# Hewitt Technologies Inc.

## The Hewitt-Tech Secondary Air Injection System Bypass Kit

## V5427H-2.7L Installation Instructions

## Introduction:

The Secondary Air Injection System (SAIS) bypass module is used to prevent the operation of the SAIS that is found on Toyota/Lexus vehicles. By preventing the operation of the SAIS the trouble codes related to mechanical malfunctions of the SAIS can be cleared and prevented from returning. In general, the bypass module cannot clear codes that are caused by electrical faults or circuit malfunctions which can be the result of an electrically damaged component or wiring. The exhaust block off plates are an integral part of the Hewitt-Tech SAIS Bypass Kit and should always be installed with the bypass module. If you have any questions about the installation or use of this kit please visit us at: www.Hewitt-Tech.com to view our Trouble Codes and FAQ pages or use the "Contact Us" page to contact us directly.

Please note that it is illegal to remove, dismantle or otherwise cause to be inoperative any pollution control device required by federal or state law that is to be maintained in or on a motor vehicle; as such, the SAIS Bypass Kit is sold only to be installed on vehicles that are exempt from vehicle emission laws or that are intended for off-road use only. By installing or using the SAIS Bypass Kit the vehicle owner and or installer assume ALL risks associated with its use.

## SAIS and Bypass Module Operation:

A failure of any component of the SAIS will generally set the check engine light (CEL) and cause the Engine Control Module (ECM) to store trouble codes. Many of these mechanical failures will also cause the vehicle to enter "limp-mode" where throttle operation is limited to 50% to protect the engine from damage. Before installing the bypass module, it is highly recommended to address any codes not related to the SAIS.

The SAIS Bypass Module prevents the SAIS from operating at a cold start by intercepting and altering the IAT signal. The Bypass Module is triggered when the vehicle ignition is first switched to the "ON" position and again whenever it senses a 5-12V signal on its starter relay input wire (energized only when the starter is engaged). The starter relay wire eliminates the need to crank the engine as soon as the ignition is turned "On". The starter relay is a mandatory connection on the V53H units.

## Tools/Supplies Needed for Starter Relay Wire Connection:

- Wire Strippers /Cutters
- 10mm ratchet/nut driver
- Wire Loom and Mounting Supplies (optional)
- Access to an OBDII Scanner to Reset any Trouble Codes/CEL and for troubleshooting (recommended)
- Good Quality Multi Meter or Test Light/Probe
- 0.5-1 hours

## Installation Steps:

1) Locate and disconnect the MAF/IAT sensor on the airbox shown in Figure 1 by firmly squeezing the locking tab while pulling connector off. DO NOT PULL ON THE WIRES.

2) Plug the black connector from the bypass harness that looks exactly like the one you just disconnected from the sensor onto the MAF/IAT sensor. Firmly push the connector until you hear it click.

3) Now plug the factory connector you removed onto the remaining black connector of the bypass module's harness. Make sure you hear it click. The bypass module's harness should now just be in line with the factory harness and sensor.

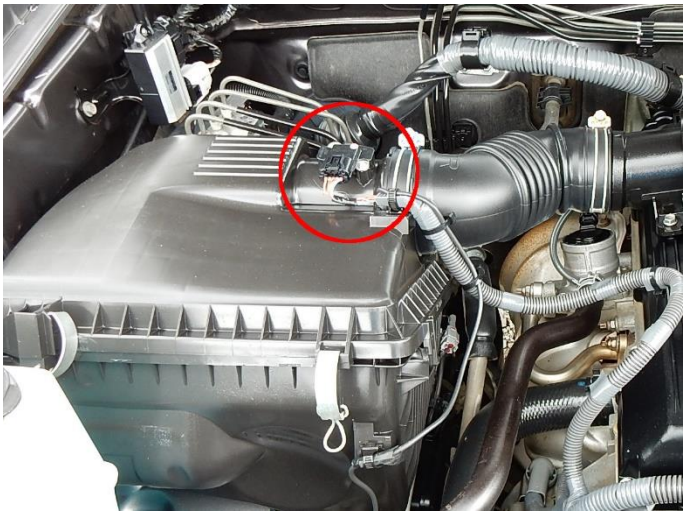

Figure 1 - MAF/IAT Sensor

4) Route the bypass module and wiring around the side of the air box and underneath the intake tube to the back of the airbox. Mount the bypass module to the back of the air box. The mounting tape is high quality 3-M® Automotive Acrylic double-sided adhesive but even it won't stick to a dirty or oily surface. Clean the mounting location with a bit of rubbing alcohol or solvent if needed and let dry. Peel the red backing film off the adhesive and press the module firmly to the mounting surface.

5) Route the bypass module's harness with the grey connectors to the other side of the by going behind the intake tube or along the main engine wiring harness as shown in Figure 2 on the next page. This harness will connect in line with the ECT sensor the same way as was done for the MAF/IAT. The ECT sensor is located on the driver's side of the engine between the plastic intake runners and the engine firewall.

6) The red circle in Figure 2 and Figure 3 on the next page show the location of the ECT sensor as if you were looking straight through the intake runners and hoses to the actual engine block. Drop the ECT sensor harness down behind the engine at the location shown by the red arrow. There is not enough clearance between the firewall to reach the sensor from the top so it must be accessed from underneath the vehicle.

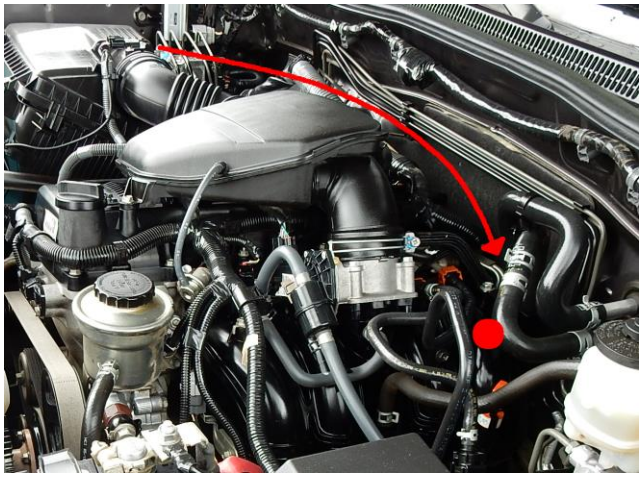

Figure 2 - ECT Sensor Location

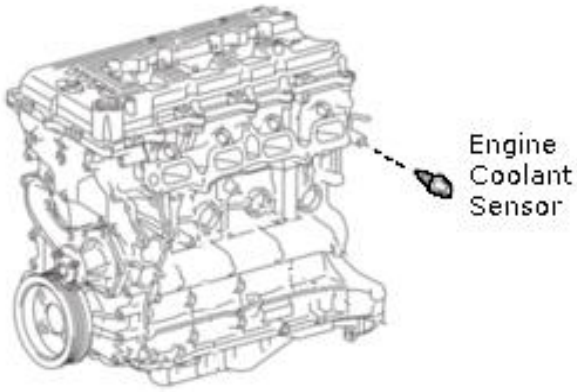


Figure 3 - ECT Harness Routing and ECT Sensor Location

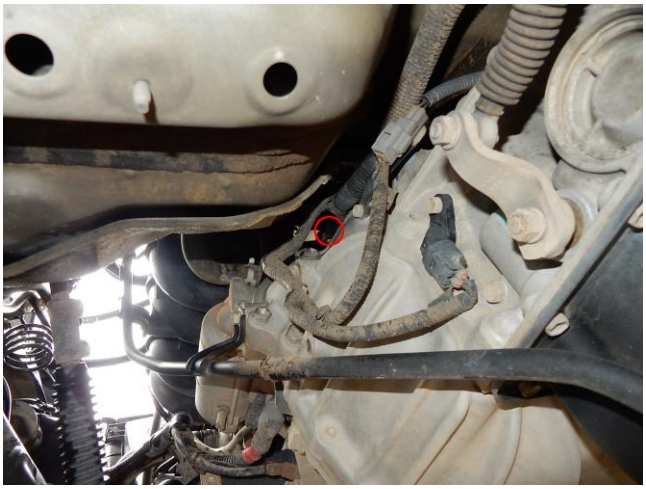

Figure 4 - View from behind driver's side front wheel

Figure 5 - ECT Connector at back of engine above starter

7) The ECT Sensor is screwed into the back of the engine block. It will look exactly like the grey female connector on the bypass module's ECT harness. Like the MAF/IAT, the ECT connectors will only mate to the correct sensor and connectors. Very carefully remove the ECT connector from the ECT Sensor by depressing the locking tab while pulling the connector body off. It may be easier to use two long screwdrivers to remove the connector. While firmly pressing the locking tab with one screwdriver us the other screwdriver to catch under the edge of the connector to carefully push or pry the connector off the sensor. Again, DO NOT PULL ON THE WIRES!

8) Connect the bypass module's grey connector that matches the one you just disconnected onto the ECT Sensor. Again, make sure you hear the click. Now connect the factory grey connector to the mating grey connector on the bypass module's harness, click.

9) Connect the starter relay wire's quick disconnect terminal to the quick disconnect stud on the bypass module and route the wire along with the ECT harness or the firewall to the fuse box that contains the violet starter relay. The starter relay wire can be installed in wire loom or simply zip tied along the fire wall to an entry point in the fuse box. To get the starter relay wire into the fuse box a notch can be cut in the edge of the box or it can be routed through an existing hole.

Figure 6 – Starter Relay Circled (labeled ST or STA on lid diagram)

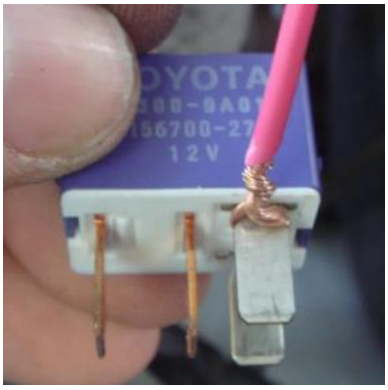


Figure 7 - Starter Signal Wire Taped onto ECU Leg of Starter Relay

10) Remove the starter relay and connect the end of the starter relay signal wire to the terminal of the starter relay exactly as shown in Figure 7. Remove the relay by prying or pulling it straight out trying not to wiggle it from side to side. Cut the off any excess wire leaving enough to work with before stripping the end of the wire to wrap around the terminal leg. Strip and wrap the bare wire around the terminal exactly as shown in Figure 7. **DO NOT** connect the starter signal wire to either of the larger copper load terminals of the relay**.**

11) Now, firmly press the relay back in its socket (remember how hard it was to remove). Make sure the wire is not preventing it from seating completely and that the wire is not creating a short to another terminal. If the relay is not properly reinstalled it may cause intermittent starting problems. If the terminals seem loose when reinserting the relay, the socket terminals may need to be tightened by slightly pinching them more closed with a pair of needle nose pliers or small screwdriver. Reinstall the fuse box lid.

12) Install the exhaust block off plates according to the installation instructions that came in the kit.

13) Clear the engine trouble codes using an ODBII scanner. If you do not have access to an ODBII scanner you can reset the codes by removing the negative battery terminal and let the vehicle sit for a minute before reconnecting. If the battery method is used the engine may run rough or initially stall until it can rebuild the tuning data.

14) Once you have cleared the codes the secondary air system will no longer operate and keep the system from causing any more trouble.

If you have questions or trouble before, during or after installation please contact us directly

www.Hewitt-Tech.com

or call

Toll Free 844-307-7671