



YAMAHA









2004

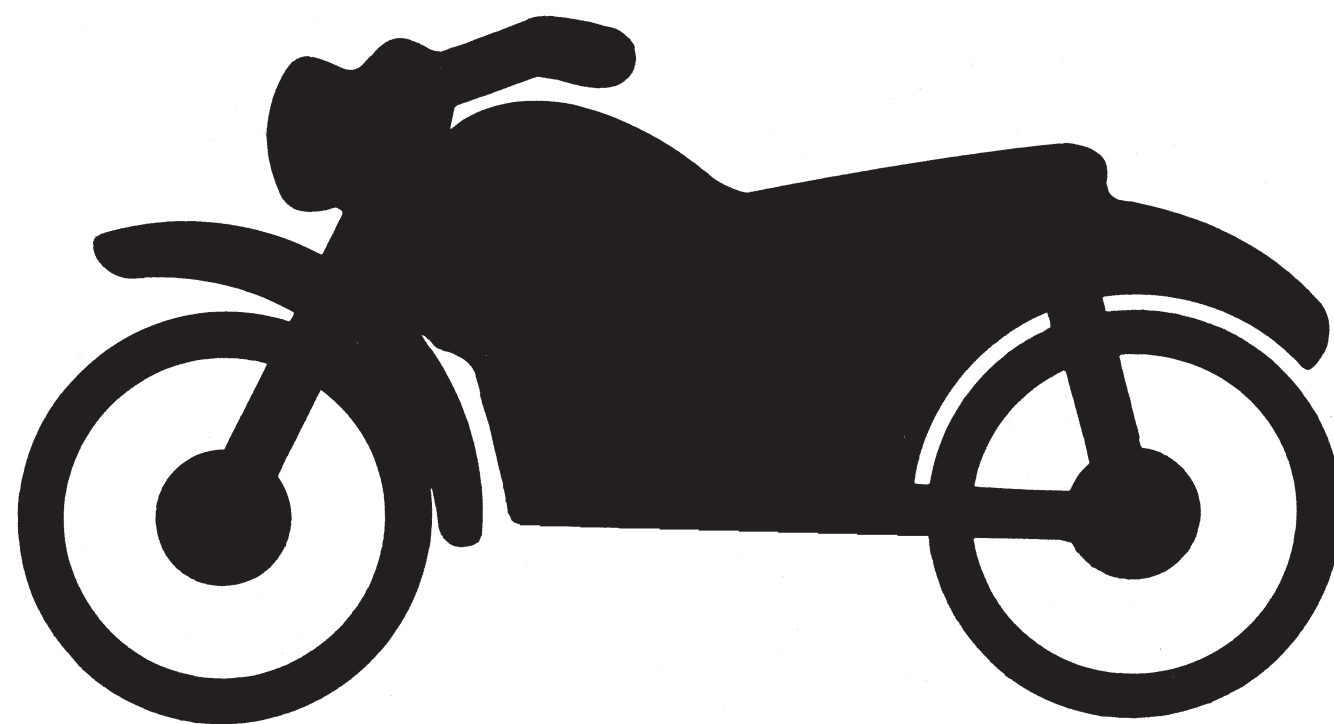
TT600RE

5CH5-ME1

SERVICE MANUAL

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**GEN
INFO**

1

CHAPTER 1. GENERAL INFORMATION

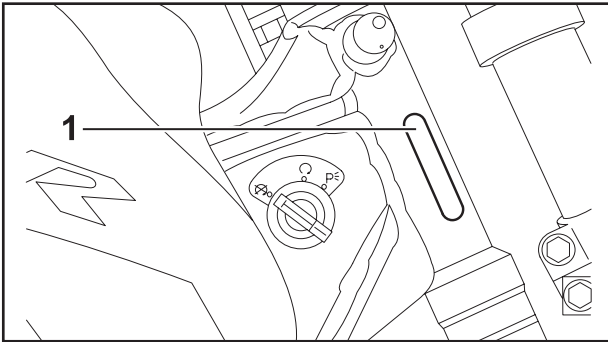
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GENERAL INFORMATION

VEHICLE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

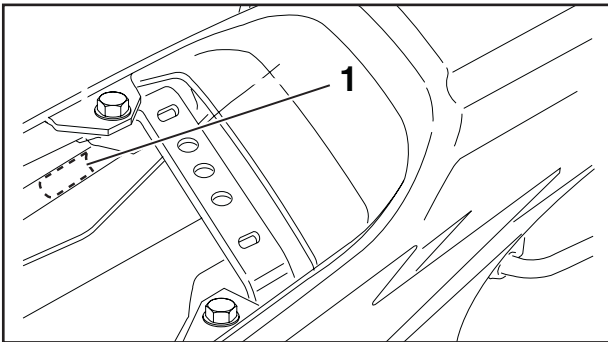
The vehicle identification number ① is stamped into the frame.

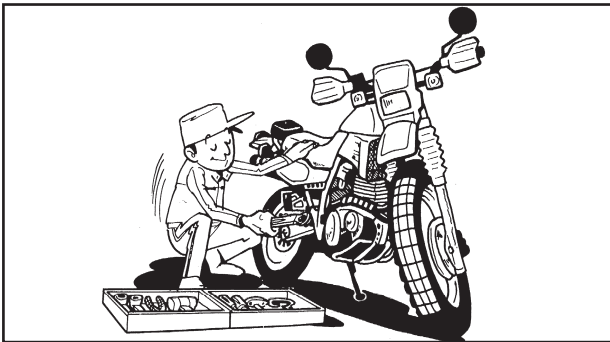
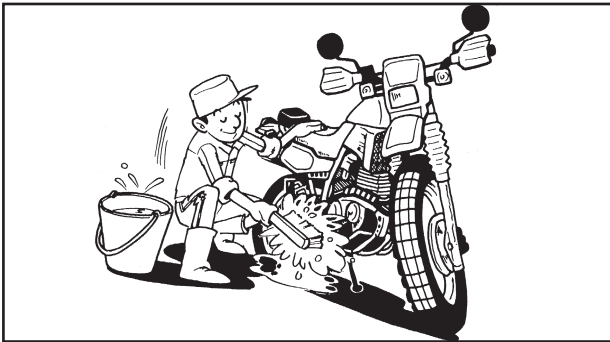


MODEL LABEL

The model label ① is affixed to the frame under the seat.

This information will be needed to order spare parts.





EB101000

IMPORTANT INFORMATION

PREPARATION FOR REMOVAL PROCEDURES

1. Remove all dirt, mud, dust and foreign material before removal and disassembly.
2. Use proper tools and cleaning equipment. Refer to the "SPECIAL TOOLS" section.
3. When disassembling the machine, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been "mated" through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During machine disassembly, clean all parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.

EB101010

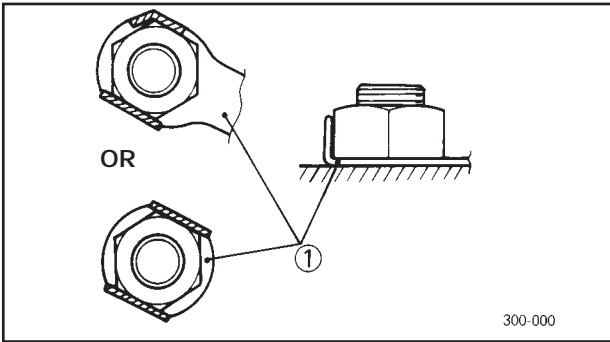
REPLACEMENT PARTS

1. Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.

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GASKETS, OIL SEALS AND O-RINGS

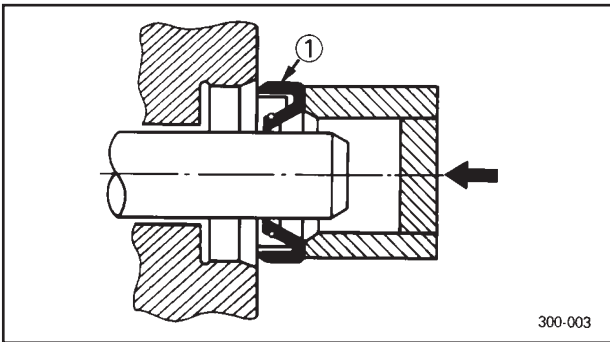
1. Replace all gaskets, seals and O-rings when overhauling the engine. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. Properly oil all mating parts and bearings during reassembly. Apply grease to the oil seal lips.



EB101030

LOCK WASHERS/PLATES AND COTTER PINS

1. Replace all lock washers/plates ① and cotter pins after removal. Bend lock tabs along the bolt or nut flats after the bolt or nut has been tightened to specification.



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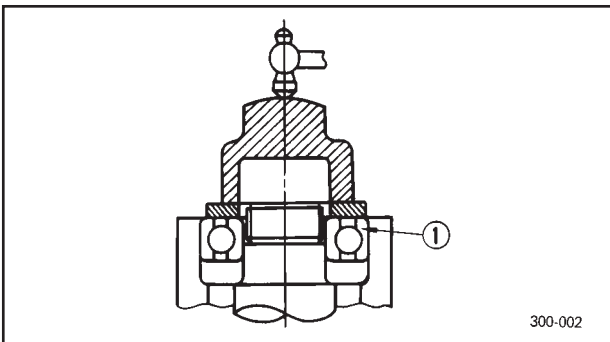
BEARINGS AND OIL SEALS

1. Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals, apply a light coating of lightweight lithium base grease to the seal lips. Oil bearings liberally when installing, if appropriate.

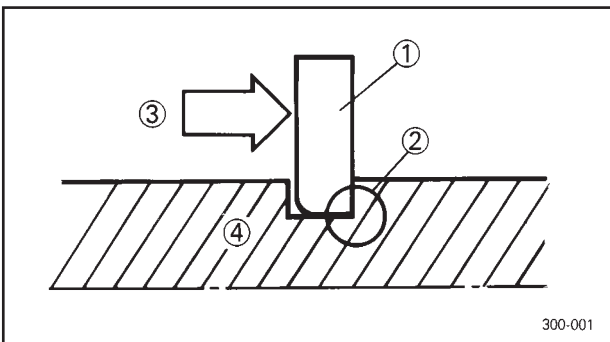
① Oil seal

CAUTION:

Do not use compressed air to spin the bearings dry. This will damage the bearing surfaces.



① Bearing

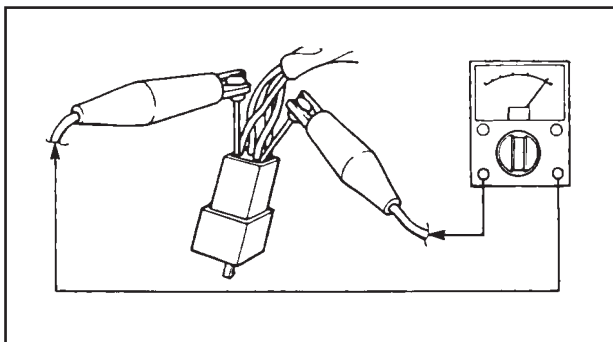
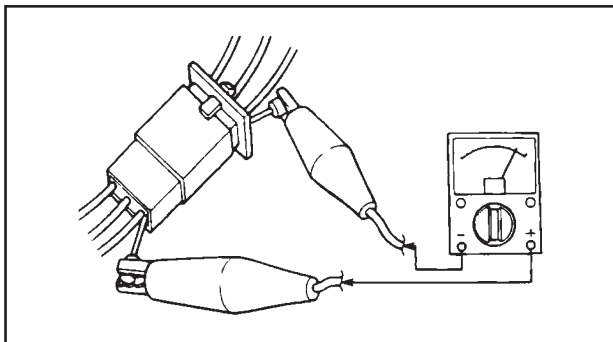
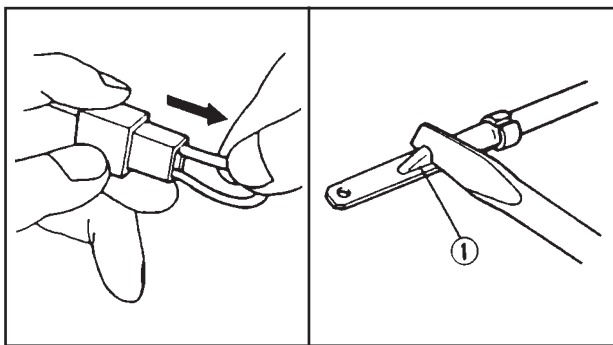
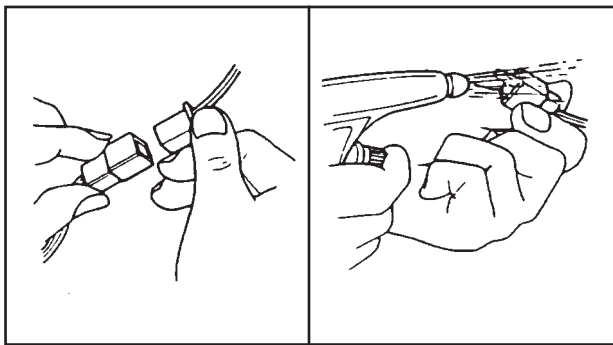


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CIRCLIPS

1. Check all circlips carefully before reassembly. Always replace piston pin clips after one use. Replace distorted circlips. When installing a circlip ①, make sure that the sharp-edged corner ② is positioned opposite the thrust ③ it receives. See sectional view.

④ Shaft



EB801000

CHECKING OF CONNECTIONS

Check the connectors for stains, rust, moisture, etc.

1. Disconnect:
 - connector
2. Check:
 - connector
 - Moisture → Dry each terminal with an air blower.
 - Stains/rust → Connect and disconnect the terminals several times.
3. Check:
 - connector leads
 - Looseness → Bend up the pin ① and connect the terminals.

4. Connect:
 - connector terminals

NOTE: _____
The two terminals “click” together.

5. Check:
 - continuity (using a pocket tester)

NOTE: _____

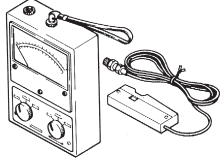
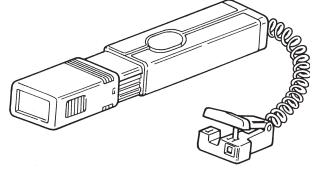
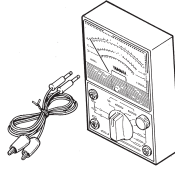
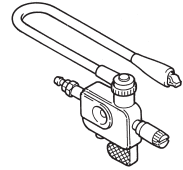
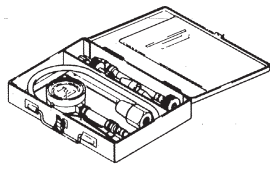
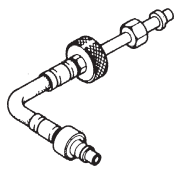
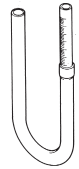
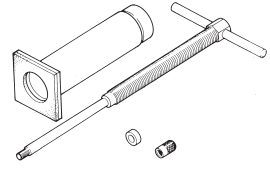
- If there is no continuity, clean the terminals.
- When checking the wire harness be sure to perform steps 1 to 3.
- As a quick remedy, use a contact revitalizer available at most part stores.
- Check the connector with a pocket tester as shown.





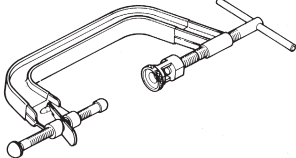
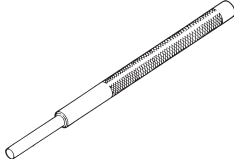
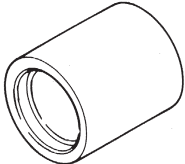
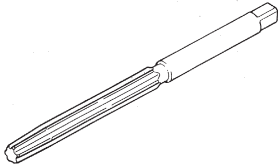
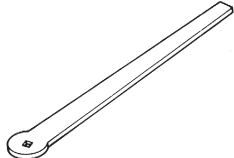
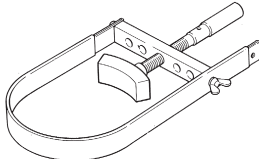
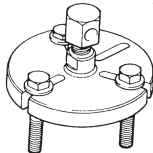
SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools; this will help prevent damage caused by the use of inappropriate tools or improvised techniques.

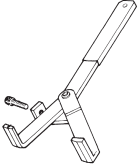
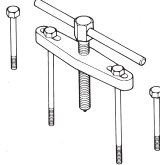
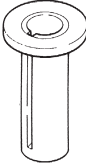

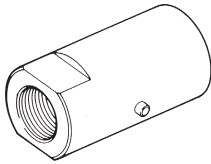
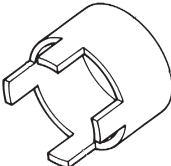
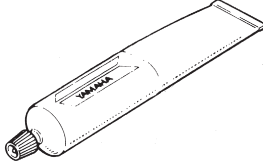
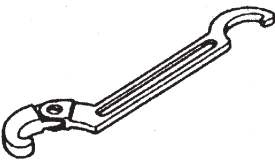
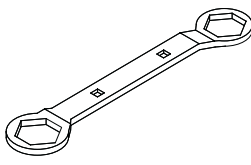
When placing an order, refer to the list provided below to avoid any mistakes.

Tool No.	Tool name / Usage	Illustration
90890-03113	Engine tachometer This tool is needed for detecting engine rpm.	
90890-03141	Timing light This tool is needed for detecting ignition timing.	
90890-03112	Pocket tester These instruments are invaluable for checking the electrical system.	
90890-06754	Ignition checker This instrument is necessary for checking the ignition system components.	
90890-03081	Compression gauge These tools are used to measure the engine compression.	
90890-04082	Adapter (compression gauge) This tool serves to measure the engine compression.	
90890-01312	Fuel level gauge This gauge is used to measure the fuel level in the float chamber.	
90890-01304	Piston pin clip puller This tool serves for removing the piston pin clip.	

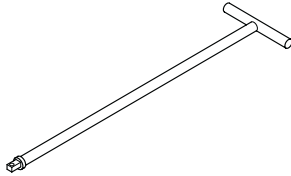
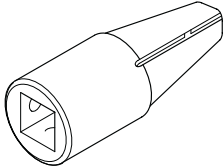
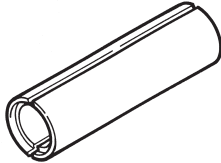


Tool No.	Tool name / Usage	Illustration
90890-01083	Rocker arm shaft puller bolt These tools are used when removing the rocker arm shafts.	
90890-01084	Weight These tools are used when removing the rocker arm shafts.	
90890-04019	Valve spring compressor These tools are used when removing or installing the valve and the valve spring.	
90890-01225	7 mm (0.28 in) valve guide puller This tool is used to remove the valve guides.	
90890-04017	7 mm (0.28 in) valve guide installer This tool is necessary to install the valve slides properly.	
90890-01227	7 mm (0.28 in) valve guide reamer This tool is used to re-ream the new valve guide.	
90890-01311	Valve adjusting tool This tool is necessary for adjusting valve clearance.	
90890-01701	Rotor holder This tool is used for loosening and tightening the rotor nut.	
90890-01362	Rotor screw puller This tool is used to disassemble the magneto flywheel rotor.	



Tool No.	Tool name / Usage	Illustration
90890-04086	<p>All-purpose clutch holder</p> <p>This tool is used to lock the clutch, when the clutch boss lock nut is being loosened or tightened.</p>	
90890-01135	<p>Crankcase separating tool</p> <p>This tool is necessary to disassemble the crankcase.</p>	
90890-01274	<p>Crankshaft installation hose</p> <p>This tool is used to install the crankshaft.</p>	
90890-01275	<p>Crankshaft installation bolt</p> <p>This tool is used to install the crankshaft.</p>	
90890-04059	<p>#10 (M14) adapter</p> <p>This tool is used to install the crankshaft.</p>	
90890-04081	<p>Crank spacer</p> <p>This tool is used to install the crankshaft.</p>	
90890-85505	<p>SEALANT (QUICK GASKET) ® Yamaha Bond No. 1215 ®</p> <p>This sealant (adhesive) is used for crankcase mating surfaces etc.</p>	
90890-01268	<p>Ringnut wrench</p> <p>This tool is used to loosen and tighten the steering ringnut.</p>	
90890-01348	<p>Ringnut wrench</p> <p>This tool is used to loosen and tighten the steering ringnut.</p>	



Tool No.	Tool name / Usage	Illustration
90890-01326	T-handle This tool is needed to loosen and tighten the front fork damper rod holding bolt.	
90890-01460	Front fork damper rod holder This tool is needed to hold the front fork damper rod when loosening and tightening the holding bolt.	
90890-11043	DU bush/oil seal guide This tool is used to install the DU bush and the fork oil seal.	



SPEC

2

CHAPTER 2. SPECIFICATIONS

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SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Standard	Limit
Model	TT600RE: 5CH5	
Dimensions Overall length Overall width Overall height Seat height Wheelbase Ground clearance Minimum turning radius	2,220 mm 865 mm 1,195 mm 890 mm 1,480 mm 280 mm 3,300 mm (right) 3,100 mm (left)
Basic weight (with oil and full fuel tank)	164.5 kg	...
Engine Engine type Cylinder arrangement Displacement Bore x stroke Compression ratio Starting system Lubrication system	Air cooled 4-stroke, SOHC Forward inclined single cylinder 595 cm ³ 95.0 x 84.0 mm 8.5 : 1 Electric starter Dry sump with separate oil tank
Engine oil Type Temp. °C -20 -10 0 10 20 30 40 Recommended engine oil classification Quantity: Without oil filter cartridge replacement With oil filter cartridge replacement Total amount (dry engine)	SAE20W40SE or SAE10W30SE API Service SE, SF, SG or higher 2.4 L 2.5 L 3.0 L
Air filter	Wet type element	
Fuel Type Fuel tank capacity Fuel reserve amount	Regular unleaded gasoline 10 L 3.0 L
Carburetor Manufacturer Model x quantity	TEIKEI Y30PV-2ATK x 1	

GENERAL SPECIFICATIONS

SPEC



Item	Standard	Limit
Spark plug Manufacturer/model Gap	NGK/DPR8EA-9 or NGK/DPR9EA-9 0.8–0.9 mm	●●●
Clutch type	Wet. Multiple-disc	
Transmission Primary reduction system Primary reduction ratio Secondary reduction system Secondary reduction ratio Number of drive chain sprocket teeth (front/rear) Transmission type Operation Gear ratio	Spur gear 71/34 (2.088) Chain drive 47/15 (3.133) 15/47 Constant mesh 5-speed Left foot 2.583 1.588 1.200 0.955 0.792	
Chassis Frame type Caster angle Trail	Open cradle backbone frame/detachable rear frame 27° 117 mm	 ●●● ●●●
Tires Front: Type Size Manufacturer/model Rear: Type Size Manufacturer/model Maximum load* Tire air pressure (measured on cold tires): Up to 90 kg* Front Rear 90 kg–maximum* Front Rear Off-road riding Front Rear High-speed riding Front Rear * Total weight of rider, passenger, cargo and accessories	With tube 90/90-21-(54R) / 90/90-21-(54S) Pirelli / MT70 - Michelin / T63 With tube 130/80-18-(66R) / 130/80-18-(66S) Pirelli / MT70 - Michelin / T63 180 kg 200 kPa; 2.00 kgf/cm ² ; 2.00 bar 220 kPa; 2.20 kgf/cm ² ; 2.20 bar 210 kPa; 2.10 kgf/cm ² ; 2.10 bar 240 kPa; 2.40 kgf/cm ² ; 2.40 bar 150 kPa; 1.50 kgf/cm ² ; 1.50 bar 160 kPa; 1.60 kgf/cm ² ; 1.60 bar 210 kPa; 2.10 kgf/cm ² ; 2.10 bar 240 kPa; 2.40 kgf/cm ² ; 2.40 bar	 ●●● ●●● ●●● ●●● ●●● ●●● ●●● ●●● ●●●
Wheels Front: Type Size Rear: Type Size	Spoke wheel 21" x 1.85 Spoke wheel 18" x MT 2.50	

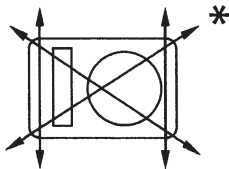
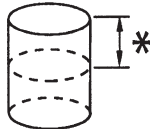
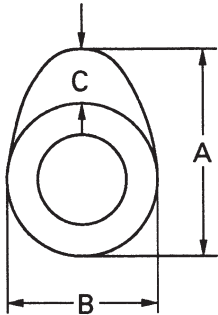
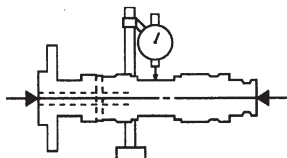
GENERAL SPECIFICATIONS

SPEC



Item	Standard	Limit
Brakes Front: Type Operation Fluid Rear: Type Operation Fluid	Single Ø 267 mm disk brake, 2 x 28 mm Right hand DOT 4 Single Ø 220 mm disk brake, 1 x 34 mm caliper Right foot DOT 4	
Suspension Front Rear	Telescopic fork Outside tube dia. 46 mm Deltabox Swingarm with adjustable shock absorber	
Spring/shock absorber Front Rear	Coil spring / oil damper Coil spring / gas-oil damper, spring preload adjustable	
Wheel travel Front Rear	230 mm 230 mm
Electrical system Ignition system Charging system: Type Standard output Battery: Model Voltage, capacity	Transistorized coil ignition (digital) A.C. magneto 14V, 13.5A at 5.000 r/min GT9B-4 12V, 8Ah	
Headlight type	Quartz bulb (halogen)	
Bulb voltage, wattage x quantity Headlight Tail/brake light Turn signal light Auxiliary light Meter lighting Turn signal indicator light Neutral indicator light Auxiliary indicator light High beam indicator light	12V 60W / 55W x 1 12V 5W / 21W x 1 12V 10W x 4 12V 5W x 1 12V 3W x 1 12V 1.2W x 1 12V 1.2W x 1 12V 1.2W x 1 12V 1.2W x 1
Fuse	20A	...

MAINTENANCE SPECIFICATIONS
ENGINE

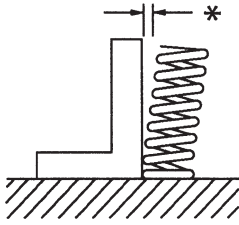
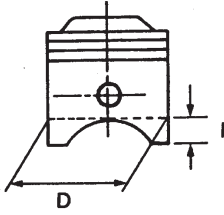
Item	Standard	Limit
<p>Cylinder head Max. warpage *</p> 	<p>•••</p>	<p>0.03 mm</p>
<p>Cylinder Bore Measuring point *</p> 	<p>94.970 - 95.020 mm 50 mm</p>	<p>95.10 mm •••</p>
<p>Camshaft Drive system Camshaft cap inside diameter Camshaft journal diameter Camshaft-journal-to-camshaft-cap clearance Camshaft lobe dimensions:</p>  <p>Intake-measurement A Intake-measurement B Intake-measurement C</p> <p>Exhaust-measurement A Exhaust-measurement B Exhaust-measurement C Max. camshaft runout</p> 	<p>Chain drive (left) 23.000 - 23.021 mm 22.967 - 22.980 mm 0.020 - 0.054 mm</p> <p>36.470 - 36.570 mm 30.060 - 30.160 mm 6.41 mm</p> <p>36.620 - 36.720 mm 30.110 - 30.210 mm 6.51 mm •••</p>	<p>••• ••• ••• ••• ••• ••• ••• ••• ••• ••• ••• 0.030 mm</p>

MAINTENANCE SPECIFICATIONS



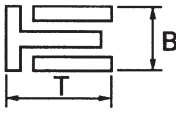
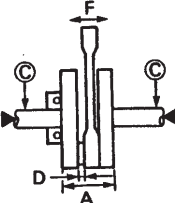
SPEC



Item	Standard	Limit
Timing chain Model/number of links Tensioning system	75-010/126 Automatic	
Rocker arm/rocker arm shaft Arm inside diameter Shaft outside diameter Arm-to-shaft clearance	12.000 - 12.018 mm 11.976 - 11.991 mm 0.009 - 0.042 mm
Valve, valve seat, valve guide Valve clearance (cold)	intake 0.05 - 0.10 mm exhaust 0.12 - 0.17 mm
Valve dimensions:		
Valve head diameter A	intake 36.90 - 37.10 mm exhaust 31.90 - 32.10 mm
Valve face width B	intake 2.260 mm exhaust 2.260 mm
Valve seat width C	intake 1.00 - 1.20 mm exhaust 1.00 - 1.20 mm	1.80 mm 1.80 mm
Valve margin thickness D	intake 1.00 - 1.40 mm exhaust 0.80 - 1.20 mm	0.80 mm 0.65 mm
Valve stem diameter	intake 6.975 - 6.990 mm exhaust 6.955 - 6.970 mm	6.995 mm 6.925 mm
Valve guide inside diameter	intake 7.000 - 7.012 mm exhaust 7.000 - 7.012 mm	7.042 mm 7.042 mm
Valve stem to valve guide clearance	intake 0.010 - 0.037 mm exhaust 0.030 - 0.057 mm	0.08 mm 0.10 mm
Valve stem runout	...	0.010 mm
Valve seat width	intake 1.10 mm exhaust 1.10 mm	1.80 mm 1.80 mm

Item	Standard	Limit
Valve spring		
Inner spring:		
Free length	intake 40.10 mm	38.10 mm
	exhaust 40.10 mm	38.10 mm
Installed length	intake 22.70 mm	...
(valve closed)	exhaust 22.70 mm	...
Compressed spring force	intake 164.80 - 190.20 N	...
(installed)	16.80 - 19.39 kg	...
	exhaust 164.80 - 190.20 N	...
	16.80 - 19.39 kg	...
Spring tilt intake	intake ...	2.5 °/1.7 mm
	exhaust ...	2.5 °/1.7 mm
		
Winding direction	intake Clockwise	
(top view)	exhaust Clockwise	
Outer spring:		
Free length intake	intake 43.80 mm	38.10 mm
	exhaust 43.80 mm	38.10 mm
Installed length	intake 34.20 mm	...
(valve closed)	exhaust 34.20 mm	...
Compressed spring force	intake 71.60 - 87.30 N	...
(installed)	7.3 - 8,9 kg	...
	exhaust 149.10 - 182.40 N	...
	15.2 - 18.6 kg	...
Spring tilt	intake ...	2.5 °/1.7 mm
	exhaust ...	2.5 °/1.9 mm
Winding direction	intake Counterclockwise	
(top view)	exhaust Counterclockwise	
Piston		
Piston-to-cylinder clearance		
Diameter D		
Height H		
		
0.045 - 0.065 mm		
94.915 - 94.965 mm		
5.0 mm		
0.15 mm		
...		
...		
Piston pin bore inside diameter		
22.004 - 22.015 mm		
Offset		
2.00 mm		
Offset direction		
Intake side		
Piston pin outside diameter		
21.991 - 22.000 mm		
...		



Item	Standard	Limit
<p>Piston ring Top ring:</p>  <p>Ring type Dimensions (B x T) End gap (installed) Ring side clearance</p> <p>2nd ring:</p>  <p>Ring type Dimensions (B x T) End gap (installed) Ring side clearance</p> <p>Oil ring:</p>  <p>Dimensions (B x T) End gap (installed) Ring side clearance</p>	<p>Barrel 1.20 x 3.80 mm</p> <p>0.30 - 0.45 mm 0.040 - 0.080 mm</p> <p>Plain 1.20 x 3.80 mm</p> <p>0.30 - 0.45 mm 0.030 - 0.070 mm</p> <p>2.50 x 3.40 mm 0.20 - 0.70 mm 0.020 - 0.060 mm</p>	<p>••• 0.70 mm 0.130 mm</p> <p>••• 0.80 mm 0.130 mm</p> <p>••• ••• •••</p>
<p>Crankshaft</p>  <p>Width A Max. runout C Big end side clearance D Big end radial clearance Small end free play F</p>	<p>74.95 - 75.00 mm ••• 0.350 - 0.650 mm 0.010 - 0.025 mm 0.80 mm</p>	<p>••• 0.030 mm ••• ••• •••</p>

MAINTENANCE SPECIFICATIONS

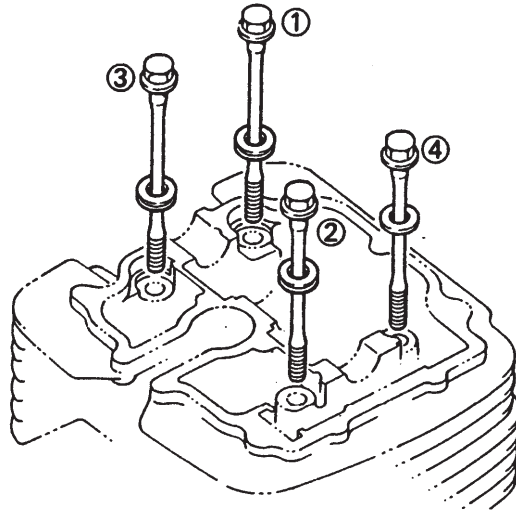
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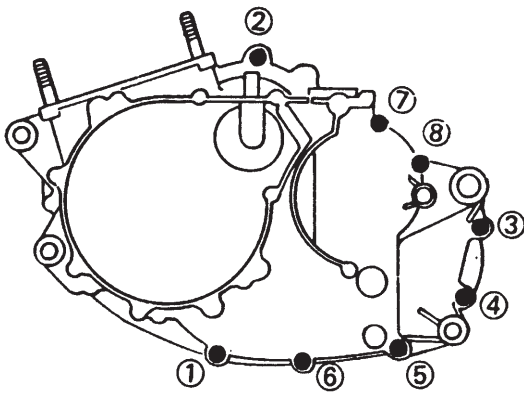
Item	Standard	Limit
Ballancer Ballancer drive method	Gear	
Clutch Clutch release method Friction plate thickness Wear limit Plate quantity Friction plate thickness Wear limit Plate quantity Clutch plate thickness Plate quantity Max. warpage Clutch spring free length Plate quantity Clutch housing thrust clearance	Inner push, cam push 2.72 - 2.88 mm ... 6 pcs 2.94 - 3.06 mm ... 2 pcs 1.20 mm 7 pcs ... 42.8 mm 5 pcs 0.070 - 0.071 mm	... 2.60 mm ... 2.8 mm ... 0.20 mm
Transmission Max. main axle runout Max. drive axle runout Shift mechanism type Cam drum and guide bar	0.08 mm 0.08 mm
Carburetor ID mark Main jet Main air jet Jet needle Needle jet Cutaway Pilot air jet 1 Pilot jet Bypass 1 Pilot screw turns out Valve seat size Starter jet 1 Float height	5CH5 10 #1:#150 #2:#145 #1:1.0 #2:0.9 #1:5C5A-3/5 #2:5Y18-3/5 2.600 4.00 # 0.8 mm # 50 # 1.0 2-3/4 +/- 1/2 2.5 # 74 6.0 - 8.0 mm
Engine idle speed CO% Intake vacuum	1,150-1,450 r/min 1.5 - 3 30.6-33.36 kPa - 230-250 mm Hg
Lubrication system Oil filter type Oil pump: Oil pump type Inner rotor to outer rotor tip clearance Outer rotor to pump housing clearance Bypass valve opening pressure Relief valve operating pressure Oil pressure (hot) Pressure check location	Dry sump Paper type Trochoid type 0.12 mm 0.030 - 0.080 mm 80.0 - 120.0 kPa (0.8 - 1.2 kgf/cm ²) 80.0 - 120.0 kPa (0.8 - 1.2 kgf/cm ²) 13.0 kPa (0.13 kgf/cm ²)/1,300 r/min Oil filter chamber	0.20 mm 0.150 mm

ENGINE

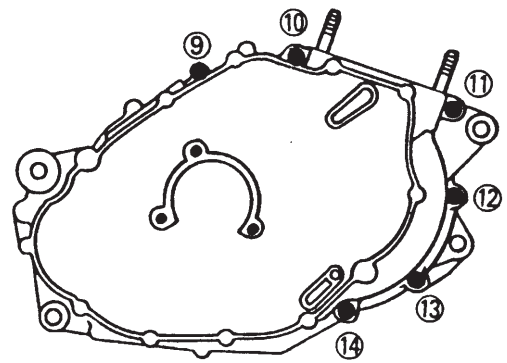
Cylinder head tightening steps:



Crankcase tightening steps:



Left crankcase



Right crankcase



Tightening torques

Part to be tightened	Part name	Thread size	Tightening torque		Remarks
			Nm	mkg	
Cylinder head	Washer based bol	M8 x 1.25	29	2.9	
Cylinder head	Stud bolt	M10 x 1.25	20	2.0	
Cylinder head	Hexagon socket head screw	M6 x 1.0	10	1.0	
Cylinder head	Stud bolt	M6 x 1.0	7	0.7	
Cylinder head: Cap (oil check)	Union bolt	M6 x 1.0	7	0.7	
Spark plug	–	M12 x 1.25	18	1.8	
Cylinder head cover	Hexagon socket head screw	M6 x 1.0	10	1.0	
Tappet cover (intake)	Hexagon socket head screw	M6 x 1.0	10	1.0	
Tappet cover (exhaust)	–	M32 x 1.5	12	1.2	
Cylinder	Crown nut	M8 x 1.25	22	2.2	
Cylinder	Nut	M10 x 1.25	42	4.2	
Cylinder	Hexagon socket head screw	M6 x 1.0	10	1.0	
Weight drive gear	Hexagon nut	M16 x 1.0	60	6.0	
Rotor (A.C. magneto)	Hexagon nut	M14 x 1.5	120	12.0	
Lock nut (valve adjusting screw)	Hexagon nut	M6 x 1.0	14	1.4	
Cam chain sprocket	Washer based bolt	M7 x 1.0	20	2.0	
Cam chain stopper guide	Hexagon socket head screw	M6 x 1.0	10	1.0	
Cam chain stopper guide	Washer based screw	M16 x 1.0	20	2.0	
Rocker shaft	Hexagon socket head screw	M6 x 1.0	10	1.0	
Oil pump	Hexagon socket head screw	M6 x 1.0	10	1.0	
Oil delivery/retrieval pipe	Pan screw	M6 x 1.0	7	0.7	
Oil draining pipe	Washer based screw	M14 x 1.5	30	3.0	
Oil filter cover	Hexagon socket head screw	M6 x 1.0	10	1.0	
Bleed screw (oil filter cover)	Hexagon screw	M5 x 0.8	5	0.5	
Push lever (clutch)	Pan screw	M8 x 1.0	12	1.2	
Push rod (clutch)	Hexagon nut	M6 x 1.0	8	0.8	
Sprocket	Hexagon nut	M18 x 1.0	115	11.5	
Lock washer (oil seal)	Hexagon screw	M6 x 1.0	10	1.0	
Stop lever	Bolt	M6 x 1.0	10	1.0	
Shift cam	Hexagon screw	M6 x 1.0	10	1.0	
Stator	Pan head (+) screw	M5 x 0.8	5	0.5	

MAINTENANCE SPECIFICATIONS

SPEC





Part to be tightened	Part name	Thread size	Tightening torque		Remarks
			Nm	mkg	
Stator (pick-up coil)	Hexagon socket head screw	M6 x 1.0	7	0.7	
Engine oil pipe 1	Hexagon socket head screw	M6 x 1.0	10	1.0	
Engine oil pipe 2	Union screw	M12 x 1.25	35	3.5	
Oil delivery pipe	Union bolt	M8 x 1.25	18	1.8	
Carburetor joints	Hexagon socket head screw	M6 x 1.0	10	1.0	
Air filter case (frame)	Hexagon screw	M6 x 1.0	10	1.0	
Air filter case (frame)	Washer based screw	M6 x 1.0	10	1.0	
Exhaust pipe	Washer based nut	M6 x 1.0	10	1.0	
Exhaust pipe protector	Pan head (+) screw	M6 x 1.0	7	0.7	
Muffler	Hexagon socket head screw	M8 x 1.25	23	2.3	
Muffler (band)	Nut, nylon	M8 x 1.25	23	2.3	
Muffler	Washer based screw	M8 x 1.25	23	2.3	
Crankcase	Hexagon socket head screw	M6 x 1.0	10	1.0	
Crankcase	Stud bolt	M10 x 1.25	20	2.0	
Crankcase cover (right)	Hexagon socket head screw	M6 x 1.0	10	1.0	
Crankcase cover (left)	Hexagon socket head screw	M6 x 1.0	10	1.0	
Sprocket cover	Hexagon socket head screw	M6 x 1.0	10	1.0	
Stop washer (bearing)	Flat headscrew	M6 x 1.0	7	0.7	
Pressure plate	Washer based screw	M6 x 1.0	8	0.8	
Clutch housing	Hexagon nut	M20 x 1.0	90	9.0	
Primary drive gear	Hexagon nut	M20 x 1.0	120	12.0	



CHASSIS

Item	Standard	Limit
Steering		
Steering bearing type	Taper roller bearing	
Lock to lock angle (left)	45°	•••
Lock to lock angle (right)	45°	•••
Front suspension		
Front fork travel	277 - 283 mm	•••
Fork spring free length	530 mm	•••
Spring rate (K1)	7.0 N/mm (0.71 kgf/mm)	•••
Spring stroke (K1)	330 mm	•••
Spring rate (K2)	11.2 N/mm (1.14 kgf/mm)	•••
Optional spring available	No	
Recommended oil	Liqui Moly Racing suspension oil SAE 7,5	
Quantity	650 cc	•••
Level	180 mm	•••
< min - max >	170-190 mm (from upper edge of inner tube, fully compressed without spring)	•••
Rear suspension		
Rear shock absorber assembly travel	83 mm	
Spring free length	224 mm	•••
Installed length	211 mm	± 1.5 mm
Spring rate (K)	80 N/mm (8.1 kgf/mm)	•••
Optional spring available	No	
Swingarm		
Free play limit (at the end of the swingarm)-radial	•••	1.0 mm
Free play limit (at the end of the swingarm)-axial	0.4 - 0.7 mm	•••
Front wheel		
Wheel type	Spoke wheel	
Rim size	21 x 1.85	
Rim material	Aluminium	
Max. radial wheel runout	1.0 mm	•••
Max. lateral wheel runout	0.5 mm	•••
Rear wheel		
Wheel type	Spoke wheel	
Rim size	18 x MT2.50	
Rim material	Aluminium	
Max. radial wheel runout	1.0 mm	•••
Max. lateral wheel runout	0.5 mm	•••



Item	Standard	Limit
Drive chain Type/manufacturer Link quantity Drive chain slack	520 135ORSB / Regina Chain 114 30.0 - 40.0 mm	...
Front disc brake Disc outside diameter x thickness Max. deflection Brake pad lining thickness-inner Brake pad lining thickness-outer  Master cylinder inside diameter Caliper cylinder inside diameter Recommended fluid	267 x 4 mm ... 7.5 mm 7.5 mm 13 mm 28 mm x 2 DOT 4	... 0.15 mm * 3.7 mm * 3.7 mm
Rear disc brake Disc outside diameter x thickness Max. deflection Brake pad lining thickness-inner Brake pad lining thickness-outer  Master cylinder inside diameter Caliper cylinder inside diameter Recommended fluid	220.0 x 5.0 mm ... 9.0 mm 9.0 mm 12.7 mm 34 mm DOT 4	... 0.15 mm * 4.5 mm * 4.5 mm
Front brake lever	Adjustable	
Brake pedal lever Brake pedal position	10 mm (below the footrest plane)	...
Clutch lever Clutch lever free play (lever end)	10.0 - 15.0 mm	...
Throttle grip Throttle cable free play	3.0 - 5.0 mm	...



Tightening torques

Part to be tightened	Thread size	Tightening torque		Remarks
		N-m	m-kg	
Engine mounting and rear frame:				
Engine front/Stay engine	M10 x 1.25	64	6.4	
Stay engine (engine front)/Frame	M10 x 1.25	64	6.4	
Engine rear under/Frame	M10 x 1.25	68	6.8	
Engine top/Stay engine	M10 x 1.25	64	6.4	
Engine protector/Frame	M6 x 1.0	7	0.7	
Chain tensioner top/Frame	M8 x 1.25	23	2.3	
Chain tensioner under/Frame	M8 x 1.25	23	2.3	
Frame/Rear frame (upper)	M8 x 1.25	23	2.3	
Frame/Rear frame (under)	M8 x 1.25	23	2.3	
Rear frame/Air filter assy	M6 x 1.0	5	0.5	
Front fork and steering:				
Handle crown/Inner tube	M8 x 1.25	28	2.8	See "NOTE"
Handle crown/Steering shaft	M28 x 1.5	4	0.4	
Steering shaft/Ring nut	M36 x 1.5	115	11.5	
Holder handle upper/Crown handle	M8 x 1.25	20	2.0	
Holder handle under/Crown handle	M10 x 1.5	40	4.0	
Front fork under bracket/Inner tube	M8 x 1.25	23	2.3	
Front master cylinder/Cap	M4 x 0.7	1.5	0.15	
Front master cylinder/Handle	M6 x 1.0	9	0.9	
Union bolt tightening	M10 x 1.0	20	2.0	
Front fender/Front fork	M6 x 1.0	7	0.7	
Stay headlight/Handle crown	M6 x 1.0	10	1.0	
Stay headlight/Bracket meter	M6 x 1.0	6	0.6	
Headlight/Stay headlight	M6 x 1.0	10	1.0	
Rear arm and cushion:				
Pivot shaft/Frame	M14 x 1.5	90	9.0	
Arm relay/Frame	M10 x 1.25	60	6.0	
Arm relay/Rod connecting	M10 x 1.25	52	5.2	
Arm relay/Shock absorber	M10 x 1.25	59	5.9	
Rod connecting/Rear arm	M12 x 1.25	66	6.6	
Shock absorber upper/Frame	M12 x 1.25	66	6.6	
Seal guard/Rear arm	M6 x 1.0	4	0.4	
Support chain/Rear arm	M6 x 1.0	9	0.9	
Chain case/Rear arm	M6 x 1.0	9	0.9	
Front wheel:				
Front wheel shaft/Front fork	M16 x 1.5	59	5.9	
Axle holder//Front fork	M6 x 1.0	9	0.9	
Rear wheel:				
Rear wheel shaft/Nut	M18 x 1.5	115	11.5	
Clutch hub/Sprocket	M10 x 1.25	48	4.8	

MAINTENANCE SPECIFICATIONS

SPEC



Part to be tightened	Thread size	Tightening torque		Remarks
		N·m	m·kg	
Front brake: Front hub/Disc brake Front caliper/Front fork Front caliper/Bleeder tightening Union bolt tightening (front)	M6 x 1.0 M8 x 1.25 M10 x 1.0 M10 x 1.0	12 25 14 20	1.2 2.5 1.4 2.0	
Rear brake: Rear hub/Disc brake Rear master cylinder/Frame Rear stop switch/Rear master cylinder Rear caliper/Bleeder tightening Protector rear caliper/Rear caliper Union bolt tightening (rear) Rear brake tank reserve/Air cleaner assy Brake pedal/Frame	M6 x 1.0 M6 x 1.0 M10 x 1.0 M10 x 1.0 M6 x 1.0 M10 x 1.0 M6 x 1.0 M10 x 1.25	12 10 20 14 10 20 5 48	1.2 1.0 2.0 1.4 1.0 2.0 0.5 4.8	
Sidestand/Footrest: Sidestand mounting bolt/Frame Sidestand mounting bolt/Nut Sidestand switch/Frame Rear footrest/Rear frame Bracket 1 (main footrest)/Frame Bracket 2 (main footrest)/Frame Footrest cover/Footrest	M12 x 1.25 M12 x 1.25 M5 x 0.8 M8 x 1.25 M10 x 1.25 M10 x 1.25 M6 x 1.0	40 40 8 30 48 48 10	4.0 4.0 0.8 3.0 4.8 4.8 1.0	
Seat, fuel tank and oil tank: Seat/Frame Bolt (guide seat)/Fuel tank Fuel tank/Rear frame Damper fuel tank (front)/Frame Fuel tank/Fuel cock Oil tank/Sub-oil tank Union bolt (oil hose 2)/Oil tank assy/Engine Oil hose 1/Oil tank/Engine Oil tank/Rear frame	M6 x 1.0 M6 x 1.0 M6 x 1.0 M8 x 1.25 M6 x 1.0 M6 x 1.0 M12 x 1.25 M6 x 1.0 M12 x 1.5	10 5 12 15 7 7 35 10 20	1.0 0.5 1.2 1.5 0.7 0.7 3.5 1.0 2.0	
Frame, rear fender compl. and lights: Rear fender compl. (under)/Rear frame Rear fender compl. (upper)/Rear frame Bracket, license/Rear frame Bracket, license/Rear flasher Horn/Frame Regulator/Frame Igniton coil/Frame Battery box/Rear frame Igniter cover/Battery box Main switch/Frame Tail light (lense)/Rear fender compl. Starter switch/Red wire	M6 x 1.0 M6 x 1.0 M6 x 1.0 M6 x 1.0 M6 x 1.0 M8 x 1.25 M5 x 0.8 M6 x 1.0 M4 M24 x 1.0 M3.5 M6 x 1.0	2 7 10 10 13 7 13 7 1 1 1 7	0.2 0.7 1.0 1.0 1.3 0.7 1.3 0.7 0.1 0.1 0.1 0.7	



Part to be tightened	Thread size	Tightening torque		Remarks
		N·m	m·kg	
Starting motor cord/Starting motor	M6 x 1.0	11	1.1	
Wire minus lead (-)/Starting motor	M6 x 1.0	10	1.0	
Front flasher lights/Stay, headlight	M6 x 1.0	1.5	0.15	
Clutch wire/Engine	M6 x 1.0	7	0.7	
Assist grip (Standing handle)/Rear frame	M8 x 1.25	23	2.3	
Speedometer	M5 x 0.8	4	0.4	
Air filter case 1/Air filter case 2 (L = 13 mm)	M3.9	0.5	0.05	
Air filter case 1/Air filter case 2 (L = 19 mm)	M3.9	1	0.1	
Hose clamp/Joint, carburator	M4 x 0.7	0.6	0.06	
Hose clamp/Air cleaner/Carburator	M5 x 0.8	0.8	0.08	
Battery (+)/(-)	M6 x 1.0	2.5	0.25	

NOTE:

1. First tighten the ring nut approximately 38 Nm (3.8 mkg) by using the torque wrench, then loosen the ring nut one turn.
2. Final tighten the ring nut at the torque of 4 Nm (0.4 mkg).



ELECTRICAL

Item	Standard	Limit
Ignition system Ignition timing (B.T.D.C.) Advanced timing (B.T.D.C.) Advancer type	12° / 1,300 r/min 31° / 7,500 r/min Electrical type
Transistorized coil ignition Pickup coil resistance T.C.I. unit model/manufacturer	230 Ω ± 20% L/Y-G/W TNDF09 / NIPPON DENSO	...
Ignition coil Model/manufacturer Primary coil resistance Secondary coil resistance	JO300 / NIPPON DENSO 4 Ω ± 15% 13 kΩ ± 20%
Spark plug cap Material Resistance	Resin 10 kΩ	...
Charging system Type Model/manufacturer Standard output Stator coil resistance	A.C. magneto TLMZ48 / NIPPON DENSO 14.0 V 13.5 A 5,000 r/min 0.65 Ω ± 20% W-W
Rectifier/regulator Regulator type Model/manufacturer No load regulated voltage Rectifier capacity Withstand voltage	Semi conductor-short circuit SH629A-12/SHINDENGEN 14.5 ± 0.4 V 25 A 240 V
Battery Specific gravity	1.320	...
Electric starting system System type Starter motor: Model/manufacturer Power output Armature coil resistance Brush overall length Brush spring force Commutator diameter Mica undercut (depth) Starter relay: Model/manufacturer Amperage Coil resistance	Constant mesh SM-13/MITSUBA 0.80 kW 0.03 - 0.04 Ω 10.0 mm 8.82 N (899 gf) 28.0 mm 0.70 mm MS5F-721 / JIDECO 180 A 4,4 Ω ± 5% 5 mm ... 27 mm

MAINTENANCE SPECIFICATIONS

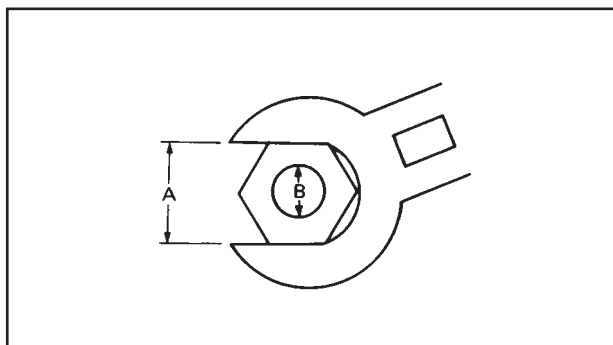
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Item	Standard	Limit
Horn Horn type Quantity Manufacturer Max. amperage	Plane 1 pcs LEONELLI 1.5 A	 ...
Flasher relay Type Model/manufacturer Self cancelling device Flasher frequency Wattage	Semi-transistor FB222M/NIPPONDENSO No 75 - 95 cycle/min 10 W × 2 + 3.4 W	
Daylight switch relay Model/manufacturer	ACA12151-1-MATSUSHITA DENKOU	
Circuit breaker Type Amperage for fuse Reserve	Fuse 20 A 20 A	



GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until the specified torque is reached. Unless otherwise specified, torque specifications require clean, dry threads. Components should be at room temperature.



A: Distance between flats
B: Outside thread diameter

A (nut)	B (Bolt)	General torque specifications	
		N·m	m·kg
10 mm	6 mm	6	0.6
12 mm	8 mm	15	1.5
14 mm	10 mm	30	3.0
17 mm	12 mm	55	5.5
19 mm	14 mm	85	8.5
22 mm	16 mm	130	13.0

CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS. Use this table to convert METRIC unit data to IMPERIAL unit data.

Ex.

METRIC	MULTIPLIER	IMP
** mm	× 0.03937	= ** in
2 mm	× 0.03937	= 0.08 in

CONVERSION TABLE

METRIC TO IMP			
	Known	Multiplier	Result
Torque	m·kg	7.233	ft·lb
	m·kg	86.794	in·lb
	cm·kg	0.0723	ft·lb
	cm·kg	0.8679	in·lb
Weight	kg	2.205	lb
	g	0.03527	oz
Distance	km/hr	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
Volume/ Capacity	cc (cm ³)	0.03527	oz (IMP liq.)
	cc (cm ³)	0.06102	cu·in
	lt (liter)	0.8799	qt (IMP liq.)
	lt (liter)	0.2199	gal (IMP liq.)
Miscel- laneous	kg/mm	55.997	lb/in
	kg/cm ²	14.2234	psi (lb/in ²)
	Centigrade	9/5 (°C) + 32	Fahrenheit (°F)



LUBRICATION POINTS AND LUBRICANT TYPES

ENGINE

Lubrication points (part name)	Lubricant type
Oil seal edges (completely)	LS
Bearing retainer	E
Rod pins	E
Rod (big end)	E
Piston and piston rings	E
Hub (weight drive sprocket)	E
Piston pin	E
Valve stem and guide	M
Oil seal (valve stem end)	M
Rocker shaft and rocker arm	E
Cam and bearing (camshaft)	E
Rotor and rotor housing (oil pump)	E
Push rod (clutch)	LS
Primary driven gear and main shaft	E
Sliding gear (transmission)	M
Idle gear (transmission)	M
Shift forks and bar	E
Shift cam and bearing (gearshift cam)	E
Shift shaft	E
Rod housing coupled surfaces	Bonding agent (rapid seal adhesive) [®] Yamaha bond No. 1215 [®]
Coupled surfaces (cylinder head and cylinder head cover)	Bonding agent (rapid seal adhesive) [®] Yamaha bond No. 1215 [®]



CHASSIS

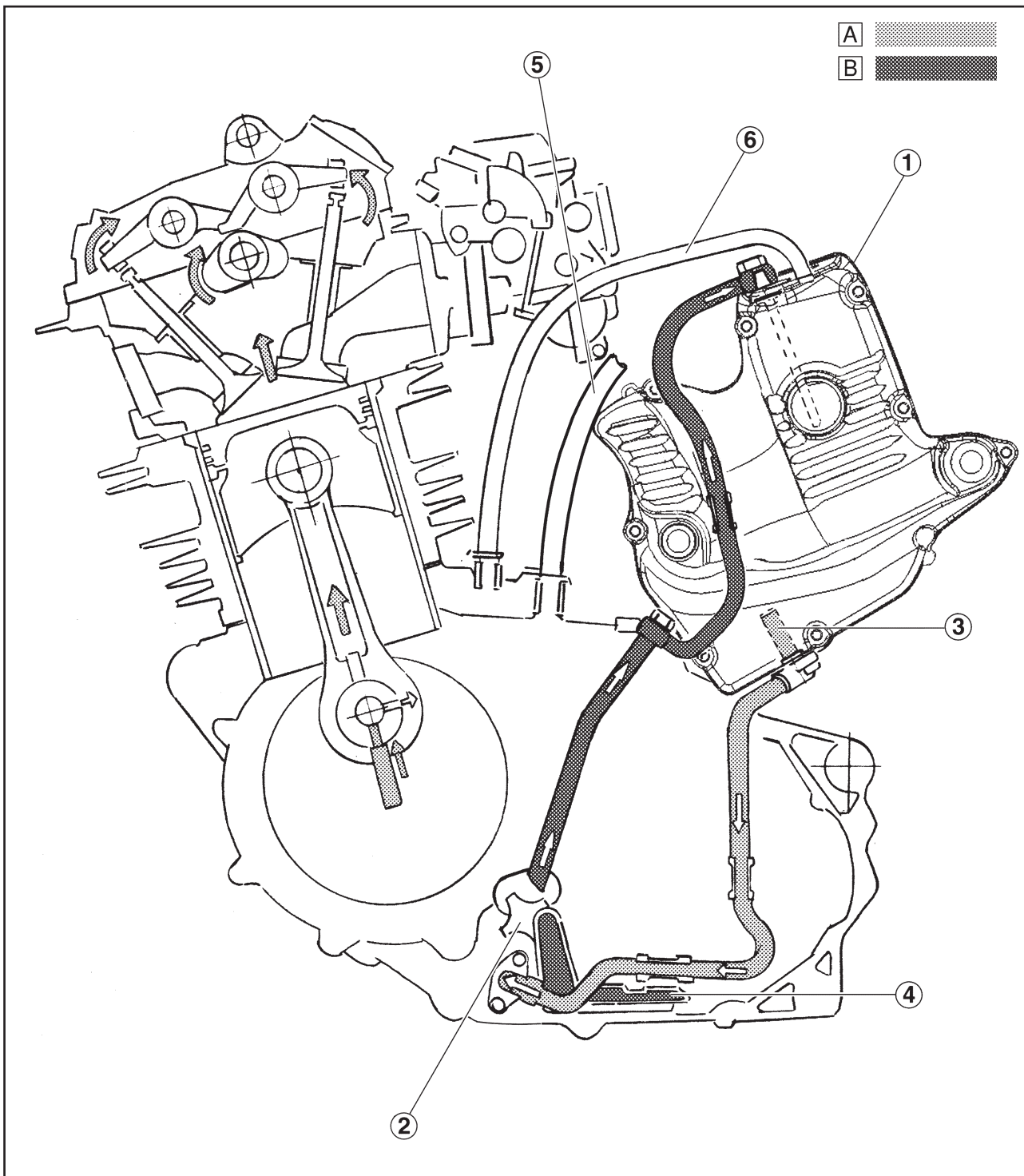
Lubrication points (part name)	Lubricant type
Gear unit (tachometer)	
Oil seal edges (completely)	
Wheel axle (front and rear wheels)	
Rear wheel hub and clutch	
Bearings brasses (rear arm) and bearing push cover	
Front footrest	
Pivot points (brake pedal and shift pedal)	
Bearings (steering head)	
Pivot points (brake lever and clutch lever)	
Clutch cable end	
Pivot points (sidestand)	
Grease nipples (rear arm-front axle)	



LUBRICATION LAYOUT

- (1) Oil tank
- (2) Oil pump
- (3) Oil filter (oil tank)
- (4) Oil strainer (engine)
- (5) Oil vapour retrieval hose
- (6) Oil blow-by retrieval hose

- [A] DELIVERY
[B] RETRIEVAL





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