State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-58-2
Relating to Exemptions under Section 27156
of the Vehicle Code

GULF AND WESTERN
GENERAL AUTOMOTIVE PRODUCTS GROUP
BREAKERLESS ELECTRONIC IGNITION SYSTEMS

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 of the Health and Safety Code;

IT IS ORDERED AND RESOLVED: That the installation of the Gulf and Western Breakerless Electronic Ignition Systems, manufactured by the General Automotive Products Division, 17500 Northland Park Court, Southfield, Michigan 48075, and marketed under the following trade names by the listed companies has been found to not 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 certain 1976 and older model-year vehicles equipped with 12 volt battery, standard ignition coil and negative ground:

"Grand Prix II" - Guaranteed Parts Inc.,
Seneca Falls, New York 13148

"Powerready" - American Parts
3000 Pawnee Street
Houston, Texas 77054

"Magnition" - Sorensen Manufacturing Co., Inc.,
Glasgow, Kentucky 42141

"Zenith Electronic Ignition" and "Voltronic Electronic Ignition" - Zenith Ignition
Seneca Falls, New York 13148

"Mighty Electronic Ignition" - Mighty Distributing System of America
Jessup, Maryland 20794

This exemption is applicable to the following vehicles and covers the breakerless electronic ignition system kits specified:

Distribution Company	"Single Pack" Kit No.	"Dual Packs" - (1 ea. req'd.) Master Pack	Adapter Pack
Guaranteed Parts Company	ECK-113	ECBP-101	ECA-113A
APS	30-1013	30-5101	30-1013A
Sorensen	8913K	9001K	9013C
Zenith	130-13	151-01	130-13A
Voltronix	13V		
Application: 4 cylinder - Vega 1971-74, Chevy II and Nova 1962-1970.			
Guaranteed Parts Company	ECK-124	ECBP-101	ECA-124A
APS	30-2024	30-5101	30-2024A
Sorensen	8924K	9001K	9024C
Zenith	140-24	151-01	140-24A
Voltronix	24V		
Application: Ford 4 cylinder (Pinto & Capri) 1971-74 2000 cc			
Guaranteed Parts Company	ECK-126	ECBP-101	ECA-126A
APS	30-2026	30-5101	30-2026A
Sorensen	8926K	9001K	9026C
Zenith	140-26	151-01	140-26A
Voltronix	26V		
Application: Pinto 1974 2300cc			
Guaranteed Parts Company	ECK-150	ECBP-101	ECA-150A
APS	30-4050	30-5101	30-4050A
Sorensen	8950K	9001K	9050C
Zenith	160-50	151-01	160-50A
Voltronix	50V		
Application: Datsun 1974 B210, 610, 620 and 710			
Guaranteed Parts Company	ECK-151	ECBP-101	ECA-151A
APS	30-4051	30-5101	30-4051A
Sorensen	8951K	9001K	9051C
Zenith	160-51	151-01	160-51A
Voltronix	51V		
Application: Toyota - 1964-1974, 4 cylinder, single point distributor - 3C, 3KC engines			

Guaranteed Parts Company	ECK-154	EC P-101	ECA-154A
APS	30-4054	30-5101	90-4054A
Sorensen	8954K	9001K	9054C
Zenith	160-54	151-01	160-54A
Voltronix	54A		

Application:
Toyota - 1971-1975 - 2TC, 8RC, 18RC, 3RC and 20RC engines

Mighty Electronic Ignition	130-10AY	GM8
	130-12AY	GM6
	130-13AY	GM4
	140-20AY	Ford 8
	140-21AY	Ford 6
	140-24AY	Ford 4 - Pinto Capri (1971-74) 2000 cc
	140-26AY	Ford 4 - Pinto (1974) 2300 cc
	160-51AY	Toyota - 3C, 3KC engines
	160-54AY	Toyota - 2TC, 8RC, 18RC, 3RC engines
	160-50AY	Datsun

This device is not for use on the following:

1. Volkswagen and other vehicles using Bosch distributors with unequal cam angles.

2. Vehicles originally equipped with breakerless capacitive discharge or electronic ignition systems.

3. Vehicles equipped with dual point distributors where one of the points is used for emission control.

4. 1966-70 vehicles equipped with a retrofit NOx device which incorporates retard of basic ignition timing (i.e. Carter-CER, Echlin, STP-Air Computer and AQP-Electro-NOx and Kar Kit).

The devices named in this Executive Order are identical in all respects except their tradenames. The device consists of an amplifier, magnetic sensor, interrupter wheel and wiring harness.

This Executive Order is valid provided that installation instructions for this device will not recommend tuning the vehicle to specifications different than those listed by the vehicle 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.

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 "GULF AND WESTERN BREAKERLESS IGNITION SYSTEMS".

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 Sacramento, California, this 29 day of May, 1976.

original signed by
Thomas C. Austin
Deputy Executive Officer-Technical

State of California

AIR RESOURCES BOARD

Staff Report

May 11, 1976

(Addendum to Staff Report Dated October 6, 1975)
Evaluation of Gulf and Western, General Automotive Products Group's
Breakerless Electronic Ignition Kits for Compliance
with the Requirements of Section 27156 of the
California Motor Vehicle Code

I. Introduction

Gulf and Western, General Automotive Products Group, 17500 Northland Park Court, Southfield, Michigan 48075 has submitted an application (see Appendix I) requesting an exemption from Section 27156 of the California Vehicle Code for its breakerless electronic ignition kits sold under the following trade names: "Grand Prix II", "Magnition", "Zenith", "Voltronic", "Poweready" and "Mighty". These electronic ignition systems are identical in all respects and are marketed as follows:

"Grand Prix II"	- Guaranteed Parts Inc. Seneca Falls, New York 13148
"Poweready"	- American Parts 3000 Pawnee Street Houston, Texas 77054
"Magnition"	- Sorensen Manufacturing Co. Inc. Glasgow, Kentucky 42141
"Zenith Electronic Ignition and "Voltronix Electronic Ignition"	- Zenith Ignition Seneca Falls, New York 13148
"Mighty Electronic Ignition"	- Mighty Distributing System of America Jessup, Maryland 20794

A request for granting the exemption on 1974 and older model vehicles equipped with 8 cylinder Delco distributors was granted by Executive Order D-58 dated August 12, 1975. An additional request for exemption for the 6 cylinder Delco distributor and both the 8 and 6 cylinder Ford applications was granted by Executive Order D-58-1 dated October 28, 1975.

The applicant has made additional requests as follows:

1. Exemption for certain 4 cylinder engines.
2. Sale of "Dual Packs" consisting of a "Master Pack" and an "Adapter Pack"
3. Sale of "Zenith Electronic Ignition" Systems under "Voltronic" and "Mighty" logo.

Appendix I contains a list of applicable vehicles and kit numbers. Appendix II contains a list of non applicable vehicles.

Section 27156 of the Vehicle Code prohibits the installation, sale or advertisement of any device or mechanisms which alters the performance or design of the vehicle's emission control systems. The Air Resources Board is empowered to exempt any device from this prohibition if a finding shows the device will not reduce the effectiveness of the emission control system.

II. System Description and Function

The Gulf and Western device is designed to replace the breakerpoints with an electronic switching system. This device consists of an amplifier, Hall effect magnetic sensor, sensor mounting bracket, trigger wheel, wiring harness and spacer gauge. The trigger wheel consists of a metal skirt with four, six or eight slits depending on the number of cylinders. A more detailed description is provided in the Staff Reports dated July 30, 1975 and October 6, 1975. A typical installation instruction is contained in Exhibit A.

III. System Evaluation

The applicant submitted ignition system performance data which showed some variations from the OEM equipment but within ARB evaluation criteria. In order to verify the data, the applicant was requested to submit units for testing at this laboratory for Volkswagen, Toyota, and Vega 4 cylinder distributors since these have critical ignition requirements. The Volkswagen and Toyota 4 cylinder engines are equipped with high resistance primary ignition coils (3-4 ohms) with no ballast in the ignition system. This may cause a significant decrease in the secondary spark energy output. The Vega 4 cylinder distributors have an eccentric vacuum advance breaker plate which may cause significant vacuum spark retard.

A summary of the test results generated by the Air Resources Board Laboratory for these distributors is given in Table I.

Table I

Ignition System Data

A. Centrifugal Spark Advance in Crankshaft Degrees

	1972 Vega		1971 VW		1974 Toyota	
Engine RPM	Baseline	Device	Baseline	Device	Baseline	Device
600	0	0	0	0	0	0
1400	4	2.5	12	13.5	3.5	4
2000	8.5	8	19.5	18	9	9
2600	11.5	13.5	21	20.5	15.5	16
3200	20	19	23	23	19	19

B. Vacuum Spark Advance in Crankshaft Degrees

Vacuum In. Hg.						
3	0	0	0.5	0.5	0	0
6	0	0	7	6	9.5	9
9	7	2.5	11	11	15	13.5
12	16	13	11	11	15	14
15	21	21	11	11	15	14
20	22	22	11	11	15	14

C. Spark Duration in Microseconds

Engine RPM						
200	1400	1250	500	500	1000	1000
600	2100	2100	900	850	1300	1300
4000	1400	1400	700	700	1200	1200

Table I (Cont'd)

D. Secondary Voltage Rise Time in Microseconds

Engine RPM	1972 Vega		1971 VW		1974 Toyota	
	Baseline	Device	Baseline	Device	Baseline	Device
200	70	80	50	50	100	40
600	70	90	50	50	90	40
4000	70	80	50	50	100	40

E. Spark Energy in Millijoules

Engine RPM						
200	16.9	17.5	7.5	7.0	12.9	13.6
600	34.4	36.2	15.5	14.7	22.4	24.7
4000	23.5	23.5	12.7	12.7	18.2	19.0

F. Secondary Voltage Available (KV) with load

Engine RPM						
200	22.0	19.0	14.0	13.0	18.0	18.0
600	28.0	24.0	19.0	18.0	20.0	18.5
4000	20.0	21.0	16.0	17.0	21.0	18.0

G. Secondary Voltage Available (KV) with simulated fouled spark plug

Engine RPM						
200	15.0	13.0	12.0	11.0	14.0	14.0
600	22.0	18.0	16.0	15.0	16.0	15.5
4000	13.0	14.0	13.0	14.0	15.0	14.0

An examination of the laboratory data in Table I showed the following deviations from OEM parameters.

A. 1972 Vega

1. The device showed 4.5 degrees spark retard against the OEM equipment at 9 inches mercury vacuum and 3 degrees at 12 inches.
2. The device showed a decrease of 150 microseconds in spark duration at 200 engine RPM.
3. Available secondary voltage at load condition showed a 3 KV decrease at 200 engine R.P.M. and a 4 KV decrease at 600 RPM. With simulated fouled spark plugs the decrease was 2 KV at 200 engine RPM and 4 KV at 600 RPM.

The above variations occurred only at isolated test points and are believed due to test variability. This condition would have a negligible effect on emissions.

B. 1974 Toyota

1. The device showed a 6% reduction in secondary voltage rise time.
2. The device also showed a 5 to 10% increase in spark energy.
3. There was also a small decrease (0.5-3.0 KV) in secondary voltage available at load and with simulated fouled spark plug.

A 60 percent reduction in secondary voltage rise time is beneficial since there is less opportunity for current leakage prior to spark plug firing resulting in an increase in spark energy. The small decrease in available secondary voltage may be due to experimental or instrumental variability and is within acceptable limits.

C. 1971 Volkswagen

Certain Bosch distributors have unequal cam angles. This causes a timing variation from cylinder to cylinder. The applicant did not compensate for this variation and has requested that the exemption for vehicles using Bosch distributors be held in abeyance until the correction can be made. All ignition timing and electrical output parameters were satisfactory on the Volkswagen distributor tested in the laboratory. However, until this problem is resolved all Bosch distributors referenced in Appendix I are not exempted from the prohibitions of Section 27156 of the Vehicle Code at this time.

IV. Manufacturers Claims

The applicant has not submitted any performance claims or benefits of the device. It is the opinion of the staff that the installation of the device on an engine could accomplish the following:

1. Reduced ignition system maintenance because of the elimination of breakerpoints from the distributor.
2. No significant effect on vehicle performance, fuel economy or emission reduction would be expected than would be obtained from a properly tuned engine using a standard Kettering ignition system.

V. Conclusions and Recommendations

The staff concludes that the installation of this device on the specified 4 cylinder engines will not result in increased emissions.

Based on the test data and other information submitted by the applicant, the staff recommends Gulf and Western, General Automotive Products Group, be granted an exemption for the "Grand Prix II", "Magnition", "Zenith", "Voltronic", "Mighty" and "Powerready" systems installed on 1976 and older vehicles equipped with specific distributors as listed in Appendix I except for Volkswagen and other vehicles using Bosch distributors with unequal cam angles.

This device is not for use on vehicles originally equipped with breakerless, C-D, electronic ignition systems, leading ignition systems for rotary engines, dual point distributors (where one of the points is used for emission control) and for 1966-1970 vehicles with NOx devices and 4^{o} retard (i.e., Carter-CER, Echlin, STP - Air Computer and AQP - Electro-NOx and Kar Kit).

APPENDIX I

General Automotive Products Group
A GULF + WESTERN MANUFACTURING COMPANY (MICHIGAN)
Detroit Sales and Engineering Office

17500 Northland Park Court
Southfield, Michigan, 48075
Telephone: 313-~~444-5090~~
313-~~352-9345~~
569-2454

April 20, 1976

Mr. K.D. Drachand
Chief, Vehicle Compliance
State of California Resources Agency
Air Resources Board Laboratory
9528 Telstar Road
ElMonte, California 91731

Dear Mr. Drachand:

Please amend our request of March 18, 1976 for exemption to MV code Section 27156. This will show "additional applications" listed below each of the submitted kit number assignments.

These additional applications were picked up by further investigation of cars in the field using the same or similar distributors.

Kit number assignments and applications as listed on March 8, 1976 letter, and "additional applications" are listed below.

Distribution Company	"Single Pack" Kit No.	"Dual Packs" - 1 ea. required	
		Master Pack	Adapter Pack
Guaranteed Parts Company	ECK-113	ECBP-101	ECA-113A
APS	30-1013	30-5101	30-1013A
Sorensen	8913K	9001K	9013C
Zenith	130-13	151-01	130-13A
Voltronix	13V		

Application: Vega 1971-74 4 Cylinder

Additional Application: Chevy II and Nova 1962-70 4 Cylinder

Guaranteed Parts Company	ECK-124	ECBP-101	ECA-124A
APS	30-2024	30-5101	30-2024A
Sorensen	8924K	9001K	9024C
Zenith	140-24	151-01	140-24A
Voltronix	24V		

Application: Ford 4 cylinder (Pinto & Capri) 1971-74 2000cc and Volkswagen (Bosch) Porsche and Audi as listed.

VW

MODEL	YEAR	DIST. #
1600cc	1974	043905205 A,C
411	1973	022905205P
Sedan (1600)	1972-73	0231167070& 071
Sedan	1971-73	113905205 AH, AJ, AN
412E	1973	D231172019
1600cc	1974	0231170034,036
Super Beetle 1302S 1600	1973-74	0231167049,050,053,054
Sedan	1974	0231167053,070
Dasher	1974	0231176015,040,046
412E	1974	0231170093
412E	1973-74	0231172019
411	1972	022905205H
411	1971-72	0231163011,012& 0231172007,008
Sedan (Auto)	1970	0231167013
Sedan (1600)	1970	0231137035,036
Sedan	1969-70	113905205T
Sedan	1969-70	113905205 AD, AE
Sedan	1969	113905205 AA
Sedan (Auto)	1969	0231115079
Sedan (1500)	1969	0231137035,036
Karmann Ghia (Calif)	1974	0231176028
Karmann Ghia	1974	0231170034,036
Karmann Ghia	1971-74	0231176033
The Thing (181)	1974	0231176028
Transporter Bus 1800, 1700	1973-74	0231170093, 0231181005, 0231181007
Karmann Ghia	1973	0231176028
Trans. Bus	1973	0231167070
Trans. Bus	1973	0231181003,005
Trans. Bus	1973	0231173007
Trans. Bus	1973	021905205, F, J
Karmann Ghia	1972-73	0231167070,071
Karmann Ghia	1971-73	113905205, AH, AJ, AN
Karmann Ghia	1971-73	0231167049, 050, 053, 054
Trans. Bus	1972	021905205E
Trans. Bus	1972	0231173005
Trans. Bus	1971	0231173001
Trans. Bus	1971	0231167055, 056
Trans. Bus	1971	211905205Q
Karmann Ghia	1970	0231167012, 013,
Karmann Ghia	1969-70	0231137036
Karmann Ghia	1969	0231115079
Trans. Bus	1969-70	0231137036
Trans. Bus	1969	113905205T

PORSCHE

MODEL	YEAR	DIST. #
914,914/4	1972-69	0231172008
914 Coupe W/411E Eng.	1970	0231172007

AUDI

100,100 AT, 100GL	1974	0231176032
80LS (Fox)	1974-73	0231176015, 040, 046
100GL	1972-73	0231176013
AUDI	1972	023176014, 015

Additional Applications:

VW	1975-76	All
Porsche	1975-76	All
Audi	1975-76	All
Audi	1972-74	0231170010
Opel	1975-76	All
Opel Kadett, GT, Manta	1972-74	0231176011, 012
Opel Kadett 1.1 LTR.	1970-72	0231167009
Opel GT 100	1971	0231167032
Opel Kadett 1.9 Ltr, GT1900	1969-71	0231167007
Opel Kadett B, GT 1100	1967-71	0231167004, 023
Opel Kadett 1.9 Ltr, GT1900	1969	0231167024

Saab (using Bosch Distributor)

Saab	1975-76	All
Saab 99EA	1971-74	0231163007
Saab 99EMS	1974	0231179001
Saab Sonnett	1972-74	0231170131
Saab 99EMS	1972-74	0231163025
Saab 95, 96	1973	0231176010
Saab 99, 99	1969-73	0231163007
Saab All	1967-72	0231146072
Saab Monte Carlo, Sonnett II	1967-72	0231146073

Distribution Company	"Single Pack" Kit No.	"Dual Pack" - (1 ea. req'd) Master Pack	Adapter Pa
Guaranteed Parts Company	ECK-126	EC P-101	ECA-126A
APS	30-2026	30-5101	30-2026A
Sorensen	8926K	9001K	9026C
Zenith	140-26	151-01	140-26A
Voltronix	26V		
Application: Pinto 2300cc 1974			

Guaranteed Parts Company	ECK-150	EC P-101	ECA-150A
APS	30-4050	30-5101	30-4050A
Sorensen	8950K	9001K	9050C
Zenith	160-50	151-01	160-50A
Voltronix	50V		
Application: Datsun B210 1974 ~~(Manual Transmission)~~ *			
Additional Applications: Datsun 610, 620, & 710 1974 *Manual Trans. Limitation Removed			

Guaranteed Parts Company	ECK-151	EC P-101	ECA-151A
APS	30-4051	30-5101	30-4051A
Sorensen	8951K	9001K	9051C
Zenith	160-51	151-01	160-51A
Voltronix	51V		
Application: Toyota - as listed below			

Years	Specific Application
71-74	Corolla 1200
71	Corona *
70-71	Mark II *
69-71	Hilux RN 11L *
66-71	Crown *
64-69	Stout* (with external condenser
75	Corolla 1200 (3KC)
69-70	Corolla
66-70	Corona *(with external condenser

* with one piece point set only

Distribution Company	"Single Pack" Kit No.	"Dual Pack" -(1 ea. req'd) Master Pack	Adapter Pac
Guaranteed Parts Company	ECK-152	ECBP-101	ECA-152A
APS	30-4052	30-5101	30-4052A
Sorensen	8952K	9001K	9052C
Zenith	160-52	151-01	160-52A
Voltronix	52V		

Application:
VW-As noted below:

MODEL	YEAR	DIST. #
Fastback & Sq. Back	1972-73	311905205 AE,AF,AG,AH
Sedan	1972-73	0231163027,029
Sedan	1972	0231163172,009,011
Fastback & Sq. Back	1972	0231172009,010,011,012
Fastback & Sq. Back	1971	0231163016,017,018,019
Fastback & Sq. Back	1970-71	311905205M,AA, AB
Fastback & Sq. Back	1970	0231163008,009,003,004
Sedan (1600 & 1.6 ltr.)	1970-71	0231167015,017
Fastback & Sq. Back	1968-69	0231163001, 311905205L
Sedan	1968	0231137021
Sedan Trans. Bus	1970	311905205M,AA, AB
Sedan Trans. Bus	1968-69	311905205L
Karmann Ghia	1968-69	311905205L
Karmann Ghia	1968	0231137021
Trans. Bus	1968	0231137021 & 113905205M

Distribution Company	"Single Pack" Kit No.	"Dual Pack" -(1 ea. req'd) Master Pack	Adapter Pack
Guaranteed Parts Company	ECK-154	EC P-101	ECA-154A
APS	30-4054	30-5101	30-4054A
Sorensen	8954K	9001K	9054C
Zenith	160-54	151-01	160-54A
Voltronix	54V		

Application:
Toyota - As noted below:

Years	Specific Application
72-74	Corona, Celica (18RC)
72-73	Carina, Hilux,
71-74	Corolla 1600
74-75	Corolla 1600 (2TC)
75	Celica, Corona (20RC)
74	Hilux (18RC), Celica, Corona

On the March 18, 1976 letter, Volkswagen vehicles which our ignition kit did not fit were listed. These still apply, except remove 1975-76 All VW, because it was added to one of the above kits.

Thank you for your continued assistance on this program. If you need any further information, please do not hesitate to contact us.

Very truly yours,

Roger B. Anthony
Chief Engineer

cc: R.Bradley
G.Gilkey
J.Madeira
K.Merklen
J.MacKay

APPENDIX I

General Automotive Products Group
A GULF + WESTERN MANUFACTURING COMPANY (MICHIGAN)
Detroit Sales and Engineering Office

17500 Northland Park Court
Southfield, Michigan, 48075
Telephone: 313—444-5090
313—352-9345

March 30, 1976

Mr. K.D. Drachand
Chief, Vehicle Compliance
State of California Resources Agency
Air Resources Board Laboratory
9528 Telstar Avenue
ElMonte, California 91731

Dear Mr. Drachand:

Attached is a letter from Mighty Distributing System of America, Inc. requesting your approval of Gulf + Western's Zenith electronic ignition system to be sold under the "Mighty" logo.

The kits requested for approval are identical with Zenith kits except for the name change. The corresponding Zenith kit numbers, Mighty kit numbers, application information, and California Air Resources Board approvals and/or submission dates are referenced on the attached sheet for your convenience. Please approve "Mighty" for the currently approved kits as soon as possible and add the four cylinder Mighty applications to G+W's request for approval for four cylinder kits dated March 18, 1976 (copy attached for reference).

The "Mighty" electronic ignition kits will be merchandized by a "dual pack" consisting of a "master pack" and an "adapter pack" consisting of a "master pack" and an "adapter pack" combined to service one complete application. Please note that the "master pack" number is common to all applications.

Thank you for your continued assistance on this program. If you need any further information, please do not hesitate to contact us.

Respectfully submitted,

Roger B. Anthony
Chief Engineer

Enclosures: Copy of 3/18/76 Submission for 4 cylinder Application
Letter from Mr. C.F. Leibensperger to K.D. Drachand 3/12/76
Copy of letter from Mr. A. Johengen to R.B.Anthony 3/25/76

cc: R.Bradley J.Madeira
A.Johengen K.Merklen
C.Leibensperger 83036

Application	Distribution Co.	"Dual Pack"		"Adapter Pack" Kit No.	Exemption Granted/Date
		"Single Pack" Kit No.	"Master Pack" Kit No.		
GM-8	Zenith Mighty	130-10 N/A	N/A 151-01Y	N/A 130-10AY	D-58 8/12/75 Applied for 3/30/76
GM-6 (includes AMC, Studebaker, Checker Motors, Intn'l. Harv)	Zenith Mighty	130-12 N/A	N/A 151-01Y	N/A 130-12AY	D-58-1 10/28/75 Applied for 3/30/76
Ford-8 (74-72)	Zenith Mighty	140-20 N/A	N/A 151-01Y	N/A 140-20AY	D-58-1 10/28/75 Applied for 3/30/76
Ford-6 (74-72)	Zenith Mighty	140-21 N/A	N/A 151-01Y	N/A 140-21AY	D-58-1 10/28/75 Applied for 3/30/76
Vega 1971-74 (4 cyl) Chevy II and Nova 1962-1970 4 cyl.	Zenith Mighty	130-13 N/A	151-01 151-01Y	130-13A 130-13AY	Applied for 3/18/76 Applied for 3/30/76
Ford 4 cyl (Pinto & Capri) 1971-74 2000cc and VW (Bosch) Porsche, Audi	Zenith Mighty	140-24 N/A	151-01 151-01Y	140-24A 140-24AY	Applied for 3/18/76 Applied for 3/30/76
Pinto 1974 2300cc	Zenith Mighty	140-26 N/A	151-01 151-01Y	140-26A 140-26AY	Applied for 3/18/76 Applied for 3/30/76
Datsun 1974 B210,610,620, 710	Zenith Mighty	160-50 N/A	151-01 151-01Y	160-50A 160-50AY	Applied for 3/18/76 Applied for 3/30/76
Toyota (1970-1975	Zenith Mighty	160-51 N/A	151-01 151-01Y	160-51A 160-51AY	Applied for 3/18/76 Applied for 3/30/76
VW 1968-1973	Zenith Mighty	160-52 N/A	151-01 151-01Y	160-52A 160-52AY	Applied for 3/18/76 Applied for 3/30/76
Toyota (71-75)	Zenith Mighty	160-54 N/A	151-01 151-01Y	160-54A 160-54AY	Applied for 3/18/76 Applied for 3/30/76

APPENDIX II

As requested in your letter of 1-7-76, a list of VW and Toyota vehicles which our ignition kit does not fit follows:

VW

MODEL	YEAR	DIST.#
Sedan	1967-68	113905205L
All with VW distributor	1962-67	
	1960-64	All with 0231139002,0(
	1955-60	All with 023115004
Karmann Ghia	1960	0231138001
Karmann Ghia	1959-60	0231137001
Trans. Bus	1959-60	0231129010
Trans. Bus	1955-59	0231129019
Sedan (Auto Trans)	1968	0231115056
Fastback & Sq. Back (12V)	1967	0231137017
Sedan & Karmann Ghia (12V)	1967	0231137009
Trans. Bus (12V)	1967	0231137011
1500 Sedan (6V)	1966	0231137005
Sedan & Fastback (6V)	1966	0231137009,013
Karmann Ghia (6V)	1966	0231137009
Trans. Bus (6V)	1966	0231137011
	1965	All with 0231137005
	1964-65	All with 0231147002
	1975-76	ALL

TOYOTA

MODEL	YEAR	DIST. #
RT-40, 50, 51	1966-69	
Stout and Corona (with internal condensor)	1964-69	
All 6 (six) cylinder		

This list obviously cannot be complete for all possible applications It is apparent, for example, that future applications cannot be included on the list, nor can limited production, prototype or engine modification situations be included. The list of vehicles which our ignition system does cover should be considered accurate in the event of a conflict.

KIT #ECK-113

VEGA 4 CYLINDER INSTALLATION

EXHIBIT A

Note: Please read the instructions thoroughly prior to starting the installation of the system.

1. Remove distributor cap. Check for cracks or burnt electrodes. Replace if found defective.

2. Remove rotor and set aside.

3. Remove points and condenser and hold down screw. Set these aside.

4. Remove distributor lead from negative (- or dist.) terminal on the ignition coil. Pull it out of the distributor completely and set it aside.

5. Remove the retaining ring holding the points mounting plate to the distributor. Remove the spring and the plate. Put the spring in a safe place as it will be used later.

6. Remove the two (2) screws holding the vacuum advance chamber to the distributor. These screws will be used again so do not discard them. When removing the screws care must be exercised that no damage occurs to the vacuum chamber. When the screws are removed nothing will be holding the chamber.

7. Line up the hole in the link of the new distributor top plate with the new distributor top plate with the hole in the arm of the vacuum chamber. Start the 4-40 x 1/4" screw tying the two arms together. Be sure the head of the screw is on the bottom. Before tightening the screw be sure the vacuum chamber arm is securely seated between the two tabs of the link. Tighten the screw securely.

8. Carefully locate the hole in the tope plate with the post in the distributor. Slide the plate down the post until its nylon feet are resting on the bottom plate. You will now be able to remount the vacuum chamber with the screws removed earlier.

9. Place the spring removed earlier over the post in the distributor. Now carefully press the tinnerman nut over the post until it snaps in place.

10. Place existing distributor wire grommet (rubber insulator) over the signal generator wires. Insert the grommet down into the distributor base plate and seat the grommet into the slot.

11. Position the "signal generator" mounting bracket on the new base plate of the distributor in the similar place previously occupied by the point contact set. Loosely secure bracket to base plate using two #8/32 x 1/4" brass screws in place of the original screws.

12. Place the provided "signal generator" locator (see figure B) over the distributor shaft and slide down until the locator goes inside the slot of the signal generator mounting bracket. Tighten the two screws of the signal generator mounting bracket to the distributor base plate. Remove the locator from the distributor shaft.

13. Place the "signal generator" onto the mounting bracket, using care to align the two locator posts of the bracket into the "signal generator" base. Drive the #8/32 x 1/8" brass "signal generator" mounting screw.

14. Place the signal chopper rotor on the distributor shaft and rotate and push down until you feel it index on the shaft. Make sure the signal chopper blades do not touch the signal generator when rotated.

15. Dress the wires from the "signal generator" through the grommet (rubber insulator) to remove any possibility of the wire getting cut by the rotating signal chopper, but providing enough wire to allow the distributor vacuum advance to work freely. The length of the wires protruding from the distributor should be 5 1/4". Carefully install the loose connector shell on the red wire terminal.

16. Install a good distributor cap and ignition wires.

17. Install the provided harness to the coil and distributor signal generator: (refer to circuit diagram of figure A):

    a. Connect red wires together.
    b. Connect green wires together.
    c. Connect black wires together.
    d. Connect blue wire to positive (+ or batt) terminal on the coil. Make sure that the original equipment wire to the coil is also still on this terminal.
    e. Connect the yellow wire to the negative (- or dist) terminal on the coil.

18. Route the wiring across the engine to the fenderwell or firewall of the vehicle. Use care to keep the wiring away from moving mechanisms and exhaust manifold and to allow the harness to flex freely between the engine and fenderwell or firewall.

19. CAUTION: Before mounting the electronic control unit, make sure the wire harness will reach from the engine to the mounting location and that it is subjected to the least amount of heat. A fenderwell may be best suited (do not mount to a plastic fenderwell). Excess harness length may be folded back on itself and taped together.

20. Remove the center screw from the control unit and remove back mounting plate. Using the mounting plate as a template, drill four 1/8" holes in firewall or fenderwell.

21. Mount the control unit mounting plate with 4-#10 x 3/8" sheet metal screws provided. Remount the control unit to the mounting bracket with the center screw.

22. Plug the wire harness into the control unit. Drill a 1/8" hole in the nearby sheet metal for mounting the ground wire (black). Mount the ground wire with the #10 x 3/8" sheet metal screw provided.

23. Start engine, check timing and reset to manufacturers specifications if needed. The dwell cannot be adjusted, because it is fixed by design.

24. For maximum performance, check the condition of all spark plugs, ignition wiring, and coil. Replace if necessary.

25. Place "Attention" sticker on air cleaner or in other prominent location.

26. Original parts previously set aside should be retained for re-installation when the car is disposed of.