



FRONT MOUNTED INTERCOOLER KIT

Renault 5 GT Turbo – 1985* to 1991

Although this has been fitted to a Phase 2 model, there is little reason to believe it will not fit the Phase 1 model as well.



It is recommended that you read through these instructions thoroughly before commencing the installation

CONTENTS

<u>Page</u>	<u>Section</u>
3	THE KIT
3	KIT OVERVIEW
3	PARTS INCLUDED
4	ESSENTIALS - TOOLS YOU WILL NEED / JACKING POINTS
	PARTS REMOVAL
5	1 Jacking The Car
5	2 Bonnet Removal
5	3 Indicator Removal
5	4 Grille Removal
5	5 Fog Light Removal
5	6 Bumper Removal
6	7 Air Filter Removal
6	8 Turbo/Intercooler Pipe Work Removal
7	9 Standard Intercooler Removal
7	10 Splash Guard Removal
	PARTS MODIFICATION
7	1 Cutting Cross Member
8	2 Drilling Cross Member
8	3 Trimming Fog Light Aperture
	ASSEMBLY OF PARTS
9	1 Mounting Intercooler
10	2 Turbo-to-Intercooler Pipe Run
11	3 Intercooler-to-Carbtap Pipe Run
	FINAL CHECK
15	1 Checking Over Pipe Work
15	2 Re-Fitting For 'Stock' Look
	CUTTING THE BUMPER
16	1 How Much To Cut
16	2 The 'Natural' Cut
16	3 Cutting The Bumper
17	4 Do You Fit Mesh?
17	5 Fitting Mesh
	FINISHED
17	1 Time For A Drive

THE KIT

The Forge Motorsport kit was designed specifically for the Renault 5 GT Turbo. As such it requires minimal movement of Renault components already fitted to your car, and offers advantages over other kits on the market.

- You do not have to fit a different bumper
- You do not have to cut your bumper entirely (you can retain the stock look, if you like)
- You do not have to remove your fog lights (except for fitting)
- You do not have to remove the towing eye

The kit is designed to fit behind a standard bumper, unlike other kits on the market. However, if you do have an aftermarket bumper fitted, the Forge kit should still fit behind no problem as the majority of aftermarket bumpers have MORE room behind them. We have found the standard bumper to be the most restrictive, therefore designing the kit to fit that bumper ensures it will work for others.

KIT OVERVIEW

Charged air comes out of the turbo, and takes the most direct route to the nearside intercooler inlet. The cooled air runs from the intercooler, around the front subframe, across under the alternator, then up in front and to the right of the alternator, straight across the engine bay and finally entering the carb top.



PARTS

1	x	Intercooler with O/S exit 125mm long	3	x	45 degree 51mm Samco elbow
2	x	M8 Nuts/Bolts/Washers	1	x	57-51mm Samco straight reducer
5	x	90 degree 51mm Samco elbow			

16 x 40-55mm Jubilee	1 x 140mm Alloy Pipe
1 x 60-80mm Jubilee clip	1 x 190mm Alloy Pipe
1 x 100mm Alloy Pipe	4 x 40mm Alloy Pipe

This kit DOES NOT include any mesh to fit in front of the intercooler.

ESSENTIALS

To start with you need a fairly sound mechanical knowledge and not be put off by what appears to be a complex kit - it isn't, the fit is straightforward, and can be achieved in around a day at a relaxed pace.

You will need:

TOOLS

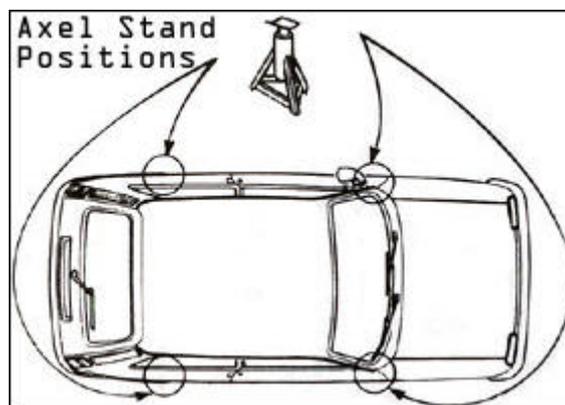
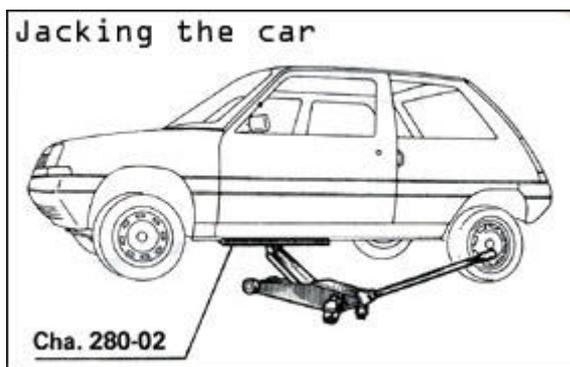
- A good quality, full ratchet (socket) set
- A good quality set of spanners (optional)
- A set of screwdrivers
- A sharp blade (Stanley Knife or similar)
- An angle grinder with cutting and grinding discs (and suitable safety equipment)
- A jigsaw with a semi-fine toothed blade (and suitable safety equipment)
- Various grades of sandpaper or wet'n'dry
- A drill and various sized bits
- A trolley jack or similar
- A pair of good quality axle stands

CONSUMABLES

- New Alternator Belt
- Rust inhibitor and/or paint to match body colour
- Mesh of your own choosing to prevent stone chips damaging the intercooler

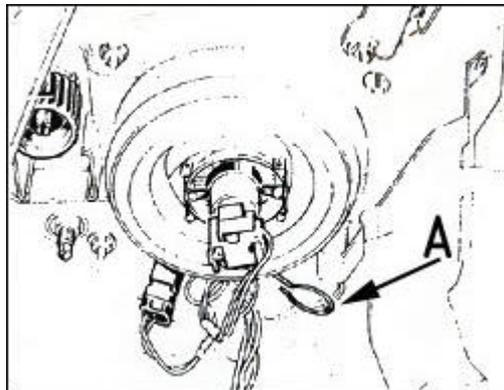
Forge Motorsport can accept no responsibility for the accuracy of these instructions - what you do to your car YOU DO.

Observe the jacking points for the Renault 5:

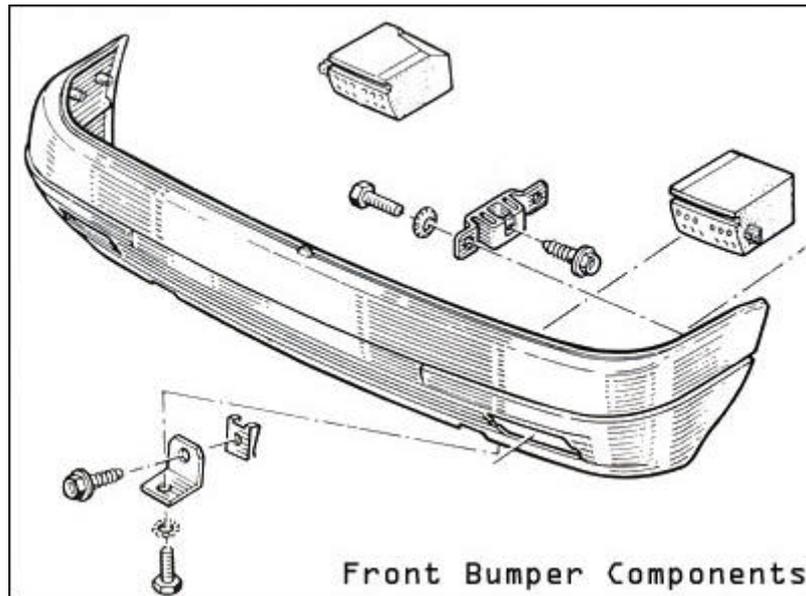


PARTS REMOVAL

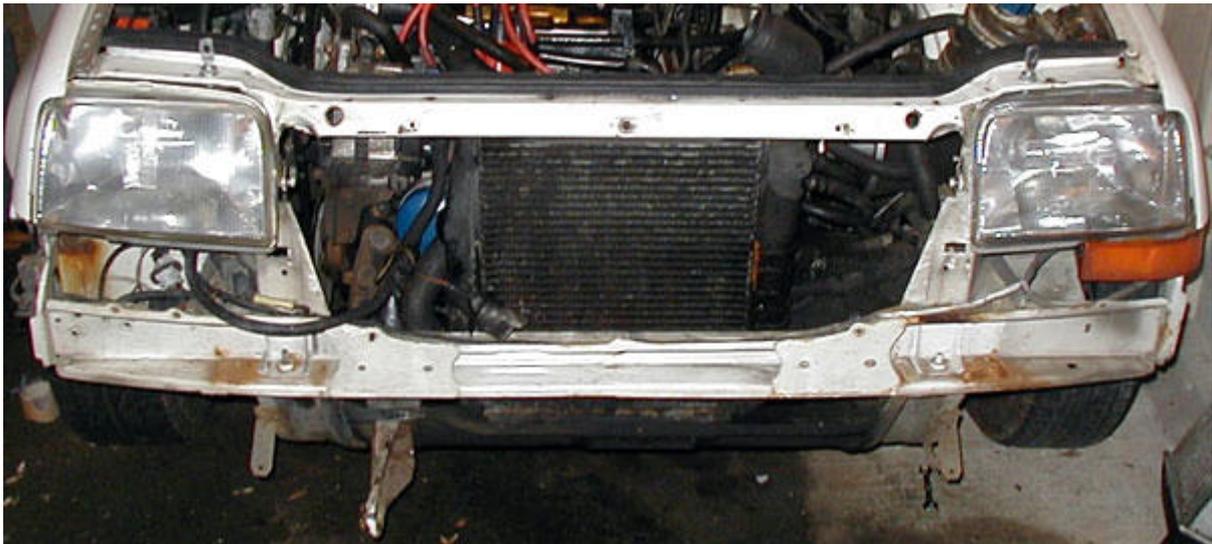
1. Set the car in a dry area with plenty of room to work around (especially the O/S). Jack it up (referring to previous diagrams) and set whole front of the car in the air on two axle stands, Ensure it is safe and secure.
2. Although not essential, it's recommended to remove the bonnet completely as this will provide maximum access. To remove the bonnet drill out the rivet securing the safety wire to the front panel. Undo the four 10mm nuts on the bonnet hinges being very careful not to shear any of the threads (spray with WD40 prior to removal). Lift the bonnet from the hinges and store safely. It is easier to remove the bonnet with two people (one holding, one loosening the nuts) but it's possible by yourself.
3. Remove both front indicator lenses (required to enable removal of grille) by locating the wire spring positioned below the rear of each headlamp (see A on diagram below). Pull the spring rearwards to release it from the bracket and remove the indicator forwards.



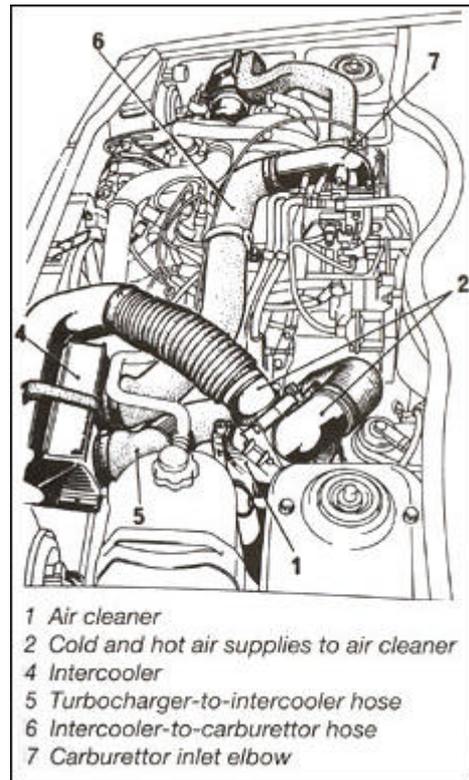
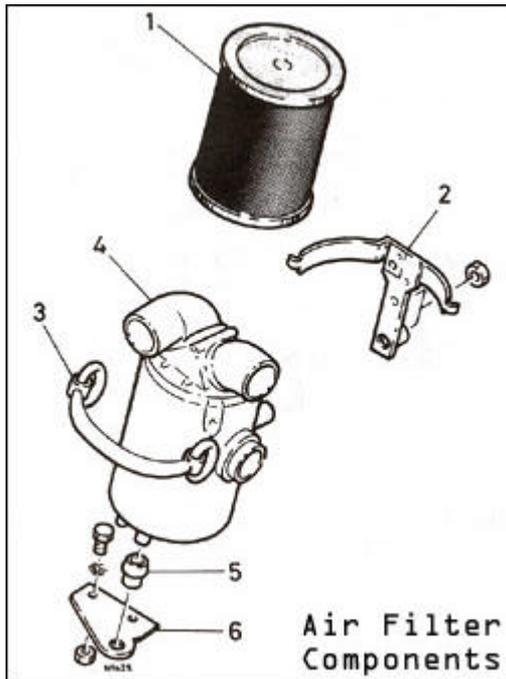
4. Remove the front grille. Unscrew the centre top retaining bolt, remove the screws from the two remaining upper clips and pull out the clips. From inside the engine bay release the two clips either side of the radiator and remove the grille.
5. Remove the fog lights (if fitted). Undo the two screws holding the light to the bumper and carefully withdraw the lens. Disconnect the two wires on the bulb and store safely.
6. Remove the front bumper (you may need to remove both wheels to make it easier).



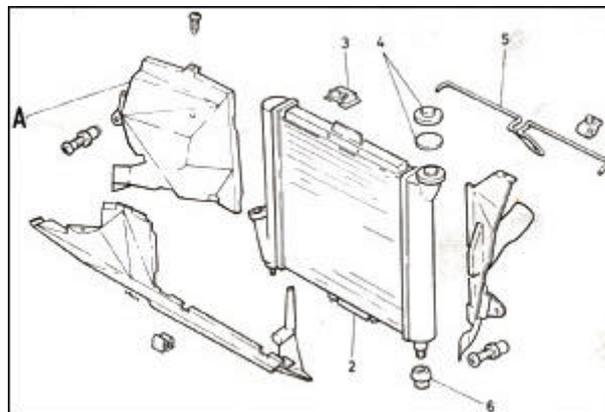
Using the appropriate sized socket or spanner undo the two bolts located on the inside of the wheel arch. This is possible with the wheels still fitted although removing them would make access a lot easier. Standing in front of the car, pull the bumper towards you until free of the clips on either side. Store the bumper safely and remove the two impact blocks.



7. Remove the standard air box (or aftermarket air filter). To remove the standard air box undo the lower pipe that runs to the turbo intake. Undo the two top hoses running to the hot air/cold air intakes. Release the strap securing the box to the bracket attached to the N/S strut tower and lift the box out.



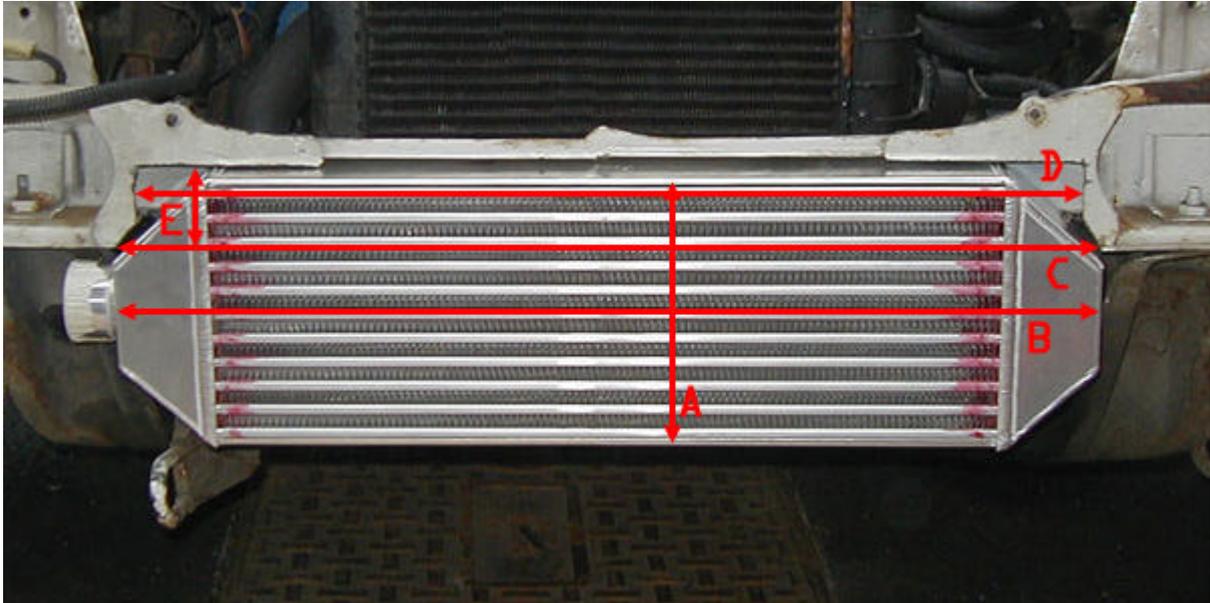
8. Remove the turbo/intercooler pipe work. Undo and remove the airbox-to-turbo pipe on the turbo and place some clean rag into the turbo inlet to prevent any dust/debris from entering. Undo and remove the turbo-to-intercooler pipe (no.5 in above diagram) and place some clean rag into the turbo outlet to prevent any dust/debris from entering. Undo and remove the intercooler-to-carbtop pipe (no.6 in above diagram) and place some clean rag into the carbtop inlet to prevent any dust/debris from entering.
9. Remove the standard intercooler. Release the strap holding the intercooler in place and lift from its mounting plate. It is also necessary to remove the mounting plate, this is done by removing two 10mm nuts/bolts, one at the front of the car in the cross member, the other on the N/S of the car.
10. Where fitted, remove the splash guard to the O/S of the radiator (A in diagram below)



TRIAL KIT NOTE: It is unsure whether the guard can be re-fitted once the new pipe run as been installed. **Please report back whether it will re-fit with the new pipe run or not** (if you have the guard fitted).

PARTS MODIFICATION

1. The first and most involved task is to cut a section from the front cross member so the intercooler can sit high enough and far enough back so as to clear the standard bumper and towing eye bracket.



The dimensions of the above diagram are as follows:

Intercooler

- Depth = 80mm
 A) Height = 180mm
 B) Width = 625mm

Cut in Cross Member

- Depth = Right back to the rear of the 'C' section
 C) Width = 640mm
 D) Width = 610mm
 E) Height = 55mm

Measuring from either side of the cross member, work out the middle and then measure from that to mark up the correct places to cut. Using an angle grinder and the correct disc (metal cutting) carefully begin to cut out the section. The bottom section of the cross member is difficult to cut back completely first time. The easiest method is to cut back as far as you can and then use a grinding disk to grind the metal back until it is flush with the rear of the cross member.

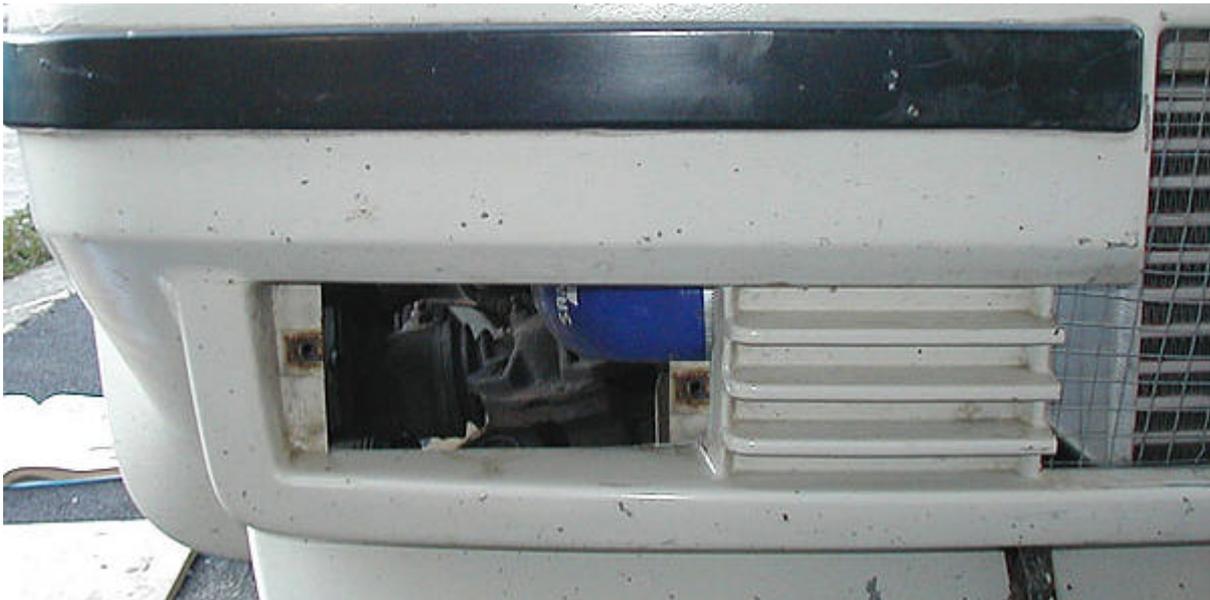
Use the grinding disc to take the sharp edges off all the cuts you make to prevent injury at a later date. It is advisable to use some kind of rust inhibitor on the edges of the cuts to prevent any corrosion over time. It's entirely up to you how you go about this but the easiest way would be to use a small tin of Hamerite paint (as it has rust inhibitors already mixed in) and paint the cut edges. If you want to keep the original colour of the car then use some rust inhibitor primer and then paint the edges with some touchup paint.

Things to note:

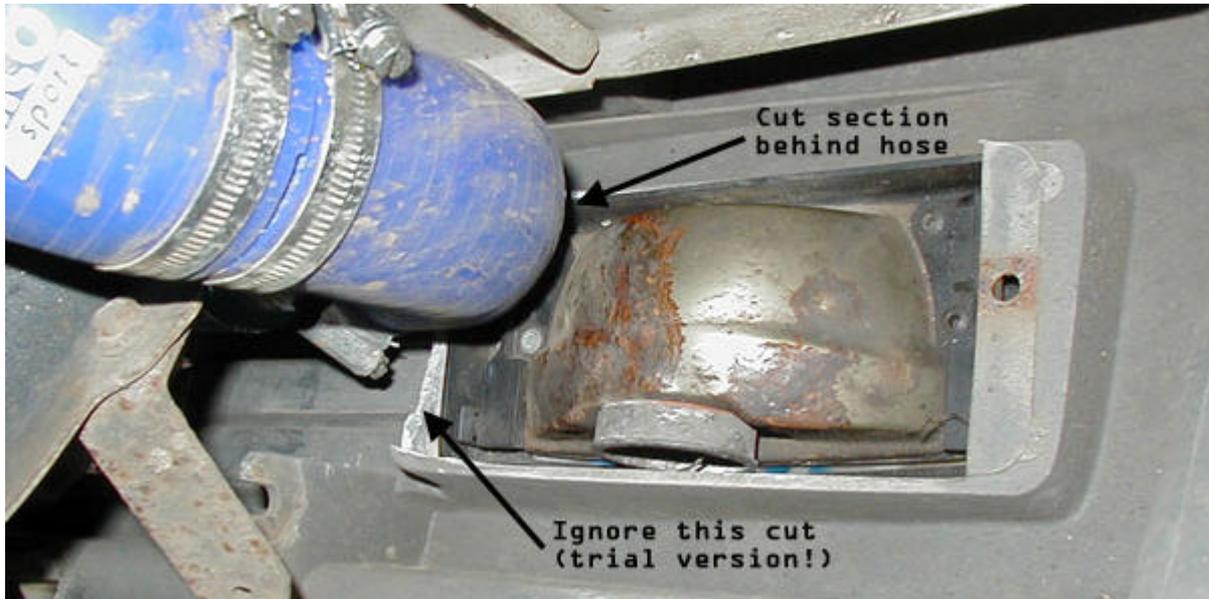
- a) Being extremely careful, keep using the intercooler to see how progress is going with the cut and to ensure you have enough room for minor adjustment.
- b) The dimensions given are generous to allow the movement of the intercooler so as to ensure it is fitted centrally.
- c) The top left and right areas of the cut do not follow the line of the intercooler end tanks for a reason, they allow access to the mounting brackets on the intercooler later on. DO NOT be

tempted to cut the ends on a continued angle otherwise you will have to re-cut when you come to fit the intercooler to the car.

- d) **BE EXTREMELY CAREFUL WHEN USING AN ANGLE GRINDER.** Even a small 4" grinder (recommended for this job) is powerful and can cause injuries. Always wear protective goggles and gloves and ensure there are no flammable liquids or materials within your working area. Keep an eye on where the sparks fly from the grinder as they do go a long way!
2. Once the cross member has been cut you then need to drill the mounting holes for the cooler (2 x M8 Nuts/Bolts). Holding the intercooler up against the car (if there is only one of you then you can use zip/cable ties to hold the cooler to the cross member) ensure that it is as central as possible and mark where to drill through the mounting brackets. Using the correct sized drill bit make a hole through the back of the cross member ensuring you don't drill into anything behind (there is a relay on the O/S by the radiator which often sits where you will need to drill).
- TIP:** When drilling the hole if you elongate it from left to right you will then have a small amount of movement to ensure the intercooler is centred on the car. If you are going to cut the section out of your bumper to expose the intercooler then now is a good time to do this so that you can align the intercooler to the bumper cut-out. See the **CUTTING THE BUMPER** section for full details.
3. A small modification has to be made to the O/S fog light aperture to allow the bumper to fit back correctly over the intercooler outlet pipe and the first 90 degree bend.



Looking at the front of the bumper you need to cut approximately 25mm (1") of the mounting surface for the fog light as shown in the above picture, Then from behind you also need to cut a very small amount off the inside of the bumper to allow clearance for the pipe run.



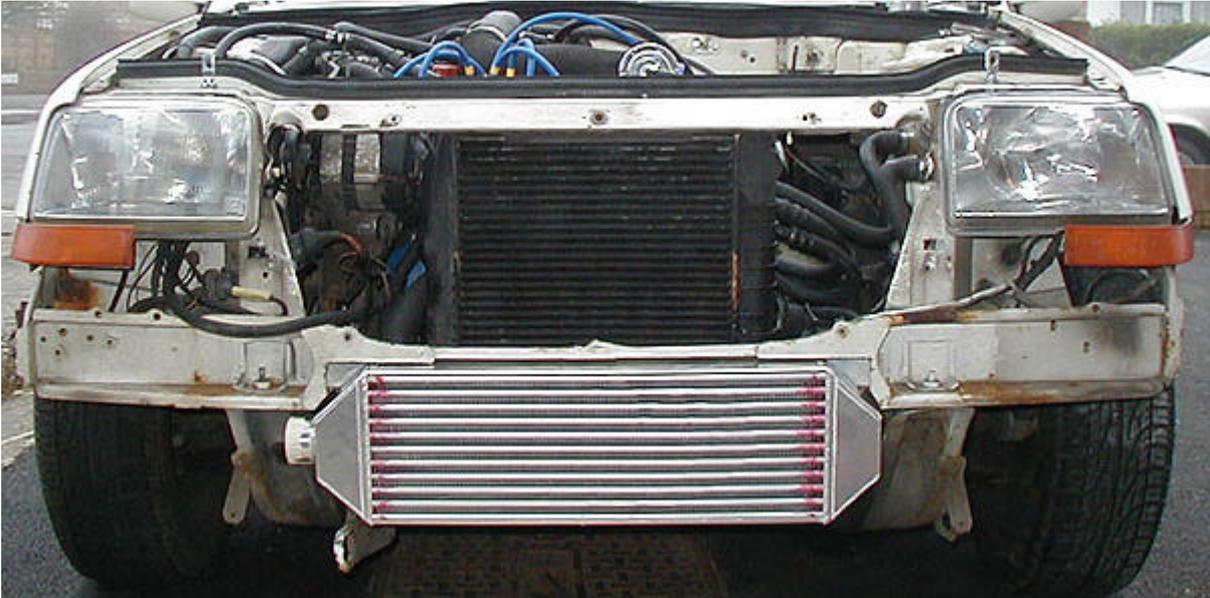
TRIAL KIT NOTE: Fog lights were not fitted to the demo car and therefore we can't be 100% sure it will work without some more modifications. **Please report back on how you get on with this.**

ASSEMBLY OF PARTS

1. Begin by mounting the intercooler to the cross member using the two M8 nuts, bolts and washers to secure. Make every effort to ensure the cooler is mounted centrally and is high enough to allow the standard bumper to fit. With the bolts nipped up trial fit the bumper on the car (no need to put the impact blocks) and make sure it's sat high enough.



You can just make out the intercooler behind the standard bumper in the above picture. If you have any difficulties fitting the bumper then remove the intercooler and ensure you have cut enough metal away at the top and have drilled the holes in the correct place to allow the intercooler to sit higher. If necessary elongate the holes vertically to allow more movement of the intercooler. Re-fit bumper and ensure a good fit all round. Once everything fits well remove bumper and tighten up the bolts on the intercooler. You are now ready to start the pipe run.



Turbo-to-Intercooler Pipe Run

- Starting from the turbo outlet remove the cloth placed in the opening to protect it from dirt/debris entering. Remove from the packaging one 45 degree bend, two 90 degree bends, the 100mm pipe, the 140mm pipe and 6 jubilee clips.



Put the first 90 degree bend on the turbo outlet pointing towards the front of the car and down towards the intercooler. Take the 100mm section of alloy pipe and put that into the first 90 degree bend. Take the other 90 degree bend and put that on the intercooler inlet pipe (remember to remove the covering from the intercooler inlet pipe first!). Put the 140mm pipe on that 90 degree bend and then using the 45 degree bend connect the pipe work together.

TRIAL KIT NOTE: As you can see from the above picture the install was originally done with 3 90 degree bends. A 45 degree bend has been introduced to try and lessen the number of sharp bends in the pipe run. However, if using the single 45 degree bend causes difficulties then the bottom 90 degree bend could be changed for another 45 degree bend and this should then work. Also, the two lengths of alloy pipe may be slightly wrong.

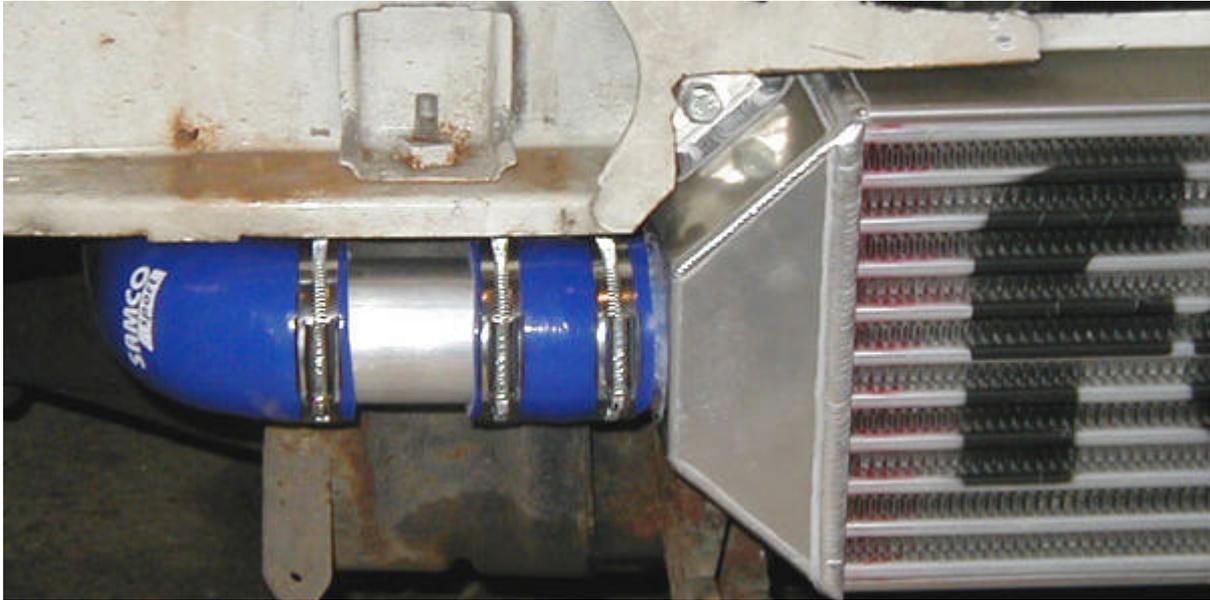
Please report back with any comments on this section of the pipe run.

Intercooler-to-Carbtop Pipe Run

3. Starting from the intercooler outlet remove one of the 90 degree bends and 1 jubilee clip from the packaging and get your sharp blade (Stanley knife).

TIP: Ensure you have a brand new blade fitted as a slightly blunt blade will tear the silicone hose and make a mess of the cut. A sharp blade will glide through the silicone and make a perfect smooth cut.

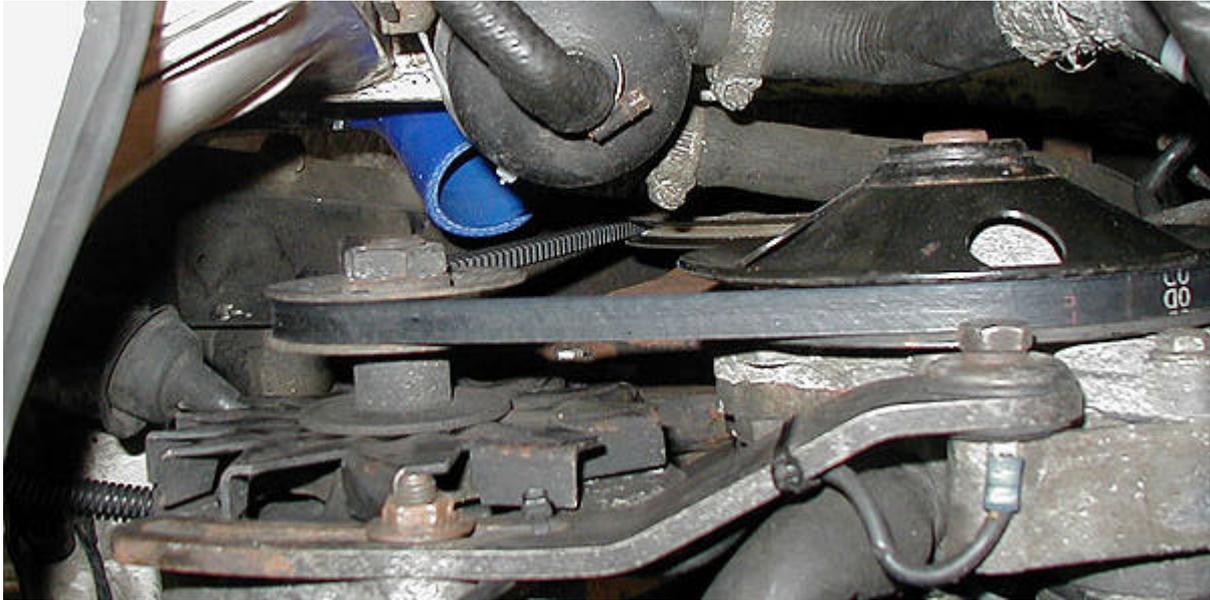
Cut the 90 degree bend approx 20mm (3/4 inch) before the start of the actual bend (leaving enough straight pipe so you can fit a jubilee clip on). In the picture below the outlet from the intercooler is shorter than the one supplied in the kit hence the extra piece of silicone hose.



Remembering to remove the protective covering on the intercooler outlet pipe, aim that bend directly towards the rear of the car and as close to the subframe as possible. Then remove another 90 degree bend from the packaging, locate one of the short 40mm sections of alloy pipe and 2 jubilee clips. Cut the 90 degree bend approx 20mm (3/4 inch) before the start of the actual bend as before and using the short alloy pipe connect the bends together.



Aim that 90 degree bend up towards the water pump as shown in the picture below.

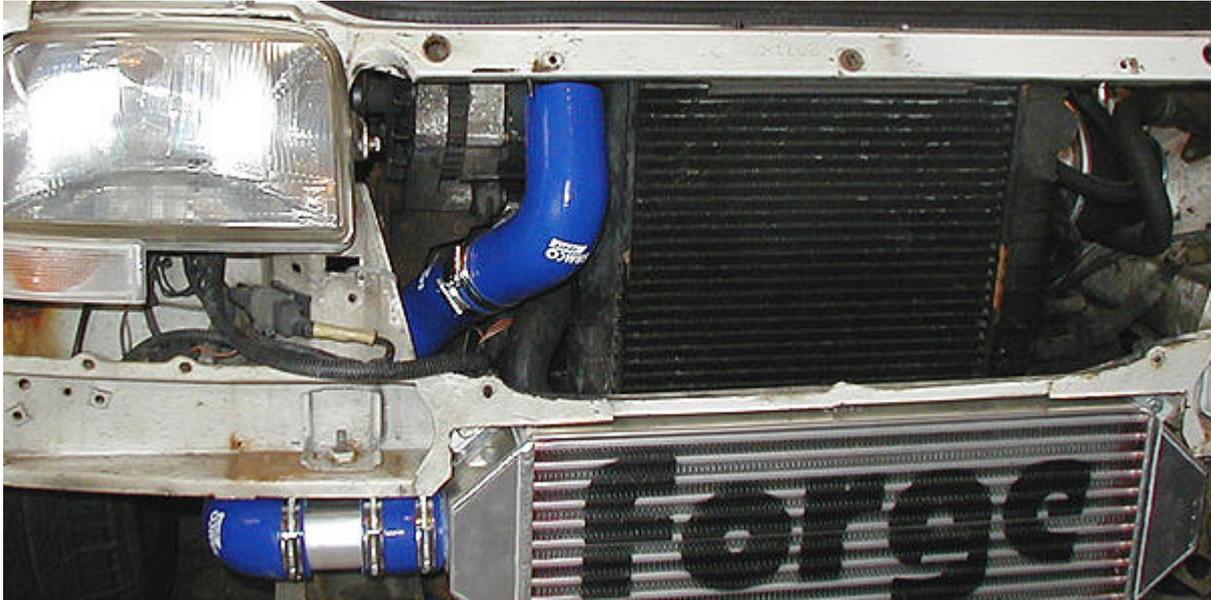


Next remove one of the 45 degree bends from the packaging, one of the 40mm sections of alloy pipe and 2 jubilee clips. Using that pipe connect the 45 degree bend to the 90 degree bend now pointing upwards and aim that 45 degree towards the front of the car as below. This will pull the pipes quite tight and keep them from fowling the alternator belt and pulleys.



Remove the last 90 degree bend from the packaging, one of the 40mm sections of alloy pipe and 2 jubilee clips. Using the pipe connect the two bends together aiming the 90 degree pipe up behind the alternator (*) and straight up towards the distributor.

(*) It is necessary to fit a new alternator belt so as to provide the maximum amount of clearance for the pipe run. There is still a good couple of inches adjustment with the pipe run in place but a new belt will be required if you struggle to fit the pipe run up behind the alternator.



Remove the final 45 degree bend from the packaging, the 40mm section alloy pipe and 2 jubilee clips. Using the pipe connect the 90 degree and 45 degree pipe together aiming the 45 degree pipe straight towards the carb top.



Now locate the straight reducer, 190mm alloy pipe, the last 40-55mm jubilee clip and the 60-80mm jubilee clip. Attach the reducer to the carb top with the 60-80mm jubilee clip and then using the 190mm alloy pipe connect the pipe work together.

NOTE: As you can see from the pictures a dump valve has been fitted in place of the 190mm alloy pipe with an extra piece of silicone hose and a piece of alloy pipe. If you have a dump valve already fitted to the car there would be two normal ways this is fitted:

Alloy 'T' Piece

If your dump valve is fitted with an alloy 'T' piece then use that 'T' piece in place of the 190mm alloy pipe. You will find the 'T' piece will most probably be too short to bridge the gap between the 45 degree bend and the reducer pipe on the carb inlet. To bridge the gap fully use one of the off cuts from the shortened 90 degree bends and you will need to shorten the 190mm piece of alloy pipe to suit (use the angle grinder and ensure that all cut edges have been filed and all grinder dust is kept away from the engine bay). You will also need a further two jubilee clips that would have been used to fix the 'T' piece in place on the old boost hose.

Silicone Hose with Dump Valve takeoff

If you have upgraded to silicone boost hoses and have opted for the one available with a dump valve take off fabricated into the hose then you have two choices:

- 1) Obtain an alloy 'T' piece and follow the instructions above. ('T' pieces are available from Forge Motorsport on 01452 380999)
- 2) Cut a suitable section of your boost hose off (making your own measurements) which retains the dump valve takeoff. Then cut the 190mm alloy pipe into two short joining sections using the angle grinder ensuring all cut edges have been filed and all grinder dust is kept away from the engine bay. Use two spare jubilee clips from the original pipe work to connect the hoses together.



FINAL CHECK

1. Once all the pipe work has been completed double check all connections are tight on all pipes. Re-fit the standard air box or aftermarket filter referring back to the removal instructions. Once you are sure everything is done, check for air leaks by starting and running the car briefly. If you can hear air 'hissing' it is a sure sign of an air leak - check all hose connections, and dump valve connections. If the car does not start at all check you have not dislodged any of the ignition leads. Once you are happy, switch off.



TRIAL KIT NOTE: As you can see from the pictures the air filter has been mounted vertically which is purely a personal decision. The pipe run has not been checked with a standard air box or another aftermarket filter position. For an aftermarket filter the ideal position would be where the original intercooler sat, therefore getting a large flow of cool air.

Please report back with any comments or suggestions on this section of the install.

2. The install of the intercooler is now complete. You can re-fit all the bodywork (bumper, grille, indicators and bonnet) if you like and keep the install as a 'stealth' mod. The intercooler will get significantly more flow than the standard cooler from the slats that are already available at the bottom of the bumper. If, however, you would like maximum exposure of the intercooler then read on....

CUTTING THE BUMPER

1. As previously mentioned you can re-fit the bumper to your car without the need to cut a large section out of the bumper. If you want maximum air flow then you will need to cut some of the bumper material out to expose the intercooler. You can cut out as much or as little of the bumper that you want and the following is only one option and a guide on how to achieve this.



2. The picture above shows the natural area to cut out of the bumper to give maximum exposure to the intercooler. You can cut the bottom section out all the way along to the fog light apertures and mesh the entire section, but this is entirely up to you to decide.
3. To cut the bumper section out it's recommended to use a jigsaw with a semi-fine blade (too coarse and you will tear the bumper, not cut it). It is also essential to wear safety goggles and some gloves as the dust created but cutting is very irritating and sharp, Start cutting **INSIDE** of the edge you are aiming for as this allows for slight errors and you can then sand the edges smooth and straight.



Here you can see the first section cut out and the bumper back on the car. You can see that the intercooler is not sitting straight or central. It is only when you cut out the section from your bumper and mount the bumper to the car that you can see how central the intercooler is sitting. If miss-aligned, remove the bumper and loosen the mounting bolts and adjust the intercooler (it helps if you have drilled slightly elongated holes so that you have a small amount of movement). This is all done by pure trial and error until everything looks straight and you're happy.



4. Once the bumper has been cut and sanded back to your satisfaction you should then fit some mesh to protect the intercooler from stone chips (the alloy fins of the core as extremely delicate

and damage very easily). The kit does not include any mesh as this is a very personal choice. The picture below shows some cheap square section mesh bought from a DIY store.



5. To fit mesh basically cut down to approximate size leaving a good inch or so overlap. Press the mesh into shape from behind and then fix into place using silicone seal or something similar and 'sticky'.

FINISHED

1. So with the intercooler kit fitted and all the bodywork re-fitted it's now time to start the car and take it for a spin. It's good practice to check over the pipe work after a couple of trips just to ensure nothing has worked it's way loose. You will notice a drop in boost if there is a serious air leak. As long as everything is done correctly you will enjoy many happy miles of improved motoring in your Renault 5 GT Turbo.
2. If you feel there could be any improvements made to the intercooler kit or to these fitting instructions then please don't hesitate to contact Forge Motorsport on 01452 380999 who will be happy to hear your comments.



Engineered For Performance