

**TIGHTENING TORQUE  
ENGINE**

ITEM	N•m	kgf-m	lb-ft
Cylinder head cover bolt	14	1.4	10.0
Spark plug	11	1.1	8.0
Cylinder head bolt (M10)	47	4.7	18.0
(M6)	10	1.0	7.0
Cylinder bolt	10	1.0	7.0
Camshaft journal holder bolt	10	1.0	7.0
Balancer driven gear nut	50	5.0	36.0
Primary drive gear nut	140	14.0	101.5
Generator rotor nut	120	12.0	87.0
Clutch sleeve hub nut	90	9.0	65.0
Gearshift lever bolt	10	1.0	7.0
Gearshift arm stopper	32	3.2	23.0
Starter clutch bolt	10	1.0	7.0
Gearshift cam driven gear bolt	31	3.1	22.5
Cam chain tension adjuster mounting bolt	10	1.0	7.0
Cam chain tensioner mounting bolt	10	1.0	7.0
Cam chain tension spring holder bolt	30	3.0	21.5
Engine oil drain plug (on the crankcase)	18	1.8	13.0
Engine oil drain bolt (on the oil tank)	12	1.2	8.5
Crankcase bolt	11	1.1	8.0
Gear position switch bolt	6.5	0.65	4.7
Oil hose mounting bolt	10	1.0	7.0
Starter motor mounting bolt	10	1.0	7.0
TDC plug	23	2.3	16.5
Generator cover cap	15	1.5	11.0
Engine mounting bolt	55	5.5	40.0
Engine mounting bracket bolt	26	2.6	19.0
Exhaust pipe nut	23	2.3	16.5
Muffler connection bolt	23	2.3	16.5
Muffler mounting bolt	23	2.3	16.5
Engine sprocket bolt	10	1.0	7.0
Intake pipe mounting bolt	9	0.9	6.5

**FI SYSTEM AND INTAKE AIR SYSTEM**

ITEM	N•m	kgf-m	lb-ft
CKP sensor mounting bolt	6.5	0.65	4.7
IAT sensor mounting screw	1.8	0.18	1.3
Fuel delivery pipe mounting screw	3.5	0.35	2.5
Fuel pump mounting bolt	9	0.9	6.5
TP sensor mounting screw	3.5	0.35	2.5

## COOLING SYSTEM

ITEM	Wm	kgf-m	lb-ft
Water pump cover screw	10	1.0	7.0
Water pump cover bolt	10	1.0	7.0
Engine coolant drain plug	5.5	0.55	4.0
ECT sensor	12	1.2	8.5
Thermostat cover bolt	10	1.0	7.0

## CHASSIS

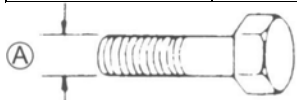
ITEM	N•m	kgf-m	lb-ft
Handlebar clamp bolt	26	2.6	19.0
Handlebar holder nut	60	6.0	43.5
Steering shaft holder bolt	23	2.3	16.5
Steering shaft lower nut	120	12.0	87.0
Steering arm plate bolt	29	2.9	21.0
Steering knuckle end nut (Upper & Lower)	23	2.3	16.5
Tie rod end nut	23	2.3	16.5
Tie rod lock-nut	29	2.9	21.0
Front shock absorber mounting nut (Upper & Lower)	60	6.0	43.5
Wishbone arm pivot nut	65	6.5	47.0
Wheel hub nut (Front)	65	6.5	47.0
(Rear)	121	12.1	87.5
Wheel set nut (Front & Rear)	66	6.6	47.5
Brake hose union bolt	23	2.3	16.5
Brake disc bolt (Front & Rear)	23	2.3	16.5
Brake air bleeder valve	6	0.6	4.5
Brake caliper mounting bolt (Front & Rear)	26	2.6	19.0
Brake master cylinder mounting bolt (Front & Rear)	10	1.0	7.0
Front brake lever pivot bolt	6	0.6	4.5
Front brake lever pivot bolt lock-nut	6	0.6	4.5
Front brake caliper holder pin	18	1.8	13.0
Front brake caliper holder nut	23	2.3	16.5
Front brake pipe nut	16	1.6	11.5
Front brake pad mounting pin	18	1.8	13.0
Rear brake master cylinder rod lock-nut	18	1.8	13.0
Rear brake pedal pivot bolt	29	2.9	21.0
Rear brake pad mounting pin	18	1.8	13.0
Rear brake caliper holder pin	18	1.8	13.0
Rear brake caliper holder slide pin	23	2.3	16.5
Parking brake housing bolt	28	2.8	20.5
Parking brake adjuster lock-nut	18	1.8	13.0
Footrest mounting bolt	55	5.5	40.0
Seat rail bolt (Upper & Lower)	60	6.0	43.5
Rear sprocket mounting bolt	60	6.0	43.5
Rear axle nut	240	24.0	173.5
Rear axle lock-nut	240	24.0	173.5
Rear axle housing set nut	28	2.8	20.0
Swingarm pivot nut	95	9.5	68.5
Rear shock absorber mounting nut (Upper & Lower)	60	6.0	43.5
Cushion lever nut	78	7.8	56.5

Cushion rod nut	78	7.8	56.5
Drive chain control mounting bolt	31	3.1	22.5
Throttle lever case bolt	5	0.5	3.5
Clutch lever hold mounting bolt	10	1.0	7.5

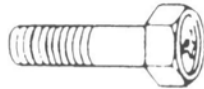
### TIGHTENING TORQUE CHART

For other nuts and bolts not listed in the preceding page, refer to this chart:

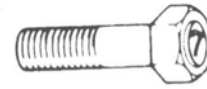
Bolt Diameter Ø (mm)	Conventional or "4" marked bolt			7" marked bolt		
	N•m	kgf-m	lb-ft	N•m	kgf-m	lb-ft
4	1.5	0.15	1.0	2.3	0.23	1.5
5	3	0.3	2.0	4.5	0.45	3.0
6	5.5	0.55	4.0	10	1.0	7.0
8	13	1.3	9.5	23	2.3	16.5
10	29	2.9	21.0	50	5.0	36.0
12	45	4.5	32.5	85	8.5	61.5
14	65	6.5	47.0	135	13.5	97.5
16	105	10.5	76.0	210	21.0	152.0
18	160	16.0	115.5	240	24.0	173.5



Conventional bolt



"4" marked bolt



"7" marked bolt

SERVICE DATA

VALVE + GUIDE Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.		36	
	IN.	(1.42)	-
		29	
	EX.	(1.14)	
Tappet clearance (when cold)	IN.	0.10 - 0.20	
		(0.0039 - 0.0078)	-
	EX.	0.20 - 0.30	
		(0.0078 - 0.0118)	-
Valve guide to valve stem clearance	IN.	0.010 - 0.037	
		(0.0004 - 0.0015)	-
	EX.	0.030 - 0.057	
		(0.0012 - 0.0022)	-
Valve stem deflection			0.25
	IN. & EX.		(0.010)
Valve guide I.D.	IN. & EX.	5.500 - 5.512	
		(0.2165 - 0.2170)	-
Valve stem O.D.		5.475 - 5.490	
	IN.	(0.2156 - 0.2161)	-
	EX.	5.455 - 5.470	
		(0.2148 - 0.2154)	-
Valve stem runout			0.05
	IN. & EX.		(0.002)
Valve head thickness	IN. & EX.		0.5
			(0.02)
Valve seat width	IN. & EX.	0.9 - 1.1	
		(0.035 - 0.043)	-
Valve head radial runout			0.03
	IN. & EX.		(0.001)
Valve spring free length			34.0
	IN.		(1.34)
			33.3
	EX.		(1.31)
Valve spring tension		119 - 137 N	
	IN.	(11.9 - 13.7 kgf, 26.2 - 30.2 lbs)	-
		at length 30.9 mm (1.22 in)	
		78.5 N	
	EX.	(7.85 kgf, 17.3 lbs)	-
		at length 30.9 mm (1.22 in)	

**CAMSHAFT + CYLINDER HEAD Unit: mm (in)**

ITEM	STANDARD		LIMIT
Cam heigh		32.564 - 32.604	32.264
	IN.	(1.2820 - 1.2836)	(1.2702)
	EX.	33.451 - 33.491 (1.3170 - 1.3185)	33.151 (1.3052)
Camshaft journal oil clearance		0.032 - 0.066	0.150
	IN. & EX.	(0.0013 - 0.0026)	(0.0059)
Camshaft journal holder I.D.	N.	22.012 - 22.025	-
	IN & EX.	(0.8666 - 0.8671)	
Camshaft journal O.D.	IN. & EX.	21.959 - 21.980 (0.8645 - 0.8653)	-
Cam chain pin	15th pin		-
Cylinder head distortion			0.05
			(0.002)

**CYLINDER + PISTON + PISTON RING Unit: mm (in)**

ITEM	STANDARD		LIMIT
Compression pressure	800 kPa		
(Automatic de-comp. actuated)	(8.0 kgf/cm <sup>2</sup> , 114 psi)		
Piston to cylinder clearance	0.045 - 0.055		0.120
	(0.0018 - 0.0022)		(0.0047)
Cylinder bore	95.500 - 95.515		Nicks or
	(3.7598 - 3.7604)		Scratches
Piston diam.	95.450 - 95.465		95.380
	(8.9437 - 3.7585)		(3.7551)
	Measure at 10 mm (0.6 in) from the skirt end.		
Cylinder distortion			0.05
			(0.002)
Piston ring free end gap	1st	Approx. 7.6 (0.30)	-
	2nd R	Approx. 12.3 (0.48)	-
Piston ring end gap		0.08 - 0.20	0.50
	1st	(0.003 - 0.008)	(0.020)
		0.08 - 0.20	0.50
	2nd	(0.003 - 0.008)	(0.020)
Piston ring to groove clearanc	1 st		0.180 (0.007)
	2nd	-	0.150 (0.006)
Piston ring groove width		0.78 - 0.80	-
	1	(0.0307 - 0.0315)	
	1st	1.30 - 1.32	
		(0.0512 - 0.0520)	
	2nd	0.81 - 0.83 (0.0319 - 0.0327)	
		2.01 - 2.03	
	Oil	(0.0791 - 0.0799)	

ITEM	STANDARD		LIMIT
Piston ring thickness		0.71 - 0.76	
		(0.0280 - 0.0299)	
	1st	1.08 - 1.10	
		(0.0425 - 0.0433)	
		0.77 - 0.79	
	2nd	(0.0303 - 0.0311)	
Piston pin bore	19.002 - 19.008		19.030
	(0.7481 - 0.7483)		(0.7492)
Piston pin O.D.	18.994 - 19.000		18.980
	(0.7478 - 0.7480)		(0.7472)

**CONROD + CRANKSHAFT** Unit: mm (in)

ITEM	STANDARD		LIMIT
Conrod small end I.D.	19.010 - 19.018 (0.7484 - 0.7487)		19.040 (0.7496)
Conrod deflection			3.0 (0.12)
Conrod big end side clearance	0.30 - 0.65 (0.012 - 0.026)		1.0 (0.04)
Conrod big end width	21.75 - 21.80 (0.8563 - 0.8583)		
Crank web to web width	62.0 ± 0.1 (2.441 ± 0.004)		
Crankshaft runout			0.08 (0.003)

**OIL PUMP**

ITEM	STANDARD		LIMIT
Oil pressure (at 60°C, 140°F)	10 kPa (0.1 kgf/cm <sup>2</sup> , 1.4 psi) at 3 000 r/min		

**CLUTCH** Unit: mm (in)

ITEM	STANDARD		LIMIT
Clutch cable play	10 - 15		
	(0.4 - 0.6)		
Drive plate thickness (No. 1 & No. 2)	3.07 - 3.23		2.77
	(0.120 - 0.127)		(0.109)
Drive plate claw width (No. 1 & No. 2)	13.85 - 13.95		13.35
	(0.545 - 0.549)		(0.528)
Driven plate distortion			0.10
			(0.004)
Clutch spring free length	53.06		50.4
	(2.09)		(1.98)

**DRIVE TRAIN + DRIVE CHAIN** Unit: mm (in) Except ratio

ITEM	STANDARD		LIMIT
Primary reduction ratio	2.851 (77/27)		-
Final reduction ratio	2.571 (36/14)		-
Gear ratios	Low	2.076 (27/13)	-
	2nd	1.647 (28/17)	-
	3rd	1.333 (28/21)	-
	4th	1.095 (23/21)	-
	Top	0.913 (21/23)	-
Shift fork to groove clearance	0.1 - 0.3 (0.004 - 0.012)		0.5 (0.020)
Shift fork groove width	No.1, No.2 & No.3	4.8 - 4.9 (0.189 - 0.193)	-
Shift fork thickness	No.1, No.2 & No.3	4.6 - 4.7 (0.181 - 0.185)	-
Drive chain	Type	RK 520SMOZ10S	-
	Links	96	-
	20-pitch length		319.4 (12.57)
Drive chain slack	45 - 55 (1.8 - 2.2)		-
Gearshift lever height	5 - 10 (0.2 - 0.4)		-

**THERMOSTAT + RADIATOR + FAN + COOLANT**

ITEM	STANDARD/SPECIFICATION		NOTE
Thermostat valve opening temperature	Approx. 76.5 °C (169.7 °F)		-
Thermostat valve lift	4.5 mm (0.18 in) and over at 90 °C (194 °F)		-
ECT sensor resistance	20 °C (68 °F)	Approx. 2.6 kΩ	-
	50 °C (122 °F)	Approx. 0.772 kΩ	-
	80 °C (176 °F)	Approx. 0.279 kΩ	-
	110 °C (230 °F)	Approx. 0.118 kΩ	-
Radiator cap valve opening pressure	108 - 137 kPa (1.08 - 1.37 kgf/cm <sup>2</sup> , 15.4 - 19.5 psi)		-
Cooling fan operating temperature	OFF- ON	Approx. 98 °C (208 °F)	-
	ON-DOFF	Approx. 93 °C (199 °F)	-
Engine coolant type	Use an antifreeze/coolant compatible with aluminum radiator, mixed with distilled water only, at the ratio of 50:50.		-
Engine coolant including reserve	Approx. 1 400 ml (1.5 - 1.2 US/Imp qt)		-

## INJECTOR + FUEL PUMP + FUEL PRESSURE REGULATOR

ITEM	SPECIFICATION	NOTE
Injector resistance	9 - 17 Q at 20 °C (68 °F)	
Fuel pump discharge amount	Approx. 83 ml (2.8/ 2.9 US/Imp oz) and more /10 sec.	
Fuel pressure regulator operating set pressure	Approx. 294 kPa (2.94 kgf/cm <sup>2</sup> , 41.81 psi)	

## FI SENSORS

ITEM	SPECIFICATION	NOTE
CKP sensor resistance	155 - 232 Q	
CKP sensor peak voltage	0.5 V and more	When cranking
IAP sensor input voltage	4.5 - 5.5 V	
IAP sensor output voltage	Approx. 2.7 V at idle speed	
TP sensor input voltage	4.5 - 5.5 V	
TP sensor resistance	Approx. 4.5 kQ	
	Closed      Approx. 1.4 kQ	
	Opened      Approx. 4.2 kQ	
TP sensor output voltage	Closed      Approx. 0.6 V	
	Opened      Approx. 3.8 V	
ECT sensor input voltage	4.5 - 5.5 V	
ECT sensor output voltage	0.15 - 4.85 V	
ECT sensor resistance	Approx. 2.6 kQ at 20 °C (68 °F)	
IAT sensor input voltage	4.5 - 5.5 V	
IAT sensor output voltage	0.15 - 4.85 V	
IAT sensor resistance	Approx. 2.6 kQ at 20 °C (68 °F)	
TO sensor resistance	15.0 - 25.0 kQ	
TO sensor voltage	Normal      0.4 - 1.4V	
	Leaning      3.7 - 4.4 V	When leaning 65°
GP switch voltage	0.9 V and more	From 1st to Top
Injector voltage	Battery voltage	
Ignition coil primary peak voltage	150 V and more	When cranking

## THROTTLE BODY

ITEM	SPECIFICATION
Bore size	43 mm
I.D. No.	45G0
Idle r/min	1 800 ± 100 r/min
Idle air screw	1-5/8 turns back
Throttle cable play	3 - 5 mm (0.12 - 0.20 in)

## ELECTRICAL      Unit: mm (in)

ITEM	SPECIFICATION	NOTE
Spark plug	Type      NGK: CR8EB	
	Gap      0.7 - 0.8 (0.028 - 0.031)	
Spark performance	Over 8 (0.3) at 1 atm.	
CKP sensor resistance	155 - 232 Q	



ITEM		SPECIFICATION		NOTE
CKP sensor peak voltage		0.5 V and more		When cranking
Ignition coil resistance		Primary	0.1 – 1.0 Q	Terminal – Terminal cap Plug – Terminal
		Secondary	8 – 15 k $\Omega$	
Ignition coil primary peak voltage		150 V and more		When cranking
Generator coil resistance		0.1 – 1.5 Q		
Generator Max. output		Approx. 240 W at 5 000 r/min		
Generator no-load voltage (When engine is cold)		50 V (AC) and more at 5 000 r/min		
Starter motor bursh length		Standard	7.0 (0.28)	
		Limit	3.5 (0.14)	
Regulated voltage		13.5 – 15.0 V at 5 000 r/min		
Starter relay resistance		3 – 6 Q		
GP switch voltage		0.9 V and more (From 1st to Top)		
Battery	Type designation	FTX7A-BS		
	Capacity	12 V 21.6 kC (6 Ah)/10 HR		
Fuse size	Ignition	10 A		
	Fan	10 A		
	Main	20 A		

#### WATTAGE Unit: W

ITEM		SPECIFICATION	
Headlight	HI	40	
	LO	40	
Brake light/Taillight		LED	
Fuel indicator light		3.4	
Neutral indicator light		3.4	
Engine coolant temp. Fl warning indicator light		3.4	

#### BRAKE + WHEEL Unit: mm (in)

ITEM	STANDARD/SPECIFICATION		LIMIT
Rear brake pedal height	0 - 10 (0 - 0.4)		
Brake caliper cylinder bore	Front	25.40 - 25.45 (1.0000 - 1.0020)	-
	Rear	33.96 - 34.01 (1.3370 - 1.3390)	
Brake caliper piston diam.	Front	25.318 - 25.368 (0.9968 - 0.9987)	
	Rear	33.878 - 33.928 (1.3338 - 1.3357)	
Brake fluid type	DOT 4		-
Brake disc thickness	Front	2.8 - 3.2 (0.110 - 0.126)	2.5 (0.098)
	Rear	3.8 - 4.2 (0.150 - 0.165)	3.5 (0.138)

ITEM	SPECIFICATION		NOTE
Brake disc runout (Front & Rear)			0.30 (0.012)
Master cylinder bore	Front	12.700 - 12.743 (0.5000 - 0.5017)	-
	Rear	12.700 - 12.743 (0.5000 - 0.5017)	
Master cylinder piston diam.	Front	12.657 - 12.684 (0.4983 - 0.4994)	-
	Rear	12.657 - 12.684 (0.4983 - 0.4994)	
Turning radius	3.5 m (11.5 ft)		
Toe-in (with 75 kg, 165 lbs)	0 ± 4 (0 ± 0.16)		
Camber	- 3.0°		
Caster	8.0°		
Wheel rim runou	Front		2.0 (0.08)
	Rear		2.0 (0.08)
Wheel rim size	Front	10 x 5.5 AT	-
	Rear	8 x 8.0 AT	-
Tire size	Front	AT20 x 7R10 -'***	-
	Rear	AT18 x 10R8 ***	-
Tire type	Front	DUNLOP: KT381	-
	Rear	DUNLOP: KT385	-
Tire tread dept	Front		4.0 (0.16)
	Rear		4.0 (0.16)
Wheel axle runou	Rear		6.0 (0.24)

### TIRE PRESSURE

COLD INFLATION TIRE PRESSURE	kPa	kgf/cm2	psi
FRONT	45	0.45	6.5
REAR	45	0.45	6.5

VEHICLE LOAD CAPACITY LIMIT: 110 kg (243 lbs)

### SUSPENSION

ITEM	STANDARD/SPECIFICATION		LIMIT
Front shock absorber spring pre-set length	274.5 (10.8)		—
Front shock absorber damping force adjuster	Rebound	1-1/2 turns out from stiffest position	
	Compression	2-1/4 turns out from stiffest position	
Rear shock absorber spring pre-set length	299 (11.8)		—

ITEM	STANDARD/SPECIFICATION		LIMIT
Rear shock absorber damping force adjuster	Rebound	7 clicks out from stiffest position	
	Compression (Low speed)	8 clicks out from stiffest position	
	Compression (High speed)	3/4 turn out from stiffest position	
Front wheel travel	254 (10.0)		
Rear wheel travel	277 (10.9)		—

### FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Use only unleaded gasoline of at least 90 pump octane (R/2 + M/2).		
	Gasoline containing MTBE (Methyl Tertiary Butyl		
			E-28, 33
	Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		
	Gasoline used should be graded 95 octane or		
			Others
	higher. An unleaded gasoline is recommended.		
Fuel tank including reserve	10.0 L (2.6/2.2 US/Imp gal)		
Engine oil type	SAE 10 W-40, API SF/SG or SH/SJ with JASO MA		
Engine oil capacity	Change	1 200 ml (1.3/1.1 US/Imp qt)	Oil tank side
		400 ml (0.4/0.4 US/Imp qt)	Engine side
	Filter change	1 300 ml (1.4/1.1 US/Imp qt)	Oil tank side
		400 ml (0.4/0.4 US/Imp qt)	Engine side
	Overhaul	1 400 ml (1.5/1.2 US/Imp qt)	Oil tank side
		400 ml (0.4/0.4 US/Imp qt)	Engine side