

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-200-5  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

DOUG THORLEY HEADERS, INC.  
HEADER SYSTEM

(P/N's 303Y-SO, 303Y-DAO, 388Y-SO, 354Y-SO, 354Y-DAO, 392Y-SO AND 399Y-SO)

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 Sections 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 Doug Thorley Headers, P/N's 303Y-SO, 303Y-DAO, 388Y-SO, 354Y-SO, 354Y-DAO, 392Y-SO and 399Y-SO, manufactured by Doug Thorley Headers, Inc. of 1561 Commerce Street, Corona, CA 91720 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 1987-1992 model-year General Motors vehicles powered by a closed-loop 6.6-7.4 liter (366 400<sup>th</sup> 2/5/98 CID-454 CID) engine.

This Executive Order is valid provided that installation instructions for this header system will not recommend tuning the vehicle to specifications different from those submitted by Doug Thorley Headers, Inc.

Changes made to the design or operating conditions of the header system, 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 this header system using any identification other than that shown in this Executive Order or marketing of this header system 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 header system shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

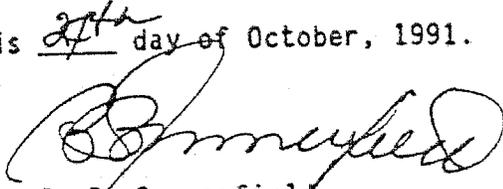
This Executive Order does not constitute any opinion as to the effect the use of this header system may have on any warranty either expressed or implied by the vehicle manufacturer.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF DOUG THORLEY HEADERS, INC.'S HEADERS, P/N'S 303Y-SO, 303Y-DAO, 388Y-SO, 354Y-SO, 354Y-DAO, 392Y-SO AND 399Y-SO.

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 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 27<sup>th</sup> day of October, 1991.



R. B. Summerfield  
Assistant Division Chief  
Mobile Source Division

*Original*

State of California  
AIR RESOURCES BOARD

EVALUATION OF DOUG THORLEY HEADERS, INC.'S HEADER SYSTEM  
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE  
CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE  
CALIFORNIA CODE OF REGULATIONS

October 1991

State of California  
AIR RESOURCES BOARD

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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

Doug Thorley Headers, Inc., of 1561 Commerce Street, Corona, California 91720 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for the Doug Thorley headers, P/N's 303Y-S0, 303Y-DAO, 388Y-S0, 354Y-S0, 354Y-DAO, 392Y-S0 and 399Y-S0. These headers are designed for installation on 1987-92 General Motors vehicles equipped with a closed-loop 6.0-7.4 liter (366 CID-454 CID) engine.

Based on the results from comparative exhaust emission tests performed at an independent laboratory on a 1991 Chevrolet C2500 pick-up truck, the staff concludes that Doug Thorley Headers, Inc.'s headers, P/N's 303Y-S0, 303Y-DAO, 388Y-S0, 354Y-S0, 354Y-DAO, 392Y-S0 and 399Y-S0 will not adversely affect exhaust emission from vehicles for which an exemption is requested.

The staff recommends that Doug Thorley Headers, Inc. be granted an exemption as requested and that Executive Order D-200-5 be issued.

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I. INTRODUCTION

Doug Thorley Headers, Inc. of 1561 Commerce Street, Corona, California 91720 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code for the headers, P/N's 303Y-S0, 303Y-DA0, 388Y-S0, 354Y-S0, 354Y-DA0, 392Y-S0 and 399Y-S0. These headers are designed for installation on 1987-92 General Motors vehicles powered by a closed-loop 6.6-7.4 liter (366 CID-454 CID) engine.

Doug Thorley Headers, Inc. has submitted data from comparative emission tests conducted on a 1991 Chevrolet C2500 pick-up truck at Milton Roy Laboratory, Orange, California.

II. CONCLUSIONS

Based on the results from comparative exhaust emission tests performed at Milton Roy Laboratory on a 1991 Chevrolet C2500 pick-up truck, the staff concludes that Doug Thorley Headers, Inc.'s headers, P/N's 303Y-S0, 303Y-DA0, 388Y-S0, 354Y-S0, 354Y-DA0, 392Y-S0 and 399Y-S0, will not adversely affect exhaust emissions from vehicles for which an exemption is requested.

III. RECOMMENDATION

The staff recommends that Doug Thorley Headers, Inc. be granted an exemption for their headers, P/N's 303Y-S0, 303Y-DA0, 388Y-S0, 354Y-S0,

354Y-DA0, 392Y-S0 and 399Y-S0, for installation on 1987-1992 model-year General Motors vehicles powered by a closed-loop 6.6-7.4 liter (366 CID-454 CID) engine. The staff also recommends that Executive Order D-200-5 be issued.

#### IV. DEVICE DESCRIPTION

The Doug Thorley headers, P/N's 303Y-S0, 303Y-DA0, 388Y-S0, 354Y-S0, 354Y-DA0, 392Y-S0 and 399Y-S0, are designed for installation on 1987-92 General Motors vehicles powered by a closed-loop 6.6-7.4 liter (366 CID-454 CID) fuel injected engine. As with the original equipment manufacturer's (OEM) exhaust system, the function of Doug Thorley's header system is to route exhaust gases through the header pipes from the two exhaust manifolds of the engine into a common pipe which then feeds to the catalytic converter. Each cylinder has a 1.75" diameter pipe that combines with the adjacent pipe into a 2" diameter pipe. On each side of the engine, these two 2" pipes combine into a 2.5" diameter pipe. Finally, all the exhaust gases are then routed into a pipe which feeds into the pre-catalyst piping.

The system operates in conjunction with the OEM computer controlled electronic port fuel injection and emission control systems already certified with the stock engine. Installation of Doug Thorley exhaust system does not alter the OEM location of the oxygen sensor and the catalyst. The tune-up specifications also remain the same. Appendix A contains a sample of the installation instructions.

V. HEADER SYSTEM EVALUATION AND DISCUSSION

A 1991 General Motors C2500 pick-up truck with a 7.4 liter (454 CID) fuel injected gasoline engine was used for the evaluation of the header P/N's 303Y-S0, 303Y-DAO, 388Y-S0, 354Y-S0, 354Y-DAO, 392Y-S0 and 399Y-S0. The dynamometer inertia weight and loading used were 7000-lbs and 15.4-hp respectively.

Comparative emissions tests conducted by Milton Roy Laboratory for Doug Thorley Headers, Inc. consisted of one Cold-Start CVS-75 emission test in the unmodified (baseline) configuration, followed by one Cold-Start CVS-75 emission test in the modified (header system installed) configuration. The ARB did not perform tests to confirm the test results submitted by the applicant. A summary of the test results is shown below:

Exhaust Emissions Test Results  
On A 1991 Chevrolet C2500 pick-up truck

<u>Test Mode</u>	<u>Exhaust Emissions (gm/mi)</u>		
	<u>NMHC</u>	<u>CO</u>	<u>NOx</u>
Baseline	.478	6.619	2.552
Device	.552	7.276	2.779
Difference	+.074	+.657	+.227
% Difference	+15.5%	+9.9%	+8.9%

The differences between the device emission test results and baseline emission test results submitted by the applicant were within the allowed limits of .1 gm/mile or 10 percent of baseline HC, 1.0 gm/mile or 15 percent of baseline CO and .1 gm/mile or 10 percent of baseline NOx as specified in the "Procedures for Exemption of Add-On and Modified Parts." Based on the test results, the staff concludes that the installation of the Doug Thorley headers, P/N's 303Y-S0, 303Y-DAO, 388Y-S0, 354Y-S0, 354Y-DAO, 392Y-S0 and 399Y-S0 did not have an adverse effect on exhaust emissions of the affected vehicles. Doug Thorley Headers, Inc. submitted all the required information and fulfilled the requirements for exemption.

Appendix

# DOUG THORLEY HEADERS

PART #303Y & 303Y-SD

CHEVROLET/GMC Pick-ups, Suburbans, Blazers: 1973-1985 2&4WD  
CLASS "A" MOTORHOMES: 1975-1985 396-427-454 Engine

When the enclosed instructions are followed precisely you will find the installation of your headers to be relatively simple. We cannot over-emphasize of adhering strictly to this proven approach.

NOTE: Installation of headers for vehicles equipped with emissions control devices and/or catalytic converters must be made in accordance with government regulations pertaining to emissions standards.

Due to restricted room in the engine compartment, your headers may come close to certain body and chassis components. This is a normal condition for an installation of this type. WARNING: MAKE SURE YOU HAVE ENOUGH CLEARANCE AROUND BRAKE, FUEL & ELECTRICAL LINES, ETC. In some cases it may be necessary to relocate those items which might be adversely affected by exhaust heat.

1. Disconnect battery cable to avoid damage to vehicle electrical system.
2. Raise front of vehicle approx. 24" and support with jack stands.  
WARNING: DO NOT RELY ON BUMPER JACKS FOR SUPPORT!!
3. Remove spark plugs, headpipes, and oil filter. It is not necessary to remove clutch linkage or front drive shaft on vehicles so equipped. It may be necessary to lift the engine from its mounts to remove the stock manifolds and to install the left side header.
4. Loosen starter motor, but do not remove. Remove dipstick tube.
5. Clean accumulation of carbon from exhaust port gasket surfaces.
6. Place headers into position from the underside of the vehicle, using the gaskets and hardware provided. We strongly recommend the use of high-temp silicone gasket sealer between the header and the gasket. Start all header bolts. Re-install dipstick and oil filter, etc.
7. Tighten all bolts securely. It is important that on the header flange, you start with the center bolts and work your way outward. Re-tighten bolts to starter, motor mounts, etc.

NOTE: All engines are not mounted exactly the same at the factory and is sometimes necessary to shift the motor from side to side to obtain maximum clearance. If motor mounts are worn or broken, they should be replaced at this time.

8. Attach reducer adapters to header collectors and attach to exhaust system by clamping or welding.
9. After completion of the entire system, start the engine and check for leaks. After the engine has run for approx. 20 minutes, re-tighten all header bolts (approx. 35 ft/lbs). Header bolts should be inspected periodically for tightness in order to prevent gasket damage and leakage.

Due to varying conditions in different geographical areas, we strongly recommend having your engine re-tuned after the installation of headers. This will assure that you receive the maximum increase scavenging in performance and economy. It may be noted that due to the increased scavenging effect of Tri-Y headers, that your air-fuel mixture and/or timing may require modification.

NOT LEGAL FOR SALE OR USE IN CA ON POLLUTION CONTROLLED MOTOR VEHICLES.  
DOUG THORLEY HEADERS, INC. • 1561 Commerce St. Corona, CA 91720 • (714) 735-7280 / (714) 735-1145