E. O. Book

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-39
Relating to Exemptions under Section 27156
of the Vehicle Code

DIS-AUT ENTERPRISES
"H_2O VAPOR 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 39023 of the Health and Safety Code;

IT IS ORDERED AND RESOLVED: That the installation of the "H_2O Vapor Injector" system manufactured by Dis-Aut Enterprises, P. O. Box 1699, Ontario, California 91762 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 glass bottle, rubber hose, mounting bracket, plastic tee, and a bottle cap with a vapor outlet port, air inlet port, and water fill port. This exemption is valid on those units which meet the following requirements:

(1) The names "H_2O Vapor Injector" and"Dis-Aut Enterprises"are identified on the unit.

(2) The vapor outlet port of the device incorporates a 0.022-inch diameter orifice.

(3) The vaporous mixture is admitted into the existing PCV system of the engine.

(4) The use of water is specified as the working fluid.

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

Changes made to the design or operating conditions of the device as submitted to the Air Resources Board for evaluation that adversely affect the performance of the vehicle's pollution control devices 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 "H_2O VAPOR INJECTOR" DEVICE.

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 unlawful, untrue or misleading advertising, and Section 17534 makes violation punishable as a misdemeanor.

Sections 39130 and 39184 of the Health and Safety Code provide as follows:

> "39130. No person shall install, sell, offer for sale, or advertise, or, except in an application to the board for certification of a device, represent, any device as a motor vehicle pollution control device unless that device has been certified by the 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 section is a misdemeanor."
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> "39184. (a) No person shall install, sell, offer for sale, or advertise, or, except in an application to the board for accreditation 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 accredited by the board. No person shall sell, offer for sale, advertise, or represent any motor vehicle pollution control device as an accredited device which, in fact, is not an accredited 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.

Executed at Sacramento, California, this 12 day of September, 1974.

WILLIAM SIMMONS
Executive Officer

State of California
AIR RESOURCES BOARD

September 4, 1974

Staff Report

Evaluation of the Dis-Aut Enterprises "H_2O Vapor Injector" for Compliance with the Requirements of Section 27156 of the California Vehicle Code

I. Introduction

Dis-Aut Enterprises of P. O. Box 1699, Ontario, California 91762 has made an application requesting an exemption from the prohibitions of Section 27156 of the California Vehicle Code for its "H_2O Vapor Injector" device. Section 27156 prohibits the sale, advertisement or installation of any device which reduces the effectiveness of the required motor vehicle emission control system. The applicant is requesting the exemption be granted for 1974 and older model-year vehicles.

II. Device Description

The "H_2O Vapor Injector" device consists of a glass bottle, rubber hose, plastic tee (1), a specially designed cap with an outlet port which has an opening of 0.022-inch diameter (2), inlet port with an air metering screw (3), and water fill hole (4), and a mounting bracket. A rubber hose provides the connection between the engine and the glass container mounted in the engine compartment. Figure 1 is a schematic of the device showing how the fluid vapor is admitted into the engine through the PCV system.

Dis-Aut Enterprises specifies the use of water as the working fluid. According to the applicant, the injection of water vapor would tend to increase fuel economy and to prevent fouling of the spark plugs.

The bottle cap has outlet and inlet ports. The inlet port has an adjustable screw which meters the amount of air entering the bottle. The outlet port has an orifice diameter of 0.022 inches. A rubber hose connects the engine to the device by attaching one end of the hose to the outlet port and the other end to a plastic tee. This tee is located on the PCV line.

III. Device Function

Applying manifold vacuum to the tee on the PCV line draws water vapor out of the glass bottle. As the vapor is being removed, air enters the glass through the metering screw. A standpipe is connected to the air inlet port. The entering air creates bubbles at the bottom of the standpipe. The formed bubbles and their subsequent rising enhances the evaporation rate of the water. The amount of vapor injected into the engine is limited by the 0.022-inch outlet in the fluid tank and is a function of the intake manifold vacuum.

IV. Device Evaluation

The applicant submitted emission data from idle tests performed with and without the device. These data were obtained with an HC-CO analyzer. These data were not performed in accordance with the Air Resources Board Test Procedure for exhaust emissions. Therefore, results are not considered conclusive in assessing the effects of the device on the emission control system.

The Air Resources Board staff uses maximum air flow limits as a basis of judgment for the leaning effect of vapor injection devices. The established air flow limits are judged by the staff to not adversely affect the performance of the emission control system.

The applicant submitted two devices to the Air Resources Board for evaluation. Both devices had a 0.022-inch diameter orifice located on the outlet port. The air flow tests performed on the two submitted showed flow rates of 0.100 cfm and 0.240 cfm. Based on previous experience with a similar type of device, a 0.022-inch diameter orifice would permit a maximum flow of 0.100 cfm. The device having the high flow rate was found to have a secondary air leak on the outlet port. To prevent this problem from happening again, the applicant plans to flow test every device at 27 inches of Hg vacuum before offering the device for sale. The flow rate of 0.100 cfm is within the air flow limits established by the ARB staff.

V. Conclusion

The staff is of the opinion that the "H_2O Vapor Injector" incorporating the 0.022-inch diameter orifice would not have an adverse effect on the existing pollution control system.

Therefore, the staff recommends that the Dis-Aut Enterprises be granted an exemption from the prohibitions of Vehicle Code Section 27156 for its "H_2O Vapor Injector" on 1974 and older model-year vehicles.

FIGURE 1

"SCHEMATIC OF "H_2O VAPOR INJECTOR" DEVICE