

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-150-1  
Relating to Exemptions under Section 27156  
of the Vehicle Code

K.F. INDUSTRIES, INC.  
MAX-25 SUPERCHARGER KIT

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 MAX-25 supercharger kit manufactured by K.F. Industries, Inc. 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 all 1985 and older model-year Chevrolet or GMC light-duty trucks and 1986 and older model-year AMC light-duty trucks powered by a GMC 2.8 liter V-6 gasoline carbureted engine.

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 MAX-25 SUPERCHARGER KIT.

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 D-150, dated November 16, 1984 is superseded and of no further force and effect.

Executed at El Monte, California, this 7<sup>th</sup> day of November, 1985.

  
K. D. Drachand, Chief  
Mobile Source Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF K. F. INDUSTRIES, INC.'s MAX-25 SUPERCHARGER  
KIT FOR EXEMPTION FROM THE PROHIBITIONS IN VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222,  
TITLE 13, OF THE CALIFORNIA ADMINISTRATIVE CODE

November 1985

Date of Issue: November 1985

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

K. F. Industries, Inc. (KFI) has requested an update to the existing exemption from the prohibitions in Vehicle Code Section 27156 for their MAX-25 supercharger kit. The request is to include the 1986 model-year AMC light-duty trucks powered by a GMC 2.8 liter V-6 gasoline carbureted engine in the exemption.

Previously KFI was granted an exemption (Executive Order D-150) for the same MAX-25 supercharger kit for installation on 1985 and older model-year Chevrolet, GMC or AMC light-duty trucks powered by a GMC 2.8 liter V-6 gasoline carbureted engine.

Certification documents show that the 1986 AMC light-duty trucks powered by the GMC 2.8 liter V-6 engines is a carry-over engine and utilizes the same emission control systems as the 1985 vehicles. The staff is of the opinion that the 1986 vehicles will have the same degree of performance/emissions impact as the previous model years with the MAX-25 supercharger kit installed.

The staff recommends that K. F. Industries, Inc. be granted an exemption as requested and that Executive Order D-150-1 be issued.

## CONTENTS

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

EVALUATION OF K. F. INDUSTRIES, INC.'S MAX-25 SUPERCHARGER KIT FOR EXEMPTION FROM THE PROHIBITIONS IN VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE CALIFORNIA ADMINISTRATIVE CODE

I. INTRODUCTION

K. F. Industries, Inc., (KFI) of Sun Valley, California 91353, has requested an update to the existing exemption from the prohibitions in Vehicle Code Section 27156 for their MAX-25 supercharger kit. The request is to include in the exemption the 1986 model-year AMC light-duty trucks powered by a GMC 2.8 liter V-6 gasoline carbureted engine.

KFI has previously submitted data from comparative (stock baseline vs supercharged) emission tests conducted on a 1984 GMC S-15 pick-up truck at Fairway Environmental Engineering, Inc., Torrance, California. Confirmatory tests were conducted on the same vehicle at the Air Resources Board (ARB) laboratory in El Monte, California.

II. CONCLUSION

Based on the results from comparative exhaust emission tests performed by KFI, the confirmatory tests performed by the ARB on the same vehicle, and the fact that the engines used in the 1986 AMC light-duty trucks are carry-over from 1985, the staff concludes that KFI's supercharger kit will not adversely affect exhaust emission from vehicles for which exemption update is requested.

III. RECOMMENDATIONS

The staff recommends that K. F. Industries, Inc. be granted an updated exemption for their add-on turbocharger kit for installation on 1985 and older model-year Chevrolet or GMC light-duty trucks and 1986 and older model-year AMC light-duty trucks powered by a GMC 2.8 liter V-6 gasoline carbureted engine. The staff also recommends that Executive Order D-150-1 be issued.

#### IV. SUPERCHARGER KIT DESCRIPTION

The MAX-25 Supercharger Kit has been specifically designed for installation on the GMC 2.8 liter, V-6 gasoline fueled engine. The supercharger is belt driven and runs at 1.7 times the speed of the engine. The kit operates in conjunction with the OEM carburetor and the emission control systems already certified with the stock engine. All the necessary hardwares and supplies are included in the kit. A complete manual describing the parts, and step-by-step installation procedure is supplied with the kit. Some of the OEM parts are removed and discarded to be replaced by custom parts supplied with the kit.

Lubrication and cooling of the supercharger is provided by a high pressure hose with a swivel fitting teed to the oil pressure switch connection. The other end of this hose is connected to the supercharger bearing house. At the opposite end bearing of the supercharger the return oil hose is connected and drains the return oil into the rocker cover through a special fitting.

The maximum positive pressure boost of 5 psig at 5000 engine RPM is limited by the ACM-30 computer, supplied in the kit, by controlling the distributor spark advance curve above 5000 rpm. This electronic computer module is also employed to suppress detonation during boost conditions or heavy operations. It utilizes a sensor, mounted on the intake manifold or cylinder head, to detect detonation (pinging). When detonation is detected, the module electronically retards the spark advance until detonation is eliminated.

The kit utilizes the OEM fuel enrichment system. The ACM-30 computer also connects to a new manifold absolute pressure sensor, supplied in the kit, and to the oxygen sensor circuit. When boost



pressure reaches 4 psig, the ACM-30 increases the electrical resistance of the oxygen sensor circuit. This increase in electrical resistance dictates the vehicle's computer to increase the fuel flow through the mixture control valve in the carburetor, thus enriching the air-fuel mixture during the boost conditions above 4 psig.

V. SUPERCHARGER KIT EVALUATION

A 1984 GMC S-15, light-duty pick-up truck with a 2.8 liter, V-6 gasoline carbureted engine was used for the evaluation of the K. F. Industries, Inc.'s MAX 25 supercharger kit. For more detailed information on the supercharger kit evaluation and the results of the comparative emissions tests performed, refer to the October 1984 staff report "EVALUATION OF K. F. INDUSTRIES, INC.'s MAX-25 SUPERCHARGER KIT FOR EXEMPTION FROM THE PROHIBITIONS IN VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE CALIFORNIA ADMINISTRATIVE CODE."

The 1985 Chevrolet, GMC and AMC vehicles were included in the exemption (E.O. No. D-150) previously granted to KFI because the certification documents showed that the emission control systems are the same and were carry-over from 1984. For 1986, the Chevrolet and GMC light-duty trucks powered by the GMC 2.8 liter V-6 gasoline engines are equipped with electronic fuel injection and their emission control systems were not carry-over from 1985. However, the 1986 AMC light-duty trucks powered by the GMC 2.8 liter V-6 gasoline engines are equipped with the same closed-loop carburetion system as the previous model-years. For this reason KFI requests that their Executive Order D-150 be superceded by Executive Order D-150-1 which will include the 1986 AMC light-duty trucks.

## VI. DISCUSSION

The previously issued Executive Order D-150 for KFI's MAX-25 supercharger kit was issued because the kit did not show any adverse effects on the emissions from the vehicles for which it was designed. The 1986 model-year AMC light-duty trucks powered by the 2.8 liter V-6 gasoline carbureted engines have been evaluated and determined to be identical to the previous model years. For this reason the staff believes that the MAX-25 supercharger kit installed on the 1986 model-year AMC light-duty trucks will have the same degree of performance/emissions impact as the vehicles included in the previous exemption. No additional testing was performed because neither the vehicle configuration nor the design of the MAX-25 supercharger kit was changed. 1986 will probably be the last year of the carbureted GMC 2.8 liter V-6 engines for light-duty trucks. In 1987 it is very likely that AMC will also equip this engine with fuel injection. Should KFI seek exemption for the MAX-25 supercharger kit for installation on the fuel-injected vehicles additional testing would be required.

The staff concludes that Executive Order D-150 should be superseded by Executive Order D-150-1 which will include the 1986 model-year AMC light-duty trucks.