

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-312-1  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

IRAAL, INCORPORATED  
HYDRO POWER PAK MODEL 1000C

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 Hydro Power Pak Model 1000C manufactured by Iraal, Inc., 200 South Main Street, P.O. Box 310, North English, Iowa 52316, 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 all 1993 model year and older 4, 5, 6, and 8 cylinder gasoline fueled engines. This Executive Order exempts the Hydro Power Pak Model 1000C with volumes ranging from 210 to 1296 cubic inches.

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 vehicle 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.

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.

Marketing of this device using an identification other than that shown in 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 IRAAL, INC.'S HYDRO POWER PAK MODEL 1000C.**

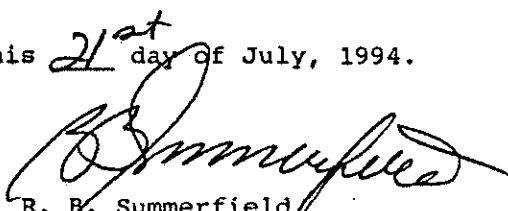
Section 17500 of the Business and Professions Code makes untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

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.

Executed at El Monte, California, this 21<sup>st</sup> day of July, 1994.

  
R. B. Summerfield  
Assistant Division Chief  
Mobile Source Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF IRAAL, INC.'S HYDRO POWER PAK MODEL 1000C  
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF  
THE CALIFORNIA CODE OF REGULATIONS

July 1994

State of California  
AIR RESOURCES BOARD

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

SUMMARY

Iraal, Inc., of 200 South Main Street, P.O. Box 310, North English, Iowa, 52316, has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for their Hydro Power Pak Model 1000C device. The Hydro Power Pak Model 1000C device is designed for installation on all 1993 model year and older vehicles equipped with 4, 5, 6, and 8 cylinder gasoline fueled engines.

Iraal, Inc. has submitted a completed application and all the required information. Based on independent laboratory emissions test results and confirmatory tests performed at the Air Resources Board, the Hydro Power Pak Model 1000C Device was found not to have any adverse effects on emissions.

The staff recommends that Iraal, Inc. be granted exemption as requested and that Executive Order D-312-1 be issued for the Hydro Power Pak Model 1000C device.

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I. INTRODUCTION

Iraal, Inc., 200 South Main Street, P.O. Box 310, North English, Iowa 52316 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for their Hydro Power Pak Model 1000C device. The Hydro Power Pak Model 1000C device is designed for installation on all 1993 and older model-year vehicles equipped with 4, 5, 6, and 8 cylinder gasoline fueled engines.

Iraal, Inc. has submitted a completed application and all the required information.

II. CONCLUSION

Based on independent laboratory emissions testing and confirmatory testing at the Air Resources Board, the staff concludes that the installation of the Iraal, Inc.'s Hydro Power Pak Model 1000C device will not adversely affect exhaust emissions from vehicles for which an exemption is requested.

III. RECOMMENDATION

The staff recommends that Iraal, Inc. be granted exemption as requested and that Executive Order D-312-1 be issued for the Hydro Power Pak Model 1000C device.

IV. DEVICE DESCRIPTION

The Hydro Power Pak Model 1000C device is claimed to create and supply hydrogen and oxygen mixed with air to the engine. The device may be installed on all 1993 and older model-year vehicles equipped 4, 5, 6, and 8 cylinder gasoline fueled engines.

The device consists of box with a tightly fitted lid. The Hydro Power Pak Model 1000C is available in volumes ranging from 210 cubic inches to 1296 cubic inches. Two electrical connections are provided on opposite sides of the box. On top of the lid, an air cleaner is attached which acts as the device's air intake. Holes are drilled through the lid allowing air to enter the main chamber of the device. In the center of the lid extending through and sealed from the air cleaner chamber is the output tube connecting the main device chamber with the supply hose connecting to the engine air intake.

Inside the box and connected to the external electrical connections are vertically oriented anode and cathode plates. During operation, these plates are submerged in an electrolyte solution consisting of Glacial Acetic Acid. According to the manufacturer, an electrolyte solution containing 1% to 1 1/2% acetic acid and distilled water will produce optimum results. With these concentrations, the electrolyte keeps the cathode and anode plates clean, creates its own buffer and removes the gas bubbles that form on the plates. Additionally, the manufacturer claims this concentration of acetic acid will put the proper pressure on the chemical reaction occurring in the electrolysis process and, thus, produces higher amounts of hydrogen gas.

According to the manufacturer, this device when connected to the vehicle's main electrical power supply produces hydrogen and oxygen which reduces emissions, carbon deposits and increases power and fuel mileage.

#### V. HYDRO POWER PAK MODEL 1000C DEVICE EVALUATION AND DISCUSSION

A 1992 Chevrolet Caprice equipped with a 5.0 liter gasoline engine and a 1993 Ford Escort equipped with a 1.9 liter gasoline engine were used for the evaluation of the Iraal, Inc.'s Hydro Power Pak Model 1000C device. For the Caprice, the dynamometer inertia weight and loading were 4250-lbs and 8.8-hp



respectively. For the Escort, the dynamometer inertia weight and loading were 2875-lbs and 7.4 hp respectively.

Comparative emissions tests were conducted by Environmental Testing Corporation, Orange, California. For each vehicle, testing consisted of one Cold-Start CVS-75 emission test in the modified (Hydro Power Pak Model 1000C device installed) configuration, and one Cold-Start CVS-75 emission test in the unmodified (baseline) configuration. The Air Resources Board performed tests to confirm the test results submitted by the applicant for the Chevrolet Caprice. A summary of the test results is shown below.

Exhaust Emissions Test Results  
On A 1992 Chevrolet Caprice

<u>Test Mode</u>	Exhaust Emissions (gm/mi)		
	<u>HC</u>	<u>CO</u>	<u>NOx</u>
Baseline	0.294	2.823	0.437
Device	0.307	3.320	0.445
Difference	+0.013	+0.497	+0.008
% Difference	+4.4%	+17.6%	+1.8%

Exhaust Emissions Test Results  
On A 1993 Ford Escort

<u>Test Mode</u>	Exhaust Emissions (gm/mi)		
	<u>HC</u>	<u>CO</u>	<u>NOx</u>
Baseline	0.088	1.228	0.234
Device	0.078	1.071	0.259
Difference	-0.01	-0.157	+0.025
% Difference	-11.4%	-12.8%	+10.7%

Air Resources Board Confirmatory Test Results  
On A 1992 Chevrolet Caprice

<u>Test Mode</u>	Exhaust Emissions (gm/mi)		
	<u>HC</u>	<u>CO</u>	<u>NOx</u>
Baseline	0.254	3.909	0.568
Device	0.302	4.403	0.502
Difference	+0.048	+0.494	-0.066
% Difference	+18.9%	+12.6%	-11.6%

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 HC, 1.0 gm/mile CO, and .1 gm/mile NOx as specified in the "Procedures for Exemption of Add-On and Modified Parts." Therefore, the installation of the Iraal, Inc.'s Hydro Power Pak Model 1000C did not have an adverse effect on exhaust emissions on the test vehicle.

Iraal, Inc. claims that results in the field and laboratory consistently show reductions in fuel consumption and emissions of hydrocarbons, carbon monoxide, and nitrogen oxides. However, the test results from the Air Resources Board or the Environmental Testing Corporation did not consistently support these claims.

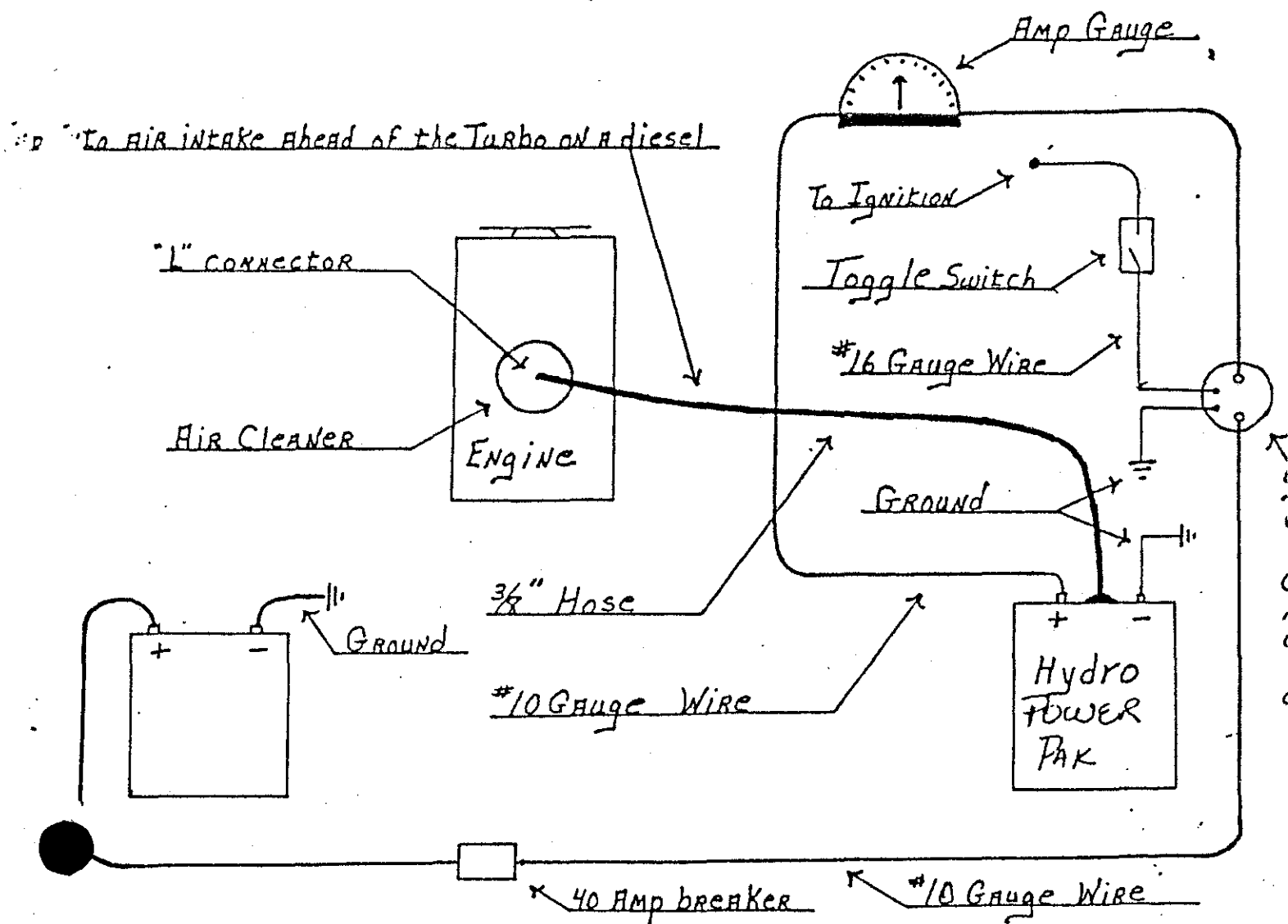
Based on the test results, the staff concludes that the installation of the Iraal, Inc. Hydro Power Pak Model 1000C device will not have an adverse effect of exhaust emissions on the affected vehicles. Iraal, Inc. submitted all the required information and fulfilled the requirements for exemption.

**APPENDIX**

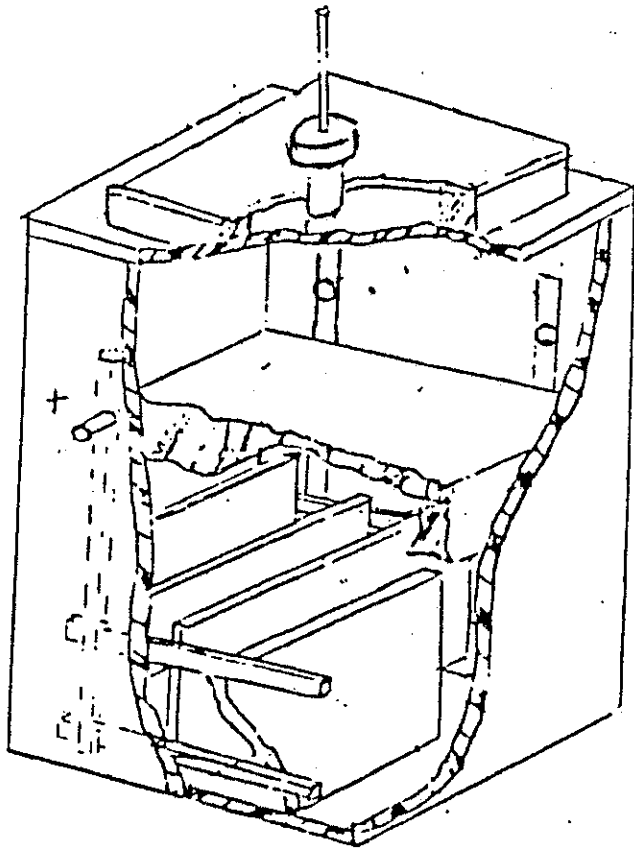
APPENDIX A:

INSTALLATION INSTRUCTIONS  
OF HYDRO POWER PAK

1. Determine where the HYDRO POWER PAK is to be mounted. Attach bracket to wall securely.
2. Layout 10 ga. wire with inline breaker from battery to solenoid.
3. Install Amp. Gauge and toggle switch in cab where desired.
4. Run 10 gauge from one side of solenoid to the Amp. Gauge.
5. Run 10 gauge wire from the other side of Amp. Gauge to the plus side of the HYDRO POWER PAK.
6. Run 10 gauge wire from minus side of HYDRO POWER PAK to grounding point.
7. Run 16 gauge wire from small post to solenoid to grounding point.
8. Run 16 gauge wire from the other small post on solenoid to one side of the toggle switch.
9. Run 16 gauge wire from other side of toggle switch to ignition switch in on position - not accessory position.
10. On a gas or propane engine run the 3/8 inch hose from the "L" outlet on top of the HYDRO POWER PAK to the "L" connection on top of the air cleaner housing. On a diesel connect 1/2 inch hose to air intake just ahead of the turbo.



**APPENDIX B:**



THE HYDRO POWER PAK