

5. Select the best fitting mounting bracket assembly for your distributor. 4 and 6 cylinder: use one piece bracket for Lucas pickup held down by two screws. 12 cylinder: use adjustable two piece bracket assembly with mounting arm and mounting foot as shown in Figure 8.
6. Attach optical trigger to mounting arm or mounting bracket as applicable for your distributor. Use the supplied 4-40 x 3/16" screw as shown in Figure 8. If applicable, attach mounting arm to the mounting foot with the supplied 6-32 x 3/16" screw. To allow adjustment, do not tighten the screws completely.
7. Pass optical trigger cable out through rubber grommet (that was cut to create an opening in step 1). Install the optical trigger and mounting bracket assembly using original screw as shown in Figures 14 or 15. If using adjustable bracket, do not tighten screw completely. In case of limited clearance, install shutter and trigger assembly at the same time.
8. Adjust the optical trigger height so that the shutter rim is approximately in the middle of the trigger opening as shown in Figure 4. Check for clearance around all parts. Verify that the shutter is level and does not rub or touch. If required, readjust it. Reinstall rotor
9. Reassemble distributor if applicable. If distributor was removed, reinstall it. Align rotor tip with mark on engine. Then rotate distributor to align mark on distributor with rotor tip.
10. Proceed with ignition module installation on page 7.

Jaguar 12 Cyl With Fuel Injection Notes

When an XR700 system is installed in V12 Jaguars with electronic fuel injection, the Lucas fuel injection trigger unit must be retained. Otherwise, the fuel injection will not function. Follow the optical trigger installation instructions above, except:

1. Refer to Figure 16. Remove the Lucas timing rotor and ignition pickup. Install the optical trigger and shutter wheel as explained above. Use the best fitting single piece bracket to mount the optical trigger.
2. The fuel injection trigger unit (held by four screws) must be retained. Note that this trigger unit requires a special Lucas rotor that has a magnet at the rear. The magnet triggers the fuel injection trigger unit.

Ignition Module Installation

This section covers 12 volt negative ground installations only. Refer to the Appendix for positive ground vehicles and applications where the XR700 is used to trigger a CD ignition. Note that XR700 systems for 6 volt applications are no longer available and that the XR3000 can only be used in 12 volt negative ground applications.

1. Mount the XR700 or XR3000 ignition module in any convenient location on the firewall or a fender well. Avoid locations directly exposed to engine or exhaust header heat or where water can splash. Do not mount it on the engine. Make sure that the wires will reach to the coil and distributor with some slack for engine movement.
2. Basic wiring hookup is shown in Figure 19. Use this figure for all applications except certain Lucas Opus applications described below. Before you connect the wires, check to see if sections 3 to 8 apply to your application.
3. Bosch systems. Disconnect and remove the OE Bosch module. Use electrical tape to tape off both the module plug and plug at distributor on OE harness. To avoid disconnecting accessories (such as tach), do not cut plugs off or remove any wires at coil. XR700 or XR3000 module connections will be made at the Bosch coil. Proceed to step 9.
4. Hitachi systems. Disconnect and remove OE module. Some Hitachi modules are located in the passenger compartment. Use electrical tape to tape off all wires that ran to the Hitachi ignition module. To avoid disconnecting accessories (such as tach), do not remove any wires at coil or ballast resistor. XR700 or XR3000 module connections will be made at the coil terminals. Proceed to step 9.
5. Nippondenso systems. The OE Nippondenso module (ignitor) is mounted on the coil. Disconnect and remove the ignitor. Use electrical tape to tape off all wires that ran to ignitor. To avoid disconnecting accessories (such as tach), do not remove any other wires to coil or ballast resistor. XR700 or XR3000 module connections will be made at the coil terminals. Proceed to step 9.

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6. Triumph and MG with Lucas Opus combination amplifier and vacuum advance unit mounted on distributor. Refer to Figure 20. Use electrical tape to tape off the plug on the vehicle wire harness that went to the Lucas amplifier. XR700 module connections will be made to the coil terminals. Other Lucas connections are shown for reference only. No wiring changes are required. You can skip the following section about ballast resistance. Proceed to step 9.
7. All Jaguar. Refer to Figure 21. Disconnect the Lucas amplifier. Removal of external amplifier is optional. Use electrical tape to tape off the plugs on the vehicle wire harness that went to the Lucas amplifier and/or distributor. XR700 module connections will be made to the coil terminals. Add the diode wire as shown. The black end of the diode wire (with attached ring terminal) is connected to COIL-, the other end goes to the Lucas ballast resistor as shown. Other Lucas connections are shown for reference only. No wiring changes are required. However, make sure you do not break the connection from COIL- to the ECU on fuel injected vehicles. You can skip the following section about ballast resistance. Proceed to step 9.
8. Lucas Opus distributor in vehicles with modified wire harness. Use the basic hookup shown in Figure 19. Rewire the vehicle as required.
9. Connect the XR700 or XR3000 black wire to ground on the chassis or engine block. An existing bolt or screw can be used, but scrape away paint and corrosion to ensure good ground.
10. Check and double check the identification of COIL+ and COIL- terminals. Improper coil connection may damage ignition module. Bosch coils are labeled as follows: terminal 1 is COIL- and terminal 15 is COIL+. Some English coils use SW for COIL+ and CB for COIL-. If you are not sure which terminals are COIL+ and COIL-, use the following procedure. Label and then disconnect OE wires from coil. Reconnect battery and turn ignition key on. Use a 12V test light or voltmeter. The wire from the ignition switch to COIL+ will be hot.
11. Tach connection (skip if not equipped). Except for Smiths current sensing tachometers found on older English vehicles, the tach wire typically goes to COIL-. Vehicles with Smiths tach, refer to Smiths Tach Tech Note in the Appendix.
12. Jaguar only. Some tachs may not work with the diode wire hookup shown in Figure 21. If your tach doesn't work, try a direct connection between the ballast resistor and COIL- in place of the diode wire.
13. Insert the three terminals on the end of the cable from the optical trigger assembly into the Molex plug supplied with the installation kit. Make sure that the individual wire colors match from side to side. Use a small screwdriver to push the terminals all the way into the Molex plug. Then connect it to the mating Molex plug on the cable from the module. If you must remove a terminal, see Figure 22.

Ballast Resistance

1. All vehicles with OE breaker points ignition are factory equipped with ballast resistance. This can be external resistance in the form of a ceramic ballast resistor or a resistance wire between the ignition key and COIL+ terminal. Most AMC and GM and 1975 and later VW vehicles have a resistance wire. Most Chrysler models use a ceramic resistor. Ballast resistance can also be in the form of internal resistance within the coil. Bosch blue coils (used with many pre-1975 VW models) and some Lucas coils have internal resistance. Coils with internal resistance measure 3 to 4 ohms from COIL- to COIL+ terminals.
2. Bosch, Hitachi, and Nippondenso OE electronic ignition replacement only. Most vehicles are factory equipped with an external ballast resistor between the ignition key and COIL+ terminal. Refer to vehicle service manual. Bosch Hall Effect systems do not have any ballast resistor.

Study the ballast resistance sections carefully. Most installation problems result from improper ballast resistance.

XR700 Ballast Resistance Notes

1. If you have a Bosch Hall Effect system or other system without ballast resistance, you will need to add a 1.2 to 1.9 ohm ballast resistor. Use a Chrysler style two terminal ballast resistor such as Echlin ICR23. Connect the ballast resistor between the COIL+ terminal and ignition switch as shown in Figure 19.