

## BMC TECH DAY – 2017

By Terry Lucas

Tech Day 2017 was held on Saturday May 27, again at Dave Weishoff's Shop - Dave's Certified Auto Repair (DCAR) - located at 300 S. Division Street in Waunakee. Only myself and Terry Rieck were there with Dave, who showed us the additions (a new hoist, large tool chest + others) he made since last year's tour of his well-equipped full-service repair facility as part of Tech Day 2016.

Dave gave us an informative demonstration on replacing worn ball joints and universal joints from a medium duty truck he had in the shop. Both ball joints were removed from the steering knuckle on his work bench using a 'Ball Joint Press' tool kit designed for removal and installation of pressed-in ball joints. It looks and works like a 'C' clamp using collars of different diameters and lengths and is powered by an impact driver. The lower joint was physically loose with obviously little or no grease remaining. The upper joint visually looked good with no grease leakage and little movement. However, during the inspection check done on the vehicle, the upper joint exhibited about a half inch of movement, it also needed to be replaced. Next the noisy front half-shaft universal joints were replaced using only a ball peened hammer with key strokes on the high strength iron casting, for both removable and reinstallation. Once removed it was readily apparent that just two of the four universal joint bearings were bad, worn because of lost lubricating grease due to seal failure. The other two looked as good as new, but the entire assembly had to be replaced. Replacement was done in reverse order using the hammer tool again in the same manner as done during the removable.

Dave discussed the specification and procurement of quality replacement components and parts used in his business. Most replacement items are of OEM specification/quality from Brand Names suppliers, like Moog suspension parts in this case. They are available through aftermarket wholesale warehouses of well-known jobbers, such as O'Reily, NAPA, etc. 'Just a call to get same day drop shipment to the shop'.

Dave will only use auto manufactures parts from dealers if they're not available in the aftermarket because of 'quality' and cost concerns based on his years of experience. He sometimes will consider using internet suppliers like 'RockAuto', but the time to determine their quality, and shipping cost are often prohibitive. For performance items Dave knows and uses a number of 'quality' suppliers like 'Flying Miata' and 'Goodwin Racing' in Miata space. After the tutorial came the job of replacing the engine coolant on my 2006 MX-5. I expected coming in, the best 'DIY' method to use would be the procedure outlined in the 2006 Mazda Miata Work Shop Manual that I reproduced for the club on a 'TECH TIP – SCHEDULED MAINTENANCE' in June 2013. The procedure briefly consists of the following: recommended system pressurized leak test, draining the old coolant from the system via the radiator drain plug, flushing with water by running the engine, re-draining system again when cool, fixing any leaks found, refilling with new coolant, perform a lengthy air bleeding/burping operation or two, and finally another inspection for leaks and coolant level verification. This procedure made no mention of the problem some need to move the plastic 'Splash Guard' & 'Airfoil' panels blocking accesses to the radiator drain plug. Use of a lift or hoist rather than a floor jack, was a great aid in completing this procedure.

Dave instead used the commercial vacuum process, a method that was straight-forward and efficient. After gaining access to the drain plug the old coolant was drained completely, radiator closed up and all 'Splash Guard' panels put back in place. Then using the so called 'Power-Flush' coolant exchange apparatus attached to the coolant reserve tank filler neck, he pulled and held a 28-psi vacuum of the system as a check for any system leakage - indicated by any loss of vacuum. The system was refilled with the 'right' or 'compatible' (50C/50W mix) of new coolant from the machines reservoir, right up to the proper tank level without admitting any air during the exchange. As a result this process doesn't require an engine coolant system air bleeding or burping operation, which is wasteful and time consuming. Job finished, done well and efficiently! Commercially this operation or process would cost about \$75 to \$125 including the antifreeze/coolant.

A word about using the 'right/compatible' antifreeze/coolants in modern automotive systems. Most new cars and light trucks these days use Long/Extended Life (LL) or LifeTime coolant which lasts up to 10 years or 150K miles depending on the brand. Mazda specifies 5 years or 60K miles after replacing the original coolant at 10 years or 120K miles whichever comes first. It is a Long-Life antifreeze/coolant designated as 'FL22' sold in a 55C/45W blend good for -47°F Cool/+235°F Hot including the normal additives and ingredients. Dave's says the key consideration of what coolant to use is the designation on the container, look for: 'GLOBAL', 'FOR ALL MAKES & MODELS', 'ALL CARS & LIGHT TRUCKS' or the like. They are all pretty much the same except for color and price.

We ended Tech Day 2017 having lunch on me at the 'Lone Girl Brewing Company' in Waunakee. It was a good day for all. Thanks Dave for demonstration/tutorial, all your insights and most of all the help you provided this day!