State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-182-13
Relating to Exemptions Under Section 27156
of the Vehicle Code

WALKER MANUFACTURING
"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, Walker Manufacturing of 3901 Willis Road, Grass Lake, Michigan 49240, 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). The new catalytic converter is intended for use as OC, TWC, and TWC + OC on light-duty and medium-duty vehicles as shown below:

Converter Use	Uni. Assembly Part Numbers	Body Part Numbers	Max. Eng. Size	Max. Veh. Test Wt.
TWC + OC,TWC,OC	15180,15181 15182,15183	615181,615181, 615182,615183	5.9L	4,500 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 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 Walker Manufacturing, 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 6th day of April, 1994.

R.B. Summerfield
Assistant Division Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF WALKER MANUFACTURING 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)

April, 1994

EVALUATION OF WALKER MANUFACTURING 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

SUMMARY

Walker Manufacturing (Walker) of 3901 Willis Road, Grass Lake, Michigan 49240, 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 on new aftermarket catalytic converters. The new converter will be used on light-duty and medium-duty vehicles powered by a 5.9L or smaller engine, and maximum equivalent test weight (ETW) of 4,500 lbs. for TWC + OC, TWC, and OC applications.

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-182-13 be issued.

IV. DEVICE DESCRIPTION

Walker's new aftermarket TWC + OC contains two substrates. The front reducing substrate is coated with palladium and rhodium in the ratio of 5:1, the rear oxidizing substrate is coated with palladium only. Air tube is provided between the substrates for the TWC + OC application. Each substrate measures 3.15 inches along the minor axis, 4.75 inches along the major axis, 2.12 inches long, and has a volume of 27.0 cubic inches. The substrates are enclosed in a stainless steel shell. The substrates are wrapped with compressed intumescent mat to prevent vibration and exhaust gases from by-passing the catalyst. A heat shield of aluminized steel is welded to the converter shell to protect the vehicle underbody from heat. The catalytic converter is sold as a unit with installation instructions and kits as shown in Walker's 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

Walker submitted data from testing conducted by Automotive Testing and Development Services, Inc. (ATDS), Ontario, California. The two test converters were aged respectively on 1976 and 1979 Chrysler Cordoba powered by a 5.9L engine. The test vehicles have equivalent test weight (ETW) of 4,500 lbs. Emissions tests were conducted on the following vehicles:

Application	Emission Test Vehicle	Engine Size	ETW
TWC + OC	1992 Dodge D250 Truck	5.9L	4,500 lbs.
TWC	1994 Dodge B350 VAN	5.9L	4,500 lbs.
OC	1976 Chrysler Cordoba	5.9L	4,500 lbs.

Upon conclusion of testing at ATDS, the Air Resources Board (ARB) conducted confirmatory tests with the two aged catalysts at Haagen-Smit Laboratory, El Monte, California, for the TWC + OC and TWC applications. The converter NOx conversion efficiency for the TWC application was 59.7 percent, the required minimum conversion efficiency is 60 percent. Due to the marginal

failure on the NOx efficiency, the applicant was allowed to conduct one cold-start CVS-75 at ATDS. The retest was observed by a staff of ARB. Results from the retest were then averaged with the first test results from ATDS. The test results and conversion efficiencies for the converter are shown below:

ATDS, Ontario, California

		TWC + OC		
	Simulator	Converter 1	Converter 2	Avg Eff.
HC (g/mi)	2.159	0.606	0.585	72.9%
CO (g/mi)	36.203	9.362	8.230	77.3%
NOx(g/mi)	2.272	1.454	1.394	56.5%

		TWC Test 1		Test 2	
	Simulator	Converter 1	Converter 2		Avg Eff.
HC (g/mi)	10.106	2.648	2.987	3.430	70.6
CO (g/mi)	84.509	17.424	20.131	19.180	77.6%
NOx(g/mi)	3.450	1.339	1.332	1.235	62.3%
			OC		
HC (g/mi)	7.541	1.233	1.328		83.0%
CO (g/mi)	33.419	6.112	7.944		79.0%

Haagen-Smit Laboratory, El Monte

		TWC + OC		
	Simulator	Converter 1	Converter 2	Avg. Eff.
HC (g/mi)	2.121	0.592	0.515	73.9%
CO (g/mi)	38.345	9.908	6.600	78.5%
NOx(g/mi)	3.001	1.340	1.414	54.1%
			TWC	
HC (g/mi)	13.706	3.635	3.560	73.8%
CO (g/mi)	81.831	25.083	19.268	72.9%
NOx(g/mi)	2.743	1.125	1.086	59.7%

The exemption of the new Walker catalytic converter for TWC application is based on the combined three test results from ATDS meeting the required minimum NOx conversion efficiency. Staff attributes the marginal NOx conversion efficiency failure on the confirmatory testing to test-to-test variability.