LPFET Instruction Manual
LOW PRESSURE FUEL EVAPORATIVE TESTER
EVAP

LPFET Instruction Manual
Low-Pressure Fuel Evaporative Tester System
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Exempt Vehicles

Perform the Low Pressure Fuel Evaporative Test on all model year vehicles subject to the program except the following:

- **1996 and newer vehicles (subject to change)**
- **Vehicles for which there are no fuel tank filler neck adapters**
- **Vehicles powered exclusively by compressed natural gas (CNG), liquid natural gas (LNG) or liquid petroleum gas (LPG)**
- **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 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.**

If the vehicle is exempt enter N (not applicable) at the BAR97 EIS (Emission Inspection System) Fuel Evaporative Test prompt.

*Note: For the latest information, please refer to the Smog Check Manual or visit the California Bureau of Automotive Repair’s public website at www.smogcheck.ca.gov.*
Important Notices

Tampering is Prohibited
EVAP, the low-pressure fuel evaporative system tester, operates under strict guidelines set forth by the California Bureau of Automotive Repair (BAR). Tampering with this unit in any way is prohibited and will also void the warranty.

Keep All Documentation
Since you may need it for reference when contacting ESP for assistance, make sure you keep all of the documentation and setup material you receive with your tester.
IMPORTANT SAFETY INSTRUCTIONS

When using EVAP, basic safety precautions should always be followed, including the following:

⚠️ Before using this tester, carefully read all instructions.
- In addition to the information listed here, additional warnings and cautions are listed throughout this manual.
- The LPFET Instruction Manual cannot anticipate or provide advice and cautions for all situations encountered by technicians. With this in mind, always follow and refer to the manuals provided by the manufacturer of the vehicle or equipment being tested or used for all information and testing procedures whenever diagnosing, repairing or operating such vehicle or equipment.
- Failure to follow the instructions, cautions and warnings provided here as well as those provided by the vehicle or equipment manufacturer can result in fire, explosion, bodily injury and property damage.

⚠️ Fuel vapors are toxic and explosive, which can cause severe injury or death
- Use proper ventilation to avoid breathing fuel vapors.
- Gasoline and blended fuels are highly poisonous and chemically active. Blindness and death are possible if exposure to these substances is extensive.
- Minimize prolonged exposure to methanol as a liquid or vapor. Remember, symptoms of methanol exposure can occur after a delay of several days.
Safety Instructions

- Minimize contact with the skin with the use of gloves (such as nitrile gloves) when there is the possibility of getting gasoline or blended fuels on your hands. If the skin is directly exposed, wash the area immediately and change any clothes that have become wet with fuel.

- ALWAYS WEAR OSHA APPROVED SAFETY GLASSES when testing the pressure of the fuel system or gas caps. Everyday eyeglasses only have impact resistant lenses, they are not safety glasses. Should fuel get into eyes, flush eyes immediately with water and consult your physician.

- Follow all federal, state and local regulations for the safe storage and use of the compressed nitrogen gas used or stored at the site.

- Always refer to the chemical products Material Safety Data Sheet (MSDS) for complete safety and handling information.

⚠️ Vehicles emit flammable vapors which can ignite

- Keep flames, sparks, cigarettes and other ignition sources away from the vehicle at all times.

- To reduce the risk of fire, do not operate equipment in the vicinity of open containers of flammable liquids (gasoline) except as intended by the manufacturer.

- In case of fire, never use water to fight flames caused by gasoline or blended fuels. This will cause the flames to spread instead of extinguishing them.

- Use a dry chemical extinguisher to fight flames (preferably one marked ABC, though BC is acceptable). A foam extinguisher is acceptable only if it is ARF grade, which is resistant to alcohol.

⚠️ Before beginning any tests, make sure the equipment and the test environment are safe.

- Test area should be well ventilated. Nitrogen gas may displace the normal atmosphere particularly in poorly ventilated areas (trenches, sewers, below vehicle service areas). To avoid suffocation, be sure these areas are properly ventilated before, during and after testing.
Safety Instructions

- Remove rings, watches, loose or hanging jewelry. Tie long hair securely behind the head. Take extra care with loose or hanging clothing. Keep all parts of your body away from moving parts.

- When working on or underneath the vehicle, make sure it is properly supported on a hoist or jack stands.

- Do not begin testing without grounding the vehicle. Vehicles build up electrostatic charges, which, when discharged, can damage electronic equipment or ignite fuel vapors causing fire or explosion.

- Before removing the fuel cap, make sure to turn the vehicle off.

- When removing the fuel cap, do so slowly. Allow any pressure to decay before fully removing the cap.

- When connecting to, or disconnecting from, a fuel line, always make sure to relieve the system fuel pressure.

⚠️ To avoid personal injury or damaging the system, always use the equipment properly.

- Always keep the system away from heat sources such as a radiator.

- Never place heavy objects on top of the system.

- Always keep the system on a stable work surface.

- Use only as described in this manual. Only use with manufacturer's recommended attachments.

- Make sure the equipment is in good working condition. This tester is a precision instrument—keep it clean and repair (or replace) any damaged parts.

- This tester operates under strict guidelines set forth by the California Bureau of Automotive Repair (BAR). Tampering with this unit in any way is prohibited and will also void the warranty.

- To avoid serious injury, or damage to the tester, never remove the fuel filler neck adapter until the tank pressure has been relieved.

- Use caution when testing on a vehicle while the engine is running (electric cooling...
Safety Instructions

Fans may turn on unexpectedly even if the ignition is in the OFF position, surfaces may become hot, etc. Keep all tester cables clear of exhaust manifolds and radiator fan blades. Care must be taken as burns can occur from touching hot parts.

⚠️ To avoid the risk of electrical shock

- Make sure to connect the system to an electrical outlet with the correct voltage and proper grounding.
- This system uses power cables with three-pronged plugs—do not remove the grounding prong from the cable or use an adapter plug.
- If an extension cord is necessary, a cord with a current rating equal to or more than that of the equipment should be used. Cords rated for less current than the equipment may overheat. Do not let a cord hang over the edge of a table, bench, or counter—care should be taken to arrange the cord so that it will not be tripped over or pulled.
- Let equipment cool completely before putting away. Always unplug the system from the electrical outlet when not in use. Never use the cord to pull the plug from the outlet. Instead, grasp the plug and pull to disconnect. Loop cord loosely around equipment when storing.
- Never operate the system with a damaged cord or if it has been dropped or damaged until it has been examined and repaired by an authorized technician.
- Do not connect or disconnect any cables while the system is powered on.
- Do not operate the system if any of the cables or plugs become damaged.
- Do not use or store on wet surfaces or expose to rain. If the system becomes wet, using extreme caution, turn the power off immediately and unplug all power cables from the electrical outlet.
- Before cleaning, turn the unit off and unplug all power cables from the electrical outlet and phone lines.

SAVE THESE INSTRUCTIONS
Overview:

VEEMC Systems

This section provides you with a brief description of the Vehicle Evaporative Emissions Control System (VEEMC). If you require more detailed information for a particular VEEMC system, please refer to the vehicle's shop manual.
VEEMC Components

Vehicle Evaporative Emission Control Systems (VEEMC) are on today's vehicles to prevent them from emitting raw fuel vapors (hydrocarbons) from the fuel tank and carburetor bowl into the atmosphere. The charcoal canister storage method is the basic VEEMC system used on all vehicles. The system consists of an integrated loop of components each with a specific purpose.

Evaporative System Overview

This graphic shows the basic VEEMC components in a control system.

**Canister vent**

A vent located on the bottom or top of the vapor canister, or remote mounted, which allows fresh air into the canister during purge flow.

The air mixes with the stored fuel vapors and is drawn into the intake manifold and engine to be used as additional fuel when the engine is running.
<table>
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<tr>
<th>Component</th>
<th>Description</th>
</tr>
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<tr>
<td>Charcoal canister (Vapor canister)</td>
<td>A container filled with activated charcoal. The canister stores fuel vapors from the fuel tank and carburetor bowl when the vehicle is off and releases the vapor when fresh air is drawn through the canister during purge flow conditions when the engine is running.</td>
</tr>
<tr>
<td>Control orifice / restrictor</td>
<td>To prevent overloading, the orifice regulates the rate of vapor flow to the canister.</td>
</tr>
<tr>
<td>Filler neck</td>
<td>The port for filling the fuel tank, it also limits fill capacity and allows fuel expansion in the tank. The filler neck may include a fuel control vent system that routes vapors into the evaporative system during refueling.</td>
</tr>
<tr>
<td>Fuel cap (pressure/vacuum relief)</td>
<td>Prevents fuel vapors from escaping and allows fresh air into the tank as the fuel volume decreases.</td>
</tr>
<tr>
<td>Fuel tank</td>
<td>Tank for onboard fuel storage. Fuel tanks in VEEMC systems have head space pockets to allow for fuel expansion as the fuel temperature rises.</td>
</tr>
<tr>
<td>Purge control solenoid</td>
<td>Controlled by either a thermal switch or the vehicle's computer, the solenoid is one of these types:</td>
</tr>
<tr>
<td></td>
<td>- A ported vacuum-controlled diaphragm solenoid located on the canister.</td>
</tr>
<tr>
<td></td>
<td>- An electrically controlled, normally closed mechanical solenoid located in-line between the canister and the intake manifold.</td>
</tr>
<tr>
<td>Vapor vent system (rollover valve)</td>
<td>Allows fuel vapor, but not liquid fuel, to enter the evap hose. Also prevents liquid fuel from entering the evap system in the event of a vehicle rollover.</td>
</tr>
</tbody>
</table>
VEEMC Systems

Vehicle computer (PCM OR ECM) Based on engine and driving conditions, the vehicle computer determines when to purge the canister (typically during warm cruise).

The PCM controls the purge control solenoid. The control may be a solenoid on/off function where the amount of flow is determined by engine conditions (throttle position, manifold vacuum etc.), or the PCM may control the amount of flow by pulsing the solenoid (duty cycle).

Vehicle Emissions Label

Although it is not a working component, the Vehicle Emission Control Information (VECI) label used in the United States is considered to be a part of the emission system. The vehicle's emissions label contains information specific to that vehicle. The label may differ slightly from vehicle to vehicle, but all labels include standard information. This information occupies four sections with the fourth sometimes on a separate label.

Note: If the label is missing, unreadable or does not match the vehicle, parts may have been replaced. Contact the vehicle manufacturer for a replacement label.
### VEEMC Systems

#### Section 1: Engine family information
Consists of a 12-character identification code. Each character represents specific information, such as model year, manufacturer, engine displacement, vehicle classification, fuel metering system, and type of catalyst used on the vehicle.

#### Section 2: Certification status
Required by the U.S. E.P.A., designates where the vehicle can operate for optimal performance. This includes high or low altitude, federal (U.S.-49 states), California, and Canada.

#### Section 3: Emission equipment installed on the vehicle
Required by the U.S. E.P.A., tells which emission equipment is installed on the vehicle (may be identified using abbreviations) and catalyst status:
- CATALYST/CAT
- NON-CATALYST

#### Section 4: Emission (vacuum) hose routing diagram
Shows the routing of the vacuum hose from each component.

The VECI label can be located in different places on the vehicle, such as:
- Fender wall
- Fan shroud
- Underside of the hood
- Strut tower
- Engine valve cover
Overview:

EVAP Hardware

This section illustrates and describes the items included with EVAP. Be sure you familiarize yourself with all of the equipment before conducting any VEEMC tests.
EVAP Hardware

Front and Top View

- Calibration Adapter
- Cal Leak Valve
- Red Filler Neck Adapter
- Blue Filler Neck Adapter
- Black Filler Neck Adapter
- Pinch-off Pliers
- Control Panel
- Red Outlet Hose
- Inlet Supply Hose
Back View

System Serial Number

Calibration Tank

Filter / Regulator

FPT3001 Tester

FPT3001 Tester Serial Number

Power Strip

Tester Power

Vehicle Grounding Cable

To Power

To Incoming Phone Line Outlet
Serial Numbers and Date of Manufacture

**Tester Serial Number**—A unique number assigned to the tester. It is used for tracking the tester and for recording/tracking test records. It is located on the back of the tester along with the date of manufacture and can be easily viewed from an opening in the back of the cart.

**System Serial Number**—A unique number assigned to EVAP. It is used by ESP for tracking ownership and warranty purposes. It is located on the back of the EVAP cart.

Using the Control Panel

The control panel comprises the LCD screen, status LEDs, and the keypad. You will use the control panel for functions such as selecting and starting a test procedure, monitoring the status of a test, and entering information such as a test vehicle's ID number (VIN).

![Control Panel Diagram]

**LCD Screen**

The LCD screen displays items such as the menus, testing progress, results, etc.

**Status LEDs**

Three LEDs indicate the test status:

- **Yellow**—Lights when a test is in progress
- **Green**—Lights when a test vehicle passes a test
- **Red**—Lights when a test vehicle fails a test