



YAMAHA

YZ250S

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**OWNER'S
SERVICE MANUAL**

IMPORTANT NOTICE

THIS MACHINE IS DESIGNED STRICTLY FOR COMPETITION USE ONLY. IT IS ILLEGAL TO OPERATE THIS VEHICLE ON STREET. OFF ROAD USE ON PUBLIC LAND MAY BE ILLEGAL. PLEASE CHECK YOUR LOCAL RIDING AREA REGULATIONS. SUSPENSION ON THIS MACHINE CAN BE ADJUSTED. FOR DETAILS OF TUNING, REFER TO THE RACE PREPARATION AND TUNING MANUAL.

SAFETY WARNINGS:

1. GASOLINE IS HIGHLY FLAMMABLE:

- * Always turn off the engine when refueling.
- * Take care not to spill on the engine or exhaust pipe/muffler, when refueling.
- * If any gasoline spills on the engine or exhaust pipe/muffler, wipe it off immediately.
- * Never refuel while smoking or in the vicinity of an open flame.

2. If you should swallow some gasoline or inhale a lot of gasoline vapor, or allow some gasoline to get in your eye(s), see your doctor immediately. If any gasoline spills on your skin or clothing, immediately wash it with soap and water, and change your clothes.

3. Do not touch any moving or heated areas.

- * The engine and exhaust pipe/muffler are heated up. Park the machine in a place where pedestrians or children are not likely to touch the machine.
- * Do not park the machine on a slope or soft ground; the machine can easily overturn.

4. When transporting the machine in another vehicle, be sure it is kept upright and that the fuel petcock is turned to the "OFF" position. If it should lean over, gasoline may leak out of the carburetor or fuel tank.

5. 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 machine in an area with adequate ventilation.

6. Always wear a helmet, gloves, boots, trousers, and jacket for motocross riding.

YZ250S OWNER'S SERVICE MANUAL

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TO THE NEW OWNER

This manual will provide you with a good basic understanding of features, operation, and basic maintenance and inspection items of this vehicle.

PLEASE READ THIS MANUAL CAREFULLY AND COMPLETELY BEFORE OPERATING YOUR NEW MACHINE. If you have any questions regarding the operation or maintenance of your machine, please consult your Yamaha dealer.

NOTE:

This manual should be considered a permanent part of this machine and should remain with it even if the machine is subsequently sold.

NOTICE

Some data in this manual may become outdated due to improvements made to this model in the future. If there is any question you have regarding this manual or your machine, please consult your Yamaha dealer.

F.I.M. MACHINE WEIGHTS

Weights of machines without fuel

The minimum weights for motocross machines are:

for the class 125 cc minimum 88 kg (194 lb)

for the class 250 cc minimum 98 kg (216 lb)

for the class 500 cc minimum 102 kg (225 lb)

In modifying your machine (e.g., for weight reduction), take note of the above limits of weight.

TECHNICAL PUBLICATIONS
SERVICE DIVISION
MOTORCYCLE OPERATIONS
YAMAHA MOTOR CO., LTD

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HOW TO USE THIS MANUAL

PARTICULARLY IMPORTANT INFORMATION

This material is distinguished by the following notation.

NOTE: A **NOTE** provides key information to make procedures easier or clearer.

CAUTION: A **CAUTION** indicates special procedures that must be followed to avoid damage to the machine.

WARNING: A **WARNING** indicates special procedures that must be followed to avoid injury to a machine operator or person inspecting or repairing the machine.

MANUAL FORMAT

All of the procedures in this manual are organized in a sequential, step-by-step format. The information has been compiled to provide the mechanic with an easy to read, handy reference that contains comprehensive explanations of all disassembly, repair, assembly, and inspection operations.




















In this revised format, the condition of a faulty component will precede an arrow symbol and the course of action required will follow the symbol, e.g.,

•Bearings

Pitting/Damage → Replace.

EXPLODED DIAGRAM

Each chapter provides exploded diagrams before each disassembly section for ease in identifying correct disassembly and assembly procedures.

① GEN INFO 	② MA ADJ 	
③ ENG 	④ CHAS 	
⑤ ELEC 	⑥ APPX 	
⑦ 	⑧ 	
⑨ 	⑩ 	
⑪ 	⑫ 	
⑬ 	⑭ 	⑮ 
⑯ 	⑰ 	⑱ 
⑲ 		

ILLUSTRATED SYMBOLS (Refer to the illustration)

Illustrated symbols ① to ⑥ are designed as thumb tabs to indicate the chapter's number and content.

- ① General information
- ② Periodic inspection and adjustment
- ③ Engine
- ④ Chassis
- ⑤ Electrical
- ⑥ Appendices







Illustrated symbols ⑦ to ⑫ are used to identify the specifications appearing in the text.

- ⑦ Filling fluid
- ⑧ Lubricant
- ⑨ Tightening
- ⑩ Wear limit, clearance
- ⑪ Engine speed
- ⑫ Ω , V, A

Illustrated symbols ⑬ to ⑱ in the exploded diagram indicate grade of lubricant and location of lubrication point.

- ⑬ Apply engine oil
- ⑭ Apply gear oil
- ⑮ Apply molybdenum disulfide oil
- ⑯ Apply wheel bearing grease
- ⑰ Apply lightweight lithium-soap base grease
- ⑱ Apply molybdenum disulfide grease
- ⑲ Apply locking agent (LOCTITE®)

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CHAPTER 1 GENERAL INFORMATION

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**GENERAL
INFORMATION**

**MACHINE
IDENTIFICATION**

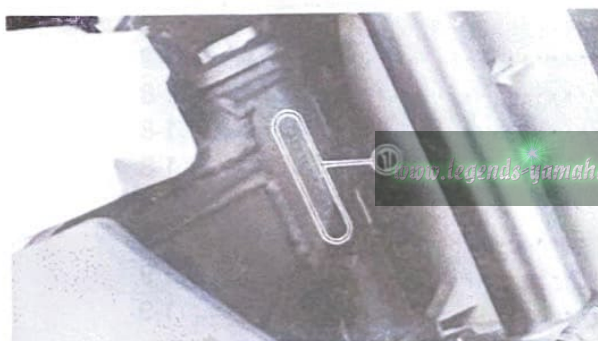
1

There are two significant reasons for knowing the serial number of your machine:

1. When ordering parts, you can give the number to your Yamaha dealer for positive identification of the model you own;
2. If your machine is stolen, the authorities will need the number to search for and identify your machine.

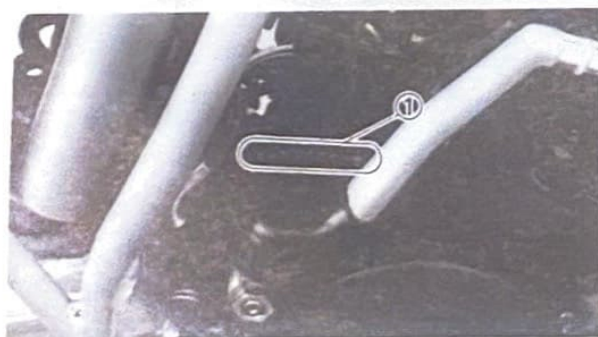
VEHICLE IDENTIFICATION NUMBER

The vehicle identification number ① is stamped on the right of the steering head pipe.



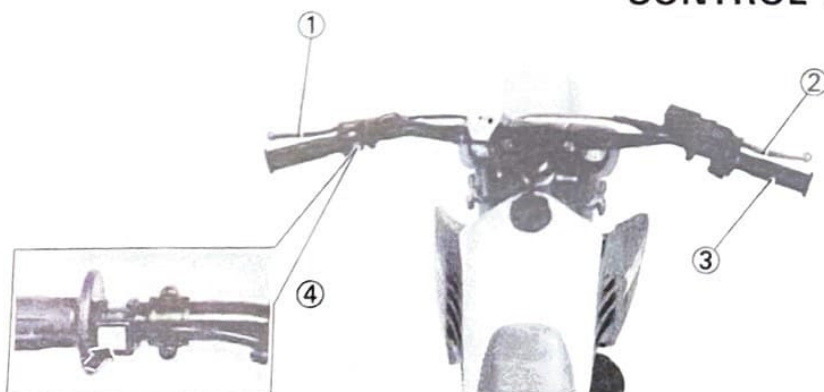
ENGINE SERIAL NUMBER

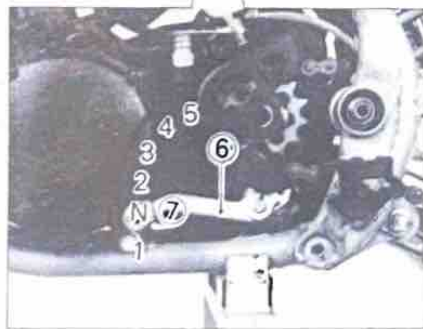
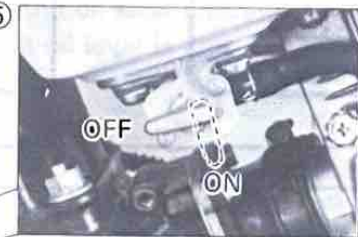
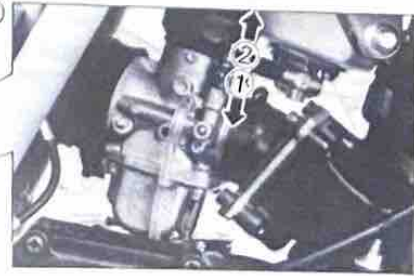
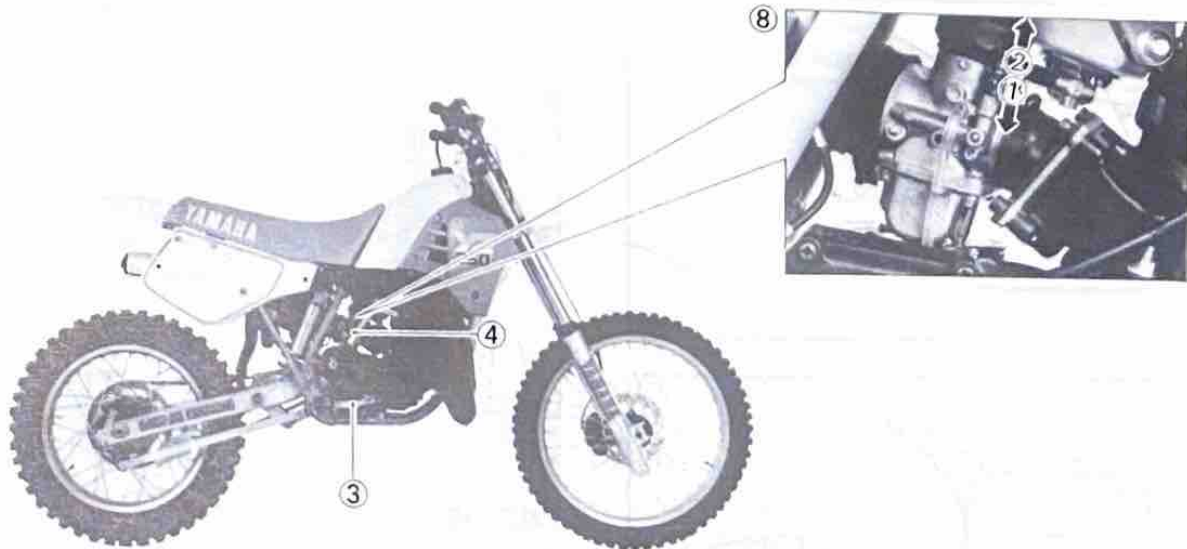
The engine serial number ① is stamped into the elevated part of the right rear section of the engine.



CONTROL FUNCTIONS

- ① Clutch lever
- ② Front brake lever
- ③ Throttle grip
- ④ Engine stop switch





- ① For riding
- ② For starting
- ③ Rear brake pedal
- ④ Kick starter
- ⑤ Fuel cock
- ⑥ Shift pedal
- ⑦ N: Neutral
- ⑧ Starter knob



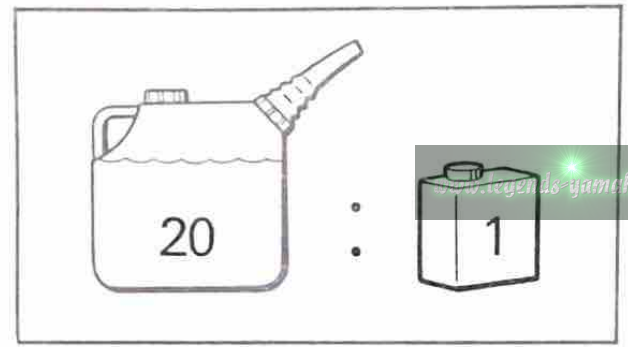
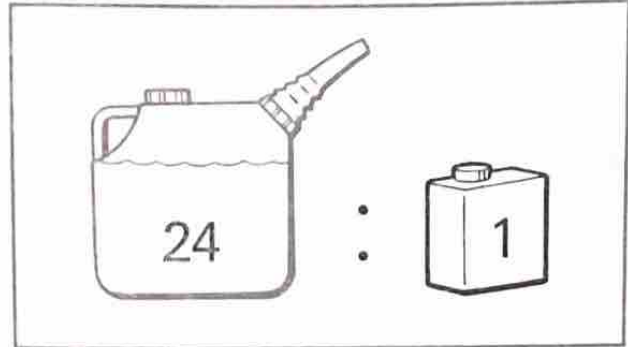
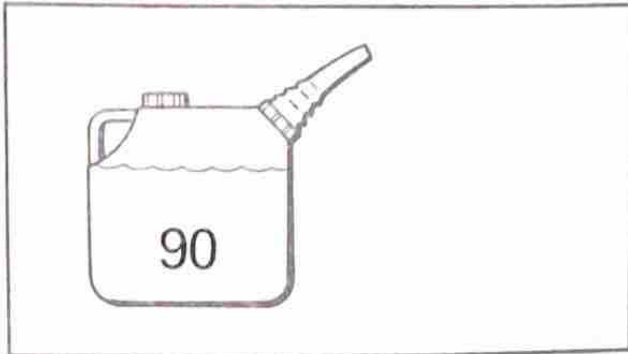
SIDESTAND

WARNING:

This sidestand is used to support only the machine when parking it.
Never apply additional force to the side-stand.



1



FUEL, OIL AND COOLANT

FUEL



Recommended Fuel:
Premium Fuel with an Octane Rating of at least 90



Fuel Tank Capacity:
8.0 L (1.76 Imp gal, 2.11 US gal)

ENGINE MIXING OIL



Recommended Oil: Yamalube "R"
(Yamalube Racing 2-cycle Oil)
Mixing Ratio: 24 : 1

If for any reason you should use another type, select from the following list.

Recommended oil	Mixing ratio
Castrol R30 A545 A747	20:1

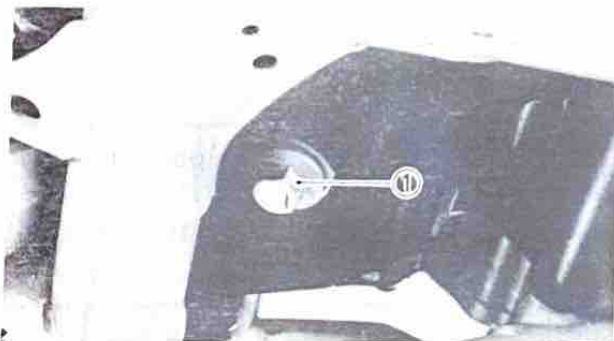
CAUTION:

Never mix two types of oil in the same batch; clotting of the oil could result.

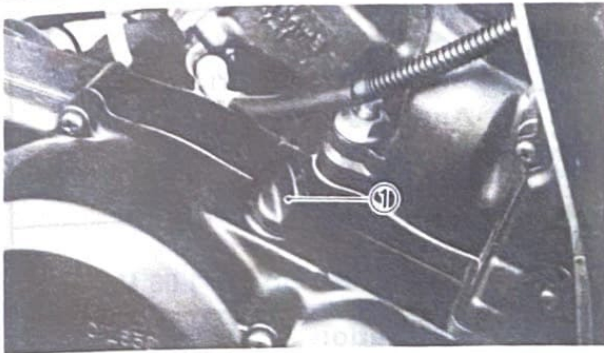
TRANSMISSION OIL



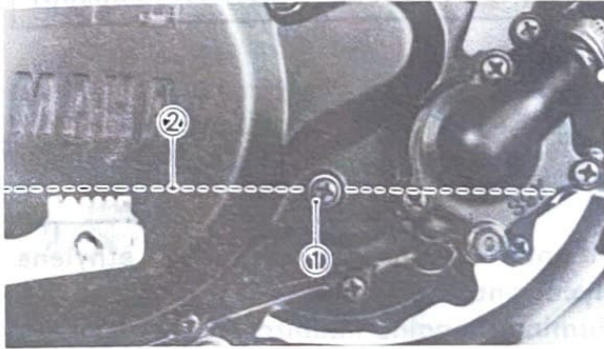
Recommended Oil:
Yamalube 4-cycle Oil or SAE 10W30 SE Motor Oil
Periodic Oil Change:
0.85 L (0.75 Imp qt, 0.90 US qt)
Overhaul:
0.90 L (0.79 Imp qt, 0.95 US qt)



① Drain bolt



Drain Bolt:
20 Nm (2.0 m•kg, 14 ft•lb)

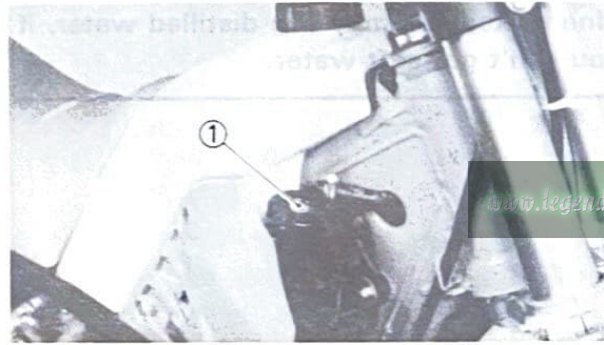


① Filler plug

OIL LEVEL

On the right side of the engine there is a checking screw ①. To check, warm up the engine for 1 minute. Stop engine. Leave the engine as it is for a few minutes and place the machine upright, then remove the oil level checking screw. If oil flows out, the oil level is correct.

② Oil level

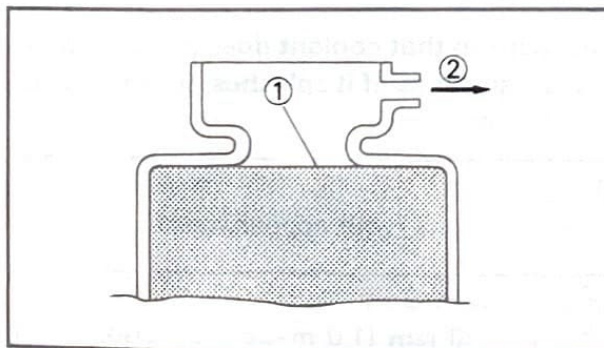


COOLANT LEVEL

WARNING:

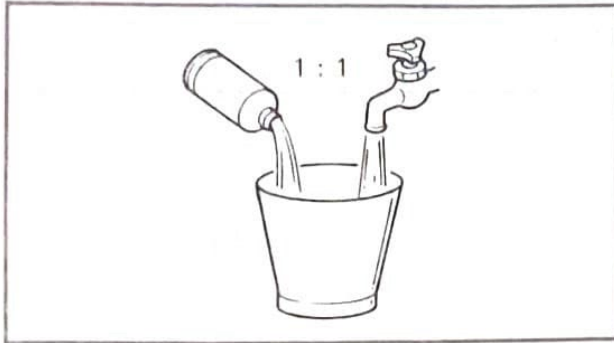
Do not remove the radiator cap ①, drain bolt and hoses when the engine and radiator are hot. Scalding hot fluid and steam may be blown out under pressure, which could cause serious injury.

When the engine has cooled, place a thick towel over the radiator cap, 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.



Check the coolant level in the radiator tank when the engine is cold. If the coolant level is low, add the coolant.

① Coolant
② Breather hose



Recommended Coolant:
High Quality Ethylene Glycol
Anti-freeze Containing
Corrosion Inhibitors for
Aluminum Engine

Capacity:
1.0 L (0.88 Imp qt, 1.06 US qt)

Mixed Ratio:
1 : 1 (50% water, 50% coolant)

CAUTION:

Do not mix more than one type of ethylene glycol antifreeze containing corrosion for aluminum engine inhibitors.

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

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COOLANT DRAINING

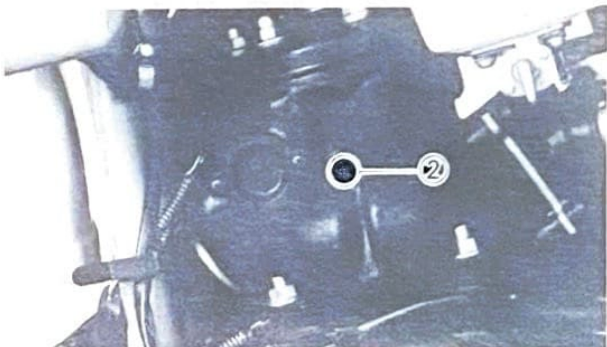
1. Place a container under the engine.
2. Remove:

- Radiator cap
- Pump cover drain bolt ①
- Cylinder drain bolt ②

Drain the coolant completely. Thoroughly flush the cooling system with clean tap water.

CAUTION:

Take care so that coolant does not splash on painted surfaces. If it splashes, wash it away with water.



3. Install:
- Drain bolts (with copper washer)



Drain Bolt:
10 Nm (1.0 m•kg, 7.2 ft•lb)



REPLENISHING COOLANT

NOTE: _____

Before pouring the coolant into the radiator, check the cooling system for damage, loose joints or leaks.

1. Add:

- Coolant

NOTE: _____

After starting the engine, race the engine a few times and add the coolant again up to specified level.

2. Install:

- Radiator cap

1



PRE-OPERATION CHECKS

Before riding for break-in operation, practice or a race, make sure the machine is in good operating condition.

1 INSPECTION AND MAINTENANCE

Cooling Water

Check that coolant is filled up to the radiator filler cap.

Fuel

Check that a fresh mixture of oil and gasoline is filled in the fuel tank.

Gear Oil

Check that the gear oil level is correct.

Gear Shifter and Clutch

Check that gears can be shifted correctly in order and that the clutch operates smoothly.

Brakes

Check the play of both front and rear brakes and their braking effect.

Brake Actuated Suspension

Check that the brake pedal height and free play are correct.

Then check that it operates correctly.

Chain

Check chain slack and alignment. Check that the chain is lubricated properly.

Wheels

Is the tire pressure correct?

Check for excessive wear. Check for loose spokes and have no excessive play.

Steering

Check that the handlebars can be turned smoothly and have no excessive play.

Front Forks and Rear Shock

Check that they operate smoothly and there is no oil leakage.

Cables (Wires)

Check that the clutch and throttle cables move smoothly. Check that they are not caught when the handlebars are turned or when the front forks travel up and down.

Muffler

Check that the muffler is tightly mounted and has no cracks.

Sprocket

Check that the rear wheel sprocket tightening bolt is not loose.

Bolts and Nuts

Check the chassis and engine for loose bolts and nuts.

Fuel, Oil and Coolant

Check the fuel tank, fuel cock, carburetor, engine bottom, and cooling system for leakage.

Lead Wire Connectors

Check that the CDI magneto, CDI unit, and ignition coil are connected tightly.

Settings

Is the machine set suitably for the condition of the racing course and weather or by taking into account the results of test-runs before racing? Is inspection and maintenance completely done?

NOTE:

The machine should be checked and serviced regularly so that only a simple, minor adjustment of settings is required prior to a race.



STARTING AND BREAK-IN

CAUTION:

Before starting the machine, perform the checks in the pre-operation check list.

WARNING:

Never start or run the engine in a closed area. The exhaust fumes are poisonous; they can cause loss of consciousness and death in a very short time. Always operate the machine in a well-ventilated area.

STARTING A COLD ENGINE

Shift the transmission into neutral. Turn on the fuel cock and pull the starter knob up on the carburetor. With the throttle completely closed, kickstart the engine with a smooth, firm stroke. Using the starter lever as required, run the engine at idle or slightly higher until it warms up; this usually takes about one or two minutes. The engine is warmed up when it responds normally to the throttle with the starter knob pushed completely.

CAUTION:

Do not warm up the engine for extended periods.

STARTING A WARM ENGINE

Do not pull the starter knob up. Open the throttle slightly and kickstart the engine with a smooth, firm stroke.

CAUTION:

Observe the following break-in procedures during initial operation to ensure optimum performance and avoid engine damage.

BREAK-IN PROCEDURES

1. Before starting the engine, fill the fuel tank with a break-in oil-fuel mixture of 12 : 1 to 14 : 1.
2. Perform the pre-operation checks on the machine.
3. Start and warm up the engine. Check the idle speed, and check the operation of the controls and the engine stop switch.
4. Operate the machine in the lower gears at moderate throttle openings for five to eight minutes. Stop and check the spark plug condition; it will show a rich condition during break-in.
5. Allow the engine to cool. Restart the engine and operate the machine as in the step above for five minutes. Then, very briefly shift to the higher gears and check full-throttle response. Stop and check the spark plug.
6. After again allowing the engine to cool, restart and run the machine for five more minutes. Full throttle and the higher gears may be used, but sustained full-throttle operation should be avoided. Check the spark plug condition.
7. Allow the engine to cool, remove the top end, and inspect the piston and cylinder; instructions for this are on page 3-11. Remove any high spots on the piston with 600-grit, wet sandpaper. Clean all components and carefully reassemble the top end.
8. Drain the break-in oil-fuel mixture from the fuel tank and refill with the specified mix. Check the entire machine for loose screws, bolts, and nuts.
9. Restart the engine and check the operation of the machine throughout its entire operating range. Stop and check the spark plug condition. Restart the machine and operate it for about 10 to 15 more minutes. The machine will now be ready to race.

**CAUTION:**

1. After the break-in period is completed, check the entire machine for loose fittings and fasteners. Tighten all such fasteners as required.

2. When any of the following parts have been replaced, they must be broken in.

CYLINDER AND CRANKSHAFT:

About one hour of break-in operation is necessary.

PISTON, RINGS AND GEARS:

These parts require about 30 minutes of break-in operation at half-throttle or less. Observe the condition of the engine carefully during operation.

4. After the majority of the dirt has been hosed off, wash all surfaces with warm water and a mild detergent. Use an old toothbrush to clean hard-to-reach places.
5. Rinse the machine off immediately with clean water, and dry all surfaces with a soft towel or cloth.
6. Immediately after washing, remove excess water from the chain with a paper towel and lubricate the chain to prevent rust.
7. Clean the seat with a vinyl upholstery cleaner to keep the cover pliable and glossy.
8. Automotive wax may be applied to all painted or chromed surfaces. Avoid combination cleaner-waxes, as they may contain abrasives.
9. After completing the above, start the engine and allow it to idle for several minutes.

CLEANING AND STORAGE**CLEANING**

Frequent cleaning of your machine will enhance its appearance, maintain good overall performance, and extend the life of many components.

1. Before washing the machine, block off the end of the exhaust pipe to prevent water from entering. A plastic bag secured with a rubber band may be used for this purpose.
2. If the engine is excessively greasy, apply some degreaser to it 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 can force water into wheel bearings, front fork seals, brake drum, and transmission seals. Avoid using high-pressure hoses such as those found in coin-operated car washes.

STORAGE

If your machine is to be stored for 60 days or more, some preventive measures must be taken to avoid deterioration. After cleaning the machine thoroughly, prepare it for storage as follows:

1. Drain the fuel tank, fuel lines, and the carburetor float bowl.
2. Remove the spark plug, pour a tablespoon of SAE 10W30 motor oil in the spark plug hole, and reinstall the plug. With the engine stop switch pushed in, kick the engine over several times to coat the cylinder walls with oil.
3. Remove the drive chain, clean it thoroughly with solvent, and lubricate it. Reinstall the chain or store it in a plastic bag tied to the frame.
4. Lubricate all control cables.
5. Block the frame up to raise the wheels off the ground.
6. Tie a plastic bag over the exhaust pipe outlet to prevent moisture from entering.
7. If the machine is to be stored in a humid or salt-air environment, coat all exposed metal surfaces with a film of light oil. Do not apply oil to rubber parts or the seat cover.

NOTE:

Make any necessary repairs before the machine is stored.

CHAPTER 2

REGULAR MAINTENANCE AND ADJUSTMENT

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REGULAR MAINTENANCE AND ADJUSTMENT

MAINTENANCE INTERVALS

The following schedule is intended as a general guide to maintenance and lubrication. Bear in mind that such factors as weather, terrain, geographical location, and individual usage will alter the required maintenance and lubrication intervals. If you are in doubt as to what intervals to follow in maintaining and lubricating your machine, consult your Yamaha dealer.

Item	After break-in	Every race	Every third	Every fifth	As required	Remarks
PISTON Inspect and clean Replace	●	●		●	●	Inspect crack Remove carbon
PISTON RING Inspect Replace	●	●	●		●	Check ring end gap
PISTON PIN, SMALL END BEARING Inspect Replace				●	●	
CYLINDER HEAD Inspect and clean Retighten	●	●				Remove carbon Check gasket
CYLINDER Inspect and clean Replace	●	●			●	Seizure Wear
Y.P.V.S. Check operation and retighten						
CLUTCH Inspect and adjust Replace	●	●			●	Inspect friction plate, clutch plate and spring
TRANSMISSION Replace oil Inspect transmission	●			●	●	Yamalube 4-cycle oil or SAE 10W30 SE motor oil
SHIFT CAM, FORK Inspect					●	Inspect wear
ROTOR NUT Retighten				●		
MUFFLER Inspect Clean	●	●		●		
CRANK Inspect and clean				●	●	
CARBURETOR Inspect, adjust and clean	●	●				
SPARK PLUG Inspect and clean Replace	●	●			●	STD plug: N-86 B8EG Gap: 0.5 ~ 0.6 mm (0.020 ~ 0.024 in)
DRIVE CHAIN Lubricate, slack, alignment Replace	●	●			●	Use chain lube Chain slack: 20 ~ 30 mm (0.8 ~ 1.2 in)

MAINTENANCE INTERVALS



Item	After break-in	Every race	Every third	Every fifth	As required	Remarks
COOLING SYSTEM Check coolant level and leakage Check radiator cap operation Replace coolant Inspect hoses	●	●			● ●	Every two years
OUTSIDE NUTS AND BOLTS Retighten	●	●				
AIR FILTER Clean and oil Replace	●	●			●	Use Foam air-filter oil or SAE 10W30 motor oil
FRAME Clean and inspect	●	●				
FUEL TANK, COCK Clean and inspect	●		●			
BRAKES Adjust free play Lubricate pivot point Check fluid level and leakage Retighten brake disc bolts, caliper bolts and union bolts Replace linings/pads	● ● ● ●	● ● ● ●			●	Brake pad wear limit: 0.8 mm (0.03 in) Lining wear limit: 2 mm (0.08 in)
FRONT FORKS Inspect and adjust Replace oil Replace oil seal	● ●	●		●	●	Fork oil 15 wt
REAR SHOCK Inspect and adjust Lube and retighten	● ●	● ●				Lithium base grease
CHAIN GUARD AND ROLLES Inspect and replace					●	
SWINGARM Inspect and retighten	●	●				
RELAY ARM, CONNECTING ROD Inspect and lube	●	●				Lithium base grease
STEERING HEAD Inspect free play and retighten Clean and lube Replace bearing	●	●		●	●	Medium weight wheel bearing grease
TIRE, WHEELS Inspect air pressure, wheel run-out, tire wear and spoke looseness Retighten sprocket bolt Inspect bearings Replace bearings Lubricate	● ●	● ●	● ●		●	Medium weight wheel bearing grease
THROTTLE, CONTROL CABLE Check routing and connection Lubricate	● ●	● ●				Yamaha cable lube SAE 10W30 motor oil
OUTSIDE NUTS AND BOLTS Retighten	●	●				

2



2


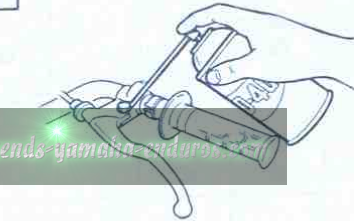
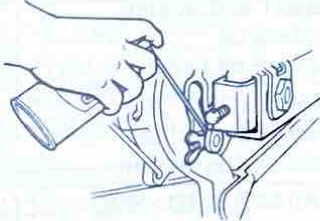
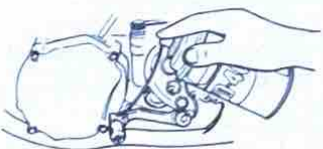
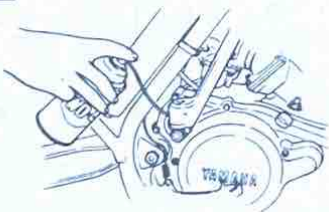
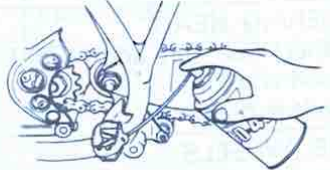
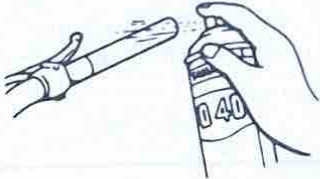
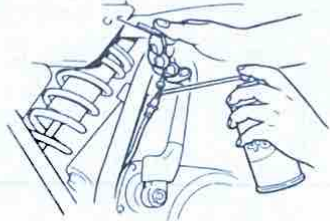
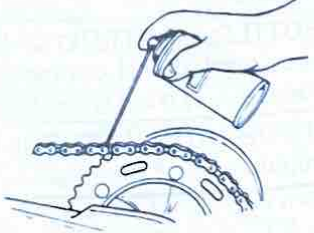
LUBRICATION


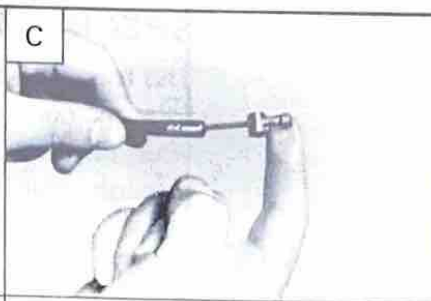
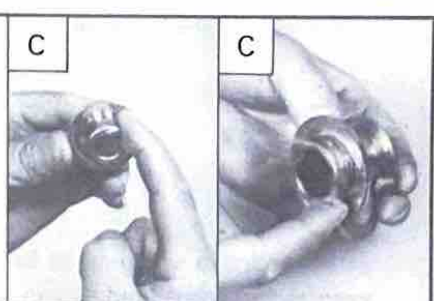
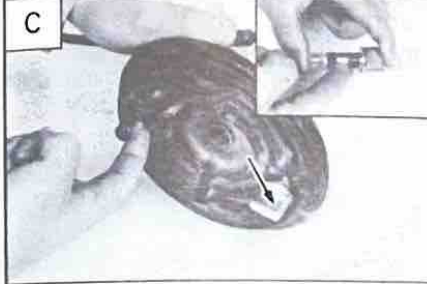
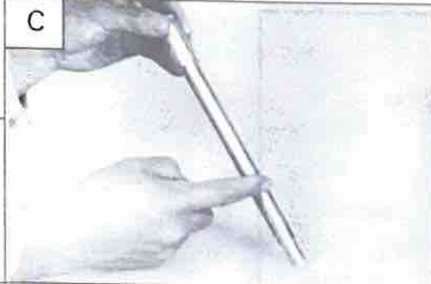
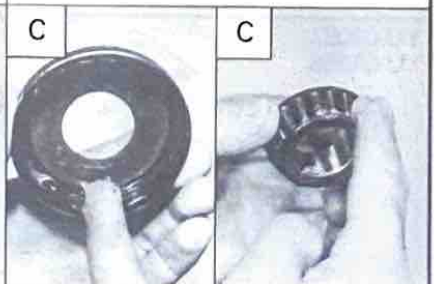


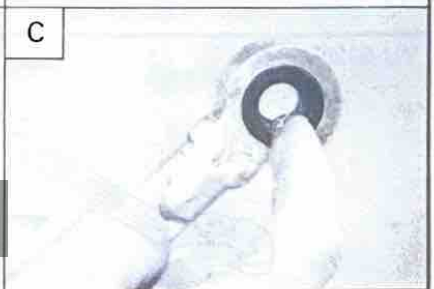

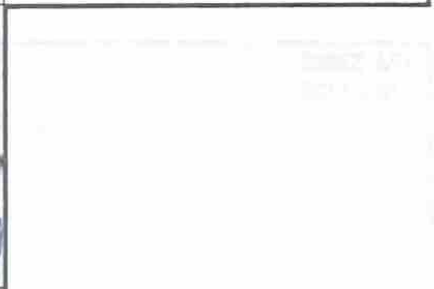
To ensure smooth operation of all components, lubricate your machine during setup, after break-in, and after every race.

- A. Use Yamaha cable lube, or WD-40 on these areas.
- B. Use racing chain lube.
- C. Lubricate the following areas with high-quality, lightweight lithium-soap base grease.

CAUTION:

Wipe off any excess grease, and avoid getting grease on the brake disc and brake shoes.

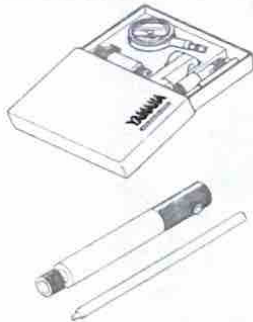
<p>A</p>  <p>All control cables</p>	<p>A</p>  <p>Brake and clutch lever pivots</p>	<p>A</p>  <p>Brake arm pivot</p>
<p>A</p>  <p>Shift lever pivot</p>	<p>A</p>  <p>Kick starter lever pivot</p>	<p>A</p>  <p>Footrest pivots</p>
<p>A</p>  <p>Throttle-to-handlebar contact</p>	<p>A</p>  <p>Brake actuated suspension control cable</p>	<p>B</p>  <p>Drive chain</p>

		
<p>Throttle guide and cable end</p>	<p>Clutch cable ends</p>	<p>Wheel axle collar</p>
		
<p>Brake shoe cam and pivot</p>	<p>Wheel axles and pivot shaft</p>	<p>Steering bearing and bearing cover</p>
		
<p>Rear brake backing plate bushing</p>	<p>Brake pedal pivot</p>	<p>Torque arm pivot bushing</p>
		
<p>Relay arm and connecting rod</p>	<p>Rear shock pivot (upper and lower)</p>	

SPECIAL TOOLS

The following special tools are required to perform maintenance, adjustments, and repairs on your machine. These tools can be obtained through your Yamaha dealer.

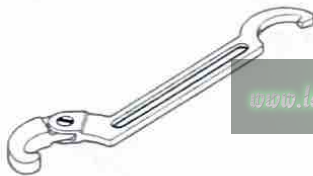
YU-03097
YU-01256



1. Dial Gauge and Stand
P/N. YU-03097, YU-01256

These tools are used to set the ignition timing.

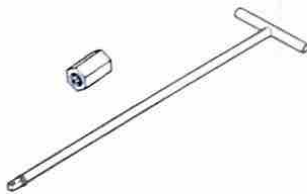
YU-01268



2. Steering Nut Wrench
P/N. YU-01268

Use this wrench to put the proper tension on the steering head bearings.

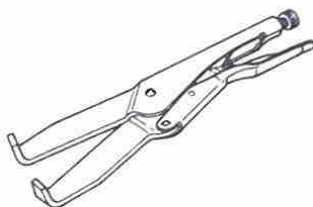
YM-33962
YM-01326



3. Fork Cylinder Holder and Adapter
P/N. YM-33962, YM-01326

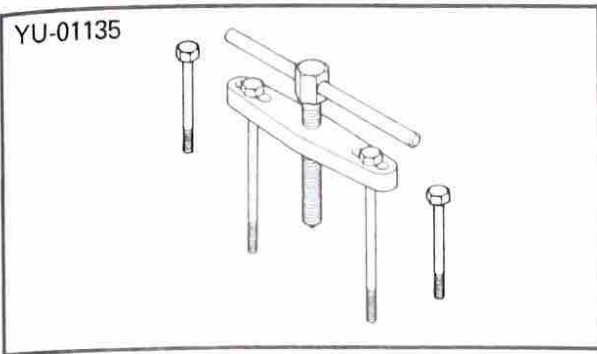
Use these tools to remove and install the fork cylinder.

YM-91042



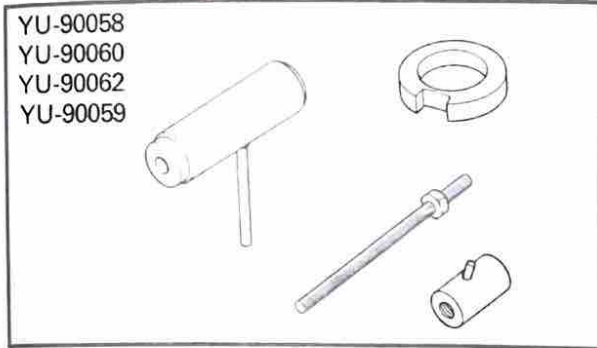
4. Clutch Holding Tool
P/N. YM-91042

Use this tool to hold the clutch boss while removing or tightening the clutch boss nut.



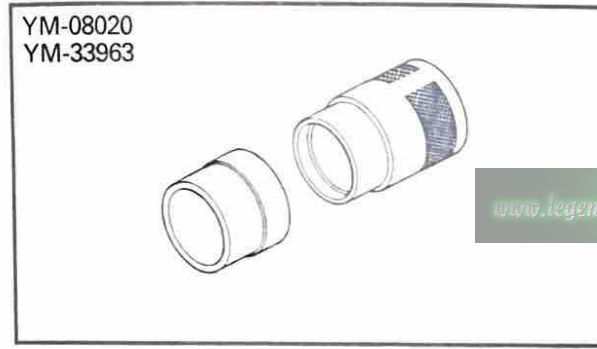
5. Crankcase Separating Tool
P/N. YU-01135

This tool is used to split the crankcases as well as remove the crankshaft from either case.



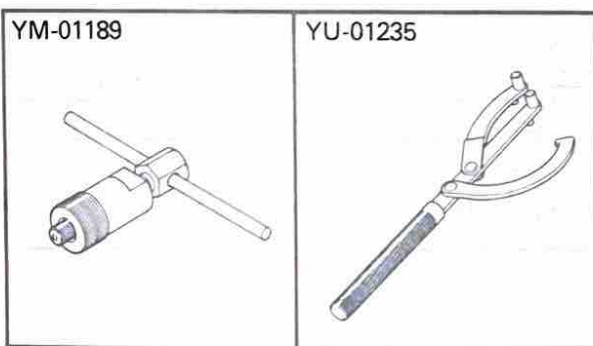
6. Crankshaft Installing Tool
Pot
P/N. YU-90058
Bolt
P/N. YU-90060
Adapter
P/N. YU-90062
Spacer
P/N. YU-90059

These tools are used to install the crankshaft.

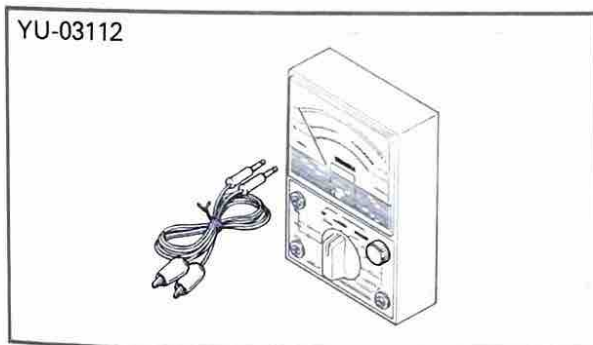


7. Fork Seal and Bushing Service Tool
P/N. YM-08020, YM-33963

This tool is used to install the fork oil seal.



8. Rotor Holder and Rotor Puller
Holder
P/N. YU-01235
Puller
P/N. YM-01189

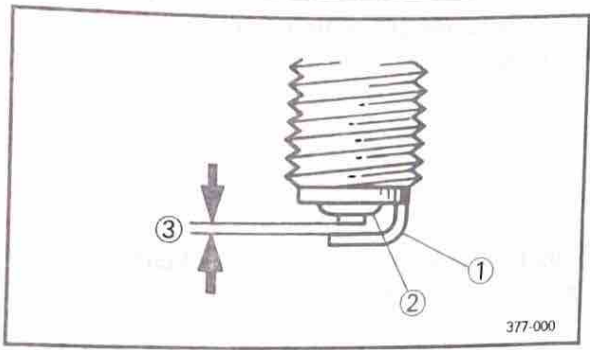


9. Yamaha Pocket Tester
P/N. YU-03112

Use this tool to measure the coil resistance, output voltage and amperage.

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MINOR MAINTENANCE AND ADJUSTMENTS



2

SPARK PLUG


1. Remove:
 - Spark plug
2. Inspect:
 - Electrode ①
 - Wear/Damage → Replace.
 - Insulator color ②
3. Measure:
 - Plug gap ③
 - Use a Wire Gauge or Feeler Gauge.
 - Out of specification → Regap.

 **Spark Plug Gap:**
0.5 ~ 0.6 mm (0.020 ~ 0.024 in)

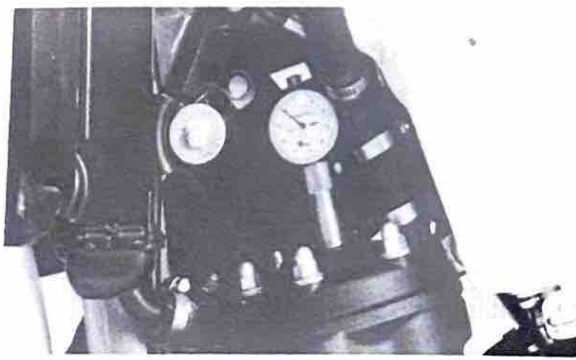
Standard Spark Plug:
N-86, N-86G, N-2G, N-2C
(CHAMPION)
B8EG, B8EGV (NGK)

www.legends-yamaha-enduro.com Before installing a spark plug, clean the gasket surface and plug surface.

4. Tighten:
 - Spark plug

 **Spark Plug:**
20 Nm (2.0 m•kg, 14 ft•lb)

NOTE: _____
Finger-tighten the spark plug before torquing to specification.



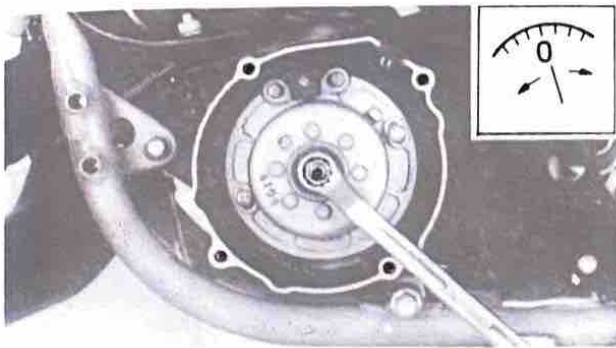
IGNITION TIMING

Checking and Adjustment

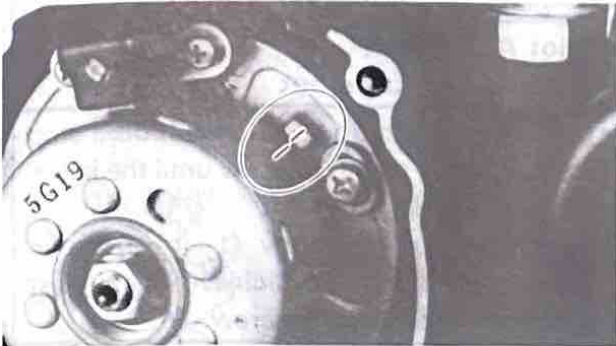
1. Check/Adjust:
 - Ignition timing

Ignition timing adjustment steps:

- Remove the spark plug.
- Install the extension on the dial gauge, and slide the dial gauge assembly into the dial gauge stand.



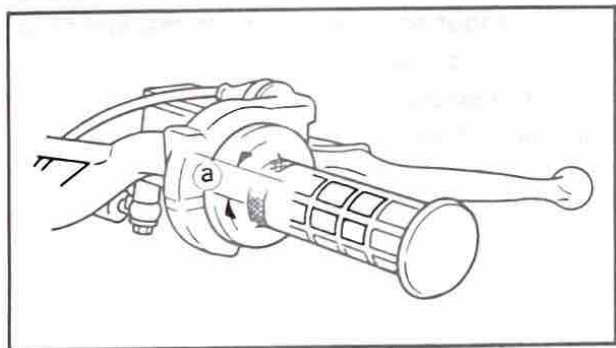
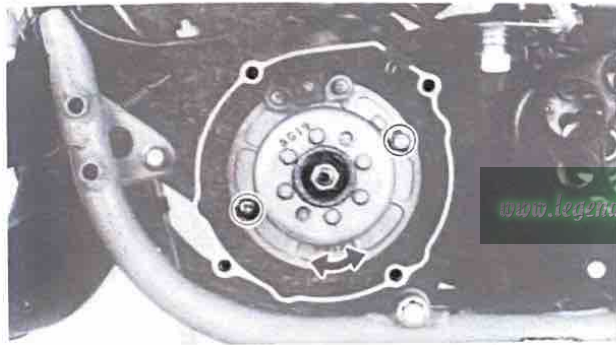
- Screw the dial gauge stand into the spark plug hole.
- Rotate the magneto rotor until the piston reaches top dead center (TDC). When this happens, the needle on the dial gauge will stop and reverse directions even though the rotor is being turned in the same direction. Zero the dial gauge at TDC.
- From TDC, rotate the rotor clockwise until the dial gauge indicates that the piston is at a specified distance from TDC. At this point, the scribed marks on the rotor and the stator plate should be aligned.



Ignition Timing:

1.5 ± 0.1 mm (0.059 ± 0.004 in)

- If the marks are not aligned, loosen the two stator retaining screws and rotate the stator until the marks line up. Tighten the screws and recheck the timing marks.



THROTTLE CABLE

1. Check:

- Throttle grip free play (a)
Out of specification → Adjust.



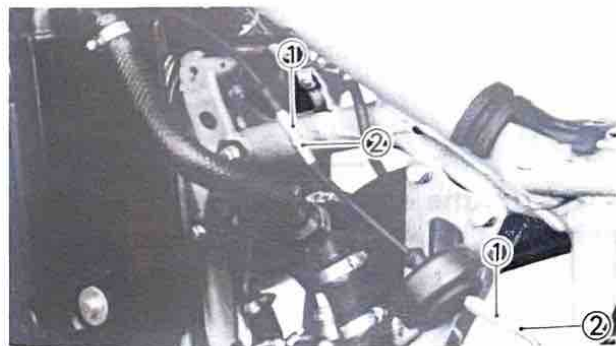
Free Play: 3 ~ 5 mm (0.12 ~ 0.20 in)

2. Adjust:

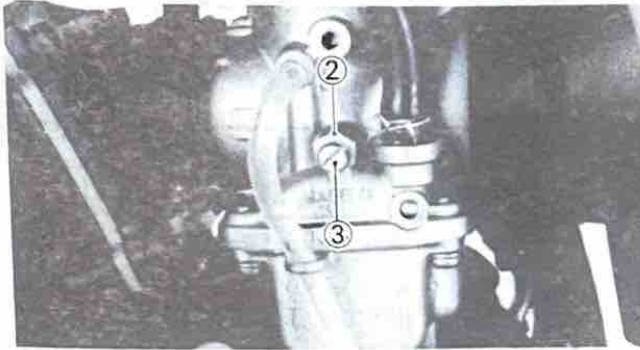
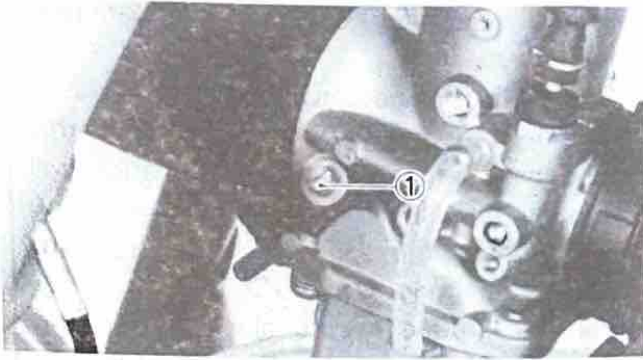
- Throttle grip free play
(by turning the adjuster ① in or out)

NOTE:

After adjusting, turn the handlebar to right and left and make sure that the engine idling does not run faster.



② Locknut



2

IDLE SPEED

1. Warm up engine for a few minutes.
2. Adjust:
 - Idle speed

Idle speed adjusting steps:

- Screw in the pilot air screw ① until it is lightly seated.
- Back out by the specified number of turns.

Pilot Air Screw:

2 and 1/4 turns out

- Loosen the locknut ② on the throttle stop screw ③ and turn the screw until the idle is at the desired rpm.
- Turn the pilot air screw ① in or out in 1/8-turn increments to achieve the highest rpm with just the pilot screw.
- Once again, turn the throttle stop screw ③ to attain the desired idle rpm, and tighten the locknut ②.

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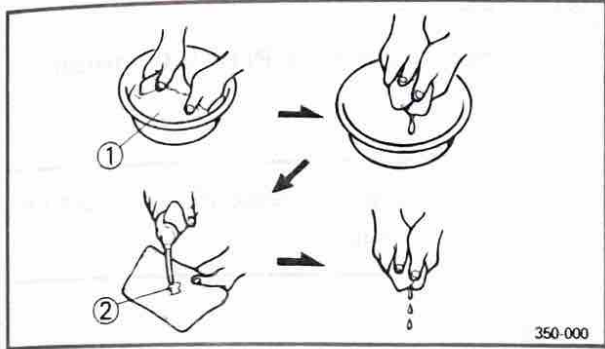
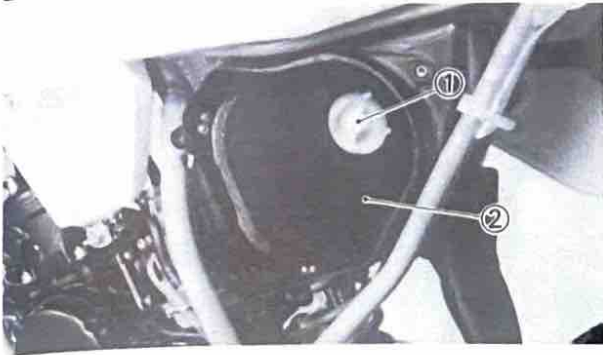
The throttle response off idle should be crisp and clean, without any hesitation. If the engine is completely warmed up and hesitates off idle, turn the pilot air screw in or out in 1/8-turn increments until the problem is eliminated.

AIR FILTER

Proper air filter maintenance is the biggest key to preventing premature engine wear and damage.

CAUTION:

Never run the engine without the air filter element in place; this would allow dirt and dust to enter the engine and cause rapid wear and possible engine damage.



1. Remove:
 - Left side cover
 - Fitting nut ①
 - Air filter element ②
 - Air filter guide

2. Inspect:
 - Element
 Contamination → Clean element with solvent ①.

NOTE: _____

After cleaning, remove the remaining solvent by squeezing the element.

3. Apply:
 - Foam-air-filter oil ②
 (to the element)

NOTE: _____

Squeeze out the excess oil. Element should be wet but not dripping.

www.legends-yamaha.com www.4install.com

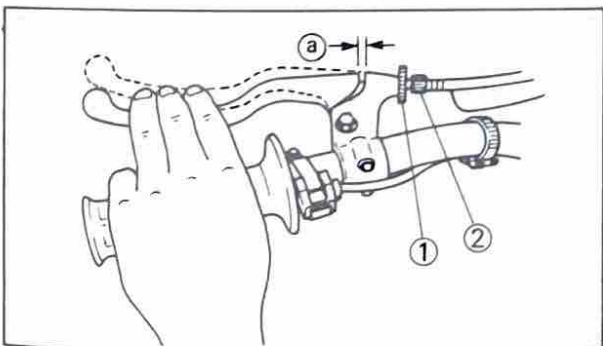
4. Install:
 - Air filter guide

5. Apply:
 - Lightweight lithium-soap base grease
 (to the sealing edge)
6. Install:
 - Air filter element
 - Fitting nut
 - Left side cover

CLUTCH

To avoid clutch slipping or dragging, the clutch mechanism and cable must be adjusted correctly.

1. Loosen:
 - Adjuster locknut ①
2. Adjust:
 - Free play ②
 Turn the adjusters ② clockwise or counter-clockwise until proper lever free play is attained.

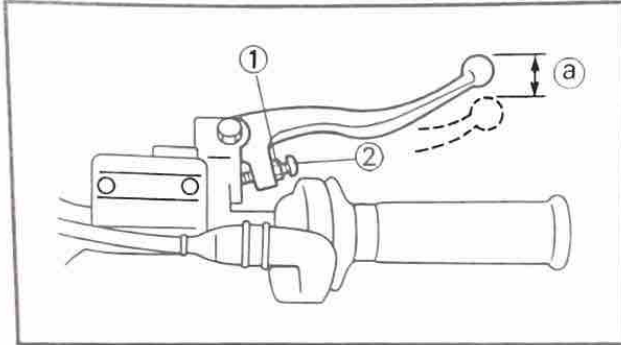


Clutch Lever Free Play:
2 ~ 3 mm (0.08 ~ 0.12 in)

3. Tighten:

- Locknut
- For the mechanical adjustment, refer to 3-26 of "Clutch mechanism adjustment".

2



FRONT BRAKE

Front Brake Lever Free Play Adjustment

CAUTION:

Proper lever free play is essential to avoid excessive brake drag.

1. Loosen:

- Adjuster locknut ①

2. Rotate:

- Adjuster ②

Turn it clockwise or counterclockwise until proper lever end free play ③ is attained.

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Front Brake Lever Free Play:
10 ~ 20 mm (0.4 ~ 0.8 in)

3. Tighten:

- Locknut

Front Brake Pad

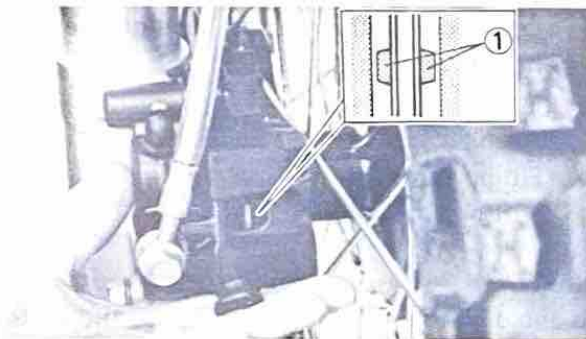
1. Remove:

- Rubber plug

2. Inspect:

- Brake pads

Over wear limit ① → Replace as a set.



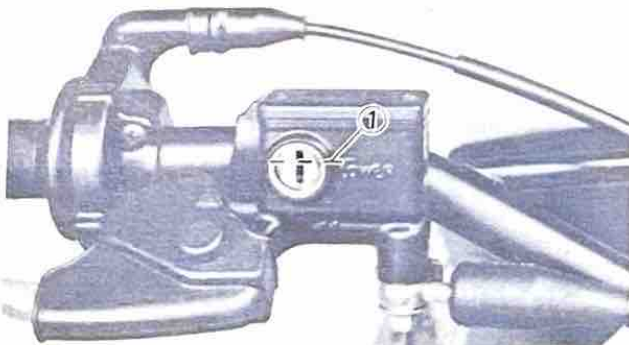
Front Brake Pad Wear Limit:
0.8 mm (0.03 in)

Brake Fluid

1. Observe:

- Brake fluid level

Fluid at lower level → Replenish.



① Lower level



Brake Fluid:
DOT #3

WARNING: _____

- Use only designated quality brake fluid to avoid poor brake performance.
- Refill with same type and brand of brake fluid; mixing fluids could result in poor brake performance.
- Be sure that water or other contaminants do not enter master cylinder when refilling.
- Clean up spilled fluid immediately to avoid erosion of painted surfaces or plastic parts.

REAR BRAKE

CAUTION: _____

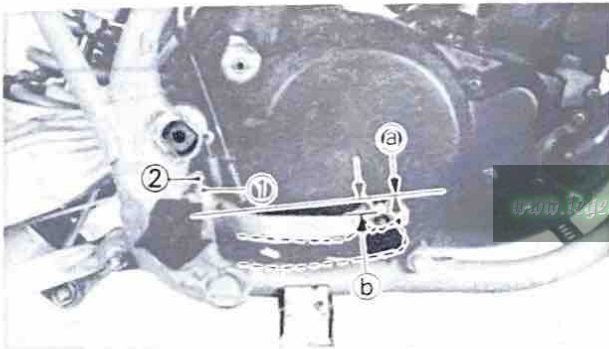
To permit the interlocking mechanism with the rear suspension to operate correctly, set the brake pedal height and free play properly.


2

Rear Brake Pedal Height Adjustment

1. Loosen:
 - Locknut ①
2. Rotate:
 - Adjuster ②

Turn it clockwise or counterclockwise until proper brake pedal height ③ is attained.



 **Brake Pedal Height ③:**
 $0 \pm 10 \text{ mm (} 0 \pm 0.4 \text{ in)}$

④ Free play

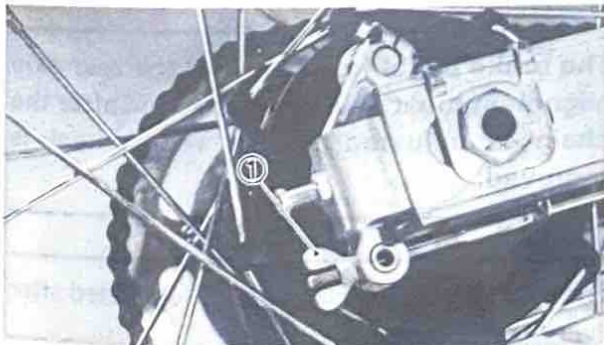
Rear Brake Pedal Free Play Adjustment


WARNING: _____

Adjust pedal height, then adjust brake pedal free play.

1. Rotate:
 - Adjuster ①

Turn it clockwise or counterclockwise until proper brake pedal free play is attained.



 **Brake Pedal Free Play:**
 $10 \sim 20 \text{ mm (} 0.4 \sim 0.8 \text{ in)}$

DRIVE CHAIN

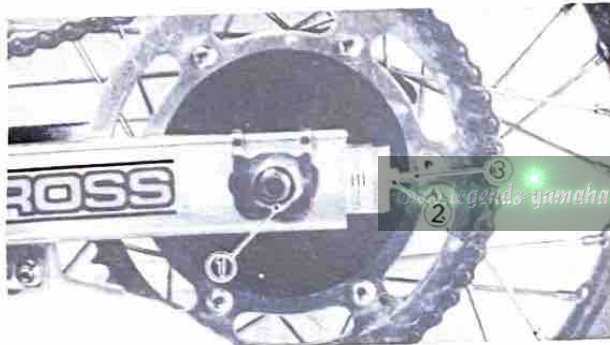
* For the inspection of the sprocket and chain, refer to 4-5.


Drive Chain Slack Check

NOTE:

Before checking and/or adjusting, rotate the rear wheel through several revolutions and check the tension several times to find the tightest point. Check and/or adjust chain slack with rear wheel in this "tight chain" position.


1. Hold the machine standing vertically without rider on it.
2. Measure:
 - Chain slack (a)
 (at the position shown in the photograph.)
 Out of specification → Adjust chain.



	Chain Slack: 20 ~ 30 mm (0.8 ~ 1.2 in)
---	--

Drive Chain Slack Adjustment

1. Loosen:
 - Axle nut (1)
 - Adjuster locknut (2)
 - Rear brake adjuster
2. Adjust:
 - Chain slack
 (by turning adjuster (3) clockwise or counterclockwise)
3. Tighten:
 - Axle nut
 - Locknut

	Axle Nut: 100 Nm (10.0 m•kg, 72 ft•lb)
---	--

4. Adjust:
 - Brake pedal free play

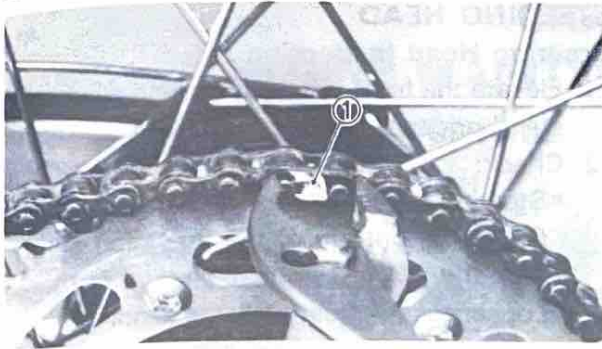
CAUTION:

The brake pedal free play and the rear axle alignment must always be checked after the chain is adjusted or the rear wheel is removed.

NOTE:

The chain should be cleaned and lubricated after every use of the machine.

2

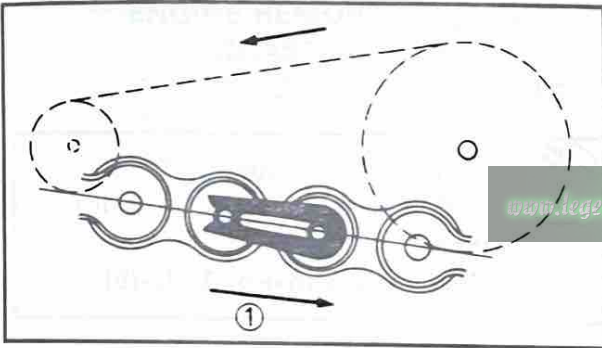
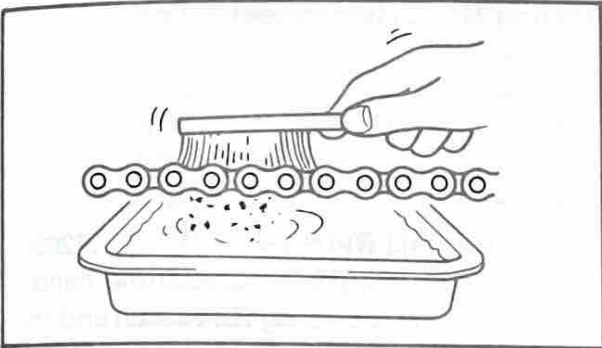


Drive Chain Maintenance

1. Remove:
 - Master link clip ①
 - Joint
 - Drive chain

2. Clean:
 - Drive chain
(Place it in solvent, and brush off as much dirt as possible. Then remove the chain from the solvent and dry the chain.)

3. Lubricate:
 - Drive chain



NOTE: _____
 During reassembly, the master link clip must be installed with the rounded end facing the direction of travel.

① Turning direction

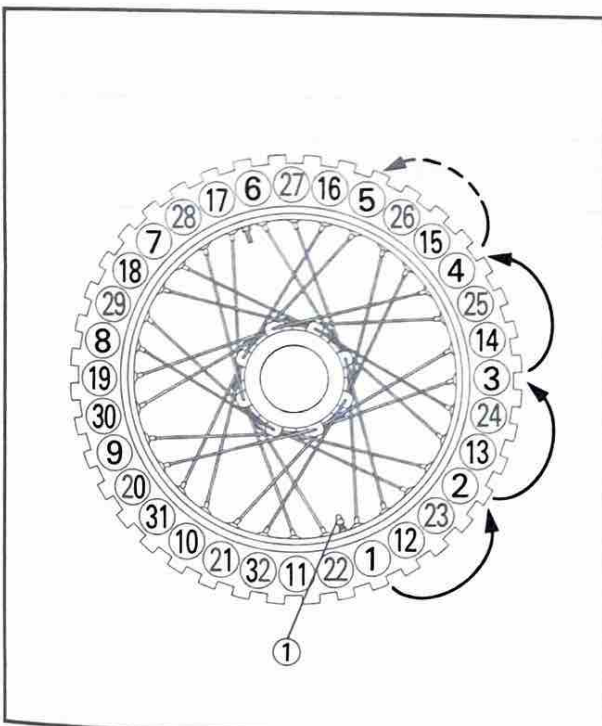
SPOKES


Be sure to retighten these spokes before and after Break-in.

After a practice or a race check spokes for looseness.

1. Perform the retightening at an interval of three spokes as shown below.
2. The retightening will be completed at No. 32 after three turns of the wheel. If there still spokes that are short of torque, then repeat the same procedure.

① Air valve



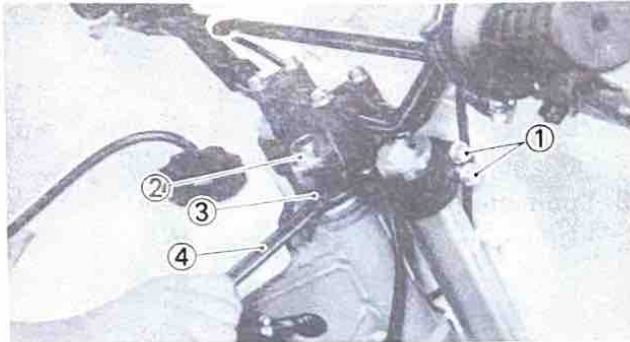
	Nipple: 6 Nm (0.6 m•kg, 4.3 ft•lb)
---	--



STEERING HEAD

Steering Head Inspection

1. Elevate the front wheel by placing a suitable stand under the engine.
2. Check:
 - Steering assembly bearings
 Grasp the bottom of the forks and gently rock the fork assembly back and forth.
 Looseness → Adjust steering head.



Steering Head Adjustment

1. Loosen:
 - Upper front fork pinch bolts ①
 - Steering stem nut ②
2. Tighten:
 - Ring nut ③
 Use the Ring Nut Wrench ④ (YU-01268). Tighten the ring nut beneath the handle crown with the steering nut wrench until the free play is eliminated and there is no binding.

2

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<p>Steering Stem Nut: 130 Nm (13.0 m•kg, 94 ft•lb)</p> <p>Pinch Bolt: 23 Nm (2.3 m•kg, 17 ft•lb)</p>
--

CAUTION: _____
 After a short running period, check steering head for proper adjustment.



CHAPTER 3

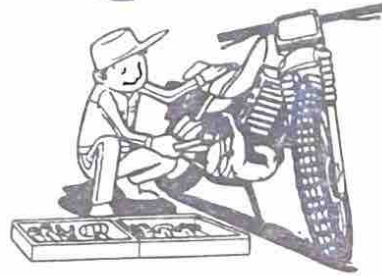
ENGINE MAINTENANCE AND REPAIR

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ENGINE MAINTENANCE AND REPAIR

PREPARATION FOR SERVICE



Prior to beginning any work on the engine, take note of the following bits of advice; they will greatly facilitate your engine maintenance and repair:

NOTE:

The engine removal is required for the servicing of the transmission, crankshaft and bearings, oil seals, etc, of the crankcase. The procedures in page 3-2 to 3-30 are not accompanied by the engine removal.

- Clean your machine as described in the General Information section entitled, "Cleaning and Storage";
- Group the parts of each component on individual trays, and arrange the parts in the order of their removal;
- When replacing parts, always use the genuine Yamaha article to maintain optimum performance, durability, and safety;
- All gaskets and seals should be replaced during engine work, and all gasket surfaces should be clean;
- During assembly, always apply oil or grease to bearing surfaces to protect them upon initial start-up;
- Replace all circlips which are distorted from use or disassembly;
- Always replace cotter pins and piston pin clips after one use;
- Always clean and oil the threads of nuts, bolts, and screws during assembly, and torque them to the proper specifications whenever possible.



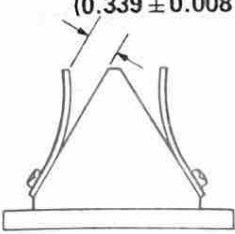
CARBURETION

CARBURETOR

- ① Clip
- ② Jet needle
- ③ Throttle valve C.A.
- ④ Needle jet
- ⑤ Locknut
- ⑥ Throttle stop screw
- ⑦ Valve seat
- ⑧ Float pin
- ⑨ Float
- ⑩ Float height
- ⑪ Drain plug
- ⑫ Main jet
- ⑬ Pilot jet
- ⑭ Pilot air screw

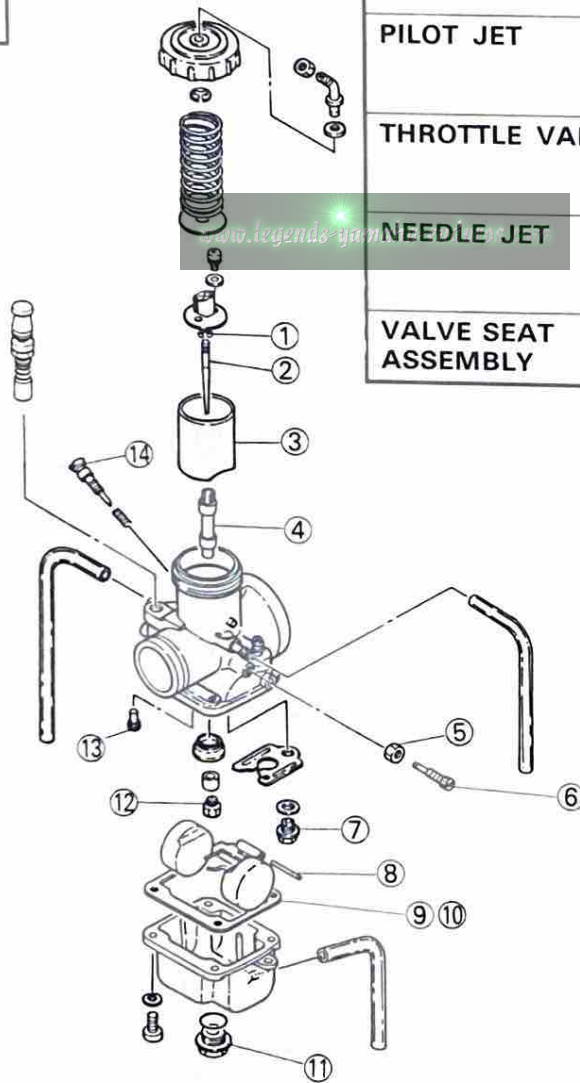
SPECIFICATIONS	
MAIN JET (M.J.)	# 340
JET NEEDLE (J.N.)	6F16-2
NEEDLE JET (N.J.)	Q-4
PILOT JET (P.J.)	# 40
PILOT AIR SCREW (P.A.S.)	2-1/4
FLOAT HEIGHT	27.0 ± 1.0 mm (1.06 ± 0.04 in)

A STOPPER HEIGHT
 8.6 ± 0.2 mm
 (0.339 ± 0.008 in)



TURNING AND REPAIR PARTS

PART NAME	SIZE	PART NUMBER
MAIN JET (STD)	# 320	137-14143-64
	# 330	137-14143-66
	# 340	137-14143-68
	# 350	137-14143-70
	# 360	137-14143-72
PILOT JET (STD)	# 35	193-14142-35
	# 40	193-14142-40
	# 45	193-14142-45
THROTTLE VALVE (STD)	2.5	2X8-14112-25
	3.0	2X8-14112-30
	3.5	2X8-14112-35
NEEDLE JET (STD)	Q-2	510-14141-52
	Q-4	510-14141-54
	Q-6	510-14141-56
VALVE SEAT ASSEMBLY	φ3.5	23X-14107-35



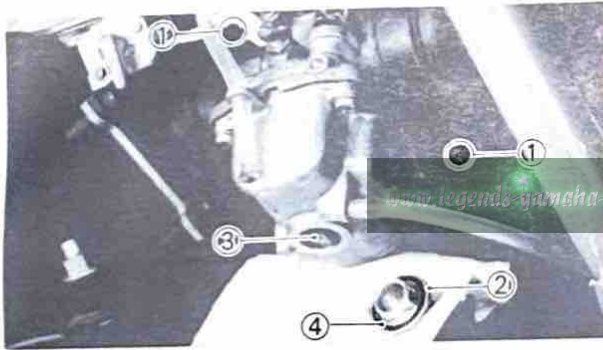


For details of carburetor tuning, refer to the Race Preparation and Tuning Manual.

IMPORTANT:

The carburetor has been set for operation at or near sea level; in most instances, it will not require changes. Some conditions, however, do demand carb setting changes to maintain performance. If this is the case, make the changes in small increments and check the results with a spark plug check. Improper settings can lead to poor performance or possible engine damage. If you are in doubt as to what setting changes to make, consult your Yamaha dealer.

3



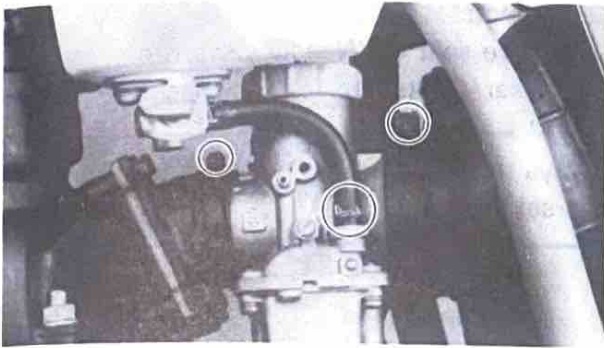
MAIN JET REPLACEMENT

1. Loosen:
 - Clamps ①
2. Remove:
 - Drain plug ②
 - Main jet ③
3. Check:
 - O-ring ④
 Damage → Replace.

WARNING:

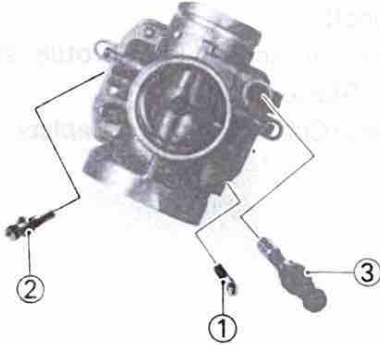
When the drain plug is removed, the fuel in the float bowl will drain. Do not remove the plug when the engine is hot. Place a rag under the carb when removing the plug to catch the fuel. Remove the plug in a well-ventilated area, away from any open flame. Always clean and dry the machine after completing main jet changes.

4. Install:
 - Main jet
 - Drain plug
5. Tighten:
 - Clamps

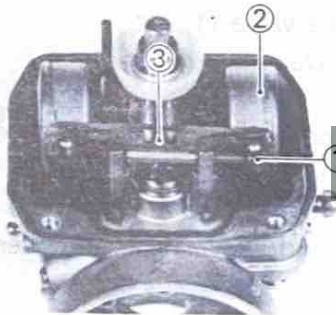


REMOVAL AND DISASSEMBLY

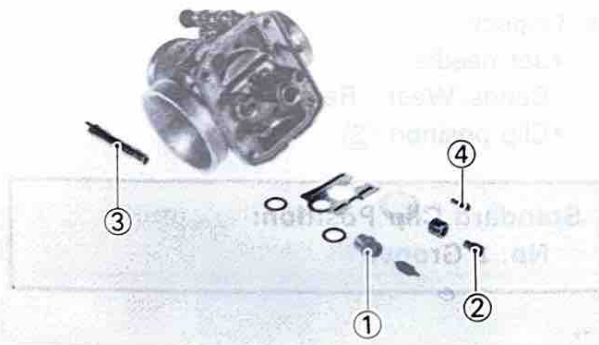
1. Loosen:
 - Clamps
2. Disconnect:
 - Fuel hose
3. Remove:
 - Carburetor assembly



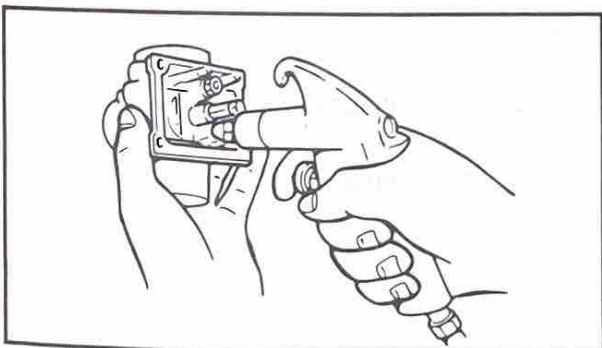
4. Remove:
 - Pilot air screw ①
 - Throttle stop screw ②
 - Starter plunger ③



5. Remove:
 - Float chamber
 - Float pin ①
 - Float ②
 - Needle valve ③



6. Remove:
 - Valve seat ①
 - Main jet ②
 - Main nozzle ③
 - Pilot jet ④



INSPECTION

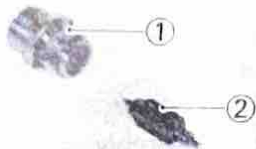
1. Inspect:
 - Carburetor body
Contamination → Clean.

NOTE:

Use a petroleum based solvent for cleaning. Blow out all passages and jets with compressed air.



3

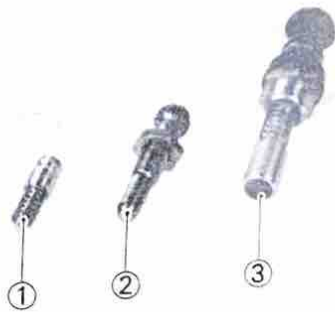


2. Inspect:

- Valve seat ①/Needle valve ②
Wear/Contamination → Replace.

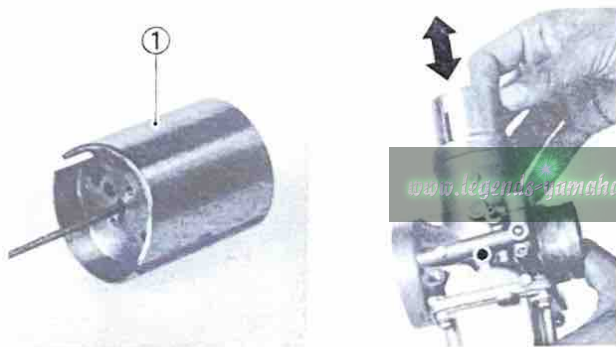
NOTE:

Always replace the needle valve and valve seat as a set.



3. Inspect:

- Pilot air screw ①/Throttle stop screw ②/Starter plunger ③
Wear/Contamination → Replace.

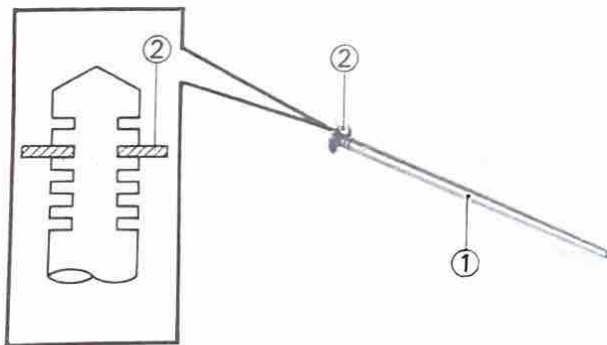


4. Inspect:

- Throttle valve ①
Wear/Damage → Replace.

5. Check:

- Free movement
Stick → Repair or replace.
Insert the throttle valve into the carburetor body, and check for free movement.



6. Inspect:

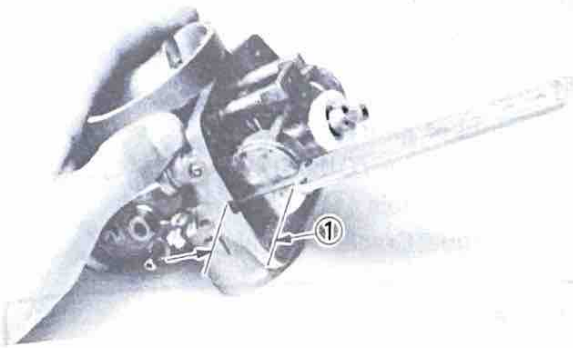
- Jet needle ①
Bends/Wear → Replace.
- Clip position ②

**Standard Clip Position:
No. 2 Groove**



7. Inspect:

- Float ①
Damage → Replace.
- Gasket/O-ring
Damage → Replace.



8. Measure:
- Float height ①
- Out of specification → Adjust.



Float Height (F.H.):
 $27.0 \pm 1.0 \text{ mm } (1.06 \pm 0.04 \text{ in})$

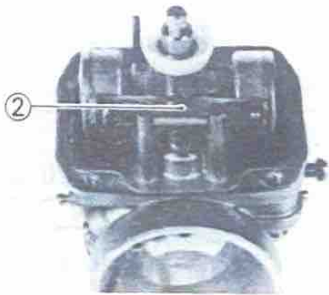
Measurement and adjustment steps:

- Hold the carburetor in an upside down position.
- Measure the distance between the mating surface of the float chamber and top of the float using a gauge.

NOTE:

The float arm should be resting on the needle valve, but not compressing the needle valve.

- If the float height is not within specification, inspect the valve seat and needle valve.
- If either is worn, replace them both.
- If both are fine, adjust the float height by bending the float tang ② on the float.
- Recheck the float height.



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ASSEMBLY

1. Install:
- Components in above list (Disassembly-Steps "4, 5, 6,")
- Reverse the disassembly procedure.



REED VALVE

INSPECTION

1. Inspect:
 - Rubber joint
Weathering/Other Deterioration → Replace.
 - Reed petals ①
Fatigue Cracks → Replace.

Inspection steps:

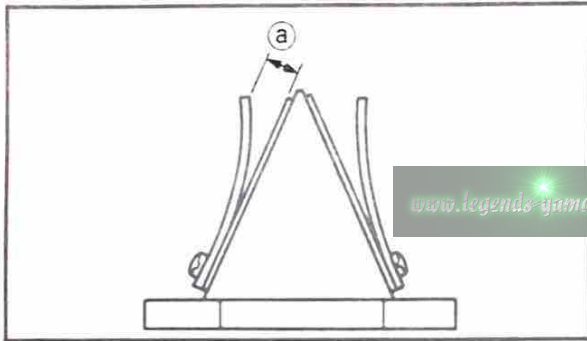
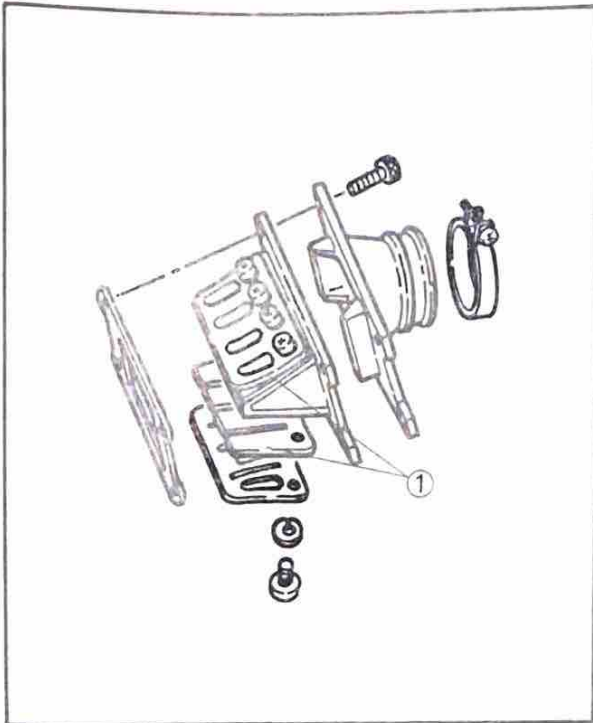
- Visually inspect the reed petals.

NOTE:

Correct reed petals should fit flush or nearly flush against neoprene seats.

- If in doubt as to sealing ability, apply suction to carburetor side of assembly.
- Leakage should be slight to moderate.

3



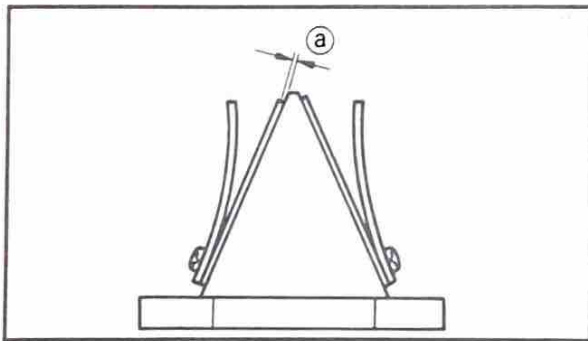
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Valve Stopper Height:

8.6 ± 0.2 mm (0.339 ± 0.008 in)

NOTE:

If it is 0.4 mm (0.016 in) more or less than specified, replace the valve stopper.



3. Measure:

- Reed valve bending (a)
Out of specification → Replace.



Reed Valve Bending Limit:

1.5 mm (0.059 in)

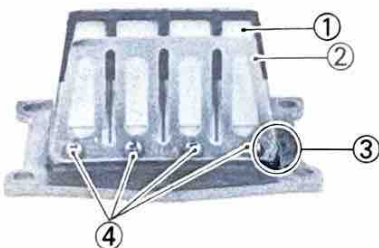
ASSEMBLY

1. Install:

- Reed valve ①
- Reed valve stopper ②

NOTE:

Note the cut ③ in the lower corner of the reed and stopper plate.





2. Tighten:

- Reed valve securing screws ④
Use LOCTITE®.



Reed valve:
1 Nm (0.1 m•kg, 0.7 ft•lb)

NOTE:

Tighten each screw gradually to avoid warping.

MUFFLER

MAINTENANCE

1. Check:

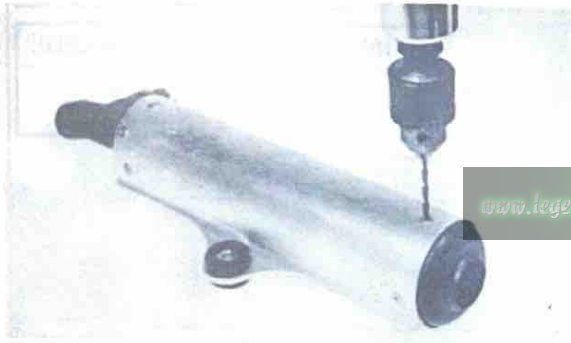
- Exhaust pipe
Crack → Repair or replace.

2. Remove:

- Carbon deposits
(from manifold area)

3. Check:

- Silencer
Large carbon build up → Replace fiber.



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Fiber replacement steps:

- Remove the rivets with a 4 mm (5/32 in) drill and remove the fiber.
- Install the new fiber.
- Rivet the silencer securely.



CYLINDER HEAD

- ① O-rings
- ② Holder 1
- ③ Base gasket
- ④ Oil seal
- ⑤ Thrust plate
- ⑥ Housing
- ⑦ Power valve
- ⑧ O-rings
- ⑨ Holder 2

N-86, N-86G, N-2G,
N-2C (CHAMPION)
B8EG, B8EGV
(NGK)
0.5 ~ 0.6 mm
(0.020 ~ 0.024 in)

A WARPAGE LIMIT:
0.03 mm (0.0012 in)

B PISTON CLEARANCE:
0.070 ~ 0.075 mm
(0.0028 ~ 0.0030 in)

C SIDE CLEARANCE:
0.04 ~ 0.08 mm
(0.0016 ~ 0.0031 in)

D RING END GAP (INSTALLED):
0.45 ~ 0.60 mm
(0.018 ~ 0.024 in)

30 Nm (3.0 m•kg, 22 ft•lb)

13 Nm (1.3 m•kg, 10 ft•lb)

10 Nm (1.0 m•kg, 7.2 ft•lb)

35 Nm (3.5 m•kg, 25 ft•lb)

SD-16-25-5-KS

5 Nm (0.5 m•kg, 3.6 ft•lb)

32 Nm (3.2 m•kg, 23 ft•lb)

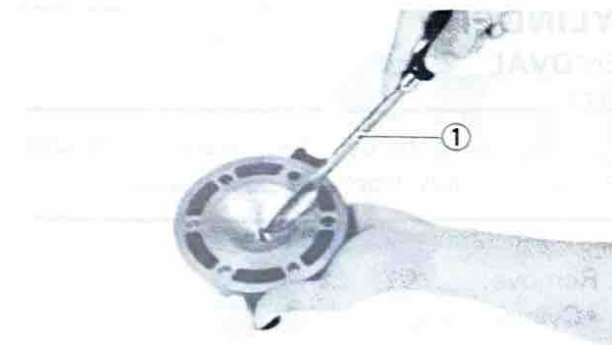
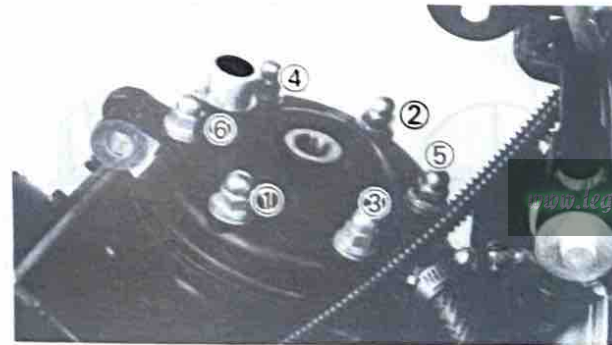
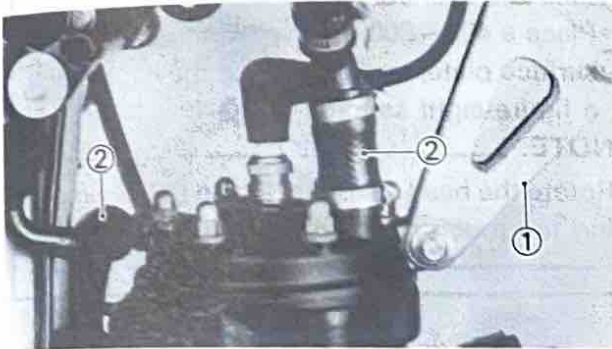
13 Nm (1.3 m•kg, 10 ft•lb)

13 Nm (1.3 m•kg, 10 ft•lb)

65 Nm (6.5 m•kg, 47 ft•lb)



3

**REMOVAL****NOTE:** _____

Before servicing the engine (disassembling of the cylinder head, cylinder, and clutch), thoroughly drain the coolant.

1. Drain:
 - Coolant
2. Remove:
 - Spark plug cap
 - Cylinder head holding brackets (1)
3. Disconnect:
 - Radiator hoses (2)
4. Loosen:
 - Cylinder head nuts

CAUTION: _____

The cylinder head holding nuts should be loosened 1/4 turn each time, and remove.

5. Remove:
 - Cylinder head
 - Cylinder head O-rings

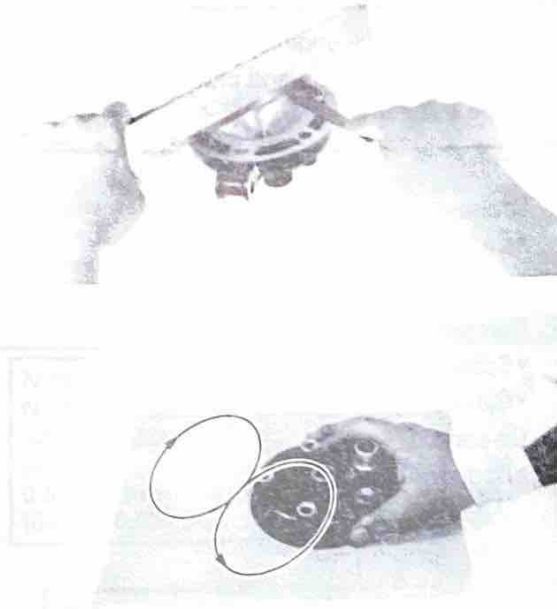
MAINTENANCE

1. Remove:
 - Carbon deposits
 Use a rounded scraper (1).

NOTE: _____

Take care to avoid damaging the spark plug threads. Do not use a sharp instrument. Avoid scratching the aluminum.

2. Inspect:
 - Cylinder head water jacket
Crust of minerals/Rust → Remove.
 - Cylinder head warpage
Out of specification → Re-surface.



Warpage measurement and re-surfacing steps:

- Attach a straightedge and a thickness gauge on the cylinder head.
- Measure the warpage.



Warpage Limit:

0.03 mm (0.0012 in)

- If the warpage is out of specification, re-surface the cylinder head.
- Place a 400 ~ 600 grit wet sandpaper on the surface plate, and re-surface the head using a figure-eight sanding pattern.

NOTE:

Rotate the head several times to avoid removing too much material from one side.

3

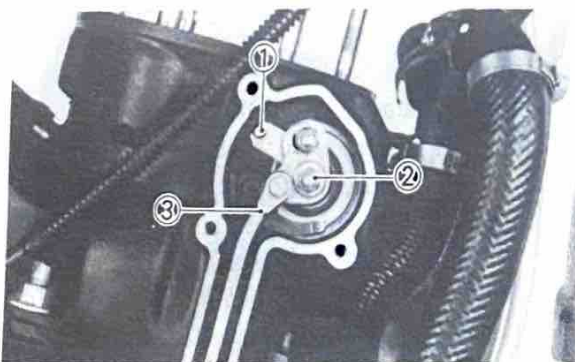
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CYLINDER

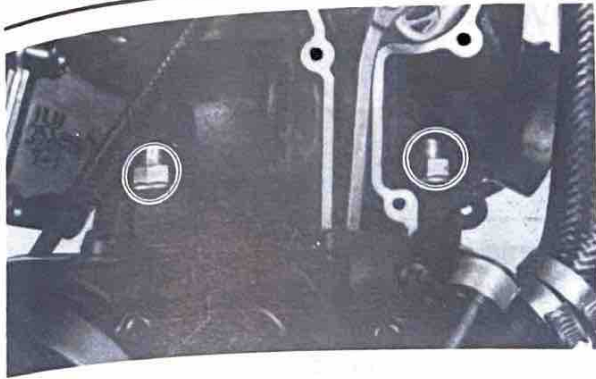
REMOVAL

NOTE:

When removing the cylinder, be sure to remove the link assembly from the power valve first.



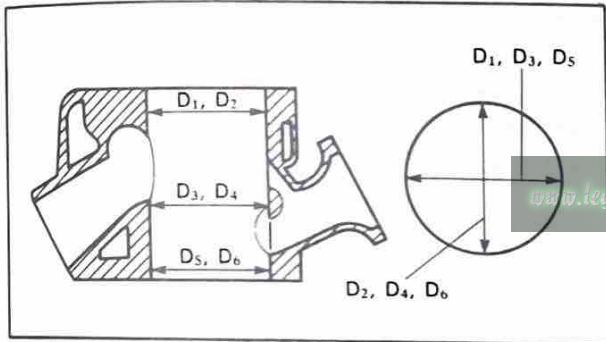
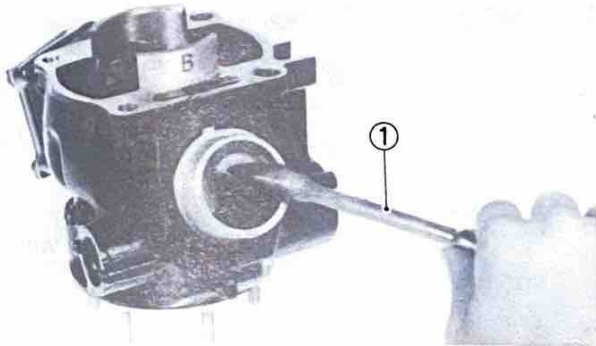
1. Remove:
 - Cylinder head
 - Power valve housing
2. Install:
 - Locating pin ① (to lock the lever to the cylinder)
3. Remove:
 - Nut ②
4. Disconnect:
 - Power valve lever ③
 - Clutch cable



5. Loosen:
 - Cylinder holding nuts (in a crisscross pattern)
6. Remove:
 - Cylinder
 - Cylinder gasket

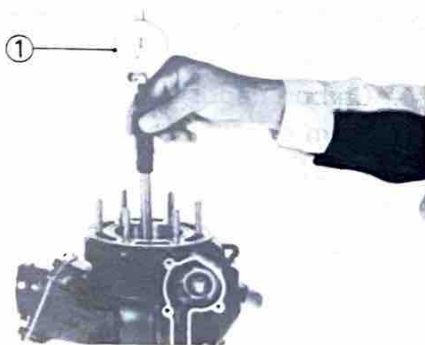
MAINTENANCE


1. Remove:
 - Carbon deposits
Use a rounded scraper ①.
2. Inspect:
 - Cylinder water jacket
Crust of minerals/Rust → Remove.
 - Cylinder wall
Wear/Scratches → Rebore or replace.
3. Measure:
 - Cylinder bore "C"
Use a Cylinder Bore Gauge ①.
Out of specification → Rebore.



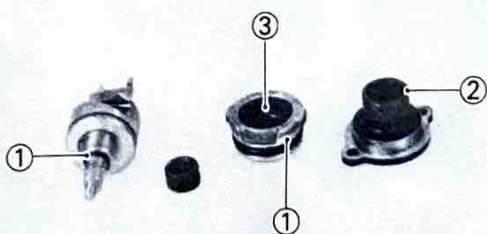
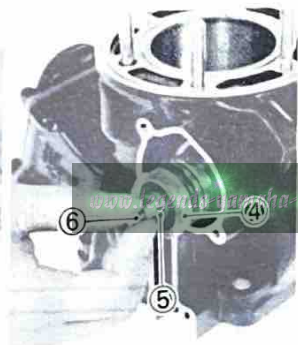
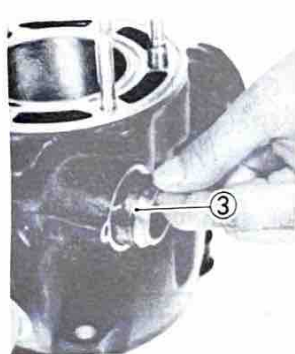
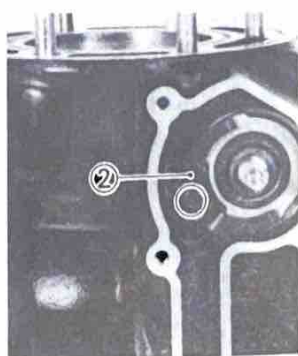
NOTE:

Before honing the cylinder, remove the power valve from it.



	Standard	Wear limit
Cylinder bore "C"	68.00 mm (2.6772 in)	68.10 mm (2.681 in)
Taper "T"	—	0.05 mm (0.002 in)
Out of round "R"	—	0.01 mm (0.0004 in)

C = Maximum D
T = (Maximum D₁ or D₂) – (Minimum D₅ or D₆)
R = (Maximum D₁, D₃ or D₅) – (Minimum D₂, D₄ or D₆)



POWER VALVE

REMOVAL

NOTE:

The power valve removal is not required to drain the coolant and remove the cylinder.

1. Remove:
 - Power valve holder (Left) ①
 2. Disconnect:
 - Power valve lever
 3. Remove:
 - Thrust plate ②
 4. Remove:
 - Hexagon socket head bolt
 - Hold the right end of the power valve with spanner.
 5. Remove:
 - Half power valve (Left) ③
 - Holder (Right) ④
 - Collar ⑤
 - Half power valve (Right) ⑥
- Pry out the half valve with pliers.

MAINTENANCE

1. Remove:
 - Carbon deposits
 - From exhaust port surface.
2. Remove:
 - Score marks and lacquer deposits
 - From curved surface.
3. Inspect:
 - O-ring ①
 - Bush ②
 - Oil seal ③
 - Wear/Damage → Replace.



PISTON AND PISTON RING REMOVAL

1. Remove:

- Piston pin clip ①

NOTE: _____

Before removing the piston pin clip, cover the crankcase with a clean rag so you will not accidentally drop the clip into the crankcase.

2. Remove:

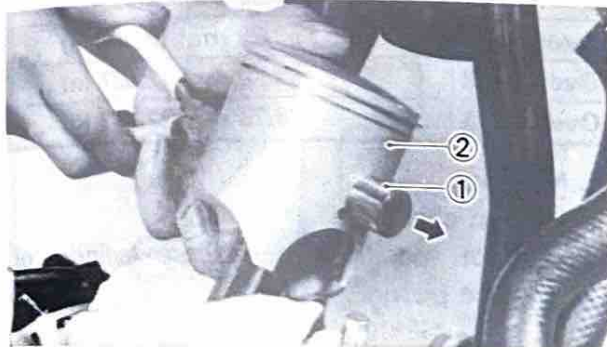
- Piston pin ①
- Piston ②
- Bearing

NOTE: _____

Before removing the piston pin, deburr the clip groove and pin hole area. If the piston pin groove is deburred and piston pin is still difficult to remove, use Piston Pin Puller.

CAUTION: _____

Do not use a hammer to drive the piston pin out.



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3. Remove:

- Piston rings

MAINTENANCE

1. Remove:

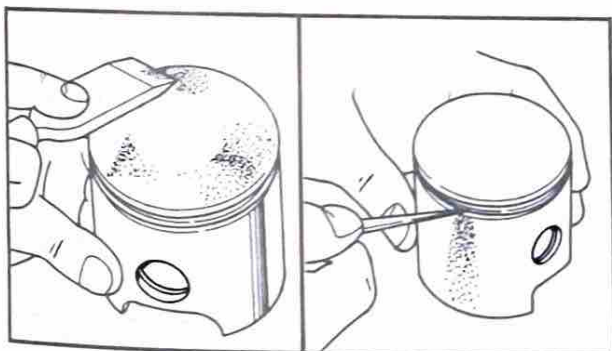
- Carbon deposits
From the piston crown and ring groove.

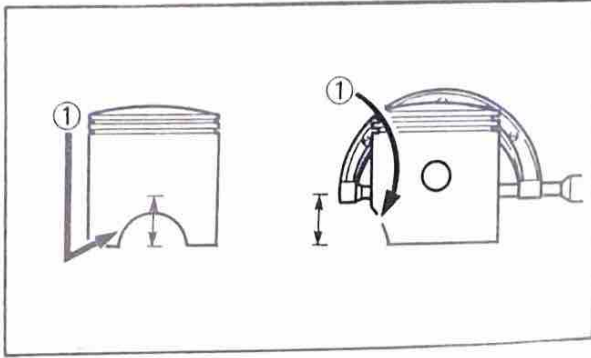
2. Remove:

- Score marks
From the piston wall.
Use a 600 ~ 800 grit wet sandpaper.

NOTE: _____

Sand in a crisscross pattern. Do not sand excessively.





3. Measure:

- Piston outside diameter "P"
Out of specification → Replace.
Use a Micrometer.

NOTE:

Measurement should be made at a point 31 mm (1.22 in) ① above the bottom edge of the piston.

	Size
Standard	68.00 mm (2.677 in)
Oversize 1	68.25 mm (2.687 in)
Oversize 2	68.50 mm (2.697 in)
Oversize 3	68.75 mm (2.707 in)

4. Measure:

- Piston clearance
Out of specification → Rebore cylinder or replace piston.

$$A = C - P$$

- A: Piston clearance
- C: Cylinder bore
- P: Piston outside diameter

Piston Clearance:

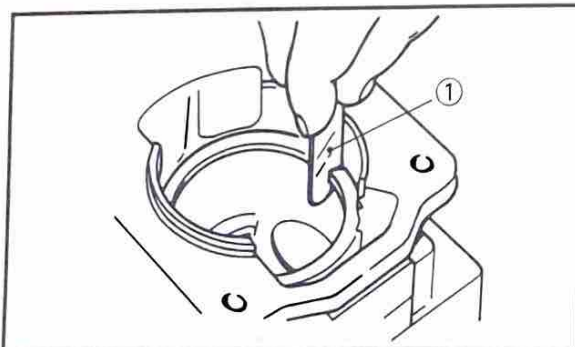
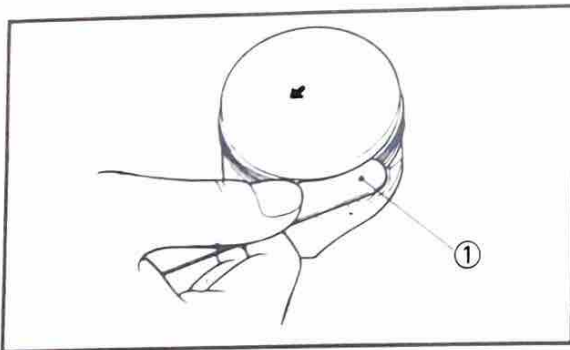
0.070 ~ 0.075 mm
(0.0028 ~ 0.0030 in)
< Limit > 0.1 mm (0.004 in)

5. Measure:

- Side clearance
Out of specification → Replace piston and/or ring.

Side Clearance:

0.04 ~ 0.08 mm (0.0016 ~ 0.0031 in)
Limit: 0.1 mm (0.004 in)



6. Install:

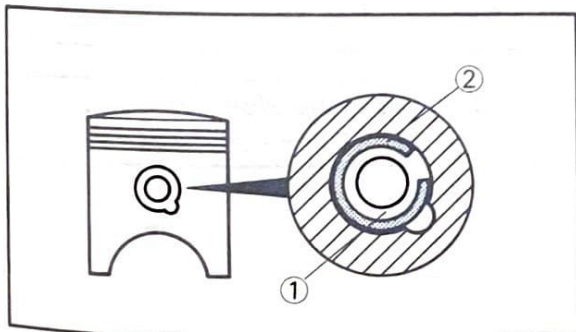
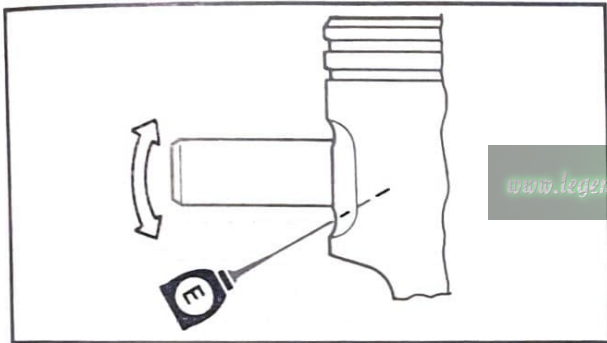
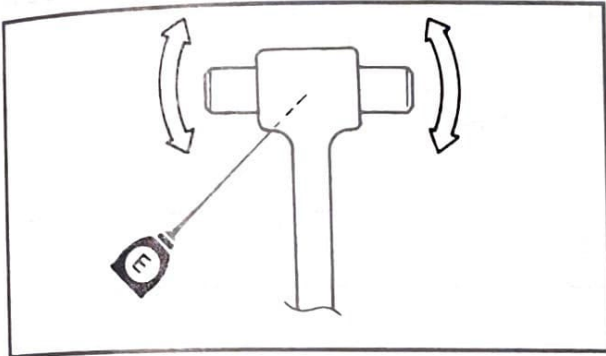
- Piston ring
(Into the cylinder)
Push the ring with the piston crown.

7. Measure:

- End gap
Out of specification → Replace rings as a set.
Use a Feeler Gauge ①.



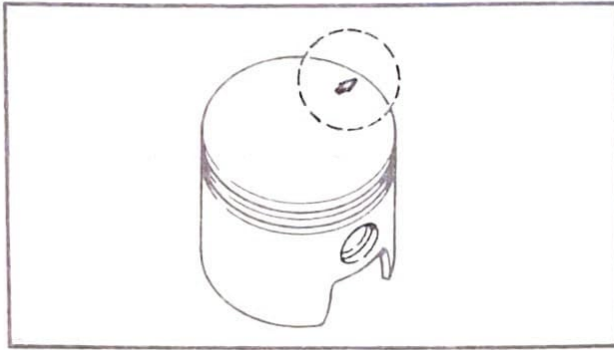
Ring End Gap (Installed):
 0.45 ~ 0.60 mm (0.018 ~ 0.024 in)
 Limit: 0.8 mm (0.032 in)



8. Inspect:
 - Piston pin and bearing
Signs of heat discoloration → Replace.
9. Lubricate:
 - Piston pin (lightly)
 - Bearing
10. Install:
 - Piston pin
 - Bearing
(Into the small end of connecting rod)
11. Check:
 - Free play
There should be no noticeable for the play.
Free play exists → Inspect the connecting rod for wear/ Replace the pin and/or connecting rod as required.
12. Install:
 - Piston pin
(Into the piston pin hole)
13. Check:
 - Free play (when the piston pin is in place in the piston)
There should be no noticeable for the play.
Free play exists → Replace piston pin and/ piston.

ASSEMBLY ABOVE CRANKCASE PISTON AND PISTON RING

1. Lubricate:
 - Piston pin
 - Bearing
2. Install:
 - Bearing
 - Piston pin ①
 - Piston pin clips ② (New)
 - Piston
 - Piston rings



NOTE: _____
 The arrow on piston dome must face forward.

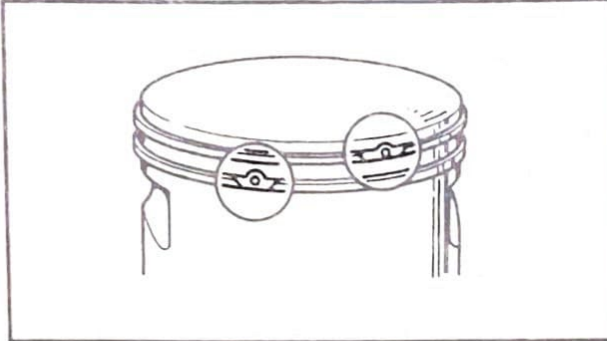
3. Lubricate:
- Piston wall
 - Piston ring



Engine Oil:
 (Same oil used for engine mixing oil)

CYLINDER

1. Install:
- Dowel pins
 - Cylinder gasket (New)

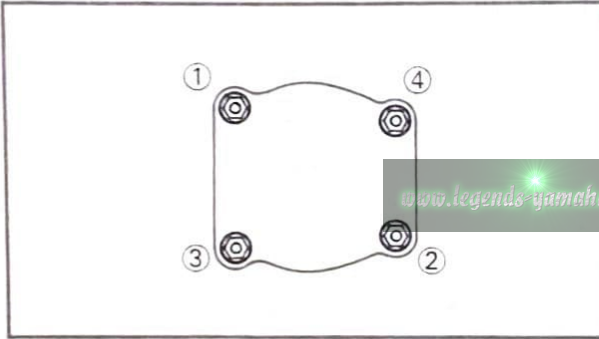


CAUTION: _____

Make sure rings are properly positioned.

3. Install:
- Cylinder

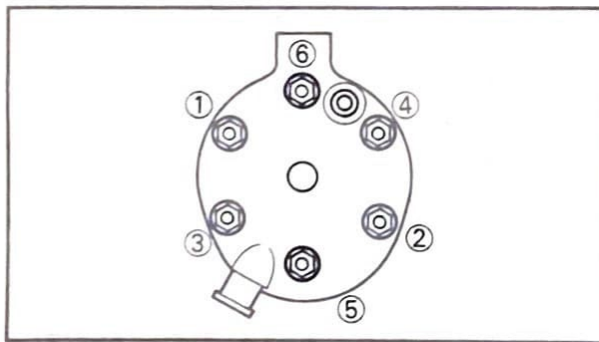
NOTE: _____
 Install the cylinder with one hand while compressing the piston ring with the other hand.



Cylinder Holding Nuts:
 35 Nm (3.5 m•kg, 25 ft•lb)

CYLINDER HEAD

1. Install:
- Cylinder head O-rings
 - Dowel pins
 - Cylinder head
 - Spark plug



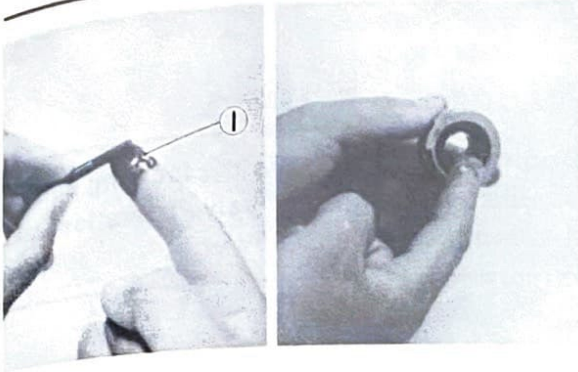
NOTE: _____

Tighten the cylinder head holding nuts in stage, using a crisscross pattern.



Cylinder Head Holding Nuts:
 30 Nm (3.0 m•kg, 22 ft•lb)

3



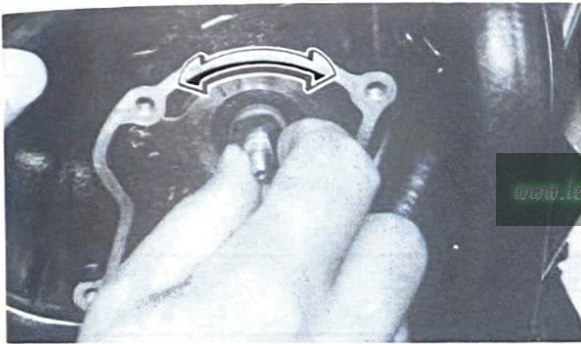
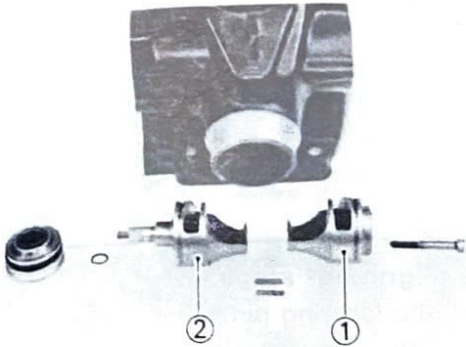
POWER VALVE

1. Apply:

- Molybdenum disulfide grease
- To the O-rings on the valve holders (Left and right), oil seal and hexagon socket head bolt
- ①.

2. Install:

- Half power valve (Left) ①
 - Half power valve (Right) ②
- Insert the half valve with pliers.
- Hexagon socket head bolt
 - Power valve holder (Left)
 - Thrust plate



Socket Head Bolt:

6 Nm (0.6 m•kg, 4.3 ft•lb)

Valve Holder (Left):

5 Nm (0.5 m•kg, 3.6 ft•lb)

NOTE:

After installing the valve, check it moves smoothly.

3. Install:

- Lever boss
(with the punch mark upward) ①
- Power valve lever
- Washer
- Nut
- Locating pin

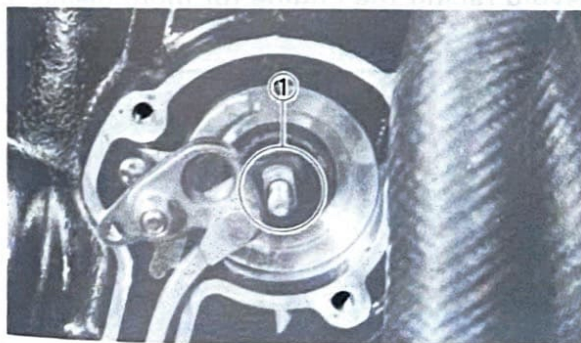
4. Tighten:

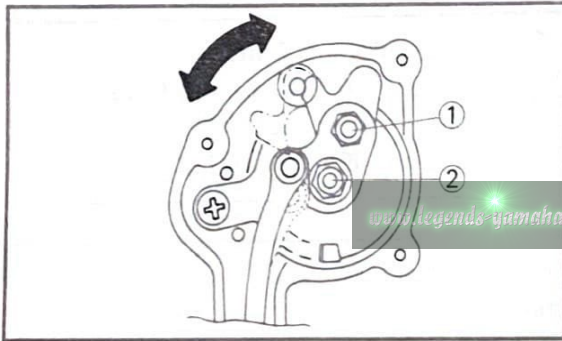
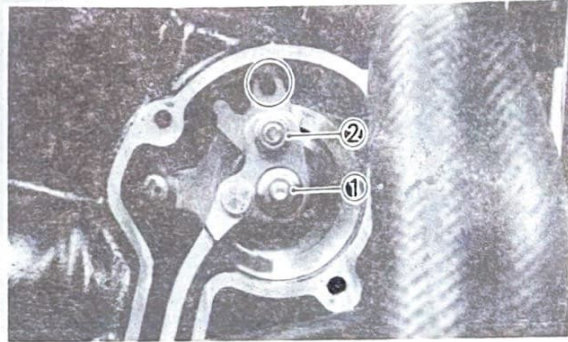
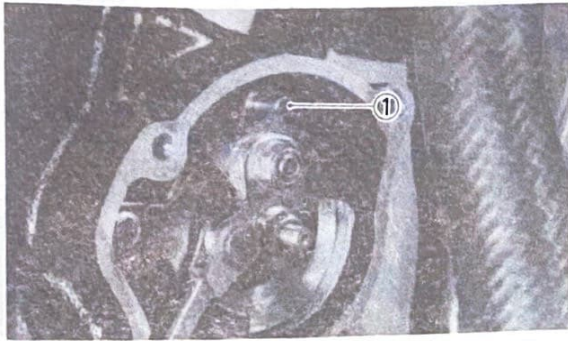
- Nut



Lever:

5 Nm (0.5 m•kg, 3.6 ft•lb)





3

5. Remove:

- Locating pin ①

CAUTION:

Don't forget to remove the locating pin. Or it will adversely affect valve operation, and the engine will lack power at high speeds.

6. Check:

- Valve alignment
(the holes in the valve lever and in the cylinder should be aligned)
Not aligned → Adjust.

Valve alignment steps:

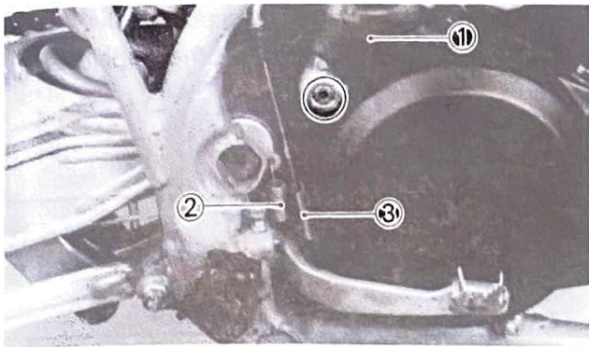
- Install the locating pin.
- Loosen the nuts ①, ②.
- Tighten the nuts ②, ①.
- Remove the locating pin.

NOTE:

After starting the engine, make sure that as illustrated, the arm operates smoothly while racing the engine.

CAUTION:

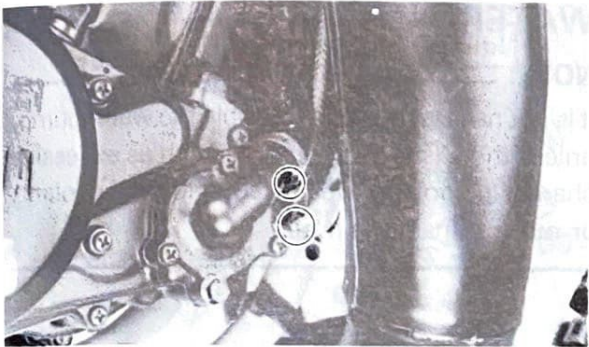
Avoid racing the engine for more than two seconds.



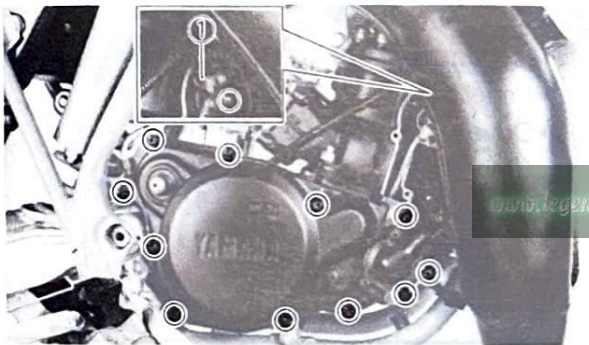
CRANKCASE COVER

REMOVAL

1. Remove:
 - Kick crank ①
 - Rear brake adjuster
2. Unhook:
 - Return spring ②
 - B.A.S.S. control cable ③



3. Drain:
 - Transmission oil
 - Coolant
4. Disconnect:
 - Radiator hoses



5. Remove:
 - Power valve housing
 - Power valve lever
(Use locating pin ① to lock the lever)
 - Crankcase cover

3

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INSTALLATION

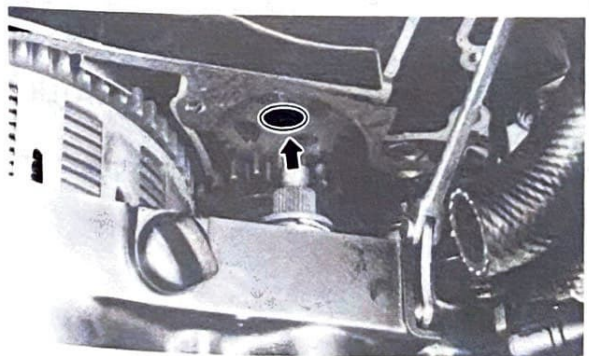
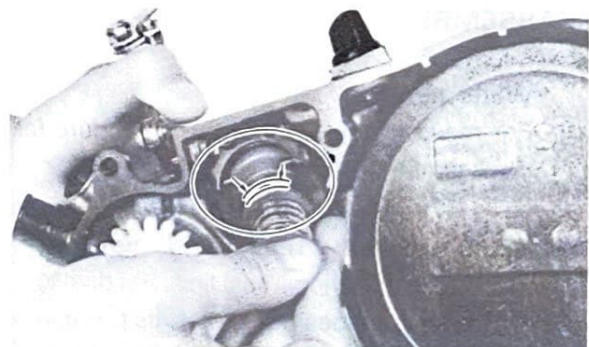
1. Install:
 - Crankcase cover
 Reverse removal steps.

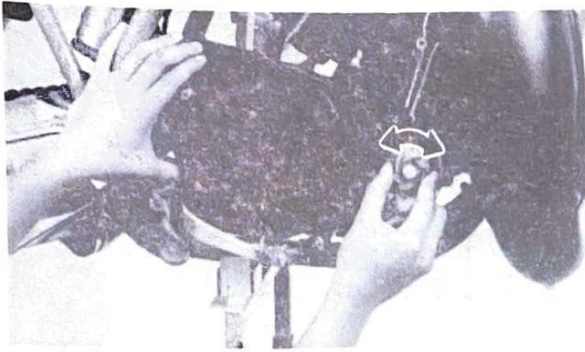
Note the following installation points:

- Align the groove in the governor with the fork and set the governor in the case.
- Bring the serrations of the governor shaft and driven gear to align.

NOTE:

Be careful not to install the driven gear front side back. Otherwise, the case cover cannot achieve a full-faced contact with the case.





- Engage the serrations of the pump drive gear and driven gear by turning the impeller by hand.
- Install the power valve lever.
(See page 3-18)

WATER PUMP

NOTE:

It is not necessary to disassemble the water pump, unless there is no abnormality such as excessive change in coolant level, discoloration of coolant, or milky transmission oil.

INSPECTION

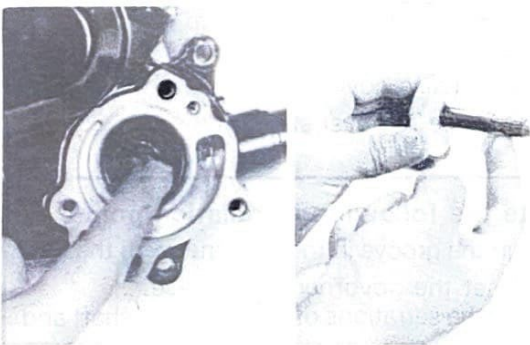
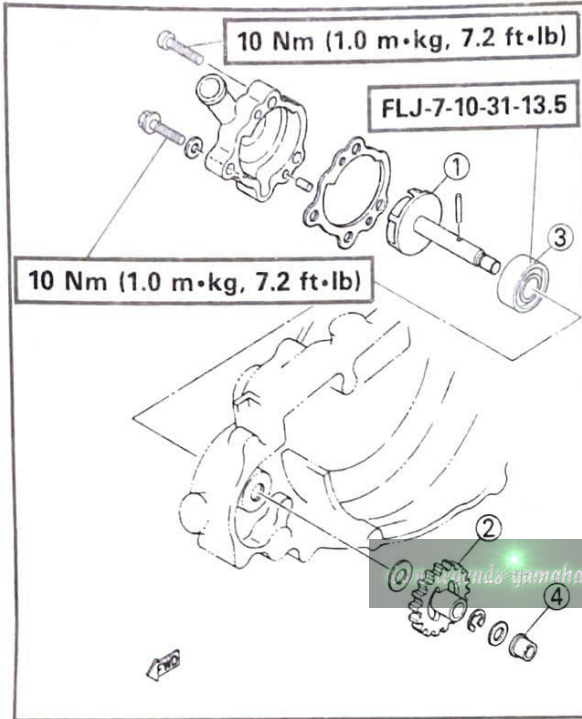
1. Inspect:
 - Impeller ①
 - Driven gear ②
Crack/Damage → Replace.
 - Oil seal ③
 - Bush ④
Wear/Damage → Replace.

REASSEMBLY

1. Assemble:
 - Water pump
For reassembly, reverse the procedure for disassembly.

Note the following reassembly points:

- Take care so that the oil seal lip is not damaged or the spring does not slip off its position.
- When installing the impeller shaft, apply a grease to oil seal and impeller shaft. And install the shaft while turning it.
- When installing the oil seal, with the "WATER SIDE" mark is on the outside.

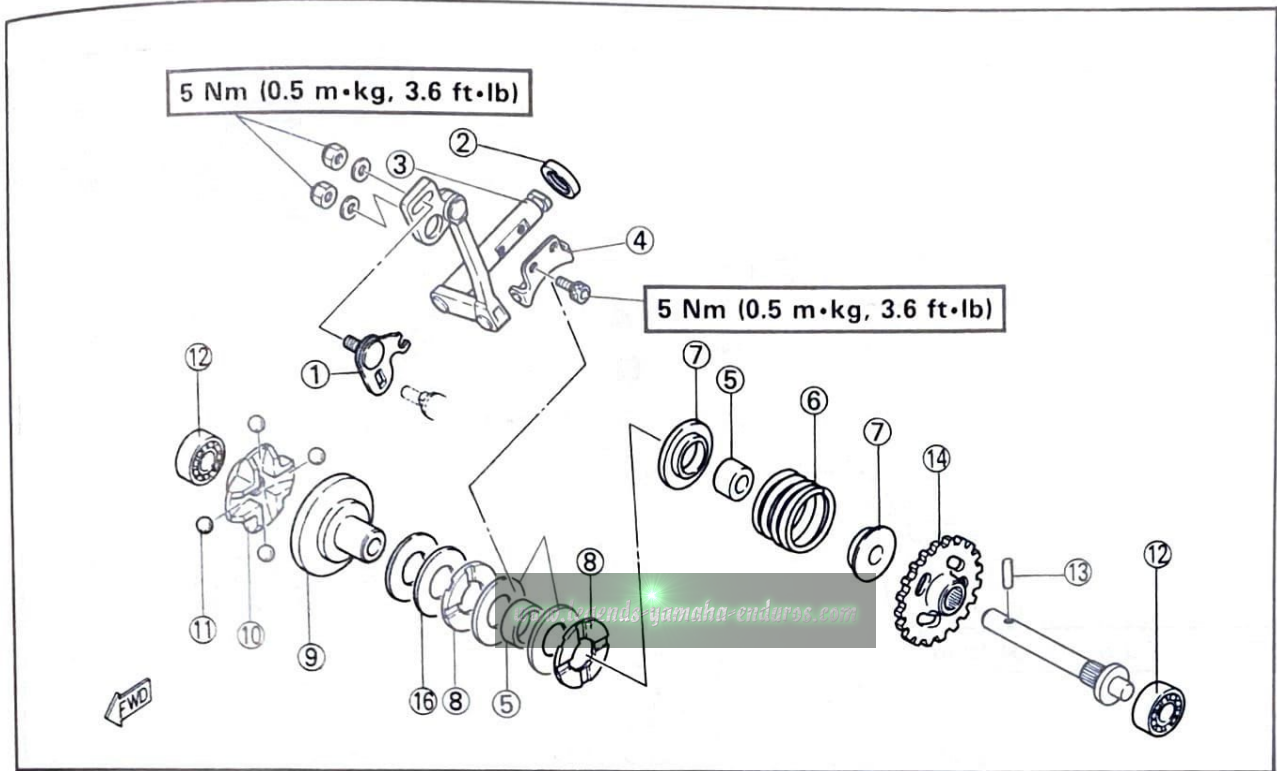




GOVERNOR

- ① Lever
- ② Oil seal
- ③ Push rod
- ④ Fork
- ⑤ Collar
- ⑥ Spring
- ⑦ Plate
- ⑧ Bush

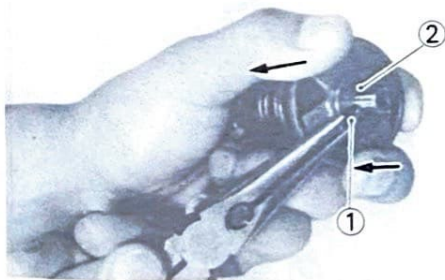
- ⑨ Retainer
- ⑩ Cam
- ⑪ Ball
- ⑫ Bearing
- ⑬ Knock pin
- ⑭ Driven gear
- ⑮ Washer (1.0 mm)
- ⑯ Washer (0.8 or 1.0 mm)



3

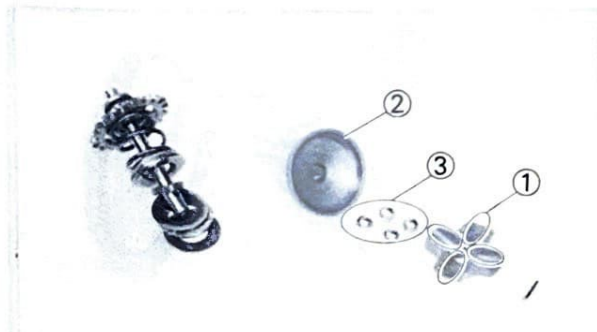
DISASSEMBLY

1. Remove:
 - Knock pin ①
 - (while depressing down the retainer plate ②)



INSPECTION

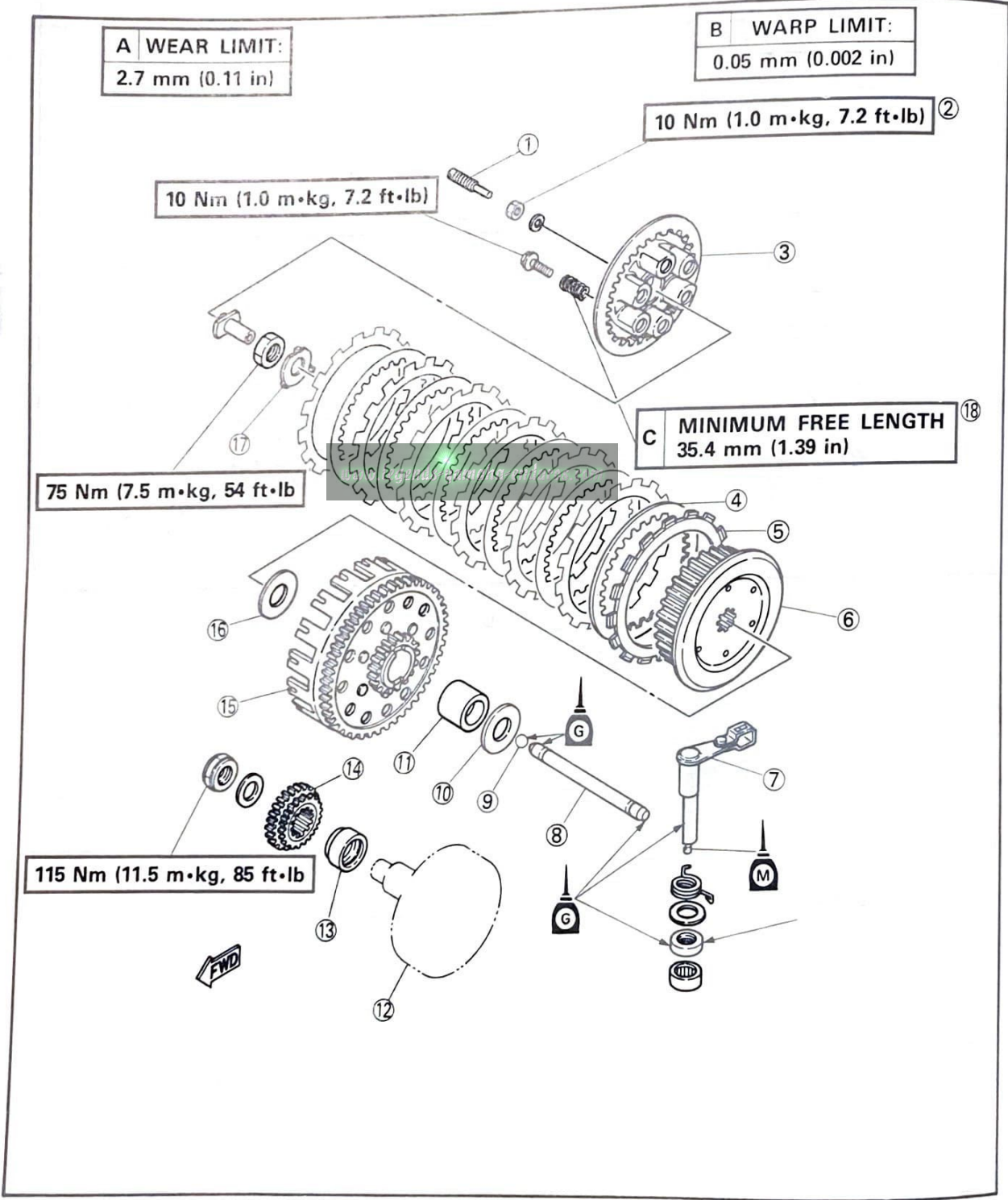
1. Inspect:
 - Cam ①
 - Retainer ②
 - Ball ③
 Wear/Damage → Replace.

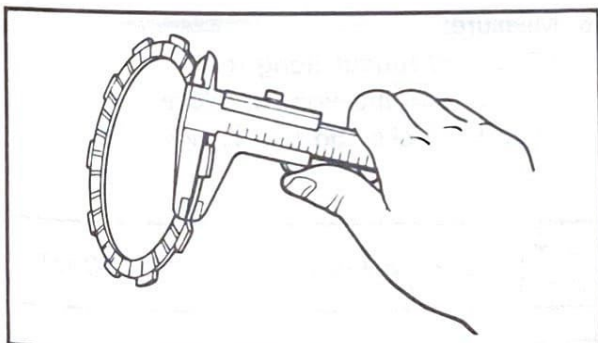
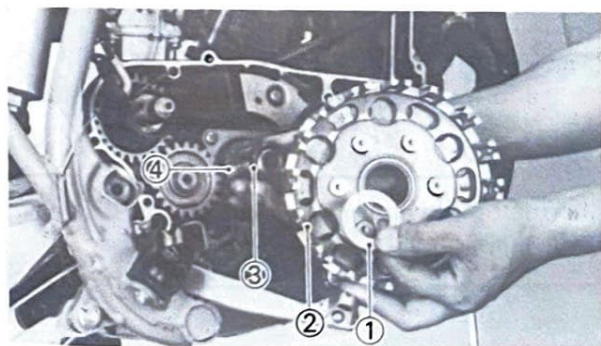
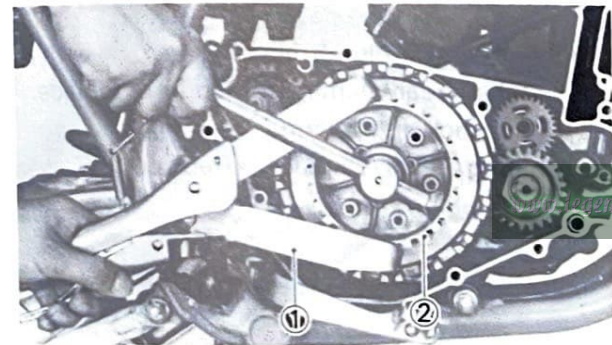
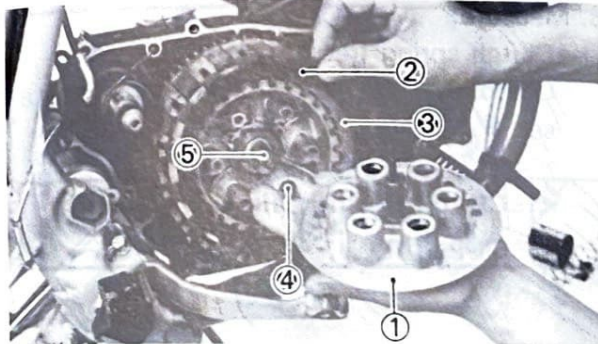
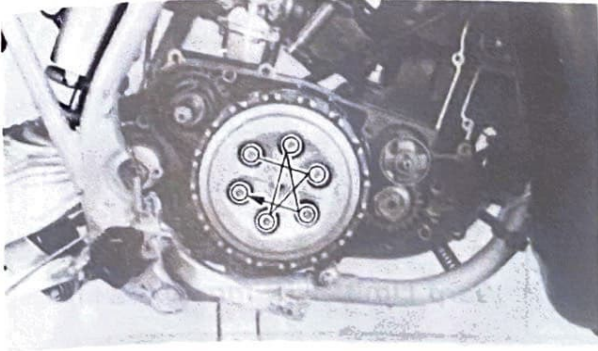


CLUTCH

- ① Adjuster
- ② Locknut
- ③ Pressure plate
- ④ Clutch plate
- ⑤ Friction plate
- ⑥ Clutch boss
- ⑦ Push lever assembly
- ⑧ Push rod
- ⑨ Ball
- ⑩ Thrust washer
- ⑪ Spacer
- ⑫ Crankshaft
- ⑬ Collar
- ⑭ Primary drive gear
- ⑮ Clutch housing
- ⑯ Thrust washer
- ⑰ Lock washer
- ⑱ Clutch spring

3





REMOVAL

- Remove:
 - Clutch spring bolts

NOTE:

When removing phillips spring screw, loosen each screw in several stages working in a crisscross pattern.

- Clutch spring

- Remove:
 - Pressure plate ①
 - Friction plates ②
 - Clutch plates ③
 - Ball ④
 - Push rod ⑤

- Straighten:
 - Lock washer tab

- Remove:
 - Locknut
 - Lock washer
 - Use Clutch Holding Tool ① (YM-91042) to hold the clutch boss.
 - Clutch boss ②

- Remove:
 - Thrust washer ①
 - Clutch housing ②
 - Spacer ③
 - Thrust washer ④

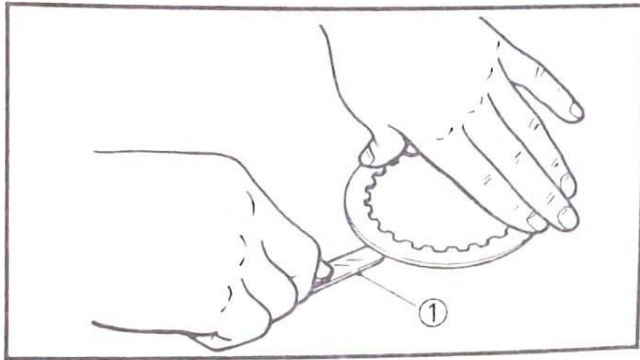
- Remove:
 - Clutch push lever assembly

INSPECTION

- Measure:
 - Friction plate thickness
 - Out of specification → Replace friction plate as a set.
 - Measure at all four point.



Wear Limit: 2.7 mm (0.11 in)

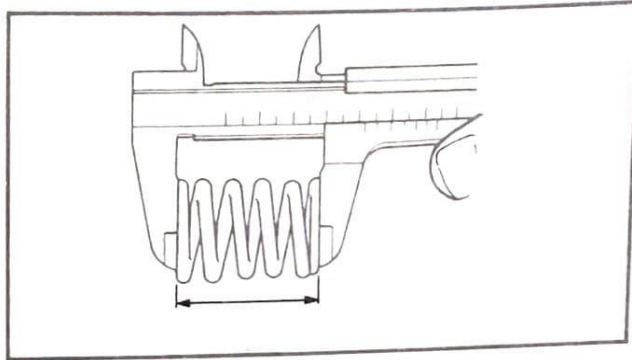


2. Measure:

- Clutch plate warpage
Out of specification → Replace clutch plate as a set.
Use a surface plate and feeler gauge ①.



Warp Limit: 0.05 mm (0.002 in)

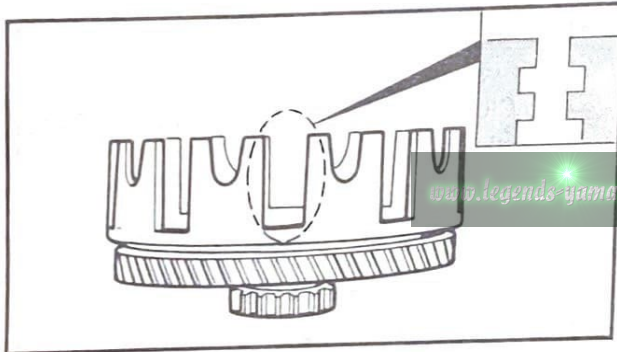


3. Measure:

- Clutch spring free length
Out of specification → Replace spring as a set.

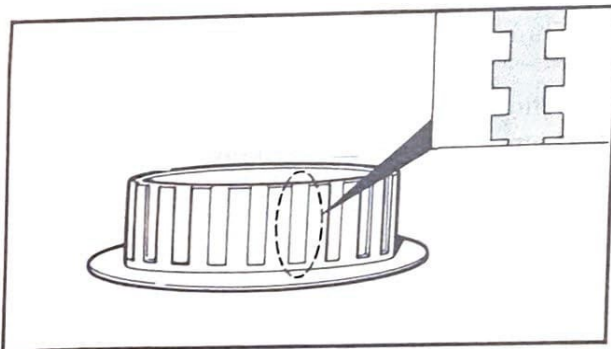


**Clutch Spring Minimum Length:
35.4 mm (1.39 in)**



4. Inspect:

- Dogs on the clutch housing
Cracks/Wear/Damage → Deburr or replace.
- Clutch housing bearing
Chafing/Wear/Damage → Replace.

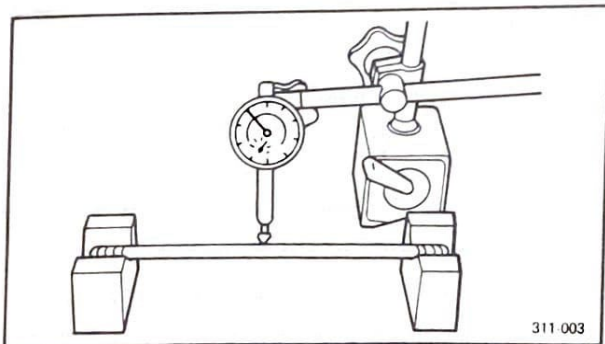


5. Inspect:

- Clutch boss splines
Scoring/Wear/Damage → Replace clutch boss.

NOTE:

Scoring on the clutch boss splines will cause erratic operation.



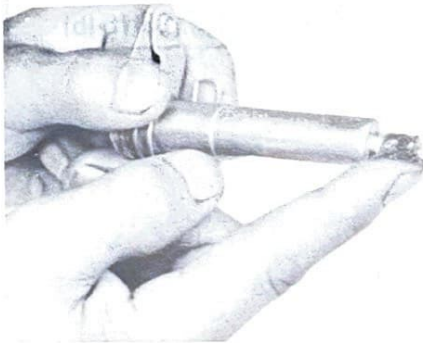
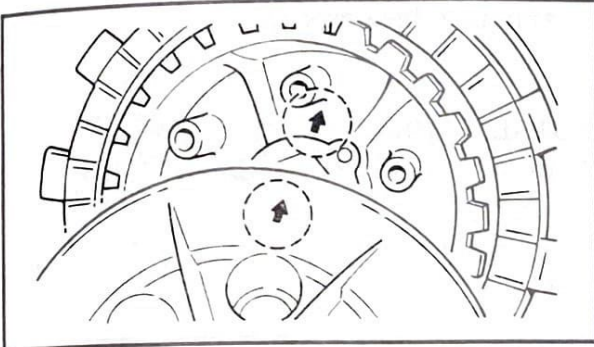
6. Measure:

- Push rod runout (long rod)
Out of specification → Replace.
Use V-Blocks and Dial Gauge.



Bending Limit: 0.2 mm (0.008 in)

311 003



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INSTALLATION

1. Install:
 - Clutch components
 Reverse removal steps.

Note the following installation points:

- When installing the clutch locknut, always use a new lock washer. After tightening the locknut to the specification, be sure to lock it with the lock washer.

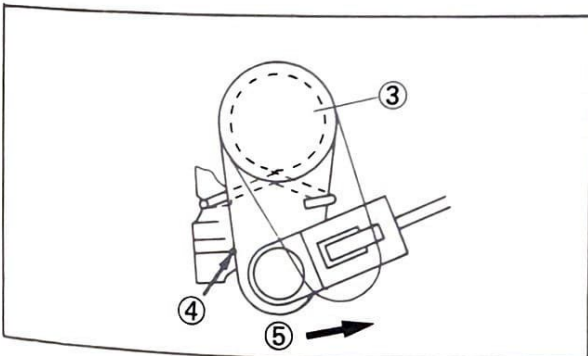
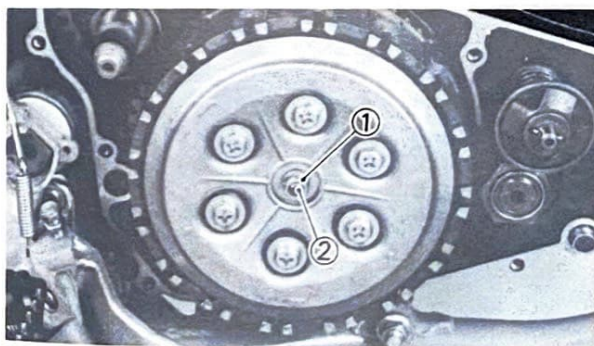


Clutch Locknut:
75 Nm (7.5 m•kg, 54 ft•lb)

- When installing the clutch pressure plate, align arrow mark on clutch boss and pressure plate mark.

- Apply molybdenum disulfide grease to the push lever.

3



MECHANISM ADJUSTMENT

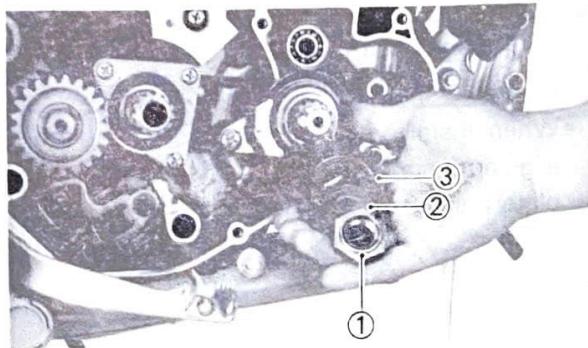
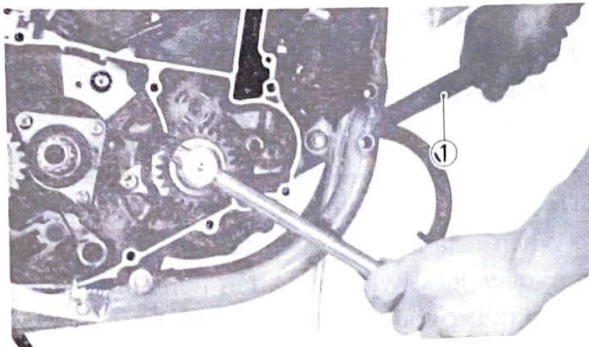
1. Loosen:
 - Locknut ①
2. Push the push lever ③ toward the front of the engine with your finger until it stops.
3. Adjust:
 - Free play
 - With the push lever in this position turn the adjuster ② either in or out until the edge of push lever and crankcase match mark ④ are aligned.

⑤ Push

4. Tighten:
 - Locknut



Clutch Locknut:
10 Nm (1.0 m•kg, 7.2 ft•lb)



PRIMARY DRIVE GEAR

REMOVAL

1. Loosen:
 - Primary drive gear nut
 - Use Universal Rotor Holder (YU-01235) ① to lock the crankshaft.
2. Remove:
 - Primary drive gear nut ①
 - Washer ②
 - Primary drive gear ③

INSTALLATION

1. Install:
 - Primary drive gear
 - Washer
 - Nut



Primary Drive Gear:
115 Nm (11.5 m•kg, 85 ft•lb)

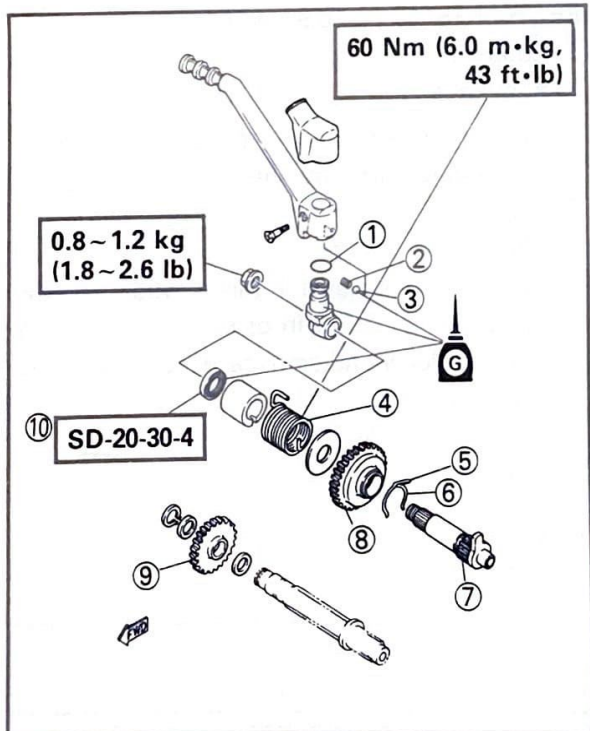
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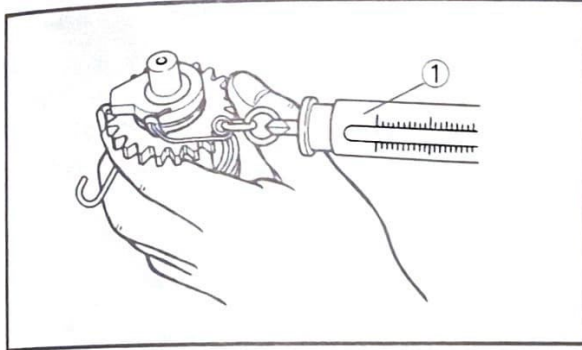
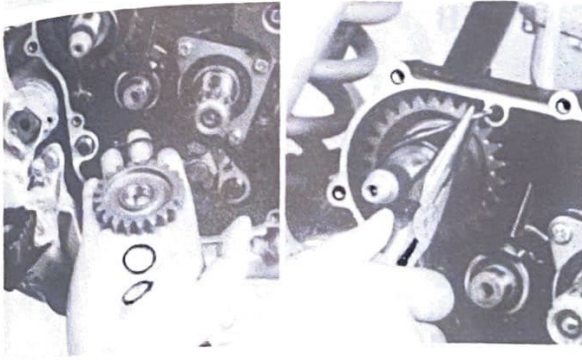
KICK STARTER

- ① O-ring
- ② Spring
- ③ Ball
- ④ Return spring
- ⑤ Kick clip
- ⑥ Friction force
- ⑦ Kick axle
- ⑧ Kick gear
- ⑨ Kick idle gear
- ⑩ Oil seal

REMOVAL

1. Remove:
 - Circlip
 - Washer
 - Kick idle gear ⑨
 - Circlip





2. Unhook:
 - Kick return spring
3. Remove:
 - Kick axle assembly

INSPECTION

1. Inspect:
 - Kick axle
Damage/Wear → Replace.
2. Measure:
 - Kick clip friction force
Out of specification → Replace.

Use a spring balance ①.

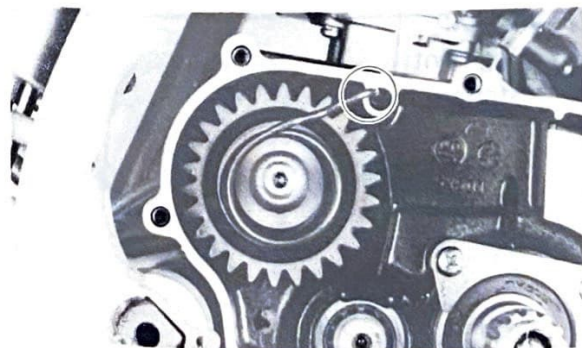
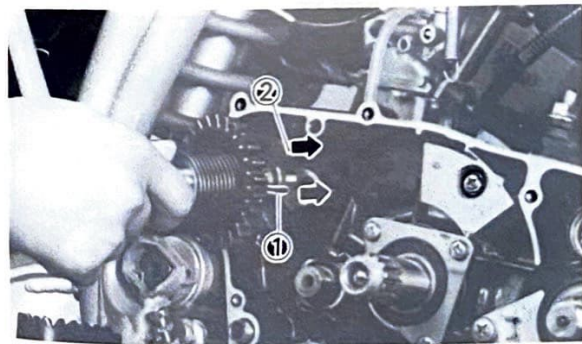
Kick Clip Friction Force:
0.8 ~ 1.2 kg (1.8 ~ 2.6 lb)

CAUTION:

Do not try to bend the clip.

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3



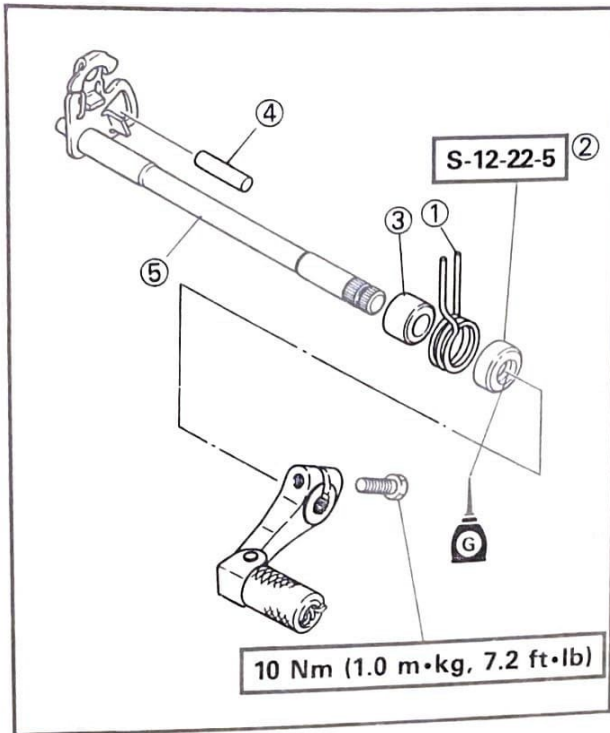
INSTALLATION

1. Install:
 - Kick axle
 - Kick idle gear

Reverse removal steps.

Note the installation points:

- Slide the axle assembly into the case; make sure the kick clip ① and kick axle stopper ② fit into their home positions.
- Turn the kick starter return spring clockwise and hook into the proper hole in the crankcase.
- After installing, make sure the kick gear engages and disengages properly with the idle gear.



SHIFTER

NOTE:

Shift shaft maintenance should be performed with clutch assembly removed.

- ① Return spring
- ② Oil seal
- ③ Spacer
- ④ Shift shaft stopper
- ⑤ Shift shaft

3



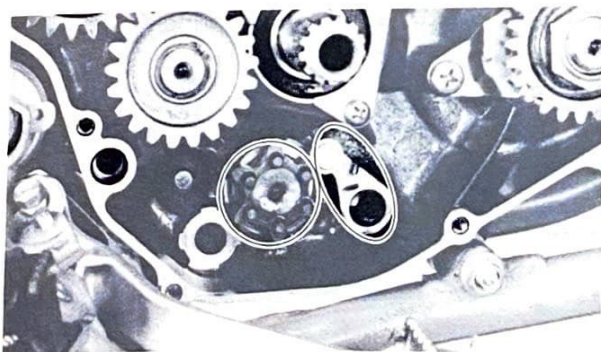
REMOVAL

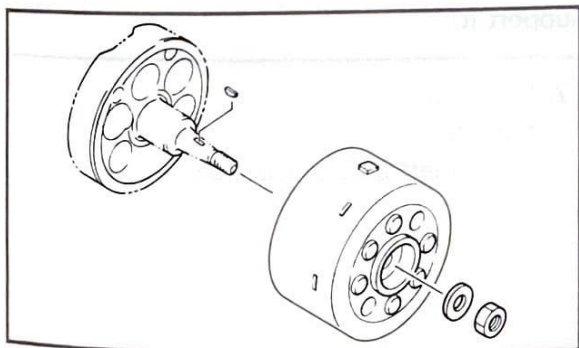
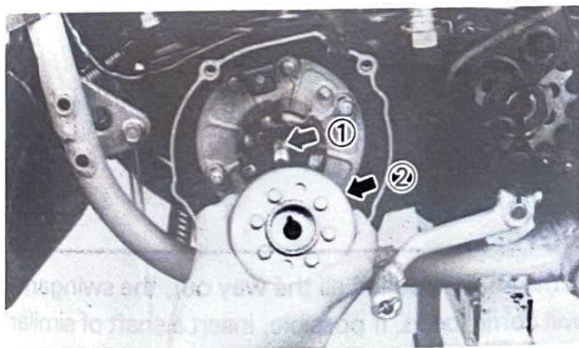
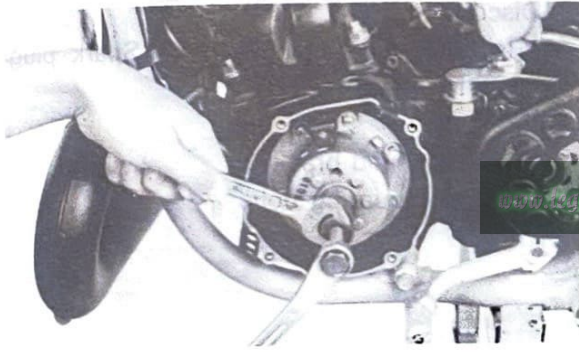
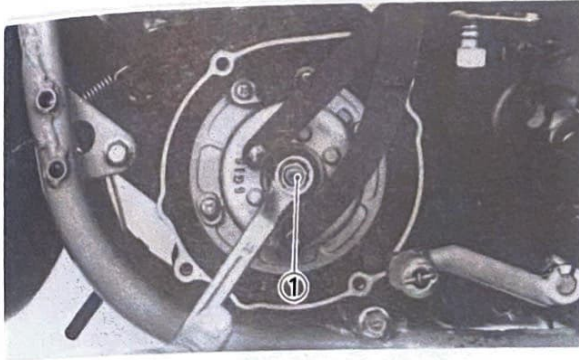
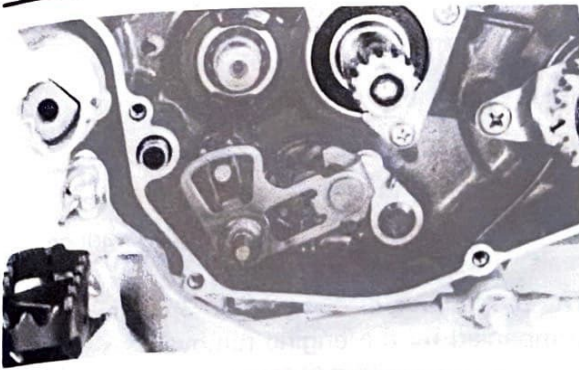
1. Remove:
 - Shift pedal
 - Shift shaft ①
 - Stopper lever ②



INSPECTION

1. Inspect:
 - Return spring
Broken → Replace.
 - Shift shaft
Bend → Replace.
2. Inspect:
 - Segment
 - Stopper lever
Wear / Damage → Replace.



**INSTALLATION**

1. Install:
 - Stopper lever
 - Shift shaft
 Reverse removal steps.



Stopper Lever:
15 Nm (1.5 m•kg, 11 ft•lb)

Apply LOCTITE® to the stopper lever bolt.

ROTOR**REMOVAL**

1. Remove:
 - Rotor securing nut ①
Use Rotor Holding Tool (YU-01235).
2. Remove:
 - Washer
 - Rotor
Use Rotor Puller (YM-01189).
 - Stator
 - Woodruff key

3

INSTALLATION

1. Clean:
 - Crankshaft ①
 - Rotor ②
2. Install:
 - Stator



Stator:
8 Nm (0.8 m•kg, 5.8 ft•lb)

3. Install:
 - Woodruff key
 - Rotor

NOTE:

When installing the CDI magneto, make sure the woodruff key is properly seated in the key way of the crankshaft.

- Washer
- Nut



Rotor:
38 Nm (3.8 m•kg, 27 ft•lb)



ENGINE REMOVAL AND MOUNTING

REMOVAL

NOTE:

The engine removal is required for the servicing of the transmission, crankshaft, and bearings, oil seals, etc. of the crankcase.

The procedures in page 3-2 to 3-30 are not accompanied by the engine removal.

1. Drain:

- Transmission oil
- Coolant

2. Remove:

- Side cover/Seat/Fuel tank
- Muffler/Carburetor
- Shift pedal/Drive sprocket
(Apply rear brake to lock the sprocket)

3. Disconnect:

- Radiator hoses/Clutch cable/Spark plug cap/Magneto leads

4. Remove:

- Cylinder head brackets
- Engine mounting bolts

5. Remove:

- Swingarm pivot shaft nut

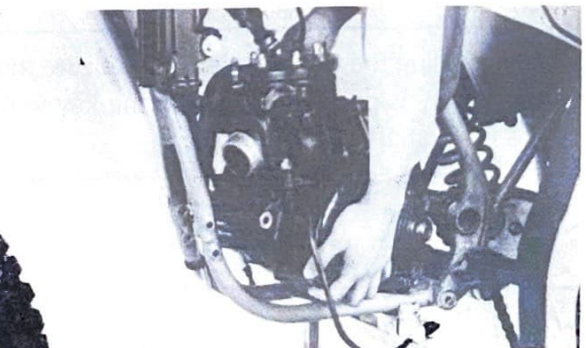
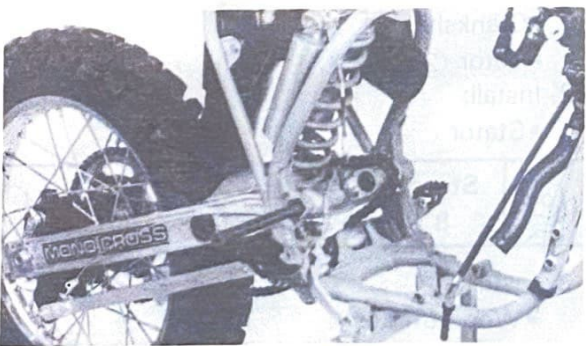
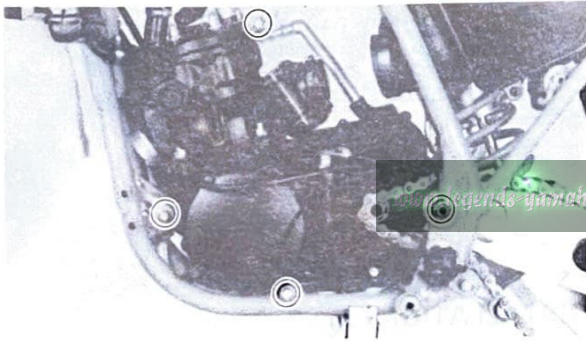
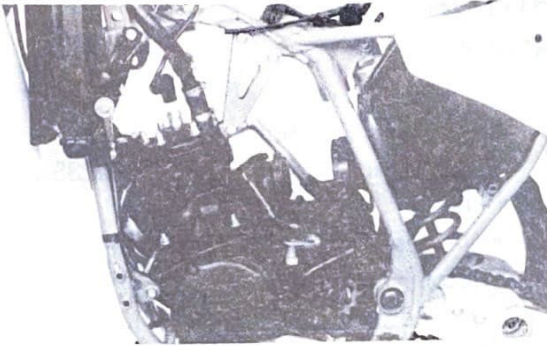
6. Pull the shaft out about two-thirds of its length.

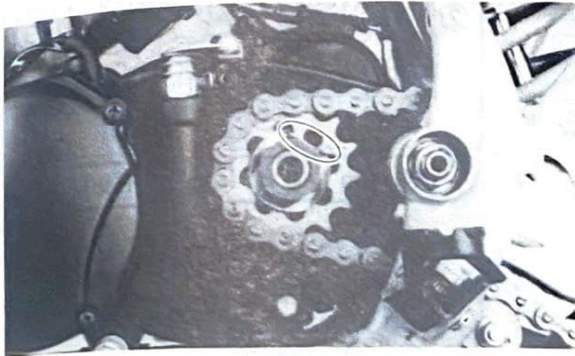
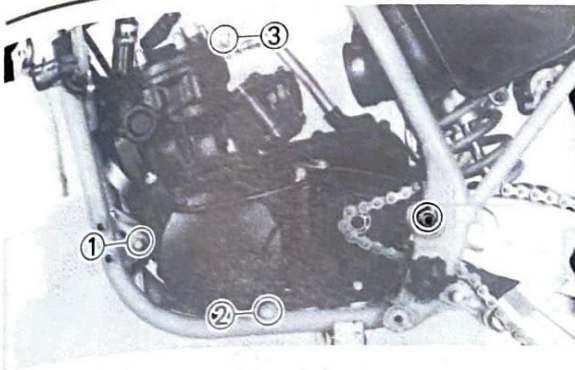
NOTE:

If the shaft is pulled all the way out, the swingarm will come loose. If possible, insert a shaft of similar diameter into the other side of the swingarm to support it.

7. Remove:

- Engine
(from left side of the frame)





MOUNTING

1. Install:

- Engine
- Engine mounting bolts
- Cylinder head brackets
- Pivot shaft



Engine Mounting Bolt ①, ②:
32 Nm (3.2 m•kg, 23 ft•lb)

Engine Mounting Bolt ③:
65 Nm (6.5 m•kg, 22 ft•lb)

Pivot Shaft:

85 Nm (8.5 m•kg, 61 ft•lb)

When installing the pivot shaft, grease it.

2. Install:

- Drive sprocket
- Lock washer (New)
- Locknut

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Drive Sprocket Nut:

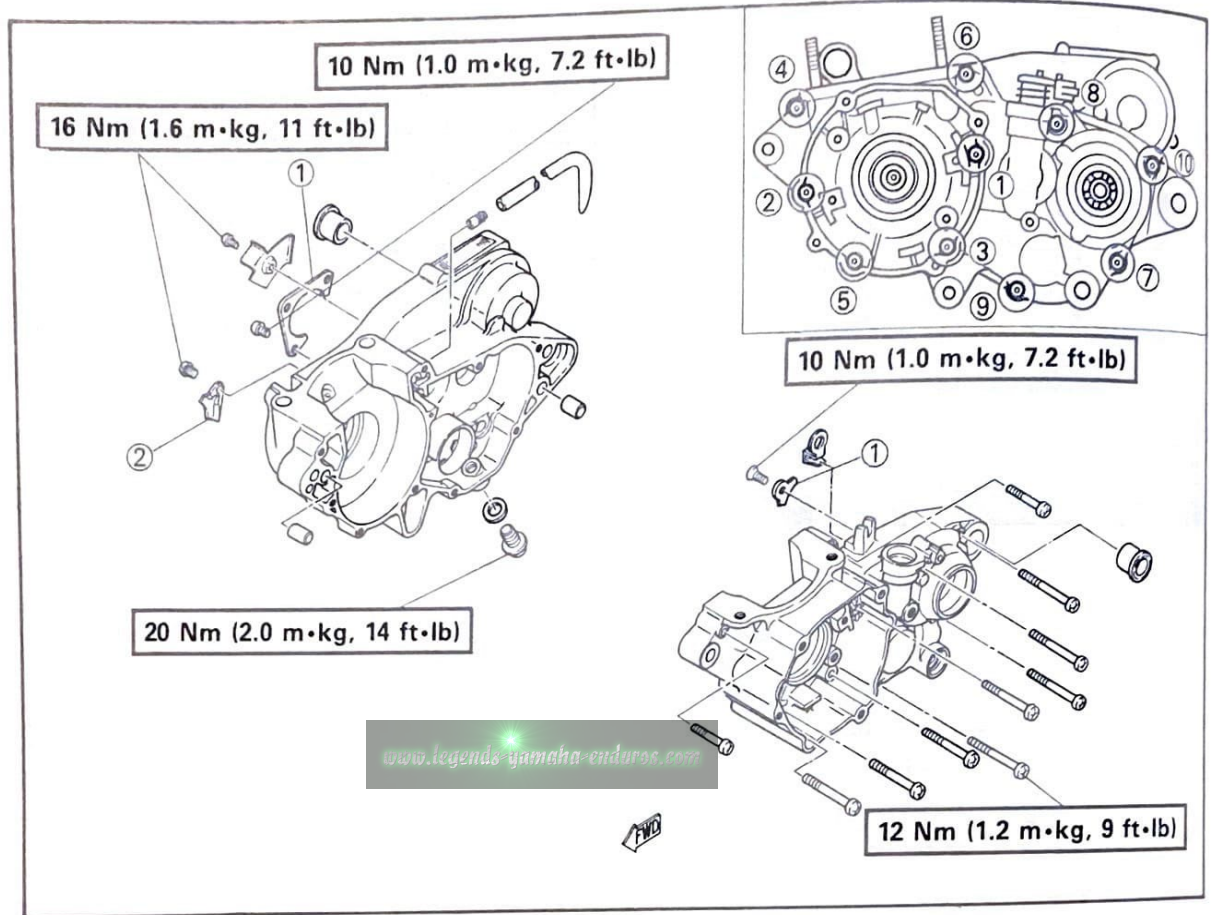
75 Nm (7.5 m•kg, 54 ft•lb)

Bend the lock washer tab against nut flat.



CRANKCASE

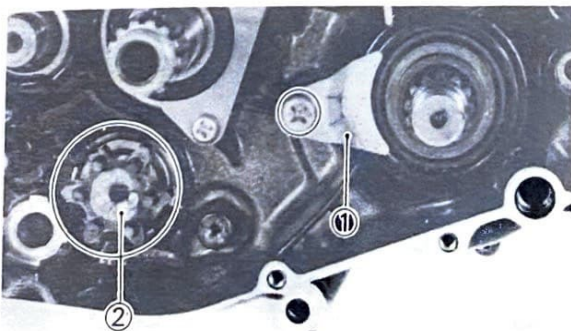
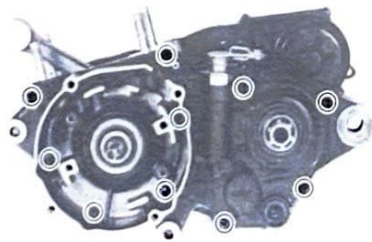
- ① Bearing cover plate
- ② Holder

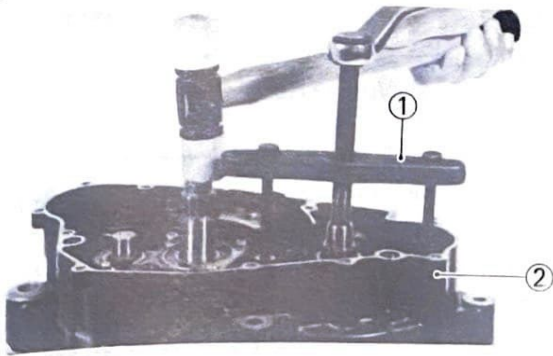


3

DISASSEMBLY

1. Loosen:
 - Crankcase tightening bolts
(Working in a crisscross pattern, loosen 1/4 turn each.)
2. Remove:
 - Crankcase tightening bolts
3. Remove:
 - Oil seal holder ①
4. Turn the segment ② to the position shown in the figure so that it does not contact the crankcase.





5. Attach:
 - Crankcase Separating Tool (YU-01135) ①
6. Remove:
 - Crankcase (Right) ②

NOTE: _____

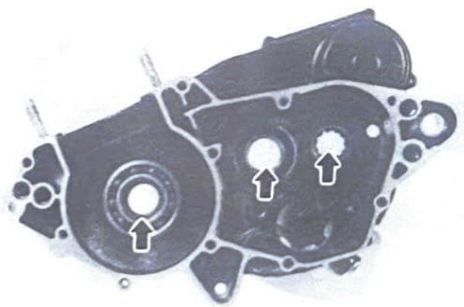
- Fully tighten the tool holding bolts, but make sure the tool body is parallel with the case. If necessary, one screw may be backed out slightly to level tool body.
- As pressure is applied, alternately tap on the front engine mounting boss, transmission shafts, and shift cam.

CAUTION: _____

Use soft hammer to tap on the case half. Tap only on reinforced portions of case. Do not tap on gasket mating surface. Work slowly and carefully. Make sure the case halves separate evenly. If one end "hangs up," take pressure off the push screw, realign, and start over. If the cases do not separate, check for a remaining case screw or fitting. Do not force.

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3

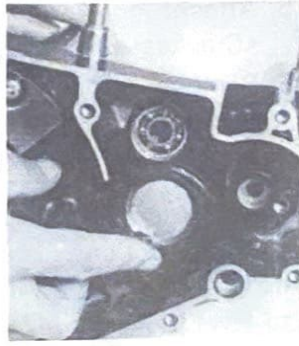


BEARINGS AND OIL SEALS

1. Clean/Lubricate/Inspect:
 - Bearings
(rotate inner race with a finger.)
Rough spot/Seizure → Replace.

NOTE: _____

Bearing(s) are most easily removed or installed if the cases are first heated to approximately 90° ~ 120°C (194° ~ 248°F). Bring the case up to proper temperature slowly. Use an oven.



2. Inspect:

- Oil seal
Damage/Wear → Replace.

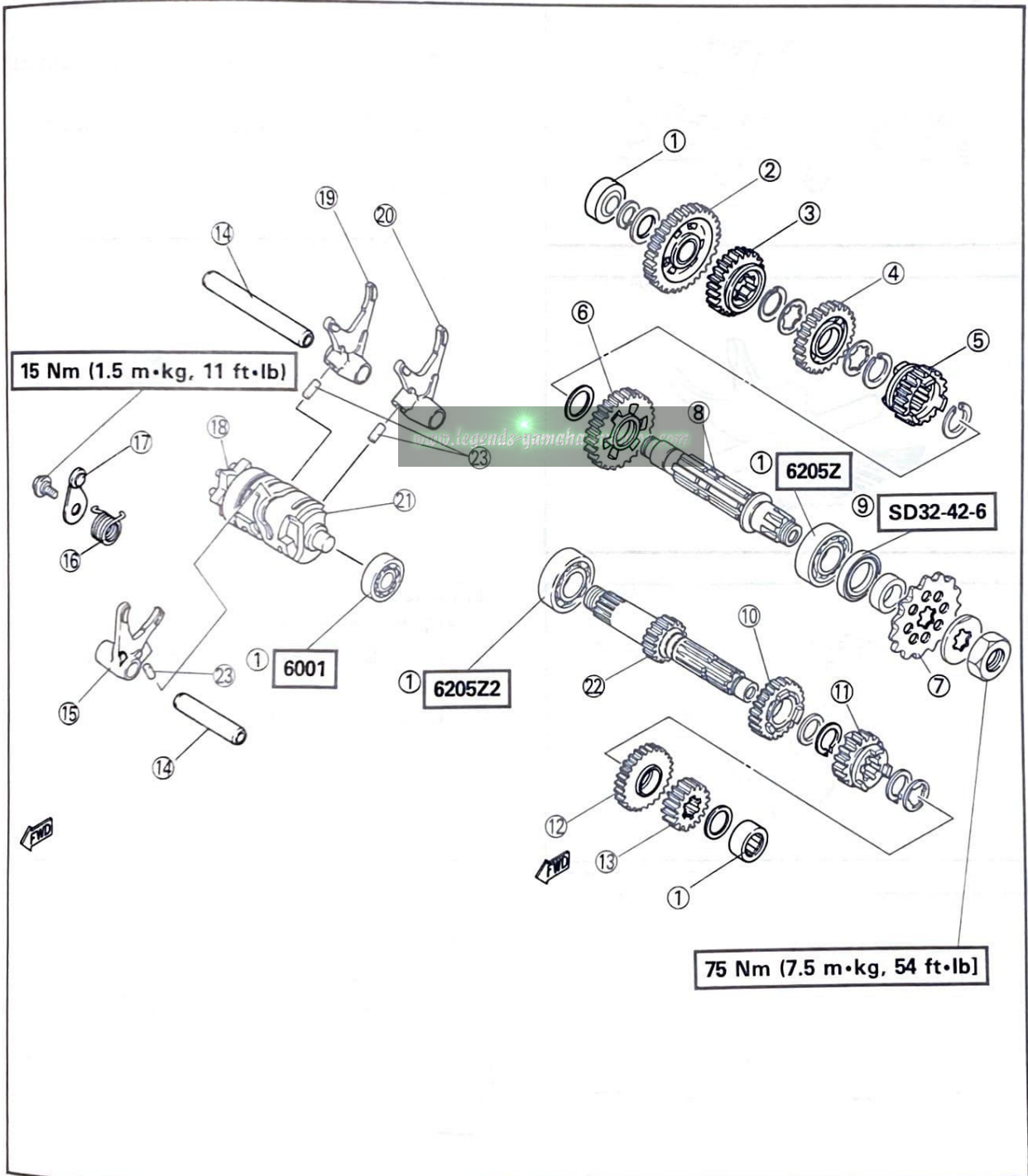
NOTE:

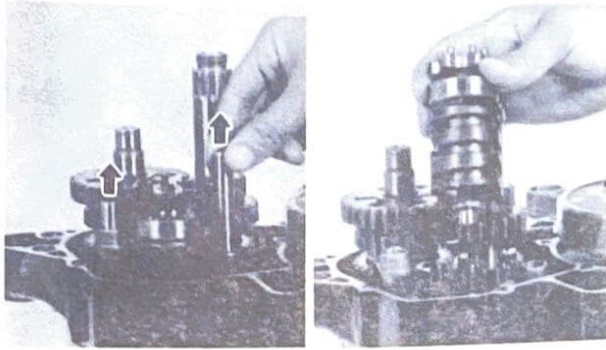
- Always replace crankshaft oil seals whenever the crankshaft is removed.
- Install bearing(s) and oil seal(s) with their manufacturer marks or numbers facing outward. Before installation, apply grease to oil seal lips and bearings.

3

TRANSMISSION AND SHIFTER

- ① Bearing
- ② 1st wheel gear (30T)
- ③ 4th wheel gear (24T)
- ④ 3rd wheel gear (26T)
- ⑤ 5th wheel gear (22T)
- ⑥ 2nd wheel gear (28T)
- ⑦ Drive sprocket (14T)
- ⑧ Drive axle
- ⑨ Oil seal
- ⑩ 4th pinion gear (21T)
- ⑪ 3rd pinion gear (19T)
- ⑫ 5th pinion gear (23T)
- ⑬ 2nd pinion gear (16T)
- ⑭ Shift fork guide bar
- ⑮ Shift fork 2
- ⑯ Return spring
- ⑰ Stopper lever
- ⑱ Segment
- ⑲ Shift fork 3
- ⑳ Shift fork 1
- ㉑ Shift cam
- ㉒ Main axle (1st pinion gear) (14T)
- ㉓ Dowel pin

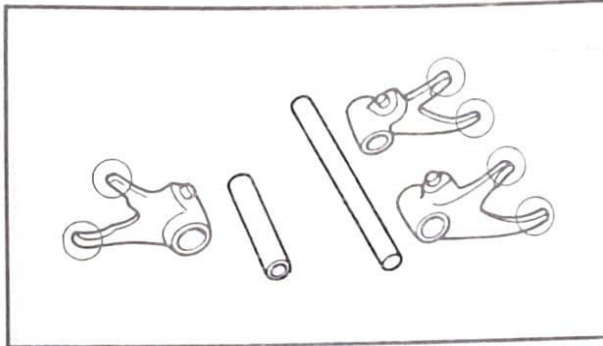


**REMOVAL**

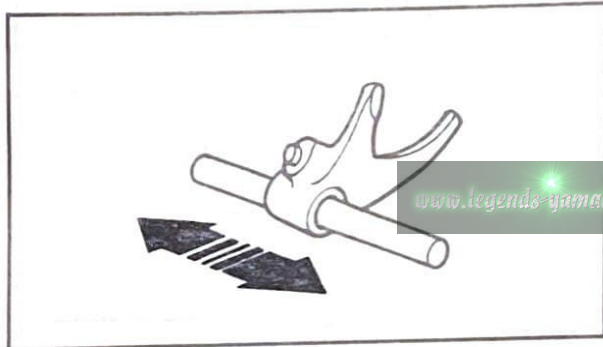
1. Remove:
 - Transmission assembly
(Tap lightly on the transmission drive axle with a soft hammer to remove.)

NOTE:

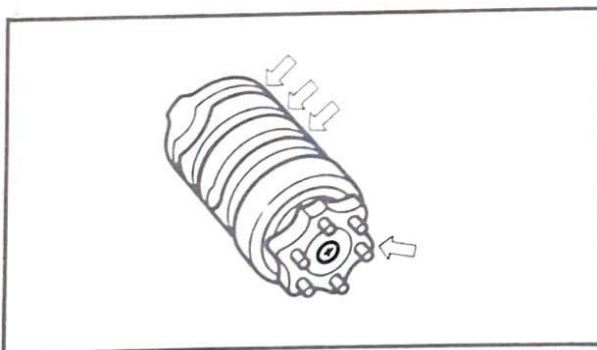
Remove assembly carefully. Note the position of each part. Pay particular attention to the location and direction of shift forks.

**INSPECTION**

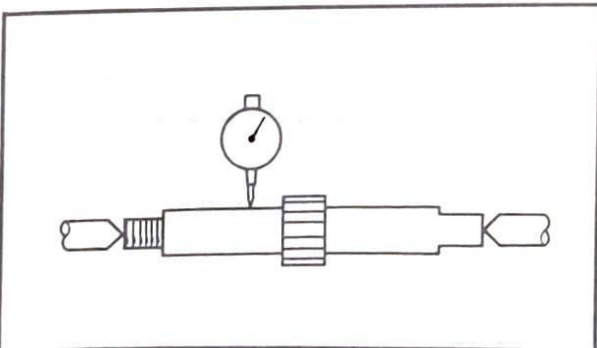
1. Inspect:
 - Shift forks (Gear and shift cam contact surfaces)
Wear/Chafing/Bends/Damage → Replace.
 - Guide bars
Bends/Wear → Replace.



2. Check:
 - Shift fork movement
(on its guide bar)
Unsmooth operation → Replace.
Shift fork and/or guide bar.



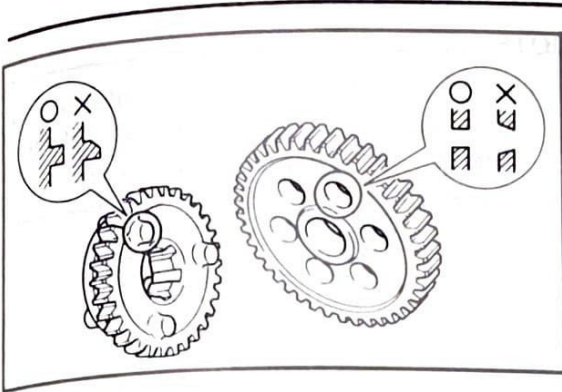
3. Inspect:
 - Shift cam grooves
Wear/Damage/Scratches → Replace.
 - Shift cam segment
Damage/Wear → Replace.



4. Measure:
 - Axle runout
Out of specification → Replace.
Use centering device and Dial Gauge (YU-03097).

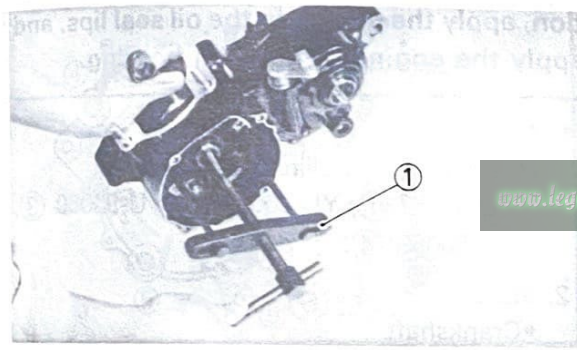
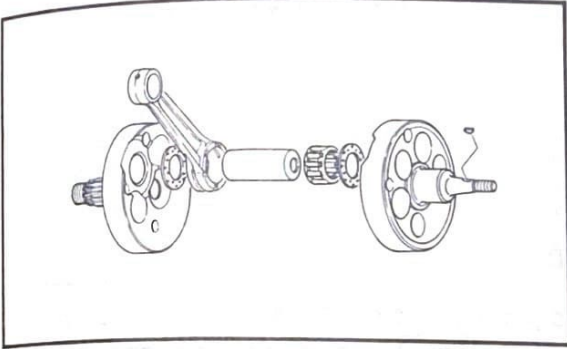


Runout Limit: 0.01 mm (0.0004 in)



5. Inspect:
 - Gears
 - Damage/Wear → Replace.
6. Check:
 - Gear movement
 - Unsmooth operation → Replace.
7. Inspect:
 - Mating dogs
 - Cracks/Wear/Damage → Replace.

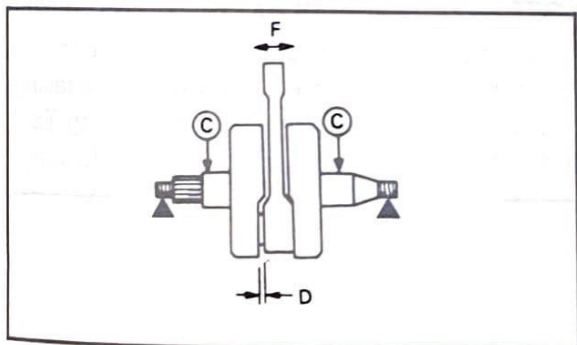
CRANKSHAFT



REMOVAL

1. Remove:
 - Crankshaft
 - Use Crankcase Separating Tool (YU-01135)

①
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INSPECTION

1. Measure:
 - Runout limit "C"
 - Connecting rod big end side clearance "D"
 - Small end free play limit "F"
 Out of specification → Replace.
 Use V-Blocks, Dial Gauge (YU-03097) and Thickness Gauge.



Runout Limit "C":
 0.03 mm (0.0012 in)
Connecting Rod Big End Side Clearance "D":
 0.25 ~ 0.75 mm (0.01 ~ 0.03 in)
Small End Free Play Limit "F":
 2.0 mm (0.08 in)

**NOTE:**

If any of the above measurements exceed tolerance, crankshaft repair is required. Take the machine to your authorized Yamaha dealer.

CRANKCASE ASSEMBLY

1. Thoroughly wash the case halves in mild solvent.
2. Clean all the gasket mating surfaces and crankcase mating surfaces thoroughly.

CAUTION:

To protect the crankshaft against scratches or to facilitate the operation of the installation, apply the grease to the oil seal lips, and apply the engine oil to each bearing.

1. Attach:

- Crankshaft Installing Tool (YU-90062 ①, YU-90058 ②, YU-90060 ③, YU-90059 ④)

2. Install:

- Crankshaft

NOTE:

Hold the connecting rod at top dead center with one hand while turning the nut of the Installing Tool with the other. Operate the Installing Tool until the crankshaft bottoms against the bearing.

3. Install:

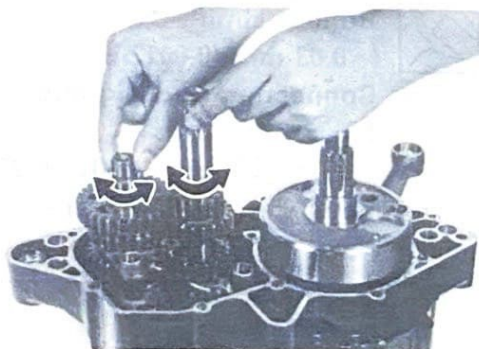
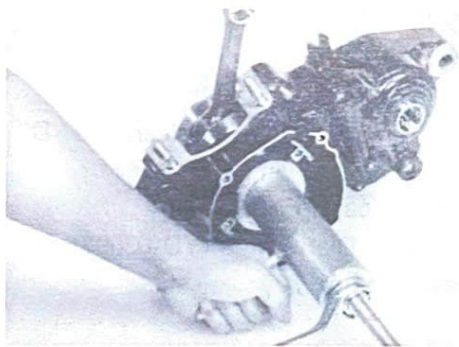
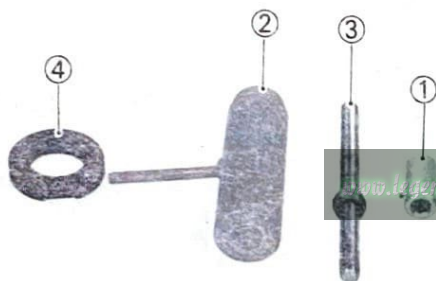
- Transmission assembly

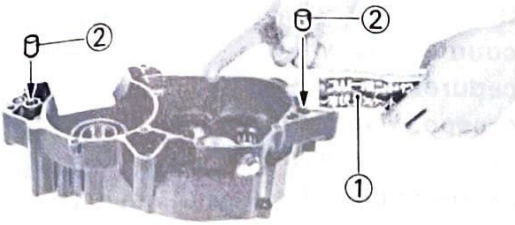
NOTE:

Each shift forks is identified by a number cast on its side. All the numbers should face the left side.

4. Check:

- Transmission operation
Unsmooth operation → Repair.

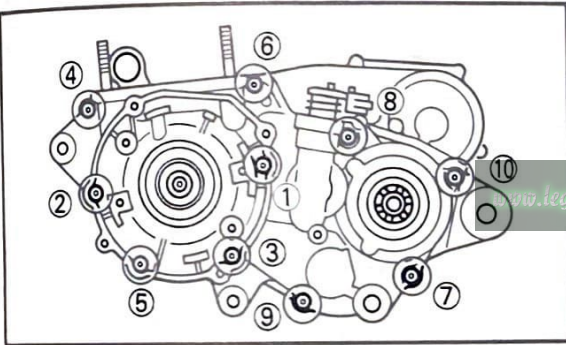
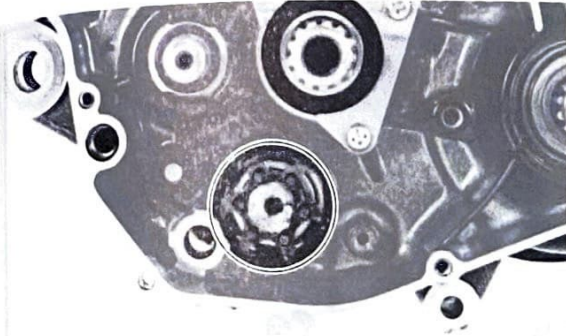




5. Apply:
 - Yamabond No. 4® (ACC-11001-30-00) ①
 - To the mating surfaces of both case halves.
6. Install:
 - Dowel pins ②
7. Fit the right crankcase onto the left case. Tap lightly on the case with a soft hammer.

NOTE: _____

Turn the shift cam to the position shown in the figure so that it does not contact the crankcase when installing the crankcase.



CAUTION: _____

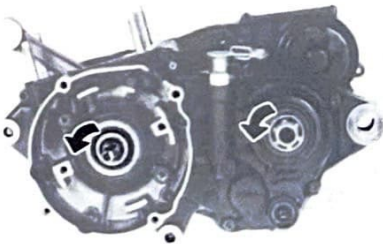
Before installing and torquing the crankcase holding screws, be sure to check whether the transmission is functioning properly by manually rotating the shift cam either way.

8. Tighten:
 - Crankcase tightening screws

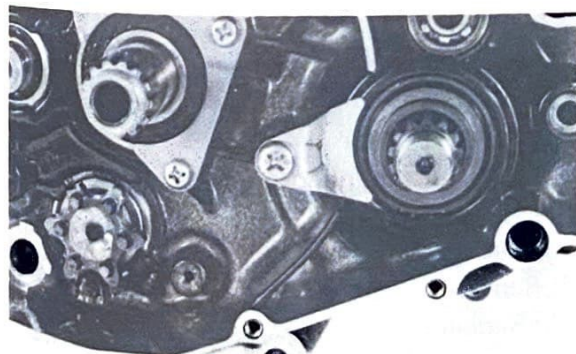
NOTE: _____

Tighten the crankcase tightening screws in stage, using a crisscross pattern.

	<p>Crankcase: 12 Nm (1.2 m•kg, 8.7 ft•lb)</p>
--	--



9. Remove:
 - Bond
 - Forced out on the cylinder mating surface.
10. Apply:
 - 2-stroke oil
 - To the crank pin, bearing and oil delivery hole.
11. Check:
 - Crankshaft and transmission operation
 - Unsmooth operation → Repair.



12. Install:
 - Oil seal holder

	<p>Oil Seal Holder: 16 Nm (1.6 m•kg, 11 ft•lb)</p>
--	---

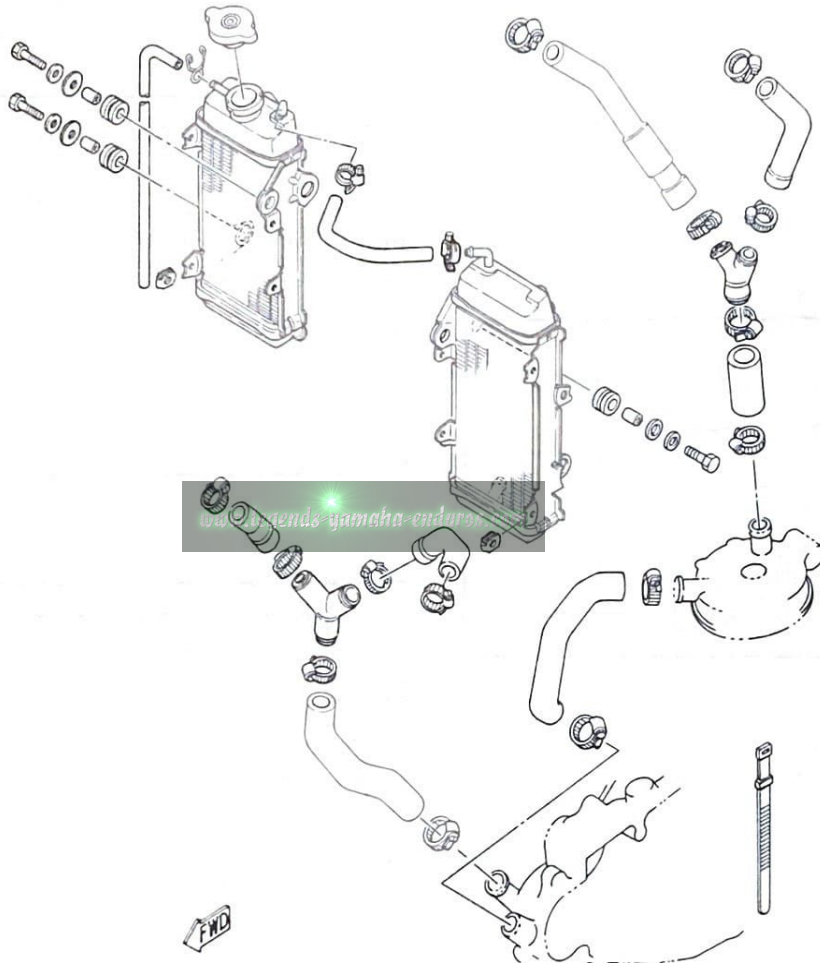


COOLING SYSTEM

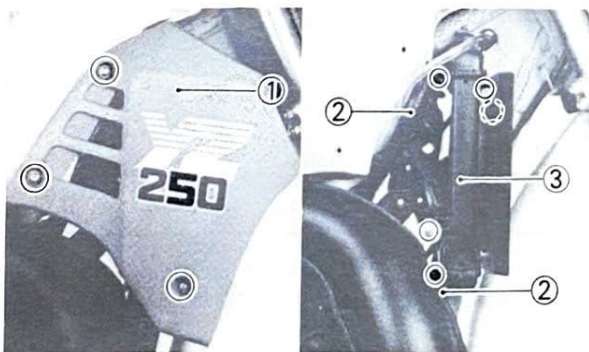
WARNING:

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. When the engine has cooled, open the radiator cap by the following procedure:

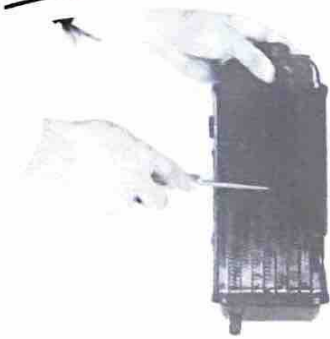
Remove the radiator cover by removing the screw. Place a thick rag, like a towel, over the radiator cap, slowly rotate the cap counterclockwise to the detent. This procedure allows any residual pressure to escape. When the hissing sound has stopped, press down on the cap while turning counterclockwise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



3

**REMOVAL**

1. Drain off the coolant.
2. Remove:
 - Radiator cover ①
 - Radiator mounting bolts
3. Disconnect:
 - Radiator hoses ②
4. Remove:
 - Radiator ③



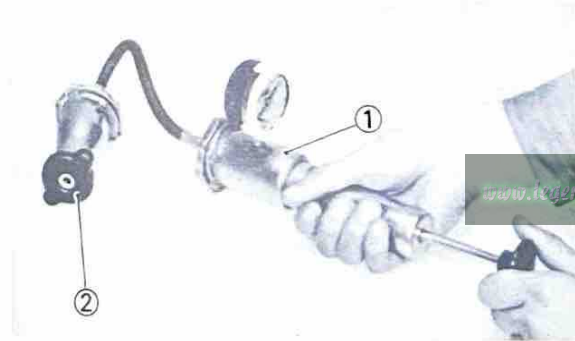
INSPECTION

1. Inspect:
 - Radiator core
Obstruction → Blow out with compressed air through rear of the radiator.
Flattened fin → Repair/replace.
2. Inspect:
 - Radiator hoses
Crack/Damage → Replace.
3. Measure:
 - Valve opening pressure
Valve opens at pressure below the specified valve or defective → Replace.

Valve Opening Pressure:

$88 \pm 108 \text{ kPa}$ (1.1 kg/cm², 15.6 psi)

3

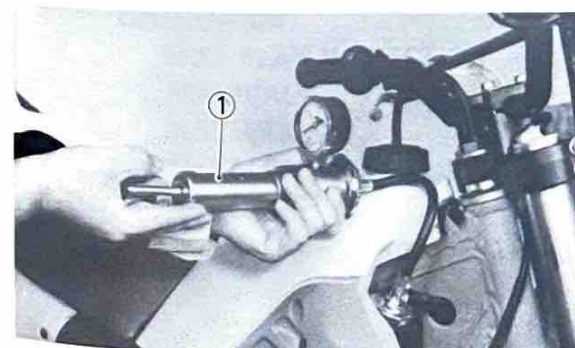


Measurement steps:

- Attach the Cooling System Tester ① (YU-33984) to the radiator cap ②.
- Apply the specified pressure for 10 seconds, and make sure there is no pressure drop.

ASSEMBLY

1. Install:
 - Radiator
 - Radiator hoses
2. Fill:
 - Coolant
 - Refer to "Coolant Replacement."
3. Inspect:
 - Cooling system
Decrease of pressure (leaks) → Repair as required.



Inspection steps:

- Attach the Cooling System Tester ① (YU-33984) to the radiator.
- Apply 98.1 kPa (1.0 kg/cm², 14 lb/in²) pressure.
- Measure the indicated pressure with gauge.

CHAPTER 4

CHASSIS MAINTENANCE AND REPAIR

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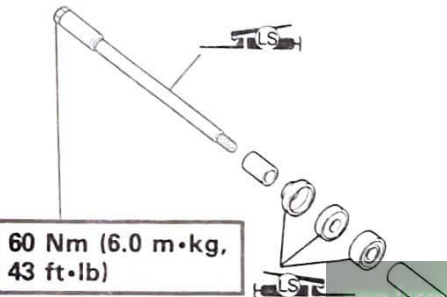


**CHASSIS MAINTENANCE
AND REPAIR**
**WHEEL ASSEMBLIES,
SPROCKETS AND CHAIN**

WARNING:

Whenever performing chassis work, always take extra care and double-check each step of each procedure. The wheels, brakes, suspension, steering, and frame must all be in top condition to provide optimum performance, reliability, and safety.

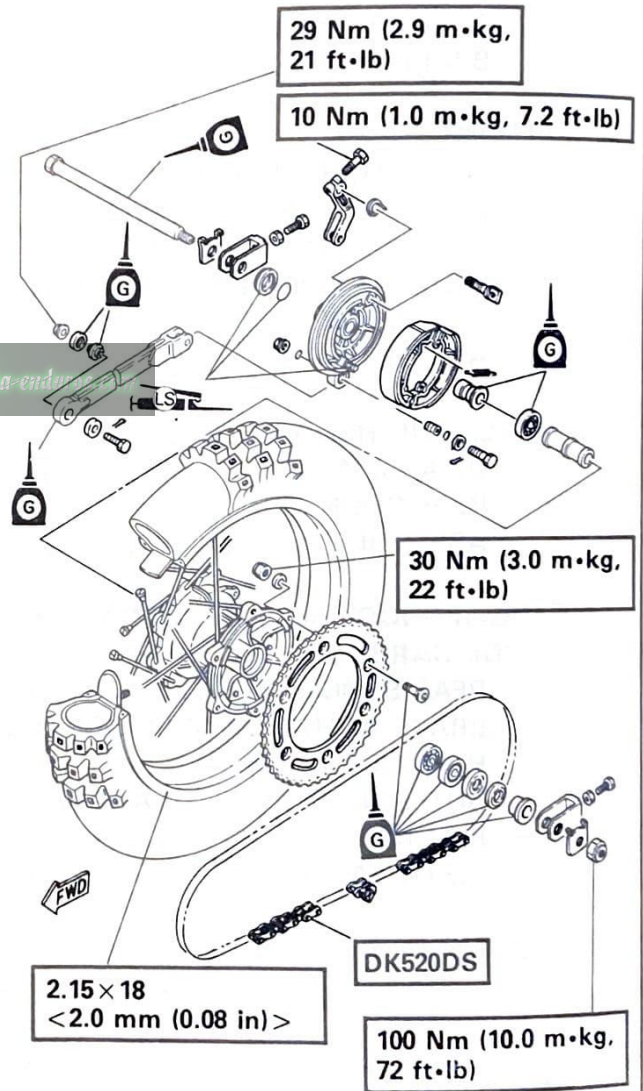
FRONT WHEEL



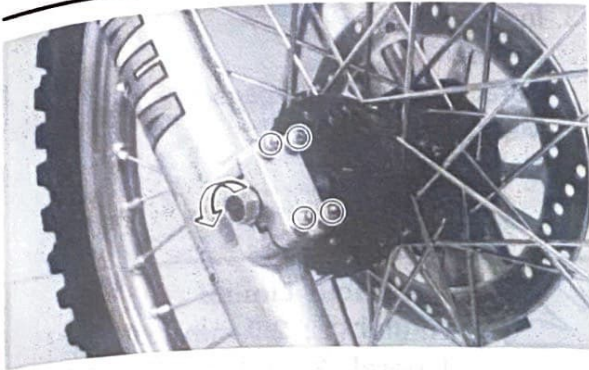
1.60×21
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REAR WHEEL

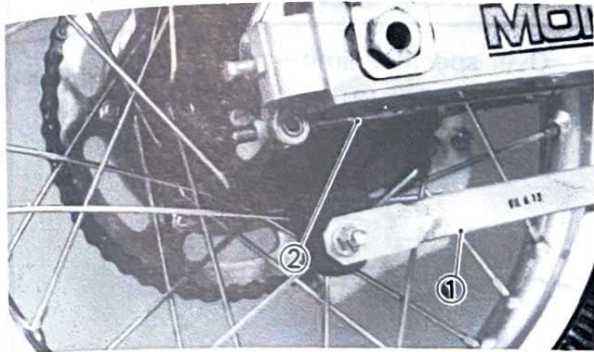


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FRONT WHEEL REMOVAL

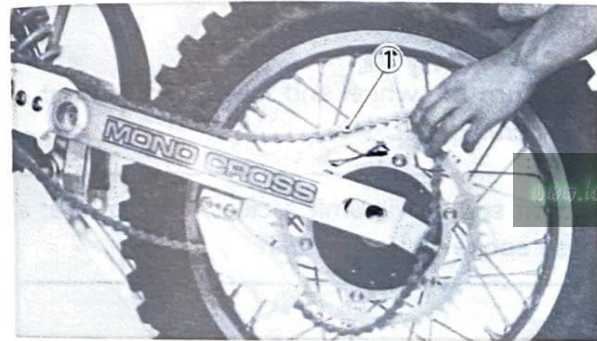
1. Elevate the front wheel by placing a suitable stand under the engine.
2. Loosen:
 - Axle pinch bolts
3. Remove:
 - Axle shaft
 - Front wheel



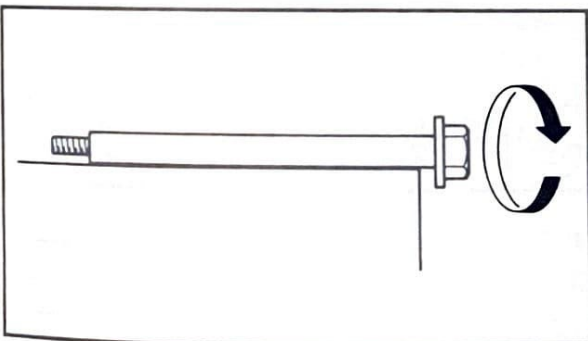
REAR WHEEL REMOVAL

1. To remove the rear wheel, place a suitable stand under the machine to keep the machine stable while the rear wheel is removed.

2. Remove:
 - Torque arm ①
3. Disconnect:
 - Brake cable ②



4. Remove:
 - Axle nut
 - Axle shaft
5. Unhook:
 - Drive chain ① (from drive sprocket)
6. Remove:
 - Rear wheel

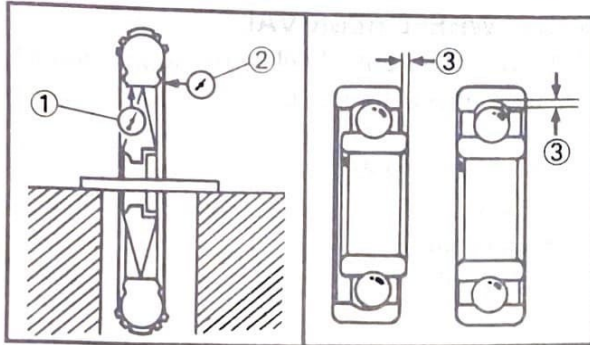


INSPECTION

1. Eliminate any corrosion from parts.
2. Inspect:
 - Front axle
 Roll the axle on a flat surface.
 Bends → Replace.

WARNING:

Do not attempt to straighten a bent axle.

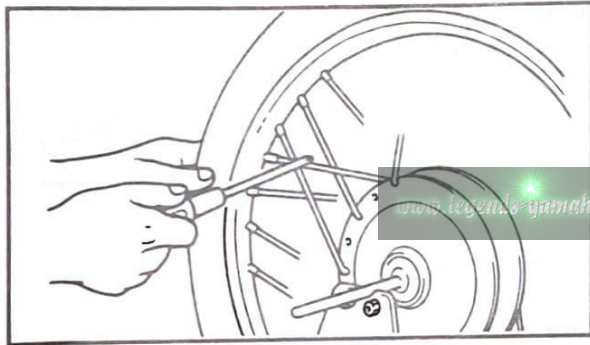


3. Inspect:
 - Wheel
Cracks/Bends/Warpage → Replace.
4. Measure:
 - Wheel runout

Rim Runout Limits:
 Radial ①: 2.0 mm (0.08 in)
 Lateral ②: 2.0 mm (0.08 in)

Over specified limit → Adjust spoke or check bearing play ③

4



5. Check:
 - Loose spokes
Turn the wheel and tap the spokes with a screwdriver.

NOTE: _____
 A tight spoke will emit a clear, ringing tone; a loose spoke will sound flat.

6. Tighten:
 - Loose spokes

Spoke:
 6 Nm (0.6 m•kg, 4.3 ft•lb)

NOTE: _____
 Check the wheel runout after tightening spoke.

7. Inspect:
 - Wheel bearings
Wheel hub play/Wheel turns roughly → Replace.

If bearings need replacement, take the wheels to your Yamaha dealer for this service.

REAR BRAKE INSPECTION

1. Measure:
 - Brake shoes (Thickness)
 - Out of specification → Replace.

① Measuring point



Brake Shoe Thickness:
4 mm (0.16 in)
Replacement Limit:
2 mm (0.08 in)

2. Inspect:
 - Brake shoes
 - Glazed parts → Sand with coarse sandpaper.

3. Inspect:
 - Brake drum (Inner surface)
 - Oil → Wipe off brake drum with rag soaked in lacquer thinner or solvent.
 - Scratches → Polish brake drum lightly and evenly with emery cloth.

4. Measure:
 - Brake drum inside diameter
 - Out of specification → Replace.

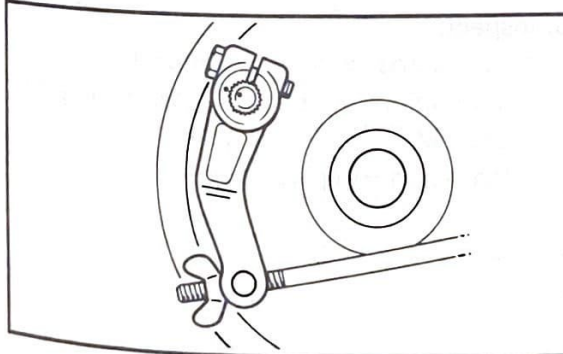
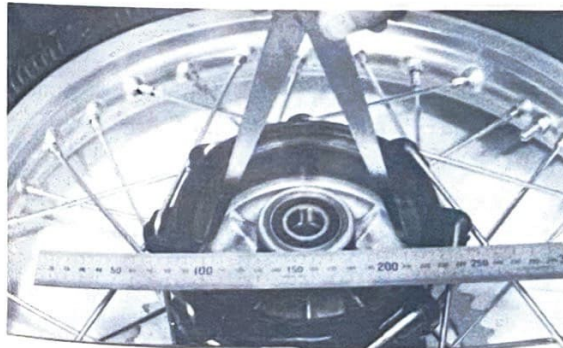
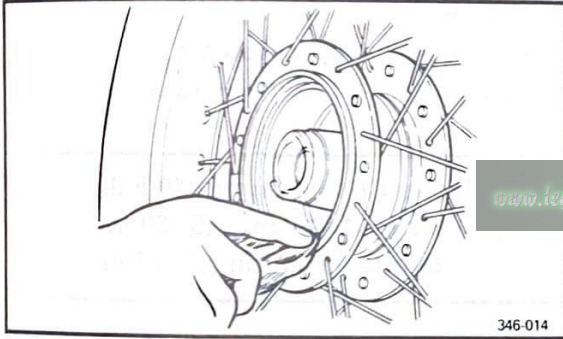
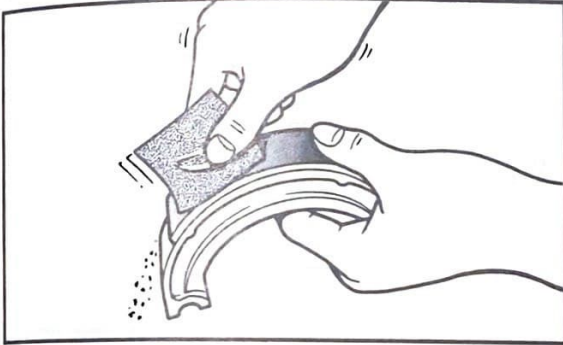
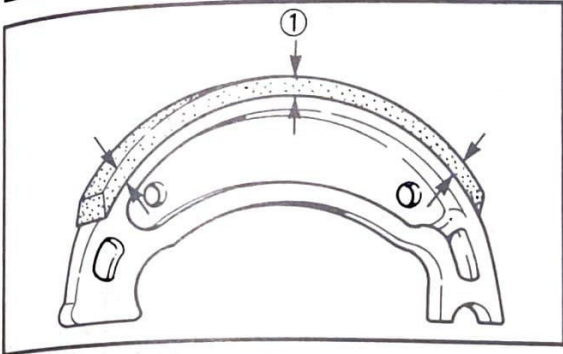


Brake Drum Wear Limit:
131 mm (5.16 in)

5. Remove:
 - Camshaft

NOTE: _____
 When removing the brake cam lever from the shaft, put match marks on both the cam lever and the shaft.

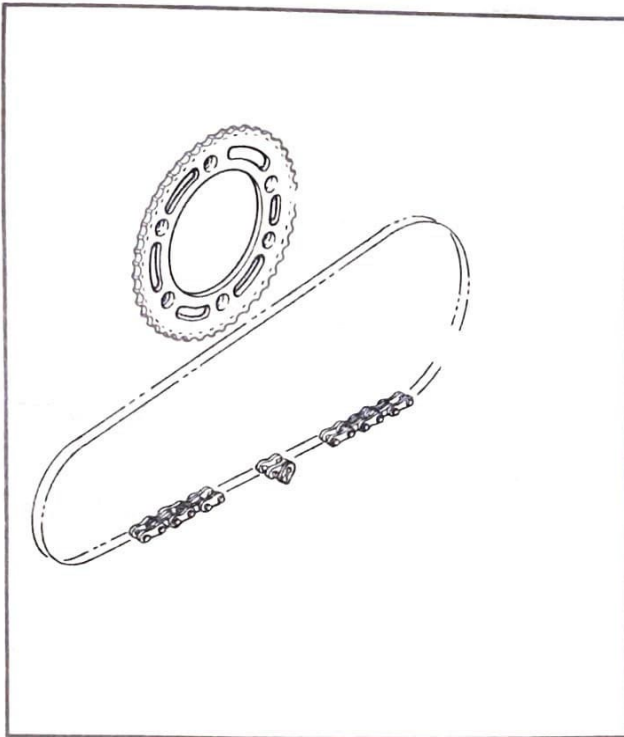
6. Inspect:
 - Cam face
 - Wear → Replace camshaft.
 - Condition OK → Grease camshaft.



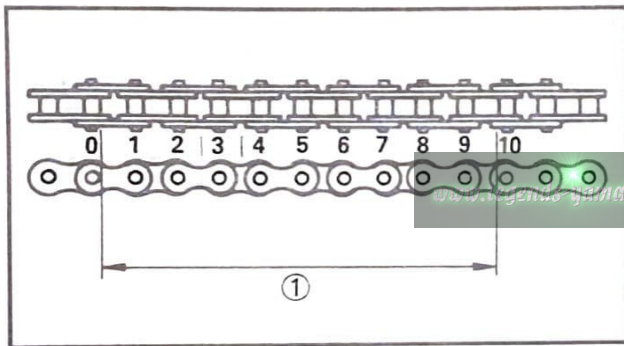


SPROCKETS AND CHAIN

Tuning and repair parts



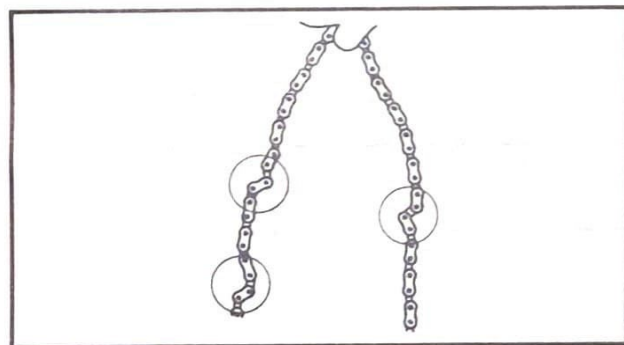
Part name	Size	Part number
Drive sprocket (STD)	13T	23X-17461-30
	14T	23X-17461-40
	15T	23X-17461-50
Lock washer		90215-21239
Driven sprocket (STD)	44T	39W-25444-01
	45T	39W-25445-00
	46T	39W-25446-00
	48T	39W-25448-00
	50T	39W-25450-00
	52T	39W-25452-00
Chain	113L + joint	94585-20114
Chain joint		94685-20001



1. Measure:

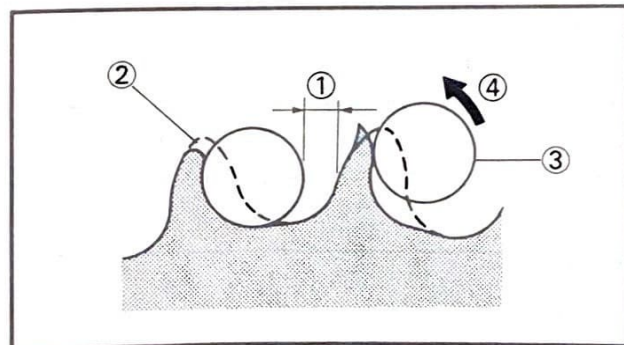
- Drive chain length (10 links) ①
Out of specification → Replace.

Drive Chain Length (10 links):
 New: 148.6 mm (5.850 in)
 Limit: 151.5 mm (5.965 in)



2. Check:

- Drive chain stiffness
Clean and oil the chain and hold as illustrated
Stiff → Replace drive chain.

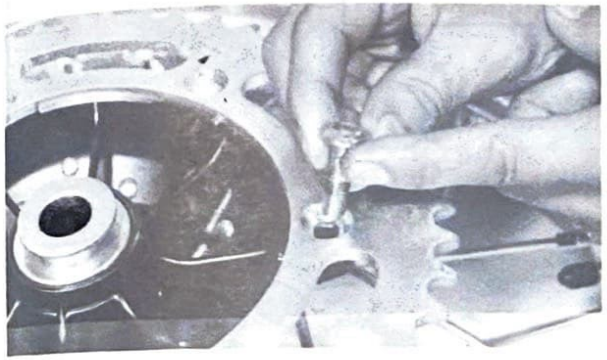
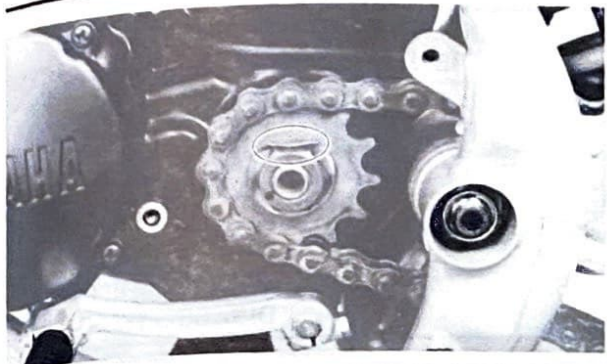


3. Inspect:

- Drive sprocket/Driven sprocket
More than 1/4 teeth ① wear → Replace sprocket.
Bent teeth → Replace sprocket.


- ② Correct
- ③ Roller
- ④ Slip off

4



NOTE:

- When replacing the drive sprocket, always use a new lock washer. After tightening the sprocket nut to the specification, be sure to lock it with the lock washer.
- When installing the driven sprocket, lightly smear grease on the fitting bolts.



Drive Sprocket Securing Nut:
75 Nm (7.5 m•kg, 54 ft•lb)
Driven Sprocket Securing Nut:
30 Nm (3.0 m•kg, 22 ft•lb)

WHEEL INSTALLATION

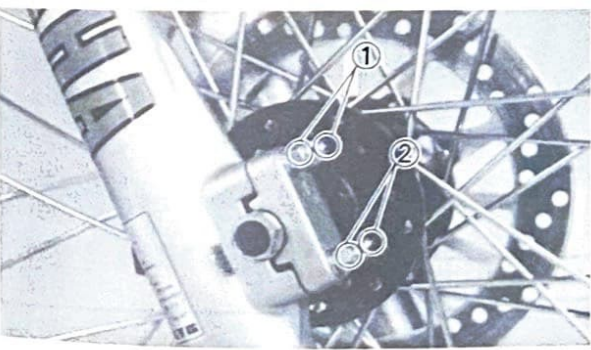
When installing wheels, reverse the removal procedure taking care of the following points.


- Lightly smear grease on:
 - * The shafts
 - * The bearings and oil seal lips
 - * The O-ring and dust cover interior for the rear brake shoe plate
 - * The oil seal and collar outer circumference from the torque arm.
- Be sure to adjust the chain slack.
(Refer to page 2-13 of "Drive Chain").
- Adjust the play in the brake lever and pedal.
- Make sure nuts are properly tightened.

NOTE:

When tightening the axle holder nuts, first, tighten the nuts on the upper side of axle holder.

- ① 1st
- ② 2nd



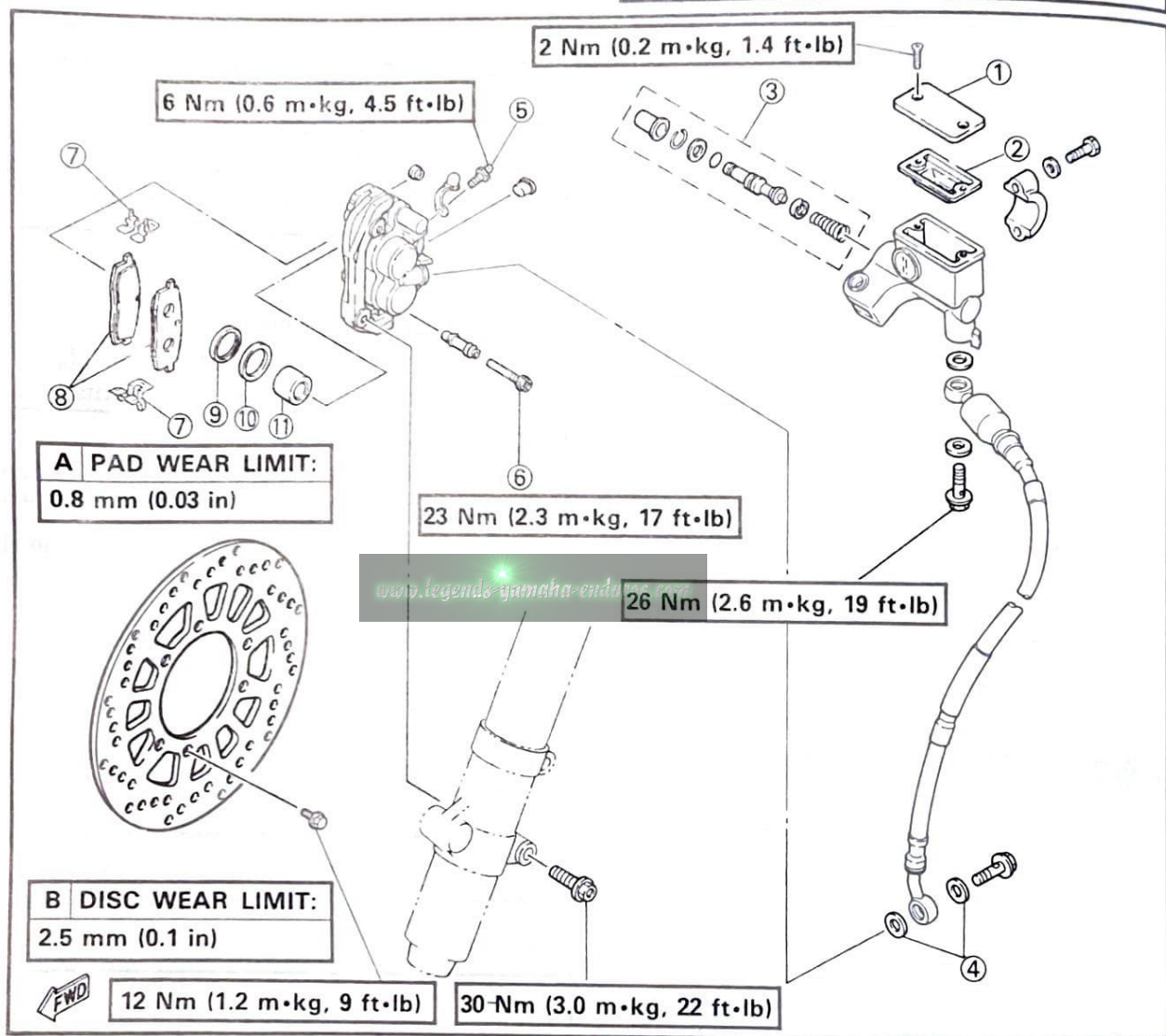


Front Wheel Axle:
60 Nm (6.0 m•kg, 43 ft•lb)
Axle Pinch Bolt:
10 Nm (1.0 m•kg, 7.2 ft•lb)
Rear Wheel Axle:
100 Nm (10.0 m•kg, 72 ft•lb)
Torque Arm-Brake Shoe Plate:
23 Nm (2.3 m•kg, 17 ft•lb)
Torque Arm—Frame:
29 Nm (2.9 m•kg, 21 ft•lb)

FRONT DISC BRAKE

RECOMMENDED BRAKE COMPONENT REPLACEMENT SCHEDULE	
BRAKE PADS	AS REQUIRED
PISTON SEAL, DUST SEAL	EVERY 2 YEARS
BRAKE HOSES	EVERY 4 YEARS
BRAKE FLUID	REPLACE ONLY WHEN BRAKES DISASSEMBLED

- ① Cap
- ② Rubber cap
- ③ Master cylinder kit
- ④ Copper washer
- ⑤ Bleed screw
- ⑥ Caliper bolt
- ⑦ Pad spring
- ⑧ Pad
- ⑨ Oust seal
- ⑩ Piston seal
- ⑪ Piston



CAUTION:

Disc brake components rarely require disassembly. **DO NOT:**

- Disassembly components unless absolutely necessary.
- Use solvents on internal brake component.
- Use contaminated brake fluid for cleaning.
Use only clean brake fluid.
- Allow brake fluid to come in contact with the eyes otherwise eye injury may occur.
- Allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.
- Disconnect any hydraulic connection otherwise the entire system must be disassembled, drained, cleaned, and then properly filled and bled after reassembly.



BRAKE PAD REPLACEMENT

1. Remove:
 - Caliper bolt ①
2. Turn the caliper body counterclockwise.
3. Remove:
 - Pads ②

4. Inspect:
 - Pads

Out of specification → Replace.

① Wear indicator



Pad Wear Limit:
0.8 mm (0.03 in)

5. Install:
 - Pads
 - Caliper bolt

Hold the pads in the caliper bracket and turn the caliper body clockwise.



Caliper Bolt:
23 Nm (2.3 m•kg, 17 ft•lb)

CALIPER

Caliper Disassembly

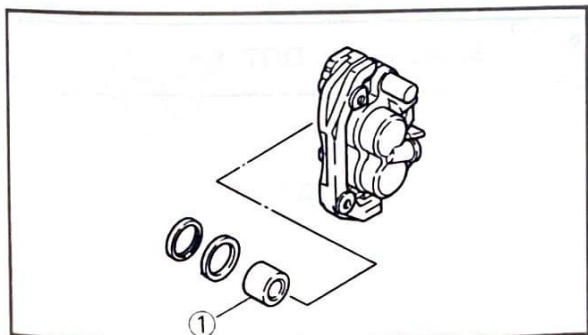
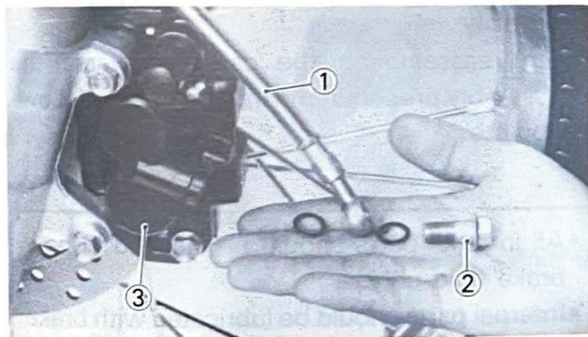
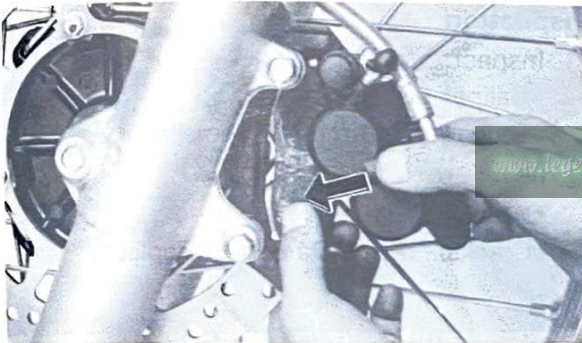
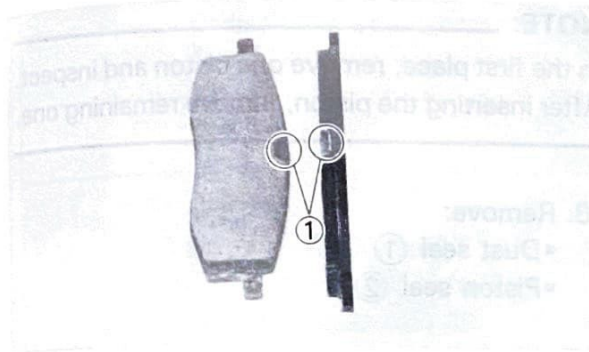
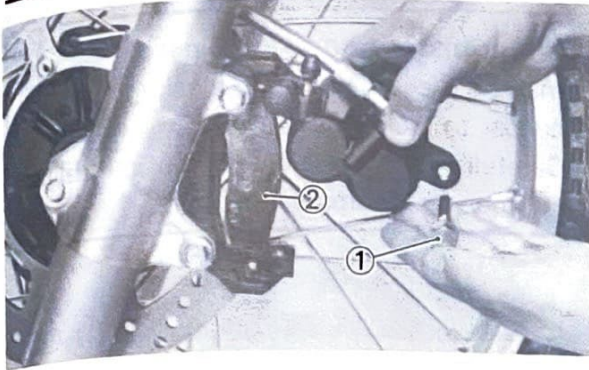
1. Remove:
 - Brake hose ①
(Place the open hose end into the container.)
 - Caliper bolt ②
 - Caliper ③

2. Remove:
 - Piston ①

Use compressed air and proceed carefully.

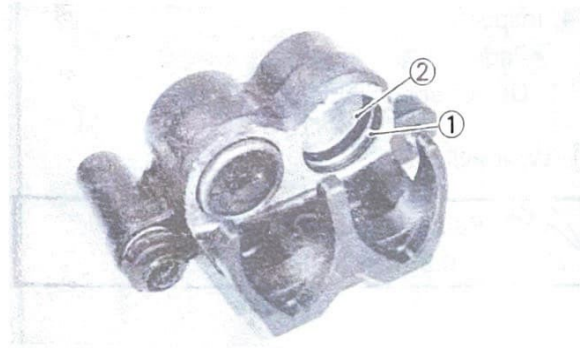
WARNING:

- Cover piston with rag and use extreme caution when expelling piston from cylinder.
- Never attempt to pry out piston.



**Caliper piston removal steps:**

- Insert a piece of wooden block ① into the caliper to lock one caliper.
- Carefully force the piston out of the caliper cylinder with compressed air.

**NOTE:**

In the first place, remove one piston and inspect. After inserting the piston, remove remaining one.

3. Remove:

- Dust seal ①
- Piston seal ②

Inspection**1. Inspect:**

- Caliper piston assembly
Damage/Scratches → Replace.

2. Inspect:

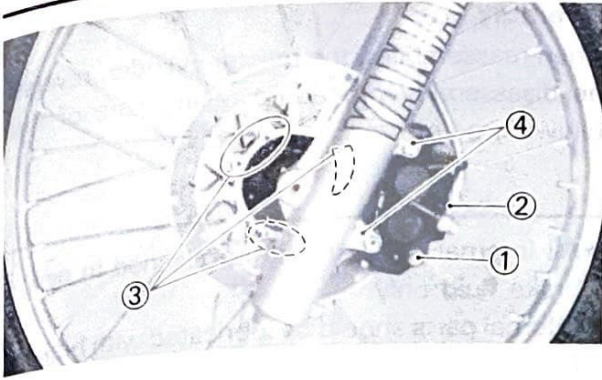
- Brake hose
Cracks/Frayed/Damage → Replace.

**4****Assembly**

When reassembling the caliper, reverse the disassembly procedure taking care of the following points.

- All internal parts should be cleaned in new brake fluid only.
- Internal parts should be lubricated with brake fluid when installed.

**Brake Fluid: DOT #3**



- Replace the piston seal and dust seal whenever a caliper is disassembled.
- Tighten each bolts to specification.



Caliper Bolt ①:

23 Nm (2.3 m•kg, 17 ft•lb)

Brake Hose ②:

26 Nm (2.6 m•kg, 19 ft•lb)

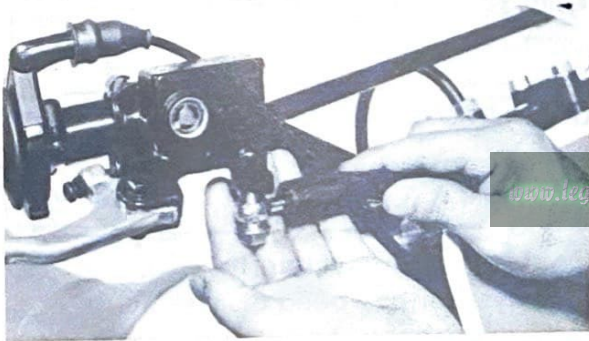
Brake Disc ③:

12 Nm (1.2 m•kg, 9 ft•lb)

Caliper Bracket ④:

30 Nm (3.0 m•kg, 22 ft•lb)

- Bleed the air completely from the brake system.

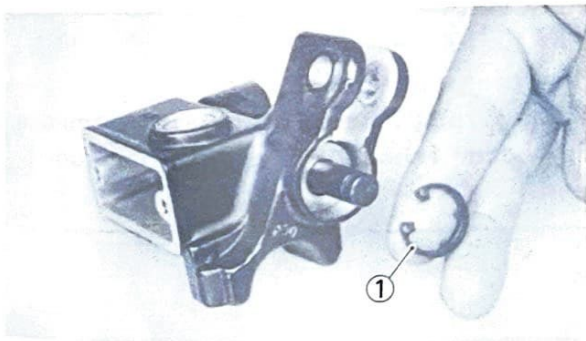


MASTER CYLINDER

Master Cylinder Disassembly

1. Remove:
 - Brake lever
 - Brake hose
 - Master cylinder

4

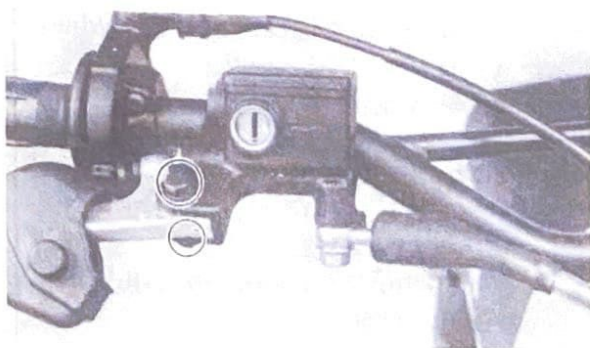


2. Remove:
 - Cap
 - Rubber cap (Drain the brake fluid)
 - Dust boot
 - Circlip ①
 - Master cylinder kit



Inspection

1. Inspect:
 - Master cylinder body
Scratches/Wear → Replace.
 - Master cylinder kit
Wear/Damage → Replace as a set.

**Assembly**

When reassembling the master cylinder, reverse the disassembly procedure taking care of the following points.

- All internal parts should be cleaned in new brake fluid only.
- Internal parts should be lubricated with brake fluid when installed.



Brake Fluid: DOT #3

- Tighten each bolts to specification.



Cap:

2 Nm (0.2 m•kg, 1.4 ft•lb)

Brake Hose:

26 Nm (2.6 m•kg, 19 ft•lb)

- Bleed the air completely from the brake system.

AIR BLEEDING

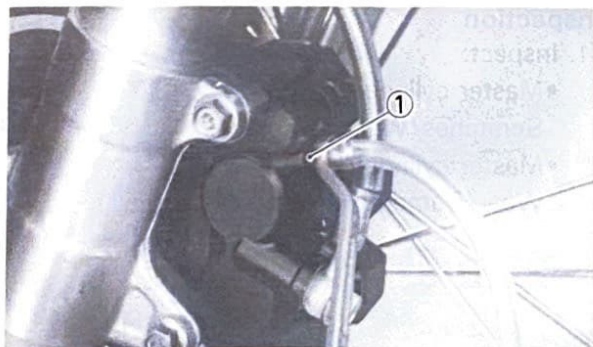
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www.legends-yamaha.com **WARNING:**

Bleed the brake system if:

- The system has been disassembled.
- A brake hose has been loosened or removed.
- The brake fluid is very low.
- The brake operation is faulty.

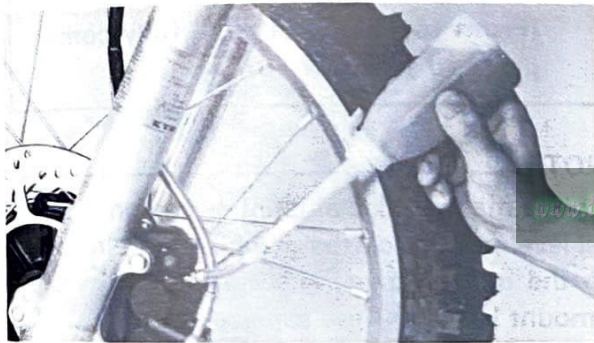
A dangerous loss of braking performance may occur if the brake system is not properly bled.

**Air bleeding steps:**

- Add proper brake fluid to the reservoir.
- Install diaphragm.
Be careful not to spill any fluid or allow the reservoir to overflow.
- Connect the clear plastic tube (4.5 mm, 3/16 in inside dia.) tightly to the caliper bleed screw ①.



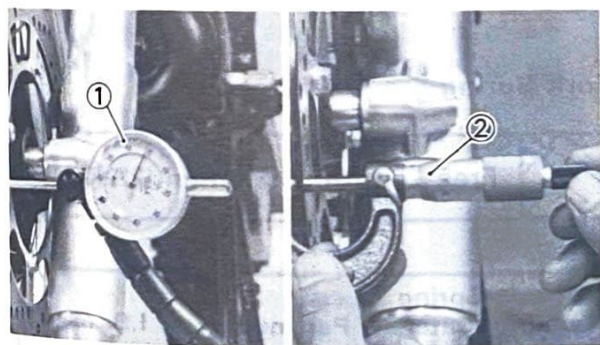
- d. Place the other end of the tube into a container.
- e. Slowly apply the brake lever several times.
- f. Pull the lever in. Hold the lever in position.
- g. Loosen the bleed screw and allow the lever to travel towards its limit.
- h. Tighten the bleed screw when the lever limit has been reached; then release the lever.
- i. Repeat steps (e) to (h) until all of the air bubbles have been removed from the system.



NOTE:

If the caliper and/or the master cylinder are drained of its brake fluid, inject fluid through the air bleed screw into the master cylinder using an oil feeder. Continue injecting oil until the fluid coming out at the master cylinder is free from air. While doing this, take care not to allow the fluid overflow. Then, bleed the air trapped in the caliper top by the above procedure.

4



BRAKE DISC

1. Measure:

- Deflection ①
- Thickness ②

Wear/Deflection out of specification → Replace.



Maximum Deflection:

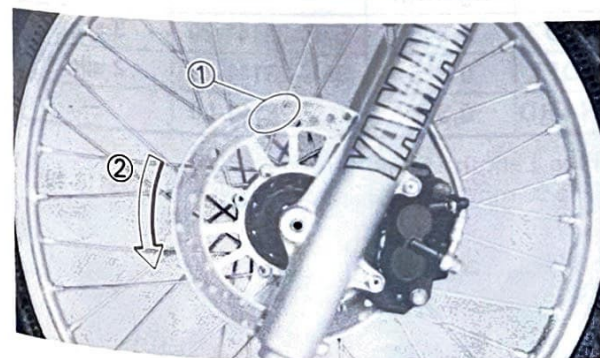
0.15 mm (0.006 in)

Minimum Disc Thickness:

2.5 mm (0.10 in)

NOTE:

When installing the brake disc, the slots on the disc should be positioned as shown.



① Slot

② Rotating direction



Brake Disc:

12 Nm (1.2 m•kg, 9 ft•lb)



FRONT FORK

FRONT FORK SETTING

For details of front fork setting, refer to the Race Preparation and Tuning Manual. It is advisable to take a note of the standard setting data and specified range of adjustment.

Fork Oil

Recommended Oil:

Fork Oil 15 wt

Oil Quantity

564 cm³ (19.9 Imp oz, 19.1 US oz)

Oil Level:

STD 160 mm (6.30 in)

MIN. 190 mm (7.48 in)

MAX. 140 mm (5.51 in)

(From top of inner tube fully compressed without spring.)

NOTE:

Unless the specified amount oil conforms to the oil level making on the machine, have recourse to the marked level. Also check that both oil amount levels are the same.

Fork Spring

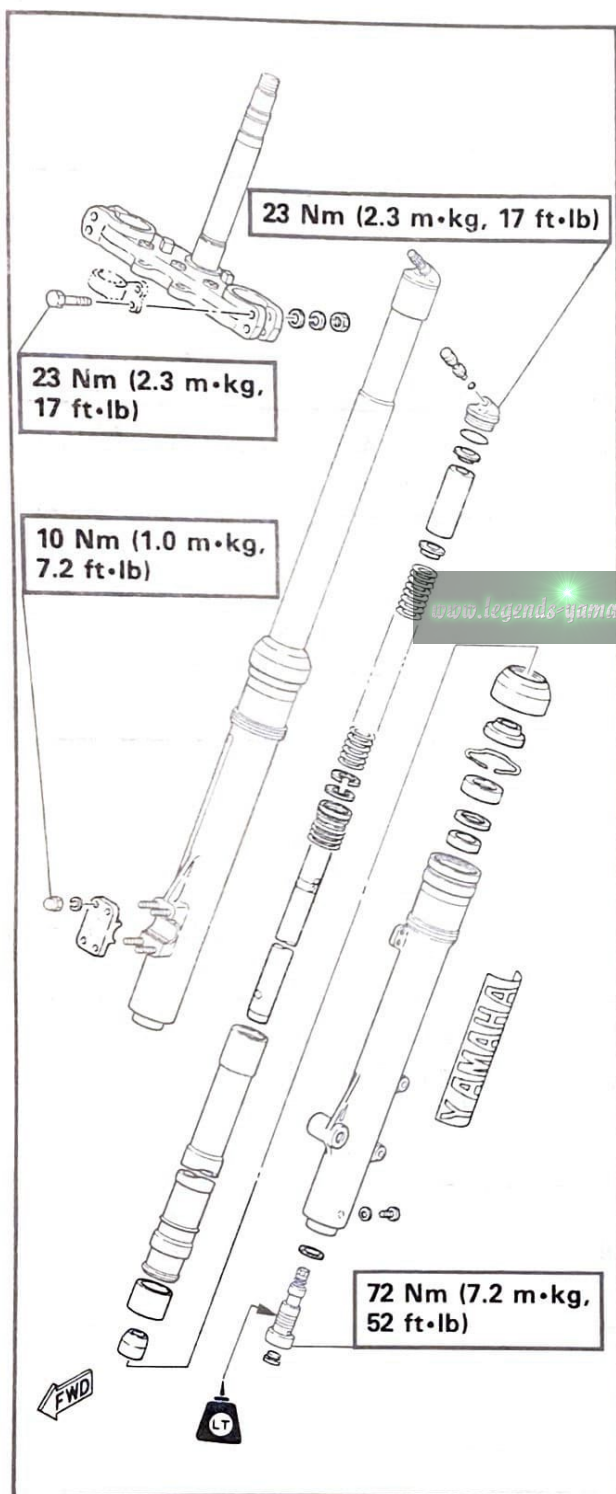


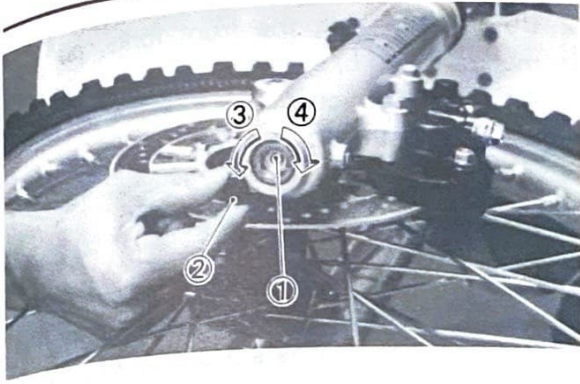
Free Length: 543.5 mm (21.40 in)

Type	Spring rate kg/mm	Part number	I.D. mark
STD	0.345	57H-23141-20	3 slits
SOFT	0.325	39X-23141-20	2 slits
* HARD	0.375	1LV-23141-L0	—

*Free Length: 537.5 mm (21.16 in)
Use 90 mm (3.54 in) spacer (P/NO. 1LV-23118-10).

4





Compression Damping

STD SETTING: 0 clicks in
[MIN. ~ MAX.]: [0 ~ 16]

- ① Compression damping adjuster
- ② Rubber cap
- ③ SOFT
- ④ HARD

CAUTION:

- Be sure to fit the rubber cap to prevent malfunction due to dust, lint, etc.
- Use a torque below 10 Nm (1.0 m•kg, 7.2 ft•lb) for turning the adjuster.



Fork Tube Height

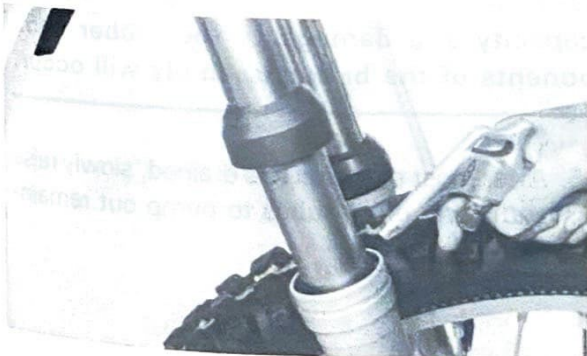
STD 6 mm (0.24 in)
MIN. 0 mm (0 in)
MAX. 10 mm (0.39 in)

Air Pressure

STD 0 kPa (0 kg/cm², 0 psi)
MAX. 245 kPa (2.5 kg/cm², 35.6 psi)

HANDLING NOTE

1. After running over a dusty or sandy course, remove the dust cover and remove the dust around the front forks. This cleaning will protect the fork oil seals against damage.



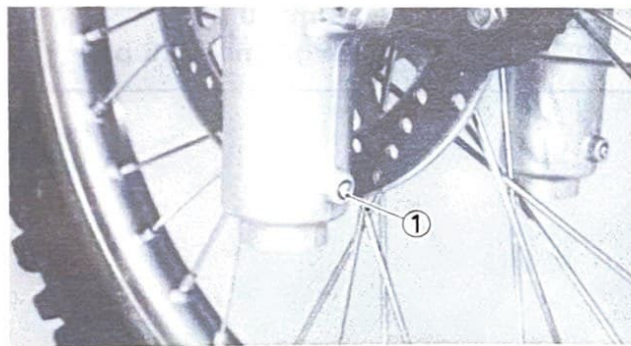
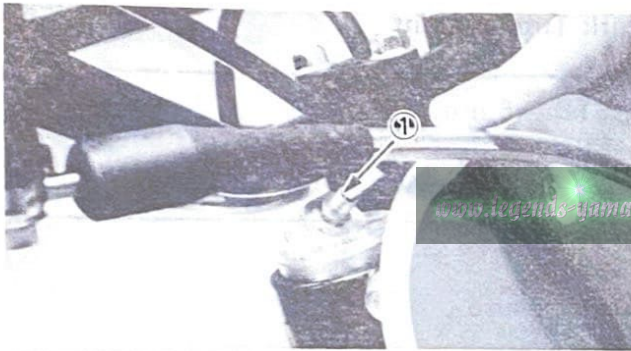


2. Before removing the front forks, put the marks, R and L, on the tops of cap bolts and spring seat so you will not be confused when reinstalling the front forks.

CAUTION:

To prevent an accidental explosion of air, the following instructions should be observed:

- Use only air or nitrogen for filling. Never use any other gas. An explosion may result.
- Never throw the front fork into fire.
- Before removing the cap bolts or front forks, be sure to extract the air from the air chamber completely.

**FORK OIL REPLACEMENT****WARNING:**

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

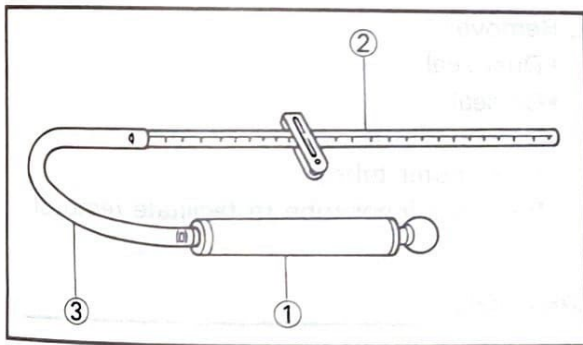
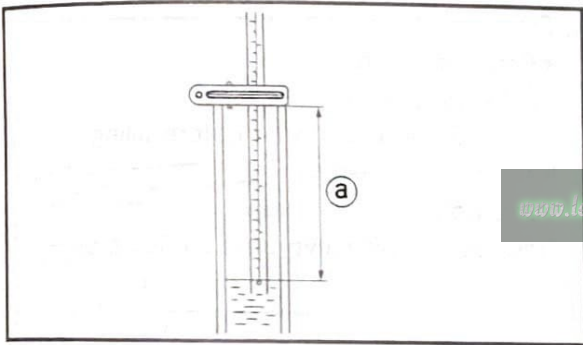
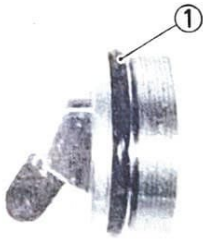
1. Remove:
 - Valve cap
2. Depress the air valve ① to allow the air to escape from the fork legs.
3. Place receptacle under drain hole.
4. Remove:
 - Drain screw ①
 Drain the fork oil.

WARNING:

Do not allow any oil to contact the disc brake components. If oil is discovered, be sure to remove it, otherwise diminished braking capacity and damage to the rubber components of the brake assembly will occur.

5. After most of the oil has drained, slowly raise and lower outer tubes to pump out remaining oil.

4



6. Loosen:
 - Front fork upper pinch bolt
7. Remove:
 - Handlebar/•Cap bolt
 - Spring seat/•Spacer
 - Spring seat/•Spring

8. Inspect:
 - Cap bolt O-ring ①
 - Drain screw gasket
 - Wear/Damage→Replace.

9. Install:
 - Drain screw

10. Fill:
 - Front fork
 - (with correct amount of oil to get your desired oil level.)
 - After filling pump the forks slowly up and down to distribute the oil.

11. Measure:
 - Oil level ②
 - Out of your preference→Add or reduce oil.

NOTE: www.legendaenduros.com

Measure the oil level from top of the fork tube with the oil level tool or the tape measure roll.

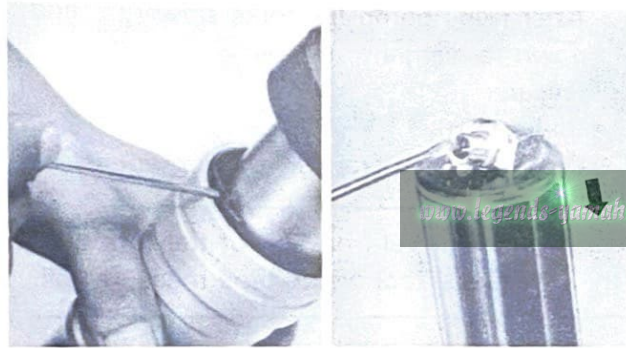
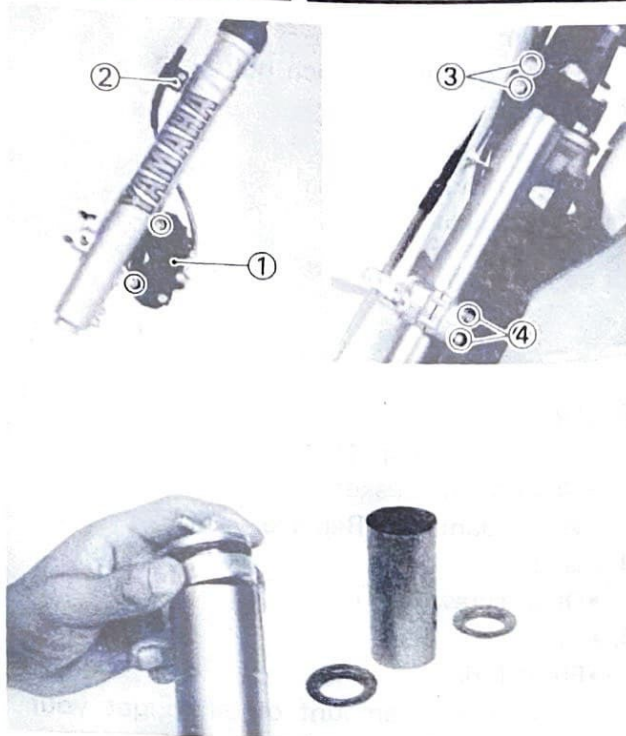
NOTE: _____
 The oil level tool can be made easily as shown in illust. Fork tube must be fully bottomed.

- ① Syringe
- ② Glass tube
- ③ Vinyl hose

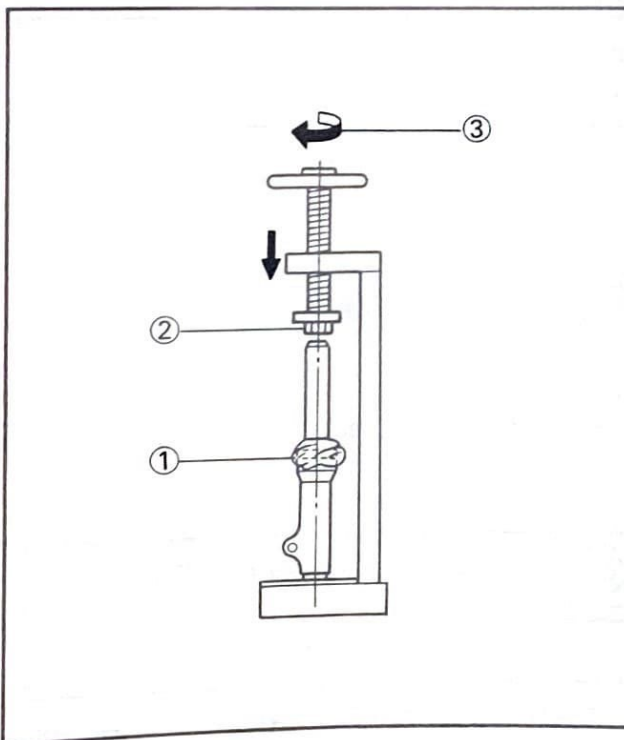
12. Install:
 - Spring/•Spring seat
 - Spacer/•Spring seat
 - Cap bolt/•Handlebar

	Cap Bolt: /Handlebar: /Fork
	Pinch Bolt:
	23 Nm (2.3 m•kg, 17 ft•lb)

13. Set the air pressure to specification or your preference.



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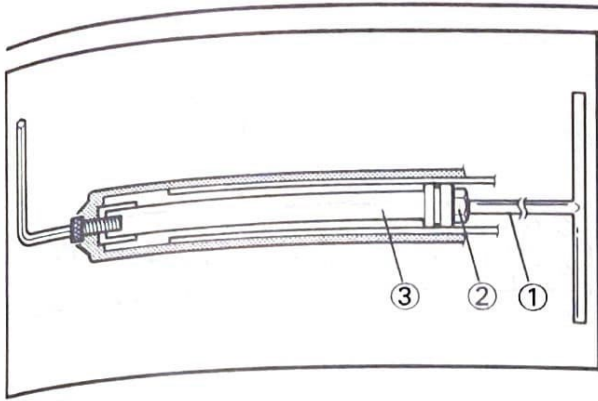
REMOVAL AND DISASSEMBLY

1. Place the machine on a suitable stand to keep it stable while the front wheel and forks are removed.
2. Remove:
 - Front wheel
 - Brake caliper ①
 - Brake hose bracket ②
3. Loosen:
 - Cap bolt (slightly)
 - Upper front fork pinch bolt ③
 - Lower front fork pinch bolt ④
4. Remove:
 - Front fork assembly (from the machine)
 - Cap bolt/•Spacer
 - Spring seats/•Dust cover/•Snap ring
5. Fill:
 - Fork inner tube (with fork oil)
 Stretch the inner tube before filling.
6. Install:
 - Cap bolt
7. Depress the air valve until oil flows out.
8. Remove:
 - Dust seal
 - Oil seal
 - Oil seal washer (from outer tube.)
 Press the inner tube to facilitate removal.

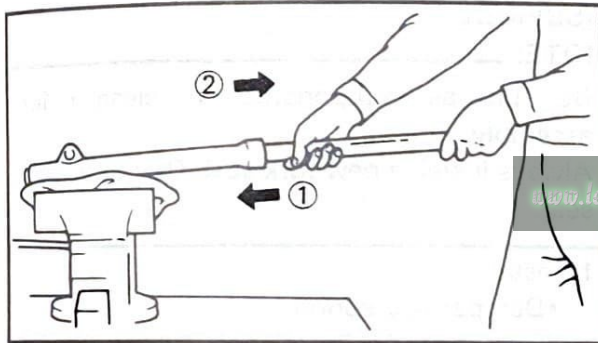
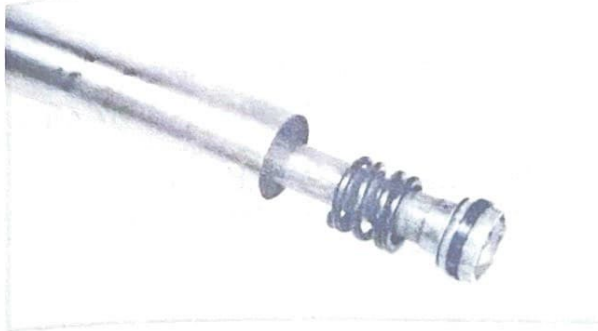
CAUTION:

- If air enters the inner tube or it is compressed abruptly, oil may spurt out or the oil seal may be ejected.
- Never touch the inner tube during a disassembly operation.
- Be sure to wrap the oil seal with a rag for safety.

- ① Wrap with rag
- ② Spacer
- ③ Turn slowly



9. Remove:
 - Oil seal
 - Cap bolt
10. Drain:
 - Fork
11. Remove:
 - Damper rod securing bolt
 Use T-handle ① (YM-01326) and Fork Cylinder Holder (YM-33962) ② to lock the damper rod ③.
12. Remove:
 - Damper rod
 - Damper rod spring
 - Guide bushing

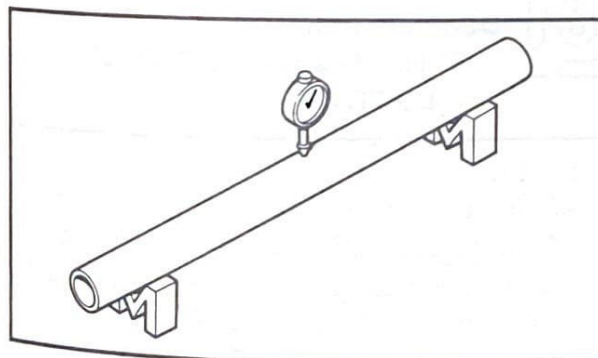


Guide bushing removal steps:

- Hold fork leg in a vise horizontally.
- Put in slowly ① the inner fork tube just before it bottoms out and then pull it back quickly ②.
- Repeat this step until the inner fork tube can be pulled out from the outer fork tube (usual 2 or 3 times).

CAUTION:

Don't bottom out the inner fork tube in the above step, or the oil lock piece will be damaged.

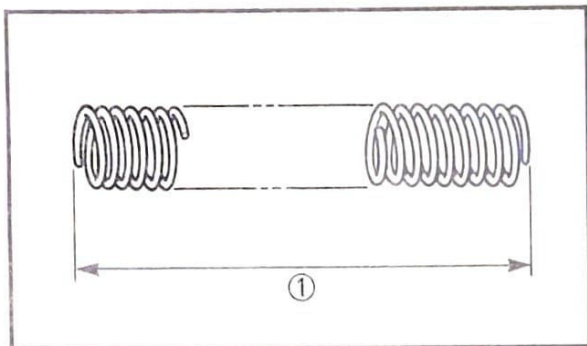


INSPECTION


1. Inspect:
 - Inner fork tube/Outer fork tube
 - Severe scratches/Bends → Replace.
 - Damaged oil lock valve → Replace.

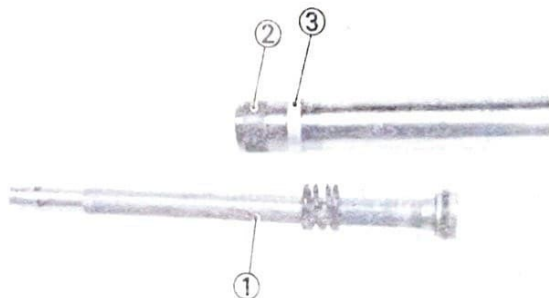
WARNING:

Do not attempt to straighten a bent fork tube as this may dangerously weaken the tube.



2. Inspect:
- Fork spring ①
Over specified limit → Replace.

 **Fork Spring Free Length Limit:**
538 mm (21.18 in)



3. Inspect:
- Damper rod ①
Worn damper rod seal → Replace.
Contamination → Wash and blow out all passages.
 - Slide metal ② / Guide bushing ③
Damage / Wear → Replace



ASSEMBLY

NOTE:

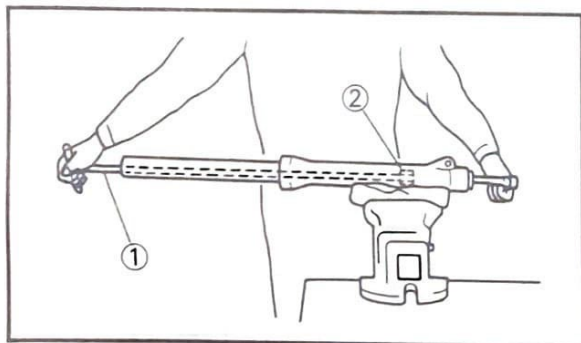
- Be sure all components are clean before assembly.
- Always install a new fork seal. Do not re-use a seal.


1. Install:

- Damper rod spring
- Damper rod
Allow rod to slide slowly down the inner fork tube until it protrudes from the bottom.
- Taper spindle
- Inner fork tube

2. Install:

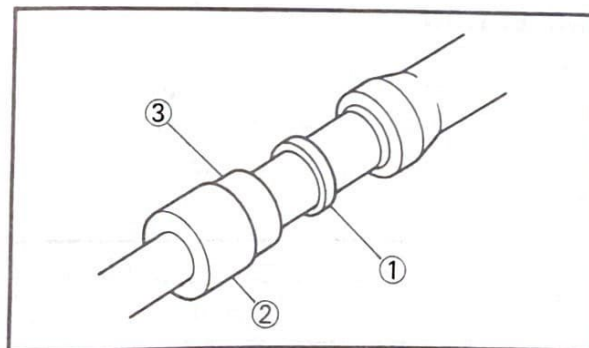
- Damper rod securing bolt
Hold damper rod with Fork Cylinder Holder ② (YM-33962) and T-handle ① (YM-01326).



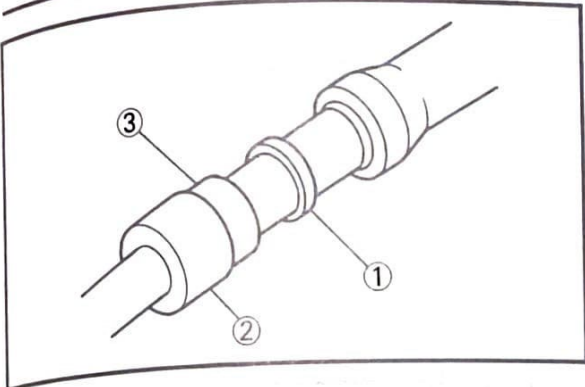
 **Damper Rod:**
72 Nm (7.2 m•kg, 52 ft•lb)
LOCTITE®

3. Install:

- Guide bushing ①
Press guide bushing into the outer fork tube with Fork Seal Driver ② (YM-08020) and Adapter (YM-33963) ③.
- Oil seal washer



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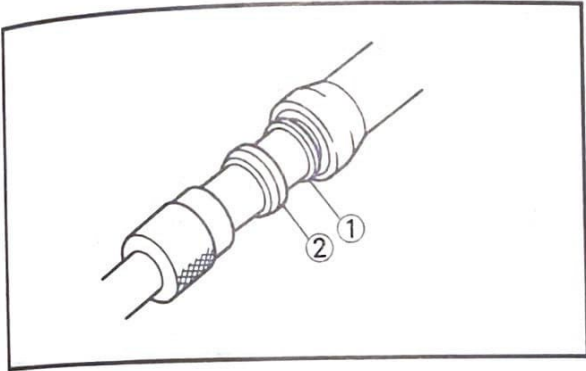


4. Install:

- Fork oil seal ①
Press fork oil seal into the outer fork tube with Fork Seal Driver ② (YM-08020) and Adapter (YM-33963) ③.

CAUTION: _____

Be sure oil seal numbered side face upward.



5. Install:

- Snap ring ①
- Dust seal ②
Use Fork Seal Driver (YM-08020) and Adapter (YM-33963).
- Dust cover

6. Fill:

- Inner tube (with fork oil)

(See page 4-15 "FORK OIL REPLACEMENT.")

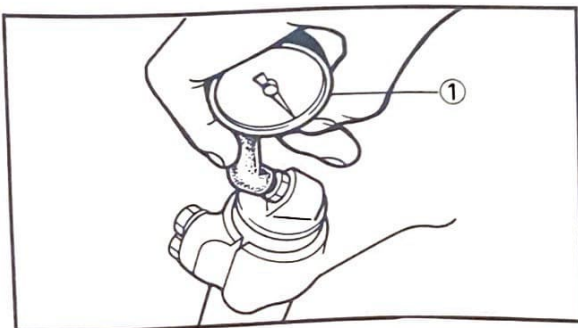
7. Continue assembly by reversing of Removal and Disassembly sequence.

Install and torque tighten each component as specified.

4



- Upper Pinch Bolts:
- Lower Pinch Bolts:
- Cap Bolt:
23 Nm (2.3 m•kg, 17 ft•lb)
- Caliper Bracket:
30 Nm (3.0 m•kg, 22 ft•lb)
- Front Wheel Axle:
60 Nm (6.0 m•kg, 43 ft•lb)



8. Fill:

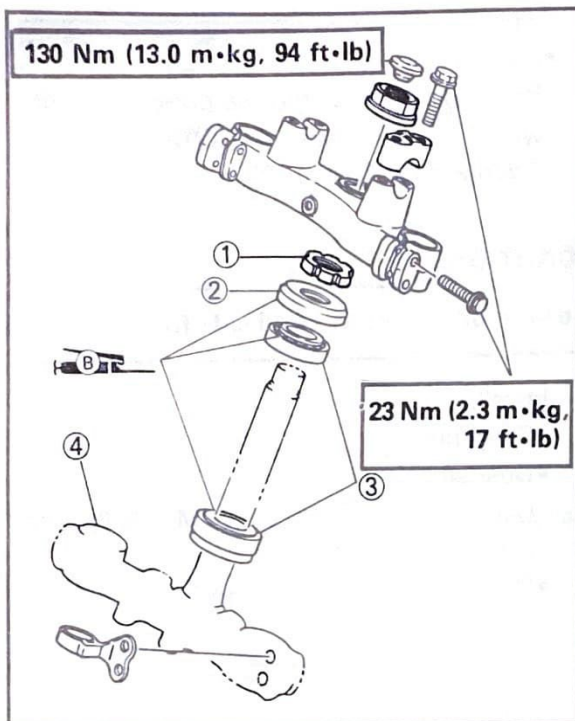
- Front fork (with air)

Maximum Air Pressure:
245 kPa (2.5 kg/cm², 35.6 psi)

① Air check gauge

9. Install:

- Air valve cap



STEERING HEAD

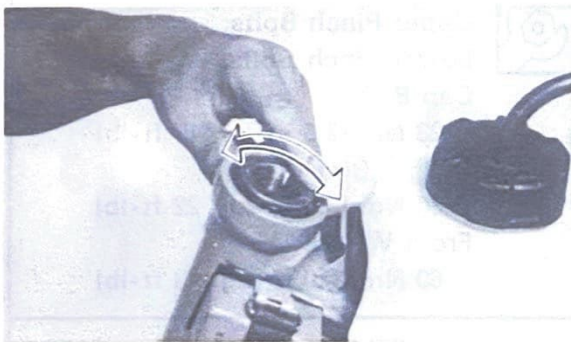
(Adjustment begins on page 2-15 of chapter 2.)

DISASSEMBLY

1. Remove:
 - Front wheel
 - Front forks
 - Front fender
 - Number plate
 - Handlebar assembly
 - Steering stem nut
 - Handle crown
2. Remove:
 - Ring nut ①
Use Steering Nut Wrench (YU-01268).
Remove while holding the steering stem.
 - Bearing cover ②
 - Bearing ③
 - Steering stem ④

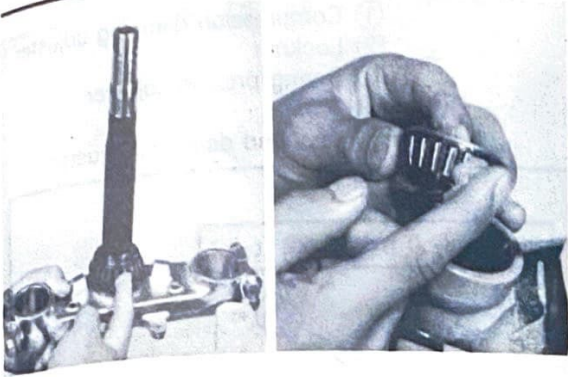
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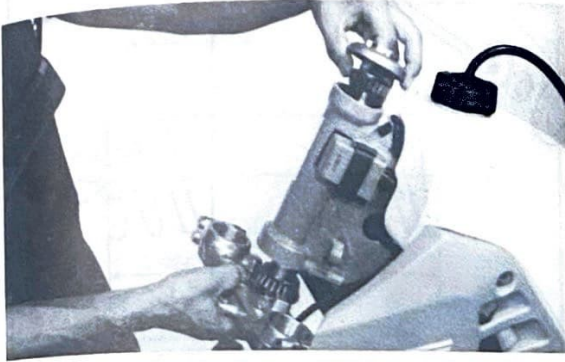


INSPECTION

1. Wash the bearings in solvent.
2. Inspect:
 - Bearing
Pitting/Damage → Replace races and bearing.
(Install the bearings in the races. Spin the bearings by hand. If the bearings hang up or are not smooth in their operation in the races, replace bearings and races.)

**ASSEMBLY**

1. Lubricate:
 - Bearings
 - Bearing cover seal

**Wheel Bearing Grease**

2. Install:
 - Steering stem
 - Upper bearing
 - Bearing cover
 - Ring nut

3. Tighten:

- Ring nut

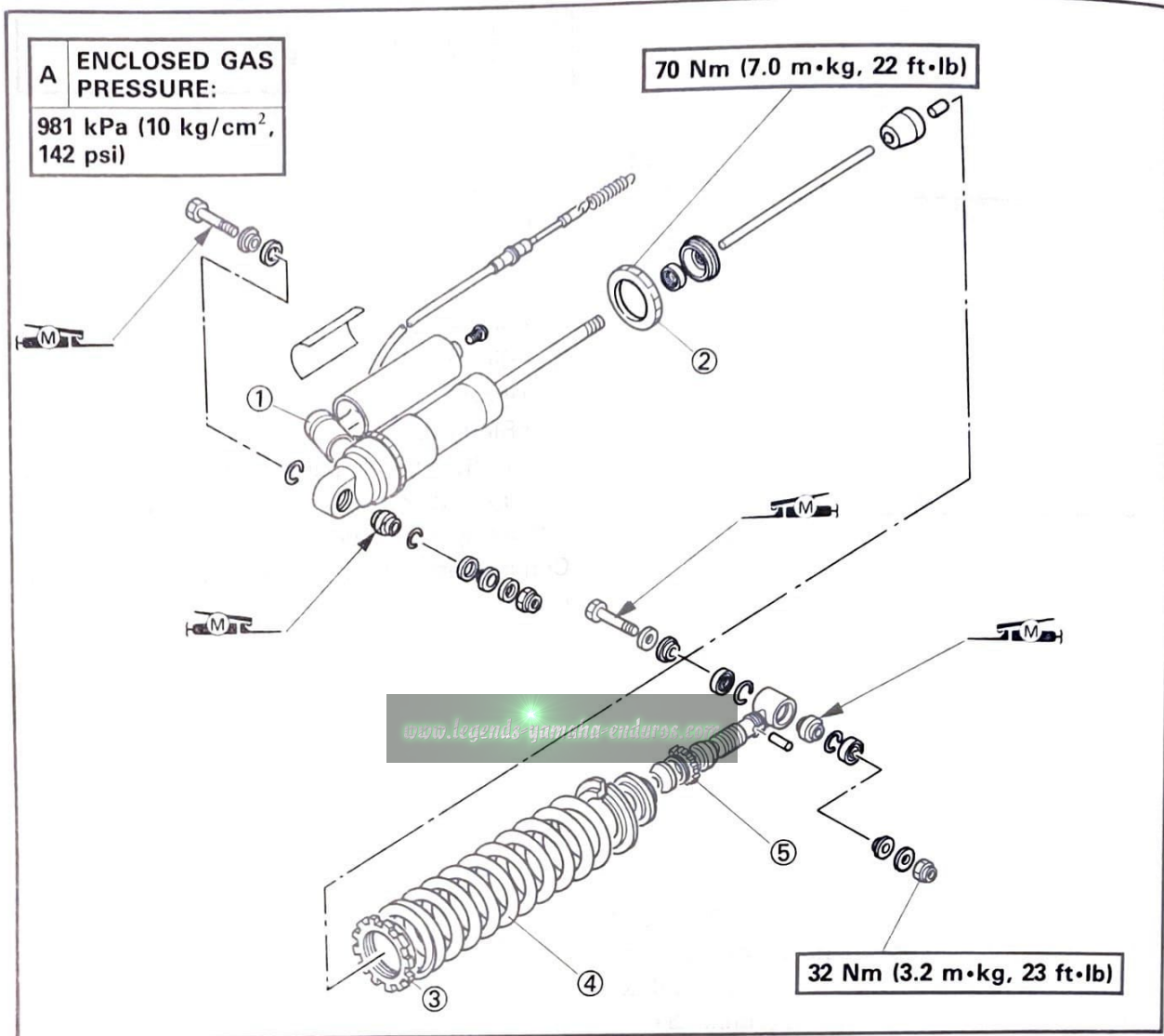
Tighten the ring nut so all free play is taken up, but so the steering stem can still pivot freely from lock to lock.

Continue assembly by reversing removal sequence.

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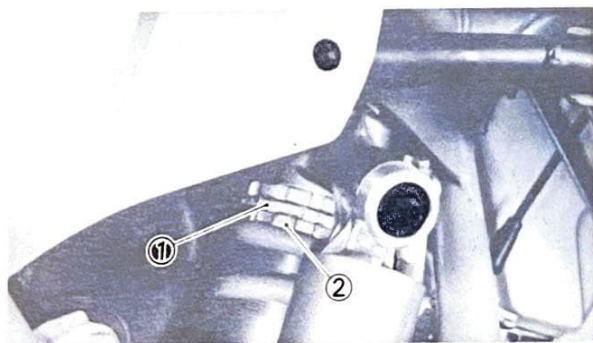
**REAR SHOCK
(MONOCROSS SUSPENSION
"DE CARBON" SYSTEM)**

- ① Compression damping adjuster
- ② Locknut
- ③ Spring preload adjuster
- ④ Spring
- ⑤ Rebound damping adjuster



REAR SHOCK SETTING

For details of rear shock setting, refer to the Race Preparation and Tuning Manual. It is advisable to take a note of the standard setting and specified range of adjustment.



Spring Preload (Installed Length)

STD	270 mm (10.63 in)
MIN.	251 mm (9.88 in)
MAX.	273.5 mm (10.77 in)

- ① Locknut
- ② Adjuster

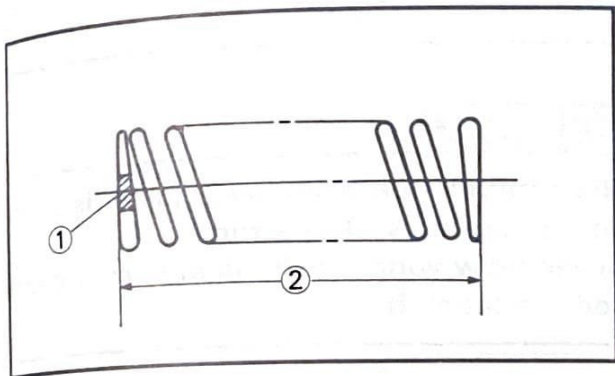
REAR SHOCK



The length of the spring (installed) changes 1.5 mm (0.06 in) per turn of the adjuster.

CAUTION:

Never attempt to turn the adjuster beyond the maximum or minimum setting.



Locknut:
70 Nm (7.0 m•kg, 50 ft•lb)

Shock Spring



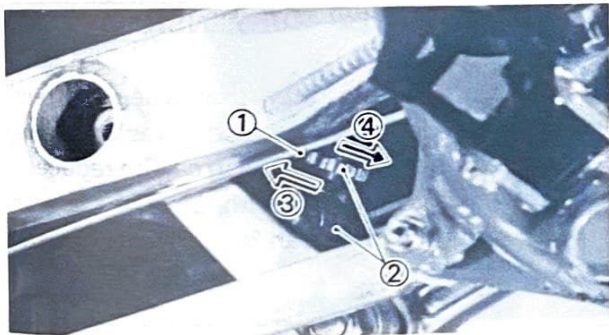
Free Length: 278 mm (10.94 in)

Type	Spring rate	Part number	I.D. Collor
STD	5.50	1LV-22212-00	Black – Blue
SOFT	5.25	1LV-22212-10	Black – White
HARD	5.75	1LV-22212-20	Black – Green

- ① I.D. Color
- ② Free length

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Rebound Damping

STD SETTING:
10 clicks out
[Min ~ Max] [25 ~ 0]

CAUTION:

Don't turn out the adjuster more than 25 clicks from the stiffest position.

- ① Rebound damping adjuster
- ② STD adjustment marks
- ③ SOFT
- ④ STIFF

Compression Damping

STD SETTING:

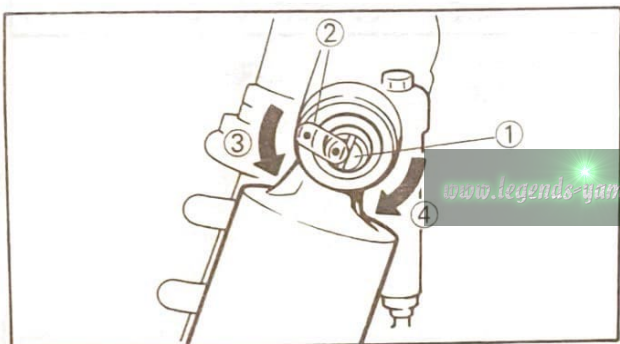
10 clicks in
[Min ~ Max] [0 ~ 28]

CAUTION:

Don't turn in the adjuster more than 28 clicks from the softest position.

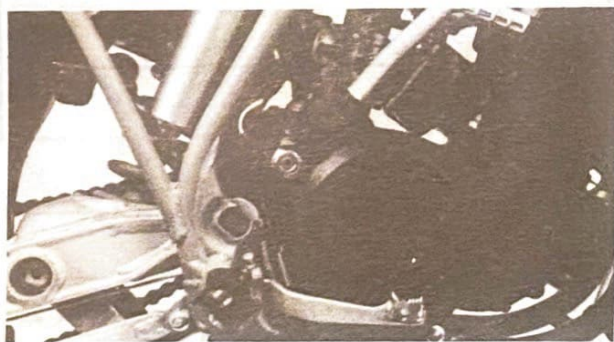
WARNING:

The compression damping adjuster is very hot immediately after a run. Never allow your bare hand or part of your body to touch it.



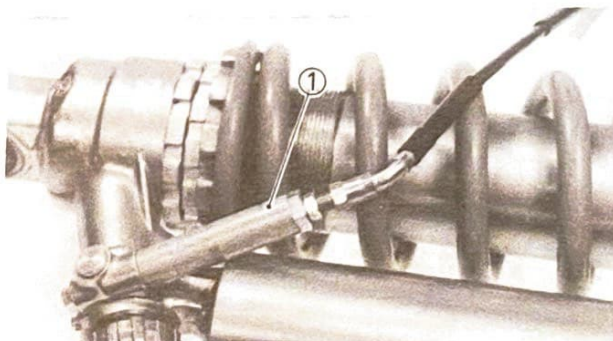
- ① Compression damping adjuster
- ② STD adjustment marks
- ③ SOFT
- ④ STIFF

4



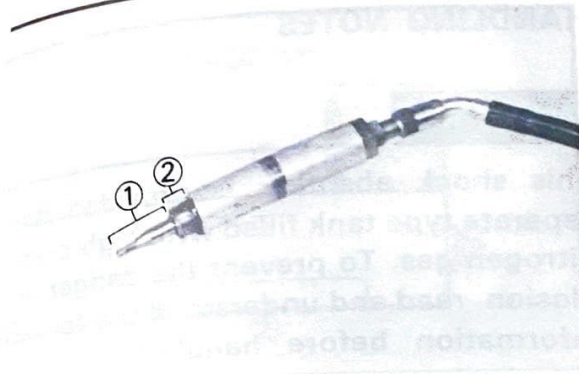
BRAKE ACTUATED SUSPENSION SYSTEM (B.A.S.S.)

This system is so designed that when the rear brake pedal is depressed, the compression damping force of the rear suspension can be reduced. Thanks to this system, the hopping of the rear wheel on rough terrain can be controlled to ensure safe braking.



Control Cable Replacement and Adjustment

1. Unhook:
 - Control cable (from the brake pedal)
2. Remove:
 - Control cable
 - Turn the housing ① counterclockwise to remove.



3. Apply:

- Molybdenum disulfide grease ①
- Three-Bond # 1303 ②

CAUTION:

Use care so the bond will not stick on the rod.

4. Install:

- Control cable

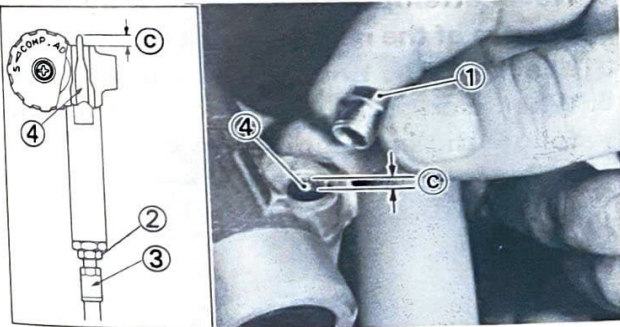
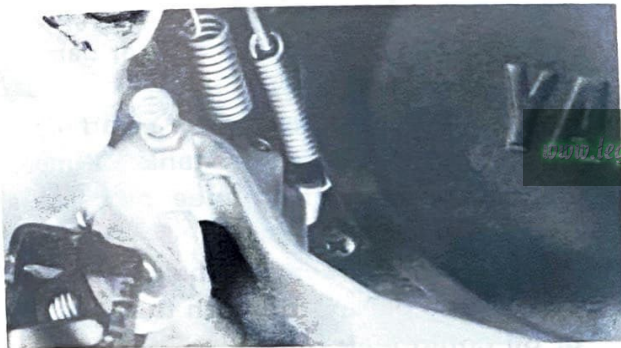
	Housing: 12 Nm (1.2 m•kg, 8.7 ft•lb)
--	--

5. Hook:

- Control cable
(with the brake pedal)

6. Adjust:

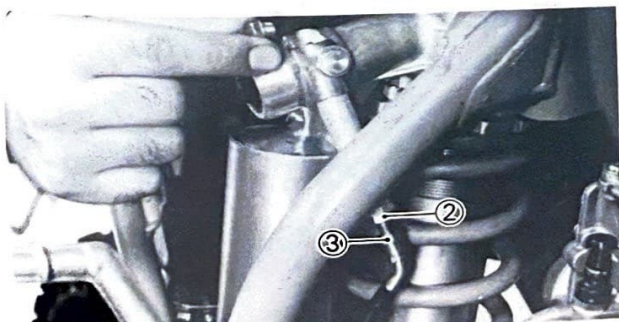
- Control cable



Control cable adjustment steps:

1. Set the brake pedal height within 0 ± 10 mm (0 ± 0.4 in) ① from the footrest top and adjust the brake pedal play to 10 ~ 20 mm (0.4 ~ 0.8 in) ②. The adjustments are required to allow the interlocking mechanism to operate properly.
2. Remove the cap ① on top of the housing and loosen the locknut ②.
3. Turn the adjuster ③ so that the top end of the rod in the housing projects out 1.5 mm (0.06 in) ④.
4. Make sure the rod ④ moves the moment that the brake pedal is depressed.
5. Install the cap carefully so that no mud or water enters the housing.

	Locknut ②: 5 Nm (0.5 m•kg, 3.6 ft•lb)
	Cap ①: 6 Nm (0.6 m•kg, 4.3 ft•lb)





HANDLING NOTES

WARNING:

This shock absorber is provided with a separate type tank filled with high-pressure nitrogen gas. To prevent the danger of explosion, read and understand the following information before handling the shock absorber.

The manufacturer can not be held responsible for property damage or personal injury that may result from improper handling.

1. Never tamper or attempt to disassemble the cylinder or the tank and never loosen the nut ①; otherwise, oil will spurt from the cylinder due to the high pressure in the nitrogen gas tank.
2. Never throw the shock absorber into an open flame or other high heat. The shock absorber may explode as a result of nitrogen gas expansion and/or damage to the hose.
3. Be careful not to damage any part of the gas tank. A damaged gas tank will impair the damping performance or cause a malfunction.
4. Take care not to scratch the contact surface of the piston rod with the cylinder; or oil could leak out.
5. Never attempt to remove the plug at the bottom of the nitrogen gas tank. It is very dangerous to remove the plug.
6. When scrapping the shock absorber, follow the instructions on disposal.



NOTES ON DISPOSAL (YAMAHA DEALERS ONLY)

Before disposing the shock absorber, be sure to extract the nitrogen gas. To do so, drill a 2 or 3 mm (0.08 ~ 0.12 in) hole ① through the tank at a position 25 ~ 30 mm (1.0 ~ 1.2 in) from the bottom end of the tank. At this time, wear eye protection ② to prevent eye damage from escaping gas and/or metal chips.

25 ~ 30 mm
(1.0 ~ 1.2 in)

①

②

WARNING:

To dispose of a damaged or worn-out shock absorber, take the unit to your Yamaha dealer for this disposal procedure.

REMOVAL

1. To remove the shock absorber, place the machine on a suitable stand to keep the machine stable while the shock absorber is removed.

2. Unhook:

- B.A.S.S. control cable ①

3. Remove:

- Connecting rod-relay arm securing bolt ②

4. Remove:

- Shock absorber upper securing bolt
- Shock absorber lower securing bolt

5. Remove:

- Shock absorber (from the machine)

6. Loosen:

- Locknut ①
- Adjuster ②

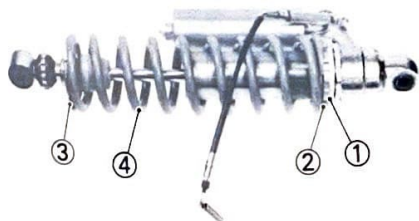
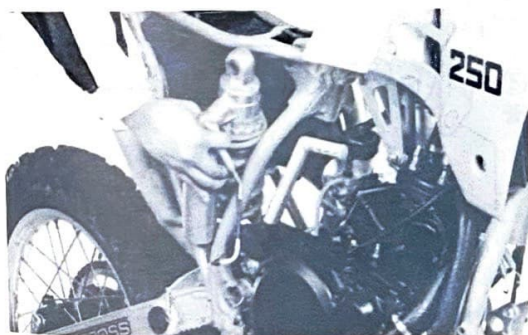
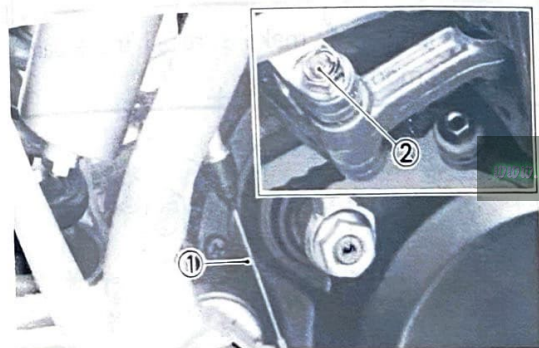
NOTE:

This will make it easy to remove the spring.

7. Remove:

- Spring retainers ③
- Spring ④

4



**INSTALLATION**

1. Install:

- Shock absorber

Reverse removal procedure taking care of the following points.

- Tighten the spring preload adjuster locknut and shock absorber securing bolts.

**Locknut:**

70 Nm (7.0 m•kg, 50 ft•lb)

Shock Absorber Securing Bolt:

32 Nm (3.2 m•kg, 23 ft•lb)

- Apply grease to the pivot shafts.

CAUTION:

Wipe off any excessive grease, and avoid getting grease on the brake shoes.

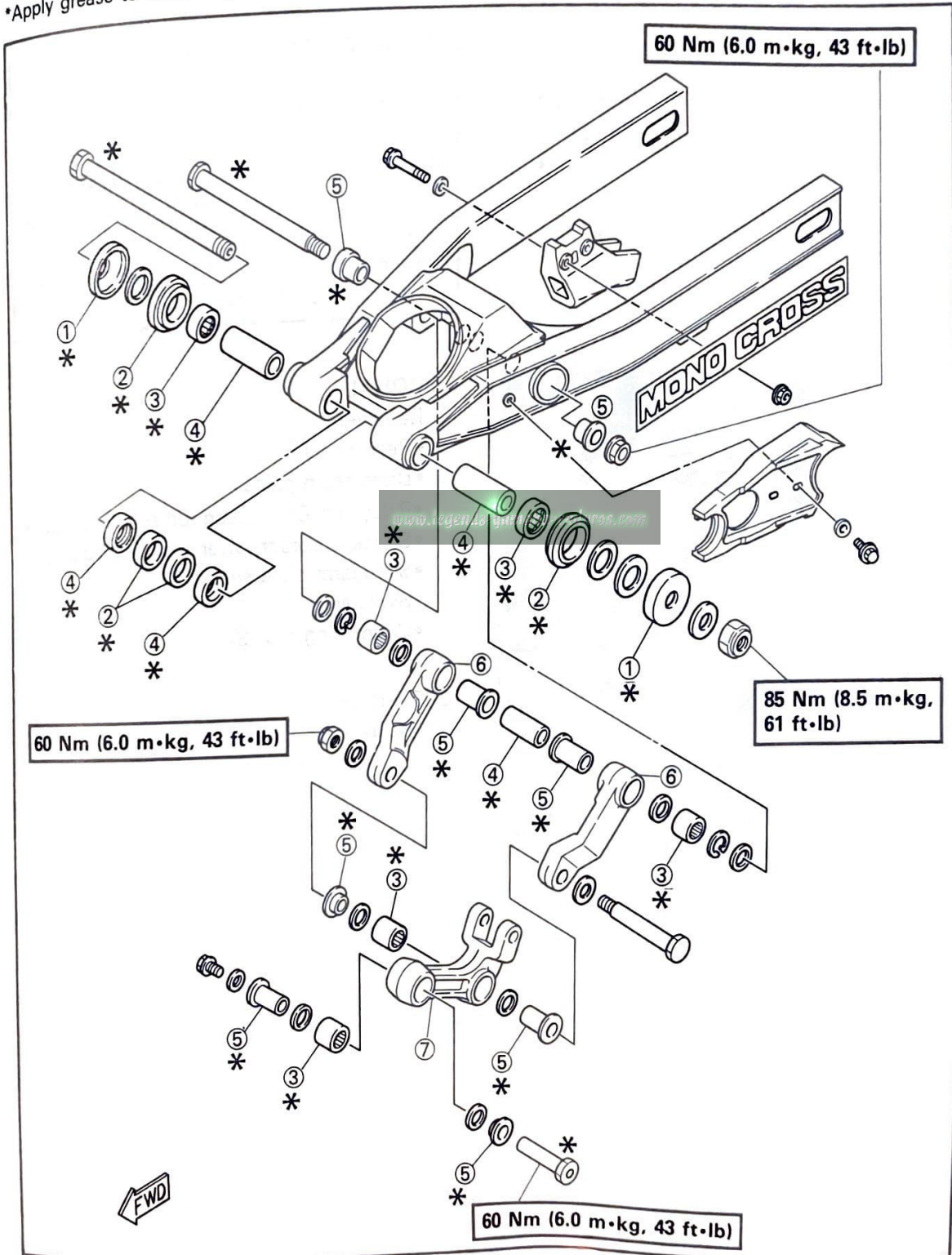
- After installing, make sure all these parts move smoothly.

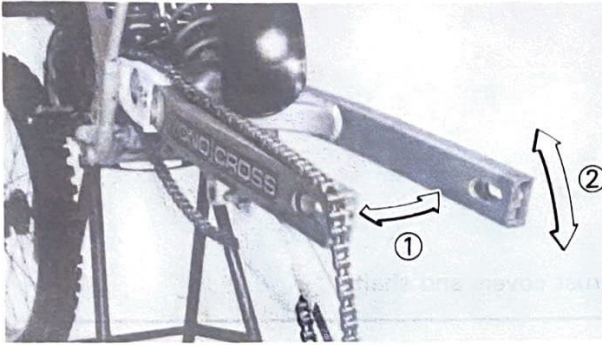
SWINGARM

- ① Thrust cover
- ② Oil seal
- ③ Bearing
- ④ Solid bush
- ⑤ Collar

- ⑥ Connecting rod
- ⑦ Relay arm

*Apply grease to all bearings, bushes, collars, oil seals, thrust covers and shafts.





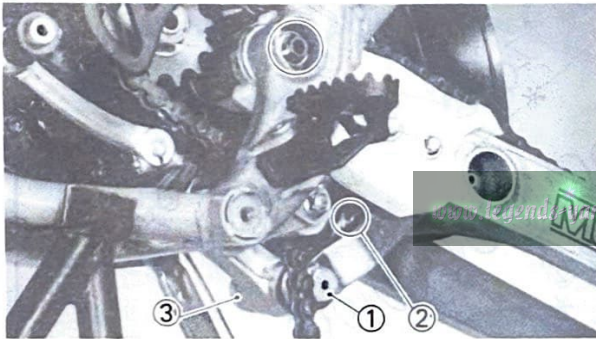
FREE PLAY INSPECTION

1. Check:

- Swingarm side play ①
Side play → Check bearing and collar.
- Swingarm up and down movement ②
Tightness/Binding/Rough spots → Replace bearings.

Free play inspection step:

- Remove the rear wheel.
- Remove the relay arm and connecting rod securing bolt.
- Inspect swingarm side play by moving it from side to side. (There should be on noticeable side play)
- Inspect swingarm up and down movement by moving it up and down.



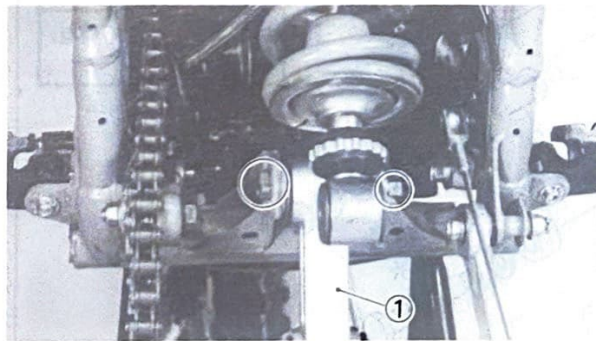
REMOVAL

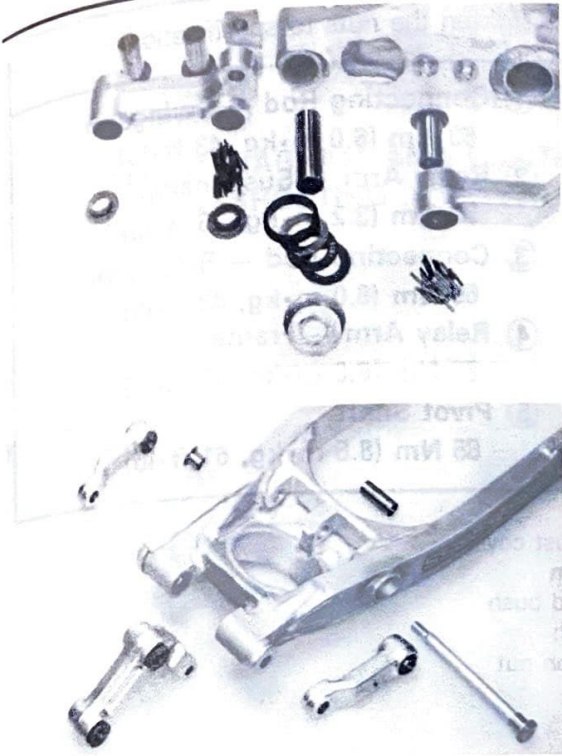
1. Remove:

- Rear wheel
- Drive chain guide
- Relay arm-Connecting rod securing bolt ①
- Shock absorber lower securing bolt ②
- Swingarm pivot shaft
- Swingarm
- Connecting rod ③

2. Remove:

- Relay arm ①





INSPECTION

1. Wash the bearings bushes, collars, thrust covers in a solvent.
2. Inspect:
 - Bearings (Needle/Race)
 - Collars
 - Bushes
 - Oil seals
 Damage/Wear/Rust → Replace.
3. Inspect:
 - Swingarm
 - Relay arm
 - Connecting rod
 - Guard
 Damage/Wear → Repair/Replace.

INSTALLATION

Assemble the swingarm by reversing the removal procedure. Take care of the following precautions.

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- Apply grease to the portions of the swingarm.

Bush/Collar:

Coat all surfaces of bushes and collars with grease.

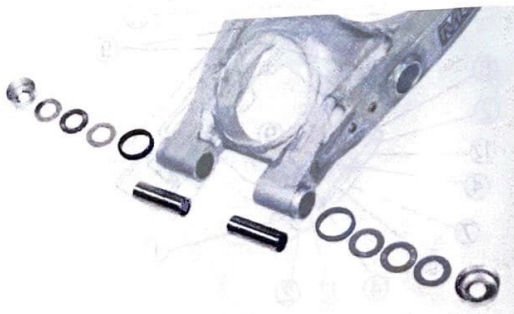
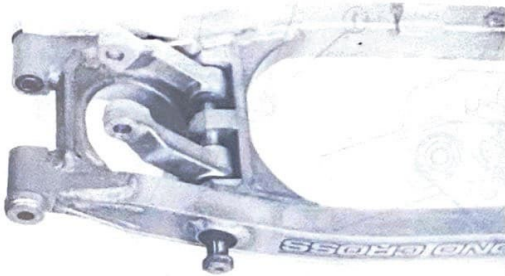
Fill the lip portion of oil seals with grease.

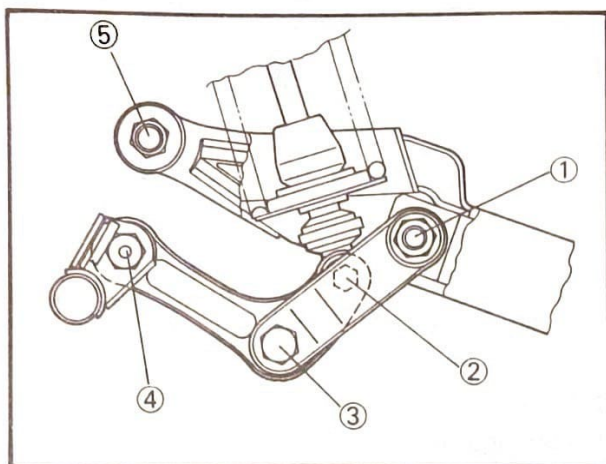
Thrust cover:

Fill inside of thrust cover with grease.

Pivot shaft:

Coat outside surface of shaft with grease.



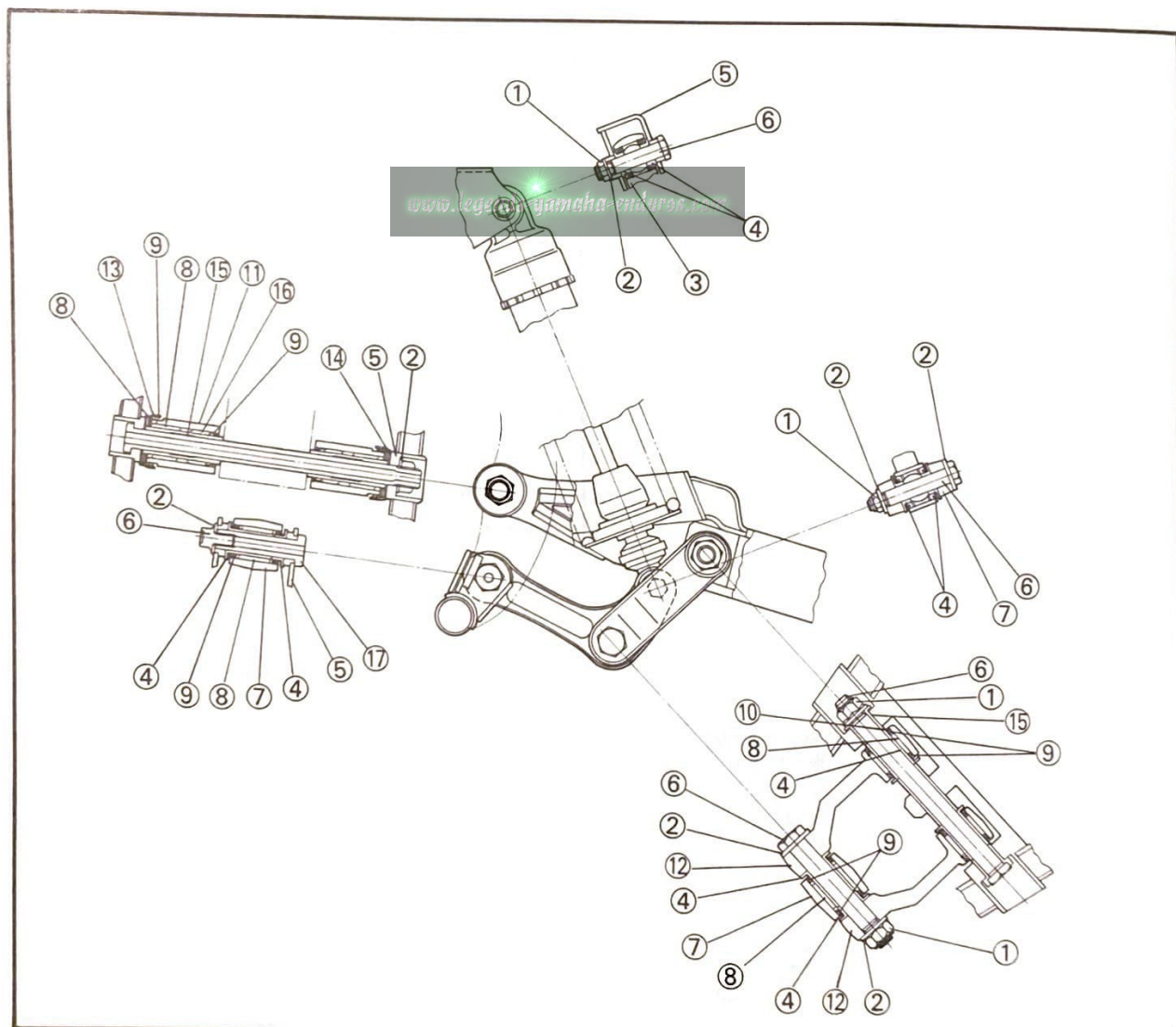


•Tighten the nuts to specification.

- ① Connecting Rod – Swingarm
60 Nm (6.0 m•kg, 43 ft•lb)
- ② Relay Arm – Suspension
32 Nm (3.2 m•kg, 23 ft•lb)
- ③ Connecting Rod – Relay Arm
60 Nm (6.0 m•kg, 43 ft•lb)
- ④ Relay Arm – Frame
60 Nm (6.0 m•kg, 43 ft•lb)
- ⑤ Pivot Shaft
85 Nm (8.5 m•kg, 61 ft•lb)

- | | | |
|-----------------------|---------------------|----------------|
| ① Self-looking nut | ⑦ Relay arm | ⑬ Thrust cover |
| ② Plane washer | ⑧ Bearing | ⑭ Shim |
| ③ Rear shock absorber | ⑨ Oil seal | ⑮ Solid bush |
| ④ Collar | ⑩ Circlip | ⑯ Bush |
| ⑤ Frame | ⑪ Swingarm complete | ⑰ Union nut |
| ⑥ Bolt | ⑫ Connecting rod | ⑱ Nut |

4



CHAPTER 5 ELECTRICAL

WIRING DIAGRAM AND ELECTRICAL COMPONENTS	5-1
TROUBLESHOOTING	5-2

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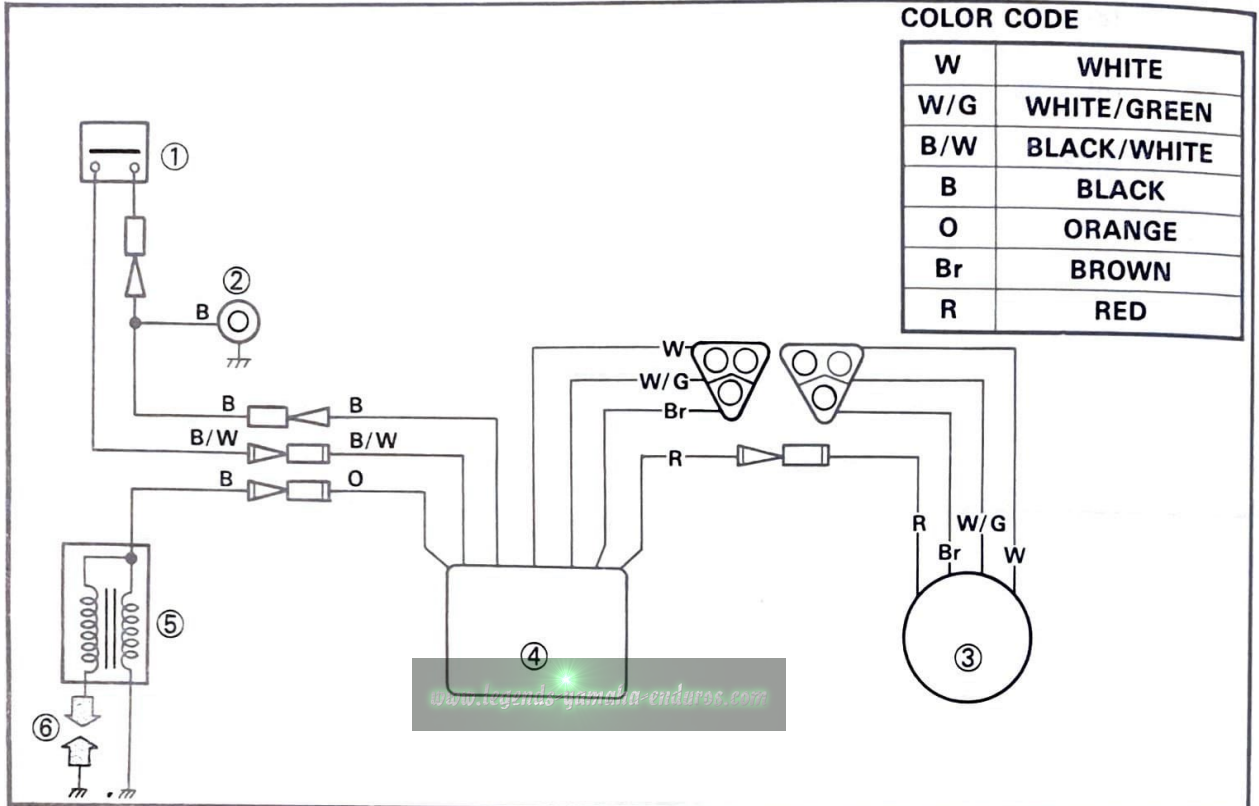
ELECTRICAL

WIRING DIAGRAM AND ELECTRICAL COMPONENTS

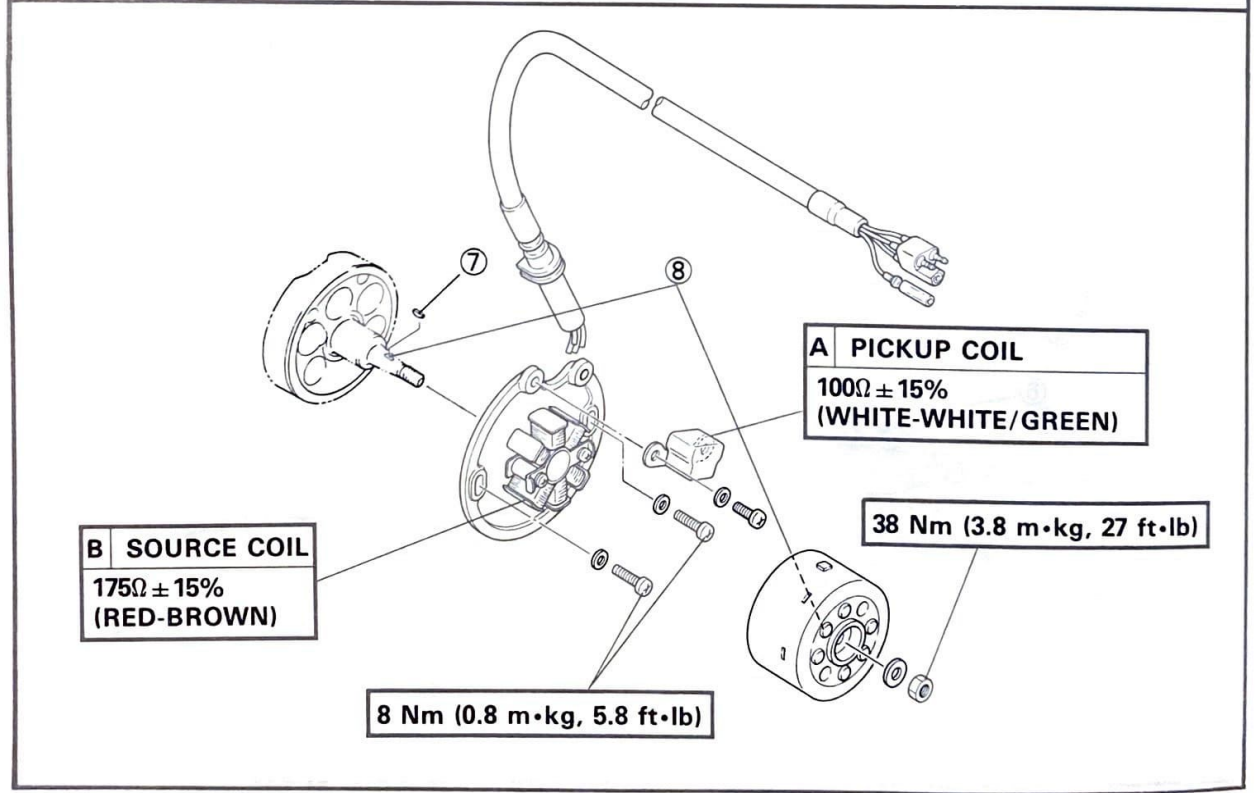
- ① Engine stop switch
- ② Body earth
- ③ Flywheel magneto (Pickup coil/Source coil)
- ④ CDI unit
- ⑤ Ignition coil
- ⑥ Spark plug
- ⑦ Woodruff key
- ⑧ Degrease

COLOR CODE

W	WHITE
W/G	WHITE/GREEN
B/W	BLACK/WHITE
B	BLACK
O	ORANGE
Br	BROWN
R	RED



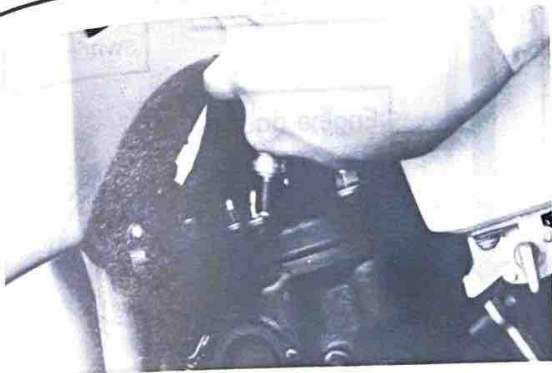
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TROUBLESHOOTING

If the ignition spark is of poor quality or if there is no spark at all; use the following procedure, to locate and repair the problem.



Spark plug test

Remove the spark plug and check the spark.

Ground the spark plug cap to the cylinder head, and kick the starter.

NOTE:

If the spark plug is oily or has carbon deposits, clean it or replace.



No spark.

Weak spark.

Replace spark plug.

Spark gap test

Remove the spark plug cap and check the spark.

Hold the high tension lead 5 mm (0.20 in) from the head, and kick the engine through.

No spark.

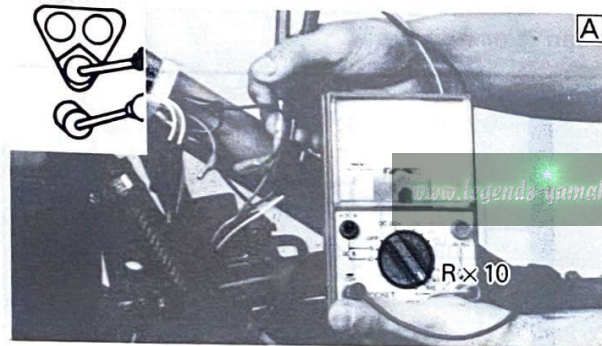
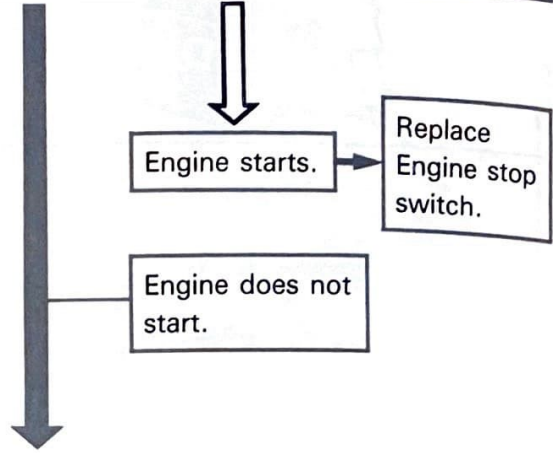
Good spark.

1. Check plug cap.
2. Replace spark plug.




Engine stop switch

Disconnect the Black/White lead of engine stop switch at CDI unit.

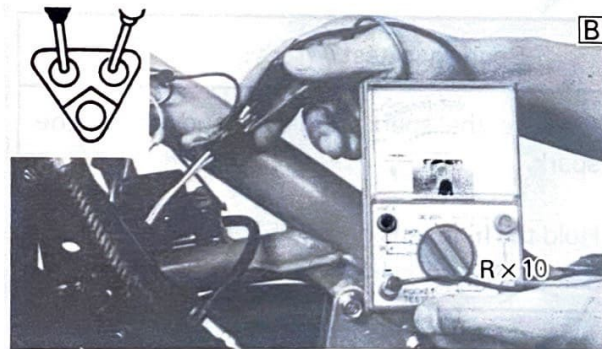
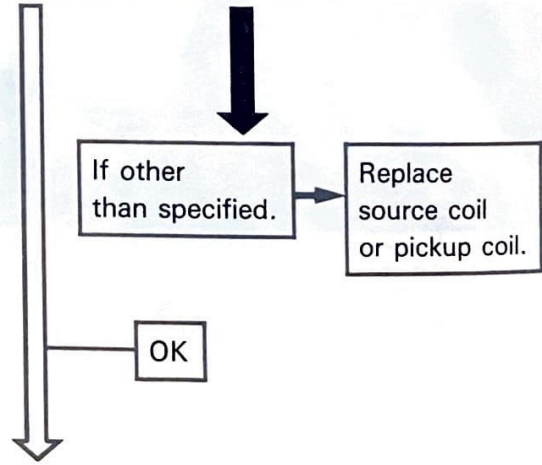


CDI Magneto (Source coil, Pickup coil) test

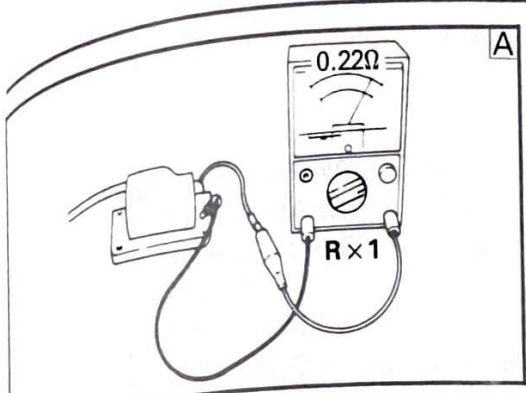
Disconnect the magneto leads, and use the pocket tester to check the resistance of the source coil **A** and/or pickup coil **B**.

 **Source Coil Resistance **A**:**
 $175\Omega \pm 15\%$ (Brown-Red)

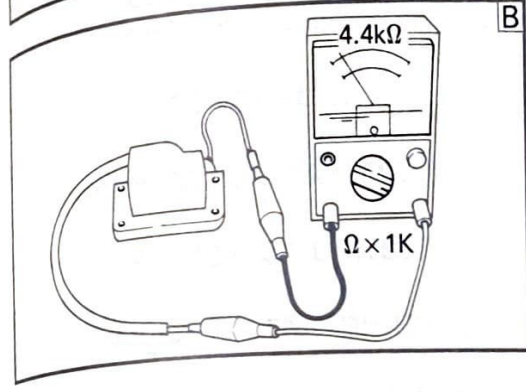
Pickup Coil Resistance **B:**
 $100\Omega \pm 15\%$ (White-White/Green)



5



A



B

Ignition coil test

Use the pocket tester to check the resistance of primary **A** and secondary **B** windings of the ignition coil.



Primary Coil Resistance **A :**

$0.22\Omega \pm 10\%$

Secondary Coil Resistance **B :**

$4.4k\Omega \pm 20\%$

If other than specified.

Replace ignition coil.

OK

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Connectors check-up

1. Check the connectors and couplers for looseness of jointing ends.
2. Keep the connectors and couplers from dirt or rust.

Wrong connection.

Correct

OK

Replace CDI unit.

CAUTION:

Make sure the wire harness is in a position it will not make contact with exhaust pipe, which could short out CDI unit.

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CHAPTER 6 APPENDICES

TROUBLESHOOTING GUIDE 6-1

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APPENDICES

TROUBLESHOOTING GUIDE

ENGINE IS HARD TO START OR DOES NOT START.

Ignition System	
Possible Cause	Remedy
<ol style="list-style-type: none"> 1. Spark plug is wet. 2. Ignition coil is faulty. 3. CDI unit is faulty. 4. CDI magneto is faulty (Pickup coil, source coil) 5. Ignition timing is incorrect. 6. Wire is broken, shorted or disconnected. 7. Engine stop switch is shorted. 	<ul style="list-style-type: none"> • Clean or replace • Replace • Replace • Replace • Adjust • Repair, replace or connect • Repair or replace
Compression System	
Possible Cause	Remedy
<ol style="list-style-type: none"> 1. Piston rings are sticking or worn. 2. Cylinder or piston is worn or scratched. 3. Compression leaks passing cylinder head gasket (Head is distorted.) 4. Crankshaft side oil seal is faulty. 5. Air leaks through crankcase sealing surfaces. 	<ul style="list-style-type: none"> • Replace • Repair or replace • Replace (or repair) • Replace • Repair
Air/Fuel System	
Possible Cause	Remedy
<ol style="list-style-type: none"> 1. Carburetor pilot jet is clogged. 2. Fuel petcock or pipe is clogged. 3. Float valve is faulty. (Float height is too high or too low.) 4. Reed valve is broken or deformed. 5. Fuel tank filler cap or carburetor breather pipe is clogged. 6. Air screw is improperly adjusted. 7. Fuel is deteriorated. 8. Oil gas mixing ratio is incorrect. 9. Air leaks through carburetor joints. 	<ul style="list-style-type: none"> • Clean • Clean • Replace (remove gasoline from crankcase) • Replace • Clean • Adjust • Replace • Replace • Retighten or replace gasket



POOR HIGH SPEED PERFORMANCE

Ignition System

Possible Cause	Remedy
<ol style="list-style-type: none"> 1. Spark plug is dirty or plug gap is too narrow. 2. CDI unit is faulty. 3. CDI magneto is faulty. 4. Ignition coil is faulty. 5. Ignition timing is incorrect. 6. Loose wire connection. 	<ul style="list-style-type: none"> • Clean, repair or replace. • Replace • Replace • Replace • Adjust • Repair

Compression System

Possible Cause	Remedy
<ol style="list-style-type: none"> 1. Piston rings are sticking or worn. 2. Cylinder or piston is worn or scratched. 3. Compression leakage through crankcase sealing surfaces or crankshaft side oil seal. 4. Carbon deposits in combustion chamber (Piston, Cylinder head). 5. Power valve malfunctions 	<ul style="list-style-type: none"> • Replace • Repair or replace • Repair or replace • Decarbonize • Repair or replace

Air/Fuel System

Possible Cause	Remedy
<ol style="list-style-type: none"> 1. Clogged carburetor jets. 2. Improperly adjusted main jet (High speed) 3. Improperly adjusted jet needle (Medium speed) 4. Incorrect fuel level 5. Dirty or clogged air cleaner element 6. Clogged fuel tank filler cap or carburetor breather pipe. 7. Clogged fuel petcock or kinked fuel pipe. 8. Deteriorated fuel. 9. Improper oil-gas mixing ratio 10. Cracked or broken exhaust pipe (Leakage of exhaust gases). 	<ul style="list-style-type: none"> • Clean • Adjust • Adjust • Adjust • Clean • Clean • Clean or repair • Replace • Replace • Replace



OVERHEAT

Possible Cause	Remedy
<ol style="list-style-type: none"> 1. Incorrect air-fuel mixture 2. Air leaks through carburetor joint. 3. Incorrect ignition timing 4. Carbon builds up in cylinder head or on piston head. 5. Improper spark plug heat range (too hot) 6. Fuel is deteriorated or oil-gas mixing ratio is incorrect. 7. Coolant of inferior quality. 8. Coolant level is low. 9. Water pump is faulty. 10. Cooling passage is clogged. 11. Radiator is clogged. 	<ul style="list-style-type: none"> • Adjust • Repair or replace • Adjust • Decarbonize • Replace • Replace • Replace with specified type • Add upto specified line • Repair or replace • Clean passage • Clean radiator

LOW COOLANT LEVEL

Possible Cause	Remedy
<ol style="list-style-type: none"> 1. Radiator is leaky. 2. Hose is damaged or joint is loose. 3. Water pump cover is leaky. 4. Cylinder head gasket is faulty. 	<ul style="list-style-type: none"> • Repair or replace • Replace hose or retighten joint • Repair or replace • Replace

TRANSMISSION AND SHIFTER

Trouble	Possible Cause	Remedy
Gears slip off	<ol style="list-style-type: none"> 1. Gear dogs are worn. 2. Shift forks are bent. (burnt or worn) 3. Shift cam stopper spring is fatigued. 	<ul style="list-style-type: none"> • Replace • Replace • Replace
Gear shifts skipping over the next.	<ol style="list-style-type: none"> 1. Shift cam stopper spring is fatigued. 2. Shift forks are bent. (burnt or worn) 	<ul style="list-style-type: none"> • Replace • Replace
Gear does not select	<ol style="list-style-type: none"> 1. Shift cam is worn. (broken) 2. Change shaft is bent. 3. Shift arm spring is broken. 4. Gears are broken. 	<ul style="list-style-type: none"> • Replace • Replace • Replace • Removal (Replace)
Shift pedal does not return.	<ol style="list-style-type: none"> 1. Shift return spring is broken. 2. Shift shaft is bent. 	<ul style="list-style-type: none"> • Replace • Replace



CLUTCH

Trouble	Possible Cause	Remedy
Clutch slips	<ol style="list-style-type: none"> 1. Friction plate is worn. 2. Clutch plate is worn. 3. Clutch spring is fatigued. 4. Pressure plate is deformed. 5. Clutch play is too small. 6. Clutch adjustment is incorrect. 7. Match marks of clutch boss and pressure plate does not aligned. 	<ul style="list-style-type: none"> • Replace • Replace • Replace • Replace • Adjust • Adjust • Reassemble
Clutch drags	<ol style="list-style-type: none"> 1. Clutch plate is warped. 2. Clutch lock nut is loosen. 3. Friction plate is broken. 4. Clutch play is too much. 5. Oil viscosity is incorrect. 	<ul style="list-style-type: none"> • Replace • Replace • Replace • Adjust • Replace

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CHASSIS

Steering head is loose		
Possible Cause	Remedy	
<ol style="list-style-type: none"> 1. Roller is worn. 2. Steering nut is loose. 	<ul style="list-style-type: none"> • Replace • Retighten 	
Wheels have excessive run-out		
Possible Cause	Remedy	
<ol style="list-style-type: none"> 1. Bearing is worn. 2. Rim has dent. 3. Spokes are loose (or broken). 4. Axle nut is loose. 	<ul style="list-style-type: none"> • Replace • Repair or replace • Retighten or replace • Retighten 	
Brakes		
Trouble	Possible Cause	Remedy
Faulty	<ol style="list-style-type: none"> 1. Brake pad or shoes are worn. 2. Brake is improperly adjusted. 3. Brake drum contains water. 4. Brake disc, pad or lining is greasy. 	<ul style="list-style-type: none"> • Replace • Adjust • Clean • Degrease or replace
Not return smoothly	<ol style="list-style-type: none"> 1. Wire is starved for oil. 2. Camshaft is starved for grease. 3. Return spring or brake shoe spring is broken. 4. Brake pedal axle is starved for grease. 	<ul style="list-style-type: none"> • Grease or replace • Grease • Replace • Grease
Frame and Swingarm		
Possible Cause	Remedy	
<ol style="list-style-type: none"> 1. Frame is cracked. 2. Rear arm is bent. 3. Rear arm is cracked. 4. Bushing is worn. 5. Bushing lacks oil. 	<ul style="list-style-type: none"> • Weld, reinforce or replace • Repair or replace • Replace • Replace • Lubricate 	



SPECIFICATIONS
I. GENERAL SPECIFICATIONS

Model	YZ250S
Model Code Number	1LU
Vehicle Identification Number	JYA1LU00*GA000101
Engine Starting Number	1LU-000101
Dimensions: Overall Length Overall Width Overall Height Seat Height Wheelbase Minimum Ground Clearance	2,170 mm (85.4 in) 850 mm (33.5 in) 1,230 mm (48.4 in) 955 mm (37.6 in) 1,470 mm (57.9 in) 340 mm (13.4 in)
Basic Weight: With Oil and Full Fuel Tank	105 kg (232 lb)
Engine: Engine Type Cylinder Arrangement Displacement Bore x Stroke Compression Ratio Starting System	Liquid cooled 2-stroke, gasoline Single cylinder, forward inclined 246 cm ³ 68 x 68 mm (2.677 x 2.677 in) 8.22 ~ 9.72 : 1 www.Kickstarters-enduros.com
Lubrication System	Premix (24 : 1) (Yamalube R) Premix (20 : 1) (Castrol R30) (Castrol A545) (Castrol A747)
Oil Type or Grade (2-Cycle): Transmission Oil	Yamalube 4-cycle oil or SAE 10W30 type SE motor oil
Periodic Oil Change Total Amount	0.85 L (0.75 Imp qt, 0.90 US qt) 0.90 L (0.79 Imp qt, 0.95 US qt)
Radiator Capacity (Including All Routes)	1.0 L (0.88 Imp qt, 1.06 US qt)
Air Filter	Wet type element
Fuel: Type	Premium gasoline with an octane rating of at least 90
Tank Capacity	8.0 L (1.76 Imp gal, 2.11 US gal)
Carburetor: Type/Manufacturer	VM38SS/MIKUNI
Spark plug: Type/Manufacturer	N-86, N-86G, N-2G, N-2C/CHAMPION, B8EG, B8EGV/NGK
Gap	0.5 ~ 0.6 mm (0.020 ~ 0.024 in)

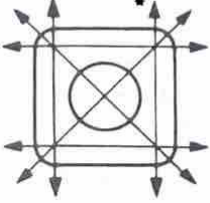
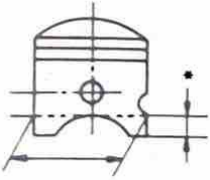
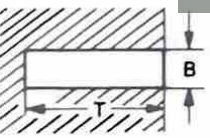
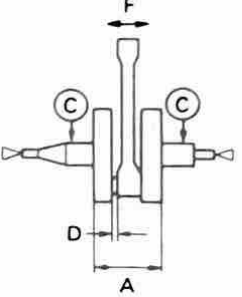


Model	YZ250S
Clutch Type	Wet, multiple-disc
Transmission:	
Primary Reduction System	Spur gear
Primary Reduction Ratio	63/24 (2.625)
Secondary Reduction System	Chain drive
Secondary Reduction Ratio	50/14 (3.571)
Transmission Type	Constant mesh, 5-speed
Operation	Left foot operation
Gear Ratio	
1st	30/14 (2.142)
2nd	28/16 (1.750)
3rd	26/19 (1.368)
4th	24/21 (1.142)
5th	22/23 (0.956)
Chassis:	
Frame Type	Semi double cradle
Caster Angle	28°
Trail	119 mm (4.69 in)
Tire:	
Type	With tube
Size (F)	*1: 80/100-21-4PR
Size (R)	*2: 110/100-18-4PR
Brake:	
Front Brake Type	Disc brake
Operation	Right hand operation
Rear Brake Type	Drum brake
Operation	Right foot operation
Suspension:	
Front Suspension	Telescopic fork (Pneumo-mechanical)
Rear Suspension	Swingarm (New monocross suspension)
Shock Absorber:	
Front Shock Absorber	Air, coil spring, oil damper
Rear Shock Absorber	Gas, coil spring, oil damper
Wheel Travel:	
Front Wheel Travel	305 mm (12.0 in)
Rear Wheel Travel	320 mm (12.6 in)
Electrical:	
Ignition System	CDI Magneto

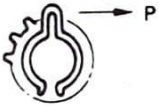

*1: 80/100-21 is a new tire size indication. This is actually the same as 90/90-21.

*2: 110/100-18 is a new tire size indication. This is actually the same as 130/80-18.

II. MAINTENANCE SPECIFICATIONS
Engine

Model	YZ250S
Cylinder Head: Warp Limit 	$< 0.03 \text{ mm (0.0012 in)} >$ *Lines indicate straightedge measurement.
Cylinder: Bore Size Wear Limit Taper Limit Out of Round Limit	$68^{+0.02} \text{ mm (2.6772}^{+0.0008} \text{ in)}$ 68.1 mm (2.681 in) $< 0.05 \text{ mm (0.0020 in)} >$ $< 0.01 \text{ mm (0.0004 in)} >$
Piston: Piston Size/ Measuring Point* Piston Clearance < Limit > Oversize 1st 2nd 3rd Piston Offset 	$68^{0}_{-0.06} \text{ mm (2.677}^{0}_{-0.002} \text{ in)}/31 \text{ mm (1.22 in)}$ $0.070 \sim 0.075 \text{ mm (0.0028} \sim 0.0030 \text{ in)}$ $< 0.1 \text{ mm (0.004 in)} >$ 68.25 mm (2.69 in) 68.50 mm (2.70 in) 68.75 mm (2.71 in) 1.5 mm (0.06 in), EX-side
Piston Ring: Sectional Sketch  End Gap (Installed)/ < Limit > Side Clearance (Installed)/ < Limit >	Plain B = 1.0 mm (0.039 in) T = 2.8 mm (0.110 in) $0.45 \sim 0.060 \text{ mm (0.018} \sim 0.024 \text{ in)}$ $< 0.8 \text{ mm (0.032 in)} >$ $0.04 \sim 0.08 \text{ mm (0.0016} \sim 0.0031 \text{ in)}$ $< 0.1 \text{ mm (0.004 in)} >$
Crankshaft: Crank Width "A" Run Out Limit "C" Connecting Rod Big End Side Clearance "D" Small End Free Play "F" < Limit > 	$62^{0}_{-0.05} \text{ mm (2.441}^{0}_{-0.002} \text{ in)}$ $< 0.03 \text{ mm (0.0012 in)} >$ $0.25 \sim 0.75 \text{ mm (0.01} \sim 0.03 \text{ in)}$ $0.4 \sim 1.0 \text{ mm (0.016} \sim 0.039 \text{ in)}$ $< 2.0 \text{ mm (0.08 in)} >$



Model	YZ250S
Clutch: Friction Plate Thickness/Quantity <Wear Limit> Clutch Plate Thickness/Quantity <Warp Limit> Clutch Spring Free Length/Quantity Clutch Spring Minimum Length Clutch Housing Thrust Clearance Clutch Housing Radial Clearance Clutch Release Method Push Rod Bending Limit	3.0 mm (0.12 in) × 7 <2.7 mm (0.11 in)> 1.6 mm (0.063 in) × 6 <0.05 mm (0.002 in)> 36.4 mm (1.43 in) × 6 35.4 mm (1.39 in) 0.17 ~ 0.23 mm (0.0067 ~ 0.0091 in) 0.03 ~ 0.55 mm (0.0012 ~ 0.0217 in) Inner push, cam push 0.2 mm (0.008 in)
Transmission: Main Axle Deflection Limit Drive Axle Deflection Limit	<0.01 mm (0.0004 in)> <0.01 mm (0.0004 in)>
Shifter: Shifting Type Guide Bar Bending Limit	Guide bar <0.05 mm (0.0020 in)>
Kick Starter: Type Kick Clip Friction Force [Min ~ Max]	 Kick and mesh type P = 0.8 ~ 1.2 kg (1.8 ~ 2.6 lb)
Air Filter Oil Grade (Oiled Filter)	Foam-air filter oil
Carburetor: Type/Manufacturer I.D. Mark Main Jet (M.J.) Main Air Jet (M.A.J.) Jet Needle-clip Position (J.N.) Needle Jet (N.J.) Cutaway (C.A.) Pilot Jet (P.J.) Pilot Air Screw (P.A.S.) Valve Seat Size (V.S.) Starter Jet (G.S.) Float Height (F.H.)	VM38SS/MIKUNI 1LU00 #340 ø2.5 6F16-2 Q-4 3.0 #40 2 1/4 ø3.5 #90 27.0 ± 1.0 mm (1.06 ± 0.04 in)
Reed Valve: Thickness* Valve Stopper Height Valve Bending Limit	 0.42 mm (0.017 in) 8.6 ± 0.2 mm (0.339 ± 0.008 in) 1.5 mm (0.059 in)
Cooling: Radiator Core Size Width Height Thickness Radiator Cap Opening Pressure	123 mm (4.84 in) 273 mm (10.7 in) 32 mm (1.26 in) 108 kPa (1.1 kg/cm ² , 15.6 psi)

SPECIFICATIONS

APPX



Model	YZ250S
Coolant Capacity (Total)	1.0 L (0.88 Imp qt, 1.06 US qt)
Water Pump Type	Single-Suction Centrifugal Pump

Tightening Torque	Thread Size	Q'ty	Nm	m•kg	ft•lb
Spark plug	M14×1.25	1	20	2.0	14
Cylinder head (Nut)	M 8×1.25	6	30	3.0	22
(Stud)	M 8×1.25	6	13	1.3	9.4
Coolant drain bolt	M 6×1.0	2	10	1.0	7.2
Cylinder (Nut)	M10×1.25	4	35	3.5	25
(Stud)	M10×1.25	4	13	1.3	9.4
Power valve	M 5×0.8	1	6	0.6	4.3
Holder	M 5×0.8	2	5	0.5	3.6
Thrust plate	M 5×0.8	1	5	0.5	3.6
Lever-Push rod	M 5×0.8	1	5	0.5	3.6
Push rod-Power valve	M 5×0.8	1	5	0.5	3.6
Governor fork-Push rod	M 5×0.8	2	5	0.5	3.6
Housing	M 5×0.8	4	5	0.5	3.6
Water pump housing	M 6×1.0	3	10	1.0	7.2
Intake manifold	M 6×1.0	6	12	1.2	8.7
Reed valve	M 3×0.8	8	1	0.1	0.7
Crankcase	M 6×1.0	10	12	1.2	8.7
Crankcase cover	M 6×1.0	11	10	1.0	7.2
Magneto cover	M 6×1.0	4	10	1.0	7.2
Chain case cover	M 6×1.0	2	10	1.0	7.2
Bearing cover plate	M 6×1.0	4	10	1.0	7.2
Holder	M 8×1.25	1	16	1.6	11
Plate	M 6×1.0	1	10	1.0	7
Oil drain bolt	M12×1.5	1	20	2.0	14
Kickstarter lever	M12×1.0	1	60	6.0	42
Primary drive gear	M18×1.0	1	115	11.5	85
Clutch	M20×1.0	1	75	7.5	54
Push lever	M 6×1.0	1	10	1.0	7.2
Clutch spring	M 6×1.0	6	10	1.0	7.2
Drive sprocket	M20×1.0	1	75	7.5	54
Shift pedal	M 6×1.0	1	10	1.0	7.2
Stopper lever	M 6×1.0	1	15	1.5	11
Magneto rotor	M10×1.25	1	38	3.8	27
Stator	M 6×1.0	2	8	0.8	5.8



Chassis

Model	YZ250S
Steering System: Steering Bearing Type	Taper roller bearing
Front Suspension Front Fork Travel Fork Spring Free Length Collor Length Spring Rate, STD/I.D. mark Optional Spring Spring Rate, Soft/I.D. mark Hard/I.D. mark Oil Capacity Oil Level Oil Grade Enclosed Air Pressure < Min. ~ Max. >	305 mm (12,0 in) 543.5 mm (21.4 in) 85 mm (3.35 in) K = 3.4 N/mm (0.345 kg/mm 19.3 lb/in)/(3 slits) K = 3.2 N/mm (0.325 kg/mm, 18.2 lb/in)/(2 slit) K = 3.7 N/mm (0,375 kg/mm, 19.1 lb/in)/(Nothing) 564 cm ³ (19.9 Imp oz, 19.1 US oz) 160 mm (6.30 in) (From top of inner tube fully compressed without spring.) Fork oil 15 wt 0 kPa (0 kg/cm ³ , 0 psi) < 0 ~ 245 kPa (0 ~ 2.5 kg/cm ² , 0 ~ 35.6 psi) >
Rear Suspension: Shock Absorber Travel Spring Free Length Fitting Length < Min. ~ Max. > Spring Rate, STD/I.D. color Optional Spring Spring Rate, Soft/I.D. color Hard/I.D. color Enclosed Gas Pressure (S.T.D.) < Min. ~ Max. >	115.5 mm (4.55 in) 278 mm (10.94 in) 270 mm (10.63 in) < 251 ~ 273.5 mm (9.88 ~ 10.77 in) > K = 53.9 N/mm (5.50 kg/mm, 308 lb/in)/ (Black-Blue) K = 51.5 N/mm (5.25 kg/mm, 294 lb/in)/ (Black-White) K = 56.4 N/mm (5.75 kg/mm, 322 lb/in)/ (Black-Green) 980 kPa (10 kg/cm ² , 142 psi) < 686 ~ 1,275 kPa (7 ~ 13 kg/cm ² , 100 ~ 185 psi) >
Rear Arm: Swingarm Free Play Limit End Side	< 1 mm (0.04 in) > < 0.3 mm (0.012 in) >
Wheel: Front wheel Type Rear Wheel Type Front Rim Size/Material Rear Rim Size/Material Rim Runout Limit Vertical Lateral	Spoke wheel Spoke wheel 1.60 × 21/Aluminum 2.15 × 18/Aluminum < 2.0 mm (0.08 in) > < 2.0 mm (0.08 in) >

SPECIFICATIONS

APPX



Model	YZ250S
Drive Chain: Type/Manufacture Number of Links Chain slack	DK520DS/DAIDO 113 links + Joint 20 ~ 30 mm (0.8 ~ 1.2 in)
Front Disc Brake: Disc Outside Dia. × Thickness Pad Thickness < Limit > Master Cylinder Inside Dia. Caliper Cylinder Inside Dia. Brake Fluid Type	220 × 3.0 mm (8.66 × 0.12 in) 4.0 mm (0.16 in) < 0.8 mm (0.03 in) > 11.0 mm (0.433 in) 27.0 mm (1.061 in) × 2 DOT #3
Rear Drum Brake: Type Drum Inside Dia < Limit > Lining Thickness < Limit > Shoe Spring Free Length	Leading and trailing 130 mm (5.12 in) < 131 mm (5.16 in) > 4 mm (0.16 in) < 2 mm (0.08 in) > 36.5 mm (1.44 in) (Vertical height below footrest top)
Brake Lever & Brake Pedal: Brake Lever Free Play Brake Pedal Free Play/Position	10 ~ 20 mm (0.4 ~ 0.8 in) (at lever end) 10 ~ 20 mm (0.4 ~ 0.8 in) / 0 ± 10 mm (0 ± 0.4 in) (Vertical height below footrest top)
Clutch Lever Free Play/Position	2 ~ 3 mm (0.08 ~ 0.12 in) / at lever pivot

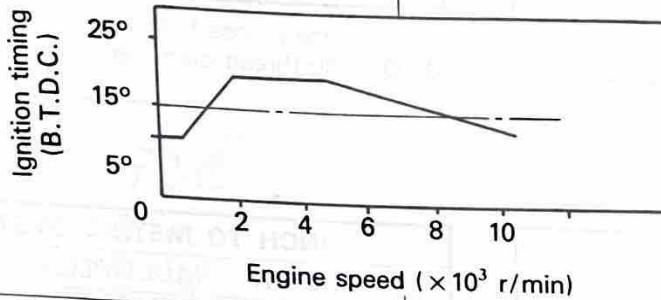


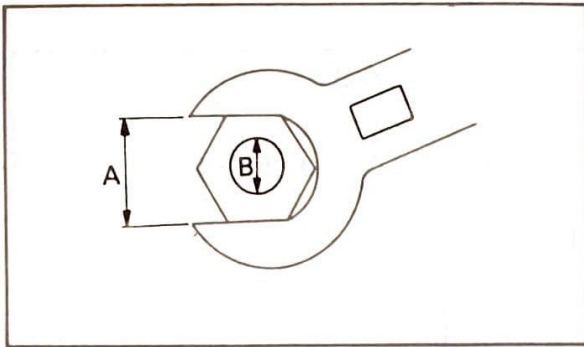
Tightening Torque:	Thread Size	Q'ty	Nm	m•kg	ft•lb
Front wheel axle	M14 × 1.5	1	60	6.0	43
Axle holder	M 6 × 1.0	4	10	1.0	7.2
Handle crown-Inner tube	M 8 × 1.25	4	23	2.3	17
-Steering shaft	M22 × 1.0	1	130	13.0	94
-Handle holder	M 8 × 1.25	4	23	2.3	17
Steering nut	M25 × 1.0	1	10	1.0	7.2
Damper rod holding bolt	M18 × 1.0	2	72	7.2	52
Cap bolt	M40 × 1.0	2	23	2.3	17
Drain screw	M 4 × 0.7	2	1	0.1	0.7
Brake disc	M 6 × 1.0	6	12	1.2	9
Caliper bolt	M 8 × 1.25	1	23	2.3	17
Caliper bracket	M 8 × 1.25	2	30	3.0	22
Brake hose	M10 × 1.25	2	26	2.6	19
Air bleed	M 7 × 1.0	1	6	0.6	4.3
Engine mount-Front, Frame	M 8 × 1.25	4	32	3.2	23
-Front, Engine	M 8 × 1.25	1	32	3.2	23
-Lower	M 8 × 1.25	1	32	3.2	23
-Rear, Upper	M 8 × 1.25	2	32	3.2	23
-Rear, Engine	M10 × 1.25	1	65	6.5	47
Rear wheel axle	M18 × 1.5	1	100	10	72
Sprocket wheel-Hub	M 8 × 1.25	6	30	3.0	22
Rear shock -Frame	M10 × 1.25	1	32	3.2	23
Pivot shaft	M16 × 1.5	1	85	8.5	61
Torque arm -Brake shoe plate	M 8 × 1.25	1	23	2.3	17
-Frame	M 8 × 1.25	1	29	2.9	21
Brake cam lever	M 6 × 1.0	1	10	1.0	7.2
Relay arm-Frame	M10 × 1.25	1	60	6.0	43
-Rear shock	M10 × 1.25	1	32	3.2	23
-Connecting rod	M14 × 1.5	1	60	6.0	43
Connecting rod-Swingarm	M14 × 1.5	1	60	6.0	43



Electrical

Model	YZ250S
Ignition System: Ignition Timing (B.T.D.C.) Advancer Type	1.5±0.1 mm (0.059±0.004 in)/15°/8,500 rpm Electrical
CDI Magneto-Model/Manufacturer Source Coil Resistance (Color) Pickup Coil Resistance (Color) CDI Unit-Model/Manufacturer	FP8163/KOKUSAN DENKI 175Ω±15% at 20°C (68°F) (Red-Brown) 100Ω±15% at 20°C (68°F) (White-White/Green) CU1568/KOKUSAN DENKI
Ignition Coil: – Model/Manufacturer Minimum Spark Gap Primary Winding Resistance Secondary Winding Resistance	CM61-29/HITACHI 10 kV or more at 500 r/min 15 kV or less at 8000 r/min 6 mm (0.24 in) at 1,500 r/min 0.22Ω±10% at 20°C (68°F) 4.4kΩ±20% at 20°C (68°F)





A (Nut)	B (Bolt)	TORQUE SPECIFICATION		
		Nm	m·kg	ft·lb
10 mm	6 mm	5	0.6	4.5
12 mm	8 mm	15	1.5	11.0
14 mm	10 mm	30	3.0	22.0
17 mm	12 mm	55	5.5	40.0
19 mm	14 mm	85	8.5	61.0
22 mm	16 mm	130	13.0	94.0

A: Distance across flats
B: Outside thread diameter

CONVERSION TABLES

METRIC TO INCH SYSTEM			
	KNOWN	MULTIPLIER	RESULT
TORQUE	m·kg	7.233	ft·lb
	m·kg	86.80	in·lb
	cm·kg	0.0723	ft·lb
	cm·kg	0.8680	in·lb
WT.	kg	2.205	lb
	g	0.03527	oz
FLOW/ DISTANCE	km/ℓ	2.352	mpg
	km/hr	0.6214	mph
	km	0.6214	mi
	m	3.281	ft
	m	1.094	yd
	cm	0.3937	in
	mm	0.03937	in
VOL./ CAPACITY	cc (cm ³)	0.03382	oz (US liq)
	cc (cm ³)	0.06102	cu. in
	ℓ (liter)	2.1134	pt (US liq)
	ℓ (liter)	1.057	qt (US liq)
	ℓ (liter)	0.2642	gal (US liq)
MISC.	kg/mm	56.007	lb/in
	kg/cm ²	14.2234	psi (lb/in ²)
	Centigrade (°C)	9/5(°C) + 32	Fahrenheit (°F)

INCH TO METRIC SYSTEM			
	KNOWN	MULTIPLIER	RESULT
TORQUE	ft·lb	0.13826	m·kg
	in·lb	0.01152	m·kg
	ft·lb	13.831	cm·kg
	in·lb	1.1521	cm·kg
WT.	lb	0.4535	kg
	oz	28.352	g
FLOW/ DISTANCE	mpg	0.4252	km/ℓ
	mph	1.609	km/hr
	mi	1.609	km
	ft	0.3048	m
	yd	0.9141	m
	in	2.54	cm
	in	25.4	mm
VOL./ CAPACITY	oz (US liq)	29.57	cc (cm ³)
	cu. in	16.387	cc (cm ³)
	pt (US liq)	0.4732	ℓ (liter)
	qt (US liq)	0.9461	ℓ (liter)
	gal (US liq)	3.785	ℓ (liter)
MISC.	lb/in	0.017855	kg/mm
	psi (lb/in ²)	0.07031	kg/cm ²
	Fahrenheit (°C)	5/9(°F - 32)	Centigrade (°C)

6

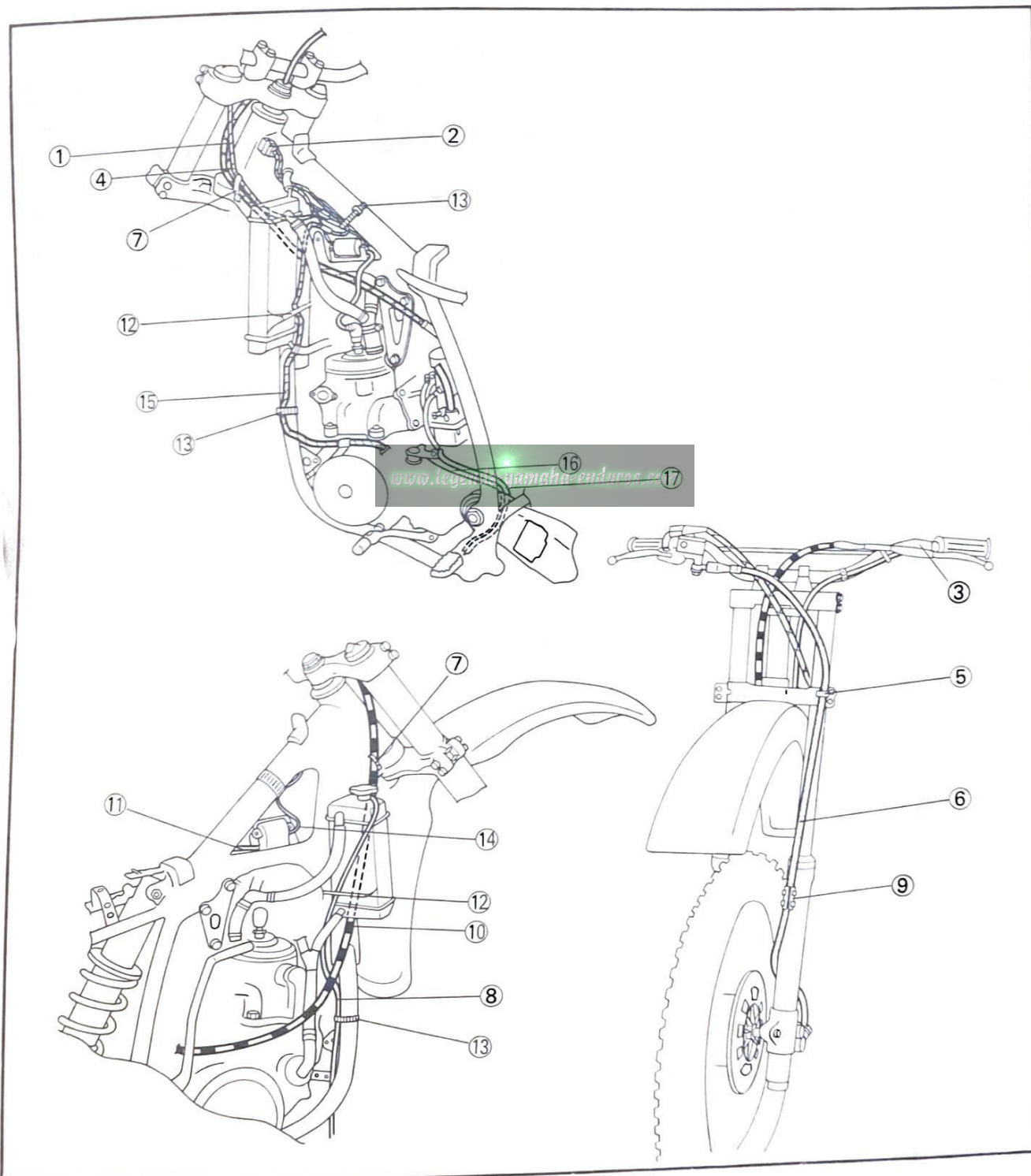
DEFINITION OF UNITS

Unit	Read	Definition	Measure
mm	millimeter	10 ⁻³ meter	Length
cm	centimeter	10 ⁻² meter	Length
kg	kilogram	10 ³ gram	Weight
N	Newton	1 kg × m/sec ²	Force
Nm	Newton meter	N × m	Torque
m·kg	Meter kilogram	m × kg	Torque
Pa	Paskal	N/m ²	Pressure
N/mm	Newtom per millimeter	N/mm	Spring rate
L	Liter	—	Volume or Capacity
cm ³	Cubic centimeter	—	Volume or Capacity
r/min	Rotation per minute	—	Engine speed



CABLE ROUTING DIAGRAM

- | | | |
|---------------------------|--------------------------|------------------------------|
| ① Throttle cable | ⑦ Guide | ⑪ High tension lead |
| ② CDI unit | ⑧ Radiator breather hose | ⑫ Radiator guard |
| ③ Engine stop switch | ⑨ Clamp | ⑬ Band |
| ④ Engine stop switch lead | ⑩ Clutch cable | ⑭ Earth lead |
| ⑤ Cable guide | | ⑮ CDI unit lead |
| ⑥ Brake hose | | ⑯ Transmission breather hose |
| | | ⑰ Carburetor breather hose |



APPX



CABLE ROUTING DIAGRAM

www.legends-yamaha-enduros.com

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WARRANTY INFORMATION

Please refer to your copy of the **YAMAHA LIMITED WARRANTY** for details of the warranty offered on your new Yamaha.

The **YAMAHA LIMITED WARRANTY** contains the warranty policy, an explanation of the warranty, and other important information. Becoming familiar with these policies will help you make the best use of Yamaha's warranty programs.

There are certain requirements which you must meet in order to qualify for warranty coverage. **FIRST**, your new Yamaha must be operated and maintained properly, as explained in this manual. If you have any questions about procedure in this manual, please consult a dealer. **ABUSE AND NEGLECTED MAINTENANCE MAY LEAD TO MECHANICAL FAILURES WHICH CANNOT BE COVERED UNDER WARRANTY.**

SECOND, IF ANY PROBLEMS OCCUR WHICH YOU FEEL SHOULD BE COVERED UNDER WARRANTY, NOTIFY YOUR DEALER IMMEDIATELY. Don't delay, as small problems left unrepaired can become large problems which may not be covered under warranty. We recommend that the **YAMAHA LIMITED WARRANTY** be used as a folder in which you may keep your registration and other important documents related to your new Yamaha.

* The **YAMAHA LIMITED WARRANTY** is to be supplied by a Yamaha dealer at the time of purchase. If you did not receive one, or have lost yours, you may obtain extracopies upon request from your Yamaha dealer or by writing to:

YAMAHA MOTOR CORPORATION U.S.A

6555 Katella Avenue

P.O. Box 6555

Cypress, California 90630

Attn: Warranty Department

www.legends-yamaha-enduros.com

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