CCS OIL CATCH CAN KIT FOR GM GEN III & IV LS ENGINES

PART NO. CCS-GM-101

MADE IN USA



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

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Rev 250516

PARTS CHECK

- Visit the website product page to confirm vehicle application and confirm all parts have arrived by checking the images (Tap the QR code when viewing this manual on your phone, PC or tablet):

EXTRA HOSE, CLAMPS & FITTINGS?

- This kit includes extra hose to accommodate various PCV hose designs found on LS/Vortec engines.
    - Figure 1, Figure 2 and Figure 3 show some common designs, highlighted orange.

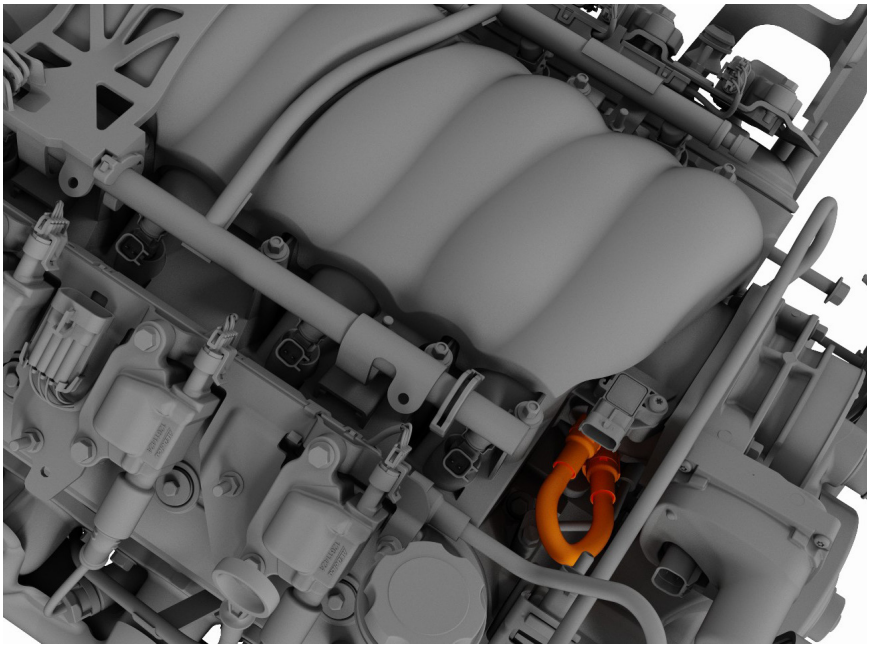


Figure 1 - PCV Hose Design #1

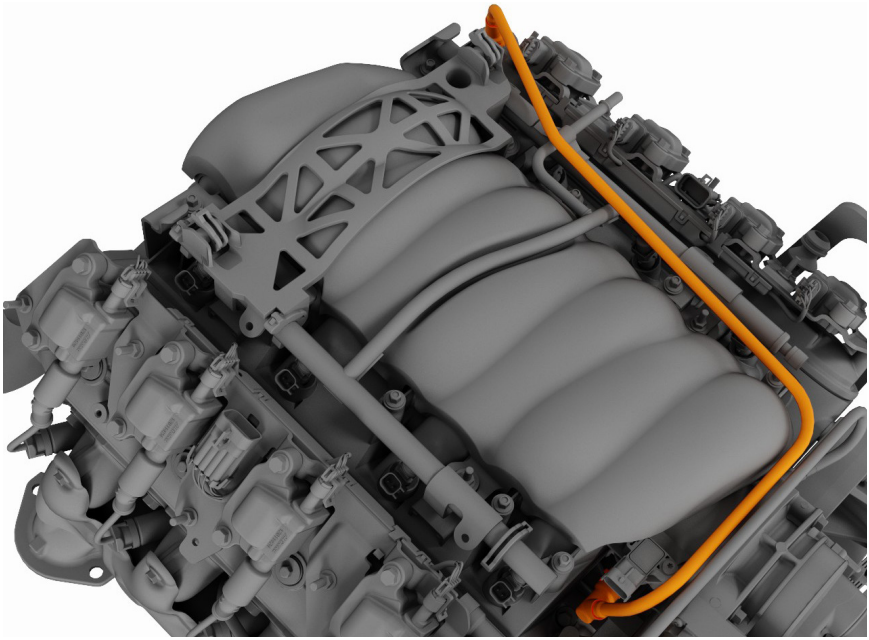


Figure 2 - PCV Hose Design #2

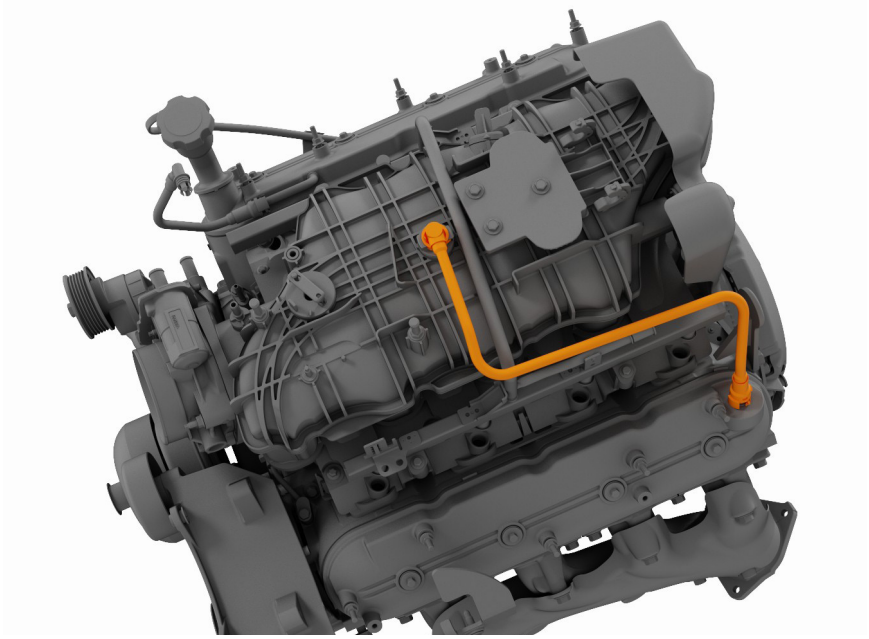


Figure 3 - PCV Hose Design #3

- This kit also includes extra fittings and clamps to accommodate various PCV hose designs found on LS/Vortec engines.
    - Refer to the section in the manual, GM PCV Hoses & Tubes, for instructions on how to use these parts.

INSTALLATION INSTRUCTIONS

BEFORE YOU BEGIN

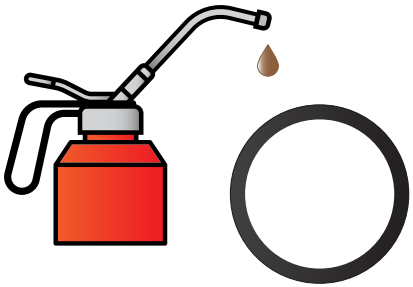
⚠ **WARNING: This product should be installed by a qualified mechanic.**

⚠ **WARNING: Improper installation could result in severe engine damage.**

Lubricate all quick connect fitting barbs before connecting the hoses.

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

Use aluminum tools to avoid damaging the aluminum fittings.



PREPARING THE CAR

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

1. Open the hood to access the engine compartment.
2. Remove the appropriate engine cover:
    a. Passenger engine cover for PCV Hose Design #1.
    b. Both engine covers for PCV Hose Design #2.
    c. Top engine cover for PCV Hose Design #3.
3. Disconnect the battery if there is a ring terminal fastened to the passenger cylinder head, shown in Figure 4.

Use zip-ties to secure battery wires from contacting the terminals.

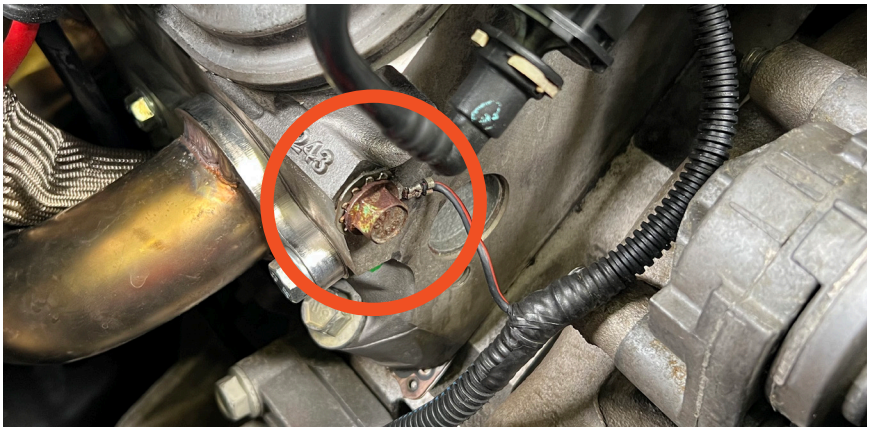


Figure 4 - Ring Terminal on Cylinder Head

4. Remove the screw from the cylinder head and relocate the ring terminal to the hole shown in Figure 5.



Figure 5 - Relocating Ring Terminal on Cylinder Head

5. Remove the original PCV hose:
    a. Consider removing EVAP or EGR systems for more work space.
    b. Consider unplugging the MAF harness for more work space.
    c. Consider removing the vent line from the passenger valve cover and air intake bellows/box for more work space.
    d. Remove the factory PCV hose.
    e. Leave parts off/unplugged until reassembly.
6. Set the hose aside: This part will no longer be used.

INSTALLING THE BRACKET & CAN

1. Review the included CCS product manual.
2. Fasten the 90° catch can bracket onto the engine bracket using a 10mm tool and all three M6 flange screws from the kit.

Secure the lanyard cord with one of the screws.

3. Torque the screws to 100 lb-in (11 N-m).
4. Determine if your install requires the spacer:
   a. The spacer may be required when using plastic engine covers.
   b. The spacer is generally required when EVAP or EGR is present.
   c. Test fit to determine if the spacer is required for your install.
5. Use a 15 mm tool to install the engine bracket, or engine bracket and spacer onto the left cylinder head:
   a. Use the short screw with the engine bracket alone.
   b. Use the long screw with the spacer and engine bracket.

The bracket and spacer interlock with each other, and to the corner of the cylinder head, shown in Figure 6.

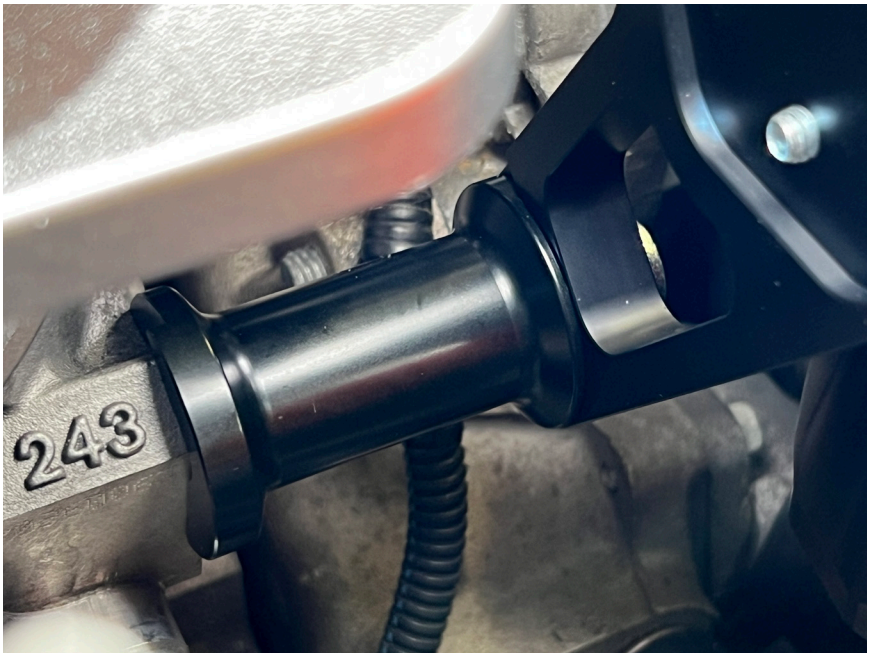


Figure 6 - Bracket & Spacer Interlock

6. Torque the screw to 33 lb-ft (44 N-m).
7. Insert the catch can through the large hole in the mounting bracket.
8. Position the catch can pin into the bracket hole shown in Figure 7.

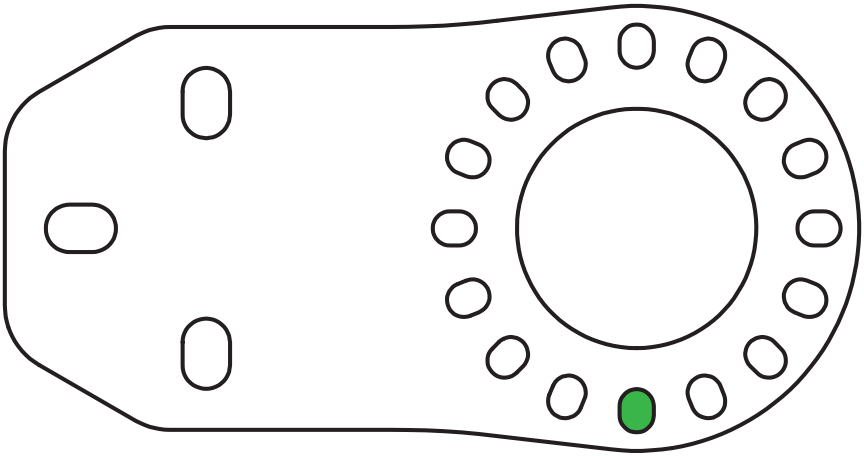


Figure 7 - Correct Bracket Hole for Pin on Top of Catch Can

9. Thread the nut onto the catch can and tighten with a ⅝" (16mm) wrench.

When hand tightening, smear a dab of anti-seize around the threads to guarantee the nut is properly tightened.

10. Thread each adapter fitting into the catch can.
11. Torque the fittings between 13 to 16 lb-ft (17 to 22 N-m).

GM PCV HOSES & TUBES

- The PCV hose design is different between LS/Vortec engines. Figure 1, Figure 2 and Figure 3 show typical factory designs.
  - Figure #1 = Design #1
  - Figure 2 = Design #2
  - Figure 3 = Design #3
- Design #1 experienced three revisions over the years.
  - Engines with hose Design #1A shown in Figure 8 should cut the included hoses to the correct length and install the hoses without adding the extra quick connect fittings.



Figure 8 - Design #1A PCV Hose: Included Hoses Directly Adapt

- Engines with hose Design #1B shown in Figure 9 require splicing the PCV valve into the new hose.



Figure 9 - Design #1B PCV Hose: Splice PCV Valve into Included Lines

- Engines with hose Design #1C shown in Figure 10 require installing the extra quick-connect fittings included in the kit onto the lines.



Figure 10 - Design #1C PCV Hose: Insert & Clamp Extra Fittings into Included Lines

- Design #2 experienced design changes from normal hose barb connections, to quick connect fittings.
  - Normal hose barbs should follow steps for Design #1A
  - Quick connect fittings should follow steps for Design #1C
- Design #3 experienced design changes from normal hose barb connections, to quick connect fittings.
  - Normal hose barbs should follow steps for Design #1A
  - Quick connect fittings should follow steps for Design #1C

CONNECTING THE LINES: DESIGN #1A

1. Connect the line with 45° fitting to the catch can “IN” port.
2. Test fit the line length for your PCV design:
   a. Design #1 connects to the valley cover.
   b. Design #2 and Design #3 connect to the valve cover.
3. Cut the hose to the correct length.
4. Install a worm-drive hose clamp and connect the hose to the valley cover or valve cover fitting.
5. Connect the line with 90° fitting to the catch can “OUT” port.

6. Test fit the line length for your PCV design:
    a. All designs connect to the intake manifold.
    b. Refer to Figure 1, Figure 2 and Figure 3.
7. Cut the hose to the correct length.
8. Install a worm-drive hose clamp and connect the hose to the intake manifold.
9. Gently-tighten all hose clamps using a 7mm tool.

CONNECTING THE LINES: DESIGN #1B

1. Splice the PCV valve into one of the included lines:
    a. Cut the hard pipe, install the hose onto the hard pipe and secure with an included worm-drive clamp.
    b. Alternatively, install **FO-06R**, an adjustable PCV restrictor fitting.

⚠ **WARNING: Confirm the PCV valve flow direction is correct.**

2. Connect the line with 45° fitting to the catch can "IN" port.
3. Test fit the line onto the valley cover.
4. Cut the hose to the correct length.
5. Install a worm-drive hose clamp and connect the hose to the valley cover.
6. Connect the line with 90° fitting to the catch can "OUT" port.
7. Test fit the line onto the intake manifold.
8. Cut the hose to the correct length.
9. Install a worm-drive hose clamp and connect the hose to the intake manifold.
10. Hand-tighten all hose clamps using a 7mm tool.

CONNECTING THE LINES: DESIGN #1C

1. Install a quick-connect fitting onto the valley cover/valve cover.
2. Install a quick connect fitting onto the intake manifold.
    a. Quick connect fittings directly install on Design #1 and Design #2.
    b. Design #3 requires modification:
    - Option 1: Cut the factory hose near the intake manifold to slide the new hose onto and secure with a worm-drive hose clamp.

- Option 2: Keep the factory hose intact and use a quick connect to hose barb union adapter, such as **BQM-06-M10**.

3. Push the hose onto the fittings and determine where to cut each hose.
4. Remove the hoses and fittings from the engine to prepare for crimping.

Confirm the quick connect buttons are usable before crimping.

5. Crimp the fittings to the hose using the Oetiker clamps.

Wire cutters can be used to crimp the Oetiker clamps if crimping pliers are not available.

The included worm-drive hose clamps are also suitable.

6. Connect the line with 45° fitting to the catch can “IN” port.
7. Connect the straight fitting to the valley cover/valve cover.
8. Connect the line with 90° fitting to the catch can “OUT” port.
9. Connect the straight fitting to the intake manifold.

COMPLETING THE INSTALL

1. Confirm all mounting hardware is properly fastened.
2. Confirm all hose are properly connected.
3. Attach the safety lock clip to the lanyard.
4. Reinstall any vent lines, EVAP and EGR removed for installation.
5. Reconnect the battery, if necessary.
6. Replace the engine covers.
7. Start the vehicle and check for signs of a vacuum leak.
   a. Troubleshoot and check connections if necessary.
8. Confirm the safety lock clip is installed in the can before closing the hood.

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