THE MOBILE AIR CONDITIONING SOCIETY WORLDWIDE©

MACS SERVICE REPORTS

Total Vehicle and Thermal Management™

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May 2014

WHAT PARTS ARE LEFT?

"I replaced everything in the system, but the cooling is still poor!" How often have we heard that line? Normally when the shop (and / or previous shops) thinks it's changed every part, there are lots of possibilities that remain.

Number one was traditionally a restricted hose; almost a sure thing when a compressor failed. Very close to that was compressor debris (often from piston rings) on the screen of an orifice tube or expansion valve, and these days, with micro-channel condensers, debris in the condenser itself. Even with the smaller desiccant bags, receiver / driers and "modulators," a collapsed and / or split bag can deposit desiccant and debris all throughout the high-pressure side of the system (typically in the condenser, orifice tube, or expansion valve). See Figures 1, 2. Occasionally, as we've mentioned, a suction side hose will collapse internally; doesn't happen often, but it happens. More on that in the June issue of MACS Service Reports.

Now, however, with variable displacement compressors, we're seeing sensor deviations that mimic low cooling load and cause compressors to move to low displacement. And finally (for now) the newest possibility: a software update.

This one has come to the top of a lot of technicians' lists so fast that if a technician doesn't find a logical trouble code, but finds there's a software update, and he doesn't do reflashing, the car goes right to the dealer. ■

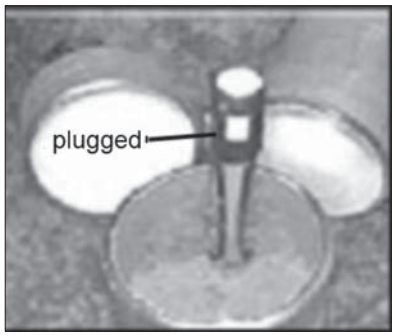

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Figure 1: *Collapse of drier and internal separation of desiccant produces restriction.*

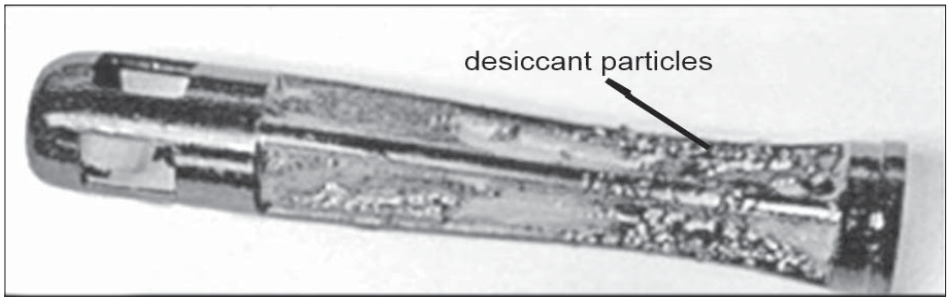

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Figure 2: *Cutaway of drier shows accumulation of desiccant particles to restrict refrigerant flow.*

ALSO INSIDE THIS ISSUE:

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ACTUALLY READ THE BULLETIN

Just because there's a reflash (even if it seems to be applicable), doesn't mean you should send the car to the dealer as a first step. What you should do is actually read the bulletin. When an independent technician encounters a tough problem, he'll often call a car dealer with whom he has a good relationship and ask for help. He's told, "Yeah, we have a TSB; there's a reflash for that problem."

Sounds like a no-brainer. He doesn't do reflashing, so he sends the car to that dealer, gets a professional discount, and bills the full price to the customer. Maybe that'll work if the reflash is all that's needed, but here's an example of why we recommend that you read the bulletin. The vehicle is a 2007 Dodge Nitro, and the bulletin the shop was told about applies to 2007-2008 models (including the 2008 Jeep Liberty). The complaint is inadequate cooling, and this vehicle already had a new compressor, receiver/dryer and expansion valve installed. The refrigerant lines and heat exchangers had also been flushed.

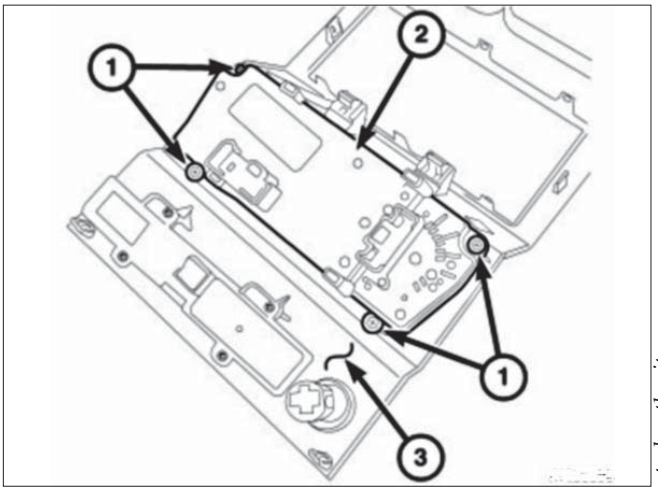

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Figure 3: *HVAC control module is built into control head. Remove bezel (3), then four retaining screws (1) and module (2) comes out.*

At this point, your first question should be, "Is the refrigerant charge correct?" In this case, just a small overcharge could be a problem because the OE charge was reduced from 20 to 18 oz. So if you read the bulletin, proper charge amount might be the first thing to check.

Yes, it ends with a reflash, but it starts with a new HVAC control module (Figure 3). This applies only to 2007 Nitros, which tells you that the factory fixed this problem on the assembly line for the next model year. If the build date is May 30, 2008 and later (which would apply to late 2008 models), just recover and recharge to the 18 oz spec. If the build date precedes May 30, 2008, and you see the reflash listed (operation 24-50-09-90), then it's already been done. You may have to replace the HVAC module, and because that's not pocket change, it has to be last on the to-do list.

With all that, we'll now tell you that the problem actually was debris in the condenser, and that the first flushing didn't do the job, but a repeat did solve the problem. To be honest, we're not crazy about flushing condensers, although many shops swear by it, particularly if they're back-flushing with a pulsating flusher, like the Hecat unit (also sold under its brand by Gates). When we had 6 mm diameter passages in the tubes of condensers, back-flushing was definitely worth a try if you were looking to keep the ticket down to something that would not give the customer an angina-like reaction. It's probably still worth trying on older cars, where the tubes are somewhere in the visible category. Some of today's tubing channels are so tiny you need a magnifying glass to see they aren't a solid strip of aluminum (Figures 4, 5). But that's your call. ■

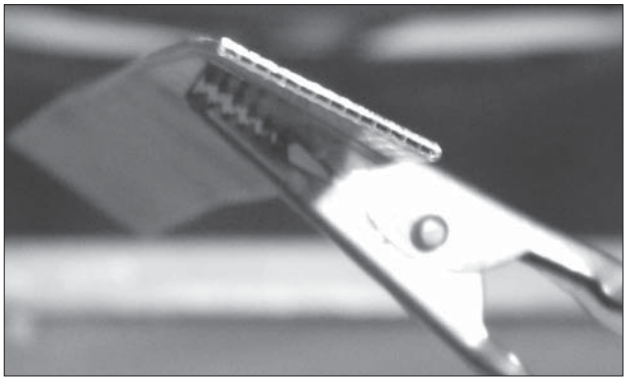

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Figure 4: *Close-up of end view of new condenser tubing. Although tubing looks like a solid strip of aluminum, under magnification you can see the refrigerant vapor flow paths.*

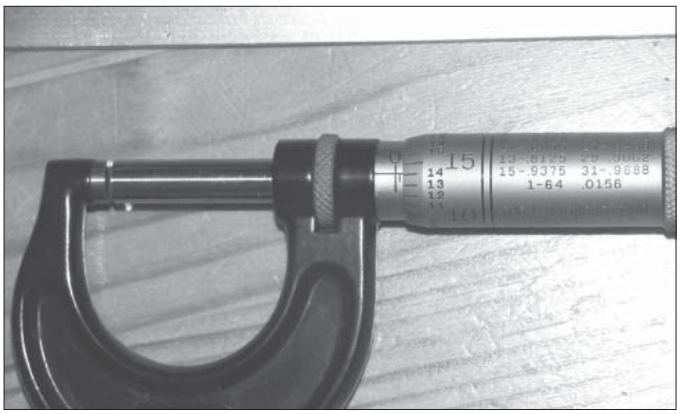

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Figure 5: *We measured overall thickness of the tubing with a micrometer. It's just .065-in including the inner and outer walls of the tubing, which equals 1.66 mm, or just over a quarter of the diameter of the passage in a 6 mm condenser tube of not too long ago.*