MINI F56 COOPER S 2.0 TURBO, JCW 2.0 TURBO AND COOPER 1.5 TURBO INTERCOOLER - INSTALLATION INSTRUCTIONS

Please thoroughly read through and familiarize yourself with these instructions in their entirety prior to beginning any part of the installation process of any component. Please also ensure the vehicle and engine has cooled down sufficiently to avoid risking possible skin burns or other injury.

Please note:

- **The intercooler that appears in these instructions is a prototype unit and production units are only supplied with a black finish.**

- The process of disassembly and reassembly of the 3 different F56 Minis is very similar. See below the intercooler installations (**Note the intercoolers are not interchangeable between models with key dimensions being very different**).

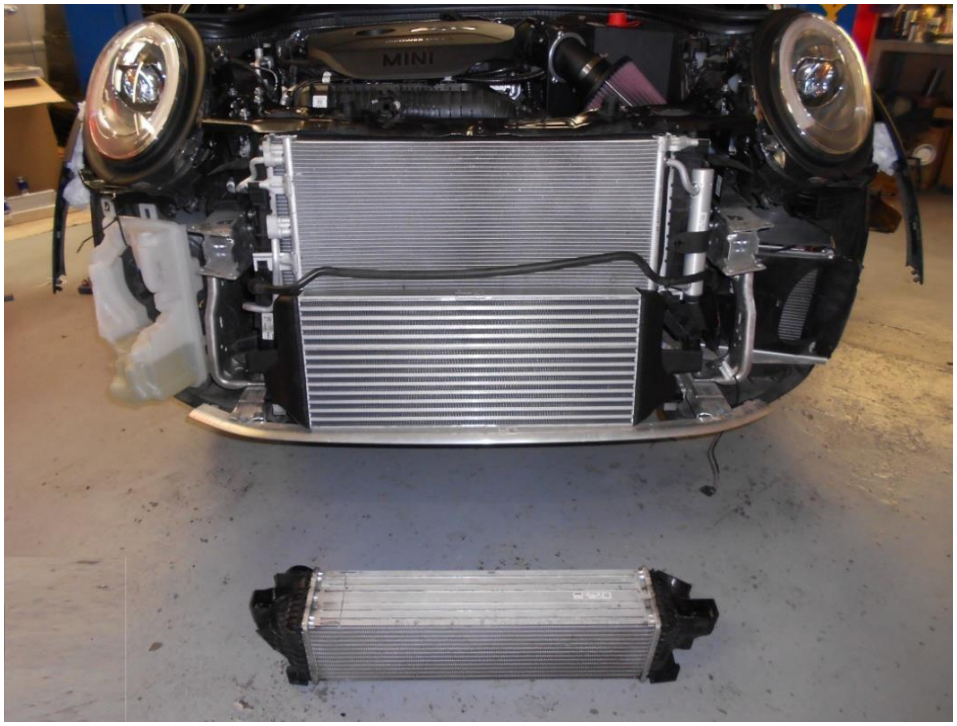
Engineered for performance

Mini F56 1.5 Turbo 3 cylinder (Supplied with Black powdercoated finish).

Mini F56 2.0 Turbo (Supplied with a black powdercoated finish).

Engineered for performance

Mini F56 2.0 JCW (Supplied with a black powdercoated finish).



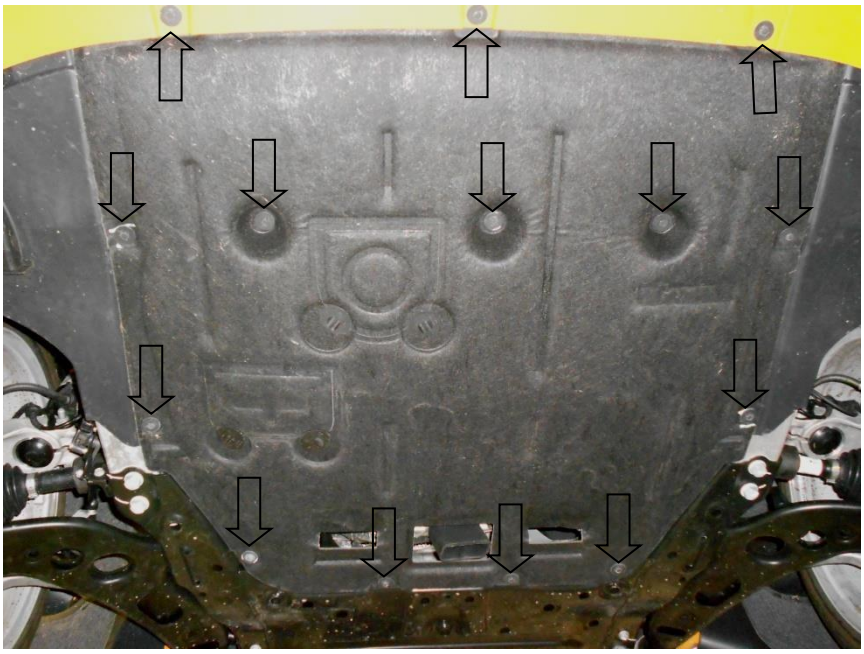
Disassembly

Tools Required:

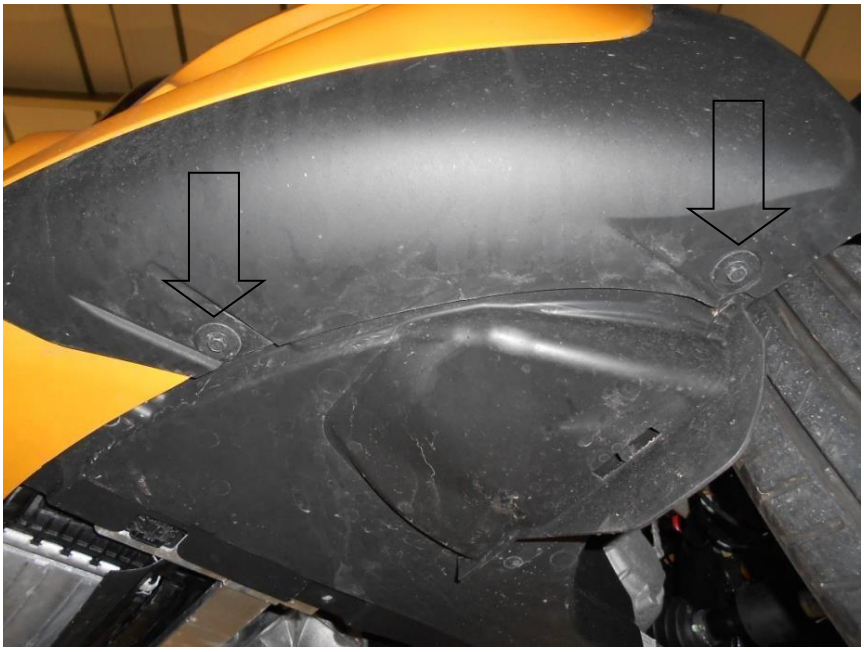
- Access to vehicle lift or floor jack and axle stands to support the vehicle.
- Flat-blade screwdriver.
- T27, T30 Torx Drivers.
- 8mm, 10mm, 13mm Socket, extension bar and suitable ratchet.
- 10mm, 13mm Spanner.
- 2mm, 3mm Allen key.
- Safety eyewear, footwear, gloves and protective clothing are also recommended.

1. Raise the vehicle on a ramp or suitable axle stands to allow access to the underside of the front of the car.

2. Using an 8mm socket undo the 14x bolts. Slide the under tray towards the back of the car to release it.

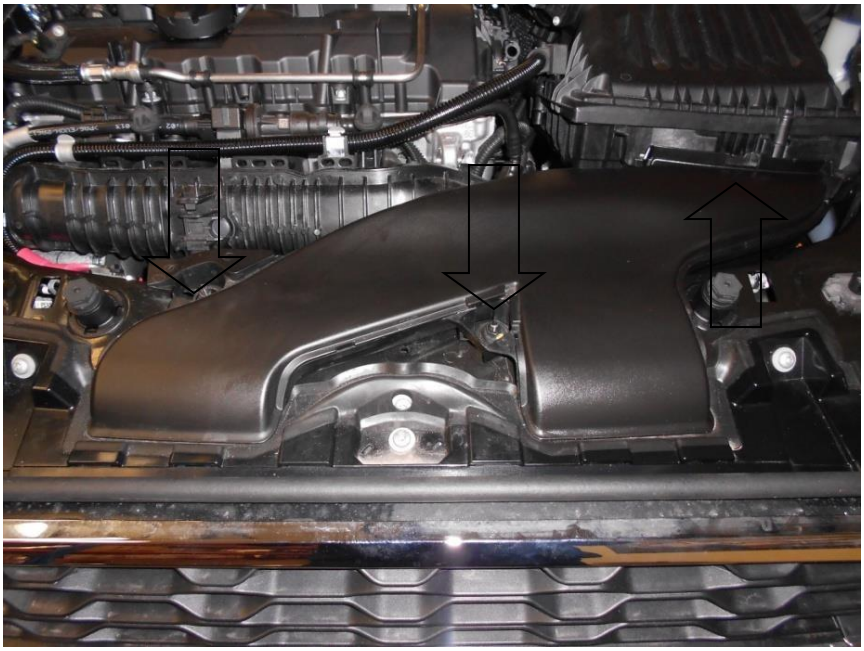


3. Using an 8mm socket and suitable ratchet undo 2x bolts in front of each wheel.



4. Using 8mm socket and suitable ratchet undo the 1 off screw inside each wheel arch. Rotate the access panel inside the wheel arch and unclip wiring to the back of the fog light on both sides.

5. Using a 10mm socket, extension bar and suitable ratchet undo 2x 10mm nuts. Unclip the scoop at the airbox and remove the intake scoop.



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6. Carefully unclip the plastic wheel arch cover at front. Use suitable packing material (paper towel or bubble wrap) to hold the plastic cover away from the car. Using a T30 Torx driver undo x1 bolt, repeat the process for the other side.

7. If your vehicle is fitted with Spot lights use a 3mm Allen key to loosen the horizontal bolt. Tilt the light forward using a 2mm Allen key undo the bolt and remove the headlight. Note the next part requires 2 people as the wiring connectors can only be undone once the bumper has been removed from the vehicle.

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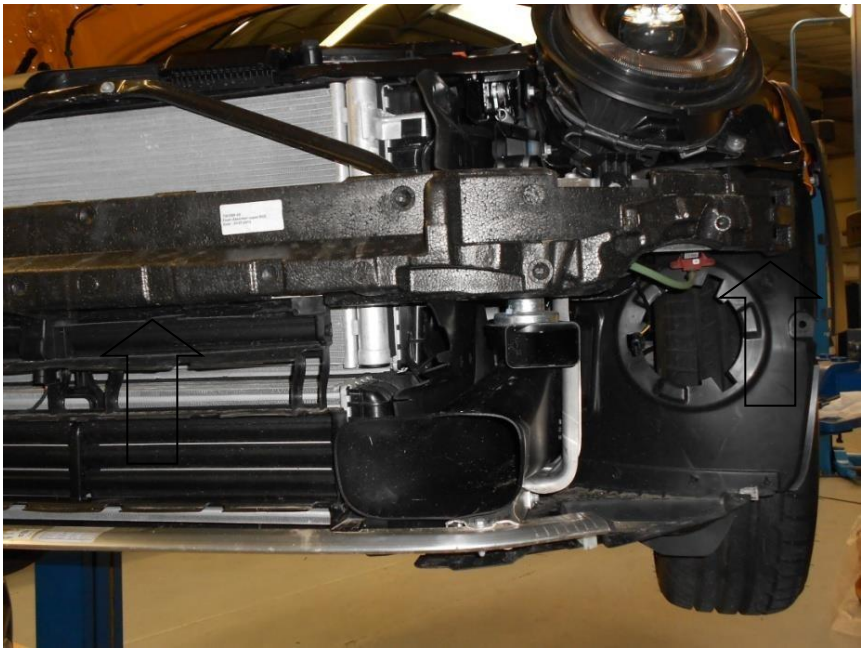
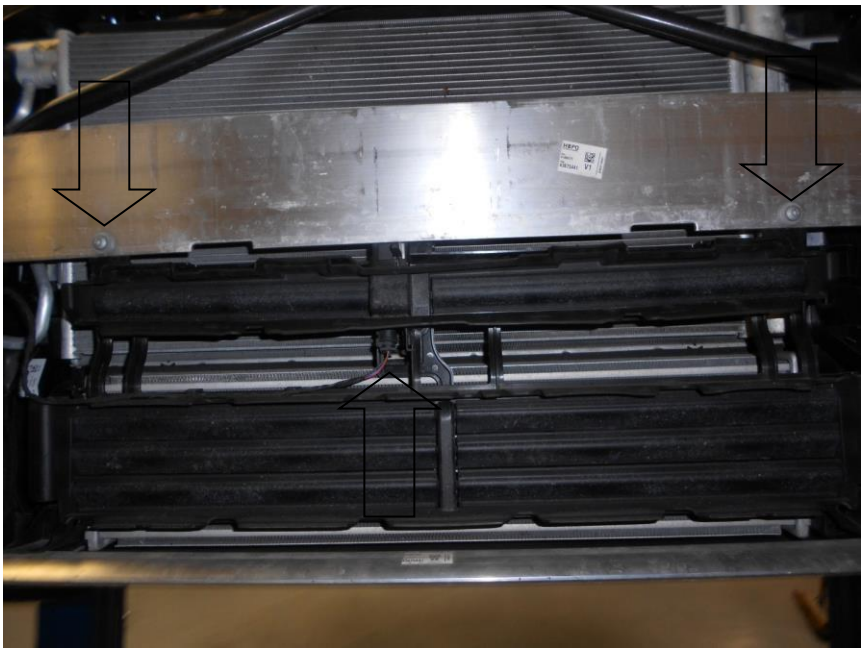
8. Undo the 3x T30 Bolts across the top of the bumper. You will require a second person to carefully pull the bumper forward and clear of the vehicle. Store in a safe place to prevent it becoming damaged while carrying out the rest of the installation.

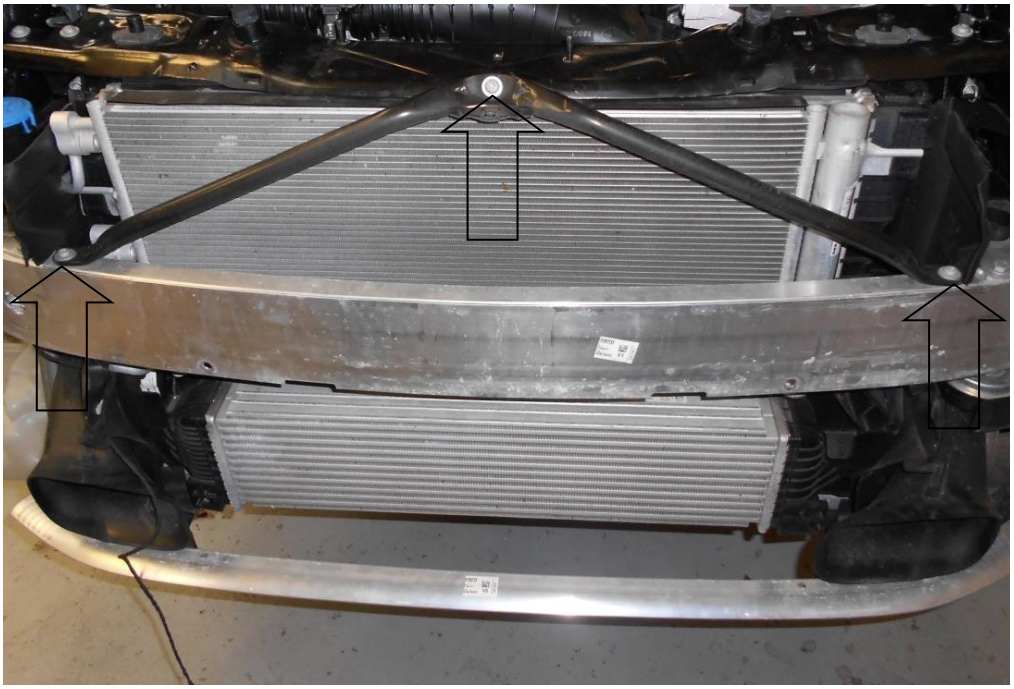
9. Unclip the sensors at each end of the crash bar and remove the foam crash bar cover. Note: <u>DO NOT SWITCH ON</u> THE IGNITION WITH THIS DISCONNECTED AS IT WILL CAUSE A WARNING LIGHT ON THE DASH WHICH CAN ONLY BE RESET AT A BMW DEALER.



10. If fitted to your vehicle, unclip the wiring and using a T30 Torx driver undo the 2x bolts and remove the active air ducting.

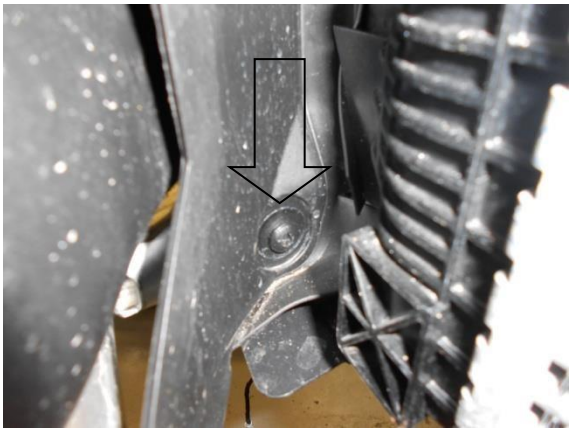


11. Undo 3x T30 Torx screws and remove the front brace.

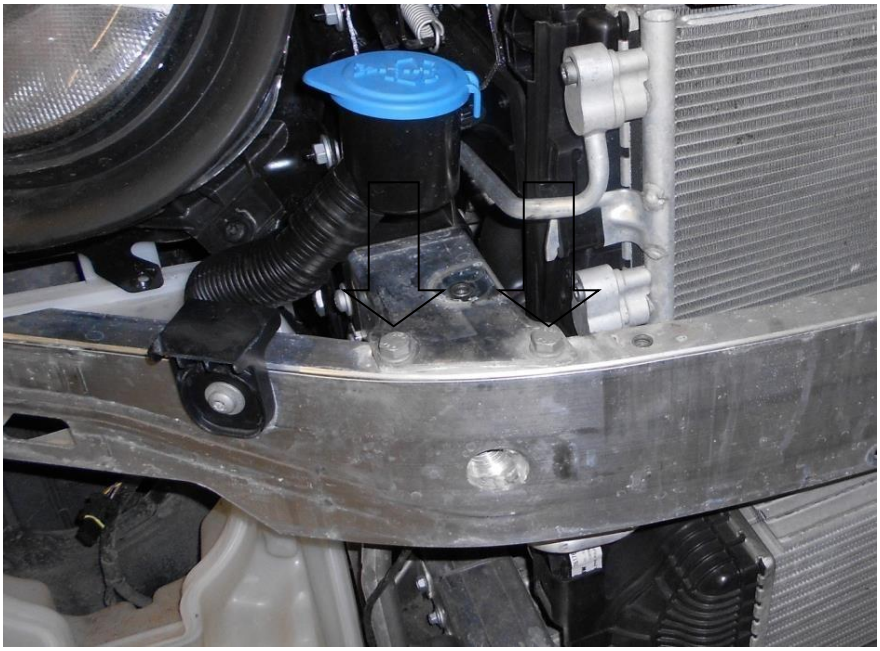


12. Unclip the wiring on both horns and disconnect the electrical connector located on the nearside of the crash bar.

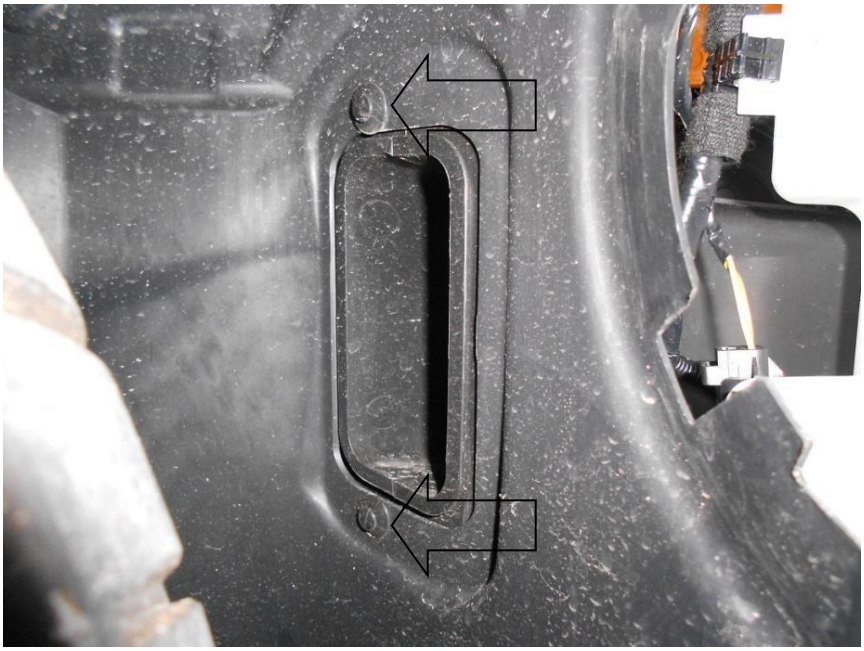
13. Undo x2 T30 Torx bolts and remove the air guide, repeat the process for the other side.



14. Using a 13mm socket and suitable ratchet undo 2x bolts on either side of the crash bar. Pull the crash bar forward and remove it from the vehicle.

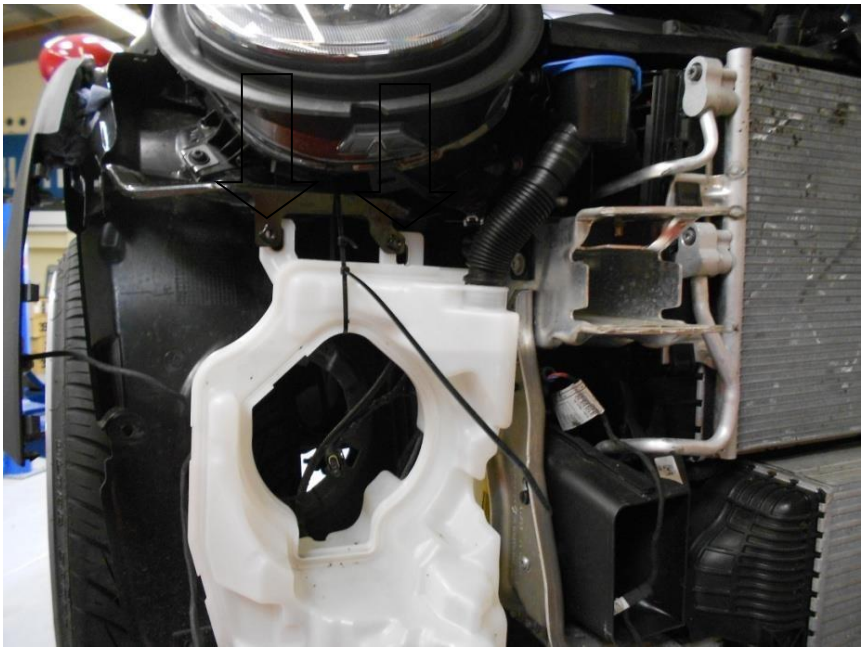


15. From inside the wheel arch using a flat blade screwdriver or similar tool remove the 2x clips. Pull the centre out first before removing the body of the clip.



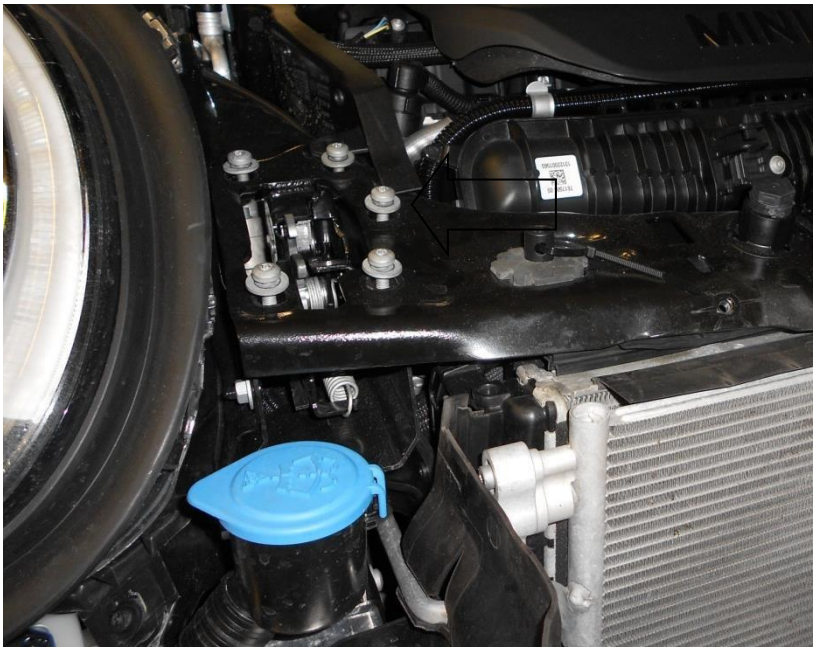
16. Using T27 Torx driver undo 1x screw and unplug the temperature sensor. Lift the duct upwards to release it and remove it from the vehicle.

17. To access the bolt for the other duct you need to move the washer fluid reservoir. Using a T30 Torx undo the 2x bolts lift the reservoir upward to release it from its bottom mounts. To support the reservoir cable-tie it to the bracket above.

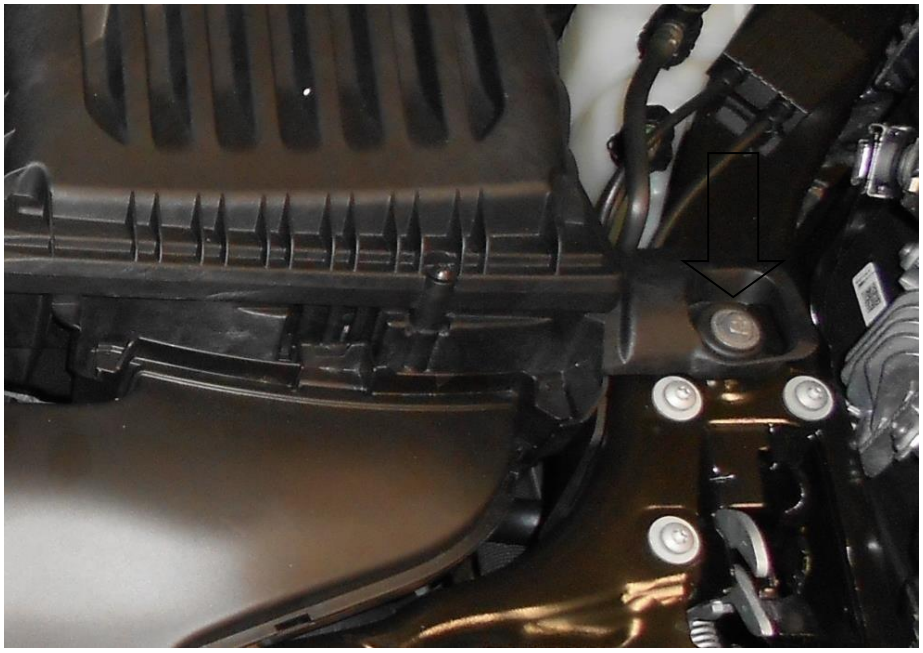


18. Using a flat blade screwdriver or similar remove the 2x clips inside the wheel arch. Using T27 Torx driver undo the 1x screws. Lift the duct upwards to release it and remove it from the vehicle.

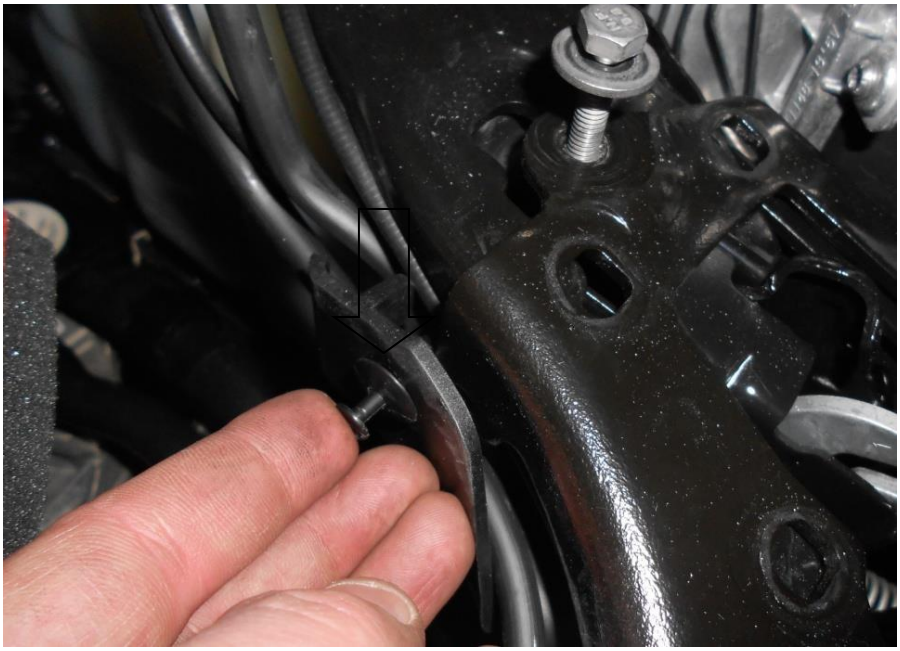
19. Undo the 5x T30 Torx bolts around each bonnet catch; do not fully remove the bolts.



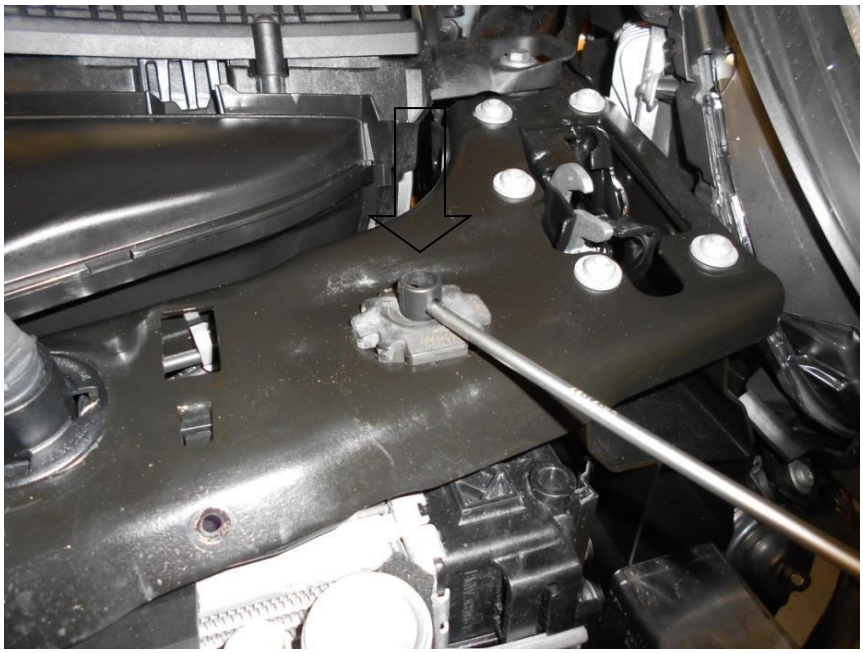
20. Using a 10mm socket and suitable ratchet remove 1x bolt.



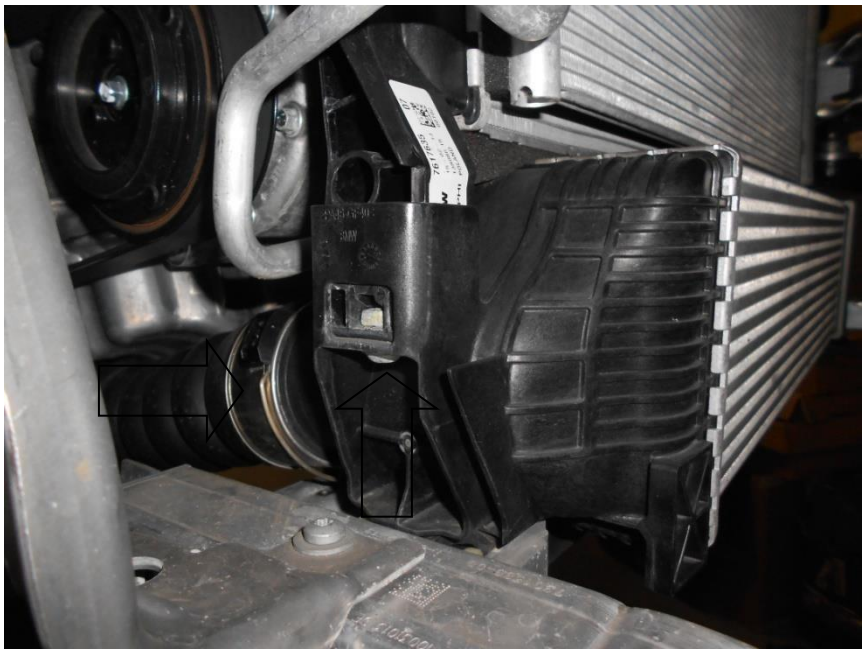
21. Using a flat blade screwdriver or similar tool remove the 1x plastic clip on each side.



22. Undo the 2x radiator pins using a screwdriver or T30 Torxs driver.

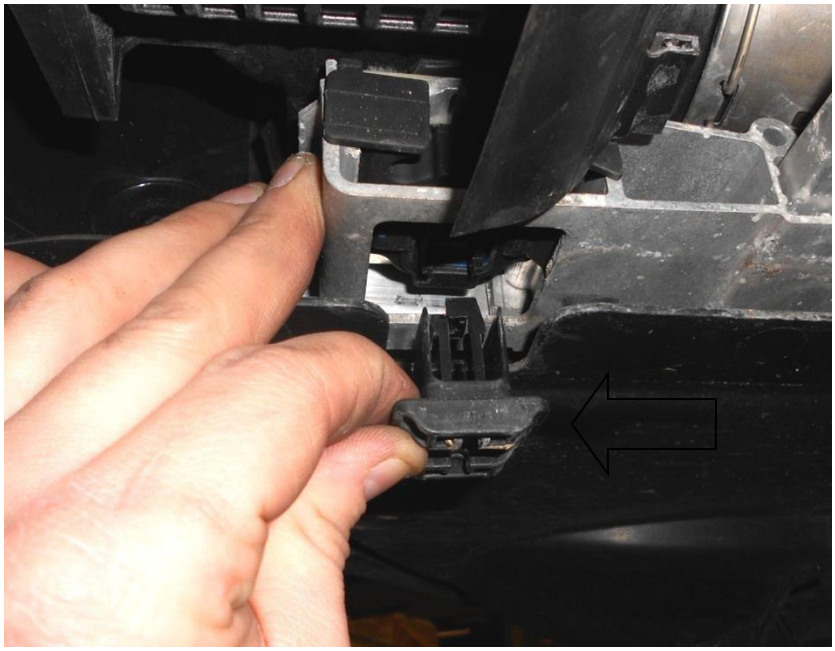


23. Undo the 2x T30 Torx screws on either side of the intercooler. Using a flat blade screwdriver or similar tool carefully release the spring-clips and disconnect the hose at each end of the intercooler.



24. Moving to the underside of the vehicle using a flatblade screwdriver or similar tool remove the centre part of the intercooler clip.

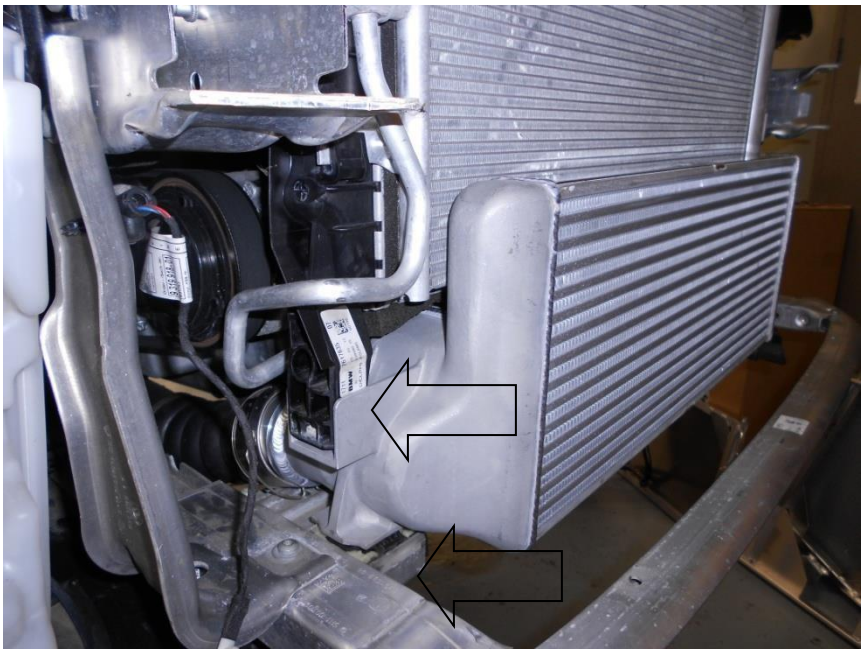
25. Once this is removed pull out the main part of the clip.



26. This next part requires 2 people. Lift the intercooler and radiator pack upward to release the intercooler from the bottom rubber mounts. Use a flatblade screwdriver or similar tool to release the rubber mounts if necessary.

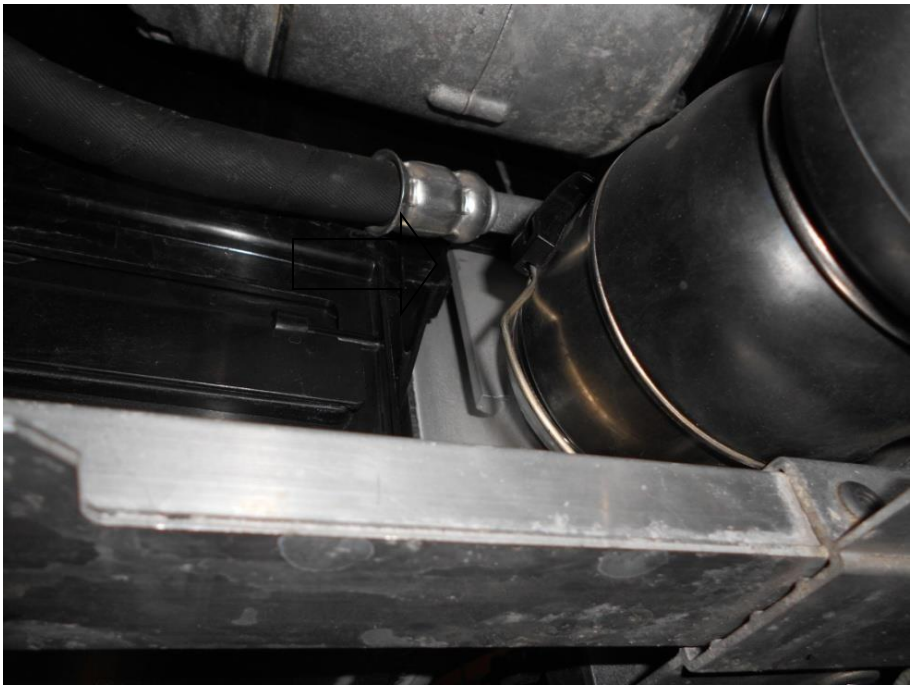
27. Pull the bottom of the intercooler forward and drop it down to release the radiator mounts.

28. Fit the radaitor mounts into the brackets on both end tanks of your Forge intercooler before lifting the intercooler upwards and pushing the bottom edge backward to allow the mounting pegs to locating the rubber bushes.

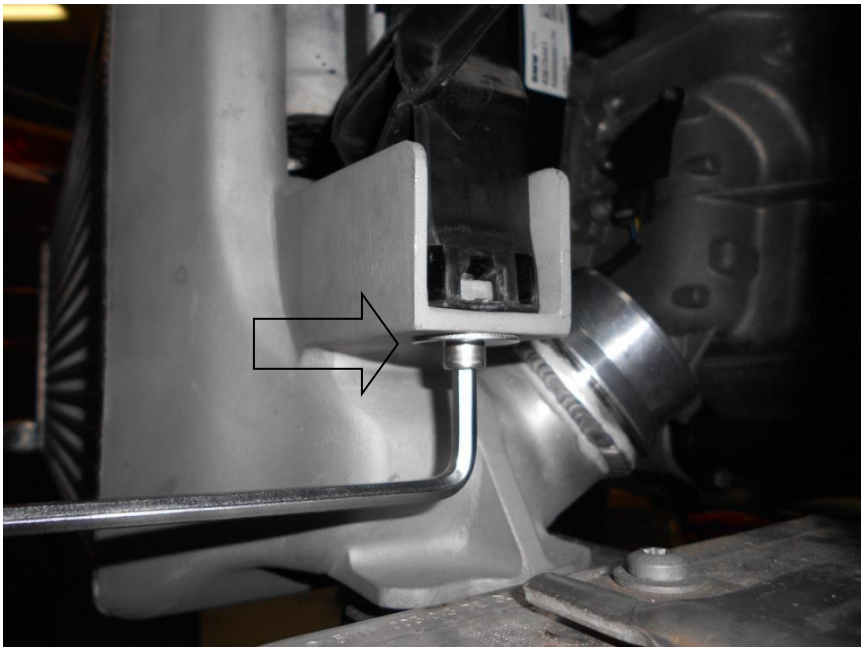


29. Using the 2x M8x16mm Allen cap bolts and 2x 8mm Penny washers supplied secure the intercooler to the bottom mounts.

30. Before securing the radiator to the intercooler check that the bracket and locating peg are correctly engaged on the fan shroud.

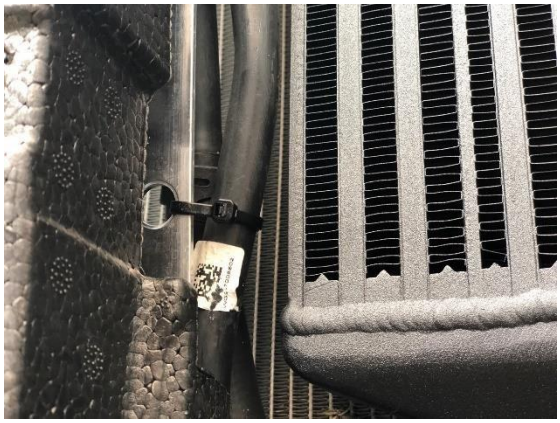
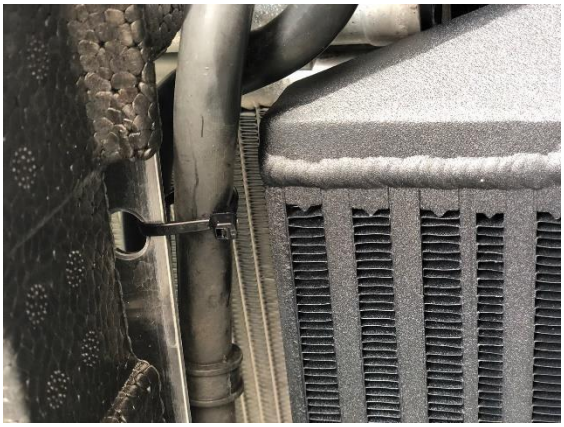


31. Using the 2x M6X16mm Allen cap bolts and 2x 6mm washers align and secure the radiator to both intercooler brackets.



32. Re-connect both intercooler hoses. Ensure that the spring clips are fully released and have fully engaged in the recess in the CNC coupler**. If these are not correctly installed they may come off during normal driving.**

33. If fitting to the 2019- GP3 the extra auxiliary hoses need to be cable tied to the crash bar to avoid rubbing as pictured below.

34. Follow steps 1 to 22 in reverse to reassemble your vehicle. The active air ducting (if fitted) in step 10, is not refitted as part of this installation. Use a cable tie or similar secure any loose wires.

35. Your installation should now be complete. Enjoy Your New Performance!

Important information regarding your new Forge cooling product

You have purchased a Forge Motorsport Made in Great Britain cooling product . You have chosen wisley , you now have a product that simply leaves the competition behind . All you need to do now is install and maintain the product correctly to maximise its full potential .

All Forge products are tested before leaving our faclility to ensure you 100 % staifaction .

Important information

When a Forge cooling product leaves our facilty , we take great care in protecting and packaging the produccts to ensure they arrive with the customer in the best of condition .Its most important that on opening your delivery you carefully check the box , product and packaging before installing it , If at this stage you find any issues or concerns that it has been damaged in transit you MUST inform us or your Forge Dealer BEFORE attempting to fit it . We will replace or repair ANY Forge product that may have been damaged in transit but we cannot guarantee to offer this service IF you have attemped to fit the product whilst damaged .

Important installation information

When you ordered your Forge cooling product we made this either to your own design specifcations or requirements or for one of our standard performance aftermarket applications . How your new product fits and works to this application can be affected by several issues , have you carried out any other modifcations , has the vehicle been involved in a previous accident , have there been any changes to the chassis or the alignment of the vehicle or have there been any design changes to the specific year or model of your vehicle.Please consder these issues when starting your fitment .Any issues should be raised with Forge or your supplying dealer as a matter of urgency .

Important general information

The following pages will outline some helpful hints and proceedures to maximise the efficiency and longevity of your Forge products .These are general guides and not to be taken as fitting instructions . Quite simply you MUST read and ACTION these recommendations highlighted to follow are issues Forge have encountered and will cause reliablity and performance releated problems .Forge will **not** warranty replace or repair any products that have been force fitted or incorrectly installed or been subjected to electrolysis .If a radiator has a blackened inside this is strong indicator that electrolysis has occurred and a refused warrnty claim from Forge .

Good general information and care for your Forge products

Important information on radiator installation

An electrolysis test should be performed before installing a Forge Motorsport radiator , to detect and repair any such situations. These problems are a result of something wrong with your vehicle, allowing abnormal currents into the coolant system. Forge **will not** offer warranty against such situations. Please read below to insure that your car is free of this condition.

Improper Flush - Cooling systems require a through flush of the radiator, engine, overflow tank, hoses and heater core, failure to do so will lead to mixing coolants and contaminates creating a corrosive cocktail for the cooling system.

Corrosion –The correct coolant and distilled water mixture prescribed by the coolant manufacture of choice must be maintained. Water with high trace elements of minerals will create problems for aluminum radiators not normally seen in copper/brass radiators.

Electrolysis – Electrolysis is the systematic removal of the protective layer on the inside of the radiator tubes due to improper grounding in the electrical system. Electrical grounding problems can stem from poor installation of aftermarket accessories or incorrect vehicle collision damages.

Electrolysis facts - An electrical current passing through the coolant can cause system component failures, due to electrical ground problems and the generation of static electricity elsewhere in the vehicle. Electrical grounding problems can stem from poor installation of aftermarket accessories or incorrect vehicle collision damage repairs. This can destroy cooling system components regardless of the quality of cooling system maintenance. Depending on conditions it can be as quick as 7 days to ruin a radiator. The only way it can be stopped is to correct the electrical problem causing the current. Damage resulting from an electrical current can be pitted liners, oil coolers, radiators, extreme aluminum corrosion, and abnormal water pump and head gasket failure.

Good general information and care for your Forge cooling products

Testing for electrolysis in cooling systems A multimeter or voltmeter capable of reading both AC and DC currents is required to test cooling systems. The meter needs to read zero to the maximum voltage of the system being tested in tenths of a volt. The meter leads must be long enough to reach between the

coolant and the groundside of the battery. An ohm function of a multimeter is very helpful to pinpoint areas of resistance in as electrical system that will cause an electrical current to ground through the coolant rather than the engineered electrical circuit. **Procedure**

Attach the proper meter lead to the groundside of the battery negative to negative or positive-to-positive. Install the second lead in the coolant touching the coolant only. Read the DC and AC voltage with all systems off. If a block heater is present, also take a reading with the heater turned on. If an automatic battery charger is present, as a standby system, also take a reading with this system running. Read the DC and AC voltage with the electrical starter engaged. Read the DC and the AC voltage with the engine running and all systems turned on: lights, coolers, fans, heaters, air conditioning, mobile phone, including the phone and radio on both standby and transmit.

The above procedure will test a complete system except for an electrical current, which can be generated by the rear transmission. This is particularly true with air bag suspensions, rubber pad suspensions and rubbermounted transmissions. Any current generated will travel up to the drive shaft to ground through the engine coolant. Grounding rear ends and transmissions is strongly recommended.

Voltage of zero to .3 is normal in a coolant of cast iron engine. Such an engine will be destroyed with time by .5 volts, and engine manufactures are reporting .15 volts will destroy an aluminum engine.

The current will be AC if the problem is due to static electricity. If the coolant shows an electrical problem with all the equipment turned on; turn off one system at a time until you finally turn off the system that stops the electrical current. When the current stops, this will indicate the electrical system causing the problem. Be partially careful of starters. They can cause as much damage to a cooling system as a direct connection to an arc welder. This is due to the amperage present. Always change the coolant if a current is detected. The electrical current will destroy the protecting chemicals in a properly inhibited coolant.

Like most parts on your car The Forge radiator will need to be serviced to ensure its continued excellent performance. You are responsible for the monitoring of the engine temperature operation and for ensuring the correct detection and monitoring devices are in place and working to alert you to any overheating or other engine related malfunctions .At the time of installing the Forge radiator an approved coolant must be used and added to the coolant system. Be sure you follow these golden rules NEVER mix coolant and ALWAYS use DISTILLED water .

Good general information and care for your Forge cooling (intercoolers) products

- On installing your intercooler be sure that all hoses clamps and fittings are tightened to prevent any leakage.
- Ensure that none of the intercooler or the associated plumbing components are rubbing on any body parts. This can cause premature failure and warranty invalidation from Forge.
- Do not use **any** car cleaning products, solutions; shampoo's to clean your intercooler, radiator or oil cooler. The use of these products and damage the Forge cooling systems and invalidate your warranty.
- We recommend that you should inspect your intercooler on a regular basis for bent and/or crushed fins. Any bent fins should be carefully straightened as to allow ambient air to pass through the core face.

Engine oil coolers and transmission oil coolers

- Ensure all hose clamps and fixing are tightened and secure to prevent leakage
- Do not exceed an 80 PSI rating

What should you do if a fault develops

If you suspect that you have an issue you should take your vehicle back to where the installation of your Forge product was carried out or to a suitable and qualified tuner for investigation on the problem

If you suspect that problem has occurred due to faulty manufacture please contact your Forge dealer or Forge Motorsport UK , Forge Motorsport USA or Forge Motorsport Asia depending on your geographical location to discuss the issue .

How to get the Best from your Forge cooling products

- Ensure the fitting is carried out by a reputable competent, garage, tuner or mechanic.
- Carry our regular visual checks, inspections and service.
- Only fit the Forge cooling product for the application that's it was designed for.

- Do not fit other parts that could detrimentally affect the efficiency of your Forge cooling product.

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