

Volvo Auto Transmission Conversion: ZF to AW

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[Volvo Maintenance FAQ for 7xx/9xx/90 Cars](#)

[Procedure thanks to Dick Riess] This narrative discusses the procedure to remove the old ZF22 automatic transmission from your Volvo 740/760 and replace it with an AW-70 series unit.

Parts Required:

- Transmission
- Transmission crossmember
- Drive line (shafts)
- Gear selector, complete with wiring and connections
- Relay for 4th gear
- Oil cooler lines (both)
- New Exhaust pipe gasket
- Gear selector grommets

Things to check and (or) replace. It will never be easier than now. See relevant FAQ files for [auto trans](#), [driveline](#), and [engine seals](#) for further information.

- Tail shaft bearing
- Tail shaft-housing gasket
- Tail shaft seal
- Torque converter seal
- Transmission pan gasket
- Transmission filter-screen
- Shaft seals, one each side
- Mount for transmission in crossmember
- Rear main seal
- Rear main gasket
- Universal joints
- Carrier bearing and its mount
- Gear selector grommets

Instructions:

Mount and elevate car safely so that the transmission may be removed and the new unit installed. You will also need room to remove and replace the drive shafts.

1. Drain oil from transmission
2. Disconnect oil cooler lines from radiator - use a counter hold wrench at the radiator to prevent damage. Also disconnect lines at transmission. You will bathe in oil. Remove line holder at bellhousing (1 - 10mm bolt). Remove lines from engine bellhousing.
3. Loosen nut holding filler tube - dipstick holder from oil pan. Once pan is drained, put plug backs in and block holes vacated by lines and filler tube.

4. Disconnect shift levers from transmission. Two E clips.
5. Disconnect driveline at back of transmission and front of differential.
6. Remove center support bracket. Total of 6 bolts. You will need the plate for mounting the new drive shafts.
7. Remove exhaust pipe support near the back of the transmission. Not on all cars.
8. Remove nuts from exhaust pipe to manifold (3).
9. Remove bolts holding exhaust pipe to bellhousing.
10. Free exhaust pipe from exhaust manifold.
11. Remove aluminum engine support bracket under the engine. This binds engine to bellhousing.
12. Remove 4 bolts holding torque converter to flexplate. You will need to counterhold the flexplate.
13. Loosen and remove starter bolts. The assumption is that you have already disconnected the negative battery cable.
14. Remove distributor cap and rotor. You don't want to crush it against the firewall.
15. Remove transmission crossmember. Two bolts on each side and one nut holding transmission to the crossmember. Remove the bolt from the transmission - need to tap with a hammer once the crossmember is removed.
16. Mount transmission jack under the transmission, safely securing it.
17. Remove all bellhousing bolts.
18. Carefully pull transmission back until clear of bellhousing and lower. You will probably take another transmission oil bath, especially if the torque converter decides to come out. Best to cross wire in the torque converter to prevent it from slipping out.. Wire from ear to ear of bellhousing portion on transmission. Remove transmission from under the car.
19. Remove flex plate - loosen bolts in a cross pattern.
20. Mark or know the position of the flexplate on the crankshaft, as it prevents timing problems later.
21. Remove and install new rear main seal. [FAQ provides instructions](#) for this as well as other items skipped in these instructions.
22. Reassemble flexplate and torque to 50 lbs. using a cross-tightening pattern.
23. At this point you reassemble with the new transmission and associated parts.

In the Car:

1. I. Remove the center console. This includes:
 - Ashtray
 - Fuse hiding panel
 - Clip holding center console panel nears the fuse panel.
 - 2 screws in parking brake recess.
 - L shaped plastic clip near parking brake, black in color
 - Lift panel, disconnect seat heater plugs (2) and light. Remove panel
2. Good time to check that all small lights are working and to clean panel and area. Vacuum out. Loosen and flip up from right to leave the metal bar by the fuse panel. This swings out of the way and allows pulling of the fuse and relay tray for access to wiring underneath. You will need to pull this tray up and forward. There are two ears, white, one on each side that you need to push to the side as you lift and pull the fuse and relay panel out.
3. Remove 4 10-mm bolts holding transmission gear selector to the car. You can

remove the selector now.

4. Under and along side the fuses relay panel, and usually on the left side you will find two unused plugs. Wiring should be: one yellow wires with sometimes a black mate. Other connector will have one brown and one blue wire. This should match color of wires from connector on new shifter. You may need to change connectors as Volvo did change connector types sometime between 1987 and 1990.
5. Check used shifter for working gear selector light and new grommets on the bottom end of shafts.
6. Install gear shifter.
7. Hook up plugs from car to plugs from the shifter. Wire colors should match.
8. Check that all lights function.

Under the car:

1. Reassemble by installing transmission to engine. This basically is retracing your disassembly steps. . Do assemble loosely so you can adjust for fit.
2. The new driveline needs to be mounted to old center support plate. Do it loosely.
3. Remember to hook up wire from shifter to the transmission overdrive solenoid (4th gear).
4. Check all nuts and bolts and tighten all.

Add transmission fluid. Suggest run car for a few hundred miles and flush transmission as noted in FAQ. Enjoy a much better shifting car. Check for leaks, always.

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