A GUIDE TO CARB EMISSIONS CERTIFICATION OF SPECIALTY AUTOMOTIVE AFTERMARKET PARTS

Prepared for:
Members of Specialty Equipment Market Association Producing Emissions-Related Products

Prepared by:
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By Way of Introduction

Dear SEMA Member,

Over the years, SEMA has received many requests from members seeking information about Federal and State emissions compliance requirements. In many cases, there has been confusion about the process by which requirements can be met and Executive Orders (E.O.s) from the California Air Resources Board (CARB) are issued for applicable parts and systems. In the past, SEMA has provided information and outlined compliance steps. However, we've learned there are ways to further simplify the process. So, to assist our members in understanding the requirements and to identify ways to minimize both cost and time in reaching compliance status, we've collected information that addresses these issues in a very user-friendly way.

Where appropriate, we note website links to help you get first-hand information from various compliance-related sources. In many ways, the CARB website is very useful for this purpose. Other times, we've shared simplified steps based on years of assisting members as they complete their E.O. requirements.

In short, the information contained on these pages is intended as a simplified guide to obtaining E.O.s that includes relevant references to other documents and websites. Overall, it is meant as a guide designed to maximize the probability of a successful compliance experience.

If you have any question about the information provided, need to identify the proper CARB staff person(s) or want to contact me with specific concerns, I can be reached at 901/377-1210 or jmcfar1@aol.com.

Jim McFarland

SEMA Technical Consultant
Simplified steps to obtaining a CARB E.O.

Elsewhere in this material, you will have an opportunity to review a collection of information dealing with the concept, objectives, and elements of a CARB Executive Order for specialty aftermarket automotive parts and systems. On the surface, this overall procedure can not only seem daunting but possibly woven with terminology and procedures that are unfamiliar to applicants who’ve not yet worked through the process.

The purpose of this memorandum is to look past these potential complexities and review steps intended to simplify an understanding of what is required to obtain an E.O. The following is based on the fact you are producing an emissions-related part or system, so the steps begin with that assumption.

- Obtain copies of Executive Order Application forms from the CARB website (www.arb.ca.gov). Once on the site’s homepage, click on “Forms” (under “Resources”) and then click on “Application forms for Exemptions for Add-on or Modified Parts VC 27156” and obtain the form(s) necessary for your particular application.

- Make a list of the vehicles, model years and related engine families for which you plan to sell products and intend E.O. coverage. Contact the CARB El Monte, CA office’s Certification Division and speak to a member of this staff. Tell that person you will be submitting an E.O. Application and, prior to then, sending a list of product applications (brand, MY and engine families) for which the E.O. is desired. This will give the CARB staff person a heads-up on your intentions and provide them an opportunity to begin identifying the test vehicle(s). You may initiate this contact by calling Rose Castro, Manager, Certification Division, 626-575-6848.

While this same listing of product applications will be noted on the E.O. Application to be filled out, it’s sometimes beneficial to provide this information in advance. The reason is because some designated test vehicles may be difficult to locate, and allowing the CARB to select a vehicle(s) prior to submitting an Applications can save some time finding the proper test vehicle(s) in the overall E.O. process.

- At this stage, you should identify (if you’ve not already done so) a suitable emissions testing facility. Elsewhere in this book, you will find a current list of test labs “recognized” (acceptable) to the CARB. You may even want to speak with more than one, for purposes of comparing test costs and turnaround times
to complete tests. In addition, make certain you ask if the facility will coordinate obtaining chassis dynamometer data comparing baseline drive-wheel power with a minimum of 80% of the power being advertised for the product. This "power verification" is included by the CARB in completing all E.O. requirements. If you intend marketing products for which specific power gains are claimed, this last step is not required.

- When you've completed the E.O. Application, mail it directly to a person on the CARB’s Certification staff, not just the department. And if you've not previously contacted anyone on staff (as suggested earlier to be an option), do so now and inform them they will be receiving your Application and supporting documentation (as spelled out in the Application). Notify that person you will provide any additional initial information they may require and be calling again in a few days to make certain your Application was received.

- Next, upon review of your materials, the CARB will identify the proper vehicle(s) for testing and issue a “test letter” to you and your choice of emissions laboratories. Essentially, this document authorizes the lab to locate the vehicle(s), if you’re not doing the providing, and begin testing. Once the lab begins work, it is advisable to stay in frequent contact with them, pursuant to getting the tests complete. Along the way, if any problems arise with the testing, you’ll be able to address them quickly. Also, insofar as you can, be prepared to address any technical issues that may arise, pertaining to why your product(s) may not be passing the emissions tests. It is not the norm for labs to help you diagnose problems underlying specific emissions failures.

- It’s important to know that all test data will be accessible to only the lab and you, until such time you decide it is ready for submission to the CARB. Should a problem arise regarding the product’s performance (for whatever reason), it’s wise to notify the ARB staff person with whom you are working so that there are no unexplained time gaps in completing the testing.

- Once you have obtained satisfactory test results, the lab will prepare a summary report that reveals all the findings and indicates the necessary E.O. requirements have been met. It is at this juncture the ARB will either (1) conduct confirmatory tests to verify the lab’s data or (2) assume all results are conclusive and proceed to issue of the E.O. This latter step typically requires about 30 days of administrative time, on the part of the CARB. If you have not received any communication from the CARB in this period of time, it’s best to contact the staff person with whom you have previously been working.

- A few general comments/suggestions about E.O. testing:
1. Over the years, SEMA has successfully sought to simplify the E.O. process. In so doing, there is an experience base from which you can draw should problems arise in obtaining compliance. To that end, you can always contact SEMA (jmcfar1@aol.com) to address such issues.

2. It is recommended that you not approach the compliance process as a hostile experience. In this case, the ARB is required by law to help with the process, even though they are not charged with providing solutions to specific product performance problems. That is the responsibility of the E.O. applicant.

3. There are times when a product being certified will not meet its E.O. requirements. In such cases, you may find some assistance from the testing laboratory. However, these facilities may not provide engineering services suitable to resolve your needs. In such cases, you may want to obtain assistance from persons familiar with your products, from an engineering perspective, if none is available from within your company.

4. In the end, be aware that SEMA has and continues to work on ways specialty aftermarket automotive parts manufacturers can achieve compliance, primarily with the CARB and secondarily the EPA. It is the responsibility of SEMA members to take the initiative toward following and concluding these steps, during the course of which we are available to help address a variety of compliance questions.
CALIFORNIA PARTS EXEMPTION PROGRAM

On February 8, 1990, the California Air Resources Board (CARB) amended Title 13 of the California Code of Regulations to provide new procedures for the “Criteria for Evaluation of Add-On or Modified Parts.” These are detailed procedures to be followed in obtaining exemptions from Vehicle Codes 27156 and 38391. These Vehicle Code sections provide that no person shall install, sell, offer to sell, or advertise any device, apparatus, or mechanism intended for use with, or as a part of, any required motor vehicle pollution-control device or system which alters or modifies the original design or performance of any such motor vehicle pollution-control device or system, unless exempted by the CARB. In addition to these and throughout this document, other revisions and updates are included to provide current compliance information.

Sections 27156 and 38391 of the California Vehicle Code charge the CARB with the responsibility of ensuring that aftermarket parts used on emission-controlled vehicles do not have an adverse impact on a vehicle’s emission-control system. Parts are divided into two groups:

1) Replacement/consolidated parts, and

2) Add-on/modified parts

The first group of parts has typically been designed to replace the original equipment manufacturer (OEM) parts, and has not required an exemption from the prohibitions of VC 27156 and VC 38391, provided data is available which demonstrate the required functional identity to the original part. The second group of parts is designed to be added to, or to alter the OEM design and have required emission testing. The new revisions affect the requirements for exemption for these add-on and modified parts.

The regulations are intended to streamline the process afteremarker part manufacturers obtain exemptions from the prohibitions of VC 27156 and VC 38391. These revisions serve to focus CARB staff efforts on those parts which are most likely to impact emissions. To this end, the revisions fall into two major categories. The first category consists of revisions to the testing protocol for “General Criteria” parts, and the second includes the creation of “Compliance Criteria” parts.

**General Criteria** parts are those which would in most cases require emission testing, but with the following revisions:

1) “General categories” have been created which would reduce the testing burden for parts manufacturers,
2) The use of a less costly alternative to the Federal Test Procedure, the “Code 505”,

3) More explicit specification of required numbers and types of vehicles required for testing, and

4) Certification to either the applicable emission standards or to typical baseline levels.

Further, General Criteria parts have been subdivided into generic categories. A generic category is a category of parts that share some common salient feature, such as exhaust headers and non-feedback-controlled catalyst-equipped vehicle or intake manifolds for non-EGR engines. A major provision of the regulations specifies the number of vehicles that a manufacturer must test in order to satisfy the requirements for a given generic category as being equal to the number of vehicle manufacturers for which the product can be applied, or as requested on the exemption application, up to a maximum of four.

The procedures also define the vehicles to be tested as the “worst case” models. A worst case test vehicle is defined by the CARB as the “cleanest,” based on a comparison of the emissions performance of the vehicle when certified by the OEM compared to California emissions standards for the same vehicle. More specifically, in a grouping of vehicles based on model year (MY) and engine family, the one certified with emissions levels the closest to the CA standards for that grouping is defined to be worst case (cleanest).

The regulations provide that parts manufacturers may choose either of two emission test procedures to satisfy the emissions testing requirements for General Criteria parts on light-duty vehicles.

1) The full Constant Volume Sampling (CVS-75) Federal Test Procedure (FTP), or

2) The “Cold 505” portion of the FTP (this amounts to the first 505 seconds of the FTP driving cycle).

In addition, a more aggressive test cycle is required in combination with either of the two tests previously listed. This is the USO6 test that causes a vehicle to be driven more aggressively during the acceleration portions of the drive cycle and includes somewhat higher vehicle speeds on the chassis dynamometer test rolls.

Finally, in order to verify advertised power gains for a product being certified (if power gains are claimed by the parts manufacturer), a chassis dynamometer drive-wheel power test is conducted by an independent facility, verifying that the horsepower obtained is no less than 85% of the power gain advertised.

Manufacturers will have the option of meeting either of two emission-compliance procedures:
1) Certification to Emission Standards. Under this procedure the applicant is required to demonstrate that the emissions from the test vehicle(s) with the aftermarket device installed (and applying the new vehicle’s deterioration factor) do not exceed the applicable new-vehicle emission standards.

2) Certification to Typical Baseline Levels. Under the procedure, the applicant performs a baseline emission test, the results of which must be comparable to the expected emissions for that model year. A second (i.e., back-to-back) emission test is then performed with the add-on or modified part installed. These emissions test results would not exceed the baseline levels by more than the larger of the following limits: 0.1 g/mi or 10% of the baseline measurement for HC and NOx; 1.0 g/mi or 15% for CO; 0.03 g/mi or 15% for particulates (diesel only); and 0.2 grams/test or 10% for evaporative emissions (if required).

Testing procedures have also been established for heavy-duty vehicles that allow any heavy-duty vehicle under 14,000 lbs gross vehicle rate rating (GVWR) and originally certified to a chassis dynamometer-based emission standard to be tested using the emission test or compliance procedures described above. Test vehicles which currently meet the specified conditions include all medium-duty vehicles and any heavy-duty vehicles under 10,000 lbs. GVWR that were certified to the medium-duty vehicle emission standards.

Heavy-duty vehicles under 14,000 lbs. GVWR and having an engine originally certified to an engine dynamometer emission standard are still able to utilize any of the test procedures described above. However, add-on or modified parts exempted for these applications may not use the emission standards method for demonstrating compliance with the proposed procedures. The emission standard method is not available to these vehicles because an appropriate standard does not exist.

Compliance Criteria parts are those for which there is no requirement for emission testing to demonstrate that the part does not cause an increase in emissions. Instead, only the submission of written documentation that the part is built as specified in the Compliance Criteria would be required to obtain an exemption from the prohibition of VC 27156 and VC 38391. To date, Compliance Criteria have been developed for:

1) Exhaust headers for non-feedback controlled catalyst-equipped vehicles;
2) Intake manifolds for non-EGR vehicles only;
3) Ignition systems (excluding distributors);
4) Ignition distributors; and
5) Intercoolers.

This list of Compliance Criteria parts will be expanded when additional criteria can be developed by the aftermarket parts industry and ARB staff.
A new provision has been added to the regulations that is applicable to all add-on and modified parts. Under this provision, a manufacturer will be denied an exemption if the add-on or modified part causes a vehicle’s on-board diagnostic system to function abnormally or to erroneously register a fault-code. The on-board diagnostic system is a critical element of the emission-control program for new vehicles, since it is designed to alert the owner whenever the emission-related malfunction occurs. This is important because newer vehicles often do not experience drivability degradation when malfunctions occur. Thus, the on-board diagnostic system is the only means of alerting the vehicle owner when malfunctions occur, and its integrity to be maintained.

Applications for parts exemptions (E.O. applications) and copies of the specified “Compliance Criteria” can be obtained from the California Air Resources Board, Manager, Aftermarket Parts Section, 9528 Telstar Avenue, El Monte, California 91731, by calling (818) 575-6848 or visiting the CARB website at www.arb.ca.gov.

NOTE: Manufacturers are advised to communicate their intent with CARB staff before selecting or testing a vehicle to ensure the test data will be accepted by CARB staff to cover the exemption application. It should also be noted, however, that test data from a prototype vehicle that can be accepted when meeting other vehicle selection criteria.

**Section 2**

**PROCEDURES FOR EXEMPTION OF ADD-ON AND MODIFIED PARTS**

I. Applicability

These criteria apply to add-on or modified parts, as defined in Section 1990 (1) and (10), Chapter 3, Title 13, California code of Regulations, as follows:

(1) “Add on” part means any aftermarket part which is not a modified part or a replacement part.

(2) “Consolidated part” means are part which is designed to replace a group of original –equipment emission-related parts and which is functionally identical to those original-equipment parts in all respects, which in any way affect emissions (including durability).

(10) “Modified” part means any aftermarket part intended to replace an original equipment, emissions-related part and is not functionally identical to the original equipment part in all respects that in any way may affect emissions (excluding a consolidated part).

(13) “Replacement part” means any aftermarket part intended to replace and original equipment emission-related part-and which is functionally identical to
the original equipment part in all respects— which in any way affects emissions (including durability), or is a consolidated part.

Examples of emissions-related parts are shown in Appendix 1 of these procedures. The CARB requires an exemption from the prohibitions of Sections 27156 and 38391 of the California Vehicle Code (VC 27156 and VC 38391) for such parts, in order to be legally advertised, offered for sale, sold or installed in California. The CARB Executive Officer shall grant an exemption to VC 27156 and VC 38391 for parts that satisfy criteria as specified in these procedures.

II. Application for Exemption by the CARB from the Prohibitions of Sections 27156 and 38391 of the California Vehicle Code.

A. Application

The manufacturer of an add-on or modified part is to file an application for exemption for each generic category, as defined in Paragraph III. G of these procedures. The application is to be in writing and must be signed by a person authorized to act on behalf of the manufacturer.

Applications for “General Criteria” parts and/or “Compliance Criteria” parts can be obtained from the Manager, Aftermarket Parts Section, California Air Resources Board, 9528 Telstar Avenue, El Monte, California 91731, by calling (818) 575-6848 or visiting the CARB website at www.arb.ca.gov.

B. Classification

Within each generic category, the add-on or modified part is further classified into two major groups which determine the type of application for exemption and supplementary material to be submitted. The two major groups are: 1) General Criteria parts and 2) Compliance Criteria parts.

C. General Criteria Parts

General Criteria parts are add-on or modified parts for which vehicle or engine emission testing may be required in accordance with Paragraph III of these procedures. For General Criteria parts, the applicant must complete information provided in the application form of Appendix 2 or 3, as appropriate. In addition to the application, the CARB Executive Officer may require the applicant to submit other design or technical information, catalog and advertising materials, photographs and a sample of the part, if the information submitted in the application does not permit a proper evaluation of the add-on or modified part. Upon request of the applicant, the Executive Officer will return any sample part within 30 days after the exemption request is either granted, denied or withdrawn.
D. Compliance Criteria Parts

Compliance Criteria parts are those parts for which explicit criteria are satisfied in writing and which do not require vehicle or engine emission testing to obtain and exemption from VC 27156 and VC 38391.

For Compliance Criteria parts, the applicant must submit the information outlined in the application form contained in Appendix 4a. The Executive Officer will require the applicant to submit an as-built sample of the add-on or modified part in addition to a completed application, if the application does not provide sufficient information to determine that the part complies with the Compliance Criteria. Upon request of the applicant, the Executive Officer will return the part within 30 days after the exemption is granted, denied, or withdrawn.

The part manufacturer will also be responsible for ensuring that the vehicle’s on-board diagnostic system’s function is not affected and that the use of the part does not erroneously cause the malfunction indicator light to MIL illuminate.

Immediately below is the list of parts for which Compliance Criteria have been developed and for which the criteria are included in Appendices 4a through 4f. As they are developed, Compliance Criteria for additional parts will be added to this list.

E. Eligible Compliance Criteria Parts List

1) Exhaust headers for non-feedback-controlled catalyst-equipped vehicles
2) Intake manifolds for non-EGR vehicles only
3) Ignition system components (excluding distributors)
4) Ignition distributors
5) Intercoolers

F. Application Forms

When filing an application for exemption, use of the forms for both General Criteria parts and Compliance Criteria parts is required, where applicable.

These forms can be obtained from: California Air Resources Board, Manager, Aftermarket Parts Section, 9528 Telstar Avenue, El Monte, California 91731, by calling (818) 575-6848 or visiting the CARB website at www.arb.ca.gov

III. Emission Testing Required by the CARB Executive Officer for General Criteria Parts
A. Vehicle Selection

The CARB Executive Officer will require an applicant to conduct emission testing in accordance with Paragraph III. E or III. F, unless the Executive Officer determines, based upon a review of available information, that the part for which an exemption is sought sufficiently meets the standards and requirements set forth in these procedures and does not significantly affect emissions. Upon request by the applicant, the Executive Officer will provide a list of test vehicles, including alternates. When selecting test vehicles, the Executive Officer will consider the vehicle configurations as defined in Paragraph III.H.2 of these test procedures. The number of vehicles to be tested is specified in Paragraph H of this section. Manufacturers are advised to consult with the ARB staff before conducting any testing in support of an exemption application.

B. Vehicle Mileage

Each test vehicle shall have been certified to California emissions standards and accumulated no less than 4,000 miles of normal operation. In the event a manufacturer acquires a vehicle with less than 4,000 miles, it must be brought up to this mileage by either over-the-highway driving or accumulation on a chassis dynamometer, using the CVS-75 Urban driving cycle. In some instances, for test vehicles with less than 4,000 miles of accumulated mileage, the CARB may allow tests to be conducted, given proof that the emissions are stable.

C. Test Laboratory

The applicant can have any required testing performed at a laboratory properly equipped to conduct such tests. The test vehicle(s) must be under the control of the laboratory for the entire test period. Return of the test vehicle(s) to the applicant during the test period may invalidate prior test results. A list of properly-equipped laboratories is provided in Appendix 6.

D. Additional or Alternate Testing

If the CARB Executive Officer finds that the emission testing specified in Paragraph III.E or III.F is not adequate to characterize the emission performance or durability of a General Criteria add-on or modified part, he/she may require alternate emission testing (including smog check, highway cycle or monitoring of toxic emissions) and/or functional and bench testing. If the Executive Officer requires such additional or alternatives testing of vehicles, the Executive Officer shall notify the applicant of the requirement prior to the start of any other required testing and shall provide the applicant with reasons or justification for imposing the alternative additional requirements The CARB may conduct confirmatory tests at the option of the
Executive Officer. Confirmatory tests, if required, will be performed by CARB within 30 days of receipt of all data, materials, and vehicles necessary to conduct the test. The actual length of this period, within the 30-day prescribed maximum, will be determined by CARB staff requirements. The results of CARB confirmatory tests will be reported to the applicant within 20 days of completion of all CARB testing. The applicant will be given the opportunity to observe the confirmatory tests. The confirmatory testing conducted by the CARB will utilize the same procedure and test type as that used by the applicant. Confirmatory tests will be at the expense of the CARB.

E. Authorized Test Procedures for Light-Duty Vehicles

Test procedures 1, 3 and 4 below are required to satisfy the requirements of E.O. testing. In some instances, procedure 2 may be used for certain products, subject to approval of the CARB. Unless specifically required by the CARB, the evaporative emission tests of the cold start CVS-75 (Federal Test Procedure or FTP) test procedures may be omitted. When the CARB finds that evaporative emission testing is required to fully characterize an add-on or modified part, because the part either modifies or affects the emission of the evaporative emission controls, only the cold start CVS-75 test procedures will be utilized.


3. USO6 – As outlined on page 2.3 of this manual, the USO6 test schedule includes a more aggressive drive cycle (compared to the standard FTP) and slightly higher chassis dynamometer roll (vehicle) speeds. It has become part of the basic tests required for all CARB Executive Orders (exemptions).

4. Horsepower Test – Also as previously mentioned, a drive-wheel power verification test (on a chassis dynamometer) is required for verification that a minimum 80% of advertised power gains are available by use of the product being certified. Specifically, the test vehicle is baselined to determine unmodified power and then re-tested after installation of the aftermarket product.
F. Authorized Test Procedures for Heavy-Duty Vehicles

When the CARB requires exhaust emissions testing of a vehicle with a gross vehicle weight rating (GVWR) greater than 6,000 pounds or an engine designed for installation in such a vehicle, the applicant shall use one of the test procedures provided herein. Prior to the start of the exhaust emissions testing, the CARB shall approve the test procedure to be used by the applicant.

1. Applicants may test vehicles with a GVWR of less than 14,000 lbs. that were originally certified to a chassis dynamometer-based California vehicle exhaust emission standard, using the procedures provided in Paragraph III.E upon approval by the CARB. The test equipment settings will be the same as those originally used to certify the vehicle. These settings are available from the CARB. With approval of the CARB, the applicant may use the specific evaluation criteria provided in Paragraph IV.F.

2. Applicants may test vehicles with a GVWR of less than 14,000 lbs. that are equipped with an engine originally certified to a California engine dynamometer exhaust emission standard using the test procedures provided in Paragraph III.E. upon approval by the CARB. The equivalent test weight of the test vehicle shall be equal to the vehicle curb weight plus one-half of the difference between the GVWR and the curb weight of the vehicle. The road-load horsepower setting for the chassis dynamometer will be based on the frontal area of the test vehicle without modifications. The specific evaluation criteria for vehicles tested herein are limited to the comparative test criteria of Paragraph IV. F. 2.a.

3. Applicants who submit vehicles for vehicle applications greater than 14,000 lbs. GVWR may submit any engine or chassis dynamometer test data as demonstration of compliance with these procedures, upon approval of test procedures by the CARB. Prior to the start of the emission testing, the applicant shall submit a detailed description of the test procedure and calculations for approval by the CARB. When the CARB approves an alternate test procedure, the specific compliance criteria is specified prior to the start of the emission testing.

NOTE: While gasoline-fueled vehicles may follow all guidelines herein provided, when applying and testing for an E.O., diesel-powered vehicles require either of two different methods of testing. Applicants for diesel vehicles (regardless of GVWR) have the option of choosing between a chassis or engine dynamometer test protocol.
5. Currently, E.O. applicants for diesel-powered vehicles may select either of two test protocols.

**Chassis Dynamometer** – Essentially, this test is based on a “Not-To-Exceed” (NTE) method of evaluating aftermarket products that modify diesel vehicles. This CARB-derived method consists of a baseline power test (at the driving wheels) for a given range of vehicle speed. Then, at previously-determined vehicles speed within this range, emissions are measured at w.o.t. The aftermarket part is then installed and the vehicle retested by the same method. Emissions from the modified state are then compared to the baseline emissions on a “Not-To-Exceed” basis and evaluated accordingly by CARB staff.

**Engine Dynamometer** – Functionally equipped with all emissions-related controls and sensors, diesel test engines are baseline mapped to determine emissions levels throughout a specified range of engine speed. Emissions are measured on the basis of grams/horsepower-hour and a ratio of these values determined, accordingly. After installing the aftermarket part or system, the engine is retested in the same fashion, including emissions measurements by the same method. Changes in emissions are evaluated against baseline data, based on a comparison of the grams/horsepower-hour from the engine’s stock to modified condition. CARB then determines acceptable emissions, according to changes in this ratio.

**G. Categorization of Parts – Generic Categories**

Any add-on or modified part will be categorized according to its “Generic Category.” For example, the term “intake manifold” will define the entire generic category for this part. Currently, the CARB had identified the current list of Generic Categories as follows:

- Accessory/Crankshaft Pulley Modification
- Air Bleed
- Air Cleaner Modification
- Air-conditioning Cut-Out System
- Air Filter/Intake Modification
- Air Flow Sensor
Anti-Theft System
Blow-by Oil Separator
Camshaft
Carburetor/Carburetor Modification
Cylinder Head
Diesel After-treatment System
Distributor/Distributor Modification
EGR System Modification
Electronic Control Unit/PROMs
Electronic Engine Governor/Rev. Limiter
Electronic Shut-Off Systems
Electronic Valve Controller
Engine Modification/Engine Change
Exhaust System/Exhaust Modification
Fuel Injection Systems/Fuel Injectors
Fuel Line Modifications
Fuel System Modifications
Fuel Tank System
Ignition Coil
Ignition System/Ignition System Modification
Intake/Exhaust Systems
Intake Manifold
Intercooler System
Nitrous System
Non-OBDII Catalytic Converter
OBDII Catalytic Converter
Particulate Trap System
PCV Modification
Rocker Arm
Supercharger System/Supercharger System Modification
Throttle Body
Timing Control
Transmission/Transmission Modification
Trike Conversion Kit
Turbocharger System/Turbocharger System Modification
Used OEM Catalytic Converters
Vapor Injection
Water Injection

For other components that could be considered emissions related, E.O. applicants should check with ARB Certification staff to determine specific parts category and the necessity for obtaining an exemption.

H. Number and Type of Test Vehicles Required

1. When required by the CARB, add-on or modified parts included in the Generic Categories of Paragraph III.G. are emission tested using one of the test procedures specified in Paragraph III.E or III.F as applicable.

2. Generally, the required number and type of test vehicles required is determined by the CARB as follows: Applicants will provide a list of vehicle brands, model years and engine families for which an E.O. is requested. When obtained, exemptions will be for the latest MY for which the product will be sold. All prior model years will be automatically covered, up to and including the latest MY. (Additional information on the ARB’s test vehicle selection process is contained on page 2.3 in the paragraph discussing “worst case” vehicles.)

   a) Universal Application
Refers to the generic categories in which the add-on or modified part exemption application applies to the product line of four (4) or more vehicles or engine manufacturers. In such cases the applicant is required to emission test a maximum of four (4) vehicles or engines.

b) Less Than Universal Application

Refers to the generic categories in which the add-on or modified part exemption application is applicable to the product line of two (2) or three (3) vehicle or engine manufacturers. In such cases, the add-on or modified part manufacturer is required to emission test a number of vehicles, or engines equal to or less than the number of applicable manufacturers.

c) Single Manufacturer Application

Refers to the generic categories in which the add-on or modified part exemption application only applies to one (1) vehicle or engine manufacturer. In such cases, the applicant may be required to emission test no more than one (1) vehicle or engine.

IV. Evaluation Criteria

A. Basis of Emission Evaluation

The CARB Executive Officer will review the applicant’s emission test data and the CARB test results, if any, to determine if the add-on or modified part increases emissions. In the absence of any test data, the CARB will use good engineering judgment and the results of any bench, functional, emission test results from similar parts, or Compliance Criteria, if applicable, in making the determination regarding the effect of the add-on or modified part on emissions.

B. Resolution of Discrepancies

In the event of discrepancies between the CARB test results and those of the applicant’s (as obtain from an independent testing facility), the Executive Officer's evaluation may be based solely on the CARB test results. The CARB will inform the applicant of any such discrepancies and endeavor to resolve the conflict between the test results. If the conflict cannot be resolved, the CARB will inform the applicant.

C. Performance and Drivability

The CARB may evaluate the effects of the add-on or modified part on the vehicle’s performance or drivability. If the add-on or modified part degrades the
drivability or vehicle performance such that owners may be encouraged to adjust the engine settings or tamper with required emission-control systems to improve drivability or vehicle performance, the CARB may find that the add-on or modified part will increase emissions.

D. Durability

If the CARB has reason to believe, on the basis of an engineering evaluation, that an add-on or modified part will affect the durability of the vehicle emission-control system or that in the past the part did not demonstrate durability equivalent to the part or system replaced or added to, he or she may find that the modification will increase emissions. In such cases, the applicant will be required to submit durability data in order to show that the durability of the vehicle emission-control system is not affected, and/or that the add-on or modified part demonstrates adequate durability.

E. On-Board Diagnostic Requirements

The add-on or modified part manufacturer is responsible for ensuring that, if applicable, the manufacturer’s part will not affect the proper operation of the vehicle’s on-board diagnostic system or cause a fault code to be erroneously stored and/or the malfunction indicator light to illuminate.

F. Specific Evaluation Criteria for General Criteria Parts

When the CARB requires an add-on or modified parts manufacturer to perform emission testing, the applicant must demonstrate compliance with the requirements of these test procedures using one of the two optional procedures contained herein.

1) New Vehicle Exhaust Emission Standards

a) The add-on or modified part manufacturer may demonstrate compliance with these procedures by showing that the exhaust emissions from the test vehicle with the add-on or modified part installed are in compliance with the California new-vehicle exhaust emission standards for the vehicle class and model year of the test vehicle. An applicant may elect to use this optional method of compliance only when the emission test data and applicable standards were derived by using the cold start CVS-75 FTP test procedure. In addition, as is required of the OEM when certifying new vehicles, the more aggressive USO6 test must be performed in conjunction with the FTP. More information on this requirement is available from CARB staff or your emissions testing
laboratory of choice. To demonstrate compliance with the applicable emission standards, each emission test result will be adjusted by the application of a deterioration factor. The CARB will specify the use of the certification deterioration factor provided in the original vehicle manufacturer’s certification application for the model and model year of the test vehicle. The deteriorated emission test results will be in compliance with these procedures only if they are equal to or less than the California new-vehicle exhaust emission standards for the test vehicle. The applicant will 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 average number must meet the standards set for the single test in order to demonstrate compliance.

2) Comparative Emission Testing (Baseline vs. Modified)

a) The add-on or modified part manufacturer may elect to conduct comparative emission tests to demonstrate compliance with these procedures. To demonstrate compliance by this method, the manufacturer will conduct a minimum of two emission tests using any of the test procedures specified in III.E Paragraph or III.F. The first, or baseline emission test, is performed with the test vehicle or engine in the as-built configuration. For the second, or device emission test, the vehicle or engine modified by installation of the add-on or modified part. The add-on or modified part will be in compliance with these procedures if the difference between the device emission test result and the baseline emission test result is equal to or less than the following limits:

<table>
<thead>
<tr>
<th>Emissions</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocarbons</td>
<td>0.10 grams per mile or 10% of baseline</td>
</tr>
<tr>
<td>Carbon monoxide</td>
<td>1.0 grams per mile or 15% of baseline</td>
</tr>
<tr>
<td>Oxides of nitrogen</td>
<td>0.10 grams per mile or 10% of baseline</td>
</tr>
<tr>
<td>Particulates</td>
<td>0.03 grams per mile or 15% of (diesel only) baseline</td>
</tr>
<tr>
<td>Evaporative emissions</td>
<td>0.2 gram per test or 10% of baseline</td>
</tr>
</tbody>
</table>

When the CARB requires or allows testing other than the explicit testing of Paragraph III.E or III.F, the compliance will be specified prior to the start of any testing.
b) Each test vehicle must also be subjected to a thorough examination prior to the baseline test to detect and have corrected possible defects and deviations from the manufacturer's specifications for emissions-related parts. This step is typically performed by the independent test facility.

It is recommended that the add-on or modifying part manufacturer submit the test vehicle to a "smog check" station to see if the vehicle can first pass that test. Based on the results, the vehicle is then accepted, corrected or rejected for continuing with emissions testing.

It is also recommended that the test laboratory do a complete engine parameter check on the test vehicle as described in Appendix 5.

The baseline (stock) emissions of the test vehicle should be on or below the current CA emissions standards for the vehicle. The appropriate standards for a particular vehicle being tested can be obtained from the CARB, on request.

c) If a selected test vehicle's baseline emissions exceed the standards for that vehicle, and a diagnostic investigation does not reveal the cause of failure, another test vehicle may be selected. On the chance it also exceeds the required baseline (stock) emissions standards, the CARB can be approached to discuss next steps. Occasionally, based on approval of the CARB, a vehicle that baseline tests above the required standards may be allowed as a test vehicle.

d) After the baseline testing has been completed, prior approval is required from the CARB before any servicing, maintenance, or part replacement is made, except those that are in accordance with the written instructions provided with the application. The same type of test fuel is used for all tests unless otherwise specified in writing by the manufacturer.

e) Each vehicle selected is tested in the modified and unmodified configuration. All engine settings are adjusted to vehicle manufacturer’s specifications in the unmodified configuration (baseline) test. The add-on or modified part is to be installed in accordance with the written instructions provided with the application under the supervision of test laboratory personnel. Engine settings must be recorded and submitted with test results for each test in both the modified and unmodified configurations. The forms provided in Appendix 5 may be used as a guide.

G. Specific Evaluation for Compliance Criteria Parts
In determining whether specific add-on or modified parts are exempted from the prohibitions of Sections 27156 and 38391 of the California Vehicle Code under the provisions of Compliance Criteria, the CARB will apply evaluation criteria which consist of documentation that the part, as built, satisfies the criteria outlined in the Compliance Criteria for that part as listed in Appendices 4b though 4f. Additionally, the part manufacturer may be required, upon submission of the application for exemption, to submit an as-built part to confirm that the specifications outlined in the applicable Compliance Criteria have been met. The complete package of Compliance Criteria for eligible parts is included in Appendices 4a through 4f. Finally, as noted in Paragraph E above, the part manufacturer must ensure that, if applicable, the part will not affect the proper operation of the on-board diagnostic system, or erroneously cause a fault code to be stored and/or the malfunction indicator light to illuminate.

V. Action on the Application

A. Application Based on Vehicle Emissions Testing for General Criteria Parts

The CARB will initially evaluate the application, the test data and any other pertinent information concerning the add-on or modifying part. On the basis of the information provided by the applicant and/or the CARB test results, the staff will make a recommendation to the “Executive Officer” (the CARB member with whom the E.O. applicant is working.) If the Executive Officer determines that an add-or or modifying part will not reduce the effectiveness of the emissions control system or result in emissions that exceed the applicable model-year State or Federal emissions standards for each vehicle, he or she will issue an Executive Order, exempting the add-on or modifying part from the prohibitions of CA Vehicle Code Sections 27156 and 38391. This Executive Order may restrict the installation of the add-on or modifying part certified by engineering evaluation to certain makes, model-years or classes of vehicles. Other stipulations may be included that affect E.O. coverage and requirements; e.g., Internet downloading of information and updates, etc. Also, as a condition of exemption, the applicant must not use the Executive Order as an endorsement or approval by the Air Resources Board, in any of the applicant’s marketing materials.
State of California  
AIR RESOURCES BOARD  
Vehicle Code Sections 27156 and 38391 Exemption Application  
for General Criteria Parts

1. Name of Applicant ______________________________
   Address _______________________________________
   Phone ( ) _______________________________________

2. Name of Device Manufacturer* ____________________________
   Address _______________________________________
   Phone ( ) _______________________________________

3. Name of Authorized Representative** _________________________
   Address _______________________________________
   Phone ( ) _______________________________________

4. Test Procedure (check one)
   The test procedure to be used is:
   ______ Cold start CVS-75 Federal Test Procedure
   ______ Cold 505
   ______ Hot Start CVS-75 (applicable to some diesel-powered vehicles)

5. Evaluation Criteria (check one)
   This application is for certification to:
   ______ emission standards
   ______ typical baseline emission levels

*If different from name of applicant. Device as used herein is defined to mean add-on or modified part.
**An authorized representative may be required to prove that he/she is authorized to act on behalf of an applicant or manufacturer.

2.27
6. Device Name(s)__________________________

7. Briefly describe the purpose of the device__________________________

__________________________

__________________________

8. Briefly describe the operation of the device__________________________

__________________________

__________________________

9. List vehicle names, model years, engine displacements and systems that are compatible with the device, and for which exemption is requested. Specify the correct device model for each vehicle.

__________________________

__________________________

__________________________

10. The following information is required for the Air Resources Board (ARB) to complete an evaluation. Please place a check mark next to the items that are enclosed with the application and provide an explanation for items that are not checked.

   (a) A detailed description of the device including operating principles, cross-sectional drawings, electrical schematics, and other such material to assist the staff in understanding its operation.

   (b) Copies of all advertising material to be used in selling the device including a sample or facsimile of the packaging label. (Optional).
(c) A copy of the installation and adjustment instructions and drawings that will be included with the device.

(d) A facsimile or prototype of the identification plate or label to be attached permanently to or imprinted on or near each device offered for sale. The plate or label should be placed such that it is visible after the device is installed, and should contain:

i) the manufacturer's name
ii) the device name and model number
iii) the Air Resources Board exemption number identified as "ARB E.O. No.D-XX"

(e) A facsimile or prototype engine compartment plate or label located adjacent to, but not covering, the vehicle manufacturer's Vehicle Emission Control Information (tune-up) label. This plate or label is only required if a change is recommended to vehicle manufacturer's tune-up parameters. In addition to the recommended tune-up parameter changes, the plate or label must contain the same information as the device label.

(f) A list of the companies or persons that will manufacture the device under license.

11. The ARB may require one or more devices for testing. Do you agree to provide the device(s) free of cost? _yes_ _no_. The device(s) will be returned only if return is requested at the time the device(s) are submitted.

Emission Statements

I affirm that to the best of my knowledge this device shall not cause the emission into the ambient air of any noxious or toxic matter that is not emitted in the operation of such motor vehicle without such device. I understand that an exemption, if granted, does not constitute a certification, accreditation, approval, or any other type of endorsement by the Air Resources Board of any claims concerning alleged benefits of a device. I further understand that no claims of any kind concerning anti-pollution benefits may be made for an exempted device.

Signature of Authorized Representative: ____________________________
Date: __________
APPENDIX 3

State of California
AIR RESOURCES BOARD
Application for Exemption of Aftermarket Turbochargers
from Vehicle Code Sections 27156 and 38391

The following information is required before the ARB can evaluate your aftermarket turbocharger system. Please provide the information as completely as possible and explain any unanswered items.

I. Manufacturer of Turbocharger System

Name: ___________________________ Tel. ___________________________
Address: ___________________________ Authorized Representative: ___________________________
Title: ___________________________

II. Vehicle Application

If the turbocharger is applicable for two or more engines or chassis models, you may use separate sheets to complete the information.

Make: ___________________________ Model Years: ___________________________
Engine Family: ___________________________ No. Cylinders: ___________________________
Fuel Induction System (No. of barrels, maximum air flow, type of fuel injection system, etc.)

For heavy-duty vehicles and secondary vehicles such as motorhomes, complete the following:

Primary Vehicle or Engine Original Chassis or Engine Model
Manufacturer: ___________________________ Model: ___________________________

Secondary Vehicle Manufacturer: Secondary Vehicle model: ___________________________

Gross Vehicle Weight (lbs): __________________ Frontal Area: __________________
III. Test Procedure (check one)

The test procedure to be used is:

_____ Cold start CVS-75 Federal Test Procedure

_____ Cold 505

_____ Hot start CVS-75 (applicable to some diesel-powered vehicles)

IV. Evaluation Criteria (check one)

This application is for certification to:

_____ Emission standards

_____ Typical baseline emission levels

V. Turbocharger System

Name of original (turbocharger) manufacturer: ____________________________

Turbocharger Model No.: ____________________________

Type of turbine (e.g., axial flow, radial flow): ____________________________

Area of throat: ____________________________

Distance from centroid area of center of vortex: ____________________________

Area Ratio (A/R) for turbine size: ____________________________

Please supply the turbocharger engineering drawings and turbocharger kit, and complete installation instructions.

VI. Modification to OEM System

In the turbocharging process, you may have to modify certain OEM systems. Check the items that you will modify and explain the modification in detail.

_____ 1. Fuel induction system (this should include carburetor, fuel injection system, fuel pump, fuel filter and all pertinent calibrations and adjustments).

_____ 2. Air intake system such as air cleaners, air flow control sensors, heated air intake system, etc.
3. Intake manifold (please include any adaptor or devices you plan to use to change fuel-air mixture vaporization).

4. Ignition system (i.e., distributor, vacuum and centrifugal timing mechanism, points, plugs and all specifications).

5. Exhaust system such as exhaust manifolds, head pipes, mufflers, etc.

6. Valve train components including valve clearance adjustments.

7. Others (specify).

VII. Modification to OEM Emission Control Systems

Please check the applicable items and explain the modifications in detail.

1. EGR system (valve body, vacuum amplifier, vacuum signals, temperature control sensors, back pressure transducer, etc.).

2. Catalytic converter, thermal reactor and fuel-air mixture feedback control.

3. Air injection system (air pump, air injection port, by-pass valve, etc.).

4. Spark control system.

5. Positive crankcase ventilation system.

6. Others (specify).

VIII. The following items are usually required for an Air Resources Board (ARB) evaluation. Please check the ones enclosed and give an explanation for excluding items that are not checked.

1. Advertising material to be used in selling the turbocharger.

2. A sample or facsimile of packaging labels.
3. A sample or facsimile label or identification plate containing the manufacturer’s name, turbocharger model and the Air Resources Board exemption number. The exemption number shall be identified: "ARB E.O. No. D-XX." This label or plate must be permanently attached to or imprinted on each system in a location clearly visible and readable after installation.

4. A sample or facsimile label showing any changes in tune-up parameters recommended by the turbocharger manufacturer. This label must be permanently attached in a location adjacent to or as close as possible to the OEM Vehicle Emission Control Information label (tune-up label).

5. Detailed installation and/or maintenance instructions. This should include assembly drawings, parts list, and fuel octane/cetane requirements.

IX. Emission Statements

I affirm that to the best of my knowledge this turbocharger system shall not cause the emission into the ambient air of any noxious or toxic matter that is not emitted in the operation of such motor vehicle without such turbocharger system.

I understand that an exemption, if granted, does not constitute a certification, accreditation, approval, or any other type of endorsement by the Air Resources Board of any claims concerning alleged benefits of a device. I further understand that no claims of any kind concerning anti-pollution benefits may be made for an exempted device.

Signature of Authorized Representative: __________________________
Date: __________
State of California
AIR RESOURCES BOARD

Vehicle Code Sections 27156 and 38391 Exemption
Application for Compliance Criteria Parts

1. Name of Applicant ________________________________
Address __________________________________________
   Phone ( ) _______________________________________

2. Name of Device Manufacturer* ___________________
Address __________________________________________
   Phone ( ) _______________________________________

3. Name of Authorized Representative** _____________
Address __________________________________________
   Phone ( ) _______________________________________

4. Device Name(s) _________________________________

*If different from name of applicant. Device as used herein is defined to mean add-on or modified part.

**An authorized representative may be required to prove that they are authorized to act on behalf of an applicant or manufacturer.
5. Briefly describe the purpose of the device


6. Briefly describe the operation of the device


7. List vehicle names, model years, engine displacements and systems that are compatible with the device, and for which exemption is requested. Specify the correct device model for each vehicle.


8. The requirements contained in Paragraphs II.D and IV.C-E and G. and Appendices 4a through 4f must be satisfied by the aftermarket part manufacturer in order to obtain an exemption from the prohibitions of Vehicle Code Sections 27156 and 38391.

9. The ARB may require one or more devices for verifying that the device is built as specified in the application. Do you agree to provide the device(s) free of cost? ___Yes___No.

2.35
The device(s) will be returned only if return is requested at the time the device(s) are submitted.

**Emission Statements**

I affirm that to the best of my knowledge this device shall not cause the emission into the ambient air of any noxious or toxic matter that is not emitted in the operation of such motor vehicle without such device.

I understand that an exemption, if granted, does not constitute a certification, accreditation, approval, or any other type of endorsement by the Air Resources Board of any claims concerning alleged benefits of a device. I further understand that no claims of any kind concerning anti-pollution benefits may be made for an exempted device.

Signature of Authorized Representative: ____________________________

Date: ____________
COMPLIANCE CRITERIA FOR
EXHAUST HEADERS FOR NON-FEEDBACK CONTROLLED
CATALYST-EQUIPPED VEHICLES

1. The exhaust header manufacturer must provide a description of the
exhaust headers for non-feedback controlled catalyst-equipped vehicles
which clearly demonstrates that the headers meet the following compliance
criteria:

* The header system must have provisions for all emission controls
present on the production system.

* The number and location of catalysts must not be altered.

* Emission-related specifications and/or adjustments must not be
altered.

2. Check the items affected by the header installation which can in any
way influence exhaust emissions. Please explain the effect in detail.

   1. Exhaust system (e.g., catalytic converter, heat riser,
      power heat valve, etc.)
   2. Air induction system (e.g., air cleaner, air flow control
      sensor, hot air duct, etc.)
   3. Intake manifold
   4. Ignition system
   5. Fuel injection or carburetion system, related parts
   6. Electronic control devices and sensors
   7. Evaporative control system
   8. Positive crankcase ventilation system
   9. Exhaust gas recirculation system
  10. Air injection system
  11. Others (specify)

2.37
APPENDIX 4c

COMPLIANCE CRITERIA FOR INTAKE MANIFOLDS
FOR NON-EGR VEHICLES ONLY

1. The intake manifold manufacturer must provide a description of the intake manifold (for use on non-exhaust gas recirculation (non-EGR) equipped vehicles) which clearly demonstrates that it meets the following compliance criteria:

* Emission-related specifications and/or adjustments including basic timing, idle air/fuel ratio and RPM settings, choke settings, etc., must not be altered;

* For a given model year of vehicle, the aftermarket intake manifold must accept the installation and proper function of the vehicle’s original production carburetor(s) or fuel injector(s) and associated emission-control system components (e.g., thermal vacuum switches, choke units, etc.) certified for the vehicle’s California engine family;

* Any intake manifold height increase over the original production intake manifold must allow for the installation and function of associated devices/systems (e.g., carburetor(s), fuel injector(s), air cleaner assembly, hot air duct, etc.) within the confines of the original production hood; and

* The aftermarket intake manifold must be heated by the same means (i.e., exhaust gas or water).

2. Check the items affected by the intake manifold installation which can in any way influence emission. Please explain the effect in detail.

   ______ 1. Exhaust system (e.g., heat valve, heat stove, etc.)
   ______ 2. Air induction system (e.g., air cleaner, air flow control sensor, hot air duct, etc.)
   ______ 3. Fuel injection or carburetion system and related parts
   ______ 4. Ignition system (e.g., component mounting provisions, etc.)
   ______ 5. Electronic or vacuum control devices and sensors
   ______ 6. Evaporative control system
   ______ 7. Positive crankcase ventilation system
   ______ 8. Air injection system
   ______ 9. Others (specify)

   2.38
COMPLIANCE CRITERIA FOR IGNITION SYSTEM COMPONENTS (EXCLUDING DISTRIBUTORS)

1. The applicable ignition system components applicable include coils, capacitive discharge systems, multi-spark systems, electronic spark generators (amplifier units), cylinder-to-cylinder spark adjusters, knock sensors, spark retard devices, and points conversion kits. The ignition system manufacturer must provide a description of the ignition system component which clearly demonstrates that it meets the following compliance criteria:

* The ignition system components must have provisions for all emission controls or provide for their equivalent in the production system;

* Emission related specifications and/or adjustments, including basic timing, idle air/fuel ratio, and RPM settings, choke settings, etc. must not be altered; and

* With the installation of the ignition system component, the ignition timing must not under any condition exceed that of the original production system by more than +4 crankshaft degrees.

2. Check the items affected by the installation of the ignition system components which can in any way influence emissions. Please explain the effect in detail.

   ____ 1. Ignition system
   ____ 2. Electronic control devices and sensors
   ____ 3. Fuel injection or carburetion system and related parts
   ____ 4. Exhaust gas recirculation system
   ____ 5. Air injection system
   ____ 6. Others (specify)
COMPLIANCE CRITERIA FOR IGNITION DISTRIBUTORS

1. The ignition distributor manufacturer must provide a description of the ignition distributor which clearly demonstrates that it meets the following compliance criteria:

* Emission-related specifications and/or adjustments, including basic timing, idle air/fuel ratio and RPM settings, choke settings, etc., must not be altered;

* The mechanical and vacuum ignition timing curves individually must not under any conditions exceed those of the original production unit or original manufacturer's service replacement unit by more than +4 crankshaft degrees. A graph shall be required with the mechanical advance curve plotted at 1000, 2000, 3000, and 4000 engine RPM; plus, if applicable, the vacuum advance curve plotted at 5, 10, 15, and 20° Hg. Mechanical-advance only distributors are exempt from the requirements of this paragraph (but not the above paragraph). In addition, mechanical advance distributors may not exceed the total advance available in the OEM distributor, where total advance represents the sum of the vacuum and mechanical advance.

2. Check the items affected by the ignition distributor installation which can in any way influence emission. Please explain in detail.

   1. Fuel injection or carburetion system and related parts
   2. Electronic or vacuum control devices and sensors
   3. Others (specify)
COMPLIANCE CRITERIA FOR INTERCOOLERS ON TURBOCHARGED OR SUPERCHARGED VEHICLES THAT ARE CATALYST EQUIPPED

1. The intercooler manufacturer must provide a description of the intercooler which clearly demonstrates that it meets the following compliance criteria:
   * The OEM's maximum intake manifold pressure (boost) must not be altered.
   * Installation of the intercooler must not require disconnection of OEM temperature sensor, or alteration of OEM temperature sensor design specifications.
   * The emission-related specifications must not be altered (tune-up specifications must not be altered).
   * Fuel system calibration must not be altered.

2. Check the items affected by the intercooler installation which can in any way influence emissions. Please explain the effect in detail.
   ____1. Exhaust system (e.g., heat valve, heat stove, etc.)
   ____2. Air induction system (e.g., air cleaner, air flow control sensor, hot air duct, etc.)
   ____3. Fuel injection or carburetion system and related parts
   ____4. Electronic or vacuum control devices and sensors
   ____5. Catalyst system
   ____6. Exhaust gas recirculation system
   ____7. Air injection system
   ____8. Computer calibration on chip
   ____9. Turbocharger or supercharger system
   ____10. Ignition system
   ____11. Others

2.41
APPENDIX 5

Test Vehicle Flowchart and Documentation

The forms contained in this Appendix are intended to provide the add-on or modified part manufacturer with a guide to be followed in pursuit of an exemption from the prohibitions of California Vehicle Code Sections 27156 and 38391. The completion of these forms will not guarantee an exemption from Vehicle Code Sections 27156 and 38391, but will ensure that the ARB has a record of the procedures followed and test vehicle parameters noted. Explicit documentation of engine parameter, etc., is encouraged but not required.

Contents: Page

Test Vehicle Flowchart 2.43
Test Vehicle Check-in Sheet 2.45
Engine Parameter Data Sheet 2.46
Test Vehicle Flow Chart

This flow chart provides the basic order of steps to be followed when performing the Constant Volume Sampling (CVS) Federal Test Procedure (FTP) and US06 emissions testing protocols. Note CARB contact information (e-mail address of Rose Castro, Manager of the CARB Certification Division) and recommendation for following up on submission of E.O. Application materials.

Note: E.O. Application forms can be obtained from the CARB website (www.arb.ca.gov), after which you will know exactly which materials and information required at this stage in the process. It is recommended that you follow up submission of your Application by contacting El Monte, CA staff in the office of Rose Castro (rcastro@arb.ca.gov) to track the next ARB steps and issue of a "test letter" to initiate emissions testing.

2.43
INDEPENDENT LABORATORIES EQUIPPED TO CONDUCT EXHAUST/EVAPORATIVE EMISSIONS TESTS

While the California Air Resources Board (ARB) does not currently approve laboratories for compliance testing, certain independent commercial laboratories have become accepted, based on information submitted to the ARB, as being properly equipped to perform specialized tests, in accordance with applicable federal and California test procedures. Their equipment is similar or equivalent to that used at the Hansen-Smit Laboratory. However, these private laboratories are neither inspected nor supervised by the ARB to determine if candidate devices for Vehicle Code (VC) Section 27156 or 38395 exemption are tested in strict adherence to ARB's test letter and relevant test procedures. For this reason, ARB relies on confirmatory tests conducted at its Hansen-Smit Laboratory for a final determination of the emission performance of add-on devices. Listed below are several such commercial laboratories.

<table>
<thead>
<tr>
<th>Laboratory Name</th>
<th>Location Address</th>
<th>Contact Personnel</th>
<th>Telephone</th>
<th>Special Testing Capabilities</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona Testing Laboratory, Inc.</td>
<td>250 S. Mulberry Street, Mesa, AZ 85202</td>
<td>Mr. Dennis McClement</td>
<td>(480) 649-7995</td>
<td>Enhance Evap. Emission test; SFTP-US06, AC2 (alternative)</td>
<td></td>
</tr>
<tr>
<td>California Automotive Club of Southern California – Automotive Research Center</td>
<td>1377 S. Valley Vista Dr. Diamond Bar, CA 91765</td>
<td>Mr. Steve Mazor</td>
<td>(213) 741-3378</td>
<td>SFTP – US06, AC2 (alternative)</td>
<td></td>
</tr>
<tr>
<td>Automotive Testing &amp; Development Services, Inc. (ATDS)</td>
<td>480 S. Eureka Avenue, Ontario, CA 91761</td>
<td>Mr. Lamood Farmer</td>
<td>(909) 390-1109</td>
<td>SFTP-US06, AC2 (alternative); Enhanced Evap. Emission test; Diesel vehicle test; Motorcycle test; LEV II SULEV testing</td>
<td></td>
</tr>
<tr>
<td>California Environmental Engineering (CEE)</td>
<td>2530 S. Burch Street, Santa Ana, CA 92707</td>
<td>Mr. George Gmayer</td>
<td>(714) 545-9832</td>
<td>SFTP – US06, AC2 (alternative); FTP for gasoline, NG/LPG vehicles &amp; motorcycles; Enhanced Evap.; SORE emission test; Off-Road CI (Emissions)</td>
<td>Engine Dyno 13-Mile Steady-State test is available, if required</td>
</tr>
<tr>
<td>Olsen-Ecologic Engine Testing Laboratories, LLC.</td>
<td>1370 South Acracia Ave Fullerton, CA 92831</td>
<td>Mr. Donald R. Olson</td>
<td>(714) 774-3353</td>
<td>Heavy-duty diesel engine FTP transient test; SORE emission test; CVS-73 FTP on LDVs/MDVs &amp; motorcycles (including CNG/LPG vehicles)</td>
<td>Engine Dyno 13-Mile Steady-State test is available, if required</td>
</tr>
<tr>
<td>Mercedes-Benz Service Corporation – Los Angeles Technology Center</td>
<td>4035 Via Oro Avenue Long Beach, CA 90803</td>
<td>Mr. Kenneth Griggs</td>
<td>(310) 549-7699</td>
<td>SFTP-US06</td>
<td></td>
</tr>
<tr>
<td>Northern Calif Diagnostics Lab, Inc.</td>
<td>2748 Jefferson Street Napa, CA 94558</td>
<td>Mr. Mike Spencer-Starch</td>
<td>(707) 238-1753</td>
<td>Motorcycle test</td>
<td></td>
</tr>
<tr>
<td>Quantum Technologies Emissions Laboratory</td>
<td>3242 Arctic Ocean Dr. Lake Forest, CA 92630</td>
<td>Frank Bohanan <a href="mailto:fbohanan@graw.com">fbohanan@graw.com</a></td>
<td>(949) 930-3484</td>
<td>SFTP-US06, AC2 (alternative); LEV II SULEV testing; NG/LPG vehicles &amp; motorcycles testing; model testing; bag mini flue</td>
<td>Engine Dyno 13-Mile Steady-State test</td>
</tr>
<tr>
<td>Catalytic Solutions, Inc.</td>
<td>1640 Fuente Place Oxnard, CA 93033</td>
<td>Charles F. Call</td>
<td>(805) 406-4649</td>
<td>Catalyst Supplier</td>
<td>Bench aging for clients only</td>
</tr>
<tr>
<td>CE-CERT, UC Riverside</td>
<td>1094 Columbia Drive, Riverside, CA 92507</td>
<td>Thomas Dunbar, Ph.D.</td>
<td>(951) 781-5791</td>
<td>Heavy-duty diesel engine FTP transient test</td>
<td></td>
</tr>
<tr>
<td>Colorado</td>
<td>Colorado Inst. For Fuel &amp; High Altitude Eng. Research – Colorado School of Mines</td>
<td>1500 Illinois Street Golden, CO 80401-1887</td>
<td>Mr. Michael S. Graboski</td>
<td>(303) 273-3973</td>
<td>Heavy-duty Engine Dyno test; Diesel vehicle test</td>
</tr>
<tr>
<td>SGS Environmental Testing Corp.</td>
<td>2022 Holmes Street Aurora, CO 80011</td>
<td>Mr. Keith Vettor <a href="mailto:krettor@sgs.com">krettor@sgs.com</a></td>
<td>(303) 365-7849</td>
<td>Diesel vehicle test</td>
<td></td>
</tr>
<tr>
<td>National Center for Veh. Emissions Control &amp; Safety Dept of Industrial Sciences</td>
<td>Colorado State University Fort Collins, CO 80523</td>
<td>Mr. Bruce R. Wold</td>
<td>(303) 491-7249</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illinois</td>
<td>Auto Research Laboratories, Inc.</td>
<td>400 E. Shadle Blvd, Marion, IL 62062</td>
<td>Dr. Fred Voelz</td>
<td>(708) 210-3396</td>
<td>Diesel vehicle test</td>
</tr>
<tr>
<td>Maryland</td>
<td>Environmental Research &amp; Development Corp.</td>
<td>9087 Dr. Perry Road, Knoxville, MD 21754</td>
<td>Mr. Peter W. Listan</td>
<td>(301) 687-4118</td>
<td></td>
</tr>
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</table>
## Independent Laboratory List

[Updated 12/06/13]  
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<thead>
<tr>
<th>Laboratory Name</th>
<th>Location Address</th>
<th>Contact Personnel</th>
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<td><strong>Michigan</strong></td>
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<tr>
<td>Johnson Matthey Testing</td>
<td>12500 Universal Drive, Taylor, MI 48180</td>
<td>Mr. Ian Collingwood</td>
<td>(734) 893-6127</td>
<td>Bench aging for catalytic converters</td>
<td></td>
</tr>
<tr>
<td>Johnson Matthey Testing</td>
<td>12500 Universal Drive, Taylor, MI 48180</td>
<td>Mr. Rick Jackson</td>
<td>(734) 893-6122</td>
<td>Heavy-duty engine test on gasoline, CNG, LPG</td>
<td></td>
</tr>
<tr>
<td>Mercedes-Benz Service Corp. – Ann Arbor Emission Laboratory</td>
<td>3953 Research Park Dr Ann Arbor, MI 48108</td>
<td>Mr. Mike Christianson</td>
<td>(734) 955-3066</td>
<td>Diesel vehicle test, Direct NOx measurement, SFTP-US06, SFTP-SC03</td>
<td></td>
</tr>
<tr>
<td>Lotus Engineering, Inc.</td>
<td>P.O. Box 7209 Ann Arbor, MI 48107-7209</td>
<td>Mr. Donald Apple</td>
<td>(313) 995-2544</td>
<td>Motorcycle emissions test, Bench aging for catalytic converters</td>
<td>Not a catalyst supplier</td>
</tr>
<tr>
<td>Motorola AIEG</td>
<td>15201 Mercedence Drive Dearborn, MI 48120</td>
<td>Mr. Rick Brulean</td>
<td>(313) 441-3544</td>
<td>SFTP – US06</td>
<td>Gasoline-powered light-duty &amp; medium-duty vehicles only</td>
</tr>
<tr>
<td>Roush Laboratories</td>
<td>12249 Levan Road Livonia, MI 48150</td>
<td>Mr. John Thompson</td>
<td>(734) 779-7874</td>
<td>Heavy-duty Engine Dyno test; SFTP – US06, AC2 (alternative)</td>
<td></td>
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<tr>
<td>Roush Laboratories</td>
<td>36610 Commerce Livonia, MI 48150</td>
<td>Mr. Dennis Corn</td>
<td>(734) 779-7602</td>
<td>Diesel vehicle test</td>
<td></td>
</tr>
<tr>
<td>Siemens VDO Automotive</td>
<td>2400 Executive Hills Dr, Auburn Hills, MI 48326</td>
<td>Mr. Jim Schuman</td>
<td>(248) 308-2100</td>
<td>CVS-75 FTP on gasoline LDV and MDV</td>
<td></td>
</tr>
<tr>
<td>Unocor</td>
<td>2147 Commercial Drive Auburn Hills, MI 48326</td>
<td>Davion Clark</td>
<td>248-340-1040</td>
<td>Bench aging for catalytic converters</td>
<td>May age catalysts for customers as a non-supplier</td>
</tr>
<tr>
<td>McLaren Performance Technologies</td>
<td>3233 West Eight Mile Rd, Livonia, MI 48152</td>
<td>Eric Klo</td>
<td>(248) 477-6240</td>
<td>Bench aging for catalytic converters</td>
<td>Bench aging only, not a catalyst supplier</td>
</tr>
<tr>
<td>Mala Powertrain, Inc.</td>
<td>41005 Vassar Ct Novi, MI 48375-1921</td>
<td>Chad Neff</td>
<td>(248) 718-1370</td>
<td>CVS-75 FTP, SFTP-32566, AC-2 (alternative)</td>
<td></td>
</tr>
<tr>
<td>ProCat Testing</td>
<td>30844 Century Drive Wixom, MI 48393</td>
<td>Phil Moss</td>
<td>(248) 926-8200</td>
<td>Bench aging for catalytic converters</td>
<td>Not a catalyst supplier</td>
</tr>
<tr>
<td>FEV, Inc.</td>
<td>4554 Glenmeade Lane Auburn Hills, MI 48326-1766</td>
<td>Mr. Erik Koehler</td>
<td>(248) 373-8080</td>
<td>Heavy-duty diesel engine FTP transient, SETRAMC, NTE, Part 1065 compliant equipment/instruments</td>
<td></td>
</tr>
<tr>
<td><strong>New Jersey</strong></td>
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</tbody>
</table>
| Compliance & Research Services, Inc. | 2 Garfield Street Linden, NJ 07036 | Mr. Robert DePalma | (908) 925-3533 | (1) Motorcycle emissions test  
(2) Bench aging for catalytic converters |          |
<p>| BASF Catalysts, LLC | 25 Middlesex – Essex Tpk. P.O. Box 770, Edison, NJ 08818-0770 | Mr. David Montebello | (732) 205-3436 | Bench aging for catalytic converters | May bench age catalysts for customers as a non-supplier |
| <strong>New York</strong>   |                  |                   |           |                              |          |
| Vehicle &amp; Engine Emissions Testing Services | 15 – 17 Trade Zone Drive, Ronkonkoma, NY 1179 | Mr. Peter DiBernardi | (631) 588-9777 | Fax: 631-588-8369 |          |
| <strong>Ohio</strong>       |                  |                   |           |                              |          |
| Transportation Research Center, Inc. | P.O. Box D-57 10820 State Route 347 East Liberty, OH 43139 | Mr. Douglas Fisher | (927) 666-2011 | Steady-state off-road engine testing |          |
| <strong>Oklahoma</strong>   |                  |                   |           |                              |          |
| National Institute for Fuel &amp; Energy Research | P.O. Box 2128 Bartlesville, OK 74005 | Mr. Dan Guntry | (918) 337-4379 |          |
| <strong>Pennsylvania</strong> |                  |                   |           |                              |          |
| Air Testing Services, Inc. | 200 W. 5th Street Landisville, PA 17535 | Mr. Robert R. R. Marino | (215) 362-1194 | Diesel vehicle test |          |
| Environmental Solutions Worldwide, Inc. (ESWA, aka Air Testing Services) | 200 Progress Drive Montgomeryville, PA 18936 | Mr. Vivanda Kumar | (215) 694-0750 | Off-road CI steady-state engine testing; off-road CI transient engine testing; On-road CI transient and steady-state engine testing | Part 89 compliant; Part 1065 compliant; Part 80 compliant |
| Johnson Matthey | 435 Devon Park Drive Warminster, PA 18974-1316 | Mr. Jeff Rieck | (610) 341-8367 | Bench aging for catalytic converters |          |</p>
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<td>Texas</td>
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<tr>
<td>InterTek - Automotive Research</td>
<td>5404 Bandera Road</td>
<td>Mr. John Sparrow</td>
<td>(210) 523-4600</td>
<td>Heavy-duty diesel engine FTP transient, SET/BMC, NTE, off-road NRBC, Part 1065 compliant equipment/instruments</td>
<td></td>
</tr>
<tr>
<td>Natural Gas Veh. Tech. Center</td>
<td>6111 Hwy 290 East</td>
<td>Mr. Calvin J. Mock</td>
<td>(512) 452-2776</td>
<td>CNG/LPG vehicle test</td>
<td></td>
</tr>
<tr>
<td>Southwest Research Institute</td>
<td>5220 Culebra Road</td>
<td>Mr. Kevin A. Whitney</td>
<td>(210) 522-3869</td>
<td>Heavy-duty diesel engine FTP transient, Diesel Vehicle Test, CVS-75 for LDV &amp; MDV, SFTP-US06, AC2 (alternative), Enhanced Evap test, Back-aging for catalytic converters</td>
<td></td>
</tr>
<tr>
<td>Texas Environmental Technologies</td>
<td>3453 East Vickery</td>
<td>Mr. Bill Rucker</td>
<td>(817) 534-4275</td>
<td>Motorcycle emissions test</td>
<td></td>
</tr>
<tr>
<td>Wallace Environ. Testing Labs.</td>
<td>2140 Wirtest</td>
<td>Mr. Lee Weaver</td>
<td>(713) 956-7705</td>
<td></td>
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<tr>
<td>Virginia</td>
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</tr>
<tr>
<td>Electromotive, Inc.</td>
<td>10094-J Willard Road</td>
<td>Mr. Alexander Long, III</td>
<td>(703) 378-2444</td>
<td>Evaporative test not available</td>
<td></td>
</tr>
<tr>
<td>Wisconsin</td>
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<td></td>
</tr>
<tr>
<td>S&amp;S Cycle, Inc.</td>
<td>14025 County Highway</td>
<td>Mr. Jan Smith</td>
<td>(608) 627-0230</td>
<td>Motorcycle exhaust and evaporative testing only</td>
<td>Can perform durability service accumulation for motorcycles</td>
</tr>
<tr>
<td>Canada</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Enova Canada Inc.</td>
<td>2393 Speckman Drive</td>
<td>Mr. Brian Manscom</td>
<td>(905) 822-4111</td>
<td>Heavy-duty diesel engine FTP transient, steady-state dyno tests</td>
<td></td>
</tr>
</tbody>
</table>
HELPFUL HINTS

1. Review your product line and determine which products are replacement and which are add-on or modified (see definition section). Only add-on and modified parts are required to comply with this regulation.

2. Determine which products and for which makes of vehicles you expect to sell the most. Being selective is important because if you include a part in your application of which you may only sell a few, and that part at some time in the future is shown to cause an increase in emissions through the part itself, or degradation of another emission-control part, the Executive Order could possibly be rescinded, leaving you with no exempted parts. It is prudent to first consider those products for exemption which have reasonable assurance of passing the criteria and then at a later date apply for exemption on the part with lesser importance assurances.

3. Is the product covered by Compliance Criteria or will it be necessary to perform emissions testing? If covered by Compliance Criteria, does the product meet all the requirements? If yes, contact the California Air Resources Board for the proper exemption forms, complete and return them with appropriate requirements. You will be advised of any additional requirements, such as providing a sample of the part for inspection.

If the product requires emission testing, what assurance do you have that the part will pass the criteria? Have emissions tests been performed on the parts? If not, it is prudent to consider preliminary tests to evaluate the chances of passing the criteria before advising the California Air Resources Board (CARB) of your intent. Once an application has been submitted, and an emissions test program established, the CARB expects to see test results. If the results of such tests are not given to the CARB because of the unlikelihood of meeting the test criteria, the product will likely be looked upon as being in noncompliance. In cases like this, the manufacturer will likely receive a cease and desist letter notifying the manufacturer of his non-exempt status and the requirement to use disclaimers in future advertising. If there are reasonable assurances that the part will meet the criteria, request the appropriate application, complete and return it with any requests. Upon reviewing the application, the CARB staff will communicate with the designated contact person to advise or discuss a testing program (see text). If there are any questions regarding the testing program, this is the time to discuss it and, necessary, suggest alternatives.

4. If emission testing is required, the CARB staff will advise about four test vehicles based on the breadth of the application and “worst” case choice. If the test
vehicle or vehicles are deemed not to be representative of the majority of the vehicles covered in the application, or are difficult to locate, this should be brought to the attention of the CARB staff with a recommended replacement or replacements. It is possible to use prototype test vehicles with the approval of CARB staff.

NOTE: It is very important for those manufacturers outside of California to understand that test vehicles must be vehicles certified for use in California. This places an additional burden on out-of-state manufacturers who plan on performing emissions tests outside of California. It is appropriate to ask the CARB staff to consider a certified 49-state vehicle. Some vehicles were certified for use in 50 states and they are also acceptable. In any case, always discuss vehicle selections with CARB staff.

SEMA does not recommend that a manufacturer purchase a new vehicle for the sole purpose of prototype and certification testing. The results of such testing are generally not acceptable to the CARB on the other hand, the vehicle has other purposes or it will be used as a slave vehicle other projects, it may be cost effective. The best and most common places to procure a test vehicle are through friends, employees or car rental agencies. To be acceptable for testing, however, the vehicle must have accumulated at least 4,000 miles on the odometer. The emissions characteristics of the engine are not considered stable until approximately 4,000 miles of normal usage.

5. After procuring the appropriate test vehicle, it is recommended that the vehicle be subjected to cursory underhood and tailpipe inspection by a local smog-check station to ensure the vehicle has not been tampered with or that it is not a gross polluter. At this point the compute (if equipped) should be checked for trouble codes. If the vehicle has been tampered with, return it. If it is a gross polluter (does not meet the local standards) or displays a trouble code, either return it or take it to the local manufacturer’s dealer and ask that the vehicle be brought into compliance under the emission warranty. We stress this point because laboratory emission testing is not inexpensive. Each test can cost upwards of $900 and if the vehicle does not produce reasonable test data on its baseline test (stock configuration), it may not be accepted by the CARB.

6. Once satisfied that the vehicle is appropriate for testing (it is turned over to the emissions facility (NOTE: Some test facilities will obtain, perform pre-test checks/inspections and correct minor problems, as part of their service). It is up to the laboratory personnel to verify that the vehicle is within the vehicle manufacturer’s specification prior to the start of any testing.
7. Prior to starting the testing program, sit down with the lab project engineer in charge of your program to discuss the project, the product, the purpose of the product and what may be expected with its installation on the vehicle. (NOTE: It is important that the manufacturer have some understanding of the tests that will be performed on his product and be able to make specific requests it. If the manufacturer does not have this understanding, it would be in his own best interest to bring or use a consultant that does). Ensure that the lab has all the pertinent information on the test vehicle; i.e., starting procedures, inertia weight category, road-load horsepower, shift points (if a manual transmission) and all specs with which the vehicle was originally certified. This type of information is available through the CARB. It is the lab’s responsibility to ensure that all procedures are followed according to the Federal Test Procedure. A few things to request are a dedicated driver (a driver assigned to and is the only driver of the test vehicle), that the duration of the cold-soak (the period of time the vehicle must sit following preconditioning and before the actual test), be consistent with the baseline test, and that the precondition cycle be the same for both the baseline and the device test. The preconditioning cycle, has become more important in recent years and may make a big difference in whether or not the part will pass the test criteria. Normally the lab will perform what is referred to as an LA-4 driving cycle. In years past, a single LA-4 was acceptable and in most cases still is. However, with the advent of highly-effective, computer-controlled feedback control systems, one LA-4 may no longer be sufficient for preconditioning. Many systems include what is referred to as “adaptive learning” ability. This means that the computer will adapt to a particular performance level based on a variety of parameters it sees most often. This could even include a change in drivers, the changing of a part, and certainly if the battery cable has to be removed for the installation of a product. In these cases, one LA-4 drive-cycle will not likely return the computer to its expected performance level.

This could result in a drastic shift in emission levels that will be considered as a result of the device installation, not that the computer did not have time to adapt or learn a new set of parameters. It is suggested that where there is going to be the installation of a part that will ultimately have an affect on the feedback control system, or the removal of the battery cable for any reason, that three LA-4 drive cycles be used for both the baseline and device tests to give some reasonable assurances that the computer has had time to learn or adapt to new parameters. This will increase testing costs but can ultimately save a lot of time and money looking for unacceptable problems and re-running tests.

8. Ultimately, it is the responsibility of the lab to provide quality data in accordance with the Federal Test Procedure. Any discrepancies or inaccuracies will likely
result in unacceptable data. In such a case, it is the lab’s responsibility to re-run the test at their expense. If the manufacturer is not satisfied with the results he has received or the explanation he has received from the laboratory regarding his test results, he should seek third-party verification. SEMA will attempt to assist such matters.

9. Manufacturers and/or manufacturers’ agents should be reminded that it is a prohibited act to operate a vehicle on the streets and highways of California with products installed that are in violation of Vehicle Code 27156. To prevent a possible citation and the removal of the vehicle tags by a California Highway Patrol Officer, the Air Resources Board provides an “experimental permit,” free of charge, for any manufacturer seeking to evaluate or test prototype products. SEMA highly recommends that all manufacturers obtain an “experimental permit” for their protection while evaluating new products. Permit applications can be obtained from the:

Manager, Aftermarket Parts Section,
California Air Resources Board
9528 Telstar Avenue
El Monte, California 91731
or by calling (818) 575-6848

10. The flowchart included in Appendix 5 will aid the manufacturer in understanding the sequence of events that take place during the testing program. Any questions regarding the testing program prescribed by the CARB or the laboratory should be directed to Jim McFarland 901-377-1210 or JMcFar1@aol.com
The following is a list of some of the terms (and their meanings) that may be encountered while working with the California Air Resources Board and/or an independent emission laboratory. The definitions listed for these terms are intended solely to enhance comprehension and/or to provide informal reference. These terms may be defined differently or may be used in a different context in other documents.

**Aftermarket Parts**: Those parts produced by a manufacturer other than the original equipment manufacturer. Types of aftermarket parts include direct replacement, consolidated replacement, add-on, modified, rebuilt and remanufactured parts.

**Add-On Parts**: A part which does not replace an OEM part and was not part of the originally certified vehicle configuration. Add-on parts are not emissions defeat devices under certain conditions, as defined by EPA Memorandum 1A and state laws.

**Back-To-Back Test**: Normally refers to performing a baseline test followed by a device test, but could be any number of tests run on the same vehicle one after another.

**Baseline Test**: A test to determine the emissions levels of the test vehicle in its originally manufactured configuration. All engine parameters must be set to the manufacturer’s specifications.

**Bi-Directional Control**: The capability of a diagnostic or calibration development tool to send or receive messages and commands that temporarily override the preset values of the PROM. Communication is over a data bus linked to the powertrain control module, either directly or through a standardized diagnostic connector.

**CVS (Constant Volume Sample) System**: Part of the overall emissions bench. It dilutes the vehicle exhaust and measures mass emissions values as opposed to a typical garage-type analyzer which measures raw emissions values. The mass emissions results and the actual distance traveled on the dynamometer will determine the emissions values in grams per mile.

**Canister or Charcoal Canister**: Part of the evaporative emission system collects fuel vapors from the gas tank and other sources. These stored vapors are purged during normal driving cycles. One matter of great importance in preconditioning a test vehicle to ensure proper purging is of the canister prior to the cold soak. The canister will again be loaded during the cold soak. Improper or inconsistent purging and loading of the canister can cause significant variances in emission levels, both exhaust and evaporative.
**Chassis Dynamometer**: A special chassis dynamometer for emission testing. It is calibrated to accommodate various weights of vehicles, called inertia weight categories. These inertia weight categories are divided into 125-pound increments to provide the most accurate measurements. The dynamometer is also calibrated for various road load horsepower (RLHP) settings to simulate the amount of horsepower required to move the vehicle over a level surface at 50 miles per.

**CO** – Carbon Monoxide emissions are part of measurements taken during the E.O. process and relate to air/fuel ratio.

**Cold 505 Test**: A transient driving cycle administered during the first 505 seconds of the Federal Test Procedure (FTP); a transient driving cycle. It is also referred to as the cold transient portion of the FTP. This test is used to measure emissions during the cold-start operation of the vehicle.

**Cold Soak**: Refers to the time period (12 to 36 hours) following vehicle preconditioning and prior to emissions testing. It is recommended that the cold soak be limited to 12 to 24 hours when an evaporative emission test is not required.

**Cold Stabilized Test** (see Cold 505 test)

**Component Calibration**: The mechanical, electrical or electromechanical attributes of a component necessary for the component to perform its specific design function. Included is a specification of physical attributes such as size, shape, and material.

**Data Link Connector (DLC)**: A required connector on OBDII-equipped vehicles which is standardized in design and location. The DLC allows electronic access to vehicle data stream information and provides for bi-directional control of vehicle functions.

**Data Stream Information**: Messages and/or data transmitted between a network of electronic components connected in parallel by one or more communication lines.

**Dedicated Driver**: Refers to a person who will be the only person to drive a specific vehicle. The reason to request a dedicated driver is that although the drive cycle is the same in all cases, each driver his own style of driving which may be different from that of another driver. This difference can show up as inconsistencies and variability in emission values.

**Deterioration Factor**: A value derived through the vehicle manufacturer's certification testing. This value is used with the FTP emission results to predict emission levels and compliance after 50,000 miles of vehicle use.

**Device Test**: An emission test performed with an aftermarket device(s) installed, or if the original manufacturer’s specifications have been altered, or both.
**Diagnostic Trouble Code (DTC):** An alpha-numeric identifier for a fault condition identified by the OBD/OBD-II system. DTCs are set and removed based on specific parameters being compared to criteria preprogrammed into the powertrain computer.

**Diurnal Test:** A portion of the evaporative emissions test. It includes the artificial heating of the fuel tank to raise the temperature of the fuel by a specific amount over a set time period. Any hydrocarbon losses are measured during this period. This test is intended to simulate a vehicle which was left outside at night and remained the same all day in the sunlight for a specific period of time.

**Driver’s Trace:** A computer-generated trace that the driver must follow while performing the emission test (see Urban Dynamometer Driving Schedule). The driver is given very little margin for error while following this trace. The test will be rejected and the data will become invalid for any variance over that allowed by the EPA.

**EPROM Computer Chip:** An Erasable PROM which must be removed from the vehicle computer to allow erasure by means of exposure to ultraviolet light. Subsequent reprogramming is performed electrically via additional equipment.

**EEPROM Computer Chip:** An Electrically Erasable PROM which can be completely or selectively reprogrammed via electronic means while still installed in the vehicle.

**Engine Change:** The installation of an engine in an exhaust emission-controlled motor vehicle different from that which was originally installed/certified in the vehicle. The applicable emission controls for the installed engine must be present and connected for such a change to be legal.

**Evaporative Emission Enclosure:** Most often referred to as a SHED (Sealed Housing for Evaporative Determinations), is a sealed enclosure for measuring fuel and non-fuel related hydrocarbon losses during the diurnal and hot soak enclosure tests.

**Evaporative Emissions Test:** Measuring for fuel and non-fuel related hydrocarbon losses during the diurnal and hot soak enclosure tests.

**“Flash” EEPROM Computer Chip:** A form of EEPROM which uses “flash” technology and only allows complete (no selective) reprogramming of the chip memory contents.

**Federal Test Procedure (FTP):** The certification test used to determine compliance with Federal and California emission standards for a specific model-year vehicle. The FTP consists of an evaporative emissions enclosure test and a four-phase driving mode test. The evaporative test includes a diurnal and a hot soak enclosure test. (NOTE: the evaporative emissions test is normally waived when certifying aftermarket parts unless it is determined the part may impact evaporative emissions). The results of these two tests are added together to determine whether the vehicle meets the applicable
standard. The four-phase driving mode test is performed on a chassis dynamometer and includes a cold transient cycle, a cold stabilized cycle, a hot soak period and a hot transient cycle. Tailpipe emissions are gathered in a separate bag for each drive cycle and calculated over 7.5 miles of drive cycle. The results of this test are compared to the applicable standards for hydrocarbons (HC), carbon monoxide (CO) and oxides of nitrogen (NOx). The level of carbon dioxide (CO2) captured during the test is also used in the calculation to determine the fuel economy of the vehicle as measured during the FTP. This is referred to as the carbon balance method of determining fuel economy. The laboratory performing these tests must maintain specific ambient conditions and time factors during all phases of the FTP.

**Fuel:** The specific test fuel used during certification testing. The gasoline fuel, referred to as Indolene, contains specific properties spelled out by the EPA and is used for all U.S. vehicle certification by manufacturers all over the world. Theoretically a vehicle certified in Germany or Japan will exhibit the same emission levels if retested in the U.S.

**Fuel Economy:** A calculated value derived from the emission values produced by the test vehicle during the FTP. This is referred to as the carbon balance method of determining fuel economy.

**Fuel Tank Volume:** Means 40 percent of the actual fuel tank capacity. All tests must be initiated using the appropriate test fuel at a volume of 40% of the tank capacity. This is an attempt to maintain consistency in test results no matter where tested or by whom. More or less fuel can affect evaporative and tailpipe emissions based on inconsistent evaporative emission canister loading and purging.

**Functional Control Strategies:** A description and flow diagram which explains the interaction of the powertrain control module, its calibration and affected components. This includes items such as control logic, limits, event timing, and calibration data.

**Hot 505 Test:** The hot-start version of the cold 505 which is used mostly for determining emissions levels during R&D testing.

**Highway Fuel Economy Test (HFET):** An EPA, 10-mile dynamometer driving cycle used to determine highway fuel economy based on the carbon balance method.

**Indirect Information:** Any information not specifically contained in the vehicle manufacturer’s service literature which is otherwise contained in or obtained from parts, components or equipment supplied to franchised dealers or other third parties.

**Indolene Fuel** (see Fuel).
**Inertia Weight:** Determined from an EPA chart based on the vehicle loaded weight (curb weight + 350 pounds).

**LA-4:** A hot-start Urban Dynamometer Driving Schedule (UDDS) cycle. This test is mainly used in the preconditioning of test vehicles. It can also be used for evaluating a vehicle’s emissions levels as a pre-test evaluation. This can even be done during vehicle preconditioning and if the results are not satisfactory, the remainder of the test can be aborted without incurring additional costs.

**LEV:** Low Emissions Vehicle for which the CARB lists exhaust emissions standards for which CA has published standards for both “Federal” and “California” fuels.

**Malfunction Indicator Light (MIL):** A required warning light on OBD-II equipped vehicles which is mounted on the instrument panel. This light must be illuminated when certain conditions, such as the presence of DTCs are present.

**Modified Parts:** A part which replaces a part from the originally certified OEM vehicle configuration but is not functionally equivalent to the OEM parts. Modified parts are not emissions defeat devices under certain conditions, per EPA Memorandum 1A and state law.

**NMHC Emissions** – Non-methane hydrocarbon emissions is a category included in the ARB E.O. test protocol, previously noted in E.O. documents as levels of HC (unburned hydrocarbons).

**On-Board Diagnostics (OBD):** A system of monitoring vehicle conditions which allows the powertrain control computer to regularly assess the condition of specified vehicle systems to see if a failure has occurred. Limited service information is also provided.

**On-Board Diagnostics II (OBD-II):** A second generation OBD system which monitors a greater number of vehicle systems for deterioration as well as failure under virtually all driving conditions. Standardized service/data stream information is also provided. Such systems may incorporate anti-tampering measures.

**Original Equipment Manufacturer (OEM):** The manufacturer of record for the vehicle’s emission control system. While this is usually the vehicle manufacturer, it is possible for a third party to assume this role through a cooperative agreement with the vehicle manufacturer whereby the third party modifies the vehicles prior to sale.

**PROM Computer Chips:** Programmable Read Only Memory used in a vehicle’s powertrain control module to store the various preset values, data, commands and algorithms used for operation of the powertrain. Types of PROMs include EPROMs, EEPROMs, and “Flash” EEPROMs. Each of these PROM types is defined separately.
**Powertrain Calibration**: The present values, data, algorithms and instructions needed for powertrain control module’s PROM chip(s).

**Preconditioning**: Refers to the preparation of a test vehicle prior to performing the FTP. It includes the draining of the vehicle’s fuel tank, refilling it with test fuel to 40% of the tank capacity, placing the test vehicle on the dynamometer and performing at least one LA-4 driving cycle. This is intended to stabilize vehicle temperatures and purge the evaporative emissions canister. The vehicle is then placed in a cold soak area for 12 to 36 hours. The cold soak area must be maintained at a temperature between 68 and 86 degrees Fahrenheit. The FTP cannot be started prior to 12 hours’ soak or later than 36 hours soak.

**Rebuilt parts**: A used part which has been disassembled, processed and reassembled to yield a part functionally identical to OEM specifications.

**Recalibration**: The act of revising the powertrain or component calibration for optimization and/or compliance with new vehicle operating parameters and conditions.

**Remanufactured parts**: A used part which has been disassembled, processed and reassembled to yield a part functionally equivalent to OEM specifications.

**Replacement Engine**: A new, rebuilt, remanufactured or used engine of the same make, number of cylinders, and engine family as the original equipment engine with the original emission controls reinstalled, an engine that matches a later configuration offered by the vehicle manufacturer for the same make and model of vehicle. Both the appropriate emission controls for the installed engine and the appropriate emission-related chassis components must be present and functional.

**Reprogramming**: The act of erasing, either selectively or completely, the contents of a PROM chip’s memory and subsequently installing new calibration data into it.

**Road Load Horsepower (RLHP)**: Determined by the vehicle manufacturer and is based on the amount of horsepower it takes to move a specific vehicle over a level surface at 50 miles per hour. This is determined by a series of calculations based on the aerodynamics of the vehicle such as frontal area, mirrors, other protuberances, tire type and air conditioning.

**Run Against the Standard**: Refers to a vehicle already modified and the manufacturer is going to forego performing a baseline test. In this case, the lab will perform one FTP and the test results must be equal to or less than the applicable emission standards with a deterioration factor applied.
SC03: An emissions test conducted to include the activation and effects of a vehicle’s air conditioning system.

Test Readiness Code: A requirement of OBD-II systems whereby a specified code may only be set after the OBD-II system has been able to monitor all applicable systems. This requirement was adopted to prevent consumer fraud via the disconnecting of the vehicle battery to remove any stored DTCs prior to I/M testing.

UDDS (see Urban Dynamometer Driving Schedule).

Urban Dynamometer Driving Schedule (UDDS): The speed-versus time sequence of the driving cycle used in performing the FTP. This cycle was established by the EPA based on Los Angeles urban driving in the late 1960s.

Urban Fuel Economy (see fuel economy

US06: An emissions test now included in the E.O. process by which a vehicle is subjected to more aggressive acceleration rates and higher road speeds than required in the FTP, conducted on a chassis dynamometer.

HELPFUL HINTS for OBD-II COMPLIANT VEHICLES

1. Review your product line and determine which products are “replacement” parts and which are “add-on” or “modified” parts (see Attachment 4 for definitions). Only “add-on” and “modified” parts need to comply with E.O. requirements. (Note: If you are dealing with an OBD-II vehicle, some “consolidated” parts may also be subject to these requirements. You may ask the CARB for clarification.)

2. Determine the make of vehicle(s) for which you expect to sell the most products in the line. Be selective, because if you include a part in your application for which you may only sell a few and at some future time that part is shown to cause an emissions increase (either because of the part itself or degradation of another emission-related part), the Executive Order could be rescinded and leave you with no exemption.

   It is wise to first consider products for exemption that have the best assurance of passing the criteria. You can then apply at a later date for lesser important parts that have the least chance of complying.

3. Is the product covered under the category of Compliance Criteria? If you think so, make certain the produce meets all the listed requirements. If so, contact CARB staff for the necessary applications forms or visit their website
(www.arb.ca.gov) and download the materials. Once filled out, submit these forms to the CARB for review and approval. Within two weeks after submitting an Application, it’s wise to place a follow-up call to keep the process moving forward.

After the CARB has reviewed your application, discuss it and determine an acceptable test vehicle for OBD-II compatibility testing. Determine which emissions tests will be required. Generally speaking, once you’ve submitted an Application and no additional information is required (as requested by the CARB), a “test letter” will be issued that (a) identifies the subject test vehicle(s) and (b) gives the test laboratory permission to begin testing.

In addition, during these preparatory steps (preferably prior to submitting an Application) and if the product is a General Criteria part, what assurance do you have the part will pass emissions testing? Have you conducted any emissions test at all? If not, it is usually prudent to consider some preliminary tests to make to determine your chances of having the part pass the required criteria.

Prior to OBD-II vehicles and the lowering of emissions standards to their current levels, testing for HC, CO and NOx just ahead of the catalytic converter(s) with a “garage-grade,” four-gas analyzer was usually a sufficient test to perform, prior to FTP testing. Such “engine out” emissions data would provide meaningful data. Present-day emissions standards and test procedures suggest you may want to invest in a pre-Application, hot-start FTP, in order to get a sense for how the product will eventually test in the certification process. A cold-start FTP is preferred. Such tests are the most meaningful when the subject vehicle is baseline tested in stock form and then re-tested with the aftermarket product installed. You may want to consult with SEMA technical staff or your testing facility of choice, regarding pre-certification tests.

Following is a more detailed review of how pre-Application tests should be conducted: Prior to taking any measurements.(see last three paragraphs of 3.10.3 for remaining text in item 3.)

4. If emission testing is required, the CARB staff will advise a selection of from one to four test vehicles based on the scope of the application. If the test vehicle(s) are deemed not to be representative of the majority of the vehicles covered in the application, or are difficult to locate, this should be brought to the attention of the CARB staff, along with a recommended replacement(s). It is possible to use prototype test vehicles with the approval of CARB staff.
NOTE: It is very important for those manufacturers outside of California to understand that test vehicles must be vehicles certified for use in California. This places an additional burden on out-of-state manufacturers who plan on performing emission tests outside of California. It is, however, appropriate to ask the ARB staff to consider a certified 49-state vehicle. Many vehicles are also certified for use in 50 states and thus are also acceptable.

SEMA does not recommend that a manufacturer purchase a new vehicle for the sole purpose of prototype and certification testing. The results of such tests may or may not be acceptable to the CARB. If, on the other hand, the vehicle has other purposes or will be used as a slave vehicle in other projects, it may be cost-effective. The best and most common places to procure test vehicles are through friends, employees or car rental agencies. To be acceptable for testing, however, the vehicle must have accumulated at least 4,000 miles on the odometer. The reason: The emissions characteristics of the engine are not considered stable until after approximately 4,000 miles of usage.

5. After procuring the appropriate test vehicle, make sure the readiness code has been set and that no DTCs are stored in the computer memory. This can be accomplished with an appropriate scan tool or at a local smog-check station. If the computer displays a DTC, either return the vehicle or take it to the local vehicle manufacturer's dealer and ask that the vehicle be brought into compliance under the emission warranty. We stress this point because laboratory emission testing is not inexpensive. Each FTP test can cost upwards of $500. If the vehicle does not produce a readiness code or has stored DTCs, it will not be accepted by the CARB.

6. Once satisfied the vehicle is ready for testing it is turned over to an appropriate emission testing facility. It is up to the laboratory personnel to verify that the vehicle is within the vehicle manufacturer's specification prior to the start of any testing. If any irregularities are indicated which may compromise the results of the test, abandon the vehicle or send it to the dealer for warranty repair.

7. Prior to the start of any testing program, sit down with the lab project engineer in charge of your program to discuss the test procedures required for this project, the product, the purpose of the product and what may be expected with its installation on the vehicle. (NOTE: It is important that the part manufacturer has some understanding of the tests that will be performed on his product and be able to ask for specific requests. If the manufacturer does not have this understanding, it would be in his own best interest to use a
consultant who does). Ensure the lab has all the pertinent information on the test vehicle; i.e., starting procedures, inertia weight category, road-load horsepower, shift points (if a manual transmission), and all specs with which the vehicle was originally certified. This type of information is available through the ARB. It is the lab responsibility to ensure that the vehicle certification procedures are followed and in accordance with the Federal Test Procedure.

Following are some topics you may want to discuss with the testing facility staff: (1) request that a “dedicated driver” be assigned to your particular project, (2) that the vehicle’s cold-soak period will be a minimum of twelve hours, and (3) that the preconditioning cycle be the same for both the baseline and device tests. These questions are not to suggest that testing facilities need to be reminded about their required practices. Rather, they are meant to underscore that there’s more to successfully passing the E.O. test requirements that simply running emissions tests. Don’t be reluctant to ask any and all questions that come to mind during your testing laboratory experience. The more you know, the better chance you stand of making certain that test results are based on proper procedures.

8. Ultimately it is the responsibility of the lab to provide quality data in accordance with the vehicle manufacturer’s certification specifications and the Federal Test Procedure.

Any discrepancies or inaccuracies will likely result in erroneous data. In such a case, it is the laboratory’s responsibility to rerun the test at their expense. If the manufacturer is not satisfied with the results he has received or the explanation he has received from the laboratory regarding his test results, he should seek third-party verification.

9. Part manufacturers and/or part manufacturers’ agents should be reminded that it is a prohibited act to operate a vehicle on the streets and highways of California with products installed that are in violation of Vehicle Code 27156. To prevent a possible citation and the removal of the vehicle tags by a California Highway Patrol officer, the California Air Resources Board provides an “experimental permit,” free of charge, for any manufacturer seeking to evaluate or test prototype products. SEMA highly recommends that all part manufacturers obtain an “experimental permit” for their protection while evaluating new products. Permit applications can be obtained from:

The Manager, Aftermarket Parts Section
California Air Resources Board
9528 Telstar Avenue
El Monte, California 91731
or by calling (818) 575-6848
DEFINITIONS FOR EMISSION-RELATED AFTERMARKET PARTS

These criteria apply to add-on or modified parts, as defined in Section 1900 (1) and (10), Chapter 3, Title 13, California Code of Regulations, as follows:

(1) “Add-on part” means any aftermarket part which is not a modified part or a replacement part.

(2) “Consolidated part” means a part which is designed to replace a group of original equipment parts and which is functionally identical to those original equipment parts in all respects which in any way affect emission (including durability).

(10) “Modified part” means any aftermarket part intended to replace an original equipment emission-related part and which is not functionally identical to the original equipment part in all respects which in any way affect emission, excluding a consolidated part.

(13) “Replacement part” means any aftermarket part intended to replace an original equipment emission-related part and which is functionally identical to the original equipment part in all respects which in any way affect emission (including durability), or is a consolidated part.
EPA Interim Tampering Enforcement Policy (Memorandum 1A)

Since the EPA issued their Memorandum 1A pertaining to the Clean Air Act, amendments were produced that can affect the specialty aftermarket parts industry. Specifically, there was language dealing with anti-tampering provisions of the Act about which manufacturers who provide emissions-related parts should be aware. Initially, anti-tampering provisions were directed to vehicle dealers and engine manufacturers. In August of 1977, additional language was added (Section 203 [a] [3] [B]) to the Clean Air Act, extending post-sale tampering to include any person(s) engaged in the business of repairing, servicing, selling, leasing or trading motor vehicles or motor vehicle engines or who operates a fleet of vehicles. Later, in 1990, these provisions were extended again to include the owner or user of a motor vehicle or motor vehicle engine.

The following section (4.2.3 – 4.2.7) contains a copy of the EPA’s Memorandum 1A. While it was issued prior to the two amendments cited above that extend tampering coverage, it still provides a look at the Memorandum’s core content and the basis on which the tampering extensions were made.

Enclosed is a copy of Memorandum No. 1A for your information. You will note that it is dated June 25, 1974, and cancels and supersedes Memorandum No. I dated December 22, 1972. You will also note that this policy addresses tampering with a motor vehicle or motor vehicle engine and specifically addresses only dealers and vehicle and engine manufacturers. This is because, at the time Memo I A was prepared, the post-sale tampering prohibition applied only to dealers and manufacturers. In August of 1977, Section 203 (a) (3) (B) was added to the Act, and the prohibition extended the post-sale tampering to include any person engaged in the business of repairing, servicing, selling, leasing or trading motor vehicles or motor vehicle engines or who operates a fleet of motor vehicles. The November 1990 amendments extend the tampering prohibition even further by including the owner or user of the motor vehicle or motor vehicle engine.

The purpose of Memorandum 1A is to state the interim policy of EPA with regard to enforcement of the “tampering” prohibitions of the Act. Although this policy does not offer specific guidance as to what is tampering, it does offer guidance as to what is not tampering. In short, if a manufacturer can demonstrate that the company’s product will not cause the regulated pollutants to exceed the applicable emissions standard, then it can be represented that the product meets the requirements of Memo 1A. Although there may be other arguments or means to demonstrate that a part will not cause emissions to exceed the applicable standard, by far the test that will provide the greatest assurance of not being in violation of the Act is to perform the Federal Test Procedure (FTP) or have an ARB exemption. Unlike the ARB exemption program, it is not necessary to apply or even communicate with the EPA regarding efforts in complying with Memo 1A. However, if you represent to the regulated parties that your
product meets the requirements of Memo 1A and is legal for installation and use on regulated motor vehicles, sufficient support as to how you made that determination should be available to the EPA enforcement people on request. (NOTE: Although a California ARB exemption will allow meeting the requirements of Memorandum 1A, it does not work in reverse. To not be in violation of California Vehicle Codes 27156 and 38391 you will still have to apply and receive exemption from the CARB for any emission-related add-on or modified part).

Over time, SEMA has learned that some members (when attempting to comply with Memorandum 1A) have had problems finding in-use vehicles that meet stock baseline emissions levels. Although the CARB has specific criteria to be met regarding test vehicle selection, the EPA does make comparable requirements. For specific guidance in this area, we recommend review of the EPA’s Voluntary Aftermarket Parts Certification Program as administered by their Certification Division in Ann Arbor, MI. For instances where test vehicles are difficult to find, the EPA has determined a test margin applicable to “non-complying” vehicles where back-to-back FTP testing can be used for parts certification.

Further to this issue, baseline (or stock) vehicles must be within reason of the applicable emissions standards. EPA staff can provide help in this regard by indicating whether or not a particular vehicle is considered acceptable, based on in-use data from their emissions factor (EF) program. Concurrently, they can also provide the vehicle’s certification standards (required of the OEM), including the applicable deterioration factor (DF) of the projected emissions levels. Mathematically, the arithmetic difference between the emissions standards and the projected emissions levels is the certification margin. In order to determine if a given product for a specific vehicle is compliant in back-to-back testing, the certification data is added to the baseline data. If the test data from the device is equal to or within that combined total, the part is considered to be in compliance. In addition, comparable to the CARB’s certification process, if the emissions levels of the vehicle (with the DF applied) are within the applicable emissions standards after the device is installed, the part is also considered in compliance. (Note: Both the ARB and EPA can provide the applicable DF information, if requested.)

In 1998, the EPA published another document that further clarifies their position on the classification of non-stock, emissions-related components. Even though this document was directed to heavy-duty diesel engines, auxiliary emissions control devices and the prohibition of defeat devices (as included in the Federal Clean Act), the scope of its impact could affect other emissions related products in the specialty parts industry.

Specifically, this document includes clarification and confirmation about prior EPA interpretations of the Clean Air Act’s prohibition against “defeat devices” as applied to engines with electronically-controlled engines and onboard computers. Such devices,
depending upon their function, may be classified at Auxiliary Emissions Control Devices (ACEDs) applicable to on-highway diesel engines, in particular. By EPA definition, an AECD is “any element of design that senses temperature, vehicle speed, engine rpm, transmission gear, manifold vacuum or any other parameter for the purpose of activating, deactivating or modulating the operation of any part of the emissions control system.”

SEMA members producing ACEDs should discuss the function and potential emissions impact of these parts with SEMA staff, prior to further research into possible testing and compliance requirements. Should you choose to investigate Federal Regulations containing language about ACEDs and Defeat Devices, refer to document 40 CFR 86.082-2 and 40 CFR 86.094-2.
SUBJECT: Interim Tampering Enforcement Policy

A. Purpose

The purpose of this Memorandum is to state the interim policy of EPA with regard to enforcement of the “tampering” prohibition—Section 203 (a) (3)—of the Clean Air Act. This Memorandum cancels and supersedes Mobile Source Enforcement Memorandum No. 1 of December 22, 1972.

1. Section 203(a) (3) of the Clean Air Act provides:

“(3) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser, or for any manufacturer or dealer knowingly to remove or render inoperative any such device or element of design after such sale and delivery to the ultimate purchaser.”

Section 205 of the Act provides for a maximum civil penalty of $10,000 for any person who violates Section 203 (a) (3).

2. This “tampering” provision of the law has created a great deal of uncertainty, primarily among new vehicle dealers and automotive aftermarket parts manufacturers, regarding what action and/or use of what parts are prohibited. The terms “manufacturer” and “dealer” in 203(a) (3) refer only to motor vehicle and engine manufacturers and new motor vehicle dealers; however, the law impacts indirectly on aftermarket parts manufacturers through its applicability to vehicle dealers who are customers for their products. Other provisions in the Act establishing manufacturer warranties and authorizing compulsory recalls of properly maintained vehicles also have a potential for anti-competitive effects in the aftermarket.

3. In general, it is clear EPA’s primary objective in enforcing the statutory prohibition on “tampering” must be to assure unimpaired emission control of motor vehicles throughout their useful life. It is EPA’s policy to attempt to achieve this objective without imposing unnecessary restraints on commerce in the automotive aftermarket.
4. The long-range solution to minimizing possible anti-competitive effects that could result from implementation of these statutory provisions may lie in some type of certification program for at least certain categories of aftermarket parts. EPA is currently studying the technical, administrative and legal problems such a program presents. EPA has yet to develop the policy, procedures, or facilities incidental to any long-range solution.

5. In the absence of a long-term solution, and in the absence of proof that use of non-original equipment parts will adversely affect emissions, constraining dealers to the use of only original equipment parts would constitute an unwarranted burden on commerce in the automotive aftermarket. Pending development of a long-range solution, the following statement reflects EPA’s interim policy in the tampering area. This policy is intended to reduce the uncertainty dealers now face by providing criteria by which dealers can determine in advance that certain of their acts do not constitute tampering.

6. New vehicle and engine manufacturers have also requested that they be treated, in their aftermarket parts role, similar to other aftermarket parts manufacturers. Memorandum No. 1 was intended to avoid unnecessary adverse impacts on all aftermarket manufacturers: this revision therefore makes it clear that EPA's interim policy extends to vehicle and engine manufacturers.

B. Interim Policy

1. Unless and until otherwise stated, the Environmental Protection Agency will not regard the following acts, when performed by a dealer, to constitute violations of Section 203 (a) (3) of the Act:

   (a) Use of a non-original equipment aftermarket part (including a rebuilt part) as a replacement part solely for purposes of maintenance according to the vehicle or engine manufacturer’s instructions, or for repair or replacement of a defective or worn-out part, if the dealer has a reasonable basis for knowing that such use will not adversely affect emissions performance;

   (b) Use of a non-original equipment aftermarket part or system as an add-on, auxiliary, augmenting, or secondary part or system, if the dealer has a reasonable basis for knowing that such use will not adversely affect emissions performance; and

   (c) Adjustments or alterations of a particular part or system parameter, if done for purposes of maintenance or repair according to the vehicle or engine manufacturer’s instructions, or if the dealer has a reasonable basis for knowing
that such adjustment or alteration will not adversely affect emissions performance.

2. For purposes of clause (1a), a reasonable basis for knowing that a given act will not adversely affect emissions performance exists if:

(a) the dealer reasonably believes that the replacement part or rebuilt part is designed to perform the same function with respect to emission control as the replaced part; or

(b) the replacement part or rebuilt part is represented in writing by the part manufacturer to perform the same function with respect to emission control as the replaced part.

3. For purposes of clauses (1b) and (1c), a reasonable basis for knowing that a given act will not adversely affect emissions performance exists if:

(a) the dealer knows of emission tests which have been performed according to testing procedures prescribed in 40 CFR 85 showing that the act does not cause similar vehicles or engines to fail to meet applicable emission standards for their useful lives (5 years or 50,000 miles in the case of light-duty vehicles);

(b) the part or system manufacturer represents in writing that tests as described in (a) have been performed with similar results; or

(c) a Federal, State or local environmental control agency expressly represents that a reasonable basis exists. (This provision is limited to the geographic area over which the state or local agency has jurisdiction).

4. For purposes of clauses (1a), (1b), and (1c):

(a) except when necessarily done in conjunction with acts under 1(b) or 1(c) which EPA does not consider to constitute violations of Section 203(a) (3), the permanent removal or disconnecting or blocking of any of the original system installed primarily for the purpose of controlling emissions will be presumed to affect adversely emission performance; and

(b) the proscription and appropriate publication by EPA of an act as prohibited will be deemed conclusive that such act will adversely affect emissions performance.
C. Discussion

1. Clause (1a) will apply to new or rebuilt replacement parts, protecting the dealer when it uses such a part to conduct necessary maintenance if a person familiar with the design and function of motor vehicles and engines would reasonably believe that such a part is designed to perform the same function as the replaced part, or if there is written representation by the parts manufacturer that the part is so designed. Other reasonable bases (e.g., emissions test showing no adverse effect) may exist, but these other bases will probably not occur often in the replacement part context. If EPA gains information that certain replacement parts do adversely affect emissions, a listing of such parts will be published.

2. Clause (1b) will protect the dealer that installs add-on parts if it is known, or if it has been represented in writing by the part manufacturer, that emissions tests have been performed according to Federal procedures which show that such a part will not cause similar vehicles to fail to meet applicable emission standards over the useful life of the vehicle. The dealer is protected from prosecution even if the test results have not been reported to EPA. However, the aftermarket parts manufacturer who represents that such tests have been conducted should have available the data from the tests, including where, when, how and by whom the tests were conducted should EPA request it. Such add-on parts might be auxiliary fuel tanks, which would require evaporative emission control on light-duty vehicles to the prescribed standard, or superchargers, which would require emission testing showing conformance to standards over the useful life of the vehicle or engine. Clause (1b) will also protect the dealer who installs retrofit devices to reduce emissions at the request of a State or local environmental control agency.

3. Clause (1c) applies to dealers performing necessary adjustments or alterations, according to the vehicle or engine manufacturer’s instructions, of parts already on the vehicle or engine, e.g., adjustment of the carburetor or ignition timing. It also covers adjustments or alterations, as in the case of altitude “fixes,” if a “reasonable basis” exists as described above.

4. This interim policy provides general guidance to dealers as to those acts which do not constitute tampering and those acts which may constitute tampering. It also allows aftermarket parts manufacturers an opportunity to protect their markets by providing dealers with assurance that their parts do not cause emissions standards to be exceeded. Vehicle and engine manufacturers also often function as aftermarket parts manufacturers. For example, many vehicle and engine manufacturers provide aftermarket parts for the in-use vehicle and engines of other manufacturers as well as
for their own in-use vehicles and engines. In their aftermarket parts role, vehicle and engine manufacturers may take the same steps (set forth in this Memorandum) as parts manufacturers who are not also vehicle or engine manufacturers to provide dealers with assurance that they are not violating Section 203 (a) (3). However, in their role as vehicle or engine manufacturers, procedures exist whereby they may obtain approval for any emission-related change in a vehicle or engine from its certified configuration or parameters (see MSAPC advisory Circulars No. 2-B “Field Fixes Related to Emission Control-Related Components” and No. 16-2 “Approval of Emission Control Modifications for High Altitude on New Light Duty Motor Vehicles”. March 5, 1974). This Memorandum does not relieve vehicle or engine manufacturers from complying with the procedures set forth in the advisory circulars except in their specific function as aftermarket parts manufacturers.

Any questions regarding this interim policy should be addressed to the Mobile Source Enforcement Division (EG-340), Office of Enforcement and General Counsel.
Retailing specialty performance aftermarket parts

The Clean Air Act Amendments affecting retailers of specialty automotive aftermarket products may not be well understood among SEMA members. Retailers can legally sell such products if the meet the requirements of either Memorandum 1A of the Act or have been assigned a CARB Executive Order (E.O.) number based on emissions compliance testing. In addition, the following information is provided to further explain the procedures necessary to ensure the legal sale of specialty and performance automotive aftermarket parts.

Of the more than one hundred specialty automotive aftermarket parts affected by the Federal Clean Air Act, not all require compliance testing to avoid the issue of tampering. Though emissions related, products that are produced as “functionally identical” to the original equipment (OEM) part they replace, when installed on the proper vehicle and according to the manufacturer’s instruction materials, are not considered to be tampering as defined by the Clean Air Act. However, such part improperly applied could be considered tampering violations.

Products in the “functionally identical” category include (but are not limited to) EGR valves, evaporative emissions canisters, pistons, camshafts, ignition components and other items that fit the definition of this category. Such components are those considered to be direct replacement parts as might be obtained from a traditional automotive parts supplier. Questions about parts that may or may not qualify for this category may be discussed with the appropriate CARB El Monte staff, as noted elsewhere in these materials.

Parts not qualifying as functionally identical may fall into either of two other categories: modified or add-on. The category of “modified” includes emissions-related parts that embody features either in addition to or not found in replacement or functionally identical components. Such parts typically require emissions testing. The remaining category, add-on parts, generally requires emissions testing to determine their impact on a vehicle’s emissions performance.

Where questions may arise about how certain emissions-related parts should be classified, it is best to begin your inquiry with the parts manufacturer. It is a simple matter for a retailer or installer to seek guidance from the manufacturer in determining which parts can be legally installed on an emissions-regulated vehicle.

Regulated vehicles

Relative to tail pipe emissions, these are vehicles certified for sale in California (1966, domestic and 1968, imported) or later and sold federally throughout the remaining 49 states for MYs 1968 and later. Regulations for crankcase emissions controls became
effective in 1962 but were subsequently required as retrofit equipment in California back to 1955. Note that crankcase emissions controls regulations affect the sale of valve covers, oil breather caps and the *connections* to air cleaners. Evaporative emissions controls regulations came into effect in 1971, affecting the design and sale of open-element air cleaners, fuel tanks and caps, carburetors and components related to the evaporative emissions canister and system. The introduction of onboard diagnostic systems (OBDI in 1995 and OBDII in 1996) includes the monitoring and diagnosing of emissions-related component functions and failures on an ongoing basis. All components in an OBD system, including its functionality, are required to be installed and operable for vehicles to meet current State and Federal emissions regulations requirements.

**Non-regulated vehicles** – These vehicles include all those manufactured prior to the MYs listed in the section on “regulated vehicles.” As you might expect, bona fide race cars qualify as non-regulated vehicles. However, vehicles used by so-called “week-end racers” that are relied upon for general transportation during the week are *not* considered race cars. Unless the parts used on such vehicles carry an CARB E.O. number or are represented by the parts manufacturer to not cause an increase in emissions, owners (or installers) who use any add-on or modifying emissions-related parts can be found in violation of the Clean Air Act (*and* CARB certification requirements).

Following are ways an emissions-related parts manufacturer can make this representation. Parts retailers should also be aware of these basic guidelines:

1. The part is a “direct replacement” for the OEM part it replaces. This means it must be functionally identical and, therefore, not cause an increase in emissions.

2. The part has been exempted from the prohibitions of California Vehicle Codes 27156 and 38391. This means the part (or parts) will carry an CARB Executive Order (E.O.) number, representing the non-OEM component does not cause an increase in emissions. The presumption here is that the part has the potential for increased emissions (not a direct replacement) and must pass CARB E.O. emissions requirements.

3. The part meets requirements of the Environmental Protection Agency (EPA) policy document Memorandum 1A. By definition, meeting this requirement means the aftermarket part will not be found in violation of federal anti-tampering laws, thereby making it legal for sale and use in all states except California where the CARB E.O. described in (2) above is required.
**Important note:** Specialty parts manufacturers who have obtained an CARB E.O. can legally represent the parts meet requirements of Memorandum 1A. However, the reverse is not true because meeting the requirements of Memorandum 1A does mean the part satisfies CARB E.O. requirements. Parts carrying an E.O. can be listed for sale, sold and used in all fifty states. Those parts just meeting the requirements of Memorandum 1A can only be sold and used in states outside California.

In addition, SEMA recommends that specialty parts retailers, jobbers, mail-order and Internet sales operations, mass-merchandisers, installers and others engaged in this distribution of specialty automotive aftermarket components seek guidance from their respective parts manufacturer suppliers about emissions-related parts that can be legally sold and installed on regulated (pollution-controlled) vehicles. As a rule, and particularly when in doubt, consultation with specialty parts manufacturers can help avoid compliance and enforcement problems, at both the Federal and State levels.

For all parts not applicable to or intended for on-highway use on pollution-controlled vehicles (such as those intended only for racing), SEMA recommends retailers sellers require purchasers to sign an appropriate disclaimer, stamped on each sales invoice/receipt. Such a disclaimer should acknowledge the purchaser understands the conditions of sale and acknowledges that parts will only be used purely for off-road racing purposes.

This recommendation applies to all emissions-related parts, including replacement units which do not necessarily fall into the “replacement” or “specialty” categories. Mail-order houses and other businesses (including Internet sales) not dealing face-to-face with consumers should receive a customer’s acknowledgement about product use, prior to shipping or releasing the merchandise.

In addition, since it is difficult to determine specifically how consumers will ultimately use products, everyone in the distribution chain needs to know that anyone can be found in violation of the Act if they know the product is going to be used for purposes other than those intended. Even though there may be a rational argument for violation forgiveness, if a retailer sells a part that’s used illegally, there is no excuse for a shop that installs parts not applicable to or intended for street use. Signed disclaimers or not, such an installer would be found in violation of the Act.

Further, any business or person found in violation of the anti-tampering provisions of the Act or ARB compliance requirements are generally subject to a fine of up to $2500, for each violation. In some cases, fines greater than this may be issued depending upon specific violation circumstances. So, use of the customer-signed disclaimer described is important. It may be the only defense for the seller, if a customer receives a $2500 fine and returns to collect on the basis of having been “sold an illegal part.”
With regard to specific language used on a sales invoice disclaimer, retailers may want to contact their own attorney for recommendations. Although neither the EPA nor CARB has issued guidelines on the proper language for a disclaimer, it is SEMA’s belief that either of the following will prove adequate:

“Not legal for sale or use on pollution-controlled vehicles.”

Or

“Legal only for racing vehicles which may never be used upon a highway. Not applicable or intended for street or highway use.”

Be aware that use of either disclaimer assumes additional responsibilities with regard to accountability. Specifically, records of all sales should be kept to provide a “trail” to the number of products sold as compared to the potential size of the market segment. For example, if you are selling parts for a specific category of race cars and your total sales exceed the number of such cars in use, it could be deemed you are selling outside the boundaries of the market segment you’ve specified. Such practice can become a violation of the Act or CARB policy.

Questions about Retail Sales of Specialty and High Performance Products

Following are frequently-asked questions about legality in the sale of specialty and high performance aftermarket automotive products. In particular, there may be concerns about how the Act and certain CARB requirements impact the aftermarket when, in fact, some provisions provide opportunities to manufacturers and sellers of these components that are in compliance. Here are some important facts about these requirements and their effects on some SEMA members.

Are all aftermarket parts covered by the Act? No. Only a relatively few specialty aftermarket parts are affected, although increased use of on-board electronic components and systems employed by the OEM is increasing the number of emissions-related parts requiring compliance.

Are aftermarket parts which affect emissions illegal for sale and use? No. Under California law and the Federal Clean Air Act, there are basically two types of aftermarket parts; “replacement” and “specialty.” While the laws apply equally to both types of parts, and as a practical matter, replacement parts are not subject to testing and certification requirements. Therefore, the sale and use of aftermarket replacement (functionally identical) which may affect emissions is completely legal, under both California and Federal laws, so long as the retailer reasonably believes the parts are
designed and intended to perform the same functions as the part being replaced. This leaves the remaining category, “specialty parts,” that can affect emissions.

*Should retailers be concerned they may be violating the law by selling specialty equipment?* No. Both the EPA and CARB have established programs that allow manufacturers of specialty equipment to sell their products in complete compliance with the law. Therefore, manufacturers that comply with requirements of these programs may legally sell their products.

*How does a retailer know which emissions-related products are legal?* In California, manufacturers of parts that may affect emissions are required to obtain an exemption (Executive Order or E.O. number) for their products. Retailers should ask specialty parts manufacturers for proof of their exemptions and also make certain compliance applies to the applications for which the part is sold. In states outside California, it is necessary that retailers have written representation from manufacturers that parts comply with EPA requirements. Manufacturers can make such representations if they have obtained CARB E.O. status for the parts or have complied with EPA regulations. Retailers complying with these guidelines will not be in violation of either California or Federal laws when emissions-related specialty equipment is sold or installed.

It is true that parts which do not comply with California or Federal emissions requirements are illegal for sale? No. Numerous parts are produced and sold for use on racing, unregulated and legitimate off-road vehicles. These include vehicles never intended for or driven on the street, as well as vehicles which do not require (or never were required) emissions controls. For these vehicles, the sale and installation of specialty parts is completely legal, if the following rules are followed:

1. The sale of all such parts should be accompanied by a “disclaimer” (as previously described), associated with the sale and signed by the purchasing consumer. There should also be a statement in the manufacturer’s catalog or on the sale receipt stating the product is not legal for use on emissions-controlled vehicles, or that the part is sold only for racing purposes.

2. The retailer should not know or have reason to not know that the part will be installed on an emissions-controlled vehicle which will be used on the street.

Summarizing this material, you should note that not all parts are subject to emissions-controls laws and compliance procedures. And, in fact, those that are can be brought into compliance by the parts manufacturer. Further, it is a simple process for retailers to avoid problems with violations of emissions-controls laws by following the guidelines previously stated.
Finally, be aware this guidance is general. There are many complex regulations what have been adopted and being enforced. The regulatory programs do not apply equally to all parts and practices. Therefore, it is important to seek specific guidance to deal with equally specific parts and circumstances.

Packaging, Labeling and Advertising Requirements

As indicated in a previous Section, it is important to make certain consumers are aware of products that meet emissions-related compliance requirements. In that regard, consumer materials or information provided in the normal course of marketing emissions-related products (instructional, packaging, advertising, websites, etc.) should either contain or otherwise verify their compliance status. If a given product has obtained an ARB Executive Order, the E.O. number should appear on packaging, in instruction materials, advertising copy and website text. This labeling or notification should be accompanied by a statement indicating the product as met all CARB E.O. requirements and is legal for sale on pollution-controlled vehicles operated on public streets and highways. If any limitations are placed on an E.O. by the CARB, these should be spelled out in the compliance statement included in packaging, labeling and advertising materials.

For additional information and recommendations for how cataloging should included emissions-related product compliance status, see Section 5.3.1.

Product Cataloging

There is certain information pertinent to how emissions-related products may be cataloged, particularly with regard stipulations in the Clean Air Act and its Amendments. One of these stipulations states it is a violation of the Act “to manufacture, sell or offer for sale any part or component which is intended for use with or as part of any motor vehicle or motor vehicle engine where a principal effect of such part or component is to by-pass, defeat or render inoperative the emissions-control device where it is know or should be known that such parts and components are being offered for sale for such use or put so such use.” In short, specialty parts cannot interfere with the proper function of OEM emissions controls devices or systems. The building and selling of emissions-related parts that do not allow for the retention of OEM emissions controls or may otherwise allow these devices to cause a vehicle to fail emissions compliance requirements is a violation of regulatory laws. However, no such requirements need to be met if the vehicle is a pre-emissions-controlled model.

It is therefore important for parts manufacturers to not only build and sell compliant products but also make certain such products are properly identified in catalog and website materials. Where appropriate, the use of a disclaimer for
parts never intended for street use (as discussed elsewhere in these materials) should be associated with and clearly identify these type parts, both on packaging and in catalog/website materials. And for products that have successfully passed emissions compliance requirements, such identification (CARB E.O. numbers, etc.) should accompany materials advertising these parts. The notion here is to make certain sellers and buyers of such “off-road” products are made aware of their compliance status or range of limited use. Failure to comply with these Act-mandated advertising, cataloging and website information requirements can carry penalties of up to $2500/violation.
What You Need to Know About Aftermarket Performance and Add-on Parts

(Following is a text copy of the enclosed California Air Resources Board brochure entitled: “What You Need to Know about Aftermarket Performance and Add-on Parts.”)

What’s under the hood is important to air quality.

Automotive emissions account for over 50% of all smog-forming pollutants in California. To improve air quality, the California Air Resources Board (CARB) requires vehicle manufacturers to develop engine and emission equipment system that reduce the specific pollutants that cause California’s severe air quality problem. These emissions control systems are also required to be durable and reliable.

To ensure that these systems operate as designed, California Vehicle Code Section 27156 and the Federal Clean Air prohibit modifications that increase motor vehicle emissions. If properly designed, most performance modifications do not increase vehicle emissions. California Vehicle Code Section 27156 allows aftermarket part manufacturers to work with the CARB to show that their modifications do not increase vehicle emissions and therefore are legal for installation on California vehicles. Legal modifications are sold as either Exempted Parts or Replacement Parts.

Exempted Parts are add-on or modified parts that have undergone an CARB engineering evaluation. If the part or modification does not increase emissions it is granted an Executive Order. The Executive Order allows the modification to be installed and has a number assigned to it that can be verified by any inspection station or by the CARB.

Replacement Parts are made by aftermarket part manufacturer to replace original equipment. These parts are legal to use as the manufacturer has shown that they are functionally identical to the part they are replacing.

Off-Road or Racing Parts are modifications that increase vehicle emissions. These parts are not legal for street use and are identified by their manufacturer for off-road use only.

Replacement Parts Guidelines The following list will help you determine if a part for your vehicle is a replacement part and legal for street use. Check the manufacturer's catalog to verify vehicle application and look for disclaimers, such as “Not legal for street use in California”.

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Aftermarket Electronic Fuel Injection Systems

Since these systems typically include some form of electronic monitoring and controls (notably fuel and sometimes spark ignition) and may involve replacing an OEM carburetor/manifold system, it is necessary to validate the EFI’s emissions performance. When contemplating compliance testing for an aftermarket EFI, it’s best to discuss your objectives and specific applications with CARB Certification staff (contact information provided elsewhere in this document).

Air Cleaner

Most emission controlled vehicles will have an air cleaner that is a closed element type or thermostatically controlled. A replacement air cleaner must meet the same specifications as the original and connect to any emissions equipment that was attached to the original equipment air cleaner. Any replacement air cleaner elements may be used as long as they meet original factory specifications. Any air cleaner that does not meet the original factory specifications requires an Executive Order to be legal for street use.

Cams

The manufacturer of replacement cams determines which of their parts are considered replacements for original equipment. These replacement cams are then listed by vehicle year, make, model and engine size in the manufacturer’s catalog. A replacement cam must have exactly the same specifications (grind) as the original part. Cams that have different specifications than the original part require an Executive Order to be legal for street use.

Carburetors

The manufacturer of replacement carburetors determines which of their models are considered replacements for original equipment. These replacement carburetors are then listed by vehicle year, make, model and engine size in the manufacturer’s catalog. Carburetors not listed as replacement parts by their manufacturer must have an Executive Order to be legal for street use.

Catalytic Converters

A legal aftermarket catalyst is one that is listed in a CARB approved manufacturers catalog for the year, make, model, and engine size of vehicle on which it is being installed. Manufacturers of aftermarket catalytic converters must obtain an Executive Order for their products from the California Air Resources Board in order to be listed in an approved catalog.
Coils and Ignition Wires

Any type of coil or ignition wires may be used as long as they meet original manufacturer specifications.

Computer Chips

Replacement computer chips must be an original equipment manufacturer part. Aftermarket computer chips must have an Executive Order to be legal for street use.

Distributors

The manufacturer of a replacement distributor determines which of their models are considered replacements for original equipment. These replacement distributors are then listed by vehicle year, make, model and engine size in the manufacturer’s catalog. Swapping distributors from different years, engines or makes is illegal. Aftermarket distributors that are not listed as replacements for the original part require an Executive Order number to be legal for street use.

Electronic Control Units (ECUs), Computer Programming Devices or In-line Controllers/Modules

Electronic Control Units (those containing “non-stock tuning”), Computer Programming Devices or In-line Controllers/Modules providing calibrations that enhance engine and/or powertrain performance require an CARB Executive Order. Unless demonstrated to perform otherwise, these components are considered to potentially increase exhaust emissions. Products designed for both gasoline- and diesel-fueled engines are included in this category. In addition, such products must not allow any user-adjustability to either codes or programs that have demonstrated to be emissions compliant. While the periodic updating of OEM calibrations (via the Internet) is acceptable to the ARB, no changes to tuning that has been certified is allowed is permitted without additional compliance testing.

Electronic Ignitions

The manufacturer of replacement electronic ignitions determines which of their models are considered replacements for original equipment. These replacement electronic ignitions are then listed by vehicle year, make, model and engine size in the manufacturer’s catalog. Electronic ignitions or electronic point replacement units for vehicles not originally equipped with these items require an Executive Order to be legal for street use. Swapping electronic ignitions from different years, engines, or makes is illegal.
**Engine Changes**

Engine changes are legal as long as the following requirements are met to ensure that the change does not increase pollution from the vehicle:

- The engine must be the same year or newer than the vehicle.
- The engine must be from the same type of vehicle (passenger car, light-duty truck, heavy-duty truck, etc.) based on gross vehicle weight.
- If the vehicle is a California certified vehicle, then the engine must also be a California certified engine.
- All emissions control equipment must remain on the installed engine.

After an engine change, vehicles must first be inspected by a state referee station. The vehicle will be inspected to ensure that all the equipment required is in place, and vehicle will be emissions tested subject to the specifications of the installed engine.

**Exemptions for Uncontrolled Vehicles**

Vehicles that were manufactured before emission control regulations took effect are called uncontrolled vehicles. Aftermarket parts regulations and anti-tampering laws do not apply to these vehicles. Uncontrolled vehicles may have any aftermarket add-on or modified part installed as long as the vehicle can still meet the tailpipe emission standards for the year of the vehicle. Uncontrolled vehicles must retain any original or retrofit crankcase control (PCV) devices and NOx device required for the year of the vehicle.

**Fuel Injection**

The manufacturer of replacement fuel injection systems determines which of their systems are considered replacements for original equipment. These replacement fuel injection systems are then listed by vehicle year, make, model and engine size in the manufacturer's catalog. Fuel injection systems not listed as replacement parts require an Executive Order to be legal. Modifications that change a vehicle from fuel injection to carburetion or from carburetion to fuel injection also require an Executive Order to be legal.

**Fuel Tanks**

Replacement fuel tanks must be identical to the original part. Add-on fuel tanks, or tanks with greater capacity than the original tank are legal for street use only if they have been issued an Executive Order.
**Cylinder Heads**

Replacement heads must be identical to the original part. Head swaps from different years, engines or makes are illegal. Aftermarket heads or valve train components that are not made to the same specifications as the original parts require an Executive Order to be legal for street use.

**Headers for Catalytic Converter Equipped Vehicles**

Headers for use on catalytic converter equipped vehicles require an Executive Order to be legal for street use.

**Headers for Non-catalytic Converter Equipped Vehicles**

Headers for non-catalyst equipped vehicles are considered legal replacement parts as long the replacement header allows for the installation of all smog control equipment original attached to the stock exhaust manifold. Depending on the vehicle, some of the equipment that would normally be attached to the exhaust manifold includes:

- Air injectors
- Heat shields for the thermostatic air cleaner
- Heat risers
- EGR system hookups
- Fuel evaporation systems

**Intake Manifolds**

The manufacturer of replacement manifolds determines which of their models are considered replacements for original equipment. These replacement manifolds are then listed by vehicle year, make, model and engine size in the manufacturer's catalog. Replacement manifolds may be made of a different material than the original part, for example polished aluminum instead of cast iron, but the design of the casting must be the same. Any manifold not listed as replacement part by its manufacturer must have an Executive Order to be legal for street use.

Carburetor adapter plates are not legal unless they are an integral part of a replacement manifold.

**Japanese Replacement Engines**
Used engines imported from Japan can be used as replacement engines as long as the engine being used has been identified as functionally identical to the original engine. Please refer to the engine importers catalog to determine if a replacement engine is legal for installation in your vehicle.

**Nitrous Oxide Systems**

Either complete systems or components that comprise a complete system must demonstrate CARB E.O. emissions-compliance for legal sale and use in California. Exactly how compliance testing for these type products should be discussed in specific with ARB staff during the E.O. Application process. In some instances, certain products in this category may be case-specific and not require full FTP emissions testing.

**Other Internal Engine Parts**

Replacement internal engine parts, such as pistons, rods, or the crank, must be built to factory specifications. Oversize parts can be used as long as they are within factory tolerances for replacement engine parts. Any part not built within factory specifications requires an Executive Order to be legal for street use.

**Replacement Engines**

Entire engine can be replacement parts. As with any other replacement part, the engine must be identical to the original. If the replacement block or engine is obtained without emissions equipment, all the equipment from the original engine must be installed on the replacement block. If the engine is not identical to the original then it is not a replacement part, instead it is considered an engine change. Engine changes are a modification that must meet certain requirements to be legal (please see “Engine Changes”).

**Superchargers or turbo-superchargers**

Both these products require a CARB E.O. Further, if sold with accompanying software (computer chips or programming that is specific to the performance of the supercharger or turbo-supercharger), such “tuning” must be included in the CARB E.O. emissions certification process in order to be included with the core product.

**Transmission or Transaxle**

Transmission and transaxle changes alone are not legal. Transmissions and transaxles can only be changed along with their matching engine. The total
engine transmission package must conform to the engine change requirements above.

For further information: To verify Executive Order numbers visit www.arb.ca.gov and click under “Aftermarket Parts” to search for existing E.O.s. and/or to identify a list of specialty aftermarket parts that require an CARB E.O.

For questions about the replacement parts guidelines, you may contact the Air Resources Board Vehicle Hotline at 800/242-4450.

To obtain a list of CARB Executive Order parts, or for information on the Executive Order certification process for aftermarket parts manufacturers, please visit www.arb.ca.gov or write to:

California Air Resources Board  
Aftermarket Parts Section  
9528 Telstar Ave.  
El Monte, California 91731

For a guide to identifying emissions-related components and systems that have obtained an ARB E.O., visit www.arb.ca.gov and click “Aftermarket Parts” on the CARB’s home page. This will (1) provide you access to a list of all components current requiring an E.O. (by category), and (2) the ability to determine existing Executive Orders (by E.O. number) for aftermarket parts or E.O.s by identifying specific parts. CARB definitions of common aftermarket parts and modifications to engines are also provided on this same page.