



Technical Highlights

Rebuilding Diesel Engines

The U.S. Environmental Protection Agency (EPA) has established requirements that apply to the process of rebuilding or remanufacturing diesel engines. This fact sheet describes these requirements for highway, nonroad, and marine diesel engines. Separate provisions that apply to rebuilding urban bus engines (pre-1994 model year), locomotive engines, and certain highway engines are not described here.

To which engines does this apply?

You will need to meet these requirements if you are rebuilding an engine that has been certified to meet certain emission standards for heavy-duty highway diesel engines (40 CFR Part 86), nonroad diesel engines (40 CFR 89), or marine diesel engines (40 CFR Part 94). These provisions apply generally to any certified engine, but the record keeping requirements start for the model years listed in Table 1. The label on each engine should show its model year and size or power rating.

What's the general principle behind EPA's rebuilding requirements?

As a rebuilder, you in general must restore the engine to its original configuration.

What does EPA consider "rebuilding"?

Rebuilding refers to a partial or complete rebuild of an engine or engine system. This includes a major overhaul in which you replace the engine's power assemblies. It also includes replacement or rebuilding of an engine's turbocharger/aftercooler system or its fuel injection/electronic control system. For these provisions, rebuilding may or may not involve removing the engine from the truck, equipment, or vessel. For routine maintenance or service, you still need to avoid making changes that might increase emissions, but you don't need to keep any records.

How do I meet the rebuilding requirements?

You must have a reasonable technical basis for knowing that you are rebuilding the engine to its originally certified configuration for all the relevant tolerances, calibrations, and specifications that might affect emissions. You may use new, used, or rebuilt parts, but you should have a reasonable technical basis for knowing that the parts perform the same function as the original parts. You should follow the original engine manufacturer's instructions if you change any parameter or design element. Also, be sure to check, clean, adjust, repair, or replace all critical emission-related components as needed according to the original manufacturer's recommended practice. This includes the catalytic converter or other aftertreatment device, if the engine has one.

What about diagnostic codes in the engine's computers?

Don't erase or reset emission-related codes or signals without diagnosing and responding appropriately to the diagnostic codes. Clear all codes from diagnostic systems when you return the rebuilt engine to service. Don't disable a diagnostic signal without addressing the problem. This doesn't apply to engines without onboard computers.

Can I make any changes to improve the engine?

Yes. You may make changes if you have data or some other technical basis to show that emissions will not increase. Also, you may use different than original parts or make other adjustments if they make the engine operate like one of the engine manufacturer's newer certified models.

May the rebuilt engine go into any vehicle, equipment, or vessel?

No, some restrictions apply. Rebuilt engines should return to the same application (highway, nonroad, or marine). Also, the engine may not go into trucks, equipment, or vessels that were originally powered by engines certified to a more stringent level of emission control. Contact us if this is not clear from the engine labels.

What records do I need to keep?

Keep the following records for at least two years:

- the hours of operation (or mileage or other indication of age) at time of rebuild
- the work performed on the engine
- emission-related control components you worked on, including a listing of parts and components you used
- engine parameter adjustments
- emission-related codes or signals you responded to and reset.

You may keep records based on engine families rather than individual engines if that's the way you do business. Keep the records in any format that allows us to review them if we ask.

What records don't I need to worry about?

You don't need to keep information that is not reasonably available through normal business practices. We don't expect you to have information that you can't reasonably access. Also, you don't need to keep any records of what other companies do.

For More Information

See the following regulations for a more detailed description:

- Heavy-duty highway engines: 40 CFR 86.004-40
- Nonroad diesel engines: 40 CFR 89.130
- Marine diesel engines: 40 CFR 94.11

The provisions that apply uniquely to rebuilding locomotive engines are described in *Requirements for Railroads Regarding Locomotive Exhaust Emission Standards* (EPA420-F-99-036).

For additional information, visit the Office of Mobile Sources' web site at:

<http://www.epa.gov/oms/>

You can also contact Tom Stricker at:

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Table 1
 Implementation Schedule for Rebuild Recordkeeping Requirements

Application	Size Range	Model Year
Highway	all	2004
Nonroad and Marine Engines <37 kW (50 hp)	power < 19kW power < 25 hp	2000
	19 ≤ power < 37 kW 25 ≤ power < 50 kW	1999
Nonroad Engines ≥37 kW (50 hp)	37 ≤ power < 75 kW 50 ≤ power < 100 hp	2004
	75 ≤ power < 225 kW 100 ≤ power < 300 hp	2003
	225 ≤ power < 450 kW 300 ≤ power < 600 hp	2001
	450 ≤ power < 560 kW 600 ≤ power < 750 hp	2002
	power > 560 kW power > 750 hp	2006
Marine Engines ≥ 37 kW	displacement < 0.9 L/cyl	2005
	0.9 ≤ displacement < 2.5 L/cyl	2004
	displacement > 2.5 L/cyl	2007