

# **INSTALLATION INSTRUCTIONS**

## **Mallory E-Spark™ Conversion PN 61001M**

**IMPORTANT:** Before installing the E-Spark™ Ignition System, make sure that your vehicle is equipped with an ignition ballast resistor (or loom resistance wire) in the wire between the ignition switch and the coil (+) terminal. One easy way to find the ignition ballast resistor is to check the service manual for your vehicle. You can test your stock ignition system voltage while the engine is at idle at the coil (+) terminal. If the measured voltage is within 1-volt of battery voltage, an ignition ballast resistor must be installed in the wire from the ignition switch. In general, all vehicles equipped with the Delco point ignition were equipped with an ignition ballast resistor. If you find your vehicle is not equipped with an ignition ballast resistor, install a Mallory Ignition Ballast Resistor Part No. 700 in series in the wire from the ignition switch. Failure to use an ignition ballast resistor will result in the eventual destruction of the E-Spark™ Ignition Module.

**Exceptions:** 1) Using one of Mallory's 3 specially matched coils eliminate the need for a ballast resistor or a resistance wire. These coils are: 29219- Chrome Canister Coil, 30450 PROMASTER e Coil and 29450 PROMASTER Classic Coil.

2) If your vehicle is equipped with a HyFire Electronic Ignition Control or similar aftermarket ignition control, use the wiring specified for the particular controller, along with its matching coil, such as Mallory's 29440 or 30440.

**Note:** This kit can be installed in the distributor without removing the distributor from the engine if the distributor is easily accessible. However, removal of the distributor from the engine is recommended.

### **Parts Included in this kit:**

1 E-Spark™ Module	1 Cable Tie	1 Female Connector	2 Flathead Screws, 8-32 x 1/4
1 Shutter Wheel, 2-piece set	2 Bolts, 8-32 x 3/4 Hex	1 Mounting Plate	2 Screws, 6-32 x 3/16
1 Distributor Wire Harness	2 Nuts, 8-32 Hex	1 Capsule, Heat Sink Compound	1 Grommet

## **GENERAL INFORMATION**

### **Ignition Coils:**

The E-Spark™ Ignition System is designed to work with most stock ignition coils and aftermarket high performance ignition coils. For optimum performance in systems without a HyFire or similar ignition control, use one of Mallory's 3 specially matched coils eliminates the need for a ballast resistor or a resistance wire. These coils are: 29219- Chrome Canister Coil, 30450 PROMASTER e Coil and 29450 PROMASTER Classic Coil.

### **Spark Plug Wires:**

To prevent false triggering and the possibility of premature ignition failures, use suppression type spark plug wire. We recommend spiral core ignition wire, such as Mallory PRO SIDEWINDER® Ignition Wire.

### **Spark Plug Gaps:**

For street applications, use your engine manufacturer's specifications. For racing applications, start with your engine manufacturer's specifications, then experiment with and closely monitor various gaps to achieve maximum performance.

### **Electric Welding:**

Unplug the distributor wire harness before welding on the vehicle.

### **Optional Circuit Guard Part No. 29371:**

Voltage spikes (voltage transients, power surges) are associated with "noisy" electrical systems from electrical defects such as worn alternator brushes, corroded or oxidized electrical connections and similar electrical problems. Voltage spikes damage the E-Spark™ Ignition Module. Voltage spikes are clamped and regulated by the optional Circuit Guard from damaging the E-Spark™ Ignition Module.

**INSTALLATION PROCEDURE**

- Step 1 -** Disconnect the point trigger wire from the coil (-) terminal.
- Step 2 -** Locate the spark plug wire on the distributor cap that the engine timing is set from. See a service manual for these locations. Mark the distributor housing, in line with this spark plug wire position on the distributor cap.
- Step 3 -** Turn the engine crankshaft until the timing mark lines up with the TDC (top dead center) mark on the timing tab. See a service manual for these locations.
- Note:** Removing the spark plugs may make it easier to turn the crankshaft.
- Step 4 -** Remove the distributor cap from the distributor and lay it aside. Do not remove the spark plug wires or coil wire. The rotor blade should point to the mark made on the distributor housing (from Step 2). If it is not, turn the engine crankshaft one full turn (repeating Step 3) until the timing mark lines up (again) with the TDC mark on the timing tab.
- Note:** Once you are finished with Step 4, DO NOT turn the crankshaft until the distributor is installed – Step 12.
- Step 5 -** Note the direction the rotor is pointing. Note the direction the vacuum chamber is pointing. Disconnect the vacuum chamber hose at the carburetor and temporarily plug this carburetor fitting. Remove the distributor hold down clamp and remove the distributor from the engine.
- Step 6 -** Remove the rotor. Disconnect the primary point wire. Remove the primary wire and grommet from the distributor. Remove the points and the condenser from the breaker plate.
- Step 7 -** (See Figure 1) - Install the mounting plate flat against the breaker plate where the points were. Secure using two 8-32 x 1/4 flathead screws.
- Note:** Occasionally, the breaker plate ground wire will interfere. Pry the breaker plate ground wire from the breaker plate, and disconnect it from vacuum chamber mounting screw. The E-Spark™ Ignition System will operate without the breaker plate ground wire.
- Step 8 -** Apply a thin coat of heat sink compound to the bottom of the module. Install the module onto the mounting plate with two 6-32 x 3/16 screws. See Figure 1. Secure the three module wire to the breaker plate with a cable tie.
- Step 9 -** Install the grommet in the hole in the distributor housing where the primary point wire had previously fed through. Slide the three wires from the module, through the grommet, to outside the distributor housing.
- Step 10 -** (See Figure 2) Put the three wires from the module in the female connector: green wire in hole #1; brown wire in hole #2; red wire in hole #3. Plug the distributor wire harness into the female connector. See Figure 2.
- Step 11 -** Install the two-piece shutter underneath the rotor drive plate and install two 8-32 bolts. The hex heads of the 8-32 bolts fits into the matching holes on the underside of the shutter wheel. Install the rotor on the rotor drive and install two 8-32 hex nuts. See Figure 1.
- Note:** Some distributors use a rotor made from a flexible plastic. File or cut the rotor locator (on the bottom of the rotor) so that it measures 1/8" in length. Install rotor and shutter as described in Step 11.
- Step 12 -** Install the distributor with the rotor and vacuum chamber pointing in the direction as noted in Step 5. The rotor must be pointing (approximately) at the mark on the distributor housing from Step 2.
- Note:** The distributor must be fully seated into the engine. It may be necessary to turn the oil pump drive, or turn the engine crankshaft two full turns until the timing mark lines up (again) with the TDC mark on the timing tab, to allow the distributor to seat fully.
- Step 13 -** Turn the distributor housing until the nearest slot on the shutter wheel is approximately in the center of the optics of the module. This will generally give timing close enough for starting purposes. The rotor must be pointing (approximately) at the mark on the distributor housing from Step 2. Put the distributor hold down clamp in place and tighten slightly, leaving it loose enough to turn the distributor.
- Step 14 -** Install the distributor cap.

**WIRING PROCEDURE (SEE FIGURES 3, 4 AND 5)**

**Step 1** - Make sure that your vehicle is equipped with an ignition ballast resistor (or loom resistance wire) in the wire between the ignition switch and the coil (+) terminal. If you find your vehicle is not equipped with an ignition ballast resistor, install a Mallory Ignition Ballast Resistor Part No. 700 in series in the wire from the ignition switch. For optimum performance in systems without a HyFire or similar ignition control, use one of Mallory's 3 specially matched coils which eliminates the need for a ballast resistor or a resistance wire. These coils are: 29219- Chrome Canister Coil, 30450 PROMASTER e Coil and 29450 PROMASTER Classic Coil.

**Step 2** - There are three wires coming from the distributor wire harness:

- RED WIRE: Connect to the coil (+) terminal.
- GREEN WIRE: Connect to the coil (-) terminal.
- BROWN WIRE: Connect to engine block ground.

Clean away any grease, oil and paint from the mounting surface before the connection is made.

**Note:** If a HYFIRE® Electronic Ignition Control or any other aftermarket ignition control is being used, connect the distributor wire harness according to the instructions supplied with the ignition control.

<b>DISTRIBUTOR TUNE-UP PARTS</b>	<b>PART NO.</b>
DISTRIBUTOR CAP	202
ROTOR	303
SHUTTER WHEEL (TWO PIECE)	338
E-Spark™ MODULE	6100M
DISTRIBUTOR WIRE HARNESS	29349

**STARTING THE ENGINE**

**CAUTION:** Be sure all tools, wires and miscellaneous objects are clear of moving engine parts and extreme heat before starting the engine.

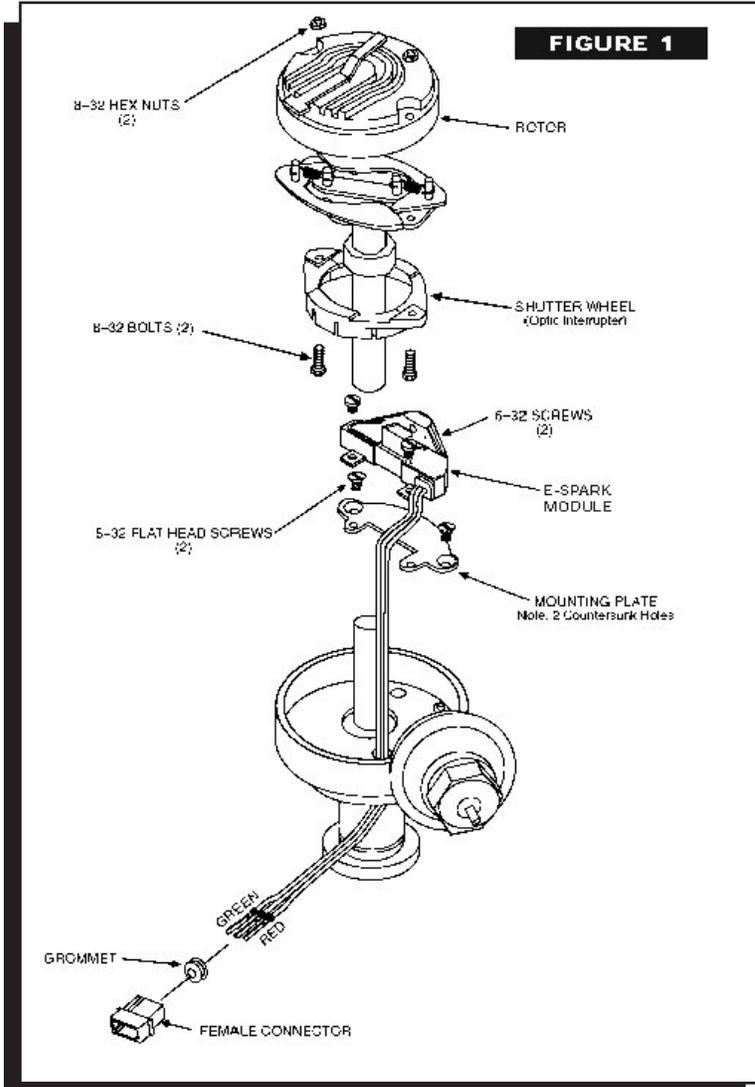
Recheck all wires and connections to make sure they are correct. Check and clean, or replace spark plugs. If replacing spark plugs, use types recommended by the engine manufacturer.

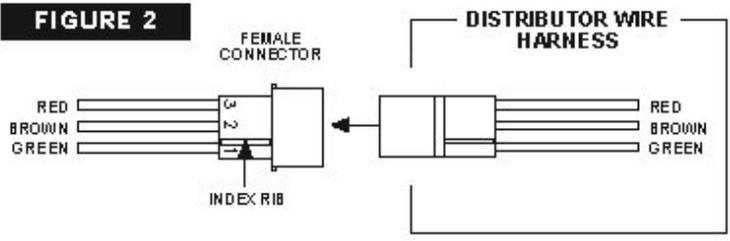
**Step 1** - Connect a timing light. Find the area with the best view of the timing marks.

**Step 2** - Start engine. If it fails to start, rotate the distributor in small increments clockwise or counterclockwise until engine starts. Do not exceed more than ten degrees of distributor housing rotation in either direction.

**Step 3** - Set timing as recommended by engine manufacturer, then tighten distributor hold down clamp. Make sure timing is still correct. If timing has moved, repeat this procedure.

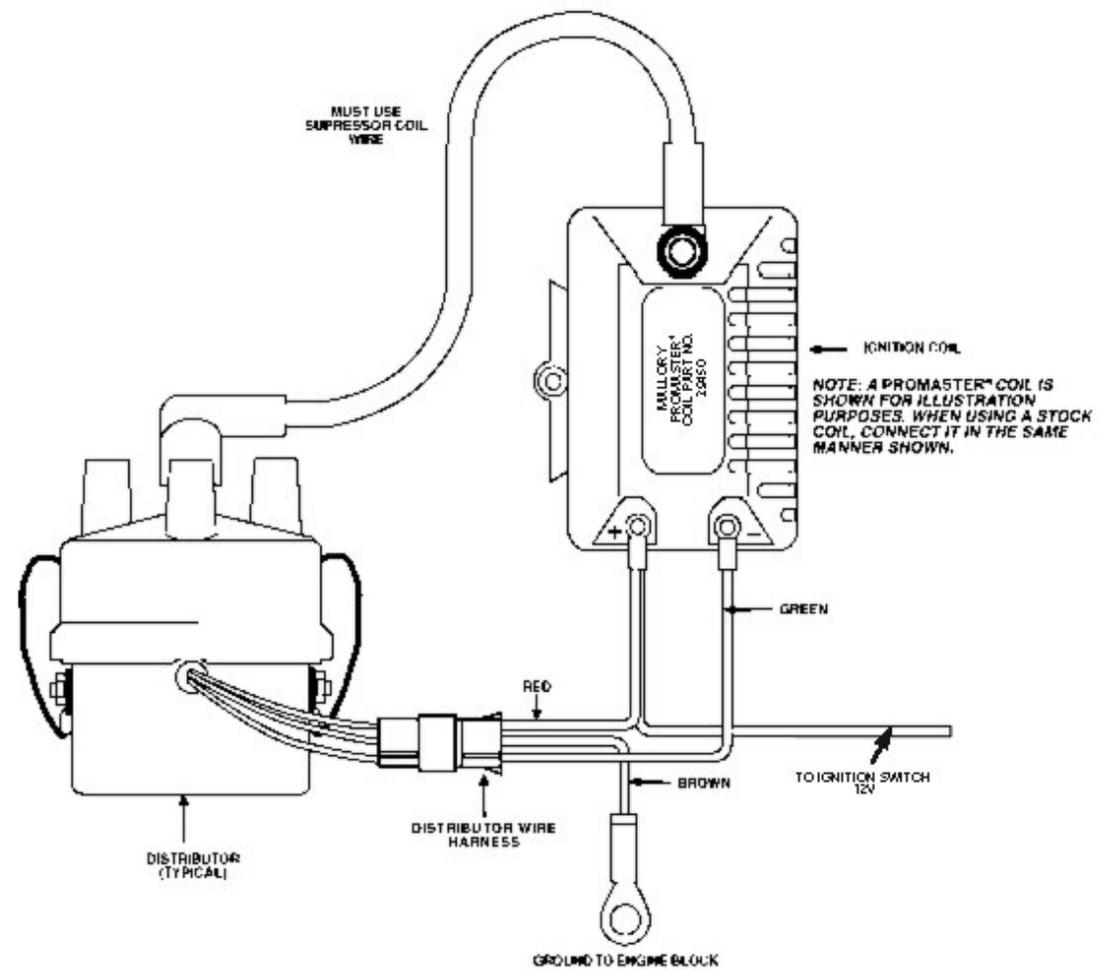
**Step 4** - Re-connect the vacuum hose between the vacuum chamber and the carburetor.





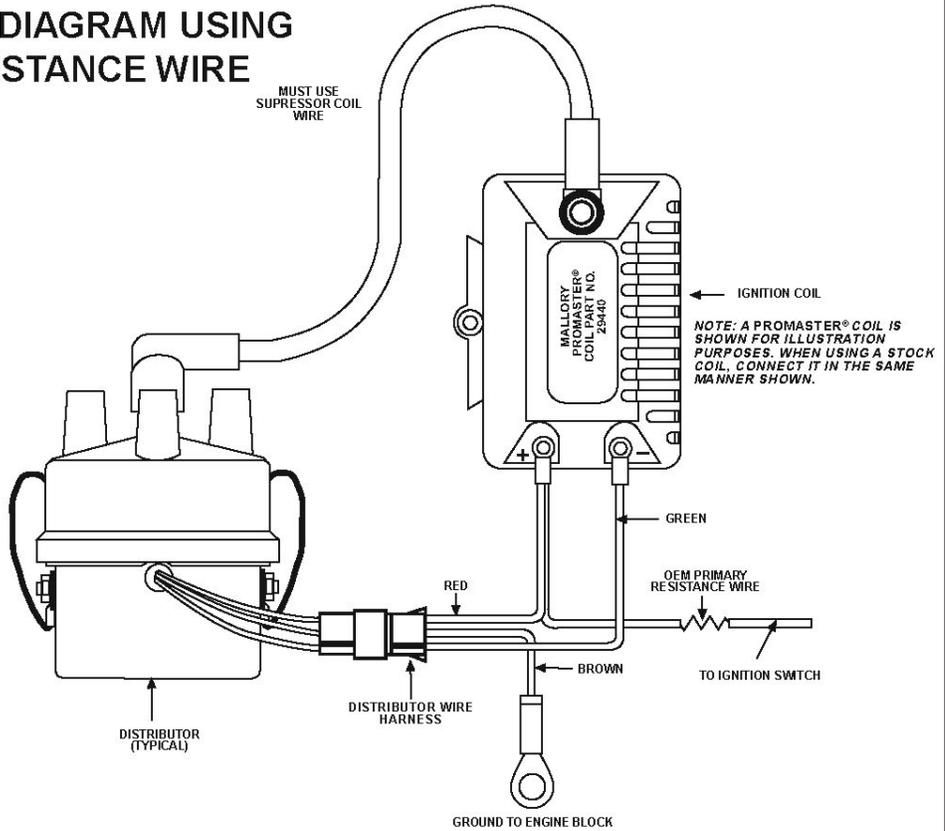
**FIGURE 3**

**E-SPARK™ WIRING DIAGRAM USING 12V IGNITION FEED AND A MALLORY 29219, 30450 OR A 29450 PERFORMANCE IGNITION COIL**



**FIGURE 4**

**E-SPARK™ WIRING DIAGRAM USING OEM PRIMARY RESISTANCE WIRE**



**FIGURE 5**

**E-SPARK™ WIRING DIAGRAM USING BALLAST RESISTOR**

