

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-235
Relating to Exemptions Under Section 27156
of the Vehicle Code

TUNED PORT INDUCTION SPECIALTIES, INC.
T.P.I.S. FAST-PAK

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 T.P.I.S. Fast-Pak, manufactured by Tuned Port Induction Specialties, Inc., of 4255 Country Road 10 East, Chaska, MN 55318, has been found not to reduce the effectiveness of the applicable vehicle pollution control system and, therefore, is exempt from the prohibitions of Section 27156 of the Vehicle Code for the following vehicle applications:

Fast-Pak P/N 100-111	1985-89 Corvette.
Fast-Pak P/N 100-112	1985-86 Camaro equipped with tuned port fuel-injected 305/350 CID engine.
Fast-Pak P/N 100-113	1987-91 Camaro equipped with a tuned port fuel-injected 305/350 CID engine.
Fast-Pak P/N 100-114	1985-86 Firebird equipped with a tuned port fuel-injected 305/350 CID engine.
Fast-Pak P/N 100-115	1987-91 Firebird equipped with a tuned port fuel-injected 305/350 CID engine.
Fast-Pak P/N 100-116	1990-91 Corvette.

This Executive Order is valid provided that installation instructions for this T.P.I.S. Fast-Pak will not recommend tuning the vehicle to specifications different from those submitted by Tuned Port Induction Specialties, Inc.

Changes made to the design or operating conditions of the T.P.I.S. Fast-Pak, as exempt by the Air Resources Board, which adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of this T.P.I.S. Fast-Pak using an identification other than that shown in this Executive Order or marketing of this T.P.I.S. Fast-Pak for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board (ARB). Exemption of the T.P.I.S. Fast-Pak shall not be construed as an exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

This Executive Order does not constitute any opinion as to the effect the use of this T.P.I.S. Fast-Pak may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on a determination that the device would not show an adverse effect in emissions if tested in accordance with the Cold-Start CVS-75 Federal Test Procedure. However, the ARB finds that reasonable grounds exist to believe that use of the T.P.I.S. Fast-Pak may adversely affect emissions of motor vehicles when operating under conditions outside the parameters of the previously prescribed test procedures. Accordingly, the ARB reserves the right to conduct emission tests, in the future, as such tests are developed, that will more adequately measure emissions from all cycle phases. If such test results demonstrate that the T.P.I.S. Fast-Pak adversely affects emissions during off-cycle conditions (defined as those conditions which are beyond the parameters of the Cold-Start CVS-75 Federal Test Procedure), this Executive Order shall be effectively rescinded as of the date the test results are validated. Further, if such test results or other evidence provides the ARB with reason to suspect that the T.P.I.S. Fast-Pak will affect the durability of the emission control system, Tuned Port Inductions Specialties, Inc. shall be required to submit durability data to show that the durability of the vehicle emission control system is not, in fact, affected and/or that the add-on or modified part demonstrates adequate durability.

In addition to the foregoing, the ARB reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations, section 2222 et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF THE TUNED PORT INDUCTION SPECIALTIES, INC. T.P.I.S. FAST-PAK.

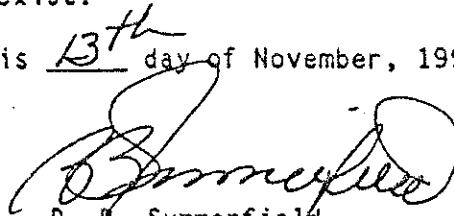
No claim of any kind, such as "Approved by the Air Resources Board" may be made with respect to the action taken herein in any advertising or other oral or written communication.

TUNED PORT INDUCTION SPECIALTIES, INC.
T.P.I.S. FAST-PAK

EXECUTIVE ORDER D-235
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Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after ten day written notice of intention to revoke the order, in which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the order may not be revoked until a determination after the hearing that grounds for revocation exist.

Executed at El Monte, California, this 13th day of November, 1991.



R. B. Summerfield
Assistant Division Chief
Mobile Source Division

Original

State of California
RESOURCES BOARD

EVALUATION OF TUNED PORT INDUCTION SPECIALTIES, INC.'S T.P.I.S. FAST-PAK
AND ITS INDIVIDUAL COMPONENTS FOR EXEMPTION FROM THE PROHIBITIONS OF
VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF
THE CALIFORNIA CODE OF REGULATIONS

November 1991

State of California
AIR RESOURCES BOARD

EVALUATION OF TUNED PORT INDUCTION SPECIALTIES, INC.'S T.P.I.S. FAST-PAK
AND ITS INDIVIDUAL COMPONENTS FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE
CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

by

Mobile Source Division
State of California
Air Resources Board
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El Monte, CA 91731-2990

(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

Tuned Port Induction Specialties, Inc. (TPIS), of 4255 County Road 10 East, Chaska, MN 55318 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for their T.P.I.S. Fast-Pak and two of its individual components, the throttle body air-foil and the adjustable fuel pressure regulator. The T.P.I.S. Fast-Pak and its individual components are designed for installation on 1985-91 model-year Camaro/Firebird equipped with a tuned port fuel-injected 305/350 CID engine and 1985-91 model-year Corvette. The Fast-Pak consists of a throttle body air-foil, an adjustable fuel pressure regulator, a foam air filter and a set of spark plugs.

TPIS has submitted a complete application and all the required information including samples of the individual components. Based on an engineering evaluation, it was determined that the Fast-Pak and its individual components would not have any significant adverse effects in emissions if tested in accordance with the Cold-Start CVS-75 Federal Test Procedure.

The staff recommends that Tuned Port Induction Specialties, Inc. be granted exemptions as requested and that Executive Orders D-235, D-235-1 and D-235-2 be issued for the Fast-Pak, the Throttle Body Air-Foil, P/N 100-001, and the Adjustable Fuel Pressure Regulator, P/N 100-002, respectively.

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EVALUATION OF TUNED PORT INDUCTION SPECIALTIES, INC.'S FAST-PAK AND ITS
INDIVIDUAL COMPONENTS 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

Tuned Port Induction Specialties, Inc. (TPIS), of 4255 County Road 10 East, Chaska, MN 55318 has applied for an exemptions from the prohibitions in Section 27156 of the California Vehicle Code for the Fast-Pak and two of its individual components, the throttle body air-foil and the adjustable fuel pressure regulator. The Fast-Pak and its individual components are applicable for installation on 1985-91 model-year Camaro/Firebird equipped with a tuned port fuel-injected 305/350 CID engine and 1985-91 model-year Corvette. The Fast-Pak includes a throttle body air-foil, adjustable fuel pressure regulator, a foam air filter and a set of spark plugs.

TPIS has submitted a completed application and all the required information as well as samples of the individual components.

II. CONCLUSIONS

Based on an engineering evaluation of the operating principles of the TPIS Fast-Pak, the staff concludes that the installation of the TPIS Fast-Pak and its individual components will not adversely affect exhaust emissions, if tested in accordance with the Cold-Start CVS-75 Federal Test Procedure, from vehicles for which an exemption is requested.

III. RECOMMENDATION

The staff recommends that TPIS be granted exemptions as requested and that Executive Orders D-235, D-235-1 and D-235-2 be issued for the Fast-Pak,

P/N's 100-111, 100-112, 100-113, 100-114, 100-115 and 100-116, the Throttle Body Air-Foil, P/N 100-001, and the Adjustable Fuel Pressure Regulator, P/N 100-002, respectively.

IV. DEVICE DESCRIPTION

TPIS Fast-Pak consists of the throttle body air-foil, the adjustable pressure regulator, the foam air filter and a set of spark plug wires. The Fast-Pak is designed primarily to enhance vehicle performance through reduced air flow restriction, improved fuel atomization and increased consistency in spark firing.

A. Throttle Body Air-Foil

The throttle body air-foil is designed to create a smoother transition for the air to travel from the air cleaner assembly hose into the two throttle body air passages. Thus, air turbulence is decreased as air passes through the throttle body air inlet area. The air-foil has rounded edges and is designed to fit snugly into the throttle body air inlet. The air-foil is approximately 2-1/2 inches long, 1 inch thick with a width varying from 2-1/2 inches to 1/2 inch.

To ensure that the air-foil remains in place, a half-cylindrical shaped part, approximately 1 inch in length with a 1/4 inch radius, has been designed to fit snugly into a slot already located in the original equipment manufacturer (OEM) throttle body. The air-foil is kept in place by fastening it into the half-cylindrical shaped part using a 2-1/4 inch screw. The manufacturer claims the installation of the throttle body air foil will cause the horsepower to increase by 11.8 HP and the inlet air rate to increase by

36 CFM. The installation of the air-foil does not cause the removal of any emission control devices nor does it cause the timing parameters to be changed. Appendix A contains a copy of the installation instructions.

B. Adjustable Fuel Pressure Regulator

The TPIS adjustable fuel pressure regulator is similar to the OEM pressure regulator except for the addition of an adjusting screw and a metal disc which is placed on the spring inside the fuel pressure regulator. Turning the adjusting screw causes the disc to compress or release the spring. The compression of the spring causes the fuel pressure to be adjusted and optimized for each vehicle. The manufacturer claims that as the fuel pressure is raised, the fuel is atomized better and emissions are reduced. The adjustable fuel pressure regulator is installed in the same location as the OEM. Also, installation does not cause the removal of any emission control equipment nor changing of the tune-up parameters. Appendix B contains a copy of the installation instructions.

C. Foam Air Filter

The purpose of the foam air filter is to allow a less restrictive air intake. The foam air filter is a depth style filter directly replacing the OEM surface style air filter. Since the dust is trapped throughout the filter's entire thickness, foam air filters have a tremendous capacity even when air flow is maintained at a high flow rate. The foam air filter functions the same as the OEM filter and does not cause the removal of any emission control devices or change the tune-up parameters.

D. Spark Plugs

The TPIS spark plugs are designed to replace the OEM spark plugs. The manufacturer claims their spark plugs provide radio suppression for quiet radio receptions, less chance of cross-firing and radio quiet for the computer. The spark plugs are made of a carbon core wrapped in a fine monel winding. The winding is covered with a layer of pure silicon, a nylon webbing and a second coat of pure silicon. The TPIS spark plugs function the same as the OEM and do not require removal of any emission control equipment nor change the tune-up parameters.

V. I.P.I.S. FAST-PAK EVALUATION AND DISCUSSION

An engineering evaluation was conducted to evaluate the impact of the Fast-Pak and its individual components on emissions. The TPIS spark plugs and the foam air filter are both determined to be functionally identical to the OEM parts. Installation of these parts do not cause the removal of any emission control equipment nor cause changes in the tune-up specifications. Therefore, these parts are considered replacement parts and would not cause the emissions to be adversely affected.

The Fast-Pak also contains two critical components, the throttle body air-foil which changes the air flow and the adjustable fuel pressure regulator which adjust the fuel pressure. TPIS has requested that the Fast-Pak and these critical components be exempted for 1985-91 model-year General Motors Camaro/Firebird equipped with tuned port fuel-injected 305/350 CID engine and 1985-91 model-year Corvettes. Under normal driving conditions, these vehicles

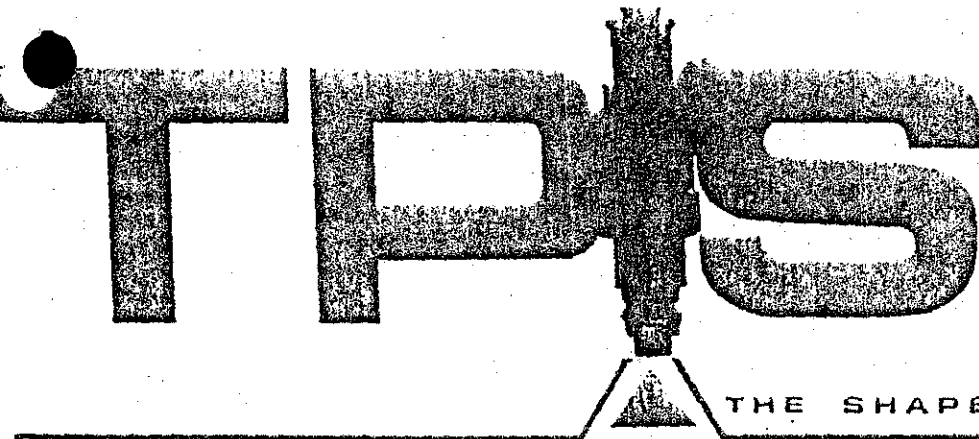
are designed to operate in a closed-loop configuration, which is characterized by the Cold-Start CVS-75 Federal Test Procedure driving cycle. While the vehicle operates under closed-loop configuration, the on-board computer monitors the air/fuel mixture to maintain it near a stoichiometric condition. The on-board computer receives voltage signals from the oxygen sensor and interprets them as either richer or leaner than a stoichiometric fuel mixture. Based on the oxygen sensor signal, the on-board computer either increases the amount of air flow (to lean the mixture) or increases the amount of fuel flow (to richen the mixture) to maintain the fuel mixture near stoichiometric. Although the T.P.I.S. Fast-Pak and its components could change the air flow or the fuel pressure, the on-board computer will compensate and keep the air/fuel mixture at stoichiometric levels during closed-loop operations. Therefore, T.P.I.S. Fast-Pak and its components will have no adverse effects on emissions of the affected vehicles during closed-loop operation.

However, under open-loop configuration such as quick accelerations, air and fuel is being supplied by demand and the fuel mixture is not maintained near stoichiometric. Although the T.P.I.S. Fast-Pak and its components could potentially increase emissions during open-loop conditions, the Air Resources Board (ARB) has not established an official test procedure to evaluate emissions during open-loop driving conditions. The ARB, therefore, reserves the right to conduct emission tests, in the future, as such tests are developed, that will more adequately measure emissions from all driving cycles.

APPENDIX

APPENDIX A:

TUNED PORT INDUCTION SPECIALTIES

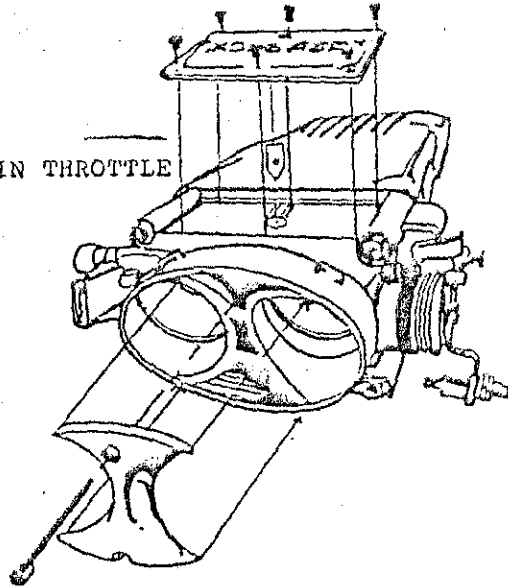


THE SHAPE OF THINGS TO COME

THROTTLE BODY AIR FOIL INSTALLATION INSTRUCTIONS

THE AIR FOIL IS PASSIVE AND SHOULD NOT AFFECT EMISSIONS, NOISE, UNDER ANY CIRCUMSTANCES, ALTER TEXTURE, SHAPE OR CONFIGURATION OF AIRFLOW. SOME OF THE ELEVATION CHANGES ARE CRITICAL.

1. REMOVE THE RUBBER BELLOWS
2. REMOVE THE COVER THAT SAYS
TUNED PORT INJECTION
- 2A. INSTALL HALF ROUND NUT IN EXISTING HOLE IN THROTTLE
BODY, ROUND SIDE FORWARD
3. INSTALL THE AIR FOIL
NOTE: USE LOCTITE® ON THREAD!
4. REPLACE COVER
5. REPLACE BELLOWS



OUR THROTTLE BODY AIR FOIL IS REALLY EASY TO INSTALL. WHILE IT LOOKS SIMPLE, IT IS THE RESULT OF OVER 300 HOURS OF FLOW BENCH WORK AND MANY DAYS OF DYNO TESTING. WE HAVE SHOWN AN AVERAGE OF 10 TO 12 HORSEPOWER EVERY TIME THE AIR FOIL IS INSTALLED.

PATENT APPLIED FOR
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T. P. I. SPECIALTIES, INC.
4855 Co. Rd. 10 East, Chaska, MN 55318 USA
1-162-440-6021

APPENDIX B:



PATENT APPLIED FOR
COPYRIGHT 1988

INSTALLATION INSTRUCTIONS

FOR VC 200 BILLET ALUMINUM ADJUSTABLE FUEL PRESSURE REGULATOR

Although the T.R.I. system looks complicated and is complicated, the regulator you are about to install is not really a hard job. If you get it off during installation:

1) Turn off the fuel line from the fuse block. Now you can start the motor if you want to. What you are doing is taking the fuel pressure down so that you won't spill as much gas when you take the regulator cover off.

2) Disconnect the battery.

3) Remove the four bolts that hold the throttle assembly to the plenum. Note the position of them.

4) On the back of the plenum there are several vacuum connections. The power brake line on the left rear of plenum must be removed as well as the two smaller vacuum lines on the right rear.

5) There are a total of 8 fasteners that hold the plenum to the intake runners. Remove these. With a soft hammer tap on the plenum until it is loose. As you lift the plenum up you will see an electrical connector. Disconnect it. Set the plenum aside.

5A. CLEAN ALL GASKET MATERIAL FROM RUNNERS AND PLENUM. INSTALL GASKETS PROVIDED.

6) You are now ready to remove the fuel pressure regulator cover. There is going to be some fuel pressure present and you will spill some gas, so be careful! There are six special bolts that hold the lid to the body. Loosen these evenly with the tool kit we've supplied and remove the cover. You will see a spring and a plunger. *Make sure these stay clean.* We have provided you with a pilot screw, special key and a disc that goes inside the cover. *Make sure nothing binds and start all six bolts and tighten them evenly.*



Now you should be ready to reassemble your T.R.I., reverse steps 1-6.

7) Once you have everything together have somebody watch for fuel leaks. If there are none you are ready to start the car.

8) In our T.R.I.s we have found that 4.2 psi seems to be a good number and at that pressure we have seen a 10% power gain at 4000 rpm and a 5 ft/lb gain at 3000 rpm. Pressure must be set with regulator vacuum hose removed. Get the pressure by turning the adjustment nut finger tight plus one (1) turn.

9) To get the most from all of our products, you will need a team of engineers and a drag strip, or a Vericom VC 200 performance computer. By using a VC 200 you will be surprised at how important fuel pressure is on these cars.

FOR VC 200 BILLET ALUMINUM ADJUSTABLE FUEL PRESSURE REGULATOR WITH 1/2 TANK GAS OR LESS

WE DON'T AT THIS POINT THE CAR
L START & RUN SO YOU CAN ADJUST
THE FUELER PRESSURE USING TRIS
PRESSURE GAUGE #166-147