



Take a 5/16" drill and carefully enlarge the center holes in 4 of them. I used a pair of pliers and gently held the washer in place while drilling in order to keep from distorting it. It's not critical to get the hole perfect because the tapered valve poppets are self-centering.



This is what they should look like when you're done:

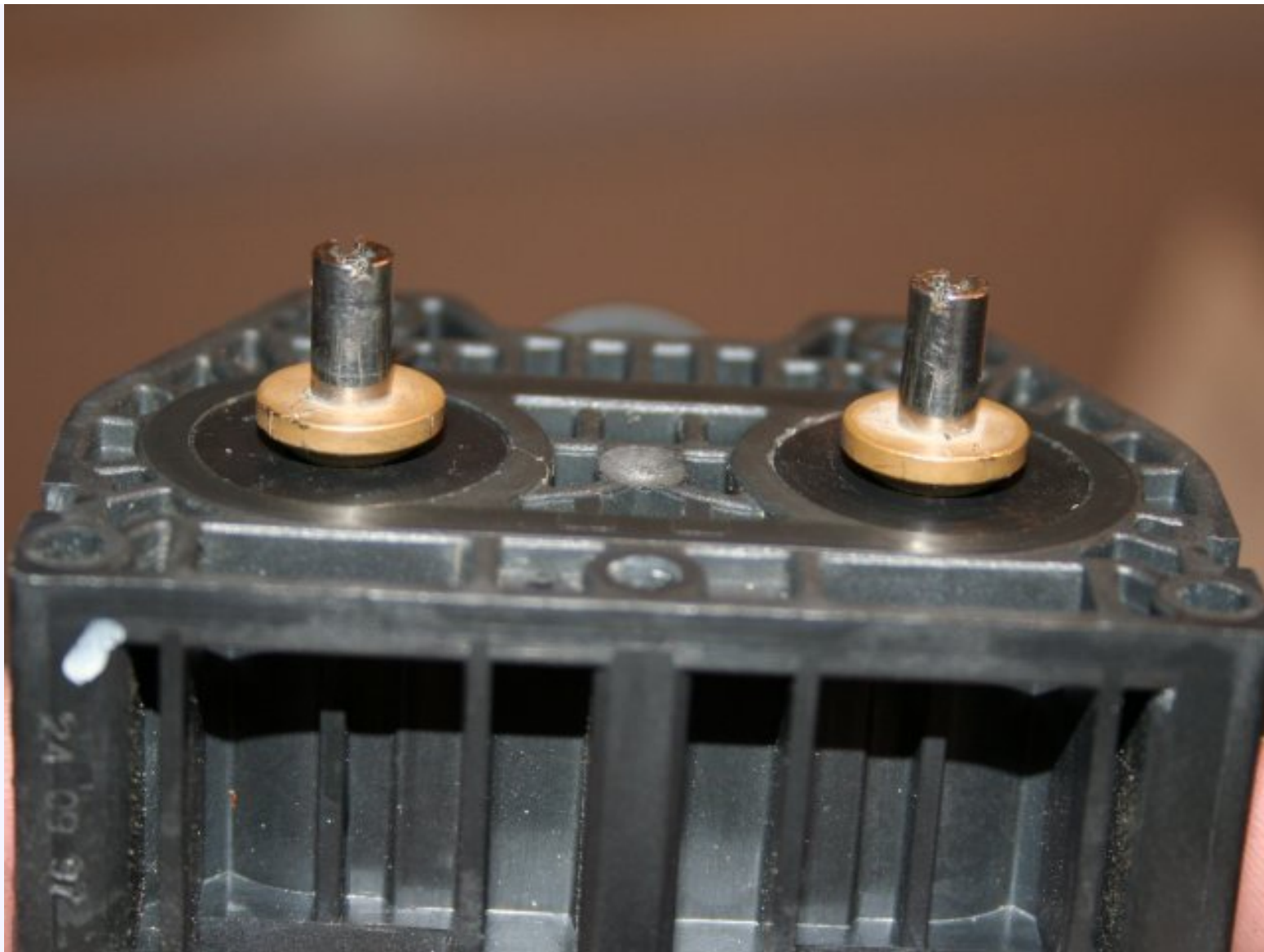


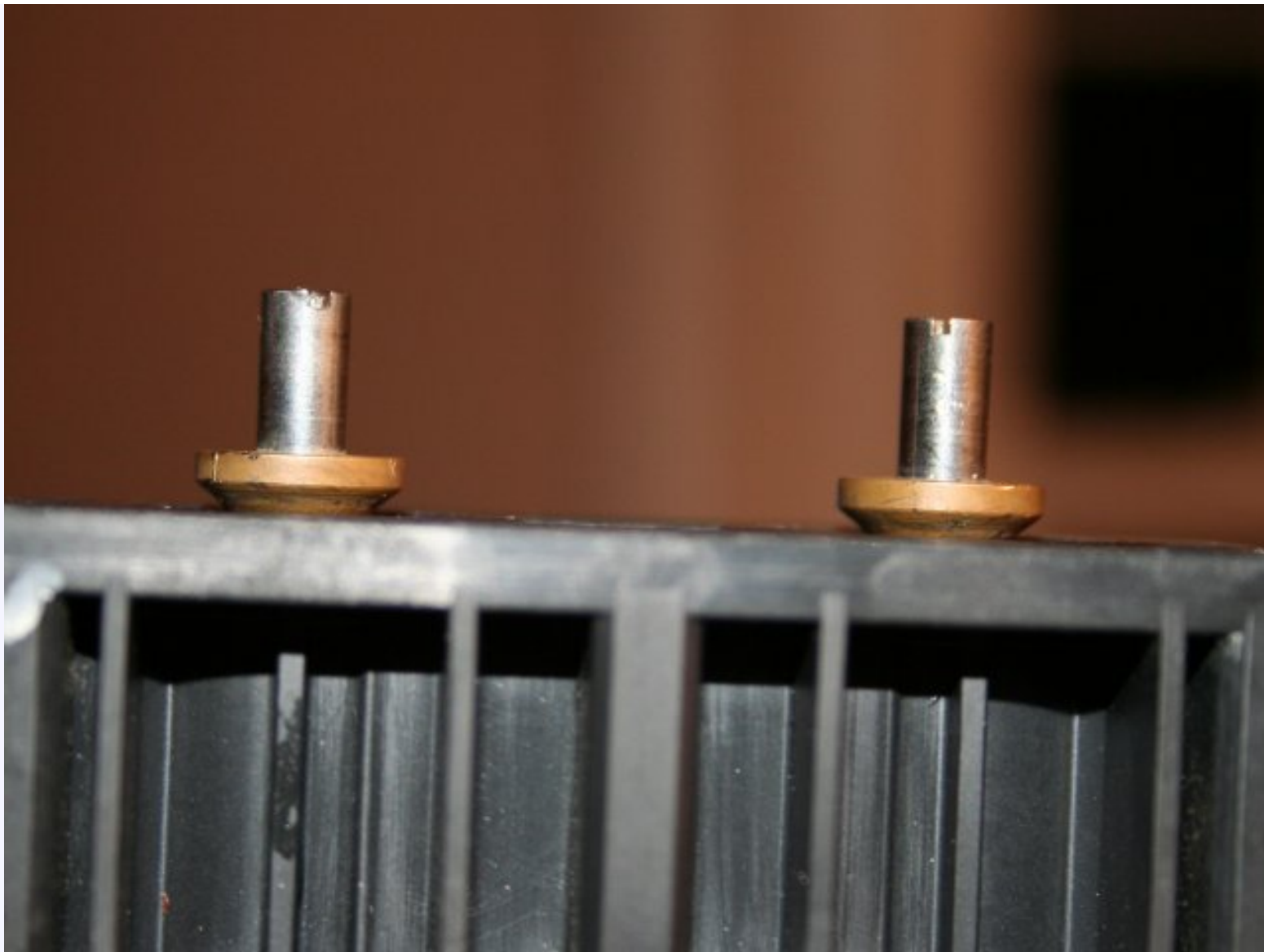
Next, insert one in each side of the bottom half. Press them all the way down then re-insert the brown plastic Cylinders. The cylinders have a shallow "key" in the back that keeps them aligned so insert them carefully and press them down all the way. When installed correctly, they will not be quite flush with the top surface of the valve body. When you're finished, it should look like this:





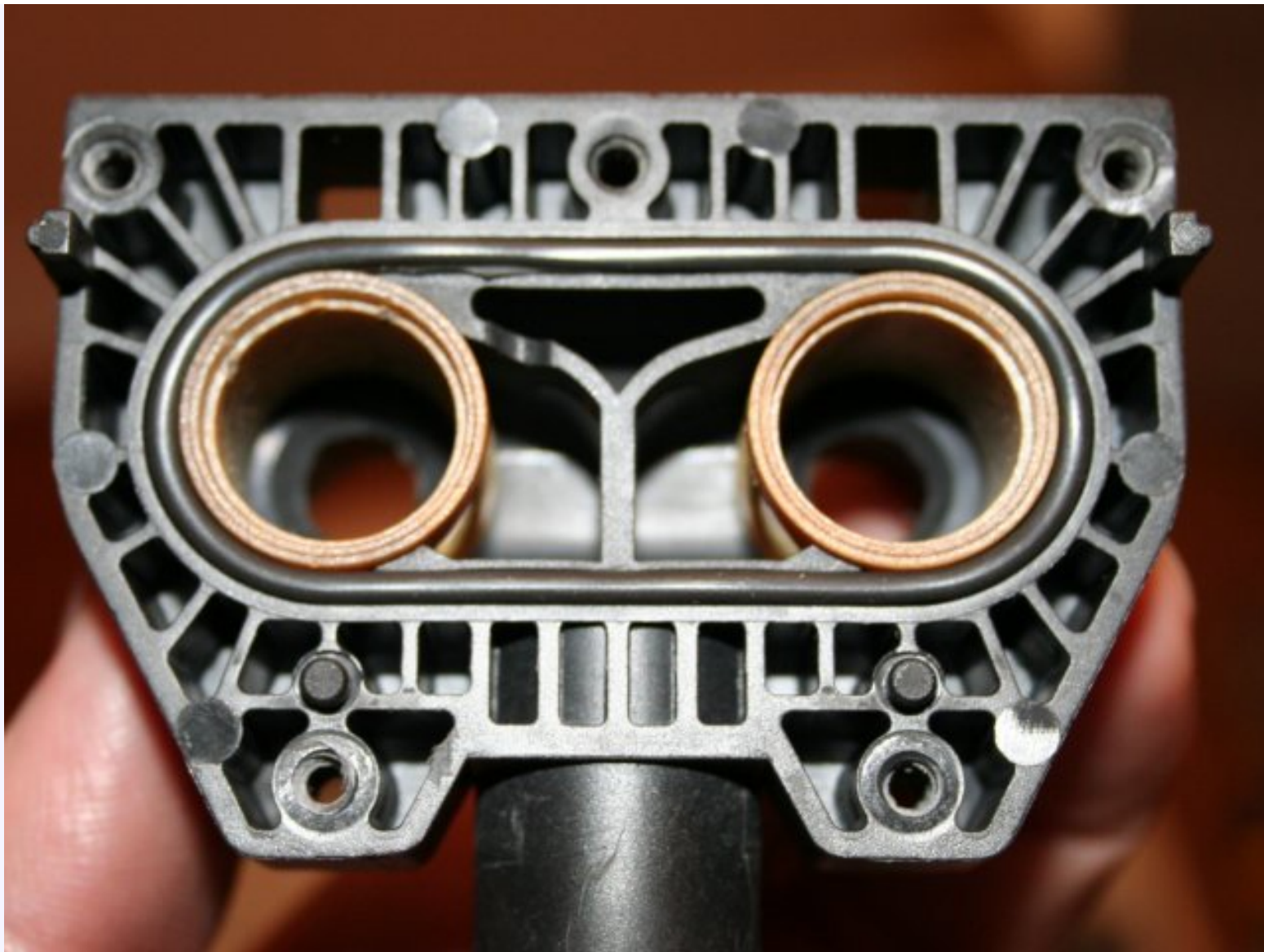
On the top half, first take one of the oval shaped O-rings and place it in the groove on the top side of the valve body. Then slide the silver plate and valve control rods back in. With one hand, press on the valve control rods (the side with the silver cylinders) and compress the springs fully. This will allow you to work the new rubber seals over the brass parts and into place in the valve body with the other hand. This part is a bit of a struggle but it's not too bad. Be careful to avoid bending the control rods. They should look like the photo below when you're done. Note that the brass parts stick up just a bit above the surface of the valve body. This is critical to the proper operation of the valve.





Finally, place the remaining oval O-ring on the opposite half of the valve body.





Return the loose umbrella shaped poppets to their position in the ends of the valve control rods and then slide the two halves together. There are two additional O-rings on the top side of the assembly for sealing the electromagnetic coils. Make sure they are in place then slide the coil assembly back onto the valve body. While holding it all together with one hand, insert and tighten the 5 T-10 screws singly. When assembly is completed, you should be able to shake the valve back and forth and hear it rattle.

Reverse the removal process to re-install the valve into the car. You can take some coolant and moisten the O-rings on the bottom fittings to make them easier to insert. Check the coolant level, start the car and warm it to operating temperature.

Test the function of the valve by setting the temp selector to "HI". You should feel warm air from the side and floor vents. After the interior has warmed up sufficiently, set the temp control to "LO". Within about 30 seconds, you should feel the air direction change and cool air begin to blow from the center vents.

Finally... Enjoy your heat! 😊

-Evan

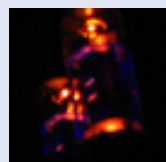


*Last edited by KarTek; 01-14-2009 at 09:05 PM.*



01-13-2009, 09:54 PM

#3



Southern



Registered User

Join Date: Jan 2000  
Location: Carol Stream, IL, USA  
Posts: 601

Thanks for sharing your information. I hope that those faucet washers hold up to the extreme temps.

Ray

1998 Mercedes E320, 200K Miles

2001 Acura 3.2TL, 178K Miles

1992 Chevy Astro, 205K Miles



01-13-2009, 10:47 PM

#4



Turbo E320



Im a Jeanyus

Join Date: Nov 2007  
Location: Jeffersonville, Indiana  
Posts: 470



So that's what that thing is 🍷 I was wondering about that. So if I disconnected that I would lose my heat, interesting. Does the secondary pump just constantly circulate the coolant through that duo valve or is it somehow tied into other engine functions to regulate its speed?

1997 Mercedes E320 Turbo  
Garrett T3/60-1 Turbocharger  
Custom Water Intercooler Setup  
352rwhp/366rwtq @ 8.6psi in '08



01-13-2009, 11:13 PM

#5




**KarTek** ●


Boy adventurer...

Join Date: Jun 2007  
Location: Bahama/Eno Twp, NC  
Posts: 2,327

[View Photos By: KarTek](#)

Quote:

Originally Posted by **Turbo E320** 

*So that's what that thing is  I was wondering about that. So if I disconnected that I would lose my heat, interesting. Does the secondary pump just constantly circulate the coolant through that duo valve or is it somehow tied into other engine functions to regulate its speed?*

If you disconnect it, it defaults to heat all the time so it'll roast you out. The duovalve is a 2x2 way bypass valve. When it's energized, it bypasses the hot water back into the cooling circuit. When it's idle, water circulates through the heater cores. The climate control system opens and closes each side of the valve on a variable duty cycle based on the temperature set on the display. The more it's energized, the colder the air is.

You can set the temp on the panel to a level colder than the ambient temp and then go out and feel of the valve and you'll feel it pulsing more rapidly. Warmer = slower.

The aux water pump provides the thrust to circulate the water on a normal basis and also when the "Rest" button is activated when the engine is off. As far as I can tell, it always spins at the same speed.

-Evan



 01-14-2009, 07:37 PM

#6

[platt-deutsch](#)



Registered User

Join Date: Dec 2007  
Location: Iowa  
Posts: 94

Nice Job! I have also rewound the solenoid coils in my 96 S600. The orings failed and coolant got in the coils and ate the copper coils...I wonder why those poppets swelled like that? Never seen that before.



 01-14-2009, 08:02 PM

#7

## Texholdem



Texholdem

Join Date: Mar 2007

Location: Dallas

Posts: 756

[View Photos By: Texholdem](#)

Thanks for the great DIY write-up, the best part is the "1/2L faucet washers"; just genial to come up with them.

1996 E320 since 1/16/08, 171K miles as of Feb 2011

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1989 300CE - R.I.P. Dec 29 2007

Other MBs (sold): 1992 300E-24 - 1979 350SLC - 1984 230E - 1990 300CE



01-14-2009, 09:07 PM

#8

## Matt L



Registered User

Join Date: Oct 2005

Posts: 4,264

Nice job. This should be added to the wiki.



01-14-2009, 10:11 PM

#9



## Chad300tdt



Benz Obsessed

Join Date: May 2007

Location: North Wales, PA

Posts: 3,645

[View Photos By: Chad300tdt](#)



nice job, KT. i do have one added suggestion for folks and that would be to stuff rag below and around the duo-valve assembly prior to dismantling. it'll serve to catch coolant flowing out, as well as the errant screw which may escape your fingers.

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-- raymond~  
47° 34'N 122° 18'W



01-15-2009, 05:24 AM

#12



[KarTek](#) 

Boy adventurer...

Join Date: Jun 2007  
Location: Bahama/Eno Twp, NC  
Posts: 2,327

[View Photos By: KarTek](#)

Thank you all for the comments! It's fun finding these "Easter Egg" kind of solutions.

Raymond~, thanks for the suggestion. I guess I should add to the story the part of the job where I took a turkey baster and drew off as much coolant as I could reach from the expansion container... 😊 Not a drop flowed out of the open connections... 😊

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-Evan



05-17-2009, 05:18 PM

#13



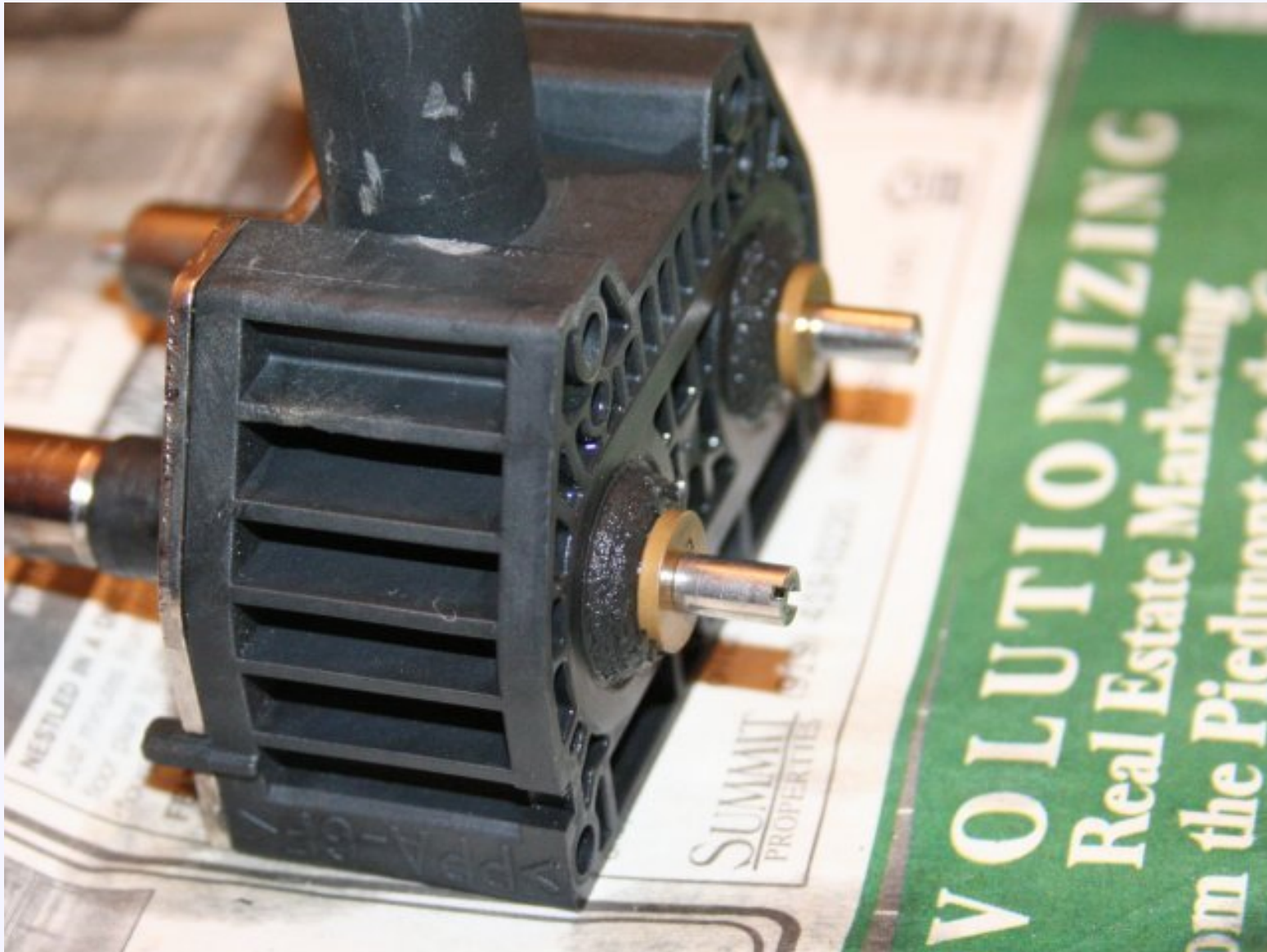
[Parrot of Doom](#) 

1997 W210 E300TD 243,000

Join Date: Mar 2006  
Location: Manchester, UK  
Posts: 983

GREAT HELP! Thanks so much. Just wanted to note that these instructions apply to the W210 E300 and E420 and probably NO OTHER W210 models (however they could be adapted to be helpful). The E420/E300 have TWO inlets and TWO outlets for some reason, and the rest of the W210 lineup only has one inlet and two outlets (or vice versa on the inlets/outlets).

I actually ended up rehabbing my valve using parts from a valve off an E320 so was able to compare them side by side. Basically, the E420/E300 valve has an extra layer... which is pretty much this section from previous photos...



I believe the biggest issue with my valve was the degraded O ring... this part...



The center section from that seal was all gummed up inside the valve. Probably would have had a pretty good chance of the valve working right just by cleaning up/trimming the center section as outlined in the instructions (and also removing the tattered bits, of course). I was able to scavenge a similar seal off the surplus E320 valve I found.

I also used two rubber washers that were in good shape from my extra valve. I don't think it had the four washers like the E420/E300 valve with the extra layer, but that was OK as two of the washers from my orig valve were in good shape.





[KarTek](#) 

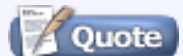
Boy adventurer...

Join Date: Jun 2007  
Location: Bahama/Eno Twp, NC  
Posts: 2,327

[View Photos By: KarTek](#)

Glad I can help you all out!

-Evan



12-26-2011, 04:25 PM

#18

[ca\\_tallguy](#)



Registered User

Join Date: Oct 2007  
Posts: 14

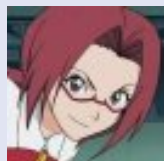
EEEE! I was feeling pretty good about the repair but now I have constant heat from both left and right side vents. Center vent does seem to be changing between hot and cold OK. Any suggestions? Is this most likely a problem with my duovalve repair or is it more likely that fixing the duovalve unmasked other issues?

Search Mercedes forums and websites at <http://www.everythingbenz.com>



12-27-2011, 09:34 PM

#19



[KarTek](#) 

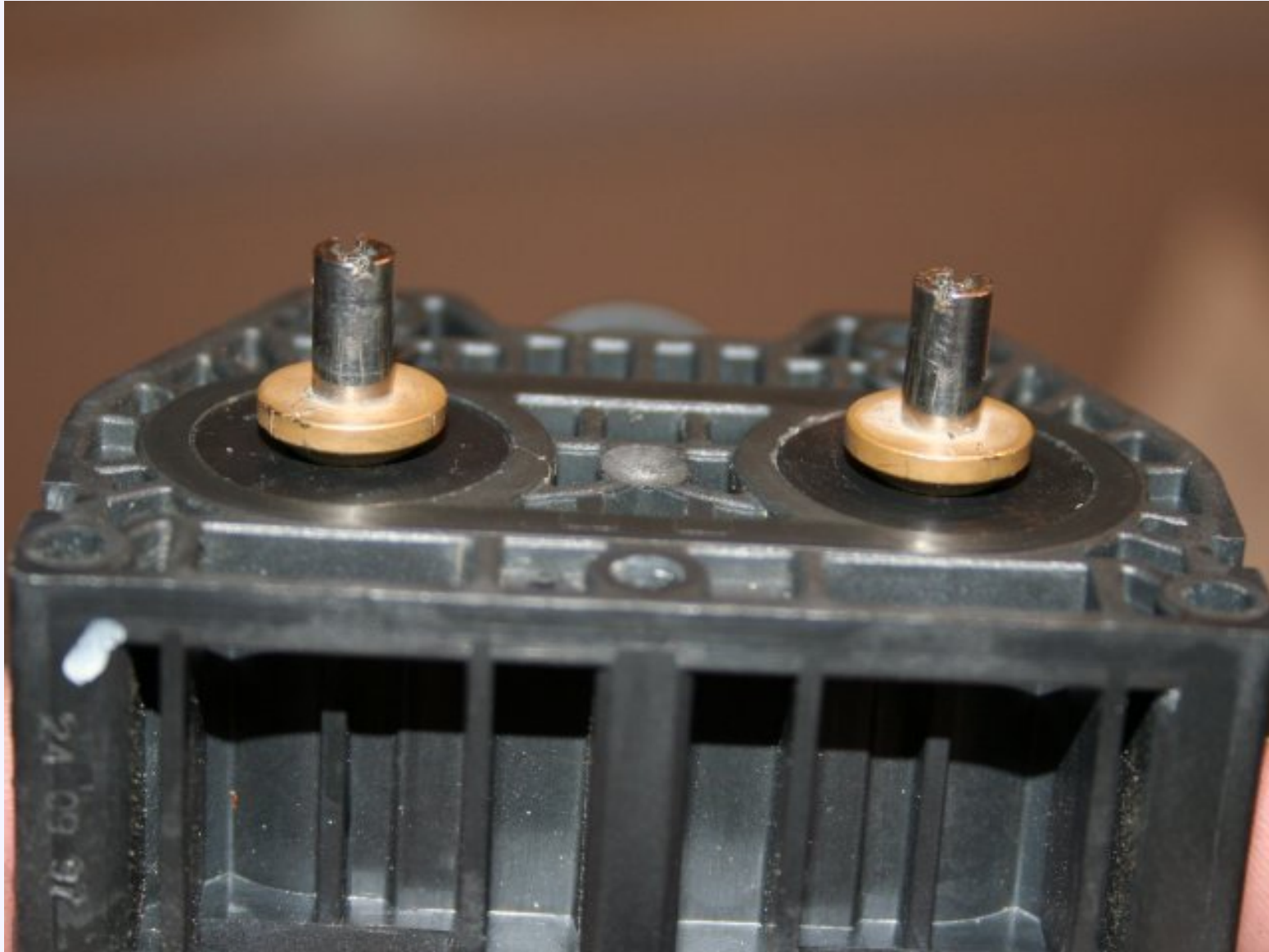
Boy adventurer...

Join Date: Jun 2007  
Location: Bahama/Eno Twp, NC  
Posts: 2,327

[View Photos By: KarTek](#)

Sounds like you either didn't get the electrical connector secured properly or you didn't ensure that the valve poppets were positioned exactly like the ones in the earlier picture.

It's critical that they sit up just like the picture because there's a balance in the distance between open and closed. The balance ensures that the valve can direct water either of two ways. If the balance is disrupted, the valve will be biased towards too cold or too hot.



Also, hot air doesn't typically come out of the center vents. Only the sides, defrost and floor.

-Evan



12-27-2011, 11:43 PM

#20

[ca\\_tallguy](#)



Registered User

Join Date: Oct 2007  
Posts: 14

That makes sense. I think the problem may be that the other end of the poppit things that slide in there... those were broken. I was hoping they would still work with just the short part of the shaft to keep them in place but after taking the valve back out, it looks like they were rolling around in there. I'm going to try the "rivet fix" that I read about on another forum to replace those stems. Unfortunately, the spare valve I had for a normal W210 also had broken poppits. It seems that those parts would have worked had they been intact on my spare valve (just FYI for anyone trying to scavenge parts for a repair).

Thanks so much for the follow up. I'll post again as I work through this to hopefully share any further info for others coming across this in the future.

Search Mercedes forums and websites at <http://www.everythingbenz.com>



12-28-2011, 07:19 PM

#21

[ca\\_tallguy](#)



Registered User

Join Date: Oct 2007  
Posts: 14

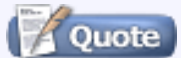


Quick update - I took the valve apart and did the "rivet fix" for the broken plastic poppits and I also changed around the seals and everything so far seems to be working well. I may have flipped around the seals before when I removed them from the very bottom area of the valve for inspection.

On reassembly, I had to guess and it seemed like the concave portion would be the logical side for the poppits to seal against. But in looking at photos here and in other threads, it seems like the opposite is true and the flatter side was supposed to be facing the poppits.

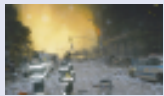
When the concave portion is facing inwards, that creates a much larger distance for the poppits to travel in order to seal them up. So if you are embarking on this repair, make sure you pay close attention to all the little details like this when you are on the disassembly portion! I'm not 100% sure that I'm correct on the final position of these washers but so far, so good. I'll try to post again if I encounter further problems with the valve in operation.

Search Mercedes forums and websites at <http://www.everythingbenz.com>



09-12-2012, 07:45 PM

#22



[Riccie420](#)



Registered User

Join Date: Jun 2012  
Location: NYC  
Posts: 3

### **VALVE CLICKING When OFF**

Thanks for Posting a great article. I did all of this and seems great ! However

When I shut my Car off, I hear "Click...Pause "Click"...pause..."Click... I put my thumb on the Duo-valve and besides it being burning Hot, The Valve doesn't stop "Clicking "...It actually I think killed my battery after not driving the car for a week.

I pulled the fuse and it stops, left the car 2 weeks battery is no issue...

\*NOTE: I followed your easy directions because the Duo-Valve was making this sound Prior....

Any help would be appreciated 🙄🙄🙄

