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IEIMVB1

Integrated Engineering 2.5L Intake Manifold Installation Guide

In this DIY, we will be covering the installation of Integrated Engineering 2.5L intake manifold and CAI. This kit needs to be installed by a professional or by an experienced technician. Integrated Engineering is not responsible for any damage caused by incorrect installation. Serious engine damage can occur from incorrect installation.



Tools Needed:

- 5 mm ball end allen wrench
- 5 mm 3/8 ball end socket
- 6 inch 3/8 extension
- 3/8 ratchet
- 6 mm allen 1/4 socket
- 10 mm 1/4 socket
- 13 mm 1/4 socket
- T25 torx 1/4 socket
- 6 inch 1/4 extension
- 1/4 inch ratchet
- Needle nose pliers
- Regular pliers
- Flat blade screwdriver
- Phillips screwdriver

- 8 triple square drive
- 10 triple square drive

- Razor knife

Kit contents:

- (1) Intake manifold
- (1) Dipstick tube bracket
- (1) 1/8" Barb brass fitting
- (1) 1/4" Barb brass fitting
- (3) 1/8" Brass countersunk plugs
- (1) 1/4" Brass countersunk plugs
- (1) Rubber loop clamp
- (4) M6 50mm bolts
- (1) M6 20mm bolts
- (1) Large O-ring
- (5) Small O-rings
- (6) M6 12mm bolts
- (1) M6 10mm bolt
- (1) Meter silicone hose
- (2) Cable Ties
- (8) M6 25mm bolts

Before beginning the installation, unpack and inventory all components on a flat surface and verify that all pieces necessary are there before proceeding.

1. Park your vehicle on a level surface and apply the parking brake.
2. Start by removing the intake track and air box. Remove the cover that attaches to the front clip. The cover secures by two fingers that clip into the lower half of the housing. Simply lift up on those fingers and remove the cover. The bottom half is removed by pressing the tabs located on the side with a flat blade screw driver (Figure 1).

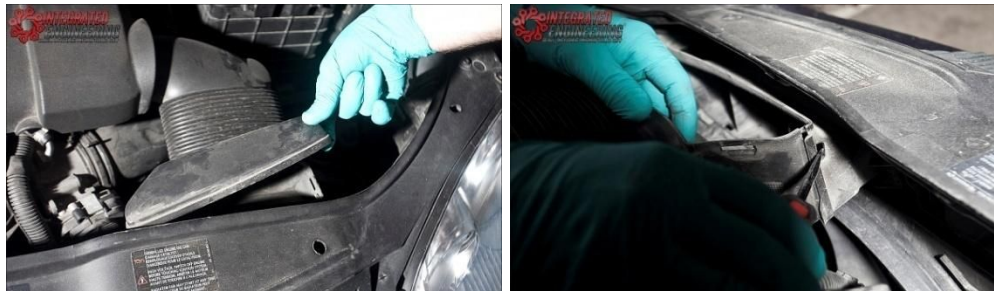


Figure 1

3. Unclip the MAF, by pressing back on the securing tap. Using a set of pliers, remove the tension from the spring clamp and pull the intake boot off of the MAF (Figure 2).



Figure 2

4. Now remove the air box housing from the engine by gently lifting on the corners of the air box. Some force may need to be taken in order to remove the air box, but be careful not to break it (Figure 3).



Figure 3

5. After the air box has been removed from the top half of the engine, remove the MAF. There are two Phillips screws that secure the MAF to the air box. Remove the screws and pull the MAF housing out of the air box (Figure 4).



Figure 4

6. Remove the intake housing that is connected to the front clip. Remove the T25 torx screws on the right and left side of the housing and take the housing out of the engine compartment (Figure5).



Figure 5

7. Locate the intake boot that is attached to the throttle body. There are two plastic pipes that attach to the intake boot. Remove those pipes by pressing on the sides of the ends and pulling away from the boot. Release the spring clamp pressure on the throttle body and pull the boot off (Figure 6).

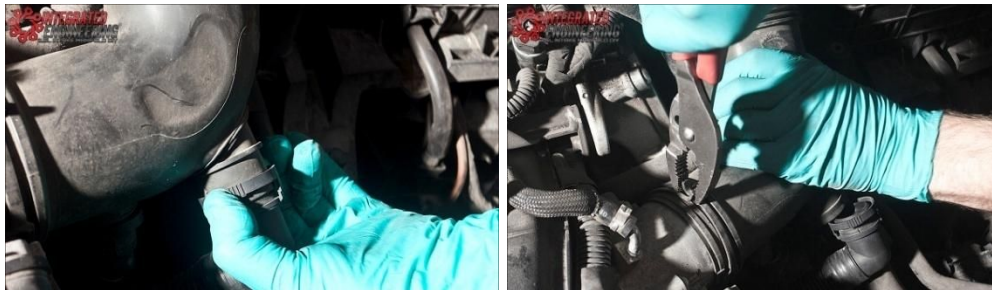


Figure 6

8. Locate the purge valve on top of the intake manifold. Remove the connector by pressing back on the retaining tab. The camshaft position sensor is located on the side of the cylinder head. Remove that connector as well (Figure 7).



Figure 7

9. Locate the rubber hose that connects the purge valve to the throttle body. Loosen the hose clamp on the end of the hose that connects the hose to the throttle body. Remove the hose from the throttle body (Figure 8).



Figure 8

10. Remove the two bolts that secure the engine lifting bracket to the cylinder head (Figure 9).



Figure 9

11. Locate the fuel injector connectors. Remove all five by pressing on the release tab located closest to the cylinder head and pulling upward. After all connectors have been removed, lay the wiring harness so that it is not in the way (Figure 10).



Figure 10

12. Remove the two T25 torx screws that secure the fuel rail onto the intake manifold. Gently wiggle the fuel rail back and forth while lifting up to loosen the fuel injectors from the intake manifold. After the fuel rail has been removed, lay it to the passenger side of the engine compartment. At this point you will also be able to remove the black bracket that runs across the intake manifold that secured the EVAP hose that connected to the throttle body (Figure 11).



Figure 11

13. After the intake manifold has been cleared off, be sure to clean the area that the intake manifold mounts to the cylinder head. This will prevent debris from falling into the intake ports when removed. If using compressed air, be sure to cover the fuel injector ports.
14. Remove the throttle body and MAP sensor electrical connectors located on the left side of the intake manifold. Gently pull back on the retaining portion of the connector and slide off.
15. Located under the front of the intake manifold, there are two 8mm triple square bolts. Remove both of these bolts (Figure 12).

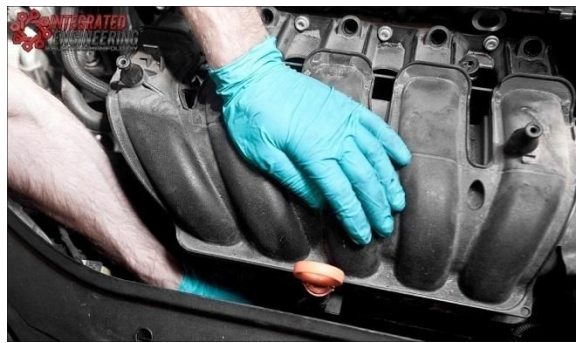


Figure 12

16. Remove the nine perimeter bolts that secure the intake manifold to the cylinder head, using your 6mm allen wrench (Figure 13).



Figure 13

17. The dipstick is secured to the intake manifold by a plastic collar. Using a flat tip screwdriver press the collar down on the dipstick tube. Remove the clamp from the right hand side of the intake manifold that secures the vacuum hose to the manifold and pull the vacuum line off (Figure 14).

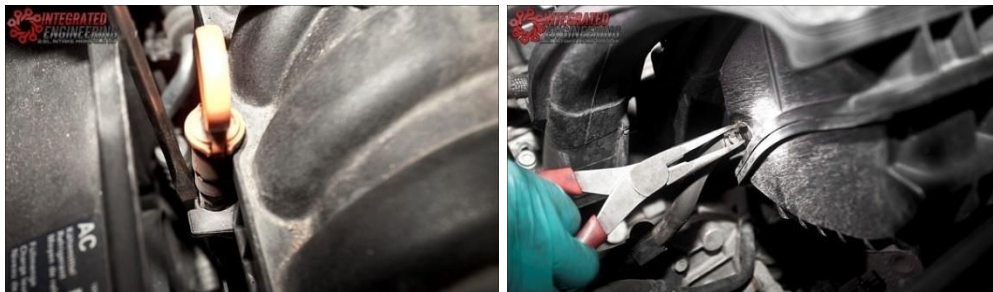


Figure 14

18. Remove the breather hose from the top of the valve cover by pressing the sides of the connector (Figure 15).

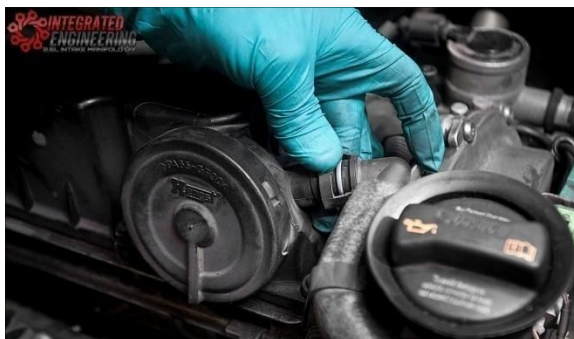


Figure 15

19. Now remove the intake manifold.
20. After the intake manifold has been removed, make sure that none of the green rubber intake manifold gaskets are stuck to the head. Remove those if they are still in place. At this point, also clean the intake surface on the cylinder head (Figure 16).



Figure 16

21. Remove the MAP sensor and the throttle body from the stock intake manifold (Figure 17).



Figure 17

22. Turn your IE 2.5L performance intake manifold over. It is time to install the vacuum fittings and plugs. Each vehicle is different and will use the various fittings supplied. Most vehicles will use only one of the barbed fittings. Decide which fittings best suit your needs. Make sure that when you install these fittings and plugs, you apply a thin layer of Teflon tape or thread sealant (Figure 18).



Figure 18

23. Install the MAP sensor using two of the 12mm long bolts. Install the dipstick tube bracket as well using two 12mm long bolts (Figure 19).



Figure 19

24. Install the five supplied o-rings in the grooves located on the bottom of the runners (Figure 20).



Figure 20

- If you are not installing an IE CAI with this manifold, please skip to step 40.

25. For installing the IE CAI you will need to remove two hoses from the vehicle. First, remove the block breather hose. There are four securing points that mount the plastic hose to the block breather. Gently using a flat tip screwdriver, lift up on each tab while pulling back. You may need to rotate the hose in order to access the lower tab. Once the tabs have been released, pull the hose off of the block breather and remove (Figure 21).

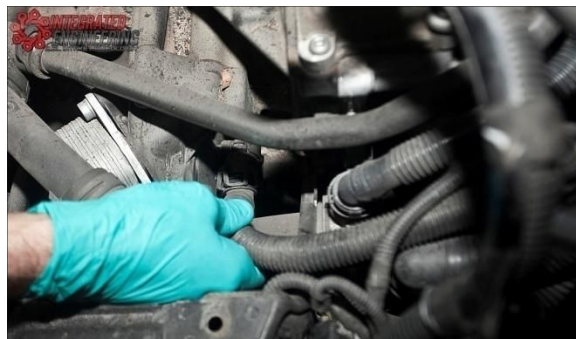


Figure 21

26. The second hose that needs to be removed from the vehicle is the air pump inlet hose. This is the larger of the two hoses located on the air pump. Press the two tabs located on the end of the hose attached to the pump. Pull the hose once the tabs are depressed (Figure 22).

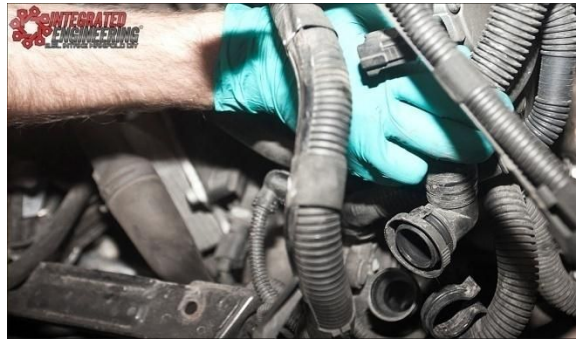


Figure 22

27. Take the large throttle body boot and install the long barbed coupler into the lower breather hose (L shaped hose). Install two of the 20-42 mm clamps onto the hose and then install the block breather hose on the exposed end of the barbed fitting (Figure 23).



Figure 23

28. Install one of the 25-40 mm clamps onto the hose end that connects to the block breather. Install the 32-50 mm hose clamp onto the hose that connects to the air pump. Now install the hoses onto the block breather and the air pump. Tighten each of the clamps (Figure 24).

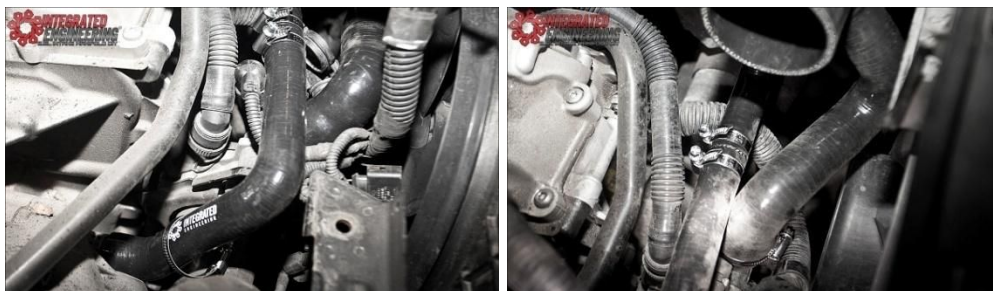


Figure 24

29. This next step is for those vehicles not using a catch can set up. If you are using a catch can, install the supplied black plug into the last remaining bung on the inlet hose using one of the 20-32 mm clamps. If you are using the factory valve cover install the remaining barbed coupler into the end of the valve cover breather hose. Using the remaining 20-32 mm clamps to secure the barbed coupler onto the

inlet boot. Now install the large end of the hose onto the valve cover and secure that end using the 32-50 mm hose clamp (Figure 25).



Figure 25

30. Now remove the battery from the vehicle. This step is needed in order to extend the MAF wiring. Remove the top cover of the battery box by pressing the tab and lifting up. Remove the front half of the battery side cover by pressing the release tabs located at the front of the cover on the battery tray. Once those tabs have been pressed, lift up on the cover and remove (Figure 26).



Figure 26

31. Disconnect the battery cables making sure that they do not touch the chassis. Arching and damage will occur if this happens. Remove the battery hold down that is located at the base of the right hand side of the battery. Pull the insulating cover that goes around the battery off. At this point the battery can be removed from the vehicle (Figure 27).



Figure 27

32. Remove the rear portion of the battery cover.
33. Extending the MAF wiring is a simple process but **extreme caution** must be taken when performing this task. **Damage will occur to the wiring harness if caution is not taken.** With a sharp razor blade,

carefully cut the cloth insulating tape from the MAF wiring harness. Cut the tape back all the way to the main wiring harness (Figure 28).



Figure 28

34. After the insulation has been removed from the MAF wiring, be sure to wrap all exposed wiring with electrical tape again.
35. Route the MAF wiring so that it runs around between the battery and the engine compartment fuse block. Reinstall the battery and all covers at this time. Make sure that the battery does not pinch the MAF harness when installing the battery back into the vehicle (Figure 29).



Figure 29

36. Remove the bolt at the base of the fuse block (Figure 30).

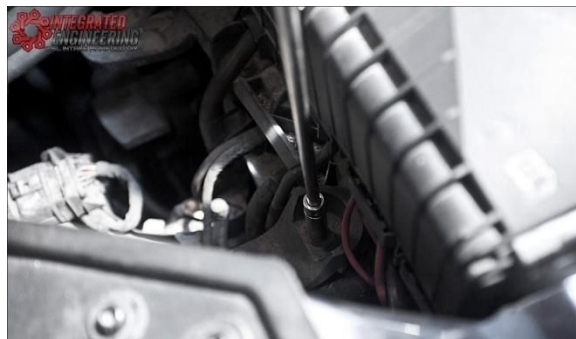


Figure 30

37. Now install the MAF and spacer on the supplied heat shield. Make sure that the indentations on the spacers are facing the rivet nuts. Orient the MAF so that the connector on the MAF is facing the flat side of the heat shield. Tighten the MAF and spacer to the heat shield using the two 25 mm button head screws (Figure 31).



Figure 31

38. Install the heat shield into the vehicle. One of the mounting points is located at the base of the engine compartment fuse block. The other mounting point is located on the front clip where the previous air inlet was mounted. Use the factory T25 torx screw when mounting the heat shield to the front clip, and the factory bolt you removed from the base of the fuse block. Make sure that the MAF wiring harness is ran behind the heat shield (Figure 32).



Figure 32

39. Connect the MAF connector now (Figure 33).

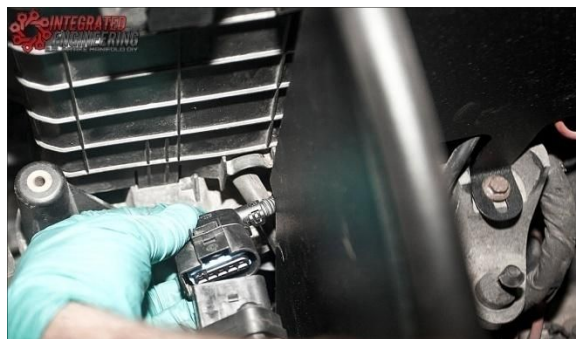


Figure 33

40. Applying blue lock-tite to the threads of the intake manifold perimeter bolts is advised.

41. Place the intake manifold into its corresponding location on the cylinder head. Start the threads of the top bolts (M6x25mm) using your 5mm allen wrench, but make sure the manifold remains loose. Start with securing the bolt located under cylinder three intake runner (M6x20mm). Make sure that the intake manifold does not move much when tightening the bolts, as this could knock one of the o-rings loose. Make sure that all o-rings are in place before securely tightening the manifold to the cylinder head. Tighten bolts to 9 NM 7 FT/LB (Figure 34).



Figure 34

42. Follow the fuel line, EVAP purge valve and vacuum line originally connected to the intake manifold back to their starting location. The middle hose will have a quick release button with a green press and release tab. Press the green release tab and pull up to remove the line. Once the line has been removed, remove the clamp that secures the rubber hose to that fitting. Use the supplied silicone hose and install the silicone hose onto the fitting and secure it using one of the zip ties (Figure 35).



Figure 35

43. Install the factory quick release fitting back into its original location. Run the new silicone hose to the barbed vacuum fitting located under the intake manifold. Cut the appropriate length of hose and secure the silicone hose to the barbed vacuum fitting with the other zip tie (Figure 36).



Figure 36

44. Tighten the dip stick tube using the loop clamp and 10 mm bolt (Figure 37).



Figure 37

45. Install the fuel rail. Applying a thin coat of grease or using a silicone spray on the lower fuel injector o-rings, will ease the installation of the fuel injectors into the intake manifold. After the fuel rail is installed on the manifold, secure the rail to the intake manifold using the two remaining 12 mm bolts (Figure 38).

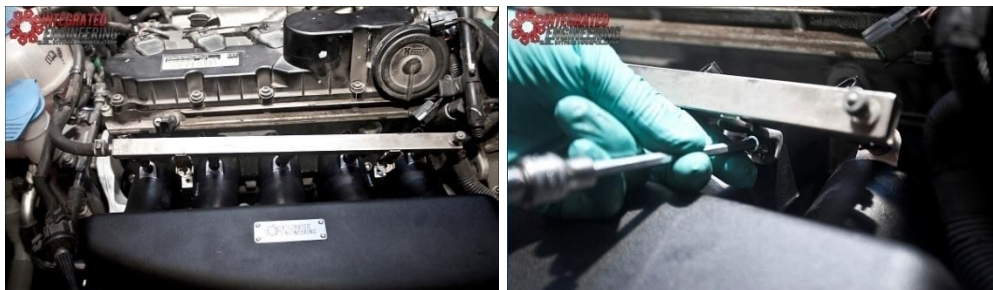


Figure 38

46. Using the razor knife. Cut the tape that secures the fuel injector wiring harness to the fuel injector wire guide. After the tape has been cut off of the guide, remove the plastic guide from the wiring harness (Figure 39).



Figure 39

47. Install the fuel injectors wiring harness so that the injector connectors run under the fuel rail. Connect the camshaft position sensor, fuel injectors and EVAP purge valve connectors at this time (Figure 40).



Figure 40

48. Cut the tape that secures the wiring harness that runs over the throttle body off of the plastic guide. This harness will run over the throttle body (Figure 41).

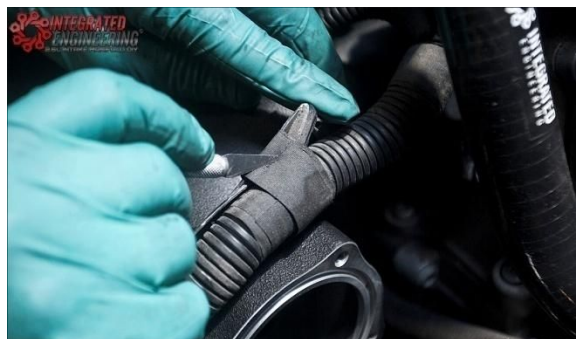


Figure 41

49. Install the remaining o-ring into the groove in the front of the intake manifold where the throttle body mounts. Slide the throttle body into the intake boot. Be sure not to knock the o-ring out of the groove it is seated in. Using the four 55 mm bolts, tighten the throttle body to the intake manifold. Tighten both intake hose clamps to the throttle boot and MAF. Install the EVAP purge valve hose back on the

throttle body and crimp the hose clamp. Now install the IE high flow air filter on the end of the MAF and secure it with the last 70-90 hose clamp (Figure 42).

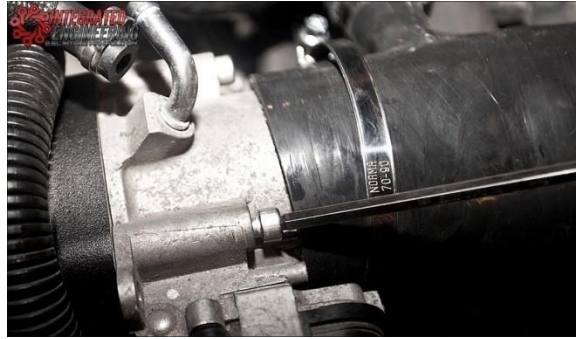
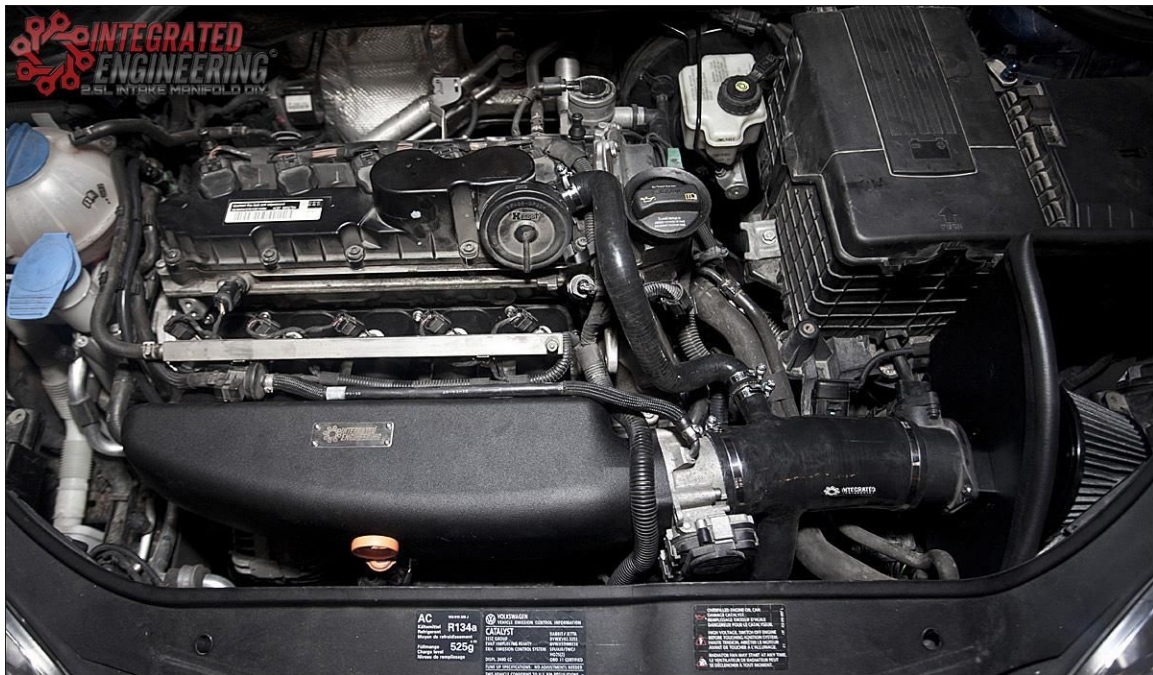


Figure 42

50. After the installation of your new IE 2.5L high performance intake manifold and CAI are complete, start your vehicle. Verify that there are no vacuum leaks or fuel leaks. Check that all wiring and vacuum hoses are not in the way of any fans or serpentine belt.



Thank you for purchasing another Integrated Engineering product. We are dedicated to serving your VW/Audi engine and performance needs. Please check our website frequently for new product releases. If you have any questions or concerns about this product please do not hesitate to contact us.

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