

YAMAHA

GTS 1000A

E

GTS

OWNER'S MANUAL

4FE-28199-X0

CONTENTS

THINK OF YOUR SAFETY.....	1-1	Fuel level indicator circuit check.....	5-7
FEATURE OUTLINE.....	2-1	Coolant temp. warning indicator circuit check.....	5-9
Electronic Fuel Injection (EFI)	2-2	“EFI” warning light circuit check	5-11
Catalytic converter.....	2-4	“ABS” warning light circuit check....	5-13
Omega (Ω) shaped frame	2-5	Speedometer	5-14
Single-sided swingarm front suspension.....	2-6	Tachometer.....	5-14
Front offset wheel/center disc	2-7	Fuel gauge.....	5-15
Anti-lock brake system (ABS)	2-8	Digital clock.....	5-15
DESCRIPTION	3-1	Handlebar switches.....	5-16
MOTORCYCLE IDENTIFICATION	4-1	Clutch lever	5-19
Identification numbers record.....	4-2	Shift pedal.....	5-19
Frame serial number (Except for Spain).....	4-3	Front brake lever	5-20
Vehicle identification number (For Spain).....	4-3	Rear brake pedal.....	5-20
Engine serial number	4-4	Fuel tank cap.....	5-21
CONTROL FUNCTIONS	5-1	Steering lock.....	5-23
Main switch	5-2	Seat.....	5-24
Indicator lights	5-3	Helmet holder.....	5-25
Oil level indicator circuit check.....	5-5	Storage box.....	5-25
		Rear view mirrors.....	5-26
		Side cover	5-28
		Top cover	5-29
		Lower cowling.....	5-29
		Side cowling	5-30

Front and rear shock absorber	5-32
Sidestand.....	5-33
Sidestand/clutch switch operation check.....	5-34
PRE-OPERATION CHECKS	6-1
Brakes	6-4
Brake/Clutch fluid leakage	6-5
Clutch	6-5
Throttle grip.....	6-6
Engine oil.....	6-6
Coolant.....	6-7
Chain	6-8
Tires	6-8
Tubeless tires and cast wheels	6-13
Fittings/Fasteners.....	6-15
Lights and signals.....	6-15
Switches	6-16
Fuel.....	6-16
Catalytic converter.....	6-18
Fuel tank breather hose	6-19

OPERATION AND IMPORTANT RIDING POINTS	7-1
Starting the engine.....	7-2
Shifting	7-5
Recommended shift point (For Switzerland only)	7-6
Engine break-in.....	7-6
Parking.....	7-8

PERIODIC MAINTENANCE AND MINOR REPAIR	8-1
Tool kit.....	8-3
Periodic maintenance / lubrication.....	8-4
Torque specifications.....	8-7
Engine oil	8-8
Cooling system.....	8-13
Electric fan.....	8-18
Air filter.....	8-18
Idle speed adjustment	8-20
Throttle cable adjustment	8-21
Valve clearance adjustment	8-22
Spark plug inspection	8-22
Front brake lever position adjustment.....	8-24



Rear brake adjustment	8-24	Wheel bearings.....	8-41
Brake light switch adjustment.....	8-25	Battery	8-42
Checking the front and rear brake pads	8-26	Battery maintenance.....	8-43
Inspecting the brake fluid level	8-26	Fuse replacement.....	8-44
Brake fluid replacement.....	8-28	Replacing the headlight bulb	8-45
Clutch adjustment.....	8-28	Taillight and rear flasher light bulb replacement.....	8-47
Drive chain slack check	8-29	Front flasher light bulb replacement	8-48
Drive chain slack adjustment.....	8-29	Front wheel removal.....	8-48
Drive chain lubrication	8-31	Front wheel installation	8-51
Cable inspection and lubrication	8-31	Rear wheel removal	8-52
Throttle cable and grip lubrication ..	8-32	Rear wheel installation	8-54
Brake and shift pedals.....	8-32	Troubleshooting.....	8-56
Brake and clutch levers	8-33		
Center and sidestand.....	8-33	CLEANING AND STORAGE	9-1
Rear suspension	8-34	A. Cleaning.....	9-2
Front and rear shock absorber	8-34	B. Storage.....	9-4
Front suspension inspection	8-35		
Front shock absorber adjustment....	8-36	SPECIFICATIONS	10-1
Rear shock absorber adjustment	8-38		
Recommended combinations of the front and rear shock absorber settings.....	8-40	WIRING DIAGRAM	
Steering inspection.....	8-41		

FEATURE OUTLINE

Electronic Fuel Injection (EFI)

The EFI system utilizes a computer to control the delivery of fuel into the combustion chamber for an optimized air-fuel mixture ratio required by the engine. This helps to always create the best combustion condition with the resultant increased startability, improved fuel economy, and reduction of poisonous substances in the exhaust emissions.

Principles of Operation:

- Fuel system

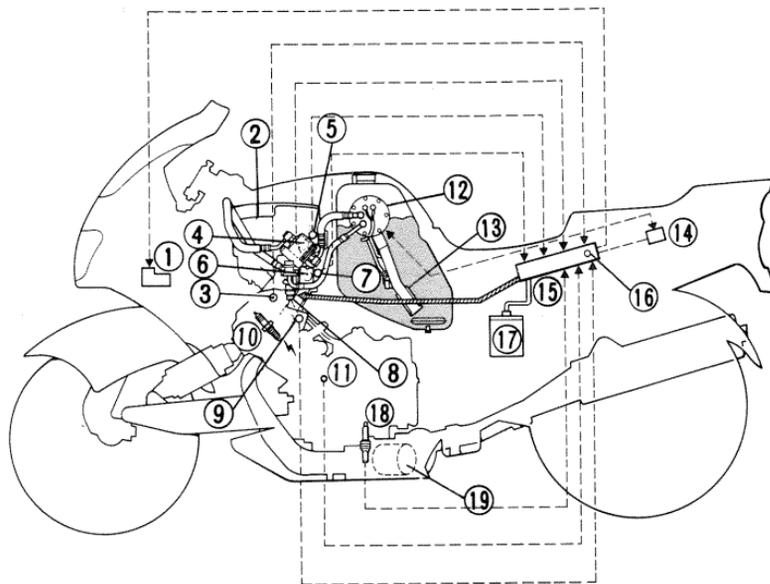
Fuel is pressure fed to the injector by the fuel pump through the filter and then injected into the intake tract by a signal from the Electronic Control Unit (ECU). The fuel pressure on the injector is kept 2.55 kg/cm^2 higher than the pressure in the intake tract.

- Ignition system

The ignition system consists of an ignition coil, igniter (built in the ECU) and spark plug. A signal from the ECU activates sparks on the spark plug for ignition.

- Control system

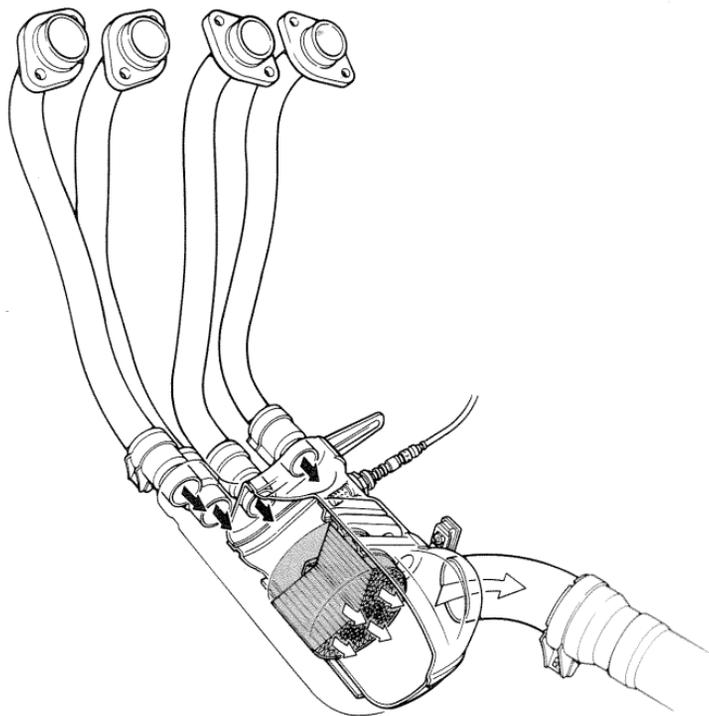
The ECU controls the period, time, etc. for fuel injection. By means of the respective sensors for the intake tract pressure, throttle, and rotation angle, the ECU meters an intake of air and calculates a standard injection time. Further, the individual sensors detect the water temperature, intake temperature, acceleration and deceleration speed, atmospheric pressure, O_2 concentration in the exhaust pipe, and so forth. The standard injection time can thus be compensated for an injection signal to the injector. Likewise, for ignition the ECU calculates the optimum ignition timing and ignition coil activation time to meet the engine requirements.



- | | | |
|----------------------------------|---------------------------------|-----------------------------------|
| 1. Ignition coil | 7. Intake tract pressure sensor | 13. Fuel pump |
| 2. Air cleaner case | 8. Fuel injector | 14. Fuel pump relay |
| 3. Cylinder sensor | 9. Water temperature sensor | 15. Electronic Control Unit (ECU) |
| 4. Fuel filter | 10. Spark plug | 16. Atmospheric pressure sensor |
| 5. Intake air temperature sensor | 11. Rotation angle sensor | 17. Battery |
| 6. Throttle sensor | 12. Fuel tank | 18. O ₂ sensor |
| | | 19. Catalytic converter |

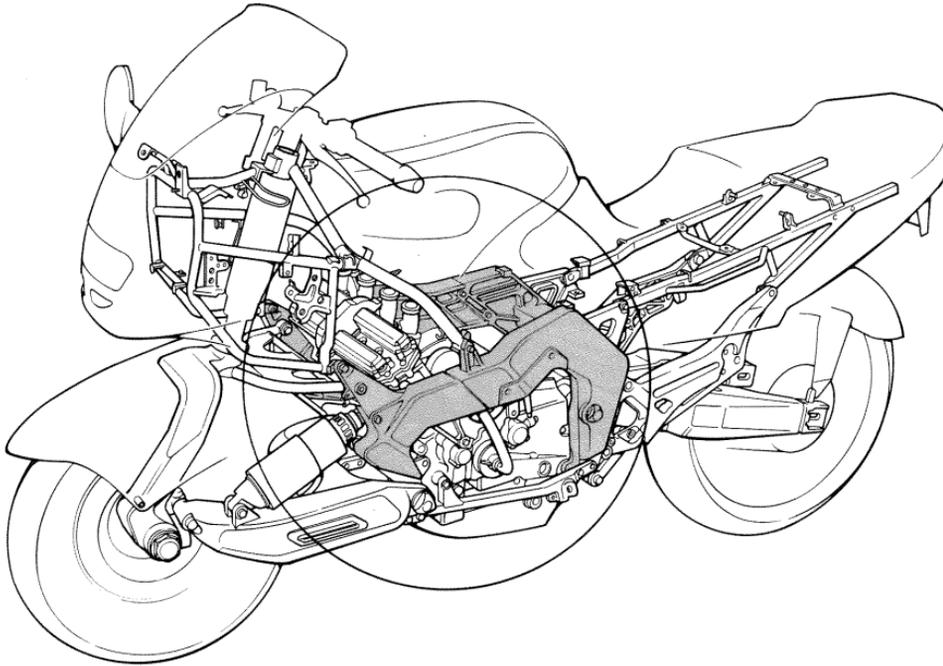
Catalytic converter

The 3-way catalytic converter, which is linked with the EFI (Electronic Fuel Injection) engine, helps to reduce exhaust emissions. This converter features a honeycomb structure consisting of stainless steel for a long service life and efficient operation.



Omega (Ω) shaped frame

An Omega shaped frame has been adopted based on the Omega chassis concept. This frame consists of a rigidly mounted engine as a frame member for rigidity and strength, providing the machine with a lower center gravity. The higher rigidity of the front end also contributes to stable machine behaviors during braking.



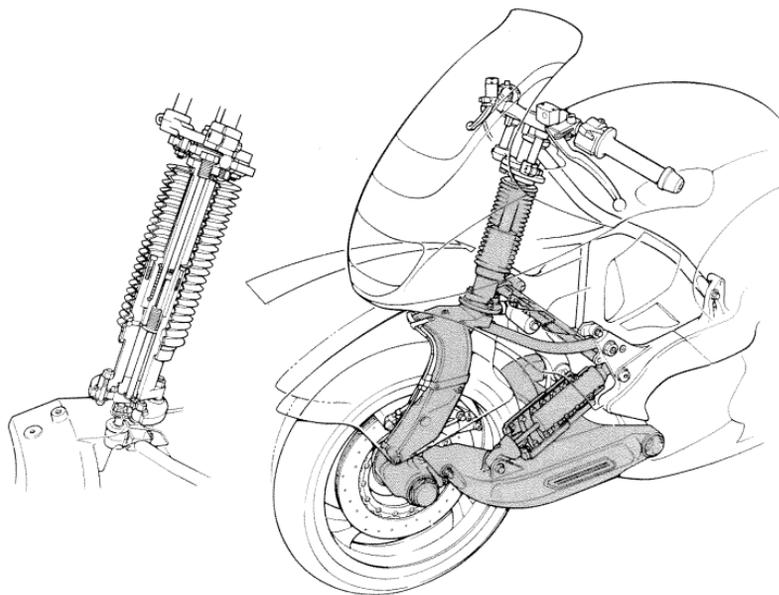
Single-sided swingarm front suspension

The omega shaped frame is followed by the adoption of an entirely new suspension system.

This system has enabled smooth suspension that can absorb shocks from the road by means of the separate functions of steering and suspension.

Another advantage of this system is the freedom with which the machine dimensions can be set according to the lower and upper arm arrangement.

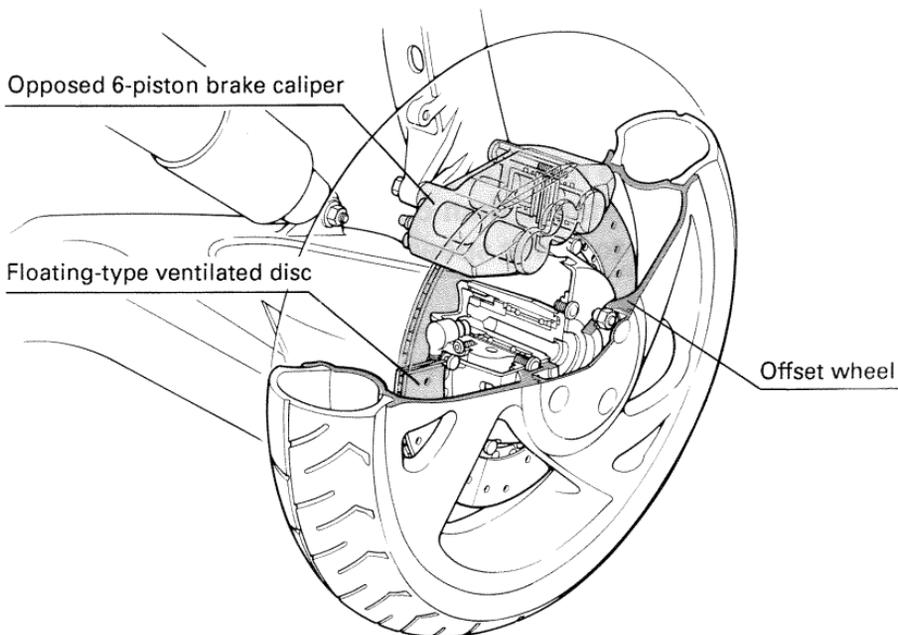
With the combined anti-nose dive geometry, this model now has a stable stopping behavior.



Front offset wheel/center disc

The newly designed offset wheels are adopted followed by the adoption of the single-sided swingarm front suspension.

Also the front brake has a floating-type ventilated disc of a better cooling effect provided in the wheel center, and the brake caliper is of an opposed 6-piston type for stable stopping power.



Anti-lock Brake System (ABS)

The ABS (Anti-lock Brake System) features an electronic control system employing a dual control device for the front and rear independently. During emergency braking it securely controls wheel lockup on changing road surfaces and under, varying weather conditions, thereby giving full play to the tire's inherent performance while providing for a smooth braking action.

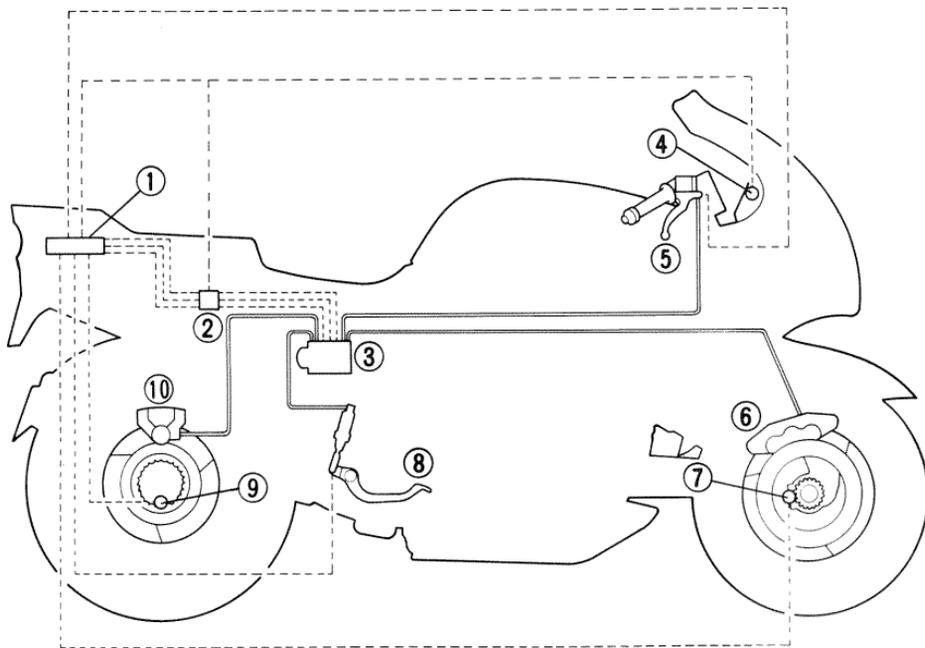
The ABS can be operated in the same manner as the ordinary brake, using the brake lever and brake pedal.

WARNING

- **The ABS is not a device intended for a shorter braking distance.**
- **Depending on road surfaces (a rough or gravel road, etc.), a motorcycle with the ABS may have a longer braking distance than one without it. Keep enough distance from the vehicle ahead according to traffic speed.**

NOTE:

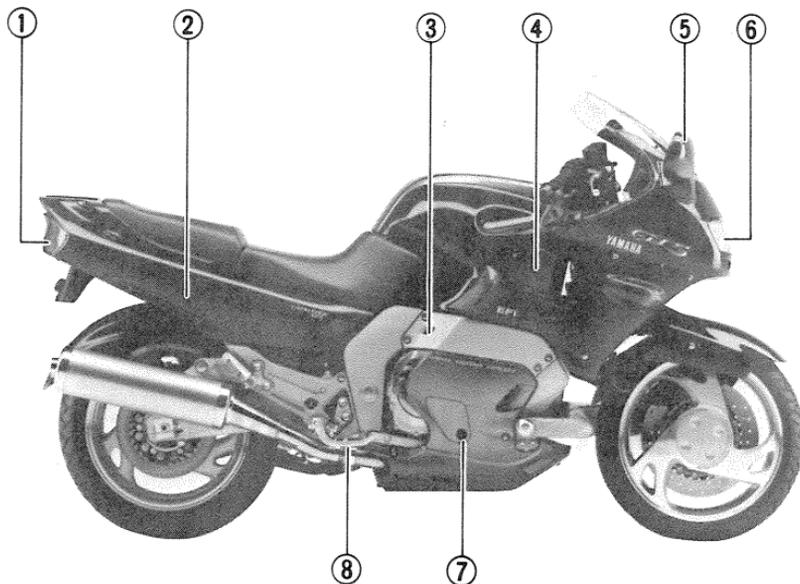
When the ABS is in operation, a pulsating action may be felt at the brake lever or brake pedal, but this is nothing abnormal.



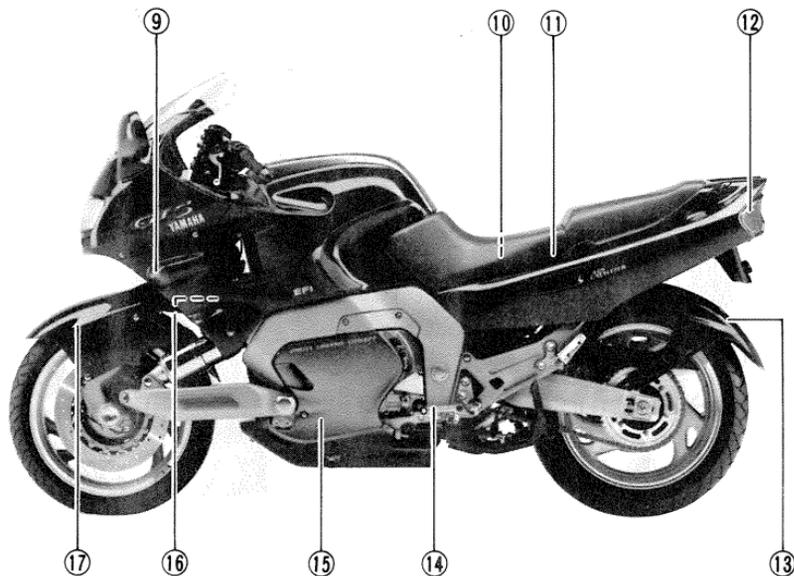
- 1. Electronic Control Unit (ECU)
- 2. Relay box
- 3. Hydraulic Unit (HU)
- 4. Warning light
- 5. Front brake lever

- 6. Front brake caliper
- 7. Sensor/sensor ring
- 8. Rear brake pedal
- 9. Sensor/sensor ring
- 10. Rear brake caliper

DESCRIPTION

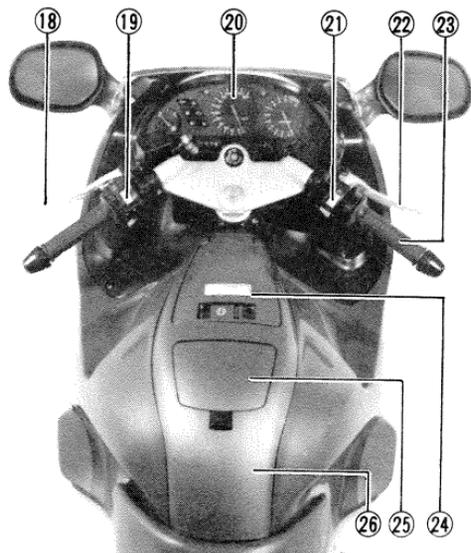


- | | |
|----------------------|-------------|
| 1. Tail/Brake light | (Page 8-47) |
| 2. Side cover | (Page 5-28) |
| 3. Idle adjust screw | (Page 8-20) |
| 4. Side cowling | (Page 5-30) |
| 5. Rear view mirror | (Page 5-26) |
| 6. Headlight | (Page 8-45) |
| 7. Oil level window | (Page 8-8) |
| 8. Rear brake pedal | (Page 5-20) |



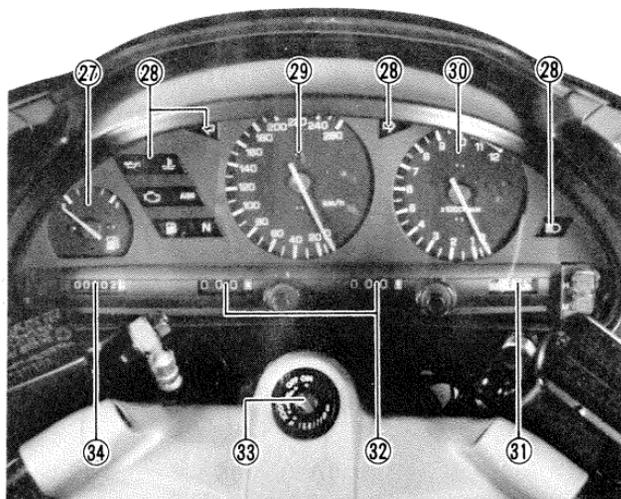
- 9. Front flasher light (Page 8-48)
- 10. Helmet holder (Page 5-25)
- 11. Seat lock (Page 5-24)
- 12. Rear flasher light (Page 8-47)
- 13. Rear fender (Page 8-52)
- 14. Shift pedal (Page 5-19)
- 15. Lower cowling (Page 5-29)
- 16. Radiator (Page 8-13)
- 17. Front fender (Page 8-49)

E



- 18. Clutch lever (Page 5-19)
- 19. Handlebar switch (left) (Page 5-16)
- 20. Instrument panel (Page 5-3)
- 21. Handlebar switch (right) (Page 5-18)
- 22. Front brake lever (Page 5-20)
- 23. Throttle grip (Page 8-21)
- 24. Storage box (Page 5-25)
- 25. Fuel filler lid/fuel tank cap (Page 5-21)
- 26. Top cover (Page 5-29)

Instrument panel



- 27. Fuel gauge (Page 5-15)
- 28. Indicator light (Page 5-3)
- 29. Speedometer (Page 5-14)
- 30. Tachometer (Page 5-14)
- 31. Digital clock (Page 5-15)
- 32. Twin trip odometer (Page 5-14)
- 33. Main switch (Page 5-2)
- 34. Odometer (Page 5-14)

MOTORCYCLE IDENTIFICATION

E

Identification numbers record

1. KEY IDENTIFICATION NUMBER:

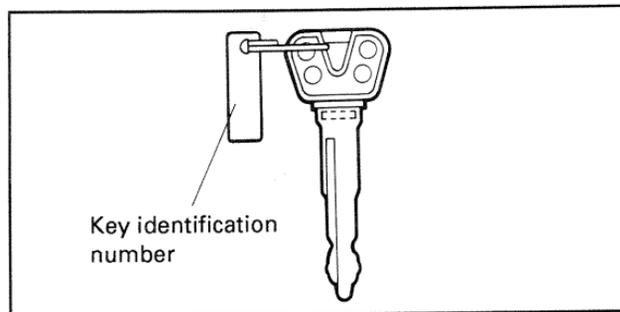
A7204

2. VEHICLE IDENTIFICATION NUMBER: FRAME SERIAL NUMBER:

4BHO18705

3. ENGINE SERIAL NUMBER:

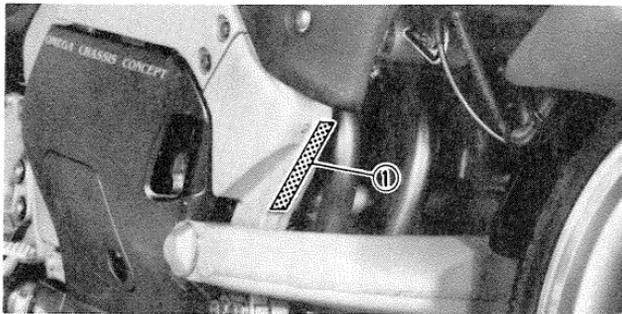
D1770



Your key identification number is stamped on your key as shown in the illustration. Record this number in the space provided for reference if you need a new key.

Record your vehicle identification number (or frame serial number) and engine serial number in the spaces provided to assist you in ordering spare parts from your Yamaha dealer or for reference in case your vehicle is stolen.

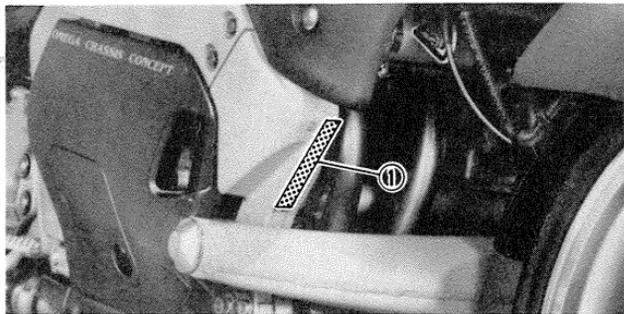
Frame serial number (Except for Spain)



1. Frame serial number

The frame serial number is stamped into the frame.

Vehicle identification number (For Spain)



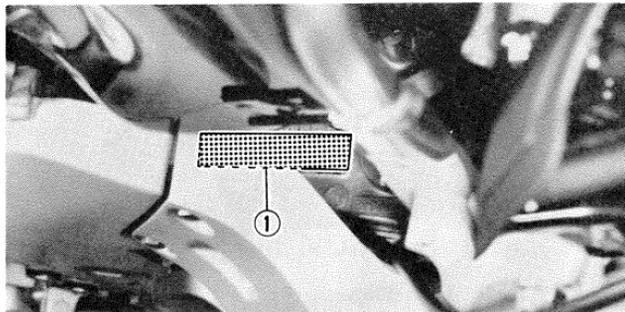
1. Vehicle identification number

The vehicle identification number is stamped into the frame.

NOTE: _____
The vehicle identification number is used to identify your motorcycle and may be used to register your motorcycle with the licensing authority in your state.

E

Engine serial number



1. Engine serial number

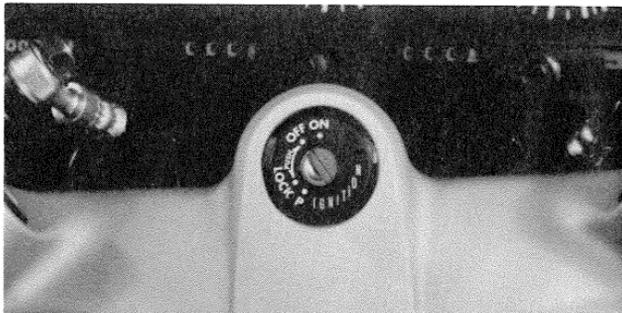
The engine serial number is stamped into the crankcase.

NOTE:

The first three digits of these numbers are for model identification; the remaining digits are the unit production number. Keep a record of these numbers for reference when ordering parts from a Yamaha dealer.

CONTROL FUNCTIONS

Main switch



The main switch controls the ignition and lighting systems. Its operation is described below.

ON:

Electrical circuits are switched on. The engine can be started. The key cannot be removed in this position.

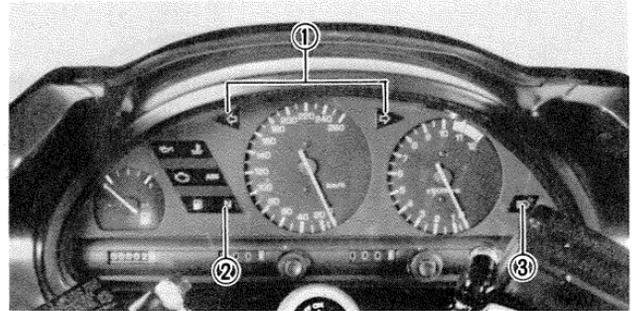
OFF:

All electrical circuits are switched off. The key can be removed in this position.

LOCK:

The steering is locked in this position, and all electrical circuits are switched off. The key can be removed in this position. Refer to "Steering lock" (page 5-23) for operation instructions.

Indicator lights



1. "TURN" indicator light
2. "NEUTRAL" indicator light
3. "HIGH BEAM" indicator light

 "TURN" indicator light (green except for England; orange for England):

This indicator flashes when the turn switch is "ON".

 "NEUTRAL" indicator light (green):
This indicator comes on when the transmission is in neutral.

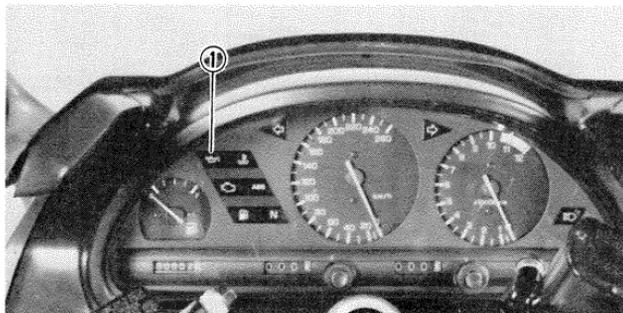
 "HIGH BEAM" indicator light (blue):
This indicator comes on when the headlight high beam is used.

P (Parking):

The steering is locked in this position, and the taillight and auxiliary light come on but all other circuits are off. The key can be removed in this position.

NOTE: _____

Always turn the main switch to "OFF" or "LOCK" and remove the key when the motorcycle is unattended.



1. "OIL LEVEL" indicator light

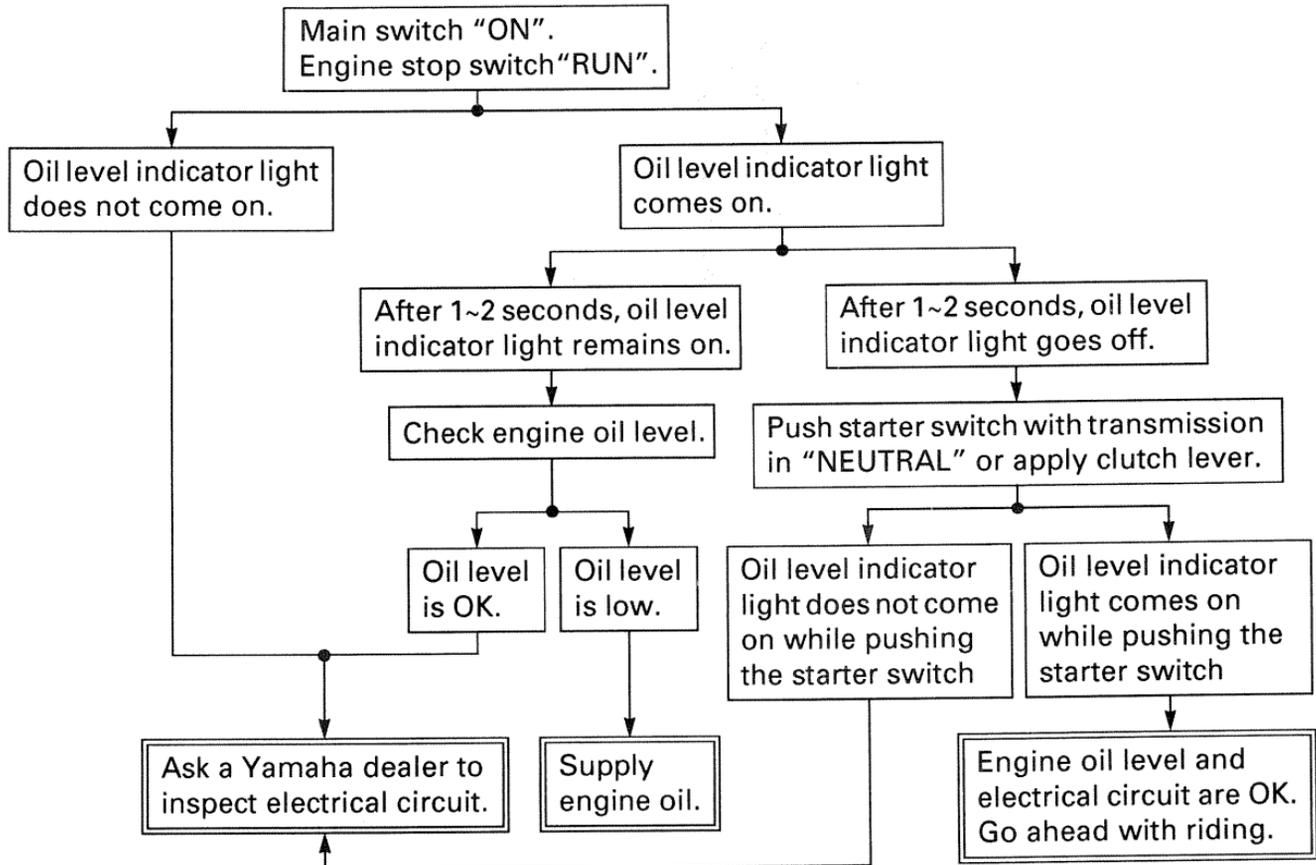
 "OIL LEVEL" indicator light (red):

This indicator comes on when the oil level is low. This light circuit can be checked by the following procedure.

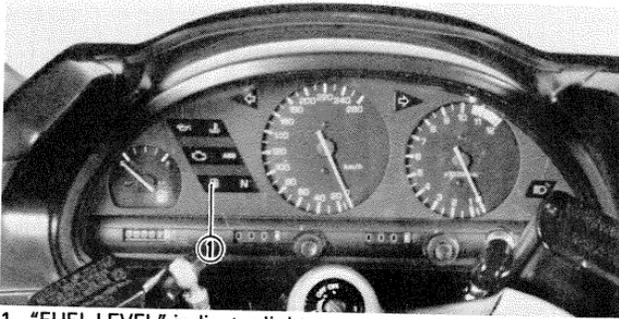
CAUTION: _____

Do not run the motorcycle until you know it has sufficient engine oil.

Oil level indicator circuit check



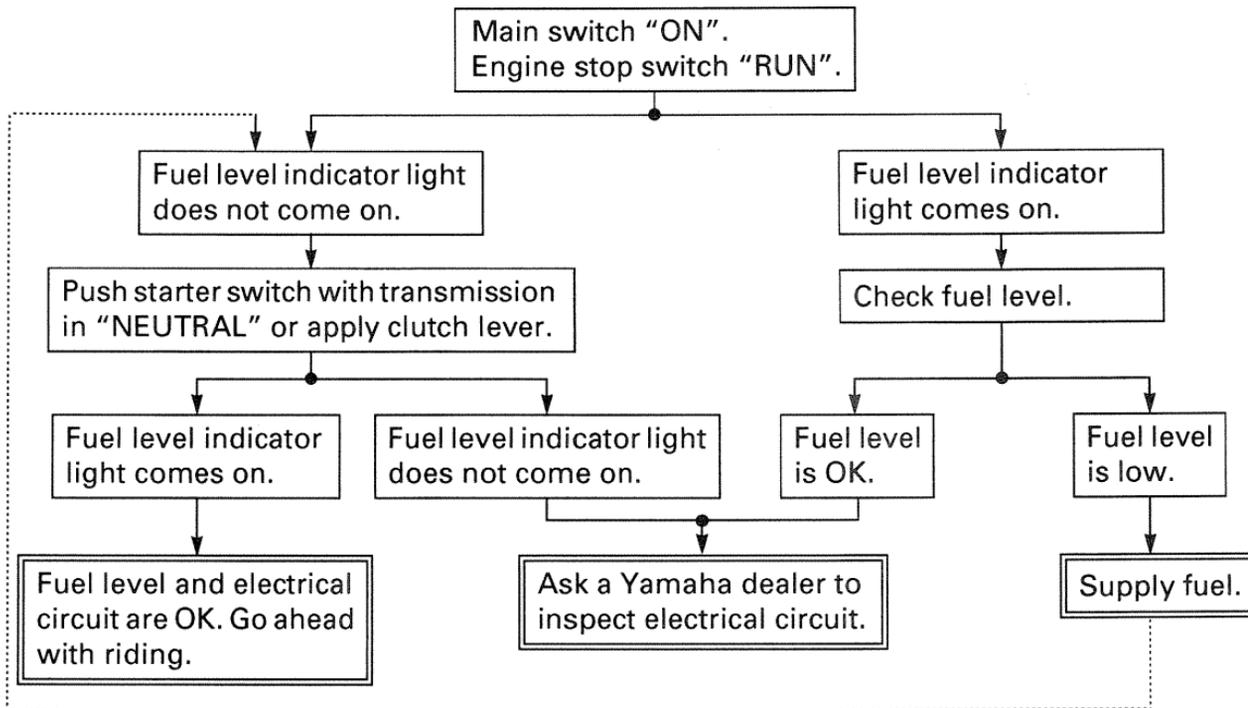
E

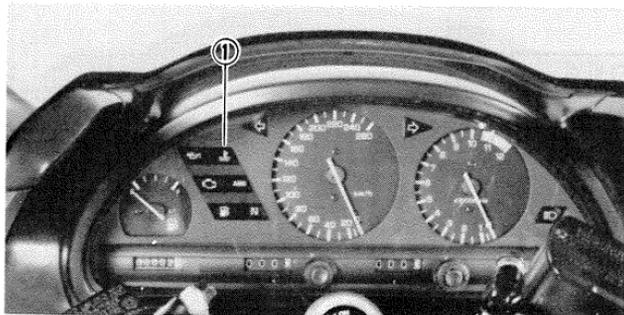


1. "FUEL LEVEL" indicator light

 "FUEL LEVEL" indicator light (red):
When the fuel level drops below approximately 3.5 L (0.8 Imp gal, 0.9 US gal), this light will come on. When this light comes on, fill the tank at the first opportunity.

Fuel level indicator circuit check





1. "Coolant temp." warning indicator light

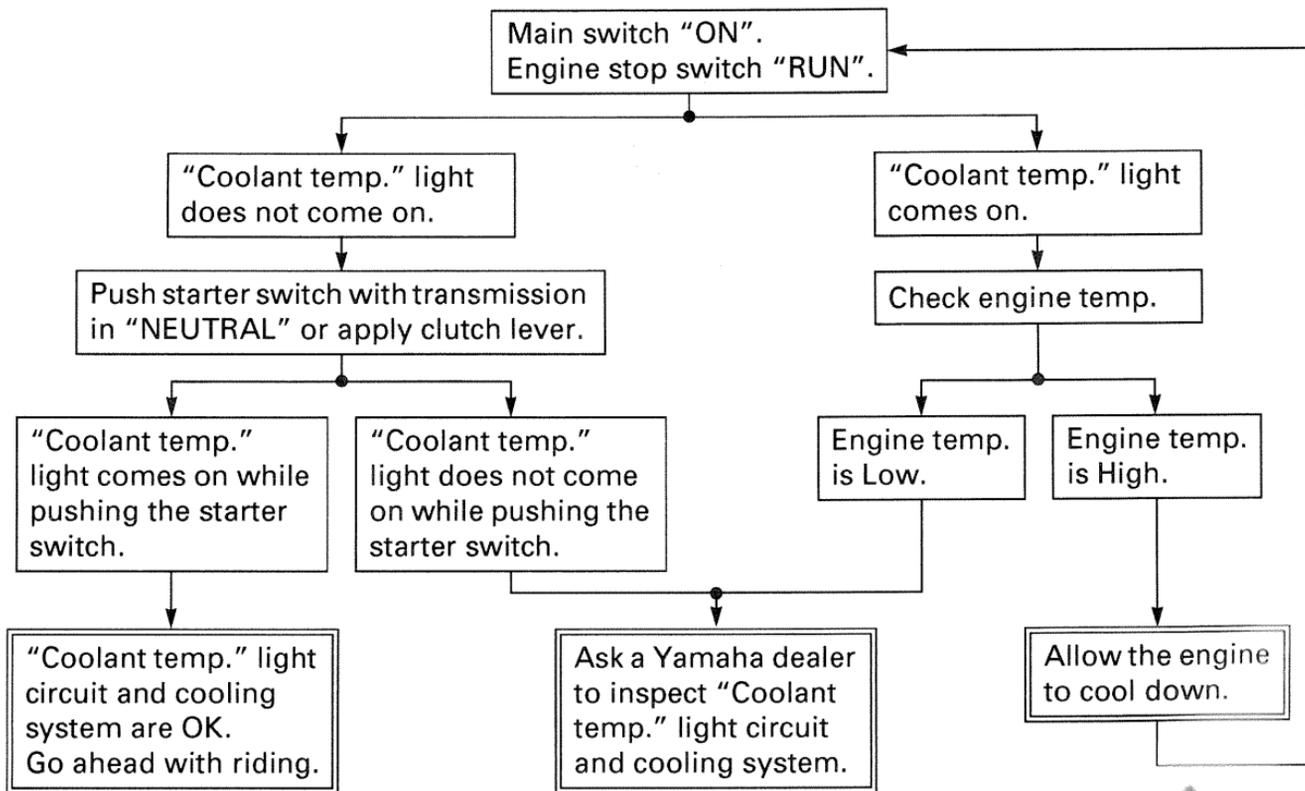
 "Coolant temp." warning indicator light (red):

This indicator light comes on when the engine overheats (about 120°C). So stop the engine immediately and wait until it cools down sufficiently. This light can be checked by the following procedure.

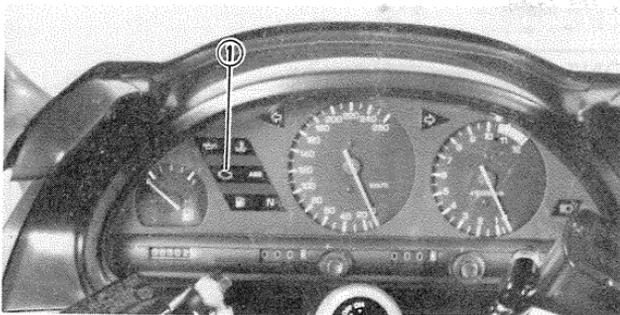
CAUTION:

When the engine is overheated, do not continue riding.

Coolant temp. warning indicator circuit check



E



1. "EFI" warning light



"EFI" warning light (orange):

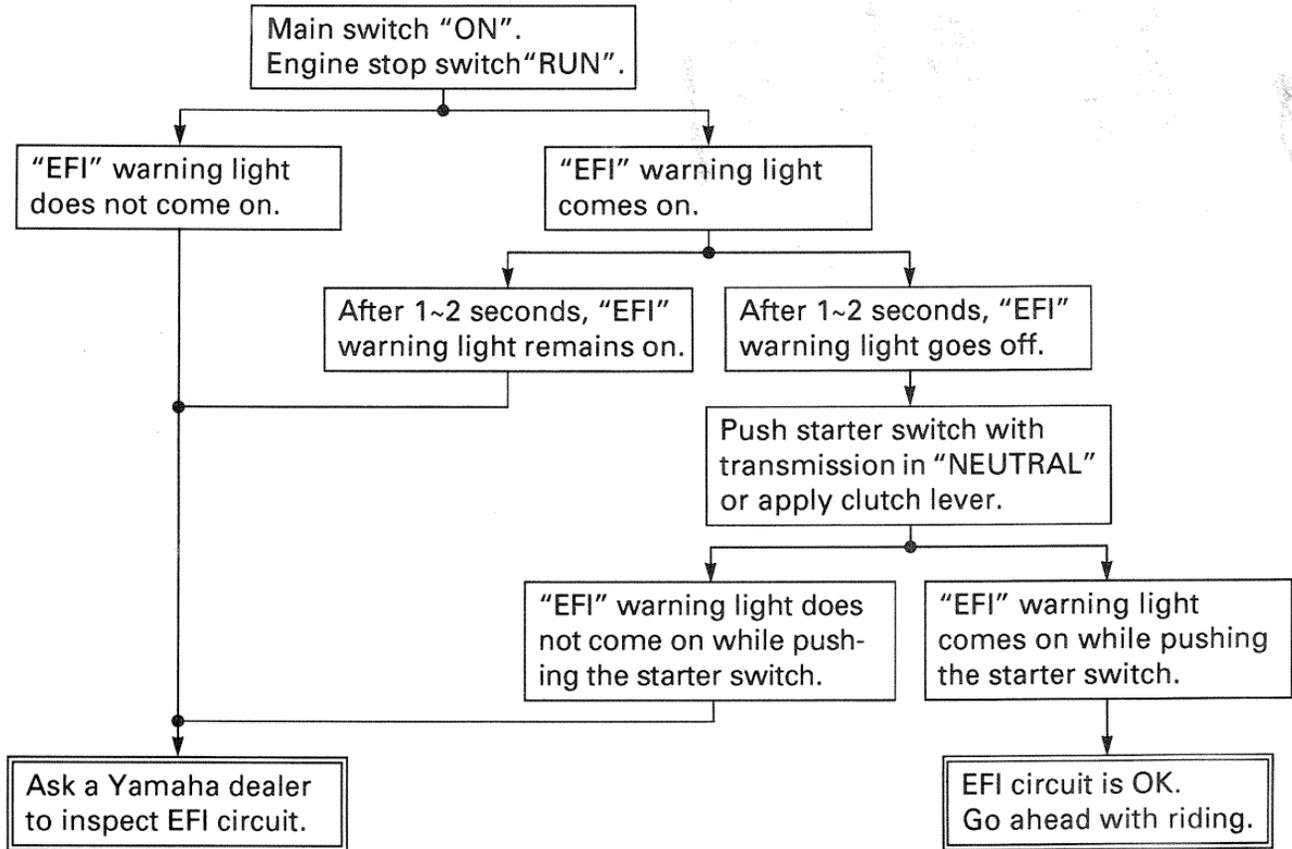
This model is equipped with Electronic Fuel Injection (EFI). (Refer to page 2-2)

If this warning light stays on, there may be something wrong with the "EFI" system. Please consult with a Yamaha dealer. This light circuit can be checked by the following procedure.

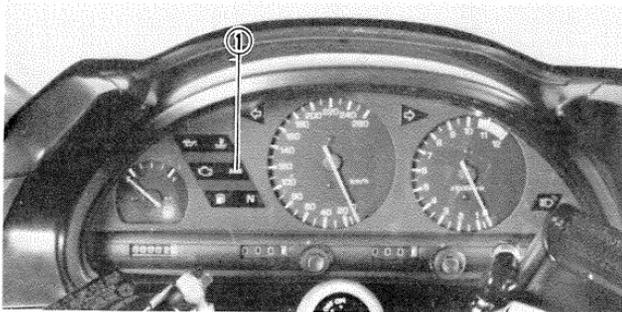
NOTE: _____

If the warning light flashes while pushing the starter switch, turn the main switch to "OFF" and then back to "ON". If it still flashes when pushing the starter switch, ask a Yamaha dealer to inspect the EFI circuit.

"EFI" warning light circuit check



E



1. "ABS" warning light

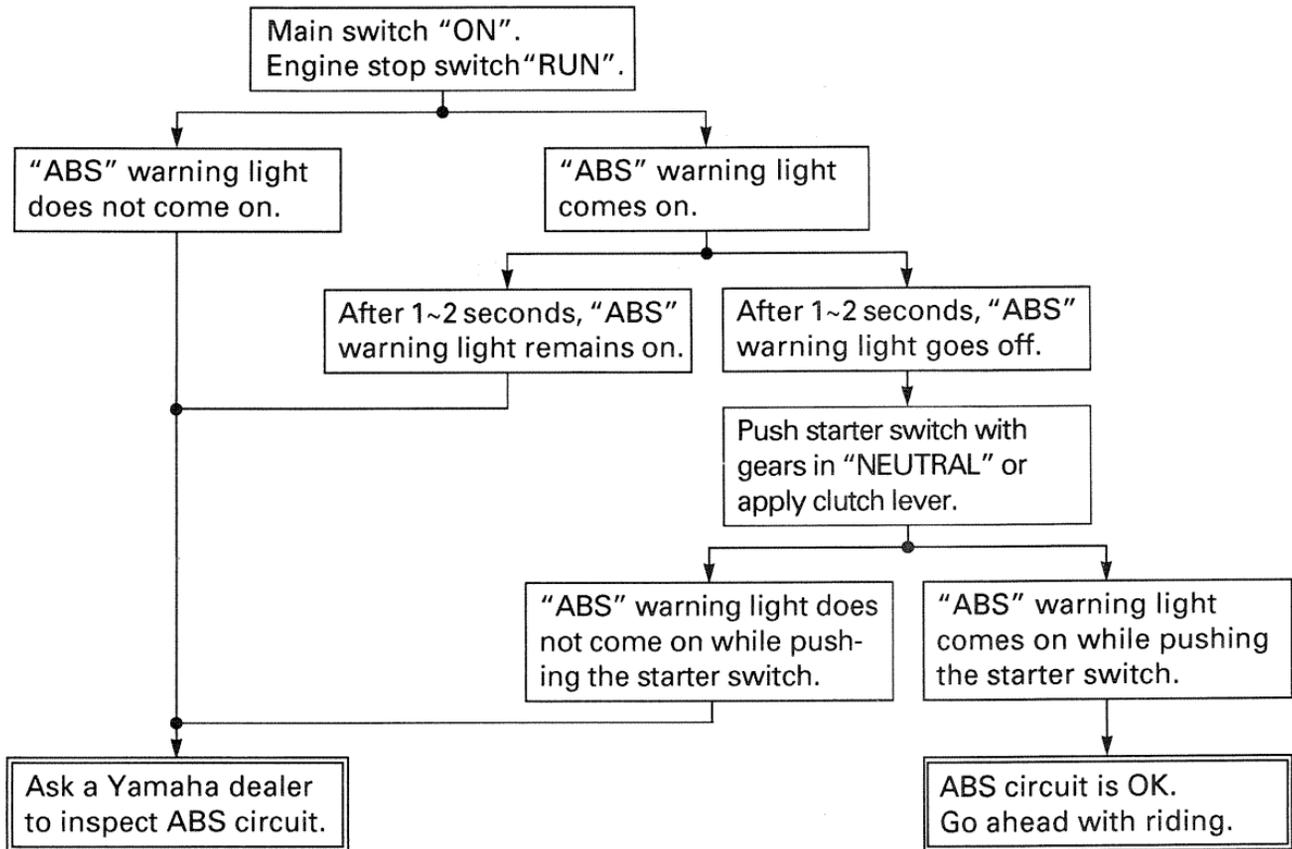
ABS "ABS" warning light (red):

This model is equipped with the ABS (Anti-lock Brake System). (Refer to page 2-8)
If the ABS warning light is flashing or remaining on, there may be something wrong with the ABS circuit. Please consult with your Yamaha dealer.

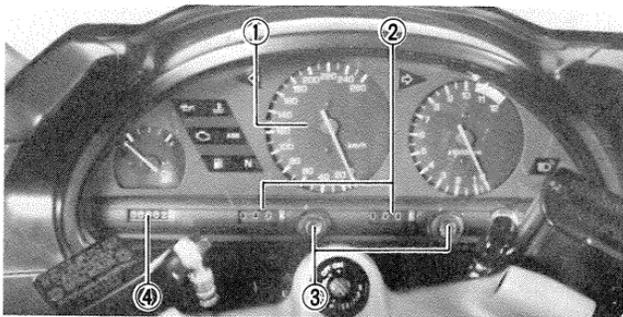
⚠ WARNING

When the ABS warning light remains on, braking returns to the ordinary brake, so be careful not to cause the wheel to lock in emergency braking.

"ABS" warning light circuit check



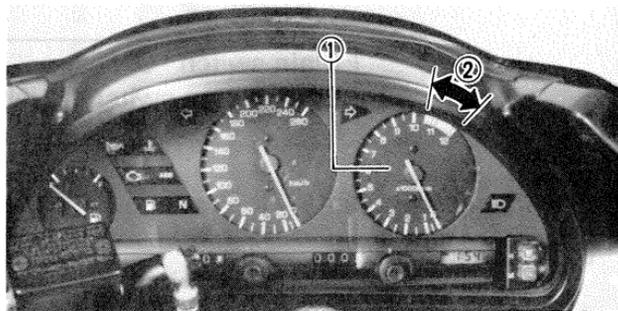
Speedometer



1. Speedometer
2. Trip odometer
3. Reset switch
4. Odometer

The speedometer shows riding speed. This speedometer is equipped with an odometer and trip odometer. The trip odometer can be reset to "0" with the reset switch. Use the odometer together with the fuel gauge to estimate how far you can ride on a tank of fuel before going to "EMPTY". This information will enable you to plan fuel stops in the future.

Tachometer



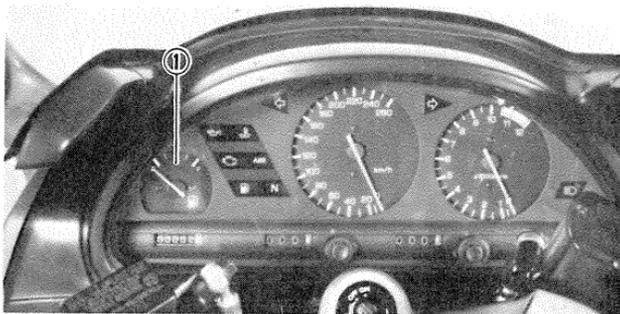
1. Tachometer
2. Red zone

This model is equipped with an electric tachometer so the rider can monitor the engine speed and keep it within the ideal power range.

CAUTION:

Do not operate in the red zone
Red zone: 10,500 r/min and above

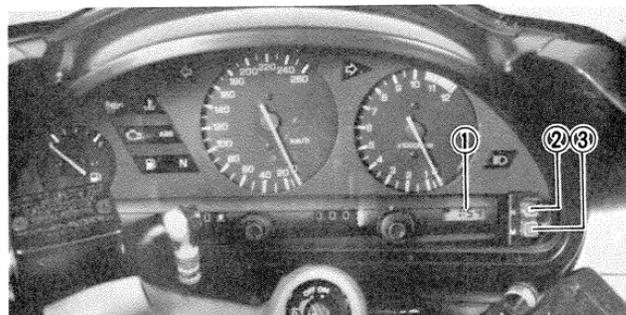
Fuel gauge



1. Fuel gauge

This model is equipped with an electric fuel gauge so the rider can monitor the fuel level in the fuel tank. When the needle indicates "E" (Empty), about 3.5 L (0.8 Imp gal, 0.9 US gal) remain in the fuel tank.

Digital clock



1. Digital clock
2. "H (hour)" switch
3. "M (minute)" switch

This digital clock always shows the time regardless of the main switch position.

Adjustment:

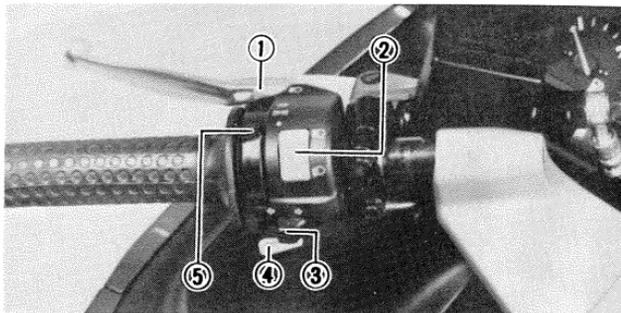
1. Turn the main switch to "ON".
2. The time (hour) setting can be made by pushing or holding the "H" switch.
3. The time (minute) setting can be made by pushing or holding the "M" switch.

NOTE: _____

When setting the clock after its power source is cut by a removed battery, etc., first set the time for 1:00 AM, then, go on to set it for the correct time.

E

Handlebar switches:



1. "PASS" switch
2. "LIGHTS (Dimmer)" switch
3. "TURN" signal switch
4. "HORN" switch
5. "LIGHTS" switch

"PASS" switch

Press the switch to operate the passing light.

"LIGHTS" (Dimmer) switch

Turn the switch to "☰" for the high beam and to "☷" for the low beam.

"TURN" signal switch

To signal a right-hand turn push the switch to "☞"; to signal a left-hand turn push the switch to "☛".

Once the switch is released it will return to the center position.

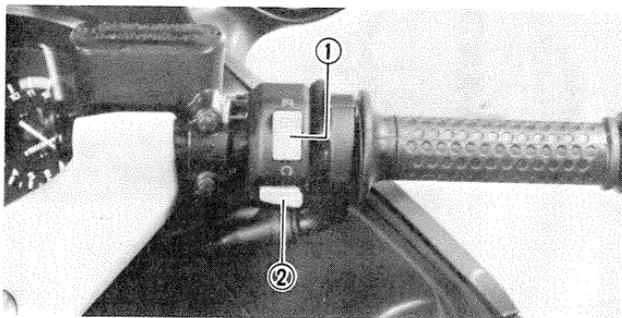
To cancel the signal push the switch in after it has returned to the center position.

"HORN" switch

Press the switch to sound the horn.

"LIGHTS" switch

Turning the light switch to "⤵⤴" turns on the auxiliary light, taillight, and meter lights. Turning to "⚙", turns the headlight on also.



1. "ENGINE STOP" switch 2. "START" switch

"ENGINE STOP" switch

The engine stop switch is a safety device for use in an emergency such as when the motorcycle overturns or if trouble occurs in the throttle system. Turn the switch to "○" to start the engine. In case of emergency, turn the switch to "⊗" to stop the engine.

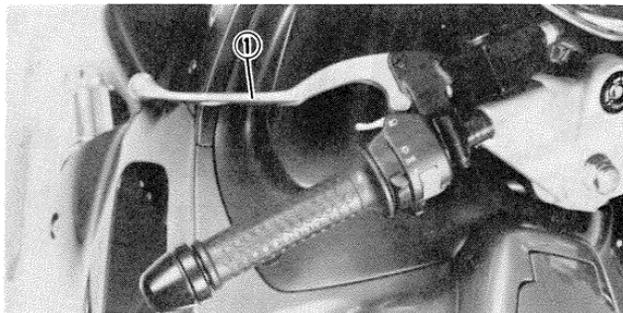
"START" switch

The starter motor cranks the engine when pushing the starter switch.

CAUTION:

See starting instructions prior to starting the engine.

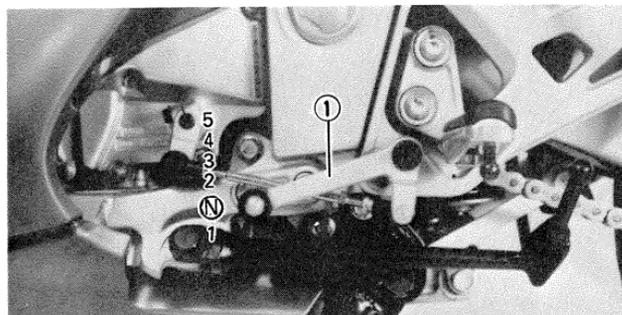
Clutch lever



1. Clutch lever

This model is provided with a hydraulic clutch. The clutch lever is located on the left handlebar and the starting circuit cut-off switch is incorporated in the clutch lever holder. Pull the clutch lever toward the handlebar to disengage the clutch, and release the lever to engage the clutch. The lever should be pulled rapidly and released slowly for smooth clutch operation. (Refer to the engine starting procedures for a description of the starting circuit cut-off switch.)

Shift pedal



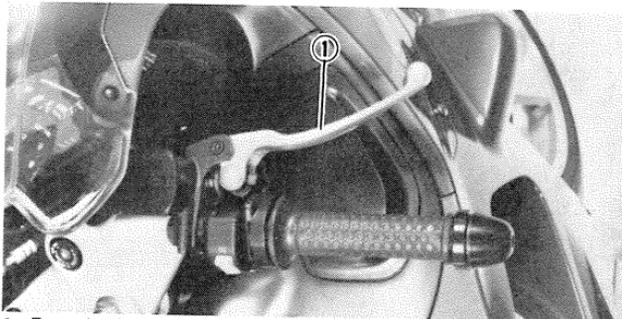
1. Shift pedal

N. Neutral

This motorcycle is equipped with a constant-mesh 5-speed transmission. The shift pedal is located on the left side of the engine and is used in combination with the clutch when shifting.

E

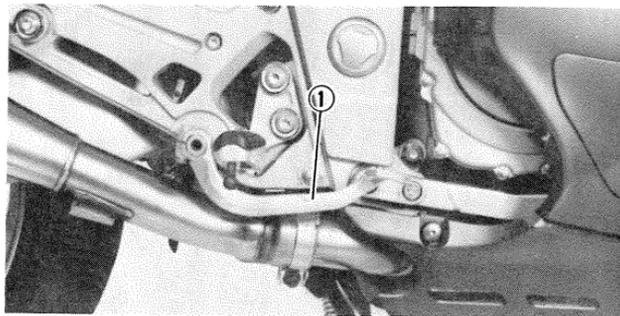
Front brake lever



1. Front brake lever

The front brake lever is located on the right handlebar. Pull it toward the handlebar to activate the front brake. The front brake lever is equipped with a lever position adjuster. Refer to page 8-24 for adjustment.

Rear brake pedal



1. Rear brake pedal

The rear brake pedal is on the right side of the motorcycle. Press down on the brake pedal to apply the rear brake.

Fuel tank cap



TO OPEN:

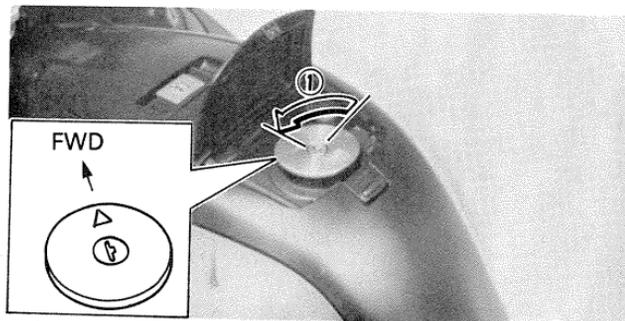
1. Open the fuel filler lid by pushing down the button.



1. Unlock

2. Insert the key and turn it 1/4 turn clockwise. The lock will be released and the cap can be opened.

E

E

1. Lock

TO CLOSE:

1. Push the tank cap into position with the key inserted. To remove the key, turn it counterclockwise to the original position.
2. Close the fuel filler lid while pushing down the bottom.

NOTE:

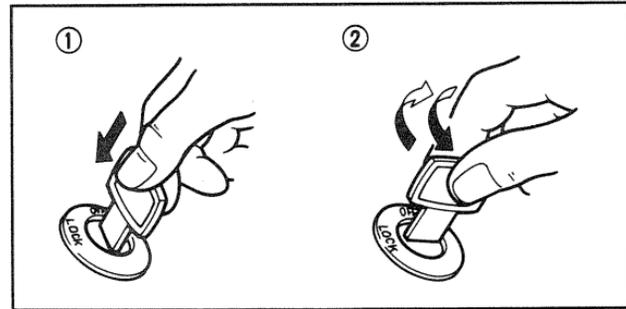
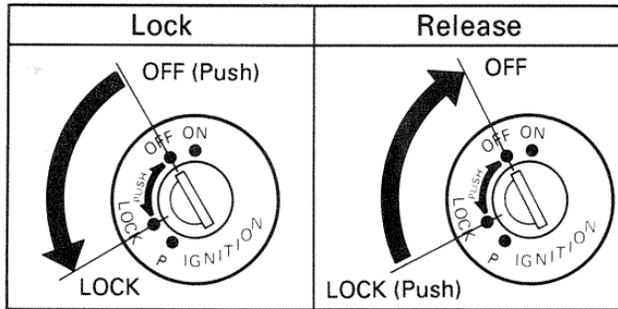
This tank cap cannot be closed unless the key is in the lock. The key cannot be removed if the cap is not locked properly.



WARNING

Be sure the cap is properly installed and locked in place before riding the motorcycle.

Steering lock



1. Push

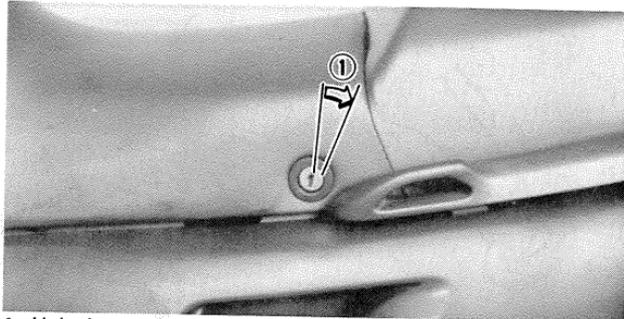
2. Turn

The steering is locked when the main switch is turned to "LOCK". To lock the steering, turn the handlebars all the way to the left or right. With the key at "OFF", while pushing it into the main switch, turn it counterclockwise to "LOCK", and remove it. To release the lock, turn it to "OFF" while pushing the key at "LOCK".



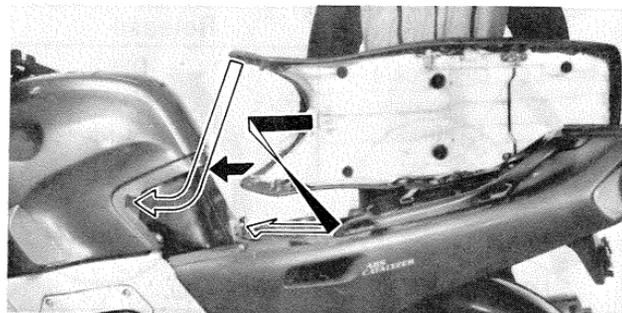
Seat

E



1. Unlock

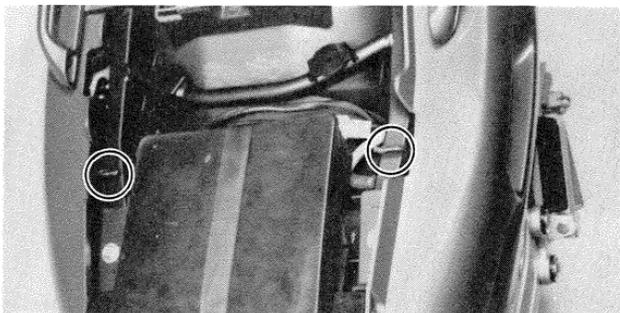
To remove the seat, insert the key in the lock and turn it clockwise.



When reinstalling the seat, insert the lobes on the seat front into the receptacles on the frame and side cowling, then push down the seat.

NOTE: _____
Make sure that the seat is securely fitted.

Helmet holder

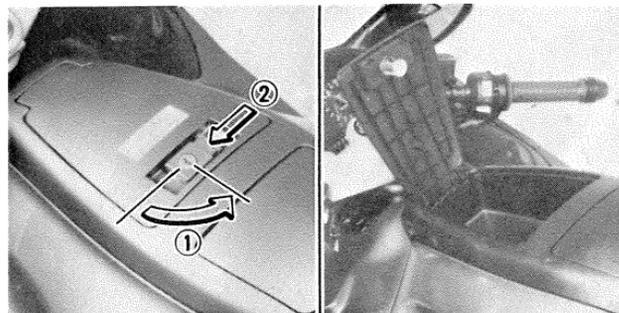


The helmet holder is under the seat. Remove the seat and hook the helmet on the helmet holder. Then, reinstall the seat and lock it.

⚠ WARNING

Never ride with a helmet in the helmet holder. The helmet may hit objects, causing loss of control and possibly an accident.

Storage box



1. Unlock
2. Push

TO OPEN:

1. Unlock the storage box lid, insert the key and turn it 1/4 turn counterclockwise.
2. Push inward on the button and the lid will open.

⚠ WARNING

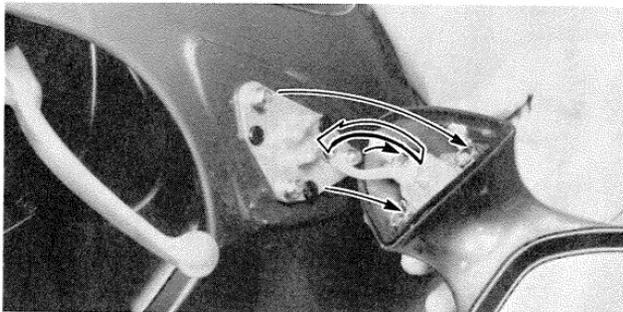
Do not exceed maximum load.
Maximum load: 1 kg (2.2 lbs)

TO CLOSE:

Reverse the above procedure.

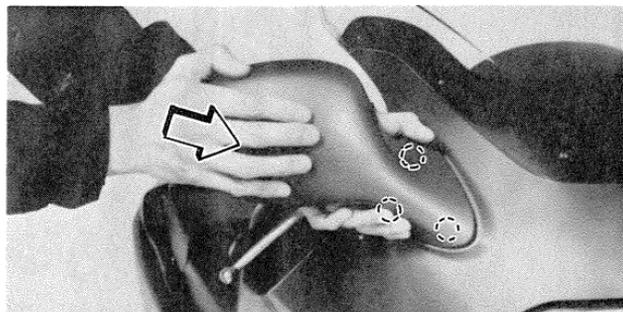
Rear view mirrors

E



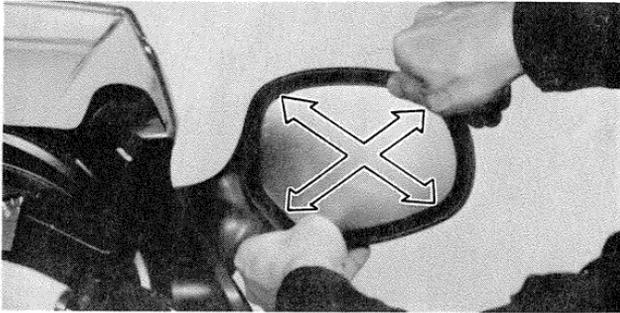
This motorcycle is equipped with detachable mirrors. They are designed to detach upon impact or collision. The mirrors can be reset onto their mounts by following the below procedure.

1. Set the mirror onto the mount so the fasteners are aligned as shown.



2. Firmly push the mirror inward on the areas shown until a distinct sound, the securing of the fasteners, is heard.

NOTE: _____
Resetting the mirrors may be easier to do by pushing inward on each area individually.

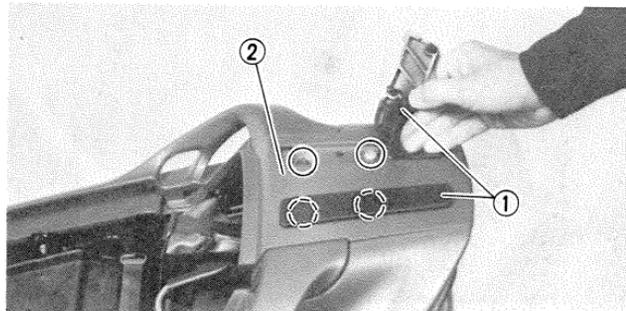


3. Adjust the mirrors by pushing inward on the edges as shown until the desired position is found.

E

Side cover

E

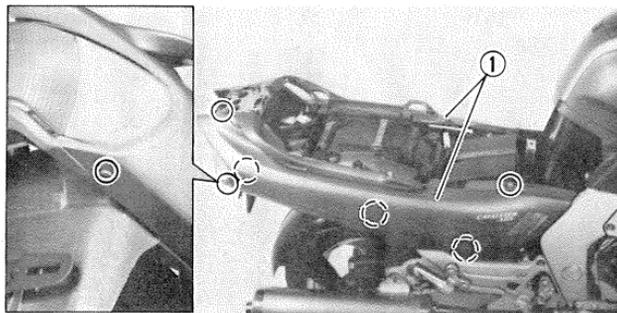


1. Molding

2. Tail cover

TO REMOVE:

1. Remove the seat.
2. Remove the molding and then remove the tail cover by removing the screws.



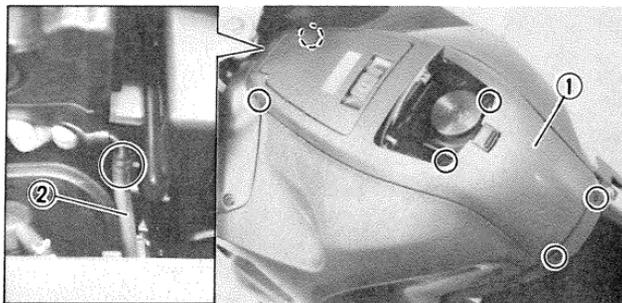
1. Side cover

3. Remove the screws and pull outward on the areas shown.

TO INSTALL:

1. Insert the side cover projection into the grommet, and tighten the screws.
2. Reinstall the tail cover and fit the molding.
3. Reinstall the seat.

Top cover

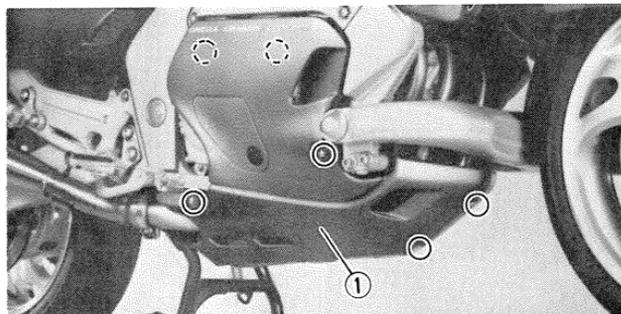


1. Top cover

2. Drain hose

1. Remove the seat.
2. Remove the holding screws.
3. Remove the fuel tank cap.
4. Disconnect the fuel drain hose, and then remove the top cover.
5. When installing the top cover, reverse the removal procedure.

Lower cowling



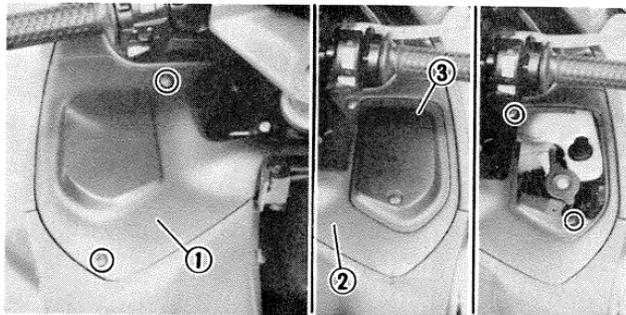
1. Lower cowling

To remove the lower cowling, remove the screws and pull outward on the areas shown.

Install by reversing the above procedure.

E

Side cowling



1. Inner panel (left)

2. Inner panel (right)

3. Reservoir tank lid

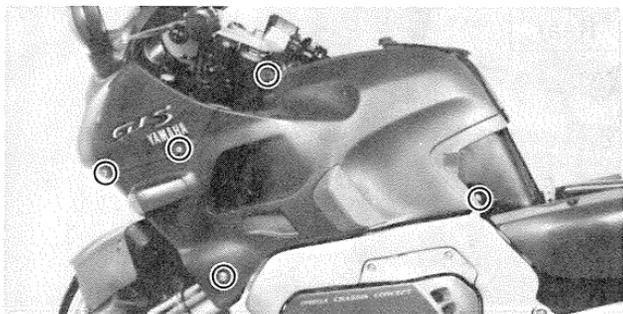
1. Remove the seat and top cover.
2. Remove the inner panel.

NOTE:

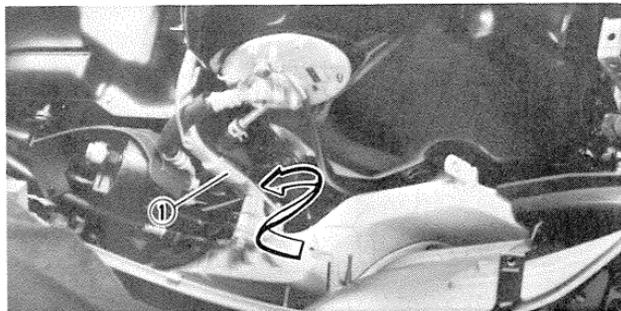
The right inner panel can be removed after removing the reservoir tank lid.



3. Disconnect the flasher lead.



4. Remove the holding screws and then remove the side cowling.

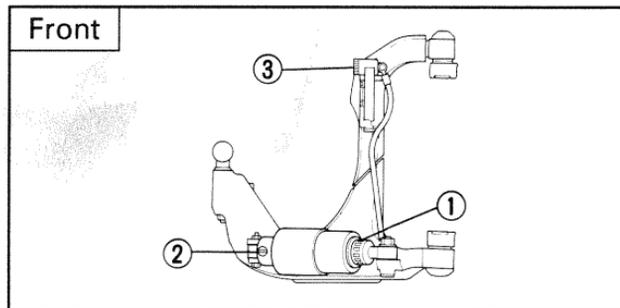


1. Fuel tank bracket

5. When installing the side cowling, reverse the removal procedure. Pay attention to the following points.
 - a. Fit the side cowling hook over the fuel tank bracket.
 - b. Connect the flasher lead.

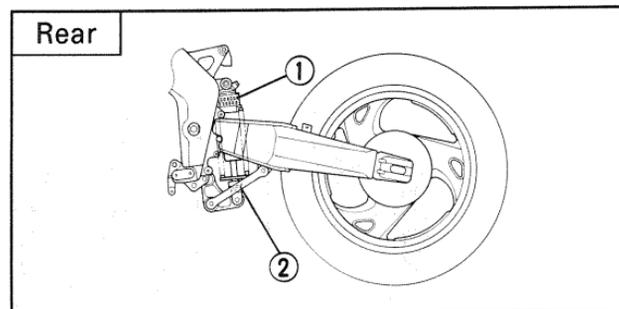
E

Front and rear shock absorber



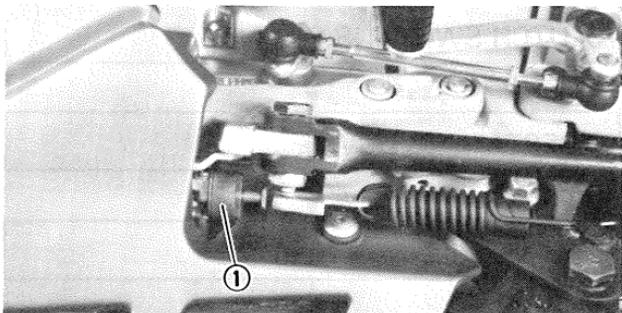
1. Spring preload adjuster
2. Rebound damping force adjuster
3. Compression damping force adjuster

The spring preload and the damping force of the front and rear shock absorber can be adjusted to suit the rider's preference, motorcycle's load (ex: optional accessories, etc.) and road conditions. Refer to page 8-36 for proper adjustment procedures.



1. Spring preload adjuster
2. Damping force adjuster

Sidestand



1. Sidestand switch

This model is equipped with an ignition circuit cut-off system. The motorcycle must not be ridden when the sidestand is down. The sidestand is located on the left side of the frame. (Refer to page 7-2 for an explanation of this system.)

⚠ WARNING

This motorcycle must not be operated with the sidestand in the down position. If the stand is not properly retracted, it could contact the ground and distract the operator, resulting in a possible loss of control.

Yamaha has designed into this motorcycle a lockout system to assist the operator in fulfilling the responsibility of retracting the sidestand. Please check carefully the operating instructions listed below and if there is any indication of a malfunction, return the motorcycle to a Yamaha dealer immediately for repair.

E

Sidestand/clutch switch operation check
Check the operation of the sidestand switch and clutch switch against the information below.

⚠ WARNING

E **Be sure to use the centerstand during this inspection.**

TURN MAIN SWITCH TO "ON" AND
ENGINE STOP SWITCH TO "RUN".

TRANSMISSION IS IN GEAR AND
SIDESTAND IS UP.

PULL IN CLUTCH LEVER AND
PUSH STARTER SWITCH.

ENGINE WILL START.

CLUTCH SWITCH IS OK.

SIDESTAND IS DOWN.

ENGINE WILL STALL.

SIDESTAND SWITCH IS OK.

⚠ WARNING

If improper operation is noted, consult a Yamaha dealer immediately.

PRE-OPERATION CHECKS

Before using this motorcycle, check the following points:

Item	Routine	Page
Front brake	Check operation, free play, fluid level and brake fluid leakage. Top-up with DOT#4 brake fluid if necessary.	6-4~6-5, 8-24~8-28
Rear brake	Check operation, free play, fluid level and brake fluid leakage. Top-up with DOT#4 (or #3) brake fluid if necessary.	
Clutch	Check operation, fluid level and brake fluid leakage. Top-up with DOT#4 (or #3) brake fluid if necessary.	6-5, 8-28
Throttle grip/housing	Check for smooth operation. Lubricate/Adjust if necessary.	6-6, 8-21, 8-32
Engine oil	Check oil level/add oil as required.	6-6, 8-8~8-12
Coolant reservoir tank	Check coolant level/top up as required.	6-7, 8-13~8-17
Drive chain	Check chain slack and condition. Adjust if necessary.	6-8, 8-29~8-31
Wheels/Tires	Check tire pressure, wear and damage.	6-8~6-14, 8-48~8-55
Control cable	Check for smooth operation. Lubricate if necessary.	8-31
Brake and Shift pedal shafts	Check for smooth operation. Lubricate if necessary.	8-32
Brake and clutch lever pivots	Check for smooth operation. Lubricate if necessary.	8-33
Centerstand and sidestand pivot	Check for smooth operation. Lubricate if necessary.	8-33
Fittings/fasteners	Check all chassis fittings and fasteners. Tighten/Adjust if necessary.	6-15, 8-7
Fuel tank	Check fuel level/top-up as required.	6-16~6-17, 6-19
Lights and signals	Check for proper operation.	6-15, 8-45~8-48

NOTE:

Pre-operation checks should be made each time the motorcycle is used. Such an inspection can be thoroughly accomplished in a very short time; and the added safety it assures is more than worth the time involved.

⚠ WARNING

If any item in the Pre-Operation Check is not working properly, have it inspected and repaired before operating the motorcycle.

E

Brakes (See page 8-24 for details)

1. Brake lever and brake pedal
Check for correct free play in the front brake lever and rear brake pedal and adjust if necessary. Make sure the brakes are working properly by checking at low speed shortly after starting out.

⚠ WARNING

A soft, spongy feeling in the brake lever (and/or brake pedal) indicates a failure in the brake system. Do not operate the motorcycle until the failure in the brake system is corrected. Ask a Yamaha dealer for immediate repairs. A soft, spongy feeling could indicate a hazardous condition in the brake system.

2. Brake fluid
Check the brake fluid level. Add fluid if necessary.

Recommended brake fluid: DOT #4

NOTE: _____
If DOT #4 is not available, #3 can be used for the rear brake only.

3. Check the disc pads.
Refer to page 8-26.

NOTE: _____
When this brake service is necessary, consult a Yamaha dealer.

Brake/Clutch fluid leakage

Apply each brake and clutch for a few minutes. Check to see if any brake fluid leaks out from the hose, joints master cylinders, or plunger case.

CAUTION:

Brake fluid may deteriorate painted surfaces or plastic parts. Never spill any fluid. If spilled, clean it up immediately.

⚠ WARNING

If brake fluid leakage is found, ask a Yamaha dealer for immediate repairs. Such leakage could indicate a hazardous condition.

Clutch (See page 8-28 for details)

Check the free play in the clutch lever, and make sure the lever operates properly. If the free play is incorrect, adjust it.

E

Throttle grip (See page 8-21 for details)

Turn the throttle grip to see if it operates properly, and check the free play. If the free play is incorrect, adjust it. Make sure the grip returns by spring force when released. Ask a Yamaha dealer to make any necessary adjustments.

Engine oil (See page 8-8 for details)

Make sure the engine oil is at the specified level. Add oil as necessary.

Recommended oil:**Oil quantity:**

Total amount:

3.2 L (2.8 Imp qt, 3.4 US qt)

Periodic oil change:

2.5 L (2.2 Imp qt, 2.6 US qt)

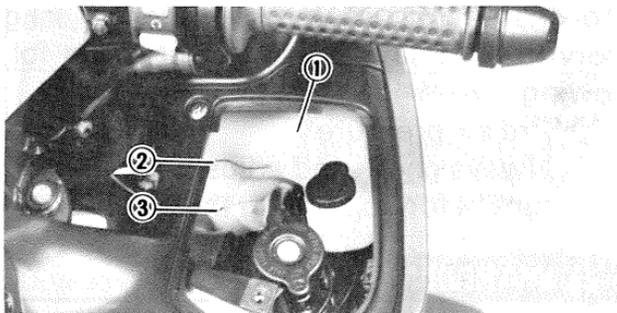
With oil filter replacement:

2.7 L (2.4 Imp qt, 2.8 US qt)

NOTE:

Recommended engine oil classification; API Service "SE", "SF" type or equivalent (e.g. "SF-SE", "SF-SE-CC", "SF-SE-SD" etc.).

Coolant (See page 8-13 for details)



1. Reservoir tank

2. "FULL" level

3. "LOW" level

Check the coolant level in the reservoir tank when the engine is cold. (The coolant level will vary with engine temperature.) The coolant level is satisfactory if it is between the FULL and LOW marks on the tank. If the coolant level is at or below the LOW level, add tap water (soft water) to bring the level up to FULL. Change the coolant every two years.

⚠ WARNING

Do not remove the radiator cap when the engine is hot.

CAUTION:

Hard water or salt water is harmful to the engine. You may use distilled water if you can't get soft water.

Reservoir tank capacity:

0.35 L (0.31 Imp qt, 0.37 US qt)

From LOW to FULL level:

0.20 L (0.18 Imp qt, 0.21 US qt)

E

Chain (See page 8-29 for details)

Check the general condition of the chain and the chain slack before every ride. Lubricate and adjust the chain as necessary.

Tires

To ensure maximum performance, long service, and safe operation, note the following:

1. Tire air pressure

Always check and adjust the tire pressure before operating the motorcycle.

 WARNING

Tire inflation pressure should be checked and adjusted when the temperature of the tire equals the ambient air temperature. Tire inflation pressure must be adjusted according to total weight of cargo, rider, passenger, and accessories (fairing, saddlebags, etc. if approved for this model), and vehicle speed.

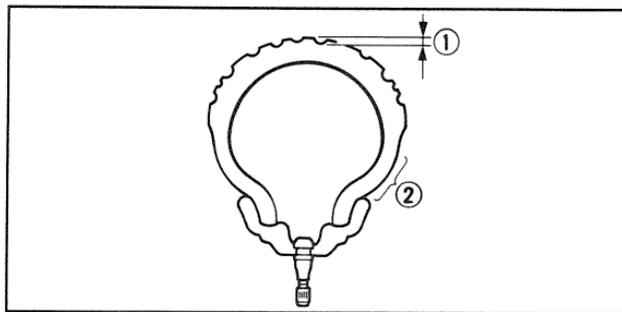
Basic weight: With oil and full fuel tank	279 kg (615 lbs)	
Maximum load*:	221 kg (487 lbs): Except for B,CH,I,A,E 191 kg (421 lbs): For B,I,CH 206 kg (454 lbs): For A,E	
Cold tire pressure:	Front	Rear
Up to 90 kg (198 lbs) load*	250 kPa (2.5 kgf/cm ² , 36 psi)	250 kPa (2.5 kgf/cm ² , 36 psi)
90 kg (198 lbs) load ~ Maximum load*	250 kPa (2.5 kgf/cm ² , 36 psi)	290 kPa (2.9 kgf/cm ² , 42 psi)
High speed riding	250 kPa (2.5 kgf/cm ² , 36 psi)	290 kPa (2.9 kgf/cm ² , 42 psi)

* Load is the total weight of cargo, rider, passenger, and accessories.

WARNING

Proper loading of your motorcycle is important for several characteristics of your motorcycle; such as handling, braking, performance and safety. Do not carry loosely packed items that can shift. Securely pack your heaviest items close to the center of the motorcycle, and distribute the weight evenly from side to side. Properly adjust the suspension for your load, and check the condition and pressure of your tires. **NEVER OVERLOAD YOUR MOTORCYCLE.** Make sure the total weight of the cargo, rider, passenger, and accessories (fairing, saddlebags, etc. if approved for this model) does not exceed the maximum load of the motorcycle. Operation of an overloaded motorcycle could cause tire damage, an accident, or even injury.

E



1. Tread depth

2. Side wall

2. Tire inspection

Always check the tires before operating the motorcycle. If center tread depth reaches the limit as shown, if the tire has a nail or glass fragments in it, or if the side wall is cracked, contact a Yamaha dealer immediately and have the tire replaced.

Minimum tire tread depth (front and rear)	1.0 mm (0.04 in)
--	------------------

NOTE:

These limits may be different by regulation from country to country. If so, conform to the limits specified by the regulations of your own country.

WARNING

Operating the motorcycle with excessively worn tires decrease riding stability and can lead to loss of control. Have excessively worn tires replaced by a Yamaha dealer immediately. Brakes, tires, and related wheel parts replacement should be left to a Yamaha Service Technician.

3. Tire information

This motorcycle is equipped with tubeless tires, tire valves and cast wheels.

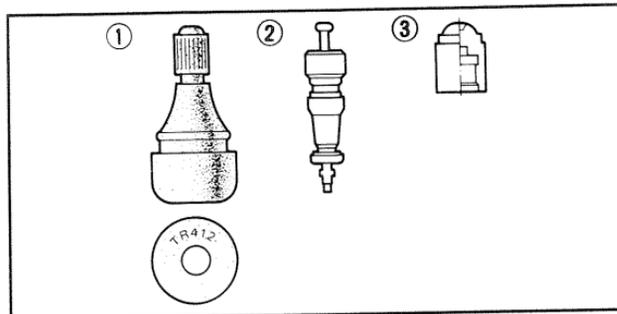
⚠ WARNING

After extensive tests, the tires mentioned on the next page have been approved by Yamaha motor Co., Ltd. for this model. No guarantee for handling characteristics can be given if tire combinations other than what is approved are used on this motorcycle. The front and rear tires should be of the same manufacture and design.

⚠ WARNING

(Rear tire only)

- The use of tire valves and valve cores other than listed below could cause tire deflation during extreme high speed riding. Always use genuine parts or their equivalent for replacement.
- Be sure to install the valve caps securely, as these are important to prevent air pressure leakage during extreme high speed riding.



1. Tire valve
2. Valve core
3. Valve cap with seal

	Type
Tire valve	TR412
Valve core	#9000A (Genuine)

E

FRONT:

Manufacture	Size	Type
Bridgestone	130/60 ZR17	CY17
Dunlop	130/60 ZR17	D202F
Michelin	130/60 ZR17	A89X
Metzeler	130/60 ZR17	ME33
Pirelli	130/60 ZR17	MT09

REAR:

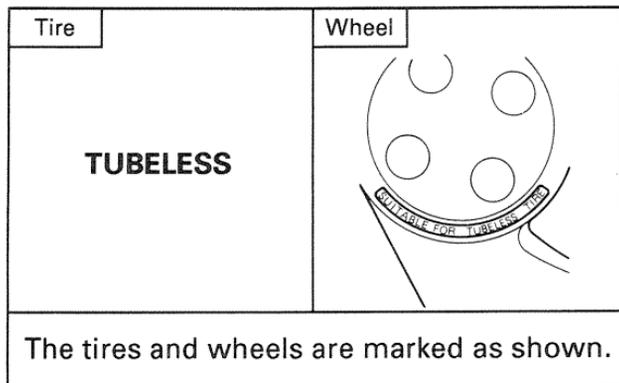
Manufacture	Size	Type
Bridgestone	170/60 ZR17	CY20
Dunlop	170/60 ZR17	D202
Michelin	170/60 ZR17	M89X
Metzeler	170/60 ZR17	ME55A
Pirelli	170/60 ZR17	MT08

 **WARNING**

This motorcycle is fitted with super high-speed running tires. The following points must be observed in order for you to make fully effective use of these tires.

1. Never fail to use specified tires in tire replacement. Other tires may have a danger of bursting at super high-speeds.
2. New tires have a relatively low grip on the road surface until they have been slightly worn. Therefore, approximately 100 km (60 mi) should be traveled at normal speed before any high-speed riding is done.
3. Before any high-speed runs, the tires should be warmed-up sufficiently.
4. Always inflate to the correct tire pressure according to the operating conditions.

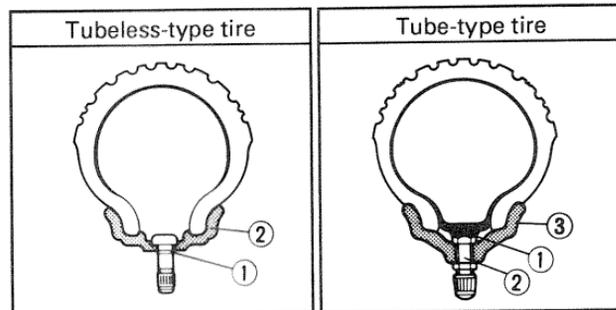
Tubeless tires and cast wheels



This motorcycle is equipped with cast wheels designed for either tube-type or tubeless tires. Tubeless tires are installed as standard equipment.

⚠ WARNING

Do not attempt to use tubeless tires on a wheel designed for use only with tube-type tires. Tire failure and personal injury may result from sudden deflation.



1. Air valve
2. Cast wheel
(Tubeless wheel)

1. Tube
2. Air valve
3. Cast wheel

Tubeless-type Wheel

→ Tubeless or Tube-type Tires

Tube Wheel

→ Tube-type Tires only

GERMANY AND AUSTRIA:

IT IS NOT ALLOWED TO USE TUBE-TYPE TIRES ON A MOTORCYCLE ORIGINALLY EQUIPPED WITH TUBELESS TIRES.

E

⚠ WARNING

When using tube-type tires, be sure to install the proper tube also.

To ensure maximum performance, long service, and safe operation, note the following:

1. Always inspect the wheels before a ride. Check for cracks, bends, or warpage of the wheels. If any abnormal condition exists in a wheel, consult a Yamaha dealer. Do not attempt even small repairs to the wheel. If a wheel is deformed or cracked, it must be replaced.
2. Tires and wheels should be balanced whenever either one is changed or replaced. Failure to have a wheel balanced can result in poor performance, adverse handling characteristics, and shortened tire life.

3. After installing a tire, ride conservatively to allow the tire to seat itself on the rim properly. Failure to allow proper seating may cause tire failure, resulting in damage to the motorcycle and injury to the rider.

(Front tire only)

4. After repairing or replacing a tire, check to be sure the valve stem lock nut is securely fastened. If not, torque it as specified.

Tightening torque:

Lower: 1 Nm (0.1 m·kg, 0.7 ft·lb)

Upper: 2 Nm (0.2 m·kg, 1.4 ft·lb)

NOTE:
Make sure Yamaha Genuine Balancer Weights are used to balance the front wheel.

Fittings/Fasteners

Always check the tightness of chassis fittings and fasteners before a ride. Use the chart on page 8-7 to find the correct torque.

Lights and signals

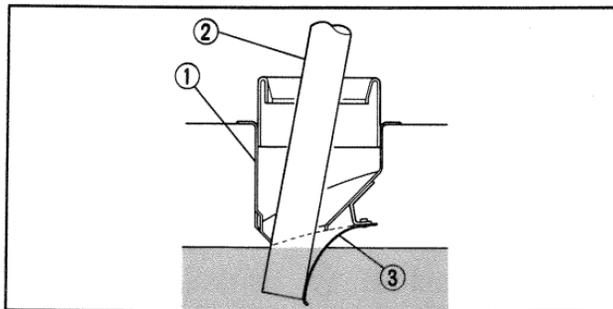
Check the headlight, flasher lights, tail-light, brake light, meter lights, and all the indicator lights to make sure they are in working condition.

E

Switches

Check the operation of the headlight switch, turn switch, brake light switch, horn switch, starter switch, main switch, etc.

Fuel



1. Filler tube

2. Filling nozzle

3. Leaf valve

Make sure there is sufficient fuel in the tank. To fill the tank with fuel, be sure to insert the filling nozzle into the filler hole as shown.

⚠ WARNING

Do not overfill the fuel tank. Avoid spilling fuel on the hot engine. Do not fill the fuel tank above the bottom of the filler tube as shown in the illustration or it may overflow when the fuel heats up later and expands.

CAUTION: _____

This fuel tank is fitted with a non-vent tank cap. Always use the correct cap whenever replacement is necessary.

CAUTION: _____

Always wipe off spilled fuel immediately with a dry and clean soft cloth. Fuel may deteriorate painted surfaces or plastic parts.

Recommended fuel:

Regular unleaded gasoline only with a research octane number of 91 or higher.

Fuel tank capacity:

Total:

20 L (4.4 Imp gal, 5.3 US gal)

NOTE: _____

If knocking or pinging occurs, use a different brand of gasoline or higher octane grade.



Catalytic converter

This motorcycle is equipped with a catalytic converter in the exhaust chamber.

WARNING

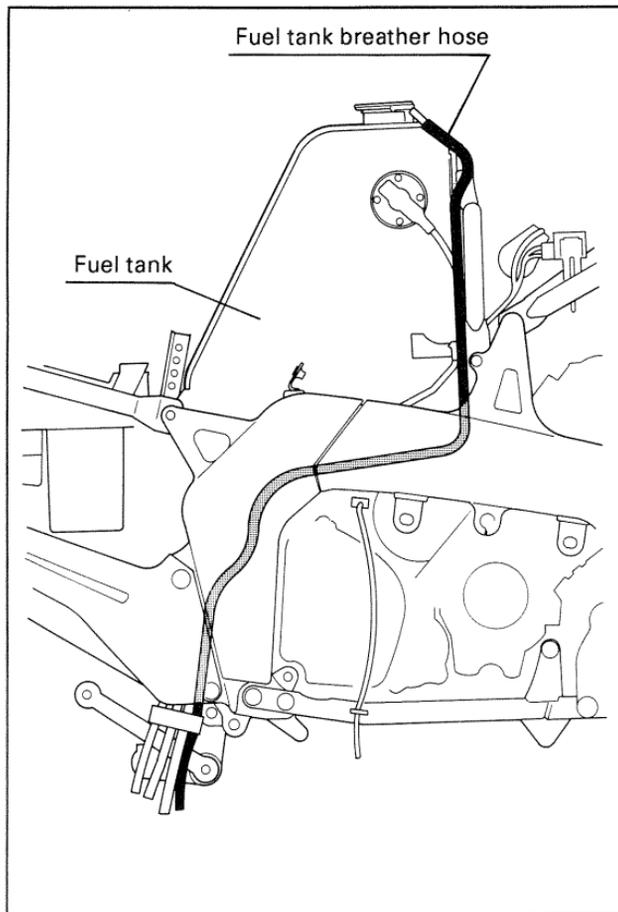
E The exhaust system is hot during and directly after engine operation. Make sure the exhaust system has cooled down before making any adjustment to or lubricating the motorcycle.

CAUTION:

The following must be observed to prevent a fire hazard or other damages.

- Use only unleaded gasoline. Use of leaded gasoline will cause unrepairable damage to the catalytic converter.
- Never park this motorcycle in an area that would cause a fire hazard such as grass or other materials that may easily burn.
- Do not allow the engine to idle for very long.

Fuel tank breather hose



This model is equipped with a fuel tank breather hose. Before using this motorcycle be sure to check the following:

1. Check hose connection.
2. Check hose for cracks or damage. Replace if damaged.
3. Make sure the bottom hose is not blocked. Clean it if necessary.

E

OPERATION AND IMPORTANT RIDING POINTS

⚠ WARNING

Before riding this motorcycle, become thoroughly familiar with all operating controls and their functions. Consult a Yamaha dealer regarding any control or function that you do not thoroughly understand.

⚠ WARNING

1. Never start your engine or let it run for any length of time in a closed area. The exhaust fumes are poisonous and can cause loss of consciousness and death within a short time. Always operate your motorcycle in an area with adequate ventilation.
2. Before starting out, always be sure the sidestand is up. Failure to retract the sidestand completely can result in a serious accident when you try to turn a corner.

Starting the engine**NOTE:**

This motorcycle is equipped with a starting and an ignition circuit cut-off switch.

1. The engine can be started only under the following conditions:
 - a. The transmission is in neutral.
 - b. The sidestand is up, the transmission is in gear, and the clutch is disengaged.
2. The motorcycle must not be ridden when the sidestand is down.

⚠ WARNING

Before going through the following steps, check the function of the sidestand switch and clutch switch. (Refer to page 5-34.)

TURN MAIN SWITCH TO "ON" AND
ENGINE STOP SWITCH TO "RUN"

IF TRANSMISSION IS IN NEUTRAL AND
SIDE STAND IS DOWN

PUSH STARTER SWITCH;
ENGINE WILL START

RETRACT SIDE STAND AND
PUT TRANSMISSION IN GEAR

MOTORCYCLE CAN BE RIDDEN

IF TRANSMISSION IS IN GEAR AND SIDE-
STAND IS UP

PULL IN CLUTCH LEVER AND PUSH
STARTER SWITCH; ENGINE WILL START

MOTORCYCLE CAN BE RIDDEN

E

1. Turn the main switch to "ON" and the engine stop switch to "⊙" (RUN).

CAUTION:

E When the main switch is "ON", the "EFI" warning light, "ABS" warning light and "OIL LEVEL" indicator light should be on. And after 1 ~ 2 seconds, the indicator lights should go off. If the light stays on, consult a Yamaha dealer.

2. Shift transmission into neutral.

NOTE:

When the transmission is in neutral, the "NEUTRAL" indicator light (green) should be on. If the light does not come on, ask a Yamaha dealer to inspect it.

3. Completely close the throttle grip.
4. Start the engine by pushing the starter switch.

NOTE:

If the engine fails to start, release the starter switch, wait a few seconds, then try again. Each attempt should be as short as possible to preserve the battery. Do not crank the engine more than 10 seconds on any one attempt.

CAUTION:

The "EFI" warning, "ABS" warning, "OIL LEVEL" and "FUEL LEVEL" indicator lights should come on when the starter switch is pushed and go off when it's released.

- If the "EFI" warning light flashes or remains on, consult a Yamaha dealer.
- If the "ABS" warning light flashes or remains on, consult a Yamaha dealer.

- If the “OIL LEVEL” indicator light flashes or remains on, immediately stop the engine. Check the engine oil level and for leakage. If necessary, replenish with oil and check to see that the indicator light goes off. If it still remains on, consult a Yamaha dealer.
- If the “FUEL LEVEL” indicator light flashes or remains on, check the fuel level and for leakage. If necessary, replenish and check to see that the indicator light goes off. If it still remains on, consult a Yamaha dealer.

-
5. Go ahead with riding when the engine normally responds to the throttle.

NOTE: _____
For maximum engine life, never accelerate hard with a cold engine!

Shifting

The transmission lets you control the amount of power you have available at a given speed for starting, accelerating, climbing hills, etc. The use of the shift pedal is shown in the illustration. (Page 5-19) To shift into NEUTRAL, depress the shift pedal repeatedly until it reaches the end of its travel (you will feel a stop when you are in first gear), then raise the pedal slightly.

CAUTION:

1. Do not coast for long periods with the engine off, and do not tow the motorcycle a long distance. Even with gears in neutral, the transmission is only properly lubricated when the engine is running. Inadequate lubrication may damage the transmission.
2. Always use the clutch when changing gears. The engine, transmission, and driveline are not designed to withstand the shock of forced shifting and can be damaged by shifting without using the clutch.

Recommended shift point (For Switzerland only)

The recommended shift points are shown in the table below.

	Acceleration shift point km/h (mi/h)
1st → 2nd	23 (14)
2nd → 3rd	36 (22)
3rd → 4th	50 (31)
4th → 5th	60 (37)

NOTE:

When shifting two gears down from 4th to 2nd, bring your motorcycle to a speed of 35 km/h (21 mi/h).

Engine break-in

There is never a more important period in the life of your motorcycle than the period between zero and 1,000 km (600 mi). For this reason we ask that you carefully read the following material. Because the engine is brand new, you must not put an excessive load on it for the first 1,000 km (600 mi). The various parts in the engine wear and polish themselves to the correct operating clearances. During this period, prolonged full throttle operation, or any condition which might result in excessive heating of the engine, must be avoided.

E

1. 0 ~ 150 km (0 ~ 90 mi):
Avoid operation above 5,000 r/min. Stop the engine and let it cool for 5 to 10 minutes after every hour of operation. Vary the speed of the motorcycle from time to time. Do not operate it at one set throttle position.
2. 150 ~ 500 km (90 ~ 300 mi):
Avoid prolonged operation above 6,000 r/min. Rev the motorcycle freely through the gears, but do not use full throttle at any time.
3. 500 ~ 1,000 km (300 ~ 600 mi):
Avoid prolonged full throttle operation. Avoid cruising speeds in excess of 7,000 r/min.

CAUTION: _____

After 1,000 km (600 mi) of operation, be sure to replace the engine oil and oil filter element.

4. 1,000 km (600 mi) and beyond:
Full throttle can be used.

CAUTION: _____

Never let engine speeds enter the red zone.

CAUTION: _____

If any engine trouble should occur during the break-in period, consult a Yamaha dealer immediately.

E

Parking

When parking the motorcycle, stop the engine and remove the ignition key.

WARNING

E

The muffler and exhaust pipe are hot. Park the motorcycle in a place where pedestrians or children are not likely to touch the motorcycle. Do not park the motorcycle on a slope or soft ground; the motorcycle may overturn.

CAUTION:

Never park this motorcycle in an area that would cause a fire hazard such as grass or other materials that may easily burn.

PERIODIC MAINTENANCE AND MINOR REPAIR

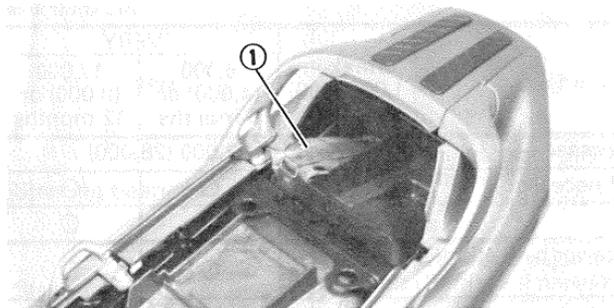
E

Periodic inspection, adjustment and lubrication will keep your motorcycle in the safest and most efficient condition possible. Safety is an obligation of the motorcycle owner. The maintenance and lubrication schedule chart should be considered strictly as a guide to general maintenance and lubrication intervals. **YOU MUST TAKE INTO CONSIDERATION THAT WEATHER, TERRAIN, GEOGRAPHICAL LOCATIONS, AND A VARIETY OF INDIVIDUAL USES ALL TEND TO DEMAND THAT EACH OWNER ALTER THIS TIME SCHEDULE TO SHORTER INTERVALS TO MATCH THE ENVIRONMENT.** The most important points of motorcycle inspection, adjustment, and lubrication are explained in the following pages.

 WARNING

If you are not familiar with motorcycle service, this work should be done by a Yamaha dealer.

Tool kit



1. Tool kit

The service information included in this manual is intended to provide you, the owner, with the necessary information for completing some of your own preventive maintenance and minor repairs. The tools provided in the owner's tool kit are to assist you in the performance of periodic maintenance. However, some other tools such as a torque wrench are also necessary to perform the maintenance correctly.

NOTE: _____
If you do not have necessary tools required during a service operation, take your motorcycle to a Yamaha dealer for service.

⚠ WARNING

Modifications to this motorcycle not approved by Yamaha may cause loss of performance, and render it unsafe for use. Consult a Yamaha dealer before attempting any changes.

E

PERIODIC MAINTENANCE / LUBRICATION

Unit: km (miles)

Item	Remarks	Break-in 1,000 (600)	EVERY	
			6,000 (4,000) or 6 months	12,000 (8,000) or 12 months
Valve(s)*	Check valve clearance. Adjust if necessary.			
Spark plug(s)	Check condition. Clean or replace if necessary.		EVERY 42,000 (28,000)	
Air filter	Clean. Replace if necessary.	○	○	○
Electronic Fuel Injection system*	Check idle speed/synchronization/starter operation/throttle position. Adjust if necessary.	○	○	○
Fuel line*	Check fuel hose for cracks or damage. Replace every 60 months.		○	○
Fuel filter*	Replace.		EVERY 50,000 (31,000)	
Engine oil	Replace (Warm engine before draining).	○	○	○
Engine oil filter*	Replace.	○		○
Brake*	Check operation/fluid leakage/See NOTE (page 8-6). Correct if necessary.		○	○
Clutch*	Check operation/fluid leakage/See NOTE (page 8-6). Correct if necessary.		○	○
Rear arm pivot*	Check rear arm assembly for looseness. Correct if necessary. Moderately repack every 24,000 (16,000) or 24 months.***			○
Rear suspension link pivots*	Check operation. Apply grease lightly every 24,000 (16,000) or 24 months.***			○
Wheel*	Check balance/damage/runout. Repair if necessary.		○	○
Wheel bearings*	Check front axle for smooth revolution. Replace if damaged.		○	○

Unit: km (miles)

Item	Remarks	Break-in 1,000 (600)	EVERY	
			6,000 (4,000) or 6 months	12,000 (8,000) or 12 months
Steering bearing*	Check bearings assembly for looseness. Correct if necessary. Moderately repack every 24,000 (16,000) or 24 months.**	○		○
Steering tube*	Check dust boot and joint ring seal for cracks or damage. Replace if necessary.		○	○
	Check for smooth operation. Correct if necessary.			○
Front swingarm pivot* (upper and lower)	Check front swingarm for looseness. Correct if necessary.			○
Knuckle arm ball joint* (upper and lower)	Check for smooth operation. Correct if necessary.			○
Front shock absorber*	Check operation/oil leakage. Repair if necessary.		○	○
Rear shock absorber*	Check operation/oil leakage. Repair if necessary.		○	○
Cooling system	Check coolant leakage. Repair if necessary. Replace coolant every 24,000 (16,000) or 24 months.		○	○
Drive chain	Check chain slack/alignment. Adjust if necessary. Clean and lube.	EVERY 500 (300)		
Fittings/Fasteners*	Check all chassis fittings and fasteners. Correct if necessary.	○	○	○
Center and sidestand*	Check operation. Repair if necessary.	○	○	○
Sidestand switch*	Check operation. Clean or replace if necessary.	○	○	○
A.C. Generator*	Replace generator brushes.	EVERY 100,000 (62,000)		

* : It is recommended that these items be serviced by a Yamaha dealer.

** : Medium weight wheel bearing grease.

*** : Molybdenum disulfide grease.

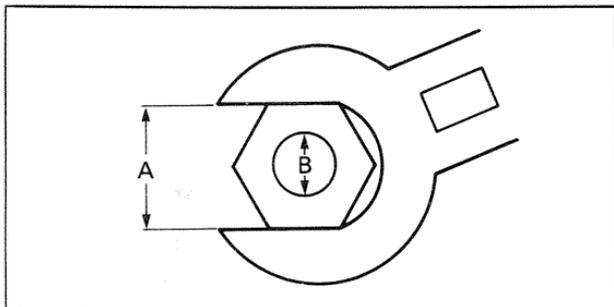
NOTE:

Brake fluid replacement:

1. When disassembling the master cylinder or caliper cylinder (clutch release cylinder) replace the brake fluid. Normally check the brake fluid level and add the fluid as required.
 2. On the inner parts of the master cylinder and caliper cylinder (clutch release cylinder), replace the oil seals every two years.
 3. Replace the brake (clutch) hoses every four years, or if cracked or damaged.
-

E

Torque specifications



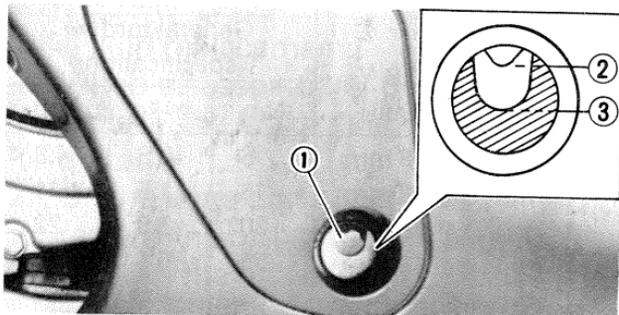
Use a torque wrench to tighten these items. It is recommended that these items be checked occasionally, especially before a long trip. Always check the tightness of these items whenever they are loosened for any reason.

A (Nut)	B (Bolt)	General torque specifications		
		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

E

Item	Torque		
	Nm	m·kg	ft·lb
Drain plug (Engine oil)	43	4.3	31
Oil filter	17	1.7	12
Drain bolt (Coolant)	10	1.0	7
Spark plug	18	1.8	13
Front fender bracket bolt	8	0.8	6
Front wheel nut	95	9.5	69
Caliper bracket bolt	49	4.9	35
Rear caliper bolt	35	3.5	25
Rear wheel axle nut	150	15.0	109
Rear wheel sensor	23	2.3	17

Engine oil



1. Level window 2. Maximum mark 3. Minimum mark

Measure and replace the engine oil while the engine is warm.

1. Oil level measurement.

- a. Place the motorcycle on the center-stand.

NOTE: _____

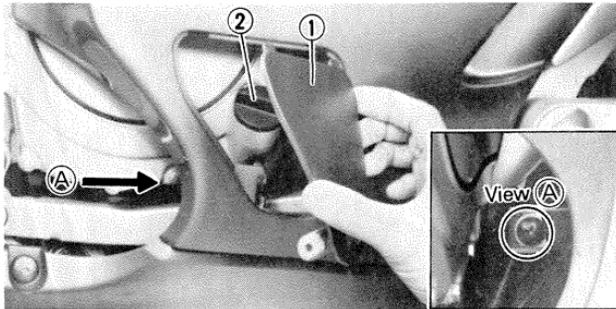
Be sure the motorcycle is positioned straight up when checking the oil level. A slight tilt toward the side can result in false readings.

- b. Check the oil level through the level window located at the lower part of the right side crankcase cover.

NOTE: _____

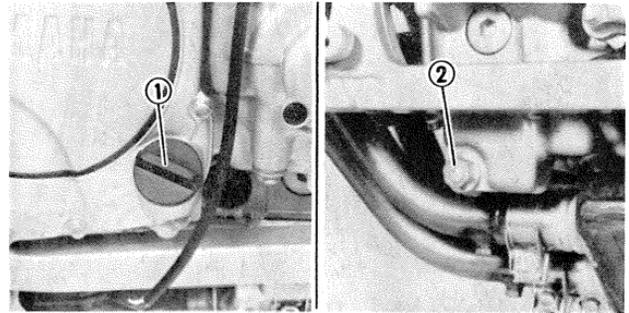
Wait a few minutes until the oil level settles before checking.

- c. The oil level should be between maximum and minimum marks. If the level is low, add oil to raise it to the proper level.



1. Filler cap cover

2. Filler cap



1. Filler cap

2. Drain plug

- d. To add the oil, remove the filler cap cover and then remove the filler cap.

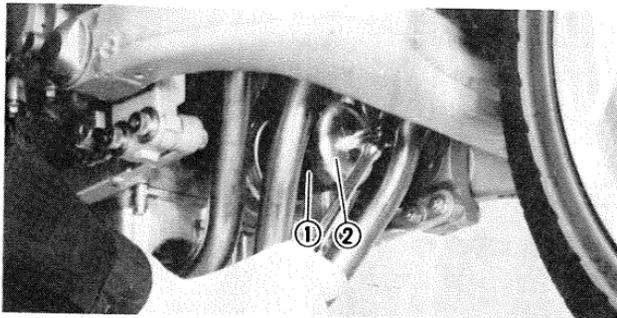
NOTE:

When installing the filler cap cover, be sure the tabs fit into the lower cowling before tightening the screw.

- 2. Oil and oil filter replacement.
 - a. Remove the lower cowling.
 - b. Place an oil pan under the engine, and remove the filler cap.
 - c. Remove the drain plug and drain the oil.

E

E



1. Oil filter

2. Oil filter wrench

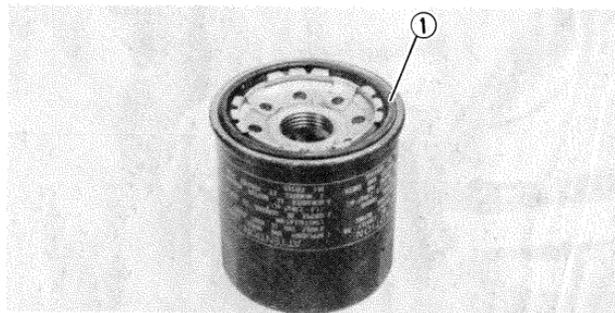
- d. Remove the oil filter by using an oil filter wrench.

NOTE: _____

An oil filter wrench is available at a nearby Yamaha dealer.

- e. Reinstall the drain plug (make sure it is tight).

Drain plug torque:
43 Nm (4.3 m·kg, 31 ft·lb)

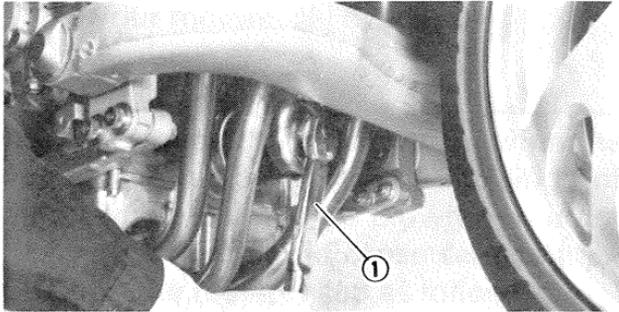


1. O-ring

- f. Apply a light coat of engine oil to the O-ring of new oil filter.

NOTE: _____

Make sure the O-ring is seated properly.



1. Torque wrench

- g. Install the new oil filter, and tighten it by using an oil filter wrench.

NOTE:

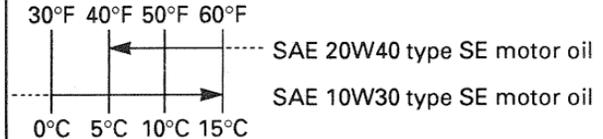
When installing the oil filter, tighten it to the proper torque by using a torque wrench.

Oil filter torque:

17 Nm (1.7 m·kg, 12 ft·lb)

- h. Fill engine with oil. Install the filler cap and tighten.

Recommended oil:



Oil quantity:

Total amount:

3.2 L (2.8 Imp qt, 3.4 US qt)

Periodic oil change:

2.5 L (2.2 Imp qt, 2.6 US qt)

With oil filter replacement:

2.7 L (2.4 Imp qt, 2.8 US qt)

NOTE:

Recommended engine oil classification; API Service "SE", "SF" type or equivalent (e.g. "SF-SE", "SF-SE-CC", "SF-SE-SD" etc.).

CAUTION: _____

Do not put in any chemical additives. Engine oil also lubricates the clutch and additives could cause clutch slippage.

CAUTION: _____

Be sure no foreign material enters the crankcase.

- i. Start the engine and let it idle for a few minutes. While idling, check for oil leakage. If oil leakage is found, stop the engine immediately, and check for the cause. After the engine is started, the oil level indicator light should go off if oil is filled to proper level.

CAUTION: _____

If the indicator light flickers or remains on, immediately stop the engine and consult a Yamaha dealer.

- j. Install the lower cowling.

Cooling system

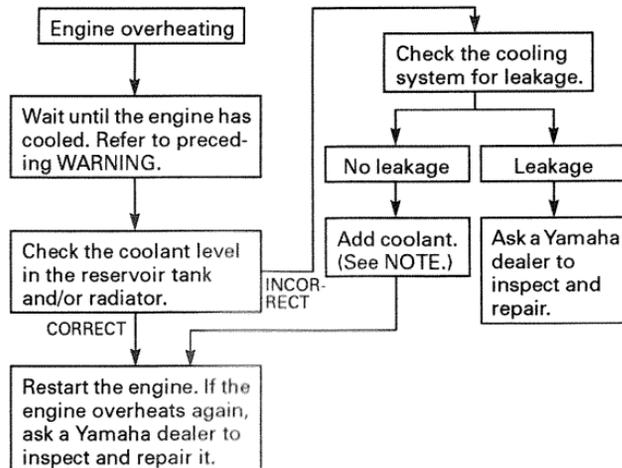
1. If your motorcycle overheats

⚠ WARNING

Do not remove the radiator cap when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury. Open the radiator cap as follows.

Wait until the engine has cooled. Place a thick rag like a towel over the radiator cap and slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise and remove it.

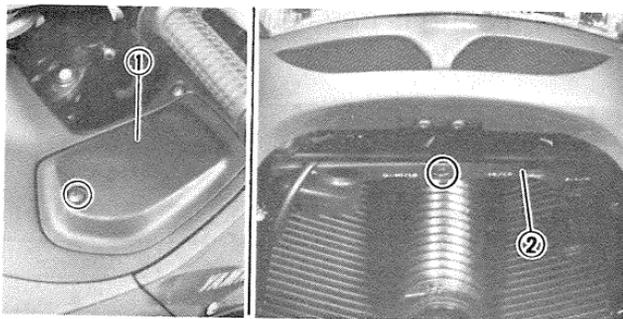
If overheating is detected, perform the following checks.



NOTE:

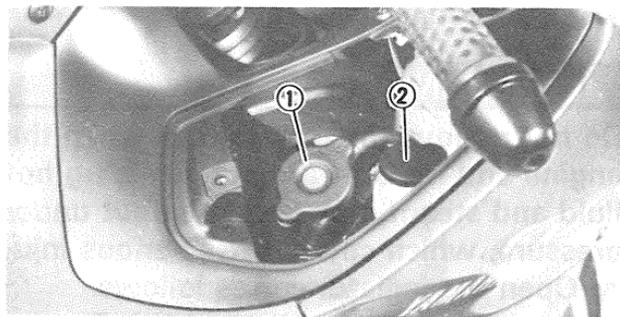
If it is difficult to get the recommended coolant, tap water can be temporarily used, provided that it is changed to the recommended coolant as soon as possible.

E



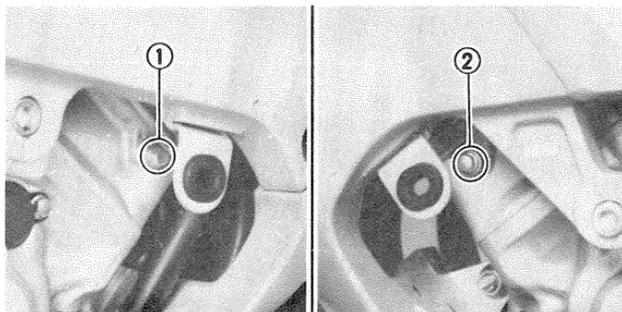
1. Reservoir tank lid 2. Under cover

2. Changing the coolant
 - a. Place the motorcycle on the center-stand.
 - b. Remove the lower cowling.
 - c. Remove the reservoir tank lid and under cover.



1. Radiator cap 2. Reservoir tank cap

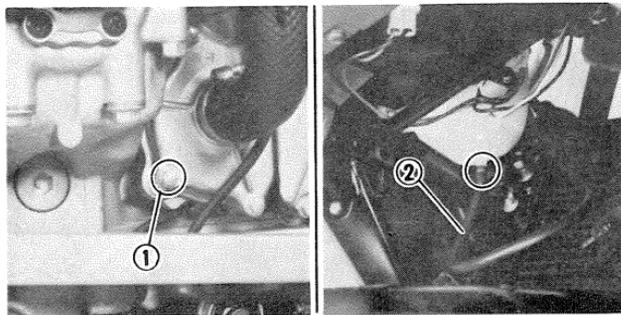
- d. Remove the radiator cap.



1. Drain bolt

2. Drain bolt

- e. Remove the drain bolts and drain the coolant.
- f. Remove the reservoir tank cap and disconnect the reservoir tank hose on the reservoir tank side. Drain the reservoir tank coolant.
- g. Drain the coolant completely, and thoroughly flush the cooling system with clean tap water.
- h. Retighten the drain bolts. If the gasket is damaged, replace it.



1. Drain bolt

2. Reservoir tank hose

Tightening torque:

Drain bolt:

10 Nm (1.0 m·kg, 7 ft·lb)

- i. Reconnect the reservoir tank hose.
- j. Pour the recommended coolant into the radiator until it's full.

E

Recommended coolant:

High quality ethylene glycol anti-freeze containing corrosion inhibitors for aluminum engines.

Coolant and water mixed ratio:
50%/50%

Total amount:

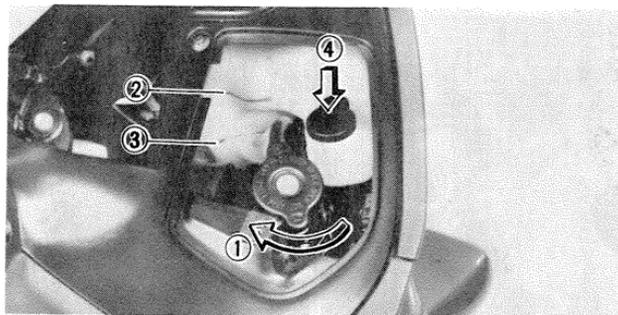
2.3 L (2.0 Imp qt, 2.4 US qt)

Reservoir tank capacity:

0.35 L (0.31 Imp qt, 0.37 US qt)

From LOW to FULL level:

0.20 L (0.18 Imp qt, 0.21 US qt)



1. Turn 2. "FULL" level 3. "LOW" level 4. Push

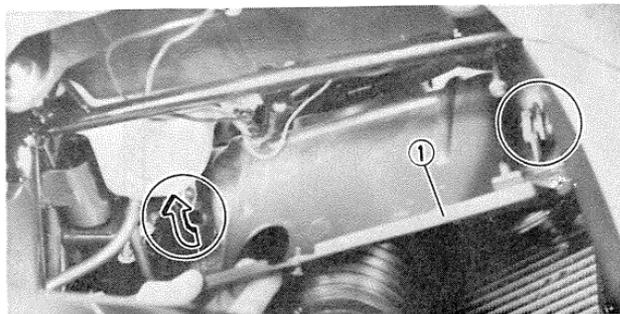
CAUTION:

Hard water or salt water is harmful to the engine. You may use distilled water if you can't get soft water.

- k. Reinstall the radiator cap.
- l. Start the engine and let it idle for a few minutes to recheck the coolant level in the radiator. If it is low, add more coolant until it reaches the top of the radiator.

- m. Fill the reservoir tank with coolant up to the "FULL" level.
- n. Reinstall the reservoir tank cap and check for coolant leakage.

NOTE: _____
If you find any leaks, ask a Yamaha dealer to inspect.



1. Under cover

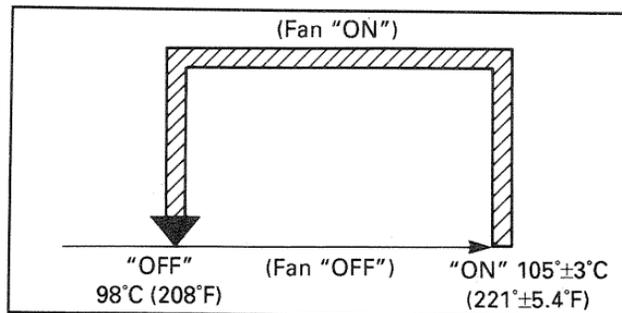
- o. Reinstall the under cover.

NOTE: _____
Be sure to place its fasteners over the grommets.

- p. Reinstall the reservoir tank lid and lower cowling.

E

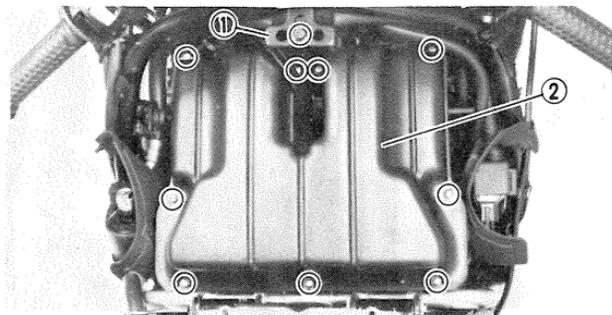
Electric fan



Operation

The electric fan operation is completely automatic. It will be switched "ON" or "OFF" according to the coolant temperature in the radiator.

Air filter



1. Side cowling holding bracket
2. Air filter case cover

The air filter element should be cleaned at the specified intervals. It should be cleaned more frequently if you are riding in unusually wet or dusty areas.

1. Remove the seat, top cover, inner panels and side cowlings.

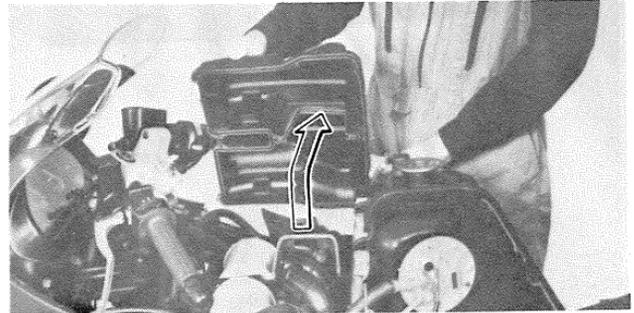
NOTE: _____

After removing the top cover, temporarily install the fuel tank cap.

2. Remove the side cowling holding bracket.
3. Remove the air filter case cover by removing the screws.



4. Pull out the element.
5. Tap the element lightly to remove most of the dust and dirt and blow out the remaining dirt with compressed air from the outside of the element. If the element is damaged, replace it.
6. Reassemble by reversing the removal procedure.



CAUTION: _____

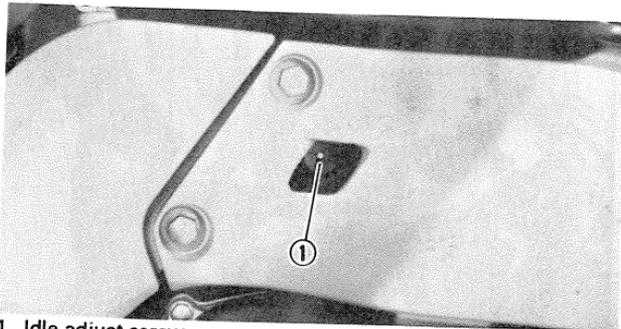
Make sure the element is properly seated in the filter case.

NOTE: _____

Be sure the seal of the separator is securely fit into the slot of the air filter case cover.

Idle speed adjustment

E



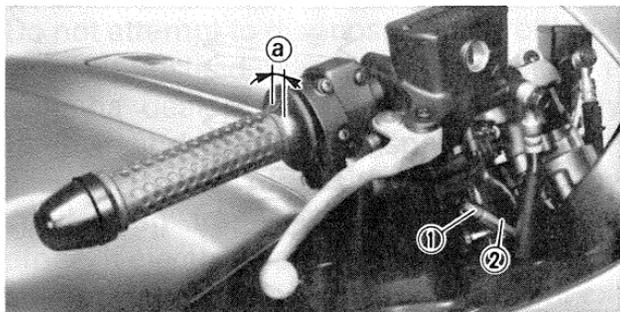
1. Idle adjust screw

1. Start the engine and let it idle for 1 ~ 2 minutes at approximately 1,000 to 2,000 r/min. Occasionally rev the engine to 4,000 to 5,000 r/min.
2. When the fast idle system cuts out and the engine quickly responds to the throttle, set the idle to the specified engine speed by adjusting the idle adjust screw. Turn the screw in to increase engine speed, and out to decrease engine speed.

Standard idle speed:
950 ~ 1,050 r/min

NOTE: _____
If the specified idle speed cannot be obtained by performing the above adjustment, consult a Yamaha dealer.

Throttle cable adjustment



a. Free play

1. Lock nut

2. Adjuster

NOTE: _____

Before adjusting the throttle cable free play, the engine idling speed should be adjusted.

Adjust the throttle cable by turning the adjuster so that proper free play at the throttle grip is obtained.

Free play:

3 ~ 5 mm (0.1 ~ 0.2 in)

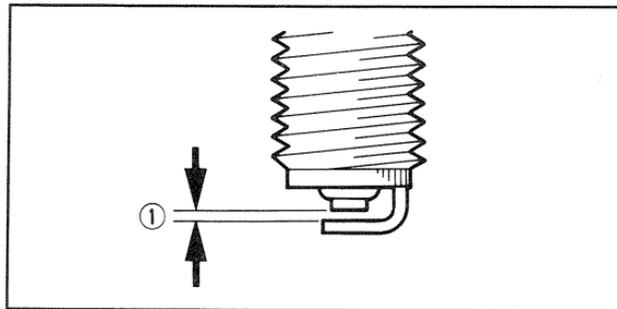
1. Loosen the lock nut.
2. Turn the adjuster in or out until specified free play is obtained.
3. Tighten the lock nut.

E

Valve clearance adjustment

The valve clearance becomes larger with use, resulting in improper fuel/air supply and engine noise. To prevent this, the valve clearance must be adjusted regularly. This adjustment, however, should be left to a professional Yamaha service technician.

Spark plug inspection



1. Spark plug gap

The spark plug is an important engine component and is easy to inspect. The condition of the spark plug can indicate the condition of the engine.

Normally, all spark plugs from the same engine should have the same color on the white porcelain insulator around the center electrode. The ideal color at this point is a medium to light tan color for a motorcycle that is being ridden normally. If one spark plug shows a distinctly different color, there could be something wrong with the engine.

Do not attempt to diagnose such problems yourself. Instead, take the motorcycle to a Yamaha dealer. You should periodically remove and inspect the spark plugs because heat and deposits will cause any spark plug to slowly break down and erode. If electrode erosion becomes excessive, or if carbon and other deposits are excessive, you should replace the spark plug with the specified plug.

Standard spark plug:
DPR8EA-9/DPR7EA-9 (NGK)
or
X24EPR-U9/X22EPR-U9
(NIPPONDENSO)

Before installing any spark plug, measure the electrode gap with a wire thickness gauge; adjust the gap to specification.

Spark plug gap:
0.8 ~ 0.9 mm (0.031 ~ 0.035 in)

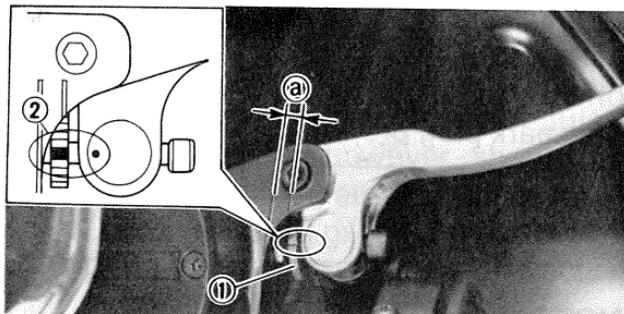
When installing the plug, always clean the gasket surface and use a new gasket. Wipe off any grime from the threads, and torque the spark plug properly.

Spark plug torque:
18 Nm (1.8 m·kg, 13 ft·lb)

NOTE: _____
If a torque wrench is not available when you are installing a spark plug, a good estimate of the correct torque is 1/4 to 1/2 turn past finger tight. Have the spark plug torqued to the correct value as soon as possible with a torque wrench.

E

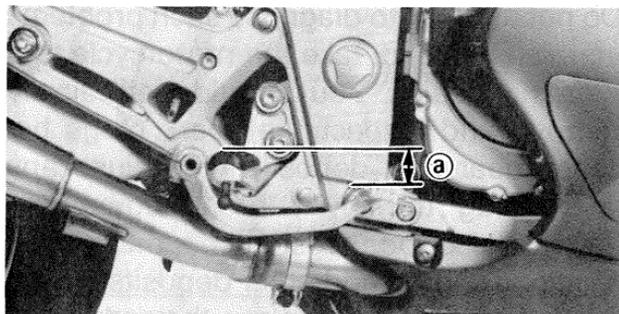
Front brake lever position adjustment



a. Adjusting range 1. Adjuster 2. Proper position

Brake lever distance from the throttle grip can be adjusted. To adjust, turn the adjuster while pushing the lever forward and align the mark (■) on the adjuster with the mark (●) on the lever.

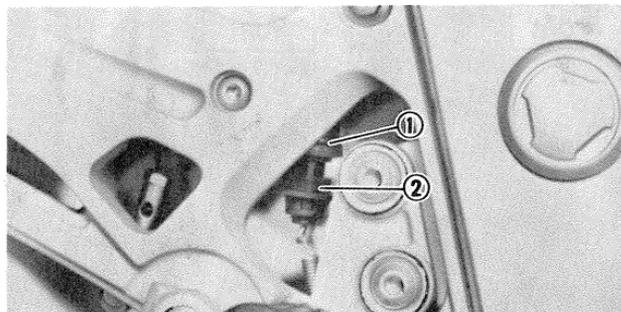
Rear brake adjustment



a. 37 mm (1.5 in)

The top of the brake pedal should be positioned 37 mm (1.5 in) below the top of the footrest. If not, ask a Yamaha dealer to adjust it.

Brake light switch adjustment



1. Main body

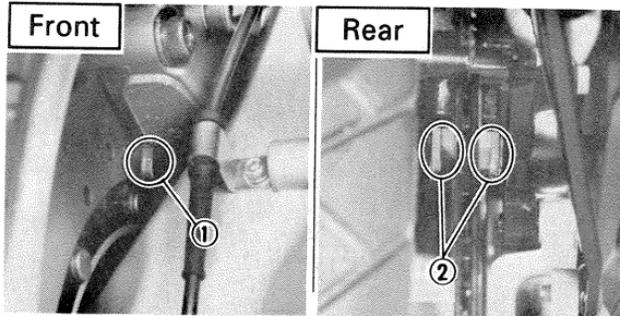
2. Adjusting nut

⚠ WARNING

A soft or spongy feeling in the brake pedal can indicate the presence of air in the brake system. This air must be removed by bleeding the brake system before the motorcycle is operated. Air in the system will cause greatly diminished braking capability and can result in loss of control and an accident. Have a Yamaha dealer inspect and bleed the system if necessary.

The brake light switch is operated by movement of the brake pedal. To adjust, hold the main body of the switch so it does not rotate and turn the adjusting nut. Proper adjustment is achieved when the brake light comes on just before the brake begins to take effect.

Checking the front and rear brake pads

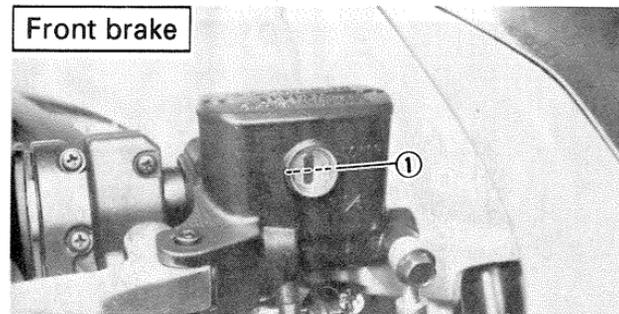


1. Wear indicator

2. Wear indicator

A wear indicator is provided on each brake. This indicator allows checking of brake pad wear without disassembling the brake. Apply the brake and inspect the wear indicator. If the indicator is **ALMOST** in contact with the disc plate, ask a Yamaha dealer to replace the pads.

Inspecting the brake fluid level

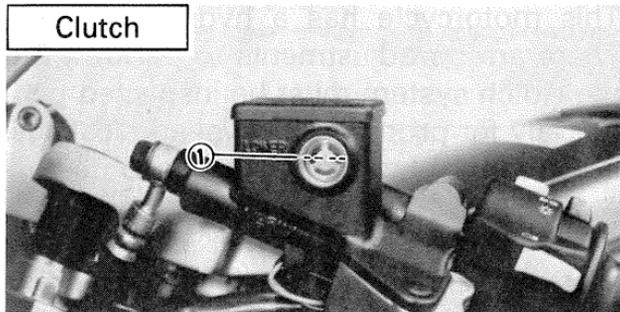


1. Lower level

Insufficient brake fluid may let air enter the brake/clutch system, possibly causing the brakes/clutch to become ineffective. Before riding, check that the brake fluid is above the lower level and replenish when necessary. Observe these precautions:

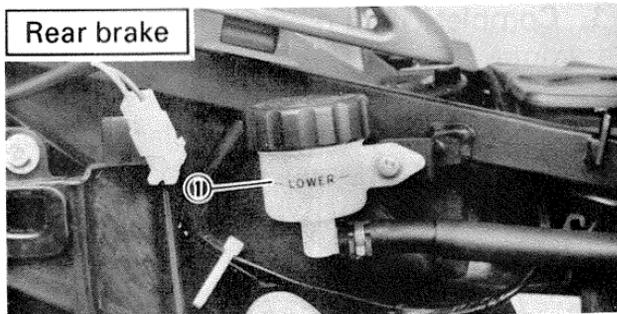
1. When checking the fluid level, make sure the top of the master cylinder is level by turning the handlebars.
2. Use only the designated quality brake fluid: otherwise, the rubber seals may deteriorate, causing leakage and poor brake/clutch performance.

Clutch



1. Lower level

Rear brake



1. Lower level

Recommended brake fluids: DOT#4

NOTE:

(Rear brake, clutch fluid only)

If DOT #4 is not available, #3 can be used.

3. Refill with the same type of brake fluid. Mixing fluids may result in a harmful chemical reaction and lead to poor brake/clutch performance.

4. Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock and dirt may clog ABS hydraulic unit valves.
5. Brake fluid may deteriorate painted surfaces or plastic parts. Always clean up spilled fluid immediately.
6. Have a Yamaha dealer check the cause if the brake fluid level goes down.

E

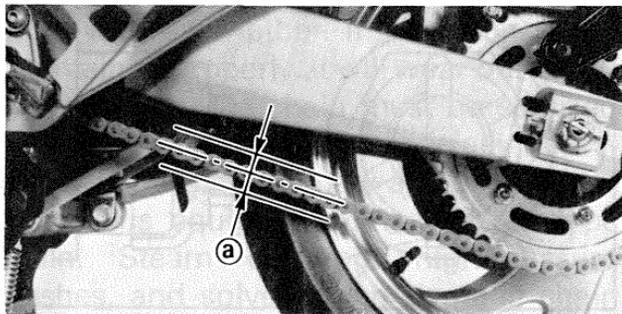
Brake fluid replacement

1. Complete fluid replacement should be done only by trained Yamaha service personnel.
2. Have a Yamaha dealer replace the following components during periodic maintenance or when they are damaged or leaking.
 - a. Replace all rubber seals every two years.
 - b. Replace all hoses every four years.

Clutch adjustment

This motorcycle has a hydraulic clutch. There are no adjustments to perform but the clutch system must be inspected periodically for proper fluid level and leakage. If the control lever free play becomes excessive and the motorcycle creeps or stalls when shifted into gear, or if the clutch slips, causing acceleration to lag behind engine speed, there is probably air in the clutch system and it must be bled out. Ask a Yamaha dealer to do this service.

Drive chain slack check



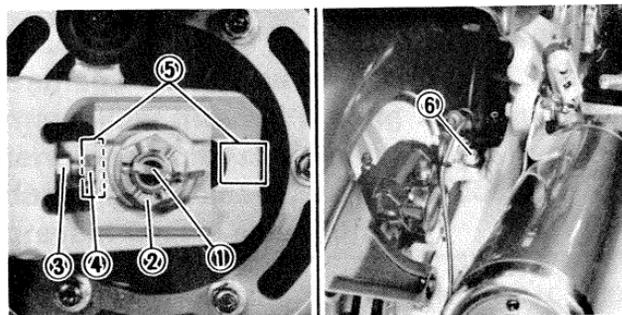
a. 15 ~ 20 mm (0.6 ~ 0.8 in)

NOTE:

Spin the wheel several times and find the tightest position of the chain. Check and/or adjust the chain slack while it's in this tightest position.

Inspect the drive chain when the motorcycle is on the centerstand. Check the slack at the position shown in the illustration. Normal slack is approximately 15 ~ 20 mm (0.6 ~ 0.8 in). If the slack exceeds 20 mm (0.8 in), adjust.

Drive chain slack adjustment



1. Cotter pin
2. Axle nut
3. Lock nut
4. Adjuster
5. Alignment marks
6. Caliper bracket bolt

1. Remove the cotter pin from the axle nut.
2. Loosen the axle nut and caliper bracket bolt.
3. Loosen the lock nuts on each side. To tighten the chain, turn the chain adjuster counterclockwise. To loosen the chain, turn the adjuster clockwise and push the wheel forward. Turn each adjuster exactly the same amount to maintain correct axle alignment. There are marks on each side of the swingarm. Use these marks to align the rear wheel.

CAUTION:

Too little chain slack will overload the engine and other vital parts. Keep the slack within the specified limits.

4. After adjusting, be sure to tighten the loosened parts.

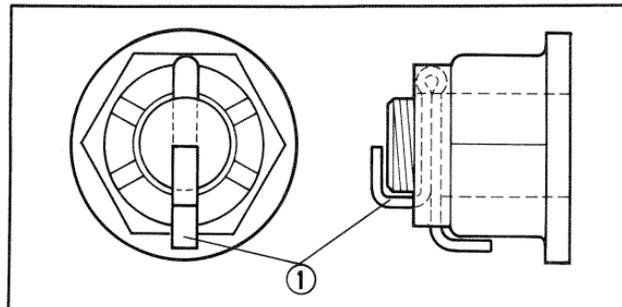
Tightening torque:

Axle nut:

150 Nm (15.0 m·kg, 109 ft·lb)

Caliper bracket bolt:

49 Nm (4.9 m·kg, 35 ft·lb)



1. Cotter pin

5. Insert a new cotter pin into the axle nut and bend the end of the cotter pin as shown in the illustration. If the notch in the nut and the cotter pin hole do not match, tighten the nut slightly to align them.

WARNING

Always use a new cotter pin on the axle nut.

Drive chain lubrication

The chain consists of many parts which work with each other. If the chain is not maintained properly, it will wear out quickly. Therefore, the chain must be serviced regularly. This service is especially necessary when riding in dusty areas. This motorcycle is equipped with a sealed type chain. Steam cleaning, high-pressure washes, and solvents can damage chain so do not use these for cleaning it. Use only kerosene to clean the drive chain. Wipe it dry, and thoroughly lubricate it with SAE 30 ~ 50W motor oil. Do not use any other lubricants on the drive chain. They may contain solvents that could damage the sealed chain.

Cable inspection and lubrication

WARNING

Damage to the outer housing of cables may allow internal rusting and cause interference with cable movement. Replace damaged cables as soon as possible to prevent unsafe conditions.

Lubricate the inner cable and the cable end. If it does not operate smoothly, ask a Yamaha dealer to replace them.

Recommended lubricant:
SAE 10W30 motor oil

E

E

Throttle cable and grip lubrication

The throttle twist grip assembly should be greased at the time that the cable is lubricated, since the grip must be removed to get at the end of the throttle cable. After removing the screws, hold the end of the cable up in the air and put in several drops of lubricant. With the throttle grip disassembled, coat the metal surface of the grip assembly with a suitable all-purpose grease.

Brake and shift pedals

Lubricate the pivoting parts.

Recommended lubricant:
SAE 10W30 motor oil

Brake and clutch levers

Lubricate the pivoting parts.

Recommended lubricant:
SAE 10W30 motor oil

Center and sidestand

Lubricate the pivoting parts. Check to see that the center and sidestand move up and down smoothly.

Recommended lubricant:
SAE 10W30 motor oil

WARNING

If the center and/or sidestand does not move smoothly, consult a Yamaha dealer.

E

Rear suspension

Lubricate the pivoting parts.

Recommended lubricant:
Molybdenum disulfide grease

E

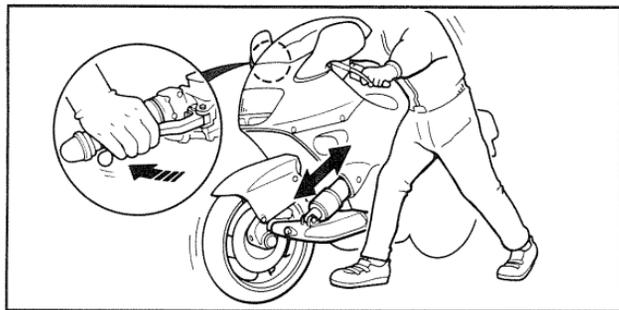
Front and rear shock absorber

WARNING

This shock absorber contains highly pressurized nitrogen gas. Read and understand the following information before handling the shock absorber. The manufacturer cannot be held responsible for property damage or personal injury that may result from improper handling.

1. Do not tamper with or attempt to open the cylinder assembly.
2. Do not subject the shock absorber to an open flame or other high heat source. This may cause the unit to explode due to excessive gas pressure.
3. Do not deform or damage the cylinder in any way. Cylinder damage will result in poor damping performance.
4. Take your shock absorber to a Yamaha dealer for any service.

Front suspension inspection



⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.

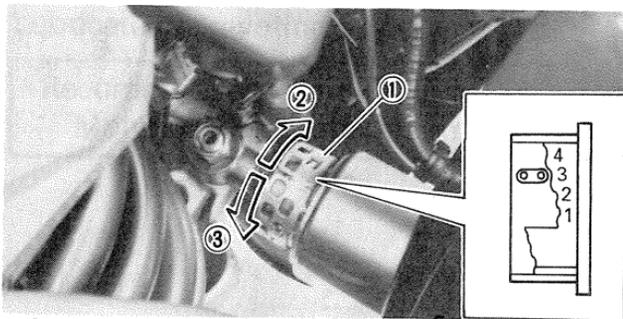
To check operation, place the motorcycle on a level place.

1. Hold the motorcycle in an upright position and apply the front brake.
2. Stroke the front suspension up and down several times.

CAUTION:

If any damage or unsmooth movement is found with the front suspension, consult a Yamaha dealer.

Front shock absorber adjustment



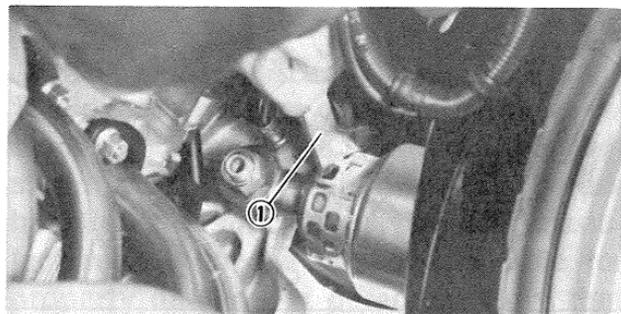
1. Spring preload adjuster
2. Decrease spring preload
3. Increase spring preload

This front shock absorber is equipped with a spring preload, rebound and compression damping force adjuster.

1. Adjust spring preload as follows.
Turn adjuster in direction ③ to increase spring preload and in direction ② to decrease spring preload.

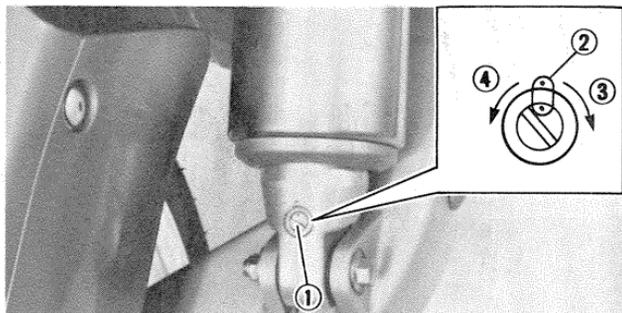
NOTE:

When adjusting, use the special wrench which is included in the owner's tool kit.



1. Special wrench

	HARD						STD	SOFT	
Adjusting position	9	8	7	6	5	4	3	2	1



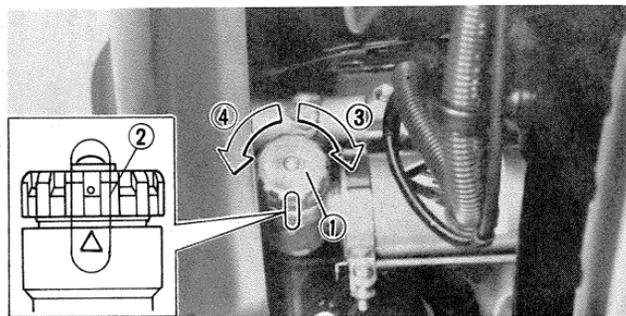
1. Rebound damping force adjuster
2. Standard position
3. Increase damping force
4. Decrease damping force

2. Adjust rebound damping force as follows.

Turn adjuster in direction ③ to increase rebound damping force and in direction ④ to decrease rebound damping force.

MAX.	3 clicks out*
S.T.D.	10 clicks out*
MIN.	12 clicks out*

* : From fully turned in position.



1. Compression damping force adjuster
2. Standard position
3. Increase damping force
4. Decrease damping force

3. Adjust compression damping force as follows.

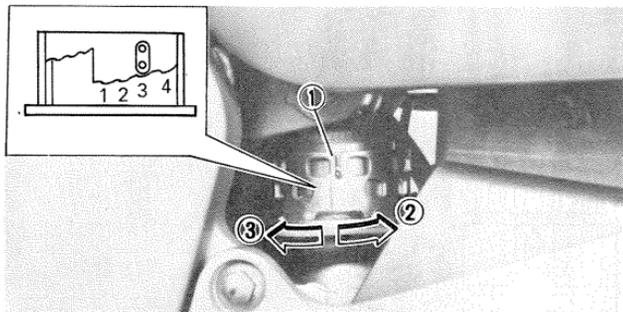
Turn adjuster in direction ③ to increase compression damping force and in direction ④ to decrease compression damping force.

MAX.	3 clicks out*
S.T.D.	10 clicks out*
MIN.	12 clicks out*

* : From fully turned in position.

E

Rear shock absorber adjustment



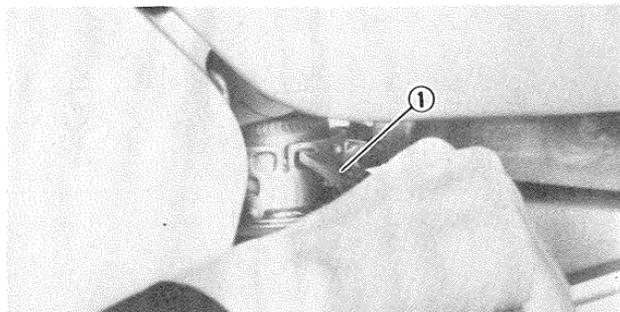
1. Spring preload adjuster
2. Decrease spring preload
3. Increase spring preload

This shock absorber is equipped with a spring preload and damping force adjuster.

1. Adjust spring preload as follows.
Turn adjuster in direction ③ to increase spring preload and in direction ② to decrease spring preload.

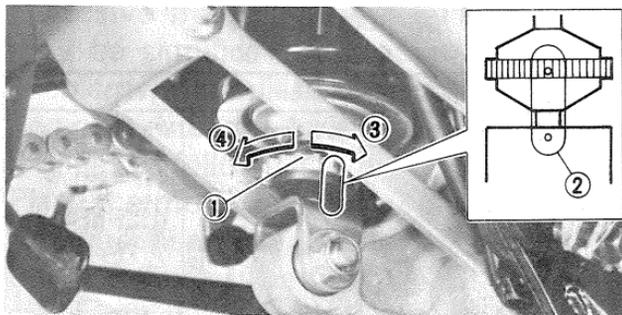
NOTE:

When adjusting, use the special wrench which is included in the owner's tool kit.



1. Special wrench

	HARD						STD	SOFT	
Adjusting position	9	8	7	6	5	4	3	2	1



1. Damping force adjuster 2. Standard position
 3. Increase damping force 4. Decrease damping force

2. Adjust damping force as follows.

Turn adjuster in direction ③ to increase damping force and in direction ④ to decrease damping force.

MAX.	3 clicks out*
S.T.D.	7 clicks out*
MIN.	12 clicks out*

* : From fully turned in position.



Recommended combinations of the front and rear shock absorber settings.

Use this table as a guide for specific riding and motorcycle load conditions.

	Front shock absorber			Rear shock absorber		Loading condition			
	Spring preload adjuster	Compression damping force adjuster	Rebound damping force adjuster	Spring preload adjuster	Damping force adjuster	Solo rider 	With passenger 	With accessories equipment 	With accessories equipment and passenger 
1.	1~5	7~12*	7~12*	1~3	7~12*	○			
2.	3~7	3~10*	3~10*	3~7	3~7*		○		
3.	3~7	3~10*	3~10*	3~7	3~7*			○	
4.	3~7	3~10*	3~10*	5~9	3~5*				○

* : From fully turned in position

Steering inspection

Excessive free play, unusual noise, etc., may be significant indication of steering problems. Periodically inspect the condition of the steering for such kinds of abnormalities as follows.

Place the motorcycle on a level place and turn the handlebars fully left and right. Check for excessive free play or noise. Visually check the rubber boot around the steering tube for cracks or damage.

If any of these signs are present, ask a Yamaha dealer to inspect and adjust.

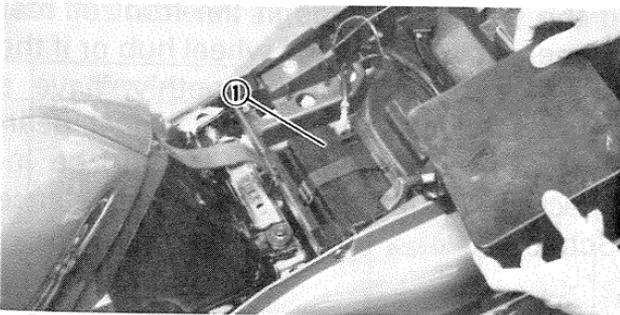
⚠ WARNING

Securely support the motorcycle so there is no danger of it falling over.

Wheel bearings

If the wheel bearings in the front or rear wheel allow play in the wheel hub or if the wheel does not turn smoothly, have a Yamaha dealer inspect the wheel bearings. The wheel bearings should be inspected according to the Maintenance Schedule.

Battery



1. Battery (under the ECU)

This motorcycle is equipped with a "Sealed type" battery. Therefore, it is not necessary to check the electrolyte or add distilled water in the battery.

If the battery seems to have discharged, consult a Yamaha dealer.

CAUTION:

Do not try to remove the sealing caps of the battery cells. You may damage the battery.

⚠ WARNING

Battery electrolyte is poisonous and dangerous, causing severe burns, etc. It contains sulfuric acid. Avoid contact with skin, eyes or clothing.

Antidote: EXTERNAL-Flush with water. INTERNAL-Drink large quantities of water or milk. Follow with milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.

Eyes: Flush with water for 15 minutes and get prompt medical attention. Batteries produce explosive gases. Keep sparks, flame, cigarettes etc., away. Ventilate when charging or using in an enclosed space. Always shield your eyes when working near batteries.

KEEP OUT OF REACH OF CHILDREN.

Battery maintenance

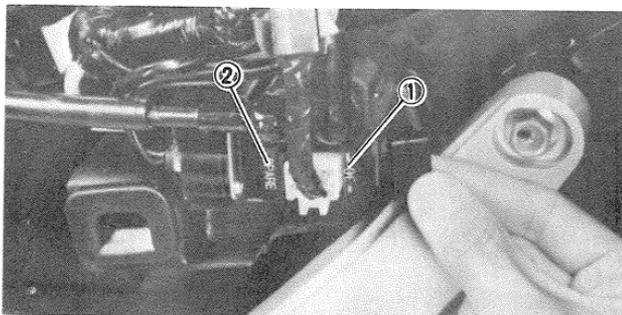
1. When the motorcycle is not used for a month or longer, remove the battery and store it in a cool, dark place. Completely recharge the battery before re-installation.

CAUTION:

A special battery charger (constant voltage/ampere or constant voltage) is required for recharging the sealed type battery. Using a conventional battery charger may shorten the battery life.

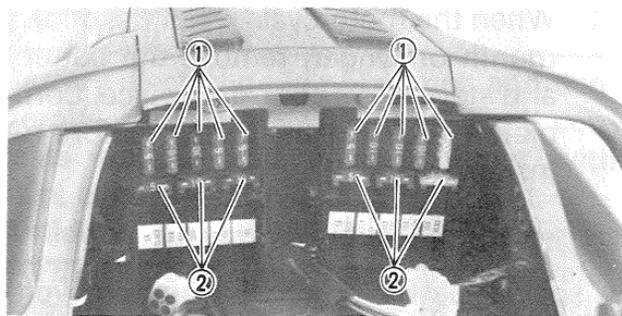
2. Always make sure the connections are correct when reinstalling the battery. The red (positive) lead is for the + terminal and the black (negative) lead is for the - terminal. Always connect the red(positive) lead first, then connect the black(negative) lead.

Fuse replacement



1. Main fuse

2. Spare fuse



1. Fuse

2. Spare fuse

1. There are three fuse cases on this motorcycle. The main fuse case is located inside the left-hand side cover. The other fuse cases are located inside the tail cover.
2. If any fuse is blown, turn off the ignition switch and the switch of the circuit in question. Install a new fuse of proper amperage. Turn on the switches and see if the electrical device operates. If the fuse immediately blows again, consult a Yamaha dealer.

CAUTION:

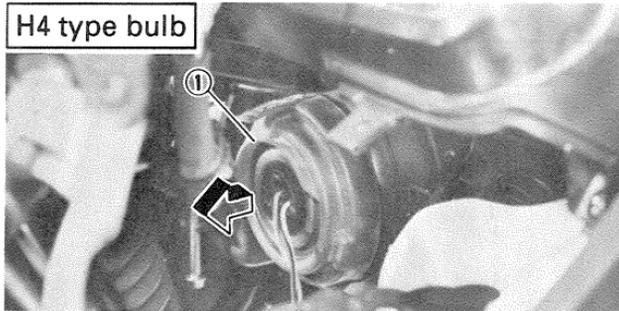
Do not use fuses of higher amperage rating than those recommended. Substitution of a fuse of improper rating can cause extensive electrical system damage and possibly a fire.

Specified fuse:

Main:	30A	EFI:	10A
ABS pump:	30A	ABS:	5A
Head:	20A	Tail:	5A
Signal:	10A	Clock:	5A
Fan:	10A	Indicator:	5A
Ignition:	10A		

Replacing the headlight bulb

H4 type bulb



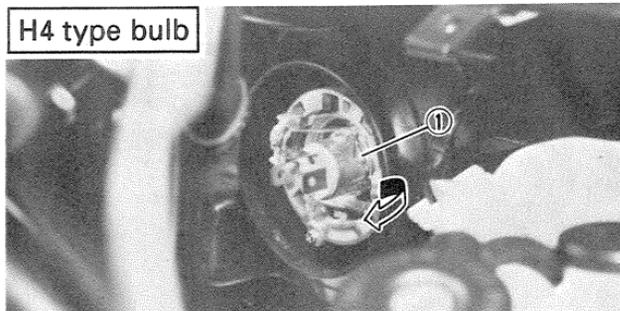
1. Cover

If the headlight bulb burns out, replace the bulb as follows.

1. Remove the seat, top cover, inner panels and under cover.
2. Remove the defective bulb.

This model is equipped with two types of bulbs.

H4 type bulb



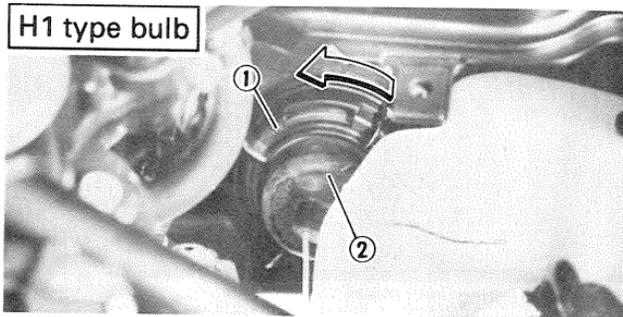
1. Holding spring

For H4 type bulb:

- a. Disconnect the leads and remove the cover.
- b. Unhook the bulb holding spring and remove the defective bulb.

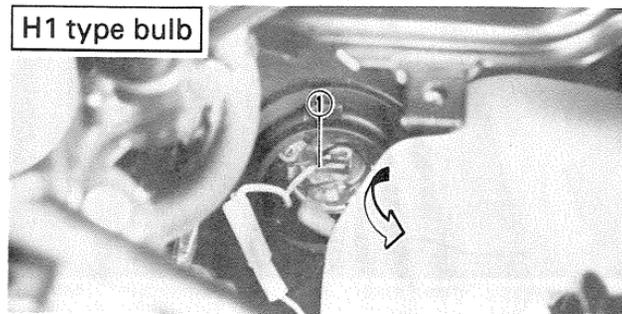
NOTE: _____
Switzerland and Austria models are equipped with this type bulb only.

E



1. Holding ring

2. Cover



1. Holding spring

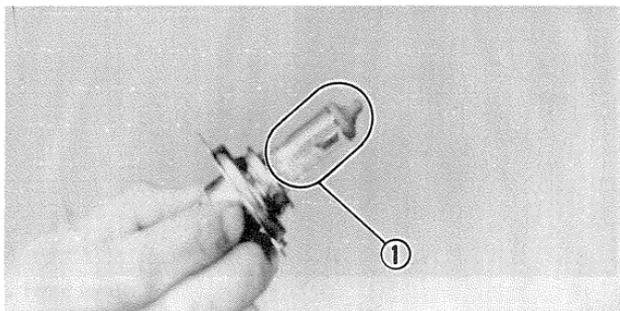
For H1 type bulb:

- a. Disconnect the lead.
- b. Turn the holding ring counterclockwise to remove it and remove the cover.
- c. Unhook the bulb holding spring and remove the defective bulb.

⚠ WARNING

Keep flammable products and your hands away from the bulb while it is on, as it is hot. Do not touch the bulb until it cools down.

3. Put a new bulb into position and secure it in place with the bulb holding spring.



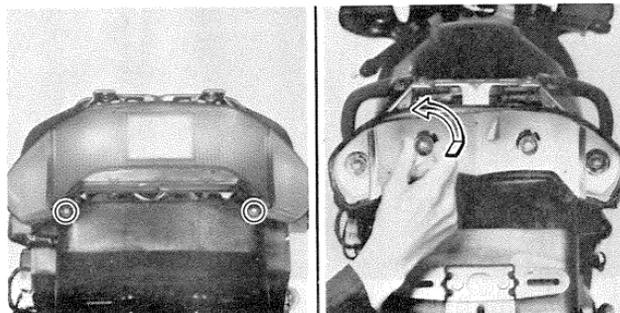
1. Don't touch

CAUTION:

Avoid touching the glass part of the bulb. Keep it free from oil; otherwise, the transparency of the glass, life of the bulb, and illuminous flux will be adversely affected. If oil gets on the bulb, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

4. After replacing the bulb, reassemble by reversing the removal procedure.

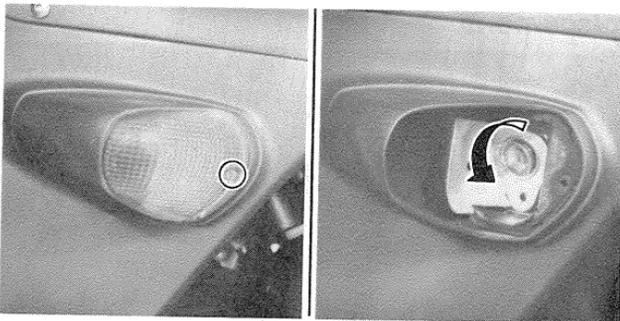
Taillight and rear flasher light bulb replacement



1. Remove the seat and both side covers.
2. Remove the screws.
3. Take off the taillight lens and flasher light lenses.
4. Push in the bulb and turn it counter-clockwise to remove the defective bulb.
5. For installation, reverse the above procedures.

E

Front flasher light bulb replacement

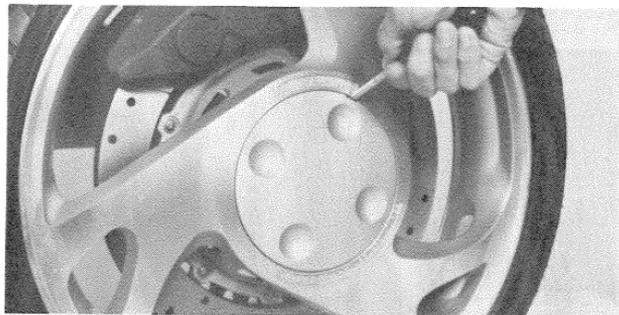


1. Take off the lense by removing the screw.
2. Push in the bulb and turn it counter-clockwise to remove the defective bulb.
3. Replace the gasket if necessary.
4. For installation, reverse the above procedure.

NOTE:

Make sure the gasket is positioned properly.

Front wheel removal



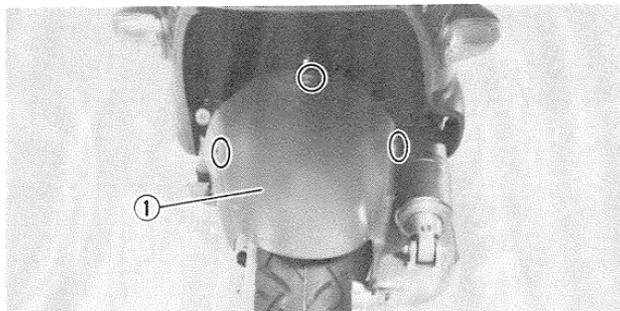
! WARNING

It is advisable to have a Yamaha dealer service the wheel.

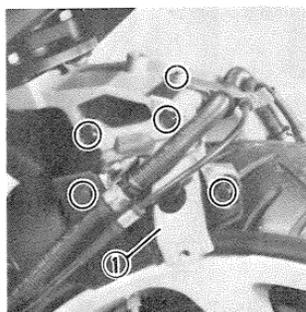
! WARNING

Securely support the motorcycle so there is no danger of it falling over.

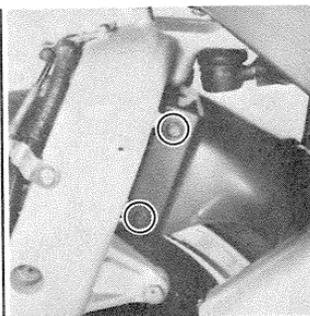
1. Place the motorcycle on the center-stand.
2. Fit a slotted-head screw driver in the slot of the wheel cap and pry it off.



1. Front fender



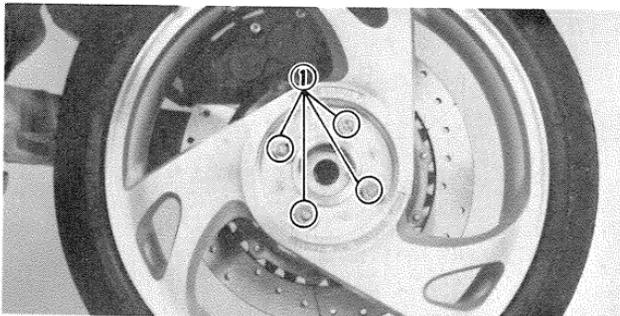
1. Front fender bracket



3. Remove the front fender and front fender bracket.

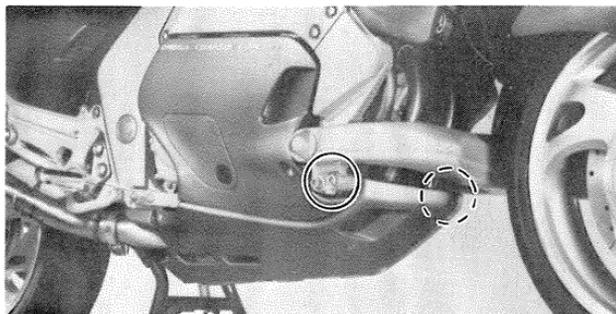
E

E



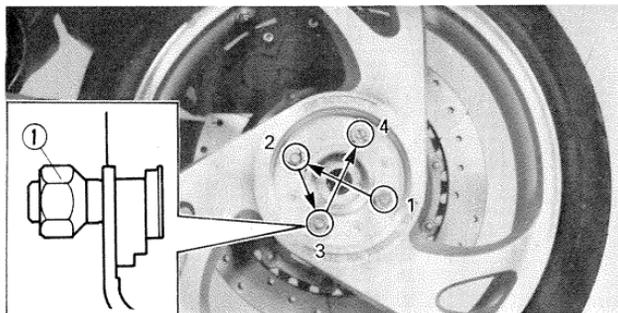
1. Wheel nut

4. Loosen the wheel nuts.



5. Elevate the front wheel by placing a suitable stand at the correct jack up position on both sides as shown.
6. Remove the wheel nuts and then remove the wheel.

Front wheel installation



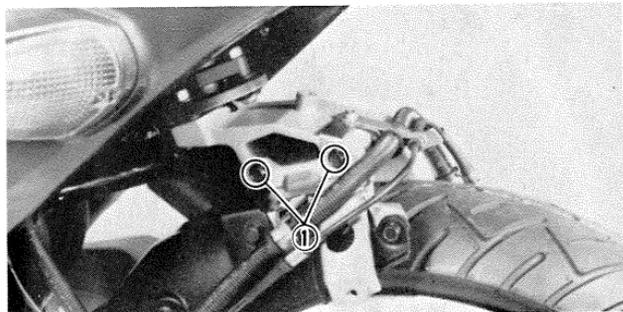
1. Wheel nut

When installing the front wheel, reverse the removal procedure.

Pay attention to the following points:

1. Install the wheel nuts with tapered side inward.
2. Tighten all the wheel nuts by hand and lower the motorcycle completely.
3. Tighten the wheel nuts in a crisscross pattern by using the wheel nut wrench.

Tightening torque:
95 Nm (9.5 m·kg, 69 ft·lb)



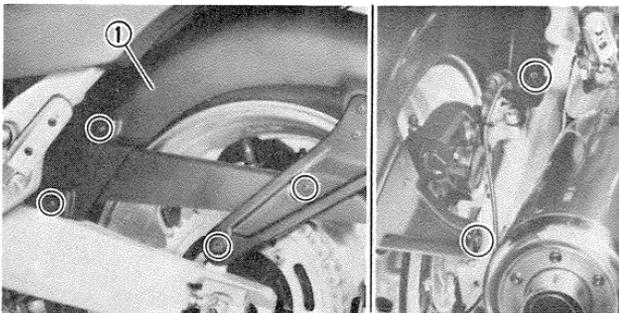
1. Front fender bracket bolt

4. Tighten the front fender bracket bolts.

Tightening torque:
8 Nm (0.8 m·kg, 6 ft·lb)

E

Rear wheel removal



1. Rear fender

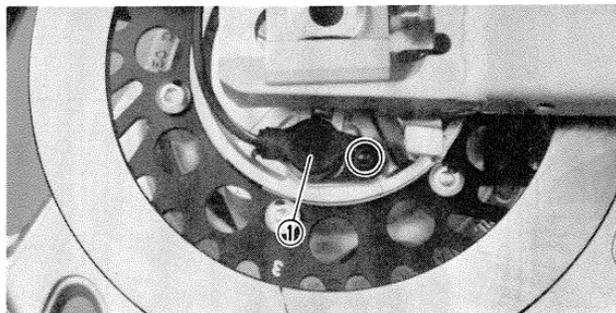
WARNING

It is advisable to have a Yamaha dealer service the wheel.

WARNING

Securely support the motorcycle so there is no danger of it falling over.

1. Place the motorcycle on the center-stand.
2. Remove the rear fender.

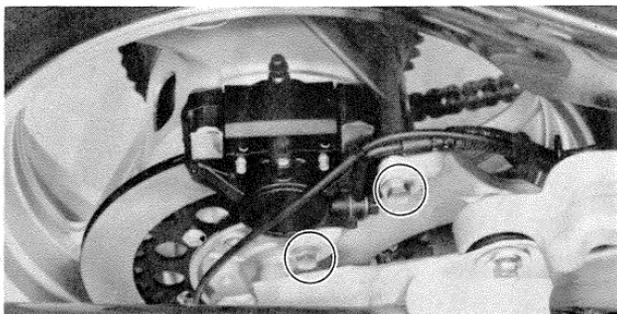


1. Rear wheel sensor

3. Remove the rear wheel sensor.

CAUTION:

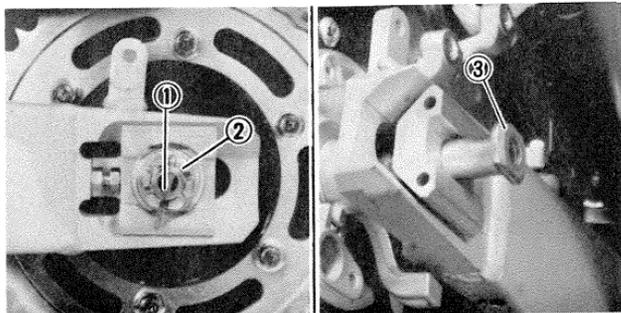
When removing and installing the wheel sensor, be careful not to scratch or allow dirt to contact it.



4. Remove the caliper bolt and caliper.

NOTE: _____

Do not depress the brake pedal when the disc and caliper are separated.



1. Cotter pin

2. Axle nut

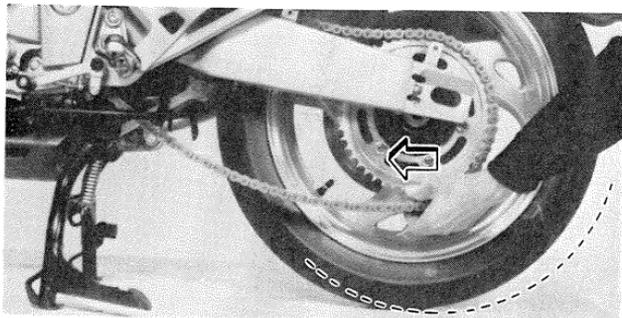
3. Wheel axle

5. Remove the axle nut cotter pin and the axle nut.

6. Pull out the rear axle.

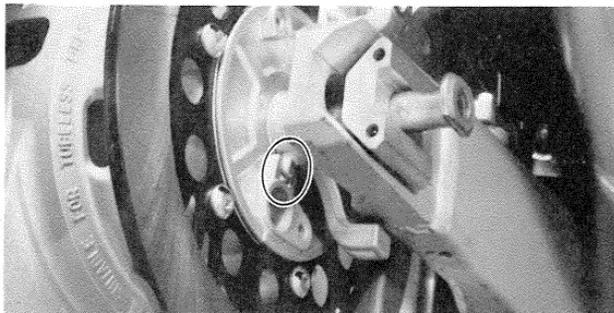
E

E



7. Push the wheel forward and remove the drive chain.
8. Remove the wheel.

Rear wheel installation



When installing the rear wheel, reverse the removal procedure.

Pay attention to the following point:

1. Make sure there is enough gap between the brake pads before inserting the brake disc.
2. Make sure the slot in the rear sensor housing is aligned with the projection on the rear brake caliper bracket.

- 3. Adjust the drive chain.
- 4. Make sure the following parts are properly torqued, and a new cotter pin is installed.

⚠ WARNING

Always use a new cotter pin on the axle nut.

Tightening torque:
Axle nut:
150 Nm (15.0 m·kg, 109 ft·lb)
Caliper bolt:
35 Nm (3.5 m·kg, 25 ft·lb)
Rear wheel sensor:
23 Nm (2.3 m·kg, 17 ft·lb)

Troubleshooting

Although Yamaha motorcycles receive a rigid inspection before shipment from the factory, trouble may occur during operation.

E Any problem in the fuel, compression, or ignition systems can cause poor starting and loss of power.

If your motorcycle requires any repair, bring it to a Yamaha dealer. The skilled technicians at a Yamaha dealership have the tools, experience, and know-how to properly service your motorcycle. Use only genuine Yamaha parts on your motorcycle. Imitation parts may look like Yamaha parts, but they are often inferior. Consequently, they have a shorter service life and can lead to expensive repair bills.

CLEANING AND STORAGE

A. CLEANING

Frequent, thorough cleaning of your motorcycle will not only enhance its appearance but will improve its general performance and extend the useful life of many components.

1. Before cleaning the motorcycle:

- a. Block off the end of the exhaust pipe to prevent water entry; a plastic bag and strong rubber band may be used.
 - b. Make sure the spark plug(s) and all filler caps are properly installed.
2. If the engine case is excessively greasy, apply degreaser with a paint brush. Do not apply degreaser to the chain, sprockets, or wheel axles.
3. Rinse the dirt and degreaser off with a garden hose. Use only enough pressure to do the job.

CAUTION:

Excessive hose pressure may cause water seepage and deterioration of wheel bearings, brakes, transmission seals and electrical parts. Many expensive repair bills have resulted from improper high pressure detergent applications such as those available in coin-operated car washers.

4. Once the majority of the dirt has been hosed off, wash all surfaces with warm water and mild, detergent-type soap. An old toothbrush or bottle brush is handy for hard-to-get-at places.
5. Rinse the motorcycle off immediately with clean water and dry all surfaces with a chamois, clean towel, or soft absorbent cloth.
6. Dry the chain and lubricate it to prevent rust.

7. Windscreen cleaning

CAUTION:

Avoid using any alkaline or strong acid cleaner, gasoline, brake fluid, or any other solvent.

Clean the windscreen with a cloth or sponge dampened with a neutral detergent, and after cleaning, thoroughly wash it off with water. Some cleaning compounds for plastics may leave scratches on surfaces of the windscreen. Before using them, make a test by polishing an area which does not affect your visibility.

8. Clean the seat with a vinyl upholstery cleaner to keep the cover pliable and glossy.

9. Automotive-type wax may be applied to all painted and chrome-plated surfaces. Avoid combination cleaner-waxes. Many contain abrasives which may mar the paint or protective finish on the fuel tank and side covers. When finished, start the engine and let it idle for several minutes.

E

B. STORAGE

Long term storage (60 days or more) of your motorcycle will require some preventive procedures to guard against deterioration. After thoroughly cleaning the motorcycle, prepare for storage as follows:

1. Drain the fuel tank.
2. Remove the empty fuel tank, pour a cup of SAE 10W30 or 20W40 motor oil in the tank, shake the tank to coat the inner surfaces thoroughly and drain off the excess oil. Reinstall the tank.
3. Remove the spark plug, pour about one tablespoon of SAE 10W30 or 20W40 motor oil in the spark plug hole and reinstall the spark plug. Turn the engine over several times (ground spark plug lead wires) to coat the cylinder walls with oil.
4. Remove the drive chain. Thoroughly clean the chain with kerosene and lubricate it. Reinstall the chain or store it in a plastic bag (tied to frame for safe-keeping).
5. Lubricate all control cables.
6. Block up the frame to raise both wheels off the ground.
7. Tie a plastic bag over the exhaust pipe outlet to prevent moisture from entering.
8. If storing in a humid or salt-air atmosphere, coat all exposed metal surfaces with a light film of oil. Do not apply oil to any rubber parts or the seat cover.

WARNING

When using the starter motor to crank the engine, remove the spark plug wires, and ground them to prevent sparking.

9. Remove the battery and charge it. Store it in a dry place and recharge it once a month. Do not store the battery in an excessively warm or cold place (less than 0°C (30°F) or more than 30°C (90°F)).

NOTE: _____
Make any necessary repairs before storing the motorcycle.

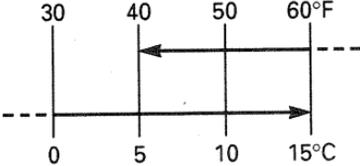




SPECIFICATIONS

E

Model	GTS1000A
Dimension: Overall length Overall width Overall height Seat height Wheel base Minimum ground clearance	2,165 mm (85.2 in) (A)(B)(E)(F)(N)(P)(S)(CH)(DK) (GB)(GR)(NL)(SF)(IRL) 2,170 mm (85.4 in) (I) 2,220 mm (87.4 in) (D) 700 mm (27.6 in) 1,255 mm (49.4 in) (Lower wind screen) 1,320 mm (52.0 in) (Higher wind screen) 790 mm (31.1 in) 1,495 mm (58.9 in) 135 mm (5.3 in)
Basic weight: With oil and full fuel tank	279 kg (615 lbs)
Minimum turning radius:	3,400 mm (133.9 in)
Engine: Type Model Cylinder arrangement Displacement Bore × Stroke Compression ratio Starting system Lubrication system	Liquid cooled, 4-stroke, gasoline, DOHC 4FE1: (B)(D)(F)(I)(N)(P)(S)(DK)(GB)(GR)(NL) (SF)(IRL) 4FE2: (E) 4FV2: (A)(CH) Parallel 4-cylinder, Forward inclined 1,002 cm ³ 75.5 × 56.0 mm (3.0 × 2.2 in) 10.8 : 1 Electric starter Wet sump

Model	GTS1000A
<p>Engine oil (4-cycle): Type</p>  <p>Capacity Periodic oil change With oil filter replacement Total amount</p>	<p>SAE 20W40 type SE motor oil (If temperature does not go below 5°C/40°F)</p> <p>SAE 10W30 type SE motor oil (If temperature does not go above 15°C/60°F)</p> <p>2.5 L (2.2 Imp qt, 2.6 US qt) 2.7 L (2.4 Imp qt, 2.8 US qt) 3.2 L (2.8 Imp qt, 3.4 US qt)</p>
<p>Radiator capacity: (Including all routes)</p>	<p>2.3 L (2.0 Imp qt, 2.4 US qt)</p>
<p>Air filter:</p>	<p>Dry type element</p>
<p>Fuel: Type Tank capacity</p>	<p>Regular unleaded gasoline 20 L (4.4 Imp gal, 5.3 US gal)</p>
<p>Throttle body: Type/manufacturer</p>	<p>AC34/4/MIKUNI</p>
<p>Spark plug: Type/manufacturer Gap</p>	<p>DPR8EA-9 or DPR7EA-9/NGK X24EPR-U9 or X22EPR-U9/NIPPONDENSO 0.8 ~ 0.9 mm (0.031 ~ 0.035 in)</p>

E

E

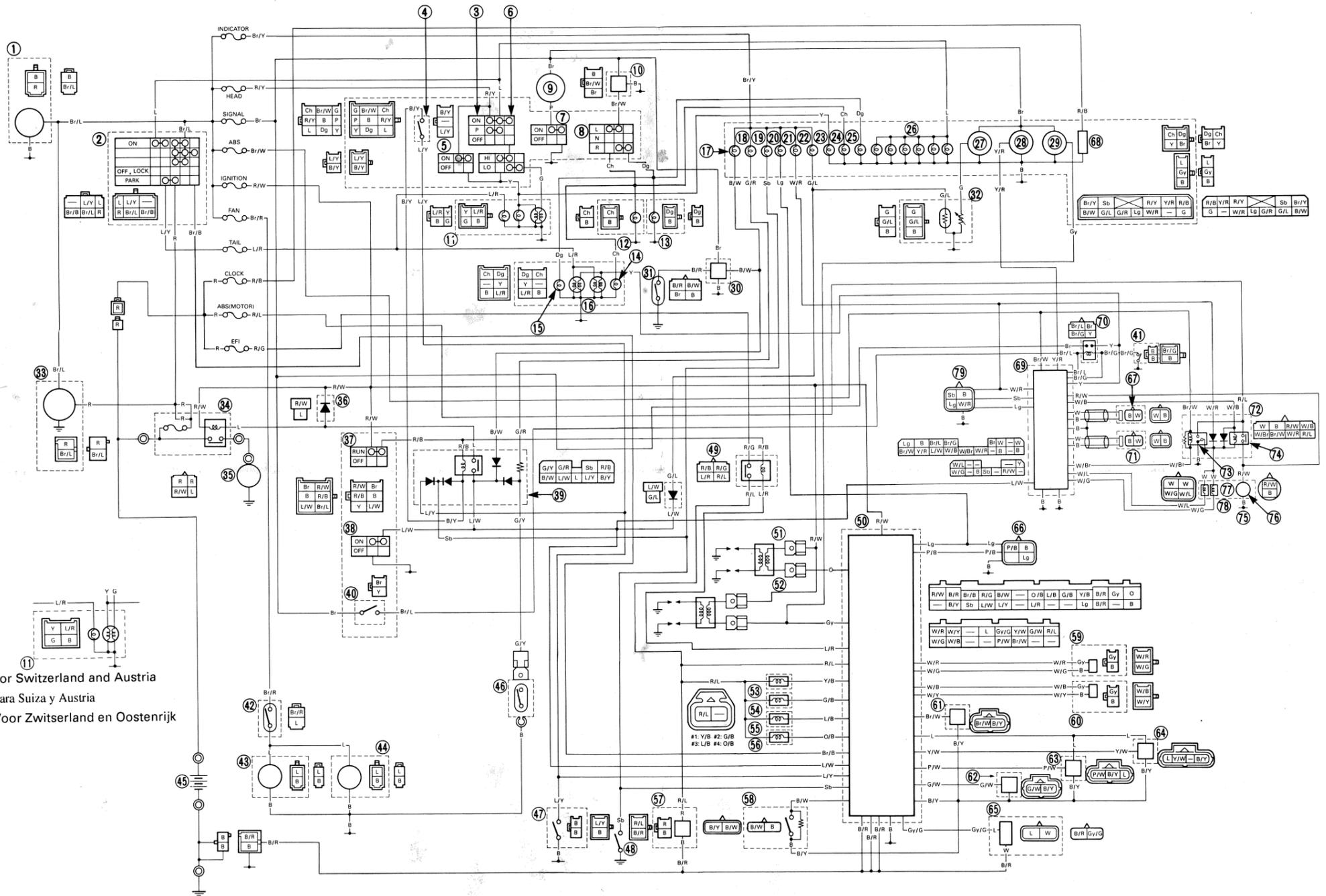
Model	GTS1000A
Clutch type:	Wet, multi-disc
Transmission: Primary reduction system Primary reduction ratio Secondary reduction system Secondary reduction ratio Transmission type Operation Gear ratio 1st 2nd 3rd 4th 5th	Spur gear 68/41 (1.659) Chain drive 47/17 (2.765) (Except for A, CH) 45/17 (2.647) (For A, CH) Constant mesh 5-speed Left foot operation 36/14 (2.571) 32/18 (1.778) 29/21 (1.381) 27/23 (1.174) 28/27 (1.037)
Chassis: Frame type Caster angle Trail	Double cradle 24° 100 mm (3.9 in)
Tire: Type Size – Front Rear	Tubeless 130/60 ZR17 170/60 ZR17

Model	GTS1000A
Brake: Front brake type Operation Rear brake type Operation	Single, Disc brake Right hand operation Single, Disc brake Right foot operation
Suspension: Front Rear	Swingarm Swingarm (Monocross suspension)
Shock absorber: Front Rear	Gas, Coil spring, Oil damper Gas, Coil spring, Oil damper
Wheel travel: Front Rear	116 mm (4.6 in) 130 mm (5.1 in)
Electrical: Ignition system Generator system Battery type/capacity	TCI (Digital) AC generator YTX14-BS/12V 12AH
Headlight type:	Quartz bulb

E

E

Model	GTS1000A
Bulb wattage/quantity: Headlight Tail/brake light Flasher light Auxiliary light Meter light	12V 60W/55W × 1 and 55W × 1 (Except for A, CH) 12V 60W/55W × 1 (For A, CH) 12V 5W/21W × 2 12V 21W × 4 12V 5W × 1 12V 3.4W × 5
Indicator light wattage/quantity: "NEUTRAL" "HIGH BEAM" "OIL LEVEL" "TURN" "FUEL LEVEL" "EFI" "ABS"	12V 1.7W × 1 12V 1.7W × 1 12V 1.7W × 1 12V 3.4W × 2 12V 3.4W × 1 12V 1.7W × 1 12V 1.7W × 1



For Switzerland and Austria
 Para Suiza y Austria
 Voor Zwitserland en Oostenrijk

- 1. Condensator
- 2. Main switch
- 3. "LIGHTS" switch
- 4. Clutch switch
- 5. "PASS" switch
- 6. "LIGHTS" (Dimmer) switch
- 7. "HORN" switch
- 8. "TURN" switch
- 9. Horn
- 10. Flasher relay
- 11. Headlight
- 12. Front flasher light (left)
- 13. Front flasher light (right)
- 14. Rear flasher light (left)
- 15. Rear flasher light (right)
- 16. Tail/Brake light
- 17. "OIL LEVEL" indicator light
- 18. "Coolant temp." warning indicator light
- 19. "NEUTRAL" indicator light
- 20. "EFI" warnig light
- 21. "ABS" warning light
- 22. "FUEL LEVEL" indicator light
- 23. "HIGH BEAM" indicator light
- 24. "TURN" indicator light (left)
- 25. "TURN" indicator light (right)
- 26. Meter light
- 27. Fuel gauge
- 28. Speedometer
- 29. Tachometer
- 30. Oil lamp relay
- 31. Oil level switch
- 32. Fuel sender
- 33. A.C. generator
- 34. Starter relay
- 35. Starter motor
- 36. Diode
- 37. "ENGINE"STOP" switch

- 38. "START" switch
- 39. Safety relay
- 40. Front brake switch
- 41. Rear brake switch
- 42. Thermo switch
- 43. Fan motor 1
- 44. Fan motor 2
- 45. Battery
- 46. Thermo switch
- 47. Sidestand switch
- 48. Neutral switch
- 49. EFI relay
- 50. EFI control unit
- 51. Ignition coil 1
- 52. Ignition coil 2
- 53. Injector 1
- 54. Injector 2
- 55. Injector 3
- 56. Injector 4
- 57. Fuel pump
- 58. Engine stop switch
- 59. Crank shaft sensor
- 60. Cam shaft sensor
- 61. Air temp. sensor
- 62. Coolant temp. sensor
- 63. Pressure sensor
- 64. Throttle sensor
- 65. O₂ sensor
- 66. EFI test terminal
- 67. Front wheel sensor
- 68. Digital clock
- 69. ABS control unit
- 70. Brake lamp relay
- 71. Rear wheel sensor
- 72. Fail safe relay
- 73. Solenoid relay
- 74. Motor relay
- 75. Hydraulic unit
- 76. Motor
- 77. Rear solenoid
- 78. Front solenoid
- 79. ABS test terminal

- 1. Condensador
- 2. Interruptor principal
- 3. Conmutador de luces "LIGHTS"
- 4. Conmutador del embrague
- 5. Conmutador de la luz para adelantar "PASS"
- 6. Conmutador reductor de luces "LIGHTS"
- 7. Conmutador de la bocina "HORN"
- 8. Conmutador de viraja "TURN"
- 9. Bocina
- 10. Relé del destellador
- 11. Farol
- 12. Luz de destello delantera (Izquierdo)
- 13. Luz de destello delantera (Derecha)
- 14. Luz de destello trasero (Izquierdo)
- 15. Luz de destello trasero (Derecha)
- 16. Luz de freno y cola
- 17. Indicador "OIL LEVEL" del nivel de aceite
- 18. Luz indicadora de advertencia de temperatura del refrigerante
- 19. Luz indicadora de punto muerto "NEUTRAL"
- 20. Luz de advertencia del sistema "EFI"
- 21. Luz de advertencia "ABS"
- 22. Luz indicadora del nivel de combustible "FUEL LEVEL"
- 23. Luz indicadora de luz alta "HIGH BEAM"
- 24. Luz indicadora del señalizador de viraja "TURN" (Izquierde)
- 25. Luz indicadora del señalizador de viraja "TURN" (Derecha)
- 26. Luz del medidor
- 27. Medidor de combustible
- 28. Tachimetro
- 29. Contagiri
- 30. Relé de la lámpara de aceite
- 31. Interruptor del nivel de aceite
- 32. Sensor de combustible
- 33. Generador C.A.
- 34. Relé del arranque
- 35. Motor de arranque
- 36. Diode
- 37. Interruptor de parar el motor "ENGINE STOP"

- 38. Conmutador de arranque "START"
- 39. Relé de seguridad
- 40. Conmutador del freno delantero
- 41. Conmutador del freno trasero
- 42. Termoccontacto
- 43. Motor del ventilador 1
- 44. Motor del ventilador 2
- 45. Batería
- 46. Termoccontacto
- 47. Interruptor del soporte laterale
- 48. Conmutador de neutro
- 49. Relé del sistema EFI
- 50. Unidad de control del sistema EFI
- 51. Bobina de encendido 1
- 52. Bobina de encendido 2
- 53. Inyector 1
- 54. Inyector 2
- 55. Inyector 3
- 56. Inyector 4
- 57. Bomba de combustible
- 58. Interruptor de parar el motor
- 59. Sensor del cigüeñal
- 60. Sensor del árbol de levas
- 61. Sensor de temperatura de agua
- 62. Sensor de temperatura del refrigerante
- 63. Presión
- 64. Sensor del acelerador
- 65. Sensor de O₂
- 66. Terminal de prueba del sistema EFI
- 67. Sensor de la rueda frontal
- 68. Reloj digital
- 69. Unidad de control de ABS
- 70. Relé de la lámpara del freno
- 71. Sensor de la rueda trasero
- 72. Relé de seguridad
- 73. Relé de solenoide
- 74. Relé del motor
- 75. Unidad hidráulica
- 76. Motor
- 77. Solenoide trasero
- 78. Solenoide frontal
- 79. Terminal de prueba de ABS

- 1. Condensator
- 2. Kontaktslot-schakelaar
- 3. Licht-schakelaar "LIGHTS"
- 4. Koppelings-schakelaar
- 5. Inhaal-schakelaar "PASS"
- 6. Grootlicht-schakelaar "LIGHTS"
- 7. Klaxon-schakelaar "HORN"
- 8. Richtingaanwijzer-schakelaar "TURN"
- 9. Klaxon
- 10. Richtingaanwijzer-relais
- 11. Koplamp
- 12. Voorste richtingaanwijzer (links)
- 13. Voorste richtingaanwijzer (rechts)
- 14. Achterste richtingaanwijzer (links)
- 15. Achterste richtingaanwijzer (rechts)
- 16. Achterlicht/remlicht
- 17. Oliepeil-kontrolampje "OIL LEVEL"
- 18. Koelwatertemperatuur-waarschuingslampje
- 19. Vrijstand-kontrolampje "NEUTRAL"
- 20. Waarschuingslampje voor brandstofinspuiting (EFI)
- 21. Antiblokkeersysteem-waarschuingslampje "ABS"
- 22. Brandstofnivo-waarschuingslampje "FUEL LEVEL"
- 23. Grootlicht-kontrolampje "HIGH BEAM"
- 24. Richtingaanwijzer-kontrolampje "TURN" (links)
- 25. Richtingaanwijzer-kontrolampje "TURN" (rechts)
- 26. Meter-verlichting
- 27. Benzinemeter
- 28. Snelheidsmeter
- 29. Toerenteller
- 30. Olielamprelais
- 31. Oliepeil-schakelaar
- 32. Brandstofvoeder
- 33. Wisselstroom-dynamo
- 34. Startrelais
- 35. Startmotor
- 36. Diode
- 37. Motorstop-schakelaar "ENGINE STOP"

- 38. Startschakelaar "START"
- 39. Beveiligingsrelais
- 40. Voorrem-schakelaar
- 41. Achterrem-schakelaar
- 42. Thermoschakelaar
- 43. Ventilatormotor 1
- 44. Ventilatormotor 2
- 45. Accu
- 46. Thermoschakelaar
- 47. Zijstandaard-schakelaar
- 48. Vrijstand-schakelaar
- 49. Relais voor brandstofinspuiting (EFI)
- 50. Regeleenheid voor brandstofinspuiting (EFI)
- 51. Ontstekingsspiraal 1
- 52. Ontstekingsspiraal 2
- 53. Inspuiter 1
- 54. Inspuiter 2
- 55. Inspuiter 3
- 56. Inspuiter 4
- 57. Benzinepompeenheid
- 58. Motorstop-schakelaar
- 59. Krukas-sensor
- 60. Nokkenas-sensor
- 61. Luchttemperatuur-sensor
- 62. Koelwatertemperatuur-sensor
- 63. Druksensor
- 64. Gasklepsensor
- 65. Zuurstofsensor
- 66. Testaansluiting voor brandstofinspuiting (EFI)
- 67. Voorwielsensor
- 68. Digitale klok
- 69. ABS regeleenheid
- 70. Remlamprelais
- 71. Achterwielsensor
- 72. Defektbeveiligingsrelais
- 73. Solenoïderelais
- 74. Motorrelais
- 75. Hydraulische eenheid
- 76. Motor
- 77. Achter-solenoïde
- 78. Voor-solenoïde
- 79. ABS test aansluiting

COLOR CODE / CODIGO DE COLOR / KLEURCODES

B	Black Negro Zwart	P	Pink Rosado Rose	Lg	Light green Verde claro Lichtgroen	L/Y	Blue/Yellow Azul/Amarillo Blauw/Geel	G/R	Green/Red Verde/Rojo Groen/Rood	R/L	Red/Blue Rojo/Azul Rood/Blauw	P/W	Pink/White Rosado/Blanco Rose/Wit	Br/W	Brown/White Marrón/Blanco Bruin/Wit	W/G	White/Green Blanco/Verde Wit/Groen
L	Blue Azul Blauw	Br	Brown Marrón Bruin	W	White Blanco Wit	L/R	Blue/Red Azul/Rojo Blauw/Rood	G/W	Green/White Verde/Blanco Groen/Wit	R/Y	Red/Yellow Rojo/Amarillo Rood/Geel	Br/B	Brown/Black Marrón/Negro Bruin/Zwart	Gy/G	Gray/Green Gris/Verde Grijs/Groen	W/Y	White/Yellow Blanco/Amarillo Wit/Geel
G	Green Verde Groen	Ch	Chocolate Chocolate Chocoladekleurig	B/Y	Black/Yellow Negro/Amarillo Zwart/Geel	L/W	Blue/White Azul/Blanco Blauw/Wit	Y/B	Yellow/Black Amarillo/Negro Geel/Zwart	R/G	Red/Green Rojo/Verde Rood/Groen	Br/L	Brown/Blue Marrón/Azul Bruin/Blauw	Gy/R	Gray/Red Gris/Rojo Grijs/Rood	W/R	White/Red Blanco/Rojo Wit/Rood
Y	Yellow Amarillo Geel	Gy	Gray Gris Grijs	B/R	Black/Red Negro/Rojo Zwart/Rood	G/B	Green/Black Verde/Negro Groen/Zwart	Y/R	Yellow/Red Amarillo/Rojo Geel/Rood	R/W	Red/White Rojo/Blanco Rood/Wit	Br/G	Brown/Green Marrón/Verde Bruin/Groen	Lg/B	Light green/Black Verde claro/Negro Lichtgroen/Zwart	W/Br	White/Brown Blanco/Marrón Wit/Bruin
R	Red Rojo Rood	Sb	Sky blue Celeste Hemelsblauw	B/W	Black/White Negro/Blanco Zwart/Wit	G/L	Green/Blue Verde/Azul Groen/Blauw	Y/W	Yellow/White Amarillo/Blanco Geel/Wit	O/B	Orange/Black Amaranjado/Negro Oranje/Zwart	Br/Y	Brown/Yellow Marrón/Amarillo Bruin/Geel	W/B	White/Black Blanco/Negro Wit/Zwart		
O	Orange Amaranjado Oranje	Dg	Dark green Verde Oscuro Donkergroen	L/B	Blue/Black Azul/Negro Blauw/Zwart	G/Y	Green/Yellow Verde/Amarillo Groen/Geel	R/B	Red/Black Rojo/Negro Rood/Zwart	O/W	Orange/White Amaranjado/Blanco Oranje/Wit	Br/R	Brown/Red Marrón/Rojo Bruin/Rood	W/L	White/Blue Blanco/Azul Wit/Blauw		