

# GFB DV+

## Installation Instructions

### Part #T9362

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## TURBO MANAGEMENT SYSTEMS



PERFORMANCE WITHOUT COMPROMISE

**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!

## OEM DIVERTER REMOVAL/DISASSEMBLY

On Nissan Juke models, the factory diverter valve is mounted under the engine cover, directly on the turbo compressor. Unplug the connector then remove the 3 screws.



On Renault Clio RS engines, the factory diverter is mounted on a plastic housing joined by hoses. There is also a mounting bracket that holds the housing in place. It is easiest to first remove the screws holding this housing, which makes it easier to access the three screws that retain the factory diverter.

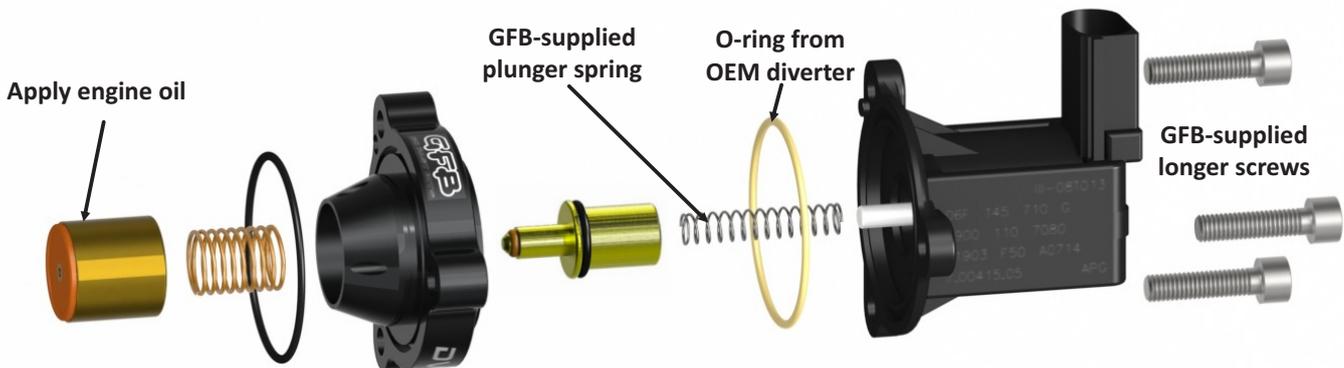


Pull the piston and spring out of the body, then remove the yellow o-ring. This will leave the plastic ring indicated by the arrow, which **MUST BE REMOVED** before the DV+ is installed. Lever it gently and work your way around.



Note that this plastic piece can become brittle over time and damage may occur during removal. 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.

Install the DV+ parts onto the factory solenoid body and yellow 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 coil.**



Fit the DV+/solenoid assembly to the car in the factory location using the 3 supplied longer screws. In the case of the Renault, install the 2 supplied spacers in between the mounting bracket and secure with the 2 remaining longer screws. The Juke does not use the spacers and extra screws. Don't forget to re-connect the wiring loom.

## THE DV+ DIFFERENCE

Whilst the DV+ might look pretty basic, there is a very significant difference in the way it operates compared to the factory diverter valve, and other aftermarket products on the market.

The factory diverter uses the solenoid to directly actuate the valve, but there are multiple problems with this method:

- The valve can only ever be open or closed - it cannot move progressively, which is detrimental to throttle response.
- The stroke of the solenoid is long, meaning the actuating forces are weak (magnetic force diminishes significantly as stroke increases). This means the operation of the factory diverter is not reliable.
- The factory diverter cannot be sealed properly, because a good seal on a plastic piston would increase friction to the point where the weak actuating forces cannot open or close the valve.

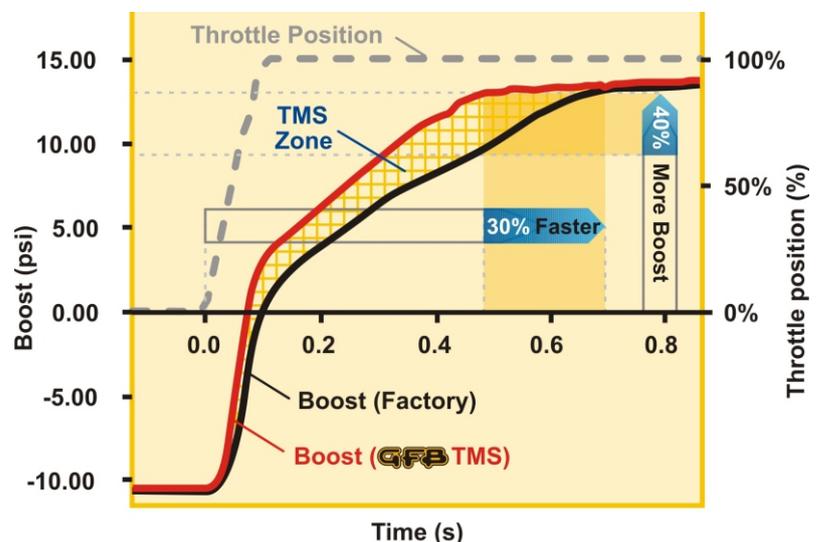
The GFB DV+ overcomes all of these issues whilst still retaining the factory solenoid coil. However, the solenoid's role is to move a smaller valve (the plunger) which controls the pressure signal used to open and close the piston, which is known as "pilot actuation". Think of it like pneumatic "leverage". The plunger stroke is reduced from 5mm to 0.8mm, which increases the actuation force and speed, meaning the DV+ is faster AND more reliable than the factory diverter!

When it comes to holding boost, the DV+ has another trick up its sleeve. When the solenoid is off and the plunger is closed, there is equal pressure on both sides of the piston. BUT, the area the pressure acts on is about 25% LARGER on the back of the piston than the front. This area differential means that boost pressure actually blows the DV+ piston shut, so it doesn't matter how much boost you run, the DV+ will never crack open when it's not meant to.

When the solenoid activates and retracts the plunger, the pressure on the back of the piston is relieved, which allows boost pressure on the front to blow the piston open against the spring. This operation method means that unlike the factory diverter, the DV+ can open and close progressively in response to the amount of boost pressure it needs to relieve. If there's no boost, it won't open even if the ECU tells it to. If there is boost, the DV+ will only open as long (and as far) as required. It will close itself as boost pressure drops, where under the same conditions the factory diverter would remain open. The result is less turbo lag, because the valve is not opened unnecessarily.

This is the basis behind GFB's TMS principle, which is this; turbo lag is minimised when the valve only vents just enough air to prevent compressor surge – the graph opposite illustrates the reduction in lag after a gearshift.

To read more about the TMS principle, visit our website: [www.gfb.com.au](http://www.gfb.com.au)



## WHAT TO EXPECT FROM YOUR DV+

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

**Longevity:** 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.

**Boost holding:** The OEM diverter valve uses a plastic piston with a plastic "seal". Unfortunately, these two parts that are responsible for sealing boost pressure don't do a very good job of it. Because the parts are moulded plastic, and minimum friction is required for the solenoid to have a hope of opening and closing the valve, the fit of the OEM piston and seal is very loose, meaning it does a poor job of sealing the boost pressure.

The DV+ however 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 a small amount, 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 preserve as much boost pressure as possible when the throttle is lifted. This means that when you lift off to shift, or when using slight on-off-on throttle modulation (causing the diverter valve to open and close), the DV+ can help recover boost faster than the OEM diverter.

## WARRANTY

### **WARNING:**

GFB recommends that only qualified motor engineers fit this product. GFB products are engineered for best performance, however incorrect use or modification may cause damage to or reduce the longevity of the engine/drive-train components.

### **GFB LIFETIME WARRANTY:**

Our commitment to quality means that when we put our name to something, we are also staking our reputation on it. That's 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.

### **TECH SUPPORT:**

We want you to get the best advice, first time. That's why our engineers are available to answer any technical questions you may have. Head to [www.gfb.com.au/contact-us](http://www.gfb.com.au/contact-us) to get in touch.