

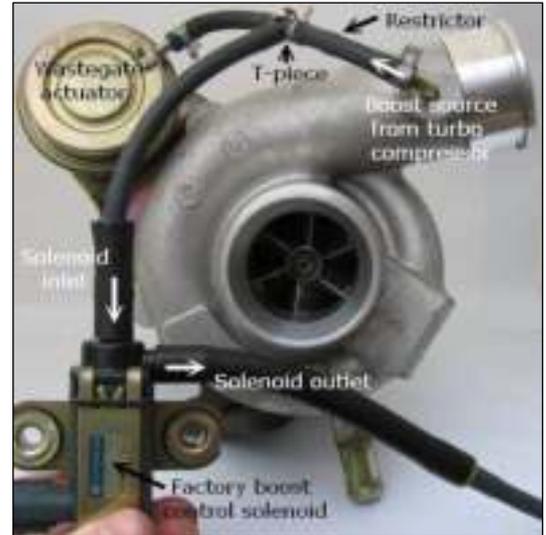
GFB Atomic Boost Controller Installation

ALWAYS use an accurate boost gauge when making boost adjustments!
Measure the boost BEFORE installing this product, so you have a reference point.

These instructions are for single-turbo installations only. If your car has a twin simultaneous turbo setup (such as that found in the 1JZ-GTE engine for example), you simply need to follow these instructions and use a tee to split the hose coming out of the Atomic to each wastegate. If you have a sequential twin turbo, it would be best to consult a knowledgeable turbo expert before installing this product.

Note that every turbo car will have a different engine layout, so it is impossible to make these instructions specific for every model. However, the principle of boost control is the same for almost every turbo car, therefore all that is required is to identify the parts shown in this guide by tracing the boost control hoses in your engine bay.

Most turbo cars will have some form of factory boost control in the form of a solenoid valve in the system (as shown opposite – note that some cars will have different hose connections, but the principle is the same), the exceptions being most turbo diesel engines and cars manufactured before about 1988. These cars will simply have an uninterrupted hose between the wastegate actuator and the boost source.



1. Locate the wastegate actuator, the boost control solenoid (if fitted), and the boost source. Note that the boost source is most commonly found on the turbo compressor cover as shown, although some cars (such as the 200SX) will have it elsewhere on the intercooler piping.
2. Remove the hoses from the wastegate actuator and boost source, and connect the Atomic as shown below. If the hoses are not a tight fit on the wastegate or boost source, secure them with cable ties.

Ensure the arrow on the Atomic body points *towards* the wastegate actuator as shown.

- **Do NOT use a manifold vacuum hose as a boost pick-up point. The boost source must come from BEFORE the throttle body.**
- **Do NOT connect any other devices such as boost gauges, blow-off valves, or fuel pressure regulators to ANY of the boost control hoses.**
- **Do not connect the Atomic to any factory hose that contains a restrictor.** The easy way to test for a restrictor is to blow through the hose. If it seems overly difficult to blow through, replace it with a new hose.



3. Leave the factory boost control solenoid in place and ensure it is still has the electrical connector attached so that no errors are detected by the ECU. There will still be one hose connected to the solenoid that leads to the turbo intake (marked solenoid outlet in the top photo), remove this hose from the solenoid and plug it so that dirt cannot be drawn into the turbo. It is also a good idea to plug all of the nipples on the solenoid to prevent dirt from entering. The ECU will still drive the solenoid, but it is no longer in control of the boost.

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.

Adjusting the Boost

Make sure you measure the original boost level before installing this product. The reason for this is so you know exactly how much you are increasing the boost - you can't always rely on factory-quoted boost levels as a starting point. **Use as high a gear as possible for testing, preferably at least 3rd.** Generally, 1st and 2nd gear do not show full boost levels because the engine load is not as high, and RPM rises very quickly. If you can't use a high gear, keep an eye on the boost gauge next time you accelerate hard in a higher gear to ensure boost doesn't overshoot.

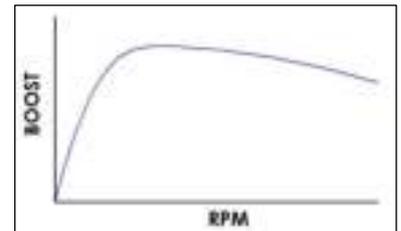
1. Using the hex key supplied, turn the adjusting screw (in the hole in the top of the body) clockwise until it stops. Take the car for a short drive to note the boost level. **IMPORTANT:** always be ready to lift off the accelerator quickly in case the boost overshoots rapidly. Boost should now be the same or lower than the factory level.
2. Determine what final boost level you want to achieve. Put some thought into this step, keeping in mind the limits of the engine internals and turbo system components. Over-boosting is fast way to destroy a turbo engine, so choose *wisely!*
3. Turn the adjusting screw counter-clockwise two turns, and re-check the boost level.
4. If the boost is more than 3psi below your desired level, continue to make coarse adjustments in 2 turn increments, then reduce to 1 turn increments as you approach the final boost level. Make final fine adjustments in ½ turn increments.

Troubleshooting

1. **Boost can't be increased** - check that boost pressure from the source enters the Atomic through the hose nipple with the smaller restrictor hole of the two (as shown opposite), and that the arrow on the body points to the wastegate as per step 2 of the installation.
2. **Boost level overshoots uncontrollably** - screw the needle fully clockwise, if the problem continues check that a hose has not come loose or been connected incorrectly. Check that all hose connections are secure and leak free.

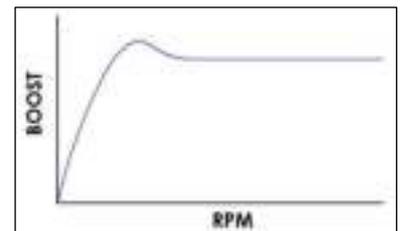


3. **Boost tapers off at high RPM** – this is a result of one or more of the turbo system components reaching its limits. Generally a small factory turbo simply lacks the capacity to flow enough air to hold high boost levels at high RPM (the TD04 in a WRX for example will have difficulty holding more than 12-13psi at redline). Attempting to force such a turbo to hold more boost at redline will push it well beyond its efficiency range, and is unlikely to result in any gains. In this case it is best to let the boost drop away and utilize the midrange torque band instead.



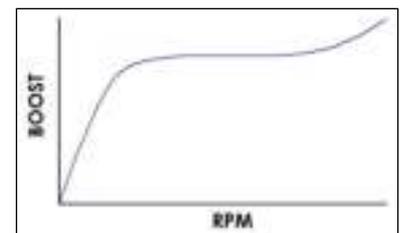
4. **The boost spikes above maximum setting** - Boost spike is the condition where boost overshoots the desired peak level during spool-up. This is not to be confused with boost taper (3), where the boost drops away from its peak at high RPM. It can be lessened by reducing the sensitivity of the boost controller by:

- Enlarging the small 1.5mm restrictor hole shown in figure 3 (VERY slightly! Increase the diameter no more than 0.1mm at a time).
- Ensuring the boost controller hoses are kept as short as possible, and are at least 3mm internal diameter.
- If the boost source is after the intercooler or near the manifold, move it closer to the turbo exit.



5. **Boost level varies from the original setting** – engine load, gear, ambient temperature, altitude and other environmental changes can have an effect on the boost level, which affects even the most expensive electronic controllers. If you set the peak boost in 2nd gear for example, you may find that overtaking in 5th results in a slightly higher boost level. It is best to set the peak level in a higher gear.

6. **Boost level creeps higher as RPM increases** – this is usually a result of the wastegate being too small. The RPM will reach a point where the amount of exhaust gas being produced exceeds the flow capacity of the wastegate. When this occurs, the boost will continue to rise. The solution is to enlarge the internal wastegate or replace it with an external wastegate.



7. **Air leak at idle** - if you can hear air hissing through the controller at idle, the boost source is hooked up to the intake manifold. It should be re-connected to a boost source BEFORE the throttle body.
8. **If all else fails** – contact GFB on support@gfb.com.au or phone +612 9534 0099.