

FINAL REGULATION ORDER, PART 1

Note: Amendments to the regulations are shown with underline text for additions and ~~strikeout text for deletions~~. Newly adopted regulations are shown without underline as permitted by California Code of Regulations, title 1, section 8. Subsection headings are shown in italics and should be italicized in Barclays California Code of Regulations.

Amend California Code of Regulations, title 13, sections 2430, 2431, 2433, 2434, and 2438 to read:

Article 4.5. Off-Road Large Spark-Ignition Engines

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NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43105, 43150, 43151, 43152, 43153, 43154, 43205.5, and 43210, 43210.5, 43211 and 43212, Health and Safety Code.

§ 2433. Exhaust Emission Standards and Test Procedures - Off-Road Large Spark-Ignition Engines.

(a) This section applies to new off-road large spark-ignition engines produced on or after January 1, 2001. For the purpose of this section, these engines are also referred to as “new off-road LSI engines.”

(b) Standards.

(1)(A) Exhaust Emission Standards. Exhaust emissions from off-road large spark-ignition engines manufactured for sale, sold, or offered for sale in California, or that are introduced, delivered or imported into California for introduction into commerce, must not exceed:

Exhaust Emission Standards
(grams per brake horsepower-hour)
[grams per kilowatt-hour]⁽¹⁾

| <i>Model Year</i> | <i>Engine Displacement</i> | <i>Durability Period</i> | <i>HC + NOx</i> | <i>Carbon Monoxide</i> |
|---|----------------------------|------------------------------|--|--|
| 2002 and subsequent | ≤1.0 liter | 1,000 hours or 2 years | 9.0 [12.0] | 410 [549] |
| 2001 - 2003 ^{(2),(3)} | > 1.0 liter | N/A | 3.0 [4.0] | 37.0 [49.6] |
| 2004 - 2006 ⁽⁴⁾ | > 1.0 liter | 3500 hours or 5 years | 3.0 [4.0] | 37.0 [49.6] |
| 2007 and subsequent - 2009 | > 1.0 liter | 5000 hours or 7 years | 3.0 <u>2.0</u> [4.0] [2.7] | 37.0 <u>3.3</u> [49.6] [4.4] |
| <u>2010 and subsequent</u> ^{(5),(6)} | <u>> 1.0 liter</u> | <u>5000 hours or 7 years</u> | <u>0.6</u> [0.8] | <u>15.4</u> [20.6] |

- Note: (1) For 2006 and previous model years, standards in grams per kilowatt-hour are given only as a reference. For 2007 and subsequent model years, pollutant emissions reported to ARB by manufacturers must be in grams per kilowatt-hour/brake horsepower-hour.
- (2) Small volume manufacturers are not required to comply with these emission standards.
- (3) Manufacturers must show that at least 25 percent of its California engine sales comply with the standards in 2001, 50 percent in 2002, and 75 percent in 2003.

- (4) The standards for in-use compliance for engine families certified to the standards in the row noted are 4.0 g/bhp-hr (5.4 g/kW-hr) hydrocarbon plus oxides of nitrogen and 50.0 g/bhp-hr (67.0 g/kW-hr) carbon monoxide, with a useful life of 5000 hours or 7 years. In-use averaging, banking, and trading credits may be generated for engines tested in compliance with these in-use compliance standards. If the in-use compliance level is above 3.0 but does not exceed 4.0 g/bhp-hr hydrocarbon plus oxides of nitrogen or is above 37.0 but does not exceed 50.0 g/bhp-hr carbon monoxide, and based on a review of information derived from a statistically valid and representative sample of engines, the Executive Officer determines that a substantial percentage of any class or category of such engines exhibits within the warranty periods noted in Section 2435, an identifiable, systematic defect in a component listed in that section, which causes a significant increase in emissions above those exhibited by engines free of such defects and of the same class or category and having the same period of use and hours, then the Executive Officer may invoke the enforcement authority under Section 2439, Title 13, California Code of regulations to require remedial action by the engine manufacturer. Such remedial action is limited to owner notification and repair or replacement of defective components, without regard to the requirements set forth in Section 2439(b)(5) or Section 2439(c)(5)(B)(vi). As used in the section, the term "defect" does not include failures that are the result of abuse, neglect, or improper maintenance.
- (5) For severe-duty engines, the HC+NOx standard is 2.7 g/kW-hr and the CO standard is 130.0 g/kW-hr.
- (6) Small volume manufacturers are required to comply with these emission standards in 2013.

(B) For the 2007 through 2009 model years, you may alternatively certify your engines according to the following formula instead of the standards in paragraph (b)(1)(A) of this section:

$$\frac{(HC+NO_x) \times CO^{0.784}}{100} \leq 8.57.$$

Where: HC + NO_x = hydrocarbon plus oxides of nitrogen family emissions level (FEL) in g/kW-hr
CO = carbon monoxide FEL in g/kW-hr

The HC+NO_x and CO emission levels selected to satisfy this formula, rounded to the nearest 0.1 g/kW-hr, become the emission standards that apply for those engines. You may not select an HC+NO_x FEL higher than 2.7 g/kW-hr or a CO FEL higher than 20.6 g/kW-hr.

(C) Field Testing Standards. The field testing standards for model year 2007 and subsequent off-road large spark-ignition engines are described in subpart F, Title 40 CFR Sections 1048.101(c), as adopted July 13, 2005.

(2)(A) Optional Exhaust Emission Standards. Manufacturers may certify off-road large spark-ignition engines manufactured for sale, sold, or offered for sale in California, or that are introduced, delivered or imported into California for introduction into commerce to the following optional low emission standards.

Optional Exhaust Emission Standards
(grams per brake horsepower-hour)
[grams per kilowatt-hour]⁽¹⁾

| <u>Model Year</u> | <u>Engine Displacement</u> | <u>Durability Period</u> | <u>HC+NOx</u> | <u>Carbon Monoxide</u> |
|----------------------------|----------------------------|------------------------------|----------------------------|------------------------------|
| <u>2007 - 2009</u> | <u>> 1.0 liter</u> | <u>5000 hours or 7 years</u> | <u>1.5</u> <u>[2.0]</u> | <u>4.8</u> <u>[6.4]</u> |
| <u>2007 - 2009</u> | <u>> 1.0 liter</u> | <u>5000 hours or 7 years</u> | <u>1.0</u> <u>[1.3]</u> | <u>8.3</u> <u>[11.1]</u> |
| <u>2007 - 2009</u> | <u>> 1.0 liter</u> | <u>5000 hours or 7 years</u> | <u>0.6</u> <u>[0.8]</u> | <u>15.4</u> <u>[20.6]</u> |
| <u>2007 - 2009</u> | <u>> 1.0 liter</u> | <u>5000 hours or 7 years</u> | <u>0.4</u> <u>[0.5]</u> | <u>15.4</u> <u>[20.6]</u> |
| <u>2007 - 2009</u> | <u>> 1.0 liter</u> | <u>5000 hours or 7 years</u> | <u>0.2</u> <u>[0.3]</u> | <u>15.4</u> <u>[20.6]</u> |
| <u>2007 - 2009</u> | <u>> 1.0 liter</u> | <u>5000 hours or 7 years</u> | <u>0.1</u> <u>[0.1]</u> | <u>15.4</u> <u>[20.6]</u> |
| <u>2010 and subsequent</u> | <u>> 1.0 liter</u> | <u>5000 hours or 7 years</u> | <u>0.4</u> <u>[0.5]</u> | <u>15.4</u> <u>[20.6]</u> |
| <u>2010 and subsequent</u> | <u>> 1.0 liter</u> | <u>5000 hours or 7 years</u> | <u>0.2</u> <u>[0.3]</u> | <u>15.4</u> <u>[20.6]</u> |
| <u>2010 and subsequent</u> | <u>> 1.0 liter</u> | <u>5000 hours or 7 years</u> | <u>0.1</u> <u>[0.1]</u> | <u>15.4</u> <u>[20.6]</u> |

Note: (1) Pollutant emissions reported to ARB by manufacturers must be in grams per kilowatt-hour.

(B) Field Testing Standards. The field testing standards for optional emission standard off-road large spark-ignition engines shall be 140 percent of the corresponding OLES HC+NO_x standard and 150 percent of the corresponding OLES CO standard, rounded to the nearest tenth of one gram, using the field testing procedures described in subpart F, Title 40 CFR Section 1048.101(c), as adopted July 13, 2005.

(23) Crankcase Emissions. No crankcase emissions shall be discharged into the ambient atmosphere from any new 2001 or later model year off-road LSI engines.

(4) Evaporative Emission Standards. Starting in the 2007 model year, engines over one liter that run on a volatile liquid fuel (such as gasoline), must meet the following evaporative emissions standards and requirements:

(A) Evaporative hydrocarbon emissions may not exceed 0.2 grams per gallon of fuel tank capacity when measured with the test procedures for evaporative emissions as described in subpart F, Title 40 Code of Federal Regulations (CFR) Sec.1048, as adopted July 13, 2005.

(B) For nonmetallic fuel lines, you must specify and use products that meet the Category 1 specifications in SAE J2260 (issued November 1996).

(C) Liquid fuel in the fuel tank may not reach boiling during continuous engine operation in the final installation at an ambient temperature of 30° C. Note that gasoline with a Reid vapor pressure of 62 kPa (9 psi) begins to boil at about 53° C.

(D) Design-based certification as described in subpart F, Title 40 CFR Sections 1048.105 and 1048.245, as adopted July 13, 2005, may be used instead of generating new emission data.

(c) Test Procedures. The test procedures for determining certification and compliance with the standards for exhaust emissions from new model year 2001 through 2006 off-road LSI engines with engine displacement greater than 1.0 liter sold in the state are set forth in “California Exhaust Emission Standards and Test Procedures for New 2001 and Later through 2006 Off-Road Large Spark-ignition Engines, Parts I and II,” adopted September 1, 1999, and as last amended March 2, 2007. The test procedures for determining certification and compliance with the standards for exhaust and evaporative emissions from new model year 2007 through 2009 off-road LSI engines with engine displacement greater than 1.0 liter sold in the state are set forth in “California Exhaust and Evaporative Emission Standards and Test Procedures for New 2007 through 2009 Off-Road Large Spark-ignition Engines (2007-2009 Test Procedure 1048),” adopted March 2, 2007. The test procedures for determining certification and compliance with the standards for exhaust and evaporative emissions from new model year 2010 and subsequent off-road LSI engines with engine displacement greater than 1.0 liter sold in the state are set forth in “California Exhaust and Evaporative Emission Standards and Test Procedures for New 2010 and Later Off-Road Large Spark-ignition Engines (2010 and Later Test

Procedure 1048),” adopted March 2, 2007. The test procedures for determining compliance with the standards for exhaust and evaporative emissions for new model year 2007 and subsequent off-road LSI engines with engine displacement greater than 1.0 liter sold in the state are set forth in the “California Exhaust and Evaporative Emission Standards and Test Procedures for New 2007 and Later Off-Road Large Spark-Ignition Engines (Test Procedures 1065 and 1068)”, adopted March 2, 2007.

(d) The test procedures for determining certification and compliance with the standards for exhaust emissions from new off-road LSI engines with engine displacement equal to or less than 1.0 liter sold in the state are set forth in “California Exhaust Emission Standards and Test Procedures for 1995-2004 ~~and Later Small Off-Road Engines,~~” as last amended ~~March 23, 1999~~ July 26, 2004 or “California Exhaust Emission Standards and Test Procedures for 2005 and Later Small Off-Road Engines,” adopted July 26, 2004.

(e) ~~Replacement Engines~~ Replacement Engines.

(1) [Reserved]

(2) (A) Beginning in 2004, a new off-road large spark-ignition engine intended solely to replace an engine in a piece of off-road equipment that was originally produced with an engine manufactured prior to the applicable implementation date as described in paragraph (b), shall not be subject to the emissions requirements of paragraph (b) provided that:

(i) The engine manufacturer has ascertained that no engine produced by itself or the manufacturer of the engine that is being replaced, if different, and certified to the requirements of this article, is available with the appropriate physical or performance characteristics to repower the equipment; and

(ii) Unless an alternative control mechanism is approved in advance by the Executive Officer, the engine manufacturer or its agent takes ownership and possession of the engine being replaced; and

(iii) The replacement engine is clearly labeled with the following language, or similar alternate language approved in advance by the Executive Officer:

THIS ENGINE DOES NOT COMPLY WITH CALIFORNIA OFF-ROAD OR ON-HIGHWAY EMISSION REQUIREMENTS. SALE OR INSTALLATION OF THIS ENGINE FOR ANY PURPOSE OTHER THAN AS A REPLACEMENT ENGINE IN AN OFF-ROAD VEHICLE OR PIECE OF OFF-ROAD EQUIPMENT WHOSE ORIGINAL ENGINE WAS NOT CERTIFIED IS A VIOLATION OF CALIFORNIA LAW SUBJECT TO CIVIL PENALTY.

(B) At the beginning of each model year, the manufacturer of replacement engines must provide, by engine model, an estimate of the number of replacement engines it expects to produce for California for that model year.

(C) At the conclusion of the model year, the manufacturer must provide, by engine model, the actual number of replacement engines produced for California during the model year, and a description of the physical or performance characteristics of those models that indicate that certified replacement engine(s) were not available as per paragraph (A).

NOTE: Authority cited: Sections 39600, 39601, 43013, 43018, 43101, 43102 and 43104, Health and Safety Code. Reference: Sections 43013, 43017, 43018, 43101, 43102, 43104, 43105, 43150, 43151, 43152, 43153, - 43154, 43205.5, and 43210, 43210.5, 43211 and-43212, Health and Safety Code.