INSTALL INSTRUCTIONS FOR 76-1012

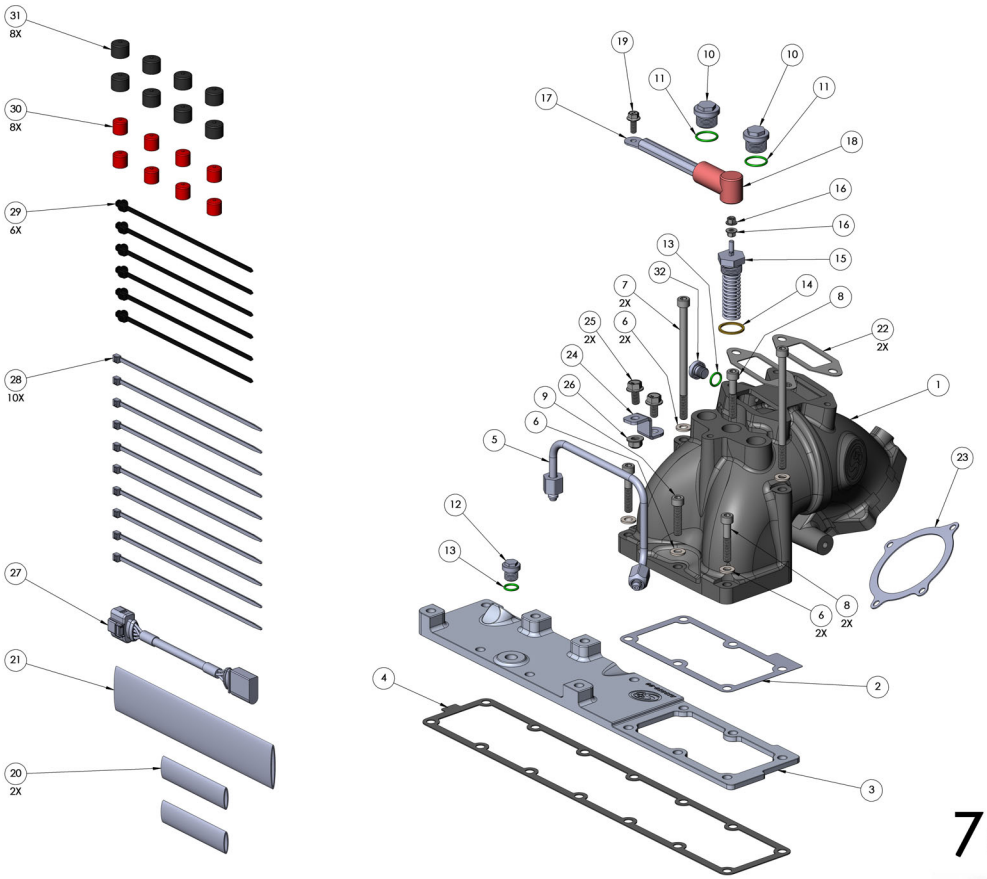
16) making sure they are secure and tight.

- All electrical connections and wire harnesses moved during the installation of the intake and make sure they are secure and away from any hot or moving components.

- Check for any signs of abrasion or wear and tear on the electrical harnesses moved or near the Intake Elbow and repair/replace as necessary.

Vehicle Fitment 2019-2024 6.7L Cummins Diesel, Ram, 2500/3500

Device Name: Intake Elbow



76-1012

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	AL1494-00	6.7L Cummins Intake Elbow, Machined
2	1	AI3561-00	Gasket, Intake Manifold to Elbow, 6.7L Cummins
3	1	AI3489-00	Grid Heater Delete Plate, 6.7L Cummins
4	1	AI3560-00	Gasket, Intake Manifold Cover, 6.7L Cummins
5	1	AI3488-00	Fuel Line, Injector #1, High Clearance, 6.7L Cummins, 2019+
6	5	AI1740-00	Washer, M8, 16mm OD, 18-8 SS
7	2	AI3568-00	Screw, Socket Head, M8x1.25 x 130mm Long, DIN 912, 18-8 SS, A2-70
8	3	AI3569-00	Screw, Socket Head, M8x1.25 x 45mm Long, DIN 912, 18-8 SS, A2-70
9	1	AI3570-00	Screw, Socket Head, M8x1.25 x 35mm Long, DIN 912, 18-8 SS, A2-70
10	2	AI3564-00	Plug, M22 x 1.5mm

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
17	1	AI2007-00	Positive Battery Cable Extension, 2AWG, 5" long, Red, 1/4" Ring Terminals
18	1	AI3625-00	Terminal Insulator, 2-2/0 GA, PVC, Red, UL V2
19	1	AI2014-00	Screw, Hex Flange, M6 x 16, DIN 6921, Class 8.8, Zn Pltd
20	2	AI2019-01	1" ID heat shrink, Red, 4.0"
21	1	AI2107-02	Fabric Heat Shrink, Black, 10" Long
22	2	AI3562-00	Gasket, EGR Valve, 6.7L Cummins
23	1	AI3563-00	Gasket, Connection, Throttle Body to Intake Elbow, 6.7L Cummins
24	1	AI3559-00	Bracket, Oil Dipstick, 6.7L Cummins
25	2	AI3623-00	Screw, Hex Head, Flange, M8 x 1.25 x 16 mm, DIN 6921, Class 8.8, Zn Pltd
26	1	AI3624-00	Locknut, Flange, Distorted Thread, M8 x 1.25,

10	2	AI3564-00	Plug, M22 x 1.5mm
11	2	AI3565-00	O-Ring, Viton, for M22 Plug
12	1	AI3566-00	Plug, M14 x 1.5mm
13	2	AI3567-00	O-Ring, Viton, for M12 and M14 Plug
14	1	AI3558-00	Gasket, Intake Air Heater, Brass
15	1	AI3557-00	Intake Air Heater
16	2	AI3622-00	Locknut, Flange, Distorted Thread, M5 x 0.8mm, DIN 6927, Class 8, Zn Pltd

26	1	AI3624-00	DIN 6927, Class 8, Zn Pltd
27	1	AI3498-00	EGR Valve Extension Harness, 6.7L Cummins
28	10	AI1750-00	Cable Tie, 9" Long
29	6	AI2154-00	Push In Mount Cable Tie
30	8	AI3662-00	Cap, Flexible Vinyl, 1/2" ID x 1/2" Deep, Red
31	8	AI3661-00	Cap, Flexible Vinyl, 5/8" ID x 1/2" Deep, Black
32	1	AI3757-00	Plug, M12 x 1.25mm

76-1012

STEP 1

With the ignition switched off and the parking brake set, disconnect the negative battery cables on both batteries. Disconnect the negative battery cable on the passenger side battery. Isolate the cable terminal from the battery by covering it with a rubber glove or other electrical insulating material.

Note: Failure to disconnect the battery for 2 hours may cause the CEL to illuminate upon completion of the installation and subsequent operation. DO NOT SKIP THIS STEP!

Tools Required: 8mm Socket/Wrench

STEP 1B

Disconnect the negative battery cable on the driver

side battery. Isolate the cable terminal from the battery by covering it with a rubber glove or other electrical insulating material.

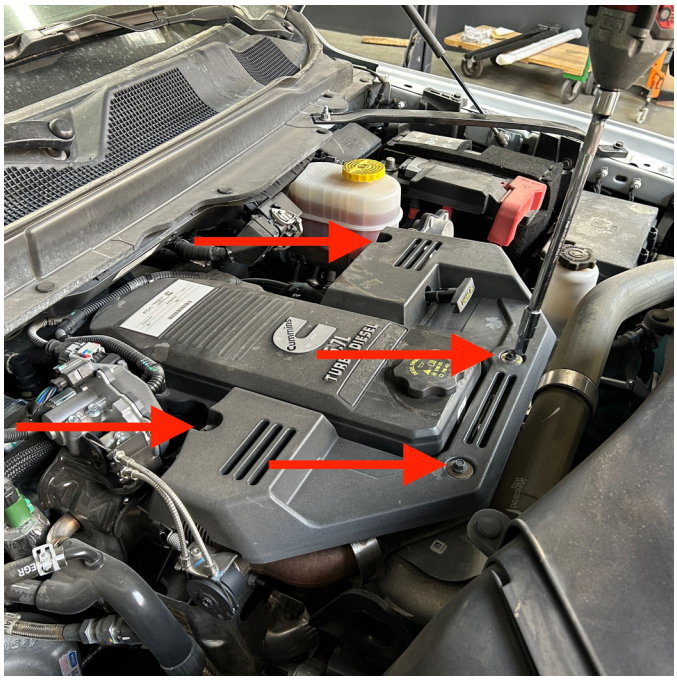
Note: Failure to disconnect the battery for 2 hours may cause the CEL to illuminate upon completion of the installation and subsequent operation. DO NOT SKIP THIS STEP!

Tools Required: 10mm Socket/Wrench

STEP 2

Remove the bolts securing the engine cover.

Tools Required: 8mm Socket/Wrench

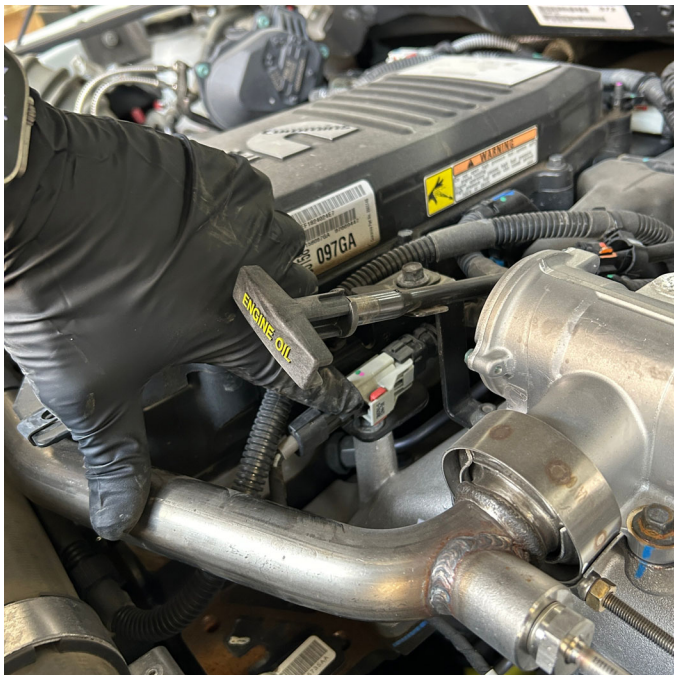


STEP 3

Remove the engine oil dipstick and then remove the engine cover.

STEP 4

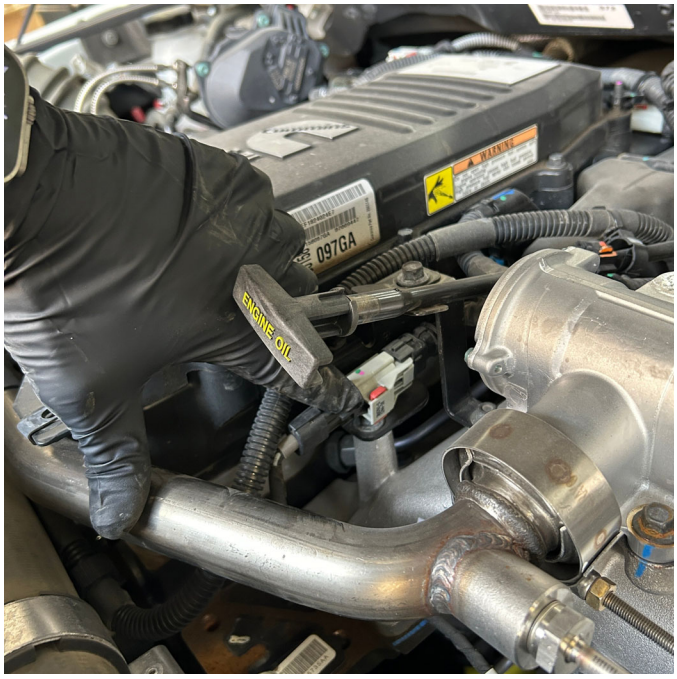
Replace the engine oil dipstick



STEP 5

Disconnect the wire harness connector from the EGR temperature sensor located

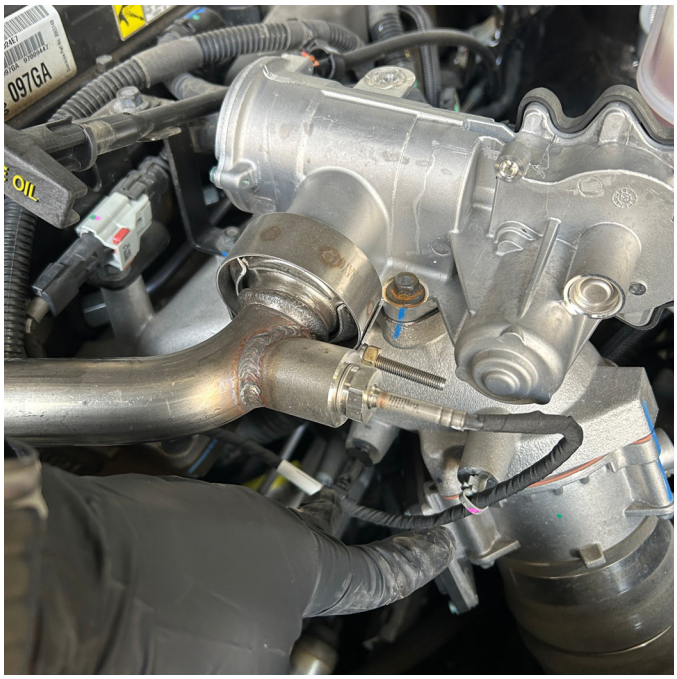
on the EGR crossover tube. To disconnect the harness connector, first slide to release the red locking tab, then depress the retaining tab and remove the connector from the sensor.



STEP 6

Remove the push rivet harness retaining clip from the intake elbow.

Tools Required: Panel Popper / Push Rivet Tool



STEP 7

Remove the nut and T-bolt

from the driver side V-band clamp on the EGR crossover tube.

Tools Required: 11mm Deep Socket/Wrench

STEP 8

Remove the bolt holding down the EGR crossover tube bracket.

Tools Required: 8mm Socket/Wrench, 6” extension, ¼” Drive Universal Joint.

STEP 9

Carefully open and move both V-band clamps away from the EGR crossover tube flanges being careful not to let the gaskets fall from either end of the EGR crossover tube.

STEP 10

Note that the passenger side flange on the EGR crossover tube has a flat sealing surface and a flat metal gasket. Keep the gasket for re-use later.

STEP 11

Note that the driver side flange on the EGR crossover tube has a conical sealing surface and a composite gasket. Keep the gasket for re-use later.

STEP 12

Remove the P-clamp from the EGR crossover tube.

STEP 13

Remove the wire harness retainer from the engine oil dipstick bracket threaded

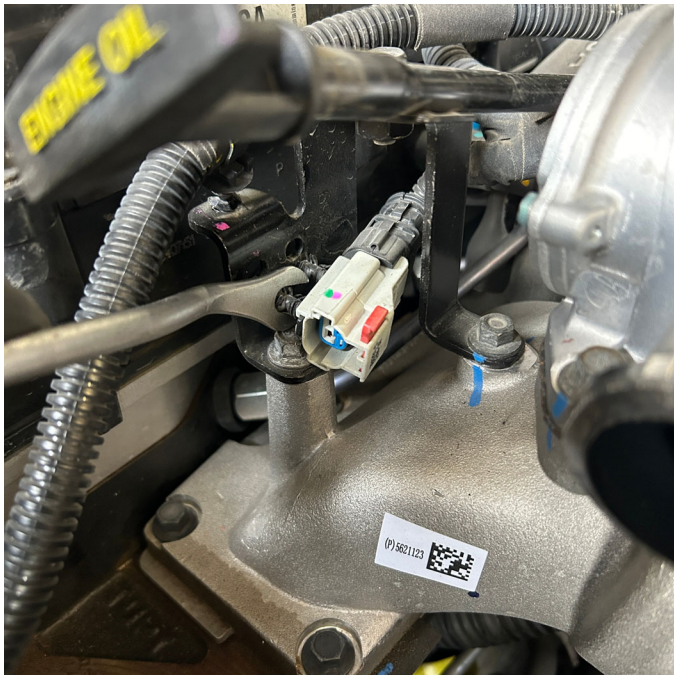
stud.

Tools Required: Panel Popper

STEP 14

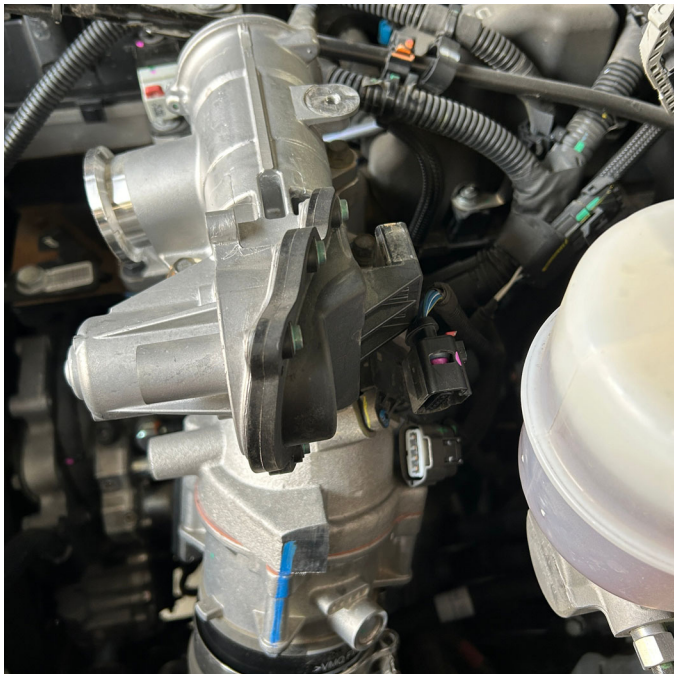
Remove the EGR temperature connector retainer from the engine oil dipstick bracket threaded stud.

Tools Required: Panel Popper



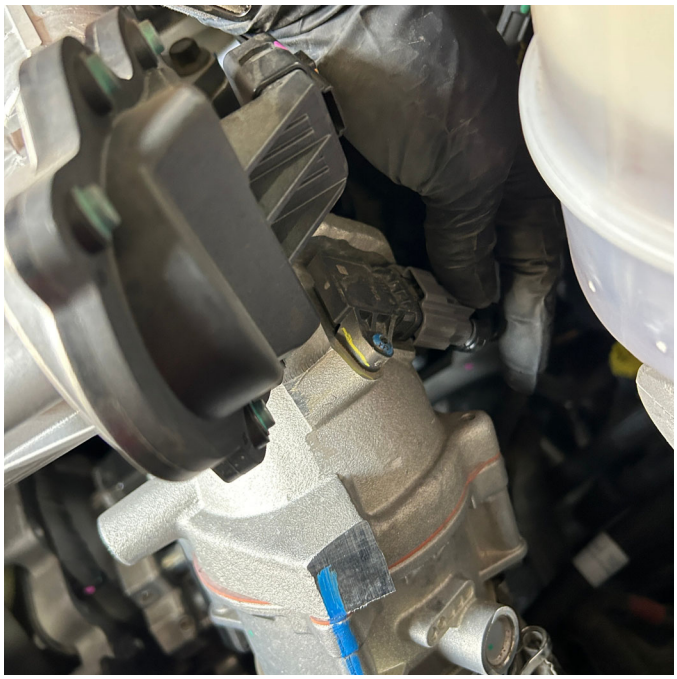
STEP 15

Disconnect the wire harness connector from the EGR valve by depressing the retaining tab and removing the connector.



STEP 16

Disconnect the wire harness connector from the TMAP sensor by depressing the retaining tab and removing the connector.



STEP 17A

Disconnect the throttle valve connector under the intake elbow by sliding the locking tab over and depressing the main tab.

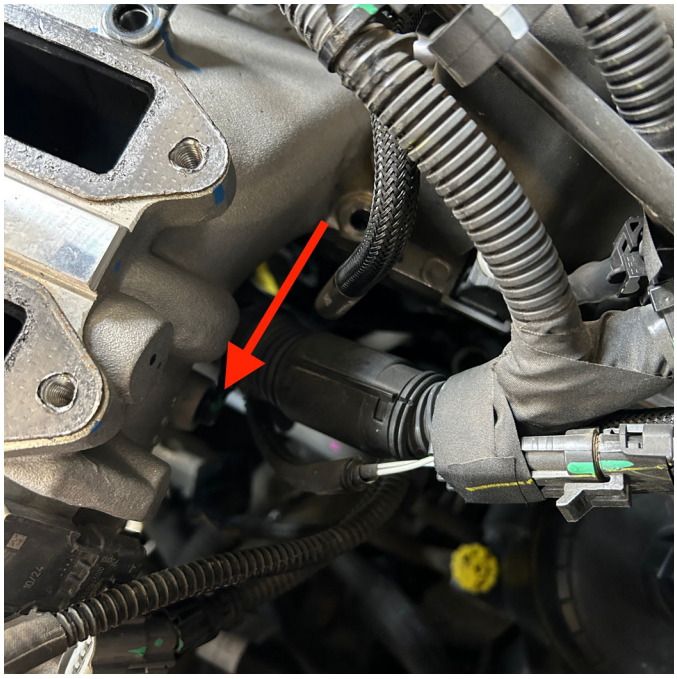
STEP 17B

Here is a view of the connector once removed so you can see how the locking tab functions.

STEP 18

Remove the wire harness retaining clip from the intake elbow

Tools Required: Panel Popper Tool



STEP 19

Loosen the Charge Air Cooler (CAC) hose clamp attached to the intake throttle.

Tools Required: 11mm Deep Socket/Wrench, 6” socket extension

STEP 20

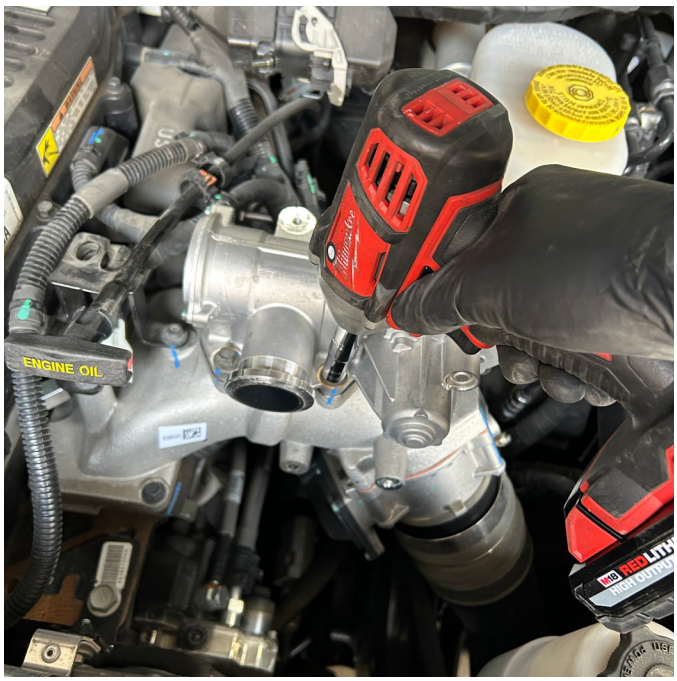
Remove the bolt securing the engine oil dipstick tube.

Tools Required: 10mm Socket/Wrench, 6” socket extension

STEP 21

Remove the 4 bolts holding the EGR valve onto the intake manifold. This is easiest to do when the elbow is still installed in the truck.

Tools Required: 10mm socket



STEP 22

Remove the EGR Valve from the vehicle. You can discard the old gaskets as we provide new OEM Cummins gaskets for the EGR Valve.

STEP 23

Remove the (6) bolts holding the intake elbow to the intake manifold.

Tools Required: 10mm Socket/Wrench, 10” Wobble Socket Extension, U-joint Adapter

STEP 24

Remove the intake elbow from the intake manifold and twist the elbow loose from the CAC hose.

STEP 25

Mask the opening to the intake manifold and the CAC hose to prevent anything from falling in either location.

STEP 26

Locate the wire harness bulkhead by the driver side firewall and remove the wire

harness retainer.

Tools Required: Panel Popper

STEP 27

Remove the wire harness retaining clip from the stud at the rear of the valve cover.

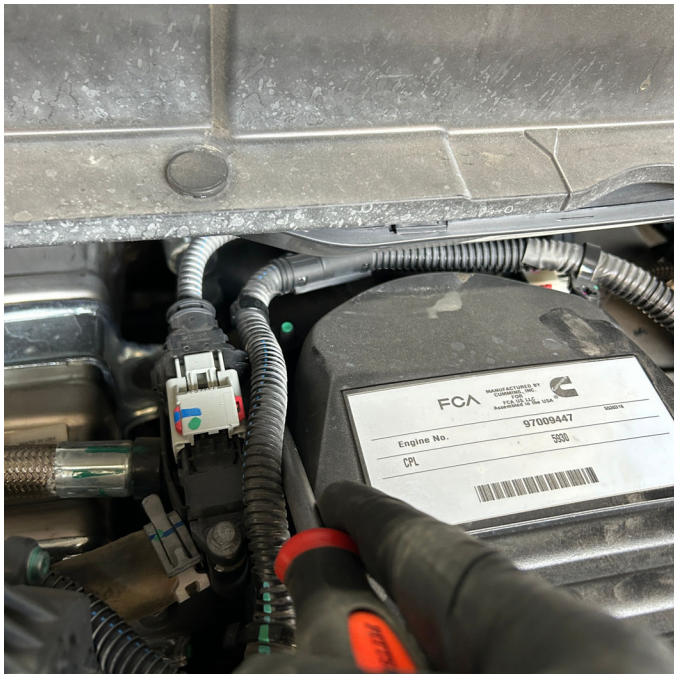
Tools Required: Panel Popper

STEP 28

Remove the wire harness

retaining clip from the stud at the rear of the valve cover.

Tools Required: Panel Popper



STEP 29

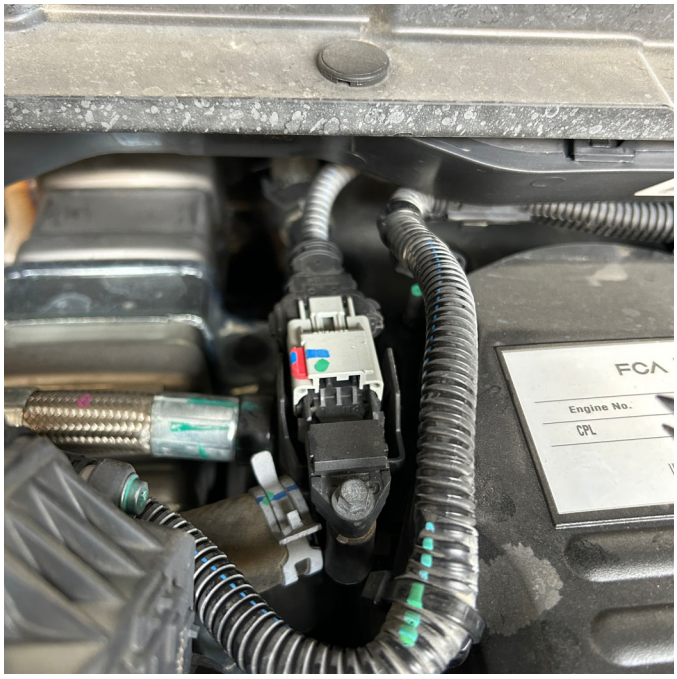
Remove the wire harness retaining clip from the stud at the side of the valve cover.

Tools Required: Panel Popper

STEP 30

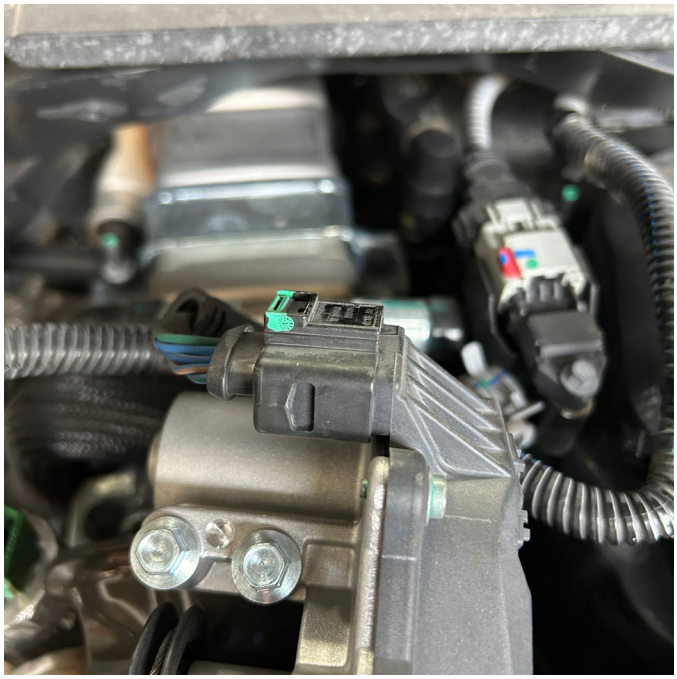
Disconnect the wire harness connector from the

crankcase pressure sensor 2 located on the passenger side of the crankcase breather cover. To disconnect the harness connector, first slide to release the red locking tab, then depress the retaining tab and remove the connector from the sensor.



STEP 31

Disconnect the wire harness connector from the Exhaust Side EGR Actuator located top of the EGR cooler. Slide the black locking tab backwards then depress the tab to remove the connector.



STEP 32

Disconnect the wire harness connector from the green connector located above the exhaust manifold. Slide the green locking tab out then depress the tab to remove the connector.

STEP 33

Disconnect the wire harness connector from the crankcase pressure sensor 1 located on the driver side of the crankcase breather cover. To disconnect the harness connector, first slide to release the red locking tab, then depress the retaining tab and remove the connector from the sensor.

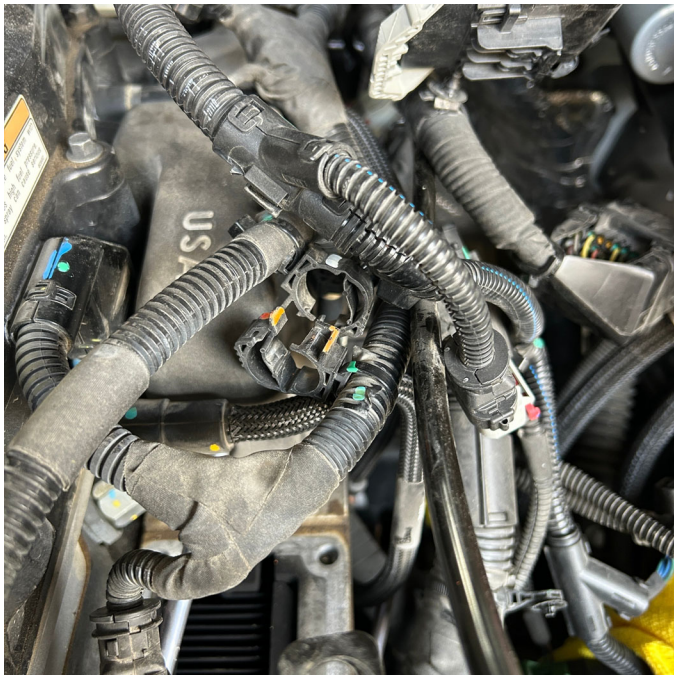
STEP 34

Press the tab to unlock the latch, then rotate the latch to unlock and separate the main harness bulkhead connector.

STEP 35

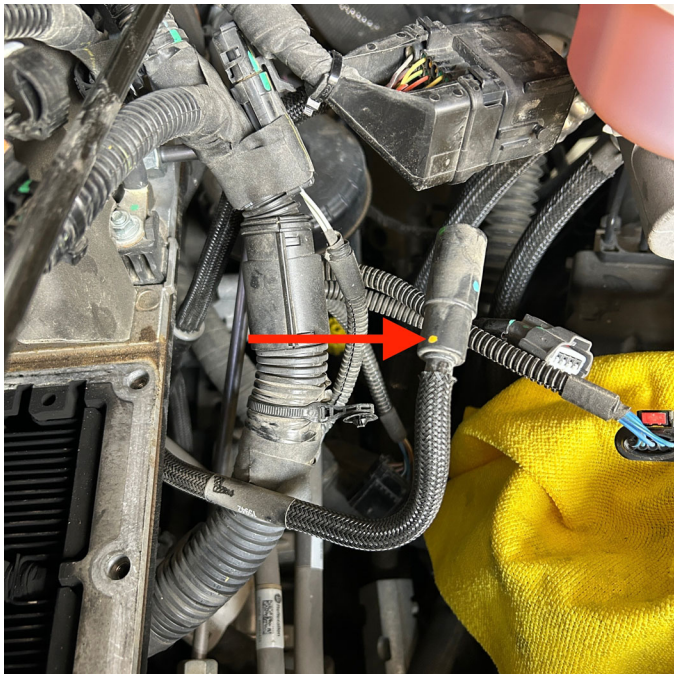
Remove the circular wire harness clips that attach the wire harness to the dipstick tube.

Tools Required: Pick to separate the circular clip.



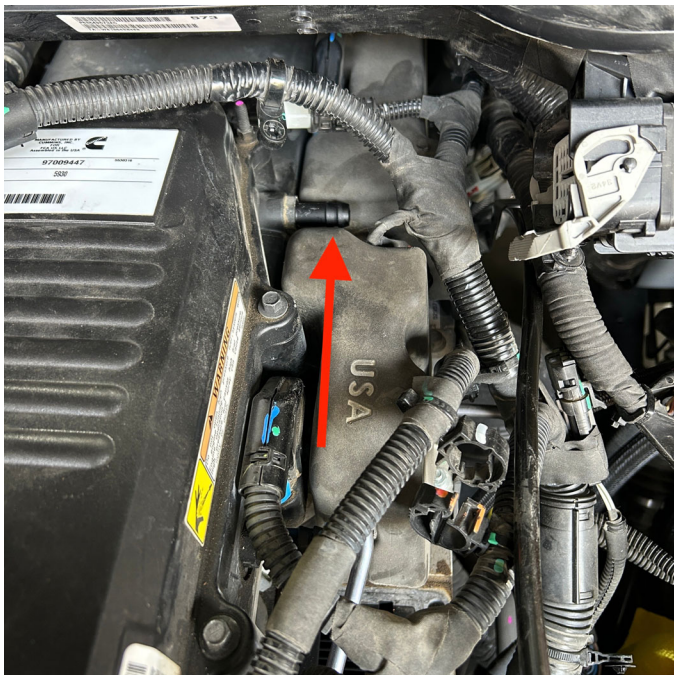
STEP 36

Remove the front crank case oil drain. You can use a pick or other small tool to pry the rubber coupler free from the barb.



STEP 37

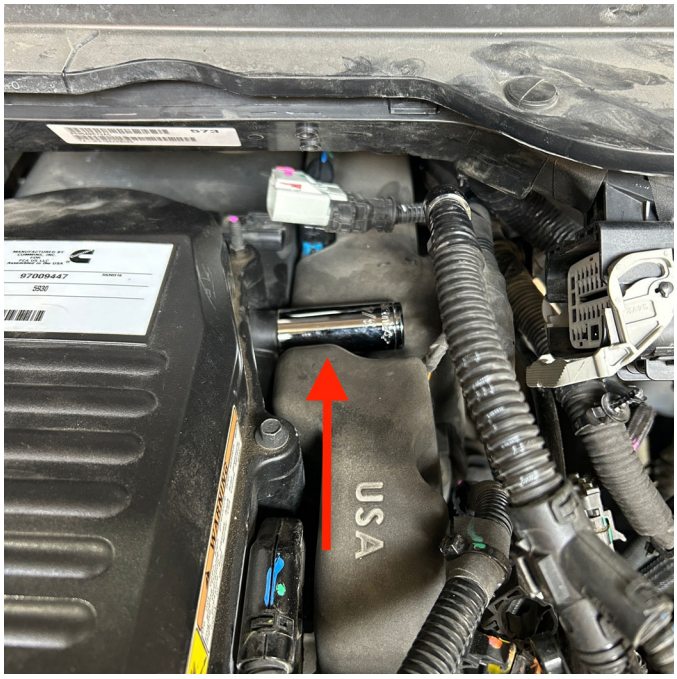
Remove the rear crank case oil drain. You can use a pick or other small tool to pry the rubber coupler free from the barb.



STEP 38

Use a 3/4" socket to remove the rear crankcase oil drain tube barb.

Tools Required: 3/4" Deep Socket



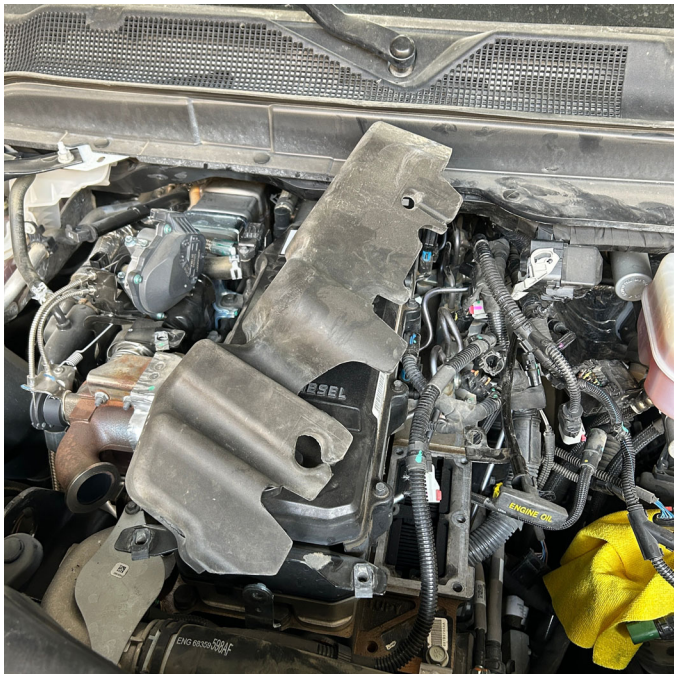
STEP 38B

Here is what the barb looks like once removed.

STEP 39

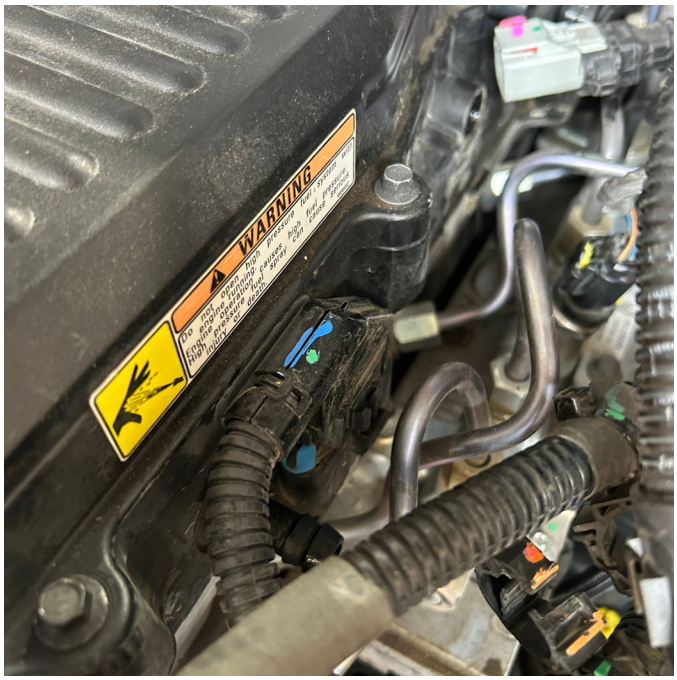
Carefully remove the foam sound deadening from the fuel rail. It should release if

all wires have been disconnected. Do not pull hard and pay attention to wires to make sure you do not damage any of the wire harness.



STEP 40

Unplug the forward injector harness plug. Press the black tab and pull upwards. You can use a pick from the bottom to release the tab as well if it will not release.

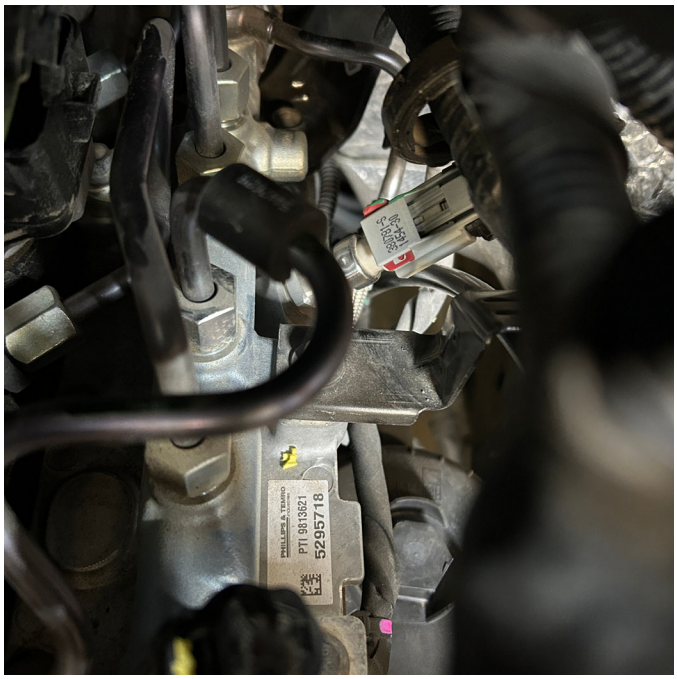


STEP 41

Unplug the rear injector harness plug. Press the black tab and pull upwards. You can use a pick from the bottom to release the tab as well if it will not release.

STEP 42

Remove the temp sensor connector at the intake manifold cover. Slide the red locking tab over then depress the tab to remove the connector.



STEP 43

Unplug the connector from the top of the fuel rail. Slide the locking tab backwards then depress the tab to release it.

STEP 44

Remove the retaining clip from the grid heater power harness. You may need a pick to separate the retaining clip.

Tools Required: Pick

STEP 45

Remove the rear retaining clip between the two

harnesses. It is located right above the rear dipstick bracket. You may need a pick to separate it.

Tools Required: Pick

STEP 46

Carefully route the engine harness under the dipstick tube and lay it on the driver side fender to allow for better access to the fuel rail.

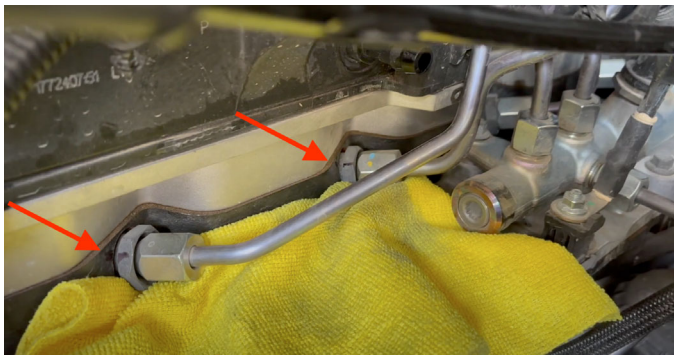
STEP 47

Remove the harness push rivet here from the dipstick bracket at the rear of the fuel rail.

Tools Required: Panel Popper

STEP 48

Prior to removing the injector lines, place a rag or masking tape over the grid heater to prevent dirt from entering the intake manifold. Wipe down all of the injector lines at the fuel rail and cylinder head. We do not want any dirt to enter the injectors or fuel rail when removing the lines. These components are extremely sensitive to contamination and repairs are very costly. Next, use a permanent marker or paint pen to draw a line between each injector adapter nut and the cylinder head. It is very important that the



adapter nuts do not spin when loosening and retorquing the injector lines. The line you draw will allow you to quickly see if the adapter shifts in the cylinder head. Do this on all 6 injector lines.

Tool Required: Permanent Marker

STEP 49A

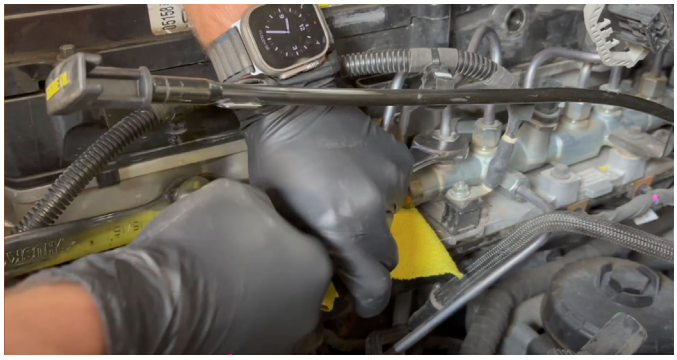
Remove each injector line from the truck. Start by loosening the cylinder head side by placing a 15/16" wrench on the adapter and a 3/4" wrench on the injector line nut. Then, use the 3/4" wrench on the fuel rail side to remove the line completely. Each line is numbered on the cylinder head side so you do not need to label them. We provide a new cylinder 1 fuel line that gives more clearance for our intake elbow. You may not be able to reach the cylinder head side nut on cylinder 6. You can just remove the nut at the fuel rail side only and

lightly pry upwards on the fuel line to release the fuel rail. You can also use a 3/4" or 19mm fuel line socket to remove some of these lines. This is one of the hardest steps in the install. Please give us a call or refer to our install video if you have any questions.

Tools Required: 3/4" & 15/16" Wrench, 3/4" Fuel Line Socket

STEP 49B

Remove the fuel rail side nut and then remove the fuel line. Follow the same procedure all the way back to Cylinder 6.



STEP 49C

Keep the fuel injector system clean by installing the provided

red plugs (Item #30) to each injector adapter and the black plugs (Item #31) to each fuel rail port as you remove the fuel lines from the truck.

STEP 50

Remove the grid heater electrical harness by unscrewing the captured nut. This will give you more room to access the rest of the fuel lines.

Tool Required: 10mm socket

STEP 51

Continue to work backwards removing each line. In the picture attached here you can see Line #1-5 have been removed and capped. Line 6

is loose and slightly above the manifold. We removed the dipstick tube bracket to give us more clearance on the injector nuts. Be extremely careful with the dipstick if you remove this bracket as the seal at the bottom of the dipstick tube can break and cause a severe oil leak if the tube is moved too much.

STEP 52

Use a 3/4" wrench to loosen the rail feed line at the fuel rail.

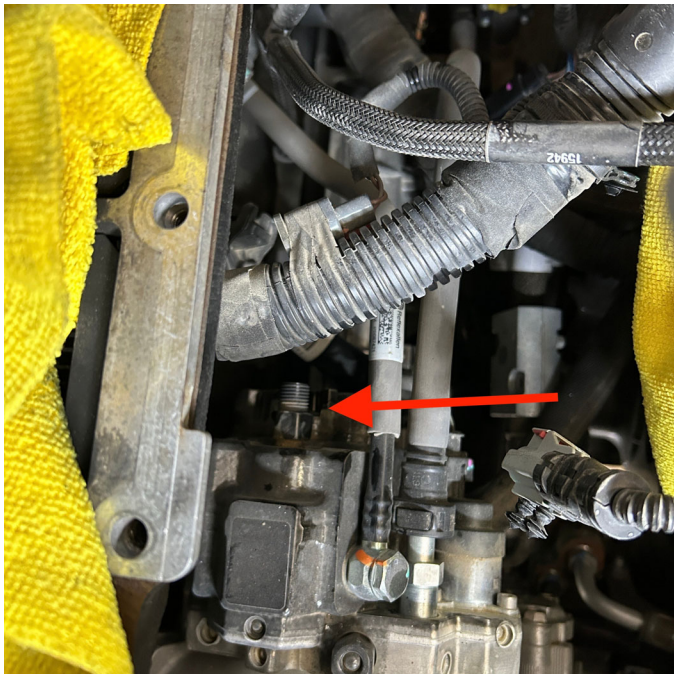
Tools Required: 3/4" Wrench

STEP 53

Loosen the feed line at the fuel pump side with a 3/4" wrench. The fuel feed line is labeled at

the fuel rail side so you do not need to mark it. After removing the fuel feed line, install the provided black plug (Item #31) to the fuel rail port and the red plug (Item #30) to the supply line port.

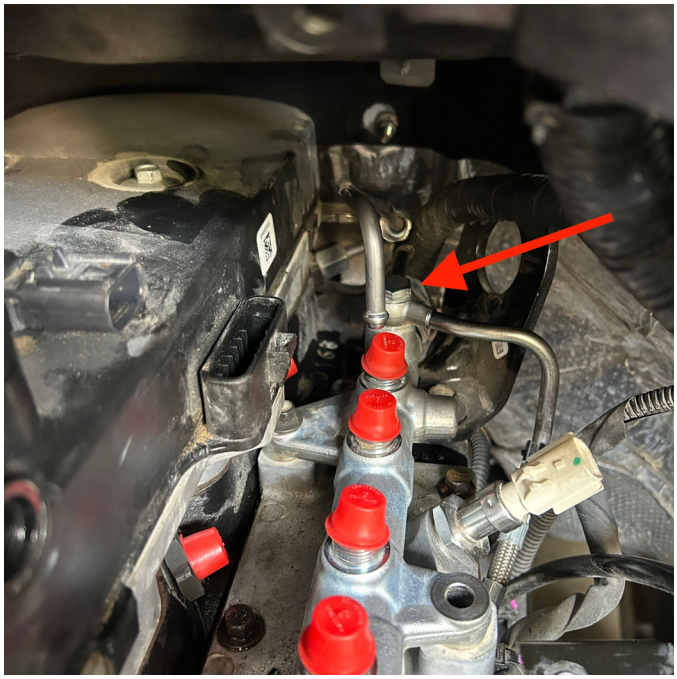
Tools Required: 3/4" Wrench.



STEP 54

Use a 17mm socket to remove the banjo bolt for the fuel rail return. Carefully remove the bolt ensuring you do not lose the sealing washers from above or below the fitting.

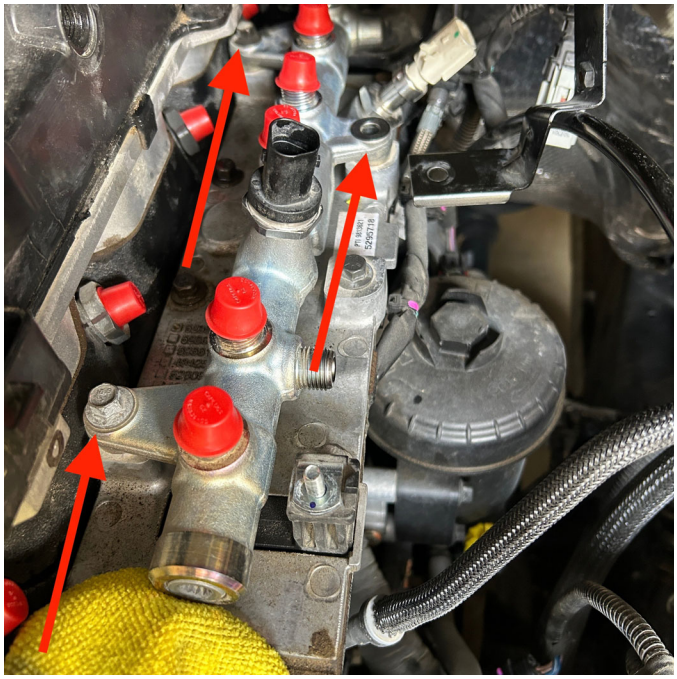
Tools Required: 17mm Socket



STEP 55

Remove the 3 10mm bolts holding the fuel rail in. Do not remove the rail yet as there is one more connector at the rear of the rail for the fuel pressure regulator.

Tools Required: 10mm Socket



STEP 56

Rotate the fuel rail slightly to expose the connector at the rear. Disconnect the connector from the fuel rail. The tab to depress is on the rear side of the connector so it can be difficult to access.

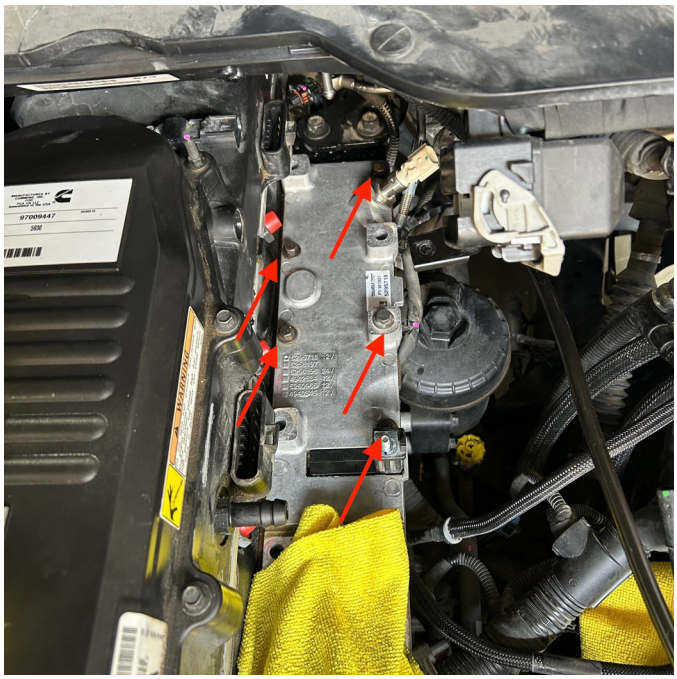
STEP 57

Remove the fuel rail from the truck and set it aside.

STEP 58

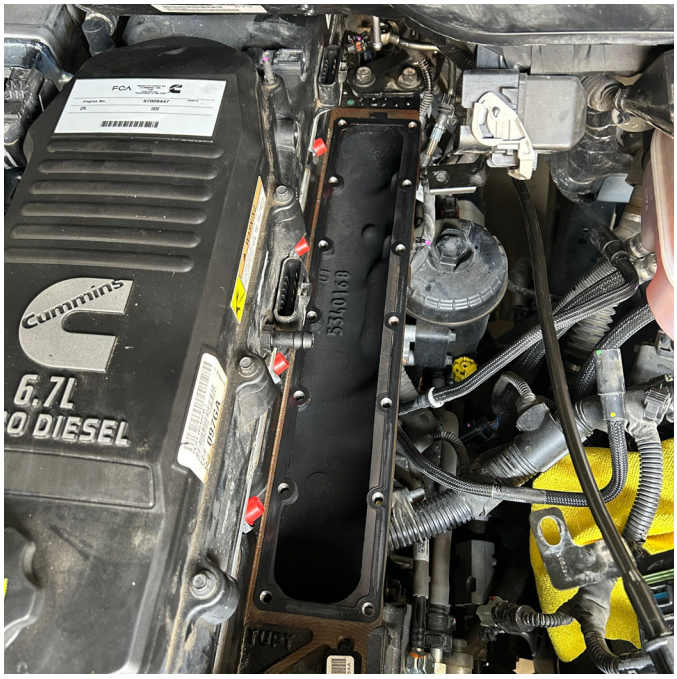
Remove the remaining 5 x 10mm bolts from the intake plate.

Tools Required: 10mm Socket



STEP 59

Remove the entire intake plate from the truck. Set it aside as we will remove the temperature sensor from the plate.



STEP 60

Remove the metal gasket from that sealed the intake plate to the cylinder head. Here is a picture of what it should look like with the gasket removed. Clean any old gasket material off the cylinder head.

STEP 61

Thoroughly vacuum the intake area to ensure there

is no dirt or debris in the intake. Any dirt or debris will immediately enter the combustion chamber if it is not cleaned out at this step. We recommend using a shop vac with an adapter to 1″ so you can get the tighter areas. Once clean, apply masking tape to the intake so dirt does not enter while we prepare the S&B elbow for install. This is a great stopping point if you want to take a break during the install.

STEP 62

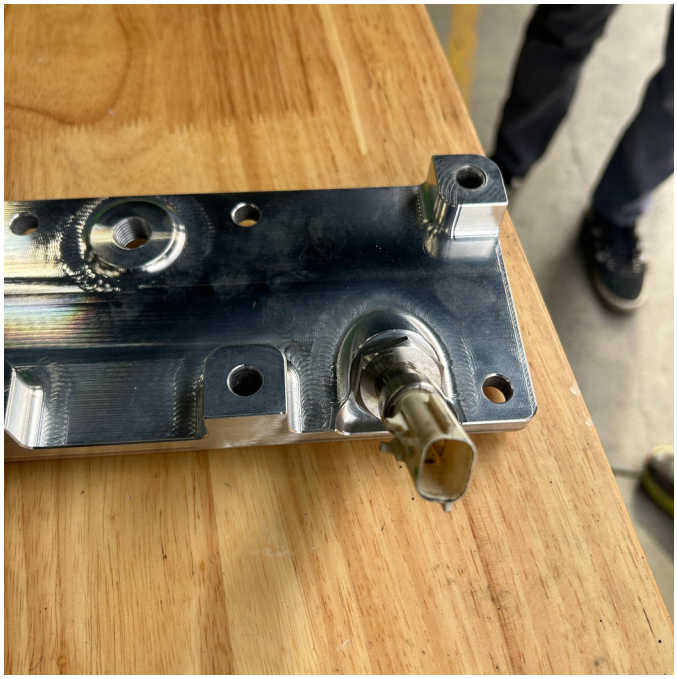
Use a 25mm or 1" wrench to remove the Intake Air Temperature Sensor from the OEM intake cover plate. Pay attention to the position of the intake air heater as we will install it in the same location on the S&B Grid Heater Delete Plate.

Tools Required: 25mm or 1" Wrench

STEP 63

Install the temperature sensor into the S&B grid heater delete plate (Item #3) and torque to 89 in-lbs. Ensure you install the sensor in the same location you removed it from.

Tools Required:25mm Socket or 1" Socket and Torque Wrench



STEP 64

Install the S&B Provided aluminum plug (Item #12) into the unused hole with the o-ring (Item #13) Torque to 89 in-lb.

Tools Required:12mm Ratchet & Torque Wrench

STEP 65

Locate the new OEM intake gasket (Item #4) and remove it from the packaging. The part number on the tab should be facing upwards and towards the rear of the vehicle. Place the assembled grid heater delete plate and gasket into the truck. You should tape over the intake elbow opening with masking tape to ensure no dirt or debris falls into the intake during the next steps.

STEP 66

Reinstall the 5 x 10 mm bolts in the S&B grid heater delete plate. The 4 shorter bolts go in the 4 holes flush with the rest of the plate. The 1 longer bolt will go in the forward most raised boss of the two driver bosses. Do not reinstall any of the bolts that hold the fuel rail down yet. Torque all 5 of these bolts to 18 ft-lbs

working from the middle of the plate to the outside to not warp the plate.

Tools Required: 10mm socket & Torque Wrench

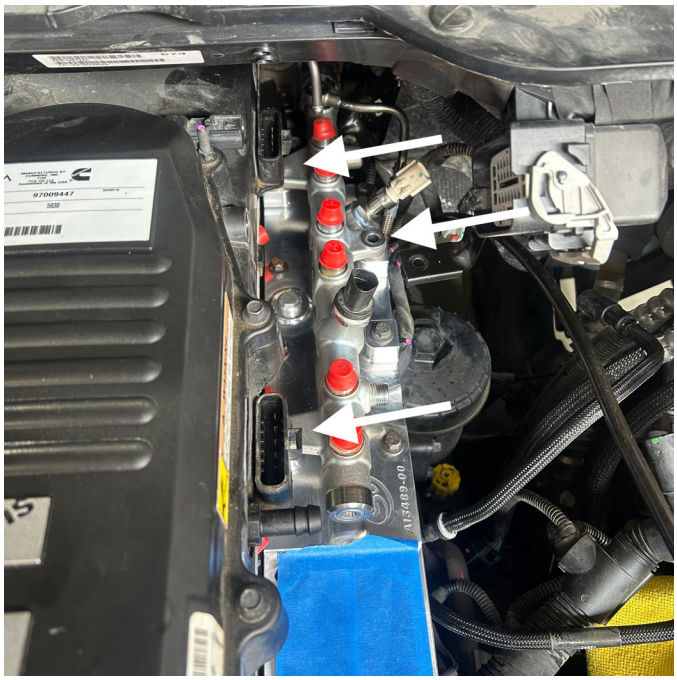
STEP 67

Place the fuel rail back in the truck. Rest it on the raised bosses and reconnect the fuel pressure regulator at the rear of the rail.

STEP 68

Reinstall the 3 fuel rail bolts. These are the longer 10mm bolts you removed earlier. You can hold off on reinstalling the middle bolt with the dipstick mounting bracket if it helps you get more clearance to torque the injector lines and then reinstall this bolt after the lines are all installed. Torque all three bolts to 18 ft-lbs.

Tools Required: 10mm socket and Torque Wrench



STEP 69

Starting at the rear of the rail, reinstall the banjo bolt for the return line with the sealing washers on the bottom and top side of the fitting. Be extremely careful to not drop the banjo bolt. Use a 17mm socket and torque the banjo bolt to 18 ft-lbs. Next, line up the fuel rail side injector line nut on line #6 and tighten it by

hand. Torque to 41 ft lbs. If you fully removed the #6 injector line, thread it back in on both the cylinder head and rail side by hand prior to torquing. Always torque the cylinder head side first and the rail side second. Use a backer wrench and check the lines you drew with permanent marker to ensure the adapter nut does not spin when torquing. Make sure the nut is fully seated on both sides before torquing. We recommend using a fuel line socket like shown here to torque them properly.

Tools Required: 17mm socket, 19mm or 3/4" fuel line socket, Torque Wrench

STEP 70

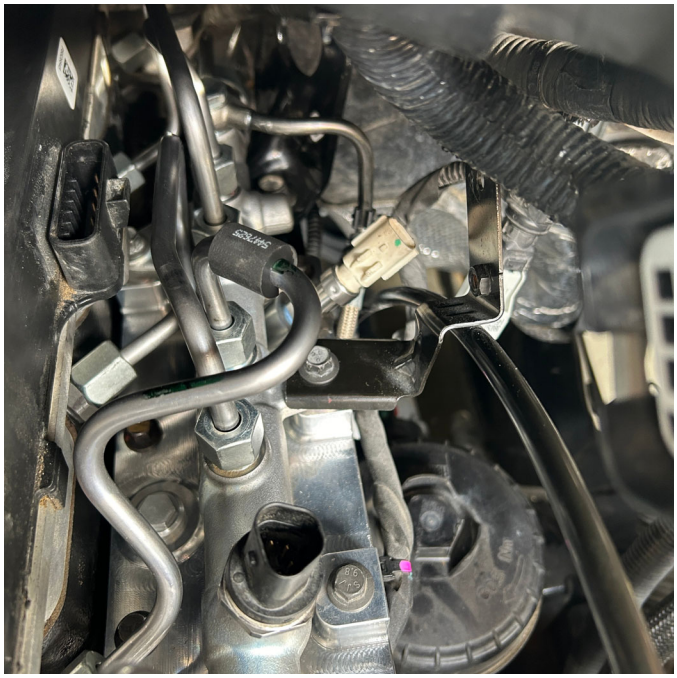
Continue to work your way forwards reinstalling injector lines. Cylinder 5, 4, and 3 will be done next. Follow the labels on the cylinder side of each line. Tighten

both sides fully by hand before torquing each line. Then torque to 41 ft-lbs at the cylinder side before torquing the rail side. Use a backer wrench on the adapter nut when able and watch the lines to ensure the adapter does not move in the head. Once you finish installing cylinder 3 line, you can reinstall the dipstick bracket and torque that bolt to 18 ft lbs.

Tools Required: 3/4" or 19mm fuel line socket, Torque Wrench, 10mm Socket

STEP 70B

Dipstick Bracket Shown here



STEP 71

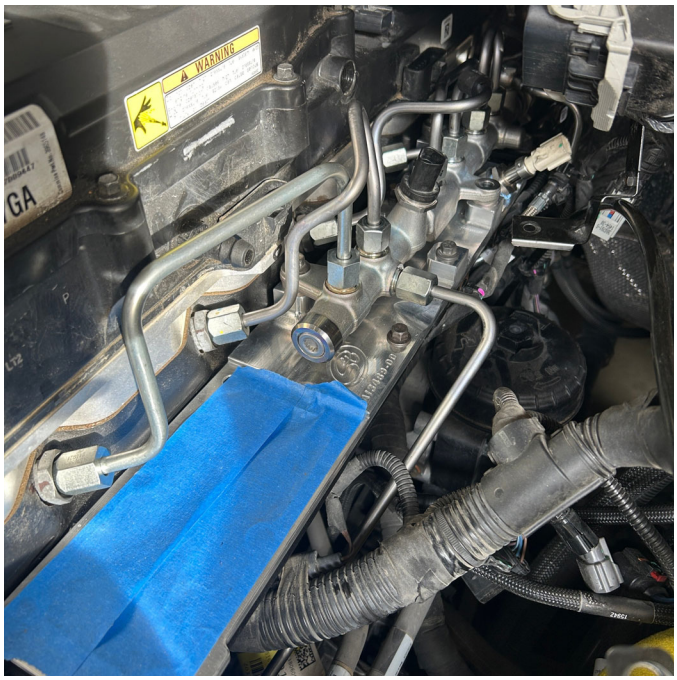
Continue the fuel line installation process for cylinders #2 & #1. Cylinder #1 will use the new S&B provided high clearance fuel line (Part #5) to allow room for the S&B intake elbow to install. Torque both following the same procedure as the other lines. Make sure that all the fuel lines are not touching each other with a minimum clearance of 1.25mm.

Tools Required: 19mm or 3/4" Fuel Line Socket, Torque Wrench.

STEP 72

Reinstall the rail feed line. Torque both sides to 41 ft-lbs once it is fully threaded by hand.

Tools Required: 3/4" or 19mm Fuel Line Socket, Torque Wrench



STEP 73

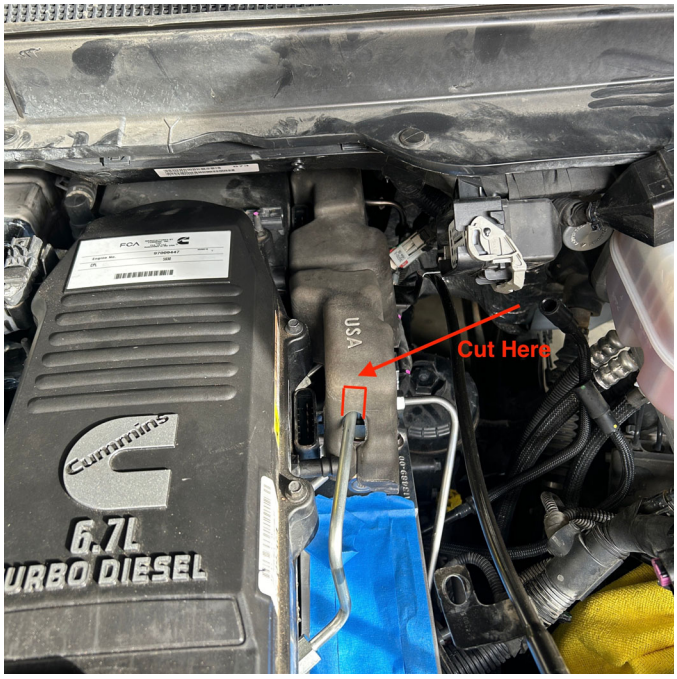
Reinstall the air temperature connector at the rear of the S&B grid heater delete plate. Slide the locking tab over once connected.

STEP 74

Reinstall the factory sound

deadening foam. We recommend removing a small rectangular chunk of foam from where the foam contacts the S&B cylinder #1 fuel line. Our line is slightly taller than the OEM line so the small cut will allow the foam piece to sit fully flush.

Tools Required: Razor Knife



STEP 75

Start snaking the main harness back into place. It will rest between the dipstick tube and the engine. You can reconnect the circle connectors that attached to the dipstick tube. You will next feed it up and over the valve cover and can align the retainers with the two studs on the rear of the breather cover. Do not push these completely onto the studs yet as we will remove this breather cover later on. Start reconnecting your plugs with the fuel rail

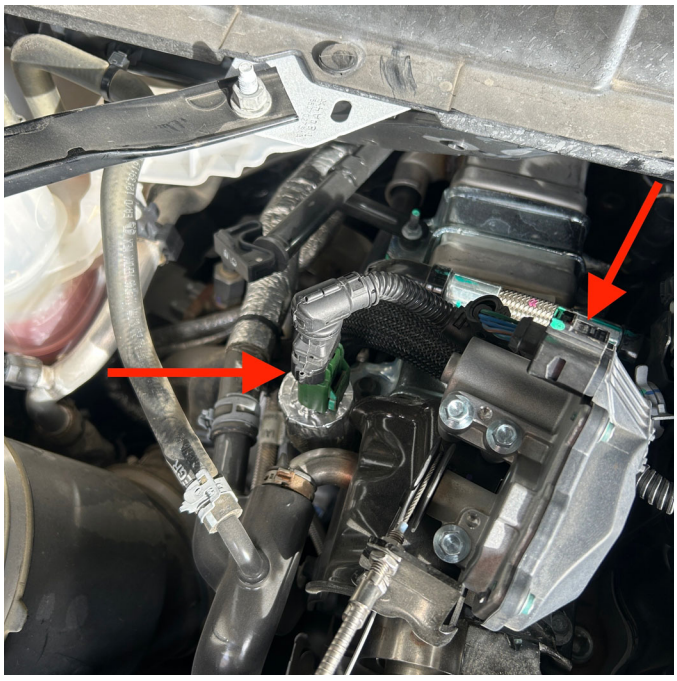
pressure sensor first. Click it in then slide the locking tab back into place.

STEP 76

Reconnect the driver side CCV pressure sensor. Slide the locking tab back in place once connected.

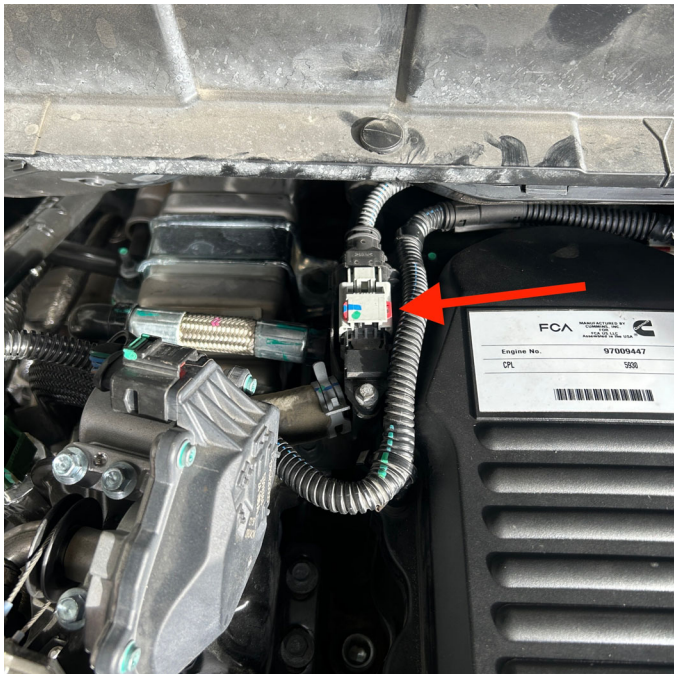
STEP 77

Reconnect the two sensors next to the EGR valve. Slide the locking tab on both into place once reconnected.



STEP 78

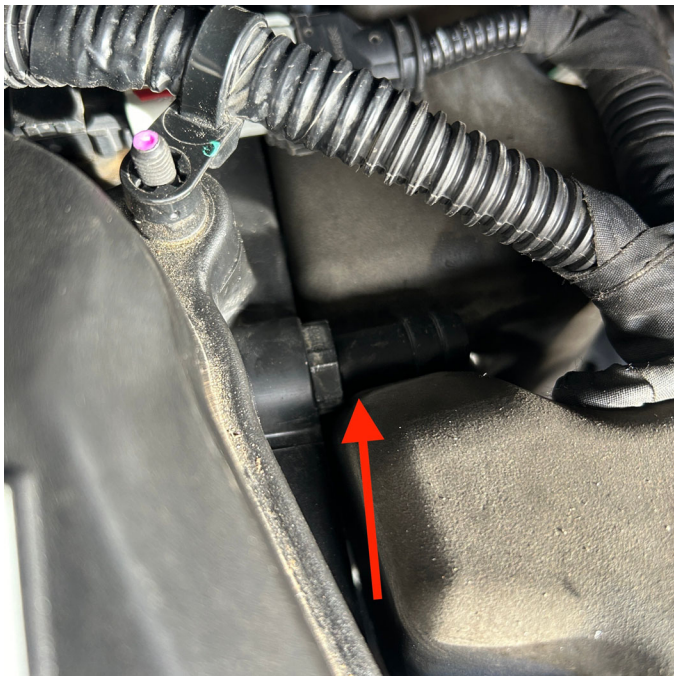
Reconnect the passenger side CCV connector and slide the locking tab back into place once connected.



STEP 79

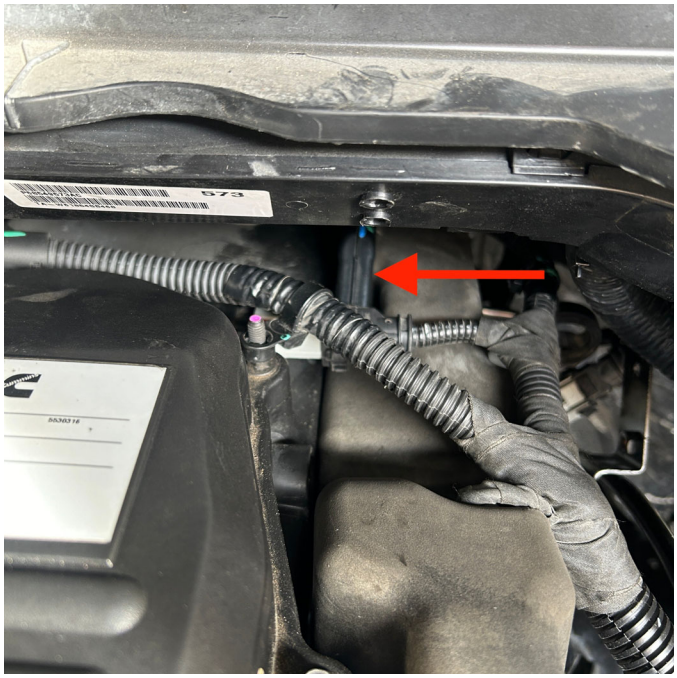
Reinstall the CCV drain tube port we removed earlier. Use a 3/4" socket or 19mm to tighten it. It should torqued slightly beyond hand tight.

Tools Required: 19mm or 3/4" Socket



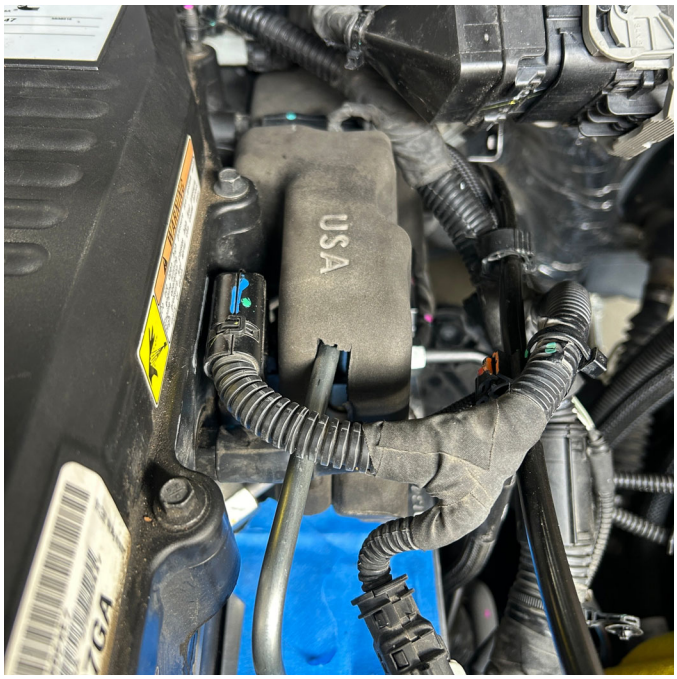
STEP 80

Reinstall the rear injector harness plug. There is no locking tab on this connector.



STEP 81

Reinstall the front injector harness plug. It will route over top of the S&B cylinder #1 line.

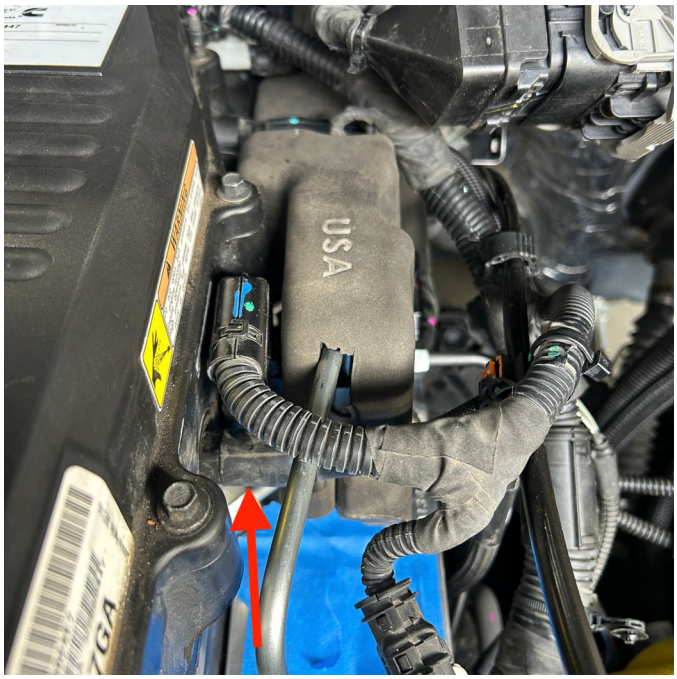


STEP 82

Reconnect the main harness bulkhead connector and push the push rivet back into the firewall.

STEP 83

Reinstall the front CCV drain hose. It gets routed between the engine block and harness and underneath the dipstick tube.



STEP 84

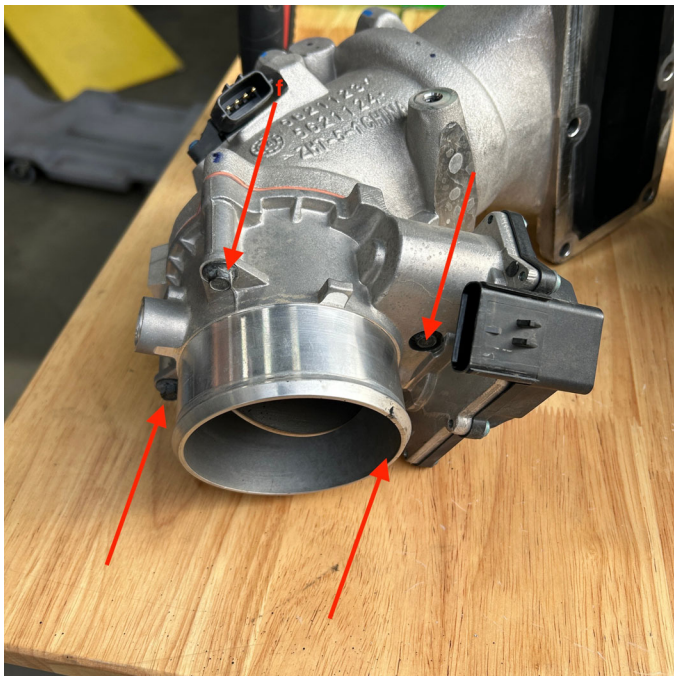
Reinstall the rear CCV drain. The rear has less obstacles and is straightforward to

route. It will go under the dipstick tube as well and back onto the barb we just reinstalled.

STEP 85

Remove the 4 x 10mm bolts holding the throttle valve to the OEM intake elbow. You can discard the OEM gasket.

Tools Required: 10mm Socket



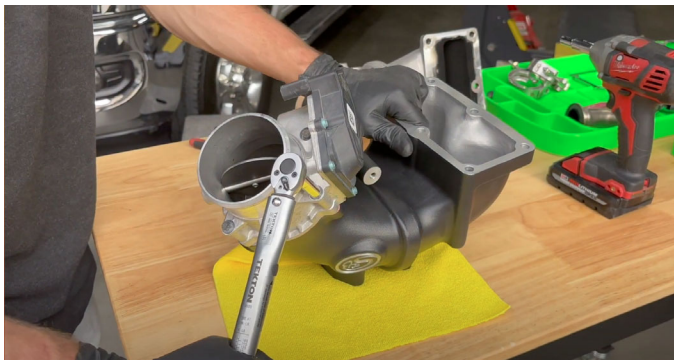
STEP 86

Locate the new OEM gasket (Item #23) and remove it from the packaging. Install the gasket between the throttle valve and the S&B Intake Elbow (Item #1) with

the text facing the Intake Elbow. Reinstall the 4 x 10mm bolts and torque to 89 in lbs in a crossing pattern.

Tools Required:10mm Socket & Torque Wrench.

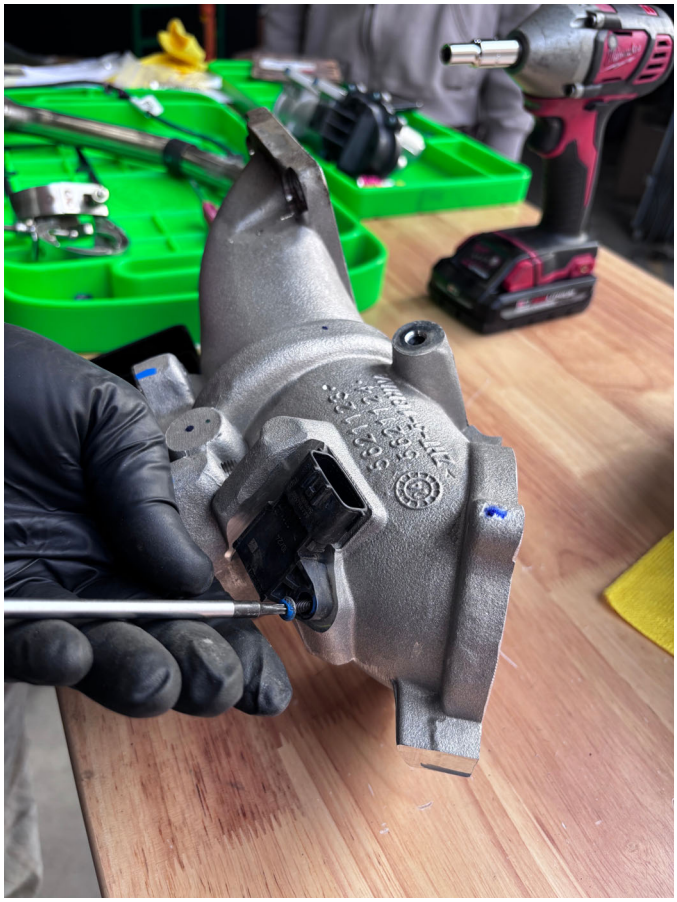
STEP 86B



STEP 87

Use a T15 and remove the torx screw to remove the TMAP sensor from the OEM Intake elbow. Wiggle it until it is free and carefully remove it.

Tools Required: T15 Torx Driver



STEP 88

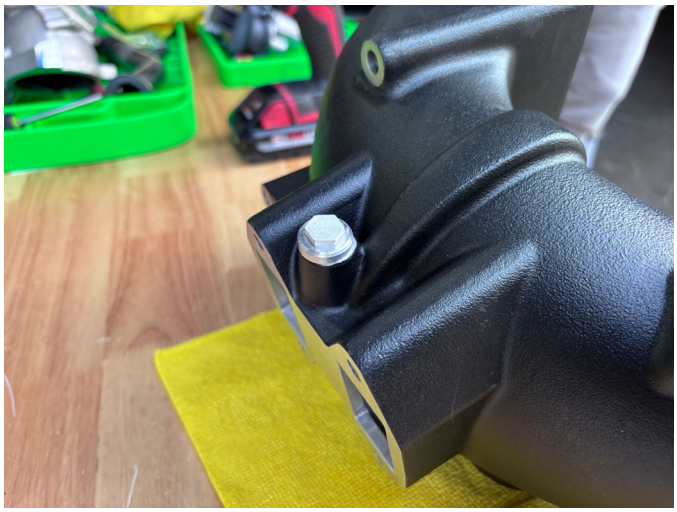
Install the TMAP sensor in the S&B Intake Elbow. Reuse the factory screw and use a T15 driver to install it snug.

Tools Required: T15 Torx Driver

STEP 89

Install the second provided plug (Item #32) with the o-ring (Item #13) into the S&B intake elbow. Torque to 89 in lbs with a 12mm socket

Tools Required: 12mm Socket & Torque Wrench



STEP 90

Locate the new OEM gasket (Item #2). Find the "Front" Marking. This will face forwards and upwards. All of the holes on the throttle valve side are set up to catch the bolt and hold the gasket in place. Use 2 of the long bolts (Item #7) with washers (Item #6) and 1 of the 3 shorter bolts (Item #8) with NO WASHER on the throttle valve side of the intake elbow to install the gasket and hold it in place. Apply blue loctite to all 3 bolts.

STEP 90B

Remove your masking tape over the Intake Elbow opening and place the S&B Intake Elbow in the truck. Start threading the two longer bolts into place to hold the elbow in position.

STEP 91

Install the rest of the intake elbow bolts and start them all by hand. The engine side of the intake elbow uses 2 of the medium-length bolts (Item #8) and washers (Item #6) on the corners and one of the short bolts (Item #9) with a washer (Item #6) in the middle position. You may need to remove the CCV oil drain to access the passenger rear corner bolt. Start all the bolts by hand. You will access the middle bolt on the driver side by going through the intake air heater port on the top of the intake elbow. I recommend using a

grabber/claw tool or telescoping magnetic pickup tool to get that middle bolt started.

Tools Required: 6mm Hex Bit Socket, Telescoping Magnetic Pickup Tool

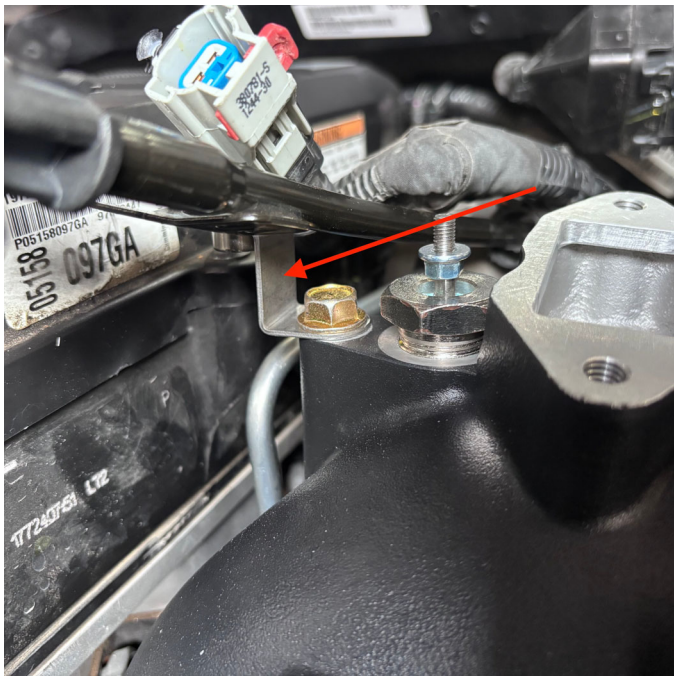
STEP 92

Torque all 6 Intake Elbow bolts to 18 ft lbs. Start at the middle two bolts and work outside in a crossing pattern.

Tools Required: 6mm Hex Bit Socket, Torque Wrench

STEP 93

Locate the dipstick relocation bracket (Item #24), the supplied bolts (Item #25), and nut (Item #26). Fasten the bracket to the S&B Intake Elbow with the rounded leg attached to the Elbow. Hand tight the bracket to the Elbow at this time. Then mount the dipstick tube on top of the bracket using the nut and bolt. Torque the bolt and nut to 18 ft-lbs with a 13mm socket and wrench.



Tools Required: 13mm Socket & Wrench, Torque Wrench

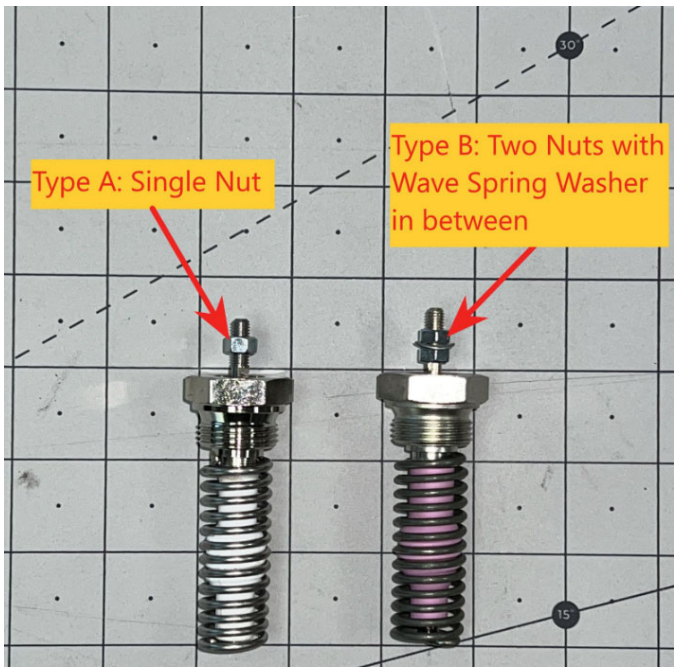
STEP 94A

Intake Air Heater Installation. You may skip the following steps if you are in a warm climate and do not want to run an Intake Air Heater. Simply Install the supplied plug (Item #10) and o-ring (Item #11) and

torque to 89 in lbs if you choose to not run the Intake Air Heater. You must remove the power harness and terminate the end in a careful manner so it is completely shielded and cannot short. You will need to have aftermarket tuning to avoid a check engine light that is present after removing the heater.

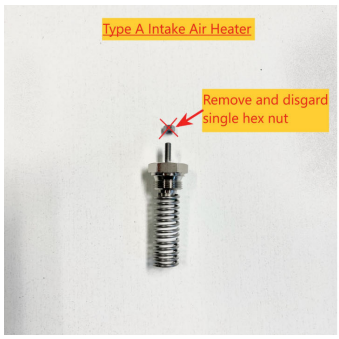
STEP 94B

Examine the Intake Air Heater (Item 15). Determine if you have a Type A or a Type B Intake Air Heater. If your Intake Air Heater came with a single hex nut on the threaded stud, it is Type A, proceed to Step 94C. If your Intake Air Heater came with two nuts with a wave spring washer in between, it is Type B, proceed to Step 94F.



STEP 94C (FOR TYPE A INTAKE AIR HEATER ONLY)

If your Intake Air Heater is Type A, remove the single hex nut and discard. Then install the M5 Flanged Locknut (Item 16) onto the threaded stud of the Intake Air Heater with the flange facing downward towards the heater coil. Thread the nut only until it just passes the top of the threaded stud. This will make it easier to re-thread the Flanged



Locknut in the correct orientation in the following Step 94D.
Tools Required: 8mm Open/ Box Wrench

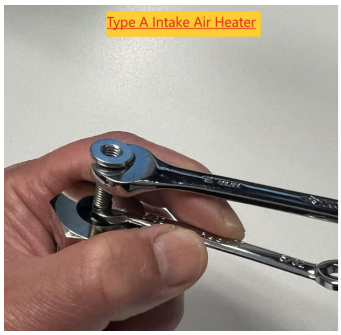
STEP 94D (FOR TYPE A INTAKE AIR HEATER ONLY)

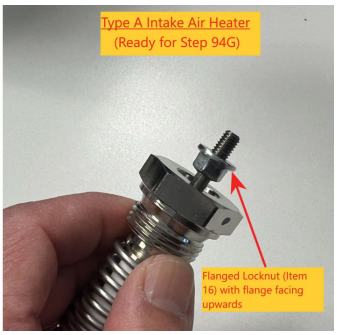
Remove the M5 Flanged Locknut (Item 16) and then re-install it back on the threaded stud but this time with the flange facing upwards and away from the heater coil as shown. Carefully hand tight the Flanged Locknut being careful not to cross thread it.
Tools Required: 8mm Open/ Box Wrench

STEP 94E (FOR TYPE A INTAKE AIR HEATER ONLY)

Use a 5/32” ignition wrench to hold the threaded stud from spinning or breaking loose from the ceramic body of the heater. Then use an 8mm open wrench to thread the M5 Flanged Locknut (Item 16) until it firmly bottoms out on the threaded stud as shown in the second photo. The Intake Air Heater is now ready to install. Please proceed to Step 94G.

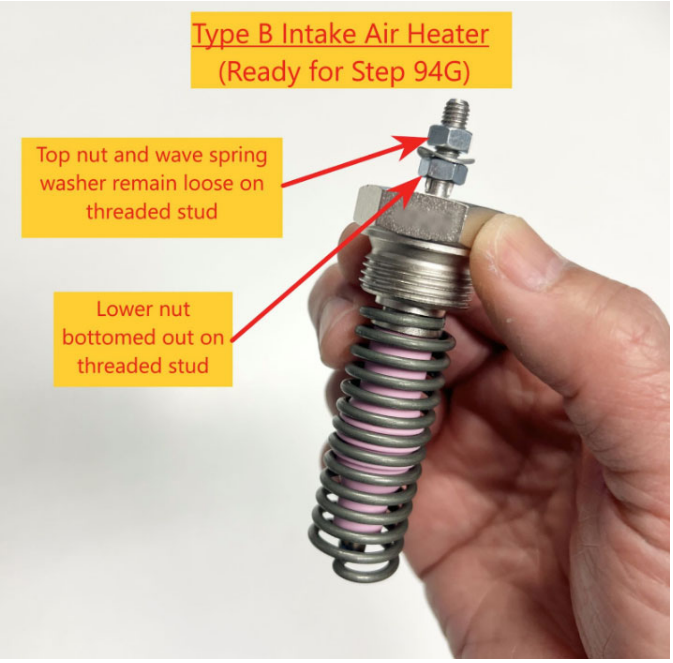
Tools Required: 5/32” Ignition Wrench, 8mm Open/ Box Wrench





STEP 94F (FOR TYPE B INTAKE AIR HEATER ONLY)

If your Intake Air Heater is Type B, verify that the lower nut is bottomed out on the threaded stud. Leave the top nut and wave spring washer loose on the threaded stud. The Intake Air Heater is now ready to install. Please proceed to Step 94G.

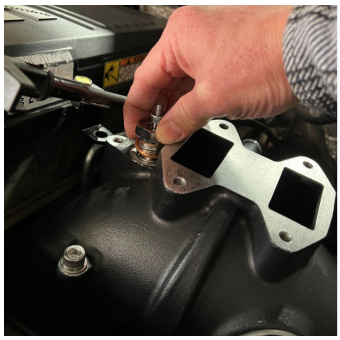
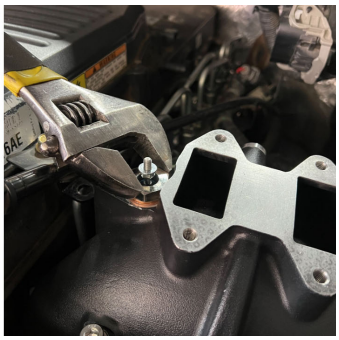


STEP 94G

Install the Brass Gasket (Item 14) onto the Intake Air Heater (Item 15) as shown.

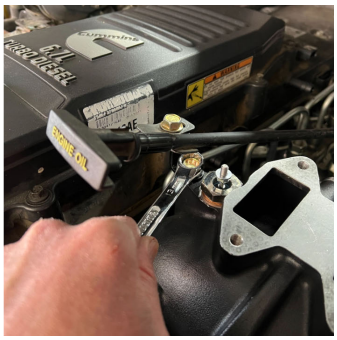
STEP 95A

Install the Intake Air Heater (Item #15) with the Brass Gasket (Item #14) into the M22 port on the S&B Intake Elbow. Remove the Oil Dipstick Bracket (Item #24) from the Intake Elbow to provide additional room to install the Intake Air Heater.Tighten the Intake Air Heater snug until the Brass Gasket is seated, it does not need to be over torqued.
Tools Required: 1” Open Wrench or Adjustable Open Wrench

STEP 95B

Place the Oil Dipstick Bracket (Item 24) back to the top of the Intake Elbow centered over the M8 threaded hole. Install blue thread locker to the end of the M8 Hex Flange Bolt (Item 25) and then tighten the M8 Hex Flange Bolt to secure the Dipstick Bracket to the Intake Elbow as shown. Torque to 18 ft-lbs

Tools Required: 13mm Open/Box Wrench

STEP 96

Install the S&B harness extension (Item #17) with the provided bolt (Item #19). Torque to 89 in lbs with a 10mm socket.

Tools Required: 10mm Socket & Torque Wrench

STEP 97

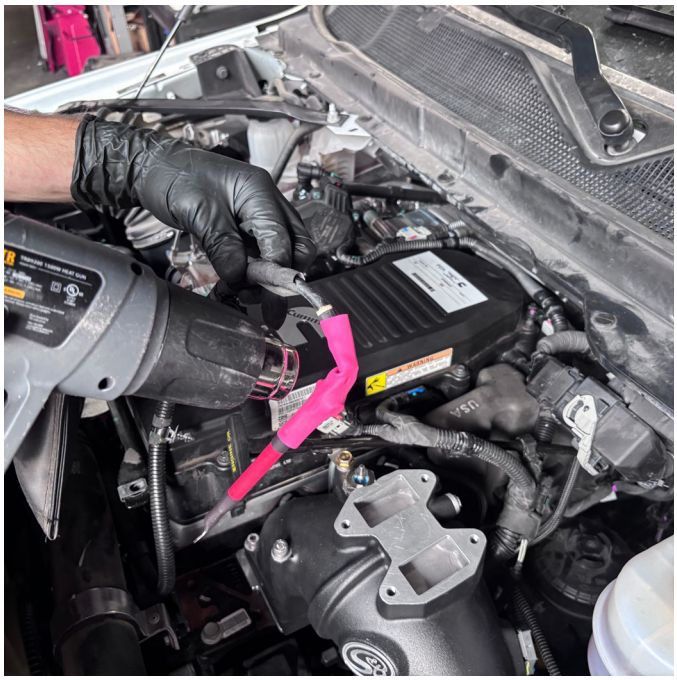
Slide one of provided heat shrink pieces (Item #20) over the bolt and nut and heat with a heat gun until it completely shrinks. Ensure it is touching both the existing piece of heatshrink on the OEM harness and on the S&B extension harness.

Tools Required: Heat Gun

STEP 98

Install a second layer of heat shrink tubing (Item #20) over top of the previous layer. Heat with a heat gun to shrink.

Tools Required: Heat Gun



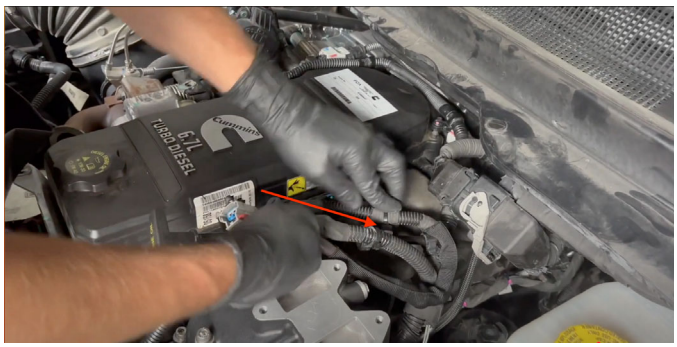
STEP 99

Install the provided wire loom/chafe protection (Item #21) onto the exposed section of wire and heat with a heat gun to shrink to fit. It should cover all of the previous heat shrink we applied as well as the red extension cable we installed.

Tools Required: Heat Gun

STEP 100

Install the clip on the grid heater harness back onto the dipstick tube and route the harness around and back to the intake air heater we previously installed.



STEP 101A

Install the Terminal Insulator (Item #18) onto the Extended Heater Cable which will protect the connection at the intake air heater.

STEP 101B

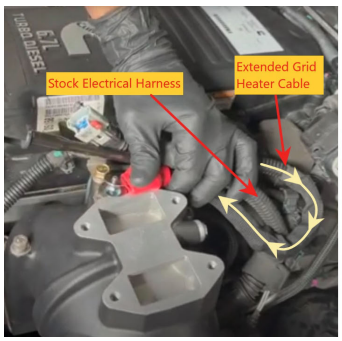
If your Intake Air Heater is Type B (See Step 94B for Type B identification). Remove and discard the top nut. Leave the bottom nut and wave spring washer on the threaded stud and proceed to Step 101C. If your Intake Air Heater is Type A (See Step 94B for Type A identification), do nothing and proceed to Step 101C.

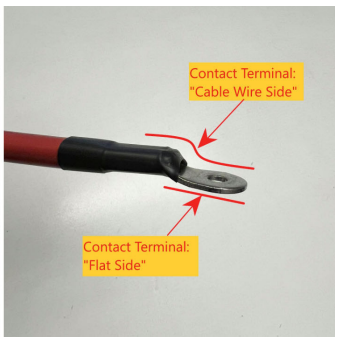
STEP 101C

Apply some blue thread locker to the top end of the threaded stud on the Intake Air Heater (Item 15).

STEP 101D

Route the Extended Heater Cable to travel down the side of the cylinder head and wrap around back towards the Air Intake Heater. Make sure that the Extended Heater Cable is positioned up against the stock electrical harness as shown. Also make sure to arrange the contact terminal (of the Extension Cable, Item 17) so that the “flat side” of the contact terminal will face down towards the Intake Air Heater and the “cable wire side” of the contact terminal will face upwards away from the Intake Air Heater as shown.



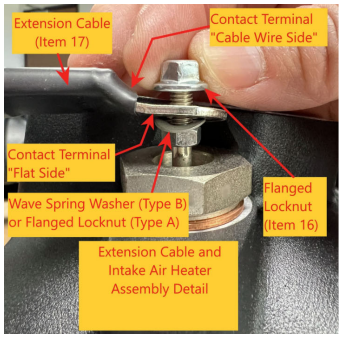


STEP 101E

Place the Extension Cable (Item 17) contact terminal so that the threaded stud of the Intake Air Heater goes through the contact terminal hole. Make sure to place the “flat side” of the terminal facing down towards the

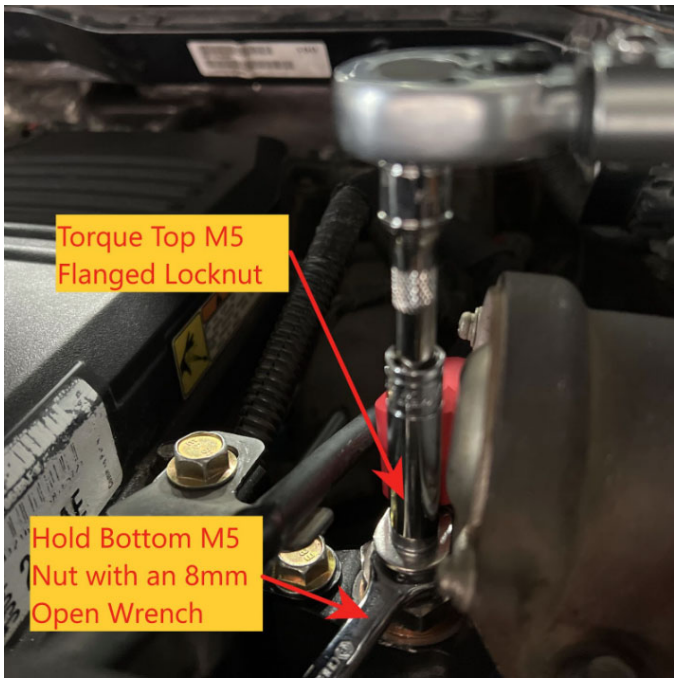
Intake Air Heater and the “cable wire side” of the terminal facing upwards as shown. Use an M5 Flanged Locknut (Item 16) on top of the grid heater contact terminal and hand tight at this time. Make sure that the contact terminal is only touching the threaded stud of the Intake Air Heater so that it will not cause any electrical shorts.

Tools Required: 8mm Socket/Wrench



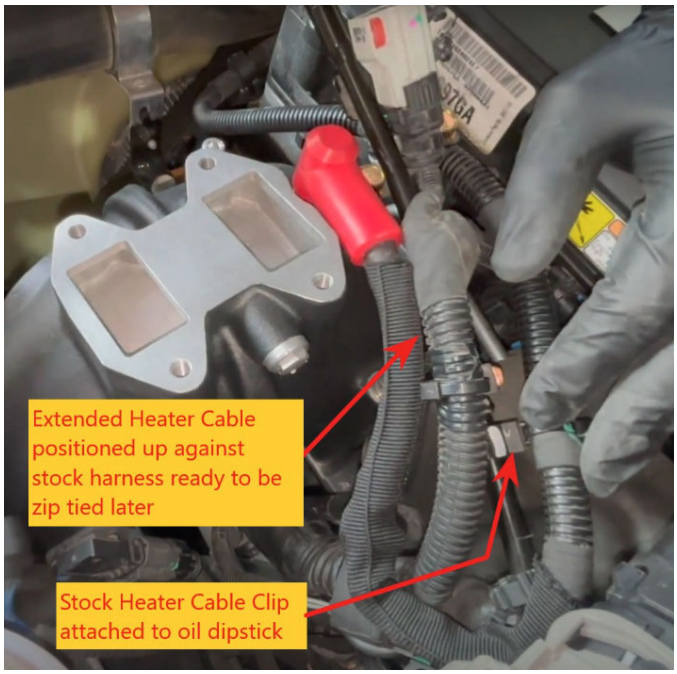
STEP 101F

Hold the bottom M5 nut with an 8mm open wrench to prevent the threaded stud from rotating and possibly twisting or breaking as you torque down the top M5 Flanged Locknut.Then torque the top M5 Flanged Locknut on the Intake Air Heater threaded stud to 35 in-lbs.
Tools Required: 8mm Open Wrench, 8mm Socket, Torque Wrench



STEP 101G

Slide the Terminal Insulator (Item 18) over the end of the extended cable contact terminal and cover the Intake Air Heater threaded stud as shown. Verify that the stock Heater Cable clip is attached to the oil dipstick as shown and also verify that the Extended Heater Cable is positioned up against the stock harness and ready to be zip tied to the stock harness later in Step 113.

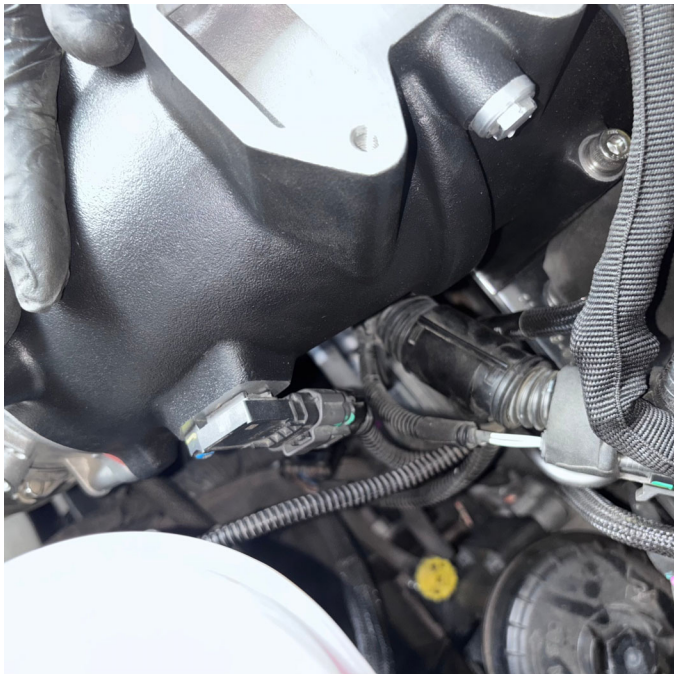


STEP 102

Reinstall the CAC boot onto the S&B Intake Elbow. Line the T-bolt clamp up and torque to 8 ft-lbs with an 11mm deep socket.
Tools Required: 11mm Deep Socket, Torque Wrench

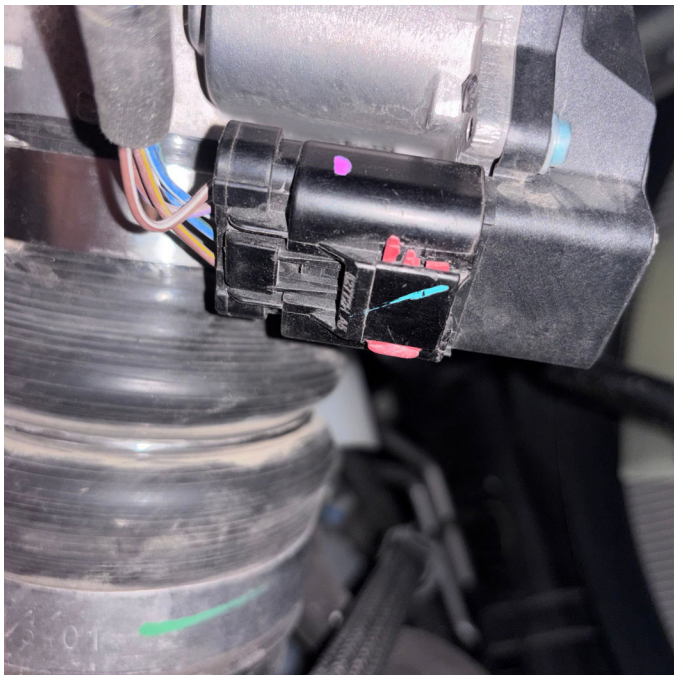
STEP 103

Reconnect the MAP sensor on the Intake elbow. Slide the locking tab over once connected.



STEP 104

Reinstall the throttle valve connector. Slide the locking tab over once installed. It is on the bottom side of the intake elbow by the intercooler boot.



STEP 105

Locate the two new OEM EGR valve gaskets (Item #22) and place them on top

of the S&B Intake Elbow

STEP 106

Reinstall the EGR Valve onto the S&B Intake Elbow with the OEM bolts. Torque all 4 bolts to 18 ft lbs in a crossing pattern with a 10mm socket.

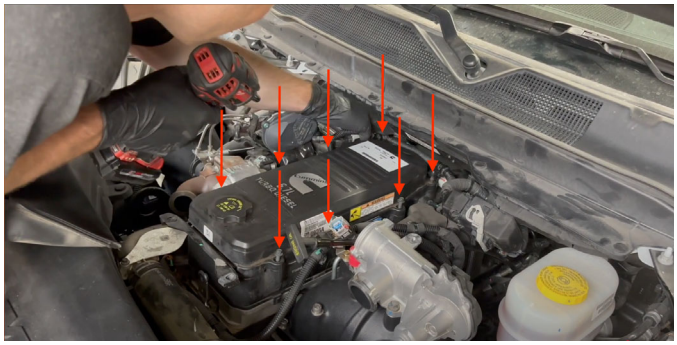
Tools Required: 10mm Socket and Torque Wrench

STEP 107

Use an 8mm wrench or socket and remove the 8 x 8mm bolts holding on the CCV Filter cover. A ratcheting wrench or deep

swivel socket will make the rear two much easier to get to.

Tools Required: 8mm deep socket, 8mm wrench.



STEP 108

Remove the 2 x 10mm bolts holding down the engine cover bracket and remove the engine cover bracket from the truck. You can discard these bolts.

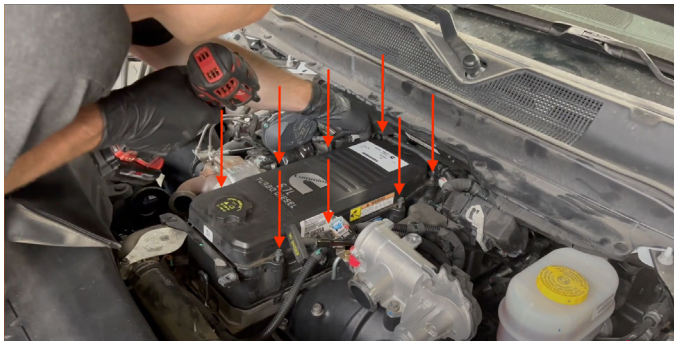
Tools Required: 10mm Socket

STEP 109

Reinstall the 8 x 8mm bolts to the CCV filter housing.

You can push the two harness retaining clips onto the two rear studs after reinstalling them.

Tools Required: 8mm Socket & 8mm Wrench



STEP 110

Reinstall the EGR Crossover tube with the OEM gaskets you removed. Reinstall both t-bolt clamps and torque to 89 in lbs.

Tools Required: 11mm Deep Socket, Torque Wrench.

STEP 111

Install the EGR valve harness extension onto the EGR valve and the wire harness. Slide both locking

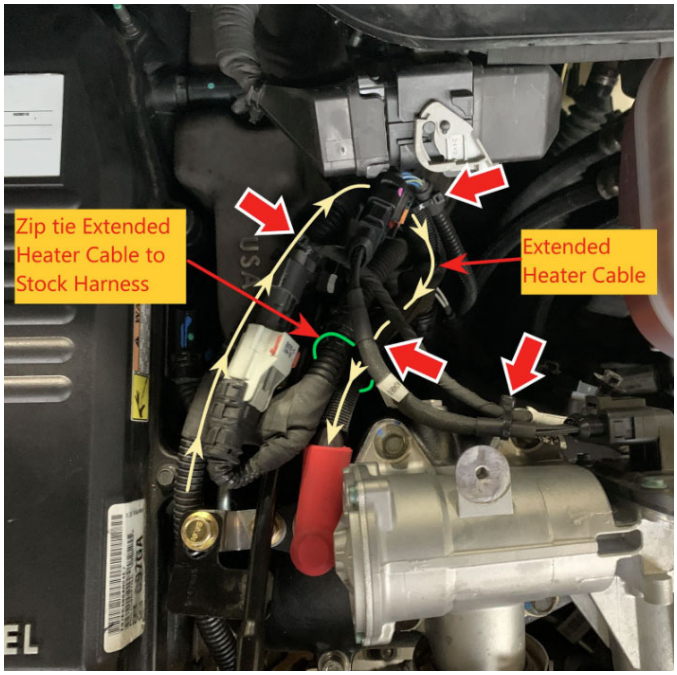
tabs once connected. Use the provided zip ties to attach the extension to the rest of the harness.

STEP 112

Reconnect the EGR Crossover tube sensor connector. We routed it under the EGR valve and towards the rear of the truck. Use the provided zip ties to attach the harness to the rest of the harnesses. Slide the locking tab once connected.

STEP 113

Group together any loose harnesses and secure them away from any hot or moving engine components. Use the provided zip ties to neatly secure the harnesses as shown with the red arrows. Make sure to zip tie the Extended Heater Cable to the stock harness as shown by the green colored loop to help secure it from moving.



STEP 114

Reinstall the driver and passenger negative battery terminals. Torque to 80 in lbs with a 10mm and 8mm socket.

Tools Required: 8mm Deep Socket, 10mm Deep Socket & Torque Wrench

STEP 115

Your installation is complete. Please give us a call at 909.947.0015 or email us at customerservice@sbfilters.com if you have any questions during the install. Make sure that all wire harnesses moved during installation are secure and away from hot or moving engine components. Keep all stock parts in case you ever need to reinstall the stock intake elbow assembly. If you are an installer, give the owner the QR code for the Installation Instructions so that he/she is aware of the Maintenance and Operation procedures given in the beginning of the Instructions

We recommend boost leak testing the system to check for boost leaks. A Check Engine Light after install accompanied by a P0299 Underboost Code is indicative of a boost leak. Check all your connections and ensure your CAC boot clamps are still tight.