An ISO 9001:2008 Registered Company

EcoLock™ ECL552-A

Stop/Start Idle Reduction with Anti-Theft

2005-2011 Ford Crown Victoria Police Interceptor

Contact InterMotive for additional vehicle applications.

Introduction

EcoLock is an automatic engine stop/start system that provides improved fuel economy, lower vehicle emissions, improved engine life, and extended oil changes by shutting off the engine when appropriate. When enabled by the driver, and with Transmission in Park, EcoLock allows an officer to remove the keys from the ignition, and leave the vehicle unattended, but with electrical loads left on (light bar, etc.). EcoLock will then continuously monitor battery voltage and cabin temperature. If either parameter move outside of a preset range, EcoLock will automatically re-start the engine, charging the battery and enabling AC/Heat (as set by officer). EcoLock will then cycle the engine over time as needed to maintain battery voltage and/or cabin temperature. EcoLock will automatically shut off the engine if anyone attempts to steal the vehicle by shifting out of Park while the keys are removed. In addition, the trunk and weapon rack release buttons are deactivated after EcoLock becomes active, preventing theft. EcoLock is instantly disabled when the keys are inserted and turned to Run. EcoLock can be used on K-9 units to maintain cabin temperatures in a preset range.

WARNING
Disconnect the battery to prevent setting a check engine light.

Installation Instructions - Disconnect vehicle battery before proceeding

It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers.
It is important to avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Also avoid radio frequency energy from antenna's or inverters next to the module. Finally, avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

ECL552 Module

Remove the lower dash panel below the steering column and find a suitable location to mount the module. Locate the module in an area away from excessive heat sources (engine, heater ducts, etc.). Ensure when routing harnesses that the tilt steering column does not contact them in the full down position. Do not mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module. When installing the harnesses, leave several inches of take-out so the module can be removed if necessary.

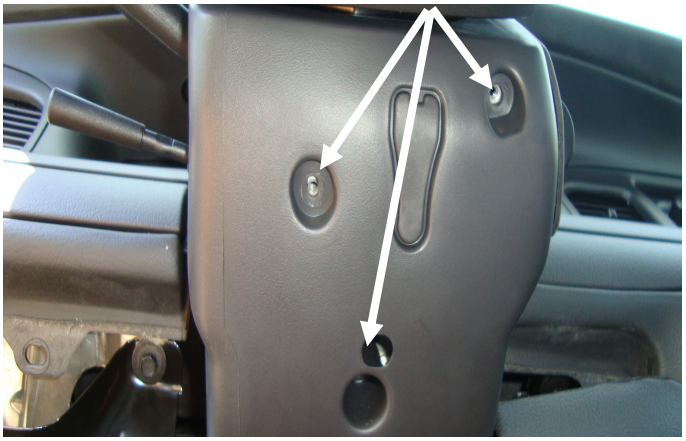
Data Link Harness Installation

1. Locate the vehicle's OBDII Data Link Connector. It will be mounted below the lower left dash panel.
2. Remove the mounting screws for the OBDII connector. Plug the Red connector from the EcoLock Data Link Harness into the vehicle's OBDII connector. Ensure the connection is fully seated and secure with the supplied wire tie.
3. Mount the Black pass through connector from the EcoLock Data Link Harness in the former location of the vehicle's OBDII connector.
4. Secure the EcoLock Data Link harness so that it does not hang below the lower dash panel.
5. Plug the free end of the Data Link harness into the mating 6-pin connector on the EcoLock module.

Data Link Harness plugs in here

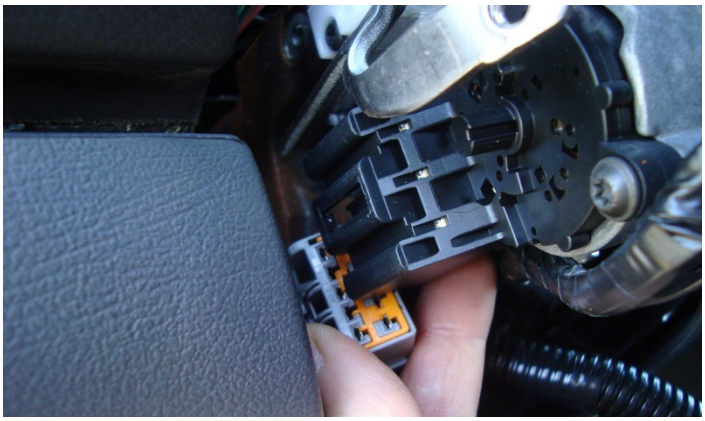
Ignition Switch harness Installation

- Remove the lower steering column housing by removing the 3 screws.

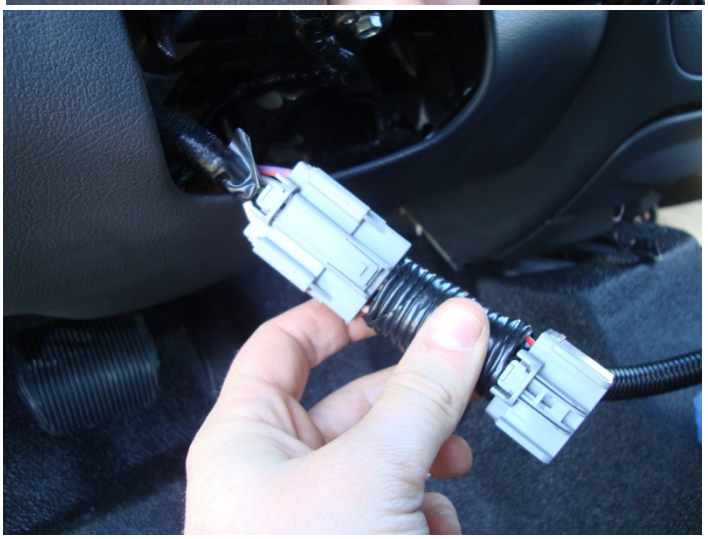


- Locate the 10 pin Ignition Switch Connector.

- Remove the 10 pin connector from the Ignition Switch.



- Plug the OEM harness side of the 10 pin Ignition Switch into the mating Intermotive Ignition Switch 'T' Harness (see picture).
- Plug the other end of the Intermotive Ignition Switch 'T' harness into the OEM Ignition Switch (see picture).



EcoLock Enable Input

The Gray wire/pin 10 of the 12 pin connector is the EcoLock system enable. This input can be connected to an installer supplied switch or to another control system signal that will automatically enable EcoLock (such as setting certain control head codes). By default, this input is High true (12V on this input enables EcoLock). The following programming sequence will toggle the input between High and Low true. Low true is recommended for use with a simple dash/console mounted switch, which allows the other side of the switch to be grounded:

With the key in run, engine Off, and the transmission in Park, perform the following steps:

1. Enter test mode (see "putting module into installation test mode" on pg. 7).
2. Shift to Reverse (press on Service Brake to release shifter).
3. Press and release the Service Brake 5 times in approximately 10 seconds.

Onboard LED 7 will flash to indicate that the programming sequence was successful. If the LED flashes 3 times the input is now High true. If the LED flashes 6 time the input is now Low true. If the LED did not flash, shift back to Park, wait 15 seconds, and attempt the sequence again. Call Intermotive technical support if needed for further assistance.

Restart Beeper

Pin #3 Orange wire of the 12 Pin Connector drives a warning beeper that will sound for 2 seconds prior to an automatic engine restart.

1. Find a suitable location for mounting the warning beeper so that it is audible to the driver.
2. Connect Orange wire to Red post of beeper, and Black wire to the negative post. The Black lead eyelet must be grounded in order for the beeper to function.

- The bezel on the beeper can be rotated to control volume.

EcoLock Active LED

Pin #4 Yellow wire of the 12 Pin Connector drives an indicator lamp that will light when EcoLock is active.

1. Drill a 12mm (0.492") hole in a location visible to the driver.
2. Route the wire with the bullet connector through the hole and mount the LED in the hole.
3. Connect the bullet connector from the LED to the mating connector on the Yellow wire.
4. The Black lead eyelet must be grounded in order for the lamp to function.

Thermostat/Thermistor

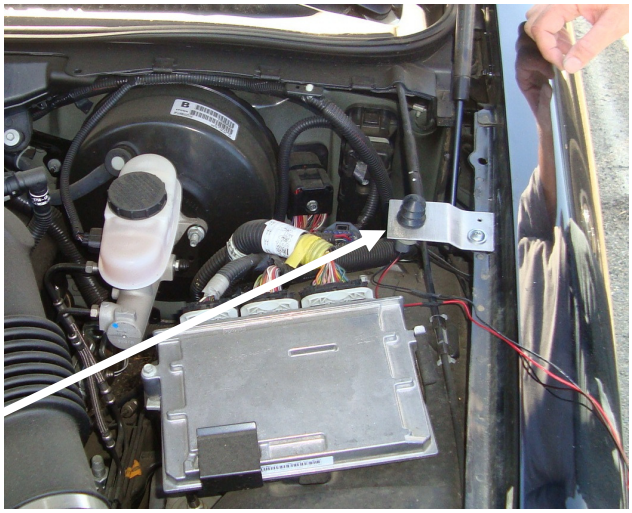
The thermistor option may be used to auto restart the engine as a result of either cold or hot temperatures. For example, it may be used to prevent the engine or cab from getting too cold in severe environments. It may also be used in police K9 vehicles to prevent cabin temperature from getting too hot.

Pin #5 Green wire of the 12 pin connector is attached to the thermistor. Mount the thermistor in a location where it cannot be damaged by sharp objects and mechanical moving parts such as the Park Brake or tilt steering wheel mechanisms.

- Low temperature thermistor engine cycling assumes the cabin heater is turned On. If the cabin temperature does not increase 3 degrees in 6 minutes after a low temperature restart, the system assumes the heater was not left on, and the thermistor is disabled until the key is manually cycled.
- High temperature thermistor engine cycling assumes the cabin air conditioner is turned On. If the cabin temperature does not decrease 3 degrees in 6 minutes after a high temperature restart, the thermistor is disabled until the key is cycled.
- Thermistor Disconnect

If the thermistor is enabled, but has become disconnected, LED 8 will blink. The engine will restart if Off and remain On until the thermistor is either disabled or reconnected.

Hood Open Disable Switch



The Hood Open Disable Switch is ***not*** an optional input. This grounding connection ***must*** be made in order for the module to operate. It is one of the most important safety features and the time must be taken to properly install the switch provided in this kit as directed.

Pin #3 (Brown wire) of the 4 pin connector is the Hood Open Disable input. As an important safety feature, this connection must be made to prevent auto-restarting when someone is working under the hood area. Extend the Brown Hood Open Disable wire through the bulkhead into the engine compartment.

Install the included hood bracket and switch into the location shown at right. Use the included bolt and nut to attach the switch to the OEM hole in the fender lip extension. Using the smaller hole in the bracket as a guide, drill a hole through the inner fender lip install the included sheet metal screw. Route the Brown wire from the EcoLock main harness to the hood switch. Plug the mating connector into the bottom of the supplied hood switch.

Connect the Black wire eyelet to ground.

EcoLock 552 Harness (4 Pin connector and 12 Pin connector)

1. Plug the ECL552 12 Pin connector into the mating 12 pin connector on the ECL552 module.
2. Plug the ECL552 4 Pin connector into the mating 4 pin connector on the ECL552 module.

Reconnect the vehicle battery

Configurable options (with default settings)

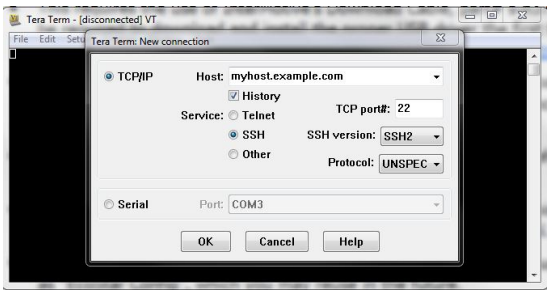
1. Battery restart, recharge, and delay default values:
   - Restart Voltage = 11.8V
   - Restart Delay (the battery Voltage must be below this threshold for this period of time before a low battery auto-restart) = 5 Seconds
   - Recharge Voltage = 13.5V
   - Recharge Timer = 60 Seconds
2. EcoLock enable settings:
   - EcoLock enable sense = High true
   - EcoLock enable delay = 3 Seconds (time that EcoLock remains enabled after enable is de-asserted
3. EcoLock timer duration (this timer is for vehicle lock-down, gun rack and trunk) = 10 Seconds
4. Idle shutoff timer duration (after driver shuts key off, engine shuts down) = 2 Seconds
5. Enable/disable idle shutoff timer = Enabled
6. Minimum engine temperature for auto-shutoff to occur = -40° F
7. Operation of the Brake pedal = Auto-restart
8. Thermostat settings:
   - Enable/Disable thermostat = Enabled
   - Low restart temperature = 40° F
   - High restart temperature = 85° F
   - Warm-up temperature = 55° F
   - Cool-down temperature = 75° F

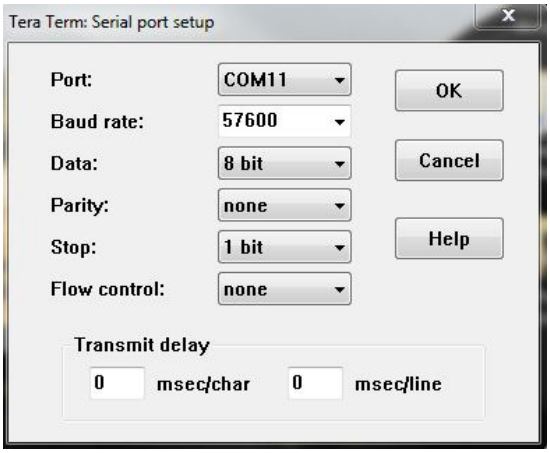
Changing the Default Settings—Establishing Laptop Communication

- This requires the use of InterMotive's Download Cable, part# s-h37a1 (not part of the EcoLock kit). You will be required to download and install the proper USB driver the first time you use this cable. All driver files are located online at http://www.intermotive.net
- Find the correct drivers for your PC and follow the steps to download the latest version (located under the "Driver Version" heading). If unsure about the installation process, contact InterMotive for further assistance.

Changing the Default Settings—Establishing Laptop Communication (continued)

- Download and install the latest release of the Tera Term application from: http://www.intermotive.net
- Plug one end of the cable into your PC's USB port, and with the vehicle's key in the off position, plug the other end into the EcoLock module's COM port.
- Open the Tera Term application. The Tera Term 'New Connection' window will open (see picture).
- Click the 'Serial' button and choose the COM Port that the InterMotive Download Cable is connected to (typically the highest numbered COM Port). Click 'OK'.
- Under the 'Setup' tab, choose 'Serial Port'.
- In the next window, you will need to change several of the default parameters for the Port Settings as follows:
    - Baud rate: **57600**
    - Data: **8 bits**
    - Parity: **None**
    - Stop: **1 bit**
    - Flow Control: **None**
    - Transmit delay: **0 msec/char 0 msec/line**
    - Click 'OK'.





- Tera Term setup is now complete.
- Turn the vehicle key to the ON position. The EcoLock module should wakeup and text should display on the open Tera Term window.
- If nothing appears, unplug the 6 pin Data Link connector going into the EcoLock module, wait several seconds and plug the connector back in.
- If still nothing appears, go to File > New Connection and try re-configuring the Tera Term as described above. If unsuccessful, contact InterMotive for further assistance.
- Once communication is established, type in "config" (followed by the enter key).
- All options in the configuration menu come with descriptions that explain what parameters are currently set and how to update them.

Post Installation Operational Test

Putting module into Installation Test Mode

The installation test mode can be entered by applying a ground to the "Test" pad on the module. When test mode activates, the status LED will start blinking. The EcoLock 552 now functions without monitoring the following pre-conditions: Engine Temp and Battery Voltage. This allows for easier testing for the installer.

Several conditions will prevent EcoLock 552 from auto-shutdown in test mode:

Service Brake Pedal Applied, Hood Open (Open = Not Grounded), Vehicle Speed not 0, cabin temperature (thermistor installed/enabled).

Test 1. Manually start the Engine.

Test 2. While the engine is running, activate the EcoLock enable request switch.

- This enables the EcoLock system. The Yellow indicator lamp on the dash will flash five times and then blink every two seconds.
- To disable EcoLock, disengage the EcoLock enable request switch. The Yellow indicator lamp on the dash will flash five times and then stop blinking.

Test 3. Turn on the EcoLock Request switch and remove the key from the ignition within 10 seconds.

- The engine will remain on for two seconds (Idle Timer) after the key is removed, then the engine should shut down.
- Ten seconds after the key is removed, ensure that EcoLock has disabled the trunk and weapon rack release buttons.

Test 4. EcoLock is now active and will begin monitoring the auto-restart triggers. You can test the low battery voltage restart by turning on all electrical loads and waiting for the battery voltage to drop. The same can be done by warming/cooling the thermistor, depending on the temperature settings.

Test 5. Hood Switch Test. With engine running and hood open, EcoLock should not shut down the engine. With the engine off, EcoLock ***must not*** auto-restart the engine when the hood is open. This is an important safety test and MUST be performed. **Do not put vehicle in service unless hood open disables EcoLock from auto restarting engine.**

Test 6. With EcoLock active (Yellow indicator lamp blinking), and the engine running, attempt to shift out of Park. EcoLock should shut down the engine to prevent vehicle theft. The trunk and weapon release buttons should remain disabled.

Test 7. To deactivate the system, put the key back in the ignition and turn it to the Run position. The Yellow dash lamp should shut off.

If the system fails any of the above tests, check the related wiring. If necessary, call Inter-Motive Technical Support at 530-823-1048. Do NOT release vehicle for service unless it has passed ALL of the above tests.

ECL552 Module Mounting

Ensure all harnesses are properly connected and routed, and are not hanging below the dash area. Mount the module as described on page one and secure with supplied screws or double sided tape.

Leave in vehicle

EcoLock™ ECL552-A

Operating Instructions

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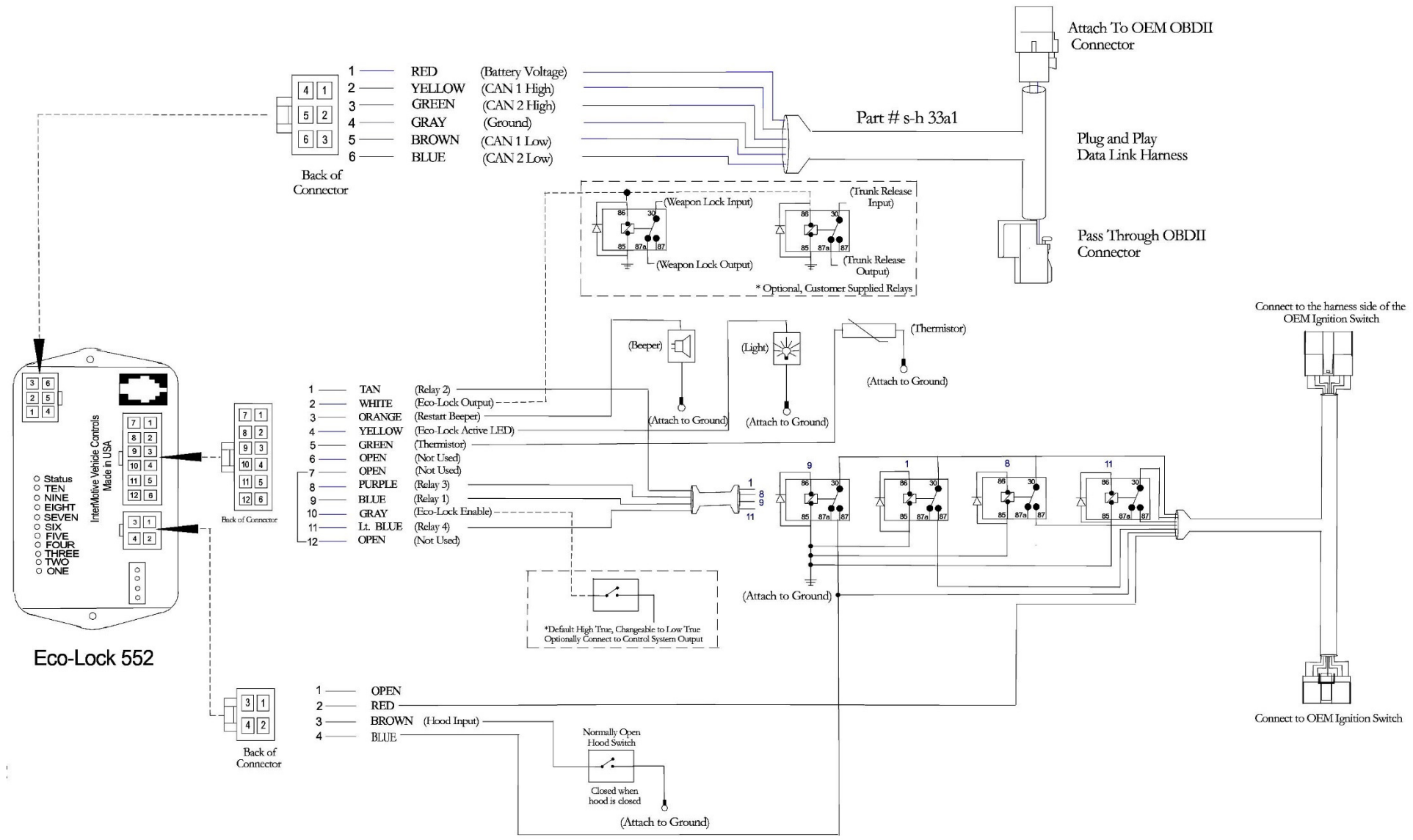
- When activated via it's switch, the EcoLock system provides enhanced fuel economy and lower vehicle emissions by reducing engine idle time. Restarts are automatically triggered by low battery voltage, thermostat temperatures, or pressing the Brake pedal. EcoLock is only active when turned on, and the key is out of the ignition.
- EcoLock will automatically shut off the engine a few seconds after being enabled and the key is removed from the ignition. Note that pressing the Service Brake will prevent engine shutdown, and also will restart the engine if off (this allows driver to easily keep AC/Heat on while sitting in vehicle).
- Once the engine has been auto-shut off, ECL552 monitors the main battery voltage and thermistor temperatures. If the battery voltage falls below a minimum restart voltage, the module will sound an alarm for 2 seconds and auto-restart the engine to recharge the batteries (hood must be closed). The default restart value is 11.8 Volts for the main battery. Once the main battery charges above 13.5 volts, a configurable timer will keep the engine running for a period to ensure proper battery charge before shutting it down again.
- When active, EcoLock minimizes the possibility of vehicle theft by shutting off the engine if the transmission is shifted out of Park. It also disables the trunk and weapon rack release buttons when it is active.
- EcoLock is disabled by shutting off it's switch, or inserting the key and turning to Run.

Default requirements for auto engine shut off:

Transmission in Park (vehicle not moving), Hood Closed, Service Brake not applied, Battery Voltage greater than 11.8 Volts (may differ from default setting), and no cabin thermostat trigger (temperatures within normal hot/cold ranges). If so configured, it will also not shut off the engine if coolant temperature is too cold (default factory setting has this feature disabled).

Default requirements for auto engine restart:

Hood Closed, Engine must have been auto-stopped by EcoLock, Transmission in Park, and the key in the Run position. Once these conditions are met, the engine will restart when a low battery is detected, or thermostat trigger occurs (cabin too warm, or too cold).



Submit product registration at www.intermotive.net

If the EcoLock552 fails any step in the Post Installation Test, review the installation instructions and check all connections. If necessary, call

InterMotive Technical Support at (530) 823-1048.

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