

C6 Corvette: How to Replace Radiator

Replacing your radiator may not be all that difficult, but gaining access to it can be.

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This article applies to the C6 Corvette (2005-2013).

When your Corvette always runs hot, but you haven't found any issues with coolant leaks, a faulty thermostat, or water pump failure, it's probably time to replace your radiator.



Time
2-4 hours



DIY Cost: \$300-600
Pro Cost: \$800-1,000



Why is this hard? Due to limited access and an array of different connector types

Materials Needed

- Flat blade screwdriver
- Torx head drivers or sockets, and extensions
- Hose clamp pliers
- Large, shallow collection pan
- Screwdriver with a "V-shaped" head or panel removal tool (optional)
- Two sheets of poster board and masking tape (optional)

Step 1 – Preparation

1. Protect the front fenders.
2. Disconnect battery ground.
3. Jack front of Corvette up on jack stands.

Pro Tip

When replacing drained coolant, the rear end should be higher than the front; if reusing the coolant, the front can be higher as this will retain more coolant in the engine.



Figure 1. Protect Corvette fenders.

Step 2 – Remove the two air intake / air box retaining pins

Using a flat blade or "V-shaped" screwdriver, lift the center of the push-pins up.



Figure 2. Remove the air intake retaining pins.

Step 3 – Loosen the worm-drive hose clamp on the mass air flow (MAF) sensor bellows

Use the flat blade screwdriver to loosen the worm drive clamp screw. No need to 'open' it completely, just loosen it.

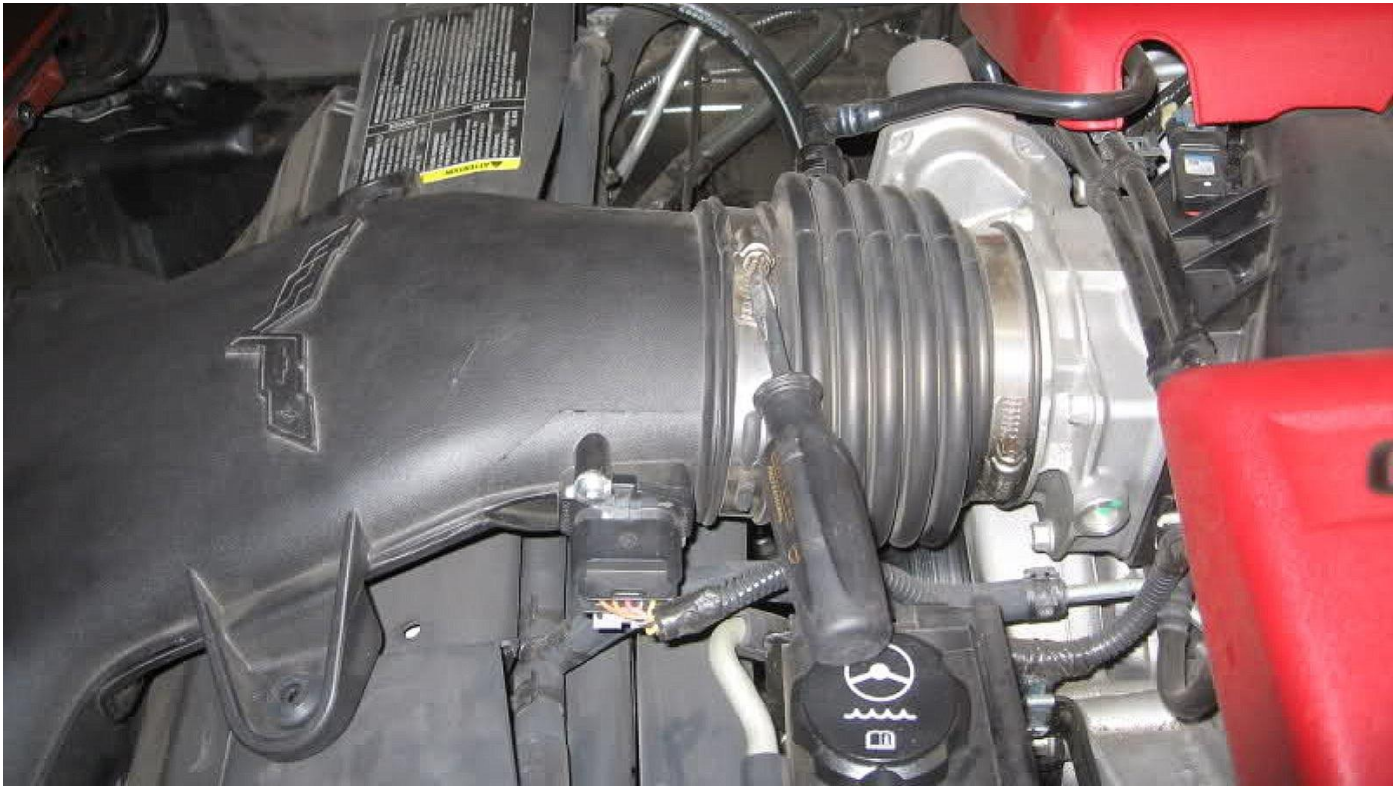


Figure 3. Unclamp the MAF sensor bellows.

Step 4 – Disconnect the intake from the throttle body bellows

Push the end of the bellows toward the rear of car. Move and wiggle the intake until it's free and place on top of the bellows (be careful not to strain the MAF sensor connection wires). Carefully flip the intake over and place on left side of engine.



Figure 4. Disconnect the intake from the throttle body bellows.

Next, push the center tab of retaining pin, and pull the pin toward the front of the car. The harness also unplugs by pulling it toward the front of the car. Bag the intake/MAF assembly and set aside.



Figure 5. Unplug the MAF sensor harness.

Step 5 – Remove the top radiator support

Using an extension, remove the four 10mm bolts (two on each side) from the top radiator support. Lift hoses off the support cradles located on the radiator support. Then, lift the top radiator support off the car.



Figure 6. Remove the top radiator support.

Step 6 – Remove the front radiator shroud

First, go to the underside of the car and remove the seven bolts that fasten the bottom of the bumper cover to the car. You may want to remove the air dam for more room, but it is not necessary. Then, remove the four (two per side) push pins mounted to the inside of the radiator shroud.



Figure 7. Remove push-pins mounted to the inside of the radiator shroud.

Remove the two pins that mount the bottom of the radiator shroud to the car's bumper beam. A small, flat tip screwdriver is useful to pull the center pins out for removal.



Figure 8. Remove pins that mount the bottom of the radiator shroud to the bumper beam.

Disconnect and remove the ambient air temperature sensor located on the passenger side of the shroud.



Figure 9. Disconnect the ambient air temperature sensor from shroud.

Also disconnect the hood lamp connector.



Figure 10. Disconnect the hood lamp connector, if you have one.

Each bottom end of the shroud is secured underneath a metal tab. First, push the bottom end toward the center of the engine bay to get the shroud loose on one side.

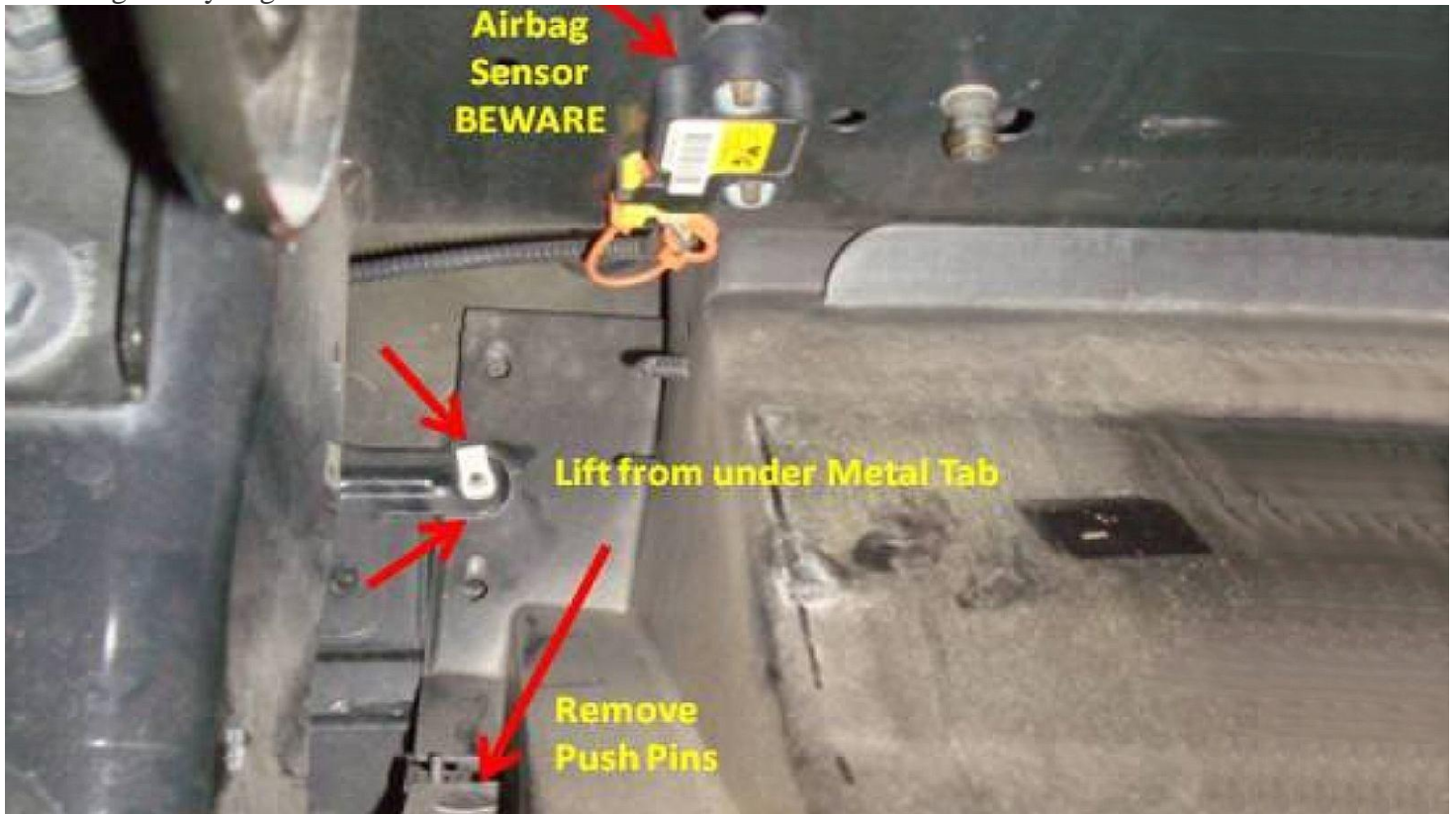


Figure 11. Bottom of radiator shroud is secured by two metal tabs.

Then tilt the loose end up first, and shove the shroud in the opposite direction to free the other side from its metal hold-down tab.



Figure 12. Tilt up and shove the shroud to free it from the other metal tab.

Remove the radiator shroud from the engine bay.



Figure 13. Remove radiator shroud from engine bay.

Step 7 – Drain coolant

If you haven't already, remove the cap from the coolant reservoir and drain the coolant into the shallow pan. This is done by opening the radiator drain plug on the passenger side, located at the bottom and behind the radiator support beam (refer to Figure 19 below). A half-turn is all that is necessary to open this plug.

Pro Tip

Replace, don't reuse the coolant if it comes out darkly discolored or brown.

Step 8 – Disconnect the four radiator hoses

Disconnect the four radiator hoses; one goes to the throttle body, one to the coolant reservoir, the large hose at the top attached to the water pump, and the lower hose attaching the bottom of the radiator to the thermostat. All these hoses are attached by spring clamps, which are easy to compress using a special tool made for that purpose: hose clamp pliers.



Figure 14. Remove the four hoses connected to the radiator with hose clamp pliers.

The A/C condenser rests on two tabs. It can be tilted forward by lifting it up while pushing it forward. If your vehicle has a transmission cooler, the lines connected to it will also have to be removed.

Step 9 – Remove radiator

The fan assembly doesn't have to be removed to pull the radiator up and out—but it might make this task a lot easier, especially if working alone. Regardless, just removing the side connections on the fan shroud can also allow it to lean back a bit, away from the radiator. When extracting the radiator, care should be taken not to let the radiator hang up on an electrical connection on the lower passenger side of the fan shroud. The radiator can also hang up on the lower hose if it isn't pulled out of its connection area.



Figure 15. Electrical bundle on fan shroud that can hang up radiator extraction.

Carefully vacuum the now-exposed A/C condenser. Note the tiny rocks embedded in the A/C condenser fins. It would probably cause more damage to the condenser fins trying to remove them than just leaving them in place.



Figure 16. Close up of tiny stones embedded in A/C condenser.

Save and reuse the two large rubber grommets that the radiator sits on. These are located on either side of the radiator's bottom.



Figure 17. Rubber grommets act as "feet" and should be reused.

Step 10 – Install new radiator

Lower the new radiator into place.

Pro Tip

Attaching poster board to either side of the radiator with masking tape could save a lot of damage to the delicate aluminum fins when handling it.



Figure 18. Corvette OEM radiator.

Make sure the drain plug on the bottom of the radiator is shut off, and reverse these disassembly directions to secure your new radiator in place.

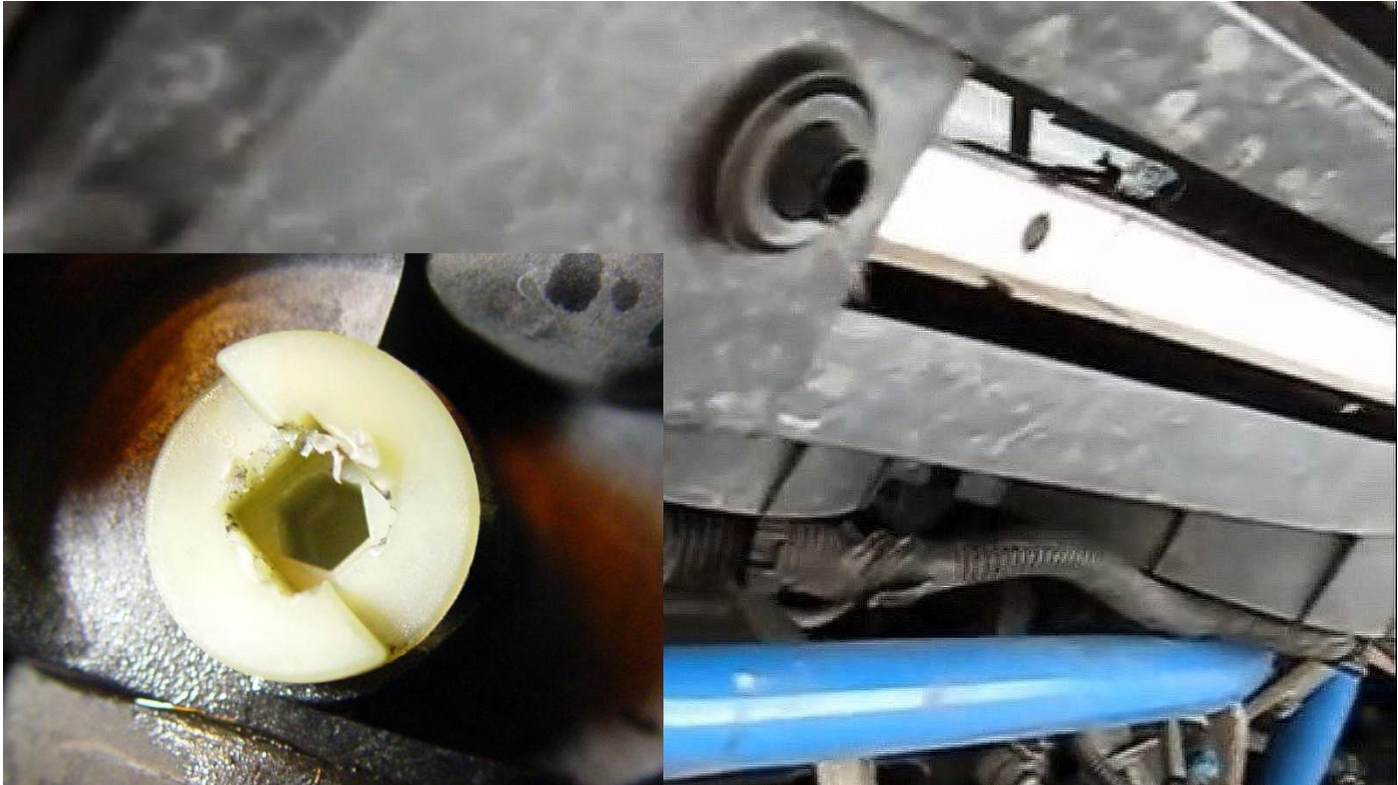


Figure 19. Radiator drain plug, and location of drain on vehicle.

Refill the radiator with the proper coolant with the proper mixture of distilled water. Using GM's recommended procedure, properly “burp” your vehicle to ensure that all air bubbles have been removed from the coolant. Note that it can take a number of engine warm-ups, or even days of driving, to accomplish this.

Removing condenser procedure

No need whatsoever to disconnect anything AC related when changing the radiator.

The thing that makes it tough is the condenser is attached to the radiator via two slots on the radiator. Break the slots off of the old radiator so that the condenser is no longer connected and it will save you quite a bit of time.

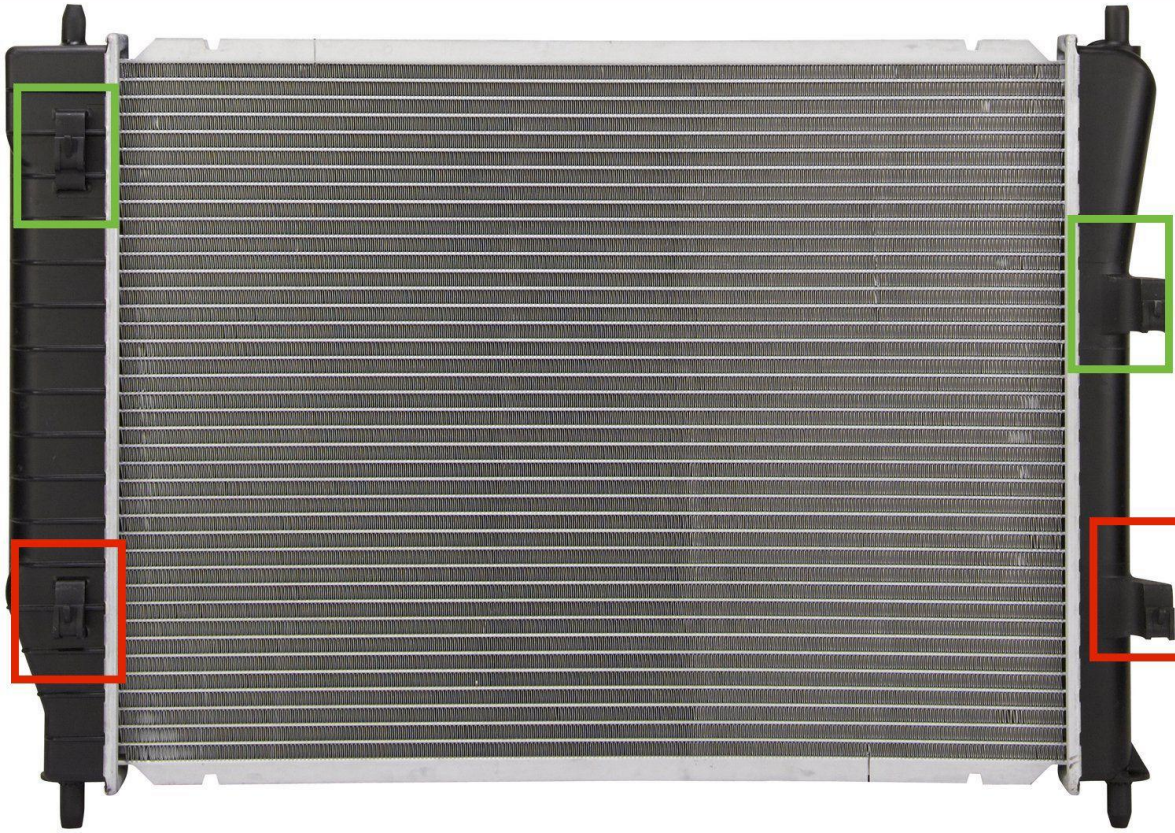
You'll have to get the fan out also.. Two 10mm bolts and a wiring harness connector

The oil connectors, if you have them, just have small C clip looking things that hold the lines in. Remove the plastic covers (they pop off), then use a pick to remove the C clips. Go easy on them, they aren't very strong (This is assuming you have an engine oil or transmission oil cooler built into your radiator. If not, then disregard this part)

Breaking the slots off that hold the condenser will make it a lot easier though. I changed mine a month or so ago so I know what you mean.. it's not super easy but it's completely doable.

It's not on the top. It's towards the bottom, on the front.. it's not easy to get to, that's why it's easier to just break these tabs off the old radiator and then the condenser comes right off and the radiator will come right out.

These 4 spots in particular are what I'm talking about. The red ones are the pain in the rear ones. The green ones you can get to easy enough so they aren't so bad.



This shows how it would be in place in the car. Note the tab/slot on the upper right has been broken off.



Next is how to slightly rotate the right side out of their slots



Here's the tab/slot broken off.



If you trim off both the top and bottom passenger side tab/slots just above the bottom radius on the new radiator before installation, it'll provide enough security to hold the condenser in place, while still allowing the clearance needed to R&R the radiator or condenser in the future.



If GM had extended the tube on the condenser another 1/2", none of this would be necessary.