

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-75-4  
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 E. 28th St., 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 1981 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 Orders D-75 dated June 13, 1977, D-75-1 dated September 21, 1979, D-75-2 dated August 15, 1979 and D-75-3 dated January 1, 1981 are superseded and of no further force and effect.

Executed at El Monte, California, this 20<sup>th</sup> day of August, 1981.

  
K. D. Drachand, Chief  
Mobile Source Control Division

State of California  
AIR RESOURCES BOARD

Staff Report

August 10, 1981

Evaluation of "Cagle Corporation Mark II Automatic Fuel Control" Device for Compliance with the Requirements of Section 27156 of the Vehicle Code

I. INTRODUCTION

Cagle Corporation of 2667 East 28th Street, Suite 517, Long Beach California 90806 requested by letter dated June 15, 1981 (See Appendix A) an update of the existing Air Resources Board's Executive Order No. D-75-3. The applicant requested that the exemption from the prohibitions of Vehicle Code Section 27156 for their "Cagle Mark II Automatic Fuel Control" device be updated to include all 1981 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.

II. DEVICE DESCRIPTION AND OPERATION

The "Cagle Mark II Automatic Fuel Control" is a fuel pressure regulator installed between the fuel pump and the carburetor. It 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 the intake manifold vacuum operating on a spring balanced Buna-N diaphragm.

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

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

### III. 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

|          | <u>Grams per miles</u> |           |            |
|----------|------------------------|-----------|------------|
|          | <u>HC</u>              | <u>CO</u> | <u>NOx</u> |
| Baseline | 0.492                  | 3.37      | 2.46       |
| Device   | 0.517                  | 3.65      | 2.48       |

1979 Chevrolet Malibu  
ARB Emission Data - Cold Start CVS

|          | <u>Grams per miles</u> |           |            |
|----------|------------------------|-----------|------------|
|          | <u>HC</u>              | <u>CO</u> | <u>NOx</u> |
| Baseline | 0.440                  | 9.43      | 0.89       |
| Device   | 0.353                  | 6.21      | 0.89       |

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

| <u>Manifold Vacuum<br/>(inches Hg)</u> | <u>Fuel Pressure (#/in<sup>2</sup>)</u> |                        | <u>Change<br/>in Pressure</u> |
|--|---|------------------------|-------------------------------|
|  | <u>Before Regulator</u>                 | <u>After Regulator</u> |                               |
| 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                                     | 3.6                    | 0                             |

Then on September 9, 1980, the applicant requested, via letter, that the Executive Order be updated to include 1980 model-year vehicles. In response to that request, the staff compared the vehicle's fuel system design on some 1979 and 1980 model-year vehicles. Since no significant differences, that could adversely affect exhaust emissions, were noted, no additional tests were requested for the update.

In response to this request, the staff compared the vehicle's fuel system on some 1981, 1980 and 1979 model-year vehicles. No significant differences were noted between the vehicle's fuel system design even though newer cars tend to operate more fuel efficient. The staff, therefore again, did not recommend or performed any additional tests.

V. CONCLUSION AND RECOMMENDATION

Previous 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. The staff then granted an exemption from the Vehicle Code for 1979 and older.

An update to include 1980 model year vehicles was granted on the basis that the vehicles fuel system on 1979 and 1980 were similar in design.

An engineering evaluation of the vehicle's fuel system design on 1981, 1980, and 1979 indicate that the use of the Cagle device should not have an adverse effect on 1981 model-year vehicles.

Based on the above, the staff concluded that granting the Cagle Corporation an exemption from the prohibitions of the Vehicle Code Section 27156 for its "Cagle Mark II Automatic Fuel Control" device for 1981 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 is justified. The staff, therefore, recommends that Executive Order No. D-75-4 be adopted.



APPENDIX A:

ONE (213) 595-4987  
or (213) 426-8483



## Cagle Corporation

2667 E. 28th St., Suite 517 - Long Beach, Ca. 90806

June 15, 1981

K. D. Drachand, Chief  
Mobile Source Control Division  
Air Resources Board, State of California  
9528 Telstar Avenue  
El Monte, California 91731

Dear Mr. Drachand:

Cagle Corporation, a Nevada Corporation qualified and authorized to transact business in the state of California, hereby requests an update of their existing exemption of Section 27156 of the California Vehicle Code granted January 6, 1981 for 1980 and older model year vehicles that are powered by gasoline engines with conventional carburetors and mechanical or electric fuel pumps with and without fuel recirculation systems. Update to include all 1981 and older model year vehicles that meet the aforementioned criteria.

Completed Exemption Application VC 27156, including Exhibits A & B are enclosed.

Yours truly,

CAGLE CORPORATION

A handwritten signature in cursive script that reads 'Gene C. Allen'.

Gene C. Allen, P.E.  
Engineering

GCA/e  
encl.

APPENDIX B:

