

CAPACITOR DISCHARGE IGNITION SYSTEM / SX-175

The ignition system used on the SX-175 model is of the breakerless capacitor discharge type. The system consists of a charging coil located inside the alternator rotor which has internal permanent magnets, two external trigger projections located on its circumference, with a pick-up coil mounted on the crankcase at the side of the alternator rotor, adjustable for both air gap and ignition timing. Also in the system are an ignition switch, ignition module, high tension coil, and spark plug. Rotation of the rotor permanent magnets past the CDI charging coil generates alternating current which is transmitted to the capacitor, inside the ignition module, through the red and black wires (see wiring diagram). This charges the capacitor. When the two projections on the rotor pass the pick-up coil a small alternating current pulse is generated which is transmitted through the green wire, through the closed contacts of the ignition switch, to the SCR in the ignition module. This pulse turns on the SCR and the stored electrical energy in the capacitor is allowed to pass through the primary windings in the high tension coil which increases the voltage in the secondary windings and causes a high energy spark to occur at the electrode of the spark plug.

If no spark occurs at the spark plug, the following steps should be performed in sequence to determine the cause and correction.

Note: The battery charging circuit and the ignition circuit are totally separate from each other.

1. Replace the spark plug. (Use Harley-Davidson No. 7-8, part No. 32344-74, exclusively).
2. Remove the two green wires from the back of ignition switch, terminals (6) and (7), and connect the wires together. If spark now occurs at the plug when engine is turned over rapidly, the ignition switch is faulty and should be replaced.
3. Disconnect the red wire from terminal (1) of the ignition module and slip the black plastic insulator away from the spade terminal. Following the recommendations of the manufacturer of your volt/ohm meter, zero the needle on the RX 100 scale and check the resistance between the red wire terminal and a good ground on the engine. A value of 500 to 600 ohms should be obtained. If the reading is substantially lower, an internally shorted coil is indicated and coil should be replaced. This coil, part No. 31605-74P, is located behind the alternator rotor and is the smallest coil, and brown in color. Note: A reading of 0 ohms resistance would indicate that the red wire is shorted to ground, and a reading of infinite resistance would indicate an open coil or broken wire.

4. Remove the green wire terminal from the pick-up coil. Switch ohm meter to the RX 1 scale and again zero the pointer. Check the resistance between the insulated terminal of the pick-up and its metal body. A value of approximately 135 ohms should be obtained. If the resistance varies outside of 120 to 150 ohm limits substantially, the pick-up is defective and should be replaced.
5. Disconnect the violet and black wires on the threaded terminals, and the high tension cable from the tower of the high tension coil. Switch ohm meter to the RX 1 scale and zero the pointer. Connect one test lead to the "R" threaded terminal and the other test lead to the other threaded coil terminal to test primary resistance. A value in the range of 0.4 ohms should be obtained. Note: Since a low ohms reading below .5 ohms is usually unreliable with other than a laboratory grade ohmmeter, and even a correct resistance reading will not show up possible insulation breakdown at the high voltages attained in operation, we suggest that a doubtful ignition coil be replaced with one from another motorcycle known to function satisfactorily.

Switch to the RX 100 scale and again zero pointer. Connect one test lead to the spur contact inside the coil tower and the other test lead to either threaded coil terminal to test secondary resistance. A value of approximately 2900 ohms should be obtained.

Any substantial variation from these figures would indicate a faulty coil and the coil should be replaced.

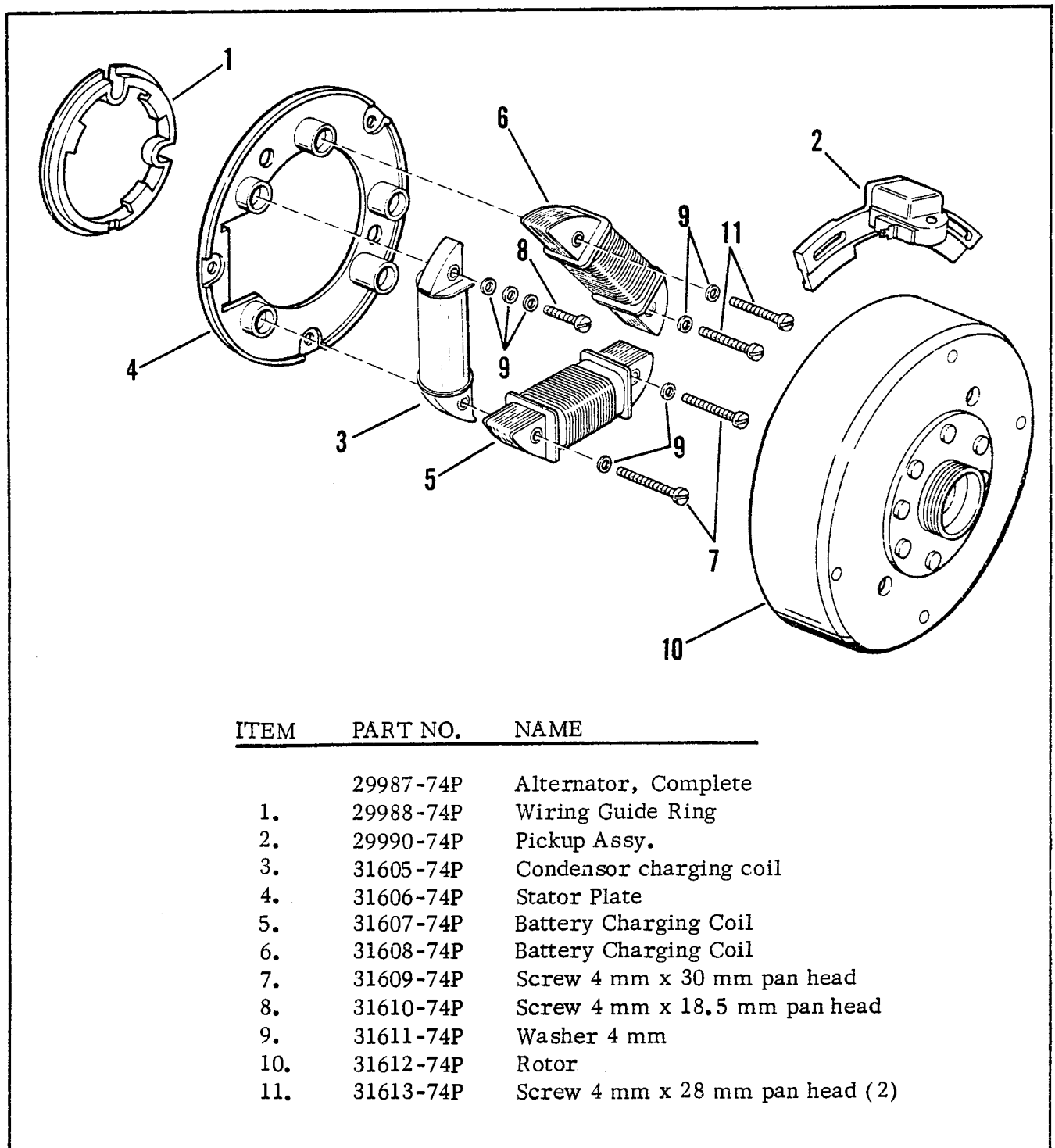
6. Check for pinched wires behind stator plate, and insulation worn through from contact with crankshaft at this location. Also check all wire terminal connectors for correct wire location according to wiring diagram.

Note: A wiring guide ring was added for later 1974 models to correctly locate wiring away from the crankshaft. Installation of this part is recommended to update earlier 1974 models and prevent possible electrical faults.

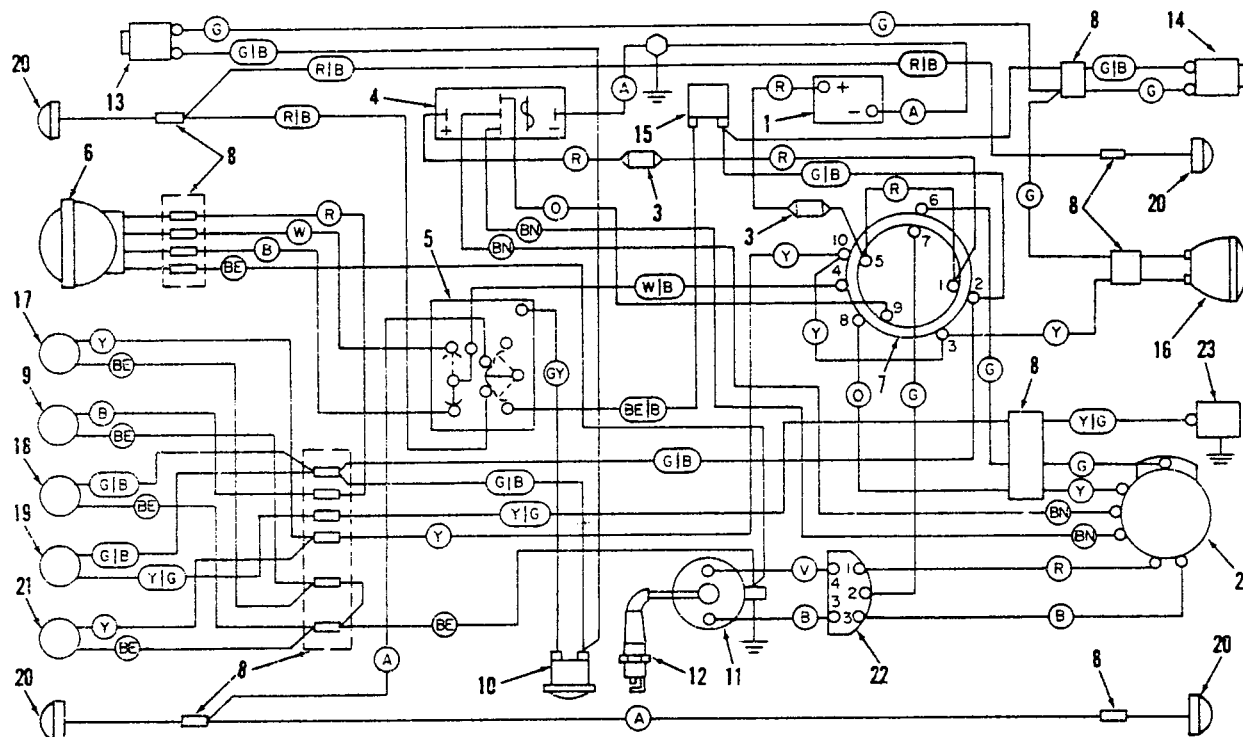
If after each of the above outlined procedures has been followed, no spark at the plug can be obtained, it is recommended that the ignition module be replaced. Due to its internal circuitry, no conclusive tests can be made other than substitution of this unit.

An exploded view of the alternator with part numbers is shown for your information.

HARLEY-DAVIDSON MOTOR CO., INC.



ALTERNATOR PARTS



- | | |
|-----------------------------|------------------------------|
| 1. Battery | 13. Stoplamp Front Switch |
| 2. Alternator | 14. Stoplamp Rear Switch |
| 3. Fuse (15 Amp.) | 15. Flasher |
| 4. Rectifier | 16. Tail Lamp |
| 5. Handlebar Switch | 17. Speedometer Lamp |
| 6. Headlamp | 18. Ignition Indicator Lamp |
| 7. Ignition-Light Switch | 19. Neutral Indicator Lamp |
| 8. Connector | 20. Direction Signal Lamp |
| 9. High Beam Indicator Lamp | 21. Tachometer Lamp |
| 10. Horn | 22. Ignition Module |
| 11. Ignition Coil | 23. Neutral Indicator Switch |
| 12. Spark Plug | |

COLOR KEY

(B) BLACK	(V) VIOLET
(BE) BLUE	(A) AZURE (Light Blue)
(G) GREEN	(B BE) BLACK AND BLUE
(BN) BROWN	(G B) GREEN AND BLACK
(W) WHITE	(W B) WHITE AND BLACK
(GY) GRAY	(R B) RED AND BLACK
(R) RED	(O) ORANGE
(Y) YELLOW	(Y G) YELLOW AND GREEN

IGNITION SWITCH CONTACTS

SWITCH POSITION	CONNECTS TERMINALS
OFF	NONE
IGNITION	1 - 2/6 - 7
IGN. & LIGHTS	1 - 2 - 3/4 - 5/6 - 7/8 - 9
PARK	5 - 10

WIRING DIAGRAM AND KEY