

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-180-15
Relating to Exemptions Under Section 27156
of the Vehicle Code

THE TURBO SHOP, INC.
EFI HEADER 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 EFI Header System manufactured by The Turbo Shop, Inc. (The Turbo Shop) of 940 W. Manchester Blvd., Inglewood, CA 90301, 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 those applications listed:

<u>PART NO.</u>	<u>YEAR</u>	<u>DESCRIPTION</u>	<u>MOTOR SIZE (CID)</u>
GENERAL MOTORS			
13-001	1973-87 1988-91	Pickups, Suburban, Blazer, Jimmy Suburban, Blazer, Jimmy	283-400 305-350
13-002	1988-92	Pickups (2wd)	305-350
13-003	1988-92	Pickups (4wd)	305-350
12-001	1973-89 1976-89	Pickups, Suburban, Blazer, Jimmy Class A Motorhome (single air pump)	454 454
12-002	1975-89	Class A Motorhome (dual air pump)	454
12-003	1988-92	Pickups	454
FORD			
11-001	1980-87	Pickups, Broncos, Vans, Mini Motorhomes	302-351W
11-002	1988-92	Pickups, Broncos, Vans, Mini Motorhomes	302-351W
6-012	1983-87 1975-87	Pickups Vans, Mini Motorhomes	460 460
6-013	1988-92	Pickups, Vans, Motorhomes (C-6 or 5 speed transmissions)	460
6-014	1988-92	Pickups, Vans, Motorhomes (E4OD transmissions)	460
6-003	1988-92	Class A Motorhomes	460

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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 TURBO SHOP #16 GAGE STEEL EFI HEADER 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.

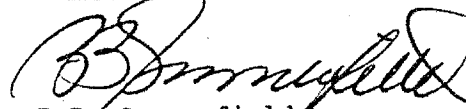
Section 43644 of the Health and Safety Code provides as follows:

"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-180-10 is superseded and of no further force and effect.

Executed at El Monte, California, this 3rd day of April, 1992.



R.B. Summerfield
Assistant Division Chief
Mobile Source Division

State of California
AIR RESOURCES BOARD

EVALUATION OF THE TURBO SHOP, INC.'S EFI 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

April 1992

State of California
AIR RESOURCES BOARD

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CALIFORNIA CODE OF REGULATIONS

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

SUMMARY

The Turbo Shop, Inc. (The Turbo Shop) of 940 W. Manchester Blvd., Inglewood, CA 90301, has requested to update Executive Order D-180-14 which exempts The Turbo Shop's EFI Header System from the prohibitions of Vehicle Code Section 27156 of the California Vehicle Code. The existing Executive Order D-180-14 exempts The Turbo Shop's EFI Header System for installation on 1987-92 Ford trucks with 7.5 liter electronic fuel injected (EFI) engine. The Turbo Shop requested that the exemption be expanded to include 1980-92 Ford trucks with either a 5.0 or 5.8 liter EFI or carbureted engine, 1975-86 Ford trucks with a 7.5 liter EFI or carbureted engine, and 1973-92 General Motors trucks with either a 5.0, 5.7 or 7.4 liter EFI, throttle body injection (TBI), or carbureted engine (see Appendix for applications).

Based on an engineering evaluation along with emission test results performed by The Turbo Shop at an independent laboratory, the staff concludes that The Turbo Shop's EFI Header System will not adversely affect exhaust emissions from the trucks for which an exemption is requested.

The staff recommends that The Turbo Shop be granted Executive Order D-180-15 allowing the installation of their EFI Header System on those applicable 1975-92 Ford trucks with either a 5.0, 5.8 or 7.5 liter EFI or carbureted engine, and 1973-92 General Motors trucks with either a 5.0, 5.7 or 7.4 liter EFI, TBI, or carbureted engine (see Appendix for applications).

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EVALUATION OF THE TURBO SHOP, INC.'S EFI 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

I. INTRODUCTION

The Turbo Shop, Inc. (The Turbo Shop) of 940 W. Manchester Blvd., Inglewood, CA 90301, has requested to update Executive Order D-180-14 which exempts The Turbo Shop's EFI Header System from the prohibitions of Vehicle Code Section 27156 of the California Vehicle Code. The existing Executive Order D-180-14 exempts The Turbo Shop's EFI Header System for installation on 1987-92 Ford trucks with a 7.5 liter electronic fuel injected (EFI) engine. The update is requested to include 1980-92 Ford trucks with either a 5.0 or 5.8 liter EFI or carbureted engine, 1975-86 Ford trucks with a 7.5 liter EFI or carbureted engine, and 1973-92 General Motors trucks with either a 5.0, 5.7 or 7.4 liter EFI, throttle body injection (TBI), or carbureted engine (see Appendix for applications).

II. CONCLUSION

Based on an engineering evaluation along with emission test results performed by The Turbo Shop at an independent laboratory, the staff concludes that The Turbo Shop's EFI Header System will not adversely affect exhaust emissions from the trucks for which an exemption is requested.

III. RECOMMENDATION

The staff recommends that The Turbo Shop be granted Executive Order D-180-15 allowing the installation of their EFI Header System on those applicable 1975-92 Ford trucks with either a 5.0, 5.8 or 7.5 liter EFI or carbureted engine, and 1973-92 General Motors trucks with either a 5.0, 5.7 or 7.4 liter EFI, TBI, or carbureted engine (see Appendix for applications).

IV. EFI HEADER SYSTEM DESCRIPTION

The Turbo Shop's EFI Header System is specifically designed for installation on those applicable Ford or General Motors trucks with either a 5.0, 5.7, 5.8, 7.4 or 7.5 liter EFI, TBI, or carbureted engine (see Appendix for applications). The EFI Header System consists of exhaust manifolds and pre-catalyst piping. As with the original equipment manufacturer's (OEM) exhaust system, the function of The Turbo Shop's EFI Header System 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 Turbo Shop's family of EFI Header Systems share the same common features: all have the same tubular exhaust flange configuration and thickness, their manifold assemblies are all designed using dual diameter primary pipe components, and the EFI Header System intake heat stoves are of the same configuration and dimensions. The EFI Header System's primary pipes are 1-3/4" inside diameter (ID) on 7.4 and 7.5 liter engine, and 1-1/2" ID on 5.0, 5.7, and 5.8 liter engine. All exhaust gases are then routed into a 2-1/4" diameter tube which feeds into the precatalyst piping. All tubes are comprised of #16 gage steel.

The EFI Header System 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 EFI Header System which optimizes the flow characteristics of the exhaust gases. The manufacturer claims that the EFI Header System 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 on applicable models and emission control systems already certified with the stock engine. The EFI Header System models are available both for trucks with A.I.R. and without A.I.R. emission control

system. The installation of the EFI Header System is done by fittings only and requires no welding, modifications or adjustments to the emission control system of the affected trucks (see Appendix).

V. DISCUSSION OF THE EFI HEADER SYSTEM

The Turbo Shop has requested an update to their Executive Order D-180-14 to expand the use of the EFI Header System to 1980-92 Ford trucks with either a 5.0 or 5.8 liter EFI or carbureted engine, 1975-86 Ford trucks with a 7.5 liter EFI or carbureted engine, and 1973-92 General Motors trucks with either a 5.0, 5.7 or 7.4 liter EFI, TBI, or carbureted engine (see Appendix for applications). To evaluate the emission impact of the EFI Header System on these trucks, the staff used prior CVS-75 emission data from a 1991, 7.5 liter Ford truck, as well as, require The Turbo Shop to test a 1991 Chevrolet 7.4 liter C3500 truck to determine the emission impact of the EFI Header System on General Motors trucks. The staff deemed results from testing a 1991, 7.5 liter Ford truck and a 1991 Chevrolet 7.4 liter C3500 truck represents the worst case conditions for the range of vehicle applications of the the EFI Header System. Table 1 lists emission test results conducted at California Environmental Engineering (CEE) on a 1991, 7.4 liter truck.

Table 1

CVS-75 Tests Conducted by The Turbo Shop

	Engine Size (liter)	Vehicle Tested	(HC	CO	NOx) g/m
Device	7.4	91 GM C3500	.515	4.82	4.46
Baseline		Full Size Truck	.541	5.01	4.06
Difference			-4.8%	-3.9%	+9.8%

The differences between the device emission test results and baseline emission test results submitted by the applicant on the 1991 Chevrolet 7.4 liter C3500 truck and that of a previously tested 1991, 7.5 liter Ford truck were both within the allowable increase limits 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." Therefore, staff concludes that based on the two trucks that The Turbo Shop has tested, no emission impact would be observed on those applicable 5.0, 5.7, 5.8, 7.4 and 7.5 liter engine when the EFI Header System is installed.

The staff recommends that The Turbo Shop be granted Executive Order D-180-15 allowing the installation of their EFI Header System on those applicable 1975-92 Ford trucks with either a 5.0, 5.8 or 7.5 liter EFI or carbureted engine, and 1973-92 General Motors trucks with either a 5.0, 5.7 or 7.4 liter EFI, TBI, or carbureted engine (see Appendix for applications).

APPENDIX

APPLICATIONS LIST

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6-013	1988-92	Pickups, Vans, Motorhomes (C-6 or 5 speed transmissions)	460
6-014	1988-92	Pickups, Vans, Motorhomes (E4OD transmissions)	460
6-003	1988-92	Class A Motorhomes	460

THE TURBO SHOP INC.
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5.0& 5.8L EFI HEADER SYSTEM
C.A.R.B. E.O.# D-180-xx

1. Remove ground cable from batteries.
2. Remove stock exhaust manifolds.
3. Install passengside header from underside of vehicle. Use bolts and gaskets provided with kit. It will be necessary to remove the starter motor to install the header. Install EGR fitting from the stock manifold into the header and connect the EGR valve. Use the stock studs to connect the exhaust pipes.
4. Install driverside header. Connect the dipstick and coil support bracket to the tab on the header. Connect exhaust pipes using original studs and nuts.
5. Tighten all mounting bolts first. Using bolts provided secure accessory mounting brackets to the new system. Tighten EGR tube.
6. Check all nuts, bolts, clamps and tube connections, tighten as necessary. Reconnect the battery cables and start vehicle. Allow the vehicle to idle and check for leaks. Shut vehicle off, tighten all bolts and nuts installed with new system. Repair any leaks.