

MG TF Stepspeed Primary Bearing Replacement

(produced by David Reed)

Whining noise from CVT gearbox

In December our beloved MGTf 2002 Stepspeed started to make a whining noise (similar to a worn wheel bearing) from the vicinity of the gearbox. Unsure of the precise location of the noise I scoured the internet to see if other owners had experienced a similar issue and also to obtain some reassurance that I wasn't going to need a new gearbox!

My initial research wasn't good reading as most forums indicated that the CVT gearbox was difficult to work with, was prone to failure/self destruction if the wrong oil was used, and in many cases a replacement gearbox would be deemed most likely. Specialist garages offered reengineered units but extremely costly. On the bright side I discovered some information advising that the noise could be from the primary bearing but it didn't explain how to verify this or the replacement process. Never one to be put off by a challenge I decided to undertake a project to find out how to diagnose the fault and to learn how to fix it.

My research

I found the following information resources extremely helpful;

- MGOC technical department
- [MGF and TF Restoration Manual by Roger Parker](#) (PAGE 148/149)
- RAVE MG Technical Information (CD) – repair 44 (21- 23)
- [MG Rover Technical bulletin TB0116 issue 2 – 24th March 2004](#)
- [MG Rover Technical bulletin TB0126 issue 1](#)
- [MG Rover Technical bulletin TB0118 issue 1](#)
- Video - Mini cooper cvt transmission teardown Part1 <http://www.youtube.com/watch?v=DmcT7Huay9A>
- [Rimmer Bros website](#) (was able to supply every part)

Tracing/identifying the cause of the whining noise

The noise was only apparent in forward gears, immediately from pulling away. MG Rover Technical bulletin TB0116 gives pre checks /road test examples which indicate when the primary bearing can be at fault. As an additional test I took our car up to 30 mph and then for few seconds dropped it into neutral at which point the noise disappeared (this is not good practice so keep the time in neutral to a minimal). This test led me to believe that my primary bearing could be the cause of the noise. The only real way of knowing for sure was to replace it!

Parts

- As per [MG Rover Technical bulletin TB0116 issue 2 – 24th March 2004](#)
- CVT oil ECL799 to replace any lost oil which is displaced from the oil pump (oil loss was no more than ½ a litre). Others claim there is alternative oils available, however I played safe and bore the cost of the genuine article.



(please note no picture of TYG000270 (4 replacement bolts)

Specialist tools

I have a standard tool kit but you will need 2 specialist items

- MG Rover Assemble tool part numbers 44-022 and 44-023. I couldn't locate these so purchased a Sykes Pickavant LKV 52 Ball Bearing Puller, Ball Race Extractor Kit (this kit is



extremely hard to obtain or hire. It could be possible to fabricate a tool for the purpose as it was found that the bearing was not a very tight fit).

- 46 mm socket to fit air impact wrench (the cheapest way I found to obtain a suitable socket was to purchase a 1,13/16" deep impact socket from Halfords. It fitted directly onto the ½ inch air impact wrench (not exactly a snug fit over the retaining nut but it is close enough and the price is right!).

Procedure

Step 1

- Jack up car both sides and support with axle stands
- Remove near side rear wheel and shielding (if present) to expose transmission end cover
- Remove 3 X 10mm cover retaining bolts and tags (access to the top bolt is restricted and in my case using a crescent shaped 10mm spanner working from the left hand side, working from above and below the sub frame it allowed me to remove it). In some cases the height of engine may need to be lowered to gain access to top bolt
- Do note that on the periphery of the cover there are 3 protrusions. When time comes to replace the cover ensure that these do not align with any of the fixings as you will be unable

to fit the tags and the bolts. You would be as well to mark the cover aligning it to one of the visible bolt holes

- Remove cover by tapping each side using a blunt screwdriver



Step

2

- With cover removed pitot chamber is now exposed



Step 3

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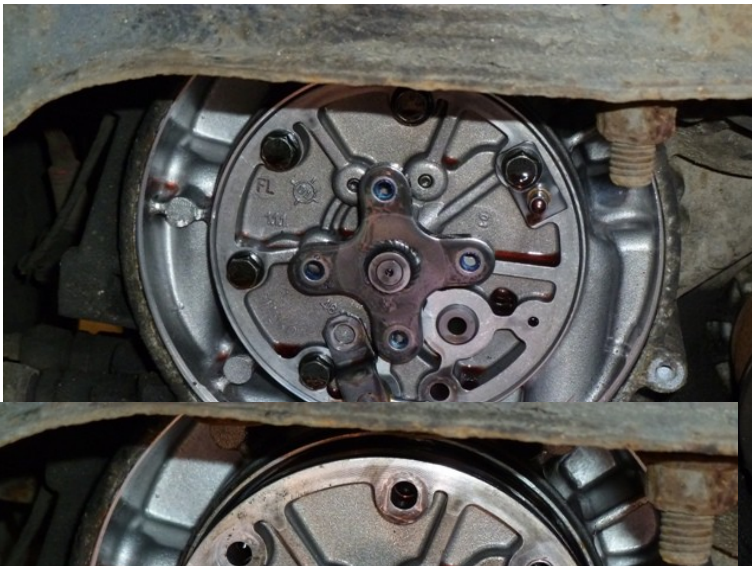


Remove and discard the 4 X 8mm bolts securing the pitot chamber
Rotate the pitot chamber sufficiently to gain access to the lower right hand oil pump bolt which secures the short pitot tube.
Remove the bolt and using

your finger rotate the pitot tube securing tag as far anti clockwise as it will go. This will then allow the pitot chamber to be removed

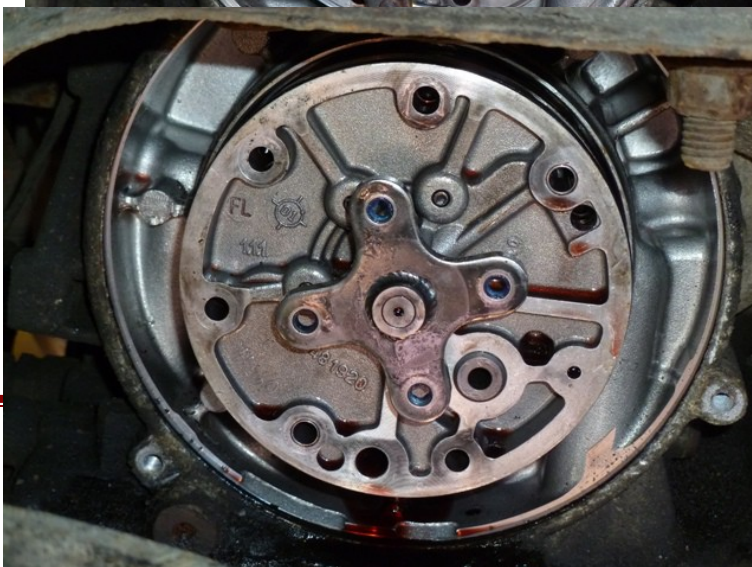
Step 4

- Remove lower pitot (pull out) undo remaining 5 pump bolts and remove top right hand pitot tube (pull out)
- Take note of pump casing markings and where they sit in relation to the outer housing so that realignment upon refitting is correct as extraction (I used the FL characters seen at the at 10 O clock position)
- Carefully prise out the oil pump (use a couple of peices of wood to protect the primary housing and prise against the 4 legged centre metal spider



Step

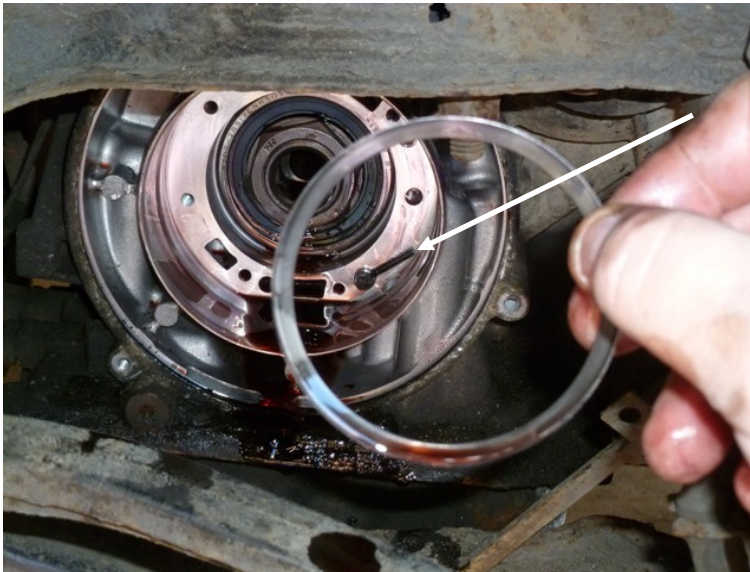
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- Pump shown partially withdrawn

Step 6

- Remove pump
- Remove Belleville washer which is situated behind the pump and fits against the outer track of the main bearing race. Do note which direction it faces , see [MG Rover Technical bulletin TB0126 issue 1](#)
- Please also note the little pin in the bottom right hand corner, this pin can rotate but just ensure it stays in the position as shown



Step 7

- Lever out primary bearing rubber seal
- Note that the bearing has lost its factory lubricant and transmission fluid has taken its place (this I feel is the casue of the premature bearing failure)



Step 8

- Remove retaining nut (which was not found over tight) using air impact wrench. The impact wrench is needed as the shaft can rotate.



Step 9

- Select correct extractor legs from kit. At this point it was found necessary to place a deep socket of a suitable size into the centre of the shaft; this will go in about 25mm and butt up. Place a large bolt in the end of the socket facing you to allow the extraction bolt to press against. Assemble the puller using all 4 legs and insert between the bearing tracks

- Tighten the extractor bolt and remove primary bearing (it was found to be fairly fiddly to assemble the puller into position)



Step 10

- Primary bearing removed



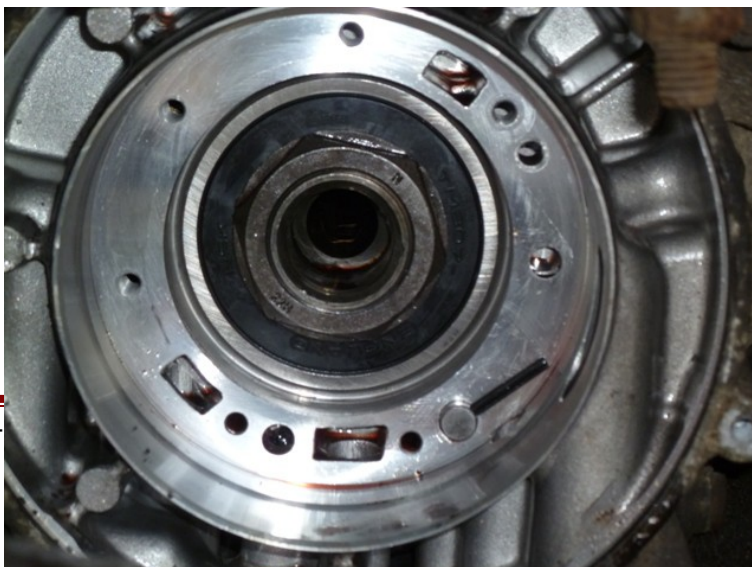
Step 11

- Clean primary bearing bore /shaft etc. and insert new bearing (ours pushed on quite easily)
- Gently tap the inner and outer rings to fully bed the primary bearing into position (I used the old bearing on top of the new one and a soft faced hammer to lightly tap the new bearing partially in. I then used a soft brass drift gently tapping the inner and outer races until the bearing bottomed in its housing. Note it is important to use the gentlest of persuasion to fit this bearing. Ideally, it would be best to fabricate a tool for this purpose to place even pressure on the inner and outer race at the same time



Step 12

- Fit and tighten nut with air impact wrench minimum torque 180Nm. It is not possible to ascertain 180Nm but a good rat a tat tat will be sufficient (it is not possible to use a torque wrench as the shaft tries to rotate). You could if so you wished add a dab of loctite to the nut.
- Fit new Belleville washer (ensure it faces the correct direction as per removal, refer to bulletin)



Step 13

- Prepare to refit oil pump
- Lubricate and fit new O rings (x2) to oil pump
- Feed oil pump into gearbox and align the markings (use a pump bolt to aid alignment)
- Push the pump fully into position
- Refit the top right hand pitot tube
- Fit the 5 securing bolts with the exception of the lower right hand bolt and tighten to 10Nm
- Fit lower pitot tube and position as in photo below
- Place pitot chamber cover over the 4 legged driver
- Rotate the pitot chamber to gain access to the lower pitot tube, rotate the pitot tube tag clockwise to enable final bolt to be refitted and secure the pitot tube (this is a reversal of step 3)
- Renew the outer O ring which seals the end cover (I needed to use grease to keep it in position)



Step 14

- Align the pitot chamber to the central drive and secure using 4 new bolts (which have new locking compound already on and tighten)



Step 15

- Carefully clean outer periphery of end cover and lightly grease outer rim
- Place the cover into position, do note that on the periphery of the cover there are 3 protrusions, and ensure that these do not line up with the fixing holes. Lightly tap the cover so that it is fully home
- Refit and tighten retaining bolts and tags
- Refit shield and road wheel
- Lower car



Step 16

- Start engine and run until warm, recheck oil level after running car through all gears
- It was apparent on start up that there was various concerning noises which came from the gearbox but faded as the pump picked up oil and expelled any trapped air. These initial noises could cause you considerable concern if they were not anticipated
- Check transmission oil level and top up if necessary
- Road test followed up oil level recheck
- Hopefully, you will enjoy the same success I experienced

This article has been written in good faith and the author cannot be held liable any actions arising from using the given information.