

## SPARK PLUG WIRES

Choice of spark plug wires is an important consideration when using an electronic ignition system. **You must use carbon core resistor or Spiral wound spark plug wires with at least 800  $\Omega$  per foot resistance. Failure to observe these precautions will damage Ignition & Void the Warranty.**

## SPARK PLUGS

You must use a resistor spark plug with electronic ignitions. Stock spark plugs are resistor type plugs and will work. Spark plug gap should be limited to as small as possible, while still maintaining performance.

A wide spark plug gap can cause the following problems: Hard cold starting, misfires during rich or lean fuel conditions, and reduction of upper rpm range.

Initial settings for spark plug gaps are:

Dual Fire -1 Plug per cylinder Multi-Spark 0.025"-0.032"

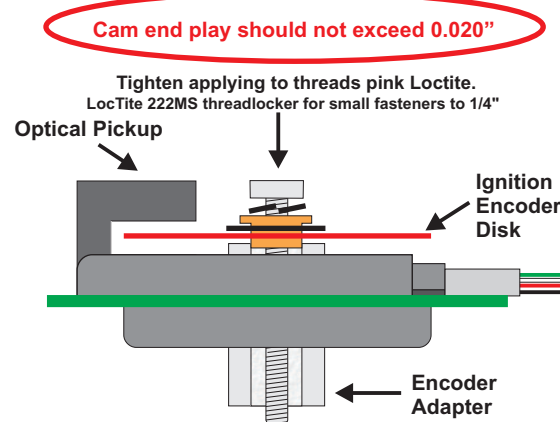
**Many things effect spark plug gap settings:**

**Compression Ratio:** The higher the engine compression, the more voltage required to fire the plug, and the narrower the plug gap should be.

**RPM:** The higher the rpm's the less time the coil has to charge to break over voltage or complete saturation. A narrower spark plug gap will help high rpm stability.

**Multi-Spark:** To maintain a good secondary spark within a wider rpm range it is wise to run a narrower spark plug gap. It is better to precisely place two stable, consistent sparks than to fire one wider spark that may cause misfires in rich or lean conditions, or from any of the above reasons.

### Encoder Installation and Cam end play



## OWNERS MANUAL

All information contained in this owner manual is the property of P. A. Ignition Co., Inc. and cannot be duplicated in whole or in part by any means or disseminated or distributed without the prior written consent of P. A. Ignitions Co., Inc. The information in this manual has been carefully compiled and checked for accuracy and is believed to be correct. However, P. A. Ignition Co., accepts no responsibility for inaccuracies which may occur. All specifications in this manual are subject to change without notice.

Power Arc Ignitions Co., Inc.  
2518 N.E. 102 Ave.  
Ankeny, IA 50021  
(515) 964-7608

**The following customer actions automatically voids the warranty.**

1) Use of any other spark plug wires other than resistor type wires with at least 4,000 ohms of resistance. 2) Use of non-resistor spark plugs. 3) Drilling or cutting of any kind into the module 4) Incorrect wiring of the module. 5) Use of module on systems with defective charging systems. 6) Use of defective coils. 7) Directly shorting the coil output wires to +12 VDC. 8) Physical damage to the ignition. 9) Any other items covered in the warranty & instruction manual.

## LIMITED WARRANTY

P. A. Ignition Co., Inc. warrants to the original retail purchaser of a Power Arc IDS ignition that it will, free of charge, repair or replace at its own option, the product if returned to P. A. Ignition Co., Inc. within 6 months after purchase and if found by P. A. Ignition Co., Inc. to be defective in material or workmanship. This warranty is not transferable by the purchaser and shall be voided: if alterations not authorized by P. A. Ignition Co., Inc. are made in the equipment or if the serial number or date of manufacture has been altered, defaced or removed. Nor does this warranty apply: if the equipment has been subjected to accident, misuse, improper hookup, damaged by flood, fire, or act of God, or has been used on circuits or voltages other than those indicated in its instruction manual. If the equipment is found to be defective in materials or workmanship the equipment will be returned and P. A. Ignition Co., Inc. will pay the return shipping (this does not include next day shipping, second day shipping, shipments outside of the continental U. S. A. or shipments outside of the U.S.A.). All warranty work outside of the U.S.A. must include prepayment of return shipping. Customs, duties or tariffs are not covered by this warranty. If the equipment is found to be defective but is due to customer misuse (as described in warranty) P. A. Ignition Co., Inc. will notify the customer and if the customer wants the defective equipment returned P. A. Ignition Co., Inc. will return the equipment C.O.D. freight. If the equipment is found to be in operational order when returned to the factory P. A. Ignition Co., Inc. will return the module with a \$30.00 service charge plus freight and C.O.D. Charges.

**Any module returned under the warranty must include note of explanation of failure and be accompanied by a dated bill of sale.**

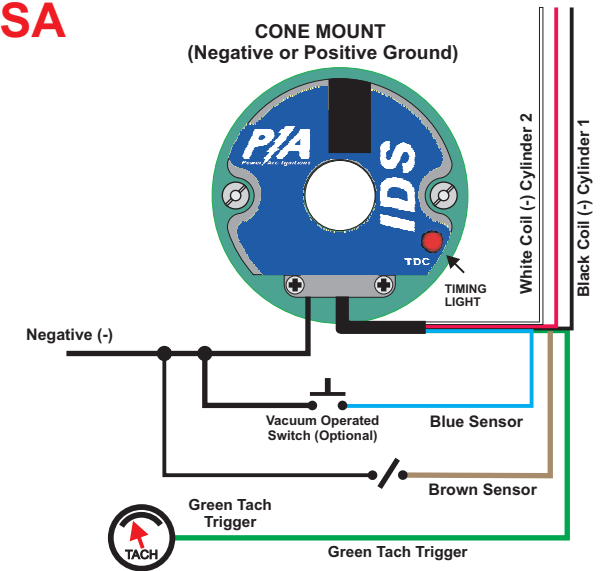
P. A. Ignition Co., Inc. warranty obligations are limited to those set forth herein and no other obligations, expressed or implied, are assumed by P. A. Ignitions Co., Inc.

Some states do not allow the exclusions or limitations of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



**POWER ARC IDS-C2 180°  
Single Fire**

## C2 British +POS BSA



### IDS-C2 British Ignition System

- **Single Fire (Fire on Compression Only)**
- **No External Module (All in the Points Housing)**
- **Low Voltage Operation (down to 6 Volts)**
- **Uses less Energy than Points**
- **For 1 or 2 Cylinder Engines (with Coil change)**
- **4 Timing Maps w Select Wires**
- **Multi-Spark 3 Sparks / Compression Stroke**
- **Optional Program Connector**
- **Automatic Coil Safety Shutoff**
- **Precision Rev limiter**
- **Static Timing Light**
- **Stainless Steel Encoder Disk**
- **Omni Directional Cam Rotation (CW or CCW)**
- **Electronic Tach Output (1 Pulse/Crank Revolution)**

**POWER ARC IGNITIONS CO., INC.**

2518 N. E. 102 AVE.

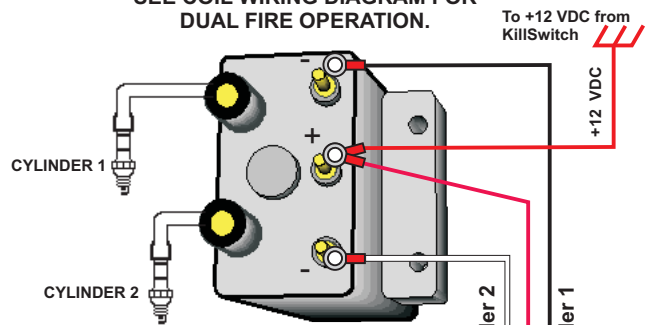
ANKENY, IA 50021

(515) 964-7608

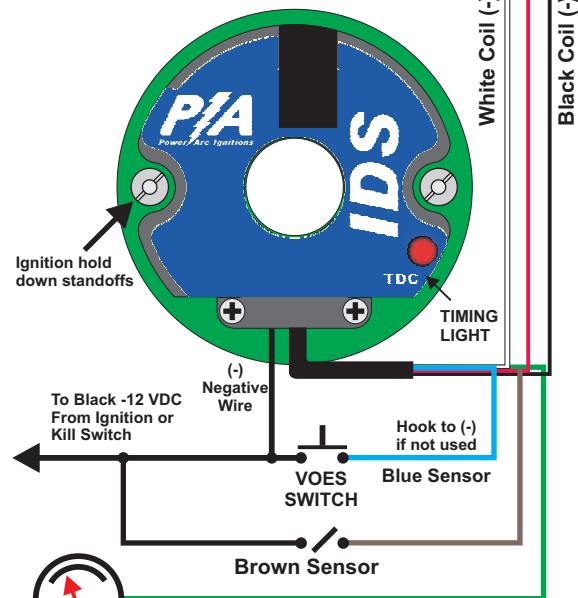
<http://www.powerarc.com>

PATENT #4,951,629 OTHER PATENTS PENDING

SEE COIL WIRING DIAGRAM FOR DUAL FIRE OPERATION.



**CONE MOUNT  
(Positive Ground)**



Tach Output Wire  
1 pulse/Crank Revolution  
Rev Limiter Set at 6800 Rpm

### Recommended Kick Starting Sequence

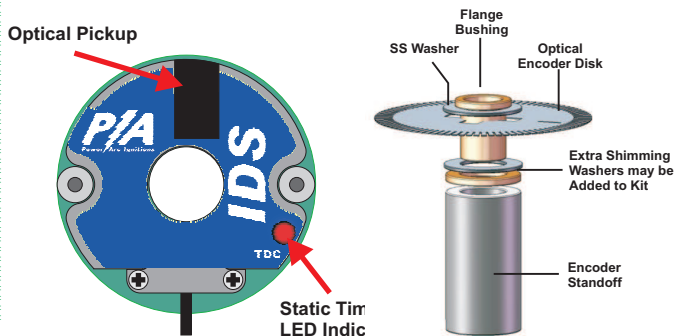
1. With the ignition off, kick the bike through until you have the crank in the position that you normally like to start your kick.
2. Turn on the ignition.
3. Kick the bike over and always kick through the complete throw of the kick start arm. Do Not do a half kick since the kick start pawl does not disengage from the engine until the kick start arm has completed its rotation.
4. If you turn off the ignition, the ignition will reset and look for TDC when it is turned on again.

**WARNING:** Do not touch coil output wires (White & Black) To +12. DO NOT USE SOLID OR SPIRAL WOUND SUPPRESSION SPARK PLUG WIRES, USE RESISTOR WIRES ONLY. FAILURE TO OBSERVE THESE PRECAUTIONS WILL DAMAGE IGN. & VOID THE WARRANTY.

### Positive Ground Wiring

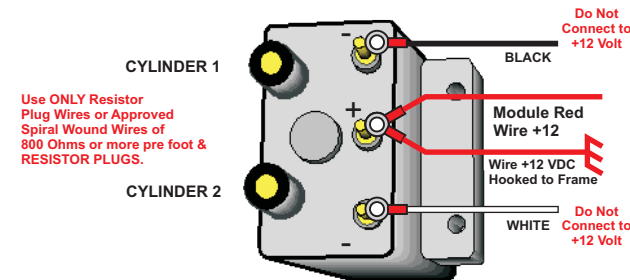
1. Remove all components from the ignition cone cam cover the shaft end.
2. Mount Ignition Coil in suitable location.
3. Pull ignition wire through wire hole in cam cover. Make sure not to run wiring near high heat areas of the motorcycle, such as the exhaust system. Rock the ignition into cam cover.
4. Insert the Ignition hold down standoffs & tighten.
5. Hook ignition (-) Negative Black wire to the Kill/ Ignition switch wire.
6. Hook ignition (+) Positive Red wire to the Coil(s) +. Connect a wire from frame ground wire to the Coil(s) +.
7. Hook the green wire to the tach trigger wire of tachometer if used. Isolate the wire if not used.
8. Insert the encoder adapter through the center hole of the ignition. Rest the optical encoder wheel centered on the Encoder Standoff. Place the stainless shim washer on to the step washer, push through the center of the Encoder Disk into the Encoder Standoff. Using the existing flyweight screw or bolt apply pink Loctite to the screw and insert the hex head screw through the center of the adapter and lightly tighten, making sure the optical encoder (see diagram below).
9. Rotate the engine to the cylinder of your choice **TOP DEAD CENTER COMPRESSION STROKE (this becomes cylinder #1)**. If you engine does not have Cylinder Top Dead Center timing marks, it may be necessary to use a dial test indicator to locate TDC.
10. Turn the Ignition and Kill Switch on and rotate the Optical Encoder Counter in the Opposite direction of Normal rotation until the Static Timing LED lights and stop (**Cam must not move**). Holding the Optical Encoder tighten the Adapter Hex screw firmly to hold the Encode wheel in place. Recheck top dead center timing mark to make sure the timing has not moved.
11. Hook the Black wire to the #1 coil & the White wire to the #2 cylinder coil. Do not hook the White or Black wire to positive.
12. Start the Engine.

**NOTE:** The stock bolt is used lock down the Encoder Adapter. Some aftermarket cams use a 1/4 x 28 SAE thread. If the bolt does not thread into the cam easily by hand, DO NOT USE A WRENCH TO TIGHTEN, since the cam may require a different bolt. Use care not to break the bolt off inside the cam. If you had a different aftermarket ignition installed the bolt may be incorrect in length and require the OEM bolt length.

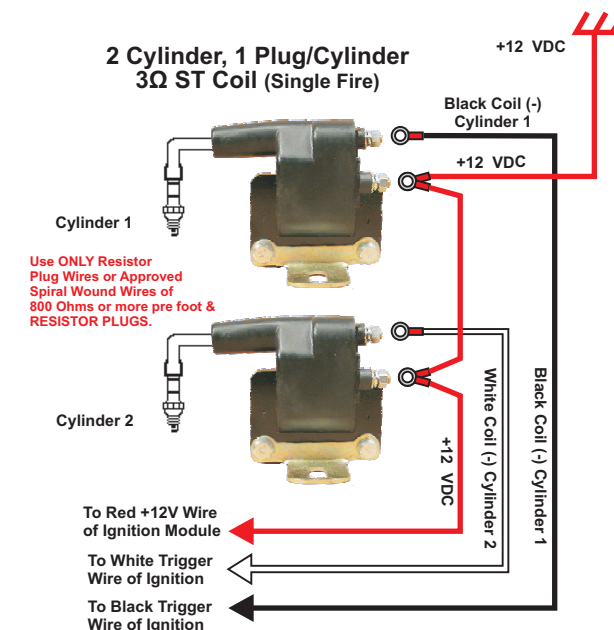


### COIL HOOKUP DRAWINGS

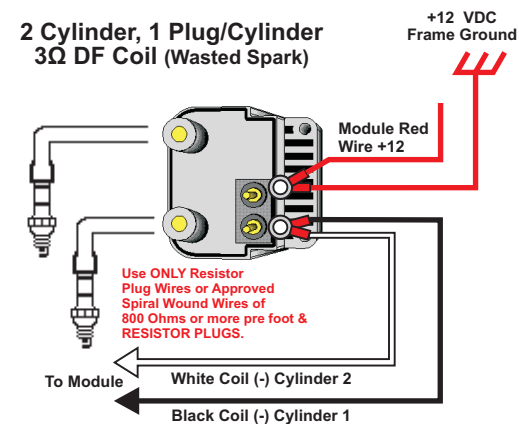
Single Fire, 1 Plug/Cylinder, 3Ω, SF Coil



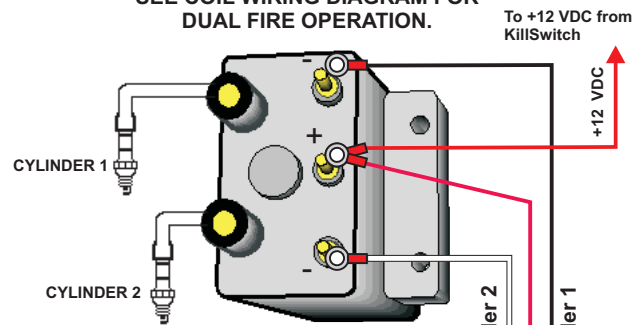
2 Cylinder, 1 Plug/Cylinder  
3Ω ST Coil (Single Fire)



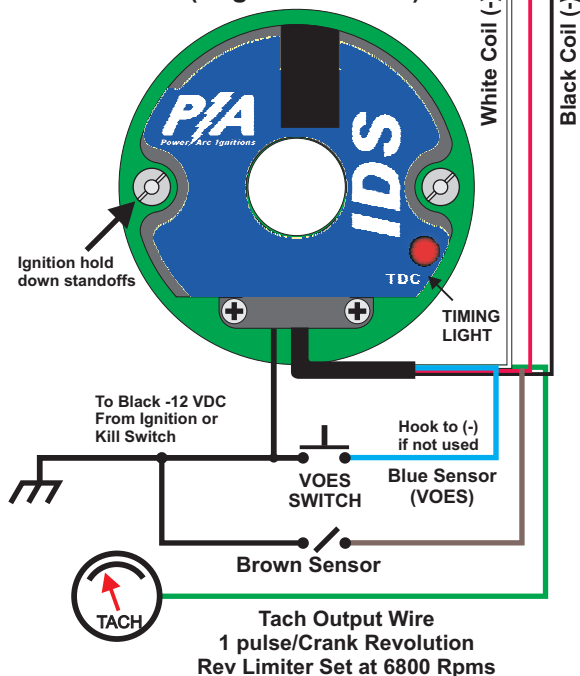
2 Cylinder, 1 Plug/Cylinder  
3Ω DF Coil (Wasted Spark)



SEE COIL WIRING DIAGRAM FOR DUAL FIRE OPERATION.



CONE MOUNT  
(Negative Ground)

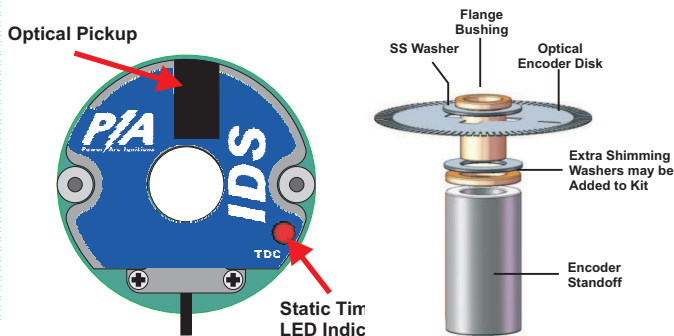


**WARNING:** Do not touch coil output wires (White & Black) To +12. DO NOT USE SOLID OR SPIRAL WOUND SUPPRESSION SPARK PLUG WIRES, USE RESISTOR WIRES ONLY. FAILURE TO OBSERVE THESE PRECAUTIONS WILL DAMAGE IGN. & VOID THE WARRANTY.

## Negative Ground Wiring

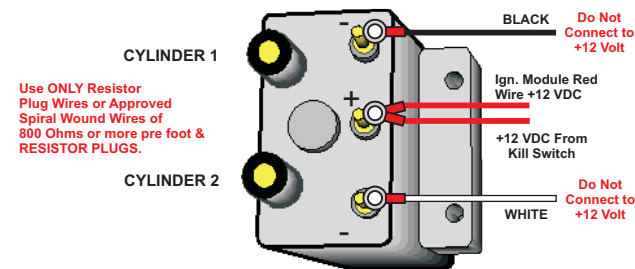
1. Remove all components from the ignition cone cam cover the shaft end.
2. Mount Ignition Coil in suitable location.
3. Pull ignition wire through wire hole in cam cover. Make sure not to run wiring near high heat areas of the motorcycle, such as the exhaust system. Rock the ignition into cam cover.
4. Insert the Ignition hold down standoffs & tighten.
5. Hook ignition Positive (Red) wire to the ignition supply kill/ignition switch wire, at the Coil(s) positive terminal.
6. Hook ignition (-) Negative Black wire to the frame ground.
7. Hook the green wire to the tach trigger wire of tachometer if used. Isolate the wire if not used.
8. Insert the encoder adapter through the center hole of the ignition. Rest the optical encoder wheel centered on the Encoder Standoff. Place the stainless shim washer on to the step washer, push through the center of the Encoder Disk into the Encoder Standoff. Using the existing flyweight screw or bolt apply pink Loctite to the screw and insert the hex head screw through the center of the adapter and lightly tighten, making sure the optical encoder (see diagram below).
9. Rotate the engine to the cylinder of your choice **TOP DEAD CENTER COMPRESSION STROKE (this becomes cylinder #1)**. If you engine does not have Cylinder Top Dead Center timing marks, it may be necessary to use a dial test indicator to locate TDC.
10. Turn the Ignition and Kill Switch on and rotate the Optical Encoder Counter in the Opposite direction of Normal rotation until the Static Timing LED lights and stop (**Cam must not move**). Holding the Optical Encoder tighten the Adapter Hex screw firmly to hold the Encode wheel in place. Recheck top dead center timing mark to make sure the timing has not moved. Do finish or fine adjustments by rotating Distributor when Optical Encoder has been firmly tightened.
11. Hook the Black wire to the #1 coil & the White wire to the #2 cylinder coil. Do not hook the White or Black wire to positive.
12. Start the Engine.

**NOTE:** The stock bolt is used lock down the Encoder Adapter. Some aftermarket cams use a 1/4 x 28 SAE thread. If the bolt does not thread into the cam easily by hand, DO NOT USE A WRENCH TO TIGHTEN, since the cam may require a different bolt. Use care not to break the bolt off inside the cam. If you had a different aftermarket ignition installed the bolt may be incorrect in length and require the OEM bolt length.

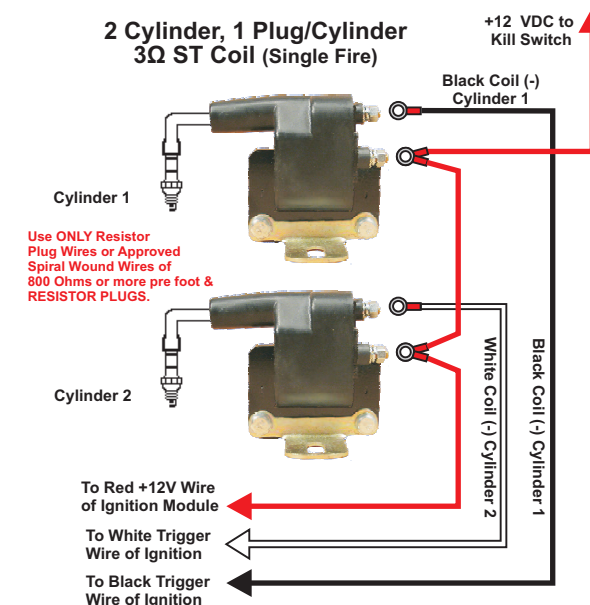


## COIL HOOKUP DRAWINGS

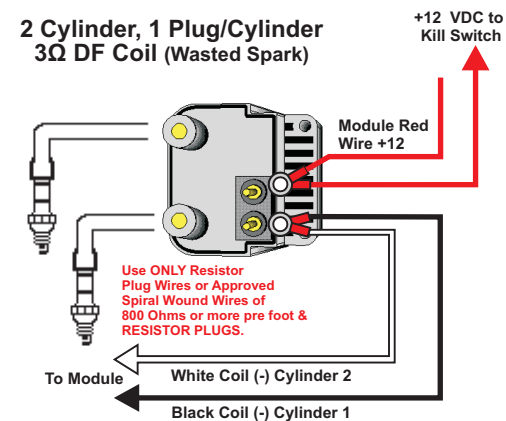
Single Fire, 1 Plug/Cylinder, 3Ω, SF Coil



2 Cylinder, 1 Plug/Cylinder  
3Ω ST Coil (Single Fire)



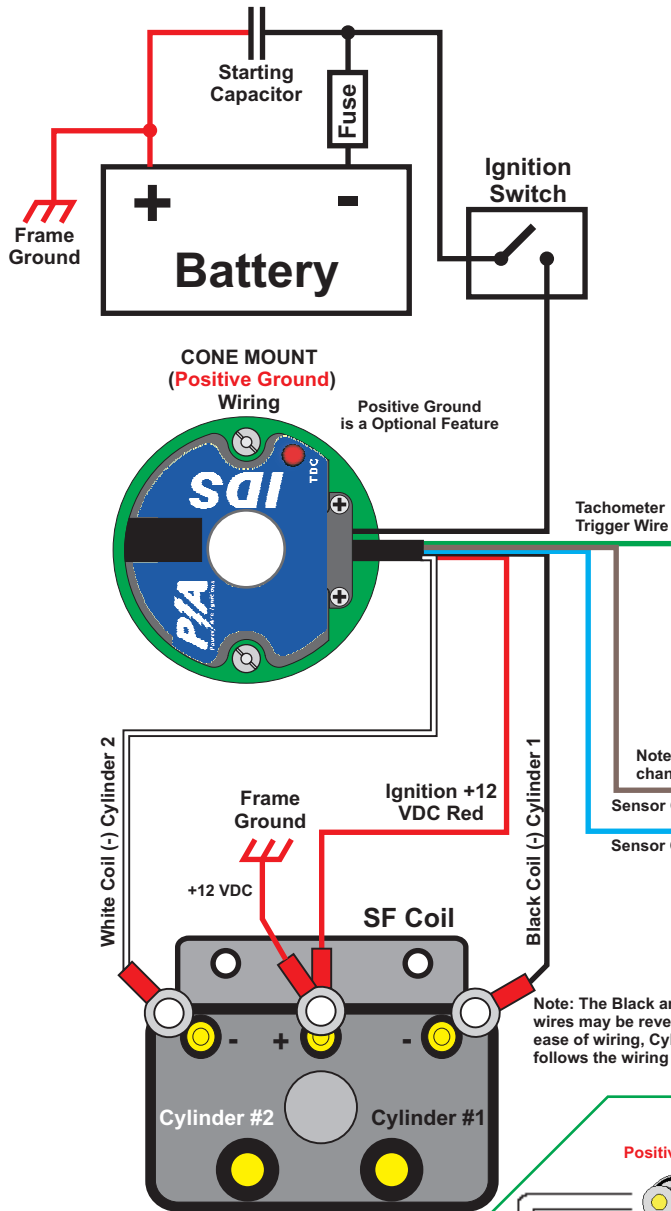
2 Cylinder, 1 Plug/Cylinder  
3Ω DF Coil (Wasted Spark)



## Recommended Kick Starting Sequence

1. With the ignition off, kick the bike through until you have the crank in the position that you normally like to start your kick.
2. Turn on the ignition.
3. Kick the bike over and always kick through the complete throw of the kick start arm. Do Not do a half kick since the kick start pawl does not disengage from the engine until the kick start arm has completed its rotation.
4. If you turn off the ignition, the ignition will reset and look for TDC when it is turned on again.

# SF Coil - Positive Ground



# Single Fire C2

(Each cylinder fires compression stroke only)

## Wiring Diagrams

WARNING: Do not touch coil output wires (White & Black) To +12. DO NOT USE Solid or Unapproved Spiral Wound Spark plug wires FAILURE TO OBSERVE THESE PRECAUTIONS WILL DAMAGE IGN. & VOID THE WARRANTY.

Programmed for Applications

Optional Program Connector and PLC Required to change programmed curves and parameters



Tachometer output  
1 pulse per crank revolution

For an Autometer Tach you may have to cut the Green wire on back of Tach.

## Sensor Control Wires

2 Sensor Wires may be Grounded or Ungrounded to switch timing curves, between 4 timing curves.

Note: Grounded means attached to Neg (-) and is based on a Negative Grounded System.

Progression from most to least advance

Blue Sensor 1	Brown Sensor 2
Grounded	Grounded
UnGrounded	UnGrounded
Grounded	Grounded
UnGrounded	UnGrounded

## Normal Stock Application

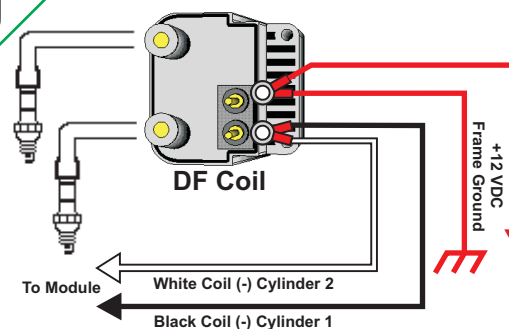
Ground (-) Blue and Brown Wires

Higher Compression or lower octane fuels may require less advance. This can be achieved by ungrounding the appropriate Sensor wires or the addition of a VOES (vacuum switch) to change timing when engine is under load.

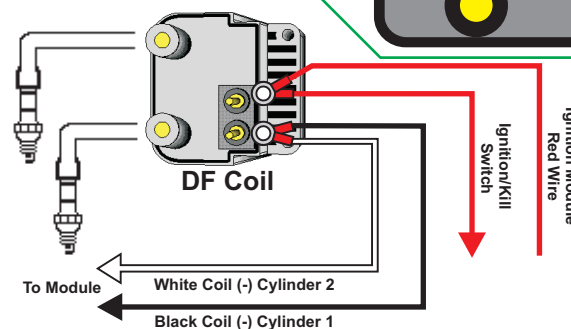
If you want the benefit of 4 timing curves and keep the wasted spark configuration you can use the DF coil and wire as below.

## 2 Cylinder, 1 Plug/Cylinder 3Ω DF Coil (Wasted Spark)

Positive Ground Wiring



Negative Ground Wiring



\*NOTE: DF (wasted spark coils) do not have (-) Trigger or (+) Positive terminal labels. You may choose which of the 2 will be (-) or (+) for ease of wiring.

# SF Coil - Negative Ground

