

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-69-2
Relating to Exemptions under Section 27156
of the Vehicle Code

CONDENSATOR, INC.
Condensator Supplementary Carburetor
Models B and C

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 Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-5;

IT IS ORDERED AND RESOLVED: That the installation of the Condensator Supplementary Carburetor Models B and C manufactured by Condensator, Inc. has been found not to 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 the vehicles, by model, listed below:

Model B

- i) 1983 and older model-year gasoline powered motor vehicles equipped with either three-way catalyst with feed-back controls or oxidation catalyst emission controls.

Model C

- ii) 1983 and older model-year motor vehicles.

This Executive Order is valid provided that installation instructions for this device will not recommend tuning the vehicle to specifications different from those submitted by the device 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. Exemption of a kit shall not be construed as an exemption to sell, offer for sale, or advertise any component of a kit as an individual device.

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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 CONDENSATOR SUPPLEMENTARY CARBURETOR MODELS B AND C.

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.

Executed at El Monte, California, this 22nd day of June, 1983.


K. D. Drachand, Chief
Mobile Source Control Division

STATE OF CALIFORNIA
AIR RESOURCES BOARD

EVALUATION OF CONDENSATOR, INC.'S MODELS B AND C CONDENSATOR
SUPPLEMENTARY CARBURETOR FOR EXEMPTION FROM THE PROHIBITIONS
OF VEHICLE CODE SECTION 27156

MAY, 1983

STATE OF CALIFORNIA
AIR RESOURCES BOARD

Evaluation of Condensator, Inc.'s Models B and C Condensator
Supplementary Carburetor for Exemption from the Prohibitions
of Vehicle Code Section 27156

by

Mobile Source Control Division

State of California

Air Resources Board
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El Monte, CA 91731

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.)

SUMMARY

Condensator, Inc. has requested that their 1978 Executive Order D-69-1 be updated to include 1983 and older model-year vehicles and that their new Model C device receive limited exemption.

The Board performed comparative exhaust emission tests on the Model B device and an engineering evaluation of the Model C device and determined that neither device would reduce the effectiveness of the engine's emission control components for the vehicle models as requested.

The staff, therefore, recommends that the requested exemptions be granted and that Executive Order D-69-2 be adopted.

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STATE OF CALIFORNIA
AIR RESOURCES BOARD

Evaluation of Condensator, Inc.'s Models B and C Condensator Supplementary Carburetor for Exemption from the Prohibitions of Vehicle Code Section 27156

I. INTRODUCTION

Condensator, Inc., 2010 Trimble Way, Sacramento, CA 95825, has applied for update exemption for Model B and Model C Condensator Supplementary Carburetor. Exemption is sought for use of these devices on the vehicles, by model, listed below:

Model B

- i) 1983 and older model-year gasoline powered motor vehicles equipped with either three-way catalyst with feed-back controls or oxidation catalyst emission controls.

Model C

- ii) 1983 and older model-year motor vehicles.

The two models differ slightly in that the Model B is a combination air bleed and oil separator while the Model C is an oil separator only.

The Board performed comparative exhaust emissions tests on the Model B device and evaluated the operating principles of the Model C device. This report describes the test results and evaluation of both devices.

II. CONCLUSIONS

The results of the Board's comparative exhaust emission tests revealed that no significant emissions increase was found with the use of the Model B device. Testing was performed on a vehicle equipped with three-way catalyst and feed-back controls which could be sensitive to the effects of the device.

The Model C device was found, through an engineering evaluation, not to reduce the effectiveness of the pollution control devices found on vehicles in which the Model B is not applicable.

III. RECOMMENDATIONS

Based on no adverse emissions impact with the use of either Model B or Model C Condensator Supplementary Carburetor, the staff recommends that Condensator, Inc., be granted exemption from the prohibitions in Vehicle Code Section 27156 for the vehicles as requested and that Executive Order B-69-2 be adopted.

IV. DEVICE DESCRIPTION

The Condensator Supplementary Carburetor Models B and C are similar in appearance. Both have a metal body with three internal passages leading through an absorbant separator containing small beads retained by wire mesh to an enclosed collector. Two of the passages allow for a series connection to the vacuum hose of the positive crankcase ventilation (PCV) system between the PCV valve and intake manifold. The third passage is vented to the atmosphere and has a 0.040 inch fixed orifice. The collector is a one quart glass jar with a threaded mouth which screws onto the bottom of the metal body. The external opening of each passage is threaded to accept a fitting. The Model C maintains the same two connections to the PCV system but seals the third passage to the air bleed vent.

In operation, blow-by gases from the crankcase which normally are pulled into the intake manifold are routed through the device. The crankcase gases combined with suspended oil particles are separated as they circulate in the device. The entrapped oil is accumulated at the bottom of the jar while the gases proceeds to the intake manifold. The manifold vacuum also pulls air

into the device through the device's air bleed vent. The incoming air combines with the crankcases gases and dilutes them. The diluted blow-by gases is then mixed with the fresh air/fuel mixture in the intake manifold and is subsequently burned during combustion in the cylinders.

V. TEST PROGRAM

Two test vehicles were selected for the evaluation of the Condensator Model B device. Each vehicle was chosen from local rental fleets and is described in Table 1. Comparative CVS-75 tests were run, two tests without the device (baseline) and two tests with the device, for direct comparison. All tests were performed according to the procedures as given in the Code of Federal Regulations Part 86:00.

The averaged comparative exhaust emission and fuel economy results are found in Table 2. All tests were performed at the Board's Haagen-Smit Laboratory in El Monte, California.

Table 1

Vehicle I. D.

<u>Description</u>	<u>Vehicle # 1</u>	<u>Vehicle # 2</u>
Year	1982	1982
Make	Ford	Chevrolet
Model	Fairmont	Chevette
Engine Size	200 CID	98 CID
Engine Family	CFMM3.3V1GXC6	C1G1.6VZNEAX
Emission Controls	AIR, EGR, TWC	AIR, EGR, TWC/CL
Transmission Type	A-3	A-3
Odometer Mileage	20K	10K

Table 2
Averaged CVS-75 Results

	<u>Exhaust Emissions in gm/mi</u>			<u>Fuel Economy in mi/gal</u>	
	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>City</u>	<u>Highway</u>
Vehicle #1					
Baseline	0.41	3.8	0.64	17.4	24.0
Device	0.42	3.5	1.26	17.9	24.3
Vehicle #2					
Baseline	0.24	1.1	0.56	26.2	36.6
Device	0.22	1.5	0.65	25.7	35.9

VI. DISCUSSION

The Board has evaluated Condensator devices since their inception in 1976. The earliest Condensator device, the Model A, is similar to the present Model B device except that it uses a 0.060 inch orifice air bleed vent. The size of the orifice used in the Condensator devices is of concern. Late model-year vehicles are calibrated to operate on precise adjustments of the engine's emission controlling components. The addition of an air bleed vent may upset the designed function of these components and may cause emissions to increase. Such was the case for Vehicle #1 when tested with the device, its comparative NOx emissions increased. The probable reason for the NOx increase is the resulting leaner air/fuel ratio as evident from the decrease in CO emissions, and the effect it had on the performance of the three-way catalyst. The comparative emissions of Vehicle #2 were not adversely affected with the use of the device. This, possibly is due to the feed-back controls which compensate, within their limit of authority, for the changes in air/fuel ratio caused by the device.

Since it was found through this evaluation that the device adversely affects some vehicles and does not affect others, the application of the device was subsequently changed from the original request. The revised application requests that the Model B be used only on vehicles which have compensating feed-back controls (like Vehicle #2) and ones not equipped with TWC only (like Vehicle #1) while the Model C device be used on all other vehicles.

The Model C is a simple oil separator. The oil separator portion of the device has been appraised by staff not to reduce the effectiveness of the PCV system and therefore does not cause an adverse emissions impact. The applicant's claimed benefit for the device is to prevent engine oil from reaching the cylinders and forming carbon deposits.

During the Board's evaluation of the Model B device which accumulated approximately 100 miles of use on each vehicle, the collectors were inspected for oil deposits. One vehicle was found to have a trace of oil in the collector while the other had none. There seems no short term benefit of removing oil from the crankcase gases as apparent from the comparative exhaust emissions or the fuel economy results. It is not known, however, from this evaluation if long term benefits could be obtained with the device.