



VEHICLE EQUIPMENT SAFETY COMMISSION

Regulation VESC-21

**STANDARDIZATION OF MOTOR VEHICLE EXHAUST
SYSTEMS INCLUDING MAXIMUM NOISE LEVELS**

Approved August 1981

Suite 802
4660 Kenmore Avenue
Alexandria, Virginia 22304

VEHICLE EQUIPMENT SAFETY COMMISSION

VESC-21

STANDARDIZATION OF MOTOR VEHICLE EXHAUST SYSTEMS INCLUDING MAXIMUM NOISE LEVELS

Approved August 1981

VESC-21 COMMITTEE MEMBERS

**T. Marvel Everett, Chairman
Chief Inspector
Motor Vehicle Division
Delaware**

**E. Watson Sauls
Administrative Assistant
Division of Motor Vehicles
North Carolina**

**David Keyser
Motor Vehicle Inspection Program
Office of State Police
Louisiana**

**Kenneth F. Anderson
Chief, Vehicle Inspection Division
Department of Transportation
District of Columbia**

**Paul Nugent
Chief, Vehicle Inspection
Department of Public Safety
Georgia**

**MEMBERS—EXECUTIVE COMMITTEE
(Public Hearing and Approval Board)**

Chairman

James O. Peterson
Director, Transportation Safety
Department of Transportation
Wisconsin

Immediate Past Chairman

Philip Thorneycroft
Assistant Director
Department of Transportation
Arizona

Vice Chairman

Eugene P. Petit, Jr.
Registrar
Registry of Motor Vehicles
Rhode Island

Secretary/Treasurer

C. H. Aubol
Registrar
Motor Vehicle Department
North Dakota

Region I Representative

William H. Conway, Jr.
Commissioner
Department of Motor Vehicles
Vermont

Region II Representative

Elbert L. Peters, Jr.
Commissioner
Division of Motor Vehicles
North Carolina

Region III Representative

J. Marlin Luker
Director
Driver & Vehicle
Regulation Division
State Highway Patrol
Missouri

Region IV Representative

Larry E. Lunnen
Commissioner
Department of Public Safety
Utah

Dairl Bragg
Executive Director
VESC
Alexandria, Virginia

TABLE OF CONTENTS

Purpose	1
Scope	1
Definitions	1
Noise Test Requirements and Procedures	2
Discharge Point(s)	3
Alterations	4
Reference Materials	5

STANDARDIZATION OF MOTOR VEHICLE EXHAUST SYSTEMS INCLUDING MAXIMUM NOISE LEVELS

1. **PURPOSE**—To establish national, uniform performance and equipment requirements for exhaust systems on vehicles, as herein defined, and to furnish state administrators with a guide for the uniform regulation of exhaust systems on those vehicles.
2. **SCOPE**—The scope of this regulation is applicable to passenger cars, multi-purpose passenger vehicles, motorcycles, trucks and buses of gross vehicle weight rating of 10,000 pounds or less for use on the public highways. The regulation sets forth maximum noise levels and discharge point(s) and prohibits certain alterations to exhaust systems.
3. **DEFINITIONS**
 - 3.1 **Exhaust System**
 - (A) **Function**—To transmit engine exhaust products to a safe discharge point(s) from the vehicle and to control engine exhaust noise as both are herein defined; and
 - (B) **Components**—Consist of all exhaust gas transfer components from the engine exhaust manifold attachment to the exhaust discharge point(s).
 - 3.2 **Noise/Sound Level**—A weighted sound pressure level measured by use of a sound level meter, using an "A" weighing scale and reported as dB(A) as specified in ANSI S1.4-1971, "Specification for Sound Level Meters."*
 - 3.3 **dB(A)**—The standard abbreviation for "A" weighted sound level in decibels.
 - 3.4 **Discharge Point(s)**—Terminal point(s) of the exhaust system.
 - 3.5 **Alterations**—Deletions, additions or modifications of any components of the exhaust system which cause a significant detrimental effect on the function of the system.

* See reference materials.

3.6 **Catalytic Converter**—A device to control pollutants from the engine exhaust. For purposes of this regulation, the catalytic converter, if originally equipped, will be considered only as a component of the system which transmits exhaust products.

3.7 **Designated Seating Position**—Any plan view location capable of accommodating a person at least as large as a 5th percentile adult female, if the overall seat configuration and design and vehicle design is such that the position is likely to be used as a seating position while the vehicle is in motion, except for auxiliary seating accommodations such as temporary or folding jump seats. Any bench or split-bench seat in a passenger car, truck or multi-purpose passenger vehicle with a GVWR less than 10,000 pounds, having greater than 50 inches of hip room (measured in accordance with SAE Standard J1100*) shall have not less than three designated seating positions, unless the seat design or vehicle design is such that the center position cannot be used for seating.

4. NOISE TEST REQUIREMENTS AND PROCEDURES

4.1 **Noise Test Requirements**—Exhaust systems shall be in constant operation and properly maintained to prohibit noise levels which exceed the following standards:

	MAXIMUM NOISE LEVELS
PASSENGER CARS, MULTI-PURPOSE PASSENGER VEHICLES, TRUCKS & BUSES OF GVWR 10,000 POUNDS OR LESS	95 dB(A)
MOTORCYCLES	99 dB(A)

4.2 Noise test procedures shall be conducted in accordance with the following standards:

- (A) Passenger cars, multi-purpose passenger vehicles, trucks and buses of GVWR 10,000 pounds or less: SAE J1169 (1977), "Measurement of Light Vehicle Exhaust Sound Level Under Stationary Conditions"*
- (B) Motorcycles: SAE J1287 (1980), "Measurement of Exhaust Sound Levels of Stationary Motorcycles"*

* See reference materials.

5. DISCHARGE POINT(S)

5.1 Side Discharge Point(s)

5.1.1 Side discharge point(s) shall not terminate inboard of the side innermost lower edge of the passenger compartment vehicle structure, except on vehicles designed to carry cargo in which case they may not be located more than six inches inboard of the innermost lower edge of the vehicle cargo carrying structure with the exhaust gas flow directed outward.

5.1.2 The discharge point(s) shall be located to the side on vehicles in which there is passenger entry to the designated seating positions through a rear door or the rear door(s) is equipped with a window movable with respect to the door. However, rear discharge point(s) are permissible on such vehicles, prior to the 1982 model year, if so designed and located by the vehicle manufacturer at the time of manufacture.

5.2 Rear Discharge Point(s)

5.2.1 When the vehicle is equipped with a luggage compartment that is separated from the passenger compartment, rear discharge point(s) shall be located not more than six inches forward of the most forward lower edge of the rear vehicle body structure (the vehicle rear body structure does not include the bumper and its attaching mechanism or structure). The discharge point(s) on vehicles in this category shall be such that the exhaust gas flow is directed away from the luggage compartment.

5.2.2 When the vehicle is not equipped with a luggage compartment that is separated from the passenger compartment, the rear discharge point(s) shall not be located forward of the most forward lower edge of the rear vehicle body structure (the vehicle rear body structure does not include the bumper and its attaching mechanism or structure). The exhaust gas flow shall be directed outward.

5.3 General—The discharge point(s) shall not terminate inboard of the innermost lower edge of the load carrying space of a pick-up truck when the space is covered such that it facilitates the transportation of passengers.

6. ALTERATIONS

- 6.1 There shall be no muffler cut-outs, muffler by-passes or other alterations which cause a significant detrimental effect on the function of the system.
- 6.2 The catalytic converter, if originally equipped, shall not be removed or rendered inoperative.
- 6.3 The exhaust system shall be securely attached to the vehicle by mounting brackets designed for that purpose.
- 6.4 Repairs or patches on exhaust systems are prohibited except:
 - (A) Materials are utilized which have been specifically designed for such purpose and are used in accordance with the manufacturer's recommendations; or
 - (B) Sections of piping may be replaced by materials specifically designed for such purposes.
- 6.5 All exhaust gas transfer components shall be exterior to the breathable atmosphere of the passenger and luggage compartments.

REFERENCE MATERIALS

ANSI — American National Standards Institute, 1430 Broadway, New York, New York 10018, (212) 354-3300

ANSI S1.4-1971, "Specification for Sound Level Meters"

SAE — Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, Pennsylvania 15096, (412) 776-4841

SAE J1100, "Motor Vehicle Dimensions" (1979)

SAE J1169, "Measurement of Light Vehicle Exhaust Sound Level Under Stationary Conditions" (1977)

SAE J1287, "Measurement of Exhaust Sound Levels of Stationary Motorcycles" (1980)

VE
SIC