



MONTY, a Fraser with a split personality

This story starts in January 2007, when due to unforeseen circumstances I was forced to sell my beloved "Monty" a 1996 Fraser Clubman, chassis no 155 to the present owner Richard Fleming, who bought the car sight unseen off the Trade me website as he was overseas at the time.

STORY BY JOHN STEINER

After the purchase was all taken care of he asked me if there was any room for improvement. The car in the state I sold her had 210hp at the wheels, a 5 speed dog box and weighed just on 600kg, in other words was fairly quick, but his wish was to go even faster.

Lots of ideas were tossed back and forth over the next few days as we discussed possibilities, then completely out of the blue he asked "if I was to build my dream

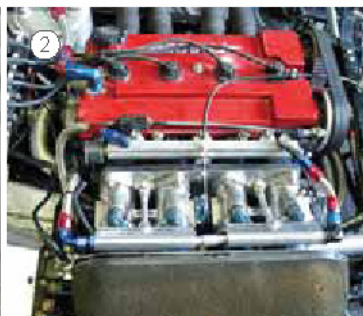
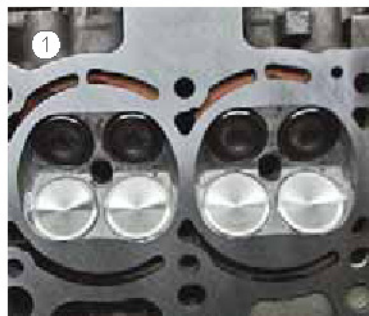
clubman, what would I spec it up to". I gave him a few basic thoughts and then the next thing I know I'm commissioned to build NZ's fastest Fraser.

The first thing to attack of course was the Toyota generation 2, 2.0 litre 3SGE engine. After removing it from the car it was stripped to a bare block and a plan of what we wanted was formulated. The brief was to achieve as close to 300hp as we could get, while keeping it naturally aspirated. It had to be street-able as well;

Richard wanted both a track day car and a road car, yeah right, all too easy!!!

With the planned output, the bottom end strength is paramount, so the first job was to send the block to the shop to get the block line bored and squared and make sure it was true. Thank god we checked, as the bores were badly off-line from the centre. Checking 3 or 4 other blocks showed they were no better, so my original block was bored and sleeved back to stock with all the bores

Above:
Building or modifying a car with dual roles is not an easy task, as always there must be compromises the difficulty here is what you sacrifice.



exactly where I wanted them in relation to the crank centre line. A 10mm steel girdle was laser-cut to fit over the main caps and bolt to the bottom of the block around the full perimeter under the alloy dry sump, with the ARP main bolts passing through the girdle into the main caps. This guarantees everything is held very snugly in place and is able to withstand the 9000 rpm that this engine experiences on a regular basis.

The crankshaft was then knife-edged and 2 kg of metal removed from its mass, before being heat treated and ground to 10thou undersize to suit TRD bearings, matched to fit it back into the block. A set of custom made CP forged pistons were coated with a Hypereutectic film and fitted to a set of Eagle H beam forged con-rods. All were fitted with ARP bolts, and duly bolted back into the block. Before this the whole spinning mass, including the special light weight CNC machined 4kg steel flywheel were balanced. A three stage dry sump pump was then fitted and plumbed into the alloy sump. This concluded stage one of the build.

With the block completed my attention was next focused on the cylinder head. After speaking to a few different people I decided to commission Kelford Cams in Christchurch

to undertake the modifications to the head. This included designing and supplying a set of cams to suit my needs. The design Kevin came up with was nothing short of spectacular, I'm not going to give too much away but can say that it flows far more than the 300 hp I was aiming at, and I was assured that even with the huge bump sticks he put in, it should still idle reasonably well and be drivable on the road with a 13 to 1 compression ratio.

Every single promise he made has been fulfilled, as it idles like a charm at 850rpm with only a slight hint of lumpiness and pulls hard all the way to 9000 rpm, while remaining comfortable to drive on the highway at a cruise of 3600 rpm at 100 kph.

The head was then carefully fitted. The next hurdle to tackle was the induction system. Quad throttle bodies were a must, but even after lord knows how many emails and phone calls around the world, I was still undecided on the best option to take, until I spoke to the team at EFI Hardware in Melbourne. They were the only ones to say honestly they had nothing on the shelf at present to suit my needs, but as they were thinking of doing a set for the 3SGE they would custom-make a set for me.

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A copy of the head specs from Kelfords were sent to EFI Hardware where they came up with a 50-48-45 Tapered throttle body with an injection port immediately behind the throttle plate to maximise both torque and horsepower. A computer designed specification for manifold length, which meant modifying the manifold I already had, plus some custom ram tubes to suit, completed the installation. This set up also gave me the luxury of being able to run one set of injectors in the stock position in the cylinder head and a larger set outboard in the throttle body for max HP at WOT.

With the engine now almost complete we still needed an exhaust system with enough flow to get rid of all the burnt gas. This little dilemma was to be resolved under recommendation by John Grudinsky at Hi-Tech Exhausts in California, who is renowned for exceptional expertise in getting the most out of an exhaust system. The design included a 3 stepped primary, 4-2-1 system built from 304 stainless. Sketches of the chassis layout and specs of the head and the induction system were sent over to John. The exhaust was to exit the engine bay over the top of the chassis; this would help reduce under-body temperatures.

When it arrived it fitted like a glove, a true testament to John's abilities.

Now with the engine built, all we needed was a gearbox strong enough to transmit this HP to the road, somehow, and figured there was really only one choice, a Quaife 5 speed sequential dog box. ▶

1. Making serious power means either forced induction or components that breathe really well, the largest valves that will physically fit in the cylinder head is a good starting point.
2. The guys at EFI Hardware customised individual throttle bodies to suit the 3SGE engine to maximise torque and horsepower, we were aiming at 300 Hp @ 9,000 RPM.
3. Holding everything stable at high revs is very important, for piece of mind a 10 mm stud girdle was laser cut and bolted in place.
4. Fraser Cars supplied a complete set of new rose-jointed front suspension arms, a set of Alloy uprights and hubs from the UK were sourced to reduce as much unsprung weight as possible.

One was ordered through Palmside sourced from the UK, along with an ATB type limited-slip differential and alloy housing. A new alloy quick ratio steering rack was ordered to replace the original stock Escort unit. The original T50 bell housing was modified with an adaptor plate to accept the type 9 gearbox configuration, and a 5 puck dual surface carbon ceramic clutch custom made by Auto clutch in Auckland was then installed.

Now that the complete drive train had been fitted into the car we needed some instrumentation, and an ECU to drive it all. A Haltech E11 V2 was selected for ECU duties along with an Aim MXL Pista data logging capable dash display with the optional GPS installed.

The gear selection lever was sent to Motor sport systems in Sydney to have a strain gauge fitted to it to activate the electronic flat shift they supplied, identical to what's used by the V8 Super-car teams (cuts fuel on shift-changes to unload the gearbox).

The only other additional extra I thought might be of benefit was an Aquamist HS-5 water injection system, to help overcome any potential problems with running pump gas at such high compression levels, as the "powers that be" would get a wee bit upset at me running Av gas on the road! Once that was installed the whole package was nearing completion, or so I very wrongly thought.

The car had the capacity of being rather quick, so attention was now directed to the already great suspension package. I had to make it even better as on the track it was going to be running slicks. First call was to Scotty and the team at Fraser Cars to order a complete set of new rose-jointed front suspension arms. I also sourced a set of Alloy uprights and hubs from the UK to reduce as much unsprung weight as I possibly could. The brakes were also upgraded to



vented rotors and Willwood 4 pots on the front while the rear Escort live axle rears were converted to disc with Mitzi rotors and callipers. A brake pad package from Steve at Race Brakes in Auckland set it all up perfectly. The whole car was resprung with Q.A 1 alloy double adjustable shocks all round with progressive springs both front and rear. Finally the car was aligned and corner weighted at TSV suspensions in Palmerston North.

Monty now had power and handling so we must be finished, right? Wrong, one of the only problems with a Seven clubman type car is that unfortunately they have the aerodynamics of a brick, and suffer badly from front lift at high speed. So with Richards's permission I went about trying to solve this problem and still keep the car a road going Fraser.

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The answer of fitting a removable front that can be interchanged with the stock nose cone wasn't as simple as it sounds. What I came up with was a front splitter from an American built Tiga S2000 sports which I modified to fit the original nose cone mounting points. I then built a removable frame that could be bolted onto the front of the chassis for support.

Six months and a great deal of hard work later, the body was finally completed. I also had Scotty and the team at Fraser cars make up an Alloy tonneau cover and side panels

1. A re-trimmed minimal interior kept Monty as light as possible while remaining practical.
2. Clubmans are not very aero at the nose so a Tiga S2000 sports racing splitter was customised to suit Monty.
3. Viewed from the front Monty certainly looks the part for racing complete with Carbon Fibre rear wing.
4. Set-up for racing Monty runs a dry sump system and individual coils per cylinder.
5. Even in street clothing Monty still make a tough looking car.

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to help with air flow. An Aero screen was also purchased from Scotty for track work as well as a rear Carbon fibre wing which is the same profile as used on the Indy Lites single seater.

The whole car was then painted jet black by Steve at Colour Spray in Wanganui, while Richard arranged to have the complete interior re-upholstered in Black leather.

Two years of hard work and endless challenges and it's finally finished, 2 cars in one, a road car, and after 2 hours transformation, a track car. Was it worth it? Hell yes! Would I do it again? Probably not! The

performance is staggering, with almost 300 hp in a car weighing a tad over 500 kg 0-60 is achieved in 2.8 secs and that's seriously quick, top speed is a moderate 240kph, but the grin factor is priceless. Onya Monty! 🏁

Special thanks to the following:

Wanganui Engine Reconditioners, Kelford Cams, Christchurch Palmside. Hy-Tech exhausts, California. Auto Clutch, Auckland. Race brakes, Auckland. Fraser Cars, Auckland. Torque performance, Auckland, Speed works, Palmerston North. Colour spray, Wanganui.

SPECIFICATIONS

Engine	2ltr Toyota 3SGE,
Crankshaft	knife edged and lightened
Pistons	Custom CP forged,
Rods	Eagle H beam forged
Flywheel	Custom CNC machined steel weighing only 4 kg
Clutch	Custom 7 inch carbon ceramic 5 puck
Cylinder head	Custom by Kelford Cams,
	Custom made 3mm oversize inlet valves, 1 mm oversize exhaust valves, Titanium collets with custom retainers, converted to shim under tappet buckets
	Custom billet cams, Inlet 0.512 lift @ 10 thou, Exhaust 0.435 lift @ 10 thou.
	Compression Ratio: 13 to 1 Head ported to flow 300+hp
Induction	EFI Hardware 50-48-45 tapered throttle bodies, on custom alloy manifold, 90mm velocity stacks, Aquamist HS-5 water injection and Piper X air filter.
Exhaust	Custom stainless 3 stepped primary 4-2-1 system
Transmission	Quaife alloy case 5 speed sequential dog engagement with 1-1 top gear
Drive shaft	Custom made
Differential	Ford MK2 Escort with alloy case fitted with Quaife ATB type limited slip diff, 4-1 ratio
Suspension	Fully rose-jointed front and rear, front - unequal length wishbones, MNR alloy uprights and hubs, QA1 double adjustable coil over shocks
	Rear - Escort Live axle 5 link QA1 double adjustable shocks
Brakes	Front - Willwood alloy 4 pot 290mm vented rotors DS3000 pads
	Rear - converted to disc with Mitsubishi EVO 2 discs and rotors DS 2500 pads
Wheels and tyres	Road - 205-50-15 Dunlop DZG dot tyres on 15-7 Superlite rims
Track	Front Hoosier 225- 40-15 R6 slicks on 8x15 Superlite rims, rear 245- 40 -15 R6 slicks on 10x15 Superlite rims
ECU	Haltech E11- V2, Dash display, MXL Pista data logger with GPS, Electronic flat shift
Weight	An anorexic 511kg and the performance is very exciting.

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