

2009-2014



SERVICE MANUAL

TRX420FA/FPA

FourTrax Rancher AT®

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1. GENERAL INFORMATION

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GENERAL INFORMATION

SERVICE RULES

1. Use Honda Genuine or Honda-recommended parts and lubricants or their equivalents. Parts that don't meet Honda's design specifications may cause damage to the vehicle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the vehicle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as shown in the Cable & Harness routing (page 1-21).

ABBREVIATION

Throughout this manual, the following abbreviation are used to identify the respective parts or systems.

Abbrev. term	Full term
A/T	Automatic Transmission
CKP sensor	Crankshaft Position sensor
Clutch PC solenoid	Clutch Pressure Control solenoid
LCD	Liquid Crystal Display
DLC	Data Link Connector
DTC	Diagnostic Trouble Code
ECT sensor	Engine Coolant Temperature sensor
EEPROM	Electrically Erasable Programmable Read Only Memory
EOT sensor	Engine Oil Temperature sensor
EPS	Electric Power Steering
ESP	Electric Shift Program
GPS	Global Positioning System
HDS	Honda Diagnostic System
IACV	Idle Air Control Valve
IAT sensor	Intake Air Temperature sensor
MAP sensor	Manifold Absolute Pressure sensor
MIL	Malfunction Indicator Lamp
PCM	Powertrain Control Module
PGM-FI	Programmed Fuel Injection
SCS connector	Service Check Short connector
TP sensor	Throttle Position sensor
VS sensor	Vehicle Speed sensor
2WD	2 Wheel Drive
4WD	4 Wheel Drive

MODEL IDENTIFICATION

This manual covers four types of TRX420 models:

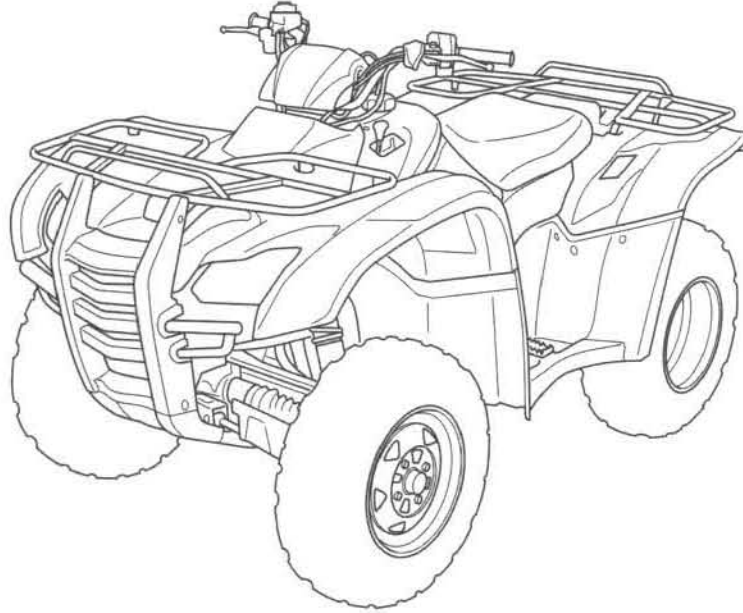
U.S.A.

- FA – standard model
- FPA – standard model with Electric Power Steering (EPS)

Canada

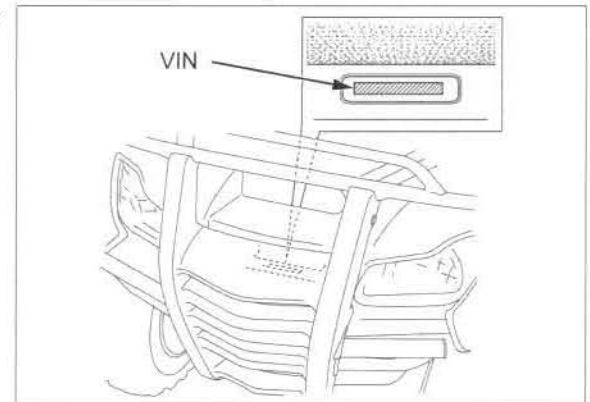
- FGA – standard model with GPS navigation system
- FPA – standard model with GPS navigation system and Electric Power Steering (EPS)

TRX420FPA model shown:



SERIAL NUMBERS

The Vehicle Identification Number (VIN) is stamped on the front side of the frame under the front fender.



The engine serial number is stamped on the left side of the rear crank-case.



GENERAL INFORMATION

The throttle body identification number is stamped on the lower side of the throttle body.

THROTTLE BODY IDENTIFICATION NUMBER



LABELS

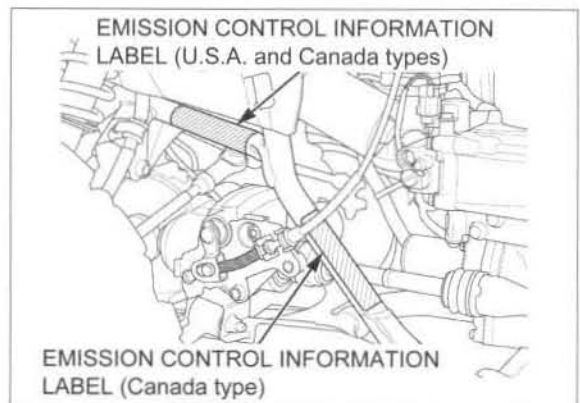
The certification label is attached on the right front frame down pipe.



The color label is attached on the left frame pipe under the seat. When ordering color-coded parts, always specify the designated color code.



The vehicle emission control information label is attached on the left front frame pipe.



GENERAL SPECIFICATIONS

ITEM		SPECIFICATIONS
DIMENSIONS	Overall length	2,055 mm (80.9 in)
	Overall width	1,172 mm (46.1 in)
	Overall height	1,163 mm (45.8 in)
	Wheelbase	1,255 mm (49.4 in)
	Front tread	845 mm (33.3 in)
	Rear tread	863 mm (34.0 in)
	Seat height	822 mm (32.4 in)
	Footpeg height	335 mm (13.2 in)
	Ground clearance	231 mm (9.1 in)
	Curb weight	FA/FGA: 283 kg (624 lbs) FPA: 291 kg (642 lbs)
	Maximum weight capacity	220 kg (485 lbs)
FRAME	Frame type	Double cradle
	Front suspension	Double wishbone
	Front wheel travel	160 mm (6.3 in)
	Front damper	Double tube
	Rear suspension	Double wishbone
	Rear wheel travel	160 mm (6.3 in)
	Rear damper	Double tube
	Front tire size	AT24 x 8-12 **
	Rear tire size	AT24 x 10-11 **
	Front rim size	12 x 6.0 AT
	Rear rim size	11 x 7.5 AT
	Front tire brand	M977 (Maxxis)
	Rear tire brand	M978 (Maxxis)
	Front brake	Hydraulic disc brake
	Rear brake	Hydraulic/mechanical disc brake
	Caster angle	3°
	Trail length	8 mm (5/16 in)
Camber angle	0°	
Fuel tank capacity	13.3 liters (3.51 US gal, 2.93 Imp gal)	
Fuel tank reserve capacity	2.6 liters (0.69 US gal, 0.57 Imp gal)	
ENGINE	Cylinder arrangement	Single cylinder, longitudinally installed
	Bore and stroke	86.5 x 71.5 mm (3.41 x 2.81 in)
	Displacement	420 cm ³ (25.6 cu-in)
	Compression ratio	9.9 : 1
	Valve train	OHV
	Intake valve	7° BTDC (at 1 mm lift) 43° ABDC (at 1 mm lift)
	Exhaust valve	44° BBDC (at 1 mm lift) 1° ATDC (at 1 mm lift)
	Lubrication system	Forced pressure and dry sump
	Oil pump type	Trochoid
	Cooling system	Liquid cooled
Air filtration	Oiled double urethane foam	
Engine dry weight	55.5 kg (122.4 lbs)	
FUEL DELIVERY SYSTEM	Type	PGM-FI (Programmed Fuel Injection)
	Throttle bore	34 mm (1.3 in)

GENERAL INFORMATION

ITEM		SPECIFICATIONS	
DRIVE TRAIN	Clutch system	Centrifugal and 2 multi-plate wet clutches	
	Clutch operation system	Automatic	
	Transmission	Automatic (5-speeds with reverse)	
	Primary reduction	2.680 (67/25)	
	Secondary reduction	1.480 (37/25)	
	Final reduction	3.231 (42/13)	
		Front	3.154 (41/13)
		Rear	3.058 (52/17)
	Gear ratio	1st	2.157 (41/19)
		2nd	1.541 (37/24)
	3rd	1.178 (33/28)	
	4th	0.848 (28/33)	
	5th	3.996 (45/16 x 27/19)	
	Reverse	R - N - 1 - 2 - 3 - 4 - 5	
	Gearshift pattern	Automatic and Electric shift (left hand operated) return system	
ELECTRICAL	Ignition system	Full transistorized ignition	
	Starting system	Electric starter motor	
	Charging system	Triple phase output alternator	
	Regulator/rectifier	SCR shorted, triple phase full wave rectification	
	Lighting system	Battery	

LUBRICATION SYSTEM SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	After draining	3.4 liters (3.6 US qt, 3.0 Imp qt)	—
	After draining/filter change	3.6 liters (3.8 US qt, 3.2 Imp qt)	—
	After disassembly	4.0 liters (4.2 US qt, 3.5 Imp qt)	—
Recommended engine oil		Pro Honda GN4 4-stroke oil (U.S.A. and Canada) or equivalent motor oil API service classification: SG or higher JASO T 903 standard: MA Viscosity: SAE 10W-30	—
Oil pressure at 5,000 rpm (80°C/176°F)		510 kPa (5.2 kgf/cm ² , 74 psi)	—
Oil pump	Tip clearance	0.15 (0.006)	0.20 (0.008)
	Body clearance	0.12 – 0.22 (0.005 – 0.009)	0.25 (0.010)
	Side clearance	0.02 – 0.09 (0.001 – 0.004)	0.11 (0.004)

FUEL SYSTEM (PGM-FI) SPECIFICATIONS

ITEM	SPECIFICATIONS
Throttle body identification number	GQB6A
Idle speed	1,400 ± 100 rpm
Throttle lever freeplay	3 – 8 mm (1/8 – 1/3 in)
IAT sensor resistance (20°C/68°F)	2.2 – 2.7 kΩ
ECT sensor resistance (20°C/68°F)	2.3 – 2.6 kΩ
Fuel injector resistance (20°C/68°F)	11.6 – 12.4 Ω
Fuel pressure at idle	336 – 350 kPa (3.43 – 3.57 kgf/cm ² , 49 – 51 psi)
Fuel pump flow (at 12 V)	150 cm ³ (5.1 US oz, 5.3 Imp oz) minimum/10 seconds

COOLING SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS	
Coolant capacity	Radiator and engine	1.5 liters (1.6 US qt, 1.3 Imp qt)
	Reserve tank	0.3 liter (0.3 US qt, 0.3 Imp qt)
Radiator cap relief pressure		108 – 137 kPa (1.1 – 1.4 kgf/cm ² , 16 – 20 psi)
Thermostat	Begin to open	80 – 84°C (176 – 183°F)
	Fully open	95°C (203°F)
	Valve lift	8 mm (0.3 in) minimum at 95°C (203°F)
Recommended antifreeze		Pro Honda HP Coolant or an equivalent high quality ethylene glycol antifreeze containing silicate-free corrosion inhibitors
Standard coolant concentration		1:1 mixture with distilled water

GENERAL INFORMATION

CYLINDER HEAD/VALVE SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Cylinder compression at 400 rpm		500 kPa (5.1 kgf/cm ³ , 73 psi)	–	
Valve clearance	IN	0.15 ± 0.02 (0.006 ± 0.001)	–	
	EX	0.23 ± 0.02 (0.009 ± 0.001)	–	
Valve, valve guide	Valve stem O.D.	IN	5.975 – 5.990 (0.2352 – 0.2358)	5.95 (0.234)
		EX	5.955 – 5.970 (0.2344 – 0.2350)	5.93 (0.233)
	Valve guide I.D.	IN/EX	6.000 – 6.012 (0.2362 – 0.2366)	6.03 (0.237)
	Stem-to-guide clearance	IN	0.010 – 0.037 (0.0004 – 0.0015)	0.12 (0.005)
		EX	0.030 – 0.057 (0.0012 – 0.0022)	0.14 (0.006)
	Valve guide projection above cylinder head	IN/EX	15.0 – 15.2 (0.59 – 0.60)	–
Valve seat width	IN/EX	1.2 (0.05)	1.5 (0.06)	
Valve spring	Free length	Inner	42.94 (1.691)	42.08 (1.657)
		Outer	43.63 (1.718)	42.76 (1.683)
Rocker arm	Arm I.D.	IN/EX	12.000 – 12.018 (0.4724 – 0.4731)	12.05 (0.474)
	Shaft O.D.	IN/EX	11.964 – 11.984 (0.4710 – 0.4718)	11.92 (0.469)
	Arm-to-shaft clearance	IN/EX	0.016 – 0.054 (0.0006 – 0.0021)	0.08 (0.003)
Camshaft and cam follower	Cam lobe height	IN	35.9400 – 36.1800 (1.41496 – 1.42441)	35.74 (1.407)
		EX	35.6811 – 35.9211 (1.40476 – 1.41421)	35.48 (1.397)
	Cam follower O.D.	IN/EX	22.467 – 22.482 (0.8845 – 0.8851)	22.46 (0.884)
	Follower bore I.D.	IN/EX	22.510 – 22.526 (0.8862 – 0.8868)	22.54 (0.887)
	Follower-to-bore clearance	IN/EX	0.028 – 0.059 (0.0011 – 0.0023)	0.07 (0.003)
Cylinder head warpage		–	0.10 (0.004)	

CYLINDER/PISTON SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Cylinder	I.D.	86.500 – 86.510 (3.4055 – 3.4059)	86.60 (3.409)	
	Out-of-round	–	0.10 (0.004)	
	Taper	–	0.10 (0.004)	
	Warpage	–	0.10 (0.004)	
Piston, piston pin, piston ring	Piston O.D. at 15 (0.6) from bottom	86.470 – 86.490 (3.4043 – 3.4051)	86.42 (3.402)	
	Piston pin hole I.D.	19.002 – 19.008 (0.7481 – 0.7483)	19.04 (0.750)	
	Piston pin O.D.	18.994 – 19.000 (0.7478 – 0.7480)	18.96 (0.746)	
	Piston-to-piston pin clearance	0.002 – 0.014 (0.0001 – 0.0006)	0.08 (0.003)	
	Piston ring end gap	Top	0.15 – 0.30 (0.006 – 0.012)	0.5 (0.02)
		Second	0.30 – 0.45 (0.012 – 0.018)	0.6 (0.02)
		Oil (side rail)	0.20 – 0.70 (0.008 – 0.028)	0.9 (0.04)
	Piston ring-to-ring groove clearance	Top	0.030 – 0.060 (0.0012 – 0.0024)	0.09 (0.004)
Second		0.030 – 0.060 (0.0012 – 0.0024)	0.09 (0.004)	
Cylinder-to-piston clearance		0.010 – 0.040 (0.0004 – 0.0016)	0.10 (0.004)	
Connecting rod small end I.D.		19.020 – 19.041 (0.7488 – 0.7496)	19.07 (0.751)	
Connecting rod-to-piston pin clearance		0.020 – 0.047 (0.0008 – 0.0019)	0.10 (0.004)	

CENTRIFUGAL CLUTCH SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Centrifugal clutch	Drum I.D.	140.0 – 140.2 (5.512 – 5.520)	140.4 (5.53)
	Weight lining thickness	2.0 (0.08)	1.3 (0.05)
	Clutch spring height	3.8 (0.15)	3.68 (0.145)
	Clutch weight spring free length	24.65 (0.970)	25.6 (1.01)
Primary drive gear	Gear I.D.	29.000 – 29.021 (1.1417 – 1.1426)	29.05 (1.144)
	Crankshaft O.D. at drive gear	28.959 – 28.980 (1.1401 – 1.1409)	28.93 (1.139)

ALTERNATOR/STARTER CLUTCH SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Starter driven gear boss	O.D.	51.705 – 51.718 (2.0356 – 2.0361)	51.69 (2.035)
	I.D.	31.946 – 31.962 (1.2577 – 1.2583)	32.00 (1.260)
Crankshaft O.D. at starter driven gear		31.884 – 31.900 (1.2553 – 1.2559)	31.85 (1.254)

CRANKCASE/TRANSMISSION/CRANKSHAFT/BALANCER SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Shift fork	I.D.	13.000 – 13.021 (0.5118 – 0.5126)	13.04 (0.513)	
	Claw thickness	5.93 – 6.00 (0.233 – 0.236)	5.5 (0.22)	
	Shaft O.D.	12.966 – 12.984 (0.5105 – 0.5112)	12.96 (0.510)	
Transmission	Gear I.D.	M1	20.000 – 20.021 (0.7874 – 0.7882)	20.05 (0.789)
		M3	25.000 – 25.021 (0.9843 – 0.9851)	25.05 (0.986)
		C2, C4, CR	28.020 – 28.041 (1.1031 – 1.1040)	28.07 (1.105)
		C5	31.000 – 31.025 (1.2205 – 1.2215)	31.05 (1.222)
		Reverse idle	13.000 – 13.018 (0.5118 – 0.5125)	13.04 (0.513)
	Gear bushing O.D.	M1	19.966 – 19.984 (0.7861 – 0.7868)	19.94 (0.785)
		M3	24.959 – 24.980 (0.9826 – 0.9835)	24.93 (0.981)
		C2/CR	27.979 – 28.000 (1.1015 – 1.1024)	27.93 (1.100)
		C4	27.984 – 28.005 (1.1017 – 1.1026)	27.94 (1.100)
		C5	30.950 – 30.975 (1.2185 – 1.2195)	30.92 (1.217)
	Gear-to-bushing clearance	M1	0.016 – 0.055 (0.0006 – 0.0022)	0.10 (0.004)
		M3	0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)
		C2, CR	0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)
		C4	0.015 – 0.057 (0.0006 – 0.0022)	0.08 (0.003)
		C5	0.025 – 0.075 (0.0010 – 0.0030)	0.10 (0.004)
	Gear bushing I.D.	M1	17.000 – 17.018 (0.6692 – 0.6700)	17.04 (0.671)
		M3	22.000 – 22.021 (0.8661 – 0.8670)	22.04 (0.868)
		C2/CR	25.000 – 25.013 (0.9843 – 0.9848)	25.04 (0.986)
		C5	28.000 – 28.021 (1.1024 – 1.1032)	28.05 (1.104)
	Mainshaft O.D.	at M1	16.976 – 16.987 (0.6683 – 0.6688)	16.93 (0.667)
		at M3	21.959 – 21.980 (0.8645 – 0.8654)	21.93 (0.863)
	Countershaft O.D.	at C2/CR	24.959 – 24.980 (0.9826 – 0.9835)	24.93 (0.981)
		at C5	27.959 – 27.980 (1.1007 – 1.1016)	27.93 (1.100)
	Reverse idle shaft O.D.		12.966 – 12.984 (0.5105 – 0.5112)	12.94 (0.509)
Bushing-to-shaft clearance	M1	0.013 – 0.042 (0.0005 – 0.0017)	0.08 (0.003)	
	M3	0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)	
	C2/CR	0.020 – 0.054 (0.0008 – 0.0021)	0.10 (0.004)	
	C5	0.020 – 0.062 (0.0008 – 0.0024)	0.10 (0.004)	
Reverse idle gear-to-shaft clearance		0.016 – 0.052 (0.0006 – 0.0020)	0.08 (0.003)	
Crankshaft	Runout	–	0.15 (0.006)	
	Big end side clearance	0.05 – 0.65 (0.002 – 0.026)	0.8 (0.03)	
	Big end radial clearance	0.006 – 0.018 (0.0002 – 0.0007)	0.05 (0.002)	

AUTOMATIC TRANSMISSION SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT	
Oil pressure at 5,000 rpm (80°C/176°F)	Line	510 kPa (5.2 kgf/cm ² , 74 psi)	–	
	Shift clutch	510 kPa (5.2 kgf/cm ² , 74 psi)	–	
Shift clutch	Initial clearance	1st	0.70 – 0.90 (0.028 – 0.035)	–
		2nd	0.65 – 0.95 (0.026 – 0.037)	–
	Disc thickness	1.88 – 2.00 (0.074 – 0.079)	worn out lining	
	Plate thickness	1.55 – 1.65 (0.061 – 0.065)	discoloration	
	Return spring free length	33.8 (1.33)	31.8 (1.25)	
Reverse selector lever freeplay		2 – 4 (1/12 – 1/6)	–	

GENERAL INFORMATION

FRONT WHEEL/SUSPENSION/STEERING SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		–	4.0 (0.16)
Cold tire pressure	Standard	30 kPa (0.30 kgf/cm ² , 4.4 psi)	–
	With cargo	30 kPa (0.30 kgf/cm ² , 4.4 psi)	–
Tie-rod distance between the ball joints		342.9 (13.50)	–
Toe		Toe-out: 9 ± 15 (0.4 ± 0.6)	–

REAR WHEEL/SUSPENSION SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Minimum tire tread depth		–	4.0 (0.16)
Cold tire pressure	Standard	30 kPa (0.30 kgf/cm ² , 4.4 psi)	–
	With cargo	30 kPa (0.30 kgf/cm ² , 4.4 psi)	–

BRAKE SYSTEM SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Recommended brake fluid		Honda DOT 4 brake fluid	–
Front brake	Disc thickness	3.8 – 4.2 (0.15 – 0.17)	3.0 (0.12)
	Disc runout	–	0.30 (0.012)
	Master cylinder I.D.	14.000 – 14.043 (0.5512 – 0.5529)	14.055 (0.5533)
	Master piston O.D.	13.957 – 13.984 (0.5495 – 0.5506)	13.945 (0.5490)
	Caliper cylinder I.D.	32.030 – 32.080 (1.2610 – 1.2630)	32.090 (1.2634)
	Caliper piston O.D.	31.984 – 31.998 (1.2578 – 1.2598)	31.94 (1.257)
Rear brake	Disc thickness	7.5 (0.30)	6.0 (0.24)
	Disc runout	–	0.5 (0.02)
	Master cylinder I.D.	15.870 – 15.913 (0.6248 – 0.6265)	14.055 (0.5533)
	Master piston O.D.	15.827 – 15.854 (0.6231 – 0.6242)	13.945 (0.5490)
	Caliper cylinder I.D.	30.230 – 30.280 (1.1902 – 1.1921)	30.29 (1.193)
	Caliper piston O.D.	30.165 – 30.198 (1.1876 – 1.1889)	30.14 (1.187)
Rear (parking) brake lever freeplay		25 – 30 (1 – 1-1/5)	–

FRONT DRIVING MECHANISM SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Front final drive	Oil capacity	After draining	230 cm ³ (7.8 US oz, 8.1 Imp oz)
		After disassembly	310 cm ³ (10.5 US oz, 10.9 Imp oz)
	Recommended oil	Hypoid gear oil, SAE # 80	–
	Gear backlash	0.05 – 0.25 (0.002 – 0.010)	0.4 (0.02)
	Backlash difference	–	0.2 (0.01)
	Slip torque	14 – 17 N·m (1.45 – 1.75 kgf·m, 10 – 13 lbf·ft)	12 N·m (1.2 kgf·m, 9 lbf·ft)
	Face cam-to-housing distance	3.3 – 3.7 (0.13 – 0.15)	3.3 (0.13)
	Differential ring gear depth	6.55 – 6.65 (0.258 – 0.262)	6.55 (0.258)
	Cone spring free height	2.8 (0.11)	2.6 (0.10)

REAR DRIVING MECHANISM SPECIFICATIONS

Unit: mm (in)

ITEM		STANDARD	SERVICE LIMIT
Rear final drive	Oil capacity	After draining	90 cm ³ (3.0 US oz, 3.2 Imp oz)
		After disassembly	120 cm ³ (4.1 US oz, 4.2 Imp oz)
	Recommended oil	Hypoid gear oil, SAE # 80	-
	Gear backlash	0.05 – 0.25 (0.002 – 0.010)	0.4 (0.02)
	Backlash difference	-	0.2 (0.01)
	Ring gear-to-stop pin clearance	0.3 – 0.6 (0.01 – 0.02)	-

BATTERY/CHARGING SYSTEM SPECIFICATIONS

ITEM		SPECIFICATIONS	
Battery	Capacity	12 V – 12 Ah	
	Current leakage	0.01 mA max.	
	Voltage (20°C/68°F)	Fully charged	13.0 – 13.2 V
		Needs charging	Below 12.3 V
	Charging current	Normal	1.4 A x 5 – 10 h
Quick		6.0 A x 1.0 h	
Alternator	Capacity	0.371 kW/5,000 rpm	
	Charging coil resistance (20°C/68°F)	0.1 – 1.0 Ω	

IGNITION SYSTEM SPECIFICATIONS

ITEM	SPECIFICATIONS
Spark plug	BKR5E-11 (NGK), K16PR-U11 (DENSO)
Spark plug gap	1.0 – 1.1 mm (0.039 – 0.043 in)
Ignition coil primary peak voltage	100 V minimum
Ignition pulse generator peak voltage	0.7 V minimum
Ignition timing ("F" mark)	8.4° BTDC at idle

ELECTRIC STARTER SPECIFICATIONS

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Starter motor brush length	12.0 (0.47)	6.5 (0.26)

LIGHTS/METERS/SWITCHES SPECIFICATIONS

ITEM		SPECIFICATIONS
Bulbs	Headlight (high/low beam)	12 V - 30/30 W x 2
	Brake/taillight	LED
Fuse	Main fuse	30 A x 2
	Sub-fuse	15 A x 2, 10 A x 2
	EPS fuse (FPA model only)	40 A

GENERAL INFORMATION

STANDARD TORQUE VALUES

FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)	FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)
5 mm bolt and nut	5 (0.5, 3.7)	5 mm screw	4 (0.4, 3.0)
6 mm bolt and nut	10 (1.0, 7)	6 mm screw	9 (0.9, 6.6)
8 mm bolt and nut	22 (2.2, 16)	6 mm flange bolt (8 mm head, small flange)	10 (1.0, 7)
10 mm bolt and nut	34 (3.5, 25)	6 mm flange bolt (8 mm head, large flange)	12 (1.2, 9)
12 mm bolt and nut	54 (5.5, 40)	6 mm flange bolt (10 mm head) and nut	12 (1.2, 9)
		8 mm flange bolt and nut	27 (2.8, 20)
		10 mm flange bolt and nut	39 (4.0, 29)

ENGINE & FRAME TORQUE VALUES

- Torque specifications listed below are for important fasteners.
- Others should be tightened to standard torque values listed above.

ENGINE

MAINTENANCE

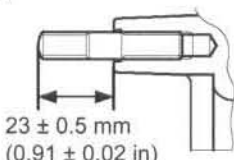
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Spark plug	1	14	22 (2.2, 16)	
Valve adjusting lock nut	2	6	17 (1.7, 13)	
Valve adjusting hole cap	2	36	12 (1.2, 9)	
Timing hole cap	1	14	10 (1.0, 7)	
Engine oil drain bolt	1	12	25 (2.5, 18)	

FUEL SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Throttle body insulator band screw	1	5	–	page 6-48
Throttle drum cover screw	1	4	1.8 (0.18, 1.3)	
TP sensor/MAP sensor torx screw	3	5	3.4 (0.35, 2.5)	
Wire harness clamp stay screw	1	5	3.4 (0.35, 2.5)	
Fuel hose clamp stay screw	1	5	3.4 (0.35, 2.5)	
Fuel injector mounting bolt	2	5	5.1 (0.53, 3.8)	
IACV torx screw	2	4	2.1 (0.21, 1.5)	
ECT sensor	1	10	12 (1.2, 9)	

CYLINDER HEAD/VALVE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cylinder head nut	4	10	39 (4.0, 29)	Apply engine oil.
Cam chain tensioner pivot bolt	1	6	12 (1.2, 9)	Apply locking agent.
Cam chain tensioner lifter bolt	2	6	12 (1.2, 9)	Apply locking agent.
Camshaft bearing setting plate bolt	1	8	27 (2.8, 20)	Apply locking agent.
Exhaust pipe stud bolt	2	8	6 (0.6, 4.4)	



23 ± 0.5 mm
(0.91 ± 0.02 in)

CYLINDER/PISTON

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Crankcase stud bolt	4	10	12 (1.2, 9)	page 10-7

CENTRIFUGAL CLUTCH:

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Centrifugal clutch lock nut	1	20	118 (12.0, 87)	Lock nut: replace with a new one. Apply engine oil. Stake.
Oil feed pipe setting cap	1	24	21 (2.1, 15)	
Orifice relief valve socket bolt	1	10	34 (3.5, 25)	Do not remove unless necessary.
Sealing bolt	1	8	16 (1.6, 12)	Do not remove unless necessary.

ALTERNATOR/STARTER CLUTCH:

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Starter clutch bolt	6	8	37 (3.8, 27)	Apply locking agent.
Flywheel bolt	1	12	108 (11.0, 80)	Apply engine oil.
Alternator stator bolt	4	6	10 (1.0, 7)	Apply locking agent.
CKP sensor bolt	2	5	6 (0.6, 4.4)	Apply locking agent.

CRANKCASE/TRANSMISSION/CRANKSHAFT/BALANCER:

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Shift drum bearing setting bolt	2	6	12 (1.2, 9)	Apply locking agent.

AUTOMATIC TRANSMISSION:

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Shift clutch lock nut	1	18	108 (11.0, 80)	Lock nut: replace with a new one. Apply engine oil. Stake.
Shift drum stopper arm pivot bolt	1	6	12 (1.2, 9)	Apply locking agent.
Shift drum center bolt	1	8	23 (2.3, 17)	Apply locking agent.
Drum shifter guide plate bolt	2	6	12 (1.2, 9)	Apply locking agent.
Shift angle sensor bolt	2	5	6 (0.6, 4.4)	Apply locking agent.
Gearshift spindle return spring pin	1	8	22 (2.2, 16)	Apply locking agent.
Shift drum position switch wire clamp bolt	2	6	12 (1.2, 9)	Apply locking agent.
Shift drum position switch retaining bolt	1	6	12 (1.2, 9)	Apply locking agent.
EOT sensor	1	10	18 (1.8, 13)	
Reverse switch	1	10	13 (1.3, 10)	

GENERAL INFORMATION

FRAME

FRAME/BODY PANELS/EXHAUST SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Rear carrier bolt	4	10	54 (5.5, 40)	
Mudguard bracket nut	8	8	32 (3.3, 24)	
Muffler band bolt	2	8	23 (2.3, 17)	
Muffler cover bolt	2	6	22 (2.2, 16)	
Exhaust pipe cover band bolt	3	—	2 (0.2, 1.5)	
Muffler cover band bolt (front side)	1	—	2 (0.2, 1.5)	
Muffler cover band bolt (rear side)	1	—	3.2 (0.33, 2.4)	
Rear sub-frame upper mounting nut	1	12	88 (9.0, 65)	Lock nut: replace with a new one.
Rear sub-frame lower mounting nut	2	12	79 (8.1, 58)	Lock nut: replace with a new one.

MAINTENANCE

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Front final gear case oil filler cap	1	30	12 (1.2, 9)	
Front final gear case oil drain bolt	1	8	12 (1.2, 9)	
Rear final gear case oil filler cap	1	30	12 (1.2, 9)	
Rear final gear case oil drain bolt	1	8	12 (1.2, 9)	
Front master cylinder reservoir cap screw	2	4	2 (0.2, 1.5)	
Tie-rod lock nut (knuckle side)	2	12	54 (5.5, 40)	
Tie-rod lock nut (steering arm side)	2	12	54 (5.5, 40)	Left hand threads.

FUEL SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Throttle body cover bolt	1	5	5.2 (0.53, 3.8)	
Fuel valve mounting bolt	1	6	9 (0.9, 6.6)	
Fuel level gauge bolt	2	6	9 (0.9, 6.6)	
Bank angle sensor mounting bolt	2	4	1.5 (0.15, 1.1)	

COOLING SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Cooling fan nut	1	5	2.7 (0.27, 2.0)	Apply locking agent.
Fan motor bolt	3	5	5.2 (0.53, 3.8)	
Fan motor stay bolt	3	6	8.4 (0.86, 6.2)	

ENGINE REMOVAL/INSTALLATION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Lower engine hanger nut (left and right)	2	10	54 (5.5, 40)	
Upper engine hanger nut (frame side)	1	10	54 (5.5, 40)	
Upper engine hanger bolt (engine side)	2	8	32 (3.3, 24)	



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FRONT WHEEL/SUSPENSION/STEERING

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Throttle housing cover screw	3	4	1.5 (0.15, 1.1)	
Parking brake lock lever pivot screw	1	6	6.9 (0.70, 0.51)	
Rear brake lever pivot bolt	1	6	10 (1.0, 7)	
Rear brake lever pivot nut	1	6	10 (1.0, 7)	
Front wheel nut	8	10	64 (6.5, 47)	
Front wheel hub nut	2	16	78 (8.0, 58)	Castle nut: tighten to the specified torque and further tighten until its grooves align with the cotter pin hole.
Front brake disc bolt	8	8	42 (4.3, 31)	ALOC bolt: replace with a new one.
Splash guard bolt	6	6	11 (1.1, 8)	ALOC bolt: replace with a new one.
Shock absorber mounting nut	4	10	30 (3.1, 22)	Lock nut: replace with a new one.
Upper and lower arm pivot nut	8	10	44 (4.5, 32)	Lock nut: replace with a new one.
Upper and lower arm ball joint nut	4	12	29 (3.0, 21)	Castle nut: tighten to the specified torque and further tighten until its grooves align with the cotter pin hole.
Tie-rod joint nut	4	12	54 (5.5, 40)	Lock nut: replace with a new one.
Steering shaft holder bolt	2	8	32 (3.3, 24)	
Steering arm nut	1	14	108 (11.0, 80)	Lock nut: replace with a new one.
EPS unit mounting nut (FPA model)	2	8	22 (2.2, 16)	
EPS motor mounting bolt (FPA model)	2	8	20 (2.0, 15)	
Steering shaft pinch bolt (FPA model)	1	10	60 (6.1, 44)	ALOC bolt: replace with a new one.

REAR WHEEL/SUSPENSION

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Rear wheel nut	8	10	64 (6.5, 47)	
Rear wheel hub nut	2	20	137 (14.0, 101)	Castle nut: tighten to the specified torque and further tighten until its grooves align with the cotter pin hole.
Shock absorber upper mounting nut	2	10	44 (4.5, 32)	Lock nut: replace with a new one.
Shock absorber lower mounting nut	2	14	88 (9.0, 65)	Lock nut: replace with a new one.
Upper and lower arm pivot nut (knuckle side)	4	10	34 (3.5, 25)	Lock nut: replace with a new one.
Upper and lower arm pivot nut (frame side)	8	10	44 (4.5, 32)	Lock nut: replace with a new one.
Rear stabilizer link nut	2	10	39 (4.0, 29)	Lock nut: replace with a new one.
Rear stabilizer holder bolt	4	8	26.5 (2.7, 19)	

GENERAL INFORMATION

BRAKE SYSTEM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Brake hose oil bolt	5	10	34 (3.5, 25)	
Brake caliper bleed valve	3	8	5.4 (0.55, 4.0)	
Pad pin	4	10	17.2 (1.8, 13)	
Pad pin plug	4	10	2.4 (0.24, 1.8)	
Front brake lever pivot bolt	1	6	1 (0.1, 0.7)	
Front brake lever pivot nut	1	6	5.9 (0.60, 4.4)	
Front brake light switch/inhibitor switch screw	1	4	1.2 (0.12, 0.9)	Apply locking agent.
Front master cylinder holder bolt	2	6	12 (1.2, 9)	
Front brake caliper mounting bolt	4	8	30 (3.1, 22)	ALOC bolt: replace with a new one.
Front brake caliper slide pin	2	8	22 (2.2, 16)	
Front brake caliper bracket pin	2	8	17 (1.7, 13)	
Front brake hose clamp bolt	7	6	12 (1.2, 9)	ALOC bolt: replace with a new one.
Rear brake caliper bracket pin bolt	1	8	32 (3.3, 24)	
Rear brake caliper mounting bolt	2	8	30 (3.1, 22)	ALOC bolt: replace with a new one.
Rear brake disc bolt	6	6	20 (2.0, 15)	ALOC bolt: replace with a new one.
Rear brake hose clamp bolt	2	6	12 (1.2, 9)	ALOC bolt: replace with a new one.
Brake pipe joint nut	2	10	14 (1.4, 10)	

FRONT DRIVING MECHANISM (FM/FE models)

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Front final gear pinion bearing lock nut	1	64	98 (10.0, 72)	Lock nut: replace with a new one. Stake.
Differential ring gear bolt	10	8	49 (5.0, 36)	ALOC bolt: replace with a new one.
Front final gear case cover bolt	2	10	46.5 (4.7, 34)	Apply locking agent.
Front final clutch shift fork bolt	4	8	25 (2.5, 18)	
Front final clutch housing bolt	1	6	10 (1.0, 7)	ALOC bolt: replace with a new one.
Front final clutch housing bolt	3	8	25 (2.5, 18)	
Front final gear case lower mounting bolt	1	10	44 (4.5, 32)	
Front final gear case upper mounting nut	1	10	44 (4.5, 32)	Lock nut: replace with a new one.
4WD select switch	1	10	12 (1.2, 9)	
Final clutch arm cover bolt	3	6	10 (1.0, 7)	

REAR DRIVING MECHANISM

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Rear final gear pinion bearing lock nut	1	64	98 (10.0, 72)	Lock nut: replace with a new one. Stake.
Rear final gear case cover bolt	2	10	46.5 (4.7, 34)	Apply locking agent.
Rear final gear case mounting nut	4	8	25 (2.5, 18)	
Rear final gear case mounting nut	2	10	44 (4.5, 32)	Lock nut: replace with a new one.
Pinion joint lock nut	1	16	108 (11.0, 80)	Apply locking agent.

LIGHTS/METERS/SWITCHES

ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
Rear brake light switch (lever side) screw	1	4	1.2 (0.12, 0.9)	

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