

YFM700RV

SERVICE MANUAL

LIT-11616-19-13 1S3-28197-10

EBS00008

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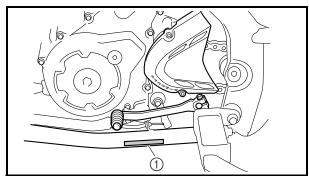
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VEHICLE IDENTIFICATION

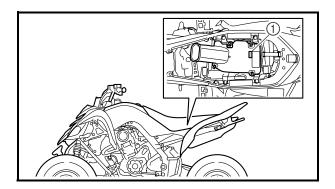




GENERAL INFORMATION VEHICLE IDENTIFICATION

VEHICLE IDENTIFICATION NUMBER

The vehicle identification number (1) is stamped into the left side of the frame.



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MODEL LABEL

The model label (1) is affixed to the air filter case cover. This information will be needed to order spare parts.

FEATURES



FEATURES

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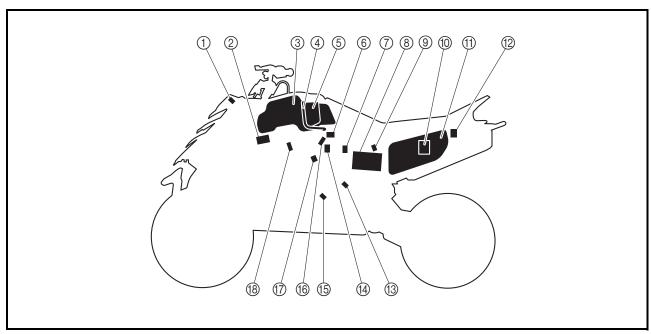
OUTLINE OF THE FI SYSTEM

The main function of a fuel supply system is to provide fuel to the combustion chamber at the optimum air-fuel ratio in accordance with the engine operating conditions and the atmospheric temperature. In the conventional carburetor system, the air-fuel ratio of the mixture that is supplied to the combustion chamber is created by the volume of the intake air and the fuel that is metered by the jet used in the respective carburetor.

Despite the same volume of intake air, the fuel volume requirement varies with the engine operating conditions, such as acceleration, deceleration, or operating under a heavy load. Carburetors that meter the fuel through the use of jets have been provided with various auxiliary devices, so that an optimum air-fuel ratio can be achieved to accommodate the constant changes in the operating conditions of the engine.

As the requirements for the engine to deliver more performance and cleaner exhaust gases increase, it becomes necessary to control the air-fuel ratio in a more precise and finely tuned manner. To accommodate this need, this model has adopted an electronically controlled fuel injection (FI) system, in place of the conventional carburetor system. This system can achieve an optimum air-fuel ratio required by the engine at all times by using a microprocessor that regulates the fuel injection volume according to the engine operating conditions detected by various sensors.

The adoption of the FI system has resulted in a highly precise fuel supply, improved engine response, better fuel economy, and reduced exhaust emissions.



- 1 Engine trouble warning light
- (2) Ignition coil
- ③ Fuel tank
- 4) Fuel hose
- ⑤ Fuel pump
- (6) Intake air pressure sensor
- ⑦ Lean angle sensor
- ® Battery
- (9) Intake air temperature sensor

- (1) Air filter case
- Relay unit (fuel pump relay)
- (3) Speed sensor
- (4) Throttle position sensor
- (5) Crankshaft position sensor
- ® Fuel injector
- (7) Coolant temperature sensor
- ® Spark plug

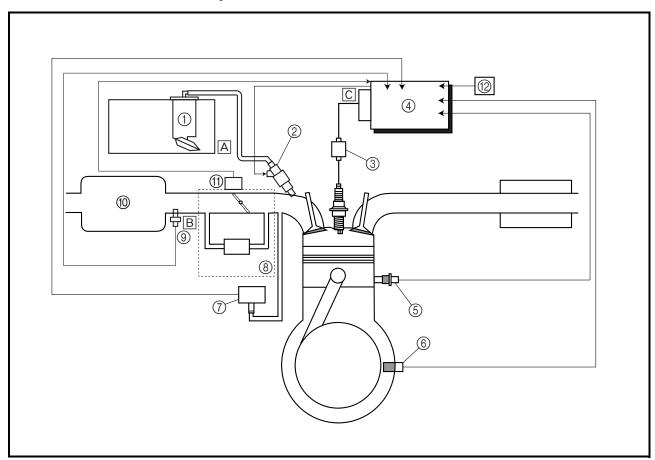


FI SYSTEM

The fuel pump delivers fuel to the fuel injector via the fuel filter. The pressure regulator maintains the fuel pressure that is applied to the fuel injector at only 324 kPa (3.24 kg/cm², 46.1 psi). Accordingly, when the energizing signal from the ECU energizes the fuel injector, the fuel passage opens, causing the fuel to be injected into the intake manifold only during the time the passage remains open. Therefore, the longer the length of time the fuel injector is energized (injection duration), the greater the volume of fuel that is supplied. Conversely, the shorter the length of time the fuel injector is energized (injection duration), the lesser the volume of fuel that is supplied.

The injection duration and the injection timing are controlled by the ECU. Signals that are input from the throttle position sensor, crankshaft position sensor, intake air pressure sensor, intake air temperature sensor, coolant temperature sensor and speed sensor enable the ECU to determine the injection duration. The injection timing is determined through the signals from the crankshaft position sensor. As a result, the volume of fuel that is required by the engine can be supplied at all times in accordance with the driving conditions.

Illustration is for reference only.



- 1) Fuel pump
- ② Fuel injector
- ③ Ignition coil
- 4 ECU (electronic control unit)
- (5) Coolant temperature sensor
- **(6)** Crankshaft position sensor
- (7) Intake air pressure sensor
- ® Throttle body

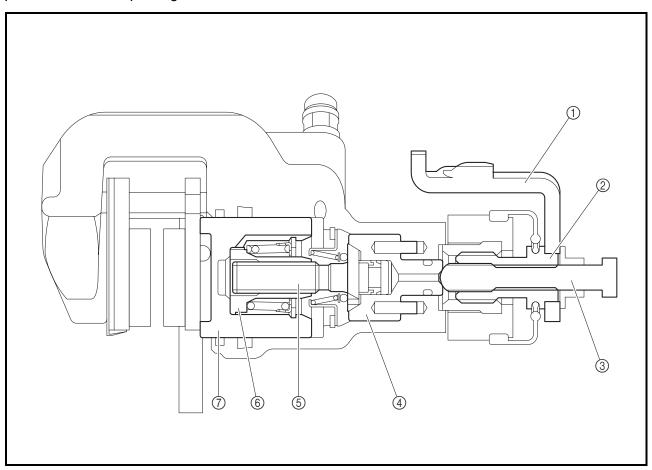
- (9) Intake air temperature sensor
- (10) Air filter case
- (1) Throttle position sensor
- 12) Speed sensor
- A Fuel system
- B Air system
- C Control system



SELF-ADJUSTING PARKING BRAKE MECHANISM

Usually, for vehicles equipped with a parking brake that must be adjusted manually, it is necessary to adjust the adjusting bolt ⑤ to achieve the proper clearance between the brake caliper piston ⑦ and the adjusting bolt ⑤.

This adjustment procedure is unnecessary for vehicles equipped with a self-adjusting parking brake mechanism. The proper clearance is automatically maintained at all times, ensuring stable braking performance when parking the vehicle.

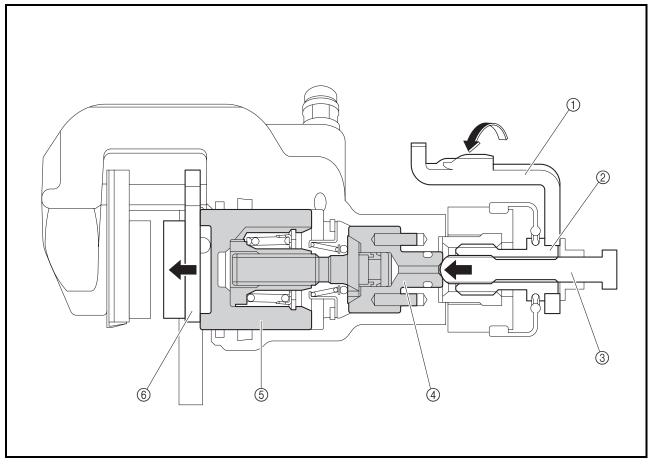


- ① Parking brake arm
- ② Parking brake shaft
- 3 Adjusting bolt
- 4 Adjusting bolt sleeve

- ⑤ Adjusting bolt
- 6 Nut
- (7) Brake caliper piston



Parking Brake Operation



- 1 Parking brake arm
- ② Parking brake shaft
- 3 Adjusting bolt

- 4 Adjusting bolt sleeve
- ⑤ Brake caliper piston
- 6 Brake pad

When the parking brake is operated, the parking brake cable turns the parking brake arm ①. The rotation of the parking brake arm is changed to axial thrust in the parking brake shaft ② and the adjusting bolt ③ is pushed against the adjusting bolt sleeve ④.

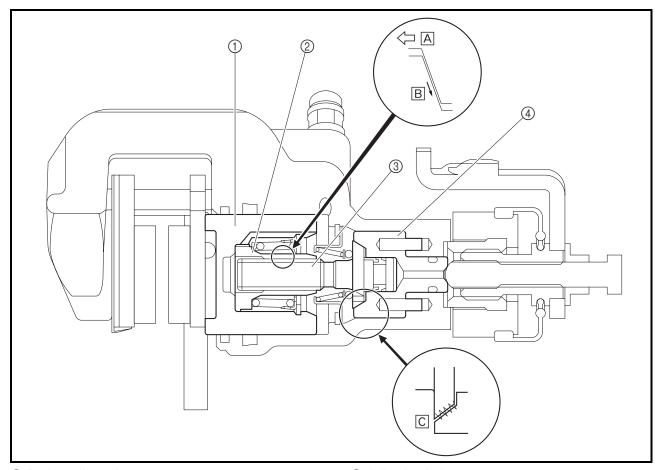
When the adjusting bolt sleeve receives the force, the dark shaded area in the above illustration is pushed and the brake pad (6) is pushed against the brake disc.

When the brake pad wears, the clearance between the brake caliper piston ⑤ and the brake pad becomes larger and the force applied to the brake pad becomes weaker.

If this occurs, the self-adjusting parking brake mechanism adjusts automatically to achieve the proper clearance.



Parking Brake Operation



- 1 Brake caliper piston
- ② Nut

- 3 Adjusting bolt
- 4 Adjusting bolt sleeve

When the brake pedal is operated, the brake fluid pressure in the master cylinder increases and the brake caliper piston ① and the nut ② are pushed.

When there is proper clearance between the brake caliper piston and the brake pad, no other parts move because the movement of the brake caliper piston and the nut is absorbed by the backlash of the threads of the nut and the adjusting bolt ③.

When the movement of the nut is greater than the backlash between the nut and the adjusting bolt, the parking brake adjusts automatically.

The amount of the adjustment varies with brake fluid pressure. Operating the parking brake makes no adjustment.

The adjustment operation is as follows.

- 1. When the brake pedal is operated, the brake fluid pressure increases and the brake caliper piston and the nut move.
- 2. When the movement of the brake caliper piston and the nut is greater than the backlash of the threads of the nut and the adjusting bolt, the force A will be required to pull the adjusting bolt. The force to pull the adjusting bolt will be turned into the rotation torque B by the shape of the threads of the nut and the adjusting bolt.
- 3. At this time, the clutch torque © between the adjusting bolt and the adjusting bolt sleeve ④ will decrease depending on the force required to pull the adjusting bolt.

 When the rotation torque exceeds the clutch torque, the adjusting bolt rotates and the clearance

between the brake caliper piston and the brake pad decreases by the movement of the threads of the nut and the adjusting bolt.

IMPORTANT INFORMATION



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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".
- 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.

EBS00014

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.

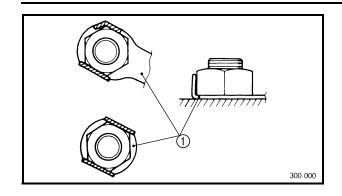
EBS00015

GASKETS, OIL SEALS AND O-RINGS

- 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.

IMPORTANT INFORMATION

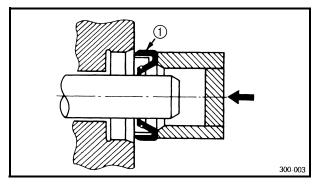




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LOCK WASHERS/PLATES AND COTTER PINS

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.

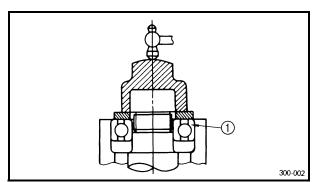


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BEARINGS AND OIL SEALS

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

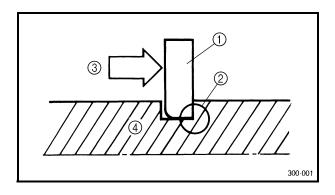
1) Oil seal



CAUTION:

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

① Bearing



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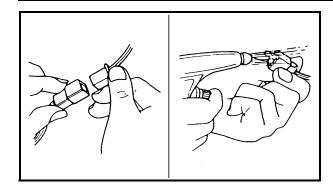
CIRCLIPS

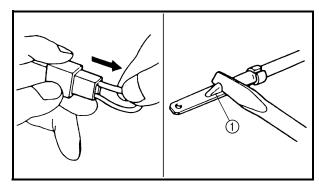
Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip ①, make sure the sharp-edged corner ② is positioned opposite the thrust ③ that the circlip receives.

4) Shaft

IMPORTANT INFORMATION







EBS00019

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 \rightarrow Dry with an air blower. Rust/stains \rightarrow Connect and disconnect several times.

- 3. Check:
- all connections
 Loose connection → Connect properly.

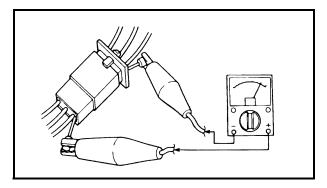
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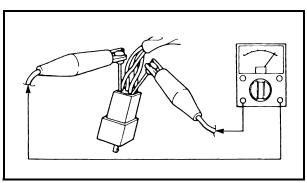
If the pin 1 on the terminal is flattened, bend it up.

- 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.



EBS00021

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. Special tools may differ by shape and part number from country to country. In such a case, two types are provided.

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

For US and CDN

P/N. YM-, YU-, YS-, YK-, ACC-

Except for US and CDN

P/N. 90890-

Tool No.	Tool name/Function	Illustration
90890-01083 YU-01083-1	Slide hammer bolt Slide hammer bolt (6 mm) This tool is used to remove the rocker arm shaft.	
90890-01084 YU-01083-3	Weight This tool is used to remove the rocker arm shaft.	
90890-01135 YU-01135-B	Crankcase separating tool Crankcase separator This tool is used to separate the crankcase.	
90890-01268 YU-01268	Ring nut wrench Spanner wrench This tool is used to loosen or tighten the rear shock absorber locknuts.	R22
90890-01274 YU-90058 YU-90059	Crankshaft installer pot Installer pot Pot installer This tool is used to install the crankshaft.	
90890-01275 YU-90060	Crankshaft installer bolt Bolt This tool is used to install the crankshaft.	



Tool No.	Tool name/Function	Illustration	
90890-04130 YM-04059	Adapter (M16) Adapter #13		
	This tool is used to install the crankshaft.		
90890-04081 YM-91044	Spacer (crankshaft installer) Pot spacer This tool is used to install the example before		
	This tool is used to install the crankshaft.		
90890-01304 YU-01304	Piston pin puller set Piston pin puller		
	This tool is used to remove the piston pin.	0 0	
90890-01311 YM-08035-A	Tappet adjusting tool Valve adjuster (3 mm & 4 mm) This tool is necessary for adjusting the valve clearance.		
90890-01325 YU-24460-01	Radiator cap tester Radiator pressure tester This tool is used to check the cooling system.		
90890-01352 YU-33984	Radiator cap tester adapter Radiator pressure tester adapter This tool is used to check the cooling system.		
	Damper rod holder (30 mm)		
90890-01327 YM-01327	This tool is needed to loosen and tighten the steering stem bearing retainer.		
90890-01404 YM-01404	Flywheel puller This tool is used to remove the A.C.magneto rotor.	M35×P1.5	



Tool No.	Tool name/Function	Illustration	
90890-01443 YU-33975	Steering nut wrench Spanner wrench This tool is needed to loosen and tighten the front shock absorber and rear shock absorber locknuts.	9	
90890-01474 YM-01474	Ball joint remover This tool is used to remove or install the ball joints.		
90890-01480 YM-01480	Ball joint remover attachment set Ball joint adapter set These tools are used to remove or install the ball joints.		
90890-01498 YM-37134	Rear axle nut wrench (46 mm) Axle nut wrench (46 mm) This tool is needed to loosen or tighten the rear axle nut.	46	
90890-01701 YS-01880-A	Sheave holder Primary clutch holder This tool is used to hold the A.C. magneto rotor when loosen or tighten the A.C. magneto rotor nut.		
90890-03079 YM-34483	Thickness gauge Narrow gauge set This tool is used to measure the valve clearance.		
90890-03081 YU-33223	Compression gauge Engine compression tester This tool is used to measure engine compression.		
90890-04082	Extension This tool is used to measure engine compression.	73	



Tool No.	Tool name/Function	Illustration
90890-03112 YU-03112-C	Pocket tester Analog pocket tester This instrument is needed for checking the electrical system.	
90890-03141 YU-03141	Timing light Inductive clamp timing light This tool is necessary for checking ignition timing.	
90890-03153 YU-03153	Pressure gauge This tool is used to measure fuel pressure.	The state of the s
90890-03176 YM-03176	Fuel pressure adapter This tool is used to measure fuel pressure.	
90890-03174 YU-A1927	Digital circuit tester Model 88 Multimeter with tachometer This tool is used to check the electrical system.	
90890-03182 YU-03182	FI diagnostic tool This tool is used to check the diagnosis.	
90890-04019 YM-04019	Valve spring compressor This tool is needed to remove and install the valve assemblies.	
90890-01243 YM-01253-1	Valve spring compressor attachment Valve spring compressor adapter (26 mm) This tool is needed to remove and install the valve assemblies.	026



Tool No.	Tool name/Function	Illustration
90890-04058 YM-04058	Middle driven shaft bearing driver Bearing driver (40 mm) This tool is used to install the water pump seal.	
90890-04132 YM-33221-A	Mechanical seal installer Water pump seal installer This tool is used to install the water pump seal.	
90890-04064 YM-4064-A	Valve guide remover (ø6) Valve guide remover (6.0 mm) This tool is needed to remove and install the valve guides.	
90890-04065 YM-4065-A	Valve guide installer (ø6) Valve guide installer (6.0 mm) This tool is needed to install the valve guides.	
90890-04066 YM-04066	Valve guide reamer (ø6) Valve guide reamer (6.0 mm) This tool is needed to rebore the new valve guides.	
90890-04086 YM-91042	Universal clutch holder This tool is needed to hold the clutch boss when removing or installing the clutch boss nut.	
90890-06754 YM-34487	Ignition checker Opama pet-4000 spark checker This tool is used to check the ignition system components.	
90890-06760 YU-39951-B	Digital tachometer This tool is needed to observe engine rpm.	



Tool No.	Tool name/Function	Illustration
90890-85505	Yamaha bond No. 1215 (Three bond No. 1215) This bond is used on crankcase mating surfaces, etc.	



EBS01001

SPECIFICATIONS

GENERAL SPECIFICATIONS

Item	Standard
Model code	1S31
Dimensions	
Overall length	1,845 mm (72.6 in)
Overall width	1,170 mm (46.1 in)
Overall height	1,130 mm (44.5 in)
Seat height	815 mm (32.1 in)
Wheelbase	1,280 mm (50.4 in)
Minimum ground clearance	240 mm (9.45 in)
Minimum turning radius	3,500 mm (137.8 in)
Basic weight	
With oil and full fuel tank	192 kg (423 lb)
Engine	
Engine type	Liquid-cooled 4-stroke, SOHC
Cylinder arrangement	Forward-inclined single cylinder
Displacement	686 cm ³ (41.86 cu in)
Bore × stroke	102.0 × 84.0 mm (4.02 × 3.31 in)
Compression ratio	9.20:1
Standard compression pressure (at sea level)	450 kPa (4.5 kg/cm ² , 64.0 psi)
Starting system	Electric starter
Lubrication system	Dry sump
Oil type or grade	
Engine oil	
0° 10° 30° 50° 70° 90° 110° 130°F YAMALUBE4 (20W40) or SAE 20W40 YAMALUBE4 (10W30) or SAE 10W30 SAE 5W30 -20° -10° 0° 10° 20° 30° 40° 50°C	API service SE, SF, SG type or higher

GENERAL SPECIFICATIONS



Item	Standard
Oil capacity	
Engine oil	
Periodic oil change	1.75 L (1.54 Imp qt, 1.85 US qt)
With oil filter replacement	1.85 L (1.63 Imp qt, 1.96 US qt)
Total amount	2.30 L (2.02 Imp qt, 2.43 US qt)
Radiator capacity (including all routes)	1.61 L (1.42 Imp qt, 1.70 US qt)
Air filter	Wet type element
Fuel	• •
Туре	Regular unleaded gasoline only (For CDN, Europe)
	Unleaded gasoline only (For Oceania)
Fuel tank capacity	11.0 L (2.42 Imp gal, 2.91 US gal)
Fuel reserve amount	2.6 L (0.57 Imp gal, 0.69 US gal)
Fuel injector	
Type/quantity	297500-0390/1
Manufacturer	DENSO
Spark plug	
Type/manufacturer	CR8E/NGK
Spark plug gap	0.7 ~ 0.8 mm (0.028 ~ 0.031 in)
Clutch type	Wet, multiple disc
Transmission	
Primary reduction system	Spur gear
Primary reduction ratio	77/34 (2.265)
Secondary reduction system	Chain drive
Secondary reduction ratio	38/14 (2.714)
Transmission type	Constant mesh, 5-speed/forward, 1 speed/
	reverse
Operation	Left foot operation
Gear ratio	
1st gear	38/13 (2.923)
2nd gear	28/14 (2.000)
3rd gear	25/17 (1.471)
4th gear	25/22 (1.136)
5th gear	22/24 (0.917)
Reverse gear	24/13 × 29/12 (4.462)
Chassis	
Frame type	Aluminum die-cast and steel tube frame
Caster angle	5°
Camber angle	-1.0°
Kingpin angle	14.8°
Kingpin offset	2.8 mm (0.11 in)
Trail	21.0 mm (0.83 in)
Tread front (STD)	940 mm (37.01 in)
Tread rear (STD)	900 mm (35.43 in)
Toe-in (with tires touching the ground)	2 ~ 12 mm (0.08 ~ 0.47 in)

GENERAL SPECIFICATIONS



Item		Standard
Tire		
Type		Tubeless
Size	front	AT21 × 7-10
	rear	AT20 × 10-9
Manufacturer	front	DUNLOP
	rear	DUNLOP
Туре	front	KT341 Radial
	rear	KT345 Radial
Tire pressure (cold tire)		
Maximum load*		100 kg (220 lb)
Off-road riding	front	27.5 kPa (0.28 kg/cm², 4.0 psi)
	rear	27.5 kPa (0.28 kg/cm², 4.0 psi)
*Load is total weight of cargo, ride	er and	
accessories		
Brake		
Front brake	type	Dual disc brake
	operation	Right hand operation
Rear brake	type	Single disc brake
	operation	Right foot operation
Suspension		
Front suspension		Double wishbone
Rear suspension		Swingarm (link suspension)
Shock absorber		
Front shock absorber		Coil spring/oil damper
Rear shock absorber		Coil spring/gas-oil damper
Wheel travel		
Front wheel travel		230 mm (9.06 in)
Rear wheel travel		256 mm (10.08 in)
Electrical system		
Ignition system		Transistorized coil ignition (digital)
Generator system		A.C. magneto
Battery type		GT9B-4
Battery capacity		12 V 8.0 Ah
Bulb type		Krypton bulb
Bulb voltage/wattage × quantity		
Headlight		12 V 30 W/30 W × 2
Tail/brake light		LED
Indicator light		
Neutral indicator light		LED
Fuel level warning light		LED
Reverse indicator light		LED
Coolant temperature warning lig	ght	LED
Engine trouble warning light		LED



EBS01002

Item		Standard	Limit
Cylinder head			
Maximum warpage *	*		0.03 mm (0.0012 in)
Cylinder			
Bore		102.000 ~ 102.010 mm (4.0157 ~ 4.0161 in)	102.080 mm (4.0189 in)
Measuring point ∗		50.0 mm (1.97 in)	
	*		
Out of round			0.05 mm (0.002 in)
Camshaft			
Drive system Camshaft lobe dimension		Chain drive (left)	
	A		
Intake measurement	"A"	43.300 ~ 43.400 mm (1.7047 ~ 1.7087 in)	43.200 mm (1.7008 in)
	"B"	37.026 ~ 37.126 mm (1.4577 ~ 1.4617 in)	36.926 mm (1.4538 in)
Exhaust measurement	"A"	43.129 ~ 43.229 mm (1.6980 ~ 1.7019 in)	43.029 mm (1.6941 in)
	"B"	37.057 ~ 37.157 mm (1.4589 ~ 1.4629 in)	36.957 mm (1.4550 in)
Maximum camshaft runo	ut		0.03 mm
			(0.0012 in)
Timing chain			
Model/number of links		98XRH2010/126	
Tensioning system		Automatic	



Item	Standard	Limit
Rocker arm/rocker arm shaft		
Rocker arm inside diameter	12.000 ~ 12.018 mm (0.4724 ~ 0.4731 in)	
Shaft outside diameter	11.981 ~ 11.991 mm (0.4717 ~ 0.4721 in)	
Arm-to-shaft clearance	0.009 ~ 0.037 mm (0.0004 ~ 0.0015 in)	
Valve, valve seat, valve guide	,	
Valve clearance-intake (cold)	0.09 ~ 0.13 mm (0.0035 ~ 0.0051 in)	
Valve clearance-exhaust (cold)	0.16 ~ 0.20 mm (0.0063 ~ 0.0079 in)	
Valve dimensions	,	l
A A	B C	→ D
Head Diameter Face Width	Seat Width Margir	n Thickness
Valve head diameter "A"		
Intake	37.9 ~ 38.1 mm (1.4921 ~ 1.5000 in)	
Exhaust	31.9 ~ 32.1 mm (1.2559 ~ 1.2638 in)	
Valve face width "B"		
Intake	2.26 mm (0.0890 in)	
Exhaust	2.26 mm (0.0890 in)	
Valve seat width "C"		
Intake	1.0 ~ 1.2 mm (0.0394 ~ 0.0472 in)	1.6 mm (0.063 in)
Exhaust	1.0 ~ 1.2 mm (0.0394 ~ 0.0472 in)	1.6 mm (0.063 in)
Valve margin thickness "D"		, ,
Intake	0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)	
Exhaust	0.8 ~ 1.2 mm (0.0315 ~ 0.0472 in)	
Valve stem diameter	·	
Intake	5.975 ~ 5.990 mm (0.2352 ~ 0.2358 in)	5.945 mm
		(0.2341 in)
Exhaust	5.960 ~ 5.975 mm (0.2346 ~ 0.2352 in)	5.930 mm
		(0.2335 in)
Valve guide inside diameter		
Intake	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)	6.050 mm (0.2382 in)
Exhaust	6.000 ~ 6.012 mm (0.2362 ~ 0.2367 in)	6.050 mm (0.2382 in)
Valve-stem-to-valve-guide clearance		, ,
Intake	0.010 ~ 0.037 mm (0.0004 ~ 0.0015 in)	0.080 mm
	,	(0.0031 in)
Exhaust	0.025 ~ 0.052 mm (0.0010 ~ 0.0020 in)	0.100 mm (0.0039 in)



Item	Standard	Limit
Valve stem runout		0.01 mm
		(0.0004 in)
Valve seat width		
Intake	1.0 ~ 1.2 mm (0.0394 ~ 0.0472 in)	1.6 mm (0.0630 in)
Exhaust	1.0 ~ 1.2 mm (0.0394 ~ 0.0472 in)	1.6 mm (0.0630 in)
Valve spring		
Free length		
Intake	38.79 mm (1.53 in)	36.85 mm (1.45 in)
Exhaust	38.79 mm (1.53 in)	36.85 mm (1.45 in)
Installed length (valve closed)		
Intake	35.00 mm (1.38 in)	
Exhaust	35.00 mm (1.38 in)	
Compressed spring force (installed)		
Intake	169.0 ~ 199.0 N	
	(17.23 ~ 20.29 kg, 37.99 ~ 44.73 lb)	
Exhaust	169.0 ~ 199.0 N	
	(17.23 ~ 20.29 kg, 37.99 ~ 44.73 lb)	
Spring tilt *		
*		
Intake		2.5°/1.70 mm (2.5°/0.067 in)
Exhaust		2.5°/1.70 mm
Miles dies en diese abie en (t		(2.5°/0.067 in)
Winding direction (top view)	Olaskaria	
Intake	Clockwise	
Exhaust	Clockwise	

Item	Standard	Limit
Piston	2 3	
Piston-to-cylinder clearance	0.030 ~ 0.055 mm (0.0012 ~ 0.0022 in)	0.13 mm (0.0051 in)
Diameter "D"	101.955 ~ 101.970 mm	
H	(4.0140 ~ 4.0146 in)	
Height "H"	10 mm (0.39 in)	
Offset	0.5 mm (0.0197 in)	
Offset direction	Intake side	
Piston pin bore inside diameter	23.004 ~ 23.015 mm (0.9057 ~ 0.9061 in)	23.045 mm (0.9073 in)
Piston pin outside diameter	22.991 ~ 23.000 mm (0.9052 ~ 0.9055 in)	22.971 mm (0.9044 in)
Piston-pin-to-piston-pin-bore clear- ance	0.004 ~ 0.024 mm (0.0002 ~ 0.0009 in)	0.074 mm (0.0029 in)
Piston rings		
Top ring		
В		
Ring type	Barrel	
Dimensions (B × T)	$1.20 \times 3.80 \text{ mm } (0.05 \times 0.15 \text{ in})$	
End gap (installed)	0.20 ~ 0.35 mm (0.008 ~ 0.014 in)	0.60 mm (0.024 in)
Ring side clearance	0.030 ~ 0.070 mm (0.0012 ~ 0.0028 in)	0.12 mm (0.0047 in)
2nd ring		
Ring type	Taper	
Dimensions (B \times T)	$1.20 \times 4.00 \text{ mm } (0.05 \times 0.16 \text{ in})$	
End gap (installed)	0.35 ~ 0.50 mm (0.014 ~ 0.020 in)	0.85 mm (0.033 in)
Ring side clearance	0.030 ~ 0.070 mm (0.0012 ~ 0.0028 in)	0.13 mm (0.0051 in)

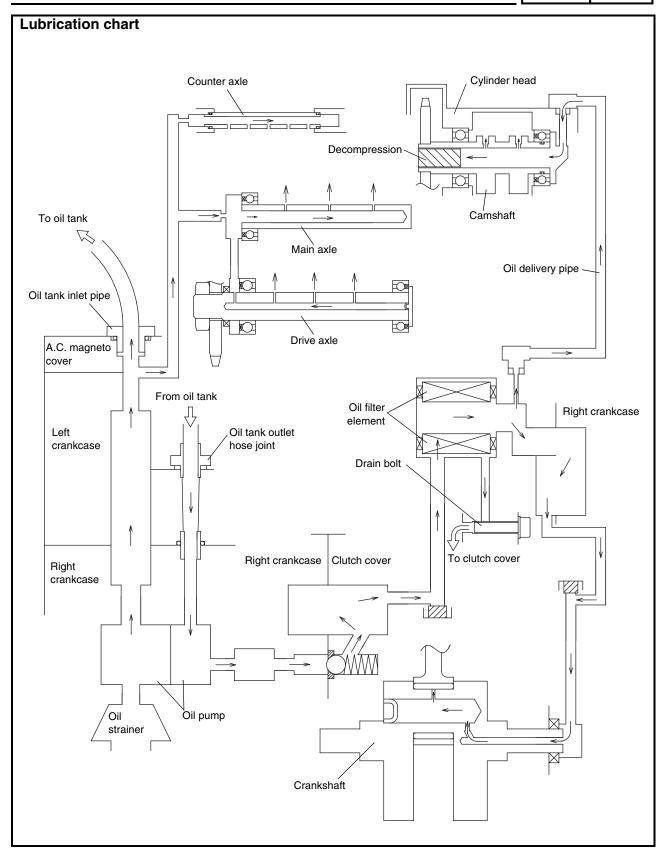


Item	Standard	Limit
Oil ring		
B		
Dimensions (B × T)	2.50 × 3.40 mm (0.10 × 0.13 in)	
End gap (installed)	0.20 ~ 0.70 mm (0.008 ~ 0.028 in)	
Ring side clearance	0.060 ~ 0.150 mm (0.0024 ~ 0.0059 in)	
Crankshaft		
Crank width "A"	74.95 ~ 75.00 mm (2.951 ~ 2.953 in)	
Maximum runout "C"	·	0.03 mm
		(0.0012 in)
Big end side clearance "D"	0.350 ~ 0.650 mm (0.0138 ~ 0.0256 in)	1.00 mm
		(0.040 in)
Big end radial clearance "E"	0.010 ~ 0.025 mm (0.0004 ~ 0.0010 in)	
Small end free play "F"	0.16 ~ 0.40 mm (0.0063 ~ 0.0157 in)	
Balancer Balancer drive method	Gear	
Clutch	Geal	
Friction plate 1 (inside dia.: 121 mm)		
Thickness	2.92 ~ 3.08 mm (0.115 ~ 0.121 in)	2.82 mm
	(*	(0.111 in)
Quantity	7	
Friction plate 2 (inside dia.: 128 mm)		
Thickness	2.90 ~ 3.10 mm (0.114 ~ 0.122 in)	2.80 mm
		(0.110 in)
Quantity	1	
Clutch plate	1.50 1.60 mm (0.050 0.000 in)	
Thickness Quantity	1.50 ~ 1.60 mm (0.059 ~ 0.063 in) 7	
Maximum warpage		0.20 mm
waxiiiidiii waipaye		(0.0079 in)
Clutch spring		
Free length	50.0 mm (1.97 in)	48.0 mm
		(1.89 in)
Quantity	6	
Clutch release method	Outer pull, rack and pinion pull	

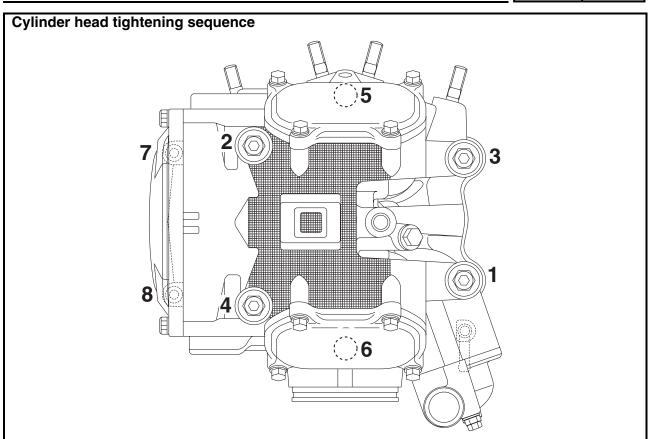


Item	Standard	Limit
Transmission		
Maximum main axle runout		0.08 mm
		(0.0031 in)
Maximum drive axle runout		0.08 mm
		(0.0031 in)
Shifting mechanism		
Shift mechanism type	Shift drum and guide bar	
Decompression device		
Device type	Auto decomp	
Air filter oil grade	Air-cooled 2-stroke engine oil	
Throttle body		
Model/manufacturer \times quantity	44EHS/MIKUNI × 1	
Engine idle speed	1,500 ~ 1,700 r/min	
Intake vacuum	37.8 kPa (284 mmHg, 11.2 inHg)	
Fuel pump		
Pump type	Electrical	
Model/manufacturer	1S3/DENSO	
Maximum consumption amperage	4.8 A	
Output pressure	324 kPa (3.24 kg/cm², 46.1 psi)	
Oil filter type	Paper	
Oil pump		
Oil pump type	Trochoid	
Inner-rotor-to-outer-rotor-tip clear-	Less than 0.12 mm (0.0047 in)	0.20 mm
ance		(0.0079 in)
Outer-rotor-to-oil-pump-housing	0.09 ~ 0.15 mm (0.0035 ~ 0.0059 in)	0.22 mm
clearance		(0.0087 in)
Bypass valve opening pressure	40.0 ~ 80.0 kPa	
	(0.40 ~ 0.80 kg/cm ² , 5.70 ~ 11.4 psi)	
Oil pressure (hot)	40.0 kPa at 1,600 r/min (0.40 kg/cm ² at	
	1,600 r/min, 5.70 psi at 1,600 r/min)	
Pressure check location	Element cover	
Cooling system		
Radiator core		
Width	197 mm (7.76 in)	
Height	300 mm (11.81 in)	
Depth	22 mm (0.87 in)	
Radiator cap opening pressure	93.3 ~ 122.7 kPa	
	(0.933 ~ 1.227 kg/cm ² , 13.27 ~ 17.45 psi)	
Coolant reservoir capacity		
Up to the maximum level mark	0.25 L (0.22 Imp qt, 0.26 US qt)	
From low to full level	0.15 L (0.13 Imp qt, 0.16 US qt)	
Water pump		
Water pump type	Single-suction centrifugal pump	
Reduction ratio	27/28 (0.964)	

ENGINE SPECIFICATIONS



ENGINE SPECIFICATIONS



CHASSIS SPECIFICATIONS



EBS01003

CHASSIS SPECIFICATIONS

Item	Standard	Limit
Steering system		
Steering bearing type	Ball and race bearing	
Front suspension		
Shock absorber travel	115.0 mm (4.53 in)	
Spring free length	269.0 mm (10.59 in)	
Installed length	260.5 mm (10.26 in)	
Spring rate (K1)	21.60 N/mm (2.20 kg/mm, 123.33 lb/in)	
Spring rate (K2)	29.40 N/mm (3.00 kg/mm, 167.87 lb/in)	
Optional spring available	No	
Rear suspension		
Shock absorber travel	110.0 mm (4.33 in)	
Spring free length	255.0 mm (10.04 in)	
Installed length	236.0 mm (9.29 in)	
Spring rate (K1)	46.00 N/mm (4.69 kg/mm, 262.66 lb/in)	
Spring stroke (K1)	0 ~ 110.0 mm (0 ~ 4.33 in)	
Optional spring available	No	
Swingarm		
Free play limit (radial)		1.0 mm
		(0.04 in)
Free play limit (axial)		1.0 mm
		(0.04 in)
Front wheel		
Type	Panel wheel	
Rim size	10 × 5.5 AT	
Rim material	Aluminum	
Maximum radial wheel runout		2.0 mm
		(0.08 in)
Maximum lateral wheel runout		2.0 mm
		(0.08 in)
Rear wheel		
Type	Panel wheel	
Rim size	9 × 8.5 AT	
Rim material	Aluminum	
Maximum radial wheel runout		2.0 mm
l 		(0.08 in)
Maximum lateral wheel runout		2.0 mm
Drive chain		(0.08 in)
	FOOMYV//DAIDO	
Type/manufacturer	520MXV/DAIDO	
Link quantity	98	
Drive chain slack	25 ~ 35 mm (0.98 ~ 1.38 in)	

CHASSIS SPECIFICATIONS



14	Otanadanal	1.59
Item	Standard	Limit
Front disc brake		
Туре	Dual	
Disc outside diameter × thickness	$161.0 \times 3.5 \text{ mm } (6.34 \times 0.14 \text{ in})$	
Pad thickness inner	4.3 mm (0.17 in)	1.0 mm
		(0.04 in)
Pad thickness outer	4.3 mm (0.17 in)	1.0 mm
		(0.04 in)
Master cylinder inside diameter	12.70 mm (0.50 in)	
Caliper cylinder inside diameter	25.40 mm (1.00 in)	
Brake fluid type	DOT 4	
Rear disc brake		
Туре	Single	
Disc outside diameter \times thickness	200.0 × 3.6 mm (7.87 × 0.14 in)	
Pad thickness inner	5.6 mm (0.22 in)	1.0 mm
		(0.04 in)
Pad thickness outer	5.6 mm (0.22 in)	1.0 mm
		(0.04 in)
Master cylinder inside diameter	12.70 mm (0.50 in)	
Caliper cylinder inside diameter	32.03 mm (1.26 in)	
Brake fluid type	DOT 4	
Brake lever and brake pedal		
Brake pedal position	15.3 mm (0.60 in)	
Parking brake cable end length	58 ~ 60 mm (2.28 ~ 2.36 in)	
Clutch lever free play (lever end)	5 ~ 10 mm (0.20 ~ 0.39 in)	
Throttle lever free play	2 ~ 4 mm (0.08 ~ 0.16 in)	
Speed limiter length	Less than 12 mm (0.47 in)	
Shift pedal height	48 mm (1.89 in)	

ELECTRICAL SPECIFICATIONS



EBS01004

ELECTRICAL SPECIFICATIONS

Item	Standard	Limit
System voltage	12 V	
Ignition system		
Ignition timing (B.T.D.C.)	9.0°/1,600 r/min	
Advancer type	Digital type	
Transistorized coil ignition		
Crankshaft position sensor resis-	192 ~ 288 Ω at 20 °C (68 °F)/	
tance/color	blue/yellow-green/white	
ECU		
Model/manufacturer	TBDF18/DENSO	
Ignition coil		
Model/manufacturer	JO267/DENSO	
Minimum ignition spark gap	6.0 mm (0.24 in)	
Primary winding resistance	3.4 ~ 4.6 Ω at 20 °C (68 °F)	
Secondary winding resistance	10.4 ~ 15.6 kΩ at 20 °C (68 °F)	
Spark plug cap		
Material	Resin	
Resistance	10.0 kΩ	
A.C. magneto		
Model/manufacturer	LMX58/DENSO	
Standard output	14 V 17.2 A at 5,000 r/min	
Stator coil resistance/color	0.248 ~ 0.372 Ω at 20 °C (68 °F)/	
	white-white	
Rectifier/regulator		
Туре	Semiconductor, short-circuit type	
Model/manufacturer	SH650D-11/SHINDENGEN	
No load regulated voltage (DC)	14.1 ~ 14.9 V	
Rectifier capacity	18.0 A	
Withstand voltage	200.0 V	
Electric starting system		
Туре	Constant mesh type	
Starter motor		
Model/manufacturer	SM-13/MITSUBA	
Power output	0.80 kW	
Armature coil resistance	0.0250 ~ 0.0350 Ω at 20 °C (68 °F)	
Brush overall length	12.5 mm (0.49 in)	5.00 mm
		(0.20 in)
Spring force	7.65 ~ 10.01 N	
	(780 ~ 1,021 gf, 27.54 ~ 36.03 oz)	
Commutator diameter	28.0 mm (1.10 in)	27.0 mm
l	0.70 (0.00)	(1.06 in)
Mica undercut	0.70 mm (0.03 in)	

ELECTRICAL SPECIFICATIONS



Item	Standard	Limit
Starter relay		
Model/manufacturer	2768106-A/JIDECO	
Amperage rating	180.0 A	
Coil winding resistance	4.18 ~ 4.62 Ω at 20 °C (68 °F)	
Circuit breaker		
Circuit breaker type	Fuse	
Fuses		
Main fuse	20 A	
Headlight fuse	15 A	
Signaling system fuse	10 A	
Ignition fuse	10 A	
Fuel injection system fuse	10 A	
Spare fuse	20 A	
	15 A	
	10 A	



EBS01005

TIGHTENING TORQUES ENGINE TIGHTENING TORQUES

Dort to be tightened	Dort name	Thread	Q'ty	Tight	ening to	orque	Remarks
Part to be tightened	Part name	size	Q ty	Nm	m · kg	ft · lb	nemarks
Cylinder head (exhaust pipe)	Stud bolt	M8	4	15	1.5	11	
Cylinder head	Bolt	M9	4	35	3.5	25	
Cylinder head	Bolt	M9	2	38	3.8	27	
Cylinder head	Bolt	M6	2	10	1.0	7.2	
Spark plug	_	M10	1	13	1.3	9.4	
Oil gallery bolt	Union bolt	M8	1	10	1.0	7.2	
Tappet cover	Bolt	M6	8	10	1.0	7.2	
Camshaft sprocket cover	Bolt	M6	2	10	1.0	7.2	
Camshaft sprocket	Bolt	M7	2	20	2.0	14	
Decompressor assembly	Bolt	M7	2	20	2.0	14	
Culindar	Dolt	N/10	4	E0	F 0	26	See NOTE.
Cylinder	Bolt	M10	4	50	5.0	36	— (3)
Cylinder	Bolt	M6	2	10	1.0	7.2	
Cable guide	Bolt	M6	1	7	0.7	5.1	
Water jacket joint	Bolt	M6	2	10	1.0	7.2	
A.C. magneto rotor	Nut	M16	1	60	6.0	43	
A.C. magneto cover	Bolt	M6	14	10	1.0	7.2	
Balancer driven gear	Nut	M16	2	60	6.0	43	Use a lock washer.
Breather plate	Bolt	M6	3	10	1.0	7.2	l la a a la alı
Primary drive gear	Nut	M20	1	110	11.0	80	Use a lock washer.
Valve adjusting screw	Nut	M6	4	14	1.4	10	_
Camshaft bearing retainer	Bolt	M6	2	10	1.0	7.2	√⑤
Timing chain guide (intake side)	Bolt	M6	2	10	1.0	7.2	
Timing chain tensioner cap bolt	Bolt	M16	1	20	2.0	14	
Timing chain tensioner	Bolt	M6	2	10	1.0	7.2	
Water pump outlet hose clamp	Screw	M4	2	2	0.2	1.4	
Water pump	Bolt	M6	3	10	1.0	7.2	
Water pump housing cover	Bolt	M6	3	11	1.1	8.0	
Thermostat cover	Bolt	M6	2	10	1.0	7.2	
Radiator	Bolt	M6	2	7	0.7	5.1	
Engine oil drain bolt (crankcase)	Bolt	M14	1	23	2.3	17	
Engine oil drain bolt (oil tank)	Bolt	M8	1	19	1.9	13	
Oil baffle plate 1	Bolt	M5	2	4	0.4	2.9	⊣ ⑤
Oil baffle plate 2	Bolt	M6	2	10	1.0	7.2	
Oil pump	Bolt	M6	1	10	1.0	7.2	
Oil pump housing 2	Screw	M6	1	7	0.7	5.1	
Oil strainer	Bolt	M6	2	10	1.0	7.2	-6

	Thread		Tight	ening to	orque		
Part to be tightened	Part name	size	Q'ty	Nm	m · kg	•	Remarks
Oil filter cover drain bolt	Bolt	M6	1	10	1.0	7.2	
Oil filter cover	Bolt	M6	2	10	1.0	7.2	
Check screw (oil filter cover)	Screw	M5	1	5	0.5	3.6	
Oil delivery pipe	Union bolt	M10	2	20	2.0	14	
Oil delivery pipe	Bolt	M6	1	10	1.0	7.2	
Oil pipe joint	Bolt	M14	1	50	5.0	36	
Oil tank inlet hose (oil tank side)	Bolt	M6	1	10	1.0	7.2	
Oil tank inlet hose (engine side)	Bolt	M6	1	10	1.0	7.2	
Oil tank outlet hose	Nut	M16	1	35	3.5	25	
Oil tank outlet hose	Bolt	M6	2	10	1.0	7.2	
Intake manifold clamp	Screw	M4	2	3	0.3	2.2	
Air filter case joint clamp	Screw	M5	1	4	0.4	2.9	
ECU bracket	Bolt	M6	2	7	0.7	5.1	
Exhaust pipe 2 and exhaust pipe 1	Bolt	M8	1	16	1.6	11	
Spark arrester	Bolt	M6	1	8	0.8	5.8	
Muffler and exhaust pipe 2	Bolt	M8	1	18	1.8	13	
Muffler	Bolt	M8	2	38	3.8	27	
Exhaust pipes	Nut	M8	4	20	2.0	14	
Muffler protector	Screw	M6	2	8	0.8	5.8	⊣ 6
Exhaust pipe protector	Bolt	M6	4	8	0.8	5.8	→6
Oil seal retainer (clutch cover)	Bolt	M6	2	10	1.0	7.2	→6
Timing mark accessing screw	Screw	M14	1	6	0.6	4.3	,
Crankshaft end accessing screw	Screw	M36	1	10	1.0	7.2	
Crankcase bearing retainer	Screw	M6	2	10	1.0	7.2	⊣ ⑤
Crankcase bearing retainer	Bolt	M6	2	10	1.0	7.2	→⑤
Crankcase	Bolt	M6	17	10	1.0	7.2	,
Engine oil filler bolt	Bolt	M20	1	12	1.2	8.7	
Starter clutch	Bolt	M8	3	30	3.0	22	⊣⑤
Clutch spring	Bolt	M6	6	8	0.8	5.8	,
Clutch boss	Nut	M20	1	95	9.5	68	Stake
Clutch cover	Bolt	M6	14	10	1.0	7.2	
Drive sprocket	Nut	M22	1	85	8.5	61	Use a lock washer.
Oil seal retainer (left crankcase)	Bolt	M6	2	10	1.0	7.2	
Shift drum segment	Bolt	M8	1	30	3.0	22	
Shift guide	Bolt	M6	2	10	1.0	7.2	- ⑤
Reverse shift lever	Bolt	M6	1	13	1.3	9.4	
Shift pedal	Bolt	M6	1	16	1.6	11	
Stator coil	Bolt	M6	3	7	0.7	5.1	⊣©
Crankshaft position sensor	Bolt	M5	2	7	0.7	5.1	-6
A.C. magneto lead holder	Bolt	M5	1	7	0.7	5.1	10
Coolant temperature sensor		M12	1	18	1.8	13	
Starter motor	Bolt	M6	2	10	1.0	7.2	



Part to be tightened	Part name	Thread	Q'ty	Tight	ening to	orque	Remarks
r art to be tigriteried	r art riame	size	Q ty	Nm	m · kg	ft · lb	Hemains
Reverse switch	_	M10	1	17	1.7	12	
Neutral switch		M10	1	17	1.7	12	

N	\mathbf{C}	ге.
IV	v	I E :

Temporarily tighten the cylinder bolts to 15 Nm (1.5 m \cdot kg, 11 ft \cdot lb), and then tighten them to 50 Nm (5.0 m \cdot kg, 36 ft \cdot lb).



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CHASSIS TIGHTENING TORQUES

Doubte he kinktoned	Thursday sime	Tight	ening to	Damarka	
Part to be tightened	Thread size	Nm	m · kg	ft · lb	Remarks
Engine upper bracket	M8	33	3.3	24	
Engine mounting bolt (upper)	M10	40	4.0	29	
Engine lower bracket	M8	41	4.1	30	
Engine mounting bolt (middle)	M10	66	6.6	48	
Engine mounting bolt (lower)	M10	66	6.6	48	
Swingarm pivot shaft, engine, and frame	M16	100	10.0	72	
Middle frame and rear frame	M10	54	5.4	39	
Frame and oil tank	M6	7	0.7	5.1	
Frame and coolant reservoir	M6	7	0.7	5.1	
Rear shock absorber and frame	M12	55	5.5	40	
Relay arm and swingarm	M10	43	4.3	31	
Connecting arm and frame	M12	55	5.5	40	
Relay arm and rear shock absorber	M10	43	4.3	31	
Relay arm and connecting arm	M10	43	4.3	31	
Rear axle pinch bolt	M8	21	2.1	15	
Swingarm and guide pin	M12	55	5.5	40	⊣ ⑤
Swingarm skid plate and swingarm	M6	7	0.7	5.1	-
Drive chain guide 1 and swingarm	M6	7	0.7	5.1	
Drive sprocket cover and engine	M6	10	1.0	7.2	
Upper front arm and frame	M10	38	3.8	27	
Lower front arm and frame	M10	55	5.5	40	
Front shock absorber and frame	M10	48	4.8	35	
Front shock absorber and lower front arm	M10	48	4.8	35	
Steering stem, pitman arm, and frame	M14	180	18.0	130	
Steering stem bushing and frame	M8	23	2.3	17	Use a lock washer.
Steering stem and handlebar holder	M8	23	2.3	17	
Tie-rod end and locknut	M12	18	1.8	13	
Steering knuckle and front wheel hub	M14	70	7.0	50	
Steering knuckle and front arm (upper and lower)	M10	25	2.5	18	
Steering knuckle and tie-rod ball joint	M10	25	2.5	18	
Pitman arm and tie-rod ball joint	M10	25	2.5	18	
Frame and bearing retainer	M42	65	6.5	47	
Fuel tank and fuel pump	M6	7	0.7	5.1	
Fuel tank and frame	M6	7	0.7	5.1	
Front wheel and front wheel hub	M10	45	4.5	32	
Steering knuckle and front brake caliper bracket	M8	28	2.8	20	
Front brake disc and front wheel hub	M8	28	2.8	20	⊣©
Rear brake caliper and brake caliper bracket	M8	34	3.4	24	
Rear axle and rear wheel hub	M16	200	20.0	145	See NOTE.
Rear wheel and rear wheel hub	M10	45	4.5	32	



Dort to be tightened	Thread size	Tight	ening to	Remarks	
Part to be tightened	Tilleau Size	Nm	m · kg	ft · lb	nemarks
Driven sprocket and sprocket bracket	M10	72	7.2	52	
Front brake caliper and brake hose	M10	27	2.7	19	
Front brake pad retaining bolt	M10	17	1.7	12	⊣ ⑤
Brake caliper bleed screw	M8	6	0.6	4.3	-
Front brake master cylinder and handlebar	M6	7	0.7	5.1	
Front brake master cylinder and brake lever	M6	6	0.6	4.3	LS
Front brake master cylinder and brake hose	M10	27	2.7	19	_
Throttle lever assembly and handlebar	M5	4	0.4	2.9	
Clutch lever and handlebar	M5	4	0.4	2.9	
Parking brake lever and clutch lever	M6	7	0.7	5.1	
Front brake pipe nut	M10	19	1.9	13	
Brake hose joint and frame	M6	10	1.0	7.2	
Brake hose holder and front upper arm	M6	7	0.7	5.1	
Footrest and frame	M10	78	7.8	56	
Foot protector and footrest	M6	13	1.3	9.4	
Foot protector and footrest	M8	16	1.6	11	
Foot protector and bracket	M6	12	1.2	8.7	
Engine skid plate and frame	M6	7	0.7	5.1	⊣ ⑤
Rear axle ring nut	M36	240	24.0	175	40
Rear axle ring nut set bolt	M6	7	0.7	5.1	46
Rear brake pad retaining bolt	M10	17	1.7	12	-
Rear brake caliper and brake hose	M10	30	3.0	22	
Parking brake case bracket and parking brake	M8	22	2.2	16	
case	IVIO	22	2.2	10	↓
Rear brake master cylinder and frame	M6	20	2.0	14	
Rear brake master cylinder and brake hose	M10	30	3.0	22	
Rear brake master cylinder adjusting bolt and	M8	17	1.7	12	
locknut Parking broke adjusting bolt and locknut	M6	10	1.0	7.2	
Parking brake adjusting bolt and locknut Rear brake disc and brake disc bracket	M8	10	1.0 3.3	7.2 24	_
	M6	33 7	0.7	5.1	-1 ⑤
Brake hose holder and swingarm	M8	, 12	1.2	8.7	
Front guard and frame Front fender and frame	M6	7	0.7	5.1	
Headlight and frame	M6	7	0.7	5.1	
Rear fender and frame	M6	7	0.7	5.1 5.1	
Rear fender and bracket	M6	7	0.7	5.1 5.1	
Battery holding bracket and frame	M6	7	0.7	5.1	
Air filter case and frame	M6	7	0.7	5.1	
Rear guard and frame	M8	, 32	3.2	23	
Battery box and lean angle sensor	M4	2	0.2	1.4	

SPEC	□ ==
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NOTE: _

- 1. Apply a rust preventive lubricant to the threads on both sides of the rear axle and to the wheel hub surfaces that contact the rear axle washers.
- 2. Tighten the rear axle nuts 200 Nm (20.0 m \cdot kg, 145 ft \cdot lb).
- 3. Loosen the rear axle nuts completely.
- 4. Retighten the rear axle nuts 200 Nm (20.0 m · kg, 145 ft · lb). Do not loosen the axle nuts after tightening them. If an axle nut slot is not aligned with the cotter pin hole on either side of the axle, further tighten the axle nut until a slot is aligned with the hole.

HOW TO USE THE CONVERSION TABLE/ GENERAL TIGHTENING TORQUE SPECIFICATIONS



EBS00022

HOW TO USE THE 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	N	MULTIPLIEF	IMPERIAL	
** mm	×	0.03937	=	** in
2 mm	×	0.03937	=	0.08 in

CONVERSION TABLE

METRIC TO IMPERIAL							
Torque	Metric unit	Multiplier	Imperial unit				
	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				
Speed	km/hr	0.6214	mph				
Distance	km	0.6214	mi				
	m	3.281	ft				
	m	1.094	yd				
	cm	0.3937	in				
	mm	0.03937	in				
	cc (cm ³)	0.03527	oz (IMP liq.)				
Volume/	cc (cm ³)	0.06102	cu · in				
Capacity	It (liter)	0.8799	qt (IMP liq.)				
	It (liter)	0.2199	gal (IMP liq.)				
Misc.	kg/mm	55.997	lb/in				
	kg/cm ²	14.2234	psi (lb/in ²)				
	Centigrade	9/5+32	Fahrenheit				
	(°C)		(°F)				

EBS00023

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

LUBRICATION POINTS AND LUBRICANT TYPES



EBS00024

LUBRICATION POINTS AND LUBRICANT TYPES ENGINE

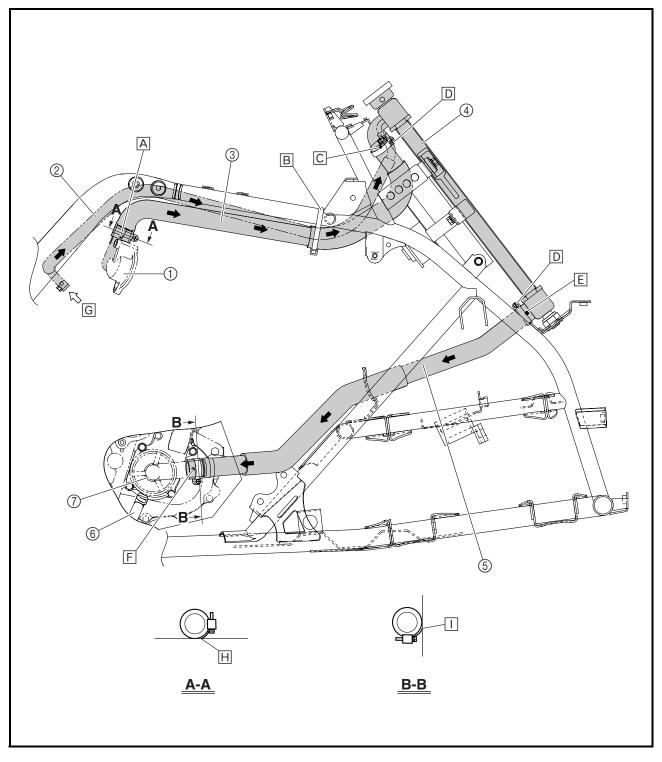
Lubrication point	Lubricant
Oil seal lips	LS
O-rings	LS
Bearings	⊸ [€
Crankshaft pins	⊸ @
Timing chain sprocket inner surface	
Connecting rod big end thrust surface	— ©
Piston pin	⊸©
Piston surface	⊸ ©
Valve stems (intake and exhaust)	—
Valve stem ends (intake and exhaust)	– •
Rocker arm shaft	⊸ [■
Camshaft lobes	—
Decompressor lever pin	⊸©
Decompressor lever spring	⊸ [■
Water pump impeller shaft	⊸ ©
Oil pump rotors (inner rotor 2 and outer rotor 2) and pump	⊸ @
Oil pump rotors (inner rotor 1 and outer rotor 1) and pump	LS
Torque limiter	⊸ ©
Starter idle gear and starter wheel gear inner surface	⊸ ©
Primary driven gear	⊸ ©
Clutch pull rod	-CSD-
Transmission gears (wheel and pinion)	⊸ @
Shift drum	⊸©
Shift forks	⊸ €
Shift lever assembly	⊸ €
Shift shaft	⊸ ©
Reverse shift shaft	⊸ €
Crankcase mating surface	Yamaha bond No. 1215 (Three bond No. 1215)
A.C. magneto lead grommet (A.C. magneto cover)	Yamaha bond No. 1215 (Three bond No. 1215)



EBS00025

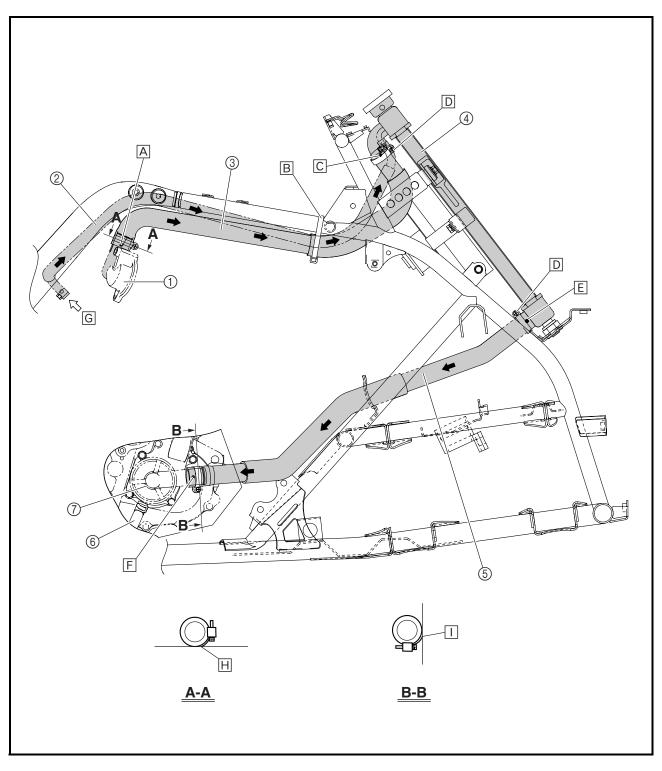
- 1 Thermostat cover
- ② Fast idle plunger outlet hose
- ③ Radiator inlet hose
- (4) Radiator
- **⑤** Radiator outlet hose
- (6) Water pump breather hose
- Water pump

- A Install the radiator inlet hose onto the thermostat cover pipe, making sure that it contacts the cover and its yellow paint mark is facing outward.
- B Fasten the fast idle plunger outlet hose and the radiator inlet hose with the plastic band.
- © Install the radiator inlet hose with its white paint mark facing outward.



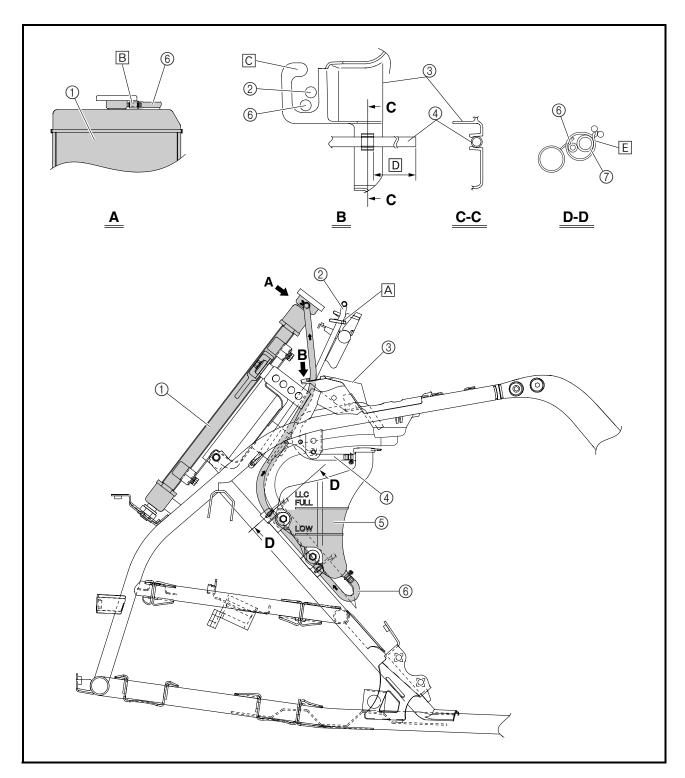


- D Position the screw clamp so that its screw can be tightened from the right side of the vehicle.
- E Install the radiator outlet hose with its white paint mark facing outward.
- F Install the radiator outlet hose with its yellow paint mark facing outward.
- G From fast idle plunger
- H Make sure that the end of the screw clamp does not protrude past the side of the radiator inlet hose.





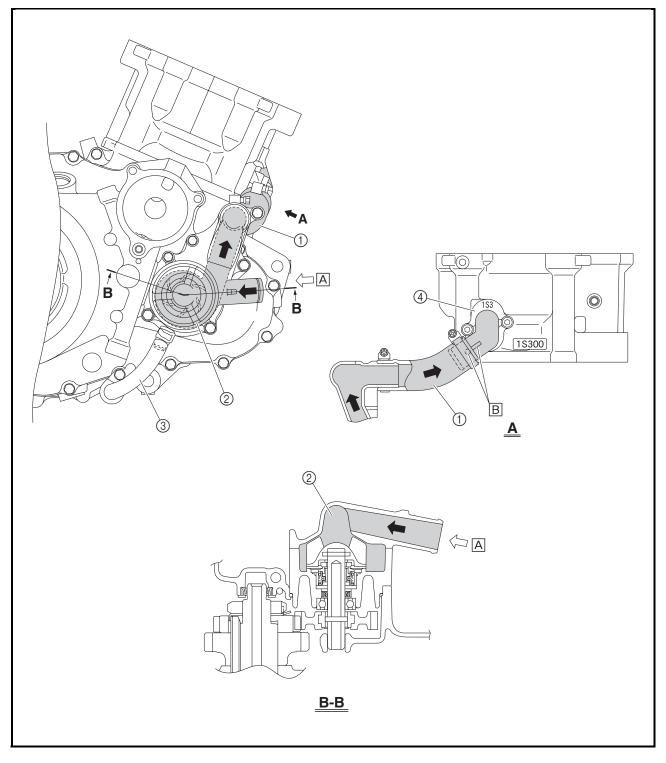
- 1) Radiator
- ② Radiator fan breather hose
- 3 Fuel tank shield
- 4 Coolant reservoir breather hose
- (5) Coolant reservoir
- 6 Coolant reservoir hose
- (7) Drain hose
- A Pass the radiator fan breather hose through the guide.
- B Install the coolant reservoir hose onto the radiator pipe, making sure that it contacts the radiator
- © Pass the coolant reservoir hose and radiator fan breather hose through the guide on the fuel tank shield.
- D 60 mm (2.36 in)
- E Pass the clamp through the hole in the stay on the frame, and then fasten the coolant reservoir hose and drain hose with the clamp.





- ① Water pump outlet hose
- ② Water pump
- ③ Water pump breather hose
- 4 Water jacket inlet housing

- A From radiator
- B Install the water pump outlet hose onto the water jacket inlet housing, making sure to align the yellow paint mark on the hose with the projection on the water jacket inlet housing.





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