

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-101
Relating to Exemptions under Section 27156
of the Vehicle Code

MARTEK PRODUCTS INC.

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 Martek 440 Electronic Ignition kit manufactured by Martek Products Inc. 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 the following motorcycles.

Honda: CB750 1978
CB500/550 1978

Kawasaki: KZ650 1978 through 1979
KZ 1000 1978

Suzuki: GS550 1978 through 1979
GS750 1978 through 1979
GS850 1979
GS1000 1978 through 1979

This Executive Order is valid provided that installation instructions for this device 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 Air Resources Board, 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 Air Resources Board. Exemption of a kit shall not be construed as an exemption to sell, offer for sale or advertise any component of a kit as an individual device.

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 MARTEK 400 ELECTRONIC IGNITION KIT.

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 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 will be submitted to the Attorney General of California for such action as he deems advisable.

Executed at El Monte, California, this 17th day of June, 1980.


K. D. Drachand, Chief
Mobile Source Control Division

State of California
AIR RESOURCES BOARD

STAFF REPORT

Evaluation of the Martek Electronic Ignition System for
Motorcycles in Accordance with Section 2222,
Title 13 of the California Administrative Code

I. Introduction

Martek Products, Inc., 3609 West MacArthur Boulevard, Santa Ana, California 92704, has filed an application for an exemption from the prohibitions of the California Vehicle Code (V.C.) Section 27156 for its "Martek 440 electronic ignition" kits for motorcycles.

Since motorcycles manufactured after January 1, 1978, are required to meet exhaust emission standards, the evaluation of the kits in this report is limited to 1978 and 1979 model motorcycles only.

Air Resources Board procedure, "Criteria For Aftermarket Ignition System Modifications", adopted on November, 4, 1977, has been used to evaluate the kits.

II. System Description and Function

The purpose of the Martek 440 aftermarket retrofit kit is to convert a conventional "Kettering" motorcycle ignition system to an electronic breakerless, light emitting diode, ignition system.

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The system utilizes light emitting diodes and light sensitive detector transistors which conduct current to the induction coils. Switching is effected by a hole in the rotor which opens and closes the light beam. The output of the light sensitive transistor is then amplified to turn a power transistor on and off which interrupts the coil primary current flow, inducing a high voltage in the secondary coil.

The vehicle application for the kits is as follows:

Martek 440 for Honda:	CB750	1969 through 1978
	CB500/550	1972 through 1978
	CB350/400	1974 through 1977
Martek 440K for Kawasaki:	KZ650	1975 through 1979
	Z1 (900cc)	1973 through 1975
	KZ 900	1976
	KZ 1000	1977 through 1978
Martek 440S for Suzuki:	GS550	1977 through 1979
	GS750	1977 through 1979
	GS850	1979
	GS 1000	1978 through 1979

III. System Evaluation

The applicant submitted bench test data for the Martek 440 kit for Honda. A summary of the test results are given in the attached table.

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IV. Discussion

The applicant submitted test data for the Honda kit. According to the applicant all Martek 440 kits have the same electronic circuitry. They are only slightly different in physical configuration to fit the different motorcycles. It was therefore unnecessary to repeat the tests.

The variability of the test data between the baseline and the device did not exceed permissible limits, therefore no CVS dynamometer tests are needed.

V. Applicant's Claims

A. Claims presented in application:

1. Eliminates need for cleaning and adjustment.
2. Stays in tune longer.
3. No degradation of current conduction as there is with points in the conventional ignition system.

B. Claims abstracted from submitted advertising:

1. Micro second timing.
2. Easier starting.
3. Smoother running.
4. More power.
5. Better economy.
6. Reduced maintenance.
7. Increased spark energy.

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The staff is of the opinion that the above claims are not in violation of V.C. Code Section 27156 or Business and Profession Code Section 17500.

The applicant will affix the required label (see attachment) to the module. It is the understanding of the staff that this is to be molded into the module.

VI. Conclusion and Recommendation

Based on the test data and other information submitted by the applicant, the staff is of the opinion that the Martek 400 Electronic Ignition System for motorcycles will have no adverse effects on emissions. The prohibitions of VC 27156 do not apply to motorcycles manufactured prior to 1978, as they are not required to have motor vehicle pollution controls. The staff, therefore, recommends approval of Executive Order D-101.

Test Data for Martek Ignition System

Vehicle Application: Honda
750cc

S-NO	Operating/Design Variable	Evaluation Criteria	DISTRIBUTION RPM								
			400			1200			4000		
			Baseline	Device	Change	Baseline	Device	Change	Baseline	Device	Change
1	Spark timing: retard	2 ⁰ Max. from baseline	1 ⁰ Max. at 300, 400, and 500 RPM.								
2	Spark timing: advance	No advance from baseline	NONE								
3	Secondary available voltage in KV	<10% below baseline	13.5	13.5	0	20	21	+5%	18.5	21	+13.5%
4	Spark energy in m. joules	<20% below baseline	8.5	11.1	+30.6	17.2	16.3	-5.2%	12.2	16.3	+33.6%
5	Spark duration time in micro sec.	>100 micro seconds	650	750	-	850	950	-	600	950	-
6	Voltage rise time in micro sec.	>10 micro sec.	50	80	-	50	80	-	50	80	-