

# GFB Hybrid

## Installation Instructions

Part #T9220



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## TURBO MANAGEMENT SYSTEMS



PERFORMANCE WITHOUT COMPROMISE

# INSTALLATION

The GFB Hybrid T9220 is suitable for custom hose-mount installations using 3/4" (19mm) I.D. hose inlet and outlet), and matches the inlet and outlet fitting sizes of the following cars:

(please note the GFB valve is typically larger than the factory valves on the cars listed below, and as such the factory hoses may need to be extended so the valve can be mounted in a different location where there is more room):

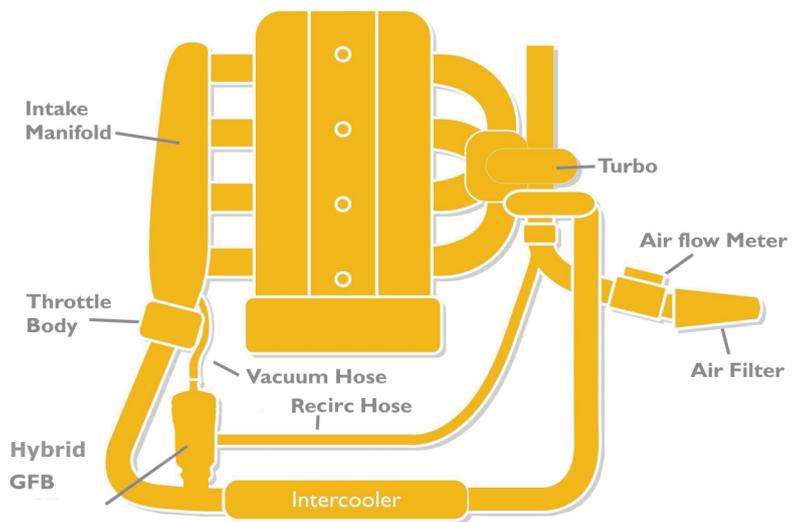
- Subaru WRX/STi MY94-96
- Subaru Liberty/Legacy RS MY89-93
- Ford Laser TX3 KC-KH
- Mazdaspeed Miata SE
- Mazda RX7 series 4-6
- Toyota Supra JZA80

## For custom installations or cars without a factory fitted valve

A location for the Hybrid must be found on the piping between the turbo outlet and the throttle body, and a suitable adaptor welded on so that a 3/4" (19mm) hose can be connected.

A hose to connect the Hybrid's recirc outlet must also be fitted to the piping before the turbo (after the airflow meter if one is installed).

Finally, a vacuum hose (minimum 4mm I.D.) needs to be connected from the intake manifold (after the throttle) to the top port of the Hybrid.



**DO NOT CONNECT THE VACUUM HOSE TO BOOST CONTROL, FUEL PRESSURE REGULATOR OR BRAKE BOOSTER HOSES.**

## For replacement of factory-fitted valves

Most factory fitted valves on these cars are typically arranged with the inlet and outlet fittings inline, and are generally quite small. Therefore, if the Hybrid valve will not fit in the factory location the hoses will need to be extended so the Hybrid valve can be mounted elsewhere.

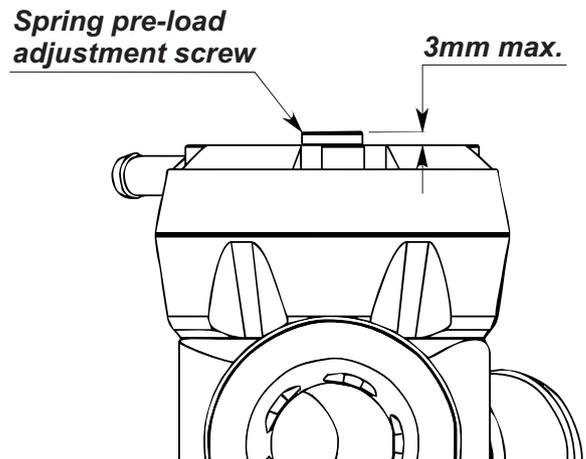
Ensure the boost pressure hose is connected to the bottom inlet of the Hybrid, and the side outlet of the Hybrid connects to the turbo intake.

## ADJUSTING THE SPRING PRELOAD

Contrary to popular belief, the spring pre-load **DOES NOT** need to be adjusted to suit different boost levels. **All GFB valves will stay shut under full throttle conditions regardless of boost pressure or spring pre-load.**

The spring pre-load affects how easily the valve opens when you lift off the throttle, and how long it stays open. It is adjusted to ensure the valve opens easily enough to release the air, but not long enough to cause idling problems. The guide below will walk you through the steps involved.

- Using the supplied 5mm hex key, set the spring pre-load adjusting screw to the softest setting (3mm above the head, as shown opposite), and ensure the atmosphere venting port is open so you can see the movement of the piston during setup.
- Start the car and let it warm up for a couple of minutes. Make sure the A/C is off.
- Look at the piston through the trumpet. If it is hovering open, wind the adjustment screw in the "+" direction until the piston closes fully. If it is already closed, proceed to the next step.



**WARNING:** For this next step, keep your face away from the trumpet when revving the engine. View the piston from a safe distance away from the blast of air.

- Give the engine a rev - stab the throttle hard then lift off quickly. The piston should lift slightly and vent, then close slowly and smoothly. The harder you stab the throttle, the further the piston will open, but typically it will not fully open when revving in neutral as the turbo doesn't generate significant boost until the engine is under load.
- If the piston does not close before the engine drops back to idle, it may cause the engine to "stumble" or stall. If this happens, turn the adjustment screw in the "+" direction one turn at a time until the engine returns smoothly to idle after revving.
- For the final adjustment, take the car for a drive. Accelerate moderately in 2nd gear then pull up to a stop quickly whilst watching the tachometer - if the revs dip below idle, tighten the spring 1-2 turns.
- If a fluttering sound is heard when lifting off sharply from full boost, wind the adjustment screw in the "-" direction one turn at a time until the noise disappears. Note that it is not uncommon to hear a slight fluttering at low RPM under certain conditions. This is a result of the different way in which this valve operates compared to the factory unit, and is not detrimental in any way.

Note there is no harm to the engine when experimenting with the spring pre-load and venting bias adjustments, in fact we encourage you to do so. Every car responds differently, and getting the spring pre-load right will usually offer a noticeable throttle response improvement over the factory valve. If you get it wrong, there may be noticeable negative drivability effects such as backfiring, stalling, or poor throttle response, in which case keep making adjustments until you find what works best for your car.

A video example of setting up the spring pre-load can be found using the QR code opposite or the link below:

[gfb.com.au/downloads/gfb-tv?video=KgGRfR6jt-c](http://gfb.com.au/downloads/gfb-tv?video=KgGRfR6jt-c)



## CHANGING THE SOUND

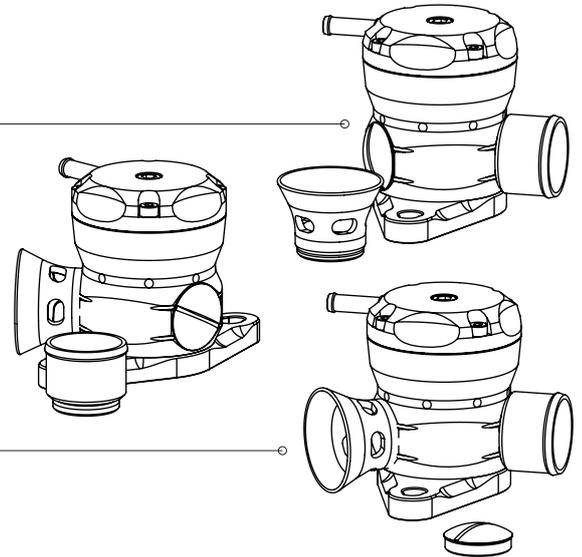
The GFB Hybrid is supplied with a plug set that allows you to configure the valve in 3 different ways, depending on your preference.

Typically, most engines will allow 100% atmosphere venting with no problems, however some combinations of modifications can result in backfiring or stalling with full atmosphere venting. In this case the solution is to revert back to 50/50 or full recirc venting.

For silent, fully recirculated operation, leave the recirc hose connected and swap the trumpet for the threaded plug.

For full atmosphere venting and maximum noise, plug the recirc hose with the supplied hose plug, and install the screw-in plug in place of the Hybrid's recirc outlet.

For 50/50 venting and a moderate sound, keep the recirc hose connected and the trumpet installed.



## MAINTENANCE

GFB blow-off valves are designed to be as maintenance-free as possible. In most cars the small amount of crankcase and rocker-cover oil vapor that is directed into the intake system is enough to keep the piston well lubricated indefinitely.

However, if you notice the sound of the valve changing over time (e.g. slow response time, intermittent operation), or if you can see that the piston is not moving smoothly, it may require a clean and re-lube.

**Cleaning Procedure:** Remove the four screws holding on the cap, taking care as the spring will try to push the cap off as the last screw is removed. Remove the spring and the brass piston, and wipe any grime from the inside of the valve and the piston with a rag. Apply normal engine oil to the piston and the inside of the bore, and re-assemble.

**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.**