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**NSR**  
**500 REP**

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100bhp and 130kg

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"No owner ever stops at just one"

Why one Bimota is never enough

## Suzuki TS125X

"My son found my old bike so I had to restore it"





# “It had to be the **ULTIMATE**”

WORDS **JIM MOORE** PHOTOGRAPHY **DAVE COLLISTER**



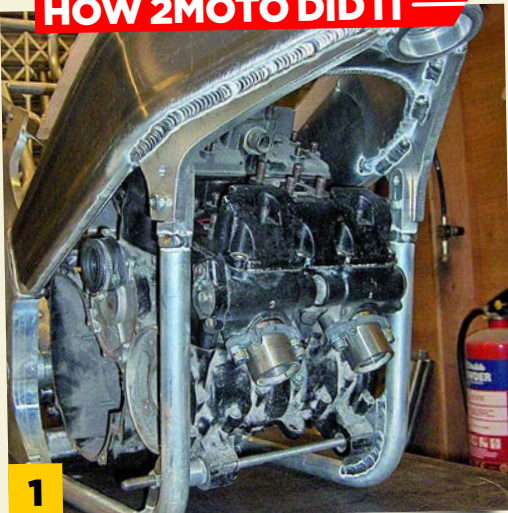


# THE GP REP”

Stunning build quality, brakes that defy belief and the world's coolest wife have all merged to make **James Mansfield's** Honda NSR500 replica the best special we've ever ridden. Seriously...







**1**

**MAR 2015 - ON THE CASE**  
A set of slave RG cases acted as part of the jig to create the 2moto frame, made from 3mm 5083 aluminium sheet and billet.



**2**

**MAR 2015 - CUT IT OUT**  
The business end is neatly tucked away under an aluminium cover, which Barry made first as a cardboard template.



**3**

**MAR 2015 - THE REAL DEAL**  
The bodywork doesn't just look like Mick D's - it's from the very same HRC moulds. Made in carbon by CTech Composites.



**7**

**APR 2015 - RACE READY**  
Stage 3 RG500 motor with Nova 'box and dry clutch. Makes 100bhp in road trim; good for 120bhp with saucy disc valves...



**8**

**MAY 2015 - BACK (END) IN THE GAME**  
The swingarm may be Yam R6, but all the linkages and shock mounts are bespoke to match the dimensions set out by 2moto's Felix Hirzel, who designed the chassis. Note the mount, behind the swingarm pivot, for the adjustable 2moto footrests.

**I**T'S ALL OUR fault. James Mansfield probably wouldn't be the owner of the world's best Honda NSR500 replica had PS not featured the Spondon Suzuki RG500s of Nick Tilley and Robert Johnson back in Issue 10 (August 2011). Those bespoke, Darren Lane-built GP reps set James on a path that eventually led to the creation of this mind-bendingly gorgeous Doohan rep 500. We stand guilty as charged.

"Seeing those Schwantz-rep Spondons was a real light bulb moment for me," explains ex-pat James, now based in New York. "It was like, 'That's what I want', and from then I set about making it happen. It had to be the ultimate GP replica." Having read about the Pepsi and Lucky Strike specials in this very mag James contacted Darren Lane, and a deal was struck on an Aprilia RS250-framed RG570 that Darren had built. That bike only whetted James's appetite for more.

A long-held love of Yamaha two-strokes saw James unable to resist when he chanced upon a Norick Abe YZR500 replica on eBay. The bike was a hybrid of a TZR250 3MA chassis and a 500LC V4 motor and while a looker, its beauty was only glass fibre deep.

"For me, the thrill of bikes is in the riding," explains James. "I'm not a 'ride to the pub' type - it has to work or there's no point, and the YZR I'd bought was a big disappointment. Dimensionally it was all wrong - the suspension didn't work as it should and the handling was compromised."

Frustrated and hungry to find a solution to his Yam's woes, James was gifted the answer during a conversation with tuning sage Stan Stephens, who recommended York-based chassis fabricators 2moto. "Stan said they were the best he'd come across, and when someone of his experience says that, you take notice."

Those of you with a love of two-strokes and exquisitely put together specials may remember us covering the build of James's YZR by 2moto last year. He was keen for them to put right the wrongs with his

3MA-derived special, but it was so compromised that it was actually easier to build a whole new chassis rather than further alter the TZR frame. A new aluminium beam frame, based around the dimensions from an ROC 500 GP bike, was computer-designed by 2moto's Felix Hirzel.

Keen to recoup some of his original investment, James decided to keep the Aprilia RSV-lifted Öhlins forks and magnesium R7 wheels on the evolving YZR, while a 2006/07 Yamaha R6 swingarm took the place of the TZR-3XV item that'd previously been mated to the 3MA frame. The aim, as those who

followed the build in this mag will remember, was to have the YZR complete for last year's Manx GP in time for testing. As deadlines go it was extremely tight, but 2moto got the bike together, it was shipped to the island and



**Wooden mould from which the tank was fashioned**





4

**APR 2015 - GET IN LINE**

Rapier Paintwork lined up the Rothmans paint to run seamlessly from seat unit to fairing. Their prep work is meticulous.



5

**APR 2015 - FULL COLOUR**

A whole lot of love and attention went into the paint. It's all paint - no stickers. All that red you see is for just one single pinstripe.



6

**APR 2015 - BILLET BEAUTY**

Buying yokes off the shelf would never do for such a build. Like the swingarm pivots and headstock, it's milled from billet.



9

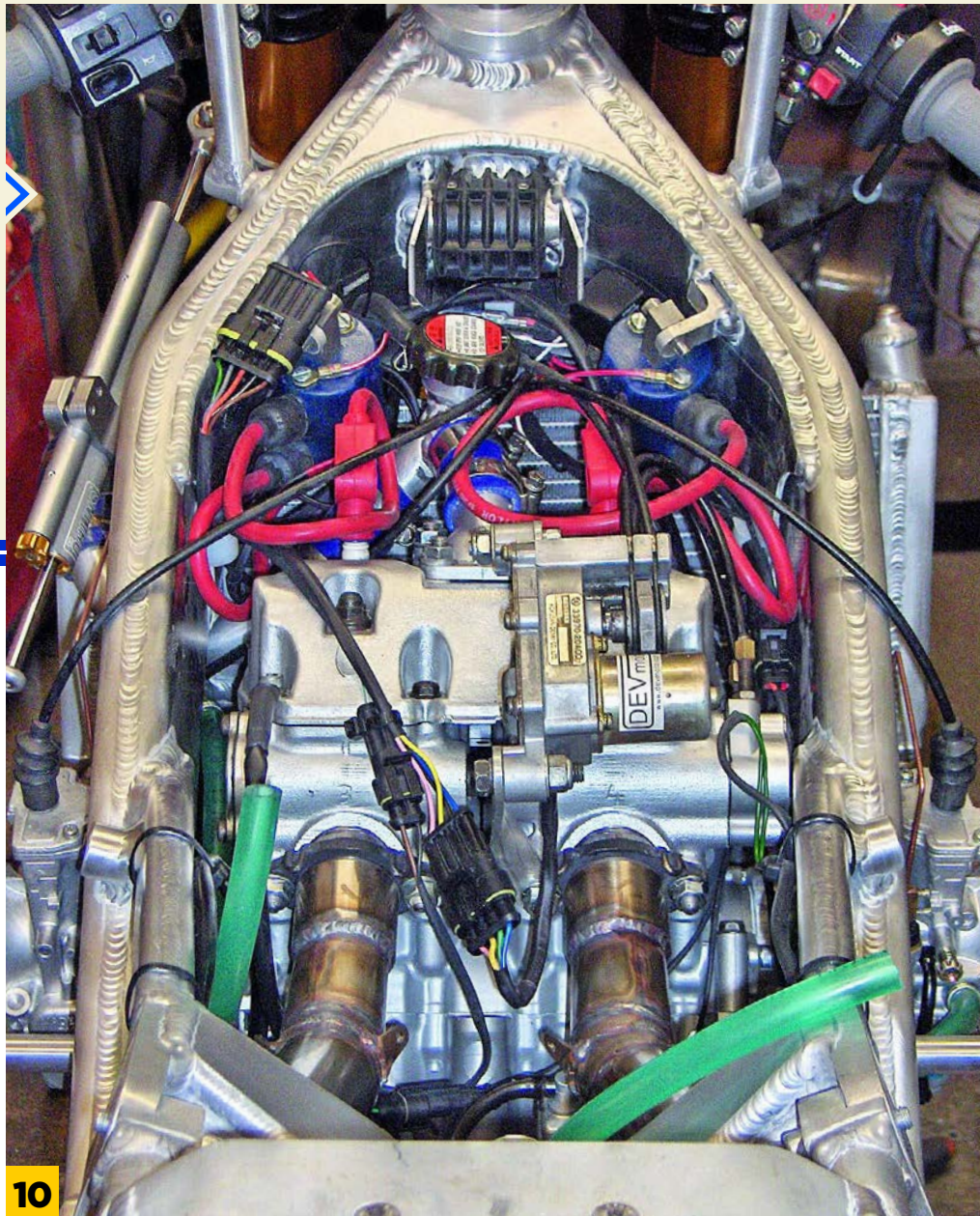
**MAY 2015 - IT'S A COVER UP**

Protecting finished components, such as these gorgeous one-off silencers, is one of the tricks of bike building. Note LED light.

we were all set to jump aboard and test it. Alas fate had different ideas and a cooling issue with the right rear cylinder, which hadn't shown up in the brief shakedown, stopped the bike in its tracks. With autumn closing in, our window of opportunity to ride the YZR slammed shut (see page 49).

Rewind several months and James was busy with a task even more important - well, almost - than overseeing the build of a GP replica. He was Stateside popping the question to the lady in his life, Julie. Luckily she said "yes". Julie then proved that she is possibly the finest female ever to walk this earth when she presented James with a picture of Mick Doohan's NSR500 GP bike saying, "And for a wedding present, how about I get one of these built for you?" No prizes for guessing his answer...

But why would a guy who lives in New York get a bike built in the UK? Why not do it across the pond, or do it himself? "Cost was a big factor," explains James. "Getting a bike like this built in the States would cost four times what it does in the UK. Secondly, building a bike like this that actually works requires really specialist skills - I'll hold my hands up and admit I'm not that man." ☺



10

**MAY 2015 - CALL IN THE PLUMBER**

How you fit the ancillaries, plumbing and wiring is what can often make or break a special. Note how neatly mounted - and accessible - the coils are just behind the headstock. PS friend and regular contributor Rupert Paul made the loom from scratch.





35mm Mikuni TMX  
drink a gallon of  
premix every 10 miles

Note the visible carbon in the  
paintjob. Highly pleasant



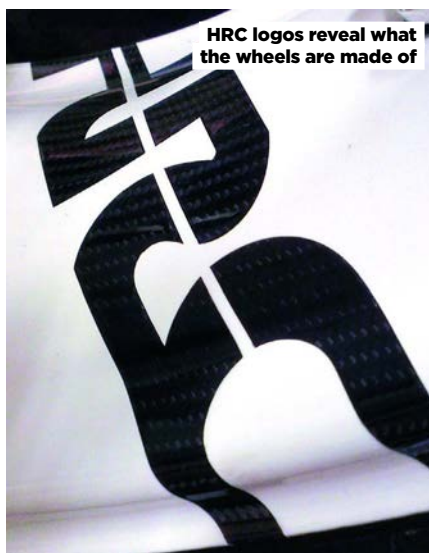




Even Mighty Mick would struggle to tell the difference



Nova gearbox and dry clutch is one of only 10



HRC logos reveal what the wheels are made of



Not only does he own it, he knows how to ride it too...

That's not to say James wasn't hands-on with the build. "I was very involved in the whole process; sourcing parts and finding people to supply components and do jobs, but I leave guys to it once I've made the choice. I own a construction company so project management is my business. It doesn't guarantee success but it gives a sense of how much rope to give someone, how often to check in and what milestones to set to determine if they need to be cut loose."

The basis of James's NSR replica is, as with the YZR rep, its 2moto chassis. Dimensionally similar to that of the Abe replica, the NSR's aluminium beam chassis was also expertly fabricated by the hands of Barry Dawson, 2moto's chosen fabricator and gaffer of Blue Haze Engineering. Unlike the RD500LC-powered YZR replica, though, the NSR has a square-four RG500 motor at its heart, so the chassis had to be tweaked to accept the physically smaller Suzuki lump, and a one-off lower cradle devised to provide lower engine mounting points.

"While the steering angle and swingarm pivot position are the same for both the YZR and NSR chassis, the shape around the swingarm pivot is different," explains Barry. "The YZR is more complex because I needed to create space for the kickstart mechanism, plus that motor's bigger and a tighter squeeze in the frame. The NSR hasn't got the external coil recesses in the beams either. And unlike the Yamaha's black powdercoated finish, the Honda replica is bare brushed aluminium."

The powerplant at the heart of the Doohan NSR is far from ordinary. With no viable Honda unit available, and James knowing that an RG500 mill has a far greater potential for reliable tuning than an RD-V4, the Suzuki was the obvious choice for a project focused on creating the ultimate NSR replica.

"When Barry and I first talked about the NSR, the starting point was very different to that of the YZR. We were starting from nothing – all the parts had to be sourced. ☺

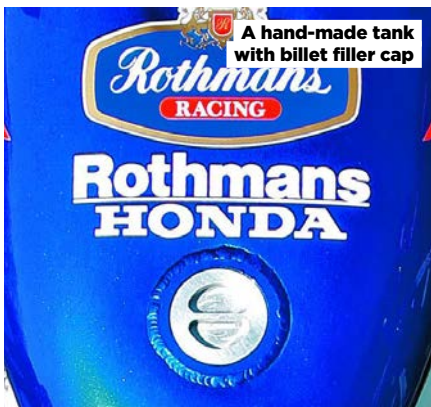




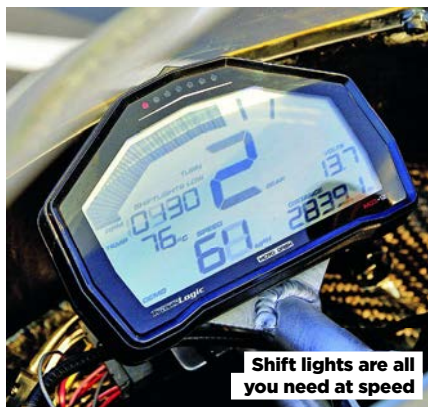
**Bar end wipers**

Oberon LED indicators and CRG Arrow mirrors: both genius solutions

Inner fairing shows its true composition



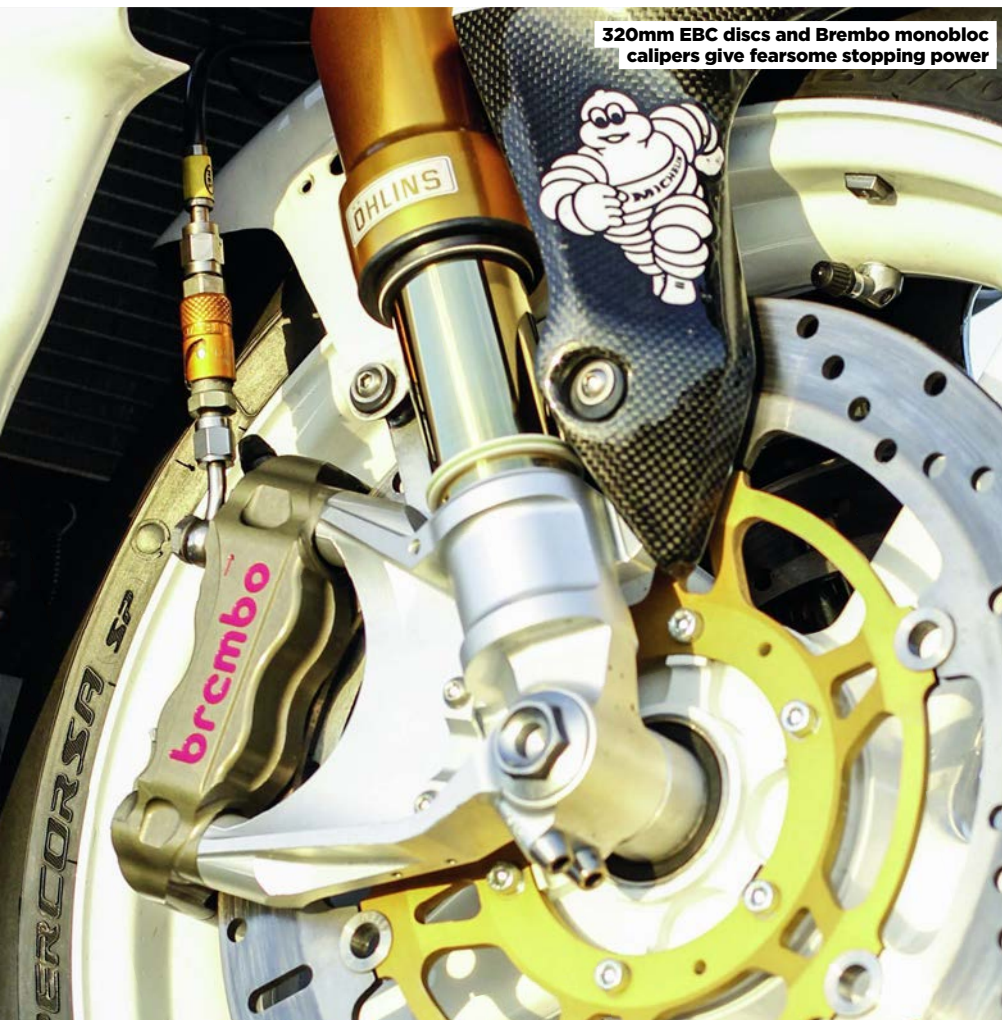
A hand-made tank with billet filler cap



Shift lights are all you need at speed



Bespoke alternator using Electrex parts



320mm EBC discs and Brembo monobloc calipers give fearsome stopping power

I said I needed to find an RG motor, but Barry said there was no need. He already had one on the bench that'd been bored and tuned to make 120bhp in full race trim."

Not only that, it came with a bespoke close-ratio gearbox and dry clutch – one of only a handful that Nova had made for Padgett's. With that in place and a target wet-weight of just over 130kgs, the recipe for outrageous performance was there.

Like the YZR, the NSR rep also uses an R6 swingarm. It works, fits the dimensions and is considerably cheaper than fabricating one from scratch. And also like the Yamaha, the rear end is controlled by an Öhlins TTX shock – a fully-adjustable thing of beauty that has been set up at the factory for the bike and James's weight. Not to be outdone, the front wears Öhlins FGRT200 forks. They're the highest spec units the firm make before you get to GP-grade forks that require ludicrously regular technician-assisted maintenance. But why not go for Showa, as per Doohan's bike?

"Finding period Showa stuff would be nigh-on impossible," explains James. "Plus it'd be old and need rebuilding, and even when that's done it wouldn't be as good as the Öhlins. I want the bike to ride as well as it can – it's not just about looks. Price was another factor. I could have bought used forks. That would have cost about \$1800 by





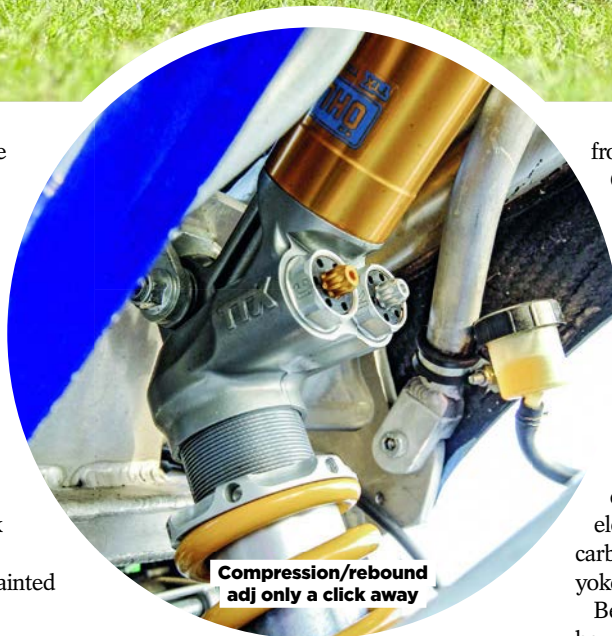
the time I'd had them rebuilt. These are brand new, set-up to my spec at the factory and they're only \$500 more."

Another advantage the NSR has over the YZR is unsprung weight. James kept the R7-derived five-spokers on the YZR through its transition to the new chassis. They look the part, and while they're light they're not as weight-free as the NSR's. It sits on feather-light carbon fibre BST rims that quicken steering and turn-in, as well as keep the bike's weight on target. If you look carefully you can still see the carbon weave through the deliberately non-painted HRC logos on both wheels.

Braking is as good as it gets. Brembo monobloc P4 calipers controlled by a matching Brembo mastercylinder and quick release Hel lines grip EBC floating discs. GP carbon rotors can't get up to temperature on the road, but with the performance this set-up offers they're simply not needed.

What makes or breaks any replica is its closeness in appearance to the original. In the case of James's NSR you really do need a double-take when you first see it. Could that actually be Doohan's bike?

"The first rule of a replica is that the silhouette *must* be right," says James. "If it's



not, the bike will never look right. I spent ages researching fairings and eventually found Russel Lowe at Bike Styles UK, who had the original HRC moulds from Doohan's 1998 bike. He rescued them after the team threw them in a skip at the German GP. He used his old MotoGP contacts to help me get CTech Composites in HighWycombe to make carbon fibre bodywork from the moulds."

But all that would be for nothing if the fuel tank looked out of place. Barry modified an NC30 tank for the YZR replica, but James raised the bar for the NSR. Its tank was made

from scratch by Neil Martin of CC Engineering in Hull. "It's real, old fashioned artisan metalwork," says James. "There's no filler whatsoever in that tank. He started with a block of wood, then hand-beat and English-wheeled the tank from sheet ally."

The tank perfectly encapsulates the level of detail and excellence that has been lovingly put into this build. From the adjustable milled billet footrests and hangers, handmade expansion chambers, one-off subframe, simple yet elegant choke levers (one for each pair of carbs) and specially designed and machined yokes, the whole bike screams 'best of'.

Being a Doohan replica, James's bike could have been finished in any of three paintjobs: Rothmans, HRC or Repsol. For its owner, however, there was only ever one choice. "I built a Wayne Gardner Tamiya model when I was 16 and I thought it was the best bike I'd ever seen – the tobacco advertising in the '80s created some epic looking bikes."

The paint was applied by Rapier Paintwork in Hull, and the finish is astonishing. They're not graphics – it's all paint so lustrous and deep you feel like you could dive in. It looks magnificent from any distance, but close up it's another level. The black pinstriping and numbers reveal naked carbon fibre; it's so



subtle you miss it at first. And the Rothmans blue is pearlescent, coming alive in sunlight.

You'll have gathered by now that James is a very particular fella. Having been bitterly disappointed by the Abe replica he'd originally bought, it's understandable that this project often left him feeling anxious.

"I put a couple of hours every day for 18 months into this bike; making calls, doing research. The build process is a constant buzz that gains momentum, followed by massive disappointments when you realise something you're building is never going to work.

"When I saw the bike complete for the first time I was very anxious. I just didn't know if it was going to be a massive disappointment to ride. I'm a rider, not a polisher, so it has to work or it would be pointless.

So what were James's first impressions?

"Astonishing. The bike blew me away. It rides and handles better than my NSR250 (MC28 - JM), and that's one of the sweetest bikes I've ridden. This has got twice the power, too. Amazing."

That Barry Dawson built this whole bike in such a tight timescale - just seven months from start to finish - makes the whole project even more impressive. But like all specials, it's still not quite finished. To further create the illusion of an HRC 500 on the road, it will suck air through carbon fibre airboxes mounted either side of the motor. James already has a man in mind who works in F1



**Ridiculously high-spec Öhlins suspension = amazing handling**

to create these finishing touches, but he's keeping tight-lipped about his identity...

The engineering, design, build quality, execution and sheer gorgeousness of James's NSR make it the finest of its kind in the world. I've not seen better, and I doubt I ever will. But does it ride as well as it looks?

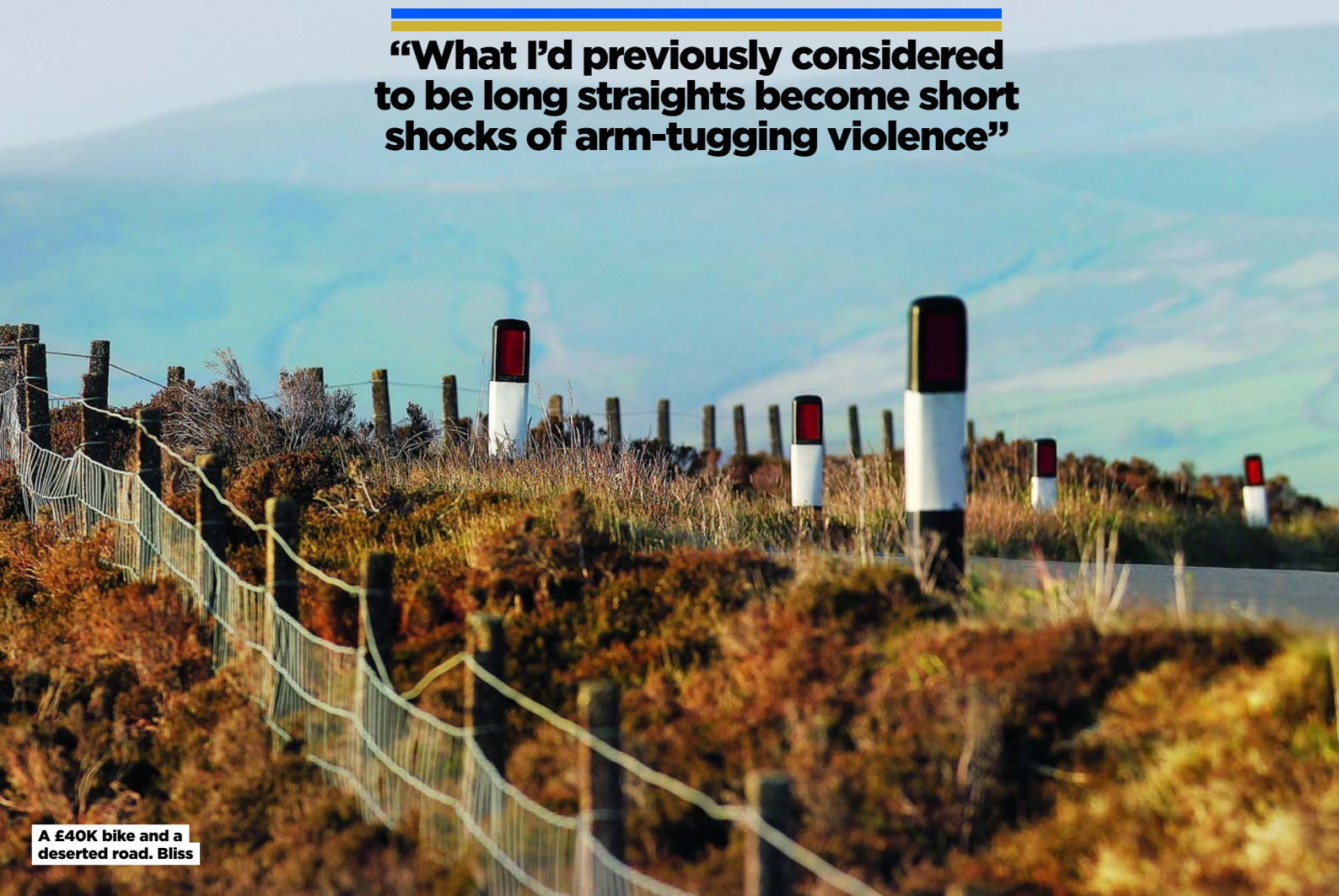
## Riding

**LET'S CUT TO** the chase. This is the best special I've ridden. Ever. Just look at the numbers: 100bhp, 132 kilos fully gassed and the chassis geometry of a GP bike - a recipe for explosive lunacy if ever there was. To give

it some context, that's the power of a decent 600 but with 50 kilos less to lug about.

If you've ever ridden an NSR250R MC21/28, sitting astride this Rothmans rep would be familiar. The riding position is business-like, yet spacious enough to be comfortable. The handmade tank is slimmer than the modified NC30 part on James's YZR, allowing me maximum tuck behind the low screen. The billet 'pegs are high enough to never touch down, but not so high that they cramp my legs, and the forward sloping seat ensures I'm tipped over the bike's tour de force - its front end (more about that later).

**"What I'd previously considered to be long straights become short shocks of arm-tugging violence"**





But let's start with the engine. There's no kickstart; the Nova gearbox has no fitment for one. There's no fancy electric start either. Just like the bike it's aping, James's Rothmans rep needs a push and bump to fire into life. That could be a pain, but it's not. Once acclimatised, I'm able to bump the square-four into action with just two forward steps and a dump of the clutch.

Even at idle this one-off stroker radiates malevolence. The quartet of spannies cackle away menacingly, and in the background the dry clutch clatters like a rattlesnake warning of imminent attack. First gear is tall – it's a close-ratio race 'box after all, so the motor needs a fistful of revs and a measured slip of the clutch to get off the line with any panache.

We're on the Isle of Man, and it's TT time. The Mountain Course is awash with halfwit heroes on S1000RRs trying to be Michael D.

Neither James nor I fancy placing 40 grand's worth of hand-built special in the middle of that, so we head for quieter roads where we can stretch the NSR's legs in peace. The road of choice is the A36 between Foxdale and Port Erin. Up to the Dalby turn-off its surface is beautifully smooth, before the road returns to type and bumps become the norm.

Unlike the bike. It's anything but normal. Between the bends I'm throwing as many gears at the tuned 570cc motor as my left foot can snick. The power delivery isn't peaky as I'd anticipated – there's power

everywhere, the presence of which is made all the more obvious by the bike's lack of weight. From 8000rpm onwards, however, it goes berserk, lifting the front wheel in the first three gears if you're aggressive enough on the gas. Everything happens so rapidly that my senses are struggling to keep up.

What I'd previously considered to be long straights become short shocks of arm-tugging violence. I've barely got a split-second to glance down at the digital Translogic dashboard. Even when I manage to steal a look, the tacho blobs and digital numbers are changing so rapidly that I'm unable to glean anything of importance. There is no rest.

Then, as quickly as I've left the last, another corner is on top of me. My brain is 🌀



## SPECIFICATION

### Honda NSR500 Replica

ENGINE	
Type	liquid-cooled, disc-valve, two-stroke square-four with AEC
Capacity	572cc
Bore x stroke	60mm x 50.6mm
Compression ratio	7:1
Ignition	gnitech
Carburation	4 x 35mm Mikuni TMX flatslide
TRANSMISSION	
Primary/final drive	gear/chain
Clutch	dry/multiplate, Nova
Gearbox	6-speed close-ratio Nova
CHASSIS	
Frame	aluminium beam, 2Moto, Yamaha R6 swingarm
Front suspension	Öhlins FGRT200 usd forks, fully adjustable
Rear suspension	Öhlins TTX shock, fully adj
Front brake	2 x 320mm EBC discs, 4-pot Brembo monobloc P4 calipers
Rear brake	1 x 220mm disc, 2-pot Brembo caliper
Wheels	5-spoke BST carbon fibre
Front tyre	120/70 ZR17 Pirelli Diablo Supercorsa
Rear tyre	180/55 ZR17 Pirelli Diablo Supercorsa
DIMENSIONS	
Wet weight	132kg (291lb)
Wheelbase	1390mm (54.7in)
Seat height	780mm (30.7in)
Fuel capacity	18 litres (3 gals)
PERFORMANCE	
Top speed	160mph (est)
Power	100bhp@11,000rpm
Torque	54lb.ft@10,000rpm
Fuel consumption	sub-20mpg





Even bumps and ruts can't  
can't shake the NSR off line



## What I've learnt

- Find and use professionals who build winning race bikes. They'll have the best resources, know how to work to a deadline, and they know other like-minded pros – so be respectful!
- Avoid favours and hopeful amateurs at all costs. They are always a disappointment and end up costing you twice as much.
- Ask a fabricator five questions: Do you want to do this, and does it interest you? • How much will it cost to do it to 'this' standard? • When are you starting? • How long will it take? • When are you finishing?

See it run at  
[ultimate2stroke.com](http://ultimate2stroke.com)



telling me we're going 20mph too quick. I brush the front brake lever with my index finger and the speed is cut away as if by a knife. The lightest of inputs to the 'bars and 'pegs lean us into the turn and... *bam*, it's all over – corner gone, and we're on the next straight.

I've never experienced brakes or suspension this good. The sheer power of the Brembo radial set-up takes my breath away. Two fingers on the lever and it'll stoppie from 80mph, as James proves on the return from yet another fuel stop (we're doing sub-10 miles to the gallon). The control and quality of the suspension, too, is such that my brain simply cannot usefully compute or use the amount of information it's feeding back to me.

Even on the undulating section of the A36 down to Port Erin, the NSR's manners are impeccable. This flies in the face of everything I've ever experienced of light bikes on rough roads. I brace myself for a bucking bronco ride, but it never comes. The NSR rides the bumps on a cushion of Öhlins damping that instead demands more throttle and more speed.

After 15 minutes I'm done. My gloves are soaked with sweat and my brain has crashed like a broken computer. I'm not even sure

what just happened. James set out to build the ultimate NSR500 replica. It's been a steep learning curve and, yes, there has been little change from 40 large, but it's not hyperbole when I say that this *is*, without doubt, the ultimate NSR rep. Damn it, it's the best two-stroke road bike ever, and far and away the finest special I have ever ridden. A job well done. 🏆

### Thanks to

- **Julie Mansfield** James's wife who paid for it!
- **Peter Mansfield** for untold trips between York and Hull with bikes and bits
- **Felix Hirzel** 2moto, 2moto.co.uk
- **Barry Dawson** Blue Haze Engineering, 07754 191773
- **Clive White at Rapier Paintwork** rapierpaintwork.co.uk, 01482 212 690
- **Dave Reynolds** for the ignition set up, 07740 479050
- **Rupe's Rewires** rupestrewires.com, 01832 270195/07736 212652
- **Robbie Sylvester and Slick Bass** for finishing off the set-up and jetting for the TT
- **Dave Hewitt, Mick Ellis and James Garritt** for helping out in the IOM





## Norick Abe **YZR500 REP**

**LIKE JAMES'S** NSR500, his YZR rep was built by Barry Dawson and designed by 2Moto's Felix Hirzel. And just like the Rothmans bike, it's a thing of beauty and engineering excellence. But although the bikes share similar chassis, there are differences – and these changes make for a very different riding experience.

I rode the Yamaha before jumping on the NSR. Unfortunately I only got 15 or 20 miles on its saddle before the cooling issue with the rear right cylinder (that stopped the bike in its tracks before our first planned ride) reared its ugly head again and seized the cylinder. But before that I was grinning like a fool.

It's still a light bike – I reckon just over 140 kilos wet – but the difference between it and the Honda is clear. The extra pounds come primarily from the engine. That and a less ferocious power delivery than the Rothmans bike give it a distinct feel all of its own.

Acceleration is rapid, although not quite as visceral as the RG-powered NSR rep. As we buzzed along the Isle of Man's winding back roads I was in awe of the YZR's front end; how effortless the steering is and how I could barrel into a bend way too quick, hard on the front brakes, and still make the turn without fuss. It's embarrassingly good. Only on a race track could I begin to fully understand what this bike can do, and even then I'd still only be scratching its surface.

That's what makes these bikes so exciting. You could spend a lifetime exploring the possibilities of such a chassis, and still not exhaust all avenues. James is going to cure the overheating problem, and maybe we'll get another go when it's done. But for all its beauty and remarkable similarity to Abe's pukka 500, it – and I hate to say this – somehow gets lost when next to the NSR. But then, that is some kind of ultimate.

**Awesome... but not quite as awesome as the NSR**



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