

GFB Turbo Fuse

The GFB Turbo Fuse is designed as a protection against accidental over-boosting in turbo-charged vehicles, which it does in conjunction with the car's existing blow-off/bypass valve.

IMPORTANT – PLEASE READ! For the Turbo Fuse to work correctly your car **MUST** be fitted with a blow-off or bypass valve, and that valve **MUST** be of the type that will open under boost if the its vacuum hose is removed. Most factory and aftermarket valves are of this type; the common exception is the HKS Super Sequential (and all copied products), and any valve that has been reversed in an attempt to hold boost better (this is a common trick with factory valves on Mitsubishi EVOs). The simple way to test your valve is to remove and plug the vacuum hose; then drive the car. If the valve opens when you accelerate and boost is lower than normal, then it is suitable.

The ability of the system to lower the boost level when the Turbo Fuse is triggered is dependant on the flow capacity of the blow-off valve it is connected to, although most valves will drop the boost enough for the purpose of engine protection. It does not matter if the valve is recirculated or vented to the atmosphere, but atmosphere-venting valves, as an additional benefit, will give an audible indication that the device has been tripped.

Installation

1. Locate the blow-off/bypass valve vacuum hose, and trace it from one end to the other. It should connect to the intake manifold at one end and the BOV at the other. If there are any other devices teed into this hose (boost gauge for example), the Turbo Fuse should be connected between the BOV and the tee joint; otherwise the connected device will stop functioning if the Turbo Fuse is triggered.
2. Select a suitable position on the vacuum hose to connect the Turbo Fuse that is protected from direct exposure to the elements or extreme heat from the exhaust.
3. Simply cut the vacuum hose in the selected location and insert the Turbo Fuse to re-join the hose. The hose from the manifold goes to the nipple on the Turbo Fuse marked "manifold", and the hose to the blow-off valve goes to the nipple marked "BOV".
4. It is strongly recommended that you cable-tie either the Turbo Fuse, or the hoses immediately either side of it to something solid to prevent the Turbo Fuse from moving around in the engine bay or knocking against something.

Setting up the Turbo Fuse

The trip-point of the Turbo Fuse is adjusted by the screw on the top. Clockwise increases the boost at which it will trigger, and anti-clockwise reduces it.

The lowest setting that the Turbo Fuse will trigger at is around 10psi (0.68 bar). Turning the adjusting screw will alter the trip-point approximately 1psi for each full turn, although this should not be relied upon to set it up.

You now need to decide where to set the actual trip-point. The most common method is to set it so it will trigger about 2-3psi higher than the peak boost the car is set up to run, although you may decide to make it more or less, depending on your engine.

If you have a boost gauge on your car, and you know what boost pressure you want the Turbo Fuse to trigger at, use the procedure below from step 1.

If you do not have a boost gauge and/or do not know how much boost your car runs or what setting you want to set it to, follow the procedure below, ignoring step 2:

1. Set the Turbo Fuse to the lowest setting by loosening the lock nut, and then wind the screw anti-clockwise a few turns. Now turn it slowly clockwise until you feel it engage the spring (the resistance will increase).
2. Use the following formula to determine an approximate initial setting:
$$\text{Number of turns} = (\text{target boost} - 10) / 1.5$$

Turn the adjusting screw clockwise by the number of turns calculated above.
3. Road-test the car. You need to make sure you hit the peak boost, which is best done in as high a gear as practical, starting from just below the turbo spool-up RPM and continuing at full throttle to the approximate peak torque RPM (between 3000-5000RPM for most cars). If the device triggers, increase the setting one turn at a time until it no longer triggers. Conversely if it does not trigger, reduce the setting until it does, then increase it one turn at a time until it stops triggering.

At this point you can choose how much headroom you will allow. If you leave the setting where it is after step 3, this means the Turbo Fuse is triggering about 1psi (or less) above the peak boost. It is possible that on this setting you might find the device triggers occasionally, as boost levels in most cars will vary by a small amount (some small boost spikes can occur so rapidly that most gauges will not show them).

Increasing the headroom will prevent the device from triggering unexpectedly, but will still protect against sudden and large over-boost occurrences. Each additional clockwise turn of adjustment will increase the headroom by about 1psi, which will tolerate small spikes that can sometimes occur.

Maintenance

The Turbo Fuse is a device that, in an ideal world, will never be triggered. Of course, if it does trigger then it has very likely prevented damage to your engine. However, as it will remain idle for much of its life, GFB recommends that you periodically activate the Turbo Fuse manually to ensure proper function of the mechanism. This procedure is common to many similar devices, such as the pressure relief valve found on all household hot water services, or even industrial pneumatic valves that do not operate often.

To activate the Turbo Fuse, insert the supplied hex key (or any suitably slim object) into the hole on the underside of the Turbo Fuse body and push the valve open a couple of times. It should push up easily and then spring closed when you remove the hex key. GFB recommends that this should be done every month or so if the Turbo Fuse does not trigger when driving.

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.

This product may not work if installed correctly, and as such GFB makes no warranty against engine failure when using this device.

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.

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.