

## How often should the automatic transmission fluid be changed?

Most owners' manuals say it isn't necessary. Yeah, right. That's why transmission shops are making a fortune replacing burned out automatic transmissions. Everyone knows to have the engine oil changed; fathers have been pounding it in our heads before we could drive, but very little (if any) mention of transmission fluid change, just how to check it.

For optimum protection, change the fluid and filter every 30,000 miles (unless you have a new vehicle that is filled with Dexron VI or a synthetic ATF which is supposed to be good for 100,000 miles, under "normal operating conditions"). Have you ever read what "normal operating conditions" are in the owners' manual? I know very few people that drive under those conditions.

### Why ATF Wears Out

An automatic transmission creates a lot of internal heat through friction: the friction of the fluid churning inside the torque converter, friction created when the clutch plates engage, and the normal friction created by gears and bearings carrying their loads.

It doesn't take long for the automatic transmission fluid (ATF) to heat up once the vehicle is in motion. Normal driving will raise fluid temperatures to 175° F, which is the usual temperature range at which most fluids are designed to operate. If fluid temperatures can be held to 175° F, ATF will last almost indefinitely -- say up to 100,000 miles. But if the fluid temperature goes much higher, the life of the fluid begins to plummet. The problem is even normal driving can push fluid temperatures well beyond safe limits. And once that happens, the trouble begins.

At elevated operating temperatures, ATF oxidizes, turns brown and takes on a smell like burnt toast. As heat destroys the fluid's lubricating qualities and friction characteristics, varnish begins to form on internal parts (such as the valve body) which interfere with the operation of the transmission. If the temperature gets above 250° F, rubber seals begin to harden, which leads to leaks and pressure losses. At higher temperatures the transmission begins to slip, which only aggravates overheating even more. Eventually the clutches burn out and the transmission calls it quits. The only way to repair the damage now is with an overhaul -- a job which can easily run upwards of \$2500 on a late model front-wheel drive car or minivan.

**As a rule of thumb, every 20 degree increase in operating temperature above 175° F cuts the life of the fluid in half!**

At 195° F, for instance, fluid life is reduced to 50,000 miles. At 220 degrees, which is commonly encountered in many transmissions, the fluid is only good for about 25,000 miles. At 240° F, the fluid won't go much over 10,000 miles. Add another 20 degrees, and life expectancy drops to 5,000 miles. Go to 295 or 300° F, and 1,000 to 1,500 miles is about all you'll get before the transmission burns up.

If you think this is propaganda put forth by the suppliers of ATF to sell more fluid, think again. **According to the Automatic Transmission Rebuilders Association, 90% of ALL transmission failures are caused by overheating.** And most of these can be blamed on worn out fluid that should have been replaced.

On most vehicles, the automatic transmission fluid is cooled by a small heat exchanger inside the bottom or end tank of the radiator. Hot ATF from the transmission circulates through a short loop of pipe and is thus "cooled." Cooling is a relative term here, however, because the radiator itself may be running at anywhere from 180 to 220° F!

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Tests have shown that the typical original equipment oil cooler is marginal at best. ATF that enters the radiator cooler at 300° F leaves at 240 to 270° F, which is only a 10 to 20% drop in temperature, and is nowhere good enough for extended fluid life.

Any number of things can push ATF temperatures beyond the system's ability to maintain safe limits: towing a trailer, mountain driving, driving at sustained high speeds during hot weather, stop-and-go driving in city traffic, "rocking" an automatic transmission from drive to reverse to free a tire from mud or snow, etc. Problems in the cooling system itself such as a low coolant level, a defective cooling fan, fan clutch, thermostat or water pump, an obstructed radiator, etc., will also diminish ATF cooling efficiency. In some cases, transmission overheating can even lead to engine coolant overheating! That's why there's a good demand for auxiliary add-on transmission coolers.

### Auxiliary Cooling

An auxiliary transmission fluid cooler is easy to install and can substantially lower fluid operating temperatures. The plate/fin type cooler is somewhat more efficient than the tube and fin design, but either can lower fluid temperatures anywhere from 80 to 140 degrees when installed in series with the stock unit. Typical cooling efficiencies run in the 35 to 50% range.

### ATF Fluid Types

What kind of automatic transmission fluid should you use in your transmission? The type specified in your owner's manual or printed on the transmission dipstick.

For older Ford automatics and certain imports, Type "F" is usually required. Most Fords since the 1980s require "Mercon" fluid, which is Ford's equivalent of Dexron II.

For General Motors, Chrysler and other imports, Dexron II is usually specified.

NOTE: Some newer vehicles with electronically-controlled transmissions require Dexron III or Dexron VI fluid. GM says its new long-life Dexron III fluid can be substituted for Dexron II in older vehicle applications.

CAUTION: Using the wrong type of fluid can affect the way the transmission shifts and feels. Using Type F fluid in an application that calls for Dexron II may make the transmission shift too harshly. Using Dexron II in a transmission that requires Type F may allow the transmission to slip under heavy load, which can accelerate clutch wear.

Some fluids have friction modifiers and should only be used in transmissions that require them. There are now multiple types of ATF's, from synthetic. blended synthetics, fluids with and without friction modifiers,

### **ALWAYS USE THE RECOMMENDED FLUID!**

### Changing the Fluid

It's a messy job because there's no drain plug to change the fluid, but you can do it yourself if you're so inclined. To change the fluid, you have to get under your vehicle and remove the pan from the bottom of the transmission.

When you loosen the pan, fluid will start to dribble out in all directions so you need a fairly large catch pan. You should also know that removing the pan doesn't drain all of the old fluid out of the

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transmission. Approximately a third of the old fluid will still be in the torque converter. There's no drain plug on the converter so you're really only doing a partial fluid change. **Even so, a partial fluid change is better than no fluid change at all.**

A typical fluid change will require anywhere from 3 to 6 quarts of ATF depending on the application, a new filter and a pan gasket (or RTV sealer) for the transmission pan. The pan must be thoroughly cleaned prior to reinstallation. This includes wiping all fluid residue from the inside of the pan and scraping all traces of the old gasket from the pan's sealing surface. Don't forget to clean the mounting flange on the transmission, too.

When the new filter is installed, be sure it is mounted in the exact same position as the original and that any O-rings or other gaskets have been properly positioned prior to tightening the bolts. Then tighten the bolts to the manufacturer's recommended specs.

When refilling the transmission with fresh fluid, be careful not to allow any dirt or debris to enter the dipstick tube. Using a long-neck funnel with a built-in screen is recommended.

**CAUTION:** Do not overfill the transmission. Too much fluid can cause the fluid to foam, which in turn can lead to erratic shifting, oil starvation and transmission damage. Too much fluid may also force ATF to leak past the transmission seals.

Add half a quart at a time until the dipstick shows full. The transmission really isn't full yet because the dipstick should be checked when the fluid is hot, and the engine is idling with the gear selector in park on most cars, some Chryslers check in neutral, and most Hondas check with engine off. So start the engine, drive the vehicle around the block, then recheck the fluid level and add fluid as needed until the dipstick reads full.

Also look at both sides of the dipstick and believe the lowest side, you may have to wait a few minutes for the fluid to read correctly after adding some. Newer cars may have to have the ATF checked at a certain temperature, requiring a scan tool, and then there are the ones with no dipstick at all! They must be checked and filled from underneath the car.

STR Transmission Repair offers cooler installations and transmission service. During the process of servicing your transmission, we check for leaks, linkage adjustments, adjust bands (where applicable), and road test. **Remember, prevention is always cheaper than a major repair.**

Call us at 770-928-8483, if you have any questions about your transmission. We're here to help you.

## References

Automatic Transmission Rebuilders Association. (2003 - 2011). ATRA - Transmission Problem Solvers - Transmission Repair Information. Retrieved January 29, 2011, from <http://atra.com/>.

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