

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 3 sec. and more, 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. $0.1\text{ V} \leq \text{sensor voltage} \leq 4.8\text{ V}$ 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 2 sec. and more 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.
C24/C25	Ignition signal #1/#2	Crankshaft position sensor (pick-up coil) signal is produced, but signal from ignition coil is interrupted continuous by 8 times or more. In this case, the code C24 or C25 is indicated.
		Ignition coil, wiring/coupler connection, power supply from the battery.

MALFUNCTION CODE	DETECTED ITEM	DETECTED FAILURE CONDITION
		CHECK FOR
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 0.2 V and less.
		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.
C44	Heated oxygen sensor (HO2S) [E-02, 19]	The sensor voltage should be the following and less after warming up condition. (Sensor voltage $\leq 0.4 \text{ V}$) Without the above value, C44 is indicated.
		Heater operation voltage does not reach in the oxygen heater circuit, C44 in indicated.
		The Heater can not operate.
		HO2S lead wire/coupler connection. Battery voltage supply to the HO2S.
C49	PAIR control solenoid valve	PAIR control solenoid valve voltage is not input in ECM.
		PAIR control solenoid valve, lead wire/coupler.

ENGINE

ENGINE WILL NOT START OR IS HARD TO START

Symptom, possible causes and remedy

1) Compression too low

- | | |
|--|-------------------------|
| • Valve clearance out of adjustment. | Adjust. |
| • Worn valve guides or poor seating of valves. | Repair or replace. |
| • Mistimed valves. | Adjust. |
| • Excessively worn piston rings. | Replace. |
| • Worn-down cylinder bores. | Replace. |
| • Starter motor cranks too slowly. | See electrical section. |
| • Poor seating of spark plugs. | Retighten. |

2) Plug not sparking

- | | |
|---------------------------------------|--------------------|
| • Fouled spark plugs. | Clean or replace. |
| • Wet spark plugs. | Clean and dry. |
| • Defective ignition coils. | Replace. |
| • Open or short in high-tension cord. | Replace. |
| • Defective CKP sensor. | Replace. |
| • Defective ECM. | Replace. |
| • Open-circuited wiring connections. | Repair or replace. |

3) No fuel reaching the intake manifold

- | | |
|--------------------------------------|-------------------|
| • Clogged fuel filter or fuel hose. | Clean or replace. |
| • Defective fuel pump. | Replace. |
| • Defective fuel pressure regulator. | Replace. |
| • Defective fuel injector. | Replace. |
| • Defective fuel pump relay. | Replace. |
| • Defective ECM. | Replace. |
| • Open-circuited wiring connections. | Check and repair. |

4) Incorrect fuel/air mixture

- | | |
|--------------------------------------|----------|
| • TP sensor out of adjustment. | Adjust. |
| • Defective fuel pump. | Replace. |
| • Defective fuel pressure regulator. | Replace. |
| • Defective TP sensor. | Replace. |
| • Defective CKP sensor. | Replace. |
| • Defective IAP sensor. | Replace. |
| • Defective ECM. | Replace. |
| • Defective ECT sensor. | Replace. |
| • Defective IAT sensor. | Replace. |

ENGINE IDLES POORLY**Symptom, possible causes and remedy**

- | | |
|--------------------------------------|--------------------|
| • Valve clearance out of adjustment. | Adjust. |
| • Poor seating of valves. | Replace or repair. |
| • Defective valve guides. | Replace. |
| • Worn down camshafts. | Replace. |
| • Too wide spark plug gaps. | Adjust or replace. |
| • Defective ignition coils. | Replace. |
| • Defective CKP sensor. | Replace. |
| • Defective ECM. | Replace. |
| • Defective TP sensor. | Replace. |
| • Defective fuel pump. | Replace. |
| • Imbalanced throttle valve or STV. | Adjust. |
| • Damaged or cracked vacuum hose. | Replace. |

ENGINE STALLS OFTEN**Symptom, possible causes and remedy**

- | | |
|---|----------------------|
| 1) Incorrect fuel/air mixture | |
| • Defective IAP sensor or circuit. | Repair or replace. |
| • Clogged fuel filter. | Clean or replace. |
| • Defective fuel pump. | Replace. |
| • Defective fuel pressure regulator. | Replace. |
| • Defective ECT sensor. | Replace. |
| • Defective thermostat. | Replace. |
| • Defective IAT sensor. | Replace. |
| • Damaged or cracked vacuum hose. | Replace. |
| 2) Fuel injector improperly operating | |
| • Defective fuel injectors. | Replace. |
| • No injection signal from ECM. | Repair or replace. |
| • Open or short circuited wiring connection. | Repair or replace. |
| • Defective battery or low battery voltage. | Replace or recharge. |
| 3) Control circuit or sensor improperly operating | |
| • Defective ECM. | Replace. |
| • Defective fuel pressure regulator. | Replace. |
| • Defective TP sensor. | Replace. |
| • Defective IAT sensor. | Replace. |
| • Defective CKP sensor. | Replace. |
| • Defective ECT sensor. | Replace. |
| • Defective fuel pump relay. | Replace. |
| 4) Engine internal parts improperly operating | |
| • Fouled spark plugs. | Clean. |
| • Defective CKP sensor or ECM. | Replace. |
| • Clogged fuel hose. | Clean. |
| • Valve clearance out of adjustment. | Adjust. |

NOISY ENGINE**Symptom, possible causes and remedy**

1) Excessive valve chatter

- Too large valve clearance. Adjust.
- Weakened or broken valve springs. Replace.
- Worn tappet or cam surface. Replace.
- Worn and burnt camshaft journal. Replace.

2) Noise seems to come from piston

- Worn down pistons or cylinders. Replace.
- Combustion chambers fouled with carbon. Clean.
- Worn piston pins or piston pin bore. Replace.
- Worn piston rings or ring grooves. Replace.

3) Noise seems to come from cam chain

- Stretched chain. Replace.
- Worn sprockets. Replace.
- Tension adjuster not working. Repair or replace.

4) Noise seems to come from clutch

- Worn splines of countershaft or hub. Replace.
- Worn teeth of clutch plates. Replace.
- Distorted clutch plates, driven and drive. Replace.
- Worn clutch release bearing. Replace.
- Weakened clutch dampers. Replace the primary driven gear.

5) Noise seems to come from crankshaft

- Rattling bearings due to wear. Replace.
- Worn and burnt big-end bearings. Replace.
- Worn and burnt journal bearings. Replace.

6) Noise seems to come from transmission

- Worn or rubbing gears. Replace.
- Worn splines. Replace.
- Worn or rubbing primary gears. Replace.
- Worn bearings. Replace.

7) Noise seems to come from water pump

- Too much play on pump shaft bearing. Replace.
- Worn or damaged impeller shaft. Replace.
- Worn or damaged mechanical seal. Replace.
- Contact between pump case and impeller. Replace.

ENGINE RUNS POORLY IN HIGH SPEED RANGE**Symptom, possible causes and remedy****1) Defective engine internal/electrical parts**

- | | |
|--|-------------------|
| • Weakened valve springs. | Replace. |
| • Worn camshafts. | Replace. |
| • Valve timing out of adjustment. | Adjust. |
| • Too narrow spark plug gaps. | Adjust. |
| • Ignition not advanced sufficiently due to poorly working timing advance circuit. | Replace ECM. |
| • Defective ignition coils. | Replace. |
| • Defective CKP sensor. | Replace. |
| • Defective ECM. | Replace. |
| • Clogged fuel hose, resulting in inadequate fuel supply to injector. | Clean and prime. |
| • Defective fuel pump. | Replace. |
| • Defective TP sensor. | Replace. |
| • Defective STP sensor or STVA. | Replace. |
| • Clogged air cleaner element. | Clean or replace. |

2) Defective air flow system

- | | |
|--|--------------------|
| • Clogged air cleaner element. | Clean or replace. |
| • Defective throttle valve. | Adjust or replace. |
| • Defective secondary throttle valve. | Adjust or replace. |
| • Sucking air from throttle body joint. | Repair or replace. |
| • Defective ECM. | Replace. |
| • Imbalanced throttle valve synchronization. | Adjust. |

3) Defective control circuit or sensor

- | | |
|-------------------------------------|--------------------|
| • Low fuel pressure. | Repair or replace. |
| • Defective TP sensor. | Replace. |
| • Defective IAT sensor. | Replace. |
| • Defective CKP sensor. | Replace. |
| • Defective GP switch. | Replace. |
| • Defective IAP sensor. | Replace. |
| • Defective ECM. | Replace. |
| • TP sensor out of adjustment. | Adjust. |
| • Defective STP sensor and/or STVA. | Replace. |

ENGINE LACKS POWER**Symptom, possible causes and remedy**

1) Defective engine internal/electrical parts

- | | |
|---|-----------------------|
| • Loss of valve clearance. | Adjust. |
| • Weakened valve springs. | Replace. |
| • Valve timing out of adjustment. | Adjust. |
| • Worn piston rings or cylinders. | Replace. |
| • Poor seating of valves. | Repair. |
| • Fouled spark plugs. | Clean or replace. |
| • Incorrect spark plugs. | Adjust or replace. |
| • Clogged injectors. | Clean or replace. |
| • TP sensor out of adjustment. | Adjust. |
| • Clogged air cleaner element. | Clean or replace. |
| • Imbalanced throttle valve synchronization. | Adjust. |
| • Sucking air from throttle valve or vacuum hose. | Retighten or replace. |
| • Too much engine oil. | Drain out excess oil. |
| • Defective fuel pump or ECM. | Replace. |
| • Defective CKP sensor and ignition coils. | Replace. |

Symptom, possible causes and remedy

2) Defective control circuit or sensor

- | | |
|--|--------------------|
| • Low fuel pressure. | Repair or replace. |
| • Defective TP sensor. | Replace. |
| • Defective IAT sensor. | Replace. |
| • Defective CKP sensor. | Replace. |
| • Defective GP switch. | Replace. |
| • Defective IAP sensor. | Replace. |
| • Defective ECM. | Replace. |
| • Imbalanced throttle valve synchronization. | Adjust. |
| • TP sensor out of adjustment. | Adjust. |
| • Defective STP sensor and/or STVA. | Replace. |

ENGINE OVERHEATS**Symptom, possible causes and remedy**

1) Defective engine internal parts

- Heavy carbon deposit on piston crowns. Clean.
- Not enough oil in the engine. Add oil.
- Defective oil pump or clogged oil circuit. Replace or clean.
- Sucking air from intake pipes. Retighten or replace.
- Use incorrect engine oil. Change.
- Defective cooling system. See radiator section.

Symptom, possible causes and remedy

2) Lean fuel/air mixture

- Short-circuited IAP sensor/lead wire. Repair or replace.
- Short-circuited IAT sensor/lead wire. Repair or replace.
- Sucking air from intake pipe joint. Repair or replace.
- Defective fuel injectors. Replace.
- Defective ECT sensor. Replace.

Symptom, possible causes and remedy

3) The other factors

- Ignition timing too advanced due to defective timing advance system (ECT sensor, GP switch, CKP sensor and ECM.) Replace.
- Drive chain is too tight. Adjust.

DIRTY OR HEAVY EXHAUST SMOKE**Symptom, possible causes and remedy**

- Too much engine oil in the engine. Check with inspection window. Drain excess oil.
- Worn piston rings or cylinders. Replace.
- Worn valve guides. Replace.
- Scored or scuffed cylinder walls. Replace.
- Worn valves stems. Replace.
- Defective stem seal. Replace.
- Worn oil ring side rails. Replace.

SLIPPING CLUTCH**Symptom, possible causes and remedy**

- Weakened clutch springs. Replace.
- Worn or distorted pressure plates. Replace.
- Distorted clutch plates or pressure plates. Replace.

DRAGGING CLUTCH**Symptom, possible causes and remedy**

- Some clutch springs weakened while others are not. Replace.
- Distorted pressure plates or clutch plates. Replace.

TRANSMISSION WILL NOT SHIFT**Symptom, possible causes and remedy**

- Broken gearshift cam. Replace.
- Distorted gearshift forks. Replace.
- Worn gearshift pawl. Replace.

TRANSMISSION WILL NOT SHIFT BACK**Symptom, possible causes and remedy**

- | | |
|--|--------------------|
| • Broken return spring on shift shaft. | Replace. |
| • Rubbing or sticky shift shaft. | Repair or replace. |
| • Distorted or worn gearshift forks. | Replace. |

TRANSMISSION JUMPS OUT OF GEAR**Symptom, possible causes and remedy**

- | | |
|--|----------|
| • Worn shifting gears on driveshaft or countershaft. | Replace. |
| • Distorted or worn gearshift forks. | Replace. |
| • Weakened stopper spring on gearshift stopper. | Replace. |

RADIATOR (COOLING SYSTEM)**ENGINE OVERHEATS****Symptom, possible causes and remedy**

- | | |
|---|--------------------|
| • Not enough engine coolant. | Add coolant. |
| • Radiator core and oil cooler core clogged with dirt or scale. | Clean. |
| • Faulty cooling fan. | Repair or replace. |
| • Defective cooling fan thermo-switch. | Replace. |
| • Clogged water passage. | Clean. |
| • Air trapped in the cooling circuit. | Bleed out air. |
| • Defective water pump. | Replace. |
| • Use of incorrect engine coolant. | Replace. |
| • Defective thermostat. | Replace. |

ENGINE OVERCOOLS**Symptom, possible causes and remedy**

- | | |
|--|----------------------------|
| • Defective cooling fan thermo-switch. | Replace. |
| • Extremely cold weather. | Put on the radiator cover. |
| • Defective thermostat. | Replace. |

CHASSIS

HEAVY STEERING

Symptom, possible causes and remedy

- | | |
|------------------------------------|----------|
| • Overtightened steering stem nut. | Adjust. |
| • Broken bearing in steering stem. | Replace. |
| • Distorted steering stem. | Replace. |
| • Not enough pressure in tires. | Adjust. |

WOBBLY HANDLEBARS

Symptom, possible causes and remedy

- | | |
|---|--------------------|
| • Loss of balance between right and left front forks. | Adjust. |
| • Distorted front fork. | Repair or replace. |
| • Distorted front axle or crooked tire. | Replace. |
| • Loose steering stem nut. | Adjust. |
| • Worn or incorrect tire or wrong tire pressure. | Adjust or replace. |
| • Worn bearing/race in steering stem. | Replace. |

WOBBLY FRONT WHEEL

Symptom, possible causes and remedy

- | | |
|---|------------|
| • Distorted wheel rim. | Replace. |
| • Worn front wheel bearings. | Replace. |
| • Defective or incorrect tire. | Replace. |
| • Loose axle or axle pinch bolt. | Retighten. |
| • Incorrect front fork oil level. | Adjust. |
| • Incorrect front wheel weight balance. | Adjust. |

FRONT SUSPENSION TOO SOFT

Symptom, possible causes and remedy

- | | |
|--|------------|
| • Weakened springs. | Replace. |
| • Not enough fork oil. | Replenish. |
| • Wrong viscous fork oil. | Replace. |
| • Improperly set front fork spring adjuster. | Adjust. |

FRONT SUSPENSION TOO STIFF

Symptom, possible causes and remedy

- | | |
|--|-------------------|
| • Too viscous fork oil. | Replace. |
| • Too much fork oil. | Drain excess oil. |
| • Improperly set front fork spring adjuster. | Adjust. |
| • Bent front axle. | Replace. |

NOISY FRONT SUSPENSION

Symptom, possible causes and remedy

- | | |
|------------------------------|------------|
| • Not enough fork oil. | Replenish. |
| • Loose bolts on suspension. | Retighten. |

WOBBLY REAR WHEEL

Symptom, possible causes and remedy

- | | |
|---|------------|
| • Distorted wheel rim. | Replace. |
| • Worn rear wheel bearing or swingarm bearings. | Replace. |
| • Defective or incorrect tire. | Replace. |
| • Worn swingarm and rear suspensions. | Replace. |
| • Loose nuts or bolts on rear suspensions. | Retighten. |

REAR SUSPENSION TOO SOFT**Symptom, possible causes and remedy**

- | | |
|---|----------|
| • Weakened spring of shock absorber. | Replace. |
| • Leakage of oil from shock absorber. | Replace. |
| • Improperly set rear spring unit adjuster. | Adjust. |

REAR SUSPENSION TOO STIFF**Symptom, possible causes and remedy**

- | | |
|---|----------|
| • Bent shock absorber shaft. | Replace. |
| • Bent swingarm pivot shaft. | Replace. |
| • Worn swingarm and suspension bearings. | Replace. |
| • Improperly set rear spring unit adjuster. | Adjust. |

NOISY REAR SUSPENSION**Symptom, possible causes and remedy**

- | | |
|---|------------|
| • Loose nuts or bolts on rear suspension. | Retighten. |
| • Worn swingarm and suspension bearings. | Replace. |

BRAKES**INSUFFICIENT BRAKE POWER****Symptom, possible causes and remedy**

- | | |
|---|----------------------|
| • Leakage of brake fluid from hydraulic system. | Repair or replace. |
| • Worn pads. | Replace. |
| • Oil adhesion on friction surface of pads. | Clean disc and pads. |
| • Worn disc. | Replace. |
| • Air in hydraulic system. | Bleed air. |
| • Not enough brake fluid in the reservoir. | Replenish. |

BRAKE SQUEAKING**Symptom, possible causes and remedy**

- | | |
|--|--|
| • Carbon adhesion on pad surface. | Repair surface with sandpaper. |
| • Tilted pad. | Correct pad fitting or replace. |
| • Damaged wheel bearing. | Replace. |
| • Loose front wheel axle or rear wheel axle. | Tighten to specified torque. |
| • Worn pads or disc. | Replace. |
| • Foreign material in brake fluid. | Replace brake fluid. |
| • Clogged return port of master cylinder. | Disassemble and clean master cylinder. |

EXCESSIVE BRAKE LEVER STROKE**Symptom, possible causes and remedy**

- | | |
|------------------------------------|--|
| • Air in hydraulic system. | Bleed air. |
| • Insufficient brake fluid. | Replenish fluid to specified level; bleed air. |
| • Improper quality of brake fluid. | Replace with correct fluid. |

LEAKAGE OF BRAKE FLUID**Symptom, possible causes and remedy**

- | | |
|---|------------------------------|
| • Insufficient tightening of connection joints. | Tighten to specified torque. |
| • Cracked hose. | Replace. |
| • Worn piston and/or cup. | Replace piston and/or cup. |

BRAKE DRAGS**Symptom, possible causes and remedy**

- | | |
|--|----------------------|
| • Rusty part. | Clean and lubricate. |
| • Insufficient brake lever or brake pedal pivot lubrication. | Lubricate. |

ELECTRICAL**NO SPARKING OR POOR SPARKING****Symptom, possible causes and remedy**

- | | |
|--|-------------------|
| • Defective ignition coils or spark plug caps. | Replace. |
| • Defective spark plugs. | Replace. |
| • Defective CKP sensor. | Replace. |
| • Defective ECM. | Replace. |
| • Defective TO sensor. | Replace. |
| • Open-circuited wiring connections. | Check and repair. |

SPARK PLUG SOON BECOME FOULED WITH CARBON**Symptom, possible causes and remedy**

- | | |
|------------------------------|--|
| • Mixture too rich. | Inspect FI system. |
| • Idling speed set too high. | Adjust fast idle or throttle stop screw. |
| • Incorrect gasoline. | Change. |
| • Dirty air cleaner element. | Clean or replace. |
| • Too cold spark plugs. | Replace with hot type plugs. |

SPARK PLUG BECOME FOULED TOO SOON**Symptom, possible causes and remedy**

- | | |
|---|----------|
| • Worn piston rings. | Replace. |
| • Worn piston or cylinders. | Replace. |
| • Excessive clearance of valve stems in valve guides. | Replace. |
| • Worn stem oil seal. | Replace. |

SPARK PLUG ELECTRODES OVERHEAT OR BURN**Symptom, possible causes and remedy**

- | | |
|--------------------------|-------------------------------|
| • Too hot spark plugs. | Replace with cold type plugs. |
| • Overheated the engine. | Tune up. |
| • Loose spark plugs. | Retighten. |
| • Too lean mixture. | Consult FI system. |

GENERATOR DOES NOT CHARGE**Symptom, possible causes and remedy**

- | | |
|---|---------------------------------|
| • Open- or short-circuited lead wires, or loose lead connections. | Repair or replace or retighten. |
| • Short-circuited, grounded or open generator coil. | Replace. |
| • Short-circuited or punctured regulator/rectifier. | Replace. |

GENERATOR DOES CHARGE, BUT CHARGING RATE IS BELOW THE SPECIFICATION**Symptom, possible causes and remedy**

- | | |
|--|----------------------|
| • Lead wires tend to get short- or open-circuited or loosely connected at terminals. | Repair or retighten. |
| • Grounded or open-circuited generator coil. | Replace. |
| • Defective regulator/rectifier. | Replace. |
| • Defective cell plates in the battery. | Replace the battery. |

GENERATOR OVERCHARGES**Symptom, possible causes and remedy**

- | | |
|---|--------------------------------------|
| • Internal short-circuit in the battery. | Replace the battery. |
| • Damaged or defective resistor element in the regulator/rectifier. | Replace. |
| • Poorly grounded regulator/rectifier. | Clean and tighten ground connection. |

UNSTABLE CHARGING**Symptom, possible causes and remedy**

- | | |
|---|--------------------|
| • Lead wire insulation frayed due to vibration, resulting in intermittent short-circuiting. | Repair or replace. |
| • Internally short-circuited generator. | Replace. |
| • Defective regulator/rectifier. | Replace. |

STARTER BUTTON IS NOT EFFECTIVE**Symptom, possible causes and remedy**

- | | |
|---|--------------------|
| • Run down battery. | Repair or replace. |
| • Defective switch contacts. | Replace. |
| • Brushes not seating properly on starter motor commutator. | Repair or replace. |
| • Defective starter relay/starter interlock switch. | Replace. |
| • Defective main fuse. | Replace. |

BATTERY

“SULFATION”, ACIDIC WHITE POWDERY SUBSTANCE OR SPOTS ON SURFACE OF CELL PLATES

Symptom, possible causes and remedy

- | | |
|--|----------------------|
| • Cracked battery case. | Replace the battery. |
| • Battery has been left in a run-down condition for a long time. | Replace the battery. |

BATTERY RUNS DOWN QUICKLY

Symptom, possible causes and remedy

- | | |
|--|---|
| • Trouble in charging system. | Check the generator, regulator/rectifier and circuit connections and make necessary adjustments to obtain specified charging operation. |
| • Cell plates have lost much of their active material as a result of overcharging. | Replace and correct the charging system. |
| • Internal short-circuit in the battery. | Replace. |
| • Too low battery voltage. | Recharge fully. |
| • Too old battery. | Replace. |

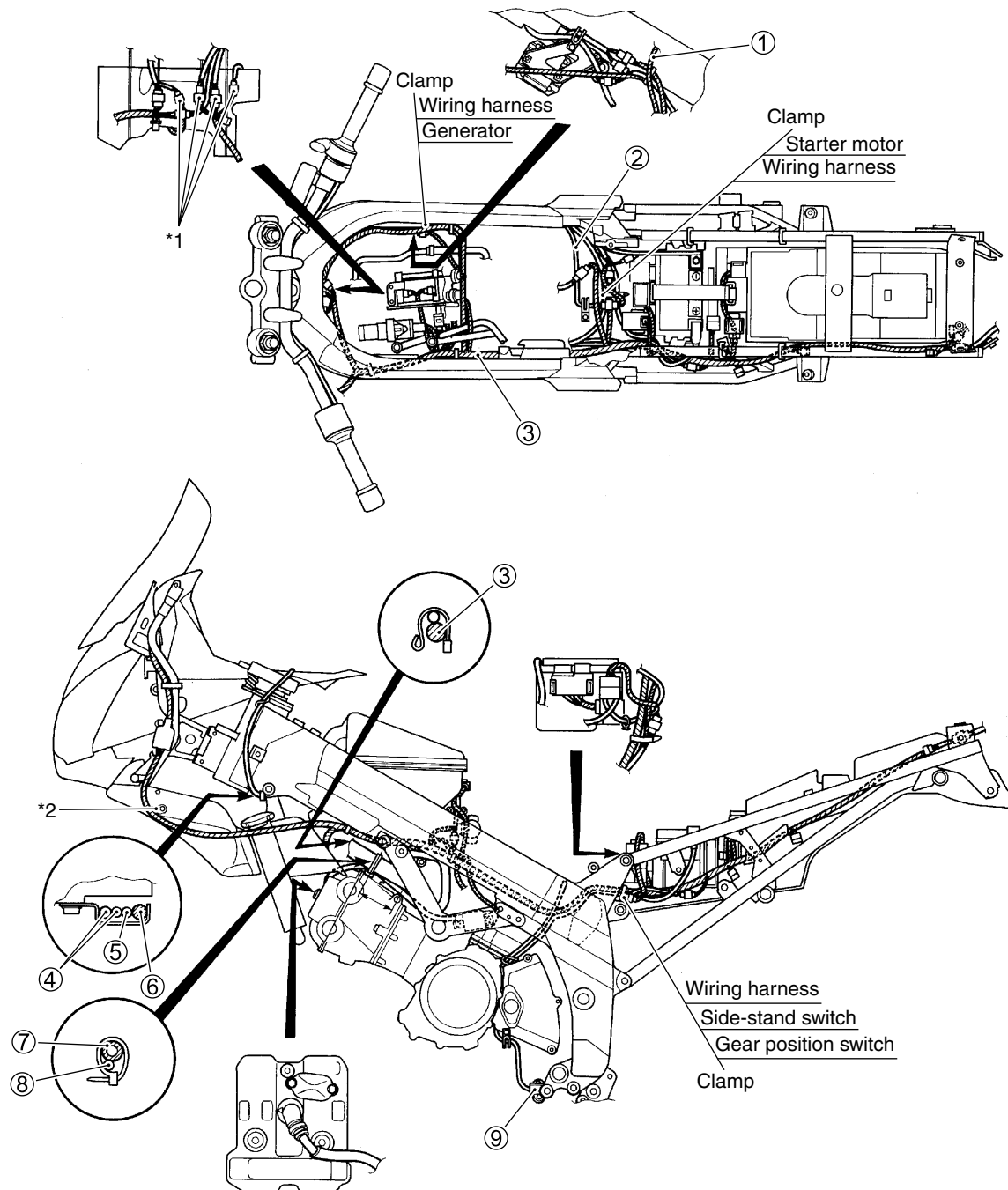
BATTERY “SULFATION”

Symptom, possible causes and remedy

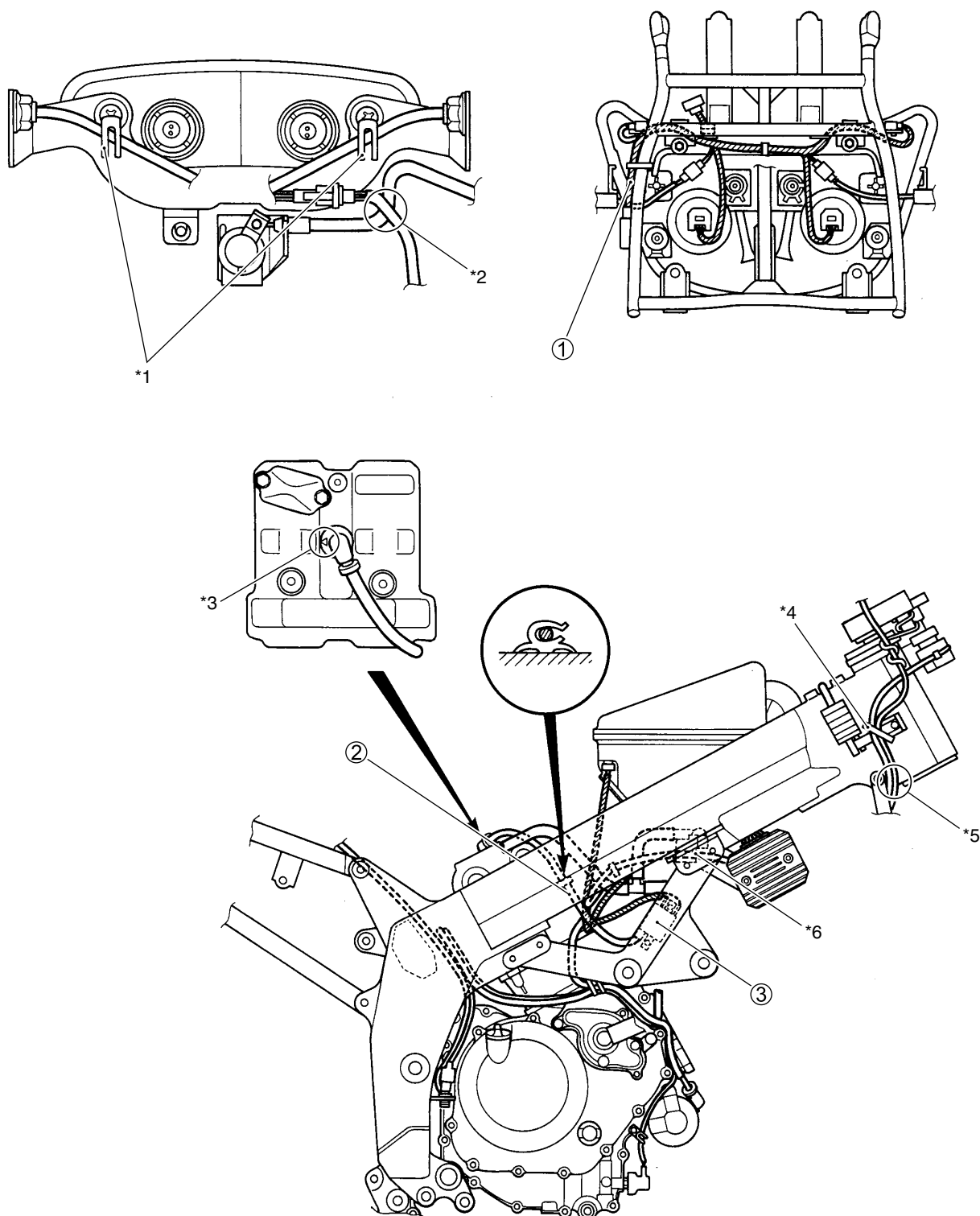
- | | |
|---|----------------------------|
| • Incorrect charging rate.
(When not in use battery should be checked at least once a month to avoid sulfation.) | Replace. |
| • The battery was left unused in a cold climate for too long. | Replace if badly sulfated. |

WIRE HARNESS, CABLE AND HOSE ROUTING

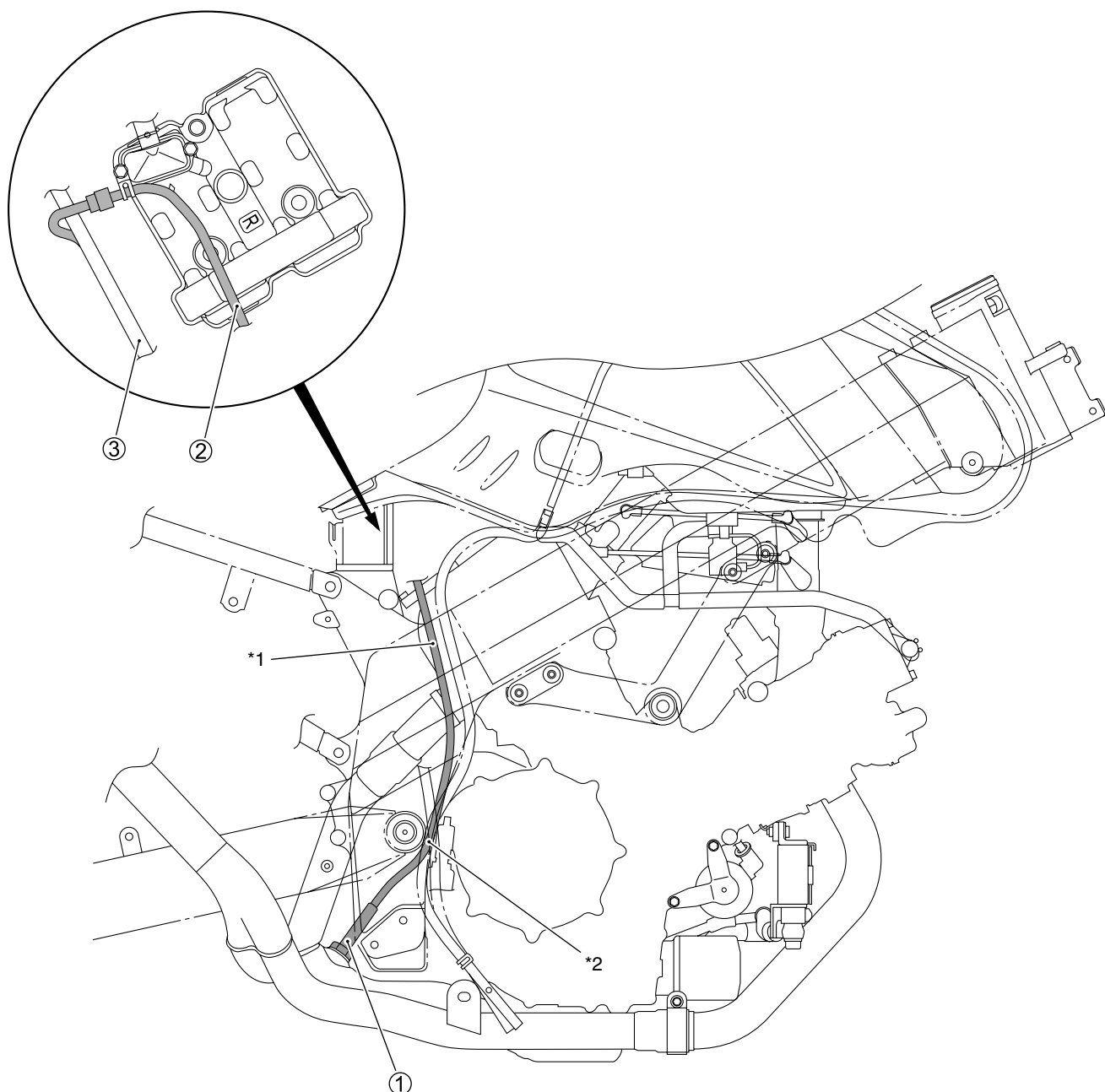
WIRE HARNESS ROUTING



①	IAT sensor lead wire	*1	Insert the protruded section each on the handlebar switch lead wire coupler, ignition switch lead wire coupler and cooling fan motor lead wire coupler into the respective holes provided on the frame.
②	HO2 sensor lead wire		
③	Wiring harness		
④	Throttle cable		
⑤	Clutch cable	*2	Route the wiring harness under the cowling fastener fitted section.
⑥	Handlebar switch left		
⑦	Water hose		
⑧	High-tension cord		
⑨	Side-stand switch		

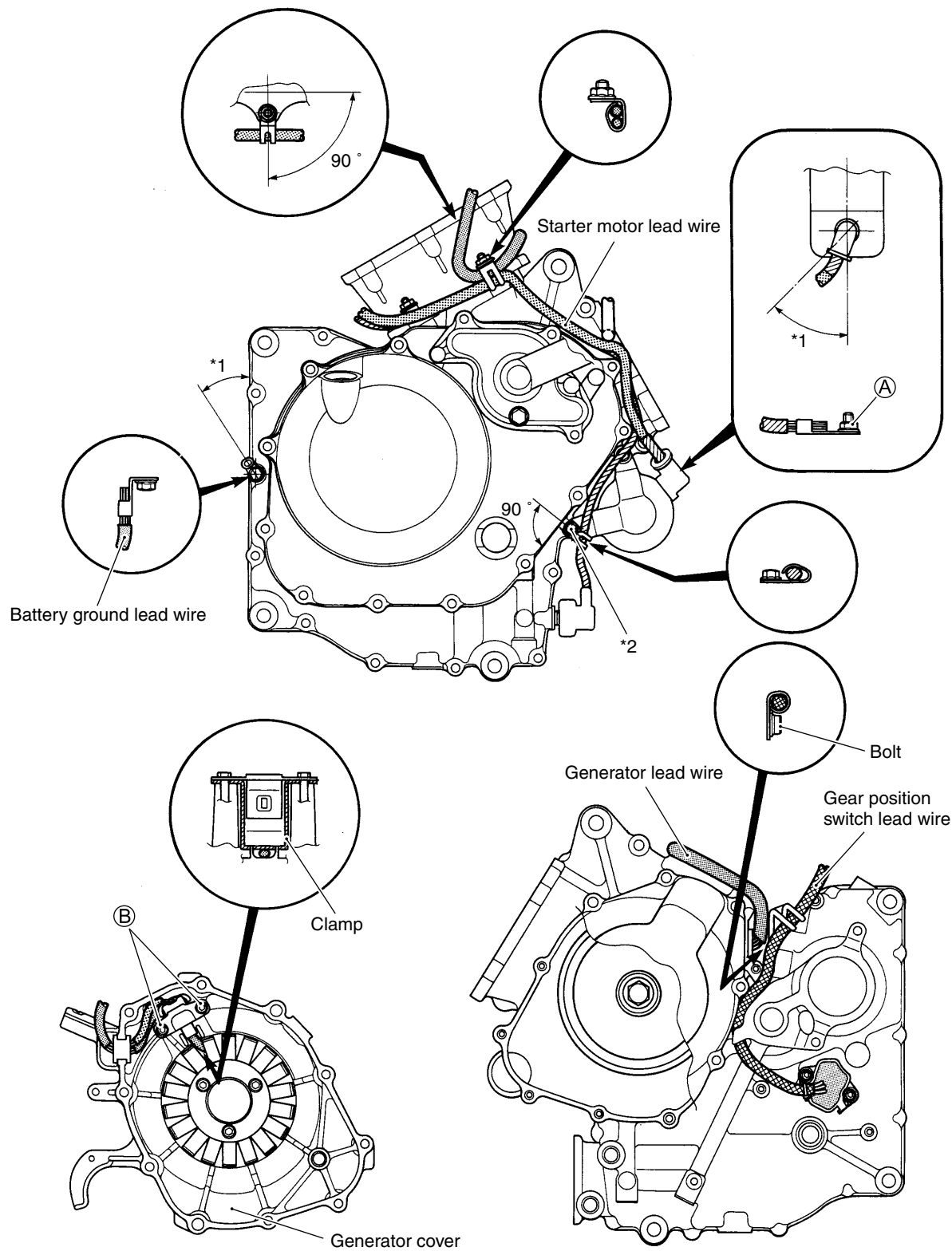


①	Wiring harness No.2	*3	Triangle mark of each spark plug cap must be brought to the exhaust side.
②	Magneto lead wire	*4	Cut the clamp end.
③	Ignition coil No.2	*5	Do not slack the lead wire.
*1	Clamp the turn signal light read wire.	*6	Pass through the PAIR reed valve lead wire between the frame and PAIR control solenoid valve.
*2	Pass through the license light read wire over the seat lock cable.		

HEATED OXYGEN SENSOR (HO2S) WIRE ROUTING (FOR E-02, 19)

①	HO2 sensor (For E-02, 19)	*1	Route the HO2 sensor lead wire along the fuel tank drain hose.
②	HO2 sensor lead wire	*2	Pass through the HO2 sensor lead wire forward the swingarm.
③	Wiring harness		

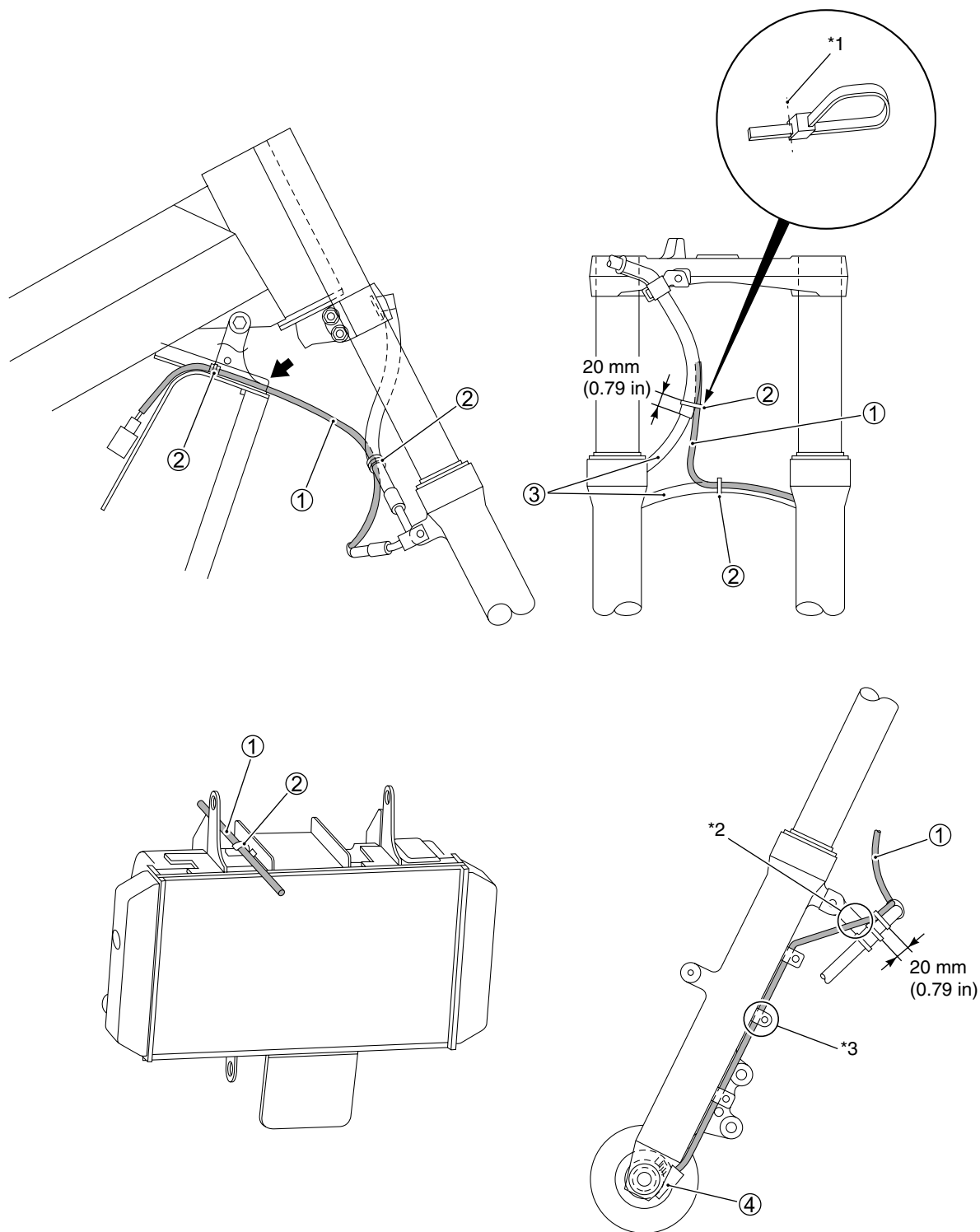
ENGINE ELECTRICAL PARTS SET-UP



Ⓐ	Starter motor lead wire mounting nut	*1	45 ° and less
Ⓑ	CKP sensor set bolt	*2	First tighten the starter motor lower mounting bolt.

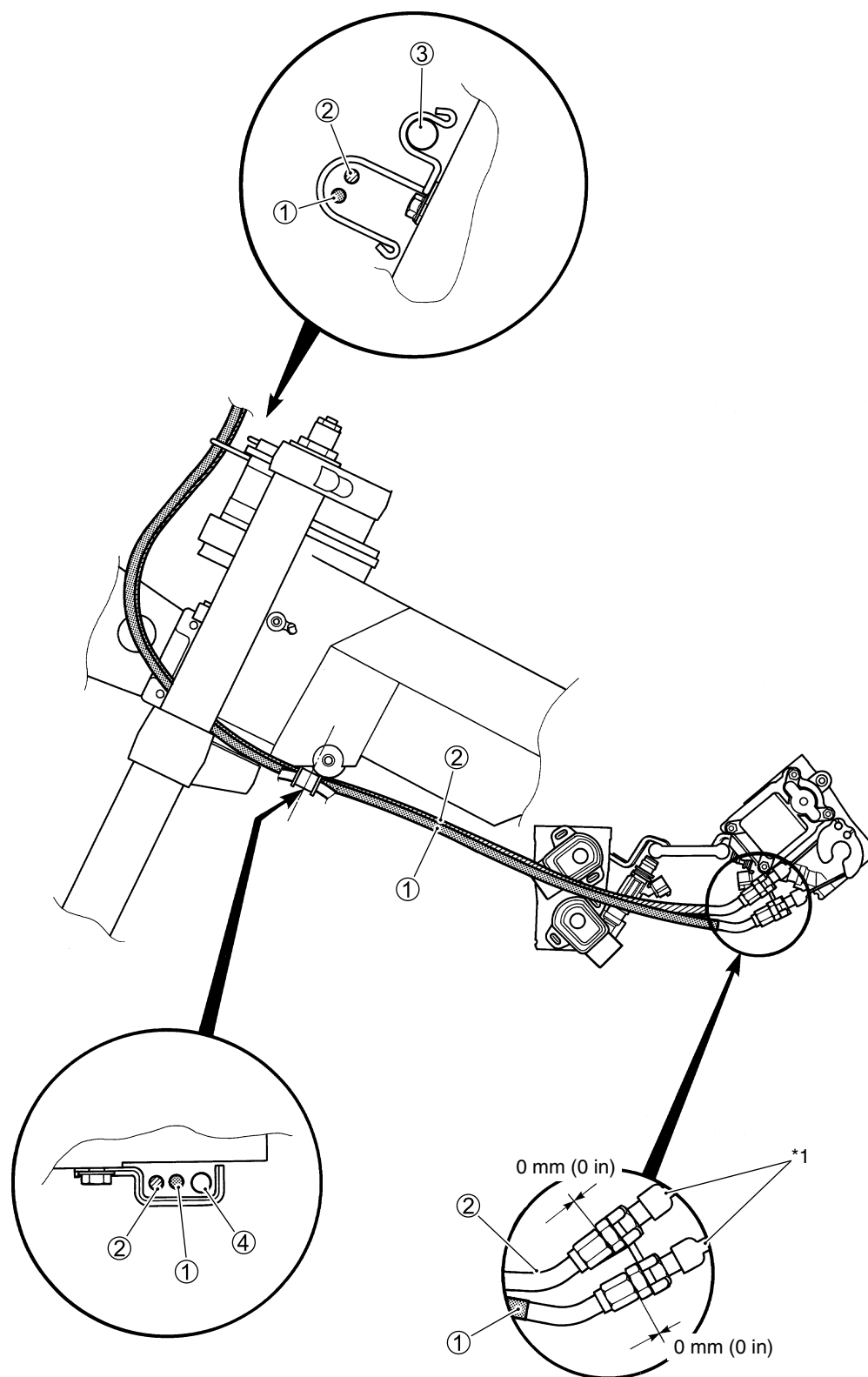
ITEM	N·m	kgf-m	lb-ft
Ⓐ	6.0	0.6	4.3
Ⓑ	6.5	0.65	4.7

SPEED SENSOR LEAD WIRE ROUTING



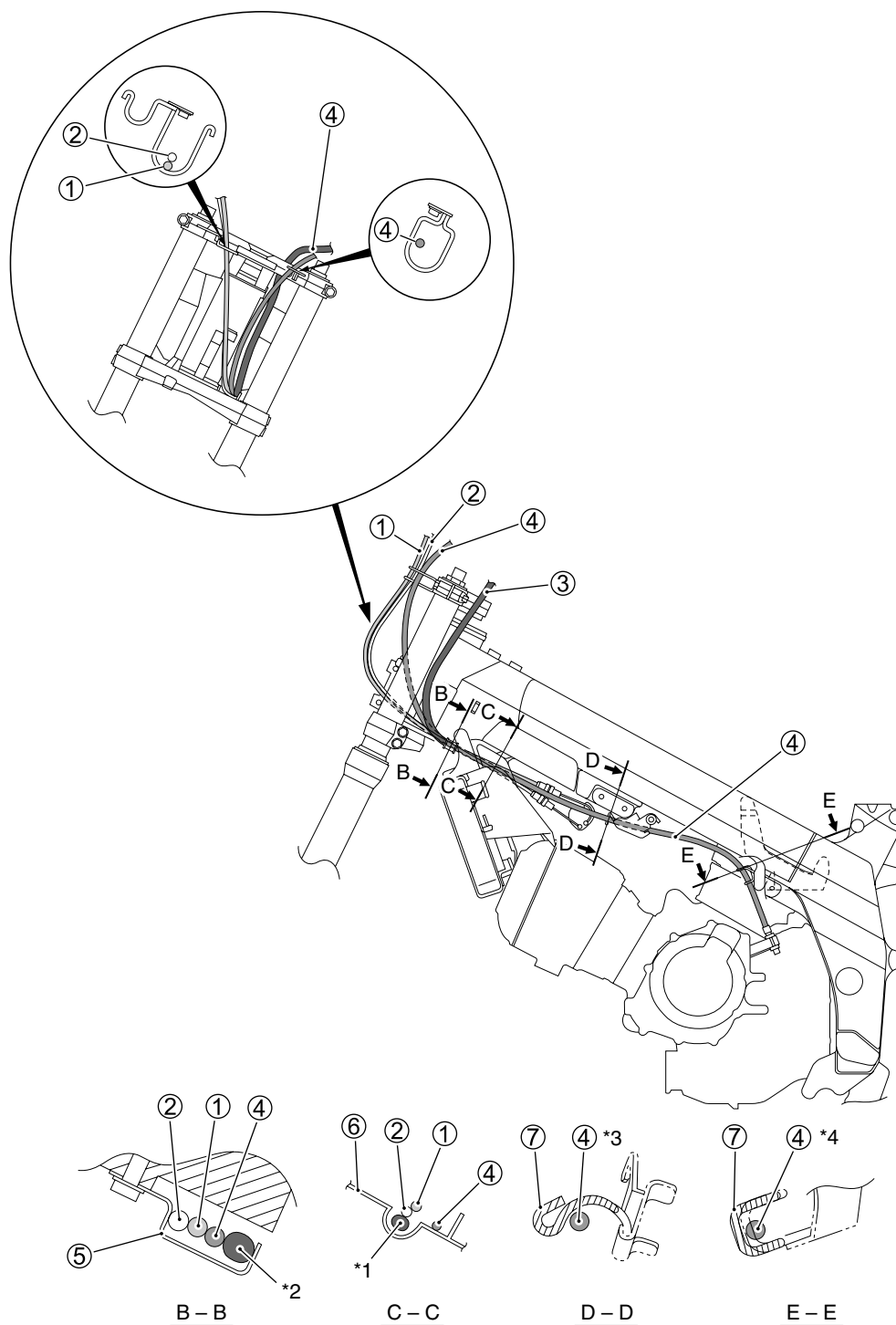
①	Speed sensor lead wire	*1	Cut the clamp end.
②	Clamp	*2	Route speed sensor lead wire to come outside the brake hose guide.
③	Brake hose	*3	Route speed sensor lead wire on inside of front fork outer tube boss.
④	Speed sensor		

THROTTLE CABLE ROUTING



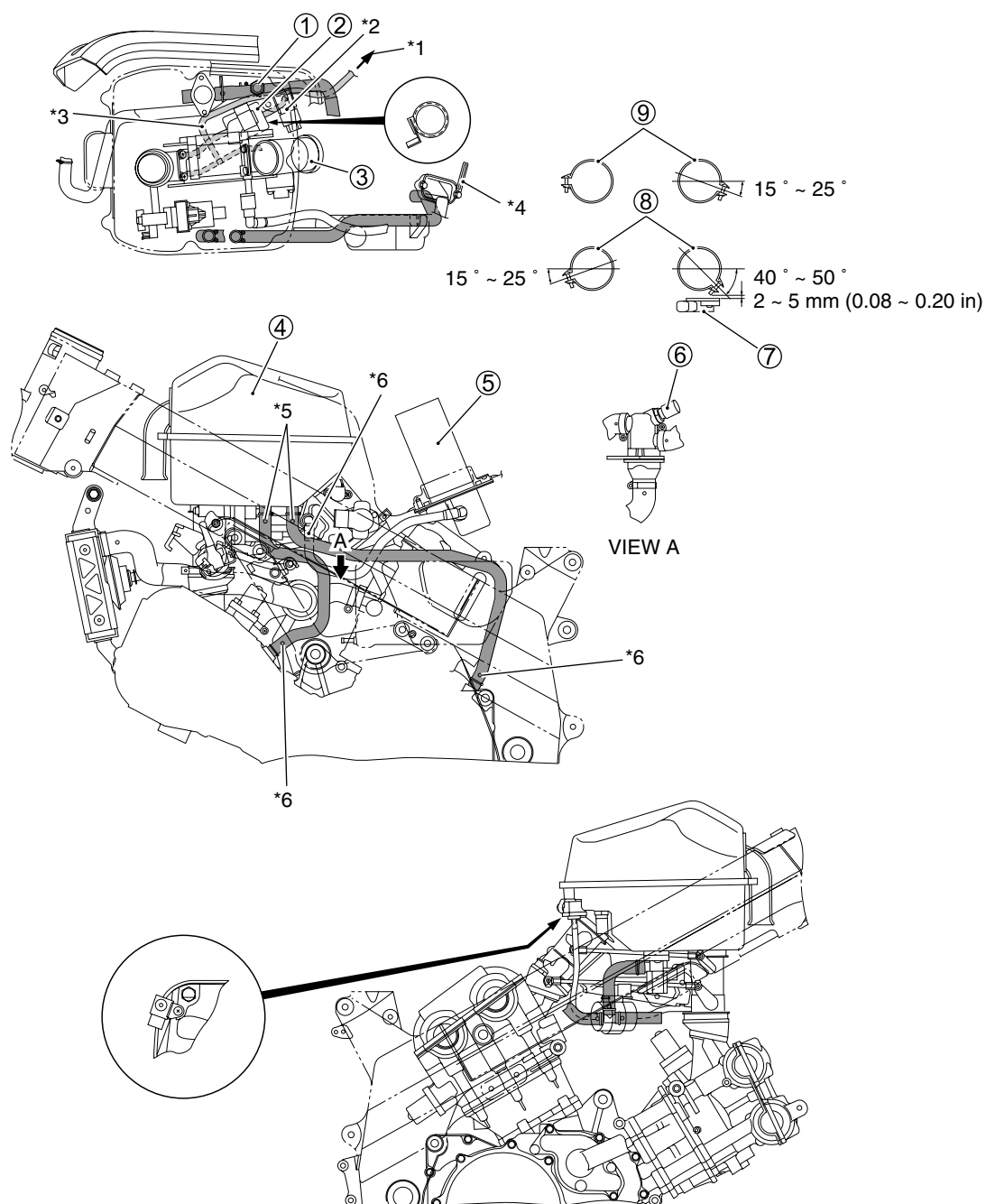
① Throttle cable No.1	④ Wiring harness
② Throttle cable No.2	*1 Fit the cable boots securely.
③ Front brake hose	

CLUTCH CABLE ROUTING



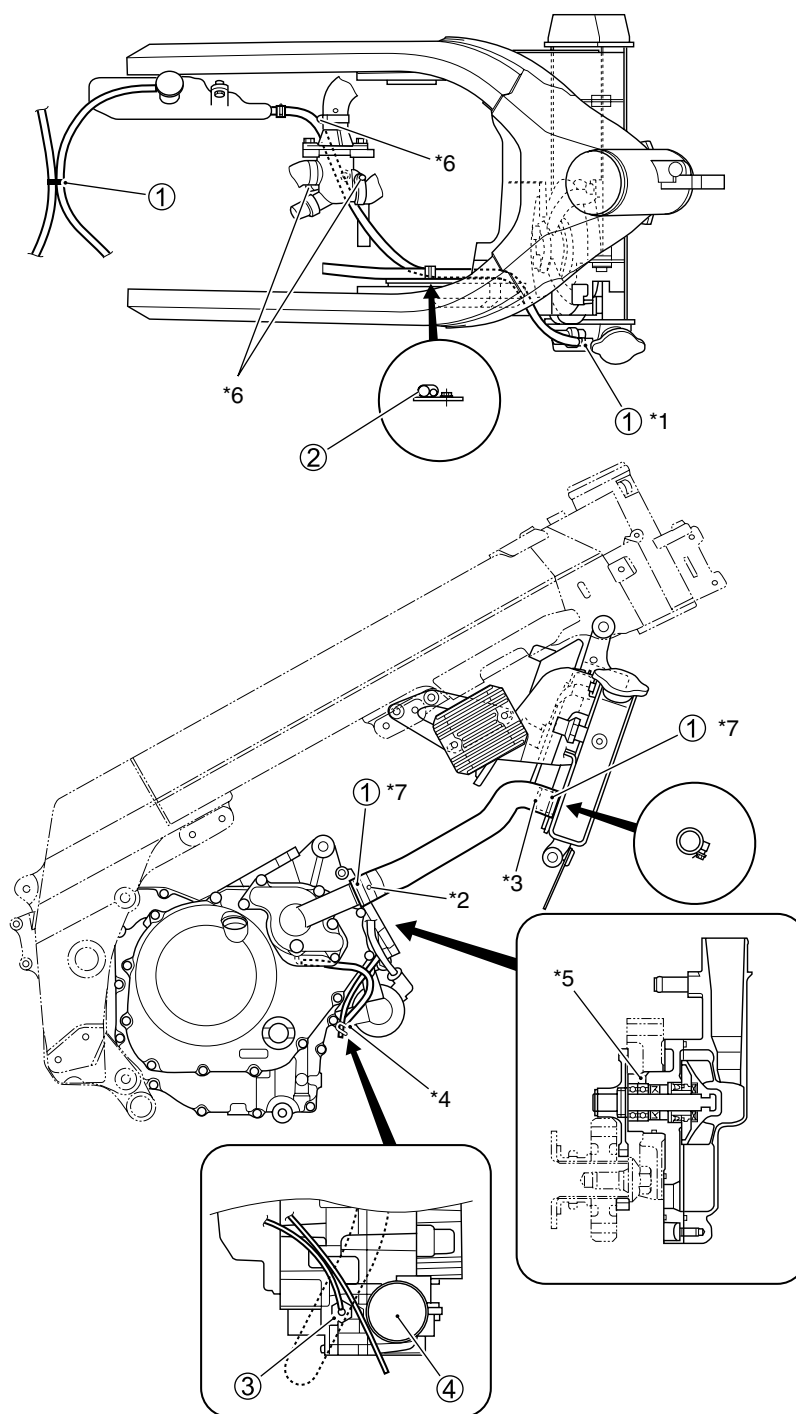
①	Throttle cable (Pull)	⑦	Reserve tank bracket
②	Throttle cable (Return)	*1	Route left handle switch wiring harness in the groove of radiator shroud.
③	Handle switch wiring harness	*2	Route left handle switch wiring harness to come outside throttle and clutch cables.
④	Clutch cable	*3	Route clutch cable inside the guide.
⑤	Throttle cable guide	*4	Route clutch cable inside the guide.
⑥	Radiator shroud		

THROTTLE BODY INSTALLATION/HOSE ROUTING

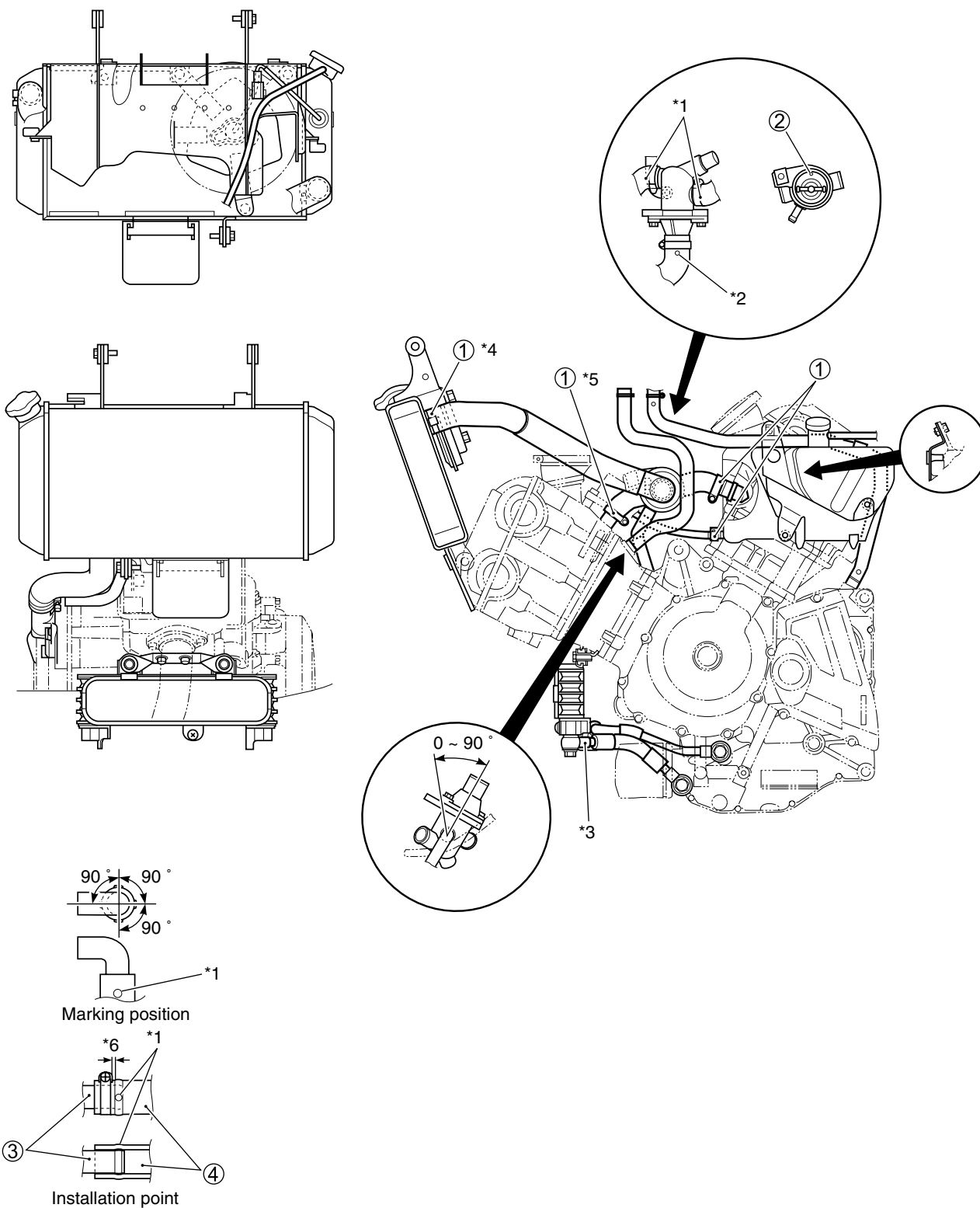


①	IAT sensor	⑨	Intake pipe clamp
②	Vacuum damper	*1	To canister (For E-33)
③	Throttle body assembly	*2	Pass through the vacuum hose inside the PAIR hose.
④	Air cleaner box	*3	E-33 Only
⑤	Fuel pump assembly	*4	HO2 sensor clamp (For E-02, 19)
⑥	ECT sensor	*5	Matching mark (Yellow)
⑦	TP sensor	*6	Matching mark (White)
⑧	Outlet tube clamp		

COOLING SYSTEM HOSE ROUTING

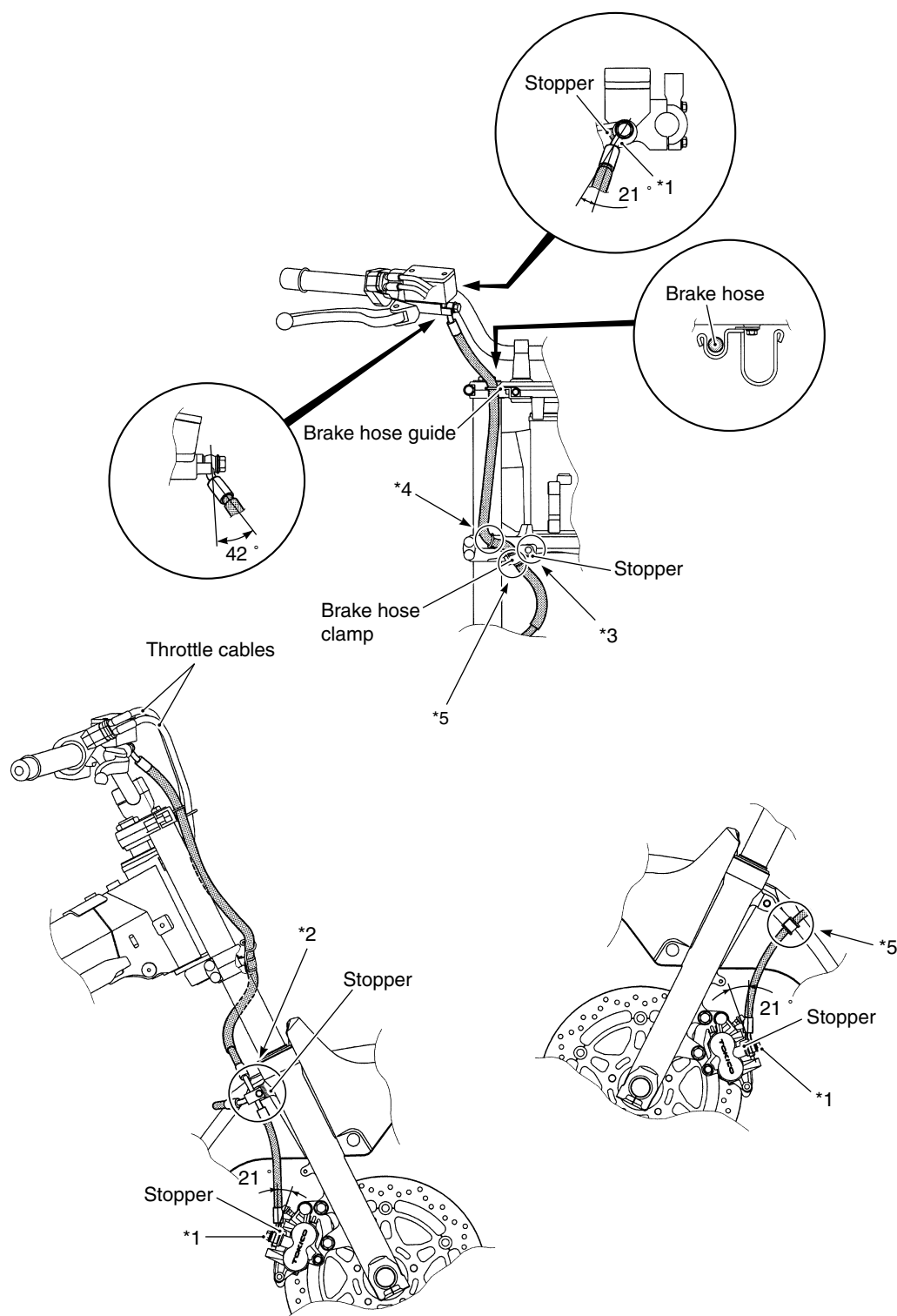


①	Clamp	*3	Matching mark (Yellow)
②	Wiring harness	*4	Clamp the water drain hose and oil pressure switch lead wire.
③	Oil pressure switch	*5	Fill the bearing with engine oil until engine oil comes out from the hole of the bearing housing.
④	Oil filter	*6	Clamp bolt head must face upward.
*1	Clamp end must face downward.	*7	Clamp bolt head must face downward.
*2	Matching mark (White)		



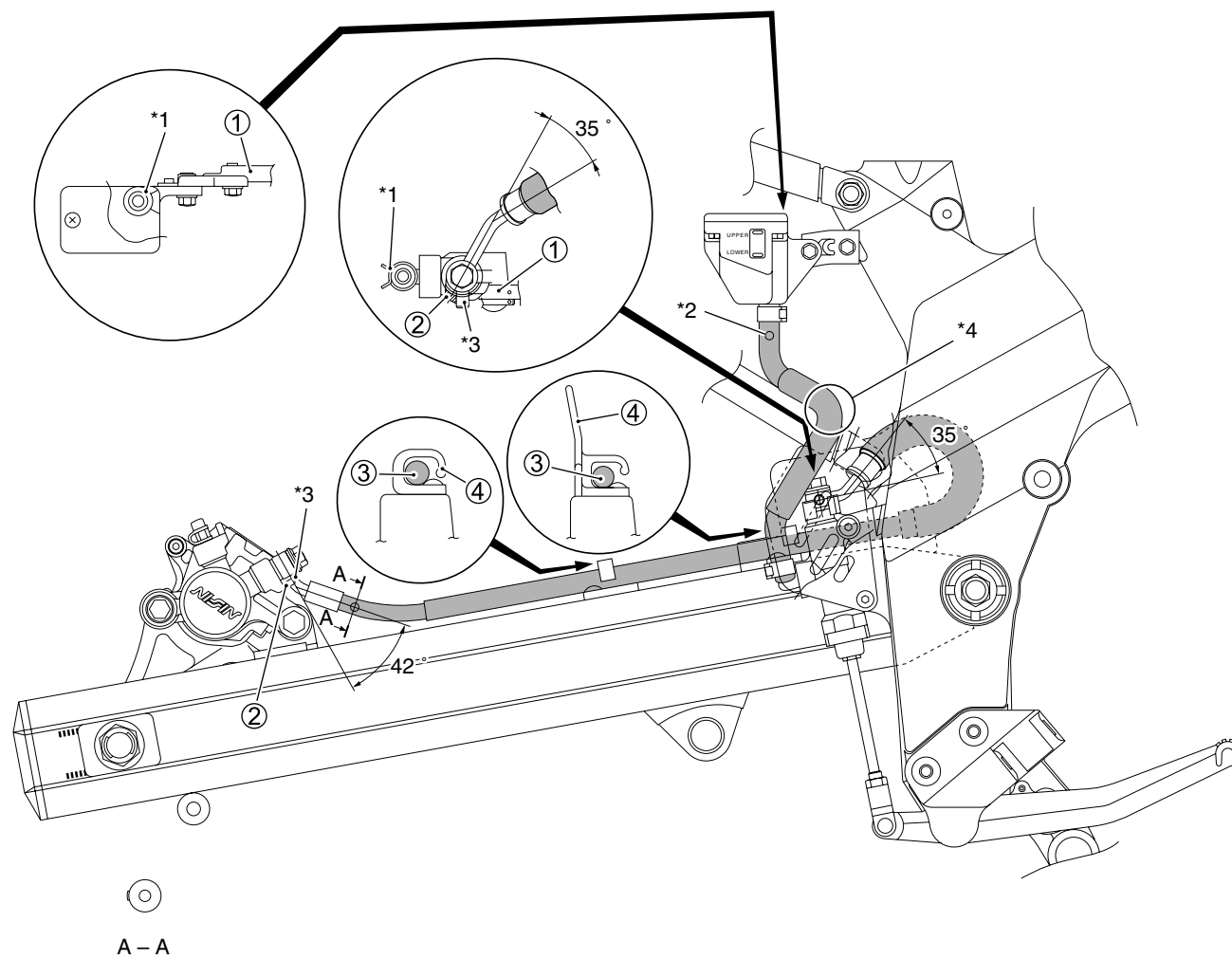
①	Clamp	*2	Matching mark (White)
②	Jiggle valve	*3	Marking (Yellow)
③	Union	*4	Clamp bolt head must face downward.
④	Radiator hose	*5	Clamp bolt head must face left side.
*1	Marking	*6	Leave clearance between bulge of union and clamp.

FRONT BRAKE HOSE ROUTING



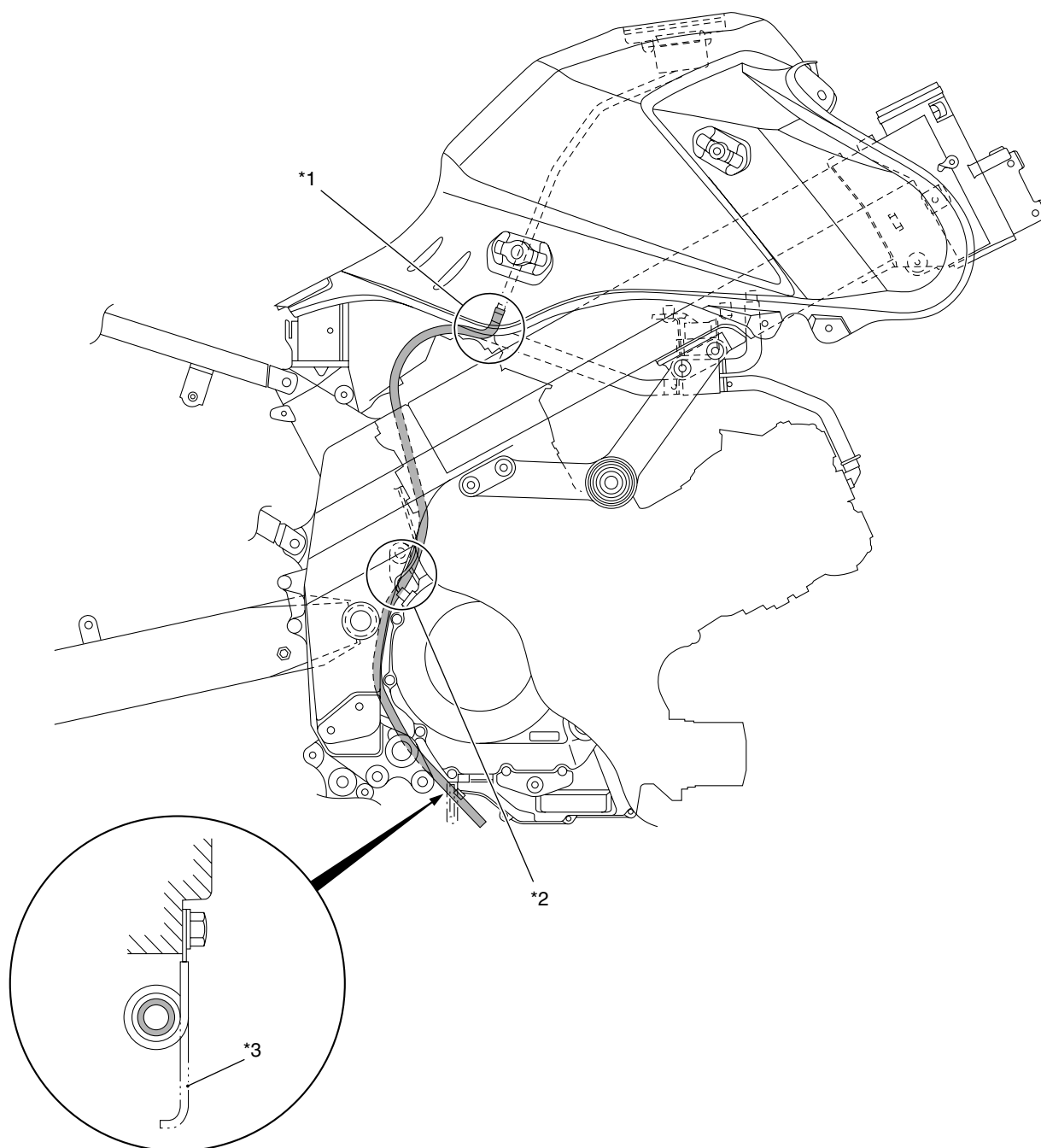
*1	After the brake hose union has contacted the stopper, tighten the union bolt.	*4	Assemble the brake hose firmly.
*2	After positioning the brake hose junction with the stopper, tighten the bolt.	*5	Clamp the brake hose firmly.
*3	After positioning the clamp with the stopper, tighten the clamp bolt.		

REAR BRAKE HOSE ROUTING



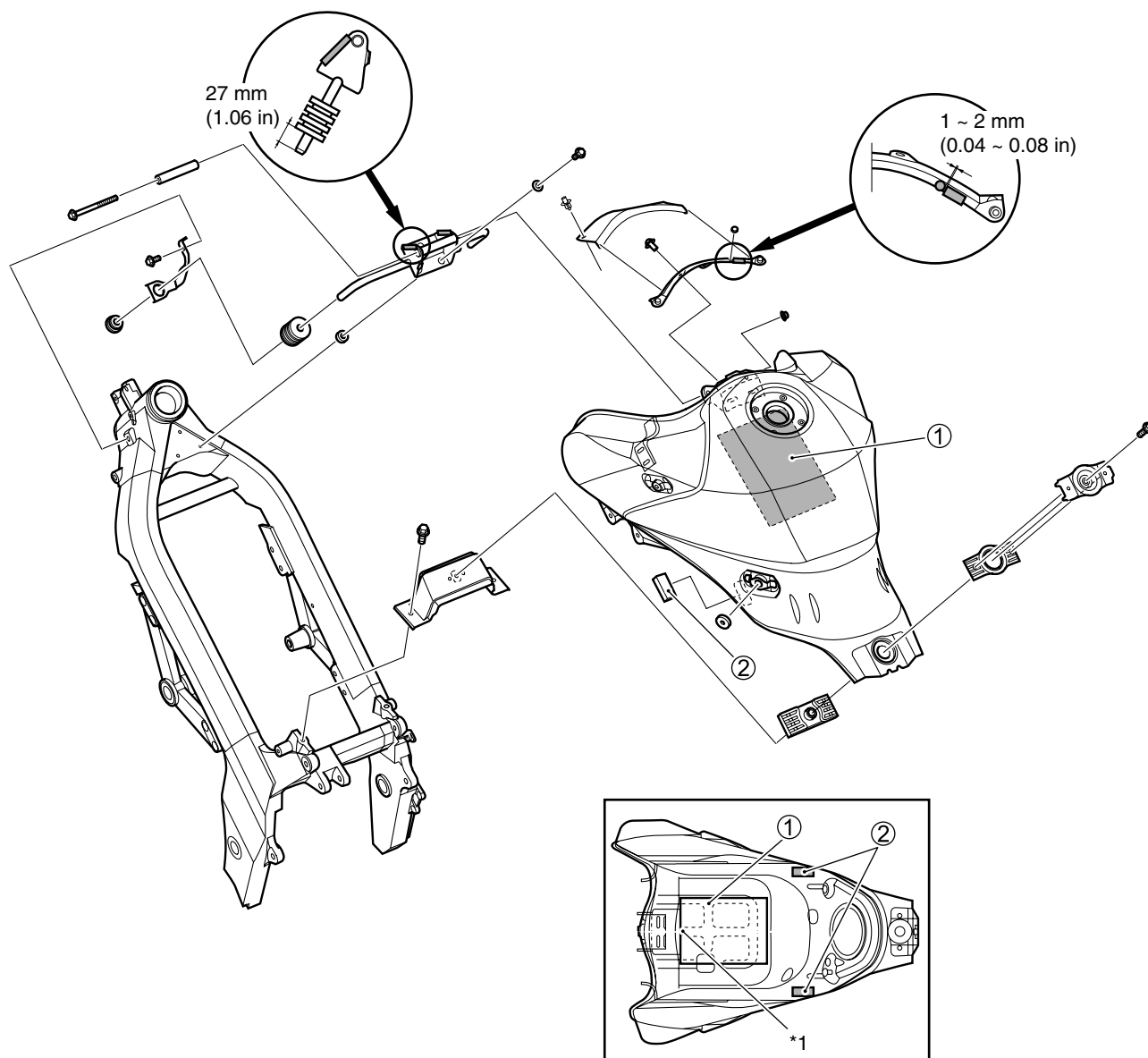
①	Frame	*1	Clamp ends should face forward.
②	Stopper	*2	White paint faces outside.
③	Brake hose	*3	After the brake hose union has contacted the stopper, tighten the union bolt.
④	Brake hose guide	*4	Pass through the brake hose outside the seat rail.

FUEL TANK DRAIN HOSE ROUTING



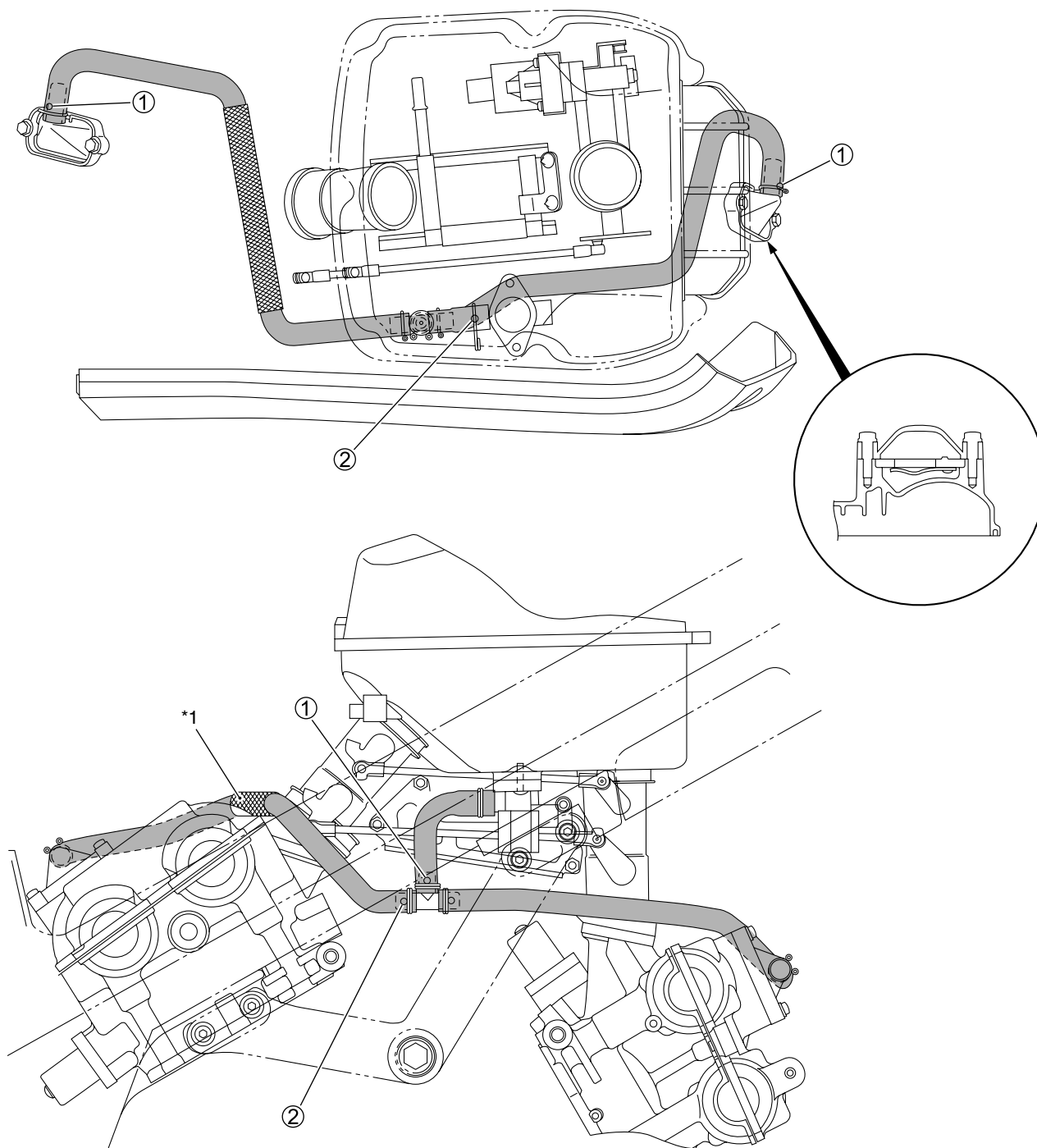
*1	Route fuel tank drain hose so that its curve faces forward.	*3	Make sure to position the clamp in the specified direction.
*2	Route fuel tank drain hose to come inside (left side) gear position sensor wiring harness.		

FUEL TANK INSTALLATION



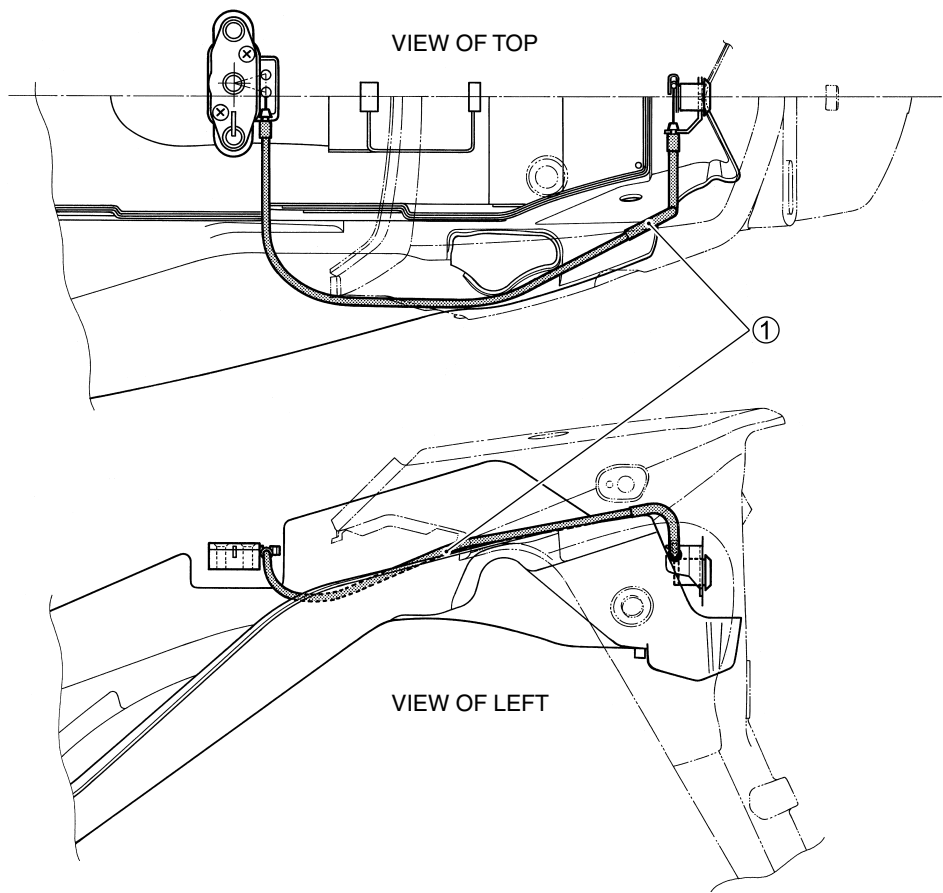
①	Fuel tank center shield	*1	Align the front end of fuel tank center shield with this position.
②	Fuel tank side cushion		

PAIR (AIR SUPPLY) SYSTEM HOSE ROUTING



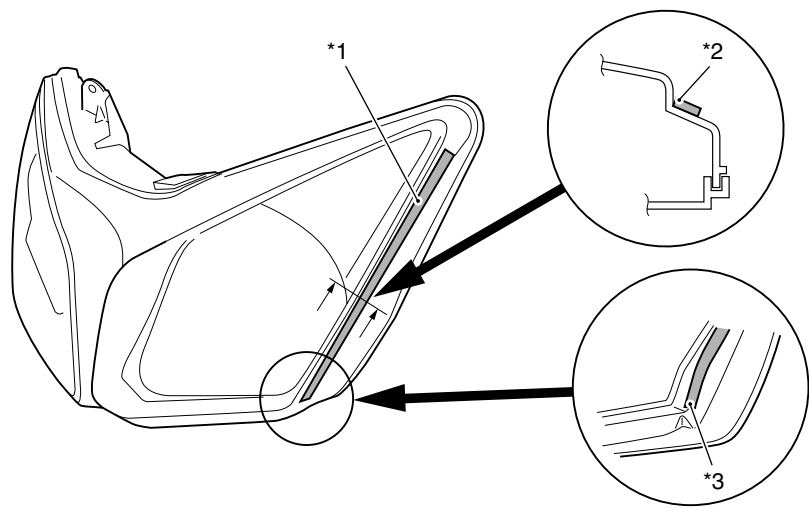
①	Matching mark (White)	*1	Pass the PAIR hose between the cylinder head cover and intake pipe.
②	Matching mark (Yellow)		

SEAT LOCK CABLE ROUTING



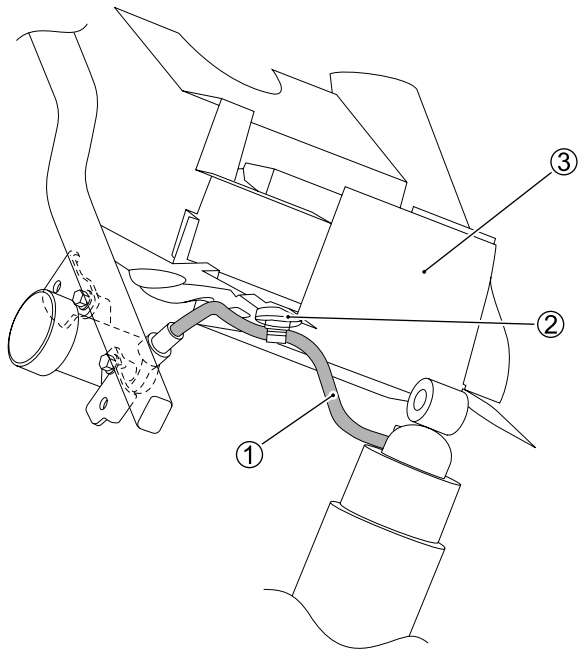
① Seat lock cable

HEAD LAMP SET-UP



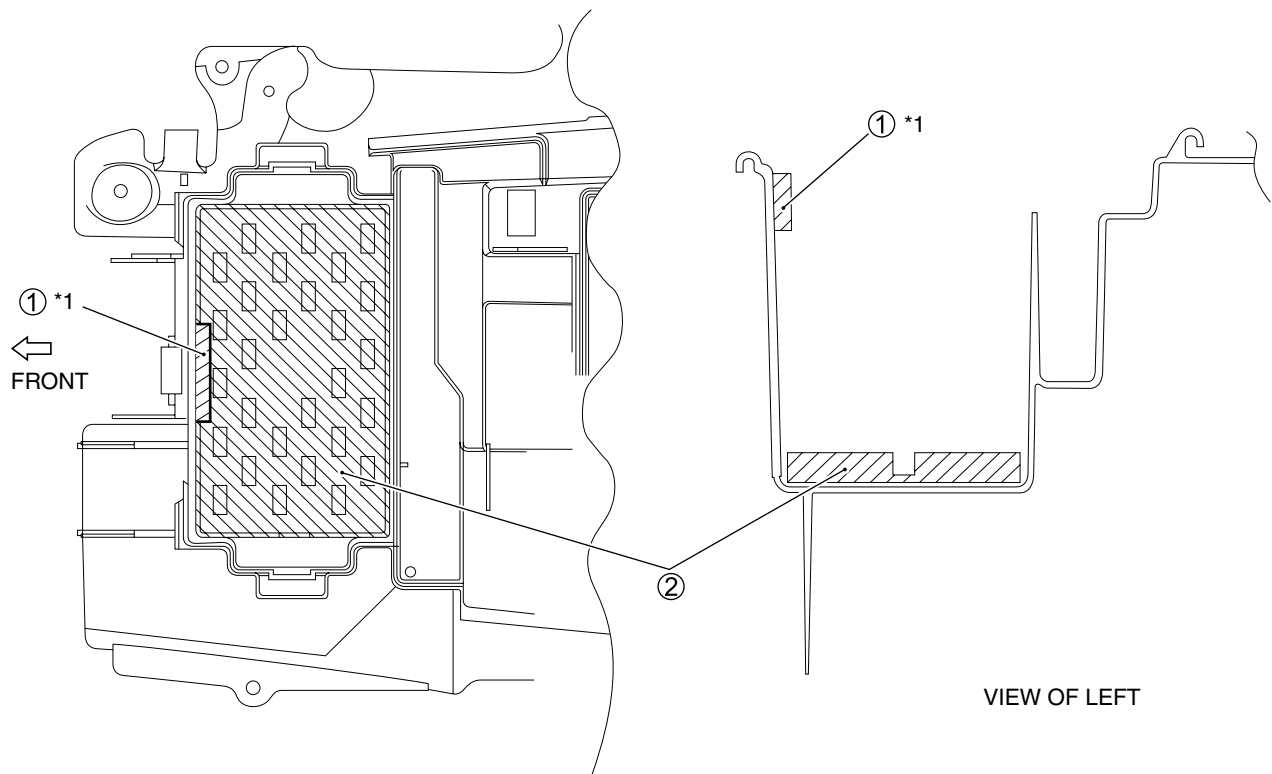
*1	Adhere cushion along the ridge line of lens.	*3	Right and left cushions shall be attached symmetrically.
*2	Start to adhere cushion from the corner of lens.		

ABSORBER HOSE ROUTING



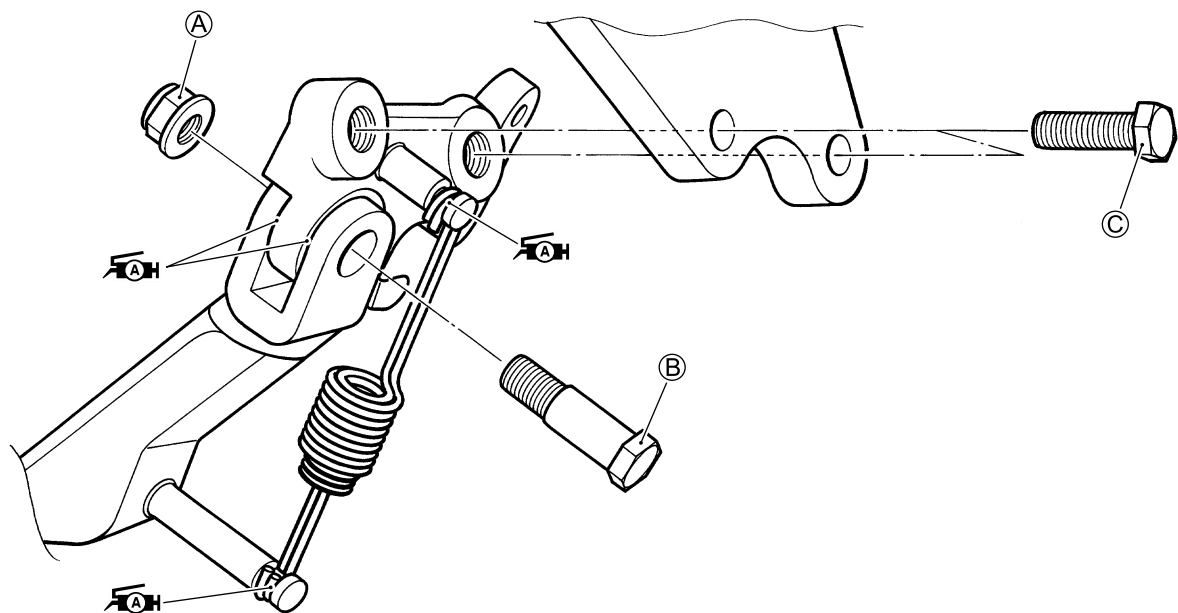
①	Absorber hose	③	Rear fender (Front)
②	Clamp		

BATTERY CUSHION INSTALLATION



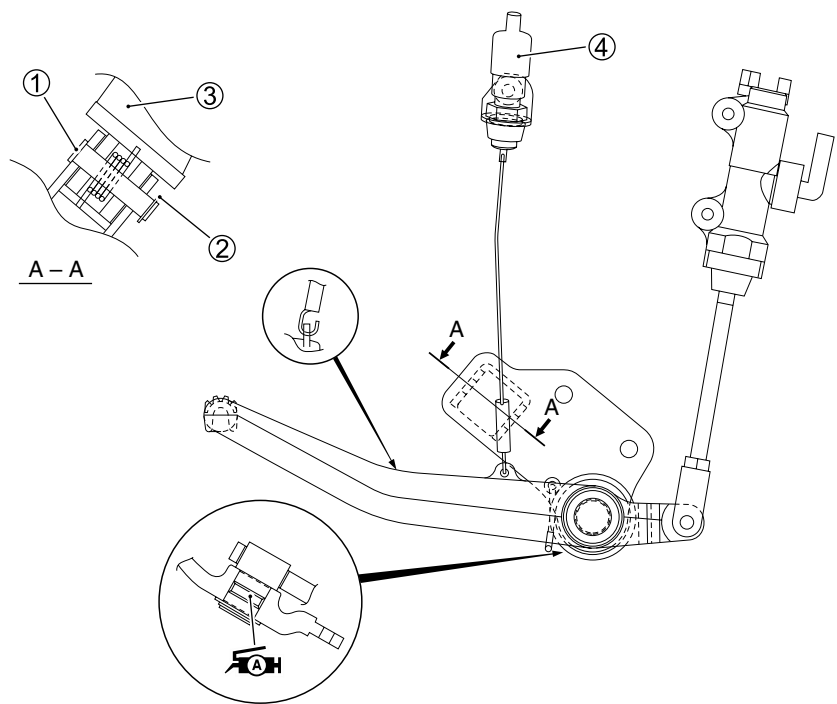
①②	Battery protector	*1	Adhere battery protector at the upper end.
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SIDE-STAND SET-UP



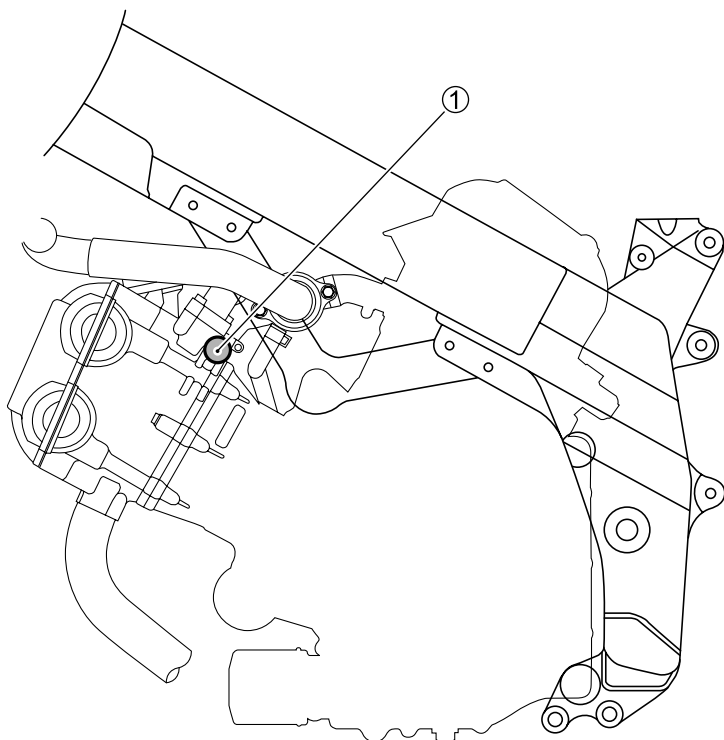
ITEM	N·m	kgf-m	lb-ft
Ⓐ	40	4.0	29.0
Ⓑ	50	5.0	36.0
Ⓒ	100	10.0	72.5

BRAKE PEDAL/FOOTREST SET-UP

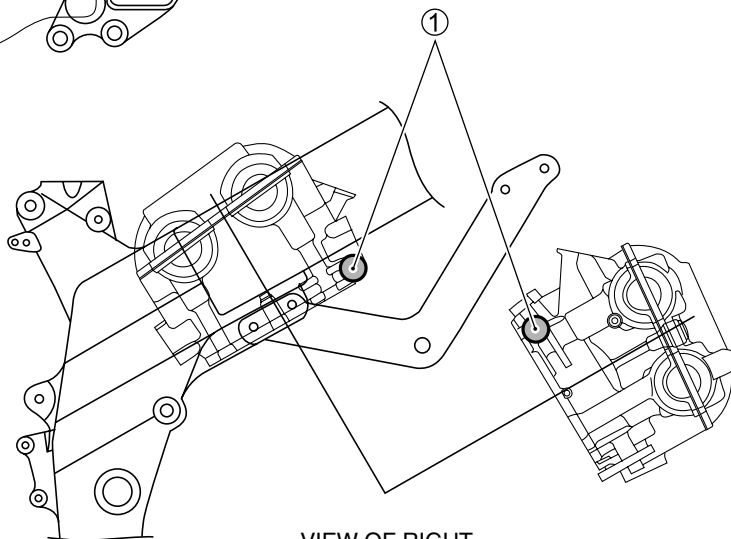


①	Pin	③	Footrest
②	E-ring	④	Brake light switch

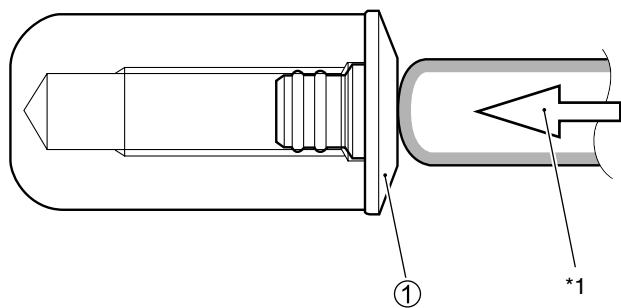
ENGINE CAP INSTALLATION



VIEW OF LEFT

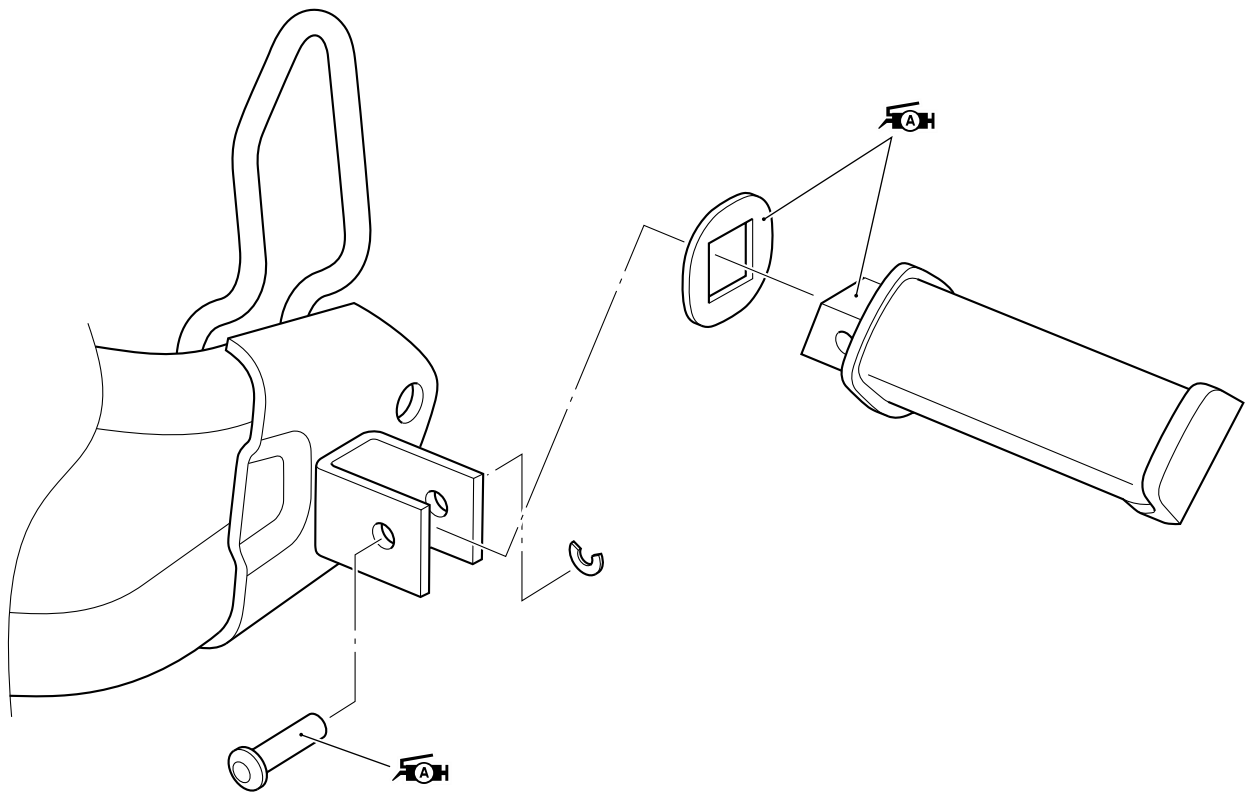


VIEW OF RIGHT

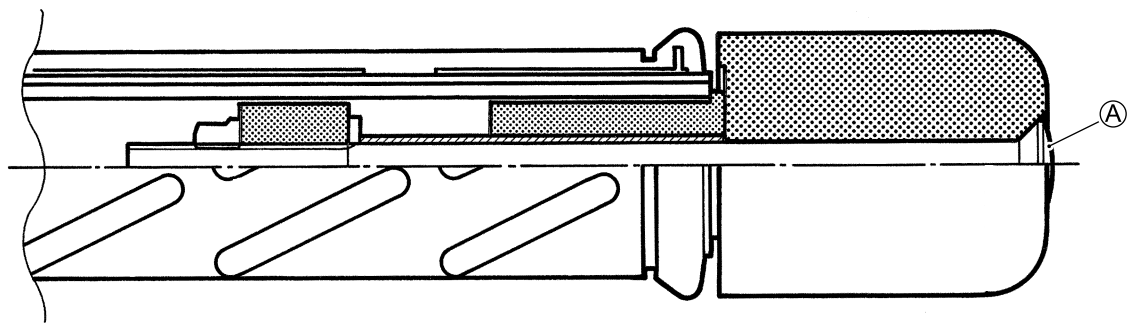


①	Engine cap	*1	Push the center of cap so as to thoroughly remove looseness.
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FOOTREST SET-UP



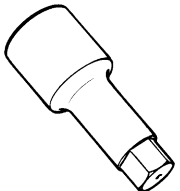
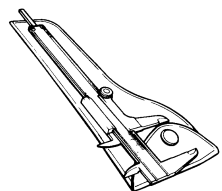
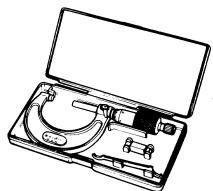
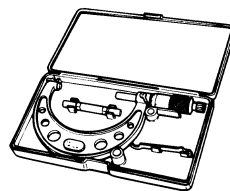
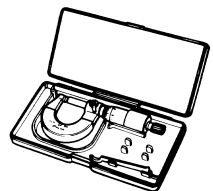
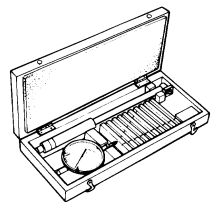
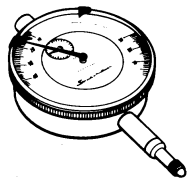
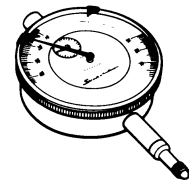
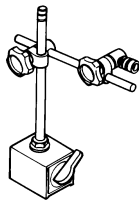
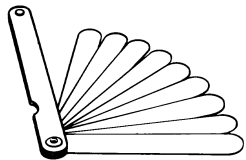
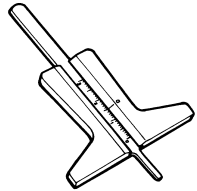
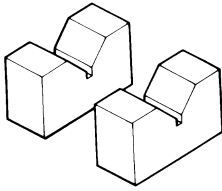
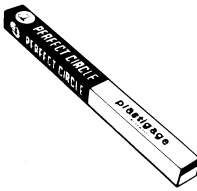
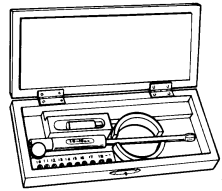
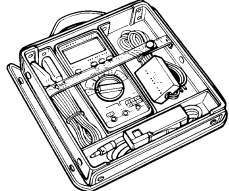
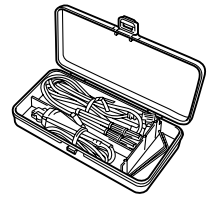
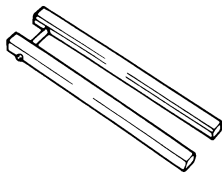
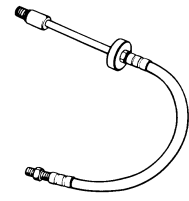
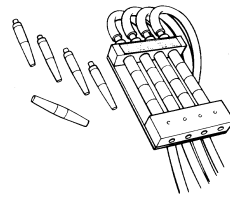
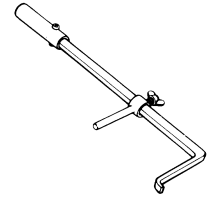
HANDLEBAR BALANCER INSTALLATION



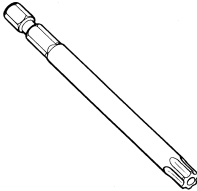
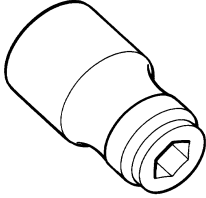
ITEM	N·m	kgf-m	lb-ft
Ⓐ	5.5	0.55	4

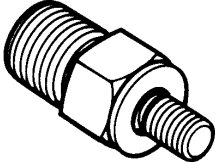
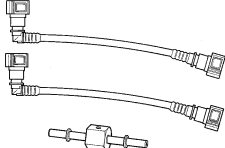
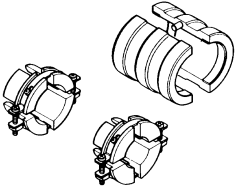
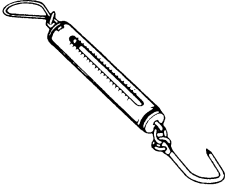
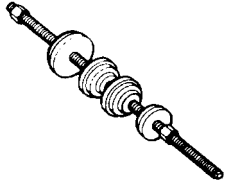
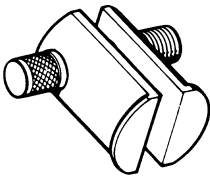
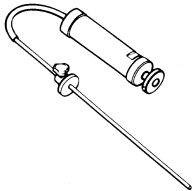
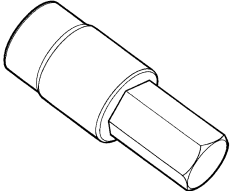
NOTE:
After installing the RH balancer weight, check that throttle grip rotate smoothly by turning it.

SPECIAL TOOLS

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

 <p>09913-60221 Journal bearing remover/installer</p>	 <p>09913-70210 Bearing installer set</p>	 <p>09915-40610 Oil filter wrench</p>	 <p>09915-64512 Compression gauge</p>	 <p>09915-74511 Oil pressure gauge set</p>
 <p>09915-74521 Oil pressure gauge hose</p>	 <p>09915-74532 Oil pressure gauge attachment</p>	 <p>09915-77331 Meter (for high pressure)</p>	 <p>09916-10911 Valve lapper set</p>	 <p>09916-14510 Valve lifter</p>
 <p>09916-14521 Valve lifter attachment</p>	 <p>09916-21111 Valve seat cutter set</p>	 <p>09916-20640 Solid pilot (N-100-4.5)</p>	 <p>09916-22430 Valve seat cutter head (N-128)</p>	 <p>09916-34542 Reamer handle</p>
 <p>09916-33210 Valve guide reamer (4.5 mm)</p>	 <p>09916-34580 Valve guide reamer (10.8 mm)</p>	 <p>09916-43210 Valve guide installer/remover</p>	 <p>09916-53330 Attachment</p>	 <p>09916-84511 Tweezers</p>

 <p>09917-47011 Vacuum pump gauge</p>	 <p>09920-13120 Crankcase separating tool</p>	 <p>09920-53740 Clutch sleeve hub holder</p>	 <p>09921-20240 Bearing remover set</p>	 <p>09924-84510 Bearing installer set</p>
 <p>09925-18011 Steering bearing installer</p>	 <p>09930-10121 Spark plug socket wrench set</p>	 <p>09930-11920 Torx bit JT40H</p>	 <p>09930-11940 Bit holder</p>	 <p>09930-11950 Torx wrench</p>
 <p>09930-11960 Torx wrench</p>	 <p>09930-30450 Rotor remover</p>	 <p>09930-44530 Rotor holder</p>	 <p>09930-82720 Mode select switch</p>	 <p>09940-14911 Steering stem nut wrench</p>
 <p>09940-14940 Swingarm pivot thrust adjuster socket wrench</p>	 <p>09940-14960 Steering stem nut wrench socket</p>	 <p>09940-14990 Engine mounting thrust adjuster socket wrench</p>	 <p>09940-34520 "T" Handle</p>	 <p>09940-34531 Attachment A</p>

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

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 cap bolt		8	0.8	5.7
Cam chain tension adjuster 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		10	1.0	7.0
Valve timing inspection plug		23	2.3	16.3
Generator rotor bolt		120	12.0	87
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		13	1.3	9.5
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 tightenig 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 bolt/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		55	5.5	40.0
Engine mounting nut	[Center]	93	9.3	67.5
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
Engine mounting pinch bolt		25	2.5	18.0
Cooling fan thermo-switch		17	1.7	12.5
ECT sensor		19	1.9	13.5
Fuel pump mounting bolt		10	1.0	7.0
Fuel delivery pipe mounting screw		5.0	0.5	3.7
Cooling fan/horn 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 hose 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		19	1.9	13.5
IAT sensor		18	1.8	13.0

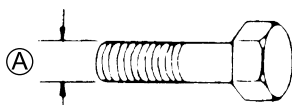
CHASSIS

ITEM	N·m	kgf-m	lb-ft
Steering stem head nut	90	9.0	65.0
Steering stem 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
Handlebar clamp 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
Front caliper air bleeder valve	7.5	0.75	5.5
Rear caliper air bleeder valve	6	0.6	4.3
Brake disc bolt (Front and Rear)	23	2.3	16.5
Rear brake caliper mounting bolt	22	2.2	16.0
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	25	2.5	18.0
Swingarm pivot shaft	15	1.5	11.0
Swingarm pivot nut	100	10.0	72.5
Swingarm pivot lock-nut	90	9.0	65.0
Rear shock absorber mounting nut (Upper & Lower)	50	5.0	36.0
Cushion lever nut	78	7.8	56.5
Cushion rod nut	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

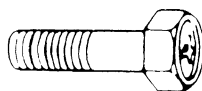
TIGHTENING TORQUE CHART

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

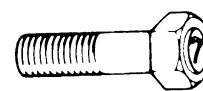
Bolt Diameter Ⓐ (mm)	Conventional or "4" marked bolt			"7" marked bolt		
	N·m	kgf-m	lb-ft	N·m	kgf-m	lb-ft
4	1.5	0.15	1.0	2.3	0.23	1.5
5	3	0.3	2.0	4.5	0.45	3.0
6	5.5	0.55	4.0	10	1.0	7.0
8	13	1.3	9.5	23	2.3	16.5
10	29	2.9	21.0	50	5.0	36.0
12	45	4.5	32.5	85	8.5	61.5
14	65	6.5	47.0	135	13.5	97.5
16	105	10.5	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.	0.10 – 0.20 (0.004 – 0.008)	—
	EX.	0.20 – 0.30 (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	41 – 47 N (4.2 – 4.8 kgf) (9.26 – 10.58 lbs) at length 29.9 mm (1.18 in)	—
	OUTER	166 – 192 N (17.0 – 19.6 kgf) (37.48 – 43.21 lbs) at length 33.4 mm (1.31 in)	—

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.48 – 35.53 (1.3968 – 1.3988)	35.18 (1.3850)
	EX.	33.48 – 33.53 (1.3181 – 1.3201)	33.18 (1.3063)
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	1 300 – 1 700 kPa (13 – 17 kgf/cm ²) (185 – 242 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)		Nicks or Scratches
Piston diam.	80.950 – 80.955 (3.1870 – 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 (0.35)
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)		19.98 (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	0.002 – 0.029 (0.0001 – 0.0011)	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 100 kPa (1.0 kgf/cm ² , 14 psi) Below 400 kPa (4.0 kgf/cm ² , 57 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 turns 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		3.133 (47/15)	—
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	116 links	—
	20-pitch length	—	319.4 (12.57)
Drive chain slack (on side-stand)		20 – 30 (0.79 – 1.18)	—
Gearshift lever height		25 (0.98)	—

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)		—
ECT 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 ² , 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 (0.53/0.44 US/lmp qt)	—
	Engine side	Approx. 1650 ml (3.49/2.90 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 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		W – G
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		⊕ G/B – ⊖ B/Br
TP sensor input voltage	4.5 – 5.5 V		
TP sensor resistance	Closed	Approx. 1.12 k Ω	
	Opened	Approx. 4.26 k Ω	
TP sensor output voltage	Closed	Approx. 1.12 V	⊕ P/W – ⊖
	Opened	Approx. 4.26 V	B/Br
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. 2.45 k Ω at 20 °C (68 °F)		
TO sensor resistance	19.1 – 19.7 k Ω		
TO sensor voltage	Normal	0.4 – 1.4 V	⊕ Br/W – ⊖
	Leaning 65 °	3.7 – 4.4 V	B/Br
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 Ω	Y – B
	Opened	Approx. 4.38 k Ω	
STP sensor output voltage	Closed	Approx. 0.58 V	⊕ Y – ⊖
	Opened	Approx. 4.40 V	B/Br
STV actuator resistance	7 – 14 Ω		
PAIR solenoid valve resistance	20 – 24 k Ω at 20 °C (68 °F)		

THROTTLE BODY

ITEM	SPECIFICATION
I.D. No.	27 G0 (Others), 27 G1 (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 ± 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.	
CKP sensor resistance			130 – 240 Ω	W – G
Ignition coil resistance	Primary		2 – 5 Ω	⊕ tap – ⊖ tap
	Secondary		24 – 37 k Ω	⊕ tap – Plug cap
CKP 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		YTX12-BS	
	Capacity		12 V 36.0 kC (10 Ah)/10 HR	
Fuse size	Headlight	HI	15 A	
		LO	15 A	
	Fuel		10 A	
	Ignition		10 A	
	Fan motor		15 A	
	Signal		15 A	
	Main		30 A	

WATTAGE

Unit: W

ITEM	SPECIFICATION	
	E-03, 24, 28, 33	Others
Headlight	12 V 60/55 W × 2 (H4)	←
Position/Parking light		12 V 5 W × 2
Brake light/Taillight	12 V 21/5 W × 2	←
Turn signal light	12 V 21 W	←
License light	12 V 5 W	←
Speedometer light	LED	←
Turn signal indicator light	LED	←
High beam indicator light	LED	←
Neutral indicator light	LED	←
Oil pressure/Coolant temp./Fuel injection warning	LED	←

BRAKE + WHEEL

Unit: mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal height	15 – 25 (0.59 – 0.98)		—
Brake disc thickness	Front	5 (0.20)	4.5 (0.18)
	Rear	5 (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 – 38.256 (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	19 M/C × MT2.50	—
	Rear	17 M/C × MT4.00	—
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 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 (2.80 kgf/cm ² , 41 psi)	—
Tire size	Front	110/80 R19 M/C (59 H)	—
	Rear	150/70 R17 M/C (69 H)	—
Tire type	Front	BRIDGESTONE: TW101 F	—
	Rear	BRIDGESTONE: TW152 F	—
Tire tread depth	Front	—	1.6 (0.06)
	Rear	—	2.0 (0.08)

SUSPENSION

Unit: mm (in)

ITEM	STD/SPEC.		LIMIT
Front fork stroke	150 (5.9)		—
Front fork spring free length	444.1 (17.5)		435 (17.1)
Front fork oil level (without spring, outer tube fully compressed)	143 (5.63)		—
Front fork spring adjuster	3 groove from Top/Spring adjuster height 9 mm (0.35 in)		—
Front fork oil type	SUZUKI FORK OIL SS-08 or equivalent fork oil		—
Front fork oil capacity (each leg)	524 ml (17.7/18.5 US/Imp oz)		—
Rear shock absorber spring adjuster	2 groove from bottom		—
Rear shock absorber damping force adjuster	Rebound	1 turn back from stiffest position	E-02, 19, 24
		1 1/2 turns back from stiffest position	E-03, 28, 33
Rear wheel travel	150 mm (5.9 in)		—
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	22 L (5.8/4.8 US/Imp gal)		
Engine oil type	SAE 10 W – 40, API SF or SG		
Engine oil capacity	Change	2 300 ml (2.4/2.0 US/Imp qt)	
	Filter change	2 700 ml (2.9/2.4 US/Imp qt)	
	Overhaul	3 100 ml (3.3/2.7 US/Imp qt)	