EPA Evaluation of the "Environmental Fuel Saver" Device

This document contains several pages which may not reproduce well. Any questions concerning the legibility of these pages should be directed to: Merrill W. Korth, Environmental Protection Agency, Office of Mobile Source Air Pollution Control, Emission Control Technology Division, 2565 Plymouth Road, Ann Arbor, MI 48105, (313) 668-4299 or FTS 374-8299

By

Thomas J. Penninga

February 1980

Test and Evaluation Branch
Emission Control Technology Division
Office of Mobile Source Air Pollution Control
U.S. Environmental Protection Agency
FUEL ECONOMY RETROFIT DEVICES

Announcement of Fuel Economy Retrofit Device Evaluation
for the "Environmental Fuel Saver"

AGENCY: Environmental Protection Agency (EPA).


SUMMARY: This document announces the conclusions of the EPA evaluation of the Environmental Fuel Saver (EFS) under the provisions of Section 511 of the Motor Vehicle Information and Cost Savings Act.

FOR FURTHER INFORMATION CONTACT: F. Peter Hutchins, Emission Control Technology Division, Office of Mobile Source Air Pollution Control, Environmental Protection Agency, 2565 Plymouth Road, Ann Arbor, Michigan 48105, 313-668-4340.
BACKGROUND INFORMATION: Section 511(b)(1) and Section 511(c) of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 2011(b)) requires that:

(b)(1) "Upon application of any manufacturer of a retrofit device (or prototype thereof), upon the request of the Federal Trade Commission pursuant to subsection (a), or upon his own motion, the EPA Administrator shall evaluate, in accordance with rules prescribed under subsection (d), any retrofit device to determine whether the retrofit device increases fuel economy and to determine whether the representations (if any) made with respect to such retrofit devices are accurate."

(c) "The EPA Administrator shall publish in the Federal Register a summary of the results of all tests conducted under this section, together with the EPA Administrator's conclusions as to-

(1) the effect of any retrofit device on fuel economy;

(2) the effect of any such device on emissions of air pollutants; and

(3) any other information which the Administrator determines to be relevant in evaluating such device."

EPA published final regulations establishing procedures for conducting fuel economy retrofit device evaluations on March 23, 1979 [44 FR 17946].

ORIGIN OF REQUEST FOR EVALUATION: On March 31, 1979 the EPA received a request from Ms. Vicki Kosar of VK Manufacturing for evaluation of a fuel saving device termed the "Environmental Fuel Saver" (EFS). An evaluation has been made and the results are described completely in a report entitled: EPA Evaluation of "Environmental Fuel Saver" Under Section 511 of the Motor Vehicle Information and Cost Savings Act. Copies of this report are available upon request.
SUMMARY OF EVALUATION: The basic conclusion following review of testing by independent laboratories and by the California Air Resources Board is that the "Environmental Fuel Saver" does not improve either vehicle fuel economy or exhaust emissions. The fuel economy results were exactly the same with and without the device installed for testing performed according to the Federal Test Procedure and Highway Fuel Economy Test. The exhaust emissions varied somewhat, but did not show any significant net reduction in hydrocarbons, carbon monoxide, or oxides of nitrogen. Therefore, the VK Manufacturing claims of 1) up to 35 percent better mileage and 2) up to 65 percent less pollutant emissions are not substantiated by the test data.

Date

David G. Hawkins
Assistant Administrator
for Air, Noise, and Radiation
EPA Evaluation of "Environmental Fuel Saver" Under Section 511 of the Motor Vehicle Information and Cost Savings Act

The following is a summary of the information on the device as supplied by the applicant.

1. **Marketing Identification of the Device:** "Environmental Fuel Saver" or "EFS."


3. **Manufacturer of the Device:** VK Manufacturing, Inc.

4. **Manufacturing Organization's Principals:** Vicki Kosar.

5. **Marketing Organization in U.S. Making Application:** VK Manufacturing, Inc., 1068 N.W. 3rd Street, Hallandale, Florida 33009.

6. **Identity of Applicant:** Vicki Kosar of Miami Beach, Florida.

7. **Description of the Device:** (As supplied by the applicant).

"..... the unit is constituted by an electrical element placed between a pair of spaced mesh screens to define a permeable assembly having a pocket therein. The assembly functions as a restrictor in the conduit whose impedance to flow is in the order of about 15 to 20 percent, whereby the screens intercept and atomize the droplets, creating a suspension of minute fuel particles in air to produce a downstream mist or fog which is forced by the restriction to assume a vortex-like flow pattern. The heat supplied to the pocket by the heater is sufficient to raise the temperature of the fog in the output of the unit to a level conducive to complete combustion when the fog reaches the chamber, thereby minimizing fuel waste and the emission of pollutants." A further detailed description is given in Attachment 1.

8. **Claimed Applicability of the Device:** See the attached application chart (Attachment 2).

9. **Device Installation, Tools Required, Expertise Required (claimed):**

An installation sheet is enclosed with each "EFS" unit. Specific instructions for specific cars are included in the installation instructions. The tools required for installation are a 1/2 inch socket, a 9/16 inch socket, a 4 inch extension, a ratchet wrench, a 9/16 inch open or box wrench, a 1/2 inch open or box end wrench and a regular screwdriver. No special equipment is needed to install the EFS device. A little
mechanical knowledge, however, is required. A do-it-yourselfer can install a unit in about one hour. Attachment 3 is a copy of the full installation instructions."

10. Device Maintenance (claimed): "The product is maintenance "free." Checking the fuse every now and then would be the only required maintenance."

11. Effects on Vehicle Emission (non-regulated) (claimed): "At no time, under regular operating conditions, or malfunction, will this unit emit into the ambient more harmful emissions than a motor car without one. Enclosed test reports prove this."

12. Emission and Fuel Economy Results Reported by Applicant:
   a. Olson Engineering tests (Attachment 4).
   b. Documentation of California Air Resources Board (CARB) retrofit approval (Attachment 5).
   c. Steady state data - unknown origin included in the patent (Attachment 6).
   d. Energy Dynamics Corporation (Attachment 7).

14. Information Gathered by EPA:
   a. Telephone communication with CARB to determine if confirmatory retrofit testing was done. It was, and the data showed no improvement in fuel economy or emissions (see Attachment 5).
   b. Telephone communication with Olson Engineering to get specific HC, CO, CO₂, and NOx readings for both FTPs and HFETs (see Addendum to Attachment 4).
   c. Telephone communications with Mr. DeMartino of VK manufacturing on the nature of the data presented in the patent. He did not know the details but mentioned that this testing was done by the inventor, prior to purchase of the patent.

15. Analysis: The installation, while the estimate of one hour installation time appears to be quite optimistic, seems quite simple and straightforward. No real problems should occur and it is estimated that any qualified mechanic or person with mechanical ability could complete the installation within 1 1/2 to 2 hours.

The safety aspects of the "EFS" device are not so clearly defined. While claims of 6 million miles of safe operation are impressive, the idea of spraying gasoline on a 600°F hot wire (as stated in the patent) may be very unsafe. Gasoline vapors will ignite at 600°F if the Air/Fuel Ratio is suitable for burning. Under conditions where the wire is heated but
the engine is not turning (example: defective starter) and fuel is injected into the carburetor (example: accelerator pump utilized), the possibility of having a fire is very real. No data was submitted on the safety aspects of the device.

The Olson test data for the HFET appears to be questionable on the CO readings. The value of .07 gms/mile is extremely low for a 1975 vehicle - especially when there was not such a reduction in CO for the CARB testing.

While the Olson data does demonstrate a lowering of HC and CO, the fuel economy stayed the same for the vehicles tested at CARB and Olson. The 3 percent gain on the Olson HFET is well within test-to-test variability. When it is noted that the Olson tested vehicle was supplied by VK Manufacturing, Inc. and adjusted by VK Manufacturing, Inc., the lack of fuel economy improvements demonstrates the lack of suitability of this unit to improve fuel economy.

16. Conclusions of EPA Evaluation: The fuel economy results for tests performed at Olson Laboratories and at the California Air Resources Board for both the Federal Test Procedure and the Highway Fuel Economy Test indicated no improvement in fuel economy for the "Environmental Fuel Saver." The Olson Laboratory test data indicated that CO emissions were reduced substantially in one test, the HFET, but it was not possible to determine if that result was due to the "Environmental Fuel Saver" or to the leaning of the carburetor as required by the installation instructions or for other reasons. A similar CO reduction was not indicated by the California Air Resources Board data.

The data submitted with this application does not substantiate the claims of improved fuel economy and reduced emissions, made about the "Environmental Fuel Saver." There is no need for the EPA to design a test program to further test the device.

List of Attachments

<table>
<thead>
<tr>
<th>Attachment No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment No. 1</td>
<td>Device Description</td>
</tr>
<tr>
<td>Attachment No. 2</td>
<td>Application Chart</td>
</tr>
<tr>
<td>Attachment No. 3</td>
<td>Installation instructions</td>
</tr>
<tr>
<td>Attachment No. 4</td>
<td>Olson Engineering Test Data</td>
</tr>
<tr>
<td>Attachment No. 5</td>
<td>Documentation of CARB Retrofit Approval</td>
</tr>
<tr>
<td>Attachment No. 6</td>
<td>Steady-State Data (unknown origin)</td>
</tr>
<tr>
<td>Attachment No. 7</td>
<td>Energy Dynamics Corporation Letter</td>
</tr>
</tbody>
</table>
the smog now encountered in many major cities is largely the result of photochemical reactions involving unburned hydrocarbons from automobile exhausts. These unburned hydrocarbons are also responsible for inefficient engine operation, in that carbon deposits are formed on the walls of combustion chambers.

Thus, with existing internal-combustion engines, a measurable portion of the fuel supplied there to remains unburned and is discharged. This not only results in an uneconomical engine operation, but it also contaminates the atmosphere.

In view of the foregoing, it is the main object of this invention to provide an improved fuel atomizing unit serving to homogenize and heat the fuel mixture fed into the combustion engine or burner so that complete combustion thereof takes place, thereby making maximum use of available fuel and minimizing the emission of unburned fuel constituents.

the unit is constituted by an electrical element placed between a pair of spaced mesh screens to define a permeable assembly having a pocket therein. The assembly functions as a restrictor in the conduit whose impedance to flow is in the order of about 15 to 20 percent, whereby the screens intercept and atomize the droplets, creating a suspension of minute fuel particles in air to produce a downstream mist or fog which is forced by the restriction to assume a vortex-like flow pattern. The heat supplied to the pocket by the heater is sufficient to raise the temperature of the fog in the output of the unit to a level conducive to complete combustion when the fog reaches the chamber, thereby minimizing fuel waste and the emission of pollutants.

For a better understanding of the invention... see the accompanying drawings:

Figure 1 is a schematic sectional illustration of a carburetor coupled in a conventional manner to the intake manifold of an internal combustion engine.

Figure 2 is the same as Figure 1, save that an atomizer unit in accordance with the invention is interposed between the carburetor and the intake manifold.

Figure 3 is an exploded view of one preferred embodiment of an actual atomizing unit of the single assembly type in accordance with the invention.

Figure 4 is a perspective view of the actual unit.
Figure 5 is a section taken through the single assembly unit in the plan indicated by line 5 - 5 in Figure 4.

Figure 6 is a perspective view of a dual assembly atomizing unit in accordance with the invention.

Figure 7 is an exploded view illustrating the manner in which the dual assembly is interposed between a standard carburetor and a dual input intake manifold.

It is well known that under certain circumstances the introduction of a restriction in a flow conduit may change the character of the flow and influence the downstream flow pattern. Thus, while in the absence of the restriction of air flow pattern is essentially laminar, the presence of the restriction results in downstream turbulence to create vortices.

The reason the downstream vortices produced by the atomizing unit is beneficial is that these vortices effectively prolong the path between the carburetor and the combustion chambers in the cylinders and thereby lengthen the period during which heat is absorbed to volitize the fuel. .... the heater is adapted to elevate the temperature of the fog to a level conducive to the full volatization thereof by the time the fog reaches the combustion chamber.
## Passenger Car & Light Truck Application Guide

- **Save Gas**
- **Reduce Pollution**
- **Maintenance Free**

### American Motors

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>B D F</th>
<th>L G</th>
<th>Our. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-77</td>
<td>196,199,232</td>
<td>196 Eng.</td>
<td>2</td>
<td>1, H, B20</td>
</tr>
<tr>
<td>1960-77</td>
<td>289,250,204,327</td>
<td>343,350 Eng.</td>
<td>2</td>
<td>2, H, C30</td>
</tr>
<tr>
<td>1960-77</td>
<td>290,237,313,323,330,390,401 Eng.</td>
<td>4</td>
<td>4, H, C30</td>
<td></td>
</tr>
</tbody>
</table>

### Buick

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>B D F</th>
<th>L G</th>
<th>Our. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-63</td>
<td>194,225 Eng.</td>
<td>2</td>
<td>R</td>
<td>E50</td>
</tr>
<tr>
<td>1964-65</td>
<td>225,250 Eng.</td>
<td>2</td>
<td>H</td>
<td>B20</td>
</tr>
<tr>
<td>1960-67</td>
<td>194,225 Eng.</td>
<td>2</td>
<td>R</td>
<td>E50</td>
</tr>
<tr>
<td>1968-77</td>
<td>225,250 Eng.</td>
<td>1</td>
<td>R</td>
<td>D20</td>
</tr>
</tbody>
</table>

### Cadillac

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>B D F</th>
<th>L G</th>
<th>Our. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957-77</td>
<td>421,427 Eng.</td>
<td>4</td>
<td>H</td>
<td>H80</td>
</tr>
</tbody>
</table>

### Chevrolet Passenger

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>B D F</th>
<th>L G</th>
<th>Our. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-67</td>
<td>194,230</td>
<td>240 Eng.</td>
<td>1</td>
<td>C, H R20</td>
</tr>
</tbody>
</table>

### Chevrolet Truck

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>B D F</th>
<th>L G</th>
<th>Our. No.</th>
</tr>
</thead>
</table>

### Chrysler & Imperial

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>B D F</th>
<th>L G</th>
<th>Our. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-64</td>
<td>421,427 Eng.</td>
<td>4</td>
<td>H</td>
<td>H80</td>
</tr>
<tr>
<td>1960-77</td>
<td>360,383,393</td>
<td>401 Eng.</td>
<td>2</td>
<td>C, H, F61</td>
</tr>
<tr>
<td>1961-67</td>
<td>421 Eng.</td>
<td>4</td>
<td>C</td>
<td>H11C</td>
</tr>
<tr>
<td>1961-67</td>
<td>313 Eng.</td>
<td>4</td>
<td>C</td>
<td>H11C</td>
</tr>
</tbody>
</table>

### Dodge Passenger

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>B D F</th>
<th>L G</th>
<th>Our. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-77</td>
<td>225 Eng.</td>
<td>1</td>
<td>C, H</td>
<td>A10</td>
</tr>
</tbody>
</table>

### Dodge Truck

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>B D F</th>
<th>L G</th>
<th>Our. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-67</td>
<td>225,250,300,327,330,390,401 Eng.</td>
<td>4</td>
<td></td>
<td>F61</td>
</tr>
<tr>
<td>1960-77</td>
<td>360,383,393,401 Eng.</td>
<td>2</td>
<td>C, H</td>
<td>D20</td>
</tr>
</tbody>
</table>

### Ford Passenger

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>B D F</th>
<th>L G</th>
<th>Our. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1966-67</td>
<td>240 Eng.</td>
<td>1</td>
<td>C, F</td>
<td>B20</td>
</tr>
</tbody>
</table>

### Ford Cylinders

<table>
<thead>
<tr>
<th>Year</th>
<th>Model</th>
<th>B D F</th>
<th>L G</th>
<th>Our. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1963-70</td>
<td>260,289,302,351</td>
<td>C, H</td>
<td>390,429 Eng.</td>
<td>2</td>
</tr>
<tr>
<td>1965-77</td>
<td>352,390,429</td>
<td>429 Eng.</td>
<td>4</td>
<td>H, F</td>
</tr>
<tr>
<td>1971</td>
<td>351C,351W,390</td>
<td>430,429 Eng.</td>
<td>2</td>
<td>H</td>
</tr>
<tr>
<td>1971</td>
<td>302,351C,</td>
<td>351W,390,</td>
<td>400,429 Eng.</td>
<td>2</td>
</tr>
<tr>
<td>1971</td>
<td>302 Eng.</td>
<td>2</td>
<td>H</td>
<td>C30</td>
</tr>
<tr>
<td>1972-77</td>
<td>429 Eng.</td>
<td>4</td>
<td>F</td>
<td>J100</td>
</tr>
</tbody>
</table>

C - Carter H - Holley R - Rochester S - Stromberg F - Ford (Motorcraft)
<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 Eng.</td>
<td>1960-61</td>
<td>250</td>
<td>Ford</td>
<td>2.5L</td>
<td>84</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>300 Eng.</td>
<td>1963-64</td>
<td>300</td>
<td>Ford</td>
<td>3.0L</td>
<td>97</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>390 Eng.</td>
<td>1966-67</td>
<td>390</td>
<td>Ford</td>
<td>3.9L</td>
<td>118</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>428 Eng.</td>
<td>1968-69</td>
<td>428</td>
<td>Ford</td>
<td>4.2L</td>
<td>158</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Ford Truck (Continued)**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>302 Eng.</td>
<td>1966-67</td>
<td>302</td>
<td>Ford</td>
<td>3.0L</td>
<td>115</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>352 Eng.</td>
<td>1968-69</td>
<td>352</td>
<td>Ford</td>
<td>3.5L</td>
<td>170</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>390 Eng.</td>
<td>1969-70</td>
<td>390</td>
<td>Ford</td>
<td>3.9L</td>
<td>180</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>429 Eng.</td>
<td>1970-71</td>
<td>429</td>
<td>Ford</td>
<td>4.3L</td>
<td>195</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>460 Eng.</td>
<td>1971-72</td>
<td>460</td>
<td>Ford</td>
<td>4.6L</td>
<td>210</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Mercury**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>351 Eng.</td>
<td>1960-61</td>
<td>351</td>
<td>Mercury</td>
<td>3.5L</td>
<td>120</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>390 Eng.</td>
<td>1962-63</td>
<td>390</td>
<td>Mercury</td>
<td>3.9L</td>
<td>145</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>429 Eng.</td>
<td>1964-65</td>
<td>429</td>
<td>Mercury</td>
<td>4.3L</td>
<td>160</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>454 Eng.</td>
<td>1966-67</td>
<td>454</td>
<td>Mercury</td>
<td>4.5L</td>
<td>175</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Plymouth**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>273 Eng.</td>
<td>1960-61</td>
<td>273</td>
<td>Plymouth</td>
<td>2.7L</td>
<td>110</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>318 Eng.</td>
<td>1962-63</td>
<td>318</td>
<td>Plymouth</td>
<td>3.1L</td>
<td>140</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>340 Eng.</td>
<td>1964-65</td>
<td>340</td>
<td>Plymouth</td>
<td>3.4L</td>
<td>160</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Pontiac**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>389 Eng.</td>
<td>1960-61</td>
<td>389</td>
<td>Pontiac</td>
<td>3.9L</td>
<td>130</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>421 Eng.</td>
<td>1962-63</td>
<td>421</td>
<td>Pontiac</td>
<td>4.2L</td>
<td>150</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>455 Eng.</td>
<td>1964-65</td>
<td>455</td>
<td>Pontiac</td>
<td>4.5L</td>
<td>175</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Lincoln**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>368 Eng.</td>
<td>1960-61</td>
<td>368</td>
<td>Lincoln</td>
<td>3.6L</td>
<td>120</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>370 Eng.</td>
<td>1962-63</td>
<td>370</td>
<td>Lincoln</td>
<td>3.7L</td>
<td>130</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>390 Eng.</td>
<td>1964-65</td>
<td>390</td>
<td>Lincoln</td>
<td>3.9L</td>
<td>150</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Jeep Corp. (Willys)**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>226 Eng.</td>
<td>1949-50</td>
<td>226</td>
<td>Jeep</td>
<td>2.2L</td>
<td>105</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>230 Eng.</td>
<td>1951-52</td>
<td>230</td>
<td>Jeep</td>
<td>2.3L</td>
<td>115</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Carter**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>304 Eng.</td>
<td>1960-61</td>
<td>304</td>
<td>Carter</td>
<td>3.0L</td>
<td>115</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Holley**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>308 Eng.</td>
<td>1961-62</td>
<td>308</td>
<td>Holley</td>
<td>3.0L</td>
<td>115</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Rochester**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>348 Eng.</td>
<td>1962-63</td>
<td>348</td>
<td>Rochester</td>
<td>3.4L</td>
<td>150</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Stromberg**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>360 Eng.</td>
<td>1963-64</td>
<td>360</td>
<td>Stromberg</td>
<td>3.6L</td>
<td>120</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Motorcraft**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>390 Eng.</td>
<td>1964-65</td>
<td>390</td>
<td>Motorcraft</td>
<td>3.9L</td>
<td>130</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>

**Ford (Motortor)**

<table>
<thead>
<tr>
<th>Engine</th>
<th>Model</th>
<th>Year</th>
<th>Type</th>
<th>Displacement</th>
<th>Horsepower</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>429 Eng.</td>
<td>1960-61</td>
<td>429</td>
<td>Ford</td>
<td>4.3L</td>
<td>175</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>455 Eng.</td>
<td>1962-63</td>
<td>455</td>
<td>Ford</td>
<td>4.5L</td>
<td>180</td>
<td>滋生至B20</td>
</tr>
<tr>
<td>485 Eng.</td>
<td>1964-65</td>
<td>485</td>
<td>Ford</td>
<td>4.8L</td>
<td>200</td>
<td>滋生至B20</td>
</tr>
</tbody>
</table>
###CLASSIFICATION / MODEL & APPLICATION INDEX

**CONTAINS 5 PARTS OF FORM 463**
**THIS INDEX SUPERSEDES ALL PREVIOUS & IS EFFECTIVE 4/1/78**

The classification or popularity rating of the part numbers in this listing are based on sales trends and do not necessarily reflect regional popularity.

The local market must be the factor which determines the part numbers to be carried in your stock.

1978 VK TAXICAB ILLUSTRATED INC.

---

<table>
<thead>
<tr>
<th>CLASS</th>
<th>E.F.S. - NO.</th>
<th>MAKE</th>
<th>MODEL</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1- BARETT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1- DAREL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2- DAREL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

() = CARB. MAKE K=HOLLY R=ROCHESTER S=STROMBERG C=CARTER F=FORD or MOTORCRAFT

---

1068 N.W. 3rd Street • Hollywood, Florida 33019 • (305) 458-5000
<table>
<thead>
<tr>
<th>CLASS</th>
<th>E.F.S. NO.</th>
<th>MODEL</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-50</td>
<td></td>
<td>Buick 6 Cyl. 60-63 195, 225 Eng. 2 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chevy. Pass. 8 Cyl. 62-77 307 Eng. 2 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chevy. Trk. 8 Cyl. 56-57 265, 322, 327 Eng. 2 Bbl. (C-R)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GMC Trk. 456 Cyl. 63-65 355, D, 4, 6. Enr. 2 Bbl. (S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GMC Trk. 8 Cyl. 64-70 307 Eng. 2 Bbl. (G)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jeep/Alloy 66-67 312 Eng. 2 Bbl. (S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pont. Firewall/TomCat 8 Cyl. 1969 325 Eng. 2 Bbl. (R)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pont. Ventura 8 Cyl. 71-77 320 Eng. 2 Bbl. (K)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buick 6 Cyl. 66-67 172, 225 Eng. 2 Bbl. (A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chevy. Pass. 8 Cyl. 66-69 222, 227 Eng. 2 Bbl. (R)</td>
<td></td>
</tr>
<tr>
<td>F-60</td>
<td></td>
<td>Buick/LeSabre 8 Cyl. 62-63 351, (G)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buick 8 Cyl. 68-77 330 Eng. 2 Bbl. (C-R)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chevy. Pass. 8 Cyl. 69-77 337, 332, 336 Eng. 2 Bbl. (A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chevy. Pass. 8 Cyl. 73-77 335 Eng. 2 Bbl. (A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chevy. Trk. 8 Cyl. 66-77 343, 355, 365 Eng. 2 Bbl. (A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GMC Trk. 426 Cyl. 60-63 351, 428 Eng. 2 Bbl. (S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GMC Trk. 456 Cyl. 65-59 351, 351, 351C Eng. 2 Bbl. (S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GMC Trk. 456 Cyl. 1970 351, 351, 351C Eng. 2 Bbl. (S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GMC Trk. 8 Cyl. 69-77 362 Eng. 2 Bbl. (S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ISC Trk. 60-67 230 Eng. 2 Bbl. (R)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jeep/Alloy 8 Cyl. 1959, 1969 350 Eng. 2 Bbl. (R)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Olins 8 Cyl. 63-77 350, 352, 354, 429, 429, 455 Eng. 2 Bbl. (C-H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pont. Firewall/TomCat 8 Cyl. 63-77 320, 350, 399, 400, 455 Eng. 2 Bbl (C-H)</td>
<td></td>
</tr>
<tr>
<td>F-61</td>
<td></td>
<td>Chevy. Pass. 8 Cyl. 67-69 427 Eng.(4)/400 Eng. 2 Bbl. (R)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chevy. Pass. 8 Cyl. 1969 330 Eng. 2 Bbl. (N)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chry./Imperial 8 Cyl. 65-77 350, 333, 333 Eng. 2 Bbl. (C-H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OPE. Pass. 8 Cyl. 62-77 300, 313, 330, 400, 400 Eng. 2 Bbl. (C-H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OPE. Trk. 8 Cyl. 62-77 350, 350, 350, 413 Eng. 2 Bbl. (S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLASS</td>
<td>E.F.S. NO.</td>
<td>MODEL</td>
<td>APPLICATION</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>0-30</td>
<td></td>
<td>Ford Fairlane/Torino 8 Cyl. 12-27 250, 289, 332, 351, 390, 450 Eng. 2 Bbl. (C-F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Fairlane/Torino 8 Cyl. 1972 302, 351C Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Falcon 8 Cyl. 63-70 250, 289, 332 Eng. (C-H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Fairlane/8 Cyl. 71-77 332 Eng. 2 Bbl. (A)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Mustang 8 Cyl. 65-77 289, 299, 322, 331 Eng. 2 Bbl. (C-G)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Mustang 8 Cyl. 1972 341 Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Mustang 8 Cyl. 1970 322 Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Mustang 8 Cyl. 1971 322 Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Mustang 8 Cyl. 1970 351C Eng. 2 Bbl. (H-F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Trk. 8 Cyl. 232, 232, 332, 350, 351, 366, 413 Eng. 2 Bbl. (F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Trk. 8 Cyl. 0-54 232, 332 Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>FORD Trk. 65-79 V226, 331, 334 Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lincoln 2 Cyl. 65-67 120 Eng. 2 251. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Merc. 8 Cyl. 69-75 222, 332, 332, 330, 429, 429, 435 Eng. 2 Bbl. (C-F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Merc. 8 Cyl. 60-62 352 Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Merc. Cougar 8 Cyl. 63-77 332, 332, 332, 332 Eng. 2 Bbl. (C-F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Merc. Cougar 8 Cyl. 71-77 357 Eng. 2 Bbl. (K)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Mustang Cobra II V-8 311 Eng. 2 Bbl. (F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-31</td>
<td></td>
<td>Ford Pass. 8 Cyl. 71-77 352, 351C, MIV. 330, 400, 420 Eng. 2 Bbl. (F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Mustang 8 Cyl. 72-77 352, 351C Eng. 2 Bbl. (F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Trk. 8 Cyl. 61-77 332, 332, 350, 399, 399 Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Merc. Pass 8 Cyl. 70-77 331, 332, 332, 333 Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Merc. Cougar 8 Cyl. 71-77 351 Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-40</td>
<td></td>
<td>Chry. Imperial ALL 55-64 345 Cog. 2 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GMC Trk. 2 Cyl. 69-77 233, 233, 233 Eng. 4 Bbl. (C-S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Trk. 8 Cyl. 57-71 332, 334, 332 Eng. 2 Bbl. (C-S)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jeep/Alloy 65-66 330 Eng. 2 Bbl. (M)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ply. Express/Scotia 8 Cyl. 62-77 292, 315 Eng. 2 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GMC Trk. 8 Cyl. 60-70, 70, 70, 70 Eng. 2 Bbl. (C)</td>
<td></td>
</tr>
</tbody>
</table>
### CLASS E.F.S. NO. MODEL APPLICATION

<table>
<thead>
<tr>
<th>CLASS</th>
<th>E.F.S. NO.</th>
<th>MODEL</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-61</td>
<td></td>
<td>INC Trk. &amp; Cyl. 72-77 350, 420, 425, 433, 455 Eng. 4 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>INC Trk. &amp; Cyl. 72-71 350, 425, 426 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ply. Barraiccda/Jaunt 8 Cyl. 63-77 350, 351, 353, 450 Eng. 2 Bbl. (P)</td>
<td></td>
</tr>
<tr>
<td>E-110</td>
<td></td>
<td>Ford Mustang 4 Cyl. Pont. Firebird/Fiercest 4 Cyl.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H-93</td>
<td></td>
<td>Buick 8 Cyl. 66-77 350, 420, 425, 433, 455 Eng. 4 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cadillac 8 Cyl. 67-77 350, 425 Eng. 4 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chev. Pass. &amp; Cyl. 65-69 357, 377, 377, 427 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chev. Pass. &amp; Cyl. 68-77 327, 350, 350, 400, 427, 454 Eng. 4 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chev. Trk. 8 Cyl. 69-77 350, 350 Eng. 4 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gm Cyl. 67-77 277, 350 Eng. 4 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Pass. 8 Cyl. 65-77 350, 420, 425, 455 Eng. 4 Bbl. (F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford/Thunderbird 8 Cyl. 66-77 350, 425, 455 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford/Vectra 8 Cyl. 66-77 350 Eng. 4 Bbl. (C-H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford/Trk. 8 Cyl. 66-71 121, 471, 514 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>INC Trk. 8 Cyl. 68-76 955 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>INC Trk. 8 Cyl. 69-77 22051 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td>1-50</td>
<td></td>
<td>INC 8 Cyl. 63-77 292, 327, 350, 356, 401 Eng. 4 Bbl. (C-H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Pass. 8 Cyl. 65-77 350, 420, 425, 455 Eng. 4 Bbl. (F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford/Thunderbird 8 Cyl. 66-77 350, 425, 455 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford/Vectra 8 Cyl. 66-77 350 Eng. 4 Bbl. (C-H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford/Trk. 8 Cyl. 66-71 117, 471, 514 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>INC Trk. 8 Cyl. 68-76 955 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td>1-51</td>
<td></td>
<td>Chev. Pass. 8 Cyl. 70-77 350, 375, 402, 454 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chev. Trk. 8 Cyl. 67-77 355 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chev. Trk. 8 Cyl. 68-77 427 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chry./Imperial 8 Cyl. 66-77 353 Eng. 4 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chry./Imperial 8 Cyl. 66-77 403 Eng. 4 Bbl. (C-H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dye. Pass. 8 Cyl. 65-67 272, 311, 313, 456 Eng. 4 Bbl. (G)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dye. Trk. 8 Cyl. 62-65 413 Eng. 4 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dye. Trk. 8 Cyl. 65-71 412 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ford Trk. 8 Cyl. 70-77 391, 471, 514 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GMC Trk. 8 Cyl. 73-77 360, 427 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GMC Trk. 8 Cyl. 71-77 355, 427 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>INC Trk. 8 Cyl. 1955 2959 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>INC Trk. 8 Cyl. 67-71 2719 Eng. 4 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>INC Trk. 8 Cyl. 68-77 2011 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>INC Trk. 1973 2239, 2250, 2260 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>INC Trk. 8 Cyl. 72-77 1401 Eng. 4 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ply. Barraiccda/Jaunt 86-77 273, 350, 353, Eng. 4 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td>J-400</td>
<td></td>
<td>Ford Pass. 8 Cyl. 72-77 429 Eng. 4 Bbl. (F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lincoln &amp; Cyl. 63-77 413, 425, 426 Eng. 4 Bbl. (C-F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Merc. Pass. 8 Cyl. 71-77 429 Eng. 4 Bbl. (F)</td>
<td></td>
</tr>
</tbody>
</table>
A-10

1- BARREL

Buick 6 Cyl. 63-77 225 Eng. 185 hp. (C-H)
Chev. Trk. 6 Cyl. 60-77 225 Eng. 170 hp. (C-H)

I.H.C. Trk. 6-109, 6-241, Eng. 1955 1956 110 hp. (H)
I.H.C. Trk. 6-111, 6-222, 265, (Eng. 1955 1956 180 hp. (H)

Ply. Barracuda, Valiant 6 Cyl. 63-77 225 Eng. 160 hp. (C-H)

B-20

1- BARREL

AMC 6 Cyl. 60-77 196, 222, 250 Eng. 150 hp. (C-H)
Buick 6 Cyl. 64-65 225, 250 Eng. 185 hp. (R)
Buick 6 Cyl. 65-77 225, 230 Eng. 180 hp. (R)
Chev. Trk. 6 Cyl. 63-77 194, 223, 250 Eng. 150 hp. (C-H)
Chev. Trk. 6 Cyl. 6-4 Cyl. 63-77 194, 223, 250, 292 Eng. 185 hp. (C-H)

Ford Pass 6 Cyl. 63-69 255 Eng. 66-69 WST 180 hp. (H)
Ford Pass 6 Cyl. 65-77 230 Eng. 195 hp. (C-H-F)
Ford Torino 6 Cyl. 65-77 225 Eng. 180 hp. (H)
Ford Torino 6 Cyl. 65-77 250 Eng. 190 hp. (C-H-F)
Ford Truck 6 Cyl. 71-77 250 Eng. 190 hp. (C)
Ford Mustang 6 Cyl. 64-79 225, 262, 335 Eng. 150 hp. (C-H-F)
Ford Trk. 6 Cyl. 64-77 194, 196, 220, 230, 250, 262, 330 Eng. 185 hp. (C-H-F)

G.M.C. Trk. 466 Cyl. 64-79 194, 200, 225, 250, 275 Eng. 180 hp. (C-H-F)

I.H.C. Trk. 6 Cyl. 65-77 222, 233, 250, 292 Eng. 180 hp. (C-H-F)

I.H.C. Trk. 6 Cyl. 6-109, 6-241, Eng. 1955 1956 180 hp. (H)

Jaguar XJ, XJ-6, XJ-12, 294 Eng. 220 Eng. 235 Eng. 345 Eng. 180 hp. (C-H-F)
Nerz. Correct/Correct 6 Cyl. 1954 250 Eng. 180 hp. (H)

Fres. Correct/Correct 6 Cyl. 65-77 250 Eng. 180 hp. (C-H-F)
Olds. Pass 6 Cyl. 64-77 225, 230 Eng. 195 hp. (C-H-F)
Pont. Firebird/Torino 6 Cyl. 63-77 215, 250, 250 Eng. 180 hp. (C-H-F)
<table>
<thead>
<tr>
<th>L.F.S. NO.</th>
<th>MODEL</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-61</td>
<td>16C Trk. 8 Cyl. 1966/67-77 230-450 Eng. 2 Bbl. (H)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. EX辣椒</td>
<td>Ply. Barracuda/Valliant 8 Cyl. 65-77 300, 361, 332, 450 Eng. 2 Bbl. (C-H)</td>
</tr>
<tr>
<td></td>
<td>2- EX辣椒</td>
<td>Chev. Pass. 6 Cyl. 67-77 277 Eng. 2 Bbl. (H)</td>
</tr>
<tr>
<td></td>
<td>2- EX辣椒</td>
<td>Chev. Trk. 6 Cyl. 1968 350 Eng. 2 Bbl. (H)</td>
</tr>
<tr>
<td></td>
<td>2- EX辣椒</td>
<td>Chry. Imperial 6 Cyl. 65-77 300, 332, 420 Eng. 2 Bbl. (C-H)</td>
</tr>
<tr>
<td></td>
<td>2- EX辣椒</td>
<td>Ply. Barracuda/Valliant 8 Cyl. 65-77 300, 361, 332, 450 Eng. 2 Bbl. (C-H)</td>
</tr>
<tr>
<td></td>
<td>2- EX辣椒</td>
<td>Chev. Trk. 6 Cyl. 60-77 350, 361, 332, 413 Eng. 2 Bbl. (S)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L.F.S. NO.</th>
<th>MODEL</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-40</td>
<td>Chry. Imperial Alt. 60-77 350 Eng. 2 Bbl. (C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2- EX辣椒</td>
<td>Ply. Barracuda/Valliant 8 Cyl. 65-77 300, 361, 332, 450 Eng. 2 Bbl. (C-H)</td>
</tr>
<tr>
<td></td>
<td>2- EX辣椒</td>
<td>Chev. Trk. 6 Cyl. 60-77 350, 361, 332, 413 Eng. 2 Bbl. (S)</td>
</tr>
<tr>
<td>E.F.S. NO.</td>
<td>MODEL</td>
<td>APPLICATION</td>
</tr>
<tr>
<td>-----------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>E-50</td>
<td>Fuchs 6 Cyl. 62-63 195, 225 Eng. 2 Bbl. (6)</td>
<td></td>
</tr>
<tr>
<td>2- BARREL</td>
<td>Fuchs 6 Cyl. 62-63 195, 225 Eng. 2 Bbl. (6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chev. Res. &amp; Cyl. 60-77 327 Eng. 2 Bbl. (6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chev. Tr. 9 Cyl. 60-77 327 Eng. 2 Bbl. (6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GMC Tr. 146 Cyl. 61-65 5155, 8 L. Engs. 2 Bbl. (5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GMC V8 Cyl. 60-77 327 Eng. 2 Bbl. (4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jeep/Chrysler 6-5-21 71-72 Eng. 2 Bbl. (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pont. Firebird/Tempest 1 Cyl. 1589 350 Eng. 2 Bbl. (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pont. Ventura 2 Cyl. 71-72 350 Eng. 2 Bbl. (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fuchs 4 Cyl. 66-67 185, 225 Eng. 2 Bbl. (2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chev. Prot. 8 Cyl. 66-67 233, 327 Eng. 2 Bbl. (2)</td>
<td></td>
</tr>
</tbody>
</table>

E.F.S. #F-61 replaces / E.F.S. #F-60 / after 1972 / VKMI 79
GENERAL INSTALLATION INSTRUCTIONS

1. Remove carburetor air-cleaner. Disconnect carburetor gas-line, all the various vacuum lines and linkage connection to carburetor, replacing all vacuum lines having cracks or showing wear.

2. Carefully clean gasket residue from engine manifold and bottom of carburetor. Both manifold and carburetor must be spotless.

3. When manifold studs are present, carefully press Environmental Fuel Saver unit (thin gasket facing down, the one closest to wire mesh) on studs, with circuit wires of the unit facing front toward radiator. In all cases, the studs may need to be BACKED OUT OF THE MANIFOLD a few turns. This can be done by using two nuts on one stud and backing out the stud with the wrench on the bottom nut. (If no manifold studs are present, longer bolts are contained in this package.)

4. This unit is self grounding (silver tab). Tighten down all carburetor bolts or nuts together to achieve an even distribution of pressure...until a tight seal is made. (per manufacturer's spec.)

5. Reconnect carburetor gas-line, all vacuum lines (making sure they are replaced as they were), and linkage connections to the carburetor. Unit will add height; make up the difference on the choke rod or tube. (Rod provided in package where necessary.)

6. Run lead-wire through an opening in the fire-wall and connect to accessory side of the fuse-box. The wire plugged into is "alive" only when the ignition switch is turned on to the run position. (DO NOT PLUG INTO CAR WIRE THAT IS "ALIVE" ALL THE TIME.)

7. Tape lead-wire on engine-side of fire-wall for support so as not to hang free, making sure that fuse connection* is free of all obstructions and areas of excessive heat.

8. Test for in-line circuit connection. Without car running, turn ignition key to "on" position. Line voltage should read 12 to 13 volts. When motor is turned on, line voltage should read approximately 14.8 volts. Line voltage determines the amount of heat radiated from the screens.

9. All vacuum-lines that are open must be closed for adjustment. Start engine and let run until it reaches normal operating temperature. 10 to 15 minutes approximately, permitting engine to stabilize with the Fuel Saver. Then, air-fuel function should be "tuned out," to insure maximum efficiency. Remove plug and connect air-filter vacuum-line to carburetor. Replace carburetor air cleaner.

10. Reconnect air-filter and all vacuum lines to their positions.

*NOTE: IN THE EVENT OF MALFUNCTION, CHECK FUSE FOR ANY VARIANCE. PLEASE NOTE MOTOR COMPANY AND CHECK OTHER SIDE FOR SPECIFIC INSTALLATION INSTRUCTIONS.
VEHICLE EMISSION TEST REPORT

DATE: June 13, 1

PROJECT NO: 6140-1

CLIENT: V.K. Manufacturing, Inc.
ADDRESS: 1068 W.W. 3 Rd. Street - Hallandale, Florida 33009

CLIENT'S REPRESENTATIVE: Mr. E. DeMartino

VEHICLE: Chevrolet
YEAR: 1975
MODEL: Monte Carlo

LICENSE NO: 601 NAP
STATE: CA

TRANSMISSION: Auto
CARBURETOR: BBL: 2

ENGINE: NO. OF CYLINDERS: V-8
CID: 350

ODOMETER: START: 55791 FINISH: 55802

TYPE TEST: CVS COLD START

PROCEDURE USED: 1975 FTP

DEVICE BRAND NAME: Baseline

DRY BULB TEMP: 86 °F WET BULB TEMP: 68 °F BAROMETER 29.90"

DYNAMOMETER INERTIA SETTING 4500 #
ROAD LOAD HORSEPOWER SETTING 12.7

FUEL ECONOMY RESULTS: 15.57 MPG TEST FUEL: Indolene Clear (CARBON BALANCE METHOD)

TEST RESULTS

HC  CO  NOx
0.55 gm/m.  6.77 gm/m.  1.65 gm/m.

COMMENTS: The Test Vehicle Tuning Parameters were sent to manufacturers specifications prior to testing.

RECEIVED BY: 
REVIEWED BY: J.C. Coker
TITLE: V.P. Test Operations
VEHICLE EMISSION TEST REPORT

DATE: June 15, 19
PROJECT NO: 6140-1

CLIENT: V.K. Manufacturing, Inc.

ADDRESS: 1063 W. 2nd Street - Hallandale, Florida 33009

CLIENT'S REPRESENTATIVE: Mr. E. D'Anastasio

VEHICLE: Chevrolet YEAR: 1975 MODEL: Monte Carlo

LICENSE NO: 601 NAP STATE: CA

TRANSMISSION: Auto CARBURETOR: BBL: 2

ENGINE: NO. OF CYLINDERS: V-8 CID: 350

ODOMETER: START: 55839 FINISH: 55850

TYPE TEST: CVS Cold Start

PROCEDURE USED: 1975 FTP

DEVICE BRAND NAME: Environmental Fuel Saver (E.F.S.)

DRY BULB TEMP: 34 °F WET BULB TEMP: 66 °F BAROMETER: 29.89'

DYNAMOMETER INERTIA SETTING 4500 #

ROAD LOAD HORSEPOWER SETTING 12.7

FUEL ECONOMY RESULTS: 13.57 MPG TEST FUEL: Indolene Clear

(CARBON BALANCE METHOD)

TEST RESULTS

<table>
<thead>
<tr>
<th>HC</th>
<th>CO</th>
<th>NOx</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.45 gm/m</td>
<td>1.86 gm/m</td>
<td>1.36 gm/m</td>
</tr>
</tbody>
</table>

COMMENTS: The E.F.S. Device was installed by the clients representative and the Tune-up Specifications were re-confirmed by OBI Personnel.

RECEIVED BY: REVIEWED BY: J.C. Coker
TITLE: V.P. Test Operations
HIGHWAY DRIVING CYCLE FOR FUEL ECONOMY
CALCULATION SHEET

PROJECT NO.: 6140-1
DATE: June 13,

CLIENT: V.K. Manufacturing, Inc.

VEHICLE: Chevrolet
MODEL: Monte Carlo
YEAR: 1975

LICENSE NO.: 601
STATE: CA
ODOMETER: 55803

1. \( K_1 = 0.06783 \) (PER MILE VALUE) (10.242 MILES)

2. \( P_p = \frac{29.90}{50.4} \times 25.4 \) - \( \frac{50.4}{1.868} \times 665.31 \) MM HG

3. \( T_p = 460^\circ + \frac{110}{665.31}^\circ_F = \frac{570}{361.61}^\circ_R \)

4. \( \frac{P_p}{665.31} \times \frac{17255}{0.06783} \times 10^{-6} \times 0.2647 \) REVOLUTIONS \( \frac{v}{rev} K_1 \)

5. A. HC MASS = \( V_{MIX} \times 16.33 \times CONC \times 10^{-6} \times 0.866 = 0.147 \)

   B. CO MASS = \( V_{MIX} \times 32.97 \times CONC \times 10^{-6} \times 0.429 = 1.150 \)

   C. CO_2 MASS = \( V_{MIX} \times 51.85 \times CONC \div 100 \times 0.273 = 114.529 \)

6. \( \frac{A + B + C}{2421} = 20.90 \) MPG FUEL ECONOMY

COMMENTS: Baseline - set to manufacturers Tune-up specifications prior to test.

CORRECTED BY J.C. Coker, TEST SITE Huntington Beach, CA
HIGHWAY DRIVING CYCLE FOR FUEL ECONOMY
CALCULATION SHEET

PROJECT NO.: 6140-1

DATE: June 15, 19...

CLIENT: V.K. Manufacturing, Inc.

VEHICLE: Chevrolet 
MODEL: Monte Carlo 
YEAR: 1975

LICENSE NO.: 601 MAP 
STATE: CA 
ODOMETER: 55350

1. \( K_1 = 0.06783 \) (PER MILE VALUE) (10.242 MILES)

2. \[ P_0 = \left( \frac{29.87}{662.87} \times 25.4 \right) - \left( \frac{51.3}{662.87} \times 1.868 \right) = \]

3. \( T_P = 460^\circ + \frac{110}{570} = 570^\circ \) R

4. \[ V_{MIX} = \left( \frac{P_0}{T_P} \times \frac{662.87}{570} \right) \times 17273 \times \frac{0.06783}{0.2646} \times 360.52 \]

5. A. \( \text{HC MASS} = V_{MIX} \times 16.33 \times \text{CONC} \times 10^{-6} \times 0.866 = 0.061 \)
   B. \( \text{CO MASS} = V_{MIX} \times 32.97 \times \text{CONC} \times 10^{-6} \times 0.429 = 0.03 \)
   C. \( \text{CO}_2 \text{ MASS} = V_{MIX} \times 51.85 \times \text{CONC} \div 100 \times 0.273 = 112.572 \)

6. \[ \frac{A + B + C}{2421} = \frac{21.50}{2421} = 0.009 \] 

MPG FUEL ECONOMY

COMMENTS: With EFS Device - Manufacturers Tune-up specifications were re-confirmed prior to the Device Test.
Addendum to Attachment 4

When asked, Olson Engineering supplied the following data about the tests run for VK Manufacturing Inc.

<table>
<thead>
<tr>
<th>Test Type</th>
<th>HC*</th>
<th>CO*</th>
<th>CO₂*</th>
<th>NOX*</th>
<th>F.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTP Baseline</td>
<td>.55</td>
<td>6.77</td>
<td>641.05</td>
<td>1.65</td>
<td>13.57</td>
</tr>
<tr>
<td>FTP with Device</td>
<td>.45</td>
<td>1.36</td>
<td>649.52</td>
<td>1.36</td>
<td>13.57</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HFEET Baseline</td>
<td>.17</td>
<td>2.68</td>
<td>419.52</td>
<td>1.39</td>
<td>20.90</td>
</tr>
<tr>
<td>HFEET with Device</td>
<td>.07</td>
<td>.07</td>
<td>412.35</td>
<td>1.40</td>
<td>21.50</td>
</tr>
<tr>
<td>Installed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* In gms/mile.

The vehicle was brought to Olson by VK Manufacturing and modified by VK Manufacturing personnel. The vehicle parameters that were set by Olson Engineering to manufacturers specifications were timing and idle RPM, not idle CO. Olson Engineering never measured the idle mixture.
September 5, 1978

Mr. Ernie De Martino
VK Manufacturing Co
1068 N.W. 3rd Street
Hollywood, FL 33009

Dear Mr. De Martino:

This is in response to your request for an exemption from the prohibitions of Section 27156 of the California Motor Vehicle Code for the "Environmental Fuel Saver" device to be used on 1972 and older model vehicles.

Our evaluation, documented in the enclosed staff report, indicates that the installation of the "Environmental Fuel Saver" device would not cause any adverse effects on emissions.

Enclosed you will find Executive Order D-84 exempting the "Environmental Fuel Saver" from the prohibitions of Section 27156 of the Motor Vehicle Code for use on all 1978 and older model gasoline powered vehicles with conventional carburetors. May we remind you that unsubstantiated claims, whether written or verbal, are prohibited.

Should you have any questions regarding this matter, please contact Mr. N. Kayne, Manager, Aftermarket Parts and Modifications Evaluation Section at (213) 575-6839.

G. C. Hass, Chief
Vehicle Emissions Control Division

Attachment
Evaluation of the VK Manufacturing, Inc.
"Environmental Fuel Saver" Device in Accordance with Section 2222,
Title 13 of the California Administrative Code

I. Introduction

VK Manufacturing Inc., 1068 N.W. 3rd St., Hollendale, Fla. 33009, has applied for an exemption for the "Environmental Fuel Saver" device from the prohibitions of Section 27156 of the Vehicle Code (See Exhibit A). The applicant is requesting that an exemption be granted for 1978 and older gasoline powered vehicles with conventional carburetors.

II. System Description

The "Environmental Fuel Saver" device consists of a spacer plate containing a wire mesh and a heated element. The spacer plate is installed between the carburetor and the intake manifold. The applicant claims that the system helps atomize the fuel and promotes evaporation.

III. System Evaluation

The applicant submitted CVS-75 data obtained at Olson Engineering, 15512 Commerce Lane, Huntington Beach, California; a recognized vehicle emission laboratory. The tests were run on a 1975 Chevrolet Monte Carlo, 350-V8 engine, with automatic transmission and 55,791 miles. The results were as follows:
The applicant also submitted Highway Driving Cycle tests on the same vehicle with the following results:

<table>
<thead>
<tr>
<th></th>
<th>Baseline gm/mi</th>
<th>With Device gm/mi</th>
</tr>
</thead>
<tbody>
<tr>
<td>HC</td>
<td>0.55</td>
<td>0.45</td>
</tr>
<tr>
<td>CO</td>
<td>6.77</td>
<td>1.86</td>
</tr>
<tr>
<td>NOx</td>
<td>1.65</td>
<td>1.36</td>
</tr>
<tr>
<td>Economy</td>
<td>13.57 mi/gal</td>
<td>13.57 mi/gal</td>
</tr>
</tbody>
</table>

The Air Resources Board Laboratory performed confirmatory tests on a 1970 Chevrolet Impala, 350-V8 engine with automatic transmission and 77,400 miles. The results were as follows:

Cold Starts CVS-II

<table>
<thead>
<tr>
<th></th>
<th>Baseline gr/mi</th>
<th>With Device gr/mi</th>
</tr>
</thead>
<tbody>
<tr>
<td>HC</td>
<td>3.34</td>
<td>3.50</td>
</tr>
<tr>
<td>CO</td>
<td>51.37</td>
<td>41.97</td>
</tr>
<tr>
<td>NOx</td>
<td>3.98</td>
<td>4.20</td>
</tr>
<tr>
<td>Economy</td>
<td>13.4 mi/gal</td>
<td>13.4 mi/gal</td>
</tr>
</tbody>
</table>
## Highway Cycle

<table>
<thead>
<tr>
<th></th>
<th>Baseline gr/mi</th>
<th>With Device gr/mi</th>
</tr>
</thead>
<tbody>
<tr>
<td>HC</td>
<td>2.34</td>
<td>2.39</td>
</tr>
<tr>
<td>CO</td>
<td>42.72</td>
<td>44.52</td>
</tr>
<tr>
<td>NOx</td>
<td>4.77</td>
<td>4.29</td>
</tr>
<tr>
<td>Economy</td>
<td>19.2 mi/gal</td>
<td>19.2 gr/mi</td>
</tr>
</tbody>
</table>

Based on the above tests, the staff believes there is no significant increase in emissions or fuel economy.

### IV. Manufacturer's Claims

The manufacturer has made unsubstantiated claims regarding vehicle emissions, fuel economy and engine efficiency. He has been advised that he may not use these claims in any of his verbal or written sales efforts.

### V. Conclusion and Recommendations

Based on the above tests and prior experience with similar devices, the staff is of the opinion that the device will not result in an increase in emissions when installed on gasoline powered vehicles using conventional carburetors. The staff therefore recommends that VK Manufacturing Inc. be granted an exemption, by Executive Order D-24, for its "Environmental Fuel Saver" device from the prohibitions of Vehicle Code Section 27156 for 1978 and older model gasoline powered vehicles using conventional carburetors.
Tests

The following road tests were performed on various models of standard automobiles, all running at 60 miles per hour, to determine the miles per gallon (MPG) normally obtained in the absence of the atomized unit as compared to the MPG realized with the unit installed and operating the vehicle:

<table>
<thead>
<tr>
<th>Vehicle</th>
<th>Without Unit</th>
<th>With Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976 Mercury (390 Engine)</td>
<td>13.3</td>
<td>20.8</td>
</tr>
<tr>
<td>1972 Plymouth (225 Engine)</td>
<td>16.9</td>
<td>26.7</td>
</tr>
<tr>
<td>1974 Plymouth (225 Engine)</td>
<td>20.5</td>
<td>27.8</td>
</tr>
<tr>
<td>1971 Pontiac Grand Prix</td>
<td>12.5</td>
<td>18.9</td>
</tr>
<tr>
<td>1974 Ford (351 Engine)</td>
<td>11.8</td>
<td>18.5</td>
</tr>
<tr>
<td>1971 Buick (225 Engine)</td>
<td>14.4</td>
<td>19.1</td>
</tr>
<tr>
<td>1973 Thunderbird</td>
<td>12.2</td>
<td>18.8</td>
</tr>
<tr>
<td>1967 Olds Supreme</td>
<td>13.1</td>
<td>19.2</td>
</tr>
</tbody>
</table>

It will be evident from the foregoing that with the unit installed, a major improvement in fuel economy was obtained in each vehicle tested. Emission tests carried out on vehicles with and without the unit were similarly impressive. Various vehicles were tested without the unit (BLR = Base Line Run), and then with the unit installed (TUR = Test Unit Run). The following results are typical of those obtained with respect to the emission of hydrocarbon (HC) and carbon monoxide.

<table>
<thead>
<tr>
<th>HC</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLR at 1250 RPM</td>
<td>71 ppm</td>
</tr>
<tr>
<td>TUR at 1250 RPM</td>
<td>21 ppm</td>
</tr>
<tr>
<td>BLK at 2500 RPM</td>
<td>25 ppm</td>
</tr>
<tr>
<td>TUR at 2500 RPM</td>
<td>15 ppm</td>
</tr>
<tr>
<td>BLK at 750 RPM</td>
<td>150 ppm</td>
</tr>
<tr>
<td>TUR at 750 RPM</td>
<td>90 ppm</td>
</tr>
<tr>
<td>TUR at 1250 RPM</td>
<td>25 ppm</td>
</tr>
<tr>
<td>TUR at 1250 RPM</td>
<td>15 ppm</td>
</tr>
<tr>
<td>TUR at 750 RPM</td>
<td>150 ppm</td>
</tr>
<tr>
<td>TUR at 750 RPM</td>
<td>90 ppm</td>
</tr>
</tbody>
</table>

Thus, in each of the above five comparative tests, the emission of noxious contaminants was significantly reduced by the unit. It is evident, therefore, that the unit acts to strikingly improve the fuel efficiency of the engine while at the same time reducing the emission of pollutants.