

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-193-6  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

CAR SOUND EXHAUST SYSTEM, INC.  
"MAIN CATALYTIC CONVERTER AND PRECATALYSTS SYSTEM  
SERIES 300/500"

WHEREAS, Vehicle Code Section 27156 and Title 13 California Code of Regulations (hereafter "CCR") Section 2222(h), authorize the California Air Resources Board (ARB) and its Executive Officer to exempt new aftermarket catalytic converters from the prohibitions of Vehicle Code Section 27156.

WHEREAS, Car Sound Exhaust System, Inc. of 22961 Arroyo Vista, Rancho Santa Margarita, California 92688, has applied to the ARB for exemption from the prohibitions in Vehicle Code Section 27156 for their new main catalytic converter and precatlysts system for the following application:

<u>Type</u>	<u>Part No.</u>	<u>Max. Engine Size</u>	<u>Number of Precatalyst</u>	<u>Max. Veh. Wt.</u>
TWC + OC	304/504	5.0L (305 CID)	2	5,500 lbs.

WHEREAS, pursuant to the authority vested in the Executive Officer by Health and Safety Code Section 39515 and in the Chief, Mobile Source Division by Health and Safety Code Section 39516 and Executive Order G-45-5, the Air Resources Board finds that the above aftermarket catalytic converter system complies with the California Vehicle Code Section 27156 and Title 13, California Code of Regulations, Section 2222(h).

IT IS HEREBY RESOLVED that the above catalytic converter system is exempt from the prohibitions in Vehicle Code Section 27156 for installation on the approved application vehicle subject to the following conditions:

1. No changes are permitted to the converter system as described in the application for exemption. Any changes to the converter system or any of its components, applicable model year, or other factors addressed in this order must be evaluated and approved by the Air Resources Board prior to marketing in California.
2. Marketing of the converter system using identifications other than those shown in the exemption application or marketing of the converter system for application other than one listed in the application catalog shall be prohibited unless prior approval is obtained from the Air Resources Board. Exemption of this product shall not be construed as an exemption to sell, offer for sale, or advertise any components of the converter system as individual devices.

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3. Any oral or written references to this Executive Order or its content by Car Sound Exhaust System, Inc., its principals, agents, employees, distributors, dealers, or other representatives must include the disclaimer that the Executive Order or the exemption it provides is not an endorsement or approval of any emissions reduction claims for the catalytic converter systems and is only a finding that the converter system is exempt from the prohibitions of Vehicle Code Section 27156.

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 it, during 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 is made, after the hearing, that grounds for revocation exist.

Executed at El Monte, California, this 4<sup>th</sup> day of April, 1991.

R.B. Summerfield  
Assistant Division Chief  
Mobile Source Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF CAR SOUND EXHAUST SYSTEM, INC. NEW AFTERMARKET 300/500 SERIES  
3-WAY PLUS OXIDATION MAIN CONVERTER AND PRECATALYST SYSTEM FOR EXEMPTION  
FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 AND TITLE 13,  
CALIFORNIA CODE OF REGULATIONS, SECTION 2222(h)

April, 1991

EVALUATION OF CAR SOUND EXHAUST SYSTEM, INC. NEW AFTERMARKET 300/500 SERIES  
3-WAY PLUS OXIDATION MAIN CONVERTER AND PRECATALYST SYSTEM FOR EXEMPTION  
FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 AND TITLE 13,  
CALIFORNIA CODE OF REGULATIONS, SECTION 2222(h)

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

Car Sound Exhaust System, Inc. (Car Sound) of 22961 Arroyo Vista, Rancho Santa Margarita, California 92688, has applied for an exemption to use their new 900 series aftermarket three-way plus oxidation (TWC + OC) catalytic converter in combination with the 500 series 3-way converter as main converter and precatalyst system application under the California regulations for new aftermarket catalytic converters. Under this system application, the 900 series is redesignated as 300. Car Sound plans to use the 300/500 system on 3-way plus oxidation vehicles up to 5.0 liters and 5500 lbs. The 300/500 system is for vehicle application requiring two precatalysts.

Emissions data submitted show that the catalytic converter system meets the requirements of Vehicle Code Section 27156 and Title 13, California Code of Regulations, Section 2222(h) for the stated application. Based on the above, the staff recommends that the exemption be granted as requested.

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EVALUATION OF CAR SOUND EXHAUST SYSTEM, INC. NEW AFTERMARKET 300/500 SERIES  
3-WAY PLUS OXIDATION MAIN CONVERTER AND PRECATALYST SYSTEM FOR EXEMPTION  
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CALIFORNIA CODE OF REGULATIONS, SECTION 2222(h)

I. INTRODUCTION

Car Sound Exhaust System, Inc. (Car Sound) of 22961 Arroyo Vista, Rancho Santa Margarita, California 92688, has applied for an exemption to use their new 900 series aftermarket three-way plus oxidation (TWC + OC) catalytic converter in combination with the 500 series 3-way converter as main converter and precatalyst system application, in accordance with the California regulations on new aftermarket catalytic converters. The intended application for the system is shown below:

<u>Type</u>	<u>Part No.</u>	<u>Max. Engine Size</u>	<u>Max. Veh. Wt.</u>
TWC + OC	304/504	5.0L (305 CID)	5500 lbs.

The 300/500 system is assembled with two 500 series converters as precatalysts and one 300 as the main catalytic converter.

II. CONCLUSION

The applicant has submitted all the required information and based on the submitted exhaust emissions test data, the staff concludes that the catalytic converter system meets the criteria set forth in Vehicle Code Section 27156 and Title 13, California Code of Regulations, Section 2222(h) for the stated application.

III. RECOMMENDATION

The staff recommends that the exemption be granted as requested and that Executive Order No. D-193-6 be issued, permitting the advertisement, sale and installation of the new aftermarket catalytic converter system.

#### IV. DEVICE DESCRIPTION

The substrates of the Car Sound's three-way and three-way plus oxidation substrates are coated with platinum, palladium and rhodium with air injection incorporated between the reducing and oxidizing substrates of the three-way plus oxidation converter. Car Sound provided extended air tube to permit air injection into the center of the main converter. The extra length of air tube was not required in the previously exempted Car Sound 300/500 system for 5.2L vehicles. The 300 and 500 series converters are assembled with one reducing and one oxidizing substrates enclosed in an outer stainless steel shell. The 300 and 500 series converters have been exempted previously by the Air Resources Board (ARB). A heat shield of aluminum is welded to the converter shell to protect the vehicle underbody from heat. The catalytic converter system is sold as a unit with installation instructions and kits as shown in the application catalog. It is also sold with a warranty for 25,000 miles on the substrates and five years or 50,000 miles on the container or shell.

#### V. DEVICE EVALUATION

Car Sound has submitted the test data on the 300/500 catalytic converter system. The tests were conducted by Automotive Testing and Development Services, Inc. (ATDS), Huntington Beach, California. Two CVS-75 emission tests were conducted on each of the test vehicles with the converter installed and two CVS-75 tests were conducted with exhaust backpressure simulator. A 1989 Ford Thunderbird 5.0L was the test vehicle for the 300/500 system. The exemption for the 300/500 system application is limited to vehicles up to 5.0L and 5500 lbs. in order to conform to the "worst case" requirement of the California regulations. The test results and conversion efficiencies for the converter systems are shown below:



TWC + OC 300/504 Series System

	<u>Simulator</u>	<u>Converter 1</u>	<u>Converter 2</u>	<u>Aveg. Conv. Eff.</u>
HC (g/mi)	3.748	0.326	0.367	90.7%
CO (g/mi)	18.762	2.477	2.968	85.5%
NOx(g/mi)	1.604	0.792	0.736	52.3%

All of the conversion efficiencies meet the requirements of the California regulations. Car Sound conducted additional tests to compare the performance of their 300/500 system with original equipment manufacturer (OEM) converter system. A baseline test was first conducted with the vehicle certification test weight of 3750 lbs., then with the higher Car Sound test weight of 5000 lbs. The OEM converter was then replaced by the Car Sound system and the test conducted again with the Car Sound test weight of <sup>5</sup>5000 lbs. The test results below show that the Car Sound converter system performed better than the existing OEM converter system.

<u>Converter make</u>	<u>Test Wt.(lbs.)</u>	<u>HC (g/mi)</u>	<u>CO (g/mi)</u>	<u>NOx (g/mi)</u>
OEM	3750	0.887	3.215	0.688
OEM	5500	0.902	2.345	1.475
% Change		+1.7	-27	+114
300/500	5500	0.346	2.722	0.764
% Change		-61	-15	+11

The staff based the evaluation of the new aftermarket catalytic converter systems on the information submitted by Car Sound and on test data from Automotive Testing and Development Services, Inc.