

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-428
Relating to Exemptions Under Section 27156
of the Vehicle Code

KENNEDY ENGINEERED PRODUCTS
VW VANAGON ENGINE CHANGE KIT

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 VW Vanagon Engine Change Kit marketed by Kennedy Engineered Products, 38830 17th St. East, Palmdale, CA 93550 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 all 1980-91 VW Vanagons.

The VW Vanagon Engine Change Kit is designed to provide all the necessary parts to replace the stock 1980-91 VW Vanagon engine with a 1990-95 2.2 liter Subaru engine. The kit includes the following parts: Adaptor plates and hardware to mount the Subaru engine to the VW transmission and motor mounts, necessary intake air ducting and closed element air filter box, electrical schematic on adapting the Subaru's sensors and ECU to the Vanagon body, and an exhaust system which includes a set of manifolds, one muffler, and one Carsound catalytic converter, P/N 24016. On Vanagons that are not equipped with a check engine light on the dash, a light must be installed and wired to the Subaru ECU. The following trouble codes may be logged by the Subaru ECU: #33, speed sensor, #51, neutral switch, and # 52, emergency brake. The Vanagon hardware does not support these electrical functions.

Kennedy Engineered Products' VW Vanagon Engine Change Kit is only applicable on a complete Subaru 2.2L engine. These engines must be installed according to the Air Resources Board's "Engine Change Policy" which requires the engine to be of the same model-year as the vehicle it is being installed in or newer. A complete engine includes the following: A stock 1990-95 Subaru 2.2L long block equipped with the stock air intake components, closed element air filter box (either original or aftermarket), ECU, associated wiring, and all engine sensors. The new engine must interface with the stock Vanagon's evaporative emissions control system. Diesel Vanagon conversions must upgrade their evaporative emissions control system to that of a gasoline Vanagon.

The Executive Order number must be printed on an identification label and affixed near the vehicle's tune-up label with your company name, address, and the list of the following trouble codes that may be logged by the Subaru ECU: #33, #51, and #52.

This Executive Order is valid provided that the installation instructions for the VW Vanagon Engine Change Kit will not recommend tuning the vehicle to specifications different from those of the original Subaru engine.

Changes made to the design or operating conditions of the VW Vanagon Engine Change 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 VW Vanagon Engine Change Kit using any identification other than that shown in this Executive Order or marketing of the system 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 system shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

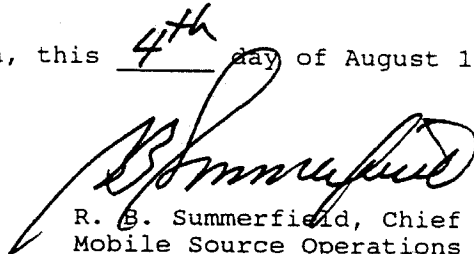
This Executive Order does not constitute any opinion as to the effect the use of the VW Vanagon Engine Change Kit may have on any warranty either expressed or implied by the vehicle manufacturer.

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 KENNEDY ENGINEERED PRODUCTS' VW VANAGON ENGINE CHANGE KIT.

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 4th day of August 1997.



R. B. Summerfield, Chief
Mobile Source Operations Division

State of California
AIR RESOURCES BOARD

EVALUATION OF KENNEDY ENGINEERED PRODUCTS'
VW VANAGON ENGINE CHANGE KIT FOR EXEMPTION FROM THE PROHIBITIONS OF VEHICLE
CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

August 1997

State of California
AIR RESOURCES BOARD

EVALUATION OF KENNEDY ENGINEERED PRODUCTS'
VW VANAGON ENGINE CHANGE KIT 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 Operations Division
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

Kennedy Engineered Products of 38830 17th St. East, Palmdale, CA 93550 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for their VW Vanagon Engine Change Kit designed for 1980-91 VW Vanagons.

Based on submitted emissions test data, the staff concludes that the VW Vanagon Engine Change Kit will not adversely affect exhaust emissions from vehicles for which the exemption is requested.

The staff recommends that Kennedy Engineered Products be granted an exemption as requested and that Executive Order D-428 be issued.

TABLE OF CONTENTS

	Page Number
SUMMARY	i
CONTENTS	ii
I. INTRODUCTION	1
II. CONCLUSION	1
III. RECOMMENDATION	1
IV. KIT DESCRIPTION	1
V. DISCUSSION OF THE KIT	2

EVALUATION OF KENNEDY ENGINEERED PRODUCTS'
VW VANAGON ENGINE CHANGE KIT FOR AN EXEMPTION FROM THE PROHIBITIONS OF VEHICLE
CODE SECTION 27156 IN ACCORDANCE WITH SECTION 2222, TITLE 13, OF THE
CALIFORNIA CODE OF REGULATIONS

I. INTRODUCTION

Kennedy Engineered Products of 38830 17th St. East, Palmdale, CA 93550 has applied for an exemption from the prohibitions in Section 27156 of the California Vehicle Code (VC) for their VW Vanagon Engine Change Kit designed for 1980-91 VW Vanagons with the stock engine replaced with a 1990-95 2.2L Subaru engine.

II. CONCLUSIONS

Based on submitted emissions test data, the staff concludes that Kennedy Engineered Products' VW Vanagon Engine Change Kit will not adversely affect exhaust emissions from the vehicles for which the exemption is requested.

III. RECOMMENDATION

The staff recommends that Kennedy Engineered Products be granted an exemption for their VW Vanagon Engine Change Kit for installation on 1980-91 VW Vanagons. This kit is used only in conjunction with an engine replacement using a 1990-95 2.2L Subaru engine. The staff also recommends that Executive Order D-428 be issued.

IV. VW VANAGON ENGINE CHANGE KIT DESCRIPTION

The VW Vanagon Engine Change Kit manufactured by Kennedy Engineered Products has been specifically designed for installation on 1980-91 VW Vanagons with the stock engine replaced with a 1990-95 Subaru 2.2L engine.

The purpose of the VW Vanagon Engine Change Kit is to aid in the installation of a 1990-95 Subaru 2.2L in a 1980-91 VW Vanagon. The kit is designed to provide all the necessary parts to replace the stock 1980-91 VW Vanagon engine with a 1990-95 2.2 liter Subaru engine. The kit includes the following parts: Adapter plates and hardware to mount the Subaru engine to the VW transmission and motor mounts, necessary intake air ducting and closed element air filter box, electrical schematic on adapting the Subaru's sensors and ECU to the Vanagon body, and an exhaust system which includes a set of manifolds, one muffler, and one Carsound catalytic converter, P/N 24016. A new exhaust system had to be designed to adapt the Subaru engine to the Vanagon body, Kennedy Engineered Products used the Carsound catalytic converter as part of this design because it adapted best to the limited space.

On Vanagons that are not equipped with a check engine light on the dash, a light must be installed and wired to the Subaru ECU. The following trouble codes may be logged by the Subaru ECU: #33, speed sensor, #51, neutral switch, and #52, emergency brake. The logging of these codes may cause a check engine light. A label will be provided with the kit to be placed in the engine compartment listing these codes. This label will aid smog check mechanics during the biannual smog check inspection. The Vanagon hardware is not capable of supporting the Subaru's speed sensor, neutral switch, and emergency brake switch. These functions are not emissions related.

Kennedy Engineered Products' VW Vanagon Engine Change Kit is only applicable on complete 1990-95 Subaru 2.2L engines. These engines must be installed according to the ARB's "Engine Change Policy" which requires the engine to be of the same model-year as the vehicle it is being installed in or newer. A complete engine includes the following: A stock Subaru 2.2L long block equipped with the stock intake components, closed element air filter box, ECU, associated wiring, and all engine sensors. The replacement engine must interface with the stock Vanagon's evaporative emissions control system. Diesel Vanagon conversions must upgrade their evaporative emissions control system to that of a gasoline Vanagon.

V. DISCUSSION OF THE VW VANAGON ENGINE CHANGE KIT

A 1985 VW Vanagon equipped with a 1994 model-year 2.2L Subaru engine was used for the evaluation of the VW Vanagon Engine Change Kit. Testing consisted of one Cold Start CVS-75 in the modified configuration. The dynamometer inertia weight and horsepower settings were 3500-lbs. and 16.4-hp., respectively. The emissions testing was conducted by Automobile Club of Southern California for Kennedy Engineering, data was evaluated against the vehicles' emission standards. Table 1 list those results.

Table 1.

	(gm/mile)		
	HC	CO	Nox
Device	0.19	1.92	0.84
Standards	0.41	9.0	1.0

The ARB did not perform testing to confirm the emission test results submitted by the applicant. Emission test results submitted were below the

vehicle's emission standards.

Kennedy Engineered Products has submitted all the required information and fulfilled the requirements for an exemption.