



Patented U.S. Patent Number 6,748,937

**1957-1974 General Motors V8
Single and Dual Point Distributors*
Part No. 38131**

**Legal for use on emission controlled vehicles per CARB EO D-275-1*

PRODUCT DESCRIPTION

The **Breakerless SE** ignition kit is designed to convert GM V8 engines originally equipped with breaker points, windowed style distributor cap, and stock coil to solid-state electronic ignition. By utilizing a fully integrated trigger and power module, the entire ignition fits completely inside the distributor. Unlike competitive systems though, no additional wires protrude from the distributor, only the original points wire. The result is a state-of-the-art ignition with an absolutely stock appearance. Outstanding features of this unit include:

- Single wire operation to preserve stock appearance and simplify wiring.
- Active dwell control maintains high rpm spark energy while reducing coil heating at idle.
- Auto-standby prevents coil damage or dead battery if the ignition is accidentally left on.
- Hall Effect rotary-vane sensor design compensates for worn bearings and distributor endplay. Magnetic sensor is unaffected by oil, dirt or other contaminants, unlike optical systems.
- Over-voltage/over-current protected against damage from high amp battery chargers, reversed battery, or improper wiring.
- Constructed with premium quality components. Sealed, hi-temp thermoplastic housing provides exceptional resistance against moisture and vibration.
- No distributor modification, disassembly, or removal is required.
- Easier starting. Reduced maintenance.
- Three year warranty

INSTALLATION

Parts included in this kit: (See Detail "A")

Module (1)	6-32 x 1/4" Brass Binding Head Screw (1)
Vane Section, with Attached Spacer (2)	8-32 x 1/4" Low Profile Screw (1)
10-32 Small Pattern Hex Nut (2)	#8 Split Lock Washer (2)
#10 Split Lock Washer (2)	Flexible Wire Clamp (1)
10-32 x 1" Button Head Screw (2)	1/8" Hex Wrench (1)
8-32 x 3/4" Fillister Head Screw (2)	Small Blade Screwdriver (1)

Tools required for installation:

1/8" Hex Wrench (included)	7/32" Drill Bit, Small Round File or Ream
5/16" Socket or Box End Wrench	Medium Blade Screwdriver
Needle Nose Pliers	Small Blade Screwdriver (included)
Flat File or Grinding Stone	

Please read through the brief installation procedure before you begin. Allow enough time to do the job right and you will be pleased with the results. This ignition may be installed with the distributor in the car. If you choose to remove the distributor, follow the procedure outlined in your vehicle's shop manual. Check the distributor for excessive side and endplay before you proceed with installation, follow the procedure outlined for excessive side or endplay in your vehicle's shop manual.

1. Remove the battery ground cable.
2. Remove the distributor cap from the distributor, leaving the spark plug wires attached. Remove the rotor, condenser, and points. On dual point distributors, remove both point sets, condenser, and crossover wire. If the crossover is not a separate wire, cut at junction (see detail "B").
3. Inspect the distributor. Twist the rotor mounting ears clockwise and release. The weights should move outward smoothly and snap back when released. Gently push the ears from side to side to check for bushing wear. Correct any problems now, as a malfunctioning distributor can rob the engine of several horsepower. Inspect the point wire for cracked or missing insulation. Verify the point plate ground wire is in place and in good condition, without corrosion on the terminals or missing wire strands.
4. Before proceeding with the next step, thread the two 10-32 x 1" button head screws in and out of the rotor mounting ears one time to clean out the threads and remove any burrs from the screws. Next, mate the two vane sections together in your hands so they form a circle. Insert one of the 10-32 x 1" button head screws through the vane mounting ears on one side and place this assembly around the distributor shaft. Hold the screw with a pair of needle nose pliers next to the head and insert into the underside of the rotor mounting ear. Using the small screwdriver, turn the screw counterclockwise (looking from the top down) a couple of turns. Repeat with the other mounting ear (see detail "C"). Pull the vane assembly up against the underside of the rotor mounting ears and run the screws the rest of the way up. Tighten firmly with the 1/8" hex wrench (not with the screwdriver!)
5. Install the 6-32 brass screw in the module. Slip the module thru an opening in the vanes and slide it over to where the points were mounted. There is a small projection on the point plate that served as the point pivot. This must mate with the hole on the bottom of the module for proper seating.

Dual Point Distributor Only: Remove the breaker-plate mounting screw closest to where the point wire exits the distributor and replace it with the supplied low profile screw. The module will not seat properly with the original screw.

6. Fasten module with the 8-32 x 3/4" fillister head screws and #8 split lock washers. Place the flexible wire clamp between the module and lock washer on the side closest to where the point wire exits the distributor. The tab should point outward and will be used to keep the point wire away from the vanes (see detail "D"). Tighten just until the washers are fully compressed. *Do Not Over Tighten* or the threads in the point plate may become stripped.
7. **IMPORTANT:** Check that there is clearance between the vanes and the two halves of the sensor by twisting the advance mechanism. If you need to rotate the distributor body to get the vanes near the sensor slot, first put a locating mark on the distributor and engine block. This will allow the distributor to be easily reset to its original position.
8. Attach the point wire to the module. The terminal must be bent up at a 45° angle to prevent it from hitting the inside of the distributor cap when the vacuum advance mechanism moves the point plate. Loop the vinyl-coated tab around the wire and position it above the module, so it won't contact the vanes or distributor cap (see Detail "D").
9. The 2 mounting holes in the rotor usually need to be enlarged to allow the rotor to easily slide over the vane mounting screws. A 7/32" drill, small file, or plumber's ream can be used to open up the holes slightly.

IMPORTANT: The square and round indexing pegs on the bottom of the rotor ***must be shorter*** than 1/8" for the rotor to seat properly. The 1/8" hex wrench can be used as a thickness gauge. Cut, grind, or file down as required (see detail "E"). Improper seating may cause damage to the rotor. Install the rotor and fasten with the 10-32 nuts & #10 split lock washers.

10. Reinstall the distributor cap. Make sure all wires are firmly seated. Reconnect the battery ground cable.

WIRING

For most installations the wiring is already completed. Replace any wiring that has cracked or missing insulation, corrosion, or questionable modifications.

The distributor wire must be connected to coil (-). There may be additional wires connected for accessories such as a tach, alarm, shift light, etc.

The +12V from the ignition switch must be connected to the coil (+) terminal. There may be additional wires connected for a radio noise suppressor or ballast bypass (see below). ***However, the coil (+) terminal should never be used as a source of power for accessories such as choke heaters, alarms, stereos, shift lights, tachometers, etc.***

COIL

The ***Breakerless SE*** is optimized for use with either the factory original coil or substitute coils that have a primary resistance of 1.2 to 1.8 ohms. Very low resistance *MSD Blaster* and *Accel Super* coils are supplied with a supplemental resistor to raise the primary resistance to 1.5 ohms. **Failure to use this supplemental resistor will damage the Breakerless SE module.**

IMPORTANT: Ballast Resistor - This ignition is designed to work with the factory installed ballast resistor. The ballast usually takes the form of resistor wire that is part of the engine compartment wiring harness. It may also be in the form of a small white ceramic block mounted on the firewall in series with the +12V supply to the coil. Its purpose is to limit current to prevent coil overheating and point burning. The ballast typically has a resistance in the range of 1.2 to 1.8 ohms. The ballast resistor (or resistance wire) should not be removed when installing the Breakerless SE

If the points have been wearing normally, then the ballast is in place. If the points burn up in about 300-500 miles (or less), then the ballast may be missing or damaged. If the stock coil has been replaced with low resistance (CDI or HEI) type, this would also cause the same effect. Correct any problems before operating the ignition.

IMPORTANT: Ballast Bypass – The draw of the starter motor will cause a modest to severe voltage drop in the electrical system. To assure the coil will develop sufficient spark voltage, the ballast resistor is bypassed during cranking. This is **typically** accomplished by a wire in the factory installed engine harness that runs from the starter solenoid (R) terminal to the coil (+) terminal, or splices into the harness near the coil. The Breakerless SE will usually function if the bypass is missing; however, to guarantee starting under all conditions the bypass must be in place.

TIMING

Disconnect the vacuum line from the distributor and plug the line. Start the engine and set the initial (or idle) timing according to your owner's manual (generally in the range of 5° to 10° BTDC at approximately 600 to 900 RPM).

If the crankshaft or distributor has been turned, the timing can be set statically. Place a mark on the distributor body below the cylinder #1 distributor cap tower. Turn the crankshaft to about 10° BTDC on the cylinder #1 compression stroke. The rotor should be pointed near the mark. Rotate the distributor counterclockwise until the sensor is centered in the nearest vane opening. Now rotate the distributor clockwise just until the edge of the vane is in the middle of the sensor area. The timing will now be close enough to start the engine and set with a timing light.

TROUBLESHOOTING

Engine won't start

Was the car running before installation of the ignition? If not, first check fuel, compression, and wiring according to the procedures outlined in your vehicle's shop manual.

WARNING! The coil generates extremely high voltage, which can be lethal. For safety and convenience, use the test procedure outlined below, or as described in your shop manual. Do not perform this test if fuel vapors or any combustible materials are present.

If the car started with the points but not after installation of the ignition, check that the rotor was re-installed and is properly indexed and the battery ground cable was re-attached. If the distributor was moved, the timing may be too far advanced or retarded. Set the timing statically as described in the previous section.

If this looks OK, use a test light to verify there is voltage present between the coil (+) terminal and ground, with the key in both the start and run positions. Loss of voltage may be due to blown fuse, faulty ballast resistor or improper wiring. With the key in the run position and the engine stopped, check that voltage is also present where the point wire connects to the module. This will verify continuity though the coil primary & the point wire.

Last, connect one lead of the test light to battery (+), and touch the other end to the point plate to verify continuity to ground. **Note!** Before beginning any tests, always first check that your test light works by connecting it across the battery.

If all this checks out, the coil or module may be suspect. To test the module, remove the point wire from the coil (-) and attach it to the test light. Connect the other end of the test light to +12 volts. The light should blink rapidly while the engine is being cranked, and go out when the engine stops. If the light does not come on, or stays on when the engine is stopped, the module should be sent in for further testing. **Note!** This test must be performed with a test light; a voltmeter will not provide correct results.

If a bad coil is suspected, it should be replaced or a live spark test can be performed.

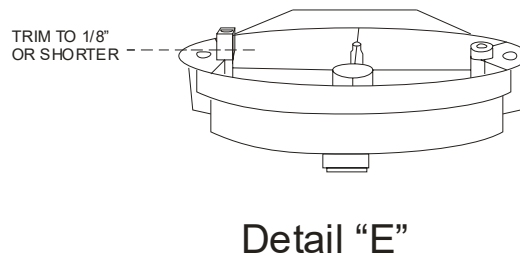
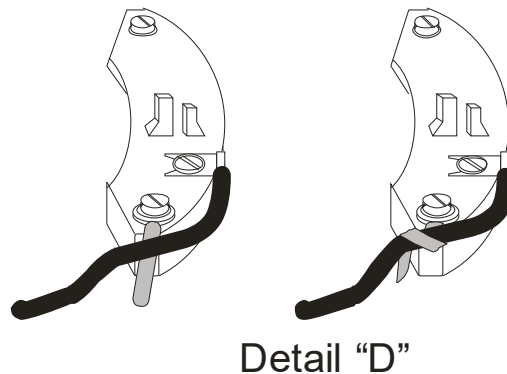
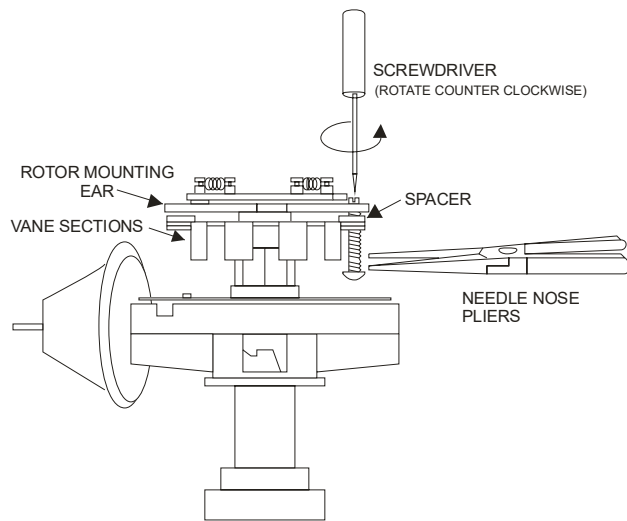
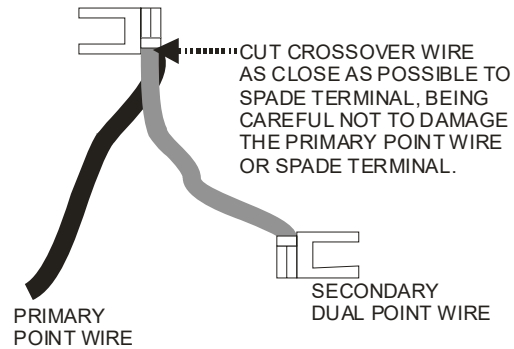
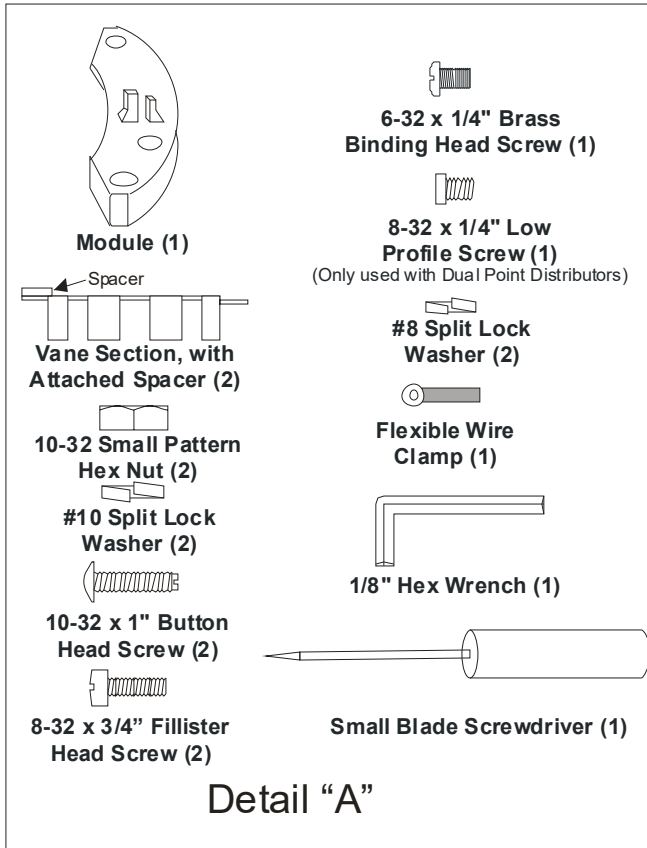
You will need to purchase a calibrated standard ignition test plug to perform this test. These are manufactured by the K-D Tools Company (K-D part # 2757) and are available at most auto parts stores for under \$10. This plug forces the coil to generate a known voltage, providing an accurate pass/fail evaluation.

Turn **off** the ignition switch. Remove the high voltage wire from the coil. Remove one spark plug wire from the car and attach it to the test plug. Insert the other end into the coil. Clip the test plug to the hood hinge on the driver's side. Crank the engine over. The spark should easily jump the gap and will vary in color from blue (strong) to yellow (weak) depending on the output of the battery during cranking, as well as several other factors (you may need to do this test in a darkened area).

Engine fires but runs rough

Possible causes: plug wire was left off or swapped with another cylinder, timing is too far advanced or retarded, coil or plug wires are arcing to ground, broken plug wire, loose coil or module connection, low voltage, weak coil, coil polarity reversed. Closely inspect the point plate ground wire and the wire that connects the module to the coil (-) terminal. High flexibility replacement wires are available from M&H Electric. If the distributor appears damaged or near the end of its useful life, it should be taken to a competent rebuilder to restore its original performance. Service providers are listed below:

***T.I. Specialty
1631 Pheasant Run
Richmond, IN 47374
(765) 962-4265***



THREE YEAR LIMITED WARRANTY

M&H Electric Fabricators, Inc. warrants the enclosed product to be free of defects in materials and workmanship for a period of three (3) year's from the date of original purchase by the end user.

M&H Electric Fabricators, Inc. will repair or replace the enclosed product in the event of a manufacturing defect as follows:

Parts: Repair or replacement in exchange for defective parts returned to our facility for three (3) year's after the date of original purchase.

Labor: Repair or replacement of defective product returned to our facility for three (3) year's after the date of original purchase.

This warranty does not cover postage, freight or delivery fees for sending the product to and from our service facility.

Warranty service can be obtained during the warranty period by bringing or shipping the product to:



13537 Alondra Blvd. Santa Fe Springs, CA 90670

A purchase receipt or other proof of date of original end user purchase will be required before warranty service can be rendered. This warranty covers normal consumer use and does not cover damage which occurs in shipment or failure which results from alteration, accident, misuse, abuse, neglect, installation or improper maintenance. Under any circumstances, the liability of the manufacturer shall be limited to the original cost of the product(s) paid by the end user and the manufacturer shall not be liable for any consequential or incidental damages which occur as a result of the use of any of our product(s). This limit on liability may vary in your state and you may have additional rights and/ or remedies depending on the state in which you live.



The enclosed product is warranted to fit and operate properly in the specific applications for which it is intended. **Do not cut, modify, alter, add or remove tape or conduit without consulting M&H Electric Fabricators, Inc.**

If the product is tampered with in any way, all warranties are void.

If you experience any difficulties with the installation or the performance of any of our products, do not attempt any modifications without first contacting our technical support department at (562) 926-9562.

Specifications and design subject to possible modification without notice, due to improvements.

For Technical Assistance Call M&H Electric Fabricators, Inc. at 562-926-9562, M-F 8:00 am to 4:00 pm Pacific Time. For Sales Assistance Call 562-926-9552 M-F 8:00am to 4:30pm Pacific Time.



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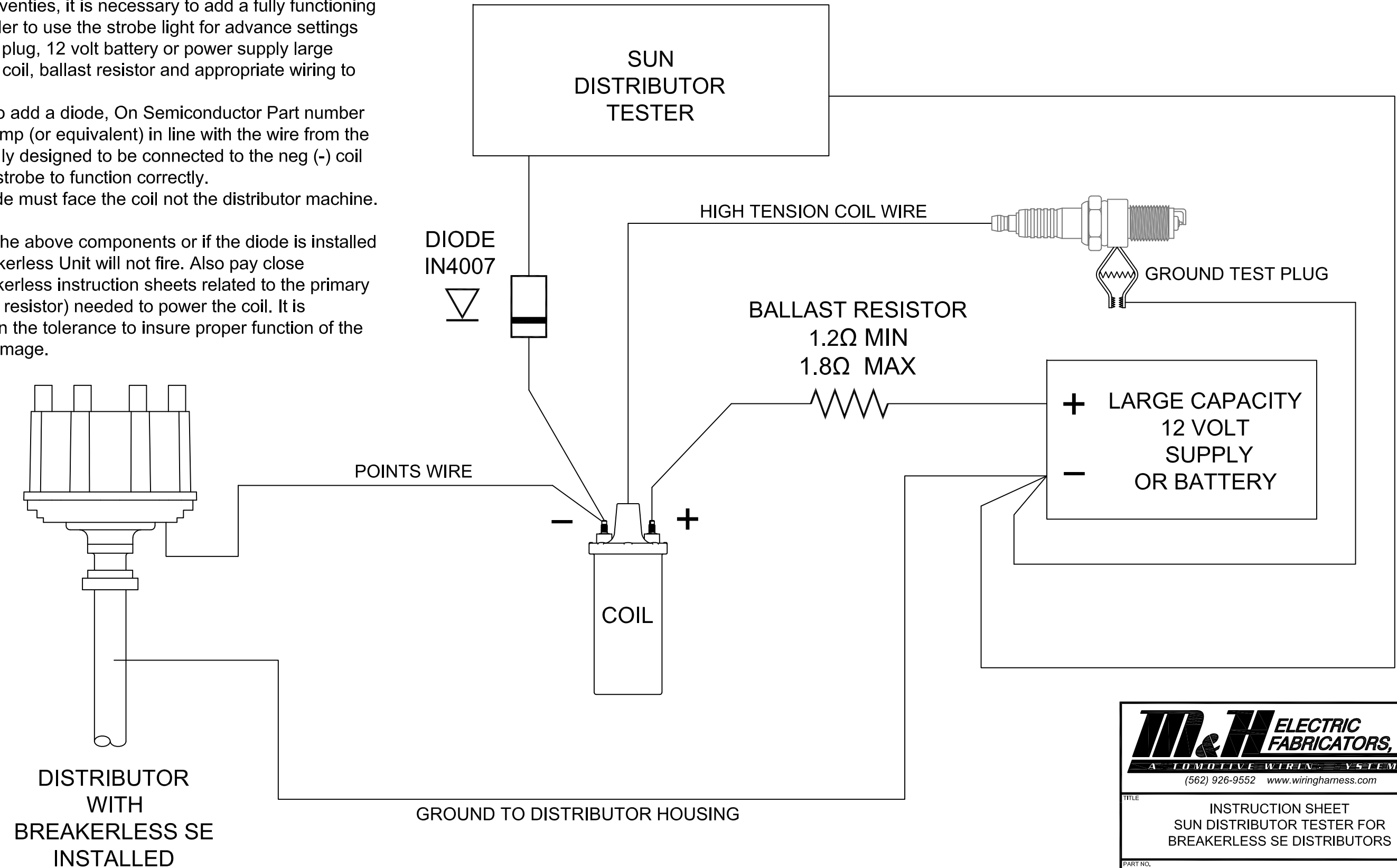
Instructions for running the Breakerless on a Sun Machine
Distributor tester with the strobe operating for setting advance.

On distributor testers such as the Sun units (404, 505, etc) from the late fifties thru the seventies, it is necessary to add a fully functioning ignition system in order to use the strobe light for advance settings to include a coil, test plug, 12 volt battery or power supply large enough to power the coil, ballast resistor and appropriate wiring to join all components.

It is also necessary to add a diode, On Semiconductor Part number 1N4007 Rated at 1-amp (or equivalent) in line with the wire from the Sun machine originally designed to be connected to the neg (-) coil in order to allow the strobe to function correctly.

The band on the diode must face the coil not the distributor machine.

Please note without the above components or if the diode is installed backwards, the Breakerless Unit will not fire. Also pay close attention to the Breakerless instruction sheets related to the primary resistance (or ballast resistor) needed to power the coil. It is necessary to maintain the tolerance to insure proper function of the module and avoid damage.



TITLE	INSTRUCTION SHEET SUN DISTRIBUTOR TESTER FOR BREAKERLESS SE DISTRIBUTORS
PART NO.	38131
DWG NO.	92973992