

CONVERTING YOUR SPEED DENSITY 5.0 MUSTANG TO MASS AIR FLOW SYSTEM

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Mustang Mass Air Conversion

In this document, I will outline the steps to convert a speed density mustang to the MAF system. I am generating this because I felt the documentation I had to work with could be improved. This is based on my own personal experience converting my 88LX convertible to MAF and the instructions that came with the kit I bought. The color codes of the wiring are what I saw in my car and may not be the same but probably are. This document is for reference only and I accept no responsibility for what you do to your car.

REQUIRED COMPONENTS: You will need to obtain a Mass Air meter, a MAF computer and the electrical harness for the MAF meter. The meter harness can be purchased from several manufacturers for about 50-60 dollars but you can make your own if you wish. There are a few EEC's that can be used depending on the car. I've heard it doesn't matter manual vs. auto tranny but I don't know for sure so this is just some additional info for you.

For older MAF computers, the numbers are:
Manual transmission hard top:E9ZF 12A650 AA
Manual transmission convertible:E9ZF 12A650 BA
Automatic transimission:E9ZF 12A650 CA

For later (early 90's I think) MAF computers, the numbers are:
Automatic transimission:F3ZF 12A650 BA
Manual transmission:F3ZF 12A650 AA
Universal EEC:F3ZF 12A650 DA

You can also use the 93 cobra computer:F3ZF 12A650 CA but it requires MAF calibrated for 24# injectors.

The MAF mounting bracket and associated plumbing between the throttle body and the air filter box will have to be acquired from a junk yard or you can rig up your own setup. If you intend the to do the "optional" signals mentioned later, you'll also need to obtain 3 EEC connector pins and some wire.

NOTES: Average mechanical skills are about all that is needed. The only special skill I suggest you have to do this conversion is soldering. Crimp connections are unreliable and could lead to future troubleshooting headaches which you should avoid.

1. EEC REMOVAL

Before you begin, disconnect the battery. Remove the passenger side kick panel. There is 1 screw and a push-in fastener that secure it. Remove the screw in the white plastic retainer that holds the EEC in place. There was a ground wire and a relay, each one screw that I had to move out of the way so I could get the old EEC out. You should now be able to pull the EEC down and out. Once the EEC is out, remove the EEC harness connector using a 10mm socket to loosen the bolt in the center of the connector.

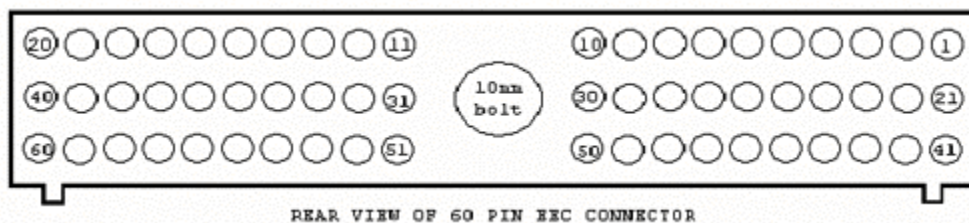
2. MAF HARNESS INSTALL

You'll need to run the 4 wire MAF meter harness through the fire wall on the passenger side. I suggest you poke another hole in the large oval grommet the existing EEC harness goes through located in the upper corner on the passenger side of the firewall. I popped the grommet out of the firewall with a screwdriver and used an exacto to poke a hole in the thin section. You don't just want to blindly jam something through there because you may cut the insulation on some of the wires and cause future shorts. I then used a wire coat hanger as a snake, poking it through the grommet and coming out by the EEC inside the car. I taped the MAF meter harness to the snake (protecting the EEC pins) and pulled it through from inside the car. Pop the grommet back into the firewall after the harness has been pulled through. I then used some silicone to seal the area where the new harness goes through the grommet so I didn't get any water leaks. Remove the red "H" shaped plastic pin lock in the EEC connector. Gently pry around the plastic pin lock with a pointed awl or small scwdriver working it up and out of the connector. You can't add or remove EEC pins to the connector without removing this lock. Depending on the MAF meter you have, it may have a 4 or 5 pin connector. Refer below for pin locations.

PIN	5-Pin connector (E4FB 14489 BA)	4-Pin connector (F078 14489 BA,E9DA 14489 BA)
A	Power (+)	Power (+)
B	No connection	Ground (-)
C	Ground (-)	Signal (-)
D	Signal (-)	Signal (+)
E	Signal (+)	

- The Power (+) wire from the MAF meter harness needs to be spliced into the existing red wire in position #37 of the EEC connector.
- The Ground (-) wire from the MAF meter harness needs to be spliced into the existing black/green wire in position #40 or #60 of the EEC connector.
- The Signal (-) wire from the MAF meter harness needs an EEC pin which then gets inserted into position #9 of the EEC connector.
- The Signal (+) wire from the MAF meter harness needs an EEC pin which then gets inserted into position #50 of the EEC connector.

The locations for pin #9 and #50 should be empty. The pin numbers are embossed into the plastic connector on the back of it where the pins insert. It's a little hard to see but they are there if you look closely.



Please note that the notches shown in the diagram are not the ones seen in the picture. The ones in the diagram are actually keys that only permit the connector to be installed into the EEC one way. Pins 20,40, and 60 are closest to you in the

picture. It should be obvious because the pin locations for the additional signals must be empty.



3. MAF METER INSTALL

Remove the existing air filter box cover and tube leading to the throttle body. Install the MAF to the passenger side strut tower which should already have the holes for the bracket. Connect the duct work, tighten the clamps and connect the meter to the MAF meter harness.

4. THERMACTOR PUMP PIN MOVES

You will need to move the 2 signals for the thermactor pump to different locations in the EEC connector. The EEC pins are held in place by a hook shaped retainer that snaps into a groove in the EEC pin. To remove you must pry the hook back from the EEC side of the connector and either push on the pin or pull on the wire from the back. I used a paper clip and flattened one end but a small jewelers screwdriver would work also. The wire currently in position 51 tan/red needs to be moved to position 38. The wire currently in position 11 green/black must be moved to position 32. If there is not enough slack for this to reach the new location, you'll have to splice in some extra wire. Mine reached without doing this.

The next 2 steps some consider optional but will generate error codes in the EEC. Others have reported stalling problems without the VSS signals. In my opinion it's worth doing if only for piece of mind and no bogus error codes. In preparation for these signals, remove the driver's seat and the driver's side kick panel. There are 3 wires that will need to be added for these signals with EEC pins on one end. I suggest you tie them all together and route them as one cable over to the EEC on the passenger side. I took this opportunity to change the carpet at the same time so I had most of the interior out which made this fairly simple.

5. FUEL PUMP MONITOR SIGNAL

This signal called FPM2 is used to monitor the voltage going to the fuel pump. It will generate an error code in the EEC if it's not connected but "shouldn't" cause a problem. Splice into one of the 2 pink/black wires going to the relay located under the driver's seat and insert the other end into position 19 of the EEC connector. Refer to figure 1.

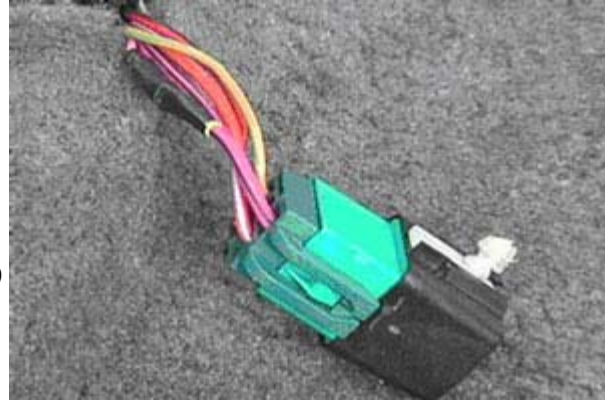


Figure 1 (Relay under driver's seat)

6. VEHICLE SPEED SENSOR SIGNALS

These signals are required for cruise control and as stated earlier, some have reported stalling problems on cars not equipped with cruise so avoid the head-ache and just do it. These will also generate an error code in the EEC if not installed. These signals come from a sensor that plugs into the transmission. The easiest place to tap into them is behind the driver's side kick panel. There is an 8 pin connector cable which runs back to the driver's seat, across the floor under the seat then back towards the front of the car and then goes through the transmission hump to the sensor. You will need to splice into the orange/yellow wire. The other end of this signal needs an EEC pin attached and this gets inserted into the EEC connector into position 6. You need to splice into the dark green/white wire for the other connection. The other end of this signal needs an EEC pin attached and this gets inserted into the EEC connector into position 3. Refer to figure 2.



Figure 2 (VSS signals behind driver's kick panel)

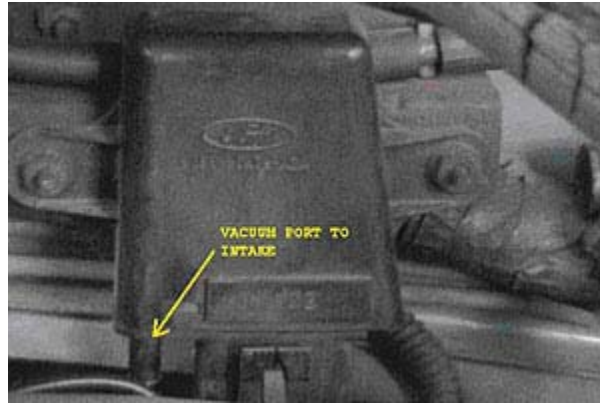
7. COMPUTER INSTALL

Put the red H shaped pin lock back into the EEC connector. Bolt the connector to the new MAF EEC and slide the EEC back up in place. Install the bolt for the EEC retaining bracket and any other relays/grounds you may have removed to get the old EEC out.

8. MAP SENSOR

The manifold absolute pressure (MAP) sensor is located on the firewall next to the

vacuum tree. Disconnect the vacuum line from the sensor going to the intake and plug the line going to the intake so you don't have a vacuum leak. Leave the port on the sensor open and DO NOT disconnect the electrical connection to the sensor.



MAP Sensor on firewall

Congratulations! You should now be done with your MAF conversion. I suggest you re-check all your wiring changes at this point before you re-connect the battery to avoid a smoke show of a different sort. Once you are happy that everything is correct, re-connect the battery and start the car. The car may idle a bit rough for a while until it relearns, but severe idle or drivability problems may indicate a real problem.