State of California
AIR RESOURCES BOARD

CALIFORNIA CERTIFICATION AND INSTALLATION PROCEDURES FOR SYSTEMS DESIGNED TO CONVERT OFF-ROAD VEHICLES, ENGINES, AND EQUIPMENT TO USE ALTERNATIVE FUELS

Adopted: October 1, 1999

TABLE OF CONTENTS

I. GENERAL REQUIREMENTS 1
A. Requirements for Installation 1
B. Evaluation Criteria 2
C. Dual Conversion Systems 2
D. Emission Control Labels 2
E. Supplemental Emission Control Information Label 3
F. Owner's Manual 4
G. Manufacturer's Record Keeping Requirement 5
H. Installer's Record Keeping Requirement 5

II. NON-APPLICABLE REGULATIONS 5

III. APPLICATION FOR APPROVAL 5

IV. OFF-ROAD CATEGORIES 7

V. TEST PROCEDURES AND STANDARDS 9
A. Test Procedures 9
B. Vehicle/Engine/Equipment Exhaust Emission Standards 11
C. Evaluation Criteria for Converted Vehicle/Engine/Equipment versus Emissions Standard 11

VI. APPROVAL 12

VII. CHANGES TO CONVERSION SYSTEM AFTER APPROVAL 13

VIII. NON-CONVENTIONAL SYSTEMS 13

IX. INSTALLATION REQUIREMENTS 13

X. WARRANTY REQUIREMENTS 13
A. Requirements of Manufacturers 13
B. Requirements of Installers 14
C. Warranty Periods 14

APPENDIX A: Exhaust Emission Standards and Test Procedures; Off-Road Diesel Engines and Equipment (greater than or equal to 50 hp but less than 175 hp)

ED_001672_00003326

CALIFORNIA CERTIFICATION AND INSTALLATION PROCEDURES FOR SYSTEMS DESIGNED TO CONVERT OFF-ROAD VEHICLES, ENGINES, AND EQUIPMENT TO USE ALTERNATIVE FUELS

The authority for these Exhaust Emission Standards and Test Procedures is found in Sections 43013 and 43018 of the California Health and Safety Code.

I. GENERAL REQUIREMENTS

A. Requirements for Installation

In addition to all other standards and requirements imposed, the following general requirements shall apply to all alternative fuel conversion systems to be certified for installation on California-certified gasoline or diesel-fueled off-road vehicles/engines/equipment:

1) Shall not cause in its operation or function the emission into the ambient air of any noxious or toxic substance that is not emitted in the operation of such vehicle/engine/equipment without such modification, except as specifically permitted by regulation; and,

2) Shall not in its operation, function, or malfunction, result in any unsafe condition endangering the vehicle/engine/equipment, its occupants, other persons, or property in close proximity to the vehicle/engine/equipment, in accordance with the safety requirements specified for the original vehicle/engine/equipment; and,

3) Alternative fuel conversion systems for gaseous fuels shall be equipped with a lockoff valve, actuated by an electrical or vacuum signal, preventing delivery of fuel to the carburetor or fuel injection system, while the engine is shut down; and,

4) Shall not degrade the driveability/performance of a vehicle/engine/equipment equipped with a conversion system in such a way as to encourage consumer tampering. To verify that the driveability/performance of a converted vehicle/engine/equipment is acceptable, the Executive Officer may require that an independent laboratory evaluate the driveability/performance. The Executive Officer's determination that driveability/performance must be evaluated shall be based on an engineering evaluation by ARB staff of the conversion system described in the application for certification or on reports or observations that conversion systems similar in design to the system for which certification is sought have caused driveability/performance degradation. The cost of this evaluation shall be borne by the applicant; and,

5) With the exception of idle speed control and throttle position control, no

ED_001672_00003326

component or calibration of the conversion system that could affect emission performance shall be adjustable by the system installer or the vehicle's/engine's/equipment'suser.

B. Evaluation Criteria

1) Basis of Emissions Evaluation

The Executive Officer shall review the applicant's emission test data and the ARB test results, if any, to determine if the conversion system meets the applicable emission standards or the criteria of an approved test plan, as applicable. In the absence of certification emission test data, the Executive Officer shall use good engineering judgment and the results of any bench, functional, emission test results from conversion systems, or Compliance Criteria, if applicable, in making the determination regarding the effect of the conversion system on emissions.

2) Performance and Driveability

The Executive Officer shall use good engineering judgement to evaluate the effects of the conversion system on the vehicle's/engine's/equipment'sperformance or driveability. If the Executive Officer determines that the conversion system degrades vehicle's/ engine's/equipment's driveability or performance such that owners may be encouraged to adjust the engine settings or tamper with required emission control systems, the Executive Officer may find that the conversion system will increase emissions.

C. Dual Conversion Systems

In the case of dual fuel conversion systems, where the vehicle/engine/equipmentmay run on gasoline, diesel, or an alternative fuel, removal of originally required emission control systems will not be permitted.

D. Emission Control Labels

For installations of alternative fuel conversion systems, the applicable emission control label requirements are specified below by vehicle/engine/equipmentcategory, which requirements are herein incorporated by reference.

1) Small Off-Road Engines

"Emission Control Labels and Consumer Information- 1995 and Later Small Off-Road Engines," Title 13 CCR, Section 2404, as amended March 23, 1999.

ED_001672_00003326

2) Off-Highway Recreational Vehicle and Engines

"Emission Control Labels - New Off-Highway Recreational Vehicles," Title 13, CCR Section 2413, as amended December 8, 1999.

3) Off-Road Diesel Engines and Equipment

i) For 175 hp and greater:

"Emission Control Labels - 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines," Title 13, CCR Section 2424, as amended December 22, 1993.

ii) For greater than or equal to 50 hp and less than 175 hp:

"Emission Control Information Label," Title 40 Code of Federal Regulations, Part 89, Section 89.110-96, adopted June 17, 1994.

4) Spark-Ignition Marine Engines

Emission Control Labels - Model Year 2001 and Later Spark-Ignition Marine Engines, Title 13, CCR Section 2443.1, adopted December 8, 1999; and Consumer/Environmental Label Requirements, Title 13, CCR Section 2443.2, adopted December 8, 1999.

5) Off-Road Large Spark-Ignition Engines

"Emission Control Labels - 2001 and Later Off-Road Large Spark-ignition Engines" Title 13, CCR Section 2434, adopted October 19, 1999.

E. Supplemental Emission Control Information Label

1) The conversion system manufacturer shall provide a supplemental Emission Control Information label, which shall be affixed in a permanent manner to each converted vehicle/engine/equipment, in a location adjacent to the original Emission Control Information Label. If the supplemental label cannot be placed adjacent to the original label, it shall be placed in a location where it can be seen by a person viewing the original label.

2) The supplemental label shall show the vehicle/engine/equipmentmodel year; the Executive Order number certifying the conversion system; the conversion system manufacturer's name, address, and telephone number; and shall state that the converted vehicle/engine/equipmentcomplies with California emission

ED_001672_00003326

requirements. The label shall also list any original parts that were removed during installation of the conversion system, as well as any changes in tune-up specifications required for the conversion system. In addition, the label shall show the installer's name, address, and telephone number; the date on which the conversion system was installed; and the mileage (or engine operating hours) or the date at which the conversion system warranty expires. It is not necessary for emission control labels installed with conversion systems to be machine readable. The supplemental label for an alternative fuel converted vehicle/engine/equipment shall clearly state that the vehicle/engine/equipment has been equipped with an alternative fuel conversion system designed to allow it to operate on a fuel other than gasoline or diesel, and shall identify the fuel(s) that the vehicle/engine/equipment is designed to use.

3) The conversion system manufacturer shall provide a schematic diagram which will include a routing diagram for each alternative fuel conversion system sold and for any other conversion system that requires changes to the original vehicle/engine/equipment system. The routing diagram shall be placed in a permanent manner at a visible and accessible location and shall show modifications to the original vehicle/engine/equipment.

F. Owner's Manual

Each conversion system installed shall include an owner's manual containing at least the following information:

1) A brief description of the conversion system, including major components and their theory of operation;

2) For alternative fuel conversions, the correct refueling procedure;

3) A listing of necessary service and service intervals, as well as tune-up data, which differ from the service requirements specified by the vehicle's/engine's/ equipment's original manufacturer;

4) The name, address, and phone number of the installer, as well as a list of names, addresses, and phone numbers of the major dealers in California who supply parts for, or service the conversion system; and,

5) Warranty information.

ED_001672_00003326

G. Manufacturer's Record Keeping Requirement

Manufacturers of conversion systems shall maintain a record of the vehicle/engine/equipment identification numbers of those vehicles/engines/equipmentin which their products have been installed. As part of this record, manufacturers shall identify the installation date and the certification number of those systems installed on each vehicle/engine/equipmentand shall identify the vehicle's/engine's/equipment'sowners at the time of installation, including the owner's current address and phone numbers at the time of installation. The conversion system manufacturer shall supply a copy of all installation information to the Executive Officer upon request.

H. Installer's Record Keeping Requirement

Installers of conversion systems shall maintain records as specified in Section I.G of these procedures and shall provide this information to conversion system manufacturers upon request.

II. NON-APPLICABLE REGULATIONS

All requirements in the referenced California or federal exhaust emission standards and test procedures for gasoline or diesel-powered vehicles/engines/equipment not directly related to exhaust emission test procedures shall not be applicable to these procedures.

III. APPLICATION FOR APPROVAL

A. A request for certification of an alternative fuel conversion system must be submitted by an authorized representative of the conversion system manufacturer intending to offer the conversion system for sale or installation in the State of California.

B. A separate request shall be required for each model year, even though the emission standards for certifying new vehicles/engines/equipment may be the same for consecutive model years. The request shall include all test data and other information required pursuant to these Procedures, except where other provisions of these Procedures allow carry-over or carry-across of test data from an engine family to the engine family (ies) for which certification is sought. Procedures governing carry-over and carry-across are discussed under section VI.D of these Procedures.

C. An application for approval shall include the following:

1) Identification and description of the vehicle/engine/equipmentin each vehicle or equipment category and engine displacement ranges for which approval is requested. The applicable off-road categories are:

ED_001672_00003326

i. Small Off-Road Engines and Equipment

ii. Off-Road Diesel Engines and Equipment

iii. Off-Highway Recreational Vehicles and Engines

iv. Spark-Ignition Marine Engines

v. Off-Road Large Spark-Ignition Engines

2) A complete description and identification of the conversion system, including carburetor model number(s), carburetor, fuel injectors configuration/calibration codes (s), vaporizer/regulator model number(s), evidence of proper assembly of the fuel tank and fuel lines, and the necessary modification(s) to the vehicle/engine/equpment.

3) A statement of recommended maintenance procedures, including initial installation and initial tuning, and equipment necessary to ensure that the vehicle/ engine/equipment will operate in conformance with applicable regulations. If the maintenance procedures are not uniform, then the specific maintenance procedures for each different make and model shall be given. A description of the program for training of personnel for such maintenance and installation shall be included.

4) An agreement that within 45 days of the Executive Officer's request any one or more of the test vehicles/engines/equipment will be supplied to the ARB for such testing as it may require, or (by mutual consent between the ARB and the applicant), will be made available at the manufacturer's facility for such testing. Provided, that in the latter case, it is further agreed that the instrumentation and equipment specified by the ARB will be made available for testing operations. Any testing conducted at a manufacturer's facility pursuant to this subparagraph shall be scheduled as promptly as possible.

5) An agreement that up to two test vehicles/engines/equipment per off-road category will be made available to the ARB upon request for testing for such reasonable periods as may be required. These test vehicles/engines/equipment shall be selected by the Executive Officer and shall be typical of production models available for sale to the public. They shall also be representative of the engines and transmissions offered by the vehicle/engine/equipment manufacturers.

6) An agreement that the modifications made in the field will be properly

ED_001672_00003326

identified. To meet this requirement, the model number shall be permanently marked on the carburetor or another permanently affixed engine component. A permanent label, to be affixed in the engine compartment where it may be easily read, covering the following for the specific installation, shall be furnished. The label shall set forth the following:

i. Manufacturer's name and address
ii. The California ARB certification number identified as "CARB E.O. No. B-XX-O".
iii. Spark timing.
iv. Idle speed.
v. Idle adjustment used.
vi. Diagrams for vacuum hose routing and electrical wiring harness.
vii. Carburetor, vaporizer/regulator model numbers, and carburetor configuration/calibration or fuel injector codes.

7) Identification and description of the engine families for which the conversion system to be certified is designed and the emission standards applicable to those engines.

IV. OFF-ROAD CATEGORIES

Applicants requesting certification for conversion systems shall utilize the appropriate procedures as specified in this section and section V of these procedures.
Emissions testing performed pursuant to these procedures shall be conducted by a vehicle/engine/equipment exhaust emissions test laboratory.

The vehicle/engine/equipment tested shall follow the appropriate break-in period as specified in the appropriate exhaust emissions test procedures before commencing testing. Break-in periods for each off-road category are specified in the test procedures referenced below. The baseline emissions for the test vehicle/engine/equipment without the conversion system shall be determined prior to testing, but after stabilization of the vehicle/engine/equipment. Following the addition of the conversion system to the test vehicle/engine/equipment, the test vehicle/engine/equipment shall be tested to ensure that the original certification standards are met.

For the purposes of these procedures, off-road vehicles/engines/equipment and equipment are categorized as follows:

A. Small Off-Road Engines

ED_001672_00003326

Small Off-Road Engines include all engines that produce, or are designed to produce, less than 25 horsepower (hp), manufactured on or after January 1, 1995, and used in off-road mobile applications, with the exceptions of off-road motorcycles, all-terrain vehicles, marine vessels, snowmobiles, model airplanes, model cars, or model boats.

B. Off-Road Diesel Engines and Equipment

The heavy-duty off-road diesel cycle engine and equipment category consists of off-road diesel-cycle engines that are:

(1) greater than or equal to 50 hp and less than 100 hp manufactured on or after January 1, 1998, and certified to meet the federal emission standards and certification provisions;

(2) greater than or equal to 100 hp and less than 175 hp manufactured on or after January 1, 1997, and certified to meet the federal emission standards and certification provisions; and

(3) diesel cycle and alternative fueled diesel cycle engines equal to 175 hp and above for off-road engines produced on or after January 1, 1996, and certified to meet California's exhaust emission standards and test procedures. This last category includes engines used in farm and construction equipment, as well as mining, forestry, and industrial equipment.

C. Off-Highway Recreational Vehicles and Engines

The off-highway recreational vehicle category includes new off-highway recreational vehicles and engines in such vehicles, produced on or after January 1, 1997. This category includes off-road motorcycles, all-terrain vehicles, go-karts 25 hp and greater, golf carts, and specialty vehicles. New golf carts used in areas that do not meet the federal ozone standards will continue to have a zero-emission requirement.

D. Spark-Ignition Marine Engines

The spark-ignition marine engine category includes 2001 and subsequent model year engines used to propel marine watercraft, but not including sterndrive or inboard engines.

E. Off-Road Large Spark-Ignition Engines

The off-road large spark-ignition engine category includes engines that produce, or are designed to produce 25 and greater horsepower, and that are produced on or after January 1, 2001. Such engines are typically used to power forklift trucks, sweepers, generators, industrial equipment and other miscellaneous applications.

ED_001672_00003326

V. TEST PROCEDURES AND STANDARDS

A. Test Procedures

1) Test Procedures for Small Off-Road Engines

"California Exhaust Emission Standards and Test Procedures for 1995 and Later Small Off-Road Engines," adopted March 20, 1992 and last amended March 23, 1999, which is incorporated by reference herein. (These procedures are also incorporated by reference by Title 13, California Code of Regulations (CCR) Section 2403.)

2) Test Procedures for Off-Road Diesel Engines and Equipment

i) For 175 horsepower and greater:

"California Exhaust Emission Standards and Test Procedures for New 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines," adopted May 12, 1993, which is incorporated by reference herein, and "California Smoke Test Procedures for New 1996 and later Heavy-Duty Off-Road Diesel Cycle Engines," adopted May 12, 1993, which is incorporated by reference herein. (These procedures are also incorporated by reference by 13, CCR Section 2423).

ii) For greater than or equal to 50 horsepower and less than 175 horsepower:

The exhaust emission standards and test procedures specified in Appendix A of these procedures, which is incorporated by reference herein.

3) Test Procedures for Off-Highway Recreational Vehicles and Engines

i) For new off-road motorcycles, all-terrain vehicles, and golf carts:

"California Exhaust Emissions Standards and Test Procedures for 1997 and Later Off-Highway Recreational Vehicles and Engines," adopted November 23, 1994, and as last amended October 22, 1999, which is incorporated by reference herein. (These procedures are also incorporated by reference by Title 13, CCR Section 2412).

ii) For all-terrain vehicle engines

"California Exhaust Emission Standards and Tests Procedures for 1995 and Later Small Off-Road Engines," adopted March 20, 1992, and last amended March 23,

ED_001672_00003326

1999, which is incorporated by reference herein. (These procedures are also incorporated by reference by Title 13, CCR Section 2412).

4) Test Procedures for Spark-Ignition Marine Engines

"California Exhaust Emission Standards and Test Procedures for 2001 and Later Spark- Ignition Marine Engines" adopted October 21, 1999, which is incorporated by reference herein. (These procedures are also incorporated by reference by Title 13, CCR Section 2442).

5) Test Procedures for Off-Road Large Spark-Ignition (LSI) Engines

i) For new off-road LSI engines with engine displacement greater than 1.0 liter

"California Exhaust Emission Standards and Test Procedures for New 2001 and Later Off-Road Large Spark-ignition Engines," adopted September 1, 1999, which is incorporated by reference herein. (These procedures are also incorporated by reference by Title 13, CCR Section 2433).

ii) For new off-road LSI engines with engine displacement equal to or less than 1.0 liter

"California Exhaust Emission Standards and Test Procedures for 1995 and Later Small Off-Road Engines," as last amended March 23, 1999, which is incorporated by reference herein. (These procedures are also incorporated by reference by Title 13, CCR Section 2433).

6) Alternative Test Plan

An applicant may use an alternative test procedure subject to prior approval by the Executive Officer. An applicant requesting the use of an alternative test procedure must fully describe the proposed test procedures and submit information that demonstrates the proposed procedures will yield results equivalent to those generated by the applicable standard test procedures.

The Executive Officer may reject data generated under alternative test procedures which do not correlate with data generated under the specified procedures.

B. Vehicle/Engine/Equipment Exhaust Emission Standards

a) For 2000 and later model-year small off-road engines

ED_001672_00003326

To demonstrate compliance with the applicable emission standards, each emission test result shall be adjusted by the application of the certification deterioration factor provided in the original engine manufacturer's certification application for the model and model year of the test engine. The deteriorated emission test results shall be in compliance with these procedures only if they are equal to or less than the California new engine exhaust emission standards. The applicant shall be permitted one retest if the initial emission test results fail to demonstrate compliance with these procedures. The results of the initial test and the retest will be averaged, and the averaged result must comply with the standards set for the single test in order to demonstrate compliance.

b) All other off-road categories:

The conversion system manufacturer shall demonstrate compliance with these procedures by showing that the exhaust emissions from the test vehicle/engine/equipment with the conversion system installed are in compliance with the California new vehicle/engine/equipment exhaust emission standards for the vehicle/engine/equipment class and model year of the test vehicle/engine/equipment.

c) Vehicles/Engines/Equipment certified under optional averaging, banking, and trading provisions

For purposes of these procedures the applicable emission standards for vehicles/engines/equipment certified under optional averaging, banking, and trading provisions shall be the family emission limit (FEL) that the vehicle/engine/equipment is certified to.

C. Evaluation Criteria for Converted Vehicle/Engine/Equipment versus Emissions Standard

The applicable emissions standards shall be at least as stringent as the emission standards applicable to the engine families for which the conversion systems to be certified are designed. A maximum of one test vehicle/engine/equipment per engine family for which certification is sought shall be required. Prior to the commencement of testing, test engine(s)/vehicle(s)/equipment(s) must be approved by the Executive Officer as being representative of the range of engine families for which certification is being sought.

A dual-fuel conversion system shall be emission tested using each fuel that it is capable of operating on. At the conclusion of vehicle/engine/equipment mileage accumulation (i.e., break-in period), a second emission test or series of tests shall be performed.

VI. APPROVAL

A. If, after a review of the data and other information submitted by the conversion system manufacturer, the Executive Officer determines that the conversion system conforms to these

ED_001672_00003326

procedures, he or she will issue an Executive Order certifying the conversion system for sale and installation on the vehicles/engines/equipmentspecified in the application.

B. Such Executive Order may be issued upon such terms as the Executive Officer deems necessary to ensure that any modifications to use an alternative fuel conversion system will meet the requirements of these procedures.

C. Approval for a conversion system for a given model year is deemed as approved for all previous model years unless specifically limited in the Executive Order. Approval for subsequent model years (i.e., carry-over) may be given, upon request by the applicant, if the Executive Officer determines that the carry-over data will adequately represent the emissions performance of the conversion system to be certified. Carry-across (installation on vehicles/engines/equipment with similar emission control systems) may also be allowed.

D. Carry-Over and Carry-Across

1) Carry-over of emission test data from the previous model year to the following model year will be allowed, if the Executive Officer determines that the carry-over data will adequately represent the emissions performance of the conversion system to be certified. Carry-across to similar engine families may also be allowed.

2) An original equipment manufacturer that produces conversion hardware which upgrades an old engine to the identical configuration of a newer engine family that the same manufacturer also produces may carry-across the newer engine family certification test data for the conversion hardware certification process. (For these purposes, the term "identical" means that all engine parts on the converted engine which affect emissions, such as pistons, cylinder heads, etc., must be of the same design and construction as those on newer engine family. Engine calibration, including injection timing must also be identical).

3) Applications for carry-over and carry-across must be accompanied by an engineering analysis demonstrating that the emissions and durability of the conversion system and engine family for which certification is being sought will be adequately represented by a certified conversion system/engine application.

VII. CHANGES TO CONVERSION SYSTEM AFTER APPROVAL

All changes to the conversion system made after receiving an Executive Order, including installation changes, must be submitted to the Executive Officer. The Executive Officer may

ED_001672_00003326

require additional testing prior to approval.

VIII. NON-CONVENTIONAL SYSTEMS

The Executive Officer may deviate from these procedures for non-conventional systems, such as diesel fuel used in conjunction with an alternative fuel, in the event that such systems cannot be tested using these procedures. Such deviations shall be limited to those necessary for the proper testing and evaluation of such systems.

IX. INSTALLATION REQUIREMENTS

Prior to releasing a converted vehicle/engine/equipment, the installer of an alternative fuel conversion system shall issue to the consumer a certificate of compliance. The certificate of compliance shall contain, but need not be limited to, the following: the vehicle's/engine's/equipment's identification number, the model year and make, the engine size, the manufacturer and fuel type of the conversion kit, the date of installation, and the emissions standard and category to which the converted system is certified. The installer shall maintain a record of this information. The ARB may require random inspection of any vehicle/engine/equipment.

X. WARRANTY REQUIREMENTS

A. Requirements of Manufacturers

The manufacturer of an alternative fuel conversion system shall warrant to the person having the vehicle/engine/equipment converted and to each subsequent purchaser of the vehicle that the alternative fuel conversion system is designed and manufactured to conform with the applicable requirements of these Procedures and is free from defects in materials and workmanship which cause the alternative fuel conversion system to fail to conform with the applicable requirements of these Procedures or cause damage to any part on the converted vehicle/engine/equipment.

This warranty shall be effective for the applicable warranty period specified in Section X.C. of these procedures, and shall cover the full repair and replacement costs including the costs of diagnosis, labor, and parts (including any part on the converted vehicle/engine/equipment that is damaged due to a defect in the alternative fuel conversion system).

B. Requirements of Installers

Each installer of an alternative fuel conversion system shall warrant to the ultimate purchaser and to each subsequent purchaser that the alternative fuel conversion system will not fail to conform

ED_001672_00003326

with the applicable requirements of these Procedures due to incorrect installation, and that no part on the converted vehicle/engine/equipment will be damaged due to incorrect installation. Installers of alternative fuel conversion systems shall install only those systems of a certified configuration and shall agree to indemnify the person having the vehicle/engine/equipment converted and to each subsequent purchaser of the vehicle/engine/equipment for the cost of repair of any vehicle/engine/equipment upon which a noncertified configuration was installed. In addition, the installer shall agree to indemnify the person having the vehicle/engine/equipment converted and to each subsequent purchaser of the vehicle/engine/equipment for any tampering fines that may be imposed as a result of improper installation of the alternative fuel conversion system.

The warranties and agreements to indemnify shall be effective for the applicable warranty period specified in Section X.C. of these procedures and shall cover the full repair and replacement costs including the costs of diagnosis, labor, and parts (including any part on the converted vehicle/engine/equipment that is damaged due to a defect in the alternative fuel conversion system). Before an installer installs an alternative fuel conversion system, he or she shall have submitted to the ARB a sample of the warranty statement to be provided by the installer in accordance with this paragraph.

C. Warranty Periods

The warranties specified in Sections X.A. and X.B. of these procedures shall be effective for the following periods of customer service:

1. Small Off-Road Engines:

   2 years

2. Off Highway Recreational Vehicles and Engines:

   This category of off-road vehicles is not subject to warranty requirements.

3. Off-Road Diesel Engines and Equipment:

a. For 175 hp and greater:

   Five years or 3,000 hours of operation, whichever occurs first.

b. For greater than or equal to 50 hp and less than 175 hp:

   Five years or 3,000 hours of operation, whichever occurs first.

ED_001672_00003326

4. Marine Spark-Ignition Engines

Four years or 250 hours of use, whichever occurs first.

5. Off-Road Large Spark-Ignition Engines

1. 2001 to 2003 model year engines with engine displacement greater than 1.0 liter; the warranty period will be two years or 1500 hours of operation, whichever first occurs.

2. 2004 and subsequent model year engines with engine displacement greater than 1.0 liter; the warranty period will be three years or 2500 hours of operation, whichever first occurs.

3. 2002 and subsequent model year engines with engine displacement equal to or less than 1.0 liter; two years.

ED_001672_00003326