

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-34
Relating to Exemptions under Section 27156
of the Vehicle Code

MANHANDLER INC.
"MANHANDLER"

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Section 39023 of the Health and Safety Code;

IT IS ORDERED AND RESOLVED: That the installation of the "Manhandler" Secondary Throttle Lockout System manufactured by Manhandler Inc. of Elkhart, Indiana, and marketed by New Generation of North Canton, Ohio has been found to not reduce the effectiveness of the required motor vehicle pollution control devices and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for the following domestic vehicle applications:

- (1) 1971-1974 Chrysler products with 4 barrel Carter Thermo-Quad Carburetor.
- (2) 1966-1974 General Motor products with 4 barrel Rochester Quadra-Jet Carburetor.
- (3) 1972-1974 Ford Motor products with 4 barrel Autolite or Motorcraft Carburetor.
- (4) 1963-1974 4 barrel Holley Carburetor that has been designated as OEM replacements.

This device consists of a shielded wire cable, mounting brackets, nuts and bolts. This Executive Order is not valid for the vehicles equipped with four barrel carburetors whose secondaries are controlled by direct linkage.

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

Changes made to the design or operating conditions of the device as originally submitted to the Air Resources Board for evaluation that adversely affect the performance of the vehicle's pollution control devices shall invalidate this Executive Order.

Marketing of this device using an identification other than that shown in this Executive Order or marketing of this device for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board.

This Executive Order does not constitute any opinion as to the effect that the use of this device may have on any warranty either expressed or implied by the vehicle manufacturer.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF THE "MANHANDLER" DEVICE.

No claim of any kind, such as "Approved by Air Resources Board" may be made with respect to the action taken herein in any advertising or other oral or written communication.

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

Sections 39130 and 39184 of the Health and Safety Code provide as follows:

"39130. No person shall install, sell, offer for sale, or advertise, or, except in an application to the board for certification of a device, represent, any device as a motor vehicle pollution control device unless that device has been certified by the board. No person shall sell, offer for sale, advertise, or represent any motor vehicle pollution control device as a certified device which, in fact, is not a certified device. Any violation of this section is a misdemeanor."

"39184. (a) No person shall install, sell, offer for sale, or advertise, or, except in an application to the board for accreditation of a device, represent, any device as a motor vehicle pollution control device for use on any used motor vehicle unless that device has been accredited by the board. No person shall sell, offer for sale, advertise, or represent any motor vehicle pollution control device as an accredited device which, in fact, is not an accredited device. Any violation of this subdivision is a misdemeanor."

Any apparent violation of the conditions of this Executive Order will be submitted to the Attorney General of California for such action as he deems advisable.

Executed at Sacramento, California, this 23 day of July, 1974.

WILLIAM SIMMONS
Executive Officer

State of California

AIR RESOURCES BOARD

July 12, 1974

Staff Report

Evaluation of the Manhandler, Inc.
"Manhandler" Secondary Carburetor Lockout
System for Exemption from the Prohibitions
of Section 27156 of the California Motor Vehicle Code

I. Introduction

New Generation Corporation of North Canton, Ohio in behalf of Manhandler Inc. of Elkhart, Indiana has applied for an exemption from the prohibitions of Section 27156 of the Vehicle Code for the "Manhandler" Secondary Carburetor Throttle Lockout System. Section 27156 prohibits the advertising, sale, or installation of any aftermarket device which reduces the effectiveness of the motor vehicle emission control system. The applicant is requesting the exemption be granted for the following domestic-make vehicles:

- 1) 1971 - 1974 Chrysler Products with 4 barrel Carter Thermo Quad Carburetors
- 2) 1966 - 1974 General Motors Products with 4 barrel Rochester Quadrajet Carburetors
- 3) 1972 - 1974 Ford Motor Products with 4 barrel Autolite or Motorcraft Carburetors.
- 4) 1963 - 1974 4 barrel Holley Carburetors that have been designated as OEM replacements.

II. System Description and Function

The system basically consists of a shielded wire cable, mounting brackets, nuts and bolts. A drill bit is supplied for some applications which require a hole in the carburetor air horn or carburetor housing. According to the applicant, this device improves fuel economy at low speed driving. The "Manhandler" manually operated Lockout System prevents the operation of the secondaries at high speeds or under conditions of heavy engine load.

This unit is mounted on the carburetor housing. The method of lockout of the secondary carburetor system is a function of the carburetor design. On the G.M. Rochester 4 barrel Carburetor application a hole is drilled in the carburetor body below the secondary air valve. A plunger is inserted to prevent the air valve from opening. On carburetors with

spring actuated secondaries (Ford), the instructions call for a hole to be drilled through the throttle shaft and journal. When the plunger is inserted, the secondary throttle shaft is locked. The Carter Thermo-Quad application requires the plunger be inserted to hold the secondary pickup lever from opening. This prevents the opening of the secondary throttle.

The plunger control is mounted under the dashboard in the passenger compartment. This control has two positions - one for a two-barrel operation and one for a four-barrel operation.

III. System Evaluation

The following discussion summarizes the applicant's emission data, the Air Resources Board's confirmatory tests and other pertinent considerations.

A. Applicant's Emission Data

The applicants submitted back-to-back baseline and device hot CVS I emission data performed by Olson Laboratories of Anaheim, California and Levonia, Michigan. The two test vehicles selected had the following specifications:

<u>Vehicle Make and Model-Year</u>	<u>Engine</u>	<u>Transmission</u>	<u>Carburetor</u>
1973 Pontiac Grand Safari Station Wagon	455 CID	Automatic	4-barrel Rochester Quadrajet
1973 Pontiac Grand Prix	455 CID	Automatic	4-barrel Rochester Quadrajet

The emission results can be summarized by the following table:

Percent Change in Exhaust Emission
Hot CVSI Test

Test Vehicle	Exhaust Emissions (Percent)		
	<u>HC</u>	<u>CO</u>	<u>NOx</u>
1973 Pontiac Grand Safari	14.3	-5.71	-12.86
1973 Pontiac Grand Prix	-1.44	-22.15	-5.50

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The 14.3% increase in hydrocarbon emissions is beyond any expected test variability. This increase in emissions is not consistent with the operation of this device. During the CVS test cycle the operation of the carburetor secondaries does not generally occur in most vehicles.

The increase in hydrocarbon emission may be due to the following possibilities:

- 1) The fuel evaporative canister upon engine shutdown could become saturated with fuel vapor. When the engine is restarted, the purging of the fuel vapor may lead to an overly rich condition.
- 2) The carburetor and ignition settings were not adjusted to the vehicle manufacturer's specifications.

B. Air Resources Board Confirmatory Test

Based on the inconclusiveness of the applicant's data, the ARB laboratory performed two pairs of back-to-back emission tests. These tests were run on the applicant's 1973 Pontiac station wagon described in Part A.

HOT CVS I TEST

<u>Vehicle Configuration</u>	<u>Exhaust Emissions (Grams per Mile)</u>		
	<u>HC</u>	<u>CO</u>	<u>NOx</u>
Baseline	2.61	15.69	2.82
Manhandler	2.07	11.07	2.54
Baseline	2.64	16.81	2.81
Manhandler	2.71	17.31	2.73
Average Baseline	2.62	16.25	2.81
Average Manhandler	2.39	14.19	2.63

The emission results from the test showed no adverse effects with the device.

C. Other Considerations

The Rochester Quadrajet application is judged to be the most critical in terms of emission control effects due to the locations of the lockout mechanisms. Instances can occur where fuel can flow into secondary carburation with the secondary air valves locked.

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The location of the hole where the plunger inserted is critical. The Quadrajets are designed with two small fuel jets just above the air valves. These jets are vacuum actuated. Opening the valves about 1/8 to 1/4 inch would subject this area to manifold vacuum and may initiate fuel flow. The purpose of these jets is to reduce stumbling and hesitation in driveability when the secondary system starts to operate. The operation of these jets with their valves partially closed could cause an overly rich mixture which would be expected to increase carbon monoxide emissions.

The increase in HC emission noted by the applicant's data could possibly have been due to the opening of these air valves during the CVS test. To investigate this problem, the ARB staff conducted a short test consisting of the first four minutes of the CVS test which contains the most severe accelerations. If these accelerations are severe enough, the secondary would begin to operate. The selected vehicle has the following specifications:

Make and Model Year	1973 Chevrolet Chevelle
Engine	350 CID
Transmission	Automatic
Carburetor	4-barrel Rochester Quadrajets

The test was conducted with the air cleaners off. This permitted the observation of any secondary throttle shaft and secondary air valve movements. No movement of the shaft and valve was observed throughout the test.

A real driveability problem would exist on the Quadrajets if the plunger was inserted with the secondary system in operation. This would prevent the secondary air valves from closing properly. When the secondary throttle is opened again, the influx of air would lean out the mixture which would cause the engine to hesitate, stumble, and even stall.

The Motorcraft carburetor application involves the drilling of the secondary throttle shaft. Improper drilling may bind the shaft, cause the shaft to stick, or even break the shaft. The drill bit supplied is 9/64 inches, leaving a 1/8 inch clearance if the hole is drilled in the middle of the shaft.

IV. Conclusion and Recommendation

The staff is of the opinion that the "Manhandler" Secondary Throttle Carburetor Lockout System does not reduce the effectiveness of the required emission control devices.

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Therefore, the staff recommends that Manhandler Inc. be granted an exemption to Section 27156 of the Vehicle Code for its "Manhandler" Secondary Carburetor Throttle Lockout System for the following carburetor application:

- 1) 1971 - 1974 Chrysler Product with 4 barrel Carter Thermo-Quad carburetors
- 2) 1966 - 1974 General Motors Products with 4 barrel Rochester Quadrajet carburetors
- 3) 1972 - 1974 Ford Motor Products with 4 barrel Autolite or Motorcraft carburetors
- 4) 1963 - 1974 Holley Carburetors that have been designated as OEM replacements.