

MX5 temp gauge linearizing

I started off with the information I found at:-

<http://www.gravitydesign.net/saturn/miata/94-97MTGLP.cfm>

to which I give "Wallyman" all credit for the original work.

There is information for the 89 - 93 gauges, 93 - 97 gauges and 99 - 03 gauges also.

As I have a JDM 98NB6C, I worked from the 99-03 section and started experimenting.

There is a chart of the water temperature thermister characteristics in this section and that is what I used as a reference. I expanded the area from 130 to 250 degrees F to show the variation of resistance with temperature more clearly.

I managed to fit all the extra resistors onto the gauge, so there is nothing external to the instrument panel.

I found that the standard temperature gauge has a flat plateau between 180F and 225F.

The gauge is essentially in a Wheatstone bridge configuration, as there are 2 coils, 2 diodes and a resistor and the thermister making up the bridge. One of the diodes is there to form the plateau, I have called it D2.

I finished up shunting the D2 with 1000 ohms, and adding a 62 ohm resistor in series with the 75 ohm resistor (137 ohms), and fitting a 6.8 ohm resistor in series with the thermister.

I fitted the 6.8 ohm resistor by lifting the junction of D2/1000 ohms and the 75 ohm resistor, off the TH tag and used the 6.8 ohm resistor to rejoin the D2/1000 ohms and the 137 ohm combination resistor, to the TH tag.

See the diagram attached for the placement of the extra resistors, and the response curves of the gauge, standard and modified.

All extra resistors are ½ watt types and should be available from Radio shack or equivalent.

To make close to a 6.8 ohm resistor, wire a 10 ohm 1/2 watt in parallel with a 22 ohm ½ watt. The actual value is 6.875 ohms, which is close enough. (or $10 + 20 = 6.66$ ohms)

To make close to a 137 ohm resistor, wire 240 ohm ½ watt in parallel with 330 ohm ½ watt, the result is 139 ohm which is close enough, (or use 120 + 18, or 82 + 56 in series = 138 ohms), just don't use the 75 ohm resistor in this case.

The 10, 20, 56, 82, 240 and 330 ohm resistors will be easier to get as they are in the preferred range of resistors most likely stocked by Radio Shack etc.

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