

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-180-3  
Relating to Exemptions under Section 27156  
of the Vehicle Code

THE TURBO SHOP, INC.  
TURBOCHARGER KIT MODEL 6.9L/7.3L

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 turbocharger kit Model 6.9L/7.3L manufactured by The Turbo Shop, 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 1983-1987 model year Ford Motor Company Vehicles powered by a 6.9L Navistar International heavy-duty diesel engine and 1988-1990 model year Ford Motor Company vehicles powered by a 7.3L Navistar International heavy-duty diesel engine.

Modifications to the OEM emission-related parts due to the installation of the turbocharger kit include replacement of the OEM exhaust system with a 3" diameter exhaust system and an air cleaner assembly. The positive crankcase ventilation (PCV) valve is relocated to allow the turbocharger kit installation.

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 TURBO SHOP, INC.'S TURBOCHARGER KIT MODEL 6.9L/7.3L.

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.

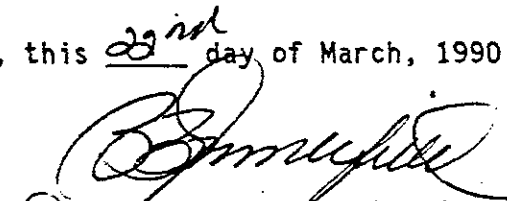
Section 43644 of the Health and Safety Code provides as follows:

"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-180-1, dated March 17, 1989, is superseded and of no further force and effect.

Executed at El Monte, California, this 29<sup>th</sup> day of March, 1990.

  
K. D. Drachand, Chief  
Mobile Source Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF THE TURBO SHOP INC.'S ADD-ON TURBOCHARGER KIT MODEL  
6.9L/7.3L FOR INSTALLATION IN 1983-1987 MODEL YEAR FORD MOTOR COMPANY  
VEHICLES POWERED BY A 6.9L NAVISTAR INTERNATIONAL HEAVY-DUTY  
DIESEL ENGINE AND 1988-1990 MODEL YEAR FORD MOTOR COMPANY  
VEHICLES POWERED BY A 7.3L NAVISTAR INTERNATIONAL  
HEAVY-DUTY DIESEL ENGINE

March, 1990

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HEAVY-DUTY DIESEL ENGINE

by

Mobile Source Division

State of California  
AIR RESOURCES BOARD  
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(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

The Turbo Shop, Inc. (Turbo Shop) has applied for an update to Executive Order D-180-1, which exempts their turbocharger kit model 6.9L/7.3L from the prohibitions in Vehicle Code Section 27156. The existing exemption applies to 1983-1987 model year Ford Motor Company vehicles powered by a 6.9L Navistar International heavy-duty diesel engine and 1988-1989 model year Ford Motor Company vehicles powered by a 7.3L Navistar International heavy-duty diesel engine. The update is requested to include the 1990 model year Ford Motor Company vehicles powered by a 7.3L Navistar International heavy-duty diesel engine.

Because Turbo Shop was granted an exemption for 1988-1989 model year 7.3L Navistar International heavy-duty diesel vehicles and the 1990 model year 7.3L heavy-duty diesel engine is a carry-over from the previous model years, the staff concludes that Turbo Shop's add-on turbocharger kit model 6.9L/7.3L will not have an adverse effect on exhaust emissions from vehicles for which the exemption update has been requested.

The staff recommends that Turbo Shop be granted an update as requested and that Executive Order D-180-3 be issued.

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I. INTRODUCTION

The Turbo Shop, Inc. (Turbo Shop) of 940 West Manchester, Inglewood, CA 90301, has applied for an update to Executive Order D-180-1, which exempts their turbocharger kit model 6.9L/7.3L from the prohibitions in Vehicle Code Section 27156. The exemption applies to 1983-1987 model year Ford Motor Company vehicles powered by a 6.9L Navistar International heavy-duty diesel engine and 1988-1989 model year Ford Motor Company vehicles powered by a 7.3L Navistar International heavy-duty diesel engine. The update is requested to include the 1990 model year Ford Motor Company vehicles powered by a 7.3L Navistar International heavy-duty diesel engine.

II. CONCLUSION

Because Turbo Shop was granted an exemption for 1988-1989 model year 7.3L Navistar International heavy-duty diesel engines and the 1990 model year 7.3L heavy-duty diesel engine is a carry-over from the previous model years, the staff concludes that Turbo Shop's add-on turbocharger kit model 6.9L/7.3L will not have an adverse effect on exhaust emissions from vehicles for which the exemption update has been requested.

III. RECOMMENDATIONS

The staff recommends that Turbo Shop be granted an update as requested and that Executive Order D-180-3 be issued.

IV. TURBOCHARGER KIT DESCRIPTION

The purpose of the Turbo Shop turbocharger system is to increase the power output of the engine by compressing the intake charge to pressures above that of the atmosphere. The increase in pressure allows a greater

charge density to enter the combustion chamber causing an increase in the volumetric efficiency of the engine. The maximum fuel delivery is slightly increased (1/4 of a turn) in order to maintain proper air-fuel ratios when the turbocharger is providing a positive manifold pressure (boost). The maximum positive manifold pressure is limited to 10 psig by the size of the turbine and the compressor. The maximum engine speed is regulated by the original equipment manufacturer (OEM) fuel injection governor. Therefore, by controlling maximum engine speed, maximum turbine speed and the corresponding boost pressure are also controlled.

Turbo Shop offers the following six turbochargers, with 1.0 area ratio (A/R), with their kit:

1. Rajay model E-FLOW;
2. Schwitzer model T04B25;
3. Roto-Master model R-11;
4. Roto-Master model V-2;
5. Roto-Master model S-4;
6. AiResearch model H-3.

The major components of the system include a turbocharger, custom intake adaptors, 3" diameter exhaust pipe, air cleaner assembly, brackets, hoses and the hardware necessary to complete the installation.

Modification to the OEM emission related parts due to the installation of the turbocharger kit includes replacement of the air cleaner assembly and replacement of the OEM exhaust system with a 3" diameter exhaust system. The positive crankcase ventilation (PCV) valve is relocated to allow for the turbocharger kit installation. No other OEM emission control components are removed, disconnected or relocated when the turbocharger kit is installed.



V. DISCUSSION

Turbo Shop's add-on turbocharger kit model 6.9L/7.3L is designed for installation on 1983-1987 model year Ford Motor Company vehicles powered by a 6.9L Navistar International heavy-duty diesel engine and 1988-1990 model year Ford Motor Company vehicles powered by a 7.3L Navistar International heavy-duty diesel engine. The applicant claims that no modification to the kit is necessary for installation on 1990 model year applicable vehicles. Certification documents show that the 1990 model year 7.3L Navistar International diesel engine is carried over from the previous model years. Based on these considerations the staff concludes that no additional testing is required.