How to calibrate 99-04 Mustang Instrument Clusters
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In 1999, Ford changed their instrument cluster to move to a microprocessor-based design, using air-core gauges, rather than the more traditional d'Arsonval gauges. The older d'Arsonval meter movements suffer from changes in needle deflection as the springs and permanent magets age. the newer air core gauges have the benefit of no springs to weaken with age and the weakening of the permanent magnets in the movement will only slow the speed of needle movement, but will not affect the needle deflection positions. As a result, there is no need to recalibrate air core gauges, unless the needles have been removed, typically for gauge face replacement. This page illustrates how to recalibrate the needles on a 1999-2004 Ford instrument cluster.

Required tools:
- One standard 9V battery
- 4 alligator-clip style test leads
- A set of TORX Screwdrivers
- A small Allen wrench

Definitions:
Minor gauges - Smaller 90 degree gauges: Fuel, Temperature, Voltage, Oil Pressure, Vacuum/Boost gauges
Major gauges - Larger 360 degree gauges: Speedometer, Tachometer gauges

Caveat:
2003 and 2004 Mustang Cobras have a mechanical Vacuum/Boost gauge in place of the Voltage gauge. Before you begin, please refer to the gauge face installation instructions to learn how to calibrate the needle on this gauge.

The Calibration Process:

1. Unhook the vehicle's negative battery terminal.
2. Using the small Allen wrench, pull out on the metal tab (in the headlight knob slot) that releases the headlight switch knob from the shaft. Remove the headlight switch knob. This may take some pulling to get it off the shaft.
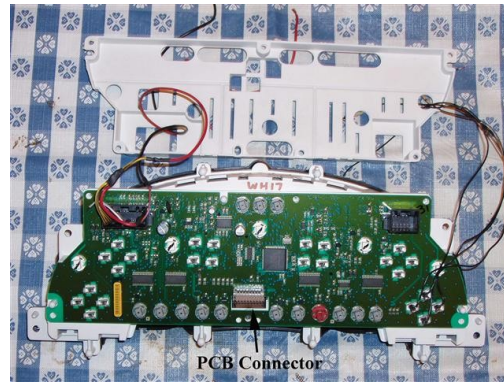

3. Remove the screws that hold the instrument cluster bezel on.
4. Remove the instrument cluster bezel.
5. Remove the screws that hold the instrument cluster into the dash.

6. Carefully pull the cluster out far enough to disconnect the two cluster wiring connectors one on either side of the back of the cluster. Unhook the boost line from the mechanical boost gauge in 03/04 Cobras.
7. Remove the cluster from the car.
8. Remove the screws that hold the plastic cover to the back of the cluster.

9. Remove the plastic cover from the back of the cluster. (You will not see the wires on your cluster. They are for my engineering work)

PCB Connector

10. Unplug the electrical connector at the bottom center of the cluster.
Pull the Printed Circuit Board from the gauge connector pins and remove the PCB

11. Remove the screws that hold the plastic cover on the front of the cluster


Front Cover Screws

12. Remove the plastic cover from the front of the cluster.

13. Carefully remove the needle from the gauge you are calibrating using a dinner fork.
If you are replacing the gauge faces, you will need to remove all of the needles and the gauge faces, install the new guage faces per the gauge face instructions.
14. For each gauge, connect a pair of clip-leads to the 9V battery, red to positive and black to negative.
15. If you are calibrating a minor gauge, connect the positive lead to the left gauge pin facing the rear of the cluster, connect the negative lead to the right gauge pin and ignore the top and bottom pins. This will center the minor gauge meter movement.
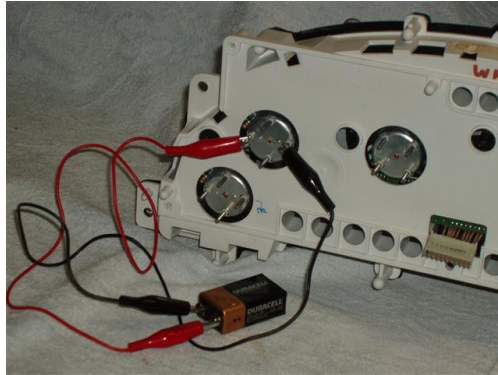
16. If you are calibrating a major gauge, connect the positive lead to one of the bottom gauge pins and add another clip-lead to connect the second bottom pin to the first bottom lead. Connect the negative lead to one of the top gauge pins and add another clip-lead to connect the second top lead to the first top lead. This will center the major gauge meter movement.
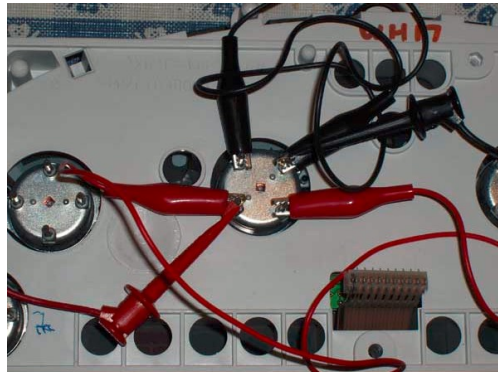
17. With the needle centered on the gauge, carefully push the needle onto the meter movement until it is firmly on the meter post. Don't push it down too far or the needle will bind on the gauge faceplate, causing the gauge to not work properly. This example shows calibration of the voltage gauge.
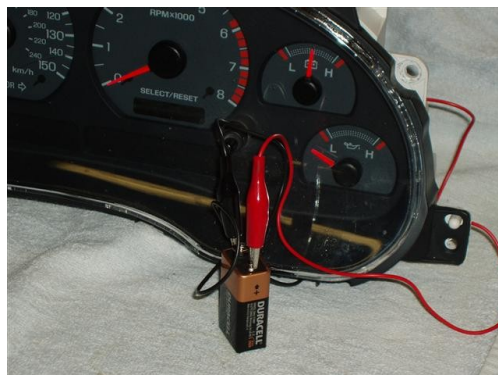
18. This example shows calibration of the speedometer.

Reassembly is the reverse of the disassembly process from step 13 to step 1.