

IGNITION COIL BASICS POSITIVE-GROUND CARS

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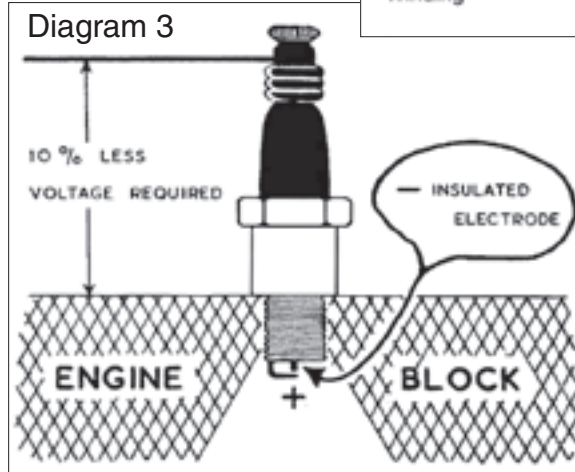
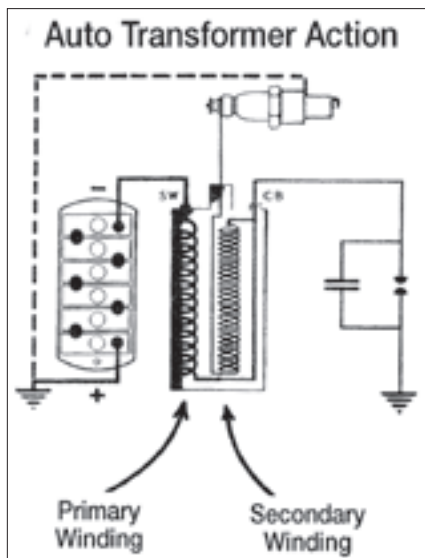
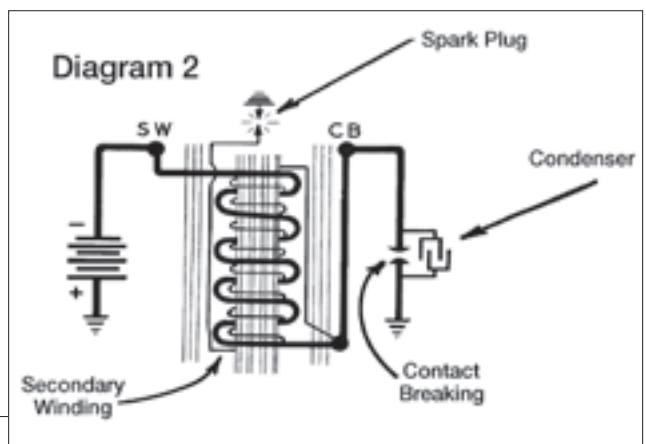
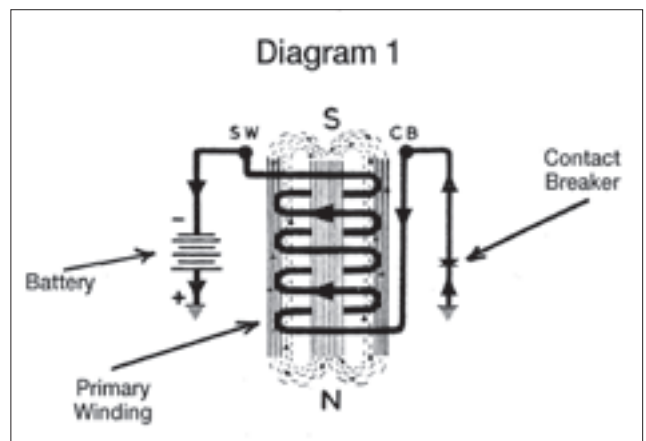
Golden Gate Austin-Healey Club

1. Primary winding: Diagram 1 shows the primary winding of the ignition coil with the battery connected to the SW terminal of the coil, and the contact breaker connected to the CB terminal. When the contacts close, current flows through the primary winding and back to the battery via the chassis. The current flowing through the winding produces a magnetic field around it. These lines of force are concentrated due to the laminated iron core of the coil.

2. Primary and Secondary Circuit: (See Diagram 2.) When the points open, the current stops flowing and the magnetic field around the primary collapses; the secondary has about 20,000 turns of very fine wire. The collapsing magnetic field will induce a high voltage (25,000+ volts) for the spark plugs. The primary winding will also receive an induced voltage of 250-300 volts. This induced voltage will cause excessive arcing at the points. A condenser is placed across the points to absorb this excessive voltage.

3. Auto Transformer Action: In a positive-ground coil, the secondary winding is in series with the primary winding. This will improve the spark at the plugs by 250-300 volts. If the external connections of the coil (CB and SW terminals) are reversed, the current will flow in the opposite direction and the auto transformer effect will be lost.

4. Negative Spark: The ignition coils in early British cars were designed to produce a positive-ground spark. The electrode of the plug is negative, as shown in Diagram 3. This is usually referred to as a "negative spark." There is a 10 percent re-



duction in the voltage required to break down the plug gap. If the car is converted to negative ground and if a negative ground coil is not installed, the 10 percent advantage is lost. This effect can be seen if you attach a scope to your car. The picture of the HT system would be upside down. If you change to a negative ground, it is always better to replace the coil with a negative system coil.

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