

SERVICE DATA

VALVE + VALVE GUIDE

Unit: mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	31.0 (1.22)	—
	EX.	25.5 (1.00)	—
Valve clearance (when cold)	IN.	0.10–0.20 (0.004–0.008)	—
	EX.	0.20–0.30 (0.008–0.012)	—
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 guide I.D.	IN. & EX.	4.500–4.512 (0.1772–0.1776)	—
Valve stem O.D.	IN.	4.475–4.490 (0.1762–0.1768)	—
	EX.	4.455–4.470 (0.1754–0.1760)	—
Valve stem deflection	IN. & EX.	—	0.35 (0.014)
Valve stem runout	IN. & EX.	—	0.05 (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	IN. & EX.	—	0.03 (0.001)
Valve spring free length	IN. & EX.	—	37.1 (1.46)
Valve spring tension	IN. & EX.	127–147 N (12.7–12.7 kgf, 28.5–33.0 lbs) at length 33.4 mm (1.31 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.48–35.55 (1.397–1.400)	35.18 (1.385)
	EX.	33.48–33.55 (1.318–1.321)	33.18 (1.306)
Camshaft journal oil clearance	IN. & EX.	0.027–0.069 (0.0011–0.0027)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.007–22.028 (0.8664–0.8672)	—
Camshaft journal O.D.	IN. & EX.	21.959–21.980 (0.8645–0.8654)	—
Camshaft runout	IN. & EX.	—	0.10 (0.004)
Cam chain pin (at arrow “3”)	16th pin		—
Cylinder head distortion	—		0.05 (0.002)

CYLINDER + PISTON + PISTON RING

Unit: mm (in)

ITEM	STANDARD			LIMIT
Compression pressure	1 300–1 700 kPa (13.0 – 17.0 kgf/cm ² , 185–242 psi)			1 100 kPa (11.0 kgf/cm ² , 156 psi)
Compression pressure difference	—			200 kPa (2.0 kgf/cm ² , 28 psi)
Piston to cylinder clearance	0.025–0.035 (0.0010–0.0014)			0.120 (0.0047)
Cylinder bore	81.000–81.015 (3.1890–3.1896)			Nicks or scratches
Piston diam.	80.970–80.985 (3.1878–3.1884) Measure at 20 mm (0.8 in) from the skirt end.			80.880 (3.1842)
Cylinder distortion	—			0.05 (0.002)
Piston ring free end gap	1st	—	Approx. 6.5 (0.26)	5.2 (0.20)
	2nd	2T	Approx. 9.0 (0.35)	7.2 (0.28)
Piston ring end gap	1st	—	0.06–0.18 (0.002–0.007)	0.50 (0.020)
	2nd	2T	0.06–0.18 (0.002–0.007)	0.50 (0.020)
Piston ring to groove clearance	1st	—		0.180 (0.0071)
	2nd	—		0.150 (0.0059)
Piston ring groove width	1st	0.83–0.85 (0.0327–0.0335)		—
		1.30–1.32 (0.0512–0.0520)		
	2nd	1.01–1.03 (0.0398–0.0406)		—
	Oil	2.01–2.03 (0.0791–0.0799)		—
Piston ring thickness	1st	0.76–0.81 (0.0299–0.0319)		—
		1.08–1.10 (0.0425–0.0433)		
	2nd	0.97–0.99 (0.0382–0.0390)		—
Piston pin bore	20.002–20.008 (0.7875–0.7877)			20.030 (0.7886)
Piston pin O.D.	19.992–20.000 (0.7871–0.7874)			19.980 (0.7866)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STANDARD			LIMIT
Conrod small end I.D.	20.010–20.018 (0.7878–0.7881)			20.040 (0.790)
Conrod big end side clearance	0.170–0.320 (0.0067–0.0126)			0.5 (0.020)
Conrod big end width	20.95–21.00 (0.825–0.827)			—
Crank pin width	42.17–42.22 (1.660–1.662)			—
Conrod big end oil clearance	0.032–0.056 (0.0013–0.0022)			0.080 (0.0031)
Crank pin O.D.	37.976–38.000 (1.4951–1.4961)			—
Crankshaft journal O.D.	41.985–42.000 (1.6529–1.6535)			—
Crankshaft runout	—			0.05 (0.002)

OIL PUMP

ITEM	STANDARD	LIMIT
Oil pressure (at 60 °C, 140 °F)	200 – 600 kPa (2.0 – 6.0 kgf/cm ² , 28 – 85 psi) at 3 000 r/min	—

CLUTCH

Unit: mm (in)

ITEM	STANDARD		LIMIT
Clutch cable play	10 – 15 (0.4 – 0.6)		—
Clutch release screw	1 turn counterclockwise		—
Clutch drive plate thickness	No.1, 2	2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
Clutch driven plate claw width	No.1, 2	13.7 – 13.8 (0.539 – 0.543)	12.9 (0.508)
Clutch driven plate distortion	—		0.10 (0.004)
Clutch spring free length	60.6 (2.39)		57.6 (2.27)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in) Except ratio

ITEM	STANDARD		LIMIT
Primary reduction ratio	2.088 (71/34)		—
Final reduction ratio	3.133 (47/15)		—
Gear ratios	1st	2.461 (32/13)	—
	2nd	1.777 (32/18)	—
	3rd	1.380 (29/21)	—
	4th	1.125 (27/24)	—
	5th	0.961 (25/26)	—
	Top	0.851 (23/37)	—
Shift fork to groove clearance	No.1, 2, 3	0.1 – 0.3 (0.004 – 0.012)	0.5 (0.020)
Shift fork groove width	No.1, 2, 3	5.5 – 5.6 (0.217 – 0.220)	—
Shift fork thickness	No.1, 2, 3	5.3 – 5.4 (0.209 – 0.213)	—
Drive chain	Type	RK 525 SMOZ8	—
	Links	118 links	—
	20-pitch length	—	319.4 (12.57)
Drive chain slack (on side-stand)	20 – 30 (0.8 – 1.2)		—
Gearshift lever height	20 – 30 (0.8 – 1.2)		—

THERMOSTAT + RADIATOR + FAN + COOLANT

ITEM	STANDARD/SPECIFICATION		NOTE
Thermostat valve opening temperature	Approx. 82 °C (180 °F)		—
Thermostat valve lift	Over 8 mm (0.31 in) at 95 °C (203 °F)		—
Engine coolant temperature sensor resistance	20 °C (68 °F)	Approx. 2.45 kΩ	—
	50 °C (122 °F)	Approx. 0.811 kΩ	—
	80 °C (176 °F)	Approx. 0.318 kΩ	—
	110 °C (230 °F)	Approx. 0.142 kΩ	—
Radiator cap valve opening pressure	93 – 123 kPa (0.93 – 1.23 kgf/cm ² , 13.2 – 17.5 psi)		—
Cooling fan operating temperature	OFF→ON	Approx 105 °C (221 °F)	—
	ON→OFF	Approx 99 °C (210 °F)	—
Engine coolant type	Use an antifreeze/coolant compatible with aluminum radiator.		—
Engine coolant including reserve	Reverse tank side	Approx. 250 ml (0.3/0.2 US/Imp qt)	—
	Engine side	Approx. 1 700 ml (1.8/1.5 US/Imp qt)	—

INJECTOR + FUEL PUMP + FUEL PRESSURE REGULATOR

ITEM	SPECIFICATION	NOTE
Injector resistance	11.5 – 12.5 Ω at 20 °C (68 °F)	—
Fuel pump discharge amount	167 ml (5.6/5.9 US/Imp oz) or more /10 seconds, at 300 kPa (3.0 kgf/cm ² , 43 psi)	—
Fuel pressure regulator operating set pressure	Approx. 300 kPa (3.0 kgf/cm ² , 43 psi)	—

FI SENSORS + SECONDARY THROTTLE VALVE ACTUATOR

ITEM	SPECIFICATION		NOTE
CKP sensor resistance	130 – 240 Ω		
CKP sensor peak voltage	3.7 V or more		When cranking
IAP sensor input voltage	4.5 – 5.5 V		
IAP sensor output voltage	Approx. 2.5 V at idle speed		
TP sensor input voltage	4.5 – 5.5 V		
TP sensor output voltage	Closed	Approx. 1.1 V	
	Opened	Approx. 4.3 V	
ECT sensor input voltage	4.5 – 5.5 V		
ECT sensor resistance	Approx. 2.45 k Ω at 20 °C (68 °F)		
IAT sensor input voltage	4.5 – 5.5 V		
IAT sensor resistance	Approx. 2.6 k Ω at 20 °C (68 °F)		
TO sensor resistance	16.5 – 22.3 k Ω		
TO sensor voltage	Normal	0.4 – 1.4 V	
	Learning	3.7 – 4.4 V	When leaning 65 °
GP switch voltage	0.6 V or more		From 1st to Top
Injector voltage	Battery voltage		
Ignition coil primary peak voltage	150 V or more		When cranking
STP sensor input voltage	4.5 – 5.5 V		
STP sensor output voltage	Closed	Approx. 0.6 V	
	Opened	Approx. 4.5 V	
STV actuator resistance	Approx. 7 Ω		
HO2 sensor heater resistance	Approx. 8 Ω at 23 °C (73 °F)		
HO2 sensor output voltage	Idle speed	Approx. 0.45 V or less	
	6 000 r/min	0.6 V or more	
EXCVA system purge control solenoid valve resistance	Approx. 3.2 Ω at 20 °C (68 °F)		E-33, 38

THROTTLE BODY

ITEM	SPECIFICATION
Bore size	39mm (1.53 in)
I.D. No.	11J1 (E-33, 38), 11J0 (Others)
Idle r/min.	1 300 \pm 100 r/min
Fast idle r/min.	Approx. 2 000 r/min. (When cold engine)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)

ELECTRICAL

Unit: mm (in)

ITEM		STANDARD/SPECIFICATION		NOTE
Firing order		1-2		
Spark plug		Type	NGK: CR8EIA-9 DENSO: IU24D	
		Gap	0.8–0.9 (0.031–0.035)	
Spark performance		Over 8 mm (0.3 in) at 1 atm.		
CKP sensor resistance		130–240 Ω		
CKP sensor peak voltage		3.7 V or more		When cranking
Ignition coil resistance		Primary	1–3 Ω	Terminal – Terminal
		Secondary	25–40 kΩ	Plug cap – Plug cap
Ignition coil primary peak voltage		150 V or more		
Generator coil resistance		0.2–0.7 Ω		
Generator maximum output		Approx. 375 W at 5 000 r/min		
Generator no-load voltage (When engine is cold)		60 V (AC) or more at 5 000 r/min		
Regulated voltage		14.0–15.5 V at 5 000 r/min		
Starter motor brush length		Standard	12 (0.47)	
		Limit	6.5 (0.26)	
Starter relay resistance		3–6 Ω		
Battery	Type designation		FTX12-BS	
	Capacity		12 V 36.0 kC (10 Ah)/10 HR	
	Standard electrolyte S.G.		1.320 at 20 °C (68 °F)	
Fuse size	Headlight	HI	15 A	
		LO	15 A	
	Fuel		10 A	
	Ignition		10 A	
	Signal		10 A	
	Fan		15 A	
	Main		30 A	
	ABS motor		25 A	
	ABS valve		15 A	

WATTAGE

Unit: W

ITEM		SPECIFICATION	
		E-28, 33, 38 , 99	E-21, 24
Headlight	HI	60 × 2	←
	LO	55 × 2	←
Position/Parking light		5 × 2	←
Brake light/Taillight		21/5	←
Turn signal light		21 × 4	←
License plate light		5	←
Speedometer light		LCD	←
Tachometer light		LED	←
Turn signal indicator light		LED	←
High beam indicator light		LED	←
Neutral position indicator light		LED	←
Oil pressure Coolant /Engine temp indicator light		LED	←
FI indicator light		LED	←
Freeze indicator light		LED	←
ABS indicator light		LED	←
Immobilizer indicator light		—	LED

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal height	23 – 33 (0.9 – 1.3)		—
Brake disc thickness	Front	4.8 – 5.2 (0.189 – 0.205)	4.5 (0.18)
	Rear	4.8 – 5.2 (0.189 – 0.205)	4.5 (0.18)
Brake disc runout	—		0.30 (0.012)
Master cylinder bore & piston diam.	Front	Approx. 14.0 (0.55)	—
	Rear	Approx. 14.0 (0.55)	—
Brake caliper cylinder bore & piston diam.	Front	Approx. 27.0 (1.06)	—
	Rear	Approx. 38.2 (1.50)	—
Brake fluid type	DOT 4		—
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)
Wheel rim size	Front	19 M/C×MT 2.50	—
	Rear	17 M/C×MT 4.00	—

TIRE

ITEM	STANDARD		LIMIT
Cold inflation tire pressure (Solo riding)	Front	225 kPa (2.25 kgf/cm ² , 33 psi)	—
	Rear	250 kPa (2.50 kgf/cm ² , 36 psi)	—
Cold inflation tire pressure (Dual riding)	Front	225 kPa (2.25 kgf/cm ² , 33 psi)	—
	Rear	280 kPa (2.90 kgf/cm ² , 41 psi)	—
Tire size	Front	110/80 R19 M/C 59H	—
	Rear	150/70 R17 M/C 69H	—
Tire type	Front	BRIDGESTONE: TW101 RADIAL J	—
	Rear	BRIDGESTONE: TW152 RADIAL F	—
Tire tread depth	Front	—	1.6 mm (0.06 in)
	Rear	—	2.0 mm (0.08 in)

SUSPENSION

Unit: mm (in)

ITEM	STANDARD	LIMIT
Front fork stroke	150 (5.9)	—
Front fork inner tube O.D.	43 (1.69)	—
Front fork spring free length	451.1 (17.8)	442 (17.4)
Front fork oil level (without spring, inner tube fully compressed)	139 (5.47)	—
Front fork oil type	SUZUKI FORK OIL SS-8 or an equivalent	—
Front fork oil capacity (each leg)	530 ml (17.9/18.7 US/Imp oz)	—
Front fork spring adjuster	2nd groove from top	—
Rear shock absorber spring pre-set position	2nd position	—
Rear shock absorber damping force adjuster	2 turns from stiffest position	—
Rear wheel travel	159 (6.3)	—
Swingarm pivot shaft runout	—	0.3 (0.01)

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 Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.	E-03, 28, 33
	Gasoline used should be graded 91 octane or higher. An unleaded gasoline is recommended.	Others
Fuel tank capacity	Including reserve 20.0 L (5.3/4.4 US/Imp gal)	
Engine oil type	SAE 10 W-40, API SF/SG or SH/SJ, or with JASO MA	
Engine oil capacity	Change	2 400 ml (2.5/2.1 US/Imp qt)
	Filter change	2 750 ml (2.9/2.4 US/Imp qt)
	Overhaul	3 000 ml (3.2/2.6 US/Imp qt)

TIGHTENING TORQUE

ENGINE

ITEM		N·m	kgf-m	lbf-ft
Exhaust pipe bolt		23	2.3	16.5
Exhaust pipe connecting bolt		18	1.8	13.0
Muffler mounting bolt		23	2.3	16.5
Muffler mounting nut		23	2.3	16.5
Muffler cover bolt		10	1.0	7.0
Muffler cover bolt (E-38 only)		5.5	0.55	4.0
Exhaust cover bolt		10	1.0	7.0
Speed sensor rotor bolt		28	2.8	20.5
Speed sensor mounting bolt		4.5	0.45	3.3
Engine sprocket nut		145	14.5	105.0
Engine mounting nut	Front upper	93	9.3	67.5
	Rear upper	55	5.5	40.0
Engine mounting bolt		55	5.5	40.0
Engine mounting pinch bolt		25	2.5	18.0
Engine mounting thrust adjuster		12	1.2	8.5
Engine mounting thrust adjuster lock-nut		45	4.5	32.5
Engine mounting bracket bolt		35	3.5	25.5
Cylinder head cover bolt		14	1.4	10.0
Intake pipe screw		8.5	0.85	6.0
Spark plug		11	1.1	8.0
Camshaft journal holder bolt		10	1.0	7.0
Oil pipe mounting bolt		10	1.0	7.0
Cam chain tensioner adjuster cap bolt		23	2.3	16.5
Cam chain tensioner adjuster mounting bolt		10	1.0	7.0
Cylinder head bolt	[M10]	25→42	2.5→4.2	18.0→30.5
	[M6]	10	1.0	7.0
Cylinder nut [M6]		10	1.0	7.0
Clutch sleeve hub nut		50	5.0	36.0
Clutch spring set bolt		10	1.0	7.0
Primary drive gear bolt		70	7.0	50.5
Starter clutch bolt		25	2.5	18.0
Generator rotor bolt		140	14.0	101.5
Generator stator set bolt		11	1.1	8.0
Generator cover bolt		10	1.0	7.0
Generator cover plug		11	1.1	8.0
Gearshift cam stopper bolt		10	1.0	7.0
Gearshift cam stopper plate bolt		13	1.3	9.5
Gearshift arm stopper		19	1.9	13.5
Gearshift lever bolt		40	4.0	29.0
Clutch release arm bolt		9	0.9	6.5
Gear position switch mounting bolt		6.5	0.65	4.7
Throttle cable lock-nut		4.5	0.45	3.3
Engine sprocket cover bolt		5.5	0.55	4.0
Oil pressure switch		14	1.4	10.0
Oil pressure switch lead wire bolt		1.5	0.15	1.0
Crankcase bolt	[M6]	11	1.1	8.0
	[M8]	26	2.6	19.0

ITEM		N·m	kgf-m	lbf-ft
Oil gallery plug	(Cylinder head) [M6]	10	1.0	7.0
	[M6]	10	1.0	7.0
	[M8]	18	1.8	13.0
	[M12]	21	2.1	15.0
	[M16]	35	3.5	25.5
Oil drain plug		21	2.1	15.0
Piston cooling oil jet bolt		10	1.0	7.0
Conrod cap bolt		21 N·m (2.1 kgf-m, 15.0 lbf-ft) → turn clockwise 90°		
Oil cooler union bolt		70	7.0	50.5
Oil filter		20	2.0	14.5
Oil pipe stopper screw		8	0.8	5.7
Oil plate bolt		10	1.0	7.0
Oil pressure regulator		27	2.7	19.5
Oil pump mounting bolt		10	1.0	7.0
Starter motor mounting bolt		6	0.6	4.5
Starter motor housing bolt		10	1.0	7.0
Starter motor lead wire mounting bolt		5	0.5	3.5

FI SYSTEM AND INTAKE AIR SYSTEM

ITEM	N·m	kgf-m	lbf-ft
CKP sensor mounting bolt	6.5	0.65	4.7
Fuel delivery pipe mounting screw	3.5	0.35	2.5
Fuel pump mounting bolt	10	1.0	7.0
TP sensor mounting screw	3.5	0.35	2.5
STP sensor mounting screw	3.5	0.35	2.5
ECT sensor	18	1.8	13.0
IAT sensor screw	1.5	0.15	1.0
GP switch mounting bolt	6.5	0.65	4.7
HO2 sensor	25	2.5	18.0
EVAP system purge control solenoid valve mounting nut (E-33, 38)	7	0.7	5.0
EVAP system purge control valve Bracket screw	5	0.5	3.5

COOLING SYSTEM

ITEM	N·m	kgf-m	lbf-ft
Water pump cover screw	4.5	0.45	3.3
Engine coolant drain plug	13	1.3	9.5
Water hose clamp bolt	1.5	0.15	1.0
Cooling fan assembly mounting bolt	5	0.5	3.5

CHASSIS

ITEM	N·m	kgf-m	lbf-ft
Steering stem head nut	90	9.0	65.0
Steering stem nut	45 N·m (4.5 kgf-m, 32.5 lbf-ft) → turn counterclockwise 1/4 – 1/2		
Steering stem lock-nut	80	8.0	58.0
Front fork upper clamp bolt	23	2.3	16.5
Front fork lower clamp bolt	23	2.3	16.5
Front fork cap bolt	23	2.3	16.5
Front fork cylinder bolt	20	2.0	14.5
Front axle	65	6.5	47.0
Front axle pinch bolt	23	2.3	16.5
Front footrest bracket bolt	26	2.6	19.0
Handlebar holder bolt	23	2.3	16.5
Front brake master cylinder mounting bolt	10	1.0	7.0
Front brake caliper mounting bolt	39	3.9	28.0
Brake hose union bolt	23	2.3	16.5
Brake disc bolt (Front & Rear)	23	2.3	16.5
Air bleeder valve (front brake caliper)	7.5	0.75	5.5
Air bleeder valve (rear brake caliper)	6	0.6	4.5
Rear brake caliper mounting bolt	23	2.3	16.5
Rear brake caliper sliding pin	27	2.7	19.5
Rear brake pad mounting pin	17	1.7	12.5
Pad pin plug	2.5	0.25	1.8
Rear brake master cylinder mounting bolt	10	1.0	7.0
Rear brake master cylinder rod lock-nut	18	1.8	13.0
Wheel speed sensor rotor bolt	6.5	0.65	4.7
Rear axle nut	100	10.0	72.5
Rear sprocket nut	60	6.0	43.5
Side-stand bolt	100	10.0	72.5
Side-stand pivot bolt	50	5.0	36.0
Side-stand pivot nut	40	4.0	29.0
Side-stand switch mounting bolt	14	1.4	10.0
Swingarm pivot nut	100	10.0	72.5
Swingarm pivot lock-nut	90	9.0	65.0
Swingarm pivot shaft	15	1.5	11.0
Rear shock absorber mounting upper nut	50	5.0	36.0
Rear shock absorber mounting lower nut	50	5.0	36.0
Cushion lever mounting nut	78	7.8	56.5
Cushion rod mounting nut	78	7.8	56.5
Brake lever pivot bolt	6	0.6	4.5
Brake lever pivot bolt lock-nut	6	0.6	4.5
Clutch lever pivot bolt	6.5	0.65	4.7
Clutch lever pivot bolt lock-nut	6.5	0.65	4.7

ITEM	N·m	kgf-m	lbf-ft
Combination meter bolt	4.5	0.45	3.3
Combination meter screw	1.5	0.15	1.0
Rear combination light mounting screw	1.8	0.18	1.5
Turn signal light mounting nut (Front)	1.3	0.13	1.0
Turn signal light mounting nut (Rear)	2.3	0.23	1.7
License plate mounting bolt	5	0.5	3.5
Reflex reflector	2	0.2	1.5
Reflex reflector bolt	4.5	0.45	3.3
Reflex reflector nut	1.8	0.18	1.5
Sport carrier bolt	29	2.9	21.0
Bank sensor bolt	18	1.8	13.0
Brake pipe flare nut	16	1.6	11.5