

# Don't Damage your Engine!



**Many people regularly ask me why there are so many different automatic transmission fluids recommended by the various vehicle manufacturers. Let me begin by stating, "There is no such thing as a universal ATF (automatic transmission fluid) and you cannot up-treat an ATF, by adding aftermarket additives."**

According to my Castrol handbook from 1991, 27 years ago, there were six automatic transmission fluids available, namely: GM Type A Suffix A; Dexron; Dexron II; Dexron IIE; Ford M2C 33 (Ford Type F) and Mercon fluid. This excluded the two commercial Leyland and Allison transmission fluids. Nowadays, we have many more with some oil companies offering up to 45 different OEM recommended and approved ATFs.

Using the OEM approved lubricants is in the best interests of owners and their vehicles. This is because vehicle manufacturers often have vastly different specifications for the range of transmissions they manufacture or supply in their vehicles, and one is often not suitable for another.

An example is that early BMW automatic transmissions used only hydraulic control with no electronic intervention. Subsequent refinements, such as electro-hydraulic (EH) transmissions, introduced a new acronym: EGS (Elektronisch Getriebe Steuerung), electronic transmission control. These modern automatic transmissions are now able to achieve better fuel economy, reduced engine emissions, greater shift-system reliability, improved shift feel and shift speed and improved vehicle handling, but only when the correctly specified automatic transmission fluid is used.

## **Specific fluids**

OEMs like BMW provide their customers with automatic-transmission options such as ZF, and GM's Hydra-Matic, which require very specific fluids. OEM specifications often denote a minimum acceptable performance level, to which they often add particular requirements or tighter tolerances on a general ATF specification. Extensive testing therefore helps OEMs to maintain an active list of approved lubricants.

An example of such a reference to specification and approved fluid, may be seen in all BMW manuals where the specified automatic transmission fluid is always accompanied by the following text: "The

automatic transmission provides pressure regulated hydraulic fluid which is filtered for all of the transmission's functional requirements. All BMW automatic transmissions are designed to operate with specific fluids. Use of non-approved oil will cause malfunctions and irreparable transmission damage which is not covered by BMW's warranty." (Please pay careful attention to the word "will" in that last sentence).

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**They don't know better**

Some mechanics will put an incorrectly specified universal ATF in an automatic transmission and, because it works, they believe this is acceptable. This is despite not knowing the long-term effects of using the incorrect fluid, while presuming to know better than the OEM who has spent millions of dollars (or deutschmark, or yen, or rand) in scientific testing of every component of the transmission, over the full expected lifetime of the transmission.

ZF transmissions are fitted to many vehicles, including Land Rover, VW, Jaguar, Ford, Audi and BMW. The ZF website states the following: "In modern transmissions, the oil is a 'constructional component' that needs to match the different transmission functions and materials as perfectly as possible. ZF transmission oils are especially developed for the individual transmissions and adapted to their specific requirements."

**Special requirements**

Remaining with the "universal ATF" theme of many oil companies, let's consider the technical service bulletins of an OEM like Toyota. These bulletins provide information regarding the usage of the correctly specified ATF in their vehicle's transmissions. Toyota technical bulletin TC003-99 which is dated 21 May 1999 is proof that these special fluid requirements have been in place with Toyota for quite some time. In this bulletin a clear instruction is offered, that "with the exception of mixing ATF Type T with Type T-IV fluids, different types of fluids must not be mixed".

In their technical bulletin TC006-03, Toyota states that the new automatic transmission fluid (ATF) "WS" has been introduced on 2004 – 2005 model year 4Runner, Land





Cruiser and Prius vehicles. Once again, Toyota warns that ATF “WS” is NOT compatible with any other type of transmission fluid.

In Technical Bulletin TC010-07 Toyota warns “ATF –WS is NOT compatible with T-IV or Dexron ATF”. Also, in the same bulletin “the use of additives or aftermarket fluids that are considered compatible or substitutes may result in shift concerns and damage to the internal transmission components”. The theme remains consistent, use the OEM specified ATF only.

### Learning the hard way

I have many customers who have learnt this lesson the hard way. Compare the co-efficient of friction for Ford specification M2C -33G and you will see it has exactly the opposite frictional curve to Dexron fluids. These are examples of how most OEMs consider only their own automatic transmission fluids to be suitable for their automatic transmissions.

OEMs are demanding longer drain intervals and fill- for-life capability for passenger cars. Automatic transmissions are changing in design from 5 to 6 and 7 speed and now even 9 speed capability, improving drivability and performance. To improve fuel economy, transmission components are lighter, viscosities are lower, despite increased engine horsepower. And now new fuel-efficient transmissions exhibit higher torque and higher operating temperatures.

All these factors are severely stressing the automatic transmission fluid. Problems such as transmission shudder, poor shift feel and accelerated wear are becoming more common as drain intervals are increased. ATFs must provide fill-for-life capabil-

ity, improved fuel economy, anti-shudder, friction durability, shear stability, low-temperature fluidity and improved oxidation stability.

### Blanket claims

Many lubricant marketers make blanket claims about the suitability of their products for universal use in the consumer marketplace; however, the lubricants marketed by all oil companies cannot be seen as equivalent and compatible. As mentioned, there is no such thing as a ATF, and an ATF cannot be up-treated by the addition of aftermarket additives.

**There is no such thing as a universal automatic transmission fluid (ATF), and an ATF cannot be up-treated by the addition of aftermarket additives**

The importance of these variations in OEM requirements and specifications is often underestimated or ignored by workshops until a problem arises; and only then do they become concerned about the critical importance of selecting the correct lubricant, almost always at the expense of the vehicle owner.

So vehicle owners should take care when it comes to choosing a workshop to service their vehicle, and pay more attention to the lubricant quality and brand offered by them. The same amount of care should be exercised by DIY enthusiasts, as advice from spares shops on lubricants is mostly extremely poor, and in many cases, completely non-existent.

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