

# DRIVE WITH FIVE

Roger Parker

## Ford Type 9 five speed gearbox

The most prolific five speed gearbox used is the very compact but strong Ford Type 9 five speed that was fitted to millions of Ford cars such as the Sierra and the beauty of using this gearbox is that being smaller than most MG gearboxes means the gearbox fits with no body modifications so is truly a bolt in change. It is about the same weight as a non-overdrive MGB gearbox, so that means it is around 6.5kgs lighter than an OD MGB gearbox.

This widespread availability, a long standing Ford reputation for good rear wheel drive gearboxes, and having a design that has a separate bolt on bell (clutch) housing meaning alternative housings can be cast to suit different engines, or a simple adapter plate can be made, is why there is a conversion for so many classic MGs. Indeed it is not just the classic MG scene where this gearbox is favoured, but other classic marques use it as well, plus with many additional variations and specifications it is a common gearbox used in motorsport applications.

The benefits of using this gearbox in classic MGs is well proven over many years and led by **Hi Gear Engineering**, run by retired engineer Peter Gamble and his wife who have been supplying five speed conversions using the Type 9 for a couple of decades. When I realised that we last looked at their conversions fourteen years ago and as things have changed clearly it was time we revisited **Hi Gear** and also looked at the other options.

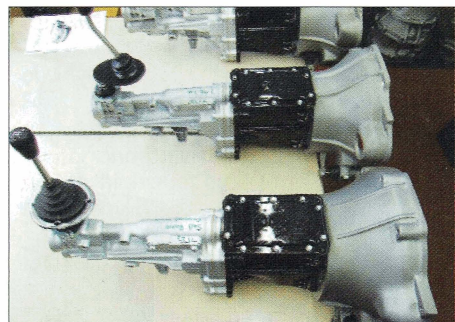
Fundamentally the same basic advantages still apply for a five speed conversion, which for a classic MG with a standard 4 speed gearbox are in order of priority...

- Higher fifth gearing allowing reduced engine rpm for the same road speed, usually around 10% lower.
- Reduced engine stress with engine turning over around 700rpm less in fifth.

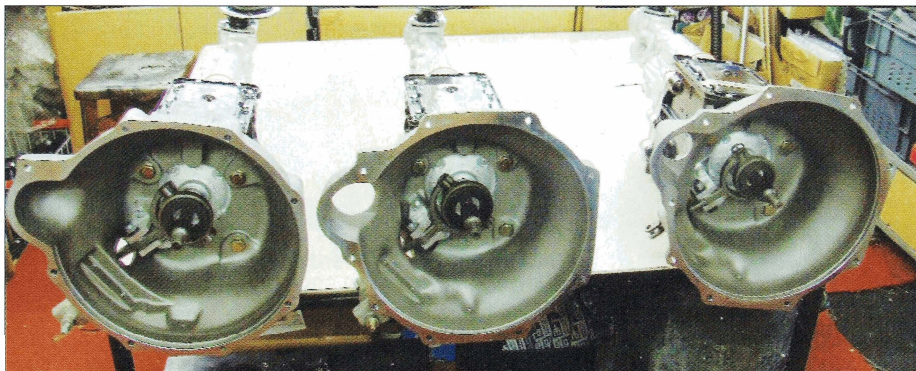
- Cruising fuel economy improved on average by around 10% through the higher gearing but also from reduced power absorption within the gearbox.
- Quieter running not just when in fifth, but also from a quieter running gearbox. This is more apparent on the three synchromesh gearboxes which have the always noisy straight cut first gear that always whines, or sometimes screams.
- Better acceleration from the better spaced gearbox ratios and lower power absorption.
- Pure bolt in fitting with no alteration to the car's structure. If the original removed parts are retained (*always advised*) then if there is any future reason to revert to the original standard spec then this is the same simple bolt in operation.
- Gear lever emerging from the same point as the original and being almost indistinguishable from the original in both looks and to a degree in feel also.
- The conversion is so highly regarded today that usually this enhances the car's value.
- Future spares supply is secure as the wearing items are all standard off the shelf parts.

Back in 2003 we reported on several hundred kits having been sold and today with that number having risen to over 7500 is testament to the conversions meeting all the above points, but with that time period it has also provided the confirmation these conversions are reliable, even though we knew that in the original Ford Sierra they often lasted for hundreds of thousands of miles.

Clearly one of the most important aspects of these conversions is how much does it cost and whether the benefits on offer are worth it. That judgement is obviously going to be an individual one, but when weighing up the pros and cons there is a very strong case to justify the expense, which for a Hi Gear MGB five



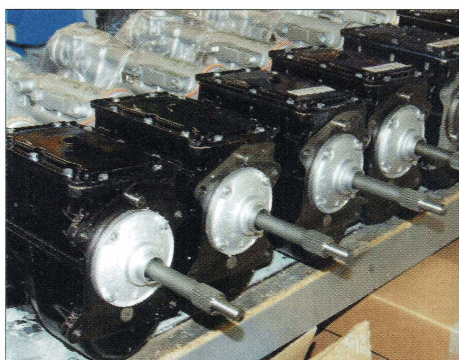
1 Hi Gear Engineering B series Type 9 gearbox conversions, four synchro MGB 1800 with pre engaged starter front, earlier three synchro MGB and 1600 MGA middle and 1500 B series rear



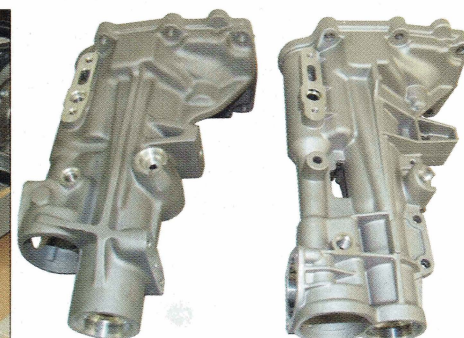
2 Bell housings from the front, L to R, 4 synchro MGB with pre engaged starter, earlier MGB and late MGA with three synchro and inertial starter, early 1500 B series



3 Selection of different gear levers used in Hi Gear five speed conversions to give the correct lever position look and look of the original gear lever



4 Selection of fully rebuilt Type 9 five speed gearboxes



5 Hi Gear manufactured new Type 9 short and long tail housings



speed conversion is approximately £1875, (£1020 for the conversion and £855 for a recon gearbox). The earlier breakdown of an overdrive conversion cost of approximately £1300 for a four synchromesh and £1500 for a three synchromesh conversion on a reasonable like for like basis shows why the five speed conversion has more MGB owners following this route. (Note, all conversions will require a different or recalibrated speedo, so add from £75.)

Of course those owners of other B series engined MGs (and other BMC cars) looking at adapting an MGB overdrive conversion would have to absorb the same costs, plus the need for additional conversion costs that would usually involve unacceptable tin bashing or cutting of the body. This then makes the totally non-invasive Hi Gear Type 9 five speed conversions so much more attractive. Of course cars like the MG T series can't consider the overdrive option so their benefits are greater still, especially as their older status means they had even lower gearing.

I mentioned that the Type 9 gearbox in standard form has a much closer and more sensible set of ratios and the most useful aspect of this is that second gear is around 10% higher than the historically low second gear of the MGA and B gearboxes and this means that overtaking in the 20 to 50mph range is so much more effective. However, for those with a desire for even closer ratios there are a number of alternative sets that can be specified, so ideal for the track day enthusiast.

Track use always adds considerable extra stress on a car and especially the transmission, so here it is worth mentioning that uprated torque capacity versions of the Type 9 are also available. This is ideal for coping with the heavily tuned MGB engine, or perhaps a supercharged version, then perhaps an alternative engine such as K series or one of a number of Ford engines. Modified MGCs would also seem prime candidates for using an uprated version of the Type 9. Uprated Type 9s have an additional £160 added to the gearbox cost, and various alternative ratios on offer have varying extra cost.

See [www.hi-gearengineering.co.uk/content/view/17/32/](http://www.hi-gearengineering.co.uk/content/view/17/32/) for more details.

## Brand new Type 9 gearboxes

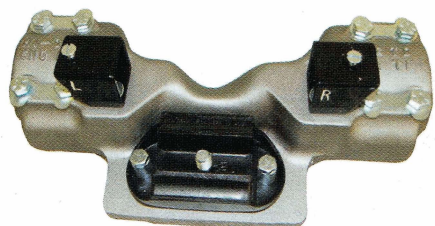
The Type 9 dropped out of mainstream use in 1991 and whilst made in millions there comes a time when availability starts to shrink, just as I have mentioned for MGB gearboxes. The fact that this gearbox is in such demand for a wide range of classic cars and competition vehicles has certainly had an impact on availability, plus just like the MGB gearboxes what is available has suffered more wear.

Hi Gear has seen this first hand and whilst the supply and ability to recondition gearboxes to a very high standard is still perfectly realistic, the future of this conversion could be threatened by the fluctuating availability of second hand gearboxes in the future. This is clearly outside the control of the company, so to overcome this and provide total future proofing of gearbox availability they have developed a 100% brand new Type 9 gearbox, which at the time of writing has successfully completed some rigorous testing and is running in several test cars and should soon be available.

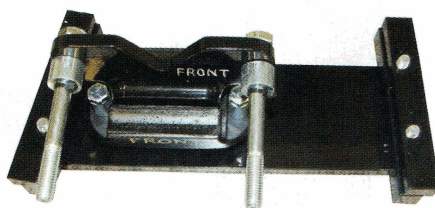
## Mazda MX5 Mk 3 gearbox

The most recent five speed gearbox conversion comes from **Vitesse Global** who supply new original Mazda Powertrain components. Their focus has been to supply the demands of small car manufacturers such as Morgan and Caterham, but in the MG world they are the suppliers of the Mazda MX5 2.0 litre engines and six speed gearboxes to Frontline for their MGB LE50 models and the more powerful 2.5 litre Mazda engines for Frontlines MGB Abingdon Edition models.

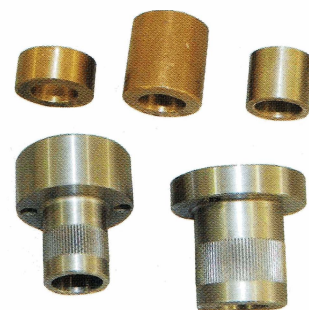
However, it is the specific demands of Caterham that led to the modification of new standard Mk 3 MX5 five speed gearboxes, which in standard form has a single piece cast gear case that incorporates the bell housing, just like the MGA, B, C and V8 gearbox. Caterham wanted to have the same flexibility of a separate bell housing as found with the Ford Type 9 and they covered the significant development costs of creating a new two piece case and changes to allow a mechanical speedo drive for the Mazda gearbox. Quite simply that opened the door for many other dif-



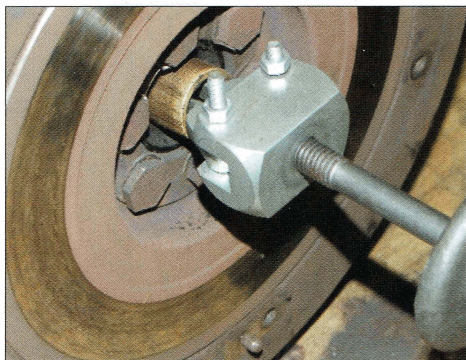
6 Hi Gear high quality castings, here showing a gearbox mounting for the MG TD and TF



7 Hi Gear simple but strong Type 9 gearbox mounting for an MGA



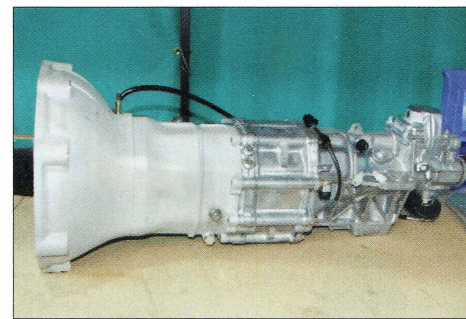
8 In all conversions a new crankshaft spigot bush is required and this is a selection that Hi Gear manufactures and uses



9 Removal of the original MG spigot bush can be troublesome but this simple extractor on a slide hammer used by Vitesse removes the bushes in a matter of seconds

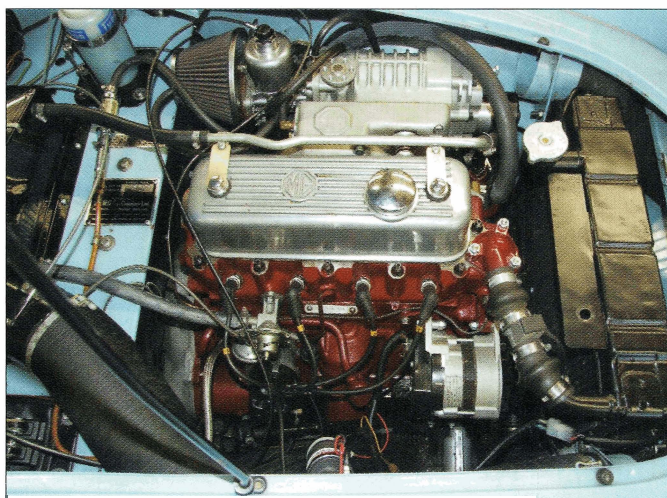


10 These five speed conversions need a hybrid clutch that usually consists of the original clutch cover that bolts to the flywheel and a driven plate that has the spline of the gearbox input shaft, with a release bearing to suit the application, all part of the kits. One off propshaft also part of the kit



11 MX5 five speed gearbox for MGB, note the matt castings of the gearbox case on the left is the new two piece design that allows a separate bell housing to suit different engines and the smooth finish gearbox case to the right is original Mazda





12 Hi Gear's superbly engineered MGA with its five speed Type 9 conversion having covered a totally reliable 90,000 miles, the last 5000 reliably coping with this MGB 1800cc supercharged engine

ferent vehicle applications for this new spec gearbox by creating alternative bell housings, again mimicking the Type 9.

The MX5 gearbox has a superbly justified reputation for reliability, spot on ratios and ease of use in Mazda cars. To date Vitesse have built and sold something over 5000 of these modified brand new gearboxes and importantly they have not lost anything in these alternative vehicles from the original Mazda MX5.

One of those alternative vehicles is a conversion for the MGB and more recently the same gearbox is now available for the MGB V8. Of course this means this gearbox will also be suitable for consideration for any rear wheel drive car with the Rover V8 and other applications are sure to follow.

Naturally the Mazda conversion is an obvious competitor to the long established Ford Type 9 conversions and there are a number of small differences, such as a concentric (*central*) release bearing, closer ratios, slightly lighter and only using new gearboxes. This is reflected in the slightly higher kit price of just short of £2500 including vat for the MGB conversions.

## Driving impressions

Over many years I have had the genuine pleasure in driving very many different classic MGs with five speed gearboxes from a wide range of manufacturers including Rover LT77 (SD1), Rover R380, Borg Warner T5, Toyota Corolla and Supra, Ford Type 9 and Mazda MX5, but only the latter two are in focus here.

## Ford Type 9 Gearbox

Without exception the Type 9 gearbox has worked exceptionally well by displaying all the dynamic benefits mentioned earlier, but the transformation has varied. Take Midgits and MGAs without the benefit of an overdrive and the transformation was huge largely down to the presence of the overdriven 5th gear, before the other benefits shone through. In MGBs the facility of overdrive negated that long overdriven gearing advantage, but the other attributes were immediately apparent within a few hundred metres driving. I have also experienced this gearbox in K series Midgits and MGBs and even a Ford Cosworth V6 engined MGB and put simply the gearbox is so slick and natural to use you tend to just drive and enjoy the benefits it delivers.

On my more recent revisit to Hi Gear I had a long extended drive of Peter's hard used MGA roadster, which since my last drive

had benefitted from an MGB engine that was fitted with a Moss supercharger. Being as Peter is based in Derby, as is Rolls Royce, I shall simply use an old RR term they used to use to describe the power and torque of their engines, but in respect of Peter's MGA and simply say both were more than 'adequate'.

Indeed the added torque and power mated to the five speed simply provided a Tsunami of smooth power and torque that delivered rapid acceleration on demand that was never left wanting in the modern traffic flows. This is certainly akin to the power delivery of modern turbo diesel engines, which in performance terms always crush any classic MG except perhaps the V8s.

The super refinement that was also present meant that whether travelling behind a local bus that stopped every few hundred metres before easing past in whatever gear you choose. Then there was the time when leaving town and at the first overtaking opportunity dropping a cog or two and then putting distance between you and the annoying BMW, that was previously trying to sample the inner delights of the MGA exhaust pipe, was simply infectious. Of specific note was that this specific five speed gearbox has been in the car for around 90,000 miles including long

continental runs, and around 5000 of those were with the new high powered engine.

MGBs with overdrive offer the same overall gearing so the cruising benefits are not the same as non-overdrive cars but even so the slick gear change, quieter operation and improved acceleration through the gears is immediately present. One interesting direct comparison I do have is with MGOC Spares 1964 OD equipped tuned 2.1 litres MGB. The surprise is that the massive torque increase of that improved engine actually amplified the negative aspects of the car's original three synchromesh gearbox and specifically the gap between the second and third gear. Therefore when the car was finally fitted with a Hi Gear five speed conversion the positive change was more pronounced than would have normally been the case if the engine was standard.



13 The complete Hi Gear kit

## Mazda MX5 gearbox

My driving experiences with the Vitesse Mazda MX5 five speed gearboxes involve both an MGB 1.8 and a V8 conversion. The conversion for both was superb and having experience of the MX5 I can confirm that there is certainly no loss from the conversion in either car. Ratios are superbly spaced and as the MX5 has the same 3.9 final drive ratio as an MGB the gearing is still right to exploit the somewhat lesser power output of the 1.8 B series engine compared to the MX5, although torque outputs are not quite as diverse. In the V8 with oodles of torque and a peak power somewhat above the MX5 the higher final drive balances the overall performance very well and whilst the beauty of a V8 is that torque, the presence of the Mazda gearbox encouraged you to use the gearbox, which was lighter and slicker than any LT77 or R380 Rover gearbox equipped MGB I have experience of including my own cars.

One thing that shines through is the fluidity, so praised with the MX5, is also present in both conversions and this promotes, even encourages you to use the gearbox more than you would normally, just for the hell of it. Matched to this is an equally light and responsive clutch.

It is fair to conclude that we MG owners are spoiled for choice and that choice is very good whichever direction you may choose to go. This isn't the only area where we are spoiled for quality choice and if you were to travel back in time to 1980 and announced what would be available for our treasured marque in the following decades you would be locked up in a mental institute and the key thrown away.