

SV650Y ('00-MODEL)

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NOTE:

- The specifications and service data are the same as X-MODEL.
- Please refer to the sections 1 through 9 for details which are not given in this section.

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 070 mm (81.5 in)
Overall width	750 mm (29.5 in)
Overall height	1 060 mm (41.7 in)
Wheelbase	1 430 mm (56.3 in)
Ground clearance	140 mm (5.5 in)
Seat height.....	805 mm (31.7 in)
Dry mass	165 kg (363 lbs)

ENGINE

Type	Four-stroke, Liquid-cooled, DOHC, TSCC, 90-degree V-twin
Number of cylinders	2
Tappet clearance, IN	0.10 – 0.20 mm (0.004 – 0.008 in)
EX	0.20 – 0.30 mm (0.008 – 0.012 in)
Bore	81.0 mm (3.189 in)
Stroke.....	62.6 mm (2.465 in)
Piston displacement	645 cm ³ (39.4 cu. in)
Compression ratio	11.5 : 1
Carburetor	MIKUNI BDSR39 × 2
Air cleaner	Non-woven fabric element
Starter system	Electric starter
Lubrication system	Wet sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission.....	6-speed constant, mesh
Gearshift pattern	1-down, 5-up
Primary reduction ratio	2.088 (71/34)
Gear ratios, Low	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 (23/27)
Final reduction ratio.....	3.000 (45/15)
Drive chain	D.I.D 525 V8, 110 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped
Rear suspension	Link type system, gas/oil damped, coil spring
Front fork stroke	130 mm (5.1 in)
Rear wheel travel	125 mm (4.9 in)
Steering angle	33° (right & left)
Caster	25°
Trail	100 mm (3.94 in)
Turning radius	2.9 m (9.5 ft)
Front brake	Disc brake, twin hydraulically operated
Rear brake	Disc brake, hydraulically operated
Front tire size	120/60 ZR17 (55 W), tubeless
Rear tire size	160/60 ZR17 (69 W), tubeless

ELECTRICAL

Ignition type	Electronic ignition (Transistorized)
Ignition timing	5° B.T.D.C. at 1 300 r/min
Spark plug	NGK CR8E, DENSO U24ESR-N
Battery	12V 36.0 kC(10 Ah)/10HR
Generator	Three-phase A.C. Generator
Main fuse	30A
Fuse	15/15/15/10/10A
Headlight	12V 60/55W
Turn signal light	12V 21W
Brake light/Taillight	12V 21/5W × 2
License plate light	12V 5W
Speedometer light	12V 1.7W × 2
Neutral indicator light	12V 1.7W
High beam indicator light	12V 1.7W
Turn signal indicator light	12V 1.7W
Oil pressure indicator light	12V 1.7W

CAPACITIES

Fuel tank, including reserve	16.0 L (4.2/3.5 US/Imp gal)
	15.0 L (4.0/3.3 US/Imp gal) Only for E-33
Engine oil, oil change	2 300 ml (2.4/2.0 US/Imp qt)
with filter change	2 400 ml (2.5/2.1 US/Imp qt)
overhaul	2 700 ml (2.9/2.4 US/Imp qt)
Coolant	1 600 ml (1.7/1.4 US/Imp qt)

These specifications are subject to change without notice.

SERVICE DATA

VALVE + GUIDE

Unit: mm (in)

ITEM	STD/SPEC.		LIMIT
Valve diam.	IN.	31 (1.2)	—
	EX.	25.5 (1.0)	—
Valve clearance (When cold)	IN.	0.1 – 0.2 (0.004 – 0.008)	—
	EX.	0.2 – 0.3 (0.008 – 0.012)	—
Valve guide to valve stem clearance	IN.	0.020 – 0.047 (0.0008 – 0.0019)	—
	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.	4.465 – 4.480 (0.1758 – 0.1764)	—
	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.)	INNER	—	36.8 (1.45)
	OUTER	—	39.8 (1.57)
Valve spring tension (IN. & EX.)	INNER	4.2 – 4.8 kgf (9.26 – 10.58 lbs) at length 29.9 mm (1.18 in)	—
	OUTER	17.0 – 19.6 kg (37.48 – 43.21 lbs) at length 33.4 mm (1.31 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STD/SPEC.		LIMIT
Cam height	IN.	35.480 – 35.530 (1.397 – 1.399)	35.18 (1.385)
	EX.	33.480 – 33.530 (1.318 – 1.320)	33.18 (1.306)
Camshaft journal oil clearance	IN. & EX.	0.032 – 0.066 (0.0013 – 0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8666 – 0.8671)	—
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	STD/SPEC.		LIMIT
Compression pressure	1 500 kPa (15 kgf/cm ²) 213 psi		1 100 kPa (11 kgf/cm ²) 156 psi
Compression pressure difference	—		200 kPa (2 kgf/cm ²) 28 psi
Piston to cylinder clearance	0.055 – 0.065 (0.0022 – 0.0026)		0.120 (0.0047)
Cylinder bore	81.000 – 81.015 (3.1890 – 3.1896)		81.075 (3.1919)
Piston diam.	80.940 – 80.955 (3.1866 – 3.1872) Measure at 20 mm (0.79 in) from the skirt end.		80.88 (3.184)
Cylinder distortion	—		0.05 (0.002)
Piston ring free end gap	1st	Approx. 9.9 (0.39)	7.9 (0.31)
	2nd	Approx. 10.5 (0.41)	8.4 (0.33)
Piston ring end gap	1st	0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
	2nd	0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
Piston ring to groove clearance	1st	—	0.180 (0.0071)
	2nd	—	0.150 (0.0059)
Piston ring groove width	1st	1.21 – 1.23 (0.0476 – 0.0484)	—
	2nd	1.01 – 1.03 (0.0398 – 0.0406)	—
	Oil	2.01 – 2.03 (0.0791 – 0.0799)	—

ITEM	STD/SPEC.		LIMIT
Piston ring thickness	1st	1.17 – 1.19 (0.0461 – 0.0469)	—
	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	STD/SPEC.		LIMIT
Conrod small end I.D.		20.010 – 20.018 (0.7878 – 0.7881)	20.040 (0.7890)
Conrod big end side clearance		0.170 – 0.320 (0.0067 – 0.0126)	0.5 (0.02)
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 – 1.4960)	—
Crankshaft journal oil clearance		0.008 – 0.035 (0.0003 – 0.0014)	0.080 (0.0031)
Crankshaft journal O.D.		41.985 – 42.000 (1.6529 – 1.6535)	—
Crankshaft thrust bearing thickness		1.925 – 2.175 (0.0758 – 0.0856)	—
Crankshaft thrust clearance		0.050 – 0.110 (0.0020 – 0.0043)	—
Crankshaft runout		—	0.05 (0.002)

OIL PUMP

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

CLUTCH

Unit: mm (in)

ITEM	STD/SPEC.		LIMIT
Clutch cable play	10 – 15 (0.4 – 0.6)		—
Clutch release screw	1/4 turn(s) back		—
Drive plate thickness	No.1	2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
	No.2	3.42 – 3.58 (0.135 – 0.141)	3.12 (0.123)
Drive plate claw width	No.1 & No.2	15.9 – 16.0 (0.626 – 0.630)	15.1 (0.59)
Driven plate distortion	—		0.10 (0.004)
Clutch spring free length	58.9 (2.32)		56.0 (2.20)

TRANSMISSION + DRIVE CHAIN

Unit: mm (in)

ITEM	STD/SPEC.		LIMIT
Primary reduction ratio	2.088 (71/34)		—
Final reduction ratio	SV650S	2.933 (44/15)	—
	SV650	3.000 (45/15)	—
Gear ratios	Low	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 (23/27)	—
Shift fork to groove clearance	0.1 – 0.3 (0.004 – 0.012)		0.5 (0.020)
Shift fork groove width	5.5 – 5.6 (0.217 – 0.220)		—
Shift fork thickness	5.3 – 5.4 (0.209 – 0.213)		—
Drive chain	Type	DID525V8	—
	Links	SV650	110 Links
		SV650S	108 Links
	20-pitch length	—	319.4 (12.57)
Drive chain slack (on side-stand)	20 – 30 (0.79 – 1.18)		—
Gearshift lever height	SV650S	60 – 70 (2.4 – 2.8)	—
	SV650	55 – 60 (2.2 – 2.4)	—

THERMOSTAT + RADIATOR + FAN + COOLANT

ITEM	STD/SPEC.		LIMIT
Thermostat valve opening temperature	Approx. 82°C (179.6°F)		—
Thermostat valve lift	Over 8.0 mm (0.31 in) at 95°C (203°F)		—
Engine coolant temperature switch operating temperature	OFF → ON	Approx. 115°C (239°F)	—
	ON → OFF	Approx. 108°C (226.4°F)	—
Radiator cap valve opening pressure	95 – 125 kPa (0.95 – 1.25 kgf/cm ² , 13.5 – 17.8 psi)		—
Cooling fan thermo-switch operating temperature	OFF → ON	Approx. 96°C (204.8°F)	—
	ON → OFF	Approx. 91 °C (195.8°F)	—
Engine coolant type	Use an anti-freeze/coolant compatible with aluminum radiator, mixed with distilled water only, at the ratio of 50:50.		—
Engine coolant including reserve	Reserve tank side	Approx. 250 ml (0.26/0.22 US/Imp qt)	—
	Engine side	Approx. 1 350 ml (1.43/1.19 US/Imp qt)	—

CARBURETOR

ITEM	STD/SPEC.	
	E-02, 04, 17, 22, 24, 25, 34	E-03, 28
Carburetor type	MIKUNI BDSR39	
Bore size	39 mm	
I.D. No.	20F0	
Idle r/min	1 300 ± 100 r/min	
Fuel level	16.9 ± 0.5 mm (0.68 ± 0.02 in)	
Float height	7.0 ± 0.5 mm (0.28 ± 0.02 in)	
Main jet (M.J.)	#137.5	#137.5
Jet needle (J.N.)	6E38-54-2	6E42-52
Needle jet (N.J.)	P-0	P-0M
Throttle valve (Th.V.)	#95	←
Pilot jet (P.J.)	#17.5	#15
Pilot screw (P.S.)	PRE-SET (2½ turns back)	PRE-SET (3 turns back)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	

CARBURETOR

ITEM	STD/SPEC.	
	E-33	E-22 (U-Type)
Carburetor type	MIKUNI BDSR39	←
Bore size	39 mm	←
I.D. No.	20F4	20F5
Idle r/min	1 300 ± 100 r/min	←
Fuel level	16.9 ± 0.5 mm (0.68 ± 0.02 in)	←
Float height	7.0 ± 0.5 mm (0.28 ± 0.02 in)	←
Main jet (M.J.)	#137.5	#137.5
Jet needle (J.N.)	6E43-54	6E38-54-2
Needle jet (N.J.)	P-DM	P-0
Throttle valve (Th.V.)	#95	←
Pilot jet (P.J.)	#15	#17.5
Pilot screw (P.S.)	PRE-SET	PRE-SET (3½ turns back)
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	←

CARBURETOR

ITEM	STD/SPEC.	
	E-18	
Carburetor type	MIKUNI BDSR39	
Bore size	39 mm	
I.D. No.	20F3	
Idle r/min	1 300 ± 50 r/min	
Fuel level	16.9 ± 0.5 mm (0.68 ± 0.02 in)	
Float height	7.0 ± 0.5 mm (0.28 ± 0.02 in)	
Main jet (M.J.)	#137.5	
Jet needle (J.N.)	6E38-54-2	
Needle jet (N.J.)	P-0	
Throttle valve (Th.V.)	#95	
Pilot jet (P.J.)	#15	
Pilot screw (P.S.)	PRE-SET (2¾ turns back)	
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)	

ELECTRICAL

ITEM		STD/SPEC.		NOTE
Firing order		1 - 2		
Spark plug	Type	NGK: CR8E DENSO: U24ESR-N		
	Gap	0.7 - 0.8 mm (0.028 - 0.031 in)		
Spark performance		Over 8 mm (0.3 in) at 1 atm.		
Signal coil resistance		140 - 230 Ω		
Signal coil peak voltage		More than 3 V		
Ignition coil resistance	Primary	3.5 - 5.5 Ω		Terminal - Terminal
	Secondary	20 - 31 k Ω		Plug cap - Terminal
Ignition coil primary peak voltage		More than 150 V		
Generator coil resistance		0.2 - 0.55 Ω		
Generator Max. output		Approx. 300 W at 5 000 r/min		
Generator no-load voltage (When cold)		More than 70 V (AC) at 5 000 r/min		
Regulated voltage		13.5 - 15.0 V at 5 000 r/min		
Starter relay resistance		3 - 6 Ω		
Battery	Type designation	YT12A-BS		
	Capacity	12 V 36.0 kC (10Ah)/10HR		
Fuse size	Headlight	HI	15A	
		LO	15A	
	Signal	15A		
	Ignition	10A		
	Meter	10A		
	Main	30A		

WATTAGE

ITEM		STD/SPEC.			
		SV650S		SV650	
		E-02, 03, 24, 28, 33	The other countries	E-03, 24, 28, 33	The other countries
Headlight	HI	45 W $\times$ 2	55 W	60 W	←
	LO	45 W $\times$ 2	55 W	55 W	←
Parking or position light		5 W	←		5 W
Brake light/Taillight		21/5 W $\times$ 2	←	←	←
Turn signal light		21 W	←	←	←
License light		5 W	←	←	←
Speedometer light		0.84 W $\times$ 3	←	1.7 W $\times$ 2	←
Turn signal indicator light		3 W	←	1.7 W	←
High beam indicator light		1.7 W	←	←	←
Neutral indicator light		1.7 W	←	←	←
Oil pressure indicator light		1.7 W	←	←	←

BRAKE + WHEEL

Unit: mm (in)

ITEM	STD/SPEC.		LIMIT
Rear brake pedal free travel	20 – 30 (0.8 – 1.2)		—
Rear brake pedal height	55 – 65 (2.17 – 2.56)		—
Brake disc thickness	Front	4.5 (0.18)	4.0 (0.16)
	Rear	5.0 (0.20)	4.5 (0.18)
Brake disc runout	—		0.3 (0.012)
Master cylinder bore	Front	15.870 – 15.913 (0.6248 – 0.6265)	—
	Rear	12.700 – 12.743 (0.5000 – 0.5017)	—
Master cylinder piston diam.	Front	15.827 – 15.854 (0.6231 – 0.6242)	—
	Rear	12.657 – 12.684 (0.4983 – 0.4994)	—
Brake caliper cylinder bore	Front	30.230 – 30.306 (1.1902 – 1.1931)	—
	Rear	38.180 – 38.256 (1.5031 – 1.5061)	—
Brake caliper piston diam.	Front	30.150 – 30.200 (1.1870 – 1.1890)	—
	Rear	38.098 – 38.148 (1.4999 – 1.5019)	—
Brake fluid type	DOT 4		
Wheel rim runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel rim size	Front	17 × MT3.50	—
	Rear	17 × MT4.50	—
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)

TIRE

Unit: mm (in)

ITEM		STD/SPEC.	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	250 kPa (2.50 kgf/cm ² , 36 psi)	—
Tire size	Front	120/60ZR17 (55W)	—
	Rear	160/60ZR17 (69W)	—
Tire type	Front	METZELER: MEZ4 FRONT	—
	Rear	METZELER: MEZ4	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

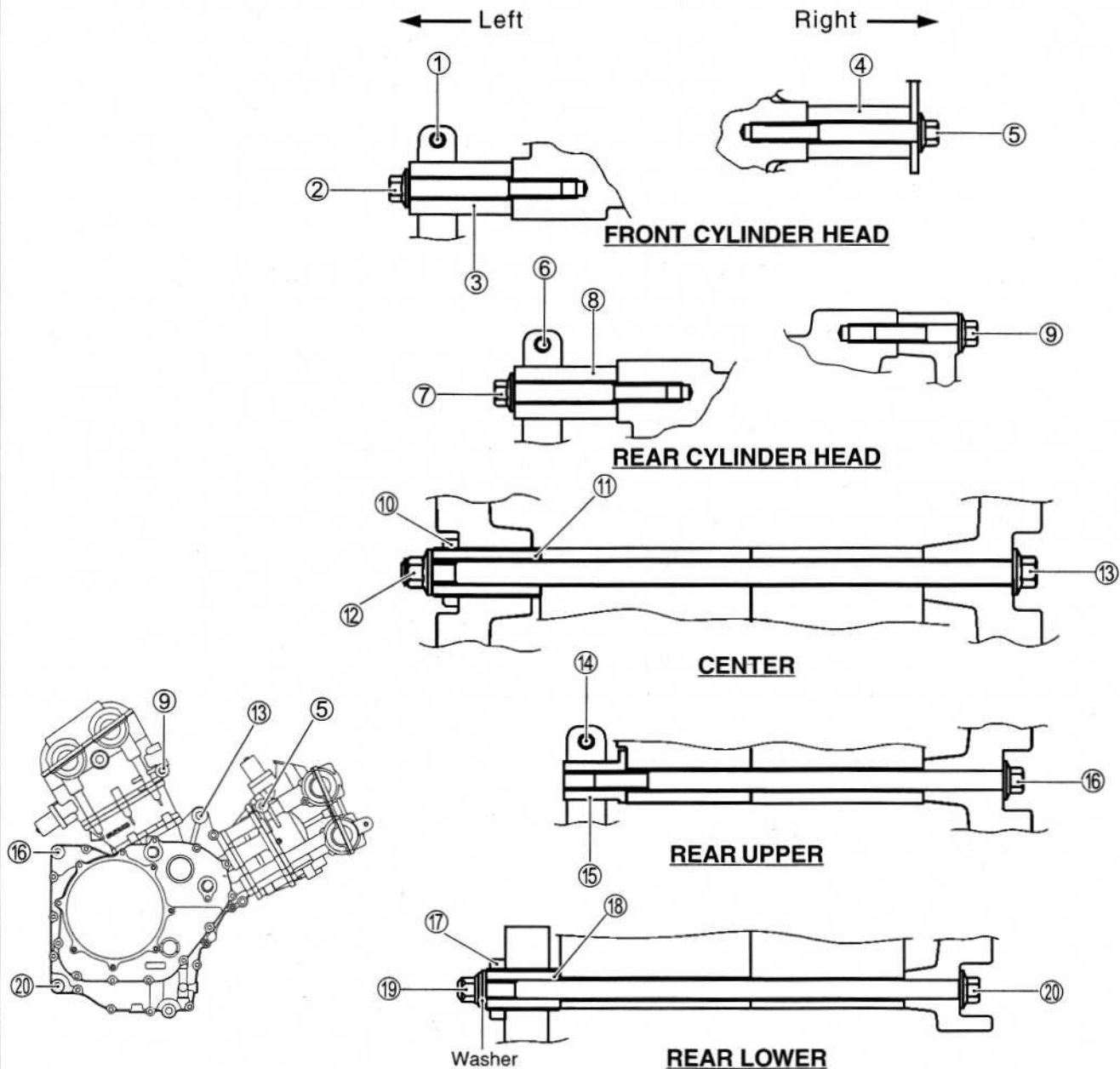
Unit: mm (in)

ITEM		STD/SPEC.	LIMIT
Front fork stroke		130 (5.1)	—
Front fork spring free length		314.6 (12.39)	308 (12.13)
Front fork oil level (without spring, inner tube fully compressed)	E-03, 33	102 (4.02)	—
	Others	104 (4.09)	—
Front fork oil type		SUZUKI FORK OIL G10 (#10) or equivalent fork oil	—
Front fork oil capacity (each leg)	E-03, 33	491 ml (16.6/17.3 US/Imp oz)	—
	Others	489 ml (16.5/17.2 US/Imp oz)	—
Rear shock absorber spring adjuster	SV650S	4/7	—
	SV650	2/7	—
Rear wheel travel		125 (4.9)	—
Swingarm pivot shaft runout		—	0.3 (0.01)

FUEL + OIL

ITEM	STD/SPEC.		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. 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, 33
	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method.		E-28
	Gasoline used should be graded 91 octane or higher. An unleaded gasoline is recommended.		The others
Fuel tank capacity	15 L (4.0/3.3 US/Imp gal)		E-33
	16 L (4.2/3.5 US/Imp gal)		The others
Engine oil type	SAE 10W/40, API SF or SG		
Engine oil capacity	Change	2 300 ml (2.4/2.0 US/Imp qt)	
	Filter change	2 400 ml (2.5/2.1 US/Imp qt)	
	Overhaul	3 000 ml (3.2/2.6 US/Imp qt)	

ENGINE INSTALLATION



ITEM	N·m	kgf·m	lb·ft
① ⑥ ⑭	23	2.3	16.5
② ⑤ ⑦ ⑨ ⑬ ⑰	55	5.5	40.0
⑩	45	4.5	32.5
⑪	10	1.0	7.3
⑫	93	9.3	67.5
⑮	45	4.5	32.5
⑯	10	1.0	7.3

LENGTH

ITEM		mm	in
Bolt	① ⑥ ⑭	30	1.18
	② ⑤ ⑦	80	3.15
	⑨	55	2.17
	⑬	310	12.20
	⑮	215	8.46
	⑰	265	10.43
Spacer	③ ④ ⑧	54	2.13
	⑫	33	1.30
Adjuster	⑪	57	2.24
	⑯	39	1.54