



STEER IT UP

Fed up with arm-wrestling your classic Porsche round the lanes? EZ Electric Power Steering will have you whirling from lock to lock like a dervish

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Photography: Antony Fraser

I'm blatting along on the top of a dyke. Unlike most Dutch waterways, this one has some sharp bends and the towpath roads reflect that, so this is a great place to test the electric power steering that's been applied to this 3.2 Carrera. And what a transformation! As I helm the tiller, the 911 swishes effortlessly around the corners, as if carried by

the current: it's turned a prize-fighter into a lounge-lizard.

We've come to Leerdam near Utrecht to visit EZ Electric Power Steering – that's Eee-Zee like in ZZ Top – where we're greeted by the amiable and effusive CEO, Roger Reijngoud. It's a converted garage premises on an industrial estate, with an Alpine-Renault specialist in the adjacent building

and a cross-section of decrepit Matra-Simcas languishing, like unbuilt TVRs at the redundant Blackpool factory, in the huge yard out back. EZ's entertaining showroom is fronted by a range of classic steering wheels mounted on pedestals, from a variety of makes that have received the electric twirling treatment, encouraging visitors to have a spin of

their fave wheel. At the back there's a wall-mounted display of wood- and leather-rimmed wheels they've created as substitutes for classic models and for restoration projects. One for a D-type Jaguar is almost flat across the bottom, to clear the knees of a Le Mans-starting driver. To the rear of the small factory is where the electric

modules and motors are fabricated and mounted on steering columns, staffed by a dozen technicians who are busy at their benches with soldering irons and screwdrivers concocting compact wiring looms. A dozen shiny black MGB steering columns with DC electric motor modules attached, are batched and ready for export. To one side of the building are racks full of splined steel shafts and needle-bearing UJs for Porsches, Beetles, Jaguars, Ferraris, Maseratis and a variety of other makes and models. Apart from our 3.2 Carrera, there's just one other car inside: at the far end, a trad Morgan V8 is undergoing the transition from stone- to rocket-age as EZ techies apply their wizardry. There's further endorsement for the concept here: EZ recently got the contract from Malvern to fit their electric power assisted steering (EPAS)

kit on Morgan V6 roadsters' steering columns from new.

Vintage cars require little short of superhuman strength to manhandle, and some classics like the Volvo P1800 have unfeasibly heavy steering. But what's the attraction of fitting power steering on a classic Porsche? Roger's customers drive their cars a lot. 'If you only drive the car two or three weekends a year, you're not going to splash out for power steering, but if you use it a lot you really do reap the benefit of having had the conversion done.' There's also the husband and wife factor: 'sometimes they talk about their wives, and then I get two reactions,' says Roger; 'firstly, I have a customer coming over saying, "oh, I love the power steering, except there's just one problem: before, my wife never drove the car, and now she drives the car at every opportunity," and

they are upset about that. On the other hand, I have a client with a Jaguar, and he says, "in the evening I drive my Jaguar to the pub, and later on she drives me home," so he looks at it on the positive side. I've had men turn up who love classic rallies and their wives want to be co-pilots. With EPAS fitted, now they can.'

Being rear-engined, the 911 has a light front end and doesn't suffer from overly heavy steering. However, when its suspension is tuned with a more sporting attitude, maybe with wider tyres as well, the steering weights up, and it is in response to this type of set-up that EZ developed a power-steering kit for classic 911s seven years ago. 'If a 911 is set up for fast driving,' says Roger, 'especially as they like to do in Germany, they tend to apply maximum castor, and if you put full lock on you can actually see the

front wing rising up and when you centre it, it goes down again. So, the more castor, the better the straight line stability, but the heavier the steering becomes in corners, because the steering always wants to go straight.' Adding more castor doesn't affect tyre wear, and though the steering does become heavier in the turns, it's no longer an issue with the power steering kit. 'If you put more castor on in combination with the power steering kit, the steering wheel always wants to push back, so you get even more feel and feed back.'

It's the work of moments to adjust the electronics so the 'feel' is lighter or, alternatively, offers more resistance. One EZ customer who bought the system for his wife declared he'd have expected it to be even lighter, but Roger disabused him: 'I said, "look, it's a sports car, you

Below: The EZ power steering unit is compact and either sits under the dashboard, or in the case of the 911, in the 'smuggler's box' in the front luggage area. The steering can be set up for differing levels of assistance
Left: EZ Electric Power Steering main man, Roger Reijngoud



“We drove the test car on three separate runs, each with a different setting”

shouldn't be able to steer it with one finger,” but he was adamant, so we fitted an even more powerful unit in it. Now it's really light, but it's speed sensitive so at higher speeds it doesn't become overly light. We can always find a setting that's right for all tastes, and that's quite easy to do.' To verify this I drove the test car on three separate runs, each with a different setting: one very light, one medium light and one with hardly any lightening, and I would probably opt for the middle way, if push came to shove.

There was always going to be a little bit of science so, bad luck, here goes.

Pre-1974 911s have a speedometer cable, and that's where EZ fit a sensor that provides the speed signal which their appliance uses to determine how much assistance to apply, so that the faster the car goes, the less assistance is applied. Roger is our interlocutor: 'if you put a classic 911 on a rolling road, you'd find that in neutral its steering is light, but when you put it in 3rd or 4th gear it seems like it doesn't have power steering: that's how you know it is speed sensitive.' At the heart of the system is a torsion rod (the first part of the steering column emanating from the

steering wheel that disappears behind the dashboard) and a sensor on the torsion rod recognises that you're turning the steering wheel, and it wants to negate that. 'For instance, it notices I'm twisting 25-percent to the left, and the electric motor on the column immediately starts turning to the left and eliminates the 25-percent torsion. If it detects 50-percent torsion it provides 50-percent power so it's not only speed sensitive, it is also torsion sensitive.'

So why is electric power assisted steering better than regular hydraulic power steering? Roger explains: 'It's not true to say that hydraulic power steering doesn't have any feel, but it is down to how much effort it applies. It's like the suspension damping, the shock absorbers: what one driver finds ideal, another doesn't, and that's the nice thing about this electronic

power steering; we've got a small module that fits in between the sensor wires and we can adjust its sensitivity. Mechanically, we could put in a heavier torsion rod so you'd need to have more torsion to get the same amount of power steering but, being electronic, it's infinitely adaptable and you can reduce the sensitivity and then it's the same effect as having more torsion.' Right.

The first 911 to be spec'd with hydraulic power assistance was the 964, and there's no way that model's steering can be described as insensitive and lacking in feedback. The last Porsche to use the hydraulic system was the 997. So EZ beat Zuffenhausen to the EPAS grail by six years: the hydraulic system and its engine-bay mounted pump and lengthy pipework was discarded after the 997 moved over for the 991 in 2012, and that, along with the

Boxster, became the first 911 to offer electric power assistance. We don't have a problem with the way they steer, either, but there's a fundamental conceptual difference between the aftermarket and factory installations. While the EZ system focuses on the wheelman's end of the proceedings, modulating the level of feel and degree of assistance according to the torque input at the steering wheel, the modern Porsche factory version of EPAS (developed in association with ZF) calculates the desirable resistance manifest at the steering wheel from sensors on the other end of the steering train, through stability control sensors that modulate yaw rate and steering angle. However technically brilliant this is, feedback to the steering wheel is contrived during the process by a reduction in rack force, something that's beyond the realms of classic car steering systems, of course, and probably anathema to the genre in any case. The vast majority of EZ's Porsche applications have been for pre-'89 cars, though they have had a few enquiries for 964 racing applications because electronic power steering will perhaps yield 4bhp, because they can get rid of the hydraulic pump and the weight migrates from the back to the front. A hydraulic pump is always sapping power, but EPAS only draws power when turning and travelling slowly; as soon as the car's heading in a straight line it doesn't use any power at all.

So whereabouts in the 911 do the EPAS components live? In the smuggler's box! EZ usually aim to fit the electronic

module behind the dashboard, but there's not enough room in the 911's, so, in left-hand drive cars, they insert it in the so-called smuggler's cubbyhole which can be found to the right hand side under the front lid in all pre-PAS 911s – unless they have air-conditioning; the box originally housed the Webasto petrol heater and was home to the blower and evaporator box of the factory-option Behr air con system from 1970. The smuggler's box was originally designed into the 901 shell as a more central location for the battery, but fortuitously it now provides a home for EZ to stash their electronics. The power steering module takes the place of the air conditioning unit. This is all well and good on left-hookers, but on right-hand drive cars the smuggler's box is considerably smaller, the air-con situated ahead of the passenger footwell, and this also obliges EZ to locate their kit on the second steering column shaft. 'We can reconstruct the complete column,' claims Roger, indicating the universal joint that's attached to the rack. The 911 steering column consists of a very short torsion rod behind the dashboard, and beyond the bulkhead an angled universal joint points the second shaft at a peculiar 66.6 degrees towards the centre of the car where it's coupled with the rack at another universal joint. If the car is a right-hooker or has air-con, EZ locate their electronic module midway between the universal joints, so it's effectively mounted beyond the bulkhead. 'The only drawback is that it takes a bit more time to install because we have to

demount the ventilation unit in the middle of the car to fit it,' says Roger. Before fitting their kit to a customer's car EZ run a few tests to make sure the steering is in good shape and self-centres properly, whether the horn works and the indicators self cancel, in order to rule out problems post fit.

Are friends electric? It's time to put them to the test. An EZ customer has kindly provided his 3.2 Carrera for the test drive. It's a sweet performer, a nice original non-Sport

equipment car showing 141,282km. It's a model I know very well, and my first impression is how uncannily easy it is to steer. It bears no resemblance to the normal unassisted 3.2 steering characteristics; it's not limp, exactly, but returning little feedback, a bit like a soggy Jaguar XJS, for example. That's because it's on the lightest setting, and Roger's colleague Ruud quickly tweaks the sensor to give me more 'feel'. But hey, hold hard there, helmsman! What's this

Below: The unit fits snugly in the 'smuggler's box' on left hand drive cars. On RHD cars this is much smaller, so EZ are obliged to locate the kit on the second steering column shaft





wheel we're grasping? It sure isn't that characteristic parallel four-spoke 3.2 Carrera wheel with its rectangular centre-piece horn – less a button, more a cake. No, it's an EZ special, familiar to classic 911 buffs as an ST wheel. It's not merely a sideline to the electric paraphernalia, more an adjunct, and EZ offers a range of nicely finished reproduction wheels for most classic makes including Mercedes-Benz, Jaguar, Volvo, Triumph and MG. Some, like this one, are eccentric, meaning that their hub is slightly higher in relation to the centre of the wheel, and it's diverting to see how the hub apparently rises and falls as the wheel's rotated. Along with the 911 ST wheel there's a very similar 911 R version with teardrop slats in the tri-spokes instead of round holes. Most of our customers have the post-1974 dished three-spoke wheel in R or ST format,

which has Porsche on the boss,' confirms Roger. 'It's 38cm, and fitting the eccentric adaptor increases leg space too.' It looks and feels like a retro wheel you'd find on an early 911, and it's not too dished either, but it does present a paradox: it throws the '80s car's main control device back in time, yet the electric power assistance projects the steering characteristics into the 21st century. The standard 3.2 is by no means the lightest 911 in the steering stakes, so this newfound lightness is perhaps equally redolent of a '60s 911 with its follow-the-contours fingertip sensitivity, though with more precision. Best of both worlds by the sound of it. And whether you agree depends on how wedded you are to the butch arm-wrestle of the standard 3.2. The 911 kit will cost you €1,530 excluding VAT, or €2,150 excluding VAT completely fitted, and EZ

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Ignore Tipler if you can – this is all about the steering, although we concede that this is hard to convey in a picture! Power steering transforms the 3.2 Carrera test car, making it easy to point into a corner and hold it there. Steering wheel is EZ's own ST inspired design

have several international agencies competent to carry out the conversion. We get going the few kilometres across the polder to our waterland photoshoot. I become accustomed to the ease of the 3.2's steering process on a mix of rural lanes, straight and narrow, till we reach the meandering curves of the ancient canalside towpath. It really is finger-light, and the slightest input registers immediately, transforming the 3.2 Carrera steering into a much more modern car. I'm reminded more of a 993 than a 996, so that lifts it at least a decade. It makes very light work of the twisty bits, pin-sharp turn-in, and as I flick from curve to curve I'm thinking what a fine innovation this is. It actually helps you come off a corner or a roundabout a little bit quicker because it is so delicately wrought. But what's important is that you do feel a bit of

resistance against your wrist-work, and that's down to the amount of castor that EZ has set it up with. And as I go about with a three-point turn after each pass of the camera, never has full opposite lock been so easy to achieve. It's not what I was expecting of a 3.2, and I would find it very easy to live with my steering being like this. It doesn't lose the tactile qualities associated with non-assisted steering, and my earlier scepticism is dispelled to the extent that I think it genuinely qualifies as an improvement. Having it on the 'heavy' setting doesn't really make any significant difference, so medium is where you'd get optimum driving feel as well as assistance in a parking or reversing situation. It might be advantageous in a rallying context too; the only downside is the lack of muscular challenge. Still, that's a way better prospect than rowing. **PW**

