



## The "D.I.Y. Manual Boost Controller"

*last updated:  
Aug 18, 2004*

....Home Depot™ style

This controller was conceived from deep within a tight pocket, along side the lint and gum wrappers. There are two reasons I made my own MBC. First, I was not going to spend money on an expensive MBC (though I did want something that would properly and effectively control boost). Second there was the challenge to build it and be able to think "heh.. see.. I didn't need to spend 50 or 100bux to buy a pre-made one!"

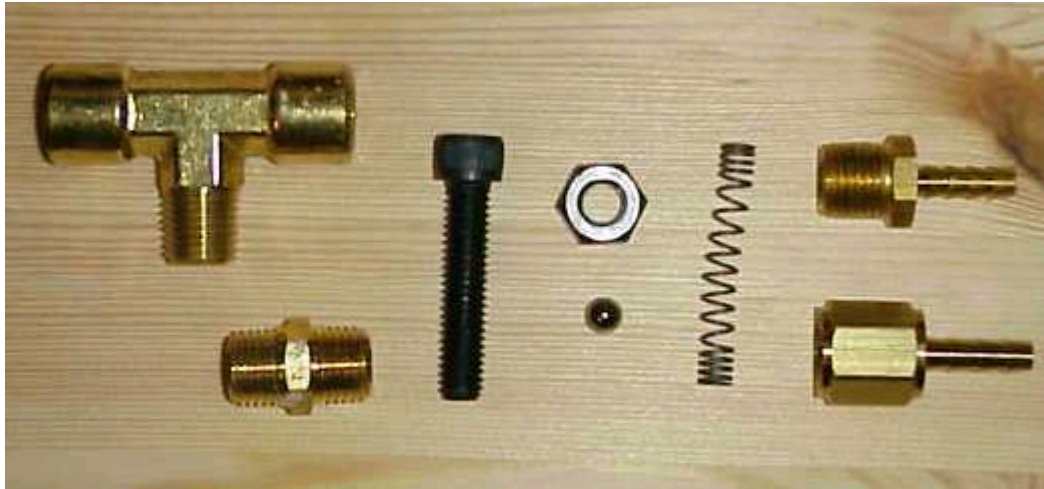
Since a fellow Club DSM Canada member shared the basic idea behind this controller with me, thanx Steve ;- ) I'm sharing it with you... If you have even the slightest bit of mechanical ability you can make one of these; building this MBC won't cost you more than about \$12 in parts from the local hardware store and an hour or two of your time...

***NOTE:*** Before making and installing a MBC you MUST have a Boost Gauge installed to monitor the changes you will be making while adjusting your boost. Failing to do so may result in nasty engine destroying demons attacking your engine. I would also highly recommend doing the fuel pump rewire mod if you plan on increasing boost beyond 15 pounds (DSM fuel system mods can be found at [www.vfaq.com](http://www.vfaq.com) ; 1G AWD rewire & 2G FWD rewire)

### the parts:

all of the following parts should be available at the local hardware store, in my case, it was Home Depot in the air tool section.

- 1/4" NPT Tee (I'll refer to it as the 'Body')
- 1/4" Male NPT coupling
- 1/4" Female NPT x 3/16" hose barb
- 1/4" Male NPT x 3/16" hose barb
- 5/16"-18 x 1 1/2" SHCS (I'll refer to it as a 'Bolt')
- 5/16-18 Jam Nut
- 1/4" dia ball bearing (I actually purchased mine from a bicycle shop)
- Spring ~ 1.69" lg x 3/16" dia
- Straight thru 3/16" plastic hose barb coupling (commonly used in windshield wiper systems)
- length of 3/16" I.D. vacuum hose to connect MBC



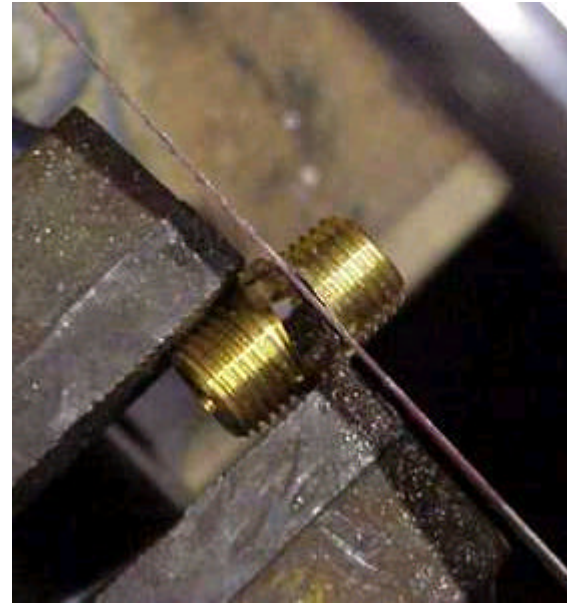
**the tools:**

- drill
- 1/32" drill bit (to drill vent hole in plastic straight thru coupling)
- 5/16"-18 UNC tap
- hack saw
- teflon tape

**the procedure:**

**1.** Cut the top part off the coupling using a hacksaw as shown.

I will refer to this piece as the "Cap"



**2.** This is what the Cap will look like after being cut. Discard the piece you cut off.



**3.** Since the hole thru the fitting is already slightly over .257" (required taps size for a 5/16-18UNC thread) drilling to the correct size to tap is not necessary. Tap the Cap all the way thru. Make sure the hole is tapped straight (concentric to the hole)



**4.** Take the jam nut and thread it part way up the Bolt. Wrap the Bolt with Teflon tape, to prevent air leaking between the threads, and thread the Bolt and nut into the Cap, place aside for now. I will refer to this as the 'Cap Assembly'.



**5.** Use some teflon tape when threading the following together... take the male hose barb and thread it onto one end of the tee. Take the female hose barb fitting and thread it onto the middle part of the tee.



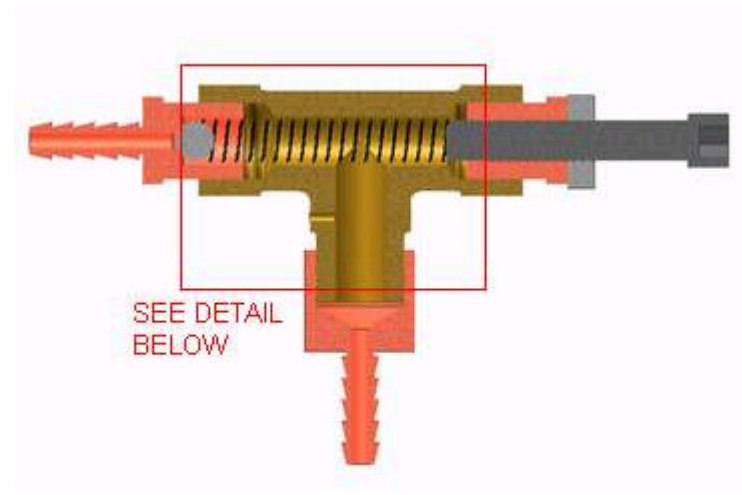
**6.** Place the ball bearing into the tee, so that it is now sitting at the bottom against the Base. Gently follow with placing the spring down on top of the bearing. Now take the Cap assembly and using some teflon tape thread it into the tee.

Note: The dimensions I have given for the spring are what worked for me. Your spring will have a different 'rate' and therefore will act differently, a little experimentation for length and compression is required to find what works for you. **MAKE SURE** the compression on the spring (from the Bolt) is completely released and increase compression on it, which increases boost, gradually.



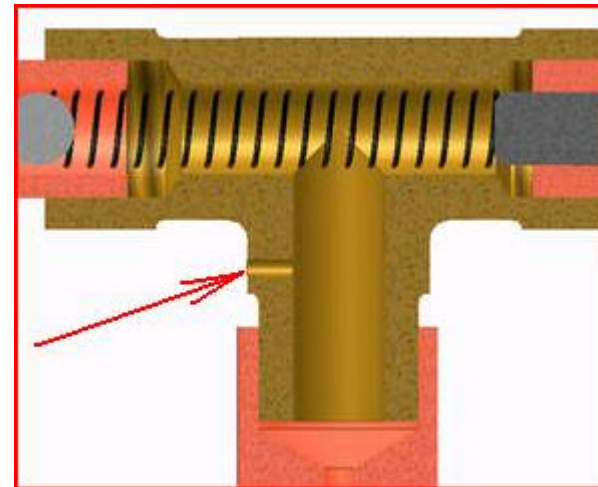
**6.1** Here is a basic cutaway view of what the internals will look like once the controller is completely assembled. Because the spring is sized closely to the inside of the Body, there is no need to modify the Body or spring to eliminate any lateral deflection that might occur if the clearance between the two components been greater.

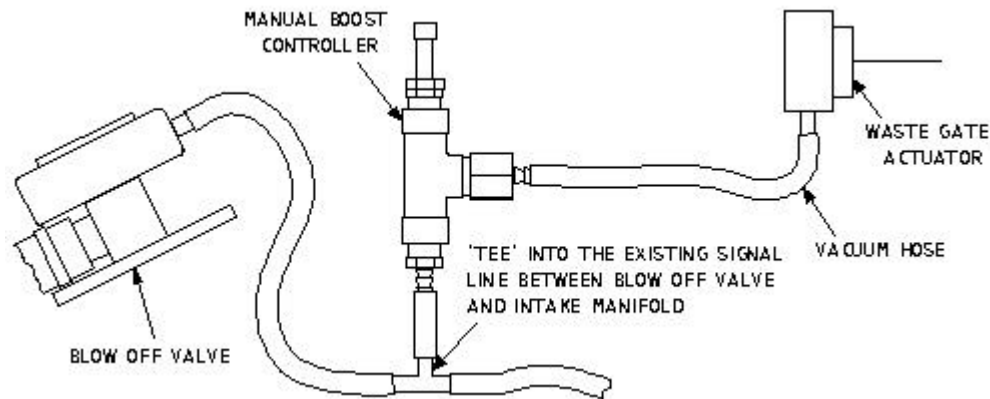
As a side note, a second ball bearing can be added between the spring and the Bolt. I've found though, that due to the spring's size, it seats fairly well on the Bolt without binding (which could cause problems with adjustment accuracy) and doesn't require it.



**7.** Carefully drill a small (1/32") hole into the body of the MBC as shown by the arrow in the cut away aside. With the bleeder hole in this position the same end result is achieved as with the coupling, but it reduces the number of parts required to fabricate and install the MBC.

The bleeder hole is not large enough to affect the signal to the Waste Gate but it is necessary to gently vent off excess vacuum or pressure in the line which causes a type of signal lock. If the hole wasn't put in, the controller would have difficulty controlling boost above about 15 pounds.





8. Attach this 'bleeder' to the fitting on the side of the MBC with silicone hose. Attach a piece of silicon hose to the other side of the 'bleeder' this line now goes to the waste gate.

9. Take another piece of silicone hose and attach one end to the Base of the MBC and the other will tee into the signal line between the BOV and the manifold.

Refer to the above Schematic for a visual layout of what I have just explained

[Update April 26, 2001:](#) For additional Installation and Adjustment Instructions [CLICK HERE](#)

### **the result:**

You can now begin to adjust your boost by turning the Bolt in or out of the Cap (turning the Bolt in, will increase boost; turning it out will decrease it). This places resistance, thru the spring, onto ball bearing which will reduce or increase the signal that the waste gate sees (thus controlling the boost). Once you find the 'sweet spot' of the controller, you will notice that it should only take minor adjustments to the Bolt to increase or decrease boost. Once you have achieved the desired boost setting, snug the Jam Nut against the Cap to lock the position of the Bolt.

Happy boosting! ;-)

You are Visitor #

[Get a GoStats hit counter](#)



This document can be reprinted for personal use or reference for your mechanic(s) with no prior permission needed. This document can NOT be reprinted or used for profit/resale/redistribution of ANY type without expressed WRITTEN permission from me in advance.

Following these fabrication and installation instructions are at your own risk.

©2001, Craig Watson

