

Cooling_System_101

I just changed out my coolant to Caterpillar ELC and replaced all water hoses and belts. Thought I would share the experience.

To my knowledge no chassis/coach maker is using ELC—so all are "low silicate coolant for diesels" with included or added SCA. Coolant needs to be changed per manufacturer's instructions (usually every 3 years). Additionally the SCA, pH and freeze point need to be checked on regular intervals using SCA test strips and SCA added as needed. The test strips are inexpensive and easy to use (we check the SCA concentration in all coaches at Cat RV Club Rallies). When either the time lapses (time starts when coolant installed in cooling system, NOT when purchased) or testing reveals an out-of-line conditions like pH or freeze point, it is time to change it. You can avoid all the testing and SCA adding, and go to 6 year change intervals by going to Caterpillar ELC and get better cooling system protection as well. Whichever coolant you choose, most of the steps are the same. The job is reasonably time consuming TO DO RIGHT, but low-tech.

Turn dash heater to full hot for the rest of the procedure—fan off. With the engine cold or at least cool, drain coolant. On some, there is a drain cock. On others, pull the lower radiator hose. I catch it in 2 Rubbermade 10 gallon storage bin lined with black trash sacks so I do not even get them dirty. At the end of the whole process, use a coffee can and funnel to pour old coolant into new coolant/water containers for recycling. Our city maintenance shop recycles coolant for free.

Refill cooling system with tap water. IMPORTANT: Be sure to remove any air lock from the thermostat housing. Some systems have a hose set up for this—on ours I just loosen the coolant line to the air pump and bleed the air out. Allow engine to warm up (using the cruise control to select idle speed of 1,000-1,100 speeds this up). Run for about 10 minutes at regular temp. If the temp gauge does not rise as normal, you likely have an air block and need to bleed the thermostat housing. Allow engine to cool 20-30 minutes and drain again. Repeat until the color is clear.

At this point, if this is the first coolant change on a 2-3 year old coach and you are not changing coolant brands/types, skip right to "Last rinse". For older systems or for switching types of coolant, add a Cooling System Cleaner such as Cat Fast Acting Cooling System Cleaner 4C4611. Follow directions. Run, allow engine to cool, drain and again flush until effluent is clear. The flushing is markedly sped up by pulling off the heater hose (usually 5/8 to 3/4" lines going to dash heater/motor-aid water heater, etc from the water pump. Put a hose nozzle in the hose and let it run until what comes out is clear. Run the engine to temperature at least once with tap water.

If your hoses are over 3-4 years old, this is a good time to change them as well (before last rinse). Same for thermostat(s).

Last Rinse is with distilled water. At \$.62/gal at Walmart, it is silly to skip this step and leave your system full of high-mineral content water (there will be several gallons of residual water that you can not easily remove). Run engine for 10 minutes after getting to operating temperature. Cool and drain. Also drain and flush your coolant overflow container and refill with new coolant/distilled water.

Add the proper amount of Coolant CONCENTRATE (NOT PRE-DILUTE) to make 50% of cooling system capacity. My cooling system is 18 gallons, so I added 9 gallons of Caterpillar ELC CONCENTRATE (119-5150) (plus one for overflow container). Top off with distilled water to achieve your 50/50 mixture.

This is also a good time to clean the OUTSIDE of the radiator/after-cooler whether you have rear or side radiator. On rear radiator, most of the debris will be on the FRONT of the after-cooler (accessed from under the bed). On side radiators, most debris is on the outside of the after-cooler (side of coach). If it is just dirt, a hose and regular nozzle is all you need. If greasy or oily, use Joy liquid (dish washing detergent) in a spray bottle. Be SURE to rinse it off completely. You need to insure that the perimeter is as clean as the center. Ya, I know it is easier to see the center, but the fan blades "sling" the dirt to the perimeter.

Check belts while you are in there.

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