Triumph TR4-6 Fuel and Temperature Gauge Calibration

by Joel Justin

Let me start by saying that I know this calibration procedure works for any Triumph fuel or temperature gauge that runs off the 10V stabilizer. I know 1961 TR4 thru 1976 TR6 have this. I'm not sure about other models, or other marques. So, you'll need to do a little of your own research to see if/how your gauges can be calibrated. Also note that my references to fuel levels and temperature readings are based on my TR4 gauges. Different gauges may have different numbers (or just L and H), but if the dots are there and it has a 10V stabilizer, this procedure will work.

I replaced the fuel tank and sending unit in my TR4 several years ago and it seemed ever since then, my fuel gauge didn't read accurately. When the tank was full, the gauge read a little below full, and when the tank was a little less than half full, the gauge read almost empty.

Since I replaced the sending unit, I thought it maybe had a different resistance from my old one. The resistance of the sending units changed over time, so I wasn't sure exactly what mine should read, but it seemed from what I found on the internet that a "full" resistance should be around 20 ohms, and when "empty", around 20 ohms. Mine was about 240 and 24 ohms respectively. Too double check, I dug out my old sending unit (never throw anything away, right?) and measured it. I was basically the same. So I decided my sending unit wasn't the issue.

My next internet search uncovered that the fuel gauge can be calibrated. I also learned that the temperature gauge is identical internally with the fuel gauge, except of course for the faceplate. What I learned is that if you look carefully along the bottom circumference of the faceplate, you will see two small dots below the E (or 110) mark, two more small dots just beyond the F (or 250) mark. Finally, there is a small line below the 1/2 (or 185) mark (see Fig 1).

It turns out if you apply 2.0V across the two gauge terminals, the needle should be between the two dots below F (see Fig 2). Then if you apply 7.6V across the two terminals, the needle should be between the two dots just above the F mark (See Fig 4). These are the points you can adjust. There is a final verification when you apply 4.8V across the terminals, the needle should be over the thin line below 1/2 (see Fig 3).

Looking on the back of the gauge (see Fig 6), you will see the two posts holding the spade lugs. That is where you apply the voltages above. Just inside of those, you will see two round holes with slotted plates underneath them. Those are the adjusters. The one behind the E (of 110) adjusts the bottom end of the gauge range, and the one behind the F (or 250) adjusts the top end of the gauge range.

One thing to note here. Do NOT use a screwdriver to make the adjustments. The adjuster does not twist, but rather slide side-to-side. Also, if you slip and the screwdriver goes in to deep, you could damage the gauge. I made the tool shown in Fig 5. I used a 3/16" bolt and a Dremel tool to fashion a pin on one side. 3/16" is the perfect diameter to fit the hole and the pin fits in the slot such that as you twist the bolt, the pin slides the adjuster from side to side. The threads on the bolt made it hard to get the bolt out sometimes as they would hang in the lip of the hole. I'll get some 3/16" round stock at some point and make a new tool from it.

I started with the 2.0V adjustment, then went to the 7.6V adjustment. Because one adjustment can affect the other, I had to go back and forth multiple times slowly getting them both into their range. Because these gauges work with bi-metal strips, you have to wait a few minutes between adjustments to be sure the gauge has settled. Why do you ask? And what is a bi-metal strip?

A bi-metal strip is two thin strips of metal bonded together. One of the metal pieces expands when heated more that the other. That causes the bi-metal strip to bend as it heats up. There is thin wire wrapped around the bi-metal strip with the ends connected to the two terminals. As the voltage across the terminals varies, the current thru the wire does also. And that current causes heat which causes the bi-metal strip to bend, thus changing the gauge reading. That's why you need to wait several minutes when you change the voltage – to give the bi-metal strip enough time to stabilize thermally. Clear as mud?

Once you have your gauge calibrated at both ends, you can check the midpoint (4.8V). There is no adjustment for this. But it is a good check-step to be sure your gauge is functioning properly. If that reading is off, something in the gauge is not quite right. This is something you'll either have to live with, or decide to send your gauge in for professional rebuilding.

I realize that many of you don't have an adjustable power supply or a digital voltmeter (DVM), so if you have a fuel or temperature gauge that isn't reading correctly, get ahold of me, then you can pull it out and we can arrange to have you come over for some calibrating.

Fig 1: Note two small dots below the 110 line and just beyond the 250 line, and the broken thin line below the 185 line

Fig 2: Low (2.0V) calibration adjustment

Fig 3: Mid-scale calibration verification

Fig 4: High (7.6V) calibration adjustment

Fig 5: Calibration adjustment tool

Fig 6: High and low adjusters