State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-176-5
Relating to Exemptions Under Section 27156
of the Vehicle Code

DINAN PERFORMANCE ENGINEERING
PERFORMANCE CHIPS

Pursuant to the authority vested in the Air Resources Board (ARB) 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 Performance Chips manufactured by Dinan Performance Engineering has been found not to reduce the effectiveness of required motor vehicle pollution control devices and, therefore, are exempt from the prohibitions of Section 27156 of the Vehicle Code for those applications listed in Exhibit A, which is attached hereto and incorporated herein.

This Executive Order is valid provided that installation instructions for the Performance Chips will not recommend tuning the vehicle to specifications different from those submitted by the device manufacturer.

Changes made to the design or operating conditions of the device, as exempted by the ARB, that adversely affect the performance of a vehicle's pollution control system 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 ARB.

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

This Executive Order is granted based on results from emissions tests conducted in accordance with Cold-Start CVS-75 Federal Test Procedure. However, the ARB finds that reasonable grounds exist to believe that use of the Performance Chips 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 additional 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 Performance Chips adversely affect 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 Performance Chips will affect the durability of the emission control system, Dinan Performance Engineering 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 ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF DINAN PERFORMANCE ENGINEERING'S PERFORMANCE CHIPS.

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.

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 vehicle unless that device has 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 conditions of this Executive Order may result in its rescission or submission to the Attorney General of California for such action as he deems advisable.

The Bureau of Automotive Repair will be notified by copy of this order.

Executed at El Monte, California, this 28th day of October, 1992.

R. B. Summerfield
Assistant Division Chief
Mobile Source Division

Exhibit A

MAKE	MODEL	YEARS	DISPL.	ECU NUMBER	DINAN NUMBER
BMW	321i	89-92	2.5L	0-261-200-173	D900-2532
BMW	321i	89-92	2.5L	0-261-200-380	D900-2533
BMW	535i	89-92	3.4L	0-261-200-179	D900-3532
BMW	M5	90-93	3.6L	0-261-200-350	D900-3631
BMW	735i	89-92	3.4L	0-261-200-179	D900-3532
BMW	750iL	88-90	5.0L	0-261-200-156	D900-5031
BMW	325e	88	2.7L	0-261-200-154	D900-2731
BMW	325i	89-92	2.5L	0-261-200-525	D900-2535
BMW	325i	89-92	2.5L	0-261-200-526	D900-2537
BMW	325i 4V	91	2.5L	0-261-200-403	D900-2542
BMW	325i 4V	91-93	2.5L	0-261-200-402	D900-2543
BMW	525i 4V	91	2.5L	0-261-200-405	D900-2541
BMW	525i 4V	92-93	2.5L	0-261-200-403	D900-2542
BMW	528e	88	2.7L	0-261-200-154	D900-2731
BMW	750iL	91-93	5.0L	0-261-200-352	D900-5033
BMW	850i	91-93	5.0L	0-261-200-352	D900-5033

State of California
AIR RESOURCES BOARD

EVALUATION OF DINAN PERFORMANCE ENGINEERING'S PERFORMANCE CHIPS FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE CALIFORNIA CODE OF REGULATIONS

October 1992

State of California
AIR RESOURCES BOARD

EVALUATION OF DINAN PERFORMANCE ENGINEERING'S PERFORMANCE CHIPS 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
9528 Telstar Avenue
El Monte, CA 91731-2990

SUMMARY

Dinan Performance Engineering (Dinan) of 81 Pioneer Way, Mountain View, CA 94041, has requested to update Executive Order D-176-2 which exempts Dinan's Performance Chips from the prohibitions in Section 27156 of the California Vehicle Code (VC). The update is requested to include 1992 & 1993 M-5 models, and 1992 325i, 535i, and 735i models. Dinan also requested the exemption to include PROM chips for the following vehicles models: 325e, 325i, 525e, 525i, 528e, 750iL, and 850i. Appendix A lists the model-year and engine displacement of both the update and the additions.

Based on an engineering evaluation and that the 1992 and 1993 vehicles for which the exemption update is requested are carry-overs from the model-years for which the exemption has been granted, the staff concludes that Dinan's Performance Chips will not adversely affect exhaust emissions from the vehicles for which an exemption is requested.

The staff recommends that Dinan be granted Executive Order D-176-5 allowing the installation of their Performance Chips on those applicable BMW vehicles listed in Appendix A.

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CALIFORNIA CODE OF REGULATIONS

I. INTRODUCTION

Dinan Performance Engineering (Dinan) of 81 Pioneer Way, Mountain View, CA 94041, has requested to update Executive Order D-176-2 which exempts Dinan's Performance Chips from the prohibitions in Section 27156 of the California Vehicle Code (VC). The update is requested to include 1992 & 1993 M-5 models, and 1992 325i, 535i, and 735i models. Dinan also requested the exemption to include PROM chips for the following vehicles models: 325e, 325i, 525e, 525i, 528e, 750iL, and 850i. Appendix A lists the model-year and engine displacement of both the update and the additions.

II. CONCLUSIONS

Based on an engineering evaluation and that the 1992 and 1993 vehicles for which the exemption update is requested are carry-overs from the model-years for which the exemption has been granted, the staff concludes that Dinan's Performance Chips will not adversely affect exhaust emissions from the vehicles for which an exemption is requested.

III. RECOMMENDATION

The staff recommends that Dinan be granted Executive Order D-176-5 allowing the installation of their Performance Chips on those applicable BMW vehicles listed in Appendix A.

IV. DESCRIPTION OF THE PERFORMANCE CHIPS

Many computer controlled vehicles are equipped with an electronic control unit (ECU) which is programmed using a programmable read only memory computer chip (PROM). Signals detected by the vehicle's sensors are fed

directly into the ECU where they are analyzed and compared to the operational data programmed inside the PROM. The PROM sends out appropriate adjustments in the engine's operation in response to changing conditions. For example, a PROM will adjust timing and fuel delivery when a vehicle is subjected to additional load. Thus, by modifying data in the PROM, spark timing, fuel delivery, and rev-limiter can be adjusted.

Dinan's Performance Chips modify the ignition timing, fuel curves, and rev-limiter of the original equipment manufacturer's (OEM) PROM under full throttle operation. Therefore, the Performance Chips operate when the vehicle is at open-loop. These modifications translate to an increase in torque and horsepower. No modifications have been conducted on the Performance Chips that would affect throttle response and driveability under normal day-to-day driving. Dinan recommends that premium fuel be used in conjunction with their Performance Chips.

V. DISCUSSION OF THE PERFORMANCE CHIPS

Dinan has requested an update to Executive Order D-176-2 to allow the use of their Performance Chips on the applicable 1992 & 1993 model-year vehicles. The Performance Chips for 1992 & 1993 model year vehicles modifies the engine parameters in a similar manner to those previously approved for the 1991 and older model-year vehicles. The staff compared the engine design of the 1991, 1992, & 1993 model-year vehicles and found that the 1992 & 1993 model-year BMW engine families certified for California sales were carried-over from the 1991 model-year. Therefore, no additional exhaust emission test is necessary.

Dinan also requested to include new PROM chips for the following vehicles models: 325e, 325i, 525e, 525i, 528e, 750iL and 850i. The engine

sizes for these vehicles are within the range of sizes previously evaluated under the original application. The modified parameters of the new PROM chips are the same as those which are already exempt. Based on previous emission testing and the information submitted regarding the new PROM chips, the staff concludes no emissions impact would be observed on the affected vehicles when tested in accordance with Cold Start CVS-75 Federal Test Procedure (FTP).

The staff recommends that Dinan be granted Executive Order D-176-5 allowing the installation of the Performance Chips on those applicable vehicles listed in Appendix A.

Dinan submitted all the required information and fulfilled the requirements for an exemption.

APPENDIX A

MAKE	MODEL	YEARS	DISPL.	ECU NUMBER	DINAN NUMBER
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