

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-482-1  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

MIRENCO  
DRIVERMAX

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 39515 and Section 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the installation of the DriverMax, manufactured and marketed by Mirencos, P.O. Box 343, 206 May Street, Radcliffe, Iowa 50230, has been found not to reduce the effectiveness of the applicable vehicle pollution control system and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1999 model-year and older heavy-duty diesel vehicles equipped with electronic throttle control.

The DriverMax includes the following main components: DriverMax controller, and wiring harness.

This Executive Order is valid provided that the installation instructions for the DriverMax will not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

This Executive Order shall not apply to any DriverMax advertised, offered for sale, or sold with or installed on, a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

Changes made to the design or operating conditions of the DriverMax system, as exempt by the Air Resources Board, which adversely affect the performance of the vehicle's pollution control system shall invalidate this Executive Order.

Marketing of the DriverMax using any identification other than that shown in this Executive Order or marketing of the DriverMax 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 the DriverMax shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

This Executive Order does not constitute any opinion as to the effect the use of the DriverMax may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on an engineering evaluation of the DriverMax, and the emissions impact with device installed. However, the ARB finds that reasonable grounds exist to believe that use of the Mirencos DriverMax may adversely affect emissions of motor vehicles when operating under conditions outside the parameters of Federal Test Procedures. Accordingly, the ARB reserves the right to conduct additional emission tests, in the future, as such tests are developed, that will more adequately measure emissions from all cycle phases. If such test results demonstrate that the Mirencos DriverMax adversely affects emissions during off-cycle conditions (defined as those conditions which are beyond the parameters of the Federal Test Procedure), this Executive Order shall be effectively rescinded as of the date the test results are validated. Further, if such test results or other evidence provides the ARB with reason to suspect that the DriverMax will affect the durability of the emission control system, Mirencos shall be required to submit durability data to show that the durability of the vehicle emission control system is not, in fact, affected and/or that the add-on or modified part demonstrates adequate durability.

In addition to the foregoing, the ARB reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations, Section 2222, et seq.

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 MIRENCO'S DRIVERMAX.

No claim of any kind, such as "Approved by the Air Resources Board", may be made with respect to the action taken herein in any advertising or other oral or written communication.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after a ten-day written notice of intention to revoke the order, in which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the order may not be revoked until a determination after hearing that grounds for revocation exist.

Executed at El Monte, California, this 7<sup>th</sup> day of June 1999.



R. B. Summerfield, Chief  
Mobile Source Operations Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF MIRENCO'S  
DRIVERMAX  
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE  
CALIFORNIA CODE OF REGULATIONS

June 1999

by

Mobile Source Operations Division  
9528 Telstar Avenue  
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

Mirencos of P.O. Box 343, 206 May Street, Radcliffe, Iowa 50230, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the DriverMax designed for 1999 model-year and older heavy-duty diesel vehicles equipped with electronic throttle control.

Based on engineering evaluation with the DriverMax installed, the staff concludes that the Mirencos DriverMax system will not adversely affect exhaust emissions from vehicles for which the exemption is requested.

The staff recommends that Mirencos be granted an exemption as requested and that Executive Order D-482-1 be issued.

TABLE OF CONTENTS

	Page Number
SUMMARY	i
CONTENTS	ii
I. INTRODUCTION	1
II. CONCLUSION	1
III. RECOMMENDATION	1
IV. DRIVERMAX DESCRIPTION	1
V. DISCUSSION OF THE DRIVERMAX	2

EVALUATION OF MIRENCO'S  
DRIVERMAX  
FOR AN EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE  
CALIFORNIA CODE OF REGULATIONS

I. INTRODUCTION

Mirencos of P.O. Box 343, 206 May Street, Radcliffe, Iowa 50230, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the DriverMax system designed for 1999 model-year and older heavy-duty diesel vehicles equipped with electronic throttle control.

II. CONCLUSIONS

Based on engineering evaluation of the DriverMax, the staff concludes that Mirencos's DriverMax will not adversely affect exhaust emissions from the vehicles for which the exemption is requested.

III. RECOMMENDATION

The staff recommends that Mirencos be granted an exemption for their DriverMax system for installation on the applicable 1999 model-year and older heavy-duty diesel vehicles equipped with electronic throttle control. The staff also recommends that Executive Order D-482-1 be issued.

IV. DRIVERMAX DESCRIPTION

The Mirencos DriverMax is an electronic throttle modulator that has been designed to delay maximum engine output as a means of improving fuel economy, reducing engine wear, and increase vehicle durability. The DriverMax delays throttle delay in a non-linear fashion that has been claimed to have no adverse effect on vehicle acceleration. The Mirencos DriverMax has been specifically designed for 1999 model-year and older heavy-duty diesel vehicles equipped with electronic throttle control. Each

system operates in conjunction with the original equipment manufacturer's (OEM) computer controlled fuel injection system and emission control system already certified with the stock engine.

#### V. DISCUSSION OF THE DRIVERMAX

The intent of installing the DriverMax is to delay throttle response to driver input as the engine approaches maximum output. Under normal operation, driver demand at the accelerator pedal often exceeds the capacity of the heavy-duty diesel engine to accelerate the vehicle (i.e., truck/bus). Drivers may "floor" the accelerator to accelerate from rest to merge with city traffic, but the throttle position/fuel delivery may exceed the demand of the engine and result in high transient particulate emissions (smoke). The DriverMax delays higher engine output in order to reduce smoke emissions and fuel consumption, but retaining stock vehicle acceleration. Per Mirencó, pilot studies conducted in various city bus fleets have gone without detection by bus drivers.

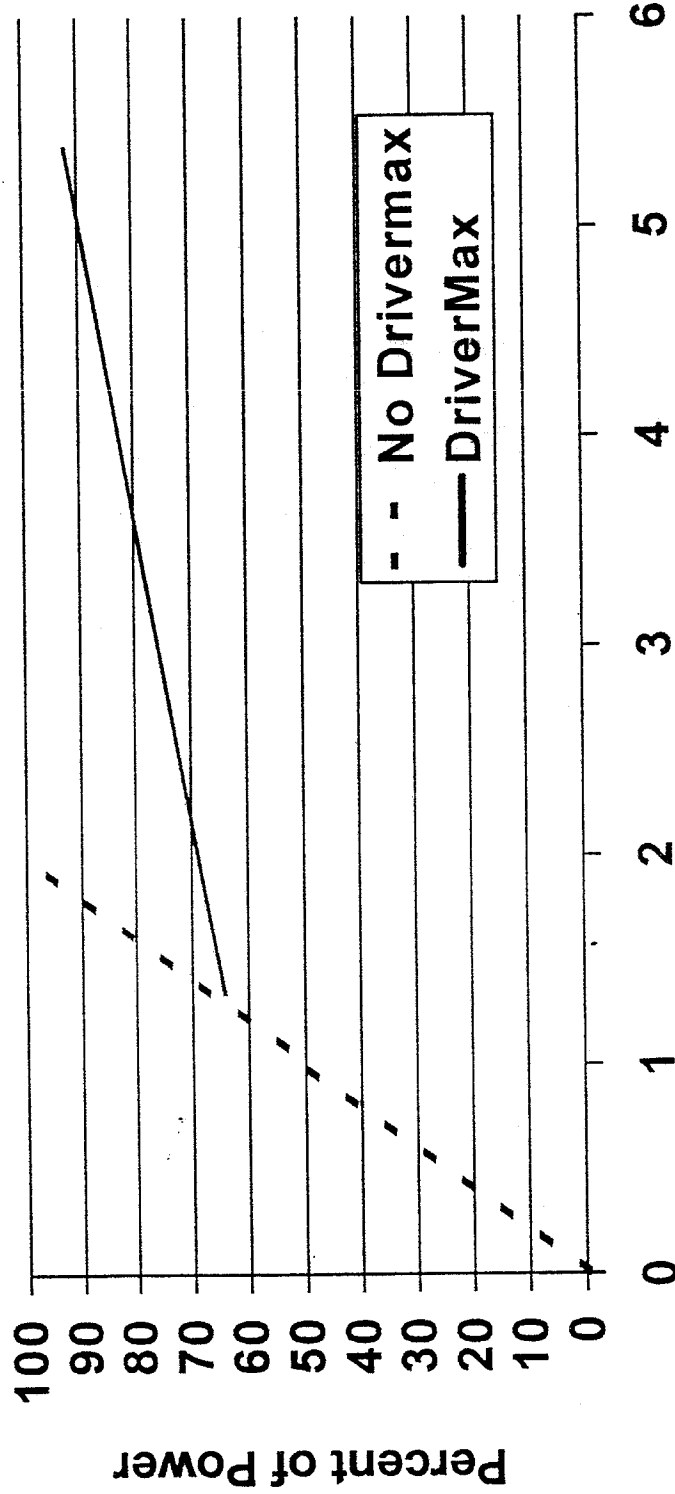
Stock electronic throttle control systems delay throttle response in a linear fashion. The DriverMax delays throttle response in a nonlinear fashion as the engine approaches peak output (see attached figure). The delay of the higher output portion of the throttle response is the basis for Mirencó's claims of increased fuel economy.

Therefore, based on engineering evaluation, the staff concludes that the Mirencó DriverMax meets the requirements for VC 27156 exemption of general criteria parts. However, the ARB finds that reasonable grounds exist to believe that use of the Mirencó DriverMax may adversely affect emissions of motor vehicles when operating under conditions outside the parameters of the previously prescribed test procedure.

Mirencó has submitted all the required information and fulfilled the requirements for an exemption.

# ACTUAL ONGOING TRANSIT AUTHORITY

## DriverMax Settings (Bus 4839)



Seconds Lapsed

**Min - 3.0v - 65%**  
**Max - 4.28v - 90.8%**  
**5.5 Seconds - 9/30/97**