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Taking the heat

The radiator is the most important part of your car's cooling system so we visited Aaron Radiator to take a look at what goes into upgrading standard radiators and the benefits on engine cooling.

Words and Pics: Paul

Engines don't like getting hot, that's a given right? If the temperature gauge is left to climb on its own accord, the chances are a pretty catastrophic malfunction (such as a head gasket failure) will soon be the result.

A radiator works, in very basic terms, by using surface area and cold air to cool the water within the engine. If this surface area is impeded by deposits in the radiator (a blockage or such like) then the efficiency of the cooling system will be significantly reduced in its capacity to do its job. This is where Gerald and the team at Aaron Radiator come into the equation.

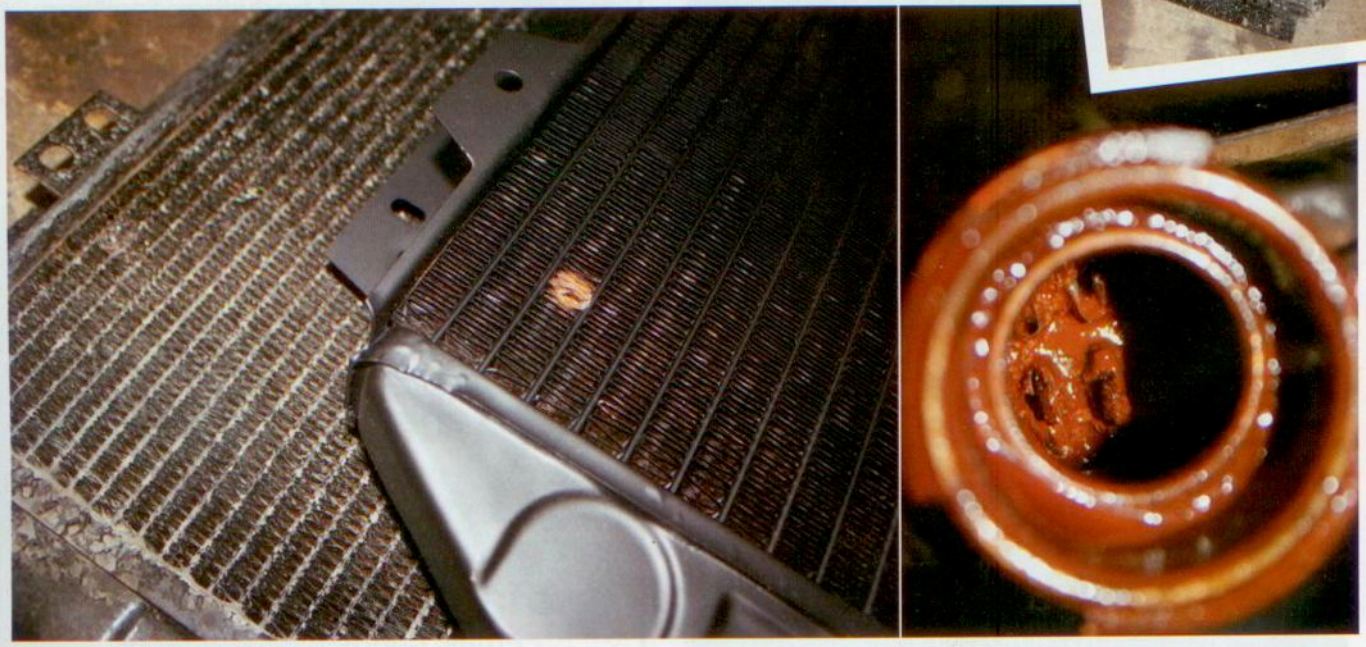
I had noticed that the temperature on the Cortina had started to creep up on a run, with the gauge creeping up further when slowing down, which indicated a water circulation problem. I had only recently replaced the thermostat, so I could rule that out of the equation from the off, which instantly pointed to the radiator being the source of the problem. I soon had it removed and taken to the Aaron Radiator head quarters where Gerald and the team could give it a once over and see where the problem lay.

Initial Inspection

As soon as Gerald picked up the radiator, he knew something was amiss. "It's so heavy!" he laughed. We took the cap off and already a lot of deposits could be seen blocking up the cooling tubes. Once the ends were taken off, we were able be able to see the true extent of the blockage. Depository build-ups can happen quite easily in older cars. Old type anti-freezes had little in the way of rust protection in them, causing waterways, and the radiator itself to corrode. These flakes of rust and corrosion then build up, blocking the tubes and massively decreasing cooling capacity. Other factors that can influence radiator cooling inefficiency can include damage to the fins, inadequate ducting to the radiator itself, or the radiator being fitted with a less efficient core at some point in its life.

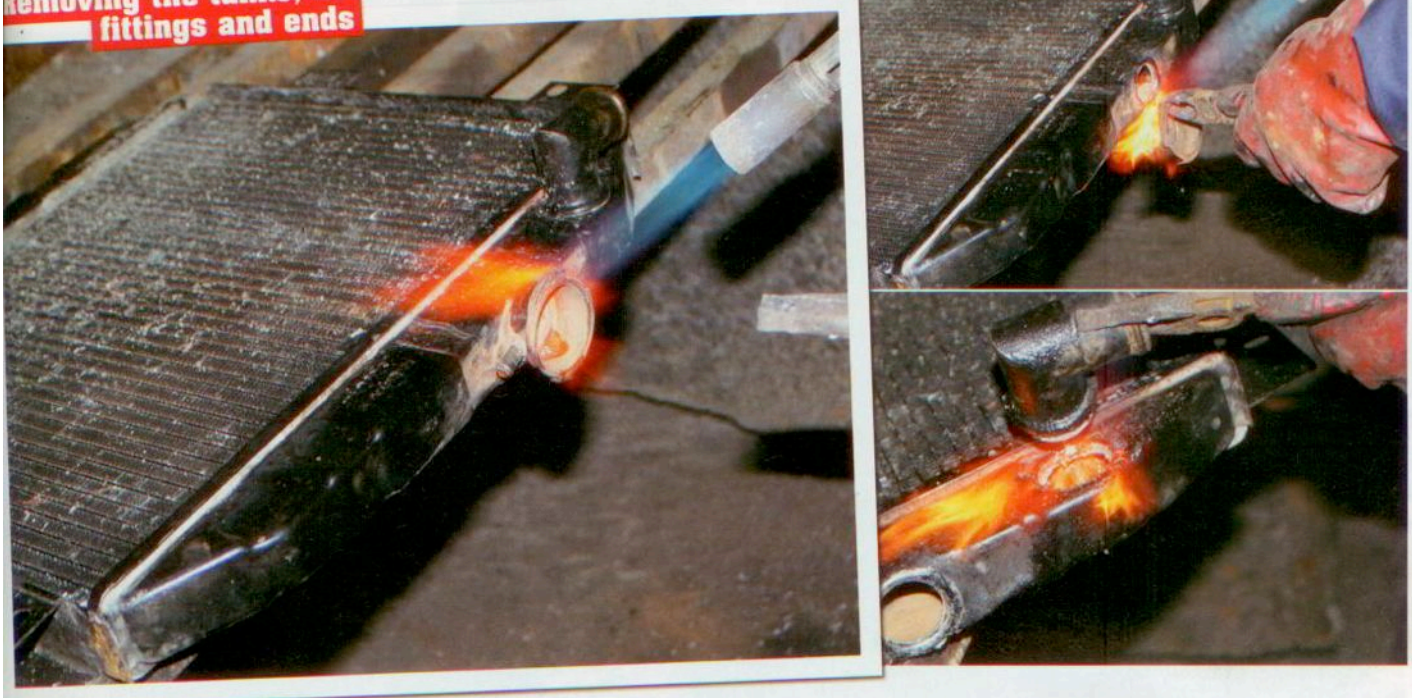
Gerald was surprised to see that my radiator had already been replaced with an improved core (not a great one, but it was better than standard) which really emphasised just how bad the problem with my radiator had become. It was clear that a newer core would be required, so Gerald specified one of his high efficiency cores. As you can see in the pictures, the tubes are much more tightly packed compared to a standard radiator core, giving a much higher surface area, and thus a much more efficient car.

New vs old – my radiator was in a bit of a state...



The rebuild

Removing the tanks, fittings and ends



Mike, the copper and brass radiator guru at Aaron Radiator, soon had my radiator into the disassembly area and set about heating all the solder to break the radiator down into its component parts, which consist of the two end tanks, side panels and fittings. Starting with the bottom tank, Mike soon had the fittings out and the tank off, before moving to the sides and top tank, including filler neck. With the core removed it was obvious why the radiator had been under performing. It was full of rusty and dirty deposits. Mike reckoned at least a third of the radiator was blocked, and it was in one of the worst states he sees day to day. The old core was thrown away and the new one readied for reassembly.

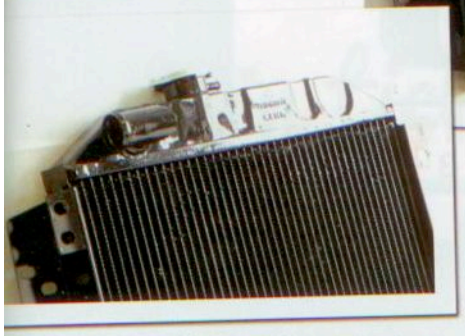
Shot blasting

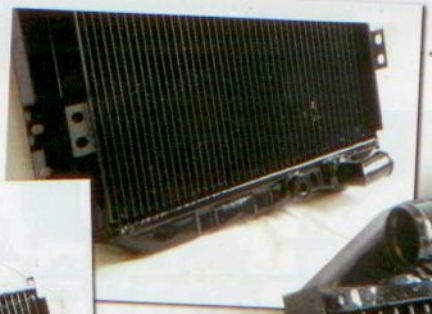
All the component parts are shot-blasted to make sure they are clean prior to soldering. Five minutes in the blasting cabinet and the parts came out looking far better, devoid of paint and prepped from reassembly.

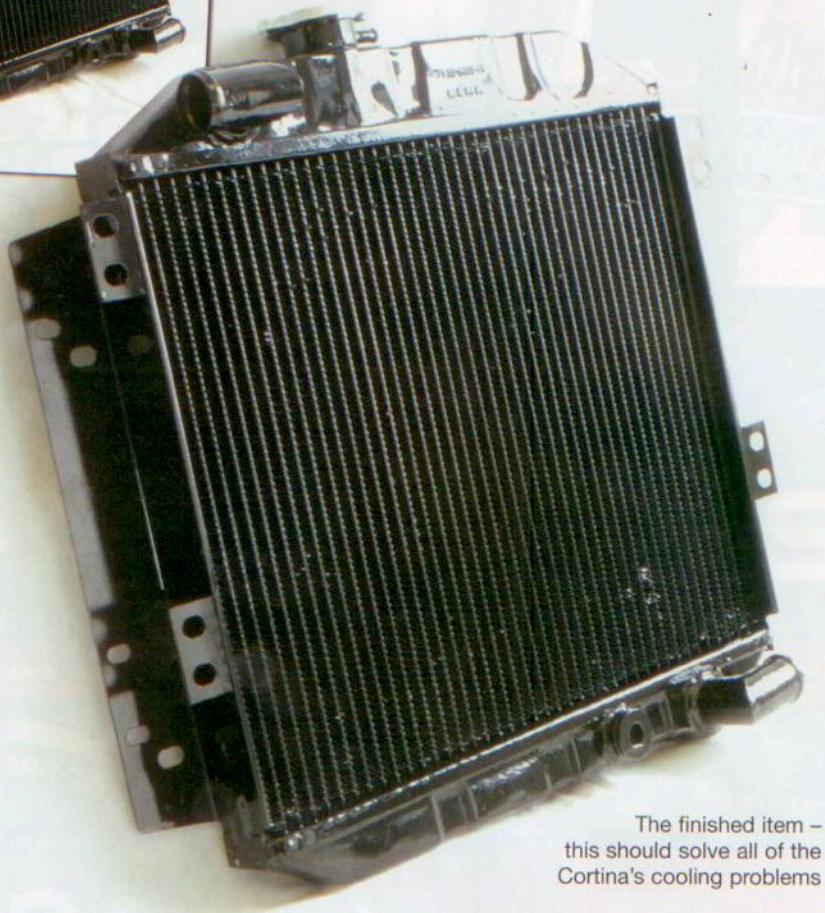
Any modifications

At this stage of the build, it's best to decide if you want anything doing differently to the norm, such as straight fittings instead of 90 degree bends or different end tanks etc. With my radiator, Gerald suggested a boss for a temperature sender so I could get it wired into the electric fan. With a hole drilled, the boss could be fitted into the bottom tank and soldered in.

The Finished Result







The finished item – this should solve all of the Cortina's cooling problems

The guys at Aaron Radiator did a superb job on my radiator. I had toyed with the idea of going for an alloy radiator in the past, but decided that a more original look with a boost in performance was what I really wanted, and they have definitely delivered. The difference in cost between a standard radiator and an upgraded re-core is negligible, so it is more than a worthwhile venture.

Having fitted the radiator, I can instantly say that the radiator temperature has been significantly reduced. The gauge used to sit at roughly a third up or higher, whereas now it barely reaches a third, even when pushed, highlighting just how much of a marked improvement the upgraded core has made. Once I have the electric fan wired in to a proper controller, as opposed to on a manual override switch, the cooling system will be in better fettle than ever.

Still undecided on copper and brass or aluminium?

Another choice is to have the entire radiator replaced with an aluminium unit. This used to be a premium option, but now as the price of copper increases and more radiator companies can make radiators in aluminium, including Aaron Radiator, it is becoming a more affordable option. For non-historic cars or where a considerable saving in weight is desired, an aluminium radiator may be the preferred option. However, in historic racing where regulations may dictate that a standard item be used, an upgraded copper and brass radiator will do just as good a job.

When comparing aluminium cores to copper and brass, the most important factor is how the core's assembled. Copper is a better conductor of heat than aluminium so a radiator made of copper should be more efficient. However, the problem is that a copper and brass core is soldered together using lead, which is a terrible conductor of heat! An aluminium core is brazed together in a furnace, not soldered, so it's all aluminium.

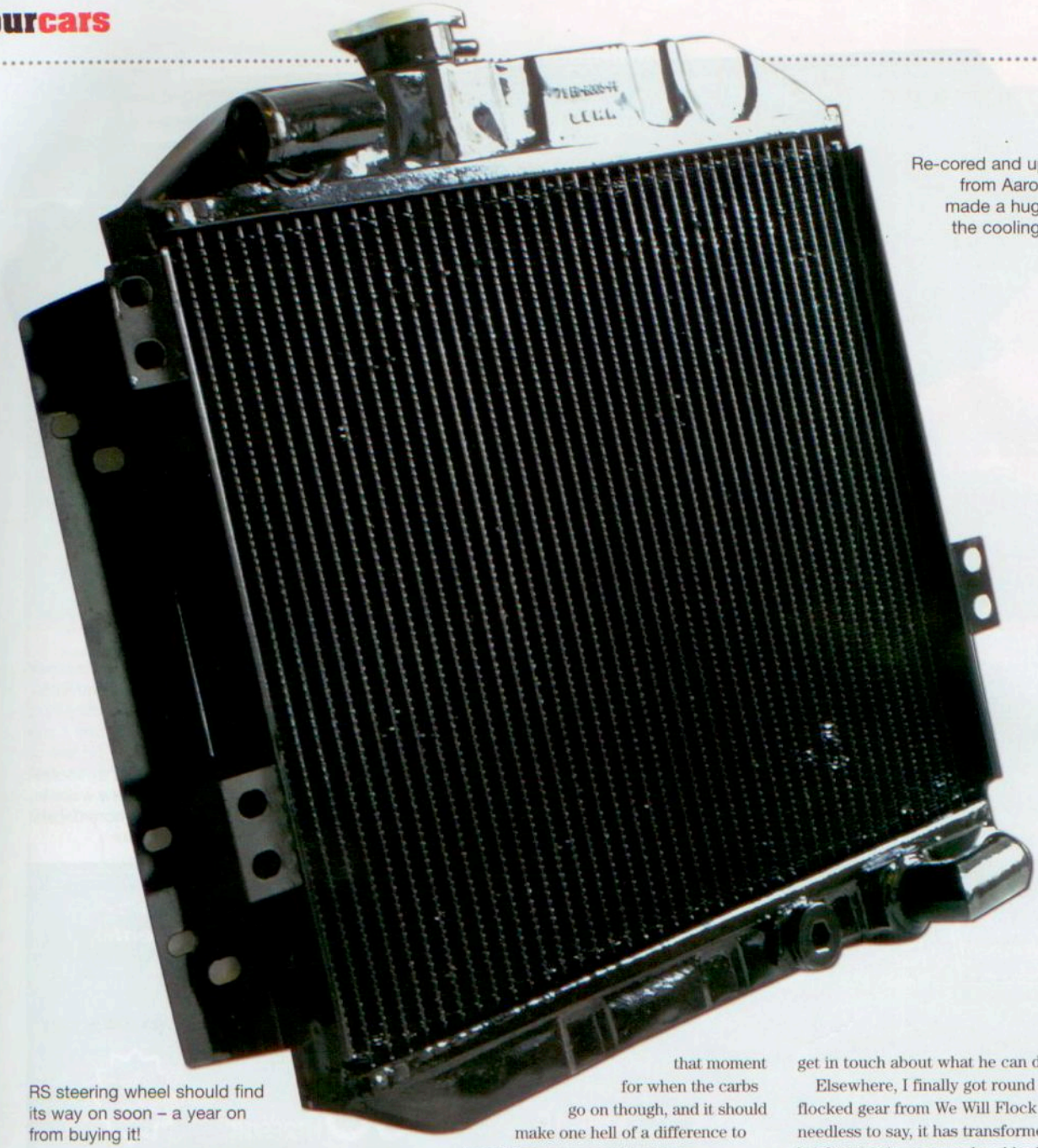
So, which is better, copper and brass or aluminium? They both have advantages and disadvantages. The decision over which to use comes down to which factors are most important to you. Weight, appearance, originality, cost and durability all need to be considered. The guys at Aaron Radiator have upgraded many copper and brass radiators in vehicles which used to overheat but don't anymore, and have also manufactured many aluminium radiators for customers who have been delighted with the weight-saving and appearance. The choice is up to you, but expect top performance from either unit.

Aaron Radiator

Aaron Radiator has been in business since 1962, and has a great reputation for turning out top quality products, as it has done since they day it opened its doors.

The Croydon-based firm is proud that it is still manufacturing in Britain and producing quality goods at an affordable price. No job is too big or small and Gerald and the team will be more than happy to discuss any project or offer any advice.

Having produced products for military forces, council vehicle fleets and many more, you can be assured that your radiator is in good, safe hands. Give them a call on 0845 652 8852, email them via sales@aaronradiator.co.uk, or check out their website www.aaronradiator.co.uk.



Re-cored and uprated radiator from Aaron Radiator has made a huge difference to the cooling of the Cortina

RS steering wheel should find its way on soon – a year on from buying it!

that moment for when the carbs go on though, and it should make one hell of a difference to how things appear under there.

One thing I did notice with John's cover that doesn't appear on others that are available are the factory style slots for the rocker cover gasket to fit into. It means you don't have to glue anything on, which is a lot better in terms of finish, and is testament to the time John has put into developing his products to the highest standard. If you're in the market for a custom alloy rocker cover to finish off an engine build, then John is your man.

For those of you looking for a more period-looking piece, then you will want to check out John's RS rocker covers for the Pinto engine. Designed to replicate the rare optional covers, they look superb, and having seen them in the flesh, I can vouch for just how good they look in the engine bay of an RS2000, for example. Check out his Facebook page, Redmond Metal Casting, for more pictures of his work and to get in touch about what he can do for you.

Elsewhere, I finally got round to fitting the flocked gear from We Will Flock You and needless to say, it has transformed this inside, brightening it up no end and looking superb. I can't wait to get my genuine Ford RS Motorsport steering wheel fitted now. Steve Taylor at Performance Conversions is currently machining and adapting a boss for me to fit it, so after nearly a year since I bought it, I can finally get it fitted!

So now it's just the small matter of getting it back on the road again. At the time of writing I have the dreaded tax and MoT to pay for and then she should be back hitting the Tarmac. With the new freshly recored radiator from Aaron Radiator installed, the running temperature should have come down a bit which means I can be confident in giving it some stick when the warmer weather eventually comes around. I'm itching to blow the cobwebs off the old girl now, so as soon as the money is there, the ticket will be in the window and I'll be out and about once more. I can't wait! Fingers crossed, next month it will be barking through twin webers too... **PM**