5. Apply blue Loctite (No. 242) to the nut threads prior to installation. Screw the nut (**Figure 22**) all the way on until it stops.
6. Secure the rotor with a 29 mm box wrench and tighten the nut with a 22 mm long socket (**Figure 31**). Tighten the nut to the torque specification listed in **Table 2**.
7. Install the starter idle gear assembly (B, **Figure 29**) as described in Chapter Five.
8. Install the left-hand crankcase cover as described in Chapter Five.

CAPACITOR DISCHARGE IGNITION

All models are equipped with a capacitor discharge ignition (CDI) system, a solid-state system that uses no mechanical parts such as cams or breaker points and no routine maintenance is required. The CDI ignition circuit is shown in **Figure 32**.

As the rotor is turned by the crankshaft, the permanent magnets within the rotor 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.

CDI Precautions

Certain measures must be taken to protect the ignition system. Damage to the semiconductors in the system will occur if the following precautions are not observed.

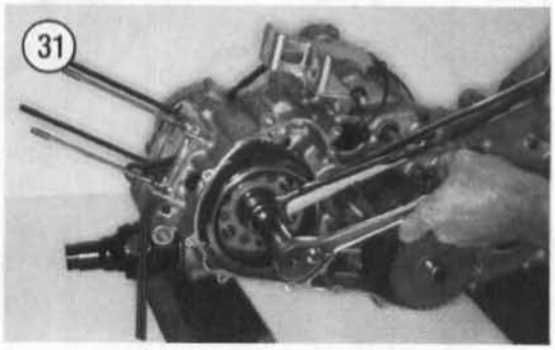
1. Never connect the battery backward. If the battery polarity is wrong, damage will occur to the voltage regulator/rectifier, CDI unit and alternator stator assembly.
2. Do not disconnect the battery when the engine is running. A voltage surge will occur which will damage the voltage regulator/rectifier and possibly burn out light bulbs.
3. Never disconnect any of the electrical connections while the engine is running.
4. Keep all connections between the various ignition system units clean and tight. Be sure that the wiring connectors are pushed together firmly to help keep out moisture. Also pack the connectors with dielectric compound as described at the beginning of this chapter.
5. Do not substitute another type of ignition coil.
6. Most components are mounted within a rubber vibration isolator. Always be sure that the isolator is in place when installing the units in the system.
7. Prior to inspection or troubleshooting the ignition system, check the battery charge as described under *Battery* in Chapter Three. For best test results, the battery must be fully charged (12.0 volts or higher). A lower voltage reading will result with different and inaccurate test readings.
8. Do *not* crank the engine unless the spark plug is installed in the cylinder head or grounded against the engine.

CDI Troubleshooting

Problems with the CDI ignition system are indicated by either a weak spark or no spark at all. Refer to **Table 1** for ignition component specifications.

CDI Testing

Complete testing of the CDI unit requires a special Suzuki Pocket Tester (part No. 09900-25002) and



should be tested by a Suzuki dealer service department. This test procedure is provided if you are able to procure this piece of test equipment and choose to perform this test yourself.

NOTE

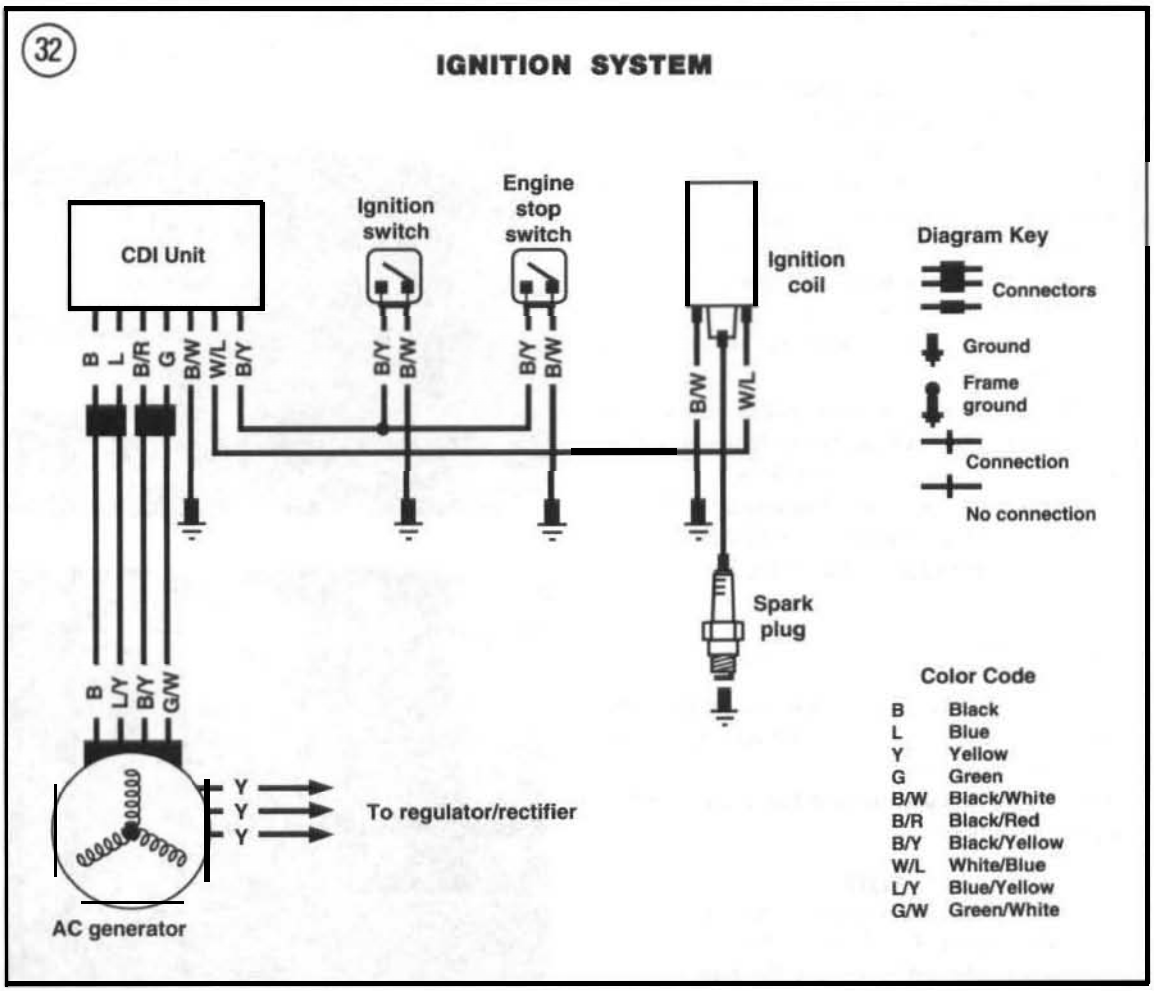
Do not perform this test procedure with an ohmmeter other than that specified in this procedure. As transistors, capacitors, zener diodes, etc, are used inside the CDI unit, the resistance readings will differ when an ohmmeter other than the Suzuki pocket tester is used. This may lead to the wrong diagnosis of a problem that may or may not exist within the CDI unit.

A Suzuki dealer will either test the CDI unit with the special tool or perform a "remove and replace" test to see if the CDI unit is faulty. This type of "R/R" test is expensive to perform on your own. Remember if you purchase a new CDI unit and it does *not* solve your particular ignition system problem, you *cannot* return the CDI unit for refund. Most motorcycle dealers will *not* accept returns on any electrical component since they could be damaged internally even though they look okay externally.

Make sure all connections between the various components are clean and tight. Be sure that the wiring connectors within the circuit are pushed together firmly and packed with a dielectric compound to help keep out moisture.

Performance Test

1. Place the ATV on level ground and set the parking brake. Block the wheels so the vehicle will not roll in either direction.



2. Disconnect the high voltage lead (**Figure 33**) from the spark plug. Remove the spark plug from the cylinder head as described under *Spark Plug* in Chapter Three.

NOTE

The spark plug must ground out against a piece of bare metal on the engine or frame. If necessary, carefully scrape away some of the paint to reach bare metal.

3. Connect a new or known good spark plug to the high voltage lead and place the spark plug base on a good ground like the engine cylinder head. Position the spark plug so you can see the electrodes.

WARNING

If it is necessary to hold the high voltage lead, do so with an insulated pair of pliers. The high voltage generated by the ignitor unit could produce serious or fatal shocks.

4. Turn the engine over rapidly with the starter motor or recoil starter and check for a spark. If there is a fat blue spark, the CDI unit is working properly.
5. If a weak spark or no spark is obtained and the pickup coil and ignition coil are okay, test the CDI unit yourself or have it tested by a Suzuki dealer.
6. Reinstall the spark plug and connect the high voltage lead onto the spark plug.
7. If all of the ignition components are okay, then check the following:
   a. Check for an open or short in the wire harness between each component in the ignition system.
   b. Again, make sure all connections between the various components are clean and tight. Be sure that the wiring connectors are pushed together firmly to help keep out moisture.

Resistance Test

1. Place the ATV on level ground and set the parking brake. Block the wheels so the vehicle will not roll in either direction.
2. Remove the seat and the front fender as described in Chapter Fourteen.

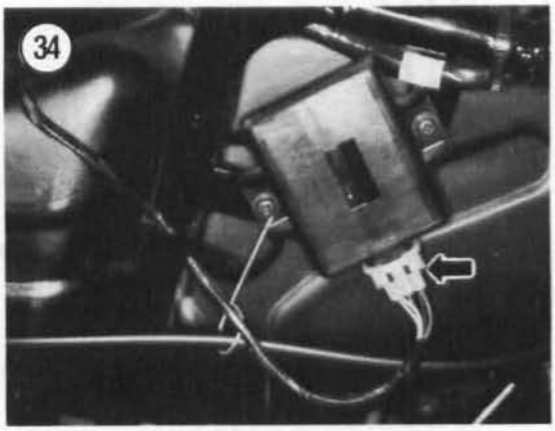
NOTE

During front fender removal, the battery is disconnected and removed from the chassis. Do not reconnect the battery since it must be removed from the circuit for this test procedure.

NOTE

The number of CDI electrical connectors varies among the different model years.

3. Disconnect the electrical connector(s) from the CDI unit (**Figure 34**).
4. Use the Suzuki Pocket Tester, set at R × K, and check continuity between each of the CDI terminals. Refer to **Figure 35** for 1987-1989 models or **Figure 36** for 1990-on models for terminal identification and for test lead placement and specified resistance readings.
5. Connect the Pocket Tester to the CDI unit side of the electrical connector(s). If any of the resistance readings are higher than specified, there is an open in the unit. If any of the resistance readings are lower than specified, there is a short in the unit.



6. If the CDI unit fails any portion of this test, the unit is faulty and must be replaced as described in this chapter.
7. If the CDI unit checks out okay, reconnect the electrical connector(s). Make sure the electrical connector(s) is free of corrosion and is tight.

Replacement

1. Place the ATV on level ground and set the parking brake. Block the wheels so the vehicle will not roll in either direction.
2. Remove the seat and front fender as described in Chapter Fourteen.
3. Disconnect the electrical connector(s) from the CDI unit (A, **Figure 37**).
4. Remove the screws (B, **Figure 37**) securing the CDI unit to the frame.
5. Install a new CDI unit onto the frame. On models so equipped, install the wire guide (C, **Figure 37**) to the mounting screw.
6. Connect the electrical connector(s) to the CDI unit. Make sure the electrical connector(s) are free of corrosion and are tight.

(35) **CDI TEST POINTS (1987-1989)**

Unit: Approx. kΩ

Negative probe of tester: \ Positive probe of tester:	B	BL	G	B/R	W/BL	B/W	B/Y
B		10 – 80	10 – 60	10 – 60	∞	10 – 60	2 – 10
Bl	5 – 40		5 – 30	4 – 20	∞	4 – 20	20 – 100
G	3 – 20	3 – 20		1 – 6	∞	1 – 6	8 – 40
B/R	2 – 10	2 – 10	1 – 6		∞	0	5 – 30
W/Bl	∞	∞	∞	∞		∞	∞
B/W	2 – 10	2 – 10	1 – 6	0			5 – 30
B/Y	∞	∞	∞	∞	∞	∞	

7. Install the front fender and seat as described in Chapter Fourteen.

PICKUP COIL

Resistance Check

1. Place the ATV on level ground and set the parking brake. Block the wheels so the vehicle will not roll in either direction.
2. Remove the seat as described in Chapter Fourteen.
3. Start the engine and let it reach normal operating temperature. Shut off the engine.

NOTE

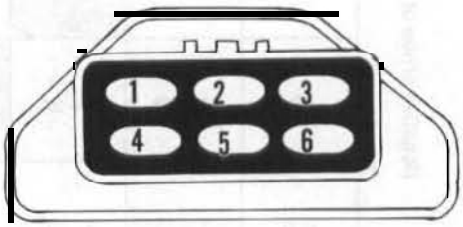
The number of electrical connectors differs between the models and years. Refer to the wiring diagrams at the end of this book for your specific model. There are either two 2-pin connectors or one 2-pin electrical connector for both the pickup coil and the alternator stator coil assembly.

(36) **CDI TEST POINTS (1990-1994)**

1990-1994

Unit: kΩ

Negative probe of tester to: \ Positive probe of tester to:	O	B/W	G	B/BL	W/BL
O		2 – 12	3 – 20	2 – 12	∞
B/W	∞		1 – 6	0	∞
G	∞	1 – 6		1 – 6	∞
B/BI	∞	0	1 – 6		∞
W/BI	∞	1 – 6	3 – 15	1 – 6	



1995-1998

Negative probe of tester to: \ Positive probe of tester to:	1	2	3	4	5	6
1		2-10	50-150	∞	2-10	2-10
2	∞		20-80	∞	0	0
3	∞	20-100		∞	20-100	20-100
4	∞	1-7	50-150		1 – 7	1-7
5	∞	0	20-80	∞		0
6	∞	0	20-80	∞	0	

4. Follow the electrical wiring harness from the AC generator to where it connects to the main wiring harness on the left-hand side of the vehicle.
5. Disconnect the pickup and alternator stator coil electrical connector(s).
6. Use an ohmmeter set at R × 1 and check continuity between the black/yellow and the green/white terminals on the AC generator stator side of the connector. The specified resistance is listed in **Table 1**.

NOTE

The CDI pickup coil and stator are one assembly and cannot be replaced separately. If either of the components fail, the entire assembly must be replaced.

7. If the pickup coil resistance does not meet (or come close to) the specifications, the pickup coil and AC generator stator assembly must be replaced as an assembly as described in this chapter.

NOTE

Prior to replacing the pickup coil/stator assembly, check the electrical wires to and within the electrical connector for any opens or poor connections.

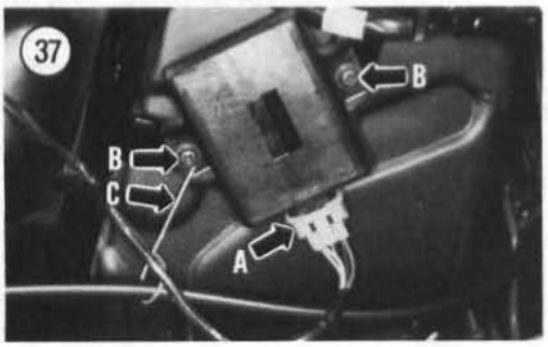
8. If the pickup coil checks okay, reconnect the electrical connector(s). Make sure they are free of corrosion and are tight.
9. Install the seat as described in Chapter Fourteen.

IGNITION COIL

Performance Test

NOTE

The spark plug must ground out against a piece of bare metal on the engine or frame.



First as a quick check of ignition coil condition, disconnect the high voltage lead from the spark plug. Remove the spark plug (**Figure 33**) from the cylinder heads as described under *Spark Plug* in Chapter Three. Connect a new or known good spark plug to the high voltage lead and place the spark plug base on a good ground like the engine cylinder head. Position the spark plug so you can see the electrodes.

WARNING

If it is necessary to hold the high voltage lead, do so with an insulated pair of pliers. The high voltage generated by the signal generator could produce serious or fatal shocks.

Crank the engine with the starter motor or recoil starter. If a fat blue spark occurs, the coil is in good condition; if not, proceed as follows. Make sure that you are using a known good spark plug for this test. If the spark plug used is defective, the test results will be incorrect.

Reinstall the spark plug in the cylinder head and connect the high voltage lead.

Resistance Test

NOTE

In order to get accurate resistance measurements, the coil must be warm (minimum temperature is 20°C [68° F]). If necessary, start the engine and let it warm up to normal operating temperature. If the engine will not start, warm the ignition coil with a portable hair dryer.

1. Place the ATV on level ground and set the parking brake. Block the wheels so the vehicle will not roll in either direction.
2. Remove the front fender as described in Chapter Fourteen.

NOTE

During front fender removal, the battery is disconnected and removed from the chassis. Do not reconnect the battery since it must be removed from the circuit for this test procedure.

3. Disconnect all ignition coil wires (including the spark plug lead from the spark plug) before testing.
4. Set the ohmmeter to R × 1 and zero the test leads.