

## **Supercharger for the Cadillac CTS-V (Fesler Built of Phoenix)**

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What is a Supercharger?

A supercharger is a gas compressor driven by the engine. It supplies air under high pressure to the cylinders of an internal-combustion engine. It's also known as a "blower". The supercharger combines air and fuel and increases the amount of both in the cylinder. This improves the horsepower of your engine, as well as its overall power and efficiency.

It is comparable to a turbocharger, but does have one obvious difference. A turbocharger is powered by the mass-flow of exhaust gases driving a turbine, a supercharger is powered mechanically, by belt- or by chain-drive from the engine's crankshaft . A supercharger can take in as much as one third of the total crankshaft power of the engine, although at the same time, it can boost the entire engine output by over 100 percent.

Superchargers are also used in aircraft as a power-boosting mechanism for function in high altitudes. It also adds power to the aircraft without the weight of building a bigger engine with larger cylinders.

The Benefits of a Supercharger:

- More efficiently-run engine
- More horsepower
- Improved octane rating
- Better gas mileage (for smaller superchargers, and dependent on the total weight of the vehicle)

History of the Supercharger:

The supercharger was first patented in 1900 by Gottlieb Daimler (of Daimler-Benz / Daimler-Chrysler)! He patented the very first forced induction system for internal combustion engines. His first superchargers were based on a twin-rotor, air-pump design first patented by American Francis Roots in 1860. This devise was the starting point for the modern type supercharger.

It didn't take much time after that for superchargers to get installed on custom racing cars. In 1920, Bentley and Mercedes were the first to produce supercharged vehicles.

Since those times, superchargers have been installed during a vehicle's production, added to racing vehicles, and more. They have now become quite intricate and pricey, bringing them to the world of luxurious performance cars.

How to install your Supercharger:

This is not something you want to install yourself. It is difficult, tricky, and you want it done right. It is best to take it to a professional who knows how to and has installed superchargers on vehicles. It would be especially beneficial if you could find a professional that has installed a supercharger on your Cadillac CTS-V.

How a supercharger is installed (The Magna Charger for a Cadillac CTS-V, 2004-2005 and GM 5.7 Liter Engine) –

Precautions and tips:

Your engine should be in good working condition. If it is installed on a vehicle with high mileage or damage, it could cause the engine to fail. Do not use any aftermarket engine recalibration devices, as this could also cause the engine to fail.

When you get ready to install your supercharger, you should also replace your fuel filter, spark plugs and plug gap, drive belt, and air filter.

The tools you need:

- A metric wrench set
- Shop vacuum cleaner
- Safety glasses
- Drain pan
- Hose cutters
- Hose clamp pliers
- Metric Allen socket set 3/8 drive
- Small or angled 3/8 drill motor
- Phillips and flathead screwdrivers
- Fuel line quick disconnect tools
- 1/4"-3/8" and 1/2" drive metric socket set – standard and deep

Installation Process:

Remove the lower rear seat cushion by pushing in at the base and pulling up. This will give you access to the two rear fuse centers where the seat base meets the carpet.

Find the fuse marked “audio” and remove the 10 amp audio fuse.

Locate and remove the fuse that is marked “Fuel Pump Mtr”. Replace this with a 30 amp fuse.

Find the OBD II plug connection which is located under the dash next to the hood release lever. Connect the cable with the microtuner to the 9 pin connector at the top of the handheld unit. Use thumbscrews to secure the cable to the connector and connect the other end to your OBD II plug connection. This connection must be secure and seated all the way in.

Do not start the engine, but turn the ignition key to the “on” position. Press the yes button to

begin programming cycle, which will take approximately five minutes. When the unit tells you the process is complete, turn the ignition off and remove the cable. If the unit says anything different, you need professional help. Do not turn off the ignition or move the cable. This is why getting a professional to do this is the best way to go. If this does happen, you would have to remove the cable and microtuner from the OBD II port and take your car to your Cadillac dealer to have your PCM program updated. (Something you could check before beginning the installation process).

Replace the audio fuse and cover.

Remove the negative battery connector. Make sure the connector is away from the battery.

Remove the wiper arm attachment nuts. Remove the wiper arms, and the weather strip from the front edge of the wiper arm apron.

Remove the four 7 mm bolts on the wiper apron on the passenger side. On the driver's side, remove the bolt. Pull the right wiper apron at the center, and the left completely. Disconnect the wiper motor electrical connector.

Remove the wiper assembly retaining bolt near the middle of the windshield. Completely remove the wiper assembly from the vehicle.

Measure 3/8ths of an inch down from the top of the left wiper arm lever and mark a line. Use your grinder or saw to remove the material above this line. Install the thick spacer washer over the wiper assembly mounting hole.

Reinstall the wiper assembly. Secure the mounting bolt and attach the electrical connector. Replace the wiper aprons, mounting screws and weather strips. Now replace the wiper arms and torque the nuts to 26 ft-lbs.

Remove the four bolts that secure the strut tower brace. Replace the bolts and tighten them temporarily.

Remove the two push rivets from the radiator mask. Pull up on the back to remove the clips. Use a flathead screwdriver to remove the push rivets.

Raise the front of the car on jackstands or a lift. You will need to remove 13 push rivets to get the lower front splash panel from the bottom of the car.

Remove the 8 push rivets that hold the top edge of the front fascia. Remove the push rivets along the front edge of both front wheel wells, too.

Turn the steering wheel until it locks so you can remove the wheel well splash panel. This will give you access to the 2 fascia lock bolts. You don't need to remove the bolts, but you do need to loosen the nuts. Pull forward on the fascia panel and remove it. Disconnect the marker light and turn signal/driving light electrical connections on both sides.

Remove the following –

- air tube, which will not be reinstalled
- Electronic Throttle Control
- Throttle Position Sensor connector
- 8 injector electrical connectors
- 2 ignition coil pack connectors.
- Engine Knock Sensor connector
- Knock connector from the wiring harness.
- Manifold Absolute Pressure sensor connector
- Positive Crankcase Ventilation hose
- engine valley cover vent hose
- the vacuum brake booster valve
- the evaporative purge solenoid electrical connector
- the evaporative emissions pipe connector
- the purge solenoid and EVAP line

Now you will need to release the pressure in the fuel pressure test port. Remove the cap taking caution, because it is under pressure! Catch any fuel with a shop towel. Remove the retaining clip.

Remove the following –

- Fuel pipe
- 2 coolant lines attached to the throttle body
- the 3 bolts that hold the throttle body to the manifold
- the 3 bolts holding the throttle body to the intake manifold
- 10 intake manifold bolts
- any debris from the intake port and engine valley

Cover the intake ports with tape

Continue to remove –

- 2 black rubber Knock Sensor covers and the electrical connectors
- Knock Sensors
- Engine valley cover and gasket
- Accessory serpentine belt

Install a new valley cover with 10 flathead bolts.

Reinstall the knock sensors and torque them to 15 ft-lb.

Reattach the electrical connectors.

Apply a silicone adhesive where you will reinstall the covers.

Install the knock sensor wires in the grooves of the top of the valley cover. Use the silicone adhesive to permanently secure them.

Remove the 2 coolant vent pipe bolts and take off the pipe.

Install the new coolant vent pipe. Torque the bolts to 106 in-lbs.

Remove the following –

the stock belt tensioner and replace it with the new one.

the radiator retaining brackets on both sides.

the A/C condenser from the radiator

the upper and lower radiator hoses.

the radiator vent hose

the A/C pipe support tab

the radiator fan electrical connections

the radiator, fans, and hoses

the stock balancer bolt from the crankshaft

Install the drill guide and bolt into the stock location. Torque the bolts to 60 ft-lbs.

Drill the 2 holes into the guide. Use a reamer to size the holes, turning it clockwise.

Clean the area with compressed air.

Remove the drill guide and bolt.

Install a dowel pin into each hole.

Use a small hammer to tap the dowels into place.

Install the new balancer bolt.

Remove the tape from the MAF connector wires and cut 3 inches off the two brown inlet air temperature wires.

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