

**Professional  
Products®**

# POWERFIRE™

## Ignition Systems Installation Instructions



**PATENT  
PENDING**

- Easy 3-wire install with no external spark box necessary but can be used with one.
- Precision CNC machining and hand assembled construction. This is a premium product.
- Patent pending positive lock manual advance/retard knob. Distributor can be accurately advanced or retarded in 1/2-degree increments on the fly by turning the external adjustment knob. Each click of the knob provides a 1/2-degree change to total ignition timing. This makes getting an accurate setting extremely easy.
- Accurate super hot spark all the way through 10,000 RPM.
- Hardened steel .50" diameter steel shaft with sealed quality roller bearing upper support and bronze bushed lower support for extreme stability at maximum rpm.
- Powerful magnetic pickup and CNC machined reluctor pickup.
- Fully adjustable advance mechanism with easy to use spring and bushing design for a nearly infinite advance curve.
- POWERFIRE module built in for drop-in reliability from 50 to 10,000 RPM.
- Hot cranking spark as low as 50 RPM.
- Black anodized base with laser etched timing marks for easy visibility.
- High quality injection molded cap with brass terminals for long life and conductivity.

## The Powerfire Ignition System

The Professional Products Powerfire distributor is the world's finest CNC machined distributor available and winner of the Best Engineered Product for 2009 at the SEMA Show. The unique Powerfire Tuning Knob enables you to adjust your ignition timing within one half of one degree without the use of a timing light after initial installation and setup .

**Please read this entire brochure prior to installing your Professional Products Powerfire distributor.**

# POWERFIRE Installation Instructions:

**Warning:** Before installing the Professional Products Powerfire Distributor, disconnect the negative battery cable.

## Preparing Your Advance Curve

Your timing curve can consist of: Initial Advance, Centrifugal Advance, Vacuum Advance and Powerfire Tuning Knob offset advance.

**Initial Advance:** Often referred to as “Base Timing”, this is the initial timing set to the engine at idle.

**Vacuum Advance:** The vacuum advance unit advances the ignition timing during partial and low throttle (low load) conditions.

**Centrifugal Advance:** Often referred to as “Mechanical Advance” consists of a mechanism of weights, springs, cams and an advance stop bushing. As the engine RPM increases, the weights move creating advance. The springs determine the rate of this advance and the advance stop bushing limits the total amount of centrifugal advance.

**Total Advance:** This is the sum of initial advance, centrifugal advance, and knob off-set advance. Example: Initial advance of 10° plus centrifugal advance of 20° = 30° of Total Advance.

**Checking Total Advance:** With an adjustable timing light you can determine your total advance (and advances at different RPM) by raising the RPM and rotating the knob on the timing light till the timing marks align at “ZERO” and reading what the dial reads on the timing light. Note: If vacuum advance is utilized, it should be disconnected and the supply line plugged when checking total advance.

## Setting Centrifugal Advance

The mechanical advance uses tension springs to control the rate of advance as RPM increases and an advance stop bushing to limit the amount of advance.

Your Powerfire Distributor has three sets of advance tension springs and four different advance stop bushings included in the kit.

## Changing the Advance Springs:

You can match or mix the springs for your advance. Your distributor has 3 sets of springs of which one set (Heavy Silver) are installed. The other 2 sets are in the parts kit and consist of a Heavy Silver set and Blue set. The strongest to weakest spring ratings are as follows:

- Strong Rate = Heavy Silver
- Medium Rate = Blue
- Light Rate = Light Silver.

**Caution:** Use eye protection when changing advance springs.

1. Remove your distributor cap and rotor.
2. Carefully use needle-nosed pliers to pull the spring and lift off one of its post. With one end of the spring off, the other end will now freely lift of its post.
3. Place desired spring on its inner post making sure it is seated in its receiver groove.
4. With your needle-nose pliers pull spring over its outer post making sure to secure this end in its receiver groove.

## Spring Combination

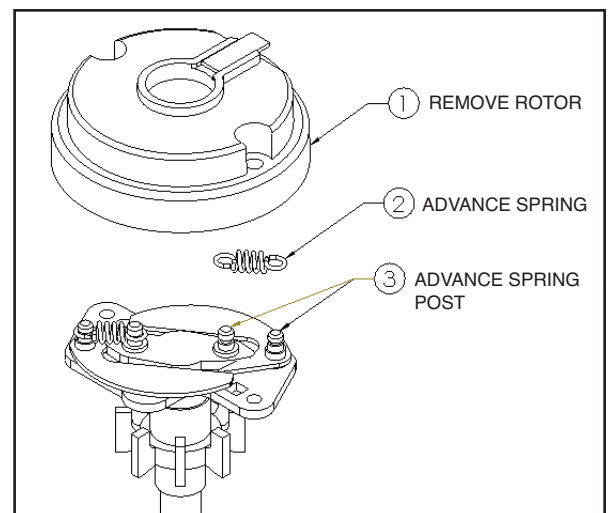
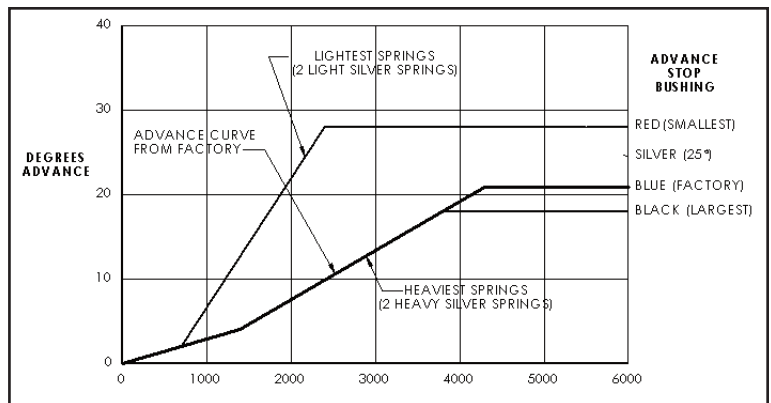
- Heavy Silver+Heavy Silver
- Heavy Silver + Blue
- Heavy Silver + Light Silver
- Blue + Blue
- Light Silver + Blue
- Light Silver + Light Silver

**Rate of Advance**  
 Slowest (Total @ ~5500 RPM)\*  
 ↑  
 ↓  
 Fastest (Total @ ~ 2300 RPM)\*  
 \* Verify with timing light

## Parts List

- (1) Powerfire Distributor
- (1) Rotor
- (1) Cap with male terminals
- (1) Advance Kit
- (1) Wire Harness
- (1) Gasket
- (1) O-ring
- (1) Vacuum Advance Lock-Out Kit

**Note:** Parts may vary slightly according to application.



**Changing the Advance Stop Bushing:**

The advance stop bushings are of different outer diameters. The smaller the diameter, the more advance it allows. The advance stop bushings are also color coded for ease of identification. A “Blue” advance stop bushing is pre-installed on your distributor and the parts kit will have 3 additional bushings.

<b>Bushing Color</b>	<b>Approx. Max. Advance in Crankshaft Degrees</b>
Red (smallest)	28 degrees
Silver	25 degrees
Blue (installed on distributor)	21 degrees
Black (largest)	18 degrees

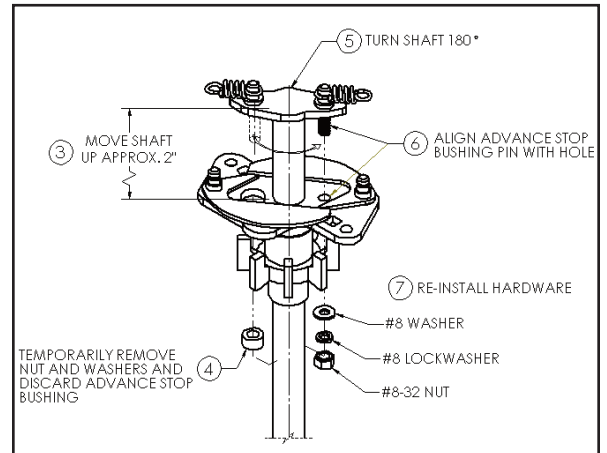
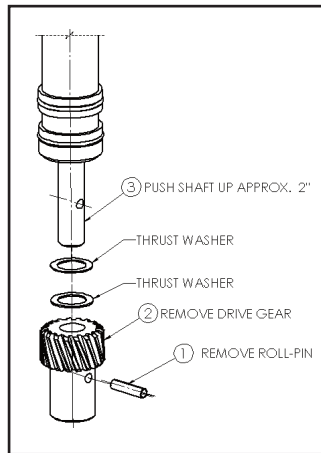
1. Remove your distributor cap.
2. Using an 8mm or 5/16” wrench remove the locknut, lock-washer and flat washer from the bottom of the mechanical advance plate.
3. Remove the bushing and install the desired bushing.
4. Re-install the washer, lock-washer and the locknut, securing the locknut tight.

**Note:** You may want to turn the distributor upside down to ease in the installation of the advance stop bushing if the distributor is removed from the vehicle.

**Locking out Centrifugal Advance:**

If you do not want to have any centrifugal advance, you can lock it out by following this procedure with the distributor removed:

1. Remove the distributor drive gear roll-pin
2. Remove the distributor gear and thrust washers.
3. With distributor gear removed, push distributor shaft approximately 2 inches out of housing.
4. Temporarily remove nut and washers and remove advance stop bushing.
5. Rotate distributor shaft 180 degrees
6. Align advance stop bushing stud with hole in the mechanical advance plate.
7. Push distributor shaft back into housing making sure the advance stop bushing stud goes through hole.

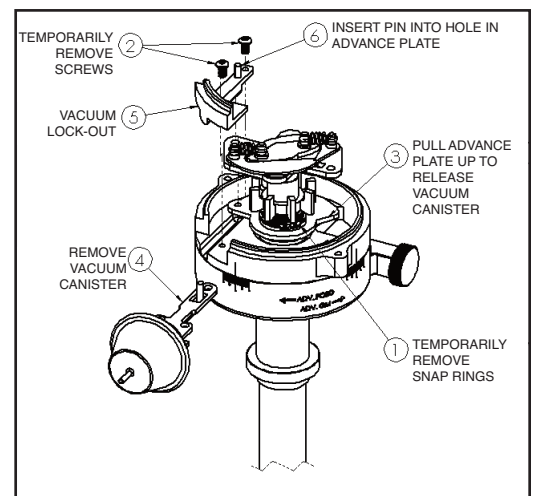
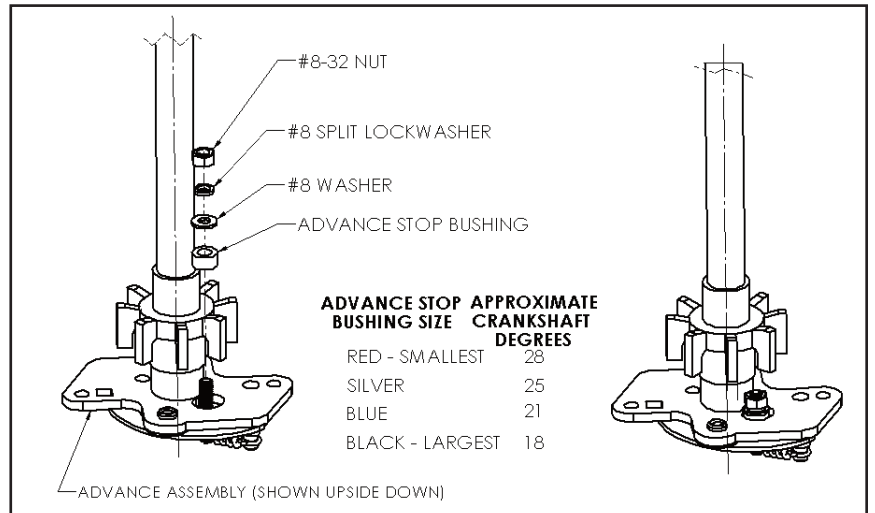


8. Re-install the just the washer, lock-washer and lock nut onto advance stop bushing stud and secure tight.
9. Re-install distributor thrust washers, gear and secure with roll-pin.

**Vacuum Advance Lock-Out**

The vacuum canister included with the Powerfire Distributor provides approximately 10 ° of advance. If you do not want to have any vacuum advance, you can leave the vacuum line off of the vacuum canister. You can also use the Powerfire Distributor Vacuum Advance Lockout kit which allows you to remove the vacuum canister for aesthetic purposes:

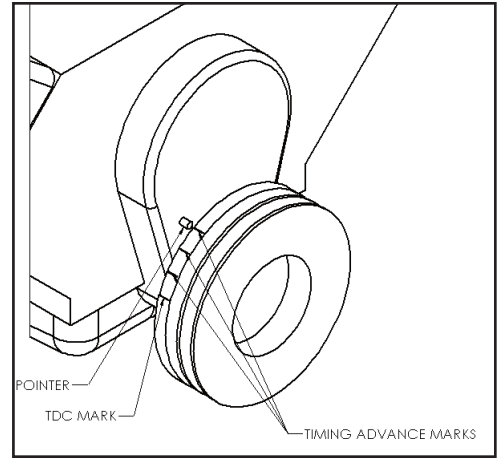
1. Remove large snap ring above vacuum plate.
2. Remove screws holding vacuum advance canister.
3. Lift advance plate up.
4. Remove vacuum canister.
5. Install vacuum advance lockout and secure with the screws previously removed.
6. Lower advance plate back into location making sure the “Pin” from the advance lockout goes through hole in advance plate.
7. Re-install snap-ring making sure it is fully seated in its receiver groove.



## Installing the Distributor on a New Engine

### Setting Engine to TDC:

1. Place vehicle in Park (automatic transmission) or neutral (manual transmission) and set parking brake.
2. Remove the #1 spark plug.
3. Reconnect battery cable.
4. Place a finger over the sparkplug hole. (Do not insert finger in the spark plug hole.)
5. With an assistant (or remote starter-button) "click" engine around until compression can be felt trying to blow your finger off the sparkplug hole.
6. Rotate engine by hand until the timing marks on the damper and pointer align to your initial desired ignition advance.
7. Re-install #1 sparkplug.



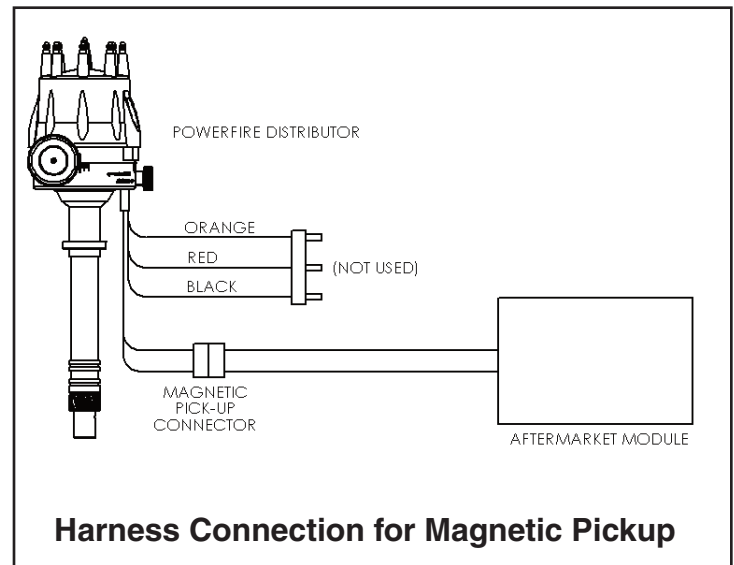
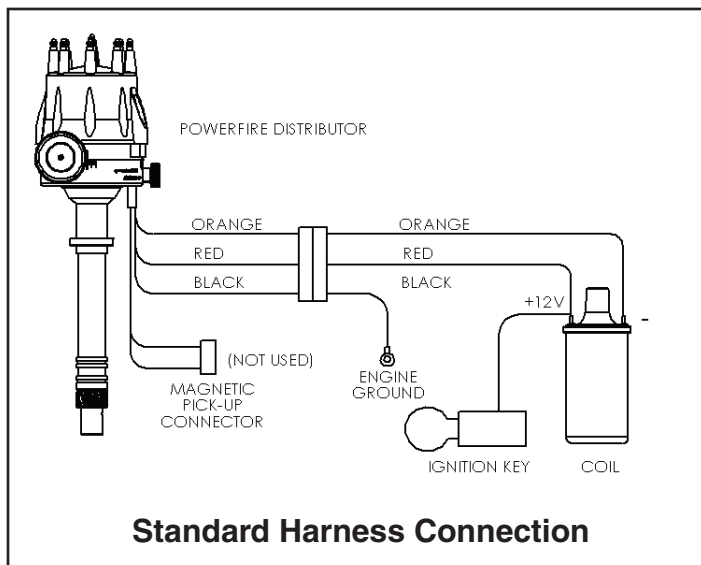
### Install Distributor and Spark Plug Wires

1. With distributor cap removed, install the distributor making sure it is seated, and positioning the rotor tip to the #1 location for your engine. (It may be necessary to spin the oil pump drive with an appropriate tool to allow the distributor to fully seat.)
2. Temporarily install the distributor cap with the #1 terminal oriented in the proper location for you engine. Place a small strip of masking tape on the side of distributor housing and mark the position of the #1 terminal.
3. Remove the distributor cap. Rotate the distributor housing to align the mark on tape with the rotor and tighten the housing clamp securely.
4. Re-install distributor cap and install the wires on the cap starting with #1 in the correct firing order and direction.
  - Chevrolet firing order: 1-8-4-3-6-5-7-2 (Clockwise rotation)
  - Ford 302 firing order: 1-5-4-2-6-3-7-8 (Counter-clockwise rotation)
  - Ford 351/302H.O. firing order: 1-3-7-2-6-5-4-8 (Counter-clockwise rotation)
5. Connect Powerfire Distributor wire harness as shown in the diagrams.

## Installing the Powerfire Distributor When Replacing an Existing Distributor

### Setting Initial Timing:

1. Place vehicle in Park (automatic transmission) or neutral (manual transmission) and set parking brake.
2. Disconnect the electrical leads at your ignition coil that come from your distributor.
3. Rotate engine by hand until the timing marks on the damper and pointer align to your initial desired ignition advance and the rotor is pointing toward the #1 terminal.
4. Note the position that the rotor tip is pointing, and remove the distributor from vehicle.
5. With distributor cap removed, install the new distributor making sure it is seated, and positioning the rotor tip oriented in the same position as the original distributor when removed. (It may be necessary to spin the oil pump drive with an appropriate tool to allow the distributor to fully seat.)
6. Re-install distributor cap and install the wires on the cap making sure to place them in the same location on the new cap as the old cap.
7. Connect Powerfire Distributor wire harness as shown in the diagrams.



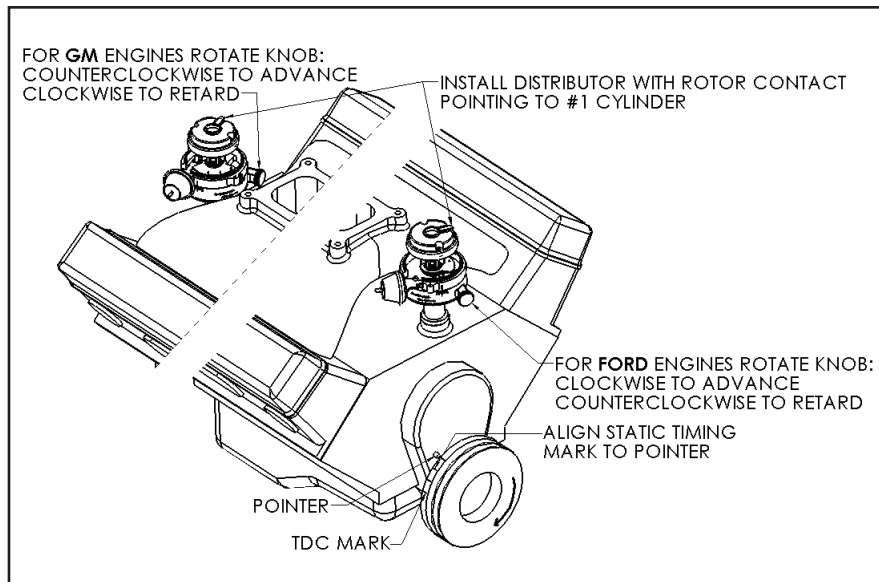
### Checking and Setting Timing:

After installing the Powerfire Distributor, always check and set the timing using a timing light.

1. Start engine and warm up.
2. Confirm your initial timing with timing light and adjust as necessary.
3. Secure distributor hold-down fastener tight.
4. Disconnect vacuum canister (and plug supply line), and confirm your maximum advance.
5. Rotate the Tuning Knob on the Powerfire Distributor to adjust your timing to your preference utilizing the timing scale on the distributor base.

### Using The Tuning Knob

After your timing has been set and verified with a timing light, you can now use the Tuning Knob to advance or retard your timing.



### General Motors

Turning the Tuning Knob counter clock-wise will advance the ignition timing ½ degree per “click”.  
Turning the Tuning Knob clock-wise will retard the ignition timing ½ degree per click.

### Ford Motor Company

Turning the Tuning Knob clock-wise will advance the ignition timing ½ degree per “click”.  
Turning the Tuning Knob counter clock-wise will retard the ignition timing ½ degree per “click”.

The distributor base has (4) scales evenly spaced around the base of the distributor for easy observation and noting of timing. After noting what your timing is with a timing light every two clicks in the same direction will either advance or retard your timing one degree. You can mark your scale so you know what your base setting is and then Knob Tune the timing to your desired timing.

### LIMITED WARRANTY

THIS IS A LIMITED WARRANTY - Professional Products offers a 12 month limited warranty from date of purchase on all products in the Powerfire line. This includes any part number in the 30000 series. Certain component parts of the Powerfire kits are limited to a 90 day warranty. Those parts are as follows: Ignition modules, and magnetic pick-ups. Professional Products warrants to the original purchaser of the product that the product and its component parts will be free of defects in material or workmanship for a period of 12 months or 90 days on listed components. This warranty does not apply to products that have been (a) modified or altered in any way; (b) subjected to adverse conditions such as misuse, neglect, accident, improper installation or adjustment, dirt or other contaminants, water, corrosion, or faulty repair; or (c) used in applications other than those recommended by Professional Products. Professional Products also does not warrant, and disclaims all liability, for products used in racing activities and/or applications other than those specifically recommended in the current Professional Products Catalog or website. This Limited Warranty is extended to the original purchaser only and is not assignable or otherwise transferable. There are no warranties which extend beyond those stated herein. Professional Products offers no warranties, either express or implied, beyond this Limited Warranty. In the event of an alleged defect in material or workmanship, Professional Products' responsibility is strictly limited to repair or replace the defective product. Professional Products has no other obligation either express or implied. Final warranty determination will be at the sole discretion of Professional Products. Professional Products will not be responsible for: (a) actual or alleged labor, transportation or other incidental charges; or (b) actual or alleged consequential or other damages incurred by use of any product of Professional Products.

### How to Initiate the Warranty Process

Do not return any Powerfire product to the place of purchase. Contact the Professional Products Powerfire Warranty Center at 951-737-2006. If it is determined that the product must be returned for inspection and evaluation, you will be given an RMA (returned merchandise authorization) number. This number must be visible on the outside of the return package. Merchandise must be returned prepaid (with a copy of the original sales receipt) and insured. Also include your name, address, phone number, and a complete explanation of the problem. The product must be properly packaged so that no damage occurs in shipment. Ship product to:

**Professional Products • c/o Retrotek Speed • 469 Harrison St. Unit E • Corona, CA 92879**

This warranty sets forth specific legal rights. The consumer may have other rights as a result of variations in state or provincial laws. This Limited Warranty supersedes all prior warranty statements.

## NOTES

### Replacement Parts for your Powerfire Distributor

31000 - Distributor Cap - Male Terminals	31008 - Chevy Distributor Gasket
31002 - Rotor - Fits all Powerfire Distributors	31009 - Ford Mounting O-Ring
31003 - Advance Spring and Stop Kit	31010 - Vacuum Advance Pod
31004 - Bronze Distributor Gear - Chevy	31011 - Ignition Module
31005 - Bronze Distributor Gear - Ford	31012 - Ignition Pickup Assembly
31006 - Advance Lockout Kit - Ford	31013 - Distributor to Coil Harness
31007 - Advance Lockout Kit - Chevy	

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