

Aston Martin DB9

Replacement of ZF6HP26 Transmission Filter, Pan, and Fluid

Date Performed: August 23, 2020

Vehicle: 2005 Aston Martin DB9 with 22000 Miles

Project Duration: Approximately 6 hours

TOOLS

1. Mercon SP - 12 to 24 quarts
2. Mahle HX-152 Transmission pan and filter
3. 10 Quart Clear container for fluid capture and measurement
4. Adaptors from summit racing
 - a. In addition you will need some fittings to attach to the hoses. The racing parts that connect to the transmission exit into a 8an fitting (which has the same threads as 1/2 pipe thread).
5. Fluid Extractor MV7201
 - a. Fitting connected to the MV7201 goes to the top port of the transmission and is the FILL
 - b. Small tube piece is the lower on the transmission and is the DRAIN



Mahle HX-152 Transmission pan and filter



Adaptors from summit racing



Fluid Extractor MV7201

PROCEDURE

1. Raise the car
 - a. I used Quick jacks and then cinderblocks under the wheels for added safety

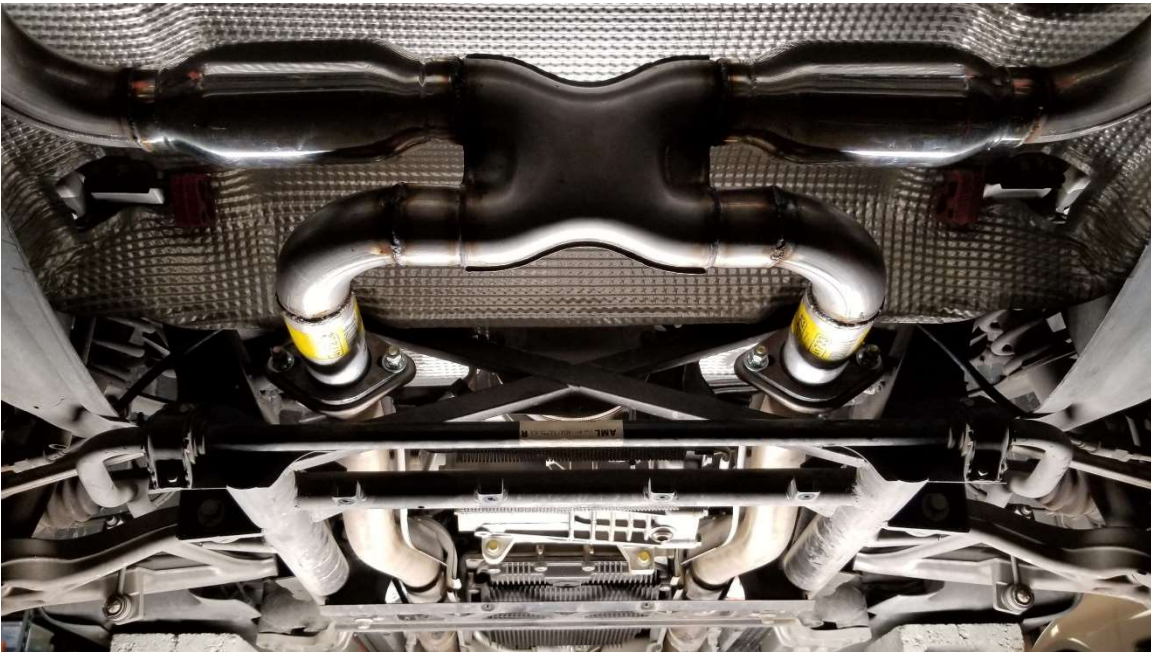


2. Remove rear cross member support restricting access to transmission pan
 - a. Four 16mm bolts
 - b. Reinstall with XXX torque
 - i. I did not know the torque so I did hand tight +45 degrees and thread locker



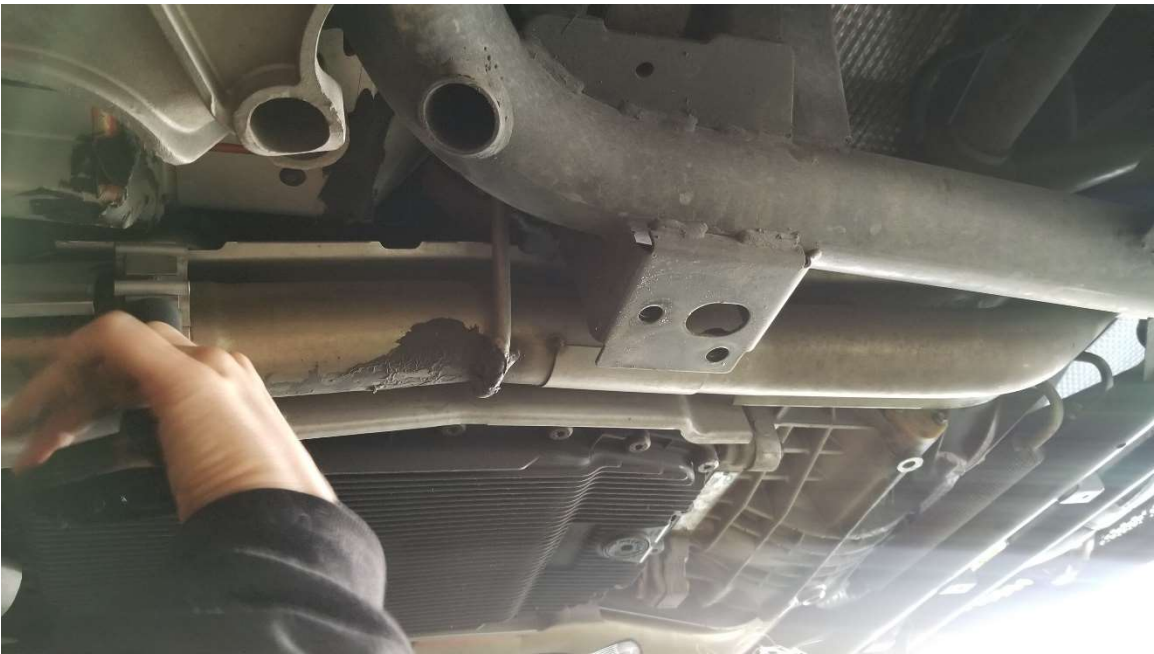


3. Remove Driver side exhaust in that area
 - a. I needed to remove the rear resonator as well to allow the pipe easily to slide out
 - b. Remove Bespoke VentosGarage DB9 Sound Enhancement System to get access to the transmission cooler lines to fill and drain



- i. Remove the driver side exhaust tube from the rear muffler to the first available disconnect - it is about 3 feet long and has a 2 bolt flange on the muffler side and slip on for the other side
- ii. You can remove shielding in that area as well, or remove it all as one like I did
- iii. Remove the nut holding the Exhaust tubes together

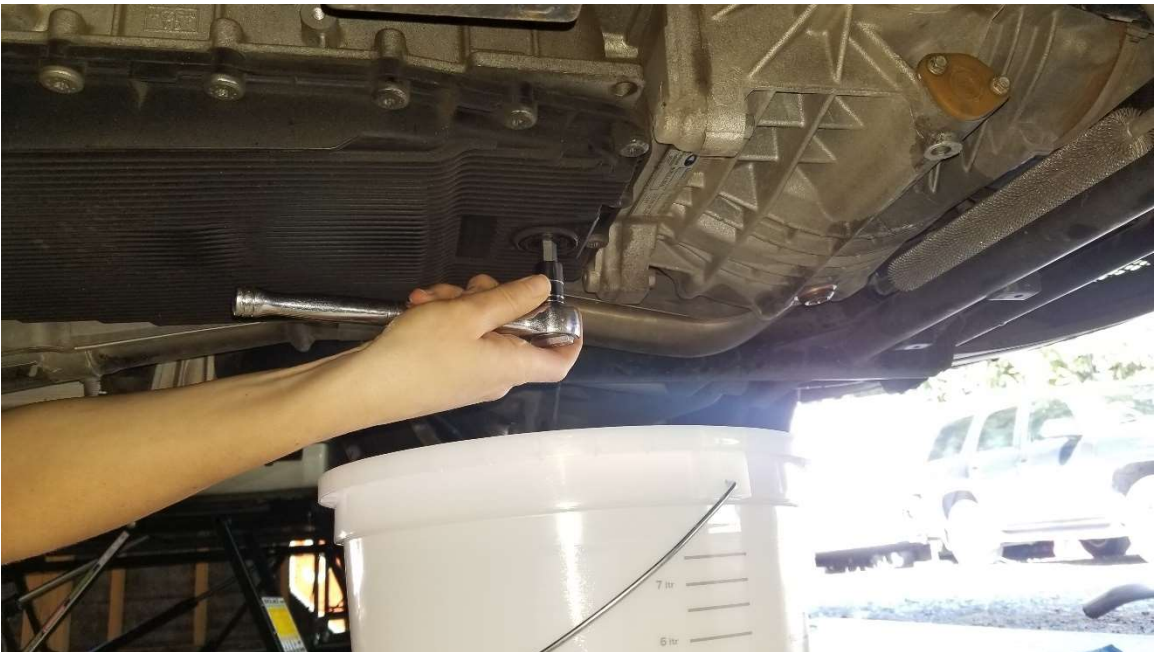
- iv. Note the hanger clip - either remove from the car frame, or do as I do and remove the two 10mm hex bolts from the frame holding the top hanger from the underside of the car





Required section to remove to get access to the transmission cooler lines entering the transmission

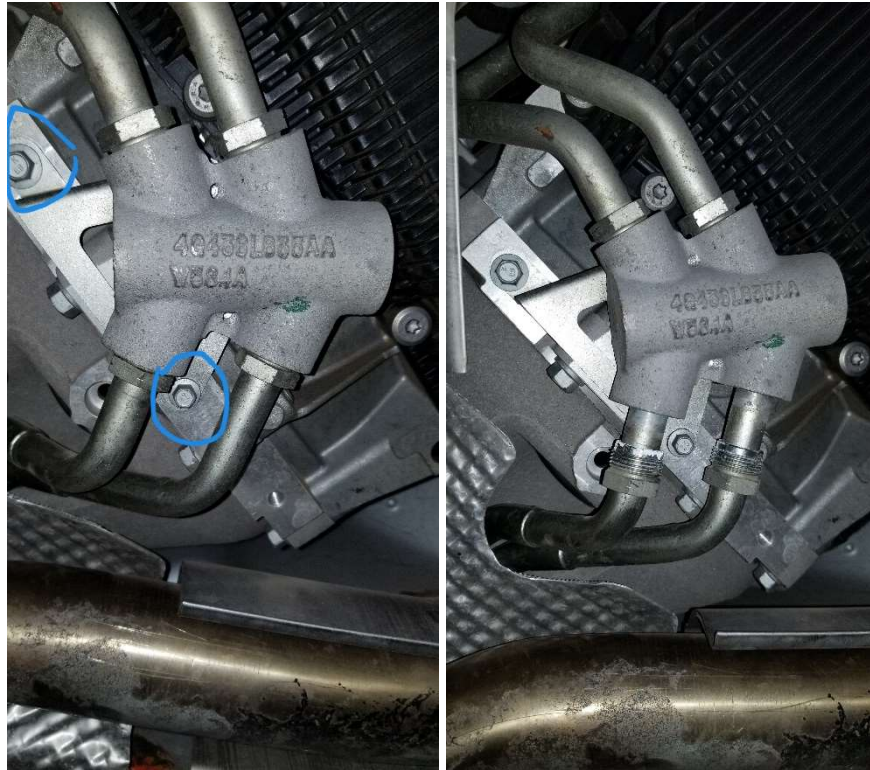
4. Drain Fluid from Oil Pan
 - a. 10mm hex required
 - b. Approximately 2 liters / 2.1 quarts qty came out





5. Remove Transmission thermostat (Part number 4G436L635AA) - held on to transmission with an 8mm and 10mm bolts
 - i. Remove only 2 of the fittings, the side leading to the trans cooler (there was no need to loosen all 4, just the two on the side of the transmission cooler)
 - i. Should take a 7/8 wrench and very little effort to break free
 - ii. Approximately 1/2 liter will drain via gravity.

- iii. Approximately another 1/4 liter will drain via compressed air
- iv. NOTE - THIS IS A DIRTY METHOD IF NOT PREPARED WITH RAGS



Note the loosened and moved oil fill lines from the Transmission thermostat to the Transmission cooler



- v. Remove 10mm bolt from transmission holding on the cooler lines



- e. May need to gently wiggle the tubes from the transmission or gently pry them off
 - i. Be careful they are only in there by the friction of the O-rings



- f. Both the lines and the thermostat can be wiggled out and placed aside until later
6. Install the Fill and Drain Fittings

- a. Top is fill port
 - i. This is where you will be pumping in your fluid
 - b. Bottom is drain - will come out pressurized if engine is started
 - i. Note it comes out at about 1 liter per 3 to 5 seconds - VERY FAST
7. Remove Oil Pan /Filter
- a. Need TORX 40 size

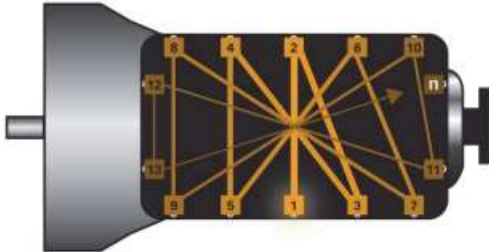
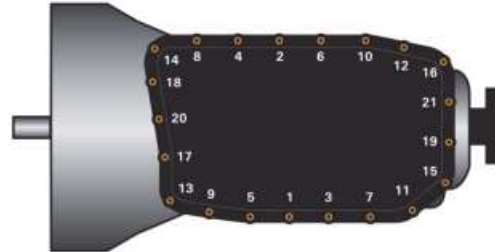


Fig 1: Schematic representation of the bolting sequence



Example: Bolting sequence



Loosen or tighten oil pan bolts: crosswise from the center outwards (Fig. 1). First screw in the bolts by hand, then tighten in the correct order with the correct **torque**. Follow the instructions issued by the vehicle manufacturer.

	Oil pan		
Material	Aluminium	Plastic	Steel plate
Tightening torque	4 Nm + 45°	10 Nm	12 Nm
Oil filter	Separate part	Integrated in oil pan	Separate part

- b. Use jack or stand to hold pan in place while removing the bolts
 - i. Clean bolts if dirty
- c. Drain oil pan into container to measure fluid out



Pan removed - there is a decent amount of fluid in the pan



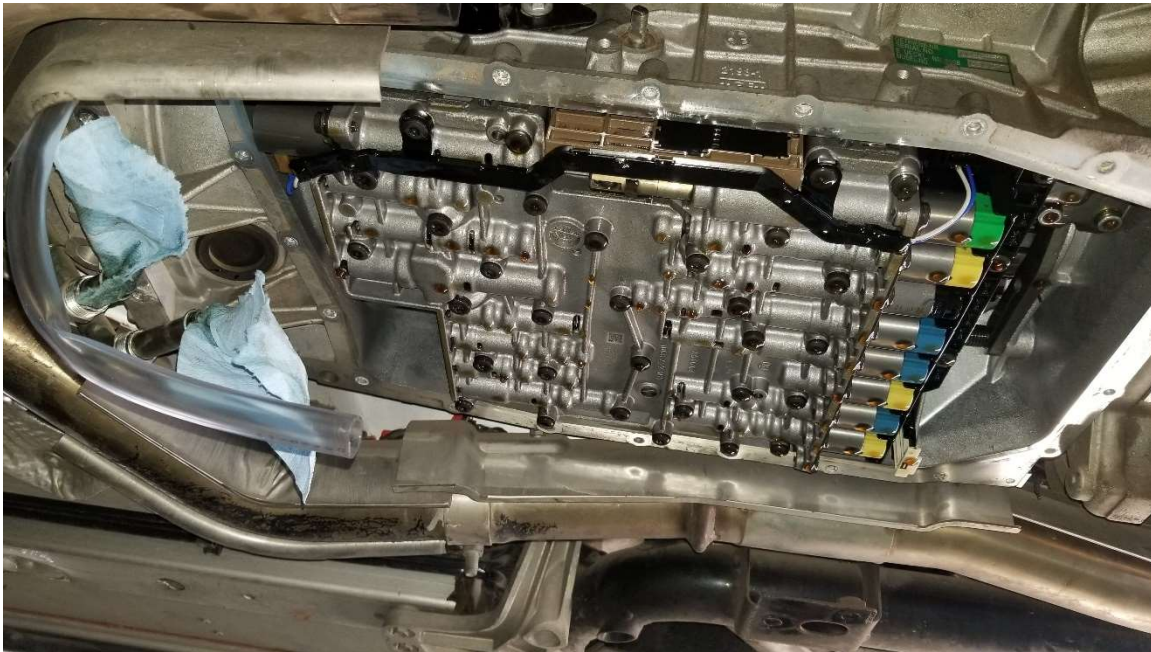
Close-up of the Pan Magnets - not a lot of debris after 15 years and 22k miles

- d. Make sure filter O-ring is not stuck in bottom of transmission
 - i. Total out at this point (initial drain + Pan removal fluid + Trans Cooler = 3.5 Liters)



Total drained fluid so far

8. Clean underside and gasket sealing surface
 - a. Inspect to see if anything looks wrong



Look at that Underside, so many fancy components - don't touch them!

9. Reattach new oil pan
 - a. Use T40 and hand tighten all the bolts on the pan
 - i. Once all bolts are installed, hand tight
 1. Remove individual bolt
 - a. Add single drop of thread sealer to each bolt
 - b. Install and then torque to 10NM
 - c. Do a final check of all bolts to make sure they are at 10NM
10. Use Pressure tool/pump in the amount of fluid drained
 - a. Add Fluid to Fluid transfer pump
 - i. Theoretically you could use gravity, but a pump is about 100 bucks and totally worth it
 - b. In my case I drained 3.5 L from the initial drain + what was in the pan + what was in the oil cooler lines
 - i. I added 4.5 liters to the top port.
 1. This is because I know 1 Liter will transfer out before stopping the engine
 - c. Secured the drain line into a measuring bucket
 - i. VERY IMPORTANT OR YOU WILL BE CLEANING UP A PUDDLE
11. STOP AND CHECK
 - a. Is the car secured on the jacks and or blocks
 - i. You will be running the engine and shifting into gears
 - b. Is the oil catch cans have ATLEAST 2 liters left in it
 - i. I recommend at least a 10Liter catch can that is clear with 1 liter marks
 - c. You have a 2nd person to start and stop the engine
12. Start the engine and let 1 liter drain into the catch can.
 - a. WARNING - need 2 people, the fluid comes out at about 1 liter in 3 seconds

- b. WARNING - it will be loud under the car with no exhaust and the exhaust open near the filling location; wear eye protection!
- c. Procedure
 - i. Add First Extra liter with the pressure tool
 - 1. I had previously done this when I added 4.5Liters instead of 3.5 removed
 - ii. Start engine and drain one liter out - about 3 seconds
 - iii. Pump in 1 Liter of new fluid
 - iv. Start engine and drain one liter out - about 3 seconds
 - v. Pump in 2 Liters of new fluid
 - vi. Start engine Immediate put into DRIVE and then Immediately back into PARK
 - 1. You only have 6 seconds to do this then turn off the engine
 - a. Approximately 2 liters will drain out - about 6 seconds
 - vii. Pump in 2 Liters of new fluid
 - viii. Start engine Immediate put into REVERSE and then Immediately back into PARK
 - 1. You only have 6 seconds to do this then turn off the engine
 - a. Approximately 2 liters will drain out - about 6 seconds
 - ix. Pump in 1 Liter of new fluid
 - x. Start engine and drain one liter out - about 3 seconds
 - xi. At this point I had fresh fluid coming out and then did one extra pump and flush for good measure
 - 1. Pump in 1 Liter of new fluid
 - 2. Start engine and drain one liter out - about 3 seconds



Drain bucket (8 quarts) and the new fluid going in

- d. Total Fluid added
 - i. 4.5 quarts after changing pan and filter
 - ii. Transferred out / in 8 quarts
 - iii. Added 1 extra for the transmission cooler
13. Remove the Drain and Fill adaptors

- a. Remove 10mm bolt and plate
 - b. Wiggle adaptors out
14. Install Thermostat and lines
- a. Wiggle them back into place
 - b. Press the lines back into the transmission
 - c. Ensure that the lines are nicely fitted to the transmission and the thermostat is nicely fitted to the transmission cooler lines
 - d. Install the 10mm bolt and plate securing the lines to the transmission
 - i. Hand tight + thread locker + 45degrees (just make it snug with a ratchet and go about 45deg extra)
 - e. install the 8 and 10mm bolts
 - i. Hand tight + thread locker + 45degrees (just make it snug with a ratchet and go about 45deg extra)
 - f. Install the transmission filter lines to the thermostat
 - i. NOT A LOT OF TORQUE
 - ii. Use 7/8 wrench and get it snug.
 - 1. Use the feeling when removing them or the other two that are attached to get a feel. I don't have a crescent wrench torque but I estimate it to only be a few NM
 - 2. After warming up the car and verifying the thermostat opens up you can check for leaks and then add additional torque as needed
 - 3. They have an o-ring and appear to be similar to AN fittings, thus not a lot of torque is required
15. Final Check of transmission system fittings
- a. Verify everything is torque'd and snug as needed.



Everything shiny and new - ready for exhaust reinstall

16. Reinstall the exhaust tube

- a. Personally I had a lot of issues getting the tube back on, I used an exhaust expander for the piece that was removed to just slightly open the end up so it slid nicely onto the car. Nothing to change the shape or size, just to loosen it up, did not take more than like a 1/2 turn on the exhaust expander
- b. Attach the two 10mm bolts holding the hanger on (if you used this method)
- c. Make sure to position the tube to ensure you don't have the piece misaligned and causing chattering of the heat shields. Take a moment under the car and from the rear to ensure its all lined up.

17. Reinstall the exhaust/muffler

- a. This is a good time to also improve the sound of your car with an aftermarket system. Saves weight and enhances the sound
- b. The system I used is a VentosGarage DB9 Sound enhancement system that weighs roughly 15lbs compared to the stock 62lbs
 - i. X pipe and dual resonators to give it a lovely sound that is great at higher RPMs and a deep grumble at idle and cursing speed. Still quiet enough (assuming you can keep it under 3000Rpm for neighborhoods or grocery runs



18. Run the car with the system installed for at least 20 min to make sure everything sounds right.

- a. Check under the car (once its all warmed up) for any leaks in the thermostat or lines.
- b. Shift through the gears (ensuring you have your foot on the brake)
- c. Back in part and neutral and ensure engine and transmission get up to temp
- d. Go for a nice easy drive to check the shifting.

19. Additional Notes

- a. You may get some engine codes or transmission codes after the flush
 - i. I got a transmission general code P1000, cleared with standard code reader, it did not reappear.
- b. This is a messy procedure, recommended having pet pee pads or towels ready for any leaks.
- c. You need two people - don't even try with one.

- i. You can do 90 percent alone, but do not try to do the starting and stopping the engine alone
- d. Overall not a difficult procedure, very straight forward but lots of disassembly and steps to follow