

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-160-2  
Relating to Exemptions under Section 27156  
of the Vehicle Code

ADVANCED EMISSION TECHNOLOGY  
GAS TANK RESTRICTOR MODELS 201, 202, AND 203

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 Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-5;

IT IS ORDERED AND RESOLVED: That the installation of the Gas Tank Restrictor Models 201, 202, and 203 manufactured by Advanced Emission Technology has been found not to 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 repairing damaged or missing fuel fill pipe restrictors on the following vehicles certified for unleaded gasoline.

Model 201 - Gm, Ford, AMC, Chrysler vehicles with "screw in" type fuel filler caps, and Chrysler vehicles with "twist on" type fuel filler caps. All other foreign and domestic vehicles with pipe diameter of 1.80 to 1.95 inches.

Model 202 - Ford vehicles with stepped double flange on inside tube. All other foreign and domestic vehicles with pipe diameter of 2.00 to 2.09 inches.

Model 203 - Chrysler vehicles with "funnel" shaped gas filler neck which have an inside diameter exceeding 2.095 inch, and Ford vehicles gas filler necks without stepped diameter or double flange. All other foreign and domestic vehicles with pipe diameter of 2.10 to 2.25 inches.

Changes made to the design or operating conditions of the device, as exempted by the Air Resources Board, 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 GAS TANK RESTRICTOR MANUFACTURED BY ADVANCED EMISSION TECHNOLOGY.

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 untrue or misleading advertising unlawful, and Section 17534 makes violation punishable as a misdemeanor.

Section 43644 of the Health and Safety Code provides as follows:

"43644. (a) No person shall install, sell, offer for sale, or advertise, or, except in an application to the state board for certification of a device, represent, any device as a motor vehicle pollution control device for use on any used motor vehicles unless that device had been certified by the state 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 subdivision is a misdemeanor."

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

Executed at El Monte, California, this 18<sup>th</sup> day of August, 1988.

  
K. D. Drachand, Chief  
Mobile Source Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF ADVANCED EMISSION TECHNOLOGY GAS TANK RESTRICTOR MODELS  
201, 202, AND 203 FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE CALIFORNIA  
CODE OF REGULATIONS

August, 1988

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CODE OF REGULATIONS

by

Mobile Source Division  
State of California  
Air Resources Board  
9528 Telstar Avenue  
El Monte, CA 91731

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.)

SUMMARY

Advanced Emission Technology (AET) has applied for exemption from the prohibitions of California Vehicle Code Section 27156 for their "Gas Tank Restrictor" device, models 201, 202 and 203. This device is designed to replace damaged or tampered original equipment manufacturer (OEM) unleaded fuel fill pipe restrictors on the following catalyst equipped vehicles:

<u>Model No.</u>	<u>Application</u>
201	GM, Ford, AMC, Chrysler vehicles with "screw in" type fuel filler caps, and Chrysler vehicles with "twist on" type fuel filler caps. All other foreign and domestic vehicles with pipe diameter of 1.80 to 1.95 inches.
202	Ford vehicles with stepped double flange on inside tube. All other foreign and domestic vehicles with pipe diameter of 2.00 to 2.09 inches.
203	Chrysler vehicles with "funnel" shaped gas filler neck which have an inside diameter exceeding 2.095 inches, and Ford vehicles with gas filler necks without stepped diameter or double flange. All other foreign and domestic vehicles with pipe diameter of 2.10 and 2.25 inches.

This device is only applicable for replacing OEM restrictors where remains of the OEM restrictor exists.

Based on the detailed studies of the Gas Tank Restrictor device design, and based on installation experiments and bench tests to determine durability of the device performed previously, the staff concludes that the AET "Gas Tank Restrictor" models 201, 202, and 203 meets the requirements for a Vehicle Code Section 27156 exemption.

The staff recommends that AET be granted an exemption from the prohibitions in Vehicle Code Section 27156 for their Gas Tank Restrictor device, models 201, 202 and 203. The staff also recommends that Executive Order D-160-2 be issued.

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EVALUATION OF ADVANCED EMISSION TECHNOLOGY GAS TANK RESTRICTOR MODELS 201, 202, AND 203 FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE CALIFORNIA CODE OF REGULATIONS

I. INTRODUCTION

Advanced Emission Technology (AET) of 516 SE Chkalov Drive, Vancouver, Washington 98668, has applied for exemption from the prohibitions of California Vehicle Code Section 27156 for their "Gas Tank Restrictor" device, models 201, 202, and 203. This device is designed to replace damaged or tampered original equipment manufacturer (OEM) unleaded fuel fill pipe restrictors on the following catalyst equipped vehicles:

<u>Model No.</u>	<u>Application</u>
201	GM, Ford, AMC, Chrysler vehicles with "screw in" type fuel filter caps, and Chrysler vehicles with "twist on" type fuel filler caps. All other foreign and domestic vehicles with pipe diameter of 1.80 to 1.95 inches.
202	Ford vehicles with stepped double flange on inside tube. All other foreign and domestic vehicles with pipe diameter of 2.00 to 2.09 inches.
203	Chrysler vehicles with "funnel" shaped gas filler neck which have an inside diameter exceeding 2.095 inches, and Ford vehicles with gas filler necks without stepped diameter or double flange. All other foreign and domestic vehicles with pipe diameter of 2.10 and 2.25 inches.

This device is only applicable for replacing OEM restrictors where remains of the OEM restrictor exists.

Section 27156 prohibits modifications to required vehicle emission control systems. Exemptions to the code section are granted upon



demonstration that the device does not increase emissions or reduce the effectiveness of the required emission control systems of applicable vehicles.

II. CONCLUSION

Based on the detailed studies of the Gas Tank Restrictor device design, and based on installation experiments and bench tests to determine durability of the device performed previously, the staff concludes that the AET "Gas Tank Restrictor" models 201, 202, and 203 meets the requirements for a Vehicle Code Section 27156 exemption.

III. RECOMMENDATIONS

The staff recommends that AET be granted an exemption from the prohibitions in Vehicle Code Section 27156 for their Gas Tank Restrictor device, models 201, 202 and 203. The staff also recommends that Executive Order D-160-2 be issued.

IV. DEVICE DESCRIPTION

The AET device is an unleaded fuel fill pipe restrictor to replace damaged or tampered OEM restrictors. It is not applicable for replacing OEM restrictors which have been completely removed; without any support (remnant from the damaged or tampered OEM restrictor) it would fall through the fill pipe into the fuel tank.

The device (all three models) is made of 0.028 inch sheet metal (see Appendices A, B and C for drawings). The device has a 0.915 inch diameter filling hole for passing the nozzle to the required depth in the fill pipe. The filling hole has an eccentricity of 0.230 inch with respect to the centerline of the fill pipe neck. The overall diameter of the device is 1.95 inches (model 201), 2.072 inches (model 202), or 2.210 inches (model 203).

The diameter of the device where the teeth have been removed is 1.56 inches (only models 201 and 203). Attached to the hind side of the device is a spring loaded 0.029 inch thick flapper door which covers the filling hole and is maintained in the closed position. The exemption number and the company's initial "AET" will be imprinted on the front side of the flapper door.

The device has 16 (model 202) or 12 (models 201 and 203) sharp teeth which are unequally spaced around the device allowing the device to be pushed into the fill pipe and to fit on top of the remains of the OEM restrictor.

According to the installation instructions (see Appendix D), the device can be installed without removing the gas tank or gas filler tube from the vehicle. Once installed, it cannot be removed since the teeth are all bent upward, and the device is squeezed tightly against the fill pipe wall.

#### V. DEVICE EVALUATION

The device was evaluated for its: 1) ability to restrict leaded fuel nozzles; and 2) compliance with the Specifications for Fill Pipe and Openings of Motor Vehicle Fuel Tanks.

The filling hole diameter of the device is 0.915 inches for passing the unleaded fuel nozzle but restricting the insertion of a leaded fuel nozzle. There are openings between the teeth around the circumference of the device when installed. The opening are not large enough to allow misfueling.

According to "Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks", angle alpha is the angle between the axial centerline of the fill pipe face and the axial centerline of the test nozzle spout when in its normal resting position. This angle should fall within the range of  $-10^{\circ}$  and  $20^{\circ}$  and the penetration of the test fuel nozzle in the fill pipe should be at least 2.25 centimeters. After a review of the company's installation instructions, the staff is of the opinion that the Gas Tank Restrictor device, models 201, 202, and 203, when installed properly will meet the above requirements.

VI. DISCUSSION

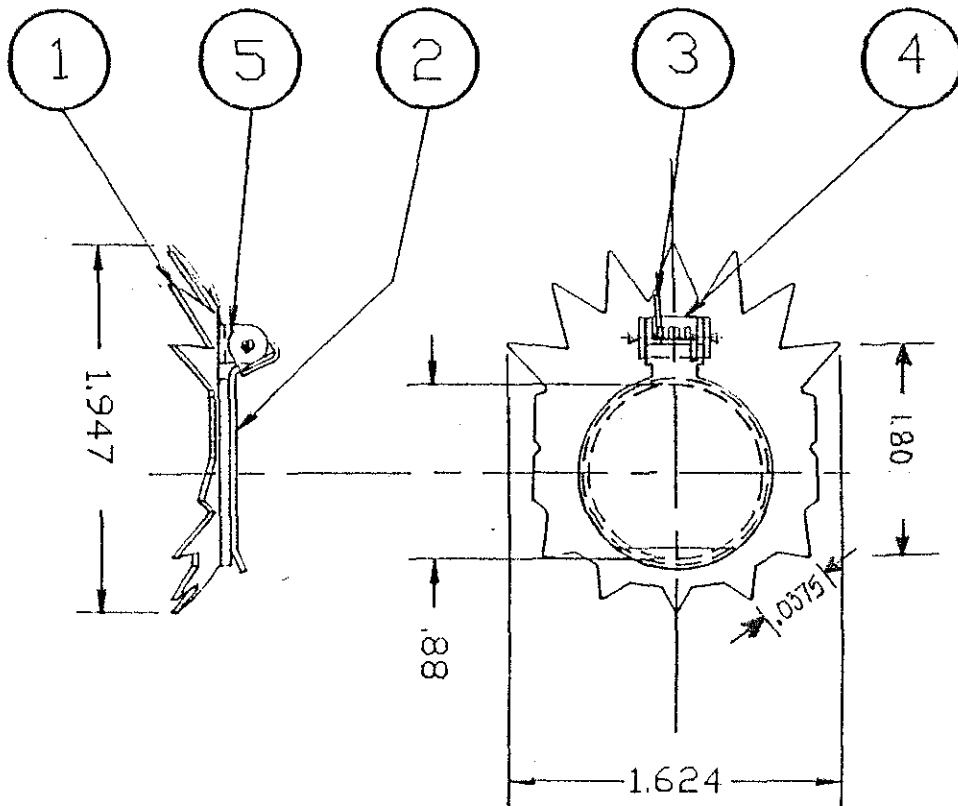
AET has applied for exemption from the prohibitions in California Vehicle Code Section 27156 for their Gas Tank Restrictor device, models 201, 202 and 203.

The staff has evaluated the device and has found it to restrict leaded fuel nozzles to penetrate, and to comply with "Specifications for Fill Pipe and Openings for Motor Vehicle Fuel Tanks".

The staff has previously evaluated (for its durability) an identical device (specifications and material) and has concluded that when the device is installed properly it will remain in its place as designed.

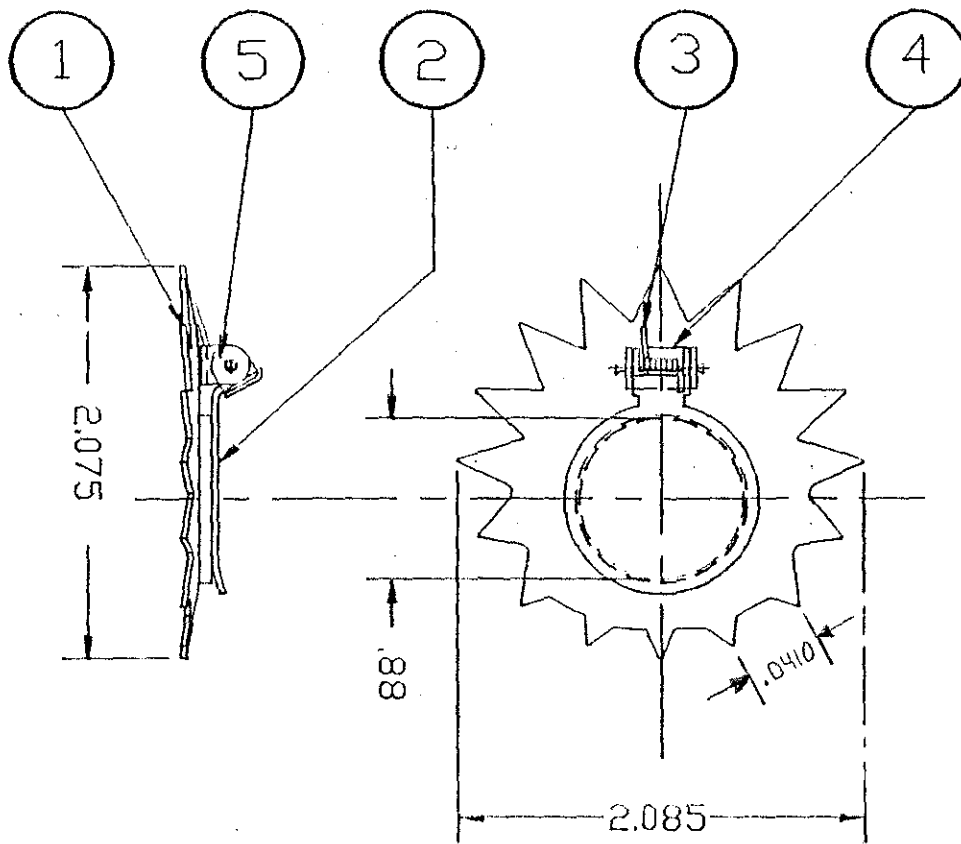
The staff is of the opinion that the AET Gas Tank Restrictor device, models 201, 202, and 203, meets the requirements for exemption from the prohibitions of Vehicle Code Section 27156.

APPENDICES



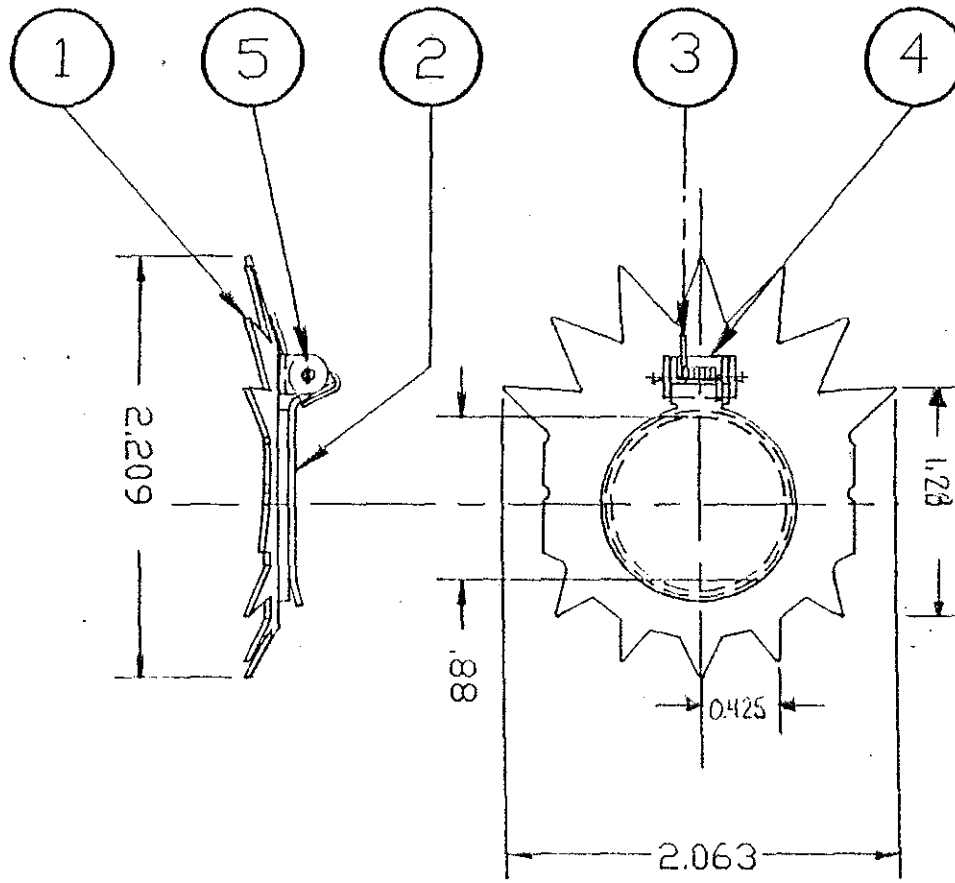
"MODEL 201"

1. Metal Frame - 0.028 thickness
2. Flapper Door - 0.029 thickness
3. Spring
4. Frame for Flapper
5. Rivet



"MODEL 202"

1. Metal Frame - 0.028 thickness
2. Flapper Door - 0.029 thickness
3. Spring
4. Frame for Flapper
5. Rivet



"MODEL 203"

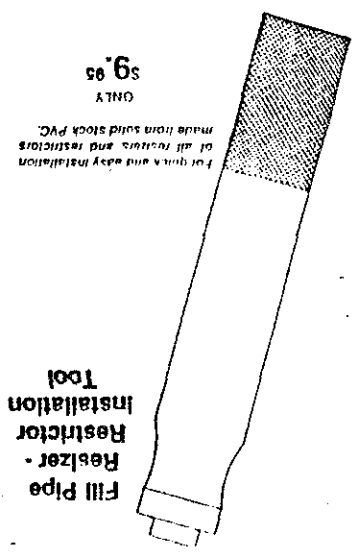
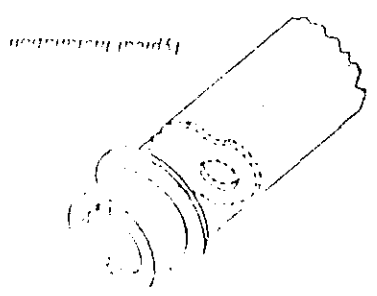
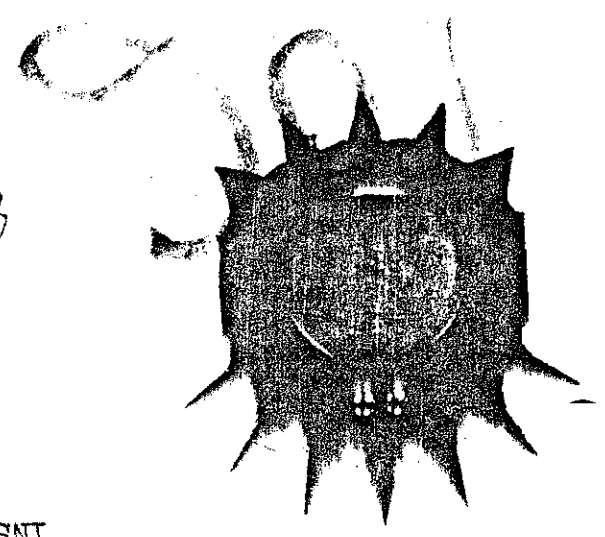
1. Metal Frame - 0.028 thickness
2. Flapper Door - 0.029 thickness
3. Spring
4. Frame for Flapper
5. Rivet

\* Installation tool available separately

Smog Supply & Equipment Co.  
119 E. Arrow Highway  
San Dimas, Ca. 91773  
(714) 599-6437 (619) 565-6056  
(818) 334-9423 Out of State (800) 832-SMOG

4. Limitation: Must be used to fill pipe inside diameter size.  
Patent Pending  
#203 # 303 = 2.10 to 2.25 inches  
#202, #302 = 2.00 to 2.090 inches  
#201, #301 = 1.80 to 1.95 inches
  3. Diameter Range
  2. Insert resizer at a 45 degree angle with 5 teeth at bottom of filler neck inside. Top teeth must be outside. At this time special installation tool made of plastic or wood must be used to drive resizer into place.
  1. Before resizers are installed make sure inspection dowel has been used to make sure hole is worn or tapered with.
- Installation instruction on gas tank resizers # 201, 202, 203, 301, 302, 303.

INSTALLATION INSTRUCTIONS



Fill Pipe Resizer - Installation Tool  
For quick and easy installation of all resizers and restrictors made from solid stock PVC.  
ONLY \$9.95