



# GFB SV50 TR9050

## INSTRUCTION MANUAL



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## NOTE

The SV50 is designed for one purpose only - to dump massive amounts of turbo pressure very rapidly, and is intended for turbo or supercharger applications of 400hp or more. Whilst it can be used on applications with less than 400hp, it would be considerable overkill, and other valves in the GFB range will give better throttle response in such circumstances.

## SPRING SELECTION

Various things such as porting, cams, or even altitude can affect the idle vacuum of your engine, which affects the operation of the valve. To accommodate such variations, two springs are included, both being installed together in the valve from the factory (one inner and one outer).

Use the table below to select the appropriate spring combination for your engine's idle vacuum. Note that this is a guide only, and in some cases it may be necessary to use a different spring combination. See the notes at the end of these instructions for more information on setting up the spring pre-load.

Measure the idle vacuum of your engine at normal operating temperature. Idle vacuum range is given in three different units below; inHg (inches Mercury), kPa (kilopascals), or psi (pounds per square inch).

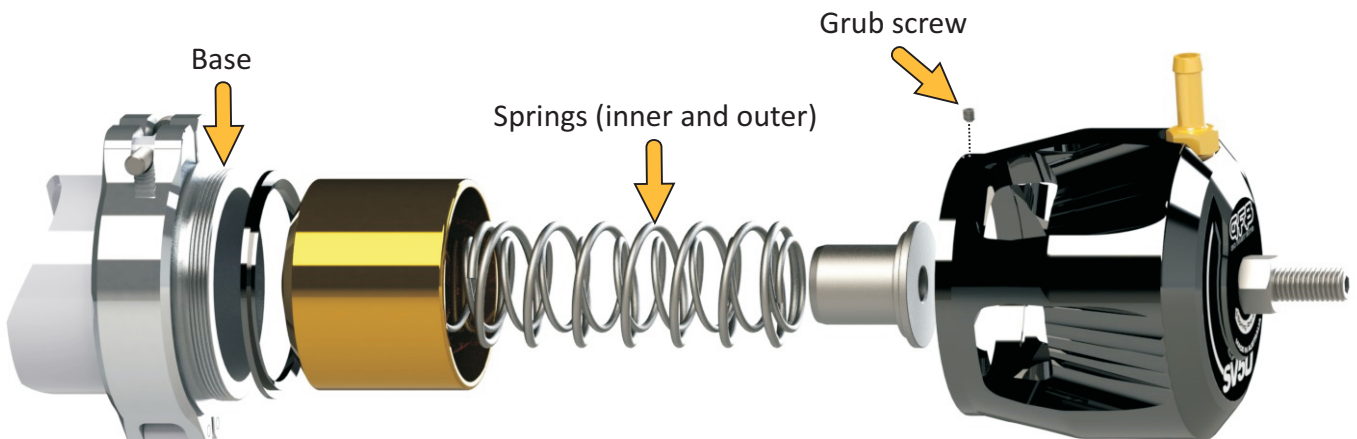
	UNITS			Inner Spring	Outer Spring
	InHg	kPa	psi		
Low Idle Vacuum	5-8	17-27	2.5-4	•	
Medium Idle Vacuum	8-14	27-47	4-7		•
High Idle Vacuum	14-22	47-75	7-11	•	•

## CHANGING THE SPRING COMBINATION

If you need to change the spring combination, disassemble the valve by first removing the small grub screw on the side of the body using a 1.5mm metric hex key.

Then unscrew the base, taking care to hold the valve firmly as the springs will try to push the valve apart as the base is unscrewed. It helps to leave the v-band clamp and weld-on installed to give you extra grip to help unscrew the base.

Remove the appropriate spring and then re-assemble the valve as per the exploded diagram below, making sure to re-install the small grub screw.



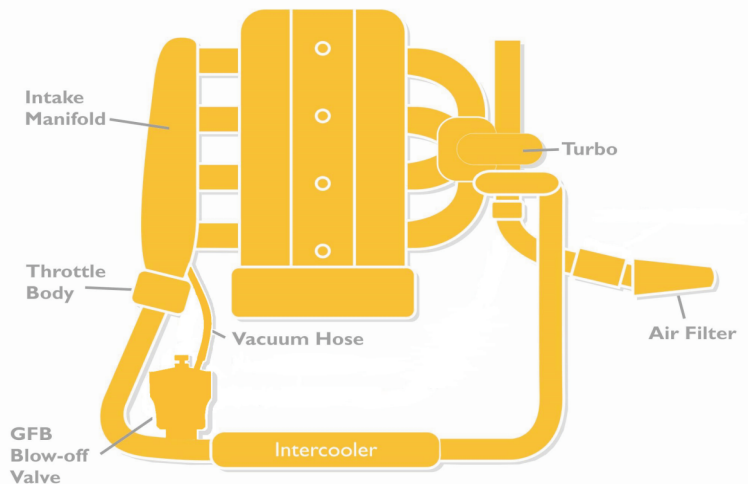
## INSTALLATION

1) Remove the v-band clamp by loosening (but not completely removing) the clamp bolt with a 4mm metric hex key. Swing the bolt head outwards so the clamp can be spread apart and removed. This will allow the v-band weld-on adaptor to separate from the BOV main body.



2) Find a suitable location on the turbo piping as shown in Figure 2, and weld the aluminium v-band adaptor to the piping. GFB recommends mounting the SV50 closer to the throttle body rather than the turbo.

3) Reassemble the SV50 BOV onto the v-band weld-on adaptor, making sure that the o-ring remains located between the main BOV body and the weld-on adaptor. Refit the v-band clamp as per removal procedure in step 1.



4) For best response, connect the vacuum nipple of the SV50 to the inlet manifold using vacuum hose of at least  $\frac{1}{4}$ " internal diameter. It is recommended that the vacuum hose is used only for the blow-off valve with no other devices teed into it.

Note that the vacuum nipple thread is 1/8" NPT, meaning that other fittings with the same thread can be used instead if desired. However, make sure when screwing in alternative fittings that they do not extend into the bore of the BOV, as this will cause the piston to jam.

## SPRING ADJUSTMENT

***Please note that the spring pre-load has nothing to do with the engine's boost pressure, nor does it affect the SV50's ability to hold boost.***

The spring pre-load adjusts how easily the valve opens when the throttle is closed, which is why it is related to the engine's idle vacuum, not the boost pressure.

Spring pre-load is adjusted via the grub screw and locknut on the top of the SV50. To adjust the pre-load, hold the grub screw steady with a 4mm hex key, then loosen the locknut. You can then adjust the grub screw to change the pre-load on the spring/s. There is approximately 15mm of screw adjustment range.

With the engine idling at normal operating temperature, adjust the spring screw so that the piston is closed on its seat. Now stab the throttle - the piston should lift easily, then close smoothly. This is a good rough setting to start with.

## SPRING ADJUSTMENT - CONTINUED

The ideal spring setting depends entirely on the desired outcome, which may be different depending on what system the SV50 is used on.

There are three main groups of engines where the spring pre-load may be set up differently to achieve different outcomes:

- ***Turbo engines where the throttle is opened and closed often, and optimum throttle response is the key objective:***

For this group the spring is best set up quite firm, because venting too much air too easily can increase lag. Start by adjusting the spring as per the previous page so that the piston is just closed at idle, then experiment by increasing the pre-load 1-2 turns at a time until optimum throttle response is achieved. You may find that the best setting for throttle response causes some low RPM flutter, so it is a matter of balancing the adjustment.

- ***Turbo drag racing engines where the throttle is only closed at the end of a pass (not during gearshift):***

On engines where the only purpose for the BOV is to open at the end of a pass to protect the turbo and prevent pipes blowing off etc, you might find a softer pre-load works best, such that the piston is slightly open at idle (provided there is no MAF sensor). The pre-load is not all that critical on these setups because the valve really only operates either open or shut.

- ***Supercharged engines:***

Superchargers have quite different requirements from the BOV than turbochargers. A softer spring pre-load is required than what the spring selection table on page 2 suggests, because a supercharger needs a relief path when the throttle is not open. Unlike a turbo, a supercharger makes positive pressure with RPM, not load. So if you are cruising on the highway with the throttle only partially open, the blower is making boost which needs to be vented so damage doesn't occur.

Therefore, the spring needs to be soft enough that the piston opens easily at idle and part throttle, only closing as the throttle is opened further and the manifold vacuum approaches 0. A good starting point is to choose a spring combination that is one range lower than the table on page 2 suggests. This will allow the piston to open at idle, and pre-load adjustments will change the manifold vacuum at which the piston fully closes.

**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.**