



Installation Instruction

Performance Intake manifold with Intercooler



BMW G8X

S58

PART NUMBER: ICM - 450

Description

This instruction shows how to replace the OEM Intake manifold with Intercooler with do88 performance Intake manifold with Intercooler.

At this type of installation, we always recommend that you have mechanical experience and knowledge about safety during work on vehicles.

This installation instruction is performed on a M2 G87 and the procedure for removal of panels and covers will differ a bit if the install is carried out on any other model this product fit.

Parts List



1. Charge air cooler
2. Bracket for front wire harness
3. Bracket for rear wire harness
4. Bracket for water hose
5. Silicone hose (water)
6. Rubber hose (EVAP)
7. Quick connect joiner (water hose)
8. 6x Injector plugs
9. 6x Black O-rings
10. 6x Brown O-rings
11. Thermal spacer
12. Blanking plug EVAP-connection
13. O-ring for Evap plug
14. Plastic blanking for EVAP connection
15. 12x FKM sealing rings
16. Fuel rail
17. 2x Fuel rail blanking plugs
18. Engine cover mounting tab
19. 7x M6x30 Screws
20. 9x M6 Spring washers
21. 2x M6x20 Screws
22. M5x20 Screw
23. 9x M5x12 Screws
24. 2x M6x12 Screws
25. 2x M6x12 Low Head Screws
26. 3x M6x45 Screws
27. 2x Hose clamps for silicone hose
28. 2x Hose clamps for rubber hose

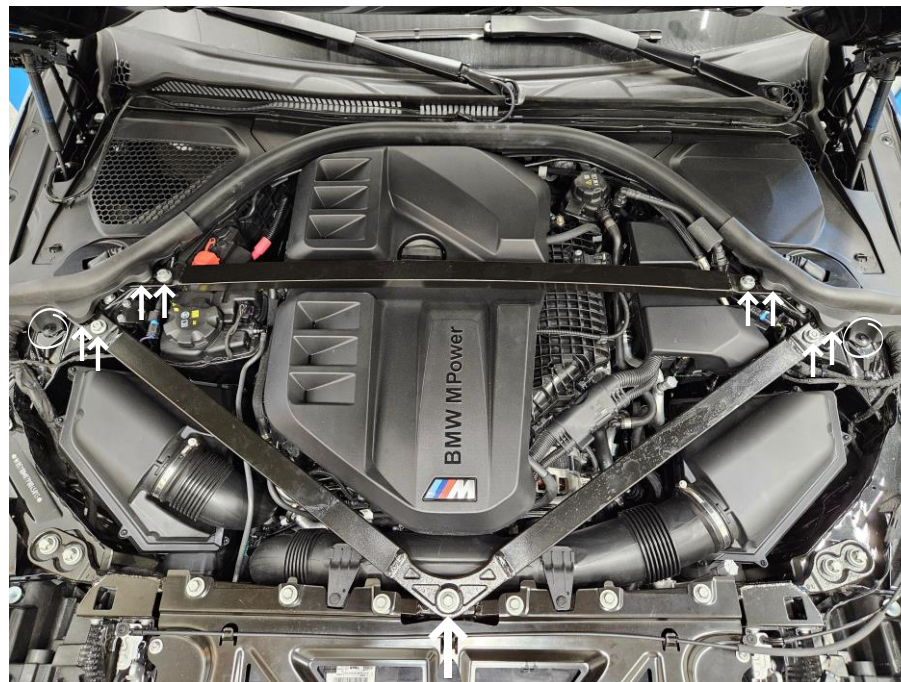
Parts included but not shown in picture:

- 2x Nylon Plastic washers
- 2x Silicone cap 4mm
- 2x Silicone cap 18mm
- 1x Zip-tie
- 5cm Adhesive foam strip



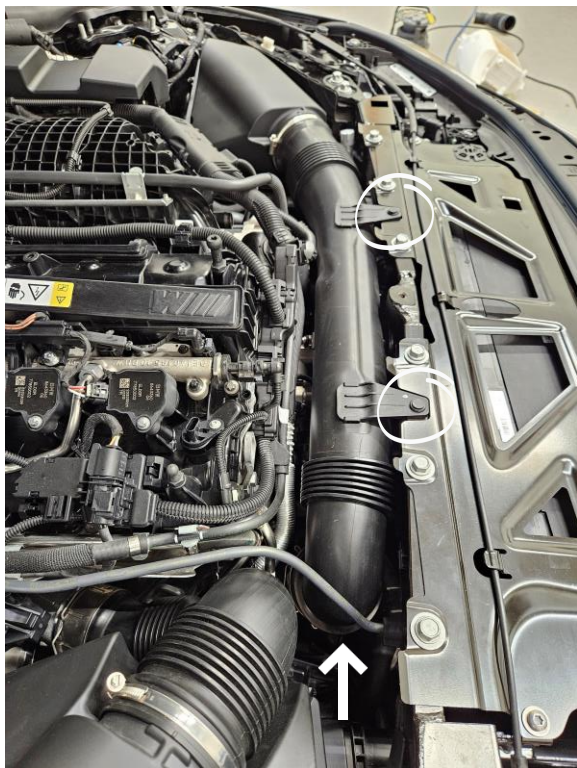
Step 1

Disconnect the negative terminal from the battery (located in the trunk).



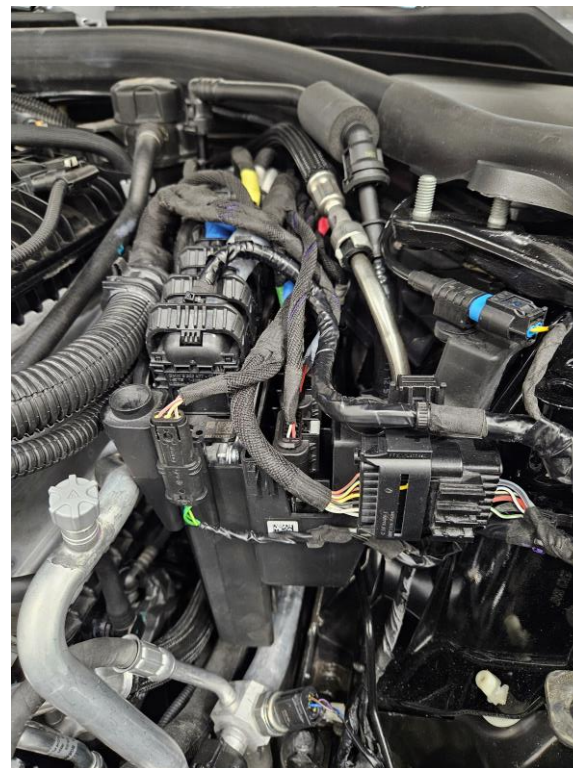
Step 2

Remove the two strut tower braces by removing the 2 circled plastic retainers to reveal 4 of the nuts, then remove 8x 15mm hex nuts and 1x 13mm hex screw. Remove the engine cover and ECU cover.



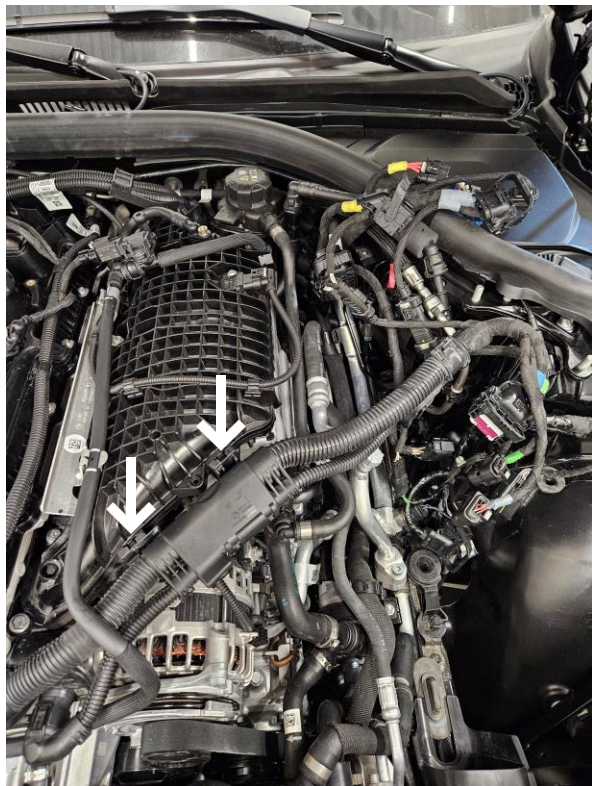
Step 3

Remove the left intake by releasing the clip on the front turbo inlet and the two plastic clips on the radiator support member. Then lift the air box and intake pipe out in one piece.



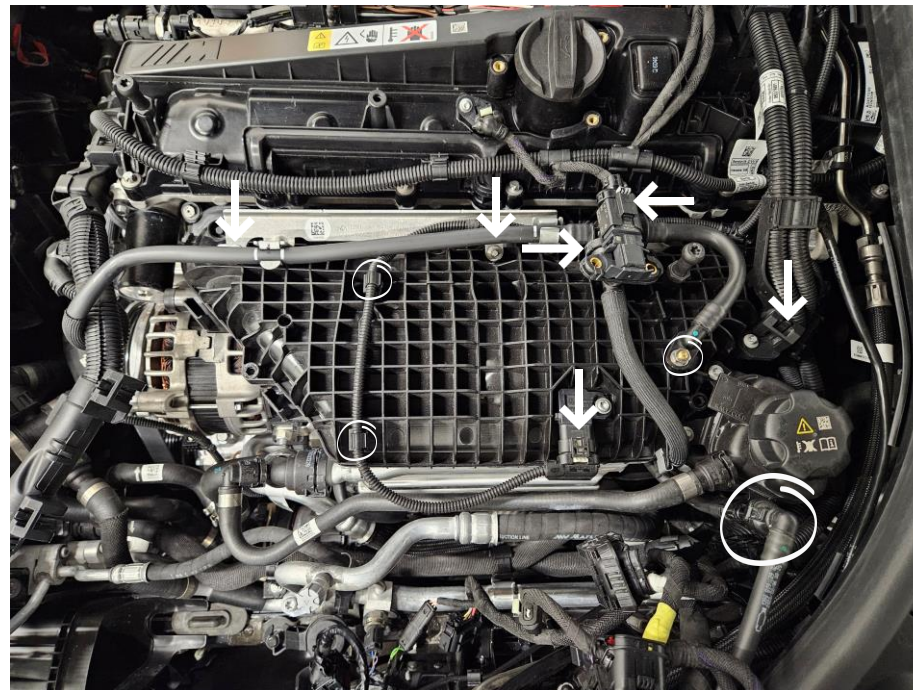
Step 4

Disconnect all wire connections from the ECU and release the connectors mounted to the ECU support. Remove the 2x 10mm hex screws holding the ECU support, then remove support with ECU from the car.



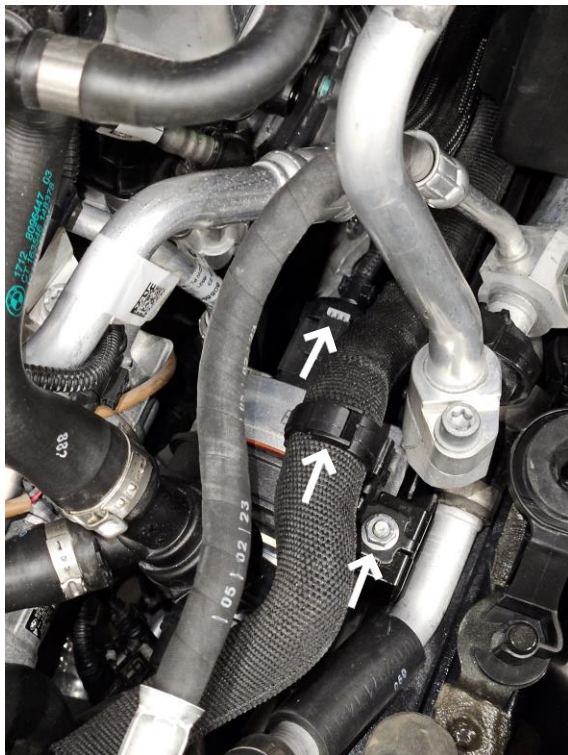
Step 5

Disconnect the rear and front harness from each other. Then release the front harness from the manifold and place it away from manifold to make space.



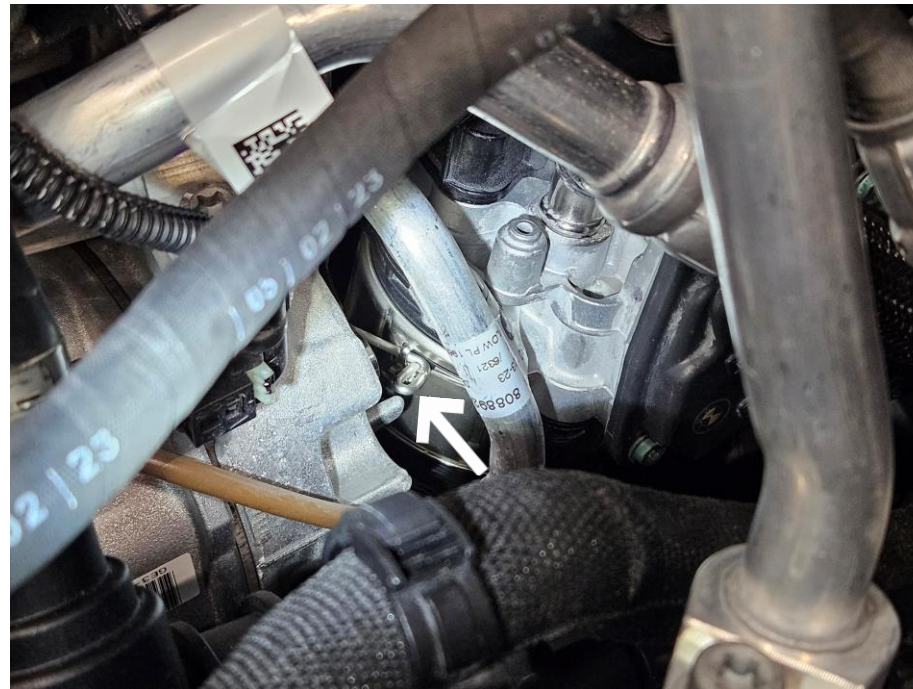
Step 6

Disconnect the intake sensor and release the harness from the manifold. Then remove the 10mm hex nut holding the EVAP line to the manifold and disconnect the EVAP valve electrical connector. Disconnect the textile wrapped line from the valve and rotate the valve out of the way. Then release the rear harness from the manifold. Remove the EVAP mount located on the top of the manifold by removing the 2x E6 screws. Disconnect the circled EVAP then separate the lower part of it from the expansion tank.



Step 7

At the auxiliary water pump located on the chassis beam on the left side of the engine, remove the 10mm Hex nut and release the clip holding the coolant hose on top of it. Disconnect the electrical connector from the water pump, you will now be able to move it to the side to give better access to the throttle body area.



Step 8

Loosen the clip holding the throttle body hose end disconnect it from the throttle body. You can push one end of the clip at the time and make sure it locks in open position.



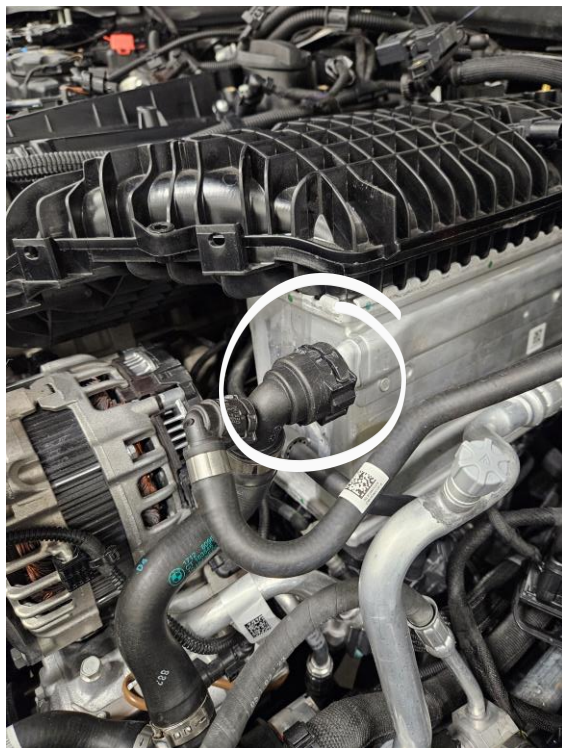
Step 9

Remove the 2x E6 screws holding the expansion tank to the manifold, then lift it out of the lower bushing and move it as far away from the rear water connection as possible.



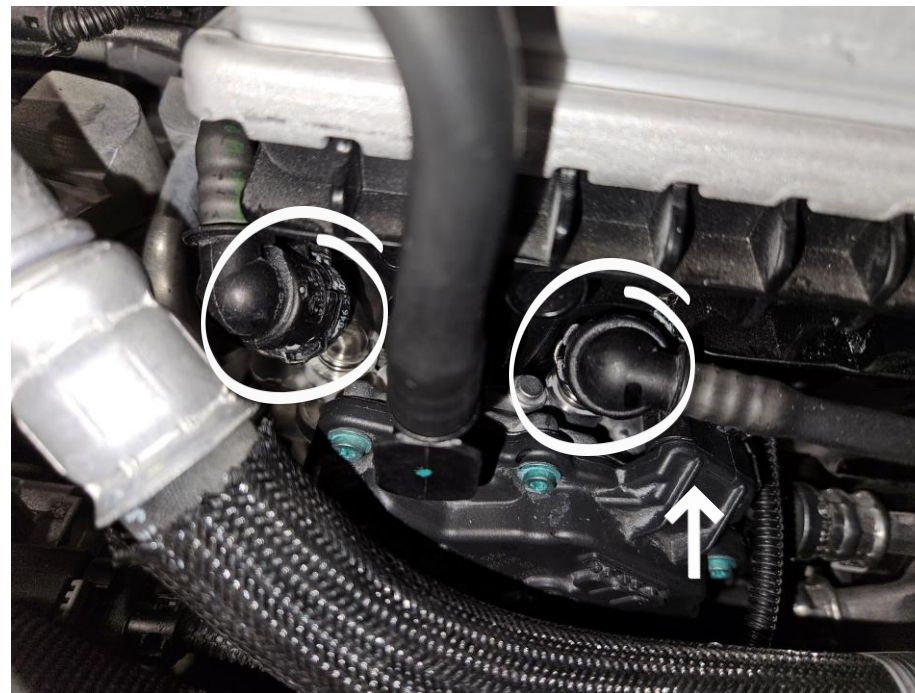
Step 10

Pinch the hose from the expansion tank then loosen the clip on the rear water connection. Then remove the connection and cap the manifold side with included 18mm silicone cap.



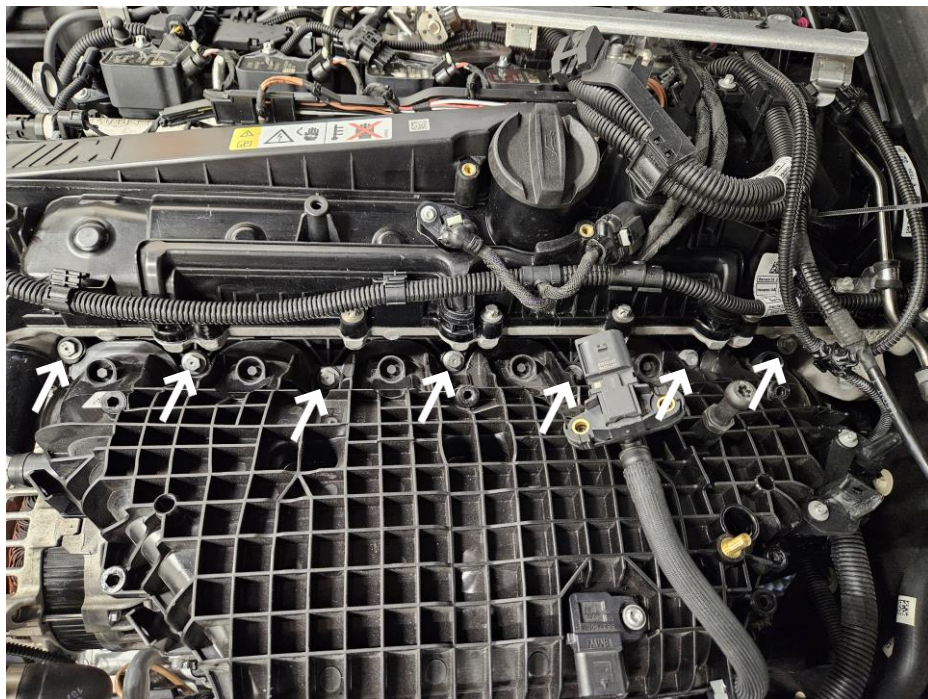
Step 11

Pinch the hose between water pump and manifold then loosen the clip on the manifold front connection. Then remove the connection and cap the manifold side with included 18mm silicone cap.



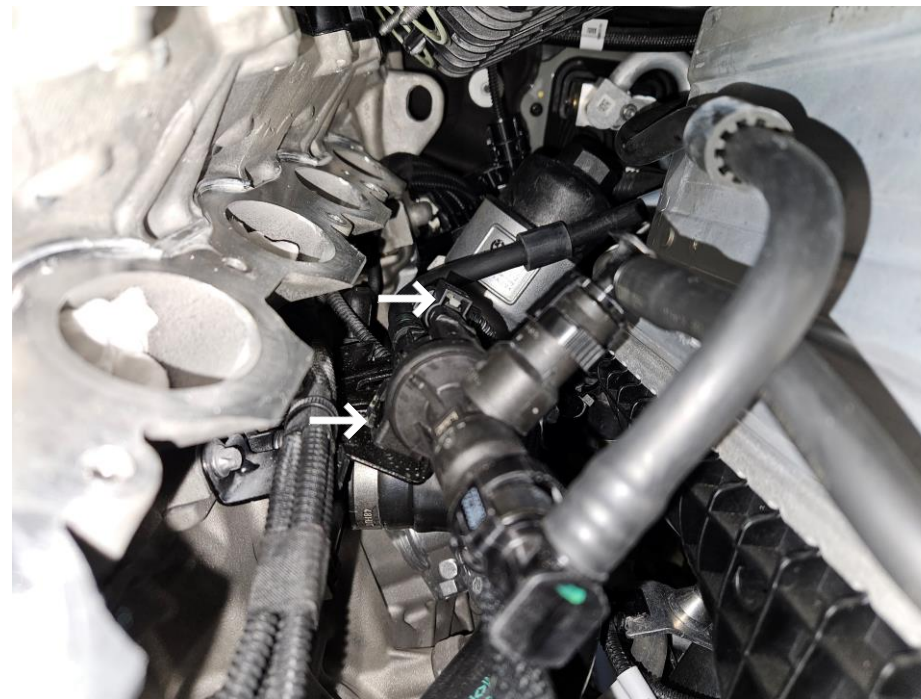
Step 12

Start by removing the cap to the engine coolant expansion tank (Make sure the engine is cold first!). Compress one of the large radiator hoses by hand and hold it compressed while tightening the expansion tank cap. Release the locking clips from the throttle body coolant hoses, remove them from throttle body and plug the coolant lines with the included 4mm caps internally. Release the rear coolant line from the clips under the manifold. Then disconnect the throttle body electrical connection.



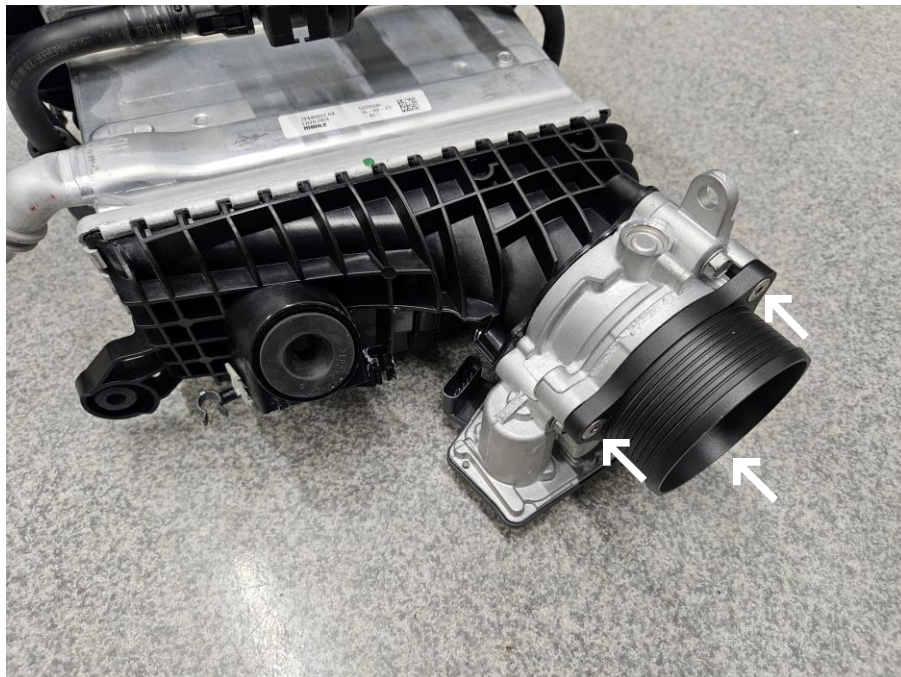
Step 13

Loosen the 7x 10mm Hex screws holding the intake manifold to the cylinder head.



Step 14

Lift the manifold up to get access to the EVAP valve under the manifold and release its electrical connector and remove the valve from its mounting bracket. Then remove the manifold and EVAP lines from the engine together as one unit.



Step 15

Remove the throttle body hose connection (do88 charge pipe version shown in picture) by removing the 3x T30 screws.



Step 16

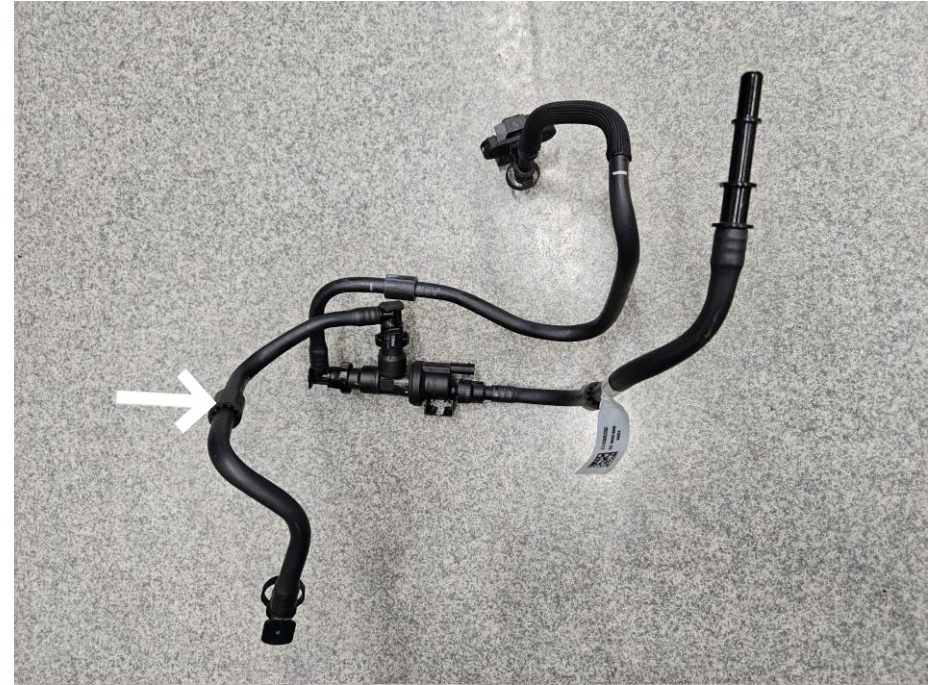
Remove the throttle body by removing the 3x 10mm hex screws. Then remove the manifold support bushing and expansion tank bushing.



Step 17

Release the EVAP line from the clips on the manifold and then remove the hole assembly.

Then remove the T30 screw holding the sensor to the top of the manifold and remove sensor.



Step 18

Remove the marked EVAP line from the valve.



Step 19

Use a heat gun and slowly heat up the end of the line until you can pull it apart from the plastic connection. Be careful and use proper safety equipment, the plastic will get hot and can cause burns. Repeat on both ends, then remove the o-ring from the plastic connections.



Step 20

Install the plastic connections in the included EVAP rubber hose and secure with included hose clamps. Connect the hose to the intercooler inlet tank. Install the front wire harness bracket with the included 2x M6x12 black screws and install the plastic EVAP block off to the front connection.

The configuration of this may differ between different models and emission standards so in some cases another connection will be used and another blocked.



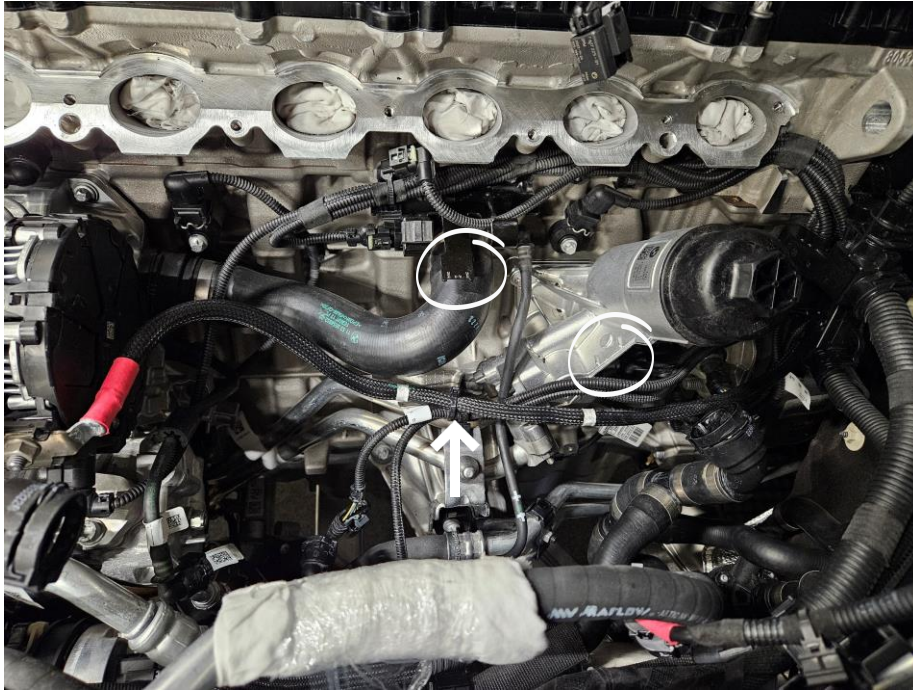
Step 21

Install the manifold support bushing and the expansion tank bushing. Mount 6x sealing rings to the manifold flange. Install the throttle body with the included 3x M6x45 T30 screws. Connect the water hose to the manifold and rotate as on picture. Install the included quick connection joiner, install the included hose clamps in both ends of the hose.



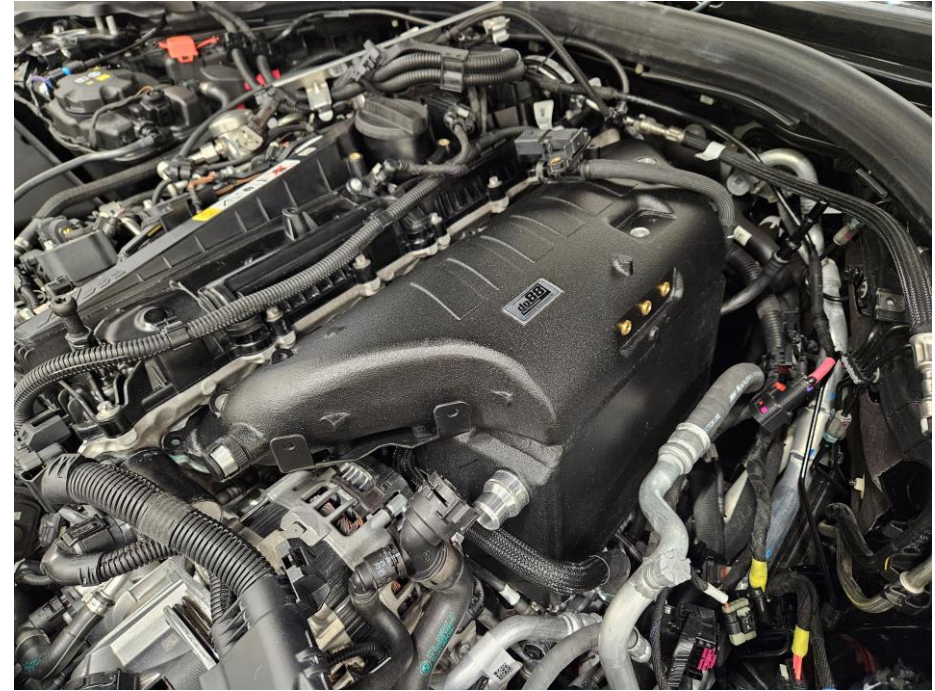
Step 22

Mount the included foam strip to the inside of the U-shaped water hose bracket and secure it holding the hose with the 2 included M5x12 screws. Install the throttle body hose adapter. Place the EVAP valve assembly on the manifold and connect it with the previously installed hose from the inlet tank. Install the thermal spacer and secure with the included 2x M6x12 Low head screws, use thread locker. Install 6x sealing rings to the spacer.



Step 23

Wrap the AC hose/pipe with a rag or similar to prevent damage to the manifold during installation. Then remove the two mounting clips for the alternator positive cable (positions in circles) and secure it with included zip-tie to the cables at the manifold mount (arrow).



Step 24

Place the manifold in the car without fully lowering then connect the electrical connection to the EVAP valve under the manifold and mount the valve to the bracket.

Then line up the manifold so that it fit to the throttle body hose and support bracket. After the throttle body hose is connected line up the intake flange to the head and make sure the locating pins seat in the head, this is a very tight fit and might require some work with the angle of the manifold to get in place.



Step 25

Install included 7x M6x30 screws and spring washers loosely to the manifold flange. Torque down to 5Nm starting in the middle (pos. 1) and following the sequence numbers in the picture, do this twice. Then torque to 10Nm in the same sequence, do this twice.

Double check that every screw still is torqued to 10Nm.



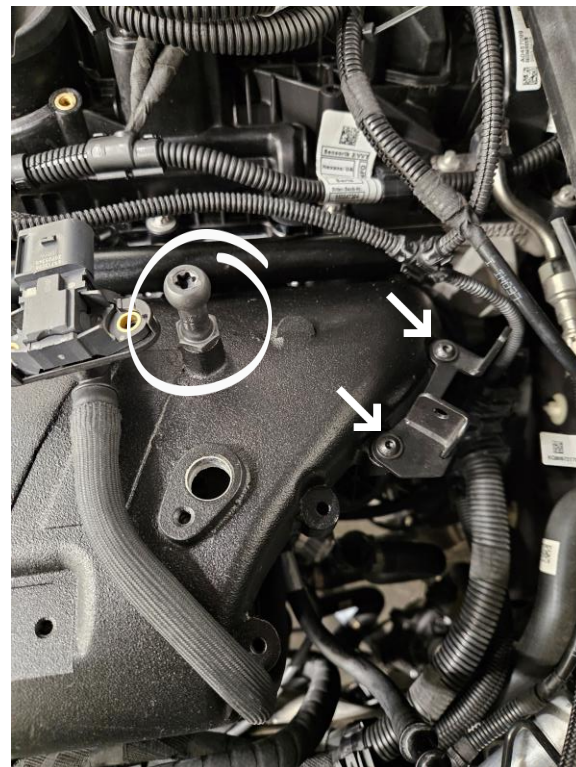
Step 26

Do not perform this step if you will install port injectors. Mount the included 12x O-rings (6 Black and 6 Brown) to the 6x injector plugs, one brown and one black on each. Apply lube to the O-rings and place them in the injector seats with the black O-ring to the manifold side.



Step 27

Install the included plugs for the fuel rail and mount it in the car with the flat side towards the manifold. Then secure it with the two included M6x20 screws and spring washers.



Step 28

Install the rear harness bracket with two of the included M5x12 Screws. Install the engine cover mounting tab.



Step 29

Install the EVAP line bracket with the included plastic washer between it and the manifold, then secure it using 2x included M5x12 Screws.



Step 30

Install remaining parts in reverse order with these exceptions, M5x20 screw for the manifold sensor. 2x M5x12 screws for the expansion tank and one M5x12 screw for the EVAP line or the plug (depending on your configuration). When reconnecting the electrical connector to the throttle body it must be angled slightly from the rear to be able to get it in place.



Step 31

Fill up the intercooler cooling system then bleed the cooling system according to this instruction:

- Switch ignition on without starting engine (Pushing the start button 3 times fast).
- Switch low-beam light on.
- Set climate control to manual with max temp and lowest fan speed.
- Press accelerator pedal to the floor for 10 seconds.
- Bleeding procedure starts and take about 10-15 minutes. In the end of the procedure the intercooler coolant pump runs on full power and at this stage you should feel the coolant flowing thru the intercooler coolant hoses when you gently squeeze them.
- Top off coolant again.
- If there is still air in the system this will result in higher IAT and no or intermittent AC function due to reduced or no circulation in the intercooler/AC cooling system and filling/bleeding have to be performed.

If this is not enough and air is trapped in the system here are some solutions.

- Disconnect the top connection on the heat exchanger for the intercooler/AC system and fill the expansion tank and wait until there is water coming out, then reconnect and do Step 31 again.
- Disconnect the bleeder hose from the expansion tank and plug the outlet, the pressurize the expansion tank and wait for a steady stream of water in the breeder hose. Repeat this multiple times in short interval to confirm there is enough water in the expansion tank, then reconnect and do Step 31 again.
- When running the cars bleeding procedure slightly pinching the hoses before and after the pump can help it pull the water through the system. **Caution! Because of engine bleeding program running there will be components turned on and parts moving.**



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