

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-213-1
Relating to Exemptions Under Section 27156
of the Vehicle Code

VORTECH ENGINEERING, INC.
MODEL V-1 SUPERCHARGER

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 V-1, manufactured by Vortech Engineering, Inc., of 5351 Bonsai Ave., Moorpark, CA 93021, 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 1986-1991 model-year Ford Motor Company vehicles 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 Vortech Engineering, 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 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 CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF THE VORTECH ENGINEERING, INC. SUPERCHARGER KIT MODEL NO. V-1.

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V-1 SUPERCHARGER

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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 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 17th day of June, 1991.



R. B. Summerfield
Assistant Division Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF VORTECH ENGINEERING, INC. MODEL V-1 SUPERCHARGER
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE
CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

June 1991

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by

Mobile Source Division
State of California
Air Resources Board
9528 Telstar Avenue
El Monte, CA 91731-2990

(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.)

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I. INTRODUCTION

Vortech Engineering, Inc., of 5351 Bonsai Avenue, Moorpark, CA 93021 has requested an update to Executive Order D-213, which currently exempts their supercharger kit Model No. V-1 for 1986-90 model-year Ford Motor Company vehicles powered by a 5.0 liter EFI gasoline engine. The update is requested to include the 1991 model-year Ford Motor Company vehicles powered by a 5.0 liter EFI gasoline engine.

II. CONCLUSIONS

Based on the fact that (1) 1990 emissions related equipment has been carried over to the 1991 model-year versions of Ford vehicles powered by a 5.0 liter EFI gasoline engine and (2) no changes to the retrofit supercharger kit Model No. V-1 have been made for the 1991 model-year application, the staff believes that the add-on supercharger kit will have no adverse emissions effect on the vehicles for which the exemption update is requested.

III. RECOMMENDATION

The staff recommends that Vortech Engineering be granted an update as requested and that Executive Order D-213-1 be issued.

IV. DEVICE DESCRIPTION

The Vortech supercharger kit is specifically designed for installation on 1986-91 Ford Motor Company vehicles powered by a 5.0 liter 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, Vortech Model No. V-1, which delivers an overall impeller-to-crankshaft ratio of 6.21:1. 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 psi 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 in 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 limit of 70 psi. This condition causes an increase in air and fuel charge, while maintaining the proper air/fuel ratio.

The blower is lubricated by feed lines in engine block and oil pan. All OEM emission controls are left intact.

V. DISCUSSION

Vortech add-on supercharger kit Model No. V-1 is currently exempted from VC 27156 for installation on 1986-1990 model-year Ford vehicles powered by a 5.0 liter EFI gasoline engine. The exemption was granted based on test results of a similar supercharger which showed no reduction in the effectiveness of the vehicle's pollution control system.

The applicant is making available the add-on supercharger kit Model No. V-1 for the 1991 model-year Ford vehicles powered by a 5.0 liter EFI gasoline engine. The applicant claims that no modifications to the kit are needed in order to be compatible with the 1991 models, and requests that the exemption be updated to include 1991 model-year vehicles.

In response to the applicant's request, the staff compared the engine design of the 1991 model-year Ford vehicles powered by a 5.0 liter EFI gasoline engine to vehicle models currently covered by the exemption. Certification documents indicate that emissions-related equipment on the 1990 models have been carried over to the 1991 model-year versions of Ford vehicles powered by a 5.0 liter EFI gasoline engine. Also no changes to the retrofit supercharger kit Model No. V-1 have been made for application to the 1991 model-year Ford vehicles powered by a 5.0 liter EFI gasoline engine. Based on these facts, no additional testing is necessary to update the exemption as requested.