

Miata Tech Day with Randy Slagle at Triple R Autosports, May 11, 2013  
by Don McCann and Don Gervais

Twenty-one BMC members arrived at Triple R Autosports in Waukesha for our first Tech Day since 2008. We had a list of maintenance items put together from input by club members and the owner of Triple R Autosports Randy Slagle. Randy is a 10 year Mazda Master Technician veteran who works primarily on Mazda cars, and specializes in RX and MX-5 Miatas for both the street and the track.



The first item was a flush of the cooling system on Tim Deadrick's 1990 Red Miata, which he purchased new in 1989; the car was in excellent condition. The front of the car was jacked up with the parking brake applied and the transmission in gear. Then we could to remove the radiator drain plug. The coolant was drained by slowly opening the radiator cap. This method will keep you from getting a coolant bath. The remainder of the coolant in the engine and heater core was removed with a vacuum device that was inserted in the radiator filler opening. The vacuum method must be used on 2006 NC models due to an expansion tank that can produce an air lock in the cylinder head if the classical method of draining coolant is used without vacuum. After about 20 minutes, with the system under vacuum, a hose from the device was placed in the new coolant solution, the vacuum was slowly reduced, and the new coolant was sucked into the radiator, engine and heater core. A job well done! This procedure can be used for checking leaks. If the vacuum decreases in a certain amount of time, there could be a leak somewhere in the cooling system.

The second item was a demonstration on how to remove and replace the thermostat, which was located at the front of Tim's Miata. Essentially the bolts are removed, the upper housing is lifted, the thermostat is removed, a new thermostat is installed, the upper housing is installed with a new gasket (if needed), and the bolts are tightened.



The third item was a discussion about changing engine oil and the various oils to use. Don Mc stated that he is using Mobil 1, but Randy claimed that a better oil to use was Valvoline Racing VR-1 10W30 (organic) or Valvoline Racing Synthetic 10W30. The reason that these two oils are better is that they both have a very high break down temperature of 350F. Randy also pointed out that cam shaft timing chain gears are not keyed to the shaft on the NC model (2006-2013), and they can spin if they get too hot, which would be a major problem. Therefore, it is very important to maintain the proper oil level at all times to keep them cool in NC models (The NA and NB models use keys). Randy also took off the cam shaft cover on a Spec Miata 1.8 L racing engine and showed us how clean everything was since the owner had used Valvoline racing oil (no apparent sludge was visible).

The fourth item was a discussion and partial tear down of the Miata rear differential that was on a workbench. The pinion gear and limited slip differential were exposed after removing the casing. It was demonstrated that if one wheel is rotated clockwise, and the other wheel rotates counterclockwise, the limited slip differential is not working properly and needs to be repaired or replaced. Both wheels must rotate in the same direction when either wheel is turned.



The fifth item was changing the manual transmission fluid on Terry Riech's 1999 Blue Tenth Anniversary Edition Miata that he just purchased, with only 12,000 miles on the odometer. This Miata had a ton of aftermarket equipment, and appeared to be in excellent condition. Randy explained the transmission fluid of choice was Royal Purple Synchronax High Performance Manual Transmission Fluid because of its excellent lubrication properties. This fluid is very beneficial to the NB series Miata with 6 speed transmissions due to shifting problems when engaging in 1<sup>st</sup> and 2<sup>nd</sup> gear. The problem is that the gears are not hardened enough. The bolt with the large head on the passenger side at the rear of the transmission holds 6<sup>th</sup> gear in place, so removing that bolt will shift 6<sup>th</sup> gear out of place. Essentially, the Miata was put on jacks so all four wheels were off the ground. The transmission drain plug was removed, the fluid drained, the drain plug was replaced, the filler plug was removed, new fluid was added until it came out of the filler hole indicating that the transmission was full, and the filler plug was re-installed.



The sixth item was a discussion and demonstration regarding checking and maintaining the hydraulic clutch slave cylinder system. Two members had previously contacted our Tech Adviser, Don Gervais, with clutch problems and Don rightly diagnosed the problem. Therefore, we decided to put this item on today's agenda. Terry's Miata was again used for the demonstration since the clutch fluid was discolored, thus indicating that it needs to be replaced. Essentially, the old discolored clutch fluid on Terry's Miata was removed from the reservoir with a syringe, the reservoir was filled with fresh Dot 4 brake fluid (this fluid is used for both the clutch and the brakes), the bleeder valve was opened (on passenger side), and the clutch was pumped slowly several times to force out the old discolored fluid until the new clear fluid emerged. The bleeder valve was then closed, and the reservoir was topped off with more Dot 4 brake fluid. What a bargain!

The last item, the seventh, was a discussion of brake pads. The new Miata pads are only about 3 mm (0.12 inches), but provide very good wear resistance; they should be replaced when they wear down to about 1 mm (0.04 inches) thickness.

The message we came away with from Randy's outstanding Tech Day presentations and demonstrations was that it is essential to do periodic maintenance on your Miata to keep it in top notch shape, and also to prevent more expensive repairs due

to neglect. We all gave Randy a round of applause for the effort he put into this day, and for the amount of subjects that were covered. Randy's address is:

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We all look forward to another Tech Day next year.