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EPA-AA-TEB-511-80-5

EPA Evaluation of the "Pass Master Vehicle Air Conditioner Cut-Off Device"

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By

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August 1980

Test and Evaluation Branch
Emission Control Technology Division
Office of Mobile Source Air Pollution Control
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This document announces the conclusions of the EPA evaluation of the "Pass Master Vehicle Air Conditioner Compressor Cut-Off Device" under the provisions of Section 511 of the Motor Vehicle Information and Cost Savings Act.

The Pass Master device disengages the air conditioning compressor during hard vehicle acceleration modes. The reduced engine loading will result in some fuel savings.

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[40 CFR Part 610]

[FRL ____________]

FUEL ECONOMY RETROFIT DEVICES

Announcement of Fuel Economy Retrofit Device Evaluation
for the "Pass Master Vehicle Air Conditioning Compressor Cut-Off Device"

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Fuel Economy Retrofit Device Evaluation.

SUMMARY: This document announces the conclusions of the EPA evaluation of the "Pass Master Vehicle Air Conditioner Compressor Cut-Off Device" under the provisions of Section 511 of the Motor Vehicle Information and Cost Savings Act.

FOR FURTHER INFORMATION CONTACT: F. Peter Hutchins, Emission Control Technology Division, Office of Mobile Source Air Pollution Control, Environmental Protection Agency, 2565 Plymouth Road, Ann Arbor, Michigan 48105, 313-668-4340.

BACKGROUND INFORMATION: Section 511(b)(1) and Section 511(c) of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 2011(b)) requires that:

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

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

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

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

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

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

ORIGIN OF REQUEST FOR EVALUATION: On September 20, 1979 the EPA received a request from Mr. Norman Halem for evaluation of a fuel saving device termed the "Pass Master Vehicle Air Conditioner Compressor Cut-Off Device". An evaluation has been made and the results are described completely in a report entitled: "EPA Evaluation of the Pass Master Vehicle Air Conditioner Compressor Cut-Off Device Under Section 511 of the Motor Vehicle Information and Cost Savings Act". Copies of this report are available upon request.

Summary:

The "Pass Master" device disengages the air conditioning compressor during hard vehicle acceleration modes. The reduced engine loading will result in some fuel savings. The effectiveness of the device will depend on five main factors:

1) The amount that the vehicle air conditioner is used. The device only operates when the vehicle air conditioning is turned on.
2) The driving habits of the vehicle operation; i.e., drivers who repeatedly use heavy accelerations and thereby activate the device will realize a greater benefit than drivers who use more moderate accelerations.
3) The suitability of the device calibration for the particular vehicle on which it is installed. The device is offered in three versions. It is suggested that an operator adjustment procedure may increase the device effectiveness.
4) The air conditioning system design on a particular vehicle. The fuel economy benefit will be greater on certain types of systems than on others.
5) The type of driving cycle used. The system will be more effective in urban driving with increased acceleration mode operation than in highway "steady state driving".

The EPA has tested the device at the Motor Vehicle Emission Laboratory and reviewed data submitted from other laboratories. The EPA has concluded that the "Pass Master" does result in a small but real fuel economy benefit when the vehicle air conditioner is in use.

The improvement in fuel economy attributable to the "Pass Master" when the vehicle air conditioner is in use will vary between 0 and 4% depending on the vehicle, the type of air conditioner used, vehicle driving patterns, ambient temperature, and the specific calibration of the unit. Some drivers in warm climates who frequently use their air conditioner might experience up to a 4% improvement in fuel economy when driving in conditions that frequently actuate the device. The device will show the greatest improvement in urban stop-and-go driving with less or no improvement noted in steady state highway type conditions.

The device has no safety related problems and is easy to install. The emissions of test vehicles running with the air conditioner on are generally reduced when the "Pass Master" is used. No information is available to permit an evaluation of any reduction in passenger compartment cooling with the "Pass Master" installed.

Date

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

EPA Evaluation of "Pass Master Vehicle Air Conditioner Compressor Cut-Off Device" under Section 511 of the Motor Vehicle Information and Cost Savings Act

The following is a summary of the information on the device as supplied by the applicant and the resulting EPA analysis and conclusions.

1. Marketing Identification of the Device:

   Pass Master Vehicle Air Conditioner Compressor Cut-Out.
   Model Numbers PM-2, PM-3, PM-4 through PM-14.

2. Inventor of the Device and Patents:

   a. Ralph Haroldson, U.S. Patent No. 3462964
      3233 Chapel Downs Drive
      Dallas, Texas 75229

   b. Norman Halem, U.S. Patent No. 3918543
      3053 Skyline Drive
      Cocoa, Florida 32922

3. Identification of Device Manufacturer:

   Halem Industries, Incorporated
   414 Highpoint Drive
   Suite 206
   P.O. Box 1419
   Cocoa, Florida 32922

4. Manufacturing Organization Principals:

   Norman Halem-President
   Fred Robin-Secretary

5. Identity of Applicant: Organization Making Application:

   Halem Industries, Incorporated
   414 Highpoint Drive
   Suite 206
   P.O. Box 1419
   Cocoa, Florida 32922

6. Identification of Applying Organization's Principals:

   Norman Halem-President
   Fred Robin-Secretary

   Norman Halem will represent Halem Industries in communicating with EPA.

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

a) "Purpose of the Device: This device was developed to improve the fuel mileage, acceleration performance, vehicle safety and engine pollution emissions on air conditioned vehicles."

b) "Theory of Operation: The Pass Master Vehicle Air Conditioner Compressor Cut-Out device is an engine intake manifold vacuum switch capable of sensing the vacuum drop which occurs in the engine intake manifold during engine power demand periods and interrupts the electrical power delivered to the vehicle air conditioner compressor clutch. Thus, the switch, upon sensing engine power demands such as, vehicle starting from rest, climbing hills or passing, will activate, open the electrical circuit providing power to the compressor clutch and idle the compressor. This will then remove the 5 to 15 horsepower compressor load from the engine and allow the vehicle to accelerate in its driving pattern without the drag from the compressor. Only a slight effect to the air conditioned comfort is noted due to the evaporator fan remaining on during this 5 to 30 second normal acceleration period. There is sufficient stored cooling in the evaporator coils to maintain cooling for this time period. In the event the driver accelerates too long and is reminded of his "heavy foot", he would ease up on the acceleration, restore the air conditioning, and at the same time subconsciously be retrained to drive for better fuel mileage."

c) "Detailed Description of Construction and Operation: The Pass Master system is comprised of a vacuum switch and all necessary hardware to affix it to an air conditioned vehicle. The swith itself is comprised of a switching element (Honeywell Micro Switch-5 ampere rated), encased in a plastic housing with a 2 inch diameter thin metal diaphragm serving as the actuator. The switch is connected to the "host system" as shown in Attachment A."

8. Applicability of the Device (claimed): "Pass Master is applicable to ALL carbureted engine vehicles, regardless of the number of cylinders, horsepower rating, carburetion, transmission, ignition, year, make or model. It functions ONLY on engines containing intake manifold vacuums which vary as a direct analog to acceleration or engine power demands. This includes all carbureted engines, some diesels, fuel injected engines, and some turbocharged engines. But its main purpose is for the carburetéd engine.

Three models are provided to suit the three basic types of engines used in vehicles. Switches can also be fabricated to suit any vacuum threshold.

Model: PM-4 (4 cylinder engines)
PM-6 (6 cylinder engines)
PM-8 (8 cylinder engines)

The difference in the switch model is related to the setting of the vacuum threshold, with the higher number switch relating to the higher vacuum cut-off levels of that switch. Although any switch model will work in any size engine, it was determined that a better mix of fuel economy and air conditioned cooling comfort was attained by providing the three models to suit the three general engine types".

9. Cost: No cost information was submitted with the application.

Device Installation (as supplied by the applicant): "The Pass Master can be installed with common tools such as a knife, screw driver, drill or metal punch as follows:

1) Locate a manifold vacuum source rubber tube. This is the most difficult part of the installation. A mechanic should be able to point it out.

2) Cut the vacuum line with the knife and insert the provided plastic tee.

3) Locate the electrical wire going to the compressor clutch. Cut with knife and strip ends back 1/4 inch.

4) Position the Pass Master case on the wheel-well in the vicinity of the air conditioner compressor, making sure the length of tubing provided and the electrical wires will reach their respective connection places.

5) Drill or punch a hole in the fender well.

6) Screw Pass Master in place.

7) Run vacuum line from Pass Master to plastic tee, making sure it does not rest on hot engine parts.

8) Run electrical wire to compressor clutch wire and splice into circuit. Attach the wire with the wire fasteners provided.

9) Installation is now complete. To check out the system do the following: Apply the vehicle brakes, put car in drive or 1st gear. Have someone observe the compressor clutch while you gently accelerate the engine. (Let out clutch on standard transmission vehicle, but do not let the vehicle move). Air conditioner clutch will disengage just as soon as the engine loading drops the manifold vacuum to the point where the Pass Master switch will sense it and open the clutch circuit.

Pass Master will now automatically turn the air conditioner compressor OFF during engine acceleration periods and provide the vehicle with optimum performance, fuel mileage and safety with air conditioning." See Attachment B for further installation instructions.

10. Device maintenance (claimed): "The device requires no maintenance and will last the life of the vehicle."

11. Effects on Vehicle Emissions (non-regulated), (as supplied by applicant): "The Pass Master can not adversely affect pollution emissions of the vehicle engine in its operating state. Since engine loading is reduced during power demand periods of vehicle acceleration, the Pass Master will reduce engine emissions.

In the event of hose failure or accidental rupture of the diaphragm or case, the engine manifold will be vented to atmosphere through the 1/8 inch ID tubing. The air conditioner will then cycle to the constant OFF state, which the driver should notice and affect remedy. The likelihood of hose failure is similar to that of the other vacuum hoses in the engine compartment provided by the vehicle manufacturer."

12. Effects on Vehicle Safety (claimed): "Pass Master has a positive effect on vehicle safety. Since the unit will remove the compressor load from the engine during engine power demand periods, such as climbing hills, starting from rest or passing, it will permit the vehicle to perform as though it were suddenly provided 5 to 15 additional horsepower. This power is being shunted from the compressor load."

13. Test Results Submitted by Applicant:

a. Automobile Club of Southern California
Several tests were run on a 1972 Nova to determine the air conditioning buyback. The data from these tests is presented in Attachment C.

b. Bartlesville Energy Research Center of the U.S., ERDA, DOE, Testing. Two 1977 vehicles, a Pinto and a Cutlass were tested on Hot LA-4 tests at 100°F. This test data is presented in Attachment D.

14. Information collected by E.P.A.

a. A 1978 Pinto was tested using 1975 CVS Federal Test Procedure (FTP) tests, Highway Fuel Economy Tests (HFET), and Hot 2-bag LA-4 tests at 75°F.

b. A 1979 Chrysler LeBaron was tested using Hot LA-4 tests at 75°F and 85°F.

c. A 1979 Buick Regal was tested using 1975 FTP and HFET tests.

d. A 1975 Plymouth Valiant was tested using Hot LA-4 tests at 75°F and 100°F.

The EPA test data is summarized in Attachment E. Actual EPA test sheets are presented in Attachment F.

15. Analysis

a. Description of the Device. The "Pass Master" device is adequately described by the applicant.

b. Applicability of the Device: The device applicability is adequately described in the application. It is however not mentioned that the "Pass Master" is only applicable to vehicles with air conditioning systems.

c. Device Installation: The installation is straightforward and requires about 15 minutes. No technical expertise is required. The only difficulty is locating a proper source of manifold vacuum. The installation instructions are clear and complete.

d. Device Maintenance: The applicant's statement that no maintenance is required appears to be correct.

e. Effect on Vehicle Emissions (non-regulated): Installation of the "Pass Master" device should have no effect on non-regulated vehicular emissions.

f. Effect on Vehicle Safety: The applicant's claim that the "Pass Master" has a positive effect on vehicle safety by allowing more power to the drive train when required appears to be correct. No safety problems should occur with installation of the device.

g. Test Results submitted by the Applicant: It must be understood when looking at the test data that the "Pass Master" functions only when the air conditioning system in a vehicle is turned on. The device then is supposed to negate part of the fuel economy penalty incurred by utilization of the air conditioning system. Therefore, the important characteristic to look for is the "percent buy-back". This figure indicates the percent of the fuel economy air conditioning penalty saved by the device.

1. The Automobile Club of Southern California Testing. This data appears to be single bag LA-4 urban cycles and the Federal Highway Fuel Economy Test cycle.

   The actual testing is not well documented. Several important parameters are not recorded. These include: (1) ambient temperature (2) type of AC unit in vehicle, (3) status of vehicle windows during testing, (4) interior cooling fan status, (5) AC setting and humidity. Nevertheless the data clearly shows that the "Pass Master" allowed an average of 43% buy-back of the air conditioning penalty on one particular vehicle, a 1972 Nova. The emission penalty of using air conditioning was also reduced by the "Pass Master". No specific details were available about the specific "Pass Master" calibration used in the testing.

2. The U.S. ERDA Test Data. This test data was taken on two vehicles; a Cutlass and a Pinto. The tests appear to be Hot LA-4 test cycles at 100°F. Although not clearly stated it also appears that the windows were open and the interior circulation fan turned on high. The Cutlass air conditioning was declutched 30-36% of the total cycle time. The Pinto with a 10"-12" Hg. vacuum setting declutched the air conditioning compressor 27% of the time. Temperature measurements were taken at the evaporator outlet air and the recirculated air to evaporator.

tests were run on a Labeco Electric singleroll Dyno. The difference in the percent buyback figures between FTP and Hot LA-4 is due to increased loading caused by the Labeco Dyno at low speed which caused the Pinto manifold vacuum to reach the "Pass Master" cut out set point more often. The Pinto data demonstrates that the effectiveness of the device depends on 1) driving habits (how hard accelerations), 2) device calibration, and 3) vehicle vacuum characteristics. It must be noted that the AC penalty is a small number in actual miles per gallon. The percent buyback is well within the test to test repeatability. Therefore only buyback percentages above 20% can individually be taken as an indication of device effectiveness.

2. The Chrysler LeBaron (vehicle is described in Attachment G) was tested in the same three configurations as the Pinto. Only LA-4 tests were performed at ambient temperatures of 75°F and 85°F. A larger percentage was noted on HC hydrocarbons (52.7 and 47.8% buyback) and Carbon Monoxide (15.8% and 32.33% buyback). The NOx penalty at 85°F is not understood.

Confidence levels for emissions and fuel economy were calculated for both 75° and 85° LA-4s. The levels are given below.

L	HC	CO	NOx	F.E.
LeBaron 75° Hot LA-4	97* >	67 >	71 >	95** <
LeBaron 85° Hot LA-4	83 >	80 >	67 <	75 <

* This reads: there is a 97% confidence that HC value with the device off, AC on, is greater than with the device on, AC on.

** This reads: there is a 95% confidence that the Fuel Economy with the device off, AC on, is less than with the device on, AC on.

These values indicate that the "Pass Master" had a small beneficial impact on the LeBaron at both 75°F and 85°F. The actual fuel economy benefit in miles per gallon is quite low. (.1 mpg and .195 mpg) but definitely there. Overall, fuel economy improvement was .68% and 1.3% for the 75°F and 85°F tests respectively.

3. The Buick Regal (see attachment G for vehicle description) was tested on the Clayton Dyno using both FTP and HFET test procedures. The test results are given in attachments E and F. The "Pass Master" caused impressive reductions in the AC penalty in both emissions and fuel economy for this car. Most noticeable was the reduction in Hydrocarbon penalty. The fuel economy buyback figures of 8.57% and 18.18% are small but significant. Numerically, these numbers represent .3 mpg (1.96%) and .6 mpg (2.73%) improvements in fuel economy.

Confidence levels were calculated using normalized data for the Pinto and Regal. The combining of the test data for both vehicles allows a statistical analysis. The confidence levels are:

	HC	CO	NOx	F.E.
Pinto/Buick FTP	62* >	63 >	60 >	51** <
Pinto/Buick HFET	68 >	72 >	66 >	59 <

* This reads: there is a 62% confidence that the HC value with the device off, AC on, is greater than the HC value with the device on, AC on.

** This reads: there is a 51% confidence that the Fuel Economy with the device off, AC on, is less than the Fuel Economy value with the device on, AC on.

The results indicate again that the "Pass Master" does have a positive effect on Fuel Economy and Emissions.

4. The Dodge Dart (see Attachment G for vehicle description) was tested using the LA-4 test procedure at 75° F and 100°F. The averaged test results show significant buyback in Fuel Economy but very difficult to interpret results on emissions. The vehicle runs at a very low manifold vacuum compared to most other cars. Therefore, the Pass Master was probably activated more on this car than on other test vehicles. The HC results show a substantial HC penalty in using the "Pass Master". The CO results are so varied that no significance can be determined from the data. The NOx numbers indicate a small penalty increase when the "Pass Master" is used. The Fuel Economy numbers however of 52.0% and 39.13% buyback are very impressive. The actual HC penalty was .022 gm/mile increase at 75°F and a .0015 gm/mile decrease at 100°F. The fuel economy figures however were .65 miles/gallon and .45 miles/gallon.

Confidence levels could not be calculated on the Dart at 85°F because the Fuel Economy variance was zero. Confidence levels were run on the LeBaron/Dart tests at 75°F data. The levels are given below:

	HC	CO	NOx	F.E.
LeBaron/Dart Hot LA-4 at 75°	53* >	63 >	57 <	80** <

* This reads: There is a 53% confidance that the HC value with device off, AC on, is greater than HC value with device on, AC on.

** This reads: There is an 80% confidence that the Fuel Economy value with the device off, AC on, is less than the Fuel Economy value with device on, AC on.

5. Summary of EPA Data Analysis

The four vehicles tested showed varying response to installation of the "Pass Master" device. However, the similar direction of response shows that the "Pass Master" does reduce the penalty of air conditioning use on fuel economy and emissions for most cars. A summary table of the buyback percentages is given below:

Vehicle	HC	CO	CO_2	NOx	F.E.
			Percent Buyback		
Pinto FTP	0.0%	None	(-)5.56%	(-)8.06%	(-)8.7%
Pinto HFET	N/A	N/A	(-)10.34%	(-)5.15%	(+)6.25%
Pinto LA-4 @ 75°F	(+)75%	N/A	(+)27.4%	(+)28.0%	(+)25.0%
LeBaron LA-4 @ 75°F	(+)53%	(+)16%	(+)7.72%	(+)13.48%	(+)7.98%
LeBaron LA-4 @ 85°F	(+)48%	(+)32%	(+)1.71%	(-)27.9%	(+)13.49%
Regal FTP	N/A	(+)79.6%	(+)1.06%	(+)32.8%	(+)8.57%
Regal HFET	N/A	(+)90.0%	(+)8.7%	(+)4.95%	(+)18.18%
Dart Hot LA-4 @ 75°F	None	N/A	(+)51.3%	(-)7.5%	(+)52.0%
Dart LA-4 @ 100°F	None	N/A	(+)41.0%	(-)11.85%	(+)39.13%

No vehicle interior temperature data was taken. The interior passenger comfort penalty by sustained activation of the "Pass Master" device was not determined. On most vehicles the penalty would be acceptable. Only those vehicles which operate for sustained periods of time below the "Pass Master" activation setting could experience a loss of A/C cooling.

There are several types of Air Conditioning (AC) systems found on American cars. While most systems incorporate the same major components; compressor, condenser, evaporator, receiver-dryer, and expansion valve, the methods of controlling the vehicle interior temperature varies. The effect of the "Pass Master" compressor cutout switch will depend on the type of system installed in the vehicle and to what position the AC control unit is set.

Present air conditioning systems sense an evaporator coil parameter such as refrigerant pressure or temperature or outlet air temperature and use this parameter to control the amount of refrigerant to the evaporator coil. The method of controlling the refrigerant varies. The actual cool air to the vehicle interior is controlled by opening or closing baffles which control the air flow, not the refrigerant. There are basically two refrigerant control systems:

1) The Thermostatic Switch type and the Accumulation Type sense the evaporative temperature or pressure and turn the compressor clutch on or off to maintain proper evaporator temperature. This is called the "Cycling Type".

2) The Suction Throttling Valve (STV) Type, the Valve in Receiver (VIT) Type, and Evaporator Pressure Regulator (EPR) Type regulate the refrigerant to the compressor to maintain proper evaporator temperature. This is called the "Continous" type. The Compressor runs continuously when the air conditioner is turned on.

Recently several vehicle manufacturers have incorporated both types of control on vehicles. When the AC switch is on "Max Cool", the compressor runs continuously. When at Normal or "FE" settings the compressor cycles.

The "Pass Master" device will work best on systems designed to operate in a "Continuous" mode. During the acceleration modes the compressor will be cut out by the "Pass Master" device. Since the compressor will run enough during non-acceleration modes to control evaporative temperature, the reduced engine load in acceleration should result in fuel economy savings.

On "Cycling" type systems, the "Pass Master" may or may not have an effect. If the car accelerates while the compressor is not engaged, the "Pass Master" will have no effect. If the compressor is engaged, the vehicle will accelerate under less load with the "Pass Master". Upon completion of the acceleration the compressor will run to correct the evaporative temperature. The fuel saving will be caused by making the compressor run during more efficient engine operation modes (cruise versus acceleration). Due to the intermittent cycling and the delayed compressor operation, less fuel economy gains are expected on this type of air conditioning system.

The four late model test vehicles had different A/C type systems. All but the Buick Regal cycled the compressor during the "Max AC" testing. The Regal compressor is in continuous operation when the "Max AC" setting is selected. The test data does not support the differentiation between the cyclic and continuous type systems. The largest improvement was noted on a cyclic system, the Dodge Dart. It is our judgment that the differentiation is still valid. The data masks the difference because the PM-4, PM-6, and PM-8 were set more appropriately for some test vehicles than others.

The largest drawback with the "Pass Master" device is that it is not optimized for each type of vehicle. A suggested improvement would be to make it's vacuum cutout setting adjustable and supply in the installation instructions an operator optimization procedure. This suggestion would insure that the device operated correctly for each vehicle. With all of the varied engine sizes, manifold vacuum actuators and modifiers, vehicle sizes, axle ratios, and transmissions, it is impossible to characterize the vacuum vs. acceleration rate characteristics of all vehicles with just three devices.

The final consideration as to the effectiveness of this device is a geographic one. The device only works when the AC is used. The yearly fuel economy benefit would depend on how much the vehicle air conditioners are used.

For the Dodge Dart which gave the largest improvement in fuel economy the savings in actual fuel economy was 4.04%. If an owner lived in a warm climate and used his (her) air conditioner 75% of the time, he (she) could see a fuel economy benefit of about 3%. An owner in a colder climate may use his (her) air conditioner 10% of the time. The corresponding fuel savings would only be 0.4%. This is an optimum fuel economy gain. The other three vehicles did not show the same amount of improvement.

16. Conclusions

The overall conclusion of this report is that the "Pass Master" does reduce vehicle emissions and fuel consumption by a small but discernible amount when the air conditioner is turned on.

The amount of fuel economy benefit depends on several factors. The most important factor is the amount that the vehicle air conditioner is used. Drivers in warm climates who frequently use their air conditioner may experience up to a 4% improvement in fuel economy when driving in situations that frequently activate the device. The second important factor is the suitability of the device to the particular manifold vacuum characteristics of the vehicle. The improvement in fuel economy with the air conditioner on will vary from 0 to 4% depending on the vehicle and the specific calibration of the "Pass Master" unit. Another factor affecting the performance is the type of vehicle air conditioning unit to which the "Pass Master" is applied. "Continuous" systems should realize a larger benefit than "Cycling" systems. The final factor is the amount of acceleration-mode operation. The "Pass Master" system will show the greatest improvement in urban stop-and-go driving. Less improvement or no improvement will be noted in steady state highway type conditions.

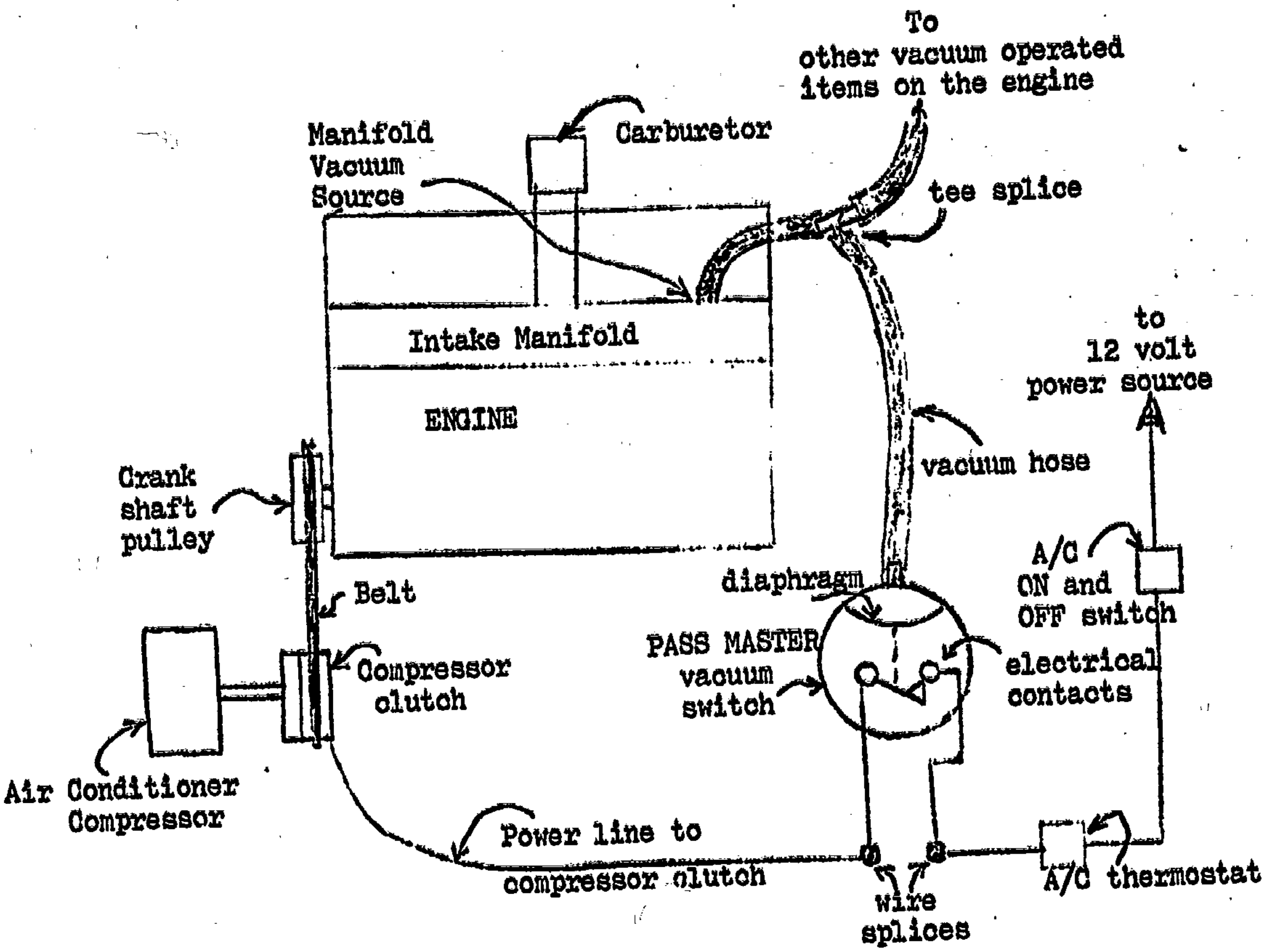
The emissions of test vehicles running with the Air Conditioning on are generally reduced when the "Pass Master" is used.

A larger general vehicle improvement may be found if the "Pass Master" was either produced for specific vehicle calibrations or the device was made "field-adjustable" so that it could be optimized for each vehicle.

Attachments

Attachment A	Schematic Representation of Pass Master Installation
Attachment B	Installation Instructions
Attachment C	Automobile Club of Southern California Test Data
Attachment D	U.S. ERDA Test Data
Attachment E	EPA Testing Summary (4 parts)
Attachment F	EPA Test Data Sheets
Attachment G	EPA Vehicle Description
Attachment H	Copy of Patent #3462964

Attachment A

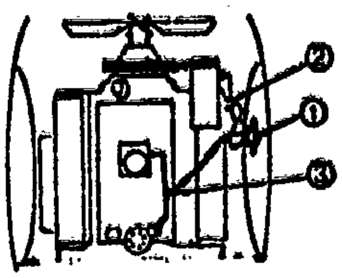


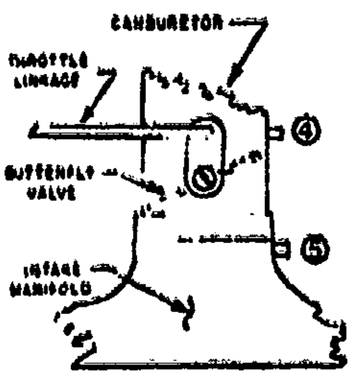
Schematic Representation of Pass Master Installation.

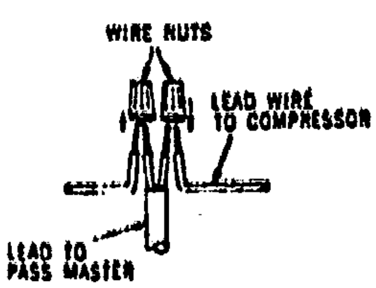
Attachment B

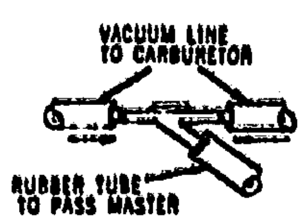
PASSMASTER AIR CONDITIONER COMPRESSOR CUT-OUT

The HALEM INDUSTRIES PASS MASTER Air Conditioner Compressor Cut-Out is a precision vacuum actuated switch, factory calibrated to cut off the air conditioner compressor during acceleration periods such as starting from stop, climbing hills or passing and turn it back on during deceleration or coasting. This will relieve the engine from its power robbing, fuel consuming, pollution causing burden and restore full vehicle performance to levels of non-air conditioned vehicle standards.









INSTALLATION INSTRUCTIONS

1. Select a mounting position for the PASS MASTER on the side wall, fender well or fire wall of the engine compartment, as far as practicable from any heat producing source. The mounting surface must be flat to avoid warping the plastic case.
2. Make sure the PASS MASTER lead wire will easily reach some point on the electrical wire leading to the air conditioning compressor clutch.
3. Make sure the rubber tubing will reach some point on the intake manifold vacuum line. This can usually be found near the carburetor and can be identified by the rubber or metal tubing routed to vacuum accessories or to a port on the distributor advance mechanism.
4. In the event compressor cut off during idle is desired, use the vacuum source above the carburetor butterfly valve. (Some cars may not provide this vacuum source.)
5. If compressor off at idle is NOT desired, make sure the vacuum source selected is below the carburetor butterfly valve. This vacuum source is the same as the intake manifold vacuum. If not sure where the vacuum source is located, your gas station attendant can point it out.
6. Drill or punch two holes to fit the PASS MASTER and mount it with the sheet metal screws provided. If the surface is irregular, one screw tightened snugly will suffice to keep the unit in place and yet not permit warping of the case.
7. Cut the electrical wire leading to the compressor clutch, strip about 3/8-inch of insulation off the two leads and attach the PASS MASTER lead wire using the wire nuts provided.
8. Cut the vacuum line to the vacuum source, insert the tee provided and connect your PASS MASTER with the provided rubber tube. If your car has a metal vacuum line, cut two one inch pieces from your rubber tubing and use these to splice the tee into the line.
9. Your HALEM INDUSTRIES PASS MASTER Compressor Cut-Out is now ready for use and should require NO adjustments. If, however, your car is equipped with a simultaneous heat/cool mix, climate control system, you may have to adjust the temperature controller to compensate for the cycling off of the air conditioner compressor. Trial and error will determine the optimum setting.

Your HALEM INDUSTRIES PASS MASTER was designed to function on all internal combustion engines, including yours, so follow our installation instructions carefully and enjoy its benefits.

INCREASES ENGINE POWER FOR MAXIMUM ACCELERATION WITH AIR CONDITIONING

HALEM INDUSTRIES, INC. P.O. BOX 1419 COCOA, FL 32922 (305) 636 - 7810

Attachment C

Automobile Club of Southern California

HEADQUARTERS: 2601 SOUTH FIGUEROA STREET • LOS ANGELES, CALIFORNIA 90007
MAILING: P. O. BOX 2890 TERMINAL ANNEX • LOS ANGELES, CALIFORNIA 90051

THOMAS A. TAPPENDEN, SUPERVISOR
AUTOMOTIVE ENGINEERING DEPT.
(213) 746-4462
741-4457

April 4, 1977

Mr. Norman Halem
Halem Industries, Inc.
P. O. Box 1419
Cocoa, Florida 32922

Dear Mr. Halem:

Additional tests have been performed to evaluate the Pass Master Device. Details of these tests are:

Test Vehicle - 1972 Chevrolet Nova - license #321 EXM.

Test Method - Emission and fuel consumption data was developed using the Federally approved test procedure. The vehicle was operated from a cold start for each test. Engine dwell, timing and idle speed were not changed between tests.

The test results: -	Emissions Grams/Mile			Fuel Consumption Miles/Gallon		
	HC	CO	NOX	Urban	Highway	Composite
Test #725 without Pass Master Device Air Conditioning Off	0.87	11.26	1.96	10.36	16.89	12.54
Test #726 with Pass Master Device Air Conditioning On	0.89	12.65	2.34	10.04	15.44	11.91
Test #727 without Pass Master Device Air Conditioning On	1.11	17.86	2.57	9.57	15.04	11.43

Enclosed are copies of the previous test results. If you have any questions do not hesitate to contact me.

Yours truly,

Thomas Tappenden

Thomas A. Tappenden

TAT/gm
Attachment

PASS MASTER DATA

COLD START CVS-2 AND HIGHWAY TEST

		BASELINE NO AC - A (725)	NO DEVICE AND AC - B (727)	%Diff A	W/DEVICE AND AC - C (726)	%Diff	*BUY BACK
URBAN	CB	10.365	9.570	7.7	10.037	4.9	58.7
HIGHWAY	CB	16.894	15.004	11.2	15.437	2.9	22.9
COMPOSITE	CB	12.547	11.433	8.9	11.912	4.2	43.0
	HC	0.866	1.108		0.886		
	NOX	1.956	2.568		2.338		
	CO	11.261	17.862		12.646		
	CO2	835.078	895.027		860.850		

$$\text{*Buy Back} = \frac{C - B}{A - B} \times 100\%$$

PASS MASTER DATA

HOT START (CVS-2 STABLIZED AND HOT 505) TEST

		BASELINE A/C OFF A (720)	BASELINE A/C ON B1 (717)	%Diff A	BASELINE A/C ON B2 (719)	%Diff A	WITH DEVICE AND A/C C (718)	%Diff B1	%Diff B2	*BUY BACK B1	*BUY BACK B2
URBAN	CB	12.447	10.687	14%	10.687	14%	11.350	6.2	6.2	38%	38%
	HC	.822	1.013		.915		.938				
	CO	7.038	11.881		11.711		8.947				
	CO_2	698.794	807.895		808.424		764.277				

$$\text{*Buy Back} = \frac{C - B1}{A - B1} \times 100\%$$

$$= \frac{C - B2}{A - B2} \times 100\%$$

Attachment D

U.S. DEPARTMENT OF TRANSPORTATION
TRANSPORTATION SYSTEMS CENTER
KENDALL SQUARE
CAMBRIDGE, MA 02142

In reply refer
to: TSC-332

August 3, 1977

Mr. Norman Halem
Halem Industries, Inc.
PO Box 1419
Cocoa, FL 32922

Dear Norm:

Enclosed is a copy of a letter from B. H. Eccleston of Bartlesville Energy Research Center, to Walt Harriott, containing preliminary results of tests conducted on a 1977 Pinto and Cutlass to determine the effects of your air conditioner cut-out device on fuel economy. When I obtain results of further tests (including emissions data), I will forward them to you. Although the results are preliminary, we expect a final report in October.

Cordially,

K. J. Bray

Enclosure

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
BARTLESVILLE ENERGY RESEARCH CENTER
P.O. BOX 1398
BARTLESVILLE, OKLAHOMA 74003

July 15, 1977

Mr. Walter Harriott
Department of Transportation
Transportation Systems Center
Kendall Square
Cambridge, MA 02142

Dear Walt:

As promised, enclosed are updated and corrected tables of data from the ambient temperature effects project. The A and B tables, "Cycle fuel economy and emissions. . ." and "Cycle fuel economy at approximately 1 mile intervals. . ." are from the same source as the data sent to you with my letter of June 20, 1977. The tables have received preliminary checking and errors corrected; however, they are still subject to minor corrections. The additional C and D tables present temperature data during the cycle tests and fuel, torque, and temperature for the steady-state tests. A further description of the tabular material is enclosed as attachment No. 1.

Also enclosed as attachment No. 2 are results of tests with the air conditioner disconnect device. It was intended the device be evaluated over the full cold start through the two highway cycles; however, it was found that the tests would have to be replicated at least three times and evaluations made at all conditions within a short time frame. That is because we are attempting to determine a possible fuel savings approaching the repeatability of the test. Therefore, it was decided to repeat the tests as used in the preliminary evaluation (my letter of April 11, 1977 to you) but using the weatherized chassis dynamometer at 100° F ambient. The Cutlass (No. 158) and Pinto (No. 156) were used as the test vehicles and the hot transient and stabilized cycles of the 75 FET used for the dynamometer driving schedule. The procedure consisted of driving the vehicle on the dynamometer at 50 mph until the oil temperature approached equilibrium then taking bag samples for FET stabilized and hot transient cycles with the following variations:

1.	Air conditioner	on	device	off
2.	"	on	"	off
3.	"	on	"	on
4.	"	off	"	off
5.	"	on	"	off
6.	"	on	"	on
7.	"	off	"	off

The data are shown in attachment No. 2, pages 1 and 2. The Pinto is scheduled for retesting with a vacuum switch adjusted to increase the air conditioner "off" time. The temperature data shown should be used only as an indication of the magnitude of loss in cooling effectiveness as much more attention to thermocouple placement and air velocity would be required before they could be accepted as a measure of cooling effectiveness.

Sincerely,

Barton H Eccleston

B. H. Eccleston
Research Chemist
Fuel/Engine Systems Research

Enclosures:
As stated

Mr. Walt Harriott Attachment #2 July 15, 1977

Cutlass #158

Test No.	HT + S cycles of FET, mpg 1	2	3	Avg.
Air conditionar off.........	13.64	14.11	-	13.88
Air conditioner on plus disconnect...........	12.67	12.89	-	12.78
Air conditioner on..........	11.54	11.55	11.40	11.50

Air conditioner off → on = 13.88 - 11.50 = 2.38 mpg = 17.2% of off mpg
Air conditioner off → on with disconnect = 13.88 - 12.78 = 1.10 = 7.9% of off mpg
17.2 - 7.9 = 9.3% savings in fuel economy
or
Air conditioner off → on = .0720 gpm - .0870 gpm = .0149 gpm to run air contitioner = 20.7%
Air conditioner off → on + disconnect = .0720 - .0782 gpm - .0062 gpm to run air conditioner with disconnect = 8.6%
20.7 - 8.6 = 12.1% savings in fuel consumption

NOTES:

a. Above for hot transient plus stabilized phases of 1975 FET
b. Disconnect device declutched air conditioner 30-36% of total cycle
c. Temperature of test cell was 100°F
d. Temperatures at air conditioner outlet with all vents open and high fan speed

Air conditioner on	outside air to evaporator	57°
Air conditioner on	recirculated air to evaporator	44°
Air conditioner on + device	outside air to evaporator	66°
Air conditioner on + device	recirculated air to evaporator	55°

Mr. Walt Harriott July 15, 1977

Pinto #156 - 27% off

	HT + S cycles of FET, mpg			
	Avg.	N	S	.95 ts/ n
Air conditioner off......	19.86	6	.97	1.02
Air conditioner on disconnect on..........	18.31	3	.165	.50
Air conditioner on.......	17.18	10	.49	.37

Air conditioner off → on = 19.86 - 17.18 = 2.68 mpg = 13.5% of off mpg
Air conditioner off → on with disconnect = 19.86 - 18.31 - 1.55 mpg = 7.8% of off mpg 13.5 - 7.8 = 5.7%
or
Air conditioner off → on = .0504 - .0582 = .0078 gpm required to run air conditioner = 15.5%
Air conditioner off → on with disconnect = .0504 - .0546 = .0042 gpm to run air conditioner = 8.3%
15.5 - 8.3 = 7.2% savings in fuel consumption or 54% of fuel to run air conditioner recovered

<u>NOTES:</u>

a. The above for HT + S cycles of 1975 FET
b. The disconnect declutched the air conditioner 27% of cycle
c. The disconnect turned air conditioner off at 10" Hg on at 12" Hg
d. The test cell temperature was 100°F
e. The air to the air conditioner evaporator was ~ 108°F
f. The temperature at center air conditioner vent with all vents open fan on high was:

Air conditioner on	outside air to evaporator	64°
Air conditioner on + device	outside air to evaporator	68°
Air conditioner on + device	recirculated air to evaporator	58°

Mr. Walt Harriott

Cutlass # 158 HOT TRANSIENT AND STABILIZED

Date	Test #	Fuel Economy (mpg)	Fuel	CO	HC	NOX
				(grams per mile)		
Air Conditioner OFF						
6-30	7504	13.65	204	2.84	.34	1.57
6-30	7507	14.11	198	2.41	.32	1.51
	Avg.	13.88	201	2.63	.33	1.54
Air Conditioner ON WITH Disconnect device.						
6-30	7505	12.68	220	3.45	.31	2.38
6-30	7508	12.91	216	3.25	.32	2.35
	Avg.	12.8	218	3.37	.32	2.37
Air Conditioner ON						
6-30	7502	11.55	242	12.53	.46	2.67
6-30	7503	11.56	241	8.33	.38	2.52
6-30	7506	11.42	245	7.22	.36	2.63
	Avg.	11.51	243	9.36	.40	2.61

SUMMARY

	Fuel Economy	Fuel	CO	HC	NOX
A = (on-off)	-2.37	42	6.73	.07	1.07
B = On - (on with PM)	-1.29	25	5.99	.08	.24
% Recovered = (B - A)100	54	60	89	114	22
% Reduction = (B - on)100	11.2	10.1	64	20	9.2

Mr. Walt Harriott

Pinto # 156 HOT TRANSIENT AND STABILIZED

Date	Test #	Fuel Economy (mpg)	Fuel	CO	HC	NOX
				(grams per mile)		
Air Conditioner OFF						
7-13	7536	20.35	137	9.11	.45	1.73
7-13	7533	18.51	151	20.73	1.31	2.28
Avg.		19.43	144	14.92	.88	2.01
Air Conditioner ON WITH Disconnect device.						
7-13	7539	18.54	150.4	13.57	.63	2.54
7-13	7537	18.26	153.6	17.38	.94	2.61
7-13	7535	18.22	153.3	17.06	.89	2.64
Avg.		18.34	152.2	16.00	.82	2.60
Air Conditioner ON						
7-13	7538	17.72	157.4	21.91	1.08	2.71
7-13	7534	17.10	163.5	26.29	1.17	2.87
Avg.		17.41	160.5	24.1	1.13	2.79

SUMMARY

	Fuel Economy	Fuel	CO	HC	NOX
A = (on-off)	-2.02	16.5	9.18	0.25	0.78
B = On - (on with PM)	-0.93	8.3	8.10	0.31	0.19
% Recovered = (B - A)100	46	50	88	124	24
% Reduction = (B - on)100	5.3	5.2	33.6	27.4	6.8

Attachment E

Passmaster Testing

Pinto

A. FTP

Date	Test #	HC	CO	CO_2	NOx	F.E.	Configuration
10-25-79	80-0305	.27	4.4	410	.71	21.2	AC off
10-31-79	80-0391	.22	3.6	467	1.38	18.7	AC on; Passmaster On
11-1-79	80-0393	.22	2.4	464	1.33	18.9	AC on; Passmaster Off
Percent buyback		0.0%	None	(-)5.56%	(-)8.06%	(-)8.7%	

B. HFET

Date	Test #	HC	CO	CO_2	NOx	F.E.	Configuration
10-24-79	80-0304	.02	.6	324	.48	27.3	AC off
10-31-79	80-0392	.03	.1	357	1.50	24.8	AC on, Passmaster On
10-26-79	80-0308	.02	.8	349	.62**	25.3	AC on, Passmaster On
11-1-79	80-0394	.02	.2	356	1.45	24.9	AC on, Passmaster Off
Percent buyback		*	*	(+)9.38%	**	(+)6.25%	

C. Hot LA-4

Date	Test #	HC	CO	CO_2	NOx	F.E.	Configuration
10-29-79	80-0309	.13	.6	386	.92	22.9	AC off
10-29-79	80-0397	.14	.4**	431	1.10	20.5	AC on, Passmaster On
10-29-79	80-0312	.17	1.3	448	1.17	19.7	AC on, Passmaster Off
Percent buyback		(+)75%		(+)27.4%	(+)28.0%	(+)25.0%	

*Numbers are too low for meaningful analysis.

**Questionable data.

Chrysler LeBaron

A. Hot LA-4 Data at 75°F

Date	Test #	HC	CO	CO_2	NOx	F.E.	Configuration
11-7-79	80-0462	.699	4.735	544	1.569	16.04	AC off @ 75°F
11-7-79	80-0463	.635	4.469	549	1.554	15.85	AC off @ 75°F
11-7-79	80-0464	.736	7.008	588	1.955	14.74	AC on, P.M.off @ 75°F
11-7-79	80-0465	.735	8.590	585	1.832	14.73	AC on, P.M.off @ 75°F
11-7-79	80-0466	.701	7.875	585	1.874	14.78	AC on, P.M.on @ 75°F
11-7-79	80-0467	.682	6.716	582	1.824	14.88	AC on, P.M. on @ 75°F
	% buyback	(+)52.7%	(+)15.8%	(+)7.72%	(+)13.48%	(+)7.98%	

B. Hot LA-4 Data at 85°F

Date	Test #	HC	CO	CO_2	NOx	F.E.	Configuration
11-8-79	80-0480	.769	6.483	524	1.375	16.50	AC off at 85°F
11-8-79	80-0481	.728	6.716	526	1.386	16.35	AC off at 85°F
11-8-79	80-0482	.963	15.081	561	1.661	15.08	AC on, P.M. off @ 85°F
11-8-79	80-0484	1.218	22.31	558	1.444	14.88	AC on, P.M. off @ 85°F
11-8-79	80-0485	.967	15.580	566	1.573	15.03	AC on, P.M. on @ 85°F
11-8-79	80-0486	.884	13.990	555	1.628	15.32	AC on, P.M. on @ 85°F
	% buyback	(+)47.8%	(+)32.33%	(+)1.71%	(-)27.91%	(+)13.49%	

Buick Regal

A. FTP

Date	Test #	HC	CO	CO_2	NOx	F.E.	Configuration
11-7-79	80-0447	.85	8.5	455	1.18	18.8	AC off
11-8-79	80-0449	1.09	17.8	549	1.79	15.3	AC on, Passmaster off
11-15-79	80-0451	.73	10.4	548	1.59	15.6	AC on, Passmaster on
	% buyback	(+)114.0%	(+)79.6%	(+)1.06%	(+)32.8%	(+)8.57%	

B. HFET

Date	Test #	HC	CO	CO_2	NOx	F.E.	Configuration
11-7-79	80-0448	.08	.7	349	1.30	25.3	AC off
11-8-79	80-0450	.19	4.7	395	2.31	22.0	AC on, Passmaster off
11-15-79	80-0452	.09	1.1	391	2.26	22.6	AC on, Passmaster on
	% buyback	*	(+)90.0%	(+)8.7%	(+)4.95%	(+)18.18%	

* Numbers too small for meaningful analysis.

Dodge Dart

A. Hot LA-4 at 75°F

Date	Test #	HC	CO	CO_2	NOx	F.E.	Configuration
11-27-79	80-0772	.492	.177	505	1.50	17.5	AC off @ 75°F
11-27-79	80-0723	.491	.314	504	1.48	17.5	AC off @ 75°F
11-27-79	80-0724	.400	.338	548	1.82	16.1	AC on, P.M. off @ 75°F
11-27-80	80-0725	.408	.120	539	1.83	16.4	AC on, P.M. off @ 75°F
11-27-79	80-0726	.518	.158	524	1.84	16.9	AC on, P.M. on @ 75°F
11-28-79	80-0727	.510	.234	523	1.86	16.9	AC on, P.M. on @ 75°F
	% buyback	(-)125%*	*	(+)51.3%	(-)7.5%	(+)52.0%	

B. Hot LA-4 at 100°F

Date	Test #	HC	CO	CO_2	NOx	F.E.	Configuration
12-1-79	80-0793	.312	.243	525	1.93	16.7	AC off at 100°F
21-1-79	80-0792	.303	.210	521	2.00	16.9	AC off at 100°F
12-1-79	80-0791	.356	.292	565	2.67	15.5	AC on, P.M. off @100°F
12-1-79	80-0790	.152	.208	559	2.61	15.8	AC on, P.M. off @100°F
12-1-79	80-0789	.302	.212	546	2.78	16.1	AC on, P.M. on @ 100°F
12-1-79	80-0788	.310	1.59	546	2.66	16.1	AC on, P.M. on @ 100°F
	% buyback	(-)97.2%	*	(+)41.0%	-11.85%	(+)39.13%	

* Numbers are too widely spread for accurate analysis.

MFR. CODE	VEHICLE I.D.	VEH. SIZE EVAP	MFR. DEF. INIT.	MILE CHG.	WEIGHT CODE	ACHP	ALT. M.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	[illegible]	0						2750	9.9			EXPERIMENTAL / CVS 75-LATER

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GROSS VEH. WT	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO MMG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.69	61.0	75.0	F	2TC

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVO H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-23-79	10	5207	2750	7.4		10310.0	45.00	0.9341	44.6	

BAG 1 3.587 MILES 5.732 KM [illegible] ROLL REVS. VMIX= 2767.0 CU.FT. DILUTION FACTOR = 11.332
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	15	48.7	144.71	15	2.1	3.12	141.50 PPM	6.43	1.404	1.122
NOX-CHEM	16	22.1	23.93	15	0.1	0.11	22.93 PPM	3.23	0.908	0.564
CO2	23	42.5	1.036	23	2.0	0.042	0.996 %	1438.22	403.818	250.921
CO	23	60.3	1337.51	16	0.0	0.6	1337.51 PPM	122.90	34.508	21.442

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
19.1	8.13	12.3

BAG 2 3.809 MILES 6.131 KM [illegible] ROLL REVS. VMIX= 4700.0 CU.FT. DILUTION FACTOR = 19.144
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	17.5	13.60	14	5.4	4.34	8.89 PPM	0.68	0.179	0.111
NOX-CHEM	15	9.7	[illegible]	15	0.4	0.20	4.42 PPM	1.15	0.301	0.187
CO2	23	29.8	0.691	23	2.0	0.042	0.651 %	1586.41	416.461	258.764
CO	17	30.4	[illegible]	17	0.0	0.0	[illegible] PPM	11.51	3.020	1.877

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
21.0	8.94	11.2

BAG 3 3.554 MILES 5.720 KM [illegible] ROLL REVS. VMIX= 2771.0 CU.FT. DILUTION FACTOR = 13.467
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	27.2	[illegible]	14	[illegible]	[illegible]	16.83 PPM	0.76	0.214	0.133
NOX-CHEM	15	31.9	16.10	15	0.3	0.15	15.96 PPM	2.24	0.629	0.391
CO2	23	40.0	0.981	23	2.0	0.042	0.942 %	1352.50	380.163	236.222
CO	14	25.2	[illegible]	14	0.1	0.47	120.54 PPM	11.01	3.096	1.923

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
23.0	9.77	10.2

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.53	9.6	404.	0.52
BEFORE ROUNDING	0.5297	9.582	403.83	0.5173
GRAMS/KM	0.327	5.95	251.	0.32
BEFORE ROUNDING	0.3235	5.9545	250.92	0.3214

	MPG	KPL	L/100KM
WEIGHTED VALUES	21.1	9.0	11.2
	21.0761	8.9626	11.1574
72-74 FTP	20.1	8.5	11.7
	20.0705	8.5328	11.7194
UNWEIGHTED FTP	20.9	8.9	11.2
	20.9394	8.9022	11.2330

COMMENTS: FUEL NOT CHANGED FOR TEST 2 FALSE STARTS

VOID

DYNO SITE10207 TES. # 80-0315

MFR. CODE	VEHICLE I.D.	VEH. SIGN	EVAP	EFF. HEP. INIT.	HEP. CHG.	RETEST CODE	ACHP	ALT. H.P. REIN.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
38	EXXON								2750	9.9			EXPERIMENTAL / HWFE

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE PRESSURE	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS INLET
28.72	63.6	74.0	F	27L

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DYNO H.P.	ODOM.	BARO PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-23-79	12	D207	2750	7.4		10321.0	45.00	0.9523	43.3	

BAG 1 10.191 MILES 16.418 MIN 23762. ROLL REVS.   VMIX= 4023.0 CU.FT.   DILUTION FACTOR = 8.342

SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	11.4	[illegible]	15	3.0	4.40	4.47 PPM	0.29	0.029	0.018
NOX-CHEM	15	34.7	17.51	16	0.0	0.0	17.51 PPM	3.63	0.357	0.222
CO2	23	61.1	1.544	23	2.0	0.042	1.501 %	3253.16	319.207	198.346
CO	17	31.0	77.71	17	0.3	0.72	77.07 PPM	10.22	1.003	0.623

AUX. FIELD1	AUX. FIELD2	AUX. CODE

MPG	KPL	L/100KM
27.6	11.75	8.5

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.03	1.0	319.	0.35
BEFORE ROUNDING	0.0294	1.003	319.20	0.3565
GRAMS/KM	0.018	0.62	198.	0.22
BEFORE ROUNDING	[illegible]	0.6233	198.36	0.2215

	MPG	KPL	L/100KM
WEIGHTED VALUES	27.7	11.8	8.5
	27.6553	11.7705	8.4957
72-74 FTP	27.7	11.8	8.5
	27.6502	11.7553	8.5067
UNWEIGHTED FTP	27.7	11.8	8.5
	27.6502	11.7553	8.5067

COMMENTS: OLD FUEL

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	MUR. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL / CVS 75-LATER

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.91	62.5	75.0	F	27C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-24-79	12	D207	2750	7.4		10348.0	45.00	0.9611	49.7	

BAG 1 3.593 MILES 5.782 KM 8377. ROLL REVS. VMIX= 2797.0 CU.FT. DILUTION FACTOR = 11.442
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	16	30.2	90.73	16	1.2	3.60	87.44 PPM	3.99	1.112	0.691			
NOX-CHEM	16	26.5	27.54	16	0.0	0.0	27.54 PPM	4.01	1.116	0.693	MPG	KPL	L/100KM
CO2	23	44.1	1.040	23	2.1	0.044	1.040 %	1506.49	419.303	260.543	19.5	8.27	12.1
CO	20	39.2	822.22	20	0.3	5.74	816.98 PPM	75.34	20.969	13.030			

BAG 2 3.840 MILES 6.180 KM 8953. ROLL REVS. VMIX= 4746.0 CU.FT. DILUTION FACTOR = 19.101
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	10.6	7.81	14	5.0	3.66	4.33 PPM	0.33	0.087	0.054			
NOX-CHEM	15	11.6	5.98	15	0.1	0.05	5.93 PPM	1.47	0.381	0.237	MPG	KPL	L/100KM
CO2	23	30.8	0.696	23	2.0	0.042	0.657 %	1614.63	420.469	261.280	20.9	8.90	11.2
CO	17	17.9	43.47	17	0.0	0.0	43.47 PPM	6.80	1.771	1.101			

BAG 3 3.601 MILES 5.795 KM 8395. ROLL REVS. VMIX= 2787.0 CU.FT. DILUTION FACTOR = 13.096
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	16	22.4	16.56	14	5.1	3.75	13.11 PPM	0.60	0.166	0.103			
NOX-CHEM	15	31.3	16.05	15	0.2	0.10	15.96 PPM	2.31	0.643	0.400	MPG	KPL	L/100KM
CO2	23	41.9	1.015	23	2.0	0.042	0.976 %	1408.98	391.322	243.156	22.5	9.55	10.5
CO	17	28.8	70.29	17	0.0	0.0	70.29 PPM	6.46	1.794	1.115			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.32	5.8	412.	0.61
BEFORE ROUNDING	0.3218	5.767	412.19	0.6062
GRAMS/KM	0.200	3.58	256.	0.38
BEFORE ROUNDING	0.19999	3.5840	256.12	0.3767

	MPG	KPL	L/100KM
WEIGHTED VALUES	21.0	8.9	11.2
	21.0080	8.9327	11.1947
72-74 FTP	20.2	8.6	11.6
	20.2042	8.5897	11.6417
UNWEIGHTED FTP	20.9	8.9	11.3
	20.8946	8.8832	11.2571

COMMENTS: PASSMASTER FEED TESTING. UNAUTHORIZED KICKDOWN ON BAG 1 START. BASELINE
FIRST 6 SECONDS OF BAG 3 RAN WITH AMBIENT PUMPS OFF ON CVS
BAG 2 30 MIN OLD

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	NUM. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL / HWFE

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO MMHG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.91	64.0	80.0	F	27C

TEST DATE	NR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-24-79	14	0207	2750	7.4		10369.0	45.00	0.9563	41.4	

BAG I 10.212 MILES 16.434 KM 23509. ROLL REVS. VMIX= 4031.0 CU.FT. DILUTION FACTOR = 8.645
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	7.7	5.66	14	4.3	3.16	2.89 PPM	0.19	0.019	0.012			
NOX-CHEM	15	46.3	23.32	15	0.1	0.05	23.27 PPM	4.86	0.476	0.296	MPG 27.3	KPL 11.59	L/100KM 8.6
CO2	23	61.8	1.620	23	1.9	0.040	1.585 %	3311.09	324.249	201.419			
CO	17	17.7	42.98	17	0.0	0.0	42.98 PPM	5.71	0.559	0.348			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.02	0.6	324.	0.48
BEFORE ROUNDING	0.0146	0.559	324.24	0.4759
GRAMS/KM	0.012	0.35	201.	0.30
BEFORE ROUNDING	0.01157	0.3475	201.47	0.2956

	MPG	KPL	L/100KM
WEIGHTED VALUES	27.3	11.6	8.6
	27.2860	11.6212	8.60
72-74 FTP	27.3	11.6	8.6
	27.2834	11.5993	8.6211
UNWEIGHTED FTP	27.3	11.6	8.6
	27.2834	11.5993	8.6211

COMMENTS: PASSMASTER FORD TESTING
BASELINE

5 of 53

TR. CODE	VEHICLE I.D.	VEH. SION	EVAP	REP. INIT.	REPL. CHG.	RETEST CODE	ACHP	SLT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE	TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL	CVS 75-LATER

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO MHG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.08	63.6	74.7	F	27C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DYNO H.P.	ODO.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-25-79	09	D207	2750	7.4		10397.0	45.00	0.9884	56.0	

BAG 1 3.560 MILES 5.730 KM 8301. ROLL REVS. VMIX= 27??.0 CU.FT. DILUTION FACTOR = 11.828

SITE BASIS

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	16	25.5	78.59	16	1.3	3.90	57.02 PPM	3.06	0.860	0.534
NOX-CHEM	16	28.8	28.66	16	0.2	0.20	28.47 PPM	4.26	1.197	0.744
CO2	23	43.7	1.069	23	2.1	0.044	1.028 %	1489.22	418.289	259.913
CO	20	28.2	574.54	20	4.5	[illegible]	565.77 PPM	52.15	14.649	9.103

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
20.0	8.49	11.8

BAG 2 3.820 MILES 6.148 KM 8987. ROLL REVS. VMIX= 4761.0 CU.FT. DILUTION FACTOR = 19.284

SITE BASIS

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	10.0	7.36	14	4.7	3.69	3.95 PPM	0.31	0.080	0.050
NOX-CHEM	14	35.0	9.07	14	0.4	0.10	8.97 PPM	2.29	0.599	0.372
CO2	23	29.0	0.691	23	1.9	0.040	0.653 %	1611.90	421.944	262.184
CO	17	12.0	29.06	17	0.0	0.0	29.05 PPM	4.56	1.194	0.742

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
20.9	8.89	11.2

BAG 3 3.562 MILES 5.732 KM 8304. ROLL REVS. VMIX= 27??.0 CU.FT. DILUTION FACTOR = 13.566

SITE BASIS

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	23.7	17.55	14	5.0	3.68	14.16 PPM	0.64	0.181	0.112
NOX-CHEM	14	51.7	13.05	14	0.3	0.08	12.98 PPM	1.94	0.544	0.338
CO2	23	40.4	0.975	23	2.0	0.042	0.936 %	1352.71	379.811	236.003
CO	17	43.5	106.82	17	0.0	0.0	106.82 PPM	9.82	2.757	1.713

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
23.1	9.80	10.2

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.27	4.4	410.	0.71
BEFORE ROUNDING	0.2546	4.414	409.59	0.7077
GRAMS/KM	0.168	2.74	255.	0.44
BEFORE ROUNDING	0.16753	2.7432	254.51	0.4397

	MPG	KPL	L/100KM
WEIGHTED VALUES	21.2	9.0	11.1
	21.2272	9.0160	11.0913
72-74 FTP	20.5	8.7	11.5
	20.4569	8.6971	11.4980
UNWEIGHTED FTP	21.2	9.0	11.1
	21.2377	9.0291	11.0752

COMMENTS:

PASSMASTER FERD TESTING. A/C OFF. 11.5 MIN SOAK. HAD 2 30 MIN OLD

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL / HWFE

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.08	64.2	77.7	F	27C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-25-79	11	0207	2750	7.6		10418.0	45.00	0.9751	47.9	

BAG 1 10.203 MILES 16.421 KM 23790. ROLL REVS. VMIX= 4026.0 CU.FT. DILUTION FACTOR = 7.601
SITE #A21S

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	8.7	6.40	14	4.6	3.38	3.47 PPM	0.23	0.022	0.014
NOX-CHEM	15	68.3	34.52	15	0.2	0.10	34.43 PPM	7.32	0.718	0.446
CO2	23	65.9	1.756	23	2.2	0.046	1.716 %	3578.88	350.753	217.948
CO	17	26.6	64.86	17	0.0	0.0	64.86 PPM	8.61	0.844	0.524

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
25.2	10.71	9.3

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.02	0.8	351.	0.72
BEFORE ROUNDING	0.0223	0.843	350.75	0.7175
GRAMS/KM	0.014	0.52	218.	0.45
BEFORE ROUNDING	0.01388	0.5242	217.94	0.4458

	MPG	KPL	L/100KM
WEIGHTED VALUES	25.2	10.7	9.3
	25.1706	10.7040	9.3422
72-74 FTP	25.2	10.7	9.3
	25.1945	10.7112	9.3359
UNWEIGHTED FTP	25.2	10.7	9.3
	25.1945	10.7112	9.3359

COMMENTS: PASSMASTER FERD TESTING
A/C ON. NO DEVICE

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.28	61.6	74.8	F	27C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIME PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-26-79	08	0207	2750	7.6		10445.0	45.00	0.9399	46.9	

BAG 1 3.566 MILES 5.739 KM 4314. ROLL REVS. VMIX= 2660.0 CU.FT. DILUTION FACTOR = 10.574
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	15	48.7	73.18	15	2.3	3.42	70.09 PPM	3.27	0.918	0.570
NOX-CHEM	15	85.7	43.35	15	0.1	0.05	43.31 PPM	6.31	1.768	1.099
CO2	23	47.4	1.175	23	2.2	0.046	1.134 %	1679.69	471.050	292.697
CO	19	86.6	845.26	19	0.0	0.0	845.28 PPM	79.71	22.352	13.889

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
17.4	7.41	13.5

BAG 2 3.841 MILES 6.181 KM 8955. ROLL REVS. VMIX= 4766.0 CU.FT. DILUTION FACTOR = 17.075
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	10.4	7.66	14	4.8	3.53	4.34 PPM	0.34	0.088	0.055
NOX-CHEM	14	51.2	12.92	14	0.3	0.08	12.85 PPM	3.11	0.811	0.504
CO2	23	33.2	0.750	23	2.2	0.046	0.737 %	1816.35	472.914	293.855
CO	17	10.6	40.29	17	0.0	0.0	40.29 PPM	6.32	1.646	1.023

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
18.6	7.92	12.6

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.49	11.6	472.	1.27
BEFORE ROUNDING	0.4874	11.615	472.01	1.2716
GRAMS/KM	0.303	7.22	293.	0.79
BEFORE ROUNDING	0.30290	7.2172	293.29	0.7901

	MPG	KPL	L/100KM
WEIGHTED VALUES	18.0	7.7	13.0
	18.0326	7.6733	13.0321
72-74 FTP	18.0	7.7	13.0
	18.0399	7.6695	13.0385
UNWEIGHTED FTP	18.0	7.7	13.0
	18.0398	7.6695	13.0385

COMMENTS: PASSMASTER FERD TESTING. A/C ON. DEVICE OFF. COLD START
BAG 1-2 CHANGE 5 SECONDS LATE
BAG 2 30 MIN. OLD

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0			-				2750	9.9			EXPERIMENTAL / HWFE

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.30	65.1	79.8	F	27C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-26-79	10	D207	2750	7.4		10466.0	45.00	0.9761	45.2	

BAG 1 10.218 MILES 16.444 KM 23823. ROLL REVS. VMIX= 4070.0 CU.FT. DILUTION FACTOR = 7.718
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	8.3	6.11	14	4.7	3.45	3.10 PPM	0.21	0.020	0.013
NOX-CHEM	15	58.0	29.33	15	0.1	0.05	29.29 PPM	6.30	0.617	0.383
CO2	23	65.1	1.729	23	2.1	0.044	1.691 %	3565.28	348.937	216.819
CO	17	26.5	64.61	17	0.0	0.0	64.61 PPM	8.67	0.849	0.527

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
25.3	10.76	9.3

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.02	0.8	349.	0.62
BEFORE ROUNDING	0.0201	0.848	348.93	0.6167
GRAMS/KM	0.013	0.53	217.	0.38
BEFORE ROUNDING	0.01253	0.5272	216.81	0.3832

	MPG	KPL	L/100KM
WEIGHTED VALUES	25.3	10.8	9.3
	25.3143	10.7526	9.3000
72-74 FTP	25.3	10.8	9.3
	25.3251	10.7668	9.2878
UNWEIGHTED FTP	25.3	10.8	9.3
	25.3251	10.7668	9.2877

COMMENTS: PASSMASTER FERD TESTING. A/C ON. DEVICE ON

4839 0

MFR. CODE	VEHICLE I.D.	VEH. SIGN	EVAP	REP. INIT.	NUM. CONV.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL / CVS 75-LATER

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG.	WET BULB	DRY BULB DEG.	CVS UNIT
29.16	64.5	75.7 F	27C

TEST DATE	NO.	DYNO SITE	ACTUAL INE-TIA SETTING	INDICATED DYNO H.P.	DYU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-31-79	10	0207	2750	7.4		10565.5	45.00	0.9954	54.6	

BAG 1 3.557 MILES 5.724 KM 4293. ROLL REVS. VMIX= 2793.0 CU.FT. DILUTION FACTOR = 10.237
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	30.1	57.18	15	4.7	7.00	50.47 PPM	2.32	0.652	0.405			
NOX-CHEM	15	100.3	56.85	15	0.4	0.21	50.67 PPM	7.63	2.146	1.333	MPG	KPL	L/100KM
CO2	23	49.7	1.263	23	2.2	0.045	1.202 %	1738.93	488.900	303.789	17.2	7.32	13.7
CO	20	29.3	594.62	20	0.5	11.49	580.25 PPM	54.17	15.230	9.463			

BAG 2 3.832 MILES 6.167 KM 4630. ROLL REVS. VMIX= 4727.0 CU.FT. DILUTION FACTOR = 16.983
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	11.4	9.41	14	6.7	4.93	3.76 PPM	0.29	0.076	0.047			
NOX-CHEM	14	66.5	16.72	14	0.7	0.18	16.55 PPM	4.22	1.101	0.684	MPG	KPL	L/100KM
CO2	23	33.5	0.795	23	2.1	0.044	0.746 %	1828.10	477.093	296.452	18.6	7.90	12.7
CO	17	1.0	2.41	17	0.2	0.48	1.95 PPM	0.31	0.080	0.049			

BAG 3 3.547 MILES 5.709 KM 4279. ROLL REVS. VMIX= 2790.0 CU.FT. DILUTION FACTOR = 12.107
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	22.6	16.73	14	9.5	4.63	12.48 PPM	0.57	0.160	0.100			
NOX-CHEM	15	62.7	31.70	15	0.3	0.15	31.56 PPM	4.75	1.339	0.832	MPG	KPL	L/100KM
CO2	23	44.0	1.100	23	2.0	0.042	1.061 %	1534.25	432.553	268.776	20.4	8.66	11.5
CO	17	21.7	52.79	17	0.0	0.0	52.79 PPM	4.86	1.369	0.851			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.22	3.6	467.	1.34
BEFORE ROUNDING	0.2142	3.564	467.33	1.3425
GRAMS/KM	0.13	2.22	290.	0.83
BEFORE ROUNDING	0.1332	2.2176	290.38	0.8340

	MPG	KPL	L/100KM
WEIGHTED VALUES	18.7	8.0	12.5
	18.7346	7.9705	12.5461
72-74 FTP	17.9	7.6	13.1
	17.9062	7.6127	13.1358
UNWEIGHTED FTP	18.6	7.9	12.6
	18.6417	7.9254	12.6175

COMMENTS: PASSMASTER FEND TESTING
A/C ON. DEVICE ON CAR ENGINE WAS SHUT OFF AFTER HOT SOAK WAS PUSHED

4834 0

MFR. CODE	VEHICLE I.D.	VEH. STOP EVAP	VEH. REV. INIT.	RUN. CHG.	REFTEST CODE	ACHP	ALT. H.P. SET.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0						2750	9.9			EXPERIMENTAL / HWFE

PREP DATE	GROSS WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.16	65.6	77.5	F	27C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DYNO H.P.	ODOM.	FIVE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-31-79	10	0207	2750	7.4		10576.0	45.00	1.0081	53.2	

BAG 1 10.187 MILES 16.395 KM 23752. ROLL REVS. VMIX= 3974.0 CU.FT. DILUTION FACTOR = 7.426
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	10.2	6.51	14	5.5	4.04	4.01 PPM	0.26	0.026	0.016			
NOX-CHEM	16	71.3	70.00	16	0.2	0.20	70.28 PPM	15.27	1.498	0.931	MPG	KPL	L/100KM
CO2	23	47.3	1.413	23	2.9	0.042	1.757 %	3641.27	357.439	222.102	24.8	10.54	9.5
CO	17	3.0	7.23	17	0.0	0.0	7.23 PPM	0.95	0.093	0.058			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.03	0.1	357.	1.50
BEFORE ROUNDING	0.0255	0.093	357.43	1.4946
GRAMS/KM	0.016	0.05	222.	0.93
BEFORE ROUNDING	0.01590	0.0578	222.10	0.9311

	MPG	KPL	L/100KM
WEIGHTED VALUES	24.8	10.5	9.5
	24.8231	10.5458	9.4823
72-74 FTP	24.8	10.5	9.5
	24.8059	10.5460	9.4821
UNWEIGHTED FTP	24.8	10.5	9.5
	24.8059	10.5460	9.4821

COMMENTS: PASSMASTER FEND TESTING. A/C ON - DEVICE ON
CO RANGE 17 SPAN POT OUT SPANNED ON LOW

4839 0

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0			-				2750	9			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.12	59.C	74.0	D	28C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-29-79	16	0220	2750	9.9		10553.0	45.00	1.0071	59.5	

BAG 1 3.590 MILES 5.778 KM VMIX= 2822.0 CU.FT. DILUTION FACTOR = 12.367
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	22.8	16.88	14	5.8	4.27	12.95 PPM	0.60	0.166	0.103			
NOX-CHEM	15	55.9	28.15	15	0.0	0.0	28.15 PPM	4.33	1.207	0.750	MPG	KPL	L/100KM
CO2	23	50.3	1.079	23	2.3	0.042	1.040 %	1520.88	423.643	263.240	20.8	8.86	11.3
CO	17	11.8	28.63	17	0.0	0.0	28.63 PPM	2.66	0.742	0.461			

BAG 2 3.910 MILES 6.293 KM VMIX= 4691.0 CU.FT. DILUTION FACTOR = 18.167
ITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	14.0	10.34	14	6.0	4.42	6.16 PPM	0.47	0.121	0.075			
NOX-CHEM	15	30.5	15.42	15	0.0	0.0	15.42 PPM	3.95	1.009	0.627	MPG	KPL	L/100KM
CO2	23	36.0	0.736	23	1.8	0.033	0.705 %	1713.44	438.219	272.296	20.2	8.59	11.6
CO	17	1.7	4.09	17	0.0	0.0	4.09 PPM	0.63	0.162	0.101			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.14	0.4	431.	1.10
BEFORE ROUNDING	0.1424	0.439	.31.26	1.1038
GRAMS/KM	0.089	0.27	268.	0.69
BEFORE ROUNDING	0.08853	0.2731	267.96	0.6858

	MPG	KPL	L/100KM
WEIGHTED VALUES	20.5	8.7	11.5
	20.5246	8.7184	11.4698
72-74 FTP	20.5	8.7	11.5
	20.5193	8.7236	11.4630
UNWEIGHTED FTP	20.5	8.7	11.5
	20.5193	8.7236	11.4630

COMMENTS: PASSMASTER FERD TESTING
DEVICE ON A/C ON. WINDOWS OPEN
T= 75 DEG. F

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	PETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.12	59.0	76.0	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-29-79	16	0220	2750	9.9		10547.0	45.00	1.0071	59.5	

BAG 1 3.590 MILES 5.776 KM VMIX= 2673.0 CU.FT. DILUTION FACTOR = 12.123
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	29.0	21.50	14	5.3	3.40	17.92 PPM	0.79	0.219	0.136			
NOX-CHEM	15	59.9	30.15	15	0.0	0.0	30.15 PPM	4.41	1.229	0.764	MPG	KPL	L/100KM
CO2	23	51.0	1.097	23	2.9	0.037	1.063 %	1477.60	411.588	255.749	21.4	9.09	11.0
CO	17	27.0	66.19	17	0.0	0.0	66.19 PPM	5.85	1.631	1.013			

BAG 2 3.910 MILES 6.293 KM VMIX= 4704.0 CU.FT. DILUTION FACTOR = 17.895
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	13.0	9.60	14	5.6	4.13	5.70 PPM	0.44	0.112	0.070			
NOX-CHEM	15	32.8	16.58	15	0.0	0.0	16.58 PPM	4.25	1.088	0.676	MPG	KPL	L/100KM
CO2	23	36.5	0.748	23	1.6	0.029	0.720 %	1754.66	448.762	278.848	19.7	8.39	11.9
CO	17	3.0	2.41	17	0.0	0.0	2.41 PPM	0.37	0.095	0.059			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.16	0.8	431.	1.16
BEFORE ROUNDING	0.1630	0.830	430.96	1.1553
GRAMS/KM	0.101	0.52	268.	0.72
BEFORE ROUNDING	0.10132	0.5168	267.79	0.7179

	MPG	KPL	L/100KM
WEIGHTED VALUES	20.5	8.7	11.5
	20.4918	8.7045	11.4882
72-74 FTP	20.5	8.7	11.5
	20.5001	8.7154	11.4738
UNWEIGHTED FTP	20.5	8.7	11.5
	20.5001	8.7154	11.4738

COMMENTS: PASSMASTER FEPU TESTING
LONG SOAK 15 MIN
DEVICE OFF A/C ON MAX/HIGH WINDOWS OPEN T= 75 DEG. F

45

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE. MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO MHG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.13	59.0	75.0	U	2FC

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-29-79	15	0220	2750	9.9		10546.0	45.00	1.0069	57.5	

BAG 1 3.590 MILES 5.778 KM VMIX= 2824.0 CU.FT. DILUTION FACTOR = 11.846
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	29.0	21.50	14	5.3	3.90	17.92 PPM	0.83	0.230	0.143			
NOX-CHEM	15	61.0	30.70	15	0.0	0.0	30.70 PPM	4.73	1.317	0.818	MPG	KPL	L/100KM
CO2	23	51.9	1.119	23	1.7	0.031	1.091 %	1596.05	444.582	276.250	19.7	8.39	11.9
CO	17	39.0	96.24	17	0.0	0.0	96.24 PPM	8.96	2.496	1.551			

BAG 2 3.910 MILES 6.293 KM VMIX= 4668.0 CU.FT. DILUTION FACTOR = 17.407
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	13.1	9.67	14	5.2	3.83	6.06 PPM	0.46	0.118	0.073			
NOX-CHEM	15	31.5	15.93	15	0.0	0.0	15.93 PPM	4.05	1.037	0.644	MPG	KPL	L/100KM
CO2	23	37.4	0.768	23	2.2	0.040	0.730 %	1766.26	451.729	280.691	19.6	8.33	12.0
CO	17	2.1	5.06	17	0.1	0.24	4.83 PPM	0.74	0.190	0.118			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.17	1.3	448.	1.17
BEFORE ROUNDING	0.1716	1.293	448.30	1.1709
GRAMS/KM	0.107	0.80	279.	0.73
BEFORE ROUNDING	0.10675	0.8039	278.56	0.7276

	MPG	KPL	L/100KM
WEIGHTED VALUES	19.7	8.3	12.0
	19.6815	8.3496	11.9774
72-74 FTP	19.7	8.4	12.0
	19.6773	8.3657	11.9535
UNWEIGHTED FTP	19.7	8.4	12.0
	19.6773	8.3657	11.9535

COMMENTS: PASSWASTER FEND TESTING
DEVICE OFF A/C ON WINDOWS OPEN
T= 75 DEG. F

4839 0

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE	TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL	2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

AMBIENT TEST CONDITIONS

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.12	59.0	76.0	0	20C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIME PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-29-79	16	U220	2750	9.9		10518.7	45.00	1.0071	59.5	

BAG 1 3.590 MILES 5.778 KM
SITE #A216 VMIX= 2767.0 CU.FT. DILUTION FACTOR = 13.582

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	22.3	16.56	14	5.5	4.05	12.75 PPM	0.58	0.160	0.100
NOX-CHEM	15	51.0	25.69	15	0.0	0.0	25.69 PPM	3.48	1.060	0.671
CO2	23	46.3	0.960	23	2.6	0.037	0.944 %	1356.09	377.741	234.718
CO	17	20.5	50.05	17	0.0	0.0	50.05 PPM	4.57	1.272	0.790

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG 23.3	KPL 9.92	L/100KM 10.1

BAG 2 3.910 MILES 6.293 KM
SITE #A216 VMIX= 4737.0 CU.FT. DILUTION FACTOR = 19.889

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	12.6	9.15	14	5.6	4.13	5.23 PPM	0.40	0.104	0.064
NOX-CHEM	15	23.0	11.65	15	0.1	0.05	11.61 PPM	3.00	0.767	0.477
CO2	23	33.2	0.673	23	2.7	0.050	0.626 %	1535.21	392.637	243.974
CO	17	0.7	1.68	17	0.0	0.0	1.68 PPM	0.26	0.067	0.042

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG 22.6	KPL 9.59	L/100KM 10.4

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.13	0.6	386.	0.92
BEFORE ROUNDING	0.1308	0.643	385.50	0.9168
GRAMS/KM	0.081	0.40	240.	0.57
BEFORE ROUNDING	0.08127	0.4000	239.54	0.5696

	MPG	KPL	L/100KM
WEIGHTED VALUES	22.9	9.7	10.3
	22.8960	9.7254	10.2823
72-74 FTP	22.9	9.7	10.3
	22.9296	9.7483	10.2581
UNWEIGHTED FTP	22.9	9.7	10.3
	22.9296	9.7483	10.2581

COMMENTS: PASSMASTER FEHD TESTING. A/C OFF. DEVICE OFF. HOT START T=75 DEG. F

4439 0

DYNO SITE:U220 TEST # 80-0309

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	VFR. REP. INIT.	RUN CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXUS	0							2750	9.9			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO MMS	WET BULB	DRY BULB	UNITS	CVS UNIT
29.12	59.0	74.0	U	20C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-29-79	14	0220	2750	9.9		10531.0	45.00	1.0071	59.5	

BAG 1 3.590 MILES 5.775 KM VMIX= 2720.0 CU.FT. DILUTION FACTOR = 13.275
SITE #A210

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	49.3	36.72	14	5.0	4.13	32.91 PPM	1.46	0.407	0.253			
NOX-CHEM	15	52.?	20.65	15	0.3	0.15	20.54 PPM	3.93	1.095	0.681	MPG	KPL	L/100KM
CO2	23	47.0	0.997	23	2.0	0.037	0.963 %	1357.33	378.085	234.931	23.2	9.85	10.2
CO	17	35.3	86.95	17	0.0	0.0	86.95 PPM	7.80	2.172	1.350			

BAG 2 3.910 MILES 6.293 KM VMIX= 4672.0 CU.FT. DILUTION FACTOR = 19.493
SITE #A210

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	13.0	9.60	14	5.9	4.35	5.47 PPM	0.42	0.107	0.066			
NOX-CHEM	15	23.5	11.91	15	0.0	0.0	11.91 PPM	3.03	0.776	0.482	MPG	KPL	L/100KM
CO2	23	33.5	0.686	23	2.0	0.037	0.651 %	1576.70	403.247	250.566	22.0	9.34	10.7
CO	17	1.3	3.13	17	0.0	0.0	3.13 PPM	0.48	0.123	0.077			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.25	1.1	391.	0.93
BEFORE ROUNDING	0.2505	1.103	391.20	0.9267
GRAMS/KM	0.156	0.69	243.	0.58
BEFORE ROUNDING	0.15565	0.6859	243.08	0.5771

	MPG	KPL	L/100KM
WEIGHTED VALUES	22.5	9.6	10.4
	22.5353	9.5785	10.4399
72-74 FTP	22.5	9.6	10.4
	22.5337	9.5800	10.4383
UNWEIGHTED FTP	22.5	9.6	10.4
	22.5337	9.5800	10.4383

COMMENTS: PASSMASTER FEMO TESTING. A/C OFF. DEVICE OFF. HOT START T= 75 DEG. F
LONG SOAK 22 MIN. BEFORE TEST

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVERDRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.13	59.0	75.0	0	20C

TEST DATE	NR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVD H.P.	ODOM.	TIME PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10-29-79	15	0220	2750	9.9		10536.0	45.00	1.0069	57.5	

BAG 1 3.590 MILES 5.778 KM VMIX= 2754.0 CU.FT. DILUTION FACTOR = 11.818
SITE #A216

	EXHAUST RANGE	EXHAUST METER	EXHAUST CONC.	BACKGROUND RANGE	BACKGROUND METER	BACKGROUND CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	27.4	20.30	14	5.3	3.90	16.73 PPM	0.75	0.210	0.130
NOX-CHEM	15	61.5	30.95	15	0.0	0.0	30.95 PPM	4.65	1.296	0.805
CO2	23	52.0	1.122	23	2.0	0.037	1.088 %	1554.02	432.876	266.977
CO	17	40.2	99.26	17	0.0	0.0	99.26 PPM	9.02	2.512	1.561

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
20.3	8.62	11.6

BAG 2 3.910 MILES 6.293 KM VMIX= 4560.0 CU.FT. DILUTION FACTOR = 17.844
SITE #A216

	EXHAUST RANGE	EXHAUST METER	EXHAUST CONC.	BACKGROUND RANGE	BACKGROUND METER	BACKGROUND CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	13.3	9.62	14	5.3	3.90	6.13 PPM	0.47	0.120	0.075
NOX-CHEM	15	34.5	17.43	15	0.0	0.0	17.43 PPM	4.45	1.138	0.707
CO2	23	36.6	0.750	23	2.3	0.042	0.710 %	1721.75	440.344	273.617
CO	17	0.2	0.48	17	0.0	0.0	0.48 PPM	0.07	0.019	0.012

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
20.1	8.55	11.7

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.16	1.2	437.	1.21
BEFORE ROUNDING	0.1624	1.212	436.76	1.2134
GRAMS/KM	0.101	0.75	271.	0.75
BEFORE ROUNDING	0.10122	0.7533	271.39	0.7539

	MPG	KPL	L/100KM
WEIGHTED VALUES	20.2	8.6	11.6
	20.1826	8.5971	11.6317
72-74 FTP	20.2	8.6	11.6
	20.2013	8.5884	11.6435
UNWEIGHTED FTP	20.2	8.6	11.6
	20.2013	8.5884	11.6435

COMMENTS: PASSMASTER FEED TESTING. A/C ON. DEVICE ~~ON.~~ OFF HOT START T= 75 DEG. F

4839 0

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
30	EXXON	0							2750	9.9			EXPERIMENTAL / CVS 75-LATER

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB UNITS	CVS UNIT
28.92	63.0	74.5 F	27L

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTINGS	INDICATED DYNO H.P.	DYNO H.P.	ODOM.	TIME PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 1-79	08	U207	2750	7.0		10615.9	45.00	0.9752	53.0	

BAG 1 3.564 MILES 5.730 KM 8310. ROLL REVS. VMIX= 2746.6 CU.FT. DILUTION FACTOR = 10.763
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	39.7	59.60	15	2.9	4.31	55.64 PPM	2.50	0.701	0.436			
NOX-CHEM	16	54.5	53.80	16	0.0	0.0	53.80 PPM	7.81	2.191	1.361	MPG	KPL	L/100KM
CO2	23	48.3	1.252	23	1.7	0.036	1.170 %	1665.12	467.191	290.299	18.3	7.79	12.8
CO	20	18.7	372.27	20	0.1	1.91	370.53 PPM	33.57	9.419	5.853			

BAG 2 3.936 MILES 6.174 KM 9965. ROLL REVS. VMIX= 4697.0 CU.FT. DILUTION FACTOR = 16.871
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	10.5	7.73	14	6.0	4.41	3.59 PPM	0.27	0.072	0.045			
NOX-CHEM	15	31.1	15.80	15	0.0	0.0	15.80 PPM	3.92	1.022	0.635	MPG	KPL	L/100KM
CO2	23	33.7	0.793	23	2.0	0.042	0.754 %	1834.28	478.116	297.088	18.5	7.88	12.7
CO	17	1.0	2.41	17	0.0	0.0	2.41 PPM	0.37	0.097	0.060			

BAG 3 3.553 MILES 5.719 KM 8285. ROLL REVS. VMIX= 2781.0 CU.FT. DILUTION FACTOR = 12.046
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	20.0	14.74	14	5.1	3.75	11.35 PPM	0.51	0.145	0.090			
NOX-CHEM	15	61.0	30.44	15	0.0	0.0	30.44 PPM	4.53	1.275	0.792	MPG	KPL	L/100KM
CO2	23	45.0	1.106	23	1.9	0.040	1.069 %	1540.41	433.506	269.367	20.3	8.65	11.6
CO	17	21.5	53.06	17	0.0	0.0	53.06 PPM	4.86	1.369	0.850			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.22	2.4	494.	1.33
BEFORE ROUNDING	0.2271	2.376	465.62	1.3333
GRAMS/KM	0.139	1.48	288.	0.83
BEFORE ROUNDING	0.13892	1.4764	288.08	0.8285

	MPG	KPL	L/100KM
WEIGHTED VALUES	18.9	8.1	12.4
	18.9300	8.0571	12.4113
72-74 FTP	18.4	7.8	12.8
	18.4358	7.8376	12.7585
UNWEIGHTED FTP	19.0	8.1	12.4
	19.0143	8.0838	12.3703

COMMENTS: PASSMASTER FEMO TESTING
A/C ON, DEVICE OFF

FD. JOE 30	VEHICLE I.D. FAXON	VER-SION 9	EVAP	MFR. REP. INIT.	MFR. CHG.	RETEST CODE	AC HP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE	TEST PROCEDURE
									2750	9.9			EXPERIMENTAL	HWFE

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

AMBIENT TEST CONDITIONS

BARO HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.92	66.3	76.3	F	27C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DYD H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 1-79	09	6207	2750	7.6		10624.1	45.00	0.9904	52.2	

BAG I 10.185 MILES 16.392 KM 2374M. ROLL REVS. VMIX= 3938.0 CU.FT. DILUTION FACTOR = 7.410

SITE REPIS

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	16	8.2	6.03	16	3.9	2.46	3.56 PPM	0.23	0.022	0.014			
NOX-CHEM	16	70.9	70.06	16	0.0	0.0	70.06 PPM	14.80	1.453	0.903	MPG	KPL	L/100KM
CO2	23	67.4	1.886	23	1.7	0.036	1.776 %	3622.76	355.682	221.011	24.9	10.59	9.4
CO	17	5.6	13.52	17	0.0	0.0	13.52 PPM	1.76	0.172	0.107			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.02	0.2	356.	1.45
BEFORE ROUNDING	0.0224	0.172	355.68	1.4528
GRAMS/KM	0.014	0.11	221.	0.90
BEFORE ROUNDING	0.01395	0.1070	221.01	0.9027

	MPG	KPL	L/100KM
WEIGHTED VALUES	24.9	10.6	9.4
	24.8840	10.5900	9.4427
72-74 FTP	24.9	10.6	9.4
	24.9203	10.5947	9.4386
UNWEIGHTED FTP	24.9	10.6	9.4
	24.9203	10.5947	9.4386

COMMENTS: PASSMASTER FEND TESTING
A/C OFF DEVICE OFF

50

MFR. CODE	VEHICLE I.D.	V-- SIG-#	EVAP	M.P. INIT.	MILE. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM6I59F156932	0	3						4000	14.3			EXPERIMENTAL / CVS 75-LATER

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE --PSI	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO MMG	WET BULB	DRY BULB UNITS		CVS UNIT
29.32	62.5	73.5	F	27C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DYNO H.P.	ODO.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 7-79	09	D207	4000	11.5		12765.0	45.00	0.9667	54.0	

BAG 1 3.583 MILES 5.766 KM 8353. ROLL REVS. VMIX= 2790.0 CU.FT. DILUTION FACTOR = 8.049
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	31.2	93.75	15	1.0	3.00	91.10 PPM	4.15	1.159	0.720	MPG	KPL	L/100KM
NOX-CHEM	15	36.3	33.74	15	0.1	0.10	33.66 PPM	4.92	1.372	0.853	13.5	5.73	17.4
CO2	23	50.9	1.531	23	1.9	0.040	1.556 %	2249.69	627.956	390.194			
CO	20	31.5	662.75	20	0.2	3.43	639.44 PPM	58.82	16.418	10.202			

BAG 2 3.890 MILES 6.260 KM 8950. ROLL REVS. VMIX= 4776.0 CU.FT. DILUTION FACTOR = 13.939
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	25.6	18.96	14	3.6	2.79	16.37 PPM	1.28	0.332	0.207	MPG	KPL	L/100KM
NOX-CHEM	15	96.5	47.90	15	0.1	0.05	47.81 PPM	11.95	3.112	1.934	14.9	6.35	15.8
CO2	23	39.7	0.956	23	2.0	0.042	0.917 %	2268.00	590.574	366.966			
CO	17	56.7	35.65	17	0.0	0.0	35.65 PPM	5.61	1.461	0.908			

BAG 3 3.575 MILES 5.754 KM 8330. ROLL REVS. VMIX= 2799.0 CU.FT. DILUTION FACTOR = 9.822
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	95.0	71.35	14	4.0	2.94	68.73 PPM	3.14	0.879	0.546	MPG	KPL	L/100KM
NOX-CHEM	16	37.0	30.65	16	0.0	0.0	30.65 PPM	5.38	1.503	0.934	16.5	7.01	14.3
CO2	23	52.7	1.334	23	2.0	0.042	1.295 %	1879.57	525.715	326.664			
CO	17	93.7	233.91	17	0.0	0.0	233.91 PPM	21.59	6.038	3.752			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.65	5.6	540.	2.31
BEFORE ROUNDING	0.6539	5.622	540.50	2.3088
GRAMS/KM	0.406	3.42	361.	1.43
BEFORE ROUNDING	0.40635	3.4181	360.71	1.4346

	MPG	KPL	L/100KM
WEIGHTED VALUES	15.0	6.4	15.7
	15.0008	6.3664	15.7072
72-74 FTP	14.2	6.0	16.6
	14.2053	6.0392	16.5582
UNWEIGHTED FTP	14.9	6.3	15.8
	14.8756	6.3243	15.8119

COMMENTS: CASSMASTER FEHJ TESTING
BASELINE
NCO. --20 SPAN POINT COULD NOT BE REACHED. SHORT BY .5 DEFLECTION

6260 B

DYNO SITE:D207 TEST # 80-0470

VEH. NO.	VEHICLE I.D.	VEH. STOR	EVAP	VEH. REP. INIT.	RUN CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM91G9F150932	0	R						4000	14.3			EXPERIMENTAL / HWFE

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE ENTRY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	NOX UNIT
29.31	63.6	74.5	F	71C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DYNO H.P.	ODO.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 7-79	10	D207	4000	11.5		12776.0	45.00	0.9553	47.0	

BAG 1 10.199 MILES 16.413 KM 23174. ROLL REVS. VMIX= 4046.0 CU.FT. DILUTION FACTOR = 6.776

SITE BASIS	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	16	43.2	30.24	16	4.0	2.96	27.07 PPM	1.96	0.192	0.119			
NOX-CHEM	17	26.0	65.96	17	0.0	0.0	65.96 PPM	13.81	1.354	0.841	MPG	KPL	L/100KM
CO2	23	72.0	1.965	23	1.9	0.040	1.931 %	4047.75	396.889	246.616	22.2	9.44	10.6
CO	17	38.0	93.10	17	0.0	0.0	93.10 PPM	12.42	1.218	0.757			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.19	1.2	397.	1.35
BEFORE ROUNDING	0.1922	1.217	396.88	1.3539
GRAMS/KM	0.119	0.76	247.	0.84
BEFORE ROUNDING	0.1194	0.7566	246.61	0.8412

	MPG	KPL	L/100KM
WEIGHTED VALUES	22.2	9.4	10.6
	22.1987	9.4247	10.6104
72-74 FTP	22.2	9.4	10.6
	22.2132	9.4438	10.5889
UNWEIGHTED FTP	22.2	9.4	10.6
	22.2132	9.4438	10.5889

COMMENTS: PASSPASIEN FEMO TESTING
BASELINE

6200 0

FR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM6IG9FI50932	0	N						4000	14.3			EXPERIMENTAL / CVS 75-LATER

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.86	61.7	74.7	F	27C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-8-79	09	0207	4000	11.5		12859.0	45.00	0.9479	47.8	

BAG 1 3.583 MILES 5.767 KM 8355. ROLL REVS. VMIX= 2730.0 CU.FT. DILUTION FACTOR = 7.560
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	16	40.7	122.28	16	1.0	3.00	119.68 PPM	5.34	1.489	0.925
NOX-CHEM	16	37.8	37.46	16	0.0	0.0	37.46 PPM	5.25	1.465	0.910
CO2	23	63.2	1.666	23	2.1	0.044	1.628 %	2302.66	642.587	399.285
CO	19	94.4	941.22	19	0.0	0.0	941.22 PPM	84.72	23.642	14.690

AUX. FIELD1	AUX. FIELD2	AUX. CODE

MPG	KPL	L/100KM
13.0	5.51	18.2

BAG 2 3.819 MILES 6.146 KM 8964. ROLL REVS. VMIX= 4684.0 CU.FT. DILUTION FACTOR = 12.973
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	29.8	22.11	14	4.8	3.53	18.85 PPM	1.44	0.378	0.235
NOX-CHEM	15	52.1	26.37	15	0.3	0.15	26.22 PPM	6.31	1.651	1.026
CO2	23	42.2	1.026	23	2.0	0.042	0.987 %	2395.45	627.264	389.764
CO	17	20.1	48.87	17	0.0	0.0	48.87 PPM	7.55	1.976	1.228

AUX. FIELD1	AUX. FIELD2	AUX. CODE

MPG	KPL	L/100KM
14.0	5.97	16.8

BAG 3 3.555 MILES 5.721 KM 8289. ROLL REVS. VMIX= 2726.0 CU.FT. DILUTION FACTOR = 9.283
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	96.4	72.42	14	4.2	3.09	69.67 PPM	3.10	0.872	0.542
NOX-CHEM	15	87.2	44.12	15	0.2	0.10	44.03 PPM	6.16	1.733	1.077
CO2	23	55.0	1.404	23	2.0	0.042	1.367 %	1930.71	543.080	337.454
CO	18	64.8	318.30	17	0.0	0.0	318.30 PPM	28.61	8.047	5.000

AUX. FIELD1	AUX. FIELD2	AUX. CODE

MPG	KPL	L/100KM
15.9	6.75	14.8

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.74	8.2	607.	1.64
BEFORE ROUNDING	0.7448	8.154	607.31	1.6350
GRAMS/KM	0.463	5.07	377.	1.02
BEFORE ROUNDING	0.46285	5.0668	377.37	1.0159

	MPG	KPL	L/100KM
WEIGHTED VALUES	14.3	6.1	16.5
	14.2521	6.0623	16.4952
72-74 FTP	13.5	5.7	17.4
	13.5007	5.7397	17.4223
UNWEIGHTED FTP	14.2	6.0	16.6
	14.1921	6.0336	16.5735

COMMENTS: PASSMASTER FERD TESTING
DEVICE OFF. A/C ON FULL

FR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM61G9F150932	0	N						4000	14.3			EXPERIMENTAL / HWFE

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.84	61.7	75.0	F	27C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-8-79	16	D207	4000	11.5		12871.0	45.00	0.9458	46.9	

BAG 1 10.148 MILES 16.332 KM 23661. ROLL REVS. VMIX= 3936.0 CU.FT. DILUTION FACTOR = 6.240
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	58.0	43.35	14	4.5	3.31	40.58 PPM	2.61	0.257	0.160			
NOX-CHEM	17	31.0	78.61	17	0.0	0.0	78.61 PPM	15.85	1.562	0.970	MPG	KPL	L/100KM
CO2	23	76.5	2.125	23	2.0	0.042	2.090 %	4261.75	419.956	260.948	20.9	8.88	11.3
CO	18	37.1	179.25	18	0.0	0.0	179.25 PPM	23.26	2.292	1.424			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.26	2.3	420.	1.56
BEFORE ROUNDING	0.2570	2.292	419.95	1.5618
GRAMS/KM	0.160	1.42	261.	0.97
BEFORE ROUNDING	0.15969	1.4242	260.94	0.9704

	MPG	KPL	L/100KM
WEIGHTED VALUES	20.9	8.9	11.3
	20.8937	8.8826	11.2578
72-74 FTP	20.9	8.9	11.3
	20.9067	8.8883	11.2506
UNWEIGHTED FTP	20.9	8.9	11.3
	20.9067	8.8883	11.2506

COMMENTS: PASSMASTER FERD TESTING
DEVICE OFF. A/C ON FULL

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	/---- TEST TYPE ----/ EXPERIMENTAL /---- TEST PROCEDURE ----/
20	FN4IG9F150932	0	N						4000	14.3			BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.22	59.0	75.6	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 7-79	15	0220	4000	14.3		12815.0	45.00	1.0058	57.5	

BAG 1 3.590 MILES 5.778 KM VMIX= 2804.0 CU.FT. DILUTION FACTOR = 9.693

SITE #A215	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	53.9	81.03	15	2.8	4.17	77.29 PPM	3.54	0.986	0.613			
NOX-CHEM	15	83.2	42.08	15	0.3	0.15	41.94 PPM	6.41	1.784	1.109	MPG	KPL	L/100KM
CO2	23	53.0	1.343	23	2.0	0.042	1.305 %	1896.30	528.219	328.220	16.3	6.93	14.4
CO	19	34.3	313.67	19	0.1	0.89	312.87 PPM	28.92	8.057	5.006			

BAG 2 3.910 MILES 6.293 KM VMIX= 4766.0 CU.FT. DILUTION FACTOR = 14.459

SITE #A215	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	31.0	23.01	14	5.9	4.34	18.97 PPM	1.48	0.378	0.235			
NOX-CHEM	15	41.0	20.79	15	0.3	0.15	20.64 PPM	5.36	1.371	0.852	MPG	KPL	L/100KM
CO2	23	38.4	0.920	23	1.8	0.038	0.885 %	2185.10	558.849	347.253	15.8	6.70	14.9
CO	17	18.2	44.21	17	1.0	2.41	41.96 PPM	6.59	1.686	1.048			

COMMENTS: PASSMASTER FERD TESTING
BASELINE W/O AIR NO DEVICE

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM41G9F150932	0	N	-					4000	14.3			EXPERIMENTAL / BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	IGNITION TIMING #2	IGNITION TIMING RPM	IGNITION TIMING GEAR	% CO LEFT	% CO RIGHT	% CO COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.22	59.0	75.0	0	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
10- 7-79	15	D220	4000	14.3		12821.0	45.00	1.0058	57.5	

BAG 1 3.590 MILES 5.778 KM VMIX= 2798.0 CU.FT. DILUTION FACTOR = 9.507
SITE #A215

	EXHAUST SAMPLE RANGE	EXHAUST METER	EXHAUST CONC.	BACKGROUND SAMPLE RANGE	BACKGROUND METER	BACKGROUND CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	49.0	73.64	15	2.6	3.87	70.17 PPM	3.21	0.893	0.555			
NOX-CHEM	15	83.0	41.95	15	0.0	0.0	41.95 PPM	6.39	1.781	1.107	MPG	KPL	L/100KM
CO2	23	54.0	1.374	23	1.7	0.036	1.342 %	1945.01	541.785	336.650	15.9	6.78	14.8
CO	19	31.3	285.30	19	0.0	0.0	285.30 PPM	26.32	7.331	4.555			

BAG 2 3.910 MILES 6.293 KM VMIX= 4754.0 CU.FT. DILUTION FACTOR = 14.541
SITE #A215

	EXHAUST SAMPLE RANGE	EXHAUST METER	EXHAUST CONC.	BACKGROUND SAMPLE RANGE	BACKGROUND METER	BACKGROUND CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	32.3	23.98	14	5.7	4.19	20.08 PPM	1.56	0.399	0.248			
NOX-CHEM	15	40.3	20.32	15	0.0	0.0	20.32 PPM	5.26	1.346	0.836	MPG	KPL	L/100KM
CO2	23	38.2	0.915	23	1.6	0.034	0.883 %	2175.72	556.450	345.762	15.8	6.73	14.9
CO	17	18.9	45.92	17	0.0	0.0	45.92 PPM	7.20	1.841	1.144			

COMMENTS: PASSMASTER FERD TESTING
NO AC OR DEVICE

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM4169F150932	0	N	-	-	-			4000	14.3			EXPERIMENTAL / BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.21	57.0	74.0	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 7-79	16	0220	4000	14.3		12829.0	45.00	0.9810	55.4	

BAG 1 3.590 MILES 5.778 KM VMIX= 2776.0 CU.FT. DILUTION FACTOR = 8.859
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	55.0	82.69	15	3.3	4.91	78.33 PPM	3.55	0.989	0.615			
NOX-CHEM	15	104.0	52.77	15	0.0	0.0	52.77 PPM	7.78	2.168	1.347	MPG	KPL	L/100KM
CO2	23	57.0	1.467	23	1.8	0.038	1.433 %	2061.59	574.260	356.828	15.0	6.36	15.7
CO	19	40.6	373.96	19	0.0	0.0	373.96 PPM	34.23	9.534	5.924			

BAG 2 3.910 MILES 6.293 KM VMIX= 4741.0 CU.FT. DILUTION FACTOR = 13.271
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	41.2	30.67	14	7.7	5.66	25.43 PPM	1.97	0.504	0.313			
NOX-CHEM	15	54.2	27.42	15	0.2	0.10	27.33 PPM	6.88	1.760	1.094	MPG	KPL	L/100KM
CO2	23	41.1	0.995	23	2.0	0.042	0.956 %	2348.47	600.632	373.216	14.5	6.18	16.2
CO	17	47.7	117.32	17	0.0	0.0	117.32 PPM	18.34	4.690	2.914			

COMMENTS: PASSMASTER FORD TESTING
WITH AC & NO DEVICE

15.0 mpg for 3.59 miles
14.5 mpg for 3.910 miles

6260 0

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	/---- TEST TYPE ----/ /---- TEST PROCEDURE ----/
20	FM&IG9FI50932	C	N						4000	14.3			EXPERIMENTAL / BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.19	57.0	74.0	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 7-79	16	0220	4000	14.3		12837.0	45.00	0.9812	55.4	

BAG 1 3.590 MILES 5.778 KM VMIX= 2794.0 CU.FT. DILUTION FACTOR = 9.037
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	52.8	79.37	15	3.3	4.91	75.00 PPM	3.42	0.953	0.592			
NOX-CHEM	15	93.5	49.92	15	0.1	0.05	49.88 PPM	7.41	2.063	1.282	MPG	KPL	L/100KM
CO2	23	55.8	1.429	23	1.9	0.040	1.394 %	2017.75	562.048	349.240	15.2	6.46	15.5
CO	19	49.0	456.01	19	0.0	0.0	456.01 PPM	42.01	11.701	7.271			

BAG 2 3.910 MILES 6.293 KM VMIX= 4730.0 CU.FT. DILUTION FACTOR = 13.054
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	42.7	31.80	14	7.0	5.15	27.05 PPM	2.09	0.534	0.332			
NOX-CHEM	15	50.0	25.31	15	0.2	0.10	25.21 PPM	6.34	1.621	1.007	MPG	KPL	L/100KM
CO2	23	41.6	1.009	23	2.0	0.042	0.970 %	2377.52	608.061	377.832	14.3	6.09	16.4
CO	17	58.6	144.21	17	0.2	0.48	143.76 PPM	22.42	5.734	3.563			

COMMENTS: PASSMASTER FEND TESTING
WITH AC & NO DEVICE

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	NUM. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM&IG9F150932	0	N						4000	14.3			EXPERIMENTAL / BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.18	59.8	74.0	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DWU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 7-79	17	D220	4000	14.3		12845.0	45.00	1.0063	59.5	

BAG 1 3.590 MILES 5.776 KM VMIX= 2754.0 CU.FT. DILUTION FACTOR = 8.981
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	49.8	70.54	15	3.3	4.91	70.48 PPM	3.17	0.883	0.549			
NOX-CHEM	15	101.2	51.32	15	0.3	0.15	51.18 PPM	7.68	2.140	1.330	MPG	KPL	L/100KM
CO2	23	56.3	1.445	23	1.9	0.040	1.410 %	2011.18	560.217	348.102	15.3	6.51	15.4
CO	19	42.9	390.23	19	0.0	0.0	396.23 PPM	35.98	10.022	6.227			

BAG 2 3.910 MILES 6.293 KM VMIX= 4721.0 CU.FT. DILUTION FACTOR = 13.049
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	42.2	31.42	14	6.4	4.71	27.08 PPM	2.09	0.534	0.332			
NOX-CHEM	15	49.2	24.91	15	0.3	0.15	24.76 PPM	6.37	1.630	1.013	MPG	KPL	L/100KM
CO2	23	41.6	1.009	23	1.9	0.040	0.972 %	2377.77	608.125	377.871	14.3	6.09	16.4
CO	17	60.2	148.75	17	0.2	0.48	148.30 PPM	23.08	5.904	3.668			

COMMENTS: PASSMASTER FERD TESTING
A/C ONE DEVICE ON

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	PFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	/---------- TEST TYPE ---------/ EXPERIMENTAL /------- TEST PROCEDURE -------/
20	FM41G9F150932	0	N						4000	14.3			BAG BY BAG

PREP DATE	CONB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.18	59.0	74.0	D	20C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 7-79	18	D220	4000	14.3		12852.0	45.00	1.0063	59.5	

BAG 1 3.590 MILES 5.778 KM VMIX= 2774.0 CU.FT. DILUTION FACTOR = 9.023
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	50.3	75.60	15	3.2	4.76	71.36 PPM	3.23	0.900	0.560			
NOX-CHEM	15	94.4	47.81	15	0.3	0.15	47.67 PPM	7.21	2.008	1.247	MPG	KPL	L/100KM
CO2	23	58.2	1.442	23	1.9	0.040	1.406 %	2021.26	563.025	349.847	15.3	6.50	15.4
CO	19	38.9	357.59	19	0.0	0.0	357.59 PPM	32.71	9.110	5.661			

BAG 2 3.910 MILES 6.293 KM VMIX= 4654.0 CU.FT. DILUTION FACTOR = 13.058
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	39.1	29.09	14	6.4	4.71	24.74 PPM	1.88	0.481	0.299			
NOX-CHEM	15	50.8	25.71	15	0.4	0.21	25.52 PPM	6.47	1.656	1.029	MPG	KPL	L/100KM
CO2	23	41.7	1.012	23	1.9	0.040	0.975 %	2350.79	601.226	373.564	14.5	6.18	16.2
CO	17	47.1	115.82	17	0.3	0.72	115.15 PPM	17.67	4.519	2.808			

COMMENTS: PASSMASTER FEMD TESTING A/C ON DEVICE ON
BAG 2 VMIX LOW BECAUSE DRIVER HIT SOAK INSTED OF BAG 2 FOR 10 SECS

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM61G9F150932	0	%						4000	14.3			EXPERIMENTAL / BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.82	56.0	85.0	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVD H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 8-79	13	D220	4000	14.3		12898.0	45.00	0.9738	37.3	

BAG 1 3.590 MILES 5.778 KM VMIX= 2772.0 CU.FT. DILUTION FACTOR = 9.790
SITE ##216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	58.8	88.30	15	2.5	3.73	84.95 PPM	3.85	1.071	0.666			
NOX-CHEM	15	74.7	37.58	15	0.0	0.0	37.58 PPM	5.49	1.530	0.951	MPG	KPL	L/100KM
CO2	23	58.7	1.319	23	2.0	0.039	1.285 %	1845.01	513.930	319.342	16.6	7.07	14.2
CO	19	42.5	406.67	19	0.1	0.93	405.83 PPM	37.09	10.332	6.420			

BAG 2 3.910 MILES 6.293 KM VMIX= 4699.0 CU.FT. DILUTION FACTOR = 14.836
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	34.3	25.46	14	6.0	4.42	21.34 PPM	1.64	0.419	0.260			
NOX-CHEM	15	38.6	19.49	15	0.1	0.05	19.44 PPM	4.82	1.232	0.766	MPG	KPL	L/100KM
CO2	23	41.7	0.893	23	2.0	0.039	0.857 %	2087.11	533.788	331.680	16.4	6.99	14.3
CO	17	30.3	74.43	17	0.0	0.0	74.43 PPM	11.53	2.949	1.832			

COMMENTS: PASSMASTER FEND TESTING BASELINE ROOM = 85 DEG. F NO A/C: NO DEVICE

FR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	/—— TEST TYPE ——/	/—— TEST PROCEDURE ——/
28	FN6IG9FI50932	0	N						4000	14.3			EXPERIMENTAL	BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	IGNITION TIMING #2	IGNITION TIMING RPM	IGNITION TIMING GEAR	% CO LEFT	% CO RIGHT	% CO COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.84	59.0	83.0	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIME PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 8-79	14	D220	4000	14.3		12906.0	45.00	1.0107	44.3	

BAG 1 3.590 MILES 5.778 KM VMIX= 2751.0 CU.FT. DILUTION FACTOR = 9.740
SITE #8216

	EXHAUST SAMPLE RANGE	EXHAUST METER	EXHAUST CONC.	BACKGROUND SAMPLE RANGE	BACKGROUND METER	BACKGROUND CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	58.9	88.45	15	3.7	5.52	83.50 PPM	3.75	1.045	0.649			
NOX-CHEM	15	74.5	37.48	15	0.2	0.10	37.39 PPM	5.63	1.568	0.974	MPG	KPL	L/100KM
CO2	23	58.9	1.325	23	2.0	0.039	1.290 %	1838.55	512.130	318.223	16.7	7.08	14.1
CO	19	44.3	424.44	19	0.1	0.93	423.60 PPM	38.42	10.702	6.650			

BAG 2 3.910 MILES 6.293 KM VMIX= 4676.0 CU.FT. DILUTION FACTOR = 14.710
SITE #8216

	EXHAUST SAMPLE RANGE	EXHAUST METER	EXHAUST CONC.	BACKGROUND SAMPLE RANGE	BACKGROUND METER	BACKGROUND CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	36.6	27.18	14	7.0	5.16	22.38 PPM	1.71	0.437	0.272			
NOX-CHEM	15	36.9	18.63	15	0.0	0.0	18.63 PPM	4.77	1.220	0.758	MPG	KPL	L/100KM
CO2	23	42.0	0.900	23	1.7	0.033	0.870 %	2107.45	538.989	334.912	16.3	6.92	14.5
CO	17	31.8	78.18	17	0.3	0.72	77.51 PPM	11.95	3.056	1.899			

COMMENTS: PASSMASTER TESTING BASELINE ROOM = 85 DEG. F NO A/C & NO DEVICE

FR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM4IG9F150932	U	N						4000	14.3			EXPERIMENTAL / BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.86	56.0	83.0	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-5-79	14	0220	4000	14.3		12914.0	45.00	0.9733	39.7	

BAG 1 3.590 MILES 5.778 KM VMIX= 2705.0 CU.FT. DILUTION FACTOR = 9.004
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	64.0	96.12	15	3.5	5.23	91.47 PPM	4.04	1.125	0.699			
NOX-CHEM	15	95.0	47.85	15	0.0	0.0	47.85 PPM	6.82	1.901	1.181	MPG	KPL	L/100KM
CO2	23	62.0	1.407	23	2.0	0.039	1.372 %	1923.41	535.769	332.912	15.6	6.64	15.1
CO	19	73.4	719.48	19	0.0	0.0	719.48 PPM	64.17	17.873	11.106			

BAG 2 3.910 MILES 6.293 KM VMIX= 4667.0 CU.FT. DILUTION FACTOR = 13.181
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	62.3	46.53	14	6.9	5.09	41.83 PPM	3.19	0.815	0.507			
NOX-CHEM	15	45.5	22.94	15	0.1	0.05	22.89 PPM	5.63	1.440	0.895	MPG	KPL	L/100KM
CO2	23	45.3	0.980	23	2.0	0.039	0.945 %	2283.89	584.115	362.952	14.6	6.22	16.1
CO	17	128.0	318.08	17	0.0	0.0	318.08 PPM	48.94	12.518	7.778			

COMMENTS: PASSMASTER FEND TESTING ROOM = 85 DEG. F A/C ON & DEVICE OFF

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. H.P. INIT.	NUM. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM6IG9F150932	0	N						4000	14.3			EXPERIMENTAL / BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO MMG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.68	55.0	83.0	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 8-79	15	0220	4000	14.3		12921.0	45.00	0.9642	38.3	

BAG 1 3.590 MILES 5.778 KM VMIX= 2724.0 CU.FT. DILUTION FACTOR = 9.095
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	61.0	91.01	15	3.4	5.08	87.09 PPM	3.87	1.079	0.671			
NOX-CHEM	15	97.0	48.87	15	0.2	0.10	48.78 PPM	6.94	1.933	1.201	MPG	KPL	L/100KM
CO2	23	61.6	1.396	23	2.0	0.039	1.362 %	1921.79	535.317	332.630	15.7	6.67	15.0
CO	19	69.7	681.09	19	0.1	0.93	680.26 PPM	61.09	17.018	10.574			

BAG 2 3.910 MILES 6.293 KM VMIX= 4659.0 CU.FT. DILUTION FACTOR = 12.898
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	41.3	60.95	14	6.9	5.09	56.25 PPM	4.28	1.095	0.680			
NOX-CHEM	15	39.0	19.69	15	0.1	0.05	19.64 PPM	4.78	1.222	0.759	MPG	KPL	L/100KM
CO2	23	45.4	0.983	23	1.6	0.031	0.954 %	2303.24	589.065	366.028	14.2	6.05	16.5
CO	18	100.2	502.51	18	0.0	0.0	502.51 PPM	77.19	19.741	12.267			

COMMENTS: PASSMASTER FERD TESTING COLD ROOM @ 85 DEG. F A/C ON: DEVICE OFF
ROOM TEMP OUT OF SPEC = 100 DEG. F

FR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUV. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FMG1G9F150932	0	N						4000	14.3			EXPERIMENTAL / BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.88	56.0	87.0	0	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DYNO H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 8-79	16	0220	4000	14.3		12929.0	45.00	0.9517	32.5	

BAG 1 3.590 MILES 5.778 KM VMIX= 2755.0 CU.FT. DILUTION FACTOR = 9.031
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	74.5	111.86	15	3.1	4.63	107.75 PPM	4.85	1.350	0.839			
NOX-CHEM	15	85.0	42.78	15	0.0	0.0	42.78 PPM	6.07	1.692	1.051	MPG	KPL	L/100KM
CO2	23	60.8	1.375	23	2.0	0.039	1.340 %	1913.31	532.955	331.163	15.4	6.54	15.3
CO	19	97.7	978.79	19	0.0	0.0	978.79 PPM	88.91	24.765	15.388			

BAG 2 3.910 MILES 6.293 KM VMIX= 4663.0 CU.FT. DILUTION FACTOR = 13.011
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	16	80.9	60.64	16	6.3	4.64	56.36 PPM	4.29	1.098	0.682			
NOX-CHEM	15	39.2	19.79	15	0.0	0.0	19.79 PPM	4.76	1.216	0.756	MPG	KPL	L/100KM
CO2	23	45.0	0.975	23	1.7	0.033	0.943 %	2277.31	582.431	361.906	14.4	6.11	16.4
CO	18	101.7	510.35	18	0.0	0.0	510.35 PPM	78.46	20.067	12.469			

COMMENTS: PASSMASTER FERD TESTING COLD ROOM = 85 DEG. A/C ON: DEVICE OFF

6260 0

FR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM41G9F150932	0	N						4000	14.3			EXPERIMENTAL / BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.89	59.0	85.0	0	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 8-79	16	D220	4000	14.3		12435.0	45.00	1.0100	41.5	

BAG 1 3.590 MILES 5.778 KM VMIX= 2727.0 CU.FT. DILUTION FACTOR = 9.009
SITE #A216

	Exhaust RANGE	Exhaust METER	Exhaust CONC.	Background RANGE	Background METER	Background CONC.	CORRECTED CONCENTRATIONS	GMS.	GMS/MI	GMS/KM
HC-FID	15	61.3	42.06	15	3.0	4.48	88.08 PPM	3.92	1.093	0.679
NOX-CHEM	15	79.2	39.85	15	0.1	0.05	39.80 PPM	5.94	1.654	1.028
CO2	23	61.9	1.404	23	2.3	0.044	1.365 %	1927.98	537.041	333.702
CO	19	75.5	741.39	19	0.0	0.0	741.39 PPM	66.66	18.568	11.537

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
15.6	6.62	15.1

BAG 2 3.910 MILES 6.293 KM VMIX= 4668.0 CU.FT. DILUTION FACTOR = 13.075
SITE #A216

	Exhaust RANGE	Exhaust METER	Exhaust CONC.	Background RANGE	Background METER	Background CONC.	CORRECTED CONCENTRATIONS	GMS.	GMS/MI	GMS/KM
HC-FID	14	46.1	47.90	14	6.2	4.57	43.68 PPM	3.33	0.852	0.529
NOX-CHEM	15	45.3	22.84	15	0.1	0.05	22.79 PPM	5.82	1.489	0.925
CO2	23	45.6	0.987	23	2.0	0.039	0.952 %	2302.15	588.784	365.854
CO	18	66.0	320.13	18	0.0	0.0	320.13 PPM	50.19	12.837	7.976

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
14.5	6.16	16.2

COMMENTS: PASSMASTER FERD TESTING ROOM @ 85 DEG. F A/C ON & DEVICE ON
BLUE LEBARON

FR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	FM61G9F150932	0	N						4000	14.3			EXPERIMENTAL / BAG BY BAG

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	IGNITION TIMING #2	RPM	GEAR	% CO LEFT	% CO RIGHT	% CO COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.90	53.0	66.5	U	20C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 8-79	17	0220	4000	14.3		12943.0	45.00	0.9416	33.9	

BAG 1 3.590 MILES 5.778 KM VMIX= 2727.0 CU.FT. DILUTION FACTOR = 9.303
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	15	58.9	88.45	15	3.0	4.48	84.46 PPM	3.76	1.048	0.651			
NOX-CHEM	15	90.0	45.31	15	0.0	0.0	45.31 PPM	6.30	1.755	1.091			
CO2	23	60.3	1.361	23	1.6	0.031	1.334 %	1884.71	524.989	326.213			
CO	19	71.7	701.81	19	0.0	0.0	701.81 PPM	63.10	17.576	10.921			

MPG	KPL	L/100KM
16.0	6.78	14.7

BAG 2 3.910 MILES 6.293 KM VMIX= 4665.0 CU.FT. DILUTION FACTOR = 13.344
SITE #A216

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	55.8	41.62	14	5.9	4.35	37.60 PPM	2.86	0.733	0.455			
NOX-CHEM	15	49.3	24.84	15	0.0	0.0	24.84 PPM	5.91	1.512	0.939			
CO2	23	45.0	0.973	23	1.7	0.033	0.943 %	2278.13	582.642	362.037			
CO	18	55.3	271.93	18	0.0	0.0	271.93 PPM	41.82	10.697	6.647			

MPG	KPL	L/100KM
14.7	6.27	16.0

COMMENTS: PASSMASTER FEND TESTING
#7 LA4 DEVICE ON - A/C ON COLD ROOM AT 85 DEG. F

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
40	4J47A9H123351	0	N						3500				EXPERIMENTAL / HWFE

PREP DATE	CURB WEIGHT	DRIVE-AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.88	61.5	74.3	F	27C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIME PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 8-79	15	D207	3500	9.7		14885.0	45.00	0.9463	48.2	

BAG 1 10.327 MILES 16.620 KM 24078. ROLL REVS. VMIX= 3954.0 CU.FT. DILUTION FACTOR = 6.524

SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	43.0	32.03	14	3.9	2.86	29.60 PPM	1.93	0.186	0.116			
NOX-CHEM	17	46.1	116.67	17	0.0	0.0	116.67 PPM	23.82	2.307	1.433	MPG	KPL	L/100KM
CO2	23	73.4	2.014	23	2.0	0.042	1.979 %	4084.23	395.493	245.748	22.0	9.35	10.7
CO	18	74.2	366.72	18	0.0	0.0	366.72 PPM	48.17	4.664	2.898			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.19	4.7	395.	2.31
BEFORE ROUNDING	0.1864	4.664	395.49	2.3067
GRAMS/KM	0.116	2.90	246.	1.43
BEFORE ROUNDING	0.11587	2.8983	245.74	1.4333

	MPG	KPL	L/100KM
WEIGHTED VALUES	22.0	9.3	10.7
	22.0059	9.3363	10.7108
72-74 FTP	22.0	9.4	10.7
	21.9929	9.3501	10.6950
UNWEIGHTED FTP	22.0	9.4	10.7
	21.9929	9.3501	10.6949

COMMENTS: DEVICE OFF. A/C ON FULL

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	/——— TEST TYPE ———/ EXPERIMENTAL /——— TEST PROCEDURE ———/
40	4J47A9M123351	0	N						3500				CVS 75-LATER

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	/— IGNITION TIMING #1	#2	RPM	GEAR —/	/——— % CO LEFT	RIGHT	COMB ———/	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/— AMBIENT TEST CONDITIONS — /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.86	61.5	73.5	F	27C

TEST DATE	HP.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 8-79	14	D207	3500	9.7		14874.0	45.00	0.9522	50.6	

BAG 1 3.561 MILES 5.731 KM 8303. ROLL REVS. VMIX= 2762.0 CU.FT. DILUTION FACTOR = 8.387
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	16	74.0	222.22	16	0.9	2.70	219.84 PPM	9.92	2.784	1.730			
NOX-CHEM	16	72.7	71.46	16	0.5	0.51	71.42 PPM	10.17	2.857	1.775	MPG	KPL	L/100KM
CO2	23	54.8	1.398	23	2.0	0.042	1.361 %	1948.04	547.030	339.909	14.1	6.01	16.6
CO	20	75.6	1771.60	20	0.3	5.74	1766.54 PPM	160.87	45.173	28.069			

BAG 2 3.836 MILES 6.173 KM 8944. ROLL REVS. VMIX= 4722.0 CU.FT. DILUTION FACTOR = 13.867
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	47.0	35.04	14	4.0	2.94	32.32 PPM	2.49	0.650	0.404			
NOX-CHEM	15	35.1	17.82	15	0.0	0.0	17.82 PPM	4.34	1.131	0.703	MPG	KPL	L/100KM
CO2	23	39.0	0.937	23	1.9	0.040	0.900 %	2200.79	573.714	356.490	15.0	6.36	15.7
CO	18	53.8	262.46	17	0.0	0.0	262.46 PPM	40.86	10.652	6.619			

BAG 3 3.530 MILES 5.681 KM 8230. ROLL REVS. VMIX= 2759.0 CU.FT. DILUTION FACTOR = 10.156
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	71.8	53.80	14	3.7	2.72	51.35 PPM	2.31	0.655	0.407			
NOX-CHEM	16	56.1	55.37	15	0.1	0.05	55.32 PPM	7.87	2.230	1.386	MPG	KPL	L/100KM
CO2	23	50.7	1.273	23	1.8	0.038	1.239 %	1771.47	501.862	311.842	17.0	7.24	13.8
CO	19	44.0	406.93	19	0.0	0.0	406.93 PPM	37.02	10.487	6.516			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	1.09	17.8	549.	1.79
BEFORE ROUNDING	1.0931	17.753	548.56	1.7885
GRAMS/KM	0.679	11.03	341.	1.11
BEFORE ROUNDING	0.67926	11.0312	340.86	1.1113

	MPG	KPL	L/100KM
WEIGHTED VALUES	15.3	6.5	15.4
	15.2785	6.4987	15.3875
72-74 FTP	14.6	6.2	16.1
	14.5676	6.1933	16.1463
UNWEIGHTED FTP	15.3	6.5	15.4
	15.2861	6.4988	15.3873

COMMENTS: DEVICE OFF. A/C ON FULL

6252 0 DYNO SITE:D207 TEST # 80-0449

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVERDRIVE CODE	TEST TYPE / TEST PROCEDURE
40	4J47A9N123351	0	N		-				3500				EXPERIMENTAL / HWFE

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.23	61.3	74.4	F	27C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 7-79	14	0207	3500	9.7		14856.0	45.00	0.9375	47.0	

BAG 1 10.187 MILES 16.394 KM 23751. ROLL REVS. VMIX= 4117.0 CU.FT. DILUTION FACTOR = 7.854
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	20.8	15.31	14	3.4	2.79	12.87 PPM	0.87	0.085	0.053
NOX-CHEM	16	64.3	63.47	16	0.1	0.10	63.38 PPM	13.25	1.301	0.808
CO2	23	64.2	1.699	23	1.9	0.040	1.664 %	3550.33	348.526	216.564
CO	17	22.4	54.51	17	0.0	0.0	54.51 PPM	7.40	0.726	0.451

AUX. FIELD1	AUX. FIELD2	AUX. CODE

MPG	KPL	L/100KM
25.3	10.77	9.3

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.08	0.7	349.	1.30
BEFORE ROUNDING	0.0849	0.726	348.52	1.3006
GRAMS/KM	0.053	0.45	217.	0.81
BEFORE ROUNDING	0.05278	0.4513	216.56	0.8082

	MPG	KPL	L/100KM
WEIGHTED VALUES	25.3	10.8	9.3
	25.3119	10.7525	9.3001
72-74 FTP	25.4	10.8	9.3
	25.3538	10.7790	9.2772
UNWEIGHTED FTP	25.4	10.8	9.3
	25.3538	10.7790	9.2772

COMMENTS: PASSMASTER BASELINE

0252 0

FR. JOE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
40	4J47A9M123351	0	N						3500				EXPERIMENTAL / CVS 75-LATER

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.26	61.0	73.9	F	27C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11- 7-79	12	0207	3500	9.7		14836.0	45.00	0.9349	47.4	

BAG 1 3.538 MILES 5.758 KM 8342. ROLL REVS. VMIX= 2834.0 CU.FT. DILUTION FACTOR = 10.054
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	16	68.2	204.84	16	0.9	2.70	202.40 PPM	9.37	2.618	1.627
NOX-CHEM	15	91.6	46.37	15	0.1	0.05	46.33 PPM	6.65	1.858	1.155
CO2	23	48.2	1.199	23	2.1	0.044	1.159 %	1702.08	475.728	295.604
CO	20	52.1	1133.90	20	0.3	5.74	1128.73 PPM	105.46	29.477	18.316

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
16.7	7.11	14.1

BAG 2 3.840 MILES 6.180 KM 8956. ROLL REVS. VMIX= 4855.0 CU.FT. DILUTION FACTOR = 17.733
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	28.2	20.91	14	4.2	3.09	18.00 PPM	1.41	0.368	0.229
NOX-CHEM	14	44.6	11.28	14	0.1	0.03	11.25 PPM	2.74	0.713	0.443
CO2	23	31.9	0.746	23	1.8	0.038	0.710 %	1768.00	460.378	286.066
CO	17	31.8	77.71	17	0.0	0.0	77.71 PPM	12.31	3.206	1.992

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
19.0	8.08	12.4

BAG 3 3.569 MILES 5.743 KM 8321. ROLL REVS. VMIX= 2814.0 CU.FT. DILUTION FACTOR = 12.183
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	47.1	35.12	14	4.2	3.09	32.29 PPM	1.48	0.416	0.258
NOX-CHEM	15	77.1	38.98	14	0.1	0.03	38.95 PPM	5.55	1.555	0.966
CO2	23	44.3	1.086	23	1.8	0.038	1.051 %	1532.14	429.310	266.761
CO	17	44.2	108.57	17	0.0	0.0	108.57 PPM	10.07	2.822	1.754

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
20.4	8.67	11.5

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.85	8.5	455.	1.18
BEFORE ROUNDING	0.8476	8.548	455.03	1.1816
GRAMS/KM	0.527	5.31	283.	0.73
BEFORE ROUNDING	0.52668	5.3120	282.74	0.7342

	MPG	KPL	L/100KM
WEIGHTED VALUES	18.8	8.0	12.5
	18.8261	7.9951	12.5075
72-74 FTP	17.8	7.6	13.2
	17.8395	7.5843	13.1850
UNWEIGHTED FTP	18.6	7.9	12.6
	18.5958	7.9059	12.6487

COMMENTS: BAG 2 IS 3 SECONDS SHORT
PASSMASTER BASELINE

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
40	4J47A9H123351	0	N						3500	12.2			EXPERIMENTAL / CVS 75-LATER

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.87	61.0	73.0	F	27C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIME PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-15-79	14	0207	3500	9.7		14912.9	45.00	0.9456	50.2	

BAG 1 3.625 MILES 5.834 KM 8452. ROLL REVS. VMIX= 2802.0 CU.FT. DILUTION FACTOR = 8.763
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	16	54.3	163.13	16	1.2	3.60	159.94 PPM	7.32	2.019	1.254
NOX-CHEM	16	60.3	59.51	16	0.2	0.20	59.33 PPM	8.52	2.349	1.460
CO2	23	54.6	1.392	23	2.1	0.044	1.353 %	1964.24	541.857	336.695
CO	20	55.0	1207.46	20	0.3	5.74	1202.37 PPM	111.08	30.642	19.040

AUX. FIELD1	AUX. FIELD2	AUX. CODE	MPG	KPL	L/100KM
			14.9	6.32	15.8

BAG 2 3.874 MILES 6.235 KM 9033. ROLL REVS. VMIX= 4737.0 CU.FT. DILUTION FACTOR = 13.845
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	30.9	22.93	14	4.4	3.23	19.93 PPM	1.54	0.398	0.247
NOX-CHEM	15	33.0	16.76	15	0.1	0.05	16.71 PPM	4.06	1.047	0.650
CO2	23	39.5	0.950	23	2.1	0.044	0.909 %	2232.06	576.135	357.993
CO	18	31.6	152.22	18	0.0	0.0	152.22 PPM	23.77	6.136	3.813

AUX. FIELD1	AUX. FIELD2	AUX. CODE	MPG	KPL	L/100KM
			15.1	6.42	15.6

BAG 3 3.622 MILES 5.830 KM 8446. ROLL REVS. VMIX= 2782.0 CU.FT. DILUTION FACTOR = 10.205
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	42.5	31.65	14	4.0	2.96	29.00 PPM	1.32	0.364	0.226
NOX-CHEM	16	52.0	51.34	15	0.0	0.0	51.34 PPM	7.32	2.020	1.255
CO2	23	51.5	1.297	23	2.0	0.042	1.260 %	1815.45	501.168	311.411
CO	17	51.0	125.60	17	0.0	0.0	125.60 PPM	11.52	3.180	1.976

AUX. FIELD1	AUX. FIELD2	AUX. CODE	MPG	KPL	L/100KM
			17.5	7.43	13.5

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.73	10.4	548.	1.59
BEFORE ROUNDING	0.7254	10.415	548.36	1.5854
GRAMS/KM	0.451	6.47	341.	0.99
BEFORE ROUNDING	0.45076	6.4720	340.73	0.9851

WEIGHTED VALUES	MPG	KPL	L/100KM
	15.6	6.6	15.1
	15.6498	6.6441	15.0508
72-74 FTP	15.0	6.4	15.7
	14.9979	6.3762	15.6831
UNWEIGHTED FTP	15.7	6.7	15.0
	15.7274	6.6864	14.9556

COMMENTS: WITH PASSMASTER - DEVICE ON. A/C ON vacuum hooked to EGR vacuum line.

6252 0

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	/--- TEST TYPE ---/ /--- TEST PROCEDURE ---/
40	4J67A9H123351	0	%						3500	12.2			EXPERIMENTAL HWFE

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	IGNITION TIMING #2	IGNITION TIMING RPM	IGNITION TIMING GEAR	% CO LEFT	% CO RIGHT	% CO COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS -/

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
28.91	62.4	74.5	F	27C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-15-79	16	D207	3500	4.7		14933.8	45.00	0.9627	50.8	

BAG 1 10.317 MILES 16.604 KM 24055. ROLL REVS. VMIX= 4017.0 CU.FT. DILUTION FACTOR = 6.768

SITE #A215

	EXHAUST SAMPLE RANGE	EXHAUST SAMPLE METER	EXHAUST SAMPLE CONC.	BACKGROUND SAMPLE RANGE	BACKGROUND SAMPLE METER	BACKGROUND SAMPLE CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	MASS EMISSIONS GMS/MI	MASS EMISSIONS GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	23.5	17.49	14	5.9	4.34	13.70 PPM	0.90	0.087	0.054			
NOX-CHEM	17	43.9	111.14	16	0.0	0.0	111.14 PPM	23.28	2.256	1.402	MPG	KPL	L/100KM
CO2	23	72.2	1.972	23	2.0	0.042	1.936 %	4029.62	390.578	242.694	22.6	9.60	10.4
CO	17	35.5	86.89	17	0.0	0.0	86.89 PPM	11.51	1.115	0.693			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.09	1.1	391.	2.26
BEFORE ROUNDING	0.0871	1.115	390.5	2.2561
GRAMS/KM	0.054	0.69	243.	1.40
BEFORE ROUNDING	0.05412	0.6930	242.69	1.4018

	MPG	KPL	L/100KM
WEIGHTED VALUES	22.6	9.6	10.4
	22.5644	9.5912	10.4261
72-74 FTP	22.6	9.6	10.4
	22.5982	9.6075	10.4085
UNWEIGHTED FTP	22.6	9.6	10.4
	22.5982	9.6075	10.4085

COMMENTS: WITH PASSMASTER - DEVICE ON. A/C ON *Vacuum hooked to EGR vacuum line.*

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVERDRIVE CODE	TEST TYPE / TEST PROCEDURE
020	LM6ICSR290359	0	N						3500	11.2			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO MMG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.10	60.0	75.0	D	20E

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-27-79	09	0220	3500	11.2		21851.6	45.00	1.0210	59.0	

BAG 1 3.590 MILES 5.778 KM VMIX= 2772.0 CU.FT. DILUTION FACTOR = 11.181
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	56.1	43.43	14	5.3	3.90	39.84 PPM	1.81	0.503	0.312			
NOX-CHEM	16	42.7	43.13	16	0.9	0.92	42.29 PPM	6.48	1.806	1.122	MPG	KPL	L/100KM
CO2	23	48.0	1.193	23	2.0	0.042	1.155 %	1658.51	461.980	287.061	19.1	8.13	12.3
CO	17	4.5	10.86	17	0.2	0.48	10.42 PPM	0.95	0.265	0.165			

BAG 2 3.910 MILES 6.293 KM VMIX= 4722.0 CU.FT. DILUTION FACTOR = 14.647
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	37.8	28.11	14	5.3	3.90	24.48 PPM	1.89	0.483	0.300			
NOX-CHEM	16	18.1	18.38	16	0.2	0.20	18.19 PPM	4.75	1.215	0.755	MPG	KPL	L/100KM
CO2	23	38.1	0.912	23	2.1	0.044	0.871 %	2130.28	544.829	338.541	16.2	6.90	14.5
CO	17	1.0	2.41	17	0.0	0.0	2.41 PPM	0.38	0.096	0.060			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.492	0.177	505.	1.50
BEFORE ROUNDING	.4926	.1770	505.2	1.499
GRAMS/KM	0.306	0.110	314.	0.931
BEFORE ROUNDING	.3060	.1100	313.9	.9305

	MPG	KPL	L/100KM
WEIGHTED VALUES	17.5	7.4	13.4
	17.5050	7.4372	13.4458
72-74 FTP	17.5	7.4	13.4
	17.4990	7.4396	13.4415
UNWEIGHTED FTP	17.5	7.4	13.4
	17.4990	7.4396	13.4415

COMMENTS: GREEN DART 75 DEGREES COLD ROOM
PASS/ASTED TESTING
BASELINE LA4 NO A/C OR DEVICE

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
020	LH61C5a290359	0	N						3500	11.2			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	COMB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.10	60.0	75.6	0	20C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-27-79	09	0220	3500	11.2		21859.	45.00	1.0210	59.6	

BAG 1 3.590 MILES 5.778 KM VMIX= 2769.0 CU.FT. DILUTION FACTOR = 11.279
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	59.1	44.19	14	5.1	3.75	40.77 PPM	1.84	0.514	0.319
NOX-CHEM	16	41.3	41.73	16	0.2	0.20	41.54 PPM	6.36	1.772	1.101
CO2	23	47.0	1.101	23	1.8	0.038	1.167 %	1645.32	458.305	284.778
CO	17	10.0	24.19	17	0.0	0.0	24.19 PPM	2.21	0.615	0.382

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
19.3	8.18	12.2

BAG 2 3.910 MILES 6.293 KM VMIX= 4710.0 CU.FT. DILUTION FACTOR = 14.694
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	37.2	27.66	14	5.5	4.04	23.89 PPM	1.84	0.470	0.292
NOX-CHEM	16	18.0	14.28	16	0.2	0.20	18.09 PPM	4.71	1.205	0.749
CO2	23	39.0	0.909	23	1.8	0.038	0.874 %	2132.57	545.414	338.905
CO	17	0.4	0.96	17	0.0	0.0	0.96 PPM	0.15	0.038	0.024

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
16.2	6.90	14.5

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.491	0.314	504.	1.48
BEFORE ROUNDING	.4908	.3144	503.7	1.476
GRAMS/KM	0.305	0.195	313.	0.917
BEFORE ROUNDING	.3050	.1954	313.0	.9172

	MPG	KPL	L/100KM
WEIGHTED VALUES	17.5	7.5	13.4
	17.5323	7.4578	13.4087
72-74 FTP	17.5	7.5	13.4
	17.5420	7.4579	13.4085
UNWEIGHTED FTP	17.5	7.5	13.4
	17.5420	7.4579	13.4085

COMMENTS: GREEN DART 75 DEGREES COLD ROOM
PASSMASTER TESTING
BASELINE

76

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUT. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
020	LM61C5P290359	0	N						3500	11.2			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.12	60.0	75.0	0	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIME PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-27-79	10	0220	3500	11.2		21866.4	45.00	1.0207	59.6	

BAG 1 3.590 MILES 5.778 KM VMIX= 2429.0 CU.FT. DILUTION FACTOR = 10.581
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	49.1	36.63	14	5.3	3.98	33.10 PPM	1.53	0.426	0.265			
NOX-CHEM	15	48.9	49.33	16	0.2	0.20	49.14 PPM	7.69	2.141	1.330	MPG	KPL	L/100KM
CO2	23	58.3	1.251	23	2.1	0.044	1.221 %	1790.21	498.667	309.857	17.7	7.54	13.3
CO	17	5.9	14.25	17	0.1	0.24	14.03 PPM	1.31	0.364	0.226			

BAG 2 3.910 MILES 6.293 KM VMIX= 4683.0 CU.FT. DILUTION FACTOR = 13.389
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	31.0	23.01	14	5.6	4.12	19.20 PPM	1.47	0.375	0.233			
NOX-CHEM	16	22.9	23.23	16	0.3	0.31	22.94 PPM	5.94	1.519	0.944	MPG	KPL	L/100KM
CO2	23	41.2	0.948	23	2.2	0.046	0.955 %	2316.98	592.577	368.210	14.9	6.35	15.8
CO	17	3.3	7.95	17	0.0	0.0	7.96 PPM	1.23	0.314	0.195			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.400	0.338	548.	1.82
BEFORE ROUNDING	.3996	.3383	547.6	1.817
GRAMS/KM	0.248	0.210	340.	1.13
BEFORE ROUNDING	.2483	.2162	340.3	1.129

	MPG	KPL	L/100KM
WEIGHTED VALUES	16.1	6.9	14.6
	16.1372	6.8709	14.5539
72-74 FTP	16.1	6.9	14.6
	16.1482	6.8653	14.5659
UNWEIGHTED FTP	16.1	6.9	14.6
	16.1482	6.8653	14.5659

COMMENTS: GREEN HART 75 DEGREES COLD ROOM
PASSMASTER TESTING
A/C NO DEVICE ENGINE STALLED ON START (NOTE HIGH VMIX BAG 1)

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	AUX. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
020	LM61C5B290359	0	N						3500	11.2			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.11	60.0	75.0	D	26C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-27-79	11	0220	3500	11.2		21873.5	45.00	1.0209	59.6	

BAG 1 3.590 MILES 5.778 KM VMIX= 2792.0 CU.FT. DILUTION FACTOR = 10.660
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	52.7	39.35	14	0.2	4.56	35.22 PPM	1.61	0.447	0.278
NOX-CHEM	16	47.7	48.13	16	0.3	0.31	47.85 PPM	7.39	2.058	1.276
CO2	23	50.0	1.252	23	2.0	0.042	1.214 %	1756.54	489.288	304.030
CO	17	3.2	7.72	17	0.2	0.48	7.28 PPM	0.67	0.187	0.116

AUX. FIELD1	AUX. FIELD2	AUX. CODE

MPG	KPL	L/100KM
18.1	7.68	13.0

BAG 2 3.910 MILES 6.293 KM VMIX= 4684.0 CU.FT. DILUTION FACTOR = 13.587
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	31.0	23.01	14	5.4	4.26	19.06 PPM	1.46	0.373	0.232
NOX-CHEM	16	24.6	24.74	16	0.4	0.41	24.36 PPM	6.31	1.614	1.003
CO2	23	40.7	0.984	23	2.2	0.046	0.941 %	2283.42	583.994	362.877
CO	17	0.9	2.17	17	0.3	0.72	1.50 PPM	0.23	0.059	0.037

AUX. FIELD1	AUX. FIELD2	AUX. CODE

MPG	KPL	L/100KM
15.2	6.45	15.5

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.404	0.120	539.	1.83
BEFORE ROUNDING	.4084	.1252	538.7	1.826
GRAMS/KM	0.254	0.7[illegible]E-01	335.	1.13
BEFORE ROUNDING	.2538	.7469E-01	334.7	1.135

	MPG	KPL	L/100KM
WEIGHTED VALUES	16.4	7.0	14.3
	16.4154	6.9771	14.3326
72-74 FTP	16.4	7.0	14.3
	16.4256	6.9832	14.3199
UNWEIGHTED FTP	16.4	7.0	14.3
	16.4256	6.9832	14.3199

COMMENTS: GREEN DART 75 DEGREES COLD ROOM
PASSMASTER TESTING
A/C NO DEVICE CAR STALLED ON START (HIGH VMIX BAG 1)

1975 LIGHT DUTY VEHICLE ANALYSIS   PROCESSED: 11:02:19   NOV 28, 1979

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFG. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METER	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
320	LM61C5A290359	0	3						3500	11.2			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/— AMBIENT TEST CONDITIONS — /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.10	60.0	75.0	6	2GC

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODO.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-27-79	11	D229	3500	11.2		21881.0	45.00	1.0210	59.6	

BAG 1 3.596 MILES 5.774 KM   VMIX= 2747.0 CU.FT.   DILUTION FACTOR = 10.903
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	73.0	56.71	14	6.0	4.41	50.71 PPM	2.31	0.643	0.399			
NOX-CHEM	16	46.7	47.13	16	0.2	0.20	46.94 PPM	7.23	2.015	1.252	MPG	KPL	L/100KM
CO2	23	49.0	1.223	23	2.0	0.042	1.184 %	1710.29	476.404	296.024	18.5	7.88	12.7
CO	17	4.0	9.65	17	0.0	0.0	9.65 PPM	0.89	0.247	0.153			

BAG 2 3.910 MILES 6.292 KM   VMIX= 4685.0 CU.FT.   DILUTION FACTOR = 14.020
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	33.0	24.51	14	5.7	4.19	20.62 PPM	1.58	0.403	0.251			
NOX-CHEM	16	25.1	25.45	16	0.2	0.20	25.26 PPM	6.54	1.673	1.040	MPG	KPL	L/100KM
CO2	23	39.6	0.953	23	2.0	0.042	0.914 %	2218.95	567.506	352.632	15.6	6.63	15.1
CO	17	0.8	1.93	17	0.0	0.0	1.93 PPM	0.30	0.076	0.047			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.518	0.154	524.	1.84
BEFORE ROUNDING	.5180	.1579	523.9	1.837
GRAMS/KM	0.322	0.981E-01	326.	1.14
BEFORE ROUNDING	.3219	.9811E-01	325.5	1.141

	MPG	KPL	L/100KM
WEIGHTED VALUES	16.9	7.2	14.0
	16.8708	7.1637	13.9591
72-74 FTP	16.9	7.2	13.9
	16.8741	7.1739	13.9393
UNWEIGHTED FTP	16.9	7.2	13.9
	16.8741	7.1739	13.9393

COMMENTS: GREEN DART 75 DEGREES COLD ROOM
PASSMASTER TESTING
S/C WITH DEVICE (CAR STALLED ON START)

2540 0

DYNO SITE:D220 TEST # 80-0726

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
020	LH61CSP290359	0	%						3500	11.2			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.10	60.0	75.0	D	20C

TEST DATE	NO.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
11-27-79	12	D220	3500	11.2		21688.	45.00	1.0210	59.6	

BAG 1 3.590 MILES 5.774 KM — VMIX= 2759.0 CU.FT. — DILUTION FACTOR = 10.771
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	68.0	50.93	14	5.0	3.68	47.59 PPM	2.14	0.597	0.371
NOX-CHEM	15	49.4	49.82	16	0.1	0.10	49.73 PPM	7.59	2.113	1.313
CO2	23	49.5	1.237	23	1.8	0.038	1.203 %	1719.89	479.077	297.685
CO	17	6.3	15.21	17	0.0	0.0	15.21 PPM	1.38	0.386	0.240

AUX. FIELD1	AUX. FIELD2	AUX. CODE

MPG	KPL	L/100KM
18.4	7.83	12.8

BAG 2 3.910 MILES 6.293 KM — VMIX= 4680.0 CU.FT. — DILUTION FACTOR = 14.182
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	34.2	25.61	14	5.0	3.68	21.99 PPM	1.68	0.430	0.267
NOX-CHEM	16	27.1	27.46	16	0.0	0.0	27.46 PPM	7.11	1.818	1.129
CO2	23	39.2	0.942	23	1.8	0.038	0.907 %	2199.19	562.454	349.492
CO	17	1.0	2.41	17	0.0	0.0	2.41 PPM	0.37	0.095	0.059

AUX. FIELD1	AUX. FIELD2	AUX. CODE

MPG	KPL	L/100KM
15.7	6.69	15.0

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.510	0.234	523.	1.96
BEFORE ROUNDING	.5100	.2341	522.5	1.959
GRAMS/KM	0.317	0.145	325.	1.22
BEFORE ROUNDING	.3169	.1454	324.7	1.217

	MPG	KPL	L/100KM
WEIGHTED VALUES	16.9	7.2	13.9
	16.8999	7.1844	13.9189
72-74 FTP	16.9	7.2	13.9
	16.9146	7.1911	13.9059
UNWEIGHTED FTP	16.9	7.2	13.9
	16.9146	7.1911	13.9059

COMMENTS: GREEN DART 75F COLD ROOM
PASSMASTER TESTING
A/C ON WITH DEVICE

2540 0

DYNO SITE:0220 TEST # 80-0727

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	/---- TEST TYPE ----/ EXPERIMENTAL /---- TEST PROCEDURE ----/
128	L-41C58290359	0	S						3500	11.2			2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.08	50.0	100.0	0	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
12- 1-79	12	0220	3500	11.2		22025.7	45.00	0.9143	18.8	

BAG 1 3.590 MILES 5.778 KM VMIX= 2779.0 CU.FT. DILUTION FACTOR = 10.653

SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	65.1	48.73	14	12.6	9.29	40.31 PPM	1.83	0.510	0.317			
NOX-CHEM	16	62.8	63.15	16	0.1	0.10	63.07 PPM	8.68	2.417	1.502	MPG	KPL	L/100KM
CO2	23	49.6	1.243	23	2.0	0.042	1.202 %	1731.19	482.225	299.641	18.1	7.72	13.0
CO	17	51.2	126.10	17	0.2	0.48	125.66 PPM	11.51	3.207	1.993			

BAG 2 3.910 MILES 6.293 KM VMIX= 4701.0 CU.FT. DILUTION FACTOR = 14.217

SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	21.2	15.68	14	13.2	9.73	6.63 PPM	0.51	0.130	0.081			
NOX-CHEM	16	24.5	24.84	16	0.1	0.10	24.75 PPM	5.76	1.473	0.915	MPG	KPL	L/100KM
CO2	23	39.0	0.937	23	1.5	0.031	0.907 %	2209.92	565.197	351.197	15.6	6.64	15.1
CO	17	18.1	43.96	17	0.2	0.48	43.51 PPM	6.74	1.725	1.072			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.312	2.43	525.	1.93
BEFORE ROUNDING	.3118	2.434	525.5	1.925
GRAMS/KM	0.194	1.51	327.	1.20
BEFORE ROUNDING	.1937	1.513	326.5	1.196

	MPG	KPL	L/100KM
WEIGHTED VALUES	16.7	7.1	14.1
	16.7461	7.1026	14.0791
72-74 FTP	16.7	7.1	14.1
	16.7307	7.1129	14.0587
UNWEIGHTED FTP	16.7	7.1	14.1
	16.7307	7.1129	14.0587

COMMENTS: DART BASELINE @ 100 DEGREES F LA-4
NO HUMIDITY CONTROL BAG 1
STALLED AT START

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
20	LM61C58290359	0	N						3500	11.2			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.00	59.5	100.5	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
12- 1-79	12	0220	3500	11.2		22033.0	45.00	1.0154	26.1	

BAG 1 3.590 MILES 5.778 KM VMIX= 2765.0 CU.FT. DILUTION FACTOR = 10.713
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	57.7	43.13	14	7.7	5.66	37.99 PPM	1.72	0.478	0.297			
NOX-CHEM	16	57.5	57.89	16	0.1	0.10	57.80 PPM	8.79	2.448	1.521			
CO2	23	49.5	1.237	23	1.9	0.040	1.201 %	1720.91	479.363	297.862	MPG 18.3	KPL 7.79	L/100KM 12.8
CO	17	37.3	91.36	17	[illegible].0	0.0	91.36 PPM	8.33	2.320	1.442			

BAG 2 3.910 MILES 6.293 KM VMIX= 4687.0 CU.FT. DILUTION FACTOR = 14.214
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	16.6	12.26	14	7.3	5.37	7.27 PPM	0.56	0.142	0.088			
NOX-CHEM	16	24.1	24.44	16	0.3	0.31	24.15 PPM	6.23	1.592	0.989			
CO2	23	39.0	0.937	23	1.8	0.038	0.901 %	2189.07	559.864	347.884	MPG 15.8	KPL 6.70	L/100KM 14.9
CO	17	20.3	49.35	17	0.5	1.20	48.24 PPM	7.45	1.906	1.185			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.303	2.10	521.	2.00
BEFORE ROUNDING	.3029	2.104	521.3	2.002
GRAMS/KM	0.188	1.31	324.	1.24
BEFORE ROUNDING	.1882	1.307	323.9	1.244

	MPG	KPL	L/100KM
WEIGHTED VALUES	16.9	7.2	13.9
	16.8911	7.1751	13.9369
72-74 FTP	16.9	7.2	13.9
	16.8802	7.1765	13.9342
UNWEIGHTED FTP	16.9	7.2	13.9
	16.8802	7.1765	13.9342

COMMENTS: DART BASELINE W 100 DEGREES F LA-4
STALLED ON START

2540 0

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
120	LH41C58290359	0	N						3500	11.2			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.08	60.0	102.0	0	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
12- 1-79	13	0220	3500	11.2		22040.	45.00	1.0224	25.4	

BAG 1 3.590 MILES 5.778 KM VMIX= 2753.0 CU.FT. DILUTION FACTOR = 9.771
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	70.3	52.67	14	6.8	5.00	48.18 PPM	2.17	0.603	0.375			
NOX-CHEM	16	70.2	70.49	16	0.3	0.31	70.22 PPM	10.70	2.981	1.853			
CO2	23	53.2	1.349	23	1.9	0.040	1.313 %	1873.19	521.779	324.218	MPG 16.7	KPL 7.11	L/100KM 14.1
CO	17	69.0	171.00	17	0.3	0.72	170.35 PPM	15.46	4.307	2.676			

BAG 2 3.910 MILES 6.293 KM VMIX= 4668.0 CU.FT. DILUTION FACTOR = 13.175
SITE #A215

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	15.0	11.07	14	6.6	4.85	6.58 PPM	0.50	0.128	0.080			
NOX-CHEM	16	36.1	36.51	16	0.4	0.41	36.16 PPM	9.34	2.389	1.484			
CO2	23	41.7	1.012	23	1.8	0.038	0.977 %	2362.52	604.224	375.447	MPG 14.6	KPL 6.21	L/100KM 16.1
CO	17	17.5	42.49	17	0.4	0.96	41.68 PPM	6.40	1.638	1.018			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.356	2.92	565.	2.67
BEFORE ROUNDING	.3557	2.915	564.8	2.672
GRAMS/KM	0.221	1.81	351.	1.66
BEFORE ROUNDING	.2210	1.811	350.9	1.661

	MPG	KPL	L/100KM
WEIGHTED VALUES	15.5	6.6	15.1
	15.5457	6.6107	15.1269
72-74 FTP	15.6	6.6	15.1
	15.5525	6.6120	15.1238
UNWEIGHTED FTP	15.6	6.6	15.1
	15.5525	6.6120	15.1238

COMMENTS: DART LA-4 A/C ON DEVICE OFF 100 DEGREES F
PASSMASTER

2540 0

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE	TEST PROCEDURE
J20	LM6IC58290359	0	N						3500	11.2			EXPERIMENTAL	2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME
		-	EMPTY												

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.80	58.0	100.0	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
12- 1-79	13	0220	3500	11.2		22047.7	45.	0.9956	25.1	

BAG 1 3.590 MILES 5.778 KM
SITE #A215 VMIX= 2746.0 CU.FT. DILUTION FACTOR = 9.843

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	27.0	20.01	14	6.6	4.85	15.65 PPM	0.70	0.195	0.121
NOX-CHEM	16	68.8	69.10	16	0.3	0.31	68.83 PPM	10.19	2.839	1.764
CO2	23	53.1	1.346	23	1.9	0.040	1.310 %	1864.03	519.229	322.634
CO	17	56.5	134.39	17	0.2	0.48	133.96 PPM	12.13	3.378	2.099

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG 16.9	KPL 7.18	L/100KM 13.9

BAG 2 3.910 MILES 6.293 KM
SITE #A215 VMIX= 4666.0 CU.FT. DILUTION FACTOR = 13.349

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	13.8	10.18	14	6.5	4.78	5.76 PPM	0.44	0.112	0.070
NOX-CHEM	16	37.3	37.72	16	0.4	0.41	37.34 PPM	9.40	2.403	1.493
CO2	23	41.3	1.000	23	1.9	0.040	0.964 %	2329.54	595.791	370.207
CO	17	9.5	22.98	17	0.2	0.48	22.53 PPM	3.47	0.887	0.551

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG 14.8	KPL 6.31	L/100KM 15.8

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.152	2.08	559.	2.61
BEFORE ROUNDING	.1521	2.079	559.1	2.611
GRAMS/KM	0.945E-01	1.29	347.	1.62
BEFORE ROUNDING	.9449E-01	1.292	347.4	1.623

	MPG	KPL	L/100KM
WEIGHTED VALUES	15.8	6.7	14.9
	15.7658	6.7094	14.9042
72-74 FTP	15.8	6.7	14.9
	15.7618	6.7010	14.9229
UNWEIGHTED FTP	15.8	6.7	14.9
	15.7618	6.7010	14.9229

COMMENTS: DART LA-4 #6 A/C ON DEVICE OFF 100 DEGREES F-COLD ROOM
PASSMASTER

2540 0

MFR. CODE	VEHICLE I.D.	VERSION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
020	1H6IC5B290359	0	N						3500	11.2			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

AMBIENT TEST CONDITIONS

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.01	58.0	102.0	D	20C

TEST DATE	HR.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
12- 1-79	14	D220	3500	11.2		22055.0	45.00	0.9955	23.7	

BAG 1 3.590 MILES 5.778 KM — SITE #A215 — VMIX= 2743.0 CU.FT. — DILUTION FACTOR = 10.230

	EXHAUST RANGE	EXHAUST METER	EXHAUST CONC.	BACKGROUND RANGE	BACKGROUND METER	BACKGROUND CONC.	CORRECTED CONCENTRATIONS	GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	16	59.6	44.57	14	6.3	4.63	40.39 PPM	1.81	0.504	0.313			
NOX-CHEM	16	74.8	75.04	16	0.3	0.31	74.76 PPM	11.06	3.080	1.914	MPG	KPL	L/100KM
CO2	23	51.4	1.294	23	1.9	0.040	1.258 %	1788.41	498.163	309.544	17.6	7.48	13.4
CO	17	45.0	110.57	17	0.2	0.48	110.13 PPM	9.96	2.774	1.726			

BAG 2 3.910 MILES 6.293 KM — SITE #A215 — VMIX= 4633.0 CU.FT. — DILUTION FACTOR = 13.364

	EXHAUST RANGE	EXHAUST METER	EXHAUST CONC.	BACKGROUND RANGE	BACKGROUND METER	BACKGROUND CONC.	CORRECTED CONCENTRATIONS	GMS.	GMS/MI	GMS/KM	AUX. FIELD1	AUX. FIELD2	AUX. CODE
HC-FID	14	14.3	10.55	14	6.6	4.85	6.06 PPM	0.46	0.117	0.073			
NOX-CHEM	16	39.0	39.42	16	0.3	0.31	39.14 PPM	9.78	2.500	1.554	MPG	KPL	L/100KM
CO2	23	41.2	0.998	23	1.9	0.040	0.961 %	2306.33	589.855	366.519	15.0	6.37	15.7
CO	17	16.2	39.31	17	0.2	0.48	38.87 PPM	5.94	1.518	0.943			

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.302	2.12	546.	2.78
BEFORE ROUNDING	.3023	2.120	546.0	2.778
GRAMS/KM	0.188	1.32	339.	1.73
BEFORE ROUNDING	.1878	1.317	339.2	1.726

WEIGHTED VALUES	MPG	KPL	L/100KM
72-74 FTP	16.1	6.9	14.6
	16.1228	6.8598	14.5776
	16.1	6.9	14.6
	16.1239	6.8549	14.5879
UNWEIGHTED FTP	16.1	6.9	14.6
	16.1239	6.8549	14.5879

COMMENTS: DAPT A/C. DEVICE ON LA-4 100 DEGREES F
PASSMASTER TESTING

MFR. CODE	VEHICLE I.D.	VER-SION	EVAP	MFR. REP. INIT.	RUN. CHG.	RETEST CODE	ACHP	ALT. H.P. METH.	EQUIVALENT TEST WEIGHT	ACTUAL DYNO H.P.	TRANS. CONFG.	OVER-DRIVE CODE	TEST TYPE / TEST PROCEDURE
020	LM41C5B290359	0	N						3500	11.2			EXPERIMENTAL / 2 BAG LA-4

PREP DATE	CURB WEIGHT	DRIVE AXLE WEIGHT	GAUGE EMPTY	AXLE MEASURE	IGNITION TIMING #1	#2	RPM	GEAR	% CO LEFT	RIGHT	COMB	IDLE RPM	GEAR	SOAK PERIOD	MEASURED COASTDOWN TIME

/- AMBIENT TEST CONDITIONS - /

BARO "HG	WET BULB	DRY BULB	UNITS	CVS UNIT
29.02	56.0	100.6	D	20C

TEST DATE	HP.	DYNO SITE	ACTUAL INERTIA SETTING	INDICATED DYNO H.P.	DVU H.P.	ODOM.	TIRE PRESSURE	NOX FACTOR	RELATIVE HUMIDITY	ALDEHYDES
12- 1-79	17	D220	3500	11.2	-	22062.0	45.00	0.9716	23.4	

BAG 1 3.590 MILES 5.778 KM — SITE #A215 — VMIX= 2719.0 CU.FT. — DILUTION FACTOR = 10.146

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	62.8	46.99	14	6.4	4.71	42.74 PPM	1.90	0.529	0.329
NOX-CHEM	16	71.4	71.68	16	0.4	0.41	71.31 PPM	10.20	2.842	1.766
CO2	23	51.8	1.306	23	2.0	0.042	1.269 %	1787.15	497.814	309.327
CO	17	39.0	95.59	17	0.2	0.48	95.16 PPM	8.53	2.376	1.477

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
17.6	7.50	13.3

BAG 2 3.910 MILES 6.293 KM — SITE #A215 — VMIX= 4651.0 CU.FT. — DILUTION FACTOR = 13.388

	EXHAUST SAMPLE RANGE	METER	CONC.	BACKGROUND SAMPLE RANGE	METER	CONC.	CORRECTED CONCENTRATIONS	MASS EMISSIONS GMS.	GMS/MI	GMS/KM
HC-FID	14	13.6	10.03	14	6.5	4.78	5.61 PPM	0.43	0.109	0.068
NOX-CHEM	16	39.9	40.32	16	0.5	0.51	39.85 PPM	9.75	2.495	1.550
CO2	23	41.2	0.998	23	2.0	0.042	0.959 %	2310.57	590.939	367.192
CO	17	9.2	22.25	17	0.1	0.24	22.03 PPM	3.38	0.864	0.537

AUX. FIELD1	AUX. FIELD2	AUX. CODE
MPG	KPL	L/100KM
15.0	6.37	15.7

WEIGHTED VALUES	HC	CO	CO2	NOX
GRAMS/MILE	0.310	1.59	546.	2.66
BEFORE ROUNDING	.3098	1.588	546.4	2.661
GRAMS/KM	0.193	0.987	339.	1.65
BEFORE ROUNDING	.1925	.9866	339.5	1.653

	MPG	KPL	L/100KM
WEIGHTED VALUES	16.1	6.9	14.6
	16.1465	6.8700	14.5559
72-74 FTP	16.1	6.9	14.6
	16.1360	6.8601	14.5769
UNWEIGHTED FTP	16.1	6.9	14.6
	16.1360	6.8601	14.5769

COMMENTS: DART A/C ON DEVICE ON LA-4 100 DEGREES F
PASSMASTER TESTING

2540 0

DYNO SITE:D220 TEST # 80-0788

Attachment G
Test Vehicle Description
Chassis model/year/make 1978 Ford Pinto

Engine

Type I-4
bore x stroke . . . . 3.781 x 3.126
displacement . . . . 2.3 liter
compression ratio 9.0
maximum power @ rpm . . . . 88 hp @ 4800 rpm
fuel metering . . . . Feedback, electronic
fuel requirement . . . . Unleaded, tested with Indolene IHO unleaded

Drive Train

transmission type . . . . A
inertia weight . . . . 2750 lbs.

Emission Control System . . . . EGR
Air Injection
Dual Oxidation Catalyst

Test Vehicle Description
Chassis model year/make-1979 Chrysler LeBaron
Vehicle I.D. FM41G9F150932

Engine

type	Otto Spark, V-8
bore x stroke	3.91 x 3.31 in/99.3 x 84.1 mm
displacement	318CID/5211 CC
compression ratio	8.6:1
maximum power @ rpm	145 hp/108 k W
fuel metering	2 Venturi carburetor
fuel requirement	Unleaded, tested with Indolene IHO unleaded

Drive Train

transmission type	3 speed lockup automatic
final drive ratio	2.50

Chassis

type	4 door sedan
tire size	FR 78 X 15
curb weight	3660 lb/1660 kg.
inertia weight	4000 lb.
passenger capacity	6

Emission Control System

basic type	EGR Oxidation catalyst Air Injection

Test Vehicle Description
Chassis model year/make-1975 Dodge Dart
Emission Control System-Air Pump, Catalyst EGR

Engine

type . . . . Inline 6, 4 cycle
bore x stroke . . . . 3.40 x 4.125 in.
displacement . . . . 225 CId/3687 cc
compression ratio 8.4:1
fuel metering . . . . 1 Venturi, carburetor
fuel requirement . . . . Unleaded, tested with Indolene IHO unleaded

Drive Train

transmission type . . . . 3 speed automatic
final drive ratio 2.75

Chassis

type . . . . 4 door sedan
tire size . . . . D78 X 14
inertia weight . . . . 3500 lbs.
passenger capacity 6

Emission Control System

basic type . . . . Air Pump
Oxidation Catalyst
EGR
Calibrated to 1975 California Standards

Test Vehicle Description
Chassis model year/make-1979 Buick Regal
Vehicle ID 4J47A9H123351

Engine

type	Otto Spark, V-6
bore x stroke	3.8 x 3.4 in.
displacement	3.8 liter/231 CID
compression ratio	8.0:1
maximum power @ rpm	115 hp/86 k W @ 4800 rpm
fuel metering	2 Venturi carburetor
fuel requirement	Unleaded, tested with Indolene IHO unleaded

Drive Train

transmission type	3 speed automatic
final drive ratio	2.40

Chassis

type	2 Dr. Sedan
tire size	P 195/75 R 14
curb weight	3312 lb/1502 kg.
passenger capacity	5

Emission Control System

basic type	EGR Oxidation Catalyst Oxidation Catalyst Air Injection

United States Patent Office
3,462,964
Patented Aug. 26, 1969

1

3,462,964

AIR CONDITIONER CONTROL MEANS RESPONSIVE TO VEHICLE ENGINE POWER DEMANDS

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Filed Sept. 12, 1967, Ser. No. 667,176
Int. Cl. B60h 3/04; H01h 35/34
U.S. Cl. 62—133 12 Claims

ABSTRACT OF THE DISCLOSURE

A system for automatically shutting off an automobile air conditioner if the full power of the automobile engine is needed including a vacuum line connecting the automobile intake manifold with a pressure-responsive switch having a flexible, concave cover, a normally open micro switch with its operating button adjacent the concave cover, and operable by inward movement of the concave cover, a set screw for adjusting the position of the micro switch relative to the concave cover in a horizontal direction and a set screw for adjusting the position of the micro switch relative to the concave cover in a vertical direction, a source of electrical power leading to the pressure-responsive switch, a source of electrical power passing from electrical switch to the operating clutch of an air-conditioning compressor and an operative connection between the clutch and the air conditioner compressor. In an alternate arrangement, an arm is connected to the accelerator and the arm is positioned to compress the concave cover of the switch when the accelerator is approaching the full power position.

Field of the invention

The present invention relates to an auto air conditioner switch. In a more specific aspect, the present invention relates to a simple electrical switch and a system for automatically operating an automobile air conditioner therewith.

The prior art

It is a well-known fact that automobile air conditioners require a substantial portion of the power of the automobile engine for their operation. This power requirement of the air conditioning system is particularly troublesome and dangerous when a high level of performance is necessary. For example, when one is attempting to pass another car, it is extremely important from a safety standpoint that the full power of the engine be available. While a number of complex systems have been provided for speeding up the engine under these circumstances, this does not provide an adequate answer since there is a point at which the engine cannot be speeded up and thus be made to handle both the air-conditioning system and the full power load of the automobile. Secondly, even though the engine might be speeded up to handle both the air conditioner and the full power load of the engine, the operation of a thermostatic switch on the air conditioner can result in sudden changes in the load. Further, while a wide variety of switches have been proposed for this and like use, all such switches appear to be unduly complex and expensive.

Summary of the invention

It is therefore an object of the present invention to provide an improved switch and automatic switching system for an automobile air conditioner which over-

2

comes the problems and deficiencies pointed out above. It is another object of the present invention to provide an improved switch for an auto air-conditioning system. A further object of the present invention is to provide an improved system for shutting off an automobile air-conditioning system when full power of the engine is required for auto operation. Another and further object of the present invention is to provide an improved system for automatically shutting off an auto air conditioner when the engine is operated at a point approaching its full power capacity. Still another object of the present invention is to provide an improved system for automatically shutting off an auto air conditioner in response to an increase in the intake manifold pressure of the engine above a preselected point. Another and further object of the present invention is to provide an improved switch wherein a flexible concave surface forms one exterior wall of the switch. Another and further object of the present invention is to provide an improved switch wherein a flexible, concave element forms one exterior wall of the switch and flexing of this element depresses the plunger of a double-throw, snap-action electrical switch.

Briefly, the present invention involves a system for turning off an auto air conditioner when full power is required for operation of the auto, including means for sensing a predetermined condition of the automobile engine as maximum engine power is approached and switch means responsive to the sensed condition to interrupt the electrical circuit to the air conditioner when said predetermined condition is sensed.

Brief description of the drawings

In accordance with the drawings, FIGURE 1 shows the system of the present invention in schematic form;

FIGURE 2 shows the operation of the switch of the present invention by different actuating means than FIGURE 1;

FIGURE 3 shows one form of the switch of the present invention; and

FIGURE 4 shows another form of the switch of the present invention.

Description of the preferred embodiments

Referring now to the drawings, FIGURE 1 shows an automobile engine 10 having a belt or other appropriate transmitting means operatively connecting the engine to one element of the clutch 14. The other element of the clutch 14 is, in turn, coupled to an air-conditioning compressor 16. Compressor 16, of course, has refrigerant passing to and from the unit through refrigerant lines 18. The continuously rotating element of clutch 14 is electrically actuated by power transmitted from a power source through lines 26 and lines 28. Forming a part of the engine 10 is intake manifold 20. In open communication with intake manifold 20 is section line or vacuum line 22. The other end of vacuum line 22 is connected to pressure-responsive switch means 24. The pressure-responsive switch means 24 is mounted in lines 26 and 28 in a manner such that the switch will make and break the circuit between the source of power and the air conditioner clutch 14.

In the operation of this form of the present invention, the pressure-responsive element of pressure-responsive switch means 24 senses the intake manifold pressure of the engine. When the throttle is opened up to a point near its full capacity, the manifold pressure approaches atmospheric pressure. The pressure-responsive element senses this condition and responds to a preselected pres-

11. A system in accordance with claim 9 wherein the switch means is adjustably mounted on the container to permit movement of the operating element of said switch means toward and away from the flexible wall of said container.

12. A system in accordance with claim 9 wherein the switch means is adjustably mounted on the container to permit movement of the operating element of said switch means laterally with respect to the center of flexure of the flexible wall of said container and to permit movement of said operating element of said switch means toward and away from said flexible wall of said container.

References Cited

UNITED STATES PATENTS

2,107,341	2/1938	Peo	62—133 X
2,268,667	1/1942	Mendez	62—133
2,929,226	3/1960	Baker et al.	62—215
3,131,314	2/1964	Koyanagi	62—133

A. HARRY LEVY, Primary Examiner

U.S. Cl. X.R.

62—323; 180—1, 77, 53; 200—61.89, 83

sure. By this response, it actuates the switch element of the pressure-responsive switch means, turns the switch off and thereby interrupts the power to the air conditioner clutch 14. Although the manifold pressure remains at this relatively high pressure (near atmospheric) for only a small fraction of the time, this fraction of time occurs when full power of the engine is needed most, such as when attempting to pass another car, etc. When the manifold pressure again drops, this is sensed by the pressure-responsive element of the switch means and this element responds to the lowered pressure to actuate the electrical switch and again close the circuit between the power source and the air conditioner compressor.

FIGURE 2 of the drawings shows an alternate means of operating the switch. However, before discussing the details of FIGURE 2, it is believed best to discuss the construction of the switch of the present invention which actually can be pressure-responsive or operated by an appropriate arm mechanism.

Specifically referring to FIGURES 3 and 4, the switch of the present invention is made up of a base element in the general shape of a circular can bottom 30, a vacuum line 32 in open communication with base 30 and designated as vacuum line 32 leads to the engine manifold where the manifold pressure is the condition sensed. The switch has a generally concave cover 34 which fits tightly over the base 30 to form an airtight container. It is obvious at this point that the cover 34 may be concave or convex and that the concavity or convexity may be in the base rather than in the cover depending on how the unit is to be mounted. Further, where mechanical operation of the switch is desired, the vacuum line 32 may be eliminated. Mounted within the enclosure is a micro switch 36 having a plunger 38. In the instance shown in FIGURE 3, micro switch 36 is a normally open switch and when the cover 34 is depressed either mechanically or by drawing a vacuum through line 32, the plunger 38 will be depressed, closing the circuit in which switch 36 is mounted. Switch 36 is mounted on a bracket in a manner such that it may slide to the right and left a limited amount. This bracket (not shown) is positioned behind switch 36 to permit movement of switch 36 in a vertical direction. In the variations shown in FIGURE 4, the switch can only be pressure actuated since switch 36 is mounted on a flexible arm 42 above the cover 34 of the container. Of course, by moving the switch slightly to the side of the center, mechanical operation for flexing of the cover 34 may be carried out. In any event, in this instance, switch 36 is a normally closed switch which is open when cover 34 is in its normal state of flexure and which will be closed when the plunger 38 is released by the downward flexure of cover 34. Switch 36 in FIGURE 4 is also mounted on arm 42 in a manner to permit vertical and horizontal movement thereof. In both FIGURES 3 and 4, vertical movement of switch 36 and hence a change in the set point of the switch is effected by means of set screw 44. Horizontal movement of switch 36 and hence a change in the differential pressure response of the switch is effected by adjustment of the screw 46.

In the alternative form of FIGURE 2 which does not require a sensing of the manifold pressure, operation can be effected mechanically by depressing the accelerator of the automobile to a point near its ultimate limit. As shown in FIGURE 2, the accelerator control rod 50 is connected to pivotal tab 52. Pivotal tab 52 is mounted on pivot 54 on the side of the carburetor of the engine 48. An operating pin or rod 56 bears against the top of switch 58. Switch 58 is positioned and set to operate and open the switch when the accelerator nears its ultimate travel, rod 50 nears its extreme pull to the left, and tab 52 approaches its maximum clock-wise rotation. Thus, in accordance with FIGURE 2, when the accelerator is depressed to a point near its maximum limit, in order to pass another car, etc., the pin 56 operates the switch means 58, the switch is opened and the air conditioner is turned off. When the accelerator is released, the switch again closes and the air conditioner may operate normally in response to the thermostatic switch.

While the present invention has been described with reference to specific illustrations and specific examples, it is to be understood that these are illustrative only.

I claim:

1. A system for automatically shutting off an auto accessory adapted to be driven by the engine of said auto when the operation of said engine approaches its maximum capacity, as indicated by a preselected high pressure in the intake manifold of said engine, comprising: sensing means, operatively connected to said intake manifold of said engine, for sensing said preselected high pressure; and switch means operatively coupled to said sensing means and operable by said sensing means, in a manner such that said switch means is opened when said sensing means senses said predetermined high pressure, and operatively connecting said engine to said accessory whereby said accessory is operative or non-operative as dictated by said switch.

2. A system in accordance with claim 1 wherein the preselected manifold pressure is a pressure approaching atmospheric pressure.

3. A system in accordance with claim 1 wherein the sensing means is a closed, generally-hollow container having a flexible wall which is flexed by a change in pressure in the container, the switch means is mounted adjacent said flexible wall and the operating element of said switch means is operated by flexure of said flexible wall.

4. A system in accordance with claim 3 wherein the switch means is adjustably mounted on the container to permit movement of the operating element of said switch means laterally with respect to the center of flexure of the flexible wall of said container.

5. A system in accordance with claim 3 wherein the switch means is adjustably mounted on the container to permit movement of the operating element of said switch means toward and away from the flexible wall of said container.

6. A system in accordance with claim 3 wherein the switch means is adjustably mounted on the container to permit movement of the operating element of said switch means laterally with respect to the center of flexure of the wall of said container and to permit movement of said operating element of said switch means toward and away from said flexible wall of said container.

7. A system for automatically shutting off an auto air-conditioner adapted to be driven by the engine of said auto when the operation of said engine approaches its maximum capacity, as indicated by a preselected high pressure in the intake manifold of said engine, comprising: sensing means, operatively connected to said intake manifold of said engine, for sensing said preselected high pressure; and switch means operatively coupled to said sensing means and operable by said sensing means, in a manner such that said switch means is opened when said sensing means senses said predetermined high pressure, and operatively connecting said engine to said air-conditioner whereby said air-conditioner is operative or non-operative as dictated by said switch.

8. A system in accordance with claim 7 wherein the preselected manifold pressure is a pressure approaching atmospheric pressure.

9. A system in accordance with claim 7 wherein the sensing means is a closed, generally-hollow container having a flexible wall which is flexed by a change in pressure in the container and the switch means is mounted adjacent said flexible wall and the operating element of said switch means is operated by flexure of said flexible wall.

10. A system in accordance with claim 9 wherein the switch means is adjustably mounted on the container to permit movement of the operating element of said switch means laterally with respect to the center of flexure of the flexible wall of said container.

Aug. 26, 1969 R. K. HAROLDSON 3,462,964

AIR CONDITIONER CONTROL MEANS RESPONSIVE TO VEHICLE ENGINE POWER DEMANDS

Filed Sept. 12, 1967

FIG. 1.

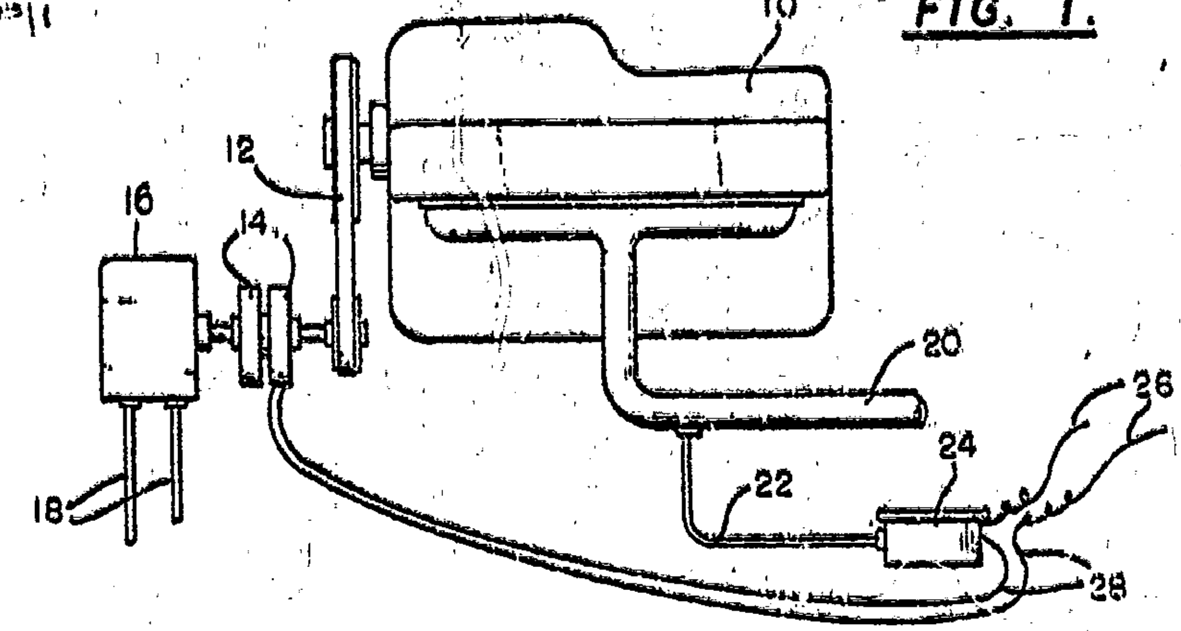


FIG. 3.

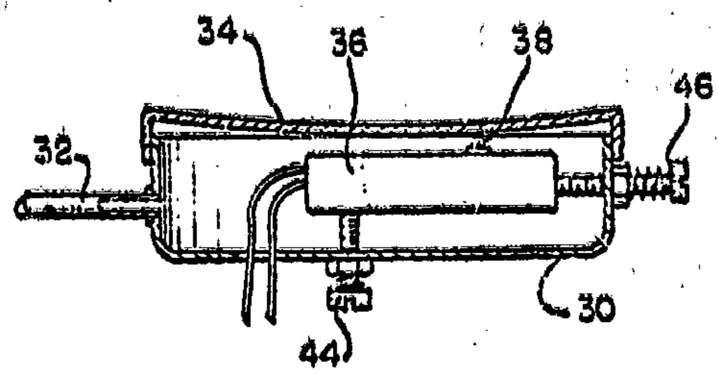


FIG. 2.

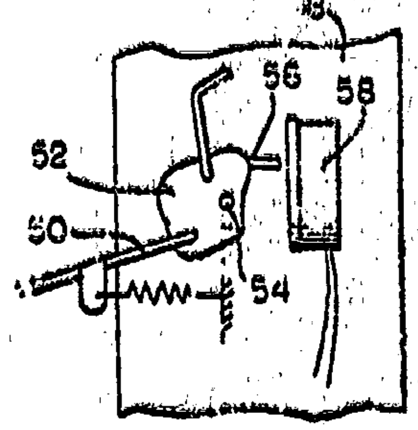
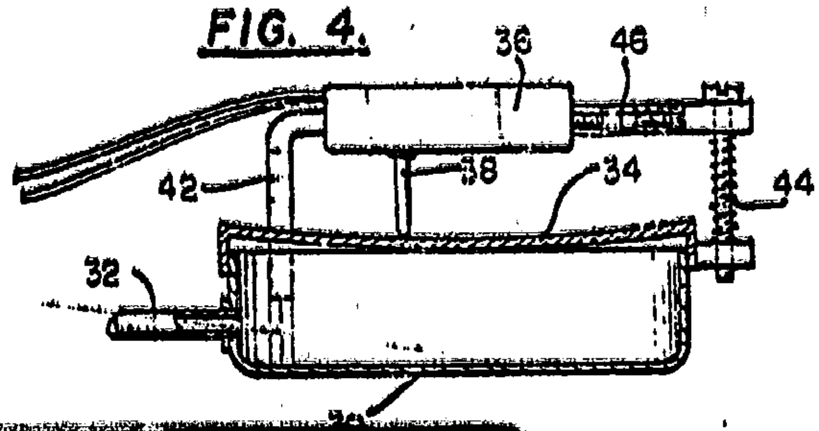


FIG. 4.



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