



Installation Instruction

Performance Intake manifold with Intercooler



BMW G-Chassis and Toyota GR Supra A90

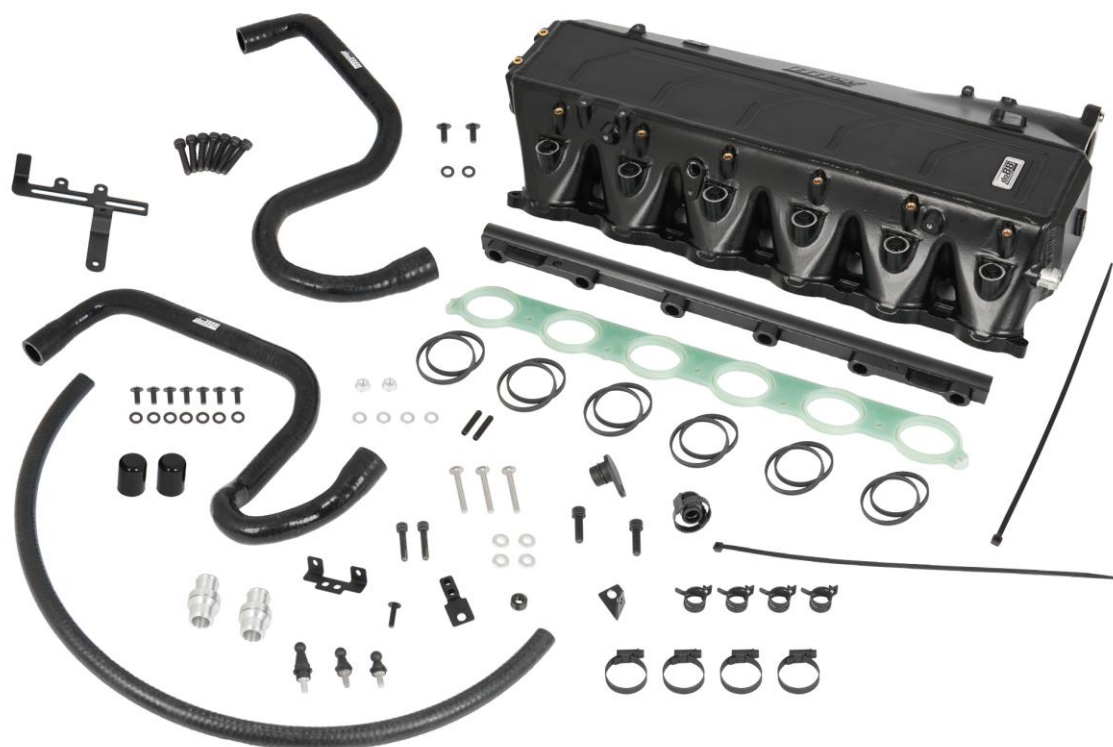
B58 Gen2

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 GR Supra 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.

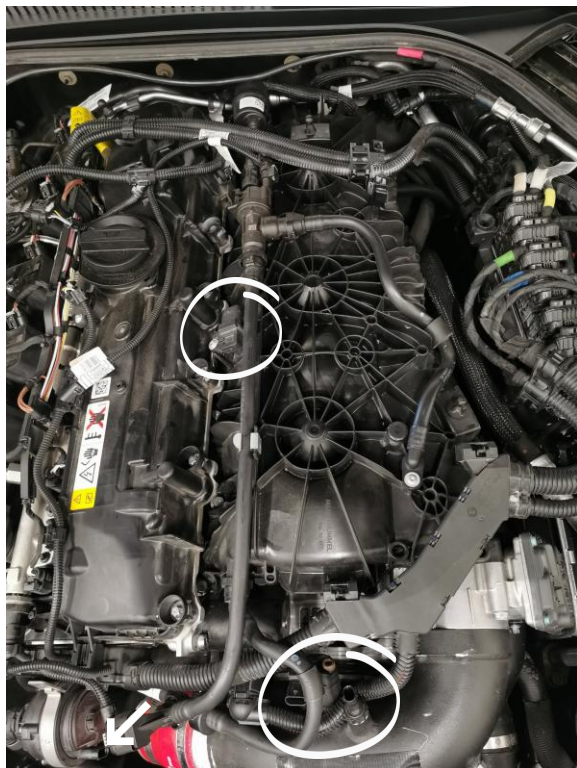


Parts List

- 1x do88 Charge air cooler
- 4x Brackets
- 2x Silicone hoses
- 2x Quick connector adaptors
- 1x Thermal barrier spacer
- 12x FKM-silicone o-rings
- 3x Engine cover mounting pins
- 1x Plastic spacer $\varnothing 12/7$ Length 6mm
- 7x M6x30 Allen screws
- 2x M6x25 Allen screws
- 9x M6 Spring washers
- 1x M5x20 Allen screw
- 9x M5x12 Allen screws
- 3x M6x45 Torx screws
- 2x M6 Flange nuts
- 4x M6 Washers
- 4x M6 Thick washers
- 2x M6x25 Allen pin screws
- 75cm Fuel hose hose (12mm)
- 2x Stripes 4.8x370mm
- 4x Hose clamps 20-32mm
- 4x Spring band clamp 17,8-20,2mm

Parts only included in the MERA-version (ICM-430-G):

- 1x Blanking plug EVAP-connection
- 1x Blanking for crankcase connection
- 1x Fuel rail
- 2x M6x20 screws



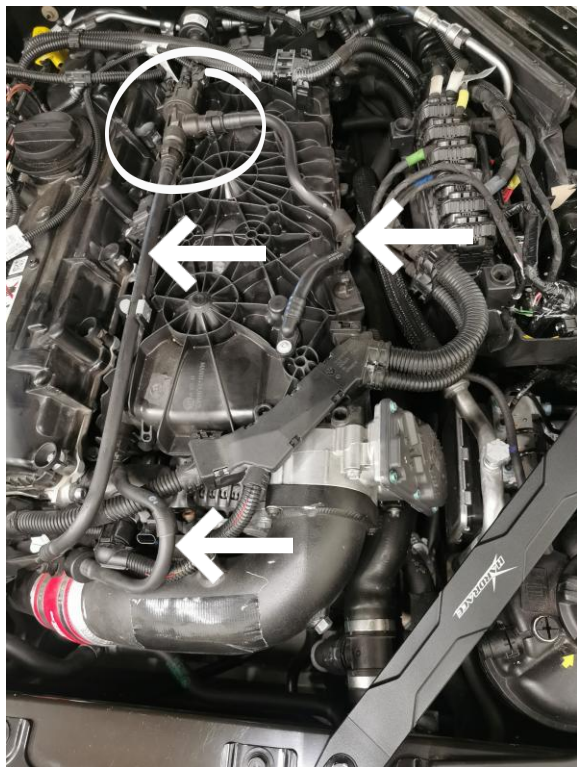
Step 1

Remove the engine cover and disconnect the electrical connectors from the charge pipe, front water pump and intake air temp sensor on the manifold.



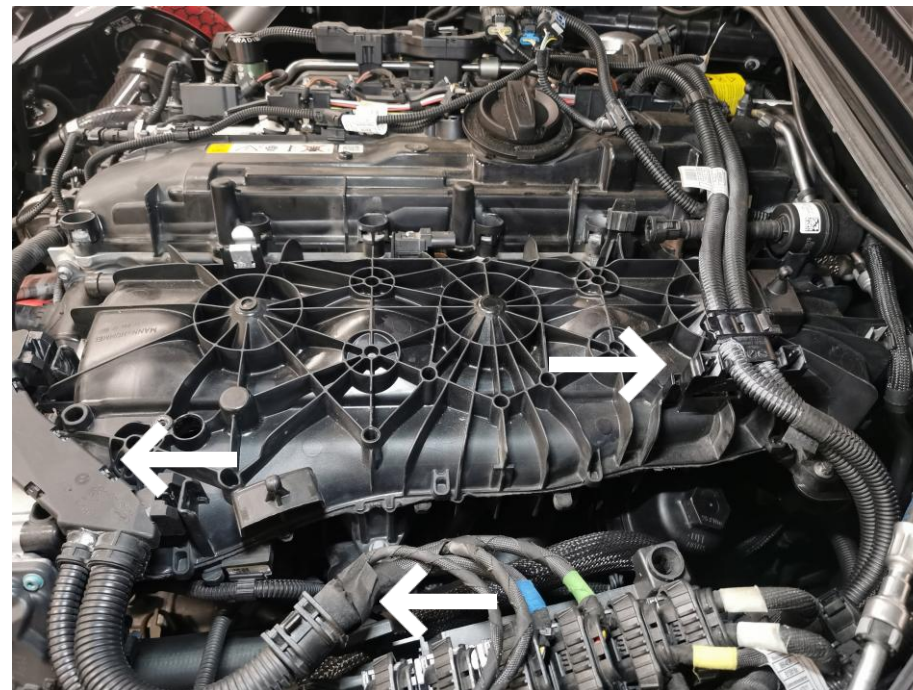
Step 2

Remove rear rubber hood sealing strip, engine isolation and ECU cover.



Step 3

Remove the T20 screw holding the EVAP line to the intake manifold and disconnect the 3 lines and remove them. Disconnect the EVAP valve from the fuel tank breather line and put it to the side.



Step 4

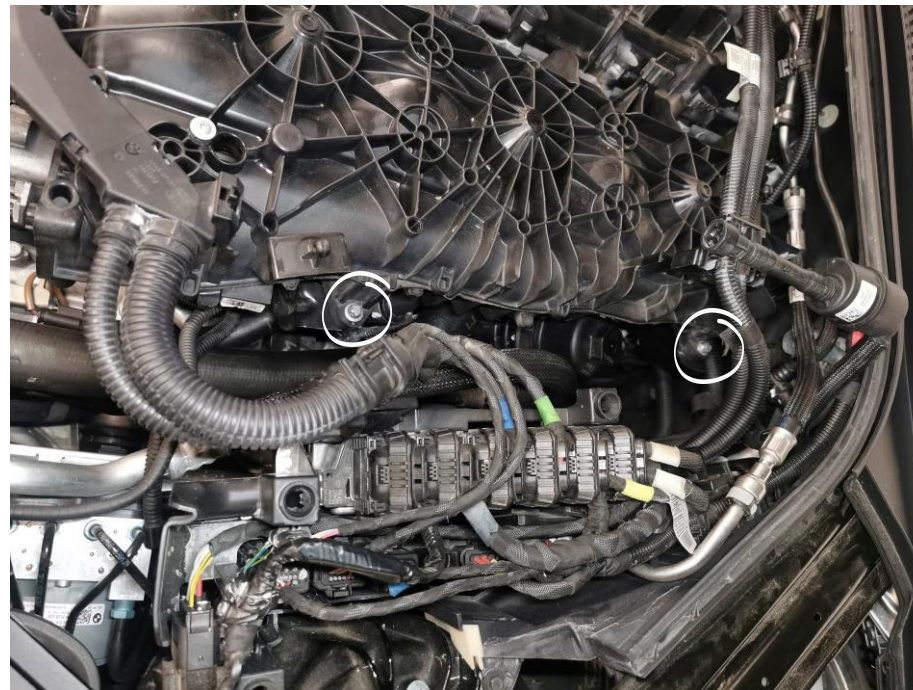
Loosen the wire channel located above the throttle body and wire harness support from ECU mount.
Loosen the wire harness bracket in the rear of the inlet manifold.



Step 5

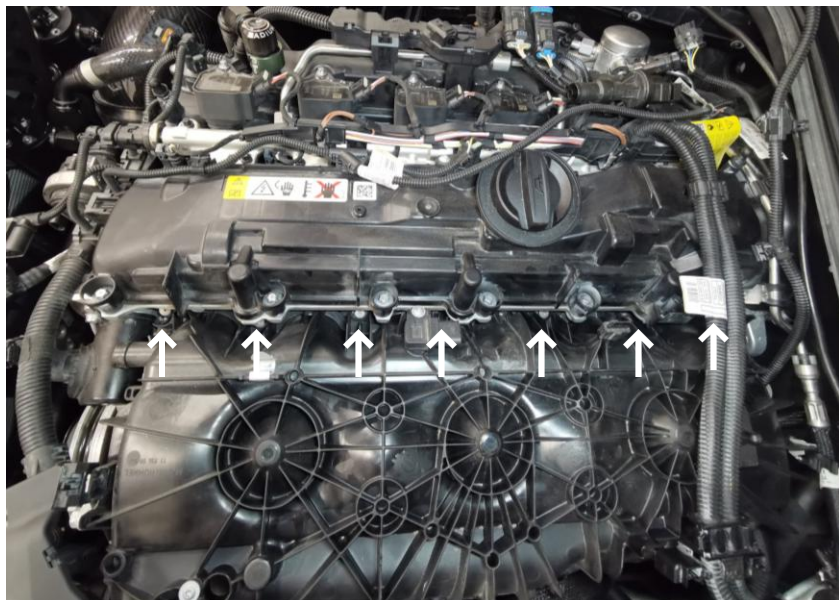
Remove the 2 screws holding the charge pipe to the throttle body, then remove the 3 screws holding the throttle body to the intake manifold. Disconnect the throttle body electrical connector and unclip the harness from the intake manifold.

Disconnect the electrical connector from the valve lift solenoid.



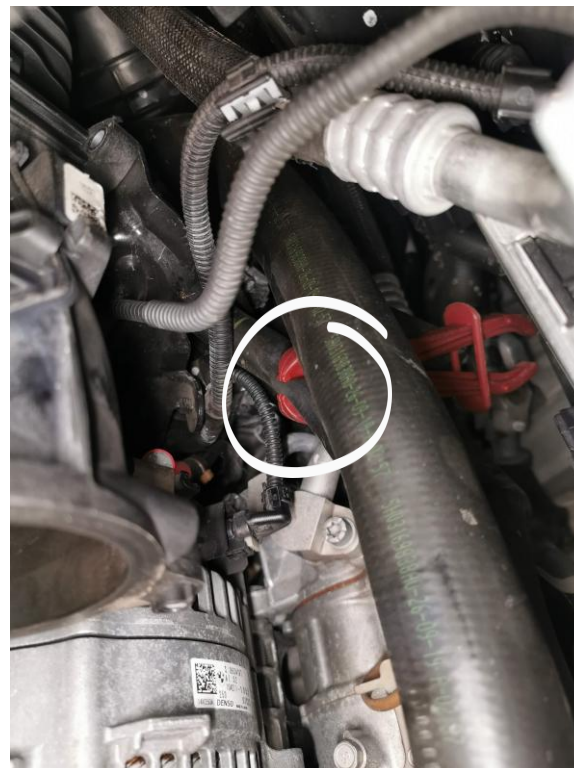
Step 6

Remove the 2 x E10 screws holding the intake manifold to the brackets. Loosen the EVAP line from the rear of the intake manifold and put it to the side.



Step 7

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



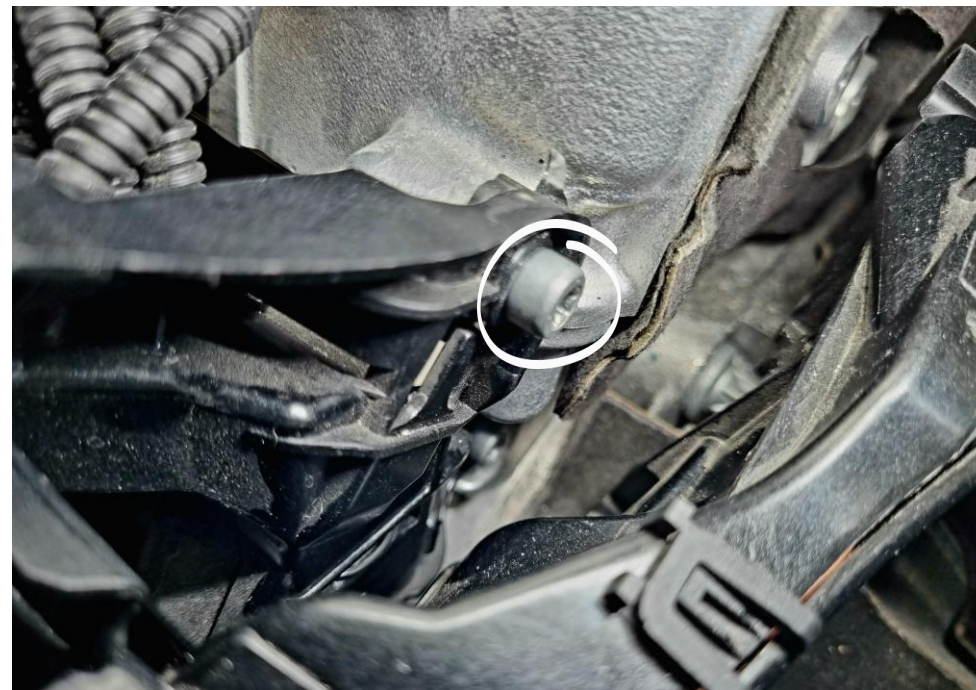
Step 8

Pinch the coolant lines running to the intake manifold and separate the connections located underneath. When separated plug the manifold in and outlet with the included caps to minimize the coolant spill. Then remove the intake from the engine in forward direction, between the wire channel and alternator.



Step 9

In the rear end of the engine, remove the 2 x E8 screws holding the outer wire harness channel on the back of the engine. Separate outer wire channel from the inner one and move it a bit backwards.



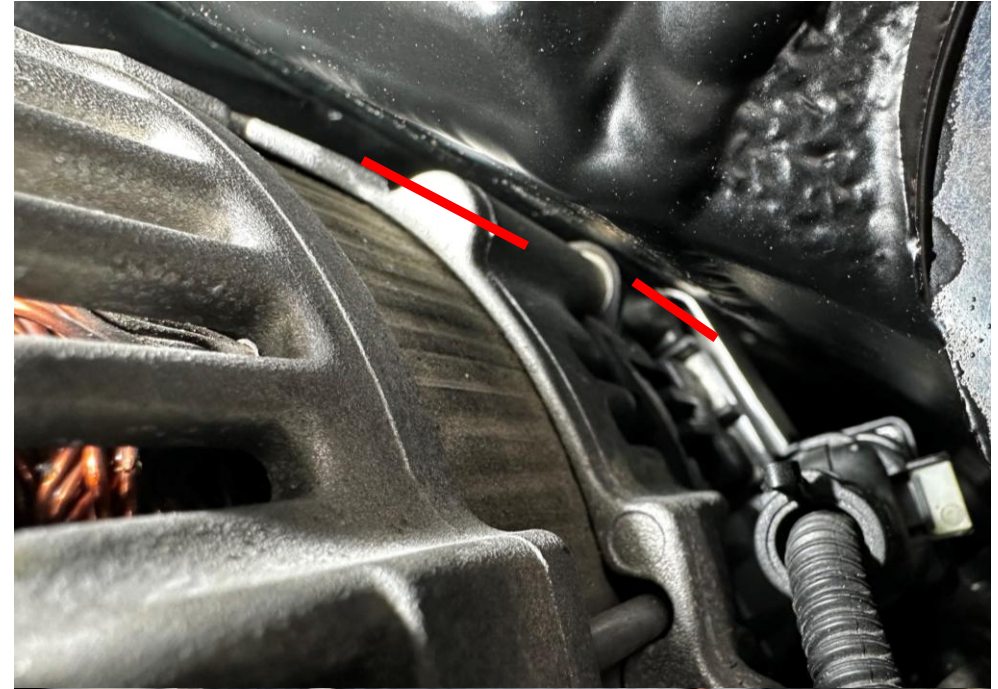
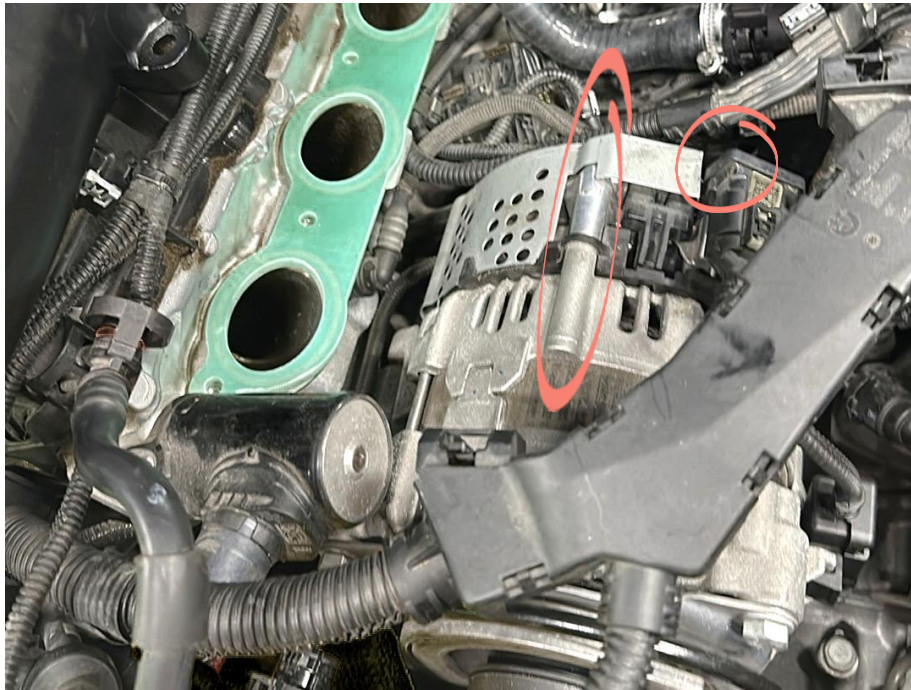
Step 10

When the outer wire channel is removed, this screw will be exposed. Remove the top T30 holding the inner wire harness channel.



Step 11

Mount the included plastic spacer between the channel and engine to move it back a bit and reinstall the T30 holding the inner wire channel.
Put the outer wire channel back in position and fasten it with the 2 x E8 screws.



Step 12 (Only for Mild hybrids)

To accommodate the larger do88 manifold, the alternator must be modified by grinding in two marked positions (applicable only to mild hybrid versions).

Grind approximately 3mm from these two areas, keeping the grinding parallel to the bottom of the do88 manifold core.

Before beginning the grinding process, cover all openings on the alternator with tape and ensure all six cylinder head ports are fully covered to prevent debris from entering the alternator or the engine. If there are any other open pipes, hose ends or connections, make sure to cover these as well before grinding.



Step 13

Mount 6pcs of the included sealing rings to the Thermal barrier spacer.



Step 14

Mount 6pcs of the included sealing rings to the intake manifold flange.



Step 15

At this point make sure there are no dirt or debris in the cylinder head runners.

Mount the two headless screws in the positions marked on picture and place the thermal barrier spacer on the cylinderhead and make sure the headless screws are flush with the top of the spacer.



Step 16

Mount the included quick connector adapters to the do88 performance silicone hoses and secure with included hose clamps (torque to 5Nm).



Step 17

Connect the silicone hoses to the OEM connections and place them around the rear intake manifold bracket according to the picture. The front OE hose should go to the lower intercooler connection and the rear hose to the upper connection.



Step 18

Remove 8 x 8mm hex screws from the underflooring and remove it to reveal the lower EVAP connection (the black plastic line in the transmission tunnel). Disconnect it and remove it upwards.



Step 19

As it might interfere with the engine cover, relocate the EVAP canister from its original position on top of the intake manifold to the transmission tunnel. Use a hot air gun and heat the ends towards the EVAP canister and connectors and remove the lines from canister and connectors. Be careful, the plastic can get very hot and cause burns!

Install 70cm of the included fuel hose to one side of the canister, 5cm fuel hose to the other side and connectors to the other hose ends (picture only show connector in one end but install in both). Secure it with included spring clamps.



Step 20

Now mount the short hose side to the connection down in the transmission tunnel and feed the other end up to the engine bay close to the firewall. Then secure it with included zip-tie.



Step 21

Place the intake manifold in the engine bay the same way the OEM one came out and start by connecting the lower silicone hose to the intercooler and secure it with one hose clamp.

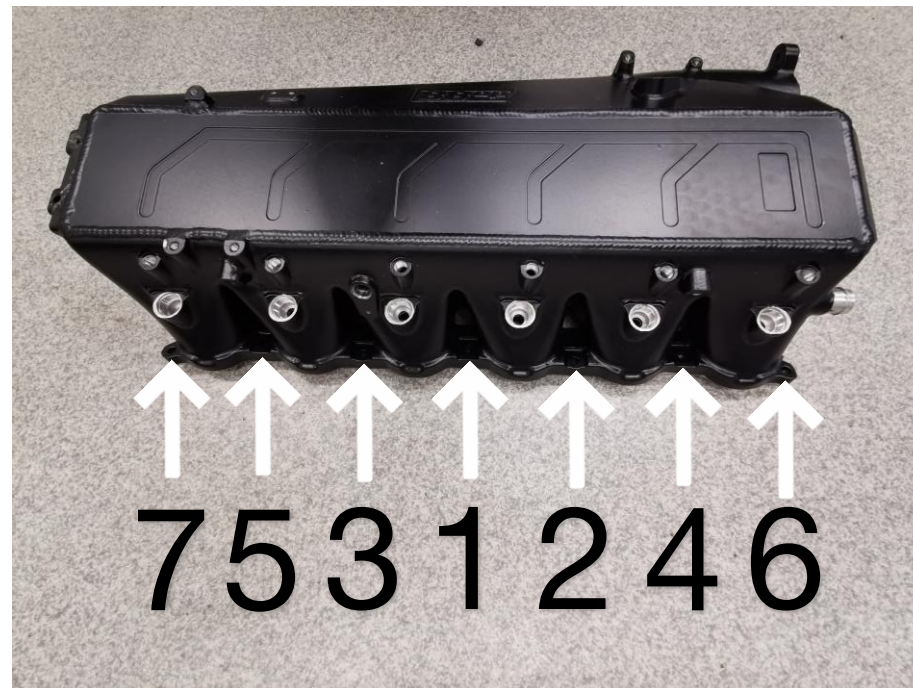
EVAP canister will not be in this position now if you followed step 18-19.



Step 22

Mount the do88 Performance intake manifold to the cylinder head. Align it over the headless screws and backing them out until they are halfway into the manifold flange.

Make sure they are in the center of the hole and moves easily on the way out.



Step 23

Install 3 x M6 screws and spring washers loosely to the manifold flange one in the middle (pos. 1), one in the front (pos. 6) and one in the rear (pos. 7). Then remove the headless screws and loosely fasten the remaining 4 x M6 Screws and spring washers.

Torque down to 5Nm starting in the middle 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 24

Mount the intake manifold to the two brackets with included M6 screws and spring washers.



Step 25

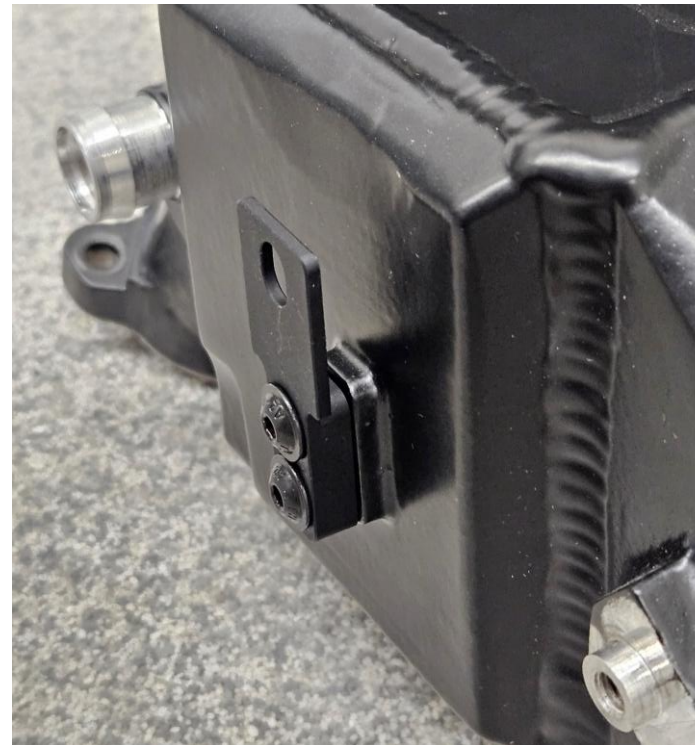
Mount the large bracket to the back of the intake manifold using 3 x M5 screws included.

Transfer the bushing for the EVAP valve from the OEM intake manifold.



Step 26

Fasten the cable harness bracket using the 2 x M5 screws included and then secure the wiring harness to it.



Step 27

Fasten the front bracket for the front wiring channel to the intake manifold with 2 x M5 screws included.

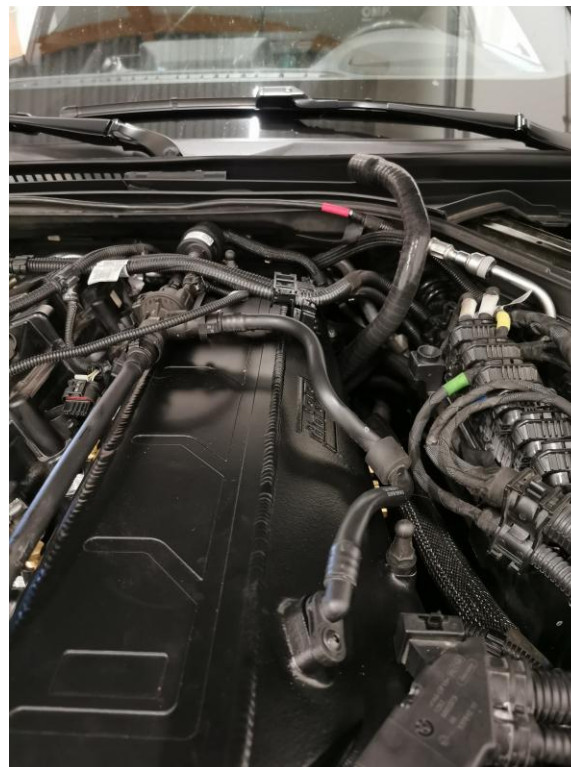


Step 28

Fasten the rear bracket for the front wiring channel to the intake manifold with 1 x M5 screw included.

Then install the front wiring channel to the brackets.

Now reinstall removed parts except for engine cover in reverse order. EVAP line and sensor fastens to the manifold with the included screws.



Step 29

Install the coolant hose to the lower intake manifold connection. Prefill with coolant through the silicone hose that will be connected to the top connection on the back of the intake manifold to ease the bleeding process.

Fill with coolant until the reservoir reaches MAX, wait a little to make sure the air can escape, repeat. Then reconnect the hose and top of the coolant if necessary and install the reservoir lid.



Step 30

Bleed 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 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 due to reduced or no circulation in the intercooler cooling system.



Step 31

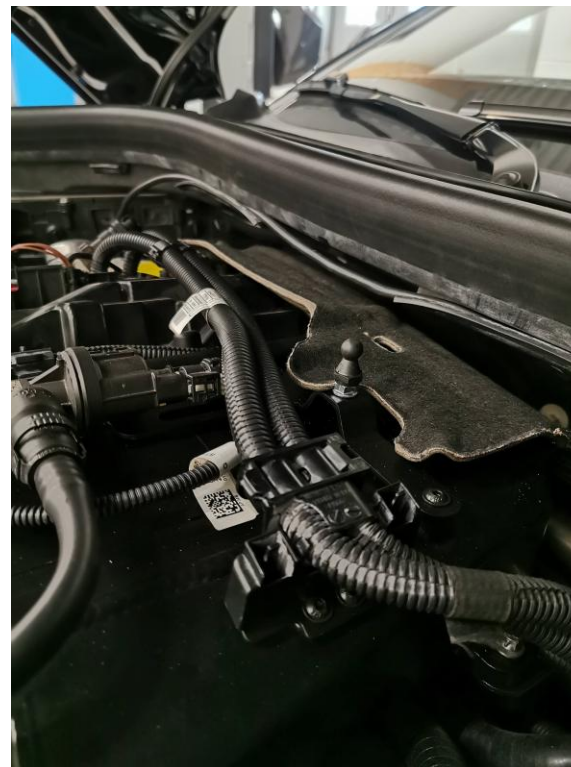
It is possible to install engine cover in a few different ways and we include washers and nuts to make them all possible. Engine cover can be installed with sound insulation, without insulation or with insulation partially cut out. It is possible to install engine cover with fuel rail but then we recommend to cut out part of the sound insulation.

To mount the engine cover it might be necessary to replace its support located on the front of the valve cover to the one included with screw for plastic together with 0-2 thick washers. The rear engine cover support located on the valve cover might need to be adjusted upward using 1-2 thick washers.



Step 32

Mount the long engine cover mount to the intake manifold with washers or a nut as height adjustment and the short one to the large bracket in the rear of the manifold.



Step 33

Put the engine cover in place and adjust with included M6 washers and nuts to fine tune the position of the engine cover you want to run.

Close the hood carefully to make sure there is no interference, depending on how you adjust it and what engine cover you run it may end up with low clearance.



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