

INSTALLATION INSTRUCTIONS

MSD MOTORCYCLE IGNITION MC 1 PART NO. 4210

PARTS INCLUDED IN THIS KIT

- 1 - MSD MOTORCYCLE IGNITION CONTROL UNIT
- 1 - MOTORCYCLE CABLE ASSEMBLY - PN 4211
- 3 - RPM MODULES (10,000, 11,000, 12,000 RPM)
- 4 - VIBRATION MOUNTS WITH HARDWARE - PN 8823
- 1 - FEMALE FASTON TERMINAL
- 2 - RING LUG TERMINALS
- 1 - INSTRUCTION MANUAL

!!! WARNING !!!

DUE TO THE HIGH VOLTAGES PRESENT WITH THIS SYSTEM, SPECIAL SAFETY PRECAUTIONS MUST BE OBSERVED TO PREVENT ELECTRICAL SHOCK DURING INSTALLATION AND OPERATION.

DO NOT TOUCH OR CONNECT ANY TEST EQUIPMENT, ACCESSORIES, ETC. TO THE COIL TERMINALS. HIGH VOLTAGE WILL BE PRESENT.

THE MSD MOTORCYCLE IGNITION IS INTENDED FOR USE ON ONE, TWO OR FOUR CYLINDER ENGINES USING ONE OR TWO COILS. THE MSD MAY RECEIVE THE TRIGGER SIGNAL FROM A CONVENTIONAL POINTS SYSTEM OR FROM THE AMPLIFIER OF AN ELECTRONIC BREAKERLESS SYSTEM. CAPACITIVE DISCHARGE UNITS CAN NOT BE USED TO TRIGGER THE MSD.

The MSD Motorcycle Ignition is designed and manufactured to be the best ignition available. Only the highest quality components and materials are used. Each unit is heat cycled and thoroughly tested before final inspection to insure trouble free performance.

STEP 1: MOUNT THE IGNITION CONTROL UNIT

The MSD Ignition control unit may be mounted in any position and in any location except on the engine or within one inch of the exhaust pipes. Either location may cause excessive heating of the unit. The suggested location is ahead of the engine at the top of the down tubes. Make sure the mounting location you have chosen does not interfere with normal operation of the motorcycle.

STEP 2: MOUNT COILS

The MSD Motorcycle Ignition will work with the factory coils or most aftermarket coils. Where maximum ignition output is needed, MSD coils are recommended. These coils are larger than most factory coils so more space must be available to mount them. MSD coils may be mounted in any position and in any location except within one inch of the exhaust pipes.

STEP 3: MAKE ALL WIRE CONNECTIONS

Before disconnecting any wires, determine if your ignition system has 1 or 2 coils, points or electronic ignition. Select the diagrams that apply to your motorcycle's ignition system. The first diagram will describe your system before the MSD installation. The second will describe your system after the installation. Inspect your motorcycle and write in the space available on the first diagram the colors of the wires that are represented by letters. Use this information to convert the letters on the second diagram to colors. Connect the wire colors as indicated. Use crimp-on terminals or solder all connections.

MOST OF THE CONNECTIONS WILL BE DONE AT THE COIL.

COLOR-CODE MSD IGNITION CONTROL UNIT

Switched

Input Voltage- Gray wire connects to the switched 12 volt side of the ignition switch. This wire carries little current and is used to switch off and on the input voltage (Red wire).

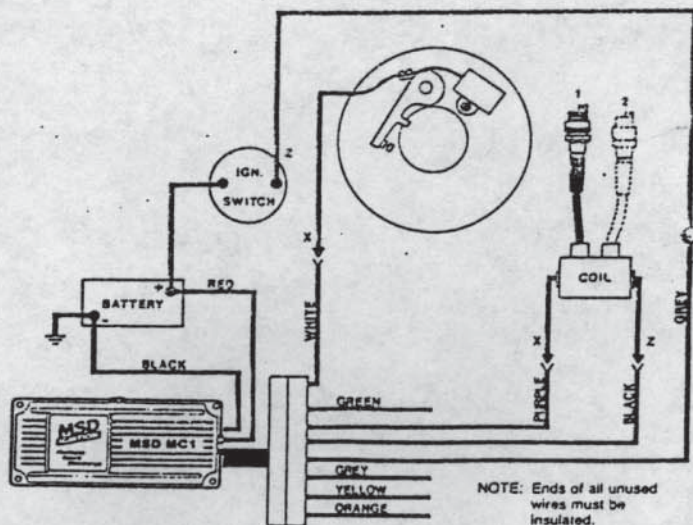
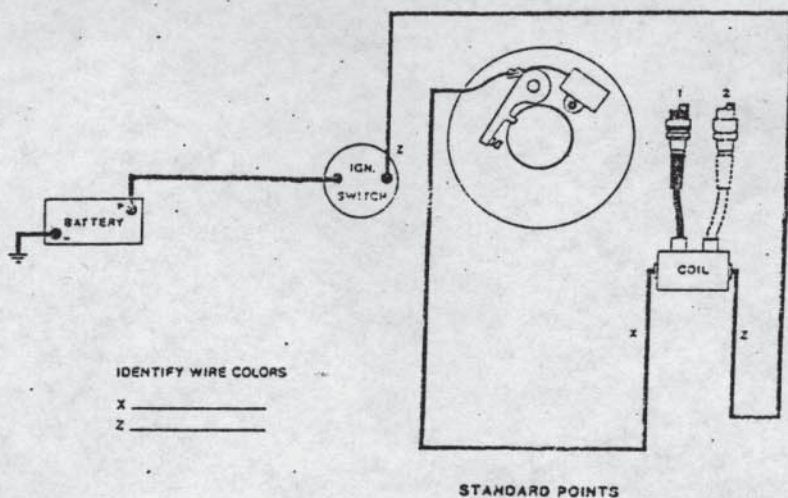
Input voltage- Red wire connects directly to the battery or battery side of the starter solenoid. This wire carries the current that powers the system. The current is switched off and on electronically within the control unit. Even though this wire is attached directly to the battery, there is no current draw when the switched input voltage is off.

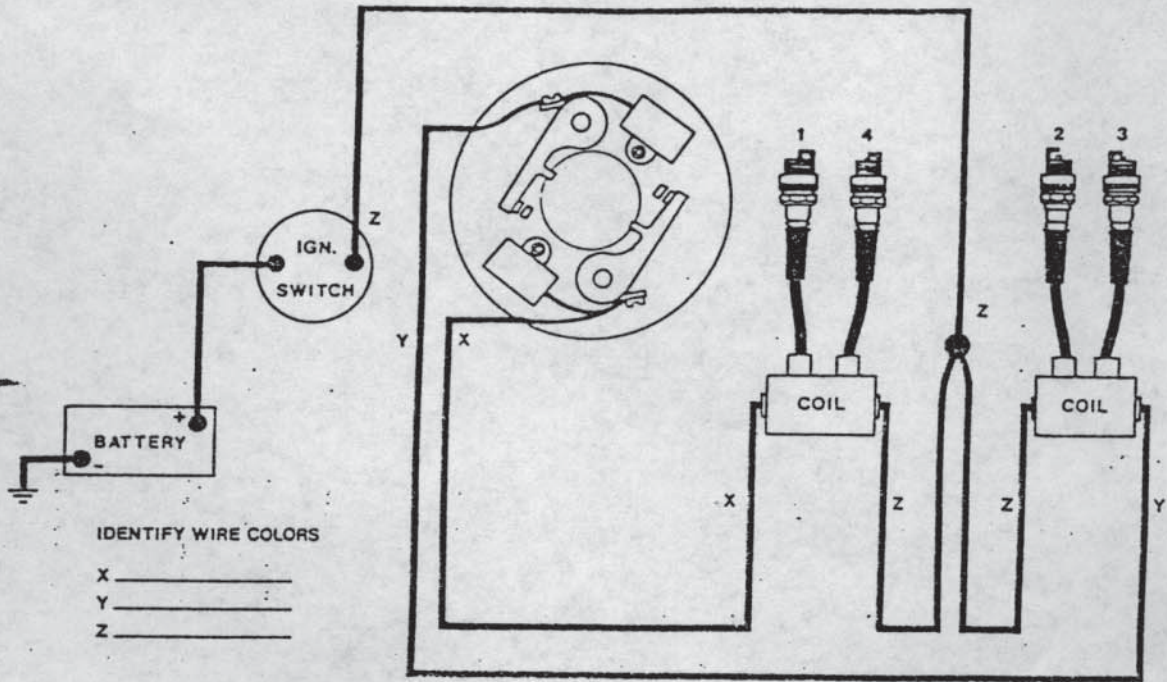
Ground- Black wire connects to the battery negative terminal or engine cases. Avoid the frame or other uncertain grounds. Make sure this connection is free of dirt or paint.

Output (pairs)- Purple-Black pair connects to the coil for cylinders 1-4. Purple wire to coil wire 'X' (see wire diagram). Black wire to coil wire 'Z'. Orange-Yellow pair connects to the coil for cylinders 2-3. Orange wire to coil wire 'Y' (see wire diagram). Yellow wire to coil wire 'Z'.

Input- White wire connects to the 'X' trigger wire from the points or electronic amplifier. Green wire connects to the 'Y' trigger wire from the points or electronic amplifier.

Note: For all single coil installations, the green, yellow, orange and one of the grey wires will not be used (see diagram below). Make sure the ends of all unused wires are insulated.

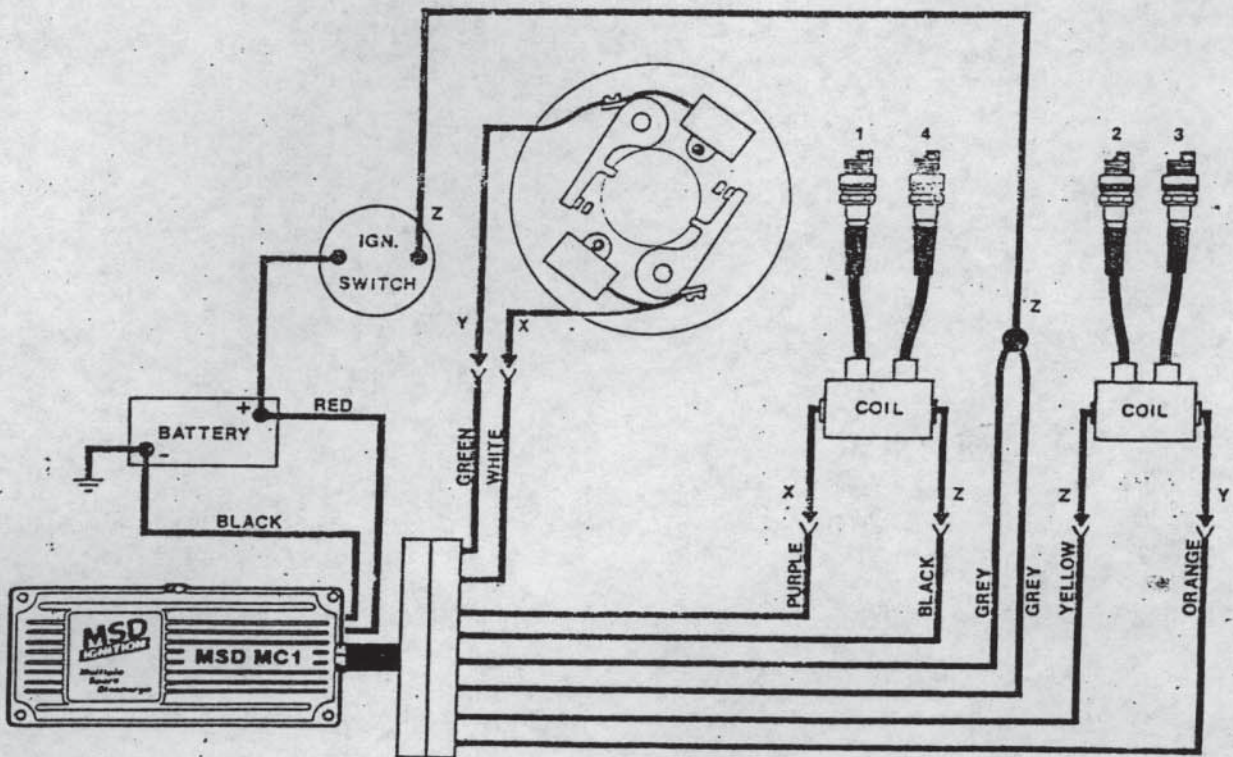




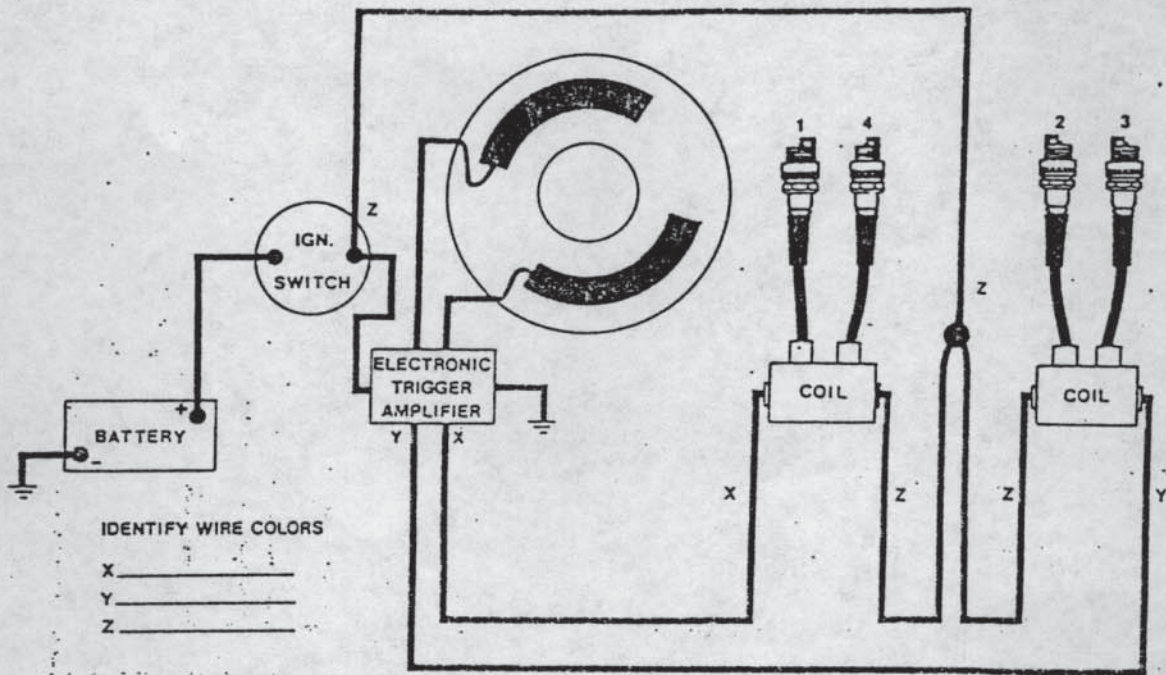
IDENTIFY WIRE COLORS

- X _____
- Y _____
- Z _____

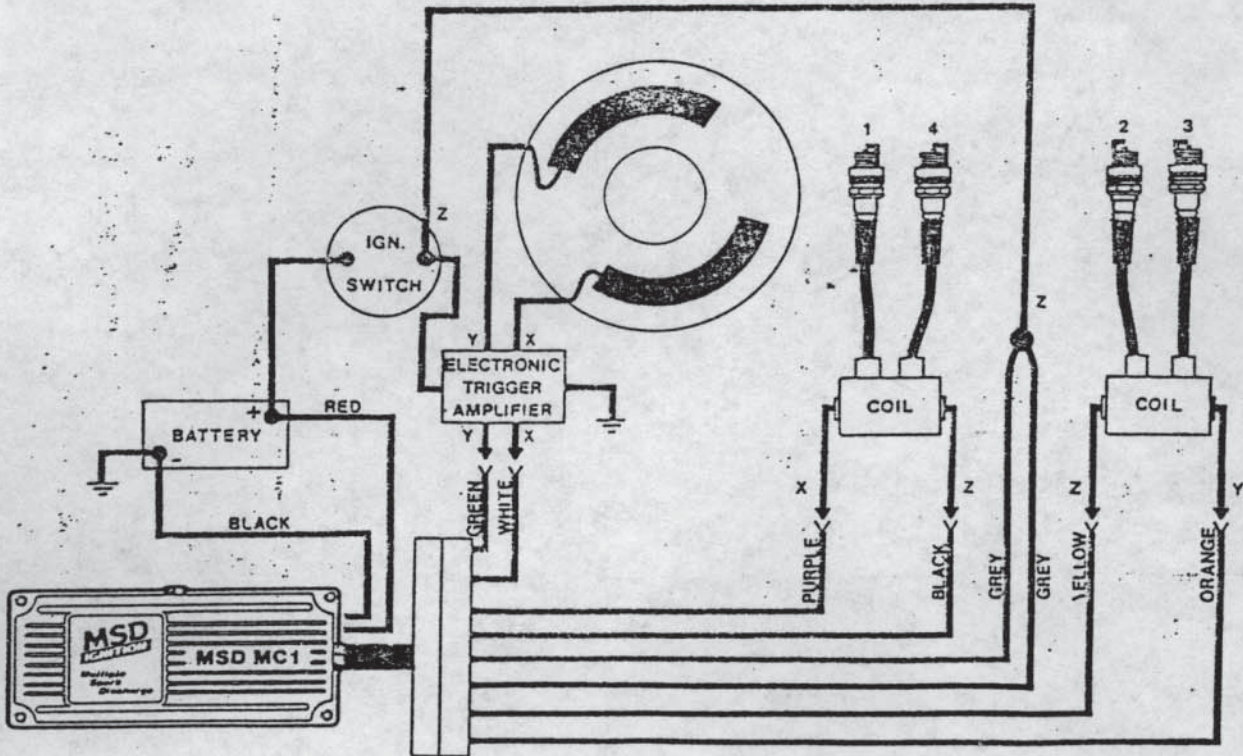
STANDARD POINTS



MSD WITH POINTS INSTALLATION



STANDARD ELECTRONIC TRIGGER



MSD WITH ELECTRONIC AMPLIFIER TRIGGER

CHECK LIST

1. All wires originally on the coil positive terminals are now wired to the MSD Grey wires.
2. All wires originally on the coil negative terminals are now wired to the MSD Green or White wires.
3. The **ONLY WIRES** on the coils are Purple-Black and-Orange-Yellow. **DO NOT** hook any other wires to the coil for any reason.
4. The Gray wires are wired to a **SWITCHED** 12 volt source, allowing the unit to be turned on/shut off by the ignition switch.

RETURNING YOUR IGNITION TO STANDARD OPERATION

To return your ignition to standard operation, simply unplug the MSD Motorcycle Ignition control unit cable and insert the jumper plug into the cable connector. When using high performance or other low resistance coils a ballast resistor of 1.5 ohms must be used when the system is returned to standard operation. Operation without the ballast resistor could cause damage to the ignition or to the coils themselves.

NOTE: If special situations require you to operate the motorcycle without a battery, unplug the ignition control cable and return to standard operation. Operating without a battery could cause severe damage to the MSD Ignition.

BATTERY

The battery is a very important part of the electrical system and should be selected carefully. A **MINIMUM** battery should be one rated at no less than 10 amp/hours whether you have a charging system or not. If you do not have a charging system, allow at least 9 amp/hours per each ½ hour of MSD use. If accessories increase the battery load, the rating should be increased accordingly.

In all cases, to insure adequate running time, the battery should begin with a **FULL CHARGE**. A fully charged battery will indicate 13.6V, and will not drop below 8V when cranking the engine.

Never start or run the engine while a battery charger is connected, as potentially damaging high voltage spikes are produced by some chargers. It is **NOT** necessary to disconnect the MSD when charging the battery, as long as the engine is off.

COILS

The MSD Motorcycle Ignition will work with the factory coils or most aftermarket coils. If using aftermarket coils other than MSD, better spark energy is realized if lower resistance (1.5 ohm) coils are used. However, for maximum ignition output, the MSD Motorcycle Coil PN 8204 is recommended.

This coil is designed for use where the ultimate output is needed from the MSD Motorcycle Ignition. It has less resistance and a high turns ratio to match the full capability of this ignition. Deep, widely spaced high tension terminals use standard spark plug wires. These coils are larger than most factory coils so more space must be available to mount them.

SPARK PLUGS

Wide spark plug gaps expose more energy to the air/fuel mixture in the combustion chamber; the result is more predictable ignition and better performance. MSD's extra energy allows spark plug gaps of .045". For wider gaps, the MSD Motorcycle Coil, PN 8204, is recommended.

SPARK PLUG WIRES

It is recommended that *only a magnetic suppression* type of spark plug wire be used with the MC1 Ignition Control. **DO NOT USE SOLID CORE PLUG WIRES!** Magnetic suppression wires suppress the radio frequency interference (RFI) emitted by solid core plug wires. If not suppressed, this RFI will interfere with any electronic component on the bike. MSD Heli-Core Spark Plug Wire is available from your MSD Ignition dealer, and will suppress the RFI while at the same time delivering maximum spark energy to the plugs.

CYLINDER-SELECT DEVICE

The MSD MC1 is set for 4 cylinder operation at the factory. Remove the phillips screw on the cover of the Cylinder-Select Device to set the unit for 1 or 2 cylinder operation (see Figure 1).

The Cylinder-Select Device has a Red and a Blue wire loop. These wire loops are used for programming the unit for the correct number of cylinder operation. Modify the loops as described below for the number of cylinders your engine has.

- 4 cylinder: Do not cut any loops
- 2 cylinder: Cut only the Red loop
- 1 cylinder: Cut both the Red and Blue loops

Turn one end of the cut wire away from the other so that they do not short out to each other. Be sure to reinstall the cap onto the Cylinder-Select Device (see Figure 2).

NOTE: The MC1 is programmed for four stroke applications. For two stroke applications, take the actual number of cylinders, multiply it by two, and program the Cylinder-Select Device according to the figure you come up with. Example: single cylinder two stroke; $1 \times 2 = 2$. Program the MC1 for 2 cylinder operation.

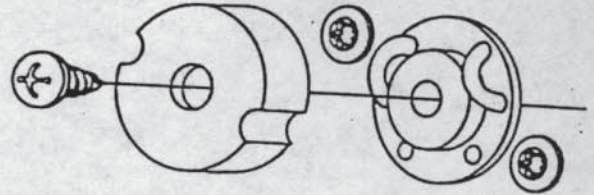


Figure 1

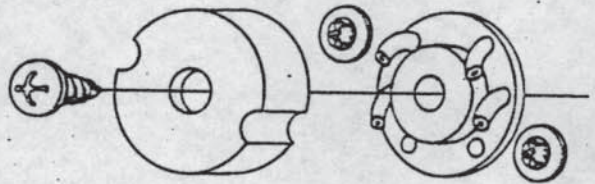


Figure 2

RPM LIMITER OPERATION

The MSD MC1 has a built-in RPM Limiter. The RPM at which the limiter will limit is programmed by plug-in RPM Limit Modules. Modules for 10,000, 11,000, and 12,000 RPM are supplied with the unit. Other RPM modules are available separately in RPM Module Kits. Each RPM Module Kit provides 5 modules within a range of 1000 rpm.

RPM Module Kit, 3000, 3200, 3400, 3600, 3800	PN 8743
RPM Module Kit, 4000, 4200, 4400, 4600, 4800	PN 8744
RPM Module Kit, 5000, 5200, 5400, 5600, 5800	PN 8745
RPM Module Kit, 6000, 6200, 6400, 6600, 6800	PN 8746
RPM Module Kit, 7000, 7200, 7400, 7600, 7800	PN 8747
RPM Module Kit, 8000, 8200, 8400, 8600, 8800	PN 8748
RPM Module Kit, 9000, 9200, 9400, 9600, 9800	PN 8749
RPM Module Kit, 10,000, 10,200, 10,400, 10,600, 10,800	PN 8750
RPM Module Kit, 11,000, 11,200, 11,400, 11,600, 11,800	PN 8751
RPM Module Kit, 12,000, 12,200, 12,400, 12,600, 12,800	PN 8752
RPM Module Kit, 13,000, 13,200, 13,400, 13,600, 13,800	PN 8753

IF NO RPM LIMIT MODULE IS USED, THE RPM WILL NOT BE LIMITED.

Plug the appropriate module into the two pin jack on the side of the ignition housing. Remember that NO MODULE MEANS NO RPM LIMITING.

TACHOMETER OUTPUT TERMINAL

The MC1 Ignition Control has a built-in tachometer output terminal. This tachometer output terminal will directly drive many models of tachometers. This output combines both input signals from either your points or electronic ignition amplifier into one signal. For this reason, some tachometers may read double when wired to this terminal. Wire your tachometer to the terminal to see if it will read correctly (use faston terminal supplied). If the RPM indicated by the tachometer doubles from its normal reading, then simply unhook it from the tachometer output terminal and splice it into either the White or Green wire of the MC1 Ignition Control.

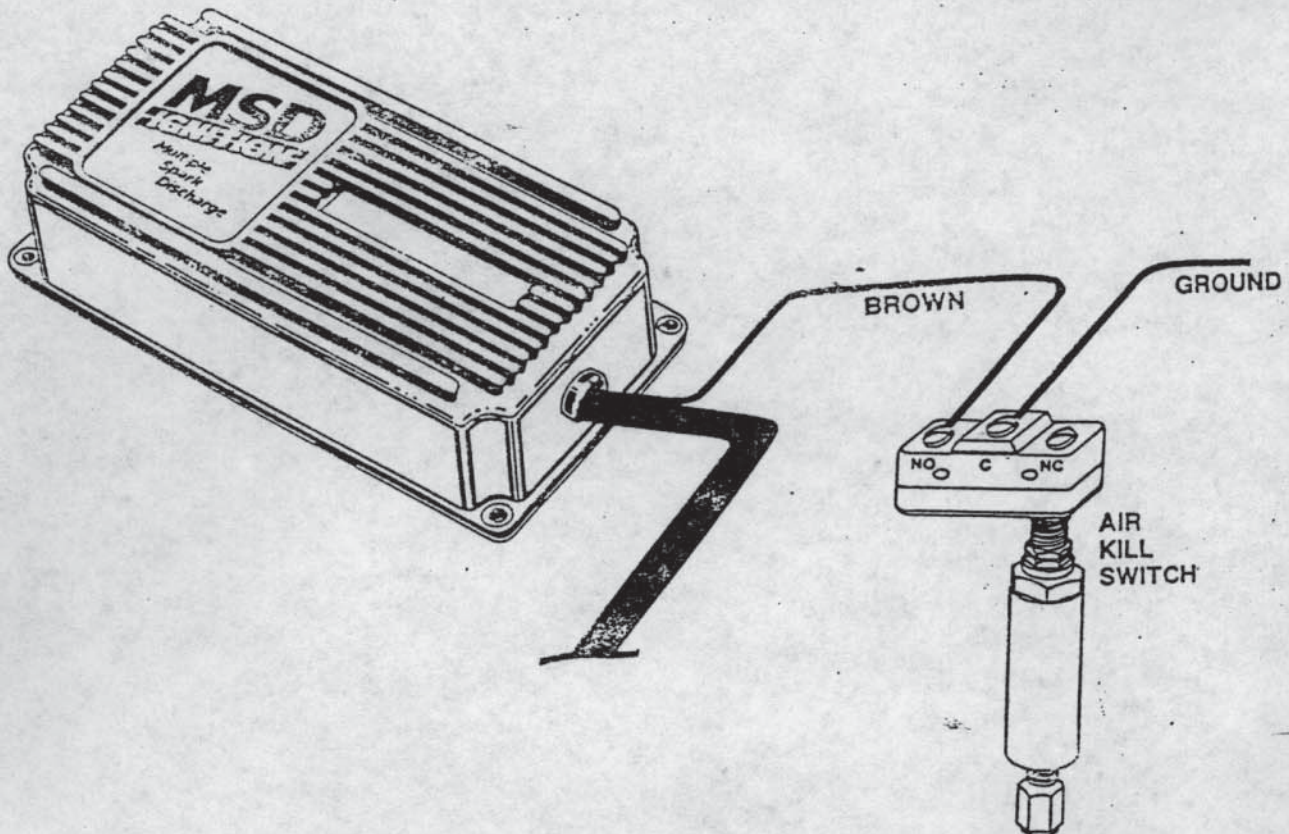
AIR SHIFT IGNITION 'KILL' FEATURE

The MSD MC1 Motorcycle Ignition has a special Air Shift Ignition 'Kill' feature incorporated into it. This ignition 'kill' will interrupt the ignition output, thereby unloading the transmission and allowing the shift to occur.

This special feature is different than the normal ignition 'kill' which simply interrupts the power to the coils, causing a spark at the time of the 'kill', regardless of timing, resulting in undesirable backfires through the exhaust or carburetors. However, with the MSD MC1 Air Shift Ignition 'Kill', only the output section of the ignition control is shutdown, allowing all timing functions within the timing section of the ignition control to keep occurring at the proper time. This insures that no backfires will occur because of a mistimed spark.

WIRING THE AIR SHIFT IGNITION 'KILL'

To wire the MC1 Air Shift Ignition 'Kill' to your motorcycle, simply run the MSD Brown wire to the Normally Open (NO) terminal on your Air Shift 'Kill' Switch (use ring lug terminal supplied). Wire the Common (C) terminal of the Air Shift 'Kill' Switch to Ground (use ring lug terminal supplied). To insure this is a good Ground, Ground it at the motor, battery negative, or case of the MSD MC1 Ignition Control. See the diagram below. If the Air Shift Ignition 'Kill' will not be used on your bike, then simply tape the end of the Brown wire to prevent it from shorting to ground.



SPECIFICATIONS

OPERATING VOLTAGE	+ 12 VDC
CURRENT REQUIREMENTS	3A to 3,000 RPM 6A at 12,000 RPM
MAX. RPM-FULL POWER	15,000 RPM (4 cyl.) 30,000 RPM (2 cyl.)
MULTI-SPARK DURATION	35° (4 cyl) 70° (2 cyl)
MAXIMUM ENERGY OUTPUT	600 Millijoules
TEMPERATURE RANGE	-40° to 200°F
WEIGHT	3 lbs.
DIMENSIONS	8"L x 3½" x 2¼"H
TRIGGER REQUIREMENTS	Points or amplifier module 4 volts min. 1/3A points current
VOLTAGE OUTPUT	Primary- 400 volts Secondary (open circuit)- 30KV- stock coil/ 40KV plus- MSD coil

U.S. PATENT 3,926,165

FOR SERVICING:

Return the MSD MC1 Motorcycle Ignition for servicing to:

AUTOTRONIC CONTROLS CORPORATION
ATTN: CUSTOMER SERVICE DEPT.
1490 HENRY BRENNAN DRIVE
EL PASO, TEXAS 79936

Please include a copy of proof of purchase with the unit for warranty consideration. If the warranty is expired or if a copy of proof of purchase is not included, the unit will be returned C.O.D. with a nominal service and freight charge.

Limited Warranty

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.

AUTOTRONIC CONTROLS CORPORATION/MSD IGNITION
1490 Henry Brennan Drive, El Paso, Texas 79936 • [915] 857-5200 • FAX [915] 857-3344