

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-423-4

Relating to Exemptions Under Section 27156
of the Vehicle Code

Allen Engine Development, Inc.
Supercharger Kits

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-02-003;

IT IS ORDERED AND RESOLVED: That the installation of the Supercharger Kits, manufactured and marketed by Allen Engine Development, Inc., 255 Lambert Street, Unit #1, Oxnard, California, 93030 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 Ford Motor Company vehicle applications as listed in Exhibit A.

The Supercharger Kit includes a new intake manifold assembly that contains an Eaton supercharger and an intercooler, a set of 30 lbs/hr fuel injectors to replace the stock 19 lbs/hr fuel injectors, a voltage step up for the fuel pump, a replacement Ford mass air flow sensor, new aluminum fuel rails, and a new electronic control module (ECM). The stock air cleaner housing is retained. The new intake manifold also acts as a mount for the throttle body, EGR valve, idle air valve bypass, and thermostat. A 180 degree thermostat which replaces the stock 195 degree is included on 1999 through 2003 applications that includes an ECM as part of the supercharger kit, see Exhibit A for kit options.

This Executive Order is valid provided that the installation instructions for the Supercharger Kits will not recommend tuning the vehicle to specifications different from those submitted by the device manufacturer.

This Executive Order shall not apply to any Allen Engine Development, Inc.'s Supercharger Kits advertised, offered for sale, sold with, or installed on a new motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

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

This Executive Order is granted based on emissions test data generated on a 2002 Ford Crown Victoria certified to the Low-Emission Vehicle (LEV) emission standards. Emission levels of the modified vehicle met the applicable emission standards over the Cold-Start CVS-75 Federal Test Procedure (FTP) and the Supplemental Federal Test Procedure (US06/SC03) test cycles. Results are in grams per mile with deterioration factors added to CVS-75 results:

	CVS-75				US06/SC03	
	NMOG	CO	NOx	HCHO	NMHC+NOx	CO
Standards	0.075	3.4	0.2	0.015	0.14/0.20	8.0/2.7
Device	0.058	0.7	0.1	0.001	0.03/0.02	0.2/0.4

Long Term Fuel Trim Values: Bank-1 0.0, Bank-2 0.0

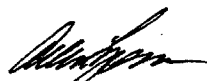
This Executive Order is also based on an On-Board Diagnostic II (OBD II) test conducted on the same test vehicle. Test data showed that the supercharger when installed on the vehicle did not affect the vehicle's ability to perform its OBD II monitoring.

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 ALLEN ENGINE DEVELOPMENT, INC.'S SUPERCHARGER KITS.

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 is made after the hearing that grounds for revocation exist.

Executed at El Monte, California, this 21ST day of November 2002.



Allen Lyons, Chief
Mobile Source Operations Division

A		B	C	D	E	F	G	H	I	J
VEHICLE MODEL		ENGINE	PSI MAX	BLOWER	PULLEY	MANIFOLD	THR. BODY	MASS AIR	FUEL SYSTEM UPGRADE	INJECTORS
1	92-02 CROWN VIC. / GRAND MARQ. / TOWN CAR	4.6L V8	6 PSI	EATON M90S	2.83	REV II	STOCK	STOCK	SFPR + PUMP	19#
2	or									
3	92-02 CROWN VIC. / GRAND MARQ. / TOWN CAR	4.6L V8	6 PSI	EATON M90S	2.83	REV II	STOCK	STOCK	PUMP & COMPUTER	30#
4	92-02 CROWN VIC. / GRAND MARQ. / TOWN CAR	4.6L V8	9 PSI	EATON M90S	2.52	REV II	STOCK	80mm FORD	PUMP & COMPUTER	30#
5	02-03 EXPLORER / MOUNTAINEER	4.6L V8	5 PSI	EATON M90S	2.93	REV II	STOCK	STOCK	PUMP & SFPR	19#
6	or									
7	02-03 EXPLORER / MOUNTAINEER	4.6L V8	9 PSI	EATON M90S	2.52	REV II	STOCK	80mm FORD	PUMP & COMPUTER	30#
8	97-03 F150 / EXPEDITION	4.6L V8	5 PSI	EATON M90S	2.93	REV I	STOCK	STOCK	SFPR + PUMP	19#
9	97-03 F150 / EXPEDITION	5.4L V8	5 PSI	EATON M90S	2.395	REV I	STOCK	STOCK	SFPR + PUMP	19#
10	97-03 F150 / EXPEDITION	4.6L V8	9 PSI	EATON M90S	2.52	REV I	STOCK	80mm FORD	PUMP & COMPUTER	30#
11	97-03 F150 / EXPEDITION	5.4L V8	8 PSI	EATON M90S	2.25	REV I	STOCK	80mm FORD	PUMP & COMPUTER	30#
12	97-03 F150 / EXPEDITION	5.4L V8	5 PSI	EATON M90S	2.395	REV I	STOCK	STOCK	SFPR + PUMP	19#
13	98-03 F250	5.4L V8	8 PSI	EATON M90S	2.25	REV I	STOCK	80mm FORD	PUMP & COMPUTER	30#
14	98-03 F250	5.4L V8	5 PSI	EATON M90S	2.395	REV I	STOCK	STOCK	SFPR + PUMP	19#
15	98-03 F250	6.8L V10	5 PSI	EATON M90S	2.395	REV I	STOCK	STOCK	PUMP & COMPUTER	30#
16	98-03 F250	6.8L V10	8 PSI	EATON M90S	2.25	REV I	STOCK	80mm FORD	PUMP & COMPUTER	30#
17	98 NAVIGATOR	5.4L V8	5 PSI	EATON M90S	2.395	REV I	STOCK	STOCK	SFPR + PUMP	19#
18	98 NAVIGATOR	5.4L V8	8 PSI	EATON M90S	2.25	REV I	STOCK	STOCK	PUMP & COMPUTER	30#
19	00-03 EXCURSION	6.8L V10	5 PSI	EATON M112	2.395	REV I	STOCK	STOCK	SFPR + PUMP	19#
20	00-03 EXCURSION	6.8L V10	8 PSI	EATON M112	2.25	REV I	STOCK	80mm FORD	PUMP & COMPUTER	30#
21	00-03 EXCURSION	5.4L V8	5 PSI	EATON M90S	2.395	REV I	STOCK	STOCK	SFPR + PUMP	19#
22	00-03 EXCURSION	5.4L V8	8 PSI	EATON M90S	2.25	REV I	STOCK	80mm FORD	PUMP & COMPUTER	30#
23	97-03 ECONOLINE VAN E150	4.6L V8	5 PSI	EATON M90S	2.93	REV I	STOCK	STOCK	SFPR + PUMP	19#
24	97-03 ECONOLINE VAN E150	4.6L V8	8 PSI	EATON M90S	2.52	REV I	STOCK	80mm FORD	PUMP & COMPUTER	30#
25	97-03 ECONOLINE VAN	5.4L V8	5 PSI	EATON M90S	2.395	REV I	STOCK	STOCK	SFPR + PUMP	19#
26	97-03 ECONOLINE VAN	5.4L V8	8 PSI	EATON M90S	2.25	REV I	STOCK	80mm FORD	PUMP & COMPUTER	30#
27	97-03 ECONOLINE VAN	6.8L V10	5 PSI	EATON M112	2.395	REV I	STOCK	STOCK	SFPR + PUMP	19#
28	97-03 ECONOLINE VAN	6.8L V10	8 PSI	EATON M112	2.25	REV I	STOCK	80mm FORD	PUMP & COMPUTER	30#
29	97-03 CLUBWAGON	6.8L V10	5 PSI	EATON M112	2.395	REV I	STOCK	STOCK	SFPR + PUMP	19#
30	97-03 CLUBWAGON	6.8L V10	8 PSI	EATON M112	2.25	REV I	STOCK	80mm FORD	PUMP & COMPUTER	30#
31	96-98 MUSTANG	4.6L V8	6 PSI	EATON M90S	2.83	REV I & II	STOCK	STOCK	SFPR + PUMP	19#
32	96-98 MUSTANG	4.6L V8	9 PSI	EATON M90S	2.52	REV I & II	STOCK	80mm FORD	PUMP & COMPUTER	30#
33	99-03 MUSTANG	4.6L V8	6 PSI	EATON M90S	2.83	REV II	STOCK	STOCK	BAP or PUMP & COMPUTER	30#
34	99-03 MUSTANG	4.6L V8	9 PSI	EATON M90S	2.52	REV II				

EVALUATION SUMMARY

Manufacturer Name: Allen Engine Development, Inc.

Name of Device: Supercharger Kit

Background:

Allen Engine Development, Inc. of 255 Lambert Street, Unit #1, Oxnard, California, 93030, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the Allen Engine Development, Inc.'s Supercharger Kits designed for applicable 1992 through 2003 Ford Motor Company vehicles equipped with a V8 or V10 engine as listed in Exhibit A, which also includes ULEV MDV.

Recommendation:

Grant exemption to Allen Engine Development, Inc. as requested and issue Executive Order D-423-4.

Device Description:

The Supercharger Kit includes a new intake manifold assembly that contains an Eaton supercharger and an intercooler, a set of 30 lbs/hr fuel injectors to replace the stock injectors, a voltage step up for the fuel pump, a replacement Ford mass air flow sensor, new aluminum fuel rails, and a new electronic control module (ECM). The stock air cleaner housing is retained. A 180 degree thermostat which replaces the stock 195 degree is included on 1999 through 2003 applications that includes an ECM as part of the supercharger kit, see Exhibit A for kit options. The ECM is programmed to turn on the cooling fan at 195 degrees, instead of 205 degrees.

Discussion/Basis for the Recommendation:

This Executive Order is granted based on emissions test data generated on a 2002 Ford Crown Victoria certified to the Low-Emission Vehicle (LEV) emission standards. Emission levels of the modified vehicle met the applicable emission standards over the Cold-Start CVS-75 Federal Test Procedure (FTP) and the Supplemental Federal Test Procedure (US06/SC03) test cycles. Results are in grams per mile with deterioration factors added to CVS-75 results:

	CVS-75				US06/SC03	
	NMOG	CO	NOx	HCHO	NMHC+NOx	CO
Standards	0.075	3.4	0.2	0.015	0.14/0.20	8.0/2.7
Device	0.058	0.7	0.1	0.001	0.03/0.02	0.2/0.4

Long Term Fuel Trim Values: Bank-1 0.0, Bank-2 0.0

Testing parameters used were: 4250 lbs. and 6.4, 0.368, 0.0229 coefficients. Additive deterioration factors were: NMOG 0.0098, CO 0.212, NOx 0.078, and HCHO 0.0004. The conversion factors were: NMOG/NMHC=1.015 and HCHO/NMHC=0.003. NMHC was measured at 0.048. Boost pressure was measured at 9 psi.

This Executive Order is also based on an On-Board Diagnostic II (OBD II) test conducted on the same test vehicle. Test data showed that the supercharger when installed on the vehicle did not affect the vehicle's ability to perform its OBD II monitoring.

Based on the emissions data and the OBD-II test results, the staff concludes that Allen Engine Development, Inc.'s Supercharger Kit meets the requirements for a VC 27156 exemption.