

Morgan Overflow System (Plus 4)

How to simply keep your Morgan from overheating Dr. Robert, Morgan Consultant and Connoisseur

This article assumes that your engine is in good order with proper carb setup (not running too lean), the ignition timing right (not too much advance), and the radiator is in like new condition.

The pictures with this article explore an easy and neat way to install a radiator overflow system on a Morgan. I designed and have been using this system for over 20 years and have found it to be both efficient and easy to install. There's only one bolt hole to drill and maybe a radiator filler neck to replace.

The filler neck and overflow-type radiator cap: The factory radiators in the 1950s and 1960s came with a 1" deep filler neck soldered to the radiator, but a 1" deep overflow-type radiator cap isn't available in the USA or England. I have often seen a 3/4" deep overflow cap mounted in a 1" deep filler neck. You might as well run no cap at all.



Radiator cap theory: Let me explain the difference between a



standard radiator cap and an overflow-type radiator cap because herein lies one of the secrets between a Morgan that overheats and one that doesn't.

When a radiator heats it creates pressure. When it cools it creates a vacuum and has to suck something from some-

where so that it doesn't collapse.

A standard radiator cap only seals on the bottom of the filler neck and has a little flapper valve in the bottom. It doesn't seal to the atmosphere at the top. Since it doesn't seal at the top, when the radiator cools it sucks in air past the top of the cap. This is what the little flapper valve at the bottom is for. It opens the cap to the atmosphere or, if there is an overflow bottle, to the overflow bottle filled with coolant.

So let's say that you have a standard radiator cap on your car. You run the car hard or in really hot weather, park it, and the heat of the engine dissipates into the water and into the radiator. A little burp happens and you get the usual little green puddle under your car, not much, but added up over time it can account for as much as a pint to a quart of coolant. Each time the car cools air is sucked back into the radiator past the top of the cap. Air in a radiator is death to the cooling system so eventually the car ends up in the overheating cycle.

An overflow cap has a rubber gasket around the top of the cap that seals the cap from the atmosphere and forces the radiator to suck through the little overflow nipple that is on the side of the filler. It's not just there as an outlet - it's also, at times, an inlet. If you put a rubber gasket on a non-overflow cap it will raise the cap and it won't seal properly on the bottom.

My solution: Here is the simplest and most efficient answer to the problem, tried and proven from experience.

Step 1 - the radiator filler neck: The first step is to replace the 1" deep filler neck with a 3/4" deep neck. If you're comfortable with a simple torch and soldering, you can remove the 1" deep neck and re-solder a 3/4" deep neck on the radiator. If you can't manage this job, take the car to a radiator shop and it can be done with the radiator in the car. With the neck replaced, you can use a 3/4" deep 7 pound cap on this filler.

Step 2 - the overflow bottle: You need an overflow bottle and bracket. They can be mounted as in the photo, on the rear inside left valance panel where there is room on all Morgans.



Step 3 - the overflow hose: Run a hose from the nipple on the filler neck down the radiator stay rod and into the bottle. Make sure the hose goes all the way to the bottom of the bottle.

Step 4 - the cooling fan: When I started Morgan Spares Ltd. I knew that Morgans needed a better fan so I designed a replacement engine fan. It is polyester (light weight), has six blades, and pulls about 600% more air than a stock metal fan. The replacement fan is quite

easy to install - it bolts right up to the factory flange on the pulley without any modifications.

Step 5 - fill the radiator: Finally, fill the radiator, start the car and warm it up. Make sure the radiator is filled to the top. Take some of your antifreeze mix or whatever you use (no Guinness, please) and fill the overflow bottle half way. Give the car a good run and park it for the night. Check the bottle the next morning. I'll bet at least half or more of the fluid that was in it is gone.

The design of Morgan radiators is such that they are almost impossible to fill up 100% so you end up with air in the radiator. The air expands when a hot shut off is done and pisses out that little burp of green stuff. When the engine cools, more air is sucked into the radiator and the cycle continues getting worse and then you have that nasty overheating Moggie.

Air in a radiator is death to the cooling system, but with the proper overflow system setup the radiator continues to be filled 100% with coolant. The absence of air makes a huge difference in the way the cooling system works. Every time a little water gets pissed into the overflow bottle it returns back to the radiator and no air gets into the system when it cools off.

This is a very simple job and makes for a neat installation. If the car does boil over for some reason, at least what goes into the bottle then flows onto the ground not all over the engine.

Parts list: Parts you will need to accomplish this include:

- Overflow bottle
- Overflow bottle bracket
- 3/4" deep filler neck for your radiator (if isn't already)
- 3/4" deep, 7 pound radiator cap
- Hose from filler neck to to the overflow bottle
- High-efficiency 6-bladed plastic fan (Plus 4)

(Edited for publication.)