



## TRU Advisory: 13-27

### Engine Rebuilder Requirements

#### What is the purpose of this advisory?

This advisory explains the requirements applicable to engine rebuilders if they rebuild transport refrigeration unit (TRU) engines to comply with the California Air Resources Board's (ARB) TRU Airborne Toxic Control Measure (ATCM or Regulation).<sup>1</sup>

#### Who is subject to these requirements?

Any person that rebuilds a TRU engine for use in California is subject to the rebuilder requirements at 13 CCR, section 2477.16.

#### When do these requirements go into effect?

All of the requirements for engine rebuilders are now in effect. The effective dates are included under the requirements described on pages 2 and 3, below

#### What are the basic requirements?

If a TRU is brought into compliance with the TRU ATCM's in-use performance standards<sup>2</sup> by replacing a noncompliant engine with a rebuilt replacement engine,<sup>3</sup> the rebuilt engine must be rebuilt in accordance with title 40 Code of Federal Regulations (40 CFR), sections 89.130 and 1068.120, and title 13 CCR, section 2423(l), as they existed on August 31, 2012. The engine must be rebuilt to a more stringent emissions standard than the original engine and must be a certified configuration of matched components. "Matched components" means a complete set of components corresponding to a certified emissions configuration of parts. That is, the parts must meet the original engine manufacturer's specifications, tolerances, and calibrations and be assembled in a configuration that would meet the new engine emissions standards that the reference engine was certified to meet. The engine block and cylinder head are the exception, providing there is a reasonable technical basis for knowing these components are equivalent, from an emissions standpoint, as determined by a licensed professional mechanical engineer with experience in diesel engine design and emissions testing.

In-Use Performance Standards. Rebuilt TRU engines must be rebuilt to a configuration that meets a more stringent new engine emissions standard tier than the original TRU engine.<sup>3</sup> The rebuilt TRU engine must meet the TRU Regulation's in-use performance standards, based on the effective model year of the rebuilt engine. Rebuilt TRU engines still need to meet the TRU Regulation's Ultra-Low-Emission TRU (ULETRU) In-Use Performance Standard by the end of the seventh year after the rebuilt engine's effective model year.

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<sup>1</sup> The TRU ATCM is codified at title 13 California Code of Regulations (13CCR) sections 2477.1 to 2477.21. The TRU ATCM covers both TRUs and TRU generator sets. Hereinafter, when the term TRU is used, TRU generator sets are also included, unless otherwise noted.

<sup>2</sup> The TRU ATCM's in-use performance standards are at 13 CCR, section 2477.5(a).

<sup>3</sup> The requirements for compliance by replacing engines are at 13 CCR, section 2477.5(i).

The effective model year of a rebuilt engine is determined by the new engine emissions standard tier that is met by the rebuilt engine and is the last year that the new engine emission standard tier was in effect. Table 1 lists the emission standard tiers that apply to TRU engines, the years that each of these tiers was in effect, the corresponding effective model year for a rebuilt engine meeting that tier, and the resulting ULETRU compliance deadline for the rebuilt engine.

**Table 1  
Effective Model Year and ULETRU Compliance Deadline for Rebuilt TRU Engines**

<b><i>New Engine Emissions Standard Tier Met by Rebuilt Engine</i></b>	<b><i>Years that New Engine Emissions Standard was in Effect</i></b>	<b><i>Effective Model Year of Rebuilt Engine</i></b>	<b><i>ULETRU Compliance Deadline</i></b>
Tier 2, 25-50 hp (trailer)	2004-2007	2007	December 31, 2014
Tier 2, under 25 hp (truck)	2005-2007	2007	December 31, 2014
Tier 4i, 25-50 hp (trailer)	2008-2012	2012	December 31, 2019

As an example, if a 25-50 horsepower (hp) engine is rebuilt to meet Tier 2 standards, the last year that Tier 2 standards were in effect was 2007. So the effective model year of an engine rebuilt to meet Tier 2 standards would be 2007. As indicated above, the ULETRU compliance deadline would be seven years after the effective model year, so the rebuilt engine would still have to meet ULETRU standards by the end of 2014.

Rebuilt Engine Labeling Requirements.<sup>4</sup> Beginning November 14, 2012, engine rebuilders are required to provide a supplemental label with each rebuilt engine that includes the following information:

- (1) Name of the engine rebuilder;
- (2) Engine manufacturer of the original engine;
- (3) Engine model;
- (4) Rebuilt engine effective model year;
- (5) Horsepower rating of the certified configuration of the rebuilt engine;
- (6) Emissions standard tier met by the certified configuration (e.g. Tier 2); and
- (7) Calendar year that the rebuild was completed.

Supplemental labels must be permanently affixed to the rebuilt engine in an easily accessible place, in accordance with 40 CFR, section 89.110 (for Tier 2) or 40 CFR, section 1039.135 (for Tier 4). Alternative supplemental label locations and font sizes may be necessary if surface space is not available, subject to ARB Executive Officer approval.

Documentation Requirements.<sup>5</sup> Beginning January 13, 2013, engine rebuilders are required to provide documentation within 30 days of request that demonstrates they have complied with the engine rebuilding practices of 40 CFR, sections 89.130 and 1068.120, and 13 CCR, section 2423(l). All of the following documentation is required:

Information that demonstrates there is a reasonable technical basis for knowing that the rebuilt engine is equivalent, from an emissions standpoint, to an engine that complies with the certification

<sup>4</sup> Labeling requirements for rebuilt engines are at 13 CCR, section 2477.16(b) and (c).

<sup>5</sup> Documentation requirements for demonstrating compliance with rebuilding practices are at 13 CCR, section 2477.16(d).

standards of the tier of the rebuilt engine (i.e. tolerances, calibrations, specifications) is required. Such equivalency would exist if the following two conditions are met:

- (A) Parts installed (whether the parts are new, used, or rebuilt) are such that a person familiar with the design and function of engines would reasonably believe that the parts perform the same function with respect to emission control as the original parts; and
- (B) Any parameter adjustment or design element change is made only in accordance with the original engine manufacturer's instructions or where data or other reasonable technical basis exists that such parameter adjustment or design element change, when performed on the rebuilt engine, is not expected to adversely affect in-use emissions.

To demonstrate these two conditions are met, the engine rebuilder must submit information in the form of blueprints, engineering analysis, and generally, emissions test results. If emissions data is necessary to show equivalency, the emissions testing must be conducted in accordance with new engine certification test methods and procedures in 40 CFR that apply to the emissions standard tier that is claimed to be met by the rebuilt engine's configuration of parts.

The documentation that makes this technical demonstration must be signed and stamped by a licensed professional mechanical engineer with experience in diesel engine design and testing.

Registration Information Document.<sup>6</sup> Beginning February 12, 2013, engine rebuilders shall provide a registration information document with the rebuilt engine that includes:

- (1) All of the TRU engine information needed to register in ARB's Equipment Registration (ARB-ER) system pursuant to 13 CCR, section 2477.5(e)(1)(A)7 except that engine family may be omitted for rebuilt engines. This information must be the same as the information on the rebuilt engine's re-label and supplemental emissions label that is attached to the engine. The registration information document must include a certification statement by the engine rebuilder or third party installer stating that the engine information provided is exactly the same as listed on the engine emissions label.
- (2) A separate section of the registration information document shall include entry spaces for all of the TRU or TRU gen set unit information that is required to register the unit in ARBER pursuant to 13 CCR, section 2477.5(e)(1)(A)4 and 5. The registration information document must include a certification statement, with a signature space for the third party installer, stating that the unit information provided is exactly the same as listed on the unit label.

### **Where can I find the TRU Regulation and regulatory language for engine rebuilder requirements?**

The requirements for engine rebuilders are at 13 CCR, section 2477.16 at:  
[http://www.arb.ca.gov/diesel/tru/documents/fro\\_10-16-12.pdf](http://www.arb.ca.gov/diesel/tru/documents/fro_10-16-12.pdf)

### **How will the engine rebuilder requirements be enforced?**

Authorized enforcement personnel will inspect TRUs at scales, agricultural and roadside inspection stations, border crossings, distribution centers, ports, intermodal facilities, terminals, truck stops, and dealerships. In addition, ARBER staff will review registration information that is submitted for TRUs that are using a rebuilt replacement engine compliance approach to ensure the rebuilt engine information and installer information are provided and the rebuilder has submitted the documentation described above. ARB investigators may audit engine rebuilders if inspectors or ARBER staff reports show potential violations. Citations will be issued when authorized enforcement personnel find

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<sup>6</sup> Registration information document requirements for rebuilt engines are at 13 CCR, section 2477.16(e).

violations of the requirements. The California State Legislature has established penalties for violations of ATCM requirements of up to \$10,000 per violation. ARB's enforcement penalty policies are described in detail at: <http://www.arb.ca.gov/enf/sb1402/policy.pdf>. The proposed penalty amount may be adjusted based on the relevant circumstances, such as the extent of harm to public health, safety, and welfare; nature and persistence of the violation; compliance history of the defendant; preventive efforts and actions taken to ensure compliance prior to the violation; magnitude of effort required to comply; cooperation of the defendant; and financial position of the defendant.

Owners that purchased rebuilt engines from that rebuilder will also be subject to inspection.

### **Are there emission tiers that cannot be achieved with a rebuild?**

Staff is aware that it is not possible to rebuild a Tier 1 Isuzu engine to a Tier 2 certified configuration and it is not possible to rebuild a Tier 1 or Tier 2 Kubota engine to Tier 4i certified configuration. Therefore, TRU owners are cautioned against purchasing rebuilt engines claiming to meet these certified configurations.

### **Does ARB certify engine rebuilders?**

No. ARB does not certify engine rebuilders, but ARB can require documentation as described above.

### **How can a TRU owner ensure they are not purchasing a rebuilt engine that does not meet federal and State engine rebuilding requirements and the TRU Regulation?**

This is a case of "Buyer beware!" TRU owners should not purchase rebuilt TRU engines unless the engine rebuilder can provide the owner with properly labeled engines, registration information documents, and other details about their company, including signed statements by the rebuilder that they certify the engine is rebuilt in accordance with federal and State rebuild requirements and meets a specified emissions standard. ARB also recommends against purchasing rebuilt engines that a rebuilder claims will meet Tier 4i or Tier 4f emissions standards until a rebuilder has provided ARB with documentation and technical demonstrations showing that there is a technical basis for knowing the rebuilt engine is equivalent, from an emissions standpoint, to an engine that complies with the certification standards they claim to meet. If the demonstration is found to be sufficient, ARB will revise the above recommendation.

### **Background**

TRUs are refrigeration systems powered by integral diesel internal combustion engines designed to control the environment of temperature-sensitive products that are transported in trucks, trailers, shipping containers, and railcars. The emissions from these units are a source of unhealthy air pollutants including particulate matter, toxic air contaminants, nitrogen oxides, carbon monoxide, and hydrocarbons, and pose a potential threat to both public health and the environment. These units often congregate in large numbers at California distribution centers, grocery stores, and other facilities where they run for extended periods of time to ensure their perishable contents remain cold or frozen. These distribution and loading facilities are often in close proximity to schools, hospitals, and residential neighborhoods. In 2004, the TRU Regulation was adopted by the Board to reduce diesel particulate matter emissions from TRUs and TRU generator set engines. The TRU Regulation is designed to accelerate the cleanup of existing (in-use) TRUs and TRU generator sets through retrofit with verified diesel emission control strategies (VDECS), engine repowers, use of Alternative Technologies, or unit replacements. The TRU Regulation's in-use standards are phased in and will reduce diesel particulate matter (PM) emissions from in-use TRU and TRU generator set engines that

operate in California. The Board adopted amendments to the TRU Regulation on November 18, 2010,<sup>7</sup> and October 21, 2011.<sup>8</sup>

### **For more information**

To obtain a copy of the regulation or other related compliance assistance documents, visit the TRU website at <http://www.arb.ca.gov/diesel/tru/tru.htm>. Additional questions may be addressed by calling the toll-free TRU Help Line at 888-878-2826 (888-TRU-ATCM). If you need this document in an alternative format or another language, please call 888-878-2826 or email [arber@arb.ca.gov](mailto:arber@arb.ca.gov). TTY/TDD/Speech users may dial 711 for a California Relay Service.

Si necesita este documento en un formato alternativo u otro idioma por favor llame al 1-888-878-2826 o contáctenos por correo electrónico a [arber@arb.ca.gov](mailto:arber@arb.ca.gov). Para Servicios de Relevé de California (CRS) o para el uso de teléfonos TTY, marquen al 711.

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<sup>7</sup> ARB's Regulatory Activity webpage for the 2010 rulemaking is at:  
<http://www.arb.ca.gov/regact/2010/tru2010/tru2010.htm>

<sup>8</sup> ARB's Regulatory Activity webpage for the 2011 rulemaking is at:  
<http://www.arb.ca.gov/regact/2011/tru2011/tru2011.htm>