

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-167-5
Relating to Exemptions Under Section 27156
of the Vehicle Code

HEDMAN MANUFACTURING
TUBULAR EXHAUST MANIFOLD SYSTEM

Pursuant to the authority vested in the Air Resources by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Section 39515 and 39516 of the Health and Safety Code and Executive Order G-45-5;

IT IS ORDERED AND RESOLVED: That the installation of the Tubular Exhaust Manifold System (16 gauge), part nos. 88600, 88600-6, 89461 and 89461-6, manufactured by Hedman Manufacturing of 9599 Jefferson Blvd., Culver City, California 90232, has been found not to reduce the effectiveness of required motor vehicle pollution control devices, and therefore is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1986-92 model-year Ford Mustangs equipped with a 5.0 liter engine and 1987-92 Ford pick-up trucks equipped with a 7.5 liter.

This Executive Order is valid provided that installation instructions for this device will not recommend tuning the vehicle to specifications different from those submitted by the device manufacturer.

Changes made to the design or operating conditions of the device, as exempted by the Air Resources Board, that adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of this device using an identification other than that shown in this Executive Order or marketing of this device 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 a kit shall not be construed as an exemption to sell, offer for sale, or advertise any component of the product as an individual device.

This Executive Order does not constitute any opinion as to the effect that the use of this device 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 THE HEDMAN MANUFACTURING TUBULAR EXHAUST MANIFOLD SYSTEM.

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 communications.

Section 17500 of the Business and Professions Code makes untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

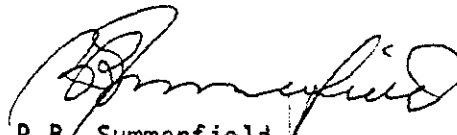
Section 43644 of the Health and Safety Code provides as follows:

"43644, (a) No person shall install, sell offer for sale, or advertise or except in an application to the state board for certification of a device, represent, any device as a motor vehicle pollution control device for use on any used motor vehicle unless that device has been certified by the state board. No person shall sell, offer for sale, advertise, or represent any motor vehicle pollution control device as a certified device which, in fact, is not a certified device. Any violation of this subdivision is a misdemeanor."

Any apparent violation of the conditions of this Executive Order will be submitted to the Attorney General of California for such action as he deems advisable.

Executive Order D-167-1 is superceded and of no further force and effect.

Executed at El Monte, California, this 2nd day of June, 1992.


R.B. Summerfield
Assistant Division Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF HEDMAN MANUFACTURING'S TUBULAR EXHAUST MANIFOLD SYSTEM
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

June 1992

State of California
AIR RESOURCES BOARD

EVALUATION OF HEDMAN MANUFACTURING'S TUBULAR EXHAUST MANIFOLD SYSTEM
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

by

Mobile Source Division
State of California
Air Resources Board
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 the mention of trade names or commercial products constitute endorsement or recommendation for use.)

SUMMARY

Hedman Manufacturing (Hedman) of 9599 Jefferson Blvd., Culver City, California 90232, has requested to update Executive Order D-167-1 which exempts Hedman's Tubular Exhaust Manifold System (TEMS) from the prohibitions of California Vehicle Code Section 27156. The existing Executive Order D-167-1 exempts Hedman's TEMS for installation on 1987-91 Ford pick-up trucks equipped with a 7.5 liter electronic fuel injected engine. The update is requested to include 1992 model-year Ford pick-up trucks with either a 7.5 liter electronic fuel injected engine. Hedman also requested that 1986-92 Ford Mustangs equipped with a 5.0 liter fuel-injected engine be included in the vehicle application.

Based on an engineering evaluation along with emission test results performed by Hedman at an independent laboratory, and that the 1992 vehicles for which the exemption update is requested are carry-overs from the model-years for which an exemption has been granted, the staff concludes that Hedman's TEMS will not adversely affect exhaust emission from the vehicles for which an exemption is requested.

The staff recommends that Hedman be granted Executive Order D-167-5 allowing the installation of their TEMS, part nos. 88600, 88600-6, 89461 and 89461-6, on 1986-92 Ford Mustangs equipped with a 5.0 liter engine and 1987-92 Ford pick-up trucks equipped with a 7.5 liter engine

TABLE OF CONTENTS

	Page No.
SUMMARY	i
CONTENTS	ii
I. INTRODUCTION	1
II. CONCLUSION	1
III. RECOMMENDATION	2
IV. TUBULAR EXHAUST MANIFOLD SYSTEM DESCRIPTION	2
V. DISCUSSION	3
VI. APPENDIX	5
APPENDIX A: INSTALLATION INSTRUCTIONS	A-1

EVALUATION OF HEDMAN MANUFACTURING'S TUBULAR EXHAUST MANIFOLD SYSTEM FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE CALIFORNIA CODE OF REGULATIONS

I. INTRODUCTION

Hedman Manufacturing (Hedman) of 9599 Jefferson Blvd., Culver City, California 90232, has requested to update Executive Order D-167-1 which exempts Hedman's Tubular Exhaust Manifold System (TEMS) from the prohibitions of California Vehicle Code Section 27156. The existing Executive Order D-167-1 exempts Hedman's TEMS for installation on 1987-91 Ford pick-up trucks with a 7.5 liter electronic fuel injected engine. The update is requested to include 1992 model-year Ford pick-up trucks with either a 7.5 liter electronic fuel injected engine. Hedman also requested that 1986-92 Ford Mustangs equipped with a 5.0 liter fuel injected engine be included in the exemption.

Hedman claims no changes to the installation instructions or tune-up specifications are necessary for use of the TEMS on the 1992 updates.

II. CONCLUSION

Based on an engineering evaluation along with emission test results performed by Hedman at an independent laboratory, and that the 1992 vehicles for which the exemption update is requested are carry-overs from the model-years for which an exemption has been granted, the staff concludes that Hedman's TEMS, part nos. 88600, 88600-6, 89461 and 89461-6, will not adversely affect exhaust emission from the vehicles for which an exemption is requested.

III. RECOMMENDATION

The staff recommends that Hedman be granted Executive Order D-167-5 allowing the installation of their TEMS, part nos. 88600, 88600-6, 89461 and 89461-6, on 1986-92 Ford Mustangs equipped with 5.0 liter engines and 1987-92 Ford pick-up trucks equipped with 7.5 liter engines.

IV. TUBULAR EXHAUST MANIFOLD SYSTEM DESCRIPTION

The Hedman TEMS, part nos. 88600 and 88600-6, are specifically designed for installation on 1986-92 Ford Mustangs equipped with a 5.0 liter engine and TEMS, part nos. 89461 and 89461-6, are specifically designed for installation on 1987-92 Ford pick-up trucks equipped with a 7.5 liter engine. The TEMS consists of exhaust manifolds and pre-catalyst piping. As with the original equipment manufacturer's (OEM) exhaust system, the function of Hedman's TEMS is to route exhaust gases from the two exhaust manifolds of the engine into a common pipe which then feeds to the catalytic converter. The TEMS, part nos. 88600 and 88600-6, for the 1986-92 Ford Mustangs, have four primary tubes of 1-5/8 inch outside diameter which combine into a 3 inch outside diameter collector pipe. The collector pipe length is 2-7/8 inches. The TEMS, part nos. 89461 and 89461-6, for the 1987-92 Ford pick-up trucks have four 1-3/4 inch outside diameter primary tubes which feed into a 3 inch collector pipe. The length of the collector pipe is 5-1/2 inches which then feeds into the "Y" pipe. All tubes are comprised of #16 gauge steel.

The TEMS is functionally identical to the cast iron exhaust manifolds and tubular steel collector pipes of the OEM exhaust system. The difference

is the design dimensions of the TEMS which optimizes the flow characteristics of the exhaust gases. The manufacturer claims TEMS was designed to improve the flow of exhaust gases from the cylinder heads to the catalytic converter, thereby promoting improved volumetric and combustion efficiency.

The system operates in conjunction with the OEM computer controlled electronic fuel injection and emission control systems already certified with the stock engines. Appendix A contains a sample of the installation instructions.

V. DISCUSSION

Hedman has requested an update to their Executive Orders D-167-1 to allow the use of the TEMS on the applicable 1992 model-year trucks. Their Tubular Exhaust Manifold Systems are identical to those previously approved for the 1987-91 trucks. The staff compared the engine design of the 1991 and 1992 model-year trucks. Since the 1992 model-year trucks certified for California sales were carried-over from the 1991 model-year, no additional exhaust emission tests were required or performed.

Hedman also requested the exemption to cover installation of TEMS on 1986-92 Ford Mustangs equipped with a 5.0 liter engine. Previous test data has shown that for header applications, the "worst" case vehicle is the vehicle with the largest engine displacement and gross vehicle weight. Hedman previously tested on a 1991 Ford F-250 pick-up truck equipped with a 7.5 liter engine. The 1991 Ford F-250 pick-up truck's emission increase due to the use of the TEMS (see Table 1) is within the allowable increase of 10 percent or 0.1 g/mi HC, 15 percent or 1.0 g/mi CO, and 10 percent or 0.1 g/mi NOx above the baseline as specified under the "Procedures for Exemption of Add-On or Modified Parts."

Table 1

CVS-75 Tests Conducted by Hedman

	Engine Size (liter)	Vehicle Tested	(HC	CO	NOx) g/m
Device	7.5	91 Ford F-250	.972	9.872	7.060
Baseline		Full Size Truck	.888	10.120	6.568
Difference			+.084	-.248	+.492
% Difference			+9.5%	-2.5%	+7.5%

Based on the fact that the 1986-92 Ford Mustangs have a smaller engine size and a lower gross vehicle weight than the 1991 Ford F-250 pick-up truck, the exhaust emissions increase would be less than those of the 1991 Ford F-250 pick-up truck. Therefore, staff concludes that based on previous testing conducted by Hedman, no emission impact would be observed on 1986-92 Ford Mustangs equipped with 5.0 liter engines when the TEMS is installed.

The staff recommends that Hedman be granted Executive Order D-167-5 allowing the installation of their TEMS, part nos. 88600, 88600-6, 89461 and 89461-6, on 1986-92 Ford Mustangs equipped with a 5.0 liter engine and 1987-92 Ford pick-up trucks equipped with 7.5 liter engines.

APPENDIX



PART #88600
MUSTANG GT/LX SR 302W 86-91

C A U T I O N !

THIS IS A CUSTOM DESIGNED EXHAUST HEDDER SYSTEM DESIGNED FOR THIS PARTICULAR APPLICATION(S). DO NOT BEND, CUT, DENT, DRILL OR HEAT ANY PORTION OF THIS HEDDER! ANY ALTERATION OTHER THAN THOSE SUGGESTED IN THIS INSTRUCTION SHEET WILL VOID THE HEDMAN LIFETIME WARRANTY!

TO PREVENT LEAKS, INSTALL YOUR HEDDERS WITH HEDMAN FLANGE GASKETS ONLY!

BEFORE STARTING INSTALLATION:

It is necessary to raise the vehicle at least 36 inches from the ground. A floor hoist is recommended. If none available, use a hydraulic jack with jack stands. DO NOT USE A BUMPER JACK!

INSTALLATION INSTRUCTIONS:

1. Disconnect battery, remove stock exhaust manifolds, headpipes, etc. Spark plugs should also be removed to eliminate possible damage during installation.
2. Remove oil dipstick tube.
3. Install passenger side first. With gasket in place, install hedder from above and start all bolts. Do not tighten.
4. Be sure that there is adequate clearance of all hoses, lines, etc. Tighten hedder bolts.
5. Install drivers side. With gasket in place, install hedder from above and start all bolts.
6. Tighten all bolts evenly.
7. Re-install oil dipstick tube and spark plugs. On some models, it will be necessary to use a regular wrench to tighten spark plugs. Replace stock exhaust manifold bolts with 3/8" X 2 1/2" bolts and nuts supplied in parts kit to hook up your stock exhaust system.
8. Make sure all wires, cables, and hoses have proper clearance.
9. Re-Connect battery.
10. Start engine and allow to run long enough to gain normal operating temperature. Turn engine off and re-tighten all hedder bolts

WARNING: REMOVAL OF CATALYTIC CONVERTERS AND OTHER FACTORY AIR POLLUTION CONTROL DEVICES IS ILLEGAL. WE RECOMMEND YOU ABIDE BY THE LAW. OUR TESTING INDICATES PERFORMANCE IS NOT SIGNIFICANTLY AFFECTED BY THESE DEVICES.

* * * ENJOY YOUR HEDDERS WHILE COMBINING * * *
INCREASED FUEL ECONOMY WITH BETTER PERFORMANCE!