

Clean brake fluid essential today

Anyone who has studied the brake system or serviced it should know the importance of brake fluid. But brake manufacturers and specialists in servicing brakes say few technicians or car owners give brake fluid the respect it deserves.

Mike Leeper, a technical trainer at EIS Brake Parts, said many technicians forget that brake fluid absorbs moisture. Mr. Leeper explained that moisture creates two major problems in any brake system.

First, it corrodes precise metal hydraulic components such as valves and pistons and causes them to stick. Eventually, moisture also creates a rusty sludge inside the system that clogs its vital valves and ports. Second, moisture can degrade brake performance by causing vapor lock inside the hydraulic system, he said. New brake fluid has a boiling point of 425 degrees Fahrenheit. After only 18 months in service, brake fluid can absorb enough moisture to lower its boiling point to 300 degrees, he said. If the fluid boils, vapor bubbles occur. When this happens, the brake pedal will feel mushy or spongy and it will take more pedal effort to stop the vehicle. Mr. Leeper said that technicians would recognize the pedal feel as being the same as that on a system that needs to be bled.

Mr. Leeper said that brake rotor temperatures can reach the range of 800 to 1400 degrees F. Because heat naturally travels toward a cooler object, some rotor heat is dissipated to the air around the rotor. But rotor heat also travels through the brake pad and into the caliper, where it heats up the brake fluid inside the caliper.

Sometimes, boiled brake fluid evades diagnosis, Mr. Leeper warned. By the time the technician has a chance to road test the vehicle, the brake fluid has usually cooled down and condensed back into a liquid. Therefore, the brake pedal feels normal again and the technician can't find anything wrong with the vehicle. In these cases, the technician can try to recreate the symptom by making repeated hard stops with the vehicle or simply by explaining the situation to the customer and selling him a brake fluid change.

Technicians at Weinhagen Tire Co. in St. Paul, Minn., change brake fluid with every job and flush the hydraulic system by bleeding fresh fluid through it. When dirty fluid is found inside the master cylinder reservoir, it is siphoned out and the reservoir flushed.

Kevin Lawrence, the service manager at Wilrae Inc., a full-service tire dealership in Bridgeview, Ill., recommends flushing the hydraulic system with every brake job. When the customer appears sceptical, Mr. Lawrence demonstrates the need for changing the brake fluid by using a tester that measures the amount of moisture present in the liquid.

Also, he cautions technicians to watch for instances of accidental brake fluid contamination, explaining that he's seen cases in which car owners or quick-service oil change workers have topped off the master cylinder with motor oil or transmission fluid. Petroleum-type lubricants such as transmission oil and motor oil cause rubber brake parts to swell up.

Mr. Leeper, Mr. Weinhagen and Mr. Lawrence all predicted that routine brake fluid changes will be necessary to keep the intricate hydraulics inside anti-lock brake systems (ABS) perform properly. Mr. Leeper said that if tire dealers check the owner's manuals in the vehicles they service, they'll find car makers are increasingly requiring periodic brake fluid changes for both conventional and ABS brake systems.