

# **VERUS**

## **ENGINEERING**

## Toyota GR Corolla Brake Cooling Kit

### Installation Manual



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**Approvals:** E. Hazen

#### Document Revisions

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## Brake Cooling Kit for Toyota GR Corolla – Install Manual

- 1.1. **Overview:** Detailed instructions on installing the Verus Engineering Brake Cooling Kit for the Toyota GR Corolla.
- 1.2. **Difficulty:** Moderate
- 1.3. **Time Required:** 2 - 3 Hours
- 1.4. **Tools Needed:**
  - 17mm Socket
  - 19mm Socket
  - Ratchet
  - 17mm Wrench
  - 19mm Wrench
  - Phillips Head Screwdriver
  - Flat Head Screwdriver
  - 30mm Socket (12 point)
  - Impact Gun
  - Punch or Chisel
  - 6" Ratchet Extension
  - Swivel Ratchet Adapter
  - Utility Knife or Side Cuts
  - Rubber Mallet
  - Trim Removal Tool

**1.5. Assembly Components****1.5.1. Backing Plate Kit**

- 1.5.1.1. (1) Left-Hand Backing Plate Assembly
  - 1.5.1.2. (1) Right-Hand Backing Plate Assembly
- 1.5.2. Duct Kit**

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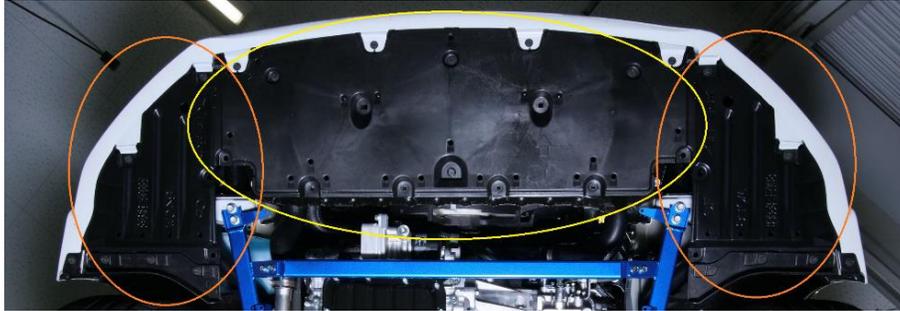
- 1.5.2.1. (1) Left-Hand 3D Printed Inlet Duct
- 1.5.2.2. (1) Right-Hand 3D Printed Inlet Duct
- 1.5.2.3. (2) 2.5" High-Temp Silicone Hose Cut to Length
- 1.5.2.4. (1) Hardware Bag
  - 1.5.2.4.1. (4) 2.5" Hose Clamp
  - 1.5.2.4.2. (8) 21.5" Cable Ties
  - 1.5.2.4.3. (2) 1" Section of Foam Tape
    - (1) Left Backing Plate Assembly
    - (1) Right Backing Plate Assembly



## 2. Toyota GR Corolla Brake Cooling Kit Installation

- 2.1. We are not responsible for damage to you or your vehicle by following this manual and installing Verus Engineering products.
- 2.2. Begin with disconnecting the battery, negative first, if this makes you feel more comfortable working on the car. It is always a good idea to disconnect the battery anytime when working on the car.
- 2.3. Jack the car up, and support it safely. You may also use a lift if you have access to one.
- 2.4. **Note: You may skip to 2.7 if you would prefer to install the backing plate kit first. Either route will get you to the same destination.** Remove the front bumper splash guard and pull back the wheel liners for access to the inlet duct mounting area. Utilize a flathead screwdriver or a trim removal tool to do so. Completely remove the center section (circled in yellow) and leave the two sides sections (circled in orange) hanging loosely.

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- 2.5. At this point you should be looking at the back side of the bumper grill. You will need to pull the radiator support tray down slightly to find the screw we need to remove for installing the inlet duct. This screw can be seen below. **Note: This is the right-hand side.**



- 2.5.1. Remove this screw with a Phillips screwdriver and insert the duct in front of the black OEM air guide. **Note: There is a small horizontal cutout on the bottom side of the duct so that it can fit around grille fin.**
- 2.5.2. Reinstall the OEM screw to secure the duct in place. Below is a photo of the bumper and duct off-car so that you can visualize it better. This is the right-hand side.

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2.6. After the inlet ducts are installed, push the radiator support tray back in place to figure out where you need to trim it.



2.6.1. After you figure out where the tray is touching the ducts, use a utility knife, side cuts, dremel, or saw to trim the tray. Below is a photo of how much we removed.



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2.7. Remove the front wheels.



2.8. Remove the brake caliper by unbolting the 17mm caliper bolts.



**2.8.1** Secure the caliper away from the hub assembly using caliper hangers, as shown below.

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2.9. Remove the rotor. Below is a photo of the rotor removed.



2.10. Now we need to remove the axle nut. Utilize a punch or a chisel and a hammer to un-stake the axle nut (the part that is crushed into the keyway, we need to push this up and out of the slot).

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**2.10.1.** After the keyway is opened up, remove the axle nut using the 30mm socket and impact gun.



**2.11.** After the axle nut is removed, we now need to remove the hub assembly. Do so by using a combination of the 19mm wrench and 19mm socket with a 6" extension and swivel adapter.

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**2.11.1.** Our ratchet setup can be seen below. This setup works best for the topmost bolt, whereas the wrench worked better for the other two locations.



**2.11.2.** You might find that you need to free up the axle to gain more clearance for removing these bolts. To do so, thread the old axle nut back on until it is flush with the end of the axle. You may now tap it with your rubber mallet to break it loose. **Note: The older the car, the harder you will need to tap.**



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**2.11.3.** Once all three hub bolts are removed, you may now slide off the hub and the OEM backing plate. Below is photo with both of these removed. **Note: Leave the hub bolts in place. We will need these bolts for locating the backing plate.**



**2.12.** Now we need to install the backing plate kit. Start by using the hub mounting bolts for locating the backing plate. **Note: The carbon duct should face inward and should be towards the rear of the car as shown below.**



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- 2.12.1.** While the backing plate is sitting on the hub mounting bolts, push it inward so that it is flush with the knuckle assembly and figure out where the carbon duct is contacting the speed sensor wire.



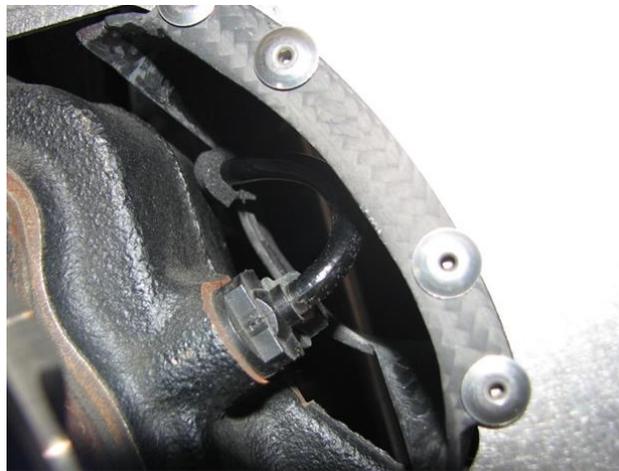
- 2.12.2.** Once the contact point has been figured out, remove the backing plate and install the provided foam tape that shown below. This will ensure the speed sensor wire does not get abraded over time.



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**2.12.3.** Reinstall the backing plate to ensure the foam is in the correct location. Below is a photo showing the foam tape protecting the wire as it is touching the carbon duct. The goal here is to have no movement and a snug fit to ensure the wire does not get abraded over time.



**2.12.4.** After you ensure the speed sensor wire is good and protected, you may now reinstall the hub assembly in reverse order from earlier. Start all three bolts by hand and then torque to factory spec.

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**2.12.5.** Install the axle nut and torque to factory spec. We highly advise replacing the axle nut after it has been removed, but depending on how new the car is, you might be able to get away with reusing the old axle nut. We opted for new axle nuts.

**2.12.6.** Reinstall rotor and caliper. Torque to factory specs.

**2.13.** After the backing plates have been installed, it is now time to route the hoses. Starting on the passenger side, slide one hose clamp over the hose, and install the hose onto the inlet duct as shown below.

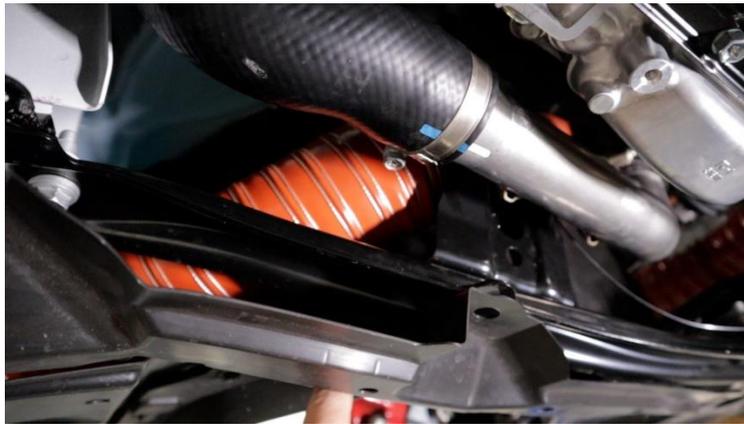


**2.13.1.** Next, route the hose under the washer fluid reservoir as shown below.

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**2.13.2.** Continue routing the hose above the radiator support bracket and next to the charge cooler piping.



**2.13.3.** Route the hose above the crank pulley and CV axle.

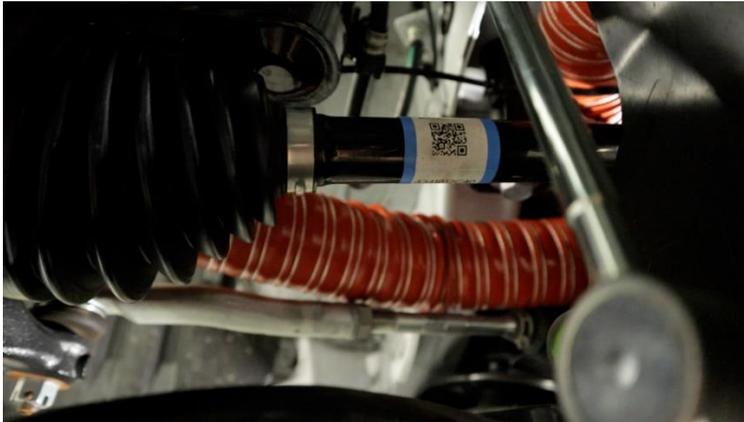


**2.13.4.** Route the hose around the mounting point for the sub-frame.

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**2.13.5.** Finally route the hose above and parallel to the tie rod.

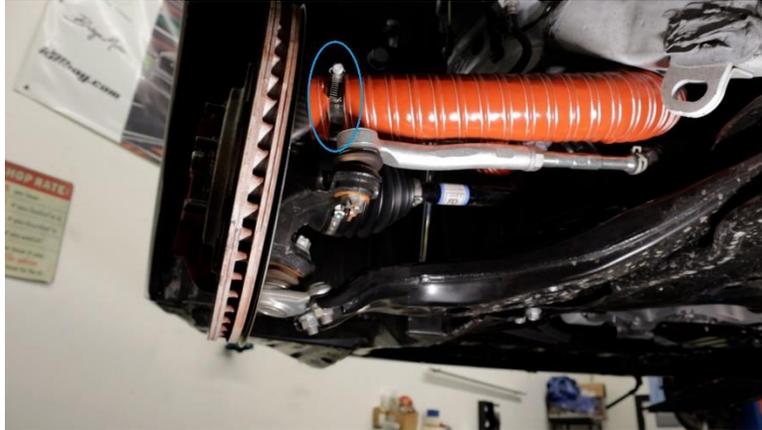


**2.13.6.** Slip another hose clamp onto to hose and install the hose onto the carbon duct as shown below.



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**2.13.7.** Tighten both hose clamps as shown below in blue with a flathead screwdriver. Ensure the hose is directly in-between the clamp and the carbon duct. Tug the hose ever so slightly to ensure it will not just fall off.



**2.13.8.** Secure the hose to a few hard mounting points using the supplied zip ties. **You do not want the hoses pulling or putting any force on the carbon duct whatsoever.** Ensure the hose is not contacting any of the moving driveline components. **Note: We advise turning the steering wheel to full lock in both directions to verify the hose is not binding or pulling the carbon duct in any direction or contacting anything that will be rotating.**

**2.14.** Now we need to route the driver side hose. Start again by sliding one hose clamp over the hose, and install the hose onto the 3D printed duct as shown below.



**2.14.1.** Route the hose in a similar fashion as what you did on the passenger side. There is more room to play with on the driver side.

**2.14.2.** Repeat step **2.13.8** for the driver side.

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- 2.15. After both hoses are routed and secured, you may now go about reinstalling the underbody panels along with your wheels and tires.
- 2.16. Congratulations on installing your new brake cooling kit! Please email us at [sales@verus-engineering.com](mailto:sales@verus-engineering.com) with any concerns, comments, or feedback.

