

VERUS

ENGINEERING

GR/GV WRX/STI Brake Cooling Kit

Installation Manual



Author: E. Hazen
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Approvals: P. Lucas

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1.1. **Overview:** Detailed instructions on installing the brake cooling kits for the GR/GV WRX and STI.

1.2. **Difficulty:** Beginner to Novice

1.3. **Time Required:** 2-4 hours

1.4. **Tools Needed:**

- Drill
- Drill Bits
- 8mm socket
- 10mm socket
- Ratchet
- Screw drivers
- Plastic rivet pulling tool
- 9/16 wrench
- 12mm socket
- 14mm socket
- 17mm socket
- 2.5mm allen wrench
- 4mm hex socket
- 5mm hex socket
- Side cuts
- Jack and jack stands



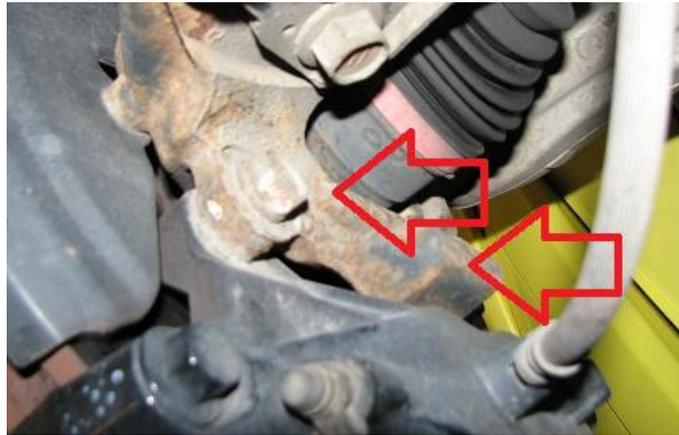
1.5. Assembly Components

- 1.5.1. (2) Backing Plate with Carbon Duct
- 1.5.2. (2) Fog Light Duct
- 1.5.3. (2) 3" Neoprene Brake Duct Hose, Cut to Length
- 1.5.4. (2) 2.5" Silicone High-Temp Brake Duct Hose, Cut to Length
- 1.5.5. (2) Fender Pancake Duct
- 1.5.6. (2) Fog Light Duct Bracket
- 1.5.7. (4) 2.5" Stainless Worm Drive Clamp
- 1.5.8. (4) 3.0" Stainless Worm Drive Clamp
- 1.5.9. (1) Hardware Kit
 - 1.5.9.1. (6) M8 x 1.25 Flanged Button Head Cap Screw (FBHCS) x 20mm Long, Stainless
 - 1.5.9.2. (6) M8 x 6mm Long Spacer, Anodized Aluminum
 - 1.5.9.3. (2) M6 x 1.0 BHCS x 40mm Long, Stainless
 - 1.5.9.4. (1) M6 x 1.0 BHCS x 12mm Long, Stainless
 - 1.5.9.5. (4) M6 x 1.0 Hex Head Cap Screw (HHCS) x 16mm Long, Stainless
 - 1.5.9.6. (11) M6 x 18mm OD Washer, Stainless
 - 1.5.9.7. (4) M6 x 1.0 Nyloc Nut, Stainless
 - 1.5.9.8. (2) M6 x 10mm Long Spacer, Nylon
 - 1.5.9.9. (2) M6 x 15mm Long Spacer, Nylon
 - 1.5.9.10. (1) M6 x 1.0 Threaded Spacer, 25mm Long, Aluminum
 - 1.5.9.11. (8) Zip Tie, 21.5" Length
 - 1.5.9.12. (2) 1/8" Thick Foam Strip



2. Install

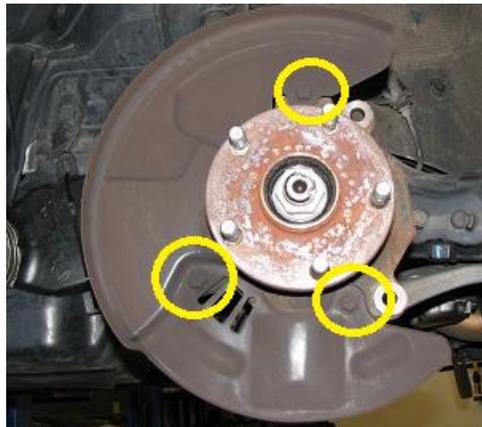
- 2.1. We are not responsible for damage to you or your vehicle by following this manual and installing Verus Engineering products.
- 2.2. Begin with disconnecting the battery, negative first, if this makes you feel more comfortable working on the car. It is always a good idea to disconnect the battery anytime when working on the car.
- 2.3. Break the lug nuts loose on the front two wheels.
- 2.4. Jack the front of the car up enough to fully remove front two wheels and comfortably work on the knuckle area of the car. Place the car on jack stands at appropriate locations, the pinch weld works as does the frame rail behind the front wheel well.
- 2.5. Remove the front two wheels.
- 2.6. Remove the caliper first by unbolting the two 17mm bolts (red arrows). Place the caliper on the LCA.



- 2.7. Remove the rotor. Dependent on how long the car has sat, if it sees snow/salt, the rotor may need to be forcibly removed. You can do this with a rubber mallet or the bolt holes on the rotor surface. Below is a photo of the rotor removed.



2.8. Remove the OEM backing plate by unbolting the (3) 12mm bolts circled in yellow below.



- 2.9. Loosely install the new Verus Engineering backing plate on the knuckle. Place the hard anodized spacers behind the backing plate. The wheel speed sensor should remain installed and will be placed between the knuckle and the carbon duct.



- 2.10. With the backing plate and the carbon duct installed, you may note that the speed sensor hits on the carbon duct slightly. Mark this location and remove the backing plate.



- 2.11. Using your mark as a guideline and one of the two strips of foam, wrap the wire to protect it against damage.



- 2.12. Re-install the backing plate with the supplied hardware and position the wire so that it is safely and nicely squeezed between the knuckle and the duct. The goal here is to have no movement and a snug fit to ensure the wire does not get abraded over time.



- 2.13. Fully tighten the (3) 5mm hex flanged BHCS to 10 ft-lbs.

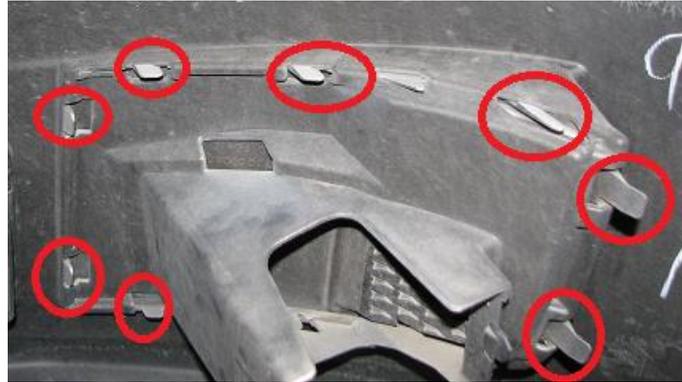


- 2.14. Re-install your rotor and tighten it down fully with (2) of the lug nuts. Spin the rotor and ensure no contact between the rotor and the backing plate takes place.

- 2.15. Repeat this test at full lock both ways. If by chance the backing plate does hit the rotor, make note of where on the backing plate and gently bend the backing plate away from the rotor. The backing plate is stainless steel so bending it will not be detrimental to its life. In some severe cases it may be necessary to cut the backing plate, but most installs require slight tweaking and nothing else.
- 2.16. Reinstall the caliper. Torque caliper bolts to 59 ft-lbs.
- 2.17. **Note: For the full install, it is necessary to have an OEM style fog light bezel! This is used for the inlet. Subaru fog light bezels can be purchased from the dealer or various other units are available.**
- 2.18. We will now work on the inlet ducts and fender ducts. For our install, we removed the front bumper but with a small drill, we believe it is not necessary to fully remove the bumper to make all modifications.
- 2.19. Working on car, we need to loosen the fender liner as shown below to gain access. The blue circled locations are plastic rivet nuts and the red circled location is a 10mm coarse bolt.



- 2.20. We need to remove the OE fog light location ducts. If you have fog lights, you'll want to remove the fog lights and the duct. If you do not have fog lights, remove the cover. This can be done by bending the plastic tabs and pushing forward.



2.21. OE cover is removed in the below photo.



2.22. On the outside tab, we will drill a hole for the bracket to bolt to. We use calipers or a tape measure to mark this point. 14mm, or 0.55", should be marked as shown below.



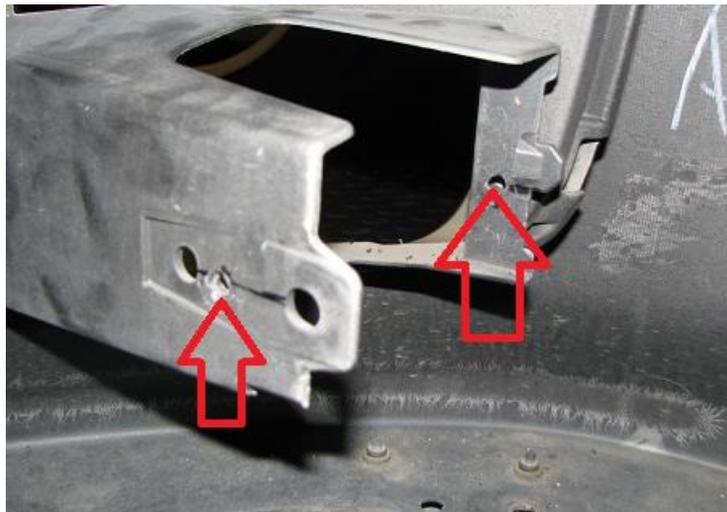
2.23. This location is shown below marked clearly.



- 2.24. On the inside tab, we will need to drill a hole as well. Below is the fore and aft measurement we need to mark out. 41.5" from the rear of the tab, which is also 1.63".



- 2.25. Utilizing a small drill bit initially, and then a 1/4" drill bit, we drill these (2) holes in the bumper. These are marked with red arrows.



- 2.26. We can now install the fog light brackets as shown below. Utilize the **M6 x 1.0 Hex Head Bolts**, fender washers, and nylocs. *Note, below photo shows button head cap screws, but hex head bolts should be used.



- 2.27. Install the fog light duct into the bracket as shown below.



- 2.28. Spin the fog light duct so the outlet faces down and install the OE fog light cover as shown below.



- 2.29. With all the parts installed, we can now fully tighten the bracket bolts/nuts. Utilize wrenches and tighten to roughly 6 ft-lbs. The fog light duct should look similar to below from the front.



- 2.30. On the driver's side, we need to space the washer fluid reservoir away from the chassis slightly to gain clearance for the 3" brake duct hose.
- 2.31. Remove the (2) M6 bolts and (1) M6 nut from the washer fluid reservoir.
- 2.32. Install the hex M6 spacer as shown below. This should be the upper bolt location. Utilize the 12mm M6 BHCS and fender washer to bolt the washer fluid to this.



- 2.33. On the lower (2) bolt locations, we grab the nylon spacers and lengthened M6 hardware and install them in these two locations.



- 2.34. All (3) locations are spaced at this point and we can tighten these locations.
- 2.35. We can now grab the 3" brake duct hose as well as the 3" stainless hose clamps to install the brake duct hoses. The driver's side is more difficult due to the washer fluid reservoir.
- 2.36. We route the hose downward and towards the chassis to clear the fender liner and the washer fluid reservoir. Photos below help guide you on this.



- 2.37. We can now grab the fender pancake duct and install this to help us drill holes in the motor underbody cover to zip tie the duct to this.
- 2.38. When you figure out the location of where the pancake duct will go, we will cut the fender liner where necessary to allow the duct to slip through. This is shown below. We use a razor blade to cut the fender liner.



- 2.39. With the fender liner cut, we can place the fender duct where we want it to be installed.
Drill (2) holes in the fender liner to zip the duct to the plastic.



- 2.40. Zip tie the fender pancake duct to the underbody panel as shown below.



- 2.41. Grabbing the 2.5" pre-cut high-temp brake duct hose, we can install this to the fender pancake duct.



- 2.42. Utilizing zip ties, ensure the high temp hose is kept away from anything moving (axle, wheel, etc).



- 2.43. You will want to turn the wheel from lock to lock again, ensuring the brake duct hose does not pull on the backing plate and do not hit anything moving while turning. Keep in mind that the suspension in full droop is a bit different then the car on the ground.
- 2.44. At this point, the install for the brake cooling kit is concluded. Reinstall all OEM plastic pieces, rotors, calipers, etc.
- 2.45. Enjoy your brake cooling kit! Please contact Verus Engineering with any concerns, comments, or feedback. We continually strive to bring the highest quality components and appreciate the feedback. E-mails can be directed to sales@verus-engineering.com.

