

PART 5

FINAL REGULATION ORDER

Tier 4 Off-Road Compression-Ignition Engines

Title 13

California Code of Regulations

Sections 2421, 2423, 2424, 2425, 2425.1, 2426, 2427

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FINAL REGULATION ORDER

Note: This document is written in a style to indicate changes from the existing provisions. All existing regulatory language is indicated by plain type. All additions to the regulatory language are indicated by underlined type. All deletions to the regulatory language are indicated by ~~strikeout~~. Only those portions containing modifications from existing provisions are included. All other portions remain unchanged and are indicated by the symbol [* * * *] for reference.

Article 4. Off-Road Compression-Ignition Engines and Equipment

Amend §§ 2421, 2423, 2424, 2425, 2425.1, 2426, and 2427, title 13, California Code of Regulations, to read as follows:

§ 2421. Definitions.

(a) The definitions in Section 1900(b), Chapter 3, Title 13 of the California Code of Regulations, shall apply with the following additions:

(1) "1996-1999 Heavy-Duty Test Procedures" means the document ~~entitled~~ "California Exhaust Emission Standards and Test Procedures for New 1996-1999 Heavy-Duty Off-Road Compression-Ignition Engines, Part I-A," which includes the standards and test procedures applicable to 1996-1999 heavy-duty off-road compression-ignition engines, as adopted May 12, 1993, and as amended January 28, 2000. This document is incorporated by reference herein.

(2) "1996-1999 Smoke Test Procedures" means the document ~~entitled~~ "California Smoke Test Procedures for New 1996-1999 Off-Road Compression-Ignition Engines, Part III," which includes the standards and test procedures applicable to 1996-1999 heavy-duty off-road compression-ignition engines, as adopted May 12, 1993, and as amended January 28, 2000. This document is incorporated by reference herein.

(3) "2000 Plus Limited Test Procedures" means the document titled "California Exhaust Emission Standards and Test Procedures for New 2000 and Later Tier 1, Tier 2, and Tier 3 Off-Road Compression-Ignition Engines, Part I-B," which includes the standards and test procedures applicable to 2000 and later model year off-road compression-ignition engines, as adopted January 28, 2000, and as amended October 20, 2005. This document is incorporated by reference herein.

(4)(A) "~~2008-2010 and Later~~ Test Procedures" means the document titled "California Exhaust Emission Standards and Test Procedures for New ~~2008-2010 and Later~~ Tier 4 Off-Road Compression-Ignition Engines," which

includes the standards and test procedures applicable to 2008-~~2010~~-and later model year off-road compression-ignition engines, as adopted October 20, 2005, and as last amended October 25, 2012. This document is incorporated by reference herein.

(B) “2011 and Later Test Procedures” means the collection of documents titled “California Exhaust Emission Standards and Test Procedures for New 2011 and Later Tier 4 Off-Road Compression-Ignition Engines, Parts I-D, I-E, and I-F,” which include, respectively, the emission standards, general compliance provisions, and engine testing procedures applicable to 2011 model year and later off-road compression engines, as adopted October 25, 2012. These documents are incorporated by reference herein.

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(15) “Constant-speed engine” means

(A) for engines subject to the 2000 and Later Plus Limited Test Procedures, an off-road compression-ignition engine that is governed to operate only at rated speed, or

(B) for engines subject to the 2008-~~2010~~-and Later Test Procedures, an off-road compression-ignition engine certified to operate only at constant speed, where Cconstant-speed operation means engine operation with a governor that controls the operator input to maintain an engine at a reference speed, even under changing load. For example, an isochronous governor changes reference speed temporarily during a load change, then returns the engine to its original reference speed after the engine stabilizes. Isochronous governors typically allow speed changes up to 1.0 %. Another example is a speed-droop governor, which has a fixed reference speed at zero load and allows the reference speed to decrease as load increases. With speed-droop governors, speed typically decreases (3 to 10) % below the reference speed at zero load, such that the minimum reference speed occurs near the engine’s point of maximum power, or

(C) for engines subject to the 2011 and Later Test Procedures, an off-road compression-ignition engine certified to operate only at constant speed, where constant-speed operation means engine operation with a governor that automatically controls the operator demand to maintain engine speed, even under changing load. Governors do not always maintain speed exactly constant. Typically speed can decrease (0.1 to 10) % below the speed at zero load, such that the minimum speed occurs near the engine’s point of maximum power.

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(19) “Date of manufacture” or “Build date” means one of the following:

(A) For engines, the date on which the crankshaft is installed in an engine block, with the following exceptions:

1. Reserved.

2. Manufacturers may assign a date of manufacture at a point in the assembly process later than the date otherwise specified under this definition. For example, a manufacturer may use the build date printed on the label or stamped on the engine as the date of manufacture.

(B) For equipment, the date on which the engine is installed, unless otherwise specified in this Article 4. Manufacturers may alternatively assign a date of manufacture later in the assembly process.

[NO CHANGES TO DEFINITIONS (19) – (33) EXCEPT TO RENUMBER TO (20)-(34)]

(3435) “Maximum Engine Power” means the maximum brake power point on the nominal power curve for a specific engine configuration, rounded to the nearest whole kilowatt. The “nominal power curve” of an engine configuration means the relationship between maximum available engine brake power and engine speed for a specific engine configuration, as determined using the mapping procedures specified in Part 1065 of the 2008-2010 and Later Test Procedures or Part I-F of the 2011 and Later Test Procedures as applicable, based on the manufacturer’s design and production specifications for that engine. This relationship may also be expressed by a torque curve that relates maximum available engine torque with engine speed. The nominal power curve shall be within the normal production variability of actual power curves for production engines of the same engine configuration. This definition of Maximum Engine Power shall be applicable for all references to a specific power value or range of power values with respect to engines subject to the 2008-2010 or 2011 and Later Test Procedures as applicable, except as otherwise noted or permitted by the Executive Officer. Maximum Engine Power shall be used as the basis for categorizing engine families into appropriate Tier 4 power categories.

(3536) “Maximum Rated Power” means the maximum brake kilowatt output of an engine at rated speed as stated by the manufacturer in the manufacturer’s sales and service literature and in the application for certification. Maximum Rated Power shall be used as the basis for categorizing engine families into appropriate Tier 1, Tier 2, and Tier 3 power categories, except as otherwise noted or permitted by the Executive Officer.

(3637) “Maximum Test Speed” has the same meaning as defined in Part 1065.1001 of the 2008-2010 and 2011 and Later Test Procedures.

(~~37~~38) "Model year" means the manufacturer's annual production period which includes January 1 of a calendar year or, if the manufacturer has no annual production period, the calendar year. Other examples for the determination of model year are identified in §1039.801 of the 2008-2010 and the 2011 and Later Test Procedures, as applicable.

[NO CHANGES TO DEFINITIONS (38) – (64) EXCEPT TO RENUMBER TO (39)-(65)]

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43018, 43101, 43102, 43104, 43105, 43150-43154, 43205.5 and 43210-43212, Health and Safety Code.