



Mercedes 722.6 Series: Keeping It Simple

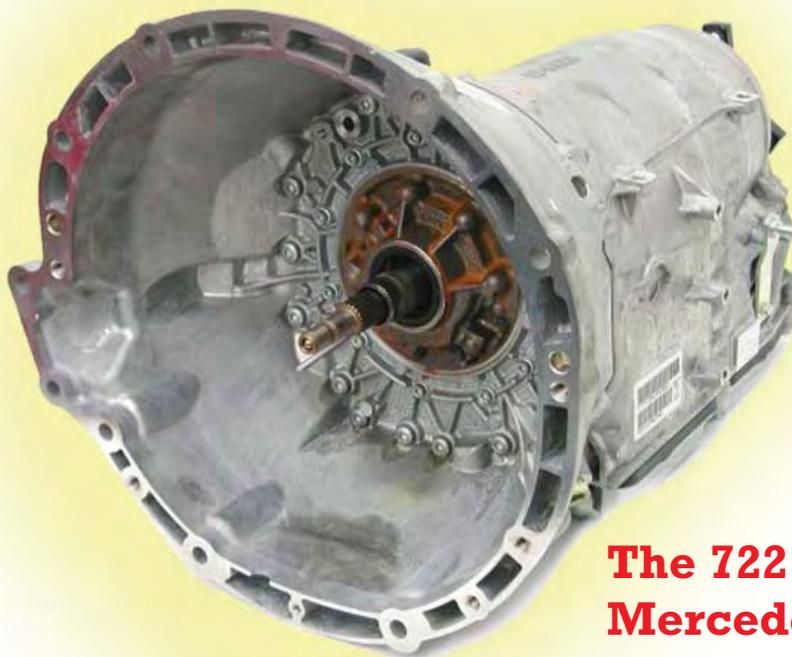
The 722.6 has been around since 1996 in Mercedes-Benz vehicles and has been offered in Chryslers and Jeeps since 2001. Until recently there hasn't been a great deal of technical information available to the transmission repair industry; that is, unless you can read German. In this edition of *Fun With Transmissions*, we'll take a look at some problem areas and the very simple solutions on this series of transmissions.

These transmissions don't come out of the vehicle very easily. Some say that R&R is just a downright bear! This isn't the case once the transmission hits the bench; a definite departure from previous Mercedes transmissions. We all recall those fun valve bodies with 3 layers, lots of small parts, and gaskets that never seem to come off the separator plate.

The first notable feature before the teardown is there are no brake bands to adjust on the 722.6. This eliminates several possible leak points. Secondly, the tail housing is incorporated into the main case housing. Finally, given that this is a completely computer-controlled transmission, the modulator diaphragm and valve have been eliminated.

There are only two parts on this transmission that are interchangeable with earlier units: the output shaft flange and the flange nut.

This is an easy transmission to tear down and reassemble, so we won't bother going through every step in the teardown procedure; instead, we'll look at the major highlights.



**The 722.6
Mercedes**

Once you've removed the valve body and bellhousing bolts, the case just lifts off the entire gear train assembly (figures 1 and 2). This makes for easy gear train disassembly and reassembly.

Front Pump

The pump body and bushing are much the same as in years past. Carefully inspect the pump bushing for wear. These bushings are machined to fit the torque converter at the factory. The factory keeps about a 0.002" to 0.005" maximum clearance on this bushing. This is easy to check: Apply a piece of cellophane tape to the converter hub (figure 3). Cellophane tape is usually 0.0015" to 0.002" thick. When you slide the pump onto the converter hub, there should be very little to zero movement at the bushing. If the pump still rocks a bit, try another piece of tape and the pump should barely fit.

The pump separator plate is a latex-

coated plate (figure 4). The latex coating serves as the pump-to-case gasket and is available from the aftermarket. You should replace this plate during every rebuild.

The B1 clutch assembly has the only molded piston in the unit, and, like the pump plate, should be replaced on every rebuild. The piston is also available from aftermarket parts suppliers. To remove this piston, strike the snap ring sharply with a screwdriver and hammer to bounce the L-shaped snap ring out of the groove, much as you would the snap ring on the E4OD overdrive piston assembly (figure 5).

Clutch Drums

For the most part the clutch drums are pretty basic. All the clutch drums use Bellville return springs. These springs can be a bit tricky to work with; you have to compress them evenly to remove the L-shaped retaining snap rings (figure 6). You'll need to do a bit

Case Removal

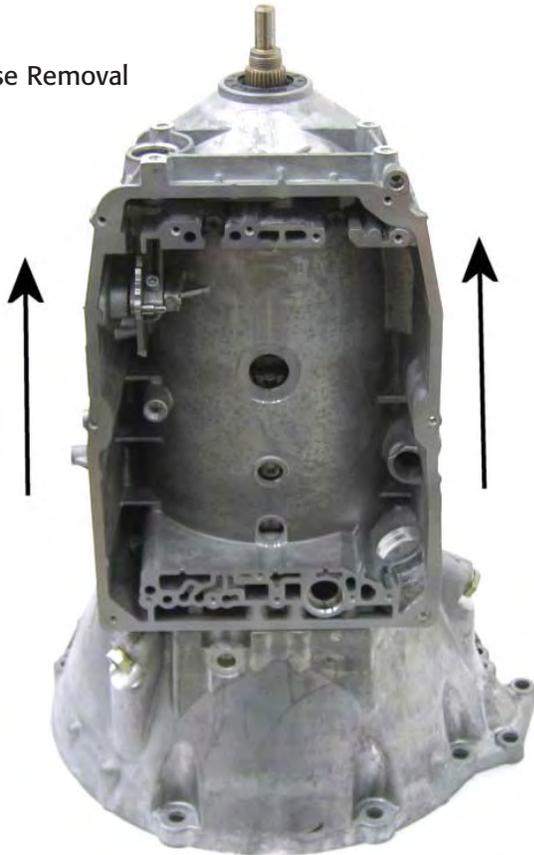


Figure 1

Gear train assembly



Figure 2



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Bushing clearance



Figure 3

Replace the teflon coated plate everytime

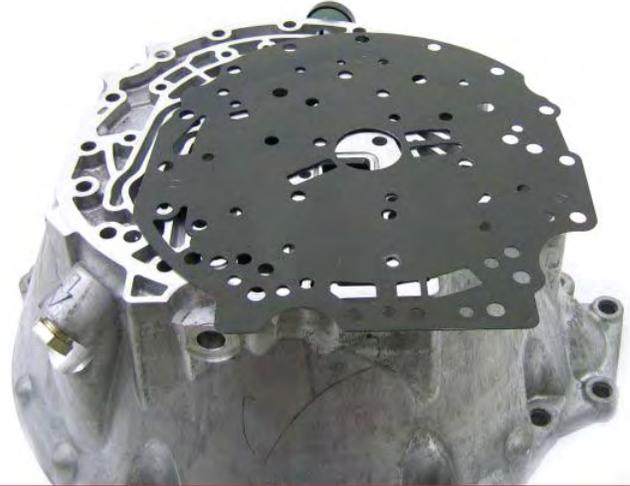


Figure 4

Snap ring removal



Figure 5

L-Shaped snap ring

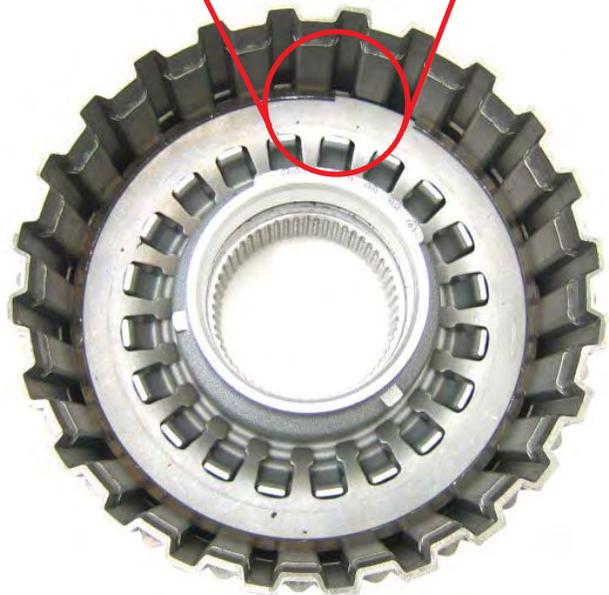


Figure 6

of creative thinking to fabricate a tool from leftover parts available around the shop to perform the job you'd normally use a factory tool to do. For example, you can use the direct clutch sprag race from an AX4S to compress the Bellville spring in the B2 clutch drum. For the K3 clutch drum, a large tapered roller bearing race works nicely. Figure 7 shows a bearing race and support from a Subaru final drive being used.

The K2 drum houses a bushing where the output shaft rides; later models have a bearing and seal. This bearing has been known to fail and wipe out the output shaft at the same time. There are bushings available from the aftermarket to replace the bearing if the output shaft is salvageable. If the output shaft must be replaced or repaired, the bearing part number is A 020 981 33 10. The part number for the teflon seal is A 140 272 27 55.

Sprags

The front sprag (F1) is located in the K1 clutch drum. The early design sprag had 14 elements and was prone to failure. When this sprag fails, the vehicle may not move at all. The sprag has been updated to 20 elements to improve

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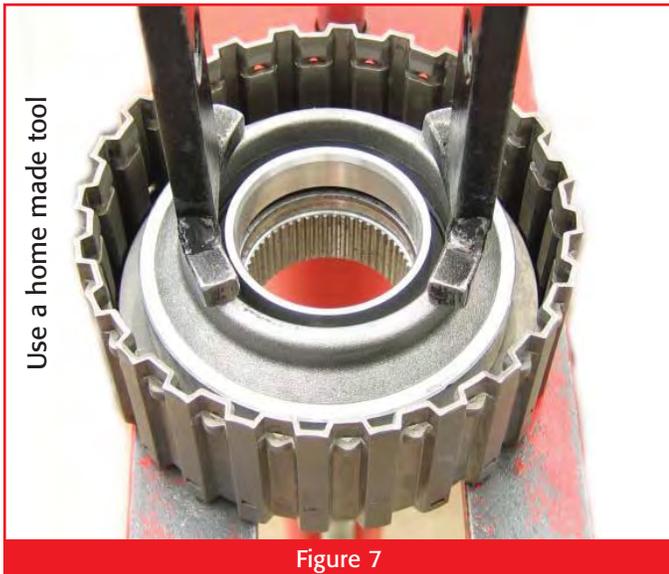


Figure 7

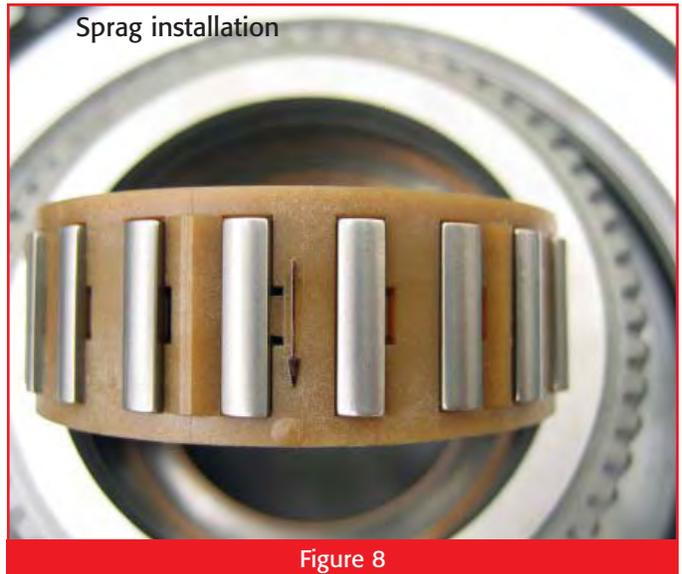


Figure 8

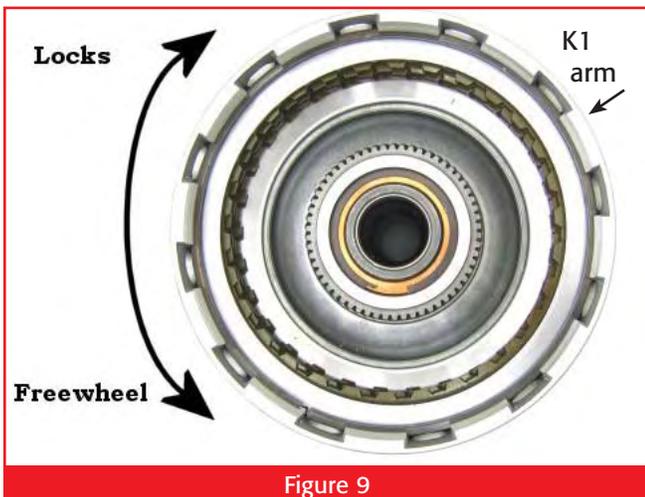


Figure 9

durability. The part number for the updated sprag is A 140 270 02 31. Both early and late sprags have an arrow on the cage (figure 8) which faces down into the drum when installed properly. When installed onto the pump, the K1 drum should freewheel counterclockwise and lock clockwise (figure 9). The 20 element sprag assembly can and should be used in the earlier model transmissions with out any modifications.

The rear sprag (F2) has had some durability issues, and can cause a 2-3 flare when isn't holding properly. This sprag has also been updated from 14 to 20 elements. The part number for the 20-element sprag is A 220 270 01 31. This assembly will also fit earlier applications and can be used without any modifications.

CAUTION!: Be very careful handling this sprag! The elements fall out of the cage very easily. Refer to figure 10 for proper element installation. When the sprag is installed properly the sun gear will freewheel counterclockwise and lock clockwise (figure 11).



Figure 10

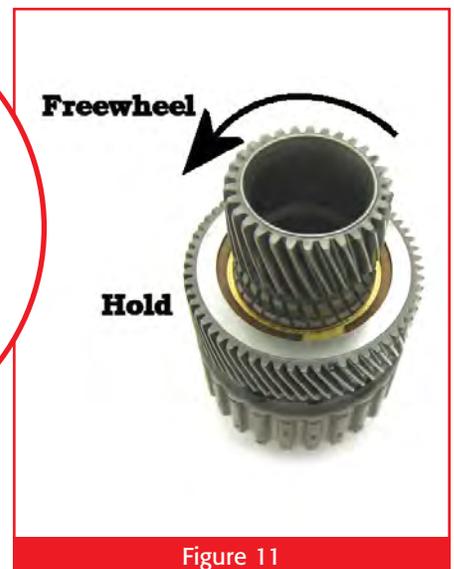


Figure 11

The Latest Problem Solvers From Superior.



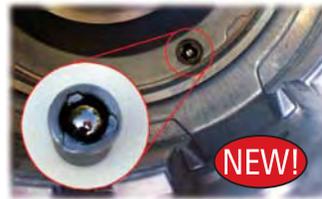
E40D/4R100 Stay-Put Filter Clip. (K066)
Holds filter securely into the pump.



500/618 TCC Boost Valve Clip. (K065)
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4L60-E 3-2 Downshift Spring And Valve Stop. (K054)
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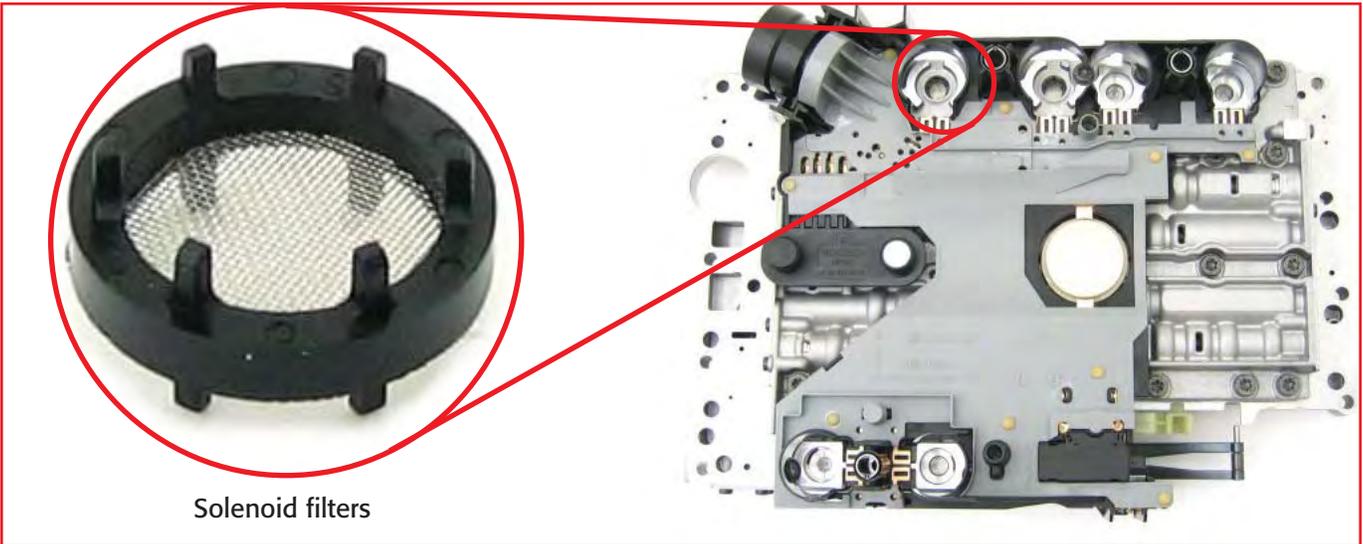
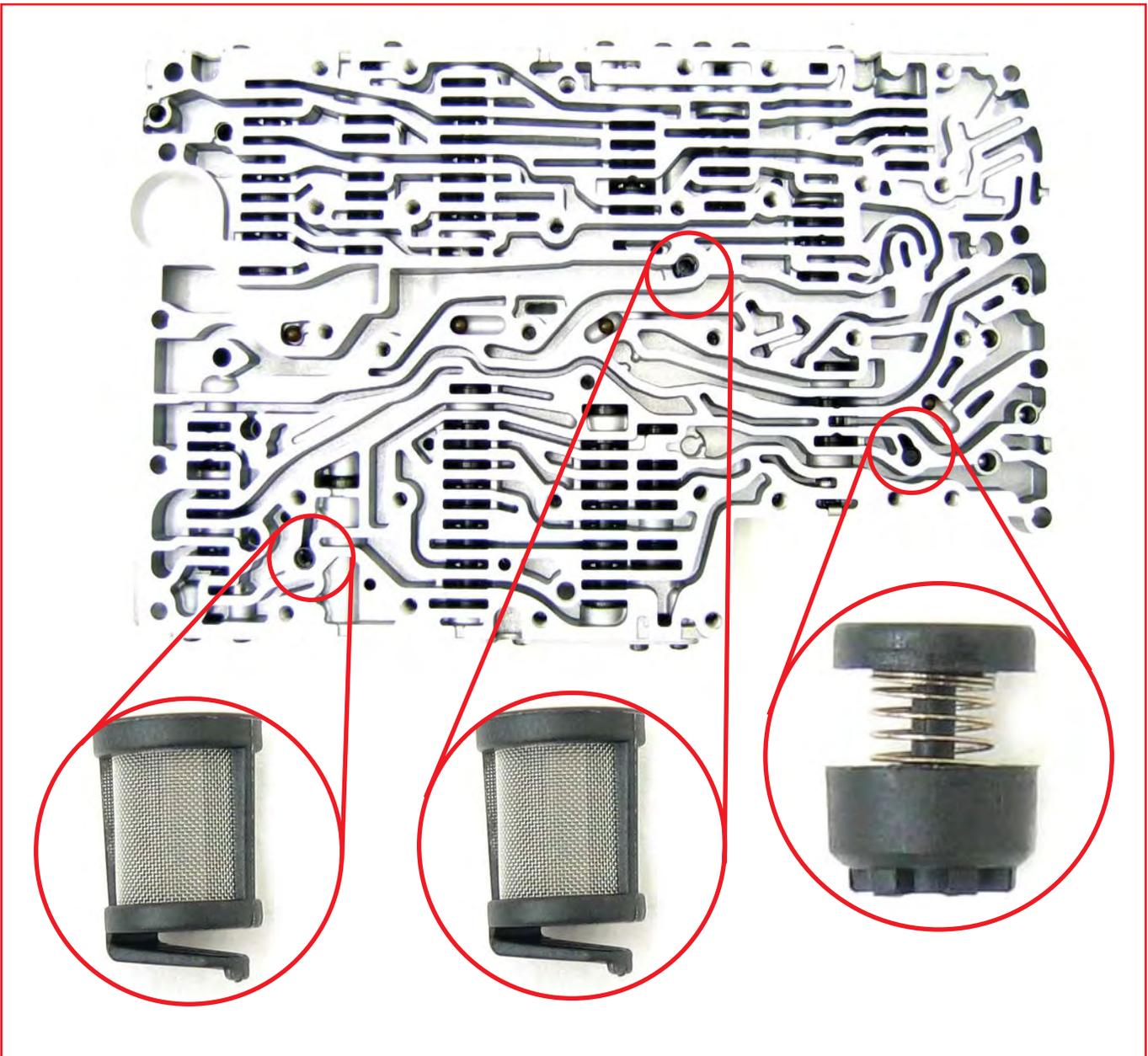


Figure 12





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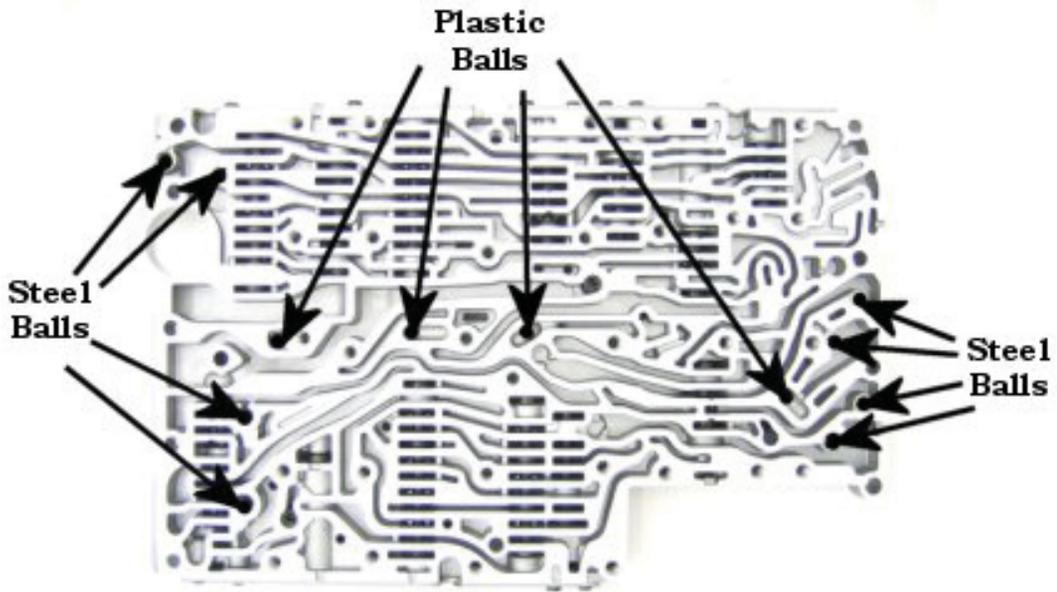


Figure 14



Figure 15

Earlier versions of the valve body have a slightly different pressure regulator (PR) valve design than the valve shown (figure 15).

The Valve Body

The valve body is yet another example of simplicity. There are 3 shift solenoids, 2 pressure control solenoids and 1 TCC solenoid. There are a couple small parts to watch for as you take the valve body apart. Look for the screens under the pressure control solenoids (figure 12).

There are a couple differences between the Mercedes and Chrysler valve bodies: The valve body shown

here is a Chrysler version and has 12 checkballs, two small filters, and a pressure feed valve in the channel casting (figures 13 & 14).

Earlier versions of the valve body have a slightly different pressure regulator (PR) valve design than the valve shown (figure 15). The earlier design PR valve spring tended to break; the part number for the replacement spring is 140 993 58 01. Remember, these are Teflon-coated valves, so never use

abrasives on them. If the valves are really stuck, you may have to replace the valve body.

Planetary Gear Sets

Early planet assemblies had terrible durability problems. Thrust bearings liked to blow up and take out the whole planetary gear set. This was such a problem that the earlier design planets are no longer sold. Even if you can find a core with a good used early planet



Planet pilot

Figure 16

setup, *don't use it!* You'll be headed for a planet failure if you go this route.

There are several different ratios available, so count the sun gear teeth carefully. Use the same ratio that came out of the car or gear ratio codes will begin to appear right away.

Measure the snout of the planet (figure 16) to determine which planet you are working on. The early planet has a .908 in. pilot and the late model has a .866 in. pilot. To use the late planet with the early K2 drum, you'll have to use the aftermarket bushing or needle bearing and seal we discussed earlier.

Finally...

Removing and reinstalling this transmission may be more difficult than the rebuild itself. It's about time Mercedes looked at what's involved in the R&R, and made some changes to make their transmissions easier coming out and going back in. Once it's on the bench, look out for the trouble spots and be sure to use good quality parts, and the job should go very smoothly.

For many more details on these increasingly more common units, be sure to attend Weldon Barnett's information-packed seminar at Expo 2005 in Las Vegas, at the Las Vegas Hilton, September 29 – October 3.



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