

POWER STEERING FOR CLASSICS



John Paulding investigates electric power steering for classics and guides us through some uncharted waters.

If you are lucky enough to have a modern car as your daily driver and a classic that only comes out when the sun shines, you'll be all too aware of the contrasts when you jump into your classic. Quirky performance, no air-con, heavy steering... you know the story. I always figured that owning a classic was about having fun and if the car wasn't fun to drive then there wasn't a lot of point owning it. OK if the car was totally original and mint things might be different, but the car wasn't totally original when I bought it so I wasn't adverse to making some changes to make it more drivable and comfortable. It now has electronic ignition to make it more reliable, central locking for convenience, air con since it's mostly used in the summer.... but that heavy steering was a problem that I couldn't solve. The 2002 never came with power steering. The 3 Series E21 that followed had it, but that had a totally different rack and pinion set up instead of a steering box. It is possible to fit an E21 rack in an 02 - see the excellent M3 powered Touring of Nick Vyse - <http://www.m2bmw.com> - so it follows that it might just be possible to fit a hydraulic power steering rack, but the work involved would be considerable, so the idea remained on the back burner for many years and I learned to accept

the heavy steering.

Then I came across something at the SEMA Show last year that changed my thinking. An American company was offering electric power steering for rods and classic American cars. A brief conversation confirmed that the conversion was feasible on pretty well anything but the distance between me and them effectively excluded doing anything with the company. When I got home I started searching the internet and found a firm in Holland that were doing similar conversions and their work was geared to classic European cars. Mostly Jaguars and Volvos, but I soon found out that they had also done some BMWs including a 1963 BMW 2800 CS Bertone coupe... and they were just about to start on a 2002!

By the beginning of this year they had converted two 2002s, one in Holland and one in Germany. They reported that they had solved all the problems and the owners were 'delighted'. They also had an agent in the UK, down in Teignmouth. Hmmmm. Time to head for sunny Devon and check it out.

Turns out sunny Devon wasn't all that sunny. Torrential rain almost all the way and Teignmouth is a long way from East Anglia. Just a mile short of 250 miles door to door and



my aching arms were testament to that. Still the rain couldn't dampen my spirits... I was going to have the first RHD 2002 with power steering... cool or what?

EZ Power Steering's UK agent, Mike Waters, showed me round his workshop - on top of the cliffs overlooking Teignmouth Bay. If you've got to go to work every day it helps to have a location like this!



What wouldn't you give to have a view like this from your workshop window?



Then Mike talked me through the conversion and showed me the parts that had arrived from Holland.

The conversions are totally electric. There are no hydraulics at all. These are the power steering systems found in many modern small cars particularly the smaller Japanese ones. The motors and other parts of the units are sourced directly from the OE manufacturers in Japan - Koyo and NSK - who make power steering for the mainstream motor industry.

EZ then select the most suitable motor for each application and design a conversion that will be completely hidden underneath the dashboard. The original steering box is retained so the ratio remains the same. The motor with new steering shafts directly replaces the original inner steering column. No holes are drilled and there is no cutting or welding to the chassis or body, so the car can always be converted back to its original system. Under the bonnet there are no changes, everything remains as original making the conversion almost invisible.

Mike explained that power assisted steering needs to be proportional to speed. You need maximum assistance at parking speeds but that assistance needs to fade as speed increases. Full power assistance at motorway speeds would make the car dangerously undrivable. The first conversions had potentiometers to vary the assistance manually, but the conversion he would be fitting to my 2002 had the latest electronic speed sensor that fitted to the speedo cable and controlled everything automatically. Nothing to see, nothing to adjust.

The conversion itself mainly involves methodically dismantling the original steering column and moving the components over to the new power steering unit. The brackets for the column stalks and the steering lock are transferred, although you need to think ahead as you work. Refitting isn't quite the reverse of dismantling. Some parts came off the bottom of the old column. They had to go on to the top end of the new unit because of the motor, so you need to work out the fitting order. Three attempts



later we got it right!

The guys in Holland had told Mike that although this was the first RHD 2002 conversion everything would 'drop right into place'. After all the right hand drive version was just a mirror image of the left hand drive model. Well, we all know that 'it will drop right in' is one of the Great Lies along with 'The cheques in the post', 'This won't hurt a bit', and... well you know the rest. It seems that the Dutch guys didn't realise that although LHD 2002s have pedals that come up through the floor, most right hand drive models have pendant pedals mounted on the bulkhead. The shroud around the lower shaft wouldn't fit between the pedal pivots and the motor fouled the brake light switch. I left Mike to figure it out and headed for the hotel.

Needless to say it eventually got sorted and when I collected the car everything fitted and it all worked perfectly. We took it down the hill into Teignmouth to try it out in the car parks and around the tight one way system. The first thing you realise is that the power steering doesn't work when you are stationary. This is a useful reminder that you shouldn't be turning from lock to lock unless you are moving and helps prevent the driver putting unnecessary strain on the steering components. However as soon as the wheels are rolling the

power assistance is there. Parking is a breeze and the quick left, right, left flicks made short work of the mini roundabouts in the one way system. In short the car drives just like a modern car. After a few minutes you forget its 36 years old!

Now for that journey home. The drive down had been quite a strain. What would the home run be like? I headed for the M5.

Just as Mike had promised the assistance faded as the speed increased. By 40mph all signs of power assistance had gone and the steering had full 'feel', maintaining confidence at motorway speeds. I pulled off at the services and as I decelerated the assistance came back. A quick flick of the wheel and the car slotted into its parking space. Perfect. 'It does what it says on the tin'.

Although there's nothing much to see after the conversion the work behind it has been considerable. There is a torque sensor controlling the system and various 'fail safe' safety devices. For instance if the electrical system should ever fail the steering would be just as it was before the conversion - unlike a hydraulic failure on a conventional power steering system - and the assistance would diminish gradually to avoid any drama. (If a car fitted with an hydraulic system



had a fault the steering would immediately become extremely heavy). In the extremely unlikely event that the motor should bind, there is a clutch unit which will disengage the motor from the steering column ensuring that the steering will always function freely.

There are other differences from hydraulic systems. In a hydraulic system the hydraulic pump is continuously operating when the engine is running. This generally uses around 4 horsepower and therefore affects fuel consumption even when driving straight ahead. An electric power steering system consumes very little current, typically around 5 amps, and only when changing steering direction. It won't make undue demands on the electrical system and EZ conversions have even been successfully carried out on classics equipped with dynamos rather than alternators! The system works without making a sound. There's nothing to leak and it's completely maintenance free. The torque sensor tells the ECU just how much assistance to provide and wide tyres and small steering wheels are all taken into account.

The current application list includes Aston Martin, Austin Healey, Ferrari, Jaguar, Mercedes, Opel, Saab, Volvo and of course, BMW. Their first MGA had just arrived as I left. Prices for the conversion are around £1300 for a small car such as the 2002 rising to a couple of thousand for bigger and more exotic classics. If a particular classic isn't included, a system can be tailor made with reasonable ease and electric power steering may well be the preferential option even on models where hydraulic power steering is available from the breaker's yard.

For models already on the application list the conversion time is around a day and a half.

Well, I'm a happy bunny. The conversion works fine. The only problem I can see for most of us is their location down in the West Country, but they are working on that. EZ Power Steering have agents in several countries and they are now in the process of appointing dealers in local areas to make the conversions more accessible. This may be the first RHD 2002 with power steering, but I don't think it will be the last.

John Paulding

