Words: Neil **Photos** Chris Wallbank and Michael Whitestone

WALLET MOLESTER FIESTA

Making noises about being the best of the best, Luke's carbon-clad Fiesta puts up a strong argument. Was it worth the cash, tears and sweat? We think so.

DRIVER SPEC

LUKE LEUILETTE

Age: 23
Job: Sales and marketing, *Fast Ford* contributor
What's next: Upgrade the brakes
Fave track: Castle Combe

It takes a special man to continue modding cars after seeing two prematurely wiped out by flooding and unobservant drivers, but Luke Leuilette did it! We told of his triumph over adversity in the Summer 2007 issue. The car was an eye popper – lightweight, track ready and in pristine, concours condition.

After the stressful time building the car you'd think Luke would've been happy to enjoy the fruits of his labour, but no. In the space of 18 months the car has undergone another radical makeover. Featuring a heap of goodies that weren't even available back then, Luke and his car have brought fresh ideas and products to market. Taking it further up the pecking order from the best Mk3, to what is in our opinion, the best Fiesta in the country. The bar has undoubtedly been raised.

MEAN AND GREEN

But it's the same green Fiesta you cry? Not so. Besides the colour only a handful of nuts and bolts remain from the original feature. Every aspect of the engine, drivetrain and suspension has been reworked or changed completely.

The cage has been reworked and sees a full welded-in item, a necessity for the carbon roof (see boxout). When the cage remodelling was taking place Luke ditched the bar and multiple gauges in favour of a lush flocked AIM MXL dash.

"The gauges were a little inaccurate and difficult to monitor," Luke recalls, "I went for a high-spec dash as it's far better technology. I can datalog now and JKM linked it to the Emerald ECU through one of its engine wiring looms."

This installation is gorgeous. Luke doesn't just chuck stuff in. Of course, this is a mere extra compared to the car's real party piece – the engine!

After taking a CVH as far as he could, the progression was Zetec turbo. One that will be a demon on track and take abuse, yet still be in with a shout of punching a 170-plus mph Fiesta-shaped hole in the air.

Luke enlisted Zetec master Ian Howells of Area Six. "I spent a lot of time and money on my spec. Ian got the compression I required using CP pistons and I chatted to Sunny Khalsa, the first man to do 178-plus mph in a Fiesta. I actually have the cylinder head he used to get his record," Luke explains.

This solid lump is mated to an Area Six inlet and exhaust manifold and a GT3071 turbo

Window-mounted Aero-catch filler feeds the...

... full Pro Alloy fuel system in the boot. Perfect for eliminating surge

The wiring on the Emerald ECU is clinically neat

after Luke ditched plans to run a GT28. When Luke lifts off his carbon bonnet, you're stunned! It's a snakes' orgy of pipework and fabrication. Everything is in its place and so clean you'd question if he actually uses the car for driving or checking if his hair's OK.

After you get over the initial shock of seeing such craftwork and hardware under a Fiesta hood, you start to notice the details.

"With the car ready it was off to Rally Day at Combe."

CUSTOM TOUCHES

The cheeky Nike "Just do it" socks on the hydraulic pots, plus tidy alloy panels for the bonnet pins and rakes of one-off custom fabrication from Pro Alloy are just a few.

"I had Pro Alloy make a few tanks and brackets, plus an RS500 cored intercooler with custom end tanks and mounting lugs. The front end needed to be modified for that," chuckles Luke. It's an imposing 'cooler and a real feat of engineering that it fits without looking offensive.

The whole set-up is secured with custom brackets, turbo hangar, pipework and a glorious exhaust system fabricated by JKM with those important track day noise limits in mind.

The final piece of the puzzle was how to harness the power when it's going to the front wheels. Luke mulled it over and the answer was six speeds (see box out).

An embarrassing and expensive mistake meant two sets of custom shafts had to be made. Luke can't measure and he cracked it! The end result though is 86dB at 4500rpm, and the current power level is set at a modest 322bhp/300lb/ft. With a further two maps, the drag or top speed one will be around 450bhp! This would give the 790kg car a power-to-weight ratio of 578bhp per ton!

Some armchair critics may snort about torque steer and an inability to get the power down, but give Luke some credit. After all the thought, time and investment in the car, it wasn't going to be let down by poor chassis dynamics.

The front shocks have 1.5 degrees negative camber built in, which allows adjustment without the arms pulling out. Luke got his trusty 'race-spec' grinder out again and chopped the strut tops to fit a pair of eccentric top mounts that he had specially made by Compbrake. With some 4mm steel plate, high tensile bolts, grinding and welding they fitted. The rest of the underside is Rose-jointed. The only polybushes are on the rear beam pivot point, everything else has proper joints, so there is no flex and it helps stability.

We've been out in the car around Castle

Even on the low boost setting the straight line pace is phenomenal

The corners are where this car really shines though. The Rose-joints and geometry set-up really work to give the car an edge

Holding his racing line, Luke destroys Castle Combe

SIX-SPEEDER

"God this was a headache," groans Luke. The problem with big-power Fiestas is always the transmission. You are limited to what you can do. With advice from Sitech Racing front man Simon Smail, Luke started to get busy.

To fit your car with a ST170 Getrag gearbox you will need; Focus top gearbox mounts and rear, a hydraulic clutch conversion, a bias pedal box as you lose the master cylinder and servo.

If you are running anything over 250bhp you will also need to drop the dual mass flywheel set-up and replace it with an alloy competition flywheel and a heavy-duty competition clutch. A Quaife ATB is fitted also. (Note the Quaife ATB must be for an ST170, the Focus RS one won't fit).

On installation the clutch is operated via a hydraulic slave cylinder. As the majority of fwd Fords run cable-operated pedal boxes for the clutch the pedal box needs to be adapted. In Luke's case a bias adjustable box was fitted, enabling the clutch and brakes to be controlled hydraulically via one unit.

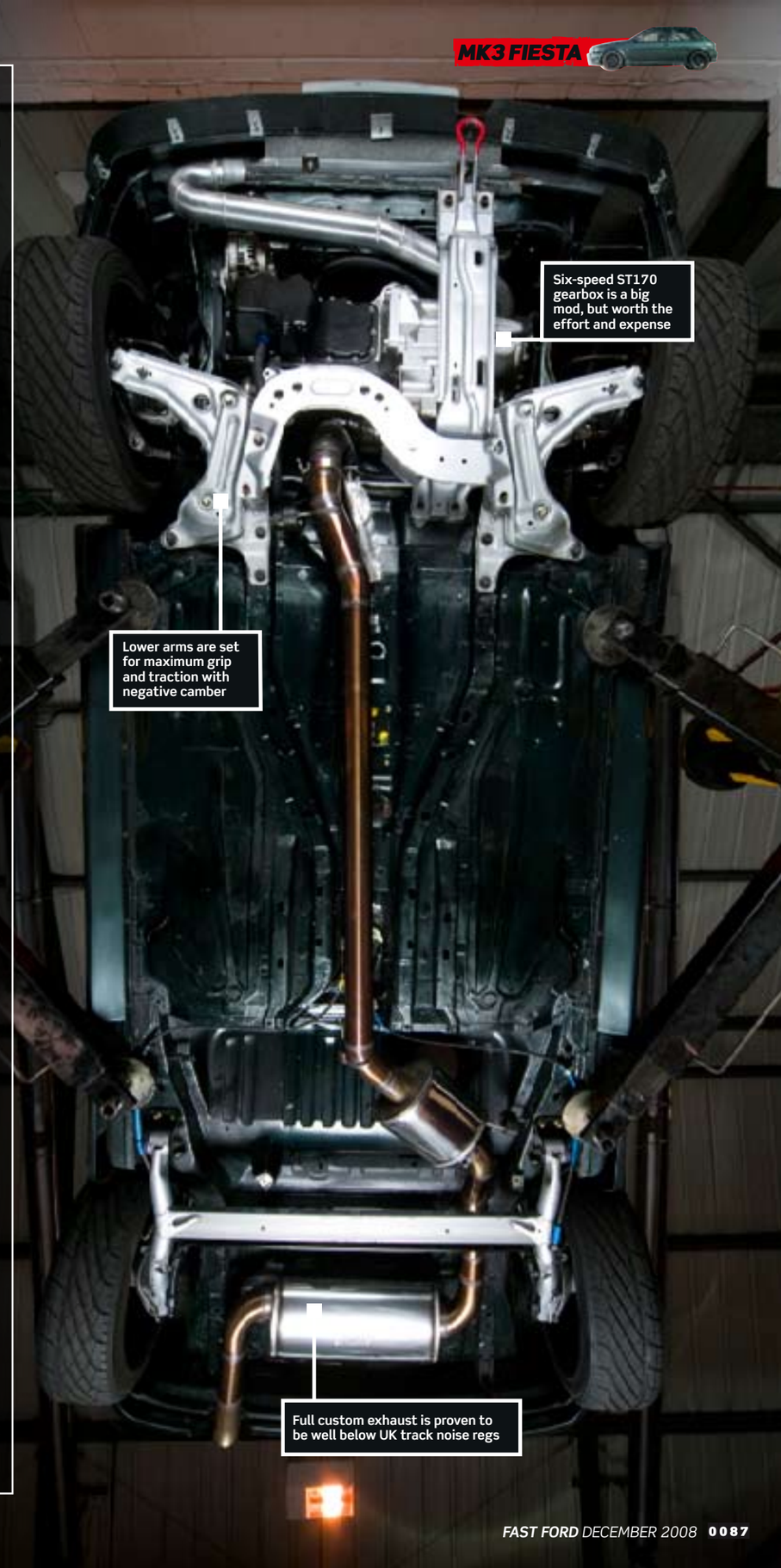
For mounting, the gearbox uses the Ford familiar bolt pattern so bolts straight to any CVH or Zetec block. Amazingly, the chassis doesn't require any cutting, but the cradle will need modifying for clearance and a bracket will need to be fabricated to match the Focus rear mount. Luke used uprated Vibratechnics mounts for extra strength.

The 'box has the capability to run equal length driveshafts. For this you must use a Focus ST170 sump. The sump features a cut out for the half shaft bearing. In a Fiesta you will need custom driveshafts because the Fiesta is a narrower track compared to the Focus. Due to the power levels, don't bodge them by cutting and welding the shafts as the power will break them.

Luke runs on DaveMac driveshafts costing around £600 a pair. The heat-treated shafts are strengthened and rated at 1000bhp! The same process is applied to F1 shafts, so you will be in good company. Note that all ST170 components are unique to the 170 including tri-bearings and CV joints.

TRANSMISSION TYPE: Getrag MT285 six-speed, close-ratio manual
CLUTCH TYPE: Hydraulically operated with dual-mass flywheel. This was removed in favour of alloy flywheel and six-paddle clutch
Six-speed transverse transaxle in three-shaft architecture
INSTALLATION: Length 332/322mm with 106.2/98.25mm bellhousing depth
Weight: 45kg
OIL QUANTITY: 1.7 litres
All gears synchronized, reverse idler gear is Speedgear first gear, two-piece housing cable shift system top mounted

The six-speed manual transaxle doesn't need an increase in the casing length to accommodate the six gears. This is achieved by using two output shafts. These allow the transaxle to be shorter, enabling installation in a more confined space. Although broader when fitted into Fiestas, Escorts, Kas and Pumas etc the brake servo in these models fouls on the gear selector unit, so a pedal box needs to be fitted and the factory brake servo/master cylinder removed.



Eccentric top mounts offer adjustability in geometry allowing caster and camber settings to be set by rotating the top mount through a series of pre-drilled threaded holes. The desired amount of suspension geometry can then be adjusted and secured. The chassis top mount must be modified to take the eccentric top mount.

Made from solid Billet HE 30 aluminium with a race quality bearing, which is a high angular precision 20mm race bearing, the construction comprises of a high loading chrome spherical bearing, bronze guide and PTFE lining. This makes them exceptionally strong for motorsport.

Lowering on the majority of fwd Ford affects camber angles that were set by Ford. You'll see problems such as tyres running on the inside edge, vastly reducing grip. The angle the arm sits at trashes the rubber bushes.

Fantastic Area Six manifold helps feed the engine masses of air

Ferrari Red cam cover was a bold but welcome decision

Area Six tubular manifold helps the engine rev cleanly

GT3071 is the perfect choice; great response and capable of blowing hard

RS500 'cooler with custom end tanks required lots of work to fit

TECH SPEC

FIESTA RS ZETEC TURBO

COLOUR
Nordic Green

WEIGHT
790kg

POWER
Currently 322bhp, 300lb/ft torque at 19psi with 6800 rev limit (October 08)
Track map: 340bhp – 7800 rev limit
Drag map: 450bhp – 7800 soft cut

ENGINE
2-litre Zetec block, H-beam con rods with ARP rod bolts, custom forged CP pistons, compression ratio 8.2:1, 1.5mm compression rings, upgraded wrist pins, gasflowed and reprofiled inlet and exhaust ports, oversize inlet and exhaust valves, revised valve seats, multi-layer steel head gasket, RS1800 oil pump and water pump, Focus ST170 baffled sump with turbo oil return installed, RS head bolts, Area Six camshafts, Area Six custom double-valve spring conversion, hydraulic followers, Area Six inlet manifold modified to clear hydraulic pedal box, Area Six exhaust manifold modified to clear six-speed gearbox, engine breather system custom Aeroquipped, Emerald K3 engine management system (new 08 version), electronic boost controller, Siemens 750cc black injectors, FJO Racing injector driver, 3bar MAP sensor, EGT probe, Kent pulleys, GT3071.82 Turbo Dynamics turbo, ITG air filter, K&N oil breather filter, JKM Performance 3in system two silencers/one flexi-joint/v-clamped 86dB @4500rpm, JKM Performance turbo custom damper, heat proofing throughout, Roose Motorsport silver water/boost hose kit, Bailey alloy header tank, Pro Alloy oil breather catch tank, Vibratechnics race engine mounts, custom alloy inlet pipe work 2.5in diameter, fireproof sleeving on hose/wiring

TRANSMISSION
Vibratechnics race mounts, alloy race flywheel, four-paddle clutch, hydraulic clutch conversion, six-speed Getrag gearbox, uprated custom driveshafts (equal length), Quaife ST170 ATB diff, Focus gearbox mount fabricated onto chassis, custom crossmember for rear gearbox mount

SUSPENSION
Gaz Gold race coilovers, Rose-jointed mounts, 350lb front coils, 550lb rear coils, built-in camber to legs, Compbrake Rose-joined eccentric top mounts, Rose-jointed adjustable lower arms

BRAKES
Wilwood four-pot callipers, race pads, Cosworth rear discs and calipers, standard pads, braided lines, swaged alloy brake pot bracket, custom Nike sweat bands

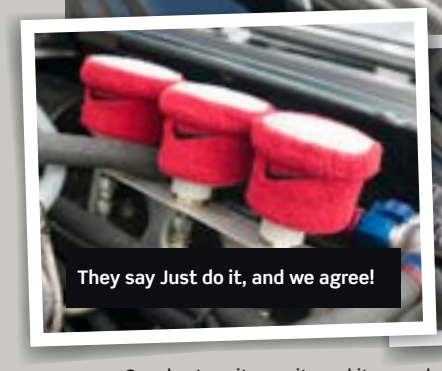
WHEELS & TYRES
15x7J Compomotive CXS black wheels, Yokohama Parada 2 tyres 195/50/5, Toyo R888 195/50/15

INTERIOR
JKM Performance wiring loom, Custom Cages weld-in roll cage, Pro Alloy fuel cell 34 litre, safety foam, Aero 400 flush filler cap, breather/roll-over valve, custom swaged alloy fuel cell base and legs, AIM MXL dash, carbon AIM pod, carbon facia, carbon switch panel, modified Mk3 flocked dash, Corbeau Revolution silver seats, Luke pro race five-point harnesses, Sparco suede steering wheel, LED road legal warning lights, Compbrake bias pedal box, alloy swaged floor panels, powdercoated parts throughout, battery box

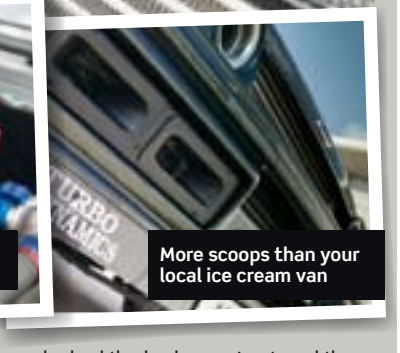
BODY
Chromed bolts/parts throughout, Pro Alloy custom radiator, Pro Alloy custom RS500 intercooler, twin slimline radiator fans, polycarbonate smoke tinted windows, fibreglass tailgate, trimmed front bumper, brake ducting/ducts in bumper, carbon-fibre canards, carbon-fibre splitter, Performance Carbon carbon-fibre bonnet and roof, Morette front lights with alloy air intakes, high temperature ducting, Touring Car mirrors with smoothed doors, Sparco bonnet pins, Aerocatch bonnet catches, swaged alloy brackets to support bonnet

THANKS
Jim, Keith and Kate at JKM Performance for the mapping and the fabrication work (02392 639933), Clive the alloy fabricating genius, Russell (Legend), the Semmens of Southsea boys for ramp/tools, Ian, Adam, Damien, Scott and Lenny, Ian Howell of Area Six for engine and spec (www.area-six.co.uk), Gazmatic for shocks and help on spec, Matt from Turbo Dynamics for my million e-mails (www.turbodynamics.co.uk), Alex and Wayne from Pro Alloy for being TV celebrities (www.proalloy.co.uk)

Just look at that weave



They say Just do it, and we agree!



More scoops than your local ice cream van

Combe to witness it, and it works! Even with the high 300-plus bhp power levels, the equal shafts and set-up ensure the most possible grip and traction.

PUT TO THE TEST

With the car ready it was off to Rally Day at Castle Combe. "It was the first outing and I was nervous due to the number of people and the high expectations in the car. My plan was to relax for the first lap. The second was better and the third, fourth and fifth were foot to the floor," he grins.

"I got told I was firing bazooka flames out the back end. I was pleased to get past a Cossie-powered Mk2 Escort easy enough, but I was watching him longer than I should in my rear view and locked the brakes as I entered the chicane. I was back on the power and pulling away again though," he states proudly.

After all this evolution and innovation, Luke still isn't happy! There are a few tweaks in store for the brakes and sprint times to be set. This car has got people talking and changed the aftermarket and Fiesta scene for the better. When it does the business at tracks and runways in 2009, you too will understand why.

CARBON FOOTPRINT

As you will have no doubt noticed, the Fez is smothered in lush carbon-fibre panels, splitter and hardcore looking canards on the sides. It all started with a few simple touches and switch panels and went a little crazy.

"I wanted rid of the sunroof, and I wanted to try and lower the centre of gravity. So a carbon roof was the way forward," states Luke.

There was a small problem in that they didn't exist! That was until Luke and Shaun Green got their heads together with Mike at Performance Trim. After some lengthy chats, the lads were down their local scrap yard cutting the roof off a Fiesta.

The mint condition roof was then used to cast the mould for the revolutionary new roofs. After the initial development and financial investment the prototype was made.

Once cast, Mike added some extra strength to the skin with a honeycomb centre. Sound tasty? It is, with carbon, honeycomb and carbon layers it keeps the weight down but makes it more than rigid enough for track abusers. There is no fibreglass in these motorsport-spec panels!

Thanks to this trio of mavericks, they are now available Prices start at £299 and come in either race form, as per Luke's car, or a Fast Road and track one which has extra strength.

Before you go rushing to grab your credit card, you need to consider a few things. Your car will need a full roll cage, ideally with several chassis mounting points to maintain your car's structural strength. When fitting, Luke used a 'race-spec' angle grinder to cut 2in in from the water gutter on the inside edge for a nice overlap to bond onto. "It was a scary day when I held the grinder above my car." winces Luke.

He did a good job; this is on par with big hitters such as the BMW CSL for finish. Besides being very special, the weight pay off is the old roof with glass sunroof weighed 10.2kg compared to the carbon skin's 2.1kg!

With such an involved task completed, Luke went through the process again to get a matching bonnet crafted (prices start at £399) To make his that little bit different from the rest of the pack, Luke's has been cut back on the front lip. This neat mod gets the maximum airflow, something that all turbo cars could do with on those hot summer days.

Bonnets come in a road or race option, the road version uses the standard mounting points and catch, the race application must be pinned. Steel bonnets weigh in at 16kg compared to the carbon's 3.5kg.

"This car has got people talking."