

SMOG CHECK INSPECTION PROCEDURES MANUAL

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DEPARTMENT OF CONSUMER AFFAIRS



Bureau of Automotive Repair

BUREAU OF AUTOMOTIVE REPAIR

PREFACE

This manual is incorporated by reference in Section 3340.45, Title 16, of the California Code of Regulations. It provides procedures for performing official Smog Check inspections. Licensed Smog Check stations and technicians must follow these procedures and the Emission Inspection System prompts when conducting Smog Check inspections.

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Written suggestions for improvement to this manual are welcomed. They should be directed to the Bureau of Automotive Repair's Standards and Training Unit at the above address, or via the Smog Check website, www.smogcheck.ca.gov.

Table of Contents

Smog Check Inspection Procedures

Pre-Test Check List.....	1
Test Application.....	1
Vehicle Identification	
1.1.0 Technician Access	2
1.1.1 Vehicle Identification Information	3-4
Emissions Measurement Test (Gasoline Only)	
1.2.0 Before Test Conditions	5
1.2.1 Acceleration Simulation Mode Emission Inspection	6-7
1.2.2 Two Speed Idle	7
1.2.3 Emission Test Abort Conditions.....	8
Visual Inspection	
1.3.0 Visual Inspection	9
1.3.1 Visual Inspection Procedures	9-11
1.3.2 Emission Control System Labels - BAR Referee Label - Aftermarket Parts Label.....	12
1.3.3 Liquid Fuel Leak Inspection	13
1.3.4 Visible Smoke Test (Gasoline and Diesel).....	14-16
Visual Inspection Definitions	
1.4.0 Tampered	17
1.4.1 Missing	17
1.4.2 Modified	17
1.4.3 Disconnected	17
1.4.4 Defective.....	17
Emission Control Functional Tests	
1.5.0 Functional Test Application	19
1.5.1 Malfunction Indicator Light	20
1.5.2 OBD II Functional Test	21
1.5.3 Ignition Timing Test.....	22
1.5.4 EGR System Functional Test	22
1.5.5 Fuel Cap Integrity Test	23
1.5.6 Low Pressure Fuel Evaporative Test	23-25
Smog Check Inspection Results	
1.6.0 Vehicle Inspection Report	26
1.6.1 Vehicle Passes Smog Check.....	26
1.6.2 Vehicle Fails Smog Check	26
Repair Data	
1.7.0 Repair Information Entry.....	27
Miscellaneous	
1.8.0 Test Restrictions for Directed Vehicles	28
1.8.1 Gross Vehicle Weight Rating	28
1.8.2 Pre-Inspection Mode.....	29
1.8.3 Pre-Inspection Repair	29
Appendix	
SC 1 Visible Smoke Test Failure Information Sheet	SC 1

Pre-Test Check List

Before each inspection technicians must:

- Check that all required test equipment is up-to-date, and maintained and calibrated in accordance with the manufacturer standards and applicable BAR specifications.
- Check for vehicle test restrictions. If test restrictions apply, inform the customer of those restrictions. For more information, see section 1.8.0.
- Ensure the customer was provided an estimate in accordance with the Automotive Repair Act.
- Ensure the vehicle is safe to test.

Test Application

Test Type	*Gasoline Power	**Diesel Power
Emissions Measurement Tests	X	
Emissions Control System Visual Inspection	X	X
Visible Smoke Test	X	X
Emission Control Functional Tests	X	X (MIL / OBDII Only)
<p>*Gasoline and alternative fueled vehicles originating from gasoline engine designs. ** Diesel and alternative fueled vehicles (including bio-diesel) originating from diesel engine designs.</p>		

Vehicle Identification

1.1.0 Technician Access

The individual technician license number and access code together provide access into the Emissions Inspection System (EIS) Smog Check inspection mode. Follow the EIS prompts to access the Smog Check inspection mode.

The access code is assigned by BAR and is unique to each technician. Each technician must maintain the security of his or her access code. Disclosure of one's access code or use of another technician's access code or license information is prohibited. If the security of your access code has been compromised, or you suspect another person is using your access code, you must contact your local BAR field office immediately to have the access code changed.

Vehicle Identification

1.1.1 Vehicle Identification Information

Technicians must follow the EIS prompts to input the vehicle identification number (VIN), license plate number, odometer reading. Typically, the remaining vehicle information populates via the Vehicle Information Database (VID) and/or the EIS Vehicle Look-Up Table. The chart on the next page provides details for entering vehicle information.

No person shall enter any vehicle identification information for any vehicle other than the one being tested. Nor shall any person knowingly enter any false information about the vehicle being tested.

- The bar code scanner must be used as the first method of entry. Manual entry must only be used in cases where the vehicle is not equipped with a bar code or the bar code is illegible, and the registration documents are unavailable or do not include a bar code. In these cases, you may proceed with the inspection and manually enter the vehicle identification information, as needed.
- When using the vehicle registration documents to scan vehicle information, you must first verify the VIN shown on the registration document matches the VIN on the vehicle. If the VIN does **not** match, the technician shall use the VIN affixed to the vehicle and inform the customer of the mismatch and that it may cause the DMV not to accept the test results.
- If VID communication failure occurs, the technician must enter all applicable information. However, for a California registered vehicle, technicians must first verify that the VIN and license plate entries are correct, and check that the EIS phone/communication line is properly connected. If VIN and plate entries are correct, and communication failure continues, complete the inspection as prompted by the EIS. In these cases, DMV may request a copy of the VIR as proof of certification. Advise the motorist to retain a copy of the VIR throughout the registration process.

Accuracy is critical to ensure the appropriate test sequences and standards are applied. For all inspections, technicians must verify that all vehicle information entered manually and transmitted from the VID is complete and correct. If not, technicians must make the necessary corrections.

Each technician is responsible for the accuracy of the test. Once a certificate is issued it is impossible to void that certificate.

Smog Check Inspection Procedures

Vehicle Identification

1.1.1 Vehicle Identification Information continued...

Technician Entries	VID / VLT Entries (as applicable)
Vehicle Identification Number	Model Year
¹⁾ License Plate Number (If no plate, enter "NONE")	Vehicle Type Code (PC, TRK, MH, GOV, PFR);
²⁾ Current Odometer Reading	Government Fleet BAR File number
Exhaust Configuration, when prompted (Single or Dual)	Gross Vehicle Weight Rating (GVWR) (See section 1.8.1 for more GVWR information)
	Vehicle Make
	Body Type
	Vehicle Model Name
	Number of Cylinders
	Engine Size
	Transmission Type
	Certification Type; (CA, FED, Referee)
	³⁾ BAR Referee Label Number
	⁴⁾ Fuel Type
	Engine Make (Motor Homes, Referee)
	Engine Year (Motor Homes, Referee)
<p>Note: Technicians must verify all applicable entries are complete and accurate and, if not, make the necessary corrections. If an error is found after the inspection begins, abort the inspection and start over using the correct information.</p>	
<p>¹⁾ For government vehicles do not enter the "E" preceding the plate number; enter the last 7 digits only.</p>	
<p>²⁾ Enter the odometer reading as displayed. Do not attempt to estimate vehicle mileage or convert from kilometers to miles. If the odometer is missing or illegible, enter "NONE".</p>	
<p>³⁾ For the purposes of a Smog Check inspection, the BAR Referee Label provides the certification type and emission control requirements for kit cars - SPCNS, grey market vehicles, and vehicles with engine changes. When inspecting a vehicle equipped with a Referee label, enter "R" for vehicle certification type.</p>	
<p>⁴⁾ Inspect a dual/bi fuel vehicle using the fuel in which the vehicle was operating on when it arrived at the station.</p>	

Emissions Measurement Test (Gasoline Only)

1.2.0 Before-Test-Conditions

Before the emission portions of the inspection technicians must:

- Check that there are no obvious safety hazards. Technicians may reject a vehicle from testing that is unsafe to test. For more information, see section, 1.2.3.
- Verify the vehicle is warmed up to normal operating temperature. If the vehicle is not at normal operating temperature, the vehicle may either be idled (low idle) or driven normally as necessary to achieve normal operating temperature. Normal operating temperature may be confirmed in one of the following ways:
 - The coolant temperature gauge shows normal operating temperature;
 - The upper and lower radiator hoses are hot and appropriately pressurized;
 - When applicable, the electric cooling fan cycles on at idle.

Once at normal operating temperature, continuously operate the engine at low idle for at least 3 minutes immediately prior to the emission tests.

Technicians shall not attempt to superheat the catalyst. Except when necessary to perform the initial visible smoke snap test as described in section 1.3.4, do not increase the engine RPM or load during this idle period or during the emission test sequences. Any methods used to artificially increase catalyst temperature are prohibited.

- Turn off all vehicle accessories.
- (TSI only) Place the transmission in neutral or park, with the parking brake on and/or wheel chocks in place.
- (ASM only) Verify that the tires are dry, inflated to proper pressure, and in a safe condition. If necessary, complete the tire drying sequence as prompted by the EIS.
- (ASM only) To prevent damage, verify that the vehicle safely fits on the dynamometer, and is compatible for operation on a 2WD dynamometer. Place the vehicle's drive wheels on the dynamometer. Vehicles that do not fit into your building or testing area must be returned to the customer for inspection at another station.
- (ASM only) Verify that the vehicle is restrained in accordance with the EIS manufacturer standards, and wheel chocks are in place.
- (ASM only) Verify that the vehicle cooling fan is positioned correctly. The fan must be used when the ambient temperature reaches 72° or above.
- As prompted by the EIS, connect or place the RPM pick-up device.
- As prompted by the EIS, insert the sample probe in the tailpipe.
- (ASM only) Lower the vehicle hood during the emissions test.

Smog Check Inspection Procedures

Emissions Measurement Test (Gasoline Only)

1.2.1 Acceleration Simulation Mode Emission Inspection (ASM)

The ASM emission inspection includes two loaded mode sequences known as the 50/15 test and the 25/25 test.

Technicians must ensure that all the applicable before-test-conditions specified in section 1.2.0 are met before beginning the ASM inspection. **Once the applicable before-test-conditions are met, follow the EIS prompts to conduct the ASM inspection.**

***CAUTION!** Be aware that some vehicle designs are incompatible with a two wheel drive (2WD) dynamometer. Any attempt to operate such vehicles on a 2WD dynamometer could cause injury and/or may damage the vehicle. Incompatible vehicles include but are not limited to the following:*

- *Vehicles equipped with “non-disengagable” traction control;*
- *Vehicles equipped with full-time all wheel drive;*
- *Vehicles too large to safely fit on the dynamometer.*

***Heavy Duty Vehicles:** In accordance with CCR 3340.42, heavy duty vehicles in enhanced areas shall receive a loaded mode test unless: The vehicle has a drive axle weight that exceeds 5,000 pounds when the vehicle is unloaded, or the vehicle is classified by the Department of Motor Vehicles as a motorhome, or the vehicle has a body and/or chassis configuration or modification made for business purposes that renders the vehicle incompatible with loaded mode testing.*

For the purposes of Smog Check inspection, the term “unloaded” shall mean that the vehicle is not currently transporting loads for delivery or is not carrying items of a temporary nature (bricks, sand, lumber, etc.), but excludes items that have been welded, bolted or otherwise permanently affixed to the vehicle, and tools, supplies, parts, hardware, equipment or devices of a similar nature that are routinely carried in or on the vehicle in the performance of the work for which the vehicle is primarily used. Additionally, modifications that render a vehicle incompatible with loaded-mode testing shall not include any tire, wheel, body or chassis modifications made for other than business purposes. A heavy duty vehicle is a vehicle with a gross vehicle weight rating of 8501 pounds or more.

To ensure the appropriate test and emission standards apply, always follow the EIS prompts.

Emissions Measurement Test (Gasoline Only)

1.2.1 Acceleration Simulation Mode Emission Inspection continued...

ASM Gear Selection:

- **Automatic transmission** - Conduct the ASM test in **drive**. Only select overdrive if the RPM exceeds the EIS specified limits. Always follow the EIS test prompts.
- **Manual transmission** - Conduct the ASM test in **second** gear. Only select first gear or third gear when it's necessary to maintain the EIS specified RPM range. Always follow the EIS test prompts.

1.2.2 Two Speed Idle Inspection (TSI)

The TSI inspection includes two test sequences; a 2500 RPM test and an idle test.

Technicians must ensure that the applicable before-test-conditions specified in section 1.2.0 are met before beginning the TSI inspection. **Once the applicable before-test-conditions are met, follow the EIS prompts to conduct the TSI inspection.**

- The 2500 RPM test is first and runs for 30 seconds. Follow the EIS prompts to complete the 2500 RPM test.
- Upon completion of the 2500 RPM test, the EIS will transition to the idle test. Return the throttle to idle and complete the idle test as prompted by the EIS.
- Technicians shall not artificially load the engine to achieve a testable idle RPM. This includes, but is not limited to, putting vehicle into gear and turning accessories on.

Note: If the vehicle fails the TSI emissions test, the EIS will automatically prompt for an additional conditioning procedure, and then transition to a second chance emissions test.

Smog Check Inspection Procedures

Emissions Measurement Test (Gasoline Only)

1.2.3 Emission Test Abort Conditions (TSI & ASM)

If a technician determines the vehicle is unsafe or incompatible with the tests, they shall reject or, if the inspection has started, abort the inspection. Some examples of unsafe and incompatible conditions include:

- Unsafe conditions such as, but not limited to, gasoline leaks, large coolant leaks, faulty brakes, tire failure;
- Vehicle could be damaged (low oil pressure, overheating);
- Idle RPM outside of required limits;
- Traction Control will not disengage.

The EIS will automatically abort the inspection for the following reasons:

- Test equipment failure;
- Test equipment power loss;
- The ASM test has been restarted more than twice;
- Vehicle unable to achieve the required ASM speed.

In the case of an inspection abort, the EIS will display a list of abort codes. Select the code(s) that best describes cause of the inspection abort.

If “OTHER” is used as the reason for abort, the technician must document the specific reason(s) for the aborted inspection on all copies of the Vehicle Inspection Report.

Visual Inspection

1.3.0 Visual Inspection

Technicians shall conduct the visual inspection in accordance with the inspection procedures described in this manual and as prompted by the EIS. No person shall enter any false emission control system information for the vehicle being tested. Nor shall any person enter any emission control information for any vehicle other than the one being tested. The visual inspection also includes a Liquid Fuel Leak Check and Visible Smoke Test; see sections 1.3.3 and 1.3.4.

1.3.1 Visual Inspection Procedures

Vehicle Emission Control Requirements: Technicians must use all available information necessary to determine the vehicle's emission control requirements, including but not limited to, the under-hood emission control label (see section 1.3.2), a current emission control application guide, emission control repair manuals, emission component location guides, manufacturer emission control recalls, vacuum hose routing diagrams, California Air Resources Board (CARB) aftermarket parts listings, the aftermarket part label (see section 1.3.2), and any reliable vehicle manufacturer sources. Note: Some diesel powered vehicles are equipped with a second or additional ECS label affixed to the engine.

Pass/Fail Criteria: To pass inspection, the required emission control system(s) must be complete and installed in accordance with the vehicle manufacturer's original California or Federal certified configuration, or, when applicable, in accordance with a CARB aftermarket configuration. If any required emission control systems are found to be tampered or defective, the vehicle shall fail the inspection. For tampered and defective definitions, see sections 1.4.0 - 1.4.4.

If a vehicle is equipped with parts that modify the original emission control configuration, technicians must verify whether those parts are CARB approved or exempted. If the installed parts are not CARB approved or exempted, and the original emissions control configuration has been modified, the corresponding emission controls are considered "Modified" and the vehicle shall fail the inspection.

To verify CARB approval or exemption, technicians must check the Aftermarket Parts Label affixed either directly to the part or near the part. This label contains a CARB Executive Order (EO) number that can be used to verify approval or exemption. With the EO number, reference the CARB EO parts listings and/or part manufacturer catalog. The CARB EO parts listings contain information about parts with CARB EO numbers, the part manufacturers and the applicable vehicles on which the parts can be installed. The CARB EO part listings and information about catalytic converters can be found on the CARB website www.arb.ca.gov. Technicians may also contact ARB at (800) 242-4450 if they need additional information. The CARB aftermarket parts listings may also provide information about modifications that are necessary and acceptable for installation of a particular part, kit or system.

Smog Check Inspection Procedures

Visual Inspection

1.3.1 Visual Inspection Procedures continued...

Inspection: Technicians must inspect all of the following emission control systems, as applicable to the vehicle being tested, and enter the inspection results as prompted by the EIS. Technicians are prohibited from entering “Not Applicable” for an emission control system that is in fact required for the vehicle undergoing inspection.

Check that each system is complete and installed per the vehicle manufacturer’s original configuration or, when applicable, a CARB approved aftermarket configuration. The inspection shall include, but is not limited to any required: component, computer, hose, module, motor, pump, seal, sensor, solenoid, switch, servo, transducer, tube, valve, and wire.

Emission Control Systems	Special BAR 97 EIS Entry
<p>Crankcase Emission Controls</p> <ul style="list-style-type: none"> ➤ Positive Crankcase Ventilation (PCV) - Gasoline/Diesel ➤ Crankcase Depression Regulator (CDR) - Diesel 	<p>Use the “PCV” entry prompt for all crankcase emission controls.</p>
<p>Thermostatic Air Cleaner (TAC / ACL) - Gasoline</p>	
<p>Fuel Evaporative System (EVAP) - Gasoline Technicians are not required to perform disassembly of the vehicle to inspect the fuel evaporative system.</p>	
<p>Exhaust Gas After Treatment Systems</p> <ul style="list-style-type: none"> ➤ Catalytic Converter(s) - Gasoline/Diesel ➤ Diesel Oxidation Catalyst (DOC or (OC) - Diesel ➤ Periodic Trap Oxidizer (PTOX) - Diesel ➤ Diesel Particulate Filter(s) (DPF) - Diesel ➤ Selective Catalytic Reduction (SCR) - Diesel <p>Catalysts, filters and traps must be in original configuration with the same number of converters, filters and traps in place, unless changes are acceptable as part of a CARB EO approval / exemption.</p>	<p>Use the “catalyst” entry prompt for all exhaust gas after treatment systems.</p>
<p>Exhaust Gas Recirculation (EGR) - Gasoline/Diesel</p>	

Visual Inspection

1.3.1 Visual Inspection Procedures continued...

Emission Control Systems	Special BAR 97 EIS Entry
<p>Ignition Spark Controls (SPK) - Gasoline</p> <p>Ignition spark controls are mechanical or electronic devices, mechanisms or systems that control ignition timing. All computer controlled vehicles are equipped with spark controls.</p>	
<p>Fuel Metering System - Gasoline/Diesel Carburetion and Fuel Injection Inspection includes: Air Flow Meters, Injectors, Throttle Bodies, Throttle Positioners, Anti-“Dieseling” Solenoids, Early Fuel Evaporation, Choke Controls, Deceleration Controls, and Dashpots.</p>	
<p>Air Injection System - Gasoline</p>	
<p>Computers, Sensors, and Switches (Computer-controlled vehicles only) - Gasoline/Diesel Inspection includes: pressure sensors, temperature sensors and oxygen sensors.</p>	
<p>Other Emission Related Components - Gasoline/Diesel The Other Emissions Related Components category encompasses emission control systems that are not otherwise addressed in the visual inspection menu. Other Emission Related Components include, but are not limited to:</p> <ul style="list-style-type: none"> ➤ <i>Add-On Aftermarket Parts</i> ➤ <i>Cylinder Heads</i> ➤ <i>Exhaust Manifolds</i> ➤ <i>Intake Manifolds</i> ➤ <i>Superchargers</i> ➤ <i>Thermal Reactors</i> ➤ <i>Timing Gears and Pulleys</i> ➤ <i>Turbochargers</i> <p>If a vehicle fails the Other Emissions Related Components category of the visual inspection, technicians must document, on the VIR, what emissions system failed.</p> <p>Note: The Other Emissions Related Components field is also used to capture failed test results for the Visible Smoke Test. For more information, see sections 1.3.4.</p>	

Visual Inspection

1.3.2 Emission Control System Labels

Under-hood Emission Control Label: Each vehicle's under-hood emission control system (ECS) label serves as the primary source for emissions control requirements. However, a missing or illegible ECS label does not constitute an inspection failure. In cases where the ECS label is missing or illegible, the technician may proceed with the inspection provided that the required emission controls can be determined using other sources as described in section 1.3.1. Note: Some diesel powered vehicles are equipped with a second or additional ECS label affixed to the engine.

BAR Referee Label: When inspecting a kit car (SPCNS), a grey market vehicle, or a vehicle with an engine change, look for a BAR Referee Label. The BAR Referee Label serves as the primary ECS information source for these vehicles. If a BAR Referee Label is not present, inform the customer to contact the BAR Referee for inspection information. When equipped with a BAR Referee Label, these vehicles may be inspected and certified by a licensed Smog Check station. Technicians must inspect the vehicle using the ECS requirements listed on the BAR Referee label. BAR Referee Labels are typically affixed to the driver's side door post or, in some cases, located under the hood.

Aftermarket Parts Label: CARB approved or exempted parts are subject to CARB aftermarket parts labeling requirements. These requirements specify that Aftermarket Parts Labels (APL) must be affixed or stamped on approved/exempted parts or, if not practical, installed near the approved/exempted parts. The labels are required to contain an Executive Order (EO) number that can be used to verify CARB approval or exemption. Note: A missing or illegible APL does not constitute an inspection failure. In cases where the label is missing or illegible, the technician may proceed with the inspection, provided the parts can be confirmed as CARB approved or exempted by comparing the part number marked on the part with the CARB EO parts listings or the parts manufacturer catalog.

Visual Inspection

1.3.3 Liquid Fuel Leak Inspection (Gasoline Only)

The liquid fuel leak inspection shall be conducted with the engine running. **Use extreme caution when working around moving parts and ensure the transmission is in “park” or “neutral” with the parking brake on.**

Definition: For the purpose of conducting this inspection, a “Liquid fuel leak” is defined as follows: “Liquid fuel leak” means any fuel emanating from a vehicle’s fuel delivery, metering, or evaporation systems in liquid form that has created a visible drop or more of fuel on a component of a vehicle’s fuel delivery, metering or evaporation system or has created a fuel puddle on, around, or under a component of a vehicle’s fuel delivery, metering, or evaporation system.

Inspection: With the engine running, the technician shall visually inspect the following components of the vehicle, if they are exposed and visually accessible, for liquid fuel leaks:

- Gasoline Fuel tanks
- Carburetors
- Fuel injectors
- Gasoline fill pipes – associated hoses, tanks, connections
- Gas caps
- Fuel pressure regulators
- External fuel pumps
- Charcoal canisters
- Fuel delivery and return lines
- Any valves connected to any other fuel evaporative component
- Fuel vapor hoses
- Fuel filters

Pass/Fail Criteria: If no liquid leak is found, the vehicle shall pass inspection and the technician shall enter “P” (pass) in the EIS “Fuel Leaks” prompt. If a liquid fuel leak is detected, the vehicle shall fail inspection and technician shall enter “F” (defective) in the EIS “Fuel Leaks” prompt. Technicians must indicate on the vehicle inspection report (VIR) the location of any liquid fuel leak.

The liquid fuel leak procedure is a visual inspection only. Technicians are not required to perform disassembly of the vehicle to inspect for liquid fuel leaks. No special tools or equipment, other than a flashlight and mirror, are required and no raising, hoisting, or lifting of the vehicle is required.

Nothing in the liquid fuel leak inspection shall prohibit a technician from refusing to inspect a vehicle or from aborting an inspection if a liquid fuel leak presents a safety hazard.

The liquid fuel leak shall not apply to vehicles fueled exclusively by diesel, compressed natural gas (CNG), liquefied natural gas (LNG) or liquefied petroleum gas (LPG).

Visual Inspection

1.3.4 Visible Smoke Test

Gasoline and diesel vehicles requiring a Smog Check inspection must be tested for visible smoke. The Visible Smoke Test procedures for gasoline and diesel vehicles are in many ways similar, but there are a few important differences. The conditions and procedures for performing the Visible Smoke Test for these vehicles, and recording the results, shall be as follows:

General Test Procedures:

- Idle Test - Observe the tailpipe exhaust plume of the vehicle for 10 seconds.
- Crankcase Test - Observe the engine crankcase for 10 seconds.
- BAR Snap Test - Quickly push-and-release the accelerator pedal from idle position to between 2,000 and 3,000 RPM, then immediately allow the engine to return to idle.
- Enter the test result into the EIS.
- Document any failure on the Vehicle Inspection Report and the consumer's invoice.

Specific Test Procedures:

Step 1 - Vehicle Preparation

- Check that there are no obvious safety hazards (abnormal engine noise, overheating, leaking fluids, etc.). Technicians may reject a vehicle that is unsafe to test.
- Place the transmission in "Neutral" or "Park," with the parking brake on and/or wheel chocks in place.
- Turn off all accessories (including air conditioning).
- Ensure the vehicle is at normal operating temperature.
- Position the vehicle to ensure there are no drafts that can disturb the exhaust plume.
- Ensure there is nothing in the shop environment, such as equipment or tool boxes, which prevents the technician from clearly observing the exhaust plume. In general, this will require clearing the line-of-site as much as 15 feet from the tailpipe(s).

Step 2 - Test Preparation and Vehicle Familiarization

- Use any means necessary to enable observation of the vehicle's exhaust plume, including but not limited to, adjusting the seat and mirror positions.
- Perform the first of three BAR Snap Tests:
 - **Gasoline** shall be performed prior to the ASM/TSI emissions portion of the inspection when the EIS screen enables you to stabilize the RPM.
 - **Diesel** shall be performed as part of Step 5 below, after the Crankcase Test.
- Ensure the vehicle's engine RPM falls between 2,000 and 3,000 while performing the BAR Snap Test. If it does not, you can do one of the following:
 - Press-and-release the accelerator pedal more quickly or more slowly as needed to stay within the designated RPM range; or
 - Quickly press the pedal only part way to the floor before releasing it.
- **Do not** check for smoke during the first BAR Snap Test. Any visible smoke observed during the first BAR Snap Test shall not result in a failure.

Visual Inspection

Visible Smoke Test continued...

Step 3 - Perform the Idle Test

- Have the engine running at idle and go to the vehicle's tailpipe.
- Perform the Idle Test:
 - **Gasoline** shall be performed immediately after performing the ASM/TSI test.
 - **Diesel** shall be performed at the time the EIS prompts for the "Other Emissions Related Components" entry.
- Observe the tailpipe(s) exhaust plume of the vehicle for 10 seconds.

Step 4 - Perform the Crankcase (PCV/CDR) Test

- After performing the Idle Test (Step 3), continue to leave the vehicle's engine running at idle and go to the vehicle engine compartment. Open the hood to the engine compartment and determine whether any smoke is coming from the crankcase (PCV/CDR) system.
- Observe the vehicle's crankcase system for 10 seconds.

Step 5 - Complete the BAR Snap Test

- Continue to leave the vehicle's engine running at idle.
- Perform the final two BAR Snap Tests at the time the EIS prompts for the "Other Emissions Related Components" entry of the visual inspection.
- Perform the second BAR Snap Test while watching for visible smoke.
- Return the engine to idle, and wait for at least 3 seconds to allow the engine to stabilize.
- Perform the third (and final) BAR Snap Test while watching for visible smoke.

Step 6 - PASS/FAIL Determination

- **PASS** the vehicle for the Visible Smoke Test portion of the Smog Check inspection if the vehicle does not emit smoke during the Idle Test, Crankcase Test, and both of the final two BAR Snap Tests.
- **FAIL** the vehicle if:
 - There is **any** visible smoke observed during the Idle Test;
 - **OR** there is **any** visible smoke coming from the crankcase (PCV/CDR) system;
 - **OR** there is:
 - **Gasoline** - any visible smoke observed up to 10 feet from the tailpipe(s) on either of the final two BAR Snap Tests.
 - **Diesel** - a visible smoke plume observed 5 to 15 feet from the tailpipe(s) that lingers for **more than 3 seconds** on either of the final two BAR Snap Tests.
- Smoke from any area other than the vehicle's tailpipe(s) or crankcase (PCV/CDR) system, regardless of the cause, does not constitute a failure of the Visible Smoke Test.
- No vehicle shall be failed for condensation or steam.

Visual Inspection

Visible Smoke Test continued...

Step 7 – Enter the Test Results into the EIS

- Results must be entered in the visual inspection’s “other Emission Related Controls” category on the EIS.
- For vehicles that pass all portions of the Visible Smoke Test, enter “P” (Pass).
- For vehicles that fail any portion of the Visible Smoke Test, enter “F” (Defective).

The BAR-97 EIS currently allows only one entry for the visual inspection of all components covered under the “Other Emission Related Controls” category. Therefore, if the vehicle passes all portions of the Visible Smoke Test, but fails a visual check of any other component covered under the “Other Emission Related Controls” category, enter the appropriate failure code. However, if the vehicle passes the visual inspection for components covered under the “Other Emission Related Controls” category, but fails any portion of the Visible Smoke Test, enter “F” (Defective) into the EIS.

Step 8 - Documentation Provided to the Consumer

If the vehicle fails the Visible Smoke Test, the technician shall:

- Document the failure on both the customer’s and station’s copy of the Vehicle Inspection Report (VIR) in the “Other Emission Related Components” section. Make a clear notation on the VIR, such as “Failed Visible Smoke Test” or “Failed For Visible Smoke.” Document what portion of the Visible Smoke Test the vehicle failed, such as “Crankcase Smoke,” “Idle Smoke,” and/or “BAR Snap Smoke.”
- Document the failure on the customer’s invoice with “Failed Visible Smoke Test,” or “Failed For Visible Smoke.” Document what portion of the Visible Smoke Test the vehicle failed, such as “Crankcase Smoke,” “Idle Smoke,” or “BAR Snap Smoke.”
- Provide to the customer the Bureau’s “Visible Smoke Test Consumer Information Sheet,” with the applicable items completed on the checklist. See Appendix SC 1.

Visual Inspection Definitions

1.4.0 Tampered

An emissions control system or component that is **missing, modified, or disconnected**.

CCR § 3340.41.5

1.4.1 Missing

A missing emissions control system or component is one which all or part has been removed from the vehicle or engine.

CCR § 3340.41.5 (a)

1.4.2 Modified

An emission control system or component has been modified if:

- It has been disabled even though it is present and properly connected to the engine and/or vehicle;
- It has been replaced with a component not marketed by its manufacturer for street use on the vehicle,
- An emissions related component of the system has been changed such that there is no capacity for connection with or operation of other emissions control components or systems.

CCR § 3340.41.5 (b)

1.4.3 Disconnected

An emission control system has been disconnected if a hose, wire, belt or component is one which is required for the operation of the emission control system is present, but has been disconnected.

CCR § 3340.41.5 (c)

1.4.4 Defective

For the purposes of a Smog Check inspection, defective is an obvious condition of an emission control system or component noticed during the visual inspection, due to normal wear, or deterioration, or unintentional disturbance that will affect the operation of an emission control component or system. It is not a condition that occurs as a result of tampering. An unintentional disturbance includes, but is not limited to, a hose, wire, cap, or thermal valve or switch, disturbed and not reconnected or corrected when the vehicle was serviced.

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Emission Control Functional Tests

1.5.0 Functional Test Application

Test Type	Application	
OBD II	Gasoline	1996 model-year and newer vehicles 14,000 and less GVWR equipped with OBD II.
	Diesel	1998 model-year and newer vehicles 14,000 and less GVWR equipped with OBD II.
Malfunction Indicator Light	Gasoline	All vehicles equipped with an on-board diagnostics (OBD I or II) system, and equipped with a malfunction indicator light.
	Diesel	1998 model-year and newer vehicles 14,000 and less GVWR equipped with OBD II.
Ignition Timing	Gasoline	All vehicles subject to Smog Check, except those with “non-adjustable timing”.
	Diesel	N/A (Not Applicable)
EGR System	Gasoline	All 1995 model-year and older vehicles undergoing the two-speed idle test equipped with EGR.
	Diesel	N/A (Not Applicable)
Fuel Cap Integrity	Gasoline	1976 to 1999 model-year vehicles equipped with evaporative controls, including dual-fueled vehicles.
	Diesel	N/A (Not Applicable)
Low Pressure Fuel EVAP	Gasoline	1976 to 1995 model-year vehicles equipped with evaporative controls.
	Diesel	N/A (Not Applicable)

Technicians shall complete the functional tests in accordance with the inspection procedures described in this manual and as prompted by the EIS. Technicians shall not falsely enter “Not Applicable,” “No,” or otherwise skip a functional test required for the vehicle being tested.

All stations (including Test Only Stations) must follow the procedures specified by the vehicle manufacturer necessary to perform required Smog Check functional tests. Example: To check the base ignition timing, an under-hood ECS label specifies that the engine speed must be set (raised) to 1000 RPM and then returned to 700 RPM upon completion.

Emission Control Functional Tests

1.5.1 Malfunction Indicator Light (OBD I and OBD II)

When applicable, the malfunction indicator light (MIL), or “Check Engine Light”, shall be checked on all vehicles equipped with an on-board diagnostics system I or II. Enter “N” when not applicable.

To check MIL function, the technician shall turn the ignition to the “key on engine off” (KOEO) position, observe the MIL operation and then start the engine “key on engine running” (KOER). The MIL should illuminate in the KOEO position and extinguish when the engine is started and in the KOER position. A brief period of illumination during start up is normal. Always follow the EIS prompts to enter test results.

Pass/Fail Criteria:

- A “Pass” entry indicates that the MIL properly operates and service or repairs are not needed.
- A “Fail” entry indicates that the MIL does not illuminate at all in the KOEO position, or the MIL illuminates continuously or flashes with the engine running during the functional test of the malfunction indicator light (MIL). Note: Intermittent illumination (flash) during the ASM tests does not constitute a MIL functional failure.

The KOEO/KOER procedures may vary for keyless ignition systems and some conventional key systems. In these cases, use the vehicle manufacturer procedure to complete the “KOEO/KOER” sequences.

Note: Maintenance reminders are not part of the Smog Check inspection. Do not confuse a maintenance *reminder*, based on time and mileage, with the Malfunction *Indicator* Light.

Emission Control Functional Tests

1.5.2 OBD II Functional Test

The Smog Check OBD II functional test evaluates and reports the status and/or results of the readiness indicators, system faults, and Malfunction Indicator Light (MIL). The process is an integral part of the Smog Check inspection, requiring minimal technician input.

- Technicians must use all available information necessary to determine the vehicle’s OBDII requirements, including but not limited to, the under-hood emission control label (see section 1.3.2), a current emission control application guide, emission control repair manuals, emission component location guides, manufacturer emission control recalls, BAR OBD technical advisements, and any reliable vehicle manufacturer sources.
- Follow the EIS test prompts to connect the EIS test lead to the Diagnostic Link Connector (DLC).

DLC Location: Most DLCs are located on the dashboard between the driver’s side of the instrument panel and the middle of the passenger side. Some manufacturers, however, chose other locations. If you are unable to find the DLC, refer to the appropriate electronic component location manual or emission control diagnostic & repair manual. The DLC provides an RPM signal that in most cases can be used during Smog Check emissions test sequences.

Pass/Fail Criteria: The OBD II functional test Pass/Fail determination is automatically performed by the EIS. The EIS assesses the system’s ability to communicate, the readiness of system monitors, diagnostic trouble codes, and the MIL command status.

<p>Communication: The EIS uses standardized OBD II communication protocols. System and DLC tampers or defects may prohibit communication. Always follow the EIS prompts and ensure the EIS test lead is securely connected.</p>	<p>Pass: Successful communication established.</p>
	<p>Fail: No communication.</p>
<p>Monitor Readiness Status: The OBDII functional test only evaluates monitors supported by the vehicle. BAR establishes the required number of set or ready monitors.</p>	<p>Pass: A required number of monitors are set/ready.</p>
	<p>Fail: An inadequate number of monitors are set (not ready).</p>
<p>Diagnostic Trouble Codes & MIL Status: The EIS gathers data on all DTCs but will only fail the vehicle if a DTC is present and the MIL is commanded on.</p> <p>When a failure occurs, the EIS will print the associated generic OBDII trouble codes on the VIR. Vehicle manufacturer specific codes may also be printed.</p>	<p>Pass: No DTC present with MIL commanded off, or DTCs present (pending codes) with MIL commanded off.</p>
	<p>Fail: DTC present with MIL commanded on, whether or not the MIL is illuminated.</p>

Emission Control Functional Tests

1.5.3 Ignition Timing Test

Technicians shall check the base ignition timing using the vehicle manufacturer procedures. Many under-hood emissions labels provide procedures and specifications for checking the ignition timing. If the procedures are not on the label, refer to an emission control application guide or an appropriate service manual. If no manufacturer's engine speed tolerance is given for the timing check, the idle speed shall be within 100 RPM of the manufacturer's specified idle speed

Pass/Fail Criteria: To pass inspection, the base ignition timing must be within 3 degrees (± 3 degrees) of the manufacturer specification. If it is more than 3 degrees from manufacturer specification, the vehicle shall fail the functional test. Note: If the manufacturer specification provides a range, the 3 degree additional tolerance described above is not allowed.

Non-Adjustable Timing: Vehicles in which the underhood label describes the timing as "not adjustable" and/or vehicles with computer controlled ignition systems that do not have "timing adjustments" are exempt from the ignition timing test even if timing specifications are listed.

For the purposes of conducting a Smog Check inspection, timing settings related to the assembly of systems or components during engine repair are not considered "timing adjustments".

Mechanical Defect(s): If the timing cannot be measured due to a mechanical defect, such as a slipped harmonic balancer, the vehicle shall fail the timing test. The EIS includes a provision to account for mechanical defect. Follow the EIS prompts and document the mechanical defect on the Vehicle Inspection Report.

1.5.4 EGR System Functional Test

All 1995 model-year and older vehicles equipped with EGR and subject to a two-speed idle test shall undergo the EGR functional test.

Technicians must follow the functional test procedures prescribed by the vehicle manufacturer.

Emission Control Functional Tests

1.5.5 Fuel Cap Integrity Test

As prompted by EIS, perform the fuel cap integrity test on all 1976 to 1999 vehicles, equipped with evaporative controls that can operate on gasoline, including dual/bi fueled vehicles.

The fuel cap integrity test is a two part test.

Visual inspection: As prompted by the EIS, inspect the fuel cap(s) for proper fit and installation. The inspection result entries are “P” for Pass, “F” for Fail and “S” for Missing. If the fuel cap threads are stripped or the fuel cap seal is missing or damaged, or the fuel cap is not designed for the vehicle, the fuel cap shall fail the visual inspection.

Functional check: This check applies only to vehicles equipped with evaporative emission control systems. Check the fuel cap tester application manual to determine the correct cap adapter. Following the EIS and cap tester prompts, attach the fuel cap(s) to the adapter and perform the test. The test results are automatically captured by the EIS. If no adapter is available from the tester manufacturer (for the vehicle being tested), enter “No adapter available” as prompted by the EIS. For vehicle newer than 1999 do not perform the functional test, enter “No Adapter is available” as prompted by the EIS.

Fill Pipe Restrictor Functional Test

The fill pipe restrictor test no longer applies. The EIS may prompt for the fill pipe restrictor test for vehicles undergoing an initial Smog Check inspection. If so, enter “N” into the EIS fill pipe test prompt.

1.5.6 Low Pressure Fuel Evaporative Test

Test Application: The Low Pressure Fuel Evaporative Test (LPFET) shall be performed on all 1976-1995 model-year vehicles with the exception of the following:

- Vehicles not originally equipped, and not required by state or federal law to be equipped, with a fuel evaporation control system;
- Vehicles with two or more fully operational fuel tanks;
- Vehicles powered exclusively by diesel, compressed natural gas (CNG), liquefied natural gas (LNG), or liquefied petroleum gas (LPG);
- Vehicles for which there are no fuel LPFET filler neck adapters;
- Vehicles in their original factory configuration, with a fuel evaporative canister and fuel vapor hoses that are not accessible or would require the partial dismantling of the vehicle in order to gain access to them for testing. The technician shall note the vehicle’s canister location on the Vehicle Inspection Report for these vehicles.

Technicians shall enter N (Not Applicable) at the EIS Fuel Evaporative Test prompt when inspecting any of the vehicles listed above.

Emission Control Functional Tests

1.5.6 Low Pressure Fuel Evaporative Test continued...

Inspection: Smog Check Stations and Smog Check Technicians shall perform the low pressure test of a vehicle's fuel evaporative systems, using a BAR certified low pressure fuel evaporative tester (LPFET). The test shall be performed in accordance with the test procedures and specifications contained in the LPFET instruction manual provided by the tester manufacturer, and the following, as applicable:

- If components related to the vehicle's fuel evaporative system *tank side* are missing, modified, disconnected, or defective enter N (not applicable) at the EIS Low Pressure Fuel Evaporative Test prompt. If the vehicle's *tank side* fuel evaporation system components are not missing, modified, disconnected, or defective proceed with the test. *Tank side* means the portion of the fuel evaporative system between the canister pinch or seal point and the fuel tank filler neck. (*Tank side* visual inspection failures can affect the LPFET. Therefore, in cases where a *tank side* visual inspection failure exists, the LPFET does not apply).

Note: Evaporative system visual inspection results must be entered at the EIS Evaporative System Visual Inspection prompt; see section 1.3.1.

- If, at the conclusion of the test, the LPFET displays a P (pass), enter P in the EIS at the Fuel Evaporative Test prompt.
- If, at the conclusion of the test the LPFET displays an F (fail), perform a seal check in accordance with the procedures and specifications contained in the LPFET instruction manual provided by the tester manufacturers.
 1. If, after completion of the appropriate seal check, the system is found to be properly sealed, enter F (fail) in the EIS at the Fuel Evaporative Test prompt.
 2. If, after completion of the appropriate seal check, the system is found not to be properly sealed follow the applicable procedures and specifications contained in the LPFET instruction manual provided by the tester manufacturers to correct the leaks and effect proper seals.

Emission Control Functional Tests

1.5.6 Low Pressure Fuel Evaporative Test continued...

- After all leaks have been corrected, a verification test shall be performed in accordance with the procedures and specifications contained in the LPFET instruction manual provided by the tester manufacturers.
 1. If, at the conclusion of the verification test, the LPFET displays a P (pass), enter P in the EIS at the Fuel Evaporative Test prompt.
 2. If, at the conclusion of the verification test the LPFET displays an F (fail), enter F in the EIS at the Fuel Evaporative Test prompt.

Depressurization: At the completion of the test and any necessary verification test, following the procedures and specifications contained in the LPFET instruction manual provided by the tester manufacturers, depressurize the evaporative system, remove the tester and return the fuel evaporative system to its original configuration.

Nothing in the LPFET procedures shall excuse a station or a technician from completing the Visual Inspection described in section 1.3.0 or the Liquid Fuel Leak inspection described in section 1.3.3.

Smog Check Inspection Results

1.6.0 Vehicle Inspection Report

Print at least two copies of the Vehicle Inspection Reports (VIR) for each Smog Check inspection. The licensed station shall give a copy of the VIR to the customer and keep a copy for the station's records. The VIR shall be attached to the customer's invoice.

- If the EIS does not print the VIR, the station will need to correct the malfunction and reprint the VIR.
- The licensed technician must sign all copies of the VIR acknowledging that the inspection was conducted in accordance with all Smog Check requirements and that the information on the VIR is true and correct.
- When applicable, technicians must document special circumstances on the VIR, including, but not limited to:
 - The location of a Liquid Fuel Leak
 - The emissions system or component that failed the Other Emissions Related Component category of the visual inspection
 - The reason for an "Other" inspection abort
 - The type of visible smoke test failure (tailpipe or crankcase)
 - The make for a SPCNS vehicle as described on the registration documents (when document are available)
 - CARB approved aftermarket parts and associated EO number

1.6.1 Vehicle Passes Smog Check

Certificate of Compliance

The EIS will issue a certificate of compliance when a vehicle passes all applicable portions of a Smog Check inspection. The certificate of compliance will electronically transmit to DMV and record in the VID, per the EIS specifications.

1.6.2 Vehicle Fails Smog Check

A vehicle that fails any portion of the Smog Check inspection, but does not exceed the gross polluter emission standards, can be repaired and obtain a Smog Check certificate at any Test and Repair station. However, if the vehicle was originally *directed* (as shown on the DMV registration renewal notice), or exceeded the gross polluter standards, it may only receive after repair certification from a Test Only or Gold Shield station, or a BAR Referee.

Repair Data

1.7.0 Repair Information Entry

Whether repairs were performed, before, during, or after the Smog Check inspection, all repairs performed at your station must be entered into the EIS, including any state subsidized (CAP) repair.

As applicable, technicians shall enter accurate repair information as prompted by the EIS in either the Smog Check Inspection Mode or the Repair Only Menu. If the retest is performed at your station, enter the repair information during the retest Smog Check inspection, as prompted. If the retest will not be conducted at your station, use the Repair Only Menu to enter the repair information. Note: Accurate repair data provides a valuable source of information that can be used by other stations and that BAR uses for program evaluation.

Repair Costs

As prompted by the EIS, enter the repair parts and labor costs in whole dollars (no cents); round up or down to the nearest dollar.

For customer paid costs, enter all parts and labor charges, including any customer co-payments made for state subsidized repairs, tax and diagnosis costs.

For state subsidized repairs, enter all parts and labor costs to be paid by state, including tax and diagnosis costs.

Miscellaneous

1.8.0 Test Restrictions for Directed Vehicle

Directed Vehicle- Before conducting an inspection, stations not authorized to certify *directed vehicles* must check the DMV registration documents (when available) for a Test Only directed designation. If the vehicle is *directed*, the station/technician shall inform the motorist of this certification restriction. *Directed vehicles* can only receive certification from a Test Only station, a Gold Shield certified Test and Repair station, or BAR Referee.

Gross Polluters- Vehicles found to exceed the gross polluter emission standards (*identified gross polluters*) are also restricted to certification from a Test Only station, a Gold Shield certified Test and Repair station, or BAR Referee. Stations not authorized to certify *identified gross polluters* shall inform the motorist of this certification restriction.

Note: When attempting to inspect a *directed vehicle* or an *identified gross polluter* at a station that is not authorized to certify *directed vehicles* or *identified gross polluters*, the EIS will prohibit the inspection, provided VID communication occurs. If VID communication does not occur, stations not authorized to certify *directed vehicles* or *identified gross polluters* must inform the customer that the vehicle could be *directed* or an *identified gross polluter* and, if so, a certificate issued by their station may be invalid.

When repairing *directed vehicles* or *identified gross polluters*, Test and Repair stations may use the EIS pre-inspection mode to verify repairs.

1.8.1 Gross Vehicle Weight Rating (GVWR)

When testing trucks and motor homes, the EIS will prompt the technician to enter the gross vehicle weight rating (GVWR). Check the vehicle information label for the GVWR (label is typically found on driver door jamb). Note: Some labels list multiple “as equipped” GVWRs. In these cases, use the GVWR that corresponds to the vehicle as originally equipped by the vehicle manufacturer. If the GVWR cannot be determined, enter “NONE” and follow the EIS prompts to select a GVWR based on weight classification.

Miscellaneous

1.8.2 Pre-Inspection Mode

The pre-inspection mode provides an option to assess the vehicle's emission controls and tailpipe emissions before undergoing the official Smog Check inspection. The pre-inspection procedure is identical to the official Smog Check inspection except that no certificate is generated and the vehicle is not subject to the gross polluter requirements, regardless of the emissions results. Pre-inspection test results are transmitted to the vehicle information data base but a certificate is not transmitted to the DMV. The station shall provide the customer a copy of the pre-inspection vehicle inspection report.

If a customer chooses to authorize a partial pre-inspection, the licensed technician or an authorized representative of the licensed Smog Check station shall inform the motorist that the partial pre-inspection will not fully indicate the likelihood of the vehicle passing a subsequent official inspection. An example of a partial pre-inspection is using the analyzer in manual mode to check tailpipe emissions only. The limitations of a partial pre-inspection must be fully disclosed to the customer both orally and on the estimate and invoice.

1.8.3 Pre-Inspection Repair

With customer authorization and an estimate provided, licensed technicians may perform repairs on vehicles before or during the Smog Check inspection. Any repair must be appropriately documented on the invoice and entered into the EIS when prompted.

Any repair conducted during the inspection shall be limited to the following: replacement of the fuel cap(s) (EIS provides a mid-inspection fuel cap replacement opportunity upon a failed cap test), minor repairs of components damaged by the station personnel during the inspection at the station, minor repairs such as the reconnection of hoses or vacuum lines. **Any repair performed during the inspection must be completed before starting the emissions test portions of the Smog Check inspection, aside from the EIS prompted fuel cap replacement provision.**

APPENDIX SC 1

VISIBLE SMOKE TEST CONSUMER INFORMATION

**VISIBLE SMOKE TEST FAILURE
CONSUMER INFORMATION SHEET**

Date: _____ Vehicle License No. or VIN: _____

Your vehicle FAILED its Smog Check for “Visible Smoke” because

Smoke was seen coming from your vehicle’s:
<input type="checkbox"/> Tailpipe during the Idle Test
<input type="checkbox"/> Tailpipe during the BAR Snap Test
<input type="checkbox"/> Crankcase during the underhood visual inspection

Visible Smoke

Color of Smoke	Condition	Common Causes
Blue or Bluish-White	Engine or transmission oil being burned	<ul style="list-style-type: none"> • Worn valve guides or seals • Worn piston rings or cylinders • Defective head gasket • Defective turbo charger • Defective transmission vacuum modulator
Black or Gray	Incomplete fuel combustion	<ul style="list-style-type: none"> • Clogged air filter • Fuel injection, carburetor, choke, or emission system malfunction • Incorrect timing (ignition or injection) • Misfire caused by faulty ignition • Misfire caused by burnt/damaged valve • Low compression from engine wear

Vehicular smoke pollutes the air that we breathe. The smoke consists of small particles that can cause lung problems, heart disease, and other health consequences. In addition, smoke from an engine can also damage emission control systems on a vehicle, like the catalytic converter and oxygen sensor, making them less effective. Less effective emissions control systems translates to dirtier air for all in California.

Section 44012.1 of the Health and Safety Code requires that vehicles subject to a Smog Check inspection undergo a visual test for smoke from the engine crankcase and tailpipe. California Vehicle Code section 27153 has for many years prohibited the operation of smoking vehicles on California’s roadways. Doing so could subject the operator/owner to the issuance of a citation by the California Highway Patrol or a local law enforcement agency. The new smoke test may help protect vehicle operators/owners from receiving a citation for the illegal on-road operation of a smoking vehicle. Any vehicle that fails a “Visible Smoke Test” must be repaired in order to PASS a Smog Check.

Please take this Consumer Information Sheet with you to a licensed Smog Check station to perform the needed repairs. You may be eligible for repair assistance or California’s Voluntary Vehicle Retirement Program. Contact the Bureau of Automotive Repair’s Consumer Assistance Program to see if you qualify.

If you wish to dispute your vehicle’s smoke test results, you may schedule a Bureau of Automotive Repair Referee verification test by calling (800) 622-7733 for an appointment.

For more information or for any other questions, call the Bureau of Automotive Repair at (800) 952-5210, or visit the Bureau’s Web site at www.smogcheck.ca.gov.

**Bureau of Automotive Repair
10240 Systems Parkway
Sacramento, CA 95827**