Install Instructions

S38B36 & S38B38 Vacuum Supply | Variable Resonance + Secondary Air Injection

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From all of the asses at Angry Ass, thank you for purchasing an Angry Ass S38B36 & S38B38 Vacuum Supply | Variable Resonance + Secondary Air Injection maintenance kit!

Please read this entire installation manual prior to attempting to install or use the Angry Ass S38B36 & S38B38 Vacuum Supply | Variable Resonance + Secondary Air Injection maintenance kit to ensure proper installation and safe use.

The Angry Ass S38B36 & S38B38 Vacuum Supply | Variable Resonance + Secondary Air Injection maintenance kit should only be installed by persons skilled in vehicle component installation and performance. Angry Ass Limited shall not be held liable for any damage or personal injury (including direct, indirect, or consequential damage) sustained as a result of improper installation of the Angry Ass S38B36 & S38B38 Vacuum Supply | Variable Resonance + Secondary Air Injection maintenance kit or its use and maintenance contrary to the instructions and warnings contained herein.

If you have any questions regarding the installation and/or proper use of the Angry Ass S38B36 & S38B38 Vacuum Supply | Variable Resonance + Secondary Air Injection maintenance kit, or this manual, please contact Angry Ass via our official website at: www.Angry-Ass.com.

All statements made are made in respect to the Angry Ass S38B36 & S38B38 Vacuum Supply | Variable Resonance + Secondary Air Injection maintenance kit being used “as is”. Any modifications to the Angry Ass S38B36 & S38B38 Vacuum Supply | Variable Resonance + Secondary Air Injection maintenance kit or its improper installation, use or maintenance that is not in accordance with this installation manual, may result in severe damage to the intake system and/or engine, as well as personal injury. The Angry Ass S38B36 & S38B38 Vacuum Supply | Variable Resonance + Secondary Air Injection maintenance kit and consumption of refreshing beverages (alcoholic or otherwise) may only be used in accordance with relevant laws and regulations, including state and federal, where applicable. Angry Ass Limited reminds you to be responsible and stay safe!!

PARTS LIST S38B36

The following parts are contained in a “full” kit, for S38B36 cars that retain Secondary Air Injection (SAI):

1. OEM BMW vacuum reservoir
2. OEM BMW vacuum reservoir mount
3. OEM BMW check valve
4. 4X OEM BMW hose clips
5. ~2m OEM BMW braided vacuum line
6. ~1m hard vacuum line
7. ~2m Abrasion protection
8. 7X OEM BMW vacuum caps
9. 316 stainless steel “L”
10. 316 stainless steel “T”

If your kit is for a car sans Secondary Air Injection (maybe you used our handy, comprehensive SAI delete kit!), B36 kits include the following:

1. OEM BMW vacuum reservoir
2. OEM BMW vacuum reservoir mount
3. OEM BMW check valve
4. 4X OEM BMW hose clips
5. ~2m OEM BMW braided vacuum line
6. ~2m Abrasion protection
7. 7X OEM BMW vacuum caps
8. 316 stainless steel “L”

PARTS LIST S38B38

The following parts are contained in a “full” kit, for S38B38 cars that retain Secondary Air Injection (SAI):

1. OEM BMW vacuum reservoir
2. OEM BMW vacuum reservoir mount
3. OEM BMW check valve
4. ~2m OEM BMW braided vacuum line
5. ~1m hard vacuum line
6. ~2m Abrasion protection
7. 7X OEM BMW vacuum caps
8. 316 stainless steel “L”
9. 316 stainless steel “T”

If your kit is for a car sans Secondary Air Injection (maybe you used our handy, comprehensive SAI delete kit!), S38B38 kits include the following:

1. OEM BMW vacuum reservoir
2. OEM BMW vacuum reservoir mount
3. OEM BMW check valve
4. ~1m OEM BMW braided vacuum line
5. ~1m Abrasion protection
6. 7X OEM BMW vacuum caps
7. 316 stainless steel “L”

TOOLS & SHOP SUPPLIES

You will need to provide the following:

1. 10mm Wrench, ratcheting is a plus
2. 13mm Wrench
3. Needle nose pliers
4. Flat head screwdriver, long blade
5. Flat head screwdriver, stubby
6. Utility or X-Acto knife (Razor blade for cutting hose and abrasion protection)
7. Tape measure capable of 2m and/or 2yd or more
8. Paper towel or shop rag
9. Rubbing alcohol
10. Refreshing beverage of choice

1. Equip yourself with a refreshing beverage or two. Install in your Angry Ass Koozie, if you have one. Pop the hood. See Figure 1.

Figure 1

2. Unpack your Angry Ass S38B36/B38 intake system vacuum maintenance kit and verify all components are accounted for according to the option you ordered.

3. Begin by disconnecting the MAF sensor harness by depressing connector release and set harness off to side. Slide under the cruise control cable, see Figure 4 (S38B36 shown).

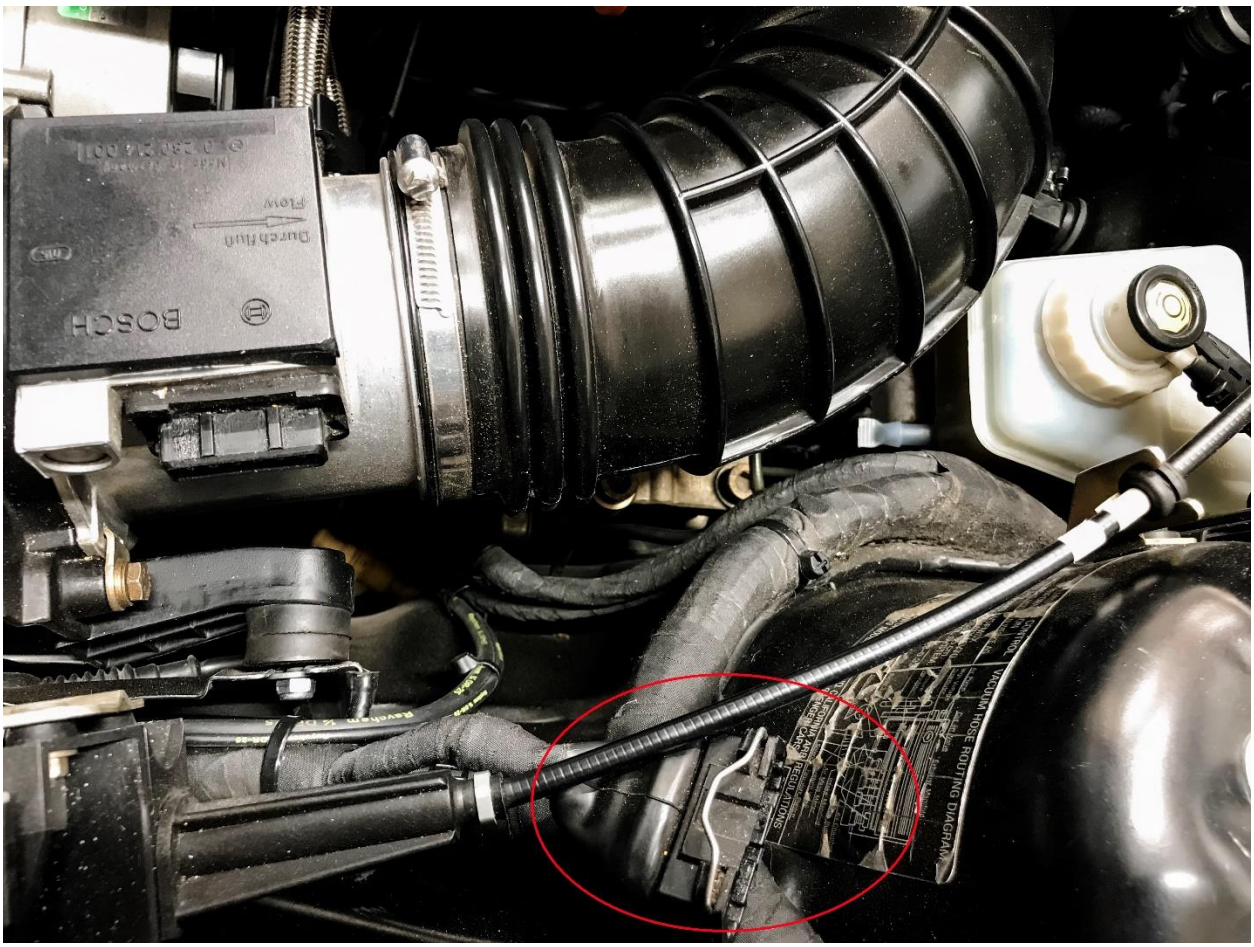

Figure 4

4. Proceed to removing the air filter box by first loosening the two nuts at chassis attachment point using a 10mm wrench. See Figure 5 (S38B38 shown).

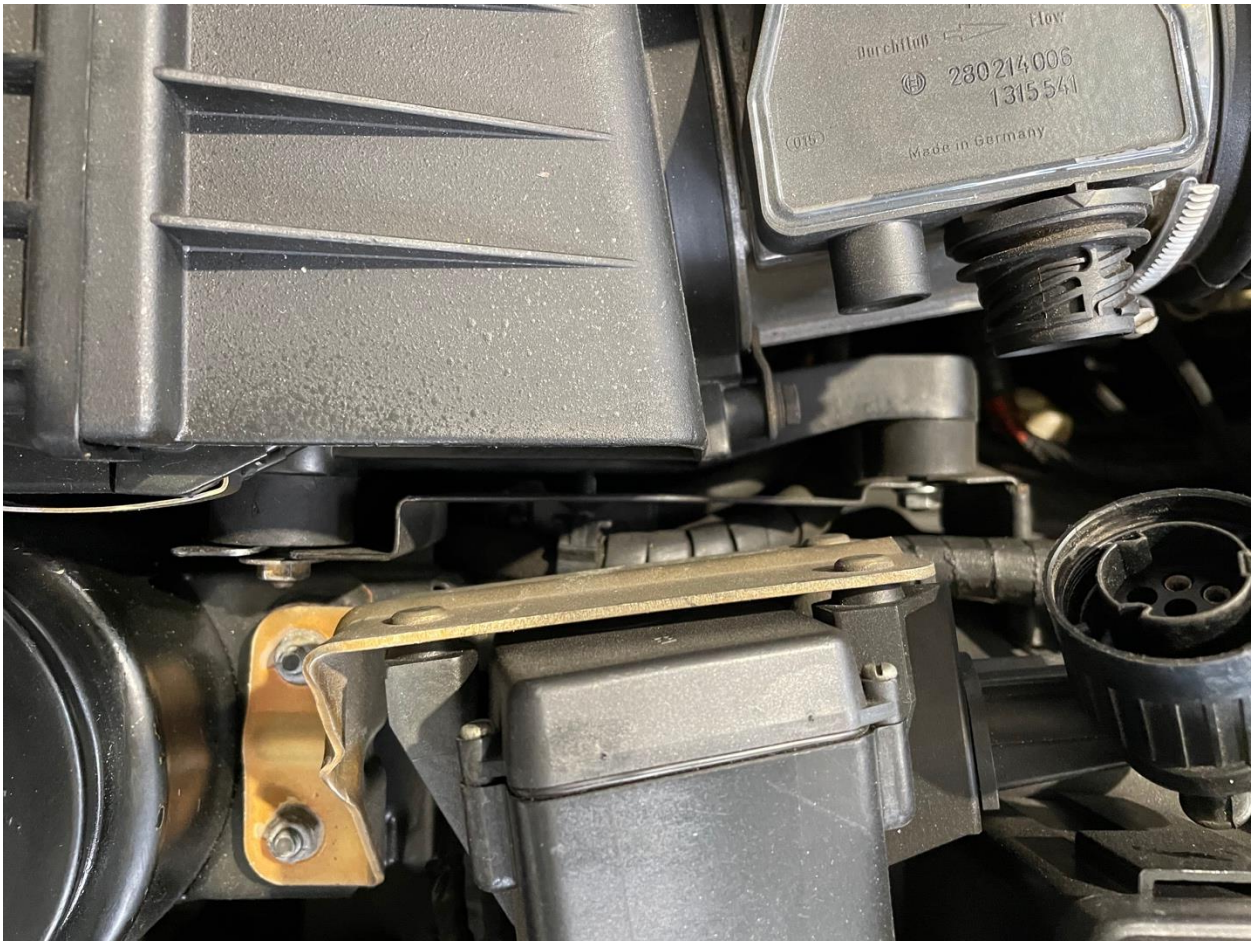

Figure 5

5. Next loosen hose clamp that secures main intake boot to MAF by using flat head screwdriver, ensure that intake boot can be slid off of the MAF. See Figure 6 (S38B36 shown).

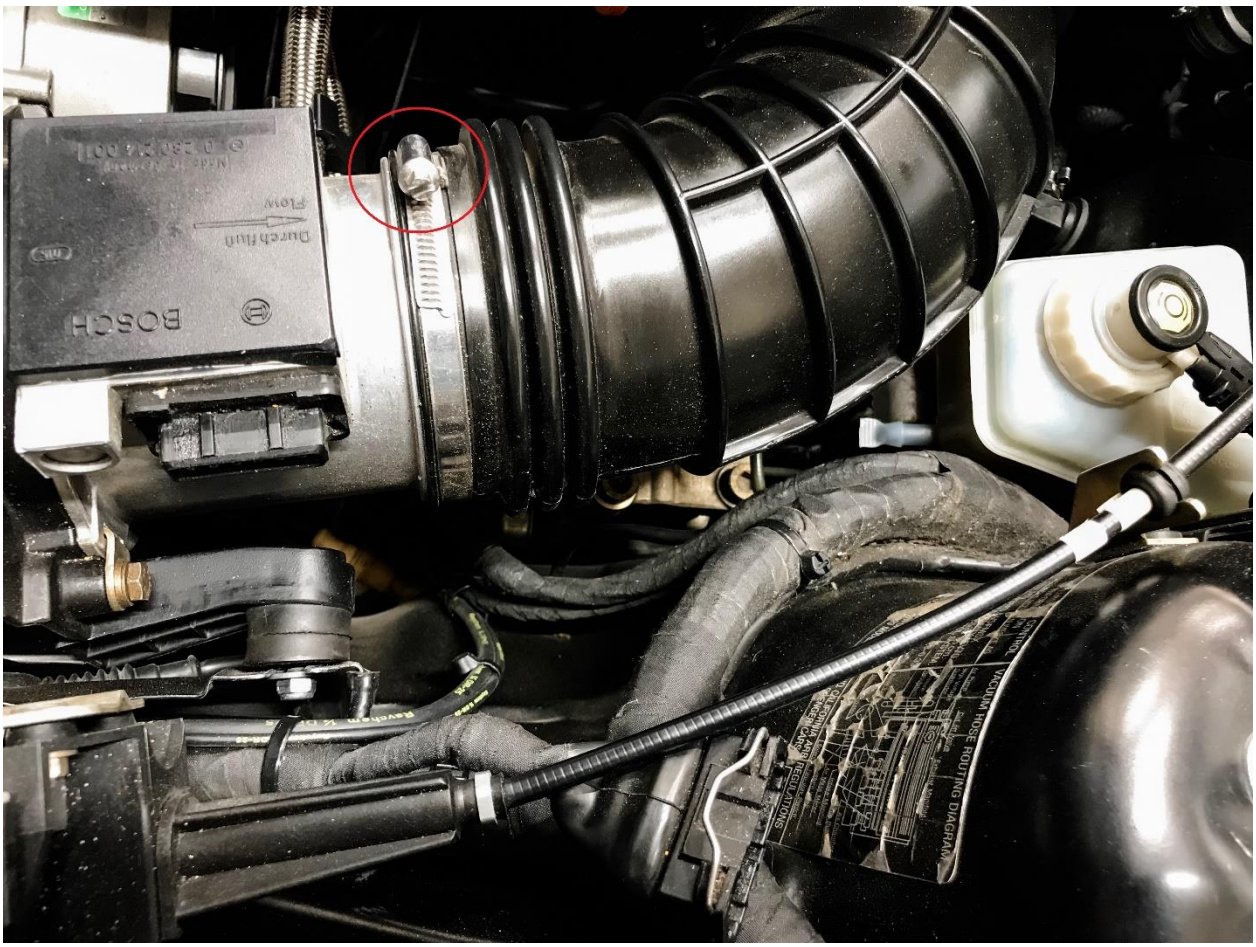

Figure 6

6. Lift airbox up and without placing strain on temperature sensor harness disconnect temperature sensor by depressing connector release. Set air filter box in a safe location and take a few drinks of your refreshing beverage.

7. Using your flat head screwdriver loosen the hose clamp that holds the main intake boot to the plenum. Remove intake boot and clean and inspect, looking for any cracks. If the boot is aged and showing signs of cracking and rigidity, we suggest replacement, part number is 11611312062 for the S38B36 and 11611317495 for the S38B38. See Figure 7.

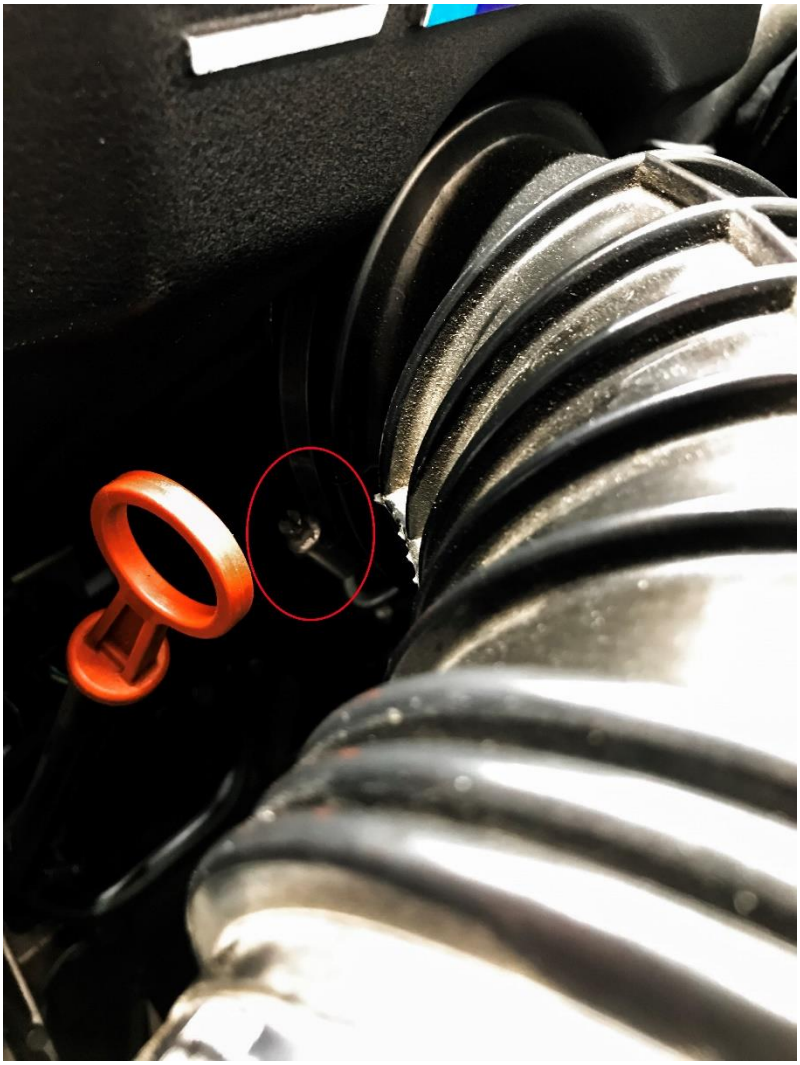

Figure 7

8. Using your flat head screwdriver disconnect the hose from the bottom of intake plenum inlet that feeds the idle air control valve. See Figure 8.

Figure 8

9. Again, using your flat head screwdriver disconnect the hose for the crank case cyclone separator under the plenum. This is the cylindrical aluminum casting that is bolted directly under the plenum. Have your shop rag ready as you will get a few drips of oil and its best to remove the hose clamp so it doesn't drop. See Figure 9.

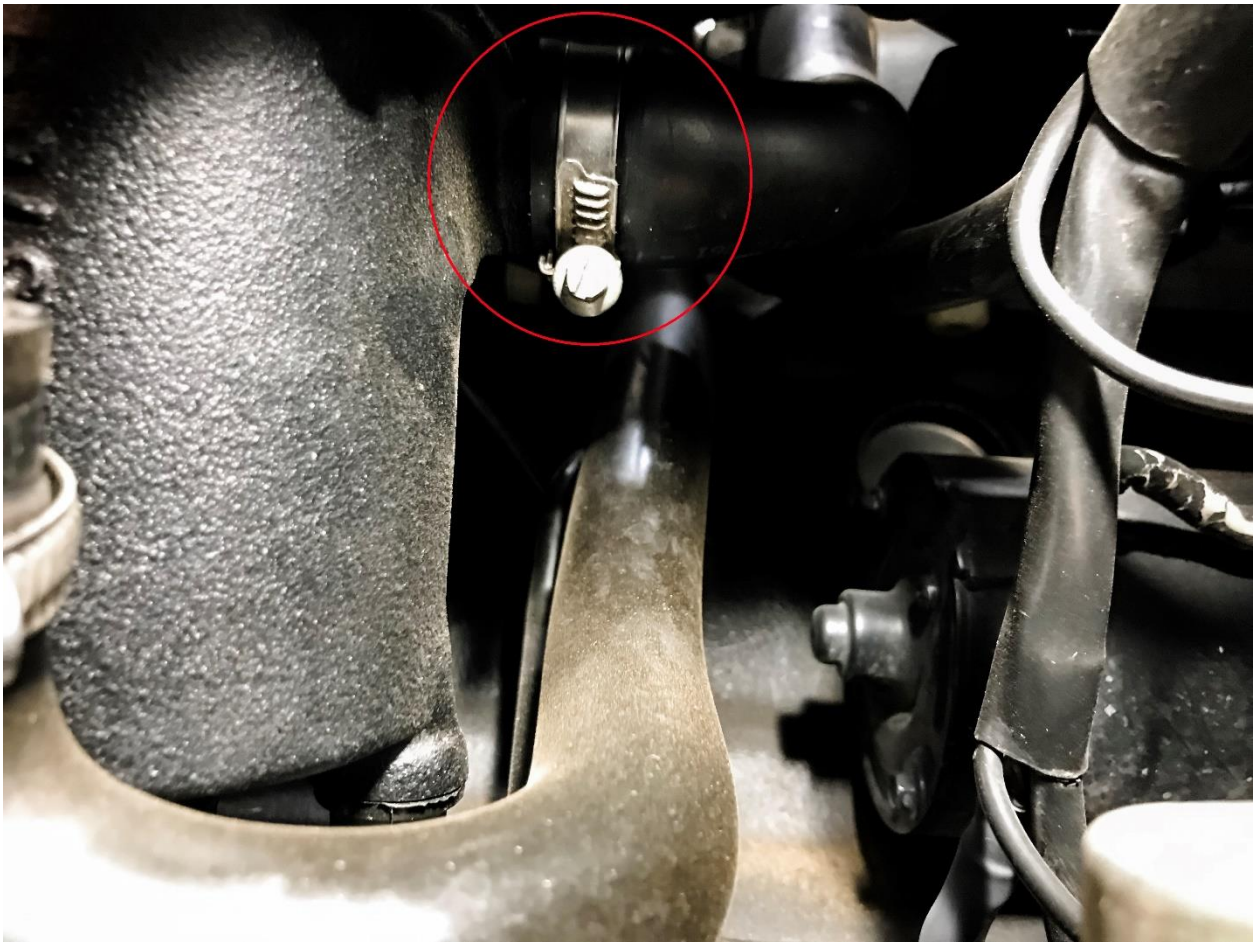

Figure 9

10. Disconnect vacuum servo electrical connection and vacuum feed located on bottom of plenum to left of plenum inlet. The vacuum feed line is the barb that points towards the engine. It will most likely be stubborn and require a bit of force, be sure to only pull in a parallel direction so as not to potentially break the servo hose barb! See Figure 10.

Figure 10

11. Disconnect oil drain line from cyclone separator by loosening the hose clamp securing the line to drain barb by using your stubby flat head screwdriver. Have your shop rag ready to catch any drips from the separator or hose. It's helpful to slide the hose clamp down the hose so it doesn't get lost and to tuck the hose clamp away towards the dipstick. See Figure 11.

Figure 11

12. Remove the two nuts that attach the rubber mounts on the bottom of the cyclone separator to the plenum support brace using your 13mm wrench. See Figure 12.

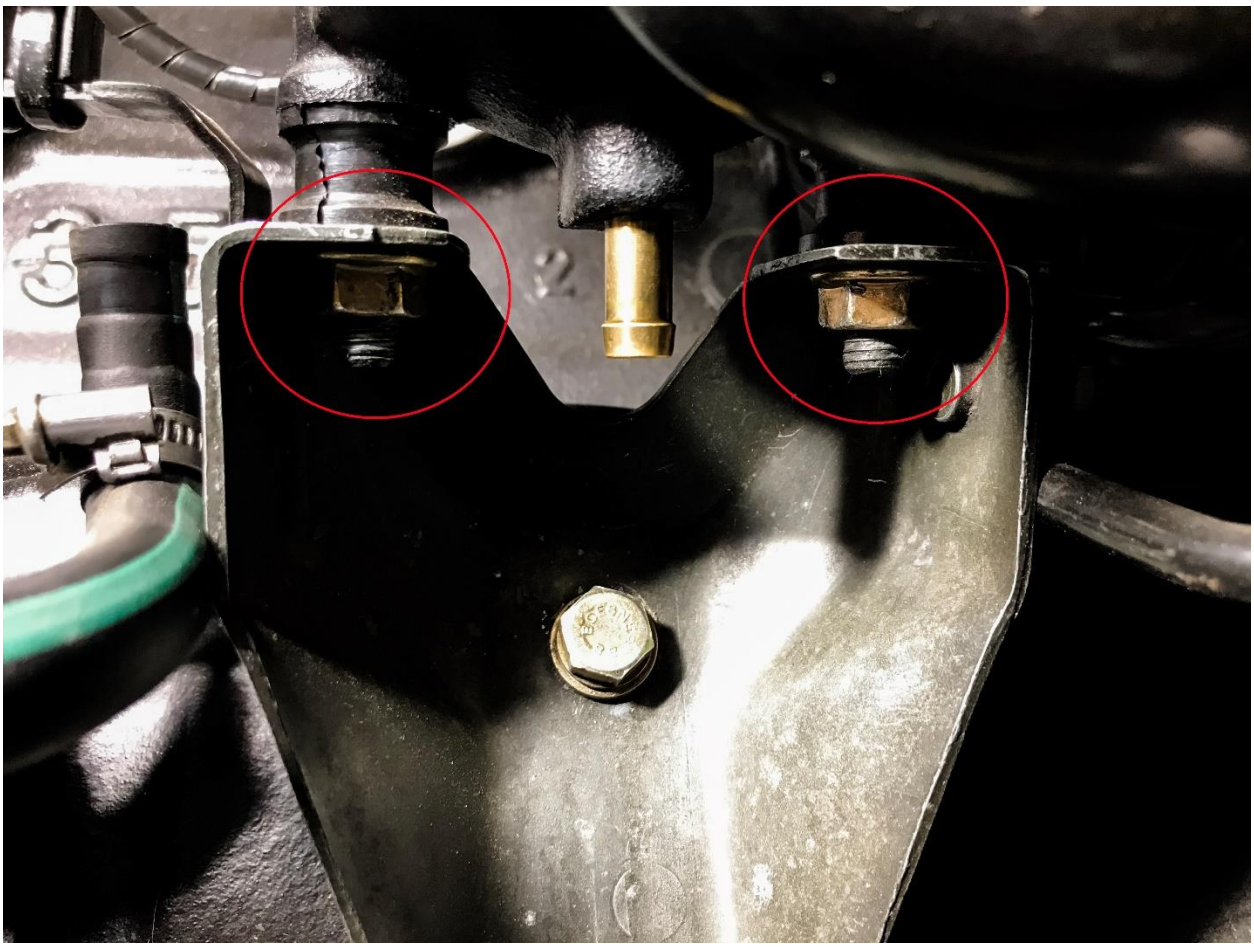

Figure 12

13. Free the wiring harness retention strap by removing the nut that attaches it to the plenum with your 10mm wrench. Slide the retention strap off the stud but make sure it stays on the harness. See Figure 13.

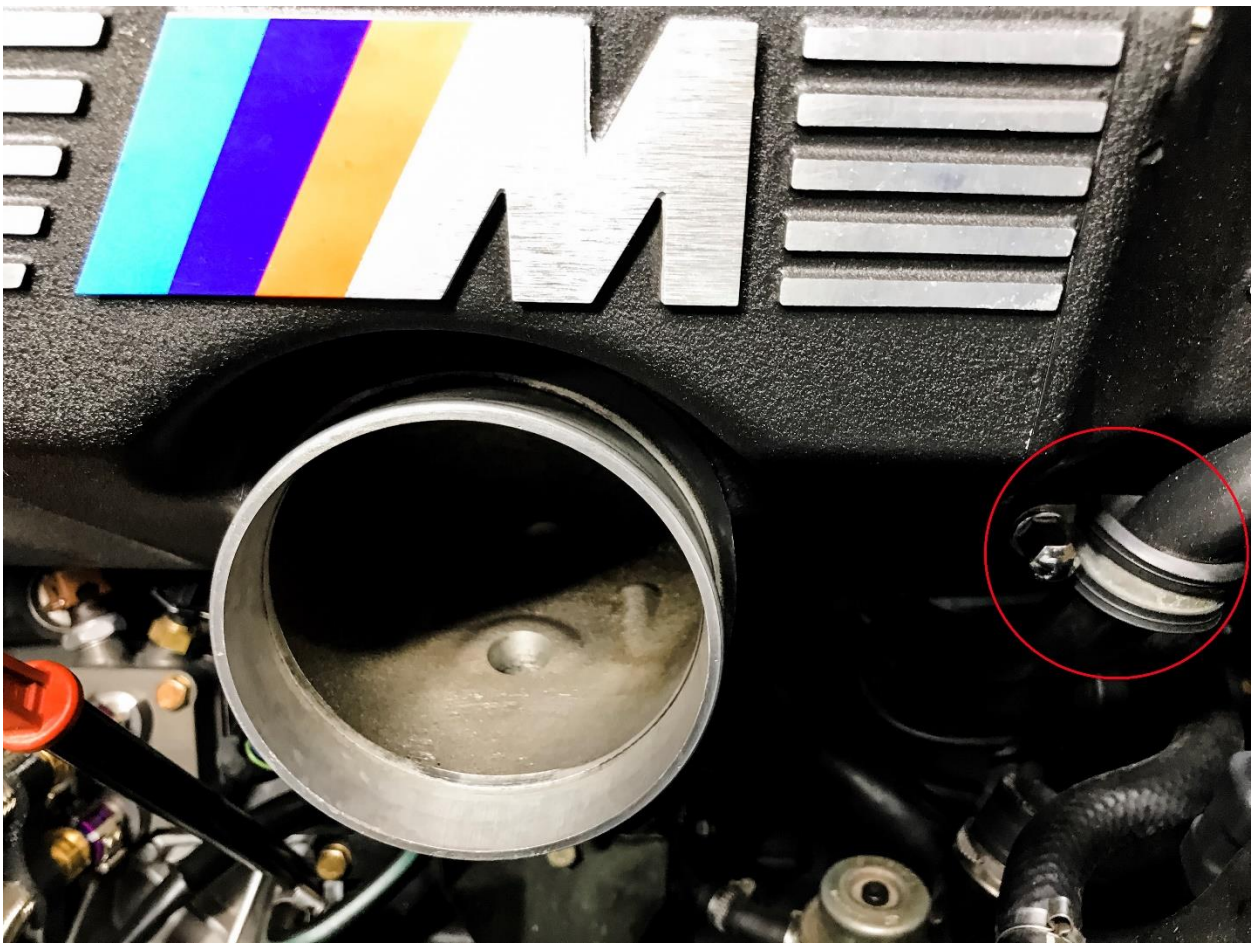

Figure 13

14. For the S38B36 disconnect throttle and cruise control cable next by pulling the throttle actuator plate towards you (US driver side) and then pinching the grommet and sliding grommet and cable out of throttle actuator. See Figure 14 (S38B36 shown).

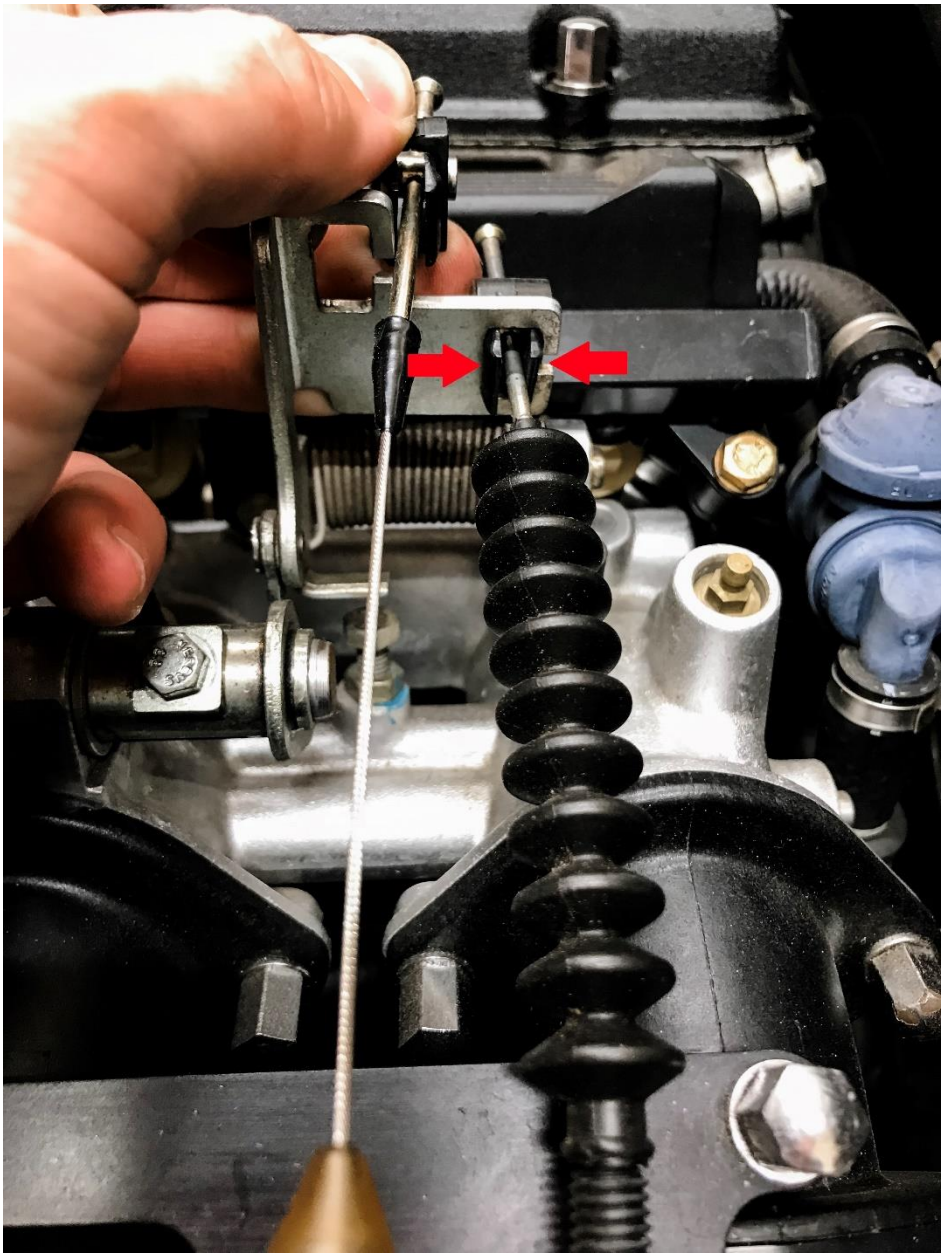

Figure 14

14B. S38B38 engines have a three-cable arrangement here, for throttle, cruise, and max speed limiter. See Figure 15.

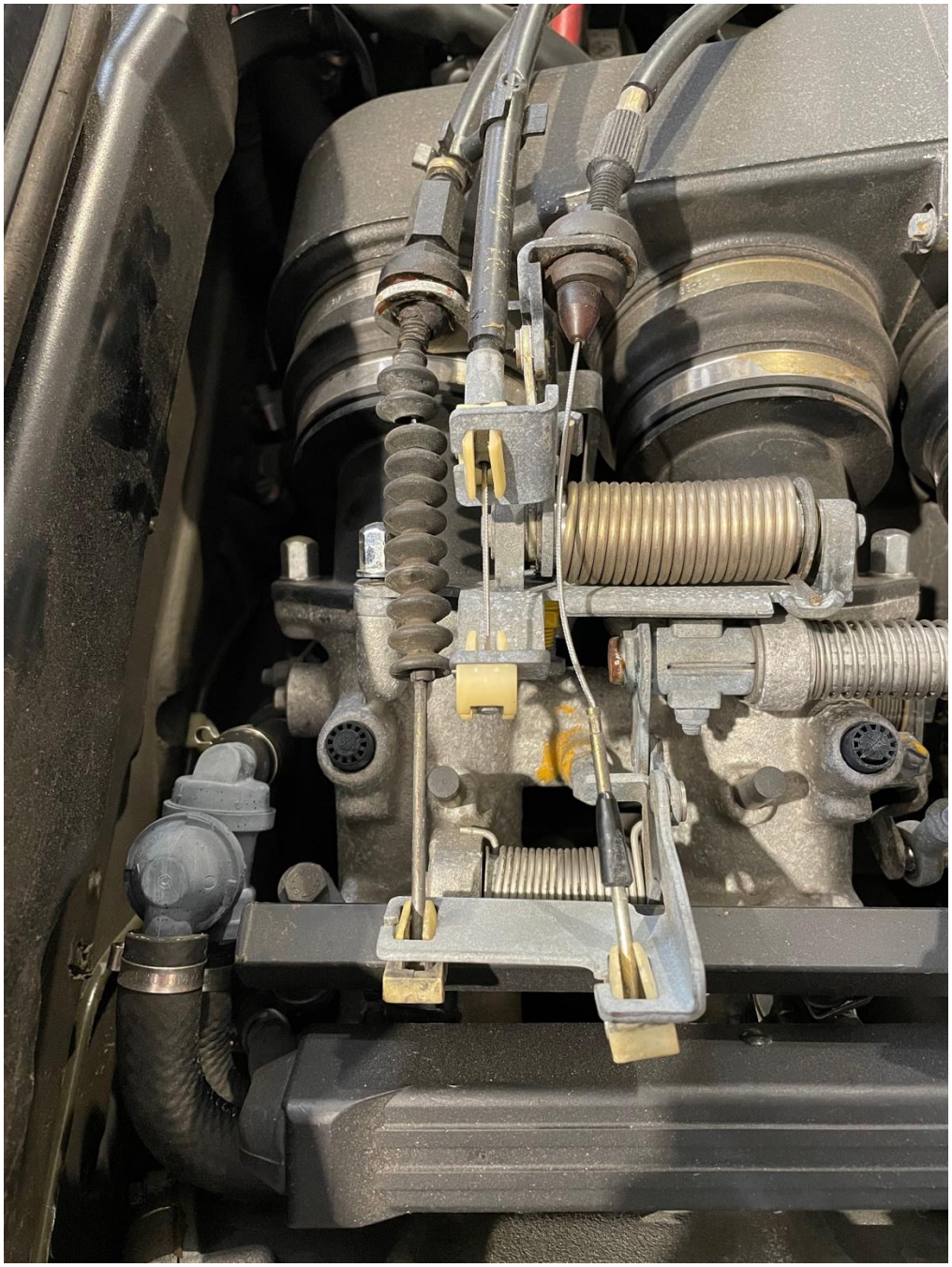

Figure 15

14B Continued. Removal of the B38 cables starts the same as in Step 14 for the B36, by pulling the throttle actuator plate towards you (US driver side – see Figure 16) and then pinching the grommet and sliding grommet and cable out of throttle actuator.

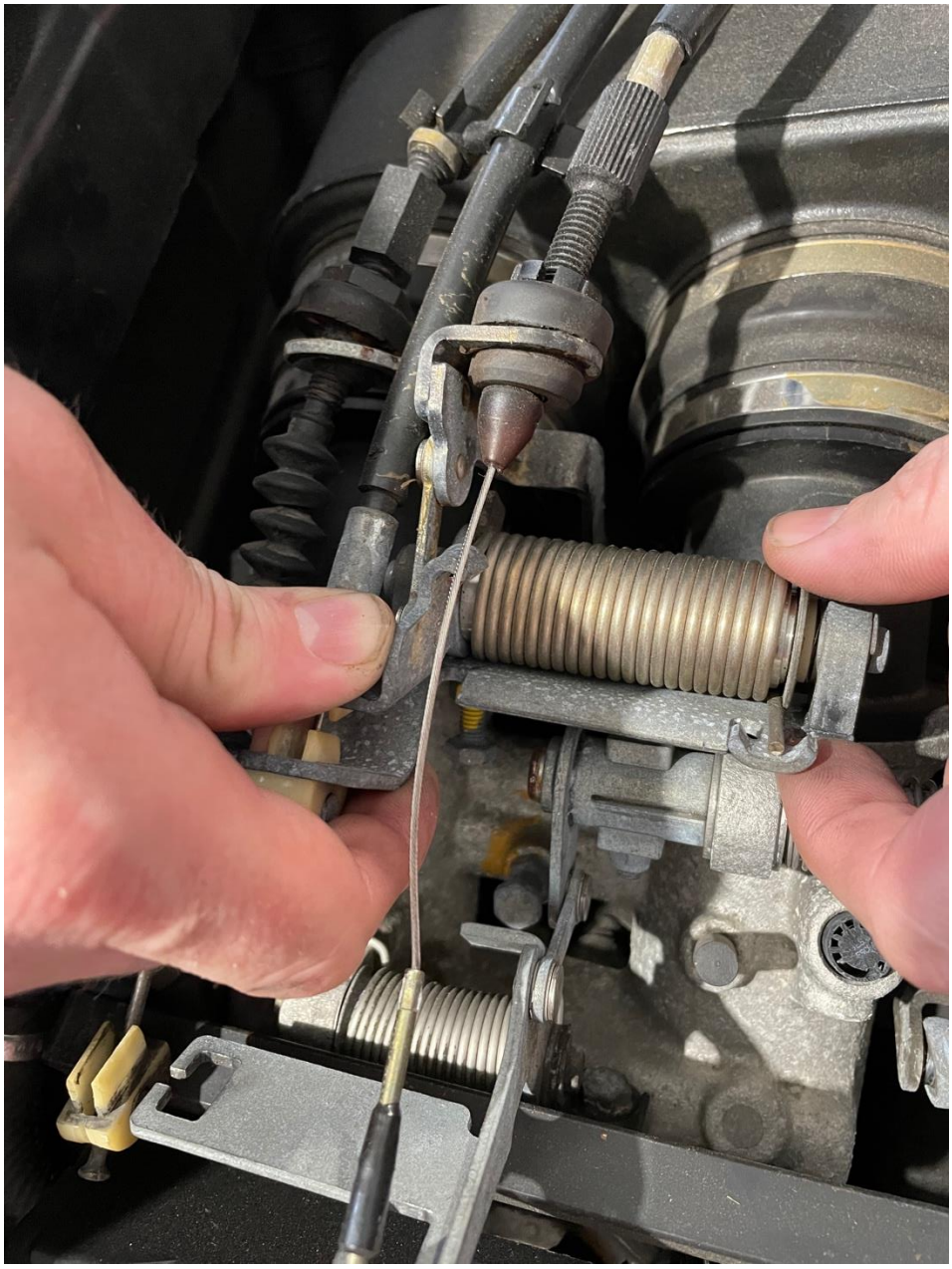

Figure 16

15. On the S38B36, Remove the two nuts with your 10mm wrench that mount the throttle cable bracket to the velocity stacks and set the throttle cable bracket and cables on fire wall. See Figures 17 & 18.

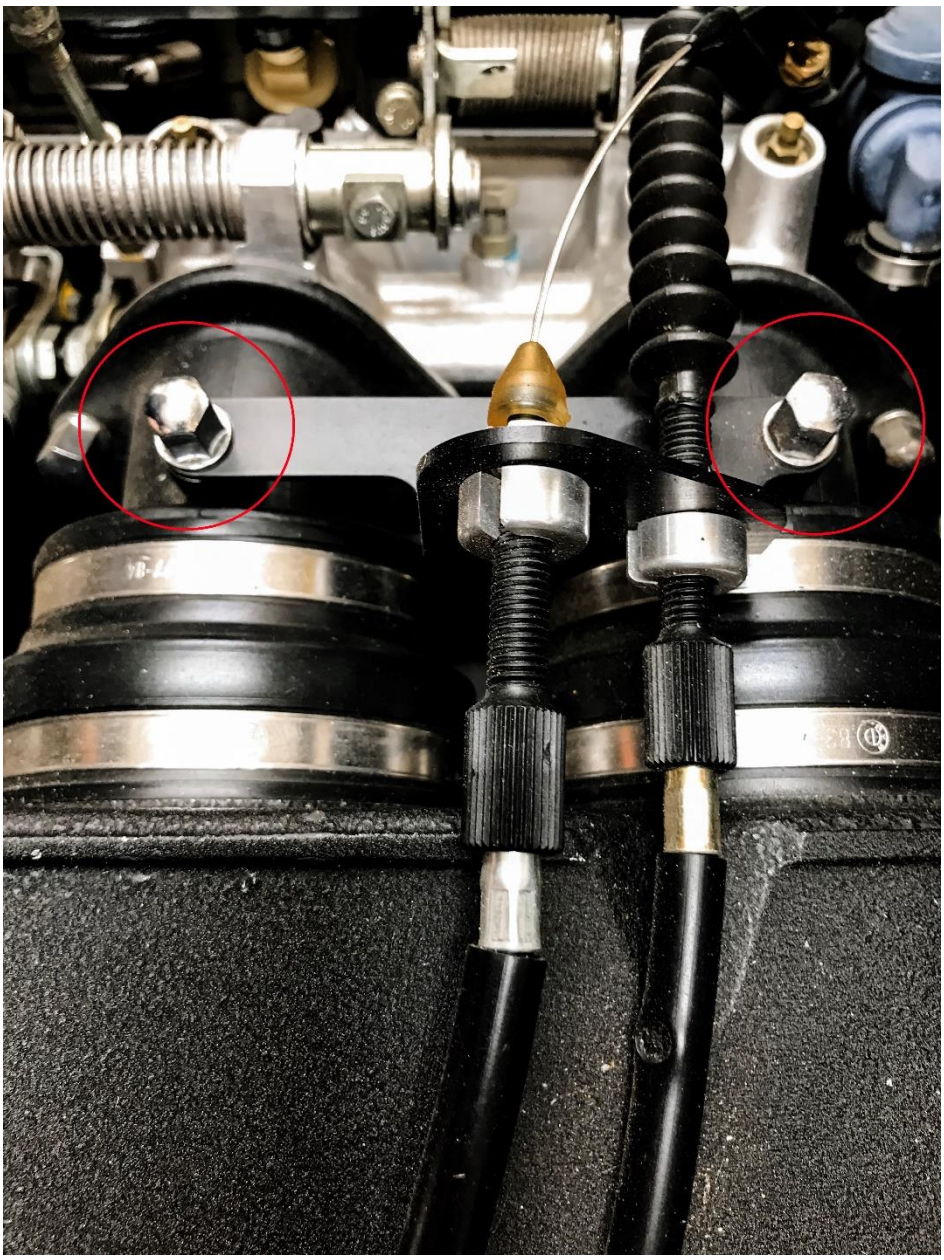

Figure 17

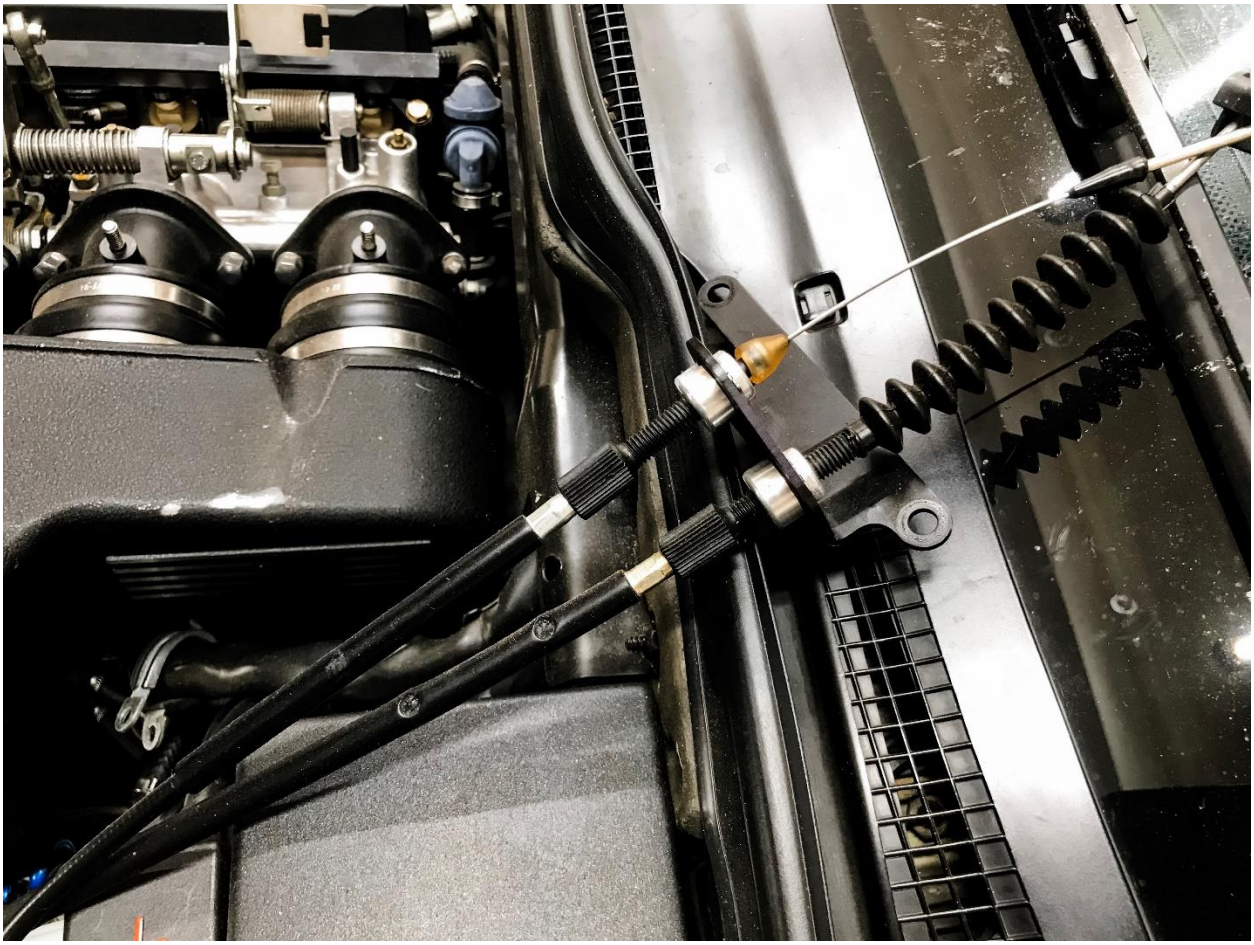

Figure 18

15B. On the S38B38, the throttle cable plate is retained by four of the throttle body nuts highlighted in Step 16. Remove them first, and place the throttle cable plate to the side as shown in Figure 18 above.

16. Remove all 12X nuts at the throttle body to velocity stack joint using your 10mm wrench. See Figure 19 (S38B36 shown).

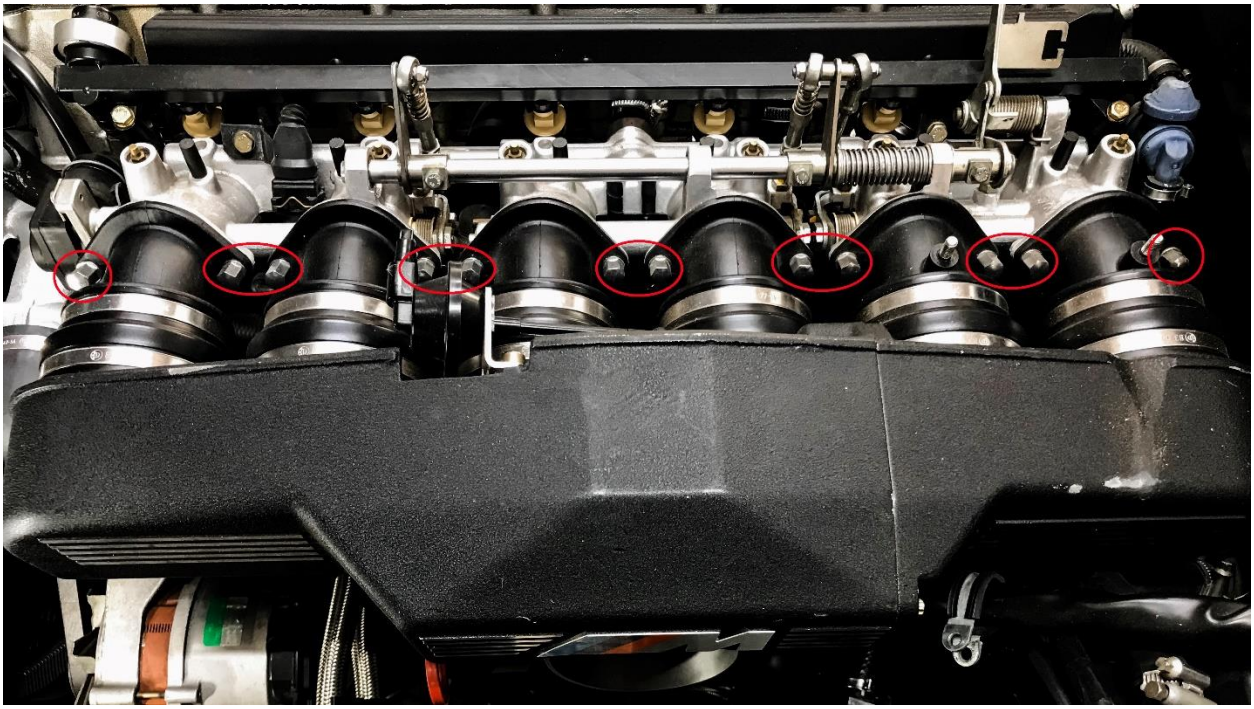

Figure 19

17. Ensure all connections and hoses are clear and lift plenum off throttle body studs and clear of lower plenum mount. This is a tilting motion towards the driver (U.S.) side strut tower. See Figure 20 (S38B36 shown).

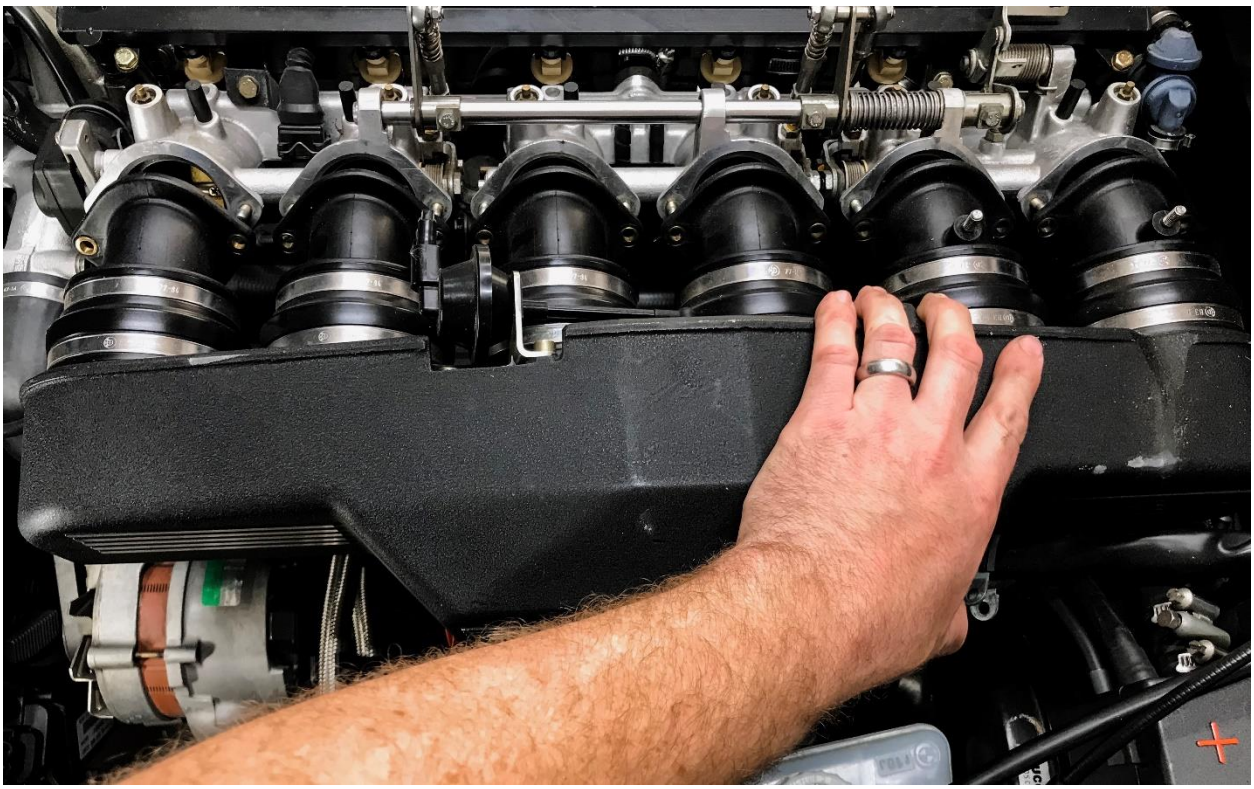

Figure 20

18. With the plenum off and on a flat surface clean and inspect the o-rings that seal the velocity stacks to throttle bodies as well as the velocity stack to plenum boots. The o-rings should be round and not have any nicks or cracking. The velocity stack to plenum boots should be free from cracking (replace as necessary).

19. With the plenum removed disconnect the IAC valve electrical connector at the valve body. See Figure 21 (S38B36 shown).

Figure 21

20. Next disconnect the idle air control hose at the idle air valve body. Remove the idle air control valve by pushing the retaining bosses on the bottom of the rubber mount together to free them from the mounting plate. It can be helpful to remove the clips and hose for the heater return line. This is just to aid in clearance. See Figure 22 (S38B36 shown).

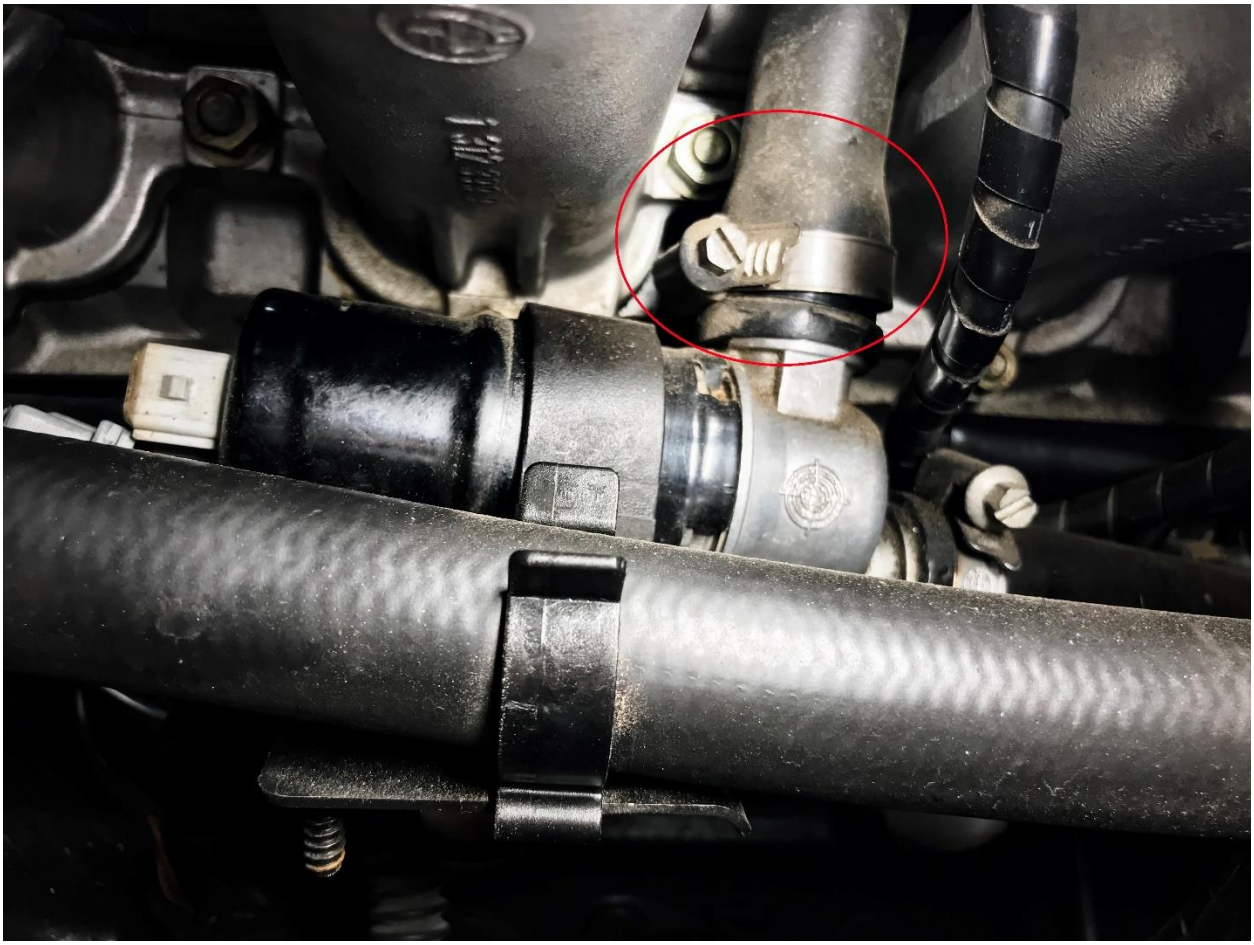

Figure 22

21. Disconnect the vacuum feed line from the throttle bodies and from the vacuum servo for the secondary air injection. Line #2 and #3 in Figure 23 (S38B36 routing shown).

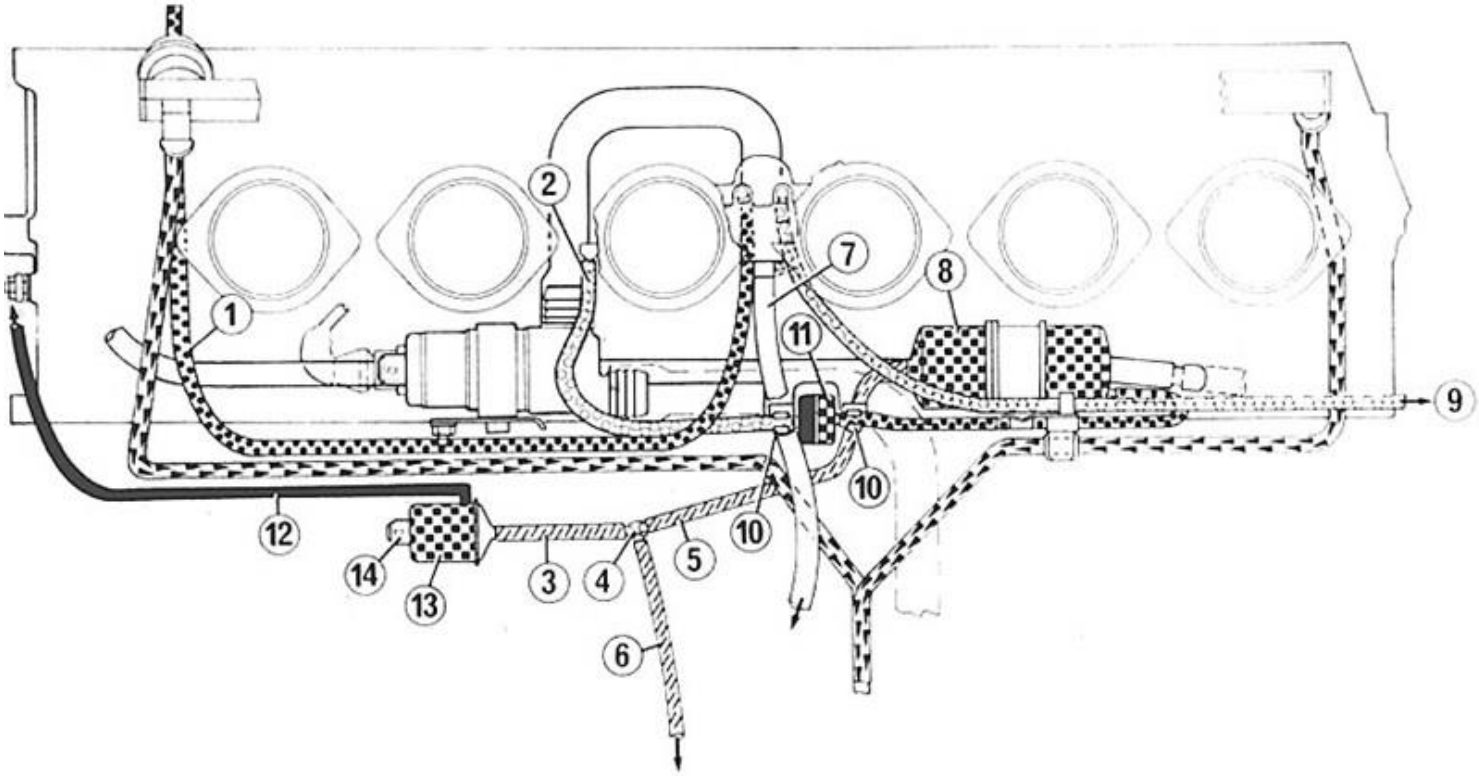

Figure 23

22. Remove the vacuum lines (with fittings), one-way valve, clips (use needle nose), vacuum reservoir, and vacuum reservoir mount from the mounting rail. Try to maintain vacuum line lengths as a template if needed. Clean the rail with shop rag and degreaser if needed.

23. For the S38B36, Install 4X new mounting clips on the mounting rail. With clips in place measure existing line lengths of #2, #3, #5, and #6 and using razor or other cutting tool cut lines for replacement. See Figure 24.

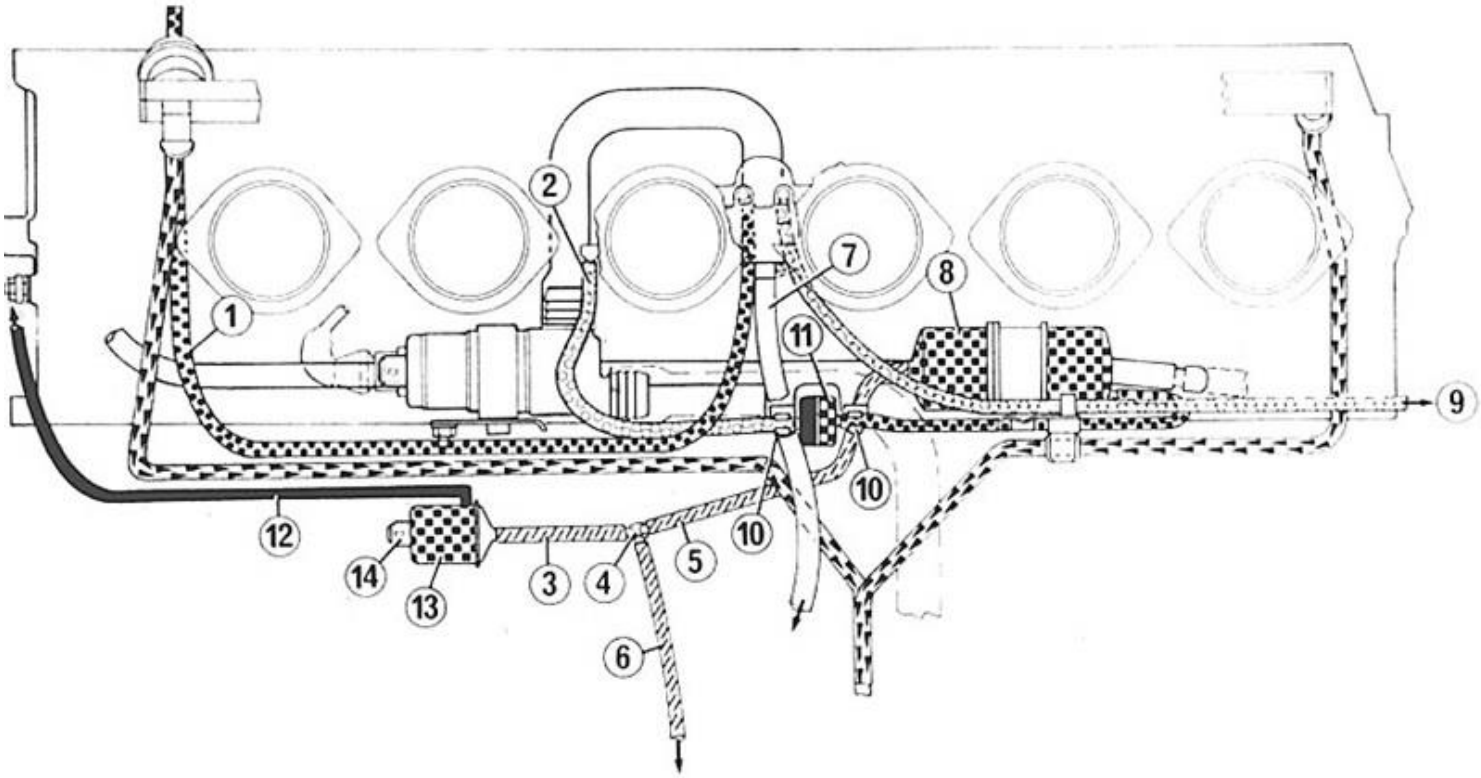

Figure 24

24. Install lines with one-way valve #11, vacuum reservoir #8, and vacuum “T” #4 assembled on to mounting rail and clips (S38B36 only). Add abrasion protection where needed and be sure to note orientation of one-way valve as well as routing. You want to ensure any bends are gradual to avoid kinking. See Figure 24 (prior page) and Figure 25 (S38B36 shown).

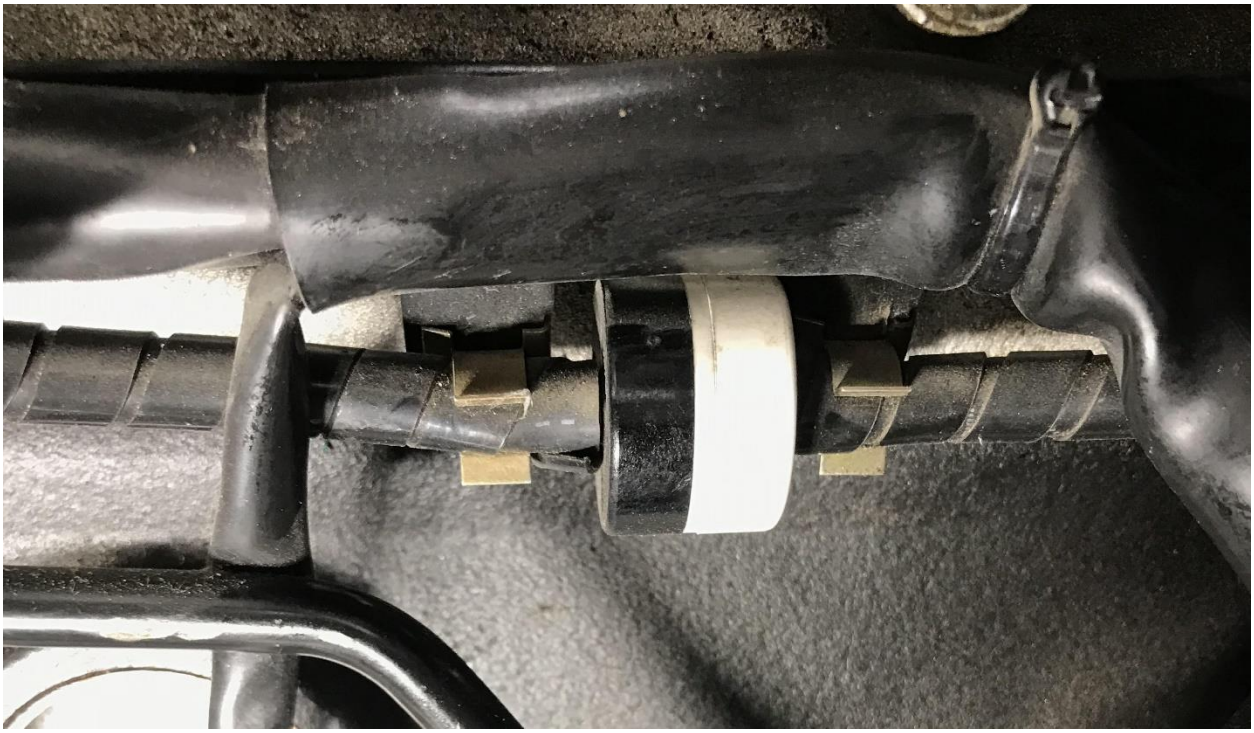

Figure 25

25. Disconnect the vacuum line #1 from the fuel pressure regulator barb and also from the throttle body vacuum source barb. Replace the line with a ~54.5cm (21.5”) for a S38B36, or use your existing line as a template for a replacement line. Be sure to note routing, and if it rubs on anything, use the abrasion protection where needed – keep all bends gradual. See Figure 26.

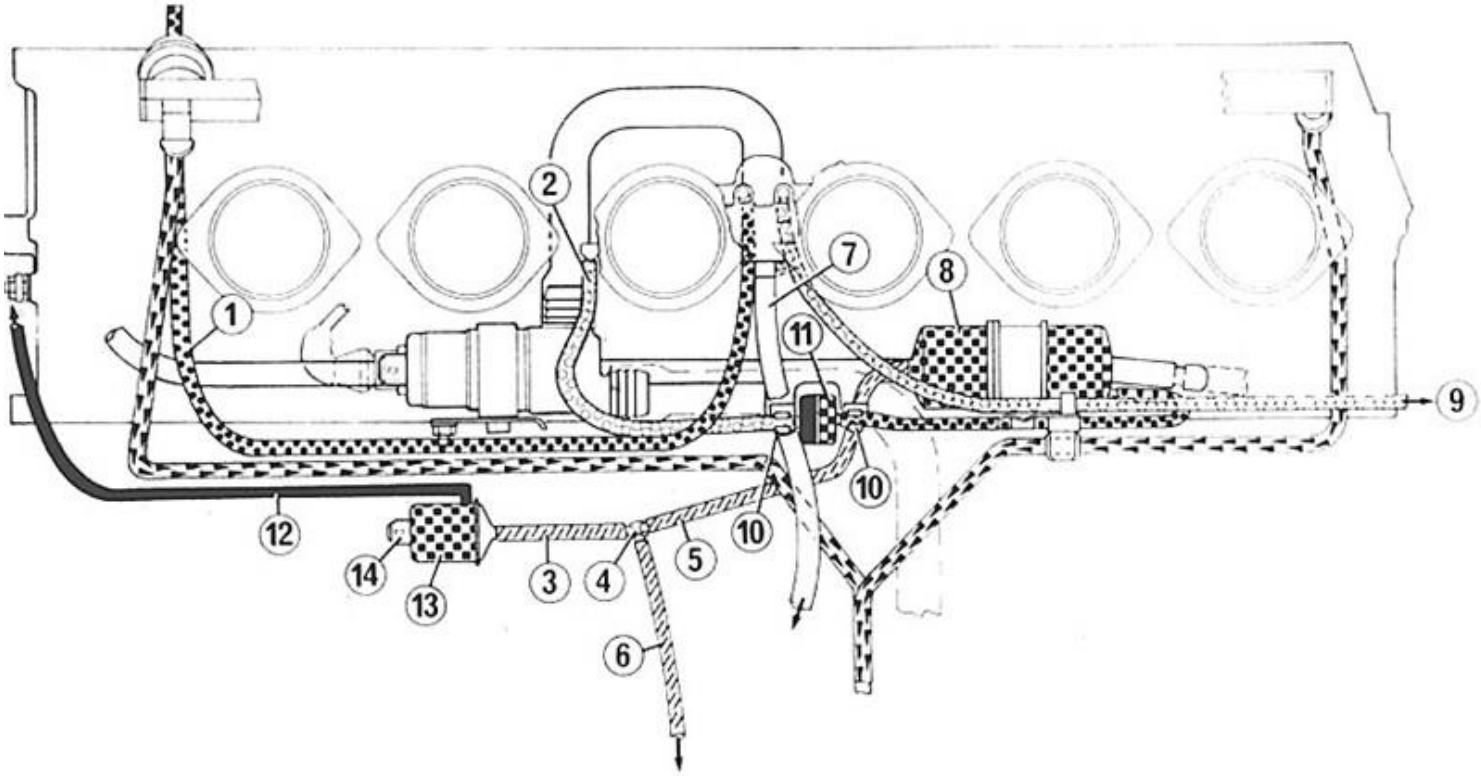

Figure 26

25B. On the S38B38 routing is simpler due to a more elegant design. Mount the vacuum reservoir (8 above) under the 2nd throttle body, “behind” the idle air control valve location. This removes the need for much vacuum hose under the throttle bodies, as well as the pipe clips included in the S38B36 kit.

26. On your removed plenum, disconnect the vacuum line from the variable resonance actuator barb and also from the variable resonance actuator servo barb. Replace the line assembly with ~29.0cm (11.5”) and 2.5cm (1.0”) pieces of soft line along with your new vacuum “L”. You can also use your existing line as a template for a replacement line. Be sure to note if the line rubs on anything and use the abrasion protection where needed. See Figure 25.

Figure 27

27. On the mounting rail find the secondary air injection servo #13 and remove the vacuum line that runs along the front of the engine #12 and down to the secondary air injection valve that's located on the exhaust side. Take note of routing and try to maintain vacuum line lengths as a template if needed. See Figure 28.

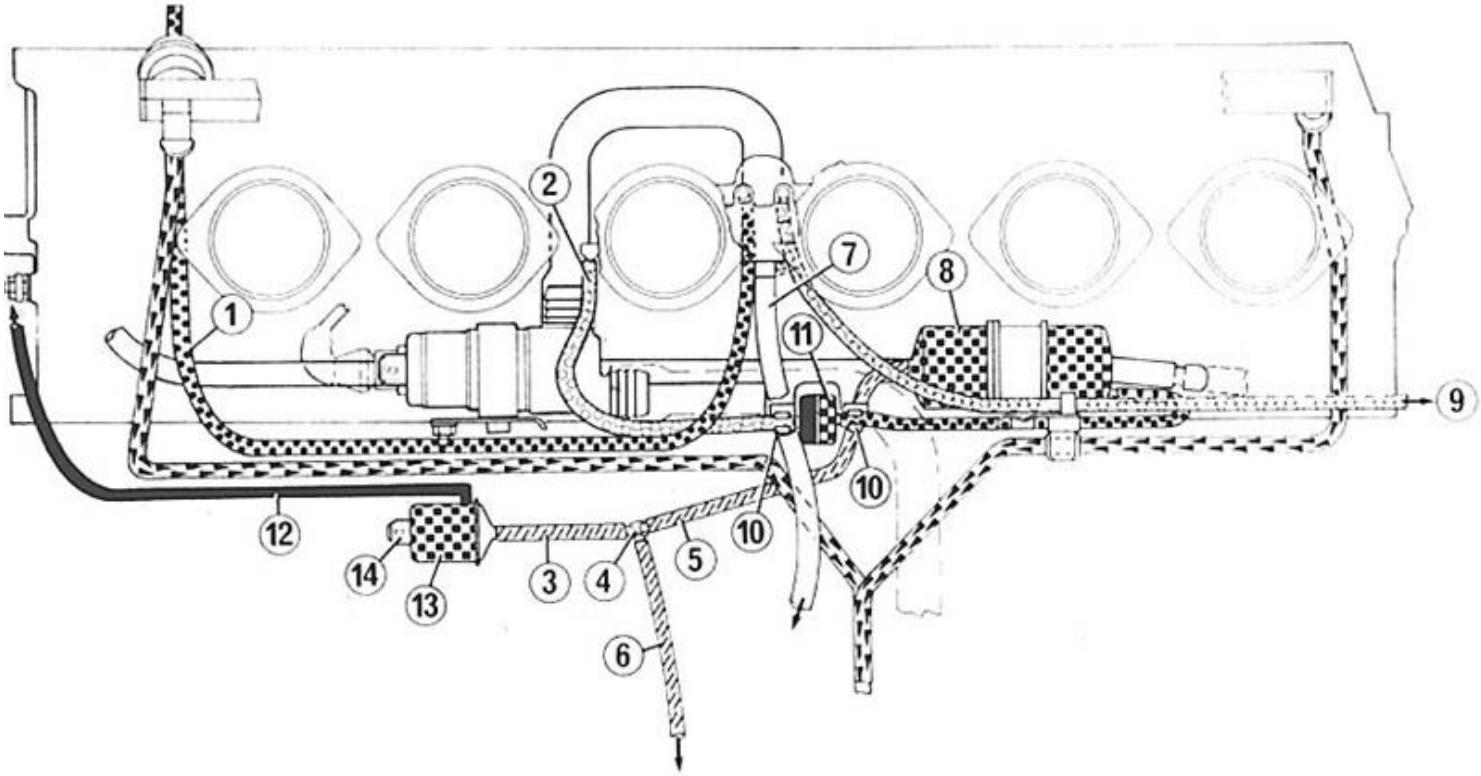

Figure 28

28. Cut 2X sections of soft vacuum hose ~ 5.0cm (2.0“) for use as couplers. Using your existing hard line as a template, cut a new replacement line ensuring the ends are square and deburred. The 2X sections of vacuum hose will be used to connect the hard vacuum line to the secondary air injection servo barb #13 to the secondary air injection valve. Route line as originally installed.

29. Remove all 7X vacuum caps on throttle bodies as shown in Figure 30 and wipe down with shop rag to ensure no oil, dirt, or debris can cause potential sealing issues. Install new caps by pressing on barbs. See Figure 29 (S38B36 shown).

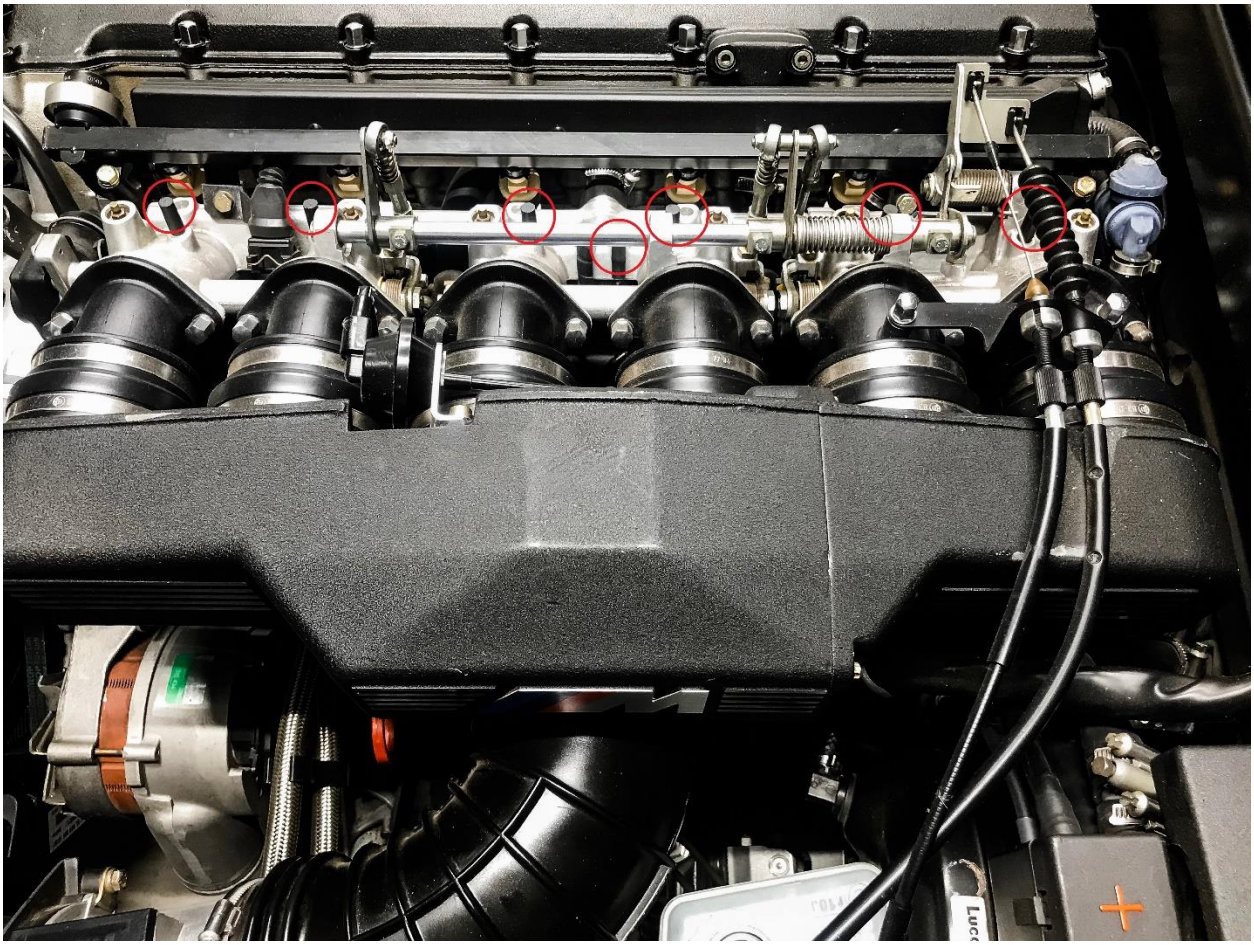

Figure 29

30. With all of your lines replaced and properly routed, reinstall all components in reverse of removal steps. If you need further assistance with anything at all please feel free to contact us at Info@angry-ass.com .

31. Finish your refreshing beverage, take pictures, and post to your favorite social media platform(s). Be sure to mention us at Angry Ass! And never mix drinking and driving, but please enjoy your hard work when you are fit to drive. Thanks again from all of us at Angry Ass!

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Variable resonance actuator not functioning	Lack of Vacuum	Check vacuum lines, reservoir and one way valve for leaks.
	Vacuum solenoid not functioning	Apply +12v at (+) position on solenoid while grounding (–) position to chassis.
	Variable resonance actuator failed	Remove vacuum line to actuator and ball joint from plenum. Suck on barb for actuaor ensuring proper seal. If lack of movement most likely a failed actuator. Angry Ass Solutions has a solution.
Secondary air injection not functioning	Lack of vacuum	Check vacuum lines, reservoir and one way valve for leaks.
	Vacuum solenoid not functioning	Apply +12v at (+) position on solenoid while grounding (–) position to chassis.
		Remove secondary air injection system and replace with Angry Ass Solutions secondary air injection delete parts. (Not emissions legal)

TROUBLE SHOOTING CONTINUED

PROBLEM	POSSIBLE CAUSE	SOLUTION
Intake leaks	Poorly sealing o-rings, velocity stack to plenum boots, main intake boot, IAC valve hose, and crank case ventilation hose.	Spray carb cleaner or equivalent on potential leak spots while idling. If idle speed increases check connection for leaks and/or tighten hose clamps.

NOTES