

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-425
Relating to Exemptions Under Section 27156
of the Vehicle Code

TOYOTA RACING DEVELOPMENT
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 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 TRD Camshaft, part no. 00602-13511-000, manufactured by Crane Cams and marketed by Toyota Racing Development, 335 E. Baker Street, Costa Mesa, California 92626 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 1988-94 2.4L Toyota trucks.

This Executive Order is valid provided that the installation instructions for the 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 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 camshaft using any identification other than that shown in this Executive Order or marketing of the 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 camshaft shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

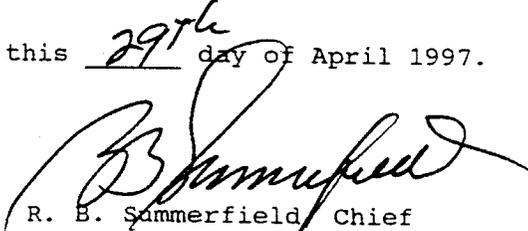
This Executive Order does not constitute any opinion as to the effect the use of the camshaft may have on any warranty either expressed or implied by the vehicle manufacturer.

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 TOYOTA RACING DEVELOPMENT'S 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 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 after hearing that grounds for revocation exist.

Executed at El Monte, California, this 29th day of April 1997.


R. B. Summerfield, Chief
Mobile Source Operations Division

State of California
AIR RESOURCES BOARD

EVALUATION OF TOYOTA RACING DEVELOPMENT'S CAMSHAFT
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

April 1997

State of California
AIR RESOURCES BOARD

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by

Mobile Source Division
9528 Telstar Avenue
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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

Toyota Racing Development of 335 E. Baker Street, Costa Mesa, California 92626 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for their camshaft designed for 1988-94 2.4L Toyota trucks.

Based on emissions testing of the camshaft, the staff concludes that the camshaft will not adversely affect exhaust emissions from vehicles for which the exemption is requested.

The staff recommends that Toyota Racing Development be granted an exemption as requested and that Executive Order D-425 be issued.

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I. INTRODUCTION

Toyota Racing Development of 335 E. Baker Street, Costa Mesa, California 92626 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for their camshaft, P/N 00602-13511-000 designed for 1988-94 2.4L Toyota trucks.

II. CONCLUSIONS

Based on emissions testing of the camshaft, the staff concludes that Toyota Racing Development's camshaft will not adversely affect exhaust emissions from the vehicles for which the exemption is requested.

III. RECOMMENDATION

The staff recommends that Toyota Racing Development (TRD) be granted an exemption for their camshaft for installation on those applicable Toyota trucks. The staff also recommends that Executive Order D-425 be issued.

IV. CAMSHAFT DESCRIPTION

The TRD Camshaft has been specifically designed for installation on 1988-94 2.4L Toyota trucks. The TRD Camshaft operates in conjunction with the original equipment manufacturer's (OEM) computer controlled feedback fuel injection system along with the emission control system already certified with the stock engine. The purpose of using the TRD Camshaft is to increase the overall engine performance by modifying the valve characteristics, such as increasing the valve lift and duration.

The cam lobes lift on the TRD Camshaft, P/N 00602-13511-000 has been increased by 4.7 percent on the exhaust lobe and 2.5 percent on the intake lobe while duration has been decreased by 15 percent on exhaust lobe and increased by 2.8 percent on the intake lobe.

V. DISCUSSION OF THE CAMSHAFT

A 1994 Toyota 4X4 with a 2.4L 4 cylinder fuel injected engine was used for the evaluation of the TRD Camshaft. The emissions test, conducted by the Edelbrock Corp., consisted of one Cold Start CVS-75 emissions test in the modified configuration with the TRD Camshaft installed. The ARB did not perform emissions testing to confirm the test results submitted by the applicant. A summary of the emissions test results is shown:

Exhaust Emission Test Results

On A 1994 4X4 Toyota Truck

Test	Exhaust Emissions (gm/mi)		
<u>Mode</u>	<u>NMHC</u>	<u>CO</u>	<u>NOx</u>
Standards	0.25	3.4	0.4
Device	0.15	2.0	0.29

Results from the emissions test conducted at the Edelbrock Corp. show the vehicle emissions with the TRD Camshaft installed are below the applicable emission standards set for that vehicle. No deterioration factors were applied because the vehicle mileage was over 50,000 miles. Therefore, based on the test results, the staff concludes that the installation of the TRD Camshaft will not have an adverse effect on exhaust emissions for those applicable Toyota trucks.

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