

Transmission Fluid Exchange

2001 Mercedes-Benz SLK320 with 5-Speed Automatic Transmission

SAFETY

Every service project should begin with safety in mind. Please read these instructions thoroughly and be certain that you feel confident in your abilities. If anything seems questionable, you should seek professional advice before undertaking this, or any, project.

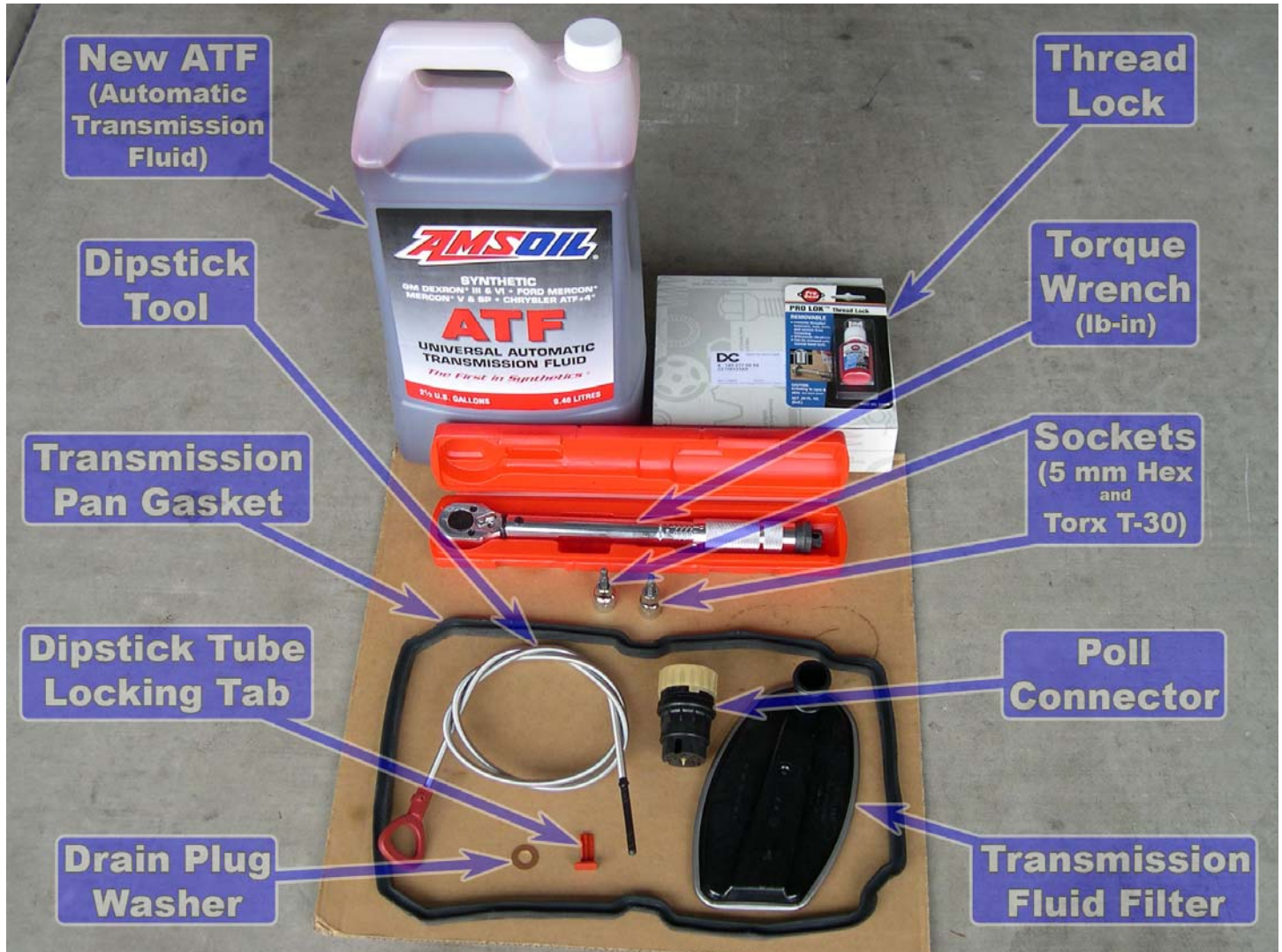
As with any service job, your car should be on a clean, dry, hard level surface. Also, be sure that you have all of the necessary safety equipment and that all of your equipment and tools are in good working order. Remember, there is no substitute for the proper tool and there is no shortage of repair facilities that will gladly perform this service for you with their own tools.

Having said all that, please understand that this is a fairly simple procedure and someone with moderate mechanical skills should be able to safely perform it with great success. A list of necessary tools and supplies is provided on the next page.



SUPPLIES

Before you even consider servicing the transmission, be sure you have all of the supplies you will need, including the correct parts and the right tools. Obviously, a full workshop complete with a lift would be best, but this guide has been written with the assumption that this work will be performed by the average homeowner with typical hand tools.



TOOLS

- 1 Torque Wrench [measuring Lb-In or Nm]
- 1 Hex Socket [5mm] (a.k.a. Allen® Wrench)
- 1 Torx Socket [T-30]
- 1 10-mm Socket/Ratchet or 10-mm Wrench
- 1 Mercedes-Benz Dipstick Tool [140 589 15 21 00]
- 2 17-mm Open-End Wrenches [or Adjustable]
- Waste Containers [for Used Transmission Fluid]
- Floor Jack and Jack Stands [4] **OR** Ramps/Stands [2]

SUPPLIES

- Safety Glasses
- Work Gloves
- Shop Towels
- Long Neck Transmission Funnel
- Thread Lock [a.k.a. Loctite® or equivalent]
- Automatic Transmission Fluid [8.5 Qts MB Spec]
- Transmission Filter Kit [Filter, Pan Gasket, Drain Plug Washer, Dipstick Tube Cap Locking Tab]

OPTIONAL SUPPLIES

- Ice Cold Beer (Bottled NOT Canned)

PREPARATION

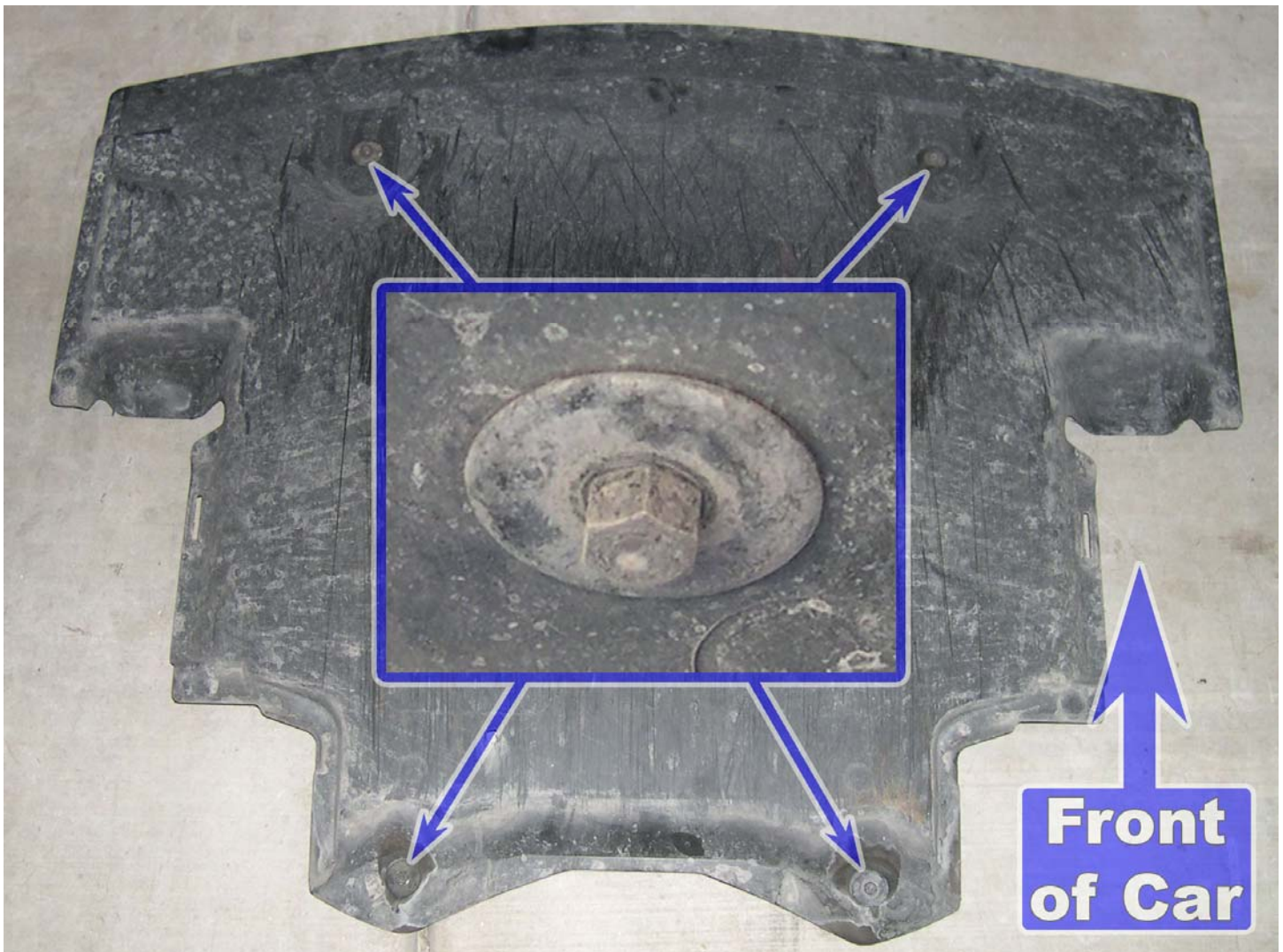
You may choose to move your car a short distance to stir up the transmission fluid and suspend any dirt, but I don't recommend this. The area you'll be working in is directly adjacent to the exhaust pipes, which could prove to be a hazard if it is hot. Not only could it burn you or catch fire if any oil gets on it, but it could easily melt the oxygen sensor wiring, transmission pan gasket, or any other plastic or rubber components that may come in contact with it while working in this area.

Changing the transmission fluid and filter will require your car to be raised off of the ground to provide you with the necessary clearance to access everything. If you don't have access to a car lift or service pit, you may support the car on jack stands, or a combination of ramps and jack stands, but be certain to position them in sturdy and secure locations, taking care to ensure that the car remains as level as possible.

Before performing any work, survey the current condition of things. Identify the parts you will be working on. Look for any apparent leaks at the output shaft seal, the transmission pan, the drain plug, the cooling lines, or any other leaks or visible defects. If nothing seems out of order, it probably isn't.

SERVICE

The underside of the engine compartment is completely covered by a large tray, supported at four points by bolts with large washers. You'll need a 10-mm wrench or socket and ratchet to remove the four bolts.



There are also two vertical plastic shields that clip into this tray via slots on each side. You may have to wiggle the tray a bit to clear the stabilizer bar mounts, then slide it backward to clear the front bumper cover. Set this tray and its bolts/washers aside for the duration of this project.

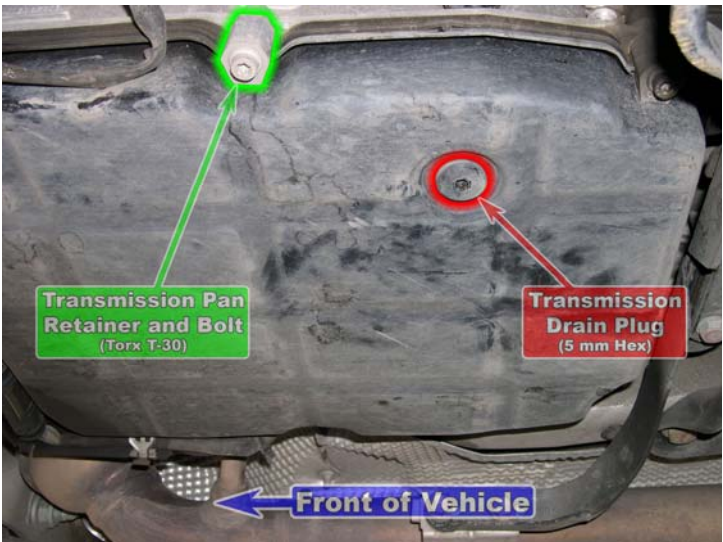
Now that you've exposed the underside of the engine compartment, you'll easily be able to see one of the transmission cooling lines just below the radiator fan shroud. This is the transmission pump output line and there is a junction between the flexible line and the hard line near the center line of the car. Use a shop towel and some degreaser or mild soap to clean around this union to prevent any contamination.

Use a 17-mm open-end or flare-nut wrench to secure the hard line end and another 17-mm wrench to loosen the fitting on the flexible hose. Disconnect the hose from the hard line and secure it to a drain pan or other container suitable for waste oil. Unless the car was recently running, there should be very little fluid present in the line.



Now, you will have to make a decision. You can drain the transmission pan first, yielding about 3 quarts, or you can pump some fluid out, leaving a low enough level in the pan to remove it without draining it. Personally, I prefer the latter because it eliminates the possibility of having a stripped or leaking drain plug later. I look at this as "if it ain't broke, don't fix it."

If you choose to drain the transmission pan, use a shop towel and some degreaser or mild soap to clean around the drain plug to prevent contamination, then tap a 5-mm hex socket into the drain plug to ensure it seats properly before loosening it. You will need a new copper washer when replacing the drain plug.

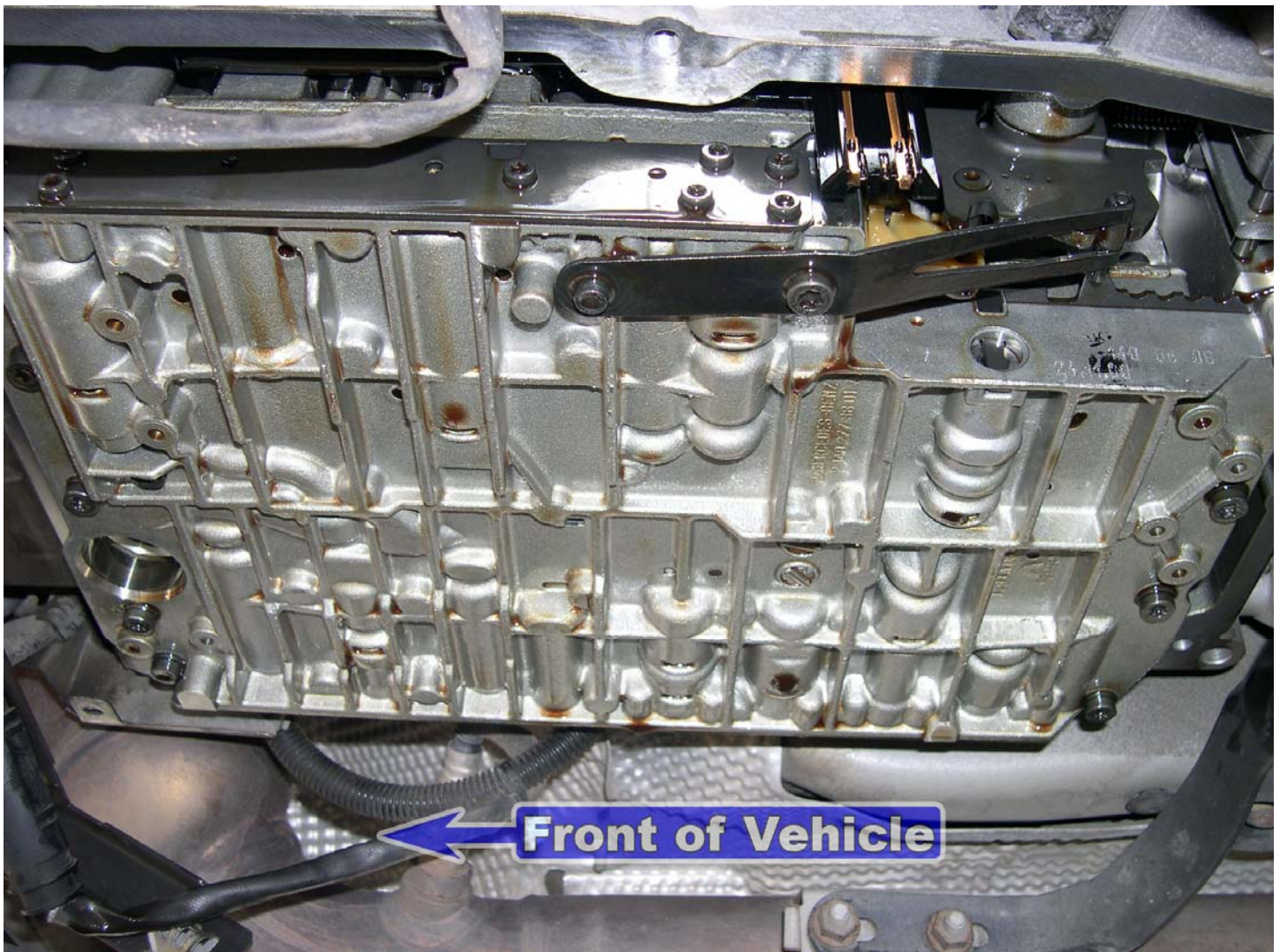


If you choose to forego risking damage to the drain plug, you'll need to pump some fluid out via the transmission cooling line. You can use a mirror, a video camera and monitor, or even a stopwatch to gauge the output from the line, but it's best to have an assistant. Virtually anyone, even an older child, is suitable, as you will only require them to start and stop the engine at your direction. Whatever your choice, ensure that anyone entering the car is mindful of the fact that the car is supported off of the ground.

While holding the output line and container steady, ask your assistant to start the engine. Allow the transmission to pump out about two quarts of fluid. With the engine at idle, the line will put out two quarts in a matter of seconds, so be prepared for this. When you have about two quarts in your container, have your assistant shut off the engine. The flow will stop almost immediately, leaving about a quart in the transmission pan. You are done with your assistant for the time being and can now move to the transmission itself.

As you look at the transmission from under the car, you will see that a sheet metal bracket runs along the front edge of the transmission pan, securing the connectors and wiring for the exhaust system oxygen sensors that reside aft of the resonators. This bracket is secured by a T-30 Torx screw on the passenger-side (U.S. model) end and a 10-mm bolt on the driver-side (U.S. model), up on the side of the transmission housing. Loosen the wiring connector from the bracket to expose the screw and remove it. Loosen the bolt enough to move the bracket out of the way; there is no need to completely remove this bolt as the intent is simply to gain clear access to all of the transmission pan retainers.

Use a ratchet and a T-30 Torx socket (an extension may help) to loosen all six transmission pan retainers. As there will still be some fluid in the pan, be sure to hold the pan in place with one hand as you remove the last of the retainers with the other hand, making note of the position of the one unique retainer.



Carefully lower the pan to the ground, making sure to note the position of the transmission filter, as it may come loose unexpectedly. If it does not, remove it by gently pulling it straight down. Once the pan and filter are removed, extricate yourself, the pan, and the old filter from beneath the car and place something under this area to catch the drips that will continue while you are preparing to re-install the pan and new filter.

Now, it's time to prepare the pan for re-installation. Pour whatever fluid remains in the pan into a suitable container. You'll want to consolidate the old fluid to help gauge the amount you've removed in order to replace it with a similar amount as you continue later with the exchange. Remove and discard the pan gasket and drain and discard the old filter.

Check the bottom of the pan for metal shavings, water foam, or anything else out of the ordinary and smell it for any evidence of burnt fluid. Any of these are cause for professional intervention. Assuming you don't have anything other than dirty fluid, you can continue by cleaning the pan. Use a mild degreaser or soap and water to thoroughly clean the pan, inside and out. I recommend Simple Green; it's highly effective, biodegradable, and widely available (I get it at the local home improvement center by the gallon).

HINT: The wife won't appreciate using the kitchen sink to clean your car parts!

Once everything is clean and there is no residue from the degreaser (which isn't really compatible with your end goal here), replace the drain plug with a new washer (if you removed it), and securely position the new pan gasket on the pan. Make sure there are no sharp creases or wrinkles in the new gasket and that it seats properly. Lubricate the mating surface of the new gasket with some fresh transmission fluid.



Back underneath the car, clean up the mating surface and carefully inspect it for any nicks, scratches, or sharp edges that might damage the gasket. Check to ensure that no lint or debris enters the transmission from snagging any shop towels while cleaning the area.

Position the new filter, making sure the small tab at the end opposite of protruding tube lines up with the slot in the lower valve body. The new filter may have a tendency to fall out of position; this is normal. Do not try to force it further into position, thinking that it must not be properly seated. It is sometimes a sort of balancing act to keep the filter in position while trying to get the pan in position below it. I was fortunate not to encounter this problem, but if you do, a little patience is necessary.

While holding the pan in place with one hand, start some of the retainer bolts in place with the other. Once you have enough in place to free up your other hand, it's time to bolt the pan in place. Start by running the four retainers closest to the corners up finger-tight.

Apply a drop of Thread Lock to one of the remaining bolts according to the directions on the package. Insert the bolt (and its retainer) into one of the two remaining center positions and run it up finger-tight. Do the same with the other remaining bolt and retainer. Go back and torque these two bolts to 106 lb-in (12 Nm). Remove one of the corner retainers, apply Thread Lock, reinsert, and torque to 106 lb-in (12 Nm). Repeat this until all of the retainer bolts are installed. Go back through the bolts in the order you installed them and check the torque again, as they may no longer be tight enough due to the pan and gasket seating into position.

Once you've cycled through all of the pan bolts and found them all to be properly torqued, re-install the sheet metal bracket along the front of the pan, using a drop of Thread Lock on the screw. Make sure all of the connectors and wiring are properly secured in their original positions. If you previously removed the transmission drain plug, torque it to 18 lb-ft (24 Nm).

Clean up any messes around the transmission and the workspace under the car. Barring any surprises, you are now finished in this area.

Under the hood, at the back of the engine on the passenger side, is the dipstick/fill tube. In order to better see and access it, you need to remove the air cleaner assembly. If you've never done this before, you'll find it to be an extremely simple operation.

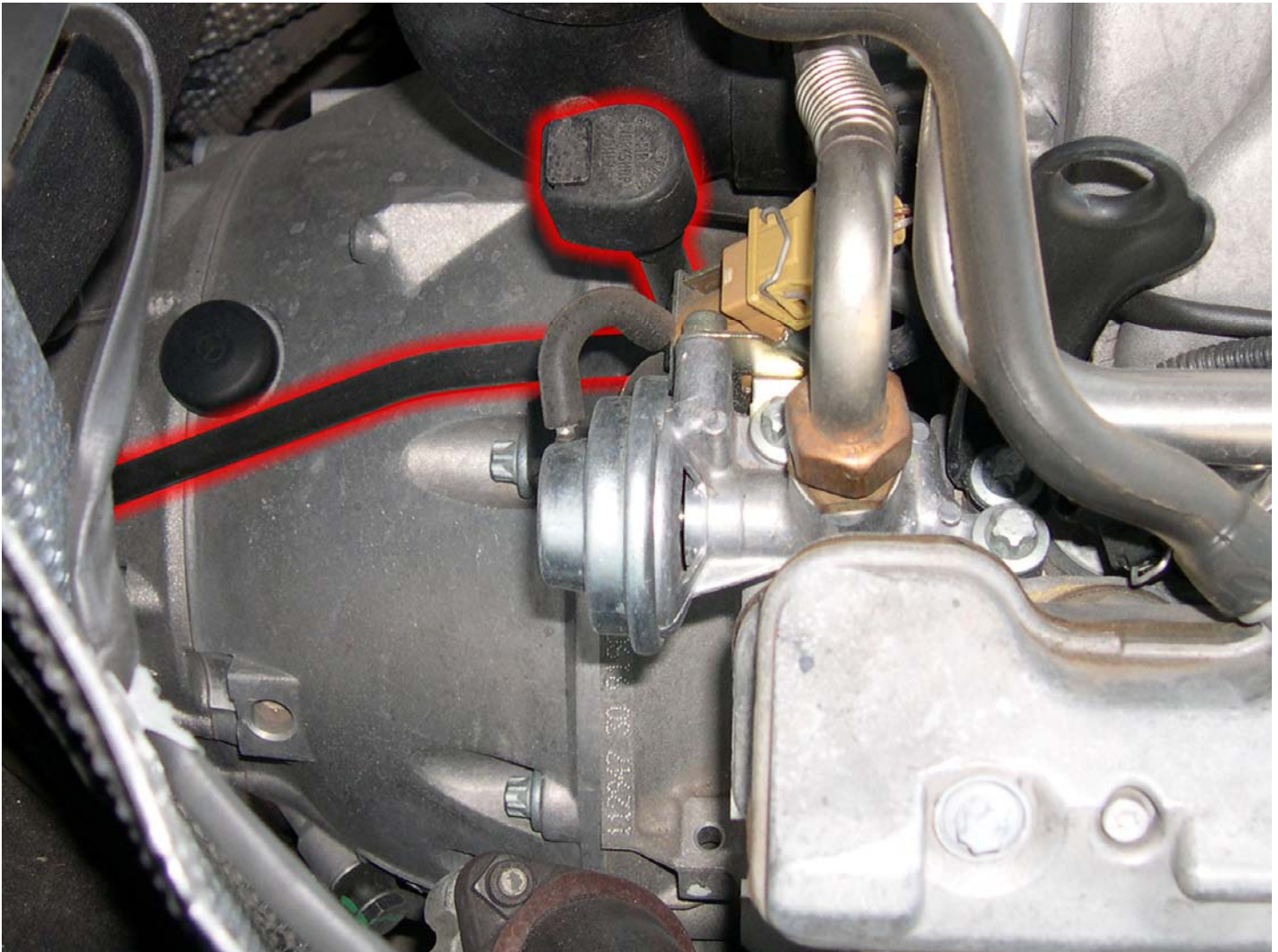
Find the two duct tubes that carry fresh air to the assembly. Grasp one and pull it toward the front of the car. Once it separates and clears the housing, you can pull it away from the front of the car to remove it, or simply lay the end of it aside. Repeat this with the other duct.

Now, simply lift up on the front of the assembly housing until it "pops" loose. As you will see, there are four rubber knobs on the engine and four metal clips on the housing that secure and dampen the assembly. There is a fifth, smaller clip on the housing, as well.

Set the air cleaner assembly aside. The top of the engine is now exposed.



From the passenger side of the car (U.S. model), look down the back of the engine toward the top of the transmission bell housing. You'll see a tube running along the top, taking a 90-degree turn upward, with a large cap on top that says "MB WORKSHOP ONLY" in raised letters. Just below the lettering is a raised rectangle. This is a locking tab.

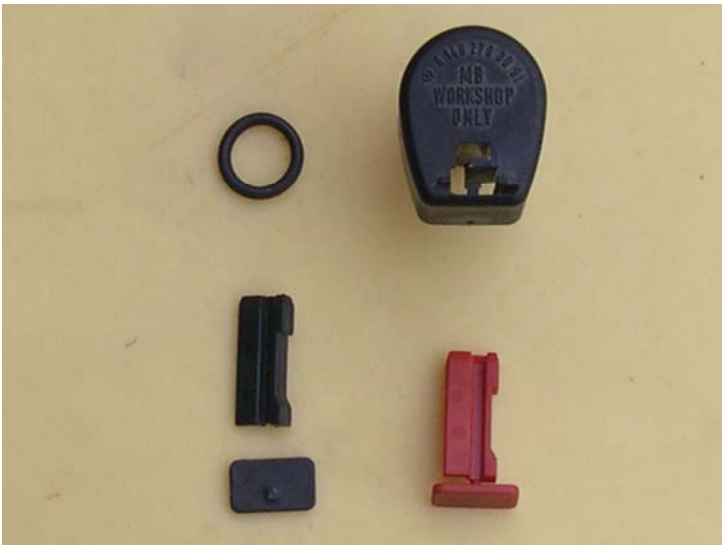


The locking tab isn't really necessary to hold the cap on- it will stay on quite well by itself. It is more of a tampering indicator. If the tab is black, your transmission has either never been serviced, or was serviced by a licensed dealer. If it is red, someone has had the cap off at some point. In your transmission filter kit, you should find a replacement tab that is, in fact, red.

Use a small standard screwdriver or a pocket-knife to snap the tab off and lift the cap off of the tube. Press the remainder of the tab assembly down and out of the cap. Check to see if the O-ring came up with the cap or if it became lodged in the mouth of the tube. In either case, remove it, clean and lubricate it with some fresh transmission fluid, and replace it on the cap stem. Set this aside for later. Discard the old locking tab, but *do not* install the new tab until the project is complete.

Place a long-neck funnel into the dipstick/fill tube. Since the mouth of these types of funnels is usually fairly small, I prefer to place another larger funnel into the first one. I also recommend surrounding the base of the funnel, near the top of the fill tube, with shop towels to catch any accidental spillage.

Using whatever method you find most convenient, try to determine how much old transmission fluid you have collected thus far. This is the amount of new fluid you want to pour back in at this time. It is not vital to be exacting in your measurement at this point, as you will correct it in the end.



Pour the appropriate amount of new transmission fluid in via the funnel arrangement, taking care to pour slowly. If you pour fluid in faster than the small tube can carry it away, it won't back up in the funnel; rather, it will pour out of the top of the fill tube. The shop towels will absorb small amounts, but larger overflows will only soil your car and your driveway or garage, not to mention wasting expensive new transmission fluid.

Be sure to use transmission fluid that meets or exceeds the MB Spec Sheet for the 722.6 transmission. You can purchase the MB brand directly from your local dealership or order it online. I highly recommend Amsoil Synthetic Universal ATF. It far exceeds the requirements for your car and is certified for the Mercedes-Benz 722.6 transmission and MB Spec Sheet. It can be ordered from your local dealer or online from the corporate website. (Please note that I am not an Amsoil dealer and make no money by recommending their products.)

I purchase new transmission fluid in 2½ gallon (10 quart) containers, although the transmission only has a capacity of 8½ quarts. The bulk discount not only saves money, but gives me a little extra to spare; I'd rather have a little left over than to be all done and find myself a little short.

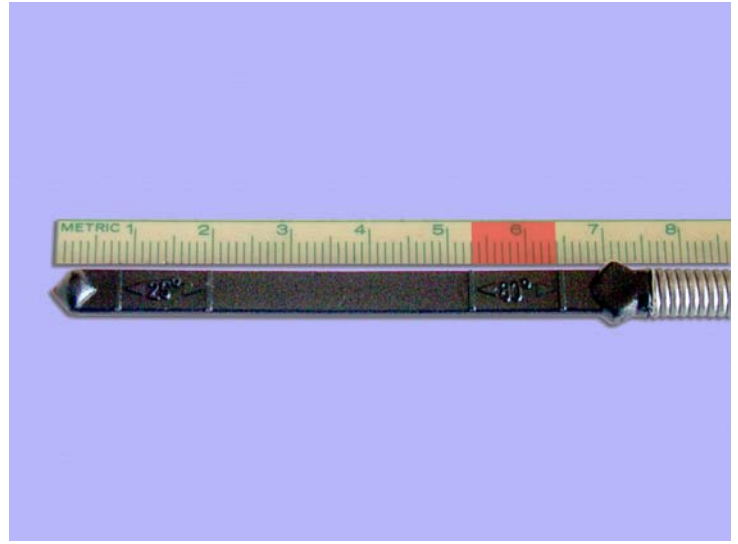
Now, it's time for your assistant, again. Make sure your shop towels are not in the path of the radiator fan, touching the exhaust, or covering the air intake. Have your assistant place his (or her) foot firmly on the brake, start the car and run through the gears one at a time, spending 3-5 seconds in each gear. When you've pumped another half gallon or so into your waste container, have your assistant stop the engine, regardless of his progress, while you add a similar amount of fluid.

Have your assistant start the engine and resume cycling through the gears from where he left off. Continue the start/stop cycle until you have drained/refilled about 8½ quarts of fluid. If your assistant makes it through all of the gears before then (and he should), he can return to Park or Neutral for the remainder of the cycle(s). Your goal is to replace the old fluid with a similar, or slightly lesser, amount than you evacuated. Take care not to add too much, as it will be immensely easier to top it off upon completion than it will be to drain more out.

Reconnect the transmission cooling line, reattach the undercarriage tray, lower the car, and put the dipstick/fill tube cap back on (without the new locking tab). Drive the car, using all of the gears, until it is thoroughly warmed up; using all of the gears will thoroughly circulate all of the fluid and remove any trapped air, and the transmission fluid needs to reach 80°C (176°F) to acquire an accurate measurement.

Since the transmission is cooled by a tank inside the radiator, the temperature of the coolant, shown on your instrument panel, is almost identical to the transmission fluid temperature, after a few miles/kilometers of driving. You can ping the bottom of the transmission pan with an infrared thermometer to confirm this.

Once you are at full operating temperature, park the car on level ground but leave the engine running. Remove the dipstick/fill tube cap (mind the o-ring) and insert the dipstick tool until it stops, but *do not* force it. It is a tool, not a permanent fixture, and as such, it is designed to measure the fluid level in several different models with several different dipstick/fill tube lengths. Therefore, it was never intended to seat into place like a typical dipstick would; in fact, it will only go in about half way on this car.



Alternating the dipstick tool and the funnel, add fluid in small increments until the transmission fluid reaches a level between the top two lines on the dipstick, where it says 80°. Accuracy counts, as too much fluid can be just as harmful to your transmission as too little fluid. When you finally reach the correct level, thoroughly inspect everything. When you are satisfied that there are no leaks, replace the dipstick/fill tube cap and install the new locking tab. Clean your tools, your workspace, and yourself. Congratulations!

Now, where did I put that beer?

DISCLAIMER

A few things to consider:

- I am not, nor have I ever been, a certified mechanic. Over the years, I have successfully maintained all of my family's vehicles without encountering serious complications, but the advice of a professional should always be considered superior to my own.
- The figures and measurements I quote are accurate to the best of my knowledge, but it is always advisable to research any project before undertaking it to check for accuracy. This is not an official, manufacturer-sanctioned publication. It is, rather, a guide that reflects my own experiences and will, hopefully, consolidate and streamline the process for you.
- The tools, supplies, and products I recommend are based on my personal research and experience. In other words, they are my opinion. If anything I recommend seems suspicious or incorrect to you, I encourage you to seek a second opinion.
- The methods I recommend are, in fact, the same methods I employ on my own personal vehicles. While I believe that these methods are safe and effective, it does not necessarily make them the only way, or even the best way, of doing things. It means, quite simply, that these methods have been shown to yield satisfactory results for me.
- References to alcoholic refreshment are not intended to suggest that anyone consume alcohol either before or during any maintenance project. While I enjoy a cold beer after a job well done, I consider even slightly impaired judgment to be a direct violation of my first objective, safety. If you do not feel healthy and alert, please consider postponing any such projects—if not for yourself, for your family.