

Reverse Flush the Model “A” Engine

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The purpose of reverse flushing the cooling system of the Model “A” is to remove contaminants such as rust, grease, oil and any acids formed by exhaust gases leaking into the coolant. This cleaning process normally is a two-step effort. The first step is to loosen or dissolve the foreign matter while the second step involves getting the contaminants out of the engine.

There are several ways to loosen or dissolve foreign matter. My approach used the chemical sodium carbonate (also known as washing soda or soda ash). Washing soda is available in most grocery stores under the brand name of Arm & Hammer since it is used as a water softener. In taxidermy, sodium carbonate added to boiling water will remove flesh from the skull or bones so be sure to be careful with it. There is some general information on reverse flushing on the Internet but few articles focus on the Model “A.” Two articles written for the Model “A” that I found helpful are listed in the footnotes.^{1, 2}

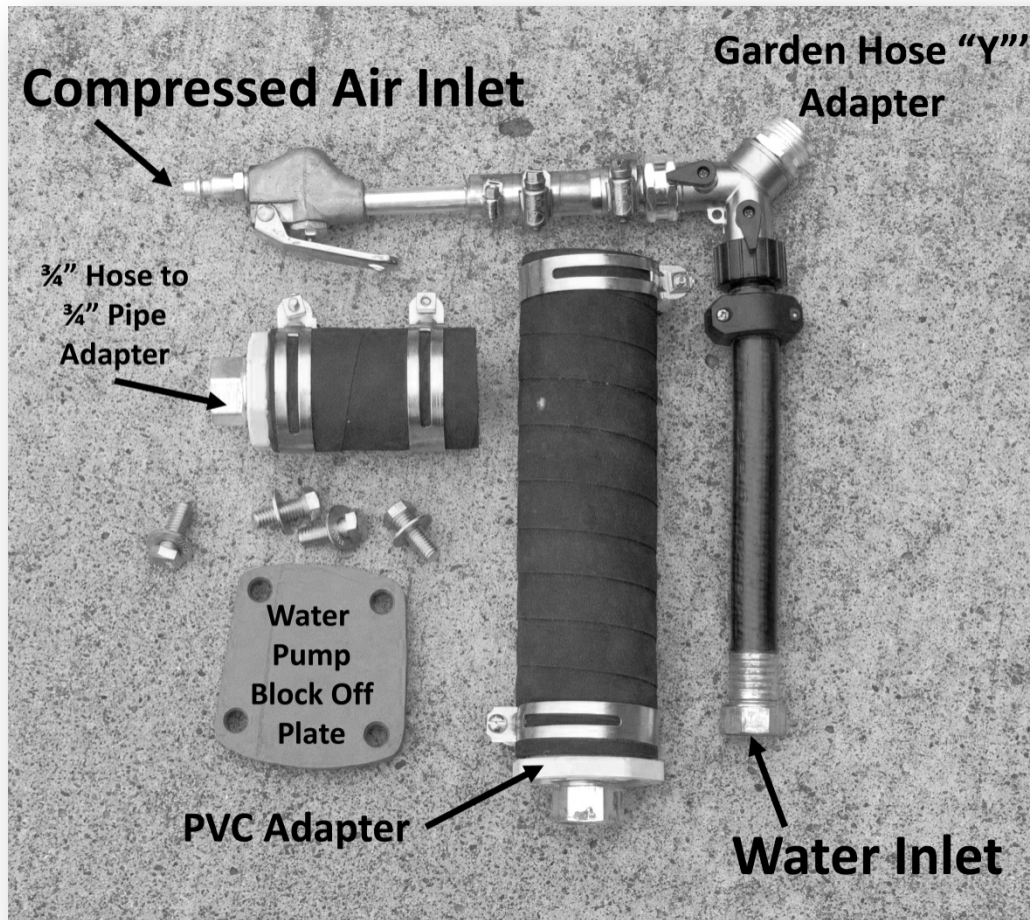


You start the cleaning process by draining your cooling system and refilling it with a mixture of washing soda and water. The formula I used was 2/3 cup of washing soda per gallon of water. I mixed the water and washing soda outside the car and then added the mixture to the radiator. Once you have about four gallons of washing soda/water mixture in the car, start it up and get it warm. Most articles I have read suggest you run the engine for at least an hour on the washing soda/water mixture. This step is meant to loosen or dissolve contaminants and prepare the cooling system for the flushing step. Now drain and discard the contents of the cooling system.

It is time to remove the contaminants that did not come out with the washing soda and water mixture. The idea of a reverse flush is to send water and air through the system in the direction opposite its normal flow. In order to do this you need to devise a way to hook up compressed air and household water to the Model “A” cooling system. The way I did this was use the approach described in Tom Endy’s article modified to add compressed air. I took a new upper and lower radiator hose and built an adapter to allow me to connect a 3/4” water hose to it.

¹ Back Flush! By Tom Endy, Orange County Model A Club.
<http://www.ocmafc.org/techarticles/Tom%20Endy%27s%20Special%20Topics/Back%20Flush.pdf>

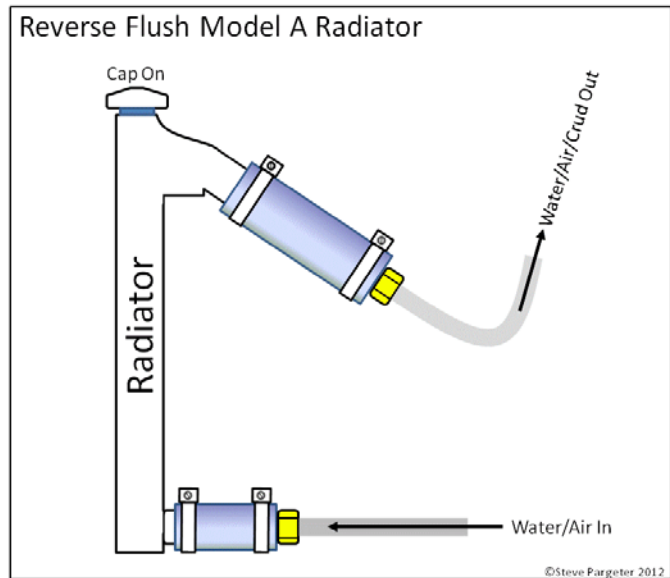
² Cooling System Seminar by Andy Weideman, Feb 25, 2012, Rocky Mountain A’s
http://www.rockymountainmodelaclub.org/Technical_Info/technical_info.html



I accomplished this by using PVC pipe adapters. I went to Home Depot and bought a 2" to 3/4" pipe adapter and a 1 7/8" to 3/4" adapter. These adapters were too large for the inside diameter of the hoses so I turned them down in a lathe so they just fit in the hoses. Once they fit the hose, I bought a 3/4" pipe to 3/4" hose adapter for each. You can stop here if you only want to do is use water to reverse flush but I wanted to also use air pressure so I bought a garden hose Y fitting and connected compressed air (and a regulator) to one side and household water to the other. See photo for my approach. I also made a water pump block off plate out of scrap 1/2" gray plastic. I used plastic for this plate rather than metal since plastic is easy to work, will not rust, and was cheap. The use of water and compressed air, under low pressure (about 10 pounds), is used to force water through the radiator core backwards. The air pressure is used intermittently (pulsed) to loosen scale and sediment. Starting and stopping the air flow produces a fluctuation in pressure and tends to loosen the foreign matter clinging to the passages in the radiator core or engine.

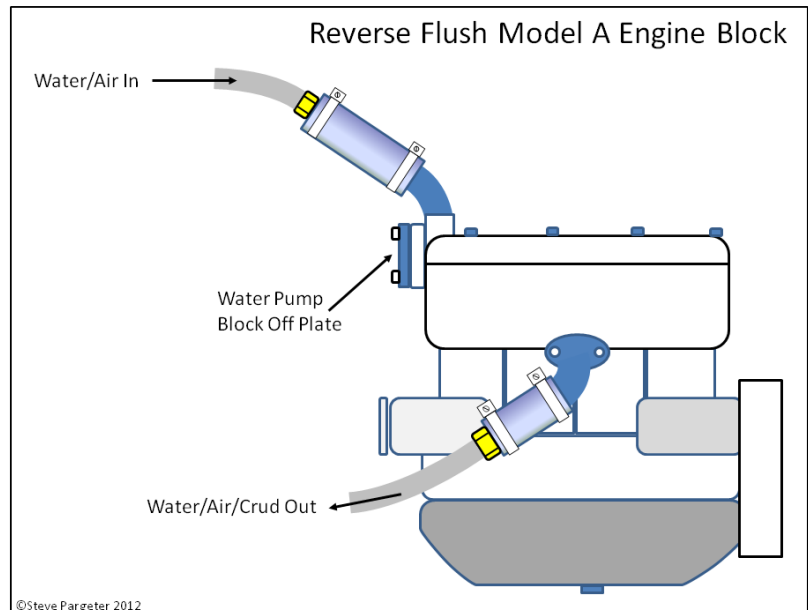
Reverse Flush the Radiator

Be sure to remove any thermostats installed. Connect the hoses as shown in the illustration. The water and air come in at the bottom and exit at the top of the radiator. I used a garden hose to direct the waste water mixture way from the car so it was not all over the engine. Once the water from the radiator flows clear, remove the hoses and install them as shown in the following illustration on the engine for the next step.



Reverse Flush the Engine

Before you start, remove the water pump and install the block off plate on the front of the engine. I suspect some people will be tempted to skip this step by why go to all this effort and not to do it right? Once the hoses and block off plate are attached, send the water and air mixture down the upper inlet hose, through the engine and away using the outlet hose. Continue this cleaning process until the water is clear. Once you are satisfied the system is clean, remove the hoses, and reinstall the water pump and the normal hoses.



In the past I ran a 160° thermostat in my car but the information in the cooling system seminar by Andy Weideman convinced me not to put it back. I re-filled my cooling system with distilled water from the supermarket and a bottle of Red Line water wetter. Today the car runs cool, does not overheat and seems very contented.