SERVICING INFORMATION

CONTENTS

TROUBLESHOOTING

ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start, or is hard to start.	**Compression too low**	
	1. Out of adjustment tappet clearance.	Adjust.
	2. Worn valve guides or poor seating of valves.	Repair or replace.
	3. Mistiming valves.	Adjust.
	4. Excessively worn piston rings.	Replace.
	5. Worn-down cylinder bore.	Replace or rebore.
	6. Too slowly starter motor cranks.	See electrical section.
	7. Poor seating of spark plug.	Retighten.
	Plugs not sparking	
	1. Fouled spark plug.	Clean.
	2. Wet spark plug.	Clean and dry.
	3. Defective ignition coil.	Replace.
	4. Open or short in high-tension cord.	Replace.
	5. Defective signal generator or ignitor unit.	Replace.
	No fuel reaching the carburetors	
	1. Clogged fuel tank air breather hose.	Clean or replace.
	2. Clogged or defective vacuum fuel valve.	Clean or replace.
	3. Defective fuel pump.	Replace.
	4. Defective carburetor needle valve.	Replace.
	5. Clogged fuel hose or fuel filter.	Clean or replace.
Engine stalls easily.	1. Fouled spark plugs.	Clean.
	2. Defective signal generator or ignitor unit.	Replace.
	3. Clogged fuel hose.	Clean.
	4. Clogged jets in carburetor.	Clean.
	5. Out of adjustment tappet clearance.	Adjust.
Noisy engine.	**Excessive valve chatter**	
	1. Too large valve clearance.	Adjust.
	2. Weakened or broken valve springs.	Replace.
	3. Worn tappet or cam surface.	Replace.
	4. Worn and burnt camshaft journal.	Replace.
	Noise seems to come from piston	
	1. Worn down piston or cylinders.	Replace.
	2. Fouled with carbon combustion chambers.	Clean.
	3. Worn piston pins or piston pin bore.	Replace.
	4. Worn piston rings or ring grooves.	Replace.
	Noise seems to come from timing chain	
	1. Stretched chain.	Replace.
	2. Worn sprockets.	Replace.
	3. Not working tension adjuster.	Repair or replace.
	Noise seems to come from clutch	
	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.

Complaint	Symptom and possible causes	Remedy
Noisy engine.	**Noise seems to come from crankshaft**	
	1. Due to wear rattling bearings.	Replace.
	2. Worn and burnt big-end bearings.	Replace.
	3. Worn and burnt journal bearings.	Replace.
	4. Too large thrust clearance.	Replace thrust bearing.
	Noise seems to come from transmission	
	1. Worn or rubbing gears.	Replace.
	2. Badly worn splines.	Replace.
	3. Worn or rubbing primary gears.	Replace.
	4. Badly worn bearings.	Replace.
	Noise seems to come from water pump	
	1. Too much play on pump shaft bearing.	Replace.
	2. Worn or damaged mechanical seal.	Replace.
	3. Touches pump case and impeller.	Replace.
Slipping clutch.	1. Out of adjustment or loss of play clutch control.	Adjust.
	2. Weakened clutch springs.	Replace.
	3. Worn or distorted pressure plate.	Replace.
	4. Distorted clutch plates, driven and drive.	Replace.
Dragging clutch.	1. Out of adjustment or loss of play clutch control.	Adjust.
	2. Clutch springs weakened.	Replace.
	3. Distorted pressure plate or clutch plate.	Replace.
Transmission will not shift.	1. Broken gearshift cam.	Replace.
	2. Distorted gearshift forks.	Replace.
	3. Worn gearshift cam plate.	Replace.
Transmission will not shift back.	1. Broken return spring on shift shaft.	Replace.
	2. Rubbing or sticky shift shaft.	Repair or replace.
	3. Distorted or worn gearshift forks.	Replace.
Transmission jumps out of gear.	1. Worn shifting gears on driveshaft or countershaft.	Replace.
	2. Distorted or worn gearshift forks.	Replace.
	3. Weakened stopper spring on gearshift stopper.	Replace.
	4. Worn gearshift cam plate.	Replace.
Engine idles poorly.	1. Out of adjustment tappet clearance.	Adjust.
	2. Poor seating of valves.	Replace or repair.
	3. Defective valve guides.	Replace.
	4. Worn tappet or cam surface.	Replace.
	5. Too wide spark plug gaps.	Adjust or replace.
	6. Defective ignition coil.	Replace.
	7. Defective signal generator or ignitor unit.	Replace.
	8. Out of adjustment in carburetor float-chamber fuel level.	Adjust.
	9. Clogged jets or imbalance of carburetors.	Clean or adjust.
	10. Defective fuel pump.	Replace

Complaint	Symptom and possible causes	Remedy
Engine runs poorly in high speed range.	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 ignitor unit.
	6. Defective ignition coil.	Replace.
	7. Defective signal generator or igntior unit.	Replace.
	8. Too low float-chamber fuel level.	Adjust.
	9. Clogged air cleaner element.	Clean.
	10. Clogged fuel hose, resulting in inadequate fuel supply to carburetors.	Clean and prime.
	11. Defective fuel pump.	Replace.
Dirty or heavy exhaust smoke.	1. Too much engine oil in the engine.	Check with inspection window drain out excess oil.
	2. Worn piston rings or cylinders.	Replace.
	3. Worn valve guides.	Replace.
	4. Scored or scuffed cylinder walls.	Rebore.
	5. Worn valves or stems.	Replace.
	6. Defective stem seal.	Replace.
	7. Worn oil ring side rails.	Replace.
Engine lacks power.	1. Loss of tappet clearance.	Adjust.
	2. Weakened valve springs.	Replace.
	3. Out of adjustment valve timing.	Adjust.
	4. Worn piston rings or cylinders.	Replace.
	5. Poor seating of valves.	Repair.
	6. Fouled spark plug.	Clean or replace.
	7. Incorrect spark plug.	Adjust or replace.
	8. Clogged jets in carburetors.	Clean.
	9. Out of adjustment float-chamber fuel level.	Adjust.
	10. Clogged air cleaner element.	Clean.
	11. Loose carburetor balancing screw..	Retighten.
	12. Sucking air from intake pipe.	Retighten or replace.
	13. Too much engine oil.	Drain out excess oil.
	14. Defective fuel pump.	Replace.
Engine overheats.	1. Heavy carbon deposit on piston crowns.	Clean.
	2. Not enough oil in the engine.	Add oil.
	3. Defective oil pump or clogged oil circuit.	Replace or clean.
	4. Too low in float chambers fuel level.	Adjust.
	5. Sucking air from intake pipes.	Retighten or replace.
	6. Use incorrect engine oil.	Change.
	7. Defective cooling system.	See radiator section.

RADIATOR

Complaint	Symptom and possible causes	Remedy
Engine overheats.	1. Not enough cooling water.	Add coolant.
	2. Clogged with dirt or tradhes radiator core.	Clean.
	3. Erratic thermostat, stuck in closed position.	Replace.
	4. Faulty cooling fan.	Repair or replace.
	5. Defective thermo-switch.	Replace.
	6. Clogged water passage.	Clean.
	7. Air trapped in the cooling circuit.	Bleed out air.
	8. Defective water pump.	Replace.
	9. Use incorrect coolant.	Replace.
Engine overcools.	1. Erratic thermostat, stuck in full-open position.	Replace.
	2. Defective thermo-switch.	Replace.
	3. Extremely cold weather.	Put on the radiator cover.

CARBURETOR

Complaint	Symptom and possible causes	Remedy
Trouble with starting.	1. Clogged starter jet.	Clean.
	2. Clogged starter pipe.	Clean.
	3. Air leaking from a joint between starter body and carburetor.	Check starter body and carburetor for tighteness, adjust and replace gasket.
	4. Air leaking from carburetor's joint or vacuum hose joint.	Check and adjust.
	5. Not operation properly starter plunger.	Check and adjust.
Idling or low-speed trouble.	1. Clogged or loose pilot jet, pilot air jet.	Check and clean.
	2. Air leaking from carburetor's joint, bacuum hose joint, or starter.	Check and adjust.
	3. Clogged pilot outlet or bypass.	Check and clean.
	4. Not fully closed starter plunger.	Check and adjust.
Medium-or high speed trouble.	1. Clogged main jet or main air jet.	Check and clean.
	2. Clogged needle jet.	Check and clean.
	3. Not operating properly throttle valve.	Check throttle valve for operation.
	4. Clogged fuel filter.	Check and clean.
Overflow and fuel level fluctuations.	1. Worn or damaged needle valve.	Replace.
	2. Broken spring in needle valve.	Replace.
	3. Not working properly float.	Check and adjust.
	4. Foreign matter has adhered to needle valve.	Clean.
	5. Too high or low fuel level.	Adjust float height.
	6. Defective fuel pump.	Replace.

CHASSIS

Complaint	Symptom and possible causes	Remedy
Heavy steering.	1. Overtightened steering stem nut. 2. Broken bearing in steering stem. 3. Distorted steering stem. 4. Not enough pressure in tires.	Adjust. Replace. Replace. Adjust.
Wobbly handlebars.	1. Loss of balance between right and left front forks. 2. Distorted front fork. 3. Distorted front axle or crooked tire. 4. Worn bearing/race in steering stem.	Replace. Repair or replace. Replace. Replace.
Wobby front wheel.	1. Distorted wheel rim. 2. Worn front wheel bearing. 3. Defective or incorrect tire. 4. Loose axle, axle nut or axle pinch bolts. 5. Incorrect front fork oil level.	Replace. Replace. Replace. Retighten. Adjust.
Front suspension too soft.	1. Weakened springs. 2. Not enough fork oil. 3. Wrong weight tank oil.	Replace. Replenish. Replace.
Front suspension too stiff.	1. Too viscous fork oil. 2. Too much fork oil. 3. Bent front axle.	Replace. Drain excess oil. Replace.
Noisy front suspension.	1. Not enough fork oil. 2. Loose bolts on suspension.	Replenish. Retighten.
Wobbly rear wheel.	1. Distorted wheel rim. 2. Worn rear wheel bearing or swingarm bearings. 3. Defective or incorrect tire. 4. Worn swingarm and rear cushion related bearings. 5. Loose nuts or bolts on rear suspensions.	Replace. Replace. Replace. Replace. Retighten.
Rear suspension too soft.	1. Weakened shock absorber spring. 2. Improperly set rear suspension adjuster. 3. Leakage oil of shock absorber. 4. Leakage gas of shock absorber.	Replace. Adjust. Replace. Replace.
Rear suspension too stiff.	1. Improperly set rear suspension adjuster. 2. Bent shock absorber shaft. 3. Bent swingarm. 4. Worn swingarm and rear cushion related bearings.	Adjust. Replace. Replace. Replace.
Noisy rear suspension.	1. Loose nuts or bolts on rear suspension. 2. Worn swingarm and rear cushion related bearings.	Retighten. Replace.

BRAKES

Complaint	Symptom and possible causes	Remedy
Insufficient brake power.	1. Leakage of brake fluid from hydraulic system. 2. Worn pads. 3. Oil adhesion of engaging surface of pads. 4. Worn disc. 5. Air in hydraulic system.	Repair or replace. Replace. Clean disc and pads. Replace. Bleed air.
Brake squeaking.	1. Carbon adhesion on pad surface. 2. Tilted pad. 3. Damaged wheel bearing. 4. Loosen front-wheel axle or rear-wheel axle. 5. Worn pads. 6. Foreign material in brake fluid. 7. Clogged return port of master cylinder.	Repair surface with sandpaper. Modify pad fitting or replace. Replace. Tighten to specified torque. Replace. Replace brake fluid. Disassemble and clean master cylinder.
Excessive brake lever stroke.	1. Air in hydraulic system. 2. Insufficient brake fluid. 3. Improper quality of brake fluid.	Bleed air. Replenish fluid to specified level; bleed air. Replace with correct fluid.
Leakage of brake fluid	1. Insufficient tightening of connection joints. 2. Cracked hose. 3. Worn piston and/or cup.	Tighten to specified torque. Replace. Replace piston and/or cup.
Brake drags.	1. Rusty part. 2. Insufficient brake lever or brake pedal pivot lubrication.	Clean and lubricate. Lubricate.

ELECTRICAL

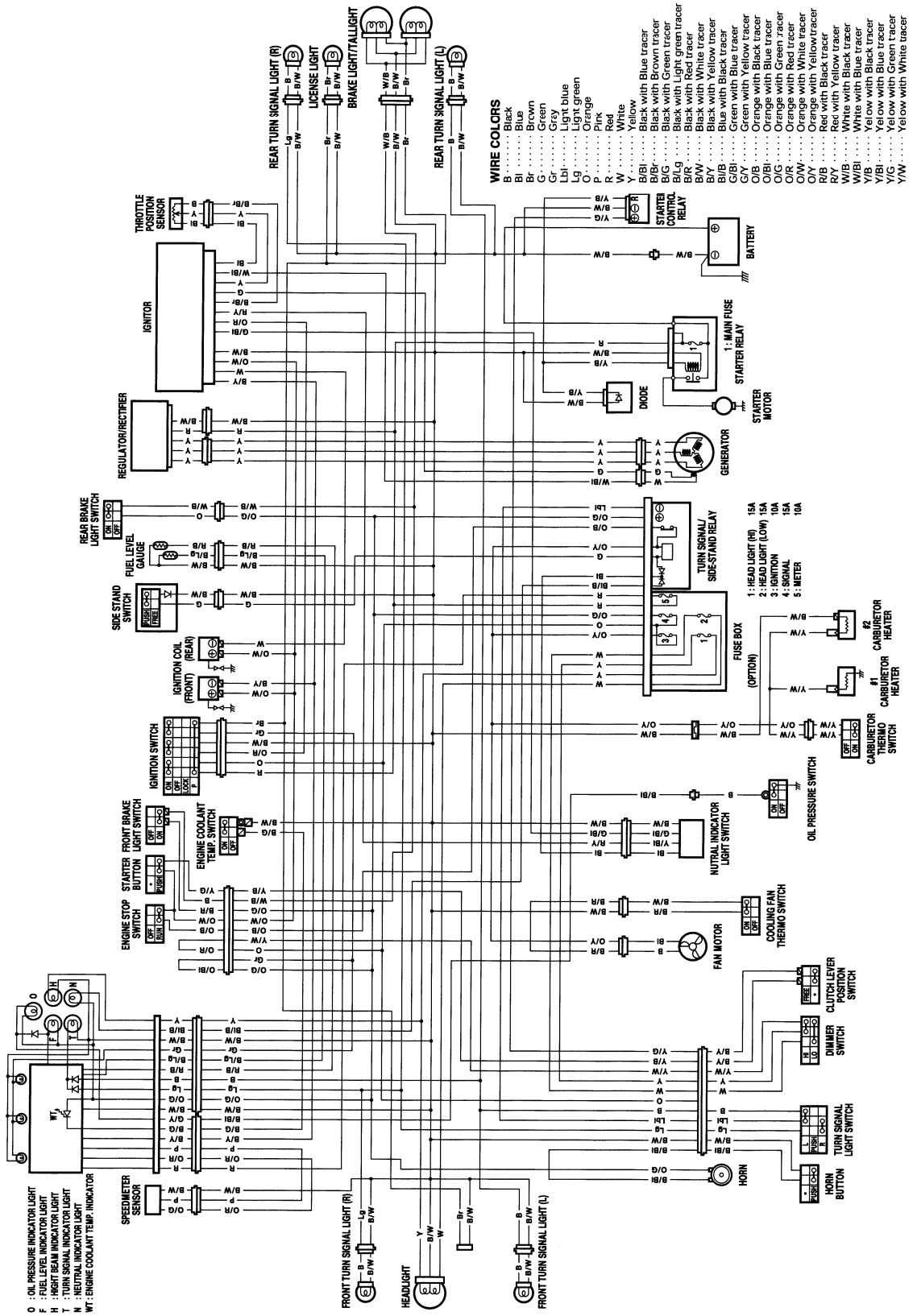
Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	1. Defective ignition coil. 2. Defective spark plugs. 3. Defective signal generator or ignitor unit.	Replace. Replace. Replace.
Spark plug soon become fouled with carbon.	1. Mixture too rich. 2. Idling speed set too high. 3. Incorrect gasoline. 4. Dirty element in air cleaner. 5. Too cold spark plug.	Adjust carburetors. Adjust carburetors. Change. Clean. Replace with hot type plugs.
Spark plugs become fouled too soon.	1. Worn piston rings. 2. Worn piston or cylinders. 3. Excessive clearance of valve stem in valve guides. 4. Worn stem oil seal.	Replace. Replace. Replace. Replace.
Spark plug electrodes overheat or burn.	1. Too hot spark plugs. 2. Overheated the engine. 3. Loose spark plugs. 4. Too lean mixture.	Replace with cold type plugs. Tune up. Retighten. Adjust carburetors.
Generator does not charge.	1. Open or short lead wires, or loose lead connections. 2. Shorted, grounded or open generator coils. 3. Shorted or punctured regulator/rectifiers.	Repair or replace or retighten. Replace. Replace.
Generator does charge, but charging rate is below the specification.	1. Lead wires tend to get shorted or open-circuited or loosely connected at terminals. 2. Grounded or open-circuited stator coils or generator. 3. Defective regulator/rectifier. 4. Defective cell plates in the battery.	Repair or retighten. Replace. Replace. Replace the battery.
Generator overcharges.	1. Internal short-circuit in the battery. 2. Damaged or defective resistor element in the regulator/rectifier. 3. Poorly grounded regulator/rectifier.	Replace the battery. Replace. Clean and tighten ground connection.
Unstable charging.	1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting. 2. Internally shorted generator. 3. Defective regulator/rectifier.	Repair or replace. Replace. Replace.
Starter button is not effective.	1. Run down battery. 2. Defective switch contacts. 3. Not seating properly brushes on commutator in starter motor. 4. Defective starter relay/starter interlock switch.	Repair or replace. Replace. Repair or replace. Replace.

BATTERY

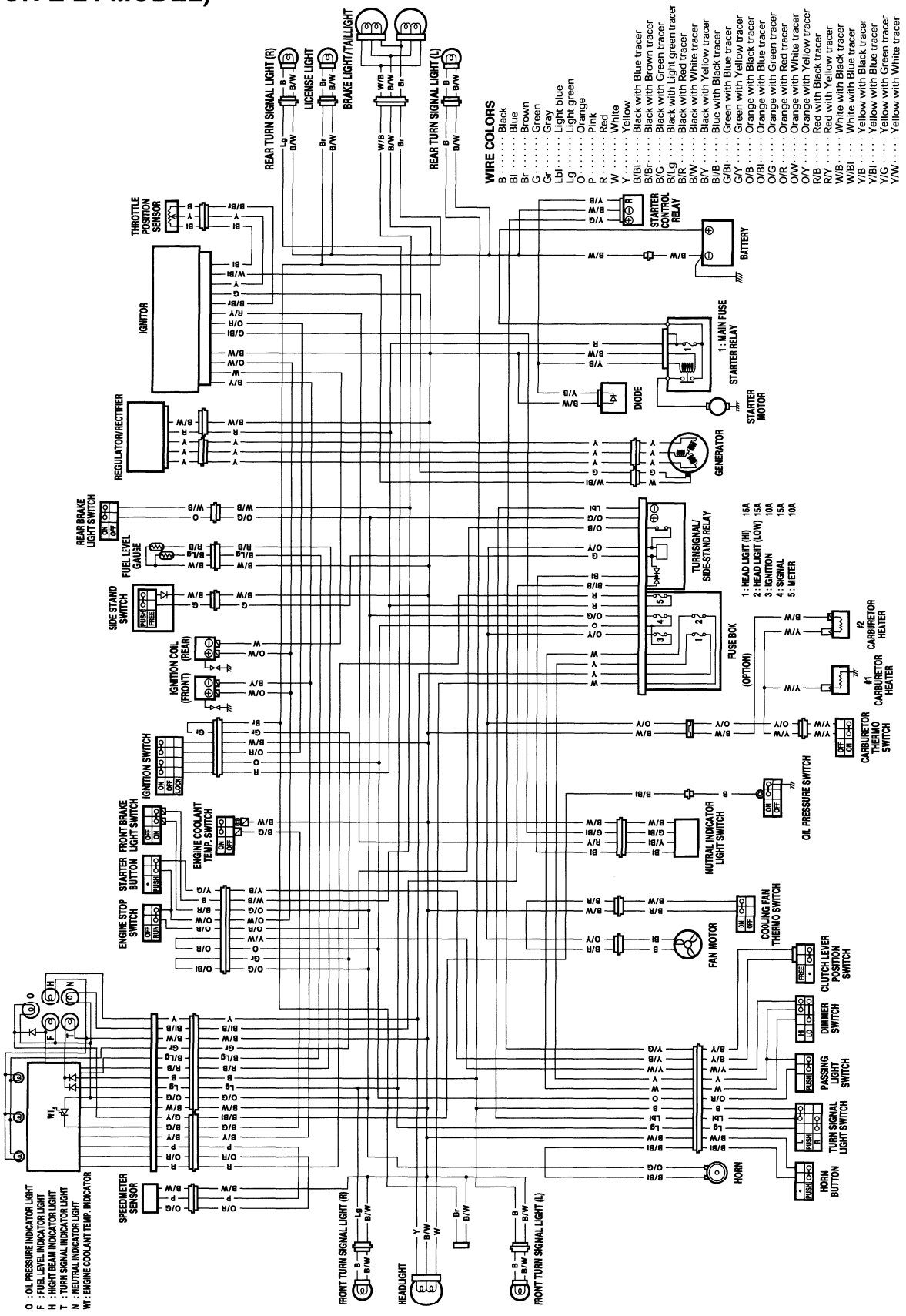
Complaint	Symptom and possible causes	Remedy
"Sulfation", acidic white powdery substance or spots on surface of cell plates.	1. Cracked battery case. 2. Battery has been left in a run-down condition for a long time.	Replace the battery. Replace the battery.
Battery runs down quickly.	1. Not correct the charging system. 2. Cell plates have lost much of their active material as a result of overcharging. 3. A short-circuit condition exists within the battery. 4. Too low battery voltage. 5. Too old battery.	Check the generator, regulator/rectifier and circuit connections and make necessary adjustments to obtain specified charging operation. Replace the battery, and correct the charging system. Replace the battery. Recharge the battery fully. Replace the battery.
Battery "sulfation".	1. Too low or too high charging rate. (When not in use batteries should be checked at least once a month to avoid sulfation.) 2. Left unused the battery for too long in cold climate.	Replace the battery. Replace the battery, if badly sulfated.
Battery discharges too rapidly.	Dirty container top and sides.	Clean.

WIRING DIAGRAM

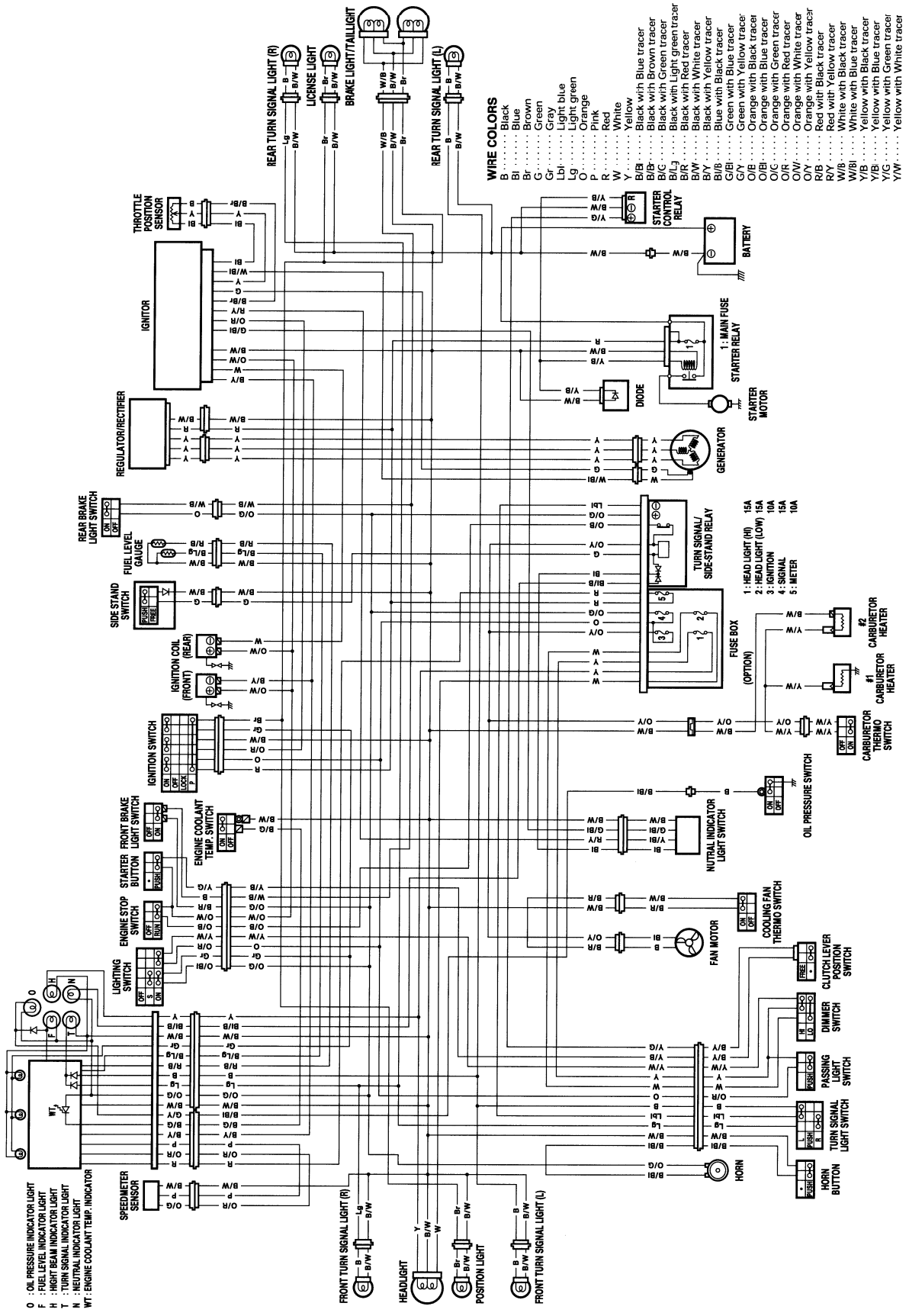
(FOR U.S.A. AND CANADA MODELS)



(FOR E-24 MODEL)

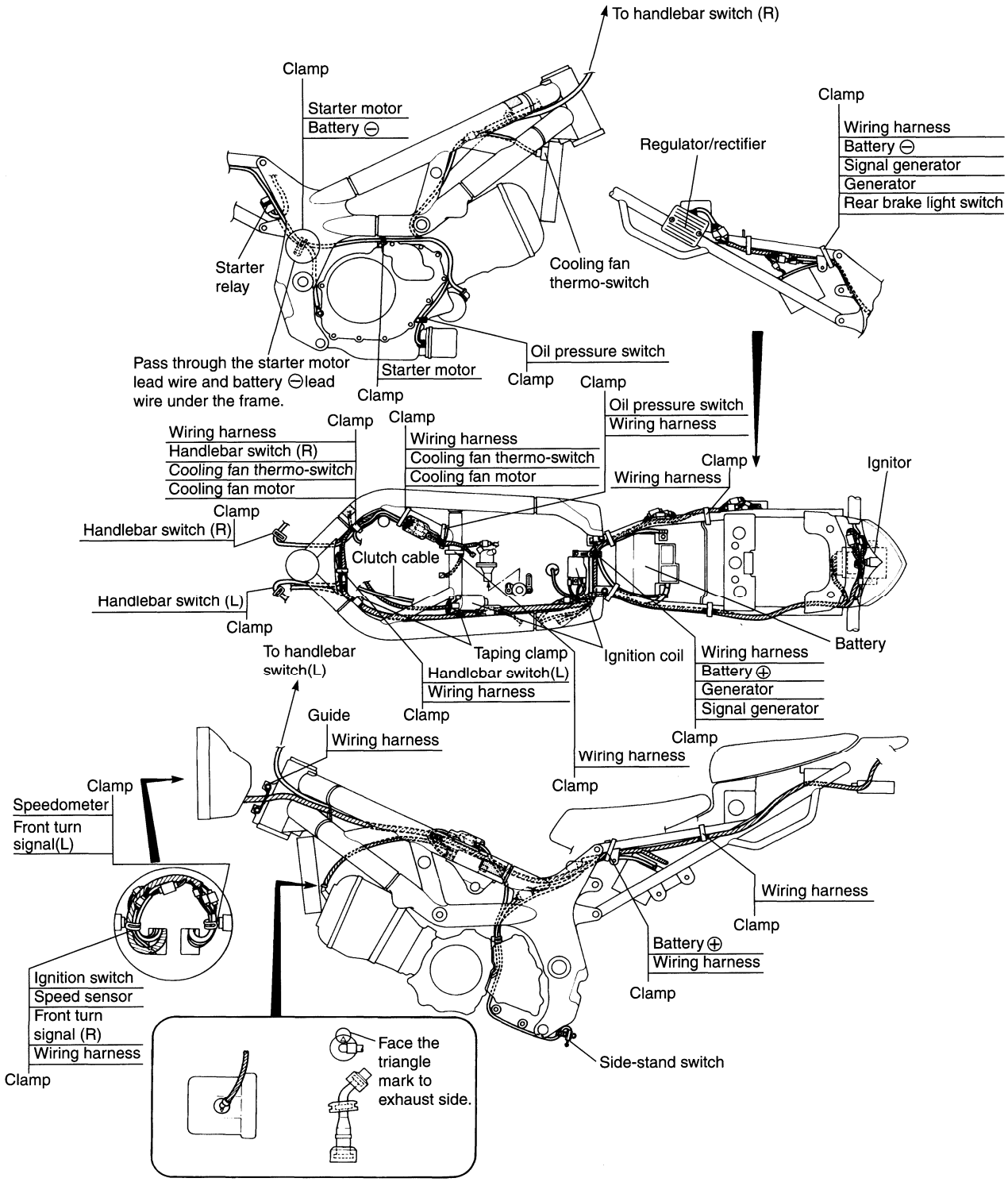


(FOR E-02, 04, 17, 18, 22, 25 AND 34 MODELS)

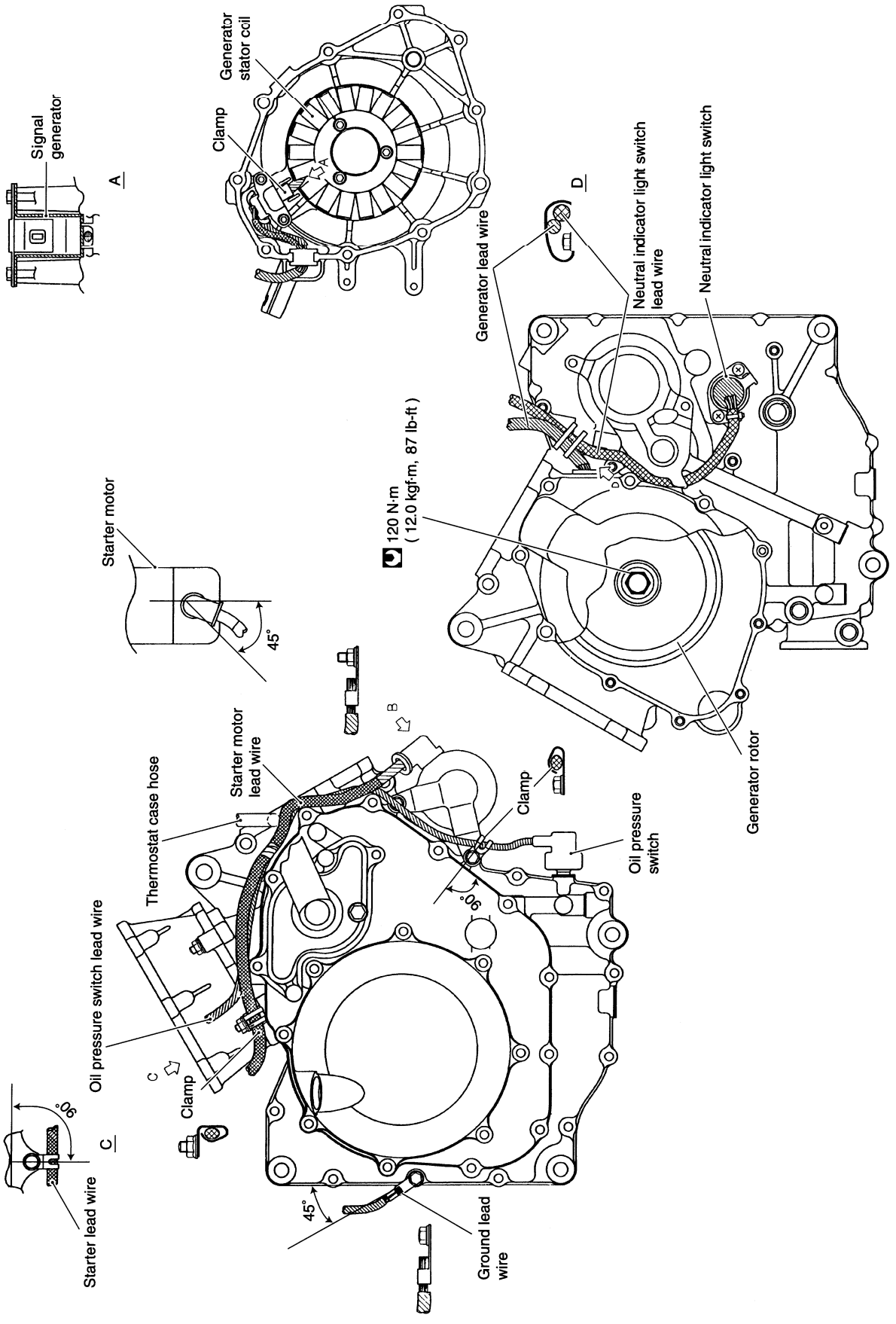


WIRING HARNESS, CABLE AND HOSE ROUTING

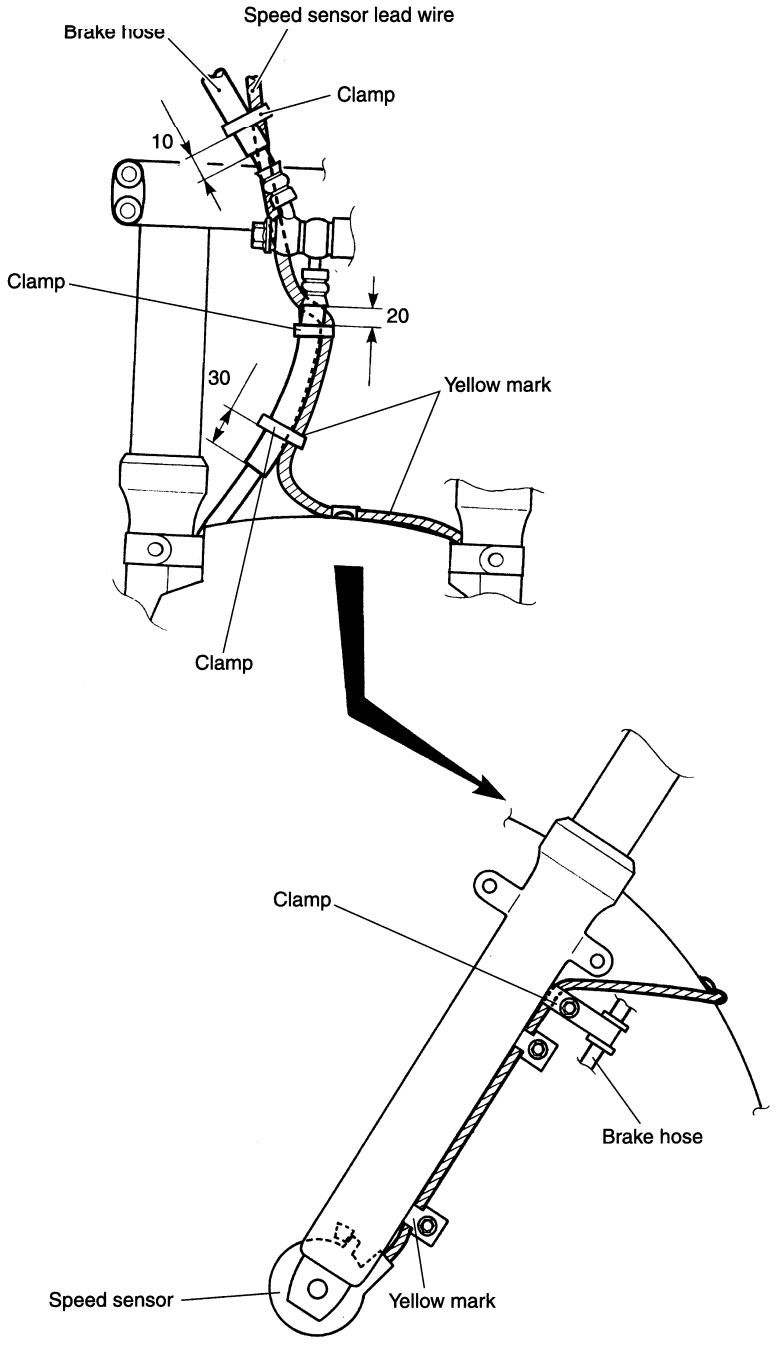
WIRE HARNESS ROUTING



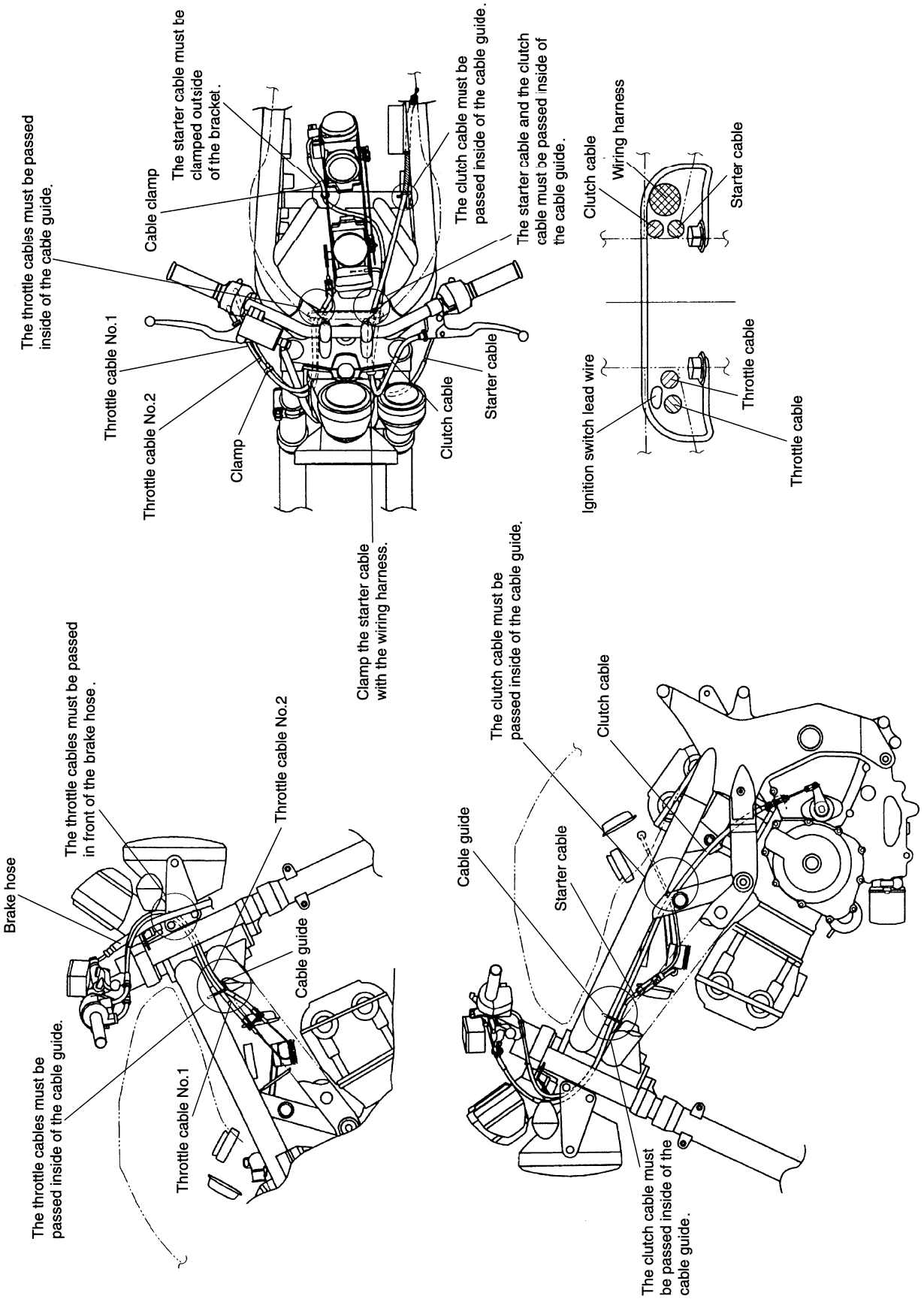
WIRE HARNESS ROUTING



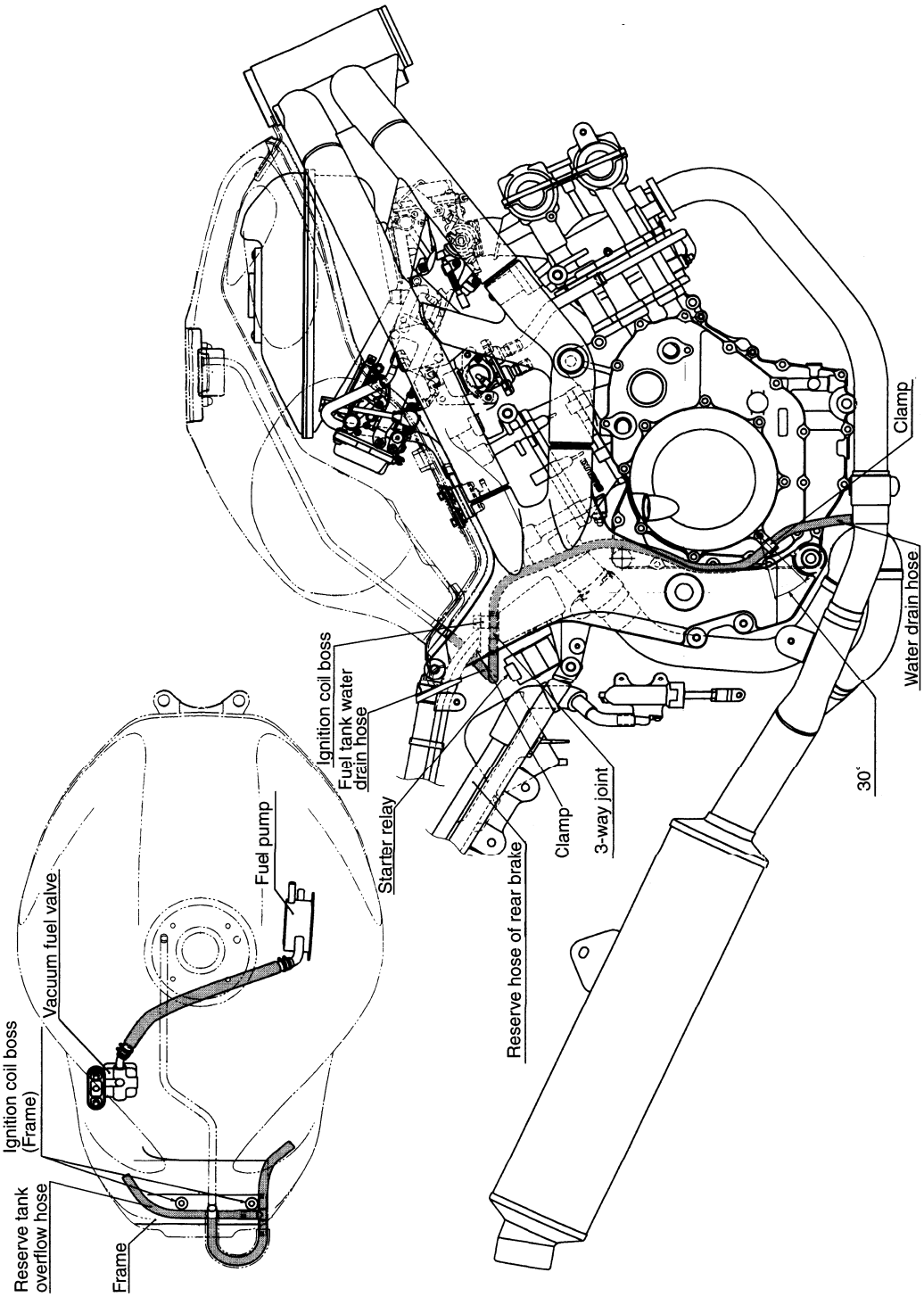
SPEED SENSOR LEAD WIRE ROUTING

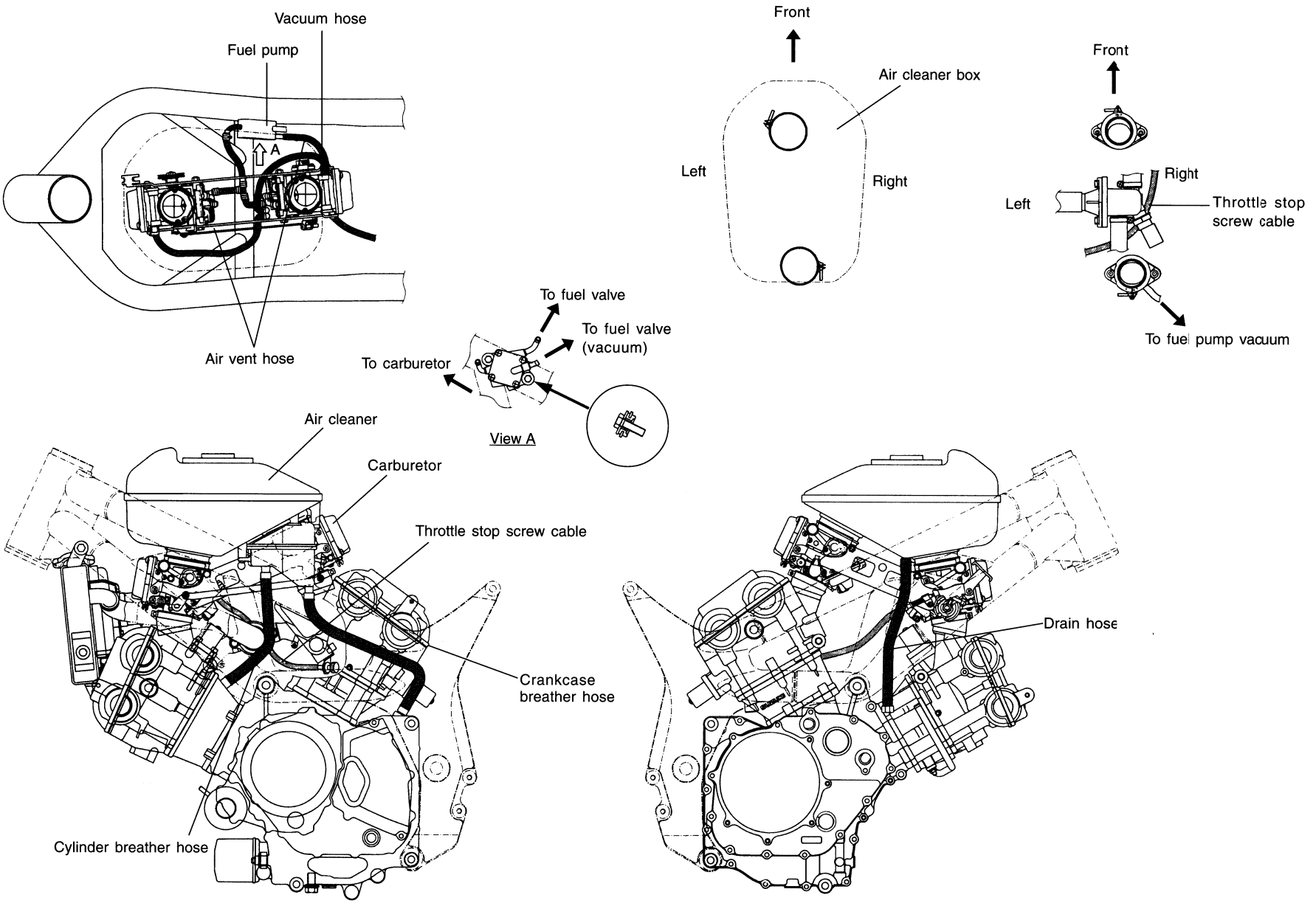


CABLE ROUTING

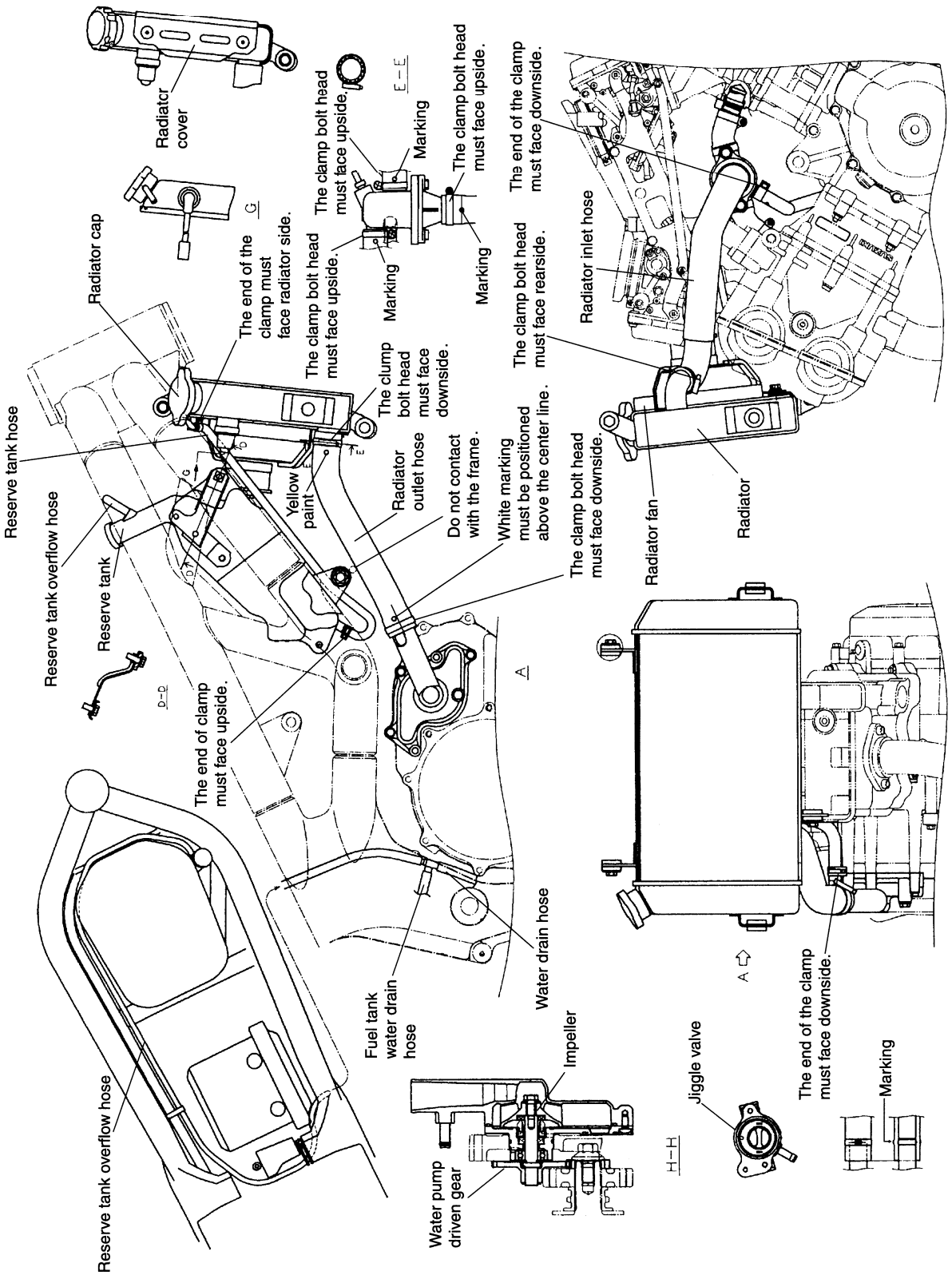


FUEL SYSTEM HOSE ROUTING

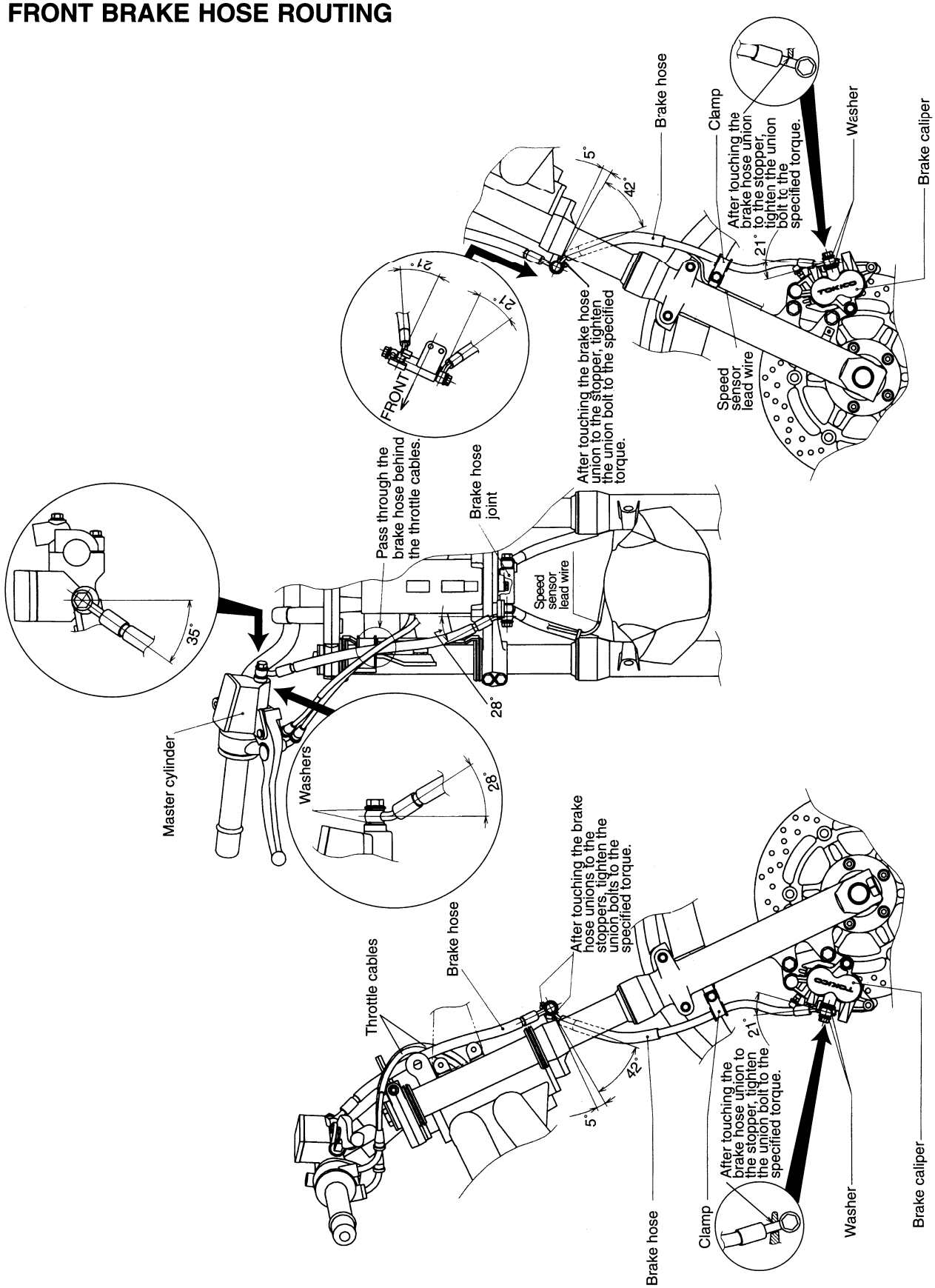



Vacuum hose
Fuel pump
A
Air vent hose
Front
Air cleaner box
Left
Right
Front
Right
Left
Throttle stop screw cable
To fuel pump vacuum
To fuel valve
To fuel valve (vacuum)
To carburetor
View A
Air cleaner
Carburetor
Throttle stop screw cable
Crankcase breather hose
Cylinder breather hose
Drain hose

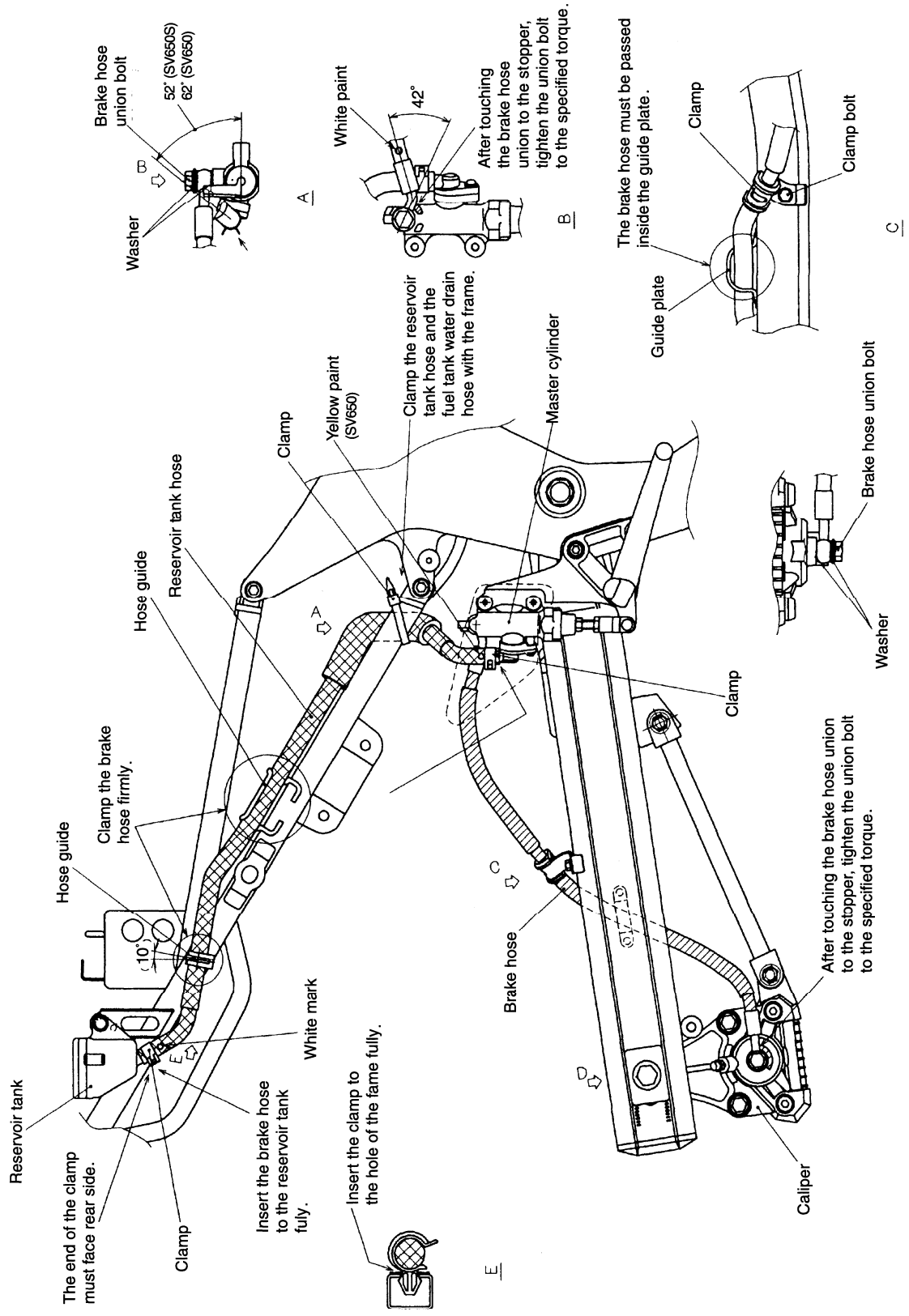
COOLING SYSTEM HOSE ROUTING



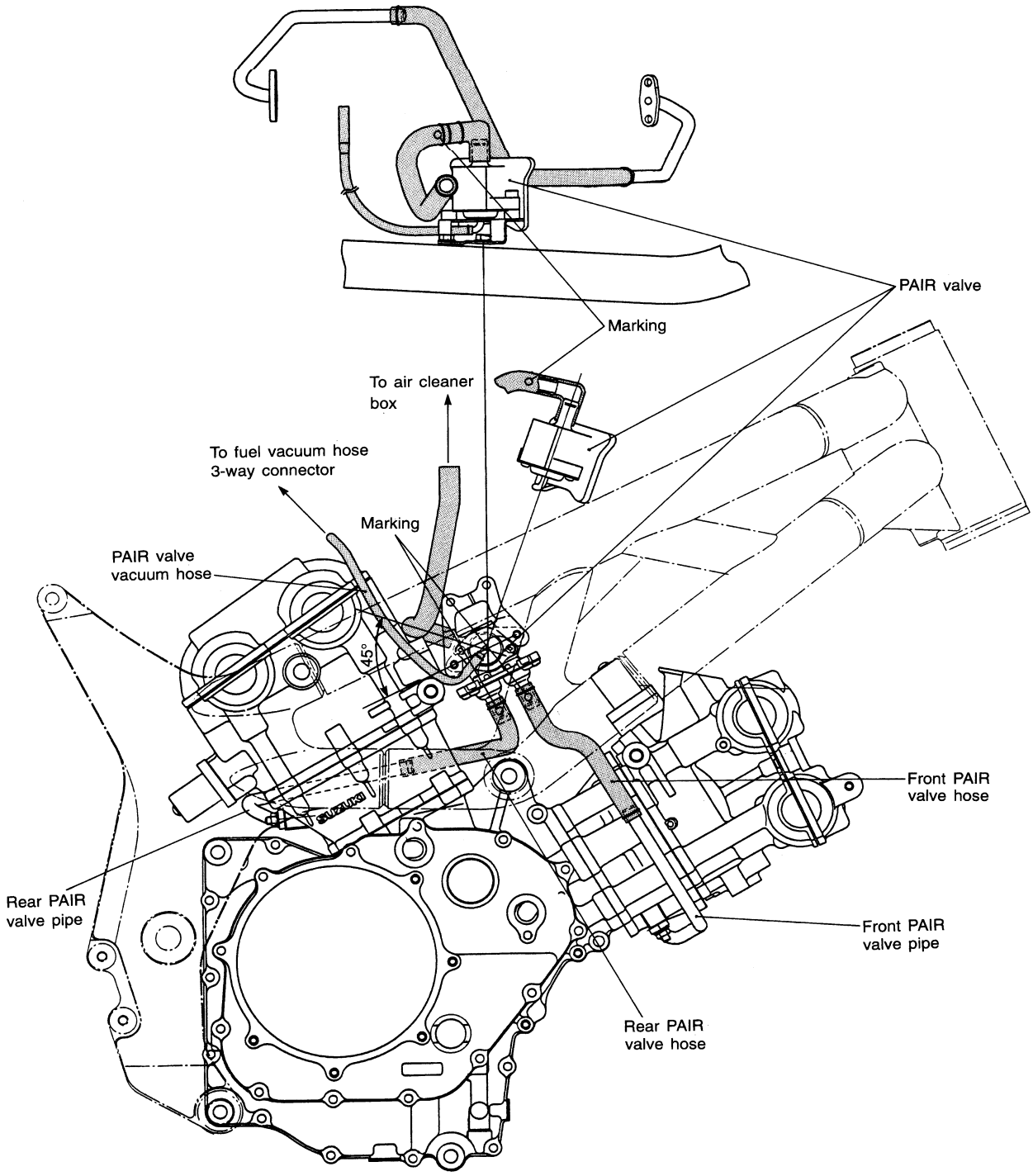
FRONT BRAKE HOSE ROUTING



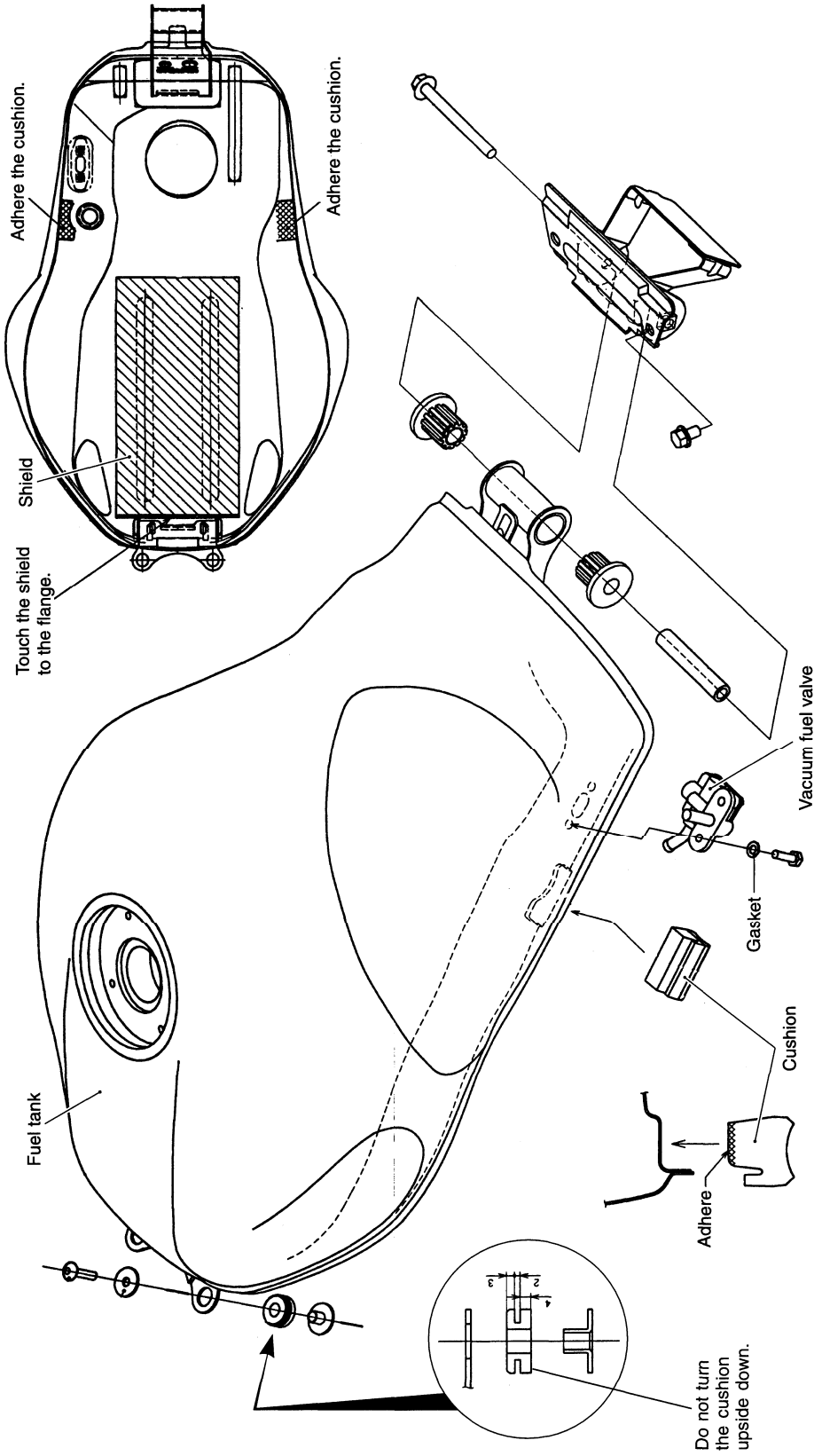
REAR BRAKE HOSE ROUTING



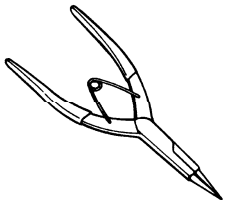
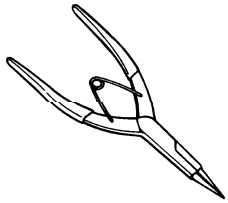
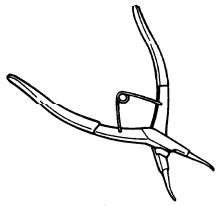
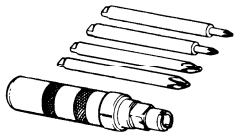
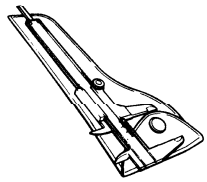
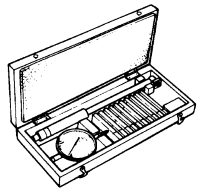
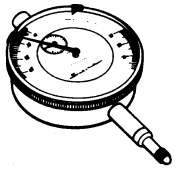
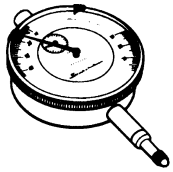
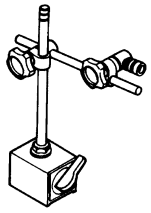
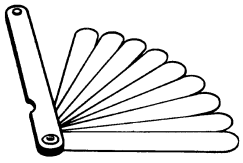
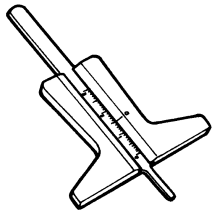
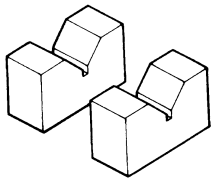
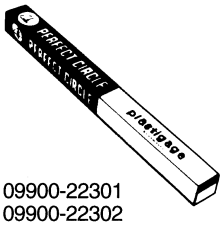
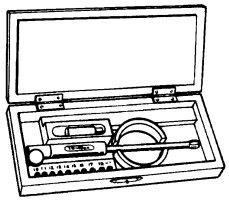
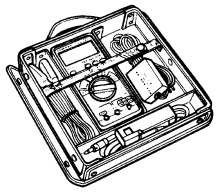
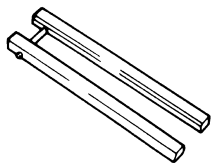
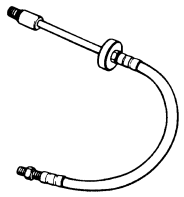
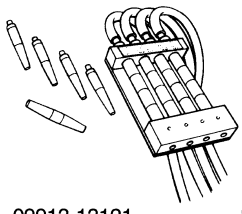
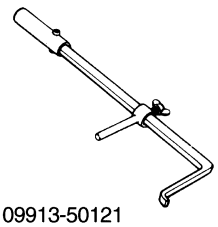
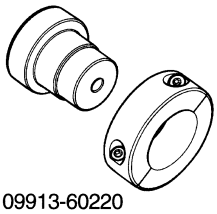
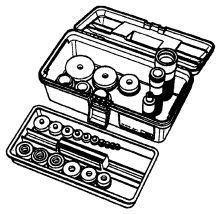
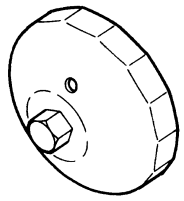
PAIR (AIR SUPPLY) SYSTEM HOSE ROUTING (FOR CALIFORNIA)

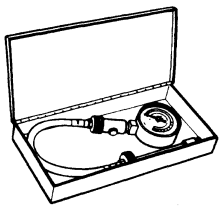
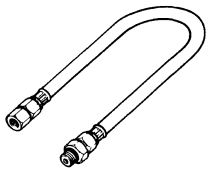
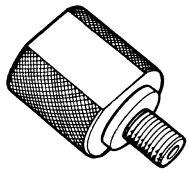
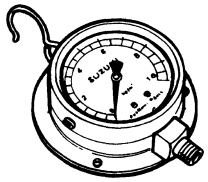
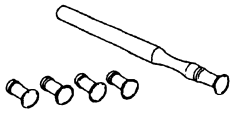
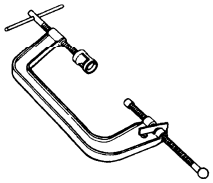
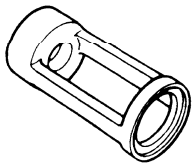
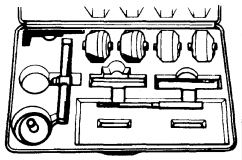
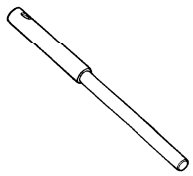
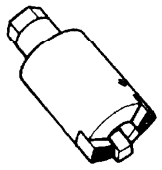
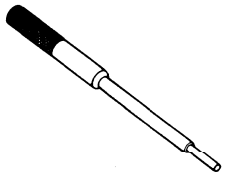
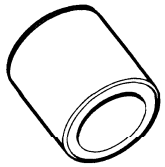
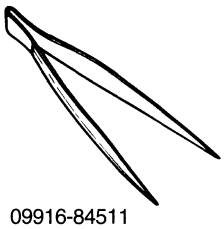
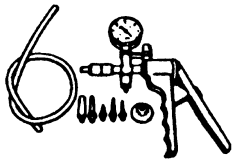
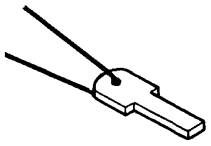
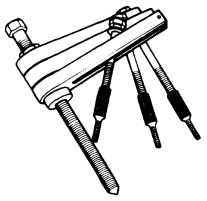
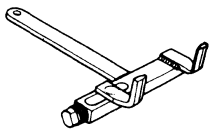
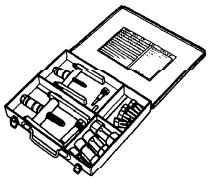
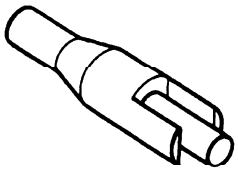
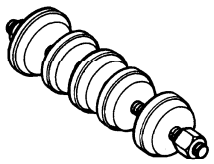
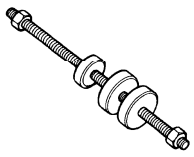


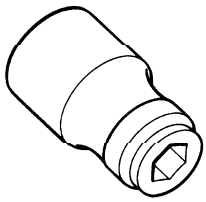
FUEL TANK SET-UP



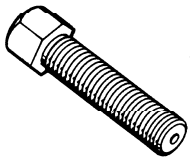
SPECIAL TOOLS

 09900-06104 Snap ring pliers	 09900-06107 Snap ring pliers	 09900-06108 Snap ring pliers	 09900-09004 Impact driver set	 09900-20101 or 09900-20102 Vernier calipers
 09900-20202 Micrometer (25 – 50 mm)	 09900-20204 Micrometer (75 – 100 mm)	 09900-20205 Micrometer (0 – 25 mm)	 09900-20508 Cylinder gauge set	 09900-20602 Dial gauge (1/1000 mm, 1 mm)
 09900-20606 Dial gauge (1/100 mm, 10 mm)	 09900-20701 Magnetic stand	 09900-20803 09900-20806 Thickness gauge	 09900-20805 Tire depth gauge	 09900-21304 V-block (100 mm)
 09900-22301 09900-22302 Plastigauge	 09900-22403 Small bore gauge (18 – 35 mm)	 09900-25008 Multi circuit tester set	 09910-20116 Conrod holder	 09915-63310 Compression gauge adapter
 09913-13121 Carburetor balancer set	 09913-50121 Oil seal remover	 09913-60220 Journal bearing remover/installer	 09913-70210 Bearing installer set	 09915-40610 Oil filter wrench

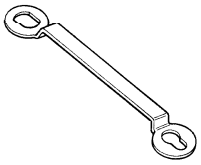
 09915-64510 Compression gauge	 09915-74520 Oil pressure gauge hose	 09915-74532 Oil pressure gauge adaptor	 09915-77330 Meter (for high pressure)	 09916-10911 Valve lapper set
 09916-14510 Valve spring compressor	 09916-14521 Valve spring compressor attachment	 09916-21111 Valve seat cutter set	 09916-20640 Solid pilot (N-100-4.5)	 09916-20630 Valve seat cutter head (N-126)
 09916-34542 Reamer handle	 09916-33210 Valve guide reamer (4.5 mm)	 09916-34580 Valve guide reamer (10.8 mm)	 09916-43210 Valve guide remover/installer	 09916-53330 Attachment
 09916-84511 Tweezers	 09917-47010 Vacuum pump gauge set	 09917-62430 Cam chain tension adjuster locking tool	 09920-13120 Crankcase separating tool	 09920-53740 Clutch sleeve hub holder
 09921-20220 Bearing remover set	 09923-80210 Oil seal guide	 09924-84510 Bearing installer set	 09924-84521 Bearing installer set	 09930-11920 Torx bit JT40H



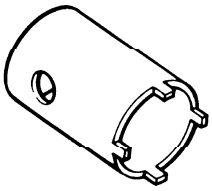
09930-11940
Bit holder



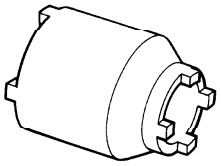
09930-30450
Rotor remover



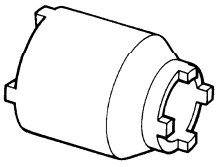
09930-44530
Rotor holder



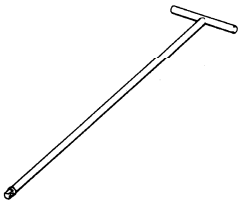
09940-14911
Steering stem nut wrench



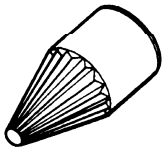
09940-14940
Swingarm adjuster lock nut wrench



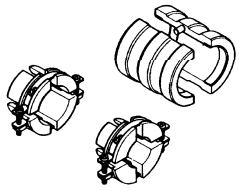
09940-14990
Engine mounting thrust adjuster socket wrench



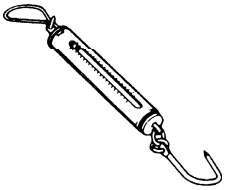
09940-34520
T handle



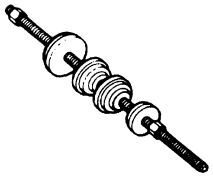
09940-34531
Attachment A



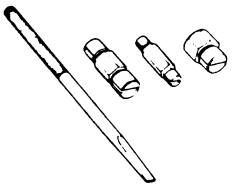
09940-52861
Front fork oil seal installer set



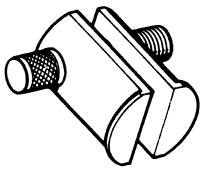
09940-92720
Spring scale



09941-34513
Bearing/steering race installer set

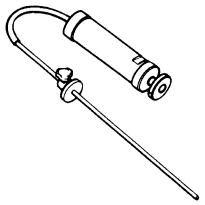


09941-50111
Wheel bearing remover

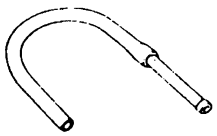


09941-54911
Bearing outer race remover

09941-74911
Steering bearing installer



09943-74111
Fork oil level gauge



09913-10760
Fuel level gauge

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		8	0.8	6.0
Cam chain tension adjuster mounting bolt		10	1.0	7.0
Cam chain guide bolt		10	1.0	7.0
Cam chain tensioner mounting bolt		10	1.0	7.0
Cylinder head bolt [M10]	(Initial)	25	2.5	18.0
	(Final)	42	4.2	30.5
Cylinder head bolt [M6]		10	1.0	7.0
Cylinder head side bolt		14	1.4	1.0
Cylinder nut	[M:6]	10	1.0	7.0
Water drain bolt		13	1.3	9.5
Impeller securing bolt		13	1.3	9.5
Clutch sleeve hub nut		50	5.0	36.0
Clutch spring set bolt		5.5	0.55	4.0
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		10	1.0	7.0
Signal generator set bolt		5.5	0.55	4.0
Gerarshift cam stopper bolt		10	1.0	7.0
Gearshift cam stopper plate bolt		10	1.0	7.0
Gearshift arm stopper bolt		23	2.3	16.5
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
Clutch cover bolt	[M:6]	10	1.0	7.0
Water pump case screw		4.5	0.45	3.3

ITEM		N·m	kgf·m	lb-ft
Oil gallery plug	[M:16]	35	3.5	25.5
	[M:8]	18	1.8	13.0
	[M6]	5.5	0.55	4.0
Oil drain plug		21	2.1	15.0
Piston cooling oil jet bolt		10	1.0	7.0
Oil pump mounting bolt		8	0.8	6.0
Conrod bearing cap bolt	(Initial)	35	3.5	25.5
	(Final)	67	6.7	48.5
Exhaust pipe bolt		23	2.3	16.5
Crankcase bearing retainer screw		8	0.8	6.0
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 pinch bolt		23	2.3	16.5
Engine mounting bolt/nut	[M:12]	93	9.3	67.5
	[M:10]	55	5.5	40.0
Engine mounting thrust adjuster	[Center]	10	1.0	7.0
	[Rear Lower]	10	1.0	7.0
Engine mounting thrust adjuster lock nut	[Center]	45	4.5	32.5
	[Rear Lower]	45	4.5	32.5
Cooling fan thermo-switch		13	1.3	9.5
Engine coolant temperature switch		10	1.0	7.0

CHASSIS

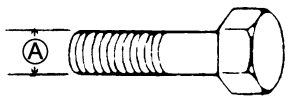
ITEM	N·m	kgf·m	lb-ft
Steering stem head nut	65	6.5	47.0
Front fork upper clamp bolt	23	2.3	16.5
Front fork lower clamp bolt	23	2.3	16.5
Front fork cap bolt	23	2.3	16.5
Front fork damper rod bolt	30	3.0	21.5
Front axle	65	6.5	47.0
Front axle pinch bolt	23	2.3	16.5
Handlebar clamp bolt	23	2.3	16.5
Handlebar holder nut	45	4.5	32.5

ITEM	N·m	kgf·m	lb-ft
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
Clutch holder mounting bolt	10	1.0	7.0
Air bleeder valve	7.5	0.75	5.5
Brake disc bolt (Front and Rear)	23	2.3	16.5
Rear brake caliper mounting bolt	26	2.6	19.0
Rear brake caliper housing bolt	30	3.0	21.5
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
Torque link nut (Front and Rear)	35	3.5	25.5
Rear shock absorber mounting bolt/nut (Upper & Lower)	50	5.0	36.0
Rear cushion lever/rod mounting nut	78	7.8	56.5
Rear axle nut	65	6.5	47.0
Rear sprocket nut	60	6.0	43.5

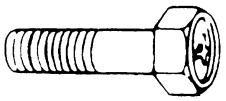
TIGHTENING TORQUE CHART

For other bolts and nuts listed previously, refer to this chart:

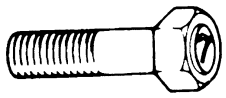
Bolt Diameter	Conventional or "4" marked bolt			"7" marked bolt		
Ⓐ (mm)	N·m	kgf·m	lb-ft	N·m	kgf·m	lb-ft
4	1.5	0.15	1.0	2.3	0.23	1.5
5	3	0.3	2.0	4.5	0.45	3.0
6	5.5	0.55	4.0	10	1.0	7.0
8	13	1.3	9.5	23	2.3	16.5
10	29	2.9	21.0	50	5.0	36.0
12	45	4.5	32.5	85	8.5	61.5
14	65	6.5	47.0	135	13.5	97.5
16	105	10.5	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	STD/SPEC.		LIMIT
Valve diam.	IN.	31 (1.2)	———
	EX.	25.5 (1.0)	———
Valve clearance (When cold)	IN.	0.1 – 0.2 (0.004 – 0.008)	———
	EX.	0.2 – 0.3 (0.008 – 0.012)	———
Valve guide to valve stem clearance	IN.	0.020 – 0.047 (0.0008 – 0.0019)	———
	EX.	0.030 – 0.057 (0.0012 – 0.0022)	———
Valve guide I.D.	IN. & EX.	4.500 – 4.512 (0.1772 – 0.1776)	———
Valve stem O.D.	IN.	4.465 – 4.480 (0.1758 – 0.1764)	———
	EX.	4.455 – 4.470 (0.1754 – 0.1760)	———
Valve stem deflection	IN. & EX.	———	0.35 (0.014)
Valve stem runout	IN. & EX.	———	0.05 (0.002)
Valve head thickness	IN. & EX.	———	0.5 (0.02)
Valve seat width	IN. & EX.	0.9 – 1.1 (0.035 – 0.043)	———
Valve head radial runout	IN. & EX.	———	0.03 (0.001)
Valve spring free length (IN. & EX.)	INNER	———	36.8 (1.45)
	OUTER	———	39.8 (1.57)
Valve spring tension (IN. & EX.)	INNER	4.2 – 4.8 kgf (9.26 – 10.58 lbs) at length 29.9 mm (1.18 in)	———
	OUTER	17.0 – 19.6 kg (37.48 – 43.21 lbs) at length 33.4 mm (1.31 in)	———

CAMSHAFT + CYLINDER HEAD

Unit: mm (in)

ITEM	STD/SPEC.		LIMIT
Cam height	IN.	35.480 – 35.530 (1.397 – 1.399)	35.18 (1.385)
	EX.	33.480 – 33.530 (1.318 – 1.320)	33.18 (1.306)
Camshaft journal oil clearance	IN. & EX.	0.032 – 0.066 (0.0013 – 0.0026)	0.150 (0.0059)
Camshaft journal holder I.D.	IN. & EX.	22.012 – 22.025 (0.8666 – 0.8671)	———
Camshaft journal O.D.	IN. & EX.	21.959 – 21.980 (0.8645 – 0.8654)	———
Camshaft runout	IN. & EX.	———	0.10 (0.004)
Cam chain pin (at arrow "3")	16th pin		———
Cylinder head distortion	———		0.05 (0.002)

CONROD + CRANKSHAFT

Unit: mm (in)

ITEM	STD/SPEC.	LIMIT
Conrod small end I.D.	20.010 – 20.018 (0.7878 – 0.7881)	20.040 (0.7890)
Conrod big end side clearance	0.170 – 0.320 (0.0067– 0.0126)	0.5 (0.02)
Conrod big end width	20.95 – 21.00 (0.825 – 0.827)	———
Crank pin width	42.17 – 42.22 (1.660 – 1.662)	———
Conrod big end oil clearance	0.032 – 0.056 (0.0013 – 0.0022)	0.080 (0.0031)
Crank pin O.D.	37.976 – 38.000 (1.4951 – 1.4960)	———
Crankshaft journal oil clearance	0.008 – 0.035 (0.0003 – 0.0014)	0.080 (0.0031)
Crankshaft journal O.D.	41.985 – 42.000 (1.6529 – 1.6535)	———
Crankshaft thrust bearing thickness	1.925 – 2.175 (0.0758 – 0.0856)	———
Crankshaft thrust clearance	0.050 – 0.110 (0.0020 – 0.0043)	———
Crankshaft runout	———	0.05 (0.002)

OIL PUMP

ITEM	STD/SPEC.	LIMIT
Oil pressure (at 60°C, 140°F)	Above 200 kPa (2.0 kgf/cm², 28 psi) Below 600 kPa (6.0 kgf/cm², 85 psi) at 3 000 r/min	———

CLUTCH

Unit: mm (in)

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

TRANSMISSION + DRIVE CHAIN

Unit: mm (in)

ITEM	STD/SPEC.			LIMIT
Primary reduction ratio	2.088 (71/34)			———
Final reduction ratio	SV650S	2.933 (44/15)		———
	SV650	3.000 (45/15)		———
Gear ratios	Low	2.461 (32/13)		———
	2nd	1.777 (32/18)		———
	3rd	1.380 (29/21)		———
	4th	1.125 (27/24)		———
	5th	0.961 (25/26)		———
	Top	0.851 (23/27)		———
Shift fork to groove clearance	0.1 – 0.3 (0.004 – 0.012)			0.5 (0.020)
Shift fork groove width	5.5 – 5.6 (0.217 – 0.220)			———
Shift fork thickness	5.3 – 5.4 (0.209 – 0.213)			———
Drive chain	Type	DID525V8		———
	Links	SV650	110 Links	———
		SV650S	108 Links	———
	20-pitch length	———		319.4 (12.57)
Drive chain slack (on side-stand)	20 – 30 (0.79 – 1.18)			———
Gearshift lever height	SV650S	60 – 70 (2.4 – 2.8)		———
	SV650	55 – 60 (2.2 – 2.4)		———

THERMOSTAT + RADIATOR + FAN + COOLANT

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

CARBURETOR

ITEM		STD/SPEC.	
		E-02, 04, 17, 22, 24, 25, 34	E-03, 28
Carburetor type		MIKUNI BDSR39	←
Bore size		39 mm	←
I.D. No.		20F0	20F2
Idle r/min		1 300 ± 100 r/min	←
Fuel level		16.9 ± 0.5 mm (0.68 ± 0.02 in)	←
Float height		7.0 ± 0.5 mm (0.28 ± 0.02 in)	←
Main jet	(M.J.)	#137.5	#137.5
Jet needle	(J.N.)	6E38-54-2	6E42-52
Needle jet	(N.J.)	P-0	P-0M
Throttle valve	(Th.V.)	#95	←
Pilot jet	(P.J.)	#17.5	#15
Pilot screw	(P.S.)	PRE-SET (2½ turns back)	PRE-SET (3 turns back)
Throttle cable play		2.0 – 4.0 mm (0.08 – 0.16 in)	←

CARBURETOR

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

CARBURETOR

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

ELECTRICAL

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

WATTAGE

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

BRAKE + WHEEL

Unit: mm (in)

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

TIRE

Unit: mm (in)

ITEM	STD/SPEC.		LIMIT
Cold inflation tire pressure (Solo riding)	Front	225 kPa (2.25 kgf/cm², 33 psi)	———
	Rear	250 kPa (2.50 kgf/cm², 36 psi)	———
Cold inflation tire pressure (Dual riding)	Front	225 kPa (2.25 kgf/cm², 33 psi)	———
	Rear	250 kPa (2.50 kgf/cm², 36 psi)	———
Tire size	Front	120/60ZR17 (55W)	———
	Rear	160/60ZR17 (69W)	———
Tire type	Front	METZELER: MEZ4 FRONT	———
	Rear	METZELER: MEZ4	———
Tire tread depth [Recommend depth]	Front	———	0.8 (0.03) [1.6 (0.06)]
	Rear	———	0.8 (0.03) [2.0 (0.08)]

SUSPENSION

Unit: mm (in)

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

FUEL + OIL

ITEM	STD/SPEC.		NOTE
Fuel type	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method. Gasoline containing MTBE (Methyl Tertiary Butyl Ether), less than 10% ethanol, or less than 5% methanol with appropriate cosolvents and corrosion inhibitor is permissible.		E-03, 33
	Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) or 91 octane or higher rated by the research method.		E-28
	Gasoline used should be graded 91 octane or higher. An unleaded gasoline is recommended.		The others
Fuel tank capacity	15 L (4.0/3.3 US/Imp gal)		E-33
	16 L (4.2/3.5 US/Imp gal)		The others
Engine oil type	SAE 10W/40, API SF or SG		
Engine oil capacity	Change	2 300 ml (2.4/2.0 US/Imp qt)	
	Filter change	2 400 ml (2.5/2.1US/Imp qt)	
	Overhaul	3 000 ml (3.2/2.6 US/Imp qt)	