

# **BREAKERLESS** **SE Single Wire Ignition**

**PRODUCT DESCRIPTION**

The Breakerless SE ignition kit is designed to convert GM V8 engines originally equipped with breaker points and windowed style distributor caps 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 end play
- 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

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

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

**Tools Required For Installation :**

- |                                     |                                    |
|-------------------------------------|------------------------------------|
| 1/8" Hex Wrench (included)          | Needle Nose Pliers                 |
| 7/32" Drill Bit or Small Round File | Small Blade Screwdriver (included) |
| 3/8" Socket or Box End Wrench       | Flat File or Grinding Stone        |
| Medium Blade Screwdriver            |                                    |

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 end play before you proceed with installation, follow the procedure outlined for excessive side or end play in your vehicle's shop manual.



1957-1974  
General Motors V8  
Single & Dual Point  
Distributors\*  
\*Legal for use on emission  
controlled vehicles per  
CARB EO D-275-1

PART # **38131**

DESCRIPTION:  
**BREAKERLESS**  
**SINGLE WIRE**  
**IGNITION**

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# INSTALLATION

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.

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.

4. Mate the two vane sections together in your hands so they form a circle. Insert a 10-32 x 1" button head screw 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). Repeat with the other mounting ear (see detail "C"). Run the screws about halfway up so the vanes remain loose. Do not tighten the screws at this time.
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.
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. Tighten the two vane mounting screws firmly, using the 1/8" Hex wrench (not with a screwdriver!). **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 advance mechanism moves. 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 nut & washer assemblies.
10. Reinstall the distributor cap. Make sure all wires are firmly seated. Reconnect the battery ground cable.



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## RELATED WIRING

For typical installations the wiring is already completed. Please inspect wiring and verify connections to ensure optimum performance. The point wire must be connected to the coil (-) terminal. There may also be additional wires if the vehicle is equipped with an electronic tachometer or other accessories. The +12V from the ignition switch must be connected to the coil (+) terminal (this is usually part of the engine compartment wiring harness). There may also be additional wires attached to this terminal. **IMPORTANT:** This ignition is designed to work with a ballast resistor. This normally takes the form of resistor wire that is part of the factory 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.

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 a low resistance type, this would also cause the same effect. Correct any problems before operating the ignition.

## 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 $\frac{1}{2}$  to 10 $\frac{1}{2}$  BTDC at approximately 600 to 900 RPM). If the crankshaft or distributor has been turned, the timing can be set statically.

1. Place a mark on the distributor body below the cylinder #1 distributor cap tower. Turn the crankshaft to about 10 $\frac{1}{2}$  BTDC on the cylinder #1 compression stroke. The rotor should be pointed near the mark.
2. Rotate the distributor counterclockwise until the sensor is centered in the nearest vane opening.
3. 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

Problem: Engine won't start

Solution: 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.

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 through the coil primary and 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.



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

**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.

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).

**Problem:** 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.

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

For Sales & Technical Assistance Contact  
American Autowire/Factory Fit  
856-933-0801  
150 Heller Place, #17W,  
Bellmawr, NJ 08031



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