



Feb. 5, 2020

Subject: Clarification to SAE/USCAR-45, Initial release (Letter #2)

This is a clarification to USCAR-45 Section 4.7.4 for resistance measurement. There will be a new step (#6) in 4.7.4 as follows:

**CHANGE #1**

6. For final measurement only, calculate the change in weld resistance by subtracting the final resistance from the initial. This value will be used to assess whether the “Max. Change from initial V Drop or R” in Table 9 has meet met.

**CHANGE #2**

In Table 9, add footnote (4) to say “Change applies only to final resistance measurement. Max resistance always applies.”

**TABLE 9 - MAXIMUM ALLOWABLE VOLTAGE DROP OR RESISTANCE**

Wire Size <sup>(1)</sup>	Test Voltage (V)	Test Current (A)	Max. (mΩ) <sup>(2)</sup>	Max. Change from initial V Drop or R mV/A (mΩ) <sup>(2)(4)</sup>
≤6	<20mV	<100mA	0.55	0.33
>6 and <12	As required <sup>(3)</sup>	50A	0.15	0.09
≥12 and <20	As required <sup>(3)</sup>	75A	0.11	0.07
≥20 and <30	As required <sup>(3)</sup>	100A	0.08	0.05
≥30 and <40	As required <sup>(3)</sup>	100A	0.06	0.04
≥40 and <50	As required <sup>(3)</sup>	100A	0.05	0.03
≥50 and <60	As required <sup>(3)</sup>	100A	0.04	0.02
≥60 and ≤120	As required <sup>(3)</sup>	100A	0.03	0.02

**NOTES:**

- <sup>(1)</sup> Wire sizes listed are per ISO 19842-3. For non-ISO wire sizes, use criteria for the next larger size or interpolate the table values.
- <sup>(2)</sup> mΩ reading is displayed directly for wires ≤ 6mm<sup>2</sup> and is calculated by dividing mV reading by applied Amps to get equivalent mΩ in mV/A for wires > 6mm<sup>2</sup>.
- <sup>(3)</sup> Voltage is not set. The circuit resistance will determine voltage. This is also known as “voltage in compliance”
- <sup>(4)</sup> Change applies only to final resistance measurement. Max resistance always applies.

Questions on this letter can be sent to [EWCAP@uscar.org](mailto:EWCAP@uscar.org).