Questions and Answers

Frequently Asked Questions from Marine Engine Owners and Rebuilders about EPA's Marine Remanufacture Program

The U.S. Environmental Protection Agency (EPA) has adopted a new emission control program for marine diesel engines that, for the first time, includes emission standards for certain engines already in operation. This information sheet answers questions about the Marine Remanufacture Program from owners and rebuilders.

Why did EPA adopt the Marine Remanufacture Program?

Marine diesel engines are significant contributors to ambient levels of ozone and particulate matter (PM) pollution in our nation's ports and along our rivers and coastal waterways. When fully phased-in, EPA's latest emission standards for new engines will result in substantial reductions of nitrogen oxides (NOX) and PM emissions from marine vessels.

Engines built before the new-engine standards take effect, however, will continue operating with higher emissions for a long time. Like locomotives, the service life of many of these engines can be 30 years or more. The Marine Remanufacture Program will provide early air quality benefits by reducing PM emissions from this legacy fleet sooner than would be the case through the normal turnover of the fleet to vessels with new engines.

Who should read this fact sheet?

You should read this fact sheet if you own a propulsion or auxiliary commercial marine diesel engine with power at or above 600 kW, manufactured in 1973 or later.

EPA United States Environmental Protection Agency

Office of Transportation and Air Quality
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You should also read this fact sheet if you are in the business of rebuilding or maintaining such marine diesel engines.

What engines are covered by the Marine Remanufacture Program?

Your marine diesel engine is covered by the Marine Remanufacture Program if it meets all of the following criteria:

1. It is a commercial marine diesel engine
2. It was manufactured between 1973 and the last Tier 2 model year. [1] (footnotes)
3. It has power at or above 600 kilowatts (kW). [2] (footnotes)
4. It has a displacement of less than 30 liters per cylinder. [3] (footnotes)
5. It is installed on a vessel that is flagged or registered in the United States.

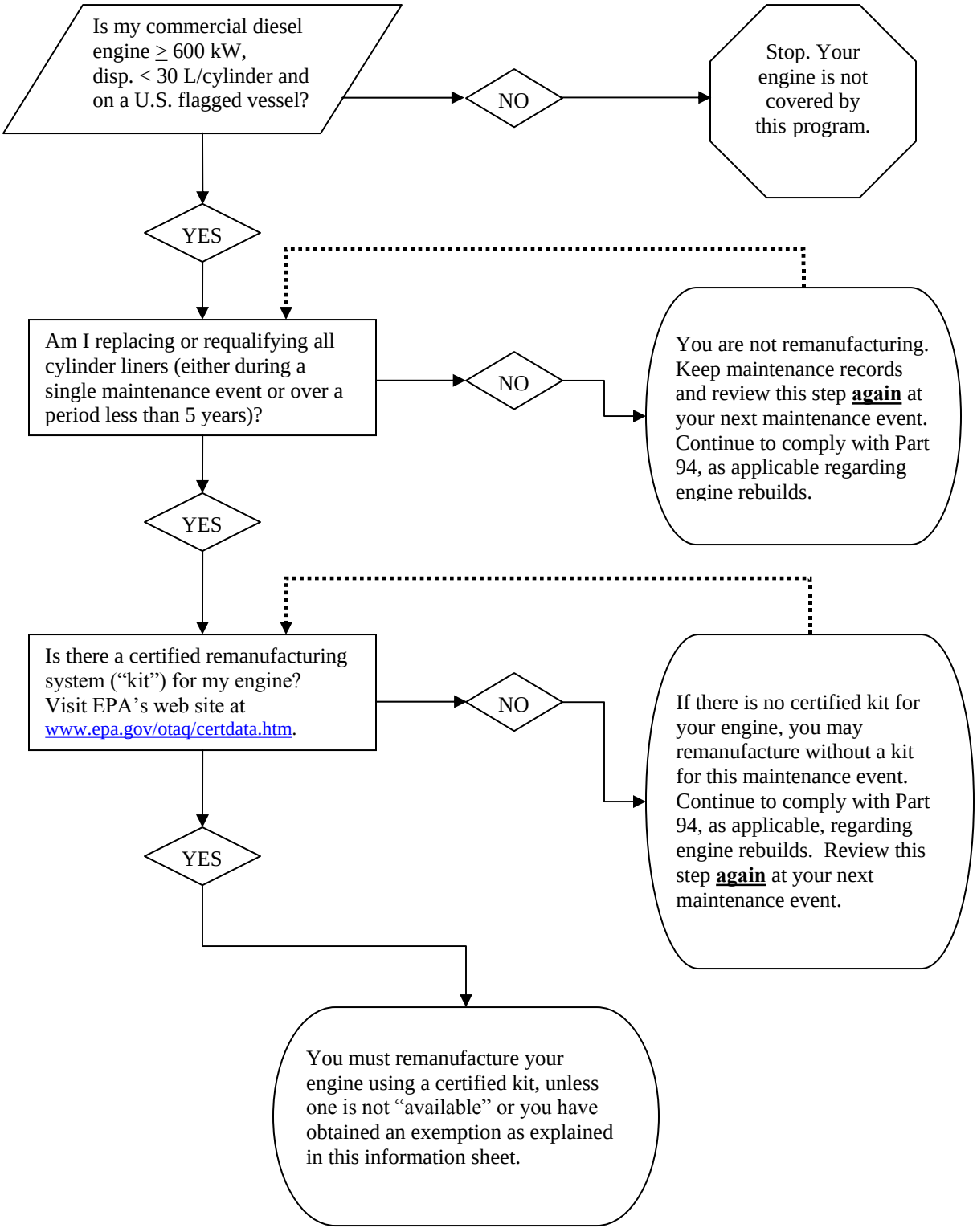
If your engine meets all of the above criteria, it is covered by the Marine Remanufacture Program.

I have a covered engine, what must I do?

Essentially, if your commercial marine diesel engine is covered by the Marine Remanufacture Program, you are required to use a certified remanufacture system when you remanufacture your engine, if one is available. These terms and criteria are described in more detail below.

The decision tree set out in Figure 1 will help you determine if you have to do something under the Marine Remanufacture Program. Further information about each of the steps in the decision tree, as well as other related information, is provided in the remainder of this information sheet.

Figure 1: Marine Remanufacture Program Decision Tree



Which scheduled maintenance activities does EPA consider to be remanufacturing?

Remanufacturing, for the purposes of this program, is the removal and replacement - including requalifying - of all cylinder liners, either all in a single maintenance event or over a period of five (5) years or less. If your cylinder replacement/requalifying schedule takes longer than five years, EPA does not consider this to be remanufacturing under this rule.

As used here, "requalifying" means to inspect a cylinder that may have been recently replaced due to a failure, to make sure it qualified for continued use.

Even though an engine may be "remanufactured" during a rebuild event, not all rebuild events and not all maintenance events are considered to be remanufacturing. A rebuild may include extensive maintenance that increases the service life of the engine, however it will not be considered to be remanufacturing unless all of the cylinder liners are replaced, either at once or over a period of 5 years.

What is a remanufacture system and how do I know if one has been certified for my engine?

A remanufacture system, commonly referred to as a "remanufacture kit," is a process for making an engine meet certain emission criteria – in this case, a 25 percent reduction in PM emissions. The kit may consist of instructions, specifications, limitations and/or engine components. In most cases, a kit is expected to consist of "better" versions of parts normally replaced at rebuild and should not adversely affect engine reliability, durability, or power. For example, a kit could include different fuel injectors or different piston rings to reduce oil consumption. However, in some cases it may consist of only instructions for tuning the engine or calibrating adjustable features. If there are several remanufacture systems certified for your engine, you may choose among them.

In addition to engine-based kits, EPA will allow certification of fuel-based kits. These would consist of a process of reducing the PM emissions by changing fuel or using a fuel additive. However, owners of engines covered by fuel-based kits will not be required to use them. Instead, they may be used as an alternative to the use of certified engine-based kits.

EPA maintains a list of certified remanufacture systems for marine diesel engines. Visit EPA's web site at www.epa.gov/otaq/certdata.htm to see if a kit has been certified for your engine.

When is a certified remanufacture kit considered available?

A remanufacture kit is generally considered to be available 120 days after it is certified. When you visit EPA's web site at www.epa.gov/otaq/certdata.htm, you will see both the certificate issuance date and the date of availability.

There are two other important criteria that determine if a kit is available for your engine. First, you must be able to obtain the kit in a timely manner according to normal remanufacturing

practices. For example, a kit would not generally be considered to be available if you would need to remove the engine from your vessel and send it to a factory to be remanufactured.

Second, the kit must not be too costly, in terms of dollars spent for each ton of PM reduced. EPA considers a kit to be too costly if it exceeds a marginal cost threshold of $45,000 per ton of PM reduction. The marginal cost of a kit is the added cost of using the kit over and above the cost of remanufacturing the engine conventionally, divided by the total amount of PM reductions expected over the useful life of the remanufactured engine.

We expect that kits will not be certified if they cannot be obtained in a timely manner or if they exceed the cost limit. However, your conditions may be unique. For example, a vessel with external keel cooling may not be able to achieve specified cooling levels required by the kit without extensive modifications to the vessel hull. If you think a kit is not available for your engine for either of these reasons, you should contact EPA.

When must I use a kit if I'm doing a rolling rebuild?

A rolling rebuild typically refers to the practice of replacing and upgrading parts incrementally over many years. If you are doing a rolling rebuild and your schedule includes replacing/requalifying all your cylinder liners over five years or less, you are remanufacturing your engine according to this program. In the case of a rolling rebuild, the clock that determines your deadline for complying with the rule starts on the date when the first set of cylinder liners is replaced, after a kit is available. This compliance clock stops on the date of replacement of the last set of cylinder liners that completes the remanufacturing, even if this is less than five years from when the clock started. If the components of your kit are compatible with your engine's current configuration, you may install them incrementally at your discretion. However, the latest a certified remanufacture kit must be applied to your engine is when the last set of cylinder liners is replaced, as determined from the clock start date described above.

What are my obligations if a kit is not available today?

If a certified remanufacture kit is not available for your engine, you must continue to comply with the otherwise applicable engine rebuilding requirements in 40 CFR Part 94 when you rebuild your Category 1 or Category 2 marine engine.

Also, before you schedule your next cylinder liner replacements, you should check EPA's web site at www.epa.gov/otaq/certdata.htm to see if a kit has become available for your engine.

I want to certify a marine remanufacture kit. How can I do this?

Anyone can certify a marine remanufacture kit, by applying to EPA for certification. You must submit test results showing that the kit will reduce PM emissions as required by the rule. Your application must also show whether owners may obtain and install the remanufacturing kit in a timely manner for a total cost that is less than $45,000 per ton of PM reduced. The details on submitting an application can be found at 40 CFR Part 1042, Subparts C and I. You should contact EPA with any questions on your application.

Due to similarities between the Marine Remanufacture Program and the Locomotive Engine Remanufacture Program, we have a streamlined process to allow locomotive kits to be certified for use with marine engines. You should contact EPA if you think your kit qualifies for this process.

What exemptions apply for special situations?

Revenue-Based Deferral:

You do not have to use a certified kit when you remanufacture your engine, if you can show that your gross annual sales revenue (including all revenues from any parent company and its subsidiaries) was less than $5 million in 2008 dollars [4] (footnotes), during the calendar year prior to the remanufacture event (or the compliance date in the case of a rolling rebuild). Although you do not need to apply to EPA to receive this deferral, you should keep records of your calculations for each year that you qualify.

State Program Exemption:

You may qualify for an exemption if you install emission controls before January 1, 2017 on your covered marine engine as part of a retrofit program through your state or local government. You must apply to EPA for this exemption before you remanufacture your engine.

Hardship Exemptions:

There are two ways to qualify for a hardship exemption under this program. You must apply to EPA for either of them.

- EPA may approve an exemption if you demonstrate that circumstances out of your control prevent you from meeting all the requirements of this rule. You must submit a compliance plan, explaining how much more time you need to comply.
- EPA may approve an exemption if you can show that a remanufacture kit is not "available" for your vessel (see "When is a certified remanufacture kit considered available?," above).

Where can I get more information?

You can review the regulation online by going to the electronic Code of Federal Regulations at: http://ecfr.gpoaccess.gov and then browsing for Title 40, Part 1042. Remanufactured engines are discussed in Subpart I of the rule, from sections 1042.801 to 1042.850. Section 1042.801 describes who is subject to this rule, as well as requirements for fuel kits and the state program exemption. Section 1042.850 describes the other exemptions.

You can review the preamble to this rule as well as other related documents at EPA's Marine Diesel web site at www.epa.gov/otaq/marine.htm.

You can also contact us at:

U.S. Environmental Protection Agency
Office of Transportation and Air Quality
Assessment and Standards Division
2000 Traverwood Dr.
Ann Arbor, MI 48105
E-mail: asdinfo@epa.gov

(footnote:)

[1] Depending on engine size, this could be 2008, 2011, 2012, or 2013. Information about the standards to which an engine is certified is located on the engine label. For help identifying your engine's tier, contact the engine manufacturer or EPA.

[2] This is roughly equivalent to 800 horsepower (hp). This information is also on the engine label.

[3] This program does not apply to Category 3 marine engines. There is a separate existing program for Category 3 marine diesel engines; you may contact EPA for more information about that program.

[4] Visit www.bls.gov for the Producer Price Index to calculate the equivalent 2008 dollars for another year.