

Environmental Protection Agency

§ 1065.525

the 100-percent speed point for normalized transient duty cycles.

(e) *Intermediate test speed.* Determine intermediate test speed with the following provisions:

(1) If peak torque speed is 60 to 75 percent of the maximum test speed, the intermediate speed point is at that same speed.

(2) If peak torque speed is less than 60 percent of the maximum test speed, the intermediate speed point is at 60 percent of maximum test speed.

(3) If peak torque speed is greater than 75 percent of the maximum test speed, the intermediate speed point is at 75 percent of maximum test speed.

§ 1065.520 Engine starting, restarting, and shutdown.

Unless the standard-setting part specifies otherwise, follow the steps in this section to start and shut down the test engine:

(a) *Engine starting.* Start the engine according to the manufacturer's recommended starting procedure in the owner's manual, using either a production starter motor or the dynamometer. Use the dynamometer to crank (or motor) the engine at the typical in-use cranking speed with a fully charged battery (nominal speed ± 10 percent), accelerating the engine to cranking speed in the same time it would take with a starter motor (nominal ± 0.5 seconds). Stop motoring by the dynamometer within one second of starting the engine. The cycle's free-idle period begins when you determine that the engine has started.

(1) If the engine does not start after 15 seconds of cranking, stop cranking and determine the reason it failed to start. While diagnosing the problem, turn off the device that measures gas flow (or revolution counter) on the constant-volume sampler (and all integrators when measuring emissions continuously). Also, turn off the constant-volume sampler or disconnect the exhaust tube from the tailpipe. If failure to start is an operational error, reschedule the engine for testing (this may require soaking the engine if the test requires a cold-start).

(2) If longer cranking times are necessary, you may use them instead of the 15-second limit, as long as the own-

er's manual and the service-repair manual describe the longer cranking times as normal.

(3) If an engine malfunction causes a failure to start, you may correct it in less than 30 minutes and continue the test. Reactivate the sampling system at the same time cranking begins. When the engine starts, begin the timing sequence. If an engine malfunction causes a failure to start, and you cannot restart the engine, the test is void.

(b) *Engine stalling.* Respond to engine stalling as follows:

(1) If the engine stalls during the warm-up period, the initial idle period of test, or the steady-state segment, you may restart the engine immediately using the appropriate starting procedure and continue the test.

(2) If the engine stalls at any other time, the test is void.

(c) *Engine shutdown.* Shut the engine down according to the manufacturer's specifications.

§ 1065.525 Engine dynamometer test run.

Take the following steps for each test:

(a) Prepare the engine, dynamometer, and sampling system. Change filters or other replaceable items and check for leaks as necessary.

(b) If you are using bag samples, connect evacuated sample-collection bags to the collection system for the dilute exhaust and dilution air sample.

(c) Attach the CVS to the engine's exhaust system any time before starting the CVS.

(d) Start the CVS (if not already started), the sample pumps, the engine cooling fans, and the data-collection system. Before the test begins, preheat the CVS's heat exchanger (if used) and the heated components of any continuous sampling systems to designated operating temperatures.

(e) Adjust the sample flow rates to the desired levels and set to zero the devices in the CVS that measure gas flow. The venturi design fixes the sample flow rate in a CFV-CVS.

(f) Start the engine if engine starting is not part of the test cycle, as specified in the standard-setting part.