

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-75-10  
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 1987 and older model-year motor vehicles that are powered by gasoline engines with conventional carburetors and mechanical or electric fuel pumps with and without fuel 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-75-9, dated April 22, 1986, is superseded and of no further force and effect.

Executed at El Monte, California, this 22<sup>nd</sup> day of April, 1987.

  
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

April, 1987

Issue Date: April, 1987

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by

Mobile Source Division

State of California

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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-75-9, 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 1986 and older model-year carbureted vehicle exemptions be updated to include all 1987 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 1987 model-year vehicles' fuel systems, the staff has concluded that the Cagle fuel pressure regulator will have no adverse effect on emissions from applicable 1987 model-year automobiles.

The staff recommends granting Cagle's request to update the Vehicle Code Section 27156 exemption to include 1987 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 an update of the existing Air Resources Board's Executive Order (E.O.) No. D-75-9. 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 1987 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-75-9 exempts 1986 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 specified 1979 model-year vehicles. An exemption from the Vehicle Code Section 27156 for 1979 and older model-year vehicles was granted.

The manufacturer was granted updates of the E.O. to include applicable 1980 through 1986 model-year vehicles on the basis that the vehicles' fuel systems on 1979 through 1986 were similar in design.

An engineering evaluation of the vehicles' fuel systems on applicable 1987 model-year vehicles indicates that it is similar in design to that of 1986 vehicles; the use of the Cagle device, therefore, should not have an adverse effect on applicable 1987 model-year vehicles either.

### 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 1987 and older model vehicles that are powered by gasoline engines with conventional carburetors and mechanical or electrical fuel pumps with or without fuel recirculation systems. The staff, therefore, recommends that E. O. No. D-75-10 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 (see the Appendix A for a cross sectional view of the device).

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".

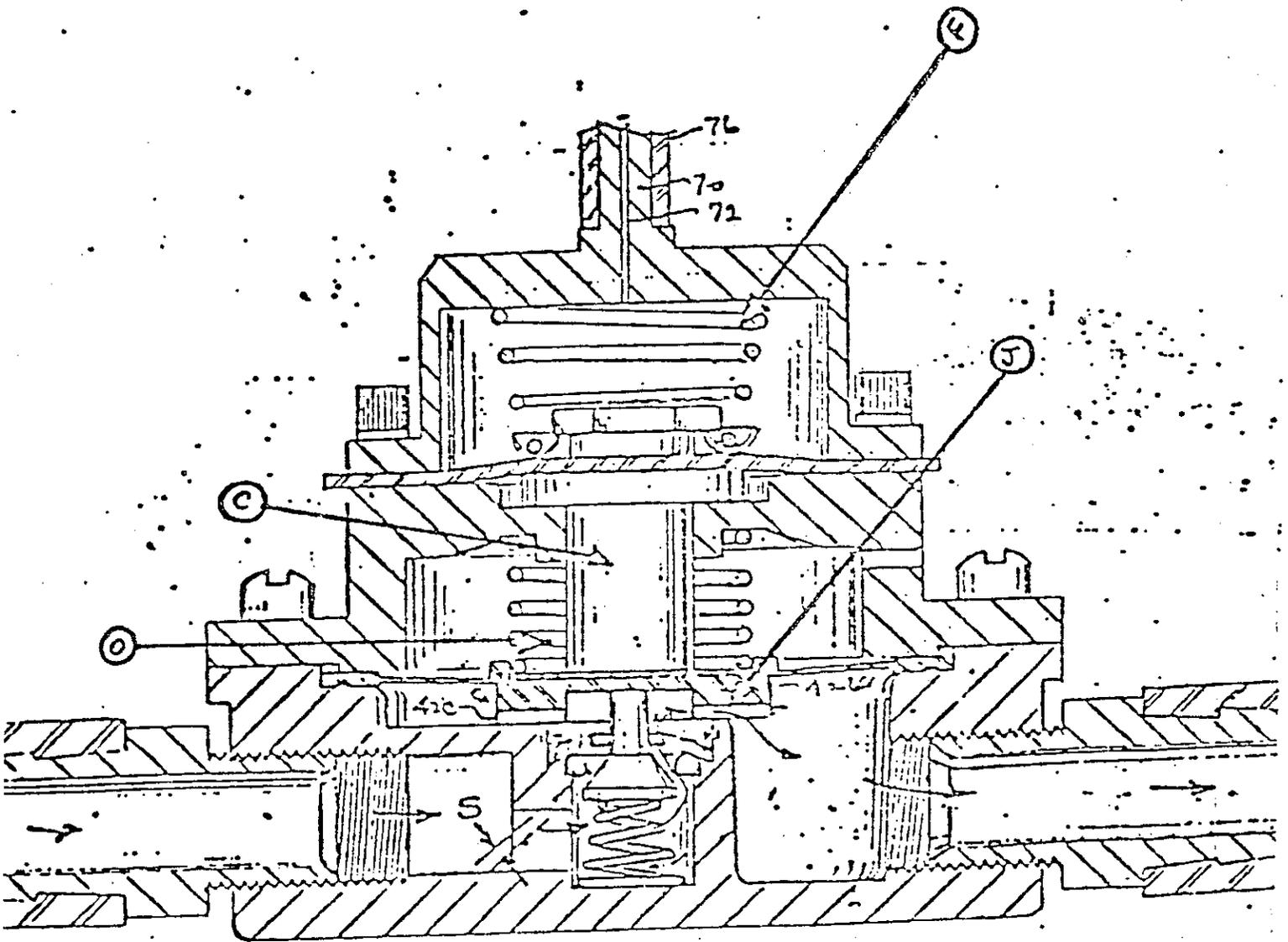
V. DISCUSSION

The staff previously 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. Based on the test results, the staff concluded that the Cagle device would not have an adverse effect on 1979 and older model-year vehicles with conventional carburetors and mechanical or electrical fuel pumps with and without fuel recirculation systems. The manufacturer was granted updates of the E.O. to include applicable 1980 through 1986 model-year vehicles on the basis that the vehicles' fuel systems on 1979 through 1986 were similar in design.

In response to Cagle's request that their existing E. O. D-75-9 be updated to include all 1987 and older model-year vehicles that are powered by gasoline engines with conventional carburetors and mechanical or electrical fuel pumps with and without fuel recirculation systems, the staff compared the vehicles' fuel systems on 1986 through 1987 model-year vehicles. No significant differences were noted between the vehicles' fuel systems design even though newer cars tend to operate more fuel efficient. The staff concluded that the Cagle device would not have an adverse effect on applicable 1987 model-year vehicles and, therefore, did not recommend or perform any additional tests.

APPENDICES

APPENDIX A





## INSTRUCTIONS FOR INSTALLATION

### Cagle Mark II Automatic Fuel Control System

General Motors vehicles, 1976 or newer, may have a roll over or check valve in the center of the filter behind the inlet nut on the carburetor. If this is the case, use the unit in the box labeled: "GM 1976 and newer with check valve in filter." (See illustration at left.)

1. Locate the metal line that runs between the Fuel Pump and the Carburetor and cut it at the most convenient place but not closer than two inches from the Carburetor so that the connecting hose from the Cagle Unit can be forced at least one inch onto the cut end of the line into the Carburetor. Use a tubing cutter.

**NOTE:** Some vehicles have a length of hose already installed into the Carburetor. In this case, remove the hose connections from the Cagle unit and install it directly in the vehicle hose line by cutting out the proper space to accommodate the unit. This should be done so that the cut ends of the hose can be forced all the way onto each brass fitting with screw clamps securely tightened.

2. Where the line is all metal to the Carburetor, cut out a sufficient gap in the metal line to replace it with the Cagle Unit with its connecting hoses attached and still allow each remaining hose end to be forced onto its respective metal line at least one inch before securely tightening screw clamps.

**IMPORTANT:** Be sure to install the Cagle Unit with the inlet marked "PUMP" connected to the line from the Fuel Pump. Likewise, the outlet marked "CARB" should be connected with the line going to the Carburetor. Make sure there are no sharp edges or dirt in the fuel line before installing hoses.

3. Connect one end of the Small Black Hose to the top opening on the Cagle Unit and the other end to a PRIMARY VACUUM SOURCE from the Intake Manifold. (**CAUTION: DO NOT CUT INTO THE SECONDARY SOURCE TO DISTRIBUTOR BY MISTAKE**). Small "tee" is provided for use where it is necessary to tie into an existing line from the Manifold. Best results will be obtained when the engine is operating as close as possible to factory specifications, i.e., fuel pump pressure, timing, clean filters and good vacuum.

**CAUTION:** MAKE SURE ALL CLAMPS ARE SECURELY TIGHTENED ON EACH CONNECTION. Start engine and run about 30 seconds. Check IMMEDIATELY for any Leaks. (NOT RESPONSIBLE FOR FAULTY INSTALLATION). DO NOT LUBRICATE OR ATTEMPT TO ADJUST THE CAGLE UNIT.

Mileage may vary due to driving habits or vehicle condition.

