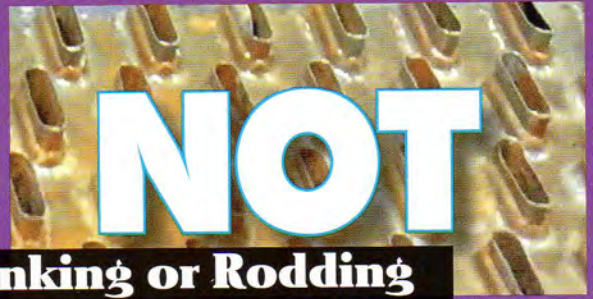


HOT

or



NOT

Radiator Servicing - Tanking or Rodding

By Keith Collins, Gustine, California

To understand what causes overheating, we need to look at the function of the cooling system. **Fig. 1** It is to circulate the water from the engine block to the top of the radiator and allow the water to flow down the tubes to the bottom outlet and return to the engine block at a lower temperature. During the hot water's trip down the tubes the tubes release the heat through the fins and air removes the heat from the fins, thus cooling the temperature of the water. The air passes over the fins in two methods, by a fan pulling air through the radiator at low speeds or the air flowing through on its own due to the higher speed at which the car is traveling. There are a number of things that would cause the "A" to overheat.

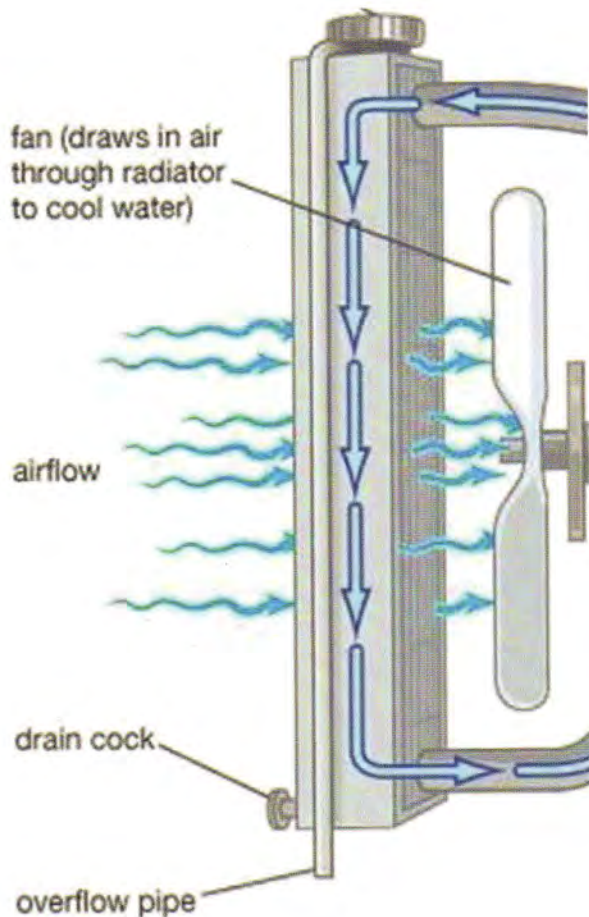


Fig. 1 Basic operation of radiator

Two causes of overheating are engine block and/or radiator problems. They could have restrictions from rust or other foreign material causing poor circulation of the water or coolant. Both the block and the radiator need to be clean and free from any restrictions.

With that being said, I will direct my attention in this article toward the radiator. A few items to check before removing the radiator for servicing: Look for any debris, dirt, bugs, bent fins, etc. that may block air from flowing through the fins. Check for

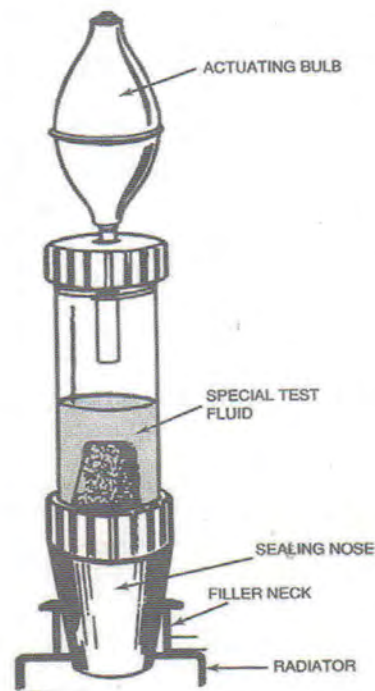


Fig. 2. Hydro-Carbon tester

the number of fins per inch. There should be a minimum of eight to ten fins per inch for a touring car. Make sure that the fins are secured to the tubes. It is extremely important to know that the fins are securely attached to the tubes or the heat will not transfer from the tubes to the fins. If the air passing over the fins can't remove the heat, it leaves an overheating condition. Radiators that have been subjected to freezing and/or overheating episodes can lose the fin to tube contact. A good radiator shop can help you recognize this condition. Also a hydro-carbon test may reveal you have a leaky head gasket. **Fig. 2** This test uses a Combustion Leak Detector which uses a special fluid.

When air is drawn up from the top of the radiator through the test chemical it is possible to detect combustion leaks. The test chemical will change color if combustion gases are present in the cooling system. This tester can be purchased at an auto parts store or the test can be performed at auto repair shops. Any of these problems could cause overheating.

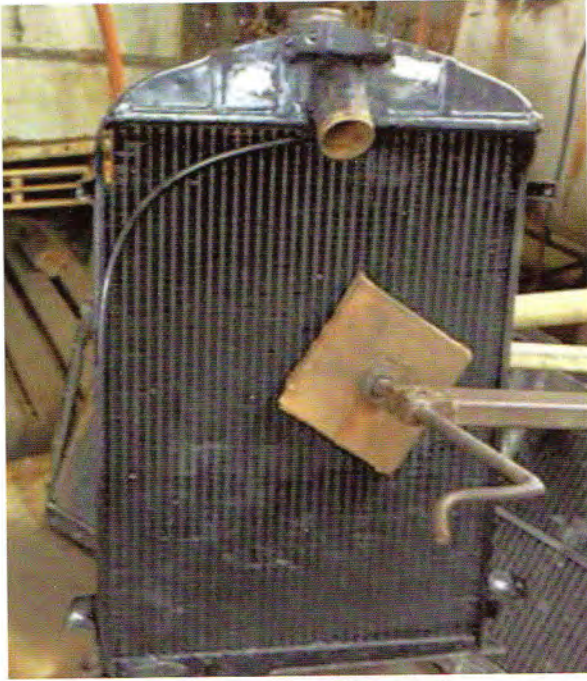


Fig. 3. Radiator ready to be serviced

I will try to clarify the servicing of the radiator. There are two methods of cleaning a radiator. First is tanking and flushing. Second is rodding. **Fig. 3**

In the first method the radiator is soaked in a chemical tank which will remove sludge that may slow down water circulation. This method will NOT remove hard deposits. **Fig. 4** still is 100% restricted (this radiator could not be saved) and **Fig. 5** is still about 33% restricted.



Fig. 4. Radiator that was tanked only. Tanking did nothing to clean this radiator.



Fig. 5. My radiator that was tanked only. Radiator was still about 1/3 restricted.

When inspecting the radiator it is very difficult to see the core (tubes) as there is a baffle in the top tank and this blocks your view of the core. You can see a small amount through the lower outlet but not enough. So you are left to look at: is the car overheating; is the water in the radiator rusty and/or dirty, and the radiator history, if known.

In the second method (rodding) the top and bottom tanks need to be removed to expose the core tubes (the water flows through the tubes). These tubes become clogged with hard deposits over time which restricts the flow of water. This means you lose that portion of the radiator due to ineffective cooling. **Fig. 6** With the tubes exposed, a special rod is worked through each tube to clear any restrictions.

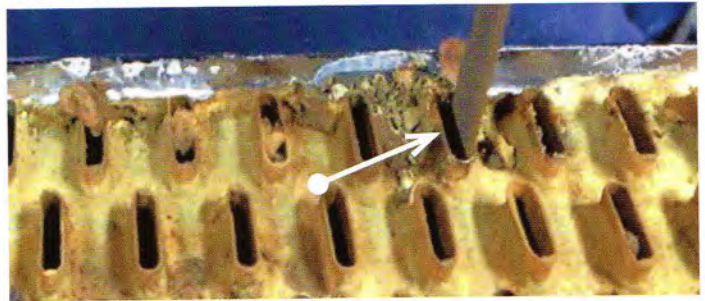


Fig. 6. Using the rod to clean each tube.

Then the radiator is cleaned in a chemical tank and flushed to make sure all tubes are clean. **Fig. 7** Finished core ready to have the top reassembled. **Fig. 8** The cost of rodding will be about double the cost of just tanking the radiator, but is definitely worth it.

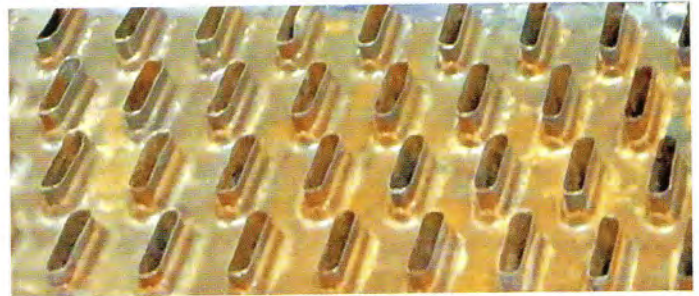


Fig. 7. Core rodded and clean

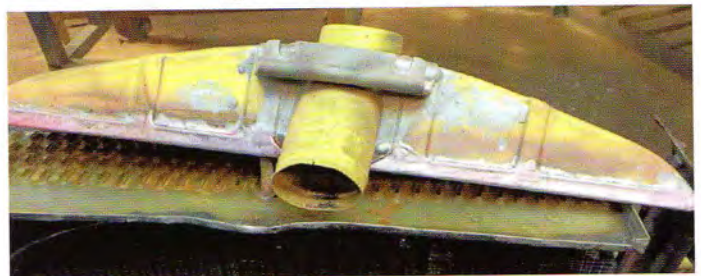


Fig. 8. Top ready to be soldered

One important factor to remember is always have the radiator serviced when you are installing a new engine.

*Photos are courtesy of
Mike Ascencio, Modesto Radiator Shop, Modesto, California*