

# TURN SIGNAL FLUID 😊

## *What About Lane Keeping Assist Fluid?*



You might have heard about it from a sarcastic shop manager, or maybe just from your lame-joke Dad when you were a new driver, but hopefully you've never purchased, sold or installed any blinker fluid.

That joke has been around as long as... well, as long as cars have had turn signals. Of course, modern, technologically advanced vehicles are well beyond such humdrum maintenance needs. However, and in all seriousness, it's time for shops to regularly be testing and replacing perhaps the most critical of all safety system fluids.

Carmakers are all bragging about their latest developments in Advanced Driver Assistance Systems (ADAS). If you are reading this magazine, you've probably already read about or received diagnostic repair training for one or more ADAS technologies.

As an industry, we are just a long, jump-step away from driverless (autonomous) vehicles. Between now and then, motorists are clamoring for cars that can stop themselves, keep the car centered in a lane, maintain a specific distance at highway speeds and even correct the steering under high crosswinds.

Moreover, all of these "nannies" will carry over into the next generation of autonomous vehicles.

So, what is this mysterious, safety system fluid? Well ...it's brake fluid.



Stop - and think about it. If a vehicle is equipped with Adaptive Cruise Control (ACC), it maintains a safe distance between vehicles by applying the Anti-lock Braking System (ABS) when necessary. Drifting out of your lane because you are drowsy or inattentive? Active Lane Keeping Assist uses the ABS to slow down two of the wheels and pull the vehicle back into its lane. Even Crosswind Stabilization software is more reliant on the braking system than the electric steering system to keep the car pointed straight ahead. It's extremely obvious that Automatic Emergency Braking systems rely upon ABS to stop a car when the driver can't (or won't). For that matter, any vehicle with Electronic Stability Control (ESC) uses the ABS to slow one or more wheels to keep a vehicle from rolling over if traction is lost while accelerating on a curved entrance ramp.



**ABS is the mechanical backbone of electronic vehicle safety systems. And, for the ABS to function efficiently enough to safely replace inputs from a human driver, proper brake fluid condition is critical.**

Just as virtually every repair procedure begins with disconnecting the battery; virtually every safety maneuver begins with slowing momentum to regain control.

So, let's rethink our perception of the role brake fluid plays in a vehicle. Customers rarely come in to a shop with a service complaint about brake fluid. With modern brake-by-wire systems, even brake pedal "feel" is controlled by a computer. Vehicle manufacturers themselves rarely address brake fluid as a maintenance item. But, here's where we want to start paying attention. In North America, little attention is paid to brake fluid. That's not the case in Europe. Until recently, most German automakers advised annual brake fluid replacement as a maintenance item. Even in today's world of extended intervals and "cost of overall ownership" concerns, most European automakers still call for brake fluid replacement every two years.

Are the cars mechanically different in Europe? No. Is the brake fluid different? No. Some of the exact same vehicles with the exact same brake fluid are sold on both continents. So then, why is there a two-year replacement interval for one car and none for the other? Hint: The reasons are not necessarily based on technology or science.

Most electronic vehicle safety systems first became widely available in Europe on high-end vehicles before the technology trickled down to other automakers. The same is true for today's Advanced Driver Assistance Systems. **European automakers understand the critical relationship between ADAS and ABS. These automakers also understand that in order for ADAS to competently perform as designed, correct brake fluid viscosity is critical.**

Viscosity is a measure to represent the brake fluid's flow property. The higher the value, the more difficult for the fluid to flow. If the value is high, (especially) when the air temperature is low, the fluid can have a negative effect on ABS performance.

Both sludge (particulates) and water content in brake fluid will affect viscosity and ABS performance. Incorrect pH and high levels of copper content can indicate a depletion of corrosion inhibitors in brake fluid. A combination of depleted corrosion inhibitors and moisture can result in particulates being suspended in the brake fluid that may increase viscosity beyond expected values.

It's evident that for ADAS using ABS, clean brake fluid meeting exact OE specifications will result in the most efficient and safe operation of the systems. If you can understand why clean motor oil meeting exact OE specifications will provide the best overall performance in an engine with cam phasers and or

cylinder deactivation, then this should make sense to you. ABS use precise micro valves and require extremely rapid activation to perform as designed.

So, what should a shop do to address these concerns? Firstly, we must realize that fluid service intervals listed in the vehicle owner's manual are not always designed to be in the best interest of the customer. Secondly, customer education is key.

If you have built a trusting relationship with your customer, a conversation discussing the points covered in this article may be enough to sway them toward replacing their vehicle's brake fluid on a schedule closer to what's followed in Europe than in the U.S.

For all other customers, testing and evaluation of brake fluid condition is your path to building that trusted relationship. With a customer's permission to test and evaluate the brake fluid at every shop visit, you will build credibility leading to that trusted relationship. If after several "no service required or suggested" test results, when brake fluid testing does indicate signs of sludge, high moisture content, contamination, incorrect pH or additive depletion, you can confidently sell brake fluid replacement services.

Get your shop in the habit of testing brake fluid as often as you check a tire's air pressure for safety. Today's motorist is more than ever relying on the car itself to take over responsibility for keeping them safe while on the road. And, motorists are also relying on your shop to let them know if any safety systems are potentially compromised.

Don't ever think of brake fluid as "just brake fluid" again. **If it raises awareness with your customer to refer to brake fluid as Lane Keeping Assist Fluid or Electronic Stability Control Fluid... then use such terms as a conversation starter about regular brake fluid testing and maintenance.**

New vehicle technologies require more customer education, along with new ways of communicating the extensive value your shop provides.

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