

# SERVICING INFORMATION

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## TROUBLESHOOTING

### ENGINE

Complaint	Symptom and possible causes	Remedy
<p><b>Engine does not start, or is hard to start.</b></p>	<p><b>Compression too low</b></p> <ol style="list-style-type: none"> <li>1. Excessively worn cylinder or piston rings.</li> <li>2. Stiff piston ring in place.</li> <li>3. Gas leaks from the joint in crankcase, cylinder or cylinder head.</li> <li>4. Damaged reed valve.</li> <li>5. Spark plug too loose.</li> <li>6. Broken, cracked or otherwise failed piston.</li> </ol> <p><b>Plug not sparking</b></p> <ol style="list-style-type: none"> <li>1. Damaged spark plug or spark plug cap.</li> <li>2. Dirty or wet spark plug.</li> <li>3. Defective CDI &amp; Ignition coil unit or stator coil.</li> <li>4. Open or short in high-tension cord.</li> <li>5. Defective ignition switch.</li> </ol> <p><b>No fuel reaching the carburetor</b></p> <ol style="list-style-type: none"> <li>1. Clogged hole in the fuel tank cap.</li> <li>2. Clogged or defective fuel cock.</li> <li>3. Defective carburetor float valve.</li> <li>4. Clogged fuel hose or defective vacuum hose.</li> </ol>	<p>Replace. Repair or replace. Repair or replace. Replace. Tighten. Replace.</p> <p>Replace. Clean and dry. Replace. Replace. Replace.</p> <p>Clean. Clean or replace. Replace. Clean or replace.</p>
<p><b>Engine stalls easily.</b></p>	<ol style="list-style-type: none"> <li>1. Carbon deposited on the spark plug.</li> <li>2. Defective CDI &amp; Ignition coil unit.</li> <li>3. Clogged fuel hose.</li> <li>4. Clogged jets in carburetor.</li> <li>5. Clogged exhaust pipe.</li> </ol>	<p>Clean. Replace. Clean. Clean. Clean.</p>
<p><b>Noisy engine.</b></p>	<p><b>Noise appears to come from piston</b></p> <ol style="list-style-type: none"> <li>1. Piston or cylinder worn down.</li> <li>2. Combustion chamber fouled with carbon.</li> <li>3. Piston pin, bearing or piston pin bore worn.</li> <li>4. Piston rings or ring grooves worn.</li> </ol> <p><b>Noise seems to come from crankshaft</b></p> <ol style="list-style-type: none"> <li>1. Worn or brunt crankshaft bearings.</li> <li>2. Worn or brunt conrod big-end bearings.</li> </ol> <p><b>Noise seems to come from final gear box</b></p> <ol style="list-style-type: none"> <li>1. Gears worn or rubbing.</li> <li>2. Badly worn splines.</li> <li>3. Worn or damaged bearings of drive shaft for rear axle shaft.</li> </ol>	<p>Replace. Clean. Replace. Replace.</p> <p>Replace. Replace.</p> <p>Replace. Replace. Replace.</p>
<p><b>Slipping clutch</b></p>	<ol style="list-style-type: none"> <li>1. Worn or damaged clutch shoes.</li> <li>2. Worn clutch drum.</li> </ol>	<p>Replace. Replace.</p>
<p><b>Engine idles poorly.</b></p>	<ol style="list-style-type: none"> <li>1. Excessively worn cylinder or piston rings.</li> <li>2. Stiff piston ring in place.</li> <li>3. Gas leaks from crankshaft oil seal.</li> <li>4. Spark plug gaps too wide.</li> <li>5. Defective CDI &amp; Ignition coil unit.</li> <li>6. Defective magneto stator coil.</li> <li>7. Float-chamber fuel level out of adjustment in carburetor.</li> <li>8. Clogged jets in carburetor.</li> <li>9. Broken or damaged reed valve.</li> </ol>	<p>Replace. Replace. Replace. Adjust or replace. Replace. Replace. Replace. Clean or adjust. Replace.</p>

Complaint	Symptom and possible causes	Remedy
<b>Engine runs poorly in high-speed range.</b>	<ol style="list-style-type: none"> <li>1. Excessively worn cylinder or piston rings.</li> <li>2. Stiff piston ring in place.</li> <li>3. Spark plug gaps too narrow.</li> <li>4. Ignition not advanced sufficiently due to poorly working CDI &amp; Ignition coil unit.</li> <li>5. Defective magneto stator coil.</li> <li>6. Float-chamber fuel level too low.</li> <li>7. Clogged air cleaner element.</li> <li>8. Clogged fuel hose, resulting in inadequate fuel supply to carburetor.</li> <li>9. Clogged fuel cock vacuum pipe.</li> </ol>	<p>Replace. Replace. Adjust. Replace.</p> <p>Replace. Adjust or replace. Clean Clean, and replace. Clean.</p>
<b>Dirty or heavy exhaust smoke.</b>	<ol style="list-style-type: none"> <li>1. Too much engine oil to the engine.</li> <li>2. Use of incorrect engine oil.</li> </ol>	<p>Check oil pump. Change.</p>
<b>Engine lacks power.</b>	<ol style="list-style-type: none"> <li>1. Excessively worn cylinder or piston rings.</li> <li>2. Stiff piston ring in place.</li> <li>3. Gas leaks from crankshaft oil seal.</li> <li>4. Spark plug gaps incorrect.</li> <li>5. Clogged jets in carburetor.</li> <li>6. Float-chamber fuel level out of adjustment.</li> <li>7. Clogged air cleaner element.</li> <li>8. Fouled spark plug.</li> <li>9. Sucking air from intake pipe.</li> <li>10. Slipping or worn V-belt.</li> <li>11. Damaged/worn rollers in the movable drive face.</li> <li>12. Weakened movable driven face spring.</li> <li>13. Too rich fuel/air mixture due to defective starter system.</li> </ol>	<p>Replace. Replace. Replace. Adjust or replace. Clean. Adjust or replace. Clean. Clean or replace. Retighten or replace. Replace. Replace. Replace. Replace.</p>
<b>Engine overheats.</b>	<ol style="list-style-type: none"> <li>1. Heavy carbon deposit on piston crown.</li> <li>2. Defective oil pump or clogged oil circuit.</li> <li>3. Fuel level too low in float chamber.</li> <li>4. Air leakage from intake pipe.</li> <li>5. Use of incorrect engine oil.</li> <li>6. Use of improper spark plug.</li> <li>7. Clogged exhaust pipe/muffler.</li> </ol>	<p>Clean. Replace or clean. Adjust or replace. Retighten or replace. Change. Change. Clean or replace.</p>

## CARBURETOR

Complaint	Symptom and possible causes	Remedy
<b>Trouble with starting.</b>	<ol style="list-style-type: none"> <li>1. Starter jet is clogged.</li> <li>2. Air leaking from a joint between starter body and carburetor.</li> <li>3. Air leaking from carburetor's joint or vacuum hose joint.</li> <li>4. Starter plunger is not operating properly.</li> </ol>	<p>Clean. Check starter body and carburetor for tightness, and replace gasket. Check and replace. Check and replace.</p>
<b>Idling or low-speed trouble.</b>	<ol style="list-style-type: none"> <li>1. Pilot jet, pilot air jet are clogged or loose.</li> <li>2. Air leaking from carburetor's joint, vacuum pipe joint, or starter.</li> <li>3. Pilot outlet is clogged.</li> <li>4. Starter plunger is not fully closed.</li> </ol>	<p>Check and clean. Clean and replace. Check and clean. Check and replace.</p>
<b>Medium or high-speed trouble.</b>	<ol style="list-style-type: none"> <li>1. Main jet or main air jet is clogged.</li> <li>2. Needle jet is clogged.</li> <li>3. Fuel level is improperly set.</li> <li>4. Throttle valve is not operating properly.</li> <li>5. Fuel filter is clogged.</li> </ol>	<p>Check and clean. Check and clean. Check and replace. Check throttle valve for operation. Check and clean.</p>
<b>Overflow and fuel level fluctuations.</b>	<ol style="list-style-type: none"> <li>1. Needle valve is worn or damaged.</li> <li>2. Spring in deedle valve is broken.</li> <li>3. Float is not working properly.</li> <li>4. Foreign matter has adhered to needle valve.</li> <li>5. Fuel level is too high or low.</li> </ol>	<p>Replace. Replace. Check and adjust. Clean. Adjust or replace.</p>

## 7-3 SERVICING INFORMATION

### ELECTRICAL

Complaint	Symptom and possible causes	Remedy
<b>No sparking or poor sparking.</b>	<ol style="list-style-type: none"> <li>1. Defective CDI &amp; Ignition coil unit.</li> <li>2. Defective spark plug.</li> <li>3. Defective magneto stator coil.</li> <li>4. Loose connection of lead wire.</li> </ol>	Replace. Replace. Replace. Connect/tighten.
<b>Spark plug soon becomes fouled with carbon.</b>	<ol style="list-style-type: none"> <li>1. Mixture too rich.</li> <li>2. Idling speed set too high.</li> <li>3. Incorrect gasoline.</li> <li>4. Dirty element in air cleaner.</li> <li>5. Spark plug too cold.</li> <li>6. Incorrect engine oil.</li> </ol>	Adjust carburetor. Adjust carburetor. Change. Clean. Replace by hot type plug. Replace.
<b>Spark plug electrodes overheat or burn.</b>	<ol style="list-style-type: none"> <li>1. Spark plug too hot.</li> <li>2. The engine overheats.</li> <li>3. Spark plug loose.</li> <li>4. Mixture too lean.</li> <li>5. Not enough engine oil.</li> </ol>	Replace by hot type plug. Turn up. Retighten. Adjust carburetor. Check oil pump.
<b>Magneto does not charge.</b>	<ol style="list-style-type: none"> <li>1. Open or short in lead wires, or loose lead connections.</li> <li>2. Shorted, grounded or open magneto coil.</li> <li>3. Shorted or open regulator/rectifier.</li> </ol>	Repair, replace or retighten. Replace. Replace.
<b>Magneto charge, but charging rate is below the specifications.</b>	<ol style="list-style-type: none"> <li>1. Lead wires tend to get shorted or open-circuited or loosely connected at terminal.</li> <li>2. Grounded or open-circuited stator coils of magneto.</li> <li>3. Defective regulator/rectifier.</li> <li>4. Defective cell plates in the battery.</li> </ol>	Repair, or retighten.  Replace. Replace. Replace the battery.
<b>Magneto overcharges</b>	<ol style="list-style-type: none"> <li>1. Internal short-circuit in the battery.</li> <li>2. Resistor element in the regulator/rectifier damaged or defective.</li> <li>3. Regulator/rectifier unit poorly grounded.</li> </ol>	Replace the battery. Replace. Clean and tighten ground connection.
<b>Unstable charging.</b>	<ol style="list-style-type: none"> <li>1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting.</li> <li>2. Magneto coil internally shorted.</li> <li>3. Defective regulator/rectifier.</li> </ol>	Repair or replace.  Replace. Replace.
<b>Starter button is not effective.</b>	<ol style="list-style-type: none"> <li>1. Battery run down.</li> <li>2. Defective switch contacts.</li> <li>3. Brushes not seating properly on commutator in starter motor.</li> <li>4. Defective starter relay.</li> <li>5. Defective starter pinion gears.</li> <li>6. Defective front or rear brake light switch circuit.</li> </ol>	Recharge or replace. Replace. Repair or replace. Replace. Replace. Replace or repair.

### BATTERY

Complaint	Symptom and possible causes	Remedy
<b>Battery runs down quickly.</b>	<ol style="list-style-type: none"> <li>1. The charging method is not correct.</li> <li>2. Cell plates have lost much of their active material as a result of over-charging.</li> <li>3. A short-circuit condition exists within the battery due to excessive accumulation of sediments caused by the incorrect electrolyte.</li> <li>4. Battery is too old.</li> </ol>	Check the magneto and regulator/rectifier circuit connections, and make necessary adjustments to obtain specified charging operation. Replace the battery, and correct the charging system. Replace the battery.  Replace the battery.
<b>Reversed battery polarity.</b>	<ol style="list-style-type: none"> <li>1. The battery has been connected the wrong way round in the system, so that it is being charged in the reverse direction.</li> </ol>	Replace the battery and be sure to connect the battery properly.
<b>Battery discharges too rapidly.</b>	<ol style="list-style-type: none"> <li>1. Dirty container top and sides.</li> <li>2. Battery is too old.</li> </ol>	Clean. Replace.

## CHASSIS

Complaint	Symptom and possible causes	Remedy
<b>Handling feels too heavy.</b>	<ol style="list-style-type: none"> <li>1. Steering stem nut overtightened.</li> <li>2. Broken bearing/race in steering stem.</li> <li>3. Distorted steering stem.</li> <li>4. Not enough pressure in tires.</li> </ol>	Adjust. Replace. Replace. Adjust.
<b>Wobbly handle.</b>	<ol style="list-style-type: none"> <li>1. Loss of balance between right and left front suspension.</li> <li>2. Distorted front axle or crooked tire.</li> </ol>	Replace. Replace.
<b>Wobbly front wheel.</b>	<ol style="list-style-type: none"> <li>1. Distorted wheel rim.</li> <li>2. Worn front wheel bearings.</li> <li>3. Defective or incorrect tire.</li> <li>4. Loose nut on axle.</li> <li>5. Loose nuts on the rear shock.</li> <li>6. Worn engine mounting bushing.</li> <li>7. Loose nuts or bolts for engine mounting.</li> </ol>	Replace. Replace. Replace. Retighten. Retighten. Replace. Tighten.
<b>Front suspension too soft.</b>	<ol style="list-style-type: none"> <li>1. Weakened springs.</li> <li>2. Oil leakage of shock absorber.</li> </ol>	Replace. Replace.
<b>Front suspension too stiff.</b>	<ol style="list-style-type: none"> <li>1. Not enough grease.</li> <li>2. Worn suspension arm spacer.</li> </ol>	Refill. Replace.
<b>Noisy front suspension.</b>	<ol style="list-style-type: none"> <li>1. Not enough grease.</li> <li>2. Loose nuts on suspension.</li> </ol>	Refill. Retighten.
<b>Wobbly rear wheel.</b>	<ol style="list-style-type: none"> <li>1. Distorted wheel rim.</li> <li>2. Defective or incorrect tire.</li> <li>3. Loose nuts on the rear shock absorber.</li> <li>4. Worn engine mounting bushing.</li> <li>5. Loose nuts or bolts for engine mounting.</li> </ol>	Replace. Replace. Replace. Replace. Retighten.
<b>Rear suspension too soft.</b>	<ol style="list-style-type: none"> <li>1. Weakened spring.</li> <li>2. Oil leakage of rear shock absorber.</li> </ol>	Replace. Replace.
<b>Noisy rear suspension.</b>	<ol style="list-style-type: none"> <li>1. Loosen nuts on shock absorber.</li> <li>2. Worn engine mounting bushing.</li> </ol>	Retighten. Replace.

## BRAKES










Complaint	Symptom and possible causes	Remedy
<b>Insufficient brake power.</b>	<ol style="list-style-type: none"> <li>1. Leakage of brake fluid from hydraulic system.</li> <li>2. Worn pad.</li> <li>3. Oil adhesion on engaging surface of pad.</li> <li>4. Worn disc.</li> <li>5. Air entered into hydraulic system.</li> <li>6. Worn shoe.</li> <li>7. Friction surfaces of shoes are dirty with oil.</li> <li>8. Excessively worn drum.</li> <li>9. Too much brake lever play.</li> </ol>	Repair or replace. Replace. Clean disc and pads. Replace. Bleed air. Replace. Replace. Replace. Adjust.
<b>Brake squeaking.</b>	<ol style="list-style-type: none"> <li>1. Carbon adhesion on pad surface.</li> <li>2. Tilted pad.</li> <li>3. Damaged wheel bearing.</li> <li>4. Worn pad.</li> <li>5. Foreign substance entered into brake fluid.</li> <li>6. Clogged return ports of master cylinder.</li> <li>7. Brake shoe surface glazed.</li> <li>8. Loose front-wheel axle or rear-wheel axle nut.</li> <li>9. Worn shoe.</li> </ol>	Repair surface with sandpaper. Modify and fitting. Replace. Replace. Replace brake fluid. Disassemble and clean master cylinder. Repair surface with sandpaper. Tighten to specified torque. Replace.








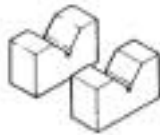

## 7-5 SERVICING INFORMATION

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<b>Complaint</b>	<b>Symptom and possible causes</b>	<b>Remedy</b>
<b>Excessive brake lever stroke.</b>	<ol style="list-style-type: none"><li>1. Air entered into hydraulic system.</li><li>2. Insufficient brake fluid.</li><li>3. Improper quality of brake fluid.</li><li>4. Worn brake cam lever.</li><li>5. Excessively worn shoes and/or drum.</li></ol>	Bleed air. Replenish fluid to normal level;bleed air. Replace with correct fluid. Replace. Replace.
<b>Leakage of brake fluid.</b>	<ol style="list-style-type: none"><li>1. Insufficient tightening of connection joints.</li><li>2. Cracked hose.</li><li>3. Worn piston seal.</li></ol>	Tighten to specified torque. Replace. Replace.
<b>Brake drags.</b>	<ol style="list-style-type: none"><li>1. Rusty moving parts.</li></ol>	Clean and lubricate.










## SPECIAL TOOLS

Special tools	Part Number · Part Name · Description
	09900-00401 “L” type hexagon wrench set
	Tighten hexagon bolt
	09900-00410 Hexagon wrench set
	Tighten hexagon bolt
	09900-05108 Snap ring pliers
	Circlip remove and remounting
	09900-06105 Snap ring pliers
	Circlip remove and remounting
	09900-06107 Snap ring pliers
	Circlip remove and remounting
	09900-09003 Impact driver set
	Remove and remounting of fixed screw
	09900-20102 Vernier calipers
	Measure thickness
	09900-20202 Micrometer (1/100mm, 25-50mm)
	Measure height of cam
	09900-20203 Micrometer (1/100mm, 50-75mm)
	Measure outside diameter of piston



Special tools	Part Number · Part Name · Description
	09900-20205 Micrometer (1/100mm, 0-25mm)
	Measure outside diameter of piston pin
	09900-20508 Cylinder gauge set (1/100mm, 40-80mm)
	Measure inside diameter of cylinder
	09900-20602 Dial gauge (1/100mm, 1mm)
	Measure inside diameter of cylinder
	09900-20605 Dial calipers (1/100mm, 10-34mm)
	Measure width of conrod big-end
	09900-20606 Dial gauge (1/100mm, 10mm)
	Measure run-out of wheel
	09900-20701 Magnetic stand
	Used with Dial gauge
	09900-20806 Thickness gauge
	Measure clearance of piston ring
	09900-21304 V-block set
	Used with Magnetic stand
	09900-21602 CCI Oil gauge
	A gauge to inspect performance of oil pump










## 7-7 SERVICING INFORMATION

Special tools	Part Number · Part Name · Description
	09900-22301 Plastic gauge Measure clearance of crankshaft thrust
	09900-22401 Small bore gauge (10-18mm) Measure inside diameter of conrod small-end
	09900-25002 Pocket tester Measure voltage, electric current, resistance
	09900-26006 Tachometer Measure rotational frequency of engine
	09900-28107 Electro tester Inspect ignition coil
	09910-20115 Conrod holder Used to lock the crankshaft
	09910-32812 Crankshaft installer Used to install the crankshaft in the crankcase
	09913-14541 Fuel level gauge set Measure height of carburetor
	09913-50121 Oil seal remover Used to remove the oil seal

Special tools	Part Number · Part Name · Description
	09913-60710 Bearing remover Remove bearing with the rotor remove sliding shaft
	09913-75520 Bearing installer Used to drive bearing in
	09913-75821 Bearing installer Used to drive bearing in
	09913-75830 Bearing installer Install rear axle shaft oil seal
	09913-76010 Bearing installer Install crankshaft bearing
	09915-63310 Compression gauge adapter Used with compression gauge
	09915-64510 Compression gauge Measure cylinder compression
	09916-84511 Tweezers Remove and remounting valve cotter pin.
	09920-13120 Crankcase separator Separate to crankcase






Special tools	Part Number · Part Name · Description
	09921-20200 Bearing remover (10mm)
	Remove oil seal or bearing
	09921-20210 Bearing remover (12mm)
	Remove oil seal or bearing
	09922-55131 Bearing installer
	Used to drive bearing in
	09923-73210 Bearing remover (17mm)
	Remove bearing with the rotor remove sliding shaft
	09923-74510 Bearing remover (20~35mm)
	Remove bearing with the rotor remove sliding shaft
	09924-84521 Bearing installer
	Used to drive small bearing in
	09925-98221 Bearing installer
	Used to drive bearing in
	09930-10121 Spark plug socket wrench set
	Remove and remounting spark plug
	09930-30102 Rotor remove sliding shaft
	Used to with bearing remover or rotor remover

Special tools	Part Number · Part Name · Description
	09930-30163 Rotor remover
	Attached to the top of sliding shaft when removing rotor
	09930-32420 Rotor holder
	Remove and remounting rotor
	09930-40113 Rotor holder
	Widely used to lock rotary parts such as a flywheel magneto
	09940-10122 Clamp wrench
	A hook wrench to adjust the steering head of motorcycle
	09940-34520 T-handle
	Remove and remounting front fork oil cylinder
	09940-34561 Front fork assembling tool attachment "D"
	Used with T-handle
	09940-50113 Front fork oil seal installer
	Install front fork oil seal
	09941-34513 Bearing installer
	Install steering outer race
	09941-50110 Wheel bearing remover
	Remove wheel bearing

## 7-9 SERVICING INFORMATION

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Special tools	Part Number · Part Name · Description
	09943-74111 Front fork oil level gauge
	Used to drain the fork oil to the specified level
	09943-88211 Bearing remover
	Remove rear axle shaft bearing
	09951-76010 Bearing installer
	Used to drive bearing in

**TIGHTENING TORQUE****ENGINE**

ITEM	N · m	kg · m
Magneto rotor nut	35 ~ 45	3.5 ~ 4.5
Muffler mounting bolt	18 ~ 28	1.8 ~ 2.8
Exhaust pipe nut	8 ~ 12	0.8 ~ 1.2
Spark plug	25 ~ 30	2.5 ~ 3.0
Cylinder head nut	8 ~ 12	0.8 ~ 1.2
Engine mounting bolt	40 ~ 60	4.0 ~ 6.0
Engine mounting bracket bolt	48 ~ 72	4.8 ~ 7.2
Oil drain plug	9 ~ 15	0.9 ~ 1.5
Oil level bolt	9 ~ 15	0.9 ~ 1.5
Oil pump bolt	3 ~ 5	0.3 ~ 0.5
Clutch shoe nut	40 ~ 60	4.0 ~ 6.0
Clutch housing nut	40 ~ 60	4.0 ~ 6.0
Kick starter driven nut	40 ~ 60	4.0 ~ 6.0
Kick starter lever bolt	8 ~ 12	0.8 ~ 1.2

## 7-11 SERVICING INFORMATION

### CHASSIS

ITEM	N · m	kg · m
Rear brake cam lever bolt	6 ~ 9	0.6 ~ 0.9
Rear shock absorber bolt	22 ~ 35	2.2 ~ 3.5
Rear axle nut	60 ~ 90	6.0 ~ 9.0
Steering stem lock nut	60 ~ 100	6.0 ~ 10.0
Front brake disc bolt	18 ~ 28	1.8 ~ 2.8
Front brake master cylinder bolt	8 ~ 12	0.8 ~ 1.2
Front brake air bleeder valve	6 ~ 9	0.6 ~ 0.9
Front brake caliper mounting bolt	18 ~ 28	1.8 ~ 2.8
Front brake hose union bolt	20 ~ 25	2.0 ~ 2.5
Front axle nut	33 ~ 52	3.3 ~ 5.2
Front fork bolt	35 ~ 55	3.5 ~ 5.5
Handlebar set bolt	22 ~ 28	2.2 ~ 2.8
Handlebar clamp nut	48 ~ 52	4.8 ~ 5.2

### TIGHTENING TORQUE CHART

For other bolts and nuts who's torque is not listed, refer to this chart :

Bolt Diameter (mm)	Conventional or "4" marked bolt		"7" marked bolt	
	N · m	kg · m	N · m	kg · m
4	1.0 ~ 2.0	0.1 ~ 0.2	1.5 ~ 3.0	0.15 ~ 0.3
5	2.0 ~ 4.0	0.2 ~ 0.4	3.0 ~ 6.0	0.3 ~ 0.6
6	4.0 ~ 7.0	0.4 ~ 0.7	8.0 ~ 12.0	0.8 ~ 1.2
8	10.0 ~ 16.0	1.0 ~ 1.6	18.0 ~ 28.0	1.8 ~ 2.8
10	22.0 ~ 35.0	2.2 ~ 3.5	40.0 ~ 60.0	4.0 ~ 6.0
12	35.0 ~ 55.0	3.5 ~ 5.5	70.0 ~ 100.0	7.0 ~ 10.0
14	50.0 ~ 80.0	5.0 ~ 8.0	110.0 ~ 160.0	11.0 ~ 16.0
16	80.0 ~ 130.0	8.0 ~ 13.0	170.0 ~ 250.0	17.0 ~ 25.0
18	130.0 ~ 190.0	13.0 ~ 19.0	200.0 ~ 280.0	20.0 ~ 28.0

## SERVICE DATA

### CYLINDER + PISTON + PISTON RING

Unit : mm

ITEM	STANDARD		LIMIT
Piston to cylinder clearance	0.065 ~ 0.075		0.120
Cylinder bore	41.005 ~ 41.020		41.07
Piston diam.	40.935 ~ 40.950 Measure at 15mm from the skirt end		40.885
Cylinder distortion	—		0.1
Cylinder head distortion	—		0.1
Piston ring clearance (Free condition)	1st	Approx. 4.5	3.2
	2nd	Approx. 4.3	3.1
Piston ring clearance (Assembling condition)	1st	0.10 ~ 0.25	0.75
	2nd	0.10 ~ 0.25	0.75
Piston ring - ring groove clearance	1st	0.02 ~ 0.06	—
	2nd	0.02 ~ 0.06	—
Piston pin bore I.D	10.002 ~ 10.010		10.030
Piston pin O.D	9.995 ~ 10.000		9.980

### CONROD + CRANKSHAFT

Unit : mm

ITEM	STANDARD	LIMIT
Conrod small end I.D.	14.003 ~ 14.011	14.047
Conrod big end runout	—	3.0
Crank web to wed width	35 ± 0.1	—
Crankshaft runout	—	0.08

## 7-13 SERVICING INFORMATION

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### OIL PUMP

Unit : mm

ITEM	STANDARD
Oil pump reduction ratio	30.000(30/1)

### CLUTCH

Unit : mm

ITEM	STANDARD	LIMIT
Clutch housing I.D.	110.00 ~ 110.15	110.35
Clutch shoe thickness	3.0	2.0
Clutch in rpm	3,600 ± 200 rpm	——
Clutch tight rpm	6,000 ± 200rpm	——

### TRANSMISSION

Unit : mm

ITEM	STANDARD	LIMIT
Final reduction ratio	12.0	——
Gear ratios	2.997 ~ 0.813	——
V-belt width	16.5 ± 0.6	15.3
V-belt thickness	8.0 ± 0.6	——
Movable drive face spring free length	143.8	135 ~ 153

**CARBURETOR**

Unit : mm

ITEM	SPECIFICATION
Carburetor type	VM14
Main bore size	φ 14
I.D. No.	HG 266
Idle rpm	1,800 ± 50 rpm
Fuel level	24.5
Main jet (M.J.)	55
Main air jet (M.A.J.)	1.0
Jet needle (J.N.)	3E17-3
Needle jet (N.J.)	E-2
Pilot jet (P.J.)	25
Throttle valve (T.V.)	3.0
By-pass (B.P.)	2.4 ± 0.05
Valve seat (V.S.)	1.2
Stater jet (G.S.)	25
Pilot screw (P.S.)	—
Pilot outlet (P.O.)	0.8
Throttle cable play	0.5 ~ 1.0

## 7-15 SERVICING INFORMATION

### ELECTRICAL

Unit : mm

ITEM		SPECIFICATION		NOTE
Ignition timing		20° at 1,000 rpm		
Spark plug		Type	BR8HSA	
		Gap	0.6 ~ 0.7	
Spark performance		Over 8 mm		
Ignition coil resistance		Primary	0.19 ~ 0.24 Ω	
		Secondary	5.4 ~ 6.6 kΩ	
Stator coil resistance		Lighting coil	0.54 ~ 0.80 Ω	Y/W-Ground
		Charging coil	0.69 ~ 1.03 Ω	W/R-Ground
		Exciting coil	220 ~ 260 Ω	B/R-Ground
		Pick-up coil	90 ~ 110 Ω	Br-W
Regulated voltage		13.0 ~ 16.0 V at 5,000 rpm		
No-load performance of A.C. generator		More than 17V (at 5,000 rpm)		
Starter relay resistance		0 ~ 70 Ω		
Battery	Type designation	YT4L-BS		
	Capacity	12V, 3AH		
	Standard electrolyte S.G.	1.32 at 20°C (68°F)		
Fuse		10 A		

### WATTAGE

Unit : W

ITEM	SPECIFICATION
Head lamp bulb	15W × 2
Tail/Brake lamp bulb	5 / 10W
Turn signal lamp bulb	10W × 4
Turn signal / Oil level check light pilot lamp	1.7W / 17W
Speedometer lamp bulb	1.7W × 2

**⚠ CAUTION**

Do not use except the specified bulb (Wattage).



**BRAKE+WHEEL**

Unit : mm

ITEM	STANDARD		LIMIT
Brake lever play	Front	5 ~ 20	——
	Rear	15 ~ 25	——
Brake drum I.D	Rear	100	100.7
Brake lining thickness	Rear	99.2	96
Brake disc plate thickness	Front	4.0 ± 0.2	3.5
Brake disc plate runout	Front	——	0.30
Master cylinder bore I.D.	Front	11.000 ~ 11.043	11.055
Master cylinder piston diam.	Front	10.957 ~ 10.984	10.945
Brake caliper I.D.	Front	30.230 ~ 30.306	30.315
Brake caliper piston diam.	Front	30.150 ~ 30.200	30.140
Wheel rim runout	Axial	——	3.0
	Radial	——	3.0
Axle shaft runout	Front	——	0.25
Tire size	Front	110/70-12 47J	——
	Rear	120/70-12 51J	——
Tire tread depth	Front	——	1.6
	Rear	——	1.6

## 7-17 SERVICING INFORMATION

### SUSPENSION

Unit: mm

ITEM	STANDARD	LIMIT
Front fork stroke	75	—
Front fork spring length(Free condition)	290.9	—
Front fork oil specification	TELLUS # 37	—
Front fork oil capacity(One side)	50 cc	—
Rear wheel travel	66	—

### TIRE PRESSURE

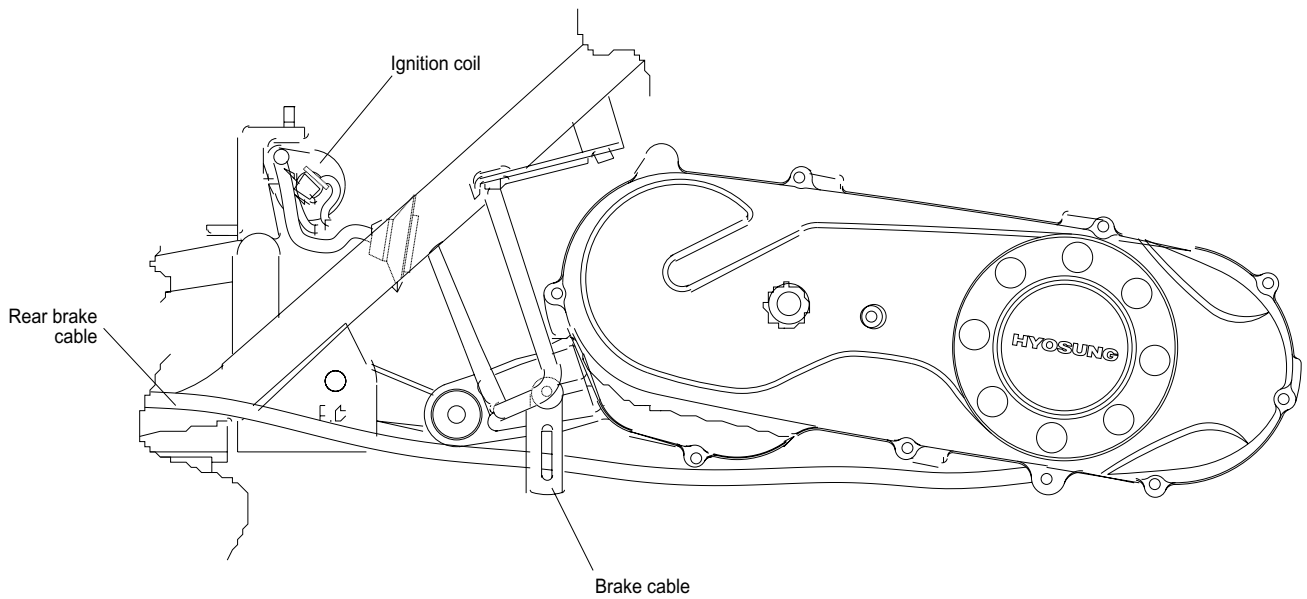
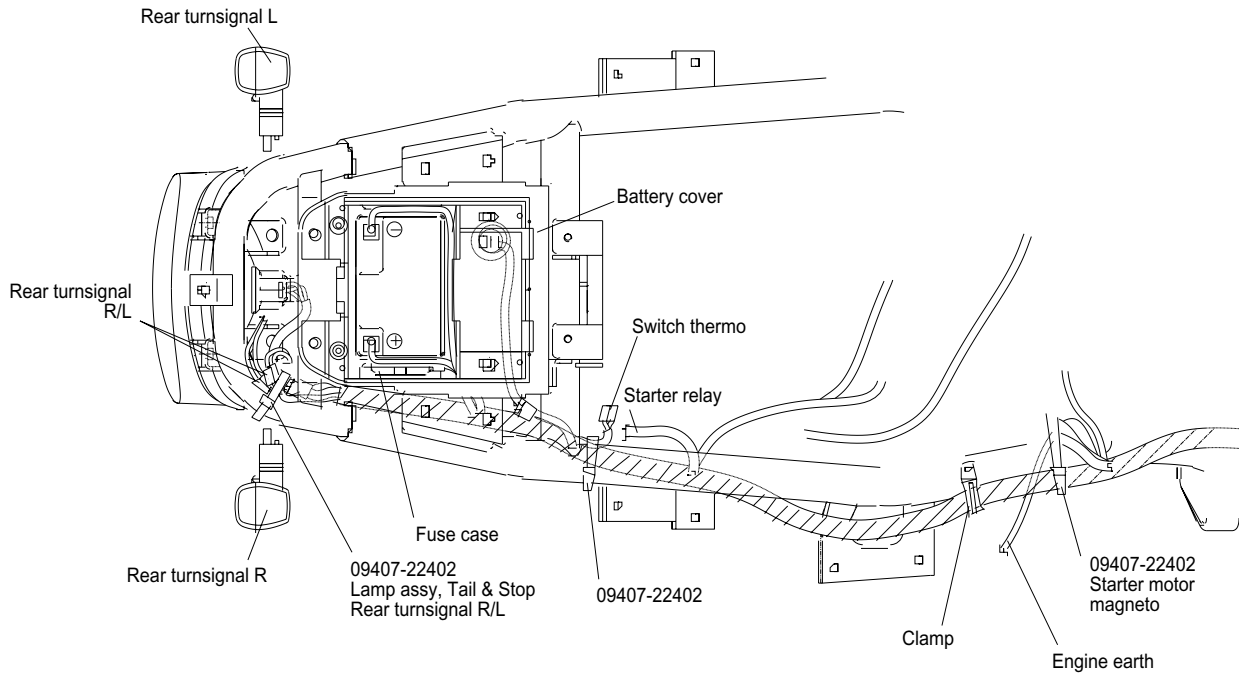
COLD INFLATION TIRE PRESSURE	SOLO RIDING		DUAL RIDING	
	kPa	kg/cm <sup>2</sup>	kPa	kg/cm <sup>2</sup>
FRONT	123	1.25	172	1.75
REAR	196	2.00	221	2.25

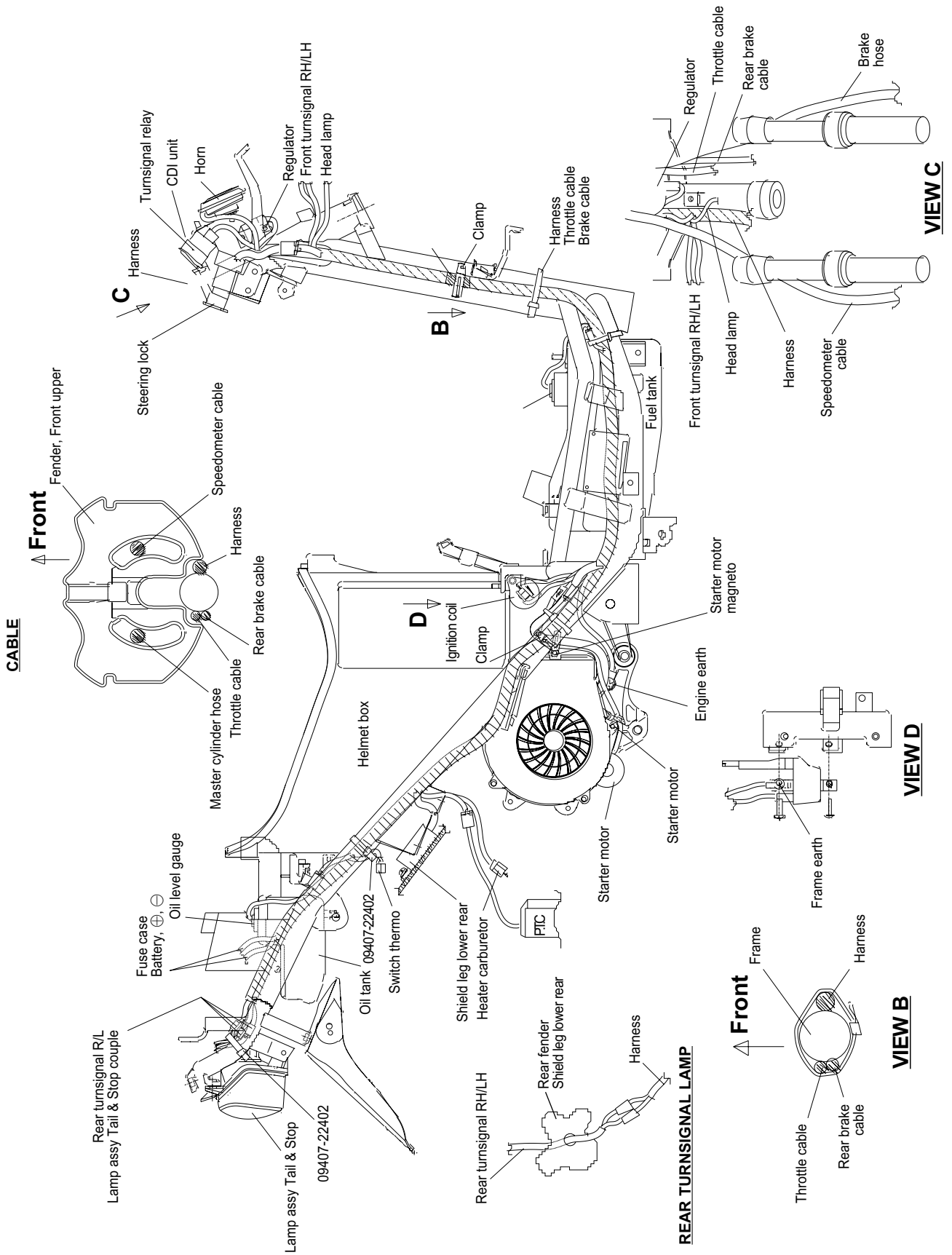
### FUEL + OIL

ITEM	SPECIFICATION	NOTE
Fuel type	Gasoline used should be graded 85 ~ 95 octane or higher. An unleaded gasoline is recommended.	
Fuel tank capacity	4.8 ℓ	
Engine oil type	APOLLOIL BIKE-K, HYPOL HS	
Engine oil capacity	1.0 ℓ	
Engine oil discharge amount	1.0 ~ 1.2 ml (at 3,000 rpm for 5 minutes)	I.D 60ml/Hr F.O 100ml/Hr
Transmission oil type	SAE 10W/30 or 10W/40 multi-grade motor oil	
Transmission oil capacity	Replace	110 ml
	Overhaul	130 ml
Brake fluid type	DOT 4	

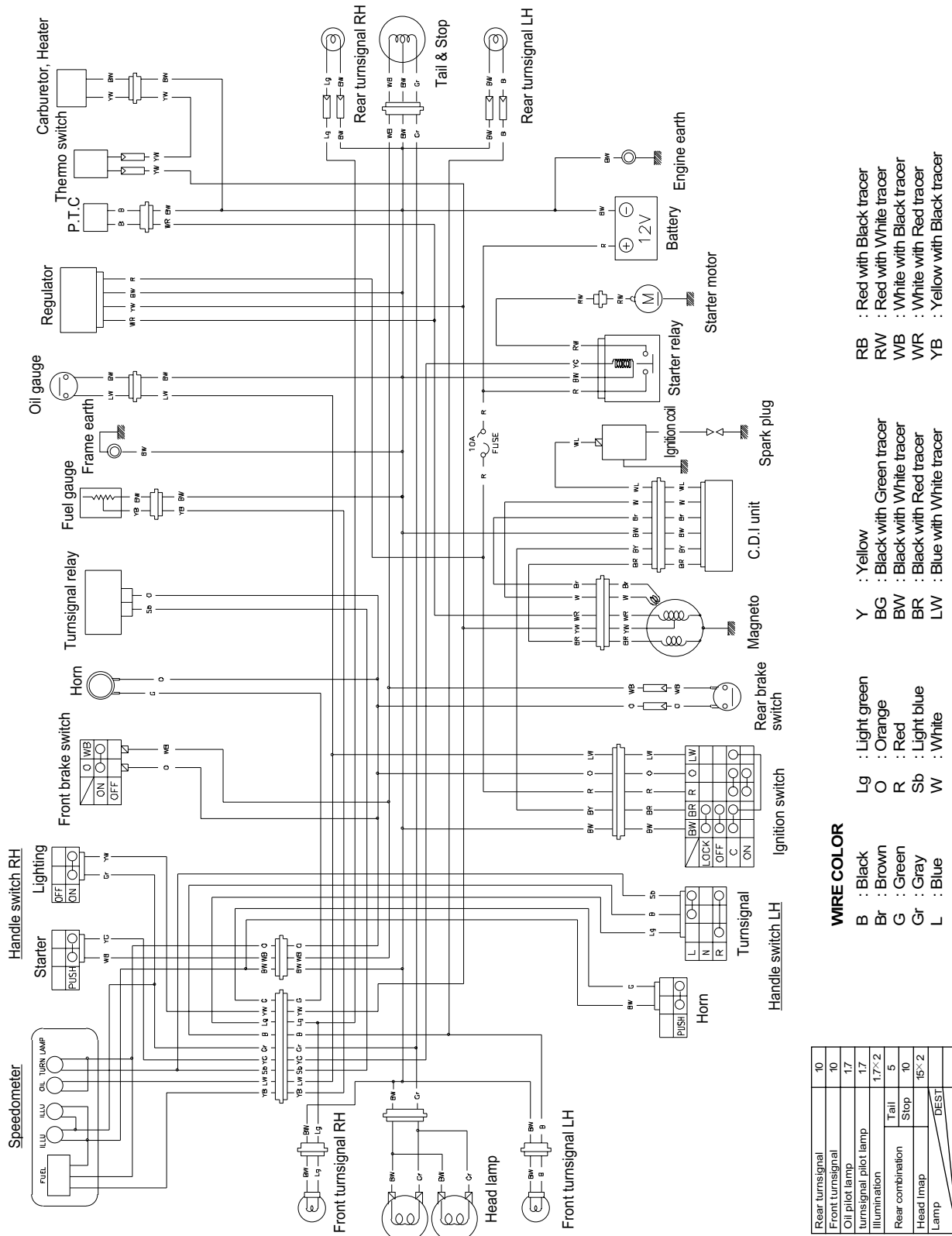
# WIRE AND CABLE ROUTING

## REAR BRAKE





# WIRING DIAGRAM



Rear turn signal	10
Front turn signal	10
Oil pilot lamp	1.7
Turn signal pilot lamp	1.7
Illumination	1.7 × 2
Rear combination	5
Stop	10
Head lamp	15 × 2
Lamp	DEST



Prepared by

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