

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-51-1
Relating to Exemptions under Section 27156
of the Vehicle Code

VAPOR JET COMPANY
"METHANOL/WATER VAPOR INJECTOR"
"VAPOR-JET METHANOL/WATER INJECTOR"

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Section 39515 of the Health and Safety Code and Executive Order G-30A;

IT IS ORDERED AND RESOLVED: That the installation of the "Methanol/Water Vapor Injector" and "Vapor-Jet Methanol/Water Injector" marketed and manufactured by Vapor Jet Company, 3674 Colonial Avenue, Los Angeles, CA 90066 has been found to not reduce the effectiveness of required motor vehicle pollution control devices and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1974 and older model-year vehicles.

This device consists of a plastic bottle, rubberhose, plastic tee for connection into the PCV system, mounting brackets, and bottle cap with a vapor outlet port incorporating a 0.022 inch orifice diameter and the air inlet port. The fluid used is a methanol/water mixture.

This Executive Order is valid provided that installation instructions for this device will not recommend tuning the vehicle to specifications different from those listed by the vehicle manufacturer.

Changes made to the design or operating conditions of the device, as exempted by the Air Resources Board, that adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of this device using an identification other than that shown in this Executive Order or marketing of this device for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board.

This Executive Order does not constitute any opinion as to the effect that the use of this device may have on any warranty either expressed or implied by the vehicle manufacturer.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF THE "METHANOL/WATER VAPOR INJECTOR" AND "VAPOR-JET METHANOL/WATER INJECTOR."

No claim of any kind, such as "Approved by Air Resources Board" may be made with respect to the action taken herein in any advertising or other oral or written communication.

Section 17500 of the Business and Professions Code makes untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

Section 43644 of the Health and Safety Code provides as follows:

"43644. (a) No person shall install, sell, offer for sale, or advertise, or, except in an application to the state board for certification of a device, represent, any device as a motor vehicle pollution control device for use on any used motor vehicle unless that device has been certified by the state board. No person shall sell, offer for sale, advertise, or represent any motor vehicle pollution control device as a certified device which, in fact, is not a certified device. Any violation of this subdivision is a misdemeanor."

Any apparent violation of the conditions of this Executive Order will be submitted to the Attorney General of California for such action as he deems advisable.

^{D-51}
Executive Order ~~D-50~~, dated February 25, 1975 is superseded and of no further force and effect.

Executed at Sacramento, California, this 14th day of November, 1977.


Thomas C. Austin
Deputy Executive Officer

State of California

Air Resources Board

February 10, 1975

Staff Report

Evaluation of Vapor-Jet Company "Methanol/Water Vapor Injector"
for Compliance with the Requirements of Section 27156
of the California Motor Vehicle Code

I. Introduction

Vapor Jet Company has submitted an application requesting an exemption from Section 27156 of the California Motor Vehicle Code for the "Methanol/Water Vapor Injector" (Reference - Exhibit A). Vehicle Code Section 27156 prohibits the installation of any device or mechanism which reduces the effectiveness of the required emission control devices. This vehicle code section also authorizes the Air Resources Board to exempt devices from this prohibition if a finding shows the device will not adversely affect the performance of the emission control system. The applicant is requesting the exemption be granted for all 1974 and older model-year vehicles.

II. System Description

The "Methanol/Water Vapor Injector" is connected to the engine by way of the PCV line. The device consists of a plastic fluid reservoir, rubber hose, plastic tee, mounting brackets and a bottle of methanol. A 0.022 inch orifice restrictor is placed in the vapor outlet of the device.

February 10, 1975

The applicant specifies a 70% methanol-water solution as the fluid to be injected to the engine.

The amount of vapor bleed from the device is a function of engine vacuum and the 0.022 inch orifice restrictor. High manifold vacuum conditions such as idle, low speed cruises, and deceleration will result in the greatest displacement of vapor from the bottle. Little or no vapor injection occurs at low manifold vacuum.

According to the applicant the purposes of this device is to increase fuel economy and the efficiency of the engine. Since the vapor bleed is limited to 0.10 cubic feet per minute (cfm), the staff believes that any fuel economy achieved is insignificant.

III. System Evaluation

The applicant did not submit any data indicating the device will not have any adverse effect on the emission control system.

The Air Resources Board staff has established a flow limit of 0.10 cfm for 1974 and older model-year vehicles. This limit is judged by the staff to not affect the performance or operation of the emission control systems. Since the orifice diameter is 0.022 inch, previous flow tests performed by the staff indicate this diameter will limit the flow to 0.10 cfm.

February 10, 1975

IV. Conclusion and Recommendation

The staff is of the opinion that this device will not affect the performance and operation of the emission control system. Therefore, the staff recommends that Vapor Jet Company be granted an exemption from the prohibitions of Section 27156 for the "Methanol/Water Vapor Injector" on 1974 and older model-year vehicles.

Exhibit A

rec'd.

1-27-75

METHANOL / WATER VAPOR INJECTOR - 3674 Colonial Ave. Los Angeles

January 22, 1975

State of California - Resources Agency
Air Resources Board Laboratory
9528 Telstar Avenue
El Monte, California, 91731

Dear Mr. Newmark,

This letter is written in response to: (1) the meeting with Mr. George Lew and myself on December 24, 1974 and (2) your letter of January 13, 1974; it refers to additional information for our application for a 27156 exemption.

Comment on the discussed items follows:

1. The official name of our device is: METHANOL / WATER VAPOR INJECTOR.
2. The flow restriction orifice (Vapor-Jet Red Regulator) will be located on the downstream vapor outlet port of the device as in the sample delivered to Mr. Lew.
3. Poly Vinyl Chloride is the material from which the flow restriction device (Vapor-Jet Red Regulator) is made.

Enclosed is a revised copy of our letter of application of December 15, 1975. We hope that you will find our intent clearer. If not, please contact us again by telephone - 391-8963.

William Trevakis
William Trevakis

METHANOL / WATER VAPOR INJECTOR - 3674 Colonial Ave. Los Angeles

January 22, 1975 (Revised)

State of California - Resources Agency
Air Resources Board Laboratory
9528 Telstar Avenue
El Monte, California 91731

Gentlemen:

Re: Methanol/Water Vapor Injector
#27156 Compliance

This letter is written to apply for a resolution of compliance with section #27156.

1. A detailed listing of the components of the device are as follows:

<u>ITEM</u>	<u>DESCRIPTION</u>
a. 'TEE' (Select one, the proper size)	<u>POLY VINYL CHLORIDE</u> (PVC) 1/2" x 1/2" x 5/16" branch 3/8" x 3/8" x 5/16" branch 7/32" x 7/32" x 5/16" branch
b. Mounting Kit, Metal	1 clamp; 1 metal screw; 1 machine nut and screw
c. Reservoir & cap	1/2 Gallon, <u>PVC</u> ; cap with 3/8" outlet spout & 5/32" inlet opening, <u>PVC</u> ;
d. Tubing	<u>PVC</u> , 5/32" OD x 10" long
e. Regulator	<u>PVC</u> , .025" diameter
f. Tubing	<u>PVC</u> , 5/16" ID x 4' long
g. Hydrocarbon	<u>Methanol</u> (wood alcohol) 70% - 1 pint solution

2. a. The purpose of the system is to inject the vapor of a water and wood alcohol mixture into the intake manifold to boost economy and efficiency of the engine.
- b. To make available an Injection System at a very reasonable cost, simple to install and easy to maintain.

3. Installation

- a. Locate the existing POLLUTION CONTROL VALVE (PCV) vacuum hose on the engine, and determine its inner diameter. Select the proper size "TEE".

3. Installation (cont'd)

b. Locate an area within 4' of the PCV hose and drill a 3/16" hole for the metal screw in the mounting kit - install and clamp. Make certain the selected area will permit clearance of the reservoir cap when the hood is closed.

c. Mount the reservoir with the machine screw and nut. Insert 5/32" x 10" plastic tubing through inlet in cap. Observe that the red PVC regulator is already inserted in the outlet spout and attach one end of 5/16" x 4' tubing to the outlet spout of the cap. Temporarily seat the cap (with tubes) on the reservoir. In the other end of the 4' hose, insert the 5/16" branch of the selected plastic "TEE".

d. Grasp the PCV vacuum hose previously located and cut - then insert the "bar" (open ends) of TEE between the two sections of hose.

e. Remove cap and pour Methanol Hydrocarbon into reservoir - add water until reservoir is filled within one inch of top and seat cap on reservoir firmly.

f. Start engine and verify that vapor is being drawn into the intake manifold by observing bubbles rising from the bottom of the inlet tube to the top of the reservoir.

4. Emission test data not previously specified.

5. Applicable vehicle makes and models (all 1974 and prior)

6. Sample for testing - The sample submitted is for a 1971 Ford which has a 1/2" ID - PCV hose.

METHANOL / WATER VAPOR INJECTOR
3674 Colonial Avenue
Los Angeles, California 90066

William Trevaskis
WILLIAM TREVASKIS
Engineer

/sr

391-8963