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An Evaluation of the Lamkin Device

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Technology Assessment and Evaluation Branch
Emission Control Technology Division
Office of Mobile Source Air Pollution Control
Environmental Protection Agency

Background

Mr. Cliff Lamkin contacted the Emission Control Technology Division concerning an invention of his which allegedly reduced exhaust emissions and improved fuel economy. He supplied data from an independent laboratory on tests conducted with and without the device installed on a motor vehicle which indicated a marked reduction in emissions with the device installed. He was invited to our laboratory for confirmatory testing during the week of April 22, 1974.

Device Description

Mr. Lamkin's invention was a modification to the stock carburetor using an unconventional fuel metering system.

Test Program

A series of three tests was performed utilizing the 1975 Federal Test Procedure (FTP); two tests without the device at different idle CO settings, and one with the device installed. The vehicle was a 1968 Dodge Charger with a 383 CID, V-8 engine tested at 4000# inertia weight. For the first test the ignition timing and idle speed were set at manufacturer's specifications and the idle mixture CO was adjusted to a "best idle" setting of 4.4% per Mr. Lamkin's recommendation. For the second test the idle CO was reduced to .2%. For the third test the idle CO was raised again to 4.4% and the device was installed.

Test Results

The results are presented in the Appendix of this report along with calculated fuel economy. These results are summarized below.

Summary of Test Results

% Improvement from 4.4% Idle CO Baseline

.2% Idle CO Baseline	HC	20%
	CO	80%
	NOx	-7%
	Fuel economy	9%
Lamkin Device	HC	19%
	CO	50%
	NOx	-19%
	Fuel economy	2%

Note: A negative sign indicates higher emissions.

Conclusions

The Lamkin device did not improve emissions or fuel economy as much as reducing the idle CO did. Mr. Lamkin indicated that he had not tried his device on a newer, leaner-running car.

TABLE II

Evaluation of the Lamkin Device
1975 Federal Test Procedure

Mass emissions = grams per mile
Fuel economy = miles per gallon

1968 Dodge Charger, 383 CID

----English Units----

Baseline w/o device	HC	CO	CO_2	NOx	Fuel Economy
Idle CO @ 4.4%	4.35	61.0	537.3	3.77	13.7
Baseline w/o device Idle CO @ .2%	3.46	11.9	561.0	4.04	14.9
Lamkin device, Idle CO @ 4.4%	3.54	30.6	583.4	4.50	14.0

APPENDIX

TABLE I

Evaluation of the Lamkin Device
1975 Federal Test Procedure

Mass emissions = grams per kilometer
Fuel consumption = liters per one hundred kilometers

1968 Dodge Charger, 383 CID

----Metric Units----

	HC	CO	CO_2	NOx	Fuel Consumption
Baseline w/o device idle CO @ 4.4%	2.70	37.8	333.1	2.34	17.2
Baseline w/o device idle CO @ .2%	2.14	7.38	347.8	2.50	15.8
Lamkin device, idle CO @ 4.4%	2.19	19.0	361.7	2.79	16.8