

Superseded by D-188-5

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-188-2
Relating to Exemptions Under Section 27156
of the Vehicle Code

TRI-D INDUSTRIES, INC.
"THREE-WAY PLUS OXIDATION CATALYTIC CONVERTER"

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 in Vehicle Code Sections 27156 and 38391.

WHEREAS, TRI-D Industries, Inc. of 820 East Fifth Street, Port Clinton, Ohio 43452, has applied to the ARB for exemption from the prohibitions in Vehicle Code Sections 27156 and 38391 for their new aftermarket three-way plus oxidation converter (TWC + OC) for the following application:

<u>Application</u>	<u>Series Number</u>	<u>Max. Eng. Size</u>	<u>Max. Veh. Wt.</u>
TWC + OC	TD5000	5.9L	6,000 lbs.
TWC	TD5000	5.9L	6,000 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 ARB finds that the above aftermarket catalytic converter complies with the California Vehicle Code Sections 27156 and 38391, and Title 13, California Code of Regulations, Section 2222(h). Emission performance of the catalytic converter was based on durability mileage accumulation of 25,000 miles using the AMA durability driving schedule (Reference Appendix IV, Title 40, Part 86, Code of Federal Regulations (June 28, 1977)).

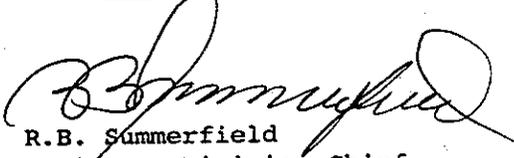
IT IS HEREBY RESOLVED that the above catalytic converter is exempt from the prohibitions in Vehicle Code Sections 27156 and 38391 for installation on applicable vehicles subject to the following conditions:

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

3. Any oral or written references to this Executive Order or its content by TRI-D Industries, 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 and is only a finding that the catalytic converter is exempt from the prohibitions of Vehicle Code Sections 27156 and 38391.
4. Upon installation, the catalytic converter must carry a manufacturer's warranty for 25,000 miles on the substrates and 50,000 miles or five years on the shell.

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 31st day of March, 1994.


R.B. Summerfield
Assistant Division Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF TRI-D INDUSTRIES, INC. NEW AFTERMARKET THREE-WAY PLUS
OXIDATION CATALYTIC CONVERTER FOR EXEMPTION FROM THE PROHIBITIONS
IN VEHICLE CODE SECTION 27156 AND TITLE 13, CALIFORNIA CODE OF
REGULATIONS, SECTION 2222(h)

March, 1994

EVALUATION OF TRI-D INDUSTRIES, INC. NEW AFTERMARKET THREE-WAY PLUS
OXIDATION CATALYTIC CONVERTER FOR EXEMPTION FROM THE PROHIBITIONS
IN VEHICLE CODE SECTION 27156 AND TITLE 13, CALIFORNIA CODE OF
REGULATIONS, SECTION 2222(h)

by

Mobile Source Division

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 mention of trade names or commercial products constitute endorsement or recommendation for use.)

SUMMARY

TRI-D Industries, Inc. (TRI-D) of 820 East 5th Street, Port Clinton, Ohio 43452, has applied for an exemption of their new aftermarket three-way plus oxidation catalytic converter (TWC + OC) from the prohibitions in Vehicle Code Sections 27156 and 38391 in accordance with California regulations for new aftermarket catalytic converters. TRI-D also conducted a carry-over test on a California vehicle powered by a 5.9L engine for three-way converter (TWC) application. The new converter will be used as TWC + OC and TWC on vehicles with engine displacement up to 5.9L and maximum equivalent test weight (ETW) of 6,000 lbs.

Emissions data submitted by the applicant show that the catalytic converter meets the requirements of Vehicle Code Section 27156 and Title 13, California Code of Regulations, Section 2222(h) for the stated applications. Based on the above, the staff recommends that the exemption be granted as requested and that Executive Order D-188-2 be issued.

CONTENTS

	<u>Page Number</u>
<u>SUMMARY</u>	i
<u>CONTENTS</u>	ii
I. <u>INTRODUCTION</u>	1
II. <u>CONCLUSION</u>	1
III. <u>RECOMMENDATION</u>	1
IV. <u>DEVICE DESCRIPTION</u>	2
V. <u>DEVICE EVALUATION</u>	2

EVALUATION OF TRI-D INDUSTRIES, INC. NEW AFTERMARKET THREE-WAY PLUS
OXIDATION CATALYTIC CONVERTER FOR EXEMPTION FROM THE PROHIBITIONS
IN VEHICLE CODE SECTION 27156 AND TITLE 13, CALIFORNIA CODE OF
REGULATIONS, SECTION 2222(h)

I. INTRODUCTION

TRI-D Industries, Inc. (TRI-D) of 820 East 5th Street, Port Clinton, Ohio 43452, has applied for an exemption from the prohibitions in Vehicle Code Sections 27156 and 38391 for their new aftermarket three-way plus oxidation catalytic converter (TWC + OC) in accordance with California regulations on new aftermarket catalytic converters. TRI-D also conducted carry-over test on a California vehicle powered by a 5.9L engine for three-way converter (TWC) application. The intended applications for the new aftermarket catalytic converter are shown below:

<u>Application</u>	<u>Series Numbers</u>	<u>Max. Engine Size</u>	<u>Max. Veh. Test Wt.</u>
TWC + OC	TD5000	5.9L	6,000 lbs.
TWC	TD5000	5.9L	6,000 lbs.

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 meets the criteria set forth in Vehicle Code Section 27156 and Title 13, California Code of Regulations, Section 2222(h) for the stated applications.

III. RECOMMENDATION

The staff recommends that the exemption be granted as requested and that Executive Order No. D-188-2 be issued, permitting the advertisement, sale and installation of the new aftermarket TWC + OC for the stated applications.

IV. DEVICE DESCRIPTION

The front single substrate of TRI-D's three-way plus oxidation catalytic converter is coated with palladium, and the rear single substrate is coated with rhodium and palladium. Air tubes are incorporated in the converter for the TWC + OC application. No air tube is required for the TWC application. The substrates are wrapped with intumescent mat to prevent vibration and exhaust gases from by-passing the catalyst. The substrates are contained in an air-tight stainless steel shell using seam weld. A heat shield of aluminum is welded to the converter shell to protect the vehicle underbody from heat. The catalytic converter is sold as a unit with installation instructions as shown in the application catalog. It may also be sold with some installation kits. It is sold with a warranty for 25,000 miles on the substrates and five years or 50,000 miles on the stainless steel container or shell.

V. DEVICE EVALUATION

TRI-D has submitted TWC + OC and TWC test data from testing conducted by Roush Laboratories in Livonia, Michigan, and Garden Grove, California. The two test converters were aged respectively on a 1990 Dodge D250 5.9L pickup truck, and a 1990 Dodge LE150 5.9L pickup truck. The the mileage accumulation vehicles had odometer reading greater than 50,000 miles prior to the start of mileage accumulation. The equivalent test weight (ETW) for both mileage accumulation vehicles was 6,000 lbs. CVS-75 emission tests to determine the conversion efficiencies of the catalytic converter for TWC + OC and TWC applications were conducted on a 1990 Dodge Ram pickup truck 5.9L at ETW of 6,000 lbs., and a 1994 Dodge Ram Van 5.9L at ETW of 7,500 lbs. respectively. TRI-D elected to test the converter using a

vehicle with higher ETW; however, since the catalyst was aged using vehicles that were certified at an ETW of 6,000 lbs. its application cannot exceed 6,000 lbs. The test results and conversion efficiencies for the TWC and TWC + OC applications are shown below:

	<u>Three-way (TWC) Application</u>			
	<u>Simulator</u>	<u>Converter 1</u>	<u>Converter 2</u>	<u>Average Eff.</u>
HC (g/mi)	1.971	0.319	0.321	83.8%
CO (g/mi)	22.613	5.262	4.814	77.7%
NOx(g/mi)	4.789	0.861	0.702	83.7%

	<u>Three-way plus oxidation (TWC + OC) Application</u>			
	<u>Simulator</u>	<u>Converter 1</u>	<u>Converter 2</u>	<u>Average Eff.</u>
HC (g/mi)	2.035	0.315	0.309	84.7
CO (g/mi)	37.186	6.644	7.718	80.7
NOx(g/mi)	2.545	0.902	0.901	64.6

All of the conversion efficiencies meet the requirements of the California regulations. The staff based the evaluation of the new aftermarket catalytic converter on the information submitted by TRI-D, and test data from Roush Laboratories.