

“Oil the News That’s Fit to Print!”



Spotlight on...

Transmissions

Confused About Make-Up Oil?

People are often confused by the “make-up oil” section on our oil forms. They often leave it blank or tell us the size of their oil reservoir. We are actually looking for the amount of oil you’ve added in between oil changes.



Most engines will use some oil, requiring you to add oil in between changes. That’s normal. But changes in oil consumption can spell trouble. If you’ve traditionally had to add 1 quart every 3000 miles, and you suddenly find you’re adding 1 quart every 1000 miles, something may be awry. Also, if you’ve had to add a lot of make-up oil recently, when normally you don’t, the extra oil may have diluted the wear metals down, and we will take that into account when doing the analysis.

by Jim Stark

If you discount the cars and trucks that are wrecked beyond recognition, the main cause of personal vehicles being relegated to the bone yard is engine failure. Replacing an engine costs so much today that if a car or truck has any age on it at all, it often makes more sense to replace the entire vehicle rather than get fitted up with a replacement engine. That’s probably why, for every automatic transmission fluid sample we analyze in the lab, we run more than 50 engine oil samples.

But that’s not to suggest that losing a transmission in your car or truck isn’t a major headache that won’t impact your budget with a serious “thud”!

Many years ago, losing a transmission was an inconvenience but not a major expense. Today you see prices for rebuilds and automatic transmission replacements going for more than \$1000 and often higher than \$3000. That will take a serious row out of your vacation plans. So here’s a couple of tips from a guy who hasn’t paid to have a transmission replaced for more than three decades: Keep it cool. And make sure your ATF stays in good condition.

Words to Live By

The keeping it cool part doesn’t apply to most of us. It does apply to people who haul and tow heavy loads. The engineers who design transmissions are very good at it, but they don’t over-design. If you are overworking your automatic transmission, you may need an add-on transmission cooler and a temperature monitor to keep track of the ATF’s temperature. Most automatic transmission oil goes into service as a 10W oil. That is a very thin weight to protect your gearing, even before the oil is thinned down from excessive heat and damaged by overuse. Those same gears in a manual transmission are run on 75W/90 grade oil or heavier. Asking a 10W ATF to do the same job is asking a lot.

But the vast majority of us, who drive as routinely as the engineers thought we would, rarely give transmissions a thought



since they typically function trouble-free if the fluid level stays up to the full mark. So why go to the trouble and expense of having your ATF analyzed?

Two reasons. Automatic transmission fluid has the multiple functions of servicing gears, running the entire hydraulics show (which replaces your having to deal with a clutch and gearshift), and lubricating all the transmission's parts and seals. In doing all that, the oil does not have the luxury of operating in a pristine environment with steady temperatures and no humidity. It collects moisture, dirt, and other abrasive contaminants like wear metals that inhibit its ability to lubricate properly and run the hydraulics effectively. These contaminants can, if left in service for too long, damage the seals. When the seals go and the fluid level drops, you will notice shifting, hesitation, and slipping problems. You will also notice specks of fluid collecting dirt on the rear deck of your car or truck. At that point, your transmission may still okay, but to save it you will need to pay for new front or rear seals, probably both.

If your transmission got you past the warranty period, it will probably never fail on you during the life of the vehicle if you keep your ATF in serviceable condition. Neither will it leak. Is the ATF in your vehicle still in serviceable condition? The only way to know for sure is to have it analyzed. If it needs to be changed and/or flushed, don't delay — go ahead and do it. It is a small cost to pay when compared with a transmission replacement.

Report of the Month

The report below is a sample from a failed transmission. Although there's no history to look at, you might be able to figure out what went wrong by studying both the spectral and the physical data. Then check out the caption below to see if you were right.

M/HR ON OIL		UNIT/ LOCATION AVERAGES					UNIVERSAL AVERAGES
M/HR ON UNIT							
SAMPLE DATE	2/3/05						
ALUMINUM	27	19					12
CHROMIUM	1	1					1
IRON	392	235					101
COPPER	215	134					79
LEAD	281	173					26
TIN	6	4					2
MOLYBDENUM	0	0					4
NICKEL	1	1					1
POTASSIUM	0	3					3
BORON	63	64					84
SILICON	39	47					23
SODIUM	9	8					14
CALCIUM	98	74					952
MAGNESIUM	18	10					102
PHOSPHORUS	323	272					773

Elements in Parts Per Million	ZINC	156	92						457
	BARIIUM	1	1						436

Properties	TEST	cST VISCOSITY @ 40 C	SUS VISCOSITY@ 100 C	cST VISCOSITY@ 100 C	SUS VISCOSITY @ 210 F	FLASHPOINT IN F	FUEL %	ANTI- FREEZE %	WATER %	INSOLUBLES %
	VALUES SHOULD BE				42-51	>335	-	-	<0.1	<0.1
	TESTED VALUES WERE				41.3	365	-	-	0.0	0.4

The oil was run far too long. We often see high insolubles (solids in the oil) and a low viscosity in transmission oil that is overrun and overheated. The extensive heat this oil suffered caused the aluminum and extremely high iron, copper, and lead wear. These metals typically show wear at the clutch plating, which appears to be where the failure occurred.

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