2005-2013 C6 CORVETTE STREET & STRIP OIL COOLER KIT

PART NO. EC6-603-TX

MADE IN USA

Important: Read these instructions in their entirety prior to installation.

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Rev 260602

PARTS CHECK

- Visit the website product page for technical data and to confirm all parts have arrived by checking the images.

INSTALLATION INSTRUCTIONS

BEFORE YOU BEGIN

WARNING: NEVER work under a vehicle supported only by a jack.

WARNING: NEVER cap / plug the oil ports on the adapter.

WARNING: Capped / plugged oil ports block oil flow in the engine and may result in catastrophic engine damage.

Use a union to loop the lines, or create a new line to join the ports if servicing or removing the oil cooler from the vehicle.

WARNING: Only qualified mechanics should install this oil cooler kit.

WARNING: Improper installation may result in severe engine damage.

WARNING: Confirm the car is not hot prior to installation.

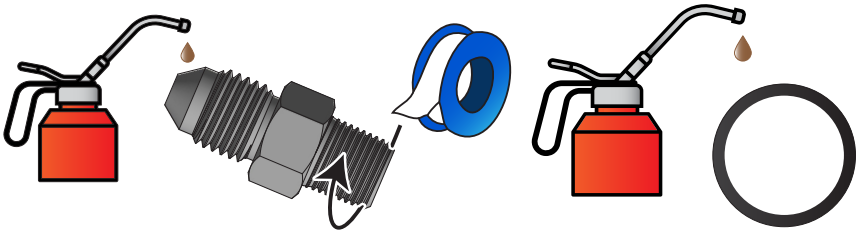
Use aluminum tools to avoid damaging fittings.

Lubricate all fitting flares before final tightening of connection.

Wrap tapered pipe (NPT) threads with Teflon (PTFE) tape or apply thread sealant to seal the threads.

Lubricate O-rings prior to installation to prevent damage and ensure a leak-free seal.

Read through this manual, in addition to the product manuals included with each part prior to installation.



REMOVE THE BUMPER COVER

1. Raise and support the vehicle using an automotive-approved car lift, frame stands or ramps.
2. Remove any underbody panels necessary to access the oil filter area.
3. Open the hood of the vehicle.
4. Apply masking tape on the fenders to prevent scratching when removing the bumper cover.
5. Remove the front bumper cover by removing the fasteners listed below, and indicated in Figure 1:
    a. Four 7 mm bumper cover screws under the nose of the hood (**blue**).
    b. Ten 7 mm or T15 screws and/or push clips securing the fender liners, five per side (**green**).
    c. Five 7 mm screws securing the lower front edge of the bumper cover (**red**).
    d. Four 10 mm nuts securing the inside of the fenders, two per side (**magenta**).
    e. Two 10 mm nuts securing the rear of the lower bumper cover (**orange**).

Removing the front wheels makes this step easier.

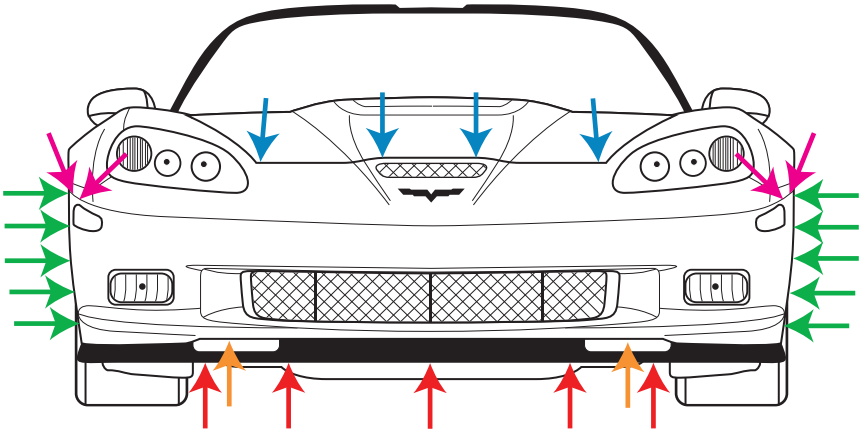


Figure 1 - Front Bumper Fastener Locations

6. Disconnect all indicator and fog light wiring harness connectors.
7. Remove four push pins (two per side) securing the radiator shroud to the core support, shown in Figure 2.

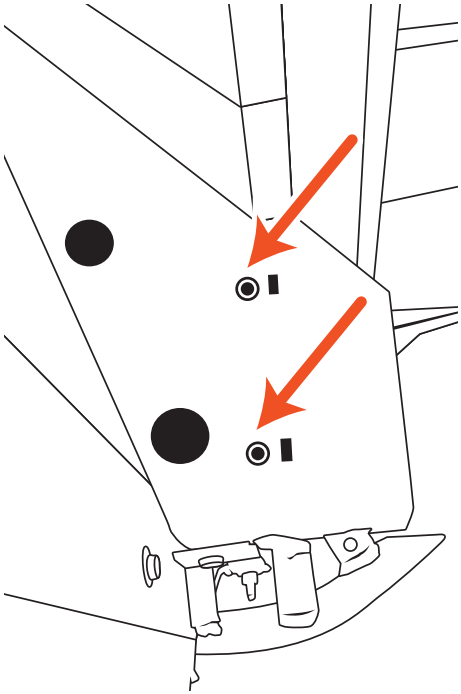


Figure 2 - Radiator Shroud Push Pins

8. Carefully remove the front bumper cover.

The top edges of the bumper cover near the headlights are clipped-in and must be released prior to removal.

REMOVE THE FACTORY OIL COOLER & LINES

C6 Corvettes use water-to-oil and air-to-oil designs depending on the model year and trim; this section covers removing both.

1. Starting at the oil filter area, track the lines up to the oil cooler in the radiator shroud or radiator end tank.
2. Place a drain pan under the lines.
3. Cut and remove the zip-tie securing the factory oil lines to the radiator shroud, when applicable.
4. Remove the plastic caps covering the retaining clips from the fittings when applicable.
5. Begin with the bottom oil cooler line, and remove the retaining clip from the hard-line fitting using a small prying tool.

a. Air-to-oil cars should be working in the radiator shroud.
b. Water-to-oil cars should be working behind the radiator.

6. Repeat for the top oil cooler line.
7. Remove the bottom oil cooler line from the oil cooler and allow the oil to drain.
8. Remove the top oil cooler line.
9. Use a 13 mm tool to remove the air-to-oil cooler from the shroud/bracket.
    a. Use a 10 mm tool to remove the bracket for the smaller cooler when applicable.
10. Use a 10 mm tool to remove the factory oil cooler adapter located above the oil filter.

Remove the rear screw first so that the front screw clears the catalytic converter during removal.

11. Use a 13 mm socket on a long extension to remove the screw securing the oil lines to the engine block.
12. Remove the factory oil cooler adapter and line assembly out towards the rear of the vehicle.
13. Determine whether plugging the water-to-oil ports is desirable.

Do not remove the fittings from a factory radiator.

The oil cooler falls into the end tank if the fittings are removed and coolant will leak out.

The factory tubes can be cut and rolled/crimped/stuffed with RTV to create a plug, otherwise a degreaser/cleaner should be flushed through the cooler to stop oil from continually dripping out and dirtying the engine bay.

RELOCATE WIRING & SENSORS

1. Relocate the wiring harness to create more space for the new oil lines:
    a. Remove the screw securing the knock sensor to the block.
    b. Reorient the knock sensor as shown in Figure 3.
    c. Torque the sensor between 11 lb-ft (15 N-m) to 18 lb-ft (25 N-m).
    d. Remove the bracket securing the wiring harness to the block.
    e. Relocate the bracket to the screw hole directly above it, where the ground strap is secured, shown in Figure 3.

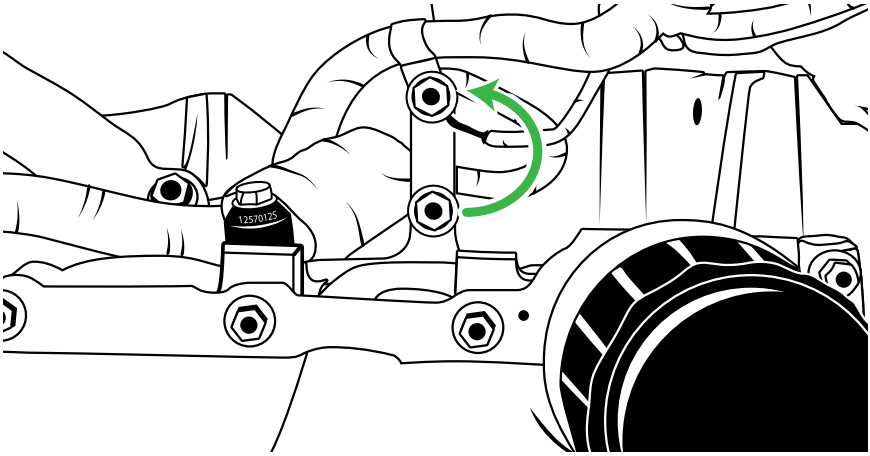


Figure 3 - Relocated Knock Sensor & Bracket

INSTALL THE OIL COOLER ADAPTER

1. Install the included adapter fittings into the oil cooler adapter.
2. Place a drain pan under the oil filter and remove the oil filter.
3. Torque the fittings between 20 lb-ft (27 N-m) to 25 lb-ft (33 N-m).
4. Install the provided NPT plug into the oil cooler adapter sensor port using a 3/16 inch hex key.

Install your choice of sensor when applicable.

DO NOT overtighten.

5. Connect the 90° fittings to the oil cooler adapter according to the part numbers shown in Figure 4.
6. Position the 90° hose end fittings as shown in Figure 4.

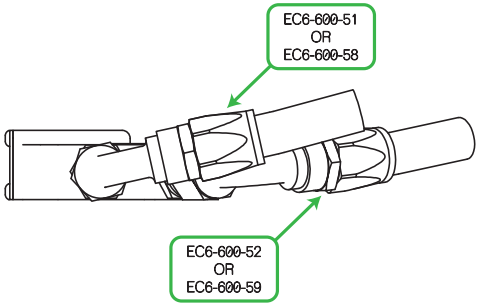


Figure 4 - Hose-End Alignment on EGM-112

7. Tighten the hose ends to the adapter fittings according to the steps below:
    a. Hand tighten the fittings.
    b. Mark the flats as shown in Figure 5.
    c. Tighten 1.25 to 1.75 hex flat rotations.

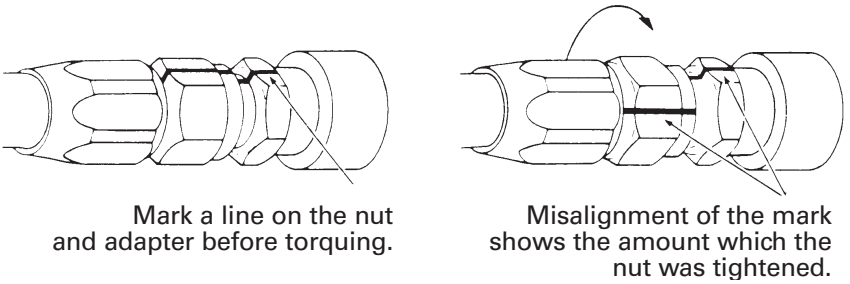


Figure 5 - Marking the Fittings for Correct Tightening

8. Leave the tags on the lines, then route each line between the engine mount, sub-frame and engine block.

Follow the same path as the factory oil lines.

9. Use a 5 mm hex tool and the included socket screws to install the oil cooler adapter and gasket onto the oil pan.

Shorten a 5 mm hex key to clear the factory catalytic converter and ease installation.

10. Torque the screws to 100 lb-in (11 N-m).

INSTALL THE OIL COOLER, BRACKET & LINES

1. Corvettes without factory oil coolers should cut out the included template and align it onto the shroud to create four holes, shown in Figure 5:
    a. Two holes are for M8 mounting hardware.
    b. Two holes are for hose end plumbing.

Corvettes with factory oil coolers only need to enlarge the line holes for the larger hose ends to fit through.

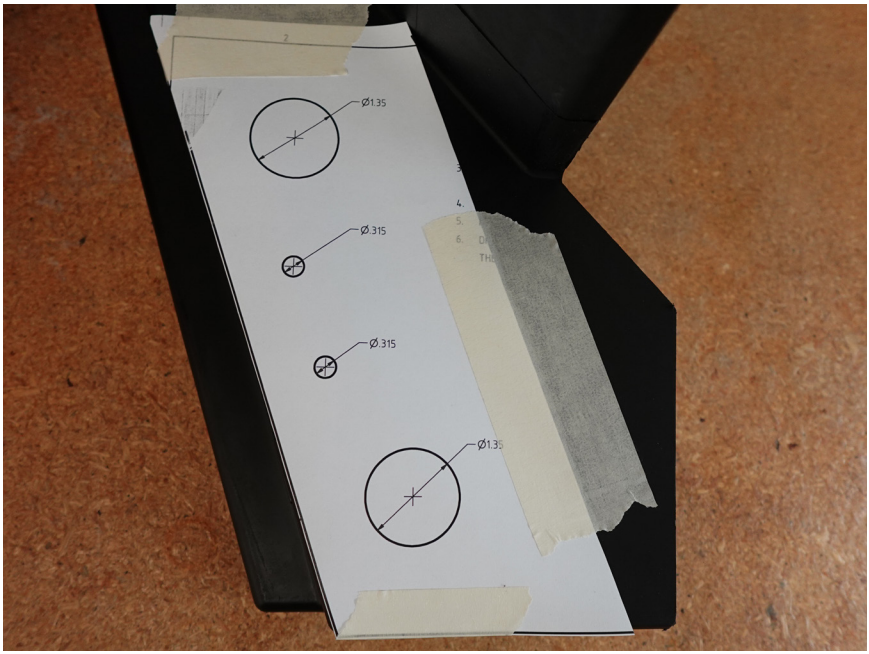


Figure 6 - Template Taped to Radiator Shroud

2. Use a 12mm tool and the included M8 screws to fasten the bracket to the oil cooler.
3. Torque the bracket screws to 14 lb-ft (19 N-m).
4. Use a 10mm and 12mm tool to install the oil cooler and bracket onto the car as shown in Figure 7.

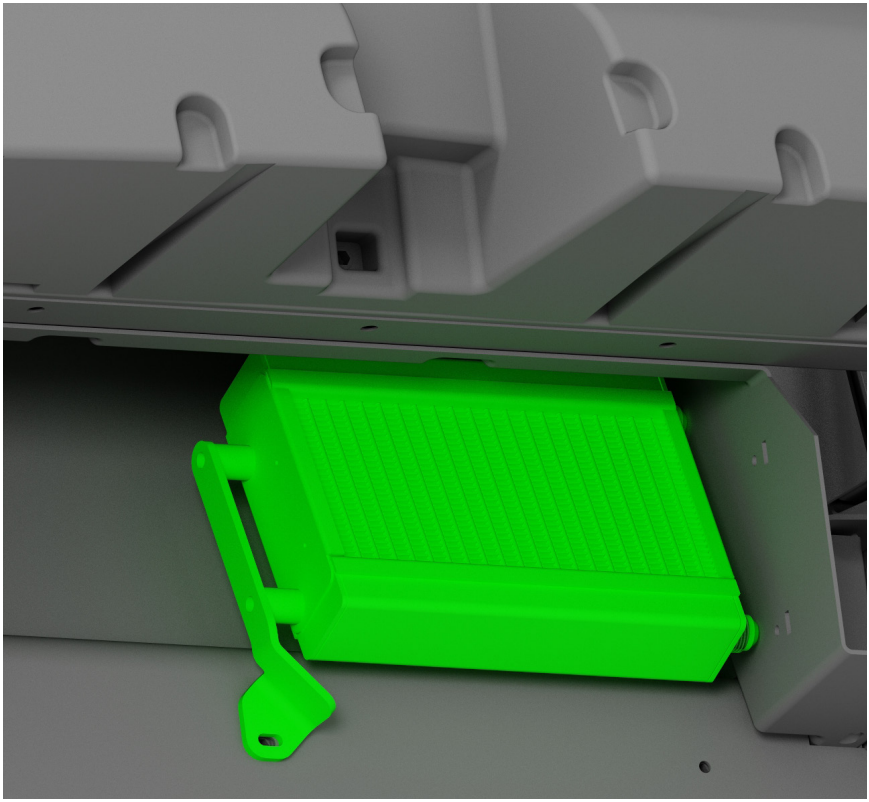


Figure 7 - Oil Cooler & Bracket Installed on Car

5. Tighten the hardware on the chin spoiler and radiator shroud to feel.
6. Connect the lines to the oil cooler:
   a. EC6-600-51 or EC6-600-58 attaches to the top fitting.
   b. EC6-600-52 or EC6-600-59 attaches to the bottom fitting.
7. Torque the lines according to the steps in Figure 5.
8. Reattach the lines to the fan shroud using the included zip tie and make sure the lines don't hang low, shown in Figure 8.

Figure 8 - Lines Reattached to Fan Shroud

PREPARE FOR STARTING

1. Fill a new oil filter with oil and install the oil filter onto the oil pan.

Lubricate the oil filter seal with engine oil prior to installation to prevent damage and to ensure a reliable seal.

WARNING: DO NOT overtighten the oil filter.

2. Verify all hydraulic connections are coupled and properly torqued.
3. Check the engine oil level and add oil if necessary.
4. Prime the system to fill the engine, lines and heat exchanger with fluid before starting:
   a. Remove the fuel injector fuses.

   Consult the vehicle's factory service manual for the fuse locations.

   b. Crank the engine over for five seconds to build oil pressure: Repeat three to five times, allowing the starter to rest for a minute.
   c. Replace the fuel injector fuses removed previously.

Fluid prelubers, such as one made by Melling or Motive, are the preferred method for engine oil priming.

5. Start the vehicle and inspect for leaks.

Confirm oil pressure is stable and reading the correct value.

6. Turn off the vehicle.
7. Inspect the engine oil level.

Add oil when necessary.

REINSTALL THE BUMPER COVER

1. Follow the steps from Remove the Bumper Cover section in reverse to reinstall the bumper cover onto the vehicle.
2. Close the hood and lower the vehicle back onto the ground.

Installation is now complete. Thank you for purchasing an Improved Racing product!