

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-375-1  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

AUTOTECH SPORT TUNING  
CAMSHAFTS

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 Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft manufactured by Autotech Sport Tuning, 32240 Paseo Adelanto, Unit E, San Juan Capistrano, CA 92675 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 the following Volkswagen applications: 1986-88 16 valve 2.0L Sciroccos, 1985-95 8 & 16 valve 1.8L & 2.0L Jettas & Golfs, 1987-93 1.8L Foxes, 1990-95 16 valve 2.0L Passat, 1990-95 1.8L Corrado, and 1988-95 1.8L & 2.0L Cabriolet.

This Executive Order is valid provided that the installation instructions for the Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft 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 Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft, 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 Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft using any identification other than that shown in this Executive Order or marketing of the Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft 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 Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft shall not be construed as an exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

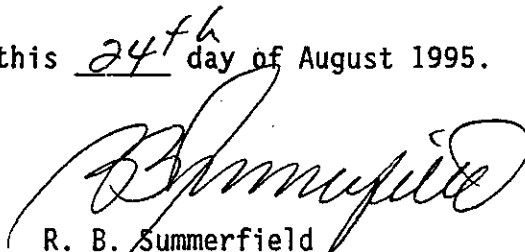
This Executive Order does not constitute any opinion as to the effect that the use of the Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft may have on any warranty either expressed or implied by the vehicle manufacturer.

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 AUTOTECH SPORT TUNING'S HOR TECHNOLOGIE SPORT HYDRO CAMSHAFT, and the Autotech SPORT 260 DEGREE CAMSHAFT, and the Autotech 16 VALVE INTAKE CAMSHAFT.

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 24<sup>th</sup> day of August 1995.



R. B. Summerfield  
Assistant Division Chief  
Mobile Source Division

**State of California  
AIR RESOURCES BOARD**

**EVALUATION OF AUTOTECH SPORT TUNING'S CAMSHAFTS  
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE  
CALIFORNIA CODE OF REGULATIONS**

**August 1995**

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AIR RESOURCES BOARD

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by

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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

Autotech Sport Tuning of 32240 Paseo Adelanto, Unit E, San Juan Capistrano, California 92675 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft designed for the following Volkswagen applications: 1986-88 16 valve 2.0L Sciroccos, 1985-95 8 & 16 valve 1.8L & 2.0L Jettas & Golfs; 1987-93 1.8L Foxes, 1990-95 16 valve 2.0L Passat, 1990-95 1.8L Corrado, and 1988-95 1.8L & 2.0L Cabriolet.

Based on comparative emissions testing of the Hor Technologie Sport Hydro Camshaft, the staff concludes that the Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft will not adversely affect exhaust emissions from vehicles for which the exemption is requested.

The staff recommends that Autotech Sport Tuning be granted an exemption as requested and that Executive Order D-375-1 be issued.

## TABLE OF CONTENTS

|                                | Page Number |
|--------------------------------|-------------|
| SUMMARY                        | i           |
| CONTENTS                       | ii          |
| I. INTRODUCTION                | 1           |
| II. CONCLUSION                 | 1           |
| III. RECOMMENDATION            | 1           |
| IV. CAMSHAFT DESCRIPTION       | 2           |
| V. DISCUSSION OF THE CAMSHAFTS | 3           |

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I. INTRODUCTION

Autotech Sport Tuning of 32240 Paseo Adelanto, Unit E, San Juan Capistrano, California 92675 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft designed for the following Volkswagen applications: 1986-88 16 valve 2.0L Sciroccos, 1985-95 8 & 16 valve 1.8L & 2.0L Jettas & Golfs, 1987-93 1.8L Foxes, 1990-95 16 valve 2.0L Passat, 1990-95 1.8L Corrado, and 1988-95 1.8L & 2.0L Cabriolet.

II. CONCLUSIONS

Based on comparative emissions testing of the Hor Technologie Sport Hydro Camshaft, the staff concludes that Autotech Sport Tuning's Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft will not adversely affect exhaust emissions from the vehicles for which the exemption is requested.

III. RECOMMENDATION

The staff recommends that Autotech Sport Tuning be granted an exemption for their Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft for the following Volkswagen applications: 1986-88 16 valve 2.0L Sciroccos, 1985-95 8 & 16 valve 1.8L & 2.0L Jettas & Golfs, 1987-93 1.8L Foxes, 1990-95 16 valve 2.0L Passat, 1990-95 1.8L Corrado, and 1988-95 1.8L & 2.0L Cabriolet. The staff also recommends that Executive Order D-375-1 be issued.

#### IV. CAMSHAFT DESCRIPTION

The Hor Technologie Sport Hydro Camshaft, Autotech Sport 260 Degree Camshaft, and the Autotech 16 Valve Intake Camshaft have been specifically designed for installation on those model/model-year vehicles listed. The camshafts operate in conjunction with the original equipment manufacturer (OEM) computer controlled feedback fuel injection systems along with the emission control systems already certified with the stock engines. The purpose of using the camshafts is to increase the overall engine performance by modifying the valve characteristics, such as increasing the valve lift and duration.

The three camshafts vary in their characteristics, each designed for different levels of performance. The Hor Technologie Sport Hydro Camshaft, designed for 8 valve engines, has the following characteristics (numbers in parentheses represent the OEM specifications): Lift 0.449" (0.402"), Duration 270° at 0.004" lift (260° at 0.004" lift), Intake Timing - Open at 19° BTDC (18° BTDC) Close at 61° ABDC (58° ABDC), Exhaust Timing - Open at 59° BBDC (58° BBDC) Close at 17° ATDC (18° ATDC), and Lobe Center at 112° (110°). The Autotech Sport 260° Camshaft, designed for 8 valve engines, has the following characteristics (numbers in parentheses represent the OEM specifications): Lift 0.420" (0.402"), Duration 260° at 0.004" lift (260° at 0.004" lift), Intake Timing - Open at 20° BTDC (18° BTDC) Close at 60° ABDC (58° ABDC), Exhaust Timing - Open at 60° BBDC (58° BBDC) Close at 20° ATDC (18° ATDC), and Lobe Center at 110° (110°). The Autotech 16 Valve Intake Camshaft, designed for 16 valve engines, has the following characteristics (numbers in parentheses represent the OEM specifications): Lift 0.378" (0.355"), Duration 260° at 0.004" lift (256° at 0.004" lift), Intake Timing - Open at 13° BTDC (8° BTDC) Close at 57° ABDC (52° ABDC), and Lobe Center at 112° (112°). The manufacturer claims that these modifications from stock specifications allow the engines greater volumetric efficiency.



V. DISCUSSION OF THE CAMSHAFTS

The Autotech Sport Tuning's Hor Technologie Sport Hydro Camshaft, 260 Degree Camshaft, and 16 Valve Intake Camshaft are designed for installation on the following Volkswagen applications: 1986-88 16 valve 2.0L Sciroccos, 1985-95 8 & 16 valve 1.8L & 2.0L Jettas & Golfs, 1987-93 1.8L Foxes, 1990-95 16 valve 2.0L Passat, 1990-95 1.8L Corrado, and 1988-95 1.8L & 2.0L Cabriolet.

A 1995 Volkswagen Golf with a 2.0L fuel injected engine was selected as the test vehicle for the evaluation of the camshafts. The Golf with the 2.0L engine was selected due to its popularity. It is also applicable to the Hor Technologie Sport Hydro camshaft, the most modified camshaft. The dynamometer's inertia weight and horsepower settings were 3000-lbs and 6.3-hp respectively. The emissions tests conducted by Automobile Club of Southern California for Autotech consisted of one Cold Start CVS-75 emission test in the baseline configuration and one Cold Start CVS-75 emission test in the modified (Hor Technologie Sport Hydro Camshaft installed) configuration. The ARB did not perform emissions testing to confirm the test results submitted by the applicant. A summary of the test results is shown below:

Exhaust Emission Test Results

| Test        | Exhaust Emissions (gm/mi) |           |            |
|-------------|---------------------------|-----------|------------|
| <u>Mode</u> | <u>HC</u>                 | <u>CO</u> | <u>NOx</u> |
| Baseline    | 0.16                      | 1.66      | 0.13       |
| Device      | 0.18                      | 1.93      | 0.11       |
| Difference  | +0.02                     | +0.27     | -0.02      |

Results from the emission test conducted at Automobile Club of Southern California show the vehicle emissions with the Hor Technologie Sport Hydro Camshaft installed are within the allowable increase of 10 percent or 0.1

gm/mile HC, 15 percent or 1.0 gm/mile CO and 10 percent 0.1 gm/mile NOx above the baseline as specified under the "Procedures for Exemption of Add-On or Modified Parts." Therefore, based on the test results, the staff concludes that the installation of Autotech's Hor Technologie Sport Hydro Camshaft, 260 Degree Camshaft, and 16 Valve Intake Camshaft will not have an adverse effect on 1986-88 16 valve 2.0L Sciroccos, 1985-95 8 & 16 valve 1.8L & 2.0L Jettas & Golfs, 1987-93 1.8L Foxes, 1990-95 16 valve 2.0L Passat, 1990-95 1.8L Corrado, and 1988-95 1.8L & 2.0L Cabriolet.

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