

HONDA ATC 90/110

Shop Manual



ATC 90

'73-'78

ATC 110

'79-'81

Thank you for your patronage.

This CD was purchased from @home backup. If it was purchased or obtained by any other means, you have illegally obtained this CD and are in violation of its copyrights.

Report copyright violations to: @home backup
Attn: Manual Backups
2902 Grasmere St.
Garland, TX 75040

Unauthorized duplication or distribution is strictly prohibited.

IMPORTANT SAFETY NOTICE

WARNING

Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.

CAUTION

Indicates a possibility of personal injury or equipment damage if instructions are not followed.

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains *some* warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda might be done or of the possible hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service method or tools selected.

FOREWORD

This Shop Manual is published for the personnel who are responsible for the maintenance and repair of the HONDA US90 and ATC90 which is based on the US90.

The manual is divided into the eight major sections and each major section is further divided into Disassembly, Inspection and Reassembly. The information and instructions peculiar to the ATC90 are grouped in Section IV.

At the end of the manual are put the features and modifications of the ATC90K3 and the operations with the engine in the motorcycle. For the overhaul operations with the engine removed, refer to the HONDA 90 Series Shop Manual.

HONDA MOTOR CO., LTD.

Service publication office

GENERAL SERVICE PRECAUTIONS

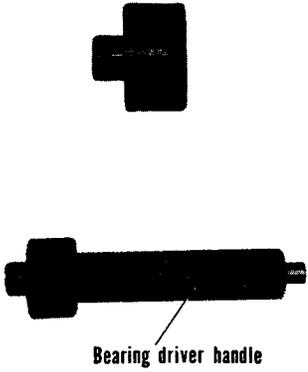
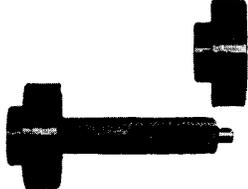
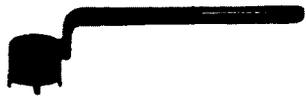
1. Always replace gaskets, O-rings, cotter pins, etc. with the new ones when reassembling.
2. When tightening bolts, nuts or screws, begin on the larger-diameter or the inner one first and tighten them to the specified torque in a criss-cross pattern.
3. Use the genuine Honda or the Honda-recommended parts and lubricants when servicing.
4. Be sure to use a special tool or tools where so specified.
5. A joint work of more than two persons must be carried out with mutual safety attention paid.
6. Wash the engine parts clean upon disassembling. Coat their sliding surfaces with high-quality lubricant when reassembling.
7. Coat or pack grease where so specified.
8. After reassembling, check to be sure each part is tightened properly. Also check for proper operation.
9. Be sure to secure the fuel pipes with clips.

Electrical System

1. When tracing electrical system problems, refer to the wiring diagram at the end of this manual.
2. Check cables and wires for disconnection, open circuit, binding or breakage of coverings, and grommets and covers for removal or breakage. Repair or replace them if necessary.

I. SPECIAL TOOLS

- 1 To service the engine, use the special tools (Tool No. 07000-02801) for the 90 cc engine.
2. Frame special tools

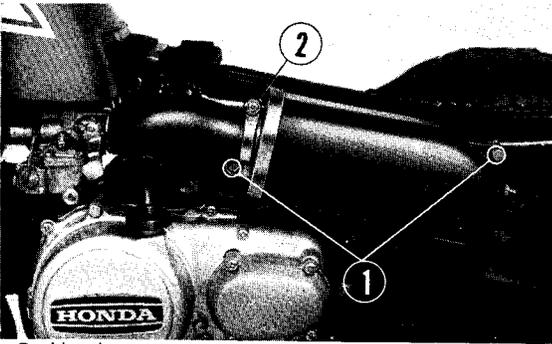
Tool Description and Number	How to use	Picture
<p>Front wheel bearing/oil seal driver. (07054-91801)</p>	<p>Place the flat surface of the tool against the bearing to drive in the bearing.</p> <p>When the tool is to be used to drive in the oil seal, install the bearing driver handle (Tool No. 07048-28611) and drive the seal into the hub.</p>	 <p>The picture shows two tools. The top one is a small, cross-shaped bearing driver. The bottom one is a long, cylindrical bearing driver handle with a handle on one end and a threaded end on the other. A label 'Bearing driver handle' with a line pointing to the handle is located below the tool.</p>
<p>Rear wheel bearing/oil seal driver. (07054-91805)</p>	<p>Same as above</p>	 <p>The picture shows a long, cylindrical bearing driver handle and a small, cross-shaped bearing driver, similar to the ones shown in the first row.</p>
<p>Steering stem nut tool. (07085-91801)</p>	<p>Refer to page 20 of the shop manual.</p>	 <p>The picture shows a steering stem nut tool, which consists of a long, curved handle and a small, hook-like end.</p>

II. INSPECTION AND ADJUSTMENTS

1. ENGINE

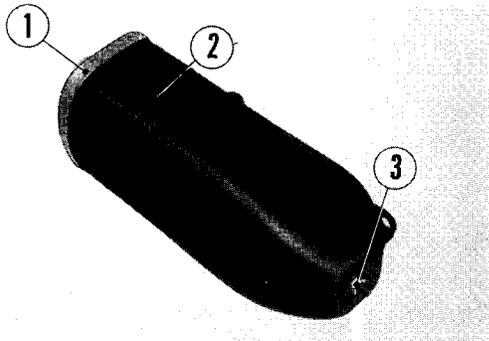
The inspection and adjustment procedures for the engine are described on pages 71 thru 75. For the other adjustments, refer to the HONDA 90 Series Shop Manual.

2. SERVICING THE AIR CLEANER ELEMENT



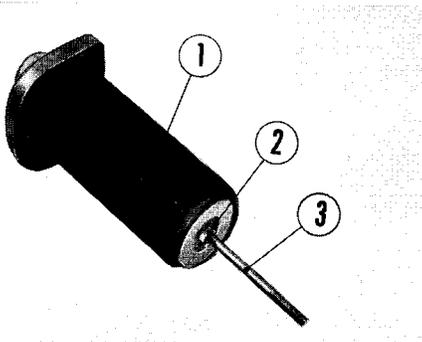
① Air cleaner case mounting bolts
② Connecting tube locking screw

Fig. 1



① Air cleaner body ② Air cleaner case
③ 6 mm nut

Fig. 2

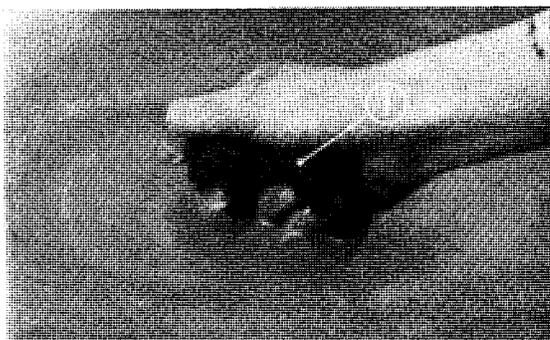


① Air cleaner element ② 6 mm nut
③ Air cleaner bolt

Fig. 3

1. Remove the frame body cover.
2. Unscrew the two air cleaner case mounting bolts, loosen the connecting tube locking screw, and then remove the air cleaner case.
3. Unscrew the 6 mm nut and remove the air cleaner body from the air cleaner case.
4. Loosen the 6 mm nut, remove the air cleaner bolt, and separate the air cleaner element from the air cleaner body.

5. Wash the air cleaner element in cleaning solvent or gasoline and let it dry out. Soak the element in clean engine oil and then squeeze out all excess oil before reinstalling.

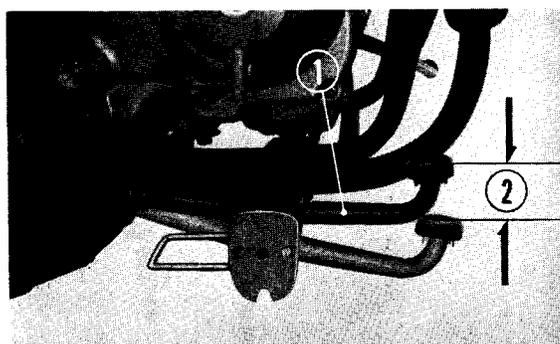


① Air cleaner element

Fig. 4

3. BRAKE ADJUSTMENT

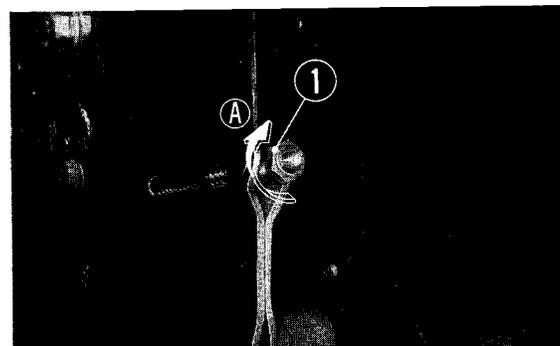
1. Remove the frame body cover.
2. Depress the brake pedal by hand to check the amount of play.
Normal play in the brake pedal is $5/8 \sim 13/16$ (15~20 mm) when measured at the front of the pedal.



① Brake pedal ② Free play

Fig. 5

3. Turn the brake adjuster nut to make the adjustment.
Turning the nut clockwise (direction A) will reduce the amount of play.



① Brake adjuster nut

Fig. 6

4. Next, check the amount of play at the brake lever.
Normal play in the lever is $13/16 \sim 1 1/4$ (20~30 mm) when measured at the end of the lever.

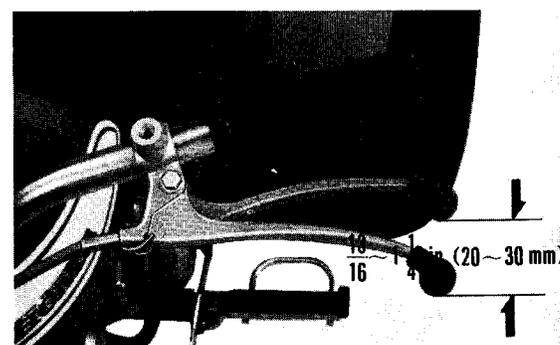
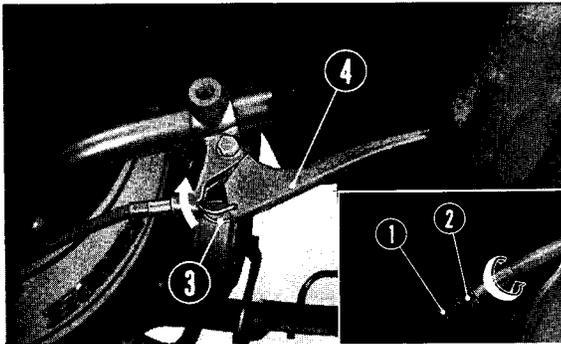
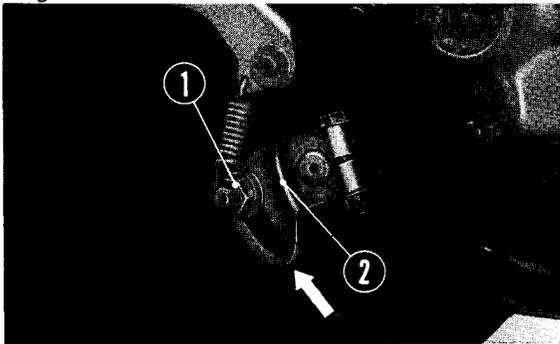


Fig. 7



① Lock nut ② Adjuster nut ③ Brake lever clip
④ Front brake lever
Fig. 8



① Lock nut ② Tensioner lock arm
Fig. 9

5. Make the adjustment by loosening the lock nut and turning the adjuster nut.

Turning the adjuster nut clockwise (direction Ⓐ) will reduce the amount of play. After completing the adjustment, set the brake lever clip to the parking position and check the function of the brake.

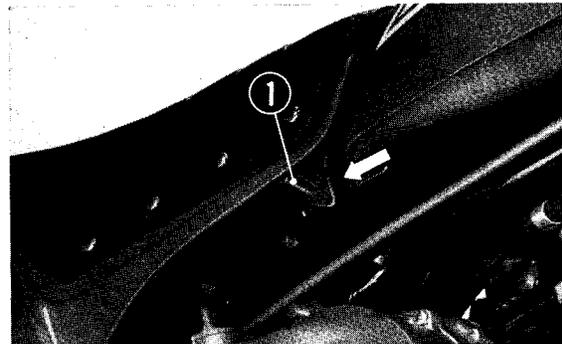
4. DRIVE CHAIN ADJUSTMENT

1. Remove the frame body cover.
2. Loosen the tensioner lock arm lock nut, force the tensioner lock arm up by hand (to make drive chain taut), and then retighten the lock nut.

III. ENGINE

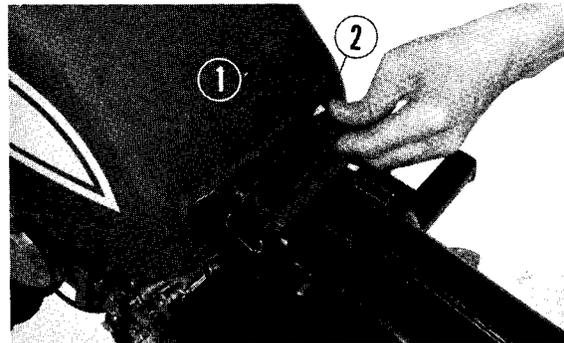
1. ENGINE REMOVAL

1. Push in the seat stopper lever and remove the frame body cover.
2. Remove the spark plug cap.
3. Close the fuel tube by a clip to shut off the flow of fuel, and then disconnect the fuel tube from the carburetor.



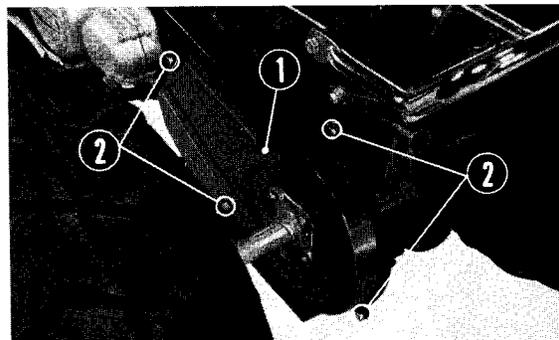
① Seat stopper lever
Fig. 10

4. Unfasten the fuel tank band and remove the fuel tank.
5. Remove the front fender.
6. Remove the air cleaner case and disconnect the air cleaner connecting tube.



① Fuel tank ② Fuel tank band
Fig. 11

7. Loosen four 6 mm bolts and remove the drive chain case. Unfasten the drive chain clip and remove the drive chain.



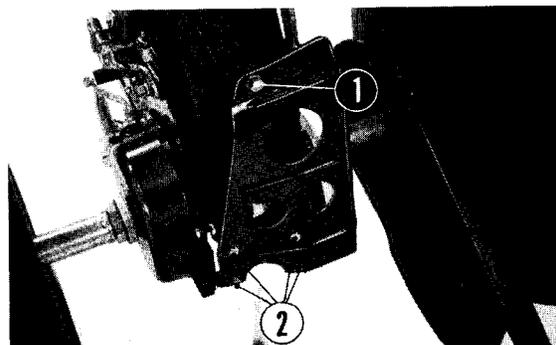
① Drive chain case ② 6 mm bolts
Fig. 12

8. Unscrew the 8 mm and four 6 mm bolts, and remove the protector plate.

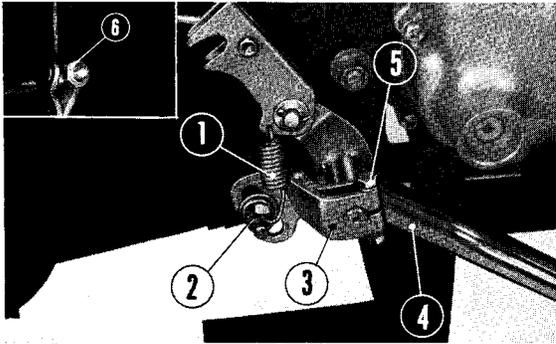
Note :

If the step bracket (Fig. 18) is removed, the operations in paragraph 9 and 10 is not required.

9. Disconnect the brake cable from the escape lever.

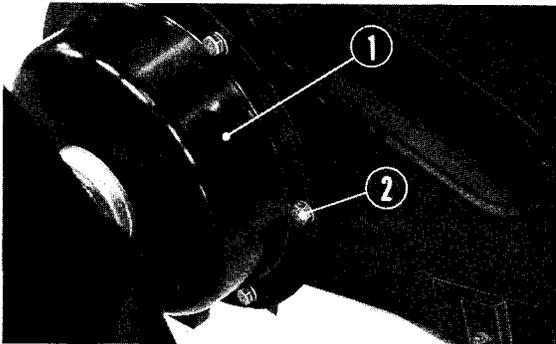


① 8 mm bolt ② 6 mm bolts
Fig. 13



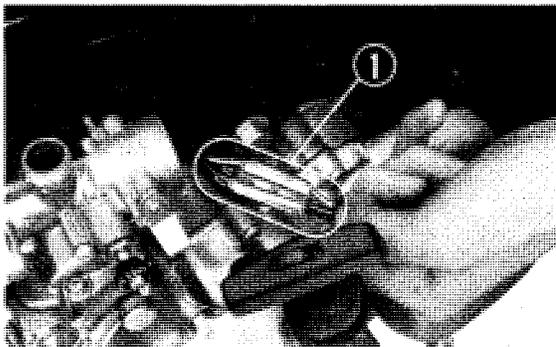
① Brake pedal spring ② 10 mm nut
③ Tensioner lock arm ④ Brake pedal
⑤ Tensioner lock arm mounting bolt
⑥ Brake adjuster nut

Fig. 14



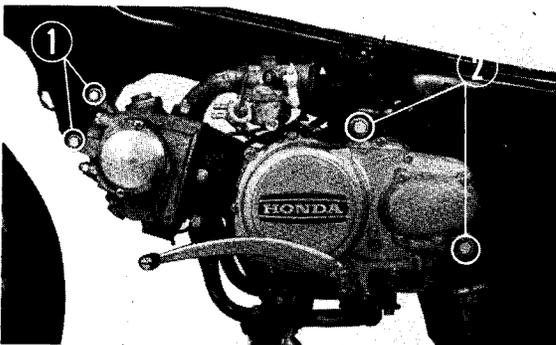
① Brake drum cover B ② 6 mm bolt

Fig. 15



① Coupler

Fig. 16



① 8 mm engine mounting bolts
② 10 mm engine mounting bolts

Fig. 17

10. Loosen the tensioner lock arm mounting bolt and remove the brake pedal spring and 10 mm nut, and then slide off the tensioner lock arm. Remove the brake adjuster nut and the brake pedal.

11. Unscrew the two 6 mm muffler mounting nuts, the 6 mm bolt from the brake drum cover B and then remove the muffler.

12. Disconnect the throttle cable from the carburetor.

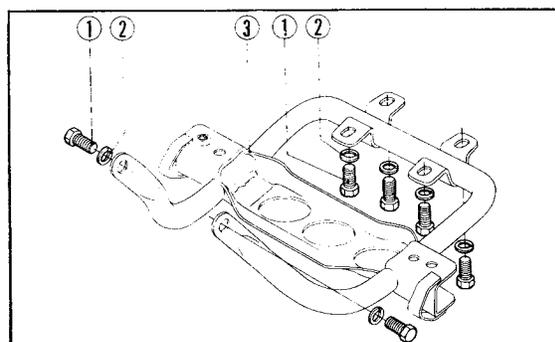
13. Disconnect all electrical leads from the engine to the wire harness at the coupler.

14. Unscrew the two each 8 mm and 10 mm engine mounting bolts and remove the engine from the frame.

15. Remove the gear change pedal and the step bracket from the engine.

2. ENGINE INSTALLATION

1. Install the step bracket on the engine.



① 8 mm bolts ② 8 mm spring washers

③ Step bracket

Fig. 18

2. Install the gear change pedal on the engine so that the forward end of the pedal is approximately $3/8$ in (10 mm) higher than the step, and then lock in place with 6 mm bolt.

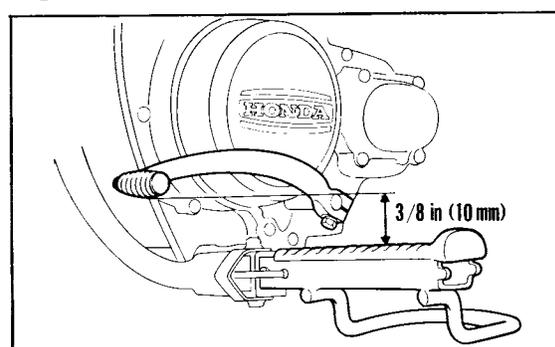
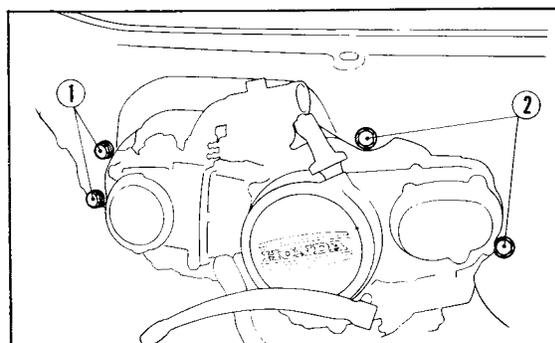


Fig. 19

3. Mount the engine on the frame with two each 10 mm and 8 mm bolts.



① 8 mm bolts ② 10 mm bolts

Fig. 20

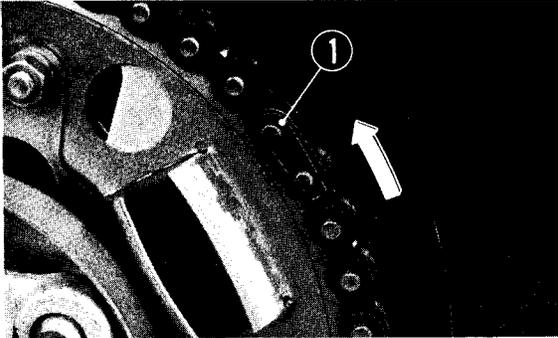
4. Connect the throttle cable to the carburetor and then install the carburetor top.

5. Connect the black and yellow cords between the engine and wire harness to their respective colors.

6. Install the muffler to the cylinder head with two each 6 mm nuts and spring washers, and a 6 mm bolt on the brake drum cover.

7. Install the tensioner lock arm and brake pedal as directed page 25.

8. Install the protector plate.



① Joint clip
Fig. 21

9. Lay the drive chain over the sprockets and connect the ends with the joint, link plate and clip.

Fix the clip from the direction of motion

10. Install the air cleaner and connect the connecting tube securely on the carburetor.
11. Install the front fender on the front fork with four each 6 mm washers, spring washers, and bolts.
12. Mount the fuel tank on the frame and tighten the fuel tank band.
13. Connect the fuel tube to the carburetor and clamp the tube with a clip.
14. Install the spark plug cap on the spark plug.
15. Install the frame body cover on the frame and lock with the stopper lever.

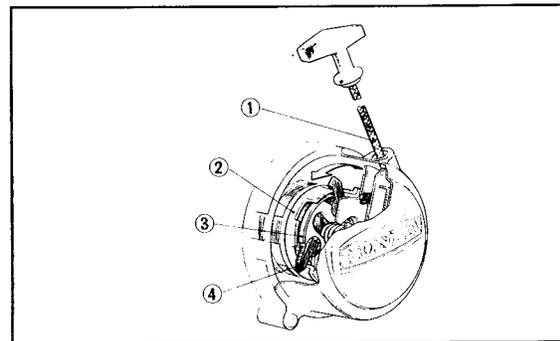
3. PRINCIPAL CHANGES TO THE CT90

1. Cylinder

Item	Standard Value	Serviceable Limit
Inside diameter	50.02~50.03 mm (1.969~1.970 in)	Replace if over 50.15 mm (1.975 in)

2. Recoil Starter

The starter is a recoil type which is mounted on top of the left crankcase cover. A starter pulley is also provided which mounts on the end of the AC generator rotor with three 6 mm bolts.

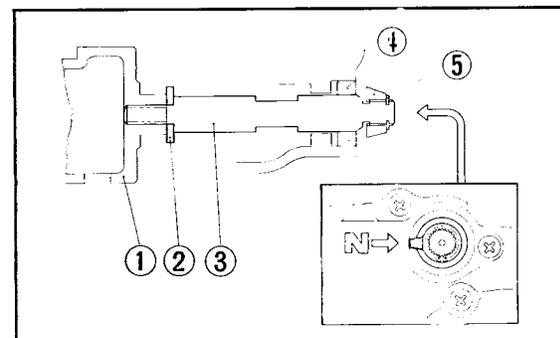


① Recoil starter rope ② Starter pulley
③ Friction plate ④ Starter ratchet

Fig. 22

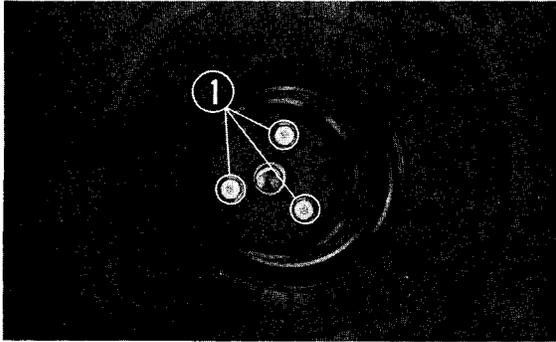
3. Neutral Indicator

The neutral indicator is located on the left crankcase cover.

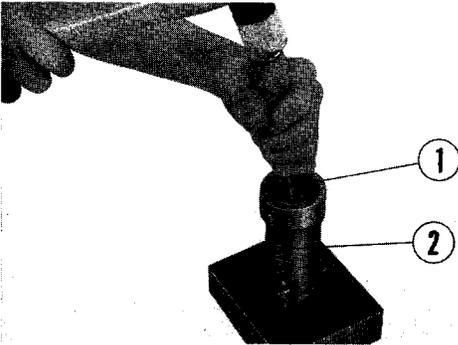


① Gear shift drum ② Shift drum side washer
③ Neutral indicator shaft ④ Neutral indicator
⑤ 5 mm snap ring

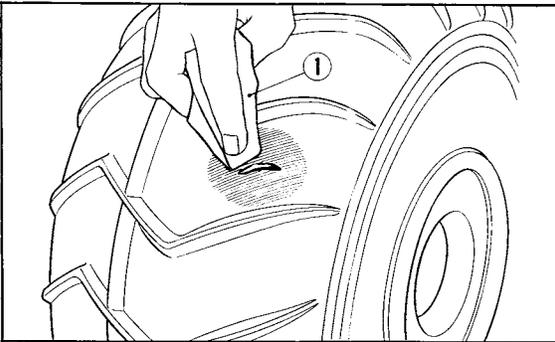
Fig. 23



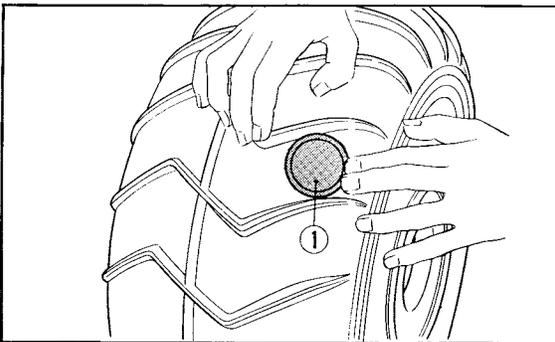
① 8 mm bolts
Fig. 24



① Soft metal drift ② Front wheel hub
Fig. 25



① Sandpaper
Fig. 26



① Patch
Fig. 27

IV. CHASSIS

1. FRONT WHEEL

A. Disassembly

1. Place a 12 in(300 mm) high support block under the engine to raise the front wheel off the ground.
2. Remove the cotter pin from the front axle and loosen the axle nut.
3. Remove the front axle collar and separate the wheel from the front fork.
4. Remove the front wheel side collar and pull the axle out from the left side.
5. Unscrew the three 8 mm bolts from the wheel center and then remove the wheel hub.
6. Remove the ball bearings (#6003) and dust seals (#20358) from the hub by driving out with a soft metal drift.

B. Inspection and Repair

1. Tire repair

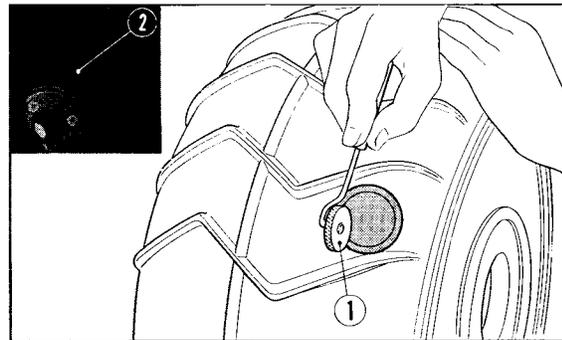
- 1) Locate the puncture and then select the repair patch of the proper size for the punctured hole.
- 2) Buff the area surrounding the punctured hole with a sandpaper.
- 3) Apply patch cement on the buffed area slightly larger than the size of the patch.
- 4) Apply the patch to the repair area after the cement has thoroughly dried

- 5) Apply pressure on the patch with a roller working from the center outward for positive adhesion.

Refer to the instruction contained in the repair kit for further detail.

Note :

Do not hit or apply force against the rubber plug on the inside of the wheel as it may be damaged and result in air leak.



① Roller ② Rubber plug
Fig. 28

2. Bent front axle

Repair or replace the axle if it is bent in excess of **0.31 in (8.0 mm)**.

3. Damaged oil seal

If the lip of the seal is cut or worn, or the seal distorted, replace with a new item.

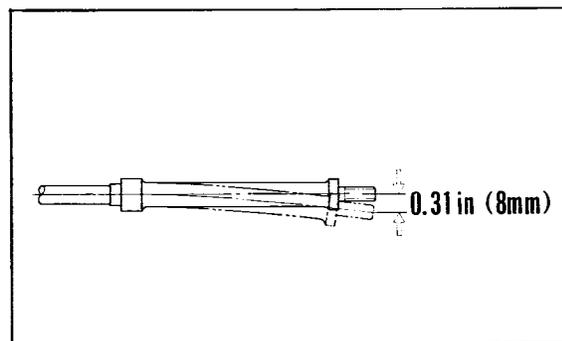
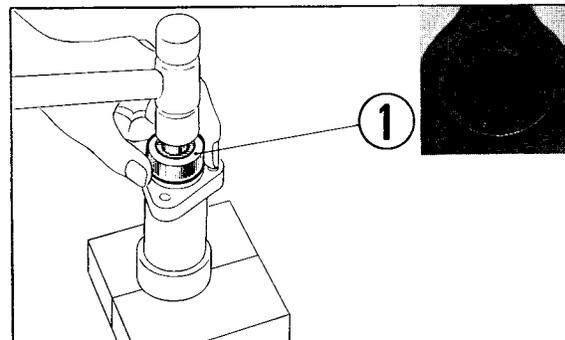


Fig. 29

C. Reassembly

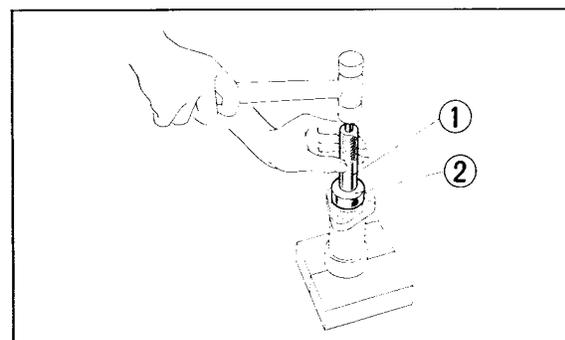
1. Drive the front wheel bearing (#6003) into the hub gently with the bearing driver, Tool #07054-91801. The bearing must be installed with the marking on the outside.



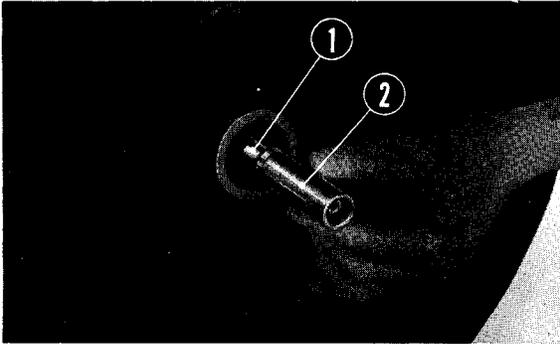
① Bearing driver
Fig. 30

2. Apply liberal amount of grease on the bearings. Carefully drive the seal into both sides of the hub with the bearing driver.

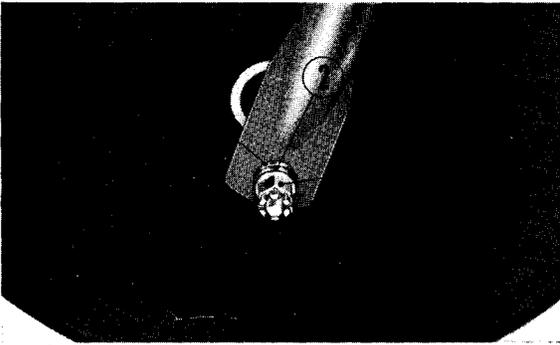
Install the oil seals so that they are flush with the hub.



① Bearing driver handle ② Oil seal driver
Fig. 31



① Front axle ② Front wheel side collar
Fig. 32



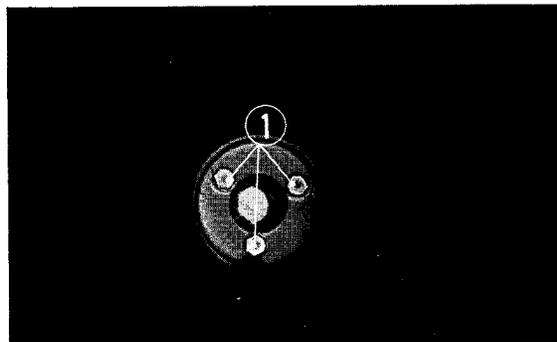
① Front axle collar ② 12 mm spring washer
③ 12 mm castle nut ④ 3 mm split pin
Fig. 33

3. Assemble the hub on the front wheel with the three 8 mm bolts and spring washers. Torque the bolts to
14.5~17.4 lbs-ft (2~2.4 kg-m)
4. Insert the front axle into the front wheel from the left side and assemble the front wheel side collar on the axle from the right.
5. Assemble the wheel on the front fork from the bottom, install the front axle collar, spring washer and then secure it to the fork with castle nuts from both sides. Install new split pins into the nuts.
6. Remove the support block from under the engine.

2. REAR WHEEL

A. Removal

1. Remove the cotter pin, axle nut, and the 15 mm washer.
2. Place a support block approximately 12 in (300 mm) high under the frame and raise the rear wheel off the ground.
3. Unscrew the three 8 mm bolts and remove the pipe shaft from the wheel.



① 8 mm bolts
Fig. 34

B. Inspection and Repair

Tire repair

Perform the repair in the same manner as directed for the front wheel, page 10.

Note :

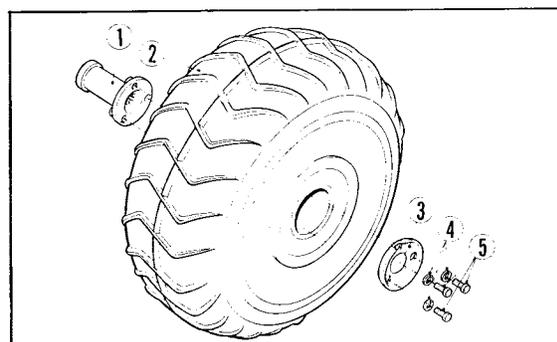
Do not hit or apply force against the rubber plug on the inside of the wheel as it may be damaged and resulted in air leak.

C. Installation

1. Install and secure the pipe shaft on the rear wheel with the three 8 mm spring washers and bolts.

Torque the bolts to

14.5~17.4 lbs-ft (2~2.4kg-m)



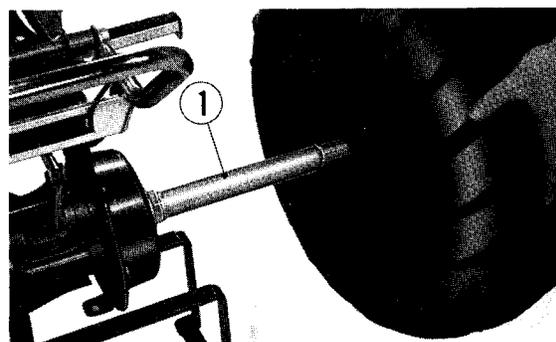
① Pipe shaft ② Rear wheel
③ Support plate patch ④ 8 mm spring washers
⑤ 8 mm bolts
Fig. 35

2. Assemble the wheel on the rear axle and then secure it with the 15 mm washer and 14 mm castle nut. Install new cotter pin into the nut.

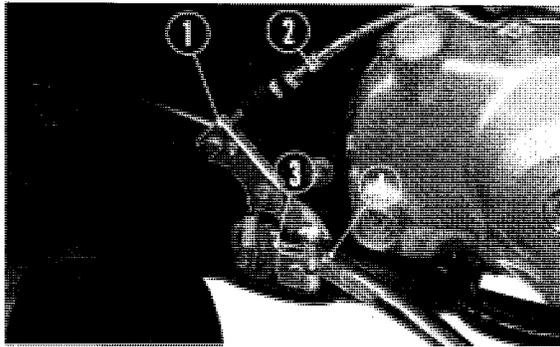
Note :

When installing the right wheel, make sure that the distance collar is assembled on the right side.

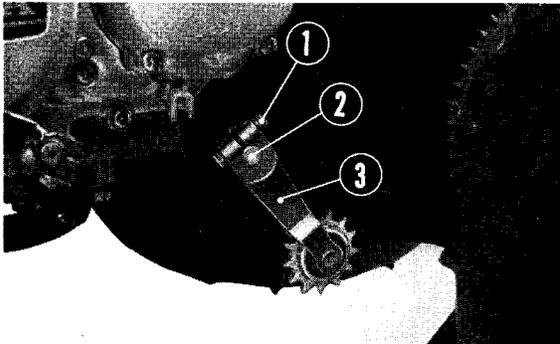
3. Remove the support block from under the frame.



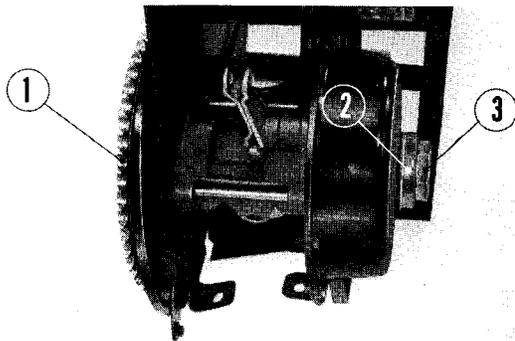
① Distance collar
Fig. 36



① Escape lever ② Brake cable
③ Tensioner lock arm ④ Brake pedal
Fig. 37



① 6 mm bolt ② Tensioner shaft ③ Tensioner
Fig. 38



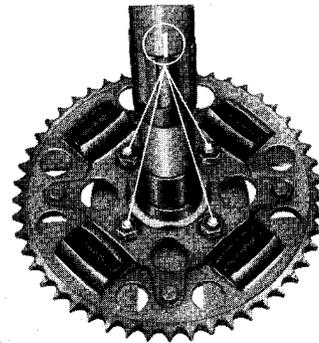
① Final driven sprocket ② Seal washer
③ Brake drum nut
Fig. 39

3. DRIVE MECHANISM

A. Disassembly

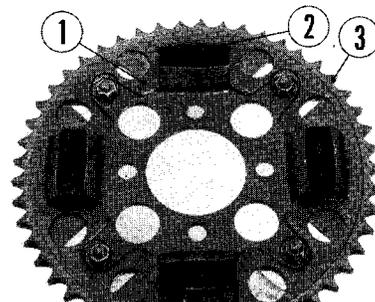
1. Remove the rear wheel as directed in the section on rear wheel removal, page 13.
2. Unscrew the four 6 mm bolts to remove the drive chain case, and then draw the rear wheel axle out of the frame.
3. Disengage the drive chain clip and disconnect the drive chain.
4. Disconnect the rear brake cable from the escape lever, the tensioner lock arm mounting bolt, brake pedal spring, and the 10mm nut. Then, remove the brake pedal and the tensioner lock arm.
5. Unscrew the 6 mm bolt, remove the tensioner from the tensioner shaft, and then remove the shaft from the frame.
6. Loosen the brake drum nut, remove the seal washer, and then remove the final driven sprocket assembly from the left side.

7. Loosen the four 10 mm nuts and remove the four rear drive bolts. Pull the final driven sprocket from the wheel shaft.



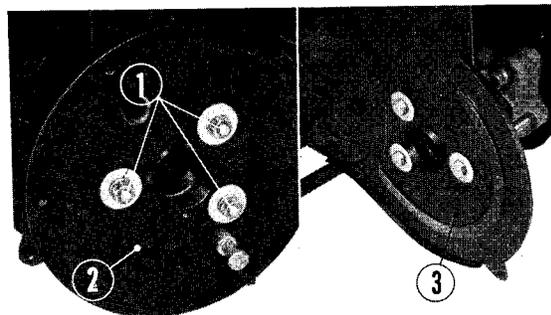
① Rear drive bolts
Fig. 40

8. The final driven sprocket assembly can be separated into sprocket and damper holders by loosening the four 6 mm nuts.
9. Remove the damper rubbers from the final driven sprocket.
10. Disassemble the brake mechanism by referring to page 25.
11. Remove the protector cover.



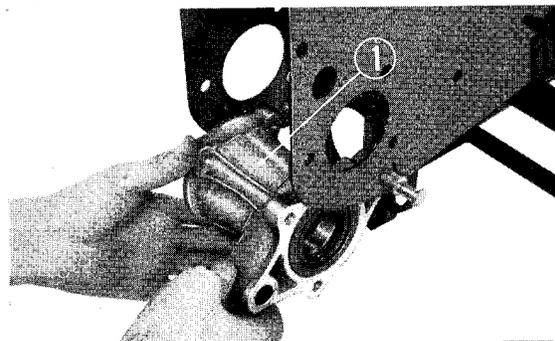
① Damper holder ② Damper rubber
③ Final driven sprocket assembly
Fig. 41

12. Remove three 8 mm bolts, and then remove the brake drum cover A and the sub chain cover.

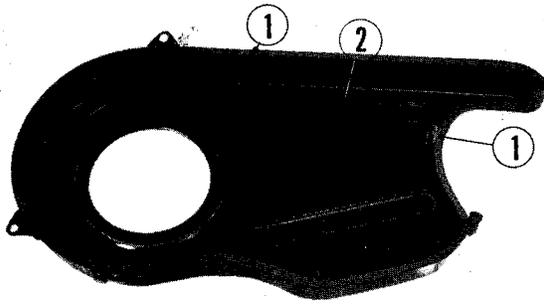


① 6 mm bolts ② Brake drum cover A
③ Sub chain cover
Fig. 42

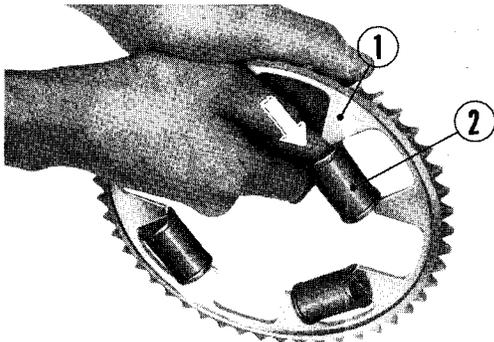
13. Remove the rear wheel hub from the frame. The rear wheel hub can be easily removed by rotating the top of the hub so that it is at the bottom.
14. Remove the ball bearings (#6007) and dust seals (#40627) from the hub by driving them out gently with a soft metal drift.



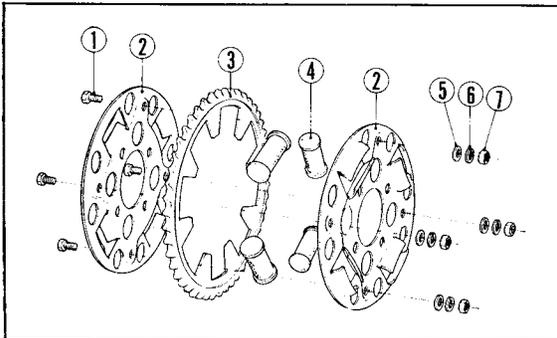
① Rear wheel hub
Fig. 43



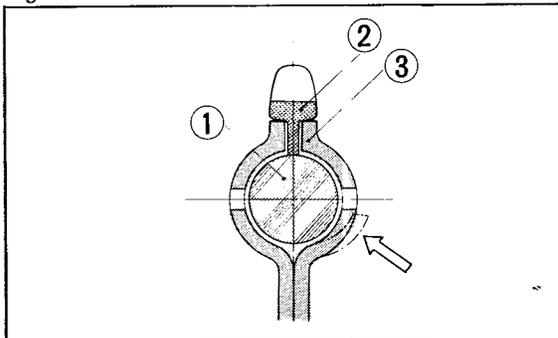
① Rubber seal ② Drive chain case
Fig. 44



① Final driven sprocket ② Damper rubber
Fig. 45



① 6 mm bolts ② Damper holders
③ Final driven sprocket ④ Damper rubber
⑤ 6 mm plain washers ⑥ 6 mm spring washers
⑦ 6 mm nuts
Fig. 46



① Damper rubber ② Final driven sprocket
③ Damper holder
Fig. 47

B. Inspection and Repair

1. Oil seal

If the lip of the seal is cut or worn, or the seals distorted, replace with a new item.

2. Inspect the brake cam and brake shoe support pin in the rear wheel hub for bend and wear. Replace if unsatisfactory.

3. Examine the condition of the rubber seal on the drive chain case for proper adhesion to the case. Re-cement if necessary or replace if damaged.

C. Reassembly

1. Hold the end of the damper rubber against the mounting area of the final driven sprocket. Apply pressure on top of the rubber to force it into the sprocket. Install all four of the damper rubbers in the same manner and make sure that they are fully seated.

2. Place the final driven sprocket between the damper holders and install the four each 6 mm bolts, 6 mm plain washers, spring washers and nuts.

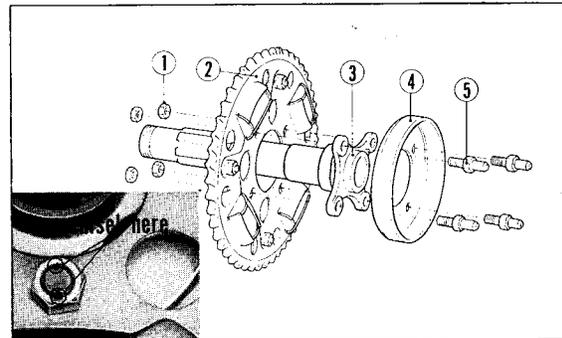
Torque to 5~7.2 lbs-ft (0.7~1.0 kg-m)

Note :

Check to make sure that the damper rubber is installed in the center of the final driven sprocket. If clearance exists between the damper rubber and the damper holder, hammer the damper holder to eliminate the clearance.

3. Assemble the final driven sprocket and the drive chain plate on the wheel shaft and bolts them together with four 10 mm bolts and nuts.

Torque to **29~34.7 lbs-ft (4~4.8 kg-m)** and follow by staking the nuts with a chisel at two places to prevent nuts from loosening.



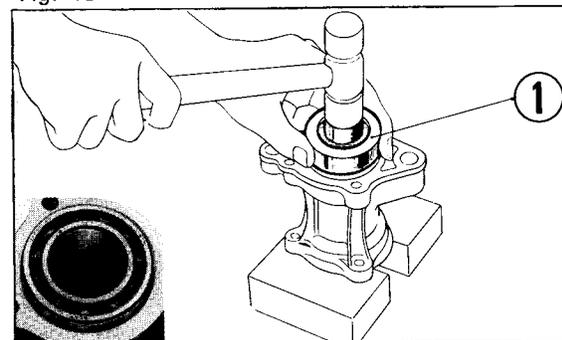
① Rear drive bolt nuts ② Final driven sprocket
③ Wheel shaft ④ Drive chain plate
⑤ Rear drive bolts

Fig. 48

4. Drive the ball bearings (#6007) gently into the wheel hub with a bearing driver (Tool #07054-91805). The bearing must be installed with the marking on the outside.

Apply a liberal amount of grease on the bearings before installing the seals with the bearing driver.

Install the oil seals flush with the hub.

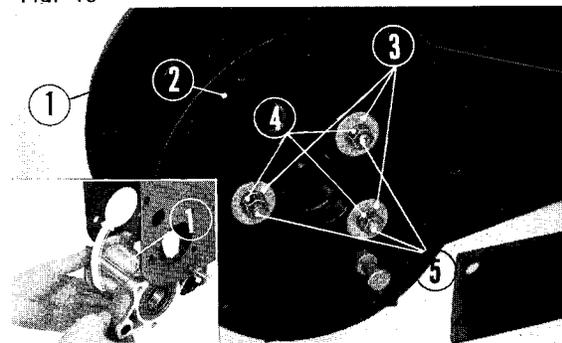


① Bearing driver

Fig. 49

5. Insert the rear wheel brake support pin of the rear brake hub into the hole in the frame and install the hub on the frame. Place the brake drum cover A on the right and the sub chain cover on the left sides of the hub and insert three 8 mm bolts in from the left side and tighten with 8.5 mm washers, (special washer) 8 mm spring washers and 8 mm nuts.

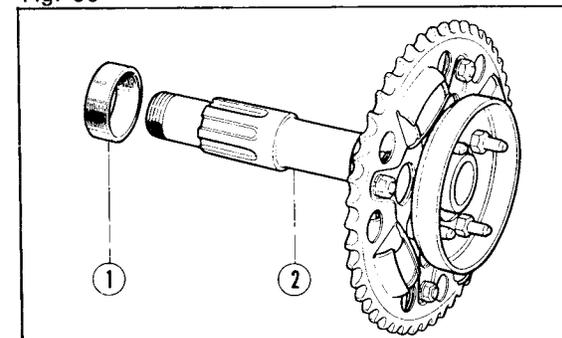
Torque to **14.5~17.4 lbs-ft (2~2.4 kg-m)**



① Sub chain cover ② Brake drum cover A
③ 8.5 mm washers ④ 8 mm spring washers
⑤ 8 mm nuts

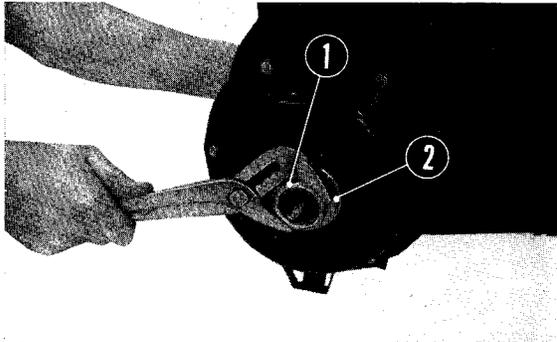
Fig. 50

6. Install the protector plate.
7. Assemble the brake mechanism as directed on page 26~27.
8. Assemble the wheel shaft collar on the wheel shaft.

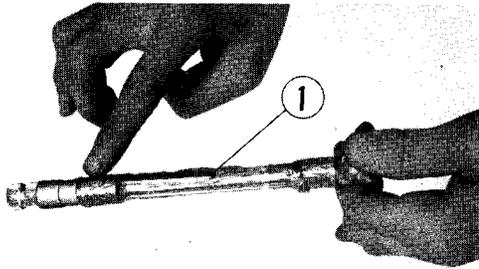


① Wheel shaft collar ② Wheel shaft

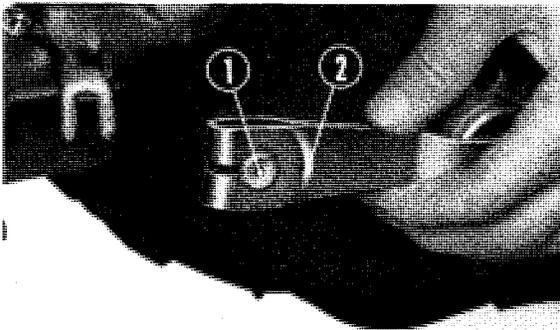
Fig. 51



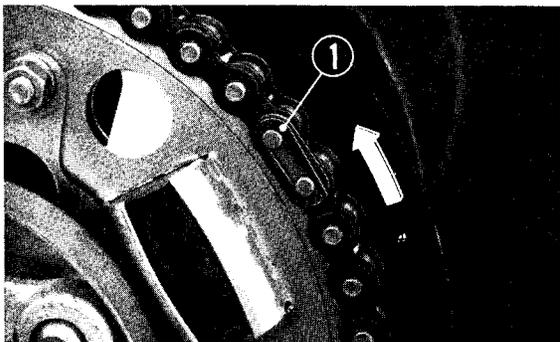
① Brake drum nut ② Seal washer
Fig. 52



① Tensioner shaft
Fig. 53



① Tensioner shaft ② Tensioner arm
Fig. 54



① Drive chain clip
Fig. 55

9. Insert the final driven sprocket in from the left side, assemble the seal washer from the right side and tighten the brake drum nut.

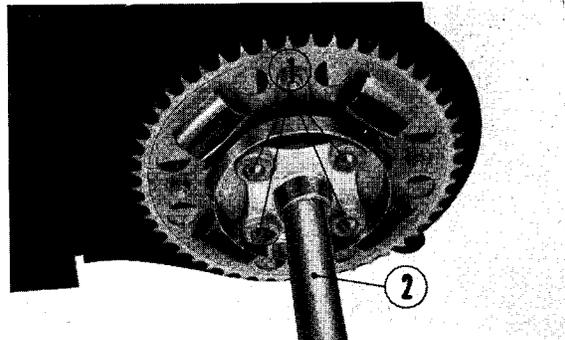
Torque to 29~32.5 lbs-ft (4~4.5 kg-m)

10. Apply grease on the tensioner shaft, and then insert it into the frame.

11. Mount the tensioner arm on the tensioner shaft with a 6 mm bolt, two 6 mm plain washers and nut.

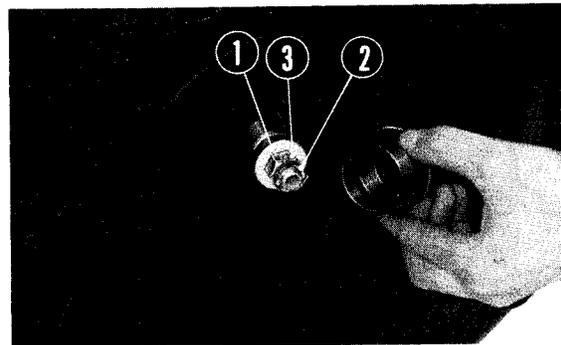
12. Loop the drive chain over both sprockets and connect the chain with the joint link plate. Observe that the clip is installed as shown with the arrow.

13. Insert the rear wheel axle through the final driven sprocket from the left side, and then install the rear drive bolt into the flange hole of the rear wheel axle.
14. Install the rear axle distance pipe on the right wheel axle. Install the rear wheel.

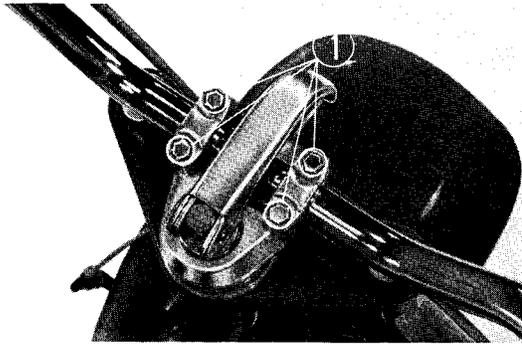


① Rear drive bolts ② Rear wheel axle
Fig. 56

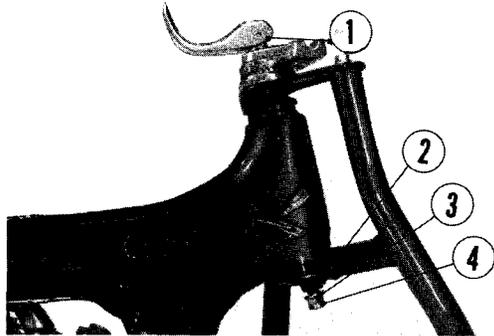
15. Install the 15 mm washer; tighten with 14 mm castle nut and install a new 3 mm cotter pin:



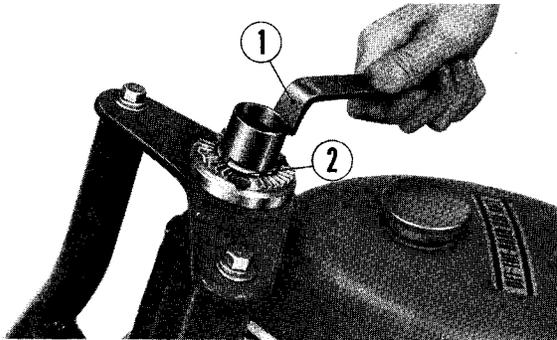
① 15 mm washer ② 14mm castle nut
③ 3 mm cotter pin
Fig. 57



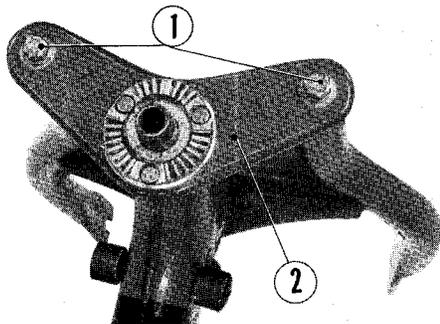
① 6 mm bolts
Fig. 58



① Handle clamp lever ② 14 mm spring washer
③ 14 mm castle nut ④ 3 mm cotter pin
Fig. 59



① Steering stem nut tool ② Steering stem nut
Fig. 60



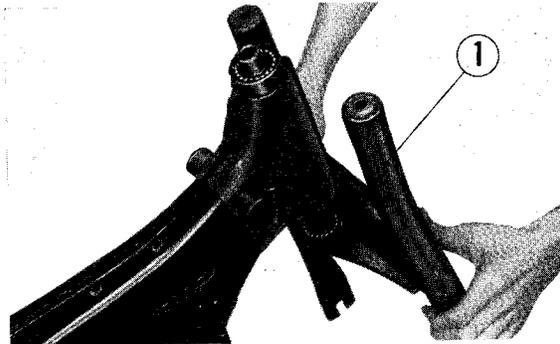
① 10 mm bolts ② Fork top bridge
Fig. 61

4. STEERING SYSTEM

A. Disassembly

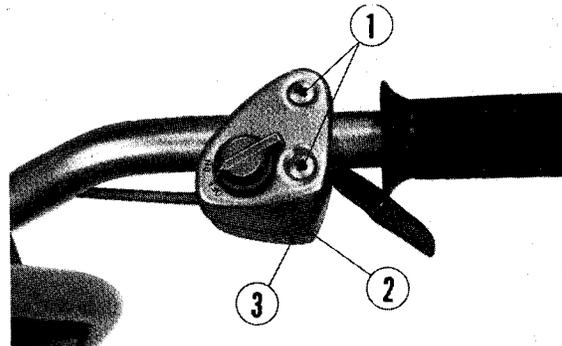
1. Remove the front wheel as directed on page 10.
2. Disconnect the throttle cable from the carburetor and the brake cable from the brake lever.
3. Loosen the four 6 mm bolts, remove the handle bar upper holder, and remove the handle bar.
4. Raise and flip back the handle clamp lever. Remove the 3 mm cotter pin; loosen the 14 mm castle nut and then remove the handle clamp lever from the stem head.
5. Loosen the steering stem nut with the stem nut tool (Tool #07085-91801) and remove the steering stem washer.
6. Loosen the two 10 mm bolts and remove the fork top bridge.

7. Loosen the steering head top thread and remove the front fork from the frame, being careful not to drop the steel balls.



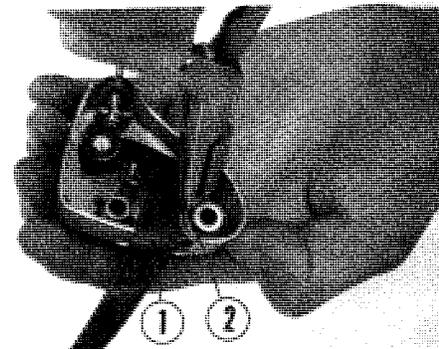
① Front fork
Fig. 62

8. Loosen two screws and remove the throttle lever case from the throttle lever cover.



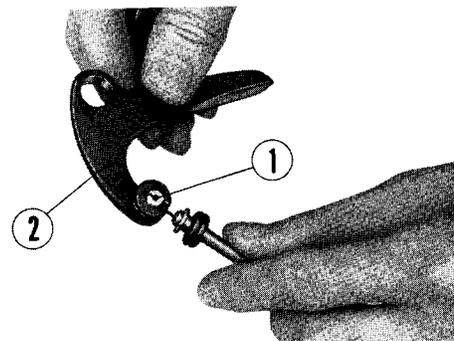
① Screws ② Throttle lever cover
③ Throttle lever case
Fig. 63

9. Remove the throttle case seat.
10. Remove the 10 mm snap ring and then the throttle lever from the case.



① Throttle lever ② 10 mm snap ring
Fig. 64

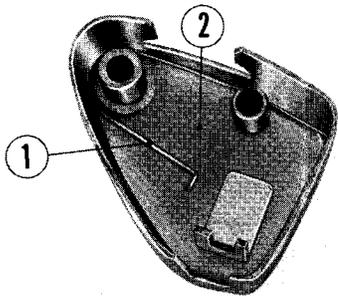
11. Disconnect the throttle cable from the throttle lever.



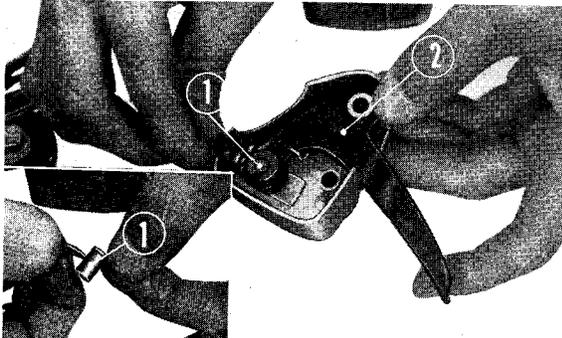
① Throttle cable ② Throttle lever
Fig. 65

B. Inspection and Repair

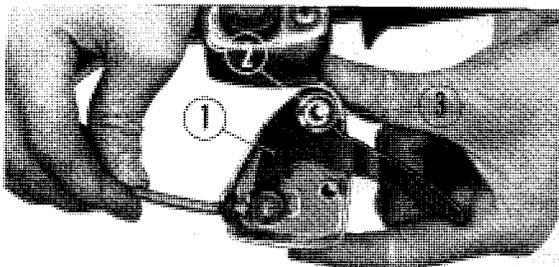
1. Check the operational condition of the throttle cable and inspect the inner and outer cables for wear, frays and damage.
If damaged, replace the damaged cable.
2. Inspect the throttle lever for bend. If bend is excessive, replace.
3. Inspect the #6 steel balls for wear, cracks and damage. Replace if necessary.
4. Inspect the cone and ball races and replace any that are excessively worn or damaged.
5. Replace damaged throttle lever spring.



① Throttle lever spring ② Throttle lever case
Fig. 66



① Throttle cable end ② Throttle lever
Fig. 67

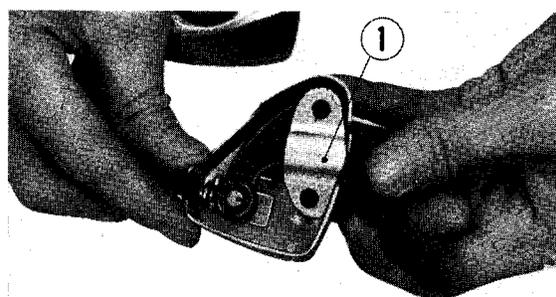


① Throttle lever ② 10 mm washer ③ Snap ring
Fig. 68

C. Reassembly

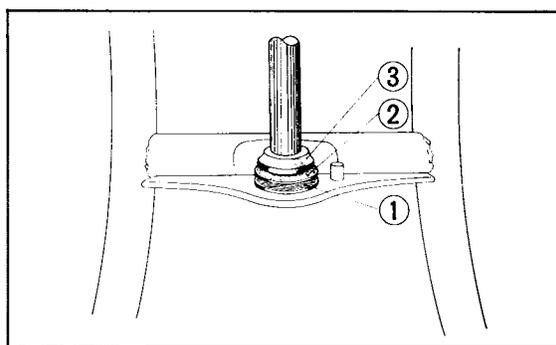
1. Install the throttle lever spring on the throttle lever case.
2. Apply grease to the end of the throttle cable, and then connect it to the throttle lever.
3. Install the throttle lever and 10 mm washer on the throttle case, and then install the snap ring.

4. Place the throttle case seat on the throttle lever case.
5. Install the throttle lever cover and case at a point $13/16$ in (20 mm) from the throttle grip rubber with two screws.



① Throttle case seat
Fig. 69

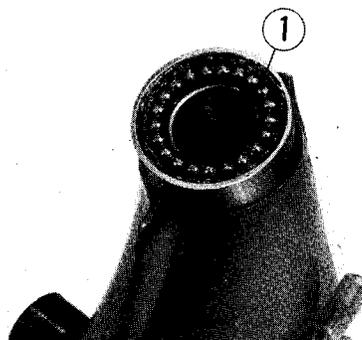
6. Assemble the dust seal washer and the dust seal on the front fork, and then drive in the bottom cone race.



① Dust seal washer ② Dust seal
③ Steering bottom cone race
Fig. 70

7. Wash the ball, and cone races, and steel balls in cleaning solvent.

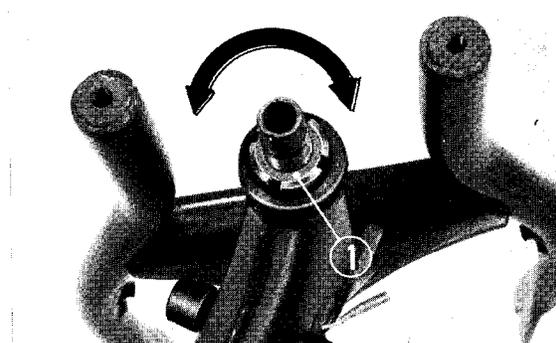
Apply liberal amount of new grease on the ball races, and then lay the balls in the cone races. Both the upper and bottom ball races must have 21 balls.



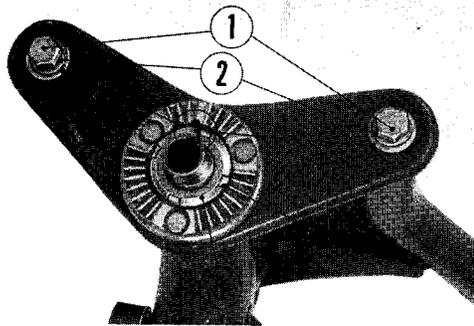
① Steel balls
Fig. 71

8. Insert the front fork into the stem head being careful not to drop the balls. Install the steering top cone race, steering head top mudguard, and then install and tighten the steering head top thread.

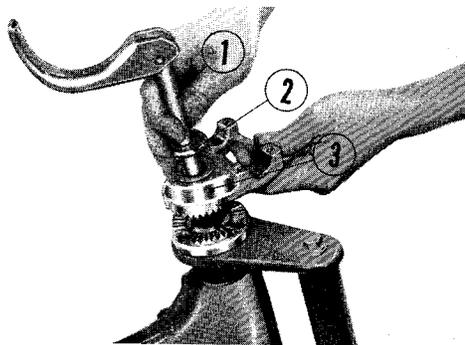
Tighten the steering head top thread so that there is neither looseness nor any binding when the steering handle is moved through its full range.



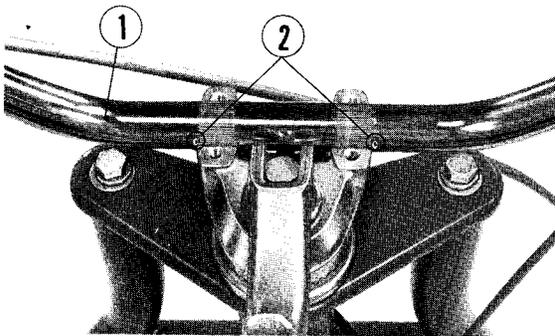
① Steering head top thread
Fig. 72



① 10 mm bolts ② Spring washer
③ 10 mm washer ④ Steering stem washer
⑤ Steering stem nut
Fig. 73



① Handle clamp lever ② Washer
③ Handle pipe under holder
Fig. 74



① Handle bar ② Punch marks
Fig. 75

9. Tighten the fork top bridge with the 10 mm washer, spring washer, and 10 mm bolt.

Torque to **29~34.7 lbs-ft (4~4.8 kg-m)**
Install the steering stem washer and steering stem nut.

10. Assemble the handle clamp lever and washer into the handle pipe under holder and insert it into the stem head.

Install a 14 mm spring washer from the bottom and tighten with a castle nut, followed by locking with a 3 mm cotter pin.

11. Place the handle pipe on the handle under holder; fix the handle pipe in place with two handle pipe upper holders and four 6 mm bolts. Align the punch marks on the handle pipe to the parting surface of the under holder.

Torque to **5~7.2 lbs-ft (0.7~1.0 kg-m)**

12. Connect the brake cable to the brake lever. If the brake pedal is depressed, this operation can be simplified. Adjust the brake lever as directed in the brake adjustment section on page 3~4.

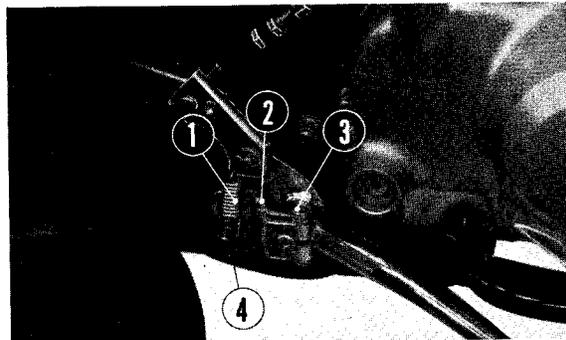
Connect the throttle cable to the carburetor.

13. Install the front wheel as directed on page 11~12.

5. BRAKE

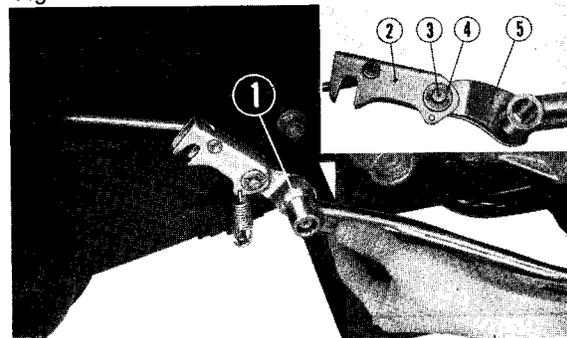
A. Disassembly

1. Remove the brake pedal spring.
2. Loosen the tensioner lock arm lock nut (10 mm nut) and the 6 mm nut. Remove the tensioner lock arm.



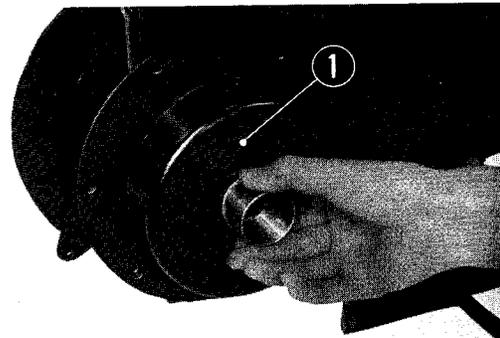
① Brake pedal spring ② Tensioner lock arm
③ 6 mm nut
④ Tensioner lock arm lock nut (10 mm nut)
Fig. 76

3. Loosen the brake adjusting nut and remove the brake pedal.
4. Remove the 2 mm split pin, pull out the escape shaft, and then remove the escape lever from the brake pedal.



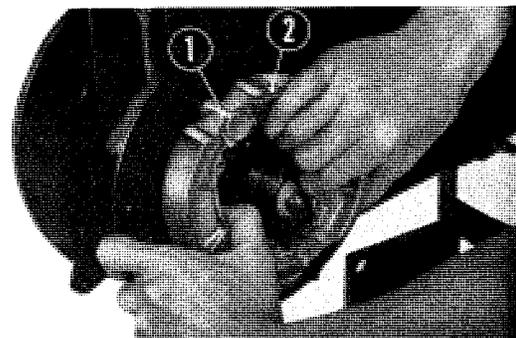
① Brake pedal ② Escape lever ③ Escape shaft
④ 2 mm split pin ⑤ Brake pedal
Fig. 77

5. Remove the rear wheel as directed on page 13.
6. Disassemble the drive system as directed on page 14~15.
7. Remove the brake drum cover B and the rear brake drum.

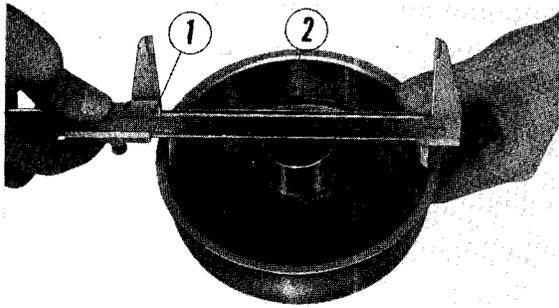


① Rear brake drum
Fig. 78

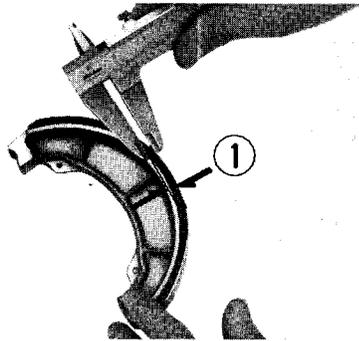
8. Remove the brake shoes and pull out the brake cam.



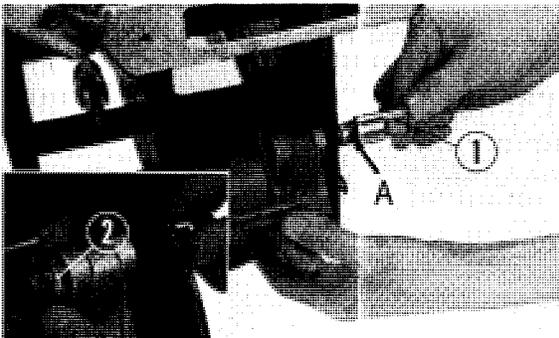
① Brake cam ② Brake shoes
Fig. 79



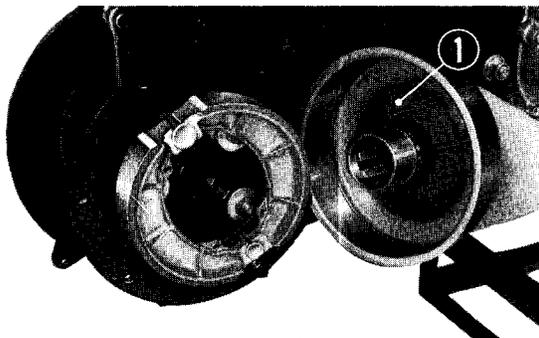
① Vernier caliper ② Rear brake drum
Fig. 80



① Thickness of shoes
Fig. 81



① Brake cam ② Brake cam dust seal
Fig. 82



① Brake drum
Fig. 83

B. Inspection and Repair

1. Rear brake drum

Measure the inside diameter of the drum with a vernier caliper and if it is in excess of **5.54 in (140.6 mm)**, replace the drum.

2. Rear brake shoes

Measure the thickness of the brake lining and if it exceeds **0.06 in (1.5 mm)**, replace the shoes.

3. Inspect the brake cam. Replace if cracked or damaged.

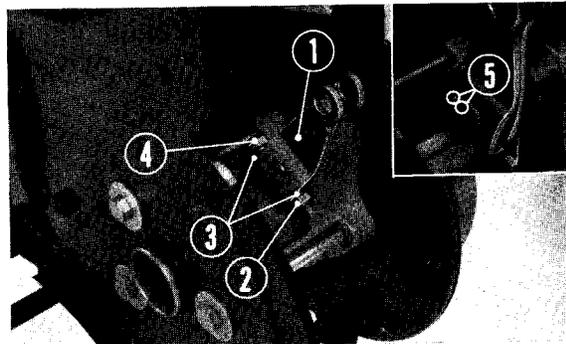
C. Reassembly

1. Apply grease on area A of the brake cam before installing it into the wheel hub. Do not forget to install the brake cam dust seal into the wheel hub.

2. Install the brake shoes and make sure that it is properly in place.

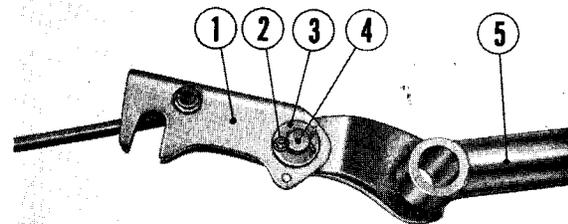
3. Insert the brake drum into the rear wheel hub, and then install the brake drum cover B with five 6 mm bolts.

4. Reassemble the drive mechanism as directed on page 16~19.
5. Reassemble the rear wheel as directed on page 13.
6. Install the rear brake arm on the cam with a 6 mm bolt, spring washer, nut, and plain washers. Align the punch marks on the brake arm and brake cam during the assembly.



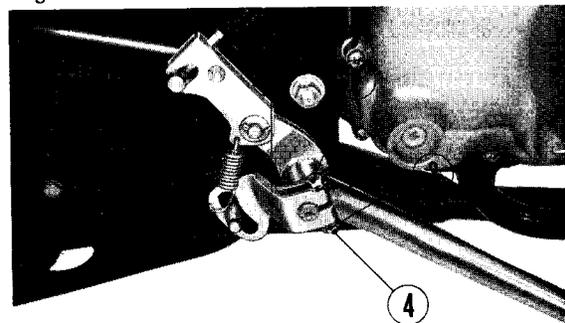
① Rear brake arm ② 6 mm bolt ③ 6 mm washer
④ 6 mm nut ⑤ Punch marks
Fig. 84

7. Join the escape lever and brake pedal with the escape shaft, 8 mm plain washer, and 2 mm split pin.
8. Attach the rear brake rod spring on the escape lever and then install the rear brake arm.



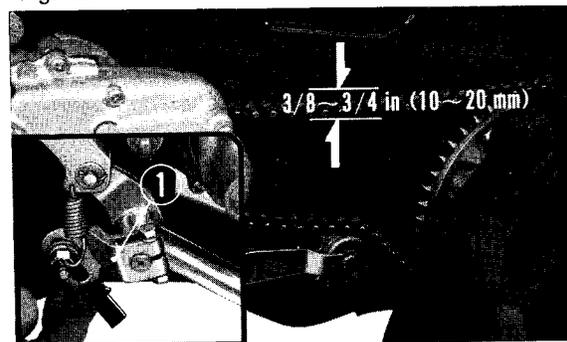
① Escape lever ② 2 mm split pin
③ 8 mm washer ④ Escape shaft ⑤ Brake pedal
Fig. 85

9. Assemble the tensioner lock arm on the tensioner shaft and lock the 6 mm bolt with two plain washers.



① Tensioner lock arm ② 6 mm bolt
③ 6 mm plain washers ④ 6 mm nut
Fig. 86

10. Force up the tensioner lock arm and lock with the 10.2 mm washer, 10 mm spring washer and 10 mm nut after the play in the drive chain has been adjusted to $3/8 \sim 3/4$ in (10~20 mm), when measured at the midpoint of the upper loop.

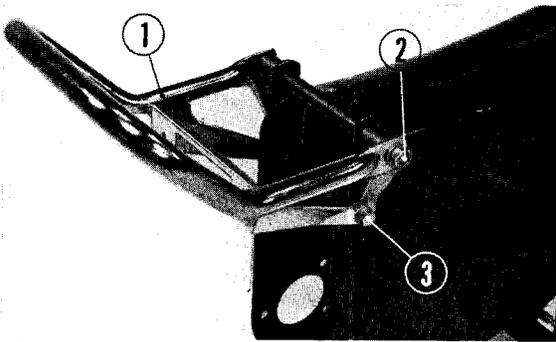


① Tensioner lock arm
Fig. 87

6. FRAME BODY

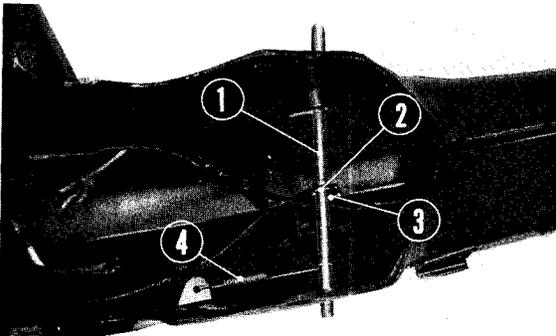
A. Disassembly

1. Remove the engine as directed on page 5~6.
2. Remove the front and rear wheels as directed on pages 10~13.
3. Disassemble the drive mechanism as directed on page 14.
4. Remove the handle bar and front fork as directed on page 20~21.
5. Remove the brake pedal, escape lever, and brake shoes as directed on page 25.
6. Loosen the 6 mm nut and separate the air cleaner body from the air cleaner case. Then loosen the 6 mm nut; remove the air cleaner body and take out the air cleaner element from the air cleaner body.



① Carry pipe ② 10 mm bolt ③ 8 mm bolt
Fig. 38

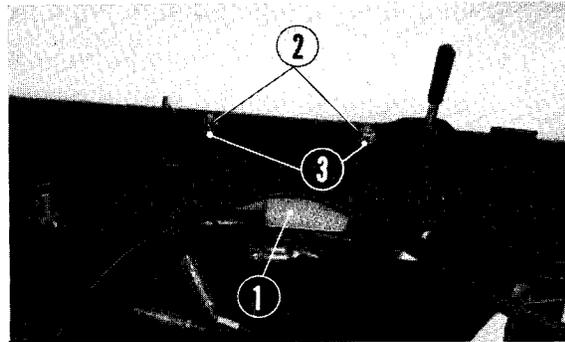
7. Unscrew the 10 mm bolt and two 8 mm bolts, and then remove the carry pipe.



① Seat stopper ② 6 mm washer
③ 2 mm split pin ④ Cover set spring
Fig. 89

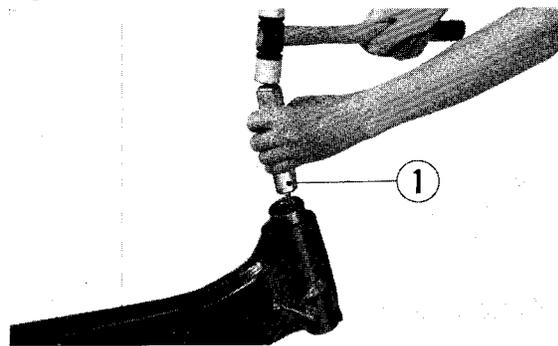
8. Remove the 2 mm split pin, spring, and remove the seat stopper lever from the frame.

9. Loosen the two 5 mm nuts and remove the ignition coil.



① Ignition coil ② 5 mm nuts
③ 5 mm spring washers
Fig. 90

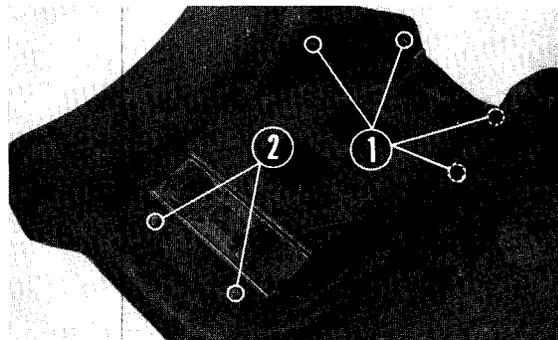
10. Remove the wire harness from the frame.
11. Remove the steering top ball races by using a soft metal or a wooden drift;



① Wooden drift
Fig. 91

12. Seat

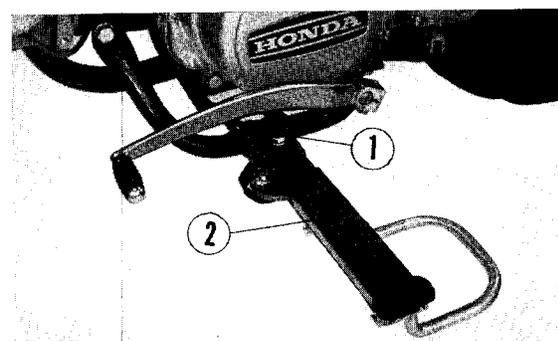
The seat can be detached from the frame by unscrewing the four 5 mm and two 6 mm nuts located behind the frame body cover.



① 5 mm nuts ② 6 mm nuts
Fig. 92

13. Step bar

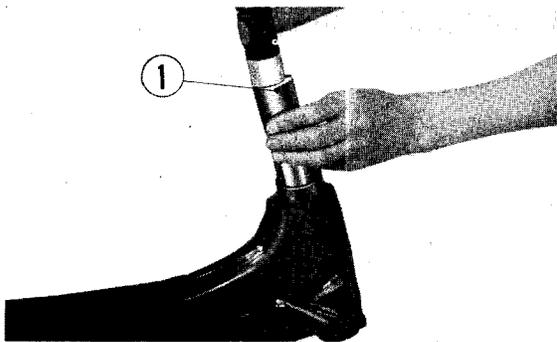
Unscrew the 6 mm bolt; remove the spring pin and remove the step bar from the step bracket.



① 6 mm bolt ② Step bar
Fig. 93

B. Inspection and Repair

1. Inspect the frame body for weld separations, cracks, damages. Replace the frame body if they exist.
2. Replace worn or damaged ball races.
3. Inspect the leather seat covering for damage.
4. Replace damaged fuel tube.
5. Wash the air cleaner element in cleaning solvent or gasoline and let it dry out. Soak in clean engine oil, squeeze out excess oil and reinstall.
6. Repair or replace any abrasion or damage to the seat and frame body cover.



① Wood block
Fig. 94

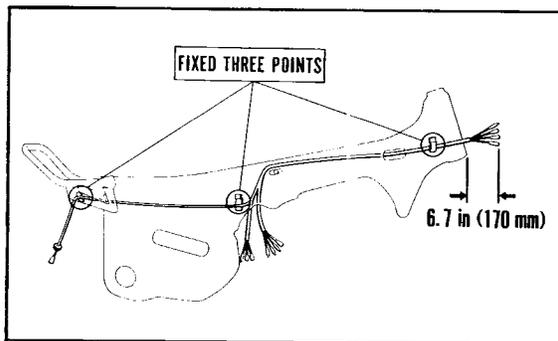
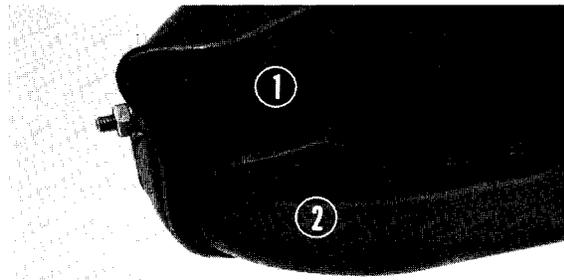


Fig. 95

C. Reassembly

1. Drive the steering top ball races into the steering head until properly seated, using a wood block.
2. Attach the wire harness to the frame at three points so that the end of the harness extends 6.7 in (170 mm) beyond the steering head.
3. Install the ignition coil with two spring washers and 5 mm nuts.
4. Mount the seat stopper lever on the frame with a 6 mm washer and a 2 mm cotter pin. Hook the spring.
5. Install the mount rubber and then attach the carrier.
6. Install the fuel tank front cushions.

7. Cement the air cleaner inlet tube to the air cleaner case and install it on the frame.



① Air cleaner case ② Air cleaner inlet tube
Fig. 96

8. Install the front fork and handle as directed on page 22~24.
Connect the lead from the kill switch into the wire harness and route the lead into the steering head as shown in Fig. 97.
9. Install the drive mechanism as directed on page 16~19.
10. Install the front and rear wheel as directed on page 11~13.
11. Mount the engine as directed on page 7~8.

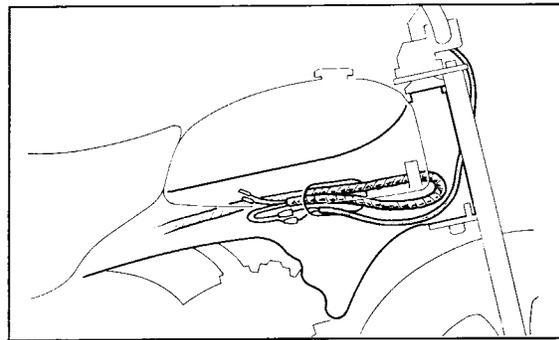
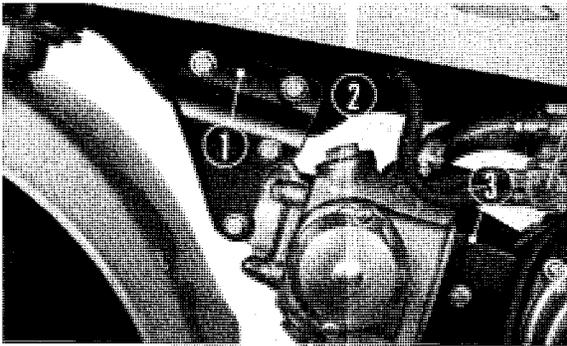


Fig. 97

V. MAJOR DIFFERENCES BETWEEN ATC90 AND US90

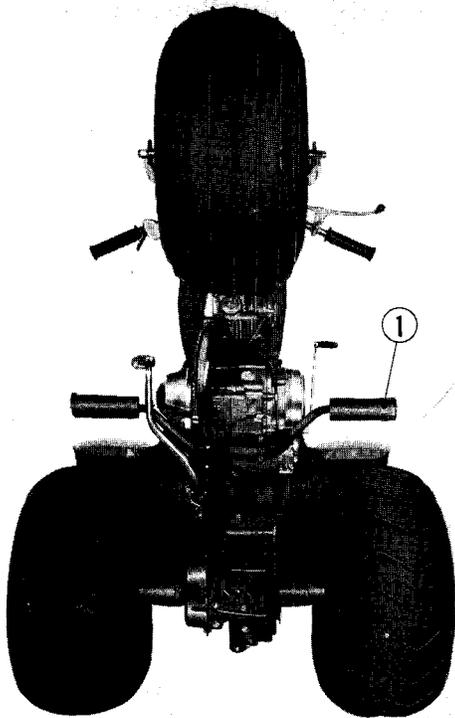
The Honda ATC90 is a remodeled version of its predecessor US90. This Section covers service information peculiar to the ATC90. When it becomes necessary to service an ATC90, be sure to observe the following procedures in addition to the counter-sections described in each major section in this manual. The torque specifications are identical to those of US90.



① Engine mounting bracket ② Cylinder head
③ Cylinder
Fig. 98

1. ENGINE MOUNTING BRACKET

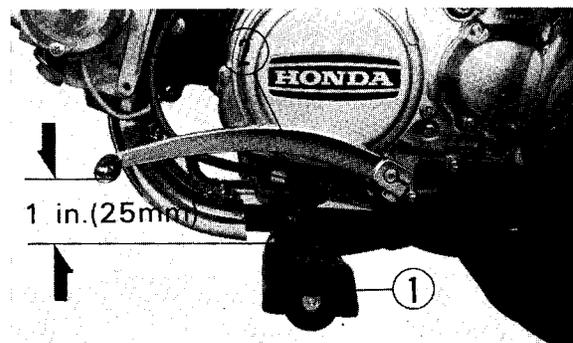
On the new ATC90, the engine bracket can be removed from the chassis; therefore, the cylinder head, cylinder and piston can be serviced on the machine without removing the engine by removing the bracket, front wheel and front fender. Stand the machine upright on the rear wheels as shown when removing the engine or carrying out other maintenance service. Wrap the carry pipe with rag or waste to prevent damage to it.



① Step
Fig. 99

2. STEP

The steps are also new for the re-modeled ATC90. With the new steps installed, the gear change pedal will be extended 1 in. (25 mm) from the top face of the step.



① Step ② Gear change pedal
Fig. 100

3. EXHAUST MUFFLER

The exhaust muffler is equipped with a spark arrestor.

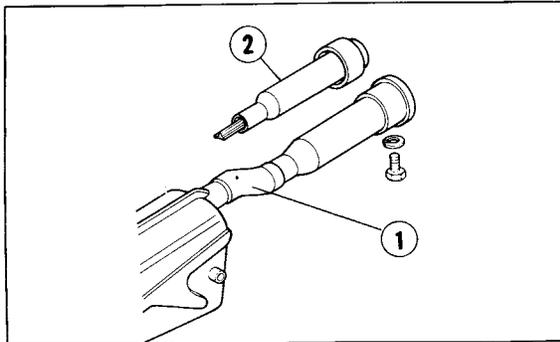
Maintenance

The exhaust system spark arrestor must be purged of accumulated carbon periodically.

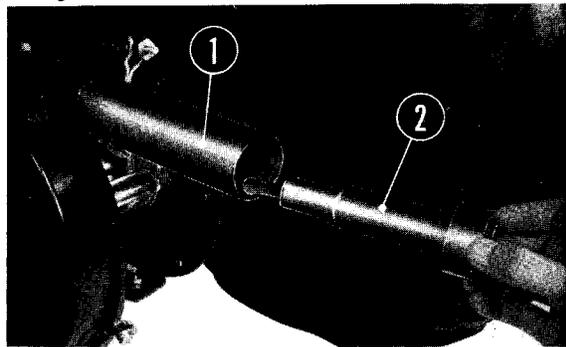
1. Shift the gear change pedal to place the transmission in the "Neutral" position.
2. Stop the engine.
3. Remove the spark arrestor mounting bolt and slide out the arrestor.
4. Clean the spark arrestor of carbon.
5. Start the engine and purge accumulated carbon from the exhaust system by momentarily revving up the engine.
6. Stop the engine.
7. Reinstall the spark arrestor with the mounting bolt.

Cautions :

- a. The exhaust system will heat up during the operation.
Take care not to touch the muffler or exhaust pipe with bare hands.
- b. Ensure that this operation is performed where there is no fire hazard (gasoline vapor, flammable material, etc.).
- c. Wear eye protection.



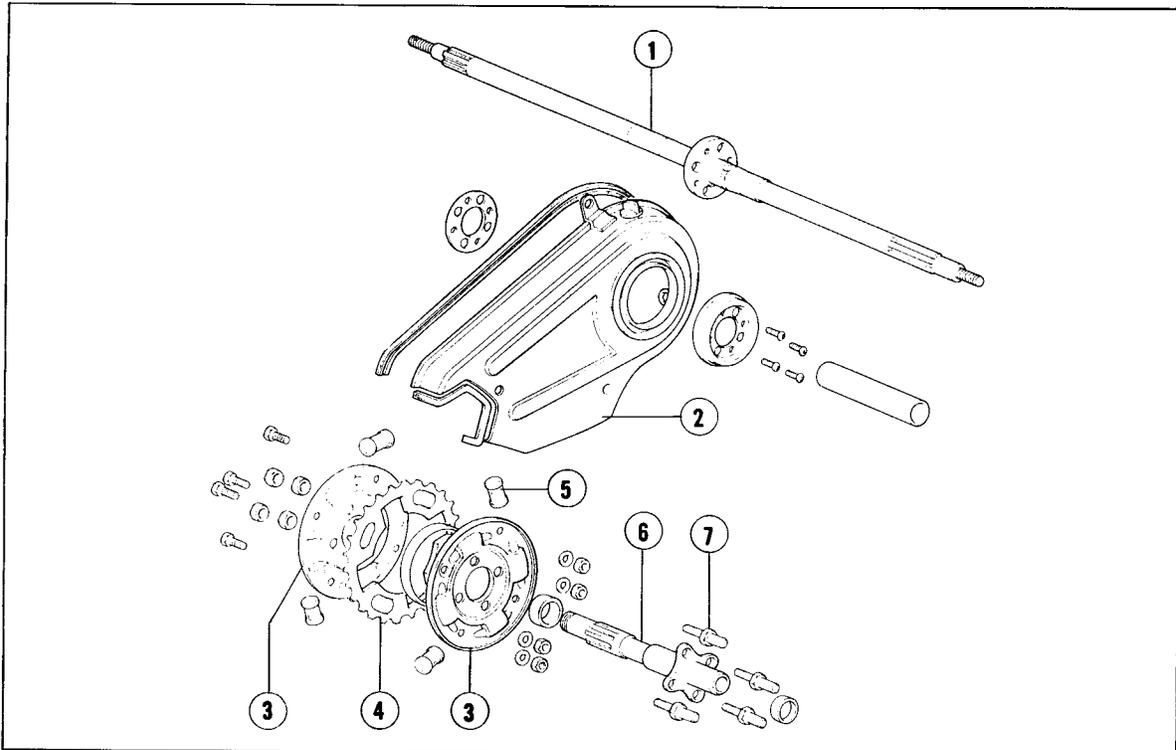
① Muffler ② Spark arrestor
Fig. 101



① Muffler ② Spark arrestor mounting bolt
③ Spark arrestor
Fig. 102

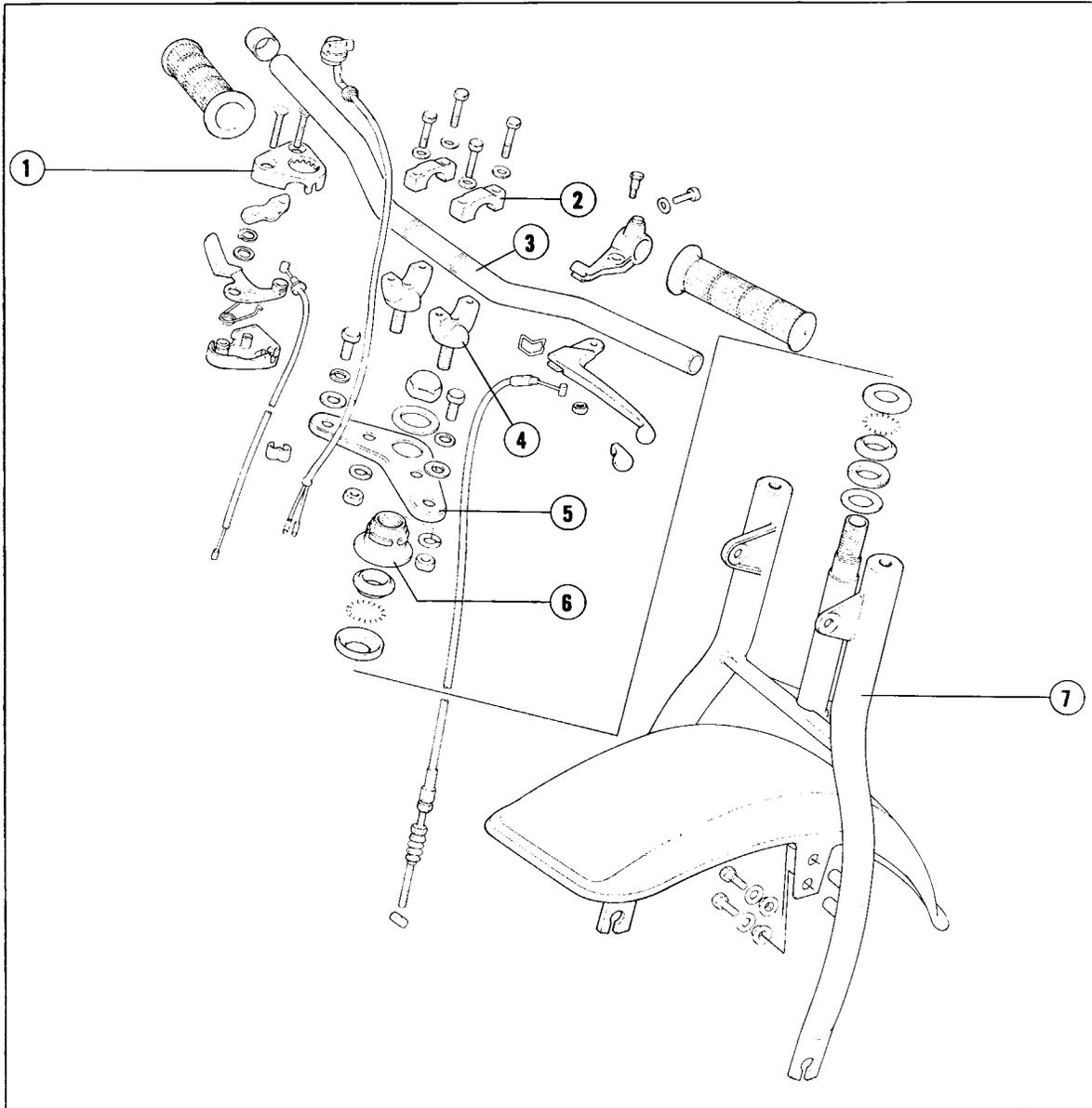
4. DRIVE MECHANISM

The final driven sprocket, damper holders and wheel shaft are also re-designed. The drive chain plate is discontinued.

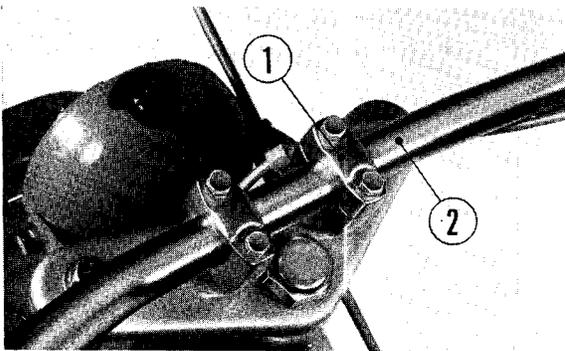


① Rear wheel axle ② Drive chain case ③ Damper holder ④ Final driven sprocket
⑤ Damper rubber ⑥ Wheel shaft ⑦ Rear drive bolt
Fig. 103

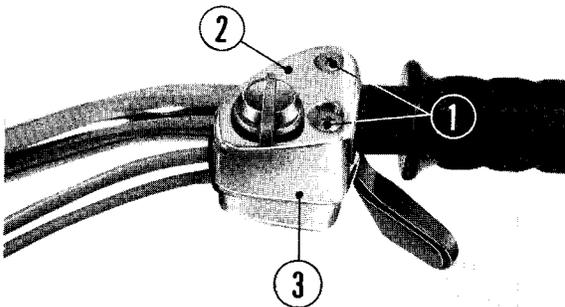
5. STEERING SYSTEM



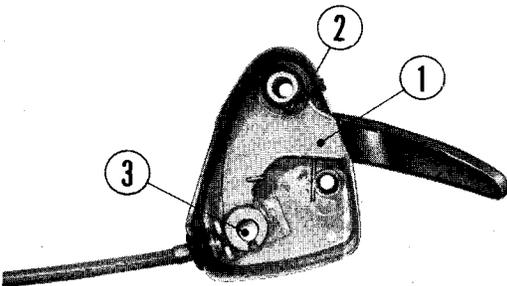
① Throttle lever cover ② Upper holder ③ Steering handle pipe ④ Lower holder
 ⑤ Fork top bridge plate ⑥ Steering head top thread ⑦ Front fork
 Fig. 104



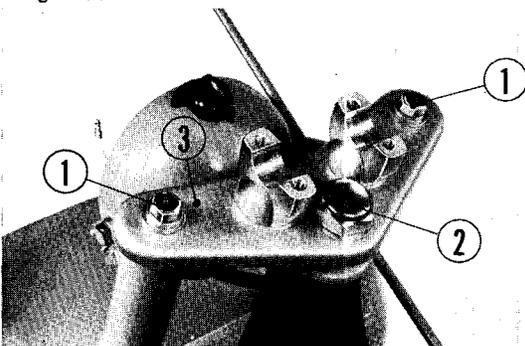
① Upper holder ② Steering handlebar
Fig. 105



① Screw ② Throttle lever cover
③ Throttle lever case
Fig. 106



① Throttle lever ② Snap ring
③ Throttle cable end
Fig. 107



① Fork bolt ② Steering stem nut
③ Fork top bridge
Fig. 108

A. Disassembly

1. Remove the front wheel. (See page 10)
2. Remove the frame body covers and fuel tank. (See page 5)
3. Disconnect the throttle cable from the carburetor. (See page 6)
4. Disconnect the brake cable from the brake cover.
5. Remove the headlight beam; disconnect the ignition switch wire.
6. Remove the bolts, and then remove the handle upper holders. Remove the handlebar.
7. Remove the screws securing the throttle lever case to the throttle lever cover; remove the lever case.
8. Remove the throttle case seat.
9. Pry off the snap ring and remove the throttle lever from the case.
10. Remove the throttle cable from the throttle lever.
11. Remove the fork bolts and steering stem nut. Remove the fork top bridge.

- Remove the steering head top thread, and then pull out the steering stem from the bottom.

Note :

Keep all removed steel balls in a part rack so that they are not scattered and lost.

Inspection

- Ensure that the steering handle is not distorted or damaged.
- Check the wire and cable for broken or frayed cover.
- Make sure that the steering stem is not bent.
- Check the steel balls for freedom from excessive wear or score marks.
- Make sure that the steering top and bottom cone races and ball races are not damaged or worn excessively.
- Check the steering head dust seal for wear or any other defect.

Reassembly

- Apply grease to upper and lower ball races. Slide the steering stem into place in the steering head pipe. Hand tighten the head top thread, but do not tighten more than necessary to eliminate play in the axial direction. The steering handle-bar should also turn freely between the two extreme positions.

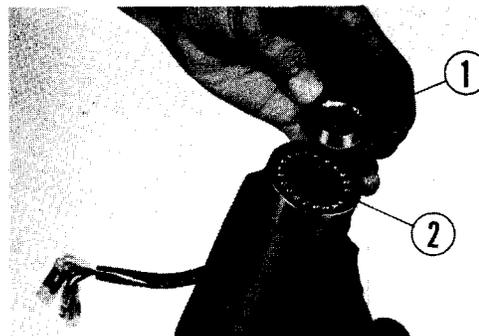
Note :

Before assembling, wash the cone races, ball races, ball races and steel balls in an approved solvent and blow dry. Always use new grease.

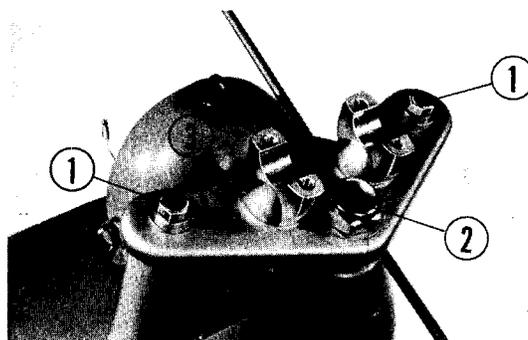
- Temporarily tighten the fork top bridge with the front fork bolts, and then tighten the steering stem nut.



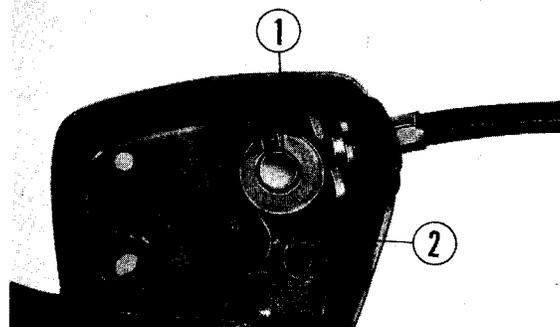
① Steering head top thread ② Steering stem
Fig. 109



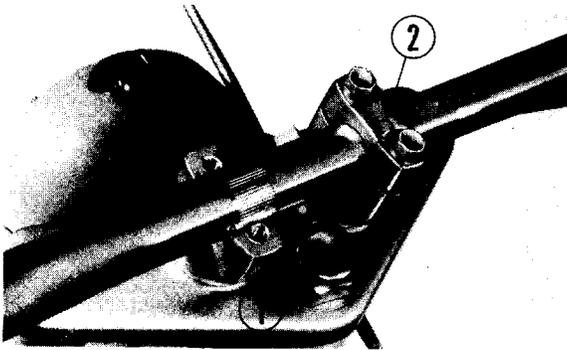
① Top cone ② Steel balls
Fig. 110



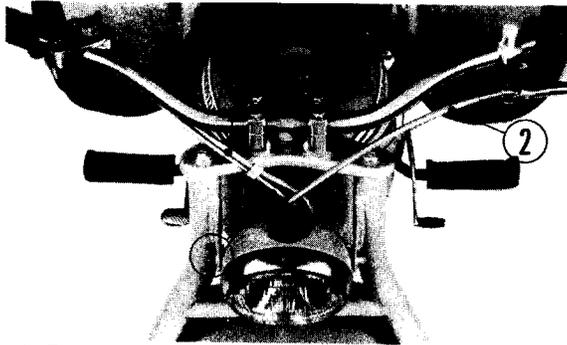
① Fork bolt ② Steering stem nut
③ Fork top bridge
Fig. 111



① Throttle cable end ② Throttle lever
Fig. 112



① Punched mark on handlebar
 ② Punched mark on upper holder
 Fig. 113



① Throttle cable ② Brake cable
 ③ Ignition switch wire
 Fig. 114

3. Coat the throttle cable end with grease and connect the cable to the throttle lever.

4. Position the handlebar so that the punched marks on the handlebar align with the top face of each holder. Place the upper holders on the handlebar with the marks facing toward front. Install the bolts through the holes in the holders and tighten starting from the front to the rear.

Note :

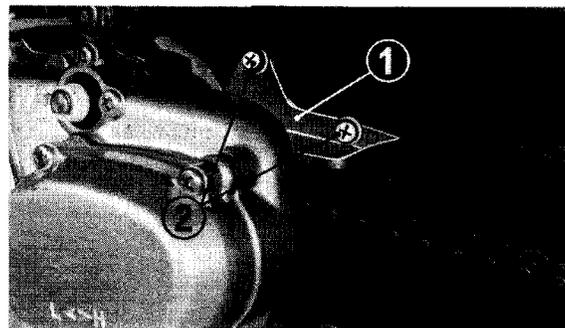
Be sure that the wire is not tightened by the holders.

5. When installing the cable and wire, use added care so that they are not stressed when the handlebar is turned fully to the stopped positions.

VI. NEW MECHANISMS AND MAJOR MODIFIED POINTS OF ATC90K3 FROM ATC90K2

1. CHAIN GUIDE

A chain guide was installed to the upper side of the drive sprocket for more smooth movement of the chain. To remove the chain guide, remove the two 6 mm screws.

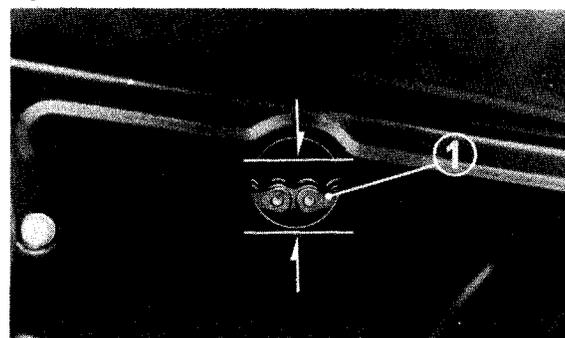


(1) Chain guide (2) 6 mm screws

Fig. 1

2. CHAIN CASE INSPECTION WINDOW

The chain case was provided with an inspection window to check the deflection of the chain visually. To adjust the chain, see page 27.

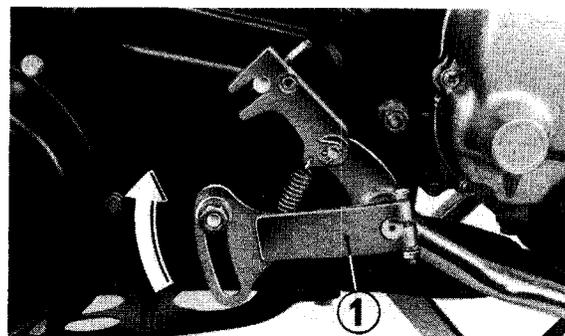


(1) Drive chain

Fig. 2

3. CHAIN TENSIONER

The chain tensioner lock arm was changed in shape as shown, making it easier to adjust the tensioner. To adjust the tensioner, see page 4.



(1) Chain tensioner lock arm

Fig. 3

4. TIRES

The tire type was changed from the one-piece type to the separation, tubeless type. The tire design was also changed as shown. For the disassembly, inflation pressure and inspection, refer to page 76–82.

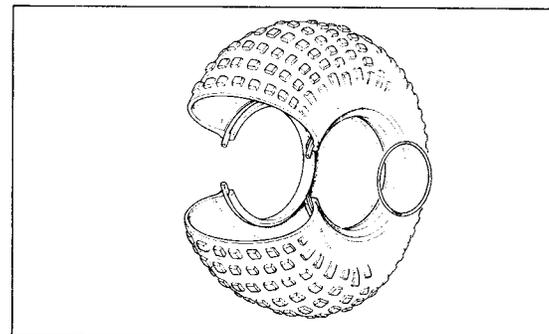
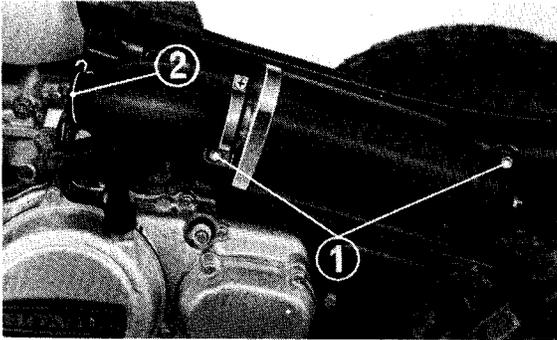
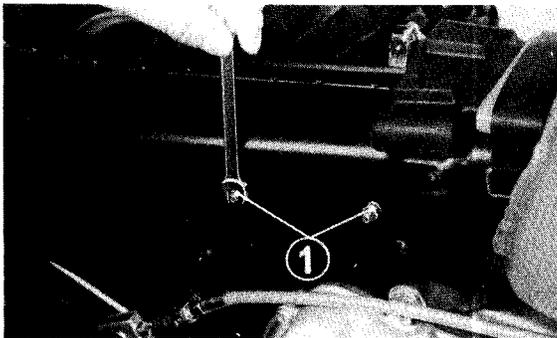


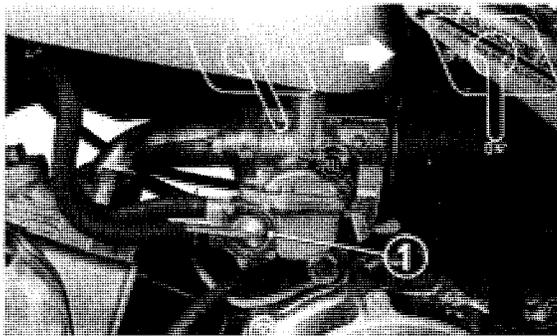
Fig. 4



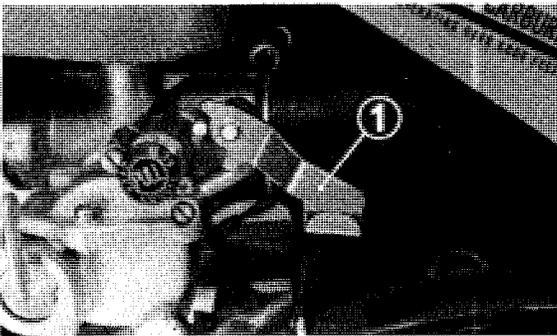
(1) Mounting bolt (2) Connecting clip
Fig. 5



(1) 5 mm nuts
Fig. 6



(1) Fuel cock
Fig. 7



(1) Choke lever
Fig. 8

5. IGNITION COIL AND CONDENSER

A. Removal

1. Unscrew the two air cleaner case mounting bolts, loosen the connecting clip and then remove the air cleaner case.

2. Loosen the two 5 mm nuts and remove the ignition coil by inserting your hand through the air cleaner attaching hole.

B. Inspection

Check the capacity of the condenser and the continuity of the ignition coil.

Condenser capacity: $0.225\text{--}0.275\mu\text{F}$

C. Reinstallation

To reinstall, reverse the removal procedures.

6. CARBURETOR FUEL COCK

The indication marks and their positions on the fuel cock were changed.

7. CHOKE LEVER

The wording on the choke lever was changed from "OPEN" to "CHOKE". The operation of the lever is the same as in the ATC90K2.

VII. ENGINE

• OPERATIONS WITH ENGINE IN MOTORCYCLE

1. LEFT CRANKCASE COVER AND ROTOR

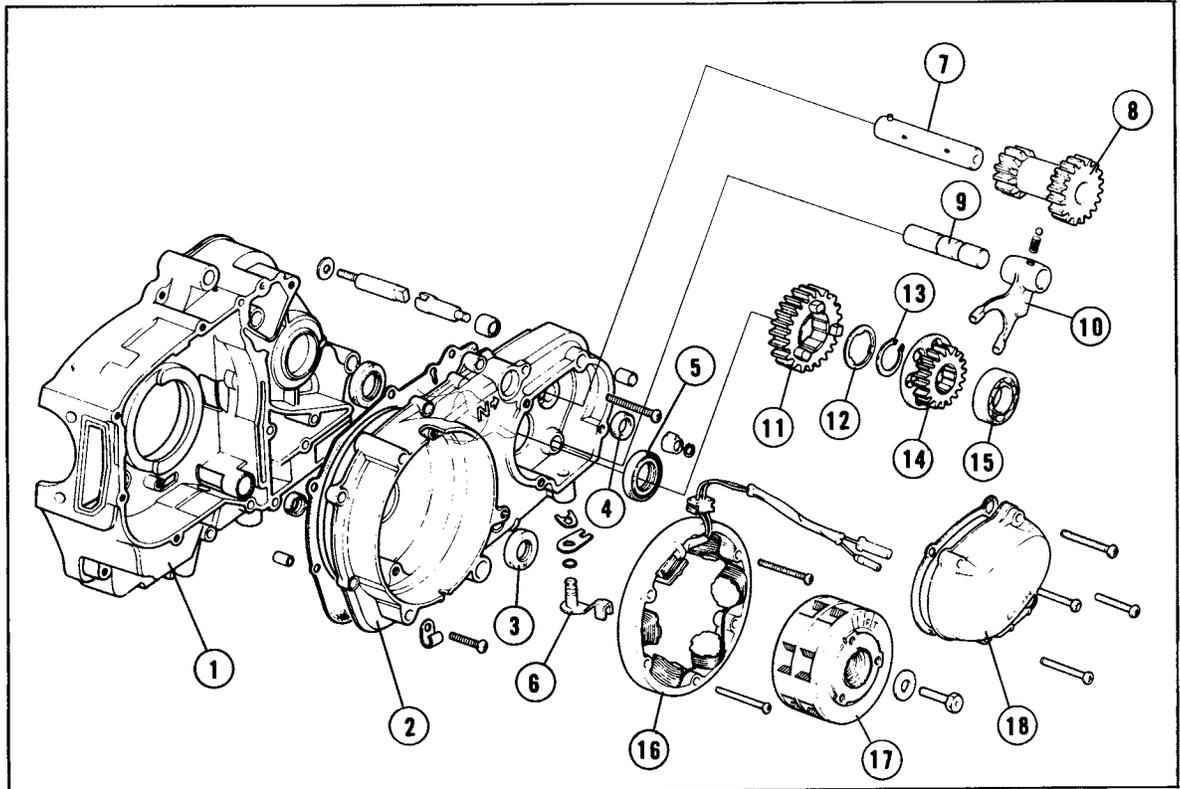
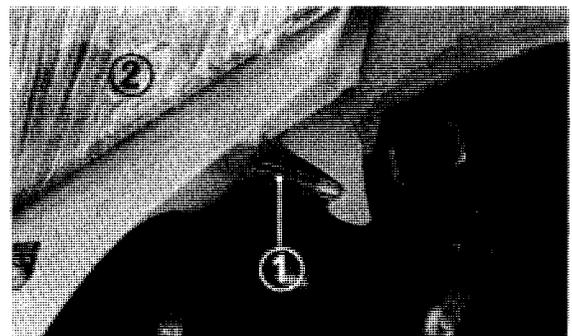


Fig. 9

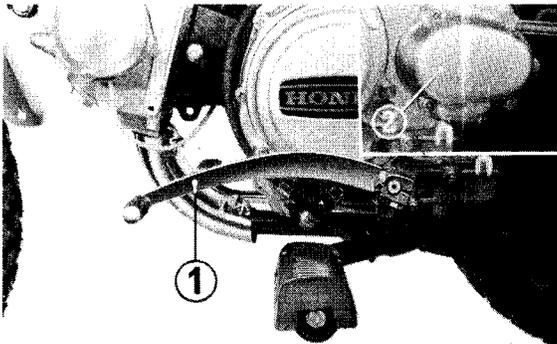
- | | | |
|---------------------------------|-------------------------------------|--------------------------------|
| (1) Right crankcase | (7) Sub transmission countershaft | (13) 20 mm snap ring |
| (2) Left crankcase cover | (8) Sub transmission countershaft | (14) Sub transmission low gear |
| (3) 20,8 x 35 x 8 mm oil seal | (9) Shift fork shaft | (15) 6202 radial ball bearing |
| (4) 12 x 21 x 4 mm oil seal | (10) Sub transmission shift fork | (16) Stator |
| (5) 31 x 43 x 8 mm oil seal | (11) Sub transmission high gear | (17) Rotor |
| (6) Sub change shaft | (12) 20 mm spline washer | (18) Sub transmission cover |

A. Disassembly

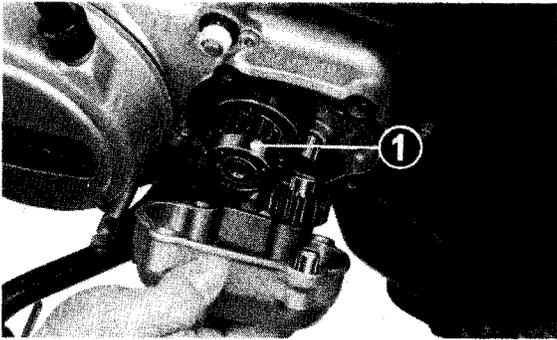
1. Operate the lever and remove the frame body cover.



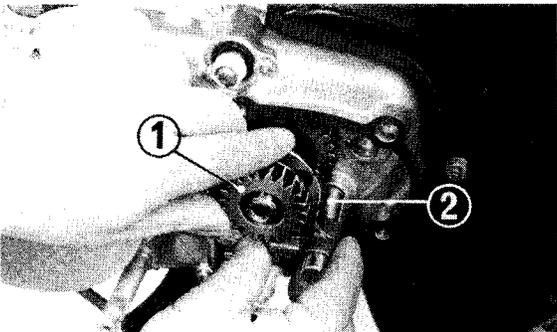
(1) Lever (2) Frame body cover
Fig. 10



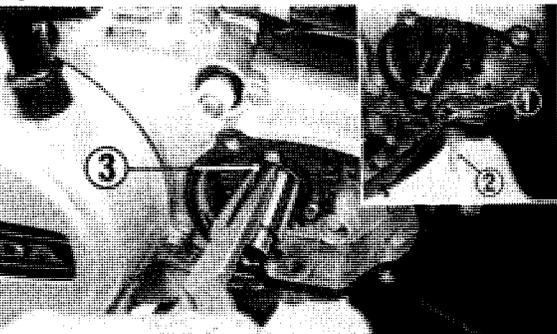
(1) Change lever (2) Sub transmission cover
Fig. 11



(1) 6202 radial ball bearing
Fig. 12



(1) Sub transmission low gear
(2) Sub transmission shift fork
Fig. 13



(1) 8.6 mm snap ring (2) Sub change shaft
(3) 20 mm snap ring
Fig. 14

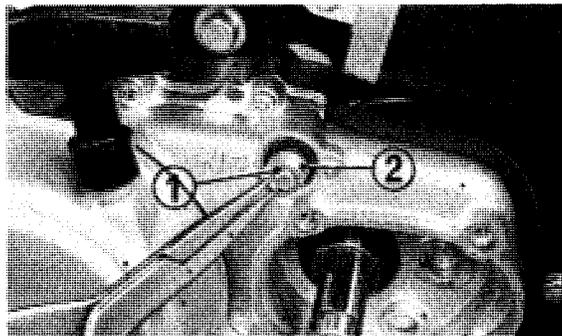
2. Remove the 6 mm bolt and remove the change lever.
3. Remove the oil drain bolt and drain the engine oil. Removing the oil filler cap in advance will make it easier to drain the oil.
4. Remove the four 6 x 40 mm pan head screws and remove the sub transmission cover.

5. Pull out the 6202 radial ball bearing.

6. Pull up the sub transmission shift fork and remove the sub transmission low gear.

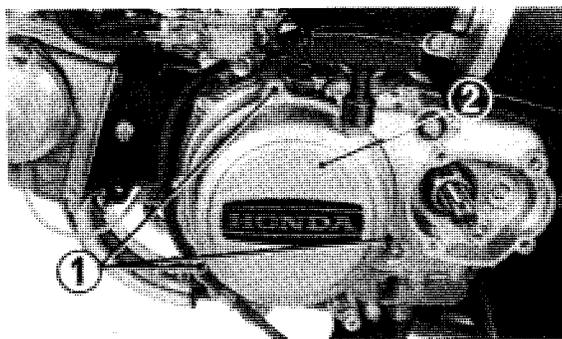
7. Remove the 8.6 mm snap ring and remove the sub change shaft.
8. Remove the 20 mm snap ring and remove the 20 mm spline washer and sub transmission high gear.

9. Remove the 5 mm snap ring and pull out the neutral indicator.



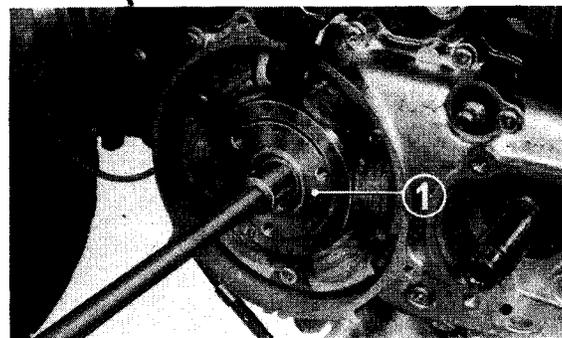
(1) 5 mm snap ring (2) Neutral indicator
Fig. 15

10. Remove the three 6 x 16 mm bolts and remove the starter pulley.



(1) 6 x 16 mm bolts (2) Recoil starter
Fig. 16

11. Remove the three 6 x 16 mm bolts and remove the starter pulley.
12. Using a 14 mm box wrench remove the rotor set bolt.



(1) Rotor
Fig. 17

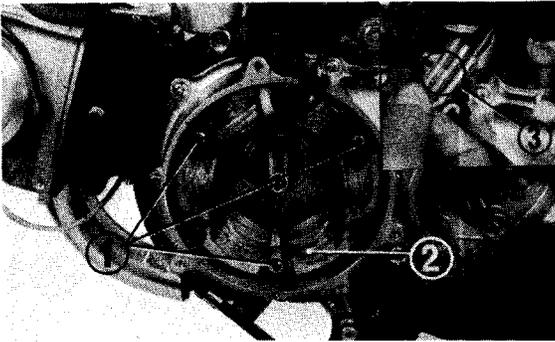
13. Remove the rotor using a generator rotor puller (Tool No. 07933-2000000).

Caution:

When removing the rotor, take care not to apply so much force as it may bend the crankshaft.

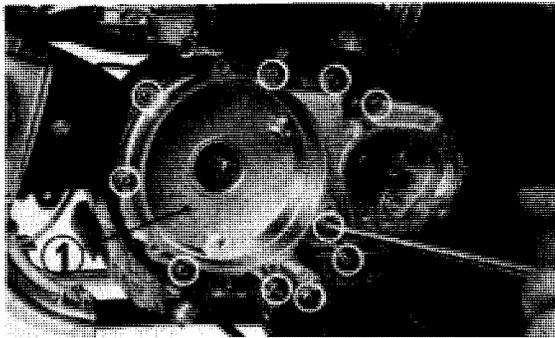


(1) Generator rotor puller
Fig. 18



(1) 6 mm screws (2) Stator (3) Primary wire
Fig. 19

14. Remove the primary wire connector, remove the three 6 mm screws securing the stator and then remove the stator from the left crankcase cover.

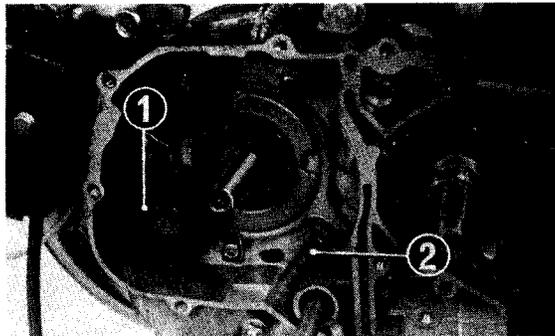


(1) Left crankcase cover
Fig. 20

15. Remove the ten 6 mm screws and remove the left crankcase cover. If it is hard to remove the cover, pull it out while lightly tapping the periphery of the cover using a plastic or wooden hammer.

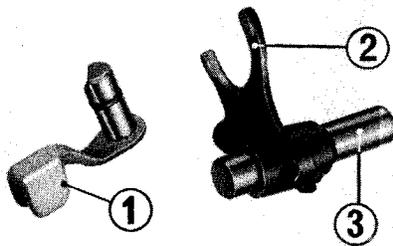
Note:

Oil may flow out when removing the left crankcase cover.



(1) Chain guide roller (2) Chain tensioner
Fig. 21

16. Loosen the chain tensioner and pull out the chain guide roller.



(1) Sub change shaft (2) Sub transmission shift fork
(3) Shift fork shaft
Fig. 22

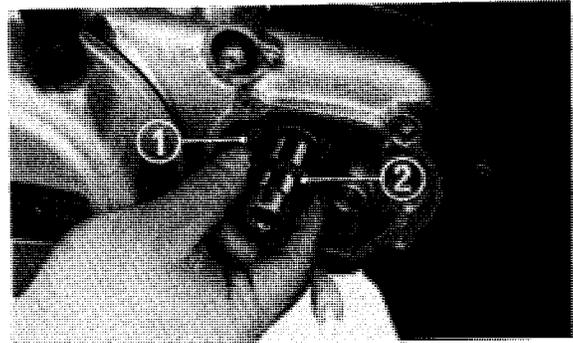
B. Inspection

1. Check the shift fork and countershaft for wear and replace if necessary.

C. Reassembly

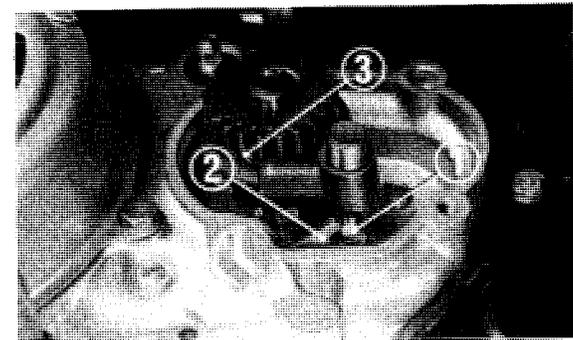
To reassemble the left crankcase cover and rotor, reverse the disassembly procedures. Pay attention to the following points:

1. Tighten the rotor to the specified torque.
Torque specification:
18.8–23.1 lbs-ft (2.6–3.2 kg-m)
2. After installing the sub transmission high gear to the transmission countershaft, secure it with the 20 mm spline washer and snap ring.



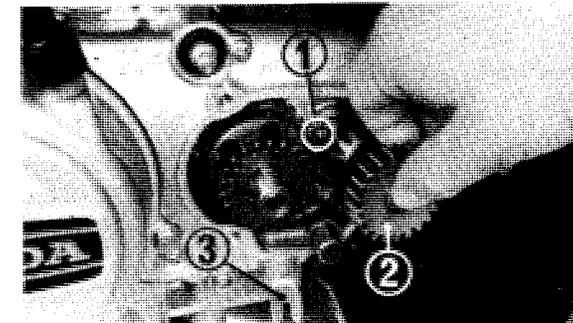
(1) Sub transmission high gear (2) 20 mm spline washer
Fig. 23

3. Engage the finger of the shift fork with the sub transmission low gear, fit the boss of the shift fork into the recess in the sub change arm and then install the shift fork properly.



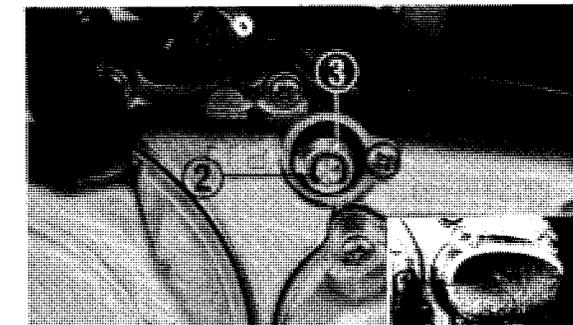
(1) Boss (2) Sub change arm
(3) Sub change shift fork
Fig. 24

4. To install the bus transmission countershaft gear, properly fit the boss of the gear into the recess in the left crankcase.
After assembly, operate the sub change shaft to check the sub transmission gears for movement.



(1) Boss and recess
(2) Sub transmission countershaft gear
(3) Sub change shaft
Fig. 25

5. Install the subchange cover and neutral indicator.



(1) Sub transmission cover (2) E ring
(3) Neutral indicator
Fig. 26

2. PISTON AND CYLINDER

- (1) Cylinder head cover
- (2) Rocker arm side cover
- (3) Tappet caps
- (4) Point base
- (5) Cam chain chamber gasket B
- (6) 13 x 22 x 5 mm oil seal
- (7) Spark advançer
- (8) Contact breaker
- (9) Point cover
- (10) Piston rings
- (11) Piston
- (12) Piston pin
- (13) Valve rocker arm shaft
- (14) Valve rocker arm
- (15) Camshaft
- (16) Cylinder
- (17) Cylinder gasket
- (18) Valve cotter
- (19) Valve spring retainer
- (20) Valve inner spring
- (21) Valve outer spring
- (22) Valve spring seat
- (23) Valve
- (24) Cam chain chamber gasket A

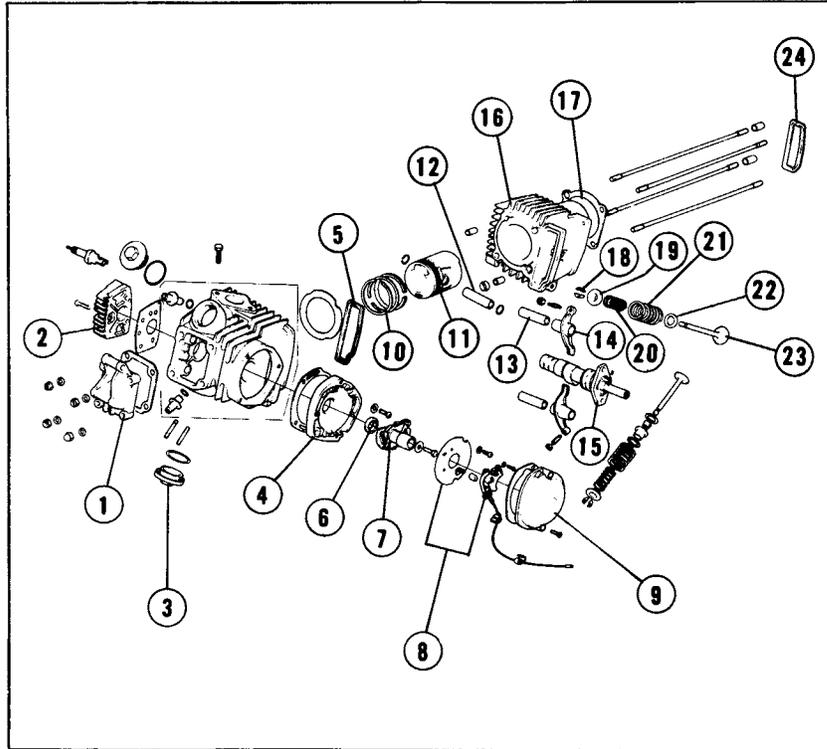


Fig. 27

A. Disassembly

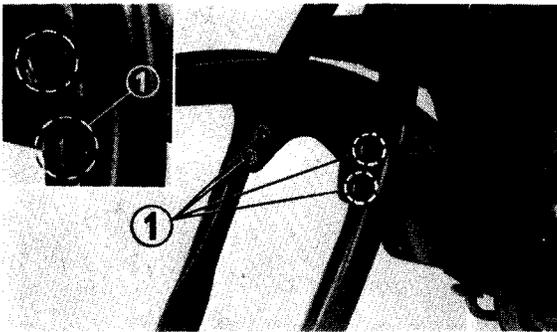
1. Remove the front wheel referring to page 76.
2. Remove the four 6 x 16 mm bolts and remove the front fender. (The fender mud guard can be removed by loosening the three 6 mm cap nuts. On the ATC90K2 the mud guard was the optional part, but on the ATC90K3 it is the standard part.)

The following operations can be more easily performed with the motorcycle stood on the rear wheels as shown in page 32. However, note that gasoline may leak from the fuel tank and that when the guide roller is removed for the cylinder removal, the cam chain may drop into the crankcase.

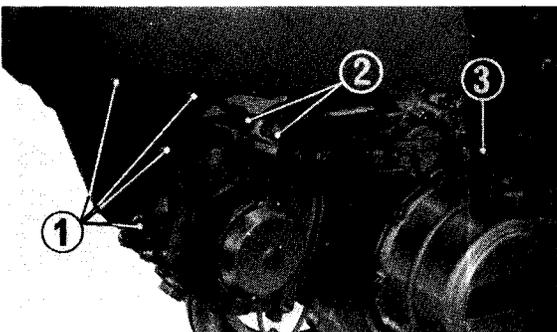
Note:

The following operations are performed with the motorcycle in the normal position.

3. Remove the two bolts securing the carburetor insulator.
4. Remove the four front engine hanger bolts and one rear bolt to permit the front of the engine to slightly tilt down.

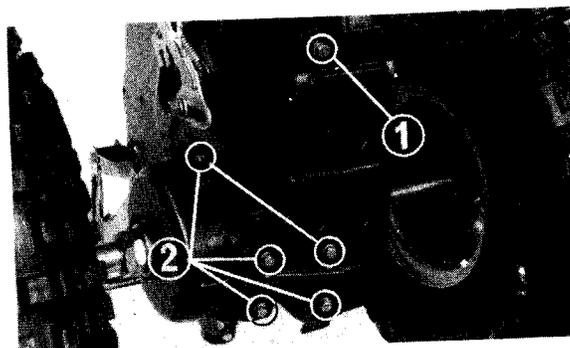


(1) 6 x 16 mm bolts (2) Front fender
Fig. 28



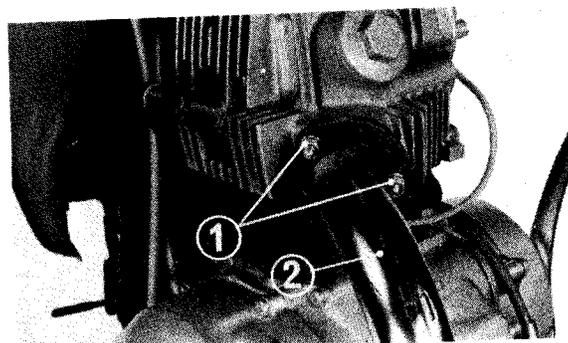
(1) Engine hanger bolts
(2) Carburetor insulator clamp bolts
(3) Engine hanger bolt
Fig. 29

5. Remove the four 6 mm bolts and one 8 mm bolt securing the protector.
6. Loosen the 6 mm bolt securing the brake drum cover B and muffler together.



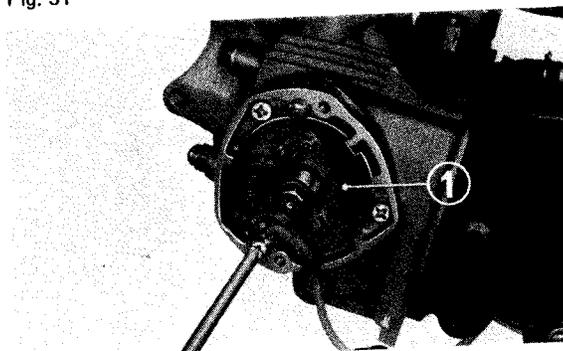
(1) 8 mm bolt
 (2) 6 mm bolts
 Fig. 30

7. Remove the two 6 mm nuts securing the exhaust muffler.
8. Remove the plug cap and disconnect the primary wire.



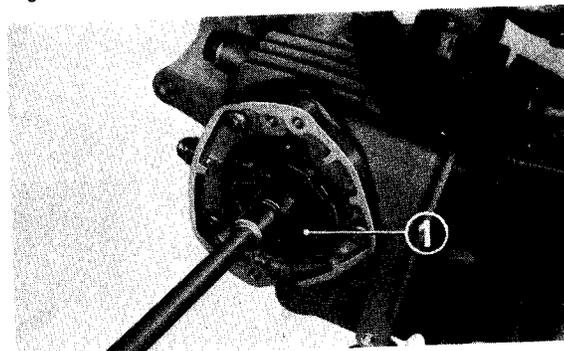
(1) 6 mm nuts
 (2) Exhaust muffler
 Fig. 31

9. Remove the recoil starter assembly and point cover.
 Remove the contact breaker assembly.

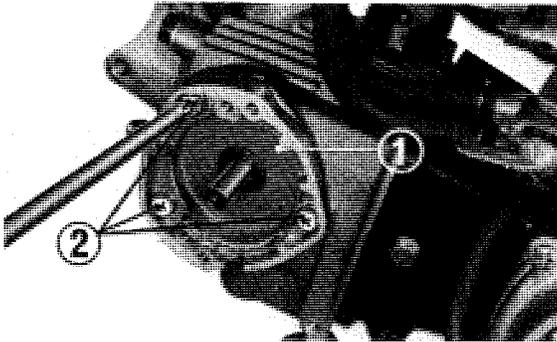


(1) Contact breaker assembly
 Fig. 32

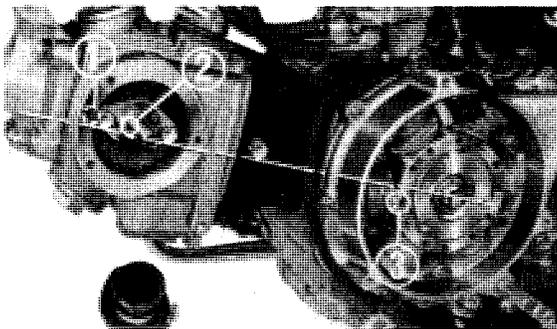
10. Remove the 6 x 14 mm bolt and remove the spark advancer.
 Then pull out the 3 x 5.2 mm camshaft pin.



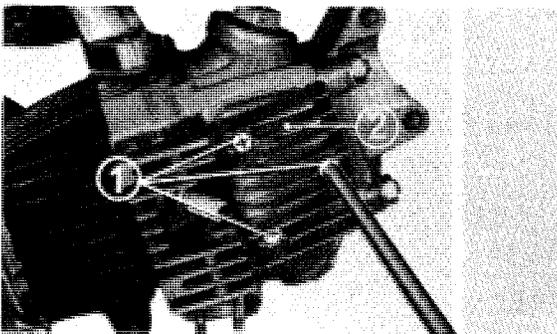
(1) Spark advancer
 Fig. 33



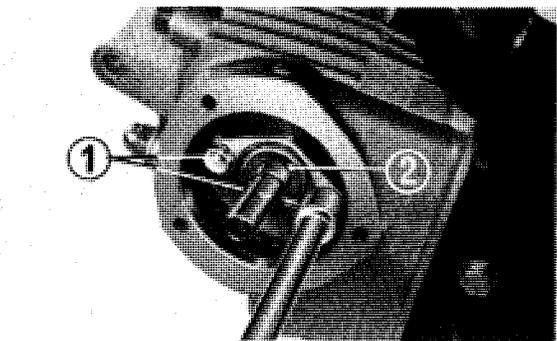
(1) Point base (2) 8 mm mounting screws
Fig. 34



(1) "O" mark area (3) "T" mark
(2) 3 x 5.2 mm camshaft pin hole
Fig. 35



(1) 6 mm screws (2) Rocker arm side cover
Fig. 36



(1) 6 x 10 mm bolt (2) Camshaft
Fig. 37

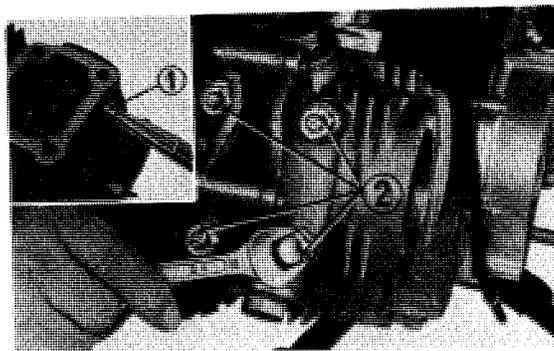
11. Remove the three 8 mm mounting screws and remove the point base.

12. Make sure that the camshaft pin hole in the cam sprocket is facing toward the groove in the cylinder head when the "T" mark on the rotor is aligned with the mark on the stator. Also make sure that "O" mark on the cam sprocket is facing in the same direction for the reinstallation.

13. Remove the three 6 mm screws and remove the rocker arm side cover.

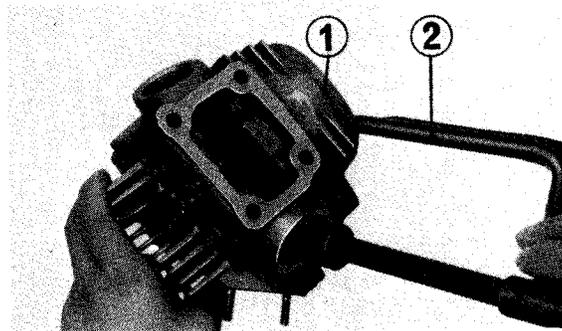
14. Remove the two 6 x 10 mm bolts and pull the camshaft backward.

15. Remove the four 8 mm nuts (including one cap nut) and remove the cylinder head assembly. If the cylinder head is tight, lightly tap around the parting surface of the head using a soft-faced hammer. Then remove the rocker arms and shafts.



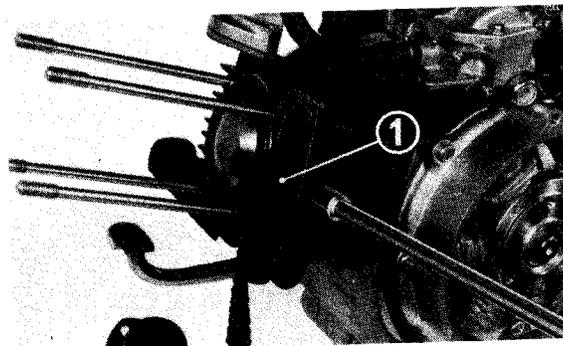
(1) Rocker arm shaft (2) 8 mm nuts
Fig. 38

16. Using a valve lifter (Tool No. 07957--3290000) remove the valves.



(1) Cylinder head (2) Valve lifter
Fig. 39

17. Remove the cam chain guide roller pin and remove the guide roller. Then remove the cylinder. To remove the cam chain, it is necessary to remove the left crankcase cover and stator after removing the cylinder. See page 60.

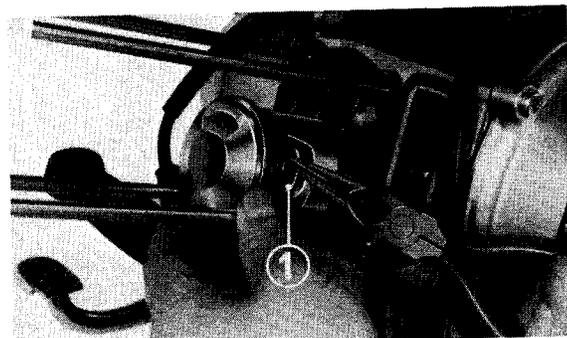


(1) Cam chain guide roller
Fig. 40

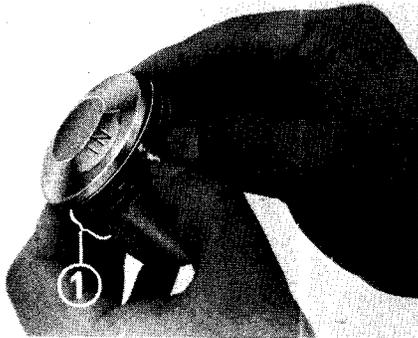
18. Remove the piston pin clips and push out the piston pin to separate the piston from the connecting rod.

Caution:

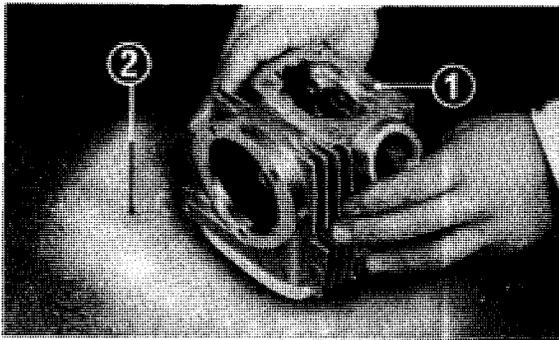
When removing the piston pin clips, care should be exercised so that the clips do not drop into the crankcase.



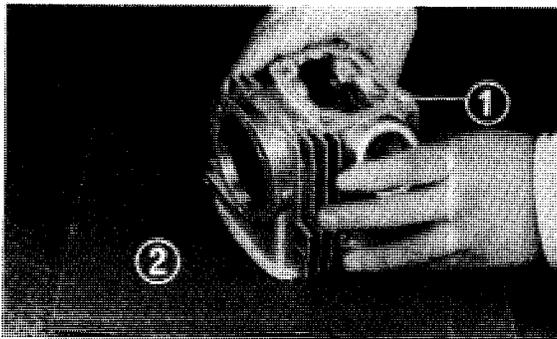
(1) Piston pin clip
Fig. 41



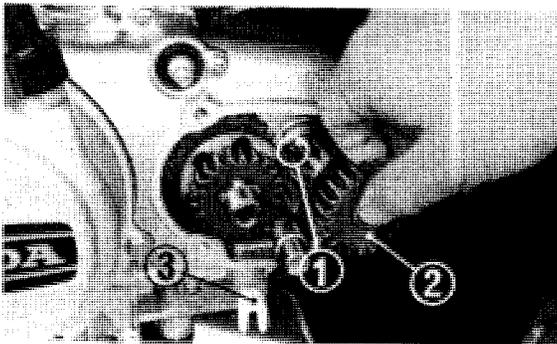
(1) Piston rings
Fig. 42



(1) Cylinder head (2) Bluing or red lead
Fig. 43



(1) Cylinder head (2) Sandpaper
Fig. 44



19. Remove each piston ring by spreading the gap with both hands. Take care not to twist the ring.

B. Inspection and Repair

The cylinder head is exposed to high pressure and temperature resulting from the combustion of the fuel mixture; further, when the cylinder head is unevenly torqued, it may develop cracks or warpage and will be the cause of defective sealing between the head and the cylinder and result in gas leak, air sucking, with consequent drop in compression.

The warpage of the cylinder head does not develop suddenly and it may be overlooked, therefore, caution should be exercised during reassembly since the uneven torquing of the cylinder head is a very common fault.

To check for warpage of the cylinder head, apply a thin coat of bluing or red lead to a surface plate and work the mating surface of the cylinder head on the surface plate; the warpage can be determined by the transfer of the bluing on to the cylinder head.

To correct the warpage, lap the cylinder head on the surface plate with a #200 sandpaper, then finish by using a #400 sandpaper. Check again with bluing.

1. Check the combustion chamber, inlet and exhaust ports for cracks.
2. Cylinder head combustion chamber

Item	Standard value
Head volume (with the spark plug installed)	18-18.4 cc- (1.098-1.122cu. in.)

3. Check the valve guides and valve stems.

Valve clearance	Standard value	Serviceable limit
Inlet	0.01–0.03 mm (0.0004–0.0012 in)	0.08 mm (0.0028 in)
Exhaust	0.03–0.05 mm (0.0012–0.0020 in)	0.1 mm (0.0032 in)

Check the valve guide diameter at the top, center and bottom in both the X and Y axis, using a precision cylinder gauge. Check the valve stem with a micrometer.

4. Check valve guides

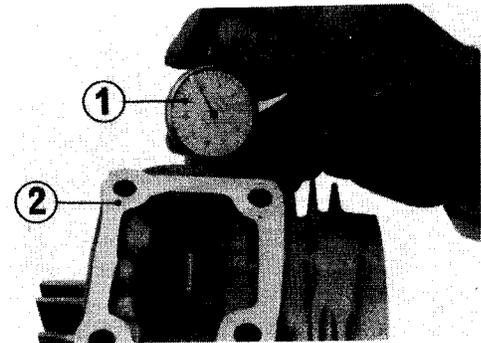
Valve guide, inlet and exhaust	Standard value	Serviceable limit
Outside diameter	10.055–10.065 mm (0.3962–0.3966 in)	—
Interference fit	0.640–0.065 mm (0.0016–0.0026 in)	—
Inside diameter	5.475–5.485 mm (0.2157–0.2161 in)	Replace if over 5.525 mm (0.2175 in)

If the valve guide inside diameter is beyond the serviceable limit, it may be repaired by using a reamer (Tool No. 07984–0980000) and replacing the valve with an oversize one.

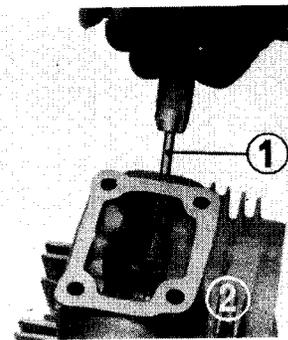
5. When it is necessary to replace the valve guide, remove and replace with an oversize guide using a valve guide remover (Tool No. 07984–0980000) and a valve guide driver (Tool No. 07942–3290200). After installing the valve guide, use a reamer to obtain the proper valve clearance.

6. Check the valve seat contact.

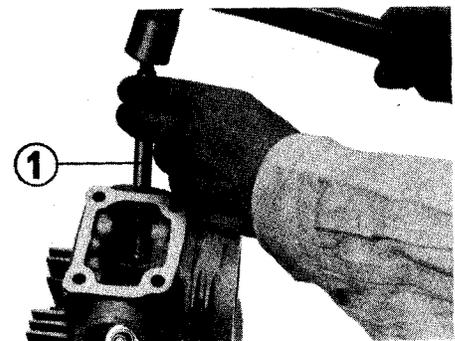
Assemble the valves into the cylinder head as shown in Fig. 48 so that they are well seated and fill the cylinder head combustion chamber with oil. Inject a blast of air 28.4 psi (2 kg/cm²) in from the inlet and exhaust ports and if any bubbles should appear, it is an indication that the valve seats are not completely sealed.



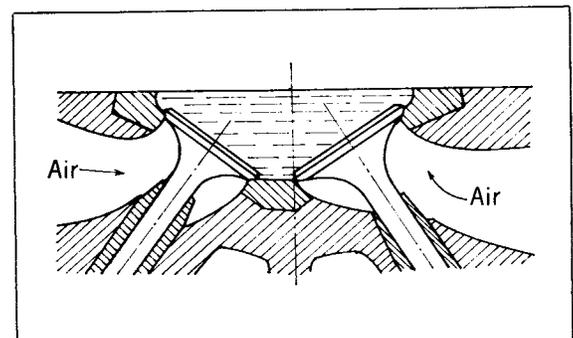
(1) Cylinder gauge (2) Cylinder head
Fig. 45



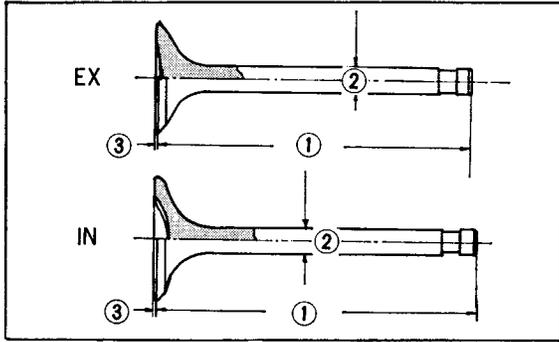
(1) Valve guide reamer (2) Cylinder head
Fig. 46



(1) Valve guide driver (2) Cylinder head
Fig. 47



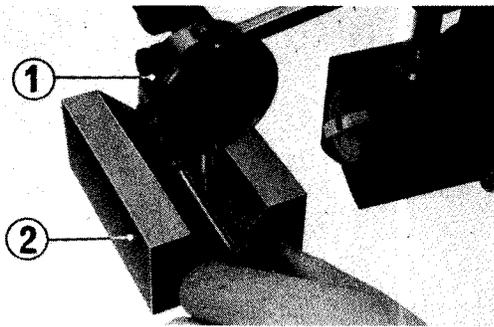
Checking the valve seat contact
Fig. 48



Exhaust and inlet valves
 (1) Length (2) Stem diameter (3) Head thickness
 Fig. 49

7. Exhaust valve

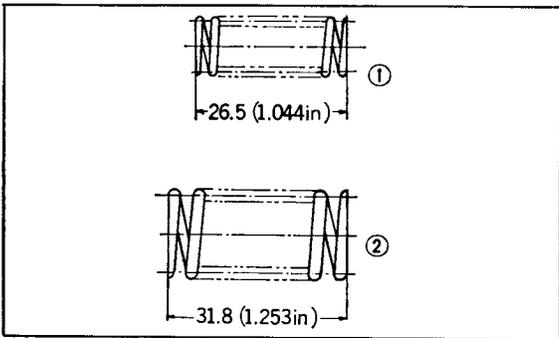
Item	Standard value	Serviceable limit
Length (1)	65.8–66.0 mm (2.593–2.600 in)	Replace if under 65.4 mm (2.577 in)
Stem diameter (2)	5.435–5.445 mm (0.2141–0.2145 in)	Replace if under 5.415mm (0.2134in)
Head thickness (3)	0.6–0.8 mm (0.024–0.032 in)	Replace if under 0.3 mm (0.012 in)
Concentricity of valve face	0.02 TIR (0.0008 in)	Replace if over 0.03 (0.0012 in)



(1) Dial gauge (2) V-block
 Fig. 50

8. Inlet valve

Item	Standard value	Serviceable limit
Length (1)	67.2–67.4 (2.648–2.654 in)	Replace if under 66.8 (2.632 in)
Stem dia (2)	5.455–5.465 (0.2149–0.2153 in)	Replace in under 5.435mm (0.2141in)
Head thickness (3)	0.6–0.8 (0.024–0.032 in)	Replace if under 0.3 (0.012 in)
Concentricity of valve face	0.02 TIR (0.0012 in)	Replace if over 0.03TIR (0.0012in)



Valve springs
 (1) Inner spring (2) Outer spring
 Fig. 51

9. Valve outer springs

Item	Standard value	Serviceable limit
Free length	31.8 mm (1.253 in)	Replace if under 30.6 mm(1.207in)
Spring pressure	27.8 mm/7.9–8.9 kg (1.095 in/17.38–19.58 lbs)	–
Spring pressure	22.3 mm/19–21 kg (0.879 in/41.8–46.2 lbs)	–
Tilt	–	Replace if over 1.5°

10. Valve inner spring

Item	Standard value	Serviceable limit
Free length	26.5 mm (1.044 in)	Replace if under 25.5mm/(0.005in)
Spring pressure	3.0–3.4 kg/23.9 mm (6.60–7.48 lbs/0.942 in)	–
Spring pressure	9.5–10.5 kg/18.4 mm (20.90–23.10 lbs/10.725 in)	–
Tilt	–	Replace if over 1.5°

11. Camshaft

Item	Standard value	Serviceable limit
Left end diameter (Fig.)	25.917–25.930 mm (1.0208–1.025 in)	Replace if under 25.180mm (0.9913 in)
Right end diameter	17.927–17.938 mm (0.7060–0.6730 in)	Replace if under 17.900mm (0.7147 in)
Shaft runout	0.01 mm, max. (0.0004 in)	Replace if over 0.05mm (0.0020 in)
Cam height (Fig.)	24.90–24.98 mm (0.9792–0.98396in)	Replace if under 24.6mm (0.9684 in)
Left end bearing diameter	26.00–26.020 mm (1.0236–1.0244 in)	Replace if over 26.05mm (1.0256 in)
Right end bearing diameter	18.000–18.018 mm (0.7086–0.7093 in)	Replace if over 18.05mm (0.7106 in)

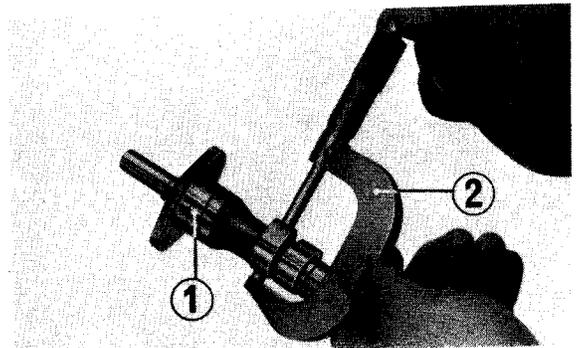
3. Cam sprocket root diameter
 Standard value 53.435–53.385 mm
 (2.103–2.105 in)
 Serviceable limit Replace if under
 53.00 mm (2.09 in)

12. Rocker arms

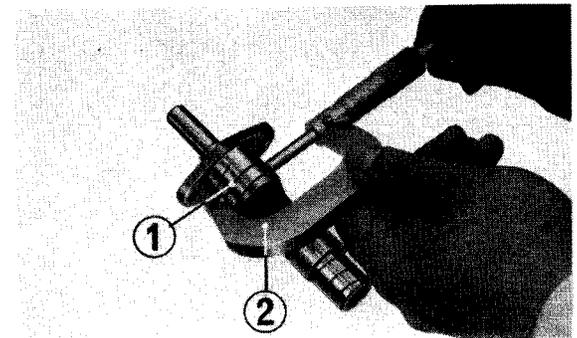
Item	Standard value	Serviceable limit
Slipper wear	–	Replace if over 0.3 mm (6.0012 in)
Shaft bore	10.00–10.015 mm (0.3937–0.3943 in)	Replace if over 10.1 mm (0.40 in)

13. Rocker arm shafts

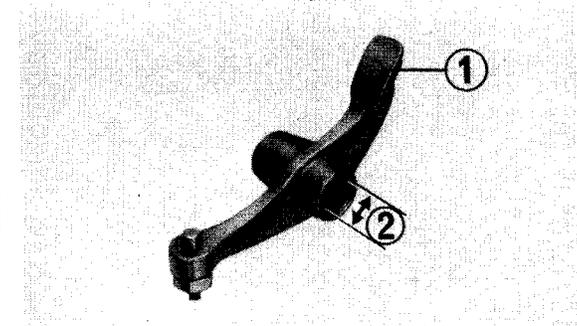
Item	Standard value	Serviceable limit
Shaft diameter	9.972–9.987 mm (0.3926–0.3933 in)	Replace if under 9.920mm (0.3934in)
Shaft clearance	0.013–0.043 mm (0.0005–0.0017in)	Replace if over 0.08mm (0.0031in)



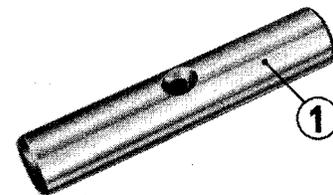
(1) Camshaft (2) Micrometer
Fig. 52



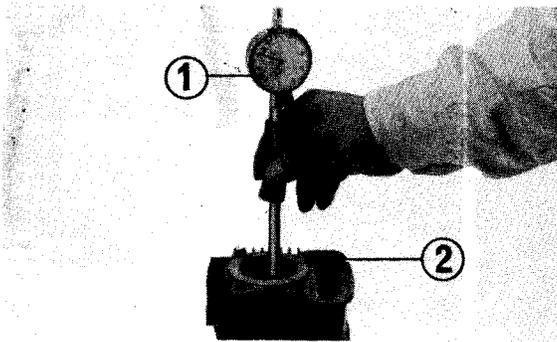
(1) Camshaft (2) Micrometer
Fig. 53



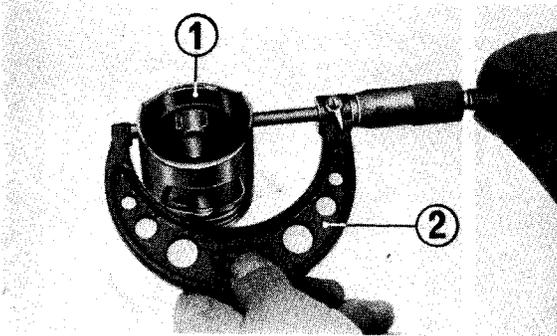
(1) Slipper face (2) Shaft bore
Fig. 54



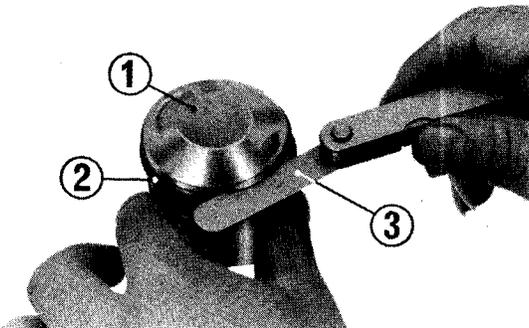
(1) Rocker arm shaft
Fig. 55



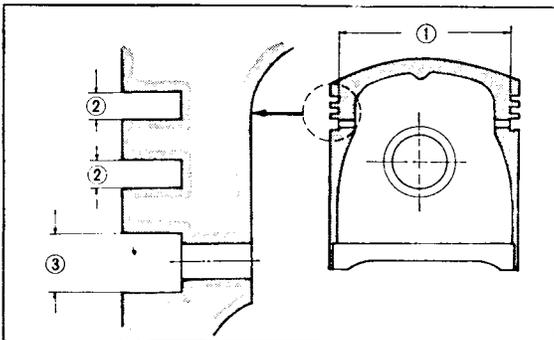
(1) Cylinder gauge
Fig. 56 (2) Cylinder



(1) Piston
Fig. 57 (2) Micrometer



(1) Piston
Fig. 58 (2) Piston ring (3) Thickness gauge



Piston ring groove dimensions
Fig. 59

Cylinder and Piston

1. Measure the inside diameter of each cylinder. Measure the bore at the top, middle and bottom with an accurate cylinder gauge placed at right angle (X) and parallel (Y) to the center line of the crankshaft.

Standard value:

50.0–50.01 mm (1.9685–1.9688 in.)

Service limit: 50.11 mm (1.9739 in.)

If the wear is so great that the service limits are exceeded, the cylinders should be rebored and oversize pistons and piston rings installed. The following four oversize pistons and piston rings are available as service parts:

Oversize pistons and rings (mm)	Size to which cylinder are to be rebored mm (in.).
0.25	50.25–50.26 (1.9784–1.9788)
0.50	50. 5–50.51 (1.9882–1.9886)
0.75	50.75–50.76 (1.9981–1.9985)
1.00	51. 0–51.01 (2.0079–2.0118)

3. When removing carbon deposits from the piston top and ring grooves, care should be exercised so as not to cause any scratches or damages to the piston.
4. Measure the skirt of the piston perpendicular to the piston pin hole. (Fig. 57)

Item	Standard value
Outside diameter	49.97–49.99mm (1.9673–1.9681 in)

5. Measure the piston ring side clearance with a thickness gauge. (Fig. 58)

Item	Standard value	Serviceable limit
Piston ring side clearance	0.01–0.045 mm (0.0004–0.018 in)	Replace if over 0.1 mm (0.004 in)

6. Piston ring grooves (Fig. 59)

Item	Standard value	Serviceable limit
Bottom diameter (1)	44.2–44.3 mm (1.7401–1.7441 in)	
Groove width (top and 2nd ring grooves) (2)	1.2–1.22mm (0.0472–0.0480in)	Replace if over 1.3mm (0.0512in)
Groove width (oil ring groove) (3)	2.5–2.52 mm (0.0984–0.0992in)	Replace if over 2.6mm (0.0102in)

7. Piston rings

Measure the ring gap by inserting the piston ring into the cylinder so that the ring is at right angle to the cylinder axis. (Fig. 60)

Item		Standard value	Serviceable limit
Ring thickness	1st & 2nd	1.175–1.190mm (0.0808–0.0812in)	Replace if under 1.13mm(0.0445in)
	Oil	2.475–2.490mm (0.9743–0.9802in)	Replace if under 2.43mm(0.0953in)
Ring closing force	1st & 2nd	0.63–0.84 kg (1.38–1.85 lbs)	Replace if under 0.4 kg (0.88 lbs)
	Oil	0.7–1.2 kg (1.54–2.64 lbs)	Replace if under 0.6 kg (1.32 lbs)
Ring gap (Fig. 60)	1st & 2nd	0.15–0.35 mm (0.0059–0.014 in.)	Replace if over 0.5mm(0.02in)
	Oil	0.15–0.40mm (0.0059–0.0157in)	Replace if over 0.5mm(0.020in)

Note:

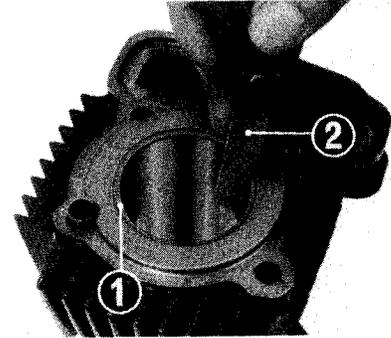
- Oversize piston rings are available in four oversizes; **0.01, 0.02, 0.03 and 0.04 in. (0.25, 0.50, 0.75 and 1.00 mm)**.
- When taking the piston ring gap measurement, insert the ring carefully into the cylinder to prevent scratches or gauges to the cylinder wall.

C. Reassembly

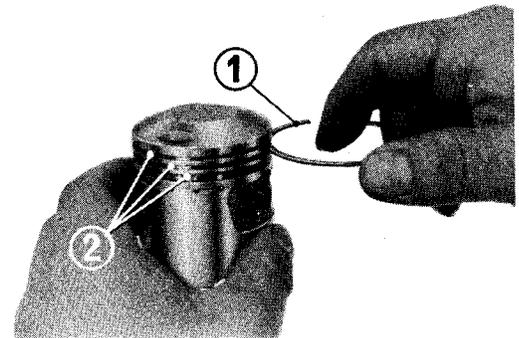
- Install the piston rings on the piston in the same manner as they were removed. The bottom oil ring must be installed first.

Cautions:

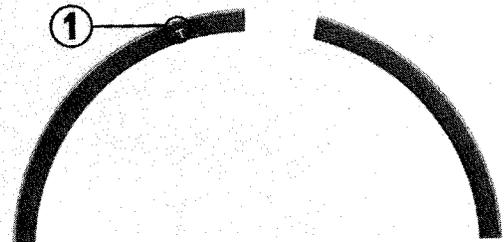
- When a new piston ring is installed, check to be sure that the ring slides smoothly in the groove.
- The rings must not be installed upside down, this will cause oil pumping. The top side of the ring is etched at the end with the initial of the manufacture's name.



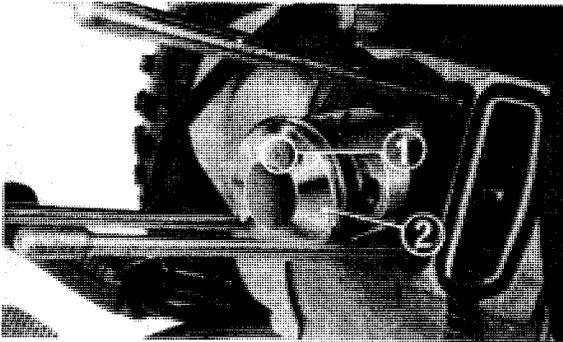
(1) Piston ring (2) Thickness gauge
Fig. 60



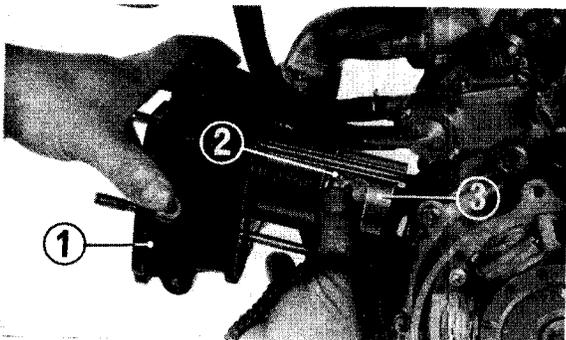
(1) Piston ring (2) Piston ring grooves
Fig. 61



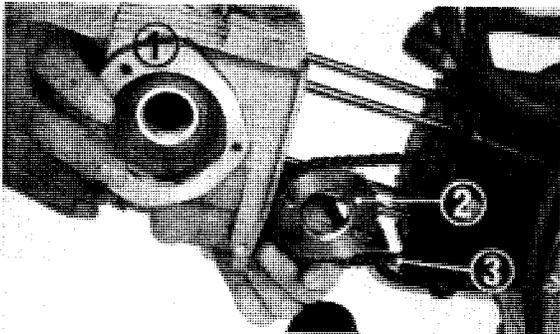
(1) Mark
Fig. 62



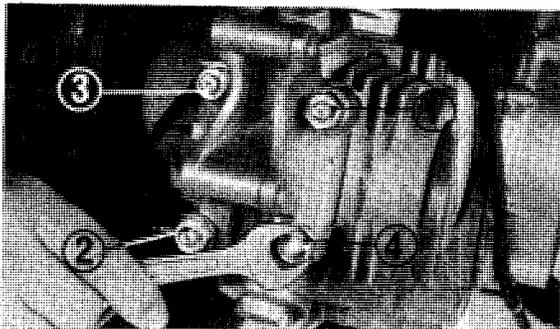
(1) "IN" mark (2) Piston
Fig. 63



(1) Cylinder (2) Piston rings (3) Piston
Fig. 64



(1) Cylinder head (2) Cam sprocket
(3) Cam chain
Fig. 65



Cylinder head tightening sequence
Fig. 66

Note:

Use of a piston ring tool will facilitate installation and prevent the possibility of ring breakage.

2. Install the piston to the small end of the connecting rod, only a slight hand pressure should be required to insert the piston pin. Always install new piston pin clips.

Caution:

The piston must be installed so that the "IN" stamped on the piston head faces upward when the engine is in the normal position. (Fig. 63)

3. As shown in Fig. 64, insert the piston rings into the cylinder, beginning on the top ring and taking care not to damage the rings. To make it easier to insert the rings, slightly move the cylinder in all directions and compress the ring by right hand.

After installing the cylinder, route the chain through the cylinder and install the chain guide roller in place.

Note:

The gaps of the three piston rings should be staggered 120°.

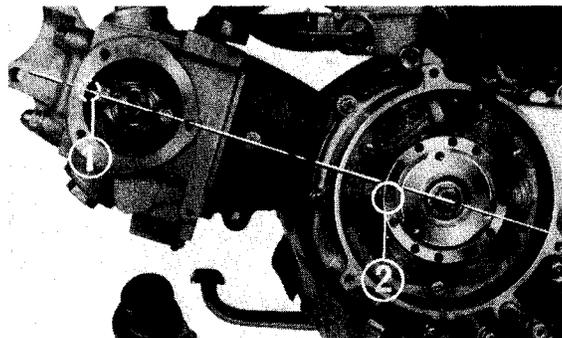
4. Apply engine oil to the valve stems before installing into the cylinder head.
5. Install the rocker arms and shafts to the cylinder head, then install the rocker arm side cover.
6. Set the cam sprocket to the chain as shown. Face the "O" mark on the sprocket toward the cylinder head.
7. Install the cylinder head.

Note:

Make sure that the cylinder head gasket, cylinder stud gasket and cam chain gasket are properly installed to prevent oil leaks.

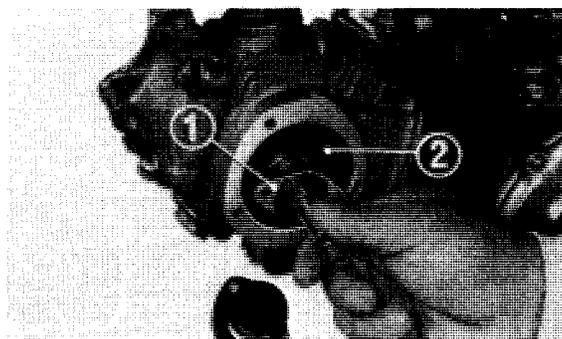
8. Install the cylinder head cover and tighten the nuts diagonally and uniformly to 14.5–18.1 lbs-ft (1.5–2.0 kg-m). Improper torquing will cause oil leaks.

9. Position the crankshaft so that the woodruff key is on the cylinder centerline and in the direction of the cylinder head. Align the "O" mark on the cam sprocket with the index mark on the cylinder head (the sprocket mounting bolt holes will be in line with the cylinder centerline) and then connect the cam chain. (Fig. 67)



(1) "O" mark (2) "T" mark
Fig. 67

10. Install the camshaft in the cam sprocket and secure with the two 6 mm bolts.

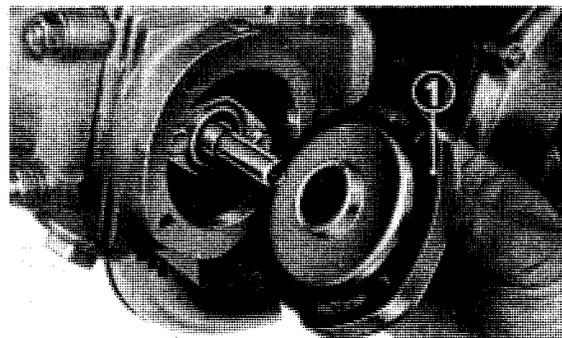


(1) Camshaft (2) Cam sprocket
Fig. 68

11. After installing the point base, insert the 3 x 5.2 mm camshaft pin into the camshaft and install the spark advancer by fitting the hole in the advancer onto the pin.

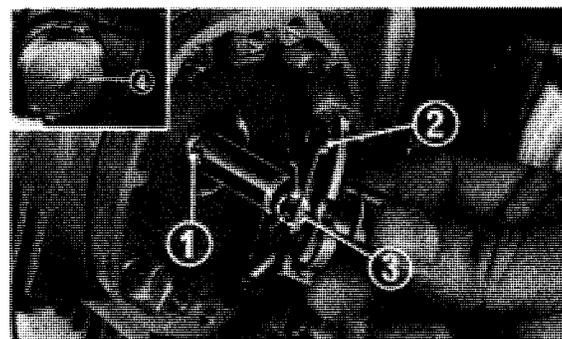
Note:

When installing the spark advancer unit to the camshaft, align the advancer groove to 3 x 5.2 mm pin on the camshaft.

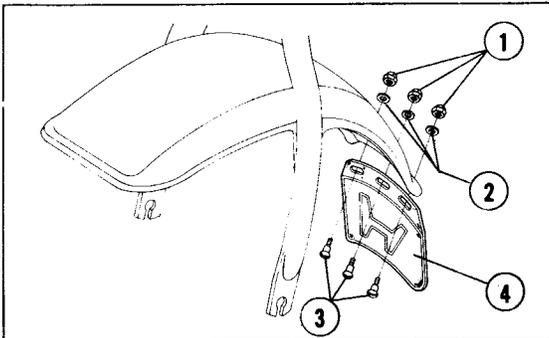


(1) Point base and gasket
Fig. 69

12. Install the contact breaker assembly and connect the wires.
13. Adjust the tappet clearance and ignition timing by referring to page 71.
14. Install the point cover, tappet caps, starter pulley, recoil starter and left crankcase cover.

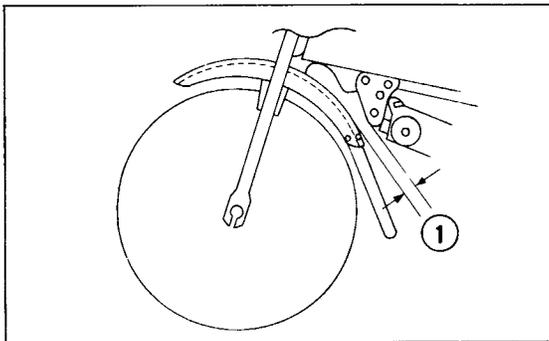


(1) 3 x 5.2 mm camshaft pin (3) Boss
(2) Spark advancer (4) Point cover
Fig. 70



- (1) 4 mm cap nuts (2) 4 mm plain washers
 (3) 4 x 12 bolts (4) Mud guard

Fig. 71



- (1) Install the 16–21 mm
 (In the straight ahead position)

Fig. 72

15. Install the mud guard to the front fender.

Caution:

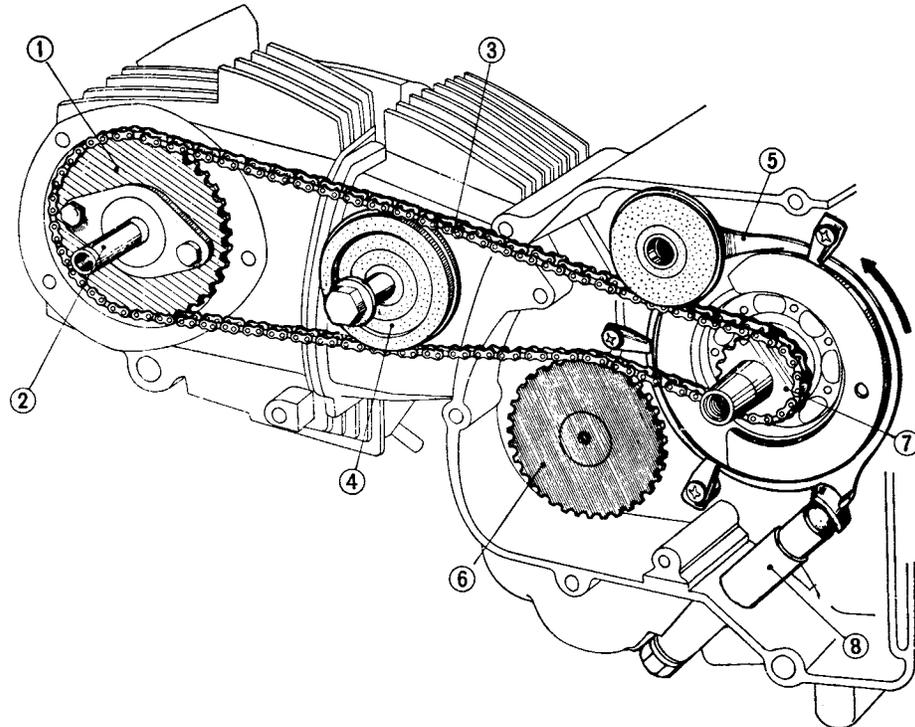
Use the correct attaching screws. Use of longer screws may damage the tire.

16. Install the front fender and front wheel. When installing the front fender, the clearance between the engine hanger and fender should be **0.630–0.827 in. (16–21 mm)**. If the said clearance is out of specification, the tire and fender or the engine hanger and fender may interfere with each other. Set the clearance to the minimum (about **0.197 in or 5 mm**) when steering to the maximum angle.

3. CAM CHAIN TENSIONER AND CAM CHAIN

CONSTRUCTION

The camshaft is driven by the drive sprocket on the crankshaft through the cam chain which is located on the left side and housed within the cam chain chamber. (Fig. 73)



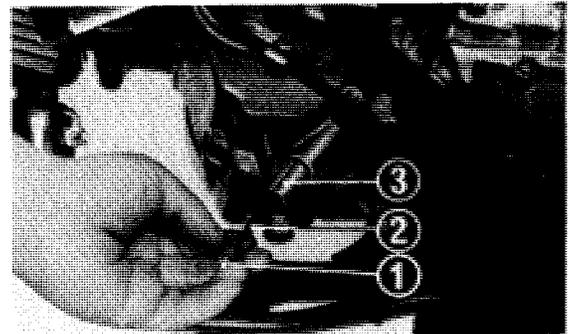
- | | |
|--------------------------------------|------------------------------|
| (1) Camsprocket | (5) Cam chain tensioner |
| (2) Camshaft | (6) Cam chain guide sprocket |
| (3) Cam chain | (7) Timing sprocket |
| (4) Cam chain guide roller tensioner | (8) Tensioner push rod |

Fig. 73

CAM CHAIN TENSIONER

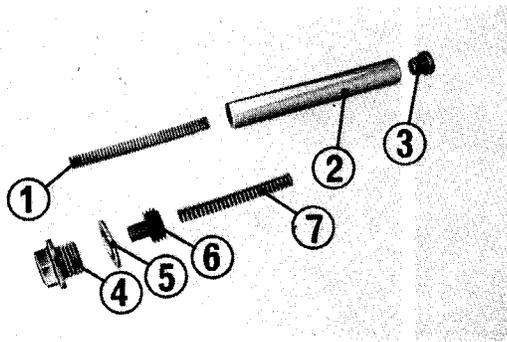
A. Disassembly

1. Unscrew the 14 mm sealing plug from the end of the tensioner push rod and remove the spring (2) and rod (3). (Fig. 74)

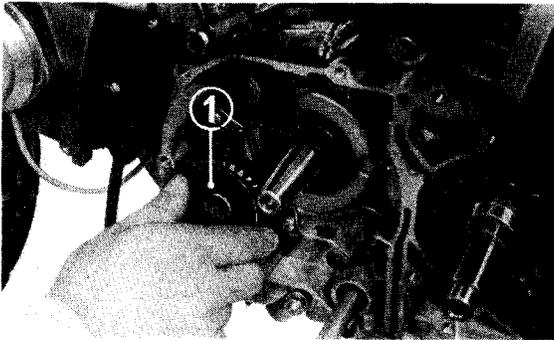


- | | |
|------------------------|------------|
| (1) 14 mm sealing plug | (2) Spring |
| (3) Tensioner push rod | |

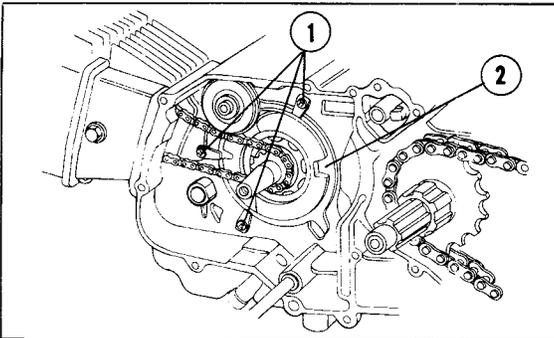
Fig. 74



(1) Tensioner spring A (2) Tensioner push rod
 (3) Tensioner push rod head (4) 14 mm sealing bolt
 (5) 14 mm sealing washer (6) Tensioner adjusting bolt B
 (7) Tensioner spring B
 Fig. 75



(1) Cam chain guide roller
 (2) Cam chain tensioner
 Fig. 76



(1) (2) 5 mm screws (3) Tensioner set plate
 Fig. 77

B. Inspection

1. Check the cam chain tensioner for wear or damage.

Item	Standard value	Serviceable limit
Free length	27.0 mm (1.0630 in)	26.0mm(1.0236in)
Tension	10–10.4kg/15mm (22–22.9lbs/0.59in)	

D. Reassembly

To reassemble the cam chain tensioner, reverse the disassembly procedure.

CAM CHAIN

A. Disassembly

1. Referring to page 49, remove the cam chain guide pin and then the cam chain guide roller.
 Remove the cam chain tensioner by loosening the three 5 mm screws which secure the cam chain tensioner set plate to the tensioner and remove the stator by referring to page 44. Then pull out the cam chain.

B. Assembly

To assemble the cam chain, reverse the disassembly procedure.

4. CLUTCH AND OIL PUMP

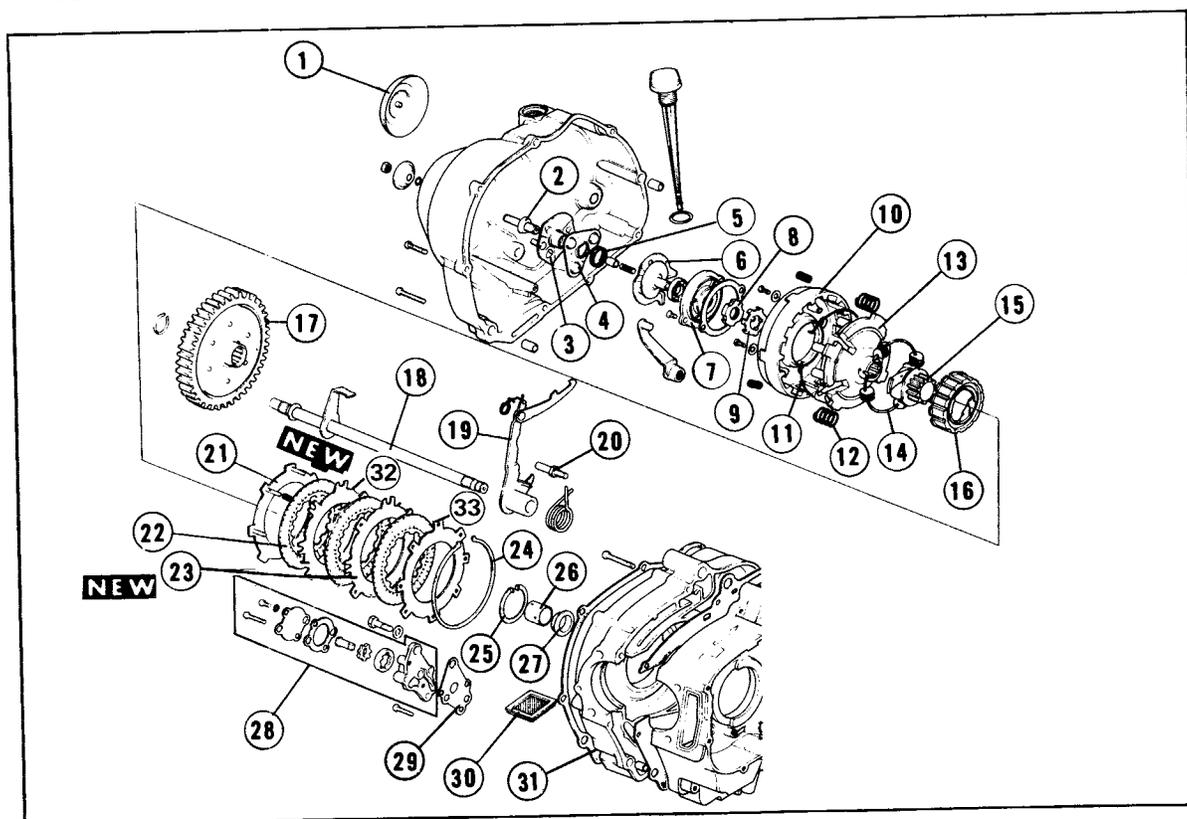


Fig. 78

- | | | |
|-----------------------------------|-------------------------------|-----------------------------------|
| (1) Right crankcase protector | (12) Clutch spring | (23) Clutch plate B |
| (2) Clutch adjusting bolt | (13) Drive plate | (24) 102.5 mm set ring |
| (3) Clutch lifter plate | (14) Clutch weight | (25) 38 mm circlip |
| (4) Ball retainer | (15) Drive gear (18T) | (26) Clutch center guide |
| (5) Cam plate side spring | (16) Clutch center (18T) | (27) 20 mm collar |
| (6) Clutch cam plate | (17) Primary driven gear | (28) Oil pump assy |
| (7) Clutch outer cover | (18) Shift spindle | (29) Oil pump body gasket |
| (8) 16 mm lock nut | (19) Gear shift arm | (30) Oil filter screen |
| (9) 16 mm lock washer | (20) Shift return spring pin | (31) Right crankcase cover gasket |
| (10) Clutch outer | (21) Clutch plate A | (32) Clutch plate C |
| (11) Clutch weight stopper spring | (22) Clutch friction disk (3) | (33) Clutch plate D |

A. Disassembly

1. Remove the nine 6 mm screws and remove the right crankcase cover. (Fig. 79)
2. Remove the clutch lever and clutch plates.

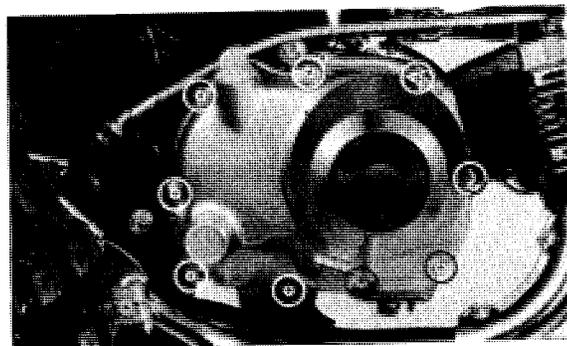
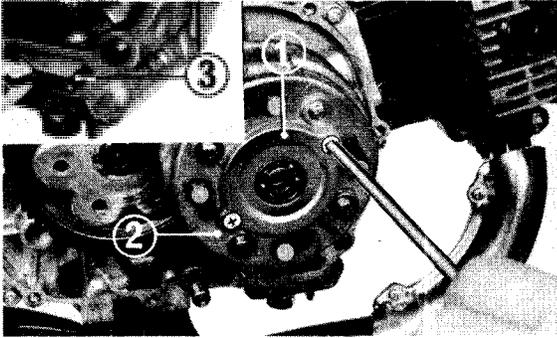
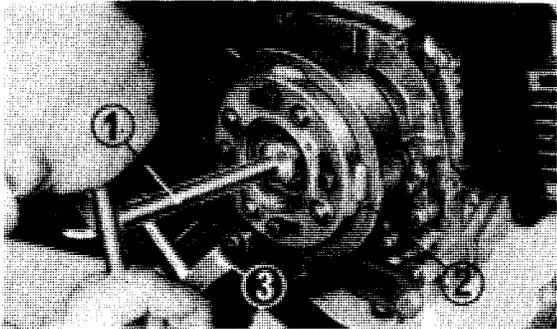


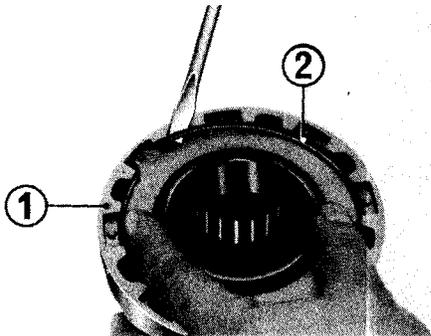
Fig. 79



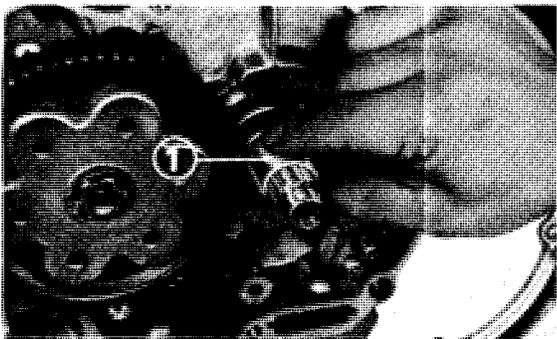
(1) Clutch outer cover (2) Clutch outer
Fig. 80



(1) 16 mm box wrench (2) Clutch outer holder
(3) Clutch lever
Fig. 81



(1) Clutch assembly (2) Snap ring
Fig. 82



(1) Clutch outer guide
Fig. 83

3. Remove the oil filter screen and remove the clutch outer cover.

4. Unlock the 16 mm lock washer, unscrew the 16 mm lock nut, then remove the clutch assembly as a unit.

5. Using a clutch outer holder (Tool No. 07923-0340000) hold the clutch and using a 16 mm box wrench (Tool No. 07916-2830000) remove the lock nut.

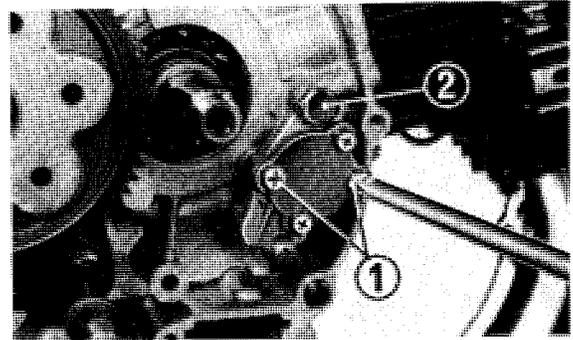
To remove the lock nut, engage the gear shift lever with the gear shift and hold the clutch outer with the clutch outer holder so that it does not rotate, and then remove the lock nut.

6. As shown in Fig. 82, attach a screwdriver to the one side of the clutch assembly and remove the snap ring. Take care not to damage the snap ring.

7. Pull the clutch outer guide out of the crankshaft.

Oil pump

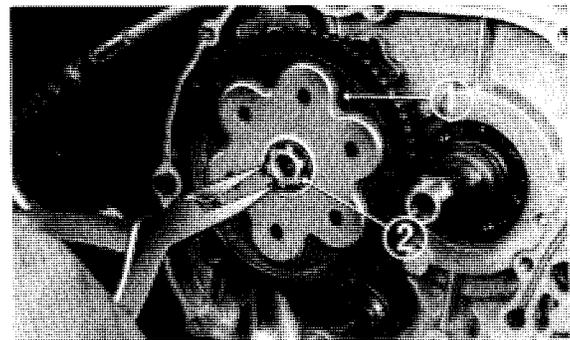
After removing the clutch assembly, remove the oil pump by unscrewing the three 6 mm screws and special hex. bolt.



(1) 6 mm screws (2) Special hex. bolt
Fig. 84

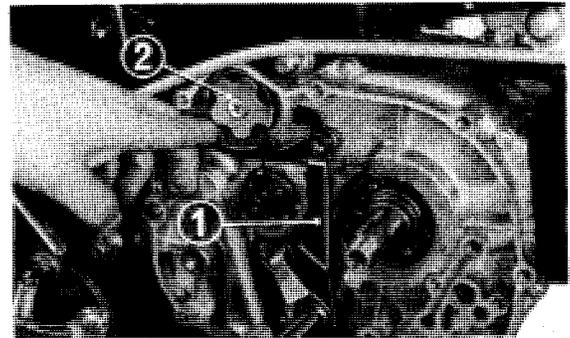
Gear shift

1. After removing the clutch assembly, remove the primary driven gear by removing the 20 mm snap ring.



(1) Primary driven gear (2) 20 mm snap ring
Fig. 85

2. After removing the gear change pedal, remove the shift drum stop and shift drum stop plate. Disengage the shift arm from the shift drum and pull the gear shift spindle backward.



(1) Gear shift arm (2) Shift drum
Fig. 86

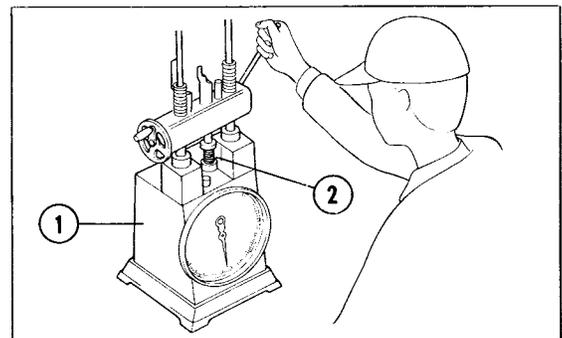
B. Inspection

1. Clutch springs

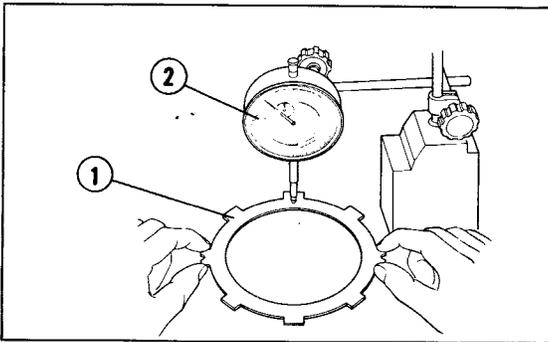
Item	Standard value	Serviceable limit
Tensioner spring free length	70.4 mm (2.722 in)	Replace if under 67.4 mm (2.654in)
Spring tension	49 mm/65–81 g (1.931in/2.275– 2.835 oz)	Replace if under 49 mm/40g (1.931in/1.400oz)

Note:

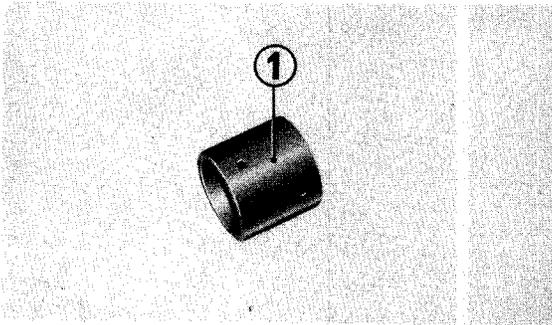
Use a coil spring tester for checking the valve spring tension.



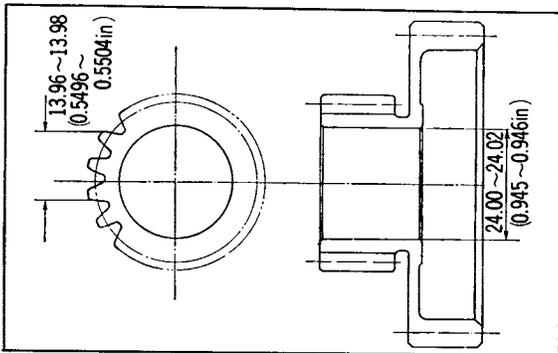
Checking the clutch spring
(1) Spring tester (2) Spring
Fig. 87



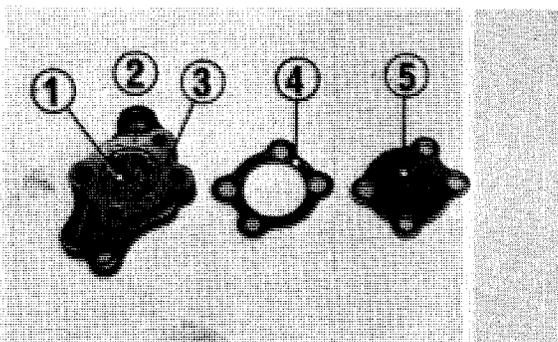
Checking the clutch plate
 (1) Clutch palte (2) Dial gauge
 Fig. 88



Clutch center guide
 Fig. 89



Primary drive gear
 Fig. 90



(1) Inner rotor
 (2) Outer rotor to pump body clearance
 (3) Oil pump body
 (4) Oil pump cover gasket
 (5) Oil pump cover
 Fig. 91

2. Friction discs and clutch plates (Fig. 88)

Item	Standard value	Serviceable limit
Thickness of disc	2.8–2.9 mm (0.1102–0.1141 in)	2.4 mm (0.0944 in)
Thickness of clutch plate	1.93–2.07 mm (0.0760–0.0815 in)	Replace if under 1.85mm (0.073in)
Warpage of plate	0.2 mm (0.0079 in)	0.5 mm (0.0196 in)

3. Clutch outer and drive plate or clutch plate.

Item	Standard value	Serviceable limit
Backlash of clutch plate	0.2 mm (0.008 in)	Replace if over 0.7mm (0.036 in)
Backlash of friction disc	0.2 mm (0.008 in)	Replace if over 0.7mm (0.036 in)

4. Clutch center guide (Fig. 89)

Item	Standard value	Serviceable limit
Crankshaft to center guide clearance	0.005–0.047 mm (0.0002–0.0019in)	Replace if over 0.15mm (0.060in)

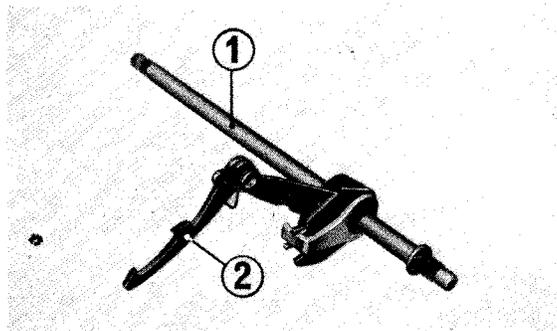
5. Primary drive gear (Fig. 90)

Item	Standard value	Serviceable limit
Inside diameter	24.00–24.02 mm (0.945–0.946 in)	Replace if over 24.15mm(0.951in)
Chordal distance across 3 teeth	13.96–13.98 mm (0.5496–0.5504 in)	Replace if under 13.93 mm (0.548 in)

6. Trochoid pump (Fig. 91)

Item	Standard value	Serviceable limit
Gear to housing clearance	0.02–0.07 mm (0.0008–0.0028 in)	Replace if over 0.12mm (0.0047in)
Outer rotor to pump body clearance	0.1–0.14 mm (0.0039–0.0055 in)	Replace if over 0.2 mm (0.0079 in)

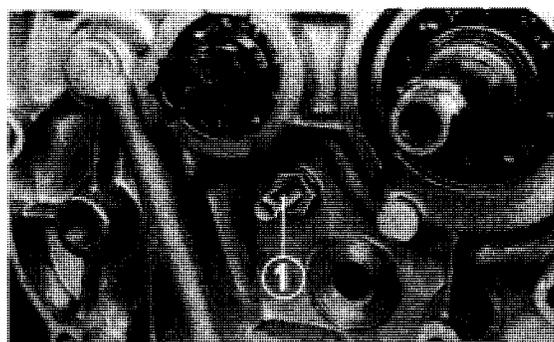
7. Check the gear shift spindle, gear shift arm and gear shift forks for twist or bend.
8. Check the gear shift drum and guide pins for excessive wear.
9. Check the springs for breakage or proper tension.



(1) Gear change spindle (2) Gear change arm
Fig. 92

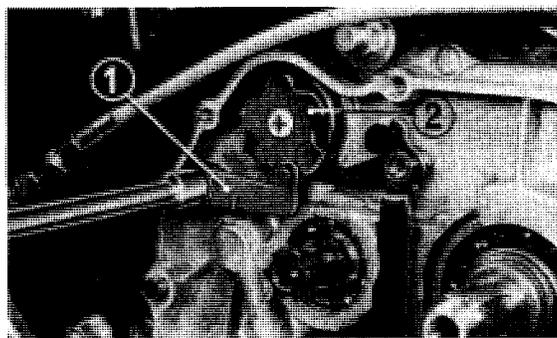
C. Reassembly

1. Install the gear shift spindle in the reverse order of the sequence described in the disassembly section. After installing, make sure that the operation is proper and that the shift return spring pin is not bent.



(1) Shift return spring pin
Fig. 93

2. Install the shift drum stop and gear shift spindle. Using a Phillips screwdriver turn the gear shift drum to check each shift mechanism for smooth operation.

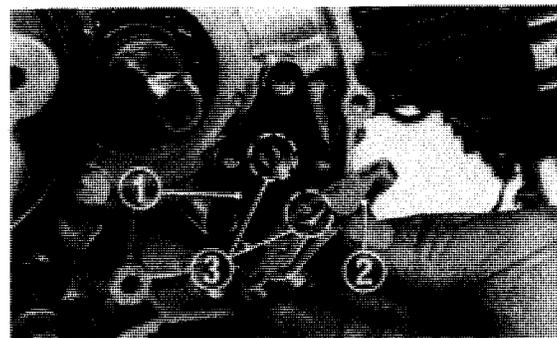


(1) Shift drum stop plate
(2) Shift drum stop
Fig. 94

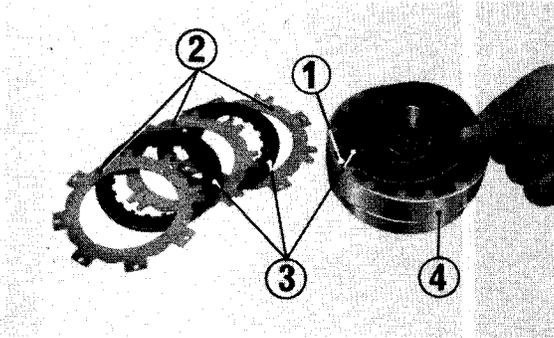
4. Assemble the oil pump and install it to the right crankcase.

Notes:

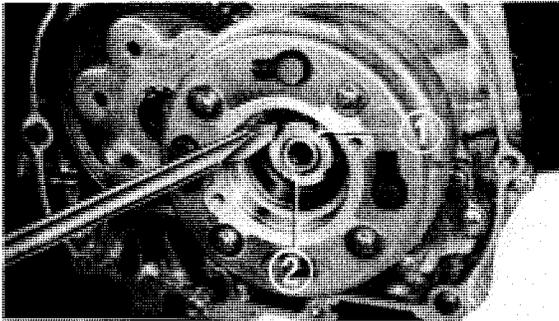
1. Do not forget to install the oil pump body gasket and cover gasket.
2. Properly fit the cut end of the oil pump drive shaft into the recess in the guide roller.



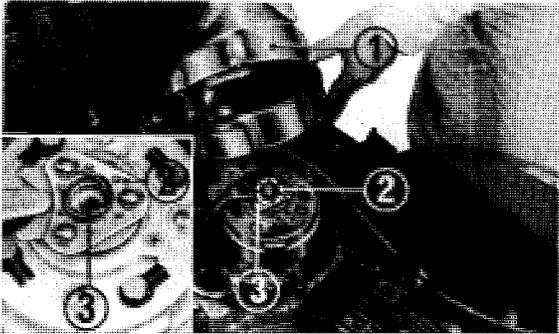
(1) Oil pump body gasket (2) Oil pump body
(3) Cut end
Fig. 95



(1) Clutch free springs (2) Clutch friction plates
(3) Clutch friction disks (4) Clutch assembly
Fig. 96



(1) Lock washer (2) Lock nut
Fig. 97



(1) Right crankcase cover (2) Ball retainer
(3) Cam plate side spring
Fig. 98

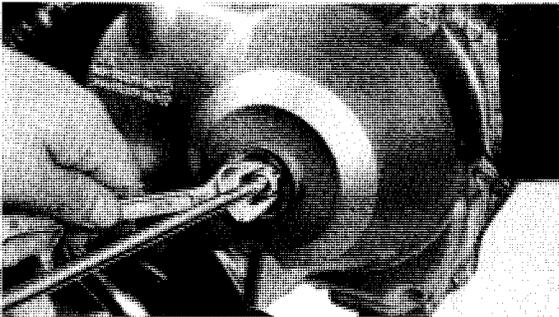


Fig. 99

5. Make sure that the clutch free springs are properly located and install the friction disks and plates alternately into the clutch outer. After installing, push the upper plate by both hands and attach the set springs.

6. Install the clutch assembly to the crankshaft and secure with the lock washer and lock nut. Bend the lock washer as shown.

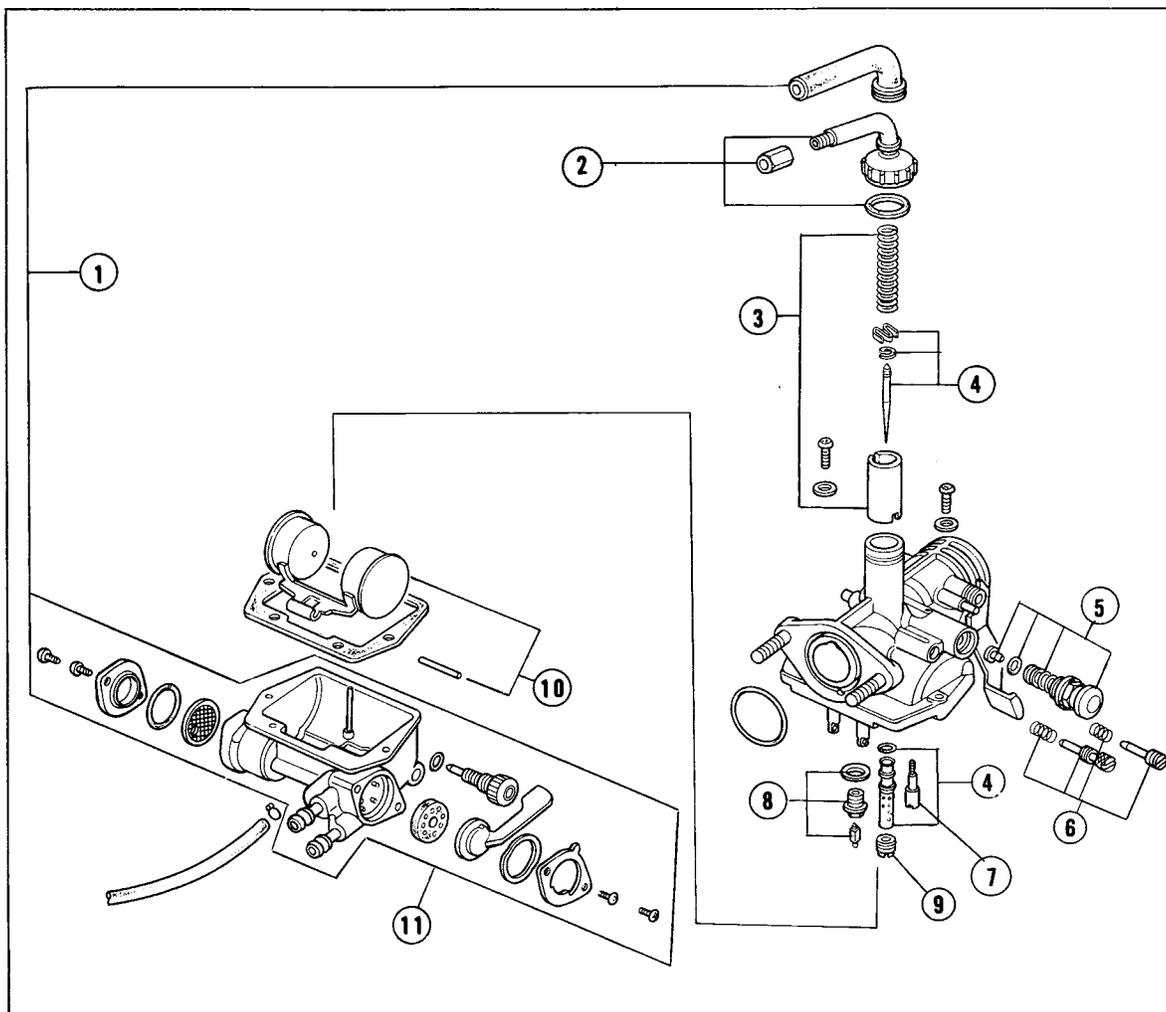
Torque specification:

54–64 lbs-ft (380–450 kg-cm)

7. Tilt the motorcycle as shown in Fig. 98 and install the right crankcase cover. Set the ball retainer and cam plate side spring on the cover side and put the right crankcase cover on.

8. After installing the right crankcase cover, adjust the clutch by referring to page 74.

• CARBURETOR



(1) Carburetor assembly (2) Top set (3) Throttle valve set (4) Jet needle set (5) Cock button set
 (6) Screw set (7) Slow jet (8) Float valve set (9) Main jet (10) Float set (11) Float chamber set
 Fig. 100

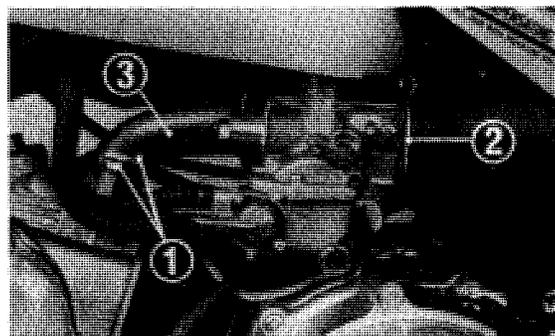
A. Disassembly

1. Remove the carburetor assembly.
 - a. Disconnect the inlet pipe by loosening its bolts and the carburetor connecting tube by loosening its band.
 - b. Disconnect the fuel tube and reserve tube.

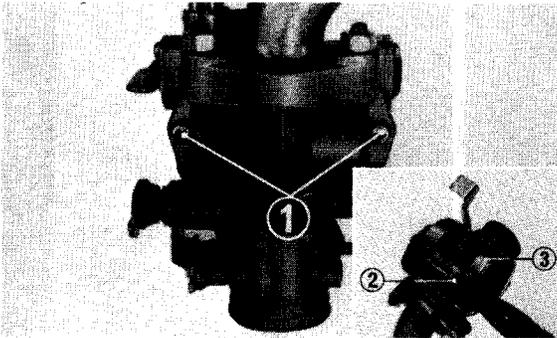
Note:

Take care not to allow fuel to spill out.

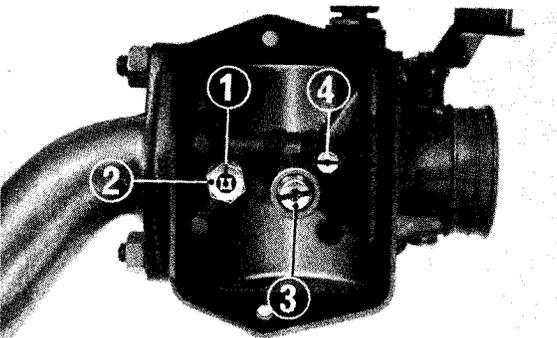
2. Separate the intake manifold from the carburetor.



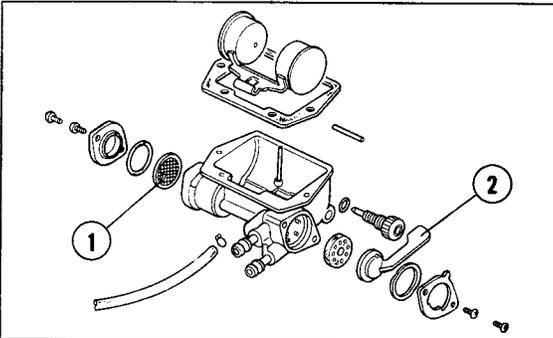
(1) Inlet pipe bolts
 (2) Carburetor connecting tube band
 (3) Intake manifold
 Fig. 101



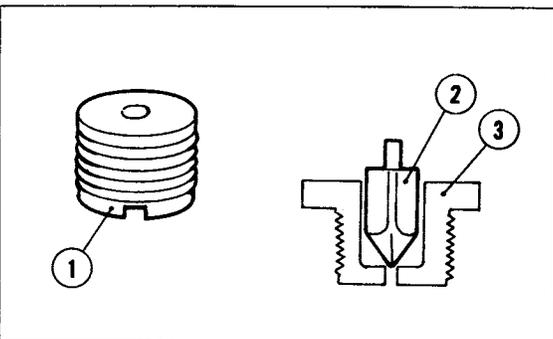
(1) 4 mm screws (2) Float arm pin (3) Float
Fig. 102



(1) Float valve (2) Valve seat
(3) Main jet (4) Slow jet
Fig. 103



(1) Fuel strainer (2) Fuel valve lever
Fig. 104



(1) Main jet (2) Float valve (3) Valve seat
Fig. 105

3. Remove the float chamber body by loosening the 4 mm screws.
4. Pull out the float arm pin and remove the float. Take care not to drop the float valve.

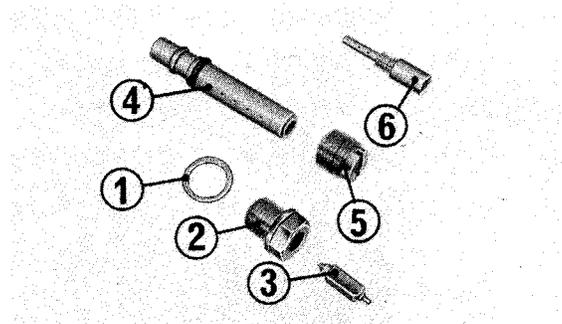
5. Remove the float valve and then the valve seat.
6. Remove the main jet and needle jet.
7. Remove the slow jet.

8. Disconnect the throttle cable end from the throttle valve.
9. Remove the jet needle.
10. Remove the fuel valve lever and fuel strainer.

B. Inspection

1. Blow the main jet to check for blocking.
2. Check the float valve and its seat for proper seating.
3. Check the fuel cock gasket for deterioration.
4. Check the fuel strainer for clogging.

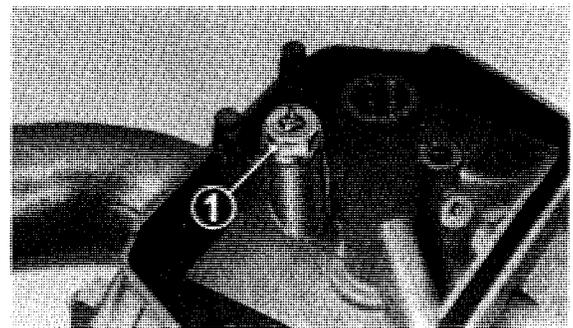
5. Check each main jet and valve for clogging and replace if necessary.



(1) Packing (3) Float valve (5) Main jet
 (2) Valve seat (4) Jet needle (6) Slow jet
 Fig. 106

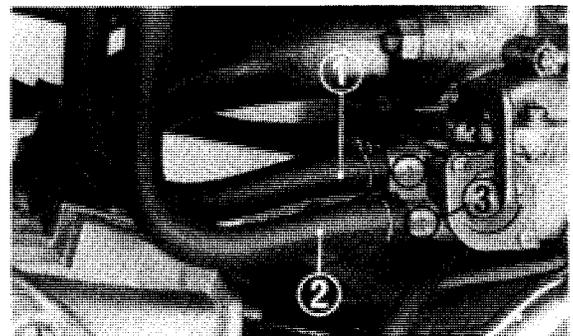
C. Reassembly

1. Install the valve seat with the float valve removed.



(1) Valve seat
 Fig. 107

2. Connect the fuel tube.
 Connect the reserve tube to the side marked "R" of the carburetor and the fuel tube to the side marked "O".

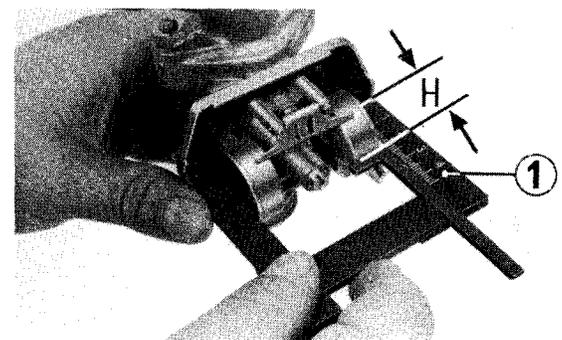


(1) Fuel tube (2) Reserve tube (3) Marks
 Fig. 108

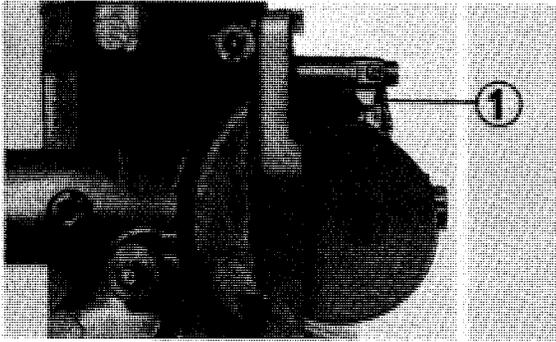
Float level adjustment

1. Position the carburetor as shown.
2. Set the float so that the end of the float valve and the float arm are barely touching.
3. Measure the distance from the base of the float to the float chamber mounting flange. If the distance is out of specification, adjust by bending the float arm.

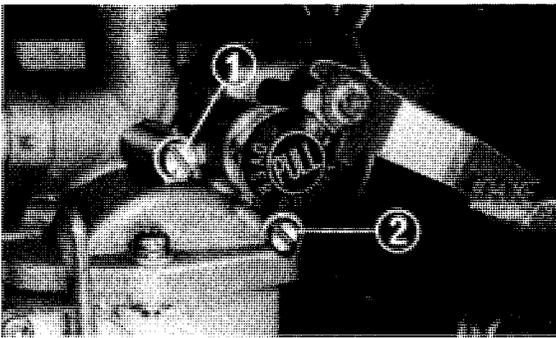
Float height: **0.7874 in. (20 mm)**



(1) Float level gauge
 Fig. 109



(1) Float arm (2) Float valve
Fig. 110



(1) Throttle stop screw (2) Air screw
Fig. 111

D. Adjustment

Adjustment of the carburetor should be made after the engine is warmed up.

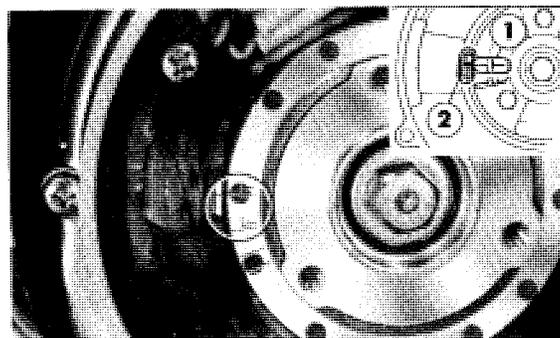
1. Turn the throttle stop screw counterclockwise to set the engine speed to the minimum smooth rotation.
2. Then turn the air screw in or out to set the engine speed to the maximum with the throttle stop screw fixed.
3. Make sure that the set engine revolution will agree with the specified idle speed. If not, adjust with the throttle screw.
4. Further turn the air screw to check if the engine speed varies.
5. If necessary, perform the steps 3 and 4 above to obtain the specified idle speed (1,300 rpm).
6. After adjusting the idle speed, check if the engine rev up will keep up with the throttle grip operation.

The turn of the air screw for adjustment should be $7/8$ – $1\ 1/8$ from the fully closed position.

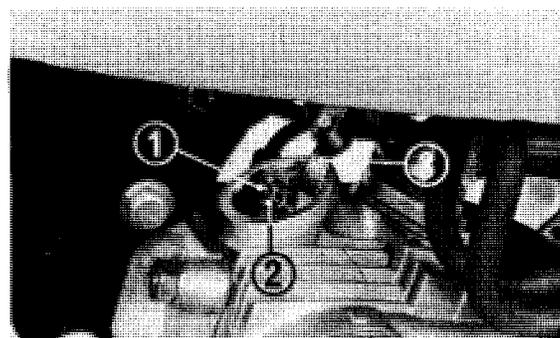
1. TAPPETS

Adjustment of the tappet clearance should be made with the engine cold.

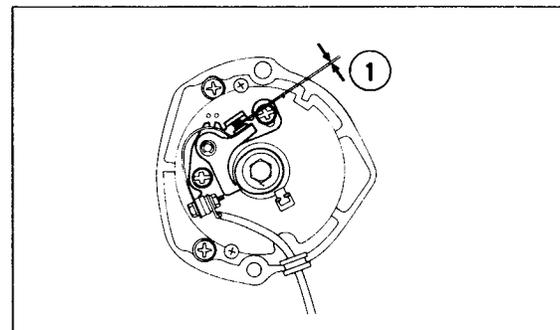
1. Remove the tappet hole caps and generator cover.
2. Turn the generator rotor counterclockwise until the mark "T" on the rotor is aligned with the index mark. At this position the piston will be at the T.D.C. (top dead center) position on the compression stroke or on the exhaust stroke. The tappet clearance should be adjusted with the piston placed at the T.D.C. position on the compression stroke. Move the intake and exhaust rocker arms and if there is any free movement, the piston is at the T.D.C. position on the compression stroke. If there is no such a movement and the valves are open, further turn the rotor one turn to align the mark "T" with the index mark.
3. Insert a **0.05 mm (0.002 in.)** thickness gauge into between the tappet adjusting screw and valve stem end to check the tappet clearance. If necessary, adjust the clearance by loosening the lock nut and turning the adjusting screw.
4. After adjusting, tighten the adjusting screw to the specified torque, and lock the screw with the lock nut.
5. Make sure that the adjustment of the tappet clearance has not been disturbed while tightening the lock nut. Then install the tappet hole caps and generator cover.



(1) Mark "T" (2) Index mark
Fig. 112



(1) Tappet adjusting screw (2) Lock nut
(3) Thickness gauge
Fig. 113

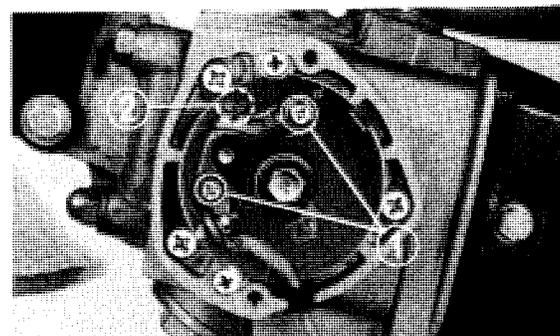


(1) Point gap
Fig. 114

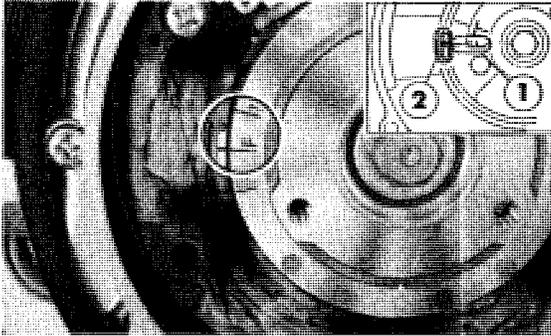
2. CONTACT BREAKER POINT GAP AND IGNITION TIMING

1. Point gap

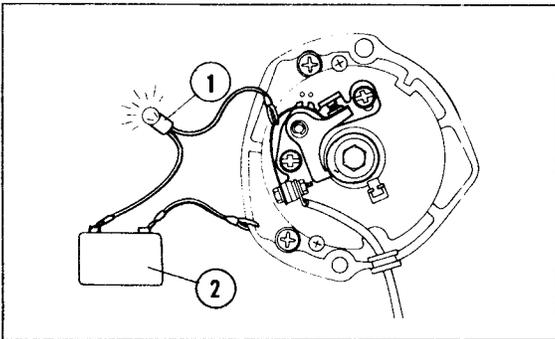
1. Remove the point cover and generator cover. Turn the generator rotor counterclockwise until the point gap is maximum.
2. Measure the point gap with a thickness gauge. The gap should be within **0.012–0.016 in. (0.3–0.4 mm)**. Fig. 114
3. To adjust, loosen the screws "a" and move the breaker arm to left or right.



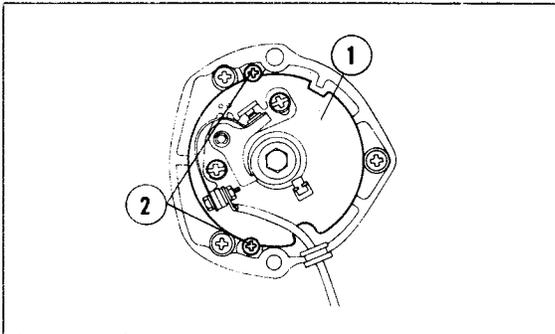
(1) Screws "a" (2) Adjusting groove
Fig. 115



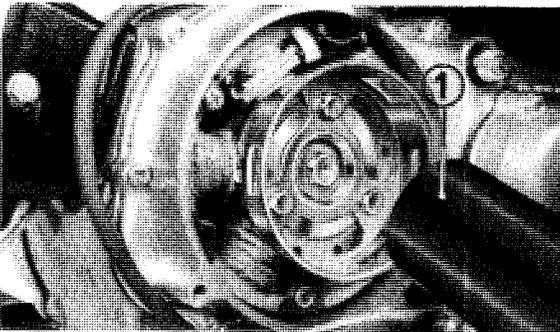
(1) Mark "F" (2) Index mark
Fig. 116



(1) 6V-3W lamp (2) 6V battery
Fig. 117



(1) Contact breaker base plate
(2) Base plate locking screw
Fig. 118



(1) Timing light
Fig. 119

2. Ignition timing

1. Remove the point cover and generator cover.
2. Turn the generator rotor counterclockwise until the mark "F" on the rotor is aligned with the index mark. If the contact breaker points start opening at this position, the ignition timing is correct.

<Inspection of ignition timing with a lamp>

1. As shown in Fig. 117 connect a 6V-3W.
2. As shown in Fig. 117 connect a 6V battery. Use a 6V-3W lamp with two leads. Connect one end of the leads to the contact breaker spring and ground the other end as shown.
3. Turn the rotor counterclockwise slowly, the lamp should go out when the breaker points just begin to open.
4. If ignition timing is found to be incorrect, loosen the two base plate locking screws and rotate the base plate to obtain correct ignition timing. Rotating the base plate clockwise will advance ignition timing, counterclockwise rotation will retard ignition timing. After the adjustment, tighten the locking screws firmly, and recheck the contact breaker point gap.

<Inspection of ignition timing with a timing light>

When using a strobo timing light to check the ignition timing, idle the engine at 1,300 rpm (Fig. 119) if it is found out of timing, adjust in the same manner as described above.

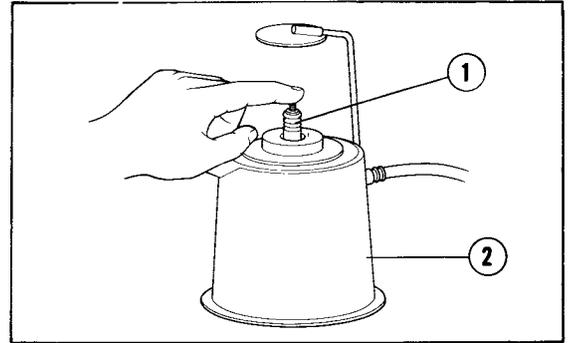
3. SPARK PLUG ADJUSTMENT

A foul or damaged spark plug, or foul plug electrodes will not produce a good strong spark, therefore, the spark plug should be checked periodically and cleaning and adjustments made. A spark plug with sooty, wet electrodes, or electrodes covered with deposits will permit the high tension voltage to bypass the gap without sparking.

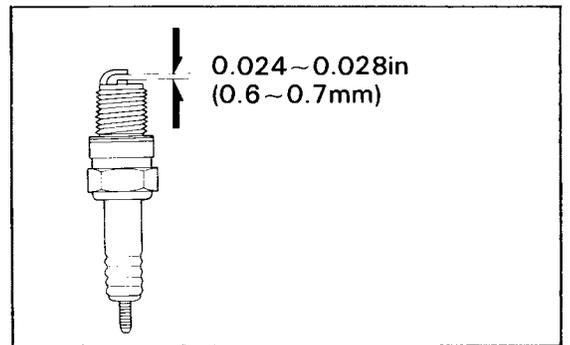
1. Cleaning
 - a. The use of a spark plug cleaner is the recommended method of cleaning the plug, however, a satisfactory cleaning can be performed by using a needle or a stiff wire to remove the deposits and then wash in gasoline followed by drying with compressed air.
 - b. Adjust the spark gap after cleaning.
Set the gap to **0.024–0.028 in. (0.6–0.7 mm)** by bending the electrode on the ground side.
2. Spark plug inspection
 - a. Check the spark intensity produced between the gaps of the ground and the center electrodes.
Blue spark Good condition
Red spark Poor condition
Cause due to:
 1. Low supply voltage
 2. Defective ignition coil
 3. Defective spark plug
 4. No sparking may also be due to compression

Cautions:

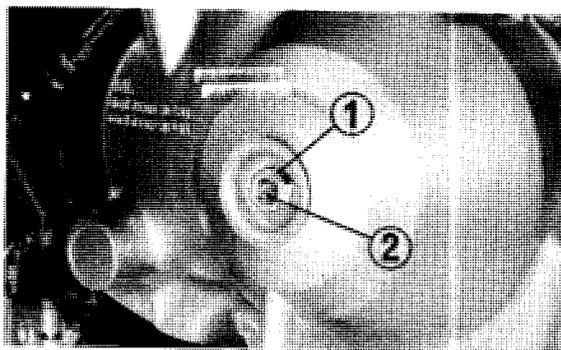
1. Do not remove the deposits by burning.
2. When installing the spark plug, clean the seating area free of oil or foreign matter and install finger tight before torquing with a plug wrench.
3. After adjustment, test the spark plug using a plug tester. with the high tension voltage constant, vary the test chamber pressure and check the condition of spark.



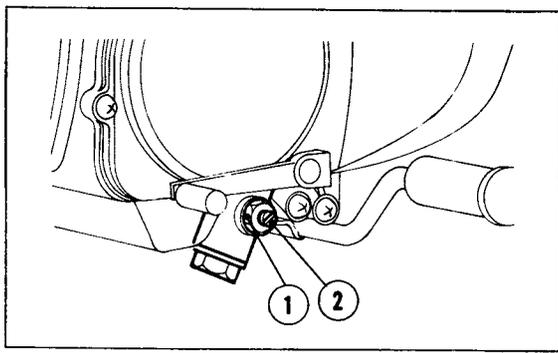
Cleaning the spark plug
(1) Spark plug (2) Spark plug cleaner
Fig. 120



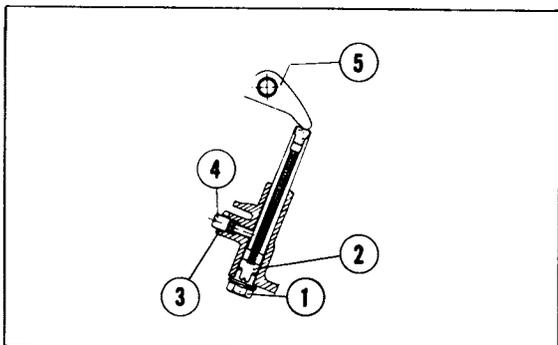
Measuring the spark gap
Fig. 121



(1) Adjusting nut (2) Adjusting screw
Fig. 122

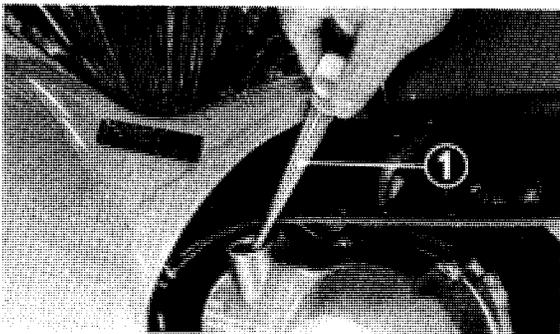


(1) 8 mm lock nut (2) Tensioner adjusting bolt
Fig. 123



(1) 14 mm sealing bolt
(2) Tensioner adjusting bolt B
(3) 8 mm lock nut (4) Tensioner adjusting bolt
(5) Cam chain tensioner arm

Fig. 124



(1) Oil level gauge
Fig. 125

Backwards

4. CLUTCH

adj opposite to instructions
Adjustment of the clutch should be made with the engine stopped.

1. Loosen the adjusting nut.
2. Turn the adjusting screw counterclockwise one turn.
3. Slowly turn the adjusting screw clockwise until a resistance is felt.
4. Then turn the adjusting screw counterclockwise 1/8–1/4 turn, and tighten the adjusting nut.

5. CAM CHAIN

1. Start the engine and let it idle.
2. Loosen the 8 mm lock nut and loosen the tensioner adjusting bolt about 1/2 turn. Then the chain tension will be adjusted properly.
3. If the chain is still noisy, proceed as follows: With the adjusting bolt loosened about 1/2 turn, remove the 14 mm sealing bolt from under the left crankcase. Then tighten the tensioner adjusting bolt B slowly until the chain is no longer noisy.
4. After adjusting, tighten the tensioner adjusting bolt, 8 mm lock nut and 14 mm sealing bolt.

Note:

When tightening the 8 mm lock nut, do not exceed the torque specification.

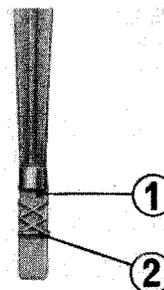
6. ENGINE OIL

Checking the oil level

1. Place a stand under the engine and position the motorcycle in the upright position.

2. Insert the oil level gauge into the oil filler hole to check the oil level. (DO NOT screw it in.) Oil should be up to the upper mark on the gauge.
3. If necessary, refill the crankcase with the specified oil.

Specified oil:SAE 10W-40 (All seasons)



(1) Upper mark

(2) Lower mark

Fig. 126

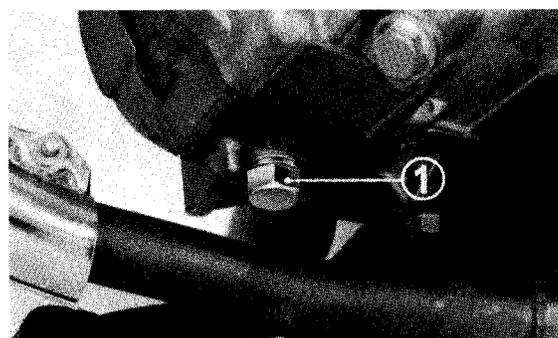
Changing the oil

1. Remove the oil filler cap.
2. Place a pan under the drain hole in the crankcase. Remove the drain plug.
3. After oil stops draining from the crankcase, operate the kick starter pedal several times to drain the oil remaining in the engine.
4. Install the drain plug, making sure that its sealing washer is in good condition.
5. Refill the crankcase with the specified oil through the oil filler hole.

The capacity is approximately:

1.0 U.S. qt. (0.9ℓ).

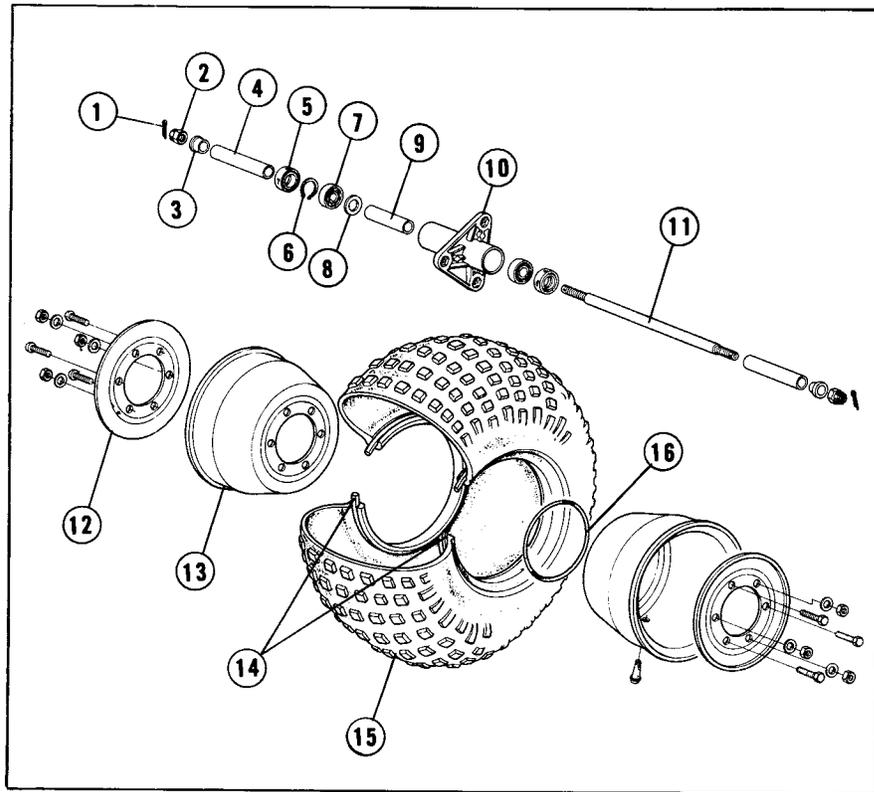
Check to see if the oil level is correct.



(1) Drain plug

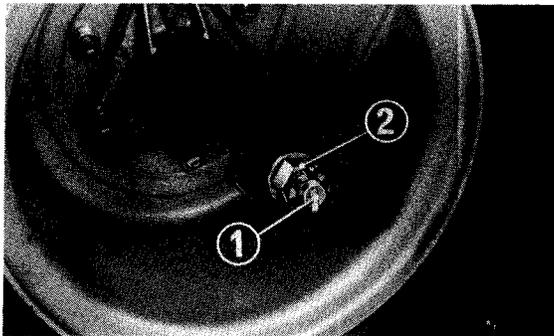
Fig. 127

VIII. CHASSIS



- (1) Cotter pins
- (2) Castle nut
- (3) Front wheel shaft collars
- (4) Front wheel side collars
- (5) 22 x 35 x 7 oil seals
- (6) 26 mm cir clip
- (7) Radial ball bearings
- (8) 26 mm plain washer
- (9) Front center collar
- (10) Front wheel hub
- (11) Front wheel axle
- (12) Support plate patch
- (13) Wheel rims
- (14) Bead
- (15) Tires
- (16) O-ring

Fig. 128

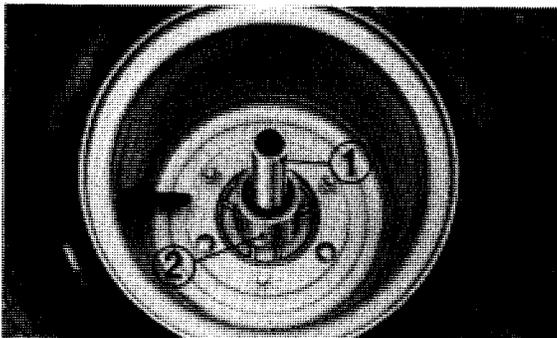


(1) Cotter pin (2) Castle nut
Fig. 129

1. FRONT WHEEL

A. Disassembly

1. Raise the front wheel off the ground and position a suitable stand under the engine.
2. Remove the cotter pin from the castle nut and loosen off the nut from the front wheel axle.
3. Remove the front wheel assembly from the fume.
4. Take out the front collars from the wheel.



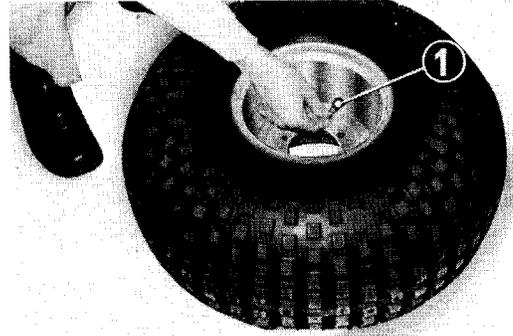
(1) Front wheel side collar (2) Front wheel hub
Fig. 130

5. Remove the bolts securing the front wheel hub in position, then take out the hub.
6. Remove the oil seals, snap ring, ball bearings and center collar from the wheel hub.

Note:

Always replace the oil seals whenever removed.

7. Deflate the tire.



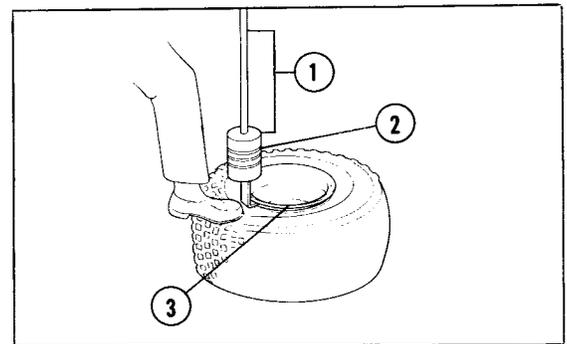
(1) Air valve
Fig. 131

8. Using a tire disassembly tool (Tool No. 07916-9180000), remove the tire bead from each rim.

- With the tire held with foot insert the tool deeply into the rim as shown. (Fig. 132)
- Place the shaft of the tool at right angle to the tire as shown. Tilting the shaft may damage the rim. Drop the weight of the tool with force to separate the tire from the rim base. This operation should be performed on the circumference of the tire at several places. (Fig. 133)

Note:

If it is hard to remove the bead or if rust is formed on the bead, direct a blast of lubricant to the periphery of the rim before removing. When reassembling, wipe off oil from the tire and rim using a waste cloth.



(1) Tire disassembly tool (2) Weight
(3) Wheel rim
Fig. 132

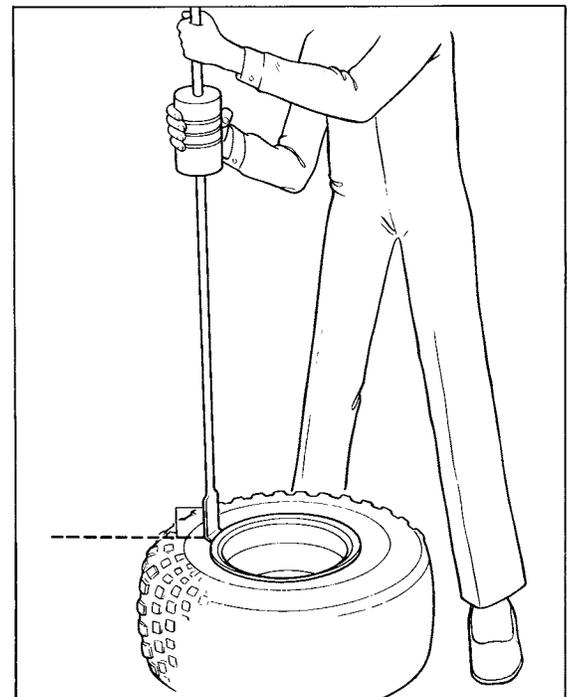
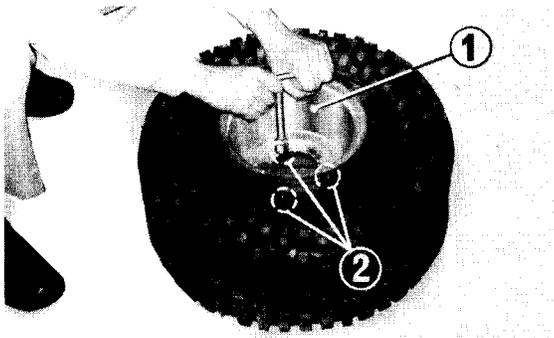


Fig. 133



(1) Wheel rim
Fig. 134

(2) 8 mm nut

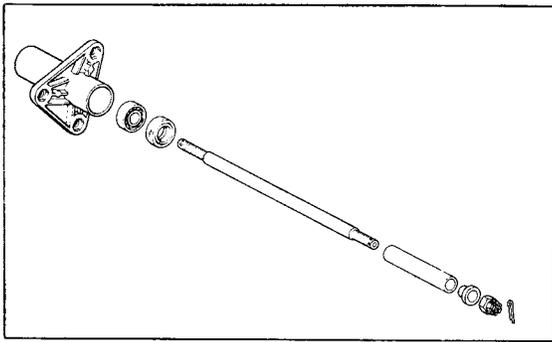
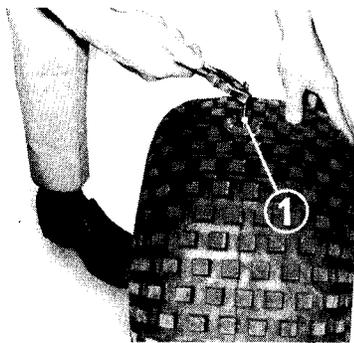
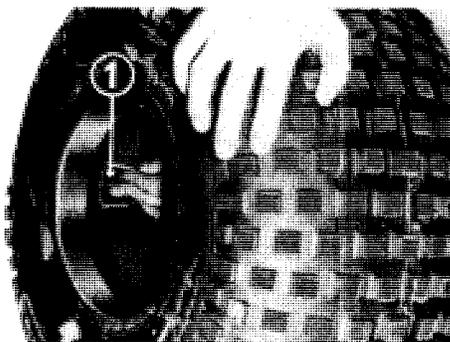


Fig. 135



(1) Nail
Fig. 136



(1) Sand paper
Fig. 137

9. Remove the rim bolts.
10. Remove each rim from the tire.

B. Inspection and Repair

1. Check if the wheel axle is bent.
2. Check the oil seal lips for wear or damage.
3. Check for air leaks from the rim valve.
4. Check if the rims and wheel O-ring are deformed or damaged.
5. Check the tire inflation pressure using an optional tire pressure gauge. The correct tire inflation pressure is 2.2 psi (0.15 kg/cm²). If such a gauge is not immediately available, use a linen or steel tape and measure the length around the circumference and in the center of the tire. It should read **68.6 in. (1742 mm)**.
6. Check the tire for cut, tear, wear or any other defects.

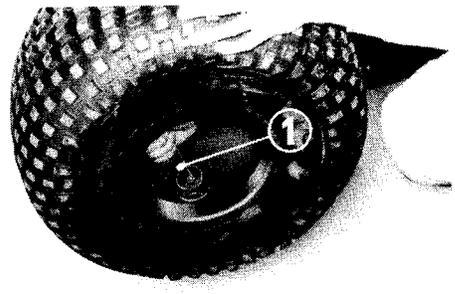
Cold-patch repair

1. Check the tire tread for nails or other puncturing objects; chalk mark the punctured area. Pry off the nails or puncturing objects.
2. Remove the tire from the rims.
3. Remove dirt and roughen the punctured area with sandpaper or a wire brush. Clean the area with gasoline.

4. Apply rubber cement around the torn area and allow it dry. Remove the lining from the patch and center it over the injury. Press the patch against the injury using a special roller.

Notes:

1. Allow cement to dry until tacky before applying patch.
2. Do not touch cement surface with dirty or greasy hand.

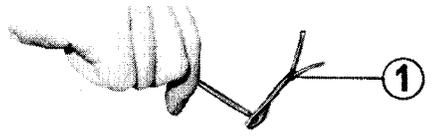


(1) Roller
Fig. 138

5. Install the tire to the rims.

Rubber-plug repair

1. Pry off nails or other puncturing objects.
2. Insert the rubber plug through the eye in the inserting needle.
3. Center the needle on the plug and insert until the plug is all the way in through the tire; twist the needle several times.

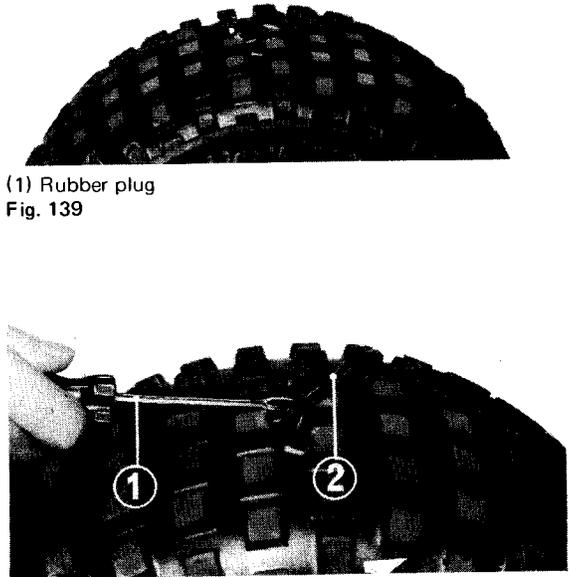


(1) Rubber plug
Fig. 139

4. Pull the needle straight out so that the plug is about 0.394 in. (10 mm) above the tread surface. Trim the plug 0.079 in. (2 mm) above the surface. Repeat the above procedure if the puncture is large.
5. Install the tire.

Note:

This method is for emergency purpose only. After driving, repair the injury with a cold patch.



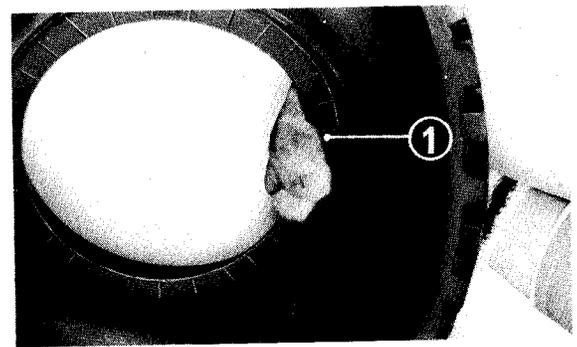
(1) Special tool (2) Rubber plug
Fig. 140

C. Reassembly

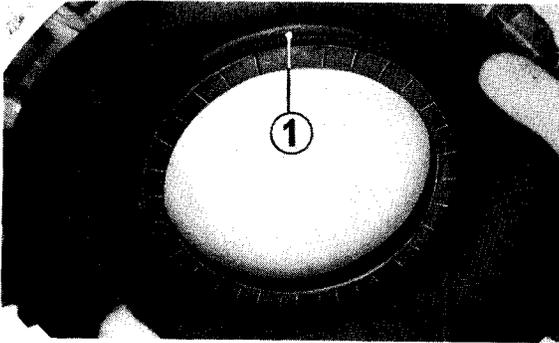
1. Make sure that the beads are up on the bead seats and are uniformly seated all around on both sides.

Note:

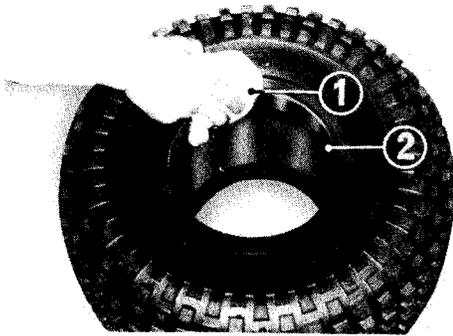
The tire must be set up on the rims properly to prevent air leaks.



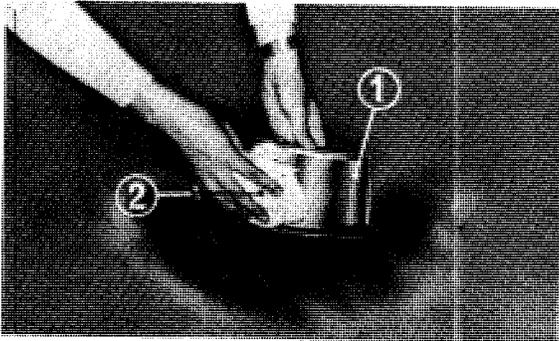
(1) Bead seat
Fig. 141



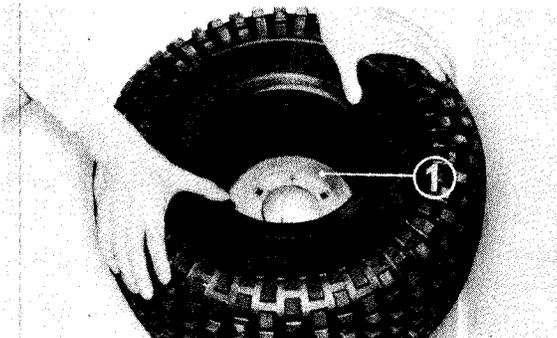
(1) Bead
Fig. 142



(1) Clear cloth (2) Bead base
Fig. 143



(1) Rim bead seats (2) Cline cloth
Fig. 144

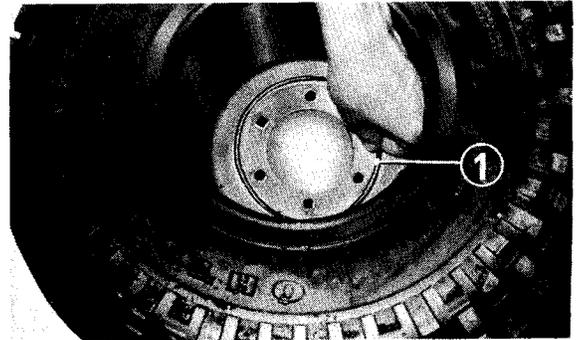


(1) Rim
Fig. 145

2. Check to be sure that the rims and O-ring are not deformed and are in good condition. If the O-ring or rims are deformed air may leak from the tire.
3. To facilitate installation, wet the rims bead seats and tire bead base with water.

4. Set up the tire on the rim which contains the rim valve.

5. Press the O-ring into place in the groove in the rim.
6. Install another rim which does not have the rim valve. Be sure to align the rim bolt holes.



(1) O-ring
Fig. 146

7. Install the rim bolts with the ends through the holes. Put the washers and nuts on the ends in the order listed and tighten to the specified torque.

Torque to 14.5–17.4 lbs-ft (2–2.4 kg-m)

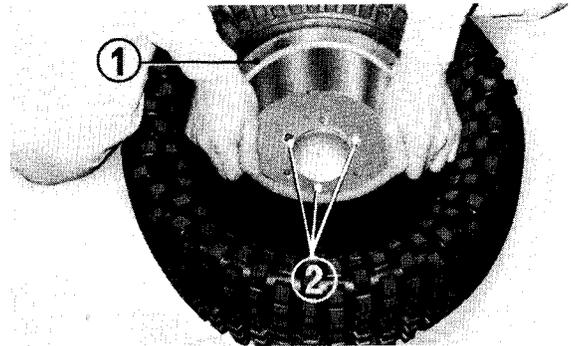


Fig. 147

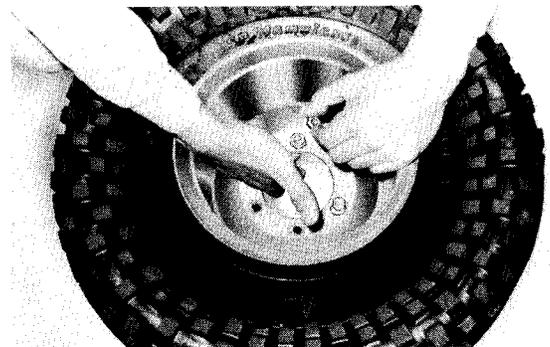


Fig. 148

8. Inflate the tire to seat the tire on the rims.

Note:

Maximum air pressure 5 PSI (0.35 kg/cm²)

Maximum circumferential length
83 in. (2100 mm)

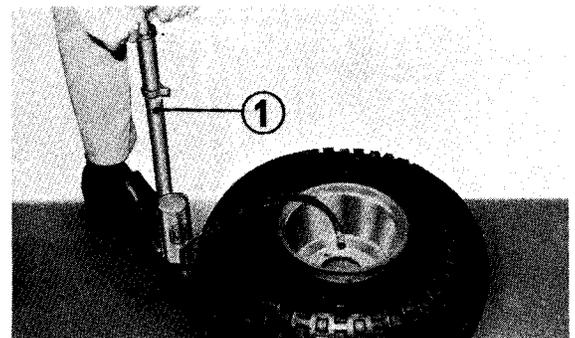


Fig. 149

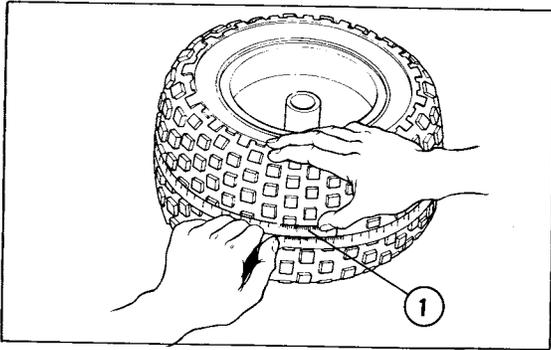
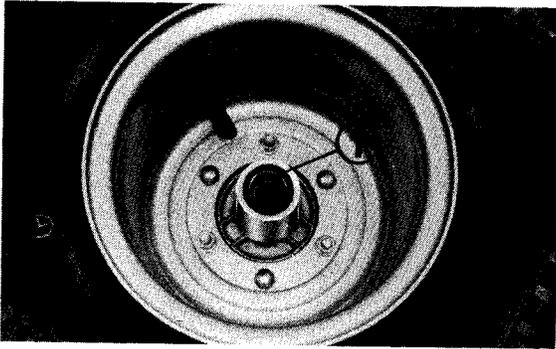


Fig. 150

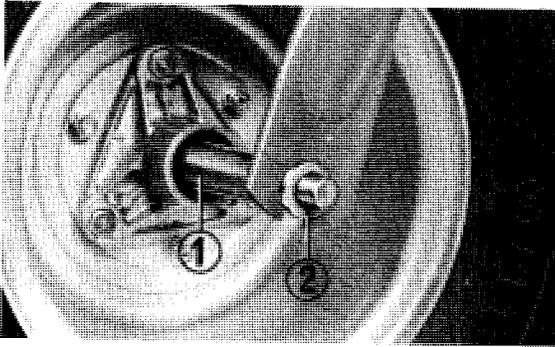
9. Deflate the tire and leave it intact for more than 1 hour. Again inflate the tire to the specified pressure.
Tire inflation pressure:
2.2 psi (0.155 kg/cm²)
Peripheral length:
68.6 in. (1742 mm)
10. Check air leaks and install the rim valve cap.



(1) Oil seal

Fig. 151

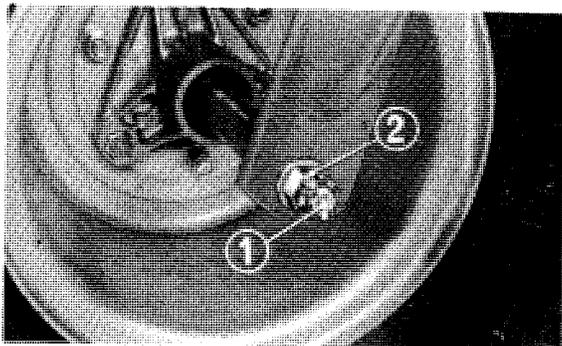
11. Hand pack the cavities in the wheel bearings and hub with grease. Drive the bearings into position in the hub. Do not angle the bearings while driving. Be sure that the center collar is installed in place.
12. Coat the lips of new oil seals with a small amount of grease and press the seals into the hub so that they are flush with the hub.
13. Slide the front collars into the hub taking care not to damage the oil seal lips.



(1) Axle shaft (2) Axle collar

Fig. 152

14. Route the axle shaft through the front wheel hub and insert the right and left collars as shown.

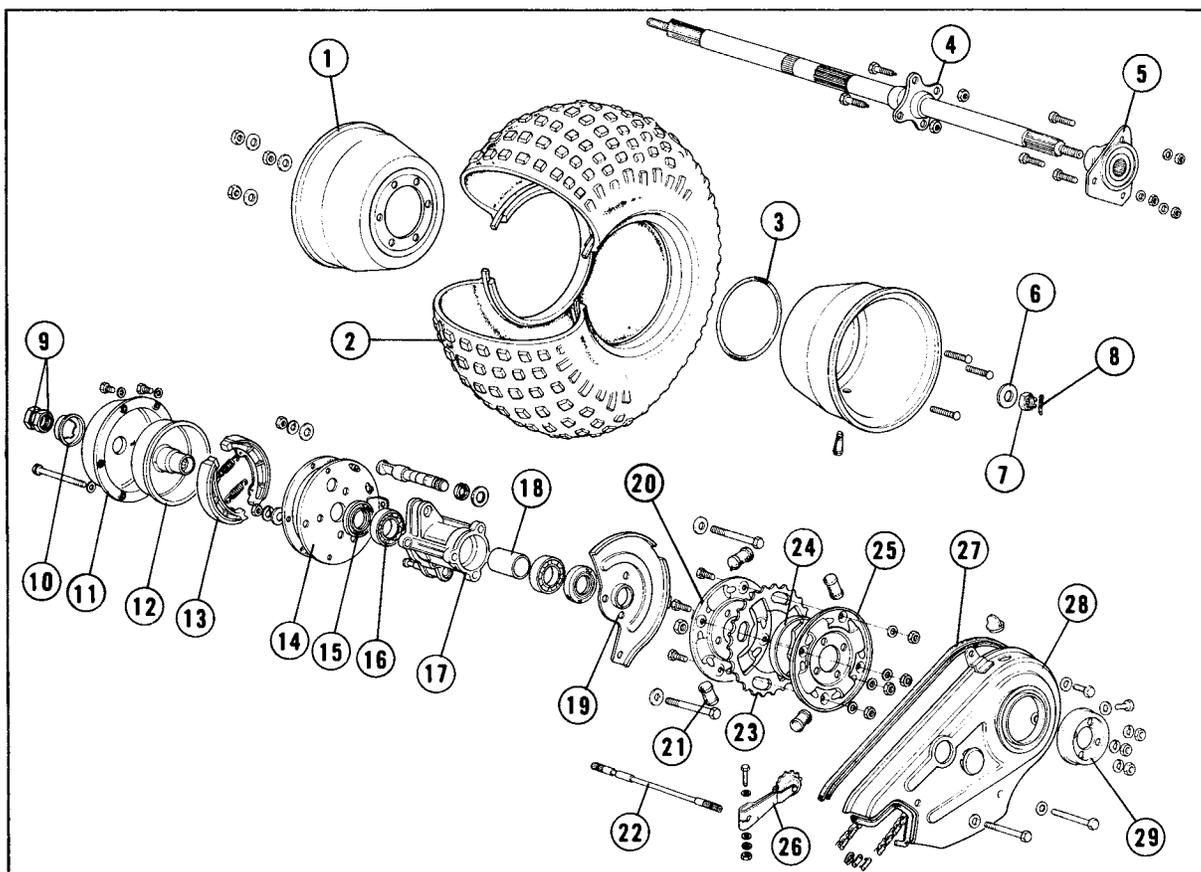


(1) Cotter pin (2) Castle nut

Fig. 153

15. With the front wheel raised, set the front forks onto the axle shaft and fit the collars securely. Tighten each axle nut and insert the cotter pin. Bend the pin securely.
Torque specification:
14.5–17.4 lbs-ft (2–2.4 kg-m)

2. REAR WHEELS AND DRIVE MECHANISM

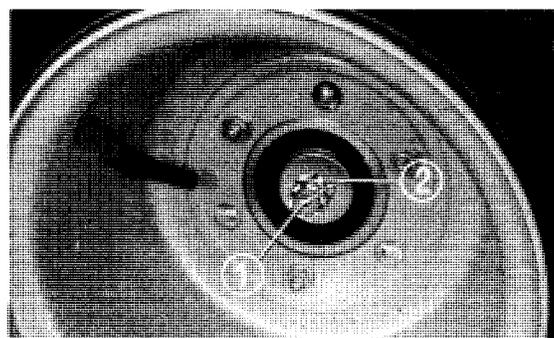


- | | | |
|------------------------|--------------------------------|----------------------------|
| (1) Wheel rims | (11) Brake drum cover B | (21) Dumper rubber |
| (2) Tires | (12) Brake drum | (22) Tensioner shaft |
| (3) O-ring | (13) Brake shoes | (23) Final driven sprocket |
| (4) Rear wheel axle | (14) Brake drum cover A | (24) Sprocket ring |
| (5) Rear wheel boss | (15) 40 x 62 x 7 dust seal | (25) Dumper holder |
| (6) 15 mm plain washer | (16) 6007 radial ball bearings | (26) Chain tensioner |
| (7) Castle nuts | (17) Rear wheel hub | (27) Chain case seal A |
| (8) Cotter pins | (18) Rear axle distance collar | (28) Chain cover |
| (9) Drum nuts | (19) Sub chain cover | (29) Shielded plate |
| (10) Seal washer | (20) Dumper holder | |

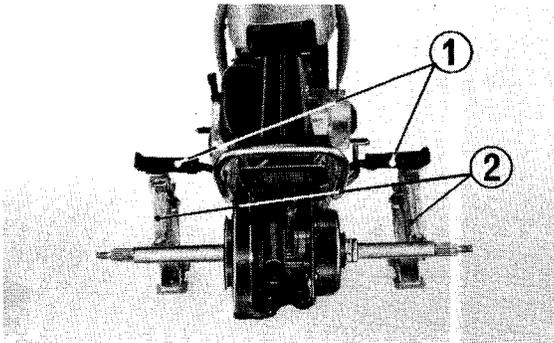
Fig. 154

A. Removal and Disassembly

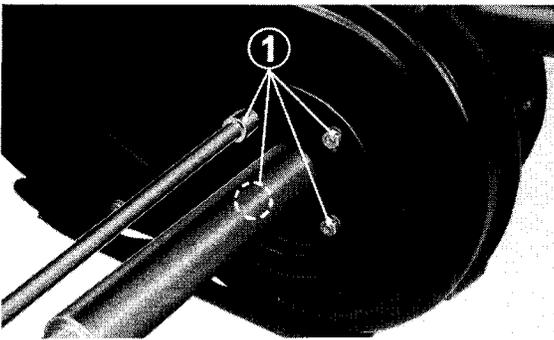
1. Remove the frame body cover.
2. Remove the cotter pin, axle nut and 15 mm washer.
3. Place a support block approximately 12 in. (300 mm) high under the frame and raise the rear wheel off the ground.



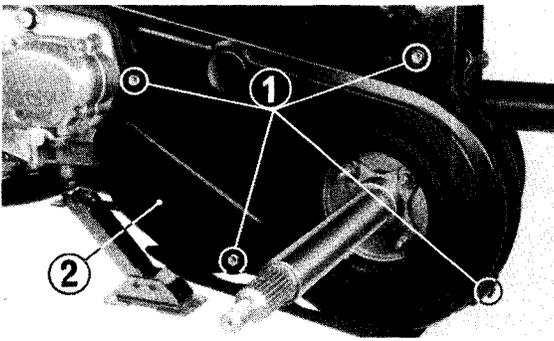
(1) Cotter pin (2) 12 mm Castle nut
Fig. 155



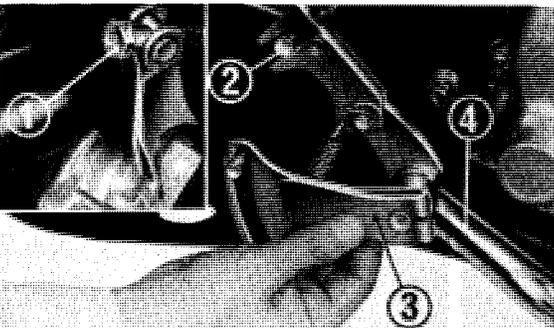
(1) Step rubbers (2) Floor jacks
Fig. 156



(1) 6 mm nuts
Fig. 157



(1) 6 mm bolts (2) Chain case
Fig. 158



(1) Rear brake adjusting nut (2) Brake cable end
(3) Tensioner lock arm (4) Brake pedal
Fig. 159

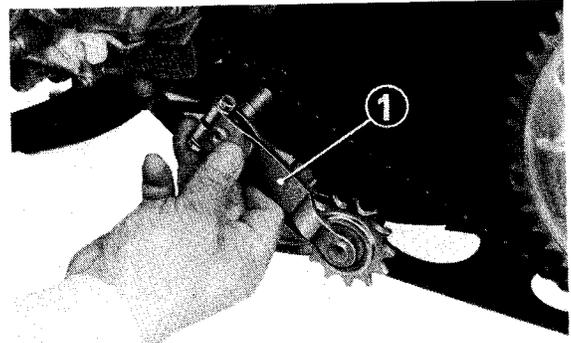
4. After removing the rear wheels, disassemble the rear chassis. To do so, raise the motorcycle to the average height using floor jacks or the like under the right and left step rubbers.

5. Disassemble the tire referring to page 77–82.
6. Remove the air cleaner case.
7. Unscrew the four 6 mm nuts and remove the sealed cover.

8. Unscrew the four 6 mm bolts and remove the drive chain case.
9. Disengage the drive chain clip and disconnect the drive chain.

10. Disconnect the rear brake cable end from the escape lever. Remove the rear brake adjusting nut, 10 mm nut and 6 x 40 mm bolt and remove the Brake pedal.

11. Remove the tensioner assembly from the frame.



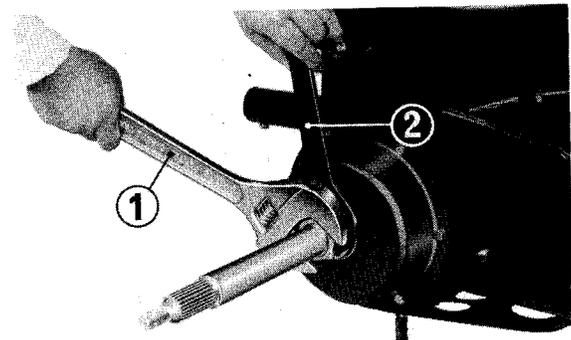
(1) Tensioner
Fig. 160

12. Loosen the brake drum nuts and seal washer, then remove the rear brake drum and brake shoes.

Note:

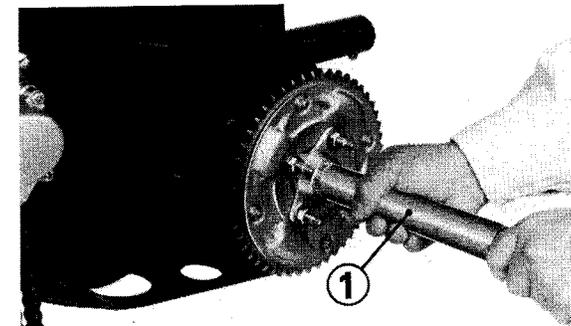
To remove the brake drum nuts, use a nut removing special tool (Tool No. 07772-0010000) and a 41 mm adjustable open-end wrench.

13. Disassemble the brake by referring to pages 25 and 26.



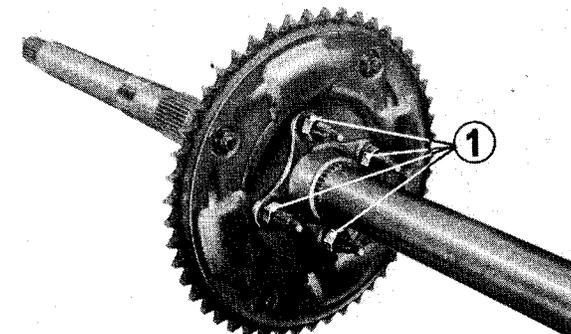
(1) 41 mm adjustable open-end wrench
(2) Nut removing special tool
Fig. 161

14. Pull the rear wheel axle out of the frame.

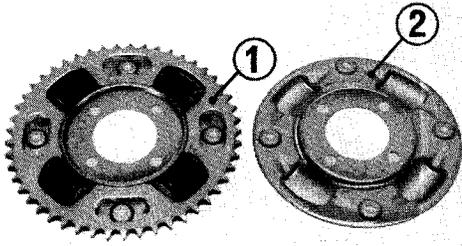


(1) Rear wheel axle assembly
Fig. 162

15. Loosen the four 10 mm nuts and remove the four rear drive bolts. Pull the final driven sprocket out of the wheel shaft.

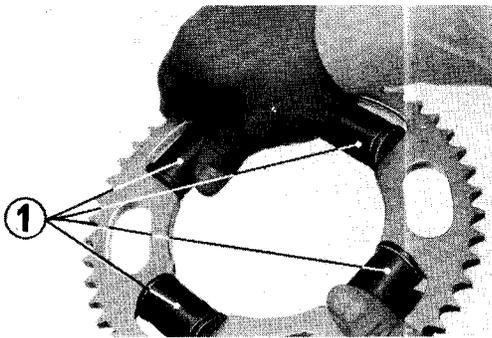


(1) Rear drive bolts
Fig. 163



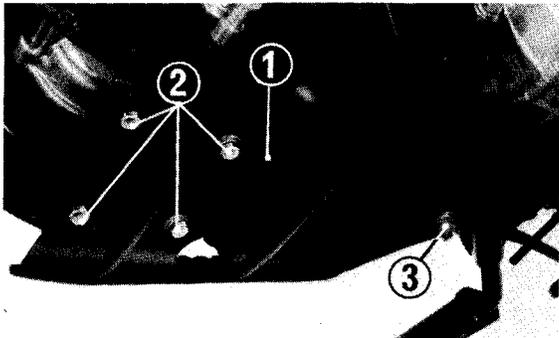
(1) Final driven sprocket
(2) Damper holder
Fig. 164

16. Remove the four 6 mm nuts and 8 mm nuts and remove the final driven sprocket assembly.



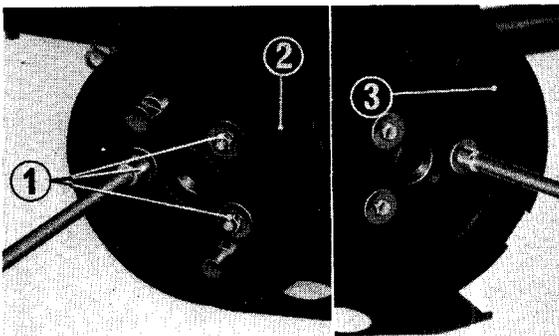
(1) Damper rubbers
Fig. 165

17. Remove the damper rubbers from the final driven sprocket.



(1) Protector (2) 6 mm bolts (3) 8 mm bolt
Fig. 166

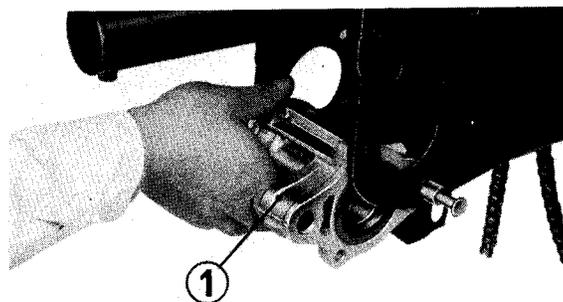
18. Remove the four 6 mm bolts securing the protector and loosen the one 8 mm bolt.



(1) 6 mm bolts (2) Brake drum cover A
(3) Sub chain cover
Fig. 167

19. Remove the three 6 mm bolts, then remove the brake drum cover A and sub chain cover.

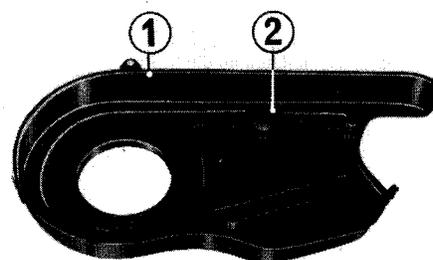
20. Move the protector sideways and remove the rear wheel hub from the frame. The rear wheel hub can be easily removed by rotating the top of the hub so that it is at the bottom.
21. Remove the ball bearings (#6007) and dust seals (#40627) from the hub by driving them out gently with a soft metal drift.



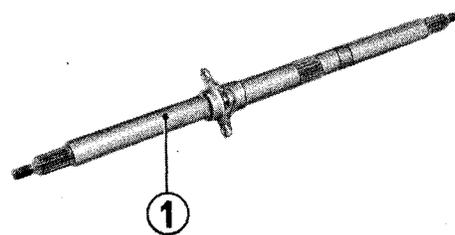
(1) Rear wheel hub
Fig. 168

B. Inspection and Repair

1. Tire repair
Repair the rear wheel tires in the same manner as directed for the front wheel on page 78 and 79.
2. Oil seals
If the lip of the seal is out or worn, or the seal is distorted, replace with a new one.
3. Check the brake cam and brake shoe support pin in the rear wheel hub for bend and wear. Replace if unsatisfactory.
4. Check the condition of the rubber seal on the drive chain case for proper adhesion to the case. Re-cement if necessary or replace if damaged.
5. Check the wheel shaft for bend or damage.



(1) Rubber seal (2) Drive chain case
Fig. 169

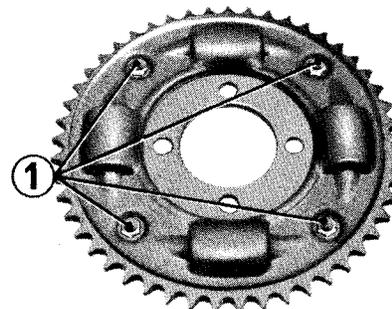


(1) Wheel shaft
Fig. 170

C. Reassembly

1. Hold the end of the damper rubber against the mounting area of the final driven sprocket. Apply pressure to the top of the rubber to force it into the sprocket.
Install the other damper rubbers in the same manner and make sure that they are fully seated.
2. Place the final driven sprocket between the damper holders and install the four 6 mm bolts, 6 mm plain washers, spring washers and nuts.
Torque to:

5–7.2 lbs-ft (0.7–1.0 kg-m)



(1) 6 mm bolts
Fig. 171

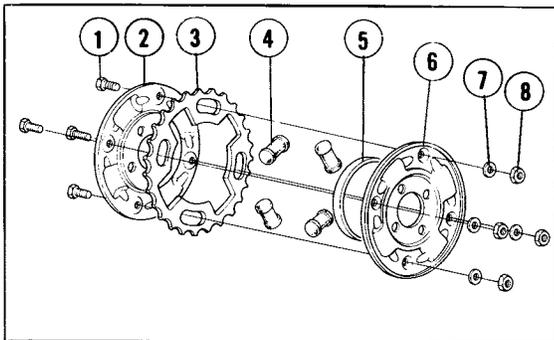
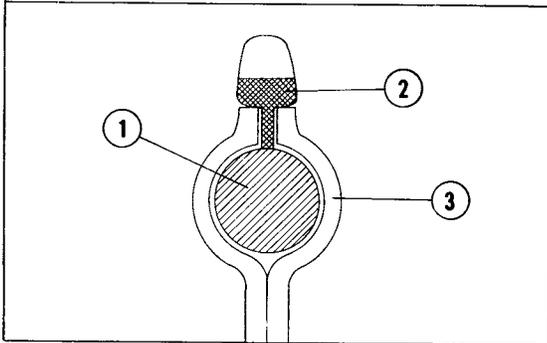


Fig. 172

- (1) 6 mm bolts
- (2) Damper holders
- (3) Final driven sprocket
- (4) Damper rubber
- (5) Ring
- (6) Damper holders
- (7) 6 mm plain washers
- (8) 6 mm nuts

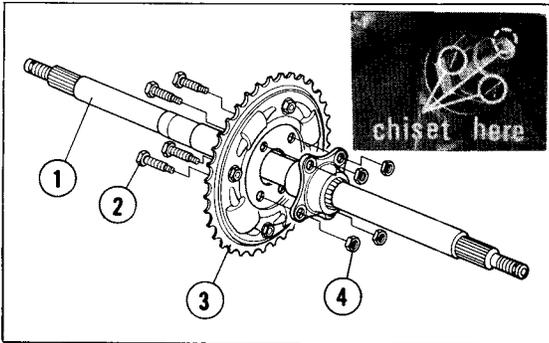
Note:

Check to be sure that the damper rubbers are installed in place in the final driven sprocket. If a clearance exists between the damper rubber and holder, hammer the damper holder to remove the clearance.



- (1) Damper rubber
- (2) Final driven sprocket
- (3) Damper holder

Fig. 173



- (1) Rear wheel shaft
- (2) Rear drive bolts
- (3) Final driven sprocket assy
- (4) Rear drive bolt nuts

Fig. 174

3. Install the final driven sprocket and drive chain plate on the wheel shaft and tighten them together with the four 10 mm bolts and nuts.

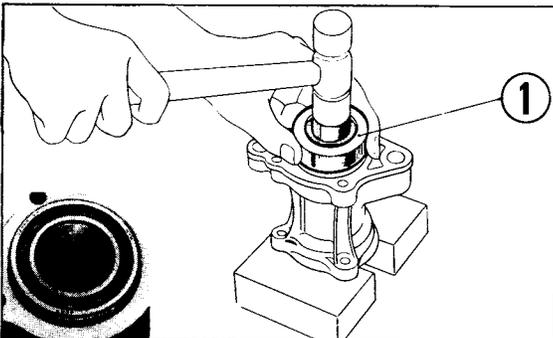
Torque specification:

29–34.7 lbs-ft (4–4.8 kg-m)

Using a chisel stake the nuts at three places to prevent the nuts from loosening.

Note:

Use new bolts and nuts.



- (1) Bearing driver

Fig. 175

4. Gently drive the ball bearings (#6007) into the wheel hub using a bearing driver (Tool No. 07946–9180100). Each bearing must be installed with the mark facing the outside.

Apply a sufficient amount of grease to the bearings before installing the oil seals. Using the bearing driver install the oil seals so that they are flush with the wheel hub.

5. Insert the rear wheel brake support pin of the rear brake hub into the hole in the frame and install the hub to the frame. Place the brake drum cover A on the right side of the hub and the sub chain cover on the left side and insert the three 8 mm bolts from the left side and then tighten with the 8.5 mm washers (special washers), 8 mm spring washers and 8 mm nuts. Torque specification:

14.5–17.4 lbs-ft (2–2.4 kg-m)

6. Install the protector.

7. After installing the brake cam. Do not forget to install the brake cam dust seal and 8.5 mm washer.

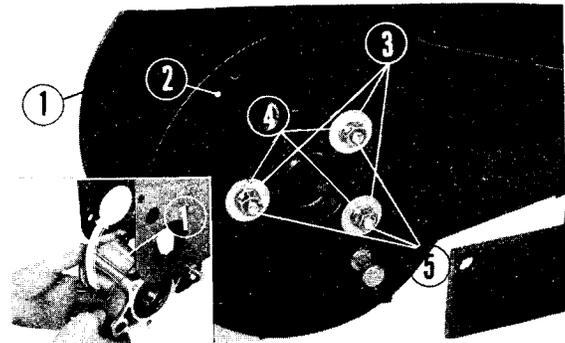
8. Insert the rear wheel axle from the left side and install the seal washer from the right side. Tighten the brake drum nuts.

28.9–36.2 lbs-ft (4–5 kg-m)

Note:

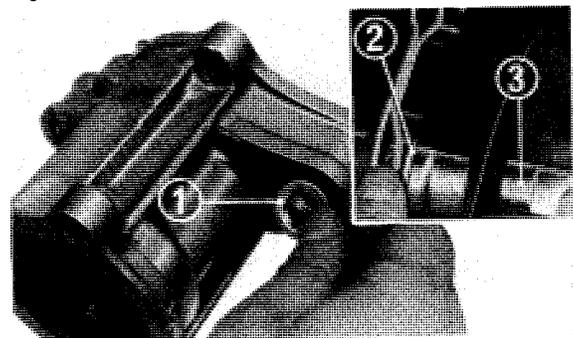
Take care not to allow the seal washer to come off the brake drum guide when installing.

9. Apply grease to the tensioner shaft, then insert it into the frame.



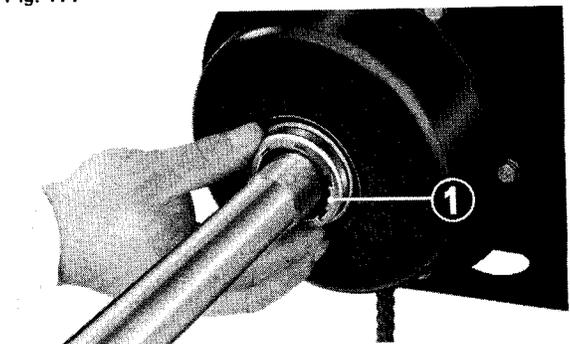
(1) Sub chain cover (2) Brake drum cover A
(3) 8.5 mm washers (4) 8 mm spring washers
(5) 8 mm nuts

Fig. 176



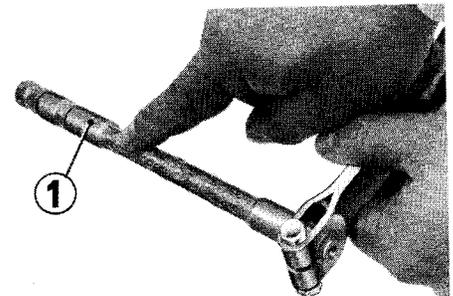
(1) Brake cam dust seal (2) 8.5 mm washer
(3) Brake cam

Fig. 177



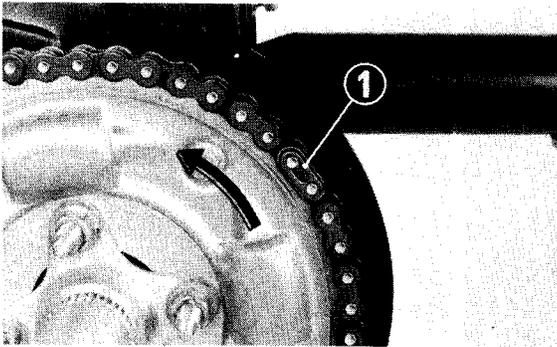
(1) Seal washer

Fig. 178



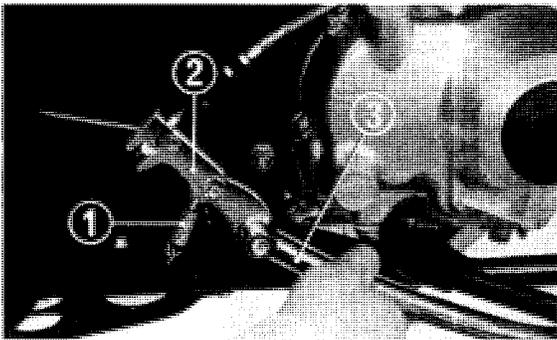
(1) Tensioner shaft

Fig. 179



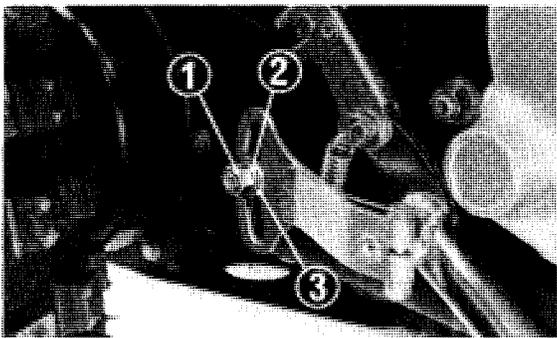
(1) Drive chain clip
Fig. 180

10. Install the drive chain over both sprockets and connect the chain with the joint link plate. Make sure that the clip is installed with the closed end in the direction of arrow.



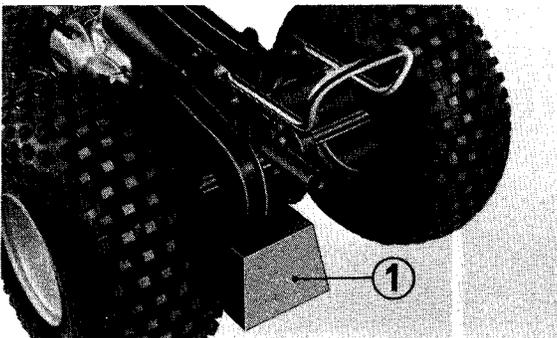
(1) Spring (2) Escape lever (3) Brake pedal
Fig. 181

11. Insert the tensioner from the left side. Attach the brake pedal spring to the boss of the frame and insert the escape lever and brake pedal into the tensioner shaft. As shown in Fig. 181, 182, fully lower the tensioner arm with respect to the tensioner lock arm guide.
12. Connect the rear brake cable to the escape lever.



(1) 10 mm nut (2) Spring washer
(3) Plain washer
Fig. 182

13. Install the 10 mm nut, spring and plain washer to the tensioner lock arm guide and tighten them temporarily. Adjust the brake pedal height and brake cable, then retighten the 10 mm nut securely. For the adjustment of the drive chain, see page 4.



(1) Support block
Fig. 183

14. Install each wheel onto the rear axle and secure it with the 15 mm washer and 14 mm castle nut. Install a new cotter pin to the nut.
15. Remove the support block from under the frame.

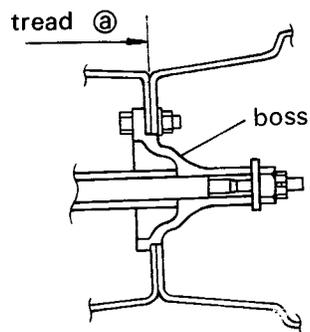
INSTALLING NEW PARTS TO OLD MODEL MOTORCYCLE

● Rear wheels bosses

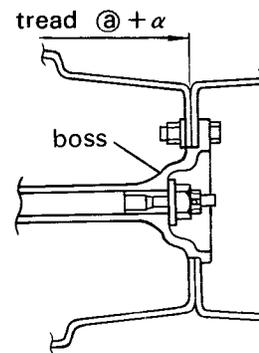
Installation of rear wheels bosses (optional)

Install the rear wheels so that their bosses are correctly positioned. Reversing the right and left bosses may cause the following failures:

1. Insufficiently engaged spline of rear wheel axle.
2. Spread tread and weak axle.
3. Misalignment with frame body.



Correct
Fig. 184



Wrong
Fig. 185

● Chain guide

Installation of chain guide (optional)

Tighten the (a) hole area of the chain guide together with the air cleaner and the (b) hole area together with the chain case. Use the bolts and washers used for the air cleaner and chain case.

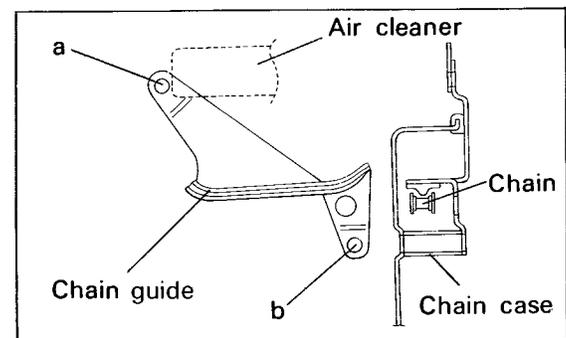
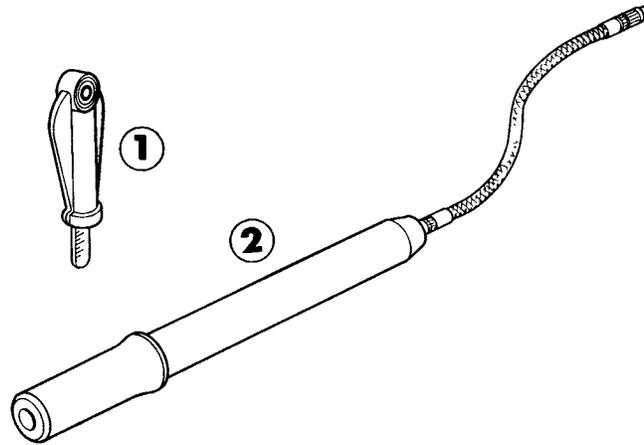


Fig. 186

IX. TECHNICAL DATA AND WIRING DIAGRAM

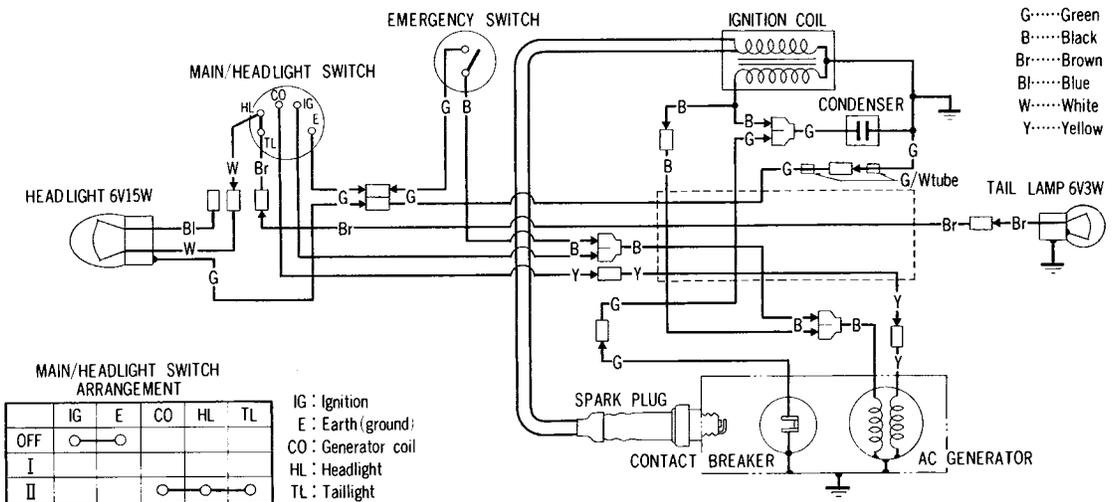
	US90	ATC90K3
DIMENSIONS		
Overall length	61.8 in. (1,570 mm)	63.0 in. (1,600 mm)
Overall width	37.4 in. (950 mm)	38.2 in. (970 mm)
Overall height	34.6 in. (880 mm)	35.0 in. (890 mm)
Wheel base	39.8 in. (1,010 mm)	40.0 in. (1,015 mm)
WEIGHT		
Dry weight	196.2 lbs (89 kg)	228.2 lbs. (103.5 kg)
CAPACITIES		
Engine oil	1.0 US qt. (1.0 liter)	1.0 US qt. (1.0 liter)
Fuel tank	1.7 US gal. (6.5 liter)	1.7 US gal. (6.5 liter)
Fuel reserve capacity	1.0 qt. (1.0 liter)	1.0 qt. (1.0 liter)
ENGINE		
Bore and stroke	1.970 x 1.797 in. (50.0 x 45.6 mm)	1.970 x 1.797 in. (50.0 x 45.6 mm)
Compression ratio	8.2 : 1	8.2 : 1
Displacement	5.48 cu in. (89 cc)	5.5 cu in. (89.5 cc)
Horse power	6.0 PS/7,500 rpm	5.0 PS/7,500 rpm
Contact breaker point gap	0.012–0.016 in. (0.3–0.4 mm)	0.012–0.016 in. (0.3–0.4 mm)
Spark plug gap	0.024–0.028 in. (0.6–0.7 mm)	0.024–0.028 in. (0.6–0.7 mm)
Valve tappet clearance	0.002 in. (0.05 mm)	0.002 in. (0.05 mm)
CHASSIS AND SUSPENSION		
Caster angle	69°	69°
Trail length	2 in. (50 mm)	2.2 in. (55 mm)
Tire size, front and rear	22 x 11–3.5ATV tire	22 x 11–8ATV tire
POWER TRANSMISSION		
Primary reduction	3.722	3.722
Final reduction	3.267	3.267
Gear ratio, 1st	2.538	2.538
2nd	1.611	1.611
3rd	1.190	1.190
4th	0.958	0.958
Posi-torque gear ratio		
Low range	1.867	1.867
High range	1.000	1.000

OPTIONAL PARTS

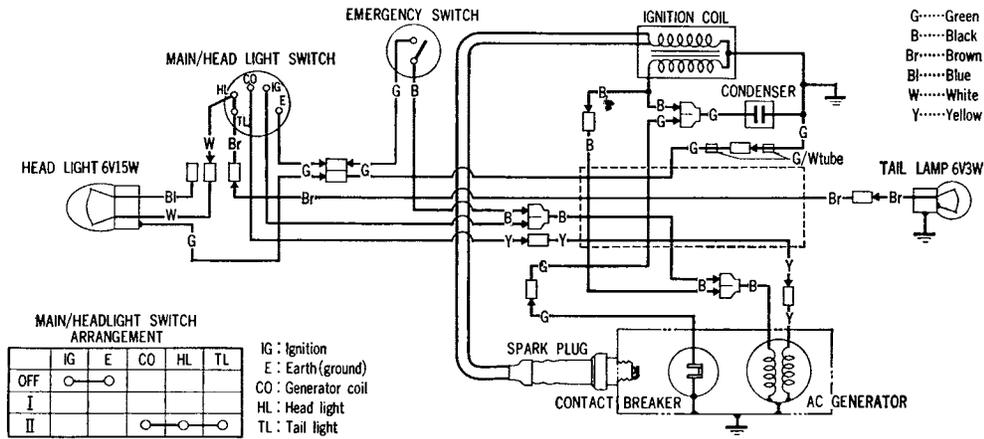


- (1) Air Pressure Gauge
- (2) Air Pump

WIRING DIAGRAM US90



ATC90K3



Insert this addendum after page 94 of the US90 • ATC90 Shop Manual.

**Engine No. ATC90E-1600001 and subsequent
Frame No. ATC90-1600001 and subsequent**

1. WHEEL

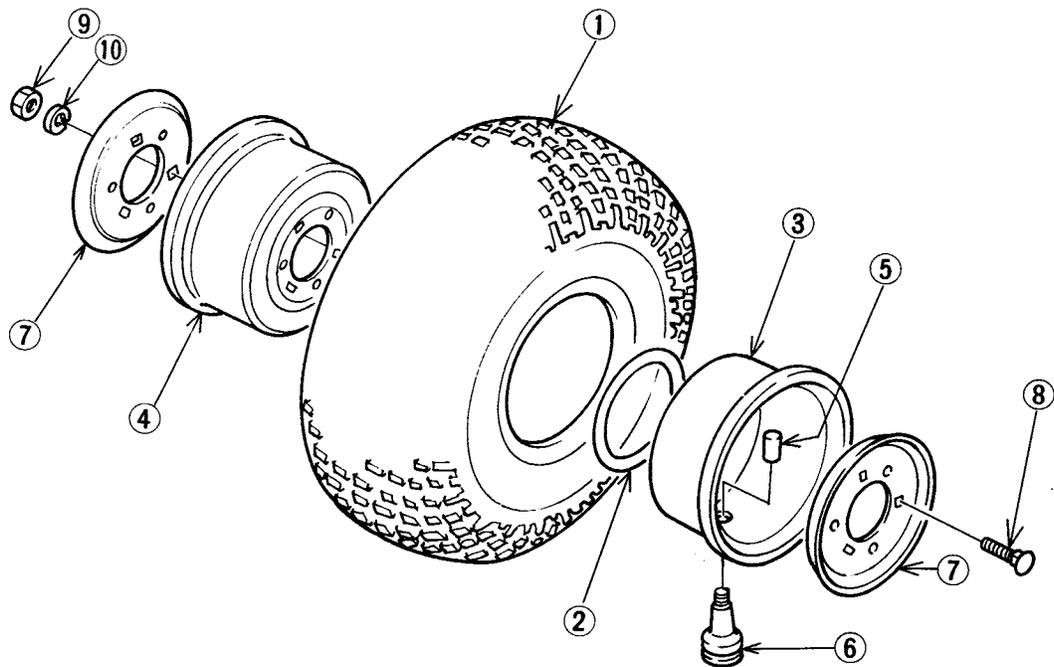
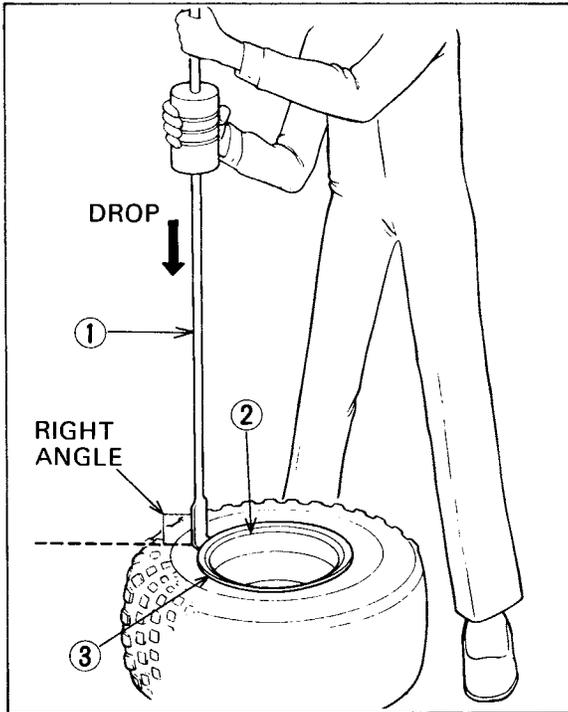


Fig. K5-1

- (1) Tire
- (2) O-ring
- (3) Outer rim
- (4) Inner rim
- (5) Cap
- (6) Valve
- (7) Support plate patch

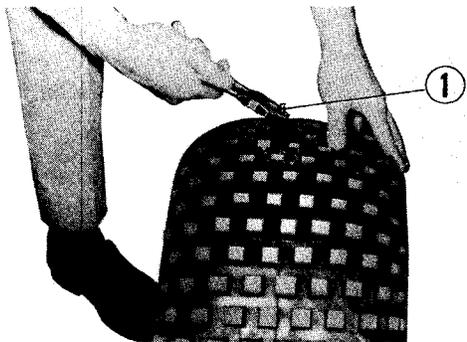
NOTE: On the rear wheel, the support plate patch is on the inside rim only.

- (8) 8 mm special bolt
- (9) 8 mm nut
- (10) 8 mm lock washer

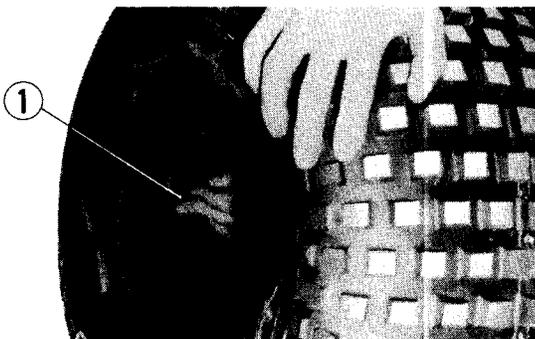


(1) Tire disassembly tool (2) Wheel rim
(3) Bead

Fig. K5-2



(1) Nail
Fig. K5-3



(1) Sandpaper
Fig. K5-4

A. Disassembly

1. After deflating the tire, break the tire beads loose from inner and outer rim flanges with the tire disassembly tool (Tool No. 07772-0010000).

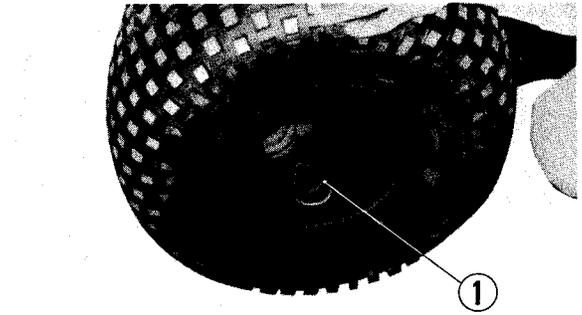
Notes:

- a. Do not use tire irons to force the beads away from the rim flanges; this could damage the rim seals on the beads and cause an air leak.
 - b. If it is difficult to remove the beads or if rust has formed on the bead, apply a coat of lubricant to the periphery of the rim before removing the tire. When reassembling, wipe off oil from the tire and rim with a cloth.
2. After the tire is loosened from the rim, remove the three 8 mm special bolts and separate the inner and outer rims from the tire.

B. Inspection and Repair

1. Check the inner and outer rims for damage.
2. Check the tire for cuts, tears, wear or any other defects.
3. Repair punctures with a cold patch.
 - (1) Check the tire tread for nails or other puncturing objects. Chalk mark the punctured area and remove the nails or puncturing objects.
 - (2) Remove dirt and roughen the punctured area with sandpaper or a wire brush. Clean the area with gasoline.

- (3) Apply rubber cement around the torn area and allow it to dry. Remove the lining from the patch and center it over the puncture. Press the patch against the puncture using a special roller.



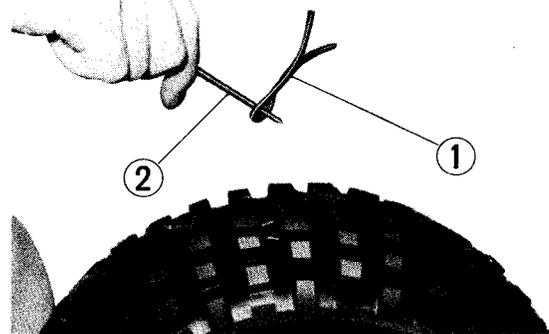
(1) Roller
Fig. K5-5

4. Repair punctures with a rubber plug.

Note:

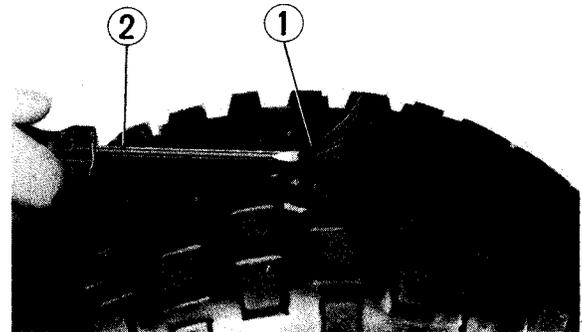
This method is for emergency purposes only. After driving, repair the puncture with a cold patch.

- (1) Remove nails or other puncturing objects.
- (2) Insert a rubber plug through the eye of an inserting needle.
- (3) Apply patching cement to the plug.
- (4) Center the needle on the plug and insert until the plug is all the way in the tire. Twist the needle several times.

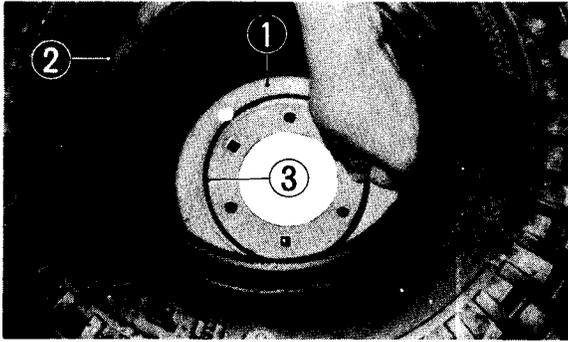


(1) Rubber plug (2) Inseting needle
Fig. K5-6

- (5) Pull the needle straight out so that the plug is about **10 mm (0.394 in.)** above the tread surface. Trim the plug **2 mm (0.079 in.)** above the surface. Repeat the above procedure if the puncture is large.

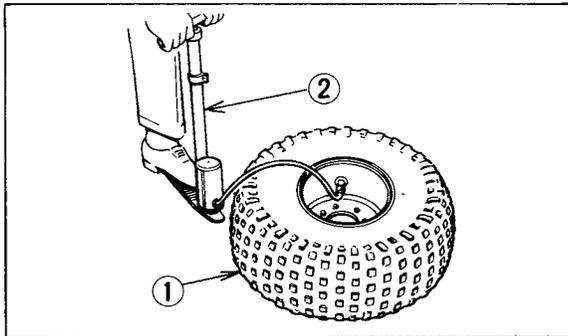


(1) Rubber plug
(2) Inserting needle
Fig. K5-7



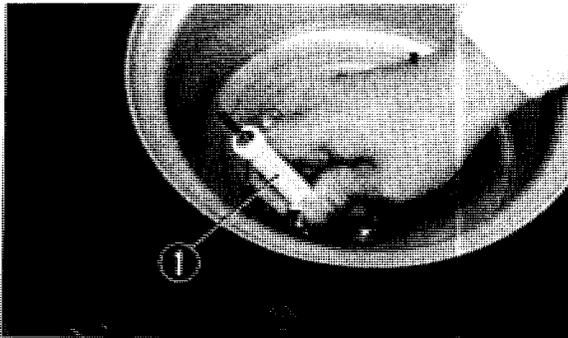
(1) Outer rim (2) Tire
(3) New O-ring

Fig. K5-8



(1) Tire (2) Air pump

Fig. K5-9



(1) Tire pressure gauge

Fig. K5-10

C. Assembly

1. Apply water to the rim flanges, bead seats and bead bases to make the mounting procedure easier.

Note:

Use only clean water. Make sure that the seal surface of the rim flange is clean. If necessary, wipe it clean with a clean, lint-free cloth.

- (1) Position the tire on the outer rim with the valve.

Note:

Replace the valve with a new one.

- (2) Seat a new O-ring in the groove in the rim.
- (3) Install the inner rim. Be sure to align the rim bolt holes.
- (4) On the front wheel, install the support plate patches on both sides and tighten the six 8 mm special bolts.

On the rear wheel, install the support plate patch on the inner rim side and tighten the six 8 mm special bolts.

Tightening torque:

1.9–2.5 kg-m (14–18 lb-ft)

- (5) Inflate the tire to the specified pressure. This operation assures proper fitting of the tire on the rim.

Specified pressure:

0.15 kg/cm² (2.2 psi)

If a tire gauge is not available, inflate the tire until the circumference is **1,743 mm (68.6 in.)**.

- (6) Remove the three 8 mm special bolts on the outer rim side. Install the wheel hub to the inner rim by using the three 8 mm special bolts and tighten to the specified torque.

2. SPECIFICATIONS (ATC90 '77)

DIMENSIONS Overall length Overall width Overall height Wheel base	1,600 mm (63.0 in.) 970 mm (38.2 in.) 890 mm (35.0 in.) 1,015 mm (40.0 in.)
WEIGHT Dry weight	103.5 kg (228.2 lb.)
CAPACITIES Engine oil Fuel tank Fuel reserve capacity	0.9 lit. (1.0 US qt., 0.8 Imp. qt.) 6.0 lit. (1.6 US gal., 1.3 Imp. gal.) 1.0 lit. (0.3 US gal., 0.2 Imp. gal.)
ENGINE Bore and stroke Compression ratio Displacement Contact breaker point gap Spark plug gap Valve tappet clearance Intake valve opens closes Exhaust valve opens closes Ignition advance "F" mark Max. advance RPM from "F" to max. advance Dwell angle Condenser capacity	50.0 x 45.6 mm (1.970 x 1.797 in.) 8.2 : 1 89.5 cc (5.5 cu. in.) 0.3–0.4 mm (0.012–0.015 in.) 0.6–0.7 mm (0.024–0.028 in.) 0.05 mm (0.002 in.) 5° ATDC 20° ABDC 25° BBDC 5° BTDC 13° BTDC 25° BTDC 975–1,750 rpm 270° [at breaker point gap is 0.35 mm (0.014 in.)] 0.25 μ F
CHASSIS AND SUSPENSION Caster angle Trail length Tire size, front and rear Tire air pressure	69° 55 mm (2.2 in.) 22 x 11–8 ATV 0.12–0.2 kg/cm ² (1.7–2.8 psi)
POWER TRANSMISSION Primary reduction Final reduction Gear ratio, 1st 2nd 3rd 4th Posi-torque gear ratio Low range High range	3.722 3.267 2.538 1.611 1.190 0.958 1.867 1.000

MEMO

HOW TO USE THIS MANUAL

This ATC 110 addendum supplements, and should be filed with, the ATC 90 shop Manual.

Refer to the ATC 90 shop manual for all service information not specifically covered by the ATC 110 addendum. Refer to the CT 90 shop manual for any engine overhaul not covered by the ATC 90 shop manual.

CONTENTS

- I SPECIFICATIONS
- II WIRING DIAGRAM
- III CABLE & WIRE HARNESS ROUTING
- IV TORQUE VALUES
- V TOOLS
- VI SERVICE DATA
- VII INSPECTION AND ADJUSTMENT
 - 1. CARBURETOR ADJUSTMENT
 - 2. FUEL FILTER CLEANING
 - 3. BRAKE ADJUSTMENT
- VIII. CLUTCH

ALL INFORMATION, ILLUSTRATIONS, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING. HONDA MOTOR CO., LTD.

RESERVES THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT NOTICE AND WITHOUT INCURRING ANY OBLIGATION WHATEVER.

NO PART OF THIS PUBLICATION MAY BE REPRODUCED WITHOUT WRITTEN PERMISSION.

HONDA MOTOR CO., LTD.
Service Publication Office

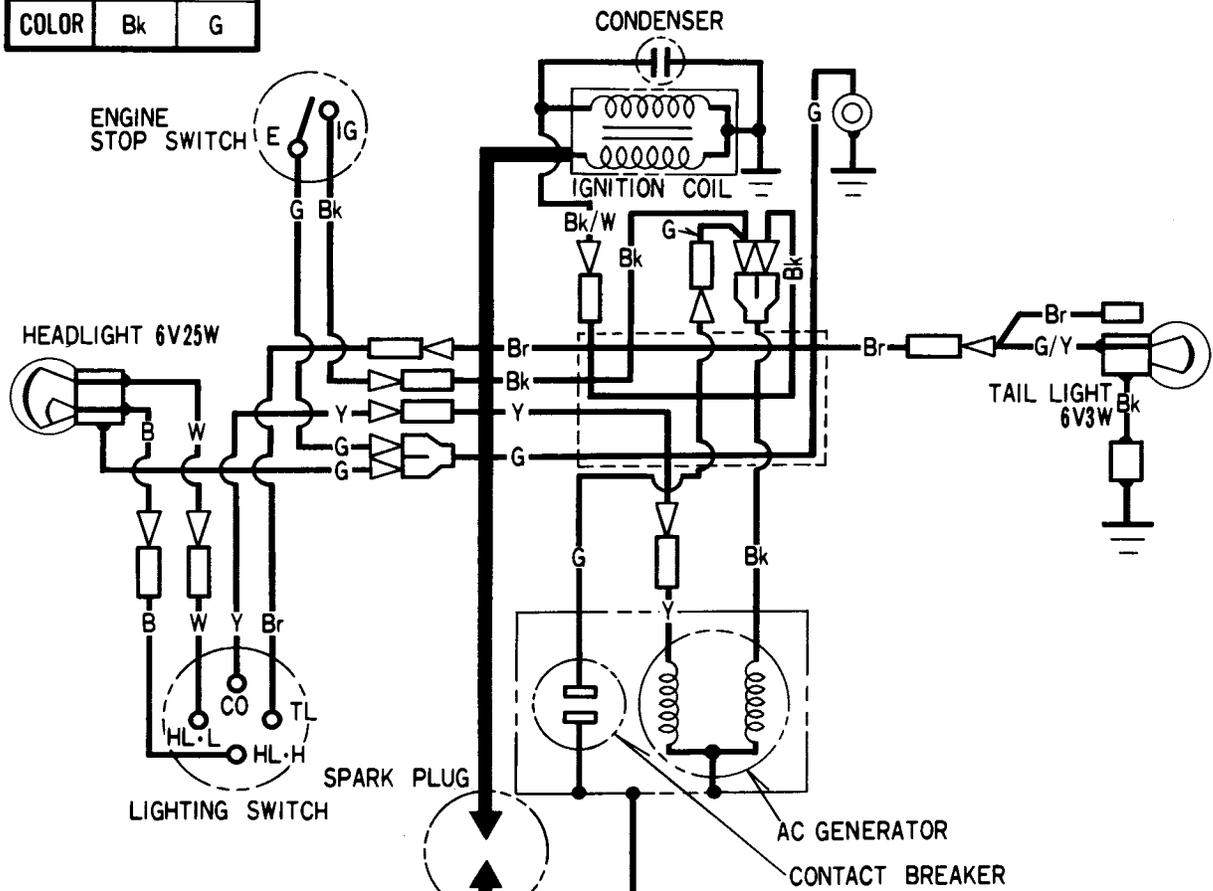
I. SPECIFICATIONS

MODEL	
DIMENSIONS	
Overall length	1,600 mm (63.0 in)
Overall width	950 mm (37.4 in)
Overall height	940 mm (37.0 in)
Wheel base	1,015 mm (40.0 in)
Ground clearance	110 mm (4.3 in)
Dry weight	107.0 kg (235.9 lb)
FRAME	
Type	Back bone (Pressed)
F. tire size, tire pressure	22 x 11.0 – 8ATV tire, 0.15 kg/cm ² (2.2 psi)
R. tire size, tire pressure	22 x 11.0 – 8ATV tire, 0.15 kg/cm ² (2.2 psi)
R. brake	Internal expanding shoe
Fuel capacity	6.0 lit (1.6 US gal. 1.3 Imp. gal.)
Fuel reserve capacity	0.9 lit (0.24 US gal. 0.2 Imp. gal.)
Caster angle	68°30'
Trail length	61 mm (2.4 in)
ENGINE	
Type	Air cooled 4-stroke O.H.C. engine
Cylinder arrangement	Single cylinder, 75° inclined from vertical
Bore and stroke	52 x 49.5 mm (2.047–1.949 in)
Displacement	105.1 cc (6.4 cu. in)
Compression ratio	8.2 : 1
Oil capacity	0.9 lit (0.95 US qt. 0.79 Imp. qt.)
Lubrication system	Forced and wet sump
Intake valve	Opens Closes
	5° ATDC 20° ABDC
Exhaust valve	Opens Closes
	25° BBDC 5° BTDC
Valve clearance	IN. EX
	0.07 mm (0.003 in)
Idle speed	1,700 rpm
	1,700 rpm
DRIVE TRAIN	
Clutch	Wet multi-plate automatic centrifugal type
Transmission	4-speed, constant mesh
Primary reduction ratio	3.722
Gear ratio I	2.538
Gear ratio II	1.611
Gear ratio III	1.190
Gear ratio IV	0.958
Gear ratio (SUB TRANSMISSION)	
	Low range
	High range
	1.867 1.000
Final reduction ratio	3.267, drive sprocket 15T, driver sprocket 49T
Gear shift pattern	Left foot operated return system
ELECTRICAL	
Ignition	A.C. Flywheel magneto
Ignition timing	"F" mark Full advance
	15° BTDC at 1,700 rpm 33° BTDC at 1,950–4,400 rpm
Starting system	RECOIL STARTER
Alternator	A.C. Generator 6V 0.043 KW/6,000 rpm
Spark plug	NGK D-8HA or D-8HS (CANADA) type NGK DR8HS
Spark plug gap	0.6–0.7 mm (0.024–0.028 in)

II. WIRING DIAGRAM '79 ATC110

ENGINE STOP SWITCH ARRANGEMENT

	IG	E
OFF		
ON		
COLOR	Bk	G



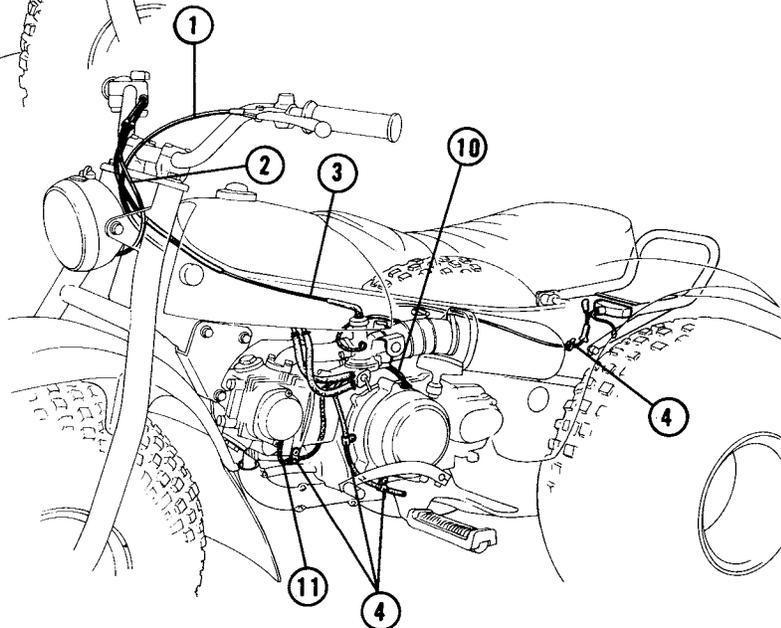
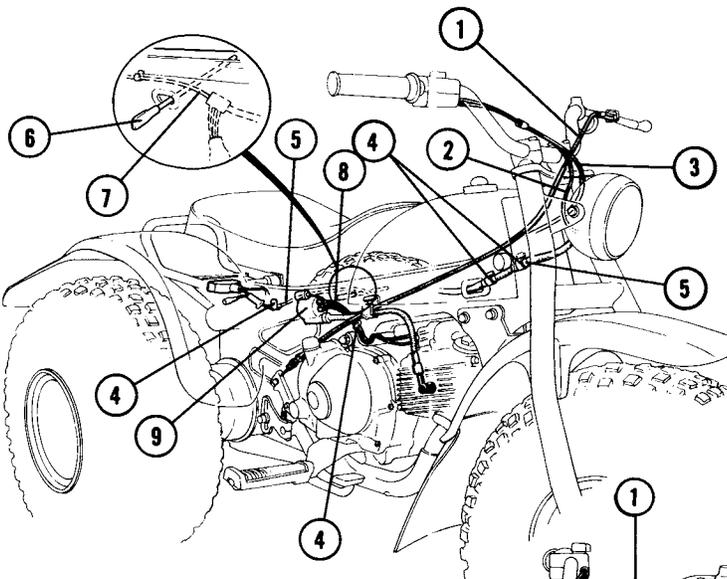
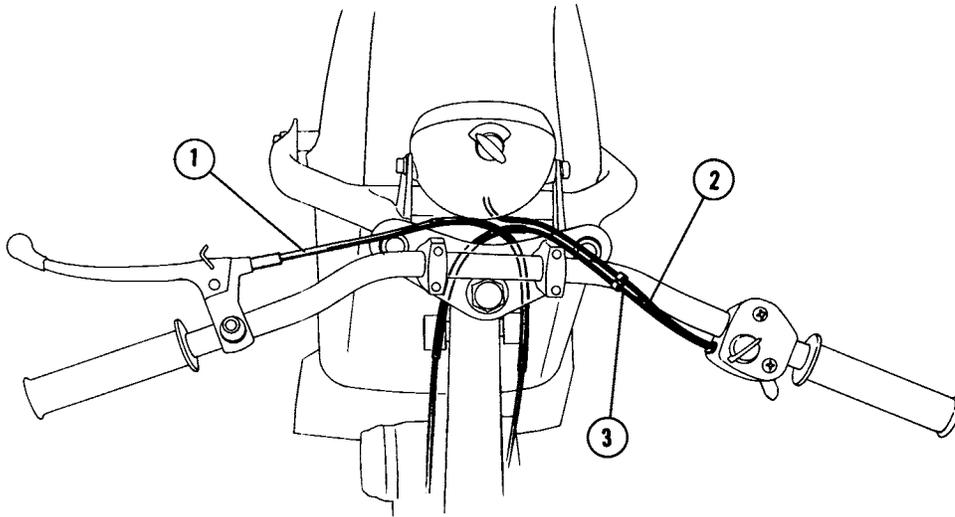
LIGHTING SWITCH ARRANGEMENT

	HL-L	CO	TL	HL-H
OFF				
LO				
HI				
COLOR	W	Y	Br	B

Br Brown
 Bk Black
 W White

Y Yellow
 B Blue
 G Green

III. CABLE & HARNESS ROUTING '79 ATC110



- (1) Brake cable
- (2) Engine stop switch wires
- (3) Throttle cable
- (4) Clamp
- (5) Wire harness
- (6) Seat lock lever
- (7) Wire harness
- (8) Wire harness ground wire
- (9) Ignition coil
- (10) A.C. generator wire
- (11) Contact breaker wire

IV. TORQUE**(ENGINE)**

	Item	Q'ty	Thread dia. (mm)	Torque kg-m (ft-lb)
1	Cylinder head	4	8	1.8–2.0 (13.0–14.5)
2	Flywheel	1	8	2.6–3.2 (18.8–23.1)
3	Clutch Assy./Drive plate	1	16	4.0–5.0 (28.9–36.1)

(FRAME)

	Item	Q'ty	Thread dia. (mm)	Torque kg-m (ft-lb)
1	Steering stem nut	1	22	5.0–7.0 (36.1–50.6)
2	Fork top bridge and front fork	2	10	4.0–4.8 (28.9–34.7)
3	Handlebar upper holder and fork top bridge	2	10	4.0–4.8 (28.9–34.7)
4	Front fork and axle nut	2	12	5.0–7.0 (36.1–50.6)
5	Brake drum nut	2	32	4.0–6.0 (28.9–43.4)
6	Rear wheel axle and hub	2	14	6.0–8.0 (43.4–57.8)
7	Final driven sprocket	4	10	4.4–5.2 (31.8–37.6)
8	Step bar	4	8	1.9–2.5 (13.7–18.1)
9	Change pedal	1	6	0.7–1.2 (5.1– 8.7)
10	Engine hanger bolt	4	8	1.9–2.5 (13.7–18.1)
11	Seat and rear fender	10	6	0.5–0.7 (3.6– 5.1)
12	Fender and mud guard	11	4	0.5–0.7 (3.6– 5.1)
13	Inlet pipe and carburetor	2	6	0.6–0.9 (4.3– 6.5)

For bolts and nuts other than those specified above, use the standard torques shown below.

STANDARD TORQUE

1	5 mm bolt, nut	0.45–0.6 (3.3– 4.3)	6	5 mm screw	0.35–0.5 (2.5– 3.6)
2	6 mm bolt, nut	0.8 –1.2 (5.8– 8.7)	7	6 mm screw	0.7 –1.1 (5.1– 8.0)
3	8 mm bolt, nut	1.8 –2.5 (13.0–18.1)	8	6 mm flange bolt, nut	1.0 –1.4 (7.2–10.1)
4	10 mm bolt, nut	3.0 –4.0 (21.7–28.9)	9	8 mm flange bolt, nut	2.4 –3.0 (17.4–21.7)
5	12 mm bolt, nut	5.0 –6.0 (36.2–43.4)	10	10 mm flange bolt, nut	3.0 –4.0 (21.7–28.9)

V. TOOLS**SPECIAL TOOLS**

	TOOL NAME	TOOL NO
1	Tappet adjust wrench	07908-0010000
2	Pin spanner 36 mm	07902-0010000
3	Lock nut wrench 41 mm	07916-9180000
4	Clutch outer holder	07923-0340000
5	Rotor puller	07933-2160000
6	Valve guide remover	07942-3290100
7	Valve guide driver	07942-1180100
8	Valve spring compressor	07957-3290001
9	Valve guide reamer	07984-0980000

COMMON TOOLS

	TOOL NAME	TOOL NO	Appropriation List (common tool-special tool)
1	FRONT WHEEL Bearing driver outer (32 x 35 mm)	07746-0010100	} 07946-9370100
2	FRONT WHEEL Bearing driver pilot (17 mm)	07746-0040400	
3	REAR WHEEL HUB Bearing driver outer (62 x 68 mm)	07746-0010500	} 07946-9180100 or 07945-3710300
4	REAR WHEEL HUB Bearing driver (35 mm)	07746-0040800	
5	CRANKCASE Bearing driver outer (42 x 47 mm)	07746-0010300	} 07945-3330100
6	CRANKCASE Bearing driver pilot (20 mm)	07746-0040500	
7	Handle driver	07749-0010000	07949-6110000
8	CRANKSHAFT Inner handle (C)	07746-0030100	} 07935-3710200
9	CRANKSHAFT Inner 25 mm driver	07746-0030200	
10	Float level gauge	07401-0010000	
11	Lock nut wrench 16 mm	07916-0020100	

VI. SERVICE DATA

Item		Standard mm (in)	Service Limit mm (in)	
Camshaft	Shaft-to-bearing clearance R	0.062–0.091 mm (0.002–0.004 in)	0.120 mm (0.005 in)	
	Shaft-to-bearing clearance L	0.03–0.13 mm (0.001–0.005 in)	0.160 mm (0.006 in)	
	Cam height	24.90–24.98 mm (0.980–0.983 in)	24.6 mm (0.969 in)	
Rocker arm	I.D.	10.00–10.015 mm (0.3937–0.3943 in)	10.1 mm (0.398 in)	
	O.D.	9.972–9.987 mm (0.3926–0.3932 in)	10.0 mm (0.394 in)	
Valve spring	Free length	Inner	26.5 mm (1.043 in)	
		Outer	31.8 mm (1.252 in)	
Preload/length		Outer	7.9–8.9 kg/27.8 mm	
		Inner	3.0–3.2 kg/23.9 mm	
Valve	Stem O.D.	IN	5.455–5.465 mm (0.2148–0.2152 in)	
		EX	5.430–5.445 mm (0.2138–0.2144 in)	
	Face width		1.0 mm (0.039 in)	
Valve guide	I.D.		5.475–5.515 mm (0.216–0.217 in)	
		Guide-to-stem clearance IN	0.010–0.060 mm (0.0004–0.0024 in)	
		EX	0.030–0.085 mm (0.0012–0.0033 in)	
Clutch	Spring free length		24.5 mm (0.965 in)	
	Preload/length		12.1–13.5 kg/15 mm (26.7–29.8 lb/0.59 in)	
			11.5 kg/15 mm (25.4 lb/0.59 in)	
	Plate thickness	A	1.95–2.05 mm (0.077–0.081 in)	1.9 mm (0.075 in)
		B	1.55–1.65 mm (0.061–0.065 in)	1.5 mm (0.059 in)
		C	1.55–1.65 mm (0.061–0.065 in)	1.5 mm (0.059 in)
		D	1.95–2.05 mm (0.077–0.081 in)	1.9 mm (0.075 in)
Warpage		0.1 mm (0.004 in)	0.2 mm (0.008 in)	
Disc thickness		2.65–2.75 mm (0.104–0.108 in)	2.5 mm (0.098 in)	
Oil pump	Tip clearance		0.1–0.14 mm (0.004–0.006 in)	
	Body clearance		0.15–0.18 mm (0.006–0.007 in)	
	End clearance		0.02–0.07 mm (0.0008–0.0028 in)	
Cylinder	I.D.		51.980–52.030 mm (2.046–2.048 in)	
		Out of roundness	0.05 mm (0.020 in)	
		Taper	0.05 mm (0.020 in)	
Piston	O.D. (at skirt)		51.97–51.99 mm (2.046–2.047 in)	
	Piston-to-cylinder clearance		0.03–0.06 mm (0.001–0.002 in)	
	Piston pin bore		15.002–15.008 mm (0.5906–0.5909 in)	
Piston ring	Ring-to-groove clearance	TOP	0.025–0.055 mm (0.001–0.002 in)	
		2nd	0.015–0.045 mm (0.001–0.002 in)	
	End gap	TOP	0.15–0.35 mm (0.006–0.014 in)	
		2nd	0.15–0.35 mm (0.006–0.014 in)	
		OIL	0.3–0.9 mm (0.012–0.035 in)	
Piston pin	O.D.		14.994–15.000 mm (0.590–0.591 in)	
	Pin-to-piston clearance		0.002–0.014 mm (0.0001–0.0006 in)	
Connecting rod	Small end I.D.		15.016–15.034 mm (0.591–0.592 in)	
	Rod-to-pin clearance		0.016–0.040 mm (0.0006–0.0016 in)	

ATC110 MAINTENANCE SCHEDULE

The maintenance intervals shown in the following schedule are based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing. Items marked * should be serviced by an authorized Honda dealer, unless the owner has the proper tools and is mechanically proficient. Other maintenance items are simple to perform and may be serviced by the owner.

Initial Service Period (First week of operation)

- ENGINE OIL – Change.
- *CONTACT POINTS AND IGNITION TIMING – Clean, check, and adjust or replace if necessary.
- *VALVE CLEARANCE – Check and adjust if necessary. COLD
- *CAM CHAIN TENSION – Adjust.
- *CARBURETOR – Check and adjust if necessary. HOT
- THROTTLE OPERATION – Inspect cable. Check and adjust free play.
- *CLUTCH – Check operation and adjust if necessary.
- DRIVE CHAIN – Check, lubricate, and adjust if necessary.
- BRAKE CONTROL LINKAGE – Check linkage and adjust if necessary.
- TIRES – Inspect and check air pressure.
- LIGHTING EQUIPMENT – Check.
- ALL NUTS, BOLTS, AND OTHER FASTENERS – Check security and tighten if necessary.

Regular Service Period (Every 30 Operating Days)

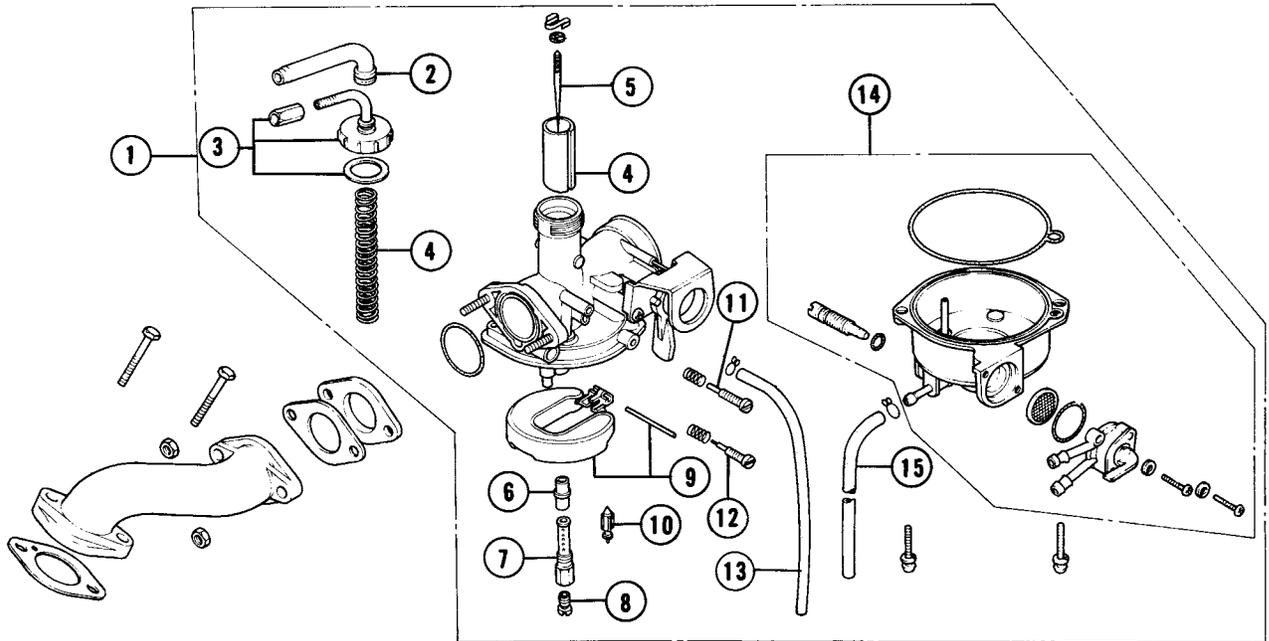
- ENGINE OIL – Change.
(NOTE: Change oil every 30 operating days or every 3 months, whichever occurs first.)
- SPARK PLUG – Clean and adjust gap, or replace if necessary.
- *CONTACT POINTS AND IGNITION TIMING – Clean, check, and adjust or replace if necessary.
- *VALVE CLEARANCE – Check and adjust if necessary. COLD
- *CAM CHAIN TENSION – Adjust.
- AIR CLEANER ELEMENT – Clean and oil. Service more frequently if operated in dusty areas.
- *CARBURETOR – Check and adjust if necessary. HOT
- THROTTLE OPERATION – Inspect cable. Check and adjust free play.
- *CLUTCH – Check operation and adjust if necessary.
- DRIVE CHAIN – Check, lubricate, and adjust if necessary. Service more frequently if operated in dusty areas.
- BRAKE CONTROL LINKAGE – Check linkage and adjust if necessary.
- TIRES – Inspect and check air pressure.
- SPARK ARRESTER – Clean.
- LIGHTING EQUIPMENT – Check.
- ALL NUTS, BOLTS, AND OTHER FASTENERS – Check security and tighten if necessary.

Every Year (Or as needed)

- FUEL STRAINER – Clean.
- FUEL LINE(S) – Check.
- *STEERING HEAD BEARINGS – Adjust.
- *BRAKE SHOES – Inspect and replace if worn.

VII. INSPECTION AND ADJUSTMENT

CARBURETOR



- (1) Carburetor assembly (2) Rubber sleeve (3) Cap set (4) Throttle valve set
 (5) Jet needle (6) Needle jet (7) Needle jet holder (8) Main jet (9) Float set
 (10) Float valve (11) Throttle stop screw (12) Pilot screw (13) Air vent tube
 (14) Float chamber assembly (15) Drain tube

CARBURETOR ADJUSTMENT

Carburetor adjustments should be made after the engine has attained operating temperature, and with the transmission in neutral.

Idle Mixture Adjustment

1. Adjust the throttle stop screw to obtain the lowest stable idle rpm.
2. Turn the pilot screw clockwise until you hear the engine miss or decrease in speed, then counterclockwise until the engine misses or decreases in speed.

Center the pilot screw exactly between these two extreme positions, at the point which produces the highest idle rpm (usually 1-5/8 turns out from the closed position).

Note:

Turning the pilot in produces a lean fuel mixture. Turning the pilot screw out produces a rich fuel mixture. If idle speed increases during mixture adjustment, readjust the throttle to reduce rpm.

Idle Speed Adjustment

Turn the throttle stop screw to obtain an idle speed of 1,700 rpm.

High Altitude Adjustment

When operating this vehicle at high altitude the air-fuel mixture becomes overly rich. Above 6,500 feet (2,000 m) driveability and performance may be reduced and fuel consumption increased. A high altitude jet is available for carburetor modification to compensate for this high altitude richness.

Installation: Above 6,500 ft (2,000 m)

1. Turn the fuel valve "OFF".
2. Place the carburetor drain tube in a suitable container. Turn the carburetor drain screw counterclockwise and drain the carburetor.
3. Remove the carburetor.

WARNING

** Gasoline is extremely flammable and explosive under certain conditions. Perform this operation in a well ventilated area. Do not smoke or allow flames or sparks in the area.*

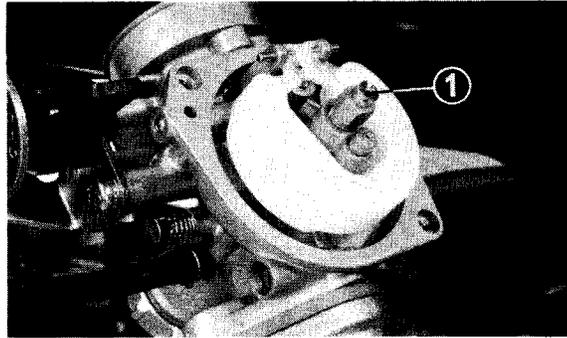
4. Remove the float chamber.
5. Remove the standard main jet (No. 85) and install the high altitude main jet (No. 78). Reinstall the float chamber.
6. Turn the pilot screw (2) clockwise 1/2 turn from the factory pre-set position.
7. Install the carburetor. Assure that the drain screw is turned fully clockwise. Turn the fuel valve "ON".
8. Start the engine and adjust the idle speed to 1,700 rpm.

** Adjust the idle speed at high altitude to ensure proper high altitude operation.*

Removal: Below 5,000 ft (1,500 m)

1. Follow installation steps 1-3.
2. Reinstall the original No. 85 main jet.
3. Return the pilot screw to the factory pre-set position by turning counterclockwise 1/2 turn.
4. Reinstall the carburetor and readjust the idle speed to 1,700 rpm.

** Adjust the idle speed at low altitude to ensure proper low altitude operation.*

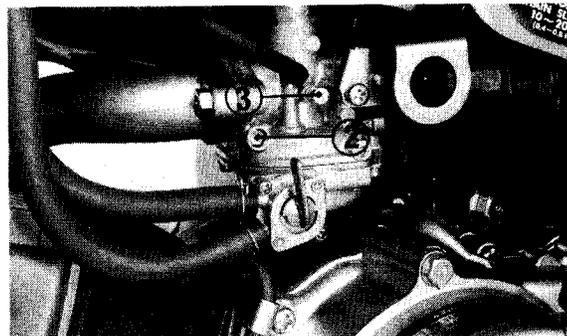


(1) Main jet

CAUTION

** Sustained operation at lower altitude below 5,000 feet (1,500 m) with the altitude jet installed may cause engine overheating and damage.*

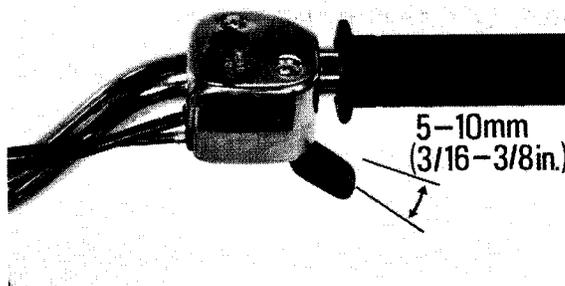
Altitude	Main jet	Pilot screw
Below 5,000 feet	No. 85	Factory Preset
Above 6,500 feet	No. 78	1/2 turn clockwise



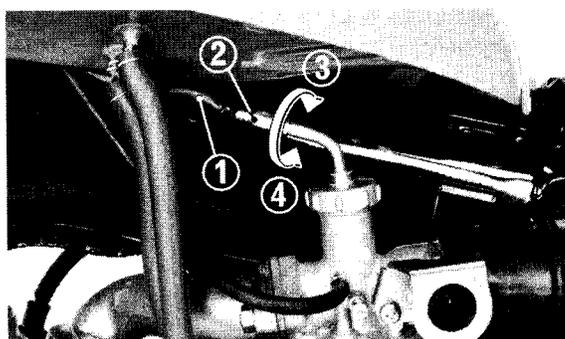
(2) Pilot screw (3) Throttle stop screw

THROTTLE CABLE ADJUSTMENT

Measure the throttle cable free play.
FREE PLAY: 5–10 mm (3/16–3/8 in)



To adjust the throttle cable free play, remove the rubber sleeve and turn the cable adjuster in or out until the correct free play is obtained.



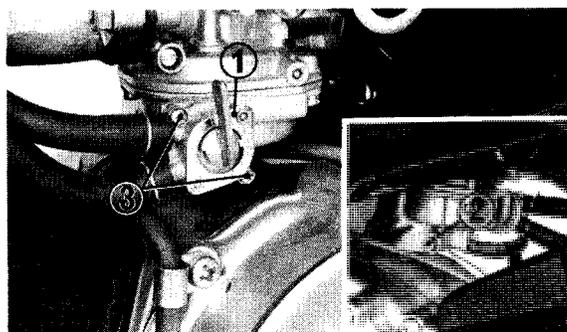
(1) Rubber sleeve (2) Cable adjuster
 (3) DECREASE PLAY (4) INCREASE PLAY

FUEL FILTER CLEANING

1. Turn the fuel valve to "OFF".
2. Loosen the drain screw to drain gasoline from the carburetor.
3. Remove the two fuel valve screws and fuel valve.

WARNING

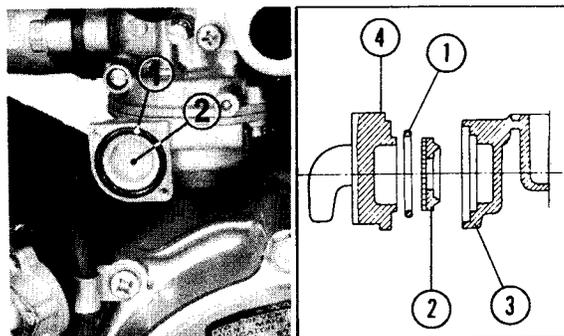
* *Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.*



(1) Fuel valve (2) Drain screw (3) Screws

4. Remove the O-ring and filter screen. Check the filter screen and O-ring for damage.
5. Wash the filter screen in solvent.
6. Install the filter screen, O-ring and fuel valve.

* Install the filter screen so that the cupped face is toward the carburetor body, as illustrated. Tighten the drain screw. Turn the fuel valve to "ON" and check for leakage.



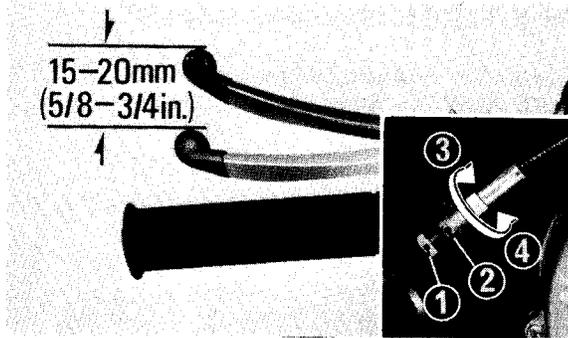
(1) O-ring (2) Filter screen
 (3) Carburetor (4) Fuel valve

BRAKE LEVER/PARKING BRAKE

Check the brake lever free play.

FREE PLAY: 15-20 mm (5/8-3/4 in)

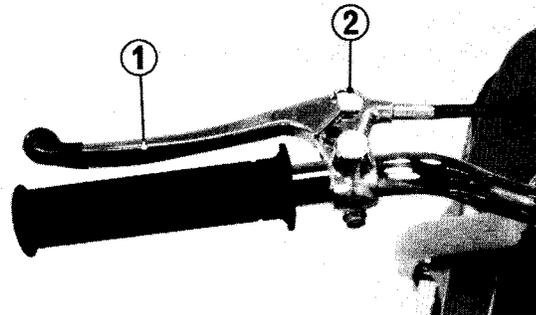
To adjust the brake lever free play, turn the brake adjuster.



(1) Lock nut (2) Adjuster
(3) DECREASE PLAY (4) INCREASE PLAY

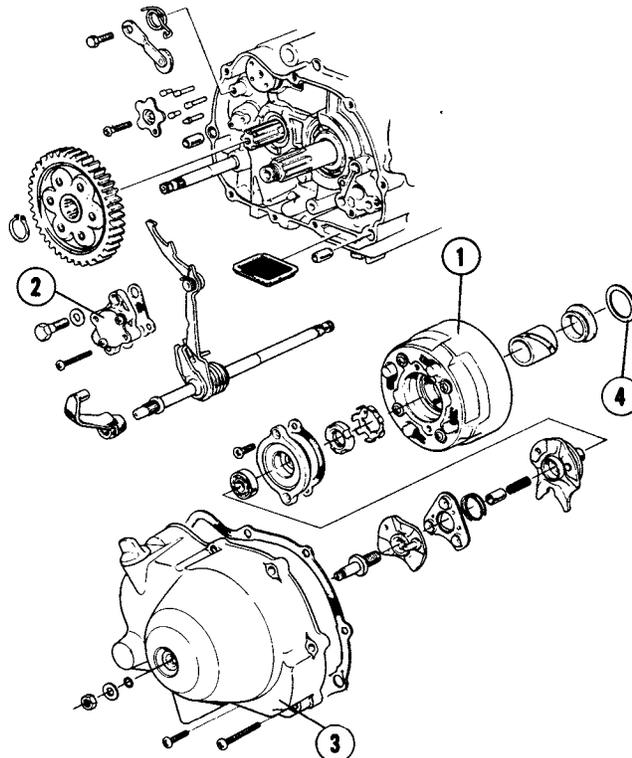
Pull in the brake lever and apply the spring lock to apply the parking brake.

* Before operating the unit, measure the brake lever free play.



(1) Brake lever/Parking brake
(2) Lock spring

VIII. CLUTCH



(1) Clutch (Disassembly - Page 61)
(2) Oil pump (Disassembly - Page 64)
(3) Left crankcase cover
(4) Lock washer (ATC110 only)

HOW TO USE THIS MANUAL

This ATC 110 addendum supplements, and should be filed with, the ATC 90 shop manual.

Refer to the ATC 90 shop manual for all service information not specifically covered by the ATC 110 addendum. Refer to the CT 90 shop manual for any engine overhaul not covered by the ATC 90 shop manual.

CONTENTS

I. SPECIFICATIONS	114
II. MAINTENANCE SCHEDULE	115
III. WIRING DIAGRAM	116
IV. TORQUE VALUES	116
V. CABLE & HARNESS ROUTING	117
VI. IGNITION SYSTEM	118
VII. INSPECTION AND ADJUSTMENT	119
–IGNITION COIL	119
–A.C. GENERATOR	119
–PULSER GENERATOR	119
–IGNITION TIMING	120
–CDI UNIT	120
–DRIVE CHAIN	121

ALL INFORMATION, ILLUSTRATIONS, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING. HONDA MOTOR CO., LTD. RESERVES THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT NOTICE AND WITHOUT INCURRING ANY OBLIGATION WHATSOEVER.

NO PART OF THIS PUBLICATION MAY BE REPRODUCED WITHOUT WRITTEN PERMISSION.

HONDA MOTOR CO., LTD.
Service Publication Office

I. SPECIFICATIONS

This addendum lists only specifications which are different from, or in addition to 1980 specifications. Refer to the base shop manual and previous addendums for information not covered here.

MODEL	
DIMENSIONS	
Overall length	1630 mm (64.2 in)
Wheel base	1040 mm (40.9 in)
Dry weight	109 kg (240.3 lb)
FRAME	
Fuel capacity	7.2 lit (1.9 US gal. 1.58 Imp. gal.)
Fuel reserve capacity	0.64 lit (0.14 US gal. 0.12 Imp. gal.)
Caster angle	68° 5'
Trail length	26 mm (1.0 in)
ENGINE	
Oil capacity	1.1 lit (1.2 US qt. 1.0 Imp. qt.)
ELECTRICAL	
Ignition timing Full advance	33° BTDC at 1950-4000 rpm
Alternator	A.C. Generator 12V: 0.048 KW/6,000 rpm

II. MAINTENANCE SCHEDULE

The maintenance intervals shown in the following schedule are based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing. Items marked * should be serviced by an authorized Honda dealer, unless the owner has the proper tools and is mechanically proficient. Other maintenance items are simple to perform and may be serviced by the owner.

I: Inspect, Clean, Adjust, Lubricate or Replace if Necessary

C: Clean

R: Replace

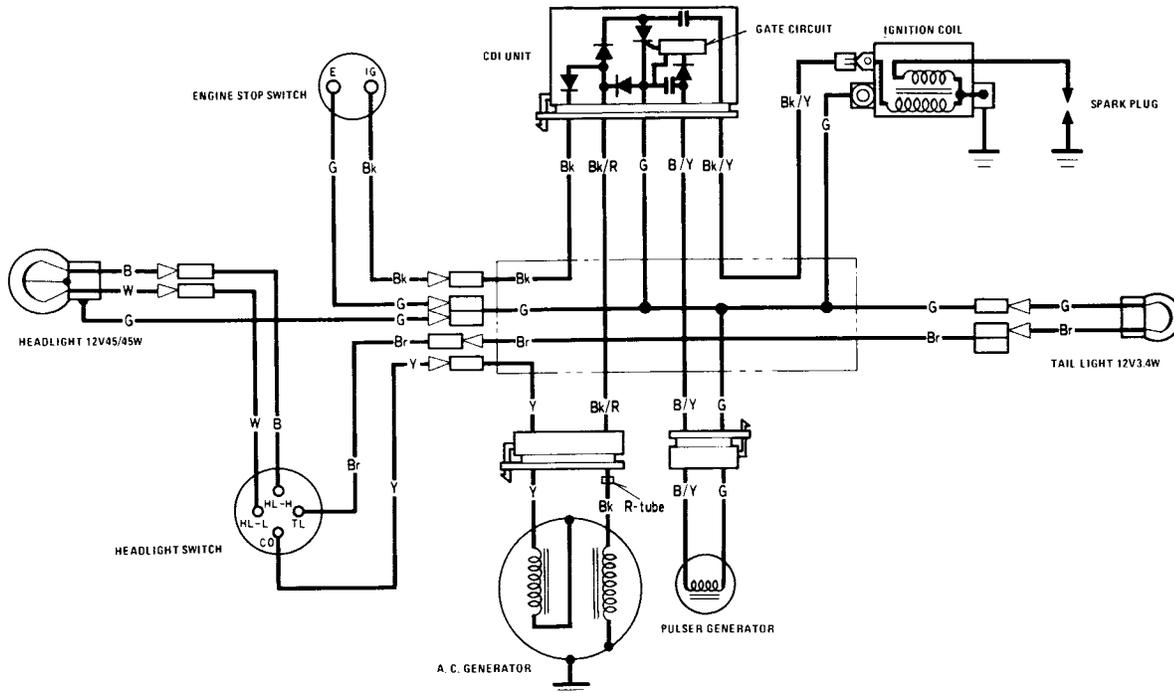
A: Adjust

L: Lubricate

	ITEM	INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)
	ENGINE OIL (NOTE 1, 2)	R	R
*	ENGINE OIL FILTER SCREEN	C	C
	OIL FILTER ROTOR		C
	AIR CLEANER ELEMENT (NOTE 2)		C
	SPARK PLUG		I
*	VALVE CLEARANCE	I	I
*	CAM CHAIN TENSION	A	A
*	CARBURETOR IDLE SPEED	I	I
	FUEL LINE	I (EVERY YEAR)	
*	FUEL STRAINER	C (EVERY YEAR)	
	THROTTLE OPERATION	I	I
	DRIVE CHAIN	I	I
*	BRAKE SHOES	I (EVERY YEAR)	
	BRAKE CONTROL LINKAGE	I	I
*	CLUTCH	I	I
*	SPARK ARRESTER		C
	ALL NUTS, BOLTS, FASTENERS	I	I
	LIGHTING EQUIPMENT	I	I
	TIRES	I	I
*	STEERING HEAD BEARING	A (EVERY YEAR)	

NOTES: 1. Replace every 30 operating days or every 3 months, whichever occurs first.
2. Service more frequently when riding in dusty area.

III. WIRING DIAGRAM



HEADLIGHT SWITCH CONTINUITY

	HL-L	Co	TL	HL-H
OFF				
LO	○	○	○	
HI		○	○	○
COLOR	W	Y	Br	B

ENGINE STOP SWITCH CONTINUITY

	IG	E
OFF	○	○
ON		
COLOR	Bk	G

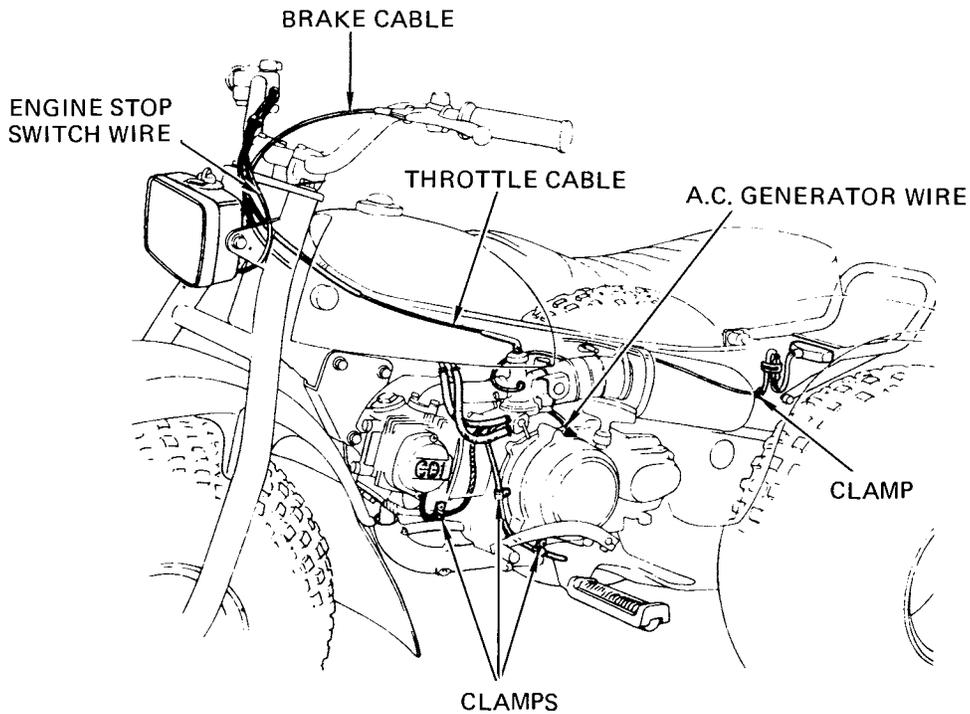
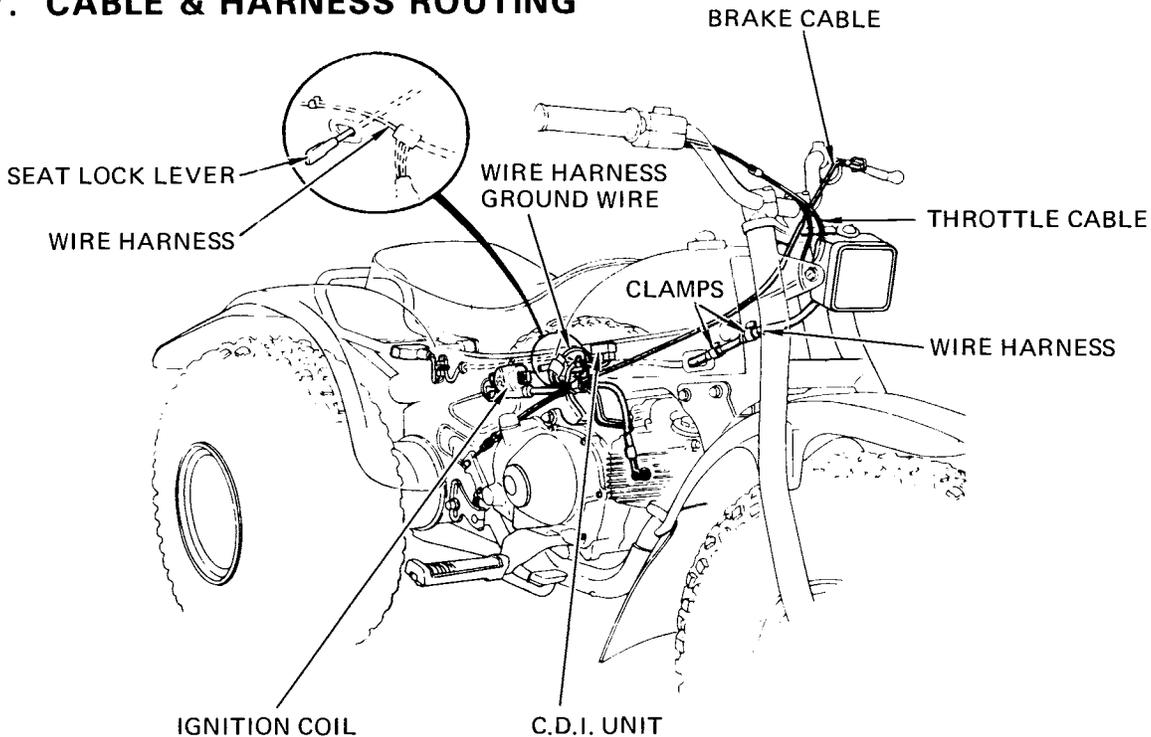
- Br Brown
- Bk Black
- W White
- R Red
- Y Yellow
- B Blue
- G Green

IV. TORQUE VALUES

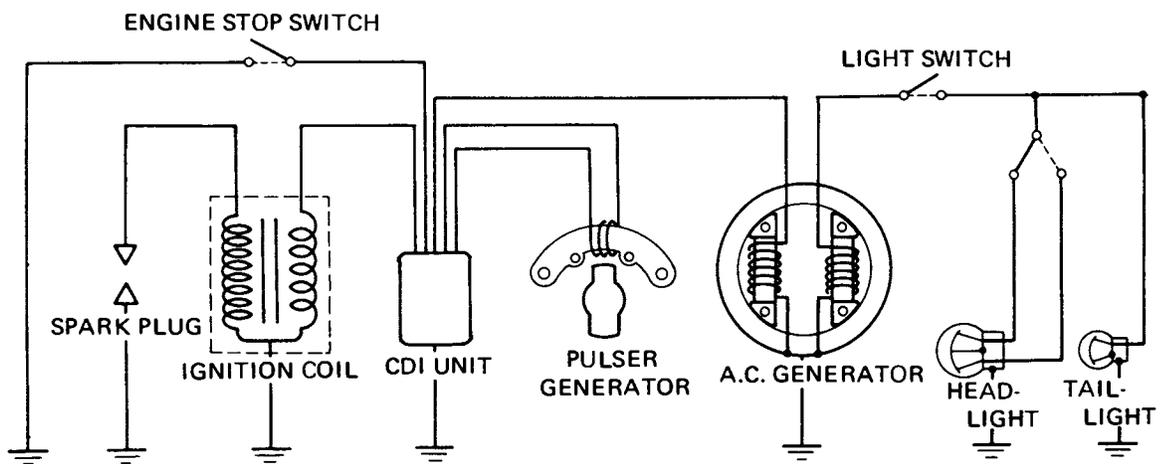
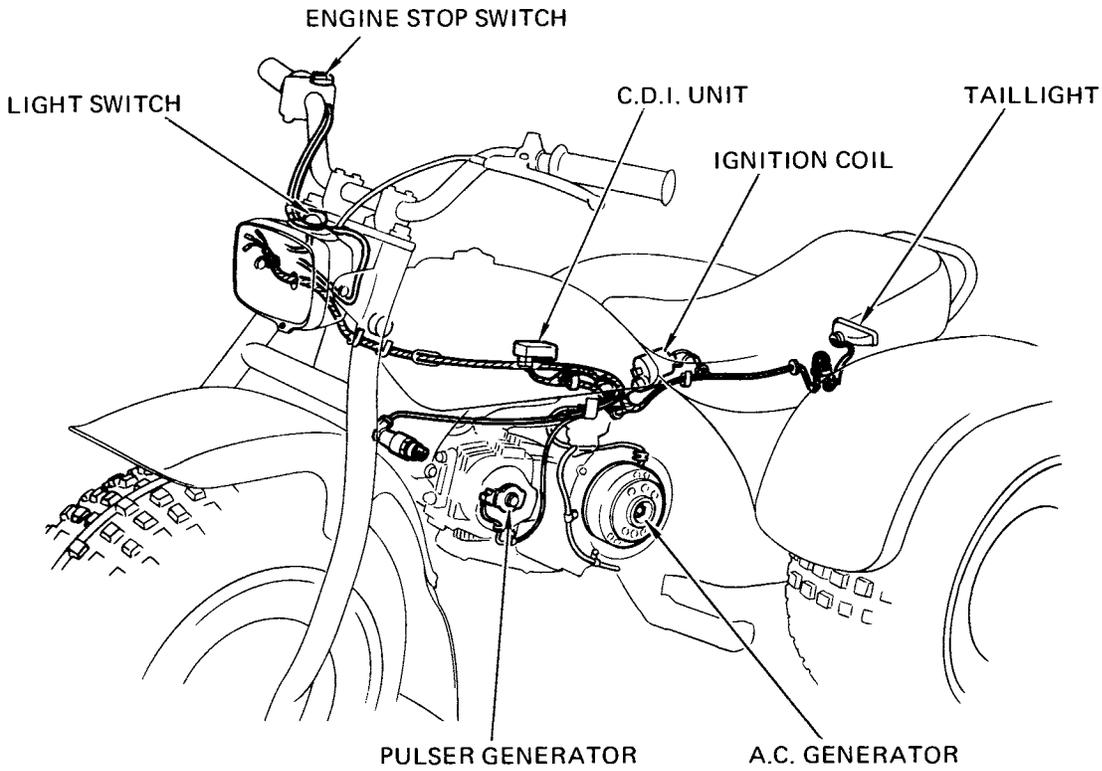
	Item	Q'ty	Thread dia. (mm)	Torque kg-m (ft-lb)
1	Fork top bridge and front fork	2	12	5.0-7.0 (36-51)
2	Chain tensioner arm and tensioner bracket	1	10	3.5-4.5 (25-33)

See '79 addendum sheet for other torques.

V. CABLE & HARNESS ROUTING



VI. IGNITION SYSTEM

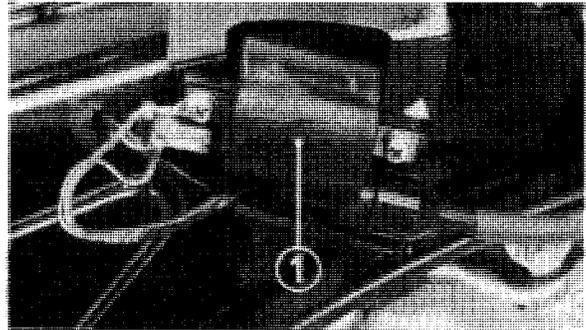


VII. INSPECTION AND ADJUSTMENT

IGNITION COIL

IGNITION COIL REMOVAL

Remove the seat.
Remove the spark plug cap from the spark plug.
Disconnect the wires.
Remove the ignition coil.



(1) Ignition Coil

IGNITION COIL INSPECTION

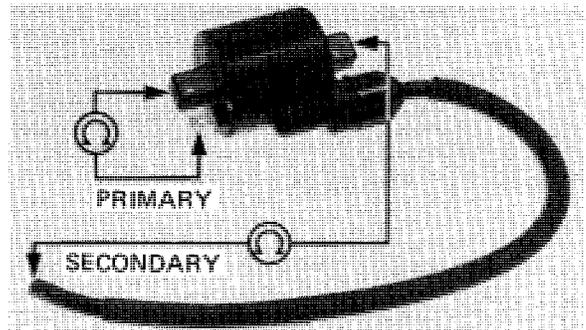
Check the resistances between the leads of the primary and secondary coils:

Primary coil: $0.2-0.8\Omega$

Secondary coil: $8-15k\Omega$

IGNITION COIL INSTALLATION

Install the ignition coil in the reverse order of removal.



A.C. GENERATOR

Disconnect the A.C. generator wire coupler and test as follows:

NOTE:

It is not necessary to remove the stator coil to make this test.

LIGHTING COIL

The lighting coil is correct if there is continuity between the yellow wire and ground.

SPECIFIED RESISTANCE: $0.4-1.2\Omega$

EXCITER COIL

The exciter coil is normal if there is continuity between the black wire and ground.

SPECIFIED RESISTANCE: $100-400\Omega$

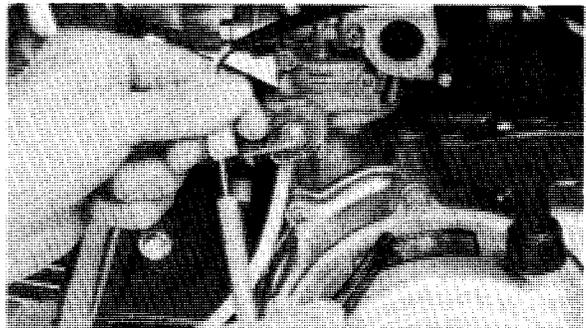
PULSER GENERATOR

NOTE:

This test can be made without removing the part.

Remove the seat.
Disconnect the generator wires.
Measure the resistance between the Blue/Yellow and Green wires.

RESISTANCE: $20-60\Omega$



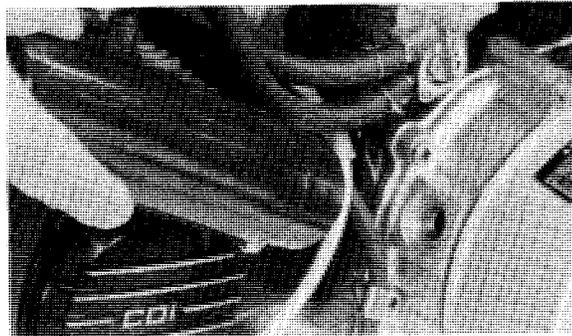
IGNITION TIMING

Remove the timing hole cap.
 Connect a timing light.
 Start the engine and allow to idle.

IDLE (1,700 rpm): "F" mark should be aligned with the index mark.

NOTE:

Ignition timing does not normally need to be adjusted since the CDI (Capacitive Discharge Ignition) unit is factory pre-set.

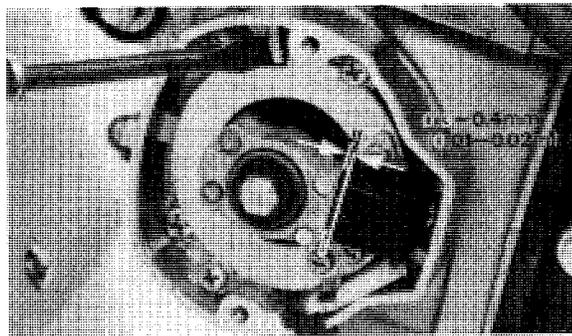


To adjust, remove the pulser generator cover, loosen the base plate attaching screws and turn the plate left or right as required.

If ignition timing cannot be corrected, inspect the CDI unit and pulser generator.
 Replace any faulty components.

NOTE:

Maintain a pulser rotor-to-generator gap of 0.3–0.4 mm.



C.D.I. UNIT

CDI UNIT REMOVAL

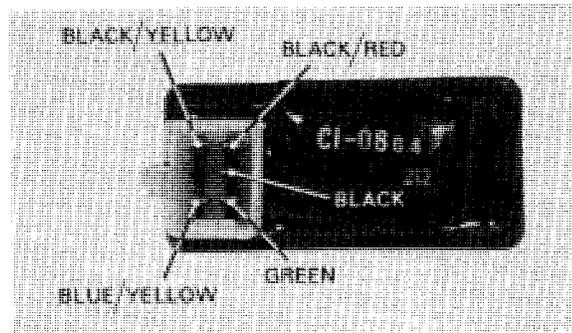
Remove the seat and fuel tank.
 Disconnect the wire coupler.
 Remove the CDI unit.

CDI UNIT INSPECTION

Replace the CDI unit if the readings are within the limits shown in the table.

NOTE:

- The CDI unit if fully transistorized.
- For accurate testing, it is necessary to use a specified electric tester. Use of an improper tester may give a false reading.
- Use SANWA ELECTRIC TESTER (P/N 7308–0020000).



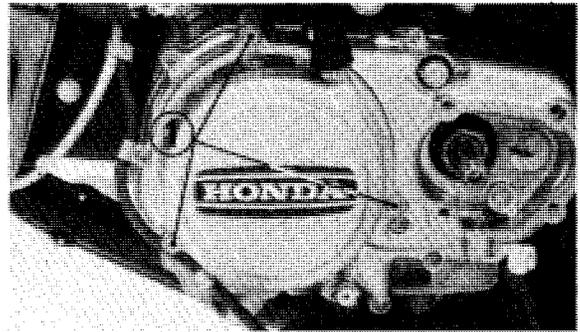
Measuring range:
 SANWA: xKΩ
 KOWA: x100Ω (TH-5A Type)

	BLACK (D)	GREEN (B)	BLACK/RED	BLUE/YELLOW	BLACK/YELLOW
BLACK (D)	∞	∞	∞	∞	∞
GREEN (B)	–	∞	∞	∞	∞
BLACK/RED	–	∞	∞	∞	∞
BLUE/YELLOW	–	–	–	∞	∞
BLACK/YELLOW	∞	∞	∞	∞	∞

DRIVE CHAIN**(Removal of endless drive chain)**

- (1) Remove the seat, with the transmission in neutral and ignition switch OFF.
- (2) Remove the 6 mm bolt and remove the shift lever.
- (3) Remove the subtransmission case by referring to page 42.

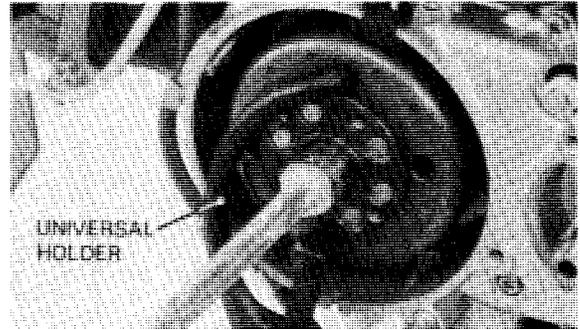
Remove the recoil starter.



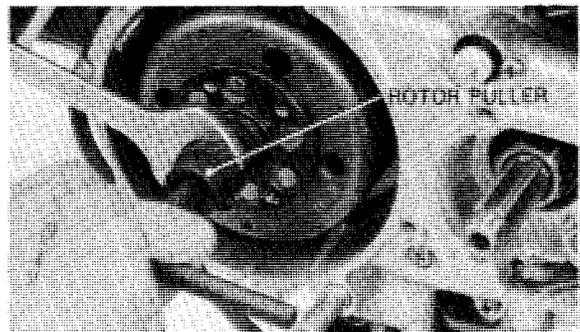
(1) Bolts

Hold the flywheel with the Universal Holder, then remove the flywheel nut.

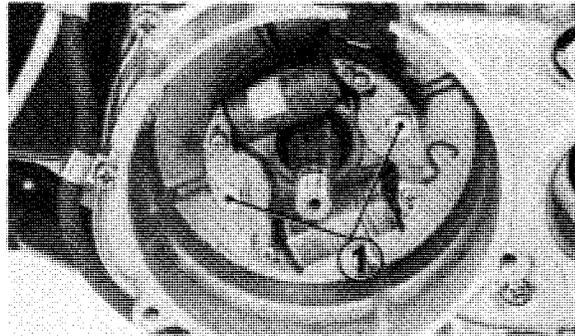
Remove the starter drive pulley.



Remove the A.C. generator rotor with rotor puller No. 07933-001.



Remove two bolts and remove the stator coils.
Disconnect the A.C. generator coupler.
Drain the engine oil.



(1) Bolts

- (1) Remove the left crankcase cover by referring to page 44.
- (2) Remove the rear wheels and the drive chain case by referring to page 84-85.

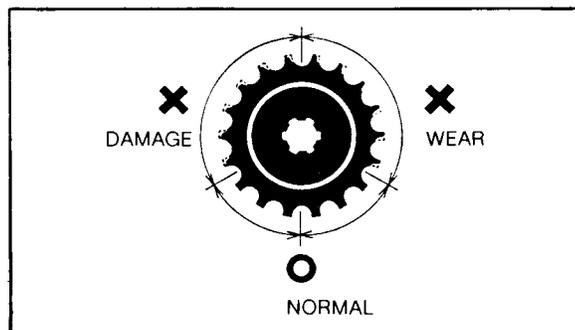
Pull the rear wheel axle and sprocket at the same time.



A drive chain with damaged rollers, loose pins, or missing O-rings must be replaced. Replace any sprocket which is damaged or excessively worn. Lubricate the drive chain.

NOTE:

Never install a new drive chain on worn sprockets or a worn chain on new sprockets. Both chain and sprockets must be in good condition, or the new replacement chain or sprockets will wear rapidly. When a new drive chain is installed, a new adjuster wear label must be attached according to the replacement chain directions.



CLEANING AND LUBRICATION

Clean the drive chain with kerosene and wipe dry.

CAUTION:

Do not use a steam cleaner, high pressure washers or solvents as these will damage the O-rings.

Lubricate the drive chain with SAE 80 or 90 gear oil.

CAUTION:

Do not use commercial aerosol chain lubricants. They contain solvents which could damage the O-rings.

