

EC 300

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-58-3
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 and Executive Order G-30A;

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
- "Poweready" - American Parts
3000 Pawnee Street
Houston, Texas 77054
- "Magnition" - Sorensen Manufacturing Co., Inc.,
Glasgow, Kentucky 42141
- "Zenith Electronic Ignition" - Zenith Ignition
and "Voltronic Electronic 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 each required)	
		Master Pack	Adapter Pack
Guaranteed Parts	ECK-124	ECBP-101	ECA-124A
APS	30-2024	30-5101	30-2024A
Sorensen	8924K	9001K	9024C
Zenith & Mighty	140-24	151-01	140-24A

Application: Volkswagen (except Fastback and Squareback), Porsche
 & Audi with distributors having equal cam angles.

Distribution Company	"Single Pack" Kit No.	"Dual Packs" - (1 each required)	
		Master Pack	Adapter Pack
Guaranteed Parts	ECK-152	ECBP-101	ECA-152A
APS	30-4052	30-5101	30-4052A
Sorensen	8952K	9001K	9052C
Zenith & Mighty	160-52	151-01	160-52A

Application: Volkswagen (Fastback, Bus and Squareback 1968-1973)

Distribution Company	Master Pack	Loadomatic adapter kit no.
Guaranteed Parts Company	ECK-121	EC-8568
APS	30-3021	30 8568
Sorensen	8921K	8159C
Zenith & Mighty	140-21	9-1617

Application: (with Loadomatic distributor)
 1947-68 Ford 6 cylinder passenger car
 1948-68 Ford 6 cylinder truck

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 from 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 19 day of ^{SEPT}~~August~~, 1976.

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

State of California

AIR RESOURCES BOARD

Staff Report

August 12, 1976

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 Elec-
tronic Ignition
and "Voltronix
Electronic
Ignition" - Zenith Ignition
Seneca Falls, New York 13148
- "Mighty Elec-
tronic Ignition" - Mighty Distributing System of America
Jessup, Maryland 20794

A request for exemption from the provisions of V.C. Section 27156 for installation of the device on 1974 and older model vehicles equipped with 8 cylinder Delco distributors was granted by Executive Order D-58 dated August 12, 1975. A similar exemption was granted for 6 cylinder General Motors engines and 6 and 8 cylinder Ford engines by Executive Order D-58-1 dated October 28, 1975. An additional request for exemption for General Motors and Ford 4 cylinder engines and certain Datsun and Toyota vehicles was granted by Executive Order D-52-2 dated May 29, 1976.

This evaluation covers the following:

1. Exemption for Volkswagen, Porsche and Audi 4 cylinder engines with distributors having equal cam angles.
2. Ford 6 cylinder vehicle having loadomatic distributors (vacuum advance only)

Appendix I contains a list of applicable vehicles and kit numbers and also a list of specific 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 ignition breaker-points with an electronic switching system. The 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 in the engine. Additional descriptions are provided in the Staff Reports dated July 30, 1975, October 6, 1975, and May 11, 1976. A typical installation instruction is contained in Exhibit A.

III. System Evaluation

The applicant submitted ignition system performance data for the Ford 6 cylinder loadomatic distributor which showed conformance with the ARB evaluation criteria. Table I contains summaries of the applicant's submitted test results for this distributor and the results from ARB Laboratory tests on a Volkswagen distributor with the same device previously given in Staff Report dated May 11, 1976.

An examination of the data in Table I showed the following:

A. 1964 Ford with Loadomatic distributor (vacuum advance only)

1. The device showed no significant spark retard from the OEM equipment.
2. The device showed a decrease in voltage rise time which is beneficial and no significant change in the other parameters.

B. 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 be granted only for vehicles using Bosch distributors with equal cam angles. All ignition timing and electrical output parameters were satisfactory on the Volkswagen distributor tested in the laboratory. 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 in the specified 4 and 6 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 "Poweready" 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° retard (i.e., Carter-CEF, Echlin, STP - Air Computer and AQP - Electro-NOx and Kar Kit).

Table I

Ignition System Data

A. Centrifugal Spark Advance in Crankshaft Degrees

<u>Engine RPM</u>	<u>1964 Ford (Loadomatic) Applicant's Data</u>		<u>1971 VW ARB Lab Data</u>	
	<u>Baseline</u>	<u>Device</u>	<u>Baseline</u>	<u>Device</u>
600	0	0	0	0
1400	0	0	12	13.5
2000	0	0	19.5	18
2600	0	0	21	20.5
3200	0	0	23	23

B. Vacuum Spark Advance in Crankshaft Degrees

<u>Vacuum In. Hg.</u>	<u>1964 Ford (Loadomatic) Applicant's Data</u>		<u>1971 VW ARB Lab Data</u>	
	<u>Baseline</u>	<u>Device</u>	<u>Baseline</u>	<u>Device</u>
3	9.5	9.5	0.5	0.5
6	13	12.5	7	6
9	15.5	15	11	11
12	16	16	11	11
15	16	16	11	11
20	16	16	11	11

C. Spark Duration in Microseconds

<u>Engine RPM</u>	<u>1964 Ford (Loadomatic) Applicant's Data</u>		<u>1971 VW ARB Lab Data</u>	
	<u>Baseline</u>	<u>Device</u>	<u>Baseline</u>	<u>Device</u>
200	1600	1500	500	500
600	2300	2200	900	850
3500	1600	1500		
4000			700	700

Table I (Cont'd)

D. Secondary Voltage Rise Time in Microseconds

<u>Engine RPM</u>	<u>Applicants Data</u>		<u>ARB Lab Data</u>	
	<u>1964 Ford</u>		<u>1971 VW</u>	
	<u>Baseline</u>	<u>Device</u>	<u>Baseline</u>	<u>Device</u>
200	40	38	50	50
600	42	30	50	50
3500	40	36		
4000			50	50

E. Spark Energy in Millijoules

<u>Engine RPM</u>				
200	20.2	21.0	7.5	7.0
600	38.6	40.0	15.5	14.7
3500	22.4	21.0		
4000			12.7	12.7

F. Secondary Voltage Available (KV) with load

<u>Engine RPM</u>				
200	18.0	18.0	14.0	13.0
600	24.0	24.0	19.0	18.0
3500	19.0	18.0		
4000			16.0	17.0

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

<u>Engine RPM</u>				
200	11.0	12.0	12.0	11.0
600	15.0	15.0	16.0	15.0
3500	10.0	11.0		
4000			13.0	14.0



**Gulf + Western
Manufacturing Company**

Systems Group

Automotive Operations

Detroit Office
Sales: (313) 569-4850
Engineering: (313) 569-2454

July 16, 1976

Mr. Ettinger
State of California Resources Agency
Air Resources Board Laboratory
9528 Telstar Road
El Monte, California 91731

Dear Mr. Ettinger:

Thank you for the opportunity to visit with you and to tour your facilities on our visit of July 2, 1976. Regarding our conversation of that day, the following information is submitted for exemption to MV code section 27156 for our electronic ignition kits.

The merchandising of these kits will be via two methods: either as a single package, or a "dual 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 for each distribution company.

Kit number assignments and applications are as follows:

Distribution Company	"Single Pack" Kit No.	"Dual Packs"-(1 each required)	
		Master Pack	Adapter Pack
Guaranteed Parts	ECK-124	ECBP-101	ECA-124A
APS	30-2024	30-5101	30-2024A
Sorensen	8924K	9001K	9024C
Zenith & Mighty	140-24	151-01	140-24A

Application: Volkswagon, Porsche & Audi as listed.
(All have equal cam angles)

Model	VW Dist #	Bosch Dist #	Year
Rabbit, Scirocco	055905205F		1976
Bus	022905205S		1976
Dasher	049905205A		1976
Dasher	055905205	0231176040	1975-76
Sedan	043905205H		1975-76
Sedan auto-stick	043905205J		1975-76
Rabbit, Scirocco	055905205B	0231176106	1975

Bus	022905205AB	0231181012	1975
Bus Auto	022905205AC	0231181014	1975
Bus	021905205N	0231181005	1973-74
Thing (181)	043905205C	0231176028	1974
Dasher		0231176015	1974
Dasher	055905205	0231176040	1974
Dasher		0231176046	1974
412E,LE		0231170093	1974
412E,LE	022905205P	0231172019	1973-74
Bus 1800,1700		0231170093	1973-74
Bus 1800,1700	021905205N	0231181005	1973-74
Bus 1800,1700		0231181007	1973-74
Bus 1800,1700		0231173007	1973-74
Bus 1800,1700		0231173009	1973-74
Bus		0231167070	1973
Bus		0231181003	1973
Bus	021905205F		1973
Bus	021905205J		1973
Bus	021905205E	0231173005	1972-73
	022905205P	0231172019	1972-73
411	022905205H		1972
411		0231163011	1971-72
411		0231163012	1971-72
411		0231172007	1971-72
411		0231172008	1971-72
Bus		0231173001	1971
Bus		0231167055	1971
Bus		0231167056	1971
Bus	211905205Q		1971

Bus		0231137036	1969-70
Bus	113905205T		1969
Sedan	11905205AA	0231137039	1963-64
All 36 H.P. eng's	126905205	0231178003	-----

PORSCHE

<u>Model</u>	<u>Year</u>	<u>Dist.#</u>
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

<u>Distribution Company</u>	<u>"Single Pack"</u>	<u>"Dual Packs" (1 each required)</u>	
	<u>Kit No.</u>	<u>Master Pack</u>	<u>Adapter Pack</u>
Guaranteed Parts	ECK-152	ECBP-101	ECA-152A
APS	30-4052	30-5101	30-4052A
Sorensen	8952K	9001K	9052C
Zenith & Mighty	160-52	151-01	160-52A

Application: Volkswagon as listed:
(All have equal cam angles)

<u>Model</u>	<u>VW Dist#</u>	<u>Bosch Dist#</u>	<u>Year</u>
Fast Back & Square Back	311905205		1972-73
Fast Back & Square Back	311905205AE		1972-73
Fast Back & Square Back	311905205AF		1972-73
Fast Back & Square Back	311905205AG		1972-73

Fast Back & Square Back	311905205AH	0231163029	1972-73
Fast Back & Square Back		0231172009	1972
Fast Back & Square Back		0231172010	1972
Fast Back & Square Back		0231172011	1972
Fast Back & Square Back		0231172012	1972
Fast Back & Square Back		0231163016	1971
Fast Back & Square Back		0231163017	1971
Fast Back & Square Back	311905205AC	0231163018	1971-72
Fast Back & Square Back		0231163019	1971
Fast Back & Square Back		0231163003	1970
Fast Back & Square Back		0231163004	1970
Fast Back & Square Back		0231163008	1970
Fast Back & Square Back		0231163009	1970
Fast Back & Square Back	311905205M		1970-71
Fast Back & Square Back	311905205AA		1970-71
Fast Back & Square Back	311905205AB		1970-71
Bus	311905205AB		1970
Fast Back & Square Back		0231163001	1968-69
Fast Back & Square Back	311905205L		1968-69
Bus	113905205M		1968

Distribution Company	"Single Pack" Kit No.	"Dual Packs"-(1 each required)	
		Master Pack	Adapter Pack
Guaranteed Parts	ECK-154	EC P-101	ECA-154A
APS	30-4054	30-5101	30-4054A
Sorensen	8954K	9001K	9054C
Zenith & Mighty	160-54	151-01	160-54A

Application: Toyota-As noted below

Years

72-74

72-73

Specific Application

Corona, Celica (18RC)

Carina, Hilux

Approved -E.O. -58-2

71-74	Corolla 1600
74-75	Corolla 1600
75	Celica, Corona (20RC)
74	Hilux,(18RC),Celica, Corona

Coverage for Ford 6 cylinder Loadomatic distributor will consist of the previously exempted Ford 6 kit (ECK-121 et al) plus the following adapter kits:

<u>Distribution Company</u>	<u>Loadomatic adapter kit no.</u>
Guaranteed Parts Company	EC-8568
APS	30 8568
Sorensen	8159C
Zenith & Mighty	9-1617

Application: (with Loadomatic distributor)

1947-68 Ford 6 cylinder passenger car

1948-68 Ford 6 cylinder truck

All Ford 6 cylinder tractors

Installation instructions for these applications are attached.

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

<u>Model</u>	<u>VW</u> <u>Year</u>	<u>Dist. #</u>
Sedan	1967	113905205L
	1968-74	ALL
All with VW distributor	1962-67	
	1960-64	All with 0231139002 005
	1955-60	All with 023115004
Karmann Ghia	1960	0231138001
Karmann Ghia	1959-60	0231137001
Trans. Bus	1959-60	0231129010

Trans. Bus	1955-59	0231129019
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
Karmann Ghia	1968-74	All

TOYOTA

<u>Model</u>	<u>Year</u>
Rt-40, 50, 51	1966-69
Stout and Corona (with internal condensor)	
All 6 (six) cylinder	1964-69

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.

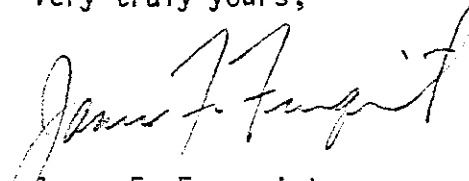
The "Ignition System Test Data" sheets and installation instructions for VW, Porsche, Audi, and Toyota applications, submitted with the March 18, 1976 letter remain valid and should be detached from the referenced letter and attached as an enclosure to this letter.

Under separate cover, we are forwarding a Ford 6 Loadomatic distributor plus a Ford 6 kit and Loadomatic adapter kit.

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,



James F. Fernquist
Engineer
Automotive Operations

Enclosures: "Ignition System Test Data"-Ford 6 with Loadomatic distributor.
Installation Instructions-Ford 6 with Loadomatic distributor.

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

saw

EXHIBIT A

Installation Instructions For Loadomatic Distributor on 6 Cylinder Engines

Please read through these instructions carefully before starting the installation. Save all the parts you remove, you may want to reinstall at later date. The parts bag supplied with this kit makes an ideal container for these old parts.

After completing each step, cross off the figure next to the instructions. Then if you are interrupted, you will know exactly where to start again.

1. Disconnect your negative battery terminal at the battery. This is a safety procedure. By doing this you will eliminate the danger of damaging any existing electrical circuits. This is always a good procedure to follow when doing any work under the hood. It is not a requirement for installing your electronic ignition.
2. Remove the air cleaner assembly if it is in the way. Give yourself enough room to work comfortably. Be sure to note the position of the vacuum hoses so you will reconnect them properly.
3. Start by removing the distributor cap. Do not remove the spark plug wires. In some cases, you may want to disconnect the coil wire so the cap can be moved out of the way more easily.
4. Check your distributor cap inside and out for hairline cracks, and inside for burned or discolored electrodes. These conditions will cause poor conduction of electricity and could lower the efficiency of your electronic ignition. Replace the cap if necessary and start with a more completely fresh tune-up.
5. Remove the rotor. Set it aside. You will not be re-installing it.
6. Remove points and condenser. Put them aside with the other parts you will not re-install. Save your condenser screw. You will not use the point set screws for your electronic ignition. Two new brass screws are provided. Wipe any dirt, grease, or foreign substances from the distributor camshaft and breaker plate.
7. Relocate the copper braided ground strap. It was on one end of the point set. Secure it now in the condenser mounting hole using the screw that held the condenser in place. Be sure that there is no interference between the ground strap and any moving parts in the distributor.

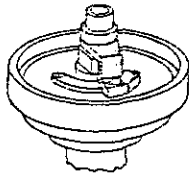


6 Cylinder

8. (Vehicles with push on terminals) Remove distributor lead. This is the wire from the negative (-), or DIST side of the ignition coil. You must take this wire completely out. You have already disconnected one end of the wire at the point set. Now unfasten the end at the coil. To unfasten, pull the quick connector off of the DIST side of the coil (Some coils are marked "BAT" and "DIST" and some are marked "+" and "-"). Grab it with your fingers or needlenose pliers, pulling inside the distributor, then up and out. Put it aside with your other old parts.

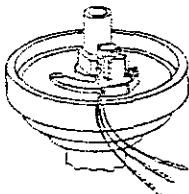
(Vehicles without push on terminals) Remove distributor lead. This is the wire from the negative (-) or DIST side of the ignition coil. You must take this wire completely out. You have already disconnected one end of the wire at the point set. Now unfasten the end at the coil. (Some coils are marked "BAT" and "DIST" and some are marked "+" and "-"). Grab it with your fingers or needlenose pliers, pulling inside the distributor, then up and out. Put it aside with your other old parts.

9. Test-mount the Firing Signal Generator on the Firing Signal Generator Mounting Bracket. Note how the two small pins on the mounting bracket fit tightly into the two small holes on the signal generator.
10. Place the Firing Signal Generator Mounting Bracket on the base plate of the distributor in the space formerly occupied by the point set. Loosely install the bracket with the two # 8-32 x 1/4" brass screws. Do not tighten down. Remove the spring clip that is on the distributor shaft.
11. Place the Spacing Gauge over the distributor shaft and directly over the Firing Signal Generator Mounting Bracket.

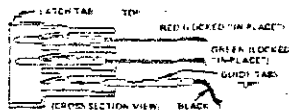


12. Slide the Spacing Gauge into the slot on the Firing Signal Generator Mounting Bracket. Tighten the screws on the mounting bracket and make sure the Spacing Gauge stays in the slot. You now have correctly located the Firing Signal Generator Mounting Bracket and have eliminated possible errors in future steps.
13. Remove the Spacing Gauge from the distributor shaft. Replace spring clip on shaft.
14. Attach the Firing Signal Generator (Hall Device) to the Firing Signal Generator Mounting Bracket with a new brass screw: #8-32 x 3/16".

CAUTION: Make sure the two small pins on the bracket fit into the two small holes in the signal generator. Do not tighten the new brass screw unless the pins are in the holes.

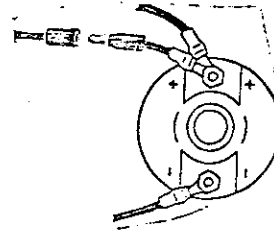


15. Insert the three wires from the Firing Signal Generator one at a time through the hole formerly occupied by the distributor lead wire.
16. Select the proper new split grommet from the hardware package. Split it and insert the three wires from the Firing Signal Generator. There can be no mistake which grommet to select. One will fit securely. The other will be either too large or too small.
17. Slide the grommet down the wires and fit it into the hole in the side of the distributor. Do not put undue stress on the wires when installing the grommet.
18. Place the Signal Chopper on the distributor shaft. Rotate it and push down until you feel it index on the shaft. Make sure the Signal Chopper blades do not touch the Firing Signal Generator.
19. Arrange the wires of the Firing Signal Generator so that they will not be cut by the Signal Chopper. Push the wires flat against the inside of the distributor housing and base plate. Make sure no excess wire slack remains inside of distributor housing.
20. Replace the distributor cap. Make sure it fits snugly and that the bands from the distributor that hold it in place snap firmly into position.
21. Insert the 3 pin terminals from the Firing Signal Generator into the female connector with the latch tab on top and to the left. Insert the red wire pin into the top slot, making sure the aligning guide tab is on top. (See illustration) Carefully push the pin terminal into the female connector until you feel it snap into the locked position. Pull lightly back on the wire to make sure the pin has locked. Next, insert the green wire in the center slot, followed by the black wire in the bottom slot.



22. Connect the Wire Harness by pushing the male connector together with the female connector installed in Step 21. They only go together one way. Make sure the connectors are fully engaged and the latch is properly hooked. Be sure the color code of the wires is correct - red to red, green to green, black to black.

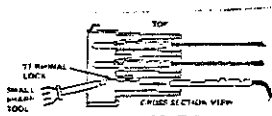
23. Detach the primary lead from BAT or positive (+) side of the coil.
24. (Vehicles with push on terminals) Connect the jumper terminal (Part #8260) with the primary lead. (See illustration),



25. (Vehicles with push on terminals) Connect the blue wire from the wire harness and the primary lead with its new jumper terminal lead to the BAT or positive (+) side of the coil. Both the wires will now be held in place by a new hex nut provided in the hardware package.

(Vehicles without push on terminals) Connect the blue wire from the wire harness to the BAT or positive (+) side of the coil. The wire will now be held in place by a new hex nut provided in the hardware package.

SPECIAL NOTE: If it becomes necessary to disconnect the firing signal generator from the wiring harness, follow these simple instructions: Depress the latch on the wire harness assembly connector and gently separate it from the firing signal generator connector. Insert a very small screwdriver or sharp tool under the terminal lock in each of the firing signal generator connectors one at a time. Raise the terminal lock to clear the terminal pin. As the lock clears the end of the pin, pull gently on the wire and it will slide out easily. Do not force the wire. If it does not come out easily, you have not fully released the terminal lock. Follow this procedure with all three pins. To reconnect, follow Step 21.

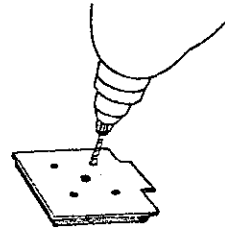


26. Connect the yellow wire to the negative (-), or GND side of the coil. This wire will now be held down by another new nut provided in the hardware package.
27. Select a spot for the Control Unit. The best spots will be metal fenderwells or the firewall. Do not mount on a fenderwell if it is made of plastic. Select an area which will not be subject to extreme heat and where air will flow over the unit.
28. Test-route the Wire Harness to the spot you have selected for the control unit. Make sure the Wire Harness reaches the spot, without touching

or coming too near moving parts or exhaust manifolds. Make sure the harness can flex freely between the engine and the spot you have chosen.

29. Mount the Control Unit. Start by unscrewing the center screw and removing the backplate. Use this as a template and drill four 1/8" holes in the surface on which you will mount the Control Unit. Attach the backplate with the four # 10 x 3/8" sheet metal screws from the hardware package.

CAUTION: Make sure the side of the plate with the raised area goes against the mounting surface you have selected.



30. Remount the Control Unit to the backplate, put the screw in and tighten. Make sure the Control Unit fits flush against the plate. CAUTION: There is a notch in the mounting plate that fits into the notch on the back of the control unit where the wires come out. Match these two notches, even though you may have had to mount the control unit upside down or on its side to make it fit in the area you selected.
31. Connect the Wire Harness to the Control Unit. The connectors are designed to fit one way only. They will snap together when properly lined up.
32. Mount the Black Ground Wire by drilling a 1/8" hole in some nearby sheet metal, making sure there is a positive ground path back to the engine. Scrape away the paint from around the hole to insure good contact and attach the ring terminal with the #10 x 3/8" sheet metal screw from your hardware kit.
33. Arrange the Wire Harness over the route you have previously selected. Tape the harness in place and fold any excess wire back on itself and tape. Take care to stay away from moving parts and areas exposed to high heat. Leave enough slack in the wire to allow the engine to flex freely.
34. Replace the air cleaner if you have removed it. Make sure the vacuum hoses are properly attached.
35. Reconnect your negative battery terminal if you followed the safety suggestion in Step 1.
36. Start the engine. If you have followed each step exactly, your engine will start immediately. In some cases, the timing may be off and the engine may run roughly. If the engine has not started, go back to the beginning and check out each step.

37. Check the timing and reset to manufacturer's specifications. A decal with this information is usually located on your valve cover. Follow the instructions for hooking up your timing light as you normally would. The economy and performance of your electronic ignition will be maximized if your timing is set correctly. The dwell angle is permanently fixed by the design of the Signal Chopper.
38. Place the "Attention" decal on the air cleaner, radiator or in some other clean prominent place.
39. For maximum economy and performance, check the condition of all spark plugs, ignition wiring and coil. Replace them if in doubt for a completely fresh tune-up.
40. Collect your old parts in the parts bag and retain them for re-installation if you decide.