

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-487
Relating to Exemptions Under Section 27156
of the Vehicle Code

EXPLORER EXPRESS
X-CHARGER 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 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 X-Charger supercharger, manufactured and marketed by Explorer Express, 1027 Bell Lane Napa, California 94558, has been found not to reduce the effectiveness of the applicable vehicle pollution control systems and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1996 through 1999 model-year 5.0 liter Ford Explorers (p/n ZD5555).

The X-Charger supercharger includes the following main components:, Magnuson supercharger, upgraded fuel pump, longer serpentine drive belt, spark plug wires, assorted brackets, hoses, and hardware. The diameter of the supercharger pulley is 2.60 inches. Maximum boost attained by this system is 6 psi.

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

Changes made to the design or operating conditions of the X-Charger supercharger, 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 X-Charger supercharger using any identification other than that shown in this Executive Order or marketing of the X-Charger supercharger 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 X-Charger supercharger 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 X-Charger supercharger may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on emissions in the modified configuration using the Cold-Start CVS-75 Federal Test Procedure and examination of the On-Board Diagnostic II (OBD II) system. Results from emissions testing conducted at the Clean Air Vehicle Technology Center, of Hayward, California, are shown below (in grams per mile):

Raw	NMOG	CO	NOx	HCHO
Emission Level	0.061	1.11	0.011	0.0006
50k	NMOG	CO	NOx	HCHO
DF	0.0213	0.33	0.09	0.0004
Emission Level	0.082	1.435	0.101	0.0010
(w. DF applied)				
STD	0.100	4.4	0.4	0.018
100k	NMOG	CO	NOx	HCHO
DF	0.045	0.68	0.18	0.0008
Emission Level	0.105	1.785	0.191	0.0014
(w. DF applied)				
STD	0.130	5.5	0.5	0.023

The emission test results in the modified configuration were below the applicable certification standards. Examination of the OBD II system showed the X-Charger supercharger does not affect OBD II operation. Therefore, based on the test results, the staff concludes that the Explorer Express X-Charger supercharger meets the criteria for exempting general criteria parts. However, the ARB finds that reasonable grounds exist to believe that use of the X-Charger supercharger may adversely affect emissions of motor vehicles when operating under conditions outside the parameters of the CVS-75 Federal Test Procedure. 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 X-Charger supercharger adversely affects emissions during off-cycle conditions (defined as those conditions which are beyond the parameters of the Cold-Start CVS-75 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 Explorer Express X-Charger supercharger will affect the durability of the emission control system, Explorer Express 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 THE EXPLORER EXPRESS X-CHARGER SUPERCHARGER.

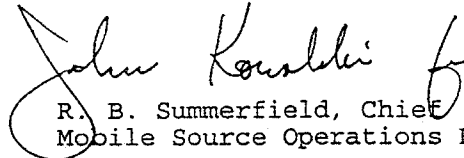
No claim of any kind, such as "Approved by the Air Resources Board", may be made with respect to the action taken herein in any advertising or other oral or written communication.

EXPLORER EXPRESS
X-CHARGER SUPERCHARGER

EXECUTIVE ORDER D-487
(Page 3 of 3)

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 29th day of July 1999.


R. B. Summerfield, Chief
Mobile Source Operations Division

State of California
AIR RESOURCES BOARD

EVALUATION OF THE EXPLORER EXPRESS
X-CHARGER SUPERCHARGER
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

July 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

Explorer Express of 1027 Bell Lane, Napa, California 94558, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the X-Charger supercharger designed for the 1996 through 1999 model-year 5.0 liter Ford Explorer (p/n ZD5555).

Based on comparison of emissions in the modified configuration with the applicable standards and an examination of the On-Board Diagnostic II (OBD II) system with the supercharger system installed, the staff concludes that the X-Charger supercharger will not adversely affect exhaust emissions from vehicles for which the exemption is requested.

The staff recommends that Explorer Express be granted an exemption as requested and that Executive Order D-487 be issued.

TABLE OF CONTENTS

	Page Number
SUMMARY	
CONTENTS	
I. INTRODUCTION	1
II. CONCLUSION	1
III. RECOMMENDATION	1
IV. X-CHARGER SUPERCHARGER DESCRIPTION	1
V. DISCUSSION OF THE X-CHARGER SUPERCHARGER	2

EVALUATION OF THE EXPLORER EXPRESS
X-CHARGER SUPERCHARGER
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

Explorer Express of 1027 Bell Lane, Napa, California 94558, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the X-Charger supercharger designed for the 1996 through 1999 model-year 5.0 liter Ford Explorer (p/n ZD5555).

II. CONCLUSIONS

Based on emission testing, and examination of the On-Board Diagnostic II (OBD II) system with the X-Charger supercharger installed, the staff concludes that the Explorer Express X-Charger supercharger will not adversely affect exhaust emissions from the vehicles for which the exemption is requested.

III. RECOMMENDATION

The staff recommends that Explorer Express be granted an exemption for their X-Charger supercharger for installation on the 1996 through 1999 model-year 5.0 liter Ford Explorer (p/n ZD5555).

IV. X-CHARGER SUPERCHARGER DESCRIPTION

The Explorer Express supercharger kit has been specifically designed for installation on the 1996 through 1999 model-year 5.0 liter Ford Explorer (p/n ZD5555). The diameter of the supercharger pulley is 2.60 inches. The supercharger is driven by a longer serpentine belt which is connected to the stock crankshaft pulley. Maximum boost attained by this system is 6 psi. In addition to the forced induction provided by the supercharger, the system utilizes an upgraded fuel pump.

The intent of installing the X-Charger supercharger is to increase power output at particular engine loads and throttle openings. At heavy engine loads and increased throttle openings, the airflow into the engine is

increased because of the compression of intake air due to the supercharger. This allows more air to enter the engine, which is compensated by an adjustment in fuel trim by the vehicle engine control module with an increase in fuel flow through the upgraded fuel pump, resulting in higher power output.

The installation of the kit requires modification to the stock intake and ignition systems to accommodate components of the X-Charger supercharger. The stock ignition coils are relocated to accommodate the supercharger on the engine, and new spark plug wires are used to connect the coils to the spark plugs. Additional equipment installed during the installation include: Magnuson supercharger, upgraded fuel pump, longer serpentine drive belt, spark plug wires, assorted brackets, hoses, and hardware.

V. DISCUSSION OF THE X-CHARGER SUPERCHARGER

Emissions were measured in the modified configuration for comparison to the applicable certification standards. Since the X-Charger supercharger kit involves forced induction and an upgraded fuel pump, a significant increase in emissions could have resulted. However, since Explorer Express opted to test against the applicable emission standards, it was not possible to quantify any emissions increases due to the X-Charger supercharger.

A 1999 model-year 5.0 liter Ford Explorer with a 5.0L sequential multipoint fuel injected engine (XFMXT5.02GF) was used for the evaluation of the X-Charger supercharger. The test vehicle was certified to light-duty truck-2 LEV standards and was equipped with OBD II and an enhanced evaporative system. The dynamometer inertia weight and horsepower settings were 4,750-lbs and 12.6-hp, respectively. Testing consisted of two CVS-75 FTP's in the modified configuration to set all readiness codes, emissions were measured during one CVS-75 FTP. The ARB did not perform testing to confirm the test results submitted by the applicant.

Results from emissions testing conducted at the Clean Air Vehicle Technology Center, of Hayward, California, are shown below (in grams per mile):

Raw	NMOG	CO	NOx	HCHO
Emission Level	0.061	1.11	0.011	0.0006
50k	NMOG	CO	NOx	HCHO
DF	0.0213	0.33	0.09	0.0004
Emission Level	0.082	1.435	0.101	0.0010
(w. DF applied)				
STD	0.100	4.4	0.4	0.018
100k	NMOG	CO	NOx	HCHO
DF	0.045	0.68	0.18	0.0008
Emission Level	0.105	1.785	0.191	0.0014
(w. DF applied)				
STD	0.130	5.5	0.5	0.023

The emission test results in the modified configuration were below the applicable certification standards. Examination of the OBD II system showed the X-Charger supercharger does not affect OBD II operation. Therefore, based on the test results, the staff concludes that the X-Charger supercharger meets the criteria for exempting general criteria parts. However, the ARB finds that reasonable grounds exist to believe that use of the X-Charger supercharger may adversely affect emissions of motor vehicles when operating under conditions outside the parameters of the previously prescribed test procedure. Accordingly, the ARB reserves the right to conduct additional emission tests in the future, as such tests are developed.

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