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Brake fluid will be the sector's money maker

with technology and equipment designed to keep the occupants of the vehicle safe, and braking hydraulics too are going through a similar cycle.

A key component among the slave cylinders, the brake hoses and calipers, is the actual brake fluid itself. It may seem like a simple product but even this has evolved on numerous occasions. Lawrence Bleasdale, Sales Director at **TMD Friction**, says that the aftermarket and especially technicians need to be aware about the type of brake fluid that they use.

He adds that vehicle manufacturers are choosing specific formulations, which are

reminiscent of the engine oil market, which has now become a specialist market.

He adds: "It does mean more SKUs will be available and means more opportunities from an aftermarket point of view to sell the product, but some of these are expensively engineered formulations, and we could start to see the brake fluid market mirror the oil sector in becoming very specialised."

Mark Sromalla, National Sales Manager of **Lucas Oil**, said that a trend adopted by original equipment manufacturers, especially those who build high performance vehicles is to use a DOT 5 brake fluid specification,

which brings a new formulation of brake fluid to the aftermarket.

"It's essential that brake installers and sales customers in the do-it-yourself market appreciate the differences between the DOT 3, DOT 4 and DOT 5 brake fluid specifications. If you have a vehicle that requires a brake fluid with a DOT 4 specification and a vehicle that requires a DOT 3 specification you, can put DOT 4 in both.

"What you cannot do is put the DOT 3 specification brake fluid in both."

Sromalla adds that although DOT 5 can be used in a DOT 3 or 4 system, he doesn't recommend

doing so as the fluid is very expensive.

Just last month saw **TRW** introduce the first DOT 5.1 brake fluid composition, which has seen the properties of brake fluid taken to another level. The main selling point for this formulation is its ability to operate without compromise in extreme temperatures.

Barbara Koerfer, Drum Brake and Actuation Systems Product Manager at **TRW**, said: "Its unique viscosity properties exceed all others on the market which can only be categorised as DOT 5.1, making this product suitable from Antarctica to Zimbabwe.

"It has a higher wet boiling point than other standard fluids on the market and retains its low viscosity, even at extremely low temperatures. This means it can react more quickly providing a greater margin of safety for braking systems."

She points to the hygroscopic make-up of the fluid, which means it absorbs moisture from the atmosphere, which in time reduces the boiling point and

year. And once you get past DOT 5, you get to silicon based formulations which are hydrophobic, which means they have different boiling points to earlier versions."

Les Downey, Managing Director at **Lucas Oils**, agrees that there is an opportunity for factors and retailers to boost their profits with brake fluids,

180°C
is the wet boiling point of **TRW's DOT 5.1 fluid**

especially as they are should be considered a necessity. He does warn that the aftermarket needs to be aware that:

"Brake fluid is a commodity, not a luxury item, or an optional choice. It is an essential safety product and the sales message – and the price –

"Brake fluid is a commodity, not a luxury item, or an optional choice"

increases the chances of the vehicle suffering from vapour lock.

TMD Friction's Bleasdale adds: "It is important to replace that fluid with the same specification as the vehicle manufacturer recommends, as it all comes down to the boiling point of the fluid and how hygroscopic it is.

"DOT 3 and DOT 4 tend to use glycol ether formulations, and most vehicle manufacturers will specify when a brake fluid change should be done, which could be as frequently as once a

should reflect this."

He adds that the industry should check the brake fluid more frequently as it can reduce the number of unnecessary brake system repairs required by customers.

"A good garage should have some form of equipment to test the brake fluid," adds Bleasdale. "They need to make sure that they follow best practice for checking and replacing the fluid, but also in general when dealing with braking jobs, and that means making sure everything is scrupulously clean and the correct lubricants are

used, and mindful of the ABS system as well."

Another area of the braking hydraulic system that has evolved over the years is the brake caliper, with VMs now adopting disc brakes on all four wheels and now more and more vehicles becoming equipped with an electronic parking brake.

Michael Flensburg, Marketing and Sales Director of **Remy Automotive UK**, said that it has seen a lot of organic growth over the years in the brake caliper sector, as OEMs have moved away from drums and shoes towards pads and discs. This means many vehicles have got four calipers instead of two.

He adds: "A trend in Northern Europe is to replace the brake calipers during repair and maintenance procedures and as a part of preparing a vehicle for winter, because the salt and grit used on the roads can eat away at the seals."

Another trend that has started to filter down into the independent aftermarket,

according to **GSF Car Parts**, is the emergence of electronic parking brakes, which sees a button apply and

release the brake instead of a cable release mechanism. The system was seen originally on 2001 BMW 7 Series and has started to find its way onto more and more vehicles.

Flensburg adds: "Electronic Parking Brakes from a remanufacturing point of view has provided a challenge. There is more involved with remanufacturing them, as they have a small electric motor which acts as an actuator, and you have to reman that electrical motor, so there is more work and cost associated with that process. But it does mean

there is a number of products that technicians can buy when it comes to replacement EPB systems and calipers."

While the calipers market has grown, **First Line** says that technicians and factors should not forget about those vehicles with brake drums and shoes, as it says these components have seen a mini revival over the last decade.

Wheel cylinders are also making a comeback as new smaller vehicles enter the market with a drum and shoe system, and it advises technicians to check all these parts when tackling any braking related jobs.

Brake hoses also play an important role in the braking hydraulic system, with **First Line** adding that stainless steel and electrophoretic-coated hoses are becoming more commonplace as VMs look to improve efficiency and reliability of these parts.

Corteco contends that factors and technicians should not skimp on the quality of the brake hose they use, as it plays an integral part in transmitting the hydraulic pressure to the car's braking system. Sales and Marketing Manager **Steve Jarrett** explains a number of outside factors can affect the overall efficiency:

"When it comes to brake hoses, safety is a major selling point because brake hoses are safety critical items. Their efficiency is slowly being compromised by the ageing of the pipes, the degree of resistance to chemical agents, temperature variations and the influence of weathering agents."

Braking hydraulics are safety critical items and are constantly evolving, but it is important for the aftermarket to keep up with future hydraulic developments and resist the temptation to now forget old technology that is deemed to be an old hat.

HOW TO DEAL WITH VAPOUR LOCK

Braking supplier Ferodo has suggested a couple of technical tips to tackle vapour lock. It explains that braking efficiency can be lost through a number of means including overheating and brake pad degradation, but neither is as dangerous as vapour lock.

The issue revolves around the brake fluid, and its abilities to absorb moisture. The more it

absorbs the lower the overall boiling point of the fluid will be, which can see the fluid heat up and in some instances boil, meaning the driver feels a loss of brake power when they hit the pedal.

Ferodo advises that technicians ensure that they use the correct specification of brake fluid for the vehicle and adds that checking the fluid regularly is a service that

garages should offer when a vehicle comes in for work, and if too much moisture has been absorbed then the garage has proof it needs replacing.

Conductivity or pen-type testers are designed to estimate the amount of water absorbed by the brake fluid in the system, rather than boiling the fluid.

Ferodo warns that using this

sort of equipment to test the fluid is not always a failsafe as these devices can fail new brake fluid and pass contaminated samples.

Even when replacing the brake fluid in a vehicle, technicians need to be mindful of also checking other parts of the system for damage or wear and replace other parts, but it is also imperative to test the master cylinder for any leaks too.

DON'T FORGET ABOUT ABS

Anti-lock braking system (ABS), which prevents the wheels locking up during braking ensuring that the vehicle can still be steered and moved out of the way of unexpected obstacles, is now commonplace, but it doesn't mean this electronic system should be ignored.

The braking system is naturally susceptible to wear and tear and over time, the components, both

friction and hydraulics, and the fluid will need replacing, but Lawrence Bleasdale, Sales Director at **TMD Friction** says technicians need to spare a thought for the ABS.

"From the late 1970s, ABS was being introduced into the mass production market on the Mercedes-Benz 350SE and the BMW 733i. ABS has developed and is now on every car that

anyone can buy from a showroom. "How that system is setup is not to use the hydraulics directly, but through a phonic ring applied to the disc or something in the bearing tells the ABS management system where that wheel is and what it is actually doing.

"The management system can then override the function of the brake pedal by turning on and off on the relevant corner whether

that caliper is applied. That is fundamentally the biggest design change experienced by the industry over the last 30 to 40 years."

Bleasdale added how important it is for the ABS that the braking and hydraulic system is checked regularly and components are replaced before they become detrimental or dangerous, and that the whole system is checked.