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Applied Expert Systems, Inc.

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Timed Engine Shut-Off Device (TESO)



INSTALLATION GUIDE (SOLENOID TYPE)

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Timed Engine Shut-Off Device(TESO) Installation Guide

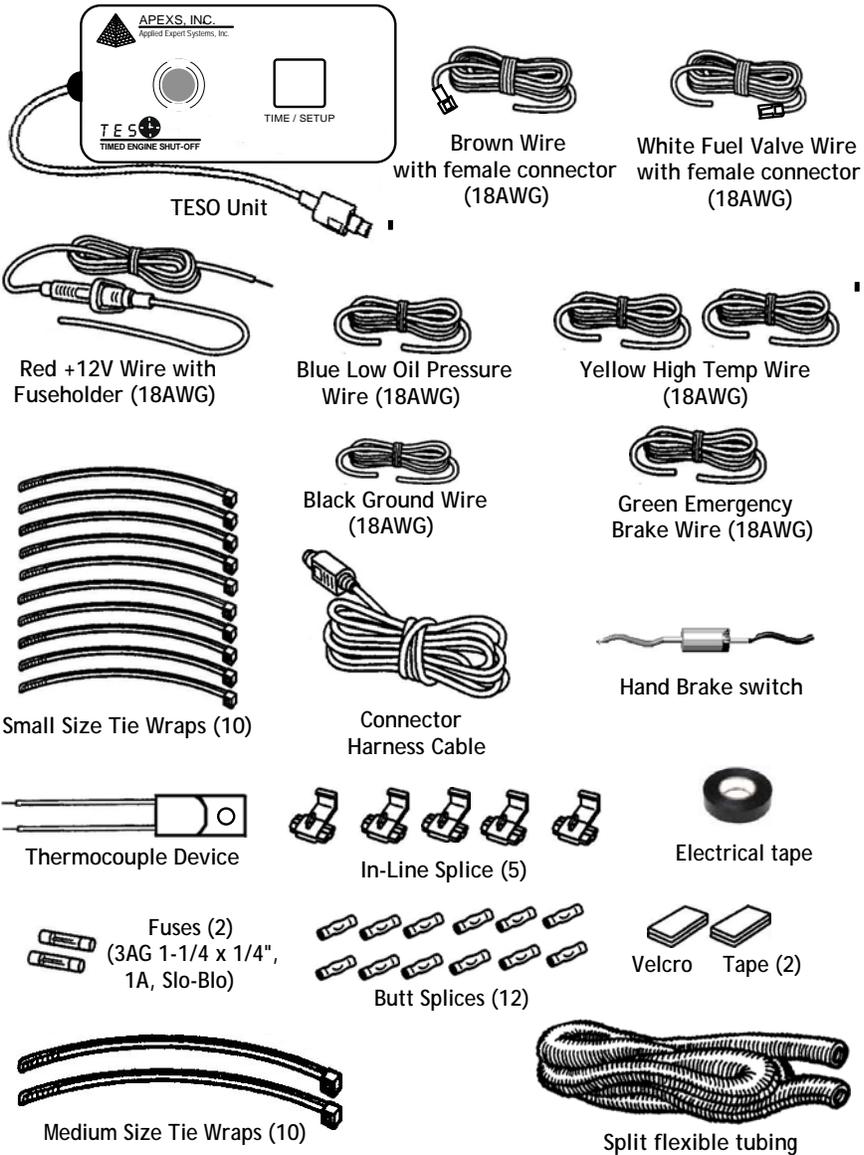
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INTRODUCTION

The following instructions explain how to complete a Timed Engine Shut-Off (TESO) Installation.

COMPONENTS

The TESO should come with all of the materials shown below. Please make sure you have all listed components before proceeding with the installation.



Tools and Materials Needed

The installation requires some or all the following tools and materials. Please make sure you have all necessary items before proceeding with the installation.

- *Medium Philips Screwdriver*
- *Crimping Tool*
- *Cutter Pliers*
- *Electrical Drill with 2.5mm (7/64") Drill Bit*
- *Fuse Tap*
- *Multimeter (optional)*

INSTALLATION

The instructions contained in the following sections provide guidelines for installation of the TESO unit.

NOTE: Teso can be installed in +12 or +24V electrical systems.

Planning the Installation

The Installation is similar to installing a vehicle stereo or vehicle alarm. The TESO requires seven (7) electrical inputs; Unswitched +24 V, vehicle ground, Low Oil pressure indicator, High Coolant Temperature indicator, Emergency brake indicator, Solenoid wire, and Switched +24 Volts

The steps required to install the TESO are:

1. Determine where to mount the TESO device.
2. Locate and tap your solenoid wire and switched +24 Volts.
3. Locate and tap your Emergency Brake wire.
4. Locate and tap power (+24V from battery) and ground.
5. Locate and tap your Low Oil Pressure wire.
6. Locate and tap your High Coolant Temperature wire.
7. Connect the Interface cable to the seven (7) main tap wires.
8. Mount the TESO in the vehicle.
9. Connect the TESO and go for a test drive.

WARNING: Installing the TESO can be hazardous to both the installer and your vehicle's electrical system if not done by an experienced professional. This manual assumes you are aware of the inherent dangers of working in and around a vehicle and have a working understanding of electricity.
To avoid short circuit accidents during installation, disconnect positive cable at the battery terminal.

Step 1: Determine where to mount the TESO monitor

Knowing where you are going to mount the TESO unit can help you make wiring decisions later on. For example, if your TESO is near the fuse box it will be convenient to get un-switched +24V using a fuse tap connector. However, if your TESO unit is on the other side of the vehicle it may be easier to find a lamp circuit. If the position of the unit is not critical, you may wish to move to the next step, and decide where to mount it after you've tapped the seven (7) electrical connections (+24V, Ground, solenoid wire, switched +24 Volts, Low Oil Pressure wire, High Coolant Temperature wire, Emergency Brake wire.)

NOTE: If you need ideas about where the unit might be mounted, look at "Step 6: Mount the TESO unit in the Vehicle" on page 8.

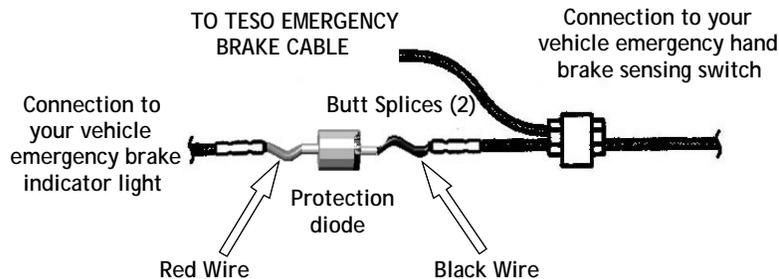
Step 2: Locate and tap your solenoid wire and switched +24 volts

In some cases solenoid uses a single wire connector so it is easy for the installer to connect the male and female connector. Once the correct solenoid connector is determined, just disconnect and extend using the provided male and female connector.

Note: It is recommended to provide an electrical system service manual of the vehicle before starting the installation

Step 3: Locate and tap your Emergency Brake wire.

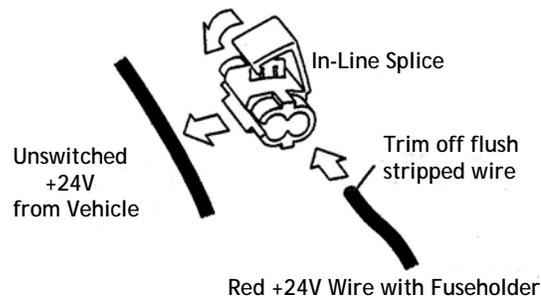
Tap your TESO emergency brake wire onto the handbrake switch wire. Connect the protection diode in-series with the line that goes to vehicle emergency brake indicator light (please observe wire color orientation). Connect the TESO cable after the protection diode. Please see the drawing below.



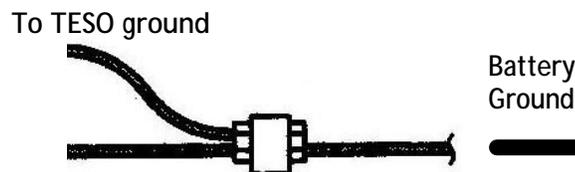
Step 4: Locate and tap power (+12) and ground

The TESO requires a constant (un-switched) +24 volts and has a negligible drain (5 ma) on the battery. You can obtain the +24V from several different places. Generally, you can easily obtain +24V from the fuse box using a fuse tap connector (not supplied) or the supplied in-line splice connectors to tap into a KNOWN circuit that does not involve safety related equipments (headlights, tail lights, air bag, etc.). Possible candidate wires include those from the cigarette lighter, dome light, glove compartment light, clock, tail gate light, or other convenience functions.

After locating +24V, connect it to the red +24V wire (the one with the fuse holder) using the in-line splice as shown below. Do not install the fuse into the fuse holder until instructed to do so in step 4.

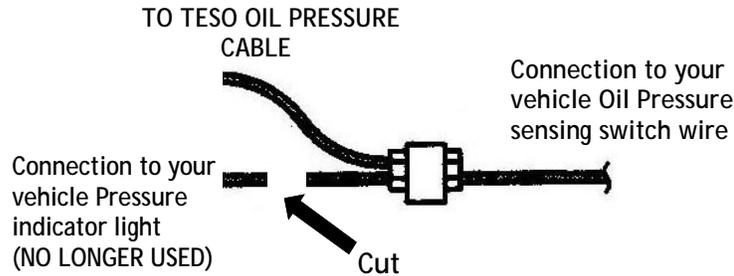


If you are getting +24V from your fuse box, use a tap connector appropriate for your vehicle. A ground can be made by inserting the spade terminal under the head of the screw threaded into the vehicle chassis and then crimping the spade terminal onto the black ground wire, as shown below. Check that the screw is actually grounded using a multimeter before making the connection.



Step5: Locate and tap your low oil pressure.

As you can see there are two (2) wires coming from the oil pressure switch one is connected to ground and the other is connected to the oil pressure. Use only the wire which is connected to the oil pressure. You can tell by using an Ohmeter tester,



NOTE: Once the Oil Pressure sensor connection has been made and the battery connection restored, the TESO will indicate a Low Oil Pressure alarm (this is normal) if the Engine Off/On/Start switch is placed in the On position for more than 15 seconds without starting the engine.

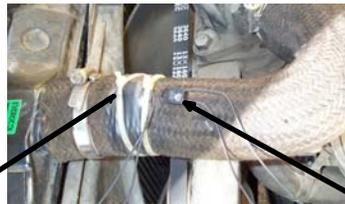
For detailed information about the TESO Low Oil Pressure Alarm, please see page 4 of the TESO setup procedures guide.

Step 6: Locate and tap your high coolant temperature wire.

We provide our own temperature sensing device (thermocouple) that tells TESO if the maximum safe coolant temperature has been reached. One wire of the thermocouple goes to the solid ground and the other to our high temp wire in the TESO. make sure that you use the same ground as your TESO ground.

Below is an illustration of a correct High Coolant Temperature Sensor Installation.

NOTE: It is installed on the radiator hose at the top of the radiator. Use the electrical tape and tie wraps provided to secure the temperature sensor.



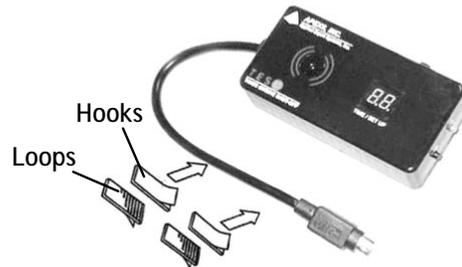
Actual installation

Actual Thermocouple Device Installed for Coolant Temperature

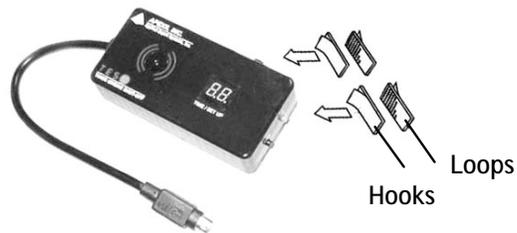
Step 7: Mount the TESO Unit in the Vehicle

The following illustrations show possible mounting options for the unit.

TOP OF DASHBOARD (Horizontal Surfaces)



FACE OF DASHBOARD (Vertical Surfaces)

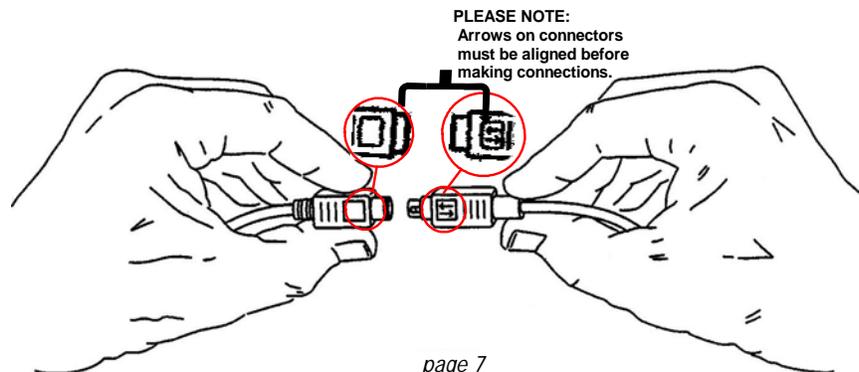


Step 8. Connect the TESO unit and go for a test drive.

Connect the harness cable to the TESO unit cable as shown below. It is important to hold the cable as shown in order to achieve a secure connection. The connectors should be firmly pushed into place to make the connection.

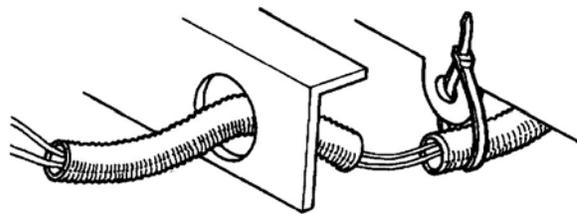
NOTE:

For a more secure connection, we suggest tapping the two connectors together.



WIRE ROUTING

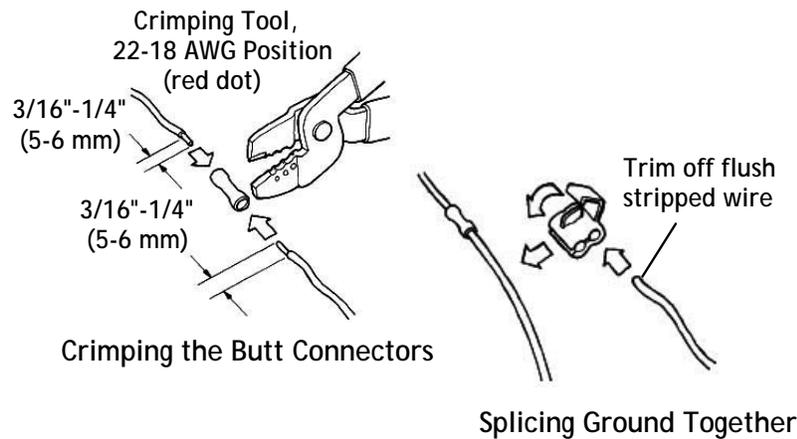
Use the split flexible tubing to protect the seven (7) main tap wires into the vehicle cabin. Use the small tie wraps to hold the leads against the underbody of your vehicle. The tubing can be cut into pieces and used where the wire may rub against sharp points or edges and where the leads are tie wrapped to the underbody. Tubing can also be used where the leads are particularly exposed. Loops, coils, and folds should be avoided in order to avoid creating unwanted interference that might result in erroneous readings.



Protecting the wires

WIRE CONNECTIONS

If the connections are on the driver's side, make sure the wires cannot become entangled in the vehicle pedals or driver's feet.



Connect the interface cable to the seven (7) main tap wires.

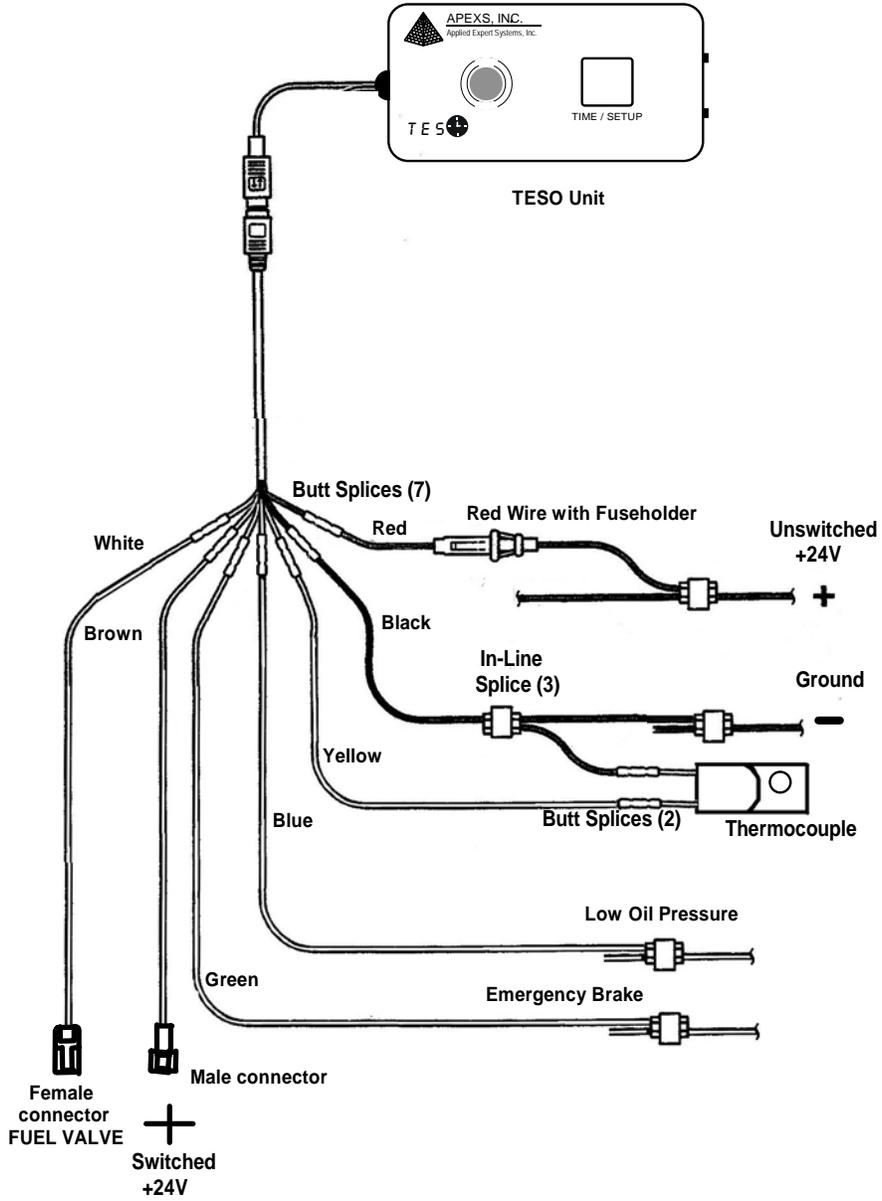


Fig. 1 Typical Installation



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