

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-176-11  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

DINAN ENGINEERING, INC.  
HIGH FLOW COLD AIR INTAKE SYSTEM

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 39515 and Section 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the installation of the High Flow Cold Air Intake System, manufactured and marketed by Dinan Engineering, Inc., 150 South Whisman Road, Building E, Mountain View, California 94041 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 BMW vehicle applications:

Part No.	Vehicle	Model-Year	Displacement
D760-0320	325i	1992	2.5L
	325i, is, ic	1993-95	2.5L
	M3	1995	3.0L
D760-0321	328i, is, ic	1996/97	2.8L
	M3	1996/97	3.2L

The High Flow Cold Air Intake System includes the following main components: Custom K&N filter, filter to air flow meter pipe, insulating filter mounting bracket, and hardware kit.

This Executive Order is valid provided that the installation instructions for the air filter kit will not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

Changes made to the design or operating conditions of the air filter kit, as exempt by the Air Resources Board, which adversely affect the performance of the vehicle's pollution control system shall invalidate this Executive Order.

Marketing of the air filter kit using any identification other than that shown in this Executive Order or marketing of the air filter kit for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board. Exemption of the air filter kit shall not be construed as 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 the air filter kit may have on any warranty either expressed or implied by the vehicle manufacturer.

This Executive Order is granted based on an engineering evaluation based on the Cold-Start CVS-75 Federal Test Procedure. However, the ARB finds that reasonable grounds exist to believe that use of the High Flow Cold Air Intake System 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 High Flow Cold Air Intake System 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 High Flow Cold Air Intake System will affect the durability of the emission control system, Dinan 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.

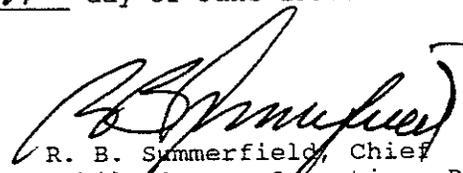
In addition to the foregoing, the ARB reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations, Section 2222, et seq.

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 ENGINEERING, INC.'S HIGH FLOW COLD AIR INTAKE SYSTEM.

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.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after a 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 hearing that grounds for revocation exist.

Executed at El Monte, California, this 11<sup>th</sup> day of June 1997.

  
R. B. Summerfield, Chief  
Mobile Source Operations Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF DINAN ENGINEERING, INC.'S HIGH FLOW COLD AIR INTAKE SYSTEM  
FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE CODE  
SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE  
CALIFORNIA CODE OF REGULATIONS

June 1997

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AIR RESOURCES BOARD

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by

Mobile Source Operations Division  
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(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

Dinan Engineering, Inc. of 150 South Whisman Road, Building E, Mountain View, California 94041 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for their air filter kit designed for 1992-97 3-Series BMW vehicles.

Based on an engineering evaluation, the staff concludes that the air filter kit will not adversely affect exhaust and evaporative emissions from vehicles for which the exemption is requested.

The staff recommends that Dinan Engineering, Inc. be granted an exemption as requested and that Executive Order D-176-11 be issued.

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I. INTRODUCTION

Dinan Engineering, Inc. of 150 South Whisman Road, Building E, Mountain View, California 94041 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for their air filter kit designed for 1992-97 3-Series BMW vehicles.

II. CONCLUSIONS

Based on an engineering evaluation, the staff concludes that Dinan Engineering, Inc.'s High Flow Cold Air Intake System will not adversely affect exhaust and evaporative emissions from the vehicles for which the exemption is requested.

III. RECOMMENDATION

The staff recommends that Dinan Engineering, Inc. be granted an exemption for their High Flow Cold Air Intake System for installation on those applicable BMW vehicles. The staff also recommends that Executive Order D-176-11 be issued.

IV. HIGH FLOW COLD AIR INTAKE SYSTEM DESCRIPTION

The High Flow Cold Air Intake System has been specifically designed for installation on 1992-97 3-Series BMW vehicles. The kit operates in conjunction with the original equipment manufacturer's (OEM) computer controlled fuel injection system and emission control system already certified with the stock engine.

The purpose of modifying the stock intake air filter is to increase air flow to the engine's combustion chamber by installing an oversized open element K&N air filter. The new air filter is placed at the location of the vehicle's horn. Dinan Engineering, Inc. claims this will bring air into the combustion chamber that is slightly cooler since this location does not draw air from the engine or radiator. The installation of this kit does not require the relocation of any vacuum hoses or sensors, including the mass air flow sensor. The 1992-95 BMWs have a throttle pre-heat thermostat which is part of the vehicle's radiator system. This thermostat is attached to the stock air box and is transferred to the new air filter kit. It is located on the tubing between the mass air flow sensor and filter.

V. DISCUSSION OF THE HIGH FLOW COLD AIR INTAKE SYSTEM

An engineering evaluation was conducted to determine the impact of the air filter kit on the vehicle's emissions. The Air Resources Board's (ARB's) concerns regarding the air filter kit is the potential to increase evaporative and exhaust emissions and its compatibility with the On Board Diagnostic II (OBD II) system.

To understand what effect the air filter kit may have on the vehicle's evaporative system, staff compared the stock and the new aftermarket configurations. In the stock configuration, the air filter box is connected to the mass air flow sensor by hardened rubber tubing, vacuum lines and miscellaneous sensors are located after the mass air flow sensor. Dinan Engineering, Inc. designed their air filter kit similar to stock, except that the tube connecting the mass air flow sensor to the open element air filter is longer in length. The mass air flow sensor and its components are not moved or modified. BMW produced some 1996 and 1997 3-Series vehicles certified to an Enhanced Evaporative Emission standard. Staff believes that the air filter kit would not have an emissions impact on these vehicles since none of the evaporative lines are cut, moved or modified. The air filter box is not considered part of BMW's evaporative emissions control system. Therefore, no change in the vehicle's evaporative emissions is expected from the use of the open element air filter.

The vehicles which the exemption is requested are designed to operate in a closed-loop configuration, which is characterized by the Cold-Start CVS-75 Federal Test Procedure driving cycle. When a vehicle operates under closed-loop configuration, the on-board computer monitors the air/fuel mixture to maintain it near stoichiometric conditions. The on-board computer receives voltage signals from the oxygen sensor and interprets them either to increase the amount of air flow (to lean the mixture) or increase the amount of fuel flow (to richen the mixture). Although the Dinan Engineering, Inc.'s High Flow Cold Air Intake System could change the air flow, the on-board computer will compensate and keep the air/fuel mixture at stoichiometric levels during closed-loop operations. Therefore, the Dinan Engineering, Inc.'s High Flow Cold Air Intake System will have no adverse effects on exhaust emissions of the affected vehicles during closed-loop operations.

Staff evaluated the effect of the air filter kit on the vehicle's OBD II system by conducting an OBD II monitor check on a 1997 BMW M3. The OBD II check was conducted at the ARB's Haagen-Smit Laboratory. The scan tool indicated that the readiness/function code is set and no diagnostic trouble code is stored. If the readiness/function code is not set, then a full diagnostic check of the monitored components and systems have not been completed, and staff would have to determine if the air filter kit was at fault.

Dinan Engineering, Inc. has submitted all the required information and fulfilled the requirements for an exemption.

