




# THE LYNX



**SAID TO BE KNOCKING ON THE DOOR OF 400BHP, RICH WALKER'S SUPERCHARGED 306 GTI-6 SHOULDN'T MAKE FOR A COMFORTABLE DAILY DRIVER, YET IT DOES. NEXT WE'LL BE TELLING YOU HE DID MOST OF THE WORK HIMSELF...**

WORDS: MATT ZOLLO PHOTOS: CRAIG PUSEY

**C**ompromise. Modified cars can't get away from it. Improve performance and you compromise reliability and drivability. Make something more exciting to drive and you sacrifice refinement and everyday usability. So increasing a car's output by 134% is going to wreak havoc, surely? You'd end up with an un-drivable, un-cooperative animal, far removed from the docility of the standard car; something that is, by all accounts, a bit of a pig to drive. Not that that's much of a problem, because it'll break down before you tire of it anyway.

Flying flagrantly in the face of such convention is 23-year-old Rich Walker's GTI-6. Having experienced everything from 800bhp Supras to 280bhp Novas, I can say with confidence that no modified car has offered such a well-rounded package. Some (very few) have been faster, some cheaper, but none combine cost, performance, usability and reliability as well as this.

But more of the car's all-round goodness later. What we really want to know is: where the hell did that 134% increase come from? Well, from a one-off conversion using a compact but crazily competent Rotrex supercharger and oodles of technical know-how, engineering expertise and man-hours, of course. The choice to supercharge came after Rich had thoroughly researched both options of forced induction. "I looked at turbocharging and supercharging and found that what was good in one was bad in the other, but given that I would be driving it on track I thought the linear power-delivery of supercharging was the way to go. Once I looked into it further, I really had my heart set on supercharging."

**K EFFECT**

The large majority of the work was done by Rich himself, with help from his mate, Nick Davis, owner of Lynx Garage/Lynx Power Engineering. Impressive, considering the experience (or lack of) that Rich has in this type of thing. "I hadn't done much in the way of engine work before," he admits. "But I've got an engineering background and pick things up quickly. The most beneficial thing along the way has been a book on supercharging by Corky Bell. It covered all aspects, from basic mounting to engine management. That helped a lot."

First of all, though, Rich had to decide what supercharger unit to go for because there are plenty of types and manufacturers out there, all of which providing very different driving experiences. "I decided on a centrifugal-type because they deliver boost progressively in relation to revs, so it suits the character and power delivery of a high-revving 16v," he explained. "Others, like the Roots positive displacement units, give plenty of low down power but then tail off. I went with Rotrex because it's really compact - about the size of an alternator - but flows well enough for 400bhp." This is the only GTi-6 in the world to run a Rotrex one.

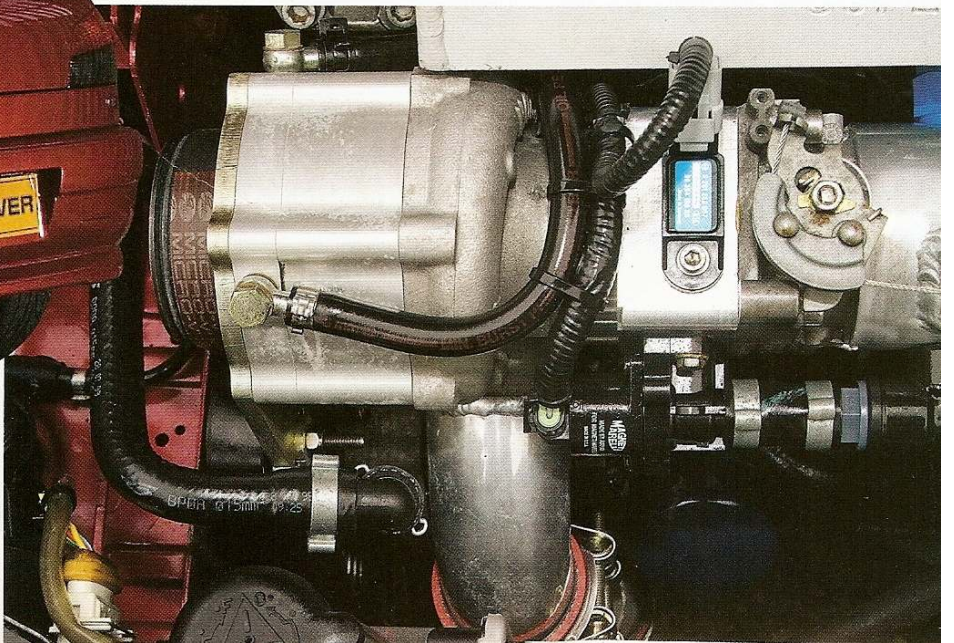
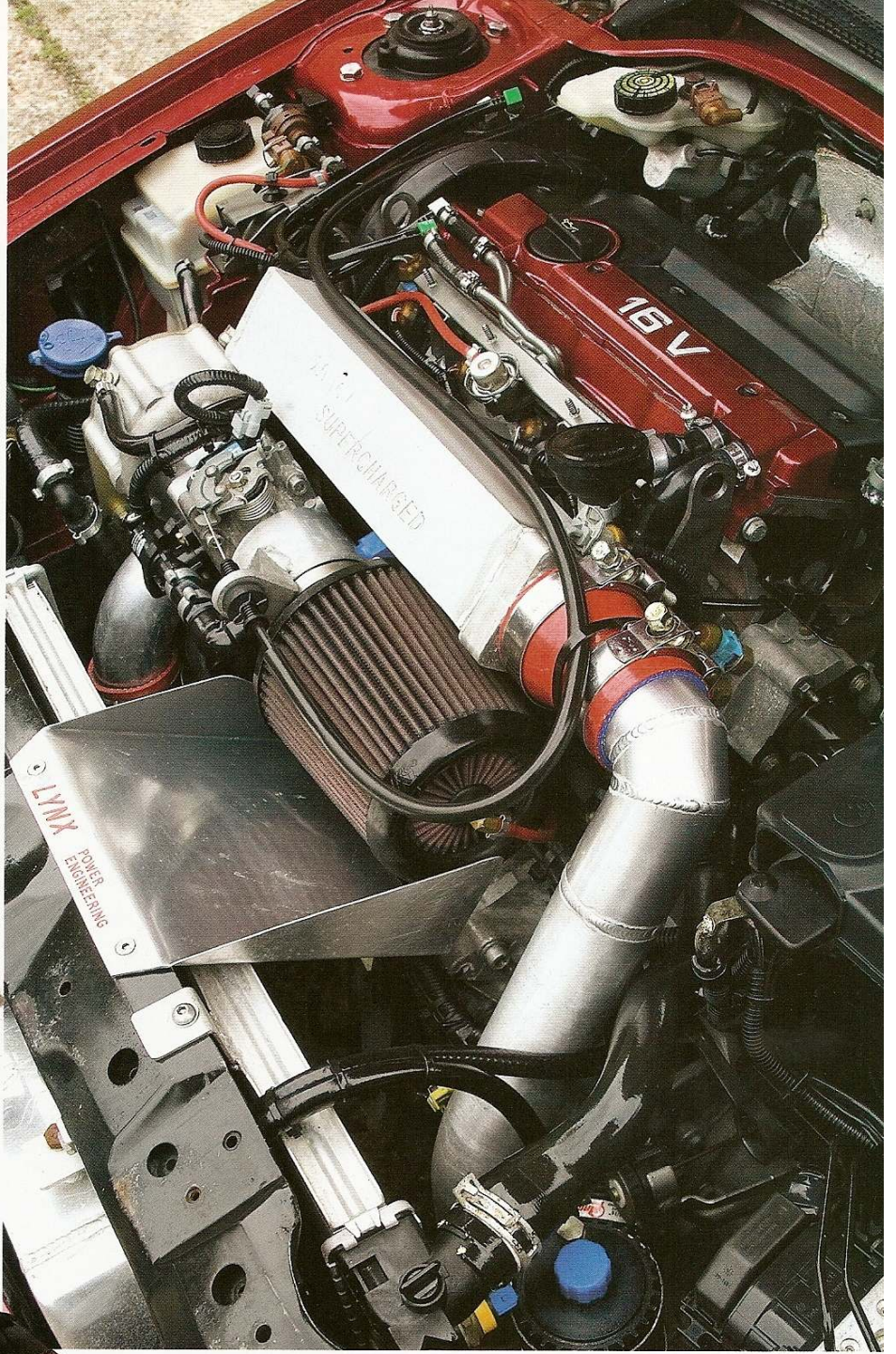
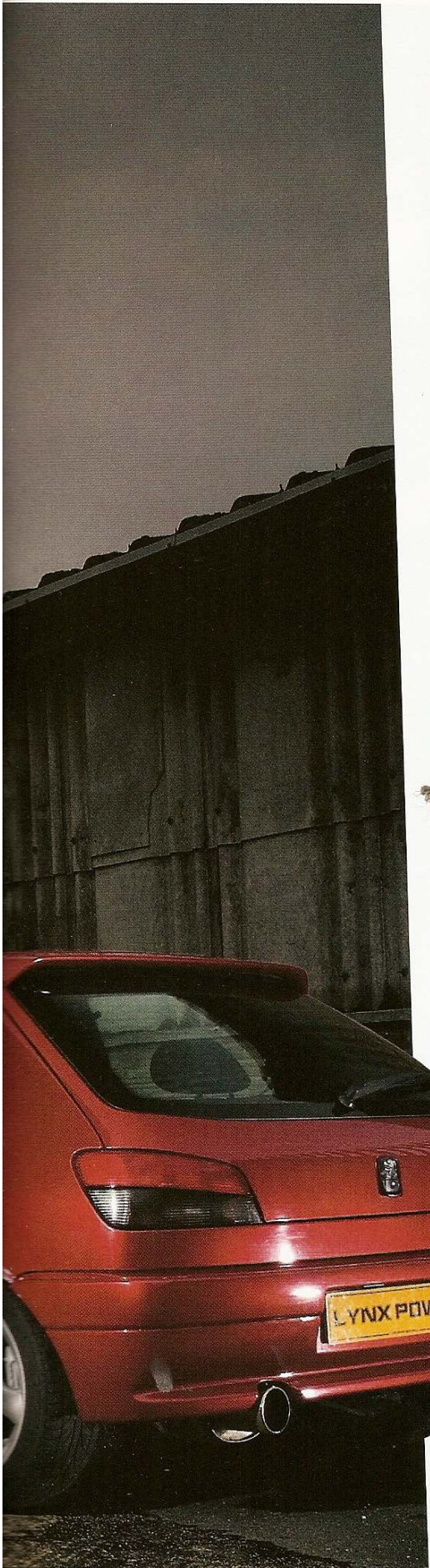
With the engine stripped to the bare block, Rich made a template of the supercharger, using technical drawings provided by Rotrex, and jiggled it up on the engine to get the dimensions of the required brackets. Obviously a few things had to make way for the unit, most notably the power-steering pump which was moved to the bottom of the engine. Relocating that meant losing the air-con, although he reckons he could've found somewhere else for it. Rich rightly points out they rarely work anyway and it's a bit of weight saved. No air-con radiator also meant more room for an intercooler. With brackets laser-cut to specification, Lynx custom-made aluminium inlet manifold fabricated, power-steering hoses and engine harness modified and various other components machined as required, everything was on, in and connected. To match the vast quantities of air supplied by the supercharger, Rich fitted two Walbro fuel pumps, larger injectors and an up-rated fuel-pressure regulator, working out the required fuel-pressure and injector size from the target power figure; a figure substantially lower than it turned out to be.

The car runs a standard Magneti Marelli ECU, but with flash-able EEPROM to allow the map to be edited. Chipwizard's reputation meant Rich travelling from Portsmouth to Rochdale to have the car mapped, but a spun big-end bearing cut proceedings short. "It was due to insufficient oil-film strength from the standard Peugeot Total oil," he says. "Basically, the oil couldn't maintain a sufficient film over the surfaces." Rich points out that it just had the standard 'rods and bearings as well.

Engine rebuilt with forged-steel con-rods and race quality bearings, using Royal Purple oil - oil changes cost £100 - it was back up

**THE MAJORITY OF WORK  
WAS DONE BY RICH  
HIMSELF, WITH THE HELP  
FROM HIS MATE NICK  
DAVIS, OWNER OF LYNX  
POWER**





## DATA FILE



**ENGINE:** 2.0 GTI-6 (XU10J4RS) 16-valve four-cylinder engine, bored 0.5mm oversize to produce 2,022cc, custom low-compression forged pistons, forged steel con-rods, ARP con-rod bolts, race big-end bearings, T6 alloy billet crank pulley, Rotrex C30-94 supercharger, Lynx custom aluminium inlet manifold, laser-cut steel supercharger bracket, laser-cut PAS pump brackets, custom PAS hoses, modified engine harness, Lynx custom billet alloy MAP/ICV housing, Lynx custom billet alloy breather/air filter block, Dellorto 70mm throttle body, K&N cone filter with front panel-mounted air-scoop, Innovate Motorsports LC-1 wideband lambda controller, Bosch 441cc injectors, 4-bar fuel pressure regulator, two Walbro high-pressure 255 LPH fuel pumps with stainless-steel swirl pot, front-mount intercooler, SPAL slim-line fans, aluminium charge pipes with Samco couplings, socketed ECU with flash-able EEPROM, NGK iridium spark plugs, Royal Purple Racing 51 oil, Royal Purple Purple Ice coolant aid, Lynx custom 2.5" manifold-back exhaust with de-cat.

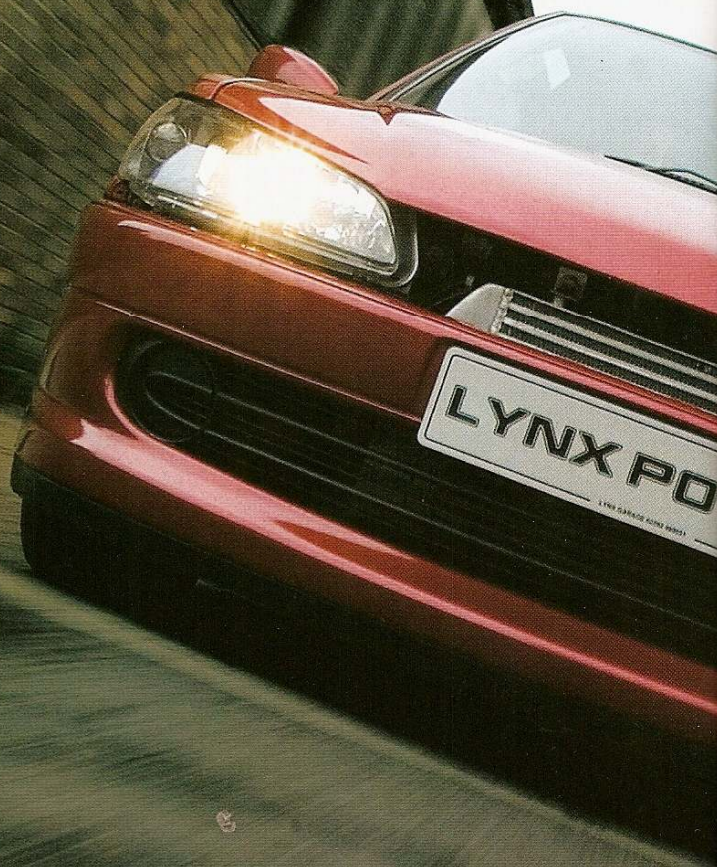
**TRANSMISSION:** BE3/6 with Quaife Auto Torque Biasing limited-slip diff, GE quick-shift, Helix clutch, Royal Purple gear oil

**SUSPENSION:** KW Variant 2 front coilovers and Koni rear shocks, adjusted torsion bar, Spoox oversize rear anti-roll bar, Lynx roller-bearing solid wishbone bushes, Lynx needle-roller-bearing solid P bushes Peugeot Sport Group A solid rear beam mounts, BBM lower engine mount, reinforced upper engine mounting

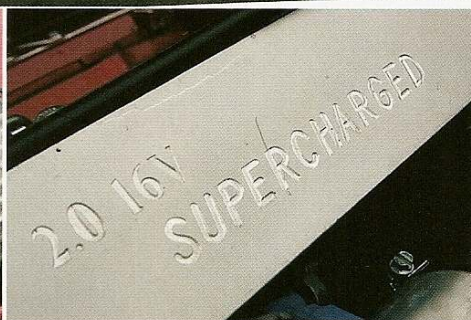
**WHEELS & TYRES:** Standard 6x15" Cyclone alloys with 195/50/15 Bridgestone RE720 tyres

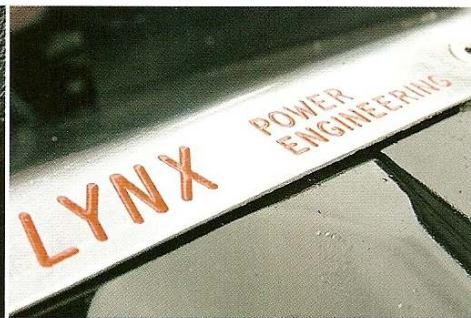
**BRAKES:** Powder-coated calipers, custom Lynx six-groove front and rear discs, Ferodo DS2500 pads front and rear, DOT 5.1 brake fluid, Goodridge braided brake lines

**EXTERIOR:** Standard Diablo red, de-badged bonnet and grille, under-bonnet sound-deadening removed, fog lights replaced with Rallye blanking plates, spare tyre and cage removed, Philips xenon bulbs all-round



**THE CONVERSION IS REALLY SUITED TO THE CAR, IT ALL MEANS SERIOUS PERFORMANCE**





to Rochdale. The result: maximum power 391.4bhp at 7,560rpm and maximum torque 281.1 lb-ft at 6,930rpm. "We were expecting it to come out with about 270bhp," admits Rich. "The injectors are running at 100% duty, so they don't actually shut at high revs. And they're about twice the size of standard already. There's the capability of running 500-600bhp with a bigger supercharger and injectors, but it's drawing the line at a sensible compromise. As it is, it's perfectly matched. I've done 10k miles with no problems at all and it's really drivable."

That reliability extends to the drive-train. The standard BE3/6 box is a motorsport derived item anyway, so its resilience isn't entirely surprising, but you can't help be impressed with the standard drive-shafts hanging in there. Rich reckons even the standard clutch would cope because the power delivery is so progressive, but he's gone with a Helix item anyway.

Less resilient were the various bushes and mounts. "Bushes a couple of months old would be literally hanging," recalls Rich. "It would tear apart the rubber rear wishbone bushes due to the power pulling the front wheels forward." Now it's got solid roller-bearing wishbone bushes and Peugeot Sport Group A rear beam mounts eradicating the passive-rear-steer ("It'll still oversteer, but it's just more predictable and stable."). Also, the perforated rubber engine mounts have been replaced with solid items. "It was just a case of waiting for standard stuff to go and then discovering what needed up-rating next. The ride isn't very good on the road but at least

I know everything is going to hold together properly now."

That un-yielding ride is partly due to KW Variant 2 front coilovers and Koni adjustable rear shocks, and a thicker rear anti-roll bar. Standard calipers have been retained, using Lynx six-groove discs and Ferodo pads, but are perfectly up to the job. "I didn't get any fade at Snetterton and that was after slamming the anchors on from 135mph down the back straight lap-after-lap."

The conversion really well suited to the car. It all means serious performance: forced-into-the-seat-back, seamless-and-unabated-thrust-no-matter-what-the-speed-or-gear, 330bhp-per-tonne, Supercar performance. And, because of the linear power-delivery and Quaife ATB diff, traction isn't an issue. It's not just the performance: the engine note is as spine-tingling as a Supercar's; what it loses in multi-cylinder culture it makes up for in sheer volume and aggression.

Slow down, though, and it reverts to standard GTi-6. And, because the charger hardly spins up at low revs, driven slowly it consumes little more fuel than the standard GTi-6. And don't forget that Rich has enjoyed 10,000 trouble-free-miles so far. And the cost of car and conversion is less than £10k. To summarise – we want one. ■

PERFORMANCE

# frenchcars

RENAULT... CITROEN... PEUGEOT... STYLED

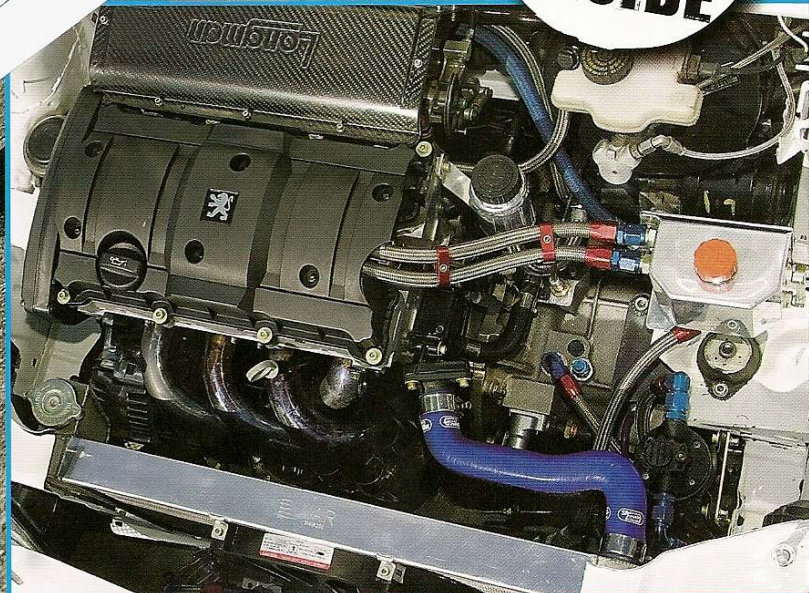
# RAZOR SHARP

EXCLUSIVE:

THE WORLD'S FINEST  
206: MAXI-KITTED,  
LONGMAN ENGINE,  
SEQUENTIAL 'BOX,  
FULL CAGE PLUS  
MUCH MORE...



PULL-OUT  
POSTER  
INSIDE



ALSO INSIDE:

- OLD-SKOOL TURBO 2
- NU-WAVE MEGANE 225
- 400+-BHP 'CHARGED 306
- SMOOTH 206 SW
- DIMMA-KITTED 205
- WIN FORGE GOODIES

**Larkspeed**

FREE LARKSPEED  
TUNING CATALOGUE

R32  
08  
2007 £3.99  
9 771751 948033