

When we left the Quantum/Fiat conversion – one of my friends has dubbed it the 'Quanturbo' – it was rolling, and the engine was in the frame, but we still had a lot to do.

That was six days into the build.

The rolling shell remained at Joe's as we tried to sort out exactly what was what with the front suspension. After several failed attempts to match the hubs and balljoints – mostly because what the supplier sent wasn't what they said they'd sent – but after a lot of detective work I found a part number stamped on the old shockers that matched that of the 1.6 Mk2 Fiesta. Which was what we'd expected all along. Turned out that the supplier had sent non-compatible XR2i parts, hence the trouble with the wrong number of splines and things seizing solid.

Resolving that was a major relief.

With a (much) more powerful engine, I couldn't help but feel that bigger brakes might not be a bad idea... the Brembos fitted to the Fiat Coupe 20vt weren't going to fit any wheel under 16", and that would have had to have such a low-profile tyre as to be a rubber band. That said, I needed a larger wheel and tyre than the original 13/185R65 originally installed; that has a rolling radius about 10% smaller than the Coupe's 16/205R50. After some calculation, I decided on 15/185R55 which is only 4% smaller. Hopefully that's large enough to avoid too much wheel spin and small enough to fit the arches...

Ebay provided a set of Focus wheels:



These came with a set of 15/195R55 – too large – but black and round, and let us wheel the car around.

I finished the day making some rough and ready calculations for the spring rates by the simple expedience of standing on them and measuring... decided to save the proper calculations for when everything is in the car.

Next problem: the pedal box. In the Fiat, the brake booster and master cylinder are behind the pedals on the driver's side of the firewall. All that pokes through is the vacuum pipe, the brake master connections, and the clutch master feed. The space where the Ford remote brake unit fits is full of bits of Coupe engine and wiring, and the Coupe clutch is hydraulic, so it's a no-brainer to use the Coupe part – but fitting it is a bit problematical.



Turns out there's one place, and one place only, where it will go. There's a slight tilt to it, and I haven't worked out the clutch master yet, but it looks as if everything will fit. Three bolts and a big hole later and it's in. The throttle pedal is mounted on a couple of stand-offs (which incidentally lets me adjust the position slightly) and works its way around the steering column.



I find a nicely-painted plenum on a car that Joe is about to weigh in for scrap, so I snaffle it and take the opportunity to replace the inlet rubbers.

I have located a set of brake calipers from a Mondeo V6 2.4. That's about the same power and a lot heavier than the Quanturbo, so although the discs are smaller than the Coupe's, I don't have too many concerns. The mounting holes on the hub need drilling out to 12mm but the centres are right; a little persuasion with the angle grinder on the facing plates resolves a slight interference issue. New discs and pads and stainless-braided hoses complete that. The rear brakes remain with the original drums.

Unfortunately, Ford have seen fit in their infinite wisdom to make the Focus wheels incompatible with the Fiesta; 13" Ford wheels have a standard offset of 38mm; 15" have 55mm, which means the centre line of the wheel is 17mm nearer the engine. This is not helpful; even with 10mm spacers, the wheels are too close and foul the gearbox turning right and the tiebar turning left. Not good.

Much perusal of alloy wheel suppliers leads to these:



Team Dynamics; standard 108mm PCD but an offset of only 25mm which moves the wheels outwards 30mm and makes all the difference. With the slightly narrower 15/185R55 Toyo T1-R rubber it's within a couple of mm of the metalwork on full lock. Result.

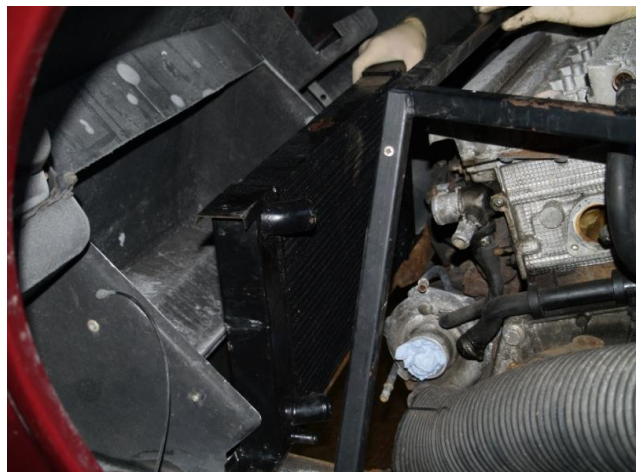
Back to the steering. Obviously the Coupe wheel won't hang off the Ford shaft, and it would be nice to use the entire assembly so I can use the switches and existing loom without too

much hassle. After more cardboard templates and some MIG welding later, an interesting slab of 4mm steel links the pedal box and the existing steering brace (to the lower windscreen surround) and provides a rigid mount for the steering assembly. As a bonus I have both reach and rake adjustment.



The shaft is too long; in a masterpiece of fabrication we cut and shut (TIG welding leaves a lovely finish) the thing an inch and a half short. Ooops... still, Joe has lots on his shelf!

With the engine in its final position, we hold the radiator in place and try and fit the bonnet. We've already had to remove part of the driver's side light housing, and now we have to remove the light cover link and a large chunk of the radiator to clear things. Nonetheless, it goes on. and we don't have to make any cutouts in the bonnet top – a major desideratum from the outset. This car should look stock when it's finished, as far as possible.



We position the bonnet and find that in spite

of our care in measurement, we're slightly out in the hinge pin position... almost 4mm. Easily solved and the new pivot tubes are stainless steel.

By this time we can remove the engine in just four minutes, and all the suspension and steering parts and suspension in fifteen. Formula One has nothing on us...



On the left is the mount for the oil cooler, and the bracing for the tiebar. While the bits are out, time for lots of yellow paint. Most of it ends up on the framework, though a bit finds its way onto the tub and a local gravitational anomaly causes a Jackson Pollock effect on Joe's floor.



The brake master cylinder and vacuum feed are fitted; the two light pipes are the reservoir feed which needs a bracket fitting on the back of the frame. I'm going to need another coat when it's all finished!

The engine is rebuilt with new belts, seals, idlers, water pump, clutch, and suchlike. While

Joe does that, I sort out the fuel filter and pump and the stainless fuel go and return pipes. We'll pass over the forgetting to use any plumber's tape at this point...



Things start to speed up as lots of little jobs get done. The accelerator cable goes through the firewall, as does the clutch master. That needs a slight modification to the pedal to make it work on the inside of the arm rather than the outside. The power steering rack goes back in and then the engine is refitted, hopefully for the last time. A mount for the clutch/brake reservoir is welded to the back of the frame.



The suspension goes back on, along with a strim of steel to support a slimline fan behind the radiator. One of the many many wiring looms that Fiat find it necessary to use is fitted, and wrapped around the engine.

The clutch and brake systems are filled, flushed, and bled; everything stays where it should. The engine fluids – lubrication and cooling – are filled and once again, no leaks.

The power steering reservoir and windscreen washer are fitted – the latter cunningly arranged to be warmed by waste heat from the oil cooler.

Time for a break...



For reasons known only to Fiat, the engine main loom runs from the right of the engine, along the back, and through the bulkhead on the passenger side. The power loom, on the other hand, runs from the battery over the passenger wheel and the major fuse group along the back of the engine and through the bulkhead on the driver's side, where it plugs into the distribution fusebox.



So, out with the hole cutter and some new holes appear. The looms are plugged into the fuse box, only to discover that it's the wrong fuse box... there are two or three types. Actually, it's the wrong loom, but same difference. All change, get the correct loom out of another donor. There's another loom which also plugs into the fusebox and runs front to back, and carries the lights and fuel pump feed; a fourth

loom goes from the fusebox to the instrument panel. We plug 'em all in. In an effort to be conservative, we don't bother with the looms that manage the door locks, windows, and speakers, for now.

The loom expects the battery in basically the same place as the Fiesta, but the engine's in the way – the Quantum is narrower than the Coupe by about four inches. So, I fake some battery terminals – using a dead battery I remove the negative terminal and bolt it to the frame with a star washer to get a good solid connection. The positive terminal is a bit more complex, but I use part of the top of the battery to provide an insulating mount. Eventually, the battery will be mounted either in the boot or behind the passenger seat, and will connect to these two points – for now, it's on the floor and being charged with a big boost charger.

Ignition switch – click. There's an immobiliser matched to the key installed here; I don't want this car to go for a drive without me. It recognises the key, turns the light out. The ECU light does the same.

No fuel pump. Damn. After some careful consideration of the wiring diagram, I discover that the fuel pump feed, for reasons known only to Fiat, comes from the fusebox up the instrument panel loom, out on a little spur, and back to the rear loom on a matching spur. Go figure, but now we have fuel...

Remove the injector connections and the spark plugs and coils, and prime the engine – we have oil pressure.

Put the plugs in, connect all the connectors...
GIVE MY CREATURE LIFE!

First turn of the key and it bursts into life. Sounds like a dog until the hydraulic lifters fill, but no errors from the ECU and everything's looking good.

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There's still a lot to do; in particular, sorting out the terminations of the loom to make the lights and such work, and tidying it away. The

dashboard needs to be reinstalled and the instrument panel mounted. There are a couple of minor electrical issues – e.g. the speedo sits at 30mph with no input! – and the accelerator pedal needs some adjustment. I'd like to get an MOT inspector to cast an eye over it, though it's still officially in test. And it will need the interior carpets sorted out, and a new hood, and a respray, and maybe a bigger hole cutting in the bonnet for cooling. But it'll be back on my drive in a couple of days, and it's looking good for Brooklands AutoItalia and then Stoneleigh – both on the same weekend. It might be scruffy, but I'll do my damndest to have it there.

From start to finish, this has taken six months – two people have spent about twelve or thirteen days each on it. Both of us are experienced engineers, and our skills complement each other. Joe knows Fiat Coupes backwards and inside out, and can weld anything to anything; I've maintained my own cars for thirty years and this is the third kit I've built (OK, I didn't start from scratch on this one, but the only things we haven't touched are the doors and the rear axle).

Once again, many thanks to Joe Knight of Fiat Coupe Specialist Spares, without whose patience and confidence (I 'ave an 'ammer!) this project could not have been completed. If you want to do something similar – he's willing to try anything if there's room for it! - then drop him a line: check his website at:

<http://www.fiatcoupespecialist.com/>

For more pictures of the build, check http://s156.photobucket.com/albums/t31/nailed_barnacle/Quantum%20engine/ and the associated sub-folders.

