

How to Remove and Clean A Corvette C4 Radiator

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How to Remove and Clean Your Radiator

This tech paper will discuss the removal, exterior cleaning, and installation of the radiator on a 1985 L98 C4 Corvette. Other years are very similar in procedure, and utilize the same overall technique.

Overview - C4 Corvettes seem to have chronic overheating and run hot problems, especially after about 100,000 miles. The radiator on a C4 Corvette is an aluminum and plastic, single-row unit. It is remarkably small and light. While looking at it, you just know that it can not possibly be big enough to handle the cooling for a high performance, V8 engine. The design of this compact radiator is state-of-the-art NASCAR radiator design. Every single little fin in the radiator is a multi-piece, serrated fin. These fins are not a solid fin like on the old *heavy duty 4-row* radiators in the old Muscle cars. This design makes the Corvette radiator highly efficient and allows the use of a very small radiator. However, this small, efficient design is also extremely sensitive to anything that changes the air flow through. Anything that slightly reduces airflow, or which restricts the frontal surface area, will dramatically reduce its cooling ability, causing your Corvette to run hot. You can change the thermostat, flush the cooling system, change your *fan-on* settings, replace your water pump, and tear your hair out, and your Corvette will still run hot if the radiator has an airflow problem.

The radiator in the C4 is shrouded together with the A/C condenser. The Condenser is positioned in the front of the radiator and clearly visible from the front, underneath side of the car. As such, the Radiator is in back of the A/C condenser. Only the back surface of the C4

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radiator is visible or accessible. There is no access, even visually, to the front surface of the C4 radiator.

Moreover, the plenum that is created between the condenser and the radiator is a low-velocity air flow area. This area will become the resting place for every dead leaf, hot dog wrapper, blade of grass, and hairy varmint that your Corvette has ever made contact with. How all this stuff gets in there is one of those mysteries that nobody can explain. After 100,000-or-so miles, the front surface of your radiator will be packed with grass, leaves, oil, dirt, grime, rodent hair and other things. You can blow a garden hose through from the back side, but it will not clear out the front surface of the C4 radiator.

If you want your 100,000-mile Corvette to run 20 degrees cooler, you have to pull the radiator and clean all this garbage out of the plenum and out of the front surface of the radiator. This should be a mandatory service process for every high-mileage, hot-running C4.

Tools and Equipment Required - As a minimum, you will need the following tools:

1. Long & short flat bladed screwdrivers. One really small one.
2. 10mm socket with long extensions and a 3/8" drive ratchet.
3. 14mm 3/8" drive socket.
4. 7mm socket with 1/4" drive ratchet and extensions.
5. 9/16" Flare Nut (*Lion*) wrench.
6. Soft, long-haired, nylon brush.
7. Antifreeze & distilled water (*50/50 mix*).
8. Dishwashing detergent, K&N Air Filter Cleaner or 409 Cleaner.

Radiator Removal – The procedure removing the C4 radiator is remarkably simple. The removal process is not as difficult as the model C3 removal. You can remove the C4 radiator in approximately 15 minutes by following the following steps:

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- **Drain the radiator.** Accomplish this simply by pulling the lower radiator hose off at the radiator. Also, pull the upper radiator hose off at the radiator.
- **Remove the overflow hose** from the radiator.
- **Remove the Mass Airflow Sensor (MAF)** with its duct. Be careful disconnecting the electrical connector so as not to damage the wires or the connector.
- **Remove the air cleaner** and the air cleaner plenum from the top of the radiator shroud. The two plastic hand-nuts that hold the plenum to the shroud will often times not come off. This is because the studs on the back side are spinning. You can keep the studs from spinning by jamming a screwdriver between the plenum and the shroud and up against the studs. *(You can alleviate this problem by drilling a 1/8" hole through the studs' metal tangs and the shroud. Once the studs are re-installed into the shroud's key-hole opening, pop-riveted the tangs to the shroud. The result will be no more spinning studs! And it will look like something the factory might have done.)*
- **Remove the A/C Receiver/Dryer** - Remove the two (2) 10mm bolts that attach the A/C receiver/drier bottle to the frame crossover member. Next remove the two (2) 10mm bolts that attach the A/C receiver/drier bottle to the fan shroud *(you will need your long extensions here)*.
- **Loosen Power Steering Assembly** - On some C4 model years, you may need to remove two (2) 10mm bolts and loosen a 3rd 10mm bolt attaching the Power Steering Reservoir and rotate the reservoir out of the way.
- **Remove Lower Fan Shroud Bolts** - Remove the remaining 10mm bolts attaching the upper fan shroud to the lower fan shroud.
- **Remove Upper Fan Shroud Bolts** - Remove the 7mm bolts running along the front edge of the upper shroud.
- **Remove Transmission Lines** - Remove the upper & lower transmission cooling lines using your flare nut wrench. Place a drain pan under the radiator to catch the few fluid drips that will be lost *(you won't loose much fluid)*.

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- **Remove Oil Cooler Lines** - Remove oil cooling lines using your flare nut wrench. Place a drain pan under the radiator to catch the oil that will be lost (*you won't lose much oil*).
- **Fan Assembly** - Remove the bolts attaching the fan assembly to the upper shroud.
- **Remove Upper Shroud** - Remove the upper shroud and place it in a safe location.
- **Remove Radiator** - Carefully pull the radiator straight up taking care not to bump the fin surfaces against the cooling fan assembly or anything else.

- **Remove Debris** - Take a look at all the debris inside the plenum and all the dirt on the front surface of your radiator. You will be aghast. The first thing you want to do is to scoop all the garbage out of the plenum.



- **Clean Radiator** - Once you have removed the loose dirt and debris, take a garden hose and flush out the plenum area thoroughly. Your radiator will need some care, but you must recognize that the radiator fins are **EXTREMELY fragile**, much more so than on the old type of radiators. Next, lay your radiator face down on the ground and flush the big chunks of debris out of it with your garden hose. Now, pick the debris out of it that did not get blasted out by the hose. Next, spray the entire face of the radiator down good with K&N Filter Cleaner, 409 Cleaner or dilute some dishwashing detergent into a spray bottle and douse the radiator down good. The front face is most likely covered in

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grease, grime, and unidentifiable road dirt.

Taking *EXTREME* care to gently brush the front face of the radiator with your soft nylon brush. ***DO NOT brush from side to side***; brush only up and down. If you brush from side to



side, even with your soft brush, you will fold the fins over on one another. Once you have brushed the cleaner or soapy solution into the front face, removing all of the oily, greasy crap and build-up, blast the entire unit off really good with the garden hose again.

- **Straighten bent fins** - Next, sit down on your front steps with a cooler full of beer beside you, place the radiator on your lap, and straighten every one of the bent, folded-over, damaged fins on both sides of the radiator using a very small, flat bladed screwdriver. If you have a lot of damaged fins, this will take some time, this is the only way to get your radiator up to its intended level of air flow efficiency.
- **Reinstall the radiator** - Once you have cleaned and repaired your radiator in this manner, reinstall the radiator back in your Corvette by reversing the above steps.
- **Fill Radiator With Antifreeze** - Fill the radiator up with new antifreeze, check your transmission fluid and engine oil levels, and enjoy a Corvette that will often run as much as 20 degrees cooler than it did before.