

SERVICING INFORMATION

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TROUBLESHOOTING

ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start, or is hard to start.	<p>Compression too low</p> <ol style="list-style-type: none"> 1. Valve clearance out of adjustment. 2. Worn valve guides or poor seating of valves. 3. Valves mistiming 4. Piston rings excessively worn. 5. Worn-down cylinder bore. 6. Poor seating of spark plug. 7. Starter motor cranks but too slowly. <p>Plug not sparking</p> <ol style="list-style-type: none"> 1. Fouled spark plug. 2. Wet spark plug. 3. Defective ignition coil. 4. Open or short circuit in high tension cord. <p>No fuel reaching the carburetor</p> <ol style="list-style-type: none"> 1. Clogged hole in the fuel tank cap. 2. Clogged or defective fuel cock. 3. Defective carburetor float valve. 4. Clogged fuel pipe. 	<p>Adjust. Repair or replace. Adjust. Replace. Replace or rebore. Retighten. Consult "electrical complaints"</p> <p>Clean or replace. Clean and dry. Replace. Replace..</p> <p>Clean. Clean or replace. Replace. Clean or replace.</p>
Engine stalls easily.	<ol style="list-style-type: none"> 1. Fouled spark plug. 2. Clogged fuel hose. 3. Clogged jets in carburetor. 4. Valve clearance out of adjustment. 	<p>Clean. Clean. Clean. Adjust.</p>
Noisy engine.	<p>Excessive valve chatter</p> <ol style="list-style-type: none"> 1. Valve clearance too large. 2. Weakened or broken valve springs. 3. Worn down camshaft. <p>Noise appears to come from piston</p> <ol style="list-style-type: none"> 1. Piston or cylinder worn down. 2. Weakened or broken valve springs. 3. Worn down piston pin or piston pin bore. 4. Piston rings or ring groove worn. <p>Noise seems to come from timing chain</p> <ol style="list-style-type: none"> 1. Stretched chain. 2. Worn sprockets. 3. Tension adjuster not working. <p>Noise seems to come from clutch</p> <ol style="list-style-type: none"> 1. Worn splines of countershaft or hub. 2. Worn teeth of clutch plates. 3. Distorted clutch plates, driven and drive. <p>Noise seems to come from crankshaft</p> <ol style="list-style-type: none"> 1. Worn or broken bearings. 2. Big-end bearings worn and broken. 3. Thrust clearance too large. 	<p>Adjust. Replace. Replace.</p> <p>Replace. Replace. Replace. Replace.</p> <p>Replace. Replace. Repair or replace.</p> <p>Replace. Replace. Replace.</p> <p>Replace. Replace. Replace.</p>

Complaint	Symptom and possible causes	Remedy
Noisy engine.	Noise seems to come from transmission <ol style="list-style-type: none"> 1. Gears worn or rubbing. 2. Badly worn splines. 3. Primary gears worn or rubbing. 3. Badly worn bearings. 	Replace. Replace. Replace. Replace.
	Noise seems to come from water pump <ol style="list-style-type: none"> 1. Too much play on pump shaft bearing. 2. Worn or damaged impeller shaft. 3. Contact between pump case and impeller. 	Replace. Replace. Replace.
Slipping clutch.	<ol style="list-style-type: none"> 1. Clutch control out of adjustment or too much play. 2. Weakened clutch springs. 3. Worn or distorted pressure plate. 4. Distorted clutch plates, driven and drive. 	Adjust. Replace. Replace. Replace.
Dragging clutch.	<ol style="list-style-type: none"> 1. Clutch control out of adjustment or too much play. 2. Weakened clutch springs. 3. Distorted clutch plates, driven and drive. 	Adjust. Replace. Replace.
Transmission will not shift.	<ol style="list-style-type: none"> 1. Broken gearshift cam. 2. Distorted gearshift forks. 3. Worn gearshift pawl. 	Replace. Replace. Replace.
Transmission will not shift back.	<ol style="list-style-type: none"> 1. Broken return spring on shift shaft. 2. Shift shafts are rubbing or sticky. 3. Distorted or worn gearshift forks. 	Replace. Repair. Replace.
Transmission jumps out of gear.	<ol style="list-style-type: none"> 1. Worn shifting gears on driveshaft or countershaft. 2. Distorted or worn gearshift forks. 3. Weakened stopper pawl spring on gearshift cam. 4. Worn gearshift pawl. 	Replace. Replace. Replace. Replace.
Engine idles poorly.	<ol style="list-style-type: none"> 1. Valve clearance out of adjustment. 2. Poor seating of valves. 3. Defective valve guides. 4. Defective pick-up coil. 5. Spark plug gap too wide. 6. Defective ignition coil resulting in weak sparking. 7. Float-chamber fuel level out of adjustment in carburetor. 8. Clogged jets. 	Adjust. Replace. Replace. Replace. Adjust or replace. Replace. Adjust. Clean.
Engine runs poorly in high speed range.	<ol style="list-style-type: none"> 1. Valve springs weakened. 2. Valve timing out of adjustment. 3. Worn cams. 4. Spark plug gap too narrow. 5. Defective ignition coil. 6. Float-chamber fuel level too low. 7. Clogged air cleaner element. 8. Clogged fuel hose, resulting in inadequate fuel supply to carburetor. 	Replace. Adjust. Replace. Repair. Replace. Adjust . Clean. Clean or replace.

8-3 SERVICING INFORMATION

Complaint	Symptom and possible causes	Remedy
Dirty or heavy exhaust smoke	<ol style="list-style-type: none">1. Too much engine oil in the engine.2. Worn piston rings or cylinder.3. Worn valve guides.4. Cylinder wall scored or scuffed.5. Worn valves stems.6. Defective stem seals.7. Worn side rails.	<p>Check with inspection window, drain out excess oil.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p>
Engine lacks power.	<ol style="list-style-type: none">1. Loosen of valve clearance.2. Weakened valve springs.3. Valve timing out of adjustment.4. Worn piston ring or cylinder.5. Poor seating of valves.6. Fouled spark plug.7. Worn camshaft.8. Spark plug gap incorrect.9. Clogged jets in carburetor.10. Float-chamber fuel level out of adjustment.11. Clogged air cleaner element.12. Too much enging oil.13. Defective air intake pipe.	<p>Adjust.</p> <p>Replace.</p> <p>Adjust.</p> <p>Replace.</p> <p>Repair or replace.</p> <p>Clean or replace.</p> <p>Replace.</p> <p>Adjust or replace.</p> <p>Clean.</p> <p>Adjust.</p> <p>Clean.</p> <p>Drain out excess oil.</p> <p>Retighten or replace.</p>
Engine overheats.	<ol style="list-style-type: none">1. Heavy carbon deposit on piston head.2. Not enough oil in the engine.3. Defective oil pump or clogged oil circuit.4. Fuel level too low in float chamber.5. Air leak from intake pipe.6. Use of incorrect engine oil.7. Defective cooling system.	<p>Clean.</p> <p>Add oil.</p> <p>Repair or clean.</p> <p>Adjust.</p> <p>Retighten or replace.</p> <p>Change.</p> <p>See "Cooling system" section.</p>

CARBURETOR

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

RADIATOR (COOLING SYSTEM)

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

8-5 SERVICING INFORMATION

ELECTRICAL

Complaint	Symptom and possible causes	Remedy
No sparking or poor sparking.	1. Defective ignition coil. 2. Defective spark plug. 3. Defective igniter.	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. Spark plug too cold.	Adjust carburetor. Adjust carburetor. Change. Clean or replace. Replace by hot type plug.
Spark plug become fouled too soon.	1. Worn piston rings. 2. Pistons or cylinder worn. 3. Excessive clearance of valve stems in valve guides. 4. Worn stem oil seal.	Replace. Replace. Replace. Replace.
Spark plug electrodes overheat or burn.	1. Spark plug too hot. 2. The engine overheats. 3. Spark plug loose. 4. Mixture too lean.	Replace by cold type plug. Tune up. Retighten. Adjust carburetor.
Generator 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 of generator. 3. Defective regulator/rectifier. 4. Not enough electrolyte in the battery. 5. Defective cell plates in the battery.	Repair or retighten. Replace. Replace. Add distilled water between the level lines. Replace the battery.
Generator overcharges.	1. Internal short-circuit in the battery. 2. Resistor element in the regulator/rectifier damaged or defective. 3. Regulator/rectifier poorly grounded.	Replace the battery. Replace. Clean and tighten ground connection.
Unstable charging.	1. Lead wire insulation frayed due to vibration resulting in intermittent shorting. 2. Generator internally shorted. 3. Defective regulator/rectifier.	Repair or replace Replace. Replace.
Starter switch is not effective.	1. Battery run down. 2. Defective switch contacts. 3. Brushes not seating properly on commutator in starter motor. 4. Defective starter relay.	Recharge or replace. Replace. Repair or replace. Replace.

BATTERY

Complaint	Symptom and possible causes	Remedy
"Sulfation" acidic white powdery substance or spots on surfaces of cell plates.	<ol style="list-style-type: none"> 1. Not enough electrolyte. 2. Battery case is cracked. 3. Battery has been left in a run-down condition for a long time. 4. Contaminated electrolyte. (Foreign matter has entered the battery and become mixed with the electrolyte.) 	<p>Add distilled water, if the battery has not been damaged and "sulfation" has not advanced too far, and recharge.</p> <p>Replace the battery.</p> <p>Replace the battery or recharge.</p> <p>If "sulfation" has not advanced far, try to restore the battery by replacing the electrolyte, recharging it fully with the battery detached from the motorcycle and then adjusting electrolyte specific gravity.</p>
Battery runs down quickly.	<ol style="list-style-type: none"> 1. The charging method is not correct. 2. Cell plates have lost much of their active material as a result of over-charging. 3. A short-circuit condition exists within the battery due to excessive accumulation of sediments caused by the high electrolyte specific gravity. 4. Electrolyte specific gravity is too low. 5. Contaminated electrolyte. 6. Battery is too old. 	<p>Check the generator, regulator/rectifier and circuit connections, and make necessary adjustments to obtain specified charging operation.</p> <p>Replace the battery, and correct the charging system.</p> <p>Replace the battery.</p> <p>Recharge the battery fully and adjust electrolyte specific gravity.</p> <p>Replace the electrolyte, recharge the battery and then adjust specific gravity.</p> <p>Replace the battery.</p>
Reversed battery polarity.	The battery has been connected the wrong way round in the system, so that it is being charged in the reverse direction.	Replace the battery and be sure to connect the battery properly.
Battery "sulfation"	<ol style="list-style-type: none"> 1. Charging rate too low or too high. (When not in use, batteries should be recharged at least once a month to avoid sulfation.) 2. Battery electrolyte excessive or insufficient, or its specific gravity too high or too low. 3. The battery left unused for too long in cold climate. 	<p>Replace the battery.</p> <p>Keep the electrolyte up to the prescribed level, or adjust the specific gravity by consulting the battery maker's directions.</p> <p>Replace the battery, if badly sulfated.</p>
Battery discharges too rapidly.	<ol style="list-style-type: none"> 1. Dirty container top and sides. 2. Impurities in the electrolyte or electrolyte specific gravity is too high. 	<p>Clean.</p> <p>Change the electrolyte by consulting the battery maker's directions.</p>

8-7 SERVICING INFORMATION










CHASSIS










Complaint	Symptom and possible causes	Remedy
Steering feels too heavy or stiff.	<ol style="list-style-type: none">1. Steering stem nut overtightened.2. Worn bearing or race in steering stem.3. Distorted steering stem.4. Not enough pressure in tires.	Adjust. Replace. Replace. Adjust.
Steering oscillation.	<ol style="list-style-type: none">1. Loss of balance between right and left front suspensions.2. Distorted front fork.3. Distorted front axle or crooked tire.4. Loose steering stem nut.5. Worn or incorrect tire or wrong tire pressure.6. Worn bearing/race in steering stem.	Replace. Repair or replace. Replace. Adjust. Adjust or replace. Replace.
Wobbling front wheel.	<ol style="list-style-type: none">1. Distorted wheel rim.2. Worn-down wheel bearings.3. Defective or incorrect tire.4. Loosen nut on axle.5. Incorrect front fork oil level.6. Incorrect front wheel weight balance.	Replace. Replace. Replace. Retighten. Adjust. Adjust.
Front suspension too soft.	<ol style="list-style-type: none">1. Weakened springs.2. Not enough fork oil.3. Wrong viscous fork oil.4. Improperly set front fork damping force adjuster.	Replace. Refill. Replace. Adjust.
Front suspension too stiff.	<ol style="list-style-type: none">1. Fork oil too viscous.2. Too much fork oil.3. Bent front axle.4. Improperly set front fork damping force adjuster.	Replace. Drain excess oil. Replace. Adjust.
Noisy front suspension.	<ol style="list-style-type: none">1. Not enough fork oil.2. Loosen nuts on suspension.	Refill. Retighten.
Wobbling rear wheel.	<ol style="list-style-type: none">1. Distorted wheel rim.2. Worn-down rear wheel bearing.3. Defective or incorrect tire.4. Loose nut on axle.5. Worn swing arm bushing or bearing.6. Loosen nut on the rear shock.	Replace. Replace. Replace. Retighten. Replace. Retighten.
Rear suspension too soft.	<ol style="list-style-type: none">1. Weakened springs.2. Rear suspension adjuster improperly set.	Replace. Adjust.
Rear suspension too stiff.	<ol style="list-style-type: none">1. Rear suspension adjuster improperly set.2. Worn swing arm bushing or bearing.	Adjust. Replace.
Noisy rear suspension.	<ol style="list-style-type: none">1. Loosen nuts on suspension.2. Worn swing arm bushing or bearing.	Retighten. Replace.










BRAKES










Complaint	Symptom and possible causes	Remedy
Poor braking (FRONT and REAR)	<ol style="list-style-type: none"> 1. Not enough brake fluid in the reservoir. 2. Air trapped in brake fluid circuit. 3. Pads worn down. 4. Too much play on brake lever or pedal. 5. Oil adhesion on friction surface of pads. 6. Worn disk. 	Refill to level mark. Bleed air out. Replace. Adjust. Clean disk and pads. Replace.
Insufficient brake power.	<ol style="list-style-type: none"> 1. Leakage of brake fluid from hydraulic system. 2. Worn pads. 3. Oil adhesion of engaging surface of pads. 4. Worn disk. 5. Air in hydraulic system. 	Repair or replace. Replace. Clean disk and pads. Replace. Bleed air.
Brake squeaking.	<ol style="list-style-type: none"> 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. Replace. Tighten to specified torque. Replace. Replace brake fluid. Disassemble and clean master cylinder.
Excessive brake lever stroke.	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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.

SPECIAL TOOLS





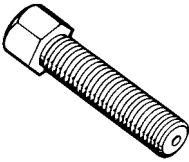




Special tools	Part Number · Part Name · Description
	09900-20101 Vernier Caliper
	Used to conveniently measure various dimensions.
	09900-20201 Micrometer(0~25mm)
	Used for precise measurement (00~25mm measure ranges).
	09900-20202 Micrometer(25~50mm)
	Used for precise measurement (25~50mm measure ranges).
	09900-20203 Micrometer(50~75mm)
	Used for precise measurement (50~75mm measure ranges).
	09900-20204 Micrometer(75~100mm)
	Used for precise measurement (75~100mm measure ranges).
	09900-20508 Cylinder gauge set
	Measure inside diameter of cylinder.
	09900-20605 Dial calipers
	Measure width of conrod big-end.
	09900-20606 Dial gauge
	Measure oscillation of wheel with using magnetic stand.
	09900-20701 Magnetic stand
	With using dial gauge.



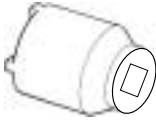
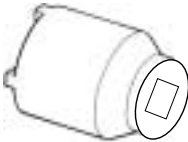



Special tools	Part Number · Part Name · Description
	09900-20806 Thickness gauge
	Measure clearance of piston ring.
	09900-21109 Torque wrench
	Measure torque of tightening.
	09900-21304 V-block
	With using magnetic stand.
	09900-22301 Plastigauge
	Measure clearance of crankshaft thrust.
	09900-22401 Small bore gauge
	Measure inside diameter of conrod small-end.
	09900-25002 Pocket tester
	Measure voltage, electric current, resistance.
	09900-25008 Multi circuit tester set
	Inspect thermo-switch or temperature sensor.
	09900-26006 Engine tachometer
	Measure rotational frequency of engine.
	09900-28107 Electro tester
	Inspect ignition coil.

Special tools	Part Number · Part Name · Description
	09910-20115 Conrod holder
	Used to lock the crankshaft.
	09910-32812 Crankshaft installer
	Used to install the crankshaft in the crankcase.
	09910-32813 Crankshaft installer adapter
	Used to with the crankshaft installer.
	09910-34510 Piston pin puller
	Use to remove the piston pin.
	09913-10760 Fuel level gauge
	Measure height of carburetor.
	09913-50121 Oil seal remover
	Used to remove the oil seal.
	09913-70122 Bearing installer
	Used to drive bearing in.
	09913-75820 Bearing installer
	Used to drive bearing in.
	09913-76010 Bearing installer
	Used to drive crankshaft bearing in.

Special tools	Part Number · Part Name · Description
	09913-80112 Bearing installer
	Used to drive bearing in.
	09915-63310 Compression gauge adapter
	Used with compression gauge.
	09915-64510 Compression gauge
	Measure cylinder compression.
	09915-74510 Oil pressure gauge
	Measure oil pressure of 4-stroke engine.
	09916-14510 Valve spring compressor
	Used to remove and remounting valve stem.
	09916-14520 Valve spring compressor attachment
	Used with valve spring compressor.
	09920-13120 Crankcase separator
	Separate to crankcase.
	09920-53710 Clutch sleeve hub holder
	Used to install or remove clutch sleeve hub nut.
	09921-20200 Bearing remover(10mm)
	Used to remove oil seal or bearing.

8-11 SERVICING INFORMATION

Special tools	Part Number · Part Name · Description
	09921-20210 Bearing remover(12mm)
	Used to remove oil seal or bearing.
	09923-73210 Bearing remover(17mm)
	Used to remove bearing with the rotor remove sliding shaft.
	09923-74510 Bearing remover(20~35mm)
	Used to remove bearing with the rotor remove sliding shaft.
	09930-30102 Rotor remove sliding shaft
	Used to with bearing remover.
	09930-30165 Rotor remover
	Used to remove rotor.
	09930-40113 Rotor holder
	Widely used to lock rotary parts such as a flywheel magneto.
	09930-44510 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.

Special tools	Part Number · Part Name · Description
	09940-34561 Front fork assembling tool attachment "D"
	Used with T-handle.
	09940-50113 Front fork oil seal installer
	Install front fork oil seal.
	09940H30010 Engine mounting socket wrench (M20)
	Used to install or remove engine mounting lock nut.
	09940H35010 Engine mounting socket wrench (M26)
	Used to install or remove engine mounting lock nut.
	09941-34513 Steering race installer
	Used to install steering outer race.
	09941-50111 Wheel bearing remover
	Used to remove wheel bearing.
	09943-74111 Front fork oil level gauge
	Used to drain the fork oil to the specified level.

TIGHTENING TORQUE

ENGINE

ITEM		N · m	kg · m
Coolant temperature sensor		18	1.8
Coolant drain bolt		11 ~ 14	1.1 ~ 1.4
Cooling fan mounting bolt		8 ~ 12	0.8 ~ 1.2
Cooling fan motor mounting bolt		8	0.8
Cooling fan thermo-switch		13	1.3
Radiator mounting bolt		8 ~ 12	0.8 ~ 1.2
Magneto rotor bolt		110 ~ 170	11.0 ~ 17.0
Magneto cover bolt		10	1.0
Muffler mounting bolt		18 ~ 28	1.8 ~ 2.8
Exhaust pipe nut		18 ~ 28	1.8 ~ 2.8
Thermostat case bolt		10	1.0
Starter clutch bolt		23 ~ 28	2.3 ~ 2.8
Cylinder head bolt	M 6	8 ~ 12	0.8 ~ 1.2
	M 10	40 ~ 45	4.0 ~ 4.5
Cylinder head cover bolt		12 ~ 16	1.2 ~ 1.6
Cylinder head base bolt		8 ~ 12	0.8 ~ 1.2
Cylinder base nut		7 ~ 11	0.7 ~ 1.1
Engine sprocket nut		130 ~ 160	13.0 ~ 16.0
Engine oil drain plug		21	2.1
Engine mounting nut		45 ~ 70	4.5 ~ 7.0
Engine mounting lock nut	M 26	70 ~ 80	7.0 ~ 8.0
	M 20	35 ~ 50	3.5 ~ 5.0
Engine mounting bolt		15 ~ 30	1.5 ~ 3.0
Spark plug		11	1.1
Cam chain tensioner bolt		8 ~ 12	0.8 ~ 1.2
Cam chain tension adjuster bolt		8 ~ 12	0.8 ~ 1.2
Crankcase bolt	M 6	11	1.1
	M 8	26	2.6
Clutch sleeve hub nut		40 ~ 60	4.0 ~ 6.0
Primary drive gear nut		40 ~ 60	4.0 ~ 6.0
Camshaft housing bolt		12	1.2
Horn mounting bolt		8 ~ 12	0.8 ~ 1.2

CHASSIS

ITEM	N · m	kg · m
Rear shock absorber mounting nut (Upper)	40 ~ 60	4.0 ~ 6.0
Rear shock absorber mounting nut (Lower)	40 ~ 60	4.0 ~ 6.0
Rear sprocket nut	20 ~ 30	2.0 ~ 3.0
Rear axle nut	90 ~ 140	9.0 ~ 14.0
Swingarm pivot nut	50 ~ 80	5.0 ~ 8.0
Swingarm pivot shaft	15 ~ 30	1.5 ~ 3.0
Steering stem nut	80 ~ 100	8.0 ~ 10.0
Steering stem head nut	80 ~ 100	8.0 ~ 10.0
Front and Rear brake disk bolt	18 ~ 28	1.8 ~ 2.8
Front brake master cylinder mounting bolt	5 ~ 8	0.5 ~ 0.8
Rear brake master cylinder mounting bolt	18 ~ 28	1.8 ~ 2.8
Front and Rear brake caliper air bleeder valve	6 ~ 8	0.6 ~ 0.8
Front and Rear brake caliper mounting bolt	18 ~ 28	1.8 ~ 2.8
Front and Rear brake hose union bolt	20 ~ 25	2.0 ~ 2.5
Front axle bolt	50 ~ 80	5.0 ~ 8.0
Front axle pinch bolt	15 ~ 25	1.5 ~ 2.5
Front fork damper rod bolt	30 ~ 40	3.0 ~ 4.0
Front fork upper clamp bolt	22 ~ 35	2.2 ~ 3.5
Front fork cap bolt	30 ~ 40	3.0 ~ 4.0
Front fork lower clamp bolt	22 ~ 35	2.2 ~ 3.5
Front fork inner rod lock nut	17.5 ~ 22.5	1.75 ~ 2.25
Front footrest bolt	22 ~ 35	2.2 ~ 3.5
Handlebar clamp bolt	18 ~ 28	1.8 ~ 2.8

SERVICE DATA

VALVE + GUIDE

Unit : mm (in)

ITEM	STANDARD		LIMIT
Valve diam.	IN.	31.0 (1.22)	—
	EX.	25.5 (1.00)	—
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 stem deflection	IN. & EX.	—	0.35 (0.014)
Valve guide I.D.	IN. & EX.	4.500 ~ 4.512 (0.1771 ~ 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 runout	IN. & EX.	—	0.05 (0.002)
Valve head thickness	IN. & EX.	—	0.50 (0.02)
Valve seat width	1.2 ~ 1.7 (0.047 ~ 0.067)		—
Valve seat angle	IN. & EX.	45°	
Valve head radial runout	IN. & EX.	—	0.03 (0.0012)
Valve spring free length	Inner	—	36.8 (1.45)
	Outer	—	39.8 (1.57)
Valve spring tension	Inner.	4.2 ~ 4.8kgf (9.3 ~ 10.6 lbs) at length 29.9mm (1.18 in)	—
	Outer	17.0 ~ 19.6kgf (37.5 ~ 43.2 lbs) at length 33.4mm (1.32 in)	—

8-15 SERVICING INFORMATION**CYLINDER + PISTON + PISTON RING**

Unit : mm (in)

ITEM	STANDARD		LIMIT
Compression pressure	14kg/cm ² (at 500 rpm)		12 kg/cm ²
Piston to cylinder clearance	0.045 ~ 0.075 (0.0018 ~ 0.0030)		0.120 (0.0047)
Cylinder bore	81.500 ~ 81.515 (3.2087 ~ 3.2093)		81.575 (3.2116)
Piston diam.	81.440 ~ 81.455 (3.2063 ~ 3.2069) (Measure at 15mm (0.6 in) from the skirt end)		81.380 (3.2039)
Cylinder or cylinder head distortion	—		0.05 (0.002)
Piston ring free end gap	1st	Approx 9.9 (0.390)	7.9 (0.311)
	2nd	Approx 10.5 (0.413)	8.4 (0.330)
Piston ring end gap (Assembly condition)	1st	0.20 ~ 0.35 (0.008 ~ 0.013)	0.5 (0.020)
	2nd	0.20 ~ 0.35 (0.008 ~ 0.013)	0.7 (0.028)
Piston ring to groove clearance	1st	—	0.180 (0.007)
	2nd	—	0.150 (0.006)
Piston ring groove width	1st	1.21 ~ 1.23 (0.0476 ~ 0.0484)	—
	2nd	1.01 ~ 1.03 (0.040 ~ 0.041)	—
	Oil	2.01 ~ 2.03 (0.079 ~ 0.080)	—
Piston ring thickness	1st	0.970 ~ 0.990 (0.0382 ~ 0.0390)	—
	2nd	1.170 ~ 1.190 (0.0461 ~ 0.0469)	—
Piston pin hole bore	20.002 ~ 20.008 (0.7875 ~ 0.7877)		20.030 (0.7886)
Piston pin O.D.	19.996 ~ 20.000 (0.7872 ~ 0.7874)		19.980 (0.7866)

OIL PUMP

ITEM	STANDARD	NOTE
Oil pressure	2.0 ~ 6.0 kg/cm ² (at 60 °C, 3,000 rpm)	—
Oil pump reduction ratio	1.3 (45/34)	—

CLUTCH

Unit : mm (in)

ITEM	STANDARD		LIMIT
Clutch cable play	2 (0.08)		—
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	15.9 ~ 16.0 (0.626 ~ 0.630)	15.1 (0.595)
	NO. 2	15.9 ~ 16.0 (0.626 ~ 0.630)	15.1 (0.595)
Driven plate distortion	—		0.1 (0.004)
Clutch spring free length	54.2 (2.134)		54 (2.126)

CAMSHAFT + CYLINDER HEAD

Unit : mm (in)

ITEM	STANDARD		LIMIT
Cam height	IN.	35.28 ~ 35.32 (1.389 ~ 1.391)	34.98 (1.377)
	EX.	33.38 ~ 33.42 (1.314 ~ 1.316)	33.08 (1.302)
Camshaft journal holder I.D.	IN. & EX.	21.959 ~ 21.980 (0.8645 ~ 0.8654)	—
Camshaft journal oil clearance	IN. & EX.	—	0.15 (0.006)
Cylinder and cylinder head distortion	—		0.05 (0.002)
Cylinder head cover distortion	—		0.05 (0.002)
Cam chain pin (Arrow "3")	16th pin		—

CONROD + CRANKSHAFT

Unit : mm (in)

ITEM	STANDARD	LIMIT
Conrod small end I.D.	20.006 ~ 20.014 (0.7876 ~ 0.7880)	20.040 (0.7890)
Conrod deflection	—	3.0 (0.12)
Conrod big end side clearance	0.17 ~ 0.32 (0.007 ~ 0.013)	0.50 (0.020)
Conrod big end width	20.95 ~ 21.00 (0.825 ~ 0.827)	—
Crank web to web width	96.9 ~ 97.1 (3.815 ~ 3.823)	—
Crankshaft runout	—	0.05 (0.002)

8-17 SERVICING INFORMATION

TRANSMISSION + DRIVE CHAIN

Unit : mm (in)

ITEM	STANDARD		LIMIT
Primary reduction ratio	2.09 (71/34)		—
Secondary reduction ratio	2.93 (44/15)		—
Gear ratio	1st	2.46 (32/13)	—
	2nd	1.60 (32/20)	—
	3rd	1.32 (29/22)	—
	4th	1.13 (27/24)	—
	5th	0.96 (25/26)	—
	6th	0.85 (23/27)	—
Shift fork to groove clearance	0.10 ~ 0.30 (0.004 ~ 0.012)		0.5 (0.020)
Shift fork groove width	NO.1 & NO.2	4.85 ~ 5.00 (0.191 ~ 0.197)	—
	NO.3	4.85 ~ 5.00 (0.191 ~ 0.197)	—
Shift fork thickness	NO.1 & NO.2	5.3 ~ 5.4 (0.209 ~ 0.213)	—
	NO.3	5.3 ~ 5.4 (0.209 ~ 0.213)	—
Drive chain	Type	RK525XSO	—
	Links	108 LINKS	—
	20-pitch length	—	319.4 (12.58)
Drive chain slack	20~30 (0.79 ~ 1.18)		—

CARBURETOR

Unit : mm (in)

ITEM	SPECIFICATION						
Carburetor type	BDSR39 TYPE(DOUBLE)						
Bore size	φ 39						
Idle r.p.m.	1,300~1,500 rpm						
Float height	7 (0.28)						
Throttle cable play	0.5~1.0 (0.02 ~ 0.04)						
	FRONT			REAR			
Main jet (M.J.)	130			130			
Main air jet (M.A.J.)	45			45			
Jet needle (J.N.)	6E44-54-3			6E44-54-3			
Needle jet (N.J.)	P-OM			P-OM			
Pilot jet (P.J.)	20			20			
Throttle valve (TH.V.)	95			95			
By-pass (B.P.)	#1 0.8	#2 0.8	#3 0.8	#1 0.8	#2 0.8	#3 0.8	
Valve seat (V.S.)	1.5			1.5			
Starter jet (G.S.)	50			50			
Pilot screw (P.S.)	STD			STD			
Pilot outlet (P.O.)	0.9			0.9			
PV. Stroke (P.V.)	30.7			30.7			

THERMOSTAT+COOLING FAN+COOLANT

ITEM	STANDARD		LIMIT
Thermostat valve operating temperature	Valve opening	88℃	
	Valve full open	100℃	
	Valve closing	83℃	
Thermostat valve lift	Over 8mm /100℃		
Engine coolant temperature sensor resistance	60℃	Approx. 125 Ω	
	85℃	Approx. 48.5 Ω	
	110℃	Approx. 24 Ω	
	125℃	Approx. 15 Ω	
Cooling fan thermo-switch operating temperature	OFF→ON	Approx. 95℃	
	ON→OFF	Over 88℃	
Engine coolant type	Use an antifreeze/coolant compatible with aluminum radiator, mixed with distilled water only, at the ratio of 50 : 50		
Engine coolant capacity	Reserve tank side	230 ml	
	Radiator side	430 ml	
	Engine side	940 ml	

ELECTRICAL

Unit : mm (in)

ITEM	STANDARD		NOTE
Ignition timing	BTDC 5°/1,500rpm		
Spark plug	Type	CR8E	
	Gap	0.7~0.8 (0.028 ~ 0.032)	
	Hot type	CR7E	
	Standard type	CR8E	
	Cold type	CR9E	
Spark performance	Over 8mm (0.32)		
Ignition coil resistance	Primary	3.5 ~ 5.5 Ω	
	Secondary	20 ~ 31 k Ω	
Magneto coil resistance	Pick-up coil	90 ~ 110 Ω	G-L
	Charging coil	0.3 ~ 0.8 Ω	Y-Y
Magneto no-load voltage	Over 70V/5,000 rpm		
Battery standard charging voltage	13.5 ~ 15.0V/5,000 rpm		
Battery	Type	STX 14A-BS	
	Capacity	12V 12Ah	
	Standard electrolyte S.G.	1.320 at 20°C (68°F)	
Fuse size	Main	30A	
	Head lamp	15A	

WATTAGE

Unit : W

ITEM	SPECIFICATION	
Head lamp	HI	60W
	LO	55W
License plate lamp	5W	
Brake/Tail lamp	21/5W	
Turn signal lamp	10W	
Illumination lamp	1.7W × 3	
Neutral indicator lamp	1.7W	
Turn signal indicator lamp (Right & left)	1.7W × 2	
High beam indicator lamp	1.7W	
Fuel indicator lamp	1/2	1.7 W
	E	1.7 W



CAUTION

Do not use except the specified bulb (Wattage).

8-21 SERVICING INFORMATION

SUSPENSION

Unit : mm (in)

ITEM	STANDARD	LIMIT
Front fork stroke	120 (4.72)	—
Front fork spring free length	433.3 (17.1)	430 (16.9)
Front fork oil type	TELLUS #32	—
Front fork oil level	146mm(5.8 in) from end of outer tube (when maximum compressed without spring)	—
Front fork oil capacity (each leg)	380cc	—
Rear wheel travel	110 (4.33)	—
Swingarm pivot shaft runout	—	0.6 (0.024)
Rear shock absorber pre-load position	3 / 5 position	—
Rear shock absorber spring free length	165 (6.50)	—

STANDARD FRONT FORK DAMPING FORCE

		Rebound	Compression
Solo riding	Softer	Turn to “S” direction	Turn to “S” direction
	Standard	3 clicks out from end of “H” direction	End of “S” direction
	Stiffer	Turn to “H” direction	Turn to “H” direction
Dual riding		3 clicks out from end of “H” direction	2 clicks out from end of “S” direction

BRAKE + WHEEL

Unit : mm (in)

ITEM	STANDARD		LIMIT
Rear brake pedal height	290 (11.4) [when one person riding from the ground]		—
Brake disk thickness	Front	4.0 (0.16)	3.0 (0.12)
	Rear	4.3 (0.17)	3.0 (0.12)
Brake disk runout	Front · Rear	—	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 (0.6227 ~ 0.6242)	—
	Rear	12.657 ~ 12.684 (0.4983 ~ 0.4994)	—
Brake caliper cylinder bore	Front · Rear	25.4 (1.00)	—
Brake caliper piston diam.	Front · Rear	25.4 (1.00)	—
Brake fluid type	Front	DOT4	—
	Rear	DOT4	—
Wheel runout	Axial	—	2.0 (0.08)
	Radial	—	2.0 (0.08)
Wheel axle runout	Front	—	0.25 (0.01)
	Rear	—	0.25 (0.01)
Tire size	Front	120/60 - ZR 17 55W	—
	Rear	160/60 - ZR 17 69W	—
Wheel rim size	Front	J17 × MT3.00	—
	Rear	J17 × MT4.50	—

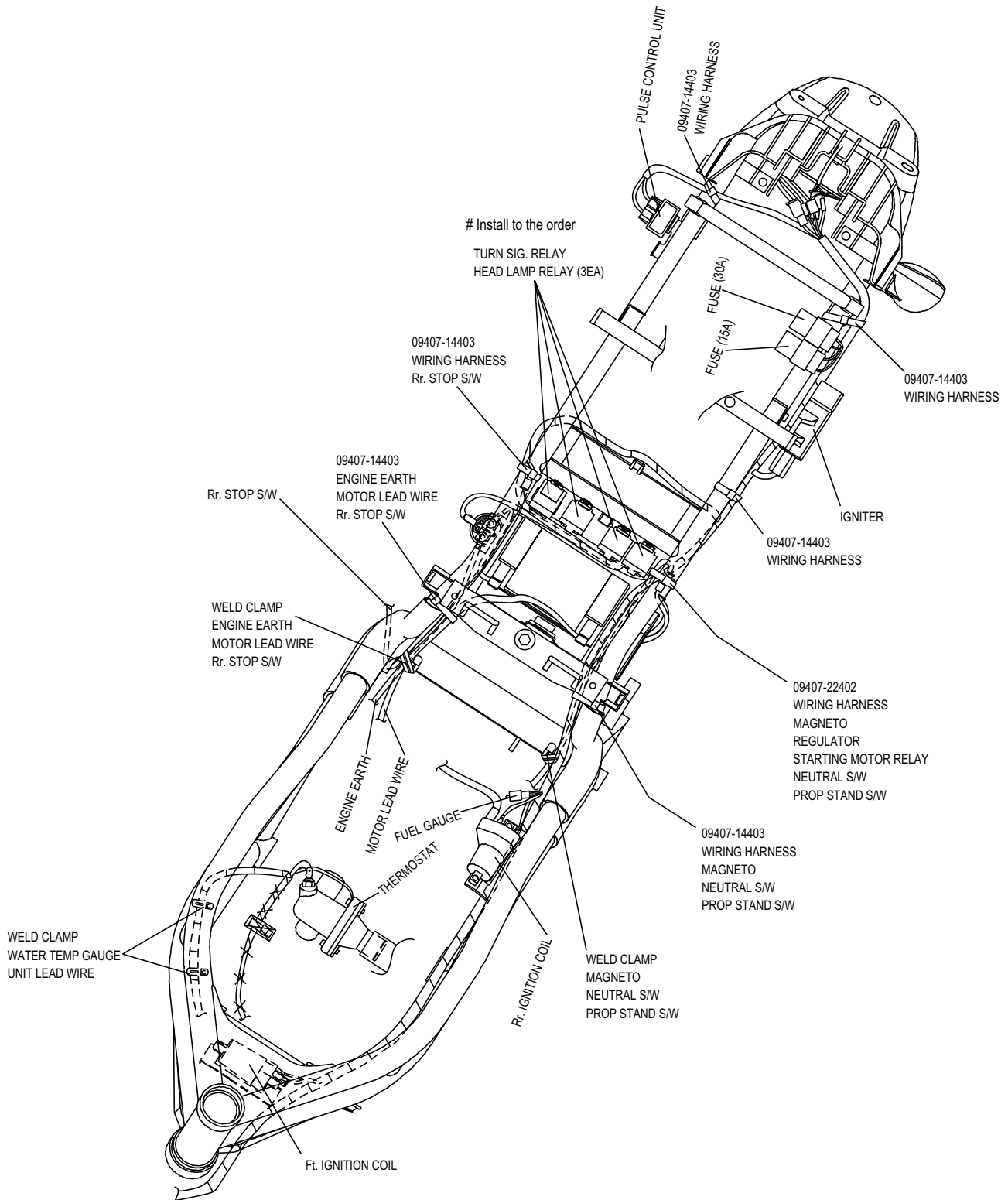
TIRE PRESSURE

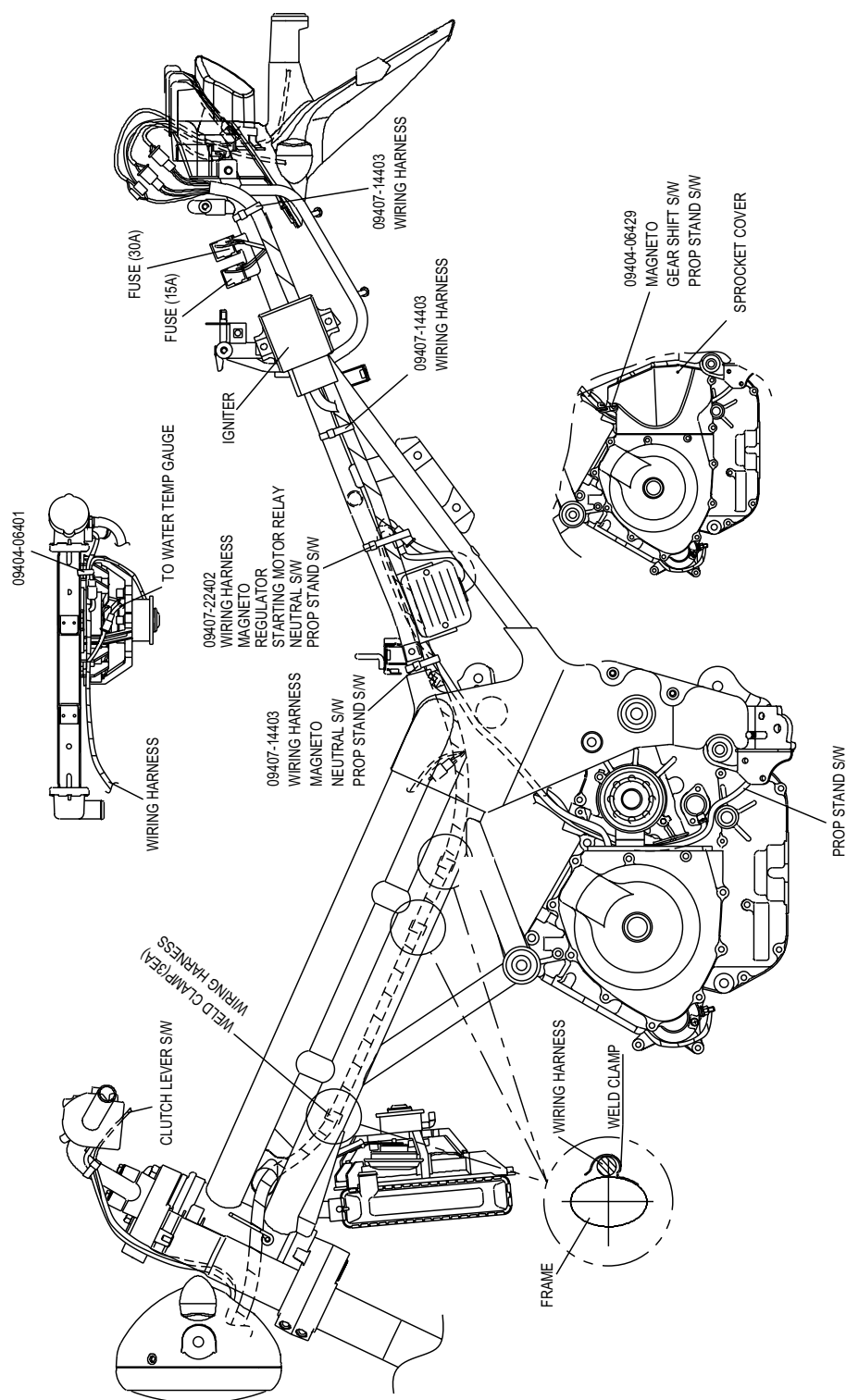
COLD INFLATION TIRE PRESSURE	NORMAL RIDING					
	SOLO RIDING			DUAL RIDING		
	kPa	kg/cm ²	psi	kPa	kg/cm ²	psi
FRONT	221	2.25	33.0	221	2.25	33.0
REAR	245	2.50	36.0	245	2.50	36.0

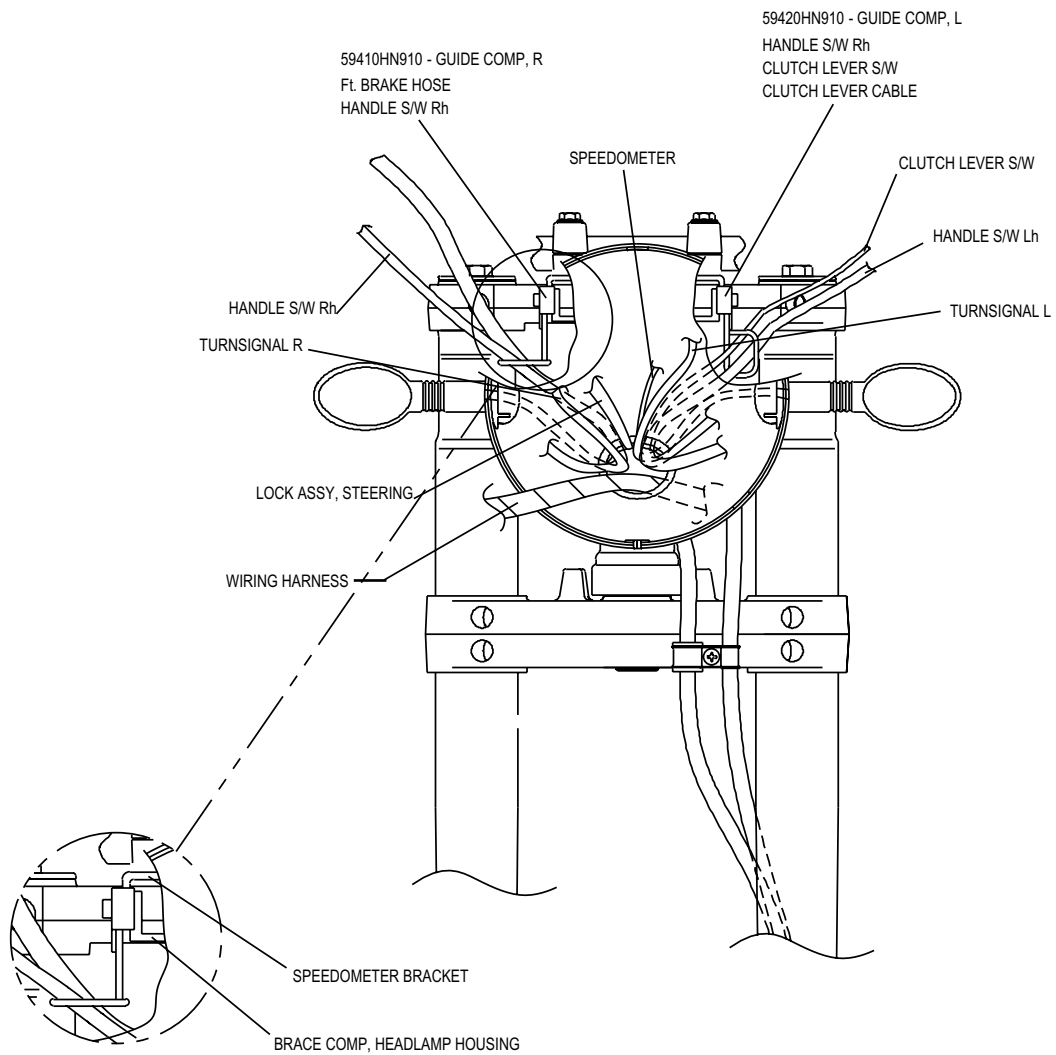
FUEL + OIL

ITEM	SPECIFICATION		NOTE
Fuel type	Gasoline used should be graded 91 octane or higher. An unleaded gasoline is recommended.		
Fuel tank capacity	Including reserve	17 ℓ	
	Reserve	3 ℓ	
Engine oil type	API Over SG (SAE 10W/40)		
Engine oil capacity	Change	3,000 ml	
	Filter change	3,200 ml	
	Overhaul	3,400 ml	

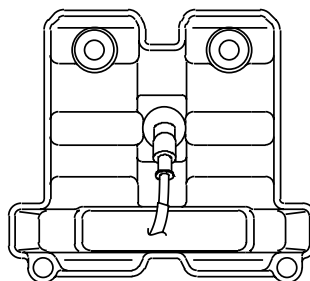
WIRE AND CABLE ROUTING



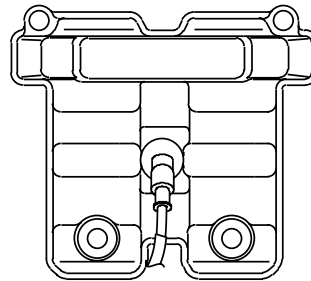




FRONT CYLINDER

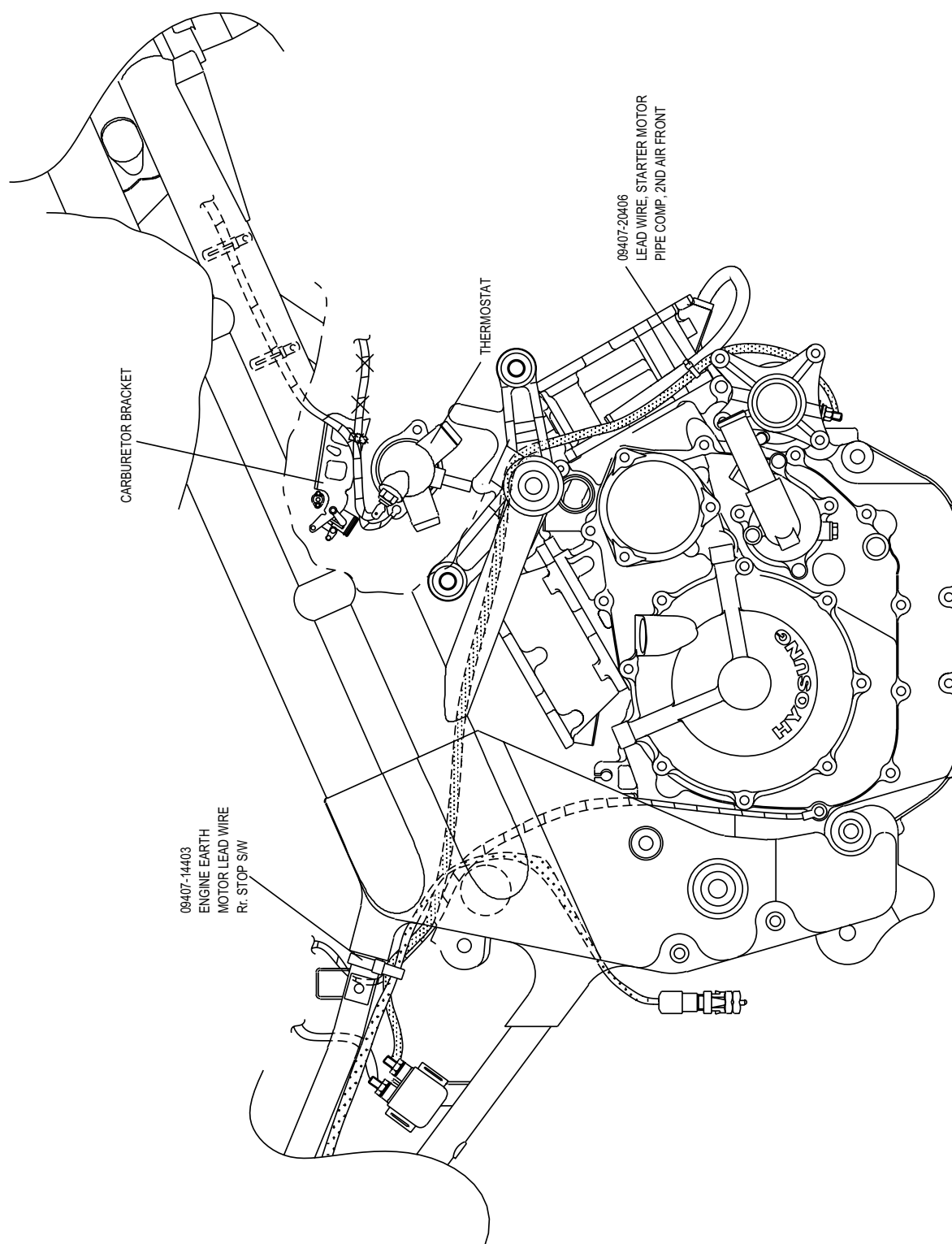


REAR CYLINDER

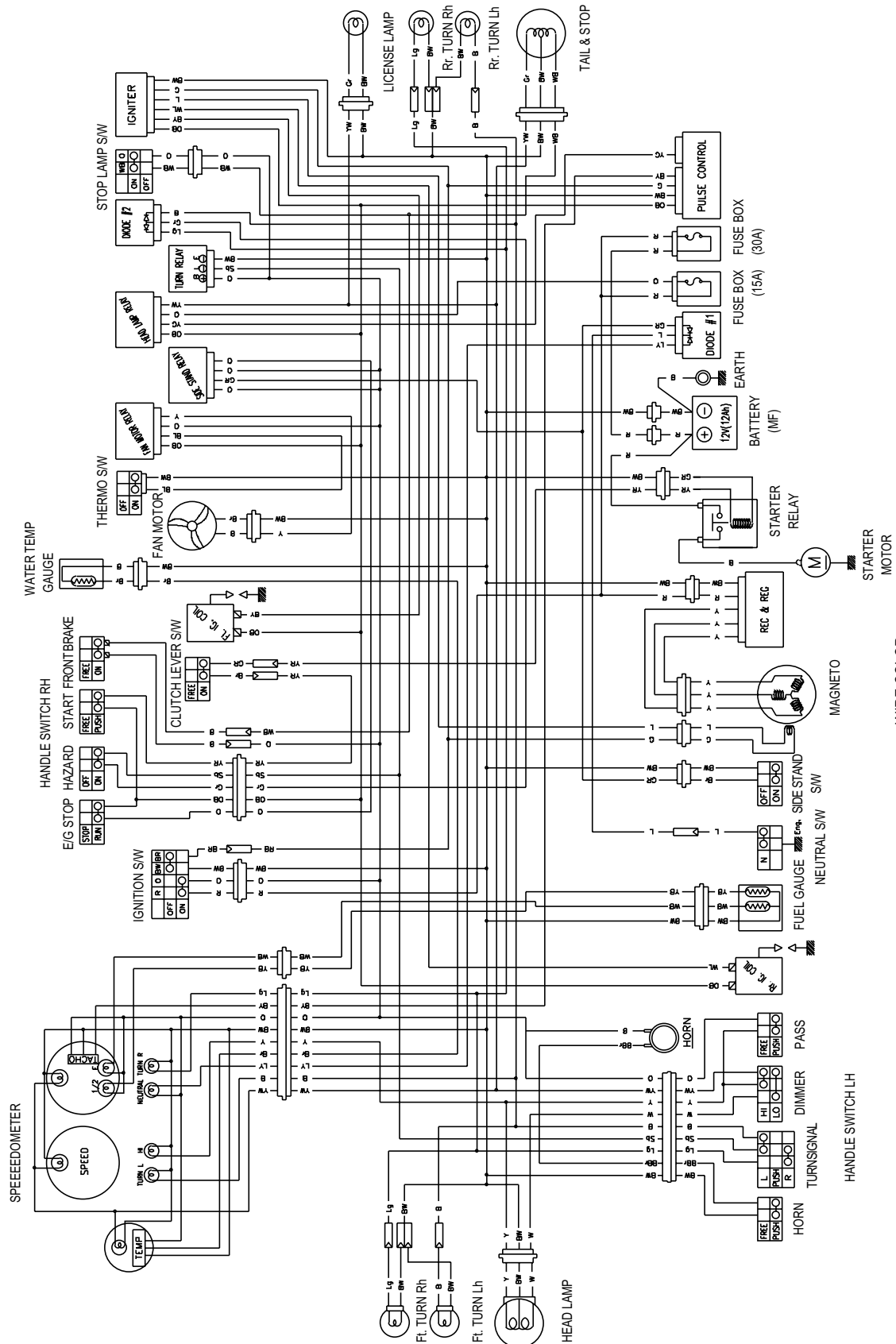


CAUTION FOR HIGHTENTION CORD INSTALLATION DIRECTION

8-27 SERVICING INFORMATION



WIRING DIAGRAM



WIRE COLOR

B	: Black
Br	: Brown
G	: Green
Gr	: Gray
L	: Blue

Lg	: Light green
O	: Orange
R	: Red
Sb	: Light blue
W	: White

Y	: Yellow
BG	: Black with Green tracer
BW	: Black with White tracer
BR	: Black with Red tracer
LW	: Blue with White tracer

RB	: Red with Black tracer
RW	: Red with White tracer
WB	: White with Black tracer
WR	: White with Red tracer
YB	: Yellow with Black tracer

TAPPET SHIM SELECTION CHART (IN.)


MEASURING TAPPET CLEARANCE (mm)	SHIM No.		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
	SHIM THICKNESS AT PRESENT (mm)																						
0.00-0.04	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20		
0.05-0.09	1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20		
0.10-0.20																							
0.21-0.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20				
0.26-0.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20					
0.31-0.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20						
0.36-0.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20							
0.41-0.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20								
0.46-0.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20									
0.51-0.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20										
0.56-0.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20											
0.61-0.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20												
0.66-0.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20													
0.71-0.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20														
0.76-0.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20															
0.81-0.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20																
0.86-0.90	1.95	2.00	2.05	2.10	2.15	2.20																	
0.91-0.95	2.00	2.05	2.10	2.15	2.20																		
0.96-1.00	2.05	2.10	2.15	2.20																			
1.01-1.05	2.10	2.15	2.20																				
1.06-1.10	2.15	2.20																					
1.11-1.15	2.20																						

HOW TO USE THE CHART

1. Measure the tappet clearance.(When cold)
2. Measure the shim thickness at present.
3. Look for meeting space in that horizontal line
for thickness and vertical line for clearance.

(EXAMPLE)

When the tappet clearance is 0.23mm and the shim thickness at present is 1.70mm, the shim thickness should be used 1.80mm.

**HYOSUNG MOTORS & MACHINERY INC.**

Specified clearance - Adjustment unnecessary

HOW TO USE THE CHART

1. Measure the tappet clearance. (When cold)
2. Measure the shim thickness at present.
3. Look for meeting space in that horizontal line for thickness and vertical line for clearance.

(EXAMPLE)

When the tappet clearance is 0.23mm and the shim thickness at present is 1.70mm, the shim thickness should be used 1.80mm.

TAPPET SHIM SELECTION CHART (EX.)


MEASURING TAPPET CLEARANCE (mm)	SHIM No.		120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220
	SHIM THICKNESS AT PRESENT (mm)		1.20	1.25	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20
0.05-0.09																							
0.10-0.14																							
0.15-0.19																							
0.20-0.30																							
0.31-0.35			1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20	
0.36-0.40			1.35	1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20		
0.41-0.45			1.40	1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20			
0.46-0.50			1.45	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20				
0.51-0.55			1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20					
0.56-0.60			1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20						
0.61-0.65			1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20							
0.66-0.70			1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20								
0.71-0.75			1.70	1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20									
0.76-0.80			1.75	1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20										
0.81-0.85			1.80	1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20											
0.86-0.90			1.85	1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20												
0.91-0.95			1.90	1.95	2.00	2.05	2.10	2.15	2.20	2.20													
0.96-1.00			1.95	2.00	2.05	2.10	2.15	2.20	2.20														
1.01-1.05			2.00	2.05	2.10	2.15	2.20	2.20															
1.06-1.10			2.05	2.10	2.15	2.20	2.20																
1.11-1.15			2.10	2.15	2.20	2.20																	
1.16-1.20			2.15	2.20	2.20																		
1.21-1.25			2.20	2.20	2.20																		

HOW TO USE THE CHART

1. Measure the tappet clearance.(When cold)
2. Measure the shim thickness at present.
3. Look for meeting space in that horizontal line for thickness and vertical line for clearance.

(EXAMPLE)

When the tappet clearance is 0.33mm and the shim thickness at present is 1.70mm, the shim thickness should be used 1.80mm.

**HYOSUNG MOTORS & MACHINERY INC.**

HOW TO USE THE CHART

1. Measure the tappet clearance.(When cold)
2. Measure the shim thickness at present.
3. Look for meeting space in that horizontal line for thickness and vertical line for clearance.

(EXAMPLE)

When the tappet clearance is 0.33mm and the shim thickness at present is 1.70mm, the shim thickness should be used 1.80mm.



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