

# SERVICING INFORMATION

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## TROUBLESHOOTING

### MALFUNCTION CODE AND DEFECTIVE CONDITION

MALFUNCTION CODE	DETECTED ITEM	DETECTED FAILURE CONDITION
		CHECK FOR
C00	NO FAULT	
C12	Crankshaft position sensor	The signal does not reach ECM for more than 3 sec. after receiving the IAP signal.
		The crankshaft position sensor wiring and mechanical parts. (Crankshaft position sensor, lead wire/coupler connection)
C13	Intake air pressure sensor	The sensor should produce following voltage. $0.10\text{ V} \leq \text{sensor voltage} \leq 4.80\text{ V}$ Without the above range for 4 sec. and more, C13 is indicated. Intake air pressure sensor, lead wire/coupler connection.
C14	Throttle position sensor	The sensor should produce following voltage. $0.1\text{ V} \leq \text{sensor voltage} < 4.8\text{ V}$ Without the above range for 4 sec. and more, C14 is indicated. Throttle position sensor, lead wire/coupler connection.
C15	Engine coolant temperature sensor	The sensor voltage should be the following. $0.1\text{ V} \leq \text{sensor voltage} < 4.6\text{ V}$ Without the above range for 4 sec. and more, C15 is indicated. Engine coolant temperature sensor, lead wire/coupler connection.
C21	Intake air temperature sensor	The sensor voltage should be the following. $0.1\text{ V} \leq \text{sensor voltage} < 4.6\text{ V}$ Without the above range for 4 sec. and more, C21 is indicated. Intake air temperature sensor, lead wire/coupler connection.
C23	Tip over sensor	The sensor voltage should be the following for more than 2 sec. after ignition switch turns ON. $0.2\text{ V} \leq \text{sensor voltage} \leq 4.6\text{ V}$ Without the above value for 2 sec. and more, C23 is indicated. Tip over sensor, lead wire/coupler connection.

MALFUNCTION CODE	DETECTED ITEM	DETECTED FAILURE CONDITION
		CHECK FOR
C24/C25	Ignition signal #1/#2	Crankshaft position sensor (pick-up coil) signal is produced, but signal from ignition coil is interrupted continuous by 4 times or more. In this case, the code C24 or C25 is indicated.
		Ignition coil, wiring/coupler connection, power supply from the battery.
C28	Secondary throttle valve actuator	When no actuator control signal is supplied from the ECM or communication signal does not reach ECM or operation voltage does not reach STVA motor, C28 is indicated. STVA can not operate.
		STVA lead wire/coupler.
C29	Secondary throttle position sensor	The sensor should produce following voltage. $0.1 \text{ V} \leq \text{sensor voltage} \leq 4.8 \text{ V}$ Without the above range for 4 sec. and more, C29 is indicated.
		Secondary throttle position sensor, lead wire/coupler connection.
C31	Gear position signal	It judges from gear position voltage, engine speed and throttle position by ECM, when the gear position voltage is 0 V.
		Gear position sensor, wiring/coupler connection. Gearshift cam etc.
C32/C33	Fuel injector #1/#2	When fuel injector voltage gets 1.3 V and less, C32 or C33 is indicated.
		Injector, wiring/coupler connection, power supply to the injector.
C41	Fuel pump relay	No voltage is applied to the both injectors #1/#2 for 3 sec. after the contact of fuel pump relay is turned ON. Or voltage is applied to the both injectors #1/#2, when the contact of fuel pump is OFF.
		Fuel pump relay, connecting lead wire, power source to fuel pump relay, fuel injectors.
C42	Ignition switch	Ignition switch signal is not input in ECM.
		Ignition switch, lead wire/coupler.
C49	PAIR control solenoid valve	PAIR control solenoid valve voltage is not input in ECM.
		PAIR control solenoid valve, lead wire/coupler.

## ENGINE

Complaint	Symptom and possible causes	Remedy
<b>Engine will not start or is hard to start.</b>	<b>Compression too low</b>	
	1. Tappet clearance out of adjustment.	Adjust.
	2. Worn valve guides or poor seating of valves.	Repair or replace.
	3. Mistimed valves.	Adjust.
	4. Excessively worn piston rings.	Replace.
	5. Worn-down cylinder bores.	Replace.
	6. Starter motor cranks too slowly.	See electrical section.
	7. Poor seating of spark plugs.	Retighten.
	<b>Plug not sparking</b>	
	1. Fouled spark plugs.	Clean.
	2. Wet spark plugs.	Clean and dry.
	3. Defective ignition coils.	Replace.
	4. Open or short in high-tension cord.	Replace.
	5. Defective CKP sensor.	Replace.
	6. Defective ECM.	Replace.
	7. Open-circuited wiring connections.	Repair or replace.
	<b>No fuel reaching the intake manifold</b>	
	1. Clogged fuel filter or fuel hose.	Clean or replace.
	2. Defective fuel pump.	Replace.
	3. Defective fuel pressure regulator.	Replace.
	4. Defective fuel injector.	Replace.
5. Defective fuel pump relay.	Replace.	
6. Defective ECM.	Replace.	
7. Open-circuited wiring connections.	Check and repair.	
<b>Incorrect fuel/air mixture</b>		
1. TP sensor out of adjustment.	Adjust.	
2. Defective fuel pump.	Replace.	
3. Defective fuel pressure regulator.	Replace.	
4. Defective TP sensor.	Replace.	
5. Defective CKP sensor.	Replace.	
6. Defective IAP sensor.	Replace.	
7. Defective ECM.	Replace.	
8. Defective ECT sensor.	Replace.	
9. Defective IAT sensor.	Replace.	

Complaint	Symptom and possible causes	Remedy
<b>Engine idles poorly.</b>	<ol style="list-style-type: none"> <li>1. Tappet clearance out of adjustment.</li> <li>2. Poor seating of valves.</li> <li>3. Defective valve guides.</li> <li>4. Worn down camshafts.</li> <li>5. Too wide spark plug gaps.</li> <li>6. Defective ignition coils.</li> <li>7. Defective CKP sensor.</li> <li>8. Defective ECM.</li> <li>9. Defective TP sensor.</li> <li>10. Defective fuel pump.</li> <li>11. Imbalanced throttle valve or STV.</li> <li>12. Damaged or cracked vacuum hose.</li> </ol>	<p>Adjust.            Replace or repair.            Replace.            Replace.            Adjust or replace.            Replace.            Replace.            Replace.            Replace.            Replace.            Adjust.            Replace.</p>
<b>Engine stalls often</b>	<p><b>Incorrect fuel/air mixture</b></p> <ol style="list-style-type: none"> <li>1. Defective IAP sensor or circuit.</li> <li>2. Clogged fuel filter.</li> <li>3. Defective fuel pump.</li> <li>4. Defective fuel pressure regulator.</li> <li>5. Defective ECT sensor.</li> <li>6. Defective thermostat.</li> <li>7. Defective IAT sensor.</li> <li>8. Damaged or cracked vacuum hose.</li> </ol> <p><b>Fuel injector improperly operating</b></p> <ol style="list-style-type: none"> <li>1. Defective fuel injectors.</li> <li>2. No injection signal from ECM.</li> <li>3. Open or short circuited wiring connection.</li> <li>4. Defective battery or low battery voltage.</li> </ol> <p><b>Control circuit or sensor improperly operating</b></p> <ol style="list-style-type: none"> <li>1. Defective ECM.</li> <li>2. Defective fuel pressure regulator.</li> <li>3. Defective TP sensor.</li> <li>4. Defective IAT sensor.</li> <li>5. Defective CKP sensor.</li> <li>6. Defective ECT sensor.</li> <li>7. Defective fuel pump relay.</li> </ol> <p><b>Engine internal parts improperly operating</b></p> <ol style="list-style-type: none"> <li>1. Fouled spark plugs.</li> <li>2. Defective CKP sensor or ECM.</li> <li>3. Clogged fuel hose.</li> <li>4. Tappet clearance out of adjustment.</li> </ol>	<p>Repair or replace.            Clean or replace.            Replace.            Replace.            Replace.            Replace.            Replace.            Replace.            Replace.            Replace.            Replace or recharge.            Replace.            Replace.            Replace.            Replace.            Replace.            Replace.            Clean.            Replace.            Clean.            Adjust.</p>

Complaint	Symptom and possible causes	Remedy
<b>Noisy engine.</b>	<b>Excessive valve chatter</b>	
	1. Too large tappet clearance.	Adjust.
	2. Weakened or broken valve springs.	Replace.
	3. Worn tappet or cam surface.	Replace.
	4. Worn and burnt camshaft journal.	Replace.
	<b>Noise seems to come from piston</b>	
	1. Worn down pistons or cylinders.	Replace.
	2. Combustion chambers fouled with carbon.	Clean.
	3. Worn piston pins or piston pin bore.	Replace.
	4. Worn piston rings or ring grooves.	Replace.
	<b>Noise seems to come from cam chain</b>	
	1. Stretched chain.	Replace.
	2. Worn sprockets.	Replace.
	3. Tension adjuster not working.	Repair or replace.
<b>Noise seems to come from clutch</b>		
1. Worn splines of countershaft or hub.	Replace.	
2. Worn teeth of clutch plates.	Replace.	
3. Distorted clutch plates, driven and drive.	Replace.	
4. Worn clutch release bearing.	Replace.	
5. Weakened clutch dampers.	Replace the primary driven gear.	
<b>Noise seems to come from crankshaft</b>		
1. Rattling bearings due to wear.	Replace.	
2. Worn and burnt big-end bearings.	Replace.	
3. Worn and burnt journal bearings.	Replace.	
<b>Noise seems to come from transmission</b>		
1. Worn or rubbing gears.	Replace.	
2. Worn splines.	Replace.	
3. Worn or rubbing primary gears.	Replace.	
4. Worn bearings.	Replace.	
<b>Noise seems to come from water pump</b>		
1. Too much play on pump shaft bearing.	Replace.	
2. Worn or damaged impeller shaft.	Replace.	
3. Worn or damaged mechanical seal.	Replace.	
4. Contact between pump case and impeller.	Replace.	

Complaint	Symptom and possible causes	Remedy
<b>Engine runs poorly in high speed range.</b>	<b>Defective engine internal/electrical parts</b>	
	1. Weakened valve springs.	Replace.
	2. Worn camshafts.	Replace.
	3. Valve timing out of adjustment.	Adjust.
	4. Too narrow spark plug gaps.	Adjust.
	5. Ignition not advanced sufficiently due to poorly working timing advance circuit.	Replace ECM.
	6. Defective ignition coils.	Replace.
	7. Defective CKP sensor.	Replace.
	8. Defective ECM.	Replace.
	9. Clogged fuel hose, resulting in inadequate fuel supply to injector.	Clean and prime.
	10. Defective fuel pump.	Replace.
	11. Defective TP sensor.	Replace.
	12. Defective STP sensor or STVA.	Replace.
	<b>Defective air flow system</b>	
	1. Clogged air cleaner element.	Clean or replace.
	2. Defective throttle valve.	Adjust or replace.
	3. Defective secondary throttle valve.	Adjust or replace.
	4. Sucking air from throttle body joint.	Repair or replace.
	5. Defective ECM.	Replace.
	6. Imbalanced throttle valve synchronization.	Adjust.
	<b>Defective control circuit or sensor</b>	
1. Low fuel pressure.	Repair or replace.	
2. Defective TP sensor.	Replace.	
3. Defective IAT sensor.	Replace.	
4. Defective CKP sensor.	Replace.	
5. Defective GP switch.	Replace.	
6. Defective IAP sensor.	Replace.	
7. Defective ECM.	Replace.	
8. TP sensor out of adjustment.	Adjust.	
9. Defective STP sensor and/or STVA.	Replace.	

Complaint	Symptom and possible causes	Remedy
<b>Engine lacks power.</b>	<p><b>Defective engine internal/electrical parts</b></p> <ol style="list-style-type: none"> <li>1. Loss of tappet clearance.</li> <li>2. Weakened valve springs.</li> <li>3. Valve timing out of adjustment.</li> <li>4. Worn piston rings or cylinders.</li> <li>5. Poor seating of valves.</li> <li>6. Fouled spark plugs.</li> <li>7. Incorrect spark plugs.</li> <li>8. Clogged injectors.</li> <li>9. TP sensor out of adjustment.</li> <li>10. Clogged air cleaner element.</li> <li>11. Imbalanced throttle valve synchronization.</li> <li>12. Sucking air from throttle valve or vacuum hose.</li> <li>13. Too much engine oil.</li> <li>14. Defective fuel pump or ECM.</li> <li>15. Defective CKP sensor and ignition coils.</li> </ol> <p><b>Defective control circuit or sensor</b></p> <ol style="list-style-type: none"> <li>1. Low fuel pressure.</li> <li>2. Defective TP sensor.</li> <li>3. Defective IAT sensor.</li> <li>4. Defective CKP sensor.</li> <li>5. Defective GP switch.</li> <li>6. Defective IAP sensor.</li> <li>7. Defective ECM.</li> <li>8. Imbalanced throttle valve synchronization.</li> <li>9. TP sensor out of adjustment.</li> <li>10. Defective STP sensor and/or STVA.</li> </ol>	<p>Adjust. Replace. Adjust. Replace. Repair. Clean or replace. Adjust or replace. Clean. Adjust. Clean. Adjust. Retighten or replace. Drain out excess oil. Replace. Replace.  Repair or replace. Replace. Replace. Replace. Replace. Replace. Replace. Adjust. Adjust. Replace.</p>
<b>Engine overheats.</b>	<p><b>Defective engine internal parts</b></p> <ol style="list-style-type: none"> <li>1. Heavy carbon deposit on piston crowns.</li> <li>2. Not enough oil in the engine.</li> <li>3. Defective oil pump or clogged oil circuit.</li> <li>4. Sucking air from intake pipes.</li> <li>5. Use incorrect engine oil.</li> <li>6. Defective cooling system.</li> </ol> <p><b>Lean fuel/air mixture</b></p> <ol style="list-style-type: none"> <li>1. Short-circuited IAP sensor/lead wire.</li> <li>2. Short-circuited IAT sensor/lead wire.</li> <li>3. Sucking air from intake pipe joint.</li> <li>4. Defective fuel injectors.</li> <li>5. Defective ECT sensor.</li> </ol> <p><b>The other factors</b></p> <ol style="list-style-type: none"> <li>1. Ignition timing too advanced due to defective timing advance system (ECT sensor, GP switch, CKP sensor and ECM.)</li> <li>2. Drive chain is too tight.</li> </ol>	<p>Clean. Add oil. Replace or clean. Retighten or replace. Change. See radiator section.  Repair or replace. Repair or replace. Repair or replace. Replace. Replace.  Replace.  Adjust.</p>

Complaint	Symptom and possible causes	Remedy
Dirty or heavy exhaust smoke.	<ol style="list-style-type: none"> <li>1. Too much engine oil in the engine.</li> <li>2. Worn piston rings or cylinders.</li> <li>3. Worn valve guides.</li> <li>4. Scored or scuffed cylinder walls.</li> <li>5. Worn valves stems.</li> <li>6. Defective stem seal.</li> <li>7. Worn oil ring side rails.</li> </ol>	<p>Check with inspection window. Drain excess oil.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p>
Slipping clutch.	<ol style="list-style-type: none"> <li>1. Weakened clutch springs.</li> <li>2. Worn or distorted pressure plates.</li> <li>3. Distorted clutch plates or pressure plates.</li> </ol>	<p>Replace.</p> <p>Replace.</p> <p>Replace.</p>
Dragging clutch.	<ol style="list-style-type: none"> <li>1. Some clutch springs weakened while others are not.</li> <li>2. Distorted pressure plates or clutch plates.</li> </ol>	<p>Replace.</p> <p>Replace.</p>
Transmission will not shift.	<ol style="list-style-type: none"> <li>1. Broken gearshift cam.</li> <li>2. Distorted gearshift forks.</li> <li>3. Worn gearshift pawl.</li> </ol>	<p>Replace.</p> <p>Replace.</p> <p>Replace.</p>
Transmission will not shift back.	<ol style="list-style-type: none"> <li>1. Broken return spring on shift shaft.</li> <li>2. Rubbing or sticky shift shaft.</li> <li>3. Distorted or worn gearshift forks.</li> </ol>	<p>Replace.</p> <p>Repair or replace.</p> <p>Replace.</p>
Transmission jumps out of gear.	<ol style="list-style-type: none"> <li>1. Worn shifting gears on driveshaft or countershaft.</li> <li>2. Distorted or worn gearshift forks.</li> <li>3. Weakened stopper spring on gearshift stopper.</li> </ol>	<p>Replace.</p> <p>Replace.</p> <p>Replace.</p>

## RADIATOR (COOLING SYSTEM)

Complaint	Symptom and possible causes	Remedy
Engine overheats.	<ol style="list-style-type: none"> <li>1. Not enough engine coolant.</li> <li>2. Radiator core and oil cooler core clogged with dirt or scale.</li> <li>3. Faulty cooling fan.</li> <li>4. Defective cooling fan thermo-switch.</li> <li>5. Clogged water passage.</li> <li>6. Air trapped in the cooling circuit.</li> <li>7. Defective water pump.</li> <li>8. Use of incorrect engine coolant.</li> <li>9. Defective thermostat.</li> </ol>	<p>Add coolant.</p> <p>Clean.</p> <p>Repair or replace.</p> <p>Replace.</p> <p>Clean.</p> <p>Bleed out air.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p>
Engine overcools.	<ol style="list-style-type: none"> <li>1. Defective cooling fan thermo-switch.</li> <li>2. Extremely cold weather.</li> <li>3. Defective thermostat.</li> </ol>	<p>Replace.</p> <p>Put on the radiator cover.</p> <p>Replace.</p>

**CHASSIS**

<b>Complaint</b>	<b>Symptom and possible causes</b>	<b>Remedy</b>
<b>Heavy steering.</b>	<ol style="list-style-type: none"> <li>1. Overtightened steering stem nut.</li> <li>2. Broken bearing in steering stem.</li> <li>3. Distorted steering stem.</li> <li>4. Not enough pressure in tires.</li> </ol>	Adjust. Replace. Replace. Adjust.
<b>Wobbly handlebars.</b>	<ol style="list-style-type: none"> <li>1. Loss of balance between right and left front forks.</li> <li>2. Distorted front fork.</li> <li>3. Distorted front axle or crooked tire.</li> <li>4. Loose steering stem nut.</li> <li>5. Worn or incorrect tire or wrong tire pressure.</li> <li>6. Worn bearing/race in steering stem.</li> </ol>	Adjust. Repair or replace. Replace. Adjust. Adjust or replace. Replace.
<b>Wobbly front wheel.</b>	<ol style="list-style-type: none"> <li>1. Distorted wheel rim.</li> <li>2. Worn front wheel bearings.</li> <li>3. Defective or incorrect tire.</li> <li>4. Loose axle or axle pinch bolt.</li> <li>5. Incorrect front fork oil level.</li> <li>6. Incorrect front wheel weight balance.</li> </ol>	Replace. Replace. Replace. Retighten. Adjust. Adjust.
<b>Front suspension too soft.</b>	<ol style="list-style-type: none"> <li>1. Weakened springs.</li> <li>2. Not enough fork oil.</li> <li>3. Wrong viscous fork oil.</li> <li>4. Improperly set front fork spring adjuster.</li> </ol>	Replace. Replenish. Replace. Adjust.
<b>Front suspension too stiff.</b>	<ol style="list-style-type: none"> <li>1. Too viscous fork oil.</li> <li>2. Too much fork oil.</li> <li>3. Improperly set front fork spring adjuster.</li> <li>4. Bent front axle.</li> </ol>	Replace. Drain excess oil. Adjust. Replace.
<b>Noisy front suspension.</b>	<ol style="list-style-type: none"> <li>1. Not enough fork oil.</li> <li>2. Loose bolts on suspension.</li> </ol>	Replenish. Retighten.
<b>Wobbly rear wheel.</b>	<ol style="list-style-type: none"> <li>1. Distorted wheel rim.</li> <li>2. Worn rear wheel bearing or swingarm bearings.</li> <li>3. Defective or incorrect tire.</li> <li>4. Worn swingarm and rear suspensions.</li> <li>5. Loose nuts or bolts on rear suspensions.</li> </ol>	Replace. Replace. Replace. Replace. Retighten.
<b>Rear suspension too soft.</b>	<ol style="list-style-type: none"> <li>1. Weakened spring of shock absorber.</li> <li>2. Leakage of oil from shock absorber.</li> <li>3. Improperly set rear spring unit adjuster.</li> </ol>	Replace. Replace. Adjust.
<b>Rear suspension too stiff.</b>	<ol style="list-style-type: none"> <li>1. Bent shock absorber shaft.</li> <li>2. Bent swingarm pivot shaft.</li> <li>3. Worn swingarm and suspension bearings.</li> <li>4. Improperly set rear spring unit adjuster.</li> </ol>	Replace. Replace. Replace. Adjust.
<b>Noisy rear suspension.</b>	<ol style="list-style-type: none"> <li>1. Loose nuts or bolts on rear suspension.</li> <li>2. Worn swingarm and suspension bearings.</li> </ol>	Retighten. Replace.

**BRAKES**

<b>Complaint</b>	<b>Symptom and possible causes</b>	<b>Remedy</b>
<b>Insufficient brake power.</b>	<ol style="list-style-type: none"> <li>1. Leakage of brake fluid from hydraulic system.</li> <li>2. Worn pads.</li> <li>3. Oil adhesion on friction surface of pads.</li> <li>4. Worn disc.</li> <li>5. Air in hydraulic system.</li> <li>6. Not enough brake fluid in the reservoir.</li> </ol>	<p>Repair or replace.            Replace.            Clean disc and pads.            Replace.            Bleed air.            Replenish.</p>
<b>Brake squeaking.</b>	<ol style="list-style-type: none"> <li>1. Carbon adhesion on pad surface.</li> <li>2. Tilted pad.</li> <li>3. Damaged wheel bearing.</li> <li>4. Loose front wheel axle or rear wheel axle.</li> <li>5. Worn pads or disc.</li> <li>6. Foreign material in brake fluid.</li> <li>7. Clogged return port of master cylinder.</li> </ol>	<p>Repair surface with sandpaper.            Correct pad fitting or replace.            Replace.            Tighten to specified torque.            Replace.            Replace brake fluid.            Disassemble and clean master cylinder.</p>
<b>Excessive brake lever stroke.</b>	<ol style="list-style-type: none"> <li>1. Air in hydraulic system.</li> <li>2. Insufficient brake fluid.</li> <li>3. Improper quality of brake fluid.</li> </ol>	<p>Bleed air.            Replenish fluid to specified level; bleed air.            Replace with correct fluid.</p>
<b>Leakage of brake fluid.</b>	<ol style="list-style-type: none"> <li>1. Insufficient tightening of connection joints.</li> <li>2. Cracked hose.</li> <li>3. Worn piston and/or cup.</li> </ol>	<p>Tighten to specified torque.            Replace.            Replace piston and/or cup.</p>
<b>Brake drags.</b>	<ol style="list-style-type: none"> <li>1. Rusty part.</li> <li>2. Insufficient brake lever or brake pedal pivot lubrication.</li> </ol>	<p>Clean and lubricate.            Lubricate.</p>

**ELECTRICAL**

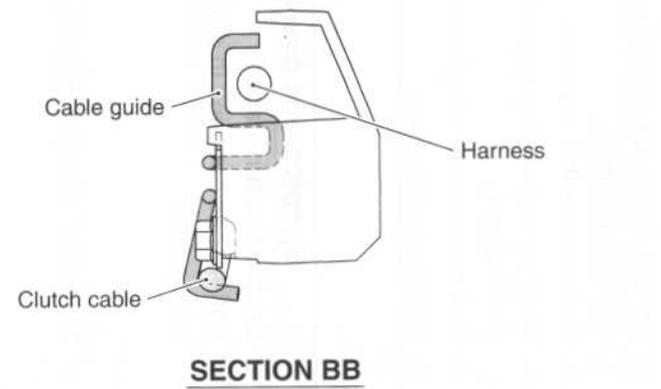
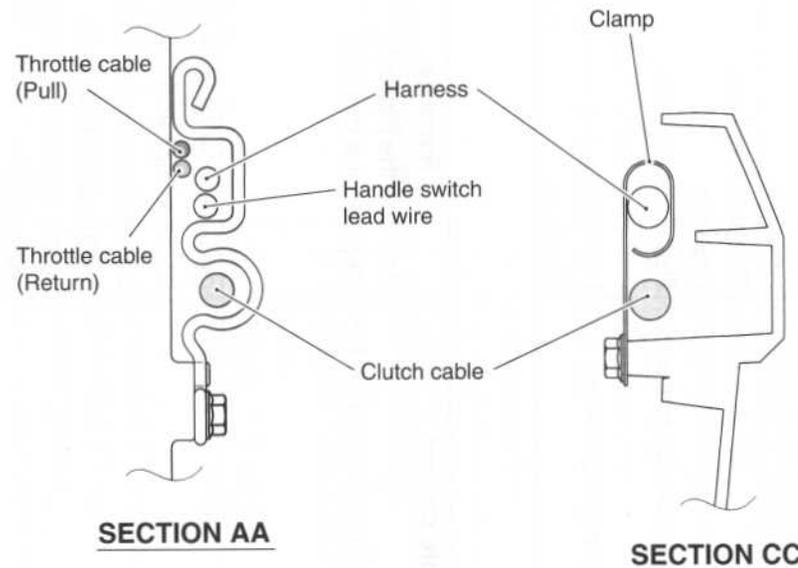
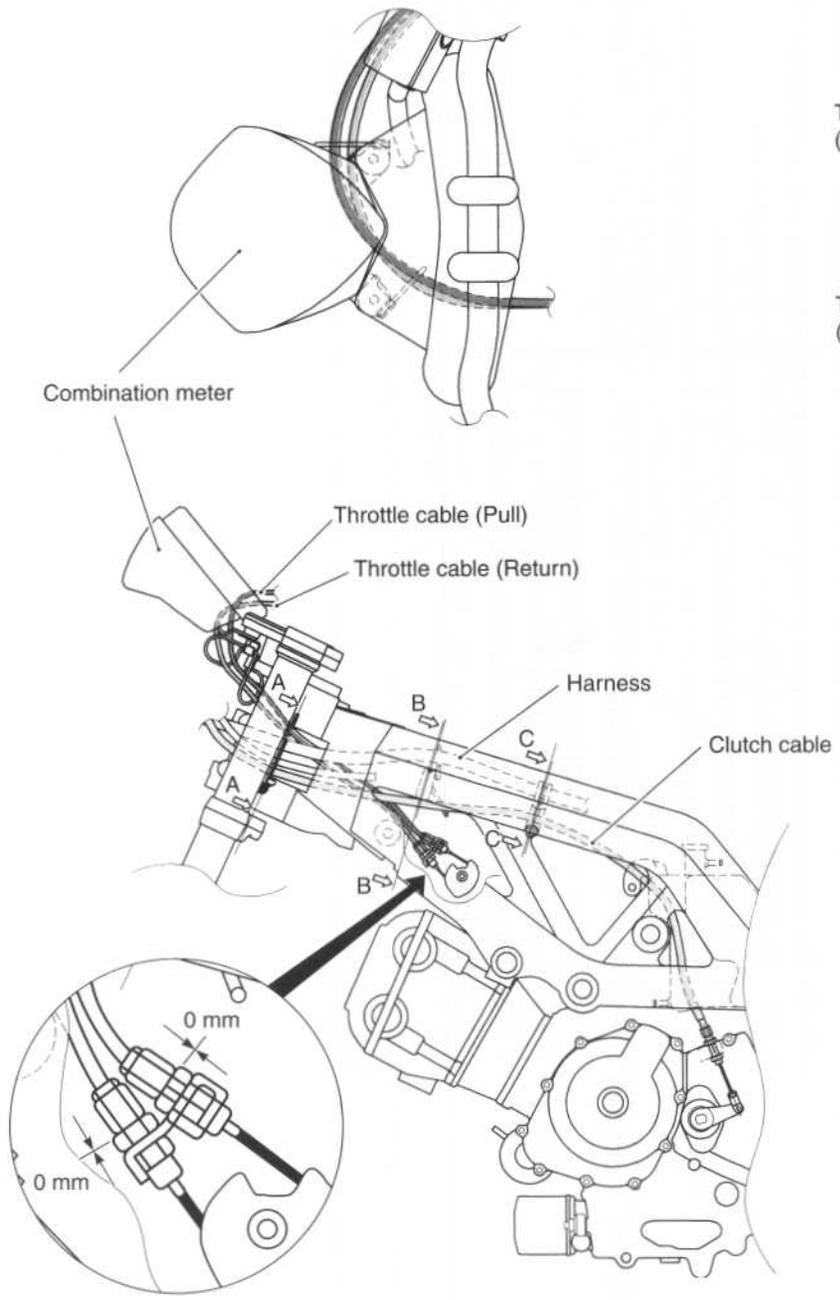
<b>Complaint</b>	<b>Symptom and possible causes</b>	<b>Remedy</b>
<b>No sparking or poor sparking.</b>	<ol style="list-style-type: none"> <li>1. Defective ignition coils or spark plug caps.</li> <li>2. Defective spark plugs.</li> <li>3. Defective CKP sensor.</li> <li>4. Defective ECM.</li> <li>5. Defective TO sensor.</li> <li>6. Open-circuited wiring connections.</li> </ol>	<p>Replace. Replace. Replace. Replace. Replace. Check and repair.</p>
<b>Spark plug soon become fouled with carbon.</b>	<ol style="list-style-type: none"> <li>1. Mixture too rich.</li> <li>2. Idling speed set too high.</li> <li>3. Incorrect gasoline.</li> <li>4. Dirty air cleaner element.</li> <li>5. Too cold spark plugs.</li> </ol>	<p>Inspect FI system. Adjust fast idle or throttle stop screw. Change. Clean or replace. Replace with hot type plugs.</p>
<b>Spark plug become fouled too soon.</b>	<ol style="list-style-type: none"> <li>1. Worn piston rings.</li> <li>2. Worn piston or cylinders.</li> <li>3. Excessive clearance of valve stems in valve guides.</li> <li>4. Worn stem oil seal.</li> </ol>	<p>Replace. Replace. Replace. Replace.</p>
<b>Spark plug electrodes overheat or burn.</b>	<ol style="list-style-type: none"> <li>1. Too hot spark plugs.</li> <li>2. Overheated the engine.</li> <li>3. Loose spark plugs.</li> <li>4. Too lean mixture.</li> </ol>	<p>Replace with cold type plugs. Tune up. Retighten. Consult FI system.</p>
<b>Generator does not charge.</b>	<ol style="list-style-type: none"> <li>1. Open- or short-circuited lead wires, or loose lead connections.</li> <li>2. Short-circuited, grounded or open generator coil.</li> <li>3. Short-circuited or punctured regulator/rectifier.</li> </ol>	<p>Repair or replace or retighten. Replace. Replace.</p>
<b>Generator does charge, but charging rate is below the specification.</b>	<ol style="list-style-type: none"> <li>1. Lead wires tend to get short- or open-circuited or loosely connected at terminals.</li> <li>2. Grounded or open-circuited generator coil.</li> <li>3. Defective regulator/rectifier.</li> <li>4. Defective cell plates in the battery.</li> </ol>	<p>Repair or retighten. Replace. Replace. Replace the battery.</p>
<b>Generator overcharges.</b>	<ol style="list-style-type: none"> <li>1. Internal short-circuit in the battery.</li> <li>2. Damaged or defective resistor element in the regulator/rectifier.</li> <li>3. Poorly grounded regulator/rectifier.</li> </ol>	<p>Replace the battery. Replace.  Clean and tighten ground connection.</p>

Complaint	Symptom and possible causes	Remedy
<b>Unstable charging.</b>	<ol style="list-style-type: none"> <li>1. Lead wire insulation frayed due to vibration, resulting in intermittent short-circuiting.</li> <li>2. Internally short-circuited generator.</li> <li>3. Defective regulator/rectifier.</li> </ol>	Repair or replace.  Replace. Replace.
<b>Starter button is not effective.</b>	<ol style="list-style-type: none"> <li>1. Run down battery.</li> <li>2. Defective switch contacts.</li> <li>3. Brushes not seating properly on starter motor commutator.</li> <li>4. Defective starter relay/starter interlock switch.</li> <li>5. Defective main fuse.</li> </ol>	Repair or replace. Replace. Repair or replace.  Replace. Replace.

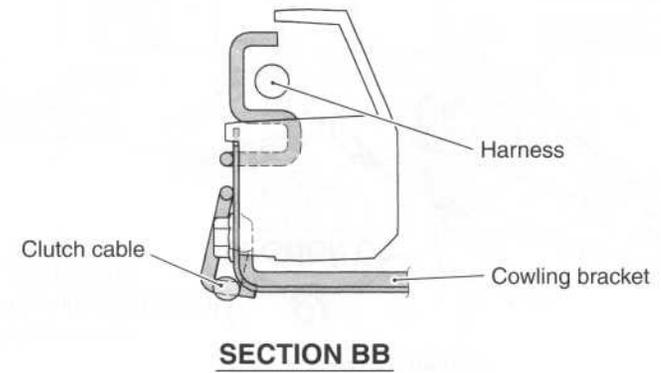
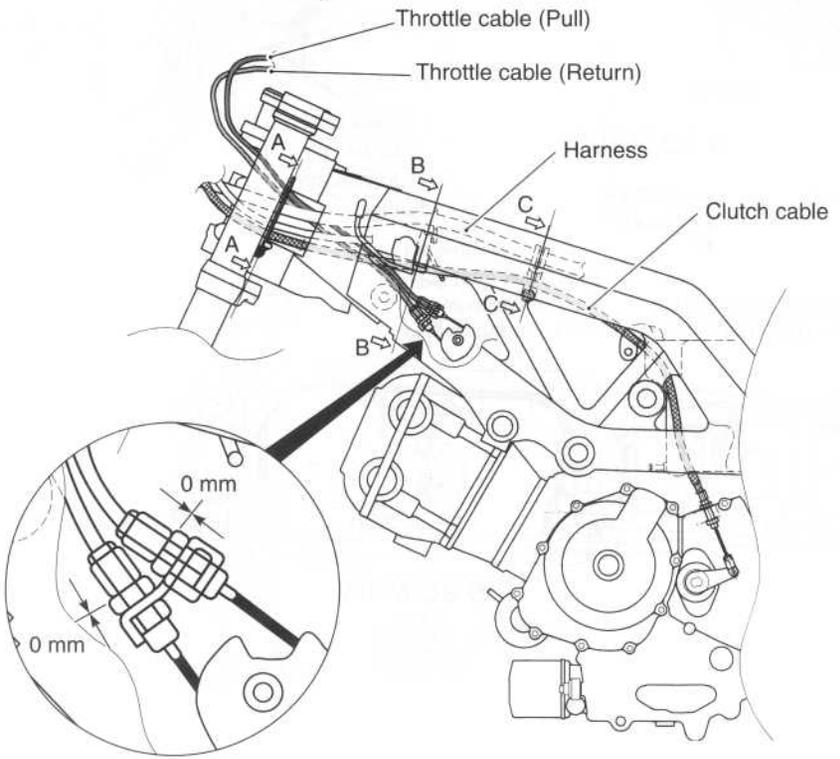
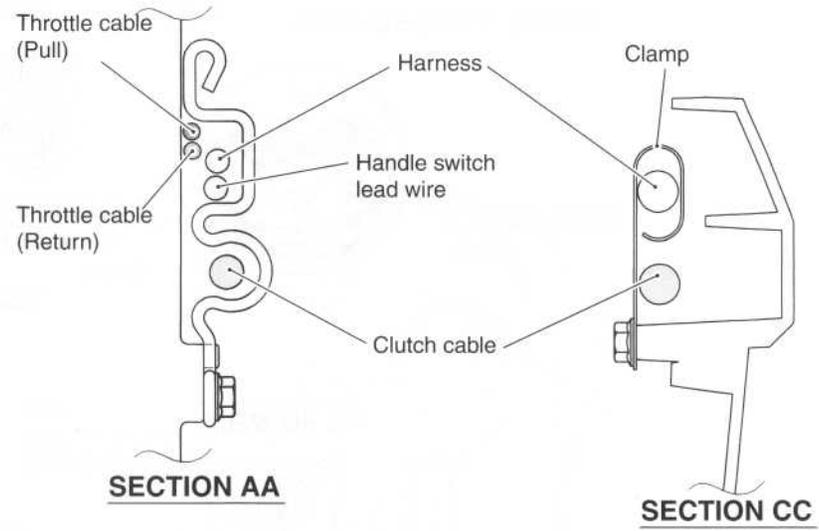
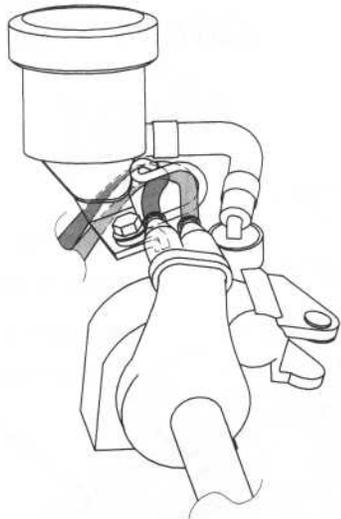
## BATTERY

Complaint	Symptom and possible causes	Remedy
<b>"Sulfation", acidic white powdery substance or spots on surface of cell plates.</b>	<ol style="list-style-type: none"> <li>1. Cracked battery case.</li> <li>2. Battery has been left in a run-down condition for a long time.</li> </ol>	Replace the battery. Replace the battery.
<b>Battery runs down quickly.</b>	<ol style="list-style-type: none"> <li>1. Trouble in charging system.</li> <li>2. Cell plates have lost much of their active material as a result of overcharging.</li> <li>3. Internal short-circuit in the battery.</li> <li>4. Too low battery voltage.</li> <li>5. Too old battery.</li> </ol>	Check the generator, regulator/rectifier and circuit connections and make necessary adjustments to obtain specified charging operation. Replace and correct the charging system. Replace. Recharge fully. Replace.
<b>Battery "sulfation".</b>	<ol style="list-style-type: none"> <li>1. Incorrect charging rate. (When not in use battery should be checked at least once a month to avoid sulfation.)</li> <li>2. The battery was left unused in a cold climate for too long.</li> </ol>	Replace.  Replace if badly sulfated.

# WIRE HARNESS, CABLE AND HOSE ROUTING CABLE ROUTING (SV650)

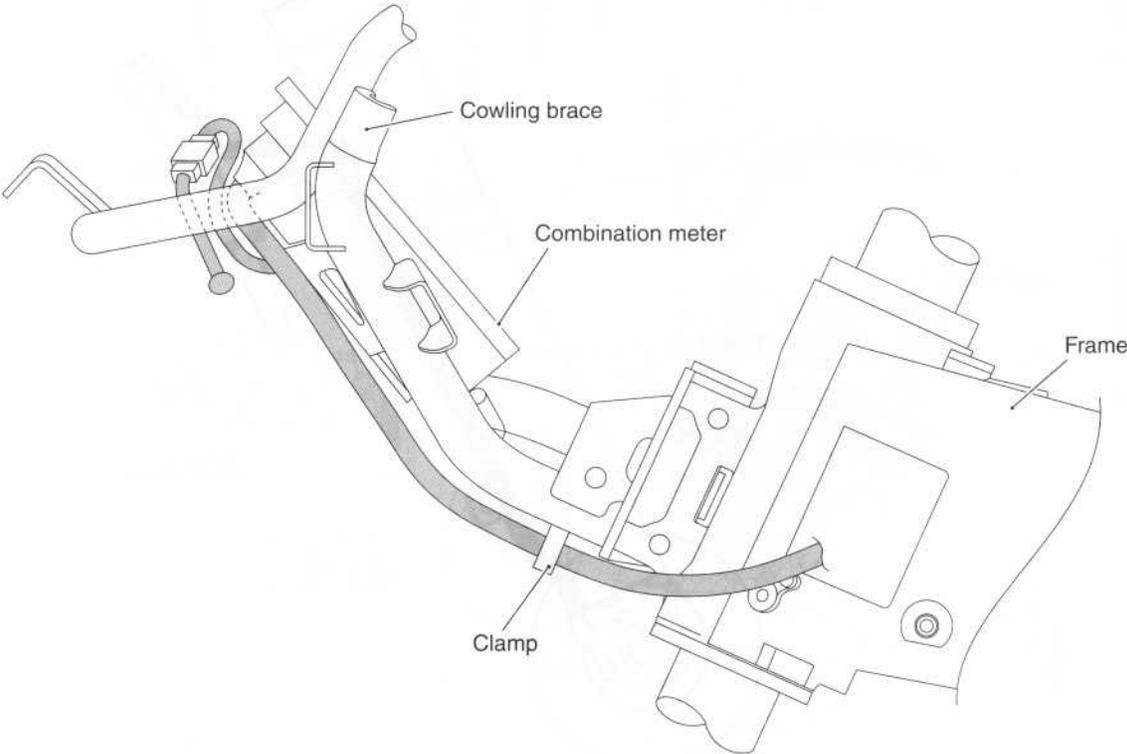
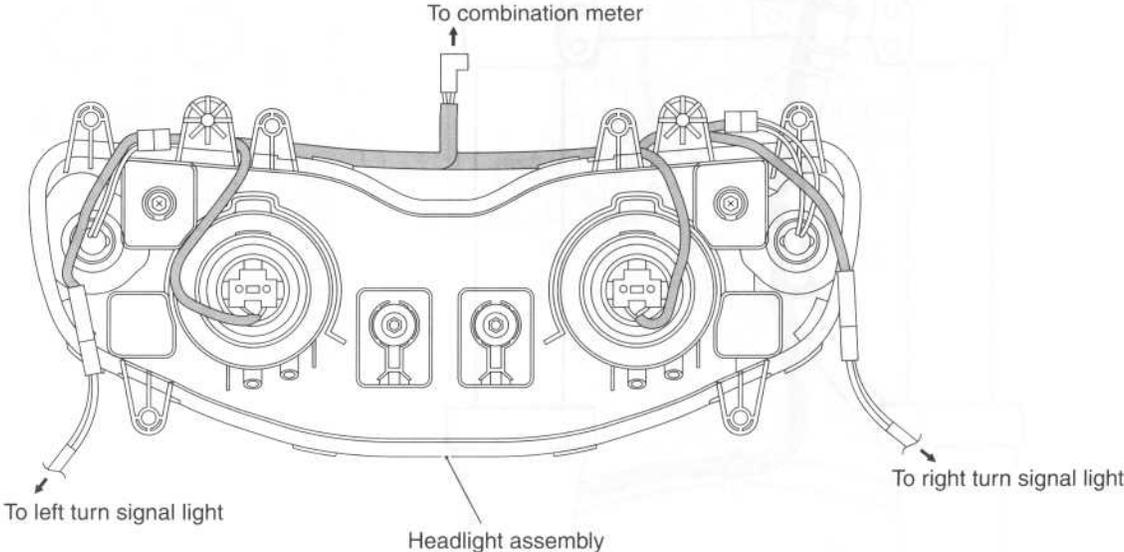


**CABLE ROUTING (SV650S)**

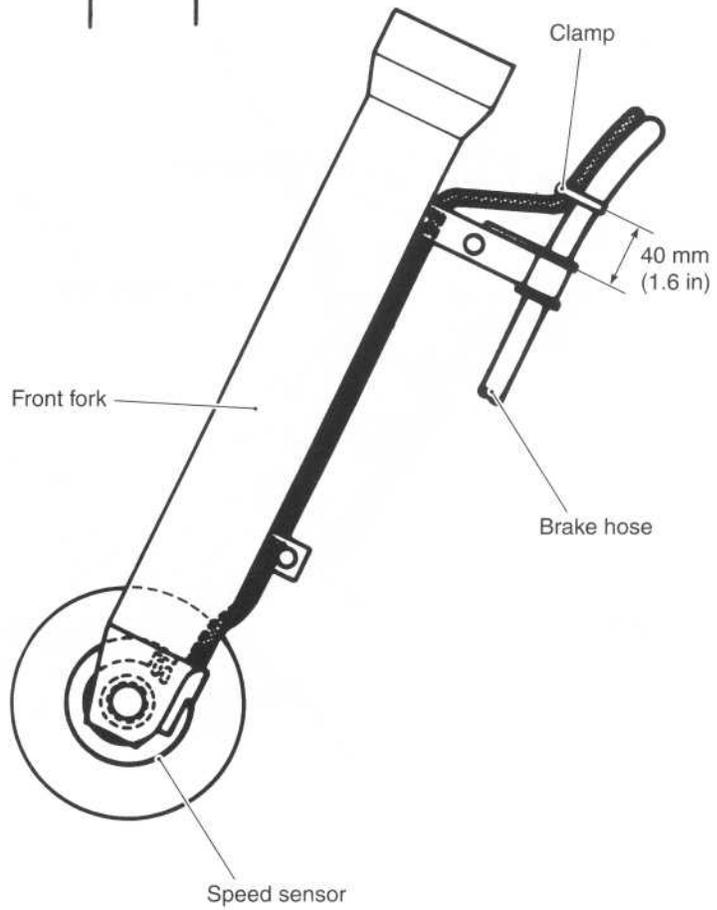
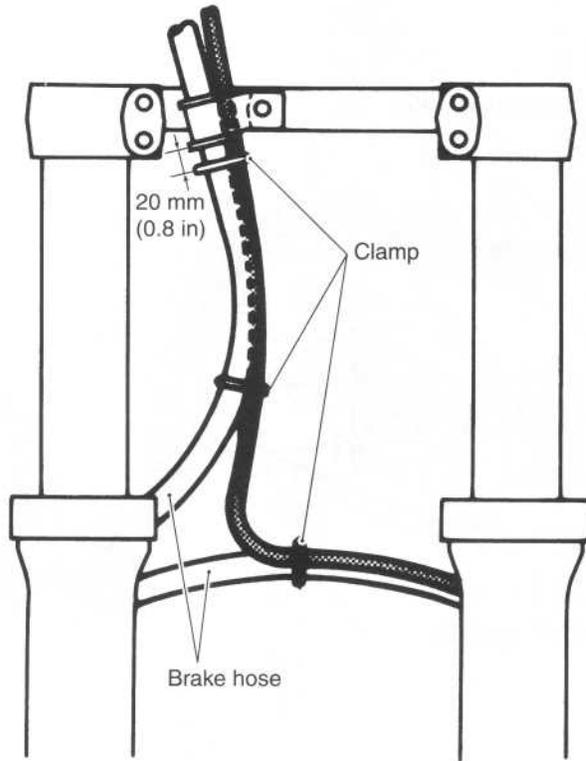




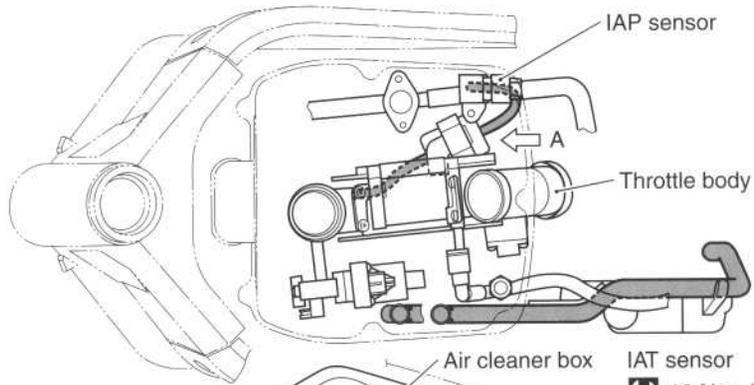
WIRE HARNESS ROUTING (SV650S only)



## SPEED SENSOR LEAD WIRE ROUTING

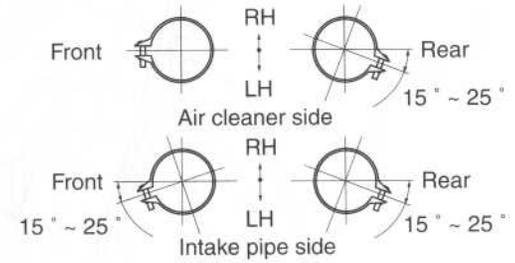


# THROTTLE BODY INSTALLATION/HOSE ROUTING

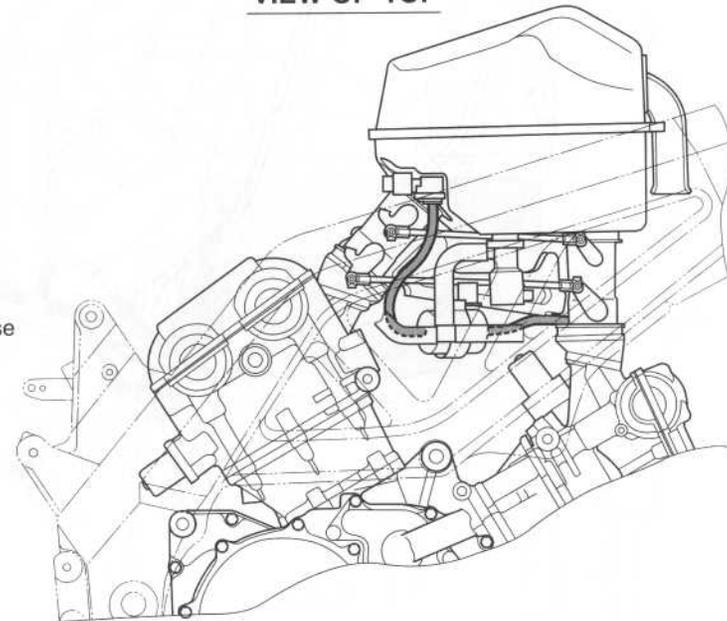
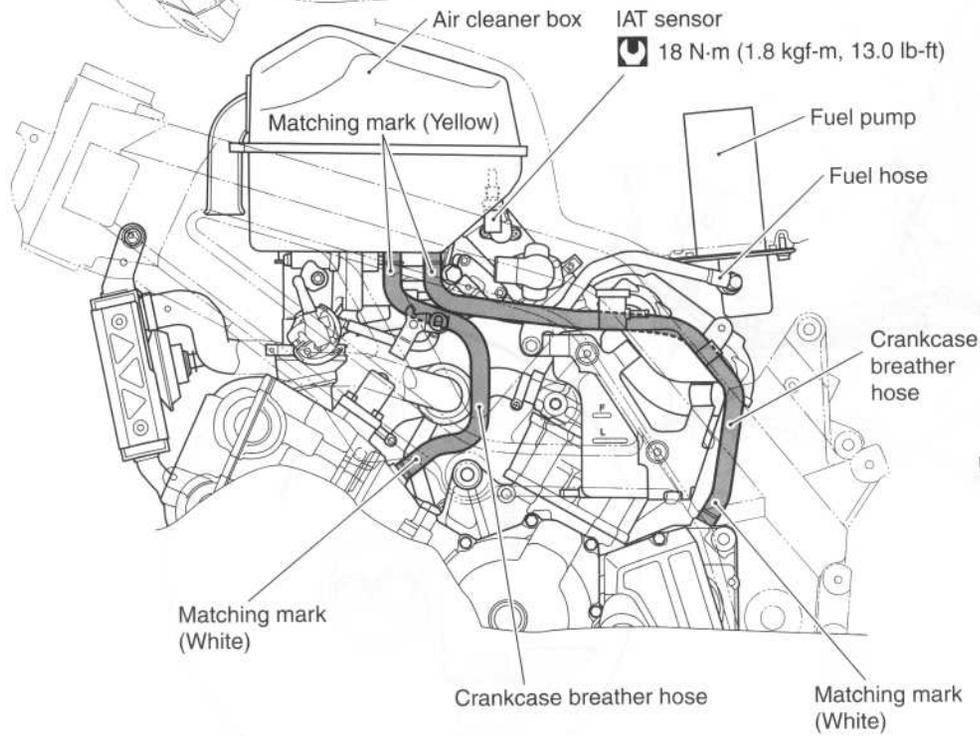


**VIEW OF A**

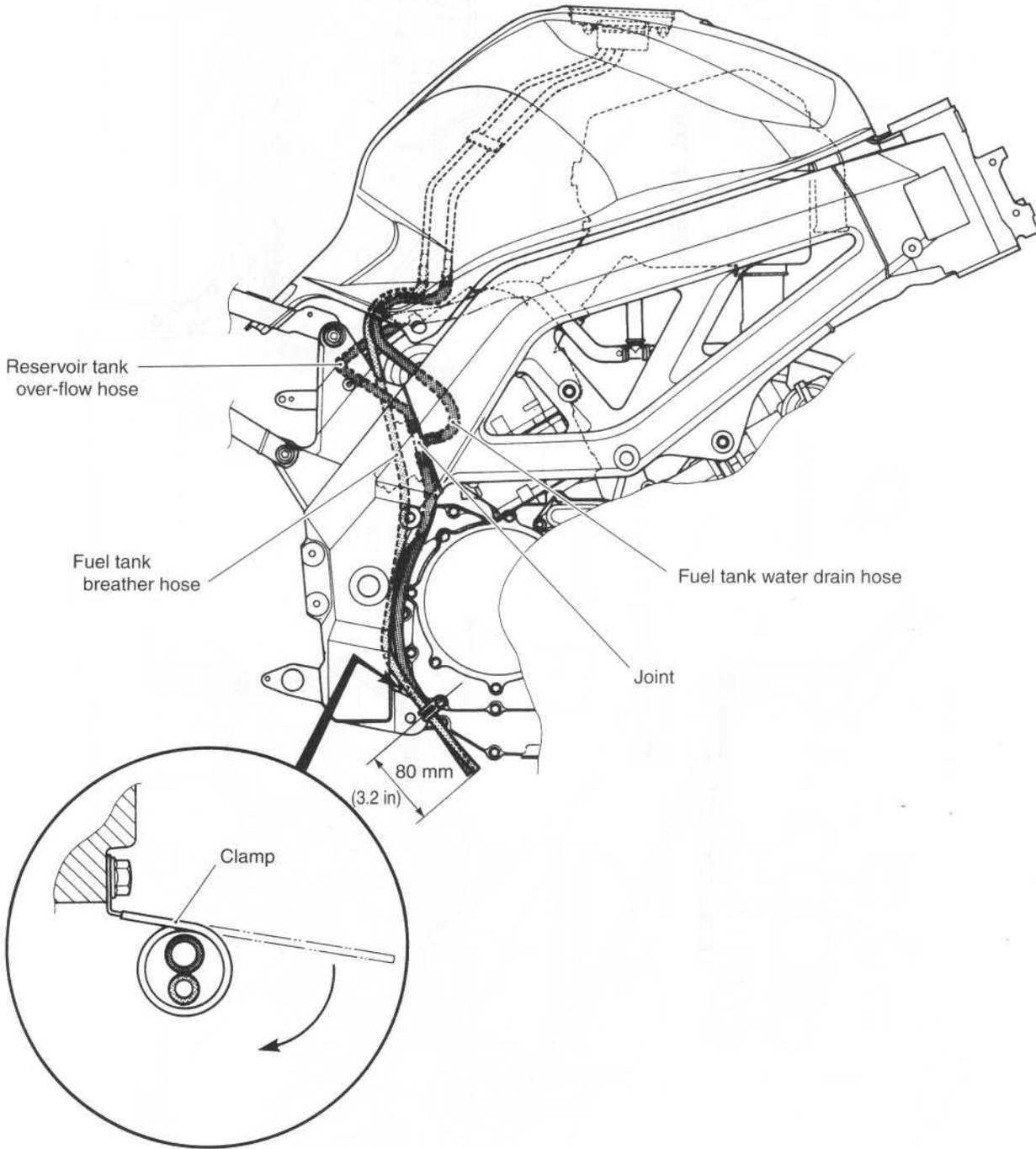
## THROTTLE BODY CLAMP POSITION



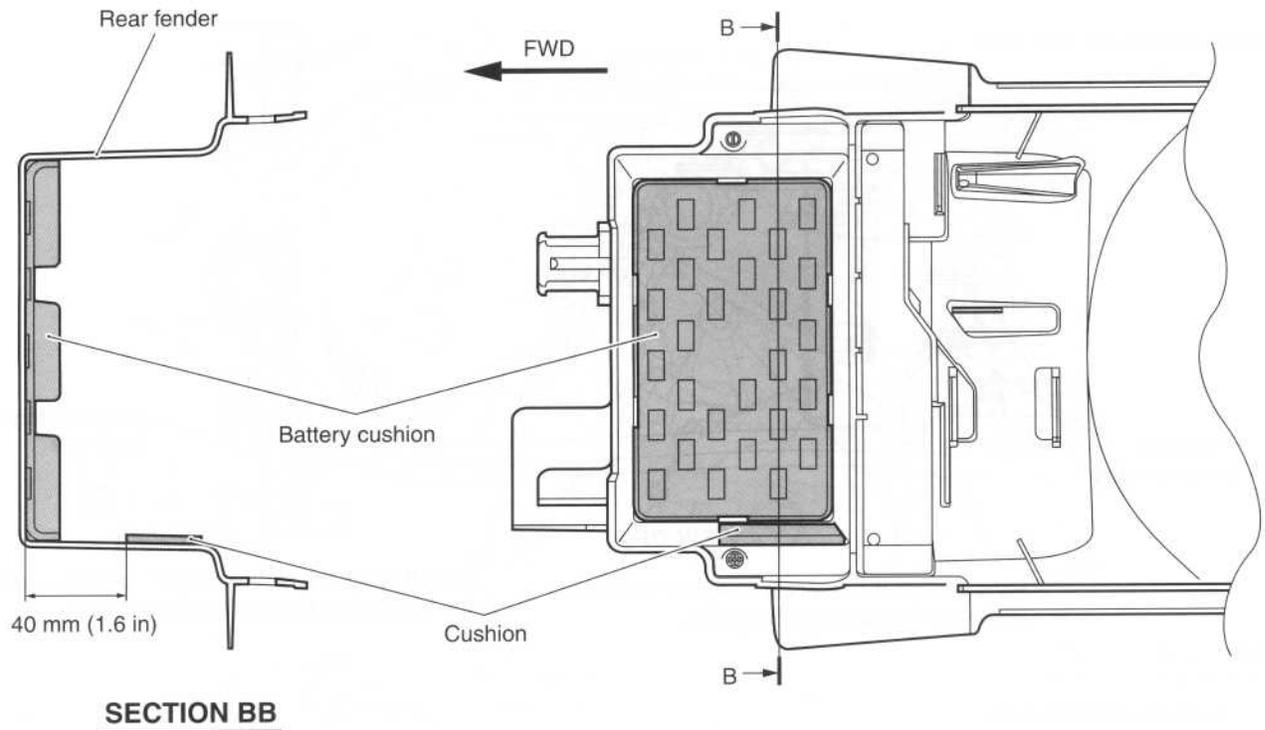
**VIEW OF TOP**



# FUEL SYSTEM HOSE ROUTING



# BATTERY CUSHION INSTALLATION



# COOLING SYSTEM HOSE ROUTING

Reservoir tank over flow hose

Fuel tank breather valve

Reservoir tank inlet hose

### VIEW OF A

Pass through the reservoir tank over flow hose under the fuel tank breather valve.

Pass through the reservoir tank inlet hose under the thermostat and over the bypass hose.

Fuel tank breather hose

Fuel tank water drain hose



Reservoir tank over flow hose

13 N-m  
(1.3 kgf-m)  
(9.5 lb-ft)

Matching mark (Yellow)

Matching mark (White)

The clamp bolt head must face downward.

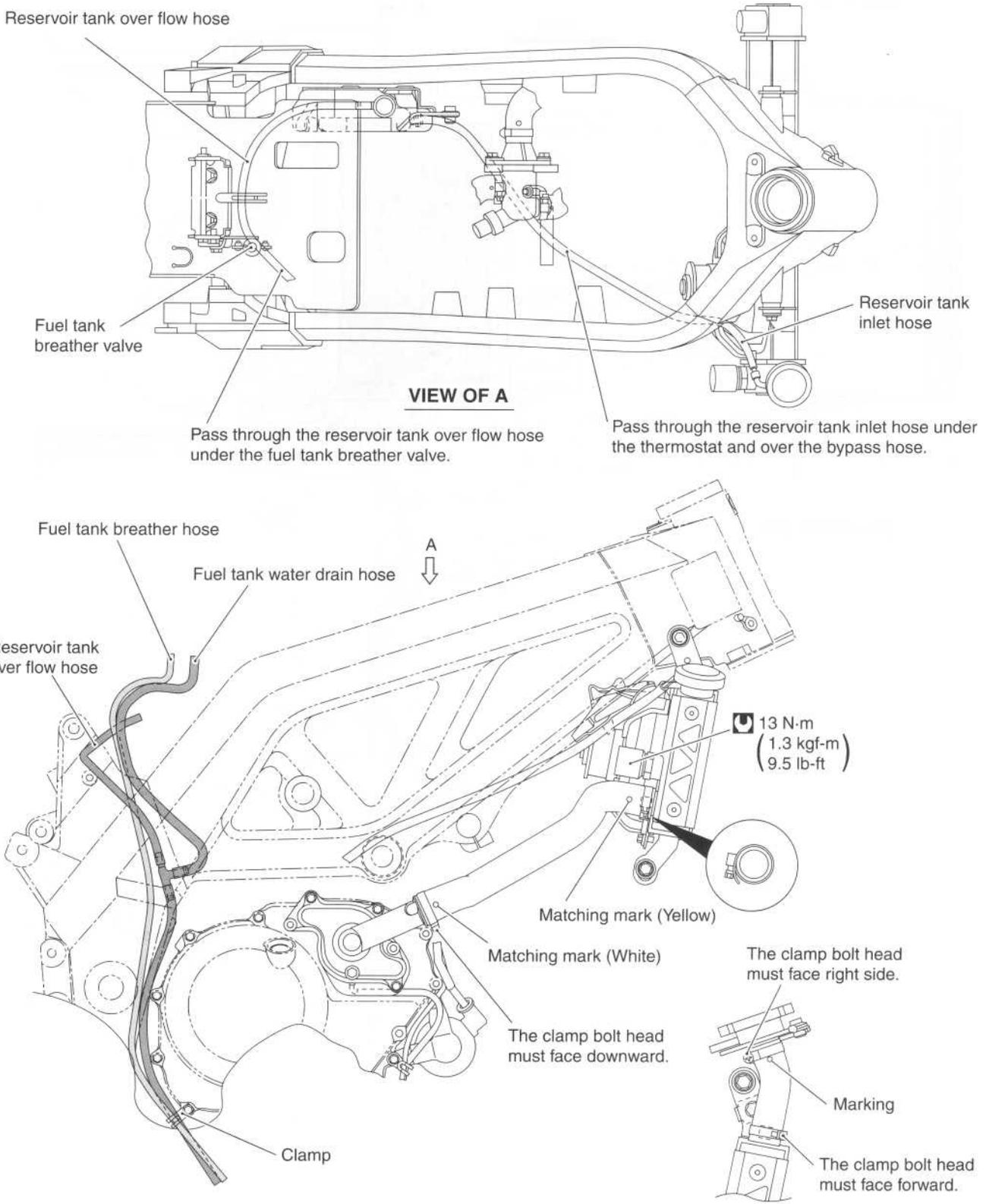
The clamp bolt head must face right side.

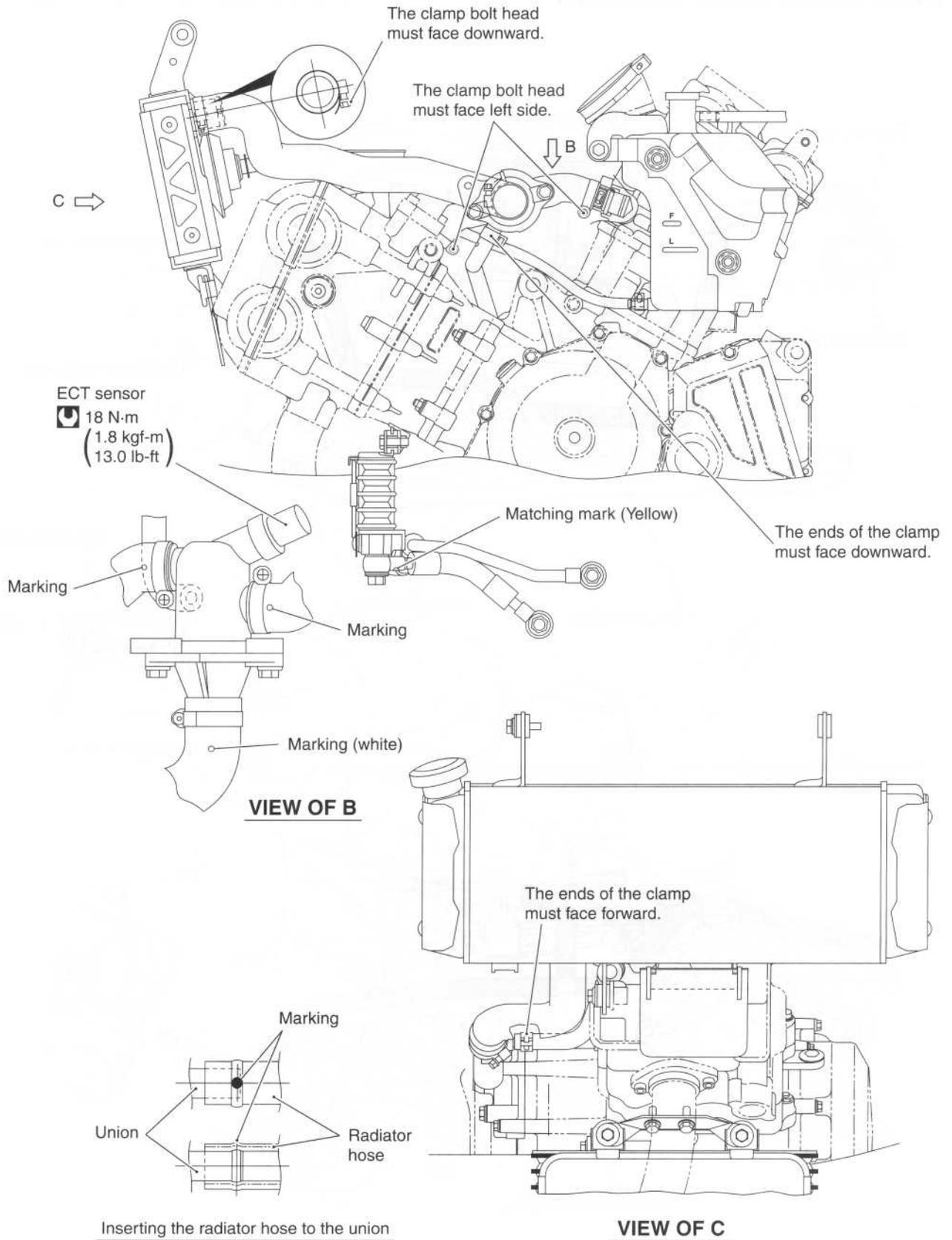
Marking

The clamp bolt head must face forward.

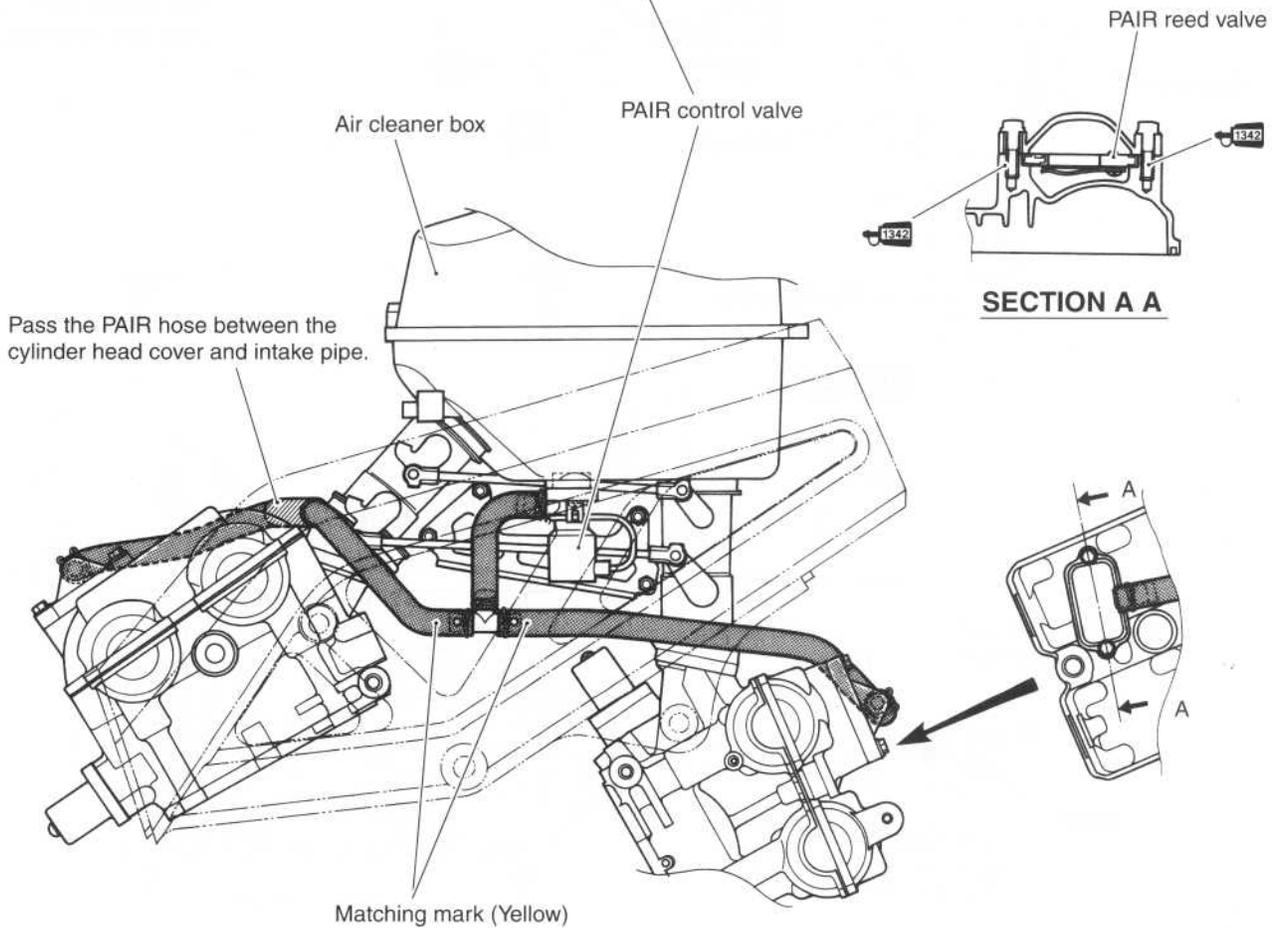
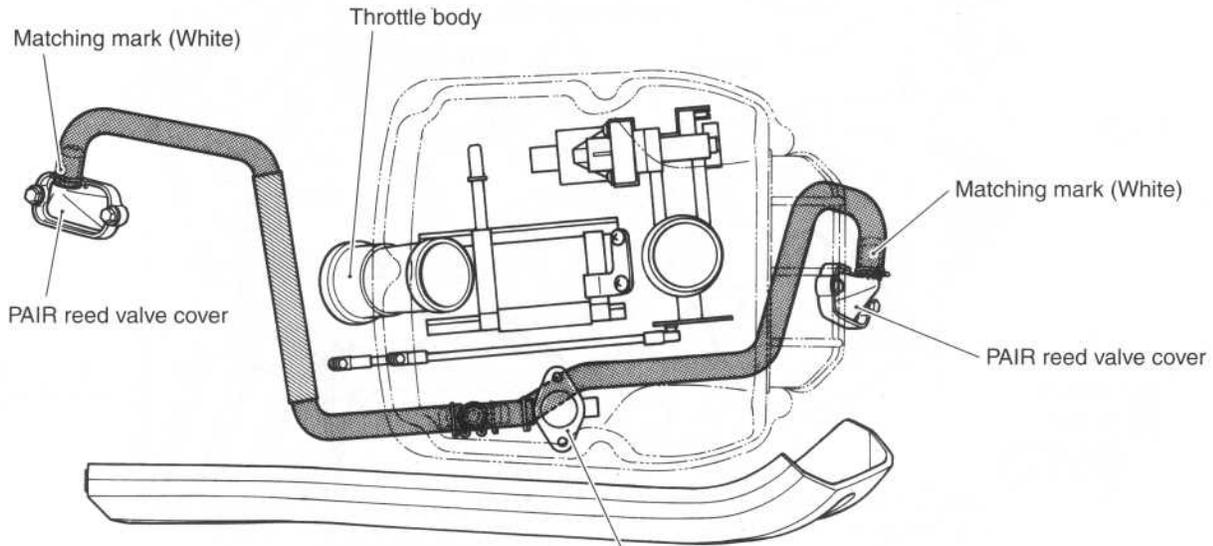
Clamp

**For SV650S**

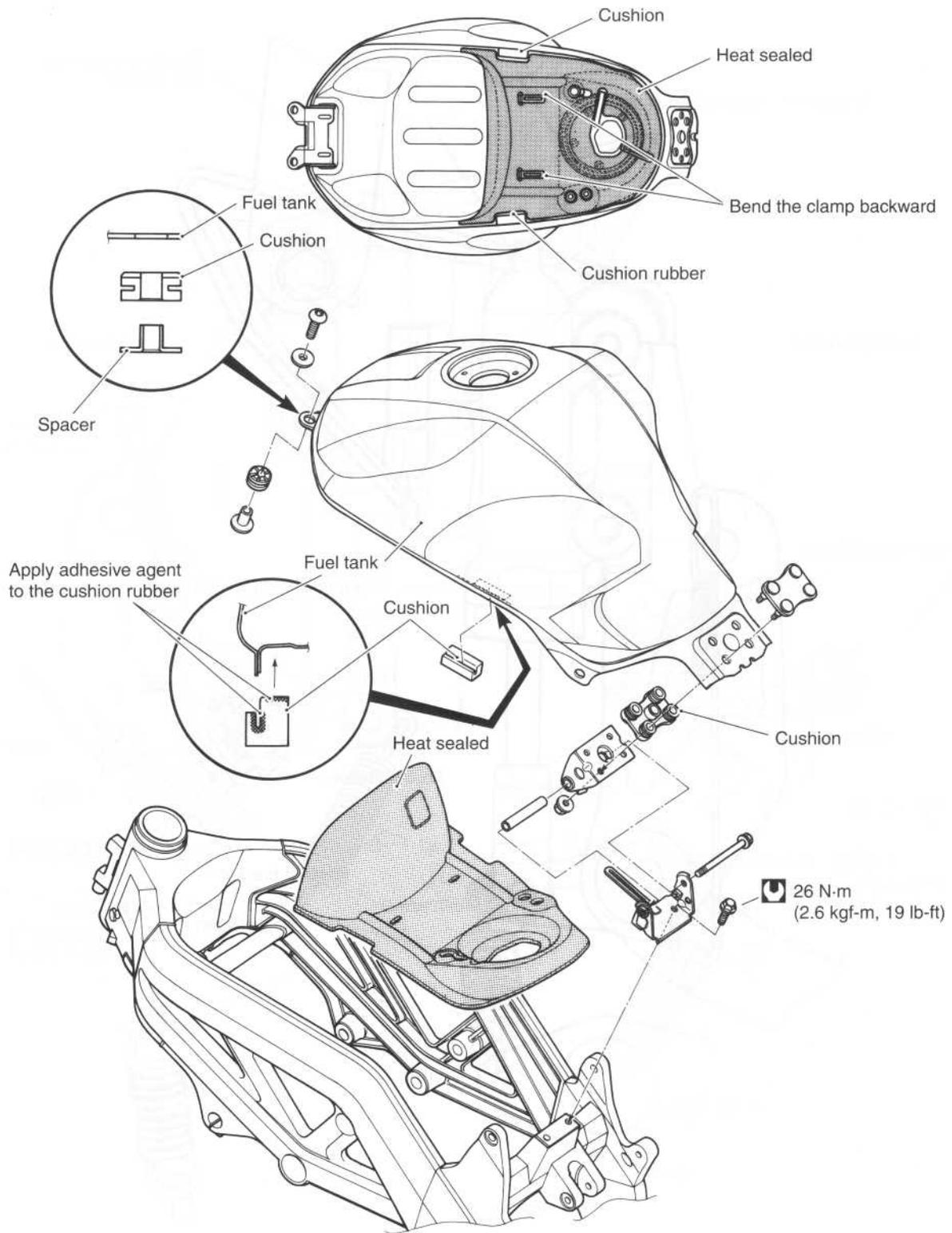




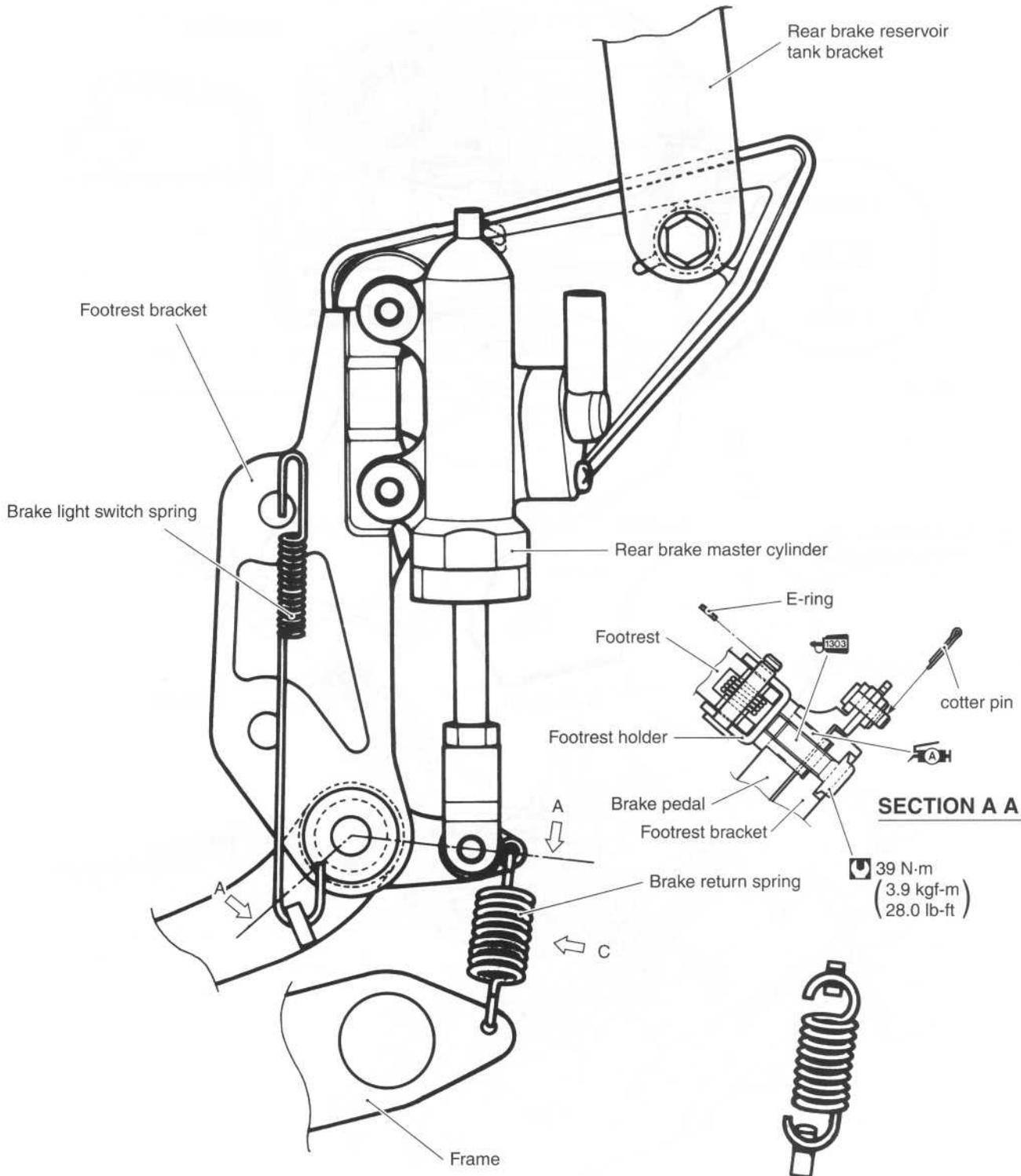
# PAIR SYSTEM HOSE ROUTING



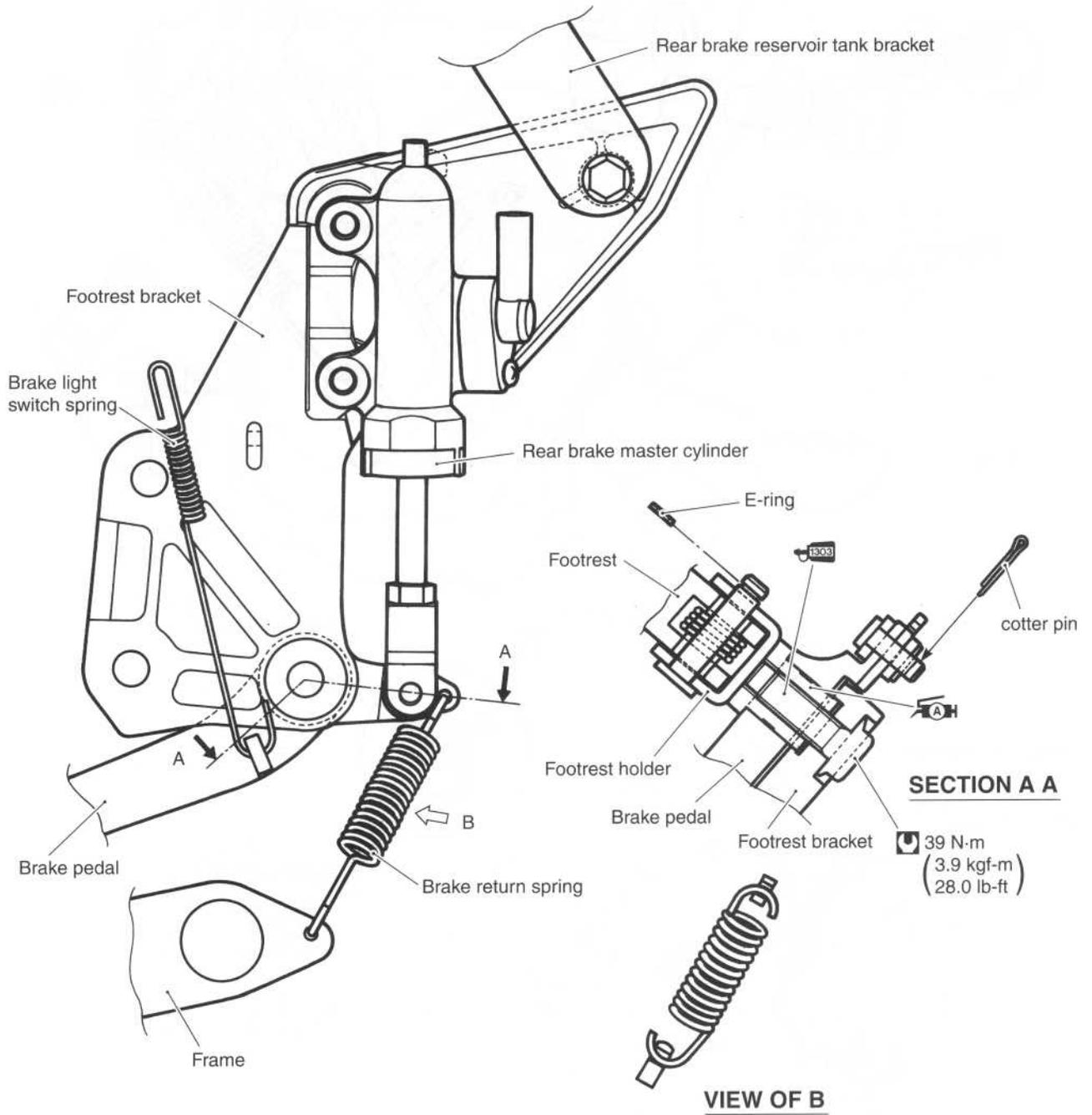
# FUEL TANK INSTALLATION



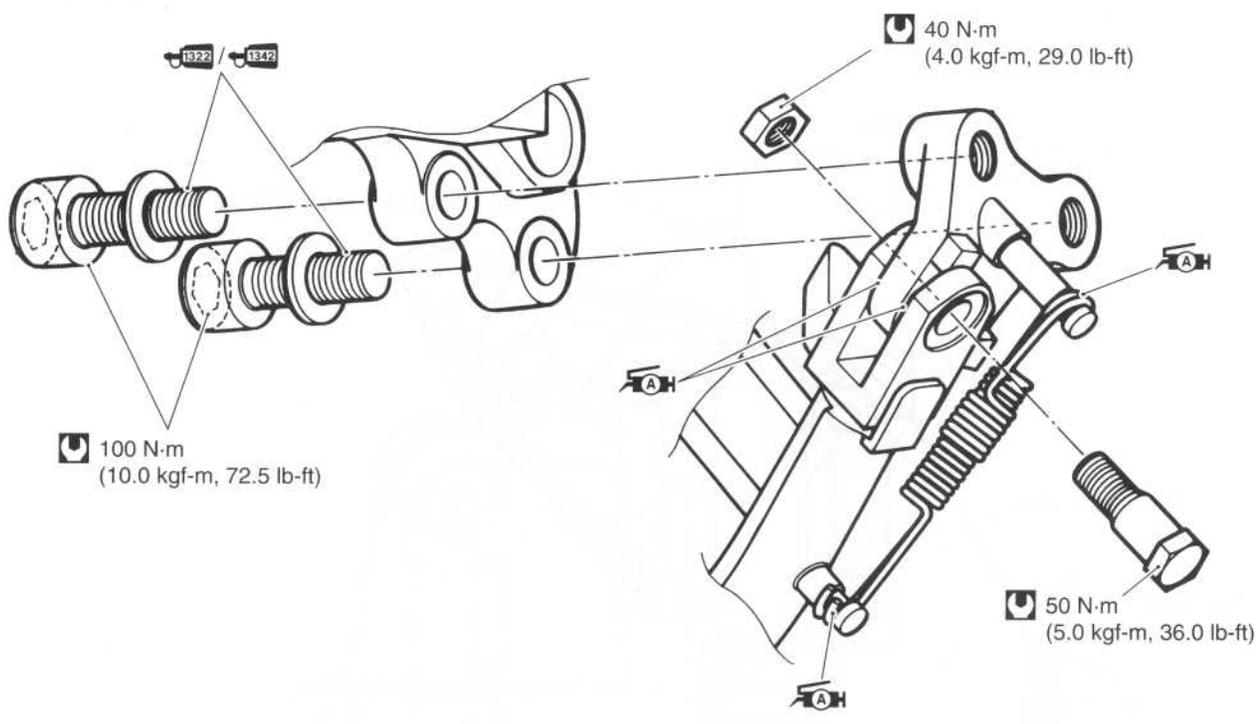
# BRAKE PEDAL/FOOTREST SET-UP For SV650



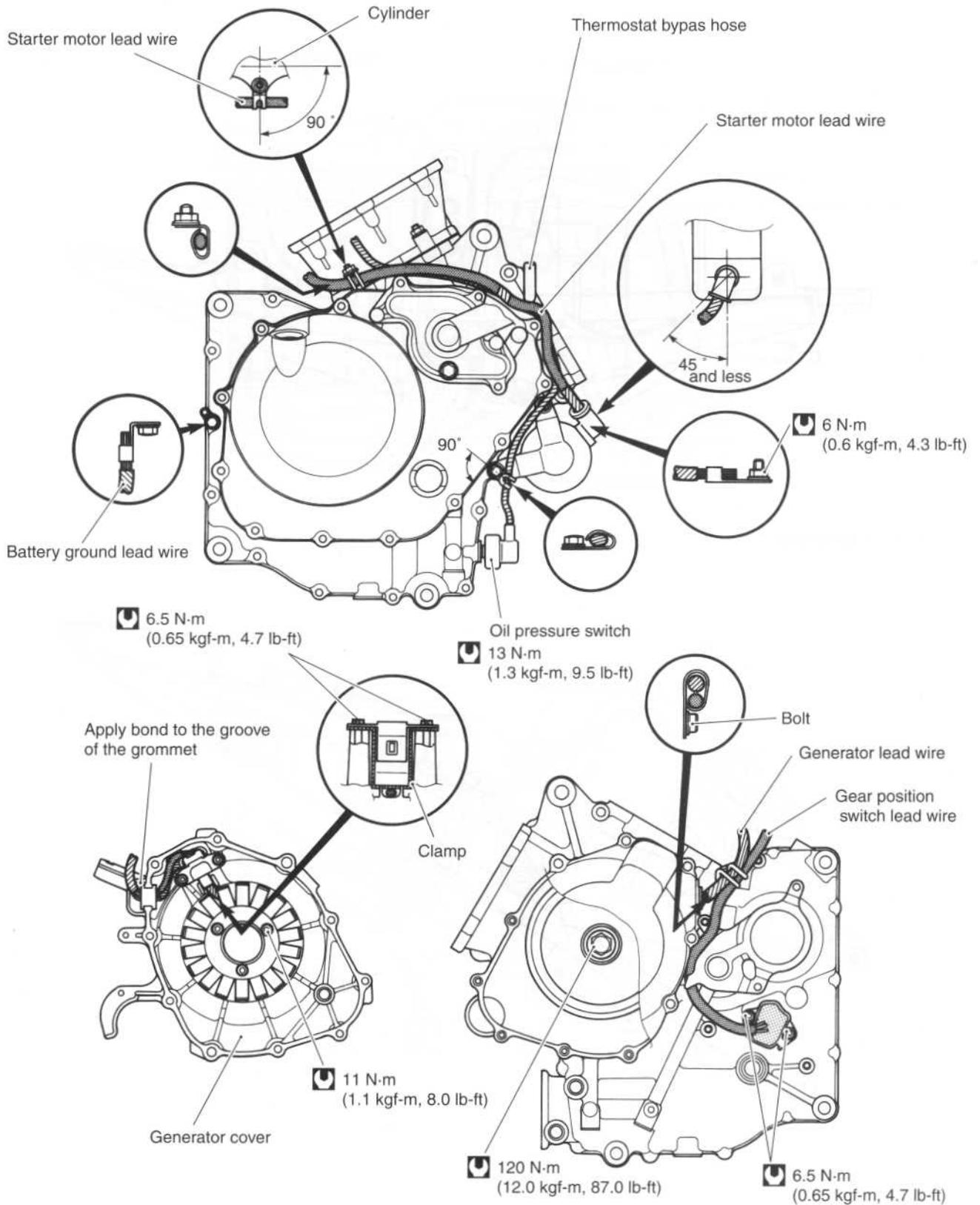
For SV650S



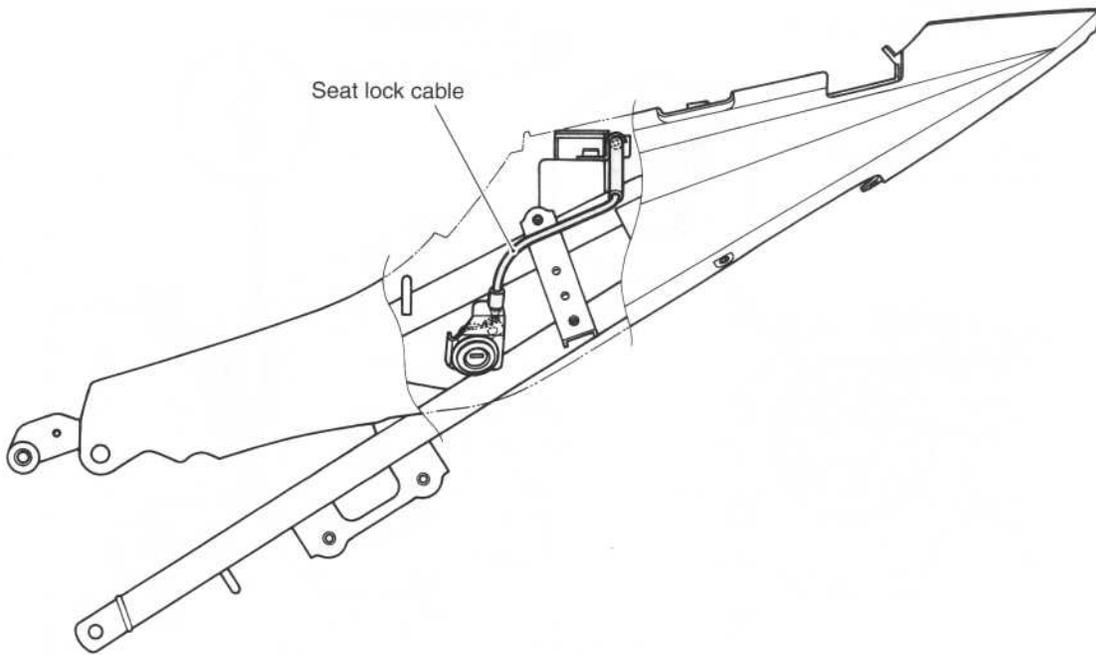
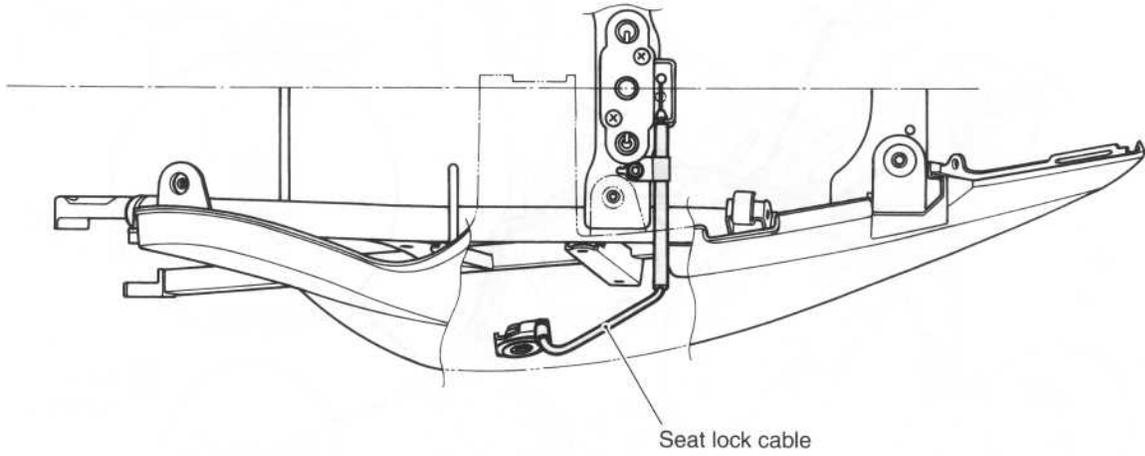
### SIDE-STAND SET-UP



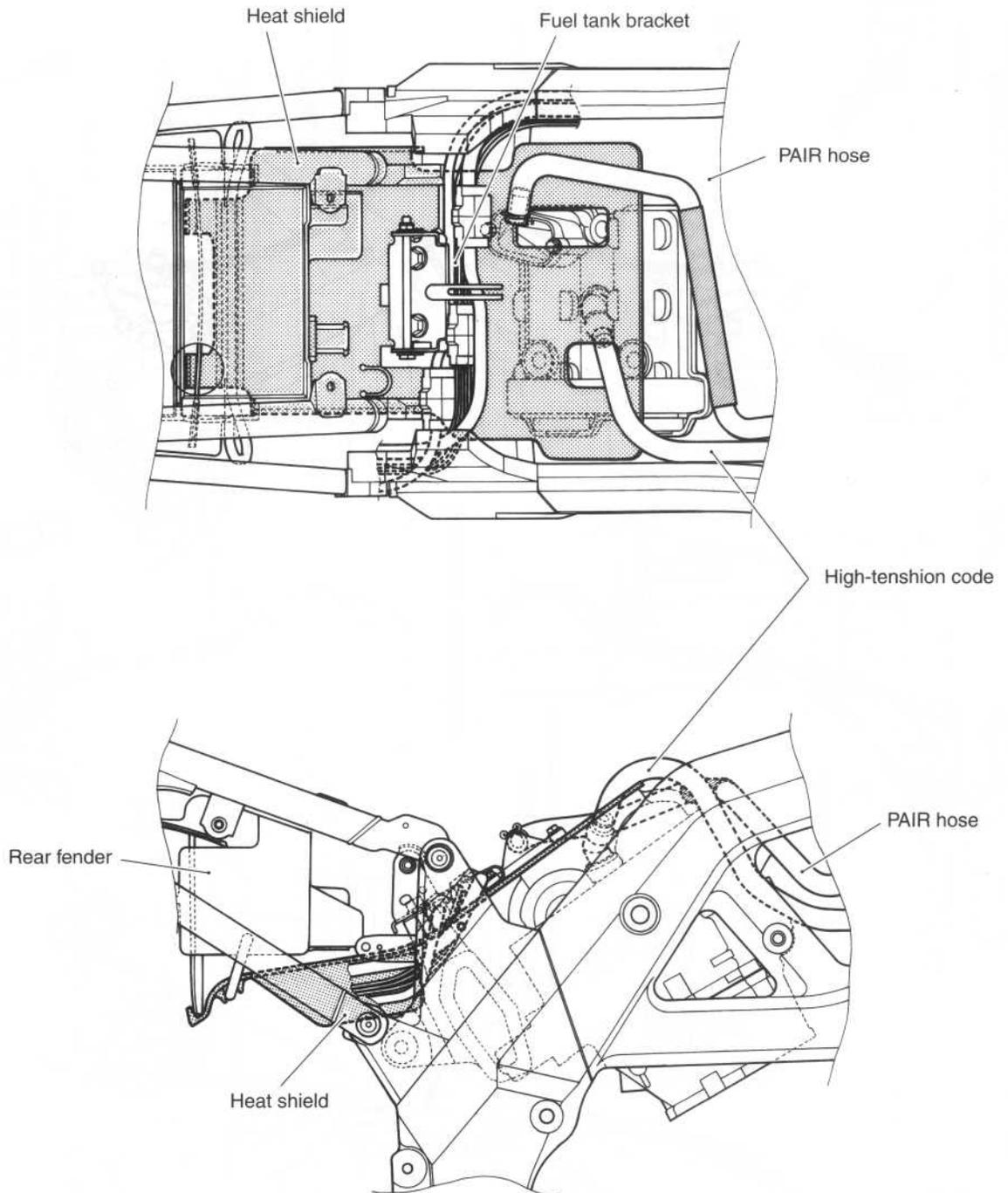
# ENGINE ELECTRICAL PARTS SET-UP



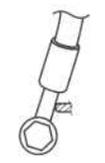
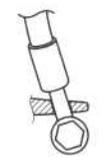
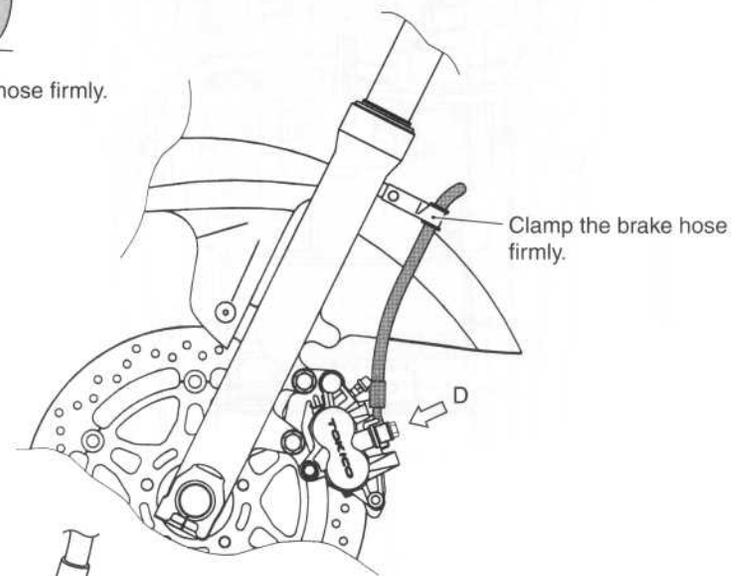
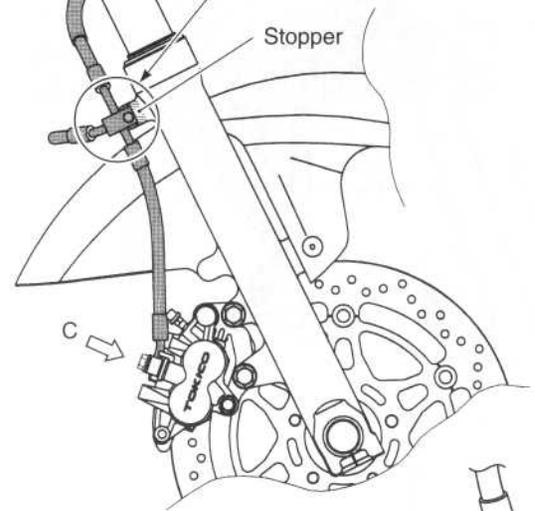
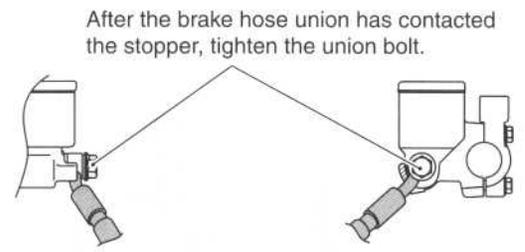
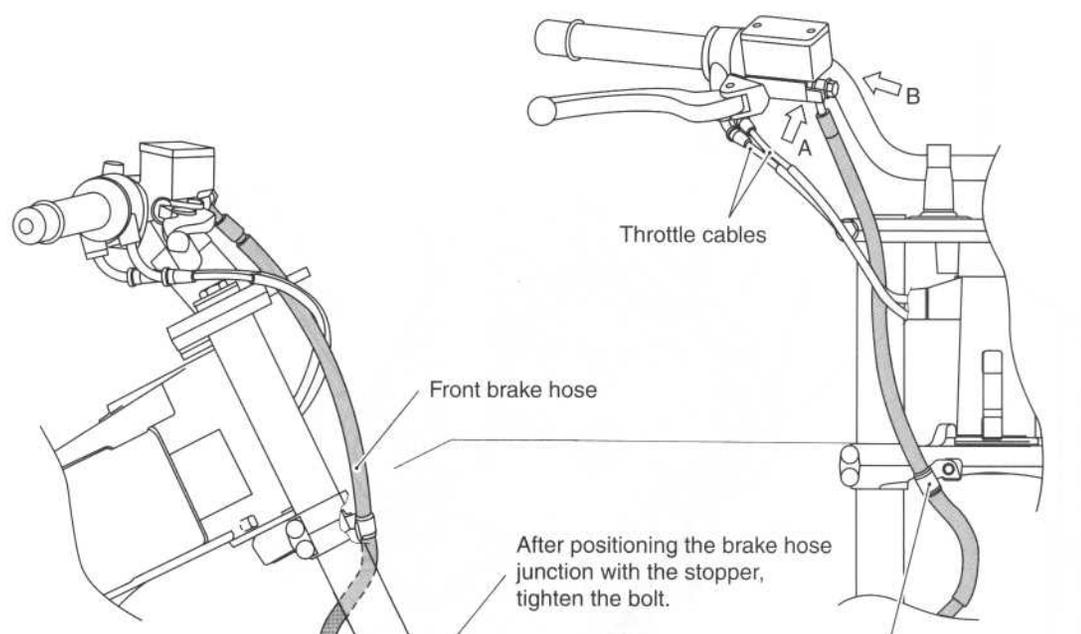
# SEAT LOCK CABLE ROUTING



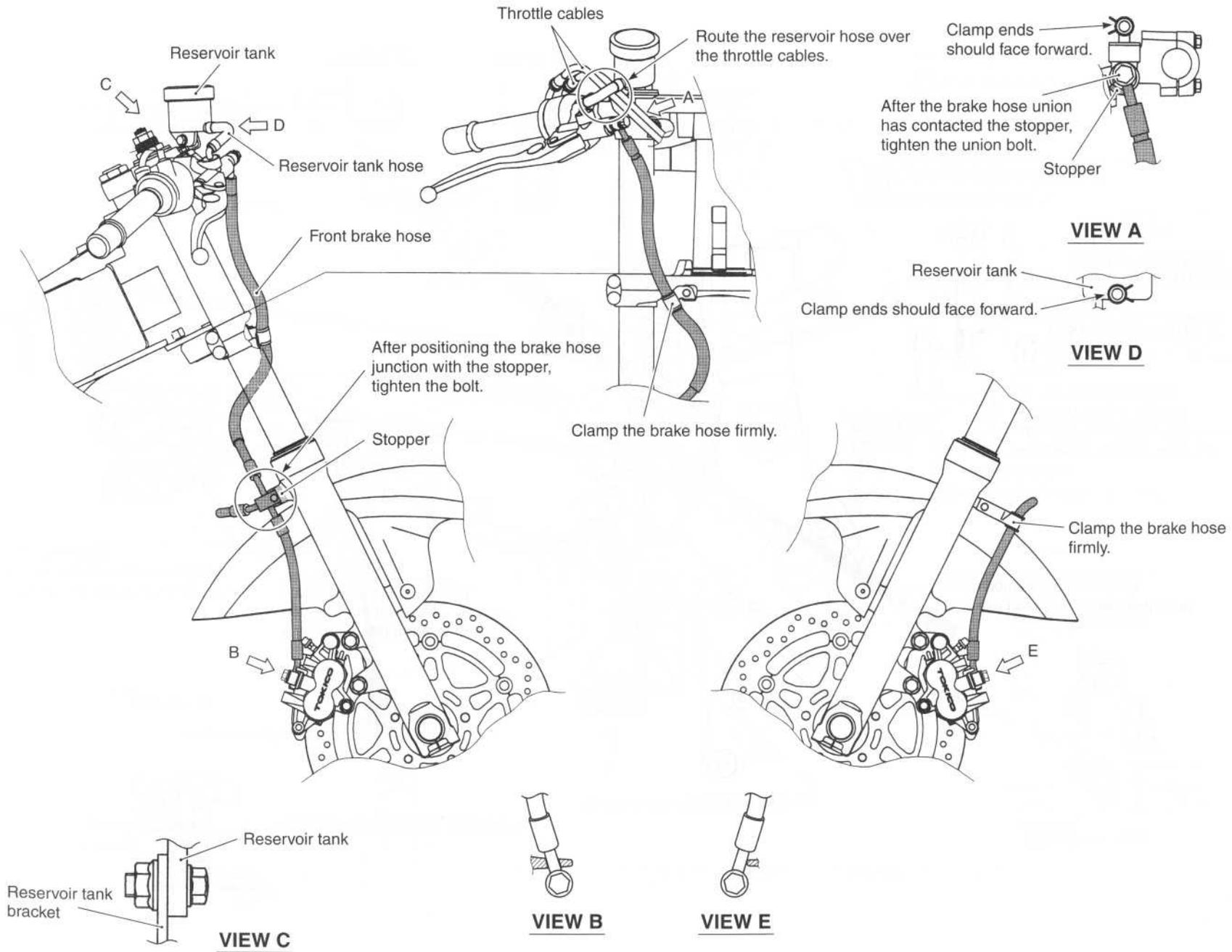
# HEAT SHIELD INSTALLATION



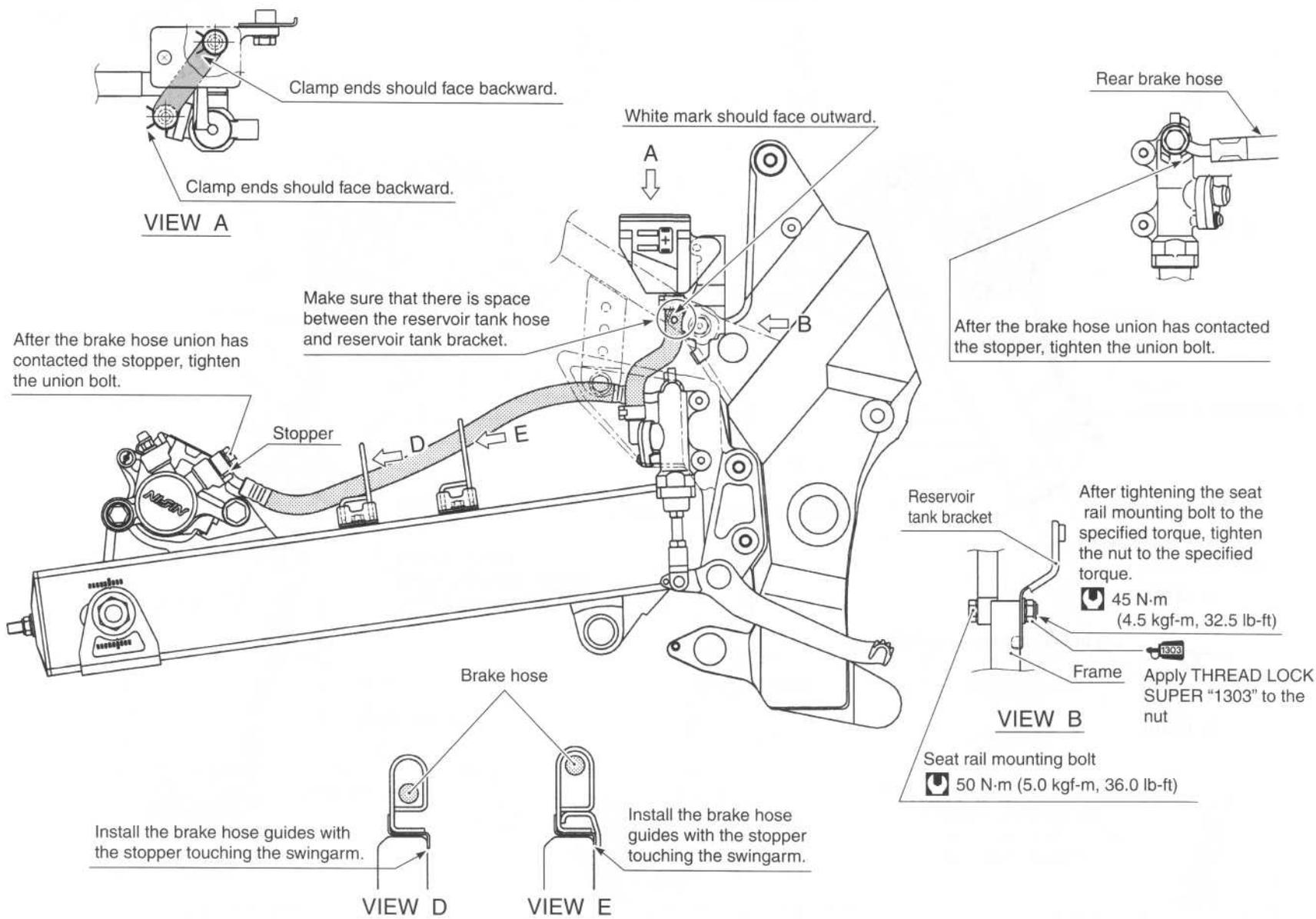
# FRONT BRAKE HOSE ROUTING For SV650



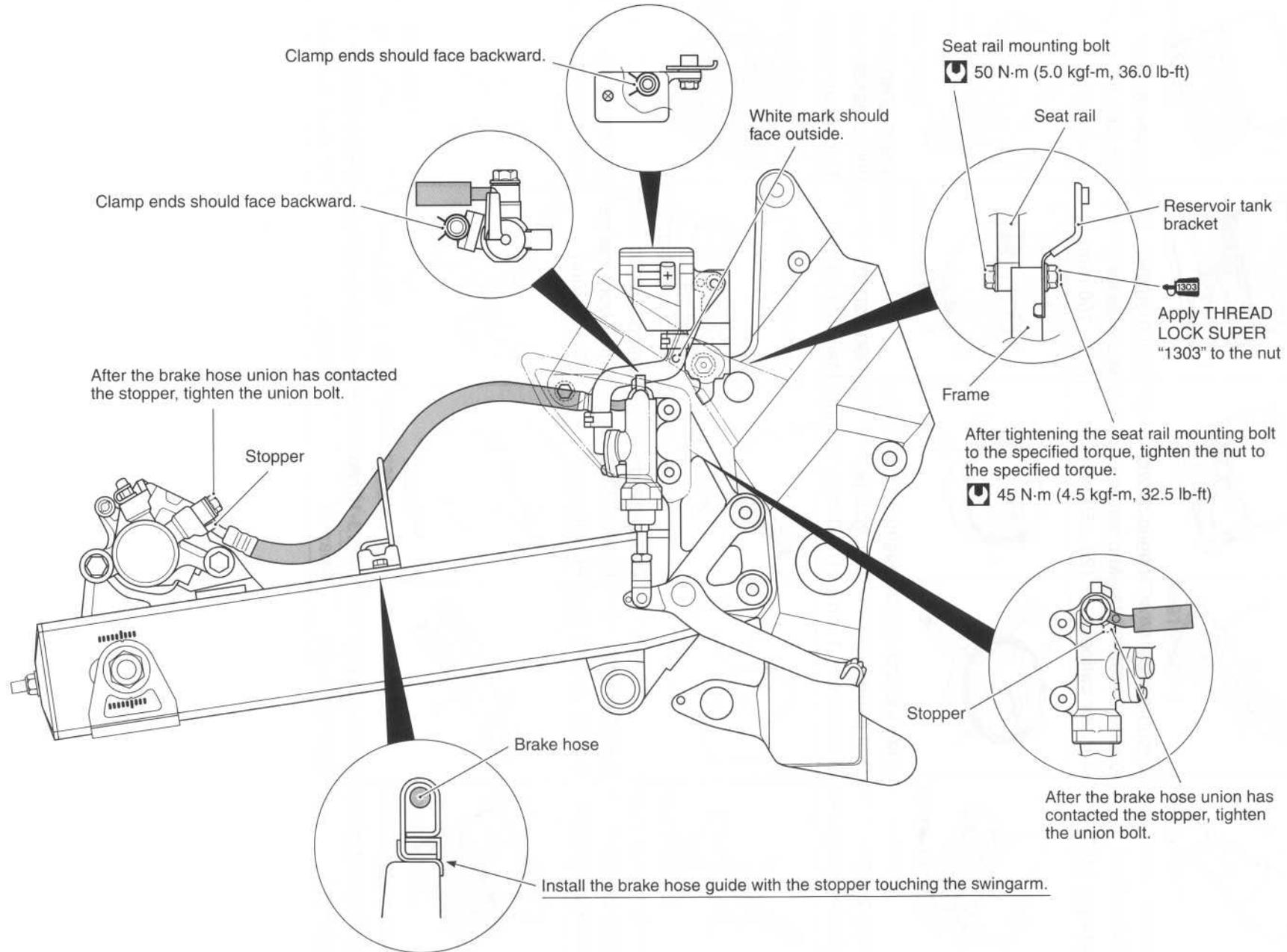
**FRONT BRAKE HOSE ROUTING  
For SV650S**



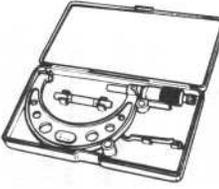
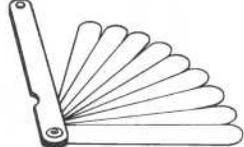
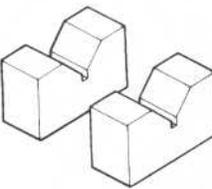
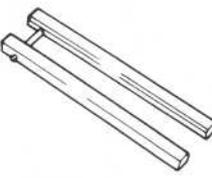
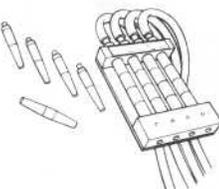
# REAR BRAKE HOSE ROUTING For SV650

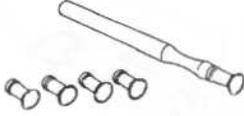
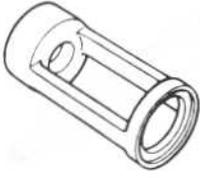
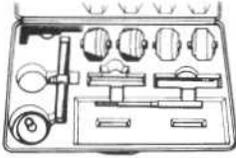


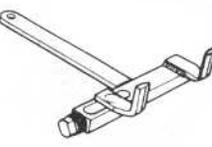
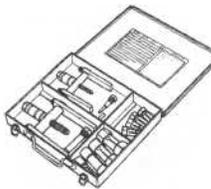
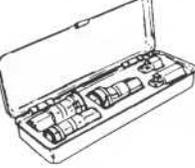
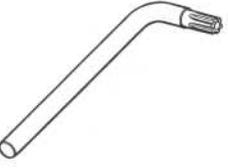
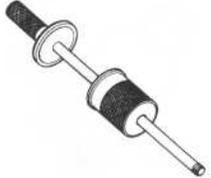
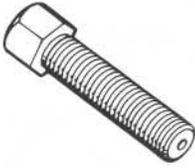
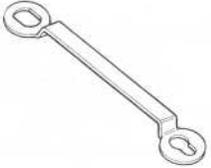
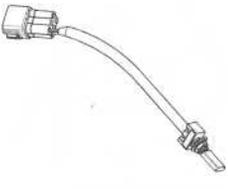
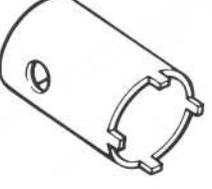
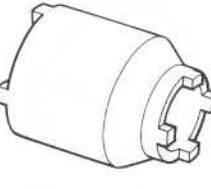
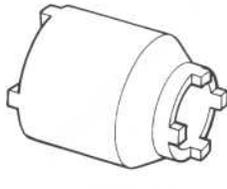
**REAR BRAKE HOSE ROUTING**  
**For SV650S**

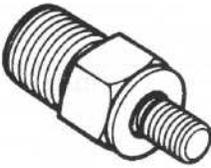
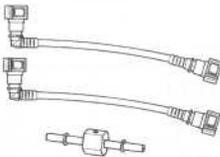
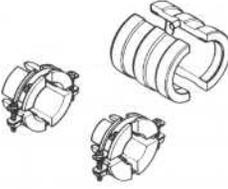
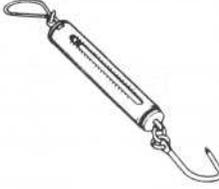
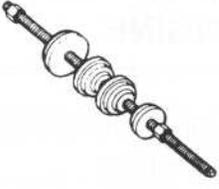
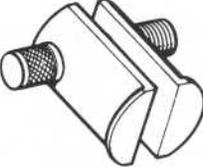
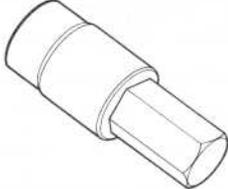


**SPECIAL TOOLS**

 <p><b>09900-18710</b> Hexagon bit 12 mm</p>	 <p><b>09900-20101</b> <b>09900-20102</b> Vernier calipers</p>	 <p><b>09900-20202</b> Micrometer (25 – 50 mm)</p>	 <p><b>09900-20204</b> Micrometer (75 – 100 mm)</p>	 <p><b>09900-20205</b> Micrometer (0 – 25 mm)</p>
 <p><b>09900-20508</b> Cylinder gauge set</p>	 <p><b>09900-20602</b> Dial gauge (1/1000 mm, 1 mm)</p>	 <p><b>09900-20607</b> Dial gauge (1/100 mm, 10 mm)</p>	 <p><b>09900-20701</b> Magnetic stand</p>	 <p><b>09900-20803</b> <b>09900-20806</b> Thickness gauge</p>
 <p><b>09900-20805</b> Tire depth gauge</p>	 <p><b>09900-21304</b> V-block set (100 mm)</p>	 <p><b>09900-22301</b> <b>09900-22302</b> Plastigauge</p>	 <p><b>09900-22403</b> Small bore gauge (18 – 35 mm)</p>	 <p><b>09900-25008</b> Multi circuit tester set</p>
 <p><b>09900-25009</b> Needle pointed probe set</p>	 <p><b>09910-20116</b> Conrod holder</p>	 <p><b>09913-10750</b> Adapter</p>	 <p><b>09913-13121</b> Vacuum balancer gauge</p>	 <p><b>09913-50121</b> Oil seal remover</p>

 <p><b>09913-60220</b> Journal bearing remover/installer</p>	 <p><b>09913-70210</b> Bearing installer set</p>	 <p><b>09915-40610</b> Oil filter wrench</p>	 <p><b>09915-64512</b> Compression gauge set</p>	 <p><b>09915-74521</b> Oil pressure gauge hose</p>
 <p><b>09915-74532</b> Oil pressure gauge attachment</p>	 <p><b>09915-77331</b> Meter (for high pressure)</p>	 <p><b>09916-10911</b> Valve lapper set</p>	 <p><b>09916-14510</b> Valve lifter</p>	 <p><b>09916-14521</b> Valve lifter attachment</p>
 <p><b>09916-21111</b> Valve seat cutter set</p>	 <p><b>09916-20640</b> Solid pilot (N-100-4.5)</p>	 <p><b>09916-20630</b> Valve seat cutter head (N-126)</p>	 <p><b>09916-34542</b> Reamer handle</p>	 <p><b>09916-33210</b> Valve guide reamer (4.5 mm)</p>
 <p><b>09916-34580</b> Valve guide reamer (10.8 mm)</p>	 <p><b>09916-43210</b> Valve guide installer/remover</p>	 <p><b>09916-53330</b> Attachment</p>	 <p><b>09916-84511</b> Tweezers</p>	 <p><b>09917-47010</b> Vacuum pump gauge</p>

 <p><b>09920-13120</b> Crankcase separating tool</p>	 <p><b>09920-53740</b> Clutch sleeve hub holder</p>	 <p><b>09921-20240</b> Bearing remover set</p>	 <p><b>09923-74511</b> Bearing remover</p>	 <p><b>09924-84510</b> Bearing installer set</p>
 <p><b>09924-84521</b> Bearing installer set</p>	 <p><b>09925-18011</b> Steering bearing installer</p>	 <p><b>09930-10121</b> Spark plug socket wrench set</p>	 <p><b>09930-11920</b> Torx bit JT40H</p>	 <p><b>09930-11940</b> Bit holder</p>
 <p><b>09930-11950</b> Torx wrench</p>	 <p><b>09930-11960</b> Torx wrench</p>	 <p><b>09930-30104</b> Sliding shaft</p>	 <p><b>09930-30450</b> Rotor remover</p>	 <p><b>09930-44530</b> Rotor holder</p>
 <p><b>09930-82720</b> Mode select switch</p>	 <p><b>09940-14911</b> Steering stem nut wrench</p>	 <p><b>09940-14940</b> Swingarm pivot thrust adjuster socket wrench</p>	 <p><b>09940-14960</b> Steering stem nut wrench socket</p>	 <p><b>09940-14990</b> Engine mounting thrust adjuster socket wrench</p>

 <p><b>09940-40211</b> Fuel pressure gauge adaptor</p>	 <p><b>09940-40220</b> Fuel pressure gauge hose attachment</p>	 <p><b>09940-52861</b> Front fork oil seal installer</p>	 <p><b>09940-92720</b> Spring scale</p>	 <p><b>09941-34513</b> Bearing/steering race installer set</p>
 <p><b>09941-54911</b> Bearing outer race remover</p>	 <p><b>09943-74111</b> Front fork oil level gauge</p>	 <p><b>09944-28320</b> Hexagon bit 19 mm</p>		

**NOTE:**

*When order the special tool, please confirm whether it is available or not.*

## 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
Camshaft journal holder bolt		10	1.0	7.0
Cam chain tension adjuster bolt		10	1.0	7.0
Cam chain tensioner mounting bolt		10	1.0	7.0
Cylinder head bolt [M: 10]	Initial	25	2.5	18.0
	Final	42	4.2	30.5
Water drain bolt		13	1.3	9.5
Clutch sleeve hub nut		50	5.0	36.0
Clutch spring set bolt		10	1.0	7.0
Oil plate bolt		10	1.0	7.0
Oil pressure regulator		27	2.7	19.5
Oil strainer plate bolt		10	1.0	7.0
Primary drive gear bolt		70	7.0	50.5
Generator cover plug		11	1.1	8.0
Valve timing inspection plug		23	2.3	16.5
Generator rotor bolt		120	12.0	87.0
Starter clutch bolt		25	2.5	18.0
Generator stator set bolt		11	1.1	8.0
CKP sensor set bolt		6.5	0.65	4.7
Gearshift cam stopper bolt		10	1.0	7.0
Gearshift cam stopper plate bolt		13	1.3	9.5
Gearshift arm stopper bolt		19	1.9	13.5
Oil pressure switch		14	1.4	10.0
Crankcase bolt	[M: 6]	11	1.1	8.0
	[M: 8]	26	2.6	19.0
Generator cover bolt	[M: 6]	10	1.0	7.0
Oil gallery plug	[M: 8]	18	1.8	13.0
Oil drain plug		21	2.1	15.0
Piston cooling oil jet bolt		10	1.0	7.0
Conrod bearing cap bolt	Initial	21	2.1	15.0
	Final	After tightening the bolts to the above torque, tighten them 1/4 of a turn (90°).		

ITEM		N·m	kgf-m	lb-ft
Exhaust pipe bolt/nut		23	2.3	16.5
Muffler mounting nut		23	2.3	16.5
Muffler joint nut		23	2.3	16.5
Oil pipe stopper screw		8	0.8	6.0
Engine sprocket nut		145	14.5	105
Engine mounting bolt/nut	[M: 12]	93	9.3	67.5
	[M: 10]	55	5.5	40.0
Engine mounting thrust adjuster	[Center]	12	1.2	8.5
	[Rear Lower]	12	1.2	8.5
Engine mounting thrust adjuster lock nut	[Center]	45	4.5	32.5
	[Rear Lower]	45	4.5	32.5
Engine mounting clamp bolt		23	2.3	16.5
Cooling fan thermo-switch		13	1.3	9.5
Engine coolant temperature sensor		18	1.8	13.0
Cam chain tension adjuster bolt		35	3.5	25.5
Fuel pump mounting bolt		10	1.0	7.0
Fuel delivery pipe mounting screw		5	0.5	3.7
Cooling fan motor mounting bolt		8	0.8	6.0
Thermostat case bolt		10	1.0	7.0
Oil cooler mounting bolt		10	1.0	7.0
Oil cooler union bolt		23	2.3	16.5

## FI SYSTEM PARTS

ITEM		N·m	kgf-m	lb-ft
TP sensor mounting screw		3.5	0.35	2.5
STP sensor mounting screw		2.0	0.2	1.5
ECT sensor		20	2.0	14.5
IAT sensor		18	1.8	13.0

**CHASSIS**

ITEM	N-m	kgf-m	lb-ft
Steering stem head nut	90	9.0	65.0
Steering stem 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
Handlebar clamp bolt	23	2.3	16.5
Handlebar holder nut (SV650)	45	4.5	32.5
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
Front caliper air bleeder valve	7.5	0.75	5.5
Rear caliper air bleeder valve	6.0	0.6	4.3
Brake disc bolt (Front and Rear)	23	2.3	16.5
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
Rear brake pad mounting 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
Front footrest bracket mounting bolt	23	2.3	16.5
Front footrest bolt	39	3.9	28.0
Swingarm pivot shaft	15	1.5	11.0
Swingarm pivot shaft nut	100	10.0	72.5
Swingarm pivot shaft lock-nut	90	9.0	65.0
Rear shock absorber mounting upper nut	50	5.0	36.0
Rear shock absorber mounting bolt	50	5.0	36.0
Cushion lever mounting nut (Front)	78	7.8	56.5
Cushion rod nut (Upper and Lower)	78	7.8	56.5
Rear axle nut	100	10.0	72.5
Rear sprocket nut	60	6.0	43.5
Seat rail mounting bolt	50	5.0	36.0
Side stand bracket mounting bolt	100	10.0	72.5
Side stand bolt	50	5.0	36.0
Side stand nut	40	4.0	29.0

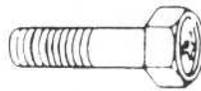
# TIGHTENING TORQUE CHART

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

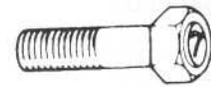
Bolt Diameter Ⓐ (mm)	Conventional or "4" marked bolt			"7" marked bolt		
	N-m	kgf-m	lb-ft	N-m	kgf-m	lb-ft
4	1.5	0.15	1.0	2.3	0.23	1.5
5	3	0.3	2.0	4.5	0.45	3.0
6	5.5	0.55	4.0	10	1.0	7.0
8	13	1.3	9.5	23	2.3	16.5
10	29	2.9	21.0	50	5.0	36.0
12	45	4.5	32.5	85	8.5	61.5
14	65	6.5	47.0	135	13.5	97.5
16	105	10.5	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.	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	4.1 – 4.7 kgf (9.03 – 10.36 lbs) at length 29.9 mm (1.18 in)	—
	OUTER	16.6 – 19.2 kgf (36.60 – 42.33 lbs) at length 33.4 mm (1.31 in)	—

**CAMSHAFT + CYLINDER HEAD**

Unit: mm (in)

ITEM		STANDARD	LIMIT
Cam height	IN.	36.060 – 36.105 (1.4196 – 1.4214)	35.76 (1.408)
	EX.	34.680 – 34.725 (1.3654 – 1.3671)	34.38 (1.354)
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	STANDARD		LIMIT
Compression pressure	1 500 kPa (15 kgf/cm <sup>2</sup> ) (213 psi)		1 100 kPa (11 kgf/cm <sup>2</sup> ) (156 psi)
Compression pressure difference	—		200 kPa (2 kgf/cm <sup>2</sup> ) (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. 9.5 (0.37)	7.6 (0.30)
	2nd	Approx. 11 (0.43)	8.8 (0.34)
Piston ring end gap	1st	0.20 – 0.35 (0.008 – 0.014)	0.70 (0.028)
	2nd	0.20 – 0.35 (0.008 – 0.0014)	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)	—
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	STANDARD	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 runout	—	0.05 (0.002)

**OIL PUMP**

ITEM	STANDARD	LIMIT
Oil pressure (at 60 °C, 140 °F)	Above 200 kPa (2.0 kgf/cm <sup>2</sup> , 28 psi) Below 600 kPa (6.0 kgf/cm <sup>2</sup> , 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	1/4 turn (s) back	—
Drive plate thickness	No. 1 & No. 2 2.92 – 3.08 (0.115 – 0.121)	2.62 (0.103)
Drive plate claw width	No. 1 & No. 2 13.7 – 13.8 (0.539 – 0.543)	12.9 (0.507)
Driven plate distortion	—	0.10 (0.004)
Clutch spring free length	53.1 (2.09)	50.5 (1.99)

**TRANSMISSION + DRIVE CHAIN**

Unit: mm (in) Except ratio

ITEM		STANDARD		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)		0.50 (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	SV650	60 – 70 (2.4 – 2.8)		—
	SV650S	55 – 60 (2.2 – 2.4)		—

**THERMOSTAT + RADIATOR + FAN + COOLANT**

ITEM	STANDARD		NOTE
Thermostat valve opening temperature	Approx. 88 °C (190 °F)		—
Thermostat valve lift	Over 8.0 mm (0.31 in) at 100 °C (212 °F)		—
Engine coolant temperature sensor resistance	20 °C (68 °F)	Approx. 2.45 kΩ	—
	40 °C (104 °F)	Approx. 1.148 kΩ	—
	60 °C (140 °F)	Approx. 0.587 kΩ	—
	80 °C (176 °F)	Approx. 0.322 kΩ	—
Radiator cap valve opening pressure	95 – 125 kPa (0.95 – 1.25 kgf/cm <sup>2</sup> , 13.5 – 17.8 psi)		—
Cooling fan thermo-switch operating temperature	OFF→ON	Approx. 98 °C (208 °F)	—
	ON→OFF	Approx. 92 °C (198 °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	Reserve tank side	Approx. 250 ml (0.26/0.22 US/lmp qt)	—
	Engine side	Approx. 1 480 ml (1.43/1.19 US/lmp qt)	—

**INJECTOR + FUEL PUMP + FUEL PRESSURE REGULATOR**

ITEM	SPECIFICATION	NOTE
Injector resistance	11 – 13 Ω at 20 °C (68 °F)	
Fuel pump discharge amount	Min 168 ml (5.7/5.9 US/lmp oz) for 10 sec. at 300 kPa (3.0 kgf/cm <sup>2</sup> , 43 psi)	
Fuel pressure regulator operating set pressure	Approx. 300 kPa (3.0 kgf/cm <sup>2</sup> , 43 psi)	

**FI SENSORS+ SECONDARY THROTTLE VALVE ACTUATOR**

ITEM	SPECIFICATION		NOTE
CKP sensor resistance	130 – 240 $\Omega$		
CKP sensor peak voltage	3.7 V (When cranking) and more		
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	Closed	Approx. 1.12 k $\Omega$	
	Opened	Approx. 4.26 k $\Omega$	
TP sensor output voltage	Closed	Approx. 1.12 V	
	Opened	Approx. 4.26 V	
ECT sensor input voltage	4.5 – 5.5 V		
ECT sensor resistance	Approx. 2.45 k $\Omega$ at 20 °C (68 °F)		
IAT sensor input voltage	4.5 – 5.5 V		
IAT sensor resistance	Approx. 2.45 k $\Omega$ at 20 °C (68 °F)		
TO sensor resistance	19.1 – 19.7 k $\Omega$		
TO sensor voltage	Approx. 0.4 – 1.4 V		
GP switch voltage	1.0 V and more (From 1st to Top)		
Injector voltage	Battery voltage		
STP sensor input voltage	4.5 – 5.5 V		
STP sensor resistance	Closed	Approx. 0.58 k $\Omega$	
	Opened	Approx. 4.38 k $\Omega$	
STP sensor output voltage	Closed	Approx. 0.58 V	
	Opened	Approx. 4.38 V	
STV actuator resistance	7 – 14 $\Omega$		
PAIR solenoid valve resistance	20 – 24 k $\Omega$ at 20 °C (68 °F)		

**THROTTLE BODY**

ITEM	SPECIFICATION
I.D. No.	17G0 (Others), 17G1 (For E-33)
Bore size	39 mm
Fast idle r/min.	1 800 – 2 400 r/min at 25 °C (77 °F)
Idle r/min.	1 300 $\pm$ 100 r/min/Warmed engine
Throttle cable play	2.0 – 4.0 mm (0.08 – 0.16 in)

**ELECTRICAL**

Unit: mm (in)

ITEM		SPECIFICATION		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.		
Crankshaft position sensor resistance		130 – 240 Ω		BI – G
Ignition coil resistance	Primary	2 – 5 Ω		⊕ tap – ⊖ tap
	Secondary	24 – 37 kΩ		⊕ tap – Plug cap
Crankshaft position sensor peak voltage		3.7 V and more		When cranking
Ignition coil primary peak voltage		150 V and more		
Generator coil resistance		0.2 – 0.7 Ω		
Generator Max. output		Approx. 375 W at 5 000 r/min		
Generator no-load voltage (When cold)		60 V (AC) and more at 5 000 r/min.		
Regulated voltage		14.0 – 15.5 V at 5 000 r/min.		
Starter relay resistance		3 – 6 Ω		
Battery	Type designation	YTX12A-BS		
	Capacity	12 V 36.0 kC (10 Ah)/10 HR		
Fuse size	Headlight	HI	SV650S	15 A
			SV650	10 A
		LO	SV650S	15 A
			SV650	10 A
	Fuel		10 A	
	Ignition		10 A	
	Fan motor		15 A	
	Signal		10 A	
	Main		30 A	

**WATTAGE**

Unit: W

ITEM		SPECIFICATION		
		SV650S	SV650	
			E-03, 24, 28, 33	Others
Headlight	HI	60 W × 2	60 W	←
	LO	55 W × 2	55 W	←
Parking or position light		5 W		5 W
Brake light/Taillight		LED	←	←
Turn signal light		21 W	←	←
License light		5 W	←	←
Speedometer light		LED	←	←
Turn signal indicator light		LED	←	←
High beam indicator light		LED	←	←
Neutral indicator light		LED	←	←
Oil pressure/coolant temp./FI indicator light		LED	←	←
Fuel indicator light		LED	←	←

**BRAKE + WHEEL**

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal height	SV650	50 – 60 (1.97 – 2.36)	—
	SV650S	60 – 70 (2.36 – 2.76)	
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	14.000 – 14.043 (0.5512 – 0.5529)	—
Master cylinder piston diam.	Front	15.827 – 15.854 (0.6231 – 0.6242)	—
	Rear	13.957 – 13.984 (0.5495 – 0.5506)	—
Brake caliper cylinder bore	Front	30.230 – 30.306 (1.1902 – 1.1931)	—
	Rear	38.180 – 38.230 (1.5031 – 1.5051)	—
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 M/C × MT3.50	—
	Rear	17 M/C × MT4.50	—
Wheel axle runout	Front	—	0.25 (0.010)
	Rear	—	0.25 (0.010)

**TIRE**

ITEM		STD/SPEC.	LIMIT
Cold inflation tire pressure (Solo riding)	Front	225 kPa (2.25 kgf/cm <sup>2</sup> , 33 psi)	—
	Rear	250 kPa (2.50 kgf/cm <sup>2</sup> , 36 psi)	—
Cold inflation tire pressure (Dual riding)	Front	225 kPa (2.25 kgf/cm <sup>2</sup> , 33 psi)	—
	Rear	250 kPa (2.50 kgf/cm <sup>2</sup> , 36 psi)	—
Tire size	Front	120/60 ZR17 M/C (55 W)	—
	Rear	160/60 ZR17 M/C (69 W)	—
Tire type	Front	DUNLOP: D220FST L	—
	Rear	DUNLOP: D220ST L	—
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	SV650	429 (16.89)	420 (16.5)
	SV650S	437.4 (17.22)	428 (16.8)
Front fork oil level (without spring, outer tube fully compressed)	SV650	92 (3.62)	—
	SV650S	94 (3.70)	
Front fork spring adjuster		3rd groove from Top	—
Front fork oil type		SUZUKI FORK OIL SS8 or equivalent fork oil	—
Front fork oil capacity (each leg)	SV650	490 ml (20.2/17.3 US/Imp oz)	—
	SV650S	488 ml (16.5/17.2 US/Imp oz)	—
Rear shock absorber spring pre-set length	SV650	4/7	—
	SV650S	3/7	—
Rear wheel travel		137 (5.4)	—
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, 28, 33
	Gasoline used should be graded 91 octane or higher. An unleaded gasoline is recommended.		Others
Fuel tank capacity	16 L (4.2/3.5 US/lmp gal)		E-33
	17 L (4.5/3.7 US/lmp gal)		Others
Engine oil type	SAE 10 W – 40, API SF or SG		
Engine oil capacity	Change	2 300 ml (2.4/2.0 US/lmp qt)	
	Filter change	2 700 ml (2.9/2.4 US/lmp qt)	
	Overhaul	3 100 ml (3.3/2.7 US/lmp qt)	