AMS NISSAN Z FLEX FUEL

INSTALL INSTRUCTIONS

Nissan Z 2023+

Introduction ///

The goal of AMS Performance is to provide the highest quality, best performing products available. By utilizing research and development, and rigorous testing programs AMS Performance will never compromise the quality or performance of our products. In addition, AMS Performance will only provide the finest customer service offering only parts and advice that are in the best interests of the customer. AMS Performance was built on a foundation of integrity. This is who we are. This is what you can count on.

A vehicle modified by the use of performance parts and tuning may not meet the legal requirements for use on public roads. AMS Performance makes no claims of compliance unless otherwise stated on a per-product basis. Use or installation of performance parts and tuning may adversely affect the drivability and reliability of your vehicle, and may also affect or eliminate your insurance coverage, factory warranty and new OEM part warranty. There is no stated or implied guarantee by AMS of continued OEM vehicle warranty, insurance coverage, or emissions compliance, due to the stress placed on your vehicle by performance parts and our inability to monitor its use, tuning or modification.

These instructions are not intended to be a comprehensive guide for installation as there are many variables that may affect your particular vehicle, including but not limited to model year differences, sub-model/trim/optional equipment differences, the presence of non-OEM parts, or other modifications that may have previously been completed. A basic understanding of automotive parts and systems and novice mechanical skills should be all that is necessary for installation, but certain circumstances may necessitate professional installation.

AMS Performance is committed to providing quality support for our products. If you are in need of technical support, installation help, or a replacement component, our Customer Service Team is available directly via telephone at 847-709-0530, or digitally via the contact form linked here: amsperformance.com/support

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DISASSEMBLY AND REMOVAL ///

Depending on your current modifications, the next few steps may or may not apply to you. It may be easier to remove some or all of the downpipe assembly in order to access the fuel line quick disconnect.

1. Position your car on a lift or raise it in a safe manner where you can access the engine bay and passenger downpipe area.

2. Starting with the top side, remove the front half of the engine cover(fig 1 & 2)

Figure 1

Figure 2

Note: If an AMS Fuel Filter Kit has already been installed, skip to step 6. Otherwise continue with step 3.

3. Unclip the harness from the bracket(arrow fig 3) and remove two bolts holding the bracket near the HPFP(circled fig 3). Remove the bracket(fig 4).

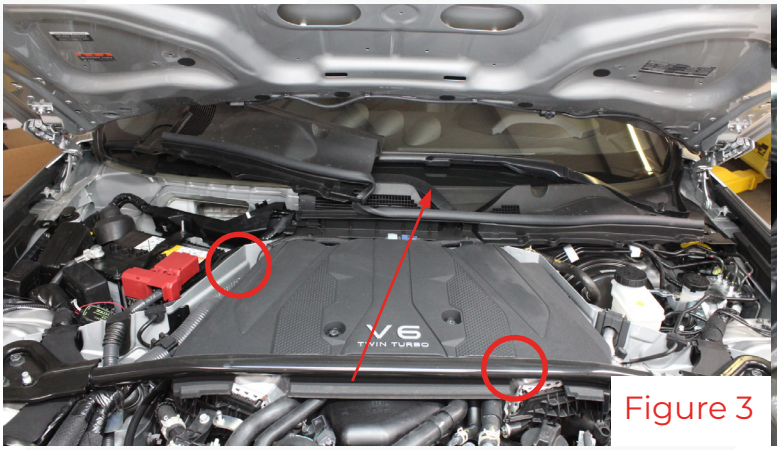


Figure 3

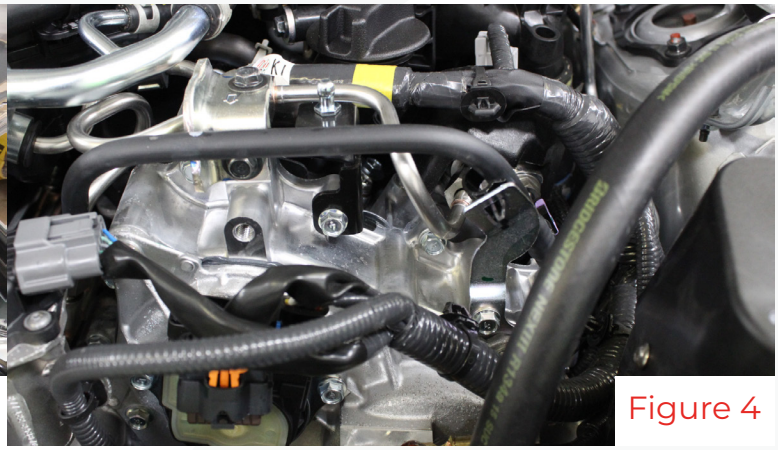


Figure 4

4. Remove the fuel line bracket(fig 5 & 6).

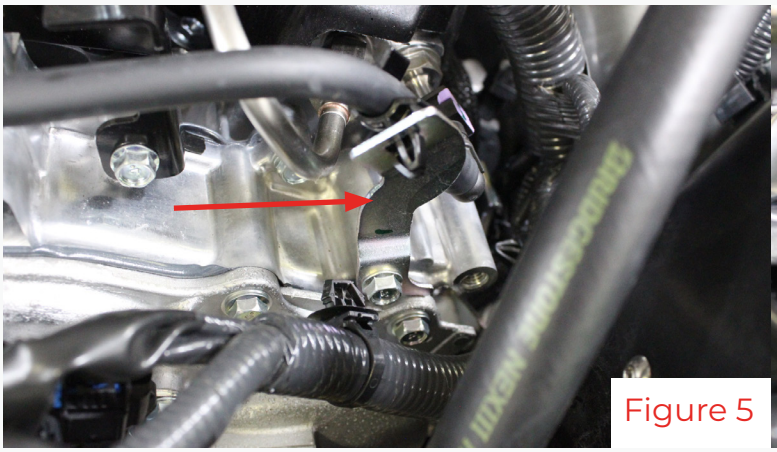


Figure 5

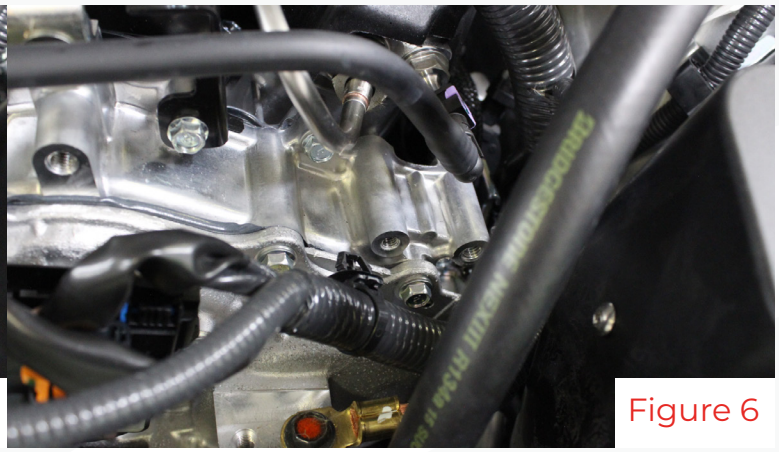


Figure 6

5. Release the purple clip and disconnect the fuel line from the HPFP(fig 7 & 8).

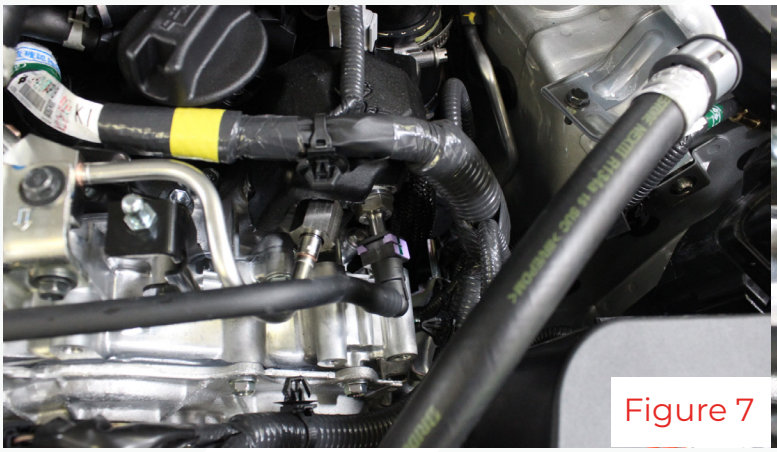


Figure 7

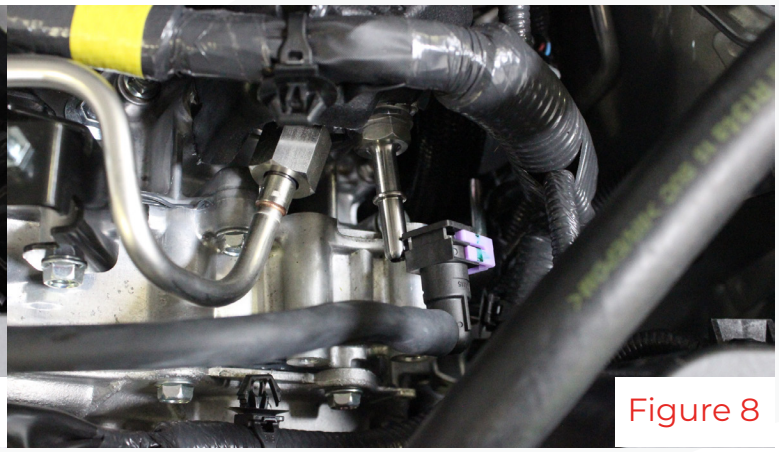


Figure 8

6. On the other side of the engine, unclip the harness and remove the bracket near the fuel pressure damper (fig 9 & 10).

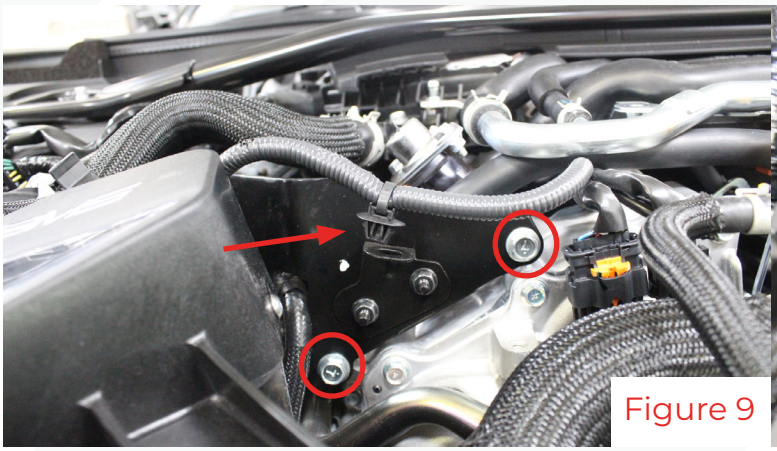


Figure 9

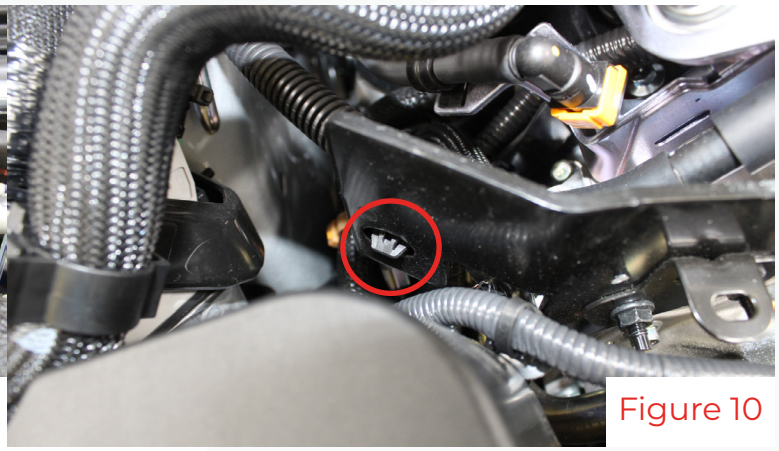


Figure 10

7. Remove the two bolts under the water line holding the hard pipe to the manifold(fig 11).

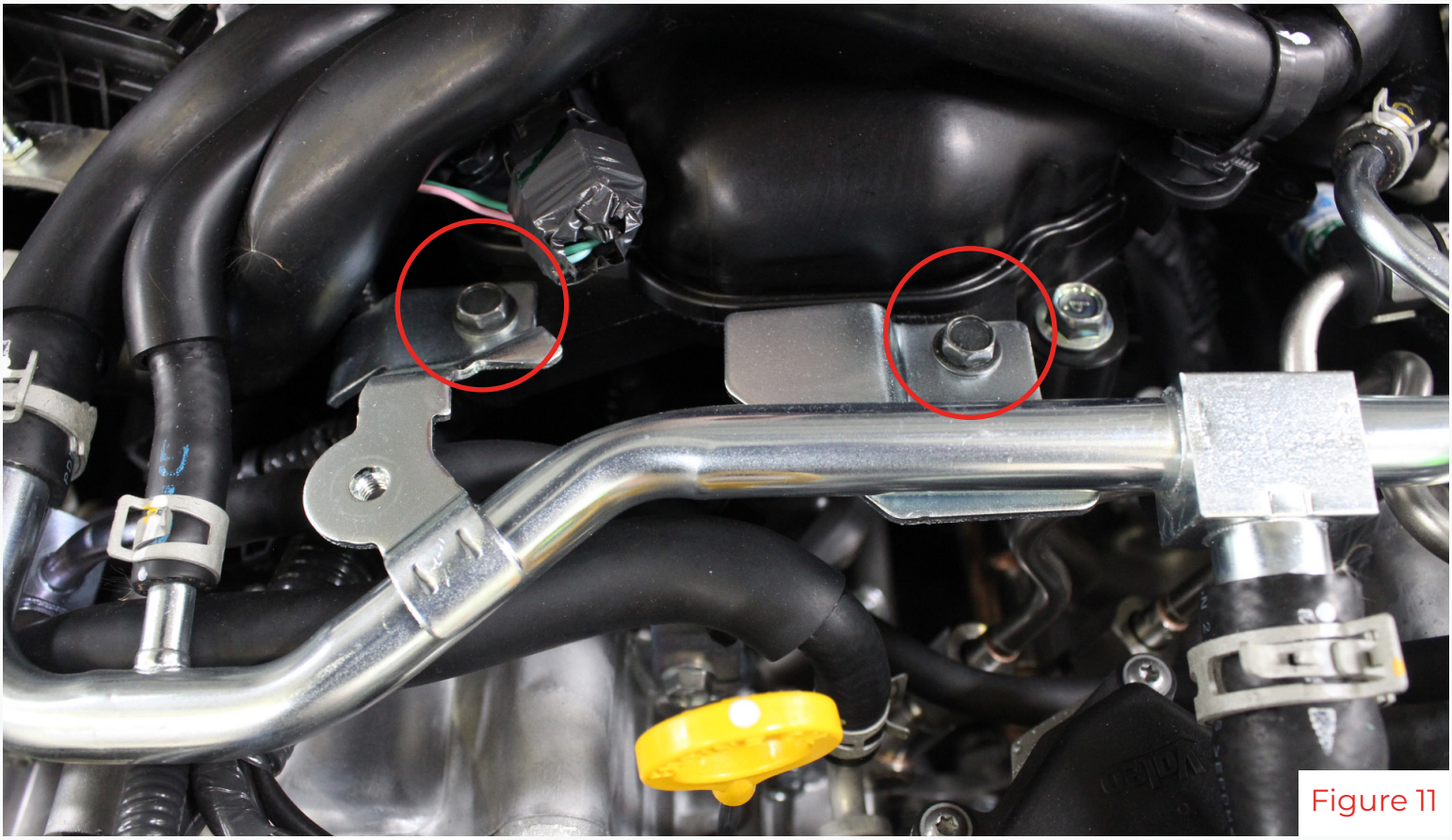


Figure 11

8. Release the yellow fuel line lock and disconnect the fuel line from the damper assembly(fig 12). Remove the two bolts mounting the damper assembly to the engine(fig 13).

Note: If an AMS Fuel Filter Kit is already installed, remove the hardpipe assembly as it will not be used.

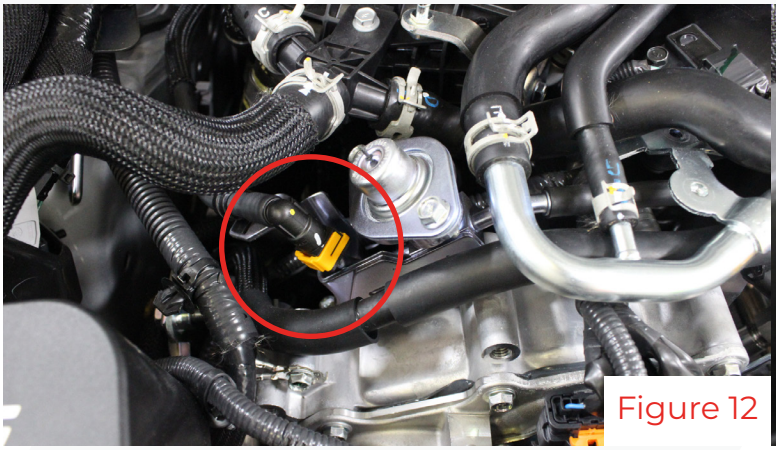


Figure 12

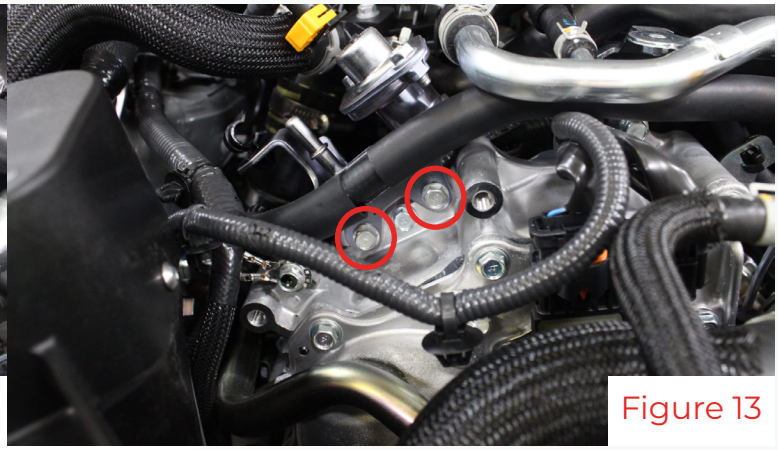


Figure 13

9. Remove the two passenger side downpipe nuts from the top, near the rear secondary firewall(fig 14).

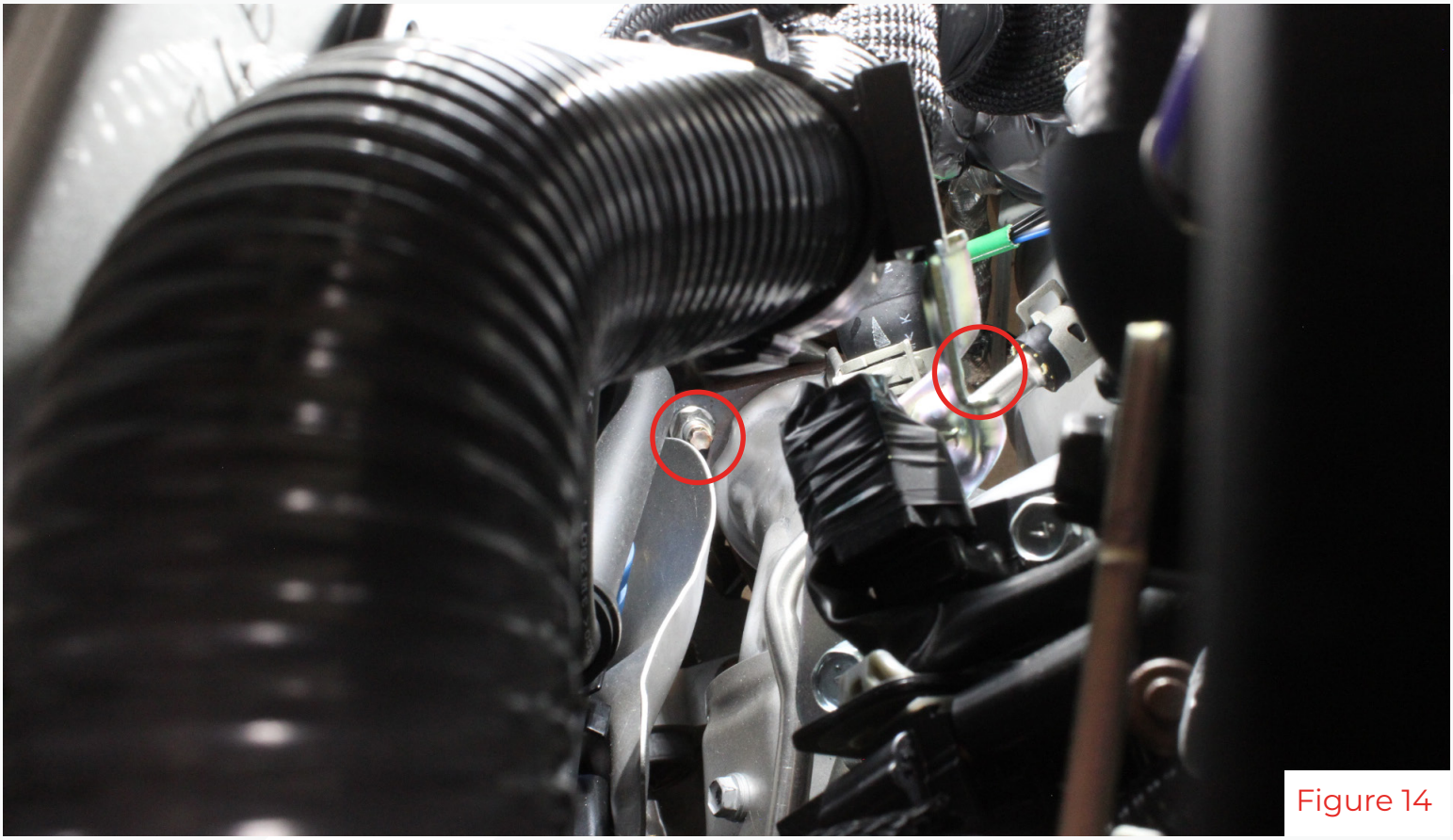


Figure 14

10. Under the vehicle, remove the last exhaust nut for the lower downpipe and the two bolts for the downpipe bracket(fig 15). Then disconnect the 02 sensor(fig 16).

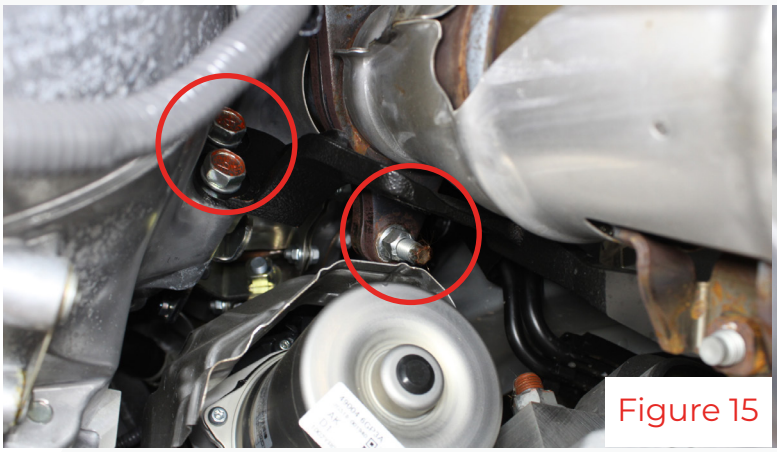


Figure 15

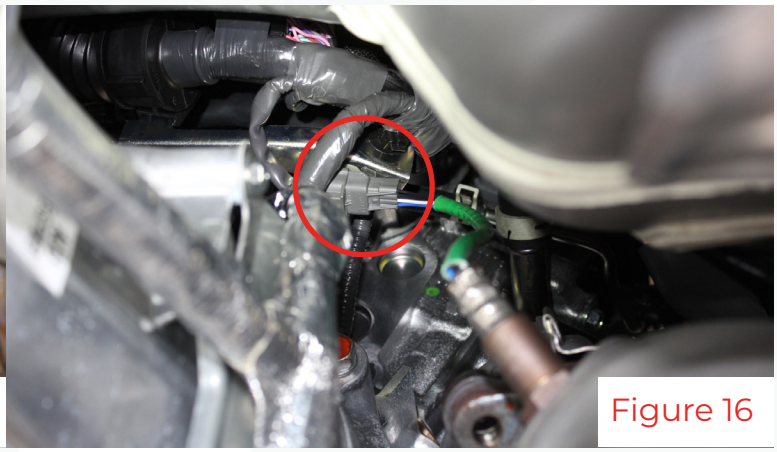


Figure 16

11. Remove the final two exhaust nuts from the midpipe(fig 17), then remove the downpipe(fig 18).

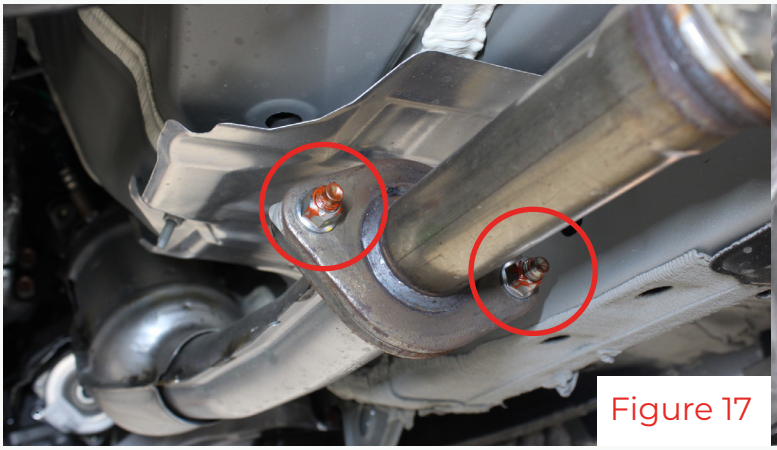


Figure 17

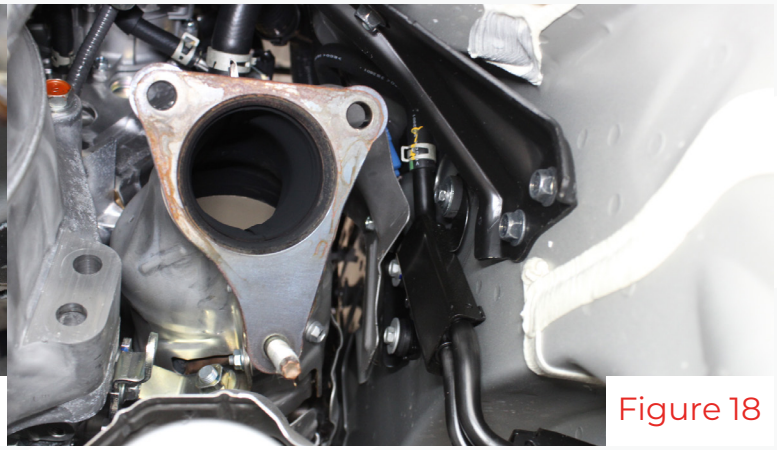


Figure 18

12. Remove the two m6 bolts holding the heat shield on(fig 19 & 20).

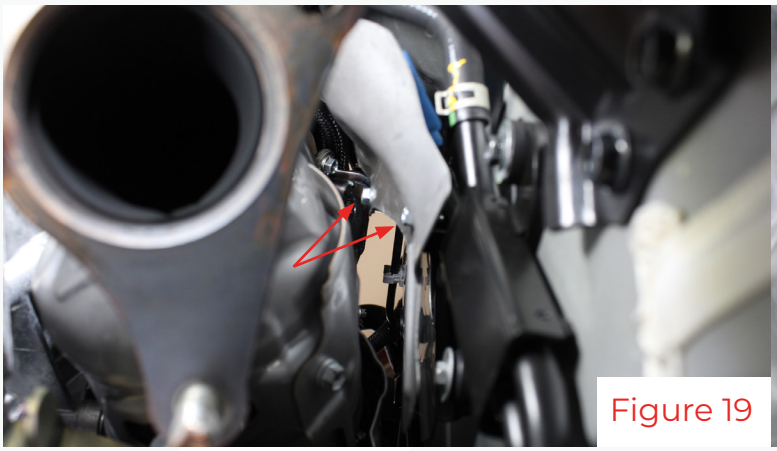


Figure 19

Figure 20

13. Remove the blue fuel line lock cover(fig 21). Then disconnect the fuel line(fig 22).It is advisable to use a shop towel to catch the rest of the fuel in the line.

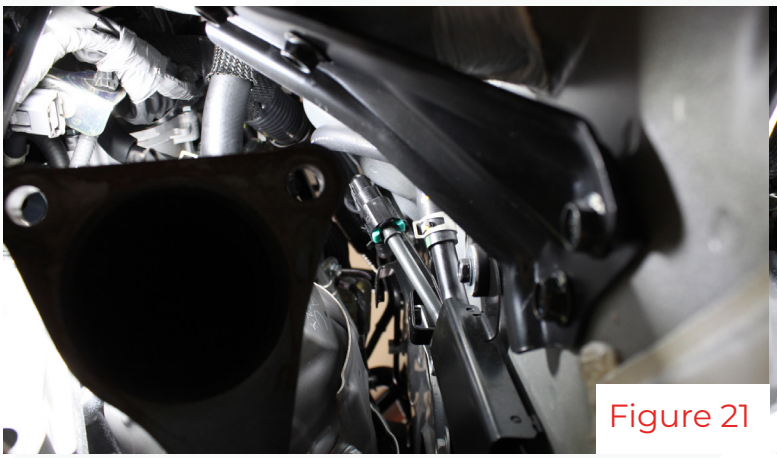


Figure 21

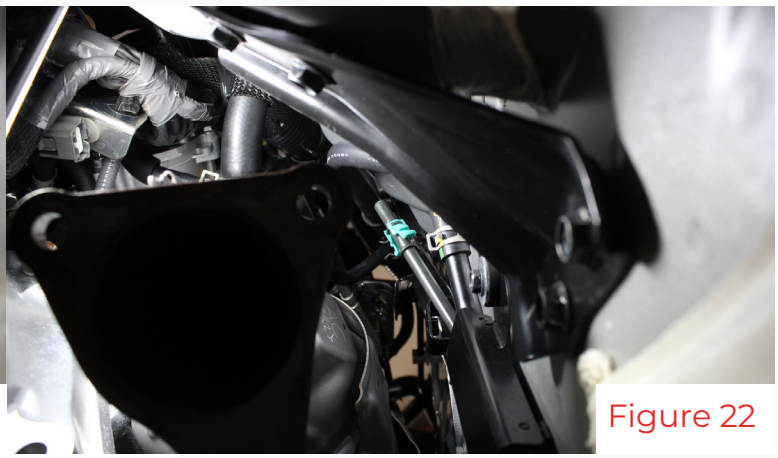


Figure 22

14. Remove the fuel line and green plastic fuel line clip(fig 23). Now you should have both the fuel lines and clip removed(fig 24).


Figure 23

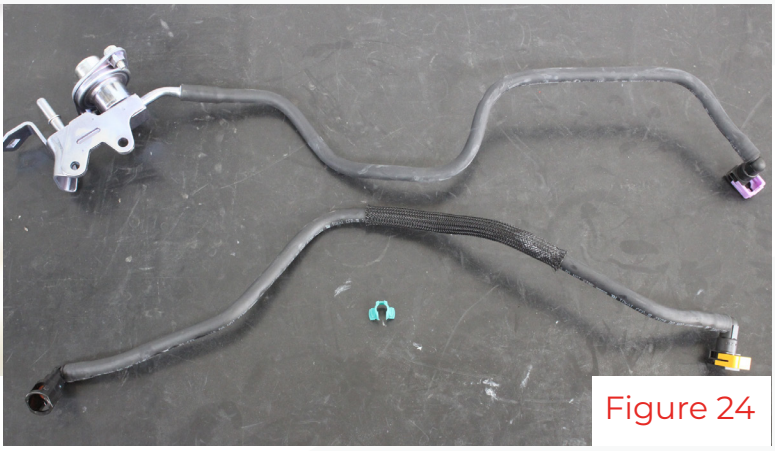


Figure 24

Installation

15. Locate the provided fuel line with the 90-degree fitting on one end and 45-degree on the other(fig 25). Route the 90-degree fitting end down towards the firewall connection(fig 26). Remove the screw nut and install the fitting onto the hardline. The nut has a groove on it that will mate to the shoulder on the hardline. Slide it onto the groove and screw the fitting together(fig 27). Use a 5/8” wrench and a 22mm wrench to tighten the fitting(fig 28).


Figure 25

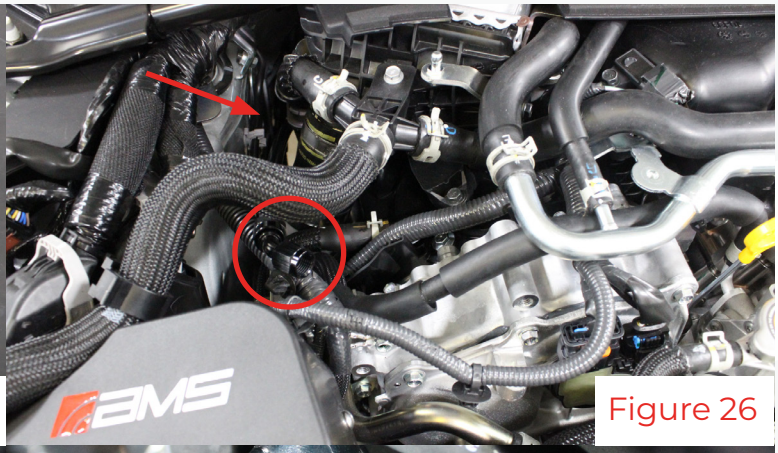


Figure 26


Figure 27


Figure 28

16. Push the new fuel line into the factory clip(fig 29). Reinstall the metal heatshield(fig 30).

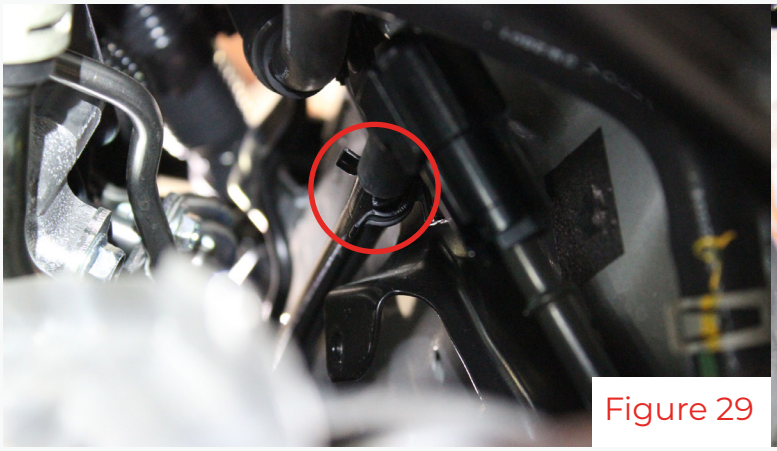


Figure 29

Figure 30

17. Gather the parts below to assemble the flex fuel sensor assembly(fig 31). Place the foam on the back of the sensor (fig 32). Then, with the logo on the bracket facing you, install the sensor on the backside with the connector at the top(fig 33 & 34).

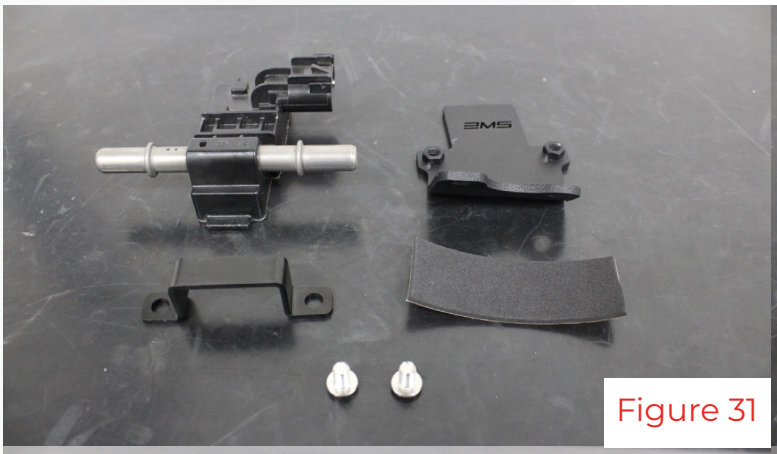


Figure 31

Figure 32

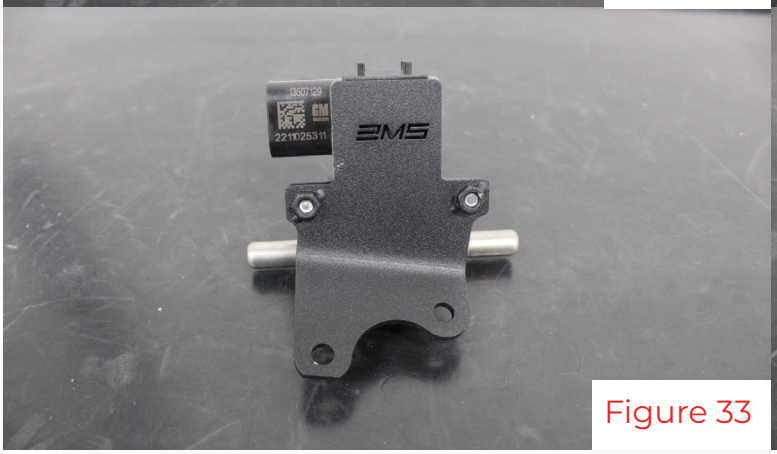


Figure 33

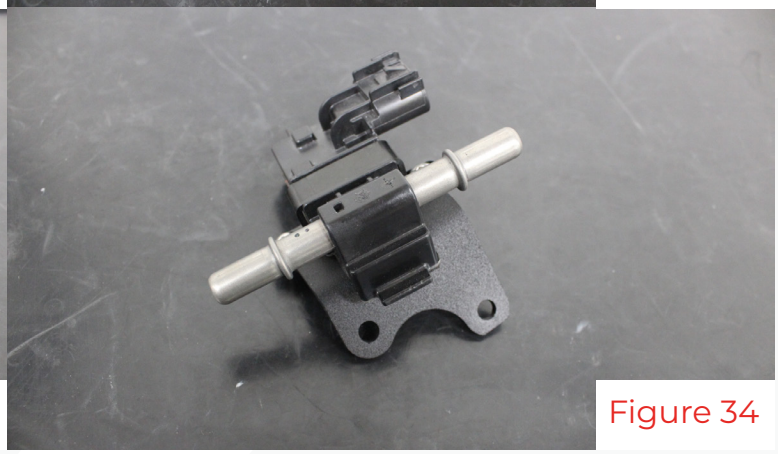


Figure 34

18. Install the two 3/8” quick connect fittings on the sensor(fig 35). Reuse the bolts from the OEM fuel damper and install the flex fuel sensor assembly in the same location(fig 36).

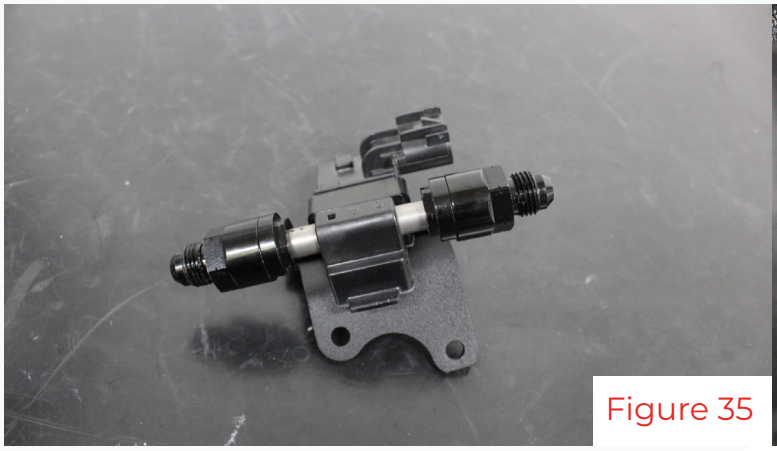


Figure 35

Figure 36

19. Be sure the new fuel line is routed up near the intercooler and connect it to flex fuel sensor(fig 37 & 38).

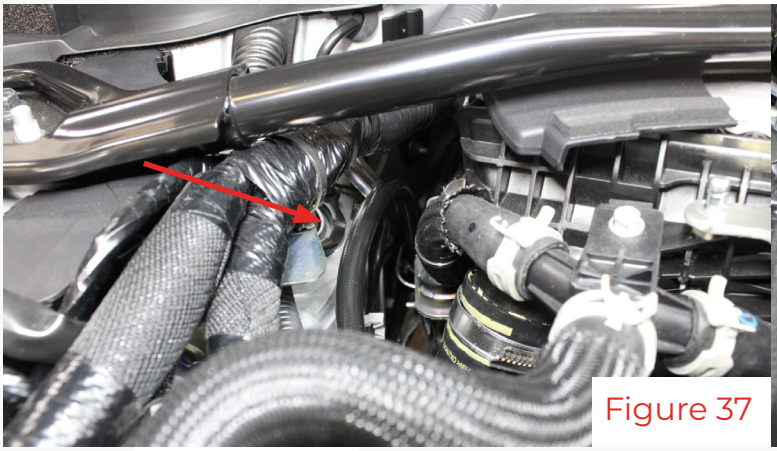


Figure 37

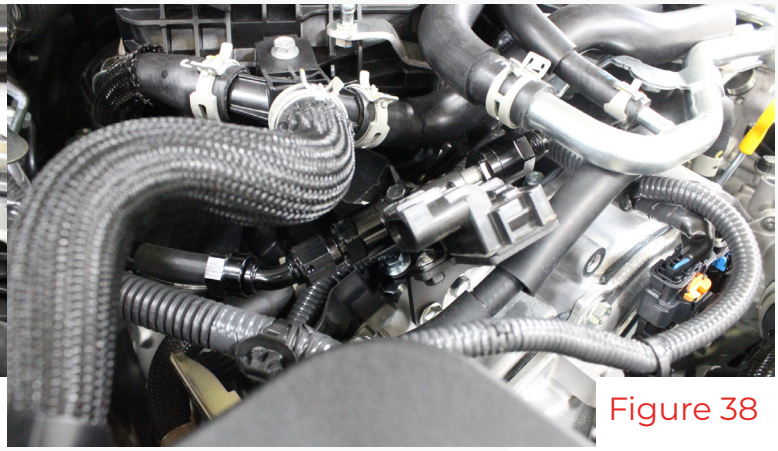


Figure 38

Follow the steps below based on your situation.

I am not installing an AMS Fuel Filter Kit. - Continue to step 20.

I already installed the AMS Fuel Filter Kit. - Simply connect the line that was removed from the AMS hardpipe assembly. Then skip to the wiring section of the instructions.

I purchased both the AMS Flex Fuel Kit and AMS Fuel Filter Kit and plan to install them at the same time. - Follow the Fuel Filter instructions from here, then return to the wiring section of these instructions when complete.

20. Using the line provided in the flex fuel kit(fig 39), route the end of the line with the straight fitting under the coolant crossover hard pipe to the flex fuel sensor and connect it(fig 40 & 41).

Figure 39

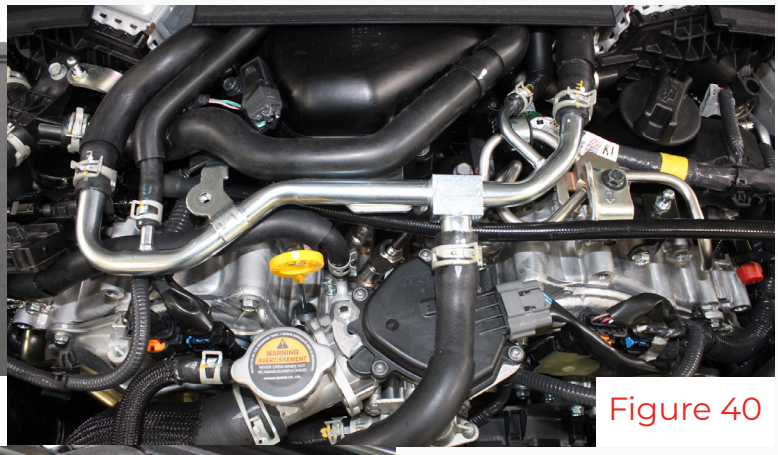


Figure 40

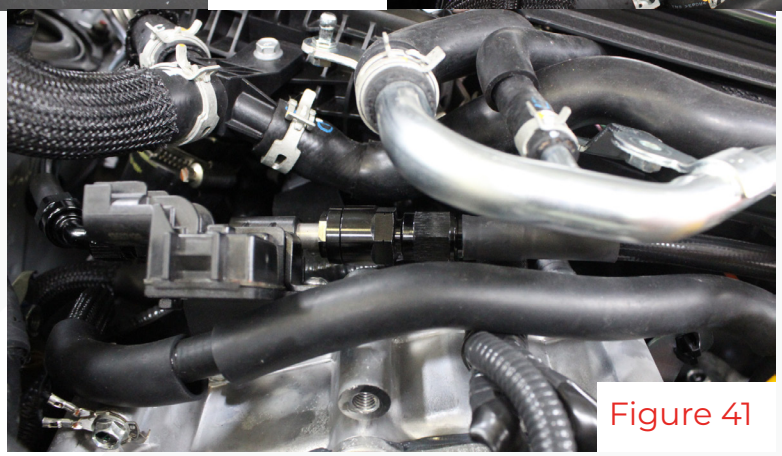


Figure 41

21. **All pumps EXCEPT Stage 3**: Install the 5/16" quick connect fitting onto the pump(fig 42 & 43). Push the fuel line into the fuel line retainer in the valley of the engine(fig 44). Connect the 90-degree fitting to the pump(fig 45).

Figure 42

Figure 43

Figure 44

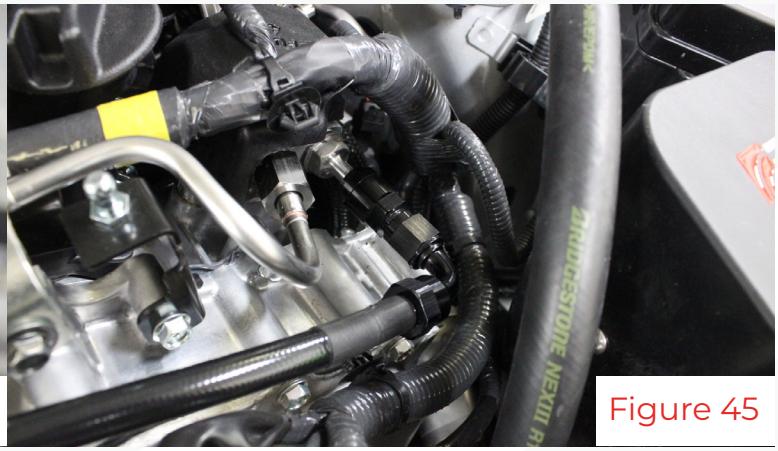


Figure 45

22. **Stage 3 Pump Only:** Route the fuel line over the valley and connect it directly to the HPFP.(fig 46 &47)

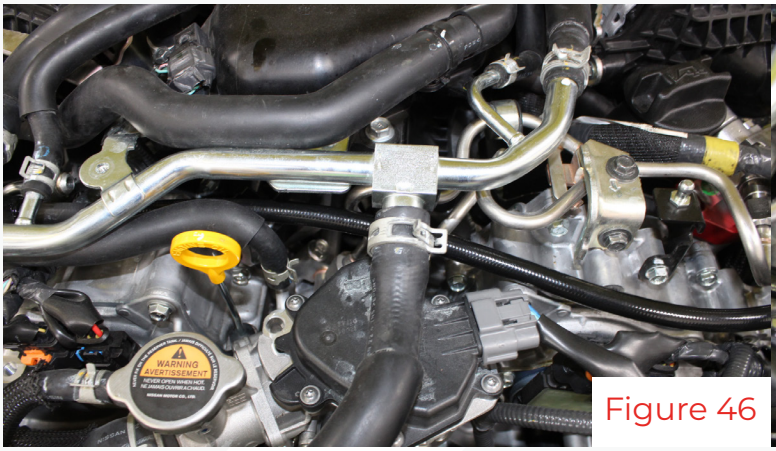


Figure 46

Figure 47

23. Reinstall the bolts for the crossover pipe(fig 48) and reinstall the metal bracket near the flex fuel sensor(fig 49).

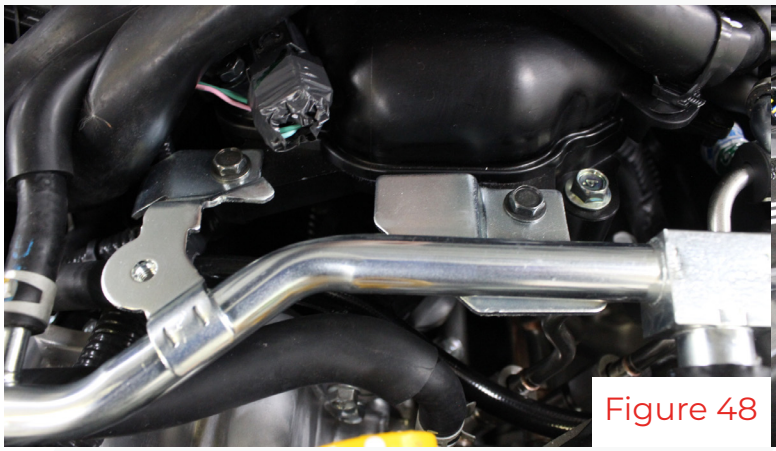


Figure 48

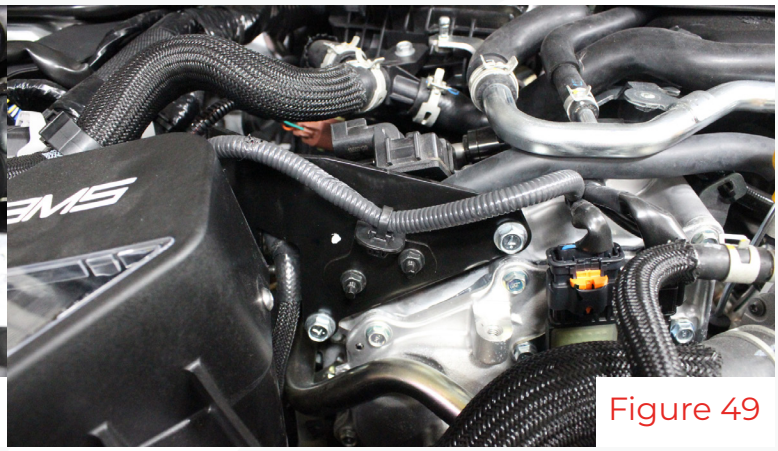


Figure 49

Wiring

24. Remove the battery and brake fluid access panels and disconnect the battery(fig 50). Remove the passenger side cowl cover, and the two clips holding the middle cowl cover(fig 51).

Figure 50

Figure 51

25. Remove the battery to gain better access to the IPDM/fuse box.(fig 52)

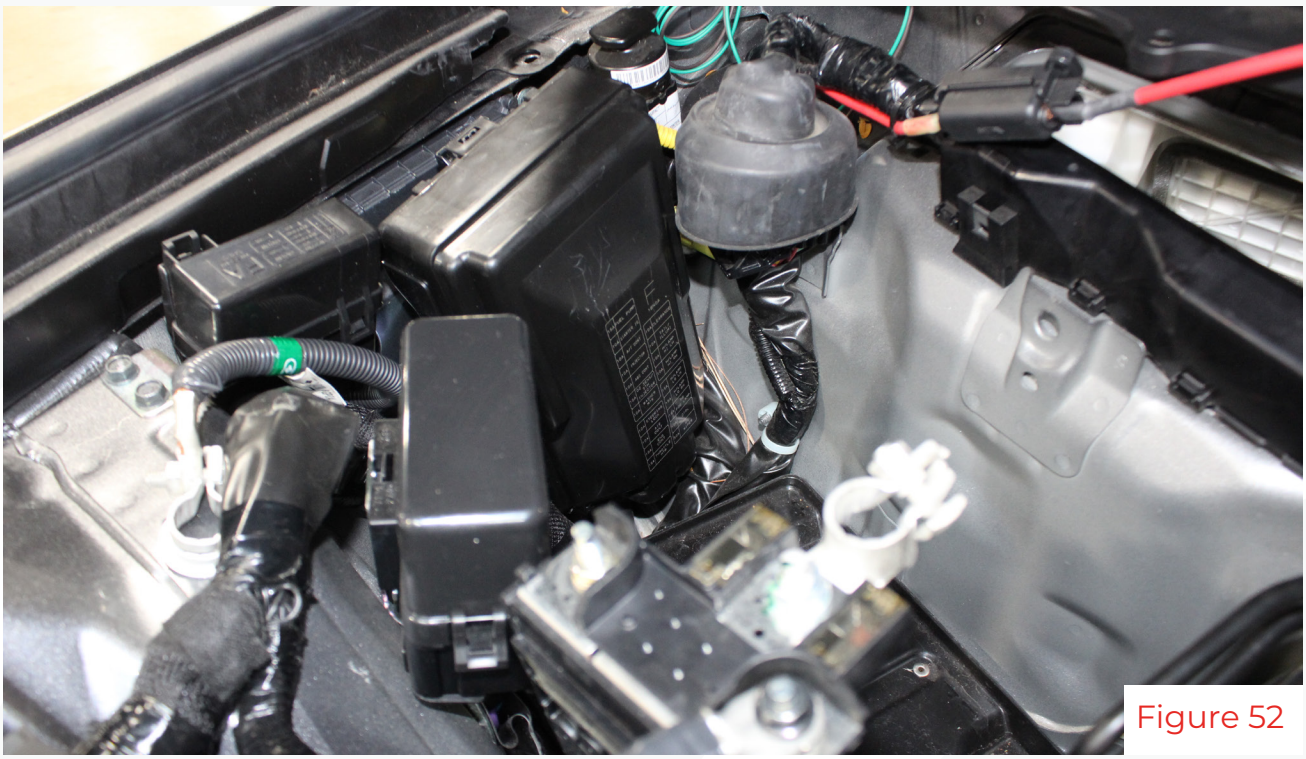


Figure 52

26. Release the two tabs on top and slide the IPDM up.(fig 53 & 54)

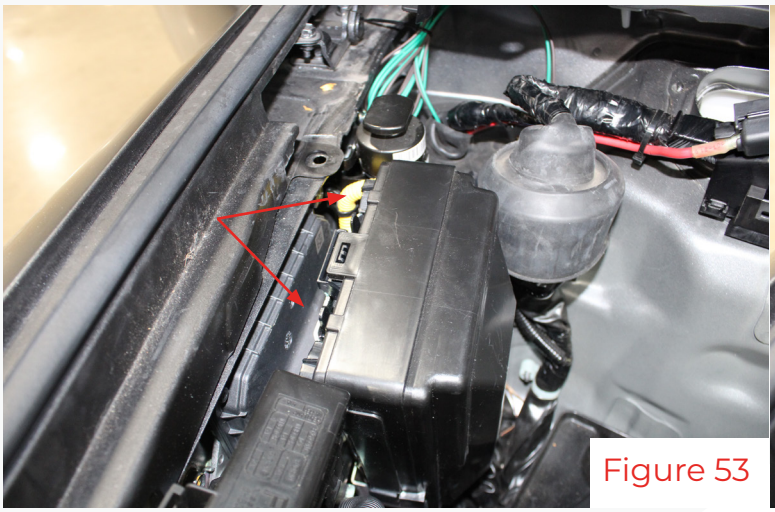


Figure 53

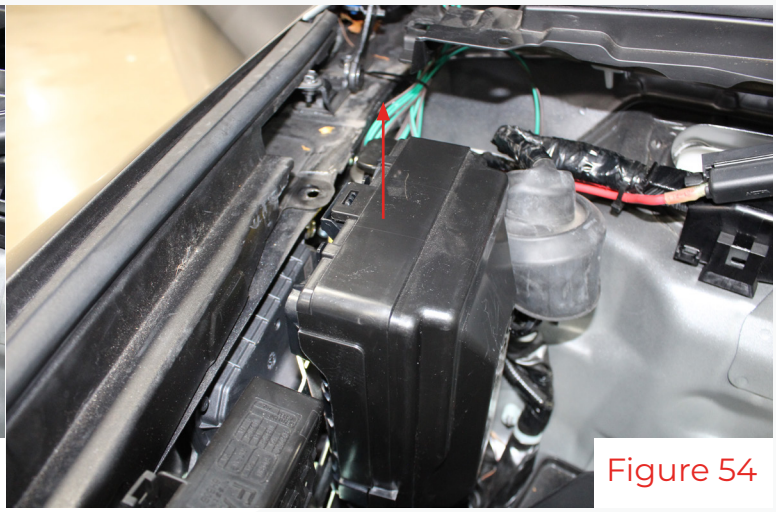


Figure 54

27. Release the two tabs on the bottom to remove the IPDM cover.(fig 55 & 56)

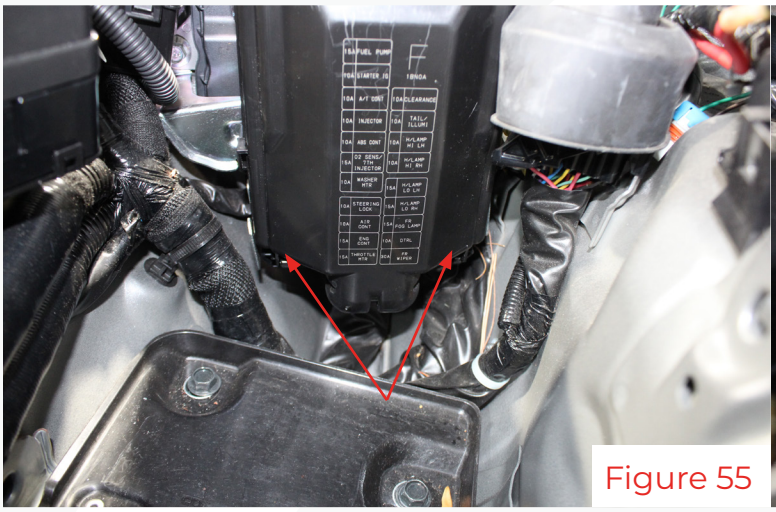


Figure 55

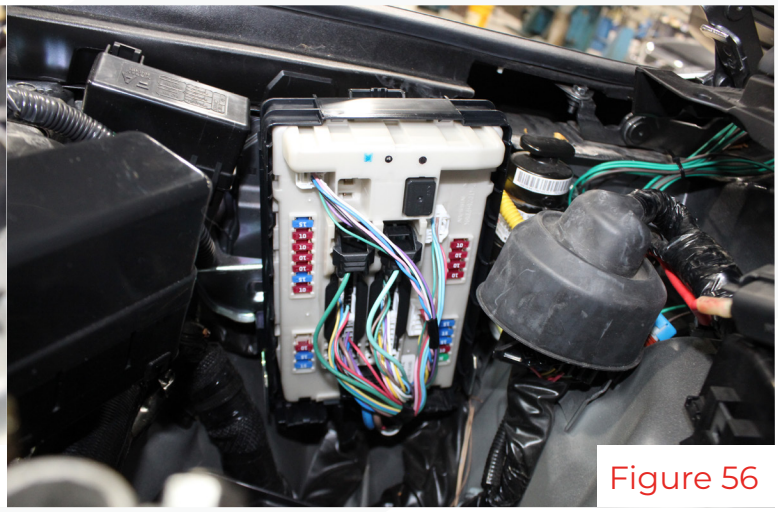


Figure 56

28. Locate the Plug n Play harness. Unplug the 8-pin connector at the top of the box and plug it into the PnP harness. Then plug in the PnP into the IPDM.(fig 57-60)

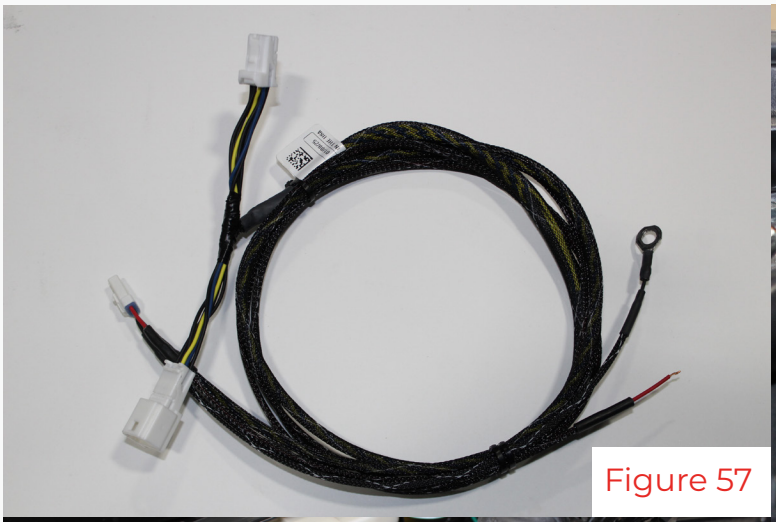


Figure 57

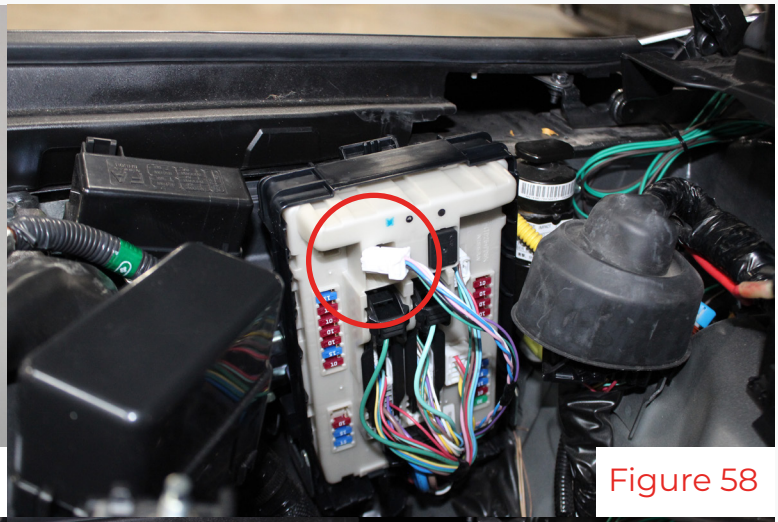


Figure 58

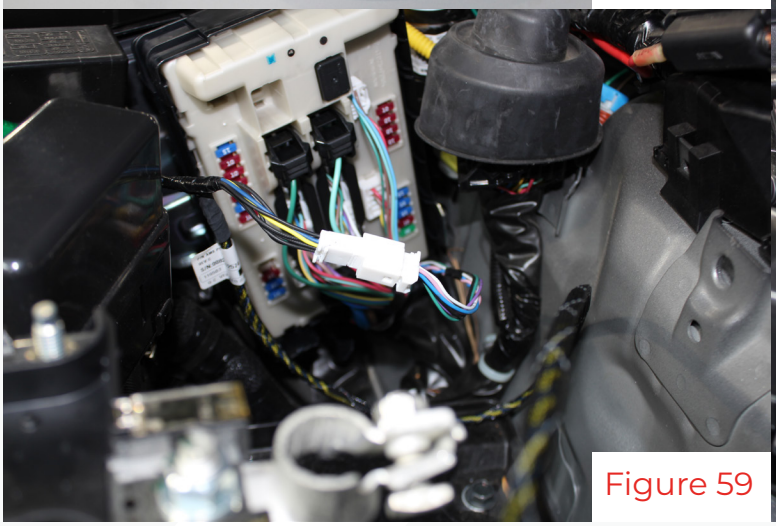


Figure 59

Figure 60

29. Secure the harness inside the IPDM with one or two zip ties as needed and route the PnP harness out the bottom. Reinstall the cover and click the IPDM back in place.(fig 61 & 62)

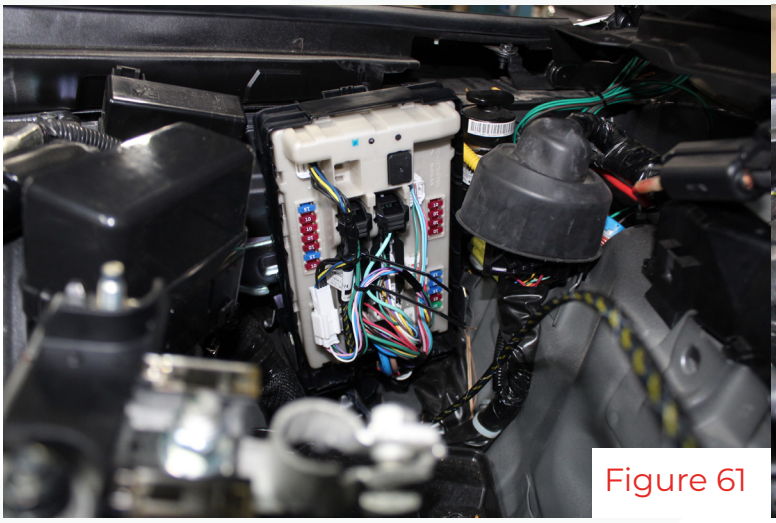


Figure 61

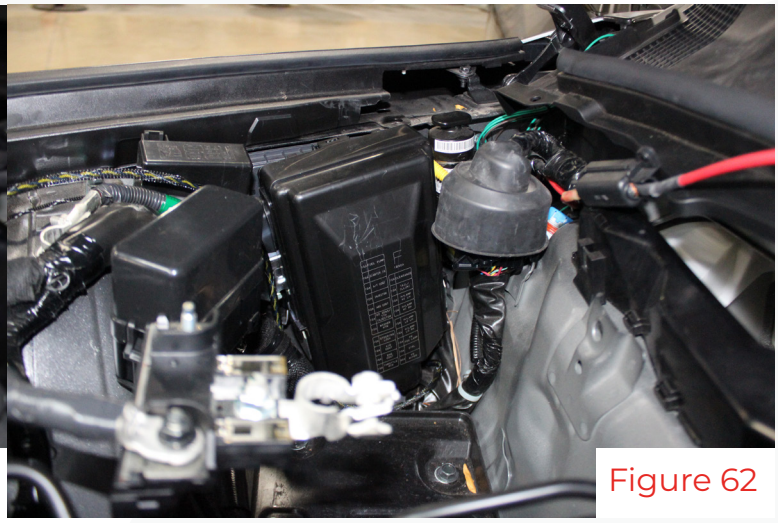


Figure 62

30. Route the harness along the vehicle harness near the battery. Secure the harness ground to the existing chassis ground near the battery. (fig 63-65)

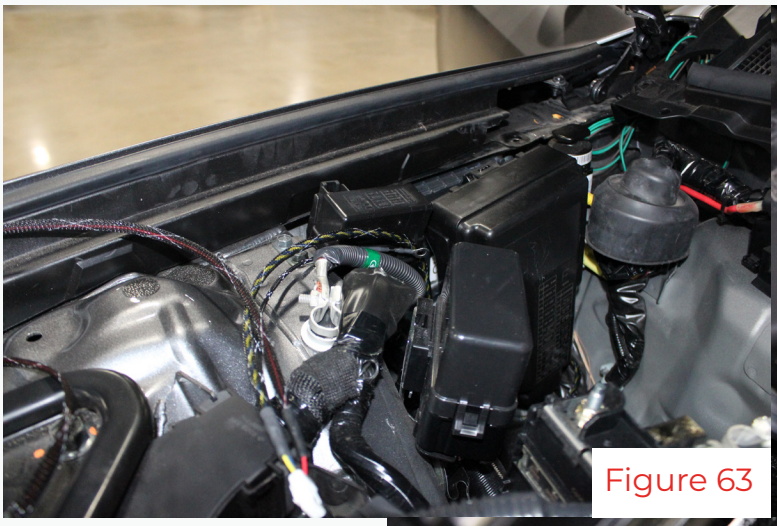


Figure 63

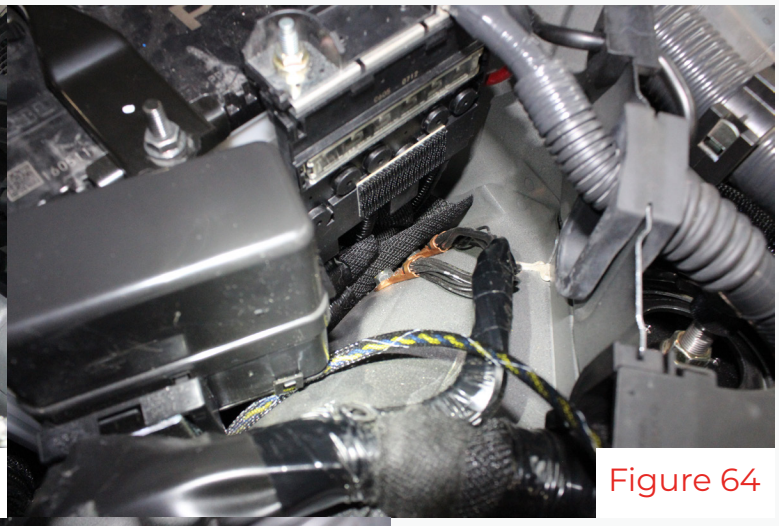


Figure 64

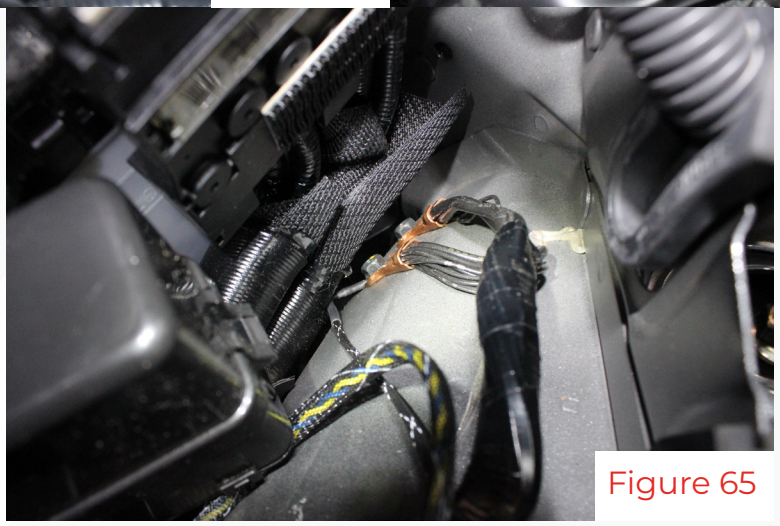


Figure 65

31. Reinstall the battery and positive terminal only. (fig 66)

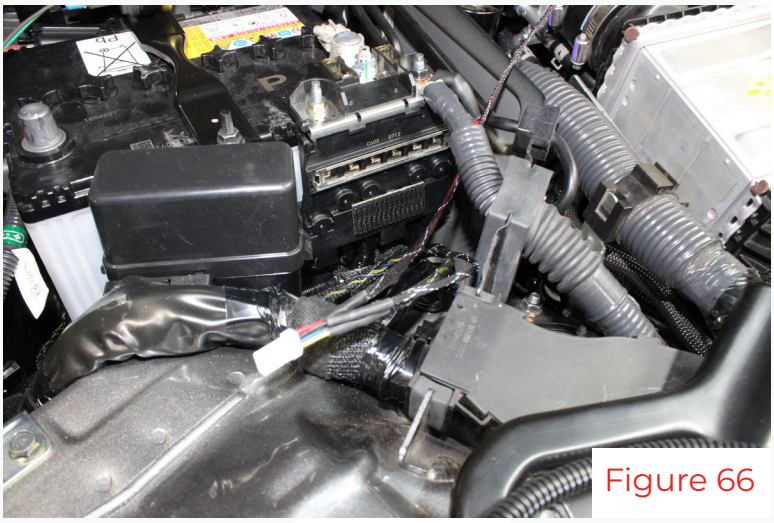


Figure 66

32. Locate the CAN module and dual lock. Cut the dual lock in half and press one half onto the CAN module.(fig 67-70)

Figure 67

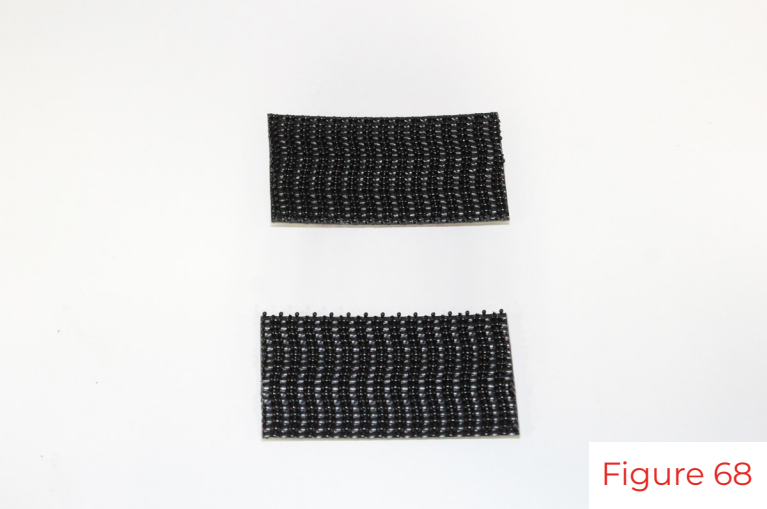


Figure 68

Figure 69

Figure 70

33. Adhere the Can module to the base of the multi-fuse on the battery as shown below. Plug in the 4-pin connector to the right side of the CAN module. (fig 71 & 72))

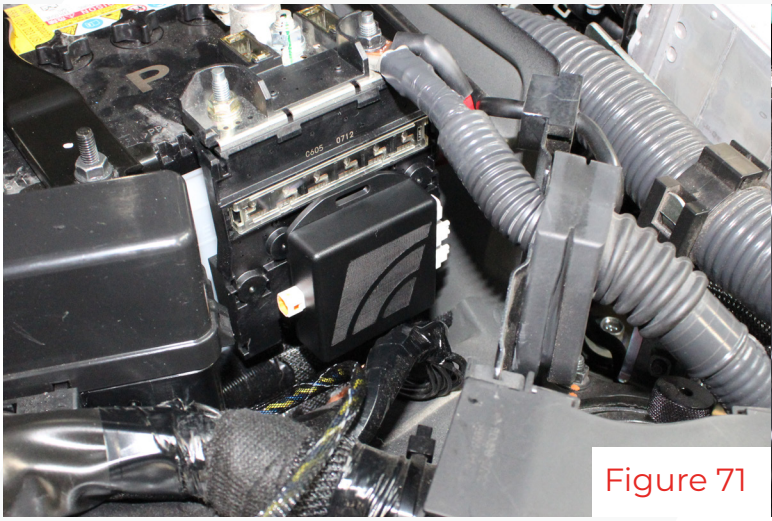


Figure 71

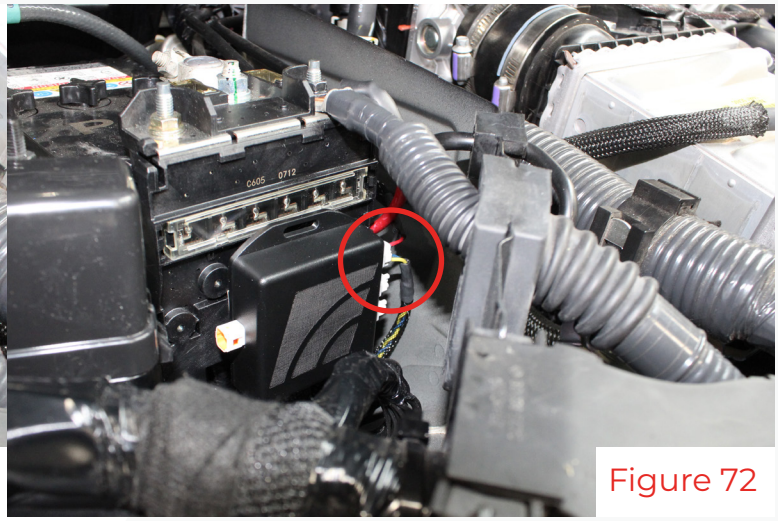


Figure 72

34. Locate the grommet in the firewall on the drivers side near the brake booster/drivers foot well. On automatic cars, it is very easy to see(fig 73 & 74). On manuals, it is right below the clutch master cylinder (fig 75 & 76).

Automatic Transmission

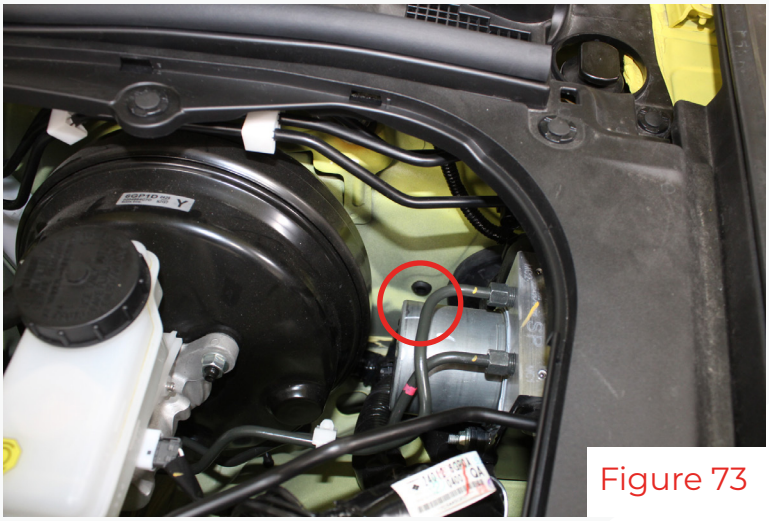


Figure 73

Figure 74

Manual Transmission

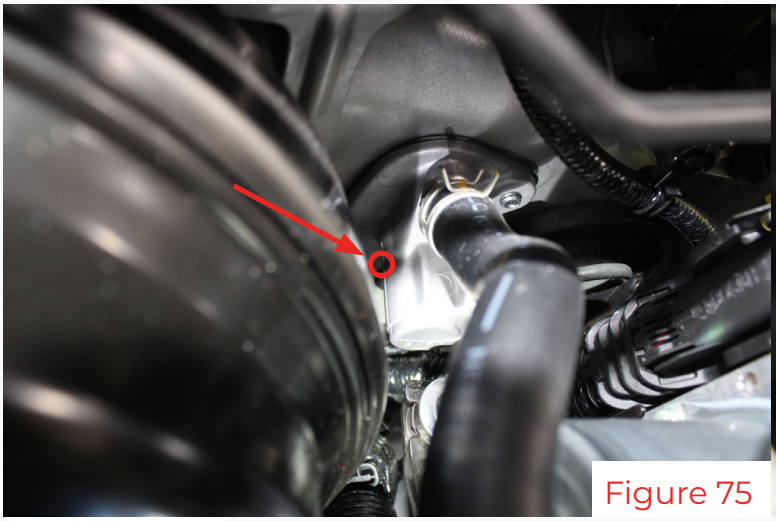


Figure 75

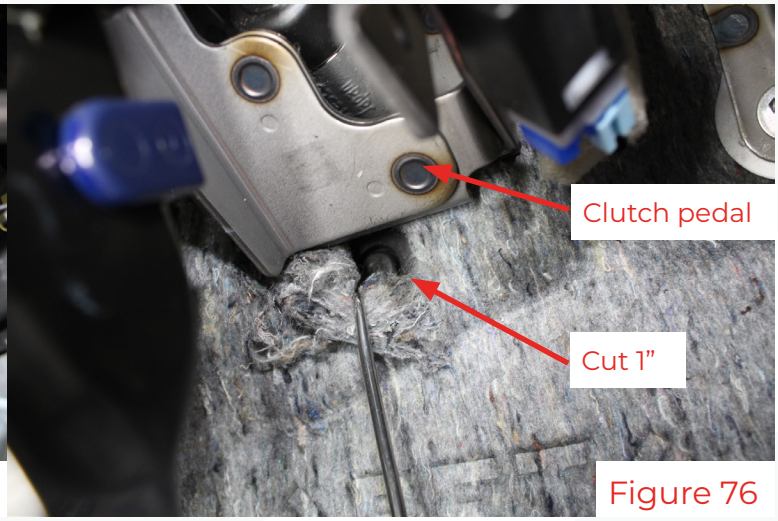


Figure 76

35. Neatly route the loomed red wire back to the firewall grommet.(fig 77-79). Use zip ties to secure the loomed wire(fig 80 & 81).

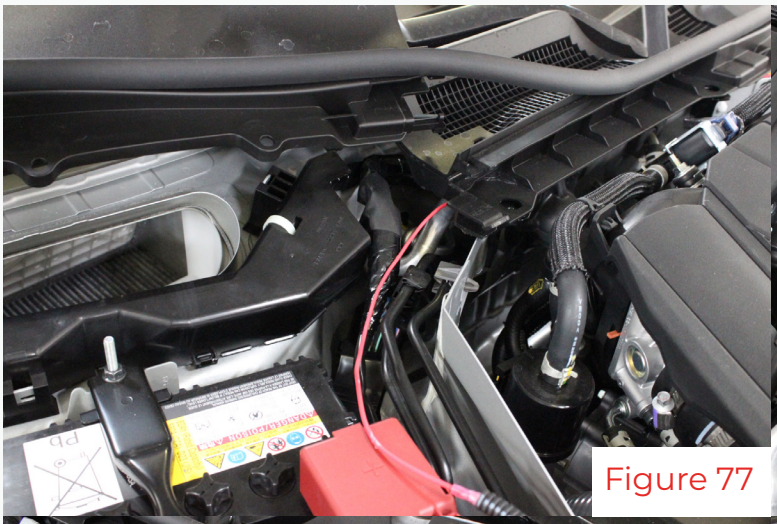


Figure 77

Figure 78

Figure 79

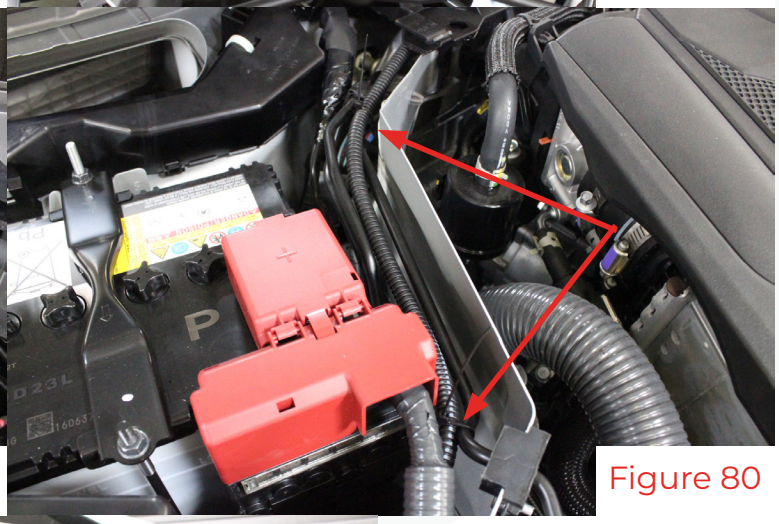


Figure 80

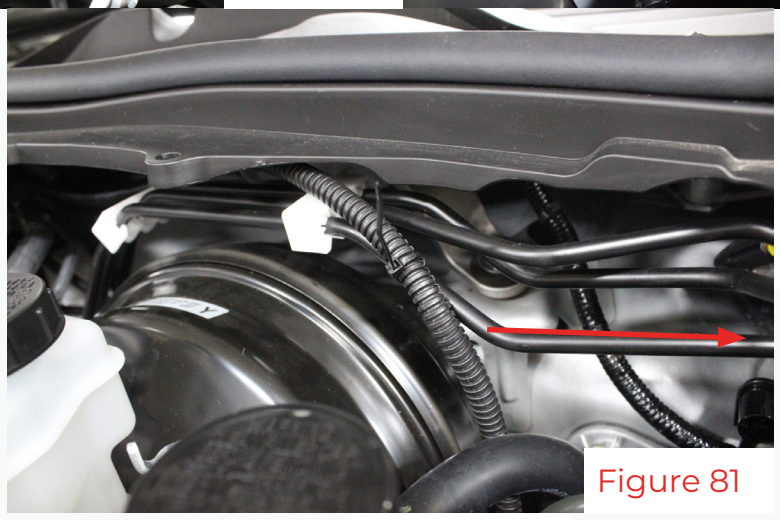


Figure 81

36. Poke through the grommet with a small pick(fig 82). Feed the loomed red wire through the grommet into the vehicle (fig 83).


Figure 82

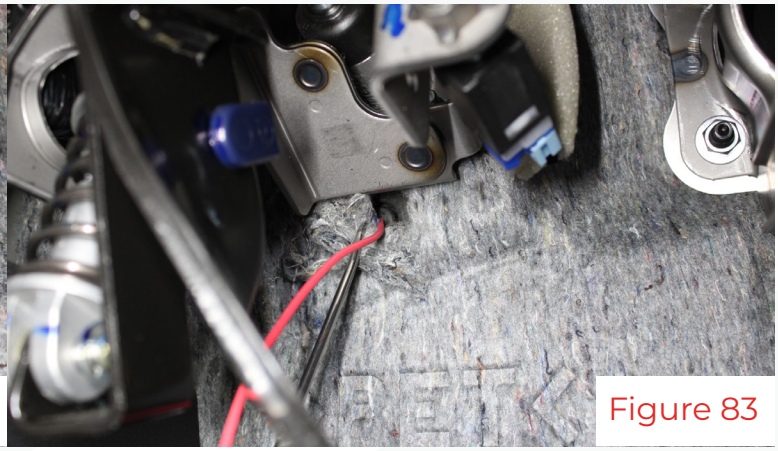


Figure 83

37 Remove the 20A fuse shown below from the drivers fuse box(fig 84). Install that fuse into the provided fuse tap(fig 85).


Figure 84

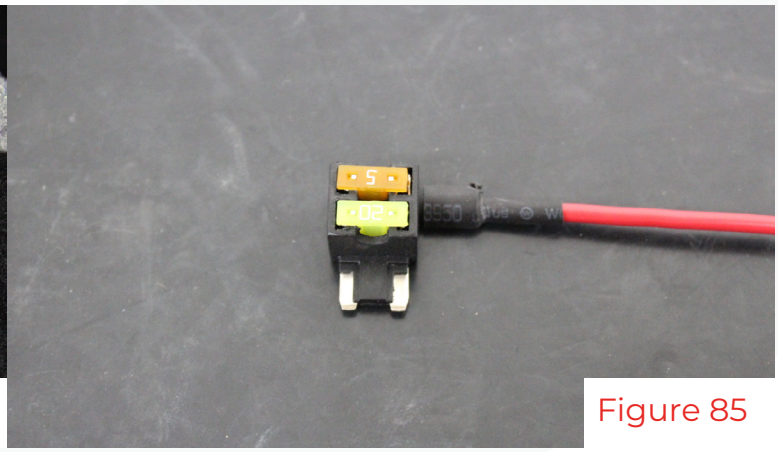


Figure 85

38. Install the fuse tap to the fuse box. Be sure **not** to cut off the blue butt connector from the fuse tap. Then use a wire stripper to strip the wire and make crimp connection on the fuse tap(fig 86 & 87).

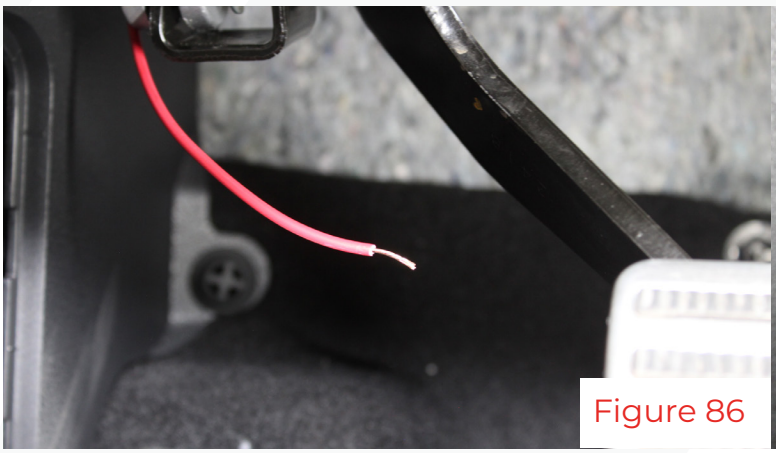


Figure 86

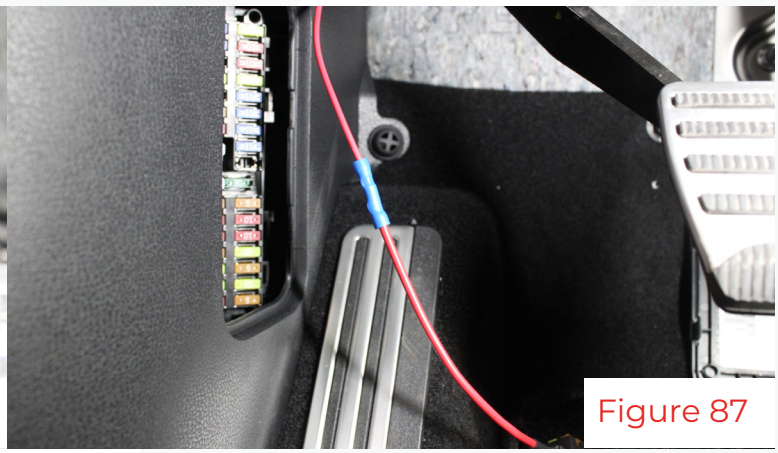


Figure 87

39. Route the fuse tap to the fuse box behind the cover panel and plug the fuse tap into the open spot where the 20A fuse was removed(fig 88). Safely tuck the wire out of the way along the vehicle harness and secure with a zip tie.(fig 89).

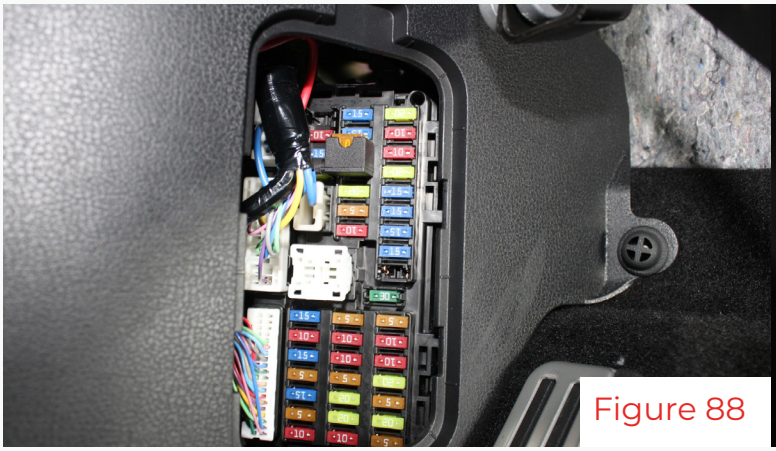


Figure 88

Figure 89

40. Plug in the flex fuel sensor (brown connector) to the flex fuel sensor. Route the flex fuel harness from the flex fuel sensor along the vehicle battery harness towards the CAN module and plug it in. Use zip ties to secure it and any extra slack in the battery compartment.

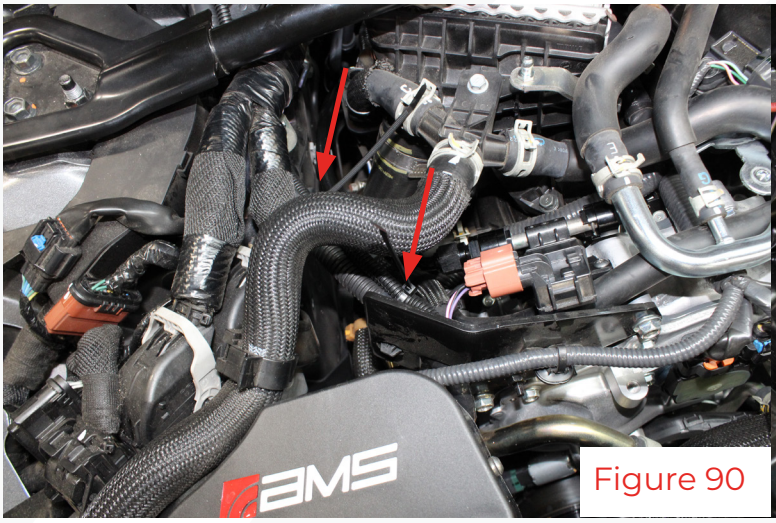


Figure 90

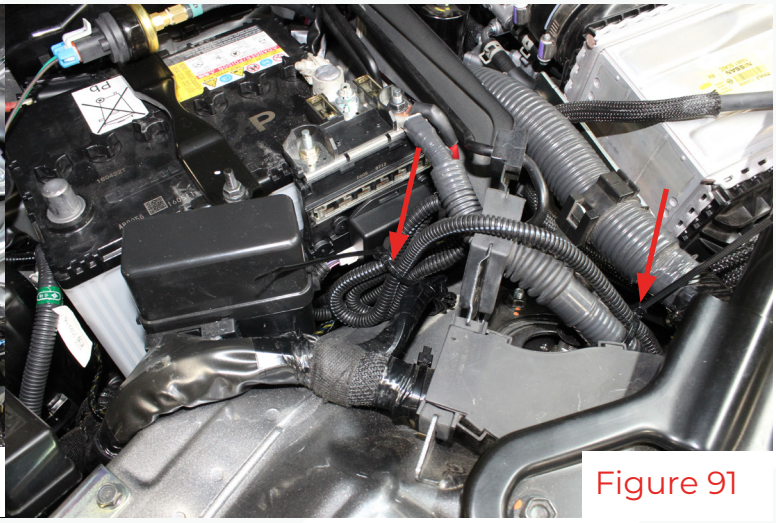
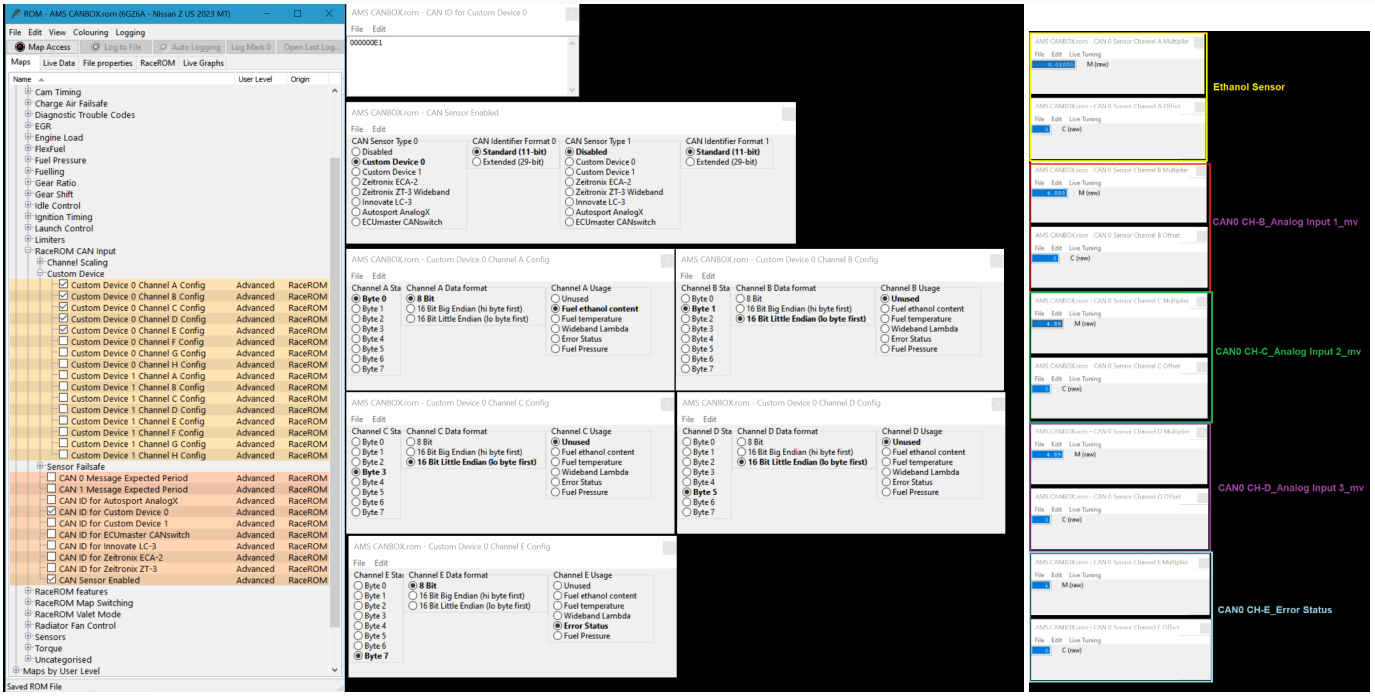


Figure 91

46. Check for any fuel system leaks before reinstalling all removed parts.

This completes the AMS Flex Fuel Installation! See the final pages for tuning/setup information or contact AMS for an onsite or remote tune for final setup. Enjoy!

Note: In order to take full advantage of ECUtek Flex Fuel Support, you will need to check with your tuner to have the most recent software release loaded and the following criteria set.



CAN ID	E1
Format	STD-11bit

Byte	Bits	endian	Name	Incoming Hex	Incoming Decimal	Multiplier	Offset	Unit	Converted Range	Notes
0	8	n/a	Flex %	0-FF	0-255	0.01	0	%	0-255 %	Decimal = Flex % exactly 0-100%, but EcuTek wants to see 0.0 to 1.0
1-2	16	Little (lo byte First)	AV 01	0 - 03FF	0-1023	4.8876	0	mv	0-5000mv	
3-4	16	Little (lo byte First)	AV 02	0 - 03FF	0-1023	4.8876	0	mv	0-5000mv	
5-6	16	Little (lo byte First)	AV 03	0 - 03FF	0-1023	4.8876	0	mv	0-5000mv	
7	8	n/a	FlexError	0-1	0-1	1	0		0-1	0 - Sensor Ok _ 1 - Sensor fail

Common sensor Configurations			
0-5v Sensor	Multi	Offset	Logged unit
AEM 100psi	0.12219	-12.5	psi (gauge)
AEM 150psi	0.183284	-18.75	psi (gauge)
AEM 1 bar	0.018328	-16.575	psi (gauge)
AEM 2 bar	0.036657	-18.75	psi (gauge)
AEM 3.5 bar	0.061095	-20.95	psi (gauge)
AEM 5 bar	0.091642	-24.075	psi (gauge)
Omni 4bar	0.058798	0	psi absolute
Stock Nissan	0.043443	-3.4075	psi absolute

2016 - 2020 Q50/Q60 Models will have this additional toggle that needs to be checked as well as the above parmeters setup.

For additional sensors, see our website for Plug'n'Play solutions or if you'd like to wire your own, the pinout is below.