

**Environmental Protection Agency**

**§ 1065.920**

TABLE 2 OF § 1065.910.—95% CONFIDENCE INTERVAL CRITICAL T VALUES FOR T-TEST

n-1	t <sub>crit</sub>
6	2.45
7	2.36
8	2.31
9	2.26
10	2.23
11	2.20
12	2.18
13	2.16
14	2.14
15	2.13
16	2.12
17	2.11
18	2.10
19	2.09
20	2.09

**§ 1065.915 Equipment specifications for SI engines.**

This section describes equipment you may use to measure in-use emissions. You may use other equipment and measurement systems that conform to the requirements of §§1065.905 and 1065.910.

(a) The primary components of the in-use measurement system are a mass air flow sensor, a portable FID, a zirconia-based NO<sub>x</sub> sensor, a zirconia-based air/fuel ratio sensor, and a portable NDIR analyzer.

(1) The mass air flow sensor must meet the requirements of §1065.930.

(2) The portable FID must meet the requirements of §1065.935.

(3) The NO<sub>x</sub> and air/fuel sensors must meet the requirements of §1065.940

(4) The NDIR analyzer must meet the requirements of §1065.945.

(b) You must measure the following parameters continuously at a rate of 3 Hz or higher and store the data electronically:

(1) THC, NO<sub>x</sub>, CO concentrations.

(2) Mass air-fuel ratio.

(3) Intake air flow rate.

(4) Engine speed.

(5) Parameters used to calculate torque.

(c) You must minimize sample line length for any analyzers that require a physical sample be drawn from the exhaust to the analyzer (*i.e.*, THC and CO analyzers). You must draw these samples at a constant flow rate. In no case may you use any combination of sample line length and sample flow rate that would require more than 10 seconds for the analyzer to reach 90 per-

cent of its final response after a step change to the input concentration at the opening of the sample probe. For residence time delays between 1 and 10 seconds, you must correct the measurements to be consistent with the data for engine speed, torque, and air intake. You may also correct other measurements with less than delays less than 1 second.

(d) You may insert the sample probes and sensors into the exhaust pipe, or mount them in an exhaust extension that is connected to the exhaust pipe with negligible leaking. Place the sample probes and sensors close enough to the center line of the exhaust pipe to minimize boundary layer effects from the wall.

**§ 1065.920 Equipment setup and test run for SI engines.**

This section describes how to set up the equipment specified in §1065.915, and how to use it to measure in-use emissions from SI engines.

(a) Inspect the vehicle or equipment to determine whether it meets any applicable requirements of the standard-setting part. This may include requirements related to model year, accumulated hours of operation, fuel specifications, maintenance history, engine temperatures, etc.

(b) Perform calibrations as specified in this subpart. In the field, this generally will require only zeroing and spanning the instruments. However, each instrument must have been fully calibrated according to the instrument manufacturer's specifications. Non-linear calibrations generated previously from the full calibration may be used after zeroing and spanning the instruments. Spanning can be performed using a single gas bottle, consistent with good engineering practice, and provided that stability of the span mixture has been demonstrated.

(c) Connect the data recorder (with any necessary signal interpreters or converters) to the engine's electronic control module.

(d) Disconnect the air intake system, as necessary, to attach the mass air flow sensor. Reconnect the system after attaching the mass air flow sensor.