

FROM DREAM TO REALITY

Don Anderson builds his Southern GT: Part 19



After completing my last report, things appeared to be going downhill fast.

I was getting no new support from Mark Sibley at GT Race Parts, so I decided to phone Powerlite, (Starter motor Company), direct. I was fortunate in that the phone was answered by Jak, whom I had dealt with earlier when we were sorting out the return of the faulty starter. He said he was sorry to hear that I had not resolved my starter problem, To



- ▲ Starter with adaptor plate ready for fixing
- ▼ The starter in position, as mentioned very hard to see what's happening



solve this he needed to consult his production manager and would be in touch as soon as possible. Good as his word, he phoned a couple of days later, and asked me to detail the issues in writing. The main issue was insufficient forward movement of the starter pinion. He also said he would require the return of the starter complete with the adaptor plate. So duly sent off with all the detail required. Fast forward about 10 days and a box arrived from Powerlite!

Inspecting the delivery, it was obvious that, amongst other things, they had modified the adaptor plate making the starter mounting more rigid. Jak then phoned to say, if the items needed further alterations to make it all work correctly, I could send it back with what was required and they would further modify the parts. What better service could you ask than that!

While my starter was being sorted out, I turned my attention to the exhaust pipes, they protrude just where the rear window is. I have been looking at different solutions to minimise the heat radiating from the pipes. My friend Jim from the MOT Centre in York put me in touch with Nimbus Motorsports in Pocklington. www.nimbusmotorsport.com. They specialise in heat shields, wraps, and all things heat related, also they are not far from my home.

After speaking to Chris at Nimbus, I settled on two titanium heat shields, one 12 inches long and one 24 inches long. These come with stand off clamps that go round the exhaust pipes. When fitted they allow for the passage of air between the shield and the pipe, they are also capable of shielding up to 1350F. I also need to tidy up the rear shelf where the pipes protrude. I have looked at various methods to insulate these, whatever I use needs to be adaptable, lightweight and almost invisible. After speaking to various companies it looks as though the answer will be a sheet of "Vermiculite". Vermiculite comes about 5cm thick and can be worked like wood. When we were at the Spa Classic, I noticed that all the GT40's running on track had the rear deck inside the back window painted black, so whatever I do, painting it black would make the inside almost invisible and tidy up the rear deck.



- ▲ Exhaust pipes protrude through the rear deck
- ▼ The titanium heat shield from Nimbus



I was fortunate again this year in that Rob my friend and fellow club member we had made the decision to go to the "Spa Classic", in May. But with being away it was not till the end of May that I had the first opportunity to get the spanners out since receiving the modified starter. First I fitted the starter and adaptor plate with the bolts supplied. A problem with all this of course is that the starter is buried under exhaust pipes, suspension arms and chassis tubes and it's not easy to see what's going on! It was obvious that the pinion, in it's de-energised position, was now much further forward, in fact, now slightly engaging the starter ring. I took as many measurements as possible of the key items and with some help from my brother he created an engineering drawing of the set up. From this we could work out the spacers now required to position the starter correctly.

With all this done and it looking as though the pinion was now in the correct position, with my heart in my mouth I connected the battery and engaged the starter. It engaged, spun the engine, and disengaged all ok, but there was a noise suggesting a misalignment of the pinion and starter ring, so the starter position now required a bit of fine tuning. I took some further measurements and made slight changes to the spacers. I spun the starter again and the engagement, disengagement and noise were all fine this time, so hopefully the starter issue is finally put to bed!

On the next engine start I noticed it was running exceptionally rich.

I connected the laptop to check the key data. According to the laptop the engine water temperature was

displayed as minus 30 degrees! I phoned Emerald (ECU manufacturer) to enquire how to correct this, I was told that it was a compatibility issue, and I needed an Emerald engine coolant temperature (ECT) sensor and intake air temperature (IAT) sensor. This is apparently because the Emerald ECU does not read the type of sensor used by Ford.

I ordered these and they arrived very quickly. Fortunately the kit included an adaptor for the water temp.sensor, as the Ford tapped hole was several sizes bigger. After replacing the sensors an engine run showed the laptop readings were back to normal.



Two views of the MAP sensor



The ERG Valve, the Fuel sensor and the Idle control valve, all superfluous to requirements.

I was now back to where I was some months previous, where I was ready (again!) to go to Richard Martin at Automotive Solutions, Peterlee, Co Durham richard-martin.co.uk for a full testing and adjustment session on the rolling road.

The car was once again put on a trailer and I drove it up to Peterlee. One nice thing was, after getting the car off the trailer, I was able to drive it into Richard's garage, first time ever!!

As previously, Richard asked for the car to be left so he could carefully go over all the details. After a couple of days Richard sent me a message. He required a manifold absolute pressure

(MAP) sensor, this also to come from Emerald. I ordered this and had it sent direct to Peterlee. This informs the ECU of the engine load by monitoring the pressure in the throttle body inlet.

We also had a problem with air bleeding into the plenum which was making the car run very lumpy. To overcome these problems Richard ordered a blanking

plate for the exhaust gas recirculation (EGR) valve. This came from Poland! I also went back to my friends at Yorkshire Profiles yorkshireprofiles.co.uk and had a blanking plate made for the idle air control valve. With these modifications it has allowed us to remove a number of unused vacuum pipes, the EGR valve, the idle control valve and the fuel sensor. These functions seem not required with the Emerald engine management. However, we await the final exhaust emission levels from Richard, and I trust these will be good enough to get me an IVA pass!

When the MAP sensor arrived I drove back up to Peterlee and exposed the wiring from the ECU to the engine.

Once I identified the relevant wires, we spliced in the power, earth and sensor wires as per the Emerald instructions. Richard had a great way of splicing wires, as he is an approved Audi/Volkswagen Agent. Audi insist that when splicing wires, it must be by use the "Wurth butt connectors". These are a combination of glue strips that grab and hold the outer insulating sheath, a heat shrink outer with a solder

section in the middle. A heat gun is applied, and it all comes together beautifully for a very strong and low resistance joint. After the wiring was completed, I had fortunately brought some aluminium strips with me and I was able to make a bracket to support the MAP sensor. Richard connected



The Wurth Butt Connector. (Great piece of kit)

up a vacuum pipe from the sensor to the Plenum, this would normally have served the brake servo's, so its a neat fix. It should now be able to get the car running on the rolling road! As the date for this article is fast approaching I have decided to sent this now and will update in the next edition.

The only other issue at present is the clutch. It is not disengaging fully.

I have adjusted the length of the arm. This has made it slightly better, but it is still not allowing me to select gears without some crunching.

Mick at Southern GT helpfully suggested that he can sort out a different slave cylinder that will give me more movement. That sounds like the answer, watch this space!

Costs so far this Quarter:

Sensor adaptor	8
Air & Temp Sensors	21
Blanking plate	5
MAP Sensor	80
York Profiles	30
Heat Shields	106
Total	£250
Total costs so far	£43,412