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Gen-II Secondary Air Injection System Bypass Kit

5.7L Tundra/Sequoia Installation Instructions



Introduction:

Before installing the bypass module, it is highly recommended to address non-SAIS codes first. For the Gen-II kit to work correctly, the related factory wiring, pins, and connectors, as well as the engine control module (ECM) must be in good working order. If problems remain after installation, further troubleshooting, pressure sensor replacement addons, or in EXTREME cases, ECM replacement may be required.

The Gen-II units emulate the operation of the SAIS and allow you to clear your trouble codes/CEL and prevent the vehicle from entering limp mode. The Gen-II SAIS bypass module replaces the factory air injection control drivers (AID)s and connects in line with each of the air switching valves (ASV)s and their factory harness. When you install the Gen-II unit and block off plates installed, the air pumps, air tubes/plumbing and factory air injection control drivers are not needed. Regardless of the bypass kit, the vehicle still requires functioning pressure sensors. Because of this, the air switching valves will typically need to remain installed to utilize the pressure sensors that are part of them. If your air switching valve pressure sensors are damaged, or you wish to completely remove them, they can be replaced with our Pressure Sensor Replacement (PSR) addons. One PSR is needed to replace each damaged sensor or ASV. Once an air switching valve is replaced with a PSO, that ASV is no longer needed and can be removed. If you have 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. You can also contact us directly using the information found on the “Contact Us” page.

You can also view our install videos on our YouTube channel by searching “Hewitt-Tech” or click [Hewitt Tech YouTube Channel](#) if you’re viewing these instructions electronically. If you have questions about any part of the installation, kits or your codes, please call us toll-free at [1-844-307-7671](tel:1-844-307-7671), submit a ticket through our website or email us directly support@hewitt-tech.com

Important: It is illegal to remove, dismantle or otherwise cause to be inoperative any pollution control device required by federal, state, or local emissions law. The Gen-II bypass kits are sold for off-road or competition use only, no other applications are intended or implied. By installing or using this SAIS bypass kit, the vehicle owner and installer acknowledges and assumes ALL risks associated with its installation and use.

Needed for Installation:

- #2 Philips and flathead screwdrivers
- Long reach bent nose pliers (at least 10-12" long is recommended)
- Long flathead screwdrivers
- 10mm ratchet/wrench
- 0.5-1 hours

Installation Steps:

- 1) Open the hood, remove the engine cover, and disconnect the negative battery terminal. Leaving the battery disconnected while installing the bypass kit will also clear any pending and active trouble codes stored in the ECM. For 2009 and newer vehicles, any permanent codes for the secondary air system will clear by themselves the first-time system is commanded to operate, and the Gen-II kit successfully completes its cycle. After resetting the ECM this way, it is normal for the engine to stall on the first start.

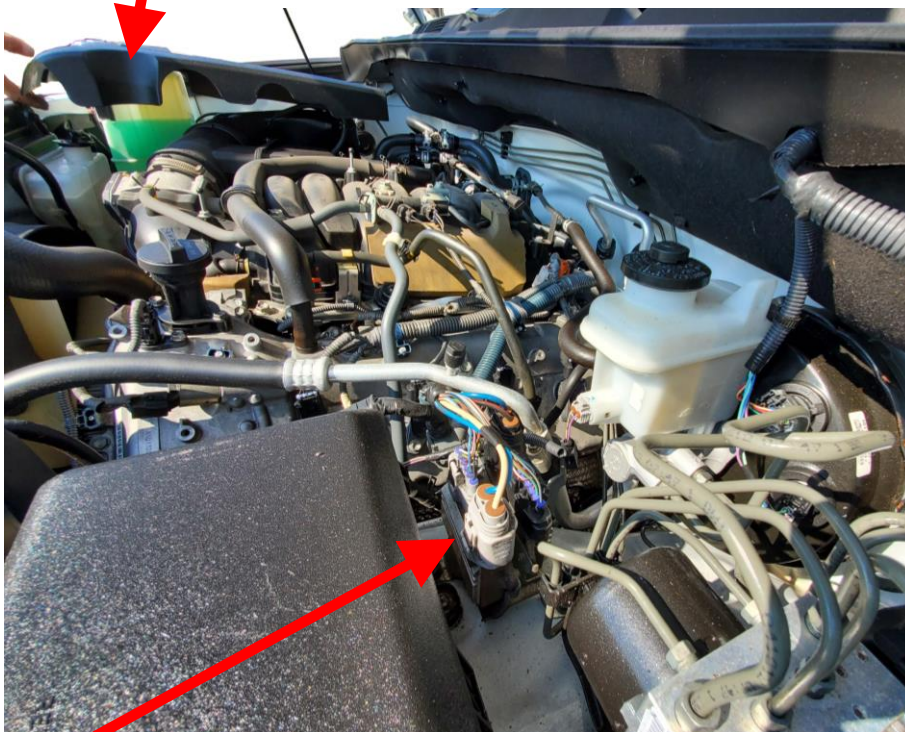


Figure 1 - Engine Compartment Viewed from Driver's Side Fender.

- 2) Locate the Air Injection Control Drivers (AIDs) in the engine bay. They are located on the inner driver side fender between the fuse box and the brake booster/master cylinder. The 5.7L has two air injection control drivers that are mounted in a back-to-back arrangement.

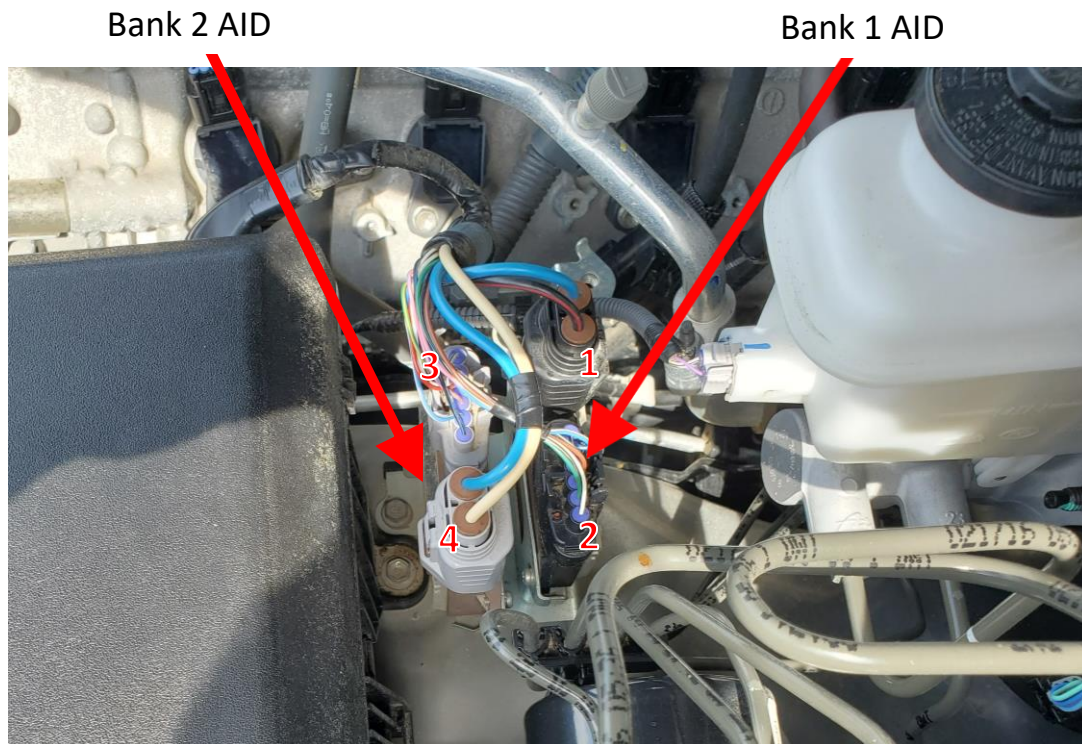


Figure 2 - Bank 1&2 Air Injection Control Drivers.

- 3) Disconnect all four connectors from the air injection control drivers (AIDs).
- 4) Install the custom blank plug caps into the two connectors labeled #1 and #4 in Figure 2 above. The connectors will remain disconnected, and the caps will keep them safe when the battery is reconnected. Tuck them out of the way.

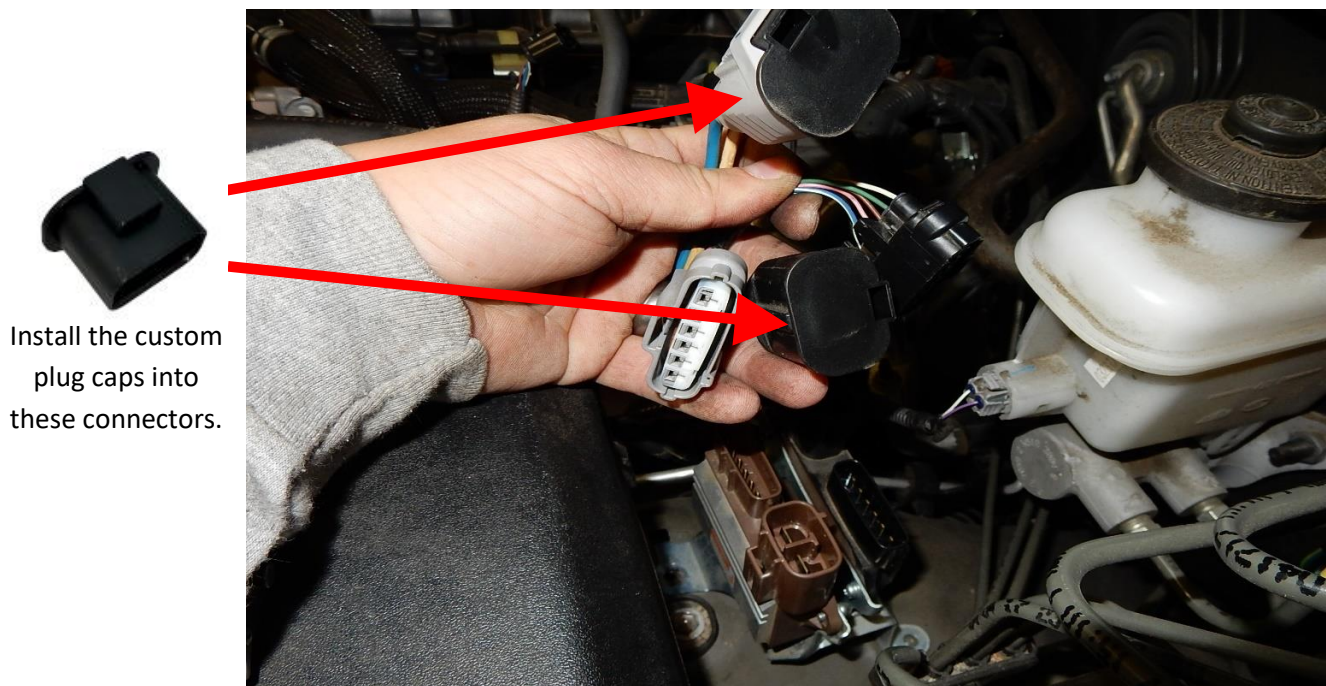


Figure 3 - Custom plug caps installed.

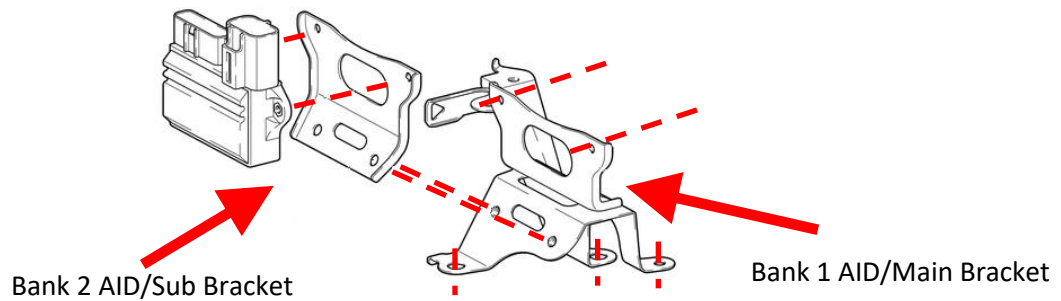
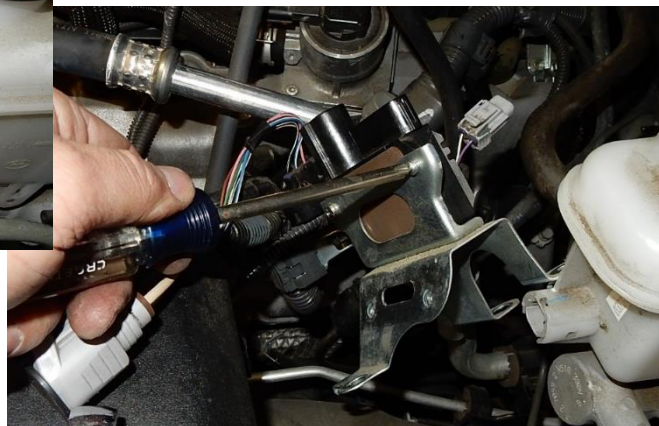


Figure 4 - Factory AID and Bracket Removal

- 5) Unbolt the main AID bracket from the fender and remove it from the vehicle. Unbolt and remove the brown Bank 2 AID/sub-bracket from the main bracket and set aside. Remove the two Phillips screws holding the black Bank 1 AID to the main bracket and set aside. The factory AIDs and sub-brackets are no longer needed.



If you do not want to keep your factory AIDs, we would be glad to have them.



Figures 5 - Removing the air injection control drivers.

- 6) Use the included M4 x 0.7 mm stainless steel nuts and screws to mount the Gen-II unit to the main AID bracket. It can face either way on the bracket.

Be careful not to pinch the wires between the unit enclosure and bracket.

- 7) Bolt the bracket back to the fender. No air injection control drivers should be left installed.



Figure 5 Mount the Gen2 Unit to the bracket.

Connect the Gen
2 Harness to the
Gen2 unit.

Connect the AID
connectors to
the Gen2 unit.

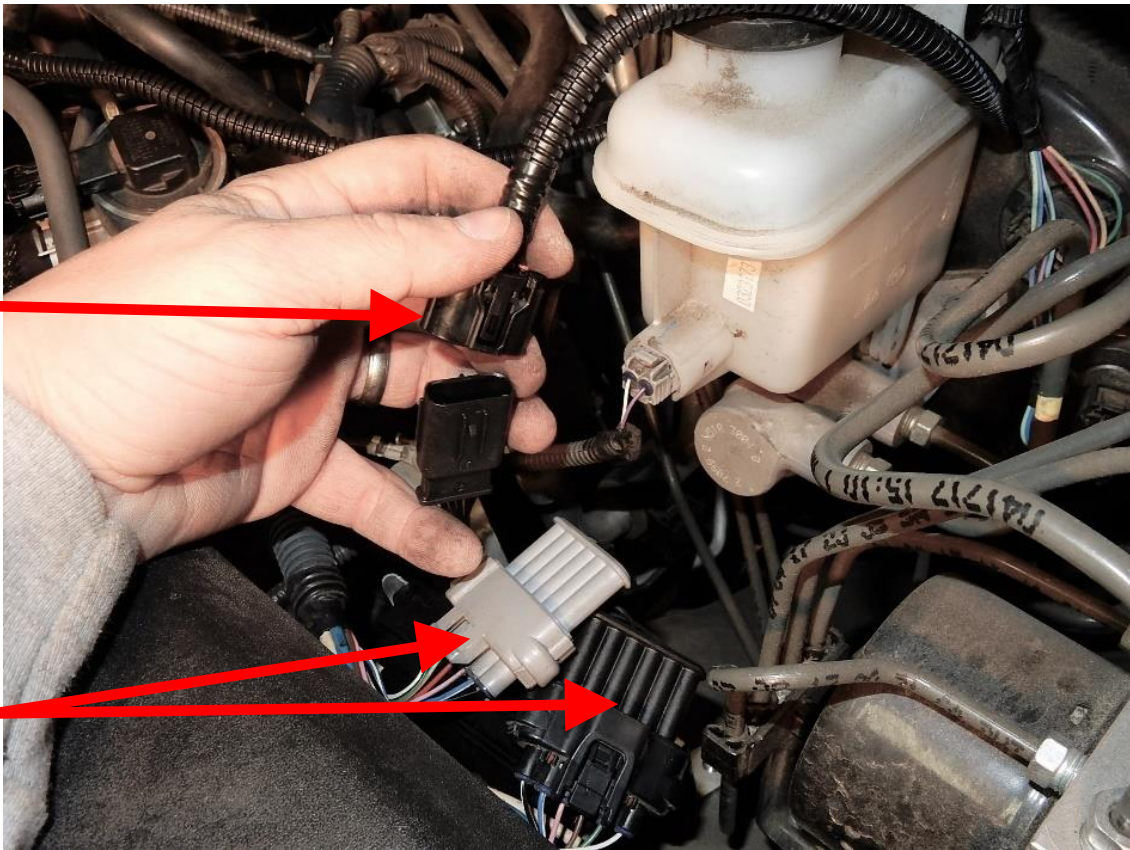


Figure 7 – Gen-II unit and connecting the AID connectors.

- 8) Connect the two factory AID connectors to the matching Gen2 module's connectors.
- 9) Route the Gen-II harness that came with the kit around the back of the brake master cylinder at the firewall and connect it to the smaller black 6 pin connector on the GenII unit. Lay the rest of the harness over the top of the engine being careful to keep it away from any hot exhaust.



Figure 8 - 5.7L Gen-II Harness

Air switching valves are located below the rear of the intake manifold.



Figure 9 - Gen-II Harness Routed over top of engine.

- 10) The harness extensions for the remaining connectors are intentionally long. This makes it easier to connect to the air switching valves and the factory harness connections located underneath the rear of the intake manifold.

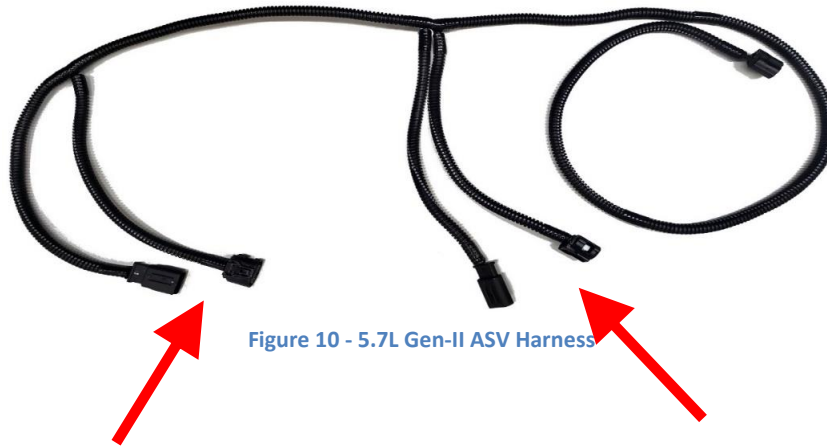


Figure 10 - 5.7L Gen-II ASV Harness

Bank-2 - Passenger Side Connectors
The male connector plugs into the factory ASV harness. The female connector plugs into the Bank-2 ASV (or Pressure Sensor Replacements).

Bank-1 – Driver Side Connectors
The male connector plugs into the factory ASV harness. The female connector plugs into the Bank-1 ASV (or Pressure Sensor Replacements).

Note: Pressure Sensor Replacements (PSR) are purchased separately. If you have PSR to install, refer to step 14 instead of connecting to the air switching valves. They are only needed if the pressure sensors built into the air switching valves are damaged. Damaged sensors are commonly caused by operating the vehicle for an extended period with the valves stuck open which exposes them to exhaust gases.

11) Locate the air switching valves/connectors below the rear of the intake manifold. The work at the air switching valves will be performed mostly by feel. To help visualize their location the engine cutaway below shows the location of the valves without the intake manifold.

One bank at a time, disconnect the factory harness from the air switching valve. Connect the factory harness to the Gen2 harness location for that bank. For the other Gen2 harness connection on that bank, refer to steps 13 and 14. You can practice disconnecting the same connector used on the air switching valves by disconnecting and reconnecting the MAF sensor on the airbox.

To get more room to work on the passenger side, the main engine harness can be unclipped from its bracket, or the bracket unbolted and very gently nudged out of the way to get more room. A long screwdriver can also be used to depress the locking tab so you can use your whole hand to grip and pull the connector off. With the tab depressed, a long pair of needle nose pliers or another long screwdriver can be used to catch the edge of the connector to push/pull it off. DO NOT pull on the harness or wires and be careful not to damage the wires with any tools. It is an extremely difficult area to perform any repairs.

Figure 11 - Air Switching Valves/Connector Location Shown with the intake manifold cutaway.

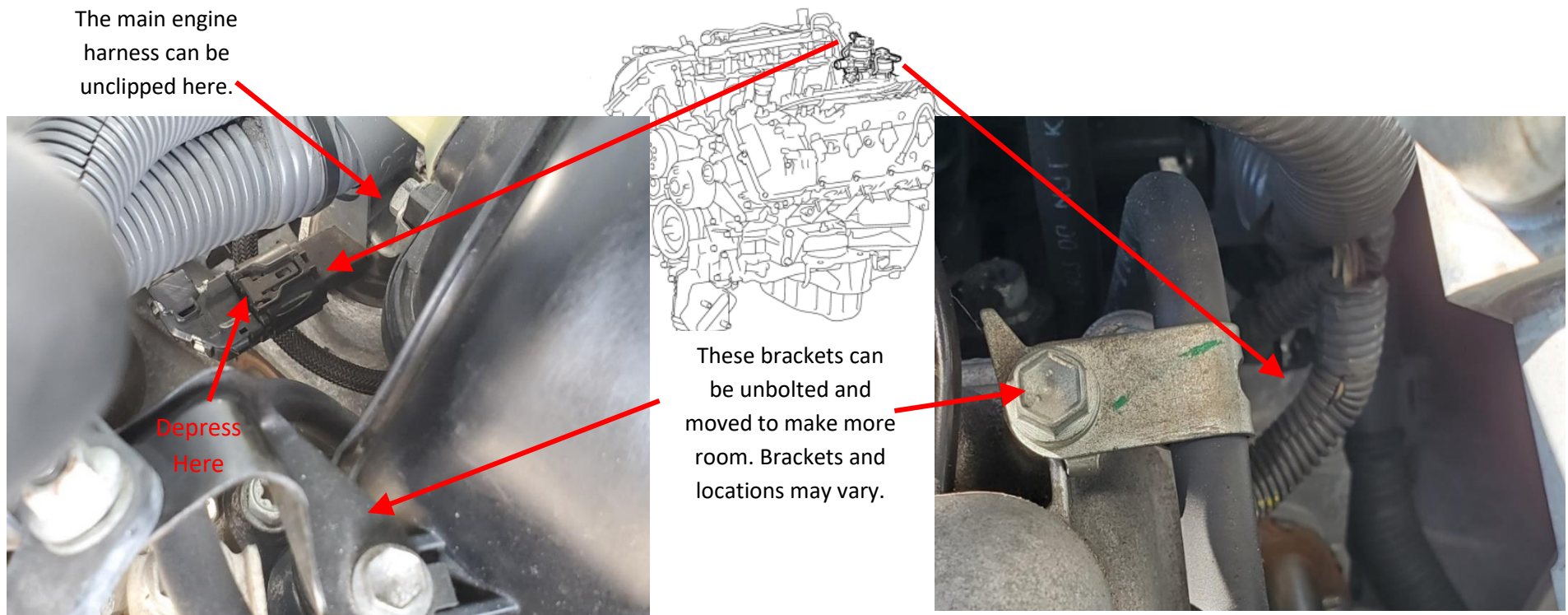


Figure 62 - Bank 2 Air Switching Valve Connection. Shown from the Rear Passenger corner of the intake manifold.

Figure 73 - Bank 1 Air Switching Valve Connection. Shown from Rear Driver Side of the intake manifold. Connector Obscured by the harness.

12) Connect the factory ASV harnesses to the Bank 1 and Bank 2 connectors of the Gen-II's ASV harness.

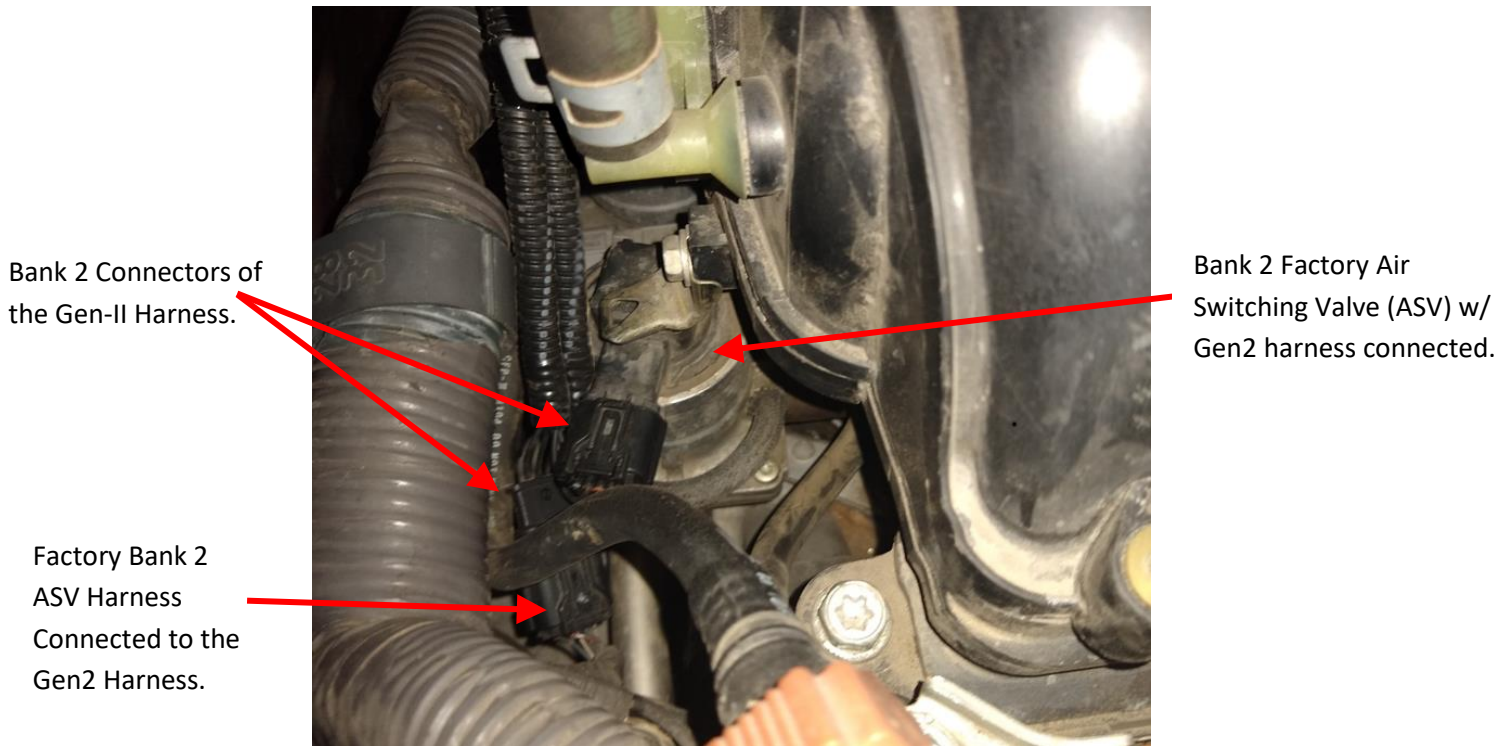


Figure 84 - Gen-II ASV Harness Connected to passenger side ASV and Factory ASV Harness (no PSR installed). The Main Harness and Bracket moved out of the way.

13) If you, Do Not Have Pressure Sensor Replacements, connect the remaining Gen-II harness connector for each bank to the ASV. Your connections should then look like Figure 13 above for both banks. Skip Step 12.



Figure 95 - Pressure Sensor Replacement (each sold separately)

Note: PSR(s) are needed only when one of the ASVs has a damaged or faulty pressure sensor. One PSR is needed for each damaged ASV or valve to be removed.



Figure 106 - Pressure Sensor Replacement (each sold separately)

14) If you, Do Have pressure sensor replacements, follow this step. Otherwise, skip ahead to the next step to finish your installation.

a) Your pressure sensor replacement(s) will connect to the Gen-II's harness using one of the three cases below. If you are still unsure about how to determine how to connect the PSR to the kit, please contact us directly.

i) For codes (P2431, P2432, P2433, P2440, P2441, P2444, P2445) that cannot be cleared or come back after being cleared, plug the PSR into the Bank-1 connector of the Gen-II ASV harness. The Bank-1 air switching valve will be left completely disconnected.

ii) For codes (P2436, P2437, P2438, P2442, P2443, P2446, P2447) that cannot be cleared or come back after being cleared, plug the PSR into Bank-2 connector of the Gen-II ASV harness. The Bank-2 air switching valve will be left completely disconnected.

iii) If you purchased two PSRs simply connect one PSR to each of the remaining connectors of the Gen-II ASV harness and there will be no connections to either of the air switching valves.

b) Mount the PSR(s). There is no existing mounting location for the PSR. The sensors can be secured with zip-ties or under a non-critical mounting bolt. A bolt that only serves to secure vacuum or brake lines in place works well as a sensor mount if the bolt is long enough.

Ideally, the PSR sensor should be secured with the vacuum nipple pointing downward to keep water and debris from getting into the sensor. A small length of vacuum line can be placed on the sensor and pointed downward but must remain Open.

Note The vacuum nipple of the pressure sensor does not connect to anything and needs to remain open to the atmosphere. There will be no connection to the ASV for either bank that has a PSR installed.

- 15) Connect the remaining female connectors of the Gen-II ASV harness that do not have a PSR(s) to that bank's air switching valves. If either bank has a PSR installed there will be no connection made to that bank's ASV.
- 16) Once you have all the harnesses installed and PSR mounted replace any lines, brackets, or harnesses that you moved out of the way to gain access. Pay close attention that you do not leave anything undone or disconnected and that the engine harness is properly secured again.
- 17) Use zip-ties to neatly secure the rest of the harnesses and re-install any engine covers that you removed.
- 18) Reconnect the negative battery terminal and install the block off plates if you have not already installed them. If you did not disconnect the battery during installation or for at least 2 minutes the codes will still need to be cleared with an OBDII scan tool.
- 19) Congrats, you finished the installation!

At this point there should be no active or pending codes stored for the secondary air injection system. The CEL should remain off (if there are no other problems). For 2009 and newer vehicles, any permanent trouble codes that remain in the computer will drop out by themselves the next time the system is commanded to operate, and the Gen-II unit completes the cycle.

Attn: Disconnecting the negative battery terminal to reset the codes will also reset engine tuning parameters like the fuel trims. It is normal for the engine to run rough, off idle, and even stall after the first start. Restart the engine and let it idle for 10 min before driving so it can relearn idle position and fuel trims.

If you have questions or trouble before, during or after installation please contact us directly
www.Hewitt-Tech.com
Toll Free 1-844-307-7671



Important: It is illegal to remove, dismantle or otherwise cause to be inoperative any pollution control device required by federal, state, or local emissions law. The Gen-II bypass kits are sold for road or competition use only, no other applications are intended or implied. By installing or using this SAIS Bypass Kit the vehicle owner and installer acknowledge and assume ALL risks associated with its use.