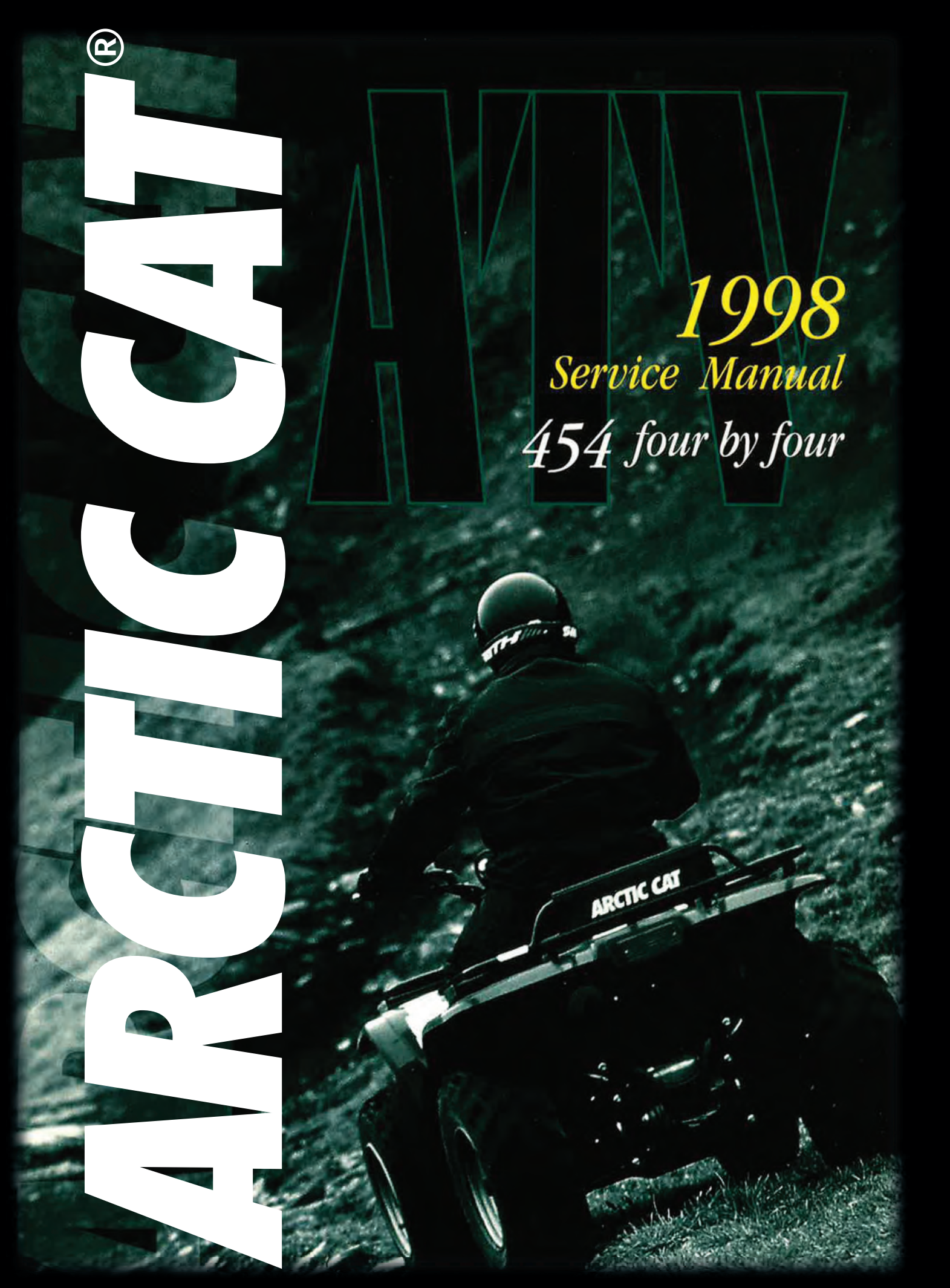
ARCTIC CAT®

ATV

1998 Service Manual

454 four by four



Break-In Procedure

A new ATV and an overhauled ATV engine require a "break-in" period. The first 10 hours (or 200 miles) are most critical to the life of this ATV. Proper operation during this break-in period will help assure maximum life and performance from the ATV.

During the first 10 hours (or 200 miles) of operation, always use less than 1/2 throttle. Varying the engine RPM during the break-in period allows the components to "load" (aiding the mating process) and then "unload" (allowing components to cool). Although it is essential to place some stress on the engine components during break-in, care should be taken not to overload the engine too often. Do not pull a trailer or carry heavy loads during the 10-hour break-in period.

When the engine starts, allow it to warm up properly. Idle the engine several minutes until the engine has reached normal operating temperature. Do not idle the engine for excessively long periods of time.

During the break-in period, a maximum of 1/2 throttle is recommended; however, brief full-throttle accelerations and variations in driving speeds contribute to good engine break-in.

During the break-in period (or whenever the brake pads are replaced), the hydraulic brake pads must be burnished. Slow disc-speed hydraulic brakes must be properly burnished in order to achieve maximum stopping power. Burnish the brake pads by driving the ATV in third gear up to 30 mph and then compressing the hand brake lever 15-20 times while decelerating to 0-5 mph. Repeat this procedure several times or until the brakes feel effective. This procedure burnishes the brake pads, stabilizes the pad material, and extends the life of the brake pads.

⚠ WARNING

Do not attempt sudden stops or put the ATV into a situation where a sudden stop will be required until the brake pads are properly burnished.

■ NOTE: Do not be reluctant to heat up the brake pads during the burnishing procedure.

After the completion of the break-in period, the engine oil and oil filter should be changed. Other maintenance after break-in should include checking of all prescribed adjustments and tightening of all fasteners.

Gasoline-Oil-Lubricant

RECOMMENDED GASOLINE

The recommended gasoline to use in this ATV is 87 minimum octane regular unleaded. In many areas, oxygenates (either ethanol or MTBE) are added to the gasoline. Oxygenated gasolines containing up to 10% ethanol, 5% methane, or 5% MTBE are acceptable gasolines.

When using ethanol blended gasoline, it is not necessary to add a gasoline antifreeze since ethanol will prevent the accumulation of moisture in the fuel system.

⚠ CAUTION

Do not use white gas. Only Arctic Cat approved gasoline additives should be used.

RECOMMENDED ENGINE/ TRANSMISSION OIL

⚠ CAUTION

Any oil used in place of the recommended oil could cause serious engine damage. Do not use oils which contain graphite or molybdenum additives. These oils can adversely affect clutch operation. Also, not recommended are racing, vegetable, non-detergent, and castor-based oils.

The recommended oil to use in this ATV is Arctic Cat 4-Stroke Oil (p/n 0436-005) or an equivalent oil which is rated SE, SF, or SG under API service classification. These oils meet all of the lubrication requirements of the Arctic Cat ATV engine. The recommended engine oil viscosity is SAE 10W-40. Ambient temperature should determine the correct weight of oil. See the viscosity chart for details.

VISCOSITY CHART

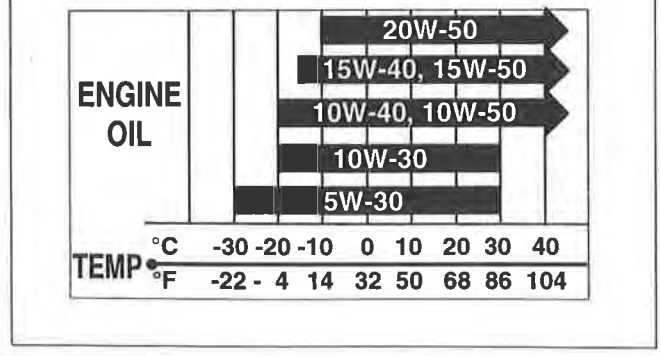


Fig. 2-20

AL645D

7. Install the seat making sure the seat is properly secured (see Section 8).

Valve/Tappet Clearance

To check and adjust valve/tappet clearance, use the following procedure.

1. Remove the seat assembly and side panels (see Section 8).
2. Remove the gas tank (see Section 4).
3. Remove the timing inspection plug; then remove the tappet covers (for more detailed information, see Section 3 - Servicing Top-Side Components).
4. Rotate the crankshaft to the TDC position on the compression stroke.

■ **NOTE: At this point, the rocker arms and adjuster screws must not have pressure on them.**

5. Using a feeler gauge, check each valve/tappet clearance. If clearance is not within specifications, loosen the jam nut and rotate the tappet adjuster screw until the clearance is within specifications. Tighten each jam nut securely after completing the adjustment.

⚠ CAUTION

The feeler gauge must be positioned at the same angle as the valve and valve adjuster for an accurate measurement of clearance. Failure to measure the valve clearance accurately could cause valve component damage.

VALVE/TAPPET CLEARANCE	
Intake	0.05-0.10 mm (0.002-0.004 in.)
Exhaust	0.17-0.22 mm (0.007-0.009 in.)

Fig. 2-21

CC007D

6. Install the timing inspection plug.
7. Place the two tappet covers into position making sure the proper cap screws are with the proper cover. Tighten the cap screws securely.

Fig. 2-22

CC001D

8. Install the gas tank (see Section 4).
9. Install the side panels and seat (see Section 8).

Testing Engine Compression

To test engine compression, use the following procedure.

1. Remove the high tension lead from the spark plug.
2. Using compressed air, blow any debris from around the spark plug.

4. High Beam Indicator — A blue light will illuminate when the lights are on high beam. The light will not be illuminated when the lights are switched to low beam.

5. Temperature Indicator — A red light will illuminate if the engine overheats. The light should be off during normal operation.

⚠ CAUTION

Continued operation of the ATV with high engine temperature may result in engine damage or premature wear.

6. Neutral Indicator — A green light will illuminate when the transmission is in neutral and the ignition switch is on. The light will go out when shifted into any gear other than neutral.

7. Reverse Indicator — An orange light will illuminate when the transmission is shifted into reverse gear. The light will go off when shifted out of reverse.

8. Low Oil-Pressure Indicator (Optional) - If installed, a red light will illuminate if the oil pressure is low. The light should be off during normal operation.

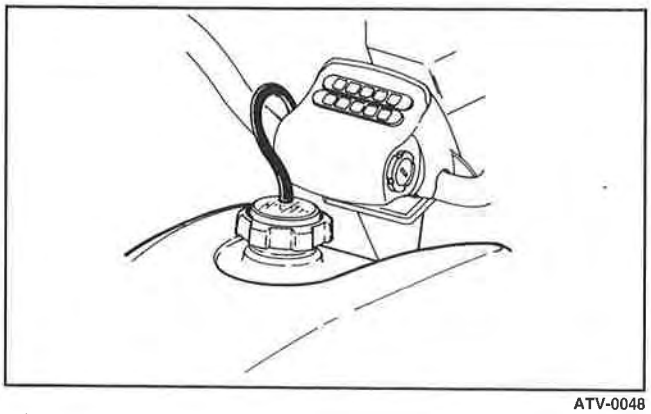
⚠ CAUTION

Continued operation of the ATV with low oil pressure will result in engine damage or premature wear.

9. Gear Selection Indicator — A yellow light will illuminate to indicate which gear (1-5) the transmission is shifted into.

GAS TANK CAP/GAUGE

Fig. 2-48



ATV-0048

The gauge shows the approximate amount of gas remaining in the gas tank.

Frame/Welds/Racks

The frame, welds, and racks should be checked periodically for damage, bends, cracks, deterioration, broken components, and missing components. If replacement or repair constitutes removal, see Section 8.

Electrical Connections

The electrical connections should be checked periodically for proper function. In case of an electrical failure, check fuses, connections (for tightness, corrosion, damage), and/or bulbs. If an electrical component needs to be tested for proper function, see Section 5.

Hydraulic Brake System

CHECKING/BLEEDING

The hydraulic brake system has been filled and bled at the factory. To check and/or bleed the hydraulic brake system, use the following procedure.

1. With the master cylinder in a level position, check the fluid level. It must be above the minimum line and below the maximum line.

Fig. 2-49

AF767D

2. Compress the brake lever several times to check for a firm lever. If the lever is not firm, the brake system must be bled.

3. To bleed the brake system, use the following procedure.

Fig. 3-14

CC123D

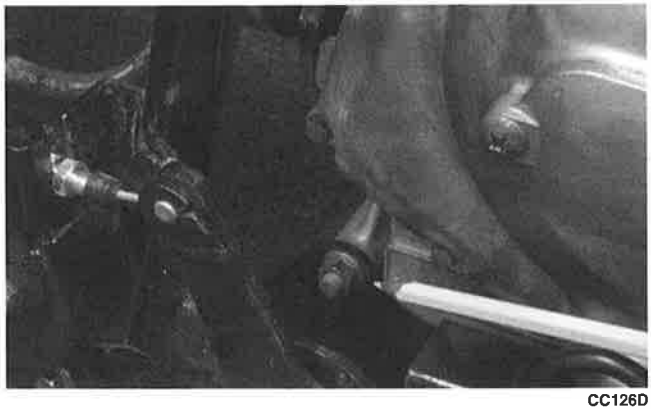
C. Upper rear: One cap screw and nut with flat washer.

Fig. 3-15

CC125D

D. Lower rear: One cap screw and nut with flat washer.

Fig. 3-16



CC126D

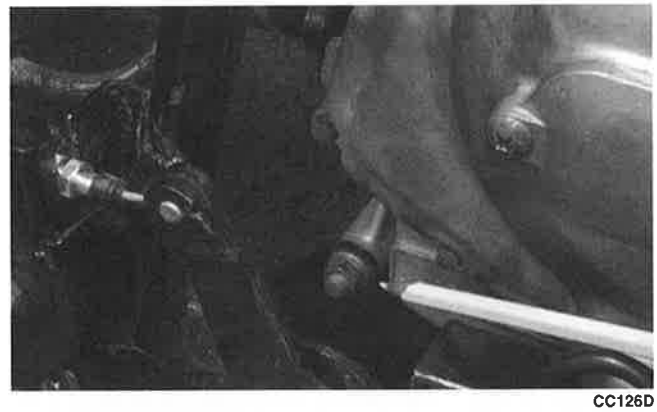
19. Remove the engine/transmission from the left side of the frame.

Installing Engine/Transmission

■ **NOTE: Arctic Cat recommends that new gaskets and O-rings be installed whenever servicing the ATV.**

1. From the left side, place the engine/transmission into the frame.
2. Install the mounting fasteners securing the engine/transmission in the following sequence.
   A. Lower rear: One cap screw and nut with flat washer. Tighten only until snug.

Fig. 3-17



CC126D

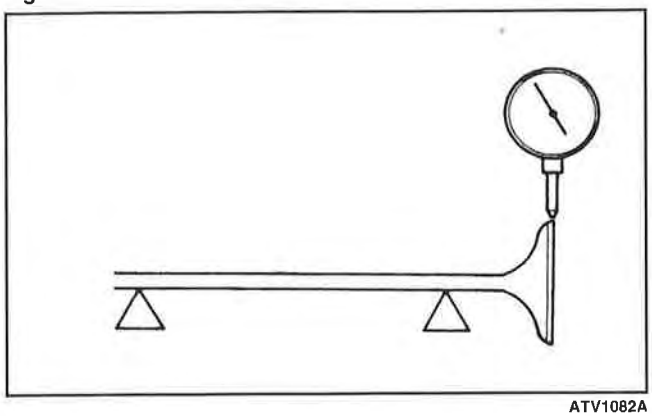
B. Upper rear: One cap screw and nut with flat washer. Tighten only until snug.

Fig. 3-18

CC125D

C. Lower front: One cap screw, nut, spacer, and washer. Tighten only until snug.

Fig. 3-61



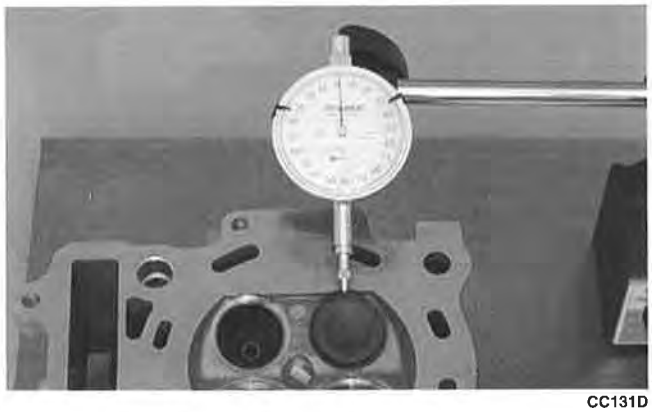
ATV1082A

3. Rotate the valve in the V-blocks.
4. Maximum runout is 0.03 mm (0.001 in.).

Measuring Valve Guide/Valve Stem Deflection (Wobble Method)

1. Mount a dial indicator and base on the surface plate; then place the cylinder head on the surface plate.
2. Install the valve into the cylinder head; then position the dial indicator contact point against the outside edge of the valve face. Zero the indicator.

Fig. 3-62



CC131D

3. Push the valve from side to side; then from top to bottom.
4. Maximum "wobble" deflection is 0.35 mm (0.014 in.).

Measuring Valve Guides (Inside Diameter)

1. Insert a snap gauge 1/2 way down into each valve guide bore; then remove the gauge and measure it with a micrometer.
2. Acceptable inside diameter range is 5.000-5.012 mm (0.1969-0.1973 in.).
3. If a valve guide is out of tolerance, it must be replaced.

Replacing Valve Guide

■ NOTE: If a valve guide is worn or damaged, it must be replaced.

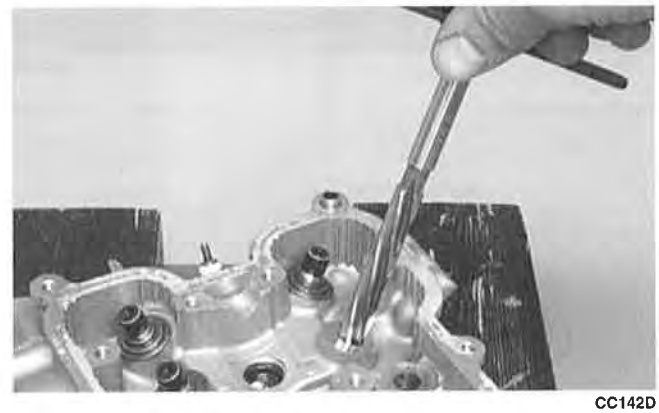
1. If a valve guide needs replacing, insert the Valve Guide Remover/Installer (p/n 0444-016) into the valve seat side of the valve guide. Using a hammer, gently drive the valve guide out of the cylinder head.

Fig. 3-63

CC137D

2. Using the Standard Valve Guide Reamer (p/n 0444-017), remove any burrs or tight areas from the valve guide journals.

Fig. 3-64



CC142D

3. To install a valve guide, use the Valve Guide Remover/Installer and gently drive a valve guide with a retaining clip into the bore from the valve spring side until the retaining clip just contacts the cylinder head.

Fig. 3-100

CC024D

Fig. 3-101

CC023D

4. Loosely install the two nuts which secure the cylinder to the crankcase.

5. Install the coolant hose onto the crankcase union and tighten the clamp.

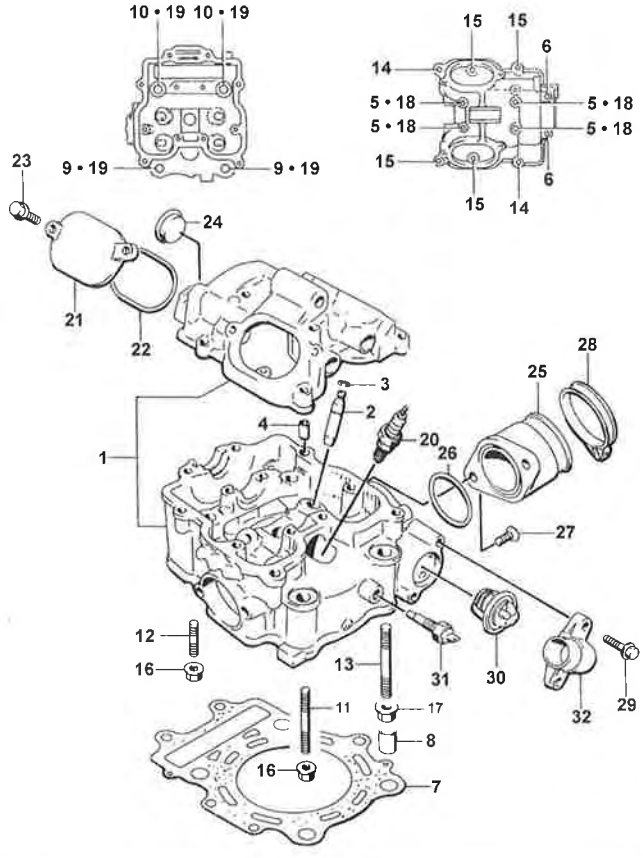
■ **NOTE: The two cylinder to crankcase nuts will be tightened in step 10.**

C. Cylinder Head
D. Valve Cover

Fig. 3-102

KEY

1. Cylinder Head Assy
2. Valve Guide
3. Circlip
4. Pin
5. Cap Screw
6. Cap Screw
7. Cylinder Head Gasket
8. Pin
9. Cap Screw
10. Cap Screw
11. Cylinder Head Stud Bolt
12. Cylinder Head Stud Bolt
13. Stud Bolt
14. Cap Screw
15. Cap Screw
16. Nut
17. Nut
18. Gasket
19. Head Nut Gasket
20. Spark Plug
21. Inspection Cap
22. O-Ring
23. Cap Screw
24. Cylinder Head Plug
25. Intake Pipe Assy
26. O-Ring
27. Cap Screw
28. Clamp
29. Cap Screw
30. Magneto Rotor Nut
31. Water Temperature Switch Assy
32. Thermostat Cover
33. Thermostat
34. Cap Screw
35. Gasket Set



0732-300

■ **NOTE: Steps 1-5 in the preceding sub-section must precede this procedure.**

6. Place the chain guide into the cylinder.

Fig. 3-151

CC060D

15. Remove the #2 gear and the select sliding dog gear from the driveshaft.

Fig. 3-152

CC061D

☞ AT THIS POINT

To service gear shift fork, see Servicing Left-Side Components in this sub-section.

16. Remove the circlip and washer from the driveshaft; then remove the driven gear. Account for a driven spacer and a spacer.

Fig. 3-153

CC059D

Fig. 3-154

CC062D

17. Remove the washer and the #1 gear from the output shaft; then account for the bushing.

Fig. 3-155

CC063D

18. Remove the starter idle gear from the pin; then remove the pin.

Fig. 3-156

CC064D

19. Remove the Phillips-head screws securing the shift-indicator sending unit; then remove the sending unit. Account for an O-ring, neutral contact, and spring.

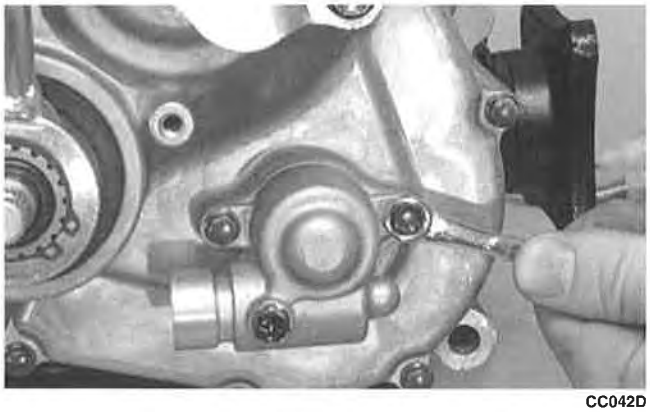
⚠ CAUTION

Make sure the speedometer gear and output shaft gear match up during assembly.

Fig. 3-203

CC043D

Fig. 3-204



CC042D

26. Install the inside circlip onto the Hi/Low range shift shaft with the sharp side of the circlip facing the engine; then place the shift lever assembly part way onto the shaft.

■ NOTE: Position the shift lever part way onto the splines and verify the subtransmission is in Hi range. If not, shift into Hi range.

Fig. 3-205

CC045D

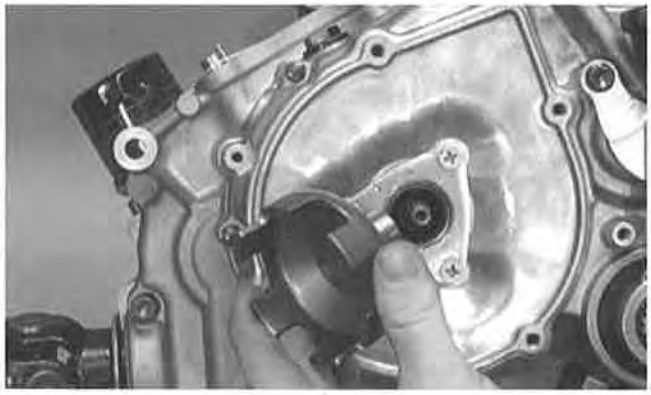
27. Pull up on the Hi/Low shift T-handle and guide the T-handle stop pin into the Hi range lever stop plate slot; then slide the shift lever assembly the rest of the way onto the shift shaft. Secure with the outer circlip making sure the sharp side of the circlip faces away from the Hi/Low-range lever.

Fig. 3-206

CC044D

28. Place the starter cup into position on the crankshaft making sure a new, lubricated O-ring is inside the cup. Tighten the flange nut to 3.5 kg-m (25 ft-lb).

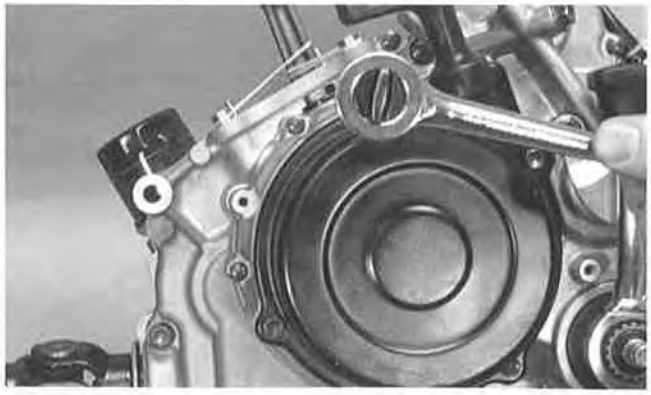
Fig. 3-207



CC041D

29. Place the gasket and recoil starter assembly into position on the left-side cover; then tighten four cap screws to 0.8 kg-m (6 ft-lb).

Fig. 3-208



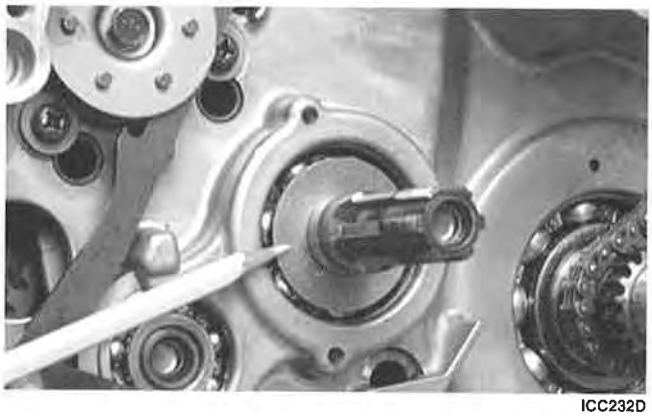
CC039D

Fig. 3-254

CC079D

10. Install the primary driven washers onto the driveshaft and crankshaft.

Fig. 3-255



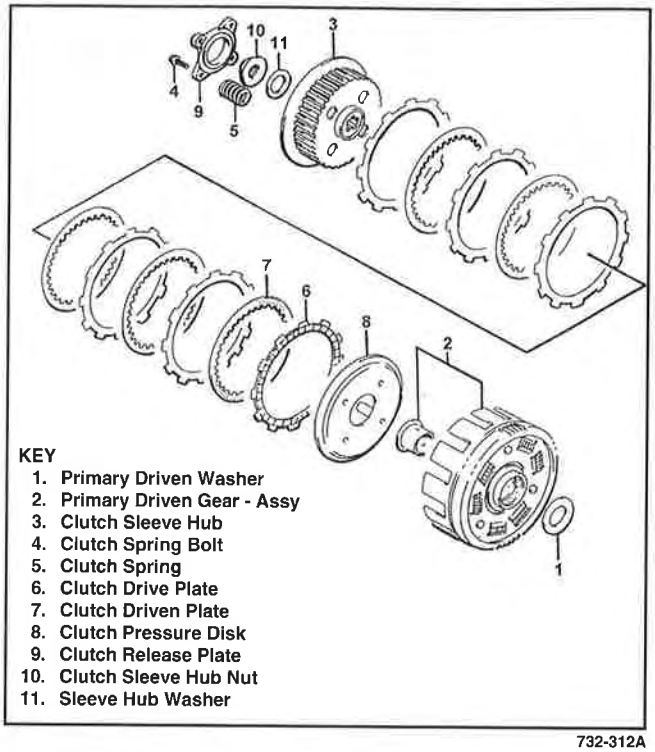
ICC232D

11. Install the bushing into the primary driven gear.

Fig. 3-256

CC239D

Fig. 3-257



KEY
1. Primary Driven Washer
2. Primary Driven Gear - Assy
3. Clutch Sleeve Hub
4. Clutch Spring Bolt
5. Clutch Spring
6. Clutch Drive Plate
7. Clutch Driven Plate
8. Clutch Pressure Disk
9. Clutch Release Plate
10. Clutch Sleeve Hub Nut
11. Sleeve Hub Washer

732-312A

12. Install the clutch pressure disk.

Fig. 3-258

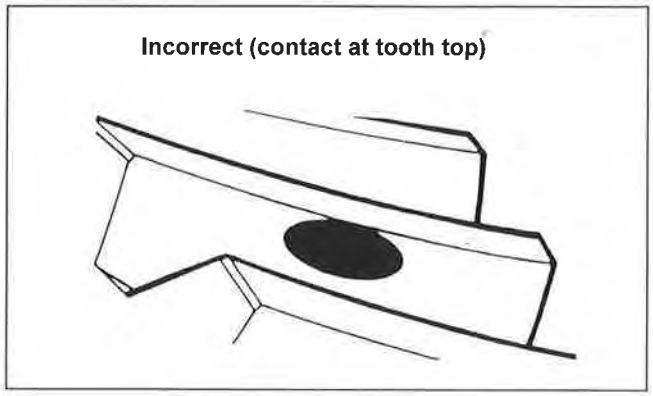
CC238D

13. Alternately install the 6 drive clutch fiber plates and the 5 driven clutch steel plates.

⚠ CAUTION

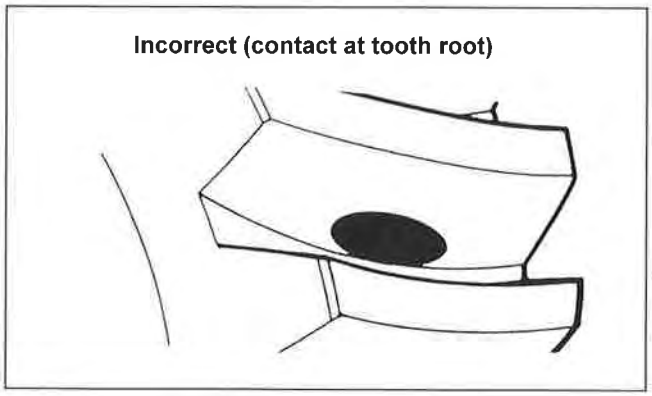
The six drive clutch fiber plates and the five driven clutch steel plates must be alternately installed starting and ending with a drive clutch fiber plate.

Fig. 3-302



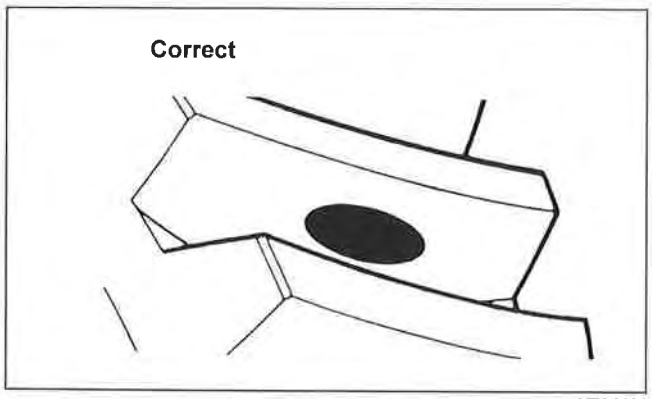
ATV-0103

Fig. 3-303



ATV-0105

Fig. 3-304



ATV-0104

Correcting Tooth Contact

■ NOTE: If tooth contact pattern is comparable to the correct pattern illustration, no correction is necessary.

1. If tooth contact pattern is comparable to an incorrect pattern, correct tooth contact according to the following chart.

Tooth Contact	Shim Correction
Contacts at Top	Decrease Shim Thickness
Contacts at Root	Increase Shim Thickness

■ NOTE: To correct tooth contact, steps 1 and 2 (with NOTE) of "Correcting Backlash" must be followed and the above "Tooth Contact/Shim Correction" chart must be consulted.

⚠ CAUTION

After correcting tooth contact, backlash must again be checked and corrected (if necessary). Continue the correcting backlash/correcting tooth contact procedures until they are both within tolerance values.

CRANKSHAFT ASSEMBLY

Measuring Connecting Rod (Small End Inside Diameter)

1. Insert a snap gauge into the upper connecting rod small end bore; then remove the gauge and measure it with micrometer.

Fig. 3-305

CC290D

2. Maximum diameter is 21.04 mm (0.8283 in.).

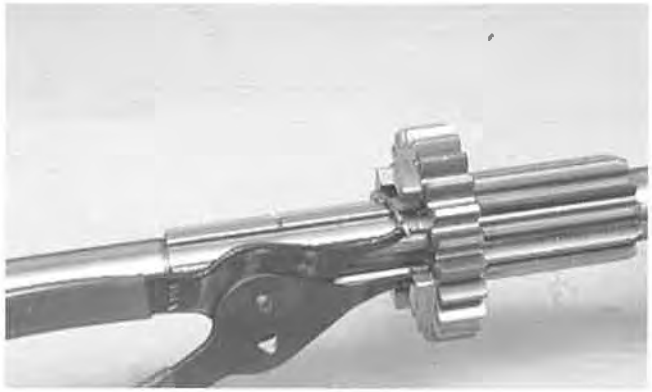
Measuring Connecting Rod (Small End Deflection)

1. Place the crankshaft on a set of V-blocks and mount a dial indicator and base on the surface plate. Position the indicator contact point against the center of the connecting rod small end journal.
2. Zero the indicator and push the small end of the connecting rod away from the dial indicator.
3. Maximum deflection is 3 mm (0.12 in.).

Measuring Connecting Rod (Big End Side-to-Side)

1. Push the lower end of the connecting rod to one side of the crankshaft journal.

Fig. 3-358



CC199D

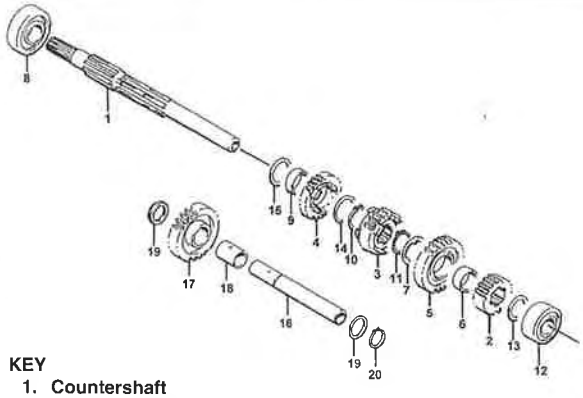
Fig. 3-359

CC198D

6. Remove the 4th drive gear bushing; then remove the 4th drive gear washer from the countershaft.

Assembling

Fig. 3-360



KEY

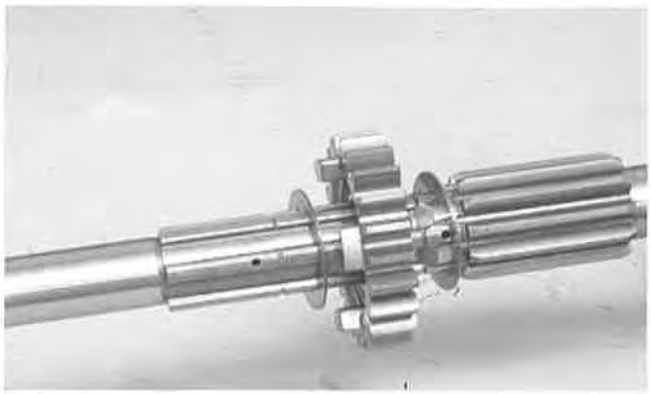
1. Countershaft
2. 2nd Drive Gear
3. 3rd Drive Gear
4. 4th Drive Gear
5. 5th Drive Gear
6. 5th Drive Gear Bushing
7. 5th Drive Gear Washer
8. Center Shaft Bearing - Right
9. 4th Drive Gear Bushing
10. 4th Drive Circlip
11. 5th Drive Circlip
12. Center Shaft Bearing
13. 2nd Drive Washer
14. 4th Drive Washer
15. 4th Drive Washer
16. Reverse Idle Shaft
17. Reverse Idle Gear
18. Reverse Idle Bushing
19. Reverse Idle Washer
20. Reverse Idle Circlip

732-313B

1. Install the 4th drive gear washer; then install the 4th drive gear bushing onto the countershaft.

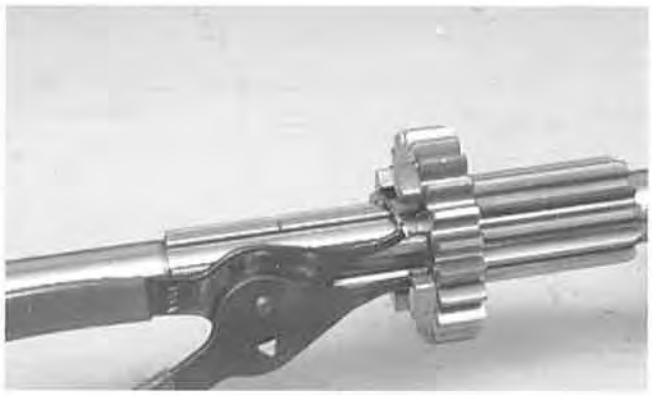
2. Install the 4th drive gear; then install the 4th drive gear washer onto the countershaft. Secure with the circlip.

Fig. 3-361



CC198D

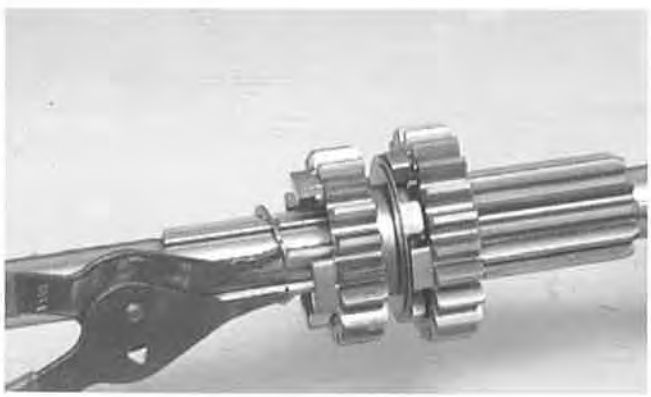
Fig. 3-362



CC199D

3. Install the 3rd drive gear; then install the 5th drive gear circlip onto the countershaft.

Fig. 3-363



CC200D

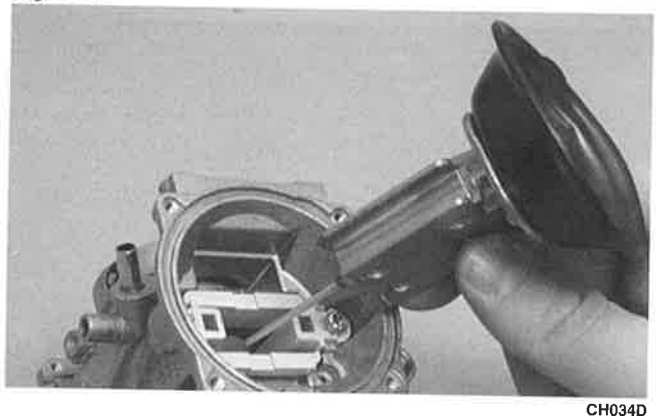
4. Install the 5th drive gear washer, 5th drive gear bushing, and 5th drive gear onto the countershaft. Align the oil holes.

Fig. 4-10

CH015D

2. Remove the diaphragm from the carburetor body and account for the spring, washer, and piston valve.

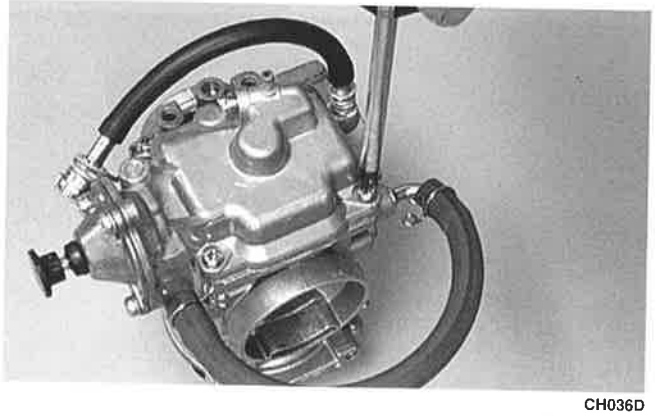
Fig. 4-11



CH034D

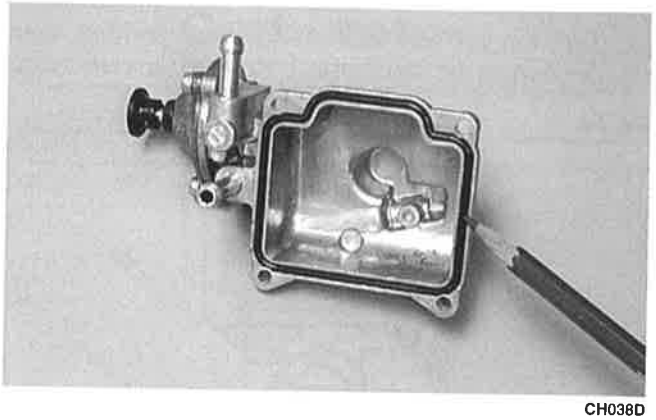
3. Remove the four Phillips-head screws securing the float chamber; then remove the chamber. Account for the O-ring. Note position of the idle speed adjuster wire form. Remove the idle RPM speed adjuster link.

Fig. 4-12



CH036D

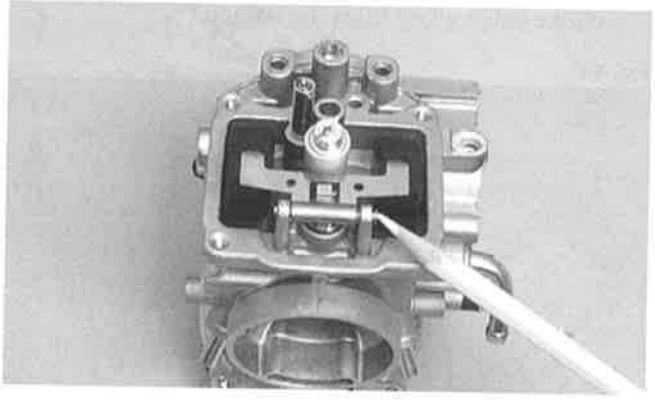
Fig. 4-13



CH038D

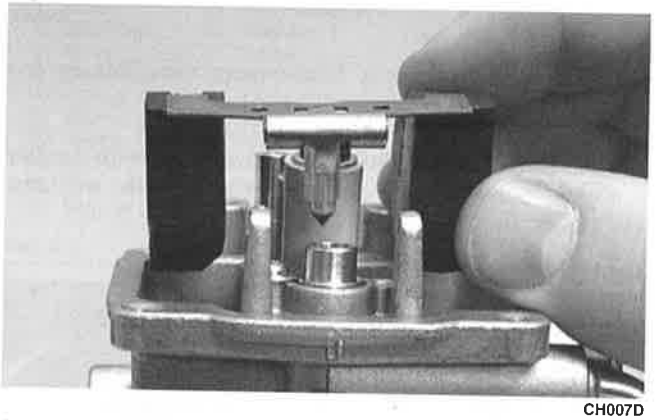
4. Remove the float pin; then lift the float with needle valve from the carburetor body.

Fig. 4-14



CH005D

Fig. 4-15

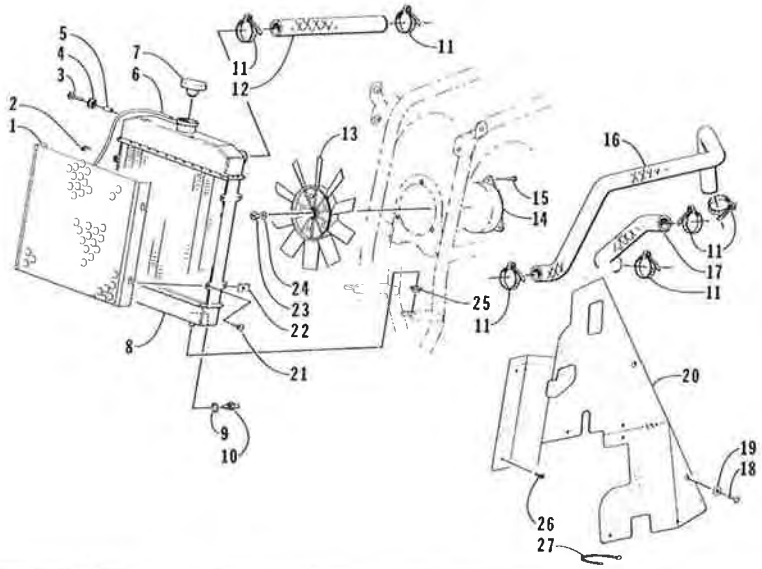


CH007D

5. Remove the main jet; then remove the pilot screw.

Cooling System

KEY
1. Radiator Screen
2. Wire Clamp
3. Cap Screw
4. Grommet
5. Collar
6. Hose
7. Radiator Cap
8. Radiator
9. O-Ring
10. Switch
11. Hose Clamp
12. Coolant Hose
13. Fan Blade
14. Fan Motor
15. Cap Screw
16. Coolant Hose
17. Coolant Hose
18. Machine Screw
19. Washer
20. Fender Panel
21. Thumb Screw
22. Speed Nut
23. Nut
24. Washer
25. Stem Bushing
26. Machine Screw
27. Cable Tie



0732-349

This ATV is equipped with a liquid cooling system for engine cooling. The cooling system capacity is approximately 2.8 l (3 U.S. qt). The cooling system should be inspected daily for leakage and damage. Also, the coolant level should be checked periodically.

When filling the cooling system, use premixed Arctic Cat Antifreeze (p/n 0638-395). While the cooling system is being filled, air pockets may develop; therefore, run the engine for five minutes after the initial fill, shut the engine off, and then fill the cooling system to 1/2 in. above the radiator core.

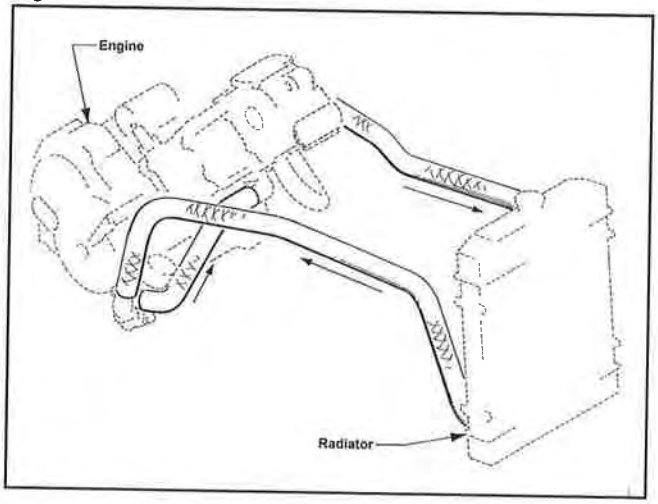
Fig. 4-50

AN604D

⚠ CAUTION

After operating the ATV for the initial 5-10 minutes, stop the engine, allow the engine to cool down, and check the coolant level. Add coolant as necessary.

Fig. 4-51



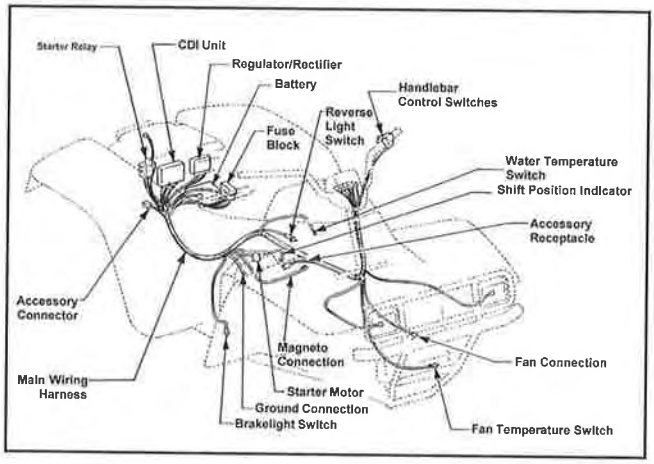
0732-411

Testing Electrical Components

All of the electrical tests should be made using the Fluke Model 73 Multimeter (p/n 0644-191). If any other type of meter is used, readings may vary due to internal circuitry. When troubleshooting a specific component, always verify first that the fuse(s) are good, that the bulb(s) are good, that the connections are clean and tight, that the battery is fully charged, and that all appropriate switches are activated.

■ NOTE: For absolute accuracy, all tests should be made at room temperature of 68° F.

Fig. 5-6



0732-410

Accessory Receptacle/Connector

■ NOTE: This test procedure is for either the receptacle or the connector.

VOLTAGE

1. Set the meter selector to the D.C. Voltage position.
2. Connect the red tester lead to the red/white wire or the positive connector; connect the black tester lead to ground.

Fig. 5-7

AR606D

3. The meter must show battery voltage.

■ NOTE: If the meter shows no battery voltage, troubleshoot the battery, fuse, receptacle, connector, or the main wiring harness.

Brakelight Switch (Foot)

The switch connector is the two-prong connector on the right side of the engine directly above the brake cable adjuster.

■ NOTE: The ignition switch must be in the ON position.

VOLTAGE (Wiring Harness Side)

1. Set the meter selector to the D.C. Voltage position.
2. Connect the red tester to the orange wire; connect the black tester lead to ground.

Fig. 5-8

AR627D

3. The meter must show battery voltage.

⚠ CAUTION

Do not run the engine at high RPM for more than 10 seconds.

■ NOTE: If voltage is lower than specified, test charging coils - no load.

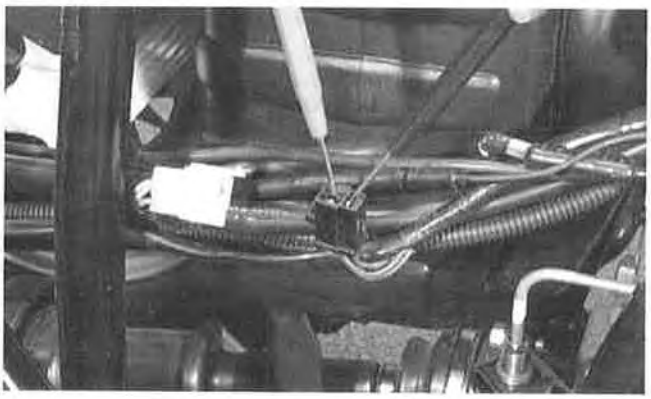
VOLTAGE (Charging Coils - No Load)

The connector is the black and white one on the right side of the engine just above the brake cable adjuster.

■ NOTE: Test the connector that comes from the engine.

1. Set the meter selector to the A.C. Voltage position.
2. Using the multimeter, test between the three black wires for a total of three tests.

Fig. 5-23



AR630D

3. With the engine running at a constant 5000 RPM, all three black wire tests must show 60 D.C. volts.

⚠ CAUTION

Do not run the engine at high RPM for more than 10 seconds.

■ NOTE: If both charging coil tests failed, check all connections, etc., and test again. If no voltage is present, replace the stator assembly.

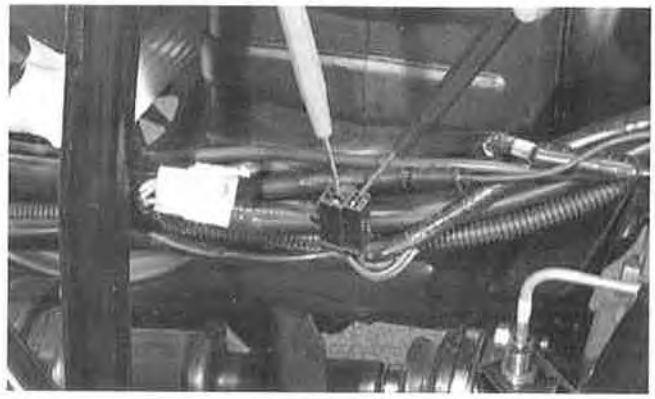
RESISTANCE (Charging Coils)

⚠ CAUTION

Always disconnect the battery when performing resistance tests to avoid damaging the multimeter.

1. Set the meter selector to OHMS position.
2. Using the multimeter, test between the three black wires for a total of three tests.

Fig. 5-24



AR630D

3. In all three tests, the meter must show 0.1 - 1.0 ohm.

RESISTANCE (Trigger Coil)

⚠ CAUTION

Always disconnect the battery when performing resistance tests to avoid damaging the multimeter.

1. Set the meter selector to the OHMS position.
2. Connect the red tester lead to the green wire; connect the black tester lead to the blue wire.
3. The meter must show 150-300 ohms.

RESISTANCE (Source/Charge Coil)

1. Set the meter selector to the OHMS position.
2. Connect the red tester lead to the yellow wire; connect the black tester lead to the white wire.
3. The meter must show 0.05-1.0 ohm.

■ NOTE: If the meter shows other than specified in any resistance test, replace the stator assembly.

Starter Motor

REMOVING/DISASSEMBLING

1. Disconnect the battery.

⚠ WARNING

Always disconnect the negative battery cable from the battery first; then disconnect the positive cable.

■ **NOTE: If either the taillight or brakelight fails to illuminate, inspect the bulb, the connectors, or the component wiring harness.**

VOLTAGE (Taillight)

■ **NOTE: Perform this test on the main harness side of the connector. Also, the ignition switch should be in the LIGHTS position.**

1. Set the meter selector to the D.C. Voltage position.
2. Connect the red tester lead to the gray wire; connect the black tester lead to the black wire.
3. With the ignition key in the LIGHTS position, the meter must show battery voltage.

■ **NOTE: If the meter shows no voltage, inspect fuses, wiring harness, connectors, and switches.**

VOLTAGE (Brakelight)

■ **NOTE: Perform this test on the main harness side of the connector. Also, the ignition switch should be in the ON position and the brake (either foot pedal or hand lever) must be applied.**

■ **NOTE: Make sure the brake lever (hand) and brake pedal (foot) are properly adjusted for this procedure.**

1. Set the meter selector to the D.C. Voltage position.
2. Connect the red tester lead to the red wire; connect the black tester lead to the black wire.
3. With either brake applied, the meter must show battery voltage.

■ **NOTE: If the meter shows no voltage, inspect bulb, fuses, wiring harness, connectors, and switches.**

Ignition Timing

The ignition timing cannot be adjusted; however, verifying ignition timing can aid in troubleshooting other components. To verify engine timing, use the following procedure.

1. Attach the engine Timing Light (p/n 0644-197) to the spark plug high tension lead; then remove the timing inspection plug from the left-side crankcase cover.
2. With the Digital Engine Tachometer (p/n 0444-041) connected, start the engine and run at 1800 RPM; ignition timing should be 10° BTDC.
3. Run at 3800 RPM; ignition timing should be 30° BTDC.
4. Install the timing inspection plug.

If ignition timing cannot be verified, the rotor may be damaged, the key may be sheared, the trigger coil bracket may be bent or damaged, or the CDI unit may be faulty.

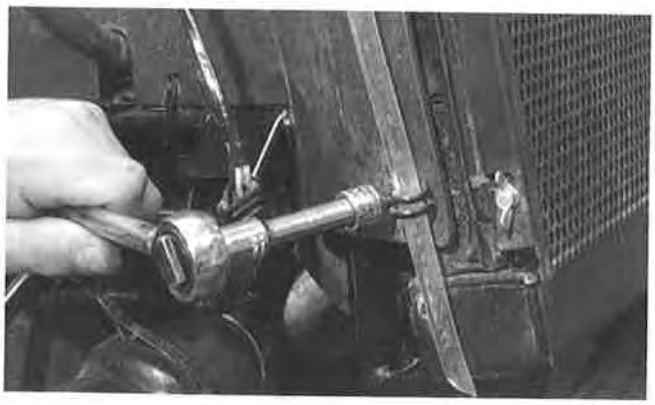
4. Install the cap screws securing the upper A-arm. Do not tighten at this time.

Fig. 6-20

AF610D

5. Place the side panel into position and secure with four machine screws with washers and four cable ties. Make sure the headlight wiring harness is properly routed and secured.

Fig. 6-21



AF622D

6. Place the shock absorber into position; then install the cap screws. Do not tighten at this time.

7. Install the spindle into the spindle housing; then connect the ball joints to the spindle housing with the two cap screws coated with green Loctite #609. Do not tighten at this time.

8. Secure the spindle to the spindle housing with the slotted nut; then tighten to 2.8 kg-m (20 ft-lb). Install and spread the cotter pin.

■ **NOTE: During assembly, new cotter pins should be installed.**

Fig. 6-22

AF614D

9. Tighten the cap screws securing the ball joints to the spindle housing to 2.8 kg-m (20 ft-lb).

Fig. 6-23

AF628D

10. Tighten the shock absorber cap screws to 5.5 kg-m (40 ft-lb).

Fig. 6-24

AF626D

⚠ CAUTION

Do not tighten nuts beyond the 5.5 kg-m (40 ft-lb) specification or the shock eyelet or mount WILL be damaged.

11. Tighten the cap screws securing the upper and lower A-arms to 5.5 kg-m (40 ft-lb).

Fig. 6-65

AF611D

8. Remove the ATV from the support stand.

■ NOTE: Check all fasteners for tightness and check the brakes for proper operation before test riding.

Wheel Hub

REMOVING

1. Secure the ATV on a support stand to elevate the wheel; then remove the wheel.

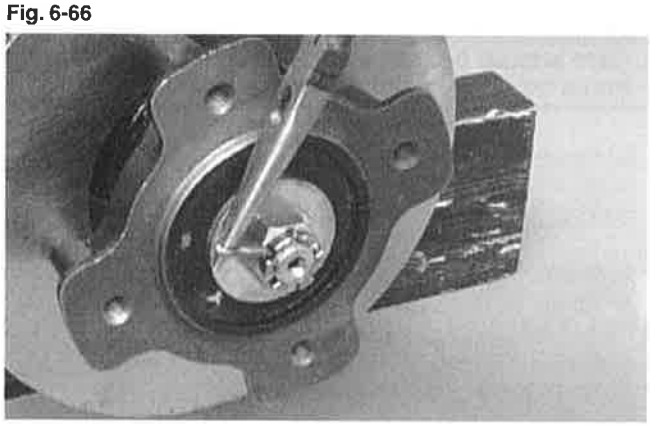
⚠ WARNING

Make sure the ATV is solidly supported on the support stand to avoid injury.

2. Remove the wheel cap from the hub; then remove the cotter pin from the nut.

■ NOTE: During assembly, new cotter pins should be installed.

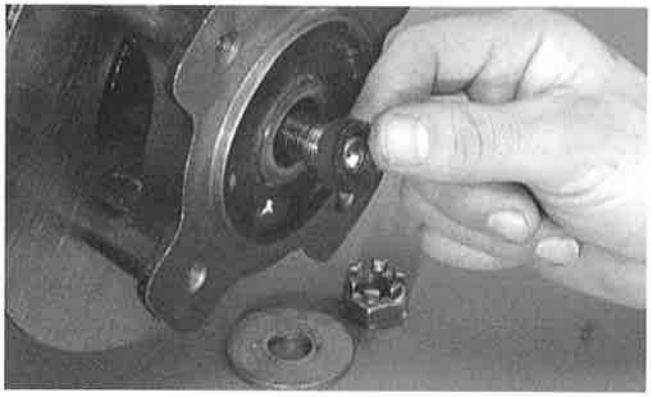
Fig. 6-66



AF700D

3. Remove the nut securing the hub. Account for a washer and a hub seal.

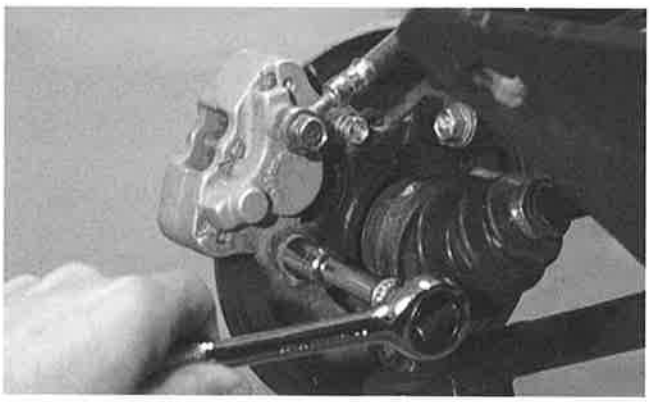
Fig. 6-67



AF701D

4. Remove the brake caliper.

Fig. 6-68



AF615D

5. Remove the hub assembly.

6. Remove the four cap screws securing the brake disc.

CLEANING AND INSPECTING

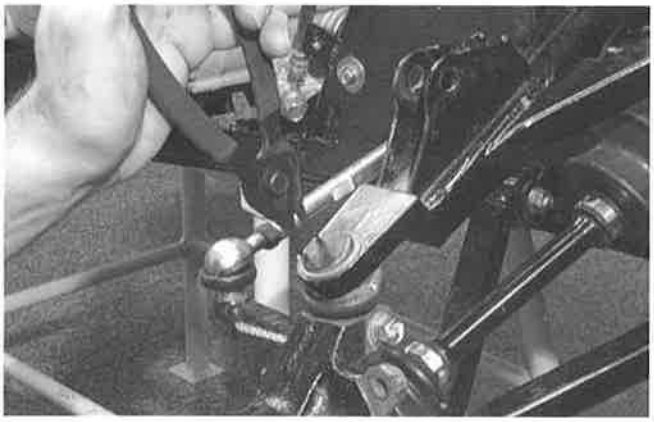
■ NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Clean all hub components.
2. Inspect all threads for stripping or damage.
3. Inspect the brake disc for cracks or warping.
4. Inspect the sealing area of the hub for pits.
5. Inspect the hub splines for signs of wear.
6. Inspect the hub for cracks.

INSTALLING

1. Secure the brake disc to the hub with the four cap screws coated with red Loctite #271. Tighten to 2.1 kg-m (15 ft-lb).
2. Apply grease to hub sealing area and on the splines.

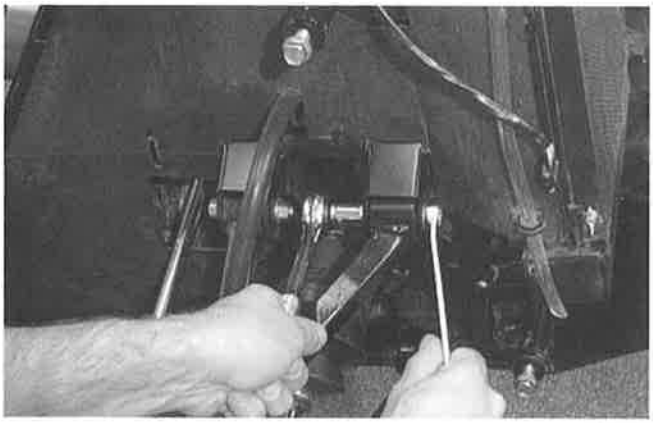
Fig. 7-16



AF616D

2. Install the A-arm assembly into the frame mounts and secure with the cap screws. Only finger-tighten at this time.

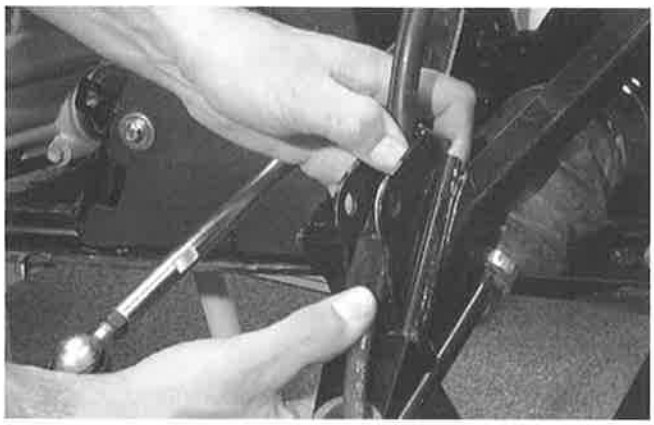
Fig. 7-17



AF610D

3. Route the brake hose through the upper A-arm shock absorber mount.

Fig. 7-18



AF627D

4. Secure the lower eyelet of the shock absorber to the upper A-arm. Tighten nut to 5.5 kg-m (40 ft-lb).

⚠ CAUTION

Do not tighten the nut beyond the 5.5 kg-m (40 ft-lb) specification or the shock eyelet or mount WILL be damaged.

5. Install the knuckle assembly onto the ball joints and secure with two cap screws. Tighten to 5.5 kg-m (40 ft-lb).

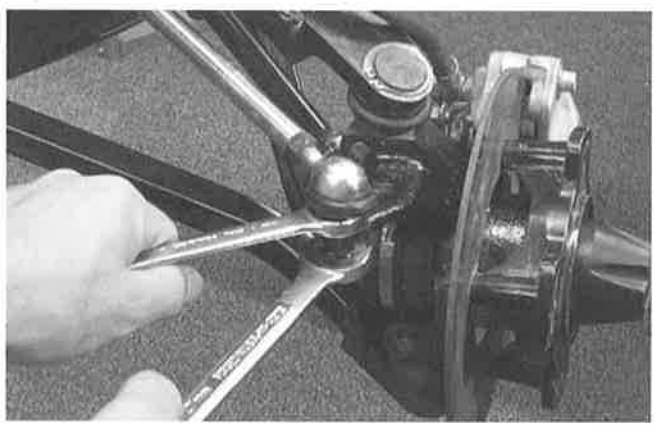
Fig. 7-19

AF628D

6. Install the tie rod end and secure with the nut. Tighten to 4.2 kg-m (30 ft-lb); then install a new cotter pin and spread the pin to secure the nut.

■ NOTE: During assembly, new cotter pins should be installed.

Fig. 7-20



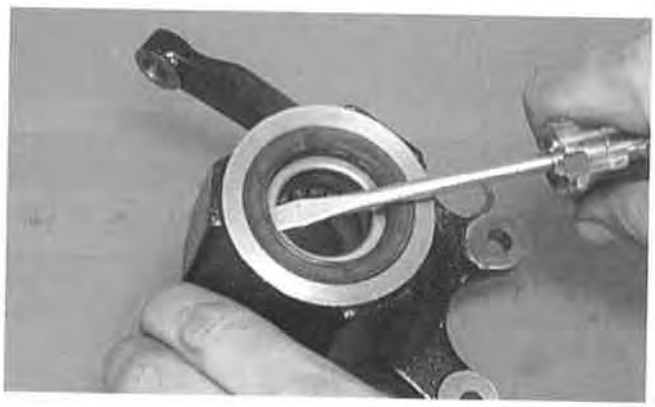
AF618D

7. Apply grease to hub sealing area and on the splines.

8. Install the hub assembly onto the splines of the shaft.

6. Remove the cotter pin from the tie rod end and remove the tie rod end from the knuckle.
7. Remove the two cap screws securing the ball joints in the knuckle.
8. Tap the ball joint end out of the knuckle; then remove the knuckle.
9. Remove the seal from the knuckle.

Fig. 8-19



AF725D

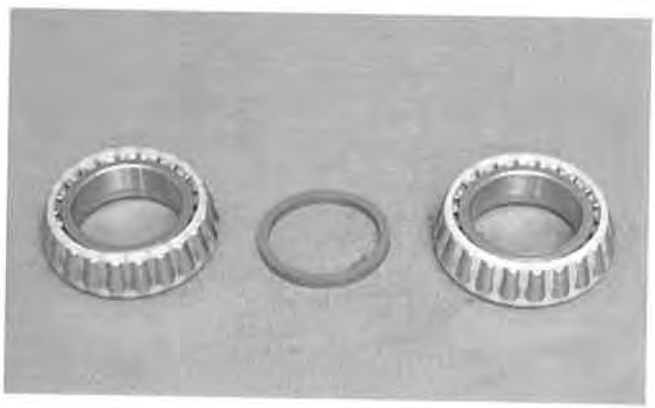
10. Remove the bearing retainer.

Fig. 8-20

AF726D

11. Remove the bearings and spacer.

Fig. 8-21



AF727D

⚠ CAUTION

Use extreme care when removing the bearings. If the bearings are allowed to fall, they will be damaged and will have to be replaced.

■NOTE: If replacement is necessary, always replace bearings and races as a set.

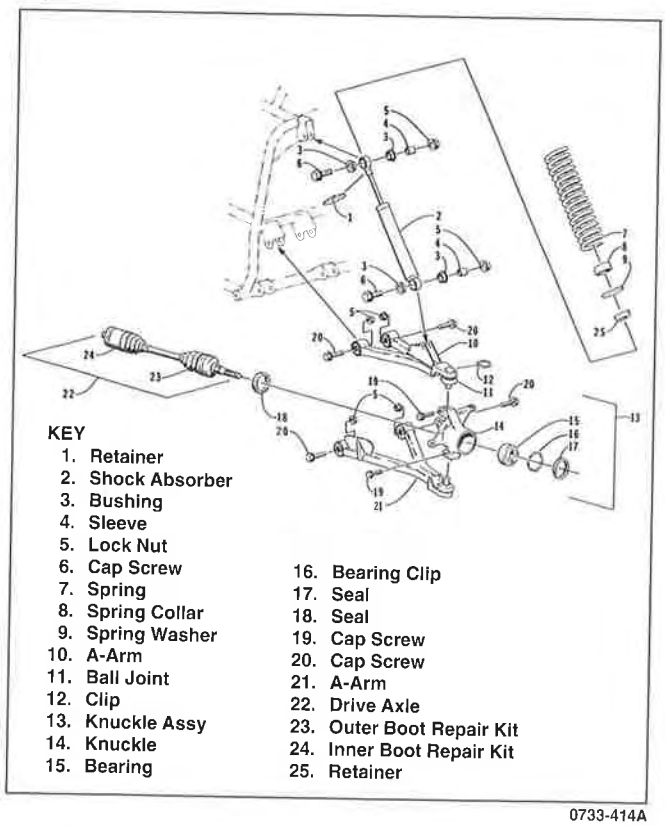
CLEANING AND INSPECTING

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Clean all knuckle components.
2. Inspect the bearings and races for pits, gouges, rusting, or premature wear.
3. Inspect the knuckle for cracks, breaks, or porosity.
4. Inspect threads for stripping or damage.

ASSEMBLING AND INSTALLING

Fig. 8-22



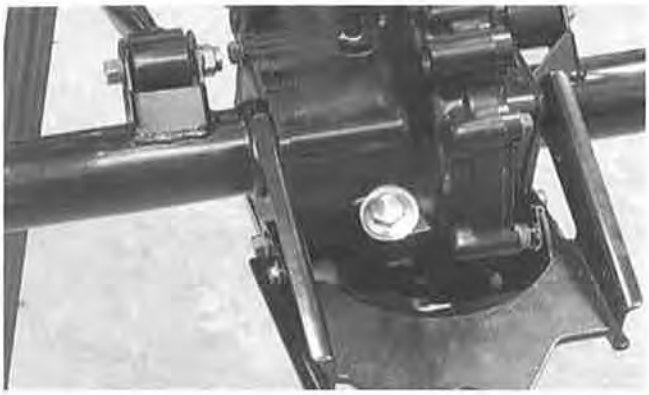
KEY

1. Retainer
2. Shock Absorber
3. Bushing
4. Sleeve
5. Lock Nut
6. Cap Screw
7. Spring
8. Spring Collar
9. Spring Washer
10. A-Arm
11. Ball Joint
12. Clip
13. Knuckle Assy
14. Knuckle
15. Bearing
16. Bearing Clip
17. Seal
18. Seal
19. Cap Screw
20. Cap Screw
21. A-Arm
22. Drive Axle
23. Outer Boot Repair Kit
24. Inner Boot Repair Kit
25. Retainer

0733-414A

1. Using water-resistant wheel bearing grease, pack the bearings.
2. Install the bearings (back-to-back with a spacer between) into the knuckle.

Fig. 8-64



AL631D

CLEANING AND INSPECTING

■NOTE: Whenever a part is worn excessively, cracked, or damaged in any way, replacement is necessary.

1. Clean all hitch components with parts-cleaning solvent.
2. Inspect all welds for cracking or bending.
3. Inspect threaded areas of all mounting bosses for stripping.
4. Inspect all mounting holes for elongation or wear.

INSTALLING

1. Place the hitch into position on the rear axle housing and belly panel; then install the six cap screws.

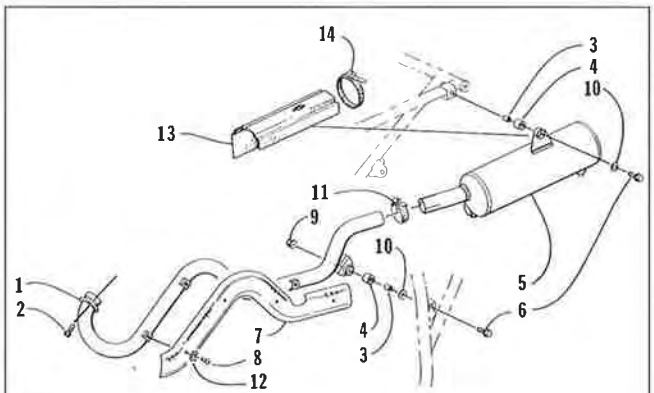
Fig. 8-65

AL631D

2. Tighten the two 6 mm cap screws to clips to 0.7 kg-m (5 ft-lb).
3. Tighten the two 8 mm cap screws to 2.2 kg-m (16 ft-lb).
4. Tighten the two 10 mm cap screws to 4.4 kg-m (32 ft-lb).

Exhaust System

Fig. 8-66



KEY

1.	Exhaust Pipe	8.	Screw
2.	Cap Screw	9.	Hex Nut
3.	Exhaust Spacer	10.	Washer
4.	Bushing	11.	Clamp
5.	Muffler	12.	Star Washer
6.	Cap Screw	13.	Heat Shield
7.	Exhaust Cover	14.	Clamp

733-371A

REMOVING MUFFLER

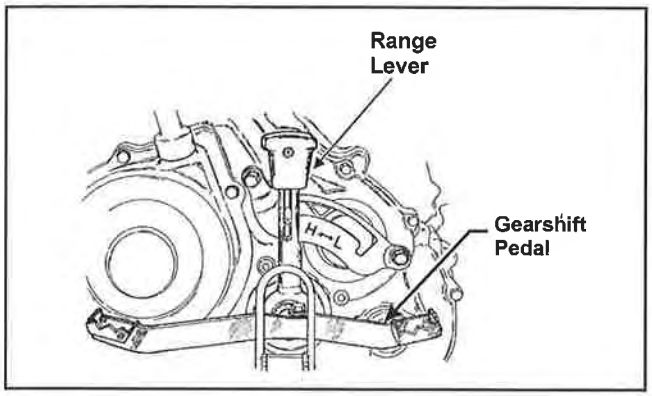
1. Remove the two cap screws securing the muffler to the frame and account for a nut, washers, sleeves, and rubber insulators.

Fig. 8-67

ATVUDB16

2. Loosen the clamp at the muffler/exhaust pipe juncture; then remove the muffler.

Fig. 9-20



ATV-0078

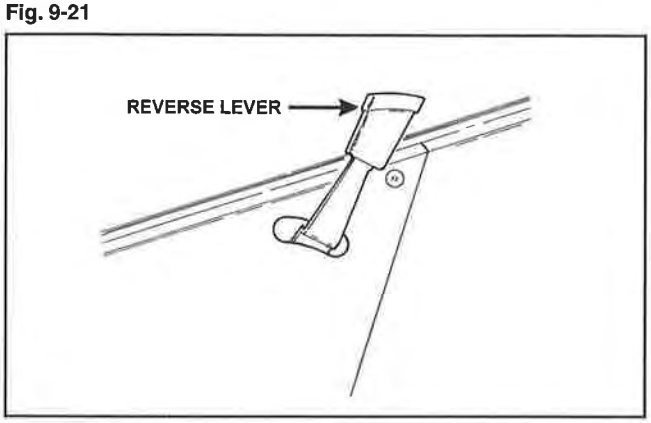
Reverse Shift Lever

This ATV has a reverse gear. To shift into reverse gear, stop the ATV completely and shift the transmission into neutral. Pull the reverse shift lever fully rearward. When the ATV is in reverse gear, the gearshift pedal will not function.

⚠ WARNING

Never shift the ATV into reverse gear when the ATV is moving as it could cause the ATV to stop suddenly throwing the operator from the ATV.

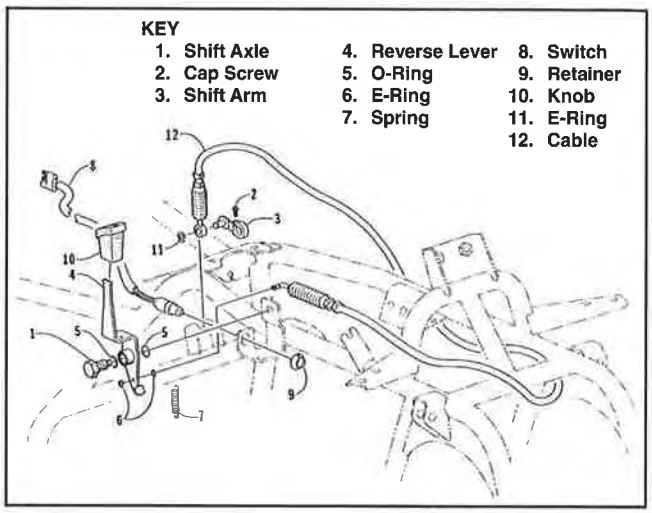
Fig. 9-21



ATV-0091

Reverse Shift Lever and Cable

Fig. 9-22



0733-405

REMOVING

1. Remove the E-ring securing the reverse cable to the reverse shift lever.

Fig. 9-23

AF714DA

2. Remove the reverse lever over-center spring from the reverse lever and reverse lever bracket.

SECTION 11 — TROUBLESHOOTING

TABLE OF CONTENTS