

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-236-2
Relating to Exemptions Under Section 27156
of the Vehicle Code

AUTOMOTIVE PERFORMANCE SYSTEMS, INC.
NEUSPEED 260 DEGREE CAMSHAFT & 16 VALVE INTAKE CAMSHAFT

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 Neuspeed 260 Degree Camshaft & 16 Valve Intake Camshaft manufactured by Automotive Performance Systems, Inc. of 1464 N. Hundley St., Anaheim, CA 92806, 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. The Neuspeed 260 Degree Camshaft is applicable to 1985-92 model year Volkswagen (VW) Fox, Jetta, Corrado & Cabriolet vehicles that are powered by a 1.8 liter, 8 valve engine, and 16 Valve Intake Camshaft is applicable to 1987-92 model year VW Golf, Jetta, & Passat vehicles powered by a 1.8 or 2.0 liter, 16 valve engine.

This Executive Order is valid provided that installation instructions for the camshafts will not recommend tuning the vehicle to specifications different from those submitted by Automotive Performance Systems, Inc.

Changes made to the design or operating conditions of the 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 kit using any identification other than that shown in this Executive Order or marketing of this 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 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 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 AUTOMOTIVE PERFORMANCE SYSTEMS' NEUSPEED 260 DEGREE CAMSHAFT & 16 VALVE INTAKE CAMSHAFT.

AUTOMOTIVE PERFORMANCE SYSTEMS, INC.
Neuspeed 260 Degree Camshaft and
16 Valve Intake Camshaft

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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 22nd day of July, 1992.


R. B. Summerfield
Assistant Division Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF AUTOMOTIVE PERFORMANCE SYSTEMS, INC.
NEUSPEED 260 DEGREE CAMSHAFT & 16 VALVE INTAKE CAMSHAFT FOR EXEMPTION FROM
THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION
2222, TITLE 13, OF THE CALIFORNIA CODE OF REGULATIONS

July 1992

State of California
AIR RESOURCES BOARD

EVALUATION OF AUTOMOTIVE PERFORMANCE SYSTEMS, INC.
NEUSPEED 260 DEGREE CAMSHAFT & 16 VALVE INTAKE CAMSHAFT FOR EXEMPTION FROM
THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION
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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 the mention of trade names or commercial products constitute endorsement or recommendation for use.)

SUMMARY

Automotive Performance Systems, Inc. (APS) has applied for an exemption from the prohibitions of Vehicle Code Section 27156 for the Neuspeed 260 Degree Camshaft for installation on 1985-92 model year Volkswagen (VW) Fox, Jetta, Corrado & Cabriolet vehicles that are powered by a 1.8 liter, 8 valve engine, and the 16 Valve Intake Camshaft for installation on 1987-92 model year VW Golf, Jetta & Passat vehicles powered by a 1.8 or 2.0 liter, 16 valve engine. APS has submitted a completed application and all the required information, as well as exhaust emissions test data performed at Milton Roy Company which has demonstrated that their camshafts do not have any adverse effect on the exhaust emissions on the affected vehicles.

Based on the submitted information and the results of the emissions test performed at the Milton Roy Company, the staff concludes that the installation of APS' Neuspeed 260 Degree Camshaft and 16 Valve Intake Camshaft will not adversely affect exhaust emissions on the specified vehicles when tested in accordance with the cold start CVS-75 Federal Test Procedure.

The staff recommends Automotive Performance Systems, Inc. be granted an exemption as requested and that Executive Order D-236-2 be issued.

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EVALUATION OF AUTOMOTIVE PERFORMANCE SYSTEMS, INC. NEUSPEED 260 DEGREE CAMSHAFT & 16 VALVE INTAKE CAMSHAFT FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE CALIFORNIA CODE OF REGULATIONS

I. INTRODUCTION

Automotive Performance Systems, Inc. (APS) of 1464 N. Hundley St., Anaheim, CA 92806, has applied for an exemption from the prohibitions of Vehicle Code Section 27156 for the Neuspeed 260 Degree Camshaft for installation on 1985-92 model year Volkswagen (VW) Fox, Jetta, Corrado & Cabriolet vehicles that are powered by a 1.8 liter, 8 valve engine, and the 16 Valve Intake Camshaft for installation on 1987-92 model year VW Golfs, Jetta, and Passats powered by a 1.8 or 2.0 liter, 16 valve engine. APS has submitted a completed application and all the required information, as well as exhaust emissions test data performed at the Milton Roy Company on a 1991, 2.0 liter, 16 valve Volkswagen Passat.

II. CONCLUSIONS

Based on the submitted information and the results from exhaust emissions test performed at the Milton Roy Company, the staff concludes that APS' Neuspeed 260 Degree Camshaft and 16 Valve Intake Camshaft will not adversely affect exhaust emissions from the specified vehicles.

III. RECOMMENDATION

The staff recommends that Automotive Performance Systems, Inc. be granted an exemption as requested and that Executive Order D-236-2 be issued.

IV. DESCRIPTION OF THE CAMSHAFTS

The Neuspeed 260 Degree Camshaft is specifically designed for installation on 1985-92 model year Volkswagen (VW) Fox, Jetta, Corrado &

Cabriolet vehicles powered by a 1.8 liter, 8 valve engine, and the 16 Valve Intake Camshaft for installation on 1987-92 model year VW Golf, Jetta, and Passat vehicles powered by a 1.8 or 2.0 liter, 16 valve engine. The camshafts operate in conjunction with the original equipment manufacturer's fuel injection along with the emission control systems already certified with the stock engines. The purpose of using a modified camshaft is to increase the overall engine performance which is a direct result of modifying the valve characteristics. An example would be an increase or decrease in valve lift and duration.

Camshaft specifications for OEM and APS are tabulated in Table 1.

Table 1.

Neuspeed 260 Degree Specifications

Lift: .420
 Duration: 260° at .004 lifter rise
 220° at .050

Intake timing:

Open 20° BTDC
 Closed 60° ABDC

Exhaust timing:

Open 60° BBDC
 Closed 20° ATDC

Lobe center: 110°

16 Valve Intake Specifications

Lift: .378
 Duration: 250° at .004 lifter rise
 206° at .050

Intake timing:

Open 13° BTDC
 Closed 57° ABDC

Lobe center: 112°

OEM Specifications

Lift: .402
 Duration: 256° at .004 lifter rise
 216° at .050

Intake timing:

Open 18° BTDC
 Closed 58° ABDC

Exhaust timing:

Open 58° BBDC
 Closed 18° ATDC

Lobe center: 110°

OEM Specifications

Lift: .355
 Duration: 240° at .004 lifter rise
 196° at .050

Intake timing:

Open 8° BTDC
 Closed 52° ABDC

Lobe center: 112°

Table 1 shows that the Neuspeed 260 Degree Camshaft increases both lift and duration on the intake and exhaust valves by 4.5 and 1.6 percent, while, the 16 Valve Intake Camshaft increases the intake valve lift and duration by 6.5 and 4.2 percent.

V. DISCUSSION OF THE CAMSHAFTS

A 1991, 16-valve Volkswagen Passat powered by a 2.0 liter engine was used as the test vehicle. Emission testing conducted by the Milton Roy Company consisted of a cold-start CVS-75 emission test with the 16 Valve Intake Camshaft installed. The ARB considered the 16 valve Intake Camshaft as the "worst case" because it has a greater increase in intake valve lift and duration when compared to the Neuspeed 260 Degree Camshaft. Test results were evaluated against the vehicle's emission standards. Results are shown in Table 2.

Table 2

CVS-75 TEST RESULTS
(Milton Roy Company)

	<u>HC</u>	<u>CO</u>	<u>NOx</u>
Device	0.23	2.9	0.15
Standard	0.41	7.0	0.4
Difference	-0.18	-4.1	-0.11

The CVS-75 emissions test results at the Milton Roy Company demonstrate that HC, CO and NOx emissions levels of the 16 Valve Intake Camshaft are below the emission standards for the test vehicle. This demonstrates that the installation of the Neuspeed 260 Degree Camshaft and the 16 Valve Intake Camshaft will not adversely affect the exhaust emissions of the applicable vehicles.

Automotive Performance Systems, Inc. has submitted all the required information and fulfilled the requirements for an exemption. The test results confirmed that APS' Neuspeed 260 Degree Camshaft and 16 Valve Intake Camshaft meet the requirements for the exemption.