

B2 Piston Failure in Mercedes-Benz 722.xxx Automatic Transmissions

Introduction

The technical material for this FAQ (Frequently Asked Question) was provided by Stu Ritter of Stu Ritter Mercedes-Benz Technician, Inc. of Denver, Colorado, was edited by Richard Easley of Baylor University, and is provided as a service to the subscribers of the Mercedes-Benz Discussion List.

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The B2 Piston Problem

The B2 piston in specific transmission numbers within the 722.3/4/5 category of Mercedes-Benz automatic transmissions is a known problem part that is likely to catastrophically fail. There is an improved version of the part available as a replacement part from Mercedes-Benz parts departments . The B2's design was improved in the late 80s, so there are still a lot of MBs running around with the old-style B2. And, the addition of the "T" sealing ring purportedly did not occur until late 93/early 94. Check with your dealer for specifics for your particular Mercedes-Benz.

Specific modifications related to B2 pistons include:

1. The outer sealing ring was modified from a flat ring to a "T" ring). [It is important to note that the important purpose for the improved "T" ring: there is more surface area to contact the outer bore, but even more importantly, the outer parts of the "T" seal effectively preclude piston-to-bore contact which could result in binding, not to mention wear of the outer bore's surface.]
2. The early style B2 piston's mold was changed to beef it up to reduce the potential for breakage.
3. The sleeve in which the B2 piston operates was changed from metal to plastic to reduce the possibility of binding (and it is imperative that this sleeve be changed.)
4. Finally, the release clearance specification for the B2 piston was changed by the factory to reduce delayed engagement complaints.

I would strongly recommend preventative maintenance on this item if you have one of the affected cars and that would be roughly any pre-94 MB for the "T" sealing ring and pre-87-89 for the sturdier B2 piston. Note that if you have a catastrophic failure with a B2 -- and you are away from your trusted shop -- it is very unlikely that a shop will replace the B2 piston alone, particularly if it is a non-MB transmission shop. Nonetheless, I would recommend that you at least print out this FAQ and keep it in your car. This way, if you haven't replaced the B2 and it fails, a shop might be more willing to do the replacement for you if it happens.

As an owner of a Mercedes-Benz with one of these transmissions, it is highly recommended that you replace this component as part of a preventative maintenance schedule. The part is reasonable in price (~\$110.00 from MB) and the part can definitely leave you stranded if you are driving an automobile with an older-style B2 piston. Undoubtedly, many 722.3/.4/.5 transmissions have been rebuilt or replaced needlessly as a result of the catastrophic failure of this one critical component.

On the other hand, if you are a risk-taker, these pistons have been known to survive for years and years (mine had about 135K on it when it failed). So with this in mind, make your own personal risk-assessment and go from there. I like peace of mind and the general extreme reliability of Mercedes-Benz products, so I will automatically replace this known problem part on any subsequent Mercedes-Benz product in the future that is within the relevant range.

Assumptions

1. Using the categories of mechanical ability from the Mercedes-Benz Discussion List <<http://hsb.baylor.edu/html/easley/mercedes/subscribe.html>>, you need to be at the level of "Medium Do-It-Yourselfer" at minimum, to replace the B2 piston. If you are below that level, you may want to provide these instructions for someone who is at the medium level or beyond.
2. Please note, however, that if your transmission has suffered catastrophic failure (as indicated below), it would be beneficial to you to either 1) print this FAQ out and take it to a professional for analysis of B2 piston failure or 2) if you are comfortable with doing the removal of the piston (if you are at a medium DIY level or beyond), there is no additional "cost" in checking this component prior to a transmission rebuild or replacement. In other words, it would be advantageous to rule this problem out before spending major money on a (potentially) unneeded transmission rebuild or replacement.
3. A scrupulously clean transmission housing, including B2 piston cover, surrounding area including transmission tunnel, transmission pan, and

work area should be evidenced before commencing B2 piston check and repairs. Automatic transmission repair work requires a level of cleanliness far beyond typical repair standards. For example, even a task as simple as checking the fluid level in an automatic transmission is best performed by wiping the dipstick clean with one's fingers and then wiping the fingers with a rag. This ensures that no lint enters the transmission.

4. The W126 chassis (S body) is the only affected chassis in the Mercedes-Benz line that will permit easy removal/replacement of the B2 piston with the transmission remaining in the vehicle. All other bodies: W107s (SL series), W124s (86-on 250Es, 300Es, 300Ds, 300TEs, 400Es, 500Es), W201s (190 series), and W123s require transmission removal for easy access to the B2 piston. Note that it may be possible to do the replacement with the transmission in the car (see the W107 replacement done by Barry Stark), but it will be difficult due to clearances.

Symptoms of B2 Piston Failure

1. Catastrophic failure of transmission in forward gears
2. Partial engagement of forward gears, with slippage progressively reduced as transmission is shifting from 1-2, 2-3, and 3-4.
3. Reverse gear engagement normal

Tools needed for checking B2 Piston

1. Professional-size floor jack (or lift)
2. 4 heavy-duty jack stands (or lift)
3. 10-15 shop rags
4. Small high power light
5. Assortment of flat-tipped screwdrivers
6. Prybar

Checking/Replacing B2 Piston

1. Jack up the car as high as safely possible for undercar-access.
2. Drain the transmission and torque converter, removing the transmission pan in the process.
3. Put gentle pressure on the rear transmission mount with a floor jack. Then, remove the four bolts that attach the rear transmission mount to the body. Slowly release the floor jack. The transmission should only drop about 1-2Lay a protective pan or sheet directly underneath the right side of the transmission toward the rear.
4. Locate the B2 piston cover [the second (rearmost) of two large circular covers on the right side of the transmission toward the rear].

5. **Using a pry bar, push the rear of the transmission to the extreme left. This will enable you to shift the transmission to the left to gain greater access to the B2 piston cover.**
6. **While pushing the B2 piston cover in, remove the circular spring-type circlip that retains the B2 piston cover. [Note that the B2 piston cover has spring pressure behind it, but this tension can be held with your hand.]**
7. **After removal of the circlip, let the cover release gradually. You will need to have several shop rags handy, because you will lose some fluid in the process.**
8. **At this point, the B2 piston can be removed by disconnecting it by going up through the pan opening and removing it out the right side of the transmission. If it has already fallen out into your hands in several pieces, well, you know that you've found your problem.**
9. **A most important point: do not, repeat: do not, remove the very large "O"-ring that seals the B2 piston cover. It is near impossible to re-install on a transmission still located in the vehicle.**
10. **If your transmission has a metal sleeve for the B2 piston to slide in, replace it with the improved, plastic version that reduces the potential for binding.**
11. **Installation is reverse of the above, using extreme care and cleanliness in the work area and the transmission.**
12. **Replace transmission filter.**
13. **Clean transmission pan, ensuring that no lint remains in the pan before mounting to the transmission.**
14. **Using an inch-pounds torque wrench, torque transmission pan bolts to factory-specified settings.**
15. **Replace transmission fluid. [Checking the fluid level in an automatic transmission is best performed by wiping the dipstick clean with one's fingers and then wiping the fingers with a rag. This ensures that no lint enters the transmission.]**
16. **Note: Do not overfill transmission. Automatic transmission fluid expands when heated, so it is best to leave the level around a pint low until transmission is adequately warmed up.**
17. **Road test.**

Finally

Please let me know if you complete this procedure successfully; took a while to type this, and I'd appreciate knowing when each person has completed the repair! Please e-mail me at richard_easley@baylor.edu

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