



YAMAHA

XG250

SERVICE MANUAL

TABLE OF CONTENTS

GENERAL INFORMATION

1

SPECIFICATIONS

2

**PERIODIC CHECKS AND
ADJUSTMENTS**

3

CHASSIS

4

ENGINE

5

FUEL SYSTEM

6

ELECTRICAL SYSTEM

7

TROUBLESHOOTING

8

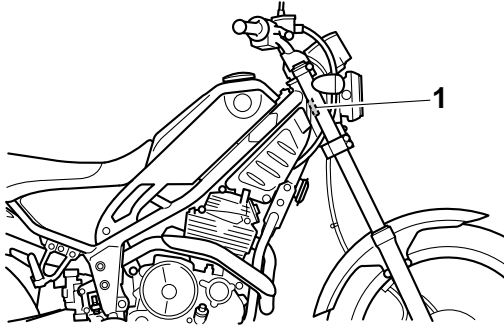
GENERAL INFORMATION

IDENTIFICATION	1-1
VEHICLE IDENTIFICATION NUMBER.....	1-1
MODEL LABEL	1-1
ENGINE SERIAL NUMBER	1-1
IMPORTANT INFORMATION	1-2
PREPARATION FOR REMOVAL AND DISASSEMBLY	1-2
REPLACEMENT PARTS	1-2
GASKETS, OIL SEALS AND O-RINGS	1-2
LOCK WASHERS/PLATES AND COTTER PINS.....	1-2
BEARINGS AND OIL SEALS.....	1-2
CIRCLIPS.....	1-3
CHECKING THE CONNECTIONS	1-4
SPECIAL TOOLS	1-5

IDENTIFICATION

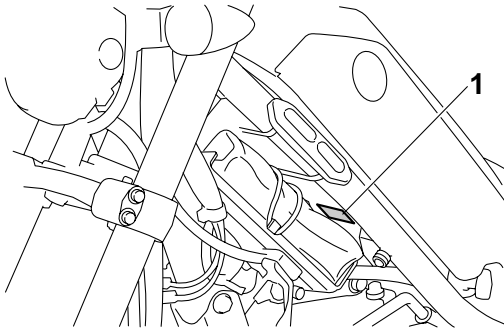
VEHICLE IDENTIFICATION NUMBER

The vehicle identification number “1” is stamped into the right side of the steering head pipe.



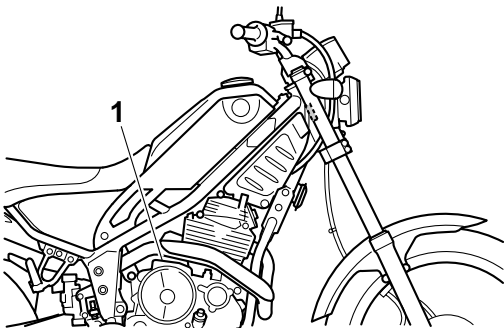
MODEL LABEL

The model label “1” is affixed to the frame. This information will be needed to order spare parts.



ENGINE SERIAL NUMBER

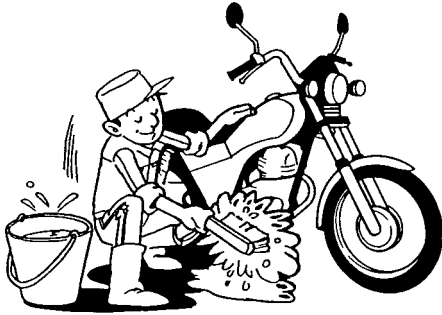
The engine serial number “1” is stamped into the elevated part of the right rear section of the engine.



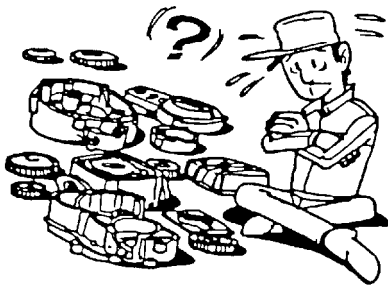
IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY

1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.



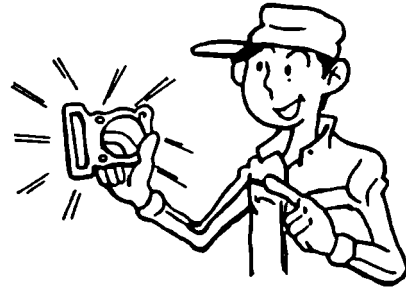
2. Use only the proper tools and cleaning equipment. Refer to "SPECIAL TOOLS" on page 1-5.
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been "mated" through normal wear. Mated parts must always be reused or replaced as an assembly.



4. During disassembly, clean all of the 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.

REPLACEMENT PARTS

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.

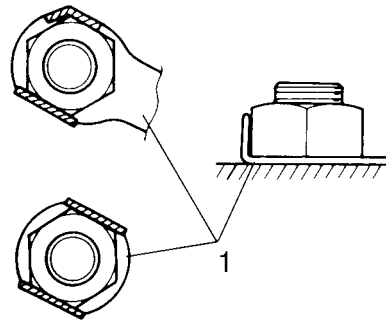


GASKETS, OIL SEALS AND O-RINGS

1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.

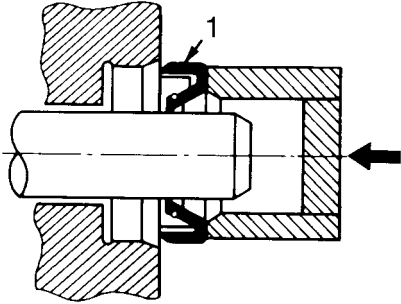
LOCK WASHERS/PLATES AND COTTER PINS

After removal, replace all lock washers/plates "1" and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.



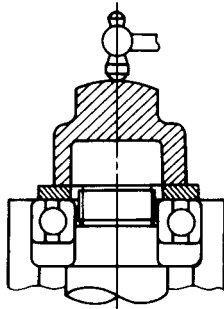
BEARINGS AND OIL SEALS

Install bearings and oil seals so that the manufacturer's marks or numbers are visible. When installing oil seals "1", lubricate the oil seal lips with a light coat of lithium-soap-based grease. Oil bearings liberally when installing, if appropriate.



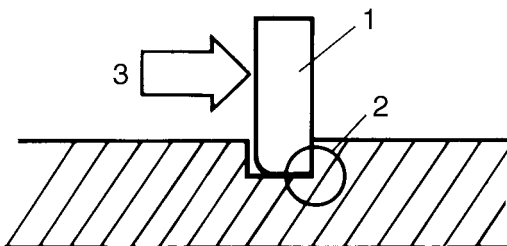
CAUTION:

Do not spin the bearing with compressed air because this will damage the bearing surfaces.



CIRCLIPS

Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip "1", make sure the sharp-edged corner "2" is positioned opposite the thrust "3" that the circlip receives.



CHECKING THE CONNECTIONS

CHECKING THE CONNECTIONS

Check the leads, couplers, and connectors for stains, rust, moisture, etc.

1. Disconnect:

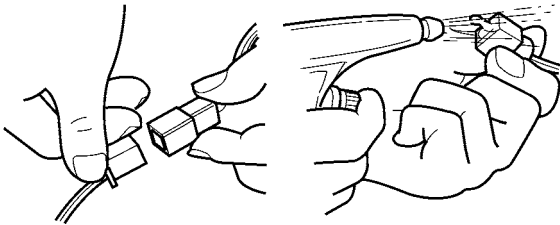
- Lead
- Coupler
- Connector

2. Check:

- Lead
- Coupler
- Connector

Moisture → Dry with an air blower.

Rust/stains → Connect and disconnect several times.

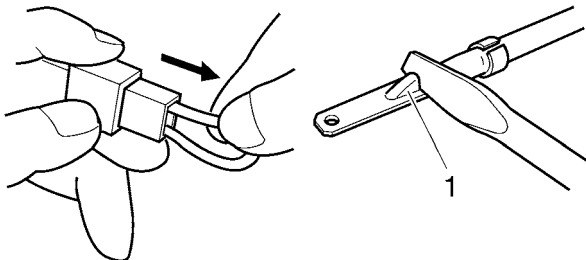


3. Check:

- All connections
- Loose connection → Connect properly.

NOTE:

If the pin "1" on the terminal is flattened, bend it up.



4. Connect:

- Lead
- Coupler
- Connector

NOTE:

Make sure all connections are tight.

5. Check:

- Continuity

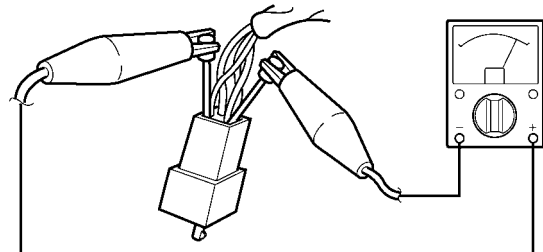
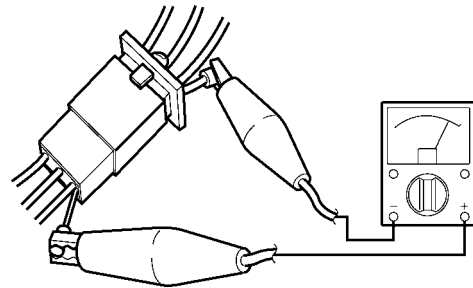
(with the pocket tester)



Pocket tester
90890-03112
Analog pocket tester
YU-03112-C

NOTE:

- If there is no continuity, clean the terminals.
- When checking the wire harness, perform steps (1) to (3).
- As a quick remedy, use a contact revitalizer available at most part stores.

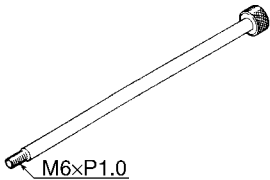
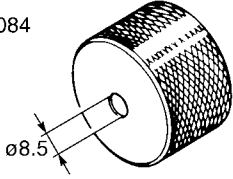
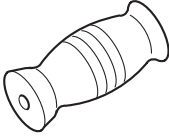
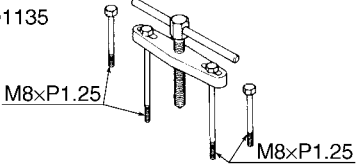
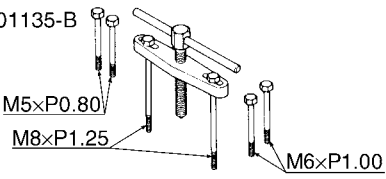
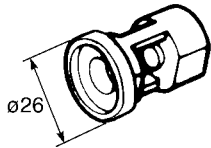


SPECIAL TOOLS

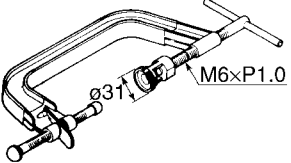
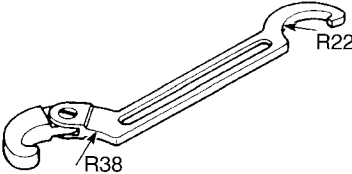
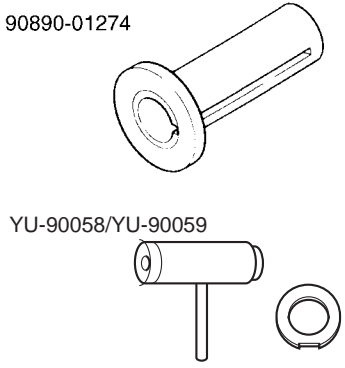
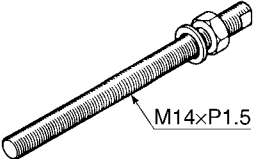
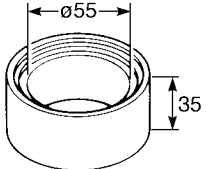
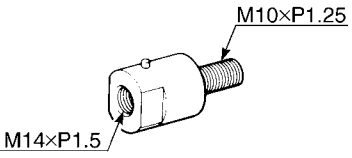
The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country. When placing an order, refer to the list provided below to avoid any mistakes.

NOTE:

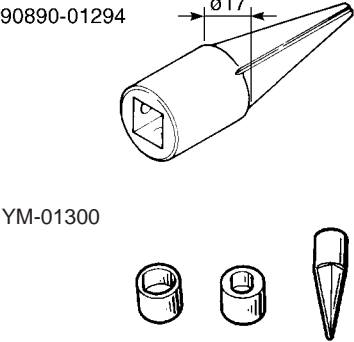
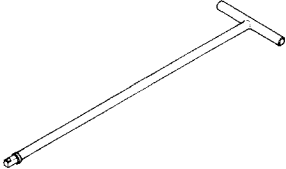
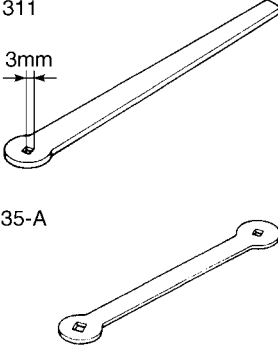
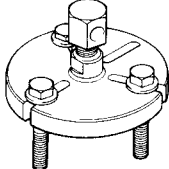
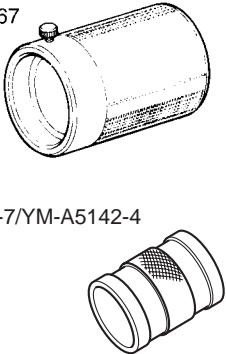
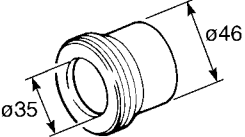
For U.S.A. and Canada, use part number starting with "YM-", "YU-", or "ACC-".
For others, use part number starting with "90890-".

Tool name/Tool No.	Illustration	Reference pages
Slide hammer bolt 90890-01083 Slide hammer bolt 6 mm YU-01083-1		5-13
Weight 90890-01084 YU-01083-3	90890-01084  YU-01083-3 	5-13
Crankcase separating tool 90890-01135 Crankcase separator YU-01135-B	90890-01135  YU-01135-B 	5-59
Valve spring compressor attachment 90890-01243 Valve spring compressor adapter (26 mm) YM-01253-1		5-18, 5-23

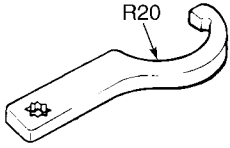
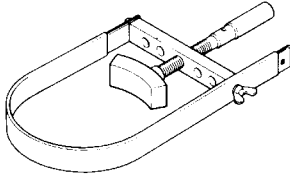
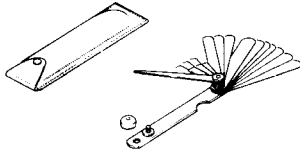
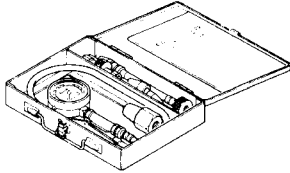
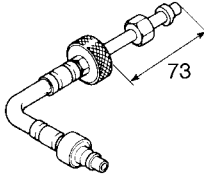
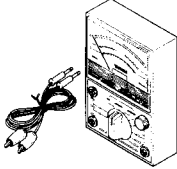
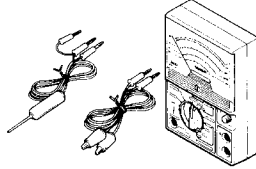
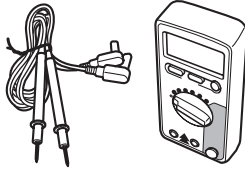
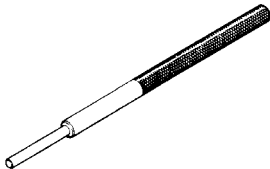
SPECIAL TOOLS

Tool name/Tool No.	Illustration	Reference pages
Valve spring compressor 90890-04019 YM-04019		5-18, 5-23
Ring nut wrench 90890-01268 Spanner wrench YU-01268		4-50
Crankshaft installer pot 90890-01274 Installing pot YU-90058		5-61
Crankshaft installer bolt 90890-01275 Bolt YU-90060		5-61
Spacer 90890-01288		5-61
Adapter (M10) 90890-01383 Adapter #2 YU-90062		5-61

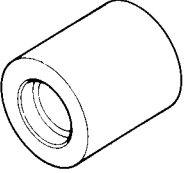
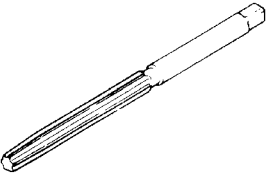
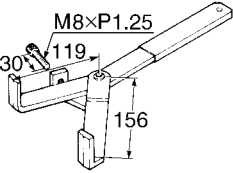
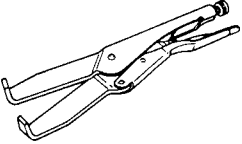
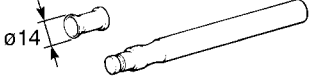
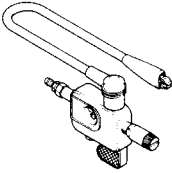

SPECIAL TOOLS

Tool name/Tool No.	Illustration	Reference pages
Damper rod holder 90890-01294 Damping rod holder set YM-01300	 <p>90890-01294 $\phi 17$</p> <p>YM-01300</p>	4-43, 4-45
T-handle 90890-01326 T-handle 3/8" drive 60 cm long YM-01326		4-43, 4-45
Tappet adjusting tool 90890-01311 Valve adjuster 3 mm & 4 mm YM-08035-A	 <p>90890-01311 3mm</p> <p>YM-08035-A</p>	3-4
Flywheel puller 90890-01362 Heavy duty puller YU-33270-B		5-51
Fork seal driver weight 90890-01367 Replacement hammer YM-A9409-7	 <p>90890-01367</p> <p>YM-A9409-7/YM-A5142-4</p>	4-45, 4-46
Fork seal driver attachment ($\phi 35$) 90890-01369 Replacement 35 mm YM-A9409-5	 <p>$\phi 35$ $\phi 46$</p>	4-45, 4-46

SPECIAL TOOLS

Tool name/Tool No.	Illustration	Reference pages
Steering nut wrench 90890-01403 Spanner wrench YU-33975		3-20
Sheave holder 90890-01701 Primary clutch holder YS-01880-A		5-51, 5-52
Thickness gauge 90890-03079 Narrow gauge set YM-34483		3-4
Compression gauge 90890-03081 Engine compression tester YU-33223		3-9
Extension 90890-04082		3-9
Pocket tester 90890-03112 Analog pocket tester YU-03112-C		1-4, 7-35, 7-36, 7-37, 7-41, 7-42, 7-43, 7-44, 7-45, 7-47
Pocket tester 90890-03132		3-4
Digital circuit tester 90890-03174 Model 88 Multimeter with tachometer YU-A1927		5-47
Valve guide remover (ø6) 90890-04064 Valve guide remover (6.0 mm) YM-04064-A		5-20

SPECIAL TOOLS

Tool name/Tool No.	Illustration	Reference pages
Valve guide installer (ø6) 90890-04065 Valve guide installer (6.0 mm) YM-04065-A		5-20
Valve guide reamer (ø6) 90890-04066 Valve guide reamer (6.0 mm) YM-04066		5-20
Universal clutch holder 90890-04086 YM-91042	 	5-33, 5-35
Valve lapper 90890-04101 Valve lapping tool YM-A8998		5-21
Ignition checker 90890-06754 Opama pet-4000 spark checker YM-34487		7-44
Digital tachometer 90890-06760		3-4

SPECIFICATIONS

GENERAL SPECIFICATIONS	2-1
ENGINE SPECIFICATIONS	2-2
CHASSIS SPECIFICATIONS	2-9
ELECTRICAL SPECIFICATIONS	2-12
TIGHTENING TORQUES	2-14
GENERAL TIGHTENING TORQUE SPECIFICATIONS.....	2-14
ENGINE TIGHTENING TORQUES.....	2-14
CHASSIS TIGHTENING TORQUES.....	2-16
LUBRICATION POINTS AND LUBRICANT TYPES	2-19
ENGINE.....	2-19
CHASSIS.....	2-20
LUBRICATION SYSTEM CHART AND DIAGRAMS	2-21
ENGINE OIL LUBRICATION CHART	2-21
LUBRICATION DIAGRAMS	2-23
CABLE ROUTING	2-25

GENERAL SPECIFICATIONS

GENERAL SPECIFICATIONS

Model

Model	4D61 4D62
-------	--------------

Dimensions

Overall length	2010 mm (79.1 in)
Overall width	800 mm (31.5 in)
Overall height	1145 mm (45.1 in)
Seat height	790 mm (31.1 in)
Wheelbase	1330 mm (52.4 in)
Ground clearance	280 mm (11.02 in)
Minimum turning radius	1900 mm (74.8 in)

Weight

With oil and fuel	120.0 kg (265 lb)
Maximum load	180 kg (397 lb)

ENGINE SPECIFICATIONS

ENGINE SPECIFICATIONS

Engine

Engine type	Air cooled 4-stroke, SOHC
Displacement	249.0 cm ³ (15.19 cu.in)
Cylinder arrangement	Forward-inclined single cylinder
Bore × stroke	74.0 × 58.0 mm (2.91 × 2.28 in)
Compression ratio	9.50 :1
Standard compression pressure (at sea level)	1200 kPa/300 r/min (170.7 psi/300 r/min) (12.0 kgf/cm ² /300 r/min)
Starting system	Electric starter

Fuel

Recommended fuel	Regular unleaded gasoline only
Fuel tank capacity	6.0 L (1.59 US gal) (1.32 Imp.gal)
Fuel reserve amount	1.9 L (0.50 US gal) (0.42 Imp.gal)

Engine oil

Lubrication system	Wet sump
Type	SAE10W30 or SAE10W40 or SAE15W40 or SAE20W40 or SAE20W50
Recommended engine oil grade	API service SE, SF, SG type or higher
Engine oil quantity	
Total amount	1.40 L (1.48 US qt) (1.23 Imp.qt)
Without oil filter element replacement	1.20 L (1.27 US qt) (1.06 Imp.qt)
With oil filter element replacement	1.30 L (1.37 US qt) (1.14 Imp.qt)
Oil filter type	Wire mesh

Oil pump

Oil pump type	Trochoid
Inner-rotor-to-outer-rotor-tip clearance	0.150 mm (0.0059 in)
Limit	0.20 mm (0.0079 in)
Outer-rotor-to-oil-pump-housing clearance	0.010–0.034 mm (0.0004–0.0013 in)
Limit	0.050 mm (0.0020 in)
Oil-pump-housing-to-inner-and-outer-rotor clearance	0.04–0.09 mm (0.0016–0.0035 in)
Limit	0.15 mm (0.0059 in)
Pressure check location	HEAD CYLINDER

Spark plug (s)

Manufacturer/model	NGK/DR7EA
Spark plug gap	0.6–0.7 mm (0.024–0.028 in)

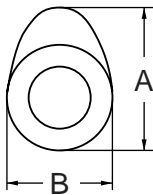
Cylinder head

Volume	20.50–21.50 cm ³ (1.25–1.31 cu.in)
Warpage limit	0.03 mm (0.0012 in)

ENGINE SPECIFICATIONS

Camshaft

Drive system	Chain drive (right)
Camshaft journal diameter	24.960–24.980 mm (0.9827–0.9835 in)
Camshaft lobe dimensions	
Intake A	36.520–36.620 mm (1.4378–1.4417 in)
Limit	36.460 mm (1.4354 in)
Intake B	30.201–30.301 mm (1.1890–1.1930 in)
Limit	30.151 mm (1.1870 in)
Exhaust A	36.564–36.664 mm (1.4395–1.4435 in)
Limit	36.514 mm (1.4376 in)
Exhaust B	30.216–30.316 mm (1.1896–1.1935 in)
Limit	30.166 mm (1.1876 in)
Camshaft runout limit	0.030 mm (0.0012 in)



Timing chain

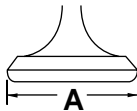
Model/number of links	DID SCR-0404 SDH/104
Tensioning system	Automatic

Rocker arm/rocker arm shaft

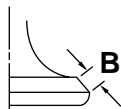
Rocker arm inside diameter	12.000–12.018 mm (0.4724–0.4731 in)
Limit	12.036 mm (0.4739 in)
Rocker arm shaft outside diameter	11.981–11.991 mm (0.4717–0.4721 in)
Limit	11.950 mm (0.4705 in)
Rocker-arm-to-rocker-arm-shaft clearance	0.009–0.037 mm (0.0004–0.0015 in)

Valve, valve seat, valve guide

Valve clearance (cold)	
Intake	0.05–0.10 mm (0.0020–0.0039 in)
Exhaust	0.10–0.15 mm (0.0039–0.0059 in)
Valve dimensions	
Valve head diameter A (intake)	33.90–34.10 mm (1.3346–1.3425 in)
Valve head diameter A (exhaust)	28.40–28.60 mm (1.1181–1.1260 in)

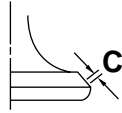


Valve face width B (intake)	2.260 mm (0.0890 in)
Valve face width B (exhaust)	2.260 mm (0.0890 in)

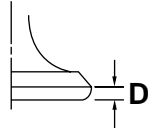


ENGINE SPECIFICATIONS

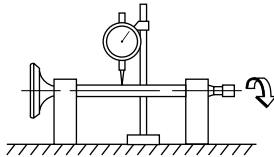
Valve seat width C (intake)	0.90–1.10 mm (0.0354–0.0433 in)
Valve seat width C (exhaust)	0.90–1.10 mm (0.0354–0.0433 in)



Valve margin thickness D (intake)	0.80–1.20 mm (0.0315–0.0472 in)
Valve margin thickness D (exhaust)	0.80–1.20 mm (0.0315–0.0472 in)



Valve stem diameter (intake)	5.975–5.990 mm (0.2352–0.2358 in)
Limit	5.950 mm (0.2343 in)
Valve stem diameter (exhaust)	5.960–5.975 mm (0.2346–0.2352 in)
Limit	5.935 mm (0.2337 in)
Valve guide inside diameter (intake)	6.000–6.012 mm (0.2362–0.2367 in)
Limit	6.042 mm (0.2379 in)
Valve guide inside diameter (exhaust)	6.000–6.012 mm (0.2362–0.2367 in)
Limit	6.042 mm (0.2379 in)
Valve-stem-to-valve-guide clearance (intake)	0.010–0.037 mm (0.0004–0.0015 in)
Limit	0.080 mm (0.0032 in)
Valve-stem-to-valve-guide clearance (exhaust)	0.025–0.052 mm (0.0010–0.0020 in)
Limit	0.100 mm (0.0039 in)
Valve stem runout	0.030 mm (0.0012 in)



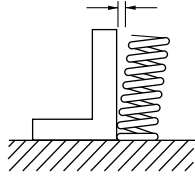
Cylinder head valve seat width (intake)	0.90–1.10 mm (0.0354–0.0433 in)
Limit	1.7 mm (0.07 in)
Cylinder head valve seat width (exhaust)	0.90–1.10 mm (0.0354–0.0433 in)
Limit	1.7 mm (0.07 in)

Valve spring

Inner spring	
Free length (intake)	36.17 mm (1.42 in)
Limit	34.47 mm (1.36 in)
Free length (exhaust)	36.17 mm (1.42 in)
Limit	34.47 mm (1.36 in)
Installed length (intake)	30.50 mm (1.20 in)
Installed length (exhaust)	30.50 mm (1.20 in)
Spring rate K1 (intake)	14.70 N/mm (83.94 lb/in) (1.50 kgf/mm)
Spring rate K2 (intake)	19.00 N/mm (108.49 lb/in) (1.94 kgf/mm)
Spring rate K1 (exhaust)	14.70 N/mm (83.94 lb/in) (1.50 kgf/mm)
Spring rate K2 (exhaust)	19.00 N/mm (108.49 lb/in) (1.94 kgf/mm)
Installed compression spring force (intake)	75.00–91.70 N (16.86–20.61 lb) (7.65–9.35 kgf)
Installed compression spring force (exhaust)	75.00–91.70 N (16.86–20.61 lb) (7.65–9.35 kgf)

ENGINE SPECIFICATIONS

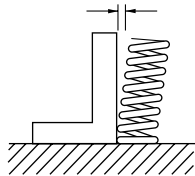
Spring tilt (intake)	2.5 °/1.6 mm
Spring tilt (exhaust)	2.5 °/1.6 mm



Winding direction (intake)	Counter clockwise
Winding direction (exhaust)	Counter clockwise

Outer spring

Free length (intake)	36.63 mm (1.44 in)
Limit	34.63 mm (1.36 in)
Free length (exhaust)	36.63 mm (1.44 in)
Limit	34.63 mm (1.36 in)
Installed length (intake)	32.00 mm (1.26 in)
Installed length (exhaust)	32.00 mm (1.26 in)
Spring rate K1 (intake)	30.90 N/mm (176.44 lb/in) (3.15 kgf/mm)
Spring rate K2 (intake)	40.80 N/mm (232.97 lb/in) (4.16 kgf/mm)
Spring rate K1 (exhaust)	30.90 N/mm (176.44 lb/in) (3.15 kgf/mm)
Spring rate K2 (exhaust)	40.80 N/mm (232.97 lb/in) (4.16 kgf/mm)
Installed compression spring force (intake)	128.50–157.90 N (28.89–35.50 lb) (13.10–16.10 kgf)
Installed compression spring force (exhaust)	128.50–157.90 N (28.89–35.50 lb) (13.10–16.10 kgf)
Spring tilt (intake)	2.5 °/1.6 mm
Spring tilt (exhaust)	2.5 °/1.6 mm



Winding direction (intake)	Clockwise
Winding direction (exhaust)	Clockwise

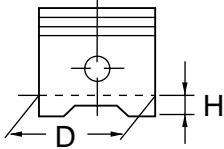
Cylinder

Bore	74.000–74.010 mm (2.9134–2.9138 in)
Wear limit	74.100 mm (2.9173 in)
Taper limit	0.050 mm (0.0020 in)
Out of round limit	0.010 mm (0.0004 in)
Warp limit	0.10 mm (0.0039 in)

ENGINE SPECIFICATIONS

Piston

Piston-to-cylinder clearance	0.025–0.050 mm (0.0010–0.0020 in)
Limit	0.15 mm (0.0059 in)
Diameter D	73.960–73.975 mm (2.9118–2.9124 in)
Height H	11.0 mm (0.43 in)

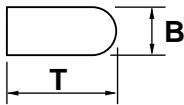


Offset	0.50 mm (0.0197 in)
Offset direction	Intake side
Piston pin bore inside diameter	16.002–16.013 mm (0.6300–0.6304 in)
Limit	16.043 mm (0.6316 in)
Piston pin outside diameter	15.991–16.000 mm (0.6296–0.6299 in)
Limit	15.970 mm (0.6287 in)
Piston-pin-to-piston-pin-bore clearance	0.002–0.022 mm (0.0001–0.0009 in)
Limit	0.073 mm (0.0029 in)

Piston ring

Top ring

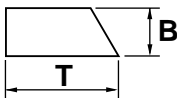
Ring type	Barrel
Dimensions (B × T)	0.90 × 2.75 mm (0.04 × 0.11 in)



End gap (installed)	0.19–0.31 mm (0.0075–0.0122 in)
Limit	0.60 mm (0.0236 in)
Ring side clearance	0.030–0.065 mm (0.0012–0.0026 in)
Limit	0.100 mm (0.0039 in)

2nd ring

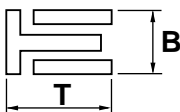
Ring type	Taper
Dimensions (B × T)	0.80 × 2.80 mm (0.03 × 0.11 in)



End gap (installed)	0.30–0.45 mm (0.0118–0.0177 in)
Limit	0.60 mm (0.0236 in)
Ring side clearance	0.020–0.055 mm (0.0008–0.0022 in)
Limit	0.100 mm (0.0039 in)

Oil ring

Dimensions (B × T)	1.50 × 2.60 mm (0.06 × 0.10 in)
--------------------	---------------------------------

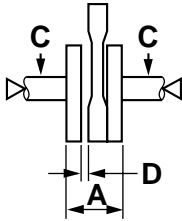


End gap (installed)	0.10–0.35 mm (0.0039–0.0138 in)
---------------------	---------------------------------

ENGINE SPECIFICATIONS

Crankshaft

Width A	69.25–69.30 mm (2.726–2.728 in)
Runout limit C	0.030 mm (0.0012 in)
Big end side clearance D	0.350–0.850 mm (0.0138–0.0335 in)



Balancer

Balancer drive method	Gear
-----------------------	------

Clutch

Clutch type	Wet, multiple-disc
Clutch release method	Inner push, cam push
Clutch lever free play	10.0–15.0 mm (0.39–0.59 in)
Friction plate thickness	2.70–2.90 mm (0.106–0.114 in)
Wear limit	2.60 mm (0.1024 in)
Plate quantity	6 pcs
Clutch plate thickness	1.50–1.70 mm (0.059–0.067 in)
Plate quantity	5 pcs
Warpage limit	0.20 mm (0.0079 in)
Clutch spring free length	40.10 mm (1.58 in)
Minimum length	38.10 mm (1.50 in)
Spring quantity	5 pcs
Clutch housing thrust clearance	0.100–0.350 mm (0.0039–0.0138 in)
Clutch housing radial clearance	0.010–0.044 mm (0.0004–0.0017 in)
Push rod bending limit	0.500 mm (0.0197 in)

Transmission

Transmission type	Constant mesh 5-speed
Primary reduction system	Spur gear
Primary reduction ratio	74/24 (3.083)
Secondary reduction system	Chain drive
Secondary reduction ratio	45/15 (3.000)
Operation	Left foot operation
Gear ratio	
1st	37/13 (2.846)
2nd	29/16 (1.812)
3rd	29/22 (1.318)
4th	29/28 (1.035)
5th	23/28 (0.821)
Main axle runout limit	0.08 mm (0.0032 in)
Drive axle runout limit	0.08 mm (0.0032 in)
Main axle assembly width	102.20–102.40 mm (4.02–4.03 in)

ENGINE SPECIFICATIONS

Shifting mechanism

Shift mechanism type	Shift drum and guide bar
Shift fork thickness	4.76–4.89 mm (0.1874–0.1925 in)

Air filter

Air filter element	Oil-coated paper element
--------------------	--------------------------

Carburetor

Type × quantity	MV33 x 1
Manufacturer	TEIKEI
ID mark	4D61 00
Main jet	#135
Main air jet	1.20
Jet needle	5A12-3
Needle jet	E1
Pilot air jet 1	0.90
Pilot outlet	0.8 x 1.2
Pilot jet	#34
Bypass 1	0.8
Bypass 2	0.8
Bypass 3	0.8
Pilot screw turns out	1-1/4
Valve seat size	1.8
Starter jet 1	0.50
Starter jet 2	#90
Throttle valve size	33
Float height	10.5 mm (0.41 in)

Idling condition

Engine idling speed	1300–1500 r/min
CO%	0.5–1.5 %
Intake vacuum	29.0–37.0 kPa (8.6–10.9 inHg) (218–278 mmHg)
Oil temperature	95.0–105.0 °C (203.00–221.00 °F)
Throttle cable free play	3.0–5.0 mm (0.12–0.20 in)

CHASSIS SPECIFICATIONS

CHASSIS SPECIFICATIONS

Chassis

Frame type	Semi double cradle
Caster angle	25.17 °
Trail	92.0 mm (3.62 in)

Front wheel

Wheel type	Spoke wheel
Rim size	19x1.85
Rim material	Aluminum
Wheel travel	180.0 mm (7.09 in)
Radial wheel runout limit	2.0 mm (0.08 in)
Lateral wheel runout limit	2.0 mm (0.08 in)
Wheel axle bending limit	0.25 mm (0.01 in)

Rear wheel

Wheel type	Spoke wheel
Rim size	16x2.15
Rim material	Aluminum
Wheel travel	172.0 mm (6.77 in)
Radial wheel runout limit	2.0 mm (0.08 in)
Lateral wheel runout limit	2.0 mm (0.08 in)
Wheel axle bending limit	0.25 mm (0.01 in)

Front tire

Type	With tube
Size	80/100-19M/C 49P
Manufacturer/model	BRIDGESTONE/TW201
Wear limit (front)	0.8 mm (0.03 in)

Rear tire

Type	With tube
Size	120/90-16M/C 63P
Manufacturer/model	BRIDGESTONE/TW202
Wear limit (rear)	0.8 mm (0.03 in)

Tire air pressure (measured on cold tires)

Loading condition	0–90 kg (0–198 lb)
Front	125 kPa (18 psi) (1.25 kgf/cm ²) (1.25 bar)
Rear	150 kPa (22 psi) (1.50 kgf/cm ²) (1.50 bar)
Loading condition	90–180 kg (198–397 lb)
Front	150 kPa (22 psi) (1.50 kgf/cm ²) (1.50 bar)
Rear	175 kPa (25 psi) (1.75 kgf/cm ²) (1.75 bar)

Front brake

Type	Single disc brake
Operation	Right hand operation
Front brake lever free play	2.0–5.0 mm (0.08–0.20 in)
Front disc brake	
Disc outside diameter × thickness	220.0 × 3.5 mm (8.66 × 0.14 in)
Brake disc thickness limit	3.0 mm (0.12 in)
Brake disc deflection limit	0.15 mm (0.0059 in)
Brake pad lining thickness (inner)	5.3 mm (0.21 in)
Limit	0.8 mm (0.03 in)
Brake pad lining thickness (outer)	5.3 mm (0.21 in)
Limit	0.8 mm (0.03 in)

CHASSIS SPECIFICATIONS

Master cylinder inside diameter	11.00 mm (0.43 in)
Caliper cylinder inside diameter	26.99 mm (1.06 in)
Caliper cylinder inside diameter	22.22 mm (0.87 in)
Recommended fluid	DOT 4

Rear brake

Type	Single disc brake
Operation	Right foot operation
Brake pedal position	35.0 mm (1.38 in)
Rear disc brake	
Disc outside diameter × thickness	203.0 × 4.5 mm (7.99 × 0.18 in)
Brake disc thickness limit	4.0 mm (0.16 in)
Brake disc deflection limit	0.15 mm (0.0059 in)
Brake pad lining thickness (inner)	5.2 mm (0.20 in)
Limit	1.0 mm (0.04 in)
Brake pad lining thickness (outer)	5.2 mm (0.20 in)
Limit	1.0 mm (0.04 in)
Master cylinder inside diameter	12.7 mm (0.50 in)
Caliper cylinder inside diameter	30.23 mm (1.19 in)
Recommended fluid	DOT 4

Steering

Steering bearing type	Taper roller bearing
Lock to lock angle (left)	48.0 °
Lock to lock angle (right)	48.0 °

Front suspension

Type	Telescopic fork
Spring/shock absorber type	Coil spring/oil damper
Front fork travel	180.0 mm (7.09 in)
Fork spring free length	478.0 mm (18.82 in)
Limit	468.4 mm (18.44 in)
Spring rate K1	3.80 N/mm (21.70 lb/in) (0.39 kgf/mm)
Spring rate K2	4.60 N/mm (26.27 lb/in) (0.47 kgf/mm)
Spring stroke K1	0.0–114.0 mm (0.00–4.49 in)
Spring stroke K2	114.0–180.0 mm (4.49–7.09 in)
Optional spring available	No
Recommended oil	Fork oil 15W or equivalent
Quantity	292.0 cm ³ (9.87 US oz) (10.30 Imp.oz)
Level	125.0 mm (4.92 in)

Rear suspension

Type	Swingarm (link suspension)
Spring/shock absorber type	Coil spring/gas-oil damper
Rear shock absorber assembly travel	66.0 mm (2.60 in)
Spring free length	198.5 mm (7.81 in)
Installed length	182.5 mm (7.19 in)
Spring rate K1	66.70 N/mm (380.86 lb/in) (6.80 kgf/mm)
Optional spring available	No
Enclosed gas/air pressure (STD)	1500 kPa (213.3 psi) (15.0 kgf/cm ²)

Swingarm

Swingarm end free play limit (radial)	1.0 mm (0.04 in)
Swingarm end free play limit (axial)	1.0 mm (0.04 in)

CHASSIS SPECIFICATIONS

Drive chain

Type/manufacturer	428V/DAIDO
Link quantity	124
Drive chain slack	40.0–45.0 mm (1.57–1.77 in)
15-link length limit	191.5 mm (7.54 in)

ELECTRICAL SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

Voltage

System voltage	12 V
----------------	------

Ignition system

Ignition system	CDI
Advancer type	Digital
Ignition timing (B.T.D.C.)	10.0 °/1400 r/min

CDI

Magneto model/manufacture	F5XT/YAMAHA
Pickup coil resistance	248.0–372.0 Ω
CDI unit model/manufacture	5XT/YAMAHA

Ignition coil

Model/manufacture	2JN/YAMAHA
Minimum ignition spark gap	6.0 mm (0.24 in)
Primary coil resistance	0.18–0.28 Ω
Secondary coil resistance	6.30–9.50 kΩ

Spark plug cap

Material	Resin
Resistance	10.0 kΩ

AC magneto

Model/manufacture	F5XT/YAMAHA
Standard output	14.0 V/190 W/5000 r/min
Stator coil resistance	0.56–0.84 Ω

Rectifier/regulator

Regulator type	Semi conductor-short circuit
Model/manufacture	SH629A-12/SHINDENGEN
No load regulated voltage	14.1–14.9 V
Rectifier capacity	10.0 A
Withstand voltage	200.0 V

Battery

Model	YTZ7S
Voltage, capacity	12 V, 6.0 Ah
Specific gravity	1.310
Manufacturer	YUASA
Ten hour rate amperage	0.60 A

Headlight

Bulb type	Halogen bulb
-----------	--------------

Bulb voltage, wattage × quantity

Headlight	12 V, 60 W/55.0 W × 1
Auxiliary light	12 V, 5.0 W × 1
Tail/brake light	12 V, 5.0 W/21.0 W × 1
Front turn signal light	12 V, 10.0 W × 2
Rear turn signal light	12 V, 10.0 W × 2
Meter lighting	14 V, 3.0 W × 1

Indicator light

Neutral indicator light	12 V, 1.7 W × 1
-------------------------	-----------------

ELECTRICAL SPECIFICATIONS

Turn signal indicator light	12 V, 1.7 W × 1
High beam indicator light	12 V, 1.7 W × 1

Electric starting system	
System type	Constant mesh

Starter motor	
Model/manufacture	3C5/YAMAHA
Power output	0.40 kW
Brush overall length	10.0 mm (0.39 in)
Limit	3.50 mm (0.14 in)
Brush spring force	5.52–8.28 N (19.87–29.80 oz) (563–844 gf)
Commutator diameter	22.0 mm (0.87 in)
Limit	21.0 mm (0.83 in)
Mica undercut (depth)	1.50 mm (0.06 in)

Starter relay	
Model/manufacture	2768096-A/JIDECO
Amperage	180.0 A

Horn	
Horn type	Plane
Quantity	1 pcs
Model/manufacture	HF-12/NIKKO
Maximum amperage	3.0 A
Coil resistance	1.01–1.11 Ω
Performance	108–116 dB/2m

Turn signal relay	
Relay type	Full transistor
Model/manufacture	FE218BH/DENSO
Built-in, self-canceling device	No
Turn signal blinking frequency	75.0–95.0 cycles/min
Wattage	10 W × 2.0 +3.4 W

Starting circuit cut-off relay	
Model/manufacture	ACM33211 M04/MATSUSHITA

Carburetor warmer	
Resistance	4.7–9.5 Ω

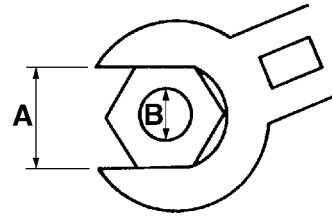
Fuse	
Fuse	20.0 A
Reserve fuse	20.0 A

TIGHTENING TORQUES

TIGHTENING TORQUES

GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening 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 pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening 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 tightening torques		
		Nm	m•kg	ft•lb
10 mm	6 mm	6	0.6	4.3
12 mm	8 mm	15	1.5	11
14 mm	10 mm	30	3.0	22
17 mm	12 mm	55	5.5	40
19 mm	14 mm	85	8.5	61
22 mm	16 mm	130	13.0	94

ENGINE TIGHTENING TORQUES

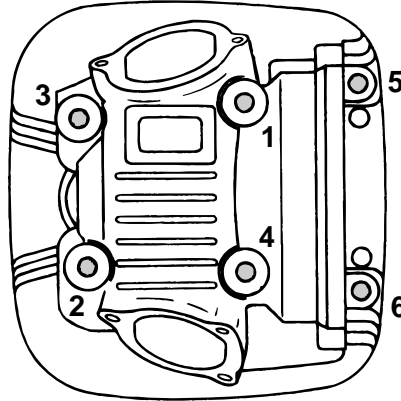
Item	Thread size	Q'ty	Tightening torque	Remarks
Cylinder head (upper)	M8	4	22 Nm (2.2 m•kg, 16 ft•lb)	
Cylinder head	M8	2	20 Nm (2.0 m•kg, 14 ft•lb)	
Camshaft lock plate	M6	2	8 Nm (0.8 m•kg, 5.8 ft•lb)	
Cylinder head side cover (1 and 2)	M55	1/1	18 Nm (1.8 m•kg, 13 ft•lb)	
Cylinder head side cover 3	M6	2	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Cylinder head breather plate	M6	2	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Spark plug	M12	1	18 Nm (1.8 m•kg, 13 ft•lb)	
Cylinder head stud bolt	M8	2	15 Nm (1.5 m•kg, 11 ft•lb)	
Oil gallery bolt	M6	1	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Left crankcase cover	M6	9	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Pickup coil rotor	M10	1	60 Nm (6.0 m•kg, 44 ft•lb)	
Balancer weight gear	M12	1	55 Nm (5.5 m•kg, 40 ft•lb)	
Valve clearance adjusting locknut	M6	2	14 Nm (1.4 m•kg, 10 ft•lb)	
Camshaft sprocket	M10	1	60 Nm (6.0 m•kg, 44 ft•lb)	
Timing chain tensioner cap bolt	M6	1	8 Nm (0.8 m•kg, 5.8 ft•lb)	

TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Timing chain guide (intake side)	M6	1	8 Nm (0.8 m•kg, 5.8 ft•lb)	
Oil filter element cover (under)	M6	3	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Oil delivery pipe	M10	2	20 Nm (2.0 m•kg, 14 ft•lb)	
Oil delivery pipe and cylinder	M8	2	17 Nm (1.7 m•kg, 12 ft•lb)	
Oil pump assembly	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Oil pump assembly (crankcase)	M6	1	6 Nm (0.6 m•kg, 4.3 ft•lb)	
Air filter case	M6	3	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Carburetor joint clamp screw	M4	1	2 Nm (0.2 m•kg, 1.4 ft•lb)	
Air cut-off valve	M6	1	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Exhaust pipe nut	M8	2	18 Nm (1.8 m•kg, 13 ft•lb)	
Muffler joint	M8	1	20 Nm (2.0 m•kg, 14 ft•lb)	
Muffler (front)	M8	1	40 Nm (4.0 m•kg, 29 ft•lb)	
Muffler (rear)	M8	1	42 Nm (4.2 m•kg, 30 ft•lb)	
Left crankcase cover	M6	1	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Right crankcase cover	M6	14	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Crankcase	M6	12	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Oil drain bolt	M12	1	20 Nm (2.0 m•kg, 14 ft•lb)	
Ground lead, clutch cable holder	M6	1	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Neutral switch lead clamp	M6	1	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Starter idle gear cover	M6	3	8 Nm (0.8 m•kg, 5.8 ft•lb)	
Starter clutch	M8	3	30 Nm (3.0 m•kg, 22 ft•lb)	
Primary drive gear nut	M16	1	80 Nm (8.0 m•kg, 58 ft•lb)	
Clutch boss nut	M16	1	75 Nm (7.5 m•kg, 54 ft•lb)	
Clutch spring	M6	5	8 Nm (0.8 m•kg, 5.8 ft•lb)	
Push lever adjusting screw locknut	M6	1	8 Nm (0.8 m•kg, 5.8 ft•lb)	
Push lever shaft	M8	1	12 Nm (1.2 m•kg, 8.6 ft•lb)	
Drive sprocket nut	M18	1	110 Nm (11.0 m•kg, 80 ft•lb)	
Stopper lever	M6	1	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Neutral switch	M10	1	20 Nm (2.0 m•kg, 14 ft•lb)	
Starter motor	M6	2	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Stator coil	M6	3	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Pickup coil	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	

TIGHTENING TORQUES



Cylinder head tightening sequence:



CHASSIS TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Engine stay and frame	M8	4	30 Nm (3.0 m•kg, 22 ft•lb)	
Engine stay and engine	M10	2	72 Nm (7.2 m•kg, 52 ft•lb)	
Engine and frame (rear upper)	M10	1	72 Nm (7.2 m•kg, 52 ft•lb)	
Engine and frame (rear under)	M10	1	72 Nm (7.2 m•kg, 52 ft•lb)	
Down tube and frame (front upper)	M10	2	72 Nm (7.2 m•kg, 52 ft•lb)	
Down tube and frame (rear under)	M10	1	72 Nm (7.2 m•kg, 52 ft•lb)	
Down tube and engine	M10	2	72 Nm (7.2 m•kg, 52 ft•lb)	
Chain tensioner	M8	2	23 Nm (2.3 m•kg, 17 ft•lb)	
Helmet holder	M6	1	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Grab bar	M8	4	32 Nm (3.2 m•kg, 23 ft•lb)	
Seat	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Flap guard	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Horn	M6	1	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Tool box	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Battery box	M6	3	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Rectifier/regulator	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Ignition coil	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Rear shock absorber and frame	M12	1	50 Nm (5.0 m•kg, 36 ft•lb)	

TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Rear shock absorber and relay arm	M10	1	40 Nm (4.0 m•kg, 29 ft•lb)	
Relay arm and frame	M12	1	50 Nm (5.0 m•kg, 36 ft•lb)	
Relay arm and connecting rod	M12	1	59 Nm (5.9 m•kg, 43 ft•lb)	
Connecting rod and swingarm	M12	1	59 Nm (5.9 m•kg, 43 ft•lb)	
Chain case and swingarm	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Pivot shaft	M12	1	53 Nm (5.3 m•kg, 38 ft•lb)	
Steering shaft and ring nut	M22	1	4 Nm (0.4 m•kg, 2.9 ft•lb)	See NOTE.
Steering shaft and handle	M22	1	110 Nm (11.0 m•kg, 80 ft•lb)	
Fuel tank and frame (front)	M6	1	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Fuel tank and frame (rear)	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Fuel tank and fuel cock	M6	1	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Handlebar upper holder	M8	4	23 Nm (2.3 m•kg, 17 ft•lb)	
Sidestand and nut	M10	1	44 Nm (4.4 m•kg, 32 ft•lb)	
Sidestand switch	M5	2	4 Nm (0.4 m•kg, 2.9 ft•lb)	
Rear master cylinder	M6	2	13 Nm (1.3 m•kg, 9.4 ft•lb)	
Rear footrest bracket	M8	4	23 Nm (2.3 m•kg, 17 ft•lb)	
Rear footrest bolt	M8	2	23 Nm (2.3 m•kg, 17 ft•lb)	
Front footrest cover bolt	M6	2	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Brake pedal	M10	1	30 Nm (3.0 m•kg, 22 ft•lb)	
Rear brake caliper cover	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Chain support	M6	2	7 Nm (0.7 m•kg, 5.1 ft•lb)	
Seal guard	M5	3	5 Nm (0.5 m•kg, 3.6 ft•lb)	
Front fork cap bolt	M30	1	23 Nm (2.3 m•kg, 17 ft•lb)	
Steering shaft pinch bolt	M8	4	23 Nm (2.3 m•kg, 17 ft•lb)	
Front wheel axle and nut	M14	1	85 Nm (8.5 m•kg, 61 ft•lb)	
Spoke (front)	BC3.5	—	3 Nm (0.3 m•kg, 2.2 ft•lb)	
Spoke (rear)	BC3.2	—	3 Nm (0.3 m•kg, 2.2 ft•lb)	
Front hub and brake disk	M6	6	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Front caliper and front fork leg	M10	2	40 Nm (4.0 m•kg, 29 ft•lb)	
Rear wheel axle and nut	M14	1	85 Nm (8.5 m•kg, 61 ft•lb)	
Rear hub and brake disk	M8	3	28 Nm (2.8 m•kg, 20 ft•lb)	
Rear wheel sprocket	M8	6	33 Nm (3.3 m•kg, 24 ft•lb)	
Front caliper bleed screw	M7	1	6 Nm (0.6 m•kg, 4.3 ft•lb)	

TIGHTENING TORQUES

Item	Thread size	Q'ty	Tightening torque	Remarks
Rear caliper bleed screw	M8	1	6 Nm (0.6 m•kg, 4.3 ft•lb)	
Rear caliper and joint	M10	1	26 Nm (2.6 m•kg, 19 ft•lb)	
Joint and brake hose	M10	1	14 Nm (1.4 m•kg, 10 ft•lb)	
Union bolt	M10	4	30 Nm (3.0 m•kg, 22 ft•lb)	
Shift pedal	M8	1	30 Nm (3.0 m•kg, 22 ft•lb)	
Shift rod and nut	M6	2	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Shift arm and engine	M6	1	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Handle crown and inner tube	M8	2	23 Nm (2.3 m•kg, 17 ft•lb)	
Headlight	M6	2	9 Nm (0.9 m•kg, 6.5 ft•lb)	
Front fork leg cable guide	M5	1	0.7 Nm (0.07 m•kg, 0.5 ft•lb)	
Front brake hose and meter cable	M4	1	0.5 Nm (0.05 m•kg, 0.4 ft•lb)	
Grab bar	M6	4	10 Nm (1.0 m•kg, 7.2 ft•lb)	
Battery leads	—	2	2 Nm (0.2 m•kg, 1.5 ft•lb)	
Master cylinder cap (front and rear)	—	4	2 Nm (0.2 m•kg, 1.5 ft•lb)	
Throttle cable and carburetor	M6	2	4 Nm (0.4 m•kg, 2.9 ft•lb)	
Brake lever adjusting bolt and lock nut	M6	1	4 Nm (0.4 m•kg, 2.9 ft•lb)	
Starter cable	—	1	4 Nm (0.4 m•kg, 2.9 ft•lb)	
Steering shaft and cable guide	M6	1	10 Nm (1.0 m•kg, 7.2 ft•lb)	

NOTE:

- First, tighten the lower ring nut to approximately 38 Nm (3.8 m•kg, 28 ft•lb) with a torque wrench, then loosen the lower ring nut completely.
Retighten the lower ring nut to 4 Nm (0.4 m•kg, 2.9 ft•lb) with a torque wrench.



Download the full PDF manual instantly.

Our customer service e-mail:

aservicemanualpdf@yahoo.com