

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-87  
Relating to Exemptions under Section 27156  
of the Vehicle Code

RODEW INTERNATIONAL, INC.  
"THE MISER" DEVICE

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 "The Miser" device manufactured by Rodew International, Inc., 1350 Knollwood Circle, Anaheim, CA 92801 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 installation on 1978 and older model year vehicles equipped with water-cooled carbureted gasoline engines.

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

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 MISER" 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.

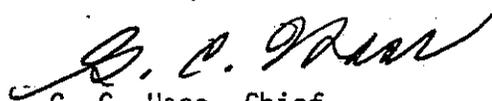
Section 17500 of the Business and Professions Code makes untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

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 29 day of November, 1978.



G. C. Hass, Chief  
Vehicle Emissions Control Division

State of California  
AIR RESOURCES BOARD

November 28, 1978

Staff Report

Evaluation of the Rodew International, Inc.  
"The Miser" in Accordance with Section 2222,  
Title 13 of the California Administrative Code

I. Introduction

The Rodew International, Inc., 1350 Knollwood Circle, Anaheim, California 92801, has applied for a Vehicle Code Section 27156 exemption for "The Miser" device (Exhibit A). The applicant intends to market the device for installation on 1978 and older vehicles equipped with water-cooled gasoline engines. Vehicles equipped with fuel injection systems are excluded from the application.

II. System Description

The "Miser" device is a fuel heater installed in the fuel line between the carburetor and fuel pump. The system consists of a heat exchanger, a thermostat switch and an electric solenoid valve.

When the temperature of the fuel in the thermostat chamber is below 125°F, the circuit is completed thereby energizing the valve (Fig. 1). Engine coolant will flow through the heat exchanger and heat up the fuel. When the fuel temperature is above 125°F, the thermostat switch will shut-off the circuit and the solenoid valve will be closed preventing any flow of engine coolant through the exchanger.

The system also incorporates a fuel additive (a mixture of 30/70 of xylene and lubricating oil) to be manually added to the carburetor, crankcase oil, and fuel tank.

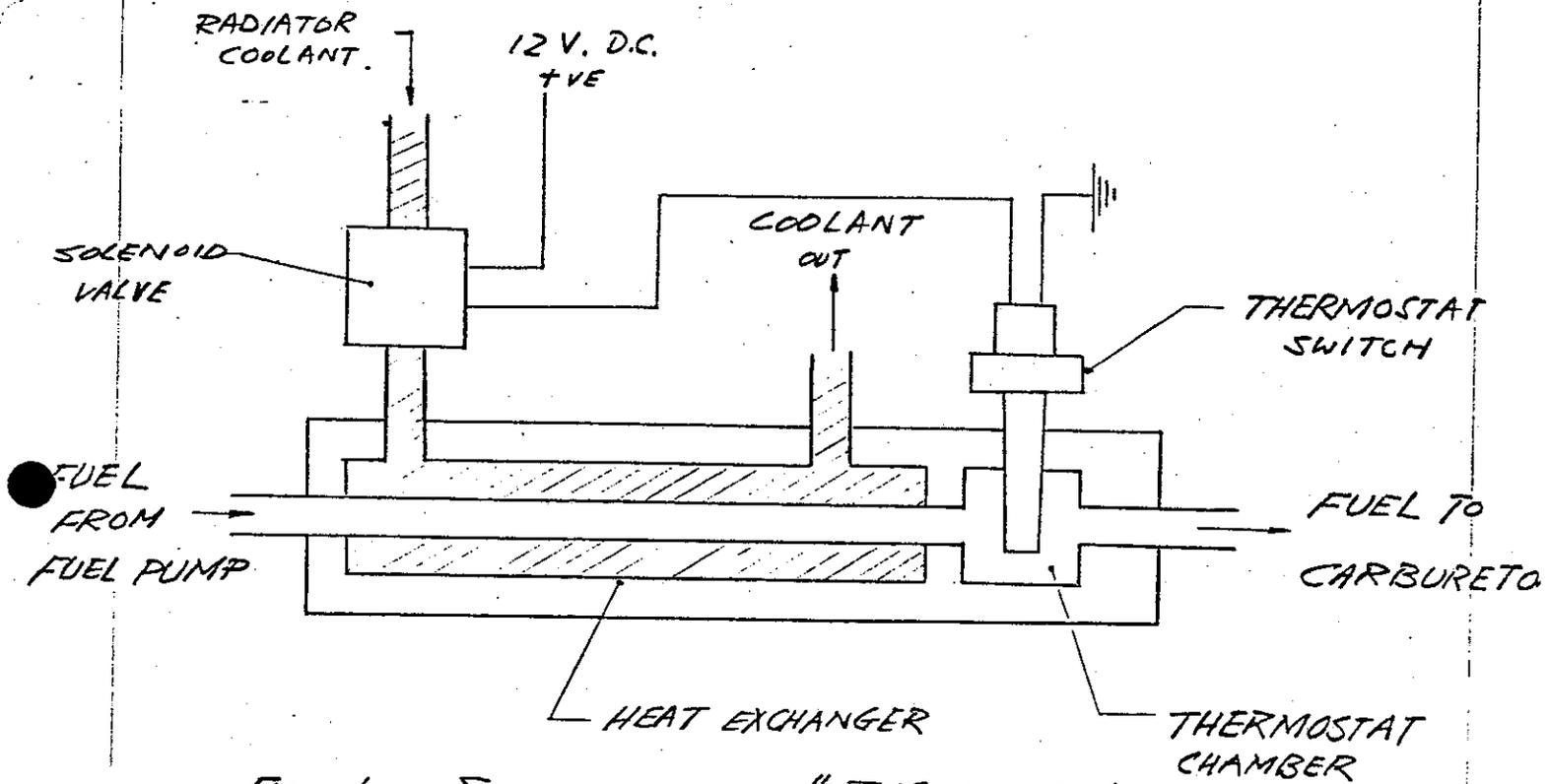


FIG. 1 SCHEMATIC OF "THE MISER"  
DEVICE

### III. System Evaluation

#### A. Applicant's Submitted Test Data

The applicant submitted back-to-back emission data to substantiate that the device has no adverse effect on emissions. The results are listed in Table 1. In addition, the applicant submitted an analytical report for the lead content in the fuel additive (Exhibit B). The lead content was found to be less than 0.02 mg/liter.

#### B. ARB Bench Tests

The Air Resources Board performed bench tests to verify the operation of the device. The results are summarized as follows: (Ref. ARB Test Report No. 2V7809).

##### 1. Thermostat Test

The thermostat switch was found to shut-off the circuit at 123°F.

##### 2. Solenoid Valve Test

With the thermostat at room temperature and the solenoid energized, the valve was open and water (simulating engine coolant) was able to flow through the heat-exchanger. When the solenoid was deactivated, the valve was closed and withstood a water pressure in excess of 18 psi.

#### C. Analysis of Test Results

Based upon the bench test results, the staff is convinced that the device operates as the applicant claims. The CVS-75 emission data submitted by the applicant shows that there is a slight decrease in NO<sub>x</sub> with the device and no increase in HC and CO.

The Laboratory has previously performed emission tests on similar fuel-heating devices. Previous tests showed that significant increases in CO and HC emissions resulted when the fuel was heated to a range of 135 to 170°F during hot-start CVS-72 tests.<sup>1,2</sup> In the baseline hot-start CVS-72 tests (without any heating device) the fuel temperature at the inlet of the carburetors ranged from 100 to 140°F.

The "Miser" device will heat up the fuel to a maximum of 125°F which is within the range of fuel temperatures measured in the baseline emission tests described above. Thus it can be concluded that the device will not have heating effects on the fuel in excess of what can normally be expected from the heat in the engine compartment.

The applicant recommends that 1 oz. of fuel additive to be added for every five gallons of gasoline for the first tank of gasoline and decrease the amount to 1 oz. for 10 or 15 gallons of gasoline for subsequent tanks. The added amount resulted to about 0.1 to 0.3%. The Laboratory has previously performed emissions tests on similar fuel additives (xylene and lubricating oil) and found that the fuel additives in the

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<sup>1</sup>ARB Staff Report, 27156 Evaluation of the "Fuel Saver," dated May 25, 1976.

<sup>2</sup>ARB Staff Report, 27156 Evaluation of the "FUELPANDER," dated June 8, 1976.

proportion added (1 oz. per 5 gallons of gasoline approximately) have no significant effect on emissions or engine performance. Therefore, the staff believes that the amount of fuel additive recommended by the applicant will have no adverse effect on emissions.

Based upon the analytical report submitted by the applicant, the additive contains lead content less than 0.02 mg/liter of fuel additive. This amounts to approximately 0.0002 mg/gallon of gasoline which is far below the specified lead content for unleaded fuel (0.00-0.05 gram/gall.)

Based upon the foregoing analysis and the emission data submitted by the applicant, the staff is of the opinion that the device will have no adverse effect on vehicle emissions.

#### IV. Manufacturer's Claims

The applicant basically makes the following benefit claims for the "Miser" device:

- A. Increase of fuel economy by 15-20%.
- B. Longer engine life.

According to the applicant, the fuel additive "will increase the BTU's of the gasoline and acts as a cleaner helping to remove carbon and free sticking valves. In addition, the heat exchanger will preheat fuel and provide better vaporization."

The data submitted by the applicant (Table 1) shows that there is a 1% and 4% fuel economy increase in the CVS-75 and highway cycle test respectively, which are within average test variability. The device will increase the fuel temperature to a maximum of 125°F which may be achieved under normal operating modes without any pre-heating device. The staff is of the opinion that the device will have no significant benefit on fuel economy. The installation of the device may, however, show a marginal benefit in cold-start driveability due to the preheating of the fuel if the vehicle is not originally equipped with any OEM fuel evaporation system.

The applicant agreed with the staff's analysis and has deleted the fuel economy claim from advertising materials.

V. Conclusion and Recommendation

Based upon the test data submitted by the applicant and ARB functional tests, the staff believes that the installation of the "Miser" device will not result in an increase in emissions when installed on gasoline powered vehicles. The staff therefore recommends that Rodew International Inc. be granted an exemption from the prohibitions of Vehicle Code Section 27156 for its "Miser" device for 1978 and older vehicles equipped with water-cooled carbureted gasoline engines.

Table 1  
Emission Test Data

Test Vehicle: 1978 Continental Mark V  
400 CID, 2V

	Emissions (gm/mi)			Fuel Economy
	<u>HC</u>	<u>CO</u>	<u>NOx</u>	<u>MPG</u>
<u>CVS-75</u>				
Baseline	0.6	8.0	1.7	9.4
w/device	0.6	8.0	1.5	9.5
Net change	0	0	-11%	+1%
<u>Highway Cycle</u>				
Baseline	0.2	1.6	2.0	14.0
w/device	0.2	1.5	1.8	14.5
Net change	0	-6%	-10%	+4%

INTRODUCTION

**Caution**

If you must jack up your vehicle to drain the radiator coolant, do it carefully. Block the wheels and use a substantial jack stand. Remember, safety comes first.

**Step 5.** Connect wire from water valve on side of MISER to hot wire from the ignition switch. This will make sure that the switch controlling the heat sensor valve is only live when the ignition is switched on. The next operation is to connect the other wire running from the thermostat to a convenient ground on engine or chassis. Check for proper wiring by turning ignition switch off and on, and at the same time have someone listen to the water valve. A "click" should be heard everytime the ignition is switched on. If not, check wiring for proper hook-up.

**Step 6.** Check to make sure drain plug is secured in radiator. Fill the radiator with fresh water (or the antifreeze saved while draining the radiator). Start the engine and check for leaks. This is important, leaking fuel could cause a fire or an explosion.

**Caution**

Before you start the engine, make sure you have adequate ventilation. Exhaust gases are deadly. Do not run the engine in a closed garage without proper ventilation.

**Step 7.** Start engine and let it idle for 5 minutes to warm up. Take air cleaner off carburetor and with the engine at fast idle, pour 1 ounce per cylinder through the carburetor slowly ~~at 1/2 in.~~ Fuel Additive. It will penetrate and burn the sludge, carbon, gum, and rust deposits which have accumulated in your engine and expel them through the exhaust pipe in a dense, grey-black smoke. Stop the engine, replace the air cleaner cover on carburetor. Pour 3 ounces of ADD<sup>1</sup> into the crankcase (do not pour into the crankcase if a synthetic oil is being used) and pour 1 ounce per 15 gallons of gasoline into the fuel tank. DO NOT add additional amounts of ~~addi-~~ <sup>addi-</sup> ~~ive~~ than those listed, as too much will cause loss of performance and results.

**Step 8.** This completes the installation and testing of your MISER. It is now ready to use. You will start receiving your best results after approximately 50 miles of driving and the engine has conditioned itself.

"The Miser" is a product of space age technology and engineering techniques combined to produce a practical and simple means of extending engine efficiency, while at the same time cleaning and lubricating the combustion chambers for increased engine life.

The Fuel Additive acts as a cleaner, helping to remove carbon & gumming, and to free sticking valves and rings. The Additive contains a high grade of oil which gives additional upper cylinder lubrication that helps seal the rings and frees sticking valves.

"The Miser" preheats the fuel to just below vaporization by the use of a unique system. The heat is thermostatically controlled, using water from the engine's cooling system. This way the fuel is already preheated before entering the carburetor so as to more completely vaporize upon entering the manifold.

INSTALLATION

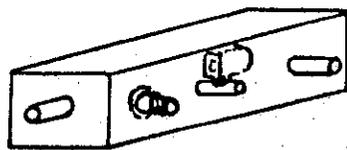
Installing the system is not a difficult or highly technical job. It requires only some basic tool (with the possible exception of the tubing cutter) and a little time. Please read this entire instruction manual and follow the directions carefully to insure that the installation does not void the warranty. This instruction manual has been carefully prepared and illustrated to help you install the system and start saving gasoline and maintenance costs.

Please check all your parts against the parts list and drawing. This will help you become familiar with the parts before you install them on your vehicle.

NOTE: "The Miser" cannot be used on fuel injected or diesel engines, nor on air cooled engines. ~~Also the increase on pickup trucks due to higher engine RPM's because of different axle ratios~~

# "THE MISER" PARTS LIST

Quantity	Description
1	MISER
3 ft.	5/16" Fuel Line Hose
12	Hose Clamps
2	Heater Hose "T"
2 ft.	Electrical Wire
3 ft.	3/8" Water Hose
2	Fuel Additive Bottles (16 oz. ea.)



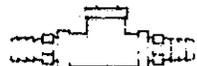
Mark V Box



Fuel Hose



Clamps



Heater Hose "T"



Wire



Water Hose



E-3 Fuel Additive

## Caution

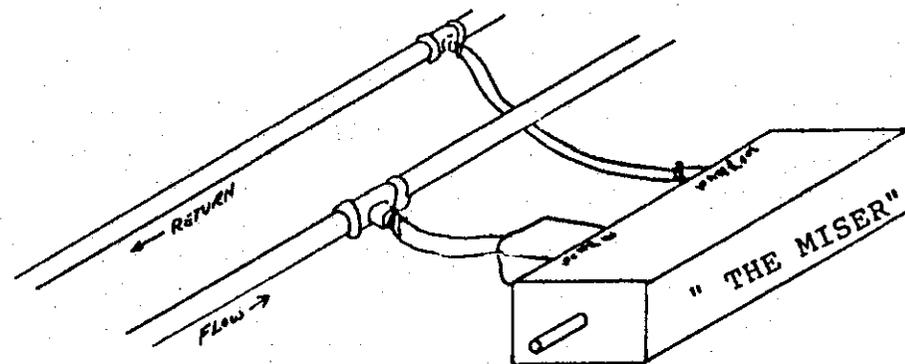
Be sure engine is cold and do not smoke while performing the following steps. Gasoline will spill out the fuel line when it is cut. Clean up any fuel before continuing. **DO NOT SMOKE OR BRING AN OPEN FLAME OR SPARK** near gasoline.

**Step 1.** Find easily accessible location away from excessive heat. mount box in a horizontal position.

**Step 2.** Cut fuel line (if necessary) approximately 2 inches from carburetor using a small tubing cutter. If a tubing cutter is not available, a hacksaw will suffice. If a hacksaw is used, the cutting operation must be done off the engine. Do not cut with hacksaw on engine or metal cuttings could damage carburetor and/or cause flooding.

**Step 3.** Connect the fuel line running from the fuel pump to the Miser Box at the fitting marked "FUEL IN", using the 5/16 inch fuel line hose provided. Connect the other end of the box, marked "FUEL OUT" to the fuel line at the carburetor using the 5/16 inch fuel line hose and clamps.

**Step 4.** Remove radiator cap and drain radiator coolant. (You may wish to save antifreeze coolant to be replaced into the radiator when this operation is complete.) Cut heater hoses where accessible and install 2 heater hose "T"s into the heater hoses.



Connect heater hose "T" on heater hose that pumps water to heater (usually connected to engine block) to the water valve on side of the Miser. Then connect the other "T" to fitting on end of Mark V Box marked "WATER OUT".

**Note:** Water flow can be checked by removing hose from water valve on side of the box and starting the engine, observing water flow. Water flow must run toward or into the water valve from hose. If not, switch water hoses for correct flow. The water valve will not work unless installed properly.

# "E-3" and Your Engine

## Motor Cleaning Procedures ...

**First Tank of Gas:** Start engine and let it idle for 5 minutes to warm up. Take an cleaner cover off carburetor and, with engine at fast idle, pour 1 oz. per cylinder through carburetor slowly. The "E-3" will penetrate and burn the sludge, carbon, gum and rust deposits which have accumulated in your engine and expel them through the exhaust pipe in a dense gray black smoke. Stop the engine, replace the air cleaner cover on carburetor.

Pour 3 oz. of "E-3" in the crankcase and pour 1 oz. for each 5 gallons of gas in the gas tank. Start engine again and run at slow and fast idle for 5 minutes. Extremely dirty engines may continue to smoke throughout most of the first tank of gas.

**Second and Third Tanks of Gas:** Reduce the amount of "E-3" to 1 oz. per 10 gallons, and on succeeding tanks of gas keep decreasing the amount of "E-3" until your mileage drops, then back up to where you again get the best mileage for the least amount of "E-3" used. The average seems to be 1 oz. to 15 gallons of gas.

## Caution:

If your customer uses synthetic oil, DO NOT put the 3 oz. of "E-3" in the crankcase as this is an organic compound and will not mix with synthetic oil. Always follow the rest of the

## New Engine Break-In:

Add as with old engine tune-up. Moving parts of new and reconditioned engines are stiff and very tight fitting. "E-3" improves lubrication of these close tolerance areas, prevents scoring of bearings, pistons and cylinder walls. Continued use prevents formation of sludge, carbon, gum and rust deposits and reduces engine wear.

## Fleet Maintenance:

Continued use of "E-3" with all fleet vehicles significantly reduces the need for and frequency of costly engine work. Engines remain clean, idle smoother and pull better. "Normal" engine repair problems caused by deposits are virtually eliminated and even routine maintenance checks can be extended.

## Diesel Engines:

Add one ounce per 7 gallons of fuel in the fuel tank and one ounce (1 oz.) per 5 quarts of oil in the crankcase. "E-3" provides a continuous cleaning and lubricating function which allows injectors and engine parts to work at peak efficiency. As a fuel extender, "E-3" tends to be even more effective in high compression engines, and aids maximum power output in over the road, farm and construction vehicles. After the initial use for cleaning, a ratio of 1 oz. per 10 to 15 gallons will provide the best fuel economy. In winter "E-3" prevents fuel gelling.

## Two Cycle Engines:

Add one ounce to each 6 gallons of gasoline and oil mixture. Even very small engines will perform better and will be easier to start after prolonged storage.

## Gear Boxes:

One ounce of "E-3" per pound of grease or two ounces per gallon of oil helps prevent corrosion and wear, increases lubrication and reduces heat.

## Oil Cooling and Bearing Lubrication:

One ounce per quart of lubrication oil will cool the bearings of a hot running pump within two hours, and keep them cool.

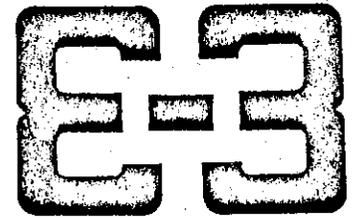
A 10% ratio added to the lubrication of rolling mill bearings will cool both bearings and casting within three hours, and keep them cool.

A 10% ratio added to the regular lubrication of multiple high speed drill heads, motors and similar equipment will keep them cool.

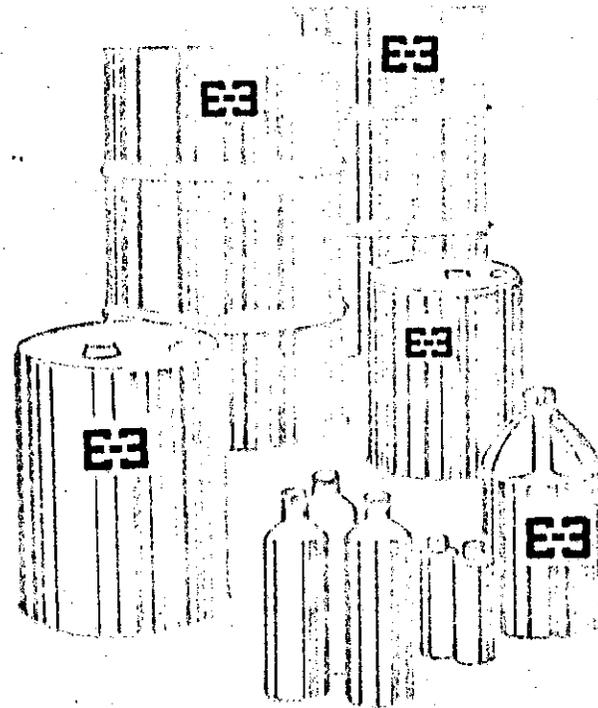
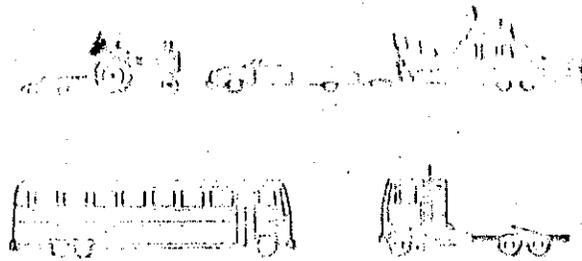
## Oil Heating Furnaces:

Add one ounce for every 25 gallons of heating fuel. As with diesel engines, "E-3" keeps fuel injectors in peak condition, thus eliminating need for annual cleaning. More complete burning of fuel gives increased economy and almost totally eliminates soot formation and prevents sludge buildup.

Energy-Economy  
Ecology



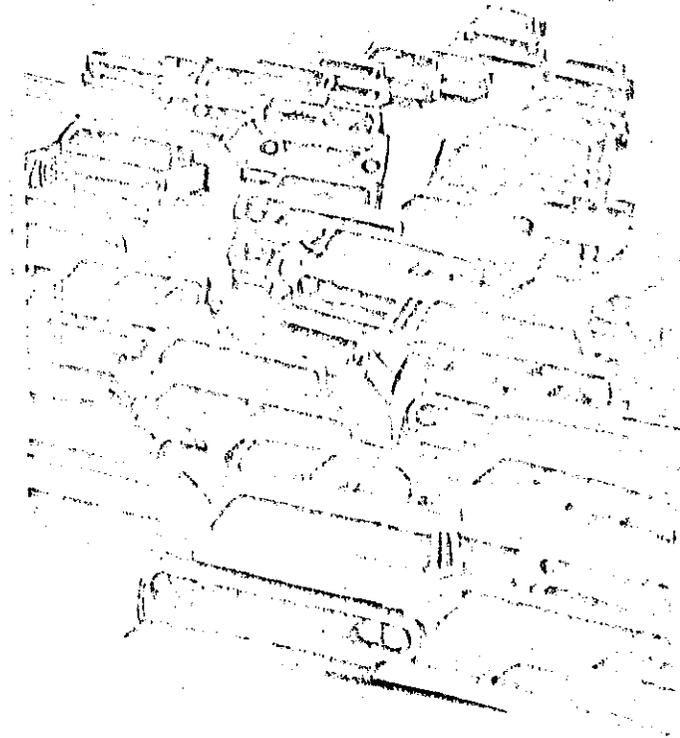
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you use too much, you will not get any  
desired results.

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# ANALYTICAL RESEARCH LABORATORIES, INC.

Lab/Stripper  
Log Number

160 TAYLOR STREET, P.O. BOX 369, MONROVIA, CALIFORNIA 91016

(213) 357-3247

118071

Client Rodew International, Inc.		Work Order 5067-01	P. O. Number Letter/Prepaid
Material/Sample Identity 1-Sample Gasoline Additive		Rec'd 11/22/78	Due 11/29/78
Requested By Name: Mr. Neil Roberts Phone: (714) 527-8333			Sample Disposition Discard

Report/Ship To:  
Rodew International, Inc.  
1350 Knollwood Circle  
Anaheim, CA 92801

Nature of Work and Information Desired  
  
**Lead Content**

Summary of Laboratory Report	Q. C. Level	3
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EXHIBIT "B"

E-3 Liquid Mileage Extender

Lead Content: Less than 0.02 mg/l

As a mutual protection to clients, this report is submitted for the exclusive use of the client to whom it is addressed. This report applies only to the sample(s) tested and is not necessarily indicative of the qualities of apparently similar or identical products. Use of this report, whether in whole or in part, or of any seals or insignia connected therewith, in any advertising or publicity matter, without prior written authorization is prohibited.

Analyst WAW	Book - Page 141 48	Approved By <i>[Signature]</i>	Date 11/22/78
Research and Development		Testing	