

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-195-3  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

PAXTON PRODUCTS, INC.  
SUPERCHARGER KIT MODEL NO. SN-89, PART NO. 10018

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 add-on supercharger kit model number SN-89, part number 10018, manufactured by Paxton Products, Inc., of 929 Olympic Blvd., Santa Monica, California 90404, has been found not to reduce the effectiveness of the application vehicle pollution control system and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1986-1990 model-year Ford Motor Company passenger cars powered by a 302 CID (5.0L) electronic fuel injection engine.

This Executive Order is valid provided that installation instructions for this supercharger kit will not recommend tuning the vehicle to specifications different from those submitted by Paxton Products, Inc.

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

Marketing of this supercharger kit using any identification other than that shown in this Executive Order or marketing of this supercharger kit 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 supercharger kit 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 that the use of this supercharger kit 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 PAXTON PRODUCTS, INC. SUPERCHARGER KIT MODEL NO. SN-89, PART NO. 10018.

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.

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 D-195-2 dated October 27, 1989 is superseded and of no further force and effect.

Executed at El Monte, California, this 4<sup>th</sup> day of December, 1989.

  
K. D. Drachand, Chief  
Mobile Source Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF PAXTON PRODUCTS, INC.'S ADD-ON SUPERCHARGER KIT  
MODEL NO. SN-89 FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE  
CALIFORNIA CODE OF REGULATIONS

November, 1989

EVALUATION OF PAXTON PRODUCTS, INC.'S ADD-ON SUPERCHARGER KIT  
MODEL NO. SN-89 FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE  
CALIFORNIA CODE OF REGULATIONS

by

Mobile Source Division  
State of California  
Air Resources Board  
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

Paxton Products, Inc. (Paxton) of 929 Olympic Blvd., Santa Monica, California 90404, has applied for an update of the exemption, Executive Order D-195-2, for their add-on supercharger kit model number SN-89, part number 10018 to include all 1986-1990 model-year Ford Motor Company passenger cars powered by a 302 CID (5.0L) electronic fuel injection (EFI) engine.

Paxton had previously submitted data from comparative emission tests conducted on a 1989 Ford Mustang powered by a 302 CID EFI engine at Automated Custom Systems, Inc. Confirmatory tests were conducted on the same vehicle at the Air Resources Board's (ARB's) Haagen-Smit Laboratory.

Based on the results from previous comparative emission tests performed by Automated Custom Systems, Inc. and confirmed by the ARB, the staff concluded that Paxton's add-on supercharger kit will not adversely affect exhaust emissions from vehicles for which exemption was requested.

The staff recommends that Paxton be granted the update for their add-on supercharger kit model number SN-89, part number 10018, for installation on 1986-1990 model-year Ford Motor Company passenger cars powered by a 302 CID EFI engine, and that Executive Order D-195-3 be issued.

## TABLE OF CONTENTS

	<u>Page Number</u>
SUMMARY	i
TABLE OF CONTENTS	ii
I. INTRODUCTION	1
II. CONCLUSION	1
III. RECOMMENDATIONS	1
IV. SUPERCHARGER KIT DESCRIPTION	2
V. SUPERCHARGER KIT EVALUATION	3
VI. DISCUSSION	4

EVALUATION OF PAXTON PRODUCTS, INC'S ADD-ON SUPERCHARGER KIT MODEL NO. SN-89, PART NO. 10018 FOR EXEMPTION FROM THE PROHIBITIONS IN VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTIONS 2222, TITLE 13, OF THE CALIFORNIA CODE OF REGULATIONS

I. INTRODUCTION

Paxton Products, Inc. (Paxton), of 929 Olympic Blvd., Santa Monica, California 90404, has applied for an update of the exemption for their add-on supercharger kit model number SN-89, part number 10018 to include all 1986-1990 Ford Motor Company passenger cars powered by a 302 CID electronic fuel injection (EFI) engine. The existing exemption covers 1986-1990 Ford Mustangs only. The exemption update will include passenger cars belonging to the same engine family: LTD Crown Victoria, LTD Crown Victory Wagon, Grand Marquis Wagon, Grand Marquis, Mustang, Mark VII, and Town Car as indicated in the Ford Motor Company vehicle certification.

II. CONCLUSION

Paxton has previously submitted data on comparative stock baseline versus supercharged emission tests conducted on a 1989 Ford Mustang powered by a 302 CID EFI engine at Automated Custom Systems, Inc. of Orange, California. Confirmatory tests were conducted on the same vehicle at the ARB's Haagen-Smit Laboratory in El Monte, California. Since the update will include only those vehicles belonging to the same engine family for which an exemption has been granted, no testing is required. Based on the comparative emission tests previously performed by Automated Custom Systems, Inc. and confirmed by the ARB the staff concluded that Paxton's add-on supercharger kit would not adversely affect exhaust emissions from vehicles for which the exemption was requested.

III. RECOMMENDATIONS

The staff recommends that Paxton be granted the update for their add-on supercharger kit model number SN-89, part number 10018 for installation on 1986-1990 Ford Motor Company passenger cars powered by a 302 CID EFI engine. The staff also recommends that Executive Order D-195-3 be issued.

#### IV. SUPERCHARGER KIT DESCRIPTION

The Paxton supercharger kit is specifically designed for installation on 1986-1990 Ford Motor Company passenger cars powered by a 302 CID EFI engine. The kit operates in conjunction with the original equipment manufacturer (OEM) computer controlled electronic port fuel injection and emission control systems already certified with the stock engine. The purpose of supercharging an engine is to increase the volumetric efficiency of the engine by forcing more air into the engine than it would consume in normal aspirated, non-supercharged condition. This is accomplished by the addition of a centrifugal blower, Paxton Model No. SN-89, that is belt driven at 1.5 times the speed of the engine. Intake air is delivered from the OEM air filtering system to the centrifugal blower. It is then compressed by the supercharger and routed to the throttle body of the electronic fuel injection system. Maximum positive manifold pressure or boost is limited to 5 psig by the blower scroll housing and the impeller design. No wastegate or other active boost limiting device is used.

To provide additional fuel to maintain the proper air/fuel ratio during boost conditions a fuel control unit is added. At boost, a positive pressure of about 1 psi induced by the supercharger causes an increase of the static pressure in the fuel return line beyond the maximum 34 psi of the OEM fuel pressure regulator. The fuel control unit has a set static pressure of 70 psi. This condition causes an increase in air/fuel charge, while maintaining the proper air/fuel ratio.

The blower is self lubricated by a piston-type oil pump. The oil sump has a capacity of 12 fluid ounces and uses type "F" automatic transmission fluid. All OEM emission controls are left intact.



## V. SUPERCHARGER KIT EVALUATION

A 1989 Ford Mustang powered by a 302 CID electronic port fuel injected engine was used for the evaluation of the supercharger kit. The dynamometer inertia weight and loading used during the testing were 3,625 lbs. and 9.0 hp, respectively.

Comparative emission tests conducted by Automated Custom Systems, Inc., and the ARB consisted of back-to-back cold-start CVS-75 emission tests. Additionally, comparative Highway Fuel Economy Tests (HFET) were conducted by the Automated Custom Systems, Inc. and the ARB. These tests were used to determine exhaust emissions and fuel economy in the unmodified and supercharged configurations for comparison. The test results are shown below:

Table 1

### Exhaust Emissions Test Results from Automated Custom Systems, Inc.

<u>Test Mode</u>	<u>Exhaust Emissions (gm/mi)</u>			<u>Fuel Economy (mpg)</u>
	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>City</u>
Baseline	0.203	0.753	0.519	17.655
Baseline	0.222	0.882	0.513	17.757
Average	0.213	0.818	0.516	17.706
Device	0.218	0.679	0.564	17.556
Device	0.252	0.667	0.558	17.647
Average	0.235	0.673	0.561	17.602
% Change	+10	-18	+9	-1

Table 2

### Exhaust Emissions Test Results from Air Resources Board

<u>Test Mode</u>	<u>Exhaust Emissions (gm/mi)</u>			<u>Fuel Economy (mpg)</u>	
	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>City</u>	<u>Highway</u>
Baseline	0.243	2.398	0.539	17.464	29.595
Baseline	0.212	1.506	0.524	17.572	29.597
Average	0.228	1.952	0.532	17.518	29.596
Device	0.248	1.443	0.547	17.578	29.574
Device	0.225	0.835	0.462	17.742	29.891
Average	0.237	1.139	0.505	17.660	29.733
% Change	+4	-42	-5	+1	+0

## VI. DISCUSSION

The results of the exhaust emission tests submitted by Paxton show a decrease in emissions of Carbon Monoxide (CO) and Nitrogen Oxides (NOx) and an increase of Hydrocarbon (HC), due to the installation of the supercharger kit. The confirmatory testing conducted by the ARB yielded less increase in HC and more decrease in CO and NOx. However, the increase in HC is within the 10% maximum which is allowed by Vehicle Code Section 27156 exemption criteria.

The tests results have shown that the Paxton supercharger model number SN-89, part number 10018, did not reduce the effectiveness of the emissions control systems of the vehicle. Thus, Paxton has fulfilled the requirements for the exemption and was issued the Executive Order D-195-2. Since the Paxton supercharger will be installed only on vehicles of the same engine family concerned under an existing exemption, the request for an update should be granted and Executive Order D-195-3 issued to include all 1986-1990 Ford Motor Company passenger cars powered by a 302 CID EFI engine.