



INSTALLATION INSTRUCTIONS

MSD Stacker-4 (4-Channel), PN 7010 Stacker-8 (8-Channel), PN 7020

Important: Read these instructions before attempting this installation!

Parts Included:

1 - MSD Stacker Ignition
2 - Ring Lug Faston Terminals

5 - T-Splice Connectors (PN 7010)
10 - T-Splice Connectors (PN 7020)

WARNING: Before installing the MSD Stacker Ignition, disconnect the battery cables. When disconnecting the battery cables, always remove the Negative (-) cable first and install it last.

Notes: Solid Core spark plug wires **cannot** be used with an MSD Ignition.
Vehicles originally equipped with a CD ignition **cannot** use a MSD Stacker Ignition.

THEORY OF OPERATION

THE STACKER ADVANTAGE

The MSD Stacker Ignitions utilize the best characteristics of both the conventional factory inductive ignition and a multiple sparking, capacitive discharge (CD) ignition system. The inductive side of the ignition provides the engine with a long duration spark while the Stackers CD design provides a full power spark with high voltage and energy. The Patented design of the Stacker Ignitions allow the system to run parallel with the stock ignition resulting in simplified installation and compatibility with the rest of the vehicle's electronics.

CAPACITIVE DISCHARGE: The MSD Stacker Ignitions feature a capacitive discharge ignition design. The majority of factory ignition systems are inductive ignitions. In an inductive ignition, the coil must store and step up the voltage to maximum strength in between each firing. At higher rpm, since there is less time to charge the coil to full capacity, the voltage falls short of reaching maximum energy resulting in a loss of power or top end miss. The MSD Stacker Ignitions feature a step up transformer and capacitor which is quickly charged to full power (120 millijoules) in less than one millisecond. This produces a full power spark throughout the entire rpm range of the engine.

MULTIPLE SPARKS: Due to the quick charge time of the Stacker's CD design, they are capable of delivering a series of full power sparks to each spark plug. Under 3,000 rpm, the Stackers deliver a series of sparks that lasts for 20° of crankshaft rotation for each firing of the spark plug. The number of sparks that occur depends on rpm. Above 3,000 rpm there is simply not enough time to fire the spark plug more than once, but there is always one full power spark.

The high output and multiple sparks of the Stacker Ignitions work together with the stock inductive spark to ensure complete combustion of the fuel mixture. Improved combustion results in quick starts, smooth idle, quick throttle response and increased performance.

GENERAL INFORMATION

BATTERY

An MSD Stacker Ignition will operate on any negative ground, 12 volt electrical system. The MSD can be used with a 16 volt battery and can withstand a momentary 24 volts in case of a jump start. The ignition will deliver full voltage with a supply of 10 - 18 volts and will operate with a supply voltage as low as 5 volts.

If your application does not use an alternator, allow at least 15 amp/hour for every half hour of operation. If the engine is cranked with the same battery or other accessories such as an electric fuel pump, fan or water pump are used, the amp/hour rating of the battery must be increased.

COILS

The MSD Stacker Ignitions can be used with stock coils and most aftermarket coils that are designed to replace the stock coils. If you have any questions concerning coils, contact our MSD Customer Service Department at (915) 855-7123.

TACHOMETERS/FUEL INJECTION

The MSD Stacker Series Ignitions are designed to work with all factory or aftermarket tachometers and fuel injection systems. No additional adapters are required.

SPARK PLUGS AND WIRES

Spark plug wires are very important to the operation of the Stacker Series Ignition. A good quality, helically wound wire and proper routing are required to obtain the best performance from the Stacker ignition. MSD recommends using a helically wound suppression type wire such as the MSD 8mm Heli-Core or 8.5mm Super Conductor Spark Plug Wire.

This type of wire provides a good path for the spark to follow while keeping Electro Magnetic Interference (EMI) to a minimum. Excessive EMI, such as the amount that is produced by solid core spark plug wires, will interfere with the operation of the MSD.

Note: Solid Core spark plug wires cannot be used with any MSD Ignition.

Routing: Correct routing of the plug wires is also important to performance. Wires should be routed away from sharp edges and engine heat sources. If there are two wires that are next to each other, the wires should be routed away from each other to avoid inducing a spark into the other wire.

To add more heat protection to the wires, MSD offers Pro Heat Guard, PN 3411. This is a glass woven and silicone coated protective sleeve that can be slid over the plug wires. For extra protection of the spark plug boots, MSD also offers Pro-Heat Boot Guard, PN 3412.

Spark Plugs: Choosing the correct spark plug design and heat range is important when trying to get the best performance possible. Since there are so many engine combinations and manufacturers, MSD does not recommend which plug or gap is exactly right for your application. MSD suggests that you 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 obtained.

MISCELLANEOUS INFORMATION

Welding: If you plan on welding on your vehicle, to avoid possible damage to the ignition, always disconnect the ground wire of the Stacker.

Initial Spark: It is normal, yet not very common, for the MSD to produce a spark when the ignition key is turned On. This is due to the capacitor being charged and the distributor pickup being in the correct position to trigger the ignition to fire. This could also occur when installing the positive battery cable.

MOUNTING

The MSD Stacker Ignition may be mounted in any location except on the engine or near the exhaust manifold. Excessive heat at these locations may cause damage to the ignition. It can be mounted in all positions, though it is not recommended to mount the unit in an enclosed area such as the glovebox. When selecting a mounting location, make sure the cable harness will reach the battery and coil assembly. When a suitable location is found, hold the ignition in place and mark the location of the mounting holes. Using a 1/8" drill bit, drill a hole in each of the locations marked. Use the supplied self tapping screws to mount the ignition unit.

WIRING

Wire Length: All of the wires of the MSD Stacker Ignition may be shortened as long as quality connectors are used or soldered in place. To lengthen the wires, use one size bigger gauge wire with proper connections. All connections must be soldered and sealed.

Grounds: A poor ground connection can cause many frustrating problems. When a wire is specified to go to ground, it should be connected to the battery negative terminal, engine block or chassis. There should always be a ground strap between the engine and the chassis. Always securely connect the ground wire to a clean, paint free metal surface.

ROUTING WIRES

The MSD Stacker Ignition wires should be routed away from direct heat such as the exhaust manifolds/headers and any sharp edges. The trigger wires should be routed separate from the other wires and spark plug wires. It is best if they are routed along a ground plane such as the block or firewall which creates an electrical shield.

WIRE FUNCTIONS

Power Leads	These are the Red and Black wires (14 gauge) and are responsible for getting direct battery voltage to the ignition. The ignition has an internal fuse so no fuse is necessary.
Red(14 Gauge)	This wire connects to the battery positive (+) terminal.
Black(14 Gauge)	This wire connects to a good ground, either at the battery negative (-) terminal or to the engine.
Red(18 Gauge)	This wire turns the Stacker On and needs to be connected to a switched 12 volt source. A coil positive (+) wire may be spliced in to.
Orange Wires Trigger/Output	These are the trigger/high voltage wires. There are four on the Stacker-4 and eight on the Stacker-8. Each Orange wire represents a channel on the ignition. An Orange wire must be connected to the coil negative (-) wire of each coil or coil pack. Use the supplied Blue tab splice connectors as shown in Figure 1. Note: If your application does not use all of the Orange wires (or channels), the remaining Orange wires must be connected to an active channel.

Refer to pages 5 -12 for specific vehicle diagrams.

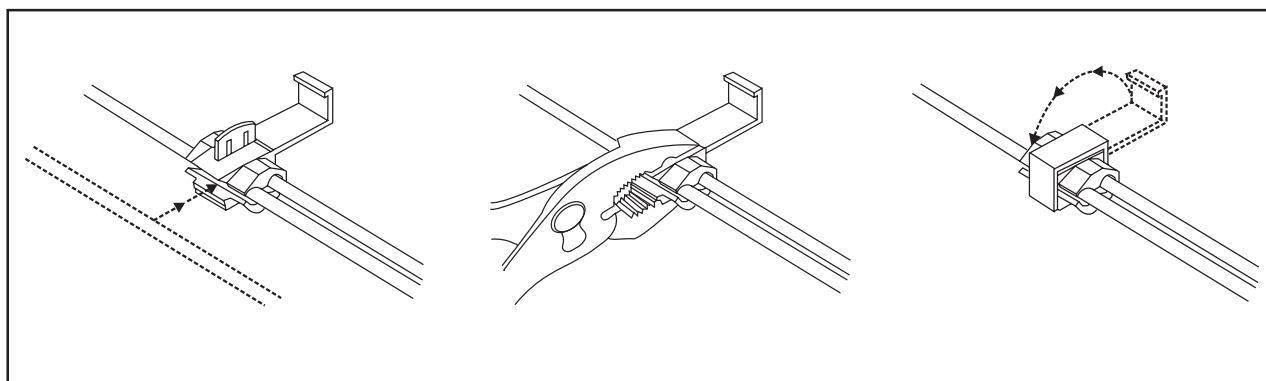


Figure 1 Using Splice Connectors.

WARNING: The MSD Stacker Ignition is a capacitive discharge ignition. High voltage is present at the coil primary terminals. Do not touch the coil or connect test equipment to the terminals.

PRESTART CHECK LIST

- The Heavy Black wire of the MSD is connected to the battery negative (-) terminal or engine ground.
- The Heavy Red wire of the MSD is connected to the battery positive (+) terminal.
- The Orange wires are connected to the negative (-) wire of each coil.
- The smaller Red wire is connected to a switched 12 volt source.
- The battery is connected and fully charged if not using an alternator.
- The engine is equipped with at least one ground strap to the chassis.
- If a channel is not used, the corresponding Orange wire is connected to an active Orange wire.

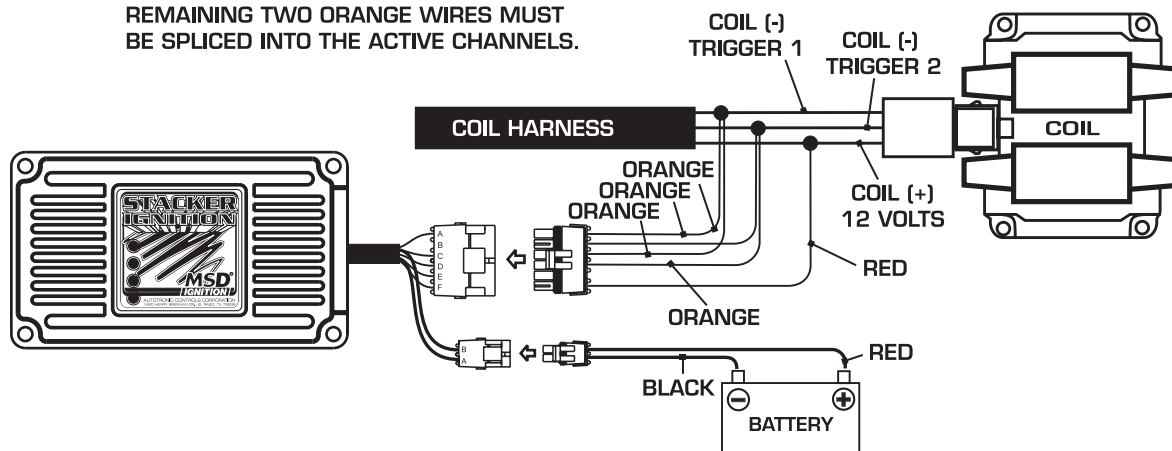
WIRING DIAGRAMS

The following wiring diagrams illustrate numerous installations on different vehicles and applications. If you experience difficulties when installing your MSD Stacker Ignition, contact our Customer Service Department at (915) 855-7123 Monday - Friday, 8am - 5pm mountain time or e-mail us at: msdtech@msdignition.com

MSD STACKER, PN 7010

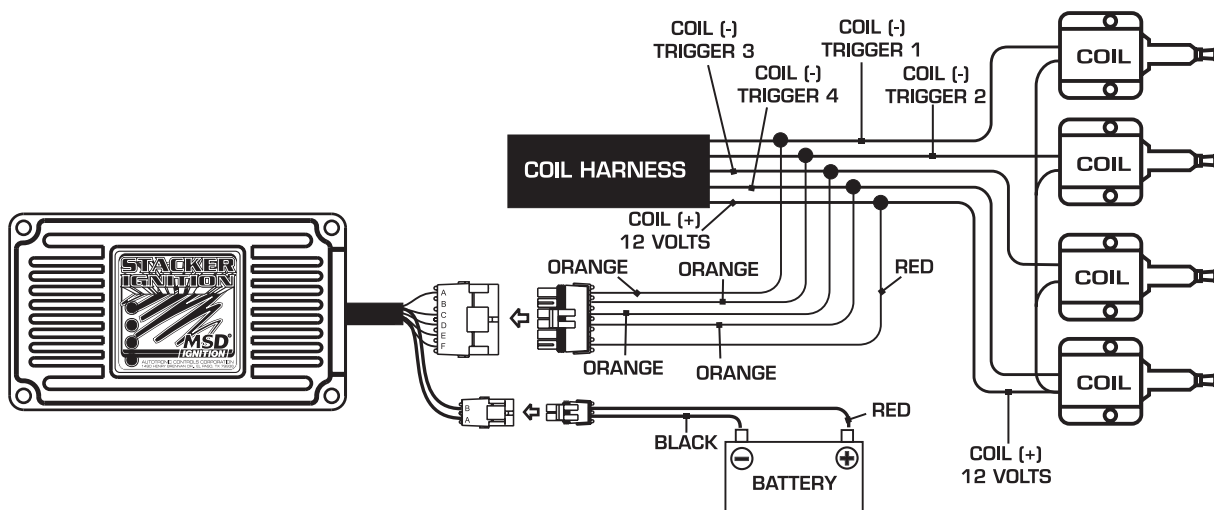
Installing to 4 Cyl. with Coil Pack Ignition

NOTE: ONLY TWO CHANNELS ARE USED SO THE REMAINING TWO ORANGE WIRES MUST BE SPLICED INTO THE ACTIVE CHANNELS.



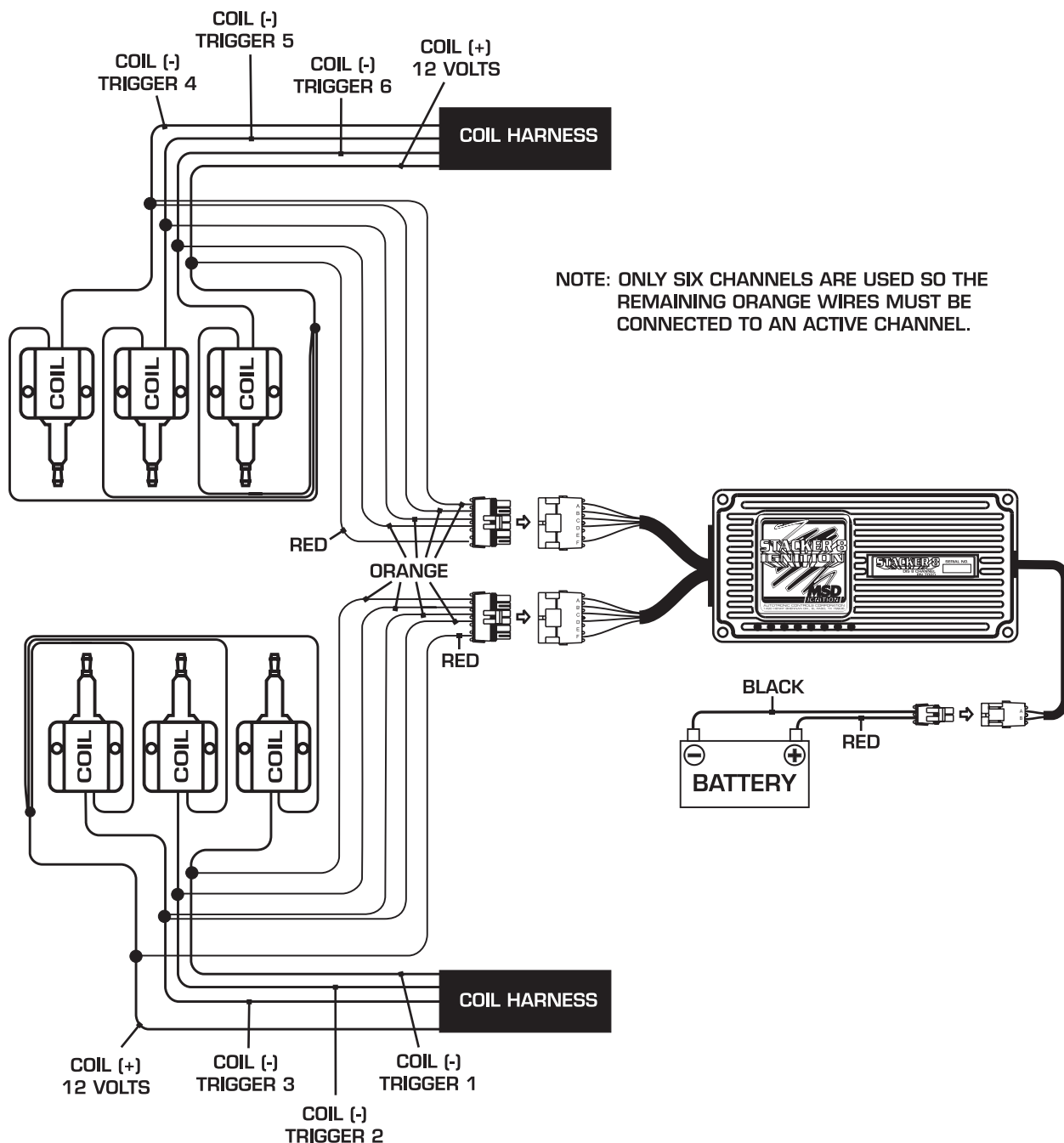
MSD STACKER, PN 7010

Installing to 4 Cyl. with Coil on Plug Ignition



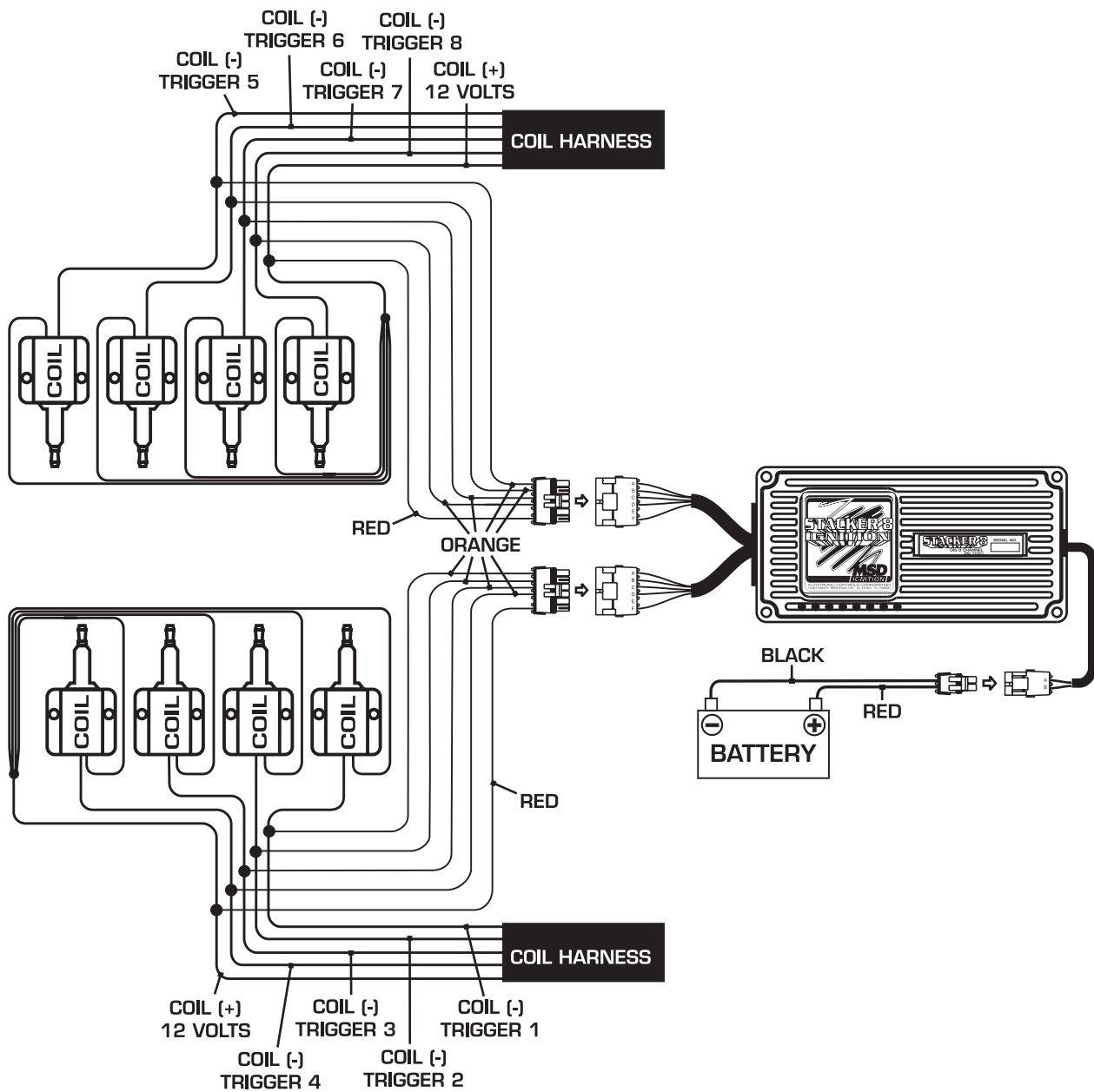
MSD STACKER, PN 7020

Installing to 6 Cyl. with Coil Per Cylinder Ignition



MSD STACKER, PN 7020

Installing to 8 Cyl. with Coil Per Cylinder Ignition

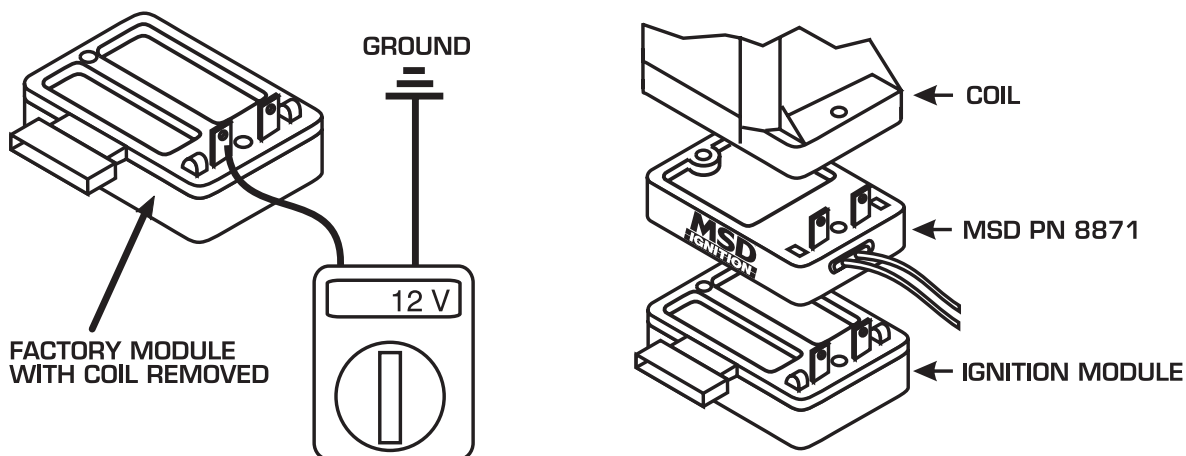


Using an MSD Interface Coil, PN 8871, to install a Stacker Ignition

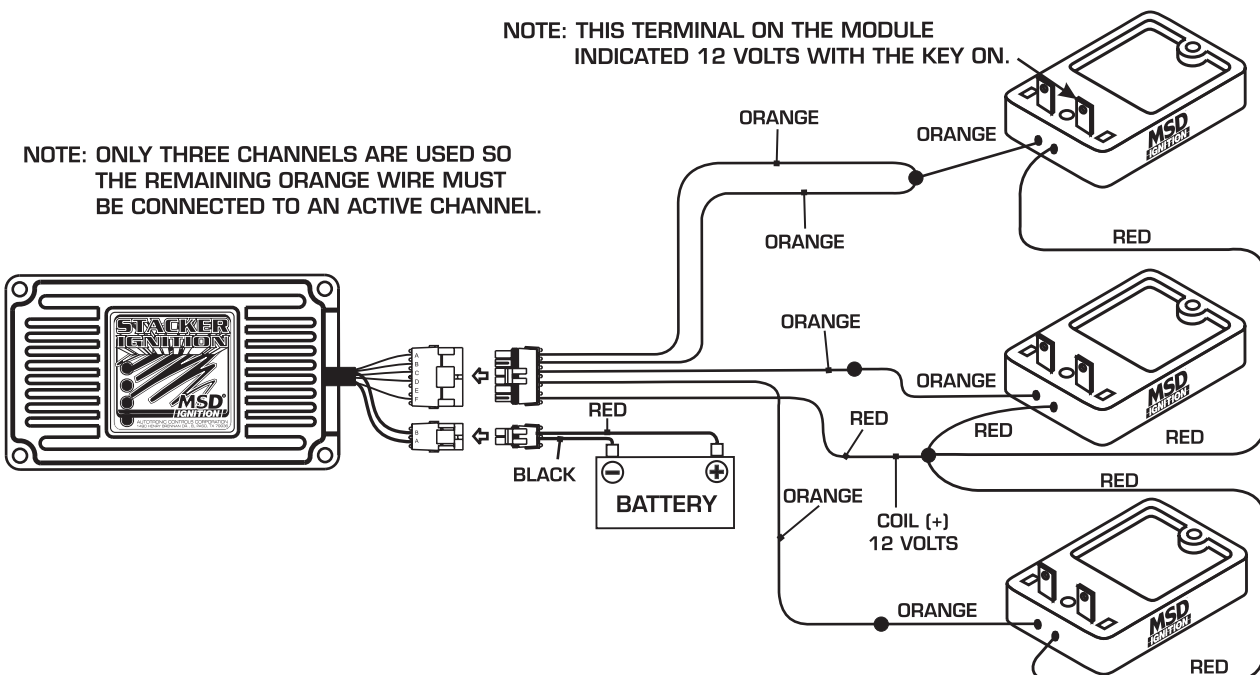
For GM vehicles with twin tower coil packs, MSD offers an Interface Module, PN 8871. These Interface Modules mount between the Coil and the factory Ignition Module so you can easily splice into each coil's primary wiring.

Factory ignition modules are not consistent in which terminal of the ignition module is the Coil (+) terminal or Coil(-). In order to properly connect the Stacker Ignition you need to confirm which terminal supplies 12 volts. To do this, a volt meter is required.

To determine which terminal is the Coil + (12 volts) remove the coil from the module and connect the volt meter to one of the terminals and ground (See the Figure at the left) with the ignition turned On. Some applications may require cranking the engine momentarily to see 12 volts. If 12 volts are not present, try the other terminal.



MSD STACKER, PN 7020 Installing to GM 6 Cyl. using Coil Interface, PN 8871



TROUBLESHOOTING

Every MSD Stacker Ignition undergoes numerous quality control checks including a burn-in test period. If you experience a problem with your MSD, our research has shown that the majority of problems are due to improper installation or poor connections.

The Troubleshooting section has several checks and tests you can perform to ensure proper installation and operation of the MSD. If you have any questions concerning your MSD, call our Customer Service Department at (915) 855-7123, Monday - Friday, 8am to 5pm mountain time.

MISSES AND INTERMITTENT PROBLEMS

Generally, a miss or hesitation at higher rpm is usually not caused by the ignition. Most probable causes include a coil or plug wire failure, arcing from the plug boot to ground. Several areas to inspect are:

- Always inspect the plug wires at the coil and plug for a tight connection and visually inspect for cuts, abrasions or burns.
- Inspect the positive (+) and negative (-) coil wire splice connections. Because the MSD is a Capacitive Discharge ignition and it receives a direct 12 volt source directly from the battery, during cranking or while the engine is running, very high voltage will be present at the coil. **Do not** connect any test equipment to the coil positive (+) or negative (-) terminals.

WARNING: Do not touch the coil terminals during cranking or while the engine is running.

- Make sure that the battery is fully charged and the connections are clean and tight. If you are not running an alternator this is an essential check. If the battery voltage falls below 10 volts during operation, the MSD output voltage will drop.
- Is the engine running lean? Inspect the spark plugs and complete fuel system.
- Inspect all wiring connections for corrosion or damage. Remember to always use proper connections followed by soldering and seal the connections completely.

If everything checks out, use the following procedure to test the ignition for spark.

General Troubleshooting Procedure

1. Make sure the ignition switch is in the "Off" position.
2. Inspect the Heavy Red and Black wire of the MSD Stacker Ignition. Red should be connected to the battery positive terminal while the Black should be connected to the battery negative or engine ground. If either connection is corroded, remove the terminal and clean the contact area thoroughly.
3. Inspect the small Red wire from the MSD Stacker Ignition to ensure that it is receiving the 12 volt supply from the coil positive wire. Check the splice connection and clean or replace if necessary.
4. Inspect each Orange wire from the MSD Stacker Ignition to ensure that it is spliced into the coil negative (-) wire. Check the splice connection and clean or replace if necessary.

Troubleshooting Procedure with the vehicle running.

The MSD Stacker Ignitions are equipped with an LED monitor for each trigger wire. When the vehicle is running, each LED should be illuminated. This indicates that each channel is receiving a trigger signal. If any of the LED's are not illuminated while the engine is running, one of the channels is not receiving a trigger signal. Note that the LEDs will not illuminate in order. Since the orange wires are not listed in a firing order, the LEDs may not flash in order.

To identify which channel is not operating, turn the engine off and disconnect one of the Orange wires then start the engine. Every time an Orange wire is disconnected one of the LED's should turn off indicating a functioning channel. Continue this procedure until the same LED **does not illuminate**. This identifies which channel is not receiving a trigger signal. At this point you can check the splice connection to the coil (-) wire. If the connection is good, the problem is in the ignition unit.

TECH NOTES

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface.

The repaired unit will be returned as soon as possible after receipt, COD for any charges. (Ground shipping is covered by warranty). All units are returned regular UPS unless otherwise noted. For more information, call the MSD Customer Service Line (915) 855-7123. MSD technicians are available from 8:00 a.m. to 5:00 p.m. Monday - Friday (mountain time).

Autotronic Controls Corporation warrants MSD Ignition products to be free from defects in material and workmanship under normal use and if properly installed for a period of one year from date of purchase. If found to be defective as mentioned above, it will be replaced or repaired if returned prepaid along with proof of date of purchase. This shall constitute the sole remedy of the purchaser and the sole liability of Autotronic Controls Corporation. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall Autotronic Controls Corporation be liable for special or consequential damages.