



GFB Respons T9003 Installation Instructions

Applicable Vehicles:

- » WRX MY01-07
- » STi MY02-on
- » Forester XT MY05-08

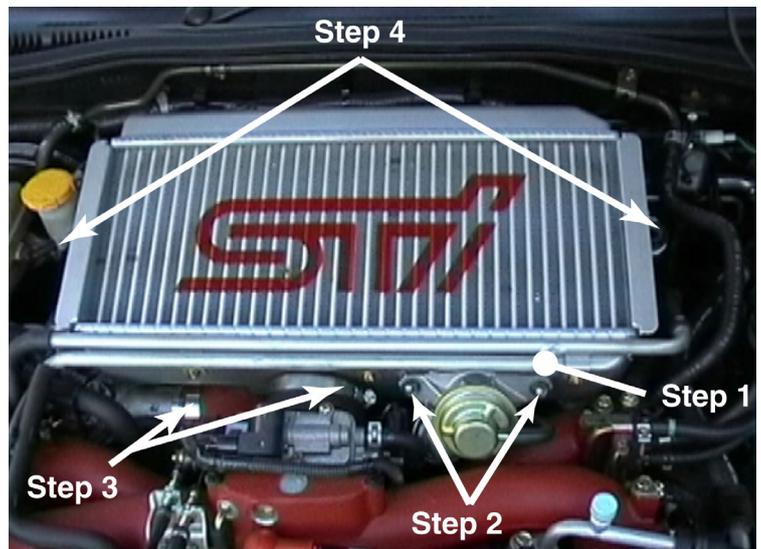
Included In T9003 Kit:

- » Respons BOV
- » Orange silicone 30 x 2 o-ring (installed on BOV flange)
- » 5mm hex key
- » 2x M8 x 20 countersunk socket mounting bolts

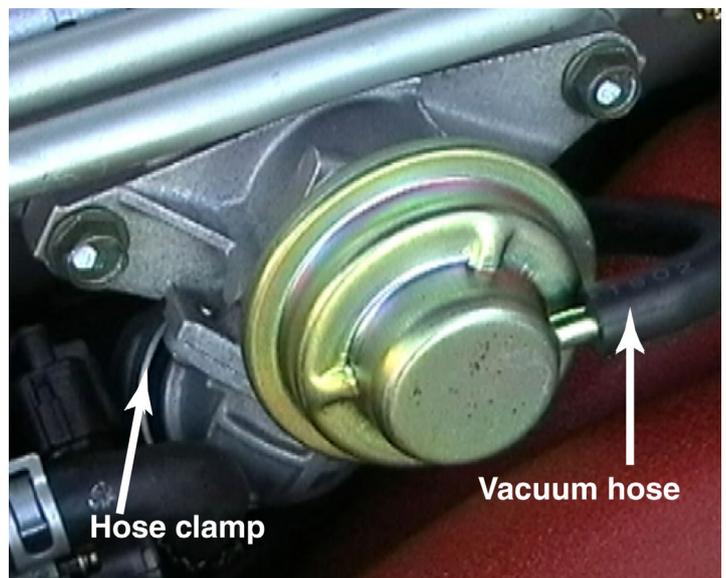
On Impreza models without an electronic throttle, it is necessary to move the intercooler to gain access to the hose clamp under the factory valve. It does not need to be removed completely, it just needs to slide back far enough to reach under. These instructions take you through it step-by-step.

For Impreza models with an electronic throttle and also Forester XT models, it is usually possible to access the clamp without shifting the intercooler. In this case, simply ignore the steps 1, 3, 4 & 5.

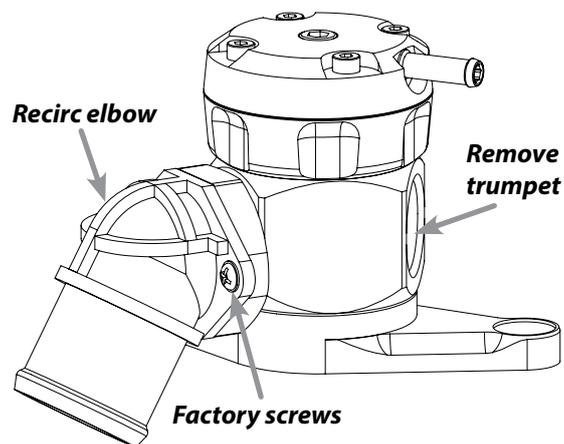
1. Remove the breather hoses from the aluminium tubes that run across the front of the intercooler (two on the left, and one on the right).
2. Using a 12mm socket or wrench, undo and remove the two bolts holding the factory bypass valve (as shown opposite, labelled step 2), leaving it supported by the hoses.
3. Loosen the throttle body hose clamp closest to the intercooler, and the clamp holding the hose onto the outlet of the turbo (as shown opposite, labelled "step 3").
4. Undo and remove the two intercooler mounting bolts (again with the 12mm socket or wrench - shown opposite, "step 4").



5. Carefully slide the intercooler back just enough to access the hose clamp on the BOV (figure 2). Take care when handling the intercooler since the cooling fins are very fragile, and also take care not to bend the hose from the turbo too much - the WRX has a corrugated plastic turbo hose and it is possible to crack this hose if you bend it too much.
6. Remove the vacuum hose from the factory valve, then use pliers to open the recirculation hose clamp and remove the factory valve from the car.



7. On the factory valve, remove the recirc elbow by unscrewing the two phillips-head screws holding it on. Fit the recirc elbow and o-ring to the outlet of the Respons as shown, using the factory screws.
8. At this point you must remove the trumpet from the Respons valve (simply unscrew it) to allow the mounting bolt to be inserted into the flange.
9. If the factory gasket is stuck to the intercooler, it should be removed. If it does not come off cleanly, it will be necessary to scrape any remaining gasket material off the flange so the o-ring can seal properly. Take care not to drop any gasket material into the intercooler hole.
10. Check that the orange o-ring is installed in the groove on the underside of the BOV flange as shown.
11. Push the recirc elbow into the recirc hose and rotate the valve so that the flange mounting holes are horizontal, then replace the hose clamp.
12. Bolt the valve onto the intercooler using the supplied M8 x 20 mounting bolts and replace the intercooler.
13. Push the vacuum hose onto the nipple on the top of the valve, then screw the trumpet back in place.
14. Perform a final check to make sure the turbo, throttle body, and recirc hose clamps are tight, the three breather hoses are reconnected to the pipes running across the intercooler, and that all bolts are tight.



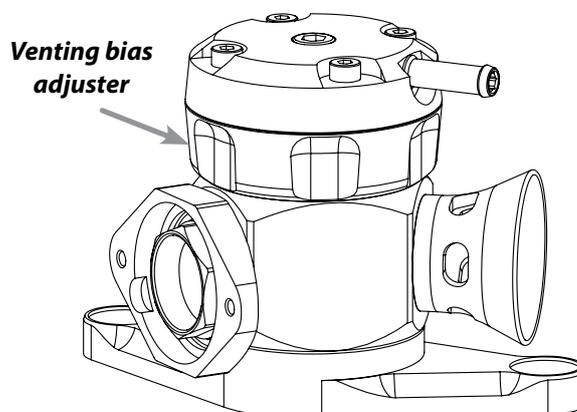
Adjusting the Noise

The unique patented venting bias adjustment feature on the GFB Respons lets you vary the amount of air vented to atmosphere or recirc, thereby changing the volume of the sound.

Turning the venting bias adjuster clockwise will open up the trumpet outlet more, making the valve louder, whilst anti-clockwise will open up more of the recirc outlet for quiet operation.

Turning the adjustment fully anti-clockwise will close off the trumpet completely, and the valve will operate like a factory bypass. Conversely, turning it fully clockwise will make it vent 100% to atmosphere, which is the loudest setting.

Typically, most Subaru engines will allow 100% atmosphere venting with no problems provided the spring pre-load is set correctly (see below). However, some combinations of engine modifications may result in backfiring when the valve vents to atmosphere, in which case the solution is simply to dial back the amount of air vented to atmosphere until the problem is resolved – this is one of the key benefits of the venting bias adjustment feature.



Spring Adjustment

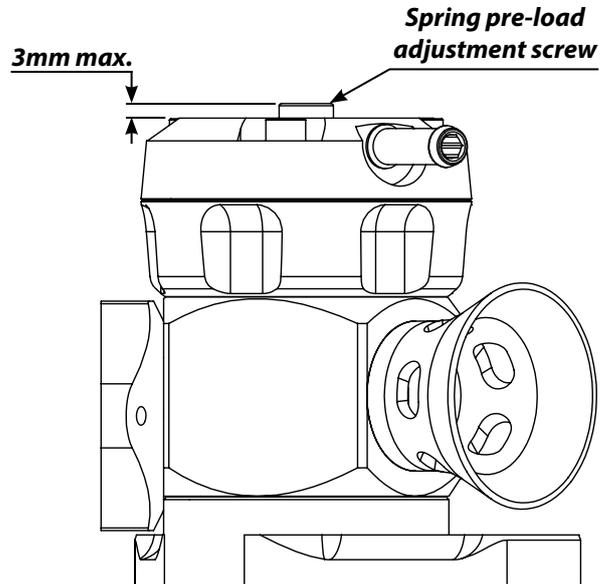
Contrary to popular belief, the spring pre-load **DOES NOT** need to be adjusted to suit different boost levels. **All GFB valves will stay shut under full throttle conditions regardless of boost pressure or spring pre-load.**

The spring pre-load affects how easily the valve opens when you lift off the throttle, and how long it stays open. The spring is adjusted to ensure the valve opens enough to release the air, but not long enough to cause idling problems. The guide below will walk you through the steps involved.

The screw in the centre of the BOV cap is the spring pre-load adjustment screw, and the direction of adjustment is labeled (+ direction increases spring pre-load). Use the supplied 5mm hex key for this screw.

The softest spring setting is achieved when the adjustment screw is 3mm above the head of the valve. Do not exceed 3mm or the o-ring that seals the screw and provides friction will become visible and the screw may rattle loose and fall out whilst driving.

- » Set the spring to the softest setting, and move the venting bias adjuster to approximately 50% so you can see the movement of the piston through the trumpet.
- » Start the car and let it warm up to normal operating temperature. Make sure the A/C is off.
- » Look at the piston through the trumpet. If it is hovering open, wind the adjustment screw in the "+" direction until the piston closes fully. If it is already closed, proceed to the next step.



WARNING: For this next step, keep your face away from the trumpet when revving the engine. View the piston from a safe distance away from the blast of air.

- » Give the engine a good hard rev - hard on the throttle then lift off quickly. The piston should lift slightly and vent, then close slowly and smoothly. The harder you stab the throttle, the further the piston will open, but typically it will not fully open when revving in neutral as the turbo doesn't generate significant boost until the engine is under load.
- » If the piston stays open too long, it will not be closed when the engine RPM drops back to idle, which can cause the engine to "stumble", where the revs dip below idle before recovering. If this happens, wind the adjustment screw in the "+" direction one turn at a time until the engine returns smoothly to idle after revving.
- » For the final fine-tune, take the car for a drive. Watch the tachometer as you pull up to a stop - if the revs dip below idle, tighten the spring 1-2 turns.
- » If a fluttering sound is heard when lifting off sharply from full boost, wind the adjustment screw in the "-" direction one turn at a time until the noise disappears. Note that it is not uncommon to hear a slight fluttering at low RPM under certain conditions. This is a result of the different way in which this valve operates compared to the factory unit, and is not detrimental in any way.

Note there is no harm to the engine when experimenting with the spring pre-load and venting bias adjustments, in fact we encourage you to do so. Every car responds differently, and getting the spring pre-load right will usually offer a noticeable throttle response improvement over the factory valve. If you get it wrong, there may be noticeable negative drivability effects such as backfiring, stalling, or poor throttle response, in which case keep making adjustments until you find what works best for your car.

A video example of setting up the spring pre-load can be found using the QR code opposite or the link below:

<http://gfb.com.au/downloads/gfb-tv?video=KgGRfR6jt-c>



Maintenance

The GFB Respons is designed to be as maintenance-free as possible. Frequent lubrication, replacement of seals, or “re-building” in order to keep the Respons in top working order is NOT required.

The only maintenance that may be required is the occasional cleaning of carbon deposits on the Respons’ piston that result from dried oil vapour in the engine’s inlet tract. This varies from car to car, and in most cases cleaning may never be required, whilst others may need to be cleaned more regularly basis. It is easy to determine if the valve needs cleaning by visual inspection of the piston for black carbon build-up, or if you notice the sound of the valve changing over time (e.g. slow response time, intermittent operation).

To disassemble the Respons, put a rag under the valve to catch any parts that may drop. Remove the four screws holding on the cap (use a 3mm metric hex key), taking care with the last screw as the spring will push upwards on the cap with approximately 5kg of force. Remove the spring and the brass piston, and wipe any grime from the inside of the valve and the piston with a rag. Apply normal engine oil to the piston and the inside of the bore, and re-assemble.

Customer Support

No-one knows a GFB product like the engineers who designed it, who are always available to help with any enquiries or issues you may have with the installation or use of your GFB products:

Email: support@gfb.com.au

Ph: (within Australia): 02 9534 0099

Ph: (international): +612 9534 0099

This product is intended for racing use only, and it is the owner’s responsibility to be aware of the legalities of fitting this product in his or her state/territory regarding noise, emissions and vehicle modifications.

GFB products are engineered for best performance, however incorrect use or modification of factory systems may cause damage to or reduce the longevity of the engine/drive-train components.

GFB recommends that only qualified motor engineers fit this product. Warranty is for the period of one year from the date of purchase and is limited only to the repair or replacement of GFB products provided they are used as intended and in accordance with all appropriate warnings and limitations. No other warranty is expressed or implied.



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