

GFB DV+

Installation Instructions

Part # T9363



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.

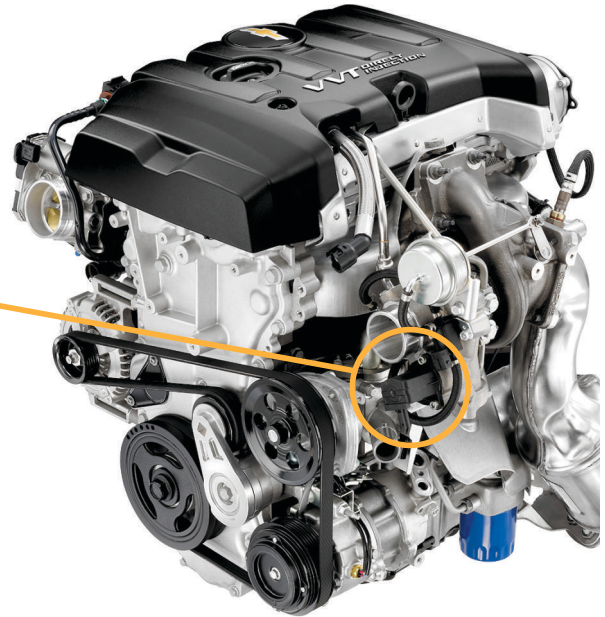
WICHTIG! Alle Kolben wurden vor Versand auf Freigängigkeit geprüft. Bitte achten Sie bei der Montage darauf, dass *der Kolben nicht auf den Boden fällt*, da dieser schon bei kleinster (evtl. Nicht sichtbarer) Beschädigung zur Undichtigkeit oder Kolbenklemmen führen kann!

INSTALLATION

The factory diverter valve on the GM 2.0 LTG engine is located on the front of the turbo compressor cover, underneath the intake pipe.

Begin by removing the intake pipe (and airbox if it helps) to gain access to the diverter valve.

Use a 5mm hex key to remove the 3 screws, unclip the electrical connector, then remove the diverter valve.

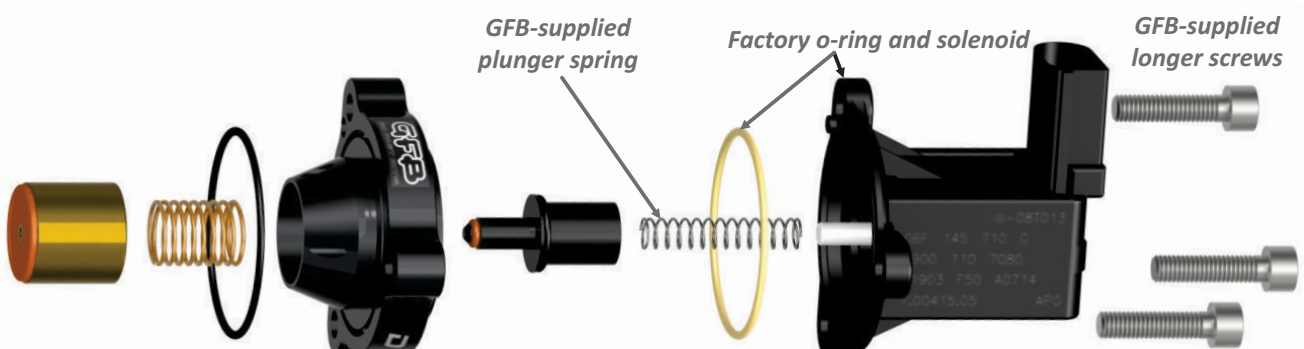


Pull the piston and spring out of the body, then remove the o-ring (keep this safe, it will be re-used in the DV+ installation). The remaining black plastic protrusion and blue piston ring **MUST BE REMOVED** before the DV+ is installed.

Note that this plastic piece is thin and brittle, and damage may occur during removal if levered directly. If it breaks, you'll still be able to continue with the DV+ installation as this part isn't used, but you won't be able to re-install the factory diverter again.

One method to remove without damage is to install a hose clamp over the plastic protrusion as shown, just tight enough to allow it to pull the plastic piece out when the clamp is levered upwards.

Assemble the DV+ parts onto the factory solenoid and o-ring as shown below, using a little engine oil on the outside of the piston. **Make sure to use the GFB-supplied spring inside the solenoid.**



Fit the assembled DV+/solenoid onto the turbo, taking note of the orientation of the connector. Fasten using the longer screws supplied.

Connect the wiring loom onto the solenoid, then re-install the intake (and airbox if removed initially).

Do a final check of all hoses, clamps, and connectors, and the installation is complete.



WHAT TO EXPECT FROM YOUR DV+

Sound: The DV+ is NOT a noise-maker, as it recirculates all the vented air back to the turbo intake like the factory diverter. If the car has a stock airbox, there will be little or no difference in sound. If you have an aftermarket intake, you may hear a slight difference in sound when lifting off at low RPM. You should NOT hear a loud fluttering sound when lifting off at high boost. If you do hear this noise with the DV+ (or any other type of diverter valve), it means the valve is not opening correctly. In this case, please re-check the installation and confirm the piston and plunger are moving freely.

Longevity: The DV+ will outlast the factory diverter hands-down. That's why we offer a lifetime warranty - we're *that* confident in the product!

Boost holding: The factory diverter valves range dramatically in their ability to seal, even when brand new. They have no positive sealing capability, and a leaking factory diverter can make the spool up lazy and reduce power at high RPM.

The DV+ will seal properly even up to 50psi, ensuring all of your hard-earned boost gets to the engine. Of course, the performance benefits you notice from the driver's seat will depend entirely on the condition of the factory diverter you replace. For example, if your factory valve is not (yet) leaking significantly, there will be no change to your peak boost.

However, if your factory diverter is leaking only slightly, a DV+ may show the same peak boost, but with an improvement in the amount of boost held to redline. If your factory valve is leaking significantly, fitting the DV+ will result in higher peak boost pressure, as well as less drop-off at high RPM.

Throttle response: The DV+ will vent air to prevent compressor surge (flutter), but it will also preserve as much boost pressure as possible when the throttle is lifted. This means that when you lift off briefly or modulate the throttle, the DV+ can help recover boost faster.

Compare this to other products on the market that do NOT change the inherent on/off operation of the stock diverter, which CANNOT offer the same throttle response improvement as a DV+. Read more about this on the next page.

THE DV+ DIFFERENCE

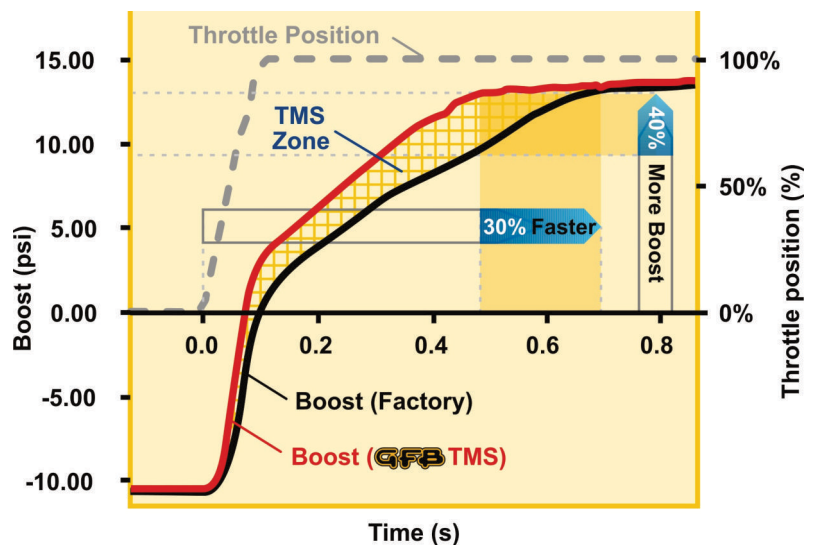
Whilst the DV+ might look simple or similar to other products, there is a very significant difference in the way it operates. Our patented system ensures the DV+ remains the fastest, highest flowing, and most cost-effective solution on the market.

The factory diverter and other aftermarket brands use the solenoid to directly actuate the piston. There are two big problems with this. One is that the actuating forces over the entire range of the valve's travel are very weak (magnetic force diminishes significantly as distance increases). So introducing any kind of friction almost inevitably prevents the valve from opening reliably, which causes the "fluttering" sound that you will see in videos of other brands of replacement diverter valve.

The second issue is throttle response. Directly actuating the piston by solenoid means it can only be either fully open, or fully shut. It cannot open progressively. The ECU triggers the diverter with the slightest throttle lift, and the factory valve will open FULLY, even if boost is low or you only lift the throttle marginally. This is bad for throttle response.

The DV+ uses the factory solenoid coil, but instead of moving the piston directly, it now controls the pressure signal used to actually open and close the piston, which is known as "pilot actuation". This means the solenoid now controls a much smaller valve, over a much shorter stroke, so the actuation forces are significantly higher and operation is faster AND more reliable. Furthermore, the DV+ can open and close progressively in response to the amount of boost pressure present - if there's not much pressure, it only opens partially. Once it has vented the bulk of the pressure that would otherwise cause compressor surge (i.e. the fluttering sound), it begins to close again instead of staying open unnecessarily like the factory diverter. This allows the DV+ to retain a small amount of boost in the intercooler to reduce spool up time when re-opening the throttle, which we call the "TMS benefit".

To explain further, turbo lag is minimised when the valve only vents just enough air to prevent compressor surge - the graph opposite illustrates the reduction in lag. To read more about the TMS benefit, visit our website: www.gfb.com.au/tech



WARNING:

GFB recommends that only qualified motor engineers fit this product. 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/drivetrain components.

GFB Limited Lifetime Warranty:

We live in a throw-away society, conditioned by cheap products and built-in obsolescence to expect eventual failure and discard something when it stops working or is superseded. However, pride in workmanship and our commitment to quality means that when we put our name to something, we are also staking our reputation on it.

That is why we back our products with the best Warranty in the business! You should expect a lifetime of use from a well-engineered product, so if your GFB product fails as a result of defective materials or faulty workmanship whilst you remain the original owner, we will repair or replace it (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).

If a fault occurs as a result of usage outside of the terms of the warranty, or you are not the original owner, fear not, we can still help you. You should never need to throw a GFB product away, as spare parts are available and won't cost the earth.