

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-48
Relating to Exemptions under Section 27156
of the Vehicle Code

MOTOR KLEAN INCORPORATED
"HARLO MOTOR KLEAN FUEL SYSTEM, 1000 SERIES"

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 Section 39023 of the Health and Safety Code;

IT IS ORDERED AND RESOLVED: That the installation of "Harlo Motor Klean Fuel System, 1000 Series" manufactured and marketed by Motor Klean Incorporated, 84 King George Road, P.O. Box 1716, Brantford, Ontario, Canada, has been found to not 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 1969 to 1974 model-year vehicles.

This device consists of a plastic bottle, rubber hose, plastic tee with 0.022 inch restrictor orifice for connection to the PCV line, mounting brackets, and bottle cap with a vapor outlet port and air inlet port. The composition of the fluid is identified by the following designation, "Motor Klean Fuel 74-100".

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

Changes made to the design or operating conditions of the device or composition of the fluid as originally submitted to the Air Resources Board for evaluation that adversely affect the performance of the vehicle's pollution control devices 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.

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 "HARLO MOTOR KLEAN FUEL SYSTEM, SERIES 1000" DEVICE.

No claim of any kind, such as "Approved by Air Resources Board" may be made with respect to the action taken herein in any advertising or other oral or written communication.

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

Sections 39130 and 39184 of the Health and Safety Code provide as follows:

"39130. No person shall install, sell, offer for sale, or advertise, or, except in an application to the board for certification of a device, represent, any device as a motor vehicle pollution control device unless that device has been certified by the 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 section is a misdemeanor."

"39184. (a) No person shall install, sell, offer for sale, or advertise, or, except in an application to the board for accreditation 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 accredited by the board. No person shall sell, offer for sale, advertise, or represent any motor vehicle pollution control device as an accredited device which, in fact, is not an accredited 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.

Executed at Sacramento, California, this 31 day of January, 1975.

WILLIAM SIMMONS
Executive Officer

State of California

AIR RESOURCES BOARD

January 14, 1975

Staff Report

Evaluation of the Motor Klean Incorporated's
"Harlo Motor Klean Fuel System, 1000 Series"
for Compliance with the Requirement of
Section 27156 of the California
Motor Vehicle Code

I. Introduction

Motor Klean Incorporated, 84 King George Road, P.O. Box 1716 Brantford, Ontario, Canada has submitted an application requesting an exemption from Section 27156 of the California Motor Vehicle Code for the "Harlo Motor Klean Fuel System, 1000 Series" (Reference - Exhibit A - Application). Section 27156 of the Vehicle Code prohibits the installation of any device or mechanism which adversely affect the performance of the emission control system. The applicant is requesting the exemption be granted for 1969 to 1974 model-year vehicles using gasoline engines (Reference - Exhibit B - December 17, 1974 letter).

II. System Description

The "Harlo Motor Klean Fuel System, 1000 Series" is a vapor injector device which is connected to the engine through the PCV system (Reference - Exhibit C - Installation Instruction). The device consists of a plastic bottle, rubber hoses, plastic tee with a 0.022 orifice diameter, a brass fitting for rubber hose, mounting equipment, nuts and bolts, and a proprietary fluid.

January 14, 1975

The chemical composition of the fluid is identified by fluid specification number "Motor Klean Fuel 74-100". The chemical composition of the fluid is on file with the Air Resources Board. The applicant has requested the fluid composition be treated as proprietary information. This working fluid is basically an alcohol-water mixture.

As with other vapor injector devices evaluated previously by the staff, the amount of vapor-air flow from the device is a function of vacuum and the 0.022 inch orifice restriction in the tee. High manifold vacuum condition such as idle, deceleration, and low speed cruises will result in the greatest displacement of vapor from the bottle. Little or very small amounts of vapor bleed occurs at low manifold vacuum conditions such as heavy acceleration and wide open throttle operations.

According to the applicant, the purpose of this device is to improve fuel consumption, prevent the formation of carbon deposits within the cylinder, reduce the amount of crankcase blowby, and increase engine efficiency. Since the flow rate of device is limited to 0.10 cfm by the 0.022 inch orifice, the staff believes the amount of fuel economy achieved is insignificant.

III. System Evaluation

The applicant submitted emission tests data performed by Scott Research Laboratories, Inc., 2600 Cajon Boulevard, San Bernardino, California 92411 (Report No. SRL 2207-01-1273) with and without the device on two vehicles. The table below summarizes the applicant's data:

Evaluation of the Motor Klean Incorporated's
 "Harlo Motor Klean Fuel System, 1000 Series"
 for Compliance with the Requirement of Section
 27156 of the California Motor Vehicle Code

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<u>Vehicle</u>	<u>Configuration</u>	<u>HC</u>	Hot Start CVS Exhaust Emissions (Grams/Mile)			<u>Fuel Consumption (MPG)</u>
			<u>CO</u>	<u>CO₂</u>	<u>NOx</u>	
1973 Ford Torino	Baseline	3.17	68.14	669.8	2.43	11.20
	Harlo Motor Klean	2.95	54.56	658.4	2.72	11.70
1968 Ford Fairlane	Baseline	3.14	19.09	537.7	4.45	14.40
	Harlo Motor Klean	2.94	17.96	580.9	4.50	14.60

The test with the 1973 Ford Torino is an atypical vehicle because the baseline carbon monoxide emission is excessive. The test with the Ford Fairlane seems to indicate no adverse effects on the exhaust emission. However, the data are not considered applicable because the tests were performed with the No. 59 (0.041 inch) and No. 57 (0.043 inch) drill size orifices on the Torino and Fairlane vehicle tests as compared to a No. 74 drill size orifice used in this application.

The Air Resources Board staff has established a flow criteria of 0.10 cubic feet per minute (CFM) for 1974 and older model-year vehicles. This flow rate is judged as not having an adverse effect on the emission control system.

The applicant has submitted orifice of three sizes to the Air Resources Board (Exhibit C - December 17, 1974 letter) for evaluation. The No. 74 drill size (0.022 inch orifice diameter) is the only size that meets the established flow criteria.

Evaluation of the Motor Klean Incorporated's
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IV. Conclusion and Recommendation

The staff is of the opinion that the "Harlo Motor Klean Fuel System, 1000 Series" would not reduce the effectiveness of the emission control system provided the system uses the 0.022 inch orifice (Drill Size No. 74) and the fluid composition is identical to that submitted to the Air Resources Board which is identified by "Motor Klean Fuel 74-100" fluid specification number. Therefore, the staff recommends that Motor Klean Incorporated be granted an exemption from the prohibitions of Section 27156 for the "Harlo Motor Klean Fuel System, 1000 Series" on 1969 to 1974 model-year vehicles using gasoline engines.



EXHIBIT A
Application

THE  GROUP

P.O. BOX 1716 BRANTFORD, ONTARIO
(519) 753-1643

December 1, 1974

State of California,
Air Resources Board,
9528 Telstar Avenue,
El Monte, California 91731,
U.S.A.

Re: Request for a Board Finding.

Dear Sirs:

We, the undersigned officers of MotorKlean Incorporated, 84 King George Road, Brantford, Ontario, Canada, make formal application on behalf of the Company for a Board Finding to determine compliance with Section 27156 of the Vehicle Code as it applies to the Harlo MotorKlean Fuel System. After five years of research, development and testing we feel that our device is ready for your finding.

We propose to attend at your offices in El Monte, California at 10:00 AM on December 5, 1974 and will bring our complete application with us. This date is dependent on reservations for a flight which at the time of writing have not been confirmed. We will advise you by telephone of any alteration.

It is our intention to bring a system with us which will include both the device and the fuel. This will be available to you for your independent evaluation should that be your decision.

.... 2

Air Resources Board,
El Monte, California.

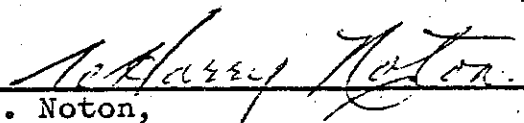
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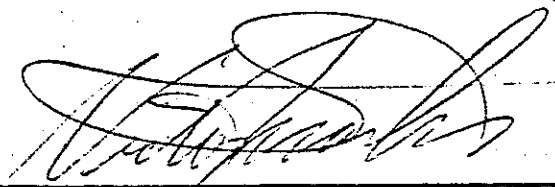
Request for a Board Finding.

We sincerely appreciate the opportunity to meet with you.

Yours sincerely,

MOTORKLEAN INCORPORATED

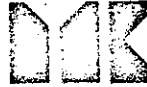

C. H. Noton,
Director of Research & Development.


V. W. Marks,
Vice-President & General Manager.

CHN:les



Exhibit B (Cont'd)

THE  GROUP

P.O. BOX 1716 BRANTFORD, ONTARIO
(519) 753-1643

December 17, 1974

Mr. George Lew, Project Engineer,
State of California,
Air Resources Board,
9528 Telestar Avenue,
El Monte, California 91731,
U.S.A.

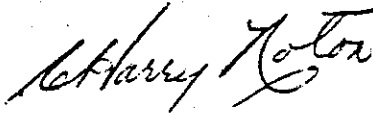
Re: Application for Finding
Model Years Applied For.

This letter confirms our request for an approval for the MotorKlean Fuel System, 1000 series, to be installed on automobile engines manufactured in the years 1969 through 1974 inclusive. This refers to 4-cycle engines powered with gasoline as its basic fuel.

Please advise us if you should require anything further in regard to this section of our application.

Yours sincerely,

MOTORKLEAN INCORPORATED



C. H. Noton,
Director of Research & Development.

CHN:les



Exhibit B (Cont'd)

THE  GROUP

P.O. BOX 1716 BRANTFORD, ONTARIO
(519) 753-1643

December 17, 1974

Mr. George Lew, Project Engineer,
State of California,
Air Resources Board,
9528 Telestar Avenue,
El Monte, California 91731,
U.S.A.

Dear Mr. Lew ...

... first of all I must thank you for your kind interest and co-operation in our application for a finding. It has been a pleasant experience working with you and Mr. Kenny.

We have set up for precision drilling of orifices. We drilled a number of them and had a test run by the Ontario Research Foundation to check C.F.M. airflow. The consistency for each size and with and without the device was most encouraging. Their summary of the results is enclosed.

Under separate cover we have forwarded six airflow tees and they are numbered to correspond with the test sheet. We want to use the #72 drilling if possible. On this size we can maintain a plus or minus control of .015 I.D. in our production. If however we must use a #73 or #74 then we will do so.

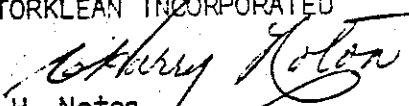
Mr. Lew, it will be interesting for me to know how your flow tests compare to these. Also of interest will be your advice on which orifice you can approve.

As enclosures you will find our MotorKlean Fuel Formulae which is to be considered Proprietary and also our confirmation of model years covered in our application. These items, I believe, cover all of your present requirements. Please let me repeat our request that you telephone me collect when a decision has been reached or in the event you require further information.

Our very best wishes for the Christmas season and for the New Year.

Yours sincerely,

MOTORKLEAN INCORPORATED


C. H. Noton,
Director of Research & Development.

CHN:les
Enclosures

AIR FLOW TEST FOR MOTORKLEAN INCORPORATED

Conducted by: Dr. Alexander Lawson, Research Scientist,
 Department of Environmental Chemistry,
 Ontario Research Foundation,
 Sheridan Park,
 Mississauga, Ontario.

Orifice Drill Size	Orifice Number	Test Open to Atmosphere		Test Connected to Device	
		CFM @ 10 HG	SCFM @ 20 HG1	CFM @ 10 HG	CFM @ 20 HG
72	.025 1	.117	.123	.113	.117
72		.115	.122	.112	.117
73	.024 3	.107	.112	.103	.108
73		.107	.111	.102	.105
74	.0225 5	.098	.102	.095	.099
74		.097	.102	.093	.098

2.

Point outlet of tee fitting slightly downward. Connect one end of the hose supplied to the tee fitting and tape the connection. Determine the length of hose required and cut it at the proper length. Then press it on to the spur fitting of the unit. Fill the unit to within three inches from the top. If filled more than this the fluid will not vaporize properly.

Start the engine and note if the fluid is bubbling in the unit. If not working properly refer to Trouble Shooting Chart - Item #4. Warm engine up and check ignition timing and carburetor adjustment.

The unit has no adjustments as the consumption of fluid is controlled by a fixed orifice. Use Motorclean fluid only in this system.

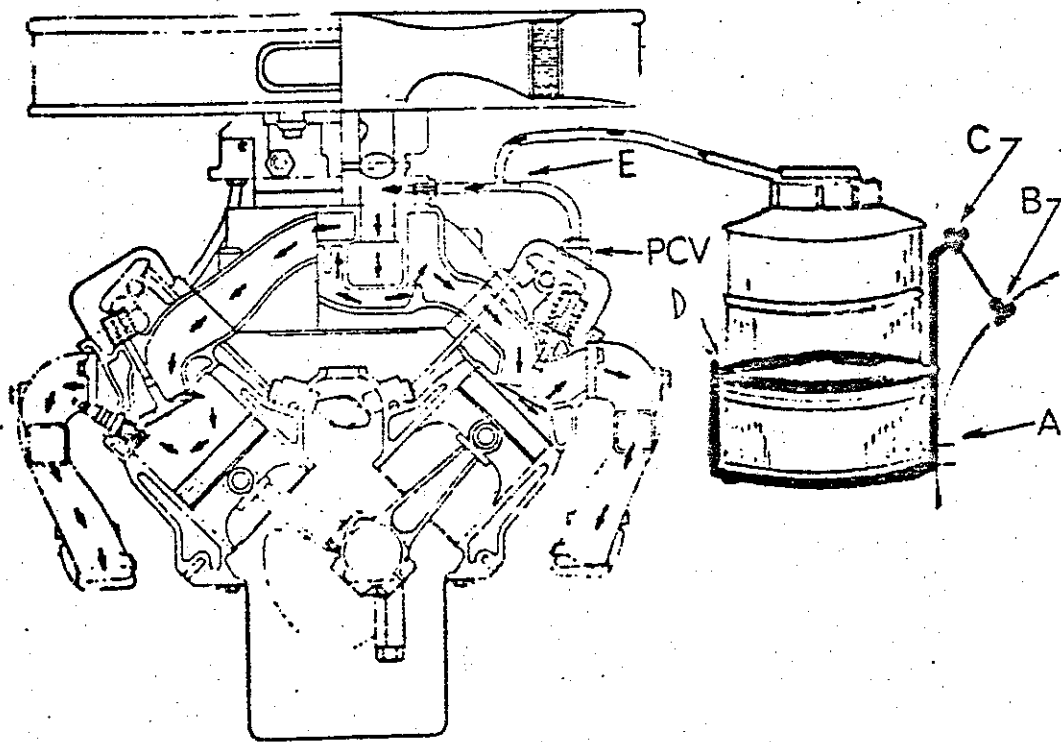


Exhibit C

INSTALLATION INSTRUCTIONS

FOR

1000 AND 1500 SERIES

1. Select mounting position in the engine compartment where:
 - a) it will be clear of the exhaust manifold.
 - b) it will be in a vertical position.
 - c) the hood will close without interference of the unit.
2. Drill two 7/64 inch holes (Illustration A). Place bracket in position and secure with two metal screws and tighten. Drill a 1/4 inch hole for the top of the bracket. (Illustration B) Install the 1/4 inch bolt with the head on the outside or bottom with a flat washer on each side of the metal. Put a nut on and tighten. Place top hole of bracket over 1/4 inch bolt using a flat washer and nut on each side of bracket. Adjust nuts as to position bracket in vertical position, then saw the bolt off flush with the nut. (Illustration C) Put Spring D on bracket and place unit in bracket. Cut P.C.V. hose and install the tee fitting. (Illustration E) The tee must be between the P.C.V. valve and the carburetor, but as close to the carburetor as convenient to do so.