



ARCC UPDATE

February 2010

Goodwood Revival 2009

by Bill Moffet, Toronto

Each year since its inception in 1998, the Goodwood races for cars from the 60's, 50's, and earlier have grown in popularity. They have been on my wish list for years, and in 2009 an opportunity to travel to the races in a Jaguar E-type fixed head coupe with a member of the Goodwood Road Racing Club was too good to miss!

Stuart Tait, the Jaguar owner, lives in Selborne, a beautiful Hampshire village. Selborne is about five miles from my wife's brother and about thirty miles from Goodwood. Early on September 19th, I drove our rented Skoda diesel to Selborne. This was the first time I had met Stuart but he was a pleasure to be with and he proceeded to take me on a lovely drive through the Hampshire and Sussex countryside approaching Goodwood by an "unofficial" local road, missing all the traffic.

Stuart's Jaguar was beautiful and fully prepared for competitive rallying with timing equipment and 5-point harnesses. He retired from rallying a few years ago but still enjoys a spirited drive in the country.



Start of Goodwood Trophy Race. Photo by author.

Goodwood Revival is exceptionally well organized and most spectators join in the spirit by dressing in '50s attire. I

wore a flat cap, a 50 year old MG Car Club tie, a tweed jacket and cavalry twill trousers and blended in well. All mechanics and photographers - in fact anyone inside the circuit - were required to dress in period. WWII uniforms, lady factory workers, flat caps, fir stoles and high heels were everywhere.



8C 2300 Engine Bay. Photo by author.

But that was just the setting. There was a great selection of Alfas racing - 1933 8C2300 Monza (2!), 1934 Tipo B (2!), 1934 6C 1750 LeMans, 1938 308C, 1948 Alfetta, Giulietta SS and SZ, and a 6C 3000 CM. The pits were open, some to the public and all to members of the Goodwood Club and their guests. You could walk around the cars and chat with mechanics, drivers, and celebrities.



A pair of Tipo B's. Photo by author.

There were 7 races on Saturday starting at 10:00 am and finishing about 6:00 pm. They included Grand Prix cars,

sports cars, Minis, and motor-bikes. Large fields and very competitive racing were enjoyed all day.

When you bought a programme you also got a receiver for one ear on a strap. You could plug it in your ear or dangle it around your neck. All around the inside of the track were huge screens, so you could watch the race at one spot and follow the cars around on the screen with a running commentary in your ear!

There was also a large area with stalls selling everything from cars to fur coats. Nearby was an amazing collection of off-beat Minis. These included a camper and an amazing orange shaped Mini. Time ran out and we didn't manage to spend much time there. Maybe next time!



6C 3000 Disco Volante. Photo by author.

Dave's Twin Spark – Part 2

by Dave Munro, Toronto

Now to the fuel injection part of the story. First off, the reason I used the carbs and distributor and not the original Bosch Motronic system is that the intake plenum would not fit under the hood of the spider. While looking for options, I came across a posting on the AlfaBB that showed an Alfa motor running on motorcycle throttle bodies. The motor was a Nord put into a hand built hot rod by an Australian known on the BB as Bcal. Look up his work, it is inspiring.

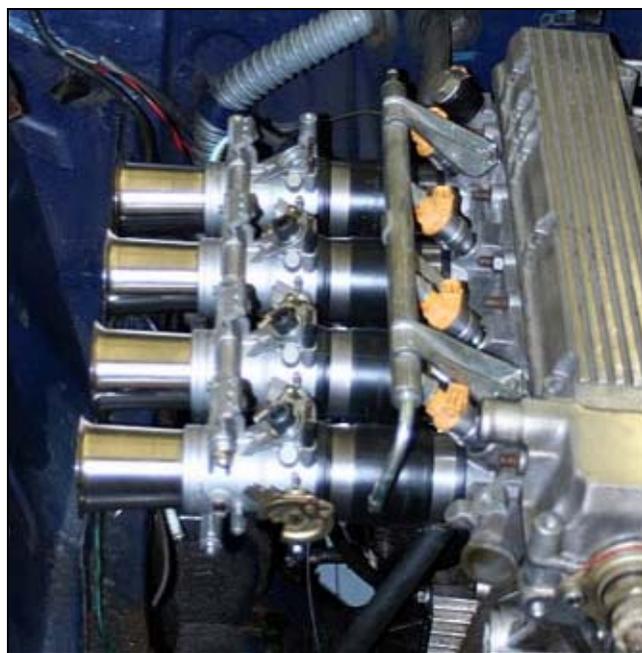
I started looking at the different types and sizes of throttle bodies available. I found all the info I needed on a section of a Megasquirt web site that showed the different throttle bodies with spacings, inlet and outlet dimensions. The ones I decided to go with were from a 2002 Suzuki GSXR 750. They are very close to the same size as the openings on the TS intake manifold. Also, this set of throttle bodies is made up of four individual units held together by cross bars with spacer sleeves between them. This is important because the cylinder spacing of the Alfa and the GSXR are different.

I found a set of throttle bodies on eBay, bid on them, and got them for \$75.00 US. There are other options for throttle

bodies but they are BIG money. The route I took was more work intensive, but almost free compared to a set of Jenvey or TWM bodies. Less bling but hopefully just as much bang.

A huge benefit of this setup was I that I could use the Alfa intake manifold, injectors and fuel rail that came with the engine. The GSXR bodies came with a throttle position sensor, so I didn't have to add one.

I took the bodies apart and used aluminum tube sections to get the correct spacing, then used longer threaded rod to put it all back together. The tabs that connect the throttle shafts from one body to the next had to be extended and a set of secondary throttle butterflies removed. I blocked off the injector ports in the GSXR bodies except for the rear one that is used as a vacuum source for the brake booster. There are two small vacuum ports per body that I hooked up to the MAP sensor and the fuel pressure regulator.



Now, for the hardest part of the build. I had to find a way to connect the Alfa carburetor throttle linkage that pushes to the GSXR cable that must be pulled. Here is a photo of what I ended up with. It works very well and is easy to adjust but took a lot of time to get right. The picture shows the linkage mounted on a support strut that runs from the engine mount to the lower cross shaft of the throttle bodies. The rod coming in from the left of the picture is pushed by the linkage as the throttle pedal is pressed down. Acting through the pivot, this results in a pull on the GSXR throttle cable.



Since my spider only had a supply fuel line, a return line had to be added. I used nylon fuel line and adaptors that push into the nylon. The nylon is very strong, much cheaper than fuel injection hose and it can be shaped with a bit of heat from boiling water or a trouble light. Other additions to the fuel system included a high pressure fuel pump and filters before and after the pump.

On to the control side of things. I was going to use a Megasquirt ECU but to control the Twin Spark's dual ignition system, I would have had to use two ignition amplifiers. I found two systems from the UK that fire dual coils directly. The first is Emerald, who said they could customize one of their units for me. The other was DTAfast who had exactly what I needed in their S60 pro.

I found the local supplier for DTAfast here in Toronto (Eurospeed Motorsport), and got my ECU and a harness kit including plugs and pins. Since the TS motor was fuel injected from the factory, a lot of the work was already done for me. The front pulley has a 60-2 toothed wheel. This, along with a magnetic crank sensor, times the whole show. The ECU "sees" a pulse as the teeth pass the sensor and when the two spaces pass by it knows where top dead centre is. Or it knows where the top dead centres are. Without a cam sensor, the ECU cannot tell which TDC is passing by. Luckily that does not cause any problems for me.

For the ignition, I found that a GM coil pack from a Corvette works out great for my 4 cylinder TS. The coil packs mount to a base that has two plugs for +12 volt power and four grounds that are controlled by the ECU. In this waste spark system the high voltage flows from the coil through the lead to the first plug (cylinder 1 front plug at the end of its compression stroke), jumps the gap, makes a bang, then the current flows through the head to the second plug (cylinder 4 rear plug on exhaust stroke). It jumps the gap and then flows back to the coil.



The next step was wiring up the ECU and all the extra bits. The ECU controls the injectors, the ignition, the electric fan, a shift light, the coils and the fuel pump. It can also control idle air, but I did not use this feature. Normally on a FI motor the ECU opens a valve to let air in if the idle speed drops below a set rpm. I used spark advance control to do the same thing. If you have ever adjusted a distributor

by ear you will know how this works. At idle, if you give the motor more advance it will run faster; and less advance will make it run slower. I'm very satisfied with the results. Idle speed is well controlled and this setup requires no extra parts or plumbing. Unlike a distributor, adjusting spark advance at idle has no effect on timing in the rest of the rpm range. I used 38° of advance at the lowest rpm and 5° at the highest idle speed. The idle control works like a low speed cruise control. I can now put the car in first, slowly let the clutch out without touching the gas and idle around the block.

The ECU also has a rev limiter that will hold the motor below a set rpm. It can also be set up to do traction control, turbo boost control and water injection.

I wired the fuel injectors from all four outputs on the ECU. There is a 12 volt supply wire that connects to the four injectors, then the computer grounds them so that they open and deliver fuel. The injectors are set to batch fire, all delivering fuel at the same time. I could have used one wire to control the injectors, however using the four outputs allows trimming of each injector's fuel delivery. If I find one cylinder running rich or lean, I can subtract or add fuel from it in the program. I do not expect to run into this with my motor, but if I do, it will be easy to fix. The wiring for the coils is the same as the injector. The coils get a +12V supply and are grounded by the ECU. There are no extra parts in this setup. I just found the dialogue box in the program to tick for twin spark, set the timing and it was up and running.

To do all this, the ECU needs input from sensors for air temperature, coolant temperature, throttle position, manifold pressure and exhaust gas oxygen. I used a wide band O2 sensor/controller from Innovate. It sends a signal to the ECU and a dash mounted gauge that shows the air to fuel ratio directly.

All of the sensors and outputs have to make their way to and from the ECU so I made looms to connect it all together. For the wiring I used OEM quality wire. It stands up to higher temperature and has thinner plastic insulation than the stuff that is sold at most automotive suppliers. It costs more money but is a lot easier to work with. I got it from Del City in the U.S. To go with the wire I used GM Weatherpack connectors and black nylon loom to finish it off. The new electronics needed relays and fuses. For that, I used a box from Bussman that has 10 mini fuses and 5 relays.

I tried to keep the electronic equipment out of sight as much as possible. The computer, fuse box and oxygen sensor controller all got mounted out of sight under the dash. The EGO gauge and shift light were installed in the radio location behind the dashboard. I got a radio blanking plate and glued two magnets to the back. I can cover up the modern electronics when I want to at car shows or when I get pulled over by "the man". See the photos on the next page.



EGO gauge and shift lights behind radio plate.

There will be a follow-up to these articles on the subject of programming the DTAfast computer.

All photos by author.

24 Hours of LeMons



Milanos are inexplicably good in the 24 Hours of LeMons races. Except maybe this one!

Upcoming ARCC Events

Toronto Chapter

Date	Time	Event
January 19	6 pm	Pub Night, Cam's Place, 2655 Yonge St.
February 23	6 pm	Pub Night, Cam's Place, 2655 Yonge St.
March 24	7 pm	AGM, Mini Grid, 608 Mt Pleasant Road

Alfa Romeo Club of Edmonton

Calgary Alfa Marque Society

Ottawa Chapter

Alfa Romeo Club of Canada

National Executive

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Harry Hamilton	Western VP	(403) 463-2235
Tony Adams	Eastern VP	(416) 222-2406
Jack Thompson	Past President	(780) 481-1708
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ARCC Update

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