

California Environmental Protection Agency
AIR RESOURCES BOARD

**CALIFORNIA CERTIFICATION PROCEDURES FOR LIGHT-DUTY ENGINE
PACKAGES FOR USE IN LIGHT-DUTY SPECIALLY CONSTRUCTED VEHICLES
FOR 2012 AND SUBSEQUENT MODEL YEARS**

Adopted: September 27, 2012

Note: All text is proposed for adoption. As authorized by title 2, California Code of Regulations, section 8, the use of underlines to indicate addition or adoption is omitted.

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NOTE: This document is incorporated by reference in sections 2210 through 2218, title 13, California Code of Regulations (CCR). It contains the majority of the requirements necessary for certification of a new certified engine package, as defined in section 2211(a)(2) for sale in California, in addition to containing the exhaust and evaporative emission standards and test procedures for these engine packages.

For the purpose of this procedures, the term ARB refers to the California Air Resources Board, and the term “Executive Officer”, means the Executive Officer of the California Air Resources Board or his or her authorized representative or designate.

CALIFORNIA CERTIFICATION PROCEDURES FOR LIGHT-DUTY ENGINE PACKAGES FOR USE IN LIGHT-DUTY SPECIALLY CONSTRUCTED VEHICLES FOR 2012 AND SUBSEQUENT MODEL YEARS

1. Applicability.

This document describes the procedures for evaluating and certifying certified engine packages, as defined in section 2211(a)(2) of title 13, California Code of Regulations.

2. Emissions Standards.

The exhaust emissions standards applicable to certified engine packages are specified in title 13 CCR sections 2212(c)(1) through (4).

The evaporative emissions standards applicable to certified engine packages are specified in title 13 CCR section 2212(d).

3. Worst Case Vehicle.

The criteria for determining the worst case vehicle for a certified engine package is set forth below:

- (a) ARB will consider the “worst case” vehicle for exhaust emission purposes to be a light duty vehicle which (1) with respect to emission deterioration over the vehicle’s useful life, produces the greatest stress on the emission related components or (2) with respect to certification testing, has the greatest probability of exceeding any of the applicable emission standards. The following criteria shall be considered when selecting the worst case vehicle: engine displacement, vehicle test weight, vehicle road load, vehicle frontal

area, calibration, emission control system configuration and calibration, transmission, and engine speed to vehicle speed (N/V) ratio. Unless otherwise indicated by engineering evaluation of information supplied by the manufacturer, or available to ARB staff from other sources, the Executive Officer shall select the highest vehicle road load within the highest test weight class as a “worst case” vehicle.

- (b) ARB will consider the “worst case” vehicle for evaporative emissions purposes to be a light duty vehicle which produces the highest evaporative emissions. The following criteria shall be considered when selecting the worst case vehicle: the canister working capacity, fuel tank vapor space, fuel tank configuration, and purge flow.

4. Vehicle Testing.

- (a) Exhaust emissions. The manufacturer must demonstrate compliance with these procedures by showing that the exhaust emissions from the worst case vehicle with the certified engine package installed is in compliance with the applicable California new vehicle exhaust emission standards for the vehicle class and model year of the test vehicle in either title 13, California Code of Regulations (CCR) section 2212(c)(1)(A) or section 2212(c)(1)(C), when tested in accordance with the following test procedures:

- (1) LEV II and LEV III Exhaust Emission Standards.

- (A) The test procedures for determining compliance with the LEV II exhaust emission standards in title 13, CCR section 2212(c)(1)(A) are set forth in the “California 2001 Through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 Through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” as amended March 22, 2012, and the “California Non-Methane Organic Gas Test Procedures,” as amended March 22, 2012, which are incorporated herein by reference.

- (B) The test procedures for determining compliance with the LEV III exhaust emission standards in title 13, CCR section 2212(c)(1)(C) are set forth in the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles” as adopted March 22, 2012, and the “California Non-

Methane Organic Gas Test Procedures,” as amended March 22, 2012, which are incorporated herein by reference.

(2) “50° Exhaust Emission Standards.”

(A) Compliance with the LEV II 50°F exhaust emission standards in title 13, CCR section 2212(c)(2)(A) for NMOG and formaldehyde (HCHO) must be demonstrated by measuring those emissions on the FTP (40 CFR, Part 86, Subpart B) conducted at a nominal test temperature of 50°F, as modified by Part II, Section C of the “California 2001 Through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 Through 2016 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as amended March 22, 2012, incorporated by reference in section 1961(d), and which are incorporated herein by reference. The NMOG mass emission result shall be multiplied by the applicable reactivity adjustment factor, if any, prior to comparing to the applicable adjusted 50,000 mile certification standards set forth below. A manufacturer may demonstrate compliance with the NMOG and HCHO certification standards contained in this subparagraph by measuring NMHC exhaust emissions or issuing a statement of compliance for HCHO in accordance with Section D.1, subparagraph (p) and Section G.3.1.2, respectively, of the “California 2001 Through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as amended March 22, 2012, incorporated by reference in section 1961(d), and which are incorporated herein by reference. Emissions of CO and NO_x measured at 50°F shall not exceed the standards set forth above applicable to vehicles of the same emission category and vehicle type subject to a cold soak and emission test at 68° to 86°F. Natural gas and diesel-fueled vehicles are exempt from the 50°F test requirements.

(B) Compliance with the LEV III 50°F exhaust emission standards in title 13, CCR section 2212(c)(2)(B) for NMOG+NO_x and formaldehyde (HCHO) must be demonstrated by measuring those emissions on the FTP (40 CFR, Part 86, Subpart B) conducted at a nominal test temperature of 50°F, as modified by Part II, Section C of the “California 2015 and

Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as adopted March 22, 2012, which are incorporated herein by reference. A manufacturer may demonstrate compliance with the NMOG+NO_x and HCHO certification standards contained in this subparagraph by measuring NMHC exhaust emissions or issuing a statement of compliance for HCHO in accordance with Section D.1, subparagraph (p) and Section G.3.1.2, respectively, of the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as adopted March 22, 2012, which are incorporated herein by reference. Emissions of CO measured at 50° F shall not exceed the standards set forth in subsection (a)(1) applicable to vehicles of the same emission category and vehicle type subject to a cold soak and emission test at 68° to 86° F.

(3) “Highway NO_x Standard” and “Highway NMOG+NO_x Standard.”

(A) LEV II Highway NO_x Standard for Certified Engine Packages Subject to title 13, CCR section 2212(c)(3)(A).

The maximum emissions of oxides of nitrogen (NO_x) measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR 600 Subpart B, which is incorporated herein by reference) must not be greater than 1.33 times the passenger car and light duty truck standard set forth in section 1961(a)(1), CCR. Both the projected emissions and the HWFET standard shall be rounded in accordance with the ASTM E29-67 to the nearest 0.1 g/mi (or 0.01 g/mi for vehicle certified to the 0.05 or 0.02 g/mi NO_x standards) before being compared.

(B) LEV III Highway NMOG +NO_x Standard for Certified Engine Packages Subject to title 13, CCR section 2212(c)(3)(C).

The maximum emissions of non-methane organic gas plus oxides of nitrogen measured on the federal Highway Fuel Economy Test (HWFET; 40 CFR 600 Subpart B, as modified by the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas

Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” which are incorporated herein by reference, must not be greater than the applicable LEV III NMOG+NO_x standard set forth in title 13, CCR section 2212(c)(3)(C). Both the sum of the NMOG+NO_x emissions and the HWFET standard must be rounded in accordance with ASTM E29-67 to the nearest 0.001 g/mi before being compared.

(4) “Supplemental Federal Test Procedure (SFTP) Off-Cycle Emission Standards.”

(A) Certified Engine Packages Subject to LEV II standards in title 13, CCR section 2212(c)(4)(A)

Compliance with the LEV II SFTP Off-Cycle emission standards in title 13, CCR section 2212(c)(4)(A) must be demonstrated in accordance with the California 2001 Through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 Through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles,” as amended March 22, 2012, Part I subpart D, section 2, SFTP General Provisions for California, which incorporates by reference and amends 40 CFR 86.1810-01, and which are incorporated herein by reference. As an alternative, a manufacturer can request Executive Officer approval to be exempt from the SC03 test portion of the SFTP. The Executive Officer will grant approval upon the manufacturer providing data, analysis, etc. demonstrating that the control system cannot be altered by the use of the air conditioning system.

(B) Certified Engine Packages Subject to LEV III standards in title 13, CCR section 2212(c)(4)(B)

Compliance with the LEV III SFTP Off-Cycle Emission Standards in title 13, CCR section 2212(c)(4)(B) must be demonstrated in accordance with the “California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles”, adopted March 22, 2012, Part I subpart D, section 2, SFTP General Provisions for California, which incorporates by reference and amends 40 CFR 86.1810-09, which are incorporated herein by reference. As an alternative, a manufacturer can request Executive Officer approval

to be exempt from the SC03 test portion of the SFTP. The Executive Officer will grant approval upon the manufacturer providing data, analysis, etc. demonstrating that the control system cannot be altered by the use of the air conditioning system.

(b) Evaporative Emissions. The manufacturer must also demonstrate compliance with these procedures by showing that the evaporative emissions from the worst case vehicle with the certified engine package installed is in compliance with the California new vehicle evaporative emission standards for the vehicle class and model year of the of the test vehicle in section 1976, title 13, CCR. The test procedures for determining compliance with the evaporative emission standards are set forth in “California Evaporative Emissions Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles”, adopted August 5, 1999, as last amended March 22, 2012, which are incorporated herein by reference.

(c) Grouping of Engines and Evaporative Emissions Control System (ECS).

- (1) This procedure shall apply to each certified engine package type separately, except that a manufacturer may group engines in the same engine family for the purpose of selecting one representative emissions test engine and establishing deterioration factors (DF). If grouping of certified engine packages is approved, ARB will issue one Executive Order (EO) covering all engine models in the group. The engine family criteria in 40 CFR 86.094-24, as it existed on November 17, 2011, which is incorporated herein by reference, should be used to determine whether one engine may represent other engines for testing and establishing DFs.
- (2) Evaporative ECS should be grouped into evaporative families per 40 CFR 86.078-24, as it existed on November 17, 2011, which is incorporated herein by reference,. Evaporative ECS components are those components which may contribute to fuel evaporative emissions or running loss emissions, and components designed to control evaporative emissions. Evaporative ECS components may include, but are not limited to, canister, purge valve, roll-over valve, fuel lines, hoses, connectors, fuel tank, fuel cap seal, fuel pump seals (non-immersed pump only), and fuel injection system (fuel injectors, fuel rail, pressure regulator, etc.). If the evaporative component is not required to be provided, or offered in the engine package to the ultimate purchaser, use components recommended in the manufacturer’s installation manual.

- (d) The engine package must be installed in the worst case vehicle in accordance with the instructions the manufacturer provides to its ultimate purchasers. The worst case vehicle with the certified engine package installed must meet the accumulation requirements of Title 40, CFR, 86.094-26(a)(3)(i), as it existed on November 17, 2011, which is incorporated herein by reference,.
- (e) Subject to advance approval by the Executive Officer, manufacturers may utilize carryover of previously generated emission data, from a previously certified vehicle with a similar certified engine configuration of the engine package for which the manufacturer seeks to obtain certification.
- (f) Confirmatory Testing. The Executive Officer may require that any test vehicle be submitted to the Air Resources Board, at such place or places as the Air Resources Board may designate, for the purposes of conducting confirmatory emissions tests. The Executive Officer may also specify that such testing be conducted at the manufacturer's selected laboratory facility, in which case instrumentation and equipment specified by the Executive Officer must be made available by the manufacturer for test operations. Confirmatory testing will be performed within 30 days after ARB's receipt of all required vehicle emission test data. If the confirmatory test results indicate that any regulated pollutant exceed the applicable standards, the Air Resources Board will deny the manufacturer's certification request.

5. Delivery of Engines.

- (a) When a manufacturer delivers a certified engine package that has been certified under this procedure to an ultimate purchaser, the following components must also accompany the engine:
 - (1) The certified engine package must include an evaporative canister, purge valve, and purge logic.
 - (2) The certified engine package must include a complete exhaust emission system with all critical components included. A manufacturer must also provide a statement that the certified engine package is not legal for use in an SPCNS unless all required exhaust and evaporative controls are installed.

(b) In addition to the components above, the following written materials must accompany the engine package:

- (1) The manufacturer must furnish with each certified engine package written instructions for the required maintenance and use of the certified engine package by the ultimate purchaser, and the written instructions shall be consistent with this section and must meet the contents and format requirements of 40 CFR, Section 1051.130, as it existed November 17, 2011, which is incorporated herein by reference. (References in that CFR section to the federal emission standards shall mean California exhaust and evaporative emission requirements.)
 - (A) The manufacturer must include fuel tank specifications, e.g., tank material, maximum capacity, minimum distance from the engine, gas cap seals, filler neck, pressure/vacuum relief settings, etc. in the installation manual to ensure that the assembled vehicle will comply with the evaporative emission standard. Additionally, the nozzle access zone and the filler neck area, including the filler neck face, shall be free of sharp projections or edges which could foreseeably damage the bellows and faceplates of fuel vapor recovery nozzles during fueling activity.
 - (B) The manufacturer must submit the above instructions with the manufacturer's preliminary application for each certified engine package for approval by the Executive Officer.
 - (C) The manufacturer must include instructions that the certified engine package should be installed in the vehicle so as not to make it impossible to perform Smog Check inspection on the vehicle.
 - (D) The Executive Officer may reject or require modification of written instructions for, among other reasons, incompleteness or lack of clarity. Approval by the Executive Officer of the written instructions shall be a condition of certification.
- (2) A statement that the certified engine package, exhaust ECS, and evaporative ECS must be installed in an SPCNS with an N/V ratio less than the N/V ratio of the worst case vehicle and below the weight of the worst case vehicle. The statement must specify the N/V ratio and weight limits not to be exceeded. This statement may be included in the written instructions, in paragraph (1) above.

- (3) A statement that no changes may be made to the certified engine package and evaporative ECS, including, but not limited to: changes to the fuel metering system; changes to the ignition system, changes to the camshaft; and modifying, recalibrating, removing, or failing to properly install any other specified component. This statement may be included in the written instructions, in paragraph (1) above.
- (4) A statement that failure to meet the requirements of paragraphs (1) through (3) above will cause the vehicle to violate ARB's certification requirements which may subject the ultimate purchaser to the penalty provisions of Part 5, Division 26 of the Health and Safety Code. Penalties can be applied. This statement may be included in the written instructions, in paragraph (1) above.
- (5) A label that meets the requirements of section 2223, title 13, CCR, and an explanation of where and how the label is to be permanently attached on the vehicle.

An engine owner's manual that is to be provided to the ultimate purchaser. The owner's manual provided by the manufacturer must contain maintenance instructions for the ultimate purchaser that comply with 40 CFR 86.004-38, as it existed on November 17, 2011, which is incorporated herein by reference. The owner's manual must contain a statement that disconnecting, modifying, or altering any emission control system on a certified engine package constitutes illegal tampering that is prohibited by state law.

- (6) A notice, printed on a separate sheet of paper in 12 point or larger type explaining the documentation, record keeping, notification, access to records requirements for installers of certified engine packages in the state of California specified in section 9 below.
- (7) An affidavit (triplicate copies), which must be completed by the installer, indicating that all of the above-described requirements for the proper installation of the certified engine package and the record keeping and notification requirements described in section 11 below have been read and understood. Provide a mailing address for the affidavit to be sent.
- (8) A warranty card (duplicate copies) requesting the certified engine package make and model, the serial number of the engine involved, the date of installation, and the installer's name (and company as applicable) from the installer. Provide a mailing address for the warranty card to be sent.

6. Manufacturer Production Reporting.

A manufacturer certifying engine packages under this procedure shall submit to ARB a report that provides the total number and serial numbers of certified engine packages produced for the model year, as specified in section 2212(i), title 13, CCR, by June 30 of the year following the model year of the certified engine packages. For example, manufacturer reports would be due by June 30, 2014, for model year 2013.

7. Application.

A manufacturer that desires to have an engine package certified under this procedure must submit a copy of the written application required herein that demonstrates compliance with each of the requirements specified in title 13, CCR sections 2210 through 2218 and the requirements specified in these certification procedures.

Manufacturers planning to obtain ARB certification for the first time should send a "Letter of Intent" to certify engines in California to:

Chief
Mobile Source Operations Division
California Air Resources Board
9480 Telstar Avenue, Suite 4
El Monte, CA 91731
Attn: On-Road Certification/Audit Section

The Letter of Intent should include general information on the company's product offering and contact information including (i) persons authorized to sign documents for submittal to ARB, (ii) persons authorized to submit signed documents to ARB, and (iii) persons authorized to communicate with ARB staff during the certification review process. Upon receiving the "Letter of Intent", the ARB will assign a manufacturer code to the manufacturer and register the authorized personnel in the ARB's DMS. Thereafter, all certification related documents must be submitted electronically according to the format described by the ARB

8. Issuance of Executive Orders (EO).

ARB will issue an EO to the manufacturer for a certified engine package that complies with the requirements of title 13, CCR sections 2210 through 2218 and these certification procedures.

9. Installer Requirements.

An installer shall be required to:

- (a) Install a certified engine package in accordance with installation instructions provided by the manufacturer, acquire other necessary parts, per the manufacturer's recommendations and instructions, and install as recommended and according to the manufacturer's instructions.
 - (1) An installer shall not install a certified engine package in a vehicle that exceeds the weight or N/V limits used to certify the engine package.
 - (2) An installer shall not modify the certified engine package and emission related components provided by the manufacturer.
- (b) Permanently affix the required manufacturer's emission label in a readily accessible location on the vehicle as specified by the manufacturer.
- (c) Maintain, for a period of not less than two years, written and photographic records documenting (1) the N/V ratio; (2) weight; (3) evaporative canister installation (photograph required); (4) installation of the label meeting the requirements of section 5 above (photograph required); (5) the appearance of the finished SPCNS from both the right and left sides (photographs required); and (6) for ECS using one or more oxygen sensors, photographic evidence that the oxygen sensors were installed in the proper location. An installer shall, upon request, provide such written and photographic records to ARB within 10 working days.
- (d) Notify ARB within 10 days of installing a certified engine package into an SPCNS, and the location where inspections can be performed and where records will be kept.
- (e) Report to ARB all certified engine packages installed in SPCNSs each year, no later than January 1. Reports should include vehicle make and model, engine make and model, and engine serial number.
- (f) Provide an installation warranty of 1 year or 12,000 miles and provides a statement under penalty of perjury, that it installed the certified engine package was in accordance with the manufacturer's installation instructions.

(g) Complete and return to the manufacturer an affidavit, as provided by the manufacturer according to section 4, subsection (i) above, confirming under penalty of perjury, the certified engine package has been installed per the manufacturer's instructions into an SPCNS. A copy of the completed affidavit must also be given to the ultimate purchaser.

10. Emissions Control System Warranty Statement.

Each manufacturer shall furnish a copy of the following statement with each certified engine package for use in an SPCNS:

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board (and manufacturer's name, optional) is pleased to explain the emission control system warranty on your (year) engine. In California, new motor vehicle engines must be designated, built, and equipped to meet the State's stringent anti-smog standards. (Manufacturer's name) must warrant the emission control system on your engine for the period of time listed below provided there has been no abuse, neglect, or improper maintenance of your engine, or improper installation of your engine package.

Your emission control system may include parts such as the carburetor or fuel-injection system, the ignition system, catalytic converter (or other after-treatment device), and engine computer. Also included may be hoses, belts, connectors, and other emission-related assemblies. Where a warrantable condition exists, (manufacturer's name) will repair your engine at no cost to you, including diagnosis, parts, and labor.

MANUFACTURER'S WARRANTY COVERAGE:

For 2012 and subsequent model year engines sold for use in specially constructed vehicles.

For 3 years or 50,000 miles (or a longer period of time or mileage, optional), whichever first occurs.

If your SPCNS with certified engine package fails a Smog Check inspection, or if any emission-related part on your certified

engine package is defective, the defective part and/or all necessary repairs and adjustments will be made by (manufacturer's name) to ensure that your SPCNS with certified engine package passes the Smog Check inspection.

OWNER'S WARRANTY RESPONSIBILITIES:

- As the certified engine package owner, you are responsible for the performance of the required maintenance listed in your owner's manual. (manufacturer's name) recommends that you retain all receipts covering maintenance on your certified engine package, but (manufacturer's name) cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.
- You are responsible for presenting your certified engine package-equipped specially constructed vehicle to a (manufacturer's name) authorized repair facility as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.
- As the certified engine package owner, you should also be aware that (manufacturer's name) may deny you warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance, improper installation, or unapproved modifications.

If you have any questions regarding your warranty rights and responsibilities, you should contact (insert chosen manufacturer's contact) at 1-XXX-XXXX or the California Air Resources Board at 9528 Telstar Avenue, El Monte, CA 91731.

11. Warranty Card.

The manufacturer shall provide a warranty card, or online warranty registration equivalent, with each certified engine package intended for California sale or use. The warranty card shall be supplied and filled out in triplicate; the original for the customer, one copy for the installer to keep (if applicable), and one copy to be sent back to the manufacturer. The copy to be returned to the manufacturer shall have pre-paid postage and be of sufficient size to allow for mailing without the use of a separate envelope.

The warranty card shall include the following:

- (a) The general terms and conditions of the emission control warranty;

- (b) A statement that the certified engine package has been designed and manufactured to meet the warranty requirements;
- (c) A place for the customer's signature in acknowledgement of the emission control warranty;
- (d) The engine serial number;
- (e) The vehicle model year, make, model, and odometer reading on which the certified engine package was installed;
- (f) The date of certified engine package purchase;
- (g) The date of certified engine package installation if applicable; and
- (h) The name of the assembly shop or facility, if applicable.

12. Violations and Penalties.

Violations of these procedures are subject to the penalty provisions of Part 5, Division 26 of the Health and Safety Code.