Visitors:

The entire procedure is as follows:

1999 VW EuroVan Camper EVC
Automatic Transmission Fluid (ATF) Change
Date of this text file: September 24, 2005
Revised 4/25/11

If you own a VW EuroVan or EuroVan Camper (EVC) or a VW Rialta, Sunstar, or Vista you will want to change your automatic transmission fluid (ATF) at least every 40,000 miles, preferably more often if you haven't installed an external cooler.

The VW Service Schedule shows the following:

Service at 40,000 miles - ALL MODELS
Automatic Transmission: Check ATF (all models except EuroVan)
Automatic Transmission: Change ATF (EuroVan only)

I change mine every 10,000 miles or 15,000 miles and find that the job only takes about 45-minutes extra time when also doing the oil change and I've already got my EVC up on the lift. Some VW dealerships have quoted upwards of $800 for this job! Clearly, they do not have a clue... yet, they are the ones laughing all the way to the bank! If you supply the parts (shown below) and take your vehicle to a good independent VW mechanic, you should not have to pay more than about $60 or $100 for the labor. Of course, I believe that you will be far better off if you simply do the job yourself.

If you have never done the ATF change job before, give yourself extra time to figure things out carefully. I would budget two hours for the first time owner doing the job at home. No one will do the job as well as you can do it yourself, especially if you follow the directions below carefully.

The next best option is to print this file out and give it to your independent VW mechanic. You can stand behind your mechanic, looking over his shoulder, to make sure he doesn't cut any corners. After all, it is you who will be taking a long walk if your transmission goes south. All of the pictures here and the information in this text file pertain to my 1999 EVC. The procedure and photos ought to be fairly close (but not always identical) for other model years too.

Let's get started. Take a look at these first seven pictures and then follow along in the text below:

Picture 1

Picture 2

Picture 3

Picture 4

Picture 5

Picture 6

Picture 7

The first seven pictures show the parts you should purchase beforehand. The ATF in picture 2 is the expensive fluid available from any VW dealership at about $27 per liter bottle. You will need just shy of 4 liters to do this ATF change. I recommend purchasing 5 liters, having an extra bottle "just in case." You can always save back the extra fifth bottle for the next change.

The VW manual calls for 3.0 liters of "refill capacity," but my experience is that it takes nearly 4 liters. The ATF in picture 2 is only available at the VW Dealerships. This next paragraph goes into an alternative ATF choice that is available.

Steve Schock, (orders@europarts-sd.com), at Europarts sells all the parts shown in pictures 1 through 7. Steve's ATF is apparently OEM, but in a different bottle. You can see Steve's ATF bottle and label in pictures 3 and 4. The price for this "other" fluid (Pentosin ATF1 or Febi-Bilstein) is roughly 40-percent less than the VW Dealership price. I've looked at the fluid side-by-side and find them to be ever so slightly different in color when a few drops on a white background are compared. The odor (aroma?) between the two bottles was ever so slightly different as well. These minor differences may simply be variances between batches. I have no way of knowing for sure. There are other replacement fluids available and some EVC owners swear by their brand. Personally, I will stick with the VW special sauce.

The Pentosin (and Febi-Bilstein) bottle does indicate that it meets VW TL 52162 specification. I tend to stick with the VW Dealership ATF thinking that the extra $$ is cheap insurance for what I do not know and cannot prove one way or another. If your VW is still under factory or extended warranty, it may be wise to use the VW ATF just to avoid any disputes in the event of a warranty claim. Steve can be called at: 858 451-0020 or his web site is: http://www.europarts-sd.com. His e-mail

address is: orders@europarts-sd.com

The VW Service Schedule calls for an ATF change at every 40,000 miles interval. Many good VW mechanics and shops (including GoWesty!) recommend a 15,000 miles interval. I do my changes every 10,000 to 15,000 miles. If you have not done your ATF change before and your mileage is getting high, I recommend that you do the change as soon as possible and then do a second change in about 5,000 miles. The reasoning behind this second change is that you cannot get all of the ATF out of the transmission when you're draining. There is still one or perhaps two liters of dirty fluid remaining when you are all done. (The VW manual shows that the EVC holds 5.3 liters ATF and the refill capacity is only 3.0 liters) That dirty fluid will mix with the nearly four liters of new fluid right away. Again, nearly four liters is the refill amount, in my experience. So, doing a second change 5,000 miles after the first one might be considered a bit of an overkill, but that can be your call.
Keep in mind too that ATF that has been overheated at any point in its history is no longer as effective as new fluid. My theory is that the sooner you can get rid of as much of the old fluid as possible, the better off you will be.

Picture 8

This is probably the most important part to bring to the VW Independent shop! (Never have this kind of work done at a Dealership... you have NO control over the idiots and will never know what they did or didn't do. Though, some folks believe that "ignorance is bliss." And, many folks have a favorite dealership... okay, fine!) Give the cooler of beer to the mechanic after the job is through... but, let him see it before he starts! ;) If you find a *good* independent VW mechanic in whom you can place your trust, great... be sure to leave him a good tip every time he works on your vehicle. I usually will leave $25 or $50 for my guy.

I did my first ATF change under the watchful eye of a good, experienced VW independent mechanic after I had researched the procedure thoroughly in the Bentley manual and other sources. I have done all subsequent changes at home myself.

Picture 9

Very important that any shop knows where to place the lift pads. There are square indentations in the EVC's body... these are there as a sign for the lift operator to follow. Make sure they don't screw this part up! If I am going to a new or different shop for any reason, I place a bright orange sticky-dot on this square and I make sure the lift operator has been clued in. Keep in mind that the vehicle needs to be level when you do the ATF fill at the very *end* of this procedure. It is okay to have the front wheels up on a ramp or up on wood blocks for the *initial* draining. Once you are ready to do the *final* ATF fill, you will need to have the vehicle on level ground. The ideal situation is to have a lift that will bring your Eurovan up to shoulder level, but this is a luxury... it is not necessary.

Picture 10

Picture 11

Picture 12

Picture 13

Here is the filler cap and spout. The red cap may be reused about three or four times, but the plastic part will break along its back crease eventually. It was designed to be used once and replaced with a new one, although I don't feel it's really needed. In fact, most VW dealerships have no idea that the ATF needs to be changed every 40,000 miles minimum (as per the shop manual fine print). Most dealerships have never done this job and have no idea how to do it properly. Additionally, most will tell you that the automatic transmission is a "sealed unit" and is never to be opened or changed. This is utter nonsense. Do not listen to them! In fact, my blanket advice is to never go to a VW dealership for any reason, if you

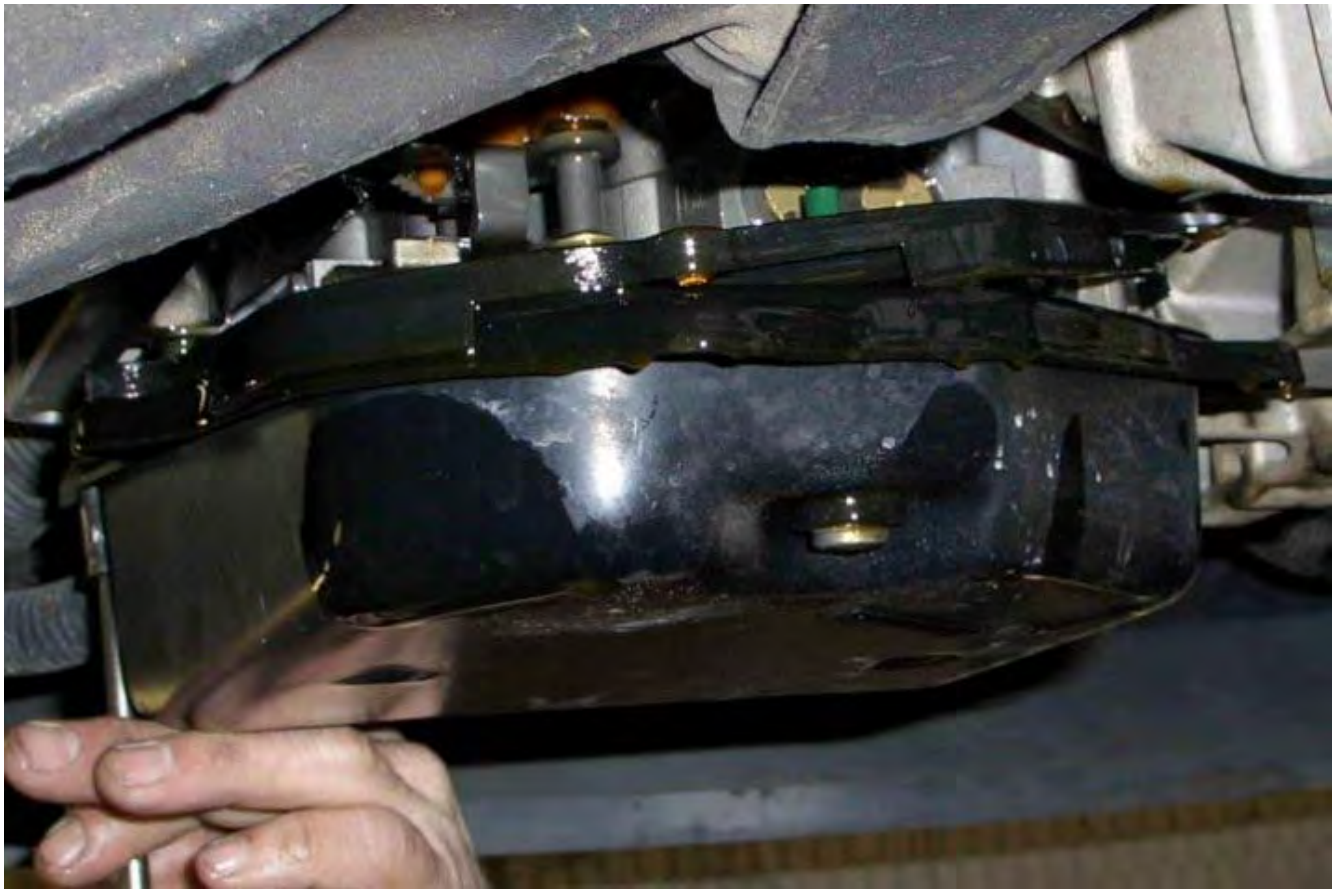
can help it!

Use a tie-wrap when you are all finished to help secure the red cap to the filler spout. Be very gentle with this cap on removal and replacement and it will last you through a dozen changes of ATF over the life of the vehicle. Be rough just once and you will be asking the parts counter for a new one. The black filler tube can be removed if you want for a good cleaning. It is vitally important that you don't get any dirt or crud falling into the transmission through this tube, so cleaning might be a good idea. See picture 20 for a view of how you may remove the tube by squeezing at the bottom and lifting straight up. It is a plastic part, so do be careful.

Also, if you don't have the special ATF filler tool (see pictures 35, 36, and 37) you could use a length of *clean* rubber hose fit snugly over the top of this filler tube and a funnel (or bottle with a valve) on the other end. If this is your plan, you may want to take the filler tube with you to the hardware store and use it to measure for the correct size rubber tubing. (Again, it is important to avoid any contamination, so be careful to not get any stray rubber particles from when you used a hacksaw to cut the rubber tubing! See how easy it is to cause yourself troubles?)

Picture 14

Picture 15



Picture 16

Here is the procedure for dropping the ATF pan. First, remove the drain plug (5 mm Allen Head) on the bottom of the ATF pan. Only a little fluid, if any, will drain at this point. Using the same tool, remove the green overflow tube inside the drain hole. This is plastic, so be careful not to ruin it. It's used to determine the proper fill level later.

Before you begin loosening bolts, inspect the perimeter of the seal for any leaks. If you loosen the back of the pan more than the front, you can tip the old ATF out the back slowly as not to cause a huge mess. Be careful of these bolts (5 bolts, all 10 mm hex head) as they thread into soft aluminum. The torque for these is quite small, so be sure to consult the Bentley manual for the correct figure for your vehicle. For any 098 or 01P transmission, this is 12 Newton-Meters. This is another reason not to trust this job to "just anyone." Also, with the pan hanging at an angle, you can put unnecessary stress on the last few threads of the bolt holes (again, soft aluminum), so do be careful and considerate. Hold the heavy pan with your hand and don't let it bounce against the bolts.

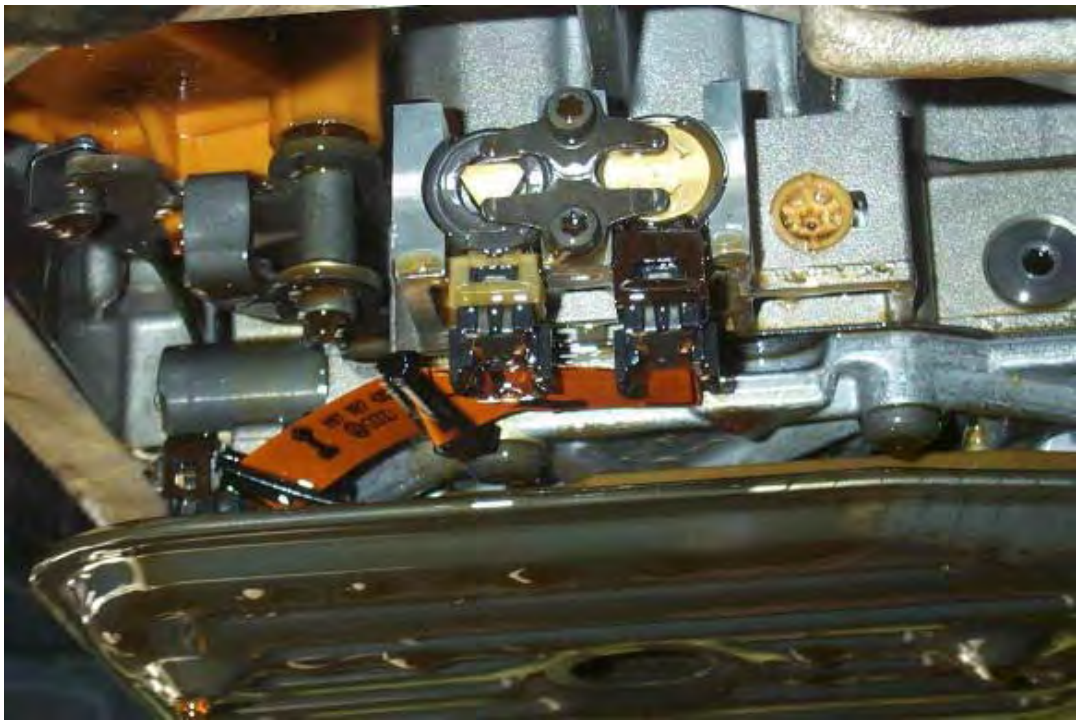
Picture 17

Picture 18

Here is what the inside of the ATF pan looks like. Notice the magnet has picked up a metallic film and has vibrated the metal into ridges. This just like a fiercely expensive version of that magnet and iron-fillings experiment we all did in second grade! Those ridges and lines will all wash off if you really scrub at them. The pan should be cleaned thoroughly. Do NOT use any shop cloths for this job. Notice too the green drain tube. This does not need to be removed, but if you don't, do be very careful draining the fluid and avoid unnecessary side loads on the tube. The green tube is the mechanism by which the ATF level is adjusted. Too much ATF and the excess will drain into the top of the tube and out the bottom (if you have the pan bolt removed). I will cover this procedure further down. (I have heard of one EVC owner who does remove the green tube from the bottom of the pan to facilitate easier draining the ATF out the bottom drain hole rather than tipping the pan and letting it spill over the side. Personally, I've never removed my green tube and would prefer to just leave it alone. Your mileage may vary. Give it a try if you want.)

Picture 19

Picture 20



Picture 21

Picture 22

These photos show the transmission interior with the ATF filter still in place. Notice the ribbon cables and the intricate pathways, valves, and switches. Take a few minutes and inspect every square inch in this area with a bright flashlight. If you take some photos now, they may be quite helpful to you later if you begin to have

troubles with your transmission. Pay very close attention to the ribbons and look for signs of trouble. I suspect that many transmissions have been replaced in total when a new ribbon cable would have solved the real problem. Also know that VW replaces "faulty" transmissions with rebuilt ones. You will NOT be getting a new transmission. There is no telling how many miles are on this "new" (rebuilt) transmission that VW installs. If you ever wonder about your transmission, you can check its casting number on the side. If it ends in an "X," you have a rebuilt transmission on your vehicle. (Maybe you don't want to know!!?)

It is very important for you or your mechanic NOT to use a shop cloth on any of these interior parts. Lint or an errant thread from the cloth can get lodged in the very small hydraulic passageways and cause you no end of grief later. I've been told that some of these intricate passageways are almost microscopically small in size, so it stands to reason that a small piece of lint or other crud can cause you a world of hurt. If you're lucky, it will get caught in the filter... if not, it may get caught in a passageway and you'll never know why your transmission is acting up. On the same theme, do NOT use any RTF (gasket sealer) on the pan gasket. Little chunks of dried RTF can cause major issues with your automatic transmission, so avoid all possible contamination sources. Little pieces of crud, doing the backstroke in your ATF is not a cool concept!

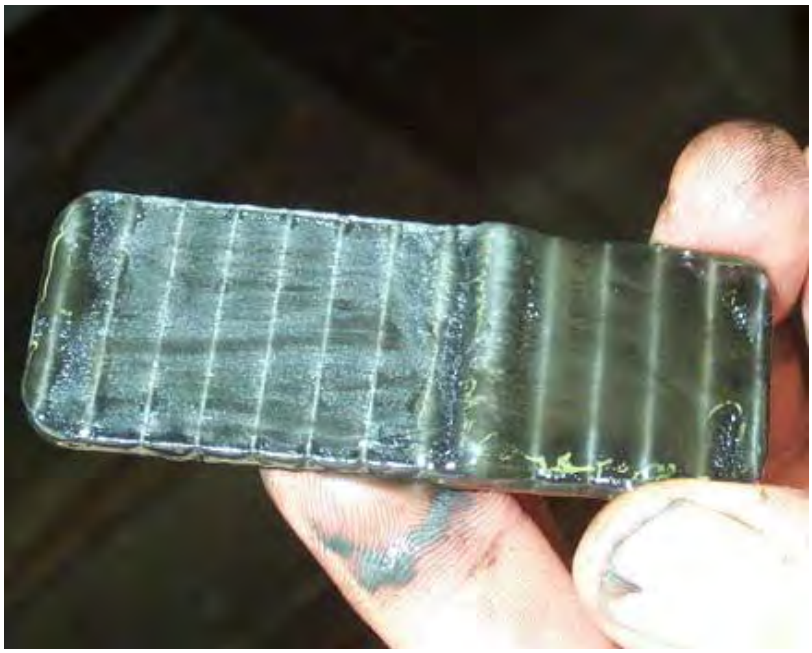
Some dealerships will try to sell you an ATF flush. Do not walk away from those idiots, RUN!! The last thing you ever want to do to your transmission is to stir up a whole bunch of muck, suck seventy-percent of it out, and dump in some new fluid, willy-nilly on top of a dirty filter. Always drop the pan, replace the filter and gasket, and allow as much of the old fluid to drain out as possible. Resist the urge to go wiping the interior of the transmission with a shop rag! (I guess I said that already!)

Notice too that the filter is just hanging there. It will pull off with about one- or two-pounds of force; it is only hanging by the friction of the ring gasket. There are no bolts holding the filter in place. Bolts are not necessary. The little bumps on the bottom of the filter rest on the bottom of the ATF pan, so there is no possibility that the filter will come off while driving. It is possible that your filter will come off and might be resting in the bottom of your pan when you remove the five bolts. This is not a huge problem and the filter only fell at the same moment that you dropped the pan. So, no panic! The new filter and new ring-gasket ought to fit snugly. The pan will hold the filter in place and there should be no chance of the filter not remaining in place for the duration. It really cannot go anywhere when the pan is on tight.

Picture 23

Picture 24

Once the filter has been pulled and discarded, this is the view underneath. Notice in picture 23, the ring gasket is still up in there. It needs to be removed. Avoid using a screwdriver (obviously) because the aluminum is soft. And, again, you don't want errant hunks of scrap aluminum floating around inside your transmission! Picture 24 shows that the gasket has been removed.



Picture 25

Picture 26

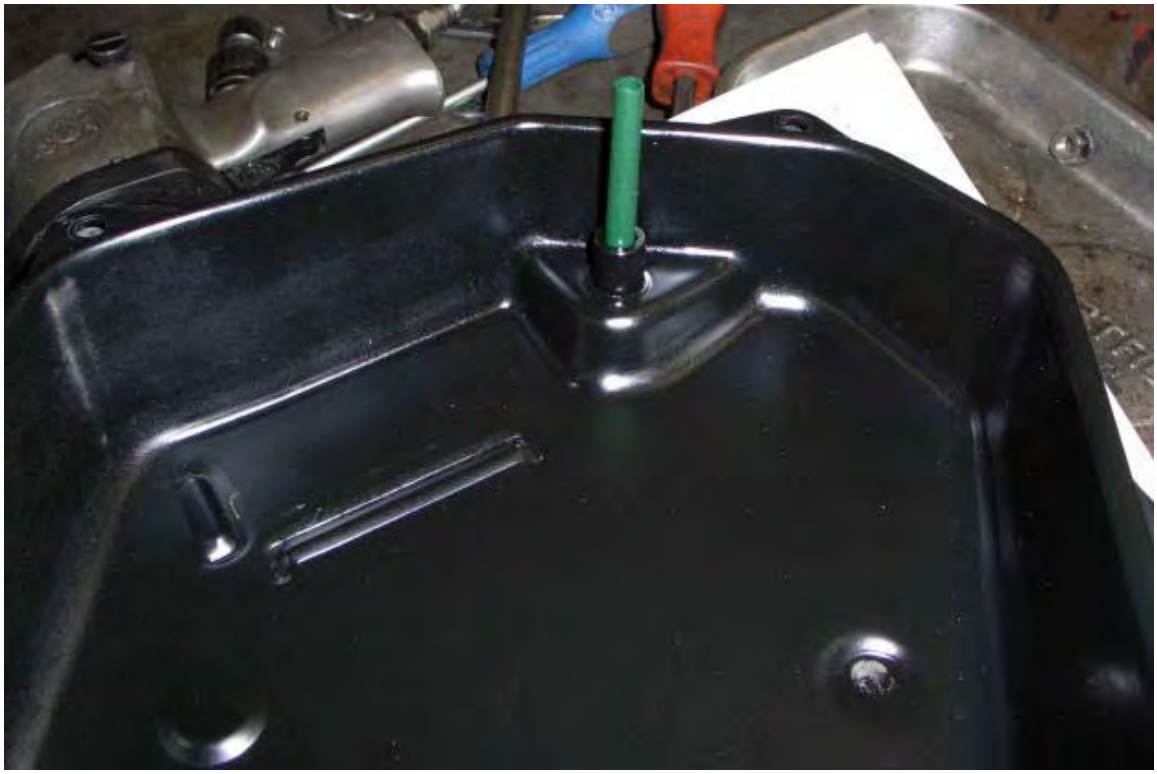
Picture 27

Picture 28

The magnet and pan need to be cleaned thoroughly. The magnet is only held in by the magnetic field, but it's very strong and may require a screwdriver to force it away from the pan. Again, avoid using shop cloths that have lint or loose threads. Some mechanics even forbid the use of paper towels for the same reason. Photo 25 shows a magnet from another Eurovan. This is how much sludge built up after only

31,000 miles! Perhaps now you can have a new-found appreciation for 10,000 or 15,000 intervals? Just think of what towing a heavy trailer up a hill will do! A good parts cleaner machine is perfect for the job and do know that all those little lines do scrub out, so don't be afraid to get to work!

Pictures 28 and 29 have a good view of the green drain tube. Keep in mind that the green drain tube does NOT extend upward inside the filler neck tube (Photo 10). This is a common misconception. If you are curious, you can see the very tip (top quarter inch) of the green tube extending upward in picture 16. Picture 21 is the same perspective and angle as picture 16 only without the pan blocking your view. The green tube extends upward right in front of the two "star head" bolts that you see in picture 21. The filler neck tube is seen quite clearly in pictures 20 and 10, and is nowhere near the green tube location. When you install the green tube, it should only be finger tight. It's plastic and could be damaged easily by over tightening. The Bentley calls for 2 NM (17 in/lb).



Picture 29

Picture 30

The magnet and pan are perfectly clean now, ready to be reinstalled. Notice that the new gasket has been laid in place, shown in Picture 30. The gasket shouold be installed dry to get a good seal. Do not forget to install the 5 metal spacer sleeves indicated in Picture 30!

Picture 31

This photo shows the discarded ATF filter. Notice the thin layer of metallic "dust" all over it. This is after less than 10,000 miles. So, now maybe you can see why the good shops recommend a 15,000 interval or less? Can you imagine what a mess the transmission fluid would be in after 60,000 or 100,000 miles without frequent changing? You can cut the old filter apart for inspection if you wish. Or... maybe you really don't want to know what's in there! Also, in photo 31, notice the three bumps on the filter; they rest against the bottom of the pan. This is what keeps the filter from simply falling down while driving over bumps.

Picture 32

Picture 33

Here are some shots of the new filter. Notice that the filter media does not cover the intake hole completely... this is correct. Look closely in the hole, you'll see what I mean. And in photo 32, I have installed the ring gasket.

The next steps are to slide the ATF filter up into the transmission and to replace the pan. It is important to torque the pan to the correct limits, 12 NM (106 in/lbs), and in the correct order. Stripping the soft aluminum threads with an over zealous wrench would be a pretty big mistake. Don't do that to yourself!! Having ATF on the threads of the bolts or saturated up in the threads of the aluminum transmission block will cause you to over-torque without even knowing it, so it is best to have clean and dry bolts. Do NOT use anti-seize compound! That would be a horrible mistake.

Picture 34

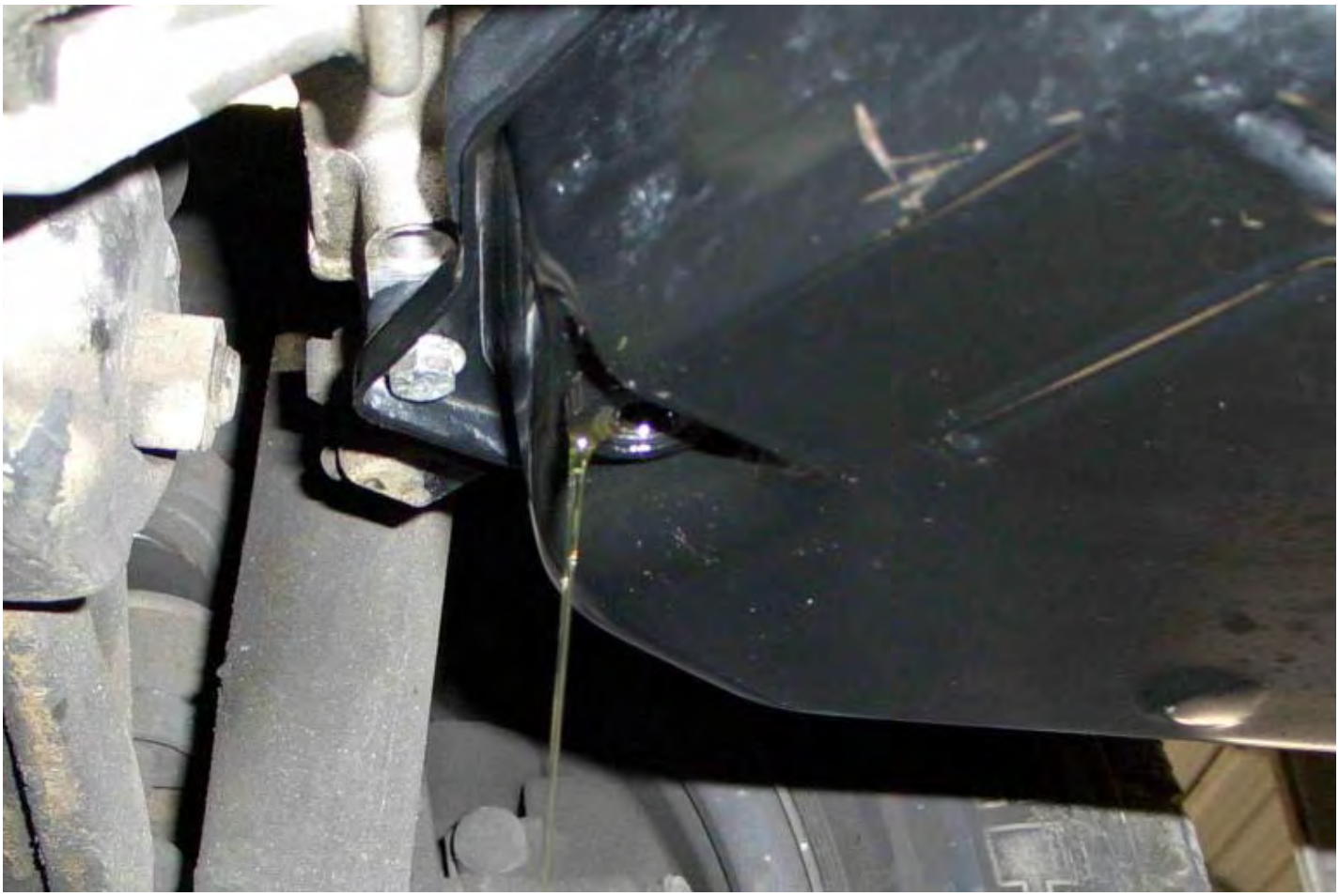
Picture 35

Picture 36

Picture 37

Picture 38

Picture 39



Picture 40

Picture 41

These next photos show installing the new ATF. Notice that most shops will have

some cheap, brand-X ATF they use for their "other customers" and all their supply bottles will be filled with this mystery garbage. I use my own clean supply bottle, picture 34. If you're not standing over the mechanic watching his every move, he may leave a cup of their Brand-X crud in the bottom of their 20-year-old fill-bottle and then pour your expensive VW ATF on top. This would be a chemistry experiment. Not wise! (Or, worse yet, the shop may just pocket your good bottles of VW ATF and use their garbage ATF in your expensive transmission. How lovely! This is why you have to take an interest and keep these guys honest.

If the supply bottle is clean and empty, that is good, but what about the hose and valve? What is left in there? (This is where having your own tools pays off. It is best to do your own work or, at the very least, stand there and make sure that all steps are being handled properly!) Rinse the bottle out thoroughly in the parts washer and blow dry with compressed air. I'll guarantee that the shop's bottle has not been cleaned in 20 years, so there is no telling what you will find in there. (The same goes for their filler hose and valve.) Whatever it is, you don't want it suddenly floating around in your transmission! There is no sense in mixing any quantity of different brands of ATF. It is not necessary to mix, so just don't let them get sloppy. Also, the same rules apply regarding shop rags... don't use them! Make sure the supply bottle and hose is absolutely spotlessly clean before pouring in your four liters of supremely expensive VW special sauce. Again, having your own bottle, hose, and filler valve tool is the best insurance against all kinds of nonsense.

Photo 35 shows the special ATF tool with the sharp bend at its tip. Photo 36 shows why that angle is so important. This is a difficult reach to get the fluid into the filler tube (as shown in photo 10). Photo 37 shows a good place on the EVC to hang the hand valve while making the adjustments to the ATF level. The ATF filler tool is a handy thing and isn't very expensive. The on/off valve is right near the filler neck of the transmission (photo 10), so when it is time to stop filling, you can stop the flow rather quickly. If you don't wish to purchase your own tool, you can substitute a rubber hose about four-feet long with a funnel at the top end. But again, watch out for contamination issues and do realize that when it is time to stop the flow of ATF, there will be a long lag time while the funnel and hose keep emptying themselves of your fiercely expensive ATF.

The easiest procedure is to fill the ATF pan through the filler neck, photo 10, with four liters. Now start the engine. You will want to cycle the transmission through all the gears, including reverse. Be familiar with how your shifter button works! Some gears require the button *in* while other gears require the button to be *out*... and things may be different and non-intuitive to you going in one direction versus the other. If you cannot get the shifter to go past one gear to the next, try doing the exact opposite with your shifter button. (This tip alone will save you massive amounts of grief.)

Remember, it is vital that the Eurovan be level to the ground when you do the FINAL fill. You need the ATF level to be exactly perfect.

The next procedure is important. The EuroVan requires the exact amount of ATF. And the quantity is temperature driven. Obviously, liquids expand and contract with temperature variation. So the proper procedure is to hook up your VAG COM (computer diagnostics tool) to your OBD-2 connector (mine is under the steering

wheel) and to monitor the proper index for the ATF temperature. (You can also use your Scangauge if you've programmed it to read Transmission Fluid Temperature - TFT.) The correct temperature to verify the level is 95-113F, so I use a target of 104, half way. While the engine is running, allow the fluid to get to this temperature, maybe ten minutes or fifteen minutes at idle. As the temperature approaches 90-95 remove the drain plug to be sure you have excess fluid draining out the overflow tube. If not, quickly add more until it runs out the overflow tube. As soon as the temperature gets to 104-105, replace the drain plug and torque to 15 NM (133 in/lb) (Double-check your manual and model.). You may now shut off the engine. I have heard of at least one mechanic who warms the bottles of ATF in a hot water bath before pouring the four liters into the supply bottle. This will minimize the amount of time leaving the engine idle, waiting for the temperature to rise.

Many mechanics bypass the use of the VAG COM and just wait until the electric fans kick in. DON'T DO IT!!! If you don't have an external cooler, the fluid will be up near 180° by the time the fans run.

Make sure the temperature doesn't get too high while you're doing this or the fluid level will be too low!

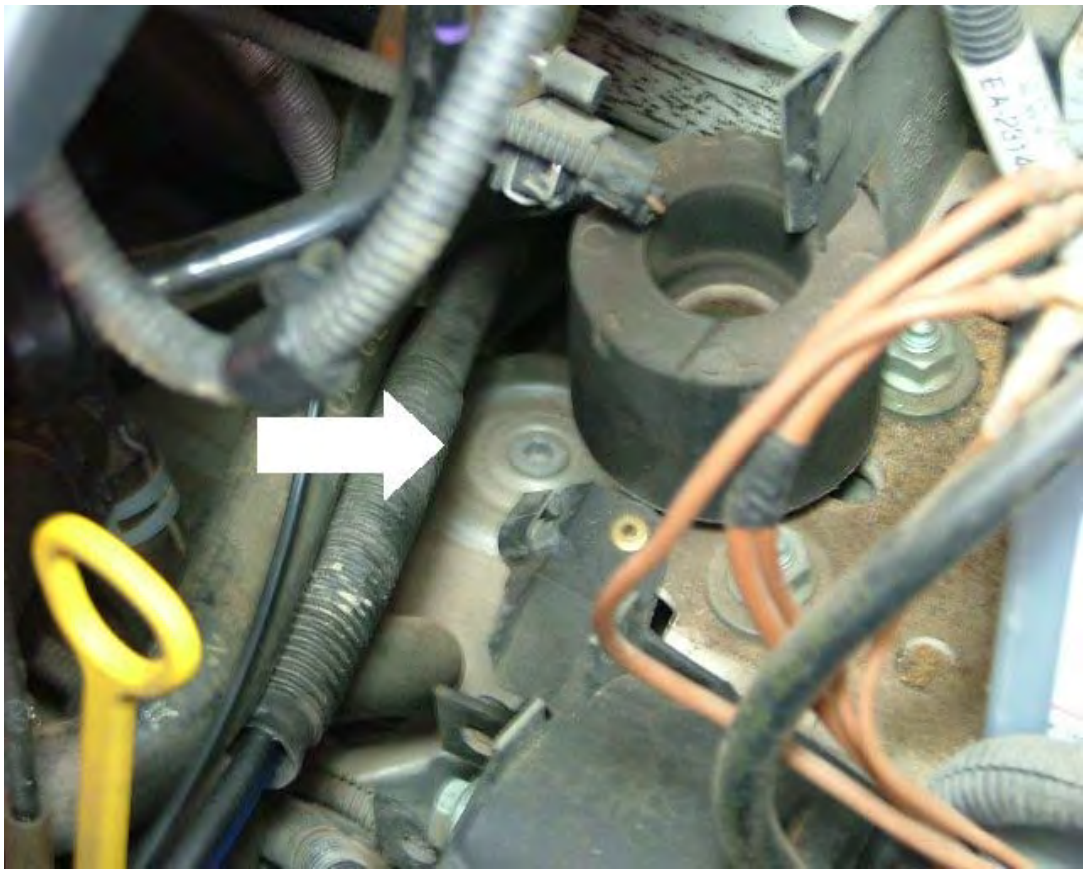
The point of all this checking and re-checking is that the ATF level is critical for proper operation. And, each time you cycle through the gears, ATF will be filling the empty passageways, thus lowering the ATF level in the pan.

Some Eurovan owners elect to install the ATF dip stick. This optional part is no longer available, so you'd need to find one from an older EV. I really don't see the point. Once the level has been checked it should not change on its own unless you have a major leak somewhere.

Drink the beer. (Photo 8) Substitution of coffee, tea, or soft drink is quite acceptable. The point is for you to celebrate! Take your Eurovan around the block (before the beer) and, I promise, you will convince yourself that the transmission is running smoother! After the beer, everything will seem to be running smoother! Do check for leaks and make certain that all drips have been wiped clean. Replace the belly pan. That pan is required for better cooling on the engine (and transmission) and for a quieter ride. (As a side note, I do not recommend the popular modification to the belly pan where a slot is cut in it for easier access to the oil filter. My philosophy is that the belly pan should come down and the engine visually inspected at every oil change. Don't get lazy on inspecting your engine!)

Unfortunately, there seems to be very little support data one way or the other regarding the dependability of the Eurovan automatic transmissions. Many people live in constant fear of their transmissions, expecting demise at any given moment. Temperature of the ATF is an important consideration. The warmer the ATF, the higher the likelihood that your transmission will experience problems. Many folks (myself included) refuse to use the EVC as a towing vehicle because of the extra heat and stress it may put on the transmission. Some extended warranties are automatically VOID if a trailer hitch is installed, regardless if it has been used or not. (If you read the fine print in an extended warranty product, my guess is that you would never buy it in the first place. The contracts are written in such a manner that the warranty company could deny each and every claim if they want to. And,

sometimes they do deny claims based on ridiculous technicalities. I think the number of denied claims is directly related to whether the company is making its projected numbers for that month. Your mileage may vary with extended warranty companies.)



Picture 42

Some of the more "engineering minded" of the Eurovan owners have been tinkering with ideas for adding an ATF cooler. An ATF pan with cooling fins is a possibility, an external radiator is another. Picture 42 shows VW's solution for cooling the ATF. This is a shot of the ATF cooler. Temperature regulated engine coolant cycles through this device as ATF is also routed in plumbing submerged in this much cooler fluid. How effective is this arrangement in hot weather, climbing a steep hill, pulling a heavy load, traveling slowly? Not very! The VAG COM connected to a laptop computer can be used to measure the actual temperature while the Eurovan is moving. This is the most reliable indication of actual temperature of your ATF. Some folks have speculated that an externally mounted thermometer can be affixed to the ATF pan (with epoxy) and the digital leads routed to the cabin for temperature monitoring.

The VW automatic transmission fluid will provide 124,000 miles of service before oxidation occurs under normal operating temperatures of up to 212°F. Above normal operating temperatures, the oxidation rate doubles (useful life of fluid is cut in half) with each 18°F increase in temperature.

The approximate life expectancy at various temperatures is as follows:

212°F 124,000 miles
230°F 62,000 miles
248°F 31,000 miles
266°F 15,500 miles
284°F 7,750 miles
302°F 3,875 miles
320°F 1,938 miles
338°F 969 miles
366°F 484 miles
384°F 242 miles
375°F 121 miles
390°F 61 miles

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Thank you!

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1999 Eurovan Camper (EVC)

The information in this file was revised, and corrected where needed, on 4/25/11.
Additional update/corrections 5/8/12