



# Mercedes 722.6 Series: Keeping It Simple

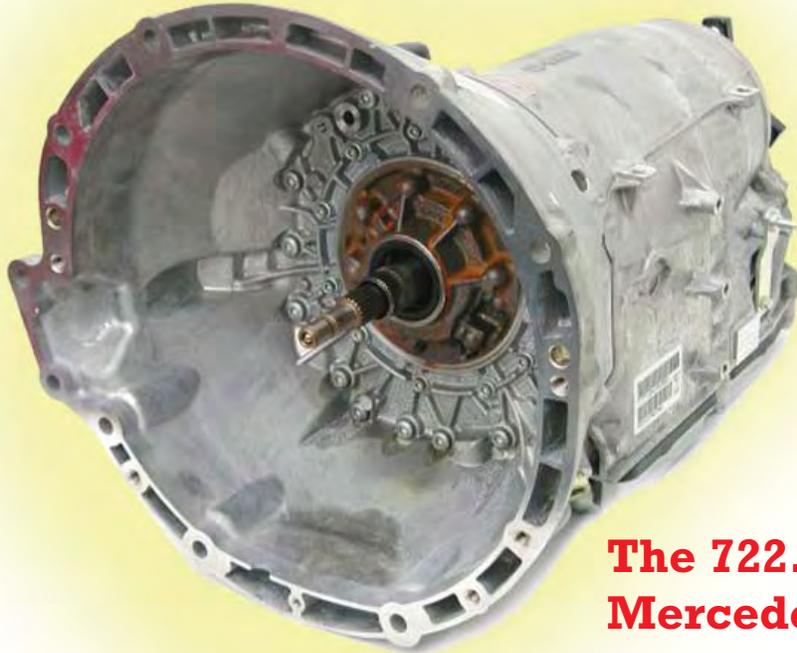
**T**he 722.6 has been around since 1996 in Mercedes-Benz vehicles and has been offered in Chryslers and Jeeps since 2001. Until recently there hasn't been a great deal of technical information available to the transmission repair industry; that is, unless you can read German. In this edition of *Fun 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

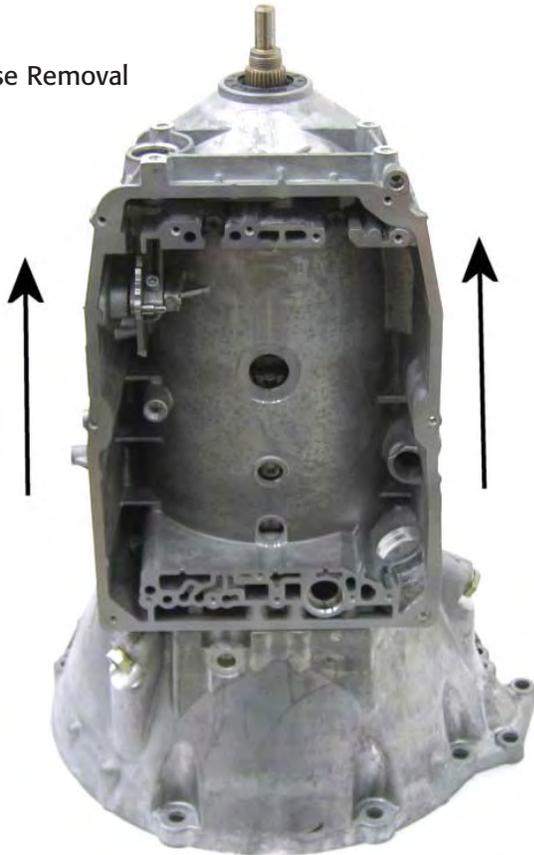


Figure 1

Gear train assembly



Figure 2



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Bushing clearance



Figure 3

Replace the teflon coated plate everytime

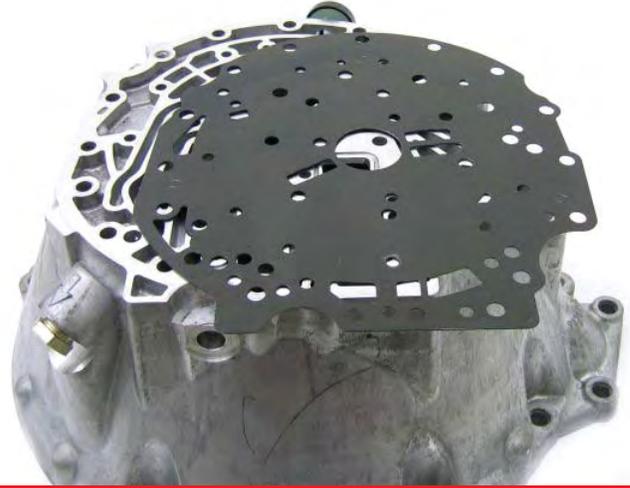


Figure 4

Snap ring removal

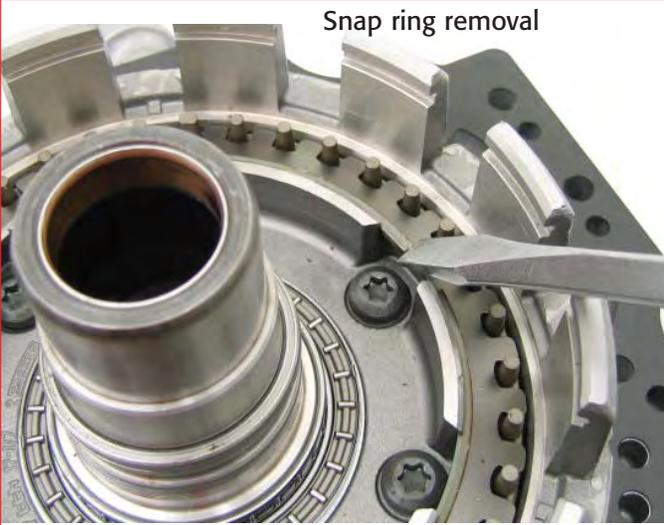


Figure 5

L-Shaped snap ring

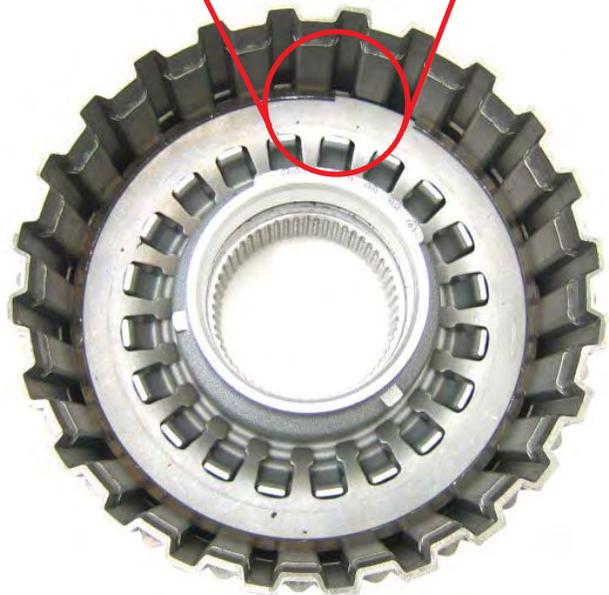


Figure 6

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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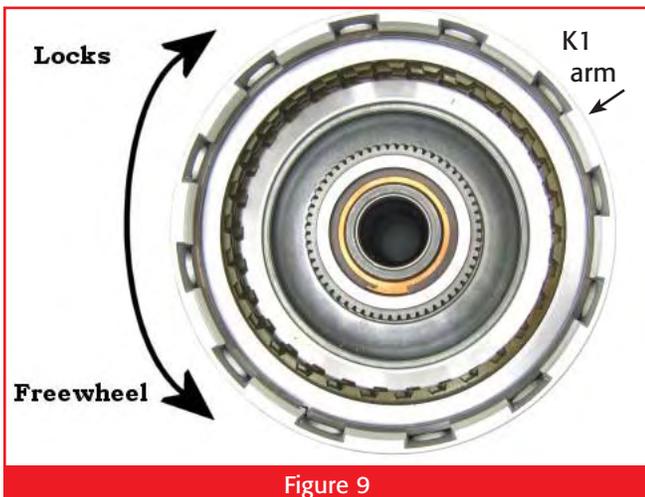
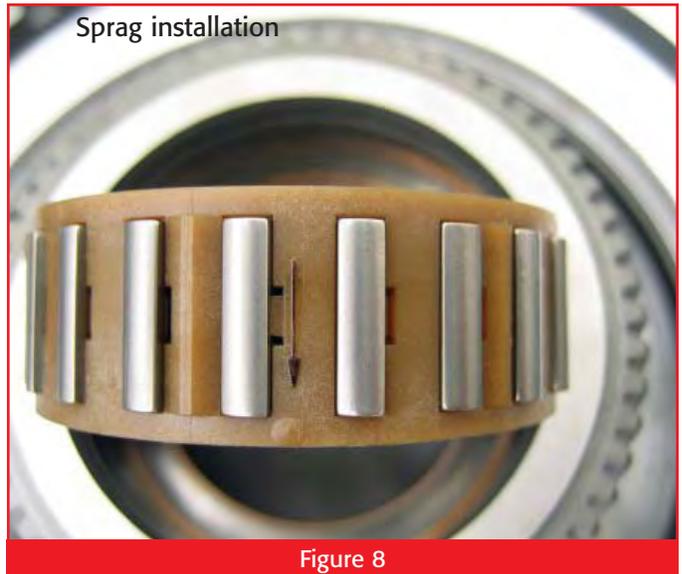
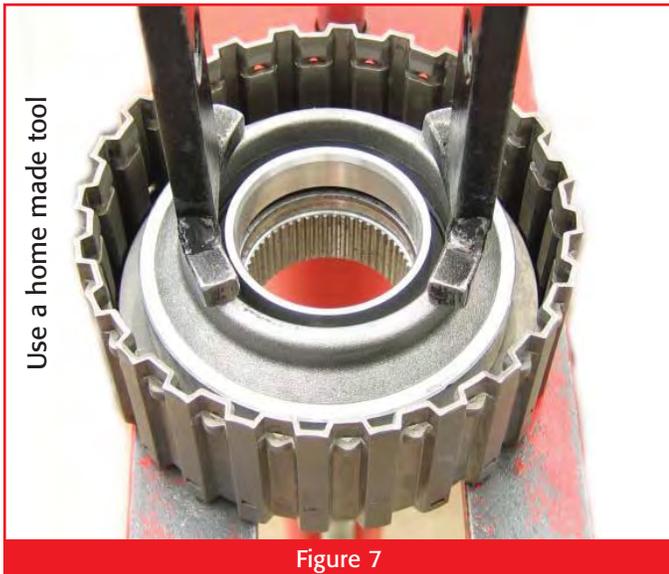
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durability. The part number for the updated sprag is A 140 270 02 31. Both early and late sprags have an arrow on the cage (figure 8) which faces down into the drum when installed properly. When installed onto the pump, the K1 drum should freewheel 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).



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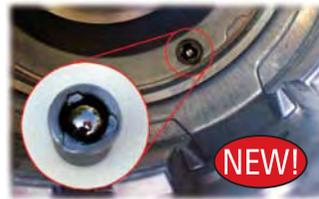
**E40D/4R100 Stay-Put Filter Clip. (K066)**  
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**500/618 TCC Boost Valve Clip. (K065)**  
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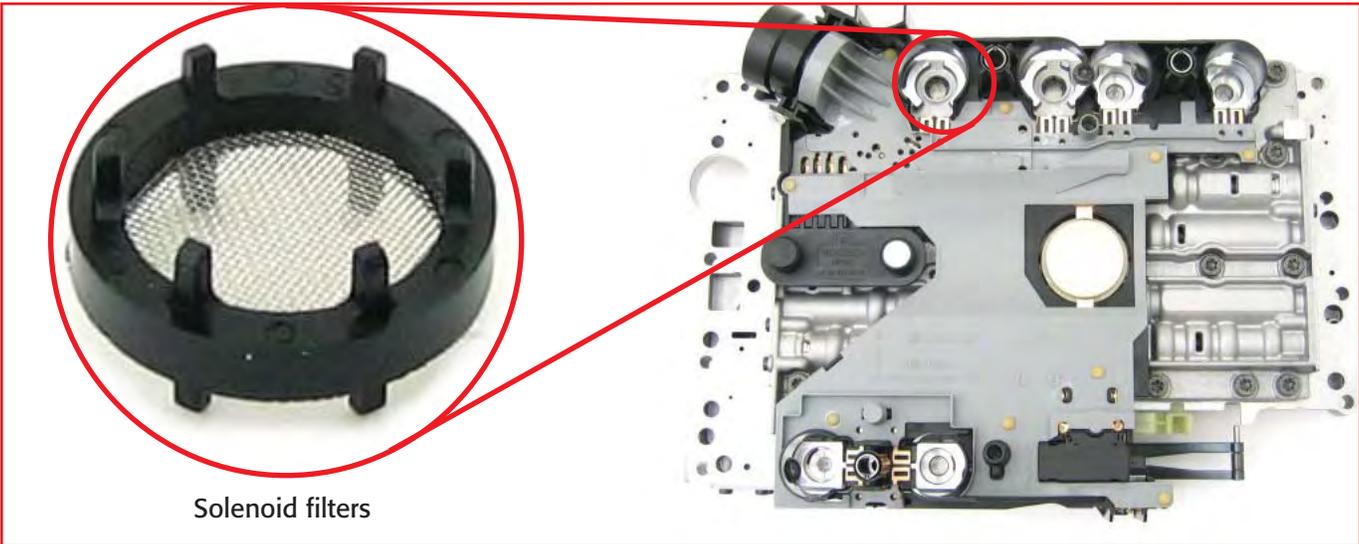
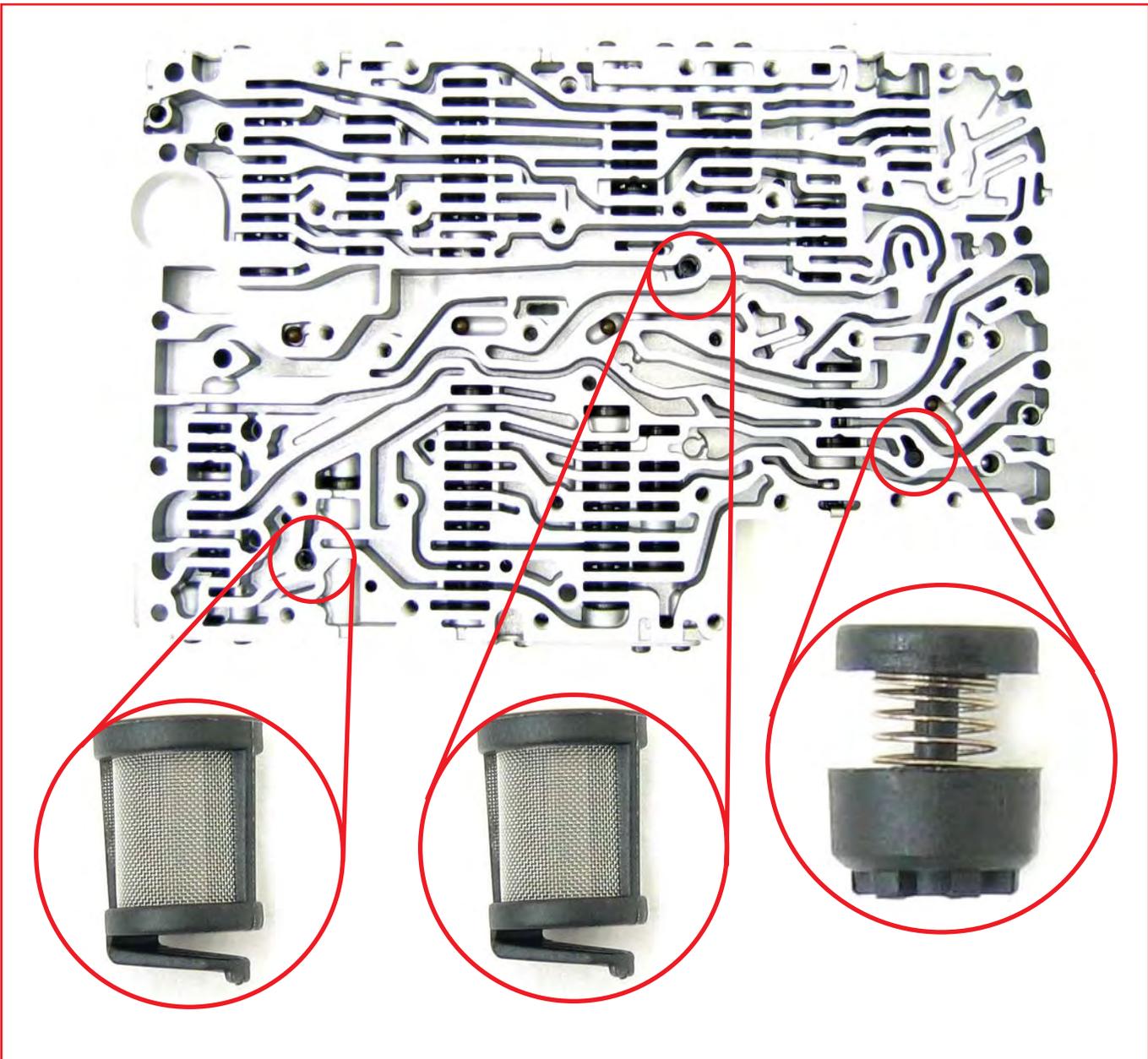


Figure 12





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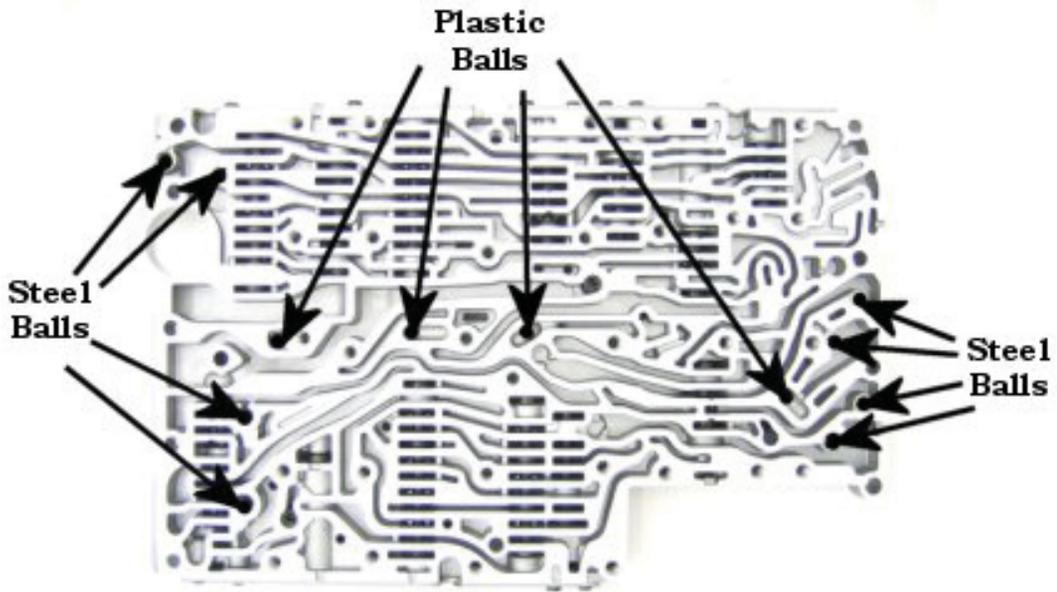


Figure 14



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.

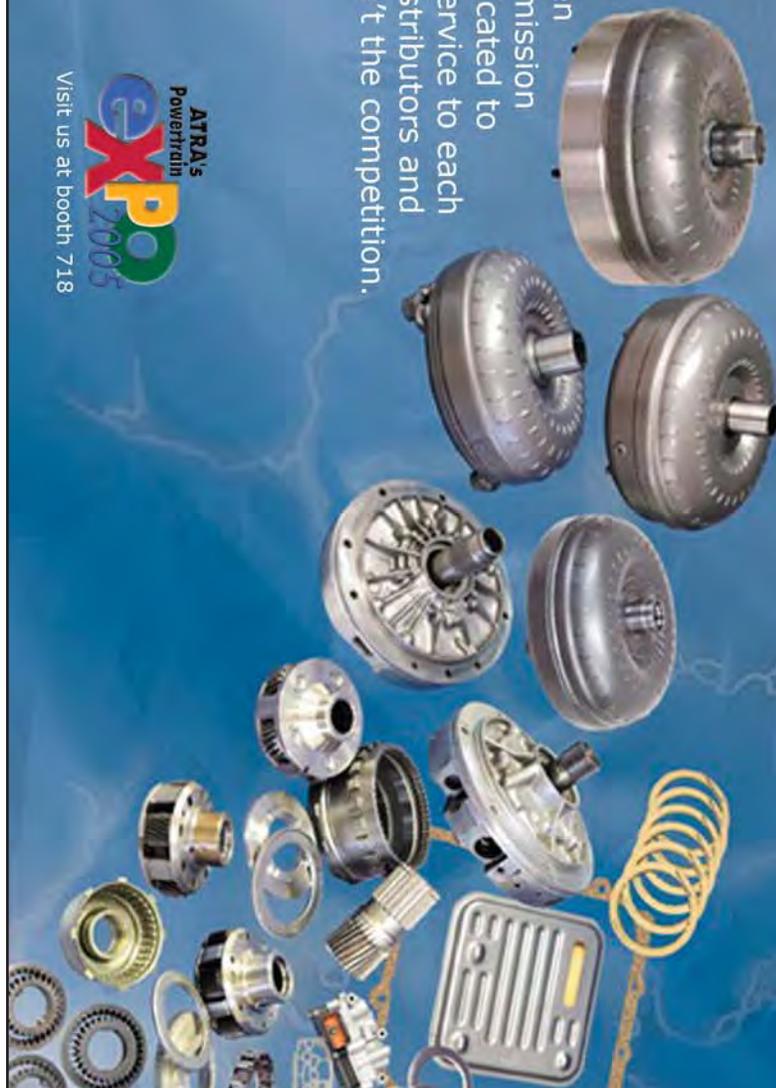


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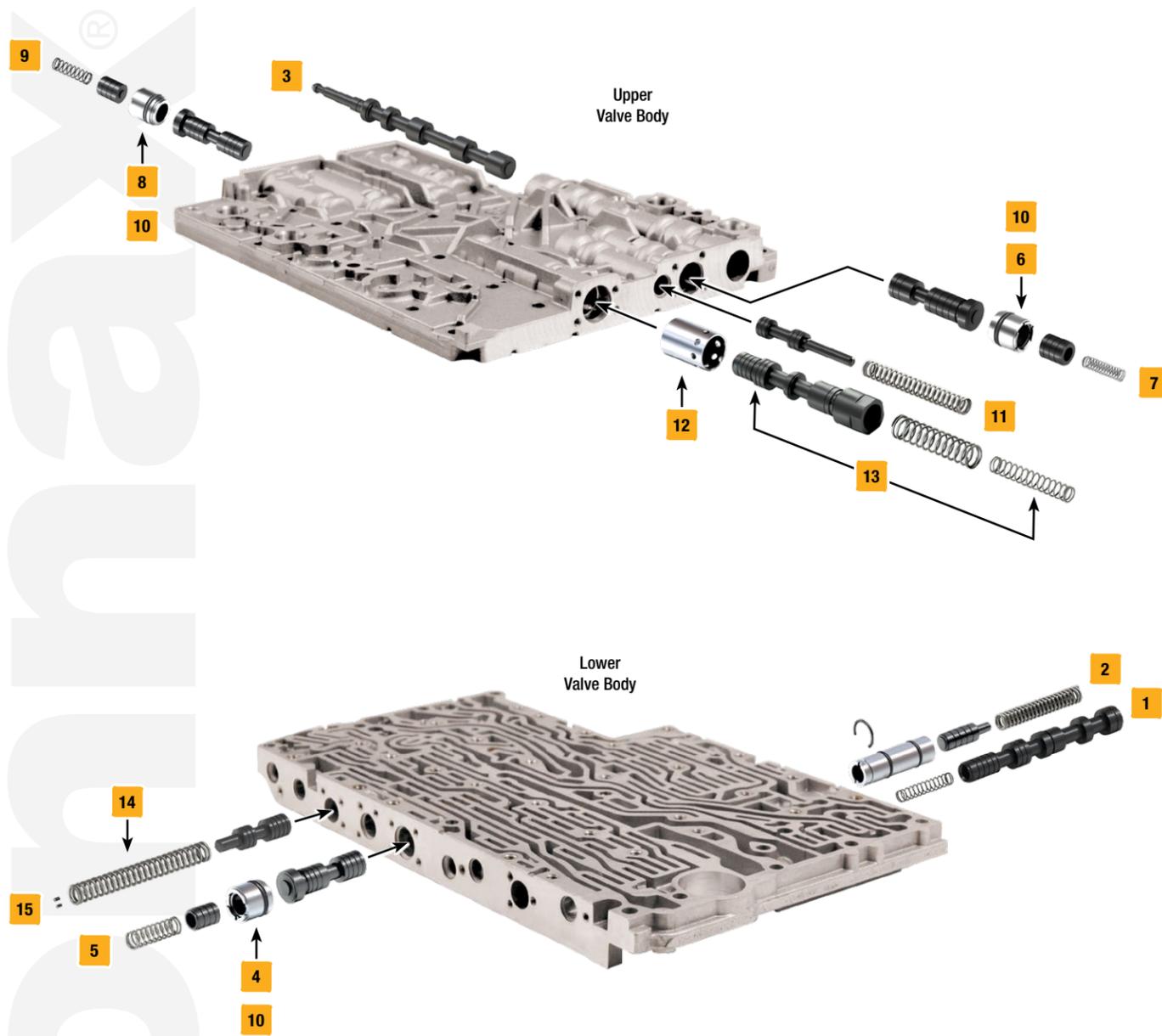
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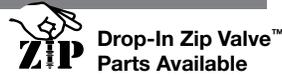


Symptoms/Part Type	Product Name	Part No.	Details	ZIP Drop-In Zip Valve™ Parts	Tooling
<b>TCC/Lockup Symptoms</b>					
TCC apply & release concerns, TCC codes, Lube failures	Oversized TC Lockup Clutch Regulator Valve Kit	1 68942-10K			F-68942-TL10*
Harsh lockup	TCC Damper Valve Kit	2 68942-23K	ZIP Found in late-style units only		
<b>Pressure Problems</b>					
Low line pressure, Delayed Drive, Delayed Reverse, Damaged valve body casting	Oversized Manual Valve	3 68942-16			F-68942-TL16*‡
<b>Shift/Engagement Concerns</b>					
1-2 Flare, Bump shifts, Harsh shifts, Slipping gears	1-2, 4-5 Overlap Control Sleeve Kit	4 68942-02	ZIP		
1-2 Flare, 4-5 Flare, 1-2 Bump, 4-5 Bump, 1-2 Harsh, 4-5 Harsh, Slipping gears	Oversized 1-2/4-5 Overlap Control Valve Kit	5 68942-19K			F-68942-TL19*‡
2-3 Flare, Bump shifts, Harsh shifts, Slipping gears	2-3 Overlap Control Sleeve Kit	6 68942-03	ZIP		
2-3 Flare, 2-3 Bump, 2-3 Harsh, Slipping gears	Oversized 2-3 Overlap Control Valve Kit	7 68942-27K			F-68942-TL27*‡
3-4 Flare, Bump shifts, Harsh shifts, Slipping gears	3-4 Overlap Control Sleeve Kit	8 68942-04	ZIP		
3-4 Flare, 3-4 Bump, 3-4 Harsh, Slipping gears	Oversized 3-4 Overlap Control Valve Kit	9 68942-31K			F-68942-TL31*‡
Flare shifts, Bump shifts, Harsh shifts, Slipping gears	Master Overlap Control Valve Sleeve Kit	10 68942-05K	ZIP Fits 3 locations		
Delayed engagement, High stall speed, Overheated converter, Lube failures, Damaged converter	Oversized Lubricating Pressure Control Valve Kit	11 68942-14K			F-68942-TL14*
No 2-3, 4-3 Neutral, Soft shifts under load, Slip codes	Outer Pressure Regulator Sleeve	12 68942-06		Fits bores containing OE PR valve with .512" dia. spool, repairs outer bore only	F-68942-TL6*
No 2-3, 4-3 Neutral, Soft shifts under acceleration, Slip codes, Delayed engagement, No lockup	Oversized Pressure Regulator Valve Kit	13 68942-07K		Fits bores containing OE PR valve with .512" dia. spool	F-68942-TL7*
Delayed engagement, 2-3 Flare, 3-4 Flare, 4-5 Flare	Regulating Pressure Control Valve Spring	14 68942-01	'99-Earlier		
Delayed engagement, Low line rise & long shift duration, Flare shifts, Shift codes	Oversized Regulating Valve Pressure Control Valve Kit	15 68942-17K			F-68942-TL14*

\* VB-FIX Required

‡ No longer in production. Check with your distributor for availability.

# Critical Wear Areas & Vacuum Test Locations



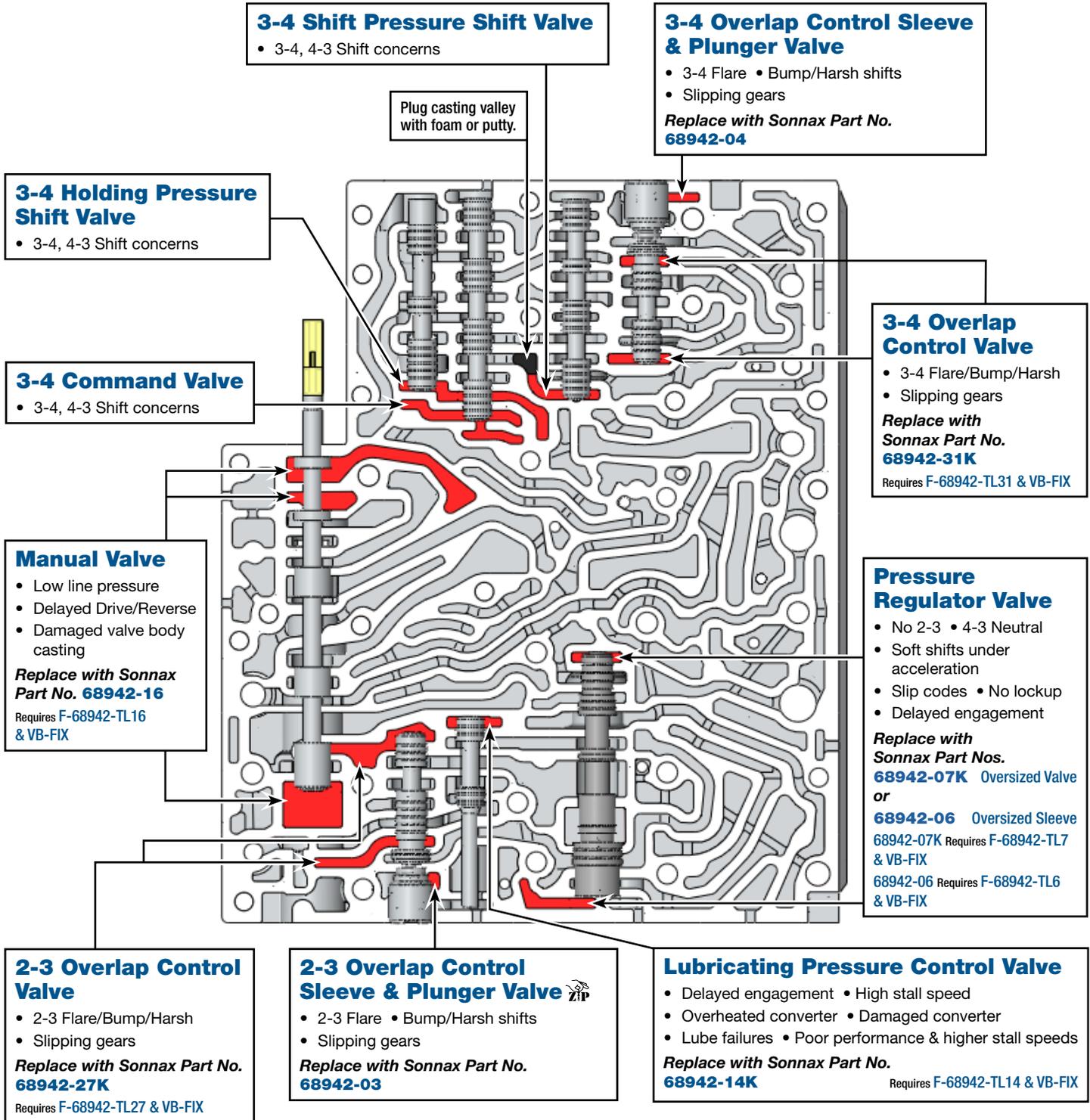
**NOTE:** OE valves are shown in rest position and should be tested in rest position unless otherwise indicated. Test locations are pointed to with an arrow. Springs are not shown for visual clarity. Low vacuum reading indicates wear and Sonnax parts are noted for replacement.

## Upper Valve Body



For specific vacuum test information, refer to individual part instructions included in kits and available at [www.sonnax.com](http://www.sonnax.com).

Click on Sonnax part numbers to see more information.



# Critical Wear Areas & Vacuum Test Locations



**NOTE:** OE valves are shown in rest position and should be tested in rest position unless otherwise indicated. Test locations are pointed to with an arrow. Springs are not shown for visual clarity. Low vacuum reading indicates wear and Sonnax parts are noted for replacement.

## Lower Valve Body



For specific vacuum test information, refer to individual part instructions included in kits and available at [www.sonnax.com](http://www.sonnax.com).

Click on Sonnax part numbers to see more information.

### Shift Valve Pressure Regulating Valve

- Shift concerns, all Forward gears
- Shift codes

### Shift Pressure Regulating Valve

- Shift concerns, all Forward gears
- Shift codes

### 1-2/4-5 Overlap Control Sleeve & Plunger Valve

- 1-2 Flare/Bump/Harsh shifts
- Slipping gears

Replace with Sonnax Part No. **68942-02**

### 1-2/4-5 Overlap Control Valve

- 1-2 Flare/Bump/Harsh shifts
- Slipping gears

Replace with Sonnax Part No. **68942-19K**

Requires F-68942-TL19 & VB-FIX

### 1-2/4-5 Shift Pressure Shift Valve

- 1-2, 2-1 Shift concerns
- 4-5, 5-4 Shift concerns

### 1-2/4-5 Holding Pressure Shift Valve

- 1-2, 2-1 Shift concerns
- 4-5, 5-4 Shift concerns

■ = Plug casting valley with foam or putty.

### 1-2/4-5 Command Valve

- 1-2, 2-1 Shift concerns
- 4-5, 5-4 Shift concerns

### Regulating Valve Pressure Control

- Delayed engagement
- Shift flares & codes
- Low line rise & long shift duration

Replace with Sonnax Part No.

**68942-17K**

Requires F-68942-TL14 & VB-FIX

### B2 Shift Valve

- Burnt B2 brake
- Slipping 1st, 2nd, 3rd

### 2-3 Holding Pressure Shift Valve

- 2-3, 3-2 Shift concerns

### 2-3 Command Valve

- 2-3, 3-2 Shift concerns

### 2-3 Shift Pressure Shift Valve

- 2-3, 3-2 Shift concerns

### TCC Damper Valve (Late Only)

- Harsh lockup

Replace with Sonnax Part No. **68942-23K**

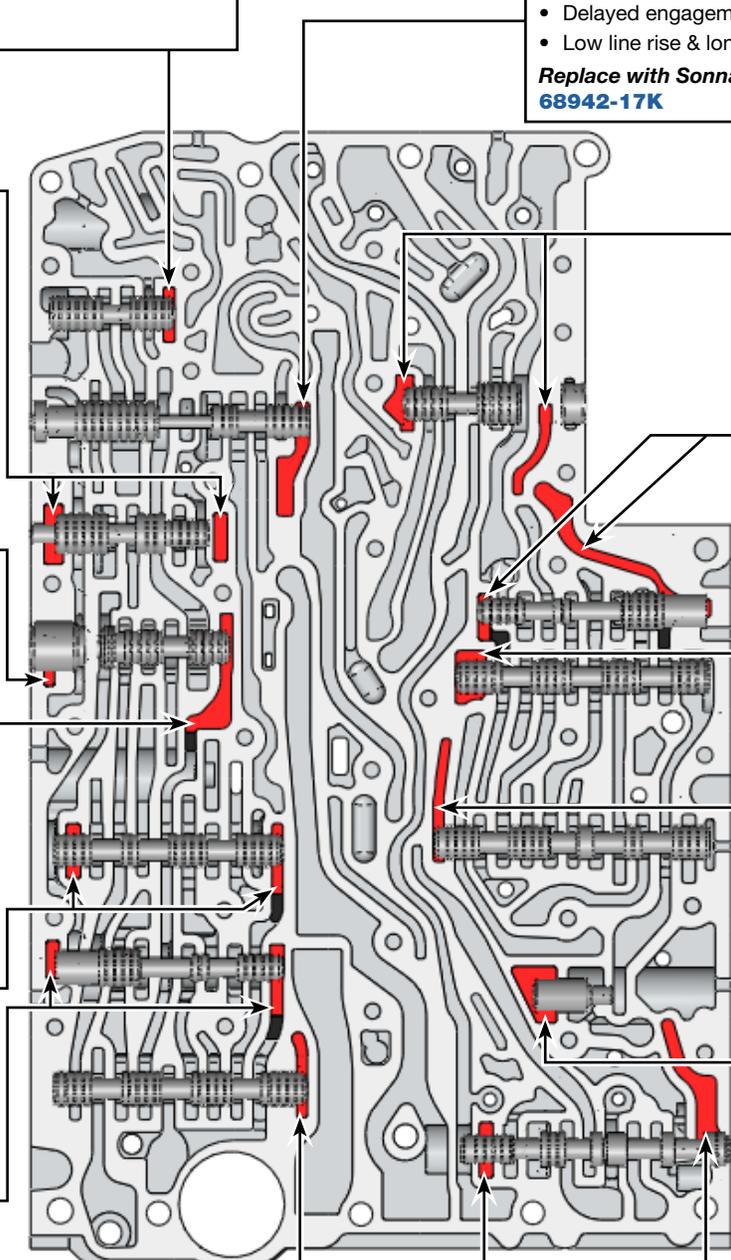
### TC Lockup Clutch Regulator Valve

- TCC apply & release concerns
- TCC codes
- Lube failures

Replace with Sonnax Part No.

**68942-10K**

Requires F-68942-TL10 & VB-FIX

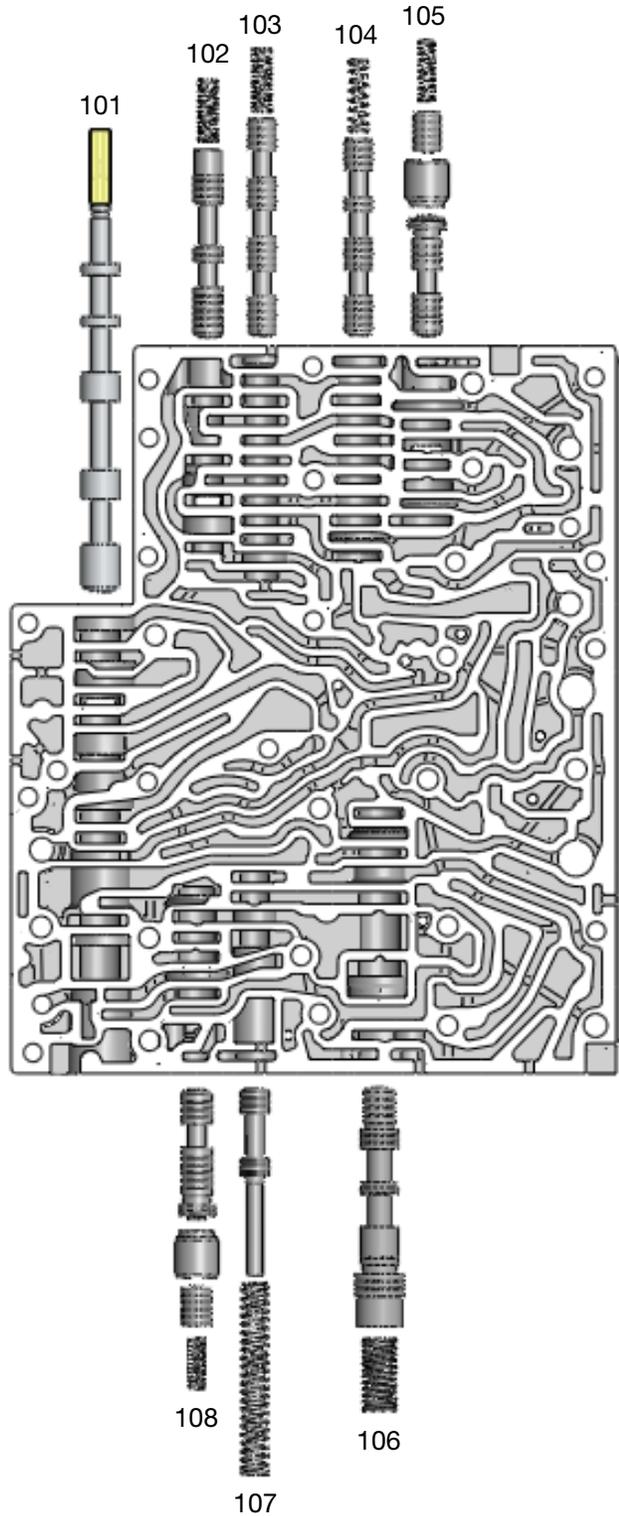


# OE Exploded View

## Upper Valve Body

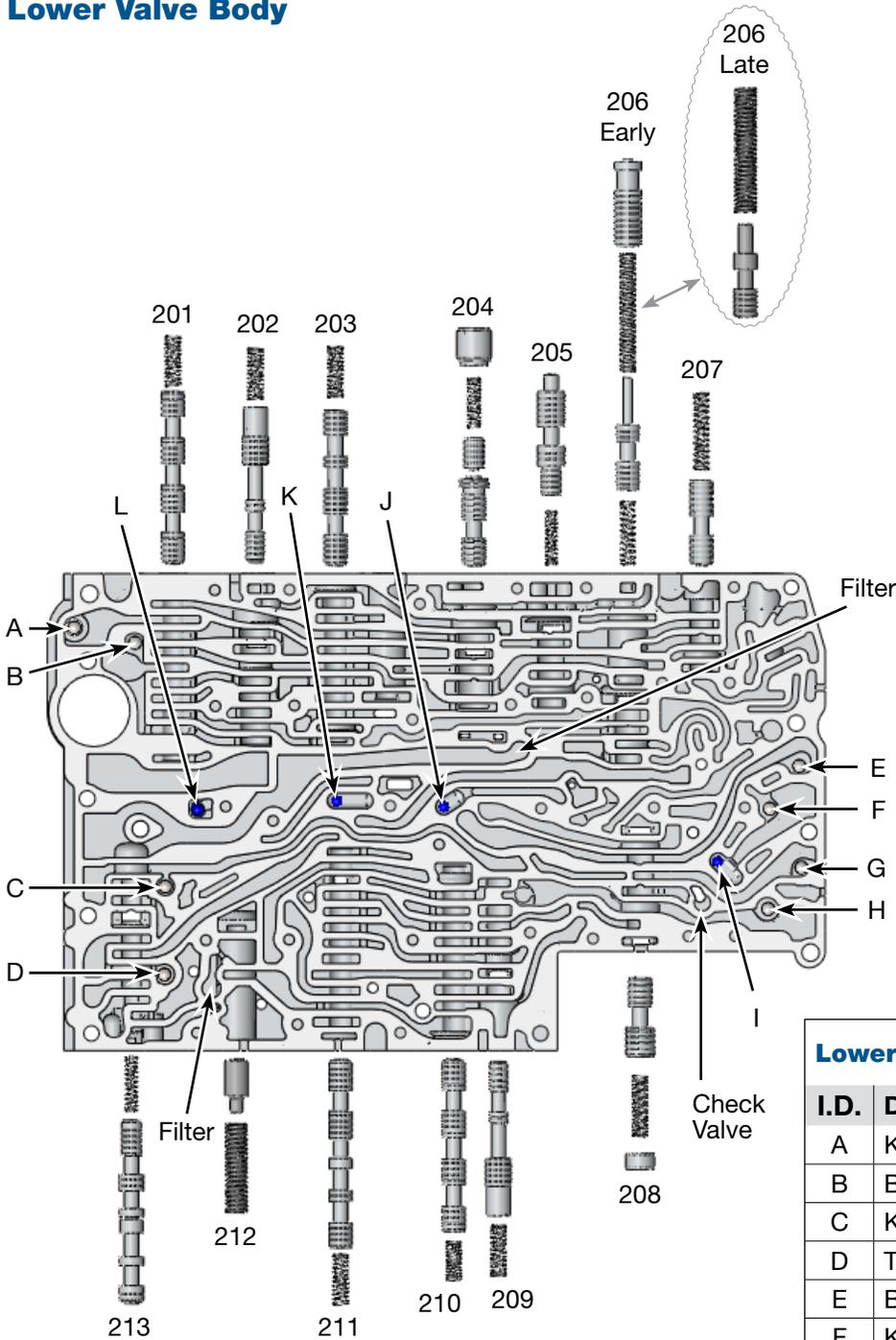
### Upper Valve Body Descriptions

I.D. No.	Description
101	Selector Valve
102	3-4 Holding Pressure Shift Valve
103	3-4 Command Valve
104	3-4 Shift Pressure Shift Valve
105	3-4 Overlap Control Valve (Inboard) Sleeve & Plunger Valve (Outboard)
106	Pressure Regulator Valve
107	Lubricating Pressure Control Valve
108	2-3 Overlap Control Valve (Inboard) Sleeve & Plunger Valve (Outboard)



# OE Exploded View

## Lower Valve Body



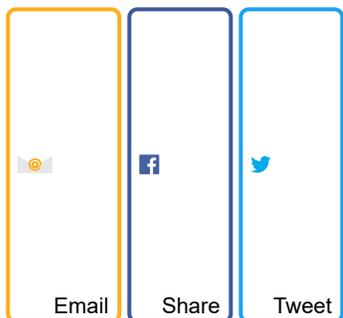
### Lower Valve Body Descriptions

I.D. No.	Description
201	1-2/4-5 Command Valve
202	1-2/4-5 Holding Pressure Shift Valve
203	1-2/4-5 Shift Pressure Shift Valve
204	1-2/4-5 Overlap Control Valve (Inboard) Sleeve & Plunger Valve (Outboard)
205	Shift Pressure Control Valve
206	Regulating Valve Pressure Control Valve(s) (Early & Late)
207	Shift Valve Pressure Control Valve
208	B2 Shift Valve
209	2-3 Holding Pressure Shift Valve
210	2-3 Command Valve
211	2-3 Shift Pressure Shift Valve
212	TCC Damper Valve (Late only)
213	TC Lockup Clutch Regulator Valve

### Lower Valve Body Checkball Locations

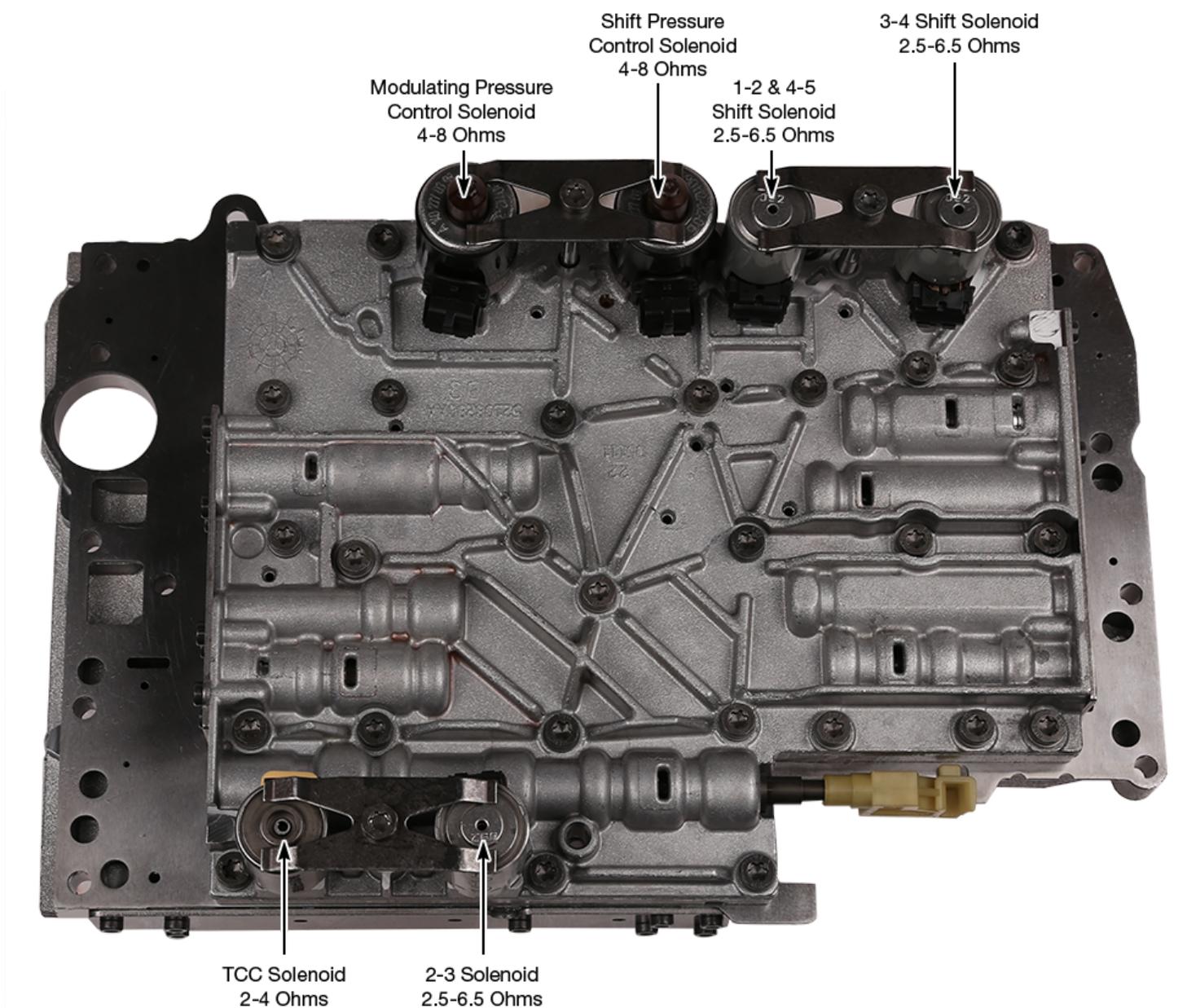
I.D.	Description	Material
A	K1 Clutch Exhaust	Steel
B	B1 Clutch Exhaust	Steel
C	K2 Clutch Exhaust	Steel
D	Torque Converter Clutch	Steel
E	B2 Clutch Exhaust	Steel
F	K3 Clutch Exhaust	Steel
G	B2 Clutch Counter Exhaust	Steel
H	B3 Clutch Exhaust	Steel
I	K3 Shuttle Ball	Plastic
J	3-4 Shift Group Shuttle Ball	Plastic
K	Pressure Reducing Shuttle Ball	Plastic
L	Modulator Pressure Shuttle Ball	Plastic

January 01, 2013



## 722.6 Solenoid Identification

Valve Body Xpress



Related Units

## Related Parts

**722.6** ([www.sonnax.com/parts/4042-remanufactured-valve-body](http://www.sonnax.com/parts/4042-remanufactured-valve-body))

**Remanufactured Valve Body** ([www.sonnax.com/parts/4042-remanufactured-valve-body](http://www.sonnax.com/parts/4042-remanufactured-valve-body))

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**722.6** ([www.sonnax.com/parts/4131-remanufactured-valve-body](http://www.sonnax.com/parts/4131-remanufactured-valve-body))

**Remanufactured Valve Body** ([www.sonnax.com/parts/4131-remanufactured-valve-body](http://www.sonnax.com/parts/4131-remanufactured-valve-body))

**MER0406**



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**722.6** ([www.sonnax.com/parts/4133-remanufactured-valve-body](http://www.sonnax.com/parts/4133-remanufactured-valve-body))

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**MER0606**

*Mercedes, Casting #0606*

**722.6** ([www.sonnax.com/parts/4127-remanufactured-valve-body](http://www.sonnax.com/parts/4127-remanufactured-valve-body)).

**Remanufactured Valve Body** ([www.sonnax.com/parts/4127-remanufactured-valve-body](http://www.sonnax.com/parts/4127-remanufactured-valve-body)).

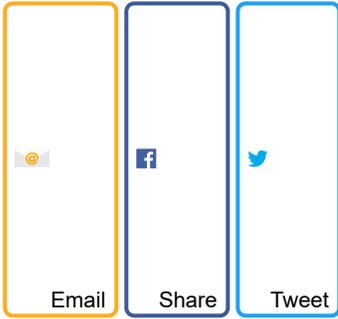
**JAG0006**



*Jaguar, Casting #0006*

*While Sonnax makes every effort to ensure the accuracy of technical articles at time of publication, we assume no liability for inaccuracies or for information which may become outdated or obsolete over time.*

January 01, 2013

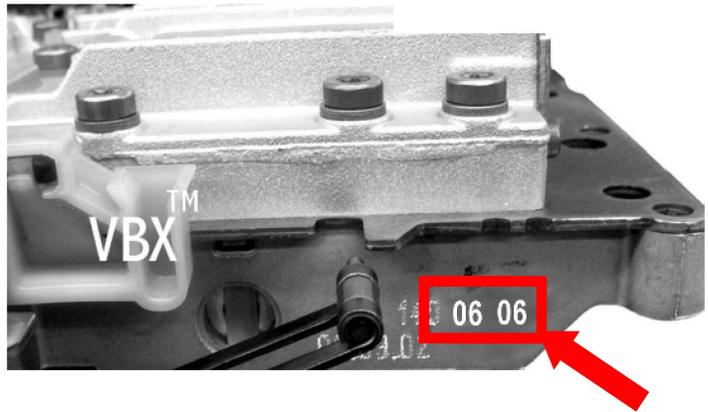
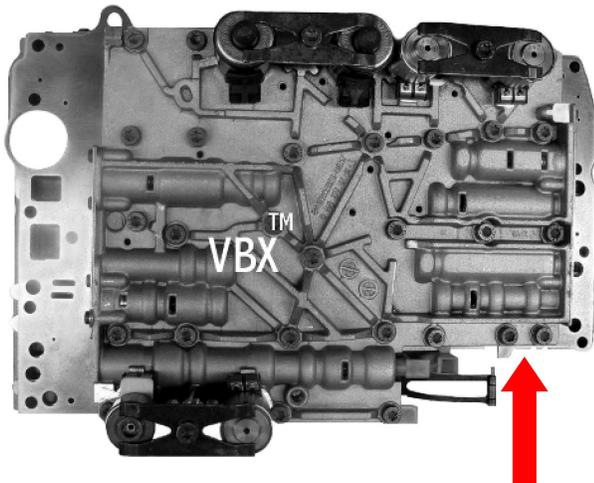


# 722.6 Valve Body Identification

## Valve Body Xpress

**There are differences between the Mercedes, Jaguar and Chrysler 722.6 units!**

Before ordering a remanufactured valve body, you must determine the correct casting number for your application. Please verify the last 4 digits in the top row of casting numbers, located on the valve body near the linkage.



Location of the casting number

Casting number

Manufacturer	Casting Number	Part Number
Mercedes	02 06	[MER0206] (Warranty Only)
Mercedes	04 06	<a href="#">MER0406</a>
Mercedes	05 06	<a href="#">MER0506</a>
Mercedes	06 06	<a href="#">MER0606</a>
Mercedes	00 06	<a href="#">MER0006*</a>
Jaguar	00 06	<a href="#">JAG0006*</a>
Chrysler	N/A	<a href="#">CHR7226</a>

\*While the casting number is the same, these are NOT the same valve bodies.

## Learn More

July 01, 2020

[Always Identify These Valve Bodies BEFORE You Start a Transmission Rebuild](#)

Andrew Jessiman

## Related Units

## Related Parts

**722.6** ([www.sonnax.com/parts/4042-remanufactured-valve-body](http://www.sonnax.com/parts/4042-remanufactured-valve-body)).

**Remanufactured Valve Body** ([www.sonnax.com/parts/4042-remanufactured-valve-body](http://www.sonnax.com/parts/4042-remanufactured-valve-body)).

**CHR7226**

*Chrysler*

**722.6** ([www.sonnax.com/parts/4127-remanufactured-valve-body](http://www.sonnax.com/parts/4127-remanufactured-valve-body)).

**Remanufactured Valve Body** ([www.sonnax.com/parts/4127-remanufactured-valve-body](http://www.sonnax.com/parts/4127-remanufactured-valve-body)).

**JAG0006**

*Jaguar, Casting #0006*



**722.6** ([www.sonnax.com/parts/4131-remanufactured-valve-body](http://www.sonnax.com/parts/4131-remanufactured-valve-body)).

**Remanufactured Valve Body** ([www.sonnax.com/parts/4131-remanufactured-valve-body](http://www.sonnax.com/parts/4131-remanufactured-valve-body)).

**MER0406**

*Mercedes, Casting #0406*



**722.6** ([www.sonnax.com/parts/4132-remanufactured-valve-body](http://www.sonnax.com/parts/4132-remanufactured-valve-body)).

**Remanufactured Valve Body** ([www.sonnax.com/parts/4132-remanufactured-valve-body](http://www.sonnax.com/parts/4132-remanufactured-valve-body)).

**MER0506**

*Mercedes, Casting #0506*



**722.6** ([www.sonnax.com/parts/4133-remanufactured-valve-body](http://www.sonnax.com/parts/4133-remanufactured-valve-body)).

**Remanufactured Valve Body** ([www.sonnax.com/parts/4133-remanufactured-valve-body](http://www.sonnax.com/parts/4133-remanufactured-valve-body)).

**MER0606**

*Mercedes, Casting #0606*

**722.6** ([www.sonnax.com/parts/4203-remanufactured-valve-body](http://www.sonnax.com/parts/4203-remanufactured-valve-body)).

**Remanufactured Valve Body** ([www.sonnax.com/parts/4203-remanufactured-valve-body](http://www.sonnax.com/parts/4203-remanufactured-valve-body)).

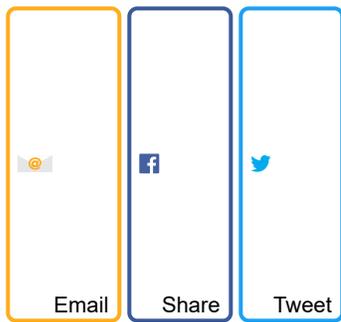
**MER0006**

*Mercedes, Casting #0006*

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May 26, 2010



# Converter Conundrums

Bob Warnke

Conundrum = A riddle involving a pun

## The Top 3 Converter vs. Transmission Issues of 2010

- **Conundrum 1**- [722.6](#) Engine stumble, TCC shudder/drone
- **Conundrum 2**- Honda [B7TA](#)-Overheated converter, TCC slip
- **Conundrum 3**- Aisin Warner 6 FWD-Overheated linings, harsh shift, sprag failure

---

### Conundrum 1

- [722.6](#)- W5A- W5J- NAG 1

#### Applications:

- Mercedes '00 to 2012
- Sprinter
- Dodge
- Jeep
- Freightliner

#### Complaints:

- Engine stumble at cool temperatures (gas or diesel)
- Rough idle when cool
- Driveline vibration ( NVH) during TCC modulation
- TCC shudder or drone between 35-48 mph

#### Cause:

##### ***Transmission Related:***

- Leakage of converter pressure into the TCC piston area
- Low converter apply pressure, due to valve bore wear
- Defective TCC solenoid

##### ***Converter Related:***

- TCC lining flake, due to water or Glycol
- TCC clutch clearance and friction material

#### Correction:

1. Air test the [transmission](#) and valve body circuits (see details on following pages).
2. Visual or vacuum test the working pressure regulator, the lube/converter limit, the torque converter control and the TCC damper piston.
3. Test, replace Y3 lockup solenoid.
4. Refer to Glycol test kit.
5. The TCC piston must return to release the converter clutch. A problem arises when centrifugal force reacts on fluid trapped behind the clutch piston. The residual pressure plus the force walks the piston toward the clutch. Within the 722.6 converter, oil trapped behind the TCC piston cannot be



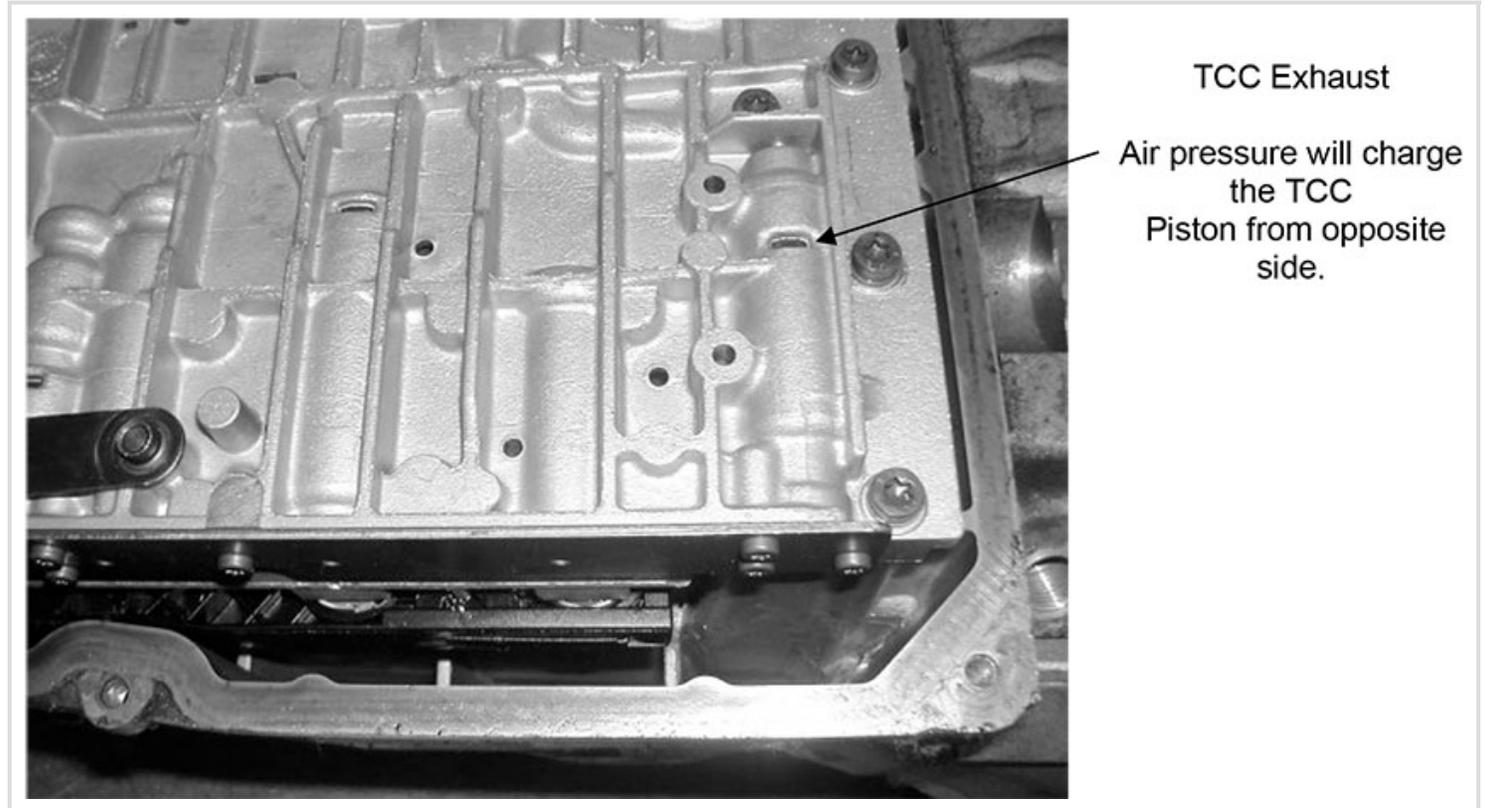
vented. This problem is increased by charge pressure of 50-100 psi. working its way into the low pressure TCC circuit. Fluid from the valve body to pump stator can exhaust at the control valve, but fluid trapped behind the piston loads it toward the clutch.

**Alternatives:**

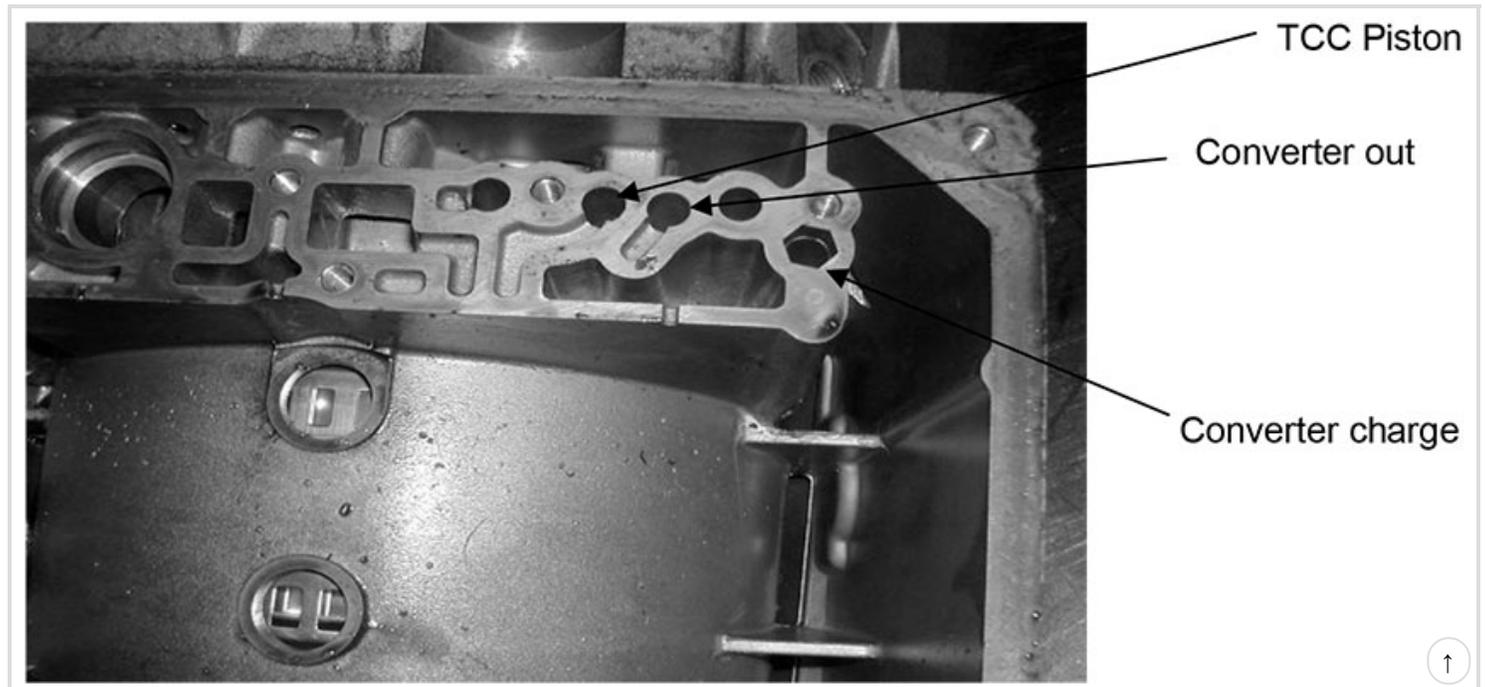
- Force the piston to release
- Use higher flow friction plates

**Air Testing**

1. The TCC apply circuit can be air tested, (30-60 psi.) with the unit in the vehicle and the valve body in place. Charge the exhaust hole. The air supplied will push remaining fluid into the converter TCC piston. Minimal leakage should come out cooler lines or other valve body locations.

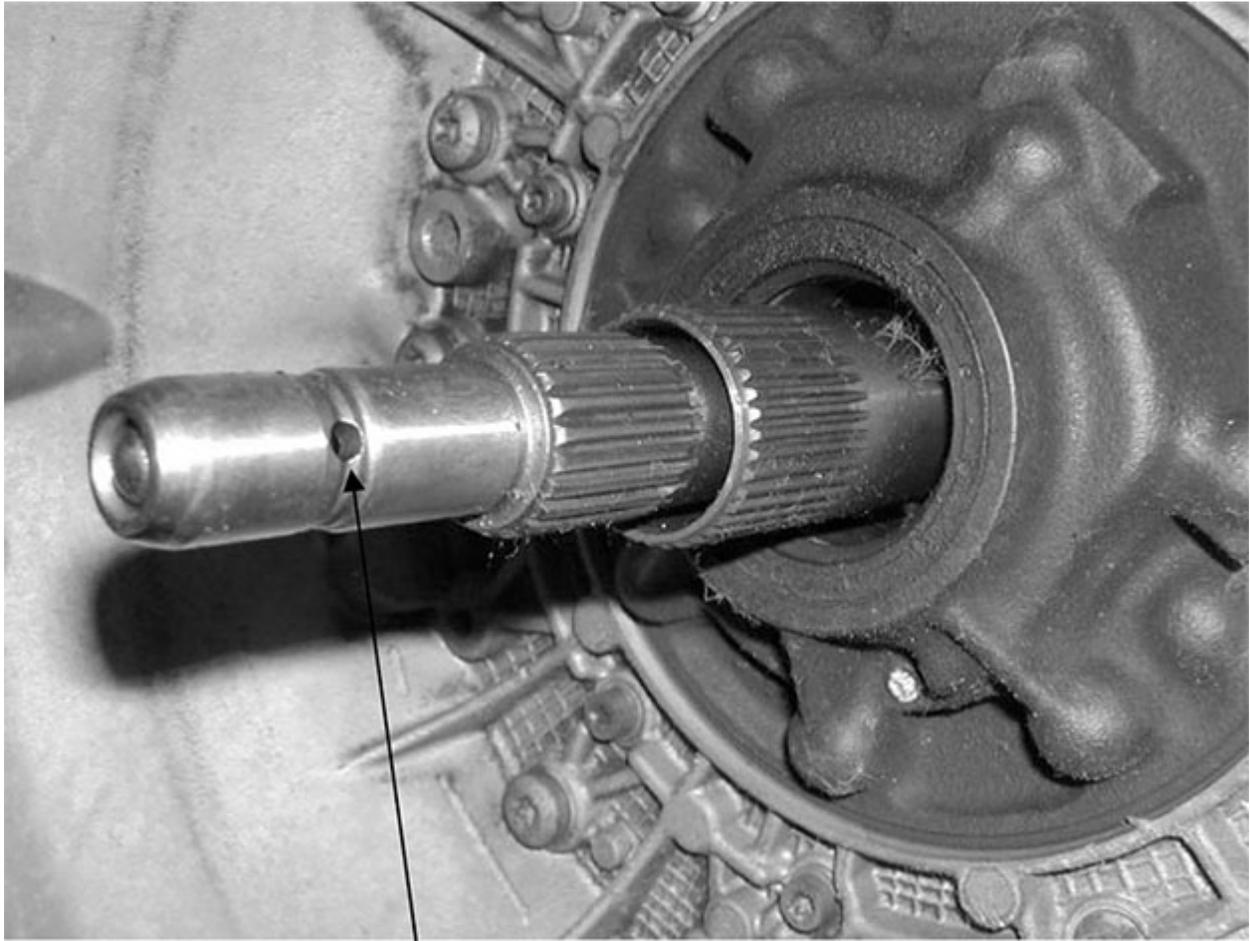


If the valve body is removed, the three converter circuits can be isolated. Any leakage from converter charge or converter out, is from cross leak at the pump or within the converter.

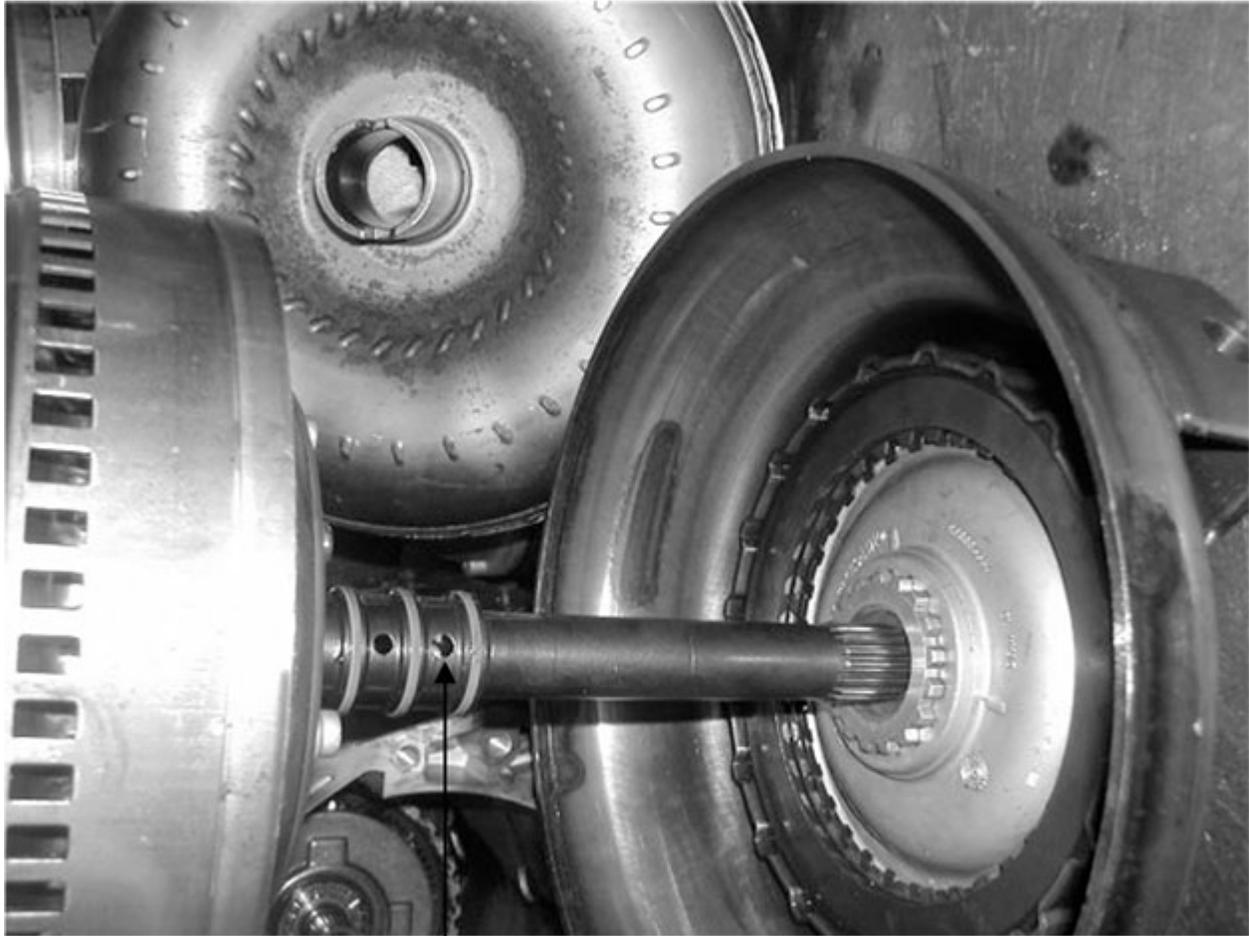


**Note:** Teflon®-type of sealing rings require fluid to lift. If air testing with a dry circuit, they will cross leak. Turbine shaft sealing rings should be the OE overlap design. Valve body must be flat and the pump stator or converter cross leaks should be eliminated. Internal transmission bushings insure the turbine shaft runs true, a requirement for the rings to seal.

The turbine shaft can also be installed into the converter and the clutch tested as well.

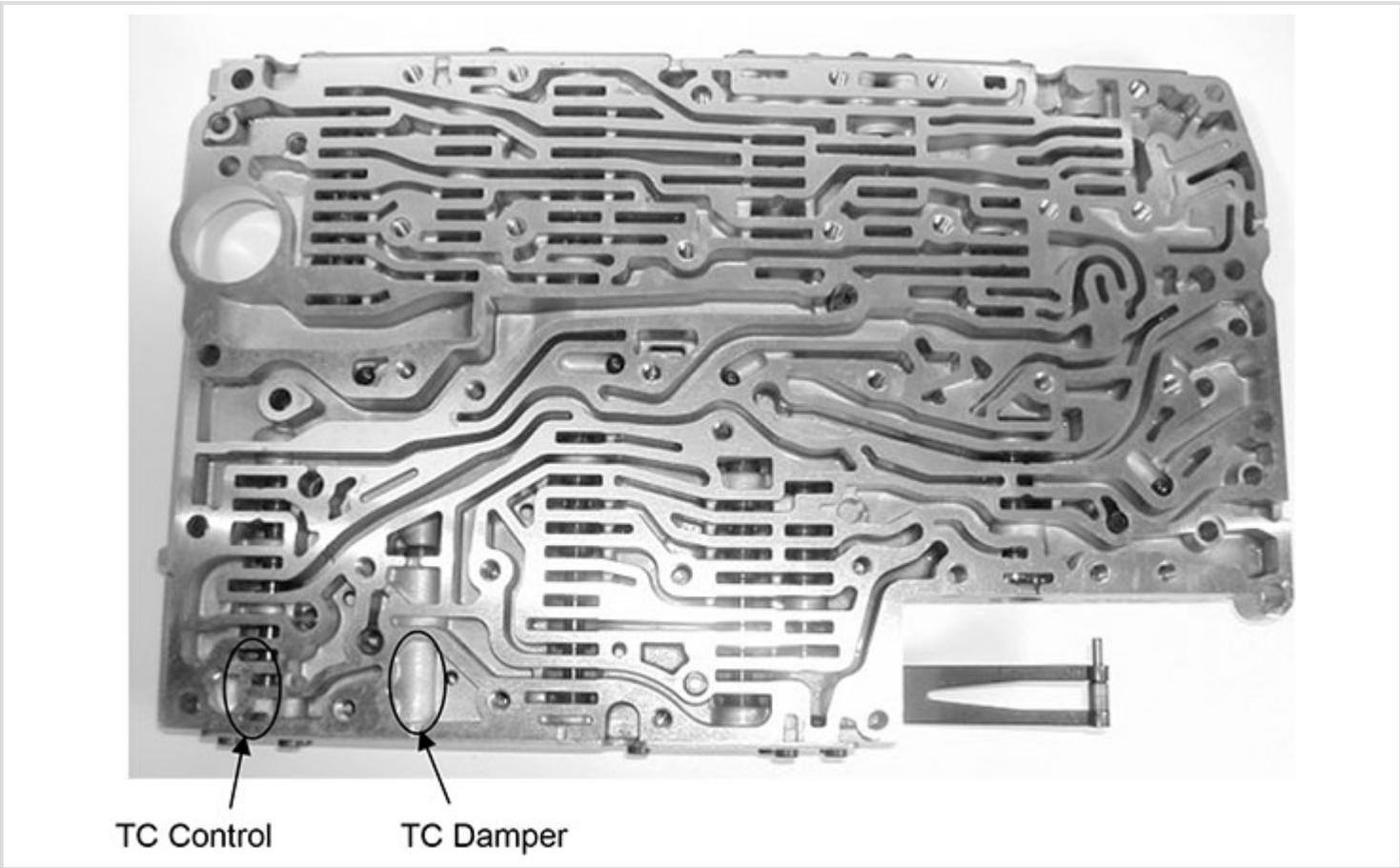
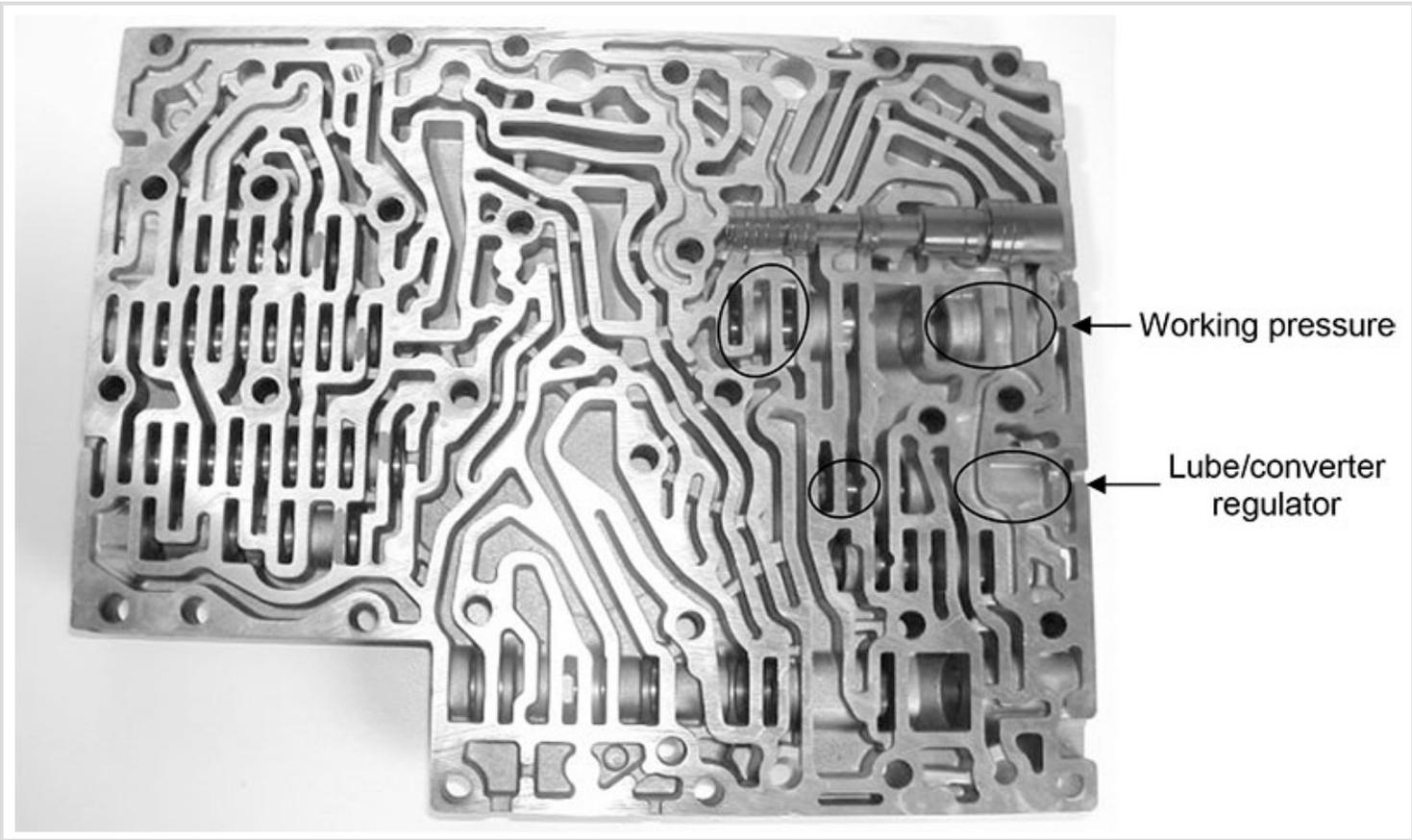


TCC Piston Apply

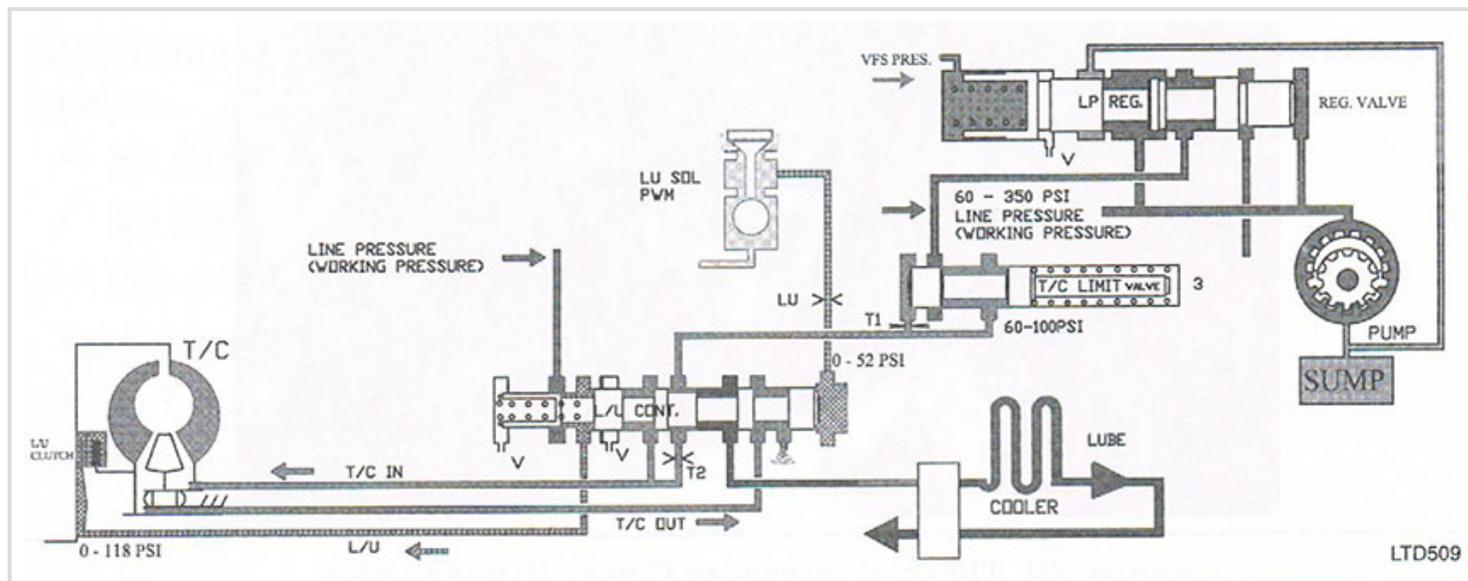


TCC Piston Apply

2. Low converter apply pressure extends from the main/working pressure regulator bore and the Lube/converter limit valve. Wear at either area affects TCC and converter charge psi. Critical wear points within circles (shown in photos below.) The TC control valve must stroke for full apply. Bore wear at either location reduces the TCC solenoid's ability to stroke the valves.

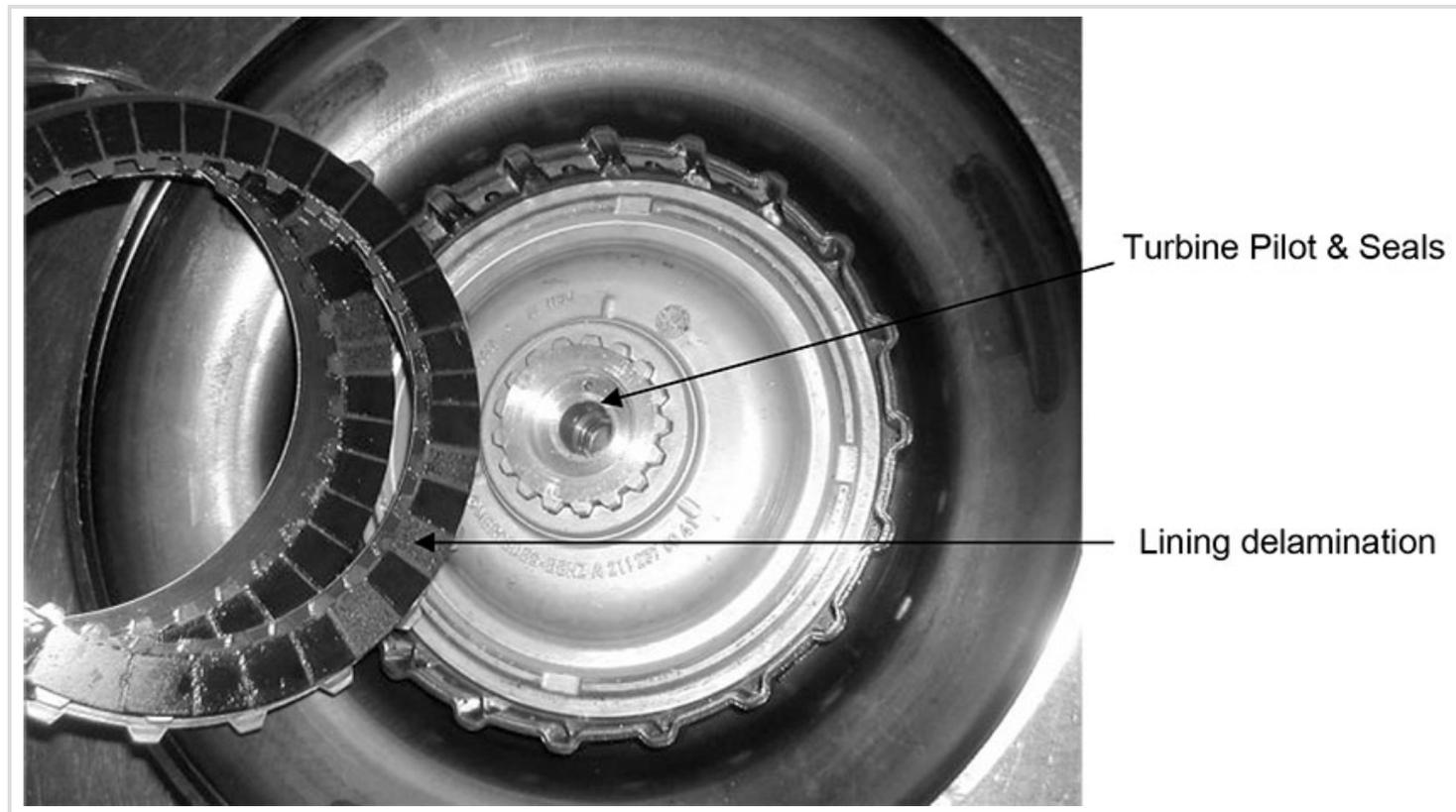


3. The normally closed, Y3/ 6y6, TCC solenoid strokes the torque converter lockup valve. If the Y3 solenoid leaks into the control valve circuit, the valve may rest in a partial apply position.



**Converter Related:**

4. Test for water or antifreeze in ATF. In some applications, one drop is sufficient to degrade clutch linings.



Mercedes kit # 000-989-009 and 000-989-0014

ESP Chemicals Inc. Ph; 520-622-4087 #HI 3859 @ \$75.00

Chrysler cannot cross reference this number.

An alternative is to use a hot plate and check for a sizzle noise as the water burns off.



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5. Aggressive converter friction plates, poor turbine shaft pilot and/or lack of piston return can create the condition.

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## **Conundrum 2**

- Honda B7TA

### **Applications:**

- Odyssey
- Similarities to other 4-speed designs

### **Complaint:**

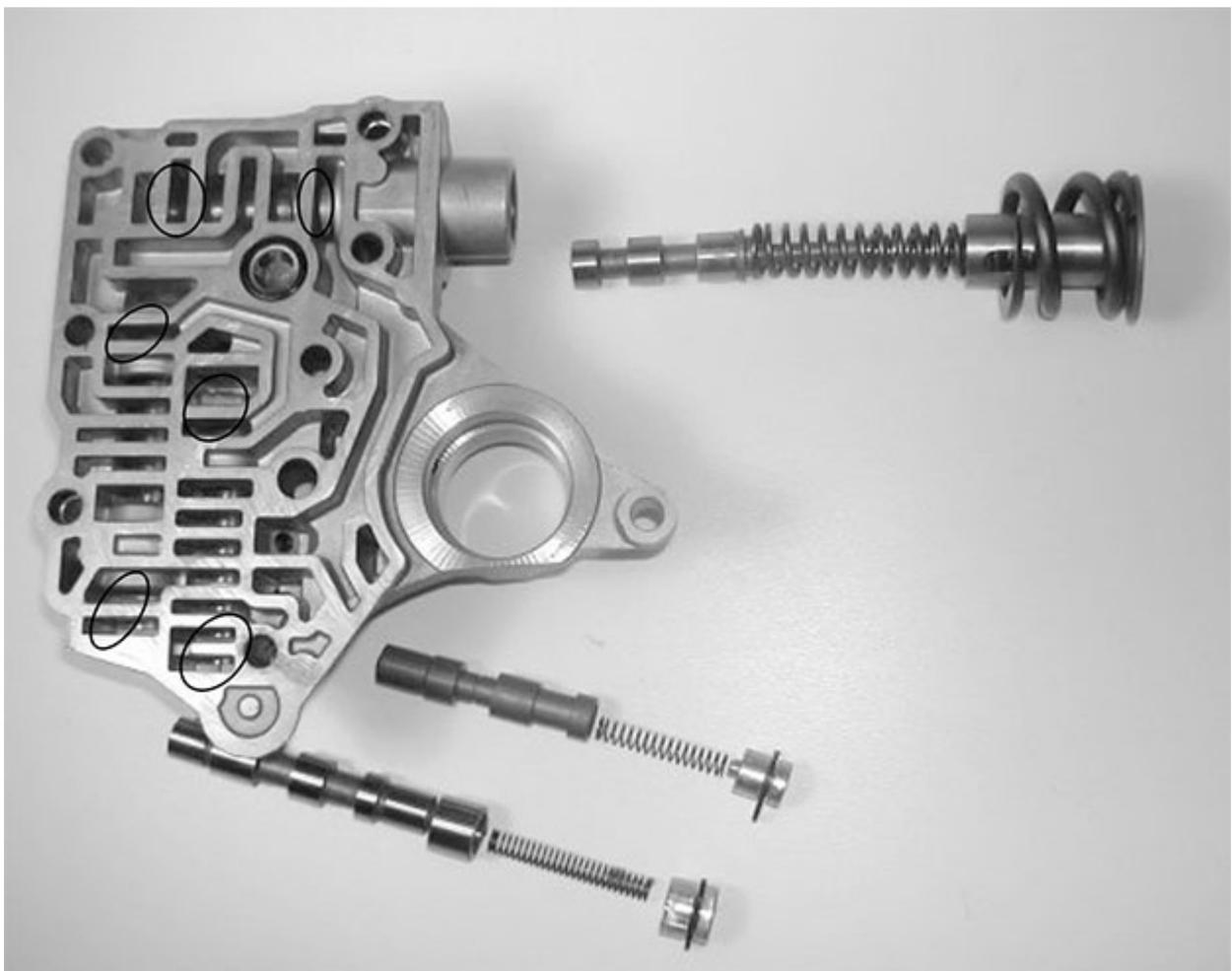
- TCC slip codes
- No TCC apply
- Overheated converters

### **Cause:**

- Valve body bore wear
- Restricted Coolers
- Defective linear solenoid
- Converter hub O-rings too small

### **Correction:**

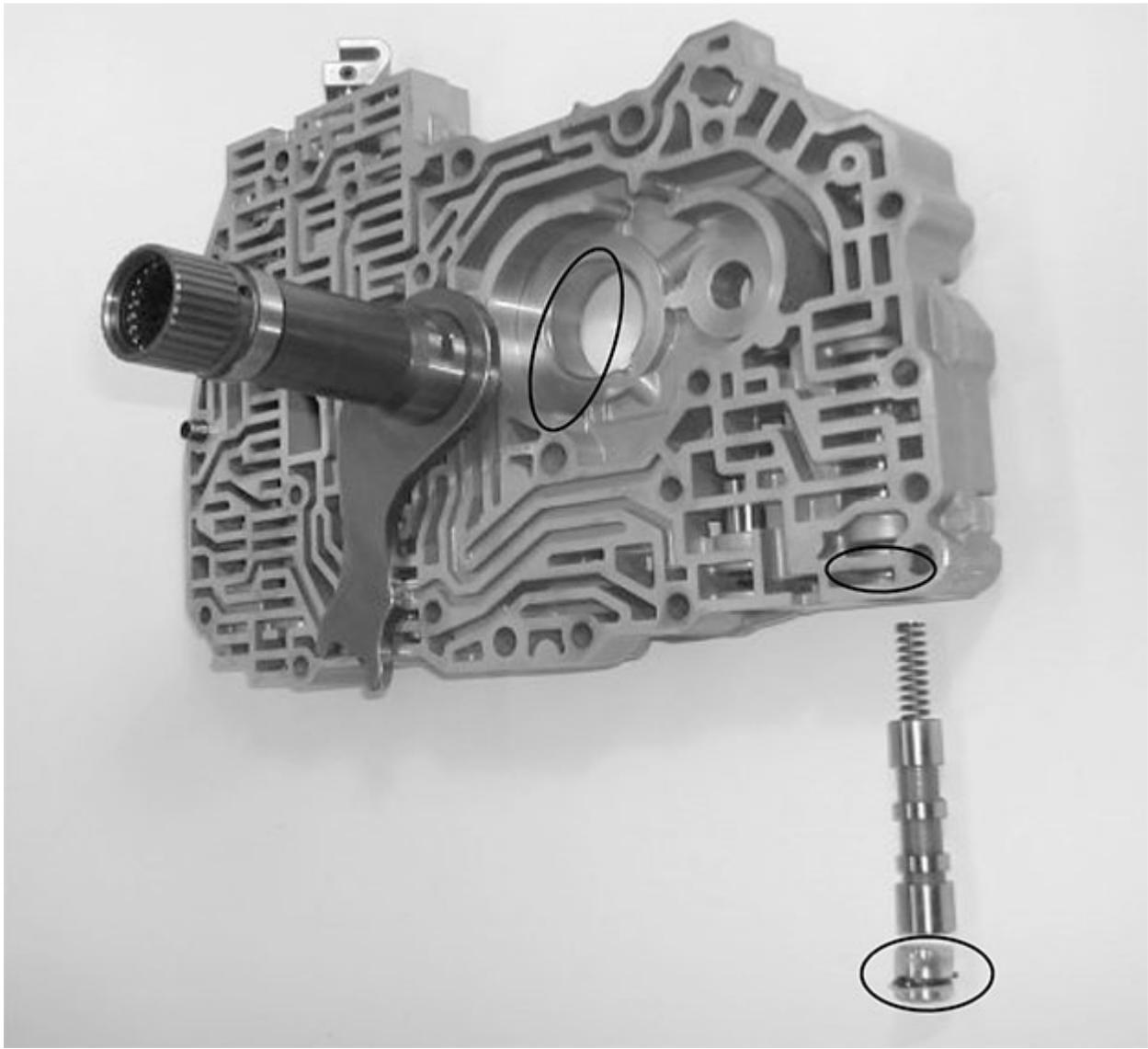
1. Main control body bore wear (critical points at circles).



Control valve body worn at the converter relief bore. To isolate prior to removal, compare scanner data to the cooler flow. You should see the TCC command and amperage change in parallel to a cooler flow change on a SonnaFlow®.

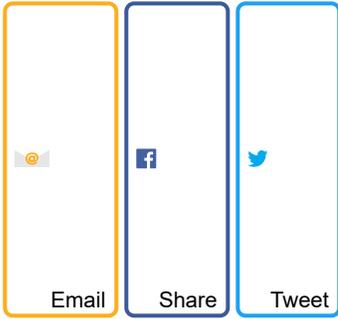


Loss of TCC or TCC slip: Created by end plug loose at the TCC control valve. A cross leak of converter charge oil into TCC control negatively affects TCC control. Inspect the stator for cross leakage at the finished area, where it passes through the casting.



2. Restricted coolers create back pressure on the hydraulics and either slow the stroke of the valve or cause it to stop midstroke.

June 30, 2009



# Mercedes 722.6, Daimler W5, Porsche W5, Jaguar 722.6

## Mio Cundl

The [722.6 transmission](#) went into production for use in 1996 model year vehicles and is still being offered in 2009. The 722.6 can be found in Mercedes, Porsche and Jaguar. The unit can also be found in variety of Chrysler products, where it is referred to as a NAG1.

The acronym NAG, is derived from the German word for new automatic gearbox; the number 1, being the first version. In the US, NAG1 units include the W5A580, W5A380, W5A330 and W5J400. In the W5A series, the last three digits indicate the maximum input torque in Newton meters. The W5A330 has the widest gear ratio; the others have the same ratio. The J400 identifies the unit as a Jeep application.

You can identify the origin by the following process. If the unit only has a pin stamp on the driver's side, or a combination pin stamp and bar code tag, it was manufactured in Germany. If it only has a bar code tag, it was manufactured by Chrysler.

The Sprinter, Crossfire and Mercedes units require specific fluid due to calibration issues, while the other Chrysler applications use ATF4.

This article will focus primarily on drivability issues related to the electro-hydraulic control unit or valve body. This gearbox was one of the first 5 speeds with a new concept in load sensitive Working Pressure and Overlap Clutch Control. The converter was also unique because of its multi-disc torque converter clutch (**Figure 1**).

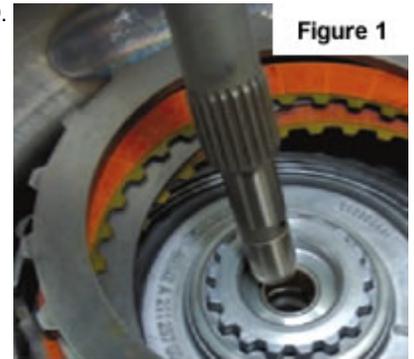


Figure 1

*Torque Converter Clutch*

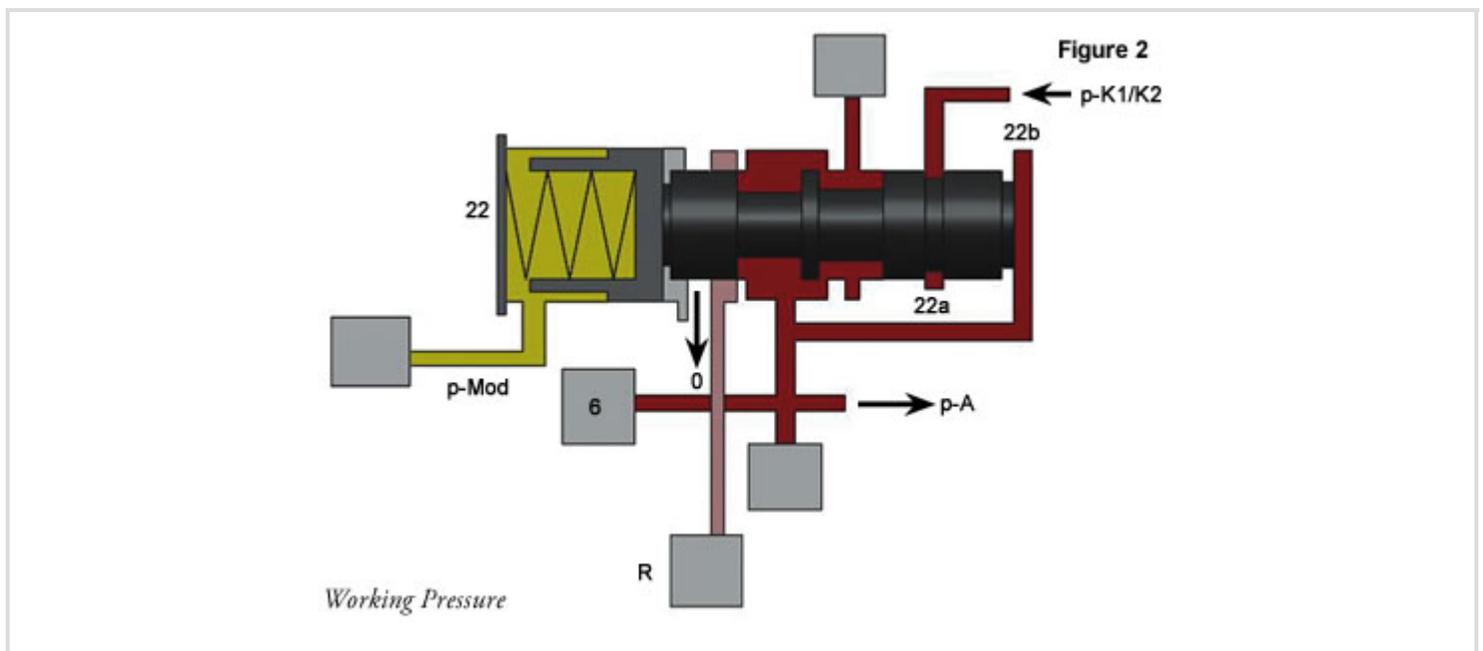


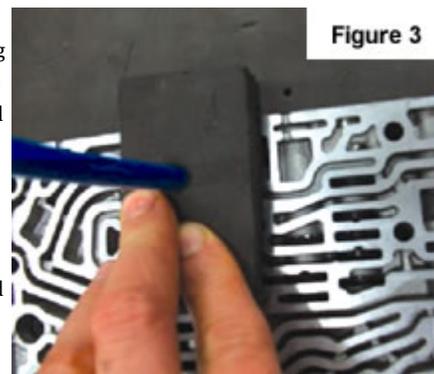
Figure 2

*Working Pressure*

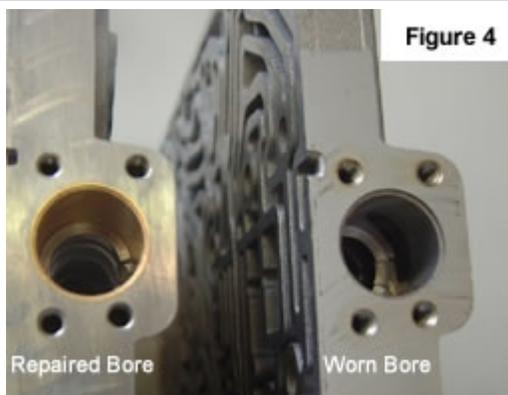
All these advances require precise hydraulic control, which leads us to the problems discussed here. One of the drivability complaints involves engine RPM flare on 2-3/4-5 upshift or a neutral flare on a 5-4/3-2 downshift. During upshift or downshift under load, line pressure (referred to as working pressure in the 722.6) must be responsive. The outer bore of the working pressure regulator valve wears and allows the pMod solenoid signal oil to leak past the boost end of the valve (**Figure 2**). As the casting wears, working pressure does not increase with engine load and the flare or loss of gear occurs.

In 1998, many of the high mileage cars we repaired under Mercedes warranty had the same problem: 2-3 flare causing the vehicle to go into limp mode. After several inspections we discovered the link between the working pressure bore wear and the shift problems. We felt that the lack of hardness of the valve body material was the cause of this common failure. We designed a bushing to correct the leakage, using a harder material that would allow it to last longer when paired with a high speed valve. The valve is a long, one-piece design, and when it is leveraged on the larger end, it also loads into the bore on the smaller inboard end. Both of these wear conditions can be discovered by either a vacuum test (**Figure 3**) or a visual inspection. **Figure 4** shows a worn bore on the right and a repaired bore on the left.

The 1-2 /4-5, the 2-3 and the 3-4 Overlap Sleeves are also in the pMod solenoid signal circuit (**Figures 5, 6 and 7**). It is common for them to wear on the I.D. and to leak at the O.D. as well. Wear at any of these sleeves reduces pressure at the working pressure valve. These sleeves can be vacuum tested prior to removal or cleaned and inspected for wear.



*Vacuum test for working pressure valve*



**Figure 4**

Repaired Bore

Worn Bore



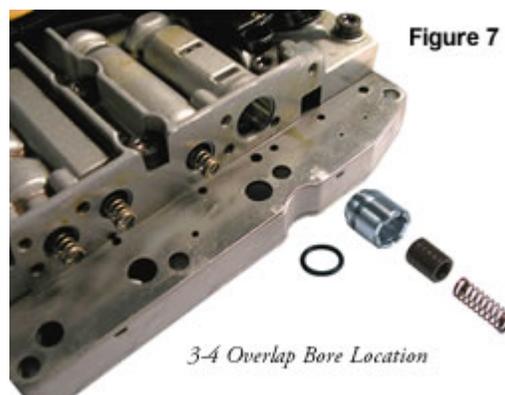
**Figure 5**

*2-3 Overlap Bore Location*



**Figure 6**

*2-3 Overlap Bore Location*



**Figure 7**

*3-4 Overlap Bore Location*

Mio Cundl is the owner of D.B. Automobile, Berlin, Germany and a member of the Sonnax TASC Force® (Technical Automotive Specialties Committee), a group of recognized industry technical specialists, transmission rebuilders and Sonnax Industries Inc. technicians.

## Related Units

722.6 Transmission

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