

A continuing series of caring for your car

There's No Stopping Us Now, Is There?

by Chuck Wills

Greetings roadster addicts! Spring is here and it's time to strip off the hard tops and snow tires! Top down driving is right around the corner or already here if you are a super-hard-core open air driver. While the weather is saying go go go, I want to tell you about stopping. This month I am really quite excited to tell you about a new idea I've had in improving our Miata brake performance.

I've decided to replace all of my brake fluid with tap water. You see, I think if you fill the system with H₂O, you will get a dramatic increase in performance as the water heats up. Think about it – as your brakes heat up, the water will turn to steam. As the steam tries to expand in the brake system it will create great pressure, thereby giving your brakes super-strong stopping power! It's like nature's own power brake booster! [Note: Do NOT do this. This appears to be an April fools joke. If you actually fill your brake system with water, you will lose your stopping ability, effectively turning your brake system into a "break system".]

OK, so now you're thinking "What kind of upgrades can I make to my Miata after I drain the water back out of the brake system?" Well, there are a lot of upgrade products on the market, some you want and some you may not. As usual, we'll start with the basics.

Clean, dry, fresh brake fluid is critical to stopping ability and the long term health of your roadster brakes. Unless you are road racing, any fresh DOT3 rated fluid will be great in your car. Brake fluid attracts and absorbs moisture, so any fluid that's more than a few years old should be considered for replacement. Water in the brake system will not only cause brake fade in hard braking situations, but it will allow corrosion on the inside of your brake components. It's cheap insurance to change that fluid every few years. For most drivers, I recommend Castrol LMA or Ford Heavy Duty fluid. You can buy these products just about anywhere and they do a great job in your Miata. There are more exotic fluids available if you encounter high brake temps from racing or super hard street driving. Motul and ATE make some great high-temp fluids for those that need it.

Once again, the Mazda engineers stayed up late doing their homework and gave us a great brake pad right from the factory. Compared to what most manufacturers put on their cars, the Mazda pads are way above average. They don't dust too badly, they work in all temperatures, there is little or no brake noise and most of all they stop the car very well even in street performance applications. By moving away from the stock pads, your gain in performance will be offset by an increase in dust, noise, faster wear, worse cold weather stopping or longer warm-up time. That doesn't mean that all aftermarket pads will turn your rims black before you get out of the driveway and squeal like a stuck pig, but you should be aware that higher stopping power will always come at a price of some kind.

High performance braking, whether it's a kamikaze club drive, track lapping events or even autocross, means more heat has to be absorbed by your brakes. Pads made for high heat tend to not stop well in cold environments. Some high performance pads need a few stops to get up to temp when you first hit the road in the morning, and may be much less effective in winter weather. Some people that drive on the street and track will have two sets of pads – one for street and one for track. With practice you can change out all of your brake pads in less than an hour.

I'm not going to say much about which pads you should or should not use, as there are just too many choices to cover here. As a general guide, I like the stock pads for most driving, and like Hawk HPS for autocross and hard street driving. Axxis Metal Master and Axxis Ultimate pads have a strong following, too. The only pad that has repeatedly been bad on our cars are EBC Greenstuff. While they don't dust, they don't last very long or perform well in anything but boulevard cruising.

A lot of roadster owners upgrade their brake lines to stainless braided units. This is a nice upgrade, as it gives a slightly firmer pedal feel with no real downside. One thing to note, though, is the factory brake lines are engineered to last the lifetime of your car and seldom fail even when they are old. The stainless braided lines are actually a little more fragile than stock and are prone to fail if the lines ever become severely kinked. If you make the switch to stainless, you should check the condition of your lines annually to make sure they are free of any unusual damage or wear.

The last area to discuss is brake rotors. I tend to get a little preachy on this, so forgive me. Stock rotors are the best way to go in nearly every situation. I know lots of people that buy cross drilled rotors, and their main advantage is that they look cool. Cross drilling does nothing for performance, and the holes can be a liability in the long run. I have yet to see a set of drilled rotors that didn't have cracks radiating from the holes after some use. Given enough time and enough heat cycles, the cross drilled rotors can have severe cracking and rotor failure. A brake rotor is a heat-sink, and when you remove metal from it, the rotors ability to hold that heat energy is diminished. I know that Porsche and others put cross drilled rotors on some of their cars from the factory, but I maintain that this is driven by the marketing department and not from engineering. If you look at most Porsche race cars, they all switch back to plain, un-drilled rotors. Does this mean that if you have drilled rotors you should pitch them? No, just keep an eye on them and replace them when the cracks get too bad.

To sum up, your brake system is great as it came from the factory. You can make some

continued on page 5