



VEHICLE EQUIPMENT SAFETY COMMISSION

REGULATION VESC-22

**MINIMUM PERFORMANCE STANDARD FOR
AUXILIARY LIQUID FUEL TANKS**

Approved August 1981

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MINIMUM PERFORMANCE STANDARD FOR AUXILIARY LIQUID FUEL TANKS

1. **PURPOSE**—The two purposes of this regulation are:
 - (A) To enhance safety by requiring a minimum level of strength and structural integrity in the manufacture and installation of auxiliary liquid fuel tanks; and
 - (B) To provide a uniform, minimum performance standard for auxiliary liquid fuel tanks to state motor vehicle administrators in the regulation of those tanks.
2. **SCOPE**—This regulation shall be applicable to auxiliary liquid fuel tanks for passenger cars, multi-purpose passenger vehicles, trucks and buses of gross vehicle weight rating of 10,000 pounds or less and shall apply to their manufacture, installation, sale and use.
3. **APPLICATION**—This regulation applies to auxiliary liquid fuel tanks except those which have been certified to FMVSS 301 (Fuel System Integrity-Passenger Cars, Multi-Purpose Passenger Vehicles, Trucks and Buses)* or FMCSR 393.65 (All Fuel Systems)* and FMCSR 393.67 (Liquid Fuel Tanks)*, as applicable.
4. **DEFINITIONS**
 - 4.1 **Auxiliary Liquid Fuel Tanks**—An additional fuel tank and any other components attached directly thereto designed to supplement the vehicle's liquid fuel carrying capability beyond that provided by the vehicle manufacturer (Liquid fuel: Fuel that is liquid at normal atmospheric pressures and temperatures except diesel fuel).
 - 4.2 **FMCSR**—Federal Motor Carrier Safety Regulations
 - 4.3 **Commissioner**—The appropriate state official or state agency responsible for promulgating rules and regulations governing vehicle equipment approval and/or use of motor vehicles over the highways of the state.
 - 4.4 **FMVSS**—Federal Motor Vehicle Safety Standard
 - 4.5 **Manufacturer**—Any person engaged in the manufacture of auxiliary liquid fuel tanks intended for use on the public highways (Person: Every natural person, firm, co-partnership, association or corporation).

* See reference materials.

5. **CONSTRUCTION**—Materials used in the construction of tanks and their fittings (as outlined below) shall be suitable for the purposes intended.

5.1 **Auxiliary liquid fuel tanks** shall be so constructed that they will meet the testing requirements specified in Section 9 of this regulation.

5.2 **Fill caps** shall be of a threaded or bayonet type or equivalent and shall be provided with a gasket.

5.3 **Venting**

5.3.1 **Air Vents**

5.3.1.1 Each fuel tank system shall be equipped with an air vent of a non-spill type (ball check or equivalent).

5.3.1.2 The air vent may be mounted separately or combined with the filler cap or relief vent.

5.3.2 **Relief Vents**

5.3.2.1 The fuel tank shall be provided with a relief vent (or vents) to relieve the pressure in the event the tank is exposed to fire or extreme heat.

5.3.2.2 The device shall be of a size and design which limits the internal pressure on the tank not to exceed 2 pounds per square inch (psi).

5.3.2.3 If only one relief vent is provided, it shall be located above the maximum fully loaded level. If more than one relief vent is provided, at least one shall be in the top of the tank.

5.3.2.4 The relief vents shall be located so that they vent away from the passenger compartment and exhaust system components.

5.4 The liquid capacity of the tank shall be limited by the fill arrangements to a maximum of not more than 95 percent of its total volume.

6. LOCATION

- 6.1 The tank, its fittings, line and all line connections, fill pipe openings, and venting systems must be exterior to the breathable atmosphere of the passenger and luggage compartments.
- 6.2 The tank, its fittings, line and line connections shall not pass within 3 inches of any part of the exhaust system unless a suitable heat shield is used in which case a minimum separation of 2 inches shall be maintained.
- 6.3 No portion of any auxiliary liquid fuel tank shall be installed to extend downward below the lowest portion of the vehicle's axle housing, differential housing, body or frame, whichever is lowest, with the vehicle sitting on a level plane loaded to its maximum gross vehicle weight rating.

7. INSTALLATION

- 7.1 The manufacturer shall provide with the tank clear and concise printed instructions for its safe installation and use.
- 7.2 The tank shall be securely attached to the vehicle by means of suitable hangers or brackets provided by the manufacturer.
- 7.3 The fuel line connections from the auxiliary liquid fuel tank to the primary system, including a selection control valve, shall not render inoperative any of the functions of the primary system. The auxiliary fuel tank lines, fittings, valves, and connections shall, for purposes of fuel flow, be of a size at least equal to the primary system.

8. SELECTION CONTROL VALVE

- 8.1 If a fuel system includes a selection control valve which is operable by the driver to control the flow of fuel from two or more tanks, the valve must be installed so that either:
 - (A) The driver may operate it while watching the roadway and without leaving the driving position; or
 - (B) The driver must stop the vehicle and leave the driving position in order to operate the valve.

8.2 If no tank selection control valve is used, each tank line must be equipped with a check valve to prevent back feeding from one tank to the other.

9. **TESTING**—The auxiliary liquid fuel tank and its fittings shall be so constructed that they will meet the following tests:

9.1 **Hydrostatic Test**—The tank shall be subjected to an internal pressure test which shall be carried out on an isolated unit complete with standard filler pipe, filler neck and cap. The tank shall be completely filled with water. After all communication from the outside has been cut off, the internal pressure on the tank shall be gradually increased through the pipe connection through which fuel is fed to the engine to a pressure differential of 2 pounds per square inch which shall be maintained for one minute. During this time, the tank shall not crack or leak.

9.2 **Drop Tests**—The tank, while containing water equal in weight to that of its fuel capacity, shall be capable of withstanding a drop of 15 feet, falling so as to strike the juncture of the longitudinal and head seams on a concrete or equivalent surface. The tank fill pipe and cap, air vents, and relief vents shall not have fuel spillage in excess of a total of 5 ounces by weight in a five minute period following the test.

10. **MARKING AND CERTIFICATION**

10.1 Each manufacturer shall permanently and legibly mark the auxiliary liquid fuel tank with the following information:

- (A) Manufacturer (name or registration number*)
- (B) Statement, "Complies with VESC-22"
- (C) Tank's liquid capacity in gallons and litres

10.2 Each manufacturer shall certify to the commissioner or to an equipment approval program or other agency designated by the commissioner that the auxiliary liquid fuel tank and its fittings are in compliance with the requirements of this regulation.

10.3 No person shall sell or offer for sale any auxiliary liquid fuel tanks for use upon the public highways that are not in compliance with this regulation.

* See reference materials.

REFERENCE MATERIALS

FMVSS — Federal Motor Vehicle Safety Standards, National Highway Traffic Safety Administration, U.S. Department of Transportation, Room 4423, Washington, D.C. 20590, (202) 426-0874

FMVSS 301 — Fuel System Integrity-Passenger Cars, Multi-Purpose Passenger Vehicles, Trucks and Buses

FMCSR — Federal Motor Carrier Safety Regulations, Bureau of Motor Carrier Safety, U.S. Department of Transportation, Room 3404, Washington, D.C. 20590, (202) 426-9767

FMCSR 393.65 — All Fuel Systems

FMCSR 393.67 — Liquid Fuel Tanks

MANUFACTURERS CODE AND/OR REGISTRATION NUMBERS—

May be assigned through the Safety Equipment Service Division, American Association of Motor Vehicle Administrators, Suite 910, 1201 Connecticut Avenue, N.W., Washington, D.C. 20036, (202) 296-1955

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