

## ***S2000 Intake Heat Shield (LHT Performance)***

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### Why?

An intake heat shield will help keep your intake air box (factory or aftermarket) cooler. What will this do for you? Improve power. A cooler intake charge helps to produce more power, as you have probably seen on cool days or when your car is first warming up. Removing sources of heat to the intake, such as the engine, will lower its temperature. How much more power will it make? Mugen has stated that as little as 5 degrees (F) will result in a 1% power gain. That means that a 25 degree reduction would result in a 5% power gain.

How hot does the manifold get? LHT's testing on an S2000 equipped with the Mugen intake shows that the outside of the head by the intake to be 179°F... which will also probably rise even more, given that the coolant can reach temps of up to 200° and higher. External surfaces on the head are usually as hot as the coolant. How does the heatshield work? Simple: by providing a thermal barrier between the head (which radiates right into the airbox) and the airbox itself. Based on the testing LHT has done, the heatshield provides a reduction in temperature (between the motor and airbox) of 64°F- pretty impressive!!!

Where can you get one? Nick (Pappy) on <http://www.s2ki.com> has been organizing the custom building of these. Go there and PM him for more info. You will find several threads on the design, installation, and sales of these heatshields.

### What You Need

- 10mm socket, ratchet and 3" extension
- U-joint for your ratchet (not needed, but helps)
- Torque wrench
- Pliers or needle-nose for hose clamp

### Installation

Work on the vehicle cold or let it sit for at least an hour to avoid burns (that motor gets HOT!). Pop the hood, and if you have the stock airbox, remove the lid. In order to access the bolts you need, use the 10mm socket to remove the bolt holding the wiring harness on the VTEC Solenoid assembly:



You will probably want to leave it loose for now (to provide you more room), but you will eventually want to remove the following bolt and relocate it here (see the green arrow):



Be sure to replace the bolt you removed (where the harness was) and retorque it to 8.7 ft-lbs. Proper torque is important, this is part of the VTEC solenoid assembly; if the bolt backs out, you could lose oil or oil pressure.

The red arrows in the picture above point to the two bolts you will need to remove and replace for the shield. Remove the bolts (with the 10mm driver) and set them aside. You might want to save these, if you ever turn your car back to stock.

Before actually installing the shield, you need to test-fit it. Assemble the new bolt through the new washer, then through the bottom hole on the heatshield bracket, then through the nylon spacer:



Being careful not to lose any parts, thread the bolt through the bottom hole on the VTEC Solenoid and start to thread it. While doing this, look at how the shield lines up. It should be parallel with the face of the head (and the airbox). If it just out further on one side than the other, or doesn't want to go into place right, look at the coolant line between it and the motor:



I had to move the hose clamp shown above so that it pointed up instead of out:



You might need to do the same. Once installed, on mine, the shield does touch the coolant line...



...but it shouldn't be a problem. Once the bottom bolt has started and you are sure the coolant clamp isn't in the way, assemble the top bolt through the washer, bracket, and spacer like you did the first. Thread that bolt through as well, and you should end up with something like this:



Once you get both bolts in and things look right, torque the bolts down to 10 ft-lbs. Be sure to torque them slowly, as the nylon will compress some as you tighten the bolt. Check for any interference between the shield and the pulleys/belt- you want at least 1/16" clearance between the shield and them. If you don't have it, be sure the bolts are properly torqued. If that doesn't do it, loosen them and try to realign the shield (there is some play). Should that fail, try bending the bracket into place with it torqued down properly. Once you finish that, make sure that connector harness is tightened down, the other two bolts replaced, and replace the top of your airbox when you took it off. Congratulations, you're now done!



### Final Notes

Be sure to check the torque on the VTEC solenoid bolts after a few days or a week of driving. Nylon tends to swell/shrink with heat and moisture, and might compress over time. This could cause the solenoid/shield bolts to loosen. Most of this will occur with the first few driving cycles. As mentioned, this solenoid controls the VTEC system and has head oil pressure in it- if you loosen those bolts while running, you will likely spring a leak if not worse. Be sure those bolts do not loosen. The stock torque spec is 8.7 ft-lbs, overtorqueing on initial install will help insure that they will not loosen past the spec. When you check torque, check for 8.7, and when you tighten, tighten to 10.

In order to not have to worry about this, I replaced the nylon spacers included in the kit with some steel ones:



The steel ones will not compress on installation or over time. I also added 6mm lock washers to help keep the bolts from backing out with vibration. Loctite would also work.

After talking with Nick, the original concern was keeping heat from the mounting bracket and the rivets that hold the carbon fiber shield to it. Using steel means that the heat from the head is communicated right to the bracket, which might be as much as 200°F. The carbon fiber should be able to handle it, but it does mean reduced effectiveness of the shield. With the other cooling modifications that I have, I wasn't worried very much about this.

Enjoy your new mod!