



### Power steering options

Fitting power steering to a classic MG is a topic often raised, particularly in relation to the RV8 which many people find heavy to steer. Hydraulic power assisted steering (PAS) systems have been available for a while, and some RV8s reimported from Japan have been retrofitted there with the MGF EPAS (electric power assisted steering) system. With a new EPAS conversion available in the UK, how do these systems compare? Victor Smith reviews the available options.

### Hydraulic PAS as a retrofit

The possibility of PAS as an option on the RV8 was considered by MG Rover when the model was in production at Cowley. They went as far as having one car fitted with a hydraulic system using a replacement Peugeot steering rack but decided not to go ahead as a production option on UK models because of the cost. They also accepted that for the Japan spec cars there was not sufficient space to accommodate the PAS kit in an already congested engine bay.

Some ten years later a hydraulic PAS conversion was available from the MGOC Workshop and many MGB, V8 and RV8 enthusiasts have since had that system as a retrofit. The conversion has a mechanical hydraulic pump, driven by a belt from the engine via a pulley and fed from an oil reservoir which provides the assistance through a new hydraulically assisted steering rack. This reduces the effort

required to steer when manoeuvring at low speeds or when parking and it also provides virtually effortless control on long journeys whilst still retaining a positive road feel. The installation uses the original steering column but involves removing the original steering rack and fitting a new replacement rack attached to modified rack mountings accurately welded to the front crossmember. The new rack has a slightly higher gearing and a marginally increased turning circle.

This well engineered power steering conversion is produced by an accredited British specialist manufacturer and has proved reliable. Initially there was natural concern with pressurized oil in a hot engine bay but the oil reservoir, originally located on the inner wing above an exhaust manifold, was well insulated.

The system can be made adjustable from the engine bay with the addition of a valve and by-pass pipe giving scope for a range of assistance from maximum PAS to none. Generally the noise created by the pump is small but when you are on full lock you can hear the pump as you will with most hydraulic PAS systems.

### Improved electro-hydraulic PAS

Later an improved conversion was developed with an electrically driven hydraulic oil pump attached to an oil reservoir - both are located at the front of the car behind the grille under the slam panel as you can on the next page. These were useful changes which enabled the system to be fitted to Japan spec RV8s. David Driver,

a former owner with a reimported RV8 still complete with all the Japan spec aircon equipment in the engine bay, confirmed the electro-hydraulic PAS installation was successfully put on his car. The original steering column is used with a new rack.

As with all PAS systems fitted for decades past, any system always has to have the failsafe characteristic that if the power assistance fails then the steering remains unaffected other than becoming heavier and requiring more physical effort from the driver. Fortunately failures with the electro-hydraulic PAS system are rare - there has been only one reported which resulted in a hose blowing off a metal connection and dumping all the hydraulic oil. So members report satisfaction with the quality of the electro-hydraulic PAS installation and they find the reduced steering effort has improved their driving experience.

### EPAS retrofit with an MGF unit

A number of RV8s returning from Japan have an MGF EPAS retrofit which was carried out in Japan. The EPAS was a very advanced feature on the MGF back in 1995. So far we have not been able to trace who installed these systems in Japan but it is believed to have been the work of one company. With the EPAS option the steering assistance is provided by an electrically driven power unit applying the assistance on the steering column. The electrical power unit is located in the legwell above the driver's legs - see photo. This option has good driver feel, is silent and consumes power only when the steering assistance is required. Members with this EPAS option report satisfaction with the quality of the installation, the reduced steering effort and the reliability of the system. Some MGF EPAS retrofits have been undertaken on RV8s in the UK and by an RV8 specialist in Australia. The lack of clutter under the bonnet with the EPAS option is a welcome feature as the engine bay on a Japan spec RV8 is already packed with the additional aircon equipment and belts.

### EZ EPAS - a well engineered retrofit

A new EPAS system was launched a couple of years ago by the Dutch group EZ Electric Power Steering (EZ) who developed their kits using well proven, good quality equipment sourced mainly from two major Japanese manufacturing groups, Koyo and NSK, who supply leading car manufacturers. The advantage of using these units is that numerous safety features are already built in which makes it easier to obtain TUV certification, a procedure involving rigorous



testing of components to verify they satisfy strict European regulations. The EZ retrofit equipment (see the main photo) is compact and uses the existing steering rack so retains the standard steering ratio and setup. The amount of assistance is fully adjustable using a knob operating a potentiometer and one option is to have a transducer added which then makes the system sensitive to speed and load.

EZ supply complete kits for installation by selected specialists. The bespoke brackets are CNC laser cut and designed to fit the original mounting points on your car. A key point is that no holes are drilled for the installation and there is no removal of the existing steering rack with consequent cutting or welding, so the car can always be converted back to its original steering column and Factory set up.

The simplicity of the system is a major benefit - it is completely hidden below the dashboard above the legwell and in the engine bay there are no changes. As the system does not need an oil reservoir, pump, belts and rubber pipework located in a cramped engine bay, everything remains original. With a well filled engine bay on an RV8 or MGBGT V8 that is good news. It's also quiet in operation with no noise from pumping fluid and it uses less energy than a hydraulic system as the electric motor only needs power when steering assistance is necessary, whereas a hydraulic pump is operating continuously when the engine is running.

A key safety feature is the new collapsible steering column should the car suffer a heavy frontal impact - essential for driver safety. The input and output shafts have the original male splines at the outer ends allowing the original steering wheel and steering box to be used. The other side of the shafts have female splines which connect to the power steering unit. This guarantees a reliable connection under all conditions.

The power steering ECU (electronic control unit) and the torsion sensor that determine the amount of assistance are reset by the specialist installer to suit the

steering characteristics of the car. The modern ECUs work with CAN bus (controller area network) data signals which are not present in a classic car. To solve this, EZ has developed an interface that simulates the signals for engine speed, road speed and steering angle of the CAN bus and regulates the ECU. The speed signal is obtained through a speed sensor installed between the speedo cable and the speedometer.

The EZ retrofit EPAS kits have been installed on a range of classic cars from Astons to TVRs and many installations on MGs including MGAs and MGBs. EZ EPAS retrofits for RV8s and MGBV8s are available from Clive Wheatley mgv8parts, the well known MG V8 specialist, where Steve Newton has spent over six months developing the installation for the RV8 to ensure the kit is fitted correctly. He has provided EZ in Holland with vital feedback to ensure the kits they supply incorporate the necessary RV8 requirements.

On the road the electric power steering system is truly speed-sensitive. It will steer light at low speeds and not become lighter at high speed. The amount of assistance can be selected using a knob operating a potentiometer located on the trim alongside the driver's leg, so the driver can select the amount of steering assistance they want by turning the knob for more assistance if the car is fitted with wider tyres or a smaller steering wheel. As the adjustment is so easy to make a lady driver can dial in more assistance to suit her preferences and then when another driver takes over the car a further adjustment to suit their needs can be made very easily.

The fail safe characteristics are good too - in the unlikely event that the electric power steering system has a defect, the car would steer through the original rack exactly as it

did prior to the power steering conversion.

Clive Wheatley is enthusiastic about the new EZ EPAS system for the RV8 saying "it is well engineered with all new parts including a new collapsible steering column, and is a simple and neat installation requiring very few modifications to the car. The system uses a new, specially designed EPAS kit, not new or recycled MGF EPAS parts." His colleague Steve Newton can usually do an installation in a day.

## How do the alternative PAS systems compare?

The hydraulic systems have been popular for almost a decade but the EPAS options, particularly the well engineered EZ system, do offer advantages - no change to the original steering rack, a complete replacement steering column with the EPAS unit attached and located in the legwell, no hydraulic equipment or pipework in the engine bay, low power consumption and the convenience of adjusting the power assistance from the driving seat with the EZ unit. The hydraulic PAS kits are £2,350 and the EZ EPAS is £2,100 both fully fitted and including VAT. So on points the EZ kit looks better.

Finally two footnotes: as any PAS retrofit is a major safety related modification, it's essential the policyholder notifies their motor insurer with details of the conversion and who carried out the work. Most specialist classic car insurance brokers and insurers will simply record the information with no policy amendments, particularly where the installation has been carried out by a well regarded specialist known to work to high standards. This article is only for information and as it involves a safety critical area of the car, it is not a recommendation to use the modified parts required and the conversion work involved.

