



As a follow-up to his article in *Minor Matters* Vol. 35/5, **ANDREW BYWATER** offers some further advice on sourcing parts for the A-series gearbox.

### Is it a good one?

Parts supply has improved a little for the 1098cc 'ribbed case' gearbox, particularly in respect of the laygear (BMC no. 22G83) and the 2nd gear (22A461). Limited quantities of these have been manufactured for some transmission rebuilders and Morris Minor specialists, but be careful as quality in the past has been variable on some reproduced items. This applies particularly in the area of heat treatment, which when done properly adds cost to the component. The surface of the tooth needs to be hard to resist wear, whereas the core of the gear needs to be tough to resist shock loading. Think of the difference between a stick of celery and a carrot: the celery will bend to a degree before it snaps; a carrot will snap. Another analogy could be a comparison between toughened and standard glass – both dimensionally identical in the window frame, but reacting very differently when impacted!

Many of the traders advertising in *Minor Matters* supply gearbox parts but if you can't find what you're looking for, another useful source of new parts is the MG Owners' Club spares website [www.mgocspares.co.uk](http://www.mgocspares.co.uk), under 1275cc Midget. Avoiding the gears, which are different, many of the peripheral items are the same as the 1098cc Minor gearbox, for example layshafts, baulk rings, selector rods and forks, and most of the bearings. If you use the original BMC part number



Fig.1. 1098cc laygears and 2nd gears.

from the Minor manual you can select corresponding items from this site.

It is sometimes possible to obtain limited quantities of genuine new old stock parts from America. Prices tend to be a little lower than in the UK, but by the time you factor in shipping and import duty, they become expensive. eBay can be another source of parts if you are prepared to wait for the right part to come along.

Unfortunately, apart from the occasional item appearing on eBay, things aren't so rosy for people with standard 948 and 803cc cars. Owners with 948cc-engined cars, particularly in the UK, can consider upgrading to a 1098cc gearbox unless strict originality is important.

Several of the transmission specialists also offer 948cc hybrid gearboxes. Using 1098cc internals combined with some machining, an outwardly standard-looking gearbox can have the benefit of baulk ring synchromesh and better spares availability. I even know of a specialist who is planning to do the same with the 803cc gearbox. In both instances with these 'hybrid' gearboxes, particularly the 803cc version, consideration will need to be given to the driveability of the car, due to the different ratio gear sets involved. A change in final drive (differential) gearing may need to be considered.

### Secondhand units

When buying secondhand 1098cc or 1275cc gearboxes it is handy to be able to conclusively identify what you are buying, as the aluminium casings are largely identical. Here the Minor owner is more fortunate than his MG cousin. The majority of these ribbed case gearboxes are of Morris Minor origin, but tend to be advertised as 'suitable for Morris Minor and MG Midget'. The Morris Minor gearbox, although perfectly adequate for the car for which it was intended, is of weaker construction and with lower ratios than the MG item. There must be many MG Midget owners driving cars with unknown history, disappointed with their car's performance.

The 1098 and 1275 'Spridget' gearboxes are stronger because the 2nd and 3rd gears run on needle roller bearings rather than on phosphor-bronze bushes as in the Minor box. The Spridget gears, as well as being too high a ratio for a standard Minor, have a larger central hole to accommodate the needle roller bearing, and therefore are not interchangeable with the Morris Minor items.

The Spridget gearbox is a good match when upgrading the engine to 1275cc on the Minor, but the more common matches to this are the Marina/Ital (Triumph-based)



Fig.2. Morris Minor mainshaft and bushes

- If the clutch bearing release arm ends with a square-sectioned fork with a short rod pivoting within it (Fig.3), this type was designed to be operated by hydraulics as on Austins and MGs. Identification by the release arm is not conclusive in itself, as Austin A35/A40 boxes are the same internally as the Morris Minor and the arm can be easily swapped over to suit the application.

- More conclusive evidence can be gained with the

gearbox removed from the car by looking for a part number on the input/1st motion shaft. This will require thorough removal of the inevitable oil/dirt deposits. A shaft marked 22G171 identifies the gearbox as being a standard 1098cc Morris Minor; any other number generally indicates it as being a Spridget, for example 22G229 or 22G1117 are examples of 1275cc gearbox numbers.

- Another indicator, although not conclusive, is that on some late Spridget gearboxes, there is a screwed port below the gear lever in the gearbox extension (Fig.4). This port appears on the later MGs to accommodate the reverse light switch, but it can be retro-fitted to the Minor gearbox. If these MG remotes can be obtained then they present the Minor owner with a neat way of retro-fitting a reverse light switch.

Sprites and Midgets were exported in fairly high numbers to the USA and Canada, and some of these gearboxes ended up in Morris Minors. North American owners would be well advised to confirm that their gearbox is a standard Minor unit, particularly if there are gaps in the car's history, before ordering parts. I know of owners who have ordered parts using the correct BMC part number, but have found them to be unsuitable upon delivery.

and the Ford Type 9 gearbox which have synchromesh on 1st gear (unlike the Minor and early Spridgets) and, in the case of the Ford unit, a 5th gear. External identification can be made as follows:

- Are there any numbers stamped on the casing? Anything starting 10MA is likely to be Minor; '10CC' indicates 1098cc early Sprite or Midget (quite rare); and 12CC, 12CD, 12CE are 1275cc Sprite/Midget variants.

- If the clutch release arm is still fitted, how does it terminate? If it's in a loop like a magnifying glass (Fig.3), then it's likely to be for the Minor. The loop or hole is to accommodate the mechanical clutch release linkage, particular to the Morris Minor.



Fig.4. Some late Spridget gearboxes have a screwed port to accommodate the reverse light switch.

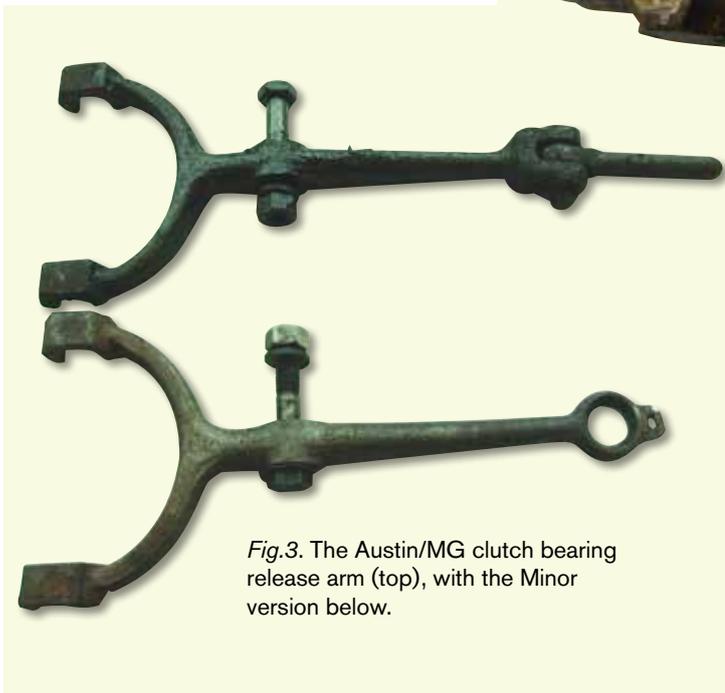


Fig.3. The Austin/MG clutch bearing release arm (top), with the Minor version below.



Fig.5. The 1098/1275cc casting (left) has a deeper step in the round hole (counter-bore) than the 803/948cc version (right).

## Bearings

For most of my career I have taken bearing quality as a 'given', but recently concerns have been raised by some customers as to the dimensional accuracy and general quality of some bearings, particularly mainshaft bearings. Part numbers in question are:

- 2A3245, 10G141, or 2LJ1G 97DG 1L (15.5mm thick approx) – 1st motion shaft bearing on all types as well as the 3rd motion shaft on the 948 and 803cc gearboxes
- 22A465, 10G184, or 3LJ1G 97DG 1L (18mm thick approx.) – 3rd motion shaft bearing on 1098 and 1275cc gearboxes

I am not aware of quality issues with any of the other bearings in the gearbox (lay shaft and 1st motion pilot). As always, buy the best you can from a reputable supplier.

Some concern has also been raised about the use of 'sealed for life' bearings, i.e. bearing with a race packed with grease and sealed on both sides with a black seal. Due to availability issues this bearing has become more common and its use *may* cause oil starvation and premature gearbox failure. In the case of the 1st motion shaft this seal may helpfully aid in reducing oil loss from a worn front cover. The jury is still out on this one, so if you have any concerns, prise the grease seals from the new bearing and revert to 'standard.'

The 22A465 bearing can be hard to source as uniquely it has a 'fatter' inner race; some suppliers supply a kit comprising a 2A3245 bearing and a spacer washer. To date I have not heard of any problems with this arrangement.

## Gear levers

Many people treat gear levers with a degree of complacency, basically finding 'any old stick' and fitting it. If you exclude the long 'magic wand' type fitted to Series II cars and the shorter more 'racy' one from the Spridget, there are two types: 948cc and 1098cc, essentially similar, but critically different in one respect. The distance between the bottom of the larger ball and the end of the lever is 25.5mm on the 1098, with the 948cc variant being shorter at 22mm across the same dimension (*Fig.8*).



*Fig.6.* The third motion shaft bearing on 1098/1275cc gearboxes (right) is thicker than on the 803/948cc version.



*Fig.7.* Bearings and bushes from the 1098/1275cc box (top row) and 803/948cc version (bottom row). The 803/948cc layshaft bearings, bottom right, are the modern caged type.



*Fig.8.* The 1098cc gear lever (top) has a longer end section than the 948cc one.

*Fig.9.* The 1098cc clutch release bearing (right) has a deeper offset than the 803/948cc version.

## Clutch release bearings

While not a gearbox part as such, I thought a mention might be useful. The 803 and 948cc carbon-faced bearings are the same, retained by coil-spring clips. The 1098cc version, although similar in design, has a deeper offset (*Fig.9*) and is retained using spring-metal clips over the locating pivots. Tempting as it might be to use any random bearing found in that cheap batch of autojumble, the consequence could be damage to the clutch cover/pressure plate or difficulty in engaging gear, requiring subsequent removal of the gearbox to cure the problem.



## Speedo drives

There are essentially two types of speedometer drive on the Morris Minor A-series gearbox. Series II cars (803cc) use a coarse tooth on the drive pinion driven by a corresponding drive gear mounted on the 3rd motion shaft. The second type of speedometer drive was introduced with the 948cc cars, initially in a similar brass pinion housing as the 803cc version but with a finer tooth on the pinion. Later 948cc-engined cars and all of the 1098cc variants used a nylon pinion housing and pinion gear mounted on a steel shaft, but still driven by a steel gear on the mainshaft.

Both of the post-Series II variants are interchangeable in practice, just being made of different materials. The later type are probably better, primarily because if there is a seizure in the speedometer head or drive cable the nylon type of pinion will shear before the mainshaft gear, enabling repair to be effected without dismantling the gearbox as the pinion can be withdrawn from the casing externally. The plastic type are also probably a little quieter in operation. Pinion oil seals for the drives are available from the usual stockists and will prevent leaks and oil tracking up the cable into the speedo head.



Fig.10. Speedo drives, top to bottom: 1098/late 948cc; early 948cc; 803cc.

## Gearbox extension bush (2A3325)

Sometimes diligent home rebuilders chose to replace this thin-walled bush which sits in the extension housing in all the variants. It fits between the aluminium casing and the 3rd motion (output) shaft and helps to centralise and support the shaft as well as providing some oil retention, although this is mainly done by the rear oil seal

assembly. Ideally these thin-walled bushes should be 'reamed' once fitted as slight distortion can occur. This may only be noticeable once the gearbox is back in the car, causing difficulty in engaging the sliding sleeve on the prop shaft due to ovality in the extension bush.

Many people may have escaped problems fitting these bushes without subsequent machining but the possibility, in a few unfortunate instances, remains.

## Series II/803cc bits and pieces

There are not so many people running these cars in standard form in the UK, and many have been upgraded to later gearboxes. Relatively more exist overseas along with the 948cc variant with fewer 1098cc examples, as the export boom was largely over by the early sixties.

To my knowledge, nobody is reproducing new parts for these. New old stock parts are virtually extinct for 948 and 803cc gearboxes, with the possible exception of 803cc reverse gear idlers, and here lies a potential pitfall. Part number 2A3008 reverse gear idler (Fig.11) was only used for a short period of time on early Series II Minors and Austin A30s, running on a thinner shaft approximately

12.5mm in diameter. This shaft was soon increased to approx. 14mm to take the later 803cc reverse gear, part number 2A3280. This larger diameter shaft, although not the gear, is used on all of the later gearboxes.

The early 2A3008 gear appears quite often on eBay and at autojumbles, tempting the unwary into making an unsuitable purchase. One way to avoid this trap is by checking the gearbox side cover. Most of the later ones are marked



Fig.11. The early Series II reverse gear idler (2A3008), left, runs on a thinner shaft than the later Series II version (2A3280).

'MOWOG' and held in place by studs and nuts, but very early ones had 'Britmo' instead of MOWOG (Fig.12) and were secured by setscrews only. This is not an absolute way of identification but it may help.



Fig.12. A side cover marked 'Britmo' may identify an earlier 803cc gearbox, but this is not conclusive.



Fig.13. Later 803cc gearbox cover.

Particularly in export markets such as Australia, New Zealand and South Africa, where people are really struggling to find serviceable gearbox parts, 803 and 948 internals are swapped over, usually by swapping the rear extension and/or remote over along with the selector rods. This solves the problem of keeping a lightly-used show car mobile, but causes a parts identification problem for the new owner if the car is sold on. If you are outside the UK, it might be worth stripping the box first in order to identify which lay gear is fitted. This will help you to source the correct gears which match it and avoid any unnecessary shipping charges. ●

I hope readers will find this information useful in understanding any gearbox issues. As early BMC parts were rarely stamped with part numbers, I will be happy to try to help with parts identification or supply problems, using some basic dimensions and tooth counts.

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