



GFB Performance Turbo Tuning Installation Guide

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GFB DV+ Part #T9354 Installation Instructions



IMPORTANT! All GFB pistons are checked for fitment and tolerance before shipment. Please do not drop the GFB piston onto a hard surface as this may cause (invisible) damage that could result in boost leaks or sticking.

Installation Instructions for GFB DV+ TMS valve (part # T9354)

- Locate factory diverter valve solenoid. It will be mounted directly on the turbo compressor cover. You may have to remove the front right wheel for access.
- Remove the factory vacuum hose clamp, then pull the hose off the factory diverter valve.
- Unscrew the 3 mounting screws and remove the factory valve from the car
- Install the spring retainer cup, spring then piston into the body of the valve. (Refer to exploded diagram on next page)
- Push the piston into the body against the spring and insert the installation tool from the top of the valve and screw it into the back of the piston **finger tight only**.
- Screw the installation tool in all the way and then undo it half a turn, this will ensure it is not done up too tight. Now install the vacuum fitting.



Care must be taken when screwing in the installation tool and vacuum fitting, as it is easy to damage the brass threads. It is important that the vacuum fitting is not over tightened, it does not need to be tight.

With the installation tool holding the piston in place the valve can then be installed on the vehicle. You must remember to place the metal solenoid bracket on top of the DV+ before installing the three bolts.

Once the three mounting bolts are installed, the installation tool can be removed and the spring pre-load screw can be installed in the top of the valve. Then re-install the vacuum hose and clamp.



Spring Pre-Load Adjustment

The dv+ can be installed and used directly out-of-the-box without any adjustment to the spring pre-load at all, regardless of the boost pressure your car runs.

So if you are not inclined to tinker, you can finish the installation here, or you can read on for more tech info on the subject!

Unlike other aftermarket replacement valves on the market, the GFB dv+ **DOES NOT** require spring pre-load adjustment to suit specific boost pressures. The pressure-balancing design of the dv+ means that under wide open throttle conditions there is equal boost pressure on both sides of the piston, so it will stay shut under boost REGARDLESS of the spring setting or the boost pressure.

However, adjustments to the spring pre-load can often help improve throttle response and reduce lag, so it can pay to experiment.

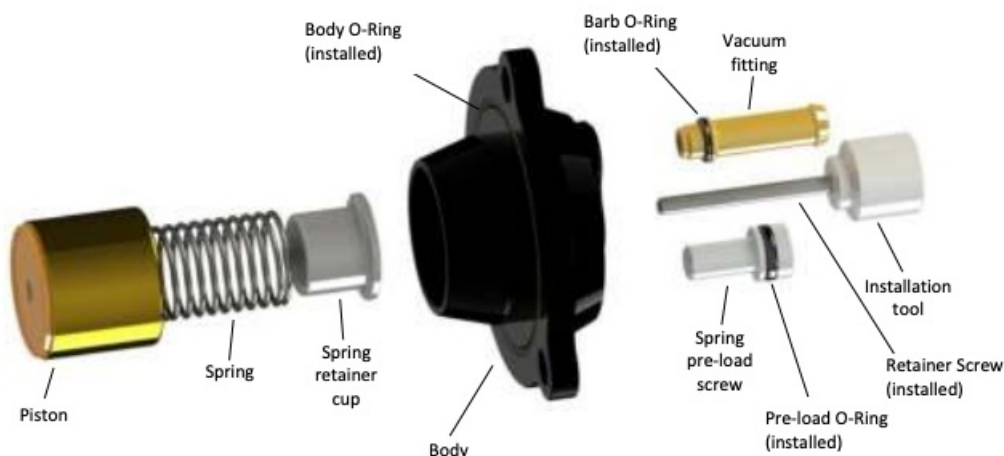
Adjusting the spring pre-load changes how easily the valve vents when the throttle is closed. The best throttle response is typically found when the spring is set to the firmest setting possible that does not cause compressor surge (turbo fluttering) at when the throttle is closed on a high boost/high RPM gearshift.

To explain further, contrary to popular belief, venting as much air as possible to “let the turbo freewheel” does not reduce lag. Perhaps 20 years ago it may have been true, but turbos these days spool up very quickly, and the greater benefit comes from setting the valve up to keeps as much pressure in the intercooler as possible during a gear-shift or brief throttle lift.

This is especially true when a large front-mount intercooler is fitted venting all of the air means the intercooler must be re-pressurised, and even though a turbo does shift a lot of air, it still takes a measurable amount of time to fill an intercooler.

Here's where adjusting the spring pre-load can help. Increasing the spring pre-load can help retain a small amount of pressure in the intercooler during a gearshift, which leads to a faster return to peak boost. The limiting factor in how much you can increase the spring pre-load is compressor surge (turbo flutter). Once this starts to occur at high boost/RPM, there is no further gain to be had and for the life expectancy of the turbo it is best avoided. Note that it is common however for compressor surge to occur at low RPM/boost, even if it doesn't occur at high boost/RPM. This is not really a concern for the turbo because the shaft speed and loads on the turbo at this point are much smaller, and the pressure spikes from compressor surge are much lower than those experienced at peak boost.

Exploded View



What to expect from your DV+

The DV+ is designed to offer three key improvements over the OE diverter:

Longevity:

The DV+ will outlast any version of the factory diverter. If you've ever replaced a factory diverter, chances are it won't be your last. Fitting a DV+ is good insurance and pays for itself after one or two factory diverter replacements.

Throttle response:

When using the DV+ with the main spring installed, it will preserve as much boost pressure as possible when the throttle is lifted. This means that when you lift off to shift, or when you balance the car with the throttle mid-corner (using slight on-off-on throttle modulation), the DV+ can help recover boost faster.

What the DV+ can't do however, is *create* more boost, or cause the turbo to spool faster. Quite simply, whatever boost the turbo makes, the DV+ will deliver to the engine, and it will also preserve as much boost pressure as possible during a brief throttle lift-off, which is where the faster boost recovery comes from. If there is no boost to preserve, or if boost still drops off at high RPM, that is simply highlighting the limitations of the turbo.

Technical Support

If you experience any issues during installation or use of your GFB DV+ that are not answered in these instructions, please contact the GFB tech support team on +612 9534 0099, or email support@gfb.com.au.

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 recommends that only qualified motor engineers fit this product.

Materials and workmanship of this product are covered by a lifetime warranty. Moving components subject to wear are covered for a period of one year from the date of purchase. Warranty is limited only to the repair or replacement of GFB products provided they are installed and used as intended, and in accordance with all applicable warnings and limitations. No other warranty is expressed or implied.

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 or drivetrain components.

Documents / Resources

	<p>GFB Performance Turbo Tuning [pdf] Installation Guide DV Turbo Tuning, Turbo Tuning, Part T9354</p>
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References

- support@gfb.com.au

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