


V1.1

# High Roller Ignition Control

*WARNING: During the installation of the High Roller CDI Box, the battery cables must be disconnected. When disconnecting the battery, always remove the NEGATIVE cable first and install it last*.

# Operation and features

## Digital operation

The ACES Fuel Injection High Roller Digital CDI uses a high-speed microprocessor to control the ignition's output while continually analyzing and monitoring some input signals such as rpm, trigger signals, and supply voltage. The high-speed microprocessor can make fast adjustments to the output voltage, multiple spark series, rpm limits and timing while maintaining very precise timing control and accurate rev limiting. The circuits and controller of the High Roller have been shielded to protect against Electro Magnetic Interference (EMI).

## Capacitive discharge

In induction ignition, the coil must store a large voltage before ignition.at high speed, because there is less time to charge the coil to its full capacity, the voltage is lower than the maximum energy, which can cause power loss or top end miss.

The capacitor of the High Roller ignition function is quickly charged to 480-535 volts and stores it until the ignition is triggered. With the CDI design, the voltage sent to the positive terminal of the coil is always at full power, even at high RPMs.

## Multiple sparks

The High Roller Digital CDI produces full power multiple sparks for each spark ignition. As the rpm increases, the number of multiple sparks does decrease, but the spark series always lasts for 22 degrees of crankshaft rotation.

## Protection

High Roller CDI has a reverse polarity protection circuit to help save the unit should wiring errors occur.

## LED indicator

There are two LED indicators which provide you with the status of the High Roller.

| | | |
|---|---|---|
| Key power on-engine off | LED always on | Red |
| Key power on-engine on | RPM > 500 LED flash every engine cycle | Blue |
| Key power on-engine on | RPM < 500 LED flash every trigger | Blue |

***NOTE: Do not use solid core spark plug wires with this ignition system.***

## Rev limiter

The digital High Roller features a built-in rev limiter. The rev limiter feature provides a smooth and accurate rev limit by dropping the spark to individual cylinders.it further produces a load free rev limit that is within 1% of the selected rpm. The rev limit is adjusted in 100 rpm increments with the two sealed rotary switches contained under the black cover on the top of the High Roller CDI.

## Number of Cylinders Selection

The High Roller system is primarily designed for use on 8-cylinder engines, but can be used on different types of engines, such as 4-cylinder and 6-cylinder, even fire engines. If you need to run on a 4-cylinder or 6-cylinder engine, make sure the cylinder select has been modified by handheld.

## Start Retard

The High Roller system will retard the timing from cranking through 700 rpm. It is automatically enabled and is adjustable from 0°-20° of retard in 1° increments. The timing retard will come in if the engine rpm drops below 500 rpm.

## Launch Retard

This feature will be activated when the launch button is applied. It is programmable from 0° - 20° in 1° increments. The Launch retard is used to offset the ignition timing during the 8 seconds after the launch button is released. It can optimize traction immediately after launch.

## Nitrous Oxide Timing Retard

The High Roller CDI system can be configured to automatically retard timing when a Nitrous Oxide System is utilized. When the Nitrous is activated and the throttle position indicates wide open throttle the High Roller CDI can be programmed to remove timing from the overall timing that is set, this is configured with the handheld programmer.

## Burn Out Rev Limit

The High Roller CDI system recognizes the tire burnout and can be programmed to help limit burnout RPM’s.

## RPM Launch Control

The High Roller CDI system can be programmed to be used as a launch RPM controller (two step rev limiter) through the handheld controller Launch RPM can be set and programmed to help limit initial high RPM launch and prevent excess tire spin at launch.

## Launch Drop RPM

This High Roller option is for Manual shift applications using the clutch switch between shifts. This value will set up an RPM window so the Launch RPM limit feature will not reactivate when using the clutch between shifts. This RPM must be set lower than Launch RPM.
High Roller Launch Rev setting example:
Launch Limit RPM: 3800
Launch Drop RPM: 1000
This example shows the car will launch at 3,800 rpm and will have to drop to 2800 (3800 - 1000) rpm during running to reset the launch feature.

## Touch screen LCD

The High Roller system is fully equipped with a handheld display that can display ignition spark energy, engine RPM, number of sparks per cycle, ignition voltage, and is used to program the two-step launch control, burn out rev limit and Nitrous Timing retard. This handheld is a convenient way for the consumer to view the current ignition operating status and function of the High Roller CDI System.

# General information

## Battery

The digital High Roller will operate on any negative ground 12-volt electrical system with a distributor. The High Roller can be used with 16-volt batteries and can withstand a momentary 24 volts in case of jump starts. The High Roller will deliver full voltage with a supply of anywhere between 8 and 18 volts. If your equipment does not use an alternator allow a minimum of 15 amp/hour for every 30 minutes of operation.

## Coil

The digital High Roller ignition can be used for most stock coils and aftermarket coils. For best results couple the High Roller CDI with an ACES Fuel Injection Blackjack Pro high-output ignition coil.

## Tachometers

The High Roller ignition features a tach output wire, which can provide trigger signals for tachometers, EFI systems, and other RPM activated devices. The output signal wire will generate a 12-Volt square wave signal with a 25% duty cycle. Some vehicles with factory tachometers may require a tach Adapter to operate with the High Roller CDI.

## Spark plug wires

Spark plug wires are especially important to the operation of your ignition system. A good quality, helically wound, suppression-type wire and proper routing are required to get the best performance from your ignition, such as the ACES WFI Blackjack Pro Series Spark Plug Wires. NOTE: Solid Core spark plug wires cannot be used with the High Roller CDI Ignition System.

## Spark plugs

Choosing the correct spark plug design and heat range is important when trying to get the best performance possible. It is recommended to follow the engine builder or manufacturer's specification for spark plugs. With that, you can then experiment with the plug gap to obtain the best performance. The gap of the plugs can be opened in 0.005" increments, then tested until the best performance is achieved.

## Welding

If any welding is being performed on your vehicle, please make sure to disconnect the primary power and ground wires for the High Roller CDI System from the battery as well as the tach wire. This will help avoid any damage to your High Roller CDI System.

## Distributor cap and rotor

When installing the High Roller CDI with an existing distributor a new distributor cap and rotor should be installed. Make sure to keep the inside and outside of the cap clean. On distributors with the smaller caps, the inside of the cap may be ion charged. You can drill vent holes in the cap to help prevent it.

## Mounting

The High Roller CDI System can be mounted in most positions, except directly upside down (if upside down, moisture or water cannot escape). It can be mounted in the engine compartment if it is away from direct engine heat sources. It is not recommended to mount the unit in an enclosed area, such as the glove box. When you find a suitable location to mount the unit, make sure the wires of the ignition reach their connections. Hold the Ignition in place and mark the location of the mounting holes. Use a 1/8" drill bit to drill the holes. And use the supplied rubber isolators to mount the box.

# Wiring

| | |
|---|---|
| Heavy Red | This wire connects directly to the battery positive terminal or a positive battery junction such as the starter solenoid. **Note:** Do not connect to the alternator. |
| Heavy Black | This wire connects to a good ground, either at the battery negative terminal or to the engine. |
| Red | This wire is responsible for turning the High Roller on and off. This connects to a switched 12-volt source such as the ignition key or switch. |
| Heavy Orange | This wire connects to the coil positive terminal. |

| | |
|---|---|
| Heavy Black | This wire connects to the coil negative terminal. |
| White | This wire is used to connect to breaker points, or electronic ignition modules. When this wire is used the magnetic pickup connector is not used. |
| Violet and Green- (Magnetic Pickup Connector) | These wires are routed together in one harness as the magnetic pickup connector. The connector plugs directly into a High Roller distributor, MSD distributor, or crank trigger, or any other aftermarket pickup. The Violet wire is positive, and the Green is negative. When these wires are used, the White wire is not used. |
| Gray | This is the tach output wire. It connects to the tachometer trigger wire or other rpm activated devices |
| Four Wires White Female Connector | Connect to Handheld |
| Four Wires White Male Connector | Step input, launch input, Burn out input. |

# General wiring information

## Wire length

The High Roller ignition wire can be shortened if quality connectors are used and preferably soldered in place. If you need to lengthen it, please use a larger gauge wire (primary positive power wire uses a 12-gauge, other wires use 16-gauge wire). The connection should be soldered and sealed with heat shrink over the connection.

## Grounds

The negative wire should be grounded, the ground wire should be connected firmly, and the connection should be kept clean and free of paint.

## Ballast resistor

If your vehicle utilizes a ballast resistor in line with the coil wiring, it is recommended that you bypass the ballast resistor.

## Routing wires

Keep High Roller wires away from heat sources, such as exhaust pipes and headers, and any sharp edges. Trigger wires should be arranged separately from power wires and ignition wires.

## Information specifications

### (1) Ignition Energy

This is a measure of how much “heat” is produced across the spark plug gap to initiate the combustion process of the air/fuel mixture. Spark energy is a product of voltage, current and time with the result being measured in millijoules.it can create 150mj of ignition energy.

### (2) Primary Voltage

This is the maximum amount of voltage that is delivered to the primary terminals of the ignition coil. With a CD ignition this voltage is extremely high because the High Roller steps up and stores this voltage with its transformer and capacitor. DO NOT attempt to check for voltage on the coil terminals with a test light. The primary voltage can reach between 450 and 530 volts.

### (3) Secondary Voltage

This is the potential maximum voltage that the ignition and coil can generate. It is the most common specification used and the most exaggerated. The secondary voltage can reach 47000 volts.

### (4) Spark Duration

The spark duration shown is how long the series of multiple sparks lasts in crankshaft degrees. It is listed this way because the number of sparks that occur decreases as rpm increases. And the spark Duration is within 22 degrees of the crankshaft angle.

# Programming

## Cylinder Select.

High Roller has been programmed to run on 8-cylinder engines. if the ignition device is installed on other types of engines, the number of cylinders need to be selected by ACES

Handheld.

## Rev limiter

High speed RPM’s can be limited from 2000-15000 RPM. To change the RPM Limit, you must remove the black cover next to the LED using the supplied Allen Wrench. If the desired RPM speed is within the range of 2000-9900rpm, you can adjust that setting by turning the knob, the left knob increases the 1000 rpm limit, and the right knob increases the 100 rpm limit. If the RPM is beyond 9900 RPM, via turning the knobs, the left knob increases the 10000 rpm limit, and the right knob increases the 1000 rpm limit.

If the speed is set to 10000 rpm or higher, the left scale is turned to “1”and the right scale is turned to “0”. If the speed is set to 11000 RPM, the left scale is turned to “1” and the right scale is turned to “1”. The engine can be running when adjusting the speed limit function.

If the handheld is used for max rev control, the physical knob Max Rev setting is invalid.

## Run Retard Curve

This timing curve can be programmed from 500 - 15,000 rpm in .1°increments for every 100 rpm. You can program ignition timing under the “PLOTS” tab uses 2D plots. Also, all these points are interpolated every milli-second to create a smooth (no steps) curve.

Note: You MUST lock out Distributor to use Run Curve!

## Prestart check list

● High Roller power wires are directly connected to the positive and negative terminals of the battery.

● Fully charge the battery without connecting to the alternator.

● The engine is equipped with at least one ground strap to the chassis.

● If you use a 4-cylinder or 6-cylinder engine, make sure the cylinder select has been modified by ACES handheld and the change has been saved.

# Troubleshooting

The High Roller ignition system has undergone many durability tests. Under normal circumstances, the problems can be caused by incorrect installation and connection. Please make sure to follow all installation and setup instructions.

## LED

The LED will flash every engine cycle. You can take advantage of this when statically setting the timing when false triggering the box to troubleshoot. Also, when the engine is not running, the LED will be on when the key is in the on position.

## Engine run on

If your engine continues to run even when the ignition is turned off, you are experiencing engine run on. This typically occurs on older vehicles with an external voltage regulator. Because the High Roller receives current directly from the battery, it requires little current to keep the unit energized. If you are experiencing a run-on, it is due to a small amount of voltage going through the charging lamp indicator and feeding the small Red wire even if the key is turned off.

The solution is to connect a diode in series on the wire connecting the charge indicator. **NOTE:** Diodes are used to allow voltage to flow only one way. Make sure the diodes are installed facing the proper direction.

## Misses and intermittent problems

The engine experienced errors and intermittent problems at high speeds. Possible reasons are wrong wiring, faulty coil or plug wire, need to check:

● Always inspect the plug wires at the cap and at the plug for a tight connection and visually inspect for cuts, abrasions or burns.

● Check the primary coil wires connection. **NOTE:** do not touch the coil terminal when the engine is running.

● Check whether the battery is full charged, whether the wiring is clean, and the battery voltage cannot be low than 8V without the generator installed.

● Is the engine running lean? Inspect the spark plugs and the complete fuel system.

● Check all wiring connections for corrosion or damage.

If everything checks positive, please test the ignition for spark.

**High Roller Connector PIN Definition**

| Wire Color | Definition |
|---|---|
| Heavy Red | This wire connects directly to the battery positive terminal or a positive battery junction such as the starter solenoid. Note: Do not connect to the alternator. |
| Heavy Black | This wire connects to a good ground, either at the battery negative terminal or to the engine. |
| Red | This wire is responsible for turning the High Roller on and off. This connects to a switched 12-volt source such as the ignition key or switch. |
| Heavy Orange | This wire connects to the coil positive terminal |
| Heavy Black | This wire connects to the coil negative terminal. |
| White | This wire is used to connect to breaker points, or electronic ignition module. When this wire is used the magnetic pickup connector is not used. |
| Violet and green （Magnetic Pickup Connector) | These wires are routed together in one harness as the magnetic pickup connector. The connector plugs directly into a High Roller distributor, MSD distributor, or crank trigger, or any other aftermarket pickup. The Violet wire is positive, and the Green is negative. When these wires are used, the White wire is not used. |
| Gray | This is the Tach output wire. It connects to the tachometer trigger wire or other rpm activated devices |
| Four Wires White Female Connector | White and Green: Connect to ACES hand-held intelligent status monitoring instrument (connector 2), make the CAN communication between CDI and intelligent status monitoring instrument. |
| | Red and Black: Connect to ACES hand-held intelligent status monitoring instrument (connector 2). They provide 12-volt to intelligent status monitoring instrument |
| Four Wires White Male Connector | Red: reserved not used |
| | White: Step Retard (12V activated) |
| | Black: Burn out Rev Limiter (12V activated) |
| | Green: Launch Rev Limiter (12V activated) |

# Sample Wiring Diagrams

The following illustrates several various installations of High Roller CDI on different applications.

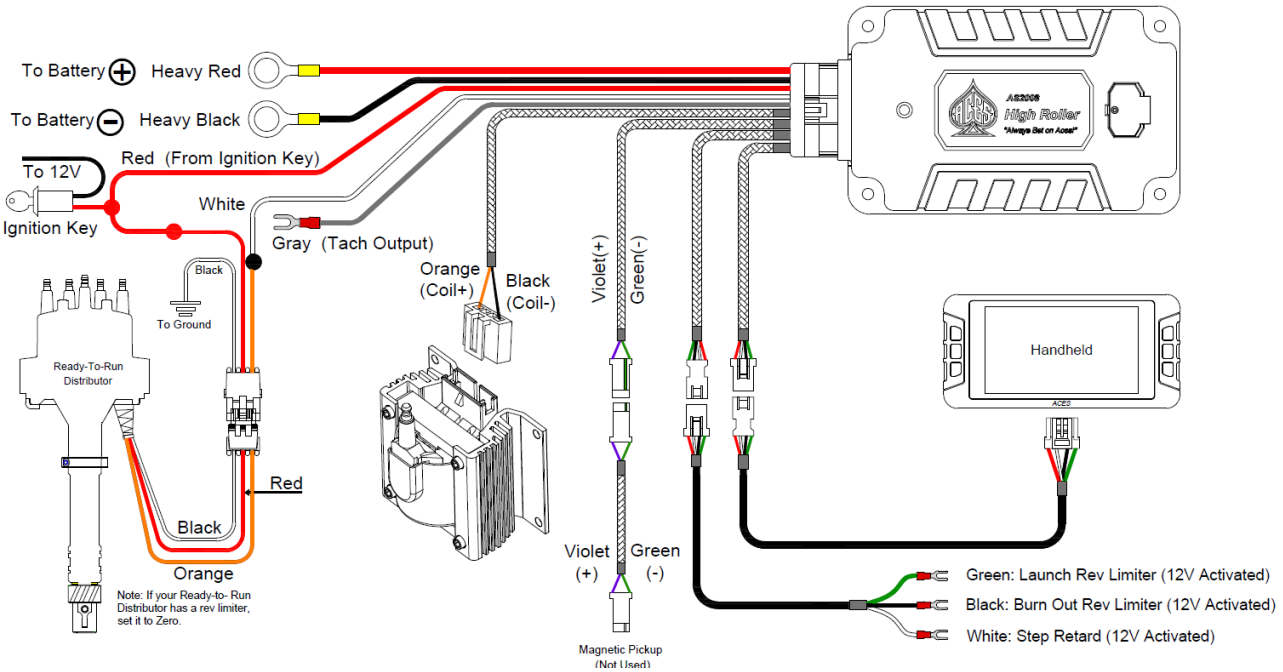



Figure 1 High Roller wiring series using point trigger.

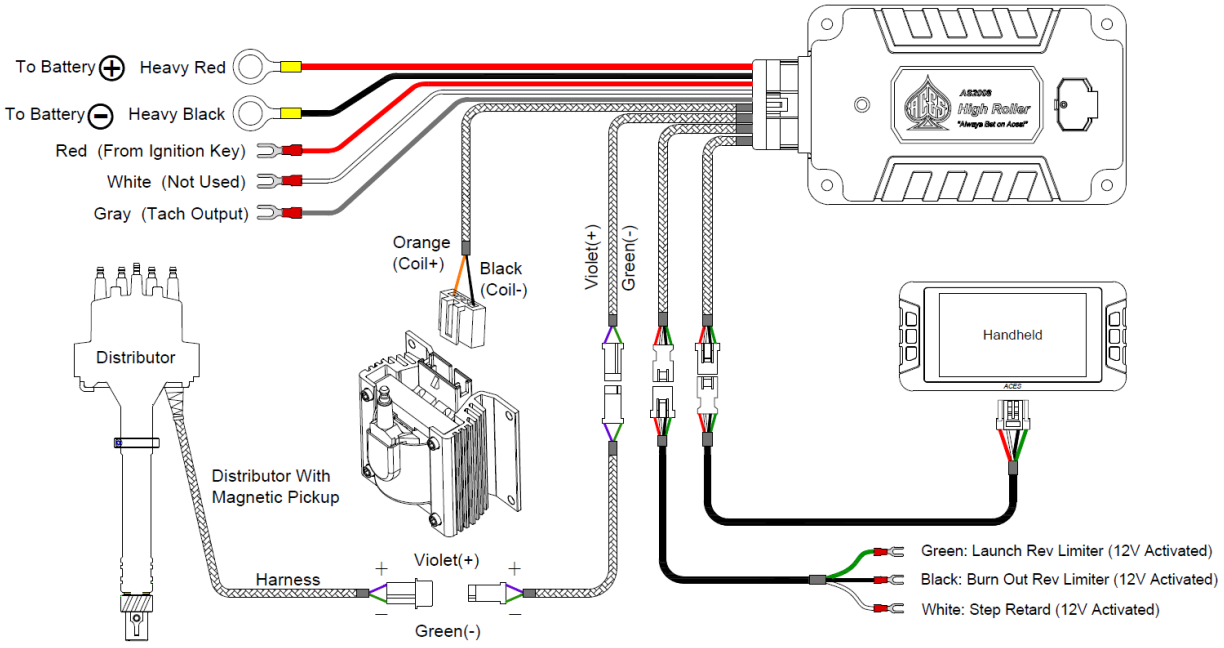



Figure 2 High Roller wiring series using magnetic pickup trigger.

**Limited Warranty**

ACES Fuel Injection warrants this product to be free from defects in material and workmanship under its intended normal use, when properly installed and purchased from an authorized ACES dealer, for a period of one year from the date of the original purchase. This warranty is void for any products purchased through auction websites. If found to be defective as mentioned above, it will be repaired or replaced at the option of ACES Fuel Injection.

This shall constitute the sole remedy of the purchaser and the sole liability of ACES Fuel Injection. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representation whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall ACES Fuel Injection or its suppliers be liable for special or consequential damages.

Intended normal use means that this item is being used as was originally intended and for the original application as sold by ACES Fuel Injection. Any modifications to this item or if it is used on an application other than what ACES Fuel Injection markets the product, the warranty will be void. It is the sole responsibility of the customer to determine that this item will work for the application they are intending. ACES Fuel Injection will accept no liability for custom applications.

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