

# Twos R Us

## Manual Boost Controller Installation Instructions

These instructions are specific to installation on the MKII (1990-1999) Toyota MR2 Turbo. Installation on other vehicles will be similar, but may vary from what is listed herein.

**NOTE: If you do not have a reliable, aftermarket boost gauge, STOP. Do not install this boost controller until you can tell how much boost you are running. Stock Toyota gauges are notoriously unreliable and inaccurate.**

### Tools required for installation:

Straight blade screwdriver  
Pliers

### Installation:

1. In order for this controller to work properly, you must disable the Turbo Vacuum Switching Valve (T-VSV). If you have not done this, please see instructions below. Failure to disable the T-VSV will result in a minimum boost level of 14psi accompanied by very abrupt boost shutoff when you lift off of the throttle.
2. Locate the hose connecting the turbocharger compressor housing to the wastegate. This hose is approximately 3 inches long and attaches to the compressor housing just behind the turbo outlet house (fig. 1). Once located, remove this hose from both the compressor housing and the wastegate. Store removed parts in a safe location so that you may return your car to stock configuration if you ever need to.
3. Attach the hose that goes straight into the main body of the boost controller (fig.2) to the turbo compressor housing fitting.

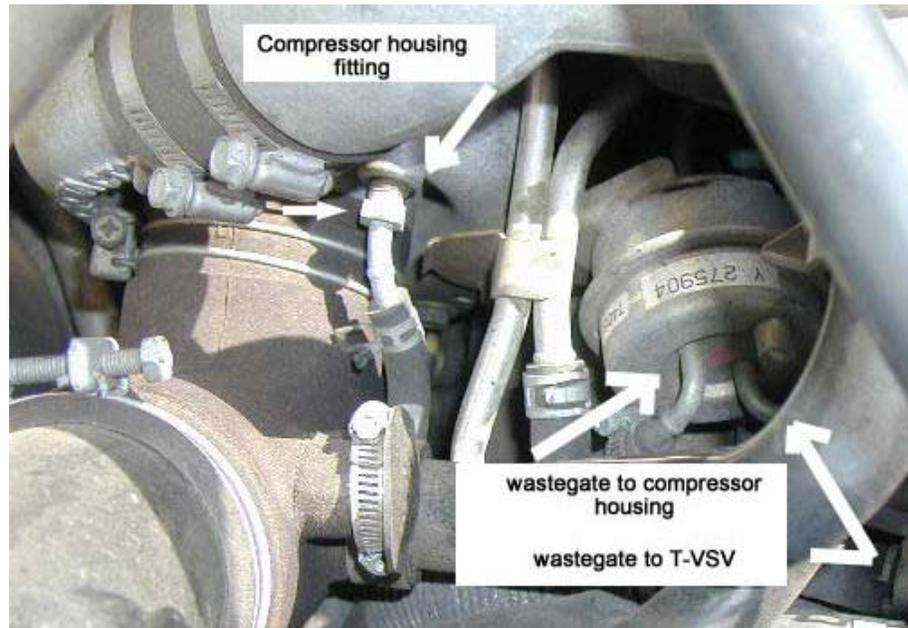


Figure 1

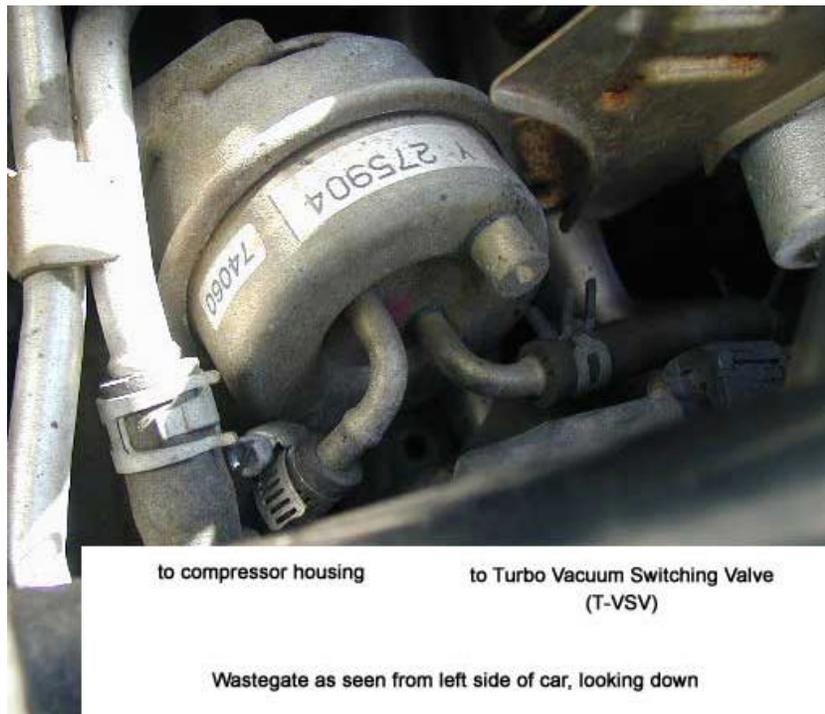
4. Attach the hose that is attached to the boost controller via a 90-degree fitting (fig.2) to the turbo wastegate at the wastegate to compressor housing fitting (fig. 3).

**Set knob - >**



**from compressor  
to wastegate**

Figure 2



**Wastegate as seen from left side of car, looking down**

Figure 3

5. Mount the boost controller where its set knob is easy to reach.

**Before taking your car out on a test run to set the boost, ensure that all hoses are securely attached and that the adjusting knob lock nut is tight.**

#### **Setting the Boost:**

**We try to ship every controller set to minimum boost, but the buyer is responsible for monitoring boost levels during the set procedure and establishing a safe boost setting.**

Boost levels are set by rotating the set knob either clockwise (more boost) or counter-clockwise (less boost). Turn the set knob counter clockwise to back the lock nut off of its seat, then adjust boost by turning the knob in the appropriate direction. Use caution when adjusting boost levels, as the set knob is very sensitive and engine damage can occur if boost levels go too high. Test runs should be made in 3<sup>rd</sup>, 4<sup>th</sup> or

5<sup>th</sup> gear so that the engine is under load. The turbocharger makes more boost when under load and setting the boost in 1<sup>st</sup> or 2<sup>nd</sup> can result in higher than desired pressures under load.

During initial set stage, turn the set knob no more than ½ turn every time you change the boost setting. Make sure that the lock nut is tight after each adjustment, or inadvertent boost changes can occur, leading to possible engine damage. Once the boost setting is close the desired level, turn the knob in ¼ turn increments. Upon reaching the desired boost level, securely fasten the lock nut and double check all hose fittings.

If, for any reason, there are problems with your boost controller or installation, contact Twos R Us.

### **Disabling the T-VSV:**

Background: The turbocharger wastegate on the Mr2 is set to 7psi. Whenever certain factors are met (such as the engine being cold), the engine control computer will shut the T-VSV and limit maximum boost to 7psi. As these factors disappear, the computer opens the T-VSV and bleeds off some of the pressure on the wastegate. This allows boost levels of up to 12 psi on certain stock cars. Failure to disable the T-VSV with a manual boost controller allows excess pressure to bleed away from the wastegate and keeps it from opening fully. This can lead to situations known as boost creep (boost levels gradually increase above what you have set) and boost spikes (instantaneous boost above your set level). Neither of these situations are desirable. Additionally, with the T-VSV open, boost bleeds off of the wastegate instantaneously when the throttle is closed – this is due to the ‘open or closed’ nature of a ball and spring MBC. This can be a very abrupt and violent occurrence that is best avoided.

Procedure: The T-VSV is located below the intake manifold. It can be disconnected at the VSV or at the wastegate. Details for both procedures are detailed herein.

At the wastegate: Disconnect the hose leading to the wastegate from the T-VSV (fig 2). Place the yellow plug provided in the hose and secure in place with factory hose clamp. Place nylon cap provided over the fitting on the wastegate and secure in place with supplied wire tie.

At the VSV: The VSV is a light blue canister with two vacuum lines entering it, and it is on the driver’s side of the car. You will have to lift the car and get underneath in order to access the T-VSV. One vacuum line entering the T-VSV comes from a small metal pipe located on the left side of the manifold. The other line goes to the turbo wastegate. Remove the line going to the wastegate and plug it with the provided yellow nylon plug. Cover the port on the VSV with the supplied nylon cap and secure in place with wire tie provided.

**Note:** There is a small hole in the side of your boost controller. This is necessary to bleed pressure off of the wastegate diaphragm when you are no longer producing boost. Do NOT plug this hole.

### **Disclaimer:**

**INCREASING BOOST LEVELS IS A PRACTICE THAT IS NOT ADVISED BY ORIGINAL EQUIPMENT AUTOMOBILE MANUFACTURERS. WHILE DOING SO WILL LEAD TO MORE POWER OUTPUT, IT CAN VERY WELL LEAD TO ENGINE DAMAGE OR COMPLETE ENGINE FAILURE IF DONE IMPROPERLY. THE ADDITION OF MORE POWER TO ANY VEHICLE REQUIRES DUE CAUTION WHILE THE DRIVER BECOMES ACCLIMATED. TWOS R US, CHASE ENGINEERING AND PRECISION DESIGN SERVICES ARE NOT LIABLE FOR ANY DAMAGE OR INJURY THAT MAY ARISE FROM THE USE OF THIS DEVICE.**

It is widely held that the maximum safe boost level for the 3S-GTE is 14psi using stock ignition and fuel components. We recommend replacement of the vehicle fuel filter and inspection of the fuel system at the time of boost controller installation. More airflow = more fuel required, and while the MR2 runs rich at factory settings, increased boost can lead to lean conditions.