EPA-AA-TEB-511-80-1

EPA Evaluation of the "Auto-Miser" Device

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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

Billing Code 6560-01

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 610]

[FRL _____]

FUEL ECONOMY RETROFIT DEVICES

Announcement of Fuel Economy Retrofit Evaluation for the "Auto Miser"

AGENCY: Environmental Protection Agency (EPA)

ACTION: Notice of Retrofit Device Evaluation

SUMMARY: This document announces the conclusions of the EPA evaluation of the "Auto Miser" 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) 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 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 evaluation such device.

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

ORIGIN OF REQUEST FOR EVALUATION: On August 16, 1979 the EPA received a request from Auto-Miser International Manufacturing Corporation for evaluation of a fuel saving device termed the "Auto-Miser." An evaluation has been made and the results are described completely in a report entitled: EPA Evaluation of "Auto Miser" 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 the testing performed by independent laboratories and by Brigham Young University is that the "Auto Miser" reduces CO emissions by 12 - 40 percent, but does not improve fuel economy. The other constituents in the exhaust, HC and NOx were not affected by the device. The fuel economy results were the same with and without the "Auto Miser" installed for testing performed according to the Federal Test Procedure and Highway Fuel Economy Tests. While specific numerical fuel-saving claims are not made in the application, several references are made naming the "Auto Miser" ~~as~~ a "fuel saving system." The test data do not substantiate the "fuel saving" capabilities of the "Auto Miser."

Dec 11, 1979

Date

David G. Hawkins
Assistant Administrator
for Air, Noise, and Radiation

EPA Evaluation of "Auto-Miser" Under
Section 511 of the Motor Vehicle Information and Cost Savings Act

The following report summarizes the information on the device as supplied by the applicant and then presents the EPA evaluation results.

1. Marketing Identification of the Device: Auto-Miser

2. Inventor of the Device and Patents: Randall W. Johnson, U.S. Patent applied for; serial No. 21259, filed March 16, 1979.

3. Manufacturer of the Device: Auto-Miser International Manufacturing Corporation.

4. Manufacturing Organizations Principals:

John H. O'Neil, Jr.	Chairman of the Board
Randall W. Johnson	President

5. Marketing Organization in U.S. Making Applications:

Auto-Miser International Manufacturing Corporation
2570 Gravel Street
Fort Worth, TX 76118

6. Identity of Applicant:

John O'Neil, Jr. and Randall W. Johnson

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

The system is designed to provide this (fuel/air) vaporized mixture in parallel to the normal carburetor in a conventional fuel induction system (not fuel injected) of a spark ignition engine. Physically, the vapor mixture is introduced below the carburetor at the connection of the existing crankcase ventilating system to the intake manifold.

The vacuum at the PCV connection is the operational force for the system. This vacuum draws fuel and air into a vaporizing chamber wherein the fuel is vaporized by and mixed with incoming filtered air. The amount of vacuum taken to operate the system is limited so as not to adversely affect PCV valve operation or other vacuum control requirements.

The amount of fuel vaporized is determined by (1) the amount of fuel in the cannister which is controlled by a float valve, (2) the vacuum in the cannister which is limited by an air inlet control adjusting screw, and (3) the amount of air flow into the cannister which is limited by a flow control screw and is a function of engine vacuum.

A secondary function of this system is to mix the vaporized fuel/air with the vapors passing from the crankcase through the PCV system. This mixing enhances the combustibility of the crankcase vapors which in turn contributes to the reduction in combustion chamber deposits.

Further, the introduction of this vaporized fuel/air results in reduced throttle opening at a given operating condition reducing the amount of fuel taken into the carburetor.

A more complete description can be found in Attachment A.

8. Claimed Applicability of the Device:

Certain general prerequisites must be met for installation of the device which defines applicability.

a. Vehicle must be equipped with a Positive Crankcase Ventilation (PCV Valve) System.

b. Vehicle must have a carburetor fuel system. Not applicable to fuel injection fuel supply engine.

c. Vehicle must be equipped with engine mounted fuel pump to permit fuel supply to device from suction side of fuel pump.

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

See Attachment B

10. Device Maintenance (claimed):

Maintenance procedures for the system include changing of the fuel filter and cleaning the air intake filter on an "as needed" basis to assure continuing correct operation. The following procedure is used.

a. Fuel Filter: The fuel filter has a translucent housing to indicate fuel flow and dirt accumulation. When flow is restricted as determined by visual observation, the

filter is changed by removing the filter from the fuel supply hose and replacing. Two spring type clamps are loosened to permit replacement. Tool required: pliers.

b. Air Inlet Filter: Outside air taken from the engine compartment is used to vaporize the gasoline. This air is filtered through a porous poly-urethane filter element. When visual inspection shows dirt accumulation, the filter is removed for cleaning. A screw retained cap is removed to permit the filter element to be taken off the unit for cleaning and replacement. Tool required: cross recess screw driver.

11. Effect on Vehicle Emission (non-regulated) (claimed):

The product provides a mixture of air and vaporized gasoline to the vehicle intake manifold via the positive crankcase ventilating system. No additives are used in the system. Therefore, only the normally controlled pollutants (hydrocarbons, carbon monoxide and oxides of nitrogen) are emitted into the ambient air.

12. Safety of the Device (claimed):

Every effort during the development and testing of the system covered in this application has been directed toward assuring safe operation. The entire system operates under a vacuum so any leakage is inward. The design has been directed toward meeting the Motor Vehicle Safety Standard No. 301-75 (Fuel System Integrity).

Further safety considerations include the spring loaded anti-backfire valve, use of hoses meeting SAE and MIL fuel hose specifications, materials unaffected by contact with fuel and which will withstand the operating temperatures.

Malfunction of the system will reduce drivability as shown in tests presented with this application but not to the extent of a safety hazard.

13. Emission and Fuel Economy Results Reported by the Applicant:

a. Brigham Young University Engine Dynamometer testing simulated urban driving cycle (see Attachment C).

b. Summary of Urban/Highway Driving Comparison (see Attachment D).

c. Test report, EG&G Automotive Research Inc., covering test conducted between June 9, 1979 and July 7, 1979.

14. Information Gathered by EPA

a. Telephone contact with Dr. Germane of Brigham Young University to discuss testing methods, procedures, and results.

b. Attempted telephonic confirmation of urban/highway driving comparison data.

c. Telephonic ~~contact with~~ EG&G to determine valid and invalid test on Chevette.

15. Analysis

a. Installation: As noted in Attachment B, installation by other than authorized Auto-Miser dealer is not recommended. The installation instructions seem quite straightforward. The system adjustments require a calibrated HC/CO meter and a calibrated vacuum garage. Installers unfamiliar with the Auto-Miser could run into trouble with the adjustments but there appears to be no real problems with the installation procedures. The Auto-Miser warranty only applies to units installed by authorized Auto-Miser installation agents.

b. Maintenance: The application is unclear whether the fuel drain check valve drains enough fuel from the vacuum chamber to avoid prolonged collection of the heavy ends of the fuel. If the drainage is insufficient, the porous pad might encounter plugging problems. If the air inlet filter to the Auto-Miser is the porous - wick type material then the maintenance instructions are sufficient. If the two are different the porous-wick type material may need periodic replacement/ cleaning. In general, the maintenance instructions appear adequate.

c. Effect of Vehicle Emissions (non regulated): The explanation given by the applicant appears to be adequate.

d. Safety of the Device: The only safety problem evident from the design description would involve a defective anti-backfire valve and subsequent backfires. Such an event could cause an explosion.

Durability is also questionable. The applicant supplied little durability data and has only a 90 day warranty for damages caused by the Auto-Miser. While there is no apparent reason why the device is unsafe, there is no data to show that the device is perfectly safe.

e. Emission and Fuel Economy Test Results:

1. The Brigham Young University testing procedure is quite different from the Federal Test Procedure and from other laboratory accepted methods of measuring for emissions and fuel economy. After discussing the test procedures with Dr. Germane it appears that:

   a. Fuel measurements were taken by a weighing method for the Auto-Miser and a turbine flow-meter for the normal fuel carburetor.

   b. The test involved a simulated cold start, raw analysis, modal LA-4 type test.

   c. No inertia was simulated for deceleration modes. The dynamometer was attached by an over speed-type clutch.

   d. It was not known how the idle CO and engine speed compared to factory specifications. The engine parameters were not adjusted in the installation of the Auto-Miser.

   e. Dr. Germane felt that the increase in fuel economy was not due to the added vaporization of fuel but that the engine, adjusted to sea level specifications, was running very rich at their 4000 ft. elevation laboratory and that the Auto-Miser worked as an air bleed device to lean out the air/fuel mixture. He stated that similar results could be achieved by calibration of the fuel/air ratio of the carburetor to a leaner mixture.

2. The summary of Urban/Highway Driving Comparisons: This set of data consists of notarized statements claiming fuel economy improvements from installation of the Auto-Miser. Because testing is on-road observed fuel economy under non-laboratory conditions this data is not as strong as FTP data. Phone calls to verify the notarized statements found two disconnected numbers.

3. The EG&G Automotive Research Inc. Test Results: These test results appear to be valid FTP results. Three vehicles were tested with and without the Auto-Miser. If any adjustments were needed to install the device, another test sequence was run. Duplicate test sequences were run. A summary of the test data is given below:

This data shows a variety of results. For HC emissions, the Pinto and Chevette showed a marked improvement while the Fairmont showed a HC penalty when compared with the adjusted data. For CO, all three vehicles demonstrated a marked improvement. The NOx values stayed relatively constant. The fuel economy figures, both FTP and HFET, show no significant increase or decrease.

EGG Testing Summary

Pinto

		Baseline (gms/mile)	Baseline with Adjusted Engine Parameters (gms/mile)	With Auto-Miser & Engine Adjusted (gms/mile)	% Change Compared to Baseline	% Change Compared to Baseline with Adjusted Engine Parameters
FTP	HC	.728		.443	-39.2%	
	CO	10.8475		6.4875	-40.2%	
	NOX	1.790		1.8285	(+)2.15%	
	CO_2	422.6		416.8	-1.38%	
	F.E.	20.06 MPG		20.70	(+)3.19%	
HFET	F.E.	27.24 MPG		27.41	(+).62%	

Fairmont

	HC	1.454	.622	.867	-40.4%	(+)39.5%
	CO	4.339	4.011	3.499	-19.4%	-12.8%
	NOx	1.460	1.310	1.478	(+)1.23%	(+)12.81%
	CO_2	563.7	573.5	565.30	(+).28%	-1.43%
	F.E.	15.42 MPG	15.24 MPG	15.46 MPG	(+).26%	(+)1.44%
HFET	F.E.	21.46 MPG	21.72 MPG	21.82 MPG	(+)1.68%	(+).46%

Chevette

	HC	.644	.738	.555	-13.8%	(+)24.8%
	CO	6.672	6.548	5.730	-14.1%	-12.5%
	NOx	2.102	1.452	1.700	-19.1%	(+)17.1%
	CO_2	299.6	294.4	299.6	0.0%	(+)1.76%
	F.E.	28.41 MPG	28.71 MPG	28.58 MPG	-.60%	-.45%
HFET	F.E.	38.22 MPG	38.16 MPG	38.84 MPG	(+)1.62%	(+)1.78%

16. Conclusions of EPA Evaluation:

It is the overall conclusion that this device is not of benefit to the nation as a fuel economy device. The only testing performed in accordance with the Federal Test Procedures and Highway Fuel Economy Test were those run by EG&G. The results of these tests showed no statistically significant improvement in fuel economy but did show a 12% to 40% reduction in CO emissions. Thus, it appears that the Auto-Miser may reduce CO emissions but has little effect on fuel economy. The data submitted with the application does not substantiate any claims made about the Auto-Miser's fuel economy benefits. Claims of 12-40% reduction in CO emissions can be substantiated by the test data. Because the data does not show any fuel economy benefits the overall conclusion is that there is no need for the EPA to design a test program to further test the device and that publication of this analysis and conclusion fulfills the requirements of Section 511 of the Energy Policy and Conservation Act.

List of Attachments

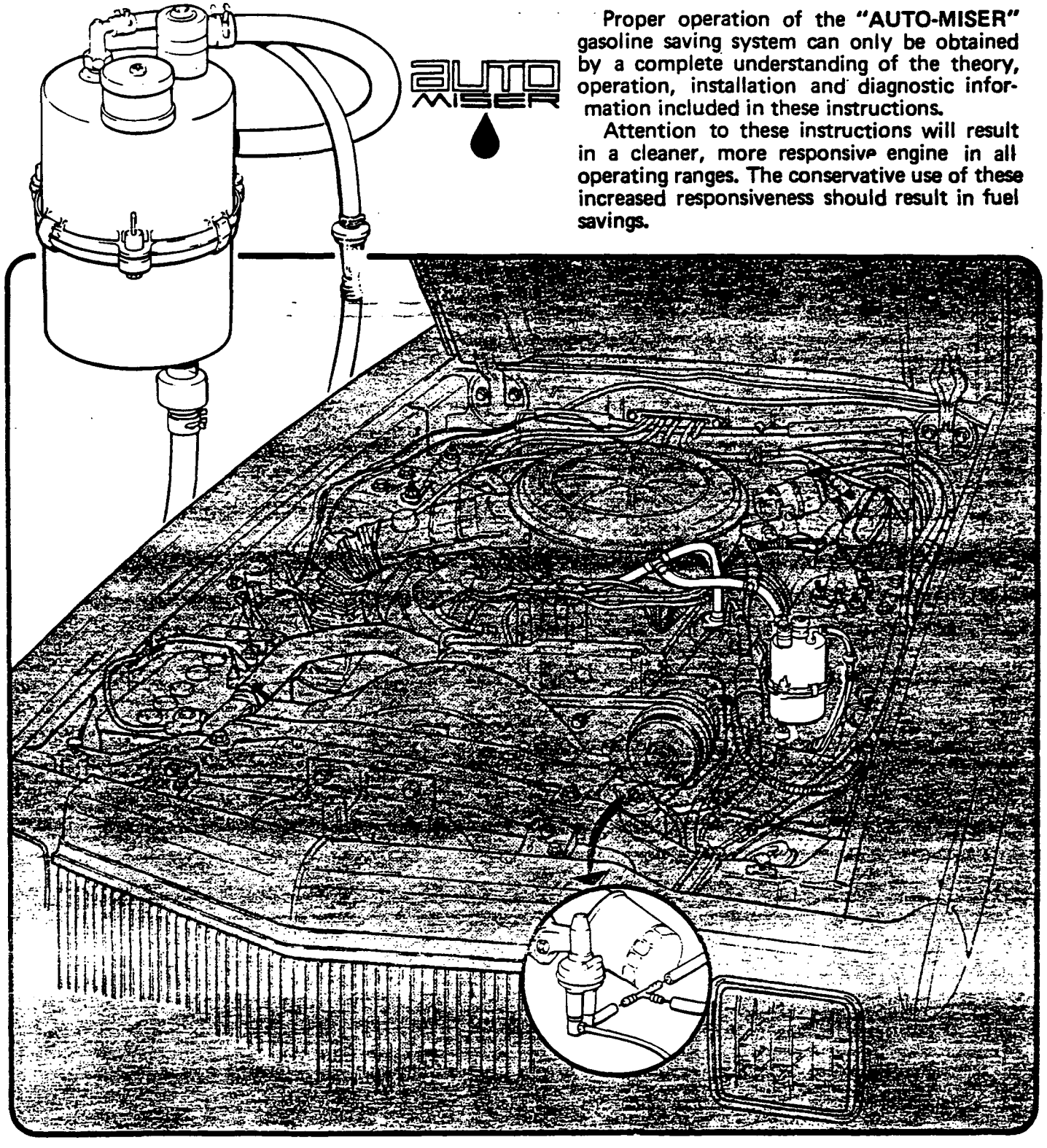
Attachment A	U.S. Patent Application for Auto-Miser
Attachment B	Installation Instructions
Attachment C	Test Results of Bringham Young University
Attachment D	Summary of Urban/Highway Driving Comparison
Attachment E	EG&G Automotive Research Test Results

ATTACHMENT A

EPA received an application for a patent from the applicant. The quality of the copy was very poor and when reproduced was not sufficiently legible to be included in this report.

EMISSION CONTROL AND FUEL ECONOMY RETROFIT DEVICE

EXHIBIT "D"



Proper operation of the **"AUTO-MISER"** gasoline saving system can only be obtained by a complete understanding of the theory, operation, installation and diagnostic information included in these instructions.

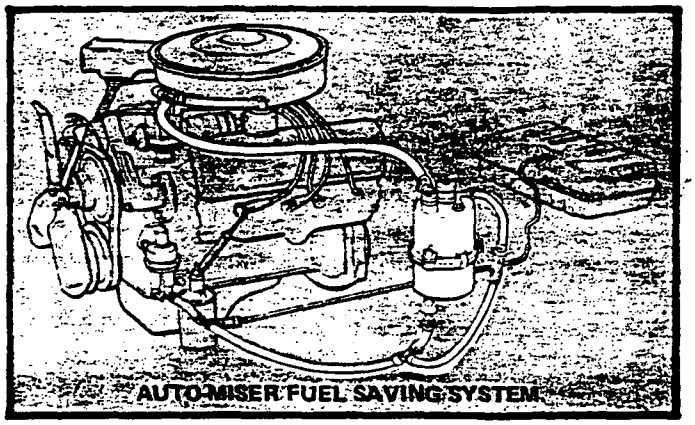
Attention to these instructions will result in a cleaner, more responsive engine in all operating ranges. The conservative use of these increased responsiveness should result in fuel savings.

AUTO-MISER IS A PRODUCT OF
AUTO-MISER INTERNATIONAL MANUFACTURING CORP.
2570 GRAVEL STREET
FORT WORTH, TEXAS 76118 **817-284-1425**

THEORY OF OPERATION

Vaporized gasoline mixed with the gasoline mist and air supplied by the carburetor will improve ignition of the total mixture and more complete combustion in the engine rather than in the exhaust system.

As a result, build up of residue in the combustion chamber is reduced, which prolongs spark plug, valve and ring life. This reduction in cylinder deposits reduces pre-combustion "ping" and the build-up of octane requirements.



AUTO-MISER FUEL SAVING SYSTEM

SYSTEM OPERATION

The entire system is vacuum operated with the vacuum source taken at the Positive Crankcase Ventilation (PCV) valve hose. This vacuum is used to draw gasoline and air into a vaporizing chamber. The gasoline is vaporized and mixed with air in the vaporizing chamber and drawn into the engine through the hose between the PCV valve and base of the carburetor.

The gasoline is taken from the fuel supply line to the engine fuel pump (suction side) through a filter and drawn into the vaporizing chamber. The amount of fuel is controlled by a float and valve in the chamber.

A porous pad in the bottom of the vaporizing chamber is immersed in this fuel.

Air is drawn into the vaporizing chamber through a filter and into the vaporizing pad where it produces vaporized gasoline. The amount of air and the vacuum in the chamber is controlled by an air inlet control screw located under the air filter retaining cap screw.

The mixture of vaporized gasoline and air is drawn into the vapor supply hose through an anti-backfire check valve and flow control adjusting screw. The amount of vapor delivered to the engine is controlled by this adjusting screw.

A spring loaded disc valve is located at the bottom of the vaporizing chamber. This is a one-way drain valve permitting only a small amount of fuel to be drained from the unit when the engine stops. The spring force (fixed) pre-determines the amount of fuel drained back into the fuel line. The purpose of this action is to provide a fresh supply of gasoline for vaporizing each time the engine is started. The spring-loading also prevents any back-flow of fuel into the vaporizing chamber if the vehicle is parked with the fuel tank above the chamber.

SYSTEM CONTROL

Since the operation of the system is vacuum actuated, the amount of vacuum and flow is controlled by the vapor adjustment screw and inlet air adjustment screw. Both these adjustments are made at installation and should not be changed.

The purpose of the vapor adjustment screw is to match the vapor flow from the unit to the amount of vacuum available from the engine. The larger the engine, the more flow from the unit. Also this adjustment is made to limit the amount of vacuum taken from the engine so as not to adversely effect the PCV valve operation.

The air inlet adjustment screw controls the amount of air taken into the vaporizing chamber which in turn determines the vacuum in the chamber. This adjustment serves several purposes:

1. Amount of vacuum in the chamber determines the vaporizing action.
2. Vacuum in the chamber determines amount of force available to lift fuel from the fuel line into the vaporizing chamber.
3. Vacuum has an effect on the buoyancy of the float; therefore on the fuel level.

PRE-INSTALLATION CHECKS

This system requires the following vehicle configurations to exist before attempting installation:

1. Carburetor – NOT fuel injection or diesel.
2. Engine-mounted fuel pump – NOT tank-mounted fuel pump.
3. PCV valve.

With the engine at operating temperature, connect and calibrate an emissions analyzer and record emissions at idle and at approximately 2500 RPM. Check for lean misfire due to vacuum leaks, carburetor malfunction, electrical misfire and timing. Adjust and correct as necessary to vehicle manufacturer's specifications. These specifications can be found at various locations under the hood. Check PCV valve for clean appearance and proper operation. (Refer to "Trouble Shooting") If any doubt of valve condition, replace. If used over 10,000 miles, replace with OEM specified parts.

Check hoses to and from fuel pump for tight connections and hose condition. Locate suction line from fuel tank and determine vapor chamber mounting location as close to fuel pump as possible.

PRE-INSTALLATION UNIT ASSEMBLY

Included in the "AUTO-MISER" packaging is a round AUTOMATIC DRAIN VALVE. This valve has a 1/8" NPT fitting on one end and a 1/4" barbed fitting on the other. This is to be installed into the fitting provided on the bottom of the vapor chamber. Removal of the red Caplug on drain valve and seal caps is required.

5. Vapor Hose
   a. Locate hose connecting PCV valve (usually located on engine valve cover) and the engine intake manifold or carburetor base.
   b. Cut hose 3" to 5" away from the engine manifold or carburetor base fitting. Note: Keeping the connection close to the engine provides optimum system performance.
   c. Install 3/8" x 3/8" x 3/8" white tee in vapor hose and connect into engine PCV hose using three green hose clamps. Note: Avoid thermostat housings and other known hot spots.
   d. Route hose to vapor control valve on top of vapor chamber and cut to length. **CAUTION:** When locating vapor hose, avoid possible broken belt damage.
   e. Install green clamp over cut end of vapor hose. DO NOT connect to vapor control valve at this time.

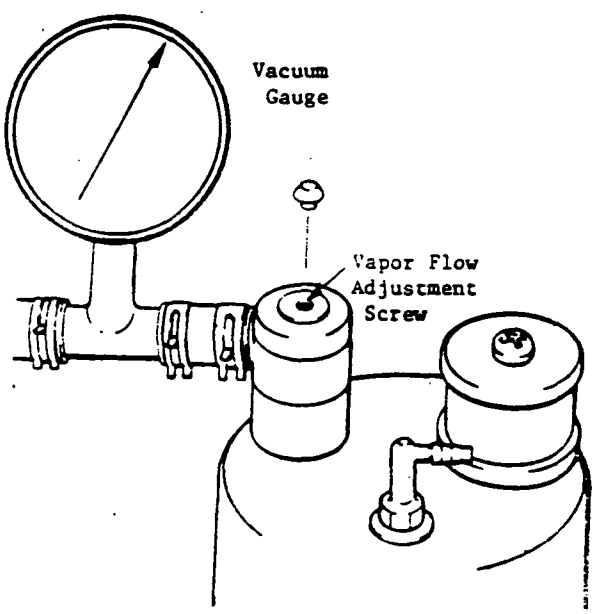
SYSTEM CALIBRATION

Two adjustments are required to match the system to the engine requirements.

1. Adjustment in the Vapor Flow Screw located beneath the black seal cap on top of the vapor chamber.
2. Adjustment in Vapor Chamber Vacuum Screw located under the inlet air filter cap retaining screw.

Both of these screws require a 1/8" hex set screw wrench.

Note: The vapor chamber is shipped with the vapor adjustment screw in the closed position and the vacuum adjustment screw in the wide open position.



1. Vapor Flow Adjustment
   a. Insert a 3/8" x 1/4" x 3/8" tee into the open end of the vapor hose.
   b. Use a short length of 3/8" vapor hose and insert between the 3/8" x 1/4" x 3/8" tee and the vapor control valve on top of the vapor chamber.
   c. Connect a well calibrated vacuum gauge to the remaining 1/4" connection on the 3/8" x 1/4" x 3/8" tee.
   d. Remove black seal cap from top of vapor control valve and be certain vapor adjustment screw is closed.
   e. Start engine; allow to reach operating temperature.
   f. Observe vacuum reading - normally between 16" and 20".
      Caution: If less than 16" of vacuum is observed prior to adjusting the vapor control valve, the engine may be in a marginal condition for the installation. Any vacuum leak should be corrected or out of balance idle mixture screws adjusted before continuing with the installation.
   g. With engine running at idle, open vapor adjustment screw (turn counterclockwise) until a 4" reduction in vacuum reading is reached. Example: If the original vacuum reading is 20", open vapor adjusting until vacuum drops to 16".
   h. Remove vacuum gauge and tee and connect vapor hose to vapor control valve using green hose clamp.
   i. Insert seal cap into top of vapor valve to discourage tampering with vapor adjustment screw.

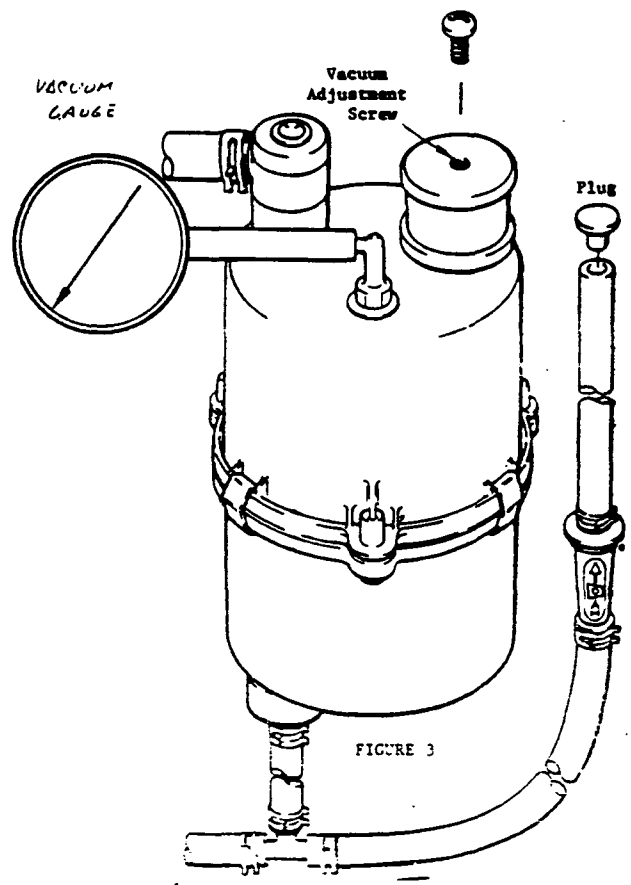
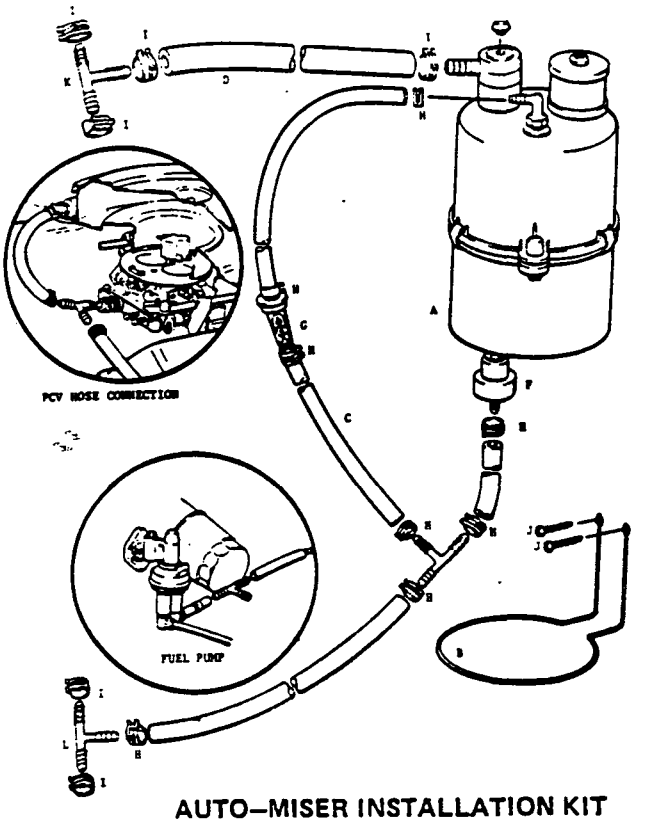


FIGURE 3

SYSTEM INSTALLATION

1. Determine best location for vapor chamber using these general rules. (Refer to Figure 1)
   a. Chamber must be mounted vertical.
   b. Keep chamber close to but above engine fuel pump.
   c. Provide clearance from any moving engine parts such as fans and belts.
   d. Allow sufficient room for system fuel and vapor hoses.
2. Pre-assemble system fuel supply hose.
   a. Install the 3/8" x 1/4" x 3/8" tee pro-
   b. vided on the 1/4" fuel hose using red hose clamp.
   b. Cut the hose about 3" to 5" from the tee. This measurement will vary depending upon space available from the suction hose of the engine fuel pump to the bottom of the vapor chamber.
   c. Install the white 1/4" x 1/4" x 1/4" tee in the fuel hose using red hose clamps. Install open end of fuel hose on remaining 1/4" connection on tee and clamp with red hose clamp.
3. Install fuel supply hose.
   a. Cut fuel suction hose to engine fuel pump preferably in center of hose being certain installed hose will clear all engine and frame parts.
   b. Install previously assembled 3/8" x 1/4" x 3/8" tee on 1/4" hose to engine fuel hose using green hose clamps.
4. Vapor Chamber.
   a. Position vapor chamber vertically and locate mounting wire hanger. Drill or punch two 1/8" diameter holes for mounting screws.
      Caution: Vapor chamber must be vertical and fuel inlet elbow must be positioned toward outside of the vehicle. Also be certain vapor chamber and hoses will not be affected in the event of broken belts.
   b. Mount vapor chamber in wire support.
   c. Route 1/4" fuel supply hose to the fuel inlet elbow on top of the vapor chamber. Leave room in hose routing to clear existing hoses or vacuum lines and cut to length at fuel inlet elbow.
   d. Cut hose between 1/4" x 1/4" x 1/4" tee previously installed and fuel inlet elbow connection for installation of fuel filter. Locate filter so it will be close to a vertical position.
   e. Install fuel filter with arrow on filter pointed toward fuel inlet elbow using red hose clamps.
   f. DO NOT connect fuel hose to inlet elbow at this time. Install red clamp over open hose and plug open end temporarily.
   g. Using remaining 1/4" hose, measure and cut to length for connection to drain valve in bottom of vapor chamber. When measuring hose provide sufficient length to avoid any side pull or strain on drain valve. Install hose using red hose clamps.



AUTO–MISER INSTALLATION KIT

A 1 Vaporizing Chamber

B 1 Pre-formed Wire Support

C 1 1/4" x 42" Fuel Hose

D 1 3/8" x 42" Vapor Hose

E 1 Hardware Package, with

F 1 Drain Valve

G 1 Fuel Filter

H 8 1/4" Red Hose Clamps

I 6 3/8" Green Hose Clamps

J 2 Mounting Screws

K 3/8" x 3/8" x 3/8" Vapor Tee

L 3/8" x 1/4" x 3/8" Fuel Tee

2. Vapor Chamber Vacuum Adjustment
   a. Connect well calibrated vacuum gauge to fuel inlet elbow on top of vapor chamber. NOTE: Be certain open end of 1/4" fuel supply hose is plugged.
   b. Remove screw and cap from top of inlet air filter to provide access to vacuum adjustment screw.
   c. With engine running, close (turn clockwise) vacuum adjustment screw until a vacuum reading of 2" minimum to 2 1/2" maximum is observed.
      NOTE: This vacuum reading is required to insure proper fuel level and vaporization. An accurate vacuum gauge is a MUST.
   d. Disconnect vacuum gauge, remove plug from fuel supply hose and connect hose to chamber inlet fuel elbow. Do not clamp at this point as a recheck of vacuum will be necessary after 3-5 min. idle time. Emissions will be erratic for a few minutes while chamber fills with fuel.

SYSTEM ADJUSTMENTS

Allow engine to idle several minutes to reach operating temperature and fill vapor chamber with fuel. During this period the engine speed will increase due to the vaporization of fuel starting to occur in the vapor chamber.

Connect a calibrated emissions analyzer and observe hydrocarbon (HC) and carbon monoxide (C.O.). They will vary as chamber fills. When emissions are steady, the chamber has filled and adjustment may be made.

1. Adjust carburetor idle mixture screw(s) for lowest hydrocarbon (HC) reading without a lean misfire.
   CAUTION: On vehicles with catalytic converters a lean misfire may occur even with low HC reading. Look for an even, smooth idle as well as low HC reading.
2. Readjust idle speed to vehicle manufacturer's specifications shown on emission data/tune up label located under the hood in the engine compartment.
3. Record emissions at idle and at approximately 2500 RPM before and after system installation and save for record purposes.
4. Final adjustment is to recheck position of the vapor chamber. The chamber should be positioned so the fuel inlet is either right or left when facing the front of the vehicle. The vapor control valve and inlet air filter should be parallel with the center line of the vehicle and the fuel inlet elbow to the right or left toward the side(s) of the vehicle. This assures proper float/fuel valve operation under heavy braking or acceleration conditions.

DISCLAIMER

This manual contains certain information concerning the installation and functional operation of the **AUTO-MISER** fuel saving system. Such information is believed to be accurate and is based upon the research and experience of **AUTO-MISER International Manufacturing Corporation.** It is believed that proper application of the information contained in this manual to the types of automotive vehicles discussed herein will result in optimum performance and operating efficiency of the **AUTO-MISER** fuel saving system.

NOTHING CONTAINED HEREIN IS INTENDED IN ANY WAY, TO MODIFY OR ENLARGE THE WARRANTY OF **AUTO-MISER INTERNATIONAL MANUFACTURING CORPORATION** AS SET FORTH IN THE LIMITED WARRANTY GIVEN TO BUYER IN CONNECTION WITH THE PURCHASE OF AN **AUTO-MISER** UNIT AND BUYER IS REFERRED SUCH LIMITED WARRANTY FOR A COMPLETE STATEMENT OF ALL WARRANTIES GIVEN TO BUYER IN CONNECTION WITH SUCH PURCHASE'

This manual has been prepared solely for the use and benefit of authorized **AUTO-MISER** dealers and is not intended for the use or benefit of any other person or entity. Any reproduction or distribution of this manual, in whole or part, or the divulgence of any of the information contained herein to any person or entity, without the express prior written authorization of **AUTO-MISER International Manufacturing Corporation,** is strictly prohibited.

TROUBLE SHOOTING

1. "Lost Gas Mileage" or "No Increase" claim. Look for:
   A. Inaccurate base line
   B. Vacuum source not adequate due to:
      1) Clogged carburetor ports or PCV valve
      2) Non-functioning PCV valve
      3) Improper vapor valve setting (Para. No. 1)
      4) Improper vapor chamber vacuum (Para. No. 2)
      5) Improper fuel level
      6) Improper combustion or weak vacuum
      7) Poor ignition, plugs, etc.
2. Diagnosis and Remedies
   A. Check fuel level in chamber — Should be 4 oz. to 5 oz. (Para. No. 1 - No. 2 - System Calibration)
   B. Recheck vacuum settings (Para. No. 1 - No. 2 - System Calibration)
   C. Check emissions for carburetor setting
3. Excessive Hydrocarbons (HC)
   A. Incorrect timing
   B. Incorrect dwell
   C. Bad ignition points
   D. Deteriorated spark plugs or S/P wires
   E. Lean misfire, usually indicated by very low CO reading and high HC reading, caused by:

4. Excessive Carbon Monoxide Readings (CO)
   A. Idle speed incorrect - check manufacturer's specifications and adjust accordingly
   B. Dirty air cleaner or restriction in air flow system
   C. Choke not operating properly
   D. PCV system not operating properly (replace PCV valve - normal life is 10,000 miles or per manufacturer's specs)
   E. To improve air/fuel ratio, reset idle mixture screws after above checks

5. Engine Surging or Racing at Idle (Wavering CO)
   A. Check carburetor float level or valve and seat condition.
   B. Check fuel filter in gas line to carburetor

6. Misfire (Wavering HC)
   A. Check engine ignition wiring
   B. Check distributor cap
   C. Check coil wire for oil on connector
   D. Check dwell
   E. Check points

NOTICE

The installation instructions contained in this manual must be strictly followed in order to avoid a change in automotive emissions to a level in excess of that permitted by the Environmental Protection Agency and to allow maximum performance by the **AUTO-MISER** unit.

The recommended procedures of the automobile manufactureremust be followed with respect to carburetor and timing adjustments in order to achieve optimum benefit of the AUTO-MISER unit and to avoid potential voiding of the automobile manufacturer's warranty.

INSTALLATION OF ANY **AUTO-MISER** UNIT BY OTHER THAN AN AUTHORIZED **AUTO-MISER** DEALER IS NOT RECOMMENDED. INCORRECT INSTALLATION MAY VOID MANUFACTURER'S WARRANTY. REFER TO STATEMENT OF LIMITED WARRANTY PROVIDED TO BUYER FOR COMPLETE STATEMENT OF WARRANTY AND LIMITATION OF MANUFACTURER'S LIABILITY.

LIMITED WARRANTY

AUTO-MISER INTERNATIONAL MANUFAC TURING CORPORATION ("Auto-Miser") warrants to the Buyer that the Auto-Miser uni purchased by Buyer is free of defects in workman ship and material for a period of ninety (90) day from the date of installation by an authorize Auto-Miser dealer. If the Auto-Miser unit purchase by Buyer is defective, Buyer may return the unit with this Warranty, to Buyer's nearest authorize Auto-Miser dealer for replacement or repair, a Auto-Miser's election. Buyer shall be responsibl for all labor charges in the replacement of th Auto-Miser unit.

THERE ARE NO WARRANTIES OTHER THAN AS EXPRESSLY SET FORTH HEREIN. ALL OTHER WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS OR ANY PARTICULAR PURPOSE, ARE HEREBY EXCLUDED, AND, IN NO EVENT, SHALL ANY WARRANTY EXTEND BEYOND THE NINETY (90) DAY PERIOD STATED. AUTO-MISER SHALL, IN NO EVENT BE LIABLE FOR ANY DAMAGES, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL, INCIDENTAL OR OTHERWISE. AUTO-MISER'S WARRANTY HEREUNDER SHALL NOT APPLY TO DAMAGE OR DEFICIENCIES RESULTING FROM ACCIDENT, ALTERATION, MISUSE, TAMPERING, NEGLIGENCE OR ABUSE.

THIS WARRANTY IS NOT TRANSFERABLE TO ANY OTHER PERSON AND SHALL APPLY ONLY TO THE VEHICLE ON WHICH THE AUTO-MISER UNIT COVERED HEREBY IS ORIGINALLY INSTALLED BY AN AUTHORIZED AUTO-MISER INSTALLATION AGENT.

1979 AUTO-MISER INTERNATIONAL MANUFACTURING CORPORATION. All rights reserved. No part of this manual may be reproduced in any form or by any means without permission in writing from **AUTO-MISER INTERNATIONAL MANUFACTURING CORPORATION**, 2570 Gravel Street, Fort Worth, Texas 76118.

Attachment C

APPLICATION FOR EVALUATION OF THE AUTO-MISER

EMISSION CONTROL AND FUEL ECONOMY RETROFIT DEVICE

EXHIBIT "E"

Brigham Young University Engine Dynamometer

Testing Simulated Urban Driving Cycle

The tests described in the attached report dated May 21, 1979, were conducted by the applicant and performed under the direction of Dr. Geoff J. Germaine. The test engine used was a 351 cu. in. displacement Ford engine with no emission device(s) installed other than the positive crankcase ventilation system. The computer used to control and record was programmed to simulate the Environmental Protection Agency Urban Driving Cycle.

Brigham Young University

Department of Mechanical Engineering

May 21, 1979

Mr. Randall Johnson, President
Auto Miser International
2570 Gravel Street
Fort Worth, TX 76118

Dear Randy:

This letter will report the results of tests conducted with the Auto Miser at Brigham Young University on May 19 and 21, 1979 with the Department of Mechanical Engineering's computer-controlled engine test cell.

Tests were run with and without the device with the EPA Urban Dynamometer Driving Schedule. A 3000 pound vehicle with a three speed transmission was simulated for the cycle. The parameters and their values which were used for the simulation are presented on the attached sheet. Previous testing with this particular vehicle and the EPA cycle showed the accuracy to be well within the limits prescribed in Appendix I(b), Chapter I, Title 40 of the Code of Federal Regulations. Additionally, the reproducibility of the cycle from test to test was within 1% for overall average engine speed and load. Engine speed, dynamometer torque, fuel flow, and exhause emissions (NO_X, HC, and CO with Beckman NDIR analyzers) were measured and recorded every half second during the tests. Prior to the tests, the engine idle screws were adjusted for the minimum CO and HC exhaust concentrations.

The results for the EPA urban cycle tests are presented below as average values for the complete cycle.

	With Device	Without Device
Brake thermal efficiency (BTE)	0.01649	0.01469
Fuel Flow (pounds/hr)	6.339*	7.116
NO_X (ppm)	471	530
HC (ppm)	273	296
CO (volume %)	0.775	0.885

*Adjusted by ratio of power difference from both tests

242 CB, Brigham Young University, Provo, Utah 84602 (801) 374-1211, Extension 2625

The Auto Miser device produced a 12.25% improvement in thermal efficiency, with a corresponding 10.92% decrease in fuel consumption.

All exhaust emissions concentrations were lower with the device: NO_x was down 11.13%, HC was down 7.77%, and CO was 12.43% lower.

Sincerely,

Geoff J. Germane, Ph.D.

kf

Enclosure

Parameters for vehicle for EPA cycle:

Vehicle weight	3000 pounds
Frontal area	22.1 sq. ft.
Aerodynamic drag coeff.	0.532
~~Rear tire~~ rolling radius	13.4 inches
Overall gear ratios	
1st gear	9.25
2nd gear	5.08
3rd gear	3.08

Upshifts occurred at 2400 rpm 1st to 2nd and 2200 rpm 2nd to 3rd

Attachment D

APPLICATION FOR EVALUATION OF THE AUTO-MISER

EMISSION CONTROL AND FUEL ECONOMY RETROFIT DEVICE

EXHIBIT "F"

Summary of Urban/Highway Driving Comparisons

As part of the applicant's product evaluation in day to day driving conditions, the below listed vehicles were used. In each case the application of the system was made after a requested 3000 miles of driving were recorded to provide a base-line for comparisons.

In each case the vehicle was taken off the street and emissions taken with an emission analyzer typical of that in use in automotive repair shops. The system was installed without any changes to the vehicle such as a complete tune up. The only change made was the installation of the system and emissions recorded after installation. The vehicle was then returned to the owner for continuing recording of fuel consumption.

		Emissions				Fuel Economy		
		Hydrocarbons ppm		Carbon Monoxide %		MPG		
		Before	After	Before	After	Before	After	
1.	78 Pontiac * 403 CID V/8	N/A	N/A	N/A	N/A	13.2	16.3	
2.	78 Mustang * 2800 cc V/6	160	100	5.2	.4	15.51	22.30	
3.	73 Buick * 350 CID V/8	260	25	1.9	.01	15.6 12.5	19.7 16.4	Hwy City
4.	74 Mercury * 460 CIC V/8	104	55	1.4	.01	12.04 9.5	16.7 11.45	Hwy City
5.	68 Lincoln 460 CID V/8	300	150	5.5	1.5	9.5	11.8	
6.	79 Ford * 351 CID V/8	480	50	6.5	.08	10.03	12.75	
7.	77 Ford * 302 CID V/8	400	40	5.5	.05	15.5	17.2	
8.	78 Chev P.U.* 350 CID V/8	70	35	.6	.25	12.6	13.5	
9.	79 Ford * 351 CID V/8	220	30	2.8	.1	10.0	12.52	
10.	76 Chev * 454 CID V/8	700	50	8.8	.08	10.0	13.9	
11.	79 Chev * 350 CID V/8	60	0	.3	.05	12.0	12.9	
12.	79 Olds * 260 CID V/8	60	10	.08	.04	15.6	16.96	
13.	78 Ford Van 351 CID V/8	340	80	7.80	.6	10.93	13.7	
14.	79 Ford 302 CID V/8	230	25	3.5	.2	16.0	18.38	
15.	79 Pinto 2300 cc 4 cyl	200	90	7.1	2.0	22.1	25.22	
16.	77 Chevette 1600 cc 4 cyl	100	15	1.0	.03	26.3	29.55	
17.	74 Chev 454 CID V/8	650	70	.6	.5	9.5	12.5	

18.	79 Ford P.U. 460 CID V/8	180	100	4.6	2.3	10.2	11.48
19.	79 Lincoln * 400 CID V/8	N/A	N/A	N/A	N/A	10.31	13.18
20.	78 Ford Van 351 CID V/8	140	10	8.5	.5	11.48	12.45
21.	78 GMC P.U. 350 CID V/8	110	60	.3	.2	10.0	11.55

Overall Fleet Average Increase 23.60%

Attached are the individual record sheets for the above vehicles with notarized statements (*) included as indicated.

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on 6-22-78 has achieved the following results:

MPG before installation	MPG after installation
9.5	11.8

Very truly yours,

Robert T. Allin

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared Robert T. Allin known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and considereation expressed.

Given under my hand and seal of office this 9th day of August A.D. 1979.

Joka E. Griffith

Notary Public in and for Tarrant County, Texas.

My commission expires 6-20-80.

AUTO-MISER INTERNATIONAL EMISSION EVALUATION

VEHICLE

MAKE Lincoln

YEAR 1968

ENGINE 460

EMISSIONS AS RECEIVED

HYDROCARBONS 300 ppm

CARBON MONOXIDE 5.5 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 150 ppm 2/12/79: 60 ppm

CARBON MONOXIDE 1.5 % .35%

FUEL ECONOMY

BEFORE 9.5 mpg.

AFTER 11.8 mpg.

OWNER Robert T. Allin

ADDRESS 9505 Royal Lane

Dallas, Tx 75243

PHONE 341-7253

INSTALLED AND TESTED BY

Greg

DATE 6-22-78

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

ENCOTEC
INSULATION COMPANY, INC
ENERGY CONSERVATION TECHNOLOGY

July 13, 1979

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Fort Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on a 1978 Pontiac Bonneville with 403cu. in. engine has achieved the following results:

MPG before installation	MPG after installation
13.2	16.3

Very truly yours,

Charles L. Johnson

Charles L. Johnson
President

1978 Pontiac
403 CID V/8

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared Charles L. Johnson known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration expressed.

Given under my hand and seal of office this 14th day of July A.A. 1979.

My commission expires:

6-21-80

Notary Public in and For Tarrant Co., Texas

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on 6-18-79 has achieved the following results:

MPG before installation	MPG after installation
10.31	13.18

Very truly yours,

Kyle W. Brown

1979 Lincoln Mark V
400 CID - 2V - V8

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared Kyle W. Brown known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and considereation expressed.

Given under my hand and seal of office this 11th day of July A.D. 79.

Nadine Sirlson

Notary Public in and for Tarrant County, Texas.

My commission expires Aug 80.

Gifford-Hill & Company,

CONCRETE DIVISION

P. O. BOX 4630 • 880 N. HOUSTON STREET • A/C 817 626-8201 • FT. WORTH

"Auto-Miser"
A Product of Auto-Miser International Mfg. Co
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto saving system which was installed on my vehic _____ has achieved the following results

MPG before installation MPG

10

Very truly yours,

Kermit R. Parton

The State of Texas
County of _____

Before me, the undersigned, a Notary Publi county, Texas, on this day personally appeared Parton known to me to be the person whos to the foregoing instrument, and acknowledged executed the same for the purpose and consider

Given under my hand and seal of office this _ August A.D. 1979.

James

Notary Public in an County, Texas.

My commission expir

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE GMC Pick up

YEAR 1978 12,520 mi.

ENGINE 350/4

EMISSIONS AS RECEIVED

HYDROCARBONS 110 ppm Idle 2500 RPM = 40 ppm

CARBON MONOXIDE .3 % .25%

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 60 ppm Idle 2500 RPM = 20 ppm

CARBON MONOXIDE .2 % .18%

FUEL ECONOMY

BEFORE 10.0 mpg.

AFTER 11.55 mpg.

OWNER Ken Parton

ADDRESS 4416 Stanley Keller Rd.

Haltom City, Tx 76117

PHONE 838-7467
626-8201 Work

INSTALLED AND TESTED BY

R. T. Allin

DATE 6-6-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on 5-21-79 has achieved the following results:

MPG before installation

10.03

MPG after installation

12.75

1979 Ford T-Bird
351 CID - V8

Very truly yours,

Lyle W. Brown

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared Lyle W. Brown known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration expressed.

Given under my hand and seal of office this 11th day of July A.D. 79

Notary Public in and for Tarrant County, Texas.

My commission expires Aug 80.

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Ford

YEAR 1979

ENGINE 351/2

EMISSIONS AS RECEIVED

HYDROCARBONS 480 ppm

CARBON MONOXIDE 6.5 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 140 ppm

CARBON MONOXIDE .9 %

5-14-79 Recheck Emissions:
HC 50 ppm
CO .08 %

FUEL ECONOMY

BEFORE 10.03 mpg.

AFTER 12.75 mpg.

OWNER Kyle W.Brown

ADDRESS 208 Baker Drive

Hurst, Texas

PHONE

INSTALLED AND TESTED BY

R. T. Allin

DATE 3-16-79

EMISSION ANALYZER

MAKE DELCO

MODEL ST-500

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on 6-22-79 has achieved the following results:

MPG before installation	MPG after installation
9.5/12.5	11.5/16.7
IN 4,500 MI. CHECKED	IN 1550 MI. CHECKED

Very truly yours,

Robert J. Allen

1974 Mercury
460 CID - 4V-V8

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared Robert J. Allen known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and considereation expressed.

Given under my hand and seal of office this 11th day of July A.D. 79.

Nadine Dozier

Notary Public in and for Tarrant County, Texas.

My commission expires [illegible].

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE MERCURY

YEAR 1974

ENGINE 460/4bbl.

EMISSIONS AS RECEIVED

HYDROCARBONS 104 ppm

CARBON MONOXIDE 1.4 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 55 ppm

CARBON MONOXIDE .01 %

FUEL ECONOMY

BEFORE 9.5/12.04 mpg.

AFTER 11.45/16.7mpg.

OWNER ROBERT T. ALLIN

ADDRESS 9505 ROYAL

DALLAS, Tx. 75243

PHONE 214/ 341-7253

INSTALLED AND TESTED BY

R. T. Allin

DATE 6-22-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on 11-03-78 has achieved the following results:

MPG before installation	MPG after installation
12.5/15.6	16.4/19.7
IN 1,500 MI. AVERAGE	IN 5,600 MI AVERAGE

Very truly yours,

Robert L. Allen

1973 Buick
350 CID 2V-V8

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared Robert L. Allen known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and considereation expressed.

Given under my hand and seal of office this 11th day of July A.D. 78.

Notary Public in and for Tarrant County, Texas.

My commission expires Aug 80.

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Buick

YEAR 1973

ENGINE 350/4

EMISSIONS AS RECEIVED

HYDROCARBONS 260 ppm

CARBON MONOXIDE 1.9 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 25 ppm

CARBON MONOXIDE .01 %

FUEL ECONOMY

BEFORE 12.5/15.6 mpg.

AFTER 16.4/19.7 mpg.

5600 miles with unit

OWNER Robert T. Allin

ADDRESS 9505 Royal #1040

Dallas, Texas 75243

PHONE 214/341-7253

INSTALLED AND TESTED BY

R. T. Allin

DATE 2-7-79

EMISSION ANALYZER

MAKE DELCO

MODEL ST-500

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Chevrolet

YEAR 1979 Chevette

ENGINE 1600 cc/1

EMISSIONS AS RECEIVED

HYDROCARBONS 100 ppm Idle 2500RPM = 40 ppm

CARBON MONOXIDE 1.0 % .1 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 15 ppm Idle 2500 RPM = 10 ppm

CARBON MONOXIDE .03 % .03 %

FUEL ECONOMY

BEFORE 26.3 mpg.

AFTER 29.55 mpg.

OWNER Randall W. Johnson

ADDRESS

PHONE

INSTALLED AND TESTED BY

R. T. Allin

DATE 6-7-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Ford Pinto

YEAR 1979 7,000 mi.

ENGINE 2300 cc

EMISSIONS AS RECEIVED

HYDROCARBONS 200 ppm IDLE 2500 RPM = 100

CARBON MONOXIDE 7.1 % .3

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 90 ppm IDLE 2500 RPM = 50

CARBON MONOXIDE 2.0 % .18

FUEL ECONOMY

BEFORE 22.1 mpg.

AFTER 25.22 mpg.

NOTE: No carburetor adjustment.

OWNER Test Vehicle

ADDRESS

PHONE

INSTALLED AND TESTED BY

R. T. Allin

DATE 6-9-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Ford Fairmont

YEAR 1979 100 mi.

ENGINE 302/2

EMISSIONS AS RECEIVED

HYDROCARBONS 230 ppm IDLE 2500 RPM = 60

CARBON MONOXIDE 3.5 % .21

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 25 ppm IDLE 2500 RPM = 30

CARBON MONOXIDE .2 % .1

FUEL ECONOMY

BEFORE 16.0 mpg.

AFTER 18.38 mpg.

NOTE: No carburetor adjustment

OWNER Test Vehicle

ADDRESS _____

_____

PHONE _____

INSTALLED AND TESTED BY

R. T. Allin

DATE 6-9-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

AUTO-MISER INTERNATIONAL EMISSION EVALUATION

VEHICLE

MAKE Ford 13,458 miles

YEAR 1979

ENGINE 460/4

EMISSIONS AS RECEIVED

HYDROCARBONS 180 ppm

CARBON MONOXIDE 4.6 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 100 ppm

CARBON MONOXIDE 2.3 %

FUEL ECONOMY

BEFORE 10.2 mpg.

AFTER 11.48 mpg.

OWNER John Hill

ADDRESS 1500 Sylvan #145

Hurst, Texas

PHONE 268-1771

INSTALLED AND TESTED BY

R. T. Allin

DATE 4-5-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Chevrolet

YEAR 1974

ENGINE 454/4

EMISSIONS AS RECEIVED

HYDROCARBONS 650 ppm

CARBON MONOXIDE .6 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 70 ppm

CARBON MONOXIDE .5 %

FUEL ECONOMY

BEFORE 9.5 mpg.

AFTER 12.5 mpg.

OWNER Walter Myer

ADDRESS 10718 Presidential

Dallas, Texas

PHONE 214-341-9987

INSTALLED AND TESTED BY

R. T. Allin

DATE 4-11-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on 5-31-79 has achieved the following results:

MPG before installation	MPG after installation
11.48	12.45

Very truly yours,

Ronald Keith Brown

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared Ronald Keith Brown known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and considereation expressed.

Given under my hand and seal of office this 8th day of August A.D. 1979.

Notary Public in and for Tarrant County, Texas.

My commission expires 6-20-80.

John E. Fuqua

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Ford Van

YEAR 1978 23,400 mi.

ENGINE 351/2V

EMISSIONS AS RECEIVED

HYDROCARBONS 140 ppm Idle 2500 RPM = 100 ppm

CARBON MONOXIDE 8.5 % 4.4%

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 10 ppm Idle 2500 RPM = 20

CARBON MONOXIDE .5 % .8%

FUEL ECONOMY

BEFORE 11.48 mpg.

AFTER 12.45 mpg.

OWNER Keith Brown

ADDRESS 10 Kingston

Bedford, TX 76021

PHONE 268-4841

INSTALLED AND TESTED BY

R. T. Allin

DATE 5-31-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

TARRANT COUNTY JUNIOR COLLEGE BOOKSTORES

FORT WORTH, TEXAS JACK LEGETT, MANAGER TELEX 75-8286

"Auto Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, TX 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on vehicle on 6-1-79 has achieved the following results:

MPG before installation	MPG after installation
15.5	17.2

1977 Ford Granada
302 CID - V8

Very truly yours,

Jack Legett

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county of Texas on this day personally appeared Jack Legett known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration expressed.

Given under my hand and seal of office this 6th day of July, 1979 A.D.

Ruby Cross
Notary Public in and for
Tarrant County Texas.

My commission expires

December 8, 1979

RUBY CROSS, Notary Public
in and for Tarrant County, Texas

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Ford Granada

YEAR 1977 36048 mi.

ENGINE 302/2 no pump

EMISSIONS AS RECEIVED

HYDROCARBONS	400 ppm	Idle	2500 RPM =	250
CARBON MONOXIDE	5.5 %			1.0

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS	40 ppm	Idle	2500 RPM =	30
CARBON MONOXIDE	.05 %			.05

FUEL ECONOMY

BEFORE 15.5 mpg. Hyw-AC

AFTER 17.2 mpg. Hwy -AC

OWNER Jack Legett

ADDRESS 1121 Forest Oak Drive

Hurst, TX 76053

PHONE 282-2384

INSTALLED AND TESTED BY

R. T. Allin

DATE 6-1-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on 5-25-79 has achieved the following results:

MPG before installation	MPG after installation
12.6	13.5

Very truly yours,

1978 Chevrolet ½ ton Pickup
350 CID - 4V - V8

Robert W. Sellers

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared Robert W. Sellers known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and considereation expressed.

Given under my hand and seal of office this 2nd day of June A.D. 1979.

Karen M Jenkins

Notary Public in and for Tarrant County, Texas.

My Commission Expires October 20, 1979

My commission expires _____.

Karen M. Jenkins, Notary Public
Tarrant County, Texas

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Chevrolet ½ ton pickup

YEAR 1978 Mileage 13,256

ENGINE 350/4V

EMISSIONS AS RECEIVED

HYDROCARBONS 70 ppm Idle 2500 RPM = 45 ppm

CARBON MONOXIDE .6 % .3%

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 35 ppm Idle 2500 RPM = 15

CARBON MONOXIDE .25 % .25%

FUEL ECONOMY

BEFORE 12.6 mpg.

AFTER 13.5 mpg.

OWNER R. W. Sellers

ADDRESS #2 Rancho Drive

Keller, TX 76248

PHONE

INSTALLED AND TESTED BY

R. T. Allin

DATE 5-25-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

Newell & Newell Industrial [illegible]

[illegible]

Fort Worth, Texas 76[illegible]

[illegible]

May 31, 1979

"Auto-Miser"
A PRODUCT OF AUTO-MISER INTERNATIONAL MFG CORP.
2570 Gravel Street
Fort Worth, Texas 76118

Gentlemen:

I am happy to report that your "Auto-Miser" gasoline saving system which was installed on my vehicle on 2-5-79 has produced far better results than I had expected. Prior to installation my MPG was accurately tested and verified to be 10. Since installation on the above date my MPG has been raised to 13.9.

Sincerely,

NEWELL & NEWELL BUSINESS PARK

1976 Chevrolet Wagon
454CID-4V-V8

W. J. Newell

WJN/tg

THE STATE OF TEXAS

COUNTY OF TARRANT

Before me, the undersigned, a Notary Public in and for said County, Texas, on this day personally appeared W. J. Newell known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration expressed.

Given under my hand and seal of office this 31st day of May A. D 1979.

[illegible]

Notary Public in and for Tarrant County, Texas

My commission expires 6-[illegible]-80

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Chevrolet

YEAR 1976

ENGINE 350 cu. in 4 B.

EMISSIONS AS RECEIVED

HYDROCARBONS 700 ppm idle 700 ppm 2500 RPM

CARBON MONOXIDE 8.8 % idle 3.0 % 2500 RPM

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 50 ppm idle 30 ppm 2500 RPM

CARBON MONOXIDE .08 % idle .05 % 2500 RPM

FUEL ECONOMY

BEFORE 10.0 mpg.

AFTER 13.9 mpg.

OWNER Jack Newell

ADDRESS Newell & Newell Const. Co

2657 Gravel St Ft Worth Tx 76118

PHONE 284. 555

INSTALLED AND TESTED BY

R T Allin

DATE 2/6/79

EMISSION ANALYZER

MAKE Delco

MODEL ST 500

CITY of BEDFORD

POLICE DEPARTMENT, Chief of Police J B. Wallace

June 5, 1979

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on 4-2-79 has achieved the following results.

MPG before installation	MPG after installation
12.0	12.9

1979 Chevrolet
350-4V-V8

Very truly yours,

J. B. Wallace
Chief of Police

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared J. B. Wallace known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration expressed.

Given under my hand and seal of office this 5 day of June A.D. 1979.

My commission expires Oct, 1981.

Juanita Hudson
Notary Public in and for Tarrant Co, Texas

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Chevrolet

YEAR 1979

ENGINE 350/4

EMISSIONS AS RECEIVED

HYDROCARBONS 60 ppm

CARBON MONOXIDE .3 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 0 ppm

CARBON MONOXIDE .05 %

FUEL ECONOMY

BEFORE 12.0 mpg.

AFTER 12.9 mpg.

OWNER City of Bedford

ADDRESS J. B. Wallace, Chief of Police

Bedford, Texas

PHONE 283-5531 Dason

INSTALLED AND TESTED BY

R. T. Allin

DATE 4-2-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

DENTON & GENERES
PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
[illegible] GRIFFIN SQUARE BUILDING
DALLAS, TEXAS 75202
214 651 1355
TWX 910-861-9197

RICHARD G. DENTON
CARL A. GENERES
RICHARD [illegible]
MIKE C. McWILLIAMS
WILLIAM B. ADAMS
WILLIAM [illegible] MERRITT
H. WAYNE MEACHUM
LYLE McCLELLAN

OF COUNSEL
GEORGE M. ELLIOTT
JULIAN M. MEER

May 31, 1979

"Auto-Miser"
A Product of Auto-~~Miser~~ International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on May 11, 1979, has achieved the following results:

MPG before installation	MPG after installation
15.6	16.96

Sincerely,

H. Wayne Meachum

1979 Oldsmobile Wagon
260-2V-V8

The State of Texas
County of Dallas

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared H. WAYNE MEACHUM known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and consideration expressed.

Given under my hand and seal of office this 31st day of May A.D. 1979.

Carolyn Jones
Notary Public in and for DALLAS County, Texas.

My Commission expires December 29, 1979.

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Oldsmobile

YEAR 1979

ENGINE 260/2

EMISSIONS AS RECEIVED

HYDROCARBONS 60 ppm

CARBON MONOXIDE .08 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 10 ppm

CARBON MONOXIDE .04 %

FUEL ECONOMY

BEFORE 15.6 mpg.

AFTER 16.96 mpg.

OWNER Wayne Meacham

ADDRESS Denton & Generes

555 Griffin Sq Bldg., Suite 920, Dallas, Texas 75202

PHONE 214/651-1355

INSTALLED AND TESTED BY

R. T. Allin

DATE 5-11-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on June 6, 1979 has achieved the following results.

MPG before installation	MPG after installation
15.51	22.30

Very truly yours,

[signature]

1978 Ford Mustang
2800 cc V-6

The State of Texas
County of Tarrant

Before me, the undersigned, a Notary Public in and for said county Texas, on this day personally appeared [signature] known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and considereation expressed.

Given under my hand and seal of office this 11th day of July A.D. 79.

[signature]
Notary Public in and for Tarrant County, Texas.

My commission expires [illegible]

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Ford

YEAR 1978

ENGINE 2800/V6

EMISSIONS AS RECEIVED

HYDROCARBONS 160 ppm Idle 2500 RPM = 150

CARBON MONOXIDE 5.2 % 3.2%

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 100 ppm Idle 2500 RPM = 60

CARBON MONOXIDE .4 % .5%

FUEL ECONOMY

BEFORE 15.51 mpg.

AFTER 22.30 mpg.

OWNER Carla D. Brown

ADDRESS 1705 Metro #102

Carrollton, Texas

PHONE

INSTALLED AND TESTED BY

R. T. Allin

DATE 6-7-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

WILLIAM A. SOLEMENE & ASSOCIATES
3131 TURTLE CREEK BLVD. / SUITE 1010 / DALLAS TEXAS 75219

"Auto-Miser"
A Product of Auto-Miser International Mfg. Corp.
2570 Gravel Street
Ft. Worth, Texas 76118

Gentlemen:

This letter is to certify that your "Auto-Miser" gasoline saving system which was installed on my vehicle on 4-9-79 has achieved the following results:

MPG before installation	MPG after installation
10.0	12.52

1979 Ford LTD
351 CID - V8

Very truly yours,

William A. Solemene

The State of Texas
County of Dallas

Before me, the undersigned, a Notary Public in and for said county, Texas, on this day personally appeared [illegible] known to me to be the person whose name subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purpose and considereation expressed.

Given under my hand and seal of office this 11 day of [illegible] A.D. 1979.

[illegible]
Notary Public in and for Dallas
County, Texas.

My commission expires 1-31-81.

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Ford

YEAR 1979

ENGINE 351/2

EMISSIONS AS RECEIVED

HYDROCARBONS 220 ppm

CARBON MONOXIDE 2.8 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 30 ppm

CARBON MONOXIDE .1 %

FUEL ECONOMY

BEFORE 10. mpg.

AFTER 12.52 mpg.

OWNER William A. Solemene

ADDRESS 3131 Turtle Creek Blvd.

Dallas, Texas 75219

PHONE 214/521-8050

INSTALLED AND TESTED BY

R. T. Allin

DATE 4-9-79

EMISSION ANALYZER

MAKE Delco

MODEL ST-500

AUTO-MISER INTERNATIONAL
EMISSION EVALUATION

VEHICLE

MAKE Ford Van

YEAR 1978

ENGINE 351-CID V8

EMISSIONS AS RECEIVED

HYDROCARBONS 340 ppm

CARBON MONOXIDE 7.80 %

EMISSIONS AFTER SYSTEM INSTALLATION

HYDROCARBONS 80 ppm

CARBON MONOXIDE .6 %

FUEL ECONOMY

BEFORE 10.93 mpg.

AFTER 13.7 mpg.

OWNER Randall W. Johnson

ADDRESS 305 Baker Drive

Hurst, Texas

PHONE 268-5648

INSTALLED AND TESTED BY

R. T. Allin

DATE 2-7-79

EMISSION ANALYZER

MAKE Delto

MODEL ST-500

APPLICATION FOR EVALUATION OF THE AUTO-MISER

EMISSION CONTROL AND FUEL ECONOMY RETROFIT DEVICE

EXHIBIT "G"

EG&G Automotive Research Inc. Test Results

The applicant contracted this facility to conduct tests which would be in accordance with the Federal Test Procedure. Additional tests were conducted to measure emissions before and after the catalytic converter to evaluate the effect of the system on emissions with and without the influence of the catalytic converter.

The criteria used in selecting these particular vehicles was to provide not only various size engines but also new versus used vehicles.

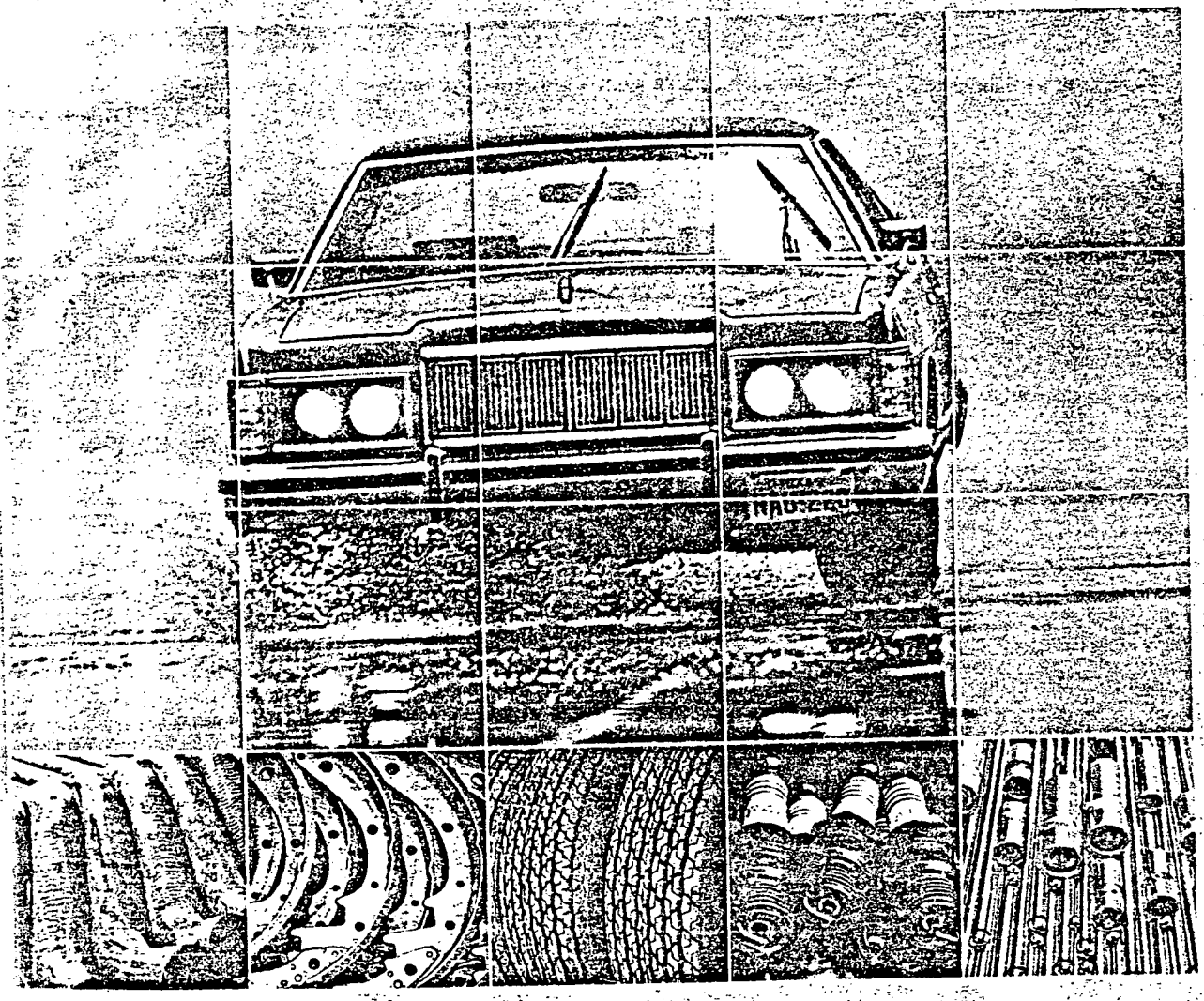
Since the EG&G facility is located approximately 300 miles from the applicant, the vehicles fuel consumption was measured driving to EG&G without the system and return with the system. The following comparisons were noted under highway driving conditions with air conditioning in use, following same route and using the same fuel.

Vehicle	Base Line to EG&G	With System Installed
79 Fairmont	16.0 MPG	18.38 MPG
79 Pinto	22.1 MPG	25.22 MPG
77 Chevette	26.3 MPG	29.55 MPG

FUEL ECONOMY AND EXHAUST EMISSIONS
EVALUATION USING THREE VEHICLES
FOR AUTO-MISER INTERNATIONAL
AR PROJECT NO. 79091

APPLICATION FOR EVALUATION OF THE
AUTO-MISER EMISSION CONTROL AND FUEL ECONOMY
RETROFIT DEVICE

EXHIBIT "G"



EG&G AUTOMOTIVE RESEARCH, INC.

"World's largest independent automotive testing organization."

FUEL ECONOMY AND EXHAUST EMISSIONS EVALUATION USING THREE VEHICLES FOR AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

REPORTED BY:

MAURICE L. FORSHEE
PROJECT SUPERVISOR

APPROVED BY:

ALBERT NAEGELIN
BUSINESS CELL MANAGER
CHASSIS DYNAMOMETER TESTING
POWER SYSTEMS RESEARCH AND DEVELOPMENT

SUBMITTED BY:

EG&G AUTOMOTIVE RESEARCH, INC.
5404 BANDERA ROAD
SAN ANTONIO, TEXAS 78238

JULY 13, 1979

FUEL ECONOMY AND EXHAUST EMISSIONS EVALUATION USING THREE VEHICLES FOR AUTO-MISER INTERNATIONAL AR PROJECT NO. 79091

TABLE OF CONTENTS

	PAGE
NOTICE OF DISCLAIMER	i
FORWARD	ii
TEST PROCEDURE	1
TUNE-UP	2
TESTING SERIES	2
ATTACHMENT 1 - TEST SCOPE	6
ATTACHMENT 2 - VEHICLE INSPECTION AND TUNE-UP	10
ATTACHMENT 3 - AUTO-MISER INSTALLATION PROCEDURE	16
ATTACHMENT 4 - SUMMARY OF TEST RESULTS	22
ATTACHMENT 5 - VEHICLE DRIVEABILITY	89

NOTICE OF DISCLAIMER

The data in this report was accumulated between June 9, 1979 and July 7, 1979. EG&G Automotive Research, Inc. certifies that the data presented herein was generated in accordance with the procedures and methods stated or referred to in this report.

EG&G Automotive Research, Inc. does not infer or make conclusions as to the performance of the device tested and does not endorse the product in any way, manner, or form.

Reference is hereby made to the agreement between Auto-Miser International and EG&G-AR dated June 19, 1979 regarding the use of the data herein and/or references to or use of the EG&G-AR trademark.

FORWARD

The enclosed data were accumulated by EG&G Automotive Research, Inc. between June 9, 1979 and July 7, 1979 at the request of Mr. Randall Johnson, President of Auto-Miser International.

Mr. R. T. Allin, Product Manager of Auto-Miser International acted as Auto-Miser's on-site representative and supervised the installations and removals of the devices in all test vehicles.

Overall supervision and coordination of the project was performed by Mr. Maurice Forshee, Project Supervisor, Power Systems Research and Development.

PROGRAM SUMMARY

FUEL ECONOMY AND EXUAUST EMISSIONS EVALUATION USING THREE VEHICLES FOR AUTO-MISER INTERNATIONAL

TEST PROCEDURE

In accordance with the United States Environmental Protection Agency (EPA) Emission Control Device Evaluation Test Policy, a proposed test scope was generated by EG&G Automotive Research, Inc. (EG&G-AR) and submitted to Mr. Randall Johnson, President of Auto-Miser International, for his approval.

After Mr. Johnson had reviewed and approved the test scope, it was forwarded to Mr. Ralph Stahman, Emissions Control Technology Division of the EPA, for that agency's review and comments.

On May 30, 1979, Mr. F. Peter Hutchins, Project Manager of EPA Technology Assessment and Evaluation Branch responded to the proposed scope and made some suggested changes in a letter to Mr. Johnson with a carbon copy to Mr. Albert Naegelin, Business Cell Manager of EG&G-AR's Power Systems Research and Development Chassis Dynamometer Laboratory.

These suggested changes were incorporated in the test program and copies of both the original test scope and Mr. Hutchins' comments are included as Attachment 1 of this report.

TEST VEHICLES

Three vehicles were selected and delivered to EG&G-AR by Auto-Miser International. The vehicle specifications are as follows:

Vehicle Number	Make/Model	Year	Vehicle Identification	Odometer	Engine	Transmission
05	Chevrolet Chevette	1977	1B08E7Y155251	11,336	1.8 L	4 Speed Manual
33	Ford/Pinto	1979	9T10Y146233	7,377	2.3 L	Automatic
73	Ford Fairmont	1979	9K92F187551	400	5.0 L	Automatic

TUNE-UP

Each vehicle was tuned-up to manufacturer's specifications (including idle mixture screw settings) and the following parts were replaced:

Spark plugs	Rotors
Ignition wires	Distributor caps
Air cleaners	Fuel filters*

TESTING SERIES

This section of the report lists the individual vehicles and outlines the complete series of tests, adjustments, changes, evaluations, etc. that were performed on each unit.

Vehicle No. 73 - 1979 Ford Fairmont

1. Received vehicle and performed complete inspection and tune-up (Attachment 2).
2. Performed duplicate tests using Federal Test Procedure 40 CFR, Part 86 and 40 CFR, Part 400 to evaluate vehicle emissions and determine city and highway fuel economies (Attachment 4).
3. Conducted catalytic converter efficiency test at 0, 30, and 50 MPH (Attachment 4).
4. Performed driveability evaluations (Attachment 5).
5. Installed the device in accordance with the written instructions supplied by Auto-Miser International (Attachment 3). After the physical installation was completed, Mr. Allin instructed EG&G-AR personnel to adjust the idle mixture screws one-half turn leaner (in) on both screws. No change in curb or fast idle RPM occurred. In accordance with the test procedure, this change made additional testing necessary after the test device series.
6. Performed duplicate tests using Federal Test Procedure 40 CFR, Part 86 and 40 CFR Part 400 to evaluate vehicle emissions and determine city and highway fuel economies (Attachment 4).
7. Conducted catalytic converter efficiency test at 0, 30, and 50 MPH (Attachment 4).
8. Performed driveability evaluation (Attachment 5).
9. Disconnected the device from the engine.

*Fuel filters were not readily available from local dealers for vehicle numbers 05 and 73 and replacement was not done. The fuel filter for 05 was changed at a later date.

Vehicle No. 73 - 1979 Ford Fairmont (Continued)

10. Performed duplicate tests using Federal Test Procedure 40 CFR, Part 86 and 40 CFR, Part 400 to evaluate vehicle emissions and determine city and highway fuel economies (Attachment 4).

11. Performed driveability evaluation (Attachment 5).

Vehicle No. 33 - 1979 Ford Pinto

1. Received vehicle and performed complete inspection and tune-up (Attachment 2).

2. Performed duplicate tests using Federal Test Procedure 40 CFR, Part 86 and 40 CFR, Part 400 to evaluate vehicle emissions and determine city and highway fuel economies (Attachment 4).

3. Conducted catalytic converter efficiency test at 0, 30, and 50 MPH (Attachment 4).

4. Performed driveability evaluation (Attachment 5).

5. Installed the device in accordance with the written instructions supplied by Auto-Miser International (Attachment 3). After the installation, idle RPM was increased by 100. The idle speed was adjusted down but after a few minutes at idle the RPM dropped by 100 and the idle speed setting was returned to its original position. No adjustments were made to any engine operating parameters and additional tests were not required on this vehicle.

6. Performed duplicate tests using Federal Test Procedure 40 CFR, Part 86 and 40 CFR, Part 400 to evaluate vehicle emissions and determine city and highway fuel economies (Attachment 4).

7. Conducted catalytic converter efficiency test at 0, 30, and 50 MPH (Attachment 4).

8. Performed driveability evaluation (Attachment 5).

Vehicle No. 05 - 1977 Chevrolet Chevette

1. Received vehicle and performed complete inspection and tune-up (Attachment 2).

2. Performed duplicate tests using Federal Test Procedure 40 CFR, Part 86 and 40 CFR, Part 400 to evaluate vehicle emissions and determine city and highway fuel economies (Attachment 4).

3. Conducted catalytic converter efficiency test at 0, 30, and 50 MPH (Attachment 4).

4. Performed driveability evaluation (Attachment 5).

5. Installed the device in accordance with the written instructions supplied by Auto-Miser International (Attachment 3). No changes were made to the engine operating parameters and curb and fast idle RPM remained at the manufacturer's recommended speeds.

Vehicle No. 05 - 1977 Chevrolet Chevette (Continued)

6. Performed duplicate tests using Federal Test Procedure 40 CFR, Part 86 and 40 CFR, Part 400 to evaluate vehicle emissions and determine city and highway fuel economies (Attachment 4).

7. Conducted catalytic converter efficiency test at 0, 30, and 50 MPH (Attachment 4).

8. Performed driveability evaluation (Attachment 5).

9. The last test in the duplicate series (test number 04) showed considerably different results from the preceeding test (number 03) and indicated a possible vehicle problem.

   Per Mr. Allin's instructions, the vehicle was removed from soak and a complete check of the vehicle was performed. The fuel line from the tank to the fuel pump was leaking and the line was replaced. A new fuel filter was also installed. During the check the curb idle speed was found to be high and erratic. Numerous attempts were made to adjust the idle speed, but it would not remain steady. Mr. Allin's instructions were to adjust the idle mixture screw three-fourths of a turn richer (out). This was accomplished and the curb and fast idle RPMs were reset to manufacturer's specifications. Both vacuum control screws on the device cannister were turned to verify proper operation of the device by Mr. Allin. When proper operation was verified, the screws were returned to verify proper operation of the device by Mr. Allin. When proper operation was verified the screws were returned to their original settings. No instruments or vacuum gauges were used to complete this check. Because of the numerous changes and repairs made to this vehicle, the results from tests 03 and 04 were considered questionable and additional tests were required.

10. Performed single test using Federal Test Procedure 40 CFR, Part 86 and 40 CFR, Part 400 to evaluate vehicle emissions and determine city and highway fuel economies (Attachment 4).

    After Mr. Allin reviewed the results of this test, he instructed EG&G-AR personnel to return the idle mixture screw to its original position (three-fourths of a turn leaner (in)). No change in curb or fast idle RPMs occurred.

11. Test numbers 06 and 07 were aborted due to wrong inertia load setting.

12. Performed duplicate test (number 08 and 10 - 09 was aborted due to load selector switch being in the wrong mode at start of test) using Federal Test Procedure 40 CFR, Part 86 and 40 CFR, Part 400 to evaluate vehicle emissions and determine city and highway fuel economies (Attachment 4).

13. Performed driveability evaluation (Attachment 5).

14. Disconnected the device from the engine.

15. Performed duplicate tests using Federal Test Procedure 40 CFR, Part 86 and 40 CFR, Part 400 to evaluate vehicle emissions and determine city and highway fuel economies (Attachment 4).

16. Due to a misunderstanding in the work schedule, this vehicle was returned to Auto-Miser before the driveability evaluation was accomplished.

At completion of all testing, the devices were reconnected and the vehicles returned to Auto-Miser International. Data obtained during testing was audited and compiled for the final report.

ATTACHMENT 1

TEST SCOPE

PROPOSED TEST SCOPE

1. Vehicle Procurement

Three vehicles will be procured. These vehicles will be specified by the device manufacturer as to make, model, engine displacement, carburetion, model year, transmission and any particulars as to optional equipment.

2. Vehicle Tune-up

Each vehicle will be tuned-up to vehicle manufacturers specifications including but not limited to, spark plugs, ignition wires, distributor cap, rotor (points and condenser if applicable), curb idle RPM, basic timing and an inspection of all emission control components for operation.

3. Vehicle Baseline Testing

Each vehicle will be tested a minimum of two times using Federal Test Procedures (40 CFR Part 86) to evaluate vehicle emissions and Highway Fuel Economy Test (40 CFR Part 400).

4. Device Installation

After the baseline tests are audited and are determined valid and the vehicles are considered acceptable (pass emission standards for that year model and test results repeat) the vehicles will be turned over to the device manufacturer for device installation.

5. Tests After Device Installation

After the device is installed and any necessary adjustments are made the vehicle will receive a minimum of two tests in accordance with Federal Test Procedure (40 CFR Part 86) to evaluate emissions and Highway Fuel Economy Tests (40 CFR Part 400). These tests will be audited and when determined valid this phase of testing will be complete.

6. Additional Tests

If any test vehicle engine parameters (such as ignition timing or idle mixture) are changed from the original manufacturers specifications the vehicle will receive a minimum of two tests with the equivalent changes to engine parameters without the device installed. These tests will be conducted in accordance with Federal Test Procedure (40 CFR Part 86) to evaluate emissions and Highway Fuel Economy Test (40 CFR Part 400).

Page 2
Proposed Test Scope

7. Driveability

The vehicles will be evaluated for acceleration, cold start performance, tendency to stumble or hesitate, surge and hot start performance. This evaluation will be completed on all phases of testing.

8. Final Report

The final report will include test results and any information necessary to show how the results were obtained. EG&G Automotive Research will not make any assumptions or comments regarding the performance of the device.

This proposed test scope was prepared by:

Albert Naegelin — May 15, 1989
Albert Naegelin
Business Cell Manager
Power Systems Research & Development
Emissions Testing

Accepted by:

Randy Johnson — May 18, 1989
Randy Johnson — Date

Approved by:

EPA Representative — Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
ANN ARBOR, MICHIGAN 48105

OFFICE OF
AIR AND WATER PROGRAMS

May 30, 1979

Mr. Randall W. Johnson, President
Auto Miser International
2570 Gravel Street
Fort Worth, Texas 76118

Dear Mr. Johnson:

This is in response to your May 18, 1979 letter seeking EPA evaluation and approval of the test project which is planned for the evaluation of your device. The EPA will comment and make suggestions on the proposed plan. We cannot, however, approve this plan.

The following comments are made without any knowledge of the operational characteristics of the device and, therefore, without any way of anticipating its effect on test results and test variability.

a. As these are the first set of FTP and HFET tests which are to be performed on the device, the overall scope of the test project (3 vehicles with duplicate baseline, device and parameter adjusted, if required, tests) appears to be a reasonable compromise between cost and size of the data base.

b. I cannot comment on what vehicles should be selected because of lack of information on either the device or its anticipated sales applicability.

c. EG&G must follow manufacturer procedures for setting idle air/fuel ratio and must record levels. If vehicles are catalyst and/or air pump equipped, tailpipe readings do not adequately identify carburetor settings.

d. If any vehicle manufacturer settings or specification of the basic vehicle are in any way altered when the device is installed, the vehicle must be tested in this parameter adjusted mode. This set of tests permits identification of the effects of the parameter adjustment separately from the effects of the device. All of these

(if any) adjustments must be recorded. When the vehicles are returned to EG&G following device installation, EG&G must inspect and record all parameters as scheduled in the baseline inspection.

e. The same fuel must be used in all tests of each vehicle. Fuel used must be appropriate for the vehicle in which it is used.

Enclosed with this letter is a copy of the "EPA Retrofit and Emission Control Device Evaluation Test Policy" and the "Application Format for Use with Fuel Economy Retrofit Device Evaluation under Section 511 of the Energy Policy and Conservation Act".

Sincerely,

F. Peter Hutchins, Project Manager
Technology Assessment and Evaluation Branch

cc: Albert Naegelin, EG&G

Enclosure

ATTACHMENT 2

VEHICLE INSPECTION AND TUNE-UP

VEHICLE INSPECTION AND TUNE-UP

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 05 Odometer: 11,336.3

Make/Model: Chevrolet/Chevette Date: June 9, 1979

		Work Completed
1.	Road test vehicle for satisfactory operation.	X
2.	Check cylinder compression and record:	
	No. 1: 180 No. 2: 175 No. 3: 170 No. 4: 175	
	No. 5: _____ No. 6: _____ No. 7: _____ No. 8: _____	X
3.	Install new spark plugs (torque to specs.).	X
4.	Install new air cleaner.	X
5.	Install new ignition cables.	X
6.	Install new distributor cap.	X
7.	Install new rotor.	X
8.	Install new fuel filter.*	X
9.	Check ignition system with oscilloscope and record the following:	
	Available coil voltage: 18K	
	Spark plug voltage: 4K	X
10.	Engine timing:	
	Vacuum advance disconnected and plugged at idle: 8°	
	Vacuum advance disconnected and plugged at 2500 RPM: 10°	
	Vacuum advance connected at 2500 RPM: 49°	X
11.	Check battery for proper condition and charge.	X
12.	Check choke for proper operation.	X
13.	Check for proper operation of EGR valve.	X
14.	Check all belts and hoses.	X
15.	Check vacuum hoses for proper routings and insure that there are no vacuum leaks.	X
16.	Check and insure that the air cleaner thermostat valve control operation is satisfactory.	X

*Fuel filter replaced June 26, 1979

	Work Completed
17. Check all fluid levels and bring to full.	
Coolant: X Power Steering: X	
Brakes: X Battery: X	
Engine Oil: X	X
18. Check idle RPMs and set to manufacturer's specifications: 800 RPM.	
19. Check fast idle RPM and ~~set to manufacturer's~~ specifications: 2400 RPM.	X
20. Set idle mixture screws per manufacturer's recommended procedure.	X
21. Recheck idle and fast RPMs and reset to manufacturer's specifications as necessary.	X
22. Remove rear tires and brake drums and inspect rear brakes.	X

Technician's signature:

Patrick E Rogers

Date: June 9, 1979

VEHICLE INSPECTION AND TUNE-UP

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 73 Odometer: 400.0

Make/Model: Ford/Fairmont Date: June 9, 1979

		Work Completed
1.	Road test vehicle for satisfactory operation.	X
2.	Check cylinder compression and record:	
	No. 1: 150 No. 2: 160 No. 3: 160 No. 4: 165	
	No. 5: 170 No. 6: 160 No. 7: 165 No. 8: 155	X
3.	Install new spark plugs (torque to specs.).	X
4.	Install new air cleaner.	X
5.	Install new ignition cables.	X
6.	Install new distributor cap.	X
7.	Install new rotor.	X
8.	Install new fuel filter.	No
9.	Check ignition system with oscilloscope and record the following:	
	Available coil voltage: 15K	
	Spark plug voltage: 4K	X
10.	Engine timing:	
	Vacuum advance disconnected and plugged at idle: 8°	
	Vacuum advance disconnected and plugged at 2500 RPM: 20°	
	Vacuum advance connected at 2500 RPM: 54°	X
11.	Check battery for proper condition and charge.	X
12.	Check choke for proper operation.	X
13.	Check for proper operation of EGR valve.	X
14.	Check all belts and hoses.	X
15.	Check vacuum hoses for proper routings and insure that there are no vacuum leaks.	X
16.	Check and insure that the air cleaner thermostat valve control operation is satisfactory.	X

	Work Completed
17. Check all fluid levels and bring to full.	
Coolant: X Power Steering: X	
Brakes: X Battery: X	
Engine Oil: X	X
18. Check idle RPMs and set to manufacturer's specifications:	
750 RPM.	X
19. Check fast idle RPM and ~~set to manufacturer's specifications~~:	
N/A* RPM.	X
20. Set idle mixture screws per manufacturer's recommended procedure.	X
21. Recheck idle and fast RPMs and reset to manufacturer's specifications as necessary.	X
22. Remove rear tires and brake drums and inspect rear brakes.	X

Technician's signature: Patrick E Pugsley

Date: June 9, 1979

*Not entered

VEHICLE INSPECTION AND TUNE-UP

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 33 Odometer: 7,377.0

Make/Model: Ford/Pinto Date: June 10, 1979

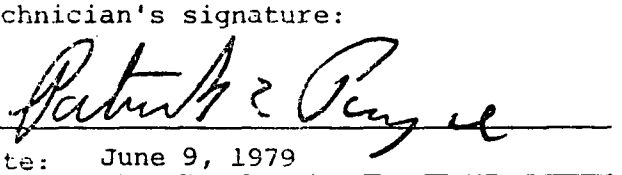
		Work Completed
1.	Road test vehicle for satisfactory operation.	X
2.	Check cylinder compression and record:	
	No. 1: 160 No. 2: 170 No. 3: 150 No. 4: 155	
	No. 5: ____ No. 6: ____ No. 7: ____ No. 8: ____	X
3.	Install new spark plugs (torque to specs.).	X
4.	Install new air cleaner.	X
5.	Install new ignition cables.	X
6.	Install new distributor cap.	X
7.	Install new rotor.	X
8.	Install new fuel filter.	No
9.	Check ignition system with oscilloscope and record the following:	
	Available coil voltage: 11K	
	Spark plug voltage: 4K	X
10.	Engine timing:	
	Vacuum advance disconnected and plugged at idle: 20°	
	Vacuum advance disconnected and plugged at 2500 RPM: 24°	
	Vacuum advance connected at 2500 RPM: 40°	X
11.	Check battery for proper condition and charge.	X
12.	Check choke for proper operation.	X
13.	Check for proper operation of EGR valve.	X
14.	Check all belts and hoses.	X
15.	Check vacuum hoses for proper routings and insure that there are no vacuum leaks.	X
16.	Check and insure that the air cleaner thermostat valve control operation is satisfactory.	X

Vehicle Inspection and Tune-up
Auto-Miser International
Page 2

15

	Work Completed
17. Check all fluid levels and bring to full.	
Coolant: X Power Steering: X	
Brakes: X Battery: X	
Engine Oil: X	X
18. Check idle RPMs and set to manufacturer's specifications:	
600 RPM.	X
19. Check fast idle RPM and set to manufacturer's specifications:	
2100 RPM.	X
20. Set idle mixture screws per manufacturer's recommended procedure.	X
21. Recheck idle and fast RPMs and reset to manufacturer's specifications as necessary.	X
22. Remove rear tires and brake drums and inspect rear brakes.	X

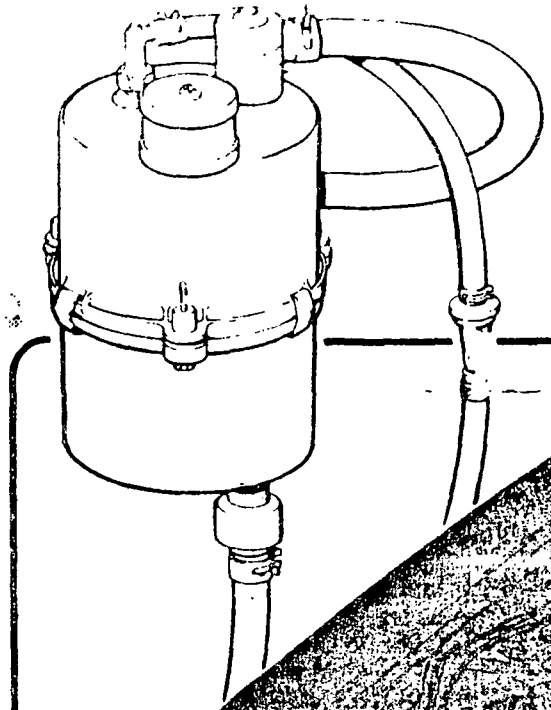
Technician's signature:



Date: June 9, 1979

ATTACHMENT 3

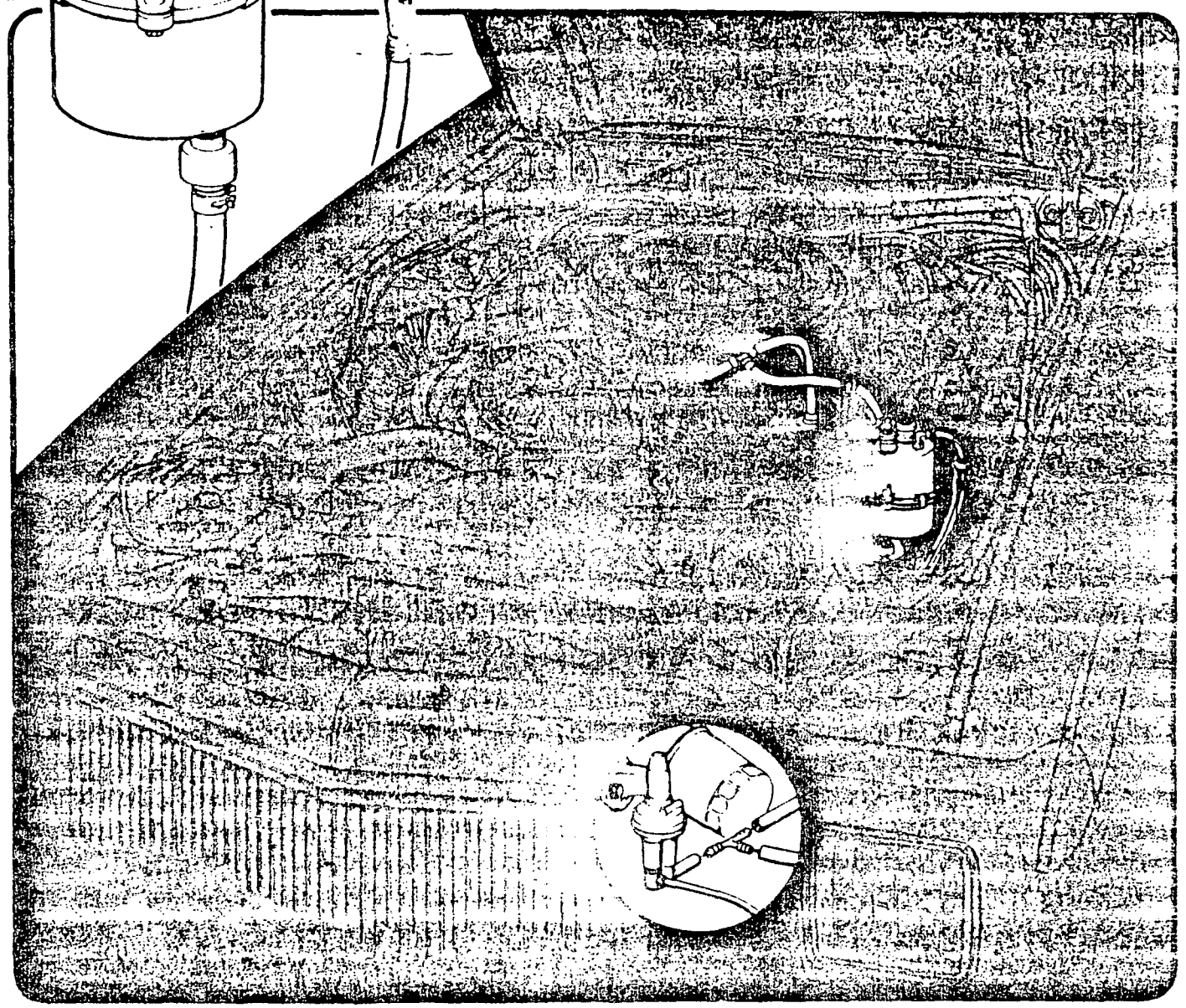
AUTO-MISER INSTALLATION PROCEDURE



AUTO MISER

Proper operation of the "AUTO-MISER" gasoline saving system can only be obtained by a complete understanding of the theory, operation, installation and diagnostic information included in these instructions.

Attention to these instructions will result in a cleaner, more responsive engine in all operating ranges. The conservative use of these increased responsiveness should result in fuel savings.

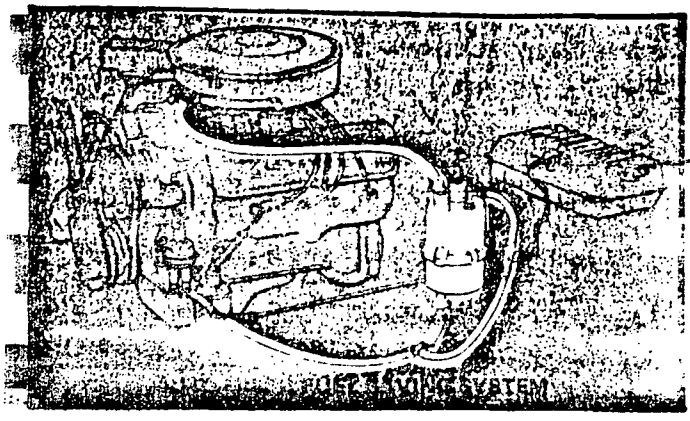


AUTO-MISER IS A PRODUCT OF
AUTO-MISER INTERNATIONAL MANUFACTURING CORP.
2570 GRAVEL STREET
FORT WORTH, TEXAS 76118 817-284-1425

THEORY OF OPERATION

Vaporized gasoline mixed with the gasoline mist and air supplied by the carburetor will improve ignition of the total mixture and more complete combustion in the engine rather than in the exhaust system.

As a result, build up of residue in the combustion chamber is reduced, which prolongs spark plug, valve and ring life. This reduction in cylinder deposits reduces pre-combustion "ping" and the build-up of octane requirements.



SYSTEM OPERATION

The entire system is vacuum operated with the vacuum source taken at the Positive Crankcase Ventilation (PCV) valve hose. This vacuum is used to draw gasoline and air into a vaporizing chamber. The gasoline is vaporized and mixed with air in the vaporizing chamber and drawn into the engine through the hose between the PCV valve and base of the carburetor.

The gasoline is taken from the fuel supply line to the engine fuel pump (suction side) through a filter and drawn into the vaporizing chamber. The amount of fuel is controlled by a float and valve in the chamber.

A porous pad in the bottom of the vaporizing chamber is immersed in this fuel.

Air is drawn into the vaporizing chamber through a filter and into the vaporizing pad where it produces vaporized gasoline. The amount of air and the vacuum in the chamber is controlled by an air inlet control screw located under the air filter retaining cap screw.

The mixture of vaporized gasoline and air is drawn into the vapor supply hose through an anti-backfire check valve and flow control adjusting screw. The amount of vapor delivered to the engine is controlled by this adjusting screw.

A spring loaded disc valve is located at the bottom of the vaporizing chamber. This is a one-way drain valve permitting only a small amount of fuel to be drained from the unit when the engine stops. The spring force (fixed) pre-determines the amount of fuel drained back into the fuel line. The purpose of this action is to provide a fresh supply of gasoline for vaporizing each time the engine is started. The spring-loading also prevents any back-flow of fuel into the vaporizing chamber if the vehicle is parked with the fuel tank above the chamber.

SYSTEM CONTROL

Since the operation of the system is vacuum actuated, the amount of vacuum and flow is controlled by the vapor adjustment screw and inlet air adjustment screw. Both these adjustments are made at installation and should not be changed.

The purpose of the vapor adjustment screw is to match the vapor flow from the unit to the amount of vacuum available from the engine. The larger the engine, the more flow from the unit. Also this adjustment is made to limit the amount of vacuum taken from the engine so as not to adversely effect the PCV valve operation.

The air inlet adjustment screw controls the amount of air taken into the vaporizing chamber which in turn determines the vacuum in the chamber. This adjustment serves several purposes:

1. Amount of vacuum in the chamber determines the vaporizing action.
2. Vacuum in the chamber determines amount of force available to lift fuel from the fuel line into the vaporizing chamber.
3. Vacuum has an effect on the buoyancy of the float; therefore on the fuel level.

PRE-INSTALLATION CHECKS

This system requires the following vehicle configurations to exist before attempting installation:

1. Carburetor – NOT fuel injection or diesel.
2. Engine-mounted fuel pump – NOT tank-mounted fuel pump.
3. PCV valve.

With the engine at operating temperature, connect and calibrate an emissions analyzer and record emissions at idle and at approximately 2500 RPM. Check for lean misfire due to vacuum leaks, carburetor malfunction, electrical misfire and timing. Adjust and correct as necessary to vehicle manufacturer's specifications. These specifications can be found at various locations under the hood. Check PCV valve for clean appearance and proper operation, (Refer to "Trouble Shooting") If any doubt of valve condition, replace. If used over 10,000 miles, replace with OEM specified parts.

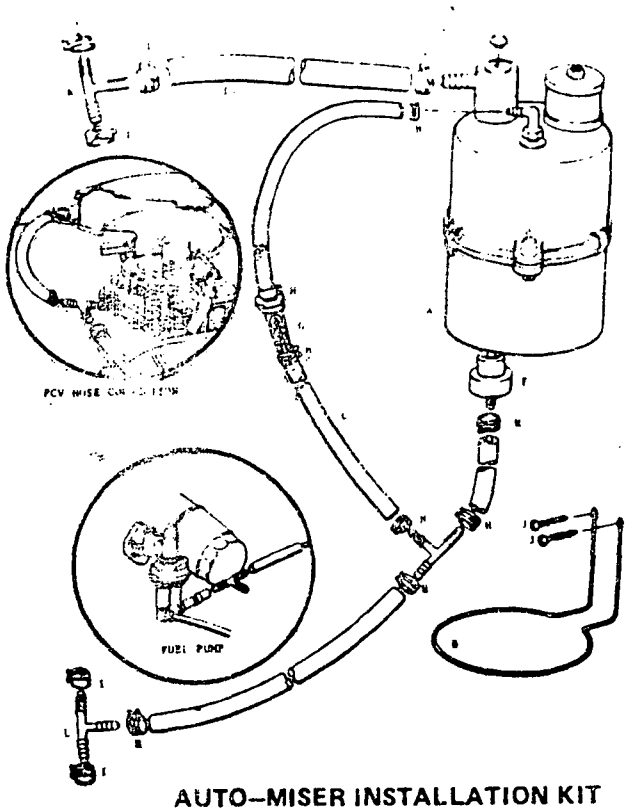
Check hoses to and from fuel pump for tight connections and hose condition. Locate suction line from fuel tank and determine vapor chamber mounting location as close to fuel pump as possible.

PRE-INSTALLATION UNIT ASSEMBLY

Included in the "AUTO-MISER" packaging is a round AUTOMATIC DRAIN VALVE. This valve has a 1/8" NPT fitting on one end and a 1/4" barbed fitting on the other. This is to be installed into the fitting provided on the bottom of the vapor chamber. Removal of the red Caplug on drain valve and seal caps is required.

SYSTEM INSTALLATION

1. Determine best location for vapor chamber using these general rules. (Refer to Figure 1)
   a. Chamber must be mounted vertical.
   b. Keep chamber close to but above engine fuel pump.
   c. Provide clearance from any moving engine parts such as fans and belts.
   d. Allow sufficient room for system fuel and vapor hoses.
2. Pre-assemble system fuel supply hose.
   a. Install the 3/8" x 1/4" x 3/8" tee pro-
   b. vided on the 1/4" fuel hose using red hose clamp.
   b. Cut the hose about 3" to 5" from the tee. This measurement will vary depending upon space available from the suction hose of the engine fuel pump to the bottom of the vapor chamber.
   c. Install the white 1/4" x 1/4" x 1/4" tee in the fuel hose using red hose clamps. Install open end of fuel hose on remaining 1/4" connection on tee and clamp with red hose clamp.
3. Install fuel supply hose.
   a. Cut fuel suction hose to engine fuel pump preferably in center of hose being certain installed hose will clear all engine and frame parts.
   b. Install previously assembled 3/8" x 1/4" x 3/8" tee on 1/4" hose to engine fuel hose using green hose clamps.
4. Vapor Chamber.
   a. Position vapor chamber vertically and locate mounting wire hanger. Drill or punch two 1/8" diameter holes for mounting screws.
   Caution: Vapor chamber must be vertical and fuel inlet elbow must be positioned toward outside of the vehicle. Also be certain vapor chamber and hoses will not be affected in the event of broken belts.
   b. Mount vapor chamber in wire support.
   c. Route 1/4" fuel supply hose to the fuel inlet elbow on top of the vapor chamber. Leave room in hose routing to clear existing hoses or vacuum lines and cut to length at fuel inlet elbow.
   d. Cut hose between 1/4" x 1/4" x 1/4" tee previously installed and fuel inlet elbow connection for installation of fuel filter. Locate filter so it will be close to a vertical position.
   e. Install fuel filter with arrow on filter pointed toward fuel inlet elbow using red hose clamps.
   f. DO NOT connect fuel hose to inlet elbow at this time. Install red clamp over open hose and plug open end temporarily.
   g. Using remaining 1/4" hose, measure and cut to length for connection to drain valve in bottom of vapor chamber. When measuring hose provide sufficient length to avoid any side pull or strain on drain valve. Install hose using red hose clamps.



AUTO–MISER INSTALLATION KIT

A	1 Vaporizing Chamber
B	1 Pre-formed Wire Support
C	1 1/4" x 42" Fuel Hose
D	1 3/8" x 42" Vapor Hose
E	1 Hardware Package, with
F	1 Drain Valve
G	1 Fuel Filter
H	8 1/4" Red Hose Clamps
I	6 3/8" Green Hose Clamps
J	2 Mounting Screws
K	3/8" x 3/8" x 3/8" Vapor Tee
L	3/8" x 1/4" x 3/8" Fuel Tee

5. Vapor Hose
   a. Locate hose connecting PCV valve (usually located on engine valve cover) and the engine intake manifold or carburetor base.
   b. Cut hose 3" to 5" away from the engine manifold or carburetor base fitting. Note: Keeping the connection close to the engine provides optimum system performance.
   c. Install 3/8" x 3/8" x 3/8" white tee in vapor hose and connect into engine PCV hose using three green hose clamps. Note: Avoid thermostat housings and other known hot spots.
   d. Route hose to vapor control valve on top of vapor chamber and cut to length. **CAUTION:** When locating vapor hose, avoid possible broken belt damage.
   e. Install green clamp over cut end of vapor hose. DO NOT connect to vapor control valve at this time.

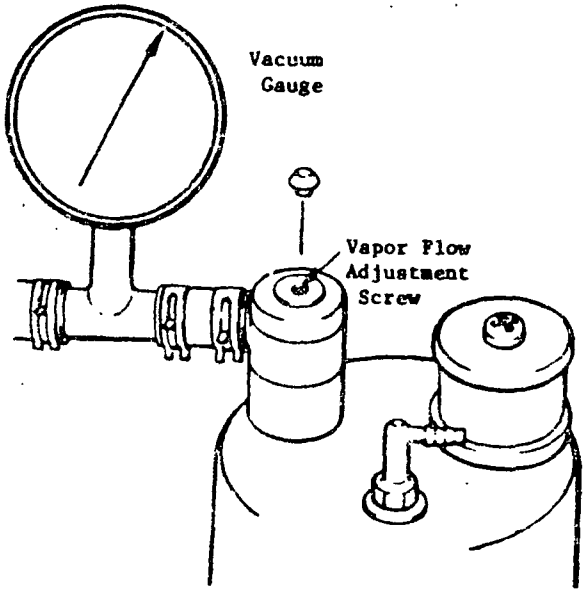
SYSTEM CALIBRATION

Two adjustments are required to match the system to the engine requirements.

1. Adjustment in the Vapor Flow Screw located beneath the black seal cap on top of the vapor chamber.
2. Adjustment in Vapor Chamber Vacuum Screw located under the inlet air filter cap retaining screw.

Both of these screws require a 1/8" hex set screw wrench.

Note: The vapor chamber is shipped with the vapor adjustment screw in the closed position and the vacuum adjustment screw in the wide open position.



1. Vapor Flow Adjustment
   a. Insert a 3/8" x 1/4" x 3/8" tee into the open end of the vapor hose.
   b. Use a short length of 3/8" vapor hose and insert between the 3/8" x 1/4" x 3/8" tee and the vapor control valve on top of the vapor chamber.
   c. Connect a well calibrated vacuum gauge to the remaining 1/4" connection on the 3/8" x 1/4" x 3/8" tee.
   d. Remove black seal cap from top of vapor control valve and be certain vapor adjustment screw is closed.
   e. Start engine; allow to reach operating temperature.
   f. Observe vacuum reading - normally between 16" and 20".
      Caution: If less than 16" of vacuum is observed prior to adjusting the vapor control valve, the engine may be in a marginal condition for the installation. Any vacuum leak should be corrected or out of balance idle mixture screws adjusted before continuing with the installation.
   g. With engine running at idle, open vapor adjustment screw (turn counterclockwise) until a 4" reduction in vacuum reading is reached. Example: If the original vacuum reading is 20", open vapor adjusting until vacuum drops to 16".
   h. Remove vacuum gauge and tee and connect vapor hose to vapor control valve using green hose clamp.
   i. Insert seal cap into top of vapor valve to discourage tampering with vapor adjustment screw.

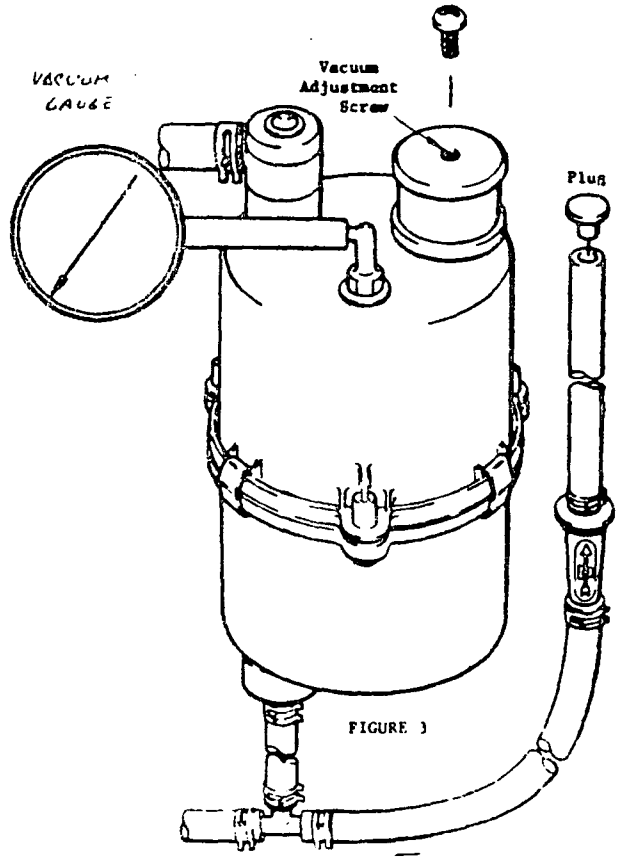


FIGURE 3

2. Vapor Chamber Vacuum Adjustment
   a. Connect well calibrated vacuum gauge to fuel inlet elbow on top of vapor chamber. NOTE: Be certain open end of 1/4" fuel supply hose is plugged.
   b. Remove screw and cap from top of inlet air filter to provide access to vacuum adjustment screw.
   c. With engine running, close (turn clockwise) vacuum adjustment screw until a vacuum reading of 2" minimum to 2 1/2" maximum is observed.
      NOTE: This vacuum reading is required to insure proper fuel level and vaporization. An accurate vacuum gauge is a MUST.
   d. Disconnect vacuum gauge, remove plug from fuel supply hose and connect hose to chamber inlet fuel elbow. Do not clamp at this point as a recheck of vacuum will be necessary after 3-5 min. idle time. Emissions will be erratic for a few minutes while chamber fills with fuel.

SYSTEM ADJUSTMENTS

Allow engine to idle several minutes to reach operating temperature and fill vapor chamber with fuel. During this period the engine speed will increase due to the vaporization of fuel starting to occur in the vapor chamber.

Connect a calibrated emissions analyzer and observe hydrocarbon (HC) and carbon monoxide (C.O.). They will vary as chamber fills. When emissions are steady, the chamber has filled and adjustment may be made.

1. Adjust carburetor idle mixture screw(s) for lowest hydrocarbon (HC) reading without a lean misfire.
   CAUTION: On vehicles with catalytic converters a lean misfire may occur even with low HC reading. Look for an even, smooth idle as well as low HC reading.
2. Readjust idle speed to vehicle manufacturer's specifications shown on emission data/tune up label located under the hood in the engine compartment.
3. Record emissions at idle and at approximately 2500 RPM before and after system installation and save for record purposes.
4. Final adjustment is to recheck position of the vapor chamber. The chamber should be positioned so the fuel inlet is either right or left when facing the front of the vehicle. The vapor control valve and inlet air filter should be parallel with the center line of the vehicle and the fuel inlet elbow to the right or left toward the side(s) of the vehicle. This assures proper float/fuel valve operation under heavy braking or acceleration conditions.

DISCLAIMER

This manual contains certain information concerning the installation and functional operation of the **AUTO-MISER** fuel saving system. Such information is believed to be accurate and is based upon the research and experience of **AUTO-MISER International Manufacturing Corporation.** It is believed that proper application of the information contained in this manual to the types of automotive vehicles discussed herein will result in optimum performance and operating efficiency of the **AUTO-MISER** fuel saving system.

NOTHING CONTAINED HEREIN IS INTENDED IN ANY WAY, TO MODIFY OR ENLARGE THE WARRANTY OF AUTO-MISER INTERNATIONAL MANUFACTURING CORPORATION AS SET FORTH IN THE LIMITED WARRANTY GIVEN TO BUYER IN CONNECTION WITH THE PURCHASE OF AN AUTO-MISER UNIT AND BUYER IS REFERRED SUCH LIMITED WARRANTY FOR A COMPLETE STATEMENT OF ALL WARRANTIES GIVEN TO BUYER IN CONNECTION WITH SUCH PURCHASE'

This manual has been prepared solely for the use and benefit of authorized **AUTO-MISER** dealers and is not intended for the use or benefit of any other person or entity. Any reproduction or distribution of this manual, in whole or part, or the divulgence of any of the information contained herein to any person or entity, without the express prior written authorization of **AUTO-MISER International Manufacturing Corporation,** is strictly prohibited.

TROUBLE SHOOTING

1. "Lost Gas Mileage" or "No Increase" claim. Look for:
   A. Inaccurate base line
   B. Vacuum source not adequate due to:
      1) Clogged carburetor ports or PCV valve
      2) Non-functioning PCV valve
      3) Improper vapor valve setting (Para. No. 1)
      4) Improper vapor chamber vacuum (Para. No. 2)
      5) Improper fuel level
      6) Improper combustion or weak vacuum
      7) Poor ignition, plugs, etc.
2. Diagnosis and Remedies
   A. Check fuel level in chamber — Should be 4 oz. to 5 oz. (Para. No. 1 - No. 2 - System Calibration)
   B. Recheck vacuum settings (Para. No. 1 - No. 2 System Calibration)
   C. Check emissions for carburetor setting
3. Excessive Hydrocarbons (HC)
   A. Incorrect timing
   B. Incorrect dwell
   C. Bad ignition points
   D. [illegible] spark plugs or S/P wires
   E. [illegible] usually indicated by very [illegible] reading and high HC reading,

4. Excessive Carbon Monoxide Readings (CO)
   A. Idle speed incorrect - check manufacturer's specifications and adjust accordingly
   B. Dirty air cleaner or restriction in air flow system
   C. Choke not operating properly
   D. PCV system not operating properly (replace PCV valve - normal life is 10,000 miles or per manufacturer's specs)
   E. To improve air/fuel ratio, reset idle mixture screws after above checks

5. Engine Surging or Racing at Idle (Wavering CO)
   A. Check carburetor float level or valve and seat condition.
   B. Check fuel filter in gas line to carburetor

6. Misfire (Wavering HC)
   A. Check engine ignition wiring
   B. Check distributor cap
   C. Check coil wire for oil on connector
   D. Check dwell
   E. Check points

NOTICE

The installation instructions contained in this manual must be strictly followed in order to avoid a change in automotive emissions to a level in excess of that permitted by the Environmental Protection Agency and to allow maximum performance by the **AUTO-MISER** unit.

The recommended procedures of the automobile manufactureremust be followed with respect to carburetor and timing adjustments in order to achieve optimum benefit of the **AUTO-MISER** unit and to avoid potential voiding of the automobile manufacturer's warranty.

INSTALLATION OF ANY AUTO-MISER UNIT BY OTHER THAN AN AUTHORIZED AUTO-MISER DEALER IS NOT RECOMMENDED. INCORRECT INSTALLATION MAY VOID MANUFACTURER'S WARRANTY. REFER TO STATEMENT OF LIMITED WARRANTY PROVIDED TO BUYER FOR COMPLETE STATEMENT OF WARRANTY AND LIMITATION OF MANUFACTURER'S LIABILITY.

LIMITED WARRANTY

AUTO-MISER INTERNATIONAL MANUFACTURING CORPORATION ("Auto-Miser"), warrants to the Buyer that the Auto-Miser unit purchased by Buyer is free of defects in workmanship and material for a period of ninety (90) days from the date of installation by an authorized Auto-Miser dealer. If the Auto-Miser unit purchased by Buyer is defective, Buyer may return the unit, with this Warranty, to Buyer's nearest authorized Auto-Miser dealer for replacement or repair, at Auto-Miser's election. Buyer shall be responsible for all labor charges in the replacement of the Auto-Miser unit.

THERE ARE NO WARRANTIES OTHER THAN AS EXPRESSLY SET FORTH HEREIN. ALL OTHER WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS OR ANY PARTICULAR PURPOSE, ARE HEREBY EXCLUDED, AND, IN NO EVENT, SHALL ANY WARRANTY EXTEND BEYOND THE NINETY (90) DAY PERIOD STATED. AUTO-MISER SHALL, IN NO EVENT, BE LIABLE FOR ANY DAMAGES, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL, INCIDENTAL OR OTHERWISE. AUTO-MISER'S WARRANTY HEREUNDER SHALL NOT APPLY TO DAMAGE OR DEFICIENCIES RESULTING FROM ACCIDENT, ALTERATION, MISUSE, TAMPERING, NEGLIGENCE OR ABUSE.

THIS WARRANTY IS NOT TRANSFERABLE TO ANY OTHER PERSON AND SHALL APPLY ONLY TO THE VEHICLE ON WHICH THE AUTO-MISER UNIT COVERED HEREBY IS ORIGINALLY INSTALLED BY AN AUTHORIZED AUTO-MISER INSTALLATION AGENT.

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ATTACHMENT 4

SUMMARY OF TEST RESULTS

SUMMARY OF CVS-CH/HFET TEST RESULTS

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No. 05 - 1977 Chevette

Test Number	01	02	03	04	05
Test Date	6-14-79	6-15-79	6-21-79	6-22-79	6-29-79
Odometer	11,336.3	11,380.4	11,444.5	11,492.6	11,609.1
Phase I					
HC - Grams/Phase	5.177	5.140	3.976	4.650	4.494
CO - Grams/Phase	38.205	41.395	31.004	33.386	44.981
NOx - Grams/Phase	8.924	7.937	7.370	7.933	7.829
CO2 - Grams/Phase	1058.417	1093.045	1035.472	1099.264	1082.198
Fuel Economy	28.035	27.032	28.921	26.995	26.964
Phase II					
HC - Grams/Phase	1.453	1.746	1.235	0.910	1.022
CO - Grams/Phase	23.980	22.641	19.702	15.288	18.063
NOx - Grams/Phase	8.103	6.981	8.373	7.015	8.578
CO2 - Grams/Phase	1224.056	1224.968	1271.935	1260.166	1239.571
Fuel Economy	27.314	27.548	26.433	26.505	26.773
Phase III					
HC - Grams/Phase	2.084	1.515	1.300	1.071	1.608
CO - Grams/Phase	19.893	14.241	14.475	13.407	20.879
NOx - Grams/Phase	8.384	7.881	6.979	7.988	6.952
CO2 - Grams/Phase	979.229	1006.444	950.253	994.321	992.859
Fuel Economy	31.184	31.153	32.600	30.931	30.553
Weighted Emissions					
HC - Grams/Mile	.650	.638	.493	.476	.524
CO - Grams/Mile	6.916	6.427	5.520	5.040	6.674
NOx - Grams/Mile	2.235	1.970	2.075	2.024	2.153
CO2 - Grams/Mile	299.037	300.197	301.958	310.800	307.375
Fuel Economy					
Carbon Balance (W)	28.43	28.39	28.41	27.69	27.75
Carbon Balance (NW)	28.70	28.54	29.02	27.97	27.96
HFET - Weighted					
HC - Grams/Mile	.126	.153	.051	.052	.056
CO - Grams/Mile	3.400	4.228	.734	.766	1.774
CO2 - Grams/Mile	224.457	226.752	230.647	247.513	225.808
Fuel Economy					
Carbon Balance (W)	38.52	37.92	38.23	35.63	38.76

Comments: Tests 01 and 02 - Baseline - Tests 03, 04, and 05 - Device Installed.

SUMMARY OF CVS-CH/HFET TEST RESULTS

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No. 05 - 1977 Chevette

Test Number	08	10	11	12
Test Date	7-02-79	7-05-79	7-06-79	7-07-79
Odometer	11,678.8	11,717.8	11,770.2	11,800.2
Phase I				
HC - Grams/Phase	5.236	6.502	6.997	8.334
CO - Grams/Phase	34.885	37.089	47.279	38.085
NOx - Grams/Phase	6.845	6.349	6.096	6.820
CO2 - Grams/Phase	1046.720	1046.731	1063.444	1095.991
Fuel Economy	28.159	27.849	27.275	26.715
Phase II				
HC - Grams/Phase	.850	.894	1.676	1.282
CO - Grams/Phase	16.545	15.723	21.720	17.927
NOx - Grams/Phase	6.813	6.115	4.956	5.229
CO2 - Grams/Phase	1192.437	1233.944	1176.427	1179.180
Fuel Economy	28.033	27.211	28.072	28.044
Phase III				
HC - Grams/Phase	1.344	1.184	1.259	1.171
CO - Grams/Phase	20.885	17.306	19.216	17.011
NOx - Grams/Phase	5.684	5.936	5.442	4.658
CO2 - Grams/Phase	972.159	989.448	965.195	970.190
Fuel Economy	31.197	31.027	31.684	31.595
Weighted Emissions				
HC - Grams/Mile	.522	.589	.728	.748
CO - Grams/Mile	5.863	5.597	7.145	5.951
NOx - Grams/Mile	1.754	1.647	1.440	1.463
CO2 - Grams/Mile	296.427	302.743	294.396	297.994
Fuel Economy				
Carbon Balance (W)	28.86	28.30	28.80	28.63
Carbon Balance (NW)	29.03	28.57	28.87	28.63
HFET - Weighted				
HC - Grams/Mile	.050	.060	.051	.114
CO - Grams/Mile	1.611	1.923	2.260	3.866
CO2 - Grams/Mile	223.914	226.899	224.394	230.446
Fuel Economy				
Carbon Balance (W)	39.14	38.54	38.88	37.44

Comments: Tests 08 and 10 - Device Installed; Tests 11 and 12 - Device Removed.

SUMMARY OF CVS-CH/HFET TEST RESULTS

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 790912

Vehicle No. 33 - 1979 Ford Pinto

Test Number	01	02	03	04
Test Date	6-15-79	6-16-79	6-20-79	6-21-79
Odometer	7,377.4	7,419.0	7,470.4	7,517.5
Phase I				
HC - Grams/Phase	5,047	4.871	4.170	3.881
CO - Grams/Phase	45.596	52.624	42.202	57.162
NOx - Grams/Phase	9.318	8.470	9.069	8.486
CO2 - Grams/Phase	1623.063	1605.610	1602.161	1541.354
Fuel Economy	18.458	18.596	18.893	19.285
Phase II				
HC - Grams/Phase	2.145	2.084	0.775	0.619
CO - Grams/Phase	46.818	47.772	15.010	16.355
NOx - Grams/Phase	4.846	4.552	4.911	5.003
CO2 - Grams/Phase	1618.620	1642.776	1642.098	1609.818
Fuel Economy	20.094	19.780	20.518	20.889
Phase III				
HC - Grams/Phase	2.124	1.919	1.337	1.703
CO - Grams/Phase	22.467	16.670	14.569	24.461
NOx - Grams/Phase	8.665	7.988	8.528	8.506
CO2 - Grams/Phase	1413.181	1422.815	1409.306	1380.213
Fuel Economy	21.665	21.717	21.983	22.249
Weighted Emissions				
HC - Grams/Mile	0.746	0.711	0.448	0.438
CO - Grams/Mile	10.696	10.999	5.589	7.385
NOx - Grams/Mile	1.862	1.718	1.840	1.817
CO2 - Grams/Mile	421.480	423.733	421.825	411.735
Fuel Economy				
Carbon Balance (W)	20.12	20.01	20.53	20.88
Carbon Balance (NW)	19.99	19.95	20.39	20.74
HFET - Weighted				
HC - Grams/Mile	.089	.085	.073	.068
CO - Grams/Mile	.954	.865	.640	.812
CO2 - Grams/Mile	326.643	321.132	326.917	317.651
Fuel Economy				
Carbon Balance (W)	27.00	27.48	27.03	27.79

Comments: Tests 01 and 02 - Baseline; Tests 03 and 04 - Device Installed.

SUMMARY OF CVS-CH/HFET TEST RESULTS

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No. 73 - 1979 Ford Fairmont

Test Number	01	02	03	04	05	06
Test Date	6-14-79	6-15-79	6-20-79	6-21-79	6-25-79	6-26-79
Odometer	429.6	483.0	528.2	565.0	618.3	649.0
Phase I						
HC - Grams/Phase	7.136	10.319	7.709	6.992	5.730	5.878
CO - Grams/Phase	55.830	57.444	46.414	43.547	50.176	53.956
NOx - Grams/Phase	4.163	5.010	4.219	4.347	3.965	4.024
CO2 - Grams/Phase	2109.797	2187.049	2095.794	2119.921	2194.649	2137.138
Fuel Economy	14.295	13.829	14.402	14.279	13.540	14.093
Phase II						
HC - Grams/Phase	3.652	3.921	1.707	1.232	0.903	0.743
CO - Grams/Phase	1.618	1.804	0.714	0.308	3.169	0.920
NOx - Grams/Phase	5.287	5.939	5.855	6.149	4.984	5.532
CO2 - Grams/Phase	2232.680	2224.248	2227.621	2228.286	2291.037	2221.173
Fuel Economy	15.187	15.323	15.181	15.182	14.900	15.209
Phase III						
HC - Grams/Phase	6.540	5.246	3.512	2.699	2.323	2.144
CO - Grams/Phase	12.499	9.448	13.925	11.924	9.463	9.575
NOx - Grams/Phase	5.851	5.711	5.384	5.376	4.872	4.639
CO2 - Grams/Phase	1817.090	1855.191	1806.490	1841.964	1850.734	1832.746
Fuel Economy	17.129	16.880	17.168	16.891	16.957	16.961
Weighted Emissions						
HC - Grams/Mile	1.406	1.520	0.951	0.783	0.634	0.609
CO - Grams/Mile	4.409	4.269	3.856	3.499	4.083	4.011
NOx - Grams/Mile	1.401	1.520	1.454	1.501	1.277	1.344
CO2 - Grams/Mile	561.899	565.543	563.059	567.552	579.163	567.895
Fuel Economy						
Carbon Balance (W)	15.47	15.37	15.50	15.41	15.09	15.39
Carbon Balance (NW)	15.44	15.24	15.49	15.37	15.01	15.33
HFET - Weighted						
HC - Grams/Mile	.158	.413	.274	.185	.168	.134
CO - Grams/Mile	.171	.221	.152	.221	.519	.144
CO2 - Grams/Mile	435.803	413.918	411.204	399.646	407.832	406.908
Fuel Economy						
Carbon Balance (W)	21.59	21.34	21.51	22.14	21.67	21.76

Comments: Tests 01 and 02 - Baseline; Tests 03 and 04 - Device Installed; Tests 05 and 06 - Device Removed.

CATALYTIC CONVERTER EFFICIENCY TEST RESULTS

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 05 (Chevrolet/Chevette)* Driver: C. Jackel

Test Date: June 14, 1979 Technician: K. Bartholomew

	Before	After	% Efficiency
50 MPH			
CO (%) High	.40	.02	95
HC (ppm) X50	2710.00	470.00	83
NOx (ppm) 1000	172.50	125.00	28
30 MPH			
CO (%) High	.15	.00	100
HC (ppm) X50	2040.00	200.00	90
NOx (ppm) 1000	230.00	192.00	17
IDLE			
CO (%) High	.35	.00	100
HC (ppm) X50	1905.00	255.00	87
NOx (ppm) 1000	70.00	56.00	20

*Baseline

CATALYTIC CONVERTER EFFICIENCY TEST RESULTS

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 05 (Chevrolet/Chevette)* Driver: Bill Martinez

Test Date: June 21, 1979** Technician: Lonnie Arnold

	Before	After	% Efficiency
50 MPH			
CO (%) High	.25	.05	80
HC (ppm) X50	2175.00	220.00	90
NOx (ppm) 1000	117.00	127.50	-09
30 MPH			
CO (%) High	.10	.02	80
HC (ppm) X50	1585.00	110.00	93
NOx (ppm) 1000	206.00	800.00	-13
IDLE			
CO (%) High	.10	.00	100
HC (ppm) X50	3050.00	150.00	95
NOx (ppm) 1000	98.00	135.00	-38

*Device installed

**This test was run immediately after test 05-03 and prior to the repairs that are mentioned in item no. 9 in the Testing Series Section for this vehicle. No converter efficiency tests were conducted after these repairs were made.

CATALYTIC CONVERTER EFFICIENCY TEST RESULTS

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 33 (Ford/Pinto)* Driver: C. Jackel

Test Date: June 15, 1979 Technician: K. Bartholomew

	Before	After	% Efficiency
50 MPH			
CO (%) High	.15	.00	100
HC (ppm) X50	1290.00	70.00	95
NOx (ppm) 1000	305.00	347.00	-14
30 MPH			
CO (%) High	.60	.15	75
HC (ppm) X50	2170.00	155.00	93
NOx (ppm) 2500	169.75	102.50	40
IDLE			
CO (%) High	1.60	.70	56
HC (ppm) X50	1770.00	750.00	58
NOx (ppm) 1000	109.00	83.00	24

*Baseline

CATALYTIC CONVERTER EFFICIENCY TEST RESULTS

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 33 (Ford/Pinto)* Driver: C. Jackel

Test Date: June 20, 1979 Technician: C. VanTassel

	Before	After	% Efficiency
50 MPH			
CO (%) High	.14	.01	93
HC (ppm) X50	1340.00	95.00	93
NOx (ppm) 1000	299.00	333.00	-11
30 MPH			
CO (%) High	1.00	.25	75
HC (ppm) X50	2395.00	245.00	90
NOx (ppm) 2500	128.00	74.75	42
IDLE			
CO (%) High	.04	.01	98
HC (ppm) X50	2205.00	145.00	93
NOx (ppm) 1000	107.00	113.00	-06

*Device installed

CATALYTIC CONVERTER EFFICIENCY TEST RESULTS

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 73 (Ford/Fairmont)* Driver: Bill Martinez

Test Date: June 14, 1979 Technician: Jerry Jelinek

	Before	After	% Efficiency
50 MPH			
CO (%) High	.04	.001	98
HC (ppm) X50	3450.00	2290.000	34
NOx (ppm) 1000	329.00	369.000	-12
30 MPH			
CO (%) High	.10	.003	97
HC (ppm) X50	2625.00	930.000	65
NOx (ppm) 1000	448.00	397.000	11
IDLE			
CO (%) High	.45	.000	100
HC (ppm) X50	3050.00	875.000	71
NOx (ppm) 1000	350.00	400.000	-14

*Baseline

CATALYTIC CONVERTER EFFICIENCY TEST RESULTS

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 73 (Ford/Fairmont)* Driver: Bill Martinez

Test Date: June 20, 1979 Technician: Lonnie Arnold

	Before	After	% Efficiency
50 MPH			
CO (%) High	.12	.005	96
HC (ppm) X50	3000.00	625.000	79
NOx (ppm) 1000	266.00	206.000	-15
30 MPH			
CO (%) High	.11	.002	98
HC (ppm) X50	6675.00	340.000	95
NOx (ppm) 1000	290.00	305.000	-05
IDLE			
CO (%) High	.50	.001	99
HC (ppm) X50	3000.00	475.000	84
NOx (ppm) 1000	380.000	310.000	18

*Device installed

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	01	TEST DATE:	6-14-79
PROJECT:	790912	REPT DATE:	6-15-79
VEHICLE:	05	ODOMETER:	11336.3

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	73.98 97.33	72.63 102.28
MIXTURE TEMP(PTI)	104.50	104.50
BAROMETER IN-HG(Pb)	29.13	29.12

CVS DATA

	--PHASE 1--	--PHASE 2--	--PHASE 3--
PRESSURES:			
INLET/OUTLET	12.95 3.45	12.95 3.45	12.95 3.45
BLOWER REVOLUTIONS	10004	17223	10020
VO(CU.FT./REV.)	0.295584	0.295584	0.295579
VMIX (CU.FT.)	2539.93	4372.77	2543.39
ZN(RPM)	1188.24	1188.24	1188.24
%O	0.000215	0.000215	0.000215
MILES/BAG	3.588	3.900	3.577

ANALYTICAL DATA

HCE/HCD (PPM)	133.50	9.32	26.73	6.69	56.56	6.79
COEM/CODM(PPM)	477.67	2.53	173.70	1.37	247.77	1.09
NOXE/NOXD(PPM)	58.90	0.90	31.10	0.50	54.00	1.00
CO2E/CO2D (%)	0.84	0.04	0.58	0.04	0.78	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	5.177	1.453	2.084
CO (GRAMS/TEST PHASE)	38.205	23.980	19.893
NOX (GRAMS/TEST PHASE)	8.924	8.103	8.384
CO2 (GRAMS/TEST PHASE)	1058.417	1224.056	979.229
FUEL ECONOMY (MPG)	28.035	27.314	31.184

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 01 TEST DATE: 6-14-79

PROJECT: 790912 REPT DATE: 6-15-79

VEHICLE: 05 ODOMETER :11336.3

VEHICLE DATA

VEHICLE MAKE: CHEVROLET

MODEL YEAR/MODEL: 1977 CHEVETTE

VEHICLE I.D. NUMBER: 1B08E7Y155251

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 2250 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS		1978 EPA STANDARDS
HC:	0.650 GRAMS/MILE	HC:	1.5 GRAMS/MILE
CO:	6.916 GRAMS/MILE	CO:	15.0 GRAMS/MILE
NOX:	2.235 GRAMS/MILE	NOX:	2.0 GRAMS/MILE

CO2: 299.037 GRAMS/MILE

URBAN FUEL ECONOMY: 28.43 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION:

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 01 Test Date: 6-14-79

Project: 790912 Report Date: 6-15-79

Vehicle: 05 Mileage: 11347.5

Test Data

Blower Revolutions: 15134

Barometer (corr) : 29.12

Blower Pressures:
inlet/outlet 12.95 3.45

Mixture Temperature: 105.0

Humidity (Relative): 74.30%

Roll Revolutions: 23777.00

Analytical Data

Hydrocarbons (exhaust): 27.4 PPM

Hydrocarbons (background): 7.6 PPM

Carbon Monoxide (exhaust): 291.1 PPM

Carbon Monoxide (background): 3.8 PPM

Carbon Dioxide (exhaust): 1.1850 %

Carbon Dioxide (background): 0.0380 %

Test Results (grams/mile)

HC: 0.126

CO: 3.400

CO2: 224.457

Calculated Fuel Economy: 38.52 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	02	TEST DATE:	6-15-79
PROJECT:	790912	REPT DATE:	7-08-79
VEHICLE:	05	ODOMETER:	11380.4

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	53.12 70.53	55.71 77.64
MIXTURE TEMP(PTI)	104.50	105.00
BAROMETER IN-HG(Pb)	29.17	29.27

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	12.95 3.40	12.95 3.40	12.95 3.40
BLOWER REVOLUTIONS	9993	17169	9979
VO(CU.FT./REV.)	0.295665	0.295665	0.295738
VMIX (CU.FT.)	2542.06	4367.53	2545.39
ZN(RPM)	1188.32	1188.32	1188.32
XO	0.000215	0.000215	0.000215
MILES/BAG	3.616	3.933	3.631

ANALYTICAL DATA

HCE/HCD (PPM)	132.48	9.32	31.84	7.70	43.29	7.29
COEM/CODM(PPM)	514.85	3.78	164.20	2.46	177.39	1.91
NOXE/NOXD(PPM)	59.70	0.90	30.80	0.70	57.40	1.00
CO2E/CO2D (%)	0.87	0.05	0.58	0.04	0.80	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	5.140	1.746	1.515
CO (GRAMS/TEST PHASE)	41.395	22.641	14.241
NOX (GRAMS/TEST PHASE)	7.937	6.981	7.881
CO2 (GRAMS/TEST PHASE)	1093.045	1224.968	1006.444
FUEL ECONOMY (MPG)	27.302	27.548	31.153

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 02 TEST DATE: 6-15-79

PROJECT: 790912 REPT DATE: 7-08-79

VEHICLE: 05 ODOMETER :11380.4

VEHICLE DATA

VEHICLE MAKE: CHEVROLET

MODEL YEAR/MODEL: 1977 CHEVETTE

VEHICLE I.D. NUMBER: 1B08E7Y155251

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 2250 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.638 GRAMS/MILE	HC: 1.5 GRAMS/MILE
CO:	6.427 GRAMS/MILE	CO: 15.0 GRAMS/MILE
NOX:	1.970 GRAMS/MILE	NOX: 2.0 GRAMS/MILE

CO2: 300.197 GRAMS/MILE

URBAN FUEL ECONOMY: 28.39 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION: _____

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 02

Project: 790912

Vehicle: 05

Test Date: 6/15/79

Report Date: 06/18/79

Mileage: 11380.4

Test Data

Blower Revolutions: 15120

Barometer (corr) : 29.27

Blower Pressures:
inlet/outlet 12.00 3.40

Mixture Temperature: 105.0

Humidity (Relative): 55.17%

Roll Revolutions: 23758.00

Analytical Data

Hydrocarbons (exhaust): 30.5 PPM

Hydrocarbons (background): 6.6 PPM

Carbon Monoxide (exhaust): 351.5 PPM

Carbon Monoxide (background): 1.9 PPM

Carbon Dioxide (exhaust): 1.1850 %

Carbon Dioxide (background): 0.0450 %

Test Results (grams/mile)

HC: 0.153

CO: 4.228

CO2: 226.752

Calculated Fuel Economy: 37.92 MPG

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 03
PROJECT: 790912
VEHICLE: 05

TEST DATE: 6-21-79
REPT DATE: 7-03-79
ODOMETER: 11444.5

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	75.18 113.27	67.41 99.60
MIXTURE TEMP(PTI)	105.00	109.00
BAROMETER IN-HG(Pb)	29.15	29.15

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES: INLET/OUTLET	13.70 3.40	13.70 3.40	13.70 3.40
BLOWER REVOLUTIONS	10009	17209	9999
VO(CU.FT./REV.)	0.294407	0.294407	0.294405
VMIX (CU.FT.)	2522.31	4336.75	2501.81
ZN(RPM)	1186.27	1186.27	1186.27
KO	0.000221	0.000221	0.000221
MILES/BAG	3.577	3.895	3.592

ANALYTICAL DATA

HCE/HCD (PPM)	104.77	8.82	23.72	6.59	38.41	6.99
COEM/CODM(PPM)	389.67	1.26	144.50	1.64	182.95	0.82
NOXE/NOXD(PPM)	44.90	0.70	30.00	0.80	46.40	0.90
CO2E/CO2D (%)	0.83	0.04	0.60	0.04	0.77	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	3.976	1.235	1.300
CO (GRAMS/TEST PHASE)	31.004	19.702	14.475
NOX (GRAMS/TEST PHASE)	7.370	8.373	6.979
CO2 (GRAMS/TEST PHASE)	1035.472	1271.935	950.253
FUEL ECONOMY (MPG)	28.921	26.433	32.600

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 03

PROJECT: 790912

VEHICLE: 05

TEST DATE: 6-21-79

REPT DATE: 7-08-79

ODOMETER :11444.5

VEHICLE DATA

VEHICLE MAKE: CHEVROLET

MODEL YEAR/MODEL: 1977 CHEVETTE

VEHICLE I.D. NUMBER: 1B08E7Y155251

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 2250 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.493 GRAMS/MILE	1.5 GRAMS/MILE
CO:	5.520 GRAMS/MILE	15.0 GRAMS/MILE
NOX:	2.075 GRAMS/MILE	2.0 GRAMS/MILE

CO2: 301.958 GRAMS/MILE

URBAN FUEL ECONOMY: 28.41 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION:

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 03 Test Date: 6-21-79

Project: 790912 Report Date: 6-21-79

Vehicle: 05 Mileage: 11464.6

Test Data

Blower Revolutions: 15156

Barometer (corr) : 29.14

Blower Pressures:
inlet/outlet 13.70 3.40

Mixture Temperature: 109.5

Humidity (Relative): 67.41%

Roll Revolutions: 23697.00

Analytical Data

Hydrocarbons (exhaust): 13.9 PPM

Hydrocarbons (background): 6.1 PPM

Carbon Monoxide (exhaust): 65.4 PPM

Carbon Monoxide (background): 3.0 PPM

Carbon Dioxide (exhaust): 1.2400 %

Carbon Dioxide (background): 0.0510 %

Test Results (grams/mile)

HC: 0.051

CO: 0.734

CO2: 230.647

Calculated Fuel Economy: 38.23 MPG

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 04

PROJECT: 790912

VEHICLE: 05

TEST DATE: 6-22-79

REPT DATE: 7-06-79

ODOMETER :11482.6

VEHICLE DATA

VEHICLE MAKE: CHEVROLET

MODEL YEAR/MODEL: 1979 CHEVETTE

VEHICLE I.D. NUMBER: 1B08E7Y15525

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 2250 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.476 GRAMS/MILE	1.5 GRAMS/MILE
CO:	5.040 GRAMS/MILE	15.0 GRAMS/MILE
NOX:	2.024 GRAMS/MILE	2.0 GRAMS/MILE

CO2: 310.800 GRAMS/MILE

URBAN FUEL ECONOMY: 27.69 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION:

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	04	TEST DATE:	6-22-79
PROJECT:	790912	REPT DATE:	7-06-79
VEHICLE:	05	ODOMETER:	11492.6

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	73.98 97.41	69.77 90.19
MIXTURE TEMP(PTI)	105.50	105.50
BAROMETER IN-HG(Pb)	29.11	29.11

CVS DATA

	PHASE 1		PHASE 2		PHASE 3	
PRESSURES:						
INLET/OUTLET	13.60	3.35	13.60	3.35	13.60	3.35
BLOWER REVOLUTIONS	10120		17159		9970	
VQ(CU.FT./REV.)	0.294577		0.294577		0.294577	
VMIX (CU.FT.)	2546.31		4317.41		2508.57	
ZN(RPM)	1186.62		1186.62		1186.62	
XO	0.000220		0.000220		0.000220	
MILES/BAG	3.551		3.847		3.553	

ANALYTICAL DATA

HCE/HCD (PPM)	123.27	12.29	24.13	11.76	36.43	10.94
COEM/CODM(PPM)	416.89	2.52	112.94	1.64	170.32	1.91
NOXE/NOXD(PPM)	52.30	0.90	27.70	0.90	56.00	1.50
CO2E/CO2D (%)	0.87	0.04	0.60	0.04	0.80	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	4.650	0.910	1.071
CO (GRAMS/TEST PHASE)	33.386	15.288	13.407
NOX (GRAMS/TEST PHASE)	7.933	7.015	7.988
CO2 (GRAMS/TEST PHASE)	1099.264	1260.166	994.321
FUEL ECONOMY (MPG)	26.995	26.505	30.931

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 04 Test Date: 6-22-79

Project: 790912 Report Date: 6-22-79

Vehicle: 05 Mileage: 11492.6

Test Data

Blower Revolutions: 15081

Barometer (corr) : 29.11

Blower Pressures:
inlet/outlet 6.60 1.55

Mixture Temperature: 105.0

Humidity (Relative): 62.16%

Roll Revolutions: 23723.00

Analytical Data

Hydrocarbons (exhaust): 14.4 ppm

Hydrocarbons (background): 7.3 ppm

Carbon Monoxide (exhaust): 62.2 ppm

Carbon Monoxide (background): 2.5 ppm

Carbon Dioxide (exhaust): 1.2140 %

Carbon Dioxide (background): 0.0400 %

Test Results (grams/mile)

HC: 0.052

CO: 0.766

CO2: 247.513

Calculated Fuel Economy: 35.63 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	05	TEST DATE:	6-29-79
PROJECT:	790912	REPT DATE:	6-29-79
VEHICLE:	05	ODOMETER:	11609.1

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	68.55 94.78	62.12 93.26
MIXTURE TEMP(PTI)	105.00	105.00
BAROMETER IN-HG(Pb)	29.13	29.13

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	14.60 3.30	14.60 3.30	14.60 3.30
BLOWER REVOLUTIONS	9955	17113	9930
VO(CU.FT./REV.)	0.293009	0.293009	0.293009
VMIX (CU.FT.)	2483.73	4269.63	2477.50
ZN(RPM)	1183.98	1183.98	1183.98
XO	0.000227	0.000227	0.000227
MILES/BAG	3.549	3.838	3.551

ANALYTICAL DATA

HCE/HCD (PPM)	118.57	8.38	21.05	6.70	45.56	6.21
COEM/CODM(PPM)	575.25	3.78	137.00	4.36	266.29	1.26
NOXE/NOXD(PPM)	54.00	1.30	34.60	1.00	48.30	1.00
CO2E/CO2D (%)	0.88	0.05	0.60	0.04	0.82	0.05

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	4.494	1.022	1.608
CO (GRAMS/TEST PHASE)	44.981	18.063	20.879
NOX (GRAMS/TEST PHASE)	7.829	8.578	6.952
CO2 (GRAMS/TEST PHASE)	1082.198	1239.571	992.859
FUEL ECONOMY (MPG)	26.964	26.773	30.553

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 05 TEST DATE: 6-29-79

PROJECT: 790912 REPT DATE: 6-29-79

VEHICLE: 05 ODOMETER :11609.1

VEHICLE DATA

VEHICLE MAKE: CHEVROLET

MODEL YEAR/MODEL: 1977 CHEVETTE

VEHICLE I.D. NUMBER: 1B08E7115525

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 2250 POUNDS

WEIGHTED MASS EMISSIONS

TEST RESULTS		1978 EPA STANDARDS	
HC:	0.524 GRAMS/MILE	HC:	1.5 GRAMS/MILE
CO:	6.674 GRAMS/MILE	CO:	15.0 GRAMS/MILE
NOX:	2.153 GRAMS/MILE	NOX:	2.0 GRAMS/MILE

CO2: 307.375 GRAMS/MILE

URBAN FUEL ECONOMY: 27.75 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION: _____

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 HIGHWAY FUEL ECONOMY TEST

TEST NO: 05 TEST DATE: 6-29-79

PROJECT: 790912 REPORT DATE: 6-29-79

VEHICLE: 05 MILEAGE: 11609.1

TEST DATA

BLOWER REVOLUTIONS: 15043

BAROMETER (corr) : 29.10

BLOWER PRESSURES:
inlet/outlet 14.75 3.30

MIXTURE TEMPERATURE: 104.5

HUMIDITY (Relative): 56.82%

ROLL REVOLUTIONS: 23674.00

ANALYTICAL DATA

HYDROCARBONS (exhaust): 15.0 PPM

HYDROCARBONS (background): 6.2 PPM

CARBON MONOXIDE (exhaust): 159.8 PPM

CARBON MONOXIDE (background): 8.2 PPM

CARBON DIOXIDE (exhaust): 1.2230 %

CARBON DIOXIDE (background): 0.0470 %

TEST RESULTS (GRAMS/MILE)

HC: 0.056

CO: 1.774

CO2: 225.808

CALCULATED FUEL ECONOMY: 38.76 MPG

COMMENTS:

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	08	TEST DATE:	7-02-79
PROJECT:	790912	REPT DATE:	7-02-79
VEHICLE:	05	ODOMETER:	11678.8

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	59.99 83.47	51.91 74.25
MIXTURE TEMP(PTI)	105.00	105.00
BAROMETER IN-HG(Pb)	28.96	28.97

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	15.00 3.43	15.00 3.43	15.00 3.43
BLOWER REVOLUTIONS	10129	17088	9959
VO(CU.FT./REV.)	0.292118	0.292118	0.292124
VMIX (CU.FT.)	2499.41	4216.59	2458.18
ZN(RPM)	1182.69	1182.69	1182.69
XO	0.000231	0.000231	0.000231
MILES/BAG	3.550	3.860	3.550

ANALYTICAL DATA

HCE/HCD (PPM)	137.47	9.86	18.09	6.02	38.12	4.95
COEM/CODM(PPM)	439.57	0.63	124.11	1.36	268.07	1.89
NOXE/NOXD(PPM)	49.30	0.80	29.60	1.00	43.50	0.70
CO2E/CO2D (%)	0.85	0.04	0.60	0.05	0.80	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	5.236	0.850	1.344
CO (GRAMS/TEST PHASE)	34.885	16.545	20.885
NOX (GRAMS/TEST PHASE)	6.845	6.813	5.684
CO2 (GRAMS/TEST PHASE)	1046.720	1192.437	972.159
FUEL ECONOMY (MPG)	28.159	28.033	31.197

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 08 TEST DATE: 7-02-79

PROJECT: 790912 REPT DATE: 7-02-79

VEHICLE: 05 ODOMETER :11678.8

VEHICLE DATA

VEHICLE MAKE: CHEVROLET

MODEL YEAR/MODEL: 1977 CHEVETTE

VEHICLE I.D. NUMBER: 1B08E74155251

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 2250 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.522 GRAMS/MILE	HC: 1.5 GRAMS/MILE
CO:	5.863 GRAMS/MILE	CO: 15.0 GRAMS/MILE
NOX:	1.754 GRAMS/MILE	NOX: 2.0 GRAMS/MILE

CO2: 296.427 GRAMS/MILE

URBAN FUEL ECONOMY: 28.86 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION:

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 HIGHWAY FUEL ECONOMY TEST

TEST NO: 08

PROJECT: 790912

VEHICLE: 05

TEST DATE: 7-02-79

REPORT DATE: 7-02-79

MILEAGE:

TEST DATA

BLOWER REVOLUTIONS: 15069

BAROMETER (corr) : 28.98

BLOWER PRESSURES:
inlet/outlet 15.00 3.43

MIXTURE TEMPERATURE: 105.0

HUMIDITY (Relative): 52.02%

ROLL REVOLUTIONS: 23727.00

ANALYTICAL DATA

HYDROCARBONS (exhaust): 14.1 ppm

HYDROCARBONS (background): 6.4 ppm

CARBON MONOXIDE (exhaust): 142.0 ppm

CARBON MONOXIDE (background): 3.0 ppm

CARBON DIOXIDE (exhaust): 1.2210 %

CARBON DIOXIDE (background): 0.0440 %

TEST RESULTS (GRAMS/MILE)

HC: 0.050

CO: 1.611

CO2: 223.914

CALCULATED FUEL ECONOMY: 39.14 MPG

COMMENTS:

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	05	TEST DATE:	7-05-79
PROJECT:	790912	RPT DATE:	7-05-79
VEHICLE:	10	ODOMETER:	11717.8

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	60.02 77.45	56.54 74.13
MIXTURE TEMP(PTI)	104.50	104.50
BAROMETER IN-HG(Pb)	29.08	29.08

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	15.65 3.30	15.65 3.30	15.65 3.30
BLOWER REVOLUTIONS	10291	17182	9925
VO(CU.FT./REV.)	0.291298	0.291298	0.291298
VMIX (CU.FT.)	2537.46	4236.58	2447.22
ZN(RPM)	1181.12	1181.12	1181.12
XO	0.000235	0.000235	0.000235
MILES/BAG	3.535	3.871	3.570

ANALYTICAL DATA

HCE/HCD (PPM)	169.83	13.84	22.60	10.14	37.91	8.86
COEM/CODM(PPM)	462.71	3.15	117.99	1.90	224.45	2.52
NOXE/NOXD(PPM)	46.60	1.00	27.20	0.90	46.00	1.10
CO2E/CO2D (%)	0.85	0.05	0.60	0.04	0.82	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	6.502	0.894	1.184
CO (GRAMS/TEST PHASE)	37.089	15.723	17.306
NOX (GRAMS/TEST PHASE)	6.349	6.115	5.936
CO2 (GRAMS/TEST PHASE)	1046.731	1233.944	989.448
FUEL ECONOMY (MPG)	27.849	27.211	31.027

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 05 TEST DATE: 7-05-79

PROJECT: 790912 REPT DATE: 7-05-79

VEHICLE: 10 ODOMETER :11717.8

VEHICLE DATA

VEHICLE MAKE: CHEVROLET

MODEL YEAR/MODEL: 1977 CHEVETTE

VEHICLE I.D. NUMBER: 1B08E7Y155251

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 2250 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS		1978 EPA STANDARDS
HC:	0.589 GRAMS/MILE	HC:	1.5 GRAMS/MILE
CO:	5.597 GRAMS/MILE	CO:	15.0 GRAMS/MILE
NOX:	1.647 GRAMS/MILE	NOX:	2.0 GRAMS/MILE

CO2: 302.743 GRAMS/MILE

URBAN FUEL ECONOMY: 28.30 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION: _____

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 HIGHWAY FUEL ECONOMY TEST

TEST NO: 10 TEST DATE: 7-05-79

PROJECT: 790912 REPORT DATE: 7-05-79

VEHICLE: 05 MILEAGE: 11717.8

TEST DATA

BLOWER REVOLUTIONS: 15010

BAROMETER (corr) : 29.08

BLOWER PRESSURES:
inlet/outlet 15.65 3.30

MIXTURE TEMPERATURE: 104.5

HUMIDITY (Relative): 50.45%

ROLL REVOLUTIONS: 23804.00

ANALYTICAL DATA

HYDROCARBONS (exhaust): 16.7 ppm

HYDROCARBONS (background): 7.2 ppm

CARBON MONOXIDE (exhaust): 169.4 ppm

CARBON MONOXIDE (background): 1.9 ppm

CARBON DIOXIDE (exhaust): 1.2470 %

CARBON DIOXIDE (background): 0.0440 %

TEST RESULTS (GRAMS/MILE)

HC: 0.060

CO: 1.923

CO2: 226.899

CALCULATED FUEL ECONOMY: 38.54 MPG

COMMENTS:

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	11	TEST DATE:	7-06-79
PROJECT:	790912	REPT DATE:	7-06-79
VEHICLE:	05	ODOMETER:	11770.2

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	56.78 75.55	54.32 74.27
MIXTURE TEMP(PTI)	104.50	104.50
BAROMETER IN-HG(Pb)	29.14	29.12

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	13.40 3.35	13.40 3.35	13.40 3.35
BLOWER REVOLUTIONS	10239	17164	9987
VO(CU.FT./REV.)	0.294936	0.294936	0.294920
VMIX (CU.FT.)	2589.72	4341.25	2524.01
ZN(RPM)	1187.17	1187.17	1187.17
XO	0.000218	0.000218	0.000218
MILES/BAG	3.568	3.849	3.571

ANALYTICAL DATA

HCE/HCD (PPM)	178.83	14.34	34.77	11.63	39.80	9.85
COEM/CODM(PPM)	576.42	3.15	158.93	2.72	241.68	3.15
NOXE/NOXD(PPM)	44.00	0.70	21.50	0.50	40.70	0.80
CO2E/CO2D (%)	0.83	0.04	0.56	0.04	0.78	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	6.997	1.676	1.259
CO (GRAMS/TEST PHASE)	47.279	21.720	19.216
NOX (GRAMS/TEST PHASE)	6.096	4.956	5.442
CO2 (GRAMS/TEST PHASE)	1063.444	1176.427	965.195
FUEL ECONOMY (MPG)	27.275	28.072	31.684

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 11 TEST DATE: 7-06-79

PROJECT: 790912 REPT DATE: 7-06-79

VEHICLE: 05 ODOMETER :11770.2

VEHICLE DATA

VEHICLE MAKE: CHEVROLET

MODEL YEAR/MODEL: 1979 CHEVETTE

VEHICLE I.D. NUMBER: 1808E7X155251

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 2250 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS		1978 EPA STANDARDS
HC:	0.728 GRAMS/MILE	HC:	1.5 GRAMS/MILE
CO:	7.145 GRAMS/MILE	CO:	15.0 GRAMS/MILE
NOX:	1.440 GRAMS/MILE	NOX:	2.0 GRAMS/MILE

CO2: 294.396 GRAMS/MILE

URBAN FUEL ECONOMY: 28.80 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION: _____

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 HIGHWAY FUEL ECONOMY TEST

TEST NO: 11 TEST DATE: 7-06-79

PROJECT: 39013 REPORT DATE: 7-06-79

VEHICLE: 05 MILEAGE: 11770.2

TEST DATA

BLOWER REVOLUTIONS: 15126

BAROMETER (corr) : 29.12

BLOWER PRESSURES:
inlet/outlet 14.30 3.35

MIXTURE TEMPERATURE: 104.5

HUMIDITY (Relative): 64.69%

ROLL REVOLUTIONS: 23773.00

ANALYTICAL DATA

HYDROCARBONS (exhaust): 16.7 ppm

HYDROCARBONS (background): 9.1 ppm

CARBON MONOXIDE (exhaust): 194.8 ppm

CARBON MONOXIDE (background): 1.9 ppm

CARBON DIOXIDE (exhaust): 1.2050 %

CARBON DIOXIDE (background): 0.0440 %

TEST RESULTS (GRAMS/MILE)

HC: 0.051

CO: 2.260

CO2: 224.394

CALCULATED FUEL ECONOMY: 38.88 MPG

COMMENTS:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	12	TEST DATE:	7-07-79
PROJECT:	790912	REPT DATE:	7-08-79
VEHICLE:	05	ODOMETER:	11800.2

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	65.57 83.10	60.00 77.25
MIXTURE TEMP(PTI)	104.00	104.50
BAROMETER IN-HG(Pb)	29.15	29.14

CVS DATA

	PHASE 1		PHASE 2		PHASE 3	
PRESSURES:						
INLET/OUTLET	13.75	3.35	13.75	3.35	13.75	3.35
BLOWER REVOLUTIONS	10655		17180		10156	
VO(CU.FT./REV.)	0.294366		0.294366		0.294357	
VMIX (CU.FT.)	2688.47		4334.85		2559.29	
ZN(RPM)	1186.22		1186.22		1186.22	
XO	0.000221		0.000221		0.000221	
MILES/BAG	3.562		3.831		3.565	

ANALYTICAL DATA

HCE/HCD (PPM)	205.00	16.33	27.15	9.45	39.91	12.63
COEM/CODM(PPM)	447.93	1.89	131.42	1.90	211.73	3.15
NOXE/NOXD(PPM)	45.80	0.80	22.00	0.60	34.00	0.80
CO2E/CO2D (%)	0.82	0.03	0.56	0.04	0.77	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	8.334	1.282	1.171
CO (GRAMS/TEST PHASE)	38.085	17.927	17.011
NOX (GRAMS/TEST PHASE)	6.820	5.229	4.658
CO2 (GRAMS/TEST PHASE)	1095.991	1179.180	970.190
FUEL ECONOMY (MPG)	26.715	28.044	31.595

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 12 TEST DATE: 7-07-79

PROJECT: 790912 REPT DATE: 7-08-79

VEHICLE: 05 ODOMETER : 11800.2

VEHICLE DATA

VEHICLE MAKE: CHEVROLET

MODEL YEAR/MODEL: 1977 CHEVETTE

VEHICLE I.D. NUMBER: 1B08E7Y155251

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 2250 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS		1978 EPA STANDARDS
HC:	0.748 GRAMS/MILE	HC:	1.5 GRAMS/MILE
CO:	5.951 GRAMS/MILE	CO:	15.0 GRAMS/MILE
NOX:	1.463 GRAMS/MILE	NOX:	2.0 GRAMS/MILE

CO2: 297.994 GRAMS/MILE

URBAN FUEL ECONOMY: 28.63 MILES/GALLON

nw 2863

COMMENTS:

QUALITY CONTROL VERIFICATION: _____

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 HIGHWAY FUEL ECONOMY TEST

TEST NO: 12 TEST DATE: 7-07-79

PROJECT: 790912 REPORT DATE: 7-08-79

VEHICLE: 05 MILEAGE: 11800.2

TEST DATA

BLOWER REVOLUTIONS: 15128

BAROMETER (corr) : 29.14

BLOWER PRESSURES:
inlet/outlet 13.75 3.35

MIXTURE TEMPERATURE: 104.5

HUMIDITY (Relative): 52.54%

ROLL REVOLUTIONS: 23409.00

ANALYTICAL DATA

HYDROCARBONS (exhaust): 28.0 ppm

HYDROCARBONS (background): 10.6 ppm

CARBON MONOXIDE (exhaust): 322.9 ppm

CARBON MONOXIDE (background): 1.3 ppm

CARBON DIOXIDE (exhaust): 1.2050 %

CARBON DIOXIDE (background): 0.0380 %

TEST RESULTS (GRAMS/MILE)

HC: 0.114

CO: 3.866

CO2: 230.446

CALCULATED FUEL ECONOMY: 37.44 MPG

COMMENTS:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	01	TEST DATE:	6-15-79
PROJECT:	790912	REPT DATE:	7-08-79
VEHICLE:	33	ODOMETER:	7377.4

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	65.14 92.96	64.13 97.87
MIXTURE TEMP(PTI)	105.00	105.00
BAROMETER IN-HG(Pb)	29.16	29.15

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	12.90 3.45	12.90 3.45	12.90 3.45
BLOWER REVOLUTIONS	10014	17216	10020
VO(CU.FT./REV.)	0.295690	0.295690	0.295688
VMIX (CU.FT.)	2544.37	4374.26	2545.63
ZN(RPM)	1188.38	1188.38	1188.38
XO	0.000215	0.000215	0.000215
MILES/BAG	3.561	3.850	3.555

ANALYTICAL DATA

HCE/HCD (PPM)	129.42	8.82	36.32	6.69	57.67	7.19
COEM/CODM(PPM)	570.58	1.26	339.02	2.52	280.63	1.26
NOXE/NOXD(PPM)	62.90	1.10	19.20	0.50	57.10	1.10
CO2E/CO2D (%)	1.27	0.04	0.76	0.05	1.11	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	5.047	2.145	2.124
CO (GRAMS/TEST PHASE)	45.596	46.818	22.467
NOX (GRAMS/TEST PHASE)	9.318	4.846	8.665
CO2 (GRAMS/TEST PHASE)	1623.063	1618.620	1413.181
FUEL ECONOMY (MPG)	18.458	20.094	21.665

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 01 TEST DATE: 6-15-79

PROJECT: 790912 REPT DATE: 7-08-79

VEHICLE: 33 ODOMETER :7377.4

VEHICLE DATA

VEHICLE MAKE: FORD

MODEL YEAR/MODEL: 1979 PINTO

VEHICLE I.D. NUMBER: 9T10Y146233

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 3000 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.746 GRAMS/MILE	1.5 GRAMS/MILE
CO:	10.696 GRAMS/MILE	15.0 GRAMS/MILE
NOX:	1.862 GRAMS/MILE	2.0 GRAMS/MILE

CO2: 421.480 GRAMS/MILE

URBAN FUEL ECONOMY: 20.12 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION: _____

E G & G AUTOMOTIVE RESEARCH, I.

1978 Highway Fuel Economy Test

Test No: 01 Test Date: 06/15/79

Project: 790912 Report Date: 06/18/79

Vehicle: 33 Mileage: 7390.0

Test Data

Blower Revolutions: 15095

Barometer (corr) : 29.17

Blower Pressures:
inlet/outlet 12.90 3.45

Mixture Temperature: 109.0

Humidity (Relative): 53.34%

Roll Revolutions: 23614.00

Analytical Data

Hydrocarbons (exhaust): 22.5 PPM

Hydrocarbons (background): 9.2 PPM

Carbon Monoxide (exhaust): 81.7 PPM

Carbon Monoxide (background): 0.8 PPM

Carbon Dioxide (exhaust): 1.7110 %

Carbon Dioxide (background): 0.0420 %

Test Results (grams/mile)

HC: 0.089

CO: 0.954

CO2: 326.643

Calculated Fuel Economy: 27.00 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	02	TEST DATE:	6-16-79
PROJECT:	790912	REPT DATE:	7-08-79
VEHICLE:	33	ODOMETER:	7419.0

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	57.95 75.05	55.89 72.01
MIXTURE TEMP(PTI)	104.50	105.00
BAROMETER IN-HG(Pb)	29.10	29.08

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	12.90 3.40	12.90 3.40	12.90 3.40
BLOWER REVOLUTIONS	10002	17211	10023
VO(CU.FT./REV.)	0.295690	0.295690	0.295678
VMIX (CU.FT.)	2538.28	4367.77	2539.84
ZW(RPM)	1188.45	1188.45	1188.45
XO	0.000215	0.000215	0.000215
MILES/BAG	3.573	3.846	3.575

ANALYTICAL DATA

HCE/HCD (PPM)	126.35	9.81	35.70	6.89	52.47	6.79
COEM/CODM(PPM)	657.55	0.63	343.79	0.63	245.16	0.63
NOXE/NOXD(PPM)	62.50	1.00	19.80	0.60	59.80	1.00
CO2E/CO2D (%)	1.26	0.04	0.76	0.04	1.12	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	4.871	2.084	1.919
CO (GRAMS/TEST PHASE)	52.624	47.772	19.670
NOX (GRAMS/TEST PHASE)	8.470	4.552	7.988
CO2 (GRAMS/TEST PHASE)	1605.610	1642.776	1422.815
FUEL ECONOMY (MPG)	18.596	19.780	21.717

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 02 TEST DATE: 6-16-79

PROJECT: 790912 REPT DATE: 7-08-79

VEHICLE: 33 ODOMETER :7419.0

VEHICLE DATA

VEHICLE MAKE: FORD

MODEL YEAR/MODEL: 1979 PINTO

VEHICLE I.D. NUMBER: 9T10Y146233

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 3000 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.711 GRAMS/MILE	HC: 1.5 GRAMS/MILE
CO:	10.999 GRAMS/MILE	CO: 15.0 GRAMS/MILE
NOX:	1.718 GRAMS/MILE	NOX: 2.0 GRAMS/MILE

CO2: 423.733 GRAMS/MILE

URBAN FUEL ECONOMY: 20.01 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION:

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 02
Project: 790912
Vehicle: 33

Test Date: 06/16/79
Report Date: 06/18
Mileage: 7431.2

Test Data

Blower Revolutions: 15127

Barometer (corr) : 29.08

Blower Pressures:
inlet/outlet 12.90 3.45

Mixture Temperature: 109.0

Humidity (Relative): 44.67%

Roll Revolutions: 23661.00

Analytical Data

Hydrocarbons (exhaust): 19.4 ppm

Hydrocarbons (background): 6.3 ppm

Carbon Monoxide (exhaust): 73.7 ppm

Carbon Monoxide (background): 0.3 ppm

Carbon Dioxide (exhaust): 1.6910 %

Carbon Dioxide (background): 0.0450 %

Test Results (grams/mile)

HC: 0.085

CO: 0.865

CO2: 321.132

Calculated Fuel Economy: 27.48 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	03	TEST DATE:	6-20-79
PROJECT:	790912	REPT DATE:	7-08-79
VEHICLE:	33	ODOMETER:	7470.4

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	74.62 105.44	73.13 108.64
MIXTURE TEMP(PTI)	105.00	104.80
BAROMETER IN-HG(Pb)	29.04	29.05

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	13.72 3.32	13.72 3.32	13.72 3.32
BLOWER REVOLUTIONS	9994	17175	10015
VO(CU.FT./REV.)	0.294355	0.294355	0.294361
VMIX (CU.FT.)	2507.78	4309.70	2514.67
ZN(RPM)	1186.34	1186.34	1186.34
XO	0.000221	0.000221	0.000221
MILES/BAG	3.583	3.860	3.561

ANALYTICAL DATA

HCE/HCD (PPM)	115.57	15.27	22.47	12.17	42.67	11.05
COEM/CODM(PPM)	541.82	3.15	111.47	1.64	186.05	2.19
NOXE/NOXD(PPM)	58.30	1.20	18.50	0.50	54.00	1.40
CO2E/CO2D (%)	1.26	0.03	0.77	0.03	1.11	0.03

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	4.170	0.775	1.337
CO (GRAMS/TEST PHASE)	42.402	15.010	14.569
NOX (GRAMS/TEST PHASE)	9.069	4.911	8.528
CO2 (GRAMS/TEST PHASE)	1602.161	1642.098	1409.306
FUEL ECONOMY (MPG)	18.893	20.518	21.983

EG&G AUTOMOTIVE RESEARCH, INC.

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 03 TEST DATE: 6-20-79

PROJECT: 790912 REPT DATE: 7-08-79

VEHICLE: 33 ODOMETER :7470.4

VEHICLE DATA

VEHICLE MAKE: FORD

MODEL YEAR/MODEL: 1979 PINTO

VEHICLE I.D. NUMBER: 9T10Y146233

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 3000 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.448 GRAMS/MILE	HC: 1.5 GRAMS/MILE
CO:	5.589 GRAMS/MILE	CO: 15.0 GRAMS/MILE
NOX:	1.840 GRAMS/MILE	NOX: 2.0 GRAMS/MILE

CO2: 421.825 GRAMS/MILE

URBAN FUEL ECONOMY: 20.53 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION: _____

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 03 Test Date: 6-20-79

Project: 790712 Report Date: 6-20-79

Vehicle: 33 Mileage: 7493.3

Test Data

Blower Revolutions: 15133

Barometer (corr) : 29.07

Blower Pressures:
inlet/outlet 13.68 3.30

Mixture Temperature: 111.1

Humidity (Relative): 65.78%

Roll Revolutions: 23793.00

Analytical Data

Hydrocarbons (exhaust): 28.7 PPM

Hydrocarbons (background): 19.1 PPM

Carbon Monoxide (exhaust): 52.6 PPM

Carbon Monoxide (background): 0.0 PPM

Carbon Dioxide (exhaust): 1.7450 %

Carbon Dioxide (background): 0.0400 %

Test Results (grams/mile)

HC: 0.073

CO: 0.604

CO2: 326.917

Calculated Fuel Economy: 27.03 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	04	TEST DATE:	6-21-79
PROJECT:	790912	REPT DATE:	7-08-79
VEHICLE:	33	ODOMETER:	7517.5

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	74.30 101.27	69.31 102.78
MIXTURE TEMP(PTI)	105.80	105.70
BAROMETER IN-HG(Pb)	29.10	29.07

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	13.71 3.35	13.71 3.35	13.71 3.35
BLOWER REVOLUTIONS	9992	17195	10006
VO(CU.FT./REV.)	0.294389	0.294389	0.294364
VMIX (CU.FT.)	2509.07	4317.81	2509.95
ZN(RPM)	1186.33	1186.33	1186.33
XO	0.000221	0.000221	0.000221
MILES/BAG	3.574	3.857	3.573

ANALYTICAL DATA

HCE/HCD (PPM)	105.80	12.29	18.23	10.03	50.73	10.03
COEM/CODM(PPM)	728.49	3.15	122.10	2.73	310.82	1.89
NOXE/NOXD(PPM)	56.00	1.40	19.60	0.90	55.50	1.20
CO2E/CO2D (%)	1.23	0.05	0.75	0.04	1.10	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	3.881	0.619	1.703
CO (GRAMS/TEST PHASE)	57.162	16.355	24.461
NOX (GRAMS/TEST PHASE)	8.486	5.003	8.506
CO2 (GRAMS/TEST PHASE)	1541.354	1609.818	1380.213
FUEL ECONOMY (MPG)	19.285	20.889	22.249

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 04 TEST DATE: 6-21-79

PROJECT: 790912 REPT DATE: 7-08-79

VEHICLE: 33 ODOMETER :7517.5

VEHICLE DATA

VEHICLE MAKE: FORD

MODEL YEAR/MODEL: 1979 PINTO

VEHICLE I.D. NUMBER: 9T10Y146233

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 3000 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.438 GRAMS/MILE	HC: 1.5 GRAMS/MILE
CO:	7.385 GRAMS/MILE	CO: 15.0 GRAMS/MILE
NOX:	1.817 GRAMS/MILE	NOX: 2.0 GRAMS/MILE

CO2: 411.735 GRAMS/MILE

URBAN FUEL ECONOMY: 20.88 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION:

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 04 Test Date: 6-21-79

Project: 790912 Report Date: 6-22-79

Vehicle: 33 Mileage: 7540.3

Test Data

Blower Revolutions: 15134

Barometer (corr) : 29.05

Blower Pressures:
inlet/outlet 13.67 3.30

Mixture Temperature: 111.1

Humidity (Relative): 60.36%

Roll Revolutions: 23732.00

Analytical Data

Hydrocarbons (exhaust): 19.4 PPM

Hydrocarbons (background): 9.3 PPM

Carbon Monoxide (exhaust): 71.1 PPM

Carbon Monoxide (background): 0.8 PPM

Carbon Dioxide (exhaust): 1.7030 %

Carbon Dioxide (background): 0.0510 %

Test Results (grams/mile)

HC: 0.068

CO: 0.812

CO2: 317.651

Calculated Fuel Economy: 27.79 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	01	TEST DATE:	6-14-79
PROJECT:	790912	REPT DATE:	6-15-79
VEHICLE:	73	ODOMETER:	429.6

AMBIENT CONDITIONS

	PHASE 1		PHASE 3	
HUMIDITY(Ra-H)	47.08	60.10	60.68	81.86
MIXTURE TEMP(PTI)	105.00		105.00	
BAROMETER IN-HG(Pb)	29.27		29.27	

CVS DATA

	--PHASE 1--		--PHASE 2--		--PHASE 3--	
PRESSURES:						
INLET/OUTLET	12.95	3.35	12.95	3.35	12.95	3.35
BLOWER REVOLUTIONS	10013		17171		9975	
CVD(CU.FT./REV.)	0.295787		0.295787		0.295787	
CVMIX (CU.FT.)	2554.98		4381.46		2545.29	
CVN(RPM)	1188.39		1188.39		1188.39	
CVXO	0.000214		0.000214		0.000214	
MILES/BAG	3.579		3.848		3.588	

ANALYTICAL DATA

HCE/HCD (PPM)	180.88	11.30	58.89	8.51	163.90	7.35
COEM/CODM(PPM)	699.62	5.05	12.90	1.37	159.02	3.01
NOXE/NOXD(PPM)	32.80	0.70	24.30	0.50	41.70	0.70
CO2E/CO2D (%)	1.62	0.04	1.03	0.05	1.42	0.05

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	7.136	3.652	6.540
CO (GRAMS/TEST PHASE)	55.830	1.618	12.499
NOX (GRAMS/TEST PHASE)	4.163	5.287	5.851
CO2 (GRAMS/TEST PHASE)	2109.797	2232.680	1817.090
FUEL ECONOMY (MPG)	14.295	15.187	17.129

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 01 TEST DATE: 6-14-79

PROJECT: 790912 REPT DATE: 6-15-79

VEHICLE: 73 ODOMETER :429.6

VEHICLE DATA

VEHICLE MAKE: FORD

MODEL YEAR/MODEL: 1979 FAIRMONT

VEHICLE I.D. NUMBER: F9K92F1875517

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 3500 POUNDS

WEIGHTED MASS EMISSIONS

TEST RESULTS		1978 EPA STANDARDS	
HC:	1.406 GRAMS/MILE	HC:	1.5 GRAMS/MILE
CO:	4.409 GRAMS/MILE	CO:	15.0 GRAMS/MILE
NOX:	1.401 GRAMS/MILE	NOX:	2.0 GRAMS/MILE

CO2: 561.899 GRAMS/MILE

URBAN FUEL ECONOMY: 15.47 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION:

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 01 Test Date: 06/14/79

Project: 790912 Report Date: 06/18/79

Vehicle: 73 Mileage: 429.6

Test Data

Blower Revolutions: 15115

Barometer (corr) : 29.27

Blower Pressures:
inlet/outlet 12.00 3.40

Mixture Temperature: 105.0

Humidity (Relative): 54.89%

Roll Revolutions: 23759.00

Analytical Data

Hydrocarbons (exhaust): 124.8 PPM

Hydrocarbons (background): 7.3 PPM

Carbon Monoxide (exhaust): 15.9 PPM

Carbon Monoxide (background): 2.7 PPM

Carbon Dioxide (exhaust): 2.0950 %

Carbon Dioxide (background): 0.0420 %

Test Results (grams/mile)

HC: 0.740

CO: 0.161

CO2: 408.087

Calculated Fuel Economy: 21.59 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	02	TEST DATE:	6-15-79
PROJECT:	790912	REPT DATE:	7-08-79
VEHICLE:	73	ODOMETER:	483.0

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	60.31 77.29	59.75 81.67
MIXTURE TEMP(PTI)	104.50	105.00
BAROMETER IN-HG(Pb)	29.18	29.18

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	12.00 3.40	12.00 3.40	12.00 3.40
BLOWER REVOLUTIONS	9985	17203	9999
VO(CU.FT./REV.)	0.297279	0.297279	0.297279
VMIX (CU.FT.)	2565.76	4420.51	2567.09
ZN(RPM)	1190.90	1190.90	1190.90
XO	0.000208	0.000208	0.000208
MILES/BAG	3.602	3.869	3.591

ANALYTICAL DATA

HCE/HCD (PPM)	256.95	12.29	63.31	9.72	132.99	8.82
COEM/CODM(PPM)	717.91	1.89	14.66	1.89	119.14	2.19
NOXE/NOXD(PPM)	36.10	0.50	25.00	0.50	40.50	0.80
CO2E/CO2D (%)	1.68	0.05	1.01	0.05	1.44	0.05

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	10.319	3.921	5.246
CO (GRAMS/TEST PHASE)	57.444	1.804	9.448
NOX (GRAMS/TEST PHASE)	5.010	5.989	5.711
CO2 (GRAMS/TEST PHASE)	2197.01	[illegible]	1855.181
[illegible]	[illegible]	[illegible]	[illegible]

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 02 TEST DATE: 6-15-79

PROJECT: 790912 REPT DATE: 7-08-79

VEHICLE: 73 ODOMETER :483.0

VEHICLE DATA

VEHICLE MAKE: FORD

MODEL YEAR/MODEL: 1979 FAIRMONT

VEHICLE I.D. NUMBER: 9K92F187551

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 3500 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS		1978 EPA STANDARDS
HC:	1.520 GRAMS/MILE	HC:	1.5 GRAMS/MILE
CO:	4.269 GRAMS/MILE	CO:	15.0 GRAMS/MILE
NOX:	1.520 GRAMS/MILE	NOX:	2.0 GRAMS/MILE

CO2: 565.543 GRAMS/MILE

URBAN FUEL ECONOMY: 15.37 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION:

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 02 Test Date: 06/15/79

Project: 790912 Report Date: 06/18/79

Vehicle: 73 Mileage: 483.0

Test Data

Blower Revolutions: 15120

Barometer (corr) : 29.27

Blower Pressures:
inlet/outlet 12.00 3.40

Mixture Temperature: 105.0

Humidity (Relative): 52.96%

Roll Revolutions: 24074.00

Analytical Data

Hydrocarbons (exhaust): 73.5 ppm

Hydrocarbons (background): 7.8 ppm

Carbon Monoxide (exhaust): 19.8 ppm

Carbon Monoxide (background): 1.1 ppm

Carbon Dioxide (exhaust): 2.1590 %

Carbon Dioxide (background): 0.0510 %

Test Results (grams/mile)

HC: 0.413

CO: 0.221

CO2: 413.918

Calculated Fuel Economy: 21.34 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	03	TEST DATE:	6-20-79
PROJECT:	790912	REPT DATE:	7-08-79
VEHICLE:	73	ODOMETER:	528.2

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	60.84 108.13	59.82 111.58
MIXTURE TEMP(PTI)	105.00	105.00
BAROMETER IN-HG(Pb)	29.05	29.07

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	13.60 3.40	13.60 3.40	13.60 3.40
BLOWER REVOLUTIONS	9987	17157	9980
VO(CU.FT./REV.)	0.294485	0.294485	0.294500
VMIX (CU.FT.)	2508.93	4310.17	2508.94
ZN(RPM)	1186.55	1186.55	1186.55
XO	0.000220	0.000220	0.000220
MILES/BAG	3.561	3.824	3.561

ANALYTICAL DATA

HCE/HCD (PPM)	196.69	9.81	30.80	7.09	91.78	6.79
COEM/CODM(PPM)	590.55	3.15	5.75	0.55	179.86	3.55
NOXE/NOXD(PPM)	27.00	0.90	22.10	1.00	33.70	1.00
CO2E/CO2D (%)	1.65	0.05	1.03	0.04	1.43	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	7.709	1.707	3.512
CO (GRAMS/TEST PHASE)	46.114	0.714	13.925
NOX (GRAMS/TEST PHASE)	4.219	5.855	5.384
CO2 (GRAMS/TEST PHASE)	2095.794	2227.621	1806.490
FUEL ECONOMY (MPG)	14.402	15.181	17.168

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 03 TEST DATE: 6-20-79

PROJECT: 790912 REPT DATE: 7-08-79

VEHICLE: 73 ODOMETER :528.2

VEHICLE DATA

VEHICLE MAKE: FORD

MODEL YEAR/MODEL: 1979 FAIRMONT

VEHICLE I.D. NUMBER: 9K92F187551F

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 3500 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS		1978 EPA STANDARDS
HC:	0.951 GRAMS/MILE	HC:	1.5 GRAMS/MILE
CO:	3.856 GRAMS/MILE	CO:	15.0 GRAMS/MILE
NOX:	1.454 GRAMS/MILE	NOX:	2.0 GRAMS/MILE

CO2: 563.059 GRAMS/MILE

URBAN FUEL ECONOMY: 15.50 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION: _____

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: .03 Test Date: 6/20/79

Project: 790912 Report Date: 6/20/79

Vehicle: 073 Mileage: 549.6

Test Data

Blower Revolutions: 15104

Barometer (corr) : 29.07

Blower Pressures:
inlet/outlet 13.60 3.40

Mixture Temperature: 111.0

Humidity (Relative): 47.63%

Roll Revolutions: 22581.00

Analytical Data

Hydrocarbons (exhaust): 49.0 ppm

Hydrocarbons (background): 6.8 ppm

Carbon Monoxide (exhaust): 14.0 ppm

Carbon Monoxide (background): 1.6 ppm

Carbon Dioxide (exhaust): 2.0890 %

Carbon Dioxide (background): 0.0530 %

Test Results (grams/mile)

HC: 0.274

CO: 0.152

CO2: 411.204

Calculated Fuel Economy: 21.51 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	04	TEST DATE:	6-21-79
PROJECT:	790912	REPT DATE:	7-09-79
VEHICLE:	73	ODOMETER:	565.0

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	62.49 110.95	56.60 105.23
MIXTURE TEMP(PTI)	105.50	105.50
BAROMETER IN-HG(Pb)	29.10	29.12

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	13.70 3.40	13.70 3.40	13.70 3.40
BLOWER REVOLUTIONS	9974	17196	9987
VO(CU.FT./REV.)	0.294362	0.294362	0.294380
VMIX (CU.FT.)	2505.77	4320.16	2511.27
ZN(RPM)	1186.27	1186.27	1186.27
XO	0.000221	0.000221	0.000221
MILES/BAG	3.559	3.822	3.560

ANALYTICAL DATA

HCE/HCD (PPM)	182.87	13.77	27.57	10.94	74.38	9.62
COEM/CODM(PPM)	557.84	1.89	3.28	1.09	151.74	0.82
NOXE/NOXD(PPM)	28.10	1.70	23.50	1.80	34.80	1.00
CO2E/CO2D (%)	1.66	0.04	1.03	0.04	1.45	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	6.992	1.232	2.699
CO (GRAMS/TEST PHASE)	43.547	0.308	11.924
NOX (GRAMS/TEST PHASE)	4.347	6.149	5.376
CO2 (GRAMS/TEST PHASE)	2119.921	2228.286	1841.964
FUEL ECONOMY (MPG)	14.279	15.182	16.891

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 04 TEST DATE: 6-21-79

PROJECT: 790912 REPT DATE: 7-09-79

VEHICLE: 73 ODOMETER :565.0

VEHICLE DATA

VEHICLE MAKE: FORD

MODEL YEAR/MODEL: 1979 FAIRMONT

VEHICLE I.D. NUMBER: FRK92F187551F

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 3500 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.783 GRAMS/MILE	HC: 1.5 GRAMS/MILE
CO:	3.499 GRAMS/MILE	CO: 15.0 GRAMS/MILE
NOX:	1.501 GRAMS/MILE	NOX: 2.0 GRAMS/MILE

CO2: 567.552 GRAMS/MILE

URBAN FUEL ECONOMY: 15.41 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION: _____

1978 Highway Fuel Economy Test

Test No: 04 Test Date: 6-21-79

Project: 790912 Report Date: 6-21-79

Vehicle: 73 Mileage: 584.9

Test Data

Blower Revolutions: 15120

Barometer (corr) : 29.09

Blower Pressures:
inlet/outlet 13.70 3.40

Mixture Temperature: 117.0

Humidity (Relative): 52.48%

Roll Revolutions: 23726.00

Analytical Data

Hydrocarbons (exhaust): 39.6 PPM

Hydrocarbons (background): 10.1 PPM

Carbon Monoxide (exhaust): 22.3 PPM

Carbon Monoxide (background): 3.3 PPM

Carbon Dioxide (exhaust): 2.1500 %

Carbon Dioxide (background): 0.0510 %

Test Results (grams/mile)

HC: 0.185

CO: 0.221

CO2: 399.646

Calculated Fuel Economy: 22.14 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	05	TEST DATE:	6-25-79
PROJECT:	79012	REPT DATE:	7-08-79
VEHICLE:	73	ODOMETER:	618.3

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	72.20 98.20	60.08 88.48
MIXTURE TEMP(PTI)	105.00	105.00
BAROMETER IN-HG(Pb)	29.17	29.17

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	13.60 3.25	13.60 3.25	13.60 3.25
BLOWER REVOLUTIONS	9858	17307	9994
VO(CU.FT./REV.)	0.294720	0.294720	0.294720
VMIX (CU.FT.)	2489.88	4371.30	2524.23
ZN(RPM)	1186.78	1186.78	1186.78
XO	0.000219	0.000219	0.000219
MILES/BAG	3.499	3.863	3.581

ANALYTICAL DATA

HCE/HCD (PPM)	151.18	11.85	20.54	3.56	63.02	7.48
COEM/CODM(PPM)	652.55	5.05	25.04	2.17	122.36	3.26
NOXE/NOXD(PPM)	26.80	0.70	19.40	0.70	34.00	0.70
CO2E/CO2D (%)	1.74	0.04	1.04	0.04	1.46	0.05

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	5.730	0.903	2.323
CO (GRAMS/TEST PHASE)	50.176	3.169	9.463
NOX (GRAMS/TEST PHASE)	3.965	4.994	4.872
CO2 (GRAMS/TEST PHASE)	2194.649	2291.037	1850.734
FUEL ECONOMY (MPG)	13.540	14.900	16.957

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 05 TEST DATE: 6-25-79

PROJECT: 79012 REPT DATE: 7-08-79

VEHICLE: 73 ODOMETER :618.3

VEHICLE DATA

VEHICLE MAKE: FORD

MODEL YEAR/MODEL: 1979 FAIRMONT

VEHICLE I.D. NUMBER: 9K92F187551F

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 3500 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.634 GRAMS/MILE	HC: 1.5 GRAMS/MILE
CO:	4.083 GRAMS/MILE	CO: 15.0 GRAMS/MILE
NOX:	1.277 GRAMS/MILE	NOX: 2.0 GRAMS/MILE

CO2: 579.163 GRAMS/MILE

URBAN FUEL ECONOMY: 15.09 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION: _____

E G & G AUTOMOTIVE RESEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 05 Test Date: 6-25-79

Project: 790912 Report Date: 6-25-79

Vehicle: 73 Mileage: 618.3

Test Data

Blower Revolutions: 15091

Barometer (corr) : 29.17

Blower Pressures:
inlet/outlet 13.60 3.25

Mixture Temperature: 105.0

Humidity (Relative): 53.69%

Roll Revolutions: 23699.00

Analytical Data

Hydrocarbons (exhaust): 33.2 ppm

Hydrocarbons (background): 6.8 ppm

Carbon Monoxide (exhaust): 47.2 ppm

Carbon Monoxide (background): 3.0 ppm

Carbon Dioxide (exhaust): 2.1370 %

Carbon Dioxide (background): 0.0470 %

Test Results (grams/mile)

HC: 0.168

CO: 0.519

CO2: 407.832

Calculated Fuel Economy: 21.67 MPG

Comments:

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 1 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO:	06	TEST DATE:	6-26-79
PROJECT:	790912	REPT DATE:	7-08-79
VEHICLE:	73	ODOMETER:	649.0

AMBIENT CONDITIONS

	PHASE 1	PHASE 3
HUMIDITY(Ra-H)	78.34 106.50	83.26 90.10
MIXTURE TEMP(PTI)	105.50	106.00
BAROMETER IN-HG(Pb)	29.21	29.20

CVS DATA

	PHASE 1	PHASE 2	PHASE 3
PRESSURES:			
INLET/OUTLET	13.90 3.30	13.90 3.30	13.90 3.30
BLOWER REVOLUTIONS	9941	17142	9955
VO(CU.FT./REV.)	0.294210	0.294210	0.294202
VMIX (CU.FT.)	2503.72	4317.35	2504.05
ZN(RPM)	1185.89	1185.89	1185.89
KO	0.000222	0.000222	0.000222
MILES/BAG	3.561	3.816	3.547

ANALYTICAL DATA

HCE/HCD (PPM)	153.21	10.86	17.98	8.07	59.96	8.46
COEM/CODM(PPM)	697.03	3.78	10.10	3.54	124.11	2.45
NOXE/NOXD(PPM)	25.80	0.60	20.80	0.70	32.40	0.70
CO2E/CO2D (%)	1.68	0.04	1.03	0.04	1.45	0.04

TEST PHASE RESULTS

	COLD START TRANSIENT (PHASE 1)	COLD START STABILIZED (PHASE 2)	HOT START STABILIZED (PHASE 3)
HC (GRAMS/TEST PHASE)	5.878	0.743	2.144
CO (GRAMS/TEST PHASE)	53.956	0.920	9.575
NOX (GRAMS/TEST PHASE)	4.024	5.532	4.639
CO2 (GRAMS/TEST PHASE)	2137.138	2221.173	1832.746
FUEL ECONOMY (MPG)	14.093	15.209	16.961

EG&G AUTOMOTIVE RESEARCH, INC. PAGE 2 OF 2

FEDERAL TEST PROCEDURE

1978 URBAN DYNAMOMETER EMISSION TEST

TEST NO: 06 TEST DATE: 6-26-79

PROJECT: 790912 REPT DATE: 7-08-79

VEHICLE: 73 ODOMETER :649.0

VEHICLE DATA

VEHICLE MAKE: FORD

MODEL YEAR/MODEL: 1979 FAIRMONT

VEHICLE I.D. NUMBER: F9K92F187551F

ENGINE SERIAL NUMBER:

INERTIA WEIGHT: 3500 POUNDS

WEIGHTED MASS EMISSIONS

	TEST RESULTS	1978 EPA STANDARDS
HC:	0.609 GRAMS/MILE	HC: 1.5 GRAMS/MILE
CO:	4.011 GRAMS/MILE	CO: 15.0 GRAMS/MILE
NOX:	1.344 GRAMS/MILE	NOX: 2.0 GRAMS/MILE

CO2: 567.895 GRAMS/MILE

URBAN FUEL ECONOMY: 15.39 MILES/GALLON

COMMENTS:

QUALITY CONTROL VERIFICATION:

E G & G AUTOMOT[illegible]SEARCH, INC.

1978 Highway Fuel Economy Test

Test No: 06 Test Date: 6-26-79

Project: 790912 Report Date: 6-26-79

Vehicle: 73 Mileage: 649.0

Test Data:

Blower Revolutions: 15078

Barometer (corr) : 29.21

Blower Pressures:
inlet/outlet 13.90 3.30

Mixture Temperature: 106.0

Humidity (Relative): 53.68%

Roll Revolutions: 23692.00

Analytical Data

Hydrocarbons (exhaust): 28.0 PPM

Hydrocarbons (background): 7.3 PPM

Carbon Monoxide (exhaust): 14.8 PPM

Carbon Monoxide (background): 2.7 PPM

Carbon Dioxide (exhaust): 2.1310 %

Carbon Dioxide (background): 0.0420 %

Test Results (grams/mile)

HC: 0.134

CO: 0.144

CO2: 406.908

Calculated Fuel Economy: 21.76 MPG

Comments:

ATTACHMENT 5

VEHICLE DRIVEABILITY

VEHICLE DRIVEABILITY

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 05 Odometer: 11,410.2

Make/Model: Chevrolet Chevette V.I.N.: 1B08E7Y15625

Date: June 18, 1979 Driver: John H. Rivenburgh

Driveability Evaluation: After Baseline Test

Cold Start

1. Review the manufacturer's starting procedure and follow. Summarize procedure: Depress accelerator pedal to floor, release and start

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	None

Hot Start

1. After engine reaches normal operating temperature, shut off ignition and record any dieseling or after run tendencies: None

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

Vehicle Driveability
Auto-Miser International
AR Project No. 79091

3. Acceleration times (over road evaluation only):

a) Make three (3) wide open throttle accelerations to the following speeds and record times:

0 to 30 MPH: 1) 5.64 2) 5.64 3) 5.51

0 to 50 MPH: 1) 13.55 2) 13.79 3) 13.33

b) Note any abnormalities during the accelerations.

Hesitation: None

Stalls: None

Other: None

Driver's Signature:

John H. Rivenburgh

Date: June 18, 1979

VEHICLE DRIVEABILITY

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 05 Odometer: 11530.4

Make/Model: Chevrolet Chevette V.I.N.: 1B08E7Y155251

Date: June 22, 1979 Driver: John R. Rivenburgh

Driveability Evaluation: After Device Testing (First Series)

Cold Start

1. Review the manufacturer's starting procedure and follow. Summarize procedure: Depress pedal once to floor, release, then start.

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	None
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	None

Hot Start

1. After engine reaches normal operating temperature, shut off ignition and record any dieseling or after run tendencies: Slight dieseling. RPM seems to be higher

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

3. Acceleration times (over road evaluation only):

a) Make three (3) wide open throttle accelerations to the following speeds and record times:

0 to 30 MPH: 1) 5.71 2) 5.66 3) 5.50

0 to 50 MPH: 1) 13.63 2) 13.73 3) 13.65

b) Note any abnormalities during the accelerations.

Hesitation: None

Stalls: None

Other: None

Driver's Signature:

John H. Rivenburg

Date: June 22, 1979

VEHICLE DRIVEABILITY

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 05 Odometer: 11770.2

Make/Model: Chevrolet Chevette V.I.N.: 1B08E7Y155251

Date: July 5, 1979 Driver: John H. Rivenburgh

Driveability Evaluation: After Device Testing (Second Series)

Cold Start

1. Review the manufacturer's starting procedure and follow. Summarize procedure: Depress pedal once to floor, release and start

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

Hot Start

1. After engine reaches normal operating temperature, shut off ignition and record any dieseling or after run tendencies: None

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

3. Acceleration times (over road evaluation only):

   a) Make three (3) wide open throttle accelerations to the following speeds and record times:

      0 to 30 MPH: 1) 5.90 2) 5.92 3) 5.94

      0 to 50 MPH: 1) 13.95 2) 13.93 3) 13.92

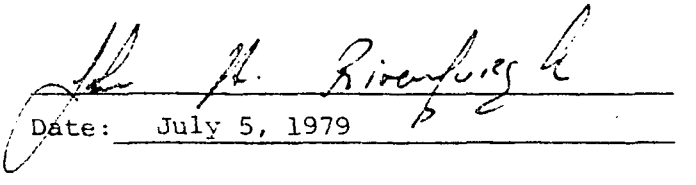
   b) Note any abnormalities during the accelerations.

      Hesitation: None

      Stalls: None

      Other: None

Driver's Signature:



Date: July 5, 1979

VEHICLE DRIVEABILITY

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 33 Odometer: 7,546.8

Make/Model: Ford/Pinto V.I.N.: 9T10Y146233

Date: June 19, 1979 Driver: John H. Rivenburgh

Driveability Evaluation: ~~After~~ Baseline Testing

Cold Start

1. Review the manufacturer's starting procedure and follow. Summarize procedure: Depress accelerator pedal to floor, release and start.

2. Note any abnormal starting conditions:

Smooth start at idle:	Little rough
Stalled after start:	No
Number restarts required:	None
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	None

Hot Start

1. After engine reaches normal operating temperature, shut off ignition and record any dieseling or after run tendencies: None

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	None
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	None

Vehicle Driveability
Auto-Miser International
AR Project No. 79091

3. Acceleration times (over road evaluation only):

a) Make three (3) wide open throttle accelerations to the following speeds and record times:

0 to 30 MPH: 1) 5.40 2) 5.43 3) 5.37

0 to 50 MPH: 1) 11.06 2) 11.06 3) 11.14

b) Note any abnormalities during the accelerations.

Hesitation: None

Stalls: None

Other: None

Driver's Signature: John A. Rivenburgh

Date: June 19, 1979

VEHICLE DRIVEABILITY

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 33 Odometer: 7561.8

Make/Model: Ford/Pinto V.I.N.: 9T10Y146233

Date: June 22, 1979 Driver: John R. Rivenburgh

Driveability Evaluation: After Device Testing

Cold Start

1. Review the manufacturer's starting procedure and follow. Summarize procedure: Depress pedal once to floor, release and start.

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

Hot Start

1. After engine reaches normal operating temperature, shut off ignition and record any dieseling or after run tendencies: None

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	None
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

3. Acceleration times (over road evaluation only):

a) Make three (3) wide open throttle accelerations to the following speeds and record times:

0 to 30 MPH: 1) 5.06 2) 5.10 3) 5.19

0 to 50 MPH: 1) 11.05 2) 11.05 3) 11.03

b) Note any abnormalities during the accelerations.

Hesitation: None

Stalls: None

Other: None

Driver's Signature:

John A. Riverbaugh

Date: June 22, 1979

VEHICLE DRIVEABILITY

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 73 Odometer: 519.8

Make/Model: Ford/Fairmont V.I.N.: 9K92F187551

Date: June 18, 1979 Driver: John H. Rivenburgh

Driveability Evaluation: After Baseline Testing

Cold Start

1. Review the manufacturer's starting procedure and follow. Summarize procedure: Depress accelerator pedal to floor, release and start

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

Hot Start

1. After engine reaches normal operating temperature, shut off ignition and record any dieseling or after run tendencies: None

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	None

Vehicle Driveability
Auto-Miser International
AR Project No. 79091

3. Acceleration times (over road evaluation only):

a) Make three (3) wide open throttle accelerations to the following speeds and record times:

0 to 30 MPH: 1) 4.28 2) 4.13 3) 4.25

0 to 50 MPH: 1) 8.24 2) 8.16 3) 8.43

b) Note any abnormalities during the accelerations.

Hesitation: None

Stalls: None

Other: None

Driver's Signature: John A. Rivelli

Date: June 18, 1979

VEHICLE DRIVEABILITY

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 73 Odometer: 594.9

Make/Model: Ford/Fairmont V.I.N.: 9K92F187551

Date: June 22, 1979 Driver: John H. Rivenburg

Driveability Evaluation: After Device Testing

Cold Start

1. Review the manufacturer's starting procedure and follow. Summarize procedure: Depress pedal once to floor, release and start.

2. Note any abnormal starting conditions:

Smooth start at idle:	Little rough
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

Hot Start

1. After engine reaches normal operating temperature, shut off ignition and record any dieseling or after run tendencies: None - OK

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

Vehicle Driveability
Auto-Miser International
AR Project No. 79091

3. Acceleration times (over road evaluation only):

a) Make three (3) wide open throttle accelerations to the following speeds and record times:

0 to 30 MPH: 1) 4.04 2) 4.00 3) 4.05

0 to 50 MPH: 1) 8.07 2) 8.19 3) 8.33

b) Note any abnormalities during the accelerations.

Hesitation: None

Stalls: None

Other: None

Driver's Signature: John H. Rimmer

Date: June 22, 1979

VEHICLE DRIVEABILITY

AUTO-MISER INTERNATIONAL

AR PROJECT NO. 79091

Vehicle No.: 73 Odometer: 681.3

Make/Model: Ford/Fairmont V.I.N.: 9K92F187551

Date: June 26, 1979 Driver: John H. Rivenburg

Driveability Evaluation: After Additional Testing

Cold Start

1. Review the manufacturer's starting procedure and follow. Summarize procedure: Depress pedal once to floor, release and start.

2. Note any abnormal starting conditions:

Smooth start at idle:	Little rough
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

Hot Start

1. After engine reaches normal operating temperature, shut off ignition and record any dieseling or after run tendencies: None

2. Note any abnormal starting conditions:

Smooth start at idle:	Yes
Stalled after start:	No
Number restarts required:	0
Long cranking time required:	No
Number of seconds:	N/A
Throttling required to prevent stall:	No
Stalled in first acceleration:	No
Number of restarts required:	0

Vehicle Driveability
Auto-Miser International
AR Project No. 79091

3. Acceleration times (over road evaluation only):

a) Make three (3) wide open throttle accelerations to the following speeds and record times:

0 to 30 MPH: 1) 4.25 2) 4.19 3) 4.14

0 to 50 MPH: 1) 8.12 2) 8.19 3) 8.09

b) Note any abnormalities during the accelerations.

Hesitation: None

Stalls: None

Other: None

Driver's Signature:

John H. Rivelyzer

Date: June 26, 1979