

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-31
Relating to Exemptions under Section 27156
of the Vehicle Code

NC INDUSTRIES
"G. R. VALVE"

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 "G. R. Valve" manufactured by NC Industries has been found to not reduce the effectiveness of required motor vehicle pollution control devices and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for 1974 and older model-year vehicles with the exception of Volkswagen, diesel, fuel injection, or supercharged engine vehicles.

The device consists of a relief valve with a filter and can be identified by the "G. R. Valve" stamp. The valve is inserted between the PCV valve and the intake manifold and permits a small amount of additional air to enter the PCV line.

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 have prior approval of 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 "G. R. VALVE" 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 19 day of April, 1974.

WILLIAM SIMMONS
Executive Officer

State of California
AIR RESOURCES BOARD

April 11, 1974

Staff Report

Evaluation of the NC Industries
"G.R. Valve"
for Exemption from the Prohibitions of
Section 27156 of the Motor Vehicle Code

I. Introduction

NC Industries of Newbury Park, California, has applied for exemption from the prohibitions of Section 27156 of the Vehicle Code for its "G.R. Valve". This section prohibits the installation of any device which may reduce the effectiveness of the motor vehicle emission control system. The applicant is requesting the exemption be granted for all 1974 model-year vehicles and older with the exception of Volkswagen, diesel, fuel injection, or supercharged engine vehicles.

II. System Description and Function

The "G.R. Valve" is a T-shaped air bleed type valve installed in the line connecting the positive crankcase ventilation valve and the intake manifold. The check ball is positioned on a spring intalled inside the valve body in a normally open position. At high engine vacuum (deceleration, low cruise, and idle operating modes) the ball compreses the spring and closes the valve to prevent additional air from entering the intake manifold. At low engine vacuum (wide open throttle or heavy acceleration) the spring fully supports the ball to keep the valve open allowing additional air to enter the intake manifold. The valve is also open when the engine is not operating.

III. System Evaluation

A. Applicant's Data

The applicant submitted Olson Laboratories, Inc., report # 8750-5101 on the NC Industries air injection device dated February 28, 1974.

The report contains exhaust emission data obtained from the following vehicles.

1. 1972 Ford LTD (#167553)
2. 1966 Pontiac Lemans (#23717).

The applicant could not provide any specific description of the vehicles such as, engine size, carburetion, transmission, etc.

The following table summarizes the data obtained.

Federal Hot CVS Exhaust Emissions in gm/mi				
		HC	CO	NOx
1972 Ford (#167553)	Baseline	1.35	27.86	4.07
	Device	2.05	26.65	3.91
	% Change	51.9	-4.4	-4.0
1966 Pontiac (#23717)	Baseline	3.29	53.16	5.37
	Device	3.09	40.11	5.44
	% Change	-6.1	-24.6	1.3

In addition, a 50 MPH steady state test was performed with another 1966 Pontiac Lemans (#560200). The data submitted from this test were inconclusive.

The applicant submitted several other reports which were also considered inconclusive by the staff as the California or Federal test procedures were not used or NOx emission test data were not included.

Except for the 51.9% increase in hydrocarbon emissions from the 1972 Ford over the baseline readings, the rest of the data were typical and similar to data previously acquired by the ARB when testing similar devices. These data generally show no adverse effects on the vehicles existing emission control system.

B. ARB Testing

1. Emission Tests

The 51.9% increase in hydrocarbons noted in the 1972 Ford LTD tested by Olson Laboratories required further investigation due to the apparent inconsistency in HC and CO emission values. The applicant agreed to submit the 1972 Ford LTD to the ARB for retesting. The vehicle is identified as; 1972 Ford LTD, 400 CID, 2 bbl. carb., auto. trans., license # 384 GVZ.

Upon inspection it was found that this vehicle was not adjusted to manufacturer settings which could account for the applicants data discrepancy. The vehicle was adjusted and checked before performing a hot CVS test.

The hot CVS test was run on the vehicle with the following results:

1972 Ford LTD (384 GVZ)
Federal Hot CVS Exhaust Emissions in gm/mi

	<u>HC</u>	<u>CO</u>	<u>NOx</u>
Baseline	1.16	7.02	3.78
Device	1.27	7.13	3.70
% Change	9.5	1.6	-2.2

An evaluation of the above data indicates that the vehicle tested had extremely lean carburetion and hence, is not representative of this particular make of vehicle. With this lean carburetion only a small change in hydrocarbon mass emissions occurred. Consequently, a more representative vehicle was chosen in order to resolve the effect of the G. R. valve on hydrocarbon emissions. The vehicle was a 1974 Pinto, 2300 cc, auto. trans., license # 255 KJC. Three hot CVS back-to-back tests were performed. The average results were as follows:

1974 Pinto (225 KJC)
Federal Hot CVS Exhaust Emissions in gm/mi

	<u>HC</u>	<u>CO</u>	<u>NOx</u>
Baseline	0.73	20.16	1.11
Device	0.73	19.59	1.13
% Change	0.0	-2.8	1.8

G. R. Valve

Based upon the available data, it is found that the G. R. valve does not adversely ^a effect a vehicle's existing emission control system.

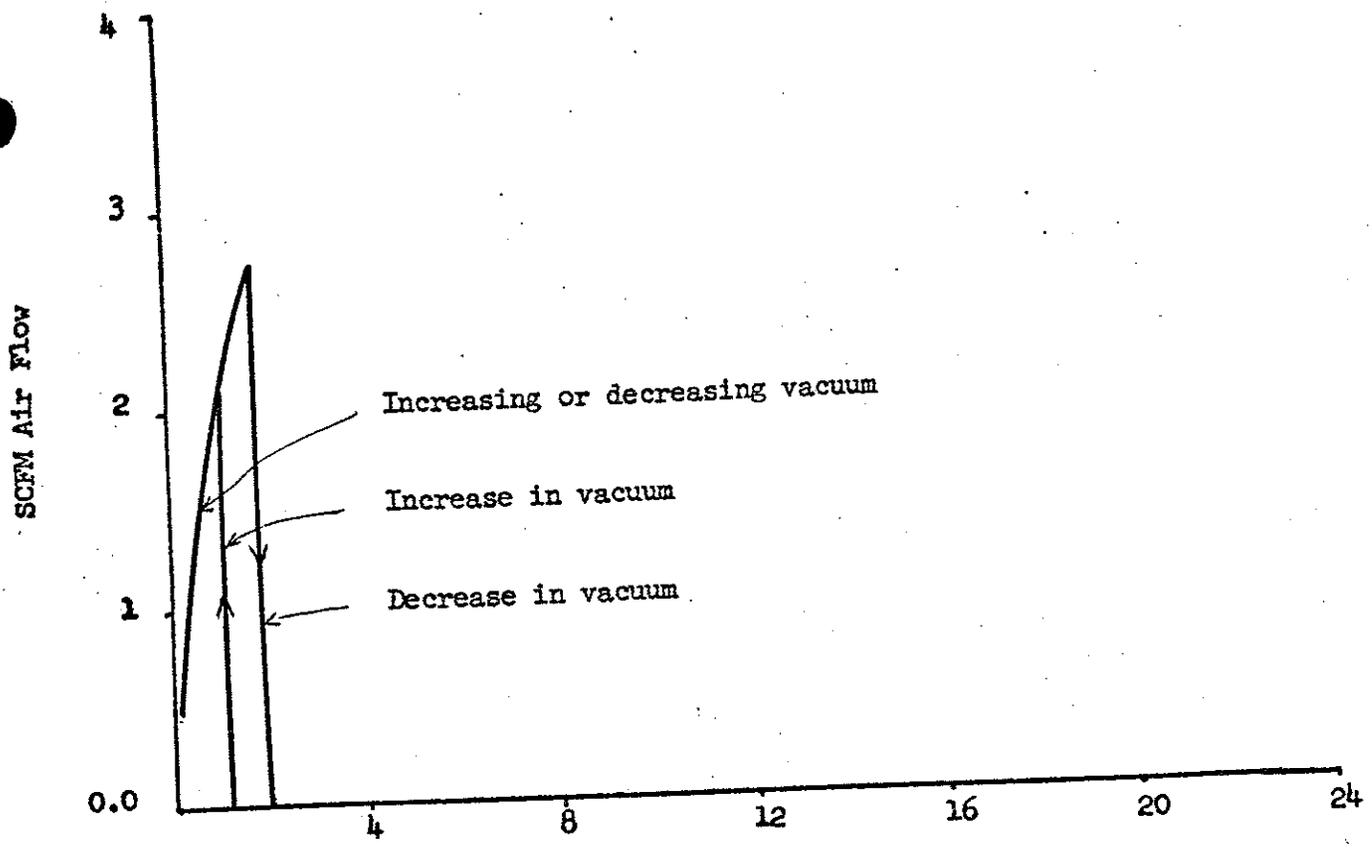
2. Bench Flow Test

The ARB performed a bench flow test with two of the G. R. valves supplied. These tests measured the air bleed rate by varying the vacuum downstream from the valve with one of the inlet ports closed. The ranges of vacuum used in the tests are those experienced during normal engine operation. In the two tests, the maximum flow rates of 2.6 to 3.3 CFM were observed when the vacuum varied between 0 inches to 6 inches Hg. Under normal road load, vehicles operate in this vacuum range for a minimal period. The staff considers the volume of air that flows through the G. R. valve into the intake manifold during this period to be insignificant. No flow rates were observed for the two tests when the vacuum exceeded 4 inches Hg (Reference Figures 1 and 2). The data obtained show that the device meets the maximum flow criteria established by the ARB for all engine sizes.

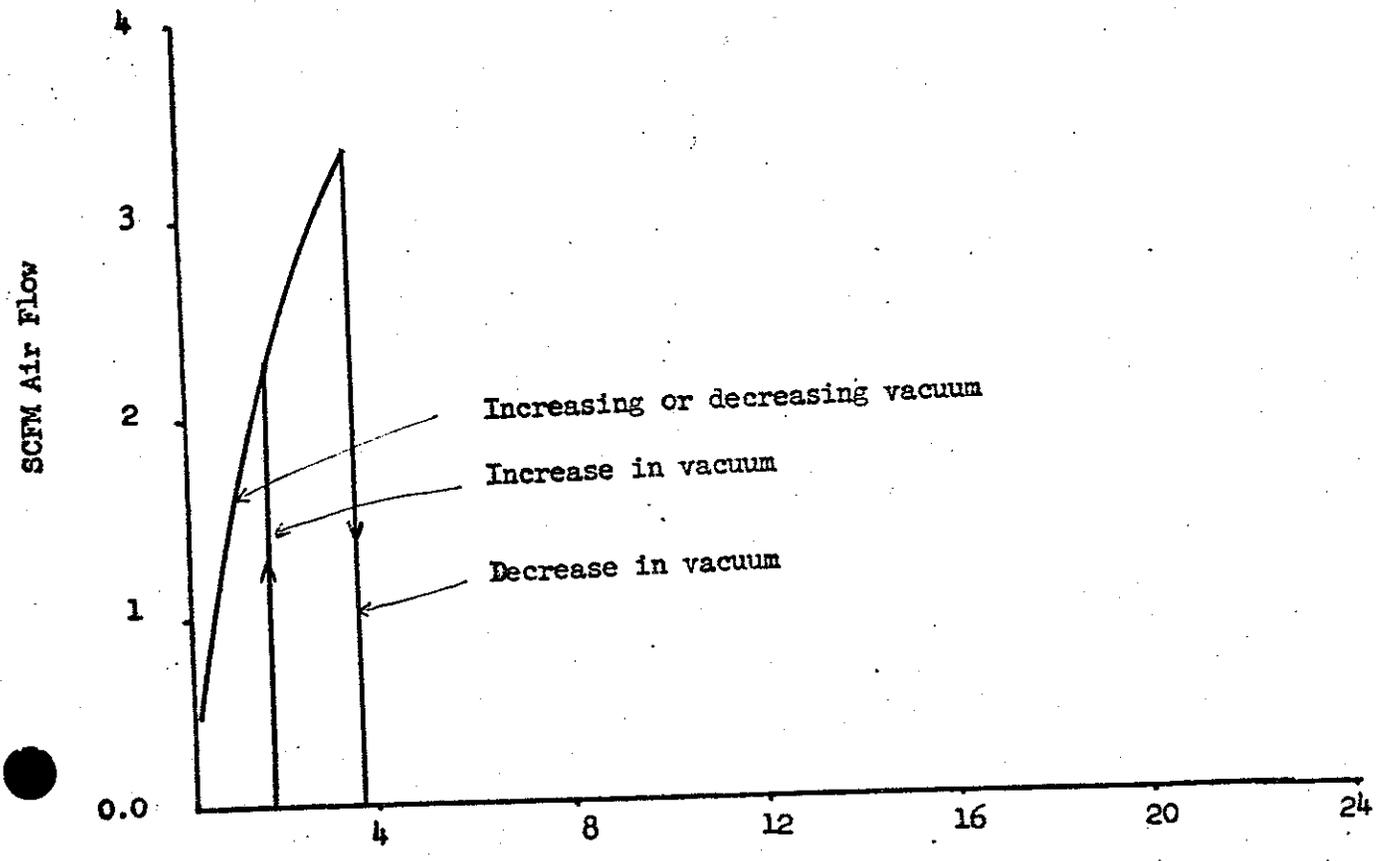
IV. Conclusion and Recommendation

The staff recommends that the air bleed valve labeled "G. R. Valve" manufactured by MC Industries, Newbury Park, California, should be granted an exemption from the prohibitions of Section 27156 for 1974 and older model year vehicles with the exception of Volkswagen, diesel, fuel injection, or supercharged engine vehicles.

Bench Flow Test
"G.R. Valve"



Manifold Vacuum in. of Hg
Figure I - first G.R. Valve



Manifold Vacuum in. of Hg
Figure 2 - Second G.R. Valve