver Side Junction Block) for IG1 No. 2 Relay:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2C-31 - 2E-1	Battery voltage not applied to terminals 2C- 52 and 2B-4	10 kΩ or higher
	Battery voltage applied to terminals 2C-52 and 2B-4	Below 1 Ω

Spark Plug:

RECOMMENDED SPARK PLUG	CORRECT ELECTRODE GAP FOR NEW SPARK PLUG	MAXIMUM ELECTRODE GAP FOR USED SPARK PLUG	STANDARD INSULATION RESISTANCE
SK20HR11	Correct electrode gap for new spark plug 1.0 to 1.1 mm	1.3 mm (0.0512 in.)	10 MΩ or higher

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RECOMMENDED SPARK PLUG	CORRECT ELECTRODE GAP FOR NEW SPARK PLUG	MAXIMUM ELECTRODE GAP FOR USED SPARK PLUG	STANDARD INSULATION RESISTANCE
	(0.0394 to 0.0433in.)		



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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1H008X
Title: SPECIFICATIONS: 1GR-FE ENGINE CONTROL: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Camshaft timing oil control valve assembly x Cylinder head	10	102	7
Throttle body x Intake air surge tank	10	102	7
No. 2 ECM bracket x ECM	3.0	31	27 in.*lbf
ECM bracket x ECM	3.0	31	27 in.*lbf
ECM x Body	8.0	82	71 in.*lbf
Accelerator pedal sensor x Body	5.4	55	48 in.*lbf
Mass air flow meter x Air cleaner cap	1.0	10	9 in.*lbf
VVT sensor x Cylinder head	10	102	7
Crankshaft position sensor x Cylinder block	10	102	7
Spark plug x Cylinder head	18	184	13
Ignition coil x Cylinder head cover	10	102	7
Air cleaner hose x Bracket	5.0	51	44 in.*lbf
Air cleaner hose x Clamp	5.0	51	44 in.*lbf
Engine coolant temperature sensor x Rear water by-pass joint	20	200	14
Knock sensor x Cylinder block	20	204	15
No. 1 Water outlet pipe x Cylinder block	10	102	7
Air fuel ratio sensor x Front exhaust pipe assembly (for Bank 1)	44 (40)	449 (408)	32 (30)
Air fuel ratio sensor x Front No. 2 exhaust pipe assembly (for Bank 2)	44 (40)	449 (408)	32 (30)
Heated oxygen sensor x Front exhaust pipe assembly (for Bank 1)	44 (40)	449 (408)	32 (30)
Heated oxygen sensor x Front No. 2 exhaust pipe assembly (for Bank 2)	44 (40)	449 (408)	32 (30)
Power steering oil pressure switch x Pressure feed tube	21	210	15

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002YUX00ZX
Title: SPECIFICATIONS: 1GR-FE ENGINE MECHANICAL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Engine

Ignition timing	Terminal TC and CG of DLC3 connected (Transmission in neutral and A/C switch OFF)	8 to 12° BTDC @ idle
	Terminals TC and CG of DLC3 disconnected (Transmission in neutral and A/C switch OFF)	7 to 24° BTDC @ idle
Idle speed (Transmission in neutral and A/C switch OFF)		690 to 790 rpm
Compression	Standard	1400 kPa (14.3 kgf/cm^2, 203 psi) or higher
	Minimum	1100 kPa (11.2 kgf/cm^2, 160 psi)
	Difference	100 kPa (1.0 kgf/cm^2, 15 psi) or less

Engine Unit

Cylinder head set bolt	Length	Standard		141.3 to 142.7 mm (5.56 to 5.62 in.)
		Maximum		143.7 mm (5.66 in.)
	Outside diameter	Standard		10.73 to 10.97 mm (0.422 to 0.431 in.)
		Minimum		10.40 mm (0.409 in.)
Camshaft	Circle runout	Maximum		0.04 mm (0.00157 in.)
	Cam lobe height	Intake	Standard	43.890 to 43.990 mm (1.728 to 1.732 in.)
			Minimum	43.840 mm (1.726 in.)
		Exhaust	Standard	44.262 to 44.362 mm (1.743 to 1.747 in.)
			Minimum	44.212 mm (1.741 in.)
	Journal diameter	No. 1 journal	Standard	35.946 to 35.960 mm (1.4152 to 1.4157 in.)
		Other journal		25.959 to 25.975 mm (1.0221 to 1.0226 in.)

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Timing chain	No. 1 chain	Chain elongation	Maximum	136.9 mm (5.39 in.)
	No. 2 chain			137.6 mm (5.42 in.)
Crankshaft timing sprocket	Gear diameter (with chain)	Minimum		61.0 mm (2.40 in.)
No. 1 idle gear	Gear diameter (with chain)	Minimum		61.0 mm (2.40 in.)
	Oil clearance	Standard idle gear shaft diameter		22.987 to 23.000 mm (0.905 to 0.906 in.)
		Standard idle gear inside diameter		23.02 to 23.03 mm (0.906 to 0.907 in.)
		Standard oil clearance		0.020 to 0.043 mm (0.000787 to 0.00169 in.)
		Maximum oil clearance		0.093 mm (0.00366 in.)
No. 2 chain tensioner	Depth	Maximum		1.0 mm (0.0394 in.)
No. 3 chain tensioner				1.0 mm (0.0394 in.)
Chain tensioner slipper				1.0 mm (0.0394 in.)
No. 1 chain vibration damper				1.0 mm (0.0394 in.)
No. 2 chain vibration damper				1.0 mm (0.0394 in.)
Camshaft thrust clearance	Standard			0.08 to 0.13 mm (0.00315 to 0.00512 in.)
	Maximum			0.15 mm (0.00591 in.)
Camshaft oil clearance	No. 1 journal		Standard	0.032 to 0.063 mm (0.00126 to 0.00248 in.)
			Maximum	0.10 mm (0.00394 in.)
	Other journal		Standard	0.025 to 0.062 mm (0.000984 to 0.00244 in.)
			Maximum	0.09 mm (0.00354 in.)
Exhaust manifold	Warpage			0.70 mm (0.0276 in.)
Intake manifold	Intake air surge tank side	Warpage	Maximum	0.80 mm (0.0315 in.)
	Cylinder head side			0.20 mm (0.00787 in.)

Cylinder Head

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Cylinder head warpage	Cylinder block side	Standard	0.05 mm (0.00197 in.)
	Intake side		0.08 mm (0.00315 in.)
	Exhaust side		0.08 mm (0.00315 in.)
	-	Maximum	0.10 mm (0.00394 in.)
Intake valve	Valve stem diameter	Standard	5.470 to 5.485 mm (0.215 to 0.216 in.)
	Margin thickness	Standard	1.25 mm (0.0492 in.)
		Minimum	0.50 mm (0.0197 in.)
	Overall length	Standard	105.85 mm (4.17 in.)
		Minimum	105.35 mm (4.15 in.)
	Width	Standard	1.1 to 1.5 mm (0.0433 to 0.0591 in.)
Exhaust	Valve stem diameter	Standard	5.465 to 5.480 mm (0.215 to 0.216 in.)
	Margin thickness	Standard	1.4 mm (0.0551 in.)
		Minimum	0.50 mm (0.0197 in.)
	Overall length	Standard	110.40 mm (4.35 in.)
		Minimum	109.90 mm (4.33 in.)
	Width	Standard	1.1 to 1.5 mm (0.0433 to 0.0591 in.)
Valve guide bush	Inside diameter	Standard	5.510 to 5.530 mm (0.217 to 0.218 in.)
Valve guide bush oil clearance	Intake	Standard	0.025 to 0.060 mm (0.000984 to 0.00236 in.)
		Maximum	0.08 mm (0.00315 in.)
	Exhaust	Standard	0.030 to 0.065 mm (0.00118 to 0.00256 in.)
		Maximum	0.10 mm (0.00394 in.)
Compression spring	Free length	Standard	48.63 mm (1.91 in.)
	Deviation	Maximum	1.0 mm (0.0394 in.)
	Angle (reference)	Maximum	2°
	Installed tension	Standard	235.6 to 260.4 N (24 to 27 kgf, 53.0 to 58.5 lbf) at 36.9 mm (1.45 in.)
Valve guide bush	Cylinder bore diameter	STD	10.285 to 10.306 mm (0.4049 to 0.4057 in.)
		O/S 0.05	10.335 to 10.356 mm (0.4069 to 0.4077 in.)
	Bush bore diameter	STD	10.333 to 10.344 mm (0.4068 to 0.4072 in.)
		O/S 0.05	10.383 to 10.394 mm (0.4088 to 0.4092 in.)
	Protrusion height	Standard	9.10 to 9.90 mm (0.358 to 0.390 in.)

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Bush length	Intake	Standard	41.3 to 41.7 mm (1.63 to 1.64 in.)
	Exhaust		46.8 to 47.2 mm (1.84 to 1.86 in.)
Tight plug	Depth	Standard	1.7 to 2.7 mm (0.0669 to 0.106 in.)
Straight pin	Protrusion height	Standard	18.0 to 19.0 mm (0.708 to 0.748 in.)
Ring pin	Protrusion height	Standard	2.5 to 3.5 mm (0.0984 to 0.138 in.)
Spark plug tube	Protrusion height	Standard	75.1 to 76.1 mm (2.96 to 3.00 in.)

Cylinder Block

Connecting rod	Thrust clearance	Standard	0.15 to 0.30 mm (0.00591 to 0.0118 in.)
		Maximum	0.35 mm (0.0138 in.)
	Thickness	Standard	20.80 to 20.85 mm (0.819 to 0.821 in.)
	Oil clearance	Standard	0.040 to 0.066 mm (0.00157 to 0.00260 in.)
		Maximum	0.086 mm (0.00339 in.)
	Big end inside diameter	Mark 1	59.000 to 59.006 mm (2.32283 to 2.32307 in.)
		Mark 2	59.007 to 59.012 mm (2.32311 to 2.32330 in.)
		Mark 3	59.013 to 59.018 mm (2.32334 to 2.32354 in.)
		Mark 4	59.019 to 59.024 mm (2.32358 to 2.32377 in.)
	Standard sized bearing center wall thickness	Mark 1	1.484 to 1.487 mm (0.05843 to 0.05854 in.)
		Mark 2	1.487 to 1.490 mm (0.05854 to 0.05866 in.)
		Mark 3	1.490 to 1.493 mm (0.05866 to 0.05878 in.)
		Mark 4	1.493 to 1.496 mm (0.05878 to 0.05900 in.)
	Bend	Maximum	0.05 mm (0.00197 in.) per 100 mm (3.94 in.)
	Twist	Maximum	0.15 mm (0.00591 in.) per 100 mm (3.94 in.)
Crankshaft pin	Diameter	Standard	55.992 to 56.000 mm (2.2044 to 2.2047 in.)

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Crankshaft	Thrust clearance	Standard		0.04 to 0.24 mm (0.00157 to 0.00945 in.)
		Maximum		0.30 mm (0.0118 in.)
	Thrust washer thickness	Standard		1.93 to 1.98 mm (0.0760 to 0.0780 in.)
	Circle runout	Maximum		0.06 mm (0.00236 in.)
	Main journal	Diameter	Standard	71.988 to 72.000 mm (2.8342 to 2.8346 in.)
		Taper and out-of-round	Maximum	0.02 mm (0.000787 in.)
	Crank pin	Diameter	Standard	55.992 to 56.000 mm (2.2044 to 2.2047 in.)
		Taper and out-of-round	Maximum	0.02 mm (0.000787 in.)
	Oil clearance	Standard		0.026 to 0.046 mm (0.00102 to 0.00181 in.)
		Maximum		0.080 mm (0.00315 in.)
Cylinder Block Main Journal Bore Diameter (A)		Mark 00		77.000 mm (3.03149 in.)
		Mark 01		77.001 mm (3.03152 in.)
		Mark 02		77.002 mm (3.03156 in.)
		Mark 03		77.003 mm (3.03160 in.)
		Mark 04		77.004 mm (3.03164 in.)
		Mark 05		77.005 mm (3.03168 in.)
		Mark 06		77.006 mm (3.03172 in.)
		Mark 07		77.007 mm (3.03176 in.)
		Mark 08		77.008 mm (3.03180 in.)
		Mark 09		77.009 mm (3.03184 in.)
		Mark 10		77.010 mm (3.03188 in.)
		Mark 11		77.011 mm (3.03192 in.)
		Mark 12		77.012 mm (3.03196 in.)
		Mark 13		77.013 mm (3.03200 in.)
		Mark 14		77.014 mm (3.03204 in.)
		Mark 15		77.015 mm (3.03208 in.)
		Mark 16		77.016 mm (3.03211 in.)
Crankshaft Main Journal Diameter (B)		Mark 00		71.999 to 72.000 mm (2.83460 to 2.83464 in.)

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		Mark 01	71.998 to 71.999 mm (2.83456 to 2.83460 in.)
		Mark 02	71.997 to 71.998 mm (2.83452 to 2.83456 in.)
		Mark 03	71.996 to 71.997 mm (2.83448 to 2.83452 in.)
		Mark 04	71.995 to 71.996 mm (2.83440 to 2.83448 in.)
		Mark 05	71.994 to 71.995 mm (2.83440 to 2.83444 in.)
		Mark 06	71.993 to 71.994 mm (2.83436 to 2.83440 in.)
		Mark 07	71.992 to 71.993 mm (2.83432 to 2.83436 in.)
		Mark 08	71.991 to 71.992 mm (2.83428 to 2.83432 in.)
		Mark 09	71.990 to 71.991 mm (2.83424 to 2.83428 in.)
		Mark 10	71.989 to 71.990 mm (2.83420 to 2.83424 in.)
		Mark 11	71.988 to 71.989 mm (2.83416 to 2.83420 in.)
Standard Bearing Center Wall Thickness		Mark 1	2.488 to 2.491 mm (0.0980 to 0.0981 in.)
		Mark 2	2.491 to 2.494 mm (0.0981 to 0.0982 in.)
		Mark 3	2.494 to 2.497 mm (0.0982 to 0.0983 in.)
		Mark 4	2.497 to 2.500 mm (0.0983 to 0.0984 in.)
		Mark 5	2.500 to 2.503 mm (0.0984 to 0.0985 in.)
Cylinder block	Warpage	Maximum	0.05 mm (0.00197 in.)
	Cylinder bore	Standard	94.000 to 94.012 mm (3.7008 to 3.7013 in.)
		Maximum	94.132 mm (3.7060 in.)
Piston ring	Groove clearance	No. 1	0.02 to 0.07 mm (0.000787 to 0.00276 in.)

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		No. 2		0.02 to 0.06 mm (0.000787 to 0.00236 in.)
		Oil		0.07 to 0.15 mm (0.00276 to 0.00590 in.)
	End gap	Standard	No. 1	0.22 to 0.32 mm (0.00866 to 0.0126 in.)
			No. 2	0.35 to 0.45 mm (0.0138 to 0.0177 in.)
			Oil	0.10 to 0.40 mm (0.00394 to 0.0157 in.)
		Maximum	No. 1	1.0 mm (0.0394 in.)
			No. 2	1.1 mm (0.0433 in.)
			Oil	1.0 mm (0.0394 in.)
Piston	Diameter	Standard		93.961 to 93.991 mm (3.6992 to 3.7004 in.)
	Oil clearance	Standard		0.009 to 0.051 mm (0.000354 to 0.00201 in.)
		Maximum		0.110 mm (0.00433 in.)
Piston pin	Hole inside diameter	Mark A		22.001 to 22.004 mm (0.86618 to 0.86630 in.)
		Mark B		22.005 to 22.007 mm (0.86634 to 0.86642 in.)
		Mark C		22.008 to 22.010 mm (0.86645 to 0.86653 in.)
	Diameter	Mark A		21.997 to 22.000 mm (0.86602 to 0.86614 in.)
		Mark B		22.001 to 22.003 mm (0.86618 to 0.86626 in.)
		Mark C		22.004 to 22.006 mm (0.86630 to 0.86642 in.)
Connecting rod bush	Inside diameter	Mark A		22.005 to 22.008 mm (0.86634 to 0.86645 in.)
		Mark B		22.009 to 22.011 mm (0.86649 to 0.86657 in.)
		Mark C		22.012 to 22.014 mm (0.86661 to 0.86669 in.)

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	Piston pin hole oil clearance	Standard	0.001 to 0.007 mm (0.0000394 to 0.000276 in.)
		Maximum	0.040 mm (0.00157 in.)
	Bush inside oil clearance	Standard	0.005 to 0.011 mm (0.000197 to 0.000433 in.)
		Maximum	0.050 mm (0.00197 in.)
Connecting rod bolt	Diameter	Standard	7.2 to 7.3 mm (0.283 to 0.287 in.)
		Minimum	7.0 mm (0.276 in.)
Crankshaft bearing cap set bolt	Diameter	Standard	10.0 to 10.2 mm (0.394 to 0.402 in.)
Straight pin	Standard protrusion height	Pin A	22.5 to 23.5 mm (0.886 to 0.925 in.)
		Pin B	10.5 to 11.5 mm (0.413 to 0.453 in.)
		Pin C	8.5 to 9.5 mm (0.335 to 0.374 in.)
		Pin D	5.5 to 6.5 mm (0.217 to 0.256 in.)
Crankshaft bearing	Bearing cap's edge and the lower bearing's edge	Dimension A - B or B - A	0 to 0.7 mm (0 to 0.0276 in.)
Connecting rod bearing	connecting rod's and bearing cap's edges	Dimension A - B or B - A	0 to 0.7 mm (0 to 0.0276 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J2A007X
Title: SPECIFICATIONS: 1GR-FE ENGINE MECHANICAL: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Camshaft timing gear x Camshaft		100	1020	74
Camshaft timing exhaust gear x Camshaft		100	1020	74
No. 3 chain tensioner x Camshaft housing LH		21	214	15
Camshaft bearing cap (for Bank 1) x Cylinder head LH	for bolt A	28	286	21
	for bolt B	16	163	12
No. 2 chain tensioner x Camshaft housing RH		21	214	15
Camshaft bearing cap (for Bank 2) x Cylinder head RH	for bolt A	28	286	21
	for bolt B	16	163	12
No. 1 chain tensioner x Cylinder head RH		10	102	7
Timing chain cover plate x Timing chain cover		9.0	92	80 in.*lbf
Cylinder head x Cylinder block	1 st	36	367	27
	2 nd	Turn 90°		
	3 rd	Turn 90°		
Cylinder head LH x Cylinder block (for cylinder head set bolt)	1 st	36	367	27
	2 nd	Turn 90°		
	3 rd	Turn 90°		
Cylinder head LH x Cylinder block (except cylinder head set bolt)		30	306	22
Engine hanger x Cylinder head		33	337	24
Engine mount insulator x Engine mount bracket		72	734	53
Engine mount insulator x Body		40	408	30
Drive plate and ring gear x Crankshaft		83	846	61
Oil cooler tube x Oil pan		14	143	10
Suction hose x Timing chain cover		7.8	80	69 in.*lbf
Engine wire x Body		8.0	82	71 in.*lbf
Air cleaner case x Body		12	122	9

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PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Rear engine under cover x Body		29	296	21
Transmission under cover x Body		29	296	21
No. 1 engine under cover x Body		29	296	21
Front bumper cover lower x Body		8.0	82	71 in.*lbf
Hood x Hood bracket	for bolt A	13	133	10
	for bolt B	18	184	13
Stud bolt x Oil pan	for stud bolt A	10	102	7
	for stud bolt B and C	4.0	41	35 in.*lbf
Stud bolt x Cylinder head cover		4.0	41	35 in.*lbf
Oil seal retainer x Cylinder block		10	102	7
No. 1 chain vibration damper x Cylinder head LH and Cylinder block		23	229	17
No. 1 idle gear shaft x Cylinder block		60	612	44
Water pump x Timing chain cover		11	112	8
No. 1 oil pan baffle plate x Oil pan		10	102	7
Oil pan drain plug x No. 2 oil pan		40	408	30
Cylinder head cover x Camshaft housing RH	for bolt A and D	10	102	7
	for bolt B and C	21	214	15
Cylinder head cover LH x Camshaft housing LH	for bolt A and D	10	102	7
	for bolt B and C	21	214	15
PCV valve x Cylinder head cover LH		27	275	20
Rear water by-pass joint x Cylinder head		10	102	7
Oil filler cap housing x Cylinder head cover LH		10	102	7
Camshaft timing oil control valve x Cylinder head cover		10	102	7
Crankshaft position sensor x Cylinder block		10	102	7
VVT sensor x Cylinder head cover		10	102	7
Cylinder block water drain cock x Cylinder block		30	306	22
Cylinder block water drain cock plug x Cylinder block water drain cock		13	130	9
Engine coolant temperature sensor x Rear water by-pass joint		20	200	14
Engine oil pressure switch x Timing chain cover		15	153	11
Front No. 1 engine mounting bracket RH x Cylinder block		43	438	32

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PART TIGHTENED			N*M	KGF*CM	FT.*LBF
Front No. 1 engine mounting bracket LH x Cylinder block			43	438	32
Fuel pipe x Cylinder head cover LH			9.0	92	80 in.*lbf
Ignition coil x Cylinder head cover			10	102	7
Stud bolt x Cylinder head		for bolt A	10	102	7
		for bolt B	4.0	41	35 in.*lbf
No. 2 straight screw plug x Cylinder head			80	816	59
No. 1 straight screw plug x Cylinder head			44	449	32
Stud bolt x Cylinder block		for stud bolt A and C	10	102	7
		for stud bolt B and D	4.0	41	35 in.*lbf
No. 1 oil nozzle x Cylinder block			9.0	92	80 in.*lbf
Crankshaft bearing cap x Cylinder block	Quantity: 16	1 st	61	622	45
		2 nd	Turn 90°		
Crankshaft bearing cap x Cylinder block		Quantity: 8	26	262	19
Connecting rod cap x Connecting rod		1 st	25	250	18
		2 nd	Turn 90°		

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003DL0002X
Title: SPECIFICATIONS: 1GR-FE FUEL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Fuel Pressure

at idle	321 to 327 kPa (3.27 to 3.33 kgf/cm^2, 46.5 to 47.4 psi)
remains for 5 minutes after engine has stopped	147 kPa (1.5 kgf/cm^2, 21 psi) or higher

Fuel Injector

Resistance: at 20°C (68°F)	11.6 to 12.4 Ω
Injection volume	71 to 86 cm^3 (4.3 to 5.2 cu in.) per 15 seconds
Difference between each cylinder	15 cm^3 (0.9 cu in.) or less
Fuel leakage	1 drop or less per 12 minutes

Fuel Pump

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	0.2 to 3.0 Ω

Fuel Sender Gauge

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 - 3	Float level is F (upper)	12 to 18 Ω
	Float level is E (lower)	405 to 415 Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003DL1001X
Title: SPECIFICATIONS: 1GR-FE FUEL: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Fuel Injector

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Fuel delivery pipe sub-assembly x Intake manifold	21	214	15
Rear cylinder head cover x Cylinder head cover and Cylinder block	9.0	92	80 in.*lbf

Fuel Pressure Regulator

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Fuel pressure regulator x Fuel delivery pipe	9.0	92	80 in.*lbf

Fuel Pump ECU

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Fuel pump ECU x Frame	31	316	23

Fuel Tank

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 3 fuel tank protector x Fuel tank	5.0	51	44 in.*lbf
Fuel tank band x Body	40	408	30
No. 1 fuel tank protector sub-assembly x Body	20	204	15

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049N1000X
Title: SPECIFICATIONS: 1GR-FE INTAKE / EXHAUST: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Item	Condition	Specification
Compression spring	Minimum length	43 mm (1.693 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049N2000X
Title: SPECIFICATIONS: 1GR-FE INTAKE / EXHAUST: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Intake manifold

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 1 air cleaner hose clamp	5.0	51	44 in.*lbf
No. 1 air cleaner hose bolt	5.0	51	44 in.*lbf
Intake air surge tank x Intake manifold	28	286	21
No. 2 surge tank stay x Cylinder head sub-assembly LH	21	214	15
Throttle body bracket x Intake air surge tank	21	214	15
No. 1 surge tank stay x Cylinder head sub-assembly LH	21	214	15
Intake manifold x Cylinder head sub-assembly LH, RH	21	214	15

Exhaust manifold

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 2 manifold stay x Exhaust manifold RH x Front transmission case	40	408	30
Manifold stay x Exhaust manifold LH x Front transmission case	40	408	30
Intake manifold x Cylinder head sub-assembly LH, RH	21	214	15
Exhaust manifold sub-assembly RH x Cylinder head RH	21	214	15
Exhaust manifold RH x No. 1 exhaust manifold heat insulator	13	133	10
Exhaust manifold LH x No. 2 exhaust manifold heat insulator	13	133	10

Exhaust pipe

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front exhaust pipe assembly x Center exhaust pipe assembly	43	438	32
Center exhaust pipe x Tailpipe assembly	48	489	35
Front exhaust pipe x Front No. 2 exhaust pipe	48	489	35
Exhaust pipe stopper bracket x Crossmember	19	194	14
Exhaust manifold RH x Front exhaust pipe	54	554	40
Exhaust manifold LH x Front No. 2 exhaust pipe	54	554	40

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002DHM006X
Title: SPECIFICATIONS: 1GR-FE STARTING: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Starter	Specified current		90 A or less at 11.5 V
Brush	Standard length		15.5 mm (0.610 in.)
	Minimum length		8.5 mm (0.335 in.)
Starter armature	Circle runout	Maximum	0.05 mm (0.00197 in.)
	Commutator	Standard diameter	30.0 mm (1.18 in.)
		Minimum diameter	29.0 mm (1.14 in.)
		Standard undercut depth	0.6 mm (0.0236 in.)
		Minimum undercut depth	0.2 mm (0.00787 in.)
Starter brush holder assembly	Standard spring load		18 to 24 N (1.8 to 2.4 kgf, 4.0 to 5.3 lbf)
	Minimum spring load		12 N (1 kgf, 2.7 lbf)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002DHN006X
Title: SPECIFICATIONS: 1GR-FE STARTING: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Lead wire x Terminal C	5.9	60	52 in.*lbf
Commutator end frame x Starter brush holder assembly	1.5	15	13 in.*lbf
Starter drive housing x Magnet starter switch assembly	5.9	60	52 in.*lbf
Commutator end frame x Starter drive housing	5.9	60	52 in.*lbf
Starter assembly x Transmission housing	37	377	27
Starter wire x Stater assembly	9.8	100	87 in.*lbf
Starter wire x Cylinder block	8.0	82	71 in.*lbf
ground wire x Cylinder block	13	133	10
Stater cover x Stater assembly	12	117	8

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049TR001X
Title: SPECIFICATIONS: 2TR-FE LUBRICATION: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Standard Oil Pressure

CONDITION	SPECIFIED CONDITION
Idle	29 kPa (0.3 kgf/cm^2, 4.2 psi) or higher
3000 rpm	160 to 490 kPa (1.6 to 5.0 kgf/cm^2, 23 to 71 psi)

Standard Resistance

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - Body ground	Engine stopped	Below 1 Ω
	Engine idling	10 kΩ or higher

Oil Pump

Tip clearance	Standard	0.040 to 0.160 mm (0.00157 to 0.00630 in.)
	Maximum	0.26 mm (0.0102 in.)
Side clearance	Standard	0.025 to 0.075 mm (0.000984 to 0.00295 in.)
	Maximum	0.130 mm (0.00512 in.)
Body clearance	Standard	0.025 to 0.325 mm (0.000984 to 0.0128 in.)
	Maximum	0.425 mm (0.0167 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049TS001X
Title: SPECIFICATIONS: 2TR-FE LUBRICATION: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

OIL AND OIL FILTER

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Oil filter x Oil filter bracket	17	175	13
Oil pan drain plug x No . 2 oil pan	38	382	28
Engine under cover seal x Rear engine under cover	29	296	21

OIL PRESSURE SWITCH

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Oil pressure switch x Cylinder block	15	153	11

OIL PUMP

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Oil pump cover x Timing chain cover		9.0	91	79 in.*lbf
Oil pump relief valve plug x Timing chain cover		49	500	36
Water pump x Timing chain cover		8.9	91	79 in.*lbf
Timing chain cover x Cylinder head, Cylinder block	bolt A	60	612	44
	bolt B, D and nut	21	214	15
	bolt C	26	265	19
	bolt E	21	214	15
	bolt F	46	469	34
V-ribbed belt tensioner x Timing chain cover, Cylinder block	bolt 1	40	408	30
	bolt 2	21	214	15
Oil pan x Cylinder block, Timing chain cover		26	265	19
Oil strainer x Oil pan		26	265	19
No. 2 oil pan x Oil pan		9.0	92	80 in.*lbf

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PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Cylinder head cover x Cylinder head, Timing chain cover		9.0	92	80 in.*lbf
No. 1 water by-pass pipe x Timing chain cover		18	178	13
No. 1 idler pulley x Timing chain cover		43	438	32
Water inlet x Timing chain cover		28	286	21
No. 1 compressor mounting bracket x Timing chain cover, Cylinder block	bolt A	45	459	33
	bolt B	45	459	33
	bolt C	25	250	18

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J4H018X
Title: SPECIFICATIONS: 2TR-FE BATTERY / CHARGING: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Battery	Standard Specific gravity		1.25 to 1.29 at 20°C (68°F)
Charging circuit without load	Standard current		10 A or less
	Standard voltage		13.2 to 14.8 V (when engine speed at 2000 rpm)
Charging circuit with load	Standard current		30 A or higher
Generator brush holder	Standard exposed length		9.5 to 11.5 mm (0.374 to 0.453 in.)
	Minimum exposed length		4.5 mm (0.177 in.)
Generator rotor	Standard resistance	Between the slip rings	2.3 to 2.7 at 20°C (68°F)
	Standard diameter		14.2 to 14.4 mm (0.559 to 0.567 in.)
	Minimum diameter		14.0 mm (0.551 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001ZH1007X
Title: SPECIFICATIONS: 2TR-FE BATTERY / CHARGING: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Retainer plate x Generator drive end frame assembly	2.3	23	20 in.*lbf
Generator coil x Generator drive end frame assembly	5.9	60	52 in.*lbf
Generator brush holder assembly x Generator coil	1.8	18	16 in.*lbf
Generator rear end cover x Generator coil	4.6	46	40 in.*lbf
Generator with clutch pulley x Generator rotor assembly	111 (88)	1127 (897)	81 (65)
Generator assembly x Timing chain cover	43	438	32
Generator assembly x Generator wire	9.8	100	87 in.*lbf

( ): For use with SST

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000004BEJ000X
Title: SPECIFICATIONS: 2TR-FE COOLING: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Thermostat

ITEM	SPECIFIED CONDITION
Standard valve opening temperature	80 to 84°C (176 to 183°F)
Standard valve lift	8.5 mm (0.335 in.) or more at 95°C (203°F)

Radiator cap

ITEM	SPECIFIED CONDITION
Standard value (for brand-new cap)	93 to 123 kPa (1.0 to 1.3 kgf/cm^2, 13.5 to 18 psi)
Minimum standard value (after using cap)	79 kPa (0.8 kgf/cm^2, 11.4 psi)

Fin for blockage

ITEM	INJECTION PRESSURE	SPECIFIED CONDITION
Fin for blockage	2942 to 4903 kPa (30.0 to 50.0 kgf/cm^2, 427 to 711 psi)	300 mm (11.8 in.)
	4903 to 7845 kPa (50.0 to 80.0 kgf/cm^2, 711 to 1138 psi)	500 mm (19.7 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000004BEK000X
Title: SPECIFICATIONS: 2TR-FE COOLING: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Coolant

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Cylinder block drain cock plug x Cylinder block drain cock	13	130	9

Water pump

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Fluid coupling x Fan		5.0	51	44 in.*lbf
Water pump assembly x Timing chain cover	for bolt A	26	265	19
	for bolt B	8.9	91	79 in.*lbf

Thermostat

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Water inlet x Timing chain cover	28	286	21

Radiator

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Radiator assembly x Vehicle body	18	184	13
Fan shroud x Radiator assembly	5.0	51	44 in.*lbf
Fluid coupling and fan pulley x Water pump assembly	25	255	18
Radiator reservoir x Fan shroud	5.0	51	44 in.*lbf
Upper front bumper retainer x Vehicle body	8.0	82	71 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001ZGM006X
Title: SPECIFICATIONS: 2TR-FE EMISSION CONTROL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Air Switching Valve

CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	4.5 to 5.5 Ω

Purge VSV

CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	26 to 30 Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001ZGN006X
Title: SPECIFICATIONS: 2TR-FE EMISSION CONTROL: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Air pump assembly x Body	20	204	15
Air switching valve assembly x Cylinder head sub-assembly	20	204	15
No. 4 intake pipe x Air switching valve assembly	20	204	15
No. 4 intake pipe x Exhaust manifold	20	204	15
No. 1 exhaust manifold heat insulator x Exhaust manifold	12	122	9
Air injection control driver x Air injection control driver bracket	2.0	20	18 in.*lbf
Air injection control driver with bracket x Body	13	127	9
Canister assembly x Body	20	204	15
Purge VSV x Intake manifold	9.0	92	80 in.*lbf
PCV valve x Cylinder head cover	5.0	51	44 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001ZAK006X
Title: SPECIFICATIONS: 2TR-FE ENGINE CONTROL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Spark plug	Electrode gap	Maximum		1.3 mm (0.0512 in.)
		Standard		1.0 to 1.1 mm (0.0394 to 0.0433 in.)
Camshaft timing oil control valve	Standard resistance	1 - 2	20°C (68°F)	6.9 to 7.9 Ω
Throttle body with motor assembly	Standard resistance	1 (M-) - 2 (M+)	20°C (68°F)	0.3 to 100 Ω
Accelerator pedal position sensor	Standard voltage	Accel sensor out No. 1	Released	0.5 to 1.1 V
			Depressed	2.6 to 4.5 V
		Accel sensor out No. 2	Released	1.2 to 2.0 V
			Depressed	3.4 to 5.3 V
Mass air flow meter	Standard resistance	4 (THA) - 5 (E2)	-20°C (-4°F)	12.5 to 16.9 kΩ
			20°C (68°F)	2.19 to 2.67 kΩ
			60°C (140°F)	0.50 to 0.68 kΩ
Camshaft position sensor	Standard resistance	1 (G+) - 2 (G-)	Cold	835 to 1400 Ω
			Hot	1060 to 1645 Ω
Crankshaft position sensor	Standard resistance	1 (NE+) - 2 (NE-)	Cold	1630 to 2740 Ω
			Hot	2065 to 3225 Ω
Engine coolant temperature sensor	Standard resistance	1 (E2) - 2 (THW)	20°C (68°F)	2.32 to 2.59 kΩ
			80°C (176°F)	0.310 to 0.326 kΩ
Knock sensor	Standard resistance	1 (Ground) - 2 (Output)	20°C (68°F)	120 to 280 kΩ
Manifold absolute pressure sensor	Standard voltage	3 (VC) - 1 (E2)	Ignition switch ON	4.5 to 5.5 V
Air fuel ratio sensor	Standard resistance	1 (HA1A) - 2 (+B)	20°C (68°F)	1.8 to 3.4 Ω
Heated oxygen sensor	Standard resistance	1 (HT1B) - 2 (+B)	20°C (68°F)	11 to 16 Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001ZAL006X
Title: SPECIFICATIONS: 2TR-FE ENGINE CONTROL: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Camshaft timing oil control valve x Cylinder head	8.0	82	71 in.*lbf
Wiring harness clamp bracket x Intake manifold	8.0	82	71 in.*lbf
Throttle body with motor assembly x Intake manifold	9.0	92	80 in.*lbf
Intake air connector x Cylinder head cover	8.0	82	71 in.*lbf
Intake air connector x Throttle body with motor assembly	5.0	51	44 in.*lbf
Intake air connector x Air cleaner and hose	5.0	51	44 in.*lbf
ECM x No. 2 ECM bracket	3.0	31	27 in.*lbf
ECM x ECM bracket	3.0	31	27 in.*lbf
ECM x Reinforcement	8.0	82	71 in.*lbf
Accelerator pedal position sensor assembly x Body	5.4	55	48 in.*lbf
Mass air flow meter x Air cleaner cap	1.0	10	9 in.*lbf
Camshaft position sensor x Timing chain cover	8.5	87	75 in.*lbf
Crankshaft position sensor x Timing chain cover	8.5	87	75 in.*lbf
Spark plug x Cylinder head	18	184	13
Ignition coil x Cylinder head cover	9.0	92	80 in.*lbf
Engine coolant temperature sensor x Cylinder block	20	200	14
Knock sensor x Cylinder block	20	204	15
Manifold absolute pressure sensor x Intake air connector	5.0	51	44 in.*lbf
Air fuel ratio sensor x Front exhaust pipe assembly	44 (40)	449 (408)	32 (30)
Heated oxygen sensor x Front exhaust pipe assembly	44 (40)	449 (408)	32 (30)
Power steering oil pressure switch x Pressure feed tube	21	210	15

( ): For use with SST

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049TP001X
Title: SPECIFICATIONS: 2TR-FE ENGINE MECHANICAL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

ENGINE

Ignition timing	with Terminals 13 (TC) and 4 (CG) connected of DLC3	3 to 7° BTDC @ idle
	without Terminals 13 (TC) and 4 (CG) connected of DLC3	3 to 13° BTDC @ idle
Engine idle speed		600 to 700 rpm
Compression	Standard	1230 kPa (12.5 kgf/cm^2, 178 psi) or higher
	Minimum	880 kPa (9.0 kgf/cm^2, 128 psi)
	Difference	68 kPa (0.7 kgf/cm^2, 9.8 psi) or less

ENGINE UNIT

Chain	Maximum chain elongation	147.5 mm (5.81 in.)
No. 2 chain	Maximum chain elongation	123.6 mm (4.87 in.)
Camshaft timing sprocket	Minimum distance	1.0 mm (0.0394 in.)
	Minimum sprocket diameter (with chain)	113.8 mm (4.48 in.)
Camshaft timing gear	Minimum distance	1.0 mm (0.0394 in.)
	Minimum sprocket diameter (with chain)	113.8 mm (4.48 in.)
Crankshaft timing gear	Minimum distance	1.0 mm (0.0394 in.)
	Minimum sprocket diameter (with chain)	59.4 mm (2.34 in.)
Chain tensioner slipper	Maximum wear	2.0 mm (0.0787 in.)
No. 1 chain vibration damper	Maximum wear	2.0 mm (0.0787 in.)
Timing chain guide	Maximum wear	0.5 mm (0.0197 in.)
No. 2 crankshaft timing sprocket	Minimum sprocket diameter (with chain)	96.7 mm (3.81 in.)
Balance shaft drive gear	Minimum sprocket diameter (with chain)	75.9 mm (2.99 in.)

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No. 2 chain vibration damper	Maximum wear		1.0 mm (0.0394 in.)
No. 3 chain vibration damper	Maximum wear		1.0 mm (0.0394 in.)
No. 4 chain vibration damper	Maximum wear		1.0 mm (0.0394 in.)
Cylinder head set bolt	Outside diameter	Standard	10.76 to 10.97 mm (0.424 to 0.432 in.)
		Minimum	10.40 mm (0.409 in.)
		Distance	30 mm (1.18 in.)
Camshaft	Maximum circle runout		0.03 mm (0.00118 in.)
	Cam lobe height	Standard	42.855 to 42.955 mm (1.687 to 1.691 in.)
		Minimum	42.855 mm (1.687 in.)
	Standard journal diameter	No. 1 journal	35.949 to 35.965 mm (1.415 to 1.416 in.)
		Other journal	26.959 to 26.975 mm (1.061 to 1.062 in.)
No. 2 camshaft	Maximum circle runout		0.03 mm (0.00118 in.)
	Cam lobe height	Standard	42.854 to 42.954 mm (1.687 to 1.691 in.)
		Minimum	42.854 mm (1.687 in.)
	Standard journal diameter	No. 1 journal	35.949 to 35.965 mm (1.415 to 1.416 in.)
		Other journal	26.959 to 26.975 mm (1.061 to 1.062 in.)
Exhaust manifold	Maximum warpage		0.7 mm (0.0276 in.)

CYLINDER HEAD

Cylinder head	Maximum warpage		0.05 mm (0.00197 in.)
Inner compression spring	Standard free length		48.53 mm (1.91 in.)
	Maximum deviation		1.5 mm (0.0591 in.)
	Maximum angle		2°
Intake valve	Overall length	Standard	106.26 mm (4.18 in.)
		Minimum	105.96 mm (4.17 in.)
	Standard valve stem diameter		5.470 to 5.485 mm (0.215 to 0.216 in.)

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	Margin thickness	Standard	1.05 to 1.45 mm (0.0413 to 0.0571 in.)
		Minimum	0.50 mm (0.0197 in.)
Exhaust valve	Overall length	Standard	106.74 mm (4.20 in.)
		Minimum	106.44 mm (4.19 in.)
	Standard valve stem diameter		5.465 to 5.480 mm (0.215 to 0.216 in.)
	Margin thickness	Standard	1.2 to 1.6 mm (0.0472 to 0.0630 in.)
		Minimum	0.50 mm (0.0197 in.)
Camshaft thrust clearance	Standard		0.10 to 0.24 mm (0.00394 to 0.00945 in.)
	Maximum		0.26 mm (0.0102 in.)
Camshaft oil clearance	Standard	No. 1 journal	0.035 to 0.072 mm (0.00138 to 0.00283 in.)
		Other journals	0.025 to 0.062 mm (0.000984 to 0.00244 in.)
	Maximum		0.08 mm (0.00315 in.)
Valve guide bush oil clearance	Standard bush inside diameter		5.51 to 5.53 mm (0.217 to 0.218 in.)
	Standard	Intake	0.025 to 0.060 mm (0.000984 to 0.00236 in.)
		Exhaust	0.030 to 0.065 mm (0.00118 to 0.00256 in.)
	Maximum	Intake	0.08 mm (0.00315 in.)
		Exhaust	0.10 mm (0.00397 in.)
Valve guide bush	Bush bore diameter (Cylinder head side)	STD	10.285 to 10.306 mm (0.405 to 0.406 in.)
		O/S 0.05	10.335 to 10.356 mm (0.407 to 0.408 in.)
	Bush bore diameter (Valve guide bush side)	STD	10.333 to 10.344 mm (0.4068 to 0.4072 in.)
		O/S 0.05	10.383 to 10.394 mm (0.4088 to 0.4092 in.)
	Protrusion height	Intake side	9.8 to 10.2 mm (0.386 to 0.402 in.)
		Exhaust side	7.6 to 8.0 mm (0.299 to 0.315 in.)
Valve seat	Standard width		1.1 to 1.4 mm (0.0433 to 0.0551 in.)

CYLINDER BLOCK

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Connecting rod	Thrust clearance	Standard	0.15 to 0.35 mm (0.00591 to 0.0138 in.)
		Maximum	0.40 mm (0.0157 in.)
	Oil clearance	Standard	0.039 to 0.066 mm (0.00154 to 0.00260 in.)
		Maximum	0.066 mm (0.00260 in.)
	Standard crankshaft pin diameter		52.989 to 53.002 mm (2.086 to 2.087 in.)
	Standard bearing center wall thickness	Mark 4	1.484 to 1.487 mm (0.05843 to 0.05854 in.)
		Mark 5	1.488 to 1.490 mm (0.05858 to 0.05866 in.)
		Mark 6	1.491 to 1.493 mm (0.05870 to 0.05878 in.)
Crankshaft thrust clearance	Standard		0.02 to 0.22 mm (0.000787 to 0.00866 in.)
	Maximum		0.30 mm (0.0118 in.)
	Thrust washer thickness		2.440 to 2.490 mm (0.0961 to 0.0980 in.)
Balance shaft thrust clearance	Standard		0.07 to 0.13 mm (0.00276 to 0.00512 in.)
	Maximum		0.20 mm (0.00787 in.)
Cylinder block	Maximum warpage		0.05 mm (0.00197 in.)
Cylinder bore	Standard diameter		94.990 to 95.003 mm (3.7398 to 3.7403 in.)
	Maximum difference in diameter		0.2 mm (0.00787 in.)
Piston diameter	Standard diameter		94.941 to 94.971 mm (3.738 to 3.739 in.)
	Distance		13.8 mm (0.543 in.)
Piston oil clearance	Standard		0.019 to 0.052 mm (0.000748 to 0.00205 in.)
Piston ring groove clearance	No. 1 compression ring		0.020 to 0.075 mm (0.000787 to 0.00295 in.)
	No. 2 compression ring		0.020 to 0.065 mm (0.000787 to 0.00256 in.)
	Oil ring		0.020 to 0.070 mm (0.000787 to 0.00276 in.)
Piston ring end gap	Standard	No. 1 compression ring	0.26 to 0.38 mm (0.0102 to 0.0150 in.)

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		No. 2 compression ring	0.59 to 0.71 mm (0.0232 to 0.0280 in.)
		Oil ring	0.10 to 0.40 mm (0.00394 to 0.0157 in.)
	Maximum	No. 1 compression ring	0.90 mm (0.0354 in.)
		No. 2 compression ring	1.36 mm (0.0535 in.)
		Oil ring	0.75 mm (0.0295 in.)
Piston pin oil clearance	Standard piston pin hole inside diameter		22.001 to 22.010 mm (0.866 to 0.867 in.)
	Standard piston pin diameter		21.997 to 22.009 mm (0.8660 to 0.8665 in.)
	Oil clearance (Piston side)	Standard	0.001 to 0.007 mm (0.0000394 to 0.000276 in.)
		Maximum	0.010 mm (0.000394 in.)
	Standard bush inside diameter		22.005 to 22.014 mm (0.866 to 0.867 in.)
	Oil clearance (Connecting rod side)	Standard	0.005 to 0.011 mm (0.000197 to 0.000433 in.)
		Maximum	0.025 mm (0.000984 in.)
Connecting rod	Maximum bend		0.03 mm (0.00118 in.) per 100 mm (3.94 in.)
	Maximum twist		0.15 mm (0.00591 in.) per 100 mm (3.94 in.)
Crankshaft	Maximum circle runout		0.03 mm (0.00118 in.)
	Standard journal diameter	No. 3 journal	59.981 to 59.994 mm (2.361 to 2.362 in.)
		Except No. 3 journal	59.987 to 60.000 mm (2.3617 to 2.3622 in.)
	Maximum taper and out-of-round		0.005 mm (0.000197 in.)
	Standard pin diameter		52.989 to 53.002 mm (2.086 to 2.087 in.)
	Maximum taper and out-of-round		0.003 mm (0.000118 in.)
Crankshaft oil clearance	Standard oil clearance	No. 3 journal	0.036 to 0.067 mm (0.00142 to 0.00264 in.)
		Other journals	0.030 to 0.061 mm (0.00118 to 0.00240 in.)
	Maximum oil clearance		0.10 mm (0.00394 in.)

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Cylinder block main journal bore diameter	Mark 1		64.004 to 64.010 mm (2.51984 to 2.52007 in.)
	Mark 2		64.011 to 64.016 mm (2.52011 to 2.52031 in.)
	Mark 3		64.017 to 64.022 mm (2.52035 to 2.52055 in.)
Bearing center wall thickness	Mark 1		1.987 to 1.990 mm (0.07823 to 0.07835 in.)
	Mark 2		1.991 to 1.993 mm (0.07839 to 0.07846 in.)
	Mark 3		1.994 to 1.996 mm (0.07850 to 0.07858 in.)
No. 1 balance shaft	Standard main journal diameter	A	37.969 to 37.985 mm (1.49 to 1.50 in.)
		B	37.449 to 37.465 mm (1.474 to 1.475 in.)
	Standard bearing inside diameter	A	38.025 to 38.045 mm (1.497 to 1.498 in.)
		B	37.525 to 37.545 mm (1.477 to 1.478 in.)
	Standard oil clearance	A	0.040 to 0.076 mm (0.00157 to 0.00299 in.)
		B	0.060 to 0.096 mm (0.00236 to 0.00378 in.)
	Maximum oil clearance		0.15 mm (0.00591 in.)
No. 2 balance shaft	Standard main journal diameter	A	37.969 to 37.985 mm (1.49 to 1.50 in.)
		B	37.449 to 37.465 mm (1.474 to 1.475 in.)
	Standard bearing inside diameter	A	38.025 to 38.045 mm (1.497 to 1.498 in.)
		B	37.525 to 37.545 mm (1.477 to 1.478 in.)
	Standard oil clearance	A	0.040 to 0.076 mm (0.00157 to 0.00299 in.)
		B	0.060 to 0.096 mm (0.00236 to 0.00378 in.)
	Maximum oil clearance		0.15 mm (0.00591 in.)
Crankshaft bearing cap set bolt	Diameter	Standard	10.76 to 10.97 mm (0.424 to 0.432 in.)

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		Minimum	10.66 mm (0.420 in.)
Connecting rod bolt	Diameter	Standard	7.2 to 7.3 mm (0.283 to 0.287 in.)
		Minimum	7.0 mm (0.276 in.)
Crankshaft bearing	Dimension A - B or B - A		0.3 mm (0.0118 in.) or less
	Standard misalignment		0.9 mm (0.0354 in.) or less
Piston diameter (O/S 0.50)	Standard		95.441 to 95.471 mm (3.758 to 3.759 in.)
Piston oil clearance (O/S 0.50)	Standard		0.019 to 0.052 mm (0.000748 to 0.00205 in.)



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Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049TQ001X
Title: SPECIFICATIONS: 2TR-FE ENGINE MECHANICAL: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

ENGINE

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Intake air connector x Cylinder head cover	8.0	82	71 in.*lbf
Intake air connector hose clamp	5.0	51	44 in.*lbf
Spark plug x Cylinder head	18	184	13
Ignition coil x Cylinder head cover	9.0	92	80 in.*lbf

CAMSHAFT

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Camshaft timing gear x Camshaft		78	795	58
Camshaft bearing cap x Cylinder head	bolt A	12	122	9
	bolt B	16	158	11
Camshaft timing sprocket x No. 2 camshaft		78	795	58
Straight screw plug x Timing chain cover		17	169	12
Timing chain guide x No. 1 camshaft bearing cap		10	102	7

CYLINDER HEAD GASKET

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Cylinder head x Cylinder block	1st	39	398	29
	2nd	Turn 90°	Turn 90°	Turn 90°
	3rd	Turn 90°	Turn 90°	Turn 90°
Camshaft bearing cap x Cylinder head	bolt A	12	122	9
	bolt B	16	158	11
No. 1 chain vibration damper x Cylinder block, Cylinder head	bolt	21	214	15
	nut	18	184	13
Chain tensioner slipper x Cylinder block		21	214	15
No. 1 chain tensioner x Cylinder block		10	102	7

FRONT CRANKSHAFT OIL SEAL

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PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Crankshaft pulley x Crankshaft	260	2651	192

REAR CRANKSHAFT OIL SEAL

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Drive plate and ring gear x Crankshaft	74	755	55

ENGINE ASSEMBLY

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
No. 1 engine hanger x Cylinder head		42	428	31
Engine mounting insulator x Body		40	408	30
Rear end plate x Cylinder block, No. 1 water by-pass pipe	bolt A	18	184	13
	bolt B	18	178	13
Rear No. 1 engine mounting insulator x Transmission		65	663	48
Rear engine mounting heat insulator x Rear no. 1 engine mounting insulator		12	122	9
No. 3 frame crossmember x Rear no. 1 engine mounting insulator		30	306	22
Front engine mounting insulator LH x harness bracket		13	131	9
Wire harness x Relay block		11	112	8
Ground wire x Cylinder block		40	408	30
Cooler compressor x No. 1 compressor mounting bracket		25	250	18
Suction hose x Timing chain cover		7.8	80	69 in.*lbf
Vane pump x Timing chain cover		21	214	15
Pressure feed tube x Body		28	285	21
Air cleaner case x Body		12	122	9
Air cleaner cap hose clamp		5.0	51	44 in.*lbf
Ground wire x Body		8.5	87	75 in.*lbf
Hood Body	bolt A	13	133	10
	bolt B	18	178	13
Rear engine under cover x Body		29	296	21
No. 1 engine under cover x Body		29	296	21

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PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front bumper cover lower x Body	8.0	82	71 in.*lbf

ENGINE UNIT

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
No. 4 chain vibration damper x Cylinder block		18	184	13
Balance shaft drive gear x No. 1 balance shaft		25	255	18
No. 2 chain tensioner x Cylinder block		18	184	13
No. 3 chain vibration damper x Cylinder block		18	184	13
No. 2 chain vibration damper x Cylinder block		27	270	20
No. 1 taper screw plug x Cylinder block		25	250	18
Oil filter bracket union x Cylinder block		25	250	18
Oil filter bracket x Screw plug		49	500	36
Oil filter bracket x Cylinder block		25	255	18
Oil filter union x Oil filter bracket		43	439	32
Oil seal retainer x Cylinder block		13	133	10
Oil control valve filter screw plug x Cylinder head		30	306	22
Camshaft timing sprocket x No. 2 camshaft		78	795	58
Straight screw plug x Timing chain cover		17	169	12
Oil pan stud bolt	Stud bolt A	7.5	76	66 in.*lbf
	Stud bolt B	3.0	31	27 in.*lbf
Front No. 1 engine mounting bracket RH x Cylinder block		51	520	38
Front No. 1 engine mounting bracket LH x Cylinder block		51	520	38
Front engine mounting insulator x Front No. 1 engine mounting bracket		46	469	34
Engine oil lever dipstick guide x Front No. 1 engine mounting bracket		20	204	15
No. 1 water by-pass pipe x Timing chain cover		18	178	13

CYLINDER HEAD

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Stud bolt	Stub bolt A	3.0	31	27 in.*lbf
	Stub bolt B	7.5	76	66 in.*lbf
	Stub bolt C	7.5	76	66 in.*lbf
No. 1 head straight screw plug x Cylinder head		44	449	32

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PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 2 head straight screw plug x Cylinder head	140	1428	103

CYLINDER BLOCK

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Stud bolt	Stud bolt A	7.5	76	66 in.*lbf
	Stud bolt B and D	7.5	76	66 in.*lbf
	Stud bolt C	7.5	76	66 in.*lbf
Cylinder block water drain cock x Cylinder block		25	250	18
Water drain cock plug x Cylinder block water drain cock		13	130	9
No. 1 oil nozzle x Cylinder block		7.0	71	62 in.*lbf
No. 2 balance shaft drive gear x No. 2 balance shaft		36	367	27
No. 2 balance shaft x Cylinder block		18	184	13
No. 1 balance shaft drive gear x No. 1 balance shaft		36	367	27
No. 1 balance shaft x Cylinder block		18	184	13
Crankshaft Cylinder block	1st	39	398	29
	2nd	Turn 90°	Turn 90°	Turn 90°
Connecting rod x Connecting rod cap	1st	25	250	18
	2nd	Turn 90°	Turn 90°	Turn 90°

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003DL000KX
Title: SPECIFICATIONS: 2TR-FE FUEL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Fuel Pressure

at idle	281 to 287 kPa (2.87 to 2.93 kgf/cm^2, 41 to 42 psi)
remains for 5 minutes after engine has stopped	147 kPa (1.5 kgf/cm^2, 21 psi) or higher

Fuel Injector

Resistance: at 20°C (68°F)	11.6 to 12.4 Ω
Injection volume	71 to 86 cm^3 (4.3 to 5.2 cu in.) per 15 seconds
Difference between each cylinder	15 cm^3 (0.9 cu in.) or less
Fuel leakage	1 drop or less per 12 minutes

Fuel Pump

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	20°C (68°F)	0.2 to 3.0 Ω

Fuel Sender Gauge

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2 - 3	Float level is F (upper)	12 to 18 Ω
	Float level is E (lower)	405 to 415 Ω

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Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003DL1003X
Title: SPECIFICATIONS: 2TR-FE FUEL: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Fuel Injector

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Fuel delivery pipe x Cylinder block	12	122	9
Purge VSV x Intake manifold	9.0	92	80 in.*lbf
Harness clamp bracket x Intake manifold	8.0	82	71 in.*lbf

Fuel Pressure Regulator

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Fuel pressure regulator assembly x Fuel delivery pipe	8.5	87	75 in.*lbf
Harness clamp bracket x Intake manifold	8.0	82	71 in.*lbf

Fuel Pressure Pulsation Damper

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Fuel pressure pulsation damper assembly x Fuel delivery pipe	8.5	87	75 in.*lbf

Fuel Pump ECU

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Fuel pump ECU x Frame	31	316	23

Fuel Tank

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 3 fuel tank protector x Fuel tank	5.0	51	44 in.*lbf
Fuel tank band x Body	40	408	30
No. 1 fuel tank protector sub-assembly x Body	20	204	15

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049JF003X
Title: SPECIFICATIONS: 2TR-FE INTAKE / EXHAUST: SERVICE DATA (2010 4Runner)		

SERVICE DATA

ITEM	CONDITION	SPECIFICATION
Compression spring	Minimum length	42 mm (1.65 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049G9003X
Title: SPECIFICATIONS: 2TR-FE INTAKE / EXHAUST: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Intake Manifold

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Wire harness clamp bracket x Intake manifold	8.0	82	71 in.*lbf
Intake manifold x Cylinder head	25	255	18

Exhaust manifold

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Front exhaust pipe x Center exhaust pipe		43	438	32
Front exhaust pipe x Exhaust manifold		43	438	32
Manifold stay x Exhaust manifold		30	306	22
Manifold stay x Transmission	bolt A	71	724	52
	bolt B	44	449	32
Exhaust manifold x Cylinder head		36	367	27

Exhaust pipe

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Exhaust manifold x Front exhaust pipe assembly	43	438	32
Front exhaust pipe assembly x Center exhaust pipe	43	438	32
Center exhaust pipe x Tailpipe assembly	48	489	35
Heated oxygen sensor x Front exhaust pipe assembly	44 (40)	449 (408)	32 (30)
Air fuel ratio sensor x Front exhaust pipe assembly	44 (40)	449 (408)	32 (30)

( ): For use with SST

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001ZGU007X
Title: SPECIFICATIONS: 2TR-FE STARTING: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Starter	Specified current		90 A or less at 11.5 V
Brush	Standard length		15.5 mm (0.610 in.)
	Minimum length		8.5 mm (0.335 in.)
Starter armature	Circle runout	Maximum	0.05 mm (0.00197 in.)
	Commutator	Standard diameter	30.0 mm (1.18 in.)
		Minimum diameter	29.0 mm (1.14 in.)
		Standard undercut depth	0.6 mm (0.0236 in.)
		Minimum undercut depth	0.2 mm (0.00787 in.)
Starter brush holder assembly	Standard spring load		18 to 24 N (1.8 to 2.4 kgf, 4.0 to 5.3 lbf)
	Minimum spring load		12 N (1 kgf, 2.7 lbf)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000001ZGV007X
Title: SPECIFICATIONS: 2TR-FE STARTING: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Lead wire x Terminal C	5.9	60	52 in.*lbf
Commutator end frame x Brush holder assembly	1.5	15	13 in.*lbf
Starter drive housing assembly x Magnet starter switch assembly	5.9	60	52 in.*lbf
Commutator end frame x Starter drive housing assembly	5.9	60	52 in.*lbf
Starter assembly x Transmission housing	37	377	27
Starter wire	9.8	100	87 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002IOB018X
Title: SPECIFICATIONS: A343E AUTOMATIC TRANSMISSION / TRANSAXLE: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Line Pressure and Shift Schedule

Line pressure (Wheel locked)		
AT stall (Throttle valve fully opened)	D position	1050 to 1200 kPa (10.7 to 12.2 kgf/cm^2, 152 to 174 psi)
	R position	1300 to 1650 kPa (13.3 to 16.8 kgf/cm^2, 189 to 239 psi)
Engine stall revolution	D and R positions	1800 to 2200 rpm
Time lag	N → D position	Less than 1.2 seconds
	N → R position	Less than 1.5 seconds
Engine idle speed (A/C OFF)	N position	650 to 750 rpm
Drive plate runout	Maximum	0.30 mm (0.0118 in.)
Shift schedule (Speeds higher than the fuel cut speed are for reference only)		
D position (Throttle valve fully opened)	1 → 2	57 to 66 km/h (35 to 41 mph)
	2 → 3	105 to 118 km/h (65 to 73 mph)
	3 → 4	137 to 148 km/h (85 to 92 mph)
D position (Throttle valve opening 5%)	1 → 2	12 to 16 km/h (7 to 10 mph)
	2 → 3	18 to 23 km/h (11 to 14 mph)
	3 → 4	50 to 55 km/h (31 to 34 mph)
Manual downshift permissible speed (Speeds higher than the fuel cut speed are for reference only)		
S position	→ 3	166 to 176 km/h (103 to 109 mph)
	→ 2	108 to 118 km/h (67 to 73 mph)
	→ 1	52 to 57 km/h (32 to 35 mph)

Speed Sensor

Speed sensor NC0 and SP2	20°C (68°F)	560 to 680 Ω

No. 2 ATF Temperature Sensor

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No. 2 temperature sensor	Always	560 to 680 Ω
No. 1 temperature sensor	Always	79 Ω to 156 kΩ

Shift Solenoid Valve

SLU and SLT	20°C (68°F)	5.0 to 5.6 Ω
S1 and S2	20°C (68°F)	11 to 15 Ω

Transfer Adaptor Oil Seal

Standard depth	0 to 1 mm (0 to 0.0394 in.)

Drive Plate

Maximum runout	0.30 mm (0.0118 in.)

Overdrive Clutch

Clutch piston return spring free length	Standard	15.8 mm (0.622 in.)
Overdrive direct clutch drum bush inside diameter	Maximum	27.11 mm (1.07 in.)
Flange thickness	Mark 21	3.05 to 3.15 mm (0.120 to 0.124 in.)
	Mark 20	3.15 to 3.25 mm (0.124 to 0.128 in.)
	Mark 19	3.25 to 3.35 mm (0.128 to 0.132 in.)
	Mark 18	3.35 to 3.45 mm (0.132 to 0.136 in.)
	Mark 17	3.45 to 3.55 mm (0.136 to 0.140 in.)
	Mark 16	3.55 to 3.65 mm (0.140 to 0.144 in.)

Overdrive Planetary Gear Assembly

Planetary gear bush inside diameter	Maximum	11.2 to 11.221 mm (0.441 to 0.442 in.)
Pinion gear thrust clearance	Standard	0.20 to 0.60 mm (0.00787 to 0.0236 in.)
	Maximum	0.65 mm (0.0256 in.)

Overdrive Brake

Brake piston return spring free length	Standard	17.03 mm (0.671 in.)
Flange thickness	Mark 33	3.25 to 3.35 mm (0.128 to 0.132 in.)
	Mark 35	3.45 to 3.55 mm (0.136 to 0.140 in.)
	Mark 36	3.55 to 3.65 mm (0.140 to 0.144 in.)
	Mark 37	3.65 to 3.75 mm (0.144 to 0.148 in.)

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	Mark 38	3.75 to 3.85 mm (0.148 to 0.152 in.)
	Mark 39	3.85 to 3.95 mm (0.152 to 0.156 in.)
	Mark 40	3.95 to 4.05 mm (0.156 to 0.159 in.)
Brake piston return spring free length	Standard	15.72 mm (0.619 in.)

Direct Clutch

Clutch piston return spring free length	Standard	21.32 mm (0.839 in.)
Clutch drum bush inside diameter	Standard	53.915 to 53.94 mm (2.123 to 2.124 in.)
	Maximum	53.99 mm (2.13 in.)
Flange thickness	Mark 53	3.25 to 3.35 mm (0.128 to 0.132 in.)
	Mark 54	3.35 to 3.45 mm (0.132 to 0.136 in.)
	Mark 55	3.45 to 3.55 mm (0.136 to 0.140 in.)
	Mark 56	3.55 to 3.65 mm (0.140 to 0.144 in.)
	Mark 57	3.65 to 3.75 mm (0.144 to 0.148 in.)
	Mark 58	3.75 to 3.85 mm (0.148 to 0.152 in.)

Forward Clutch

Clutch piston return spring free length	Standard	19.47 mm (0.767 in.)
Forward clutch input shaft bush inside diameter	Standard	24.0 to 24.026 mm (0.945 to 0.946 in.)
	Maximum	24.076 mm (0.948 in.)
Flange thickness	Mark 90	2.95 to 3.05 mm (0.116 to 0.120 in.)
	Mark 91	3.15 to 3.25 mm (0.124 to 0.128 in.)
	Mark 92	3.35 to 3.45 mm (0.132 to 0.136 in.)
	Mark 93	3.55 to 3.65 mm (0.140 to 0.144 in.)
	Mark 94	3.75 to 3.85 mm (0.148 to 0.152 in.)
	Mark 95	3.95 to 4.05 mm (0.156 to 0.159 in.)
	Mark 96	4.15 to 4.25 mm (0.163 to 0.167 in.)
	Mark 97	4.35 to 4.45 mm (0.171 to 0.175 in.)

Second Coast Brake

Piston rod length	w/ Groove mark	78.3 to 78.5 mm (3.08 to 3.09 in.)
	w/o Groove mark	79.8 to 80.0 mm (3.14 to 3.15 in.)
Piston stroke	Standard	1.5 to 3.0 mm (0.059 to 0.118 in.)

Front Planetary Gear

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Planetary ring gear bush inside diameter	Standard	24.0 to 24.026 mm (0.945 to 0.946 in.)
	Maximum	24.076 mm (0.948 in.)
Planetary sun gear bush inside diameter	Standard	27.00 to 27.026 mm (1.063 to 1.064 in.)
	Maximum	27.076 mm (1.07 in.)
Planetary pinion gear thrust clearance	Standard	0.20 to 0.60 mm (0.00787 to 0.0236 in.)
	Maximum	0.65 mm (0.0256 in.)

Second Brake

Piston return spring free length	Standard	16.05 mm (0.632 in.)

Rear Planetary Gear

Planetary pinion gear thrust clearance	Standard	0.2 to 0.6 mm (0.00787 to 0.0236 in.)
	Maximum	0.65 mm (0.0256 in.)

First and Reverse Brake

Brake piston return spring free length	Standard	18.182 to 18.582 mm (0.716 to 0.732 in.)

Transmission Case

Transmission case bush inside diameter	Standard	38.113 to 38.138 mm (1.5005 to 1.5014 in.)
	Maximum	38.19 mm (1.50 in.)

Output Shaft

Output shaft end play	Standard	0.30 to 1.04 mm (0.0118 to 0.0409 in.)

Accumulator Spring

C-0 Inner	Yellow	46.0 mm (1.81 in.)/14.02 mm (0.552 in.)
C-0 Outer	Orange	74.6 mm (2.94 in.)/20.9 mm (0.823 in.)
B-0	Red	63.6 mm (2.50 in.)/16.0 mm (0.630 in.)
C-2 Inner	Pink	42.06 mm (1.66 in.)/14.7 mm (0.579 in.)
C-2 Outer	Blue	768.53 mm (2.70 in.)/20.2 mm (0.795 in.)
B-2	Light green	70.50 mm (2.78 in.) 19.9 mm (0.783 in.)

Oil Pump

Body clearance	Standard	0.07 to 0.15 mm (0.00276 to 0.00591 in.)

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	Maximum	0.2 mm (0.00787 in.)
Tip clearance	Standard	0.004 to 0.248 mm (0.000157 to 0.00976 in.)
	Maximum	0.3 mm (0.0118 in.)
Side clearance	Standard	0.02 to 0.05 mm (0.000787 to 0.00197 in.)
	Maximum	0.1 mm (0.00394 in.)
Driver and driven gear thickness	M	M 11.690 to 11.699 mm (0.4602 to 0.4606 in.)
	N	11.700 to 11.709 mm (0.4606 to 0.4610 in.)
	P	11.710 to 11.720 mm (0.4610 to 0.4614 in.)
	R	11.721 to 11.730 mm (0.4615 to 0.4618 in.)
	S	11.731 to 11.740 mm (0.4618 to 0.4622 in.)
Pump body inside diameter	Maximum	38.19 mm (1.50 in.)
Stator shaft inside maximum diameter	Front side	21.58 mm (0.8496 in.
	Rear side	27.08 mm (1.0661 in.)



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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002IOC018X
Title: SPECIFICATIONS: A343E AUTOMATIC TRANSMISSION / TRANSAXLE: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Drain plug x Oil pan		20	204	15
Speed sensor NC0, SP2 x Automatic transmission		5.4	55	48 in.*lbf
ATF temperature sensor x Automatic transmission		29	300	22
Transmission wire connector set bolt x Automatic transmission		5.4	55	48 in.*lbf
Temperature sensor clamp x Valve body		9.8	100	87 in.*lbf
Transmission oil filler tube x Intake manifold		14	143	10
Oil pan x Transmission case		7.4	75	65 in.*lbf
Valve body oil strainer x Valve body		11	110	8
Valve body x Transmission case		11	110	8
Shift solenoid valve S1, S2 x Valve body		6.6	67	59 in.*lbf
Solenoid lock plate x Valve body		6.6	67	59 in.*lbf
Park/neutral position switch	Bolt:	13	130	9
	Nut:	7.0	71	62 in.*lbf
Transmission control cable x Transmission control shaft lever LH		14	143	10
Transmission control shaft lever LH x Transmission control shaft		16	160	12
No. 1 oil cooler tube x Transmission housing		14	143	10
No. 1 oil cooler tube x Engine		5.5	56	49 in.*lbf
No. 2 Oil cooler tube x Radiator support		14	143	10
Oil cooler tube union nut x Oil cooler tube union		34	347	25
Transmission floor shift assembly x Body		14	143	10
Shift control cable support x Body		5.5	56	49 in.*lbf

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PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Shift control cable retainer x Body		5.5	56	49 in.*lbf
Transmission control cable bracket x Automatic transmission assembly		25	255	18
Automatic transmission assembly x Engine	17 mm head bolt:	71	724	52
	14 mm head bolt:	37	377	27
Torque converter clutch x Drive plate		48	489	35
Rear No. 1 engine mounting insulator x Crossmember		30	306	22
No. 3 crossmember x Frame		72	734	53
Rear No. 1 engine mounting insulator x Automatic transmission assembly		65	663	48
Rear engine mounting heat insulator x Rear No. 1 engine mounting insulator		12	122	9
Exhaust manifold stay x Automatic transmission	17 mm head bolt:	71	724	52
	14 mm head bolt:	44	449	32
Exhaust manifold stay x Exhaust manifold		30	306	22
Automatic transmission unit				
Transmission housing x Transmission case	14 mm head bolt:	34	345	25
	17 mm head bolt:	57	585	42
Extension housing x Transmission case		34	345	25
Oil cooler tube union x Transmission case		29	300	22
Parking lock pawl bracket x Transmission case		7.4	75	65 in.*lbf
Overdrive support x Transmission case		25	260	19
Oil pump x Transmission case		21	215	16
Oil pump body x Stator shaft		9.8	100	87 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002IOB00ZX
Title: SPECIFICATIONS: A750E AUTOMATIC TRANSMISSION / TRANSAXLE: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Line Pressure and Shift Schedule

Line pressure (Wheel locked)		
AT stall (Throttle valve fully opened)	D position	1200 to 1450 kPa (12.2 to 14.8 kgf/cm^2, 174 to 210 psi)
	R position	1150 to 1400 kPa (11.7 to 14.3 kgf/cm^2, 168 to 203 psi)
Engine stall revolution	D and R positions	2200 to 2600 rpm
Time lag	N → D position	Less than 1.2 seconds
	N → R position	Less than 1.5 seconds
Engine idle speed (A/C OFF)	N position	690 to 790 rpm
Drive plate runout	Maximum	0.30 mm (0.0118 in.)
Shift schedule (Speeds higher than the fuel cut speed are for reference)		
D position (Throttle valve fully opened)	1 → 2	55 to 69 km/h (34 to 43 mph)
	2 → 3	100 to 116 km/h (62 to 72 mph)
	3 → 4	145 to 165 km/h (90 to 103 mph)
	4 → 5	203 to 225 km/h (126 to 140 mph)
D position (Throttle valve opening 5%)	1 → 2	10 to 15 km/h (6 to 9 mph)
	2 → 3	20 to 26 km/h (12 to 16 mph)
	3 → 4	33 to 39 km/h (21 to 24 mph)
	4 → 5	47 to 54 km/h (29 to 32 mph)
Manual downshift permissible speed (Speeds higher than the fuel cut speed are for reference)		
S position	→ 4	203 to 223 km/h (126 to 139 mph)
	→ 3	143 to 160 km/h (89 to 99 mph)
	→ 2	96 to 106 km/h (60 to 66 mph)
	→ 1	39 to 46 km/h (24 to 29 mph)

Speed Sensor

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Speed sensor NT and SP2	20°C (68°F)	560 to 680 Ω

Extension Housing Rear Oil Seal

Standard depth	5.4 to 5.8 mm (0.213 to 0.228 in.)

Shift Solenoid Valve

SL1, SL2, SLT and SLU	20°C (68°F)	5.0 to 5.6 Ω
S1, S2, S3, S4 and SR	20°C (68°F)	11 to 15 Ω

Drive Plate

Maximum runout	0.30 mm (0.0118 in.)

Oil Pump

Body clearance	STD	0.10 to 0.17 mm (0.0039 to 0.0067 in.)
	Maximum	0.17 mm (0.0067 in.)
Tip clearance	STD	0.070 to 0.150 mm (0.0028 to 0.0059 in.)
	Maximum	0.150 mm (0.0059 in.)
Side clearance	STD	0.02 to 0.05 mm (0.0008 to 0.0020 in.)
	Maximum	0.05 mm (0.0020 in.)
Driver and driven gear thickness	0	10.740 to 10.749 mm (0.4228 to 0.4232 in.)
	1	10.750 to 10.759 mm (0.4232 to 0.4236 in.)
	2	10.760 to 10.770 mm (0.4236 to 0.4240 in.)
	3	10.771 to 10.780 mm (0.4241 to 0.4244 in.)
	4	10.781 to 10.790 mm (0.4244 to 0.4248 in.)
Pump body bushing inside diameter	Maximum	38.188 mm (1.504 in.)
Stator shaft bushing inside diameter	(Front side) Maximum	21.577 mm (0.850 in.)
	(Rear side) Maximum	32.08 mm (1.263 in.)

2nd Brake

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Piston return spring free length	STD	15.72 mm (0.619 in.)

B3 Brake

Piston stroke		0.42 to 0.72 mm (0.017 to 0.028 in.)
Flange thickness	No. 0	2.0 mm (0.079 in.)
	No. 1	2.2 mm (0.087 in.)
	No. 2	2.4 mm (0.094 in.)
	No. 3	2.6 mm (0.102 in.)

Front Planetary Gear

Planetary gear bushing inside diameter	Maximum	57.48 mm (2.263 in.)
Planetary pinion gear thrust clearance	STD	0.2 to 0.6 mm (0.008 to 0.024 in.)
	Maximum	0.65 mm (0.026 in.)

Brake Piston No. 1

Piston return spring free length	STD	17.05 mm (0.671 in.)

Center Planetary Gear

Planetary pinion gear thrust clearance	STD	0.12 to 0.68 mm (0.005 to 0.027 in.)
	Maximum	0.73 mm (0.029 in.)

B2 Brake

Piston return spring free length	STD	17.45 mm (0.687 in.)

Rear Planetary Ring Gear Flange

Planetary ring gear flange bushing inside diameter	Maximum	32.175 mm (1.267 in.)

Intermediate Shaft

Intermediate shaft run out	Maximum	0.08 mm (0.003 in.)
Intermediate shaft diameter	STD A:	25.962 to 25.975 mm (1.022 to 1.023 in.)
	STD B:	25.962 to 25.975 mm (1.022 to 1.023 in.)
	STD C:	32.062 to 32.075 mm (1.262 to 1.263 in.)
	STD D:	32.062 to 32.075 mm (1.262 to 1.263 in.)
Intermediate shaft diameter	Min A:	25.912 mm (1.020 in.)

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	Min B:	25.912 mm (1.020 in.)
	Min C:	32.012 mm (1.260 in.)
	Min D:	32.012 mm (1.260 in.)

Rear Planetary Gear

Planetary pinion gear thrust clearance	STD	0.2 to 0.6 mm (0.008 to 0.024 in.)
	Maximum	0.65 mm (0.026 in.)
Planetary gear bushing inside diameter	Maximum	20.075 mm (0.790 in.)

1st and Reverse Brake

Pack clearance		0.8 to 1.1 mm (0.032 to 0.043 in.)
Piston return spring free length	STD	23.74 mm (0.935 in.)
H thickness	No. 0	0 mm (0 in.)
	No. 2	0.2 mm (0.00787 in.)
	No. 4	0.4 mm (0.01575 in.)
	No. 6	0.6 mm (0.02362 in.)
	No. 8	0.8 mm (0.03150 in.)
	No. 10	1.0 mm (0.03937 in.)
	No. 12	1.2 mm (0.04724 in.)
	No. 14	1.4 mm (0.05512 in.)

Direct Clutch

Pack clearance		0.50 to 0.80 mm (0.020 to 0.032 in.)
Clutch piston return spring free length	STD	19.51 mm (0.768 in.)
Flange thickness	No. 0	3.0 mm (0.118 in.)
	No. 1	3.1 mm (0.122 in.)
	No. 2	3.2 mm (0.126 in.)
	No. 3	3.3 mm (0.130 in.)
	No. 4	3.4 mm (0.134 in.)
	No. 5	3.5 mm (0.138 in.)
	No. 6	3.6 mm (0.142 in.)
	No. 7	3.7 mm (0.146 in.)
	No. 8	3.8 mm (0.150 in.)

Reverse Clutch

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Reverse clutch drum bushing inside diameter	STD	35.812 to 35.837 mm (1.4099 to 1.4109 in.)
	Maximum	35.887 mm (1.4129 in.)
Pack clearance		0.50 to 0.80 mm (0.020 to 0.032 in.)
Clutch piston return spring free length	STD	21.04 mm (0.828 in.)
Flange thickness	No. 0	2.8 mm (0.110 in.)
	No. 1	2.9 mm (0.114 in.)
	No. 2	3.0 mm (0.118 in.)
	No. 3	3.1 mm (0.122 in.)
	No. 4	3.2 mm (0.126 in.)
	No. 5	3.3 mm (0.130 in.)
	No. 6	3.4 mm (0.134 in.)
	No. 7	3.5 mm (0.138 in.)
	No. 8	3.6 mm (0.142 in.)
	No. 9	3.7 mm (0.146 in.)
	No. A	3.8 mm (0.150 in.)

Forward Clutch

Forward clutch drum bushing inside diameter	STD	26.037 to 26.062 mm (1.0251 to 1.0261 in.)
	Maximum	26.112 mm (1.028 in.)
Pack clearance		0.60 to 0.90 mm (0.0236 to 0.0354 in.)
Clutch piston return spring free length	STD	26.74 mm (1.053 in.)
Flange thickness	No. 0	3.0 mm (0.118 in.)
	No. 1	3.1 mm (0.122 in.)
	No. 2	3.2 mm (0.126 in.)
	No. 3	3.3 mm (0.130 in.)
	No. 4	3.4 mm (0.134 in.)
	No. 5	3.5 mm (0.138 in.)
	No. 6	3.6 mm (0.142 in.)
	No. 7	3.7 mm (0.146 in.)
	No. 8	3.8 mm (0.150 in.)
	No. 9	3.9 mm (0.154 in.)
	No. A	4.0 mm (0.158 in.)

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Output Shaft Bearing

Clearance		0.05 to 0.33 mm (0.002 to 0.013 in.)
Flange thickness	No. 1	3.7 mm (0.146 in.)
	No. 2	3.8 mm (0.150 in.)
	No. 3	3.9 mm (0.154 in.)
	No. 4	4.0 mm (0.158 in.)
	No. 5	4.1 mm (0.161 in.)
	No. 6	4.2 mm (0.165 in.)

Accumulator

SPRING	COLOR	FREE LENGTH / OUTER DIAMETER [MM (IN.)]
B_3	Purple	70.5 (2.776) / 19.7 (0.776)
C_2	White	62.0 (2.441) / 15.9 (0.626)
C_1 inner	Pink	30.4 (1.197) / 11.4 (0.449)
C_1 outer	Light green	48.76 (1.920) / 16.6 (0.654)
C_3 inner	Yellow	44.0 (1.732) / 14.0 (0.551)
C_3 outer	Red	73.35 (2.888) / 19.9 (0.784)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002IOC00ZX
Title: SPECIFICATIONS: A750E AUTOMATIC TRANSMISSION / TRANSAXLE: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Drain plug x Oil pan		20	204	15
Overflow plug x Oil pan		20	204	15
Refill plug x Transmission case		37	379	27
Speed sensor NT, SP2 x Automatic transmission		5.4	55	48 in.*lbf
Transmission wire connector set bolt x Automatic transmission		5.4	55	48 in.*lbf
Temperature sensor clamp	12 mm (0.472 in.) length	10	102	7
	36 mm (1.41 in.) length	11	112	8
Valve body oil strainer x Valve body		10	102	7
Valve body x Transmission case		11	112	8
Shift solenoid valve S1, SR x Valve body		6.4	65	57 in.*lbf
Shift solenoid valve S2 x Valve body		10	102	7
Solenoid lock plate x Valve body		6.4	65	57 in.*lbf
Detent spring x Valve body		10	102	7
Oil pan x Transmission case		7.0	71	62 in.*lbf
Park/neutral position switch	Bolt:	13	130	9
	Nut:	6.9	70	61 in.*lbf
Transmission control cable x Transmission control shaft lever LH		14	143	10
Transmission control shaft lever LH x Transmission control shaft		16	160	12
No. 2 flexible hose clamp x No. 2 flexible hose clamp bracket		5.5	56	49 in.*lbf
No. 2 flexible hose clamp bracket x Engine		14	143	10
No. 2 oil cooler tube sub-assembly x Radiator		5.5	56	49 in.*lbf

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PART TIGHTENED		N*M	KGF*CM	FT.*LBF
No. 1 oil cooler tube union nut x Oil cooler tube union		34	347	25
Transmission floor shift assembly x Body		14	143	10
Shift control cable clamp x Body	Nut	5.4	55	48 in.*lbf
Transmission control cable retainer x Body		5.5	56	49 in.*lbf
Transmission control cable support x Body		5.5	56	49 in.*lbf
No. 1 transmission control cable bracket x Automatic transmission assembly		14	143	10
Wire harness clamp bracket x Automatic transmission		8.0	82	71 in.*lbf
Automatic transmission assembly x Engine	17 mm head bolt:	71	724	52
	14 mm head bolt:	37	377	27
Torque converter clutch x Drive plate		48	489	35
Front suspension member bracket x No. 3 frame crossmember, Frame		33	337	24
Rear No. 1 engine mounting insulator x Crossmember		30	306	22
No. 3 frame crossmember x Frame		72	734	53
Rear engine mounting heat insulator x Rear No. 1 engine mounting insulator		12	122	9
Rear No. 1 engine mounting insulator x Automatic transmission assembly		65	663	48
Automatic transmission unit				
Transmission housing x Transmission case	14 mm head bolt:	34	345	25
	17 mm head bolt:	57	579	42
Extension housing x Transmission case		34	345	25
Oil cooler tube union x Transmission case		29	300	22
Automatic transaxle breather tube x Transmission case		5.4	55	48 in.*lbf
Parking lock pawl bracket x Transmission case		7.4	75	65 in.*lbf
Oil pump x Transmission case		21	215	16
Oil pump body x Stator shaft		11	110	8

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002IOB010X
Title: SPECIFICATIONS: A750F AUTOMATIC TRANSMISSION / TRANSAXLE: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Line Pressure and Shift Schedule

Line pressure (Wheel locked)		
AT stall (Throttle valve fully opened)	D position	1200 to 1450 kPa (12.2 to 14.8 kgf/cm^2, 174 to 210 psi)
	R position	1150 to 1400 kPa (11.7 to 14.3 kgf/cm^2, 168 to 203 psi)
Engine stall revolution	D and R positions	2200 to 2600 rpm
Time lag	N → D position	Less than 1.2 seconds
	N → R position	Less than 1.5 seconds
Engine idle speed (A/C OFF)	N position	690 to 790 rpm
Drive plate runout	Maximum	0.30 mm (0.0118 in.)
Shift schedule (Speeds higher than the fuel cut speed are for reference)		
D position (Throttle valve fully opened)	1 → 2	55 to 69 km/h (34 to 43 mph)
	2 → 3	100 to 116 km/h (62 to 72 mph)
	3 → 4	145 to 165 km/h (90 to 103 mph)
	4 → 5	203 to 225 km/h (126 to 140 mph)
D position (Throttle valve opening 5%)	1 → 2	10 to 15 km/h (6 to 9 mph)
	2 → 3	20 to 26 km/h (12 to 16 mph)
	3 → 4	33 to 39 km/h (21 to 24 mph)
	4 → 5	47 to 54 km/h (29 to 32 mph)
Manual downshift permissible speed (Speeds higher than the fuel cut speed are for reference)		
S position	→ 4	203 to 223 km/h (126 to 139 mph)
	→ 3	143 to 160 km/h (89 to 99 mph)
	→ 2	96 to 106 km/h (60 to 66 mph)
	→ 1	39 to 46 km/h (24 to 29 mph)

Speed Sensor

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Speed sensor NT and SP2	20°C (68°F)	560 to 680 Ω

Transfer Adaptor Oil Seal

Standard depth	0 to 0.5 mm (0 to 0.0197 in.)

Shift Solenoid Valve

SL1, SL2, SLT and SLU	20°C (68°F)	5.0 to 5.6 Ω
S1, S2, S3, S4 and SR	20°C (68°F)	11 to 15 Ω

Drive Plate

Maximum runout	0.30 mm (0.0118 in.)

Oil Pump

Body clearance	STD	0.10 to 0.17 mm (0.0039 to 0.0067 in.)
	Maximum	0.17 mm (0.0067 in.)
Tip clearance	STD	0.070 to 0.150 mm (0.0028 to 0.0059 in.)
	Maximum	0.150 mm (0.0059 in.)
Side clearance	STD	0.02 to 0.05 mm (0.0008 to 0.0020 in.)
	Maximum	0.05 mm (0.0020 in.)
Driver and driven gear thickness	0	10.740 to 10.749 mm (0.4228 to 0.4232 in.)
	1	10.750 to 10.759 mm (0.4232 to 0.4236 in.)
	2	10.760 to 10.770 mm (0.4236 to 0.4240 in.)
	3	10.771 to 10.780 mm (0.4241 to 0.4244 in.)
	4	10.781 to 10.790 mm (0.4244 to 0.4248 in.)
Pump body bushing inside diameter	Maximum	38.188 mm (1.504 in.)
Stator shaft bushing inside diameter	(Front side) Maximum	21.577 mm (0.850 in.)
	(Rear side) Maximum	32.08 mm (1.263 in.)

2nd Brake

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Piston return spring free length	STD	15.72 mm (0.619 in.)

B3 Brake

Piston stroke		0.42 to 0.72 mm (0.017 to 0.028 in.)
Flange thickness	No. 0	2.0 mm (0.079 in.)
	No. 1	2.2 mm (0.087 in.)
	No. 2	2.4 mm (0.094 in.)
	No. 3	2.6 mm (0.102 in.)

Front Planetary Gear

Planetary gear bushing inside diameter	Maximum	57.48 mm (2.263 in.)
Planetary pinion gear thrust clearance	STD	0.2 to 0.6 mm (0.008 to 0.024 in.)
	Maximum	0.65 mm (0.026 in.)

Brake Piston No. 1

Piston return spring free length	STD	17.05 mm (0.671 in.)

Center Planetary Gear

Planetary pinion gear thrust clearance	STD	0.12 to 0.68 mm (0.005 to 0.027 in.)
	Maximum	0.73 mm (0.029 in.)

B2 Brake

Piston return spring free length	STD	17.45 mm (0.687 in.)

Rear Planetary Ring Gear Flange

Planetary ring gear flange bushing inside diameter	Maximum	32.175 mm (1.267 in.)

Intermediate Shaft

Intermediate shaft run out	Maximum	0.08 mm (0.003 in.)
Intermediate shaft diameter	STD A:	25.962 to 25.975 mm (1.022 to 1.023 in.)
	STD B:	25.962 to 25.975 mm (1.022 to 1.023 in.)
	STD C:	32.062 to 32.075 mm (1.262 to 1.263 in.)
	STD D:	32.062 to 32.075 mm (1.262 to 1.263 in.)
Intermediate shaft diameter	Min A:	25.912 mm (1.020 in.)

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	Min B:	25.912 mm (1.020 in.)
	Min C:	32.012 mm (1.260 in.)
	Min D:	32.012 mm (1.260 in.)

Rear Planetary Gear

Planetary pinion gear thrust clearance	STD	0.2 to 0.6 mm (0.008 to 0.024 in.)
	Maximum	0.65 mm (0.026 in.)
Planetary gear bushing inside diameter	Maximum	20.075 mm (0.790 in.)

1st and Reverse Brake

Pack clearance		0.8 to 1.1 mm (0.032 to 0.043 in.)
Piston return spring free length	STD	23.74 mm (0.935 in.)
H thickness	No. 0	0 mm (0 in.)
	No. 2	0.2 mm (0.00787 in.)
	No. 4	0.4 mm (0.01575 in.)
	No. 6	0.6 mm (0.02362 in.)
	No. 8	0.8 mm (0.03150 in.)
	No. 10	1.0 mm (0.03937 in.)
	No. 12	1.2 mm (0.04724 in.)
	No. 14	1.4 mm (0.05512 in.)

Direct Clutch

Pack clearance		0.50 to 0.80 mm (0.020 to 0.032 in.)
Clutch piston return spring free length	STD	19.51 mm (0.768 in.)
Flange thickness	No. 0	3.0 mm (0.118 in.)
	No. 1	3.1 mm (0.122 in.)
	No. 2	3.2 mm (0.126 in.)
	No. 3	3.3 mm (0.130 in.)
	No. 4	3.4 mm (0.134 in.)
	No. 5	3.5 mm (0.138 in.)
	No. 6	3.6 mm (0.142 in.)
	No. 7	3.7 mm (0.146 in.)
	No. 8	3.8 mm (0.150 in.)

Reverse Clutch

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Reverse clutch drum bushing inside diameter	STD	35.812 to 35.837 mm (1.4099 to 1.4109 in.)
	Maximum	35.887 mm (1.4129 in.)
Pack clearance		0.50 to 0.80 mm (0.020 to 0.032 in.)
Clutch piston return spring free length	STD	21.04 mm (0.828 in.)
Flange thickness	No. 0	2.8 mm (0.110 in.)
	No. 1	2.9 mm (0.114 in.)
	No. 2	3.0 mm (0.118 in.)
	No. 3	3.1 mm (0.122 in.)
	No. 4	3.2 mm (0.126 in.)
	No. 5	3.3 mm (0.130 in.)
	No. 6	3.4 mm (0.134 in.)
	No. 7	3.5 mm (0.138 in.)
	No. 8	3.6 mm (0.142 in.)
	No. 9	3.7 mm (0.146 in.)
	No. A	3.8 mm (0.150 in.)

Forward Clutch

Forward clutch drum bushing inside diameter	STD	26.037 to 26.062 mm (1.0251 to 1.0261 in.)
	Maximum	26.112 mm (1.028 in.)
Pack clearance		0.60 to 0.90 mm (0.0236 to 0.0354 in.)
Clutch piston return spring free length	STD	26.74 mm (1.053 in.)
Flange thickness	No. 0	3.0 mm (0.118 in.)
	No. 1	3.1 mm (0.122 in.)
	No. 2	3.2 mm (0.126 in.)
	No. 3	3.3 mm (0.130 in.)
	No. 4	3.4 mm (0.134 in.)
	No. 5	3.5 mm (0.138 in.)
	No. 6	3.6 mm (0.142 in.)
	No. 7	3.7 mm (0.146 in.)
	No. 8	3.8 mm (0.150 in.)
	No. 9	3.9 mm (0.154 in.)
	No. A	4.0 mm (0.158 in.)

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Output Shaft Bearing

Clearance		0.05 to 0.33 mm (0.002 to 0.013 in.)
Flange thickness	No. 1	3.7 mm (0.146 in.)
	No. 2	3.8 mm (0.150 in.)
	No. 3	3.9 mm (0.154 in.)
	No. 4	4.0 mm (0.158 in.)
	No. 5	4.1 mm (0.161 in.)
	No. 6	4.2 mm (0.165 in.)

Accumulator

SPRING	COLOR	FREE LENGTH / OUTER DIAMETER [MM (IN.)]
B_3	Purple	70.5 (2.776) / 19.7 (0.776)
C_2	White	62.0 (2.441) / 15.9 (0.626)
C_1 inner	Pink	30.4 (1.197) / 11.4 (0.449)
C_1 outer	Light green	48.76 (1.920) / 16.6 (0.654)
C_3 inner	Yellow	44.0 (1.732) / 14.0 (0.551)
C_3 outer	Red	73.35 (2.888) / 19.9 (0.784)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002IOC010X
Title: SPECIFICATIONS: A750F AUTOMATIC TRANSMISSION / TRANSAXLE: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Drain plug x Oil pan		20	204	15
Overflow plug x Oil pan		20	204	15
Refill plug x Transmission case		37	379	27
Speed sensor NT, SP2 x Automatic transmission		5.4	55	48 in.*lbf
Transmission wire connector set bolt x Automatic transmission		5.4	55	48 in.*lbf
Temperature sensor clamp	12 mm (0.472 in.) length	10	102	7
	36 mm (1.41 in.) length	11	112	8
Valve body oil strainer x Valve body		10	102	7
Valve body x Transmission case		11	112	8
Shift solenoid valve S1, SR x Valve body		6.4	65	57 in.*lbf
Shift solenoid valve S2 x Valve body		10	102	7
Solenoid lock plate x Valve body		6.4	65	57 in.*lbf
Detent spring x Valve body		10	102	7
Oil pan x Transmission case		7.0	71	62 in.*lbf
Park/neutral position switch	Bolt:	13	130	9
	Nut:	6.9	70	61 in.*lbf
Transmission control cable x Transmission control shaft lever LH		14	143	10
Transmission control shaft lever LH x Transmission control shaft		16	160	12
No. 2 flexible hose clamp x No. 2 flexible hose clamp bracket		5.5	56	49 in.*lbf
No. 2 flexible hose clamp bracket x Engine		14	143	10
No. 2 oil cooler tube sub-assembly x Radiator		5.5	56	49 in.*lbf

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PART TIGHTENED		N*M	KGF*CM	FT.*LBF
No. 1 oil cooler tube union nut x Oil cooler tube union		34	347	25
Transmission floor shift assembly x Body		14	143	10
Shift control cable clamp x Body	Nut	5.4	55	48 in.*lbf
Transmission control cable retainer x Body		5.5	56	49 in.*lbf
Transmission control cable support x Body		5.5	56	49 in.*lbf
No. 1 transmission control cable bracket x Automatic transmission assembly		14	143	10
Wire harness clamp bracket x Automatic transmission		8.0	82	71 in.*lbf
Automatic transmission assembly x Engine	17 mm head bolt:	71	724	52
	14 mm head bolt:	37	377	27
Torque converter clutch x Drive plate		48	489	35
Front suspension member bracket x No. 3 frame crossmember, Frame		33	337	24
Rear No. 1 engine mounting insulator x Crossmember		30	306	22
No. 3 frame crossmember x Frame		72	734	53
Rear engine mounting heat insulator x Rear No. 1 engine mounting insulator		12	122	9
Rear No. 1 engine mounting insulator x Automatic transmission assembly		65	663	48
Automatic transmission unit				
Transmission housing x Transmission case	14 mm head bolt:	34	345	25
	17 mm head bolt:	57	579	42
Rear adaptor transfer x Transmission case		34	345	25
Oil cooler tube union x Transmission case		29	300	22
Automatic transaxle breather tube x Transmission case		5.4	55	48 in.*lbf
Parking lock pawl bracket x Transmission case		7.4	75	65 in.*lbf
Oil pump x Transmission case		21	215	16
Oil pump body x Stator shaft		11	110	8

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EW1008X
Title: SPECIFICATIONS: ALIGNMENT / HANDLING DIAGNOSIS: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Standard Vehicle Height (Unloaded Vehicle)

VEHICLE MODEL	GRADE	FRONT (A - B)	REAR (C - D)
GRN280L-GKAGKA	SR5	115.9 mm (4.56 in.)	79.9 mm (3.15 in.)
	S-Runner	116.7 mm (4.59 in.)	80.7 mm (3.18 in.)
	X-Runner	117.2 mm (4.61 in.)	85.4 mm (3.36 in.)
GRN285L-GKAGKA	SR5	94.2 mm (3.71 in.)	68.1 mm (2.68 in.)
	S-Runner	94.9 mm (3.74 in.)	68.8 mm (2.71 in.)
	Trail Edition	95.6 mm (3.76 in.)	69.8 mm (2.75 in.)
	Trail Edition (w/ KDSS)	98.2 mm (3.87 in.)	72.1 mm (2.84 in.)
	X-Runner	97.6 mm (3.84 in.)	72.5 mm (2.85 in.)
TRN280L-GKPGKA	SR5	115.6 mm (4.55 in.)	79.2 mm (3.12 in.)
	DeContent	115.6 mm (4.55 in.)	79.2 mm (3.12 in.)
	S-Runner	116.4 mm (4.58 in.)	79.9 mm (3.15 in.)
TRN285L-GKPGKA	SR5	96.0 mm (3.78 in.)	67.9 mm (2.67 in.)
	DeContent	96.0 mm (3.78 in.)	67.9 mm (2.67 in.)
	S-Runner	96.7 mm (3.81 in.)	68.6 mm (2.70 in.)

Standard Camber Inclination (Unloaded Vehicle)

VEHICLE MODEL	GRADE	CAMBER INCLINATION	RIGHT-LEFT DIFFERENCE
GRN280L-GKAGKA	SR5	-0°35' +/-45' (-0.58° +/-0.75°)	45' (0.75°) or less
	S-Runner	-0°37' +/-45' (-0.62° +/-0.75°)	45' (0.75°) or less
	X-Runner	-0°38' +/-45' (-0.63° +/-0.75°)	45' (0.75°) or less
GRN285L-GKAGKA	SR5	0°0' +/-45' (0.00°+/-0.75°)	45' (0.75°) or less
	S-Runner	-0°1' +/-45' (-0.02° +/-0.75°)	45' (0.75°) or less
	Trail Edition	-0°3' +/-45' (-0.05° +/-0.75°)	45' (0.75°) or less
	Trail Edition (w/ KDSS)	-0°7' +/-45' (-0.12° +/-0.75°)	45' (0.75°) or less
	X-Runner	-0°6' +/-45' (-0.10° +/-0.75°)	45' (0.75°) or less

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VEHICLE MODEL	GRADE	CAMBER INCLINATION	RIGHT-LEFT DIFFERENCE
TRN280L-GKPGKA	SR5	-0°34' +/-45' (-0.57° +/-0.75°)	45' (0.75°) or less
	DeContent	-0°34' +/-45' (-0.57° +/-0.75°)	45' (0.75°) or less
	S-Runner	-0°36' +/-45' (-0.60° +/-0.75°)	45' (0.75°) or less
TRN285L-GKPGKA	SR5	-0°3' +/-45' (-0.05° +/-0.75°)	45' (0.75°) or less
	DeContent	-0°3' +/-45' (-0.05° +/-0.75°)	45' (0.75°) or less
	S-Runner	-0°4' +/-45' (-0.07° +/-0.75°)	45' (0.75°) or less

Standard Caster Inclination (Unloaded Vehicle)

VEHICLE MODEL	GRADE	CASTER INCLINATION	RIGHT-LEFT DIFFERENCE
GRN280L-GKAGKA	SR5	3°40' +/-45' (3.67° +/-0.75°)	45' (0.75°) or less
	S-Runner	3°40' +/-45' (3.67° +/-0.75°)	45' (0.75°) or less
	X-Runner	3°50' +/-45' (3.83° +/-0.75°)	45' (0.75°) or less
GRN285L-GKAGKA	SR5	3°13' +/-45' (3.22° +/-0.75°)	45' (0.75°) or less
	S-Runner	3°15' +/-45' (3.25° +/-0.75°)	45' (0.75°) or less
	Trail Edition	3°16' +/-45' (3.27° +/-0.75°)	45' (0.75°) or less
	Trail Edition (w/ KDSS)	3°21' +/-45' (3.35° +/-0.75°)	45' (0.75°) or less
	X-Runner	3°22' +/-45' (3.37° +/-0.75°)	45' (0.75°) or less
TRN280L-GKPGKA	SR5	3°39' +/-45' (3.65° +/-0.75°)	45' (0.75°) or less
	DeContent	3°39' +/-45' (3.65° +/-0.75°)	45' (0.75°) or less
	S-Runner	3°40' +/-45' (3.67° +/-0.75°)	45' (0.75°) or less
TRN285L-GKPGKA	SR5	3°14' +/-45' (3.23° +/-0.75°)	45' (0.75°) or less
	DeContent	3°14' +/-45' (3.23° +/-0.75°)	45' (0.75°) or less
	S-Runner	3°15' +/-45' (3.25° +/-0.75°)	45' (0.75°) or less

Standard Steering Axis Inclination (Unloaded Vehicle)

VEHICLE MODEL	GRADE	STEERING AXIS INCLINATION
GRN280L-GKAGKA	SR5	12°41' +/-45' (12.68° +/-0.75°)
	S-Runner	12°42' +/-45' (12.70° +/-0.75°)
	X-Runner	12°44' +/-45' (12.73° +/-0.75°)
GRN285L-GKAGKA	SR5	12°10' +/-45' (12.17° +/-0.75°)
	S-Runner	12°11' +/-45' (12.18° +/-0.75°)
	Trail Edition	12°12' +/-45' (12.20° +/-0.75°)

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VEHICLE MODEL	GRADE	STEERING AXIS INCLINATION
	Trail Edition (w/ KDSS)	12°16' +/-45' (12.27° +/-0.75°)
	X-Runner	12°15' +/-45' (12.25° +/-0.75°)
TRN280L-GKPGKA	SR5	12°41' +/-45' (12.68° +/-0.75°)
	DeContent	12°41' +/-45' (12.68° +/-0.75°)
	S-Runner	12°42' +/-45' (12.70° +/-0.75°)
TRN285L-GKPGKA	SR5	12°12' +/-45' (12.20° +/-0.75°)
	DeContent	12°12' +/-45' (12.20° +/-0.75°)
	S-Runner	12°13' +/-45' (12.22° +/-0.75°)

Standard Toe-in (Unloaded Vehicle)

VEHICLE MODEL	GRADE	TOE-IN
GRN280L-GKAGKA	SR5	A + B: 0°6' +/-0°10' (0.10° +/-0.16°) C - D: 2.52 +/-2 mm (0.10 +/-0.08 in.)
	S-Runner	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.35 +/-2 mm (0.09 +/-0.08 in.)
	X-Runner	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.16 +/-2 mm (0.09 +/-0.08 in.)
GRN285L-GKAGKA	SR5	A + B: 0°6' +/-0°10' (0.10° +/-0.16°) C - D: 2.47 +/-2 mm (0.10 +/-0.08 in.)
	S-Runner	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.29 +/-2 mm (0.09 +/-0.08 in.)
	Trail Edition	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.11 +/-2 mm (0.08 +/-0.08 in.)
	Trail Edition (w/ KDSS)	A + B: 0°3' +/-0°10' (0.05° +/-0.16°) C - D: 1.49 +/-2 mm (0.06 +/-0.08 in.)
	X-Runner	A + B: 0°4' +/-0°10' (0.07° +/-0.16°) C - D: 1.60 +/-2 mm (0.06 +/-0.08 in.)
TRN280L-GKPGKA	SR5	A + B: 0°6' +/-0°10' (0.10° +/-0.16°) C - D: 2.59 +/-2 mm (0.10 +/-0.08 in.)
	DeContent	A + B: 0°6' +/-0°10' (0.10° +/-0.16°) C - D: 2.59 +/-2 mm (0.10 +/-0.08 in.)
	S-Runner	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.41 +/-2 mm (0.09 +/-0.08 in.)
TRN285L-GKPGKA	SR5	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.07 +/-2 mm (0.08 +/-0.08 in.)

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VEHICLE MODEL	GRADE	TOE-IN
	DeContent	A + B: 0°5' +/-0°10' (0.08° +/-0.16°) C - D: 2.07 +/-2 mm (0.08 +/-0.08 in.)
	S-Runner	A + B: 0°4' +/-0°10' (0.07° +/-0.16°) C - D: 1.89 +/-2 mm (0.07 +/-0.08 in.)

Standard Wheel Turning Angle (Unloaded Vehicle)

VEHICLE MODEL	GRADE	INSIDE WHEEL ANGLE	OUTSIDE WHEEL ANGLE: REFERENCE
GRN280L-GKAGKA	SR5	29°49' to 32°49' (29.82° to 32.82°)	29°34' (29.57°)
	S-Runner	29°48' to 32°48' (29.80° to 32.80°)	29°33' (29.55°)
	X-Runner	29°47' to 32°47' (29.78° to 32.78°)	29°31' (29.52°)
GRN285L-GKAGKA	SR5	30°21' to 33°21' (30.35° to 33.35°)	29°29' (29.48°)
	S-Runner	30°20' to 33°20' (30.33° to 33.33°)	29°28' (29.47°)
	Trail Edition	30°20' to 33°20' (30.33° to 33.33°)	29°27' (29.45°)
	Trail Edition (w/ KDSS)	30°17' to 33°17' (30.28° to 33.28°)	29°23' (29.38°)
	X-Runner	30°18' to 33°18' (30.30° to 33.30°)	29°24' (29.40°)
TRN280L-GKPGKA	SR5	29°49' to 32°49' (29.82° to 32.82°)	29°34' (29.57°)
	DeContent	29°49' to 32°49' (29.82° to 32.82°)	29°34' (29.57°)
	S-Runner	29°48' to 32°48' (29.80° to 32.80°)	29°33' (29.55°)
TRN285L-GKPGKA	SR5	30°19' to 33°19' (30.32° to 33.32°)	29°27' (29.45°)
	DeContent	30°19' to 33°19' (30.32° to 33.32°)	29°27' (29.45°)
	S-Runner	30°18' to 33°18' (30.30° to 33.30°)	29°26' (29.43°)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EW2008X
Title: SPECIFICATIONS: ALIGNMENT / HANDLING DIAGNOSIS: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Tie rod end lock nut	88	897	65

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003DL0003X
Title: SPECIFICATIONS: AUDIO / VIDEO: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Luggage Speaker

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 (WF1+) - 3 (WF1-)	Always	1.6 to 2.4 Ω
2 (WF2+) - 4 (WF2-)	Always	1.6 to 2.4 Ω

Front Door Speaker

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	Always	4 Ω
	Always	1.4 to 2.2 Ω

Rear Door Speaker

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	Always	4 Ω

Back Door Speaker

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	Always	4 Ω

Woofer Speaker Switch

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
3 (SW-) - 6 (SW+)	Switch is pushed	Below 1 Ω
2 (WF2+) - 4 (WF2-)	Switch is not pushed	10 kΩ or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
3 - 4	Battery voltage is not applied between terminals 1 and 2	Below 1 Ω
3 - 5		10 kΩ or higher
3 - 4	Battery voltage is applied to terminals 1 and 2	10 kΩ or higher
3 - 5		Below 1 Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003YX4003X
Title: SPECIFICATIONS: AUDIO / VIDEO: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Radio Receiver

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Radio receiver assembly with bracket x Instrument panel	2.5 2.5 (25, 22 in.*lbf)	25	22 in.*lbf
Radio receiver assembly x Bracket	2.5	25	22 in.*lbf

Stereo Component Amplifier

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Stereo component amplifier assembly with bracket x Body	2.5	25	22 in.*lbf

Luggage Speaker

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 1 speaker assembly with box x Body	2.5	25	22 in.*lbf

Front Door Speaker

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front No. 1 Speaker assembly x Door Panel	2.5	25	22 in.*lbf

Rear Door Speaker

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear No. 1 Speaker assembly x Door Panel	2.5	25	22 in.*lbf

Back Door Speaker

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear No. 2 Speaker assembly x Back Door Panel	2.5	25	22 in.*lbf

Instrument panel Speaker

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front No. 2 Speaker assembly x Instrument Panel	2.5	25	22 in.*lbf

Radio Antenna

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PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Fender Antenna assembly x Body	7.9	81	70 in.*lbf

Multi-Media Interface ECU

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Multi-Media Interface ECU x Instrument panel Reinforcement Assembly	12	122	9

Stereo Component Tuner

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Stereo Component Tune x Body	2.5	25	22 in.*lbf
	7.9	81	70

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J0100IX
Title: SPECIFICATIONS: AXLE AND DIFFERENTIAL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Front Axle Hub

Axle hub bearing looseness	Maximum	0.05 mm (0.00197 in.)
Axle hub runout	Maximum	0.08 mm (0.00315 in.)

Rear Axle Shaft

Rear Axle shaft runout	Maximum	1.50 mm (0.0591 in.)
Rear Axle flange runout	Maximum	0.05 mm (0.00197 in.)

Front Differential

Companion flange runout	Vertical	Maximum: 0.10 mm (0.00394 in.)
	Lateral	Maximum: 0.10 mm (0.00394 in.)
Drive pinion preload (at starting)	New bearing	0.98 to 1.57 N*m (10 to 16 kgf*cm, 8.7 to 14 in.*lbf)
	Used bearing	0.49 to 0.78 N*m (5 to 8 kgf*cm, 4.3 to 6.9 in.*lbf)
Total preload (at starting)	New bearing	1.2 to 2.45 N*m (12 to 25 kgf*cm, 10.6 to 21.7 in.*lbf)
	Used bearing	0.71 to 1.66 N*m (7.2 to 17 kgf*cm, 6.3 to 14.7 in.*lbf)
Drive pinion to ring gear backlash		0.11 to 0.21 mm (0.0043 to 0.0827 in.)
Side gear backlash		0.15 mm or less (0.00591 in. or less)
Side gear thrust washer thickness		1.48 to 1.52 mm (0.0583 to 0.0598 in.)
		1.53 to 1.57 mm (0.0602 to 0.0618 in.)
		1.58 to 1.62 mm (0.0622 to 0.0638 in.)
		1.63 to 1.67 mm (0.0642 to 0.0657 in.)
		1.68 to 1.72 mm (0.0661 to 0.0677 in.)
		1.73 to 1.77 mm (0.0681 to 0.0697 in.)
		1.78 to 1.82 mm (0.0701 to 0.0717 in.)
		1.83 to 1.87 mm (0.0720 to 0.0736 in.)
		1.88 to 1.92 mm (0.0740 to 0.0756 in.)

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Plate washer thickness	1.57 to 1.59 mm (0.0618 to 0.0626 in.)
	1.59 to 1.61 mm (0.0626 to 0.0634 in.)
	1.61 to 1.63 mm (0.0634 to 0.0642 in.)
	1.63 to 1.65 mm (0.0642 to 0.0650 in.)
	1.65 to 1.67 mm (0.0650 to 0.0657 in.)
	1.67 to 1.69 mm (0.0657 to 0.0665 in.)
	1.69 to 1.71 mm (0.0665 to 0.0673 in.)
	1.71 to 1.73 mm (0.0673 to 0.0681 in.)
	1.73 to 1.75 mm (0.0681 to 0.0689 in.)
	1.75 to 1.77 mm (0.0689 to 0.0697 in.)
	1.77 to 1.79 mm (0.0697 to 0.0705 in.)
	1.79 to 1.81 mm (0.0705 to 0.0713 in.)
	1.81 to 1.83 mm (0.0713 to 0.0720 in.)
	1.83 to 1.85 mm (0.0720 to 0.0728 in.)
	1.85 to 1.87 mm (0.0728 to 0.0736 in.)
	1.87 to 1.89 mm (0.0736 to 0.0744 in.)
	1.89 to 1.91 mm (0.0744 to 0.0752 in.)
	1.91 to 1.93 mm (0.0752 to 0.0760 in.)
	1.93 to 1.95 mm (0.0760 to 0.0768 in.)
	1.95 to 1.97 mm (0.0768 to 0.0776 in.)
	1.97 to 1.99 mm (0.0776 to 0.0783 in.)
	1.99 to 2.01 mm (0.0783 to 0.0791 in.)
	2.01 to 2.03 mm (0.0791 to 0.0799 in.)
	2.03 to 2.05 mm (0.0799 to 0.0807 in.)
	2.05 to 2.07 mm (0.0807 to 0.0815 in.)
	2.07 to 2.09 mm (0.0815 to 0.0823 in.)
	2.09 to 2.11 mm (0.0823 to 0.0831 in.)
	2.11 to 2.13 mm (0.0831 to 0.0839 in.)
	2.13 to 2.15 mm (0.0839 to 0.0846 in.)
	2.15 to 2.17 mm (0.0846 to 0.0854 in.)
Drive pinion washer thickness	1.69 to 1.71 mm (0.0665 to 0.0673 in.)
	1.72 to 1.74 mm (0.0677 to 0.0685 in.)
	1.75 to 1.77 mm (0.0689 to 0.0697 in.)

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1.78 to 1.80 mm (0.0700 to 0.0709 in.)
1.81 to 1.83 mm (0.0713 to 0.0720 in.)
1.84 to 1.86 mm (0.0724 to 0.0732 in.)
1.87 to 1.89 mm (0.0736 to 0.0744 in.)
1.90 to 1.92mm (0.0784 to 0.0756 in.)
1.93 to 1.95 mm (0.0760 to 0.0768 in.)
1.96 to 1.98 mm (0.0772 to 0.0780 in.)
1.99 to 2.01 mm (0.0783 to 0.0791 in.)
2.02 to 2.04 mm (0.0795 to 0.0803 in.)
2.05 to 2.07 mm (0.0807 to 0.0815 in.)
2.08 to 2.10 mm (0.0819 to 0.0827 in.)
2.11 to 2.13 mm (0.0831 to 0.0839 in.)
2.14 to 2.16 mm (0.0843 to 0.0850 in.)
2.17 to 2.19 mm (0.0854 to 0.0862 in.)
2.20 to 2.22 mm (0.0866 to 0.0874 in.)
2.23 to 2.25 mm (0.0878 to 0.0886 in.)
2.26 to 2.28 mm (0.0890 to 0.0898 in.)
2.29 to 2.31 mm (0.0902 to 0.0909 in.)
2.32 to 2.34 mm (0.0913 to 0.0921 in.)

Rear Differential

Companion flange runout	Vertical	Maximum: 0.14 mm (0.00551 in.)
	Lateral	Maximum: 0.14 mm (0.00551 in.)
Ring gear runout		Maximum: 0.07 mm (0.00276 in.)
Drive pinion to ring gear backlash		0.10 to 0.20 mm (0.00394 to 0.00787 in.)
Drive pinion preload (at starting)	New bearing	0.83 to 2.18 N*m (8.64 to 22.2 kgf*cm, 7.35 to 19.3 in.*lbf)
	Used bearing	0.88 to 1.98 N*m (8.97 to 20.2 kgf*cm, 7.79 to 17.5 in.*lbf)
Total preload (at starting)	New bearing	Drive pinion preload plus 0.2 to 0.4 N*m (2.0 to 4.1 kgf*cm, 1.8 to 3.5 in.*lbf)
	Used bearing	Drive pinion preload plus 0.2 to 0.4 N*m (2.0 to 4.1 kgf*cm, 1.8 to 3.5 in.*lbf)
Differential case runout		Maximum: 0.07 mm (0.00276 in.)
Side gear backlash		0.05 to 0.20 mm (0.00197 to 0.00787 in.)

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Side gear thrust Washer thickness	0.87 to 0.93 mm (0.0343 to 0.0366 in.)
	0.97 to 1.03 mm (0.0382 to 0.0406 in.)
	1.07 to 1.13 mm (0.0421 to 0.0445 in.)
	1.17 to 1.23 mm (0.0461 to 0.0484 in.)
	1.27 to 1.33 mm (0.0500 to 0.0524 in.)
Plate washer thickness	2.05 to 2.07 mm (0.0808 to 0.0816 in.)
	2.07 to 2.09 mm (0.0816 to 0.0823 in.)
	2.09 to 2.11 mm (0.0823 to 0.0831 in.)
	2.11 to 2.13 mm (0.0831 to 0.0839 in.)
	2.13 to 2.15 mm (0.0839 to 0.0847 in.)
	2.15 to 2.17 mm (0.0847 to 0.0855 in.)
	2.17 to 2.19 mm (0.0855 to 0.0863 in.)
	2.19 to 2.21 mm (0.0863 to 0.0871 in.)
	2.21 to 2.23 mm (0.0871 to 0.0879 in.)
	2.23 to 2.25 mm (0.0879 to 0.0887 in.)
	2.25 to 2.27 mm (0.0887 to 0.0894 in.)
	2.27 to 2.29 mm (0.0894 to 0.0902 in.)
	2.27 to 2.31 mm (0.0902 to 0.0891 in.)
	2.31 to 2.33 mm (0.0910 to 0.0918 in.)
	2.33 to 2.35 mm (0.0918 to 0.0926 in.)
	2.35 to 2.37 mm (0.0926 to 0.0934 in.)
	2.37 to 2.39 mm (0.0934 to 0.0942 in.)
	2.39 to 2.41 mm (0.0942 to 0.0950 in.)
	2.41 to 2.43 mm (0.0950 to 0.0957 in.)
	2.43 to 2.45 mm (0.0957 to 0.0965 in.)
	2.45 to 2.47 mm (0.0965 to 0.0973 in.)
	2.47 to 2.49 mm (0.0972 to 0.0980 in.)
	2.49 to 2.51 mm (0.0980 to 0.0988 in.)
	2.51 to 2.53 mm (0.0988 to 0.0996 in.)
	2.53 to 2.55 mm (0.0996 to 0.1000 in.)
	2.55 to 2.57 mm (0.1000 to 0.1012 in.)
	2.57 to 2.59 mm (0.1012 to 0.1020 in.)
	2.59 to 2.61 mm (0.1020 to 0.1028 in.)

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	2.61 to 2.63 mm (0.1028 to 0.1035 in.)
	2.63 to 2.65 mm (0.1035 to 0.1043 in.)
	2.65 to 2.67 mm (0.1043 to 0.1051 in.)
	2.67 to 2.69 mm (0.1051 to 0.1059 in.)
	2.69 to 2.71 mm (0.1059 to 0.1067 in.)
	2.71 to 2.73 mm (0.1067 to 0.1075 in.)
	2.73 to 2.75 mm (0.1075 to 0.1082 in.)
	2.75 to 2.77 mm (0.1082 to 0.1091 in.)
Drive pinion washer thickness	1.845 to 1.855 mm (0.0726 to 0.0730 in.)
	1.855 to 1.865 mm (0.0730 to 0.0734 in.)
	1.865 to 1.875 mm (0.0734 to 0.0738 in.)
	1.875 to 1.885 mm (0.0738 to 0.0742 in.)
	1.885 to 1.895 mm (0.0742 to 0.0746 in.)
	1.895 to 1.905 mm (0.0746 to 0.0750 in.)
	1.905 to 1.915 mm (0.0750 to 0.0754 in.)
	1.915 to 1.925 mm (0.0754 to 0.0758 in.)
	1.925 to 1.935 mm (0.0758 to 0.0762 in.)
	1.935 to 1.945 mm (0.0762 to 0.0766 in.)
	1.945 to 1.955 mm (0.0766 to 0.0770 in.)
	1.955 to 1.965 mm (0.0770 to 0.0774 in.)
	1.965 to 1.975 mm (0.0774 to 0.0778 in.)
	1.975 to 1.985 mm (0.0778 to 0.0781 in.)
	1.985 to 1.995 mm (0.0781 to 0.0785 in.)
	1.995 to 2.005 mm (0.0785 to 0.0789 in.)
	2.005 to 2.015 mm (0.0789 to 0.0793 in.)
	2.015 to 2.025 mm (0.0793 to 0.0797 in.)
	2.025 to 2.035 mm (0.0797 to 0.0801 in.)
	2.035 to 2.045 mm (0.0801 to 0.0805 in.)
	2.045 to 2.055 mm (0.0805 to 0.0809 in.)
	2.055 to 5.065 mm (0.0809 to 0.0813 in.)
	2.065 to 2.075 mm (0.0813 to 0.0817 in.)
	2.075 to 2.085 mm (0.0817 to 0.0821 in.)
	2.085 to 2.095 mm (0.0821 to 0.0825 in.)

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2.095 to 2.105 mm (0.0825 to 0.0829 in.)
2.105 to 2.115 mm (0.0829 to 0.0833 in.)
2.115 to 2.125 mm (0.0833 to 0.0837 in.)
2.125 to 2.135 mm (0.0837 to 0.0841 in.)
2.135 to 2.145 mm (0.0841 to 0.0844 in.)
2.145 to 2.155 mm (0.0844 to 0.0848 in.)
2.155 to 2.165 mm (0.0848 to 0.0852 in.)
2.165 to 2.175 mm (0.0852 to 0.0856 in.)
2.175 to 2.185 mm (0.0856 to 0.0860 in.)
2.185 to 2.195 mm (0.0860 to 0.0864 in.)
2.195 to 2.205 mm (0.0864 to 0.0868 in.)
2.205 to 2.215 mm (0.0868 to 0.0872 in.)
2.215 to 2.225 mm (0.0872 to 0.0876 in.)
2.225 to 2.235 mm (0.0876 to 0.0880 in.)
2.235 to 2.245 mm (0.0880 to 0.0884 in.)
2.245 to 2.255 mm (0.0884 to 0.0888 in.)
2.255 to 2.265 mm (0.0888 to 0.0892 in.)
2.265 to 2.275 mm (0.0892 to 0.0896 in.)
2.275 to 2.285 mm (0.0896 to 0.0900 in.)
2.285 to 2.295 mm (0.0900 to 0.0904 in.)
2.295 to 2.305 mm (0.0904 to 0.0907 in.)
2.305 to 2.315 mm (0.0907 to 0.0911 in.)

Rear Differential (w/Differential Lock)

Companion flange runout	Vertical	Maximum: 0.14 mm (0.00551 in.)
	Lateral	Maximum: 0.14 mm (0.00551 in.)
Ring gear runout		Maximum: 0.07 mm (0.00276 in.)
Drive pinion to ring gear backlash		0.10 to 0.20 mm (0.00394 to 0.00787 in.)
Drive pinion preload (at starting)	New bearing	0.83 to 2.18 N*m (8.64 to 22.2 kgf*cm, 7.35 to 19.3 in.*lbf)
	Used bearing	0.88 to 1.98 N*m (8.97 to 20.2 kgf*cm, 7.79 to 17.5 in.*lbf)
Total preload (at starting)	New bearing	Drive pinion preload plus 0.2 to 0.4 N*m (2.0 to 4.1 kgf*cm, 1.8 to 3.5 in.*lbf)

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	Used bearing	Drive pinion preload plus 0.2 to 0.4 N*m (2.0 to 4.1 kgf*cm, 1.8 to 3.5 in.*lbf)
Differential case runout		Maximum: 0.07 mm (0.00276 in.)
Side gear backlash		0.05 to 0.20 mm (0.00197 to 0.00787 in.)
Side gear thrust Washer thickness		0.88 to 0.92 mm (0.0346 to 0.0362 in.)
		0.98 to 1.02 mm (0.0386 to 0.0402 in.)
		1.08 to 1.12 mm (0.0425 to 0.0441 in.)
		1.18 to 1.22 mm (0.465 to 0.0480 in.)
		1.28 to 1.32 mm (0.0504 to 0.00520 in.)
Drive pinion washer thickness		1.845 to 1.855 mm (0.0726 to 0.0730 in.)
		1.855 to 1.865 mm (0.0730 to 0.0734 in.)
		1.865 to 1.875 mm (0.0734 to 0.0738 in.)
		1.875 to 1.885 mm (0.0738 to 0.0742 in.)
		1.885 to 1.895 mm (0.0742 to 0.0746 in.)
		1.895 to 1.905 mm (0.0746 to 0.0750 in.)
		1.905 to 1.915 mm (0.0750 to 0.0754 in.)
		1.915 to 1.925 mm (0.0754 to 0.0758 in.)
		1.925 to 1.935 mm (0.0758 to 0.0762 in.)
		1.935 to 1.945 mm (0.0762 to 0.0766 in.)
		1.945 to 1.955 mm (0.0766 to 0.0770 in.)
		1.955 to 1.965 mm (0.0770 to 0.0774 in.)
		1.965 to 1.975 mm (0.0774 to 0.0778 in.)
		1.975 to 1.985 mm (0.0778 to 0.0781 in.)
		1.985 to 1.995 mm (0.0781 to 0.0785 in.)
		1.995 to 2.005 mm (0.0785 to 0.0789 in.)
		2.005 to 2.015 mm (0.0789 to 0.0793 in.)
		2.015 to 2.025 mm (0.0793 to 0.0797 in.)
		2.025 to 2.035 mm (0.0797 to 0.0801 in.)
		2.035 to 2.045 mm (0.0801 to 0.0805 in.)
		2.045 to 2.055 mm (0.0805 to 0.0809 in.)
		2.055 to 5.065 mm (0.0809 to 0.0813 in.)
		2.065 to 2.075 mm (0.0813 to 0.0817 in.)
		2.075 to 2.085 mm (0.0817 to 0.0821 in.)
		2.085 to 2.095 mm (0.0821 to 0.0825 in.)

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2.095 to 2.105 mm (0.0825 to 0.0829 in.)
2.105 to 2.115 mm (0.0829 to 0.0833 in.)
2.115 to 2.125 mm (0.0833 to 0.0837 in.)
2.125 to 2.135 mm (0.0837 to 0.0841 in.)
2.135 to 2.145 mm (0.0841 to 0.0844 in.)
2.145 to 2.155 mm (0.0844 to 0.0848 in.)
2.155 to 2.165 mm (0.0848 to 0.0852 in.)
2.165 to 2.175 mm (0.0852 to 0.0856 in.)
2.175 to 2.185 mm (0.0856 to 0.0860 in.)
2.185 to 2.195 mm (0.0860 to 0.0864 in.)
2.195 to 2.205 mm (0.0864 to 0.0868 in.)
2.205 to 2.215 mm (0.0868 to 0.0872 in.)
2.215 to 2.225 mm (0.0872 to 0.0876 in.)
2.225 to 2.235 mm (0.0876 to 0.0880 in.)
2.235 to 2.245 mm (0.0880 to 0.0884 in.)
2.245 to 2.255 mm (0.0884 to 0.0888 in.)
2.255 to 2.265 mm (0.0888 to 0.0892 in.)
2.265 to 2.275 mm (0.0892 to 0.0896 in.)
2.275 to 2.285 mm (0.0896 to 0.0900 in.)
2.285 to 2.295 mm (0.0900 to 0.0904 in.)
2.295 to 2.305 mm (0.0904 to 0.0907 in.)
2.305 to 2.315 mm (0.0907 to 0.0911 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J0200IX
Title: SPECIFICATIONS: AXLE AND DIFFERENTIAL: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Front Axle Hub (2WD)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front axle with ABS rotor bearing assembly x Steering knuckle	80	816	59
Front wheel adjusting nut LH x Front axle with ABS rotor bearing assembly	275	2804	203
Steering knuckle x Front disc brake caliper	123	1254	91
Front wheel x Front axle hub	112	1137	82
Front axle shaft x Front axle shaft nut	235	2396	173

Front Axle Hub (4WD)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front axle with ABS rotor bearing assembly x Steering knuckle	80	816	59
Steering knuckle x Front disc brake caliper	123	1254	91
Front wheel x Front axle hub	112	1137	82
Front axle shaft x Front axle shaft nut	235	2396	173

Steering Knuckle

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front speed sensor x Steering knuckle	8.5	87	75 in.*lbf
Front speed sensor bracket x Steering knuckle	13	127	10
Steering knuckle x Upper arm	110	1122	81
Steering knuckle x Tie rod end	91	928	67
Front wheel x Front axle hub	122	1137	82

Rear Axle Shaft

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear axle shaft x Housing	60	612	44
Rear disc brake cylinder x Axle housing	105	1071	77
Rear brake flexible hose x Housing	15	155	11
Rear wheel x Rear axle hub	112	1137	82

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PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear speed sensor x Axle housing	8.0	82	71

Front Differential

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Differential carrier assembly x Front differential breather tube	13	133	10
Front No. 1 differential front support x Differential carrier assembly	186	1899	137
Front No. 2 differential support x Differentia carrier	160	1632	118
Front No. 2 differential support x Frame	137	1400	101
Front No . 1 differential support x Frame	137	1400	101
Front No . 3 differential support x Differentia carrier	108	1101	80
Front No . 1 differential mount nut x Frame	87	889	64
Ring gear x Differential case	115	1173	85
Front differential tube assembly x Differential side bearing retainer	110	1122	81
(w/ A.D.D.:) Differential vacuum actuator assembly x Front differential tube assembly	21	210	15
Companion flange sub assembly x Differential drive pinion	370 or less	3773 or less	273 or less
Differential side bearing retainer x Front differential case	50	510	37
Drain plug	65	660	48
Filler plug	39	400	29

Rear Differential

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear differential carrier assembly x Propeller shaft assembly	88	899	65
Rear differential carrier assembly x Rear axle carrier	52	530	38
Differential case x Ring gear	97	985	72
Differential case RH x Differential case LH	47	479	35
Bearing cap x Differential carrier	103	1049	76
Companion flange sub assembly x Differential drive pinion	457 or less	4660 or less	337 or less
Drain plug	49	500	36
Filler plug	49	500	36

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003ESD008X
Title: SPECIFICATIONS: BRAKE (FRONT): SERVICE DATA (2010 4Runner)		

SERVICE DATA

Front Brake

Pad lining thickness	Standard	11.3 mm (0.445 in.)
	Minimum	1.0 mm (0.0394 in.)
Disc thickness	Standard	32.0 mm (1.26 in.)
	Minimum	29.0 mm (1.15 in.)
Disc runout	Maximum	0.05 mm (0.00197 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003ESI008X
Title: SPECIFICATIONS: BRAKE (FRONT): TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Front Brake

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front disc brake cylinder bolt	123	1254	91
Brake tube x Disc brake cylinder	15	155	11
Front bleeder plug	11	110	8

Front Brake Flexible Hose

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Brake tube x Flexible hose	15	155	11

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003ESE008X
Title: SPECIFICATIONS: BRAKE (REAR): SERVICE DATA (2010 4Runner)		

SERVICE DATA

Rear Brake

Pad lining thickness	Standard	10.0 mm (0.394 in.)
	Minimum	1.0 mm (0.0394 in.)
Disc thickness	Standard	18.0 mm (0.709 in.)
	Minimum	16.0 mm (0.630 in.)
Disc runout	Maximum	0.20 mm (0.00787 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003ESJ008X
Title: SPECIFICATIONS: BRAKE (REAR): TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Rear Brake

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear disc brake cylinder x Rear disc brake cylinder mounting	88	900	65
Flexible hose x Disc brake cylinder	31	316	23
Rear disc brake cylinder mounting bolt	105	1071	77

Rear Brake Flexible Hose

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 5 flexible hose bracket bolt	29	296	21
No. 6 flexible hose bracket bolt	29	296	21
Flexible hose x Disc brake cylinder	31	316	23
Brake tube x Flexible hose	15	155	11

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003ESB009X
Title: SPECIFICATIONS: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Skid Control Buzzer

MEASUREMENT CONDITION	SPECIFIED CONDITION
Battery positive (+) voltage → Terminal 2	Skid control buzzer sounds
Battery negative (-) → Terminal 1	

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003ESG009X
Title: SPECIFICATIONS: BRAKE CONTROL / DYNAMIC CONTROL SYSTEMS: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Front Speed Sensor

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front speed sensor bolt	8.5	87	75 in.*lbf
Front skid control sensor wire clamp bolt	13	127	9
Front skid control sensor wire clamp x Body	5.0	51	44 in.*lbf
Front skid control sensor wire clamp x Knuckle	13	127	9

Rear Speed Sensor

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear speed sensor nut	7.8	80	69 in.*lbf
Skid control sensor wire clamp bolt	13	127	9

Yaw Rate Sensor

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Yaw rate and acceleration sensor bolt	15	148	11

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003ESC009X
Title: SPECIFICATIONS: BRAKE SYSTEM (OTHER): SERVICE DATA (2010 4Runner)		

SERVICE DATA

Brake Pedal

Brake pedal height from dash panel	158.8 to 168.8 mm (6.25 to 6.46 in.)
Rod operating adapter length	236.3 to 237.3 mm (9.30 to 9.34 in.)
Stop light switch protrusion	1.5 to 2.5 mm (0.0591 to 0.0984 in.)
Brake pedal free play	1 to 6 mm (0.0394 to 0.236 in.)
Brake pedal reserve distance from dash panel <Depressing force: 490 N (50 kgf, 110.2 lbf)>	More than 92 mm (3.62 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003ESH008X
Title: SPECIFICATIONS: BRAKE SYSTEM (OTHER): TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Brake Fluid

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front bleeder plug	11	110	8
Rear bleeder plug	11	110	8

Brake Pedal

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Hydraulic brake booster assembly x Brake pedal support sub-assembly	14	145	10
Brake pedal support reinforcement set bolt	20	204	15

Hydraulic Brake Booster

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Brake master cylinder side lock nut x Rod operating adapter	26	260	19
Master cylinder body x Master cylinder solenoid	32	326	24
Brake booster accumulator assembly	57	585	42
No. 1 brake booster pump bracket x Master cylinder body	7.8	80	69 in.*lbf
Pin x Master cylinder body	7.8	80	69 in.*lbf
Wire harnesses x screw	2.9	30	26 in.*lbf
No. 1 brake actuator tube flare nut	15	155	11
Brake master cylinder reservoir sub-assembly x Master cylinder body	1.7	17	15 in.*lbf
No. 1 brake actuator bracket bolt	7.8	80	69 in.*lbf
No. 3 brake actuator bracket bolt	7.8	80	69 in.*lbf
Hydraulic brake booster assembly x Brake pedal support sub-assembly	14	145	10
Hydraulic brake booster assembly x Brake tube flare nut	15	155	11

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003YX4004X
Title: SPECIFICATIONS: CELLULAR COMMUNICATION: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

DCM (telematics transceiver)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
DCM (telematics transceiver) x Instrument panel Reinforcement assembly	12	122	9
DCM (telematics transceiver) x Mayday Battery with bracket	13	133	10

Mayday Battery

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Mayday Battery with bracket x DCM (telematics transceiver)	13	133	10

Telephone Antenna

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Telephone Antenna assembly x Roof panel	4.5	46	40 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049NZ001X
Title: SPECIFICATIONS: CRUISE CONTROL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

CRUISE CONTROL MAIN SWITCH

Resistance	1 (ECC) - 3 (CCS)	Neutral	1 MΩ or higher
		+RES	235 to 245 Ω
		-SET	617 to 643 Ω
		CANCEL	1509 to 1571 Ω
		Main switch off	1 MΩ or higher
		Main switch on	Below 2.5 Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049RV000X
Title: SPECIFICATIONS: DOOR / HATCH: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Back Door Opener Switch

Resistance	1 (UL) - 2 (E)	Back door opener switch assembly (opener switch) not pushed (off)	10 kΩ or higher
		Back door opener switch assembly (opener switch) pushed (on)	Below 1 Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000038EP00OX
Title: SPECIFICATIONS: DOOR / HATCH: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Hood

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Hood hinge x Hood panel	13	133	10

Hood Support

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Hood support bracket x Body	18	184	13

Front Door

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front door hinge x Body	26	265	19
Front door hinge x Door panel	27	275	20
Front door lock striker x Body	23	235	17
Front door check assembly x Body	27	275	20
Front door check assembly x Door panel	8.0	82	71 in.*lbf
Front door No.2 Stiffener cushion x Door panel	6.2	63	55
Front door outside handle frame sub-assembly x Door panel	4.0	41	35 in.*lbf
Front door outside handle cover with lock cylinder assembly (for Driver Side) x Door panel	4.0	41	35 in.*lbf
Front door outside handle cover (for Front Passenger Side) x Door panel	4.0	41	35 in.*lbf
Front door rear lower frame x Door panel	6.2	63	55
Front door window regulator assembly x Door panel	8.0	82	71 in.*lbf
Front door glass sub-assembly x Front door window regulator assembly	5.5	56	49 in.*lbf

Rear Door

PART TIGHTENED	N*M	KGF*CM	FT.*LBF

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PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear door hinge x Body	26	265	19
Rear door hinge x Door panel	27	275	20
Rear door lock striker x Body	23	235	17
Rear door check assembly x Body	27	275	20
Rear door check assembly x Door panel	8.0	82	71 in.*lbf
Rear door outside handle frame sub-assembly x Door panel	4.0	41	35 in.*lbf
Rear door outside handle cover x Door panel	4.0	41	35 in.*lbf
Rear door window regulator assembly x Door panel	8.0	82	71 in.*lbf

Back Door

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Back door lower stopper x Back door panel	8.0	82	71 in.*lbf
Back door lock cylinder x Back door panel	5.5	56	49
Back door power window regulator x Back door panel	8.0	82	71 in.*lbf
Back door glass x Back door power window regulator	8.0	82	71 in.*lbf
Back door defogger connector x Back door glass	8.0	82	71 in.*lbf
No.1 back window wiper motor bracket x Back door panel	8.0	82	71 in.*lbf
Back door hinge x Back door panel	20	204	15
Back door striker x Body	27	275	20

Back Door Support

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Back door upper damper stay bracket x Back door panel	20	204	15
Back door stay bolt x Back door panel	18	184	13

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049NZ000X
Title: SPECIFICATIONS: DOOR LOCK: SERVICE DATA (2010 4Runner)		

SERVICE DATA

DOOR CONTROL SWITCH

Resistance	4 (L) - 3 (E)	Lock	Below 1 Ω
		Off	10 kΩ or higher
	2 (UL) - 3 (E)	Off	10 kΩ or higher
		Unlock	Below 1 Ω

UNLOCK WARNING SWITCH

Resistance	1 (UN+) - 2 (UN-)	Not pushed	10 kΩ or higher
		Pushed	Below 1 Ω

FRONT DOOR LOCK (FRONT DOOR LOCK ASSEMBLY LH)

Resistance	8 (LSSR) - 7 (E)	Lock	10 kΩ or higher
		Unlock	Below 1 Ω
	9 (L) - 7 (E)	Lock	Below 1 Ω
	9 (L) - 7 (E) 10 (UL) - 7 (E)	Off	10 kΩ or higher
	10 (UL) - 7 (E)	Unlock	Below 1 Ω

FRONT DOOR LOCK (FRONT DOOR LOCK ASSEMBLY RH)

Resistance	7 (LSSR) - 8 (E)	Lock	10 kΩ or higher
		Unlock	Below 1 Ω

REAR DOOR LOCK (REAR DOOR LOCK ASSEMBLY LH)

Resistance	6 (LSSR) - 9 (E)	Lock	10 kΩ or higher
		Unlock	Below 1 Ω

REAR DOOR LOCK (REAR DOOR LOCK ASSEMBLY RH)

Resistance	6 (LSSR) - 9 (E)	Lock	10 kΩ or higher
		Unlock	Below 1 Ω

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BACK DOOR LOCK

Resistance	3 (E) - 2 (S)	Open-latch	Below 1 Ω
		Full-latch	10 kΩ or higher

WIRELESS DOOR LOCK BUZZER

Resistance	1 - 2	Always	295 to 315Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002YYD015X
Title: SPECIFICATIONS: DOOR LOCK: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

FRONT DOOR LOCK

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Door lock x Door panel	5.0	51	44 in.*lbf

REAR DOOR LOCK

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Door lock x Door panel	5.0	51	44 in.*lbf

BACK DOOR LOCK

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Back door lock assembly x Back door panel	13	133	10

DOOR CONTROL RECEIVER

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Door control receiver x Body	5.5	56	49

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002IZX00JX
Title: SPECIFICATIONS: DRIVE SHAFT / PROPELLER SHAFT: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Front Drive Shaft Assembly

Standard drive shaft length	577.5 mm (22.73 in..)

Front Propeller Shaft

Propeller shaft runout	Maximum	0.3 mm (0.0118 in.)
Bearing axial play	Maximum	0 mm (0 in.)
Snap ring thickness	1	2.28 to 2.30 mm (0.0898 to 0.0906 in.)
	2	2.30 to 2.32 mm (0.0906 to 0.0913 in.)
	-	2.32 to 2.34 mm (0.0913 to 0.0921 in.)
	Brown	2.34 to 2.36 mm (0.0921 to 0.0929 in.)
	Blue	2.36 to 2.38 mm (0.0929 to 0.0937 in.)
	6	2.38 to 2.40 mm (0.0937 to 0.0945 in.)
	7	2.40 to 2.42 mm (0.0945 to 0.0953 in.)
	8	2.42 to 2.44 mm (0.0953 to 0.0961 in.)
		2.44 to 2.46 mm (0.0961 to 0.0969 in.)
	10	2.46 to 2.48 mm (0.0969 to 0.0976 in.)
	A	2.48 to 2.50 mm (0.0976 to 0.0984 in.)
	B	2.50 to 2.52 mm (0.0984 to 0.0992 in.)
	C	2.52 to 2.54 mm (0.0992 to 0.1000 in.)
	D	2.54 to 2.56 mm (0.1000 to 0.1008 in.)
	E	2.56 to 2.58 mm (0.1008 to 0.1016 in.)
	J	2.18 to 2.20 mm (0.0858 to 0.0866 in.)
	K	2.20 to 2.22 mm (0.0866 to 0.0874 in.)
	F	2.22 to 2.24 mm (0.0874 to 0.0882 in.)
	G	2.24 to 2.26 mm (0.0882 to 0.0890 in.)
	H	2.26 to 2.28 mm (0.0890 to 0.0898 in.)

Rear Propeller Shaft Assembly (for 2WD)

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Propeller shaft runout	Maximum	0.4 mm (0.0157 in.)
Bearing axial play	Maximum	0 mm (0 in.)
Snap ring thickness	1	2.28 to 2.30 mm (0.0898 to 0.0906 in.)
	2	2.30 to 2.32 mm (0.0906 to 0.0913 in.)
	-	2.32 to 2.34 mm (0.0913 to 0.0921 in.)
	Brown	2.34 to 2.36 mm (0.0921 to 0.0929 in.)
	Blue	2.36 to 2.38 mm (0.0929 to 0.0937 in.)
	6	2.38 to 2.40 mm (0.0937 to 0.0945 in.)
	7	2.40 to 2.42 mm (0.0945 to 0.0953 in.)
	8	2.42 to 2.44 mm (0.0953 to 0.0961 in.)
		2.44 to 2.46 mm (0.0961 to 0.0969 in.)
	10	2.46 to 2.48 mm (0.0969 to 0.0976 in.)
	A	2.48 to 2.50 mm (0.0976 to 0.0984 in.)
	B	2.50 to 2.52 mm (0.0984 to 0.0992 in.)
	C	2.52 to 2.54 mm (0.0992 to 0.1000 in.)
	D	2.54 to 2.56 mm (0.1000 to 0.1008 in.)
	E	2.56 to 2.58 mm (0.1008 to 0.1016 in.)
	J	2.18 to 2.20 mm (0.0858 to 0.0866 in.)
	K	2.20 to 2.22 mm (0.0866 to 0.0874 in.)
	F	2.22 to 2.24 mm (0.0874 to 0.0882 in.)
	G	2.24 to 2.26 mm (0.0882 to 0.0890 in.)
	H	2.26 to 2.28 mm (0.0890 to 0.0898 in.)

Rear Propeller Shaft Assembly (for 4WD)

Propeller shaft runout	Maximum	0.4 mm (0.0157 in.)
Bearing axial play	Maximum	0 mm (0 in.)
Snap ring thickness	1	2.28 to 2.30 mm (0.0898 to 0.0906 in.)
	2	2.30 to 2.32 mm (0.0906 to 0.0913 in.)
	-	2.32 to 2.34 mm (0.0913 to 0.0921 in.)
	Brown	2.34 to 2.36 mm (0.0921 to 0.0929 in.)
	Blue	2.36 to 2.38 mm (0.0929 to 0.0937 in.)
	6	2.38 to 2.40 mm (0.0937 to 0.0945 in.)

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7	2.40 to 2.42 mm (0.0945 to 0.0953 in.)
8	2.42 to 2.44 mm (0.0953 to 0.0961 in.)
	2.44 to 2.46 mm (0.0961 to 0.0969 in.)
10	2.46 to 2.48 mm (0.0969 to 0.0976 in.)
A	2.48 to 2.50 mm (0.0976 to 0.0984 in.)
B	2.50 to 2.52 mm (0.0984 to 0.0992 in.)
C	2.52 to 2.54 mm (0.0992 to 0.1000 in.)
D	2.54 to 2.56 mm (0.1000 to 0.1008 in.)
E	2.56 to 2.58 mm (0.1008 to 0.1016 in.)
J	2.18 to 2.20 mm (0.0858 to 0.0866 in.)
K	2.20 to 2.22 mm (0.0866 to 0.0874 in.)
F	2.22 to 2.24 mm (0.0874 to 0.0882 in.)
G	2.24 to 2.26 mm (0.0882 to 0.0890 in.)
H	2.26 to 2.28 mm (0.0890 to 0.0898 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002IZY00IX
Title: SPECIFICATIONS: DRIVE SHAFT / PROPELLER SHAFT: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Front Propeller Shaft Assembly

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front propeller shaft x Front differential carrier assembly	88	899	65
Front propeller shaft x Transfer assembly	88	899	65

Rear Propeller Shaft Assembly

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear propeller shaft x Transfer assembly	88	899	65
Rear propeller shaft x Rear differential carrier assembly	88	899	65

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002Z1700EX
Title: SPECIFICATIONS: EXTERIOR PANELS / TRIM: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Front Bumper

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front bumper reinforcement sub-assembly x Front No. 2 bumper extension sub-assembly	30	306	21
Front No. 2 bumper extension sub-assembly x Body	65	663	48
Headlight unit x Body	5.5	56	49 in.*lbf

Front Bumper (X-Runner)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front bumper reinforcement sub-assembly x Front No. 2 bumper extension sub-assembly	30	306	21
Front No. 2 bumper extension sub-assembly x Body	65	663	48
Headlight unit x Body	5.5	56	49 in.*lbf

Rear Bumper

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Pintle hook x Body	81	826	60
Rear combination light x Body	4.5	46	40 in.*lbf

Rear Bumper (X-Runner)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Pintle hook x Body	81	826	60
Rear combination light x Body	4.5	46	40 in.*lbf

Side Step

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Side step Assembly x Body	18	184	13
Side step assembly x Side step bracket	6.0	61	53 in.*lbf

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PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Side step x Step plate	2.5	25	22 in.*lbf
Side step Assembly x Rocker panel moulding protector	3.0	31	27 in.*lbf

Roof Rack

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Roof Rail assembly x Body	23	235	17

Front Door Belt Moulding

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Outer rear view mirror assembly x Body	8.0	82	71 in.*lbf
Front door glass sub-assembly x Front door window regulator sub-assembly	5.5	53	49 in.*lbf

Rear Door Belt Moulding

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear door window frame division bar sub-assembly x Body	6.2	63	55 in.*lbf

Back Door Belt Moulding

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Back door glass sub-assembly x Back door window regulator sub-assembly	8.0	82	71 in.*lbf
Rear wiper arm x Rear wiper motor and bracket assembly	5.5	56	49 in.*lbf
Rear wiper motor and bracket assembly x Back door wiper motor bracket	5.5	56	49 in.*lbf
Back door wiper motor bracket x Body	8.0	82	71 in.*lbf

Rocker Panel Moulding (X-Runner)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rocker panel reinforcement x Body	20	204	15

Back Door outside Garnish

PART TIGHTENED	N*M	KGF*CM	FT.*LBF

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PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Back door lock cylinder x Back door outside garnish	5.5	53	49 in.*lbf

Front Door Window Frame Moulding

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Outer rear view mirror assembly x Body	8.0	82	71 in.*lbf
Front door glass sub-assembly x Front door window regulator sub-assembly	5.5	53	49 in.*lbf

Rear Door Window Frame Moulding

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear door window frame division bar sub-assembly x Body	6.2	63	55 in.*lbf

Front Door Window Frame Moulding

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Outer rear view mirror assembly x Body	8.0	82	71 in.*lbf
Front door glass sub-assembly x Front door window regulator sub-assembly	5.5	53	49 in.*lbf

Rear Door Window Frame Moulding

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear door window frame division bar sub-assembly x Body	6.2	63	55 in.*lbf

Black Out Tape (for Front Door)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Outer rear view mirror assembly x Body	8.0	82	71 in.*lbf
Front door glass sub-assembly x Front door window regulator sub-assembly	5.5	53	49 in.*lbf

Black Out Tape (for Rear Door)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear door window frame division bar sub-assembly x Body	6.2	63	55 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1800EX
Title: SPECIFICATIONS: HEATING / AIR CONDITIONING: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Refrigerant charge volume	Standard: 550 +/-30 g (19.3 +/-1.0 oz.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1900HX
Title: SPECIFICATIONS: HEATING / AIR CONDITIONING: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

REFRIGERANT LINE

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Discharge hose sub-assembly x Cooler condenser assembly	5.4	55	48 in.*lbf
Air conditioning tube assembly x Cooler condenser assembly	5.4	55	48 in.*lbf
Suction hose sub-assembly x Cooler compressor assembly	9.8	100	87 in.*lbf
Discharge hose assembly x cooler compressor assembly	5.4	55	48 in.*lbf

AIR CONDITIONING UNIT

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Instrument panel reinforcement assembly x Body	27	275	20
Instrument panel reinforcement assembly x Air conditioning unit assembly	9.8	100	87 in.*lbf
Air conditioning hose and accessory x Body	9.8	100	87 in.*lbf
Air conditioner tube and accessory assembly x No. 1 cooler evaporator sub-assembly	3.5	36	31 in.*lbf

BLOWER UNIT

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Air conditioning unit x Blower unit	2.7	28	24 in.*lbf

COMPRESSOR (for 1GR-FE)

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Discharge hose sub-assembly x Cooler compressor assembly		9.8	100	87 in.*lbf
Suction hose sub-assembly x Cooler compressor assembly		9.8	100	87 in.*lbf
Suction hose sub-assembly x Engine		7.8	80	69 in.*lbf
Magnet clutch assembly x Cooler compressor assembly		18	184	13
Cooler compressor assembly x Engine	Stud bolt	10	102	7
	Bolt	25	255	18

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PART TIGHTENED		N*M	KGF*CM	FT.*LBF
	Nut	25	255	18

COMPRESSOR (for 2TR-FE)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Discharge hose sub-assembly x Cooler compressor assembly	9.8	100	87 in.*lbf
Suction hose sub-assembly x Cooler compressor assembly	9.8	100	87 in.*lbf
Suction hose sub-assembly x Engine	7.8	80	69 in.*lbf
Magnet clutch assembly x Cooler compressor assembly	18	184	13
Cooler compressor assembly x Engine	25	255	18

CONDENSER

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Cooler refrigerant liquid pipe A x Cooler condenser assembly	5.4	55	48 in.*lbf
Cooler condenser assembly x Body	5.4	55	48 in.*lbf
No. 1 cooler refrigerant discharge hose x Cooler condenser assembly	5.4	55	48 in.*lbf
Cap x Cooler condenser assembly	2.9	30	26 in.*lbf

FRONT EVAPORATOR TEMPERATURE SENSOR

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Air conditioner tube and accessory assembly x No. 1 cooler evaporator sub-assembly	3.5	36	31 in.*lbf

AIR CONDITIONING PRESSURE SENSOR

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 1 pressure switch x Cooler refrigerant liquid pipe A	11	112	8

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002Z1800EX
Title: SPECIFICATIONS: HORN: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Horn

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Low pitched horn x Body	20	204	15
High pitched horn x Body	20	204	15

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002Z2U00WX
Title: SPECIFICATIONS: INTERIOR PANELS / TRIM: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

INSTRUMENT PANEL SAFETY PAD

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Front passenger airbag assembly x Instrument panel reinforcement		20	204	15
Lower No. 1 instrument panel airbag assembly x Instrument panel reinforcement		10	102	7
Lower No. 2 instrument panel airbag assembly x Instrument panel reinforcement		10	102	7
Radio receiver assembly x instrument panel sub-assembly (w/o Navigation System)		2.5	25	22 in.*lbf
Navigation receiver assembly x instrument panel sub-assembly (w/ Navigation System)		2.5	25	22 in.*lbf
Multi-media interface ECU x Instrument panel reinforcement		12	122	9
Four wheel drive control ECU x Instrument panel reinforcement (for 4WD)		13	133	10
DCM (Telematics transceiver) x Instrument panel reinforcement	for Nut	12	122	9
	for Bolt	12.5	127	9

ROOF HEADLINING

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front seat outer belt floor anchor x Body	42	428	32
Rear No. 1 seat outer belt floor anchor x Body	42	428	32
Rear No. 2 seat outer belt floor anchor x Body (w/ Rear No. 2 Seat)	42	428	32

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003Z00003X
Title: SPECIFICATIONS: LIGHTING (EXT): TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Headlight assembly x Body	5.5	56	49 in.*lbf
Rear combination light lens and body x Body	4.5	46	40 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049NO000X
Title: SPECIFICATIONS: METER / GAUGE / DISPLAY: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Light control rheostat (w/o TAIL cancel switch)

Resistance	7 (T) - 1 (E)	Always	8 to 12 kΩ
	3 (RV) - 1 (E)	Light control rheostat fully turned upward → fully turned downward	8 to 12 kΩ → Below 50 Ω

Light control rheostat (w/ TAIL cancel switch)

Resistance	7 (T) - 1 (E)	Always	8 to 12 kΩ
	5 (TC) - 7 (T)	TAIL cancel switch off → on	1 MΩ or higher → Below 1 Ω
	3 (RV) - 1 (E)	Light control rheostat fully turned upward → fully turned downward	8 to 12 kΩ → Below 50 Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002YYD017X
Title: SPECIFICATIONS: METER / GAUGE / DISPLAY: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

ACCESSORY METER

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Radio receiver assembly with bracket x instrument panel sub-assembly	2.6	25	22 in.*lbf
Navigation receiver assembly with bracket x instrument panel sub-assembly (w/ Navigation System)	2.6	25	22 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002YYD019X
Title: SPECIFICATIONS: MIRROR (EXT): TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Outer Rear View Mirror

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Outer rear view mirror assembly x Front door panel	8.0	82	71 in.*lbf
Outer rear view mirror body x Outer rear view mirror stay	3.8	39	34 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003DL0004X
Title: SPECIFICATIONS: NAVIGATION / MULTI INFO DISPLAY: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Navigation Antenna

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - Shield	Always	50 to 500 Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003YX5003X
Title: SPECIFICATIONS: NAVIGATION / MULTI INFO DISPLAY: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Navigation Receiver (for HDD)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Navigation receiver assembly with bracket x Instrument panel	2.5	25	22 in.*lbf
Navigation receiver assembly x Bracket	2.5	25	22 in.*lbf

Navigation Antenna

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Navigation Antenna x Instrument panel	2.5	25	22 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049NO001X
Title: SPECIFICATIONS: PARK ASSIST / MONITORING: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Ultrasonic sensor for Rear)

Resistance	1 (E) - 2 (S)	Always	20 to 40 kΩ

Clearance sonar main switch

Resistance	3 (ECU - 6 (IG)	Sonar switch off	10 kΩ or higher
	3 (ECU - 6 (IG)	Sonar switch on	Below 1 Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003J98003X
Title: SPECIFICATIONS: PARK ASSIST / MONITORING: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

CLEARANCE WARNING ECU

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Lower No. 1 instrument panel airbag assembly x Instrument panel	10	102	7

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003ESF008X
Title: SPECIFICATIONS: PARKING BRAKE: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Parking Brake Lever

Parking brake pedal travel: 294 N (30 kgf, 66 lbf)	5 to 7 clicks

Parking Brake Assembly

Brake disc inside diameter	Standard	210 mm (8.27 in.)
	Maximum	211 mm (8.31 in.)
Parking brake shoe lining thickness	Standard	4.0 mm (0.157 in.)
	Maximum	1.0 mm (0.0394 in.)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003ESK008X
Title: SPECIFICATIONS: PARKING BRAKE: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Parking Brake System

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Lock nut x No. 1 parking brake cable assembly (pedal side)	5.4	55	48 in.*lbf

Parking Brake Pedal

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Parking brake switch x Parking brake control pedal assembly	3.2	33	28 in.*lbf
Parking brake control pedal assembly x Body	13	127	9
Lock nut x No. 1 parking brake cable assembly (pedal side)	5.4	55	48 in.*lbf
Lock nut x No. 1 parking brake cable assembly (parking brake equalizer side)	5.4	55	48 in.*lbf
No. 1 parking brake cable No. 3 clamp x Body	13	127	9
No. 1 parking brake cable bolt	13	127	9
No. 1 parking brake cable nut	6.0	61	53 in.*lbf

Parking Brake Cable

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 2 parking brake cable clamp x Body	13	127	9
No. 2 parking brake cable x Body	13	127	9
No. 3 parking brake cable clamp x Body	13	127	9
No. 3 parking brake cable x Body	13	127	9
No. 2 parking brake cable assembly x Backing plate	8.0	82	71 in.*lbf
No. 3 parking brake cable assembly x Backing plate	8.0	82	71 in.*lbf
No. 1 parking brake cable heat insulator x Body	13	127	9

Parking Brake Assembly

PART TIGHTENED	N*M	KGF*CM	FT.*LBF

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PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear disc brake cylinder assembly bolt	105	1071	77

Parking Brake switch

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Parking brake control pedal assembly x Parking brake switch	3.2	33	28 in.*lbf
Parking brake control pedal assembly x Body	13	127	9
No. 1 parking brake cable assembly x Body	6.0	61	53 in.*lbf



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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1600UX
Title: SPECIFICATIONS: POWER ASSIST SYSTEMS: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Power Steering System

Fluid level rise (Maximum)	5.0 mm (0.197 in.)
Fluid pressure at idle speed with valve closed	8300 to 8800 kPa (84.7 to 89.7 kgf/cm^2, 1204 to 1276 psi)
Fluid pressure at idle speed with valve fully open and turn the steering wheel to the full lock position	8300 to 8800 kPa (84.7 to 89.7 kgf/cm^2, 1204 to 1276 psi)

Vane Pump

Vane pump shaft and vane pump housing oil clearance (Maximum)	0.07 mm (0.00276 in.)
Vane plate thickness (Standard)	1.405 to 1.411 mm (0.0554 to 0.0555 in.)
Clearance between the vane pump rotor groove and vane pump plate (Maximum)	0.025 mm (0.00098 in.)
Vane pump rotating torque	0.3 N*m (3 kgf*cm, 2 in.*lbf) or less

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1700UX
Title: SPECIFICATIONS: POWER ASSIST SYSTEMS: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Vane Pump (for 1GR-FE)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Air cleaner cap and hose set bolt	5.0	51	44 in.*lbf
Union bolt x Pressure feed tube	50	510	37
Wire harness bracket x Vane pump assembly	40	408	30
Vane pump assembly set bolt	43	438	32
Suction port union set bolt	12	122	9
Vane pump front housing x Vane pump rear housing	22	224	16

Vane Pump (for 2TR-FE)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Union bolt x Pressure feed tube	50	510	37
Vane pump assembly set bolt	21	214	15
Vane pump oil reservoir sub-assembly x Vane pump front housing	9.0	92	80 in.*lbf
Vane pump front housing x Vane pump rear housing	22	224	16

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003FFI00AX
Title: SPECIFICATIONS: POWER OUTLETS (INT): SERVICE DATA (2010 4Runner)		

SERVICE DATA

Voltage Inverter (Standard Voltage)

CONNECTOR CONDITION	TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
Component without harness connected	N20-1 (GND) - N20-2 (+B)	Engine switch on (IG)	11 to 14 V
	N20-1 (GND) - Body ground	Always	Below 1 V

Voltage Inverter (Standard Voltage)

CONNECTOR CONDITION	TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
Component with harness connected	N19-5 (AC1) - N19-11 (AC2)	Engine switch on (IG) Main switch on	AC 120 V

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002Z2K01DX
Title: SPECIFICATIONS: POWER OUTLETS (INT): TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

VOLTAGE INVERTER

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Voltage Inverter Assembly x Body	7.5	76	66 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EVF008X
Title: SPECIFICATIONS: REAR SUSPENSION: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Stabilizer link ball joint standard turning torque	0.5 to 1.96 N*m (051 to 20 kgf*cm, 0.44 to 17.3 in.*lbf)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EVG008X
Title: SPECIFICATIONS: REAR SUSPENSION: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Hub nut	112	1142	83
Shock absorber x Chassis frame	25	255	18
Shock absorber x Axle housing	98	999	72
Shock absorber tube x Tube	25	255	18
Shock absorber bracket x Chassis frame	29	296	22
Rear flexible hose x Flexible hose	15	155	11
Upper control arm x Chassis frame	80	816	59
Upper control arm x Axle housing	80	816	59
Lower control arm x Chassis frame	130	1326	96
Lower control arm x Axle housing	130	1326	96
Lower control arm x No. 3 parking brake cable	13	127	9
Lateral control arm x Chassis frame	130	1326	96
Lateral control arm x Axle housing	130	1326	96
Stabilizer link x Chassis frame	100	1020	74
Stabilizer control cylinder x Chassis frame	100	1020	74
Stabilizer link x Stabilizer lower bracket	45	459	33
Stabilizer control cylinder x Stabilizer lower bracket	45	459	33
Stabilizer control cylinder x Stabilizer control tube	69	704	51
Stabilizer bar x Axle housing	110	1122	81
Stabilizer bracket x Chassis frame	45	459	33
Stabilizer Link x Stabilizer bar	70	714	52
Stabilizer Link x Chassis frame	15	153	11

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EU800JX
Title: SPECIFICATIONS: SEAT BELT: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Front Seat Belt

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front seat inner belt assembly x Front seat	42	428	31
Front shoulder belt anchor adjuster assembly x Body	42	428	31
Front seat outer belt assembly (upper part of retractor) x Body	7.5	76	66 in.*lbf
Front seat outer belt assembly (lower part of retractor) x Body	42	428	31
Front seat outer belt assembly (shoulder anchor) x Front shoulder adjuster assembly	42	428	31

Rear No. 1 Seat Inner Belt Assembly (for 60/40 Split Double-folding Seat Type LH Side)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear No. 1 seat inner belt assembly LH x Seatback Assembly LH	42	428	31

Rear No. 1 Seat Inner Belt Assembly (for 60/40 Split Double-folding Seat Type RH Side)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear No. 1 seat inner belt assembly RH x Body	42	428	31
Rear No. 1 seat outer belt assembly floor anchor x Body	42	428	31

Rear No. 1 Seat Inner Belt Assembly (for 60/40 Split Slide Walk-in Seat Type LH Side)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear No. 1 seat inner belt assembly x Body	42	428	31

Rear No. 1 Seat Inner Belt Assembly (for 60/40 Split Slide Walk-in Seat Type RH Side)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear No. 1 seat inner belt assembly x Body	42	428	31

Rear No. 2 Seat Inner Belt Assembly

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear No. 2 seat inner belt assembly x Body	42	428	31

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Rear No. 1 Seat Outer Belt Assembly

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear No. 1 seat outer belt assembly (floor anchor) x Body	42	428	31
Rear No. 1 seat outer belt assembly (shoulder anchor) x Body	42	428	31
Rear No. 1 seat outer belt assembly (upper part of retractor) x Body	7.5	76	66 in.*lbf
Rear No. 1 seat outer belt assembly (lower part of retractor) x Body	42	428	31

Rear No. 2 Seat Outer Belt Assembly

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear No. 2 seat outer belt assembly (floor anchor) x Rear seat outer belt anchor plate sub-assembly (for LH side)	42	428	31
Rear No. 2 seat outer belt assembly (floor anchor) x Seat belt anchor plate assembly (for RH side)	42	428	31
Rear No. 2 seat outer belt assembly (shoulder anchor) x Body	42	428	31
Rear No. 2 seat outer belt assembly (retractor) x Body	42	428	31

Rear Center Seat Inner Belt Assembly (for 60/40 Split Double-folding Seat Type RH Side)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear seat inner belt assembly x Rear seatback assembly RH	42	428	31

Rear Center Seat Outer Belt Assembly (for 60/40 Split Double-folding Seat Type RH Side)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear No. 1 seat outer belt assembly (upper part of retractor) x Rear seatback frame sub-assembly	7.5	76	66 in.*lbf
Rear No. 1 seat outer belt assembly (lower part of retractor) x Rear seatback frame sub-assembly	42	428	31

Rear Center Seat Outer Belt Assembly (for 60/40 Split Slide Walk-in Seat Type LH Side)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
No. 1 seat 3 point type belt assembly (upper part of retractor) x Rear seat sub-frame assembly	7.5	76	66 in.*lbf
No. 1 seat 3 point type belt assembly (lower part of retractor) x Rear seat sub-frame assembly	42	428	31
No. 1 seat 3 point type belt assembly (floor anchor) x Rear seat sub-frame assembly	42	428	31

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000496F000X
Title: SPECIFICATIONS: SEAT: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Seat Heater Switch LH

Resistance	3 (SW) - 7 (RV)	Switch off	2.7 to 4.1 kΩ
		Switch on (Min.)	
		Switch on (Max.)	0.28 to 0.42 kΩ

Seat Heater Switch RH

Resistance	2 (SW) - 5 (RV)	Switch off	2.7 to 4.1 kΩ
		Switch on (Min.)	
		Switch on (Max.)	0.28 to 0.42 kΩ

Front Seatback Heater

Resistance	1 -2	Seatback heater temperature 20°C (68°F)	4.2 to 5.2 Ω

Front Seat Cushion Heater

Resistance	A-1 - B-1	Seat cushion heater temperature 20°C (68°F)	3.4 to 4.2 Ω
	A-4 - B-2		
	A-1 - A-4		
	A-2 - A-3		8 to 12 kΩ

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EGT00AX
Title: SPECIFICATIONS: SEAT: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Front Seat Assembly (for Manual Seat)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front seat assembly x Vehicle body	37	377	27
Separate type front seatback assembly x Separate type front seat cushion spring assembly	42	428	31
Separate type front seatback cover x Separate type front seatback spring assembly	5.5	56	49 in.*lbf

Front Seat Assembly (for Power Seat)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front seat assembly x Vehicle body	37	377	27
Separate type front seatback assembly x Separate type front seat cushion spring assembly	42	428	31
Separate type front seatback cover x Separate type front seatback spring assembly	5.5	56	49 in.*lbf

Rear No. 1 Seat Assembly (for 60/40 Split Double-folding Seat Type LH Side)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear seat cushion assembly LH x Vehicle body	37	377	27
Rear seatback assembly LH x Vehicle body	37	377	27
Rear seatback hinge sub-assembly LH x Vehicle body	18	184	13
Rear No. 2 seatback lock striker sub-assembly LH x Vehicle body	37	377	27
Rear seat cushion lock striker x Vehicle body	13	127	9
Rear seatback lock assembly LH x Rear seatback frame sub-assembly LH	21	214	15

Rear No. 1 Seat Assembly (for 60/40 Split Double-folding Seat Type RH Side)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear seat cushion assembly RH x Vehicle body	37	377	27
Rear seatback assembly RH x Vehicle body	37	377	27
Rear seatback hinge sub-assembly RH x Vehicle body	18	184	13

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PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Rear No. 2 seatback lock striker sub-assembly RH x Vehicle body		37	377	27
Rear seat cushion lock striker x Vehicle body		13	127	9
Center seatback assembly x Rear seatback frame sub-assembly RH	for bolt	21	214	15
	for "TORX" bolt	21	214	15
Seat frame set bracket x Center seatback assembly		21	214	15
Rear center seat armrest assembly x Center seatback frame sub-assembly		21	214	15
Rear seat lock assembly RH x Center seatback frame sub-assembly		21	214	15
Rear seatback lock assembly RH x Rear seatback frame sub-assembly RH		21	214	15
Rear seatback lock striker x Rear seatback frame sub-assembly RH		21	214	15

Rear No. 1 Seat Assembly (for 60/40 Split Slide Walk-in Seat Type LH Side)

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Rear seat assembly LH x Vehicle body	for bolt	37	377	27
	for nut	37	377	27
Center seatback assembly x Rear seat cushion frame sub-assembly LH		21	214	15
Rear seat reclining bracket x Center seatback frame sub-assembly		21	214	15
Rear seat center armrest assembly x Center seatback frame sub-assembly		21	214	15
Rear seat lock assembly LH x Center seatback frame sub-assembly		21	214	15
Rear back lock control lever sub-assembly x Rear seatback frame sub-assembly LH		18	184	13
Rear seatback frame sub-assembly LH x Rear seat cushion frame sub-assembly LH	for bolt	42	428	31
	for "TORX" bolt	42	428	31
Rear seat cushion frame sub-assembly LH x Rear seat upper track rail sub-assembly		32	326	24

Rear No. 1 Seat Assembly (for 60/40 Split Slide Walk-in Seat Type RH Side)

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Rear seat assembly RH x Vehicle body	for bolt	37	377	27
	for nut	37	377	27
Rear seat cushion set plate x Rear seatback frame sub-assembly RH		18	184	13
Rear seatback lock plate RH x Rear seatback frame sub-assembly RH		18	184	13

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PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Rear seatback frame sub-assembly RH x Rear seat cushion frame sub-assembly RH	for "TORX" bolt	29	296	21
Rear seat cushion frame sub-assembly RH x Rear seat upper track rail sub-assembly		32	326	24

Rear No. 2 Seat Assembly

PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Rear No. 2 seat assembly x Vehicle body		37	377	27
No. 2 seat cushion frame sub-assembly x No. 3 seat leg assembly		20	255	18
Rear seat headrest assembly x No. 3 seatback frame sub-assembly		14	143	10
Rope hook assembly x No. 3 seatback frame sub-assembly		6.0	61	53 in.*lbf
No. 3 seatback frame sub-assembly x No. 3 seat leg assembly	for "TORX" bolt	42	428	31

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EW3008X
Title: SPECIFICATIONS: FRONT SUSPENSION: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Upper ball joint standard turning torque	0.98 to 4.41 N*m (1.0 to 45 kgf*cm, 9 to 39 in.*lbf)
Lower ball joint standard turning torque	0.29 to 2.94 N*m (2.96 to 30.0 kgf*cm, 2.57 to 26.02 in.*lbf)
Stabilizer link ball joint standard turning torque	0.05 to 1.96 N*m (0.51 to 20 kgf*cm, 0.44 to 17.3 in.*lbf)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002Z2K01BX
Title: SPECIFICATIONS: SLIDING ROOF / CONVERTIBLE: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

SLIDING ROOF HOUSING

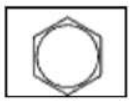
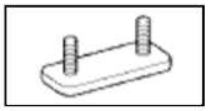
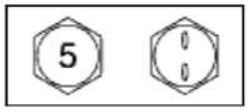
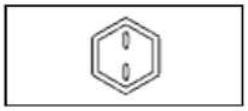
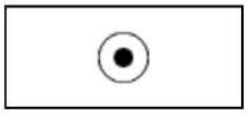
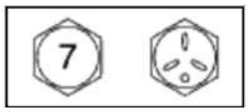
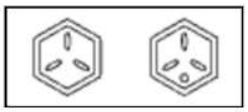
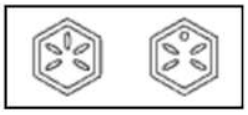
PART TIGHTENED		N*M	KGF*CM	FT.*LBF
Sliding roof glass sub-assembly x Sliding roof housing		5.5	56	49 in.*lbf
Sliding roof housing x Body	for Bolt	8.0	82	71 in.*lbf
	for Nut	5.5	56	49 in.*lbf
Sliding roof drive gear x Sliding roof housing		5.5	56	49 in.*lbf

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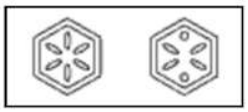
Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000118V07KX
Title: SPECIFICATIONS: STANDARD BOLT: HOW TO DETERMINE BOLT STRENGTH (2010 4Runner)		

HOW TO DETERMINE BOLT STRENGTH

Bolt Type

HEXAGON HEAD BOLT		STUD BOLT	WELD BOLT	CLASS
NORMAL RECESS BOLT	DEEP RECESS BOLT			
  No Mark	 No Mark	 • No Mark		4T
		-	-	5T
  w/ Washer	 w/ Washer		-	6T
		-	-	7T
			-	8T
		-	-	9T
		-	-	10T

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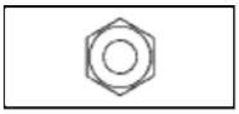
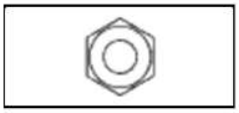
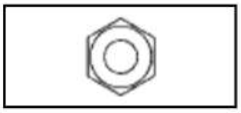
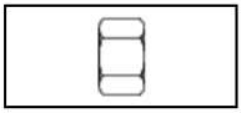
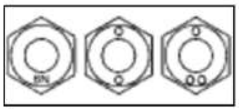
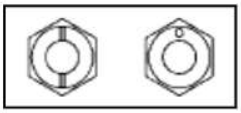
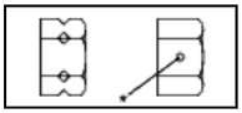
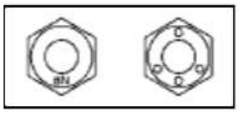
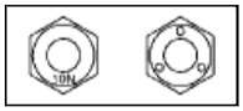
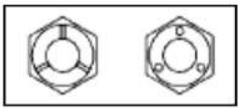
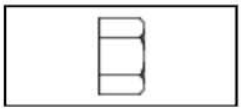
HEXAGON HEAD BOLT		STUD BOLT	WELD BOLT	CLASS
NORMAL RECESS BOLT	DEEP RECESS BOLT			
		-	-	11T

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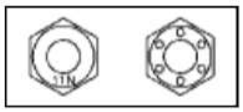
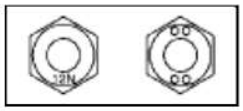
Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000118X07KX
Title: SPECIFICATIONS: STANDARD BOLT: HOW TO DETERMINE NUT STRENGTH (2010 4Runner)		

HOW TO DETERMINE NUT STRENGTH

Nut Type

PRESENT STANDARD HEXAGON NUT	OLD STANDARD HEXAGON NUT		CLASS
	COLD FORGING NUT	CUTTING PROCESSED NUT	
 No Mark	-	-	4N
 No Mark (w/ Washer)	 No Mark (w/ Washer)	 No Mark	5N (4T)
	-	-	6N
-			7N (5T)
	-	-	8N
		 No Mark	10N (7T)
	-	-	11N

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PRESENT STANDARD HEXAGON NUT	OLD STANDARD HEXAGON NUT		CLASS
	COLD FORGING NUT	CUTTING PROCESSED NUT	
			
	-	-	12N

HINT:

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

Example:

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

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM00000118W07KX
Title: SPECIFICATIONS: STANDARD BOLT: SPECIFIED TORQUE FOR STANDARD BOLTS (2010 4Runner)		

SPECIFIED TORQUE FOR STANDARD BOLTS

CLASS	DIAMETER (MM)	PITCH (MM)	SPECIFIED TORQUE					
			HEXAGON HEAD BOLT			HEXAGON FLANGE BOLT		
			N*M	KGF*CM	FT.*LBF	N*M	KGF*CM	FT.*LBF
4T	6	1	5	55	48 in.*lbf	6	60	52 in.*lbf
	8	1.25	12.5	130	9	14	145	10
	10	1.25	26	260	19	29	290	21
	12	1.25	47	480	35	53	540	39
	14	1.5	74	760	55	84	850	61
	16	1.5	115	1150	83	-	-	-
5T	6	1	6.5	65	56 in.*lbf	7.5	75	65 in.*lbf
	8	1.25	15.5	160	12	17.5	175	13
	10	1.25	32	330	24	36	360	26
	12	1.25	59	600	43	65	670	48
	14	1.5	91	930	67	100	1050	76
	16	1.5	140	1400	101	-	-	-
6T	6	1	8	80	69 in.*lbf	9	90	78 in.*lbf
	8	1.25	19	195	14	21	210	15
	10	1.25	39	400	29	44	440	32
	12	1.25	71	730	53	80	810	59
	14	1.5	110	1100	80	125	1250	90
	16	1.5	170	1750	127	-	-	-
7T	6	1	10.5	110	8	12	120	9
	8	1.25	25	260	19	28	290	21
	10	1.25	52	530	38	58	590	43
	12	1.25	95	970	70	105	1050	76
	14	1.5	145	1500	108	165	1700	123
	16	1.5	230	2300	166	-	-	-
8T	8	1.25	29	300	22	33	330	24

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CLASS	DIAMETER (MM)	PITCH (MM)	SPECIFIED TORQUE					
			HEXAGON HEAD BOLT			HEXAGON FLANGE BOLT		
			N*M	KGF*CM	FT.*LBF	N*M	KGF*CM	FT.*LBF
	10	1.25	61	620	45	68	690	50
	12	1.25	110	1100	80	120	1250	90
9T	8	1.25	34	340	25	37	380	27
	10	1.25	70	710	51	78	790	57
	12	1.25	125	1300	94	140	1450	105
10T	8	1.25	38	390	28	42	430	31
	10	1.25	78	800	58	88	890	64
	12	1.25	140	1450	105	155	1600	116
11T	8	1.25	42	430	31	47	480	35
	10	1.25	87	890	64	97	990	72
	12	1.25	155	1600	116	175	1800	130

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1A00HX
Title: SPECIFICATIONS: STEERING COLUMN: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Steering Wheel Free Play

Maximum free play	30 mm (1.18 in.)

Steering Pad Switch Standard Resistance

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
10 (AU1) - 8 (EAU)	No switch pushed	95 to 105 kΩ
	Seek+ switch pushed	Below 2.5 Ω
	Seek- switch pushed	313 to 345 Ω
	Volume+ switch pushed	950 to 1050 Ω
	Volume- switch pushed	2950 to 3265 Ω
9 (AU2) - 8 (EAU)	No switch pushed	95 to 105 kΩ
	MODE switch pushed	Below 2.5 Ω
	On Hook switch pushed	313 to 345 Ω
	Off Hook switch pushed	950 to 1050 Ω
	Voice switch pushed	2950 to 3265 Ω

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1B00ZX
Title: SPECIFICATIONS: STEERING COLUMN: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Steering Column Assembly

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Steering column assembly x Steering intermediate shaft assembly	36	367	27
Steering intermediate shaft assembly x No. 2 intermediate shaft assembly	36	367	27
No. 2 intermediate shaft assembly x Steering gear assembly	36	367	27
Steering column assembly set nut	15	153	11
Column hole cover set bolt	5.0	51	44 in.*lbf

Steering Wheel

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Steering wheel set nut	50	510	37
Steering pad set bolt	8.8	90	78 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1600TX
Title: SPECIFICATIONS: STEERING GEAR / LINKAGE: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Steering Linkage

Standard torque (Tie rod end sub-assembly stud bolt turning torque)	1.0 to 3.9 N*m (10 to 39 kgf*cm, 9 to 34 in.*lbf)
Standard preload (Control valve rotating torque)	1.6 to 2.3 N*m (16 to 23 kgf*cm, 14 to 20 in.*lbf)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002J1700TX
Title: SPECIFICATIONS: STEERING GEAR / LINKAGE: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Steering Linkage

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Pressure feed tube clamp x Steering gear assembly	28	286	21
Pressure feed tube union nut	25	255	18
Steering gear assembly set bolt and nut	120	1224	89
Steering gear outlet return tube x Steering gear assembly	25	255	18
Turn pressure tube union nut	13	127	9
Tie rod end lock nut	88	897	65
Rack x Rack end	105 (77)	1071 (784)	77 (57)

( ): For use without SST

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002ZEU00LX
Title: SPECIFICATIONS: SUPPLEMENTAL RESTRAINT SYSTEMS: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Steering pad x Steering wheel	8.8	90	78 in.*lbf
Lower No. 1 instrument panel airbag assembly x Instrument panel	10	102	7
Lower No. 2 instrument panel airbag assembly x Instrument panel	10	102	7
Curtain shield airbag assembly x Body	9.8	100	87 in.*lbf
Center airbag sensor assembly x Body	18	184	13
Front airbag sensor x Body	9.0	92	80 in.*lbf
Side airbag sensor x Body	9.0	92	80 in.*lbf
Rear airbag sensor x Body	9.0	92	80 in.*lbf
Rear floor side airbag sensor x Body	9.0	92	80 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003E3K003X
Title: SPECIFICATIONS: SUSPENSION CONTROL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Height difference of left and right sides	20 mm (0.787 in.) or less
Fluid temperature is 20°C (68°F)	2.6 to 3 MPa (26.6 to 30.5 kgf/cm^2, 377 to 435 psi)

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003E3L003X
Title: SPECIFICATIONS: SUSPENSION CONTROL: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Stabilizer Control Valve (w/ KDSS)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Stabilizer control with accumulator housing assembly x Bleeder plug	8.3	85	73 in.*lbf
Stabilizer control with accumulator housing assembly x Frame	29	296	21
Stabilizer control with accumulator housing assembly x Front stabilizer control tube	44	450	33
Stabilizer control with accumulator housing assembly x Rear stabilizer control tube	44	450	33
Stabilizer control valve protector x Frame	29	296	21
Front stabilizer control tube x Frame	29	296	21
Front stabilizer control cylinder x Front stabilizer control tube	44	450	33
Front stabilizer tube protector x Frame	29	296	21
Front stabilizer control tube insulator x Front stabilizer control tube	10	102	7 in.*lbf
Rear stabilizer control tube x Frame	29	296	21
Rear stabilizer control cylinder x Union bolt	69	704	51

Stabilizer Control ECU

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Stabilizer control ECU x Instrument reinforcement	14	138	10

Center Control Absorber (w/ REAS)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Center control absorber bracket x Frame	29	296	21
Center control absorber assembly x Center control absorber bracket	29	296	21
Center control absorber assembly x No. 1 center control absorber tube	25	255	18
No. 1 center control absorber tube x Front shock absorber	25	255	18
No. 1 center control absorber tube x Frame	29	296	21
Tube protector x Frame	29	296	21

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003DL0006X
Title: SPECIFICATIONS: THEFT DETERRENT / KEYLESS ENTRY: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Engine Hood Courtesy Switch

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
1 - 2	Unlock position	Below 1 Ω
1 - 2	Lock position	10 kΩ or higher

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003YX6003X
Title: SPECIFICATIONS: THEFT DETERRENT / KEYLESS ENTRY: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Engine Hood Courtesy Switch

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Hood Look Assembly x Body	7.5	76	66 in.*lbf

Security Horn Assembly

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Security Horn Assembly x Body	5.5	56	49 in.*lbf

Electrical Key Oscillator (for Outside Luggage Compartment)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Electrical Key Antenna Bracket x Body	8.0	82	71 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EW7008X
Title: SPECIFICATIONS: TIRE / WHEEL: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Cold Tire Inflation Pressure

TIRE SIZE	VEHICLE MODEL	FRONT KPA (KGF/CM^2, PSI)	REAR KPA (KGF/CM^2, PSI)
P265/70R17 113S	GRN280L-GKAGKA GRN285L-GKAGKA TRN285L-GKPGKA	220 (2.2, 32)	220 (2.2, 32)
P265/70R17 113S	TRN280L-GKPGKA	230 (2.3, 33)	230 (2.3, 33)
P245/60R20 107H	GRN280L-GKAGKA GRN285L-GKAGKA	220 (2.2, 32)	220 (2.2, 32)
245/70R17 110S (for Mexico)	GRN280L-GKAGKA GRN285L-GKAGKA	200 (2.0, 29)	200 (2.0, 29)

Standard Imbalance after Adjustment

TIRE SIZE	WHEEL SIZE	IMBALANCE
P265/70R17	17 x 7J, 17 x 7.5J (Aluminum Wheel)	6.0 g (0.0132 lb) or less
	17 x 7J, 17 x 7.5J (Steel Wheel)	12 g (0.0265 lb) or less
P245/60R20	20 x 7J (Aluminum Wheel)	6.0 g (0.0132 lb) or less
245/70R17 (for Mexico)	17 x 7J (Aluminum Wheel)	6.0 g (0.0132 lb) or less

Specification

Tire runout	3.0 mm (0.118 in.) or less

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EW6006X
Title: SPECIFICATIONS: TIRE PRESSURE MONITORING: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	IN.*LBF
Tire pressure warning antenna and receiver x Body	7.5	76	66
Tire pressure warning valve and transmitter set nut	4.0	41	35
Tire pressure warning ECU x Body	5.5	56	49

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EW4008X
Title: SPECIFICATIONS: FRONT SUSPENSION: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Hub nut	112	1142	83
Front shock absorber with coil spring x Chassis frame	64	653	47
Front shock absorber with coil spring x Tube	25	255	18
Front shock absorber control tube bracket x Chassis frame	29	296	21
Front shock absorber x Front support to front shock absorber nut	25	255	18
Lower suspension arm x Shock absorber	95	969	70
Skid control sensor wire clamp x Upper arm	13	127	9
Skid control sensor wire clamp x Steering knuckle	13	127	9
Upper arm x Steering knuckle	110	1122	82
Upper arm x Chassis frame	115	1173	85
Wire harness x Bracket	8.0	82	71 in.*lbf
Lower suspension arm x Chassis frame	175	1785	129
Lower suspension arm x Front lower ball joint attachment	140	1428	103
Steering knuckle x Front lower ball joint attachment	160	1632	118
Lower suspension arm x Front shock absorber	95	969	70
Front stabilizer cylinder x Chassis frame	130	1326	96
Front stabilizer cylinder x No. 1 front stabilizer control tube	44	450	33
Frame apron seal bracket x Chassis frame	29	296	21
Front stabilizer cylinder tube bracket x Chassis frame	29	296	21
Stabilizer bar link x Chassis frame	140	1428	103
Stabilizer bar link x Front stabilizer lower bracket	40	408	30
Front stabilizer cylinder x Front stabilizer lower bracket	40	408	30
Lower suspension arm x Front stabilizer end bracket	75	765	55
Front suspension member brace x Chassis frame	30	306	22
Stabilizer bar x Stabilizer bar link	70	714	52
Stabilizer bar x Stabilizer bracket	87	887	64
Steering knuckle x Stabilizer bar link	70	714	52

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PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front No. 1 stabilizer bracket x Chassis frame	49	500	36



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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002DS3005X
Title: SPECIFICATIONS: VF2A TRANSFER / 4WD / AWD: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Rear Output Shaft

Drive sprocket thrust clearance	Standard	0.10 to 0.25 mm (0.00394 to 0.00984 in.)
	Maximum	0.25 mm (0.00984 in.)
Output shaft rear journal surface diameter	(journal A) Minimum	27.98 mm (1.102 in.)
	(journal B) Minimum	36.98 mm (1.457 in.)
Drive sprocket radial clearance	Standard	0.010 to 0.055 mm (0.000394 to 0.00217 in.)
	Maximum	0.055 mm (0.00217 in.)
Front drive clutch sleeve to gear shift fork No. 1 clearance	Maximum	1.0 mm (0.0394 in.)
High and low clutch sleeve to gear shift fork No. 2 clearance	Maximum	1.0 mm (0.0394 in.)
Output shaft snap ring thickness	Mark K	2.00 to 2.05 mm (0.0787 to 0.0807 in.)
	Mark L	2.05 to 2.10 mm (0.0807 to 0.0827 in.)
	Mark A	2.10 to 2.15 mm (0.0827 to 0.0846 in.)
	Mark B	2.15 to 2.20 mm (0.0846 to 0.0866 in.)
	Mark C	2.20 to 2.25 mm (0.0866 to 0.0886 in.)
	Mark D	2.25 to 2.30 mm (0.0886 to 0.0906 in.)
	Mark E	2.30 to 2.35 mm (0.0906 to 0.0925 in.)
	Mark F	2.35 to 2.40 mm (0.0925 to 0.0945 in.)
	Mark G	2.40 to 2.45 mm (0.0945 to 0.0965 in.)

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	Mark H	2.45 to 2.50 mm (0.0965 to 0.0984 in.)
	Mark J	2.50 to 2.55 mm (0.0984 to 0.1004 in.)

Input Shaft

Input shaft outside diameter	Minimum	47.59 mm (1.88 in.)
Input shaft inside diameter	Maximum	39.14 mm (1.54 in.)
Input gear stopper shaft snap ring thickness	Mark A	2.10 to 2.15 mm (0.0827 to 0.0846 in.)
	Mark B	2.15 to 2.20 mm (0.0846 to 0.0866 in.)
	Mark C	2.20 to 2.25 mm (0.0866 to 0.0886 in.)
	Mark D	2.25 to 2.30 mm (0.0886 to 0.0906 in.)
	Mark E	2.30 to 2.35 mm (0.0906 to 0.0925 in.)
	Mark F	2.35 to 2.40 mm (0.0925 to 0.0945 in.)
	Mark G	2.40 to 2.45 mm (0.0945 to 0.0965 in.)
	Mark H	2.45 to 2.50 mm (0.0965 to 0.0984 in.)
	Mark J	2.50 to 2.55 mm (0.0984 to 0.1004 in.)
	Mark K	2.55 to 2.60 mm (0.1004 to 0.1024 in.)
	Mark L	2.60 to 2.65 mm (0.1024 to 0.1043 in.)
	Mark M	2.65 to 2.70 mm (0.1043 to 0.1063 in.)
	Mark N	2.70 to 2.75 mm (0.1063 to 0.1083 in.)
	Mark P	2.75 to 2.80 mm (0.1083 to 0.1102 in.)
	Mark Q	2.80 to 2.85 mm (0.1102 to 0.1122 in.)
	Mark R	2.85 to 2.90 mm (0.1122 to 0.1142 in.)
	Mark S	2.90 to 2.95 mm (0.1142 to 0.1161 in.)
	Mark T	2.95 to 3.00 mm (0.1161 to 0.1181 in.)
	Mark U	3.00 to 3.05 mm (0.1181 to 0.1201 in.)

Planetary Gear

Pinion gear thrust clearance	Standard	0.11 to 0.84 mm (0.00433 to 0.0331 in.)
	Maximum	0.84 mm (0.0331 in.)
Pinion gear radial clearance	Standard	0.009 to 0.038 mm (0.000354 to 0.00150 in.)
	Maximum	0.038 mm (0.00150 in.)
Input bearing shaft snap ring thickness	Mark 1	1.45 to 1.50 mm (0.0571 to 0.0591 in.)

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	Mark 2	1.50 to 1.55 mm (0.0591 to 0.0610 in.)
	Mark 3	1.55 to 1.60 mm (0.0610 to 0.0630 in.)
	Mark 4	1.60 to 1.65 mm (0.0630 to 0.0650 in.)
	Mark 5	1.65 to 1.70 mm (0.0650 to 0.0669 in.)
Planetary gear bearing press in depth	Standard	7.7 to 8.3 mm (0.303 to 0.327 in.)

Transfer Case Oil Seal

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

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002DS4005X
Title: SPECIFICATIONS: VF2A TRANSFER / 4WD / AWD: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Transfer Oil

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Drain plug x Transfer assembly	37	377	27
Filler plug x Transfer assembly	37	377	27

Transfer Assembly

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Transfer case plug x Front transfer case	19	190	14
Transfer oil pump body sub-assembly x Front transfer case	7.5	76	66 in.*lbf
Transfer oil separator sub-assembly x Front transfer case	7.5	76	66 in.*lbf
Rear transfer case x Front transfer case	28	286	21
Transfer extension housing sub-assembly x Rear transfer case	12	122	9
Transfer output shaft companion flange	118	1203	87
Transfer control shift lever retainer sub-assembly x Front transfer case	18	184	13
Transfer bearing retainer sub-assembly x Front transfer case	12	117	8
Transfer indicator switch x Front transfer case	37	377	27
Transfer assembly x Transmission assembly	24	245	18

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002EAL004X
Title: SPECIFICATIONS: VF4BM TRANSFER / 4WD / AWD: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Output Shaft Rear

Drive sprocket thrust clearance	STD	0.15 to 0.24 mm (0.00591 to 0.00944 in.)
	Max.	0.24 mm (0.0094 in.)
Drive sprocket radial clearance	STD	0.01 to 0.06 mm (0.000394 to 0.00236 in.)
	Max.	0.06 mm (0.00236 in.)
Gear shift fork No. 2 claw thickness		10 mm (0.394 in.)
High and low clutch sleeve groove distance		10.5 mm (0.413 in.)
Gear shift fork No. 2 to high and low clutch sleeve clearance	STD	0.26 to 0.84 mm (0.0103 to 0.0330 in.)
	Max.	0.84 mm (0.0330 in.)
CTR differential lock fork claw thickness		10 mm (0.394 in.)
Front drive clutch sleeve groove distance		10.5 mm (0.413 in.)
CTR differential lock fork to front drive clutch sleeve clearance	STD	0.26 to 0.84 mm (0.0103 to 0.0330 in.)
	Max.	0.84 mm (0.0330 in.)
Rear output shaft journal outer diameter		
Part A	STD	27.98 to 27.99 mm (1.1015 to 1.1019 in.)
	Min.	27.98 mm (1.1015 in.)
Part B	STD	31.98 to 32.00 mm (1.2591 to 1.2598 in.)
	Min.	31.98 mm (1.2591 in.)
Part C	STD	34.98 to 35.00 mm (1.3772 to 1.3779 in.)
	Min.	34.98 mm (1.3772 in.)
Part D	STD	36.98 to 37.00 mm (1.4560 to 1.4566 in.)
	Min.	36.98 mm (1.4560 in.)

Input shaft

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Input shaft journal outer diameter	Min.	47.59 mm (1.88 in.)
Input gear stopper snap ring thickness	Mark	
	A	2.10 to 2.15 mm (0.0827 to 0.0846 in.)
	B	2.15 to 2.20 mm (0.0846 to 0.0866 in.)
	C	2.20 to 2.25 mm (0.0866 to 0.0886 in.)
	D	2.25 to 2.30 mm (0.0886 to 0.0906 in.)
	E	2.30 to 2.35 mm (0.0906 to 0.0925 in.)
	F	2.35 to 2.40 mm (0.0925 to 0.0945 in.)
	G	2.40 to 2.45 mm (0.0945 to 0.0965 in.)
	H	2.45 to 2.50 mm (0.0965 to 0.0984 in.)
	J	2.50 to 2.55 mm (0.0984 to 0.100 in.)
	K	2.55 to 2.60 mm (0.100 to 0.102 in.)
	L	2.60 to 2.65 mm (0.102 to 0.104 in.)
	M	2.65 to 2.70 mm (0.104 to 0.106 in.)
	N	2.70 to 2.75 mm (0.106 to 0.108 in.)
	P	2.75 to 2.80 mm (0.108 to 0.110 in.)
	Q	2.80 to 2.85 mm (0.110 to 0.112 in.)
	R	2.85 to 2.90 mm (0.112 to 0.114 in.)
	S	2.90 to 2.95 mm (0.114 to 0.116 in.)
	T	2.95 to 3.00 mm (0.116 to 0.118 in.)
	U	3.00 to 3.05 mm (0.118 to 0.120 in.)

Planetary gear

Pinion gear thrust clearance	STD	0.11 to 0.84 mm (0.00434 to 0.0330 in.)
	Max.	0.84 mm (0.0330 in.)
Pinion gear radial clearance	STD	0.009 to 0.038 mm (0.000355 to 0.00149 in.)
	Max.	0.038 mm (0.00149 in.)
Input bearing shaft snap ring thickness	Mark	
	1	1.45 to 1.50 mm (0.0571 to 0.0591 in.)
	2	1.50 to 1.55 mm (0.0591 to 0.0610 in.)
	3	1.55 to 1.60 mm (0.0610 to 0.0630 in.)
	4	1.60 to 1.65 mm (0.0630 to 0.0650 in.)
	5	1.65 to 1.70 mm (0.0650 to 0.0669 in.)

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Low planetary gear bearing press in depth	7.7 to 8.3 mm (0.304 to 0.326 in.)



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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000002EAM004X
Title: SPECIFICATIONS: VF4BM TRANSFER / 4WD / AWD: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Transfer Oil

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Drain plug x Transfer assembly	37	377	27
Filler plug x Transfer assembly	37	377	27

Transfer Assembly

PART TIGHTENED	N*M	KGF CM	FT.*LBF
Transfer x Transfer adaptor	24	245	18
Transfer RH bearing retainer sub-assembly x Front case	12	117	8
Transfer case cover sub-assembly x Front case	18	184	13
Companion flange sub-assembly lock nut	118	1203	87
Transfer extension housing sub-assembly x Case rear	12	122	9
Front transfer case x Rear transfer case	28	286	21
No. 2 transfer Gear shift fork x Transfer shift actuator assembly	24	245	18
Center differential lock fork sub-assembly x Transfer shift actuator assembly	24	245	18
Transfer shift actuator assembly x Rear transfer case	20	204	15
Oil separator sub-assembly x Case rear	7.8	80	69 in.*lbf
Oil separator sub-assembly x Rear transfer case	7.5	76	66 in.*lbf
Transfer case plug x Front transfer case	19	190	14

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003EU900BX
Title: SPECIFICATIONS: WINDOW / GLASS: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Power Window Regulator Motor (for Front Door)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Front door window regulator motor assembly x Body	5.4	55	48 in.*lbf

Power Window Regulator Motor (for Rear Door)

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear door window regulator motor assembly x Body	5.4	55	48 in.*lbf

Back Door Power Window Regulator Motor

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Back door window regulator motor assembly x Body	5.5	56	49 in.*lbf

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM0000049RU000X
Title: SPECIFICATIONS: WIPER / WASHER: SERVICE DATA (2010 4Runner)		

SERVICE DATA

Front Wiper Switch

Resistance	A-1 (+S) - A-3 (+1)	Off	Below 1 Ω
		INT	
	A-2 (+B) - A-3 (+1)	MIST	
		LO	
	A-2 (+B) - A-4 (+2)	HI	

Front Washer Switch

Resistance	B-2 (EW) - B-3 (WF)	On	Below 1 Ω
		Off	10 kΩ or higher

Rear Wiper Switch

Resistance	B-6 (C1R) - B-2 (EW)	Off	10 kΩ or higher
	B-7 (+1R) - B-2 (EW)		
	B-6 (C1R) - B-2 (EW)	INT	Below 1 Ω
	B-7 (+1R) - B-2 (EW)	HI	Below 1 Ω

Rear Washer Switch

Resistance	A-5 (WR) - B-2 (EW)	Off	10 kΩ or higher
	B-7 (+1R) - B-2 (EW)		
	A-5 (WR) - B-2 (EW)	WASH	Below 1 Ω
	A-5 (WR) - B-2 (EW)	On + WASH	Below 1 Ω
	B-7 (+1R) - B-2 (EW)		

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Last Modified: 5-10-2010	6.4 F	**From:** 200908
Model Year: 2010	**Model:** 4Runner	**Doc ID:** RM000003138016X
Title: SPECIFICATIONS: WIPER / WASHER: TORQUE SPECIFICATIONS (2010 4Runner)		

TORQUE SPECIFICATIONS

Front Wiper Motor

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Windshield wiper link assembly x Windshield wiper motor assembly	7.5	76	66 in.*lbf
Windshield wiper motor and link x Body	7.0	71	62 in.*lbf
Front wiper arm and blade assembly LH x Windshield wiper motor and link	25	255	18
Front wiper arm and blade assembly RH x Windshield wiper motor and link	25	255	18

Rear Wiper Motor

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Rear wiper motor and bracket assembly x No.1 back window wiper motor bracket	5.5	56	49 in.*lbf
Rear wiper arm and blade assembly x Rear wiper motor and bracket assembly	5.5	56	49 in.*lbf

Washer Motor

PART TIGHTENED	N*M	KGF*CM	FT.*LBF
Washer jar x Body	5.5	56	49 in.*lbf

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