

Converting Your Car To A Pressure/Coolant Recovery System

by Robert Kaiser

Does your car suffer from summer/winter overheating blues? Does your vehicle lose coolant after a short run, requiring frequent top-ups? Does it boil over in downtown traffic? Do you dread ascending steep hills? If you answered *yes* to any of these questions, this article is for you.

By installing a pressure/recovery system in your car, you can bring its cooling into the 1980's with no loss of external authenticity. Interested?

WARNING: This wondrous device *will not* repair a faulty cooling system. It will not clean out clogged radiator tubes or muck-filled water passages, nor will it fix a shot water pump, slipping fan belt or collapsed hoses. You must rectify sub-standard cooling components before this system will be of any benefit.

What this little marvel *will do*, however, is place your coolant under pressure (about 7 pounds), which dramatically raises the internal boiling point. This offers you a great deal more leeway until the coolant boils and converts to non-cooling steam. It will also recover and store released coolant until the engine cools, returning the coolant to the radiator tank. The device is compact (2-1/4" x 16-1/2") and can be tucked away in or under your car's chassis. It is unobtrusive dull black and can be mounted horizontally or vertically. It will not disturb your extant radiator cap or radiator.

If you are still interested, go shopping for the

following items. All 2 inch black ABS-D plastic pipe (my local cost in parenthesis).

- 1 - End cap (3.15)
- 1 - Pipe plug (.88)
- 1 - 1/8" (or to suit, see article)
- 1 - Adapter, slip on/pipe thread for plug (1.99)
- 2 - 1/8" NPT to hose fitting (OD of your overflow pipe) (2.00)
- 1 - Radiator cap, 7 lbs. pressure, no center release, no ears (3.00) *slant 10228*
- Neoprene fuel hose, ID to fit the OD of your overflow pipe, length to your specification
- 2 - Hose clamps for above hose
- Special tools on hand: 1/8" NPT tap, 21/64 drill bit for tap, 5/32" drill bit, hacksaw, elec' drill, etc.

Explanation of System

When you are ready to assemble, take a serious look at Figure 1. Does it make sense to you? If not, permit me to explain verbally. You are keeping your present radiator arrangement. The device is connected to your existing overflow pipe. The coolant enters the tapped pipe plug where the radiator cap keeps everything in place until 7 pounds of pressure is developed, thereby opening the cap and pouring coolant into the reservoir, where it resides and is vented to the atmosphere.

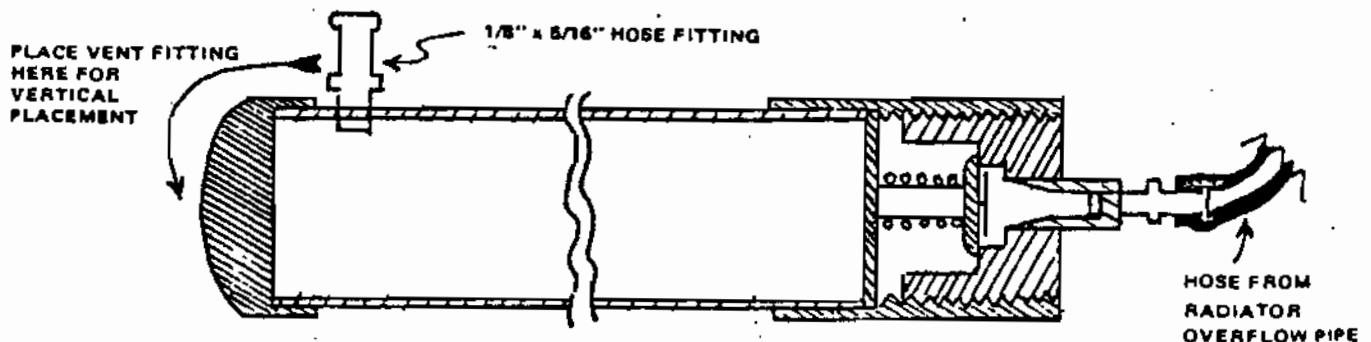


FIGURE 1 - Complete Unit: [Overall 16"; Tube alone 13"]

ENLARGE TO 1-1/16"
WIDE x 3/8" DEEP SO
SMALL ALUMINUM
WASHER IS FREE
TO MOVE

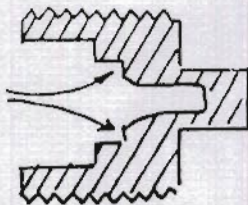


FIGURE 2 - Pipe Plug

DRILL 5/32"
HOLES AROUND
EDGE TO LET
COOLANT
ENTER THE
TUBE

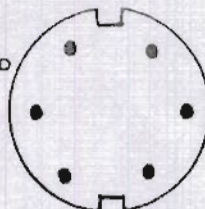


FIGURE 3a -
Top of Radiator Cap

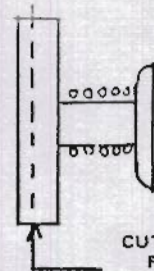


FIGURE 3b -
Side of Radiator Cap

When the engine cools, a strong vacuum is created, opening the little aluminum washer in the cap and permitting the coolant to be sucked back into the radiator tank. This cycle continues trip after trip.

Question of Reservoir Size

You decide upon the reservoir capacity. Length of the pipe, of course, determines how much coolant can be held. I built mine for an MG TC to fit across the front dumb-irons, and 13" was about right. It holds just over 24 ounces of coolant, which is sufficient for the 8 liter coolant capacity of the 1250cc engine. Owners of larger 8 cylinder cars might opt for a larger reservoir. Measure the space available for your car. One could, by judicious use of adapters, construct a behemoth tank using 3," 4" or possibly 6" pipe. You could conceivably run a 10 foot pipe along the frame of a Packard with the capacity of almost two gallons! As a rough rule-of-thumb, though, every 4.33 inches of 2 inch pipe provides 8 ounces of capacity. I might timidly suggest that 24 ounces is a suitable amount for most engines.

Assembly Directions

- 1) Cut pipe to size.
- 2) Drill and tap for brass hose fittings (figure 1). Note: If device is to be mounted vertically, drill and tap vent hole in center of end cap.
- 3) Cut off rim of radiator cap (figure 3b). This is done to move the cap close enough to the pipe plug to insure a 1/16" preload on the cap.
- 4) Drill radiator cap top with holes for coolant passage. I used a 5/32" (figure 3a).
- 5) Undercut 1-1/16" by 3/8" deep in the pipe plug (figure 2). This is so aluminum washer is free to fall open under vacuum. I used a wood bit turned by hand which cut well into the plastic.
- 6) Trial assemble. The cap goes in the slip-on part of the adapter. While holding it in place, screw in the pipe plug until about a 1/16" preload on the rubber seal is achieved. I did it by feel. It can also be measured. Mark the position on adapter and on plug.
- 7) Cement on the end cap. Slip the modified

radiator cap into the adapter and cement shut.

8) Use Teflon thread seal tape to screw in the pipe plug to the predetermined depth. Attach brass fittings also with Teflon tape.

9) Mount the device in an inconspicuous spot. I hung mine under the radiator. Fill the reservoir with coolant. Attach the hose with clamps.

You now have brought your auto into this century's cooling technology.

Some Random Thoughts

With steel wool, remove the white printing on the pipe. It comes off easily and really makes the gadget look vaguely authentic.

Check all your hoses carefully. They are now under 7 pounds pressure. You may have to tighten clamps or renew hoses.

One drawback with the plastic pipe is the difficulty in viewing the reservoir's level. However, my experience has been, using a non-pressurized recovery system for years, that a symbiotic relationship is soon established between the radiator and reservoir. After a few hot runs the two seem to agree upon how much coolant will be released and later recovered. I fill the reservoir to the top via the vent tube and affix a clear plastic hose bent into a 'U' so the spilled coolant won't stain anything. I proceed to motor as usual until the vent stops spitting coolant - cut the vent hose upright and continue to coolly motor along. I do, though, check the original radiator cap regularly when the engine is cold.

Notice that throughout this article I have used the term "coolant." I certainly hope no one is still using rusty water in their cooling systems. That is carrying authenticity too far! You should be running a 50/50 distilled water/anti-freeze solution in whatever engine you have. Except, perhaps, a Franklin. In freezing zones, adjust accordingly. Anti-freeze aids cooling, possesses anti-rust agents, and lubricates.

In conclusion, I am indebted to Mr. Charlie Moreaux of the *TC Motoring Guild*, Los Angeles, California, for his great idea of using plastic pipe to enclose a radiator cap.

May the Force be with you for cool and trouble-free motoring.