

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-75-8  
Relating to Exemptions under Section 27156  
of the Vehicle Code

CAGLE CORPORATION  
"CAGLE MARK II AUTOMATIC FUEL CONTROL" DEVICE

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 "Cagle Mark II Automatic Fuel Control" device manufactured by Cagle Corporation, 2667 East 28th Street, Suite 517, Long Beach, California 90806 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 1985 and older model-year motor vehicles that are powered by gasoline with conventional carburetors and mechanical or electric fuel pumps with and without recirculation systems.

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.

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 "CAGLE MARK II AUTOMATIC FUEL CONTROL" 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 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.

Executive Order No. D-75-7, dated July 6, 1984, is superseded and of no further force and effect.

Executed at El Monte, California, this 16<sup>th</sup> day of May, 1985.



K. D. Drachand, Chief  
Mobile Source Division

STATE OF CALIFORNIA

AIR RESOURCES BOARD

EVALUATION OF "CAGLE CORPORATION MARK II AUTOMATIC  
FUEL CONTROL" DEVICE FOR EXEMPTION FROM THE  
PROHIBITIONS IN VEHICLE CODE SECTION 27156 IN  
ACCORDANCE WITH SECTION 2222, TITLE 13 OF THE  
CALIFORNIA ADMINISTRATIVE CODE

May 14, 1985

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by

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(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

Cagle Corporation requested an update of their existing exemption, Executive Order (E.O.) No. D-75-7, from the prohibition in Vehicle Code Section 27156 for their "Cagle Mark II Automatic Fuel Control" fuel pressure regulator for automobiles. In particular, Cagle requested that the 1984 and older model-year carbureted vehicle exemptions be updated to include all 1985 model-year gasoline-powered vehicles with conventional carburetors.

Based on previous emissions tests performed on 1979 model-year vehicles, and an engineering evaluation of 1979 through 1985 model-year vehicle's fuel systems, the staff has concluded that the Cagle fuel pressure regulator will have no adverse effect on emissions from 1985 model year automobile.

The staff recommends granting Cagle's request to update the Section 27156 exemption to include 1985 model-year vehicles equipped with conventional carburetors.

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Evaluation of "Cagle Corporation Mark II Automatic Fuel Control" Device for Exemption from the Prohibitions in Vehicle Code Section 27156 in Accordance with Section 2222, Title 13 of the California Administrative Code

I. INTRODUCTION

Cagle Corporation of 2667 East 28th Street, Suite 517, Long Beach California 90806 requested by letter dated May 1, 1985, an update of the existing Air Resources Board's Executive Order No. D-75-7. The applicant requested that the exemption from the prohibitions in Vehicle Code Section 27156 for their "Cagle Mark II Automatic Fuel Control" device be updated to include all 1985 and older model-year motor vehicles that are powered by gasoline engines with conventional carburetors and mechanical or electrical fuel pumps with and without fuel recirculation systems. E.O. No. D-75-7 exempts 1984 and older model-year vehicles of this type.

II. CONCLUSION

Previous Air Resources Board (ARB) confirmatory emissions tests showed that the use of the "Cagle Mark II Automatic Fuel Control" device did not have an adverse effect on the exhaust emission control system of 1979 model-year vehicles. An exemption from the Vehicle Code for 1979 and older model-year vehicles was granted.

The manufacturer was granted updates of the E.O. to include 1980 through 1984 model-year vehicles on the basis that the vehicles' fuel systems on 1979 through 1984 were similar in design.

An engineering evaluation of the vehicles' fuel system designs on 1985 model-year vehicles indicates that the use of the Cagle device should not have an adverse effect on 1985 model-year vehicles.

### III. RECOMMENDATIONS

Based on the above, the staff concludes that the "Cagle Mark II Automatic Fuel Control" device meets the criteria for an exemption from the prohibitions in Vehicle Code Section 27156 for 1985 and older model vehicles that are powered by gasoline engines with conventional carburetors and mechanical or electrical fuel pumps with or without fuel recirculation system. The staff, therefore, recommends that Executive Order No. D-75-8 be issued to Cagle Corporation.

### IV. DEVICE DESCRIPTION AND OPERATION

The "Cagle Mark II Automatic Fuel Control" is a fuel pressure regulator installed between the fuel pump and the carburetor. The device has three external fittings: (1) a fitting at the top for measuring intake manifold vacuum, (2) an inlet fitting marked "PUMP" for connection to the fuel pump, and (3) an outlet fitting marked "CARB" for connection to the carburetor. It is designed to reduce the fuel supply pressure under low fuel demand conditions but still maintain the required fuel flow to the carburetor under all operating modes. The device is controlled by intake manifold vacuum operating on a spring balanced Buna-N diaphragm.

A cross sectional view of the device is shown in the Appendix.

For a more detailed description of the device and its operation, the reader is referred to ARB Staff Report dated December 17, 1980, entitled "Cagle Corporation Mark II Automatic Fuel Control Device for Compliance with the Requirements of Section 27156 of the Vehicle Code".

### V. DISCUSSION

Prior to issuing Executive Order No. D-75-2 (which exempted 1979 and older model-year vehicles) the staff performed comparative exhaust



emissions tests on a 1979 Ford Fairmont with a 302 CID engine and on a 1979 Chevrolet with a 231 CID engine. The results of these tests were as follows:

1979 Ford Fairmont  
ARB Emission Data - Cold Start CVS-75

	Exhaust Emissions (Grams per miles)			Fuel Economy (mpg)
	HC	CO	NOx	
Baseline	0.492	3.37	2.46	15.2
Device	0.517	3.65	2.48	15.2

1979 Chevrolet Malibu  
ARB Emission Data - Cold Start CVS-75

	Exhaust Emissions (Grams per miles)			Fuel Economy (mpg)
	HC	CO	NOx	
Baseline	0.440	9.43	0.89	15.2
Device	0.353	6.21	0.89	16.0

In addition, fuel pressure measurements were taken before and after the regulator for various manifold vacuums. The results were as follows:

Manifold Vacuum (inches Hg)	Fuel Pressure (#/in <sup>2</sup> )		Change in Pressure
	Before Regulator	After Regulator	
15	4.2	2.55	1.65
13	4.2	2.50	1.70
11	4.2	2.50	1.70
9	4.2	3.05	1.15
7	4.2	3.70	0.50
5	4.2	3.88	0.32
3	3.6	3.60	0.00

Through a series of letters covering several years, the applicant requested that the exemption be updated to include 1980 through 1984 model-year vehicles, respectively. In response to those requests, the staff compared the vehicle's fuel system design on 1979 through 1984 model-year vehicles. Since no significant differences that could adversely affect exhaust emissions were noted, no additional tests were requested for the updates.

In response to this request, the staff compared the vehicle's fuel system on 1979 through 1985 model-year vehicles. No significant differences were noted between the vehicles' fuel system design even though newer cars tend to operate more fuel efficient. The staff, therefore again, did not recommend or perform any additional tests.

APPENDIX

