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STORY & PICS: PAUL BLEZARD/MANDRU



Driven To Win?

Paul Blezard flew to Morocco for the first test of Yamaha's Two-wheel drive WR450 2-Trac

gation because this was taken care of by Yamaha France, whose rider led the way in each day's rally course on a near-standard WR450 complete with stock KYB forks but fitted with a YZ pipe and roadbook reader. We did 250+ miles in all.

I had intended to start the day on one of the conventionally driven machines, but was soon glad I hadn't as we jumped straight in at the deep end, so to speak. Having not ridden in sand for years, I was confronted with a 30 foot 'wall' of the stuff within two minutes of leaving the tarmac, it was at least as testing as the first monster climb at Weston Beach Race, but thankfully much less crowded. The 2x2 soared up it with no difficulty at all, but the dunes that lay beyond were more than a little arduous for your honourable servant. As I struggled to keep up with my fitter, faster riding companions it soon became clear that, even in soft sand, 2WD is no substitute for fitness and skill. Nor will it save you from going overboard if you're caught unawares.

So, the 2-Trac is no magic wand, but it does give you extra confidence and real help in a lot of tricky situations, especially soft sand. As we continued through the dunes for several more kilometres it was great knowing that it would pull me up and out of just about any obstacle.

I first swapped over to the conventionally driven bike on hard going and I have to say that in those conditions it didn't feel to be at any disadvantage to the 2-trac, and I immediately noticed the lighter steering. The 2-Trac system adds 7kg to the overall weight of the bike, of which a substantial proportion is unsprung. This means it's noticeably harder to lift the front over obstacles on the 2-trac and also that it hits them harder when they can't be avoided.

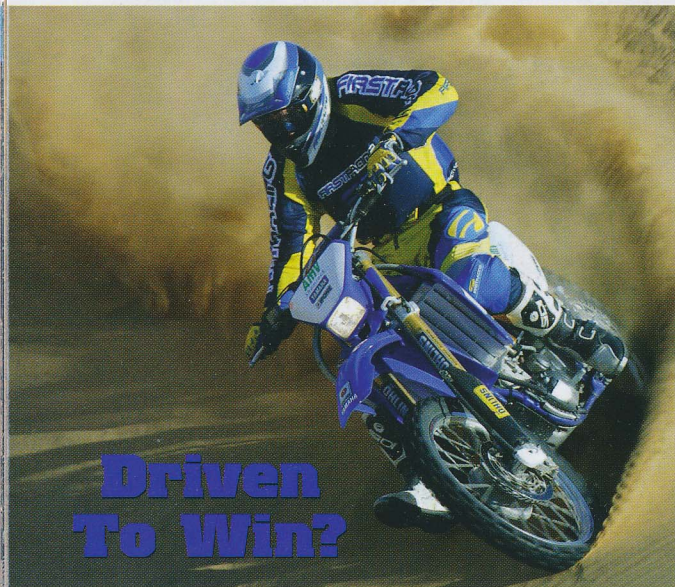
As I sailed over the handlebars and plopped into the warm, soft Moroccan sand for the second time in ten minutes, it was clear that it would take more than a driven front wheel to save me from my own incompetence at negotiating the dunes near Laayoune in southern Morocco. Crashes notwithstanding, I was still glad to be there in the November heat of the Moroccan desert, with a select band of demon dirt-riding hacks on one of the rarest and most technologically advanced bikes in the world.

'Hell', I thought, 'someone's got to represent the fat old farts of the off-road world, and it might as well be me. After all, a fat old fart is

probably in a much better position to spend upwards of £8K on one of these babies than a thrusting young whippersnapper with loads of talent but not much moolah...'

In truth, it was a pretty exclusive test. Just eight journalists were invited by Yamaha Europe to spend a couple of days riding the two wheel drive (2WD) prototypes in the Shamrock Rally, in which Yamaha France already had two works 2-Trac machines entered. Reflecting the influence of Yamaha France in the enterprise, five of the eight journos were French, plus one Italian, one German and not-so-li'l ol' Blez from Blighty. Crikey bobs!

By the time I arrived on Wednesday evening, four of the French journos had already spent the Tuesday and Wednesday of the week-long Shamrock Rally testing the two 2-Trac prototypes, but fortunately the bikes survived that ordeal unscathed. With our German colleague 'grounded' on the first day thanks to Air Maroc leaving all his equipment in the Canaries, this meant there were two 2-Trac machines between three of us to start with, plus another, conventionally driven WR450 for comparison purposes which was also kitted out with all the Ohlins equipment that'll come as standard on the production 2-Trac. Thankfully we didn't have to worry about navi-



Driven To Win?

On the other hand I soon missed the 2WD when we went back into the dunes for a play. We found a huge semi-circular dune which created a natural 'wall of death'. With a good run up in 'attack' mode, I got right around the top of the 'wall' without difficulty, but on the way back down the front wheel suddenly dug in to the soft sand and I went over once more.

Swapping back onto the 2-Track, I had no such problem. The front wheel just tows you out of trouble.

Once More Unto The Beach, Dear Friends

That day's section of the Shamrock Rally was simply called 'The Beach' and for good reason. More than a third of the 150km lap consisted of blasting down the Atlantic coastline, or down a parallel piste a few yards from it. Imagine the manic start straight at Le Touquet, times 20! However, even on a conventional bike it's not that difficult, once you've got over the initial shock of the bike leaping about all over the place and feeling as if both tyres have gone flat. On the other hand I did feel more confident on the 2-Trac, since I felt I had more margin for error, especially when changing from one rut to another. It was definitely

more stable and confidence inspiring. With the high gearing (we were running 15/47 instead of the standard 14/50) both the one wheel and two wheel drive machines were happier in the soft sand pulling hard in fourth rather than chugging in fifth. Yamaha claim that the 2-Trac will actually go faster than the standard machine in these conditions, which is certainly logical, but there was

no noticeable difference in speed in our group, no matter who was riding which version. (David Fretigné has been clocked by his GPS at a true 100mph on his works 2-Trac, which is going some for a 450 thumper...)

When we met up with veteran photographer Michel Maindru to get some action shots I took the opportunity to make some more direct comparisons between the one and two wheel drive machines. In soft sand, the 2-Trac came out a clear winner. It could chug up the side of a near-vertical dune with only the smallest of run-ups, where the one-wheel-drive bike soon bogged down if it wasn't given a much bigger run-up and kept revving hard all the way to the top. And even when the 2-Trac did grind to a halt, (after I attempted the



2WD gubbins adds 7kg onto the weight of a stock WR450F

climb with no run-up at all), it was much easier to get it going again as the front wheel helped to pull it out of trouble. And as anyone who's ever ridden in soft sand will know, on a conventional bike it's all too easy to just dig your rear wheel into a deeper and deeper hole - but the 2-Trac is much less prone to doing that.

It also scored highly when it came to making tight turns in flat, soft sand, whether standing on the pegs or sitting down wedged against the tank. Where the conventional bike's front wheel would wash out all too easily, the 2-Trac's dug in

A BRIEF HISTORY OF TWO-WHEEL DRIVE

1924 First 2WD system fitted to a 350cc Raleigh for trials.

1930 Swede Einar Stormark fits 2WD to the front and rear wheels of a REX sidecar outfit.

1935 REX-OEC JAP sprinter.

1937 Stormark converts a Belgian FN M60.

1968 Rokon launch their balloon-tyred 2WD Trail Breaker on an unsuspecting world. Power goes to the front wheel via both shaft and chain and drives it full time. These machines have used both Chrysler two-stroke engines and Honda four-strokes and are still in production today! Weight is claimed to be only 185lbs and extra fuel can be carried inside both wheels! They have solid suspension (apart from the tyres) and a 3-speed automatic transmission via a torque converter. Top speed is under 40mph. In 1995 Loren and Patricia Upton, with Juan Rivas, made an all-land crossing of the Darien Gap (across Central America) using a Rokon Trail-Breaker. No mean feat.

1970 SWM experiment with a cable-drive trials bike.

1980 Suzuki DR250 developed for the Australian army using hydraulic front wheel drive but not put into production.

1985 Ohlins AB start experimenting with two wheel drive for motorcycles using both chain and fluid drive systems.

1987 Suzuki Nuda concept bike shown at Tokyo show with hub centre steering and shaft 2WD.

1988 Honda staff develop a 2WD XR250 using hydraulic transmission to the front wheel.

1988-91 Englishman David Watts of Sunshine Components builds several Maico and Yamaha-powered 2WD prototypes using chain drive and telescopic forks via a scissor-action linkage.

1988-92 The French Savard brothers develop their hub centre steered, chain driven machine on both Yamaha and Husqvarna-powered bikes which are raced in supermoto events all over France. Their greatest moment of glory was at the first, 1989

Guidon d'Or at Circuit Carole when 42 year-old rally veteran Serge Bacou took their machine to victory in the wet on the first night of the weekend, trouncing Eddie Lawson in the process. Randy Mamola rode a later version two years later, by which time the Savard had become the Savage, but he couldn't get on with it and fell off several times.

1990 Ian Drysdale starts developing his Dryvtech hydrostatic drive system to both wheels. This extraordinary machine also has two wheel steering.

1991 The Damian Coma used Suzuki power and three chains to get power to the front wheel.

1991 Suzuki Lander uses multiple chains and leading link forks while their XF-5 uses a 'sliding spine', three chains, and telescopic.

1992 Fantic make a 305 trials bike using five chains to get drive to the front wheel using standard telescopic. The claimed extra weight is only 7kg.

1993 Australian-built Xereb CR500 Honda hill climber uses teles which pivot at the headstock and

two chains to get the power to the front wheel.

1998 Fage and Rigo produce a 2WD chain driven kit for trials bikes which can be fitted to both Gas Gas and Beta machines.

1998 Yamaha and Ohlins go public with their fluid drive system and show a 2WD YZ250.

1999 Antonio Columbo and Angelo Signorelli race 2WD TT600Rs in the UAE desert challenge and Columbo wins the Rally of Sardinia.

2001 Jean-Claude Olivier (JCO), legendary Dakar rider and President of Yamaha Motor France, rides a WR426 2-Trac to 5th place in the Shamrock Rally.

2002 David Fretigné and JCO take WR426s to first and second place in the Shamrock.

2003 David Fretigné and JCO take first and third in the Shamrock on electric start WR450s

2004 Yamaha WR450F 2-Trac goes on sale to the general public as a competition machine.

(WITH THANKS TO IAN DRYSDALE)

2-TRAC FACTS

- Only 250 2-Trac machines will be built in 2004.
- All of them will be assembled by Belgarda at their Milan factory, and none is scheduled to go outside Europe.
- The UK price has not been fixed but is likely to be close to £8,500 (12,000 euros)
- The 2-Trac will *not* be homologated as standard so you also have to add £300 for the on-road kit, plus the cost of getting it through SVA.
- In addition to the Ohlins suspension front and rear, the 2-Trac will also come with decent alloy bars, an Ohlins steering damper and prettier plastics around the forks and feed pipes.
- Ohlins have been working on the 2-Trac system for over a decade and Yamaha owns 75 percent of Ohlins.
- '2-Trac' is meant to be short for 'two-wheel traction', not '2-track' - it's obviously still a single track vehicle!

and pulled you round the turn with much less effort on the rider's part and you could 'get on the gas' much earlier.

Day Two x 2

Friday's 200km jaunt took us South of Laayoune into a totally different section of the Moroccan desert and it served to reinforce some of the conclusions I'd come to after the first day's testing, but also brought a few new insights too. The initial 50km thrash down a main road demonstrated that the extra inertia of the 2-Trac front hub is noticeable when you change direction quickly, even on tarmac, but otherwise the bike felt completely normal. Remember the front wheel is never driven until the rear wheel starts to spin, so on the road you're effectively riding a completely normal bike with a couple of funny oil pipes leading to a slightly lardy front hub. It doesn't feel at all odd or unnatural when cornering on the road.

Before setting off into the desert we had a quick top-up from the Yamaha support truck's petrol pump and the mechanics also firmed up the Ohlins suspension at both ends of 'my' 2-Trac in deference to the Blez 'avoirdupois'. All it took

was a few turns of the adjuster under the swinging arm at the back and a few twists with a screwdriver on the fork adjusters.

The first 20 or so klicks of Friday's stage was the most enjoyable of the whole trip for me. We were initially riding on a sandy track, but frequently had to go 'off-piste' to overtake several quads that had started in front of us. The sand was undulating, but not high enough to hide any nasty drop-offs and hard enough for the bikes not to sink in. I had a ball picking a line between the scrubby plants and leaping the 2-Trac over the 'waves' of sand. Nevertheless I had a major scare when I hit a hidden rock and the bike kicked violently sideways at about 60mph; I thought I was heading for a major accident but somehow it straightened itself out and just carried on regardless. I couldn't help wondering whether the standard WR suspension would have coped so well?

We then moved into some big dunes and it was a joy to slalom between them and also to ride right along their ridges with the 2-Trac system pulling me effortlessly along. We also had another photo session with Maindru and heard (and later saw) that Monsieur Fretigné himself

had come a right 'purler' in front of Maindru's lens. Nice to know that even a riding God on a 2x2 makes the occasional spectacular mistake.

Swapping back onto the conventional bike I could still make it through the dunes without any difficulty which wasn't really any great surprise since the WR450 is a pretty handy tool with a mighty fine engine (especially for open country riding like this). We then rode a very long, and fast section of hard, stony ground in which the advantage of 2WD pretty much disappeared altogether. Yamaha claim that even in these conditions the 2-Trac is much more stable than a conventional bike, but I can't say I noticed much difference. Gert Thoele of German magazine *Motorrad* even went so far as to say that he preferred the conventional bike to the 2-Trac: 'Maybe it shakes its head a bit more' he said, 'but that is no problem, it's normal, but it is lighter too and easier to lift'. This was definitely true.

One thing the hard ground did demonstrate was just how good the Ohlins suspension is. My biggest 'moment' of the entire trip occurred when I suddenly found myself heading straight into what looked like a rocky-sided 'bunker' at 60-odd mph. Several feet across and at least a foot

Driven To Win?

TECHIE STUFF

- The oil driving the front wheel is Castrol synthetic engine oil. It lasts at least as long as the oil in the engine. At rest, its pressure is 2 bar (30psi) but once running, goes up to 90 bar and up to a maximum of 200 Bar 'in exceptional circumstances'. That's 3,000psi!!! (gulp).
- The gold-coloured cylinder on the left side of the engine is a 'regulator' which maintains the oil pressure in the system and prevents the whole thing from packing up if the front wheel should lock up while the rear wheel is spinning.
- The 2-Trac system obviously saps some of the engine's power, which also means it revs slightly more slowly, but Yamaha claim that it enables the bike to put more power to the ground instead of wasting it in useless wheelspin.
- The current system is considerably lighter than early versions fitted to the TT600 that won the Sardinia Rally in '99. Even since 2002 the front hub has been lightened and the drive chain that runs off the front sprocket has been fully enclosed and the oil pipes have been strengthened.



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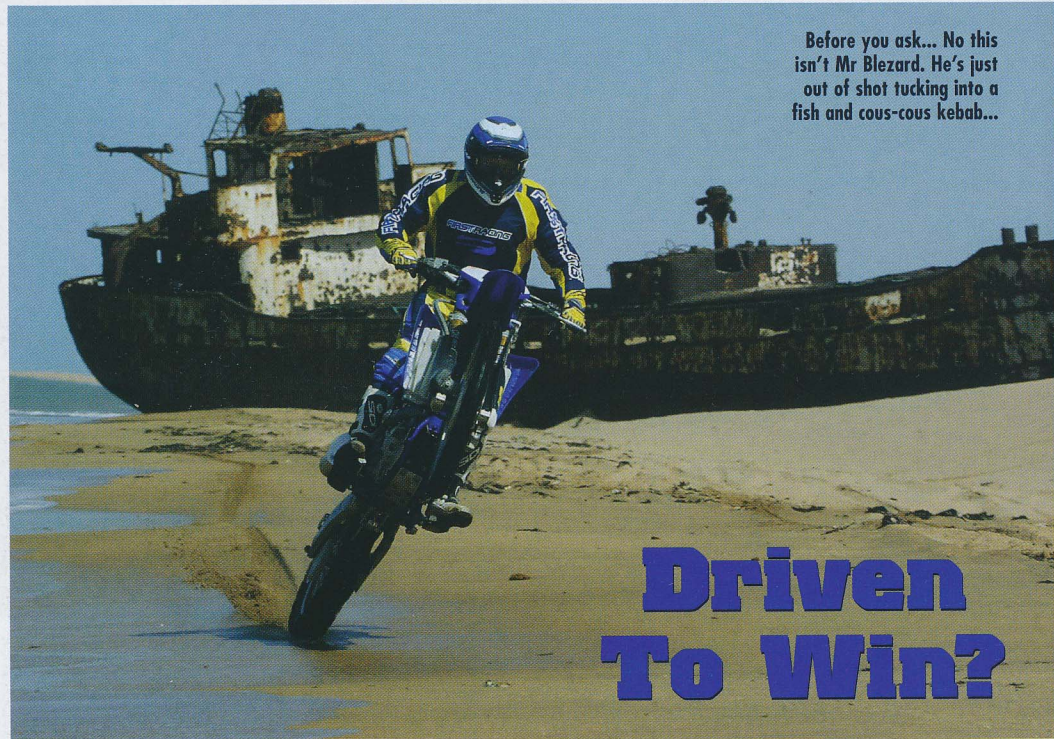
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FIRST CHECK



Before you ask... No this isn't Mr Blezard. He's just out of shot tucking into a fish and cous-cous kebab...

Driven To Win?

deep, or so it seemed. I braced myself for the inevitable massive accident and... nothing! The bike seemed to just float across the whole thing and carry on regardless. I guess it can't have been as deep as I thought, but I was still mighty impressed. Roberto Ungaro of Motociclismo and FuoriStrada magazine was equally impressed by the 2-Trac's suspension: 'This is not just better than the standard WR suspension, it's better than standard Ohlins suspension too, especially over small bumps' he declared.

In stark contrast, my other huge moment of the day occurred with no warning at all, on the 2-Trac, when I hit a hidden rock which bounced me so high off the seat that my feet were level with my ears, yet again, the bike just carried on regardless.

In between the rock-hard stuff and the big but friendly dunes was the sort of going where I found the 2-Trac most reassuring of all - on fast twisty soft stuff, full of deep ruts, where you can't just blast along wide open. Sure, I could ride that going on the conventional bike, but I was much more tense and less relaxed doing so.

Pros & Cons

I think it's fair to say that we were all impressed by the 2-Trac system, but some more so than others. There are without doubt some situations in which it gives any rider a distinct advantage over a conventional machine, but there are also some downsides. It's definitely an advantage in soft sand of all kinds and I suspect that it would also help to keep you out of trouble on the bogs of the Monk's Trod as well (when that finally reopens). Yamaha say that it's extremely efficacious on gravel roads too, and I don't disbelieve them.

On the other hand, there is that 7kg weight penalty, perhaps half of it unsprung, on what is already a heavy machine by enduro standards. None of us thought that the 2-Trac WR450 would be the tool for the job on hard, nadjery going of the kind that is common in Italy and Spain. But when I think back to some of the slippery and slimy enduros - and green lanes - that I've 'endured' in the past, I reckon the 2-Trac system would be the dog's danglies in those conditions. I also think it could be pretty handy on a supermoto track.

FIRST CHECK

Driven To Win?

Blimey, the old boy can hustle when he wants to...



I came to the conclusion that the 2-Trac might well be more useful for me or someone even more incapable than me, than for a really good rider who can cope with pretty much anything that man or nature can throw at them. I know I'd far rather have another crack at Le Touquet on a 2-Trac than a conventional bike. I'd love to try the Welsh Two-Day and the Cambrian Rally on one too, although I know it's not going to make me a winner. If Yamaha UK have any sense they'll put at least one 2-Trac on the press fleet and give one to Geraint Jones for his off-road school - just to let riders try it out.

It's also worth remembering that the 2-Trac system is relatively easy to add - and remove - from a conventional machine. Yamaha may well offer it as a retro-fittable option to standard machines in the future. For now though, the biggest problem for most people is the price. Even allowing for all the Ohlins 'goodies' a 50 percent hike over and above the cost of the standard WR450 is probably far more than most punters will swallow, so Yamaha are probably wise to keep production volumes low initially, since exclusivity carries a premium all of its own.

I've already found two people of my acquaintance who are seriously interested in a 2-Trac. And that's not counting me. Hell, at my age, in my condition, I need all the help I can get...

Yamaha have already tried the 2-Trac system in all kinds of different conditions and on a variety of machines, including an R1 sportsbike. They say that even on a motocross course, most of their test riders thought the advantages outweighed the disadvantages and the 2-Trac R1 sportsbike was several seconds a lap faster on a wet (tarmac) circuit than the standard machine.

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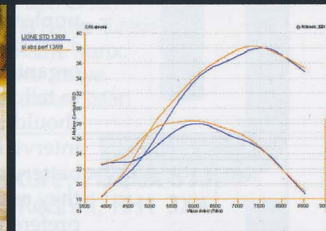
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