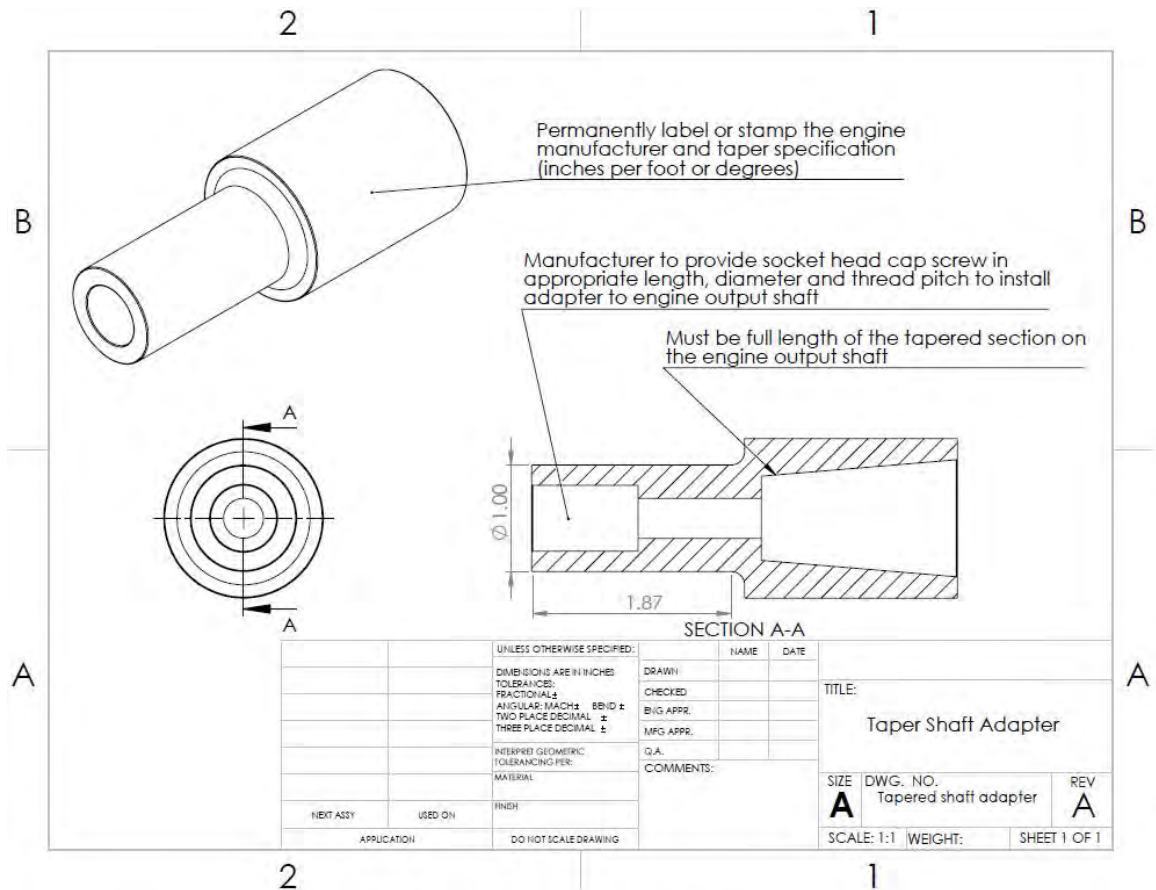


U.S. EPA-NVFEL Small SI Engine Setup

All documentation sent to EPA must be written in English

1. Please supply a location or port for the following thermocouples:
 - Cylinder Head temperature
 - Inlet Air temperature
 - Engine Oil temperature (not applicable for 2-stroke engines)
 - Exhaust temperature – if port is supplied, should be 1/4" female iron pipe size (IPS) threads
2. The engine must be supplied with any necessary external cooling, if applicable.
3. The engine must include either a recoil or electronic starting system and starting instructions. A pulley with a rope is not considered a starting system, and EPA will not accept this type of engine.
4. The manufacturer should supply all oil needed for testing in a labeled container separate from the engine (i.e., may be one shipment consisting of two containers). If oil is shipped to EPA, the manufacturer must also supply the relevant MSDS Sheets.
5. The engine must include all throttle-related components used for engine testing. If the engine is equipped with an electronic throttle, the necessary components may include modules, cables, rods, wiring diagrams, instructions written in English, and an electronic engine shut-down switch.
6. A procedure to disable the governor must also be supplied (i.e., governor control system).
7. EPA's lab provides the 12 Volt and Ground contacts for an electronic ignition system. The manufacturer must supply a dry contact relay for the engine shut-down switch.
8. The test engine must have an installed and functioning hour meter. The hour meter must have 1/10 resolution and accurately depict the engine's operating hours.
9. The engine must be supplied with the operator's manual, written in English.
10. The direction of crankshaft rotation must be marked on the outside of the engine.
11. The engine must be equipped with a muffler, air cleaner, all emissions components consistent with the certification applications, and any other components needed to run the test.

12. The manufacturer must supply a complete fuel system if the engine is sold with a fuel system. If the engine is not sold with a fuel system, then the appropriate fuel system information must be supplied.
13. Nonhandheld engines only - Manufacturer must supply an engine that can be installed on a standard one-inch shaft. If the driveshaft is tapered, the manufacturer must supply an adapter that converts the driveshaft to a standard one-inch straight shaft. See the drawing below for details.



14. Handheld engines only - A typical string trimmer installation is depicted below. EPA will install the engine by clamping the Shaft Housing into a Fixture. The Engine's output must accept a 5mm Flexible Drive Shaft for attachment to the Dynamometer.

Dimensions of the Shaft Housing must meet the following requirements:

- Inside Diameter = not less than 0.75 inch
- Outside Diameter = 1.00 inch
- Length = Extend 3 inches from nearest edge of engine case
- Shaft Housing must be well secured to the Engine as to prevent rotation/slippage during testing.

If your engine's configuration prohibits this installation, contact Julia Giuliano (Giuliano.julia@epa.gov) or your certification representative immediately. Engines that cannot be clamped onto EPA's fixture will be considered a failed emission test, unless prior EPA-approval to ship the engine in a different configuration is received.

NOTE: The Fixture and Flexible Drive Shafts depicted below will be supplied by EPA. The manufacturer is responsible for the Engine and Shaft Housing.

