



SECTION 9 - CONTROLS/INDICATORS

TABLE OF CONTENTS

Hand Brake Lever/Master Cylinder Assembly 9-2

Auxiliary Brake Assembly Schematics 9-4

Throttle Control 9-5

Gearshift Pedal (Manual Transmission)..... 9-7

Drive Selector (300 Model) 9-7

Drive Selector (400 FIS/500/650 H1/
650 V-Twin Models) 9-8

Front Differential Lock (FIS Models) 9-8

Reverse Shift Lever (Manual Transmission) 9-9

Reverse Shift Lever (500/650 H1/650 V-Twin -
Automatic Transmission) 9-10

Speedometer (Analog)/Indicator Lights..... 9-12

Speedometer (Electronic)/Indicator Lights
(400 FIS/500/650 H1) 9-13

Speedometer (Electronic)/Indicator Lights
(650 V-Twin) 9-14

Hand Brake Lever/ Master Cylinder Assembly

■ **NOTE:** The master cylinder is a non-serviceable component; it must be replaced as an assembly.

REMOVING

1. Slide a piece of flexible tubing over one of the wheel bleeder valves and direct the other end into a container. Remove the reservoir cover; then open the bleeder valve. Allow the brake fluid to drain completely.

■ **NOTE:** Compressing the brake lever several times will quicken the draining process.



AF637D

2. Place an absorbent towel around the connection to absorb brake fluid. Remove the brake hose from the master cylinder.



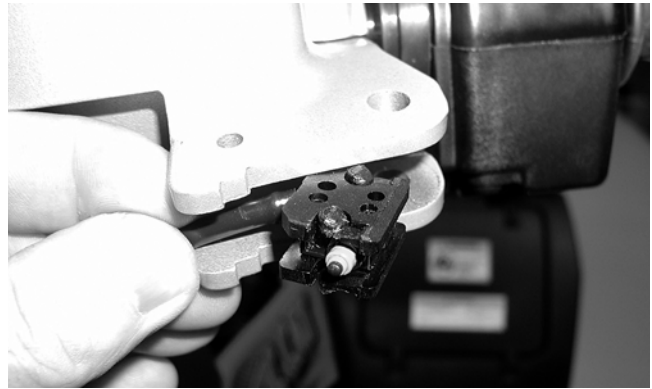
AG929

CAUTION

Brake fluid is highly corrosive. Do not spill brake fluid on any surface of the ATV.

3. Remove the circlip and pivot pin securing the brake lever to the master cylinder housing; then remove the brake lever and set aside.

4. Dislodge the brakelight switch from the master cylinder housing by gently pressing it toward the pivot pin hole in the housing; then lay it aside leaving the switch and wiring harness connected.



BC205

5. Remove the clamp screws securing the brake housing to the handlebar; then remove the assembly from the handlebar.



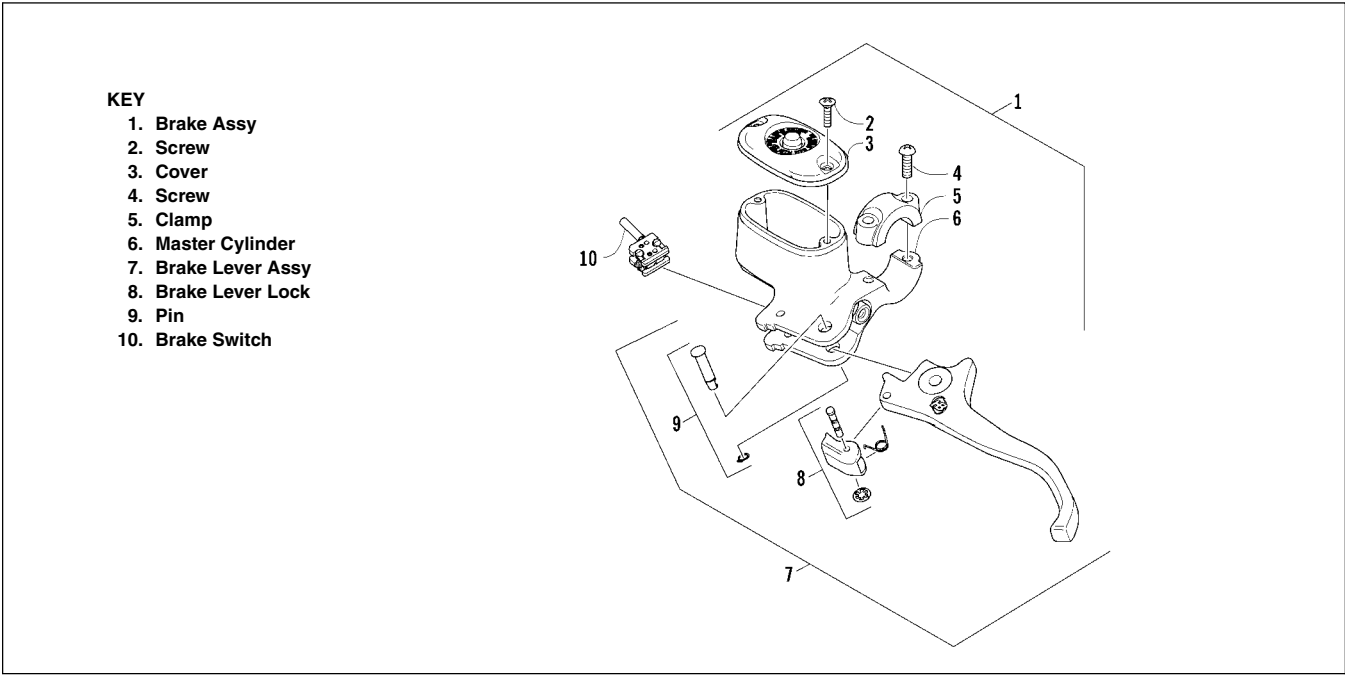
AG924

INSPECTING

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

1. Inspect the pin securing the brake lever for wear.
2. Inspect the brake lever for elongation of the pivot hole.
3. Inspect the reservoir for cracks and leakage.
4. Inspect the brake hose for cracks and deterioration and the condition of the fittings (threaded and compression).
5. Inspect the brakelight switch for corrosion, cracks, missing or broken mounting tabs, or broken and frayed wiring.

■ **NOTE:** If the brakelight switch is determined to be not serviceable, see Section 5.



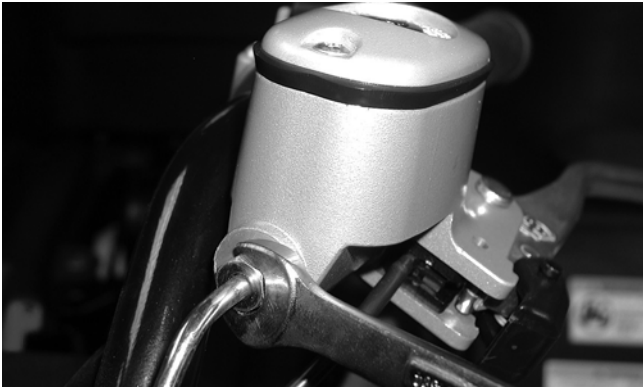
0739-479

1. Position the brake housing on the handlebar. Secure with clamp screws; then tighten securely.



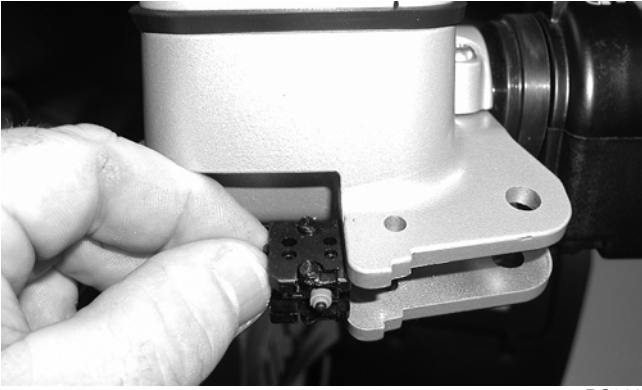
AG924

2. Install the brake hose on the master cylinder. Tighten to specifications.



AG929

3. Gently press the brakelight switch into the housing (left to right) until the mounting tabs snap into the four locating holes; then install the brake lever, pivot pin, and circlip.

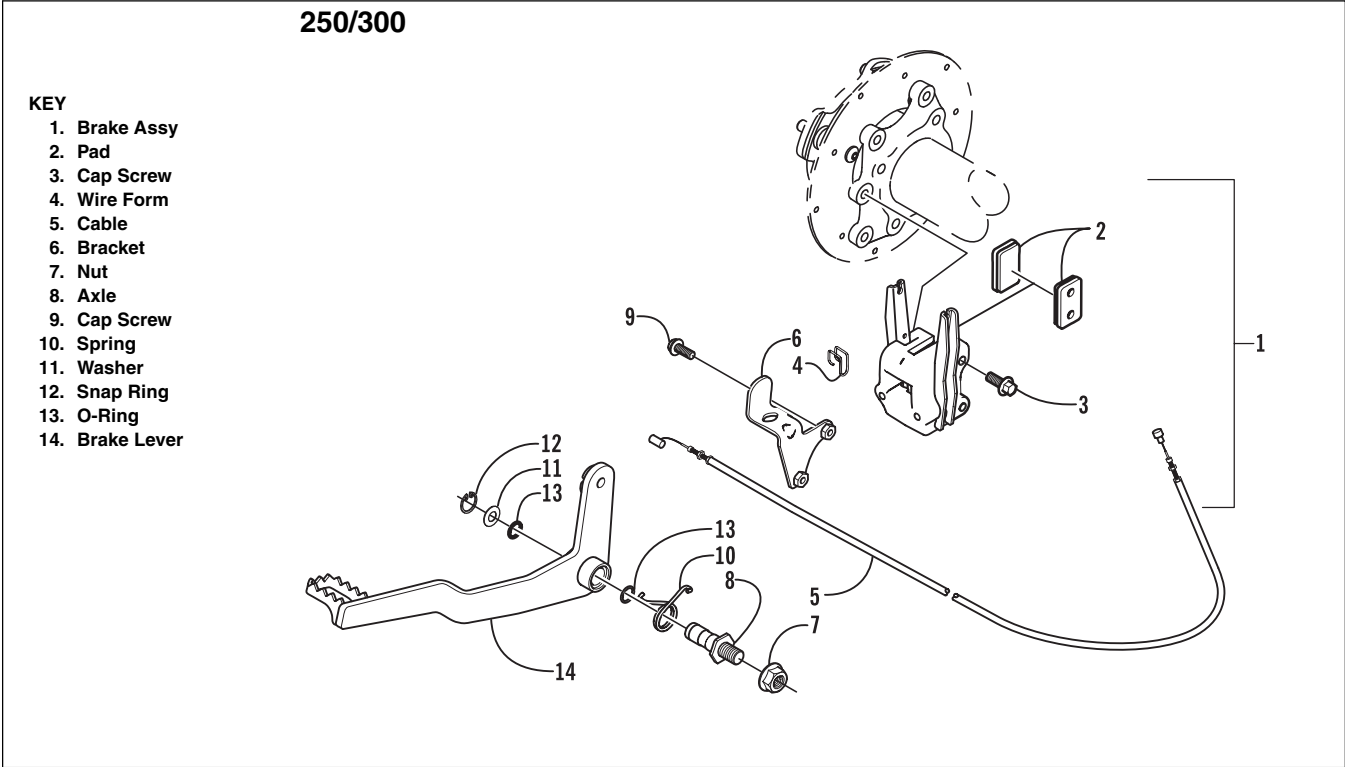


BC206

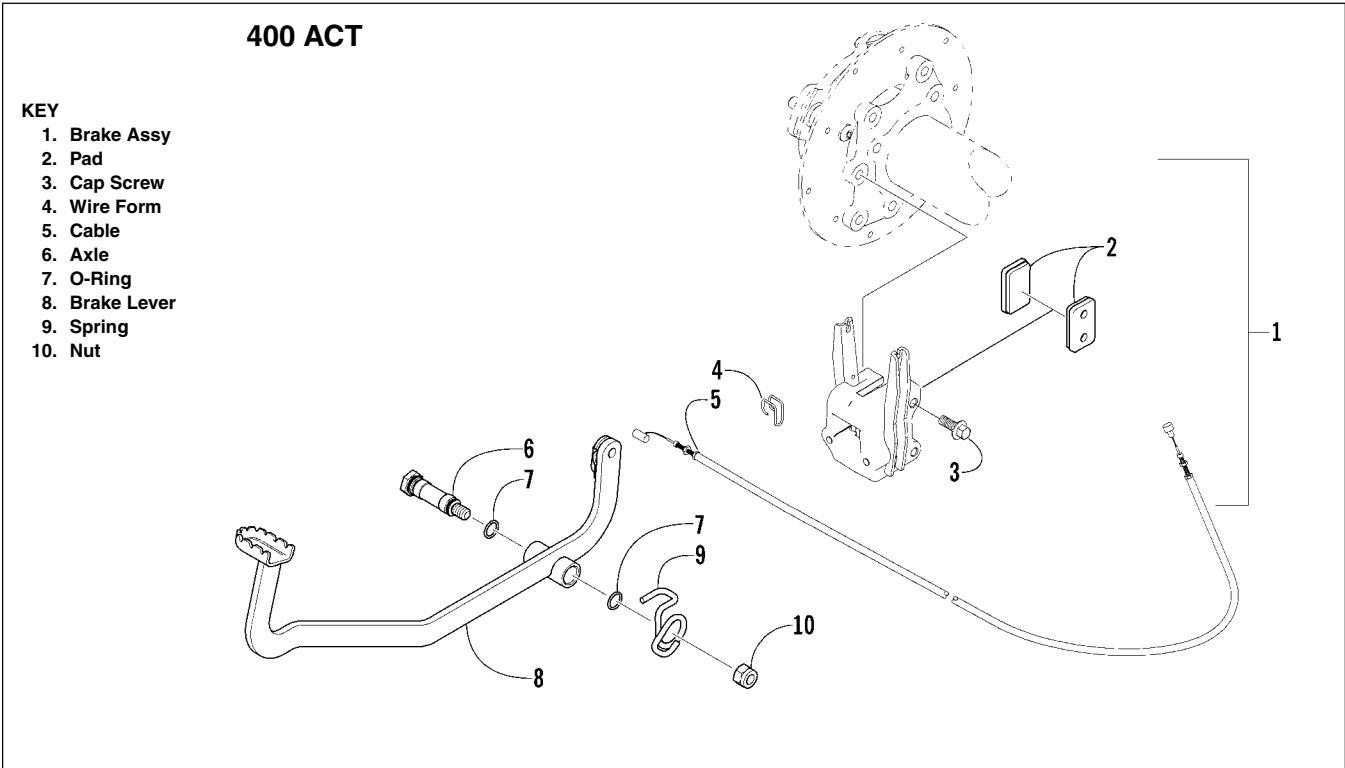
4. Bleed the brake system (see Section 2).

Auxiliary Brake Assembly Schematics

Pressing the auxiliary brake pedal downward will apply the auxiliary brake to the rear wheels.



0737-504

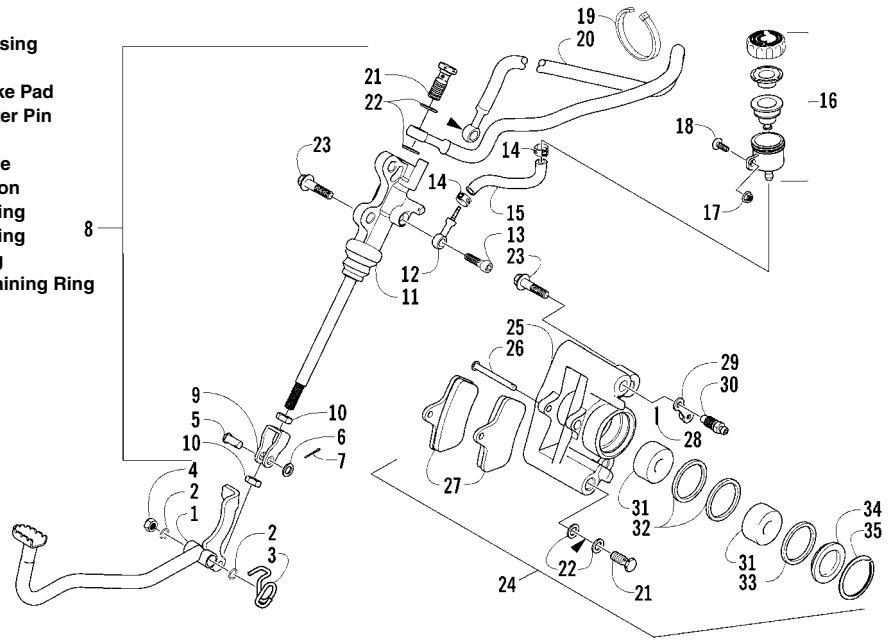


0737-565

400 FIS/500/650 H1/650 V-Twin

KEY

- 1. Brake Lever
- 2. O-Ring
- 3. Spring
- 4. Nut
- 5. Clevis Pin
- 6. Washer
- 7. Cotter Pin
- 8. Brake Assy
- 9. Rod Actuator
- 10. Jam Nut
- 11. Master Cylinder
- 12. Fitting
- 13. Fitting Bolt
- 14. Hose Clamp
- 15. Hose
- 16. Reservoir
- 17. Flange Nut
- 18. Machine Screw
- 19. Cable Tie
- 20. Hose
- 21. Fitting Bolt
- 22. Crush Washer
- 23. Cap Screw
- 24. Caliper
- 25. Housing
- 26. Pin
- 27. Brake Pad
- 28. Cotter Pin
- 29. Cap
- 30. Valve
- 31. Piston
- 32. O-Ring
- 33. O-Ring
- 34. Plug
- 35. Retaining Ring

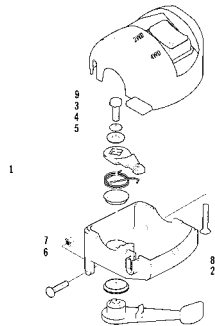


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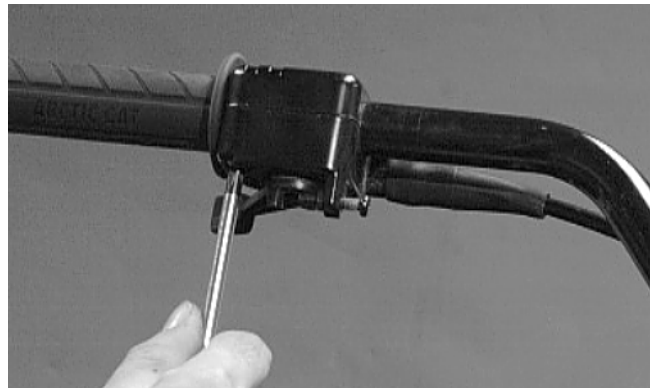
Throttle Control

KEY

- 1. Throttle Case Assy
- 2. Lever
- 3. Cap Screw
- 4. Lock Washer
- 5. Washer
- 6. Screw
- 7. Nut
- 8. Screw
- 9. Cover*
* w/switch (4x4)

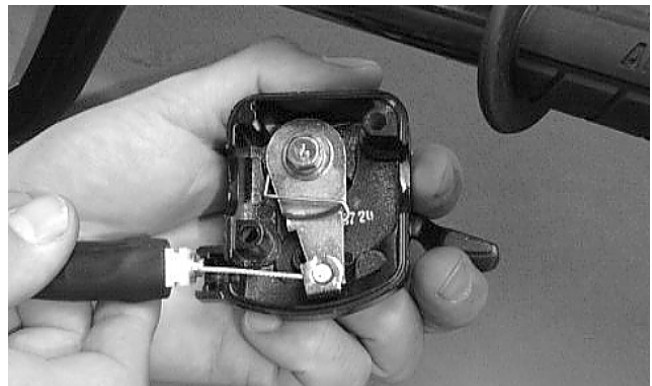


0738-414



AL610D

2. Slide the grommet out of the lower half of the throttle control; then remove the cable from the actuator arm.

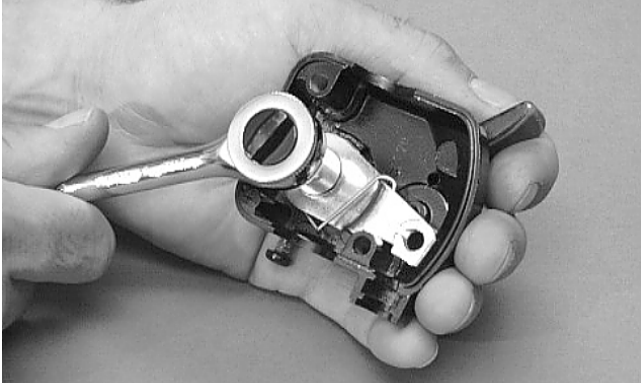


AF676D

REMOVING

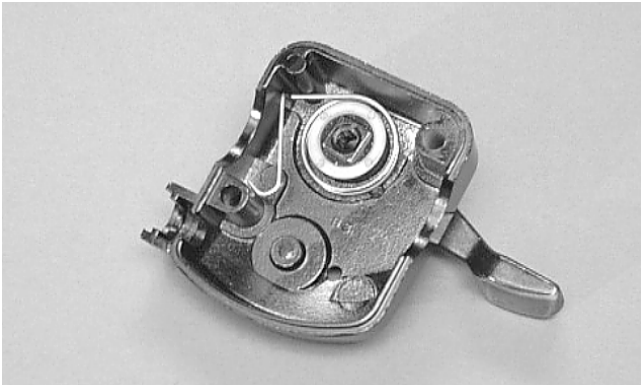
1. Remove the two machine screws securing the throttle control to the handlebar.

3. Remove the cap screw, lock washer, and washer securing the actuator arm to the throttle control lever.



AF677D

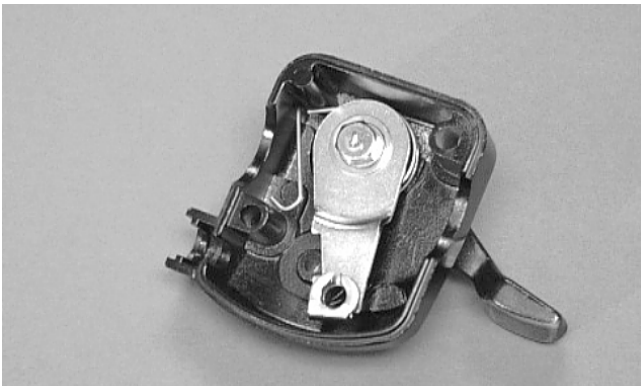
4. Remove the actuator arm and account for a bushing. Note the position of the return spring for installing purposes.



AF678D

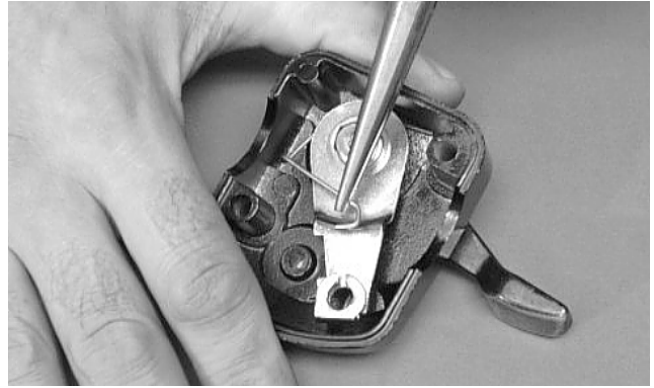
INSTALLING

1. Place the return spring into the throttle control; then place the bushing and actuator arm into position. Secure with the cap screw, lock washer, and washer.



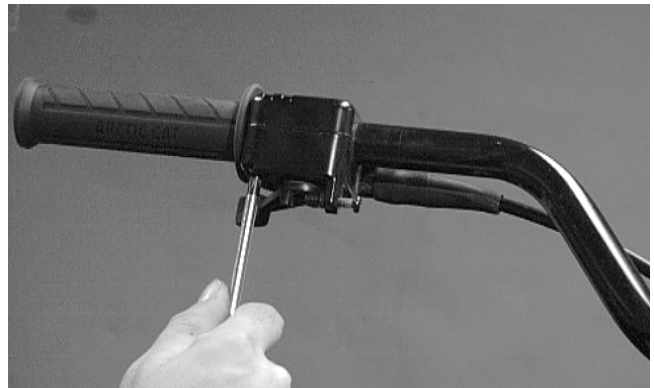
AF679D

2. Using a pair of needle-nose pliers, place the spring into position on the actuator arm.



AF680D

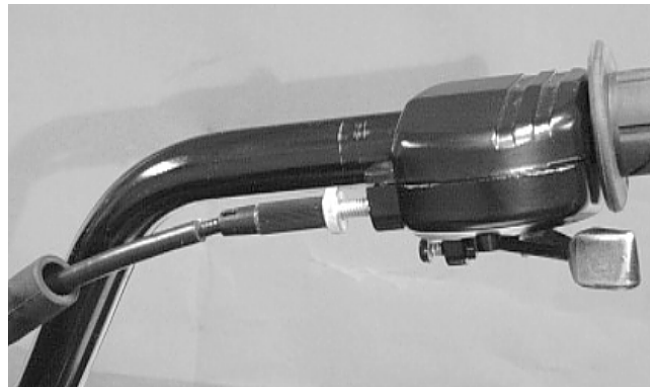
3. Place the two halves of the throttle control onto the handlebars and secure with the two machine screws.



AL610D

ADJUSTING

1. Slide the boot back to reveal the jam nut; then loosen the jam nut.



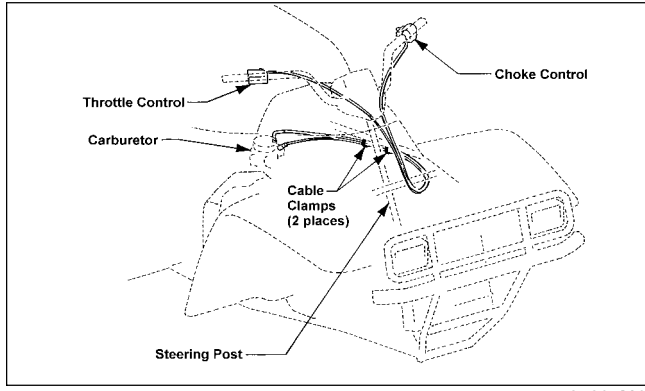
AF682D

2. Rotate the adjuster sleeve until 0.5-1.0 mm (0.02-0.04 in.) is attained.

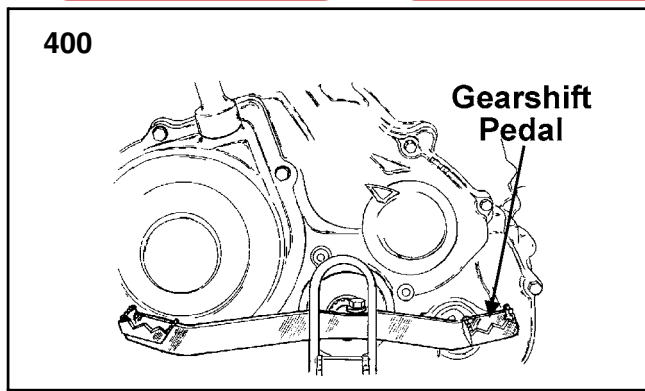


AL611D

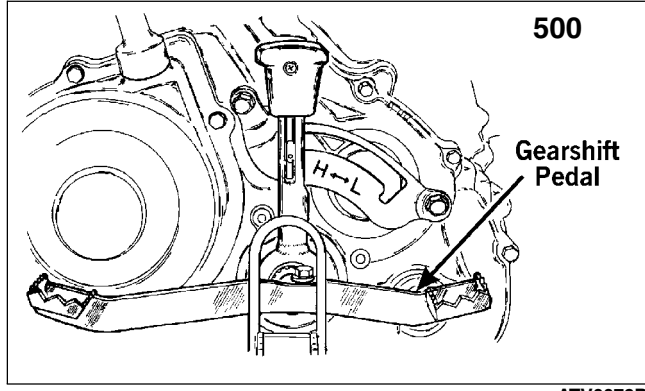
3. Secure the adjustment by tightening the jam nut; then slide the boot over the jam nut.



0732-412



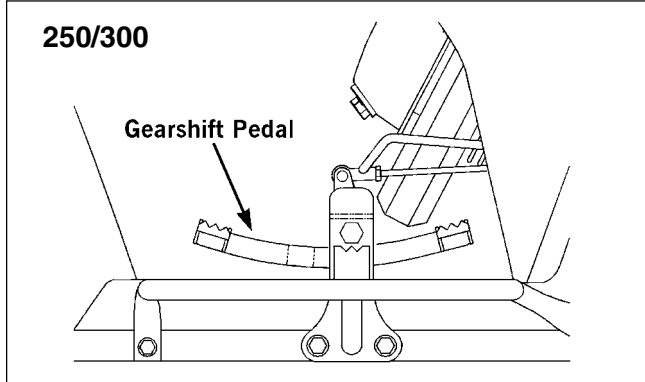
ATV0078C



ATV0078B

Gearshift Pedal (Manual Transmission)

The gearshift pedal is attached to a ratchet mechanism in the transmission. Each time a gear is selected, the gearshift pedal will return to its normal position ready to select the next gear. To return to neutral, press down repeatedly (once for each gear) on the front of the pedal. Shift into gears by pressing down on the back of the pedal once for each gear. The ratchet mechanism makes it impossible to upshift or downshift more than one gear at a time.

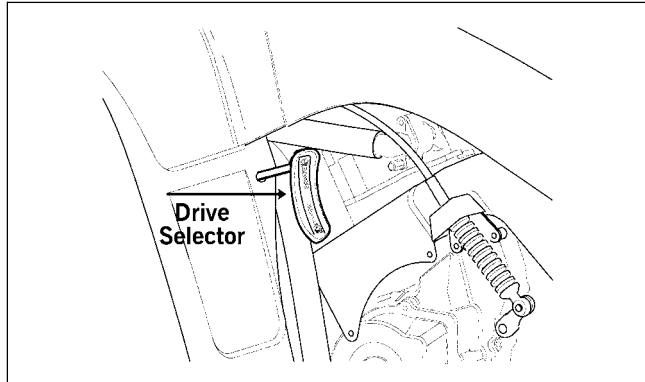


736-567B

Drive Selector (300 Model)

The mechanical drive selector allows the operator to operate in either 2-wheel drive (rear wheels) or 4-wheel drive (all wheels). For normal riding on flat, dry, hard surfaces, 2-wheel drive should be sufficient. In situations of aggressive trail conditions, 4-wheel drive would be the desired choice.

To either engage or disengage the front wheels, come to a complete stop; then either push in (to engage) or pull out (to disengage) the front wheel differential. Apply slight throttle until positive engagement of the differential has been observed.



735-508A

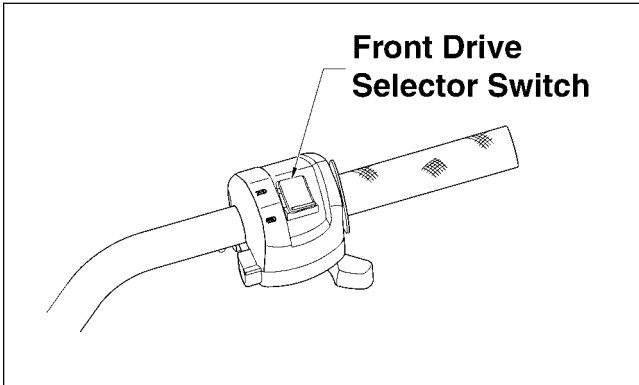
⚠ CAUTION

Do not attempt to either engage or disengage the front differential while the ATV is moving.

**Drive Selector
(400 FIS/500/650 H1/650 V-Twin Models)**

The automatic drive selector allows the operator to operate in either 2-wheel drive (rear wheels) or 4-wheel drive (all wheels). For normal riding on flat, dry, hard surfaces, 2-wheel drive should be sufficient. In situations of aggressive trail conditions, 4-wheel drive would be the desired choice.

To either engage or disengage the front wheels, move the switch to the 4WD position or to the 2WD position.



738-422A

⚠ CAUTION

Do not attempt to either engage or disengage the front differential while the ATV is moving.

**Front Differential Lock
(FIS Models)**

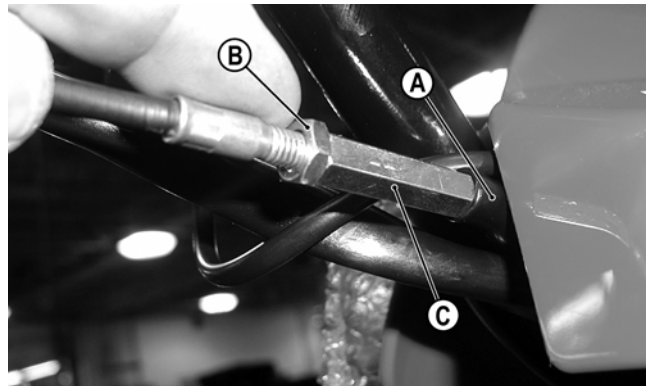
The front differential lock allows the operator to mechanically lock the differential to apply equal power to both front wheels. To engage the front differential lock, rotate the handle fully counterclockwise to LOCK; to disengage the front differential lock, rotate the handle fully clockwise to UNLOCK.



KX016A

ADJUSTING CABLE

1. With the differential lock selector in the UNLOCK position, slide the rubber protector sleeve (A) off the cable near the differential lock selector; then loosen the jam nut (B) and turn the cable adjuster (C) to achieve 6.35 mm (0.250 in.) free-travel measured at the end of the differential lock selector handle.



CD560A

2. Select the 2WD position on the front drive selector switch; then turn the ignition switch to the ON position and select the LOCK position on the differential lock selector. The front drive actuator should operate engaging four-wheel drive.

■ **NOTE:** It may be necessary to turn the handlebar or to rock the ATV forward and backward to align the differential lock splines and allow engagement.

3. Return the differential lock selector to the UNLOCK position and listen for the front drive actuator to operate.
4. Turn the ignition switch to the OFF position. Tighten the jam nut securely; then install the protector sleeve on the adjuster assembly.

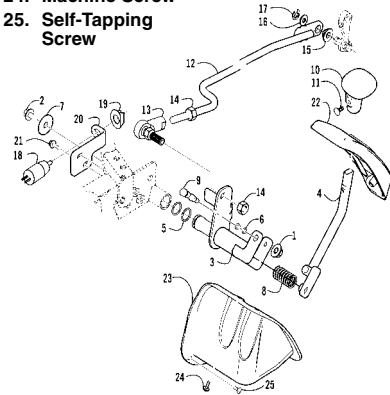
Reverse Shift Lever (Manual Transmission)

KEY

- 1. Nut
- 2. Cap Screw
- 3. Lever Axle
- 4. Lever
- 5. O-Ring
- 6. O-Ring
- 7. Washer
- 8. Spring
- 9. Pivot Axle
- 10. Handle
- 11. Clip
- 12. Linkage
- 13. Rod End
- 14. Nut
- 15. Bushing
- 16. Washer (250)
- 17. E-Ring
- 18. Reverse Switch
- 19. Retainer
- 20. Bracket

- 21. Cap Screw
- 22. Plate
- 23. Shield
- 24. Machine Screw
- 25. Self-Tapping Screw

250/300



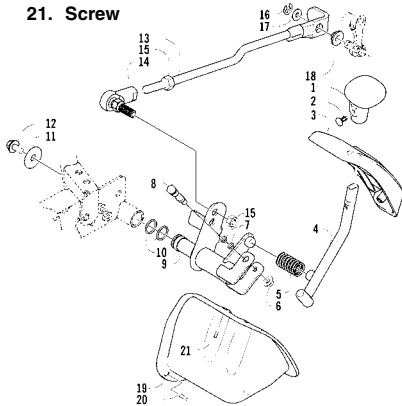
0736-908

KEY

- 1. Handle
- 2. Clip
- 3. Plate
- 4. Lever
- 5. Spring
- 6. Nut
- 7. O-Ring
- 8. Axle
- 9. Axle
- 10. O-Ring
- 11. Washer
- 12. Cap Screw
- 13. Linkage
- 14. Rod End
- 15. Nut
- 16. E-Ring
- 17. Washer
- 18. Bushing

- 19. Shield
- 20. Screw
- 21. Screw

400 FIS/ACT



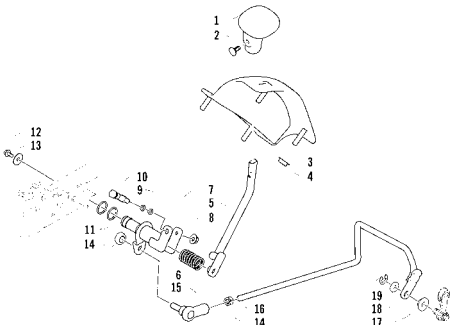
0738-827

KEY

- 1. Handle
- 2. Clip
- 3. Plate
- 4. Nut
- 5. Lever
- 6. Spring
- 7. Axle
- 8. Nut
- 9. O-Ring
- 10. Axle
- 11. O-Ring
- 12. Cap Screw
- 13. Washer
- 14. Nut
- 15. Rod End
- 16. Linkage

- 17. Bushing
- 18. Washer
- 19. E-Ring

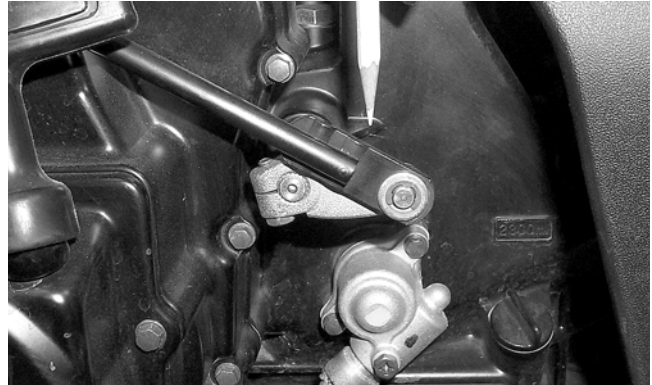
500



0739-739

REMOVING (250/300/400 FIS/ACT)

1. Remove the seat (see Section 8).
2. Remove the gas tank (see Section 4).
3. Remove the three machine screws securing the left-side panel to the frame and rear fender; then remove the left-side panel.
4. Remove the E-clip securing the shift rod to the engine shift arm.



AF942

5. Remove the three machine screws securing the gear shift linkage cover to the fender and remove the cover.

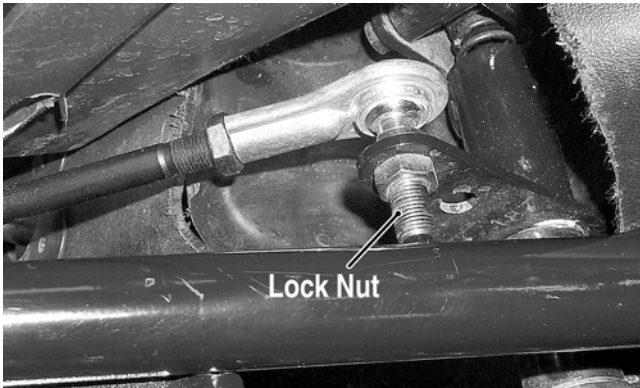
■ **NOTE:** The cover is located inside the left-front wheel well.



CC851

9

6. Remove the axle and nut securing the shift lever to the upper shift arm; then remove the shift lever. Account for the spring and two O-rings on the axle.
7. Using two open-end wrenches, remove the lock nut securing the shift rod to the upper shift arm. Remove the shift rod and discard the lock nut.

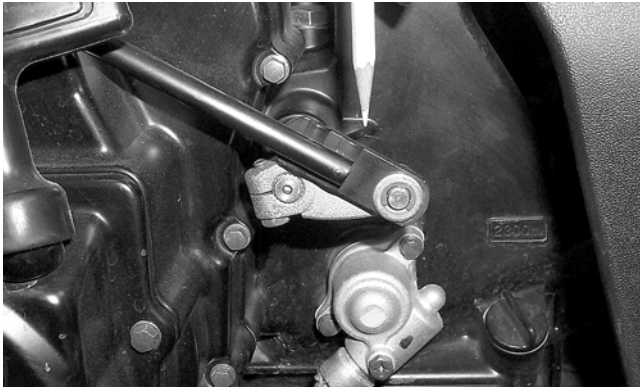


AF941B

■ **NOTE:** Never reuse a lock nut. Once a lock nut has been removed, it must be replaced with a new lock nut.

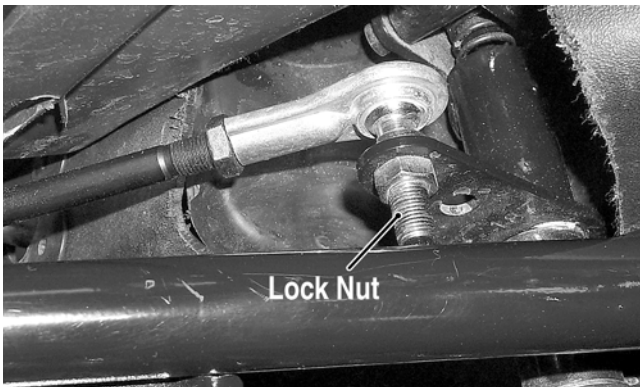
INSTALLING

1. Place the shift rod into position on the engine shift arm and secure with the existing E-clip.



AF942

2. Using a new lock nut, secure the shift rod to the upper shift arm; then using two open-end wrenches, tighten securely.



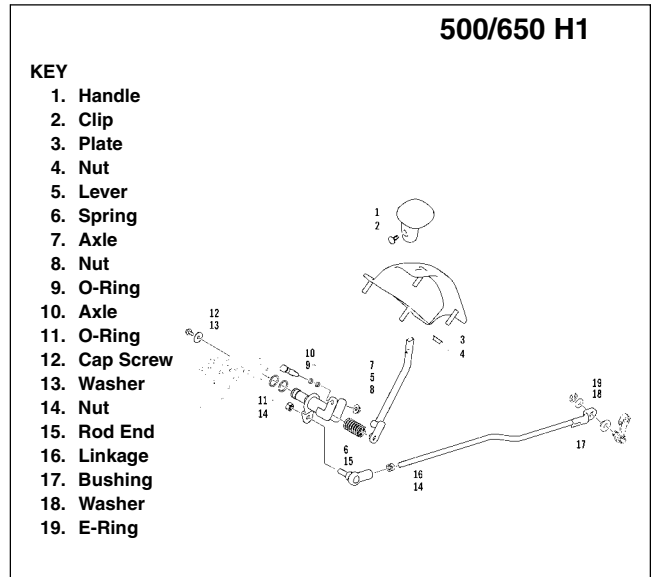
AF941B

3. Place the spring into position between the upper shift arm and shift lever; then making sure the O-rings are in place on the axle, secure the shift lever to the arm with the existing axle and nut.
4. Install the gear shift linkage cover on the fender in the left-front wheel well. Tighten the three machine screws securely.

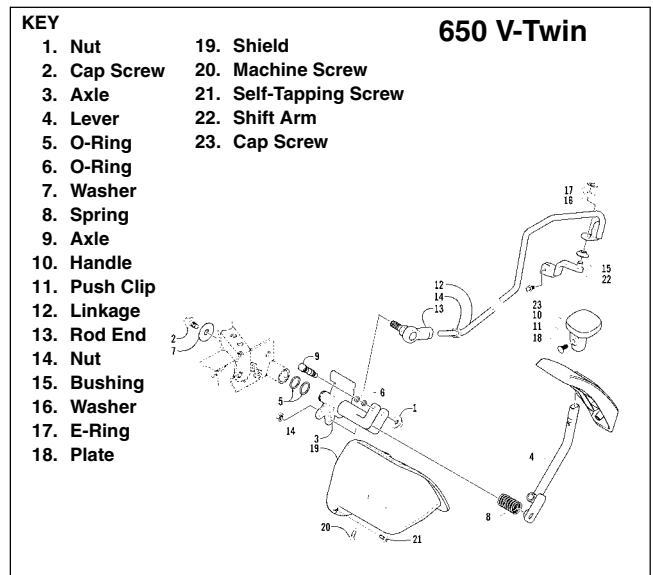
5. Place the left-side panel into position on the frame and secure with the three machine screws.
6. Install the gas tank (see Section 4); then install the seat (see Section 8).
7. Check shift lever adjustment (see Section 2).

**Reverse Shift Lever
(500/650 H1/650 V-Twin -
Automatic Transmission)**

■ **NOTE:** For servicing the reverse shift lever on 400 automatic transmission models, refer to Reverse Shift Lever (Manual Transmission) in this section.



0739-701



0739-083

REMOVING

1. Remove the seat; then remove three installable rivets securing the left side panel and remove the panel.



CD683A

2. Remove the E-clip securing the shift rod to the engine shift arm (500/650 H1). On the 650 V-Twin, remove two cap screws securing the front and rear shift rods together.



CD717

3. Remove two cap screws, two self-tapping screws, and three nylon ties securing the left-side splash panel and remove the panel.



CD685

4. Remove the axle and nut securing the shift lever to the upper shift arm; then remove the shift lever. Account for a spring and two O-rings.

5. Using two open-end wrenches, remove the lock nut securing the shift rod to the upper shift arm. Remove the shift rod and discard the lock nut.

■ **NOTE:** Never reuse a lock nut. Once a lock nut has been removed, it must be replaced with a new lock nut.

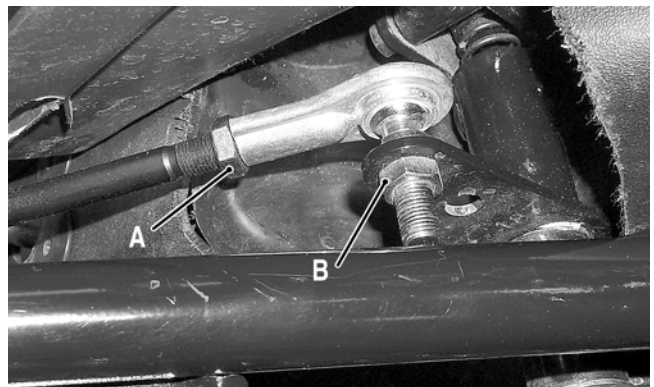
INSTALLING

1. Place the shift rod into position on the engine shift arm and secure with the existing E-clip (500/650 H1). On the 650 V-Twin, connect the front and rear shift arms with two cap screws. Only finger-tighten at this time.



CD717

2. Using a new lock nut (B), secure the shift rod to the upper shift arm; then using two open-end wrenches, tighten securely.

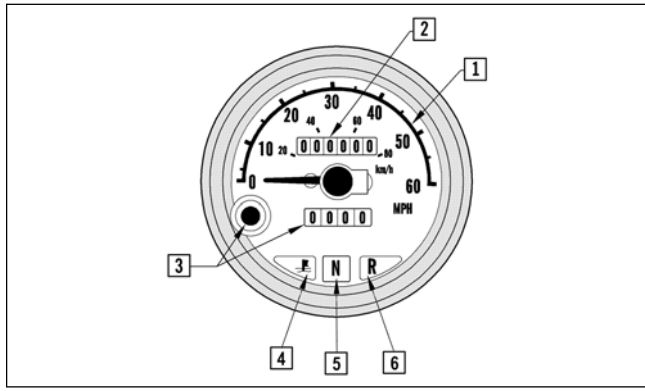


AF941A

3. Place the spring into position between the upper shift arm and shift lever; then making sure the O-rings are in place on the axle, secure the shift lever to the arm with the existing axle and nut.
4. Check shift lever adjustment (see Section 2); then tighten jam nut (A) securely.
5. Install the left-side splash panel, left side panel, and seat. Make sure the seat locks securely.

Speedometer (Analog)/ Indicator Lights

SPEEDOMETER/INDICATOR LIGHTS (300/400 ACT Auto/400 TBX)



739-499A

1. **Speedometer** - The speedometer shows approximate speed.
2. **Odometer** - The odometer shows the total distance traveled.
3. **Trip Meter** - The trip meter is an odometer which can be reset. It can be used to show the distance traveled on short trips or between gas stops. Turning the knob counterclockwise resets the trip meter to zero.
4. **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.

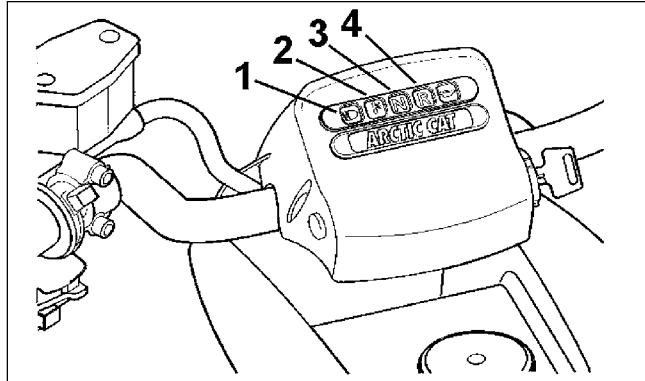
■ **NOTE:** High engine RPM, low vehicle speed, or heavy load can raise engine temperature. Decreasing engine RPM, reducing load, and selecting an appropriate transmission gear can lower temperature.

■ **NOTE:** Debris in front of the engine (or packed between the oil cooler cooling fins) can reduce cooling capability. Using a hose, pressure-wash the oil cooler to remove any debris preventing air flow.

5. **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.

6. **Reverse Indicator** - A red light will illuminate when the transmission is shifted into reverse gear. The light will go off when shifted out of reverse.

INDICATOR LIGHTS (400 ACT Manual)



733-707B

1. **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.
2. **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.

■ **NOTE:** High engine RPM, low vehicle speed, or heavy load can raise engine temperature. Decreasing engine RPM, reducing load, and selecting an appropriate transmission gear can lower the temperature.

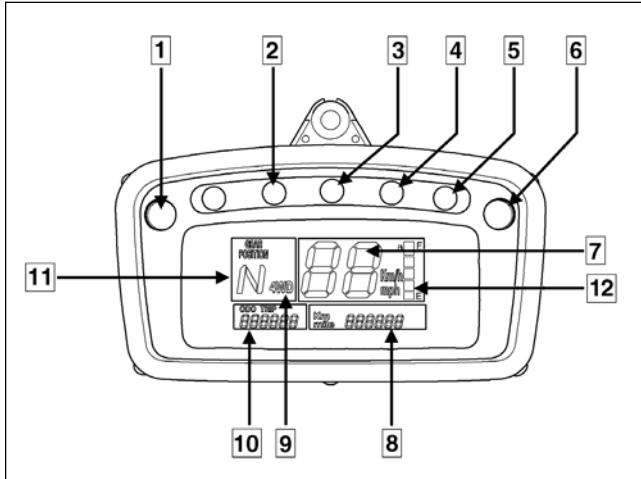
■ **NOTE:** Debris in front of the engine (or packed between the cooling fins of the radiator on the 500 or packed between the oil cooler cooling fins on the 250/300/400) can reduce cooling capability. Using a hose, pressure-wash the radiator (on the 500) engine and oil cooler (on the 250/300/400) to remove any debris preventing air flow.

3. **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.
4. **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.

Speedometer (Electronic)/Indicator Lights (400 FIS/500/650 H1)

SPEEDOMETER/INDICATOR LIGHTS (Functions)

■ **NOTE:** The indicator lights will illuminate for approximately two seconds when the ignition switch is rotated to the ON position.



738-504A

1. **Odometer/Trip Meter Display Button** - Press the display button to display the Odometer (10), the A & B Trip Meters (10), and in conjunction with the Clock/Hour Display Button (6), the speedometer km/h and mph displays.
2. **Reverse Indicator** - A red light will illuminate when the transmission is shifted into reverse gear. The light will go off when shifted out of reverse.
3. **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.
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.

■ **NOTE:** High Engine RPM, low vehicle speed, or heavy load can raise engine temperature. Decreasing engine RPM, reducing load, and selecting an appropriate transmission gear can lower the temperature.

■ **NOTE:** Debris in front of the engine (or packed between the cooling fins of the radiator) can reduce cooling capability. Using a hose, pressure-wash the radiator and the engine to remove any debris preventing air flow.

6. **Clock/Hour Meter Display Button** - Press the display button to switch to either the clock or hour meter and in conjunction with the Odometer/Trip Meter Display Button (1), the speedometer km/h and mph displays.

■ **NOTE:** The clock icon indicates a 12-hour mode; the hour meter icon indicates total time the ATV is used.

- A. Press and hold the display button until the minute display blinks; then adjust the minute display by pressing the button. Press the Odometer/Trip Meter Display Button (1) to set minute display.

■ **NOTE:** If the display button is pressed in and held, the minute display will advance continuously.

- B. After the minute display is set, the hour display will blink. Press the Clock/Hour Meter Display Button (6) to set hour display.

7. **Speedometer** - Shows approximate ATV speed in km/h and mph.

■ **NOTE:** To display km/h or mph, press Display Button (1) to odometer; then press and hold Display Button (1) while pressing Clock/Hour Meter Display Button (6) for two seconds. Speedometer will display between km/h and mph.

8. **Clock/Hour Meter** - Clock indicates 12-hour mode; the hour meter indicates total time the ATV is used.
9. **4WD Indicator** - Displays 4WD when the front drive selector switch is moved to the 4WD position. Display will go off when 2WD is selected.
10. **Odometer/Trip Meters (A & B)** - Odometer registers the total distance the ATV has traveled. Trip meters can register two different types of distances (for instance, A could register trip distance and B could register distance between stops). Trip meters can be reset.

11. **Gear Position Indicator** - Displays which position the shift lever is in: R (reverse gear) and the Reverse Indicator (2) will illuminate, N (neutral) and the Neutral Indicator (3) will illuminate, and on the automatic transmission model H (high gear), and L (low gear).

REPLACING SPEEDOMETER

To replace the speedometer, use the following procedure.

1. Remove the four nylon fasteners securing the instrument pod; then remove the ignition switch retaining nut.



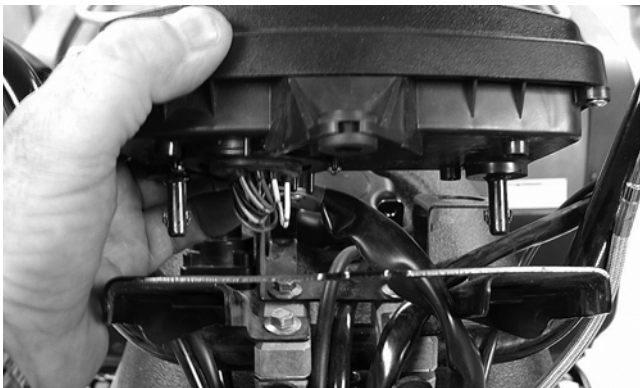
CD073

2. Remove the nut from the mounting stud; then dislodge the locating studs from the grommets.



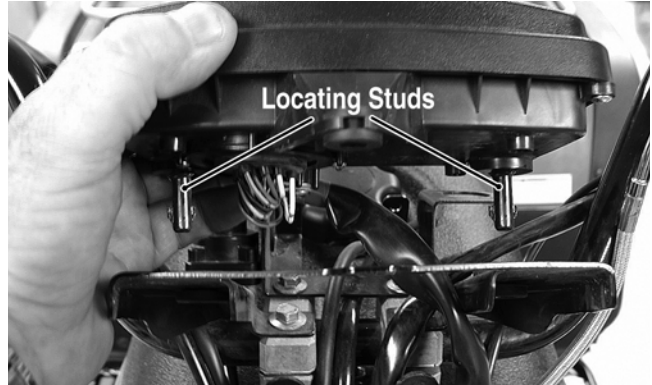
CD074

3. Remove the left-side inner fender panel and disconnect the multi-pin speedometer connector; then route the speedometer wiring harness up through the opening in front of the steering post.



CD075

4. Route the new wiring harness down through the opening; then lubricate the two locating studs with liquid soap and press the studs into the grommets.



CD075A

5. Install the nut on the mounting stud (do not overtighten); then secure the instrument pod cover with the fasteners.

6. Secure the ignition switch with the retaining nut.

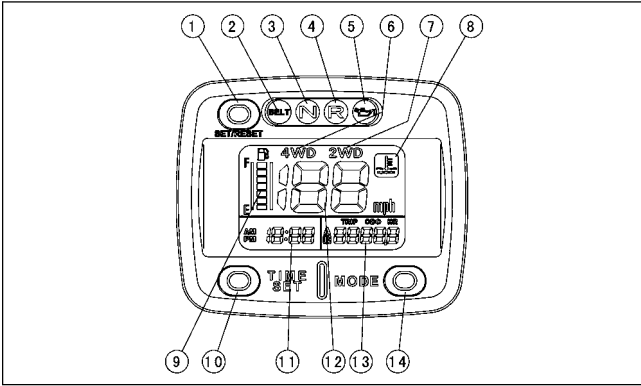


CD076

7. Connect the multi-pin connector; then install and secure the left-side inner fender panel.

Speedometer (Electronic)/Indicator Lights (650 V-Twin)

■ **NOTE:** The indicator lights will illuminate for approximately one second when the ignition switch is rotated to the ON position.



ATV2056

1. **Set/Reset Button** — Used (in conjunction with the Time Set button) to advance the hour and minute display for setting the clock and to reset the trip meter display to zero.
2. **Belt Check Indicator** — The Belt light will flash at 0.35-second intervals when excessive belt wear or belt damage is detected. Also, light will illuminate every 100 hours of operation to indicate service requirements.
3. **Neutral Indicator** — The Neutral 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.
4. **Reverse Indicator** — The Reverse light will illuminate when the transmission is shifted into reverse gear. The light will go off when shifted out of reverse.
5. **Oil Pressure Indicator** — An oil pressure warning symbol LED (light emitting diode) will flash when low oil pressure is detected.
6. **4WD Indicator** — Displays 4WD when the front drive selector switch is moved to the 4WD position. Display will go off when 2WD is selected.
7. **2WD Indicator** — Displays 2WD when the front drive selector switch is moved to the 2WD position. Display will go off when 4WD is selected.
8. **Coolant 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.

■ **NOTE:** High engine RPM, low vehicle speed, or heavy load can raise engine temperature. Decreasing engine RPM, reducing load, and selecting an appropriate transmission gear can lower the temperature.

■ **NOTE:** Debris in front of the engine (or packed between the cooling fins of the radiator) can reduce cooling capability. Using a hose, pressure-wash the radiator and the engine to remove any debris preventing air flow.

9. **Fuel Level Indicator** — Shows amount of gasoline in the gas tank. When bottom portion flashes, 3.5 L (0.92 U.S. gal.) of gasoline remains in the tank.
10. **Time Set Button** — Press the button to set clock hours and minutes.

A. Press the button and the minute display will blink; then adjust the hour display by pressing the Set/Reset Button. Press the Time Set Button to set hour display.

■ **NOTE:** If the Set/Reset Button is pressed in and held, the hour display will advance continuously.

B. After the hour display is set, the minute display will blink. Press the Set/Reset Button to set minute display.

11. **Clock** — Clock indicates 12-hour mode.
12. **Speedometer** — Shows approximate ATV speed in km/h and mph.
13. **Odometer/Trip Meters (A & B)/Hour Meter** — Odometer registers the total distance the ATV has traveled. Trip meters can register two different types of distances (for instance, A could register trip distance and B could register distance between stops). Trip meters can be reset. Hour meter registers total ignition switch ON time.
14. **Mode Button** — Used (in conjunction with the Odometer/Trip Meters/Hour Meter) to shift the odometer/trip meters/hour meter display through the four modes: odometer, trip meter (A), trip meter (B), and hour meter.

REPLACING SPEEDOMETER

To replace the speedometer, use the following procedure.

1. Remove the two reinstallable rivets securing the instrument pod; then remove the ignition switch retaining ring.
2. Remove the front rack and front fenders; then disconnect the multi-pin connector.
3. Remove the three nuts securing the mounting studs; then remove the speedometer.
4. Route the new wiring harness down through the opening; then mount the speedometer and secure with the three nuts; then connect the multi-pin connector.





5. Install the front fenders and front rack; then install the instrument pod and secure with the reinstallable rivets.

[Table of Contents](#)

[Section Table of Contents](#)

6. Secure the ignition switch with the retaining ring.