

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-140-27
Relating to Exemptions Under Section 27156
of the Vehicle Code

SPEARCO PERFORMANCE PRODUCTS, INC.'S
450 HP TWIN TURBO SYSTEM

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 450 HP Twin Turbo System manufactured by Spearco Performance Products, Inc. of 14664 Titus Street, Panorama City, California 91402, 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 1990 to 1993 Ford Mustangs equipped with a 5.0L V8 gasoline engine.

The Spearco 450 HP Twin Turbo System includes a set of exhaust manifolds, intake manifold, after catalyst exhaust system, dual Garrett Airesearch T-25 turbochargers with an area ratio of 0.64, intercooler, EGR spacer, two auxiliary fuel injectors, high volume fuel pump, throttle body, cylinder heads, rocker arms, oil pan, oil pressure sending unit, air flow meter, dual open element air cleaners, thermostat housing, and a fuel controller. Modification to the OEM emission control systems include the relocation of air injection hoses, retarding ignition timing from stock 10° BTDC to 5° BTDC, and the installation of a one way valve between the P.C.V. valve and inlet manifold.

This Executive Order is valid provided that installation instructions for the 450 HP Twin Turbo System will not recommend tuning the vehicle to specifications different from those submitted by Spearco Performance Products, Inc.

Changes made to the design or operating conditions of the 450 HP Twin Turbo System, 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 the 450 HP Twin Turbo System using any identification other than that shown in this Executive Order or marketing of the 450 HP Twin Turbo System 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 450 HP Twin Turbo System 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 these 450 HP Twin Turbo System 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 SPEARCO PERFORMANCE PRODUCTS, INC.'S 450 HP TWIN TURBO SYSTEM.

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 8th day of February, 1993.



R. B. Summerfield
Assistant Division Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF SPEARCO PERFORMANCE PRODUCTS, INC'S
450 HP TWIN TURBO SYSTEM FOR EXEMPTION FROM THE PROHIBITIONS OF
VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

February 1993

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AIR RESOURCES BOARD

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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

Spearco Performance Products, Inc. (Spearco) of 14664 Titus Street, Panorama City, California 91402, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the 450 HP Twin Turbo System. The turbocharger kit is designed for installation on 1990 to 1993 Ford Mustangs equipped with a 5.0L V8 gasoline engine.

Spearco submitted a completed application and other required information, as well as emissions test data performed at Automotive Testing and Development Services (ATDS) in Huntington Beach, California which show that their kit does not have any adverse effect on emissions. Testing performed by the Air Resources Board (ARB) showed similar results.

Based on the submitted information, the staff concludes that the Spearco turbocharger kit will not adversely affect exhaust emissions from vehicles for which an exemption is requested.

The staff recommends that Spearco Performance Products, Inc., be granted an exemption as requested and that Executive Order D-140-27 be issued.

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I. INTRODUCTION

Spearco Performance Products, Inc. (Spearco) of 14664 Titus Street, Panorama City, California 91402, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for their 450 HP Twin Turbo System. The turbocharger kit is designed for installation on 1990 to 1993 Ford Mustangs equipped with a 5.0L V8 engine.

Spearco submitted a completed application and other required information, as well as emissions test data performed at Automotive Testing and Development Services (ATDS) in Huntington Beach, California which show that their kit does not have any adverse effect on emissions. Testing performed by the Air Resources Board (ARB) showed similar results.

II. CONCLUSIONS

Based on the submitted information, the staff concludes that the Spearco turbocharger kit will not adversely affect exhaust emissions from vehicles for which an exemption is requested.

III. RECOMMENDATION

The staff recommends that Spearco Performance Products, Inc., be granted an exemption for their 450 HP Twin Turbo System for installation on 1990 to 1993 Ford Mustangs equipped with a 5.0L V8 engine. The staff also recommends that Executive Order D-140-27 be issued.

IV. TURBOCHARGER COMPONENTS DESCRIPTION

Spearco's 450 HP Twin Turbo System consists of two Garrett Airesearch T-25 turbochargers with a turbine area ratio (A/R) of 0.64, an intercooler, a

high volume fuel pump, two extra fuel injectors, two open element replacement air cleaners, exhaust manifolds, airflow meter, throttle body, EGR spacer, intake manifold, after catalyst exhaust tubing, rocker arms, cylinder heads, oil pan, oil pressure sender unit, fuel controller, and thermostat housing.

The purpose of the Spearco 450 HP Twin Turbo System is to increase the power output of the engine by compressing the intake charge to above atmospheric pressure (9 pounds maximum boost) and thereby increasing the volumetric efficiency of the engine. The increased pressure causes a greater charge density, allowing more air into the chamber for combustion. The flow of air into the combustion chamber is further enhanced through the use of a larger throttle body, high flow dual open element air cleaners, and polished air flow passages in the intake manifold and cylinder heads. Since air flow is increased, more fuel is needed to maintain proper air-fuel ratios. The Spearco 450 HP Twin Turbo System includes a high volume fuel pump and two additional fuel injectors to provide the fuel required during boost. The fuel injectors are mounted on the throttle body duct and is controlled by a stand alone fuel controller. The fuel controller receives signals from the mass air flow sensor (MAF), the manifold air pressure sensor (MAP) supplied by Spearco, and the ignition coil. The injectors are actuated only when air flow exceeds the stock level at wide open throttle. Lubrication of the turbocharger is provided by engine oil. The lubricating oil is then routed back to the engine oil pan through ducts provided in the replacement oil pan.

The housing for the air flow sensor is replaced, however the air flow sensor is retained and installed in a provided housing. No emission control components are removed during installation. However, the timing is changed

from 10 degrees BTDC to 5 degrees BTDC. The EGR spacer is changed to Ford P/N M-9H474-A50 to compensate for space, and a one way valve is installed between the P.C.V. valve and inlet manifold in order to prevent the crankcase from experiencing positive manifold pressure.

V. DISCUSSION

Spearco Performance Products, Inc., has requested that the 450 HP Twin Turbo System components, be exempted for the 1990 to 1993 Ford Mustangs equipped with a 5.0L V8 engine. A 1990 Ford Mustang with a 5.0L V8 engine was used for testing. Spearco performed testing at ATDS to be compared against the vehicle's emission standards

The results of the exhaust emissions test performed at ATDS are shown in Table 1.

Table 1

CVS-75 TEST RESULTS

(Automotive Testing and Development Services)

	<u>THC</u>	<u>CO</u>	<u>NOx</u>
	(grams/mile)		
Standard	0.41	3.4	1.0
Turbocharged	0.239	1.698	0.705

These results show that the modified vehicle emissions do not exceed the vehicle's emission standards.

The ARB also tested the vehicle with the 450 HP Twin Turbo System installed. Test results showed comparable emission levels (see Table 2) to those conducted at ATDS. The emissions levels are below the applicable emission standards.

Table 1

ARB CVS-75 Test Results

	<u>HC</u>	<u>CO</u>	<u>NOx</u>
	(grams/mile)		
Standard	0.41	3.4	1.0
Turbocharged	0.189	1.36	0.48

Spearco submitted all of the required information and fulfilled the requirements for an exemption. The test results show that the Spearco Twin Turbo kit meets the requirements for exemption.