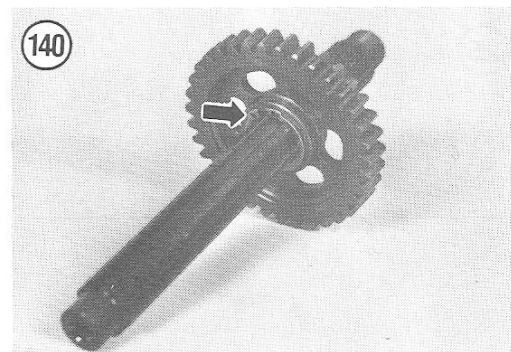
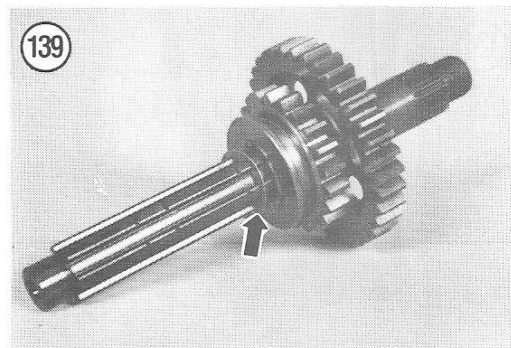
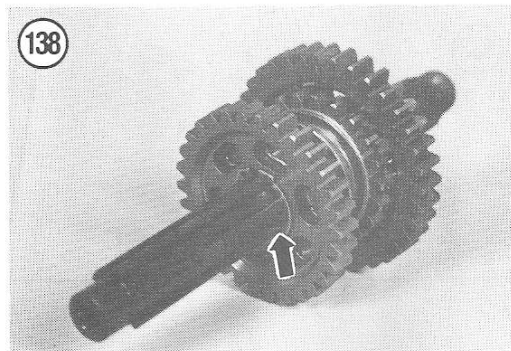
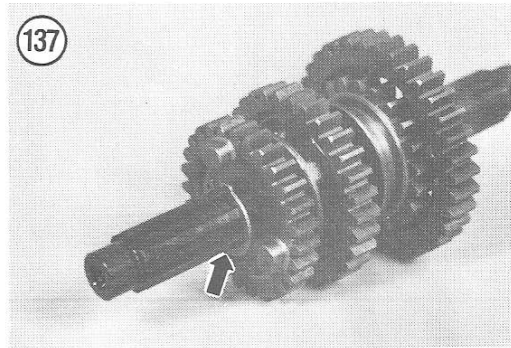
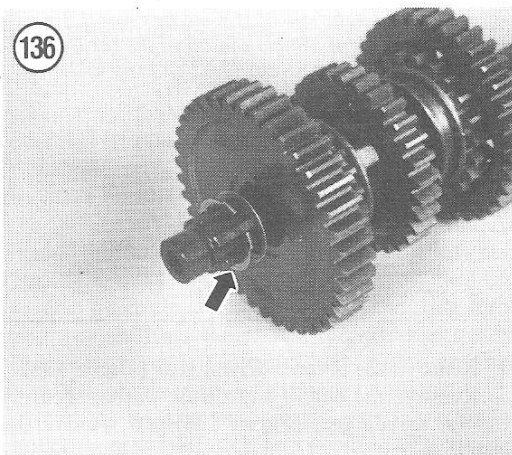
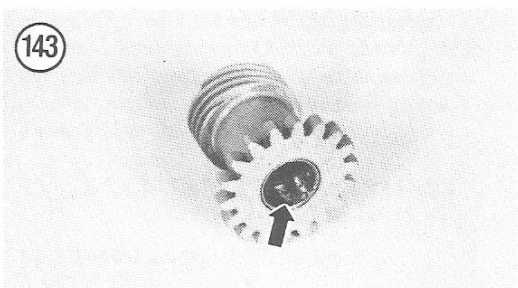
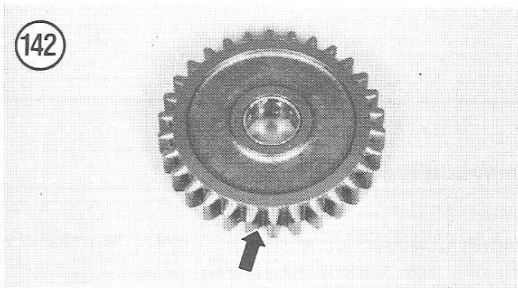
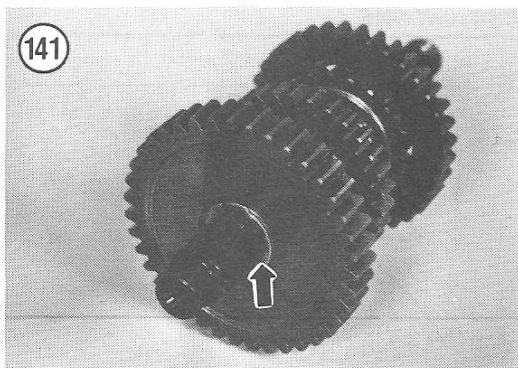


3. Remove the circlip securing the 4th driven gear and remove the gear (Figure 137).
4. Remove the circlip securing the 3rd driven gear and remove the gear (Figure 138).
5. Remove the thrust washer and circlip securing the 5th driven gear and remove the gear (Figure 139).
6. Remove the circlip then slide off the 2nd driven gear (Figure 140).
7. Assembly is the reverse of these steps. Ensure that all circlips are fully installed in the shaft grooves as shown in Figure 141. Make sure all thrust washers are installed as removed.

Gear Set Inspection

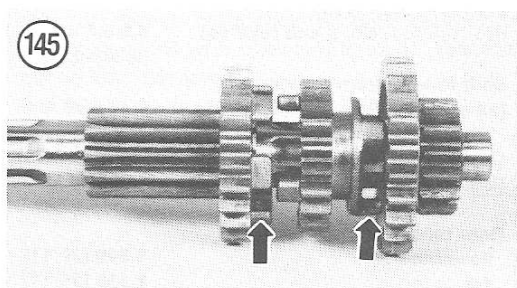
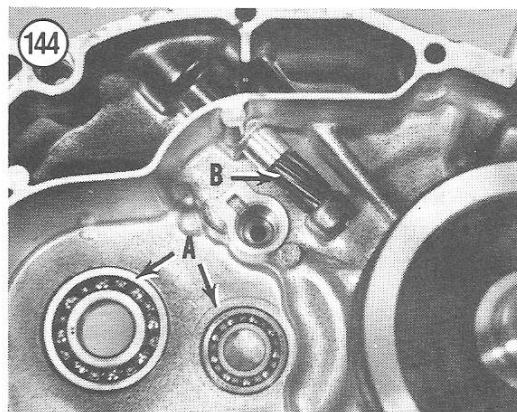
1. Clean and carefully inspect all gears for burrs, chips or roughness on the teeth. The chamfer on the reverse idler gear is normal and should not be confused with gear tooth damage (Figure 142).
2. Closely examine the bushings in all gears so equipped. See Figure 143 for an example.
3. Inspect both transmission shaft bearings in each crankcase half for excessive wear or damage (A, Figure 144). To replace the bearings in the crankcase, refer to *Bearing and Seal Replacement* in Chapter Four.
4. Examine the odometer driven gear for damage or excessive wear (B, Figure 144). If the gear is damaged, remove the bolt securing the driven gear assembly and remove the assembly from the left crankcase half (Figure 102).





5. Carefully inspect all the gear engagement dogs (Figure 145). Replace any gears with rounded or damaged edges on the dogs. Gears should be replaced in sets to ensure proper mating and even wear.

6. Clean and carefully inspect the gear set shafts. Ensure that the splines are not damaged and there are no signs of galling or fatigue. Replace any shaft that is worn or damaged.



5

Tables are on the following page.

Table 1 CLUTCH SPECIFICATIONS

Item	Standard	Limit
Clutch spring free length	-	30.2 mm (1.19 in.)
Drive plate thickness	2.9-3.1 mm (0.11-0.12 in.)	2.6 mm (0.102 in.)
Drive plate claw width	11.8-12.0 mm (0.46-0.47 in.)	11.0 mm (0.43 in.)
Driven plate thickness	1.54-1.66 mm (0.060-0.065 in.)	-
Driven plate distortion	-	0.10 mm (0.004 in.)
Clutch wheel inside diameter	116.0-116.15 mm (4.567-4.573 in.)	
Clutch sleeve hub inside diameter	4.57-4.75 mm (0.179-0.187 in.)	
Clutch engagement	1,800-2,200 rpm	
Clutch lock-up	3,200-3,600 rpm	

Table 2 TRANSMISSION SPECIFICATIONS

Item	Standard	Limit
Shift fork groove width (No. 1, No. 2, No. 3 and reverse)	5.5-5.6 mm (0.217-0.220 in.)	-
Shift fork thickness (No. 1, No. 2, No. 3 and reverse)	5.3-5.4 mm (0.209-0.213)	-
Shift fork-to-groove clearance (all shift forks)	0.10-0.30 mm (0.004-0.012 in.)	0.50 mm (0.020 in.)
Countershaft length (low-to-first gear)	111.4-111.5 mm (4.385-4.389 in.)	
Gear ratios		
Power low	3.545 (39/11)	
1st	2.333 (35/11)	
2nd	1.500 (30/20)	
3rd	1.173 (27/23)	
4th	0.913 (21/23)	
Reverse	3.090 (30/11×34/30)	

The fuel system pump, a single cleaner.

The exhaust and muffler with

This chapter parts of the fuel cleaner service. Table 1 is at the

FUEL T

Fuel Tank Rem

1. Remove the Chapter Ten.
2. Refer to Chapter near wheel.



NOTE: If you own a 1984 or later model, first check the Supplement at the back of the book for any new service information.

CHAPTER SIX

FUEL AND EXHAUST SYSTEMS

The fuel system consists of the fuel tank, a fuel pump, a single Mikuni carburetor and the air cleaner.

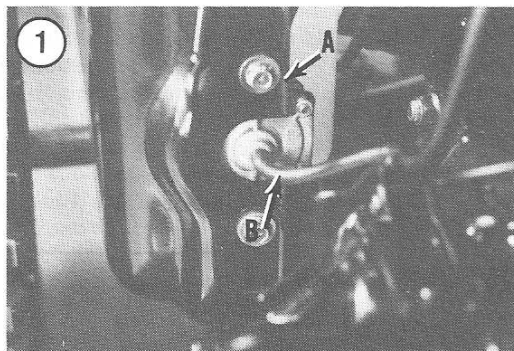
The exhaust system consists of an exhaust pipe and muffler with a built-in spark arrester.

This chapter includes service procedures for all parts of the fuel system and exhaust system. Air cleaner service is described in Chapter Three. **Table 1** is at the end of this chapter.

FUEL TANK, FUEL STRAINER AND FUEL PUMP

Fuel Tank Removal/Installation

1. Remove the seat and rear fender as outlined in Chapter Ten.
2. Refer to Chapter Nine and remove the right rear wheel.



3. Remove the fuel outlet hose (A, **Figure 1**) and the vacuum hose (B, **Figure 1**) from the fuel pump.
4. Remove the bolts and washers securing the tank and steel tank guard (**Figure 2**). Remove the tank with the guard. Note that the tank mounts are rubber cushions with spacers (**Figure 3**). Take care not to lose the spacers.
5. Installation is the reverse of these steps.

Fuel Strainer Removal/Installation

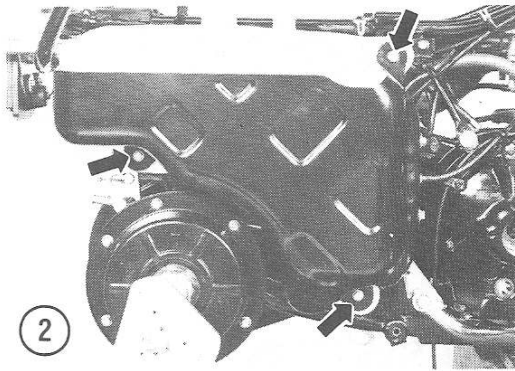
The fuel strainer should be removed and cleaned at intervals stated in Chapter Three.

1. Remove the fuel tank as outlined in this chapter.
2. Disconnect the inlet fuel line from the fuel tank (**Figure 4**).
3. Carefully pull the plastic fuel strainer out of the inlet pipe in the fuel tank.
4. Flush the strainer in clean solvent. Install the strainer in the tank inlet pipe.
5. Reconnect the fuel line and install the fuel tank.

Fuel Pump Removal/Installation

The fuel pump is operated by engine vacuum when the engine is running. The pump is not repairable and must be replaced if defective.

1. Remove the fuel tank as outlined in this chapter.
2. Disconnect the inlet fuel line (**Figure 4**). Lift the fuel tank out of the steel tank guard.
3. Remove the bolts and washers securing the pump to the tank guard and remove the pump



(Figure 5). Note that the pump mounts are rubber cushions with spacers. Take care not to lose the spacers.

4. Installation is the reverse of these steps.

CARBURETOR OPERATION

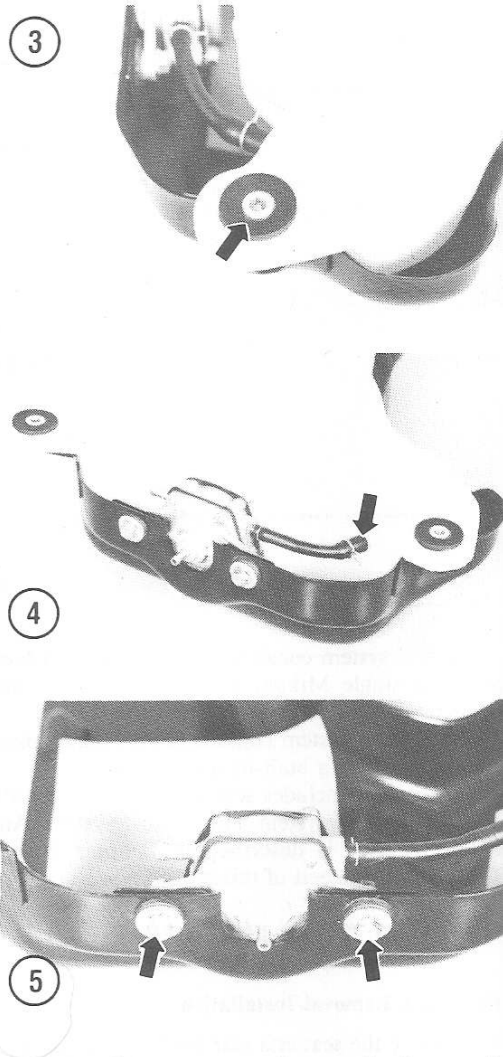
For proper operation a gasoline engine must be supplied with fuel and air mixed in proper proportions by weight. A mixture in which there is an excess of fuel is said to be rich. A lean mixture is one which contains insufficient fuel. A properly adjusted carburetor supplies the proper mixture to the engine under all operating conditions.

The carburetor consist of several operating circuits. A float and float valve mechanism maintain a constant fuel level in the float bowl. The pilot jet circuit supplies fuel from idle to approximately 1/4 throttle. Medium speeds (up to about 3/4 throttle) are controlled by the jet needle and needle jet. Fuel throttle position (3/4-full throttle) is controlled by the main jet. A starter circuit (choke) supplies the very rich mixture needed to start a cold engine.

The carburetor is also fitted with a priming pump that is used to help pump gasoline to the carburetor if the machine has been run out of fuel or has been in storage. A few strokes on the priming knob are usually all that are necessary to fill the float bowl on the carburetor. When operating the priming pump, always allow the priming knob to return on its own. Do not push it in or the priming diaphragm may be damaged.

CARBURETOR SERVICE

Carburetor adjustments should be performed at the intervals specified in Chapter Three. Major carburetor service (removal and cleaning) should be performed when poor engine performance, hesitation and little or no response to mixture adjustment is observed. Alterations in jet size,



throttle slide cutaway, changes in jet needle position, etc., should be attempted only if you're experienced in this type of "tuning" work. A bad guess could result in costly engine damage or, at least, poor performance. If, after servicing the carburetor and making the proper adjustments, the machine does not perform correctly (and assuming that other factors affecting performance are correct, such as engine condition and ignition, etc.), the machine should be checked by a dealer or a qualified performance tuning specialist.

Carburetor specifications are in Table 1 at the end of this chapter.

Removal/Installation

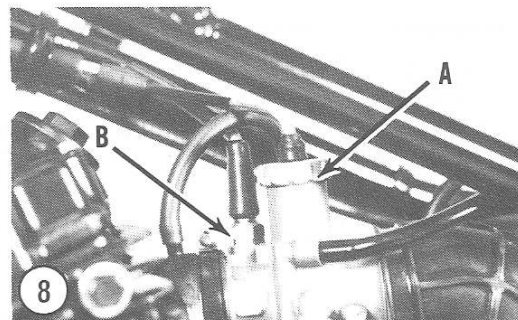
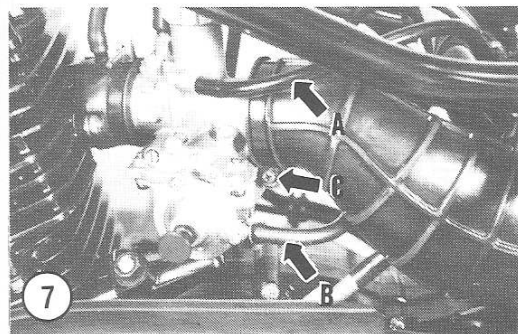
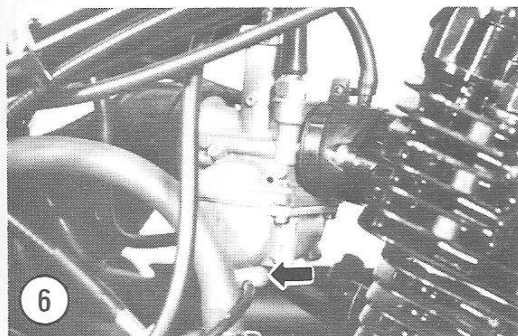
1. Disconnect the carburetor overflow hose from the bottom of the float bowl (Figure 6).



2. Remove the fuel line (B, Fig. 3). Loosen the clamp on the carburetor inlet duct.

4. If the carburetor is to be removed, carefully turn the carburetor around to the engine inlet duct. Swing the choke cables so they are clear.

5. If the carburetor is to be installed, carefully turn the carburetor around to the engine inlet duct. Swing the choke cables so they are clear. Proceed to Step 6.



2. Remove the air vent hose (A, Figure 7) and the fuel line (B, Figure 7) from the carburetor.
3. Loosen the clamp screws (C, Figure 7) securing the carburetor to the intake manifold and air box duct.
4. If the carburetor is being removed for disassembly and service, it is necessary to remove the choke and mixing chamber cap; perform Step 5. If the carburetor is just being removed for access to the engine (no carburetor service desired), carefully turn and pull the carburetor back out of the engine intake manifold then out of the air box duct. Swing the carburetor (with the throttle and choke cables still attached) clear of the frame. Proceed to Step 6.

NOTE

Before removing the mixing chamber cap, thoroughly clean the area around it so no dirt will fall into the carburetor.

5. Slightly lift up on the throttle cable and unscrew the mixing chamber cap from the top of the carburetor (A, Figure 8). Unscrew and lift out the choke plunger (B, Figure 8). The throttle slide can be removed from the throttle cable at this point, if desired. Carefully turn and pull the carburetor back out of the engine intake manifold and air box duct.
6. Installation is the reverse of these steps. Keep the following points in mind:

- a. Spray a light film of lubricant such as WD-40 around the intake manifold and air box duct to ease carburetor installation. Ensure that the carburetor is properly positioned and tighten both clamps evenly and securely.

CAUTION

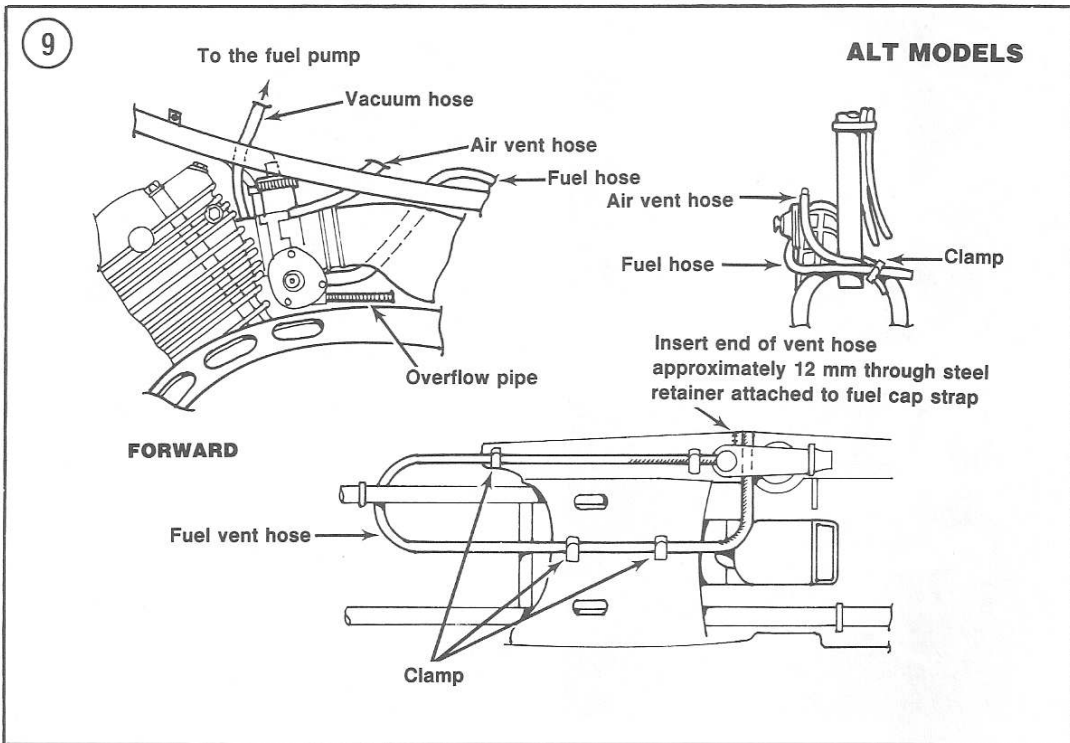
Make sure that all carburetor mounting points are well secured and air tight. Any leaks around the engine intake manifold or air box duct can easily cause serious engine damage due to ingestion of dirt. An air leak will also cause the engine to idle roughly and stumble on acceleration due to a too-lean fuel mixture.

- b. Make sure all the vent and fuel hoses are connected and routed as shown in Figure 9 and Figure 10.
- c. If the throttle slide was removed from the throttle cable, make sure the retaining clip securing the jet needle is installed in the throttle slide (Figure 11). Push the retaining clip (with the jet needle and E-clip) into the slide until it bottoms, to hold the needle in the correct position. Install the throttle spring over the throttle cable and connect the cable to the throttle slide.
- d. Ensure that the O-ring is installed on the choke plunger, if removed (Figure 12).
- e. When installing the throttle slide valve in the carburetor body, make sure the groove in the slide engages the locating pin in the carburetor.
- f. Refer to Chapter Three and perform *Carburetor Adjustments*.

Disassembly/Assembly

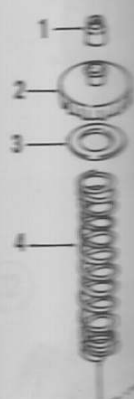
Refer to Figure 13 for this procedure.

1. Remove the screws securing the float bowl to the carburetor body and remove the bowl.

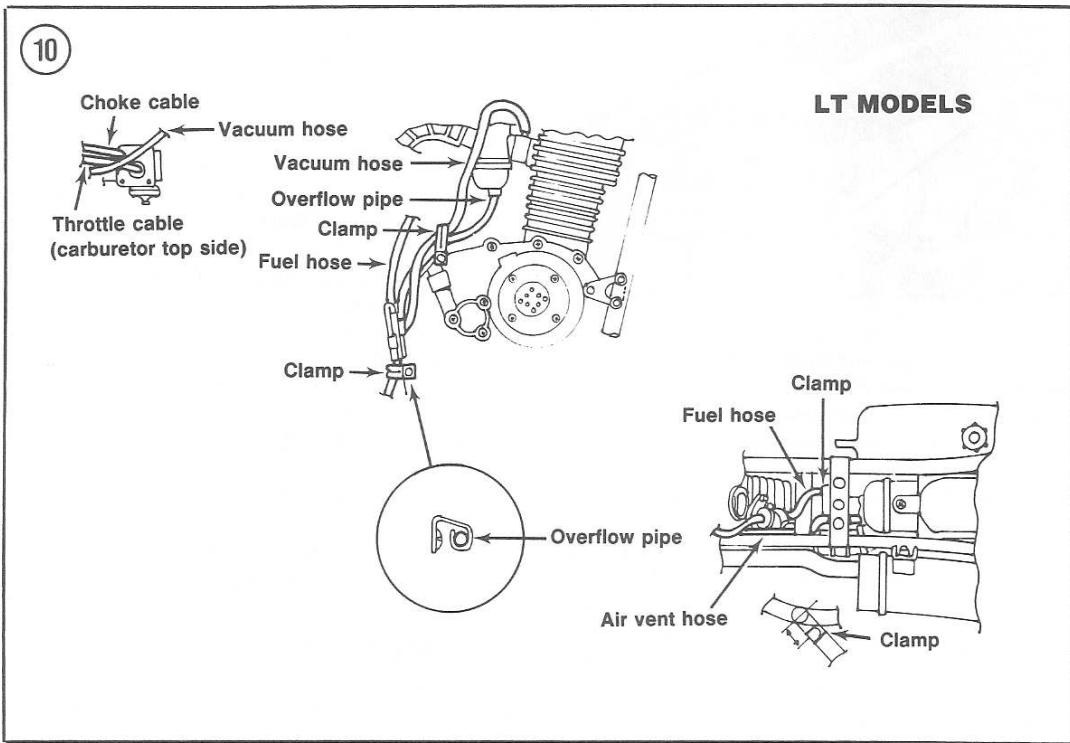


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CARBURE



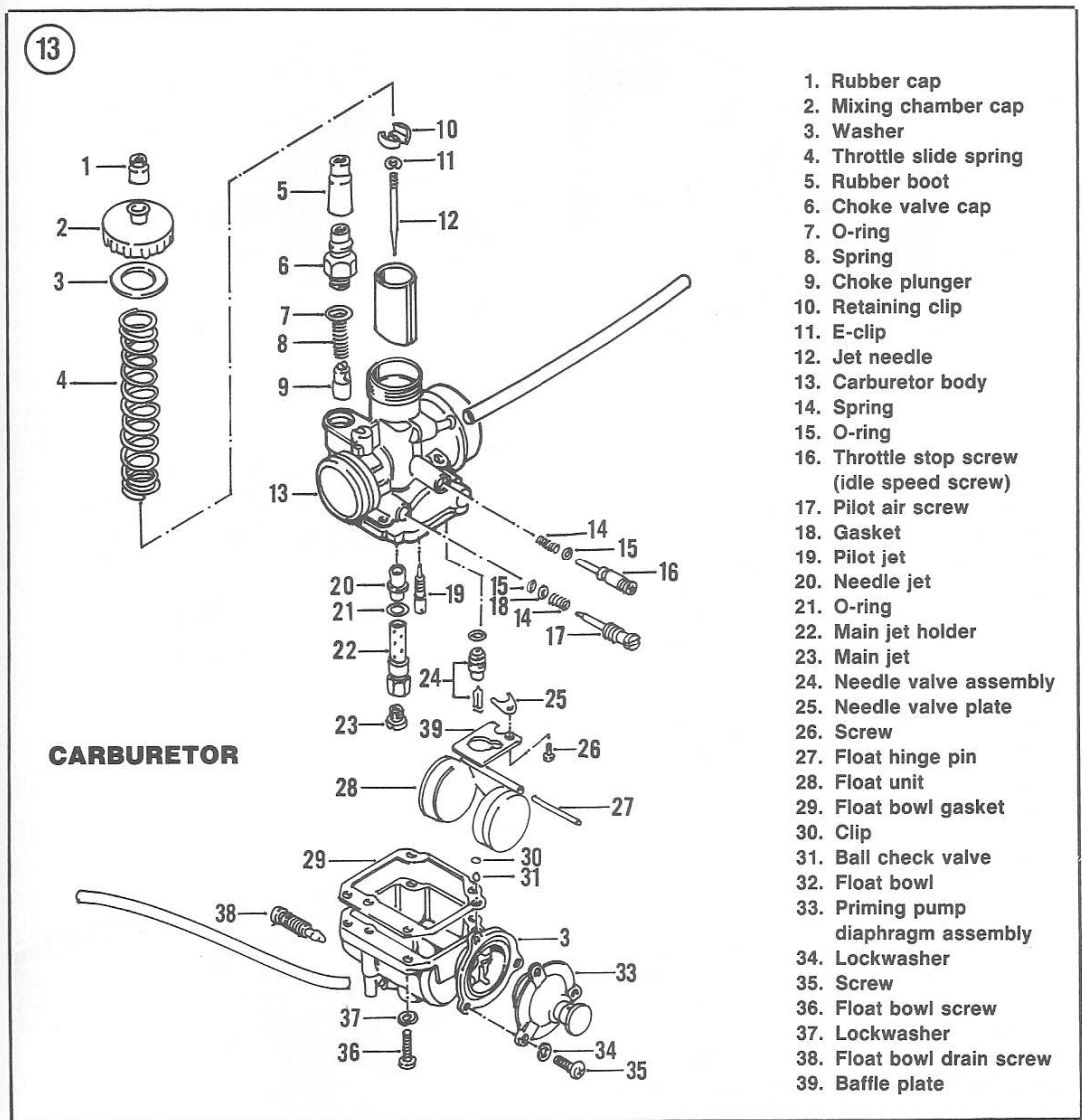
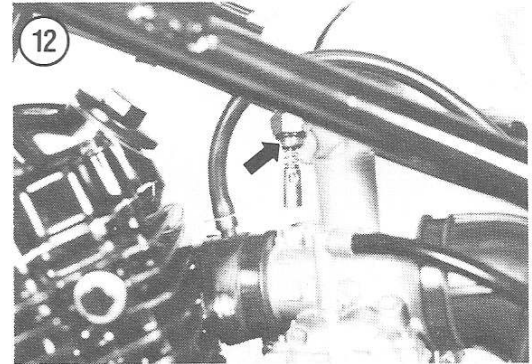
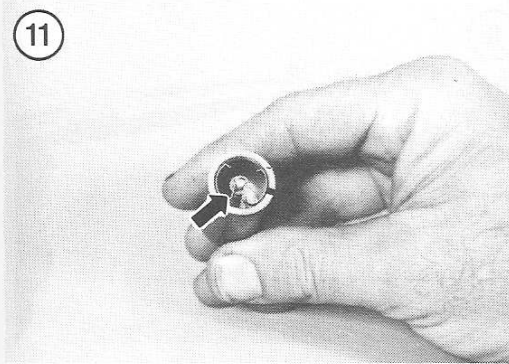
MODELS

Clamp

high steel
strap

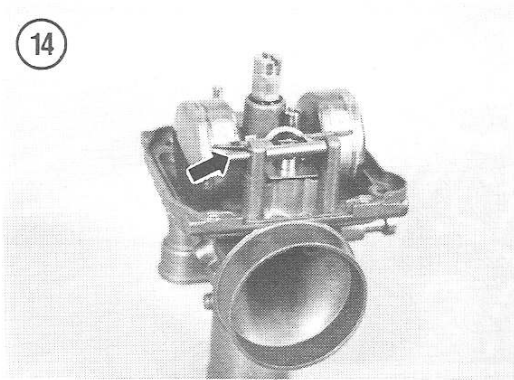
ELS

p

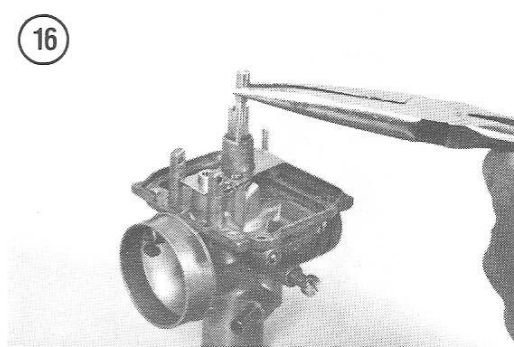


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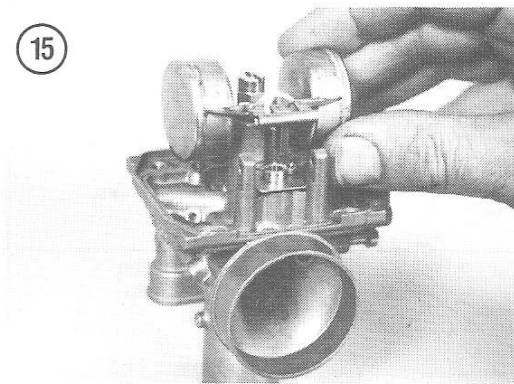
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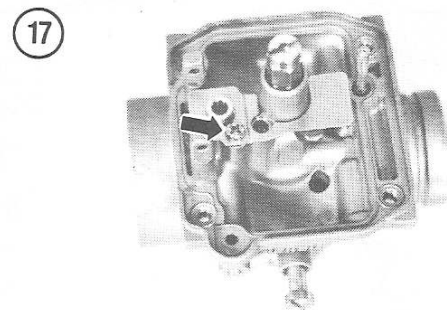
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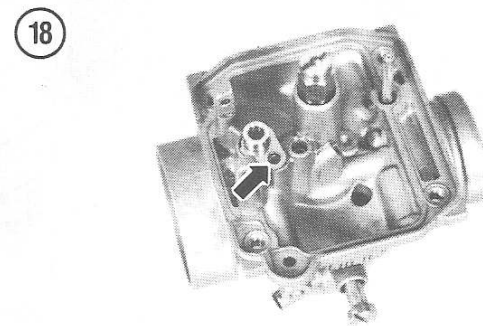
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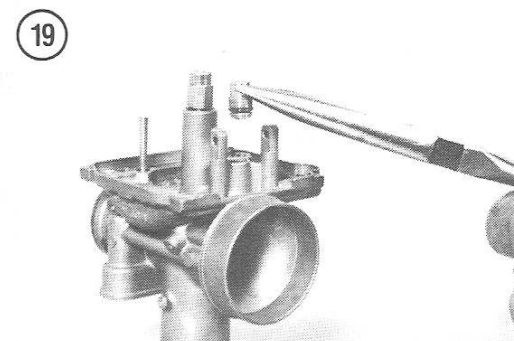
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Carefully remove the gasket. If it is not damaged, it may be reused.

2. Remove the hinge pin securing the float unit (Figure 14).

3. Remove the float unit (Figure 15). Note that the needle valve is attached to the float arm with a small wire clip. Do not remove the needle valve from the float arm unless it is to be replaced.

4. Use a small screwdriver with a good tip and remove the pilot jet. Turn the carburetor over in your hand and remove the jet (Figure 16).

5. Remove the screw securing the baffle plate and remove the plate (Figure 17).

6. Remove the needle valve plate (Figure 18) and carefully lift out the needle valve seat (Figure 19). Note the O-ring on the needle valve seat.

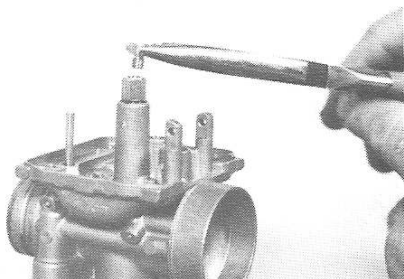
7. Unscrew and remove the main jet from the jet holder (Figure 20).

8. Use a small socket and unscrew the jet holder (Figure 21). Note the O-ring on the jet holder.

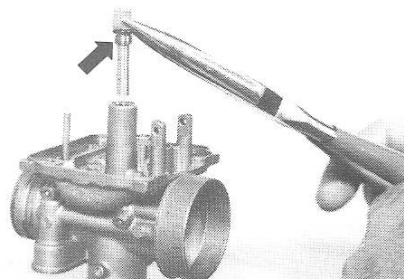
9. Turn over the carburetor and remove the needle jet (Figure 22).

10. Inspect the ball check valve in the float bowl (Figure 23). It is not necessary to remove the check valve unless there is dirt or corrosion in the hole.

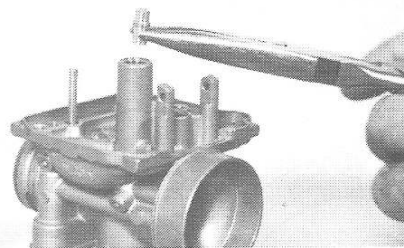
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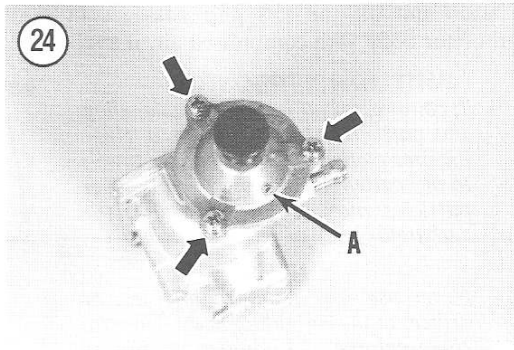
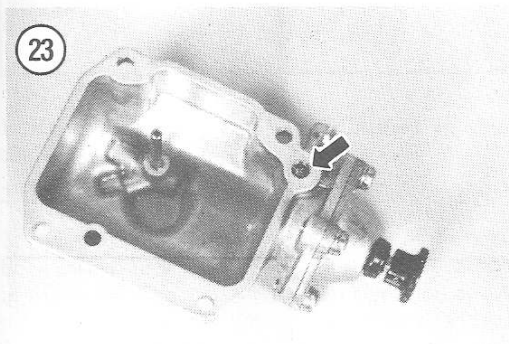
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23



11. Remove the screws securing the priming pump diaphragm assembly (Figure 24). Remove the diaphragm assembly carefully or the diaphragm may be damaged. Note that the vent hole in the assembly is toward the bottom of the float bowl (A, Figure 24).

12. Perform *Cleaning and Inspection*.

13. Assembly is the reverse of these steps. Keep the following points in mind:

- a. Install the priming pump diaphragm assembly with the vent hole toward the bottom as shown in A, Figure 24.
- b. Lightly oil the O-rings on the jet holder and needle valve seat to ease installation of these parts.
- c. Perform *Float Adjustment* before installing the float bowl.

Cleaning and Inspection

1. Soak all of the metal components of the carburetor in special carburetor cleaning solution or clean solvent. Special carburetor cleaning solution is available from most automotive parts and supply stores in a small resealable tank with a dip basket. If the tank is tightly sealed when not in use, the solution will last for several cleanings. Follow the manufacturer's instructions for correct soak time (usually about 1/2 hour).

NOTE

Special carburetor cleaner is not usually necessary to clean a carburetor unless it is excessively dirty or corroded. A good grade of parts cleaning solvent will usually clean most carburetors sufficiently.

CAUTION

Do not put non-metallic parts such as gaskets and O-rings in special carburetor cleaner. The caustic solution will damage these parts. Clean these components in parts cleaning solvent.

2. Blow out all the jets and passages in the carburetor body with compressed air, if available.

CAUTION

If compressed air is not available, allow the parts to air dry or use a clean lint-free cloth. Do not use paper towels to dry carburetor parts, as small paper particles may plug openings in the carburetor body or jets.

CAUTION

Never use wire to clean any jets or orifices in the carburetor body. The wire could enlarge and damage the precise sizes of the jets or openings, resulting in improper operation of the carburetor.

3. Check the tip of needle valve and the inside of the needle valve body. Replace the complete needle valve assembly if the tip is scored or damaged. A damaged needle valve or a particle of dirt or grit in the needle valve assembly will cause the carburetor to flood and overflow fuel.

4. Inspect the throttle slide valve for scoring or galling. Replace the throttle valve if not perfect.

WARNING

A damaged throttle slide valve can cause the carburetor to stick open resulting in loss of throttle control. Obviously, a loss of throttle control may cause a serious accident.

5. Examine the end of the pilot air screw (Figure 25) and the end of the throttle stop screw (Figure 26). Replace the pilot air screw or throttle stop screw if any grooves or roughness are present. A damaged end will prevent smooth low-speed engine operation.

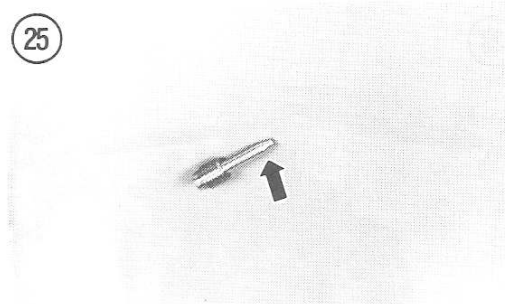
6. Inspect the priming pump diaphragm chamber for trapped dirt and corrosion (Figure 27). Dirt or moisture in the fuel will often settle in this chamber.

7. Examine the float bowl gasket for damage. Replace the gasket if there is any doubt as to its serviceability.

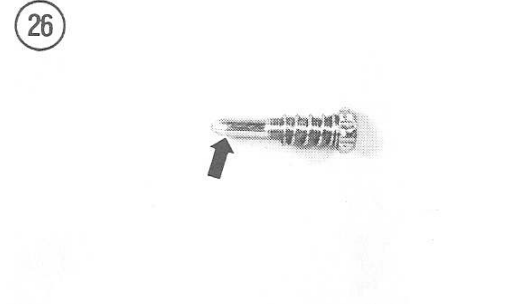
Float Adjustment

A precise float adjustment is important for proper engine operation. The float level should be set carefully using a caliper, accurate ruler or a locally fabricated gauge. If the float level is set too high, fuel will run from the float bowl overflow tube and cause the engine to flood. If the float level is too low, the engine will stumble on acceleration and run too lean to develop peak efficiency and power. Refer to **Table 1** for the specified float setting.

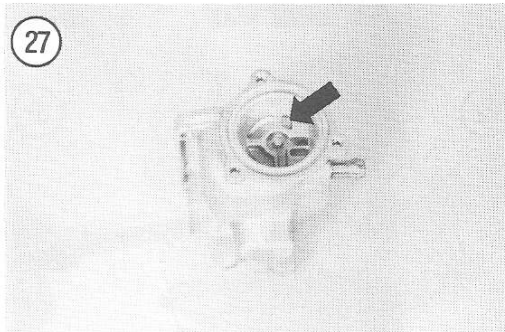
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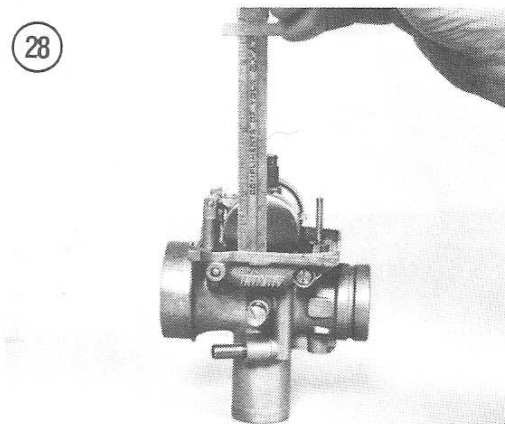
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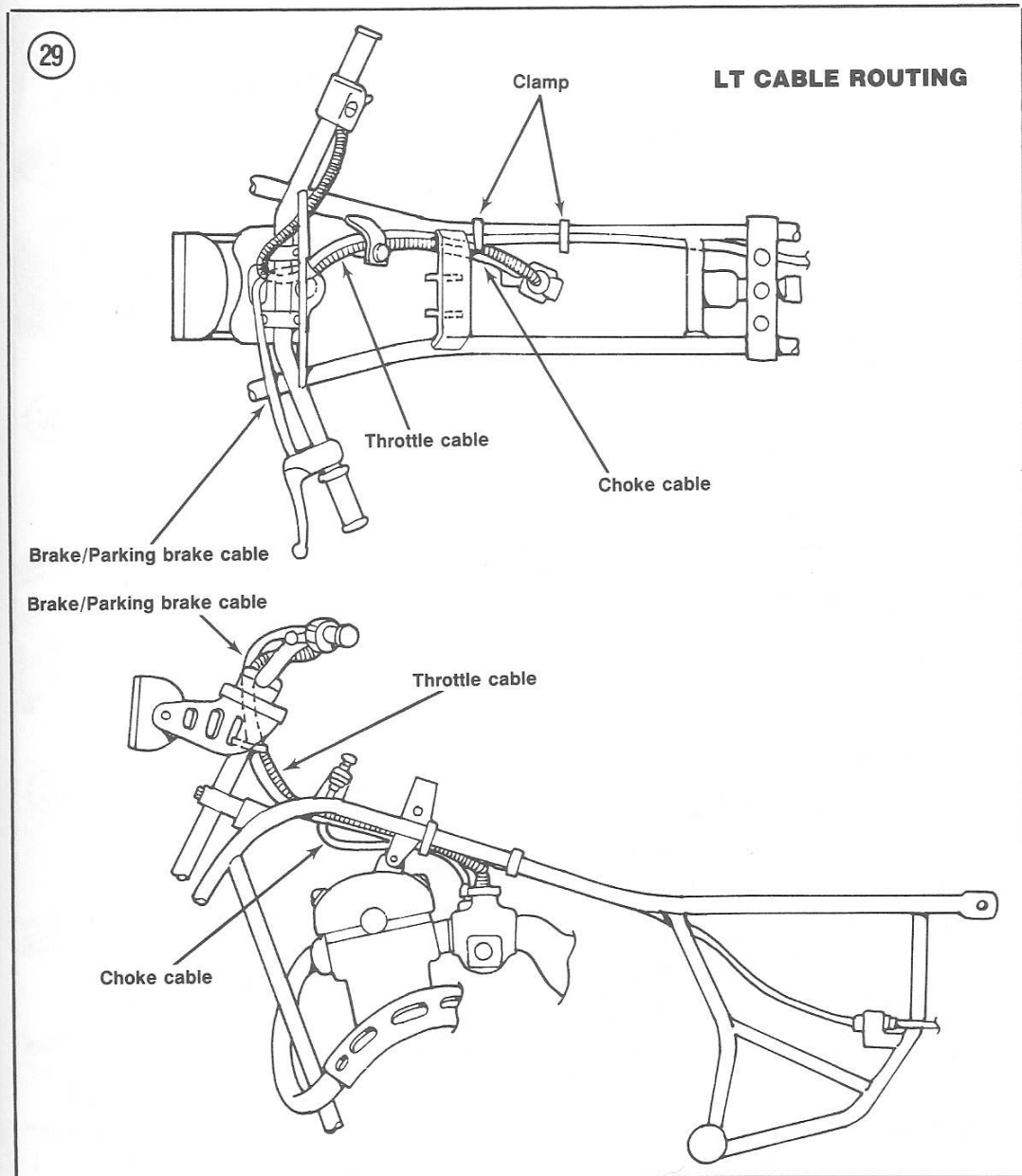
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1. Remove the carburetor as outlined in this chapter.
2. Remove the float bowl and the gasket.
3. Measure the float level from the base of the float bowl gasket surface to the top of the float as shown in **Figure 28**. The tang on the float arm should just touch, but not compress, the needle valve. Carefully bend the tang on the float arm to achieve

the specified level. Ensure that floats on both sides are set at the same height.

4. Install the float bowl and the carburetor.

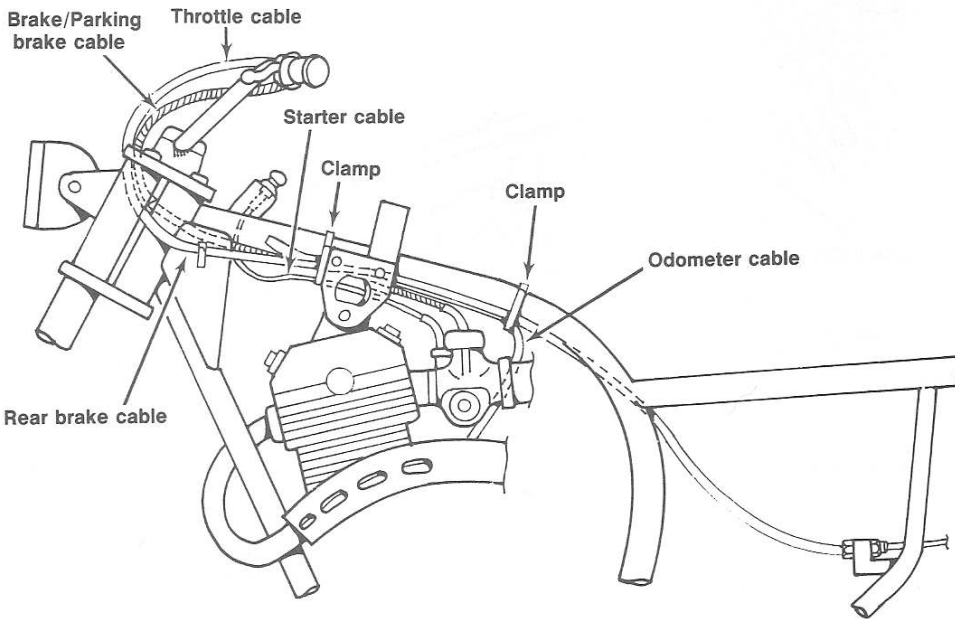
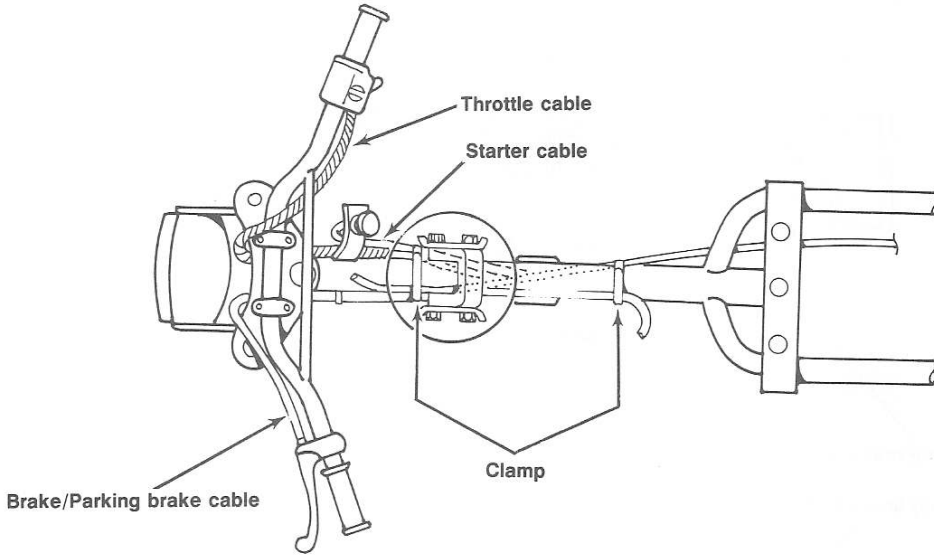
THROTTLE AND CHOKE CABLES

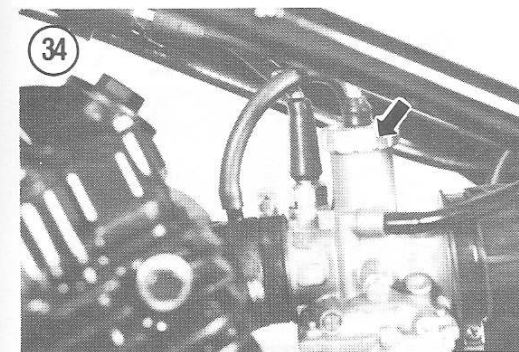
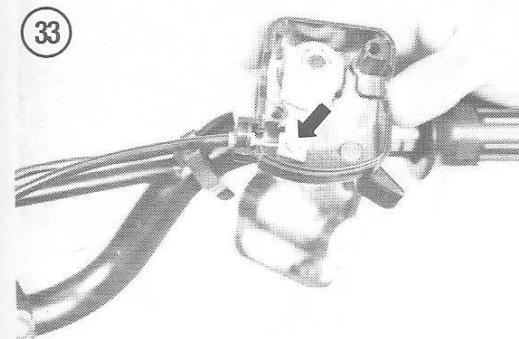
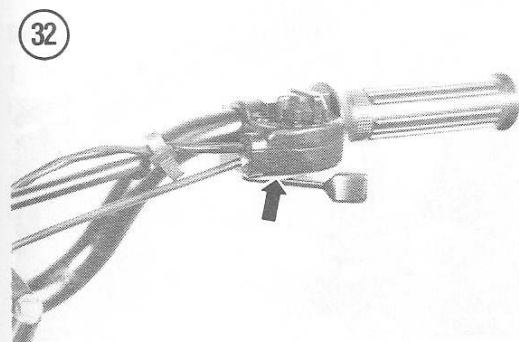
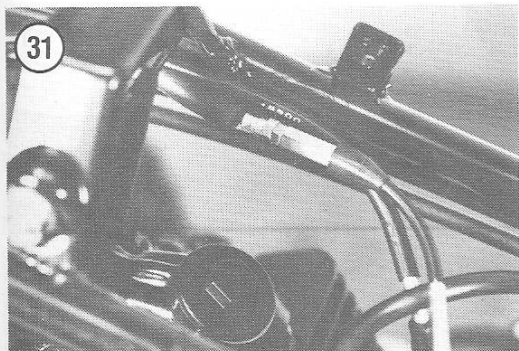
Refer to **Figure 29** or **Figure 30** during the following procedures to ensure that the cables are correctly routed and secured to the frame. Cable adjustment is described in Chapter Three.



30

ALT CABLE ROUTING





Throttle Cable Replacement

1. Remove the seat, rear fender, front fender (LT models) and frame cover (ALT models) as outlined in Chapter Ten.
2. Pull back the rubber boot from the cable adjuster and loosen the locknuts securing the adjuster (Figure 31).
3. Turn the adjuster in to provide as much slack in the cable as possible.
4. Remove the screws securing both halves of the throttle assembly to the handlebar and separate the assembly (Figure 32).
5. Disconnect the cable end from the throttle arm (Figure 33).
6. Unscrew the mixing chamber cap from the top of the carburetor (Figure 34). Carefully disconnect the throttle cable end from the throttle slide.
7. Loosen all the tie straps and clamps securing the throttle cable to the frame.
8. Install the new throttle cable while removing the old cable. Make sure the new cable is routed and secured to the frame as shown in Figure 29 or Figure 30. Tighten all the tie straps and clamps securing the cable.
9. Connect the new cable ends to the throttle slide and handlebar throttle control.
10. Make sure the grommet protecting the cable in the throttle control housing is in place. Lightly grease the pivot point of the throttle control arm and install the throttle control assembly on the handlebar.
11. Install the throttle slide in the carburetor. Make sure the groove in the slide engages the pin in the carburetor bore.
12. Turn the cable adjuster (Figure 31) until there is 0.5-1.0 mm (approximately 1/4-3/16 in.) of free play in the throttle cable when measured where the cable housing enters the top of the carburetor. Tighten the locknuts to secure the cable adjuster. Cover the cable adjuster with the rubber boot.
13. Operate the throttle lever and make sure the throttle works smoothly without any binding or tight spots. Recheck the routing and look for kinks in the cable if it does not operate smoothly.
14. Start the engine and let warm up at idle. Turn the handlebars fully side to side. If the engine speed increases when the handlebars are turned, the cable is too tight. Recheck the routing of the cable and correct the too tight condition.

WARNING

Never operate the machine if the throttle cable is too tight and the engine speed increases when the handlebars are turned. Such an unsafe condition may cause a serious accident.

15. Install the body panels and seat.

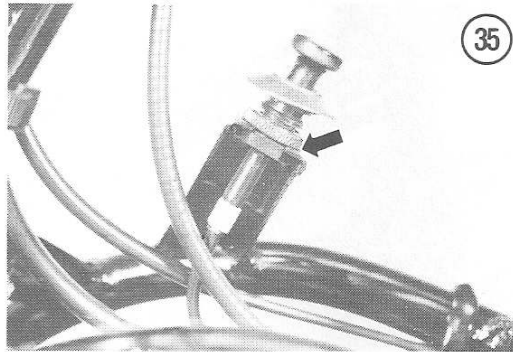
Choke Cable Replacement

1. Remove the seat, rear fender, front fender (LT models) and frame cover (ALT models) as outlined in Chapter Ten.
2. Loosen the knurled locknut securing the choke handle to the mounting bracket (Figure 35) and slide the cable out of the bracket.
3. Unscrew the choke plunger mechanism from the carburetor (Figure 36). Disconnect the cable end from the choke plunger.
4. Loosen all the tie straps and clamps securing the choke cable to the frame.
5. Install the new choke cable while removing the old cable. Make sure the new cable is routed and secured to the frame as shown in Figure 29 or Figure 30. Tighten all the tie straps and clamps securing the cable.
6. Connect the cable end to the choke plunger and install the plunger into the carburetor.
7. Slide the choke handle into the mounting bracket (Figure 35) and tighten the knurled locknut to secure the cable.
8. Operate the choke to make sure the cable works smoothly without any binding or tight spots. Recheck the routing and look for kinks in the cable if it does not operate smoothly.
9. Install the body panels and seat as outlined in Chapter Ten.

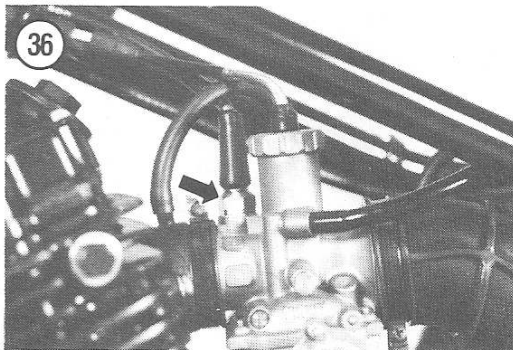
EXHAUST SYSTEM

The exhaust system is more than just a means of routing exhaust gases away from the engine, it is also a performance component. If the exhaust system is damaged or if the muffler becomes clogged with carbon, the performance of the engine can be greatly affected. Because the exhaust system (particularly the head pipe) is out in the open, it can easily be damaged. Check the exhaust system for deep dents and fractures and repair or replace them immediately. Check the muffler mounting bracket for fractures or a loose bolt. Check the cylinder head mounting flange for tightness. A loose exhaust pipe will vibrate and damage the cylinder head and pipe mounting studs. A loose head pipe will cause excessive exhaust noise and rob the engine of power. It could also lead to piston, cylinder and valve damage.

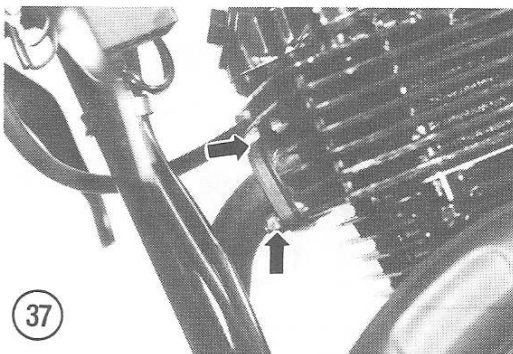
The exhaust system consists of an exhaust pipe with a welded muffler. A spark arrester baffle is secured in the end of the muffler with a bolt.



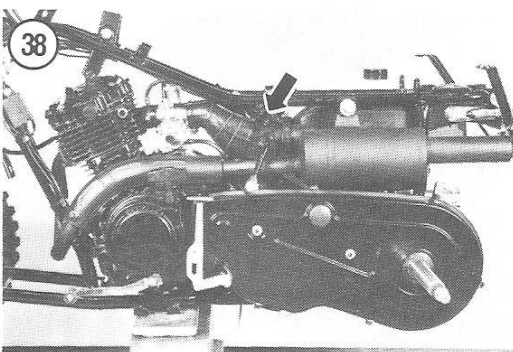
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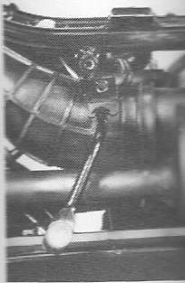


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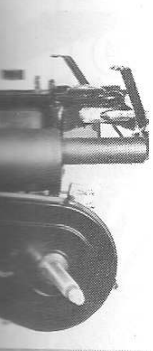
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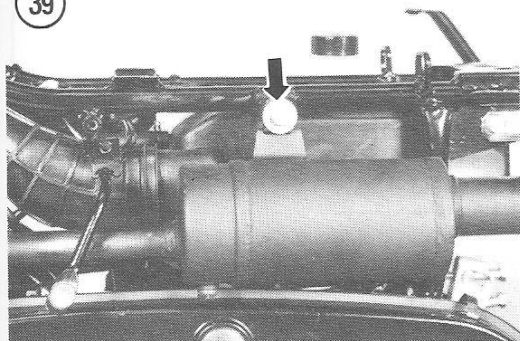
Removal/Installation

1. Place the machine on the parking brake.
2. Remove the seat.
3. Loosen the nut on the cylinder head studs.

35



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Removal/Installation

1. Place the machine on level ground and set the parking brake.
2. Remove the seat and body panels as outlined in Chapter Ten.
3. Loosen the nuts securing the exhaust pipe to the cylinder head studs (Figure 37).
4. Remove the bolts securing the fender mounting bracket (Figure 38) and remove the bracket.
5. Remove the bolts and washers securing the muffler to the frame (Figure 39). Note that the muffler mount is a rubber cushion with a spacer. Do not lose the spacer.
6. Withdraw the exhaust pipe from the cylinder head and remove it from the frame.
7. Installation is the reverse of these steps. Keep the following points in mind:
 - a. Install a new exhaust pipe gasket in the cylinder head exhaust port.
 - b. Install the exhaust pipe nuts and muffler mounting bolt finger-tight before tightening any fasteners.
 - c. Tighten the cylinder head nuts first to 0.9-1.2 mkg (6.5-8.5 ft.-lb.). This will minimize the chance of an exhaust leak at the cylinder head.
 - d. Torque the muffler bolt to 1.8-2.8 mkg (13.0-20.0 ft.-lb.).
 - e. Install the body panels and seat.
 - f. Start the engine and make sure there are no exhaust leaks.

6

Table is on the following page.

Table 1 CARBURETOR SPECIFICATIONS

Carburetor type	Mikuni VM20SS
Carburetor I.D. No.	18900
Main jet	100
Pilot jet	20
Needle jet	O-4
Jet needle (clip position)	4JR39 (2)
Float height	24.8-26.8 mm (0.98-1.06 in.)
Pilot air screw	1 3/4 turns out
Throttle cable free play	0.5-1.0 mm (1/32-1/16 in.)
Idle speed	1,500-1,600 rpm

The electrical
 consists of
 components and
 Alternating
 current supply
 lighting circuit.



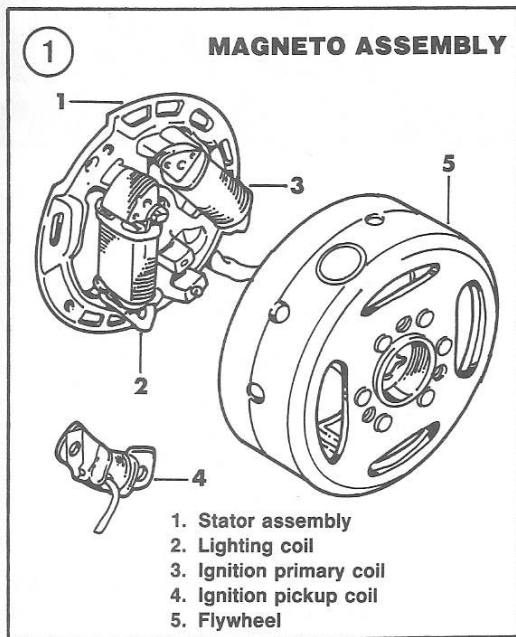
NOTE: If you own a 1984 or later model, first check the Supplement at the back of the book for any new service information.

CHAPTER SEVEN

ELECTRICAL SYSTEM

The electrical system on all ALT and LT models consists of a flywheel magneto, ignition components and off-road lights.

Alternating current (AC) produced by the magneto supplies power for both the ignition and lighting circuits.



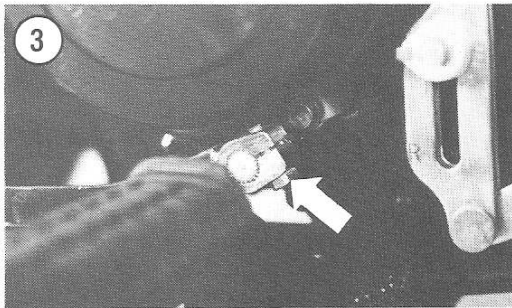
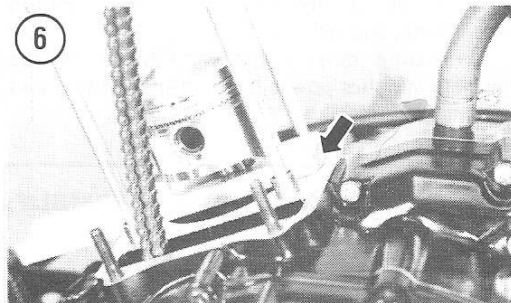
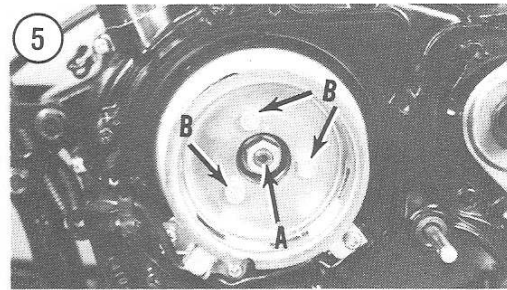
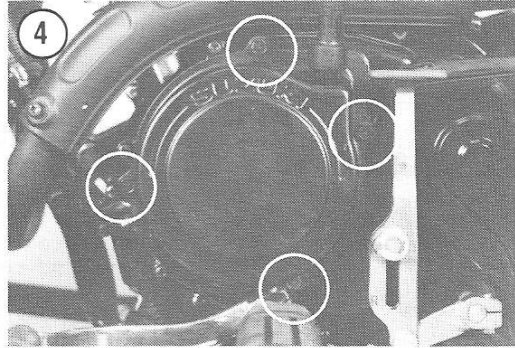
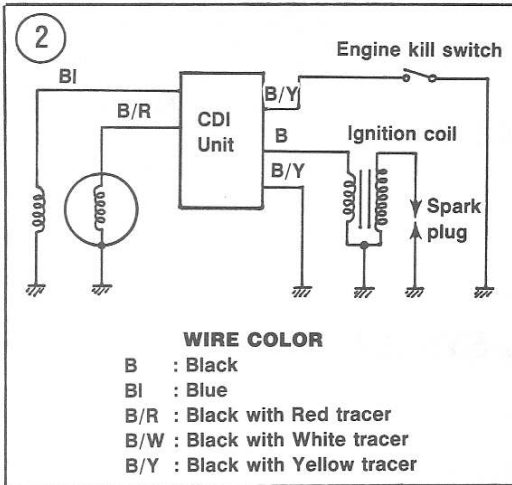
IGNITION SYSTEM

The ignition system contains a permanent magnet flywheel, a primary coil, an ignition pickup coil, a CDI unit and an ignition coil. Refer to **Figure 1** for a typical magneto assembly.

As the flywheel is turned by the crankshaft, the permanent magnets within the flywheel cause an electronic pulse to develop in the primary coil of the stator assembly. This pulse is then routed to the CDI unit where it is amplified. A pulse from the pickup coil in the stator assembly is used to trigger the output of the CDI unit which in turn triggers the output of the ignition coil and fires the spark plug. Refer to **Figure 2** for a schematic of the ignition system.

Flywheel Removal/Installation

1. Place the machine on level ground and set the parking brake.
2. Remove the bolt securing the gearshift lever and remove the lever (**Figure 3**). The bolt must be removed completely, not just loosened.
3. Remove the bolts securing the recoil starter unit and remove the starter (**Figure 4**).
4. Remove the nut, lockwasher and flat washer securing the flywheel (A, **Figure 5**). Use one of the following techniques to keep the crankshaft from turning while loosening the flywheel nut:



- a. If the cylinder and/or piston have not been removed, insert a long drift or metal bar through the slots in the starter cup.

CAUTION

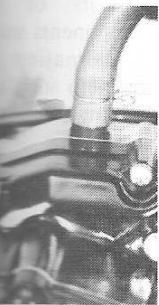
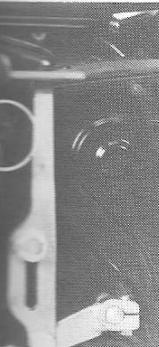
Do not place the metal bar or drift against the gearshift shaft to hold the tool in place while loosening the flywheel nut. The gearshift shaft may bend.

- b. If the cylinder and/or piston have been removed, use the piston holding fixture (Figure 6). The holding fixture can be homemade as described under *Cylinder Removal* in Chapter Four.
5. Install a flywheel removal tool into the flywheel. Use the Suzuki slide-hammer attachment (part No. 09930-30161) or a K & N flywheel puller (part No. T-100/1). See Figure 7. The inner threads in the flywheel are left-handed. If using the K & N puller, remove the bolts securing the starter cup (B, Figure 5) and remove the cup to gain more room to operate the puller.

CAUTION

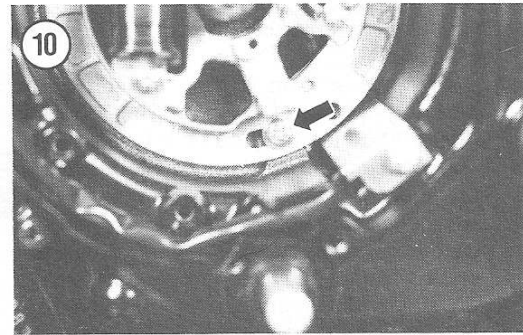
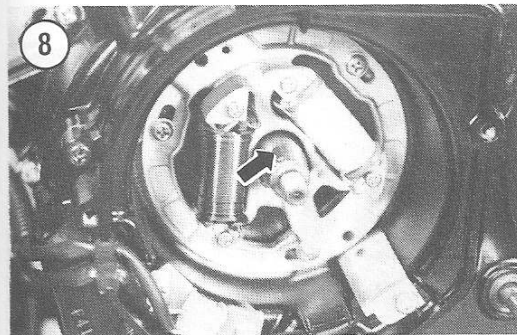
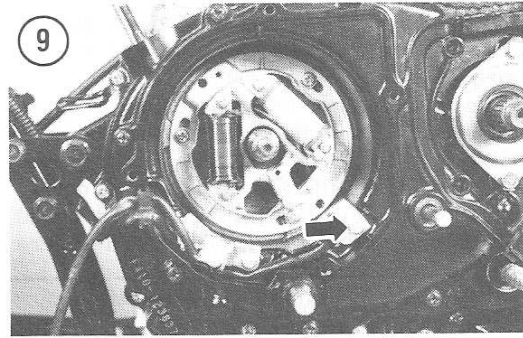
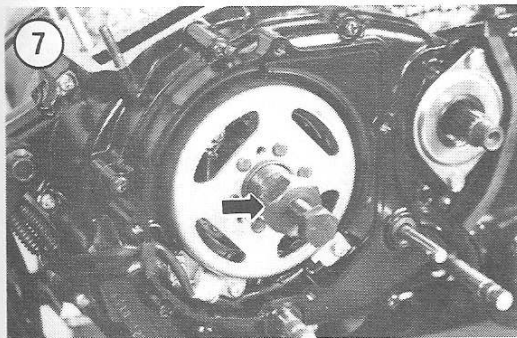
Do not try to get by without the necessary puller as any attempt to remove the flywheel without the proper tool will ultimately lead to some form of engine or flywheel damage. The K & N aftermarket pullers are available from most motorcycle shops or tool suppliers. The cost of these pullers is usually low and they make an excellent addition to any mechanic's tool box. If you can't buy or borrow a puller, have a dealer remove the flywheel.

6. Remove the flywheel as follows:
 - a. If using the Suzuki slide-hammer, operate the hammer with a few quick strokes until the flywheel is loose on the crankshaft.



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- b. When using the K & N puller, hold the outside of the puller with a wrench and gradually tighten the center bolt until the flywheel is loose on the crankshaft.

NOTE

If the flywheel is difficult to remove, tighten the puller bolt to apply pressure then strike the puller bolt smartly with a hammer. This technique will remove most stubborn flywheels.

CAUTION

If normal attempts to remove the flywheel fail, do not force the puller or improvise new removal methods. The threads in the flywheel may strip resulting in expensive damage. Refer the job to a dealer and have the flywheel removed.

- c. Remove the flywheel from the crankshaft and place it on a clean cloth or the magnets inside the flywheel will pick up small nuts, bolts and metal filings.
- d. Take care not to lose the Woodruff key (Figure 8). Remove the puller tool from the flywheel.
- 7. Installation is the reverse of these steps. Keep the following points in mind:

- a. Make sure the Woodruff key is installed in the crankshaft (Figure 8).

CAUTION

Carefully inspect the inside of the flywheel for small bolts, washers or other metal "trash" that may have been picked up by the flywheel magnets. If not removed, these metal bits will severely damage an expensive magneto stator assembly.

- b. Install the lockwasher and flat washer with the flywheel nut.
- c. Use the same technique to hold the crankshaft as during flywheel removal and torque the flywheel nut to 5.0-6.0 mkg (36.0-43.5 ft.-lb.).
- d. Install the starter cup, if removed.
- e. Install the recoil starter assembly and gearshift lever.

Stator Removal/Installation

1. Remove the flywheel as outlined in this chapter.
2. Remove the screw securing the stator lead clamp (Figure 9).
3. Note the position of the stator assembly (Figure 10). Mark the location of the stator in relation to

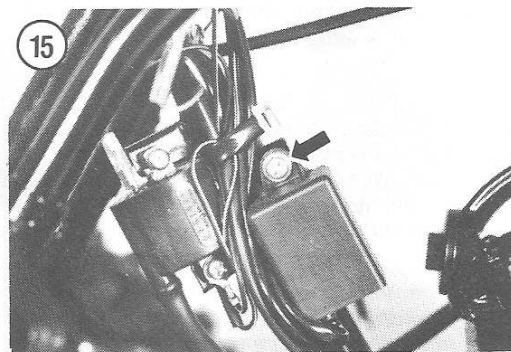
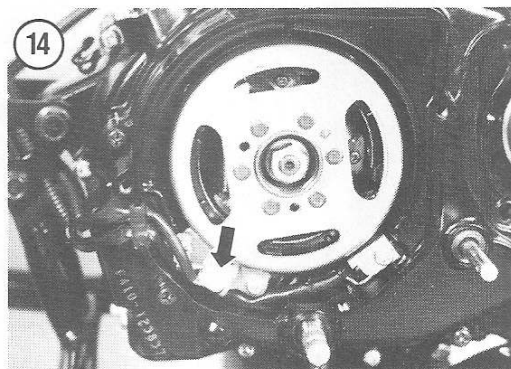
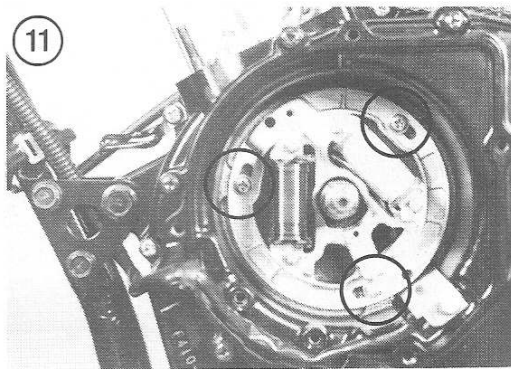
the mounting screws with a scribe or felt tip pen. The stator assembly must be installed exactly as removed.

4. Remove the screws securing the stator assembly (**Figure 11**). Remove the straps securing the wiring harness to the frame and remove the stator assembly. Observe the following during removal:

- a. Note how the stator wiring is routed around the edge of the magneto housing and between the forward engine mounts.
- b. Note the position of the grommet securing the stator wiring to the housing.

5. Installation is the reverse of these steps. Keep the following points in mind:

- a. Install the stator assembly exactly as removed (**Figure 10**).
- b. Route the ignition pickup coil and stator assembly wiring as noted during removal (**Figure 9**). Refer to **Figure 12** or **Figure 13** and make sure the wiring is routed and secured to the frame as shown.
- c. If the machine is to be operated in wet conditions, apply a small amount of silicone sealant in the groove of the grommet before installing the grommet in the magneto housing.



Pickup Coil Removal/Installation

1. Perform Steps 1-3 of *Flywheel Removal* in this chapter to gain access to the ignition pickup coil unit.

2. Remove the screws securing the ignition pickup coil (**Figure 14**). Note how the wiring is routed.

3. Remove the straps securing the wiring harness to the frame and remove the pickup coil unit.

4. Installation is the reverse of these steps. If the machine is to be operated in wet conditions, apply a small amount of silicone sealant in the groove of the grommet before installing the grommet in the magneto housing.

CDI Unit Testing/Replacement

1. Remove the seat and front fender (LT models) or frame cover (ALT models) as outlined in Chapter Ten.

2. Disconnect the CDI unit connector.

3. Connect the leads of an ohmmeter to the CDI unit half of the connector as outlined in **Table 1**.

4. If any of the measurements are not correct, remove the unit and have it tested by a dealer before purchasing a new unit.

5. Remove the straps securing the CDI unit wiring harness to the frame.

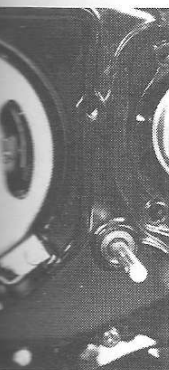
6. Remove the screw securing the CDI unit to the frame (**Figure 15**) and remove the unit.

7. Installation is the reverse of these steps. Install the body panels and seat.

Stator and Pickup Coil Testing

1. Disconnect the wiring connectors from the ignition pickup coil and stator assembly.

2. Refer to **Figure 2** and connect an ohmmeter to the stator assembly half of the connectors as outlined in **Table 2**.



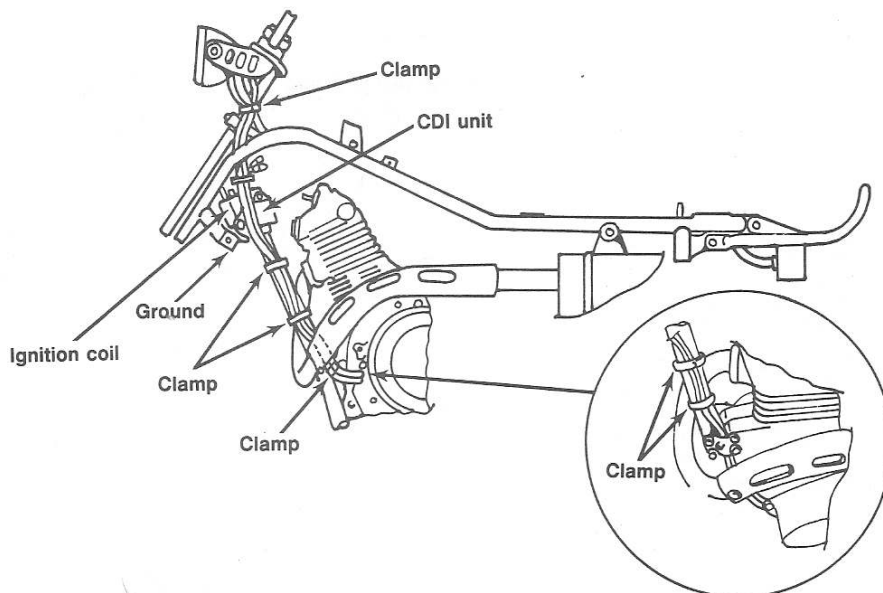
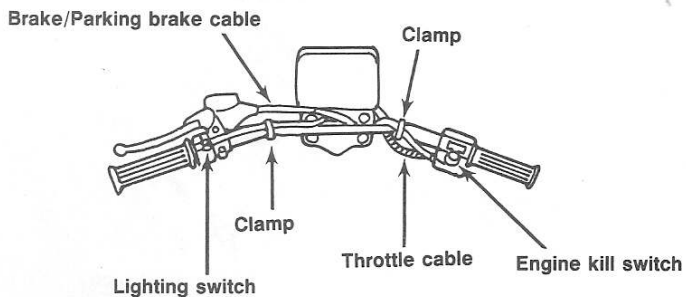
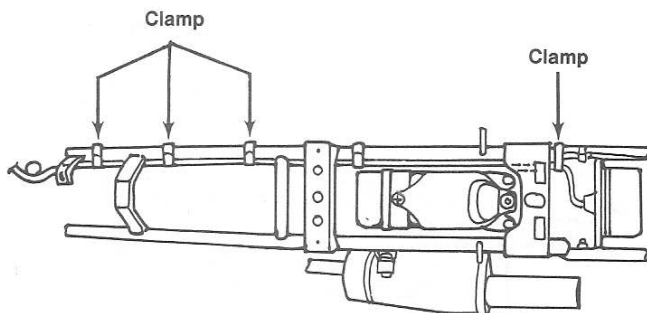
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LT125 WIRE ROUTING



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3. Replace the spark plug with a correct one specified removed to replace spark plug.

4. Connect the connection.

Ignition Coil Test

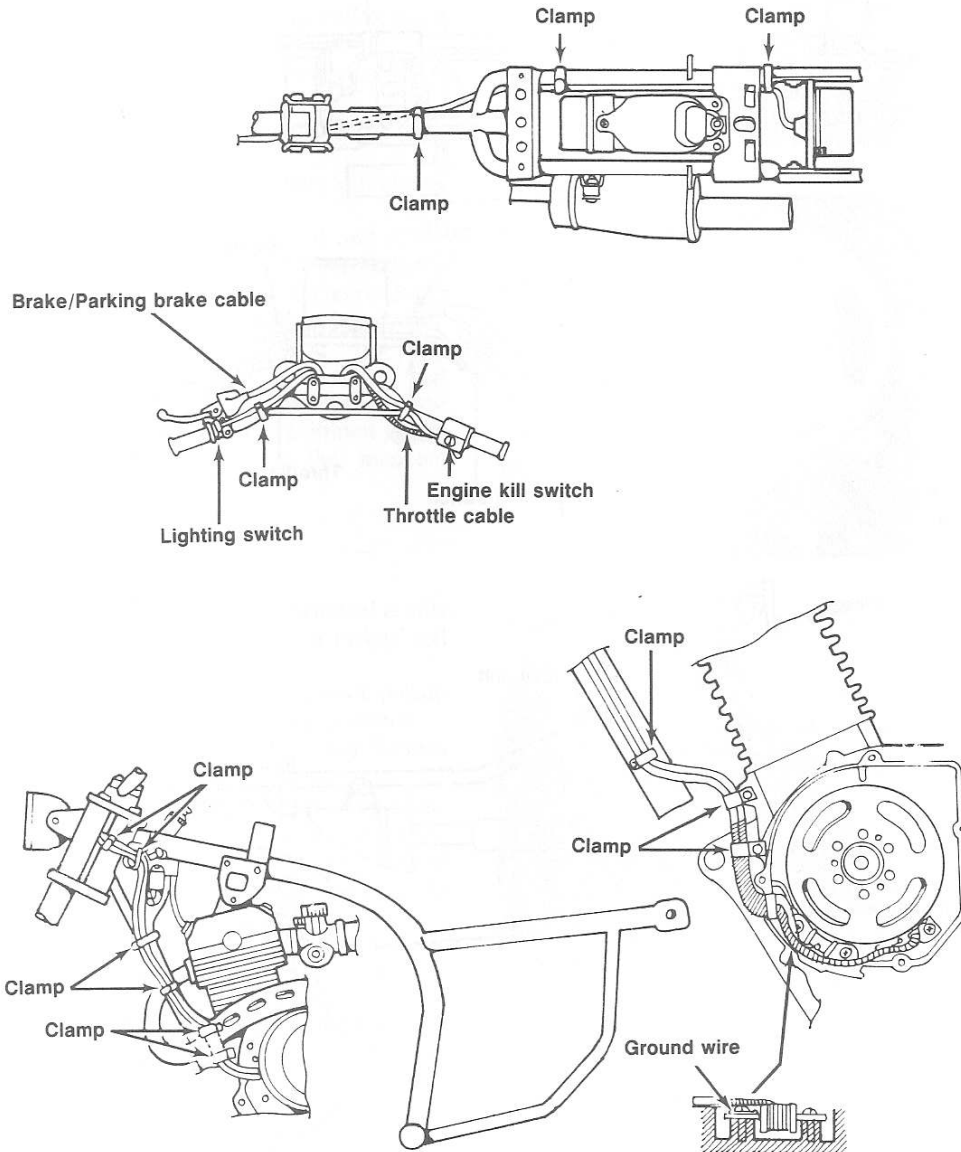
1. Disconnect the ignition coil (A, B).

2. Connect the terminal and ground meter must indicate



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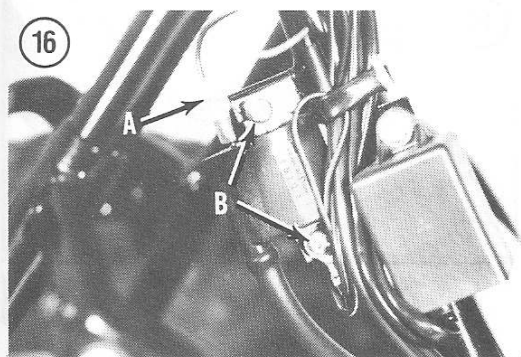
ALT WIRE ROUTING



3. Replace the ignition pickup coil, lighting coil or primary ignition coil if the measurements are not correct as specified. The stator assembly must be removed to replace the lighting coil or primary ignition coil.
4. Connect the pickup and stator assembly wiring connectors.

Ignition Coil Testing/Replacement

1. Disconnect the black primary lead from the ignition coil (A, Figure 16).
2. Connect the ohmmeter between the wire terminal and ground on the ignition coil. The meter must indicate approximately 0.5-1.5 ohms.



3. Carefully pull the spark plug cap from the spark plug. Connect the leads of an ohmmeter between the spark plug lead and ground. The meter must indicate approximately 15-25K ohms. If the meter indications are not correct, have a dealer test the coil before replacing it.
4. To remove the coil, remove the screws securing the coil to the frame (B, Figure 16).

Ignition Timing

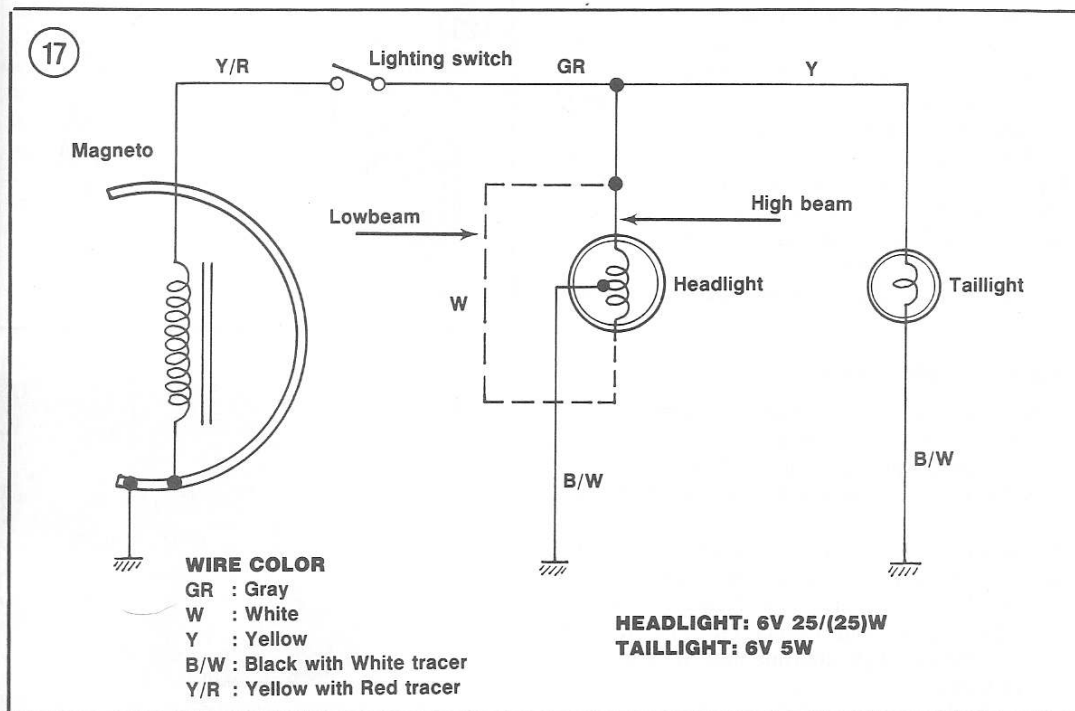
The ignition timing is preset. There are no timing marks on the engine (other than the TDC mark) and the stator plate cannot be moved.

LIGHTING SYSTEM

The lighting system for all ALT and LT models consists of a headlight with a high beam and a taillight. The lighting system is intended for off-road use only and is not street-legal. The headlight bulb is a dual filament unit; however, the low beam circuit is not used. Refer to Table 3 for the wattage of replacement bulbs.

The lighting system alternating current (AC) is generated by the magneto lighting coil. Refer to Figure 17 for a schematic diagram of the lighting system.

If a complete lighting failure occurs, perform the *Lighting Coil Output Test* described in this chapter.



Lighting Coil Output Test

1. Remove the screws securing the headlight unit (Figure 18) and carefully remove the headlight unit.
2. Disconnect the yellow headlight wire and connect one lead of an AC voltmeter to the vehicle side of the wire connector.
3. Connect the other voltmeter lead to a good ground on the machine chassis.
4. Place the gearshift lever in NEUTRAL and start the engine.
5. Accelerate the engine between 3,000 and 8,000 rpm. The voltmeter must indicate between 5.5 and 8.0 volts. If the voltmeter indication is not correct, replace the lighting coil. The lighting coil is installed on the magneto stator assembly. Refer to *Stator Assembly Removal* in this chapter and remove the lighting coil from the stator assembly.
6. Reconnect the headlight wire and install the headlight unit.

Headlight Adjustment

Loosen both bolts securing the headlight assembly to the mounting brackets (Figure 19). Tilt the headlight up or down until the desired angle is achieved and tighten the mounting bolts.

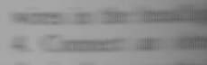
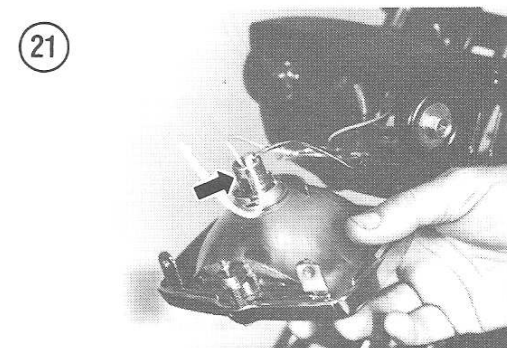
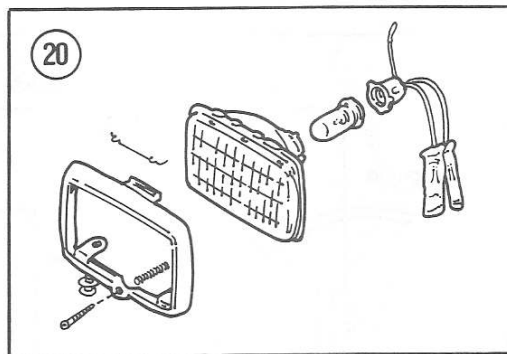
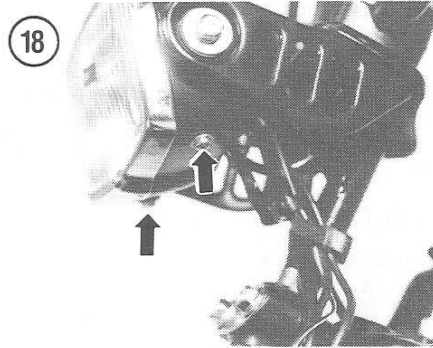
Headlight Bulb Replacement

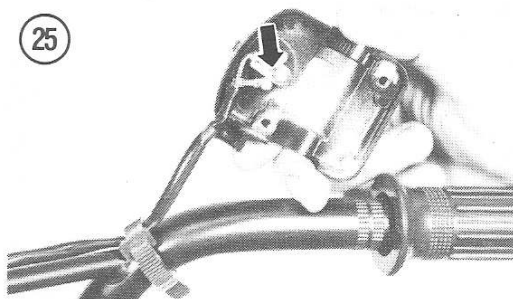
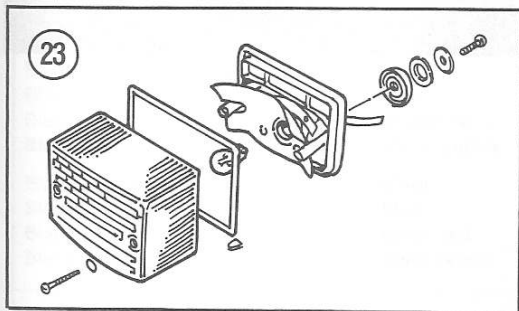
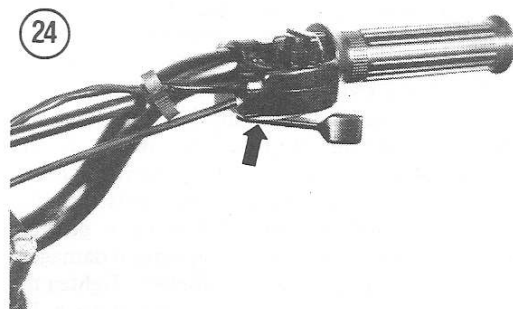
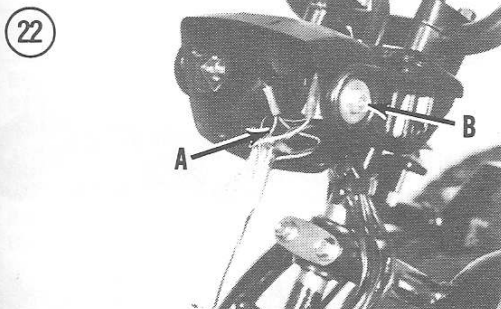
Refer to Figure 20 for this procedure.

1. Remove the screws securing the headlight unit (Figure 18) and carefully remove the unit.
2. Press down and turn the bulb holder (Figure 21); lift out the bulb holder with the bulb.
3. Replace the bulb with a motorcycle replacement lamp rated 6 volts, 25 watts high beam/25 watts low beam. Do not use an automobile replacement bulb as they are not designed to withstand vibration and will fail quickly.
4. Install the headlight unit and secure it with the screws.

Headlight Housing Removal/Installation

1. Remove the headlight bulb as outlined under *Headlight Bulb Replacement*.
2. Disconnect the ignition and lighting wires routed through the headlight housing (A, Figure 22).
3. Remove the bolts and nut plates securing the headlight housing to the mounting brackets on the steering shaft or front forks (B, Figure 22). Do not lose the spacers and rubber cushions located between the headlight housing and the mounting brackets on each side.
4. Installation is the reverse of these steps.





Taillight Bulb Replacement

Refer to **Figure 23** for this procedure.

1. Remove the screws securing the taillight lens and remove the lens.
2. Replace the taillight bulb with a motorcycle bulb rated 6 volts, 5 watts. Do not use an automobile replacement bulb as they are not designed to withstand vibration and will fail quickly.
3. Install the taillight lens and secure it with the screws. Take care not to overtighten the screws or the plastic lens may crack.

SWITCHES

Engine Kill Switch Testing/Replacement

1. Remove the screws securing each half of the engine kill switch/throttle assembly (**Figure 24**).
2. Remove the headlight unit as outlined under *Headlight Bulb Replacement* in this chapter.
3. Disconnect the black and black/white switch wires in the headlight housing.
4. Connect an ohmmeter or continuity checking device between the black and black/white wires in the headlight housing. Continuity must be present when the engine kill switch is in the OFF position and not present when the switch is in the RUN position. If the ohmmeter indication is not as

specified, the switch or switch wires may be defective.

5. If the ohmmeter indication is not correct, remove the wires from the switch body (**Figure 25**). Check the switch without the wires connected. Continuity must be present in the OFF position. Replace the switch if the indication is not correct. If the switch checks correctly and a malfunction still exists in the circuit, examine the switch wires for a possible break or short. Repair the switch wires if damaged.

6. Install the screws securing the kill switch/throttle assembly. Make sure the assembly is positioned correctly on the handlebars and tighten the screws until they are just snug. The switch assembly should be able to move on the handlebars slightly. This will often prevent damage to the switch assembly if the machine is in a spill or collision.

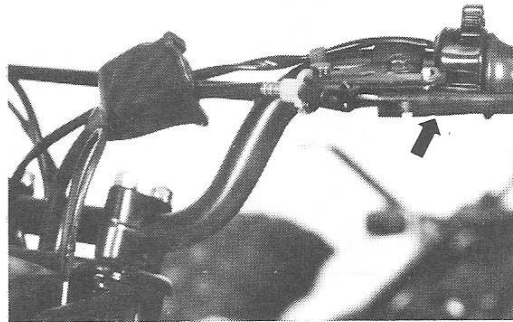
7. Install the headlight unit.

Lighting Switch Testing/Replacement

1. Remove the headlight unit as outlined under *Headlight Bulb Replacement* in this chapter.
2. Disconnect the green and yellow/red switch wires in the headlight housing.
3. Connect an ohmmeter or continuity device between the switch wires and operate the lighting switch. Continuity must be present in the ON position and not present in the OFF position.

4. If the continuity does not check correctly, remove the screws securing the switch assembly to the handlebar (**Figure 26**) and remove the switch.
5. Check the switch with the ohmmeter without the wires connected. Continuity must be present in the ON position. Replace the switch if the indication is not correct. If the switch checks correctly and a malfunction still exists in the circuit, examine the switch wires for a possible break or short. Repair the switch wires if damaged.
6. Install the switch on the handlebars. Tighten the screws just enough to keep the switch in place. Do not overtighten or the switch body may be damaged.
7. Install the headlight unit.

26



Negative lead

Black
Black
Black
Black
Blue
Blue
Blue
Blue
Blue

Black/red
Black/red
Black/red
Black/red

Black/white
Black/white
Black/white
Black/white

Black/yellow
Black/yellow
Black/yellow
Black/yellow

* All K ohm indicat
A—Meter needle
C—Continuity.

Negative lead

Ground
Ground
Ground

* All ohm indicatio

Bulb

Headlamp
High beam
Low beam
Taillight

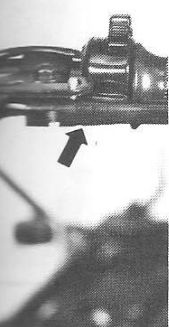


Table 1 CDI UNIT TEST

Negative lead	Positive lead	Indication* (K ohms)
Black	blue	130-170
Black	black/red	9-13
Black	black/white	2-5
Black	black/yellow	2-5
Blue	black	0
Blue	black/red	60-80
Blue	black/white	25-35
Blue	black/yellow	50-70
Black/red	black	0
Black/red	blue	500
Black/red	black/white	A
Black/red	black/yellow	C
Black/white	black	0
Black/white	blue	70-100
Black/white	black/red	2-5
Black/white	black/yellow	2-5
Black/yellow	black	0
Black/yellow	blue	500
Black/yellow	black/red	C
Black/yellow	black/white	A

* All K ohm indications are approximate.
 A—Meter needle deflects to 50-70K ohms then to approximately 150K ohms.
 C—Continuity.

Table 2 STATOR AND PICKUP COIL TEST

Negative lead	Positive lead	Indication (ohms)*
Ground	Blue	130-200
Ground	Black/red	350-450
Ground	Yellow/red	0.2-0.8

* All ohm indications are approximate.

Table 3 REPLACEMENT BULBS

Bulb	Rating (watts)
Headlamp	
High beam	25
Low beam	25
Taillight	5

7

NOTE: If you own a 1984 or later model, first check the Supplement at the back of the book for any new service information.

CHAPTER EIGHT

FRONT WHEELS, STEERING AND TIRES

This chapter outlines repair and maintenance of the front wheels and steering components for all models.

Refer to **Table 1** for torque specifications. **Tables 1-4** are located at the end of this chapter.

FRONT WHEEL

Removal/Installation

Refer to **Figure 1** or **Figure 2** for this procedure.

1. Place the machine on level ground and set the parking brake. Block the rear wheels so the vehicle will not roll in either direction.
2. Jack up the front of the vehicle with a small hydraulic jack. Place the jack under the frame with a piece of wood between the jack and the frame.
- 3A. On LT models, remove the lug nuts securing the wheel to the axle hub and remove the wheel (**Figure 3**).
- 3B. On ALT models, perform the following:
 - a. Refer to **Figure 1** and remove the cotter pins securing the axle nut on each side of the wheel.
 - b. Loosen both axle nuts several turns until the outer shouldered spacers can be pulled clear of the axle hole in the front forks. Remove the front wheel and axle from the front forks.
 - c. If the wheel is to be disassembled, remove the axle nuts and slide the axle and spacers out of the hub.
4. Installation is the reverse of these steps. Keep the following points in mind:

- a. Tighten the wheel nuts and axle nuts to the torque values specified in **Table 1**.
- b. Secure the axle nuts on ALT models with new cotter pins.

NOTE

Always use new cotter pins whenever possible. A reused cotter pin may break and fall out of the axle.

FRONT HUBS

Removal/Installation

1. Remove the front wheel as outlined in this chapter.

NOTE

If the hub is being removed to service the wheel bearings and/or grease seals, it is not necessary to remove the tire/wheel assembly from the hub. The tire/wheel assembly is an ideal holding fixture for the hub. All service can be performed with the tire/wheel installed on the hub.

- 2A. On LT models, perform the following:
 - a. Remove the cotter pin securing the hub nut (**Figure 4**).
 - b. Remove the hub nut and carefully slide the hub off the stub axle in the knuckle arm.
- 2B. On ALT models, remove the axle nuts and remove the axle and spacers from the front wheel.
3. Installation is the reverse of these steps. On LT models, perform the following:

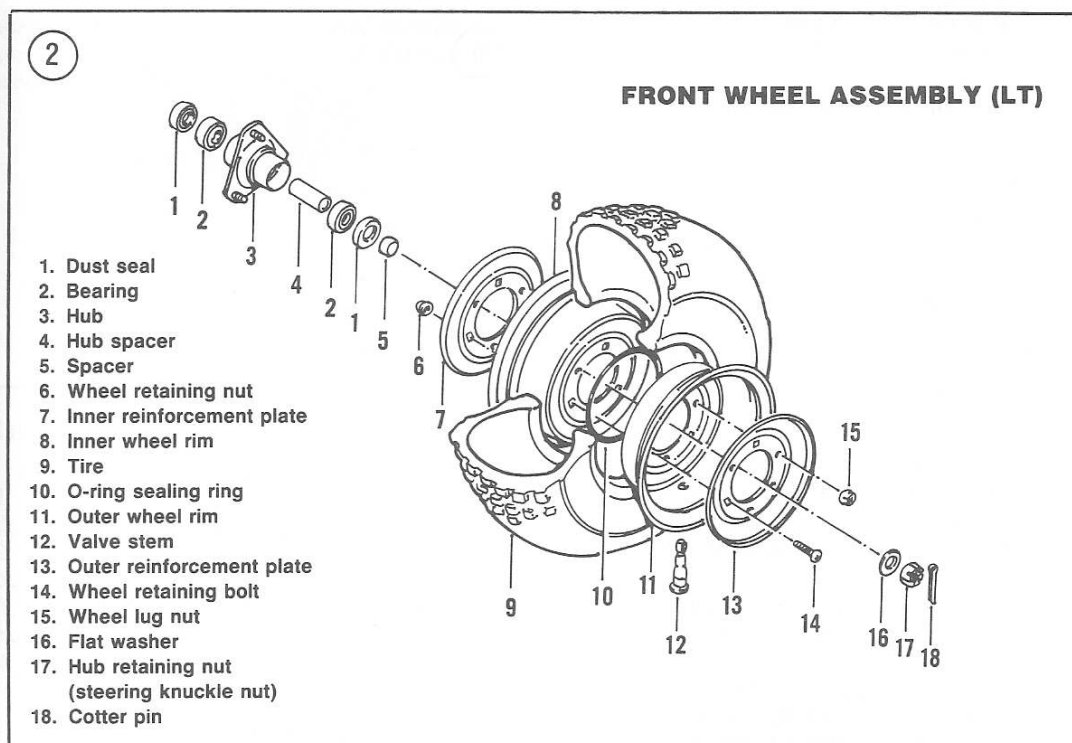
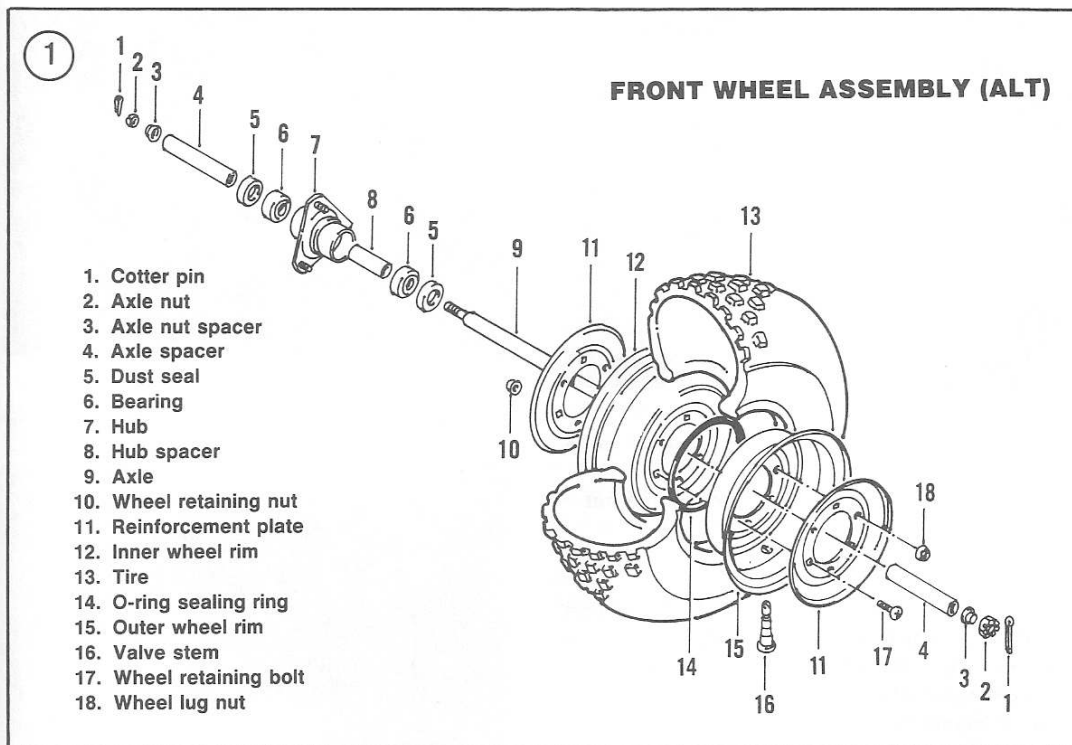
FRONT WHEELS

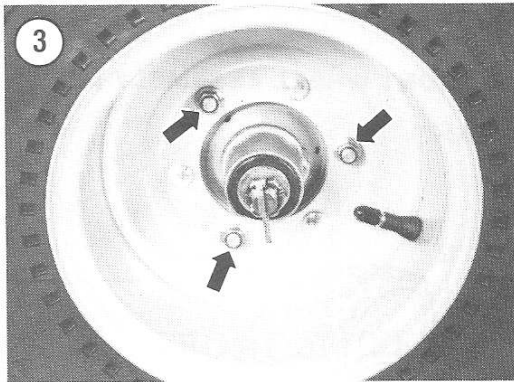
1

1. Cotter pin
2. Axle nut
3. Axle nut
4. Axle nut
5. Dust seal
6. Bearing
7. Hub
8. Hub spacer
9. Axle
10. Wheel nut
11. Grease seal
12. Inner wheel
13. Tire
14. Spring
15. Dust seal
16. Hub spacer
17. Wheel nut
18. Wheel nut

2

1. Dust seal
2. Bearing
3. Hub
4. Hub spacer
5. Spacer
6. Wheel nut
7. Inner wheel
8. Inner wheel
9. Tire
10. Spring
11. Dust seal
12. Hub spacer
13. Dust seal
14. Wheel nut
15. Wheel nut
16. Hub spacer
17. Hub spacer
18. Cotter pin





- a. Tighten the hub nut to the torque value specified in **Table 1**.
- b. Use a new cotter pin to secure the hub nut.

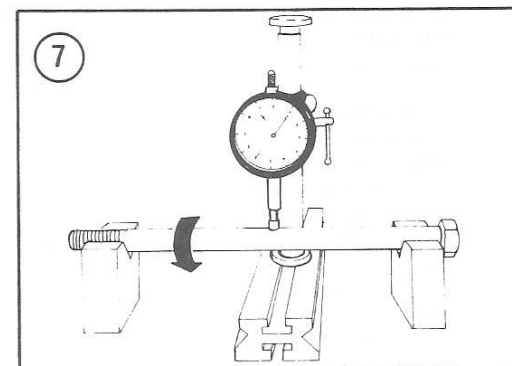
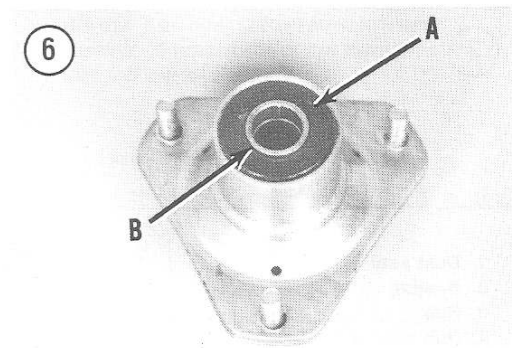
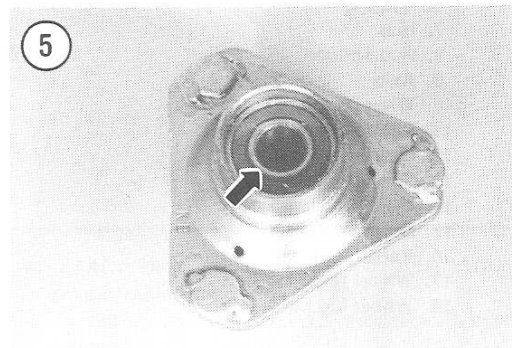
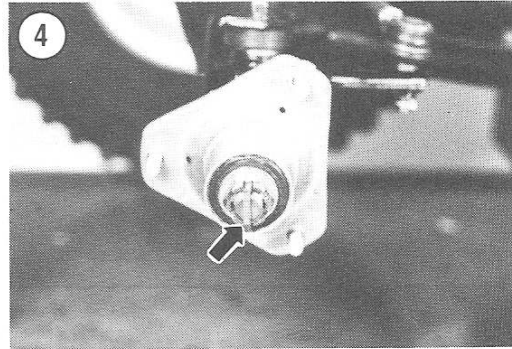
WHEEL BEARINGS

All machines are equipped with 2 bearings installed in each front hub. Each wheel bearing is sealed on the outer side (**Figure 5**). A single grease seal is installed next to the bearing on each side the hub (**A, Figure 6**).

If bearing replacement is required, purchase stock bearings from your local dealer or fully sealed bearings from any good bearing specialty shop. Be sure you take your old bearing along to ensure a perfect match. Fully sealed bearings provide excellent protection from dirt and moisture that may get into the hub.

Inspection

1. Support the machine so the wheel hub being checked is off the ground. Rock the wheel side-to-side or top-to-bottom. The movement of the wheel should be almost negligible. Any movement that can be seen or easily felt is an indication that the bearings should be inspected and lubricated or replaced.
2. Remove the front wheel as outlined in this chapter.
3. On ALT models, set up a dial indicator and V-blocks as shown in **Figure 7** and measure the runout of the front axle. If the runout exceeds 0.25 mm (0.010 in.), the axle must be replaced. *Do not attempt to straighten a bent axle.*
4. On all models, if the wheel bearings are in good condition, set up a dial indicator or a locally fabricated gauge first against the outside lip then against the inside edge of the wheel. Spin the wheel slowly and check the axial and radial runout of the wheel. The runout limit for both dimensions is



specified in **Table 1**.
specified limit the wheel
replaced.

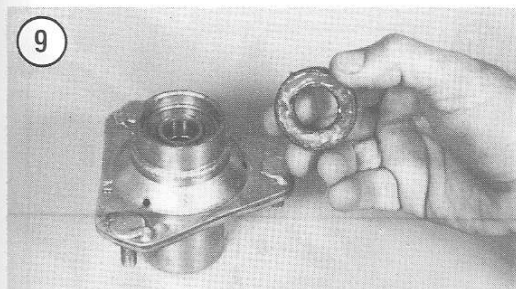
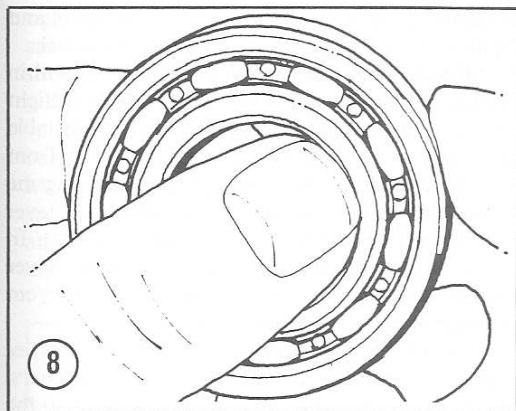
*Do not operate
damaged or
or wheel bearings.*

*Do not attempt
runout unless
known to be
Excessive wear
may be noted
manual.*

Lubrication and Re

Refer to **Figure 1**.

1. Remove the wheel
this chapter.
2. On LT models
outside of the hub.
3. Carefully pry out
hub (**A, Figure 6**).
4. To remove the
a. Insert a long
Push the spacer
applied to the



specified in **Table 2**. If the runout exceeds the specified limit the wheel is damaged and must be replaced.

CAUTION

Do not operate the machine with damaged or out-of-round wheels. Axle or wheel bearing damage may result.

NOTE

Do not attempt to check the wheel runout unless the wheel bearings are known to be in good condition. Excessive wear in the wheel bearings may be mistaken for excessive wheel runout.

Lubrication and Replacement

Refer to **Figure 1** or **Figure 2** for this procedure.

1. Remove the wheel to be serviced as outlined in this chapter.
2. On LT models remove the small spacer on the outside of the hub (B, **Figure 6**).
3. Carefully pry out the seals from each side of the hub (A, **Figure 6**).
4. To remove the bearings perform the following:
 - a. Insert a long drift into one side of the hub. Push the spacer to one side so the drift can be applied to the inner race of the bearing.

- b. Tap the bearing out of the hub by working around the perimeter of the inner race.
- c. Remove the spacer and tap out the opposite bearing.

5. Thoroughly clean all bearing cavities with solvent and a clean rag. Do not clean sealed bearings in solvent.

6. Rotate the bearings by hand (**Figure 8**) and check for roughness and radial play (some axial play is normal). The bearings should turn smoothly. Replace any bearings with tight spots or excessive play.

7. If bearings are serviceable, pack them with a good grade of waterproof grease, such as boat trailer wheel bearing grease. To pack the bearings, spread some grease in the palm of your hand and scrape the open side of the bearing across your palm until the bearing is packed completely full of grease. Spin the bearing a few times to determine if there are any open areas and repack if necessary.

8. To install bearings in the hub perform the following:

- a. Lightly grease the outside of each bearing. Use a drift or suitable sized socket and carefully tap one of the bearings into the hub bore. Ensure that each bearing is installed with the sealed portion facing outward (**Figure 5**).
- b. Lightly grease each end of the spacer. Turn the hub over and set the spacer in place.
- c. Carefully tap the other bearing into the hub bore, tapping evenly around the outer race.

9. Pack the inside of each seal with wheel bearing grease as shown in **Figure 9**.

10. Lightly grease the outside of each seal and carefully tap the seal into position in the hub.

11. On LT models install the small spacer on the inside of the hub.

HANDLEBARS

Removal

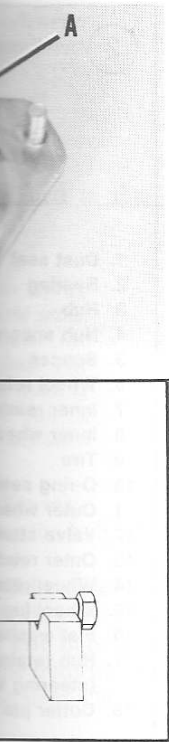
NOTE

If the handlebars are being removed for service but are not to be replaced, it is not necessary to remove the throttle/engine kill switch assembly, the front brake lever and headlight switch.

1. If the handlebars are to be replaced, perform the following:

NOTE

In the following steps carefully lay the throttle/engine kill switch assembly and brake cables over the front fender or back over the seat. Be careful that the cables do not get crimped or damaged.



- Remove the straps securing the wires and cables to both sides of the handlebars (A, **Figure 10**).
 - Remove the screws securing the throttle/engine kill switch assembly to the handlebars (B, **Figure 10**). Carefully separate the halves of the throttle assembly and remove from the handlebars.
 - Remove the screws securing the brake lever to the handlebars (A, **Figure 11**) and remove the brake lever.
 - Remove the screws securing the headlight switch assembly to the handlebars and remove the switch (B, **Figure 11**).
- Remove the bolts securing the handlebar holders and remove the holders and the handlebars (**Figure 12**).
 - To maintain a good grip on the handlebars and to prevent them from slipping, clean the knurled section of the handlebars with a wire brush. It should be kept rough so it will be held securely by the holders. The holders should also be kept clean and free of any metal that may have been gouged loose by handlebar slippage.

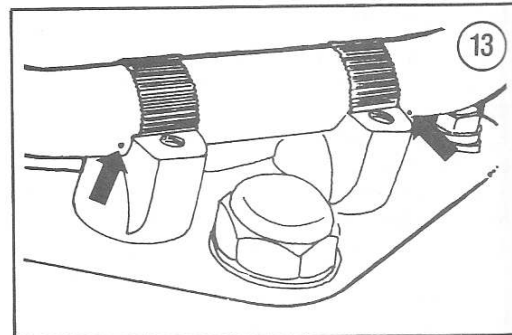
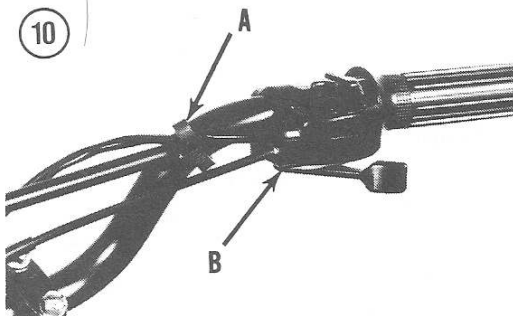
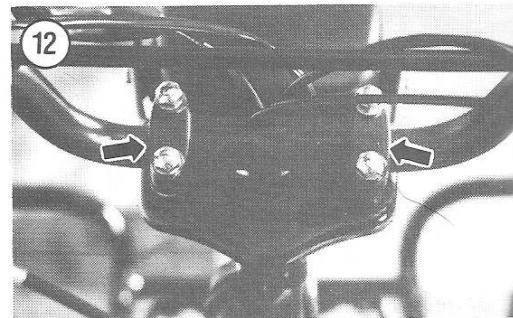
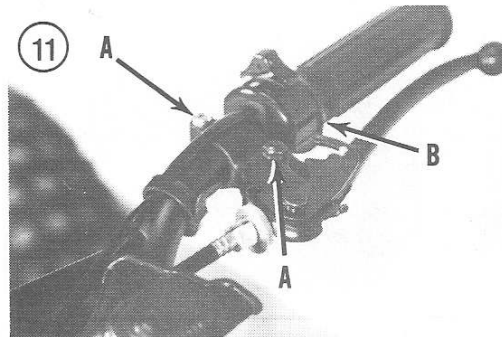
Installation

- Position the handlebars on the lower handlebar holders so the punch mark on the handlebars is aligned with the top surface of the lower handlebar holders (**Figure 13**).
- Install the handlebar holders and bolts. Tighten the forward then the rear bolts gradually and evenly. Tighten the bolts to the torque value specified in **Table 1**. Make sure that the gap on the handlebar holders is equal, front and rear. After installation is complete, recheck the alignment of the punch mark on the handlebars (**Figure 13**). Readjust if necessary.
- Slide on the front brake lever assembly. Do not tighten the fasteners at this time.
- Slide on the headlight switch and install the left grip. Position the headlight switch a comfortable

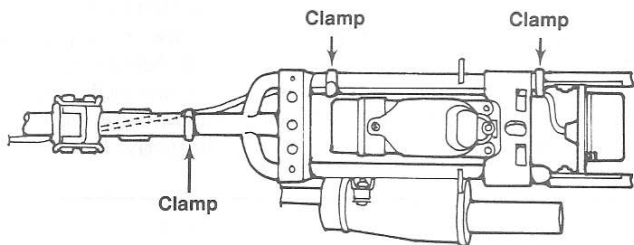
distance from the inside edge of the grip and tighten the screws securing the headlight switch.

5. Slide the front brake lever assembly to within approximately 15 mm (1/2 in.) of the headlight switch. Position the brake lever in a comfortable position, usually approximately 20° down from true horizontal. Tighten the fasteners securing the brake lever until they are just snug. The brake lever should be free to move slightly under impact. In the event of a spill or collision the brake lever mount will move on the handlebars and prevent damage to the lever assembly.

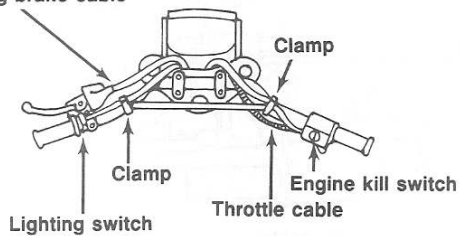
6. Slide on the right-hand grip. Install the throttle/engine kill switch assembly on the handlebars. Place it in a comfortable position in relation to the



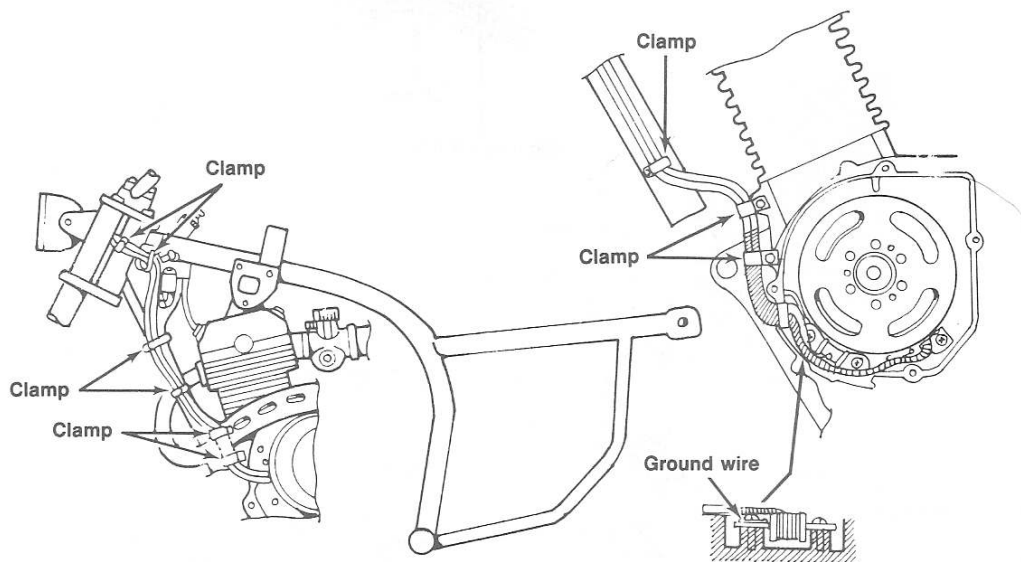
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Brake/Parking brake cable



ALT125 WIRE ROUTING

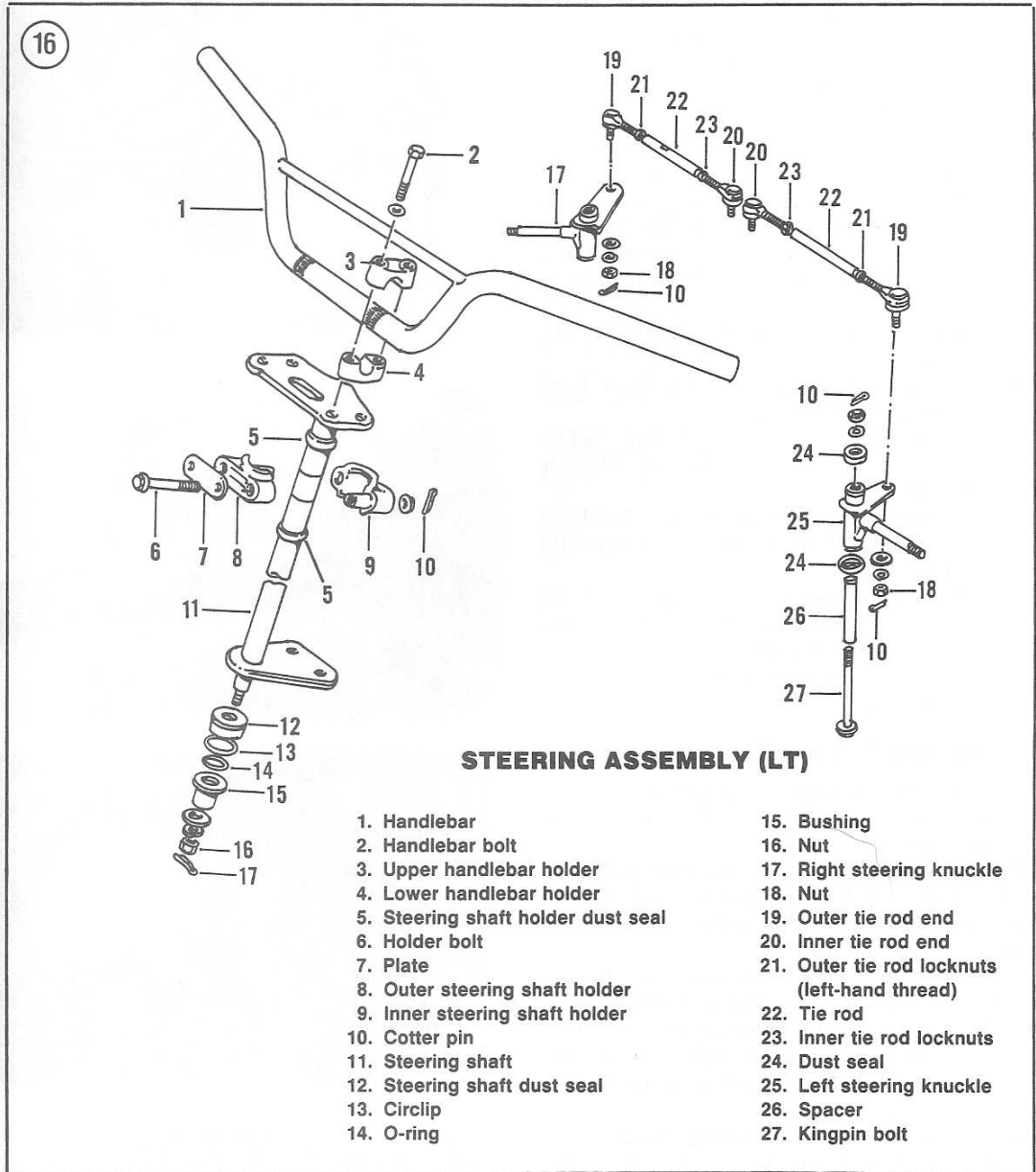


16

ensure a long service parts will wear on suspension specific

Steering Knuckle

The removal of side. Refer to Figure 1. Remove the side Chapter Ten.



ensure a long service life; however, if neglected, the parts will wear quickly. Refer to Table 3 for front suspension specifications.

Steering Knuckle Removal/Installation

The removal procedure is the same for either side. Refer to Figure 16 for this procedure.

1. Remove the seat and front fender as outlined in Chapter Ten.

2. Remove the front wheel and front hub as outlined in this chapter.

3. Remove the cotter pin securing the tie rod nut (Figure 17).

4. Remove the nut and washers and lift the tie rod end out of the arm on the steering knuckle. If the tie rod end is difficult to remove, install the nut just enough to cover the threads on the end of the bolt (Figure 18) and tap the tie rod end out of the steering knuckle with a soft-faced mallet.

CAUTION

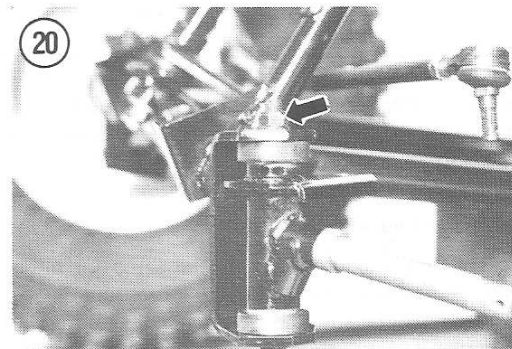
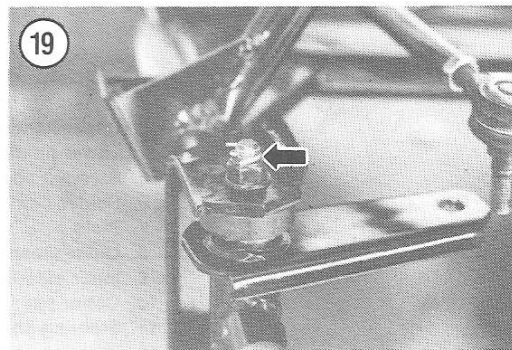
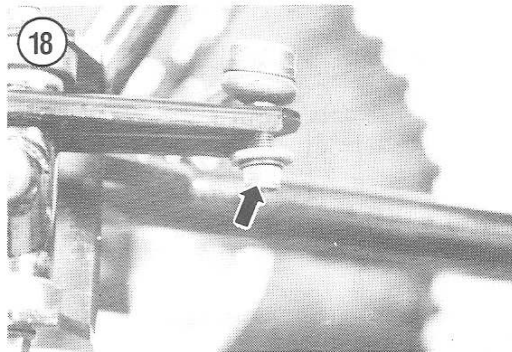
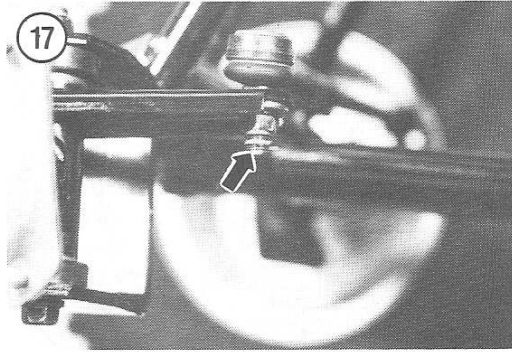
If the tie rod is difficult to remove from the steering knuckle, do not attempt to pry it out or damage to the seal on the tie rod end may result.

5. Remove the cotter pin securing the kingpin nut (Figure 19).
6. Remove the nut securing the kingpin bolt and remove the kingpin bolt (Figure 20). Slide the steering knuckle out of the frame. Take care not to drop the dust seals on each end of the steering knuckle.
7. Perform *Steering Knuckle Inspection and Lubrication*.
8. Installation is the reverse of these steps. Keep the following points in mind:
 - a. Lightly grease the kingpin bolt before installing the bolt through the steering knuckle.
 - b. Tighten the nuts securing the tie rod end and the kingpin bolt to the torque values specified in Table 1.
 - c. Use new cotter pins to secure the tie rod and kingpin nuts. Bend both halves of the cotter pin as shown in Figure 19.
 - d. Install the front fender and seat as outlined in Chapter Ten.

Steering Knuckle Inspection and Lubrication

Refer to Figure 16 for this procedure.

1. Remove the steering knuckle as described in this chapter.
2. Remove the dust seals from each end of the steering knuckle. Wipe the inside of each seal with a clean rag and carefully inspect each seal for damage or wear (Figure 21).
3. Clean the steering knuckle and spacer in clean solvent or wipe the parts clean with a clean rag.
4. Remove the kingpin spacer and examine it for signs of wear or corrosion caused by moisture (Figure 22). Replace the spacer if it is damaged or worn.
5. Slide the spacer into the steering knuckle. Try to move the spacer side-to-side in the bronze bushing. The spacer should rotate freely but have no side-to-side movement. Any side-to-side movement (more than just perceptible) is an indication that the steering knuckle bushings are worn.
6. Visually inspect the bronze bushings for wear or damage (Figure 23). In most cases damage will be caused by lack of lubrication or entry of sand and dirt. If the bushings show any signs or damage or wear, replace the steering knuckle. Replacement bushings are not available as spare parts.

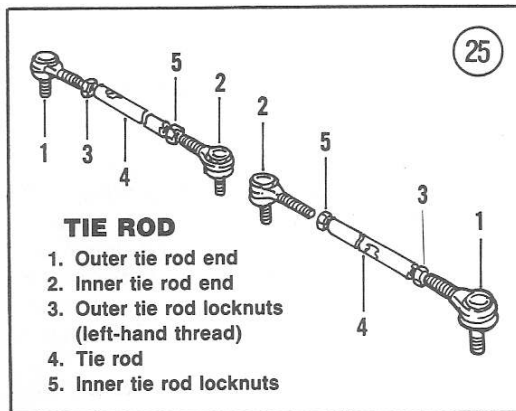
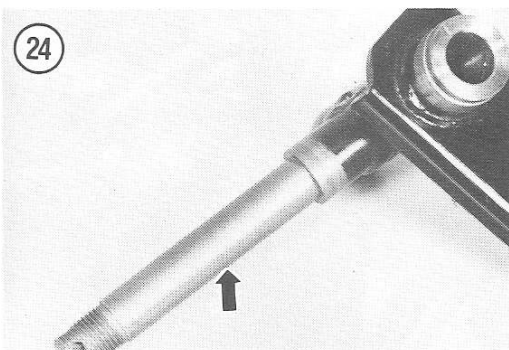
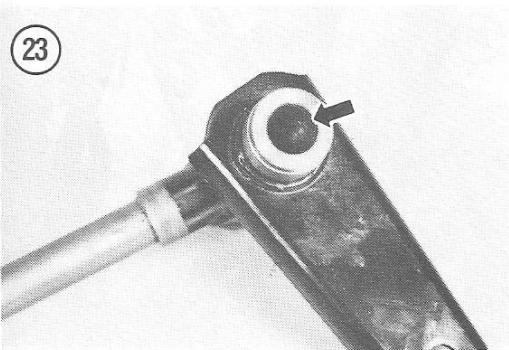
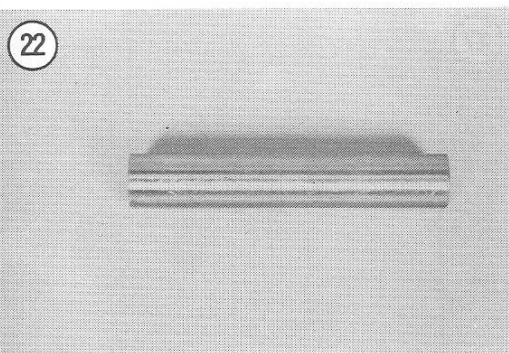
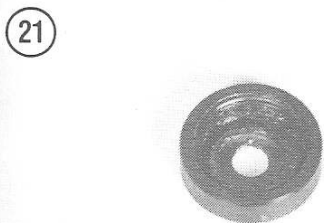


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23

24



7. Carefully inspect the front axle (Figure 24) for signs of wear or damage. A hard spill or collision may cause a bend in the front axle. If the axle is damaged in any way, the steering knuckle must be replaced.

CAUTION

If the machine is operated with a bent front axle, further damage to the wheel bearings and front hub will result.

8. Coat the inside of the steering knuckle bushings with a waterproof grease such as boat trailer wheel bearing grease. Apply a light film of grease to the spacer and install the spacer in the steering knuckle.
9. Apply a small quantity of grease to the inside lips of each dust seal and install the seals over each end of the steering knuckle.
10. Install the steering knuckle as described in this chapter.

Tie Rod Removal/Installation

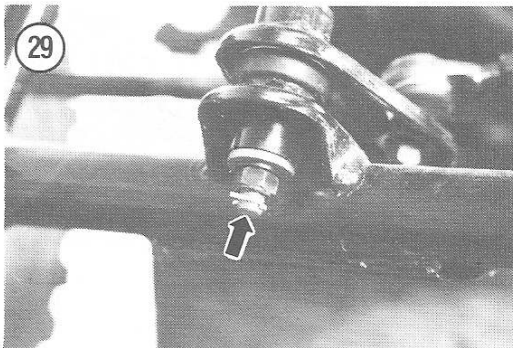
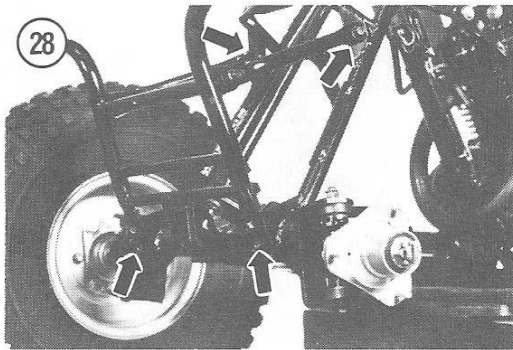
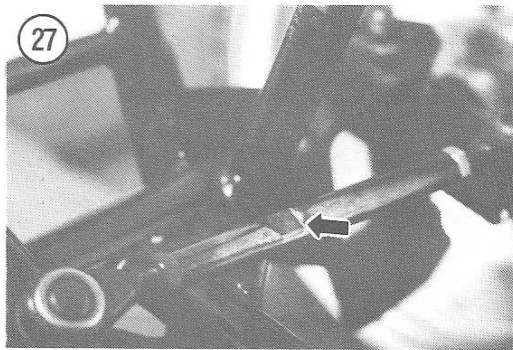
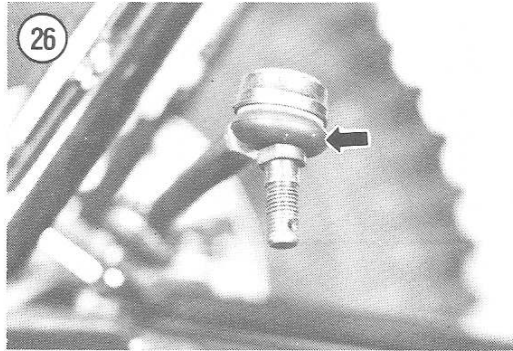
Both tie rods assemblies are the same. Refer to Figure 25 for this procedure.

1. Remove the seat and front fender as outlined in Chapter Ten.
2. Remove one or both front wheels as outlined in this chapter.
3. Remove the cotter pin securing the tie rod nut on each end (Figure 17).
4. Remove the nut and washers from both ends and lift the tie rod end out of the steering knuckle and steering shaft. If either tie rod end is difficult to remove, install the nut just enough to cover the threads on the end of the bolt (Figure 18) and tap the tie rod end out of the steering knuckle with a soft-faced mallet. The inner tie rod ends can be reached with a long drift through holes in the skid pan of the machine.

CAUTION

If the tie rod is difficult to remove from the steering knuckle, do not attempt to pry it out or damage to the seal on the tie rod end may result.

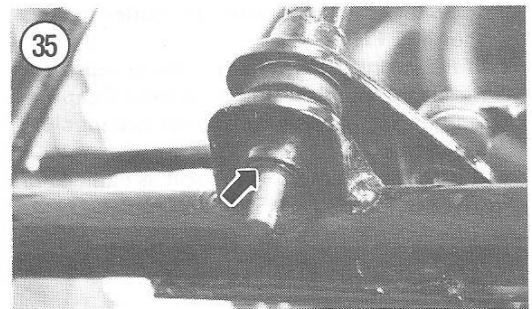
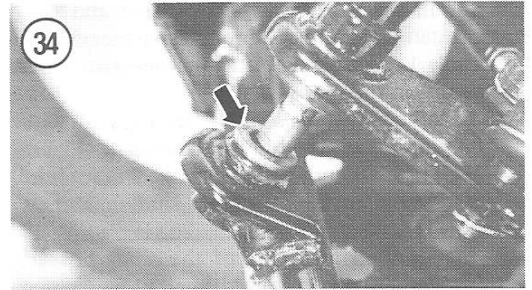
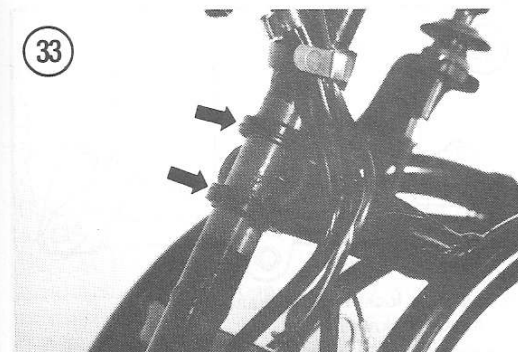
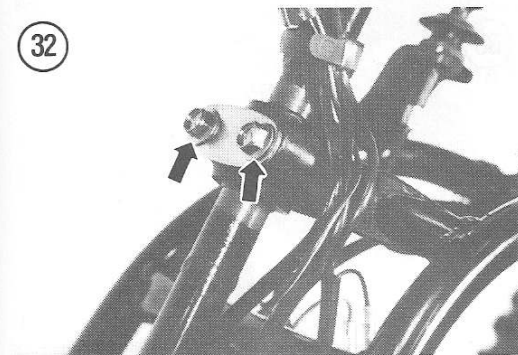
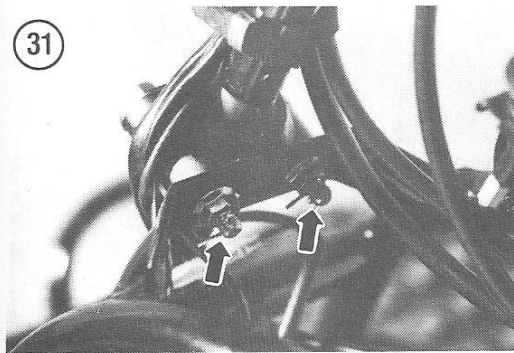
5. Ensure that the rubber boot over each tie rod end swivel joint is in good condition (**Figure 26**). Replace the tie rod end if the rubber boot is damaged in any way. The swivel joints are permanently packed with grease. If the rubber boots are damaged, dirt and moisture can enter the swivel joints and destroy them. Tie rod ends can be replaced separately.
6. If tie rod ends are to be replaced, refer to **Figure 25** and perform the following:
 - a. Carefully measure the overall length of the old tie rod assembly before removing the worn tie rod ends.
 - b. Loosen the locknuts securing the tie rod end to be replaced. The nuts securing the outside tie rod ends have left-hand threads.
 - c. Unscrew the old tie rod end. Install the new tie rod end and turn it in or out until the overall length of the tie rod is the same as the old unit. Leave the locknuts securing each tie rod end loose at this time. They are tightened after the wheel alignment is adjusted.
7. Installation is the reverse of the removal procedure. Keep the following points in mind:
 - a. Make sure the tie rods are installed with the flat spot (**Figure 27**) toward the center of the machine.
 - b. Align the front wheels as outlined in this chapter.
 - c. Tighten the nuts securing the tie rods to the torque value specified in **Table 1**.
 - d. Install the front fender and seat as outlined in Chapter Ten.

**Steering Shaft****Removal/Lubrication/Installation**

Refer to **Figure 16** for this procedure.

1. Remove the seat and front fender as outlined in Chapter Ten.
2. Remove the bolts securing the front brace unit to the frame and remove the brace (**Figure 28**).
3. If only lubrication of the steering shaft bushings is desired, it is not necessary to completely remove the steering shaft. If the steering shaft must be completely removed, perform the following steps:
 - a. Remove both tie rods as outlined in this chapter.
 - b. Remove the handlebars as outlined in this chapter.





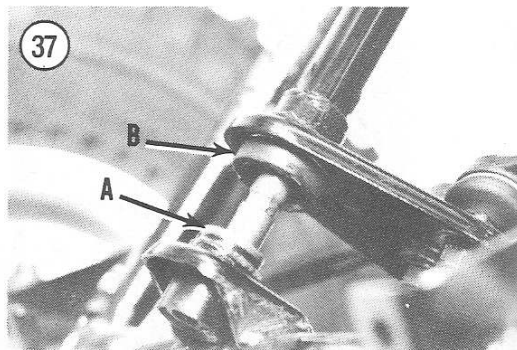
- c. Remove all the straps and clamps securing the ignition and lighting wires to the steering shaft.
4. Remove the cotter pin securing the steering shaft nut (**Figure 29**).
5. Remove the nut, lockwasher, flat washer and O-ring from the steering shaft as shown in **Figure 30**.
6. Remove the cotter pins securing the upper shaft holder bolts (**Figure 31**).
7. Remove the upper shaft holder bolts with the outer half of the shaft holder (**Figure 32**).
8. If the steering shaft is to be completely removed, remove both dust seals from the shaft (**Figure 33**). Note that the split in each seal is located toward the outside of the shaft.
9. If just lubrication is desired, it is only necessary to lift the end of the steering shaft clear of the bushing as shown in **Figure 34**. If shaft removal is desired, carefully lift the lower end of the shaft clear of the bushing and remove the shaft.
10. Installation is the reverse of the removal steps. Keep the following points in mind:
 - a. Lubricate the lower bushing and both halves of the upper shaft holder with a waterproof grease such as boat trailer wheel bearing grease.
 - b. Slide the steering shaft into position in the lower bushing. Grease the O-ring and place it in position next to the lower bushing (**Figure 35**).

- c. Install the flat washer, lockwasher and nut. Tighten the nut to the torque value specified in **Table 1**. Secure the nut with a new cotter pin as shown in **Figure 29**.
- d. Install the dust seals on the steering shaft with the slot in the seals toward the outside (**Figure 33**). Ensure that the lips of each seal fit into the grooves of each half of the shaft holder as shown in **Figure 36**.
- e. Install the outer half of the shaft holder. Install the shaft holder bolts and nuts. Tighten the nuts to the torque value specified in **Table 1**. Secure both nuts with new cotter pins as shown in **Figure 31**.
- f. If the steering shaft was completely removed, install the handlebars and tie rods. Strap the ignition and lighting wires to the steering shaft and frame.
- g. Install the front fender and seat as outlined in Chapter Three.

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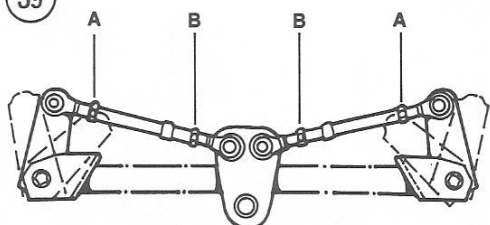
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38



39



- A. Outside locknuts (left-hand thread)
- B. Inside locknuts

Steering Shaft Inspection

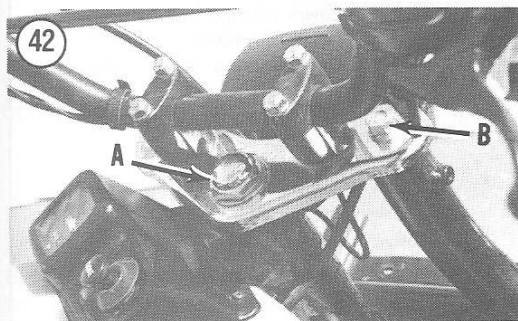
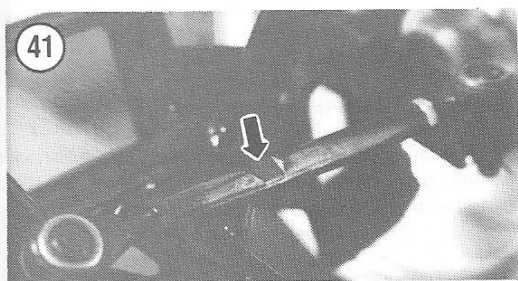
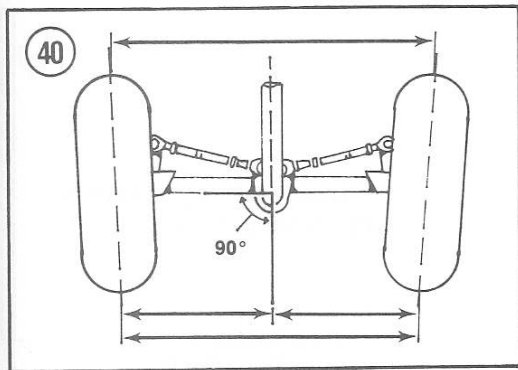
1. Carefully inspect the entire steering shaft assembly, especially if the machine has been involved in a collision or spill. If the shaft is bent or twisted in any way it must be replaced. If a damaged shaft is installed in the machine, it will cause rapid and excessive wear on the bushings as well as place undue stress on other components in the frame and steering system.
2. Examine the lower bushing in the frame (A, **Figure 37**). If the bushing is worn or shows signs of galling due to lack of lubrication, it must be replaced.
3. Inspect the lower steering shaft dust seal (B, **Figure 37**). If the seal is damaged in any way it should be replaced. A damaged seal will allow grit and moisture to enter the lower bushing. If the seal must be replaced, remove the circlip securing the seal and carefully pry the seal from the steering shaft.
4. Examine both upper dust seals and each shaft holder half (**Figure 38**). Both halves are identical. Each half can be replaced individually if worn.

Wheel Alignment

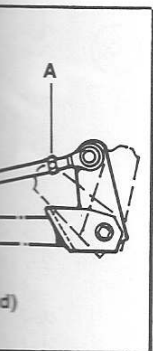
Wheel alignment on LT models consists of centering the handlebars and adjusting the toe-in of both front wheels. The handlebars are centered when the tie rods are adjusted to equal lengths on both sides. Toe-in of the front wheels is obtained by adjusting the tie rods until the distance between the front tires at the front is less than the distance between the front tires at the rear.



1. Place the front handlebar strap.
2. Set the rear wheel (Figure 39).
3. Lower the seat (Figure 39). The seat can be left down.
4. Use a string with front of the rear distance between (Figure 40). Write.
5. Measure the distance at the front measurement. The measurement is 7-8 mm (0.4-0.3 in).



1. Place the machine on level ground with the handlebars straight. Set the parking brake.
2. Set the tire pressure on all tires to 2.2 psi (0.15 kg/cm²).
3. Loosen the locknuts securing each tie rod end (Figure 39). The outside locknuts (painted yellow) are left-hand thread.
4. Use a stick with 2 marking points or a ruler in front of the machine and carefully measure the distance between the center of both front tires (Figure 40). Write down the measurement.
5. Measure the distance between the center of both tires at the back of the tire. Write down the measurement. The toe-in is correct when the rear measurement is greater than front measurement by 7-9 mm (1/4-3/8 in.).



6. Mark a center line on the floor 90° from the front frame tube as shown in Figure 40. Measure the distance from this center line to the center of each front tire. The measurement should be the same on both sides.

7. If all measurements are not correct as specified, loosen the locknuts securing each tie rod. Use a wrench on the flat portion of the tie rods (Figure 41) and slowly adjust one or both tie rods until the dimensions are correct. Recheck each measurement after each adjustment. Turn the tie rods only a small amount each time. It takes very little adjustment of the tie rods to move each tire a large amount.

8. When the adjustments are correct, hold each tie rod in place and tighten the locknuts securing each tie rod end.

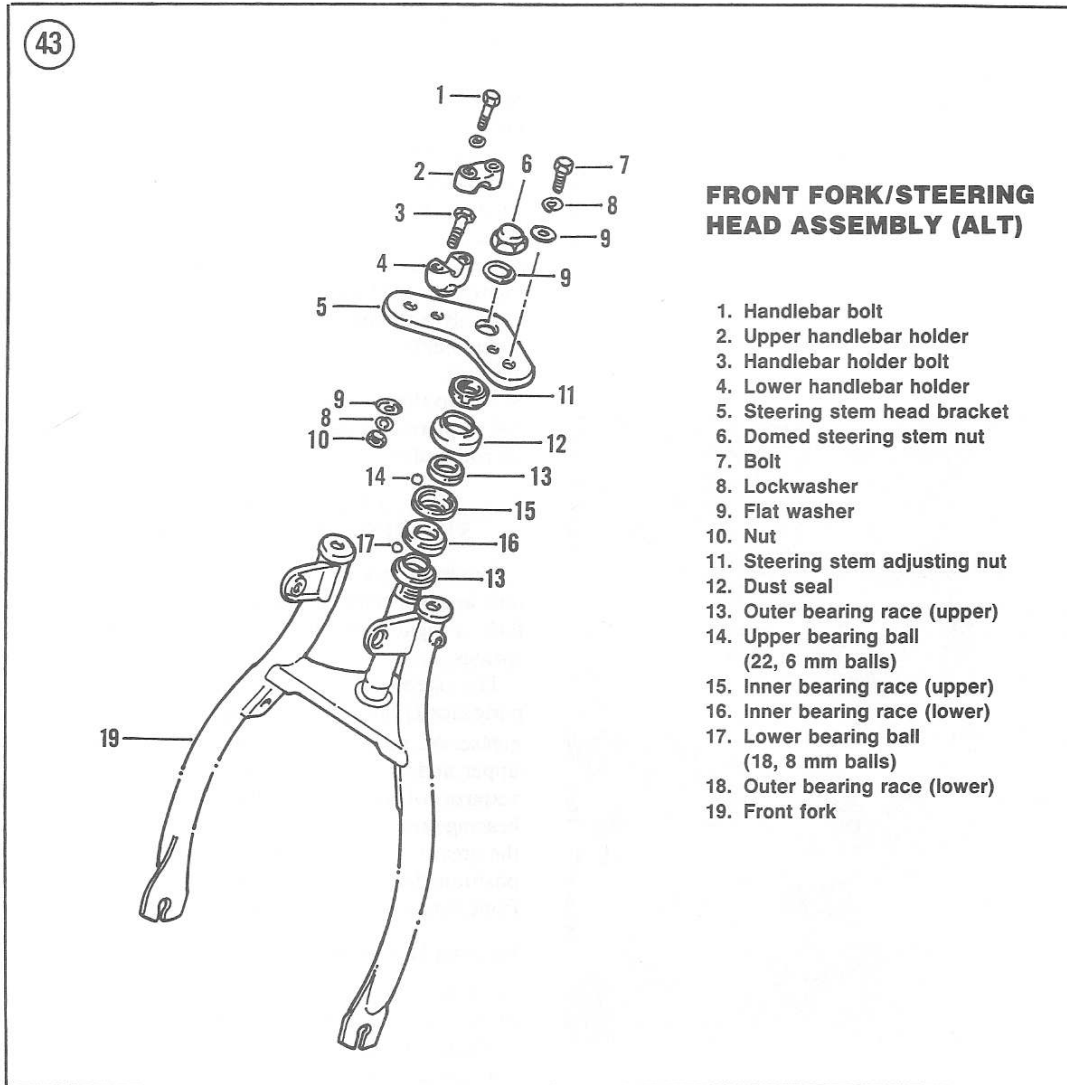
FRONT FORK AND STEERING HEAD (ALT MODELS)

The front fork and steering head are one integral unit and are removed as one assembly. The front fork is rigid without the assist of hydraulics or springs.

The steering head should be disassembled periodically and the bearings packed with new grease. All models use uncaged ball bearings in the upper and lower bearing races. Use a good heavy waterproof grease such as a boat trailer wheel bearing grease when lubricating the bearings, since the grease is also used to hold the bearing balls in position during installation. Refer to Table 3 for front suspension specifications.

Steering Head Check

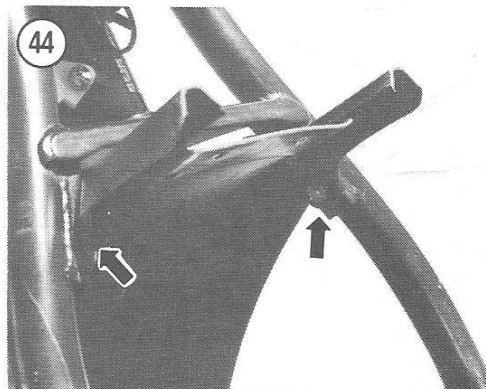
1. Jack up the ALT or place it on a box such as a milk crate to get the front wheel off the ground.
2. Grasp each fork leg at the lower end and attempt to move the front end back and forth. If any fore and aft movement of the front end is detected, the steering stem adjusting nut will have to be adjusted.
3. Remove the domed nut and washer from the steering stem (A, Figure 42).
4. Use the Suzuki spanner wrench (part No. 09940-10122) and tighten the steering stem adjusting nut (under the steering head) until all play is removed from the steering head, yet the front end turns freely from side to side, under its own weight. If the Suzuki spanner is not available the steering adjusting nut can be gently tapped with a hammer and a punch or screwdriver. Take care not to damage the nut.
5. Install the domed steering stem head nut and tighten to the torque value specified in Table 1.



Front Fork/Steering Stem Removal/Installation

Refer to **Figure 43** for this procedure.

1. Remove the front wheel as described in this chapter.
2. Remove the front fender as outlined in Chapter Ten.
3. Remove the bolts securing the lower fender extension (**Figure 44**) and remove the fender extension.
4. Remove the handlebars as outlined in this chapter.
5. Refer to Chapter Seven and remove the headlight assembly with the headlight housing.



45

6. Remove the dust
washer (A, **Figure 43**).
7. Remove the balls
each fork leg (B). Fit
stem head bracket.
8. Hold up on the
steering head adjusting
drift and hammer on
shown in **Figure 45**.

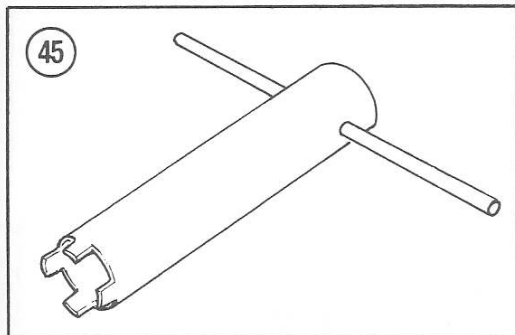
Support the
and front fork
adjusting nut
drop out of the

9. Lift the upper
from the top of the

Place a large
stem to catch
while carefully

10. Gently lower the
Be prepared to catch
balls that may drop.
11. Remove the 22-
upper race and 18-
lower race in the
12. Installation is in
the following points:

- a. Make sure the
are properly
- b. Apply a washer
wheel bearing
steering head
stem.
- c. Use grease to
and install the
upper bearing
balls in the lower
- d. Carefully slide
stem into the



6. Remove the domed steering stem nut and washer (A, **Figure 42**).
7. Remove the bolts securing the steering stem to each fork leg (B, **Figure 42**). Lift off the steering stem head bracket.
8. Hold up on the front forks and remove the steering head adjusting nut (**Figure 43**). Use a large drift and hammer or use a locally fabricated tool as shown in **Figure 45** to remove the nut if it is tight.

NOTE

Support the weight of the steering stem and front forks after removing the stem adjusting nut or the front forks will drop out of the frame.

9. Lift the upper dust seal and outer bearing race from the top of the steering stem.

NOTE

Place a large pan under the steering stem to catch the loose ball bearings while carefully lowering the front forks.

10. Gently lower the front forks out of the frame. Be prepared to catch some of the loose bearing balls that may drop out of the bearing races.
11. Remove the 22 (6 mm) bearing balls from the upper race and 18 (8 mm) bearing balls from the lower race in the steering head.
12. Installation is the reverse of these steps. Keep the following points in mind:
 - a. Make sure the steering head and stem races are properly seated.
 - b. Apply a waterproof grease such as boat trailer wheel bearing grease to the bearing races in the steering head and on the front fork steering stem.
 - c. Use grease to hold the bearing balls in place and install the 22 (6 mm) bearing balls in the upper bearing race and 18 (8 mm) bearing balls in the lower bearing race.
 - d. Carefully slide the front fork and steering stem into the frame. Install the upper bearing

race, dust seal and steering stem adjusting nut. Tighten the nut until it is snug against the upper race, then back off approximately 1/8 turn.

- e. If the Suzuki special tool (part No. 09940-14911) is available, tighten the steering stem adjusting nut to 4.0-5.0 mkg (29-36 ft.-lb.). To seat the bearing balls move the front forks lock-to-lock 5 or 6 times, then back off the adjusting nut 1/4-1/2 turn. Retighten the adjusting nut only enough to remove all the play from the front end. The number of turns needed to tighten or back off on the steering stem adjustment nut will vary from machine to machine. The adjusting nut should be just tight enough to remove both horizontal and vertical play, yet loose enough so that the assembly will turn to both lock positions under its own weight after an assist.
- f. Install the steering stem and secure it with the washer and domed nut. Install the bolts securing the steering stem to each fork leg. Tighten the domed nut and bolts to the torque values specified in **Table 1**.
- g. Install the handlebars as outlined in this chapter.
- h. Refer to Chapter Seven and install the headlight housing. Connect the electrical wires inside the headlight housing and install the headlight assembly.
 - i. Install the lower and upper halves of the front fender.
 - j. Install the front wheel as described in this chapter.
 - k. After a few hours of riding, the bearings have had a chance to seat. Readjust the free play in the steering stem with the steering stem adjusting nut.

Front Fork/Steering Stem Inspection

1. Clean the bearing races in the steering head, the steering stem races and the steel bearing balls with solvent.
2. Check the welds around the steering head for cracks and fractures. If any are found, have them repaired by a competent frame shop or welding service.
3. Check the bearing balls for pitting, scratches or discoloration indicating wear or corrosion. Most wear or corrosion results from lack of lubrication and/or improper steering head adjustment. Replace the bearing balls in sets if any are damaged.

4. Check the bearing races for pitting, galling and corrosion. If any of these conditions exist, replace the races as described in this chapter.

5. Check the steering stem on the front forks for cracks and check the lower bearing race for damage or wear. If this race or any race is damaged, the bearings should be replaced as a complete bearing set. Take the old races and bearings to your dealer to ensure accurate replacement.

6. Check the front forks for signs of wear or damage. Also check the fork legs for straightness. If they are bent or severely dented, the assembly should be replaced.

Steering Head Bearing Race Replacement

The bearing races in the steering head of the frame are pressed into place. Because they are easily damaged, do not remove them unless they are worn and require replacement.

The following procedure describes simple home techniques to remove the bearing races. If removal is difficult, do not chance damage to the machine or the new parts. Have the task performed by a dealer.

1. Insert a hardwood dowel or brass drift into the steering head as shown in **Figure 46** and tap around the race to drive it out. Do the same with the opposite race.

2. Chill the new bearing races in a freezer for a few hours to cause the metal to shrink as much as possible.

3. Install new races by tapping them into the steering head with a hardwood block (**Figure 47**). Make sure the races are seated squarely before tapping them into place. Tap them in until they are fully seated in the steering head.

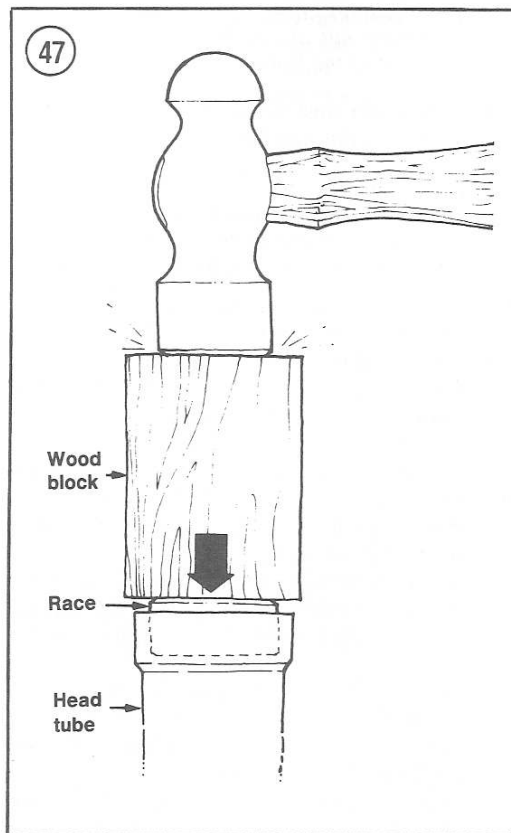
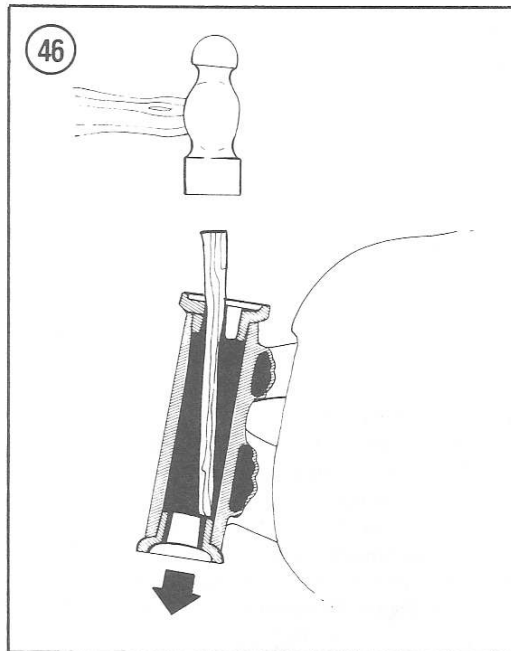
TIRES

All ALT and LT models are equipped with tubeless, low-pressure tires designed specifically for off-road use only. Rapid tire wear will occur if the machine is ridden on paved surfaces. Refer to **Table 4** for tire specifications.

Due to their low pressure requirements, these tires should only be inflated with a hand-operated air pump. Never use high-pressure air such as available at service stations.

CAUTION

*Do not overinflate the stock tires as they will be permanently distorted and damaged. If overinflated, the tires will bulge out similar to an inner tube that is not within the constraints of a tire and **will not** return to their original contour.*



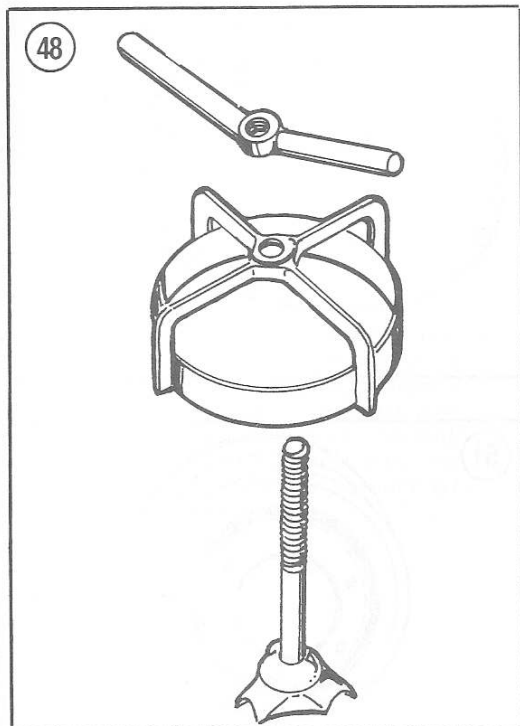
Additional stock tires will be supplied machine. If aftermarket installed.



1. Dust seal
2. Bearing
3. Hub
4. Hub spacer
5. Spacer
6. Wheel retaining
7. Inner reinforcement
8. Inner wheel
9. Tire
10. O-ring
11. Outer wheel
12. Valve stem
13. Outer reinforcement
14. Wheel retaining
15. Wheel lug nut
16. Flat washer
17. Hub retaining (steering knuckle)
18. Cotter pin

NOTE

Additional inflation pressure in the stock tires will not improve the ride or the handling characteristics of the machine. For improved handling, aftermarket tires will have to be installed.



To guard against punctures from *small* objects, install a commercially available liquid tire sealer such as Seal'n'Drive, or equivalent, into all tires through the valve stem. It's a good idea to carry a cold patch tire repair kit and hand held pump in the tow vehicle. It's also a good idea to carry the tire pump, some chewing gum and a small strip of cloth on the machine if you're venturing out into the boonies (a tire repair method using these items is discussed in this chapter).

Removing the tire from the special rims is different than on a motorcycle or automobile wheel. The easiest, but most costly and sometimes inconvenient, way to remove the tire is with the use of a tire removal rig available at most tire stores and service stations. A special tire tool such as Tire Bead Breaker (Figure 48) is useful for most home mechanics. This type of tool is usually available at dealers, mail order houses or motorcycle supply stores. This tool is the easiest to use, but make sure you purchase the correct one for your specific wheel size.

CAUTION

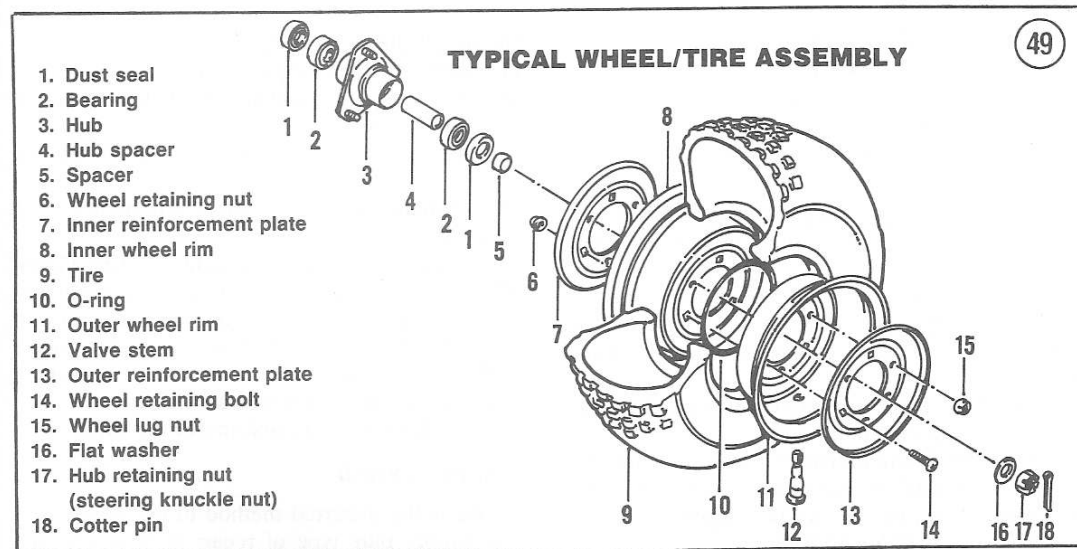
Do not use conventional motorcycle tire irons for tire removal as the tire sealing bead will be damaged when forced away from the rim flange.

Tire Changing

Refer to Figure 49 for this procedure.

NOTE

On ALT models, it is necessary to remove the front hub from the wheel as outlined in this chapter.



1. Remove the valve stem cap and core and deflate the tire. Do not reinstall the core at this time.
2. Lubricate the tire bead and rim flanges with water and liquid dish detergent, Armor All or any rubber lubricant.

CAUTION

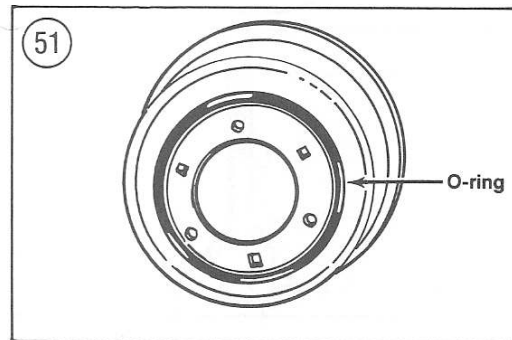
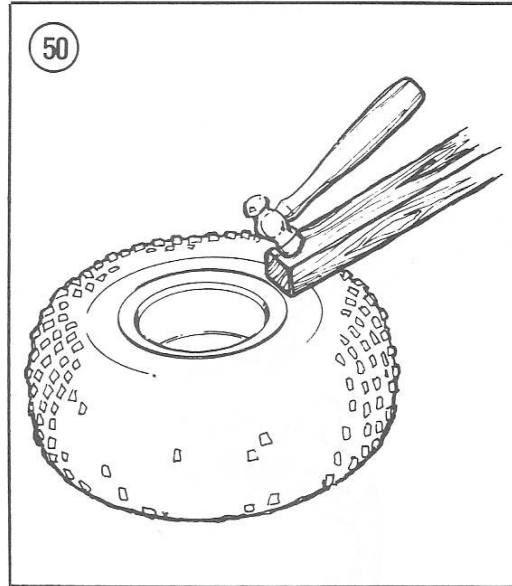
If you are using aftermarket aluminum wheels, special care must be taken when changing tires to avoid scratches and gouges to the outer rim surface.

3. After the air pressure is released from the tire, use one of the previously mentioned tire removal tools or stand on the tire with the heel of your shoe, close to the wheel rim. Exert as much downward pressure as possible to break the tire bead loose. If you are unable to break it loose this way, place a wooden 2×4 next to the rim and hit the 2×4 with a hammer as shown in **Figure 50**.
4. Continue to work your way around the tire until it is completely loose on one side. Turn the tire over and repeat for the other side.
5. Remove the rim bolts, lockwashers and nuts.
6. Remove the rim, large O-ring and reinforcement plate.
7. Inspect the rim sealing surface on both rims. If the rim has been severely hit, it will probably cause an air leak. Either repair or replace any damaged rim. On stock rims, remove any rust on the rim sealing surface area and repaint if necessary.
8. Inspect the tire for cuts, tears, abrasions or any other defects.
9. Wipe the tire beads and rims free from any lubricating agent used in Step 2.
10. Apply clean water to the rim flanges, tire rim beads and onto the outer rim.

NOTE

Use only clean water and make sure the rim flange is clean. Wipe with a lint-free cloth prior to wetting down.

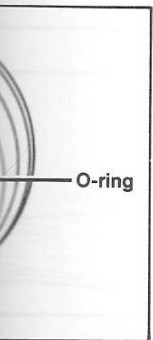
11. Inspect the large O-ring seal (**Figure 51**). If it is starting to harden or deteriorate replace it with a new one.
12. Set the tire into position on the outer rim.
13. Apply a light coat of grease to the large O-ring seal and place it in the groove in the rim (**Figure 51**).
14. Install the inner rim into the tire and onto the outer rim. Align the bolt holes.
15. Install both reinforcement plates and align the bolt holes. Install the bolts, lockwashers and nuts securing the rim halves together. Tighten the nuts to 2.0-3.1 mkg (14.5-22.5 ft.-lb.).



16. Install the valve stem core.
17. Apply tire mounting lubricant or a liquid dish detergent to the tire bead and inflate the tire to 2.2 psi (0.15 kg/cm²).
18. Deflate the tire and let it sit for about one hour.
19. Reinflate the tire to the recommended air pressure.
20. Check the rim line molded into the tire (**Figure 52**) around the edge of the rim. It must be equally spaced all the way around. If the rim line spacing is not equal, the tire bead is not properly seated. Deflate the tire and unseat the bead completely. Lubricate the bead and reinflate the tire.
21. Check for air leaks and install the valve cap.

Cold Patch Repair

This is the preferred method of patching a tire. The rubber plug type of repair is recommended



or a liquid dish
e the tire to 2.2

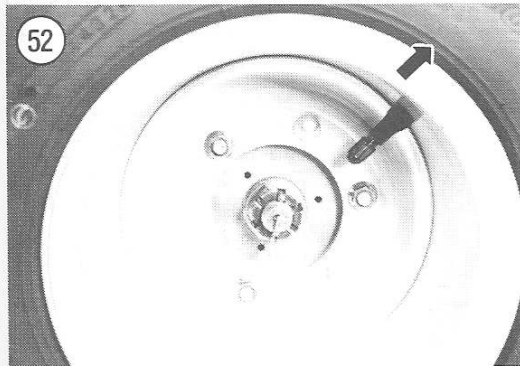
for about one

mmended air

the tire (Figure
must be equally
line spacing is
properly seated.
ad completely.

the valve cap.

atching a tire.
recommended



only for an emergency repair or until the tire can be patched correctly with the cold patch method.

NOTE

If you get caught out in the boonies without any means of patching a tire, you can try the following emergency method. Chew some gum (preferably the soft bubble-gum type) and then knead it into a small strip of cloth. Stuff this gum/cloth into the hole in the tire, pump up the tire and it just may get you back to camp.

1. Remove the tire as described in this chapter.
2. Prior to removing the object that punctured the tire, mark the location of the puncture with chalk or crayon on the outside of the tire.
3. On the inside of the tire, roughen the area around the hole slightly larger than the patch. Use the cap from the tire repair kit or a pocket knife. Do not scrape too vigorously or you may cause additional damage.
4. Clean the area with a non-flammable solvent. Do not use an oil base solvent as it will leave a residue rendering the patch useless.
5. Apply a small amount of special cement to the puncture and spread it with your finger.
6. Allow the cement to dry until tacky—usually 30 seconds or so is all that is necessary.
7. Remove the backing from the patch.

CAUTION

Do not touch the newly exposed rubber with your fingers or the patch will not stick firmly.

8. Center the patch over the hole. Hold the patch firmly in place for about 30 seconds to allow the cement to dry. If you have a roller, use it to help press the patch into place.
9. Dust the area with talcum powder.

Tables are on the following page.

Table 1 FRONT SUSPENSION TORQUE SPECIFICATIONS

Item	mkg	ft.-lb.
Front axle nuts (ALT)	3.6-5.2	36-58
Steering stem head bolt and nut (ALT)	3.5-5.0	25.5-40.0
Handlebar clamp bolt (ALT)	1.2-2.0	8.5-14.5
Handlebar clamp bolt (LT)	1.0-1.6	7.0-11.5
Front wheel lug nut	2.0-3.1	14.5-22.5
Front wheel hub nut (LT)	5-8	36-58
Front wheel rim nut	2.0-3.1	14.5-22.5
Steering shaft clamp bolt (LT)	1.8-2.8	13-20
Steering shaft lower nut (LT)	2.2-3.5	16.0-25.5
Knuckle arm bolt (LT)	4-6	29.0-43.5
Tie rod end nut (LT)	4-6	29-43
Tie rod end lock nut (LT)	2.2-3.5	16.0-25.5

Table 2 WHEEL SPECIFICATIONS

	Standard	Service limit
Wheel rim runout (axial and radial)	-	3.0 mm (0.12 in.)
Wheel axle runout		
Front (ALT)	-	0.25 mm (0.010 in.)
Rear	-	0.50 mm (0.020 in.)

Table 3 FRONT SUSPENSION SPECIFICATIONS

Steering angle (ALT)	38°
Steering angle (LT)	
Inside	38°
Outside	24°
Turning radius (LT)	2.2 m (7.2 ft.)
Trail	
ALT	57 mm (2.24 in.)
LT	10 mm (0.4 in.)
Kingpin inclination (LT)	10°
Caster	
ALT	68° 30 minutes
LT	2° 30 minutes
Camber (LT)	1°
Toe-in (LT)	7-9 mm (0.28-0.35 in.)

Table 4 TIRE SPECIFICATIONS

Tire size	
Front	
(ALT)	22×11.00
(LT)	20×7.00
Rear (all)	22×11.00
Tire tread depth (all)	4.0 mm (0.16 in.)

NOTE: If you own a 1984 or later model, first check the Supplement at the back of the book for any new service information.

CHAPTER NINE

REAR AXLE AND BRAKE

REAR WHEEL AND HUB

Removal/Installation

Refer to **Figure 1** for this procedure.

1. Remove the lug nuts securing the rear wheel to the hub and remove the wheel (**Figure 2**).
2. To remove the rear hub, remove the cotter pin securing the hub retaining nut (**Figure 3**).

NOTE

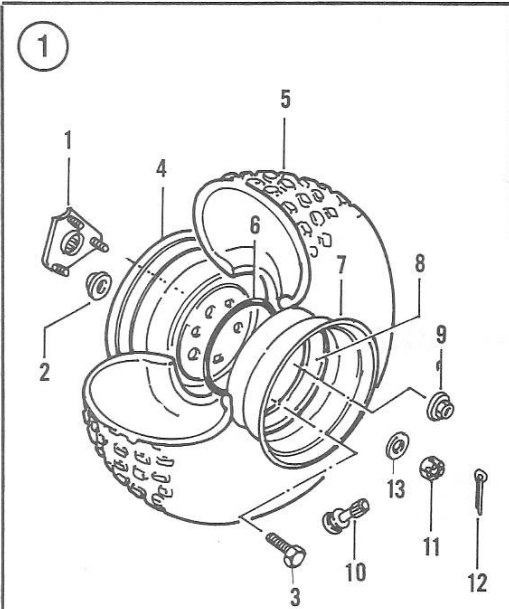
It is not necessary to first remove the rear wheel to remove the rear hub. The rear wheel and hub can be removed together as an assembly if desired.

3. Remove the hub retaining nut and slide the rear hub off the splines on the rear axle.
4. Installation is the reverse of these steps. Tighten the rear wheel lug nuts and hub retaining nut to the torque values specified in **Table 1**. Use a new cotter pin to secure the hub retaining nut.

OUTER CHAIN CASE

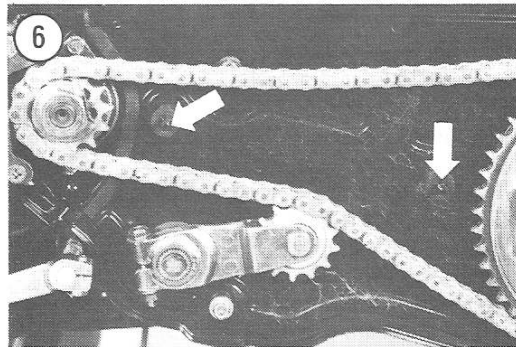
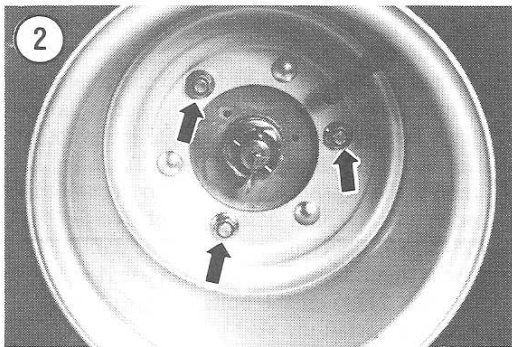
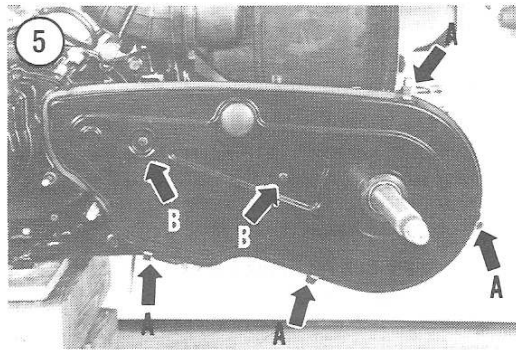
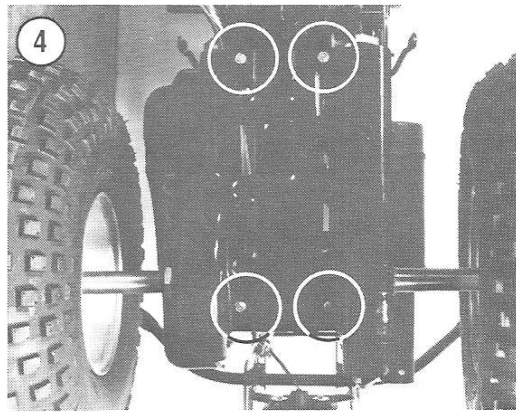
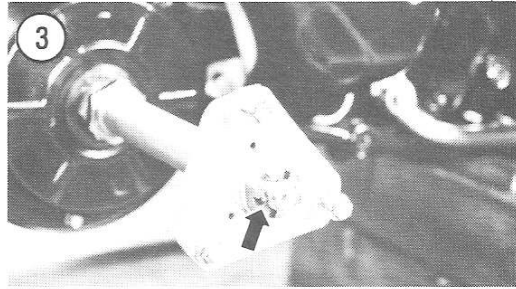
Removal/Installation

1. Remove the left rear wheel and hub as outlined in this chapter.
2. Remove the bolts securing the skid plate and remove the plate (**Figure 4**).
3. Release the clamps (A, **Figure 5**) securing the edges of the chain case.
4. Remove the nuts and washers securing the center of the chain case (B, **Figure 5**).
5. Slide the outer chain case back and clear of the inner case. Take care not to damage the dust seal around the axle hole in the chain case.
6. Installation is the reverse of these steps. Keep the following points in mind:
 - a. Always check the condition, lubrication and slack of the drive chain whenever the outer chain case is removed. Refer to Chapter Three for chain lubrication and adjustment procedures.
 - b. Inspect the rubber seal around the edge of the outer chain case. The seal must be in perfect condition or sand, dirt and water will enter the chain case and significantly shorten the life of the drive chain. Always replace the seal if any tears or splits are present.
 - c. Make sure that the rubber sealing washers are in good condition and installed on the chain case mounting studs (**Figure 6**). Replace the sealing washers if they are not in good condition.
 - d. Install the outer case and snap the retaining clamps into place. Make sure each clamp snaps firmly over the edge of the inner chain case and locks into place (**Figure 7**).
 - e. Install the washers and nuts to secure the center of the chain case. Do not overtighten the nuts or the chain cases may be damaged.
 - f. Use a small amount of blue Loctite (Lock N' Seal No. 2114) on the bolts securing the skid plate and install the skid plate.



REAR WHEEL ASSEMBLY

- 1. Hub
- 2. Wheel retaining nut
- 3. Wheel retaining bolt
- 4. Inner wheel rim
- 5. Tire
- 6. O-ring sealing ring
- 7. Outer wheel rim
- 8. Reinforcement plate
- 9. Wheel lug nut
- 10. Valve stem
- 11. Axle nut
- 12. Cotter pin
- 13. Washer



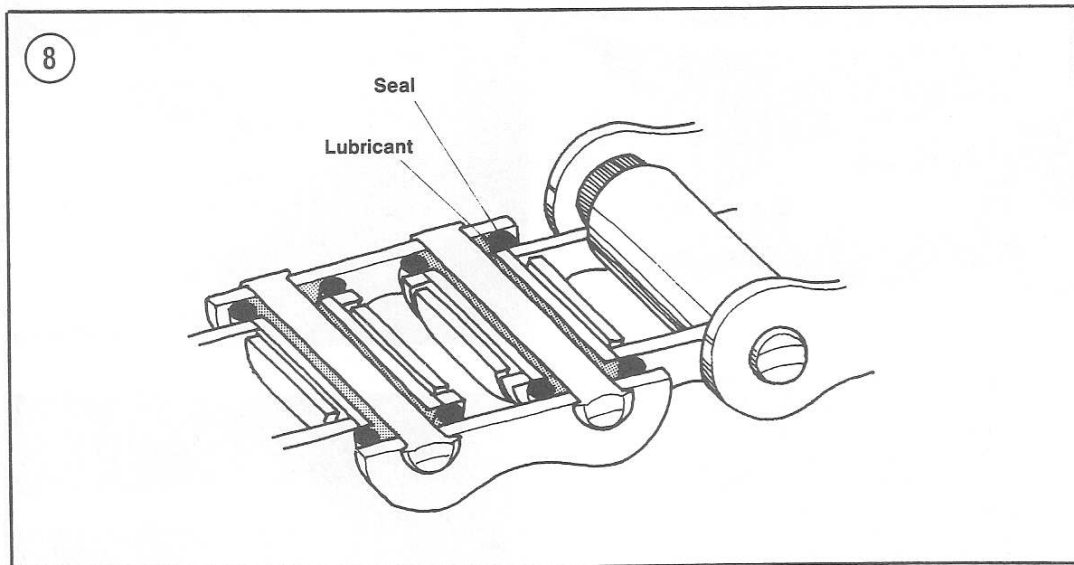
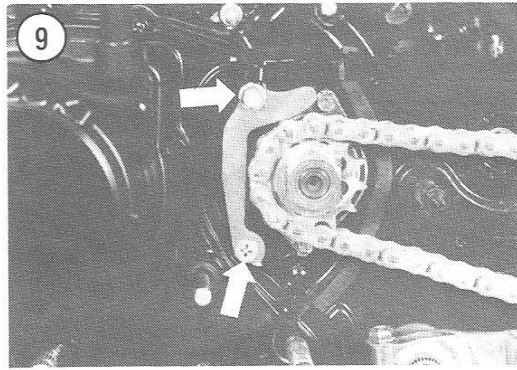
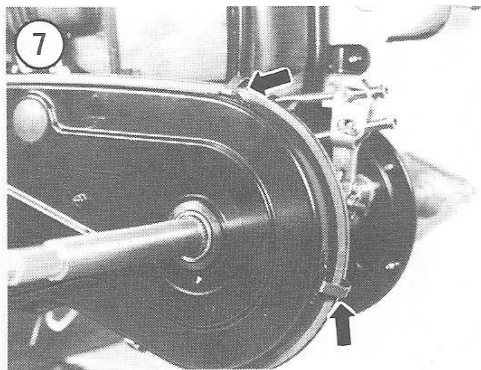
DRIVE CHAIN

Drive chain and sprockets should be adjusted at least once a month. The chain should be adjusted so that it is neither too tight nor too loose. If the chain is too tight, it will cause excessive wear and vibration and will not adjust properly.

The drive chain should be adjusted with no master link rollers and pins as shown in Figure 9-1.

Drive Chain and Sprocket Removal

1. Remove the rear axle nut.



DRIVE CHAIN AND SPROCKETS

Drive chain care is very important. The chain and sprockets should be cleaned, inspected and adjusted at least every 600 miles (1,000 km). If chain or sprocket wear is evident, both sprockets and the chain should be replaced as a set. An excessively stretched chain can cause severe vibration and will be difficult, if not impossible, to adjust properly.

The drive chain is a pre-lubricated, long-life type with no master link. The lubrication between the rollers and pins in each link is sealed with O-rings as shown in Figure 8.

Drive Chain and Engine Sprocket Removal/Installation

1. Remove the seat and rear fender as outlined in Chapter Ten.

2. Remove the outer chain case as outlined in this chapter.

3. Remove the bolt and countersunk screw securing the case saver plate and remove the plate (Figure 9).

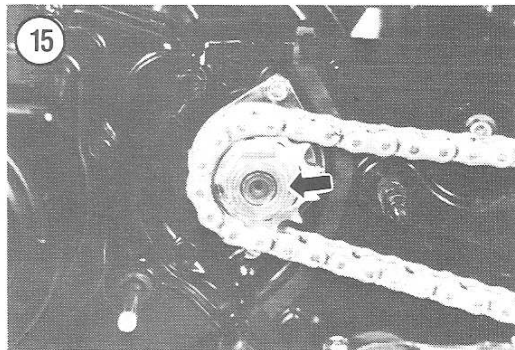
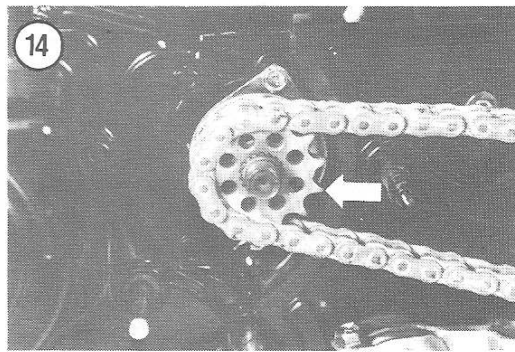
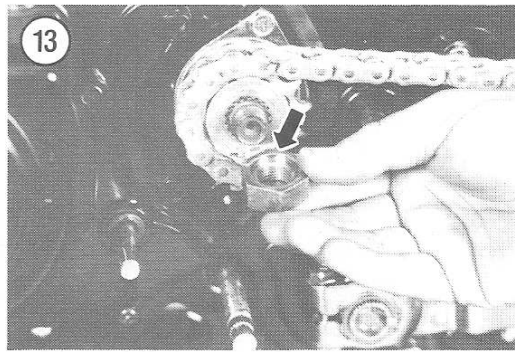
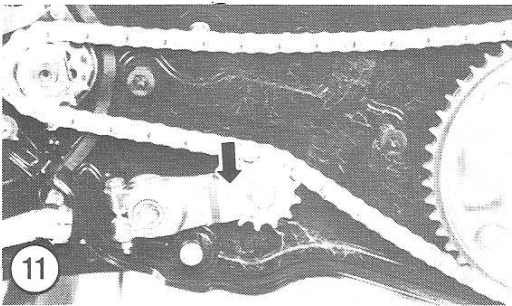
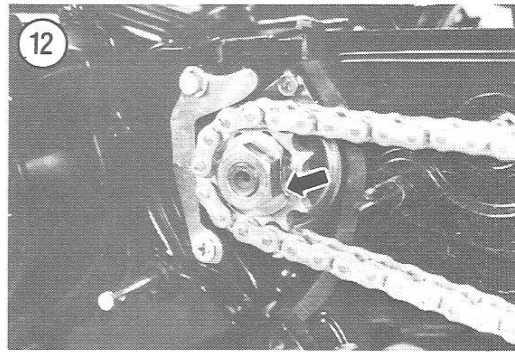
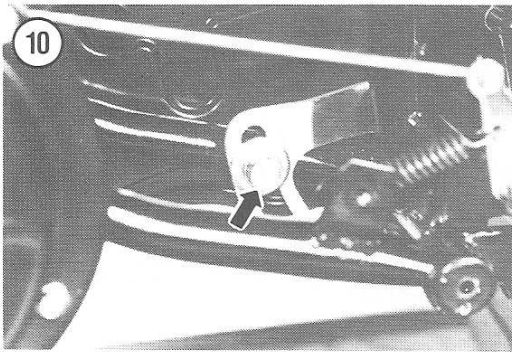
4. Loosen the chain tensioner adjuster bolt (Figure 10, fuel tank removed for clarity). Pull down on the chain tensioner assembly (Figure 11) to provide as much slack in the drive chain as possible.

5. Bend back the tab on the folding lockwasher securing the engine sprocket nut (Figure 12).

6. Have an assistant hold on the brake or set the parking brake lever. Use a 27 mm socket and remove the engine sprocket nut. Note that the recess in the nut is located against the sprocket (Figure 13). Remove the locking washer.

7. Slide the sprocket off the drive shaft or roll the drive chain off the engine sprocket and remove the sprocket.





NOTE

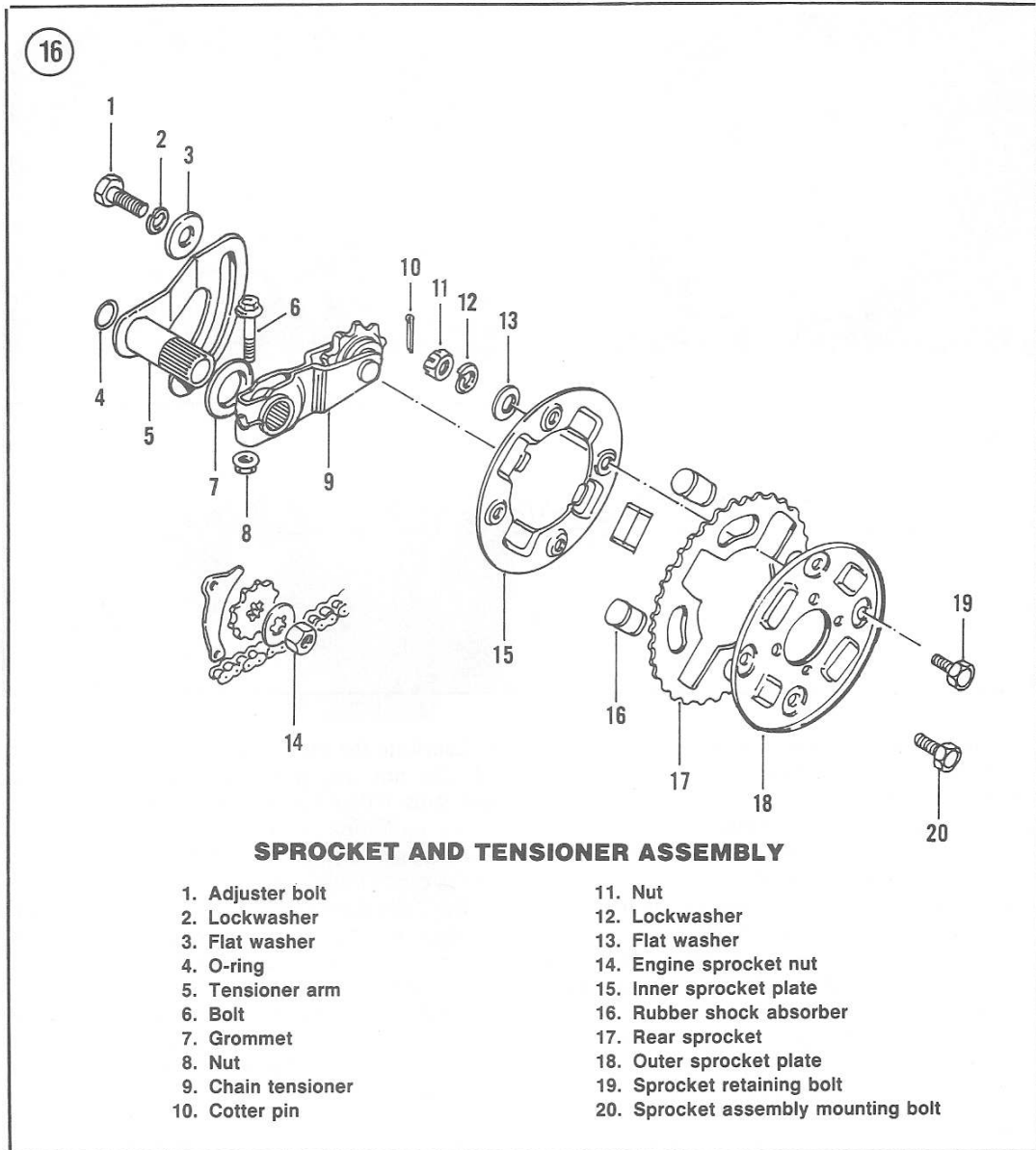
The drive chain is an endless O-ring type without a master link. If the chain is new and not stretched, it may be necessary to remove the bolts securing the rear sprocket and slide both sprockets and the drive chain off at the same time. Refer to *Rear Sprocket Removal* in this chapter.

8. Installation is the reverse of these steps. Keep the following points in mind:

- a. Install the sprocket into the drive shaft and slide the sprocket over the drive shaft (Figure 14).
- b. Install the locking washer and sprocket nut with the recess toward the sprocket. Step on the brake pedal and torque the sprocket nut to the value specified in Table 1 (Figure 15).
- c. Fold the tab of the locking washer over to secure the nut as shown in Figure 12.
- d. Install the case saver plate with the bolt and countersunk screw as shown in Figure 9.
- e. Swing the chain tensioner against the drive chain. Tighten the chain tensioner bolt when the drive chain has 10-20 mm (7/16-13/16 in.) of free play on the top run of the chain measured between both sprockets. Make sure you check the chain tension at several points. Chains will rarely stretch evenly. The specified

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C. Install the
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Chapter Ten.
Rear Sprocket
Removal Installation
The rear sprocket
removed between



free play must be present at the tightest place on the drive chain.

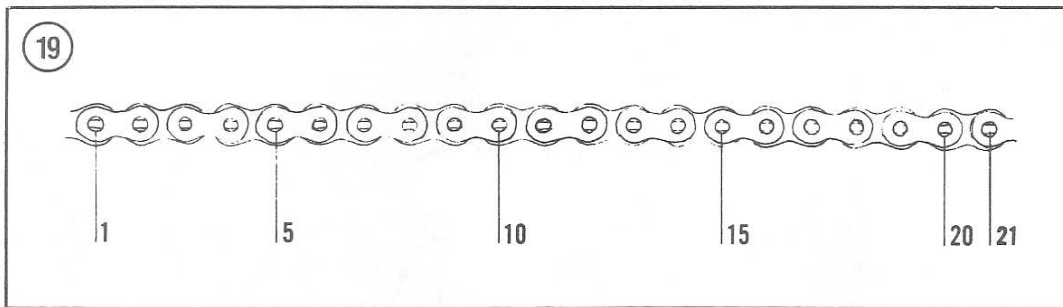
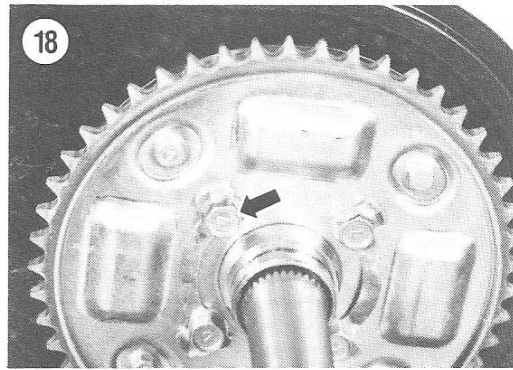
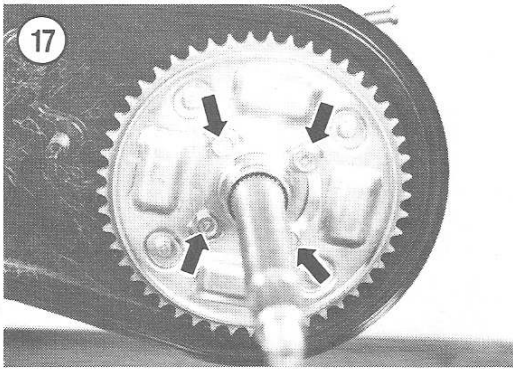
- f. Install the outer chain case as outlined in this chapter.
- g. Install the rear fender and seat as outlined in Chapter Ten.

Rear Sprocket Assembly Removal/Installation

The rear sprocket assembly consists of a sprocket secured between inner and outer sprocket plates

(Figure 16). The actual drive connection between the sprocket and axle is through 4 rubber shock absorbers mounted within the sprocket assembly. These shock absorbers help protect the engine and drive train components from any possible damage that may be caused by sudden changes in engine torque as well as shock caused by uneven terrain such as large bumps or jumps.

- 1. Remove the drive chain as described in this chapter.



2. Bend back the tabs securing the sprocket mounting bolts (Figure 17).
3. Remove the bolts securing the sprocket assembly and slide the assembly off the rear axle.
4. Installation is the reverse of these steps. Keep the following points in mind:
 - a. Torque the sprocket assembly mounting bolts to the value specified in Table 1.
 - b. Fold over the tabs of the locking washer to secure the mounting bolts as shown in Figure 18.
 - c. Install the drive chain as described in this chapter.

Drive Chain Cleaning/Lubrication/Inspection

1. Scrub the side plates of the chain with a stiff brush to remove all loose dirt and grit.
2. Wash the chain with clean kerosene and dry it thoroughly. Use the kerosene sparingly and brush it on the chain side plates, not between the rollers.

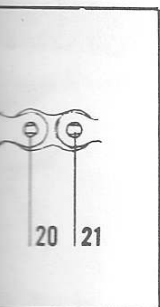
CAUTION

Only use kerosene to wash the chain. Do not use gasoline, benzine or similar solvents or the O-rings and permanent lubrication of the chain will be damaged.

3. Lubricate the outside of the chain with motor oil. Do not use specially compounded chain lubricants *unless* they are specifically designated for use on O-ring chains.
4. After the chain has been thoroughly oiled, wipe off the excess with a clean rag.
5. Carefully examine the chain for loose pins, damaged rollers, dry or rusty links, kinked links and missing O-rings. The chain must be replaced if any of these conditions exist.
6. To check the stretch of the chain refer to *Drive Chain and Engine Sprocket Installation* in this chapter and tighten the chain tensioner until all chain slack is removed.
7. With an accurate ruler or a locally improvised measuring gauge, measure the distance between 21 pins on the chain as shown in Figure 19. The service limit for all models is 256 mm (10.07 in.). The chain must be replaced if it is stretched beyond the service limits.

WARNING

Do not attempt to shorten the chain by removing links and installing a master link; the chain could easily fail. Such a chain failure could cause the rear sprocket and axle to lock up, resulting in a serious spill and/or damage to the machine.



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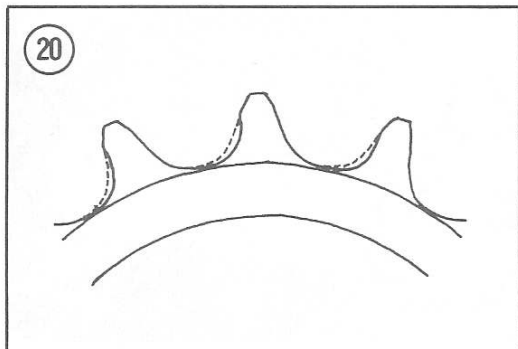
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Sprocket Inspection

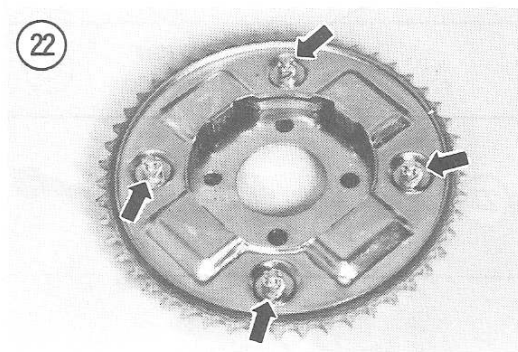
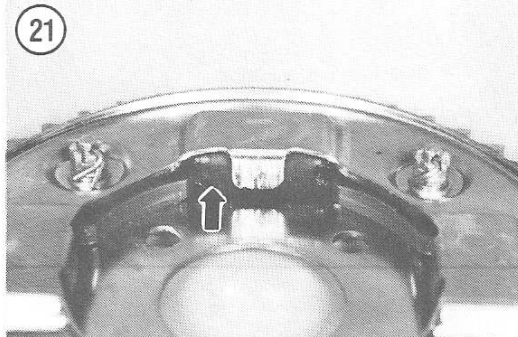
Check the teeth on both sprockets for excessive side wear or undercutting as shown in **Figure 20**. If either sprocket is worn replace both sprockets and the drive chain as set.

CAUTION

Always replace both sprockets as a set if either is worn excessively or when installing a new drive chain. Never run a new chain on old sprockets or an old chain on new sprockets. Rapid and uneven wear will result and seriously damage the new components.

Carefully inspect all the rubber shock absorbers in the rear sprocket assembly (**Figure 21**). If any of the shock absorbers show any signs of damage or deterioration, replace them as a set.

1. Remove the cotter pins securing the sprocket assembly retaining bolts (**Figure 22**).
2. Remove the nuts and bolts securing the sprocket assembly and remove both sprocket plates.
3. Install the new shock absorbers and install both sprocket plates.
4. Install the retaining bolts from the outside and tighten the nuts to the torque value specified in **Table 1**. Secure the nuts with new cotter pins.

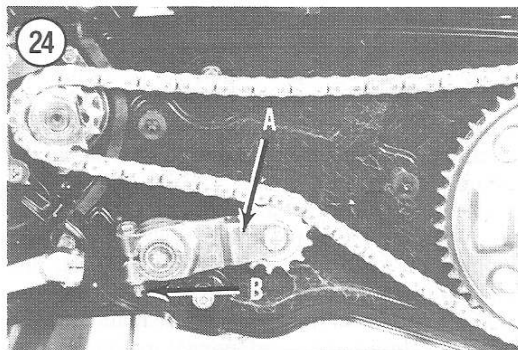
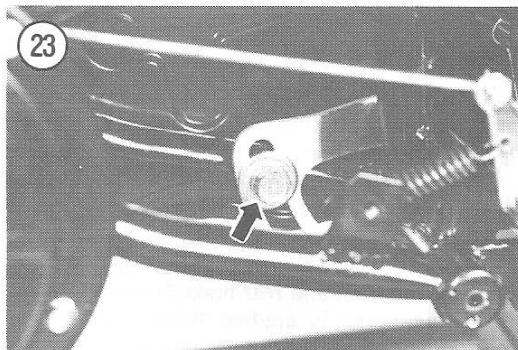


CHAIN TENSIONER ASSEMBLY

Removal/Installation

Refer to **Figure 16** for this procedure.

1. Remove the outer chain case as outlined in this chapter. It is not necessary to remove the drive chain to remove the tensioner assembly.
2. Loosen the chain tensioner bolt (**Figure 23**, fuel tank removed for clarity). Pull the chain tensioner assembly (A, **Figure 24**) down as far as possible.
3. Remove the bolt securing the tensioner to the splined shaft (B, **Figure 24**).



4. Remove the snap ring from the end of the splined tensioner arm shaft (A, **Figure 25**). Note that the punch mark on the splined shaft is aligned with the slot in the tensioner assembly (B, **Figure 25**).

5. Slide the tensioner assembly off the splined shaft.

6. Installation is the reverse of these steps. Keep the following points in mind:

- a. Install the tensioner so that the punch mark on the splined shaft is aligned with the slot (B, **Figure 25**).
- b. Install the snap ring on the end of the tensioner shaft then install the bolt. Tighten the nut to the torque value specified in **Table 1**.
- c. Adjust the slack in the drive chain as outlined in this chapter.
- d. Install the outer chain case as described in this chapter.

Inspection

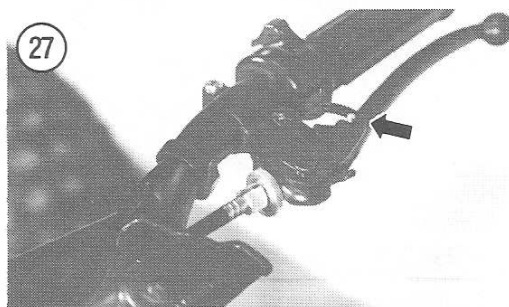
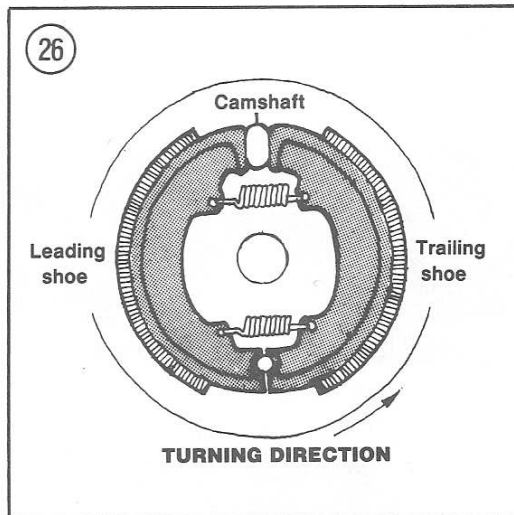
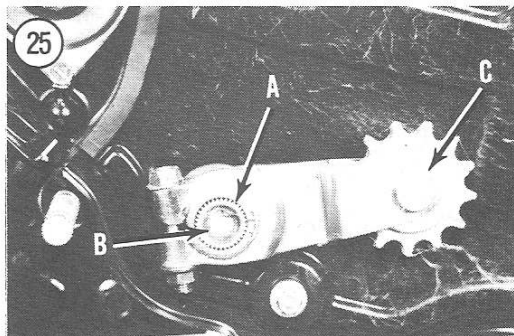
Examine the idler sprocket (C, **Figure 25**) in the tensioner assembly for damage or excessive wear. The ball bearing in the idler sprocket is replaceable; however, the sprocket is secured to the tensioner with a pin that is peened over (riveted) on one end. To remove the sprocket, one end of the pin must be ground off and the pin driven out of the tensioner assembly. If the idler sprocket bearing is worn, refer the bearing replacement job to a Suzuki dealer. Do not replace the pin with a bolt and nut as there is not enough clearance between each side of the tensioner assembly and the chain case to clear the bolt head or the nut.

BRAKES

All machines are equipped with a single drum brake actuated by a front brake lever on the handlebar or a foot pedal. The brakes are single-leading shoe type. **Figure 26** illustrates the major brake components. As the brake pedal or brake lever is actuated, the brake cam shaft rotates, forcing the brake shoes outward against the brake drum.

The front brake lever also acts as a parking brake lever. Pulling the brake lever on all the way and flipping the lock into place (**Figure 27**) sets the brake into the parking position.

Lever and pedal free play must be maintained to minimize brake drag and premature brake wear



and maximize braking effectiveness. Refer to *Brake Adjustment* in Chapter Three for complete adjustment procedures. Refer to **Table 2** at the end of the chapter for brake specifications.

Adjustment

Check the front and rear brake lever movement when the brake is applied. If the brake arm movement exceeds the limit marks cast in the rear

axle housing (Figure 28) replaced. If the rear axle housing is replaced, refer to the maintenance schedule outlined in Chapter Three.

Brake Drum and Shoes

Refer to Figure 29 for the following steps:

1. Remove the brake drum and shoes.
2. Remove the brake drum and shoes.
3. Remove the brake drum and shoes.



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axle housing (Figure 28), the brake shoes should be replaced. If the movement is within the range of the marks, adjust the brake lever and pedal as outlined in Chapter Three.

Brake Drum and Brake Shoe Removal

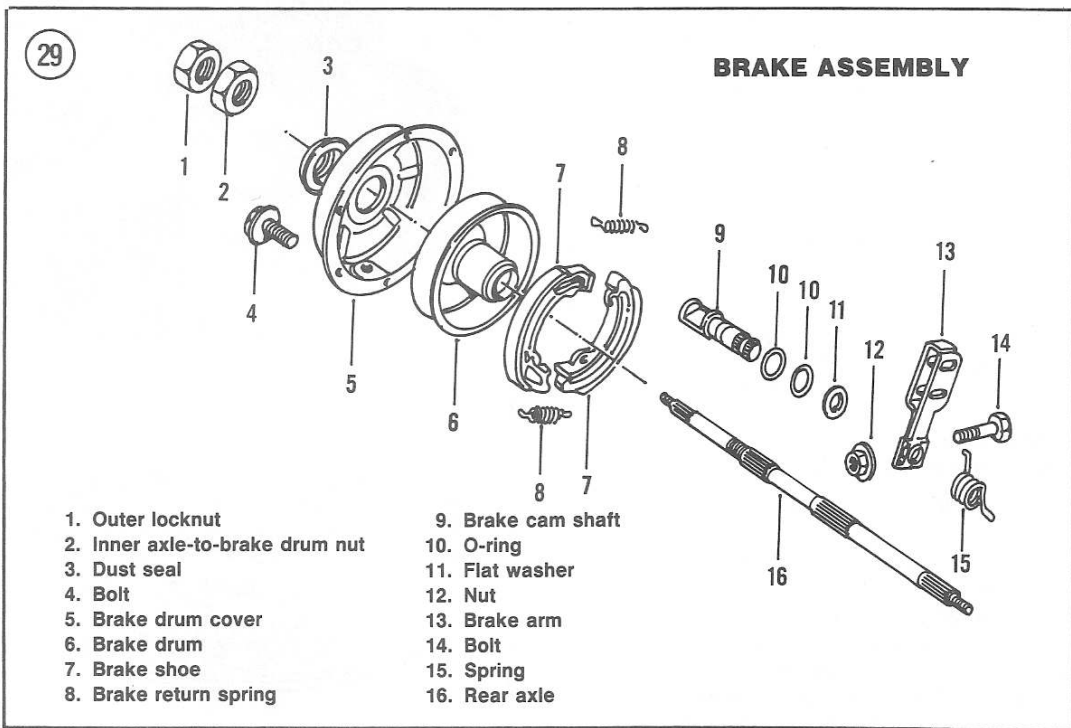
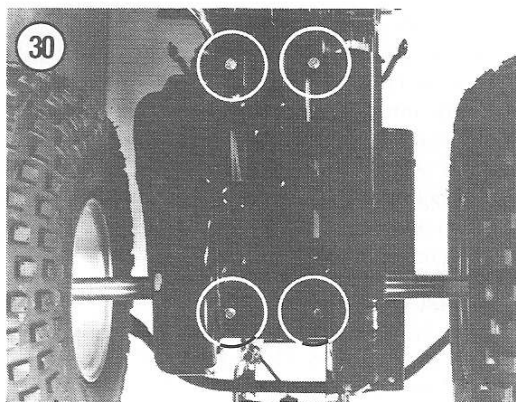
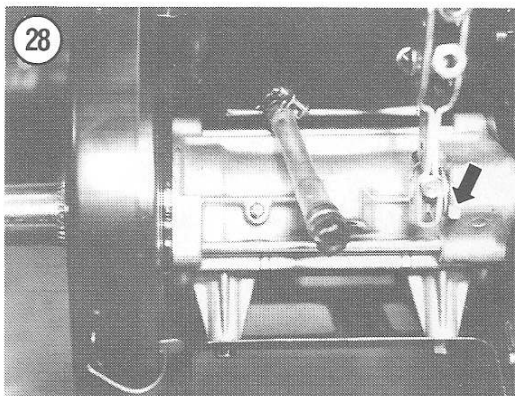
Refer to Figure 29 for this procedure.

1. Remove the right rear wheel and hub as outlined in this chapter.
2. Remove the bolts securing the skid plate and remove the plate (Figure 30).

3. Set the parking brake (Figure 27).
4. Use a large wrench and remove the outer locknut and axle-to-brake drum inner nut (Figure 31).

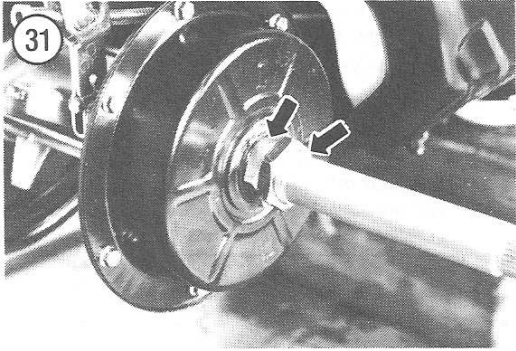
CAUTION

The locknut has been tightened to 16.0-20.0 mkg (115.5-144.5 ft.-lb.). It is very hard to remove even with the correct size tool and a lot of force. Do not apply heat to the area in order to try to loosen the locknut as this would remove the temper from the axle.



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5. If you are unable to loosen the locknut it will have to be chiseled off. Take care not to chisel all the way through into the threads on the axle. Remove the inner nut.

NOTE

The inner nut is not tightened to such a high torque value and is easier to remove.

6. Remove the bolts (Figure 32) securing the brake drum cover and slide off the cover.

7. Release the parking brake and slide off the brake drum (Figure 33).

8. Place a clean shop rag on the linings to protect them from oil and grease during removal.

9. Remove the brake shoes from brake cam and anchor pin (Figure 34). Grasp the brake shoes in each hand and roll the shoes off as shown in Figure 35.

CAUTION

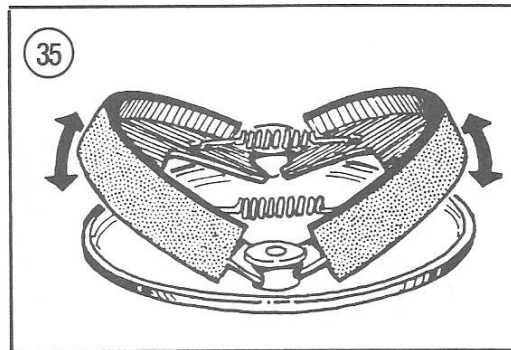
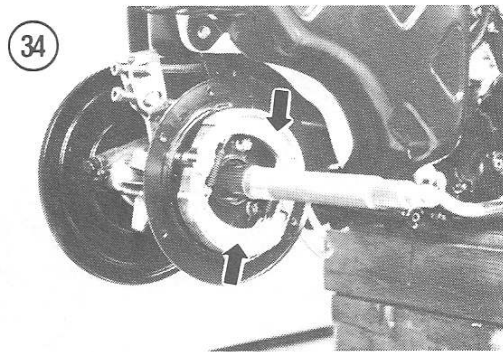
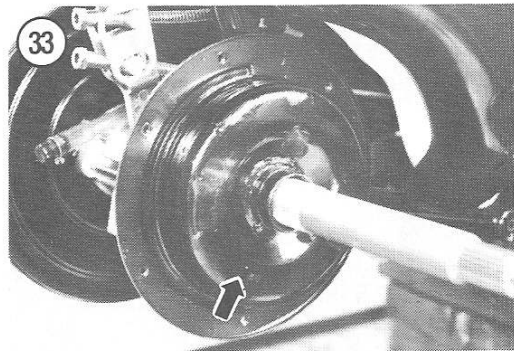
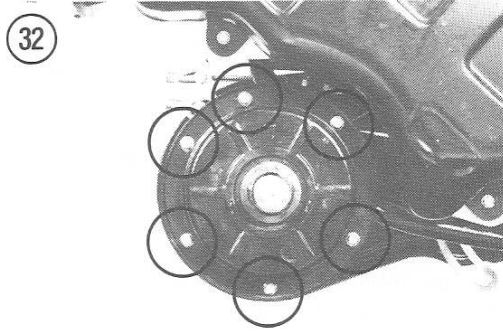
Always handle brake shoes with clean hands. Dirt and grease on hands can contaminate the brake lining material, in which case the linings must be replaced.

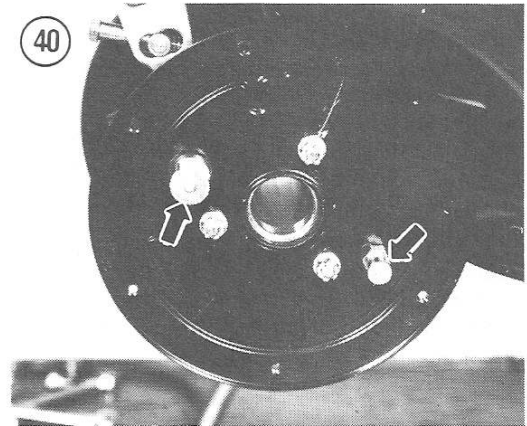
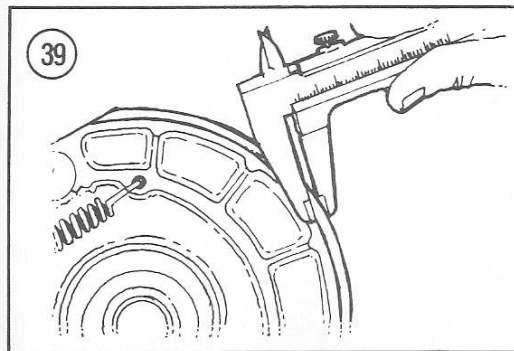
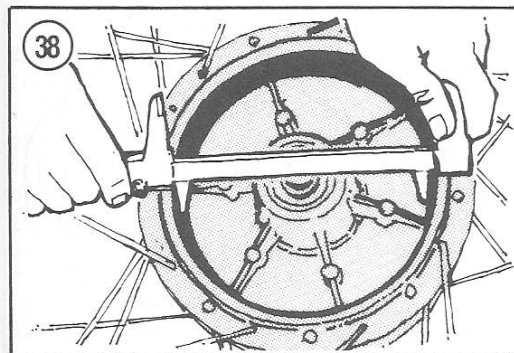
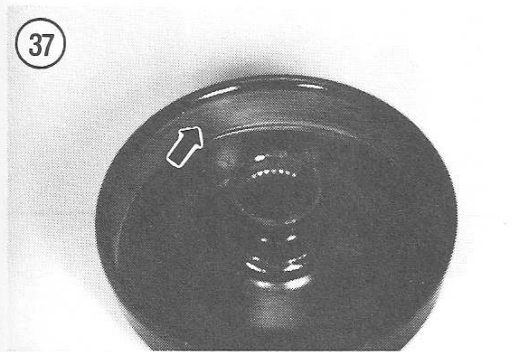
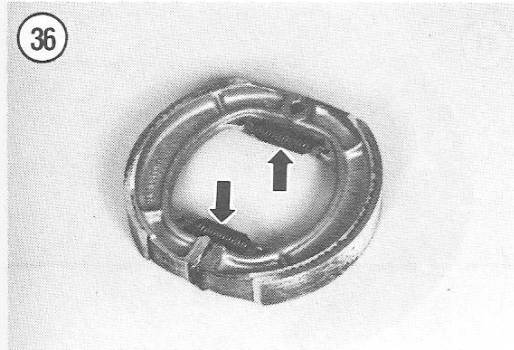
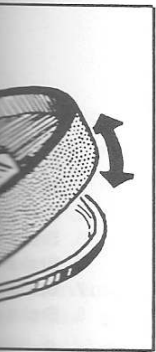
10. Disconnect the springs from each brake shoe (Figure 36).

Brake Drum and Brake Shoe Inspection

1. Thoroughly clean and dry all parts except the linings.

2. Check the contact surface of the drum (Figure 37) for scoring. If there are grooves deep enough to snag a fingernail, the drum should be turned on a lathe and new shoes installed. This type of wear can be avoided to a great extent if the brakes are disassembled and thoroughly cleaned after riding the machine in water, mud or deep sand.





NOTE
 If oil or grease is on the drum surface, clean it off with a clean rag soaked in lacquer thinner—do not use any solvent that may leave an oil residue.

3. Use vernier calipers and check the brake drum for out-of-round or excessive wear (Figure 38). Refer to Table 2 for brake drum specifications.
4. Examine the brake linings for oil, grease, or dirt. Oil-soaked linings cannot be saved; they should be replaced. Dirt imbedded in the lining can be removed with a wire brush.
5. Use a caliper and measure the thickness of both brake shoes as shown in Figure 39. The wear limit for both brake shoes is 1.5 mm (0.06 in.). Replace both shoes as a set if they are worn beyond the service limit.
6. Check the brake shoe return springs for tension. If the springs are stretched and weak, they will not fully retract the shoes from the drum, resulting in a power-robbing drag on the drum and premature wear of the lining material. Replace both springs as a set, if necessary.
7. Inspect the cam lobe and the anchor pin for wear and corrosion (Figure 40). Minor roughness can be removed with fine emery cloth.
8. Examine the dust seal in the brake drum outer cover (Figure 41). Replace the seal if worn or damaged in any way. A defective seal will allow dirt and moisture to enter the brake drum. Lightly grease the lip of the dust seal.

Brake Drum and Brake Shoe Installation

1. Grease the cam and anchor pin (Figure 40) with a light coat of molybdenum disulfide grease; avoid getting any grease on the backing plate or it may get on the friction surface of the brake shoes.
2. Attach the return springs to the brake shoes.