

PN: GDTCYL4COOL-SS

Cylinder 4 Cooling Kit with Stainless Steel T



Cylinder 4 Cooling Mod Installation Instructions

Dear Customer,

Thank you.

Thank you for purchasing the original Cylinder 4 Combustion Chamber Cooling Mod. Your participation has been crucial in getting this product in the hands of others and advancing the R&D of other exciting projects. I appreciate your trust and patronage. As a customer and supporter, I want to share with you a few of the other parts that I have been developing.

Here are just a couple of the exciting components I'm working on:

1. Dual Plenum, dual throttle body intake manifold. The most advanced intake to ever grace an EJ should offer more top end power than the competitors while sacrificing none of the spool. This project is the furthest out as it is also the most expensive and time intensive.
 2. Oil system components designed to combat oil pressure issues that EJ's are known for, while also being adaptable to many other makes. A modular external oil pressure regulator, external low restriction filter and oil cooler are all being designed to be installed separately or as a complete kit. You can even add filters in parallel for maximum filtration and minimum pressure drop.
 3. Programmable variable power steering assist system. Get a better feel of the track by reducing power steering assistance at speed while maintaining assistance for slow speed turning and parking. Applicable to any hydraulic assisted Subaru and other potential makes.
 4. EJ main bearing and block girdle to prevent ovaling of the main bearings and keep them square during operation. This prevents excessive oil pressure drop with engine usage.
- Various fuel system components are also in development. I already offer 2mm longer rods, custom pistons, custom cams, single and twin scroll rotated turbo kits for GC/GD/GR/VA, custom intercooler piping and a Torque Box for front mount intercoolers. If you are interested in any of those, please email me with any questions.

Thank you again.

While installing your cooling mod, you will be required to lift the car and drain and refill the cooling system to facilitate installing the custom anodized 6061 fitting. Installation should take approximately 2 hours to complete. I hope you enjoy installing your cooling mod.

All the best,
Dominic Acia

Tools Required:

- 8mm, 10mm and 12mm sockets and ratchet
- 12mm hex key socket or wrench
- Standard (flat head) screwdriver
- Pliers
- Razor blade or box knife
- Automotive jack and jack stands or automotive lift
- Drain-pan or other fluid catch receptacle
- Thread-sealant or gasket maker
- 1" Wrench, socket or crow's foot.

WARNINGS

- DO NOT PERFORM INSTALLATION ON A HOT ENGINE AS BURNS MAY RESULT
- USE CAUTION WHEN LIFTING A VEHICLE
- ALWAYS SUPPORT A LIFTED VEHICLE WITH JACK STANDS

Part 1: Preparing the Vehicle

1. Raise the car into the air high enough to grant access to the bottom of the engine. A lift is recommended for ease of installation, but a high lift jack is suitable. ⚠ Be sure to use properly designed jacking points to lift the vehicle and jack stands to stabilize the car once lifted. ⚠
2. Remove the engine undertray. This will require the removal of up to five 12mm head bolts and 5-8 plastic push rivets, depending on vehicle model. Once all fasteners are removed, the tray should fall out easily. If it is difficult to remove, there are remaining fasteners. Frequently missed fasteners are in the wheel well behind the front tire.

Part 2: Draining the Cooling System

DISCLAIMER: There are many ways to drain the cooling system. This is just one of them.

1. Locate the clamp on the lower radiator hose where it attaches to the water pump.
2. Position the drain-pan or fluid catch device under the engine
3. Using appropriate socket or pliers, loosen the clamp and slide it down the hose.



Figure 1:
Lower Radiator Hose

4. Pull to remove the lower radiator hose from the water pump and drain the cooling system. If you are planning on running new coolant please be respectful of the environment and dispose of used coolant properly. Otherwise, once the coolant has stopped draining, move the retained coolant aside. *Remove the radiator cap to speed the flow of coolant.
5. Re-install the lower radiator hose and tighten the hose clamp once coolant has stopped draining from the engine.

Part 3: Installing Cooling Fitting

1. Using a 12mm hex key (“allen wrench”) socket, remove the plug shown in Figure 2 from the rear of the LH cylinder head (the side opposite the turbocharger). This can be done from above or below the car. If you have a TMIC, you can choose to do it from below.
2. Thoroughly clean and dry the threads in the cylinder head and the fitting. A wire brush and a quick drying solvent such as acetone can be beneficial at this time. **THIS IS IMPORTANT TO PREVENT LEAKS.**
3. Apply sealant to the threads of the Coolant Mod fitting. Thread sealing compounds such as Permatex 54540, or threadlocker similar to Permatex 25210 are preferred. Alternatively, Permatex offers a 1 minute gasket maker in both grey (#25238) and black (#25229) that will also work for this application.
4. Thread the fitting into head and tighten with a 1” crow’s foot, socket or wrench. The fitting does not need much torque; remember the threads in the head are aluminum. In addition to providing a leak free seal, the sealant will also act as Loctite and reduce the chance of the fitting ever backing out. **IMPORTANT: Sealant must dry to ensure a leak free seal.** If you cannot allow 12-24 hours for regular Permatex Ultra Grey sealant to cure, I recommend using the 1 minute gasket maker.

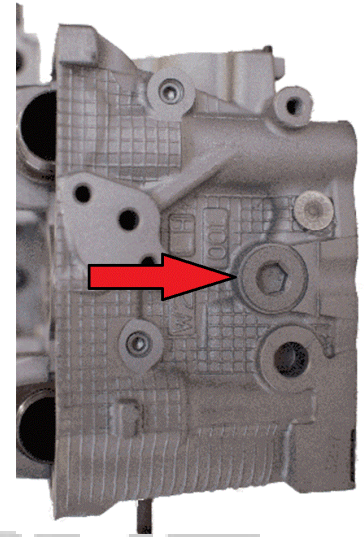


Figure 2: Cylinder Head

Part 4: Cooling Hose Preparation and Installation

1. Locate the return hose from the heater core. This is the 5/8” hose that attaches to the black metal pipe extending from the back of the engine (outboard most pipe). This pipe goes directly to the suction of the water pump. This is the hose you will use to connect the new cooling mod hose.

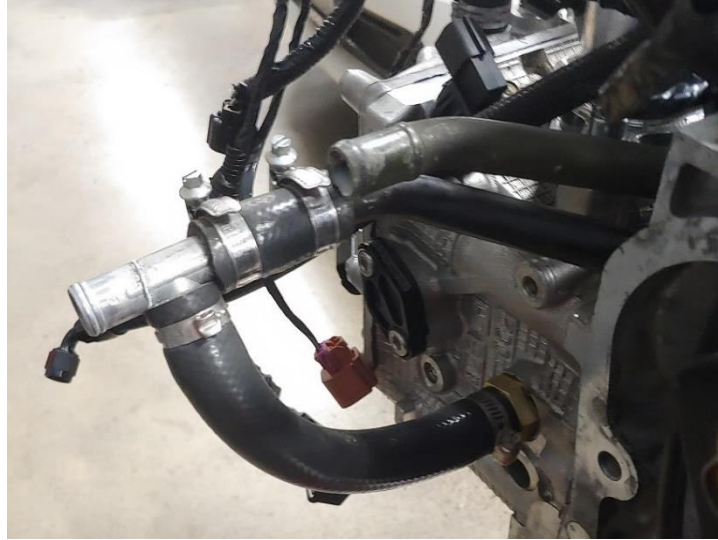
If you are installing in a 2007 or older, skip step 3.

If you are installing in a 2008 or newer, go to step 3.

2. **2007 and older:**
 - a. Cut the provided hose-using a razor blade, hose cutter, shears or sharp scissors-to allow the hose after the bend to reach the heater core hose identified in the previous step.
 - b. Remove the clamp for the heater control hose and remove the hose from the black, steel, heater return pipe above the cylinder head.

- c. Using the remaining hose you just cut, slide two clamps onto the hose and connect one end to the black steel pipe and the other end to one end of the provided T. (See Figure 3)
- d. Slide a clamp on the factory heater return hose and connect it the other end of the cooling mod T.
- e. Position and tighten all hose clamps.

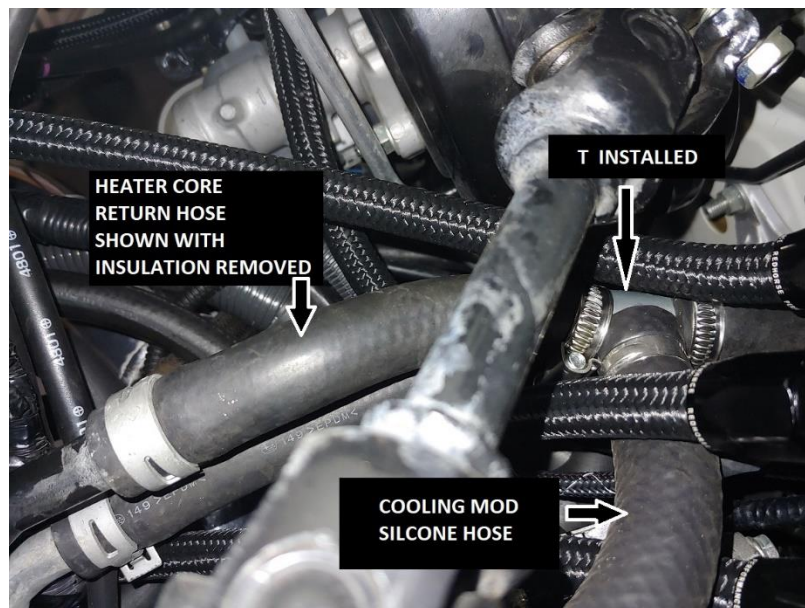
Figure 3:
Pre- 2007 Cooling Mod
Installation Location



3. 2008 or newer:

- a. Mock up the location of the T so that the Cooling Mod hose is as straight as possible and cut the heater hose in the appropriate location. The provided T will fit in the heater return hose as it travels near parallel with the firewall just inboard of the brake master cylinder. This area can be identified by the thick insulated cover over this length of heater hose. You will need to slide the insulation down the hose, or remove part of it, to allow for installation of the hose clamps.
- b. Slide hose clamps onto both sides of the heater hose and install T between them.
- c. Position and tighten hose clamps, paying attention to the locations of the humps in the t.

Figure 4:
2008+ Cooling Mod
Installation Location



Part 5: Finalizing Installation

1. Look over the installation and ensure the hoses are not going to interfere with any components like steering linkage. Figure 4 shows the close proximity of the steering shaft to the cooling mod.
2. Adjust hoses or use zip ties as needed to eliminate any interference.
3. Re-install the lower engine tray removed in Step 2.
4. Remove jack stands and lower car.
5. If sufficient time has passed for the sealant to cure, fill and burp the cooling system. It is recommended that you pinch off the cooling mod and rev the engine a couple times during the burping process to facilitate removal of air pockets from the heater core.

Congratulations! You've just installed the world's first Subaru EJ Cylinder 4 Cooling System. I hope you enjoy the added security and confidence in knowing your engine is better protected. In addition to more balanced coolant temperatures, you should also observe a 5 to 10 degree reduction in average and operating cooling temperatures. As a note, no tuning is required after installation, but tuning can be performed if desired to attain higher engine performance. To reduce the effect of the cooling mod on your heater performance, it is recommended to raise idle speed 100-200rpm.

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THANK YOU FOR YOU PATRONAGE AND SUPPORT!

For Technical Support, please contact:

GetaDomTune
1423 N Molter Rd #344
Liberty Lake, WA 99019

Phone: (208) 380-8718

Email: dominic@getadomtune.com
