MSD IGNITION INSTALLATION INSTRUCTIONS

PROGRAMMABLE TIMING COMPUTER
PN 8981

Parts Included In This Kit
- 1 - Programmable Timing Computer
- 4 - Retard Modules, 2°, 3°, 4° and 0°
- 4 - Mounting Screws and Vibration Mounts

WARNING: During installation, disconnect the battery cables. When disconnecting the battery, always remove the Negative cable first and install it last.

Note: This unit must be used with an ignition system without any type of mechanical advance. A crank trigger system or distributors with the mechanical advance locked out must be used.

Note: An MSD Ignition Control must be used with the PN 8981.

Note: Do not use a dial-back or digital timing light when programming the PN 8981.

MOUNTING

Select a location away from excessive heat, near the MSD Ignition Control and where the control knobs are easy to reach. First, install the rubber mounting pads and sleeves to line up holes for drilling. Using the unit as a guide, mark the locations of the four mounting holes on the unit. Remove the unit and drill four 1/8" holes in the locations marked. Install the unit using the four self tapping screws.

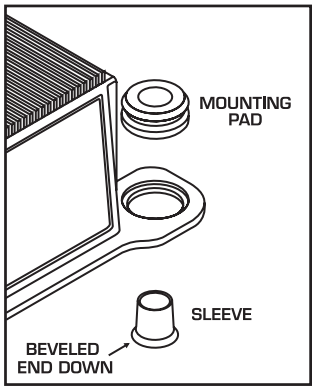
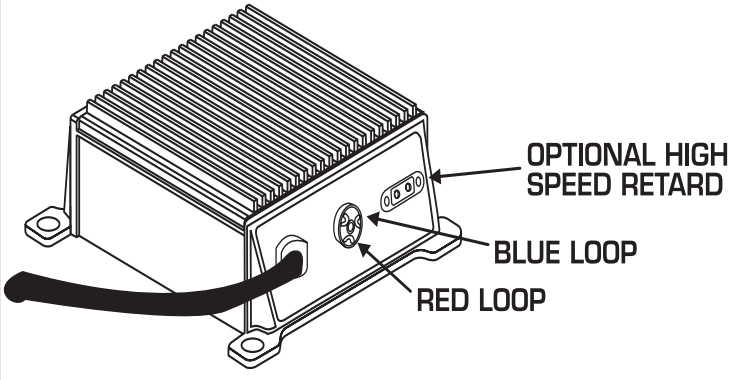


Figure 1 Installing Mounting Pads.

CYLINDER SELECT

The Timing Control must be programmed for your specific application.

Cylinder Select: The Timing Computer is programmed for 8-cylinder operation, but can be programmed for use on 4 or 6-cylinder engines. This is easily accomplished by removing the small plastic cover with one Phillips screw located on the side of the Computer (Figure 2). Inside there is a Red and Blue wire loop used to program the number of cylinders.



CYLINDERS	CUT LOOPS
8	NONE
6	RED
4	RED & BLUE

Figure 2 Programming for the Number of Cylinders.

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FEATURES AND ADJUSTING

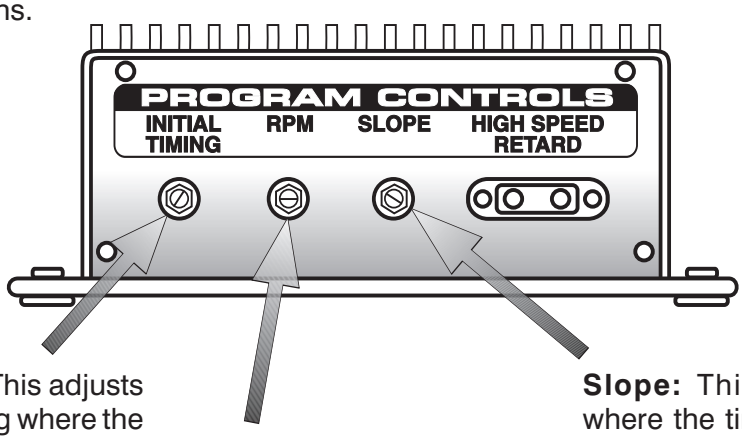
The Programmable Timing Computer allows you to program an ignition curve for an engine with locked out timing or a crank trigger. The Timing Computer also has two optional features.

Start Retard: This optional feature will retard the timing 20° during cranking to ease starting. It is activated when 12 volts is applied to the Violet wire and turns off (timing returns to the total timing) when the voltage is removed. Connect this wire to the wire that activates the starter solenoid. **Note:** The start timing retards 20° from the total timing.

High Speed Retard: A small amount of retard at high rpm or in times of nitrous can improve performance and save your engine from detonation caused by high cylinder pressures. This optional feature is adjustable with plug-in modules and is activated when the Gray wire is **removed** from ground. **If this feature is not used, ground the Gray wire.**

Timing Curve Adjustment Controls
There are three adjustable potentiometers on the side of the Programmable Timing Computer. They are adjusted by loosening the lock nut and then turning the pot with a flat blade screwdriver. All of the knobs are set at the full clockwise position at the factory, which means that they are Off and there is **no** timing curve. Figure 4 shows a typical timing curve.

All adjustments of the Timing Computer are taken from your Mechanical, or total timing setting. The Mechanical timing is set by the position of the crank trigger or distributor. Before making any adjustments, be sure to have your mechanical timing set to your specifications.



Initial Timing: This adjusts the timing setting where the engine idles. This amount can be adjusted 20° from where the mechanical timing is set. To adjust the initial timing, turn the control pot counterclockwise. It will retard the timing up to 20° from the mechanical timing.

RPM: This is the rpm point in which the advance will begin. To set this, accelerate the engine to the rpm point that you want the advance to start. Turn the RPM control pot counterclockwise until the timing begins to change.

Slope: This is the point where the timing advances to the mechanical timing again. To set this, rev the engine up to the rpm point that the timing should be completely in at. Turn the Slope control pot counterclockwise until the timing begins to change.

Figure 3 Adjustment Features.

Figure 4 shows a typical advance curve. The Mechanical timing is set at 35°. The **initial** timing is set at 20° until 1,500 rpm where the timing begins to advance (**rpm**). The timing continues to advance until it reaches the mechanical (**Slope**) timing. Also, note the 20° start retard and a 3° high speed retard.

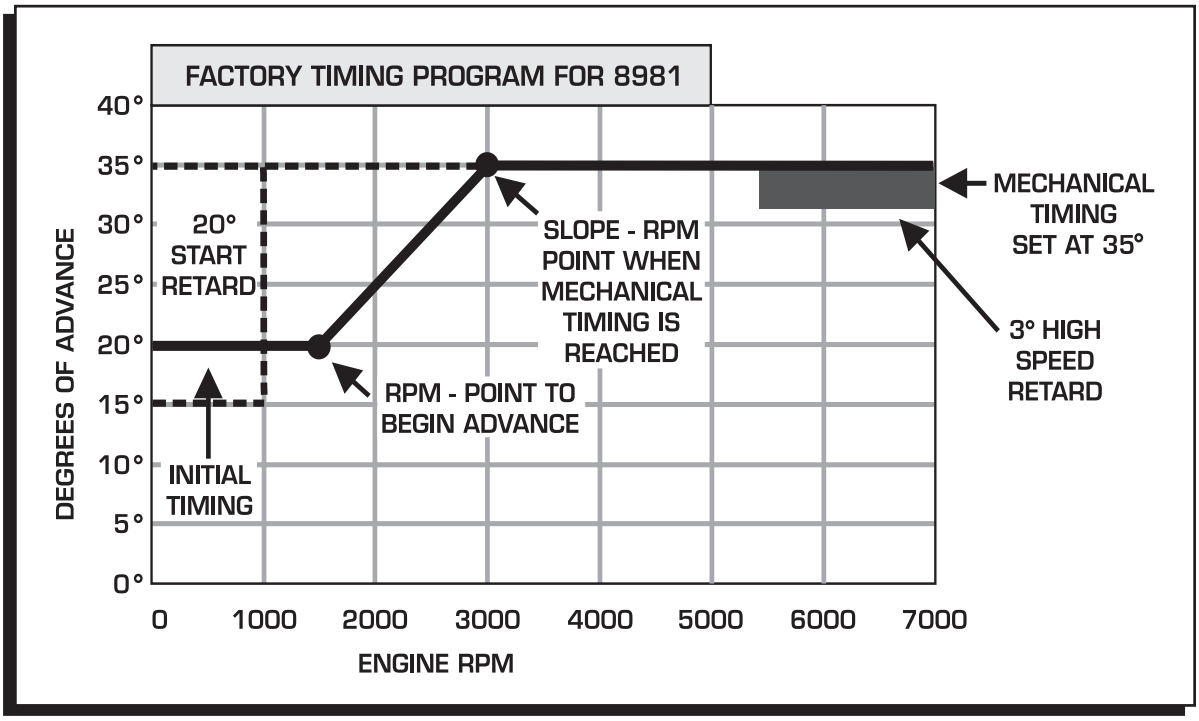


Figure 4 Typical Timing Curve.

WIRING	
RED	This is the On/Off wire. Connects to switched 12 volts.
BLACK	Connects to Ground.
YELLOW	Trigger output. Connects to the MSD Ignition's White Wire.
TRIGGER INPUTS There are two input trigger circuits. **The wires will never be connected at the same time.**	
WHITE	Connects to points or the amplifier trigger wire.
GREEN/VIOLET **2-Pin Connector**	Connects to the magnetic pickup of the distributor or crank trigger. Green is negative, Violet is positive.
RETARD WIRES **Note:** If the Step Retard is not going to be used, the Gray wire **must be grounded** or a Zero degree module must be installed. If not, the max retard amount (20°) will be applied.	
GRAY	This wire activates the Step Retard when it is **removed from ground**.
VIOLET	This is the 20° Start Retard activation wire. It is activated when applied to 12 volts.

The following figures show the installation of the Timing Computer.

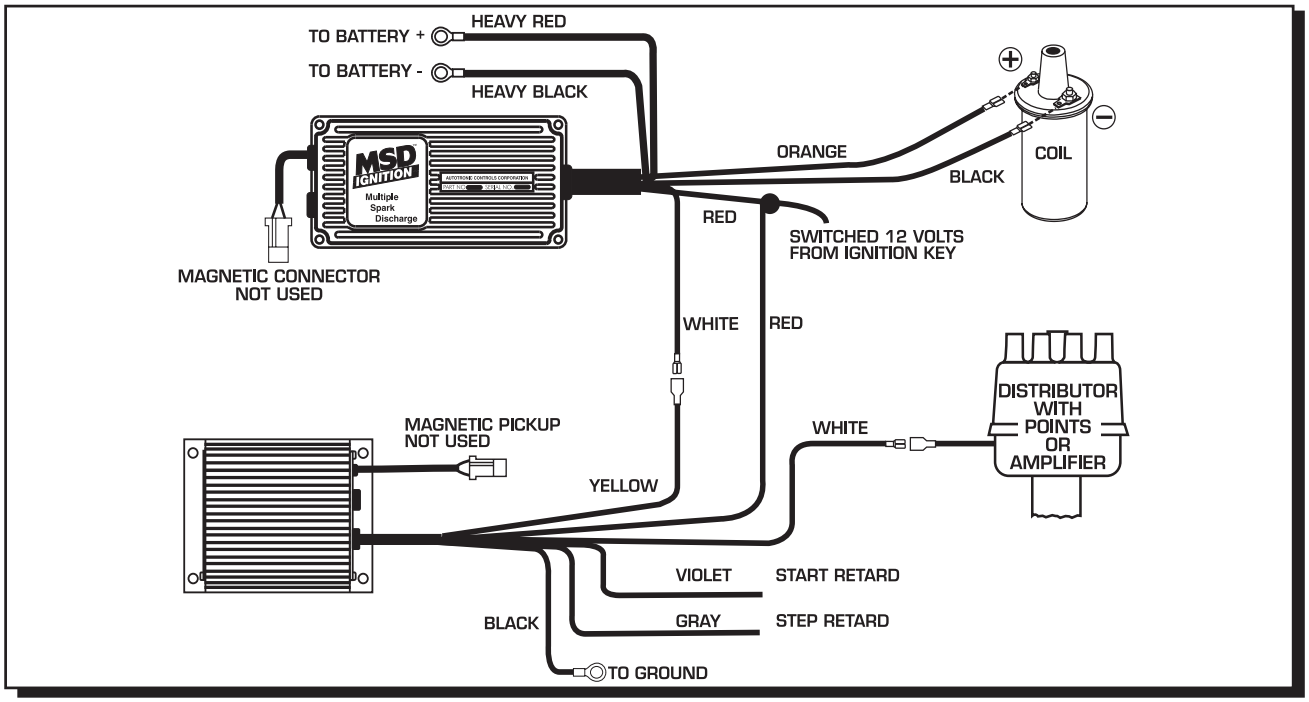


Figure 5 Wiring an MSD 6 Series Ignition with Points/Amplifier.

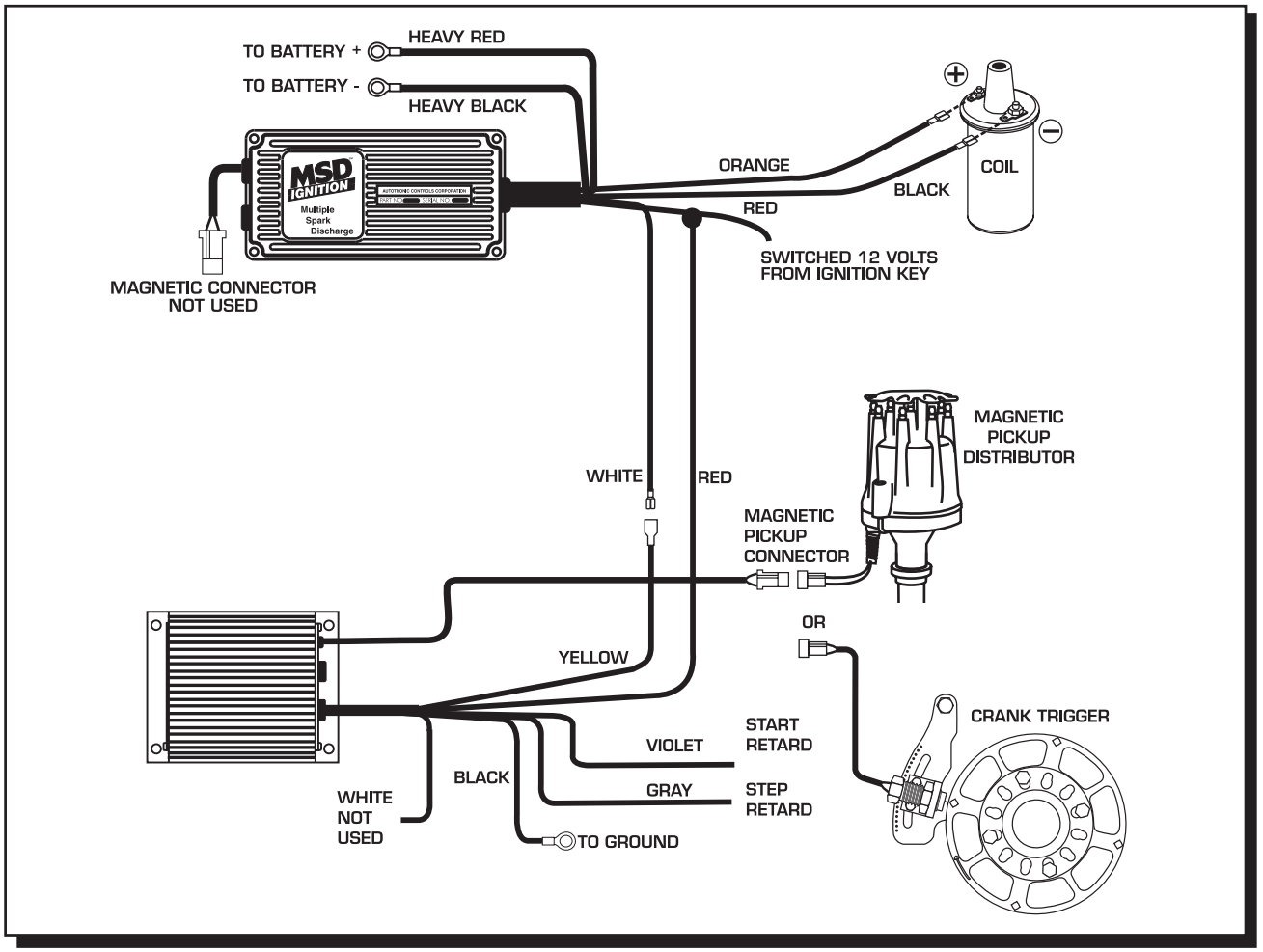


Figure 6 Wiring with an MSD 6 Series Ignition with a Mag Pickup.

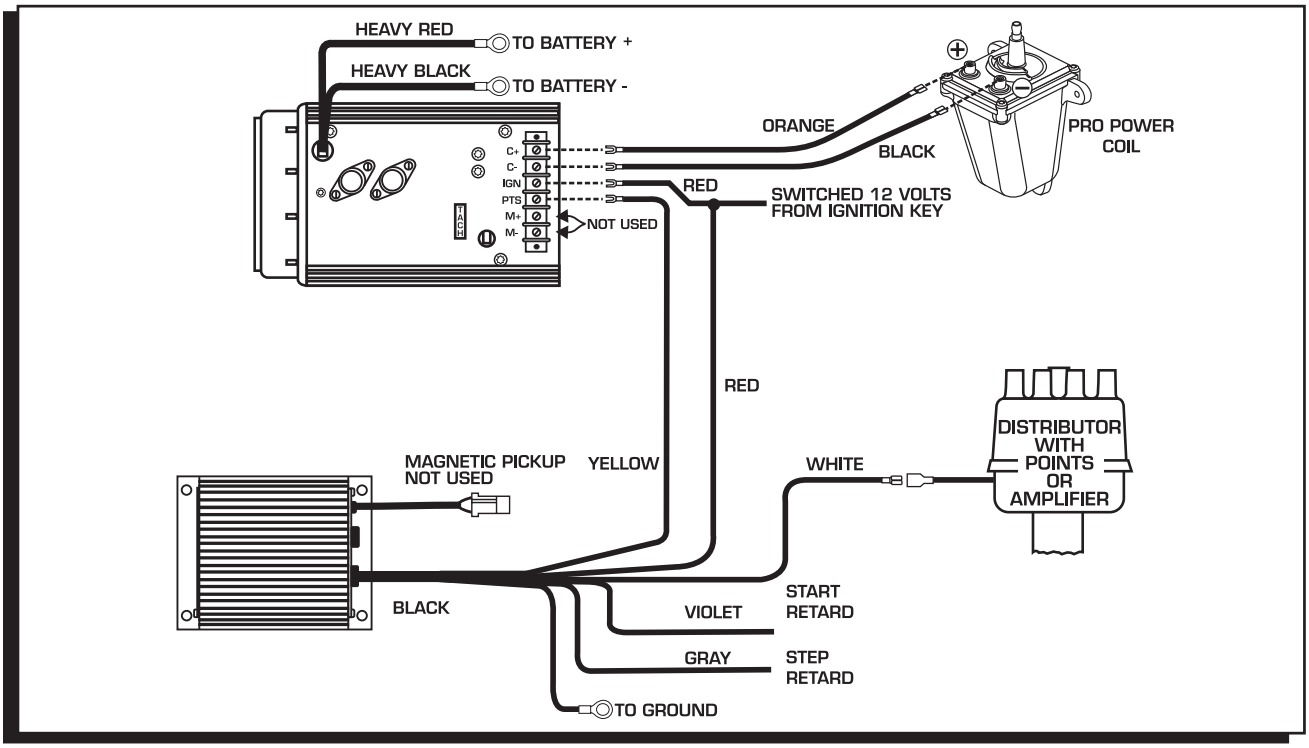


Figure 7 Wiring an MSD 7 Series Ignition with Points/Amplifier.

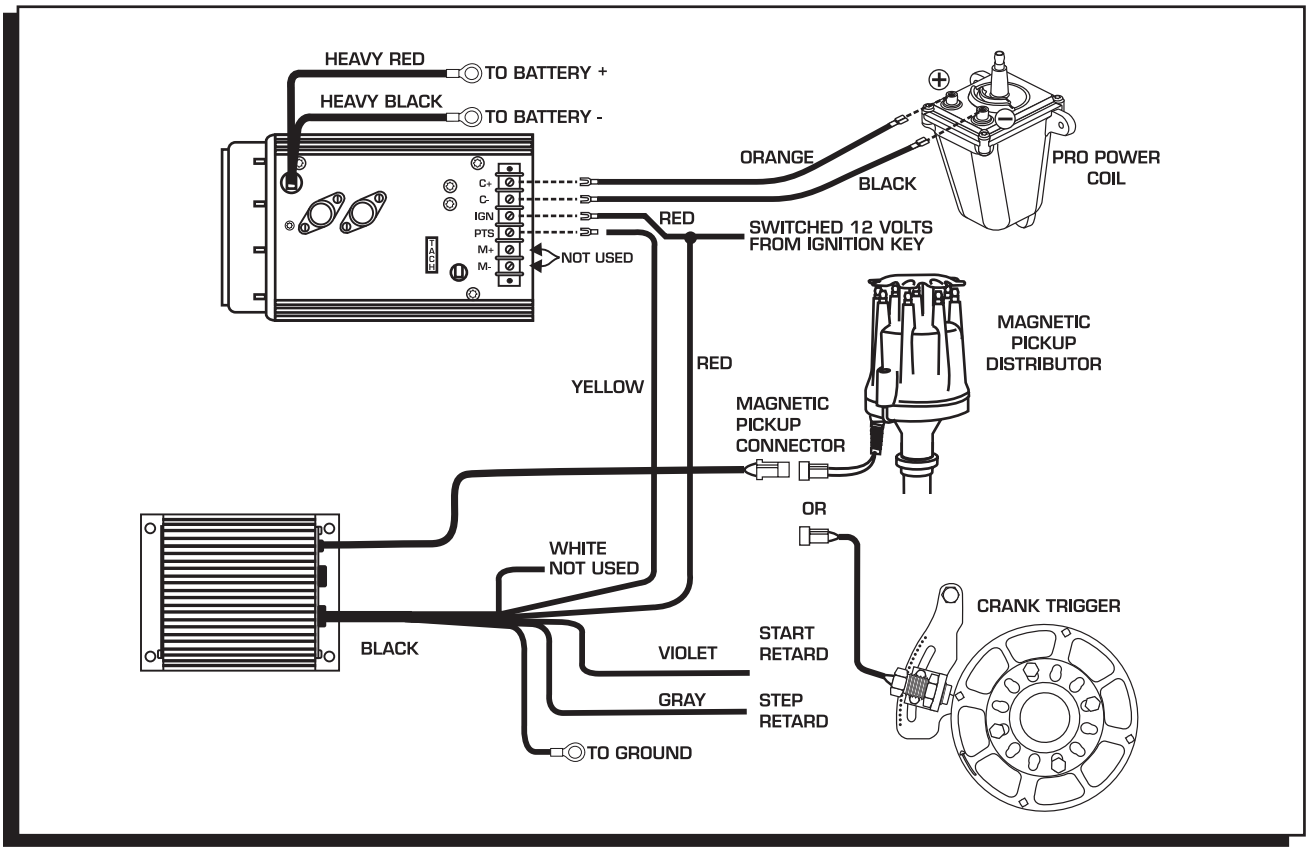


Figure8 Wiring an MSD 7 Series Ignition with a Mag Pickup.

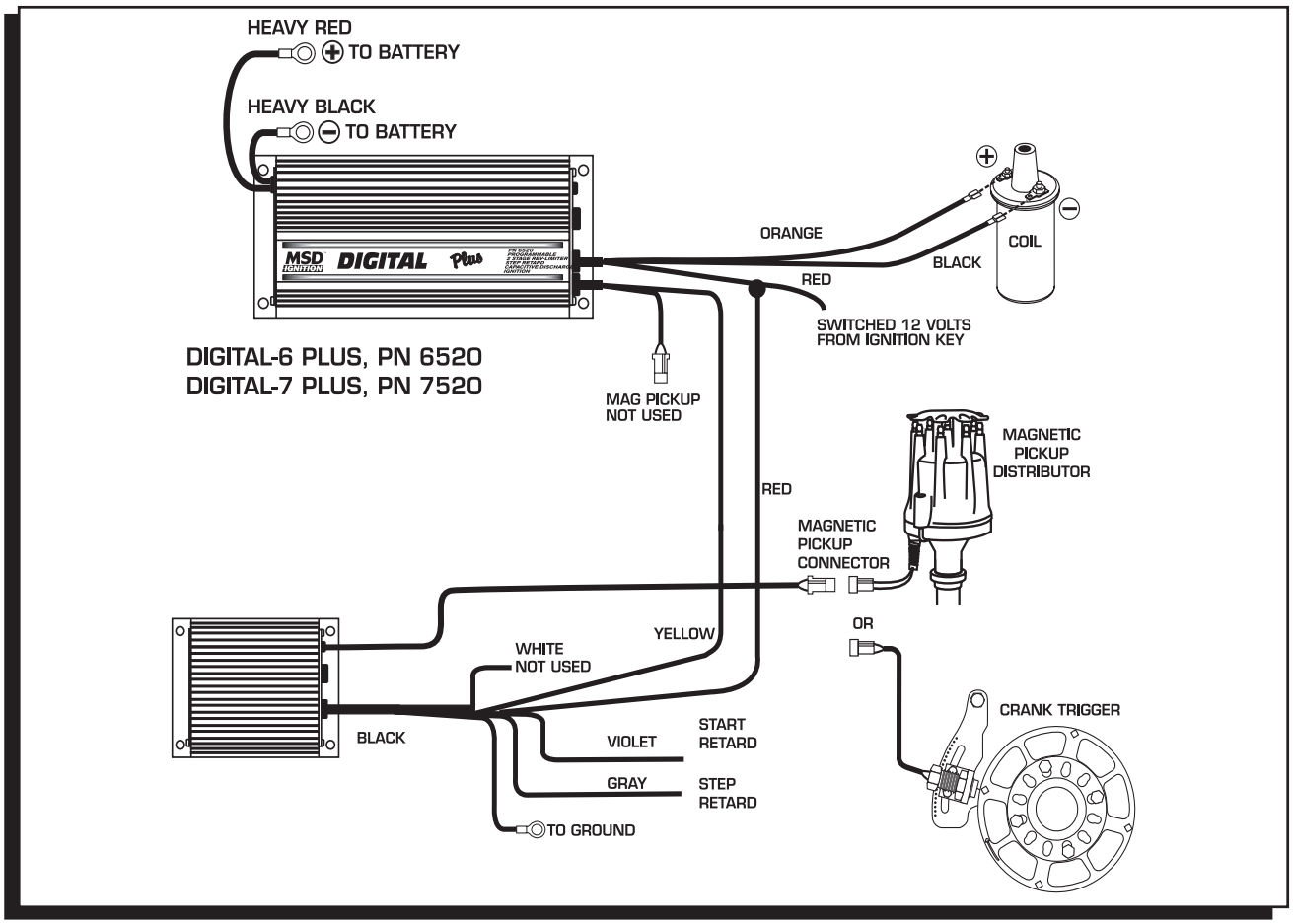


Figure 9 Wiring a Digital 6-Plus or 7-Plus Ignition with a Mag Pickup.

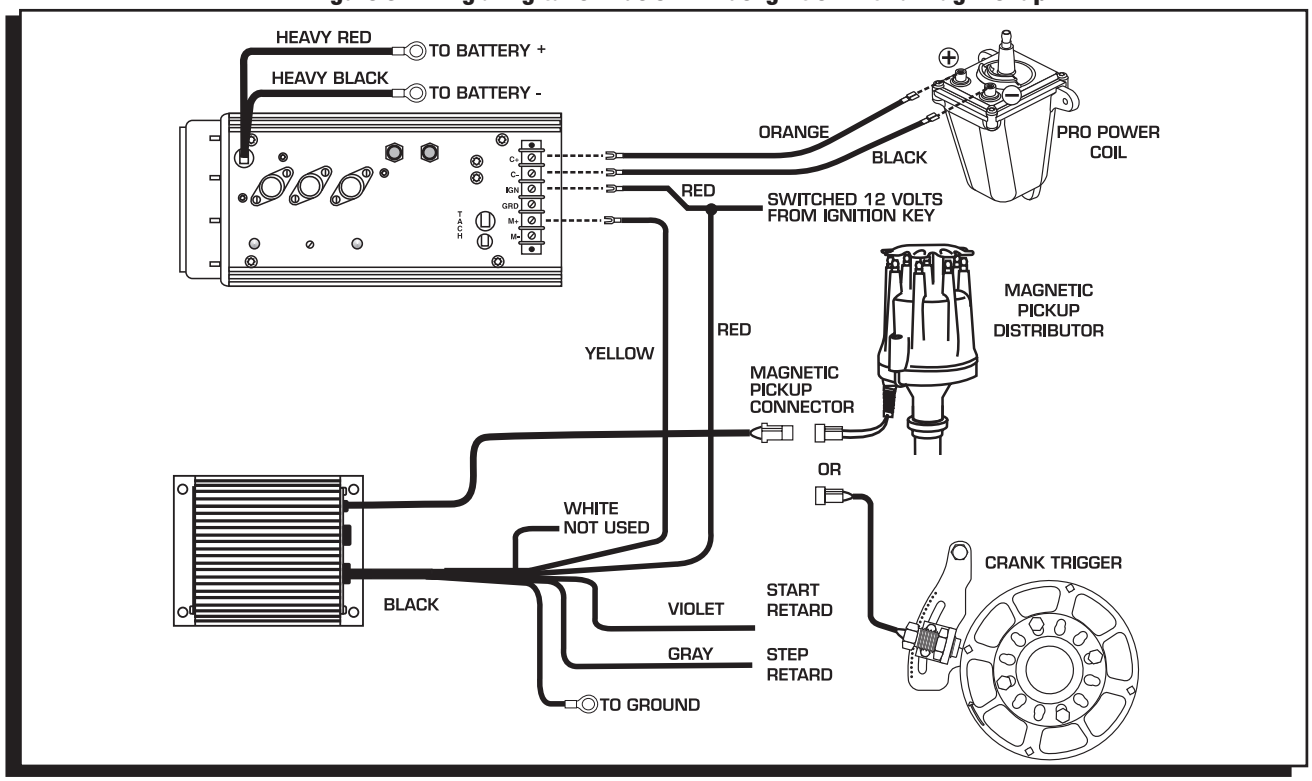


Figure10 Wiring to an MSD 8 with a Mag Pickup.

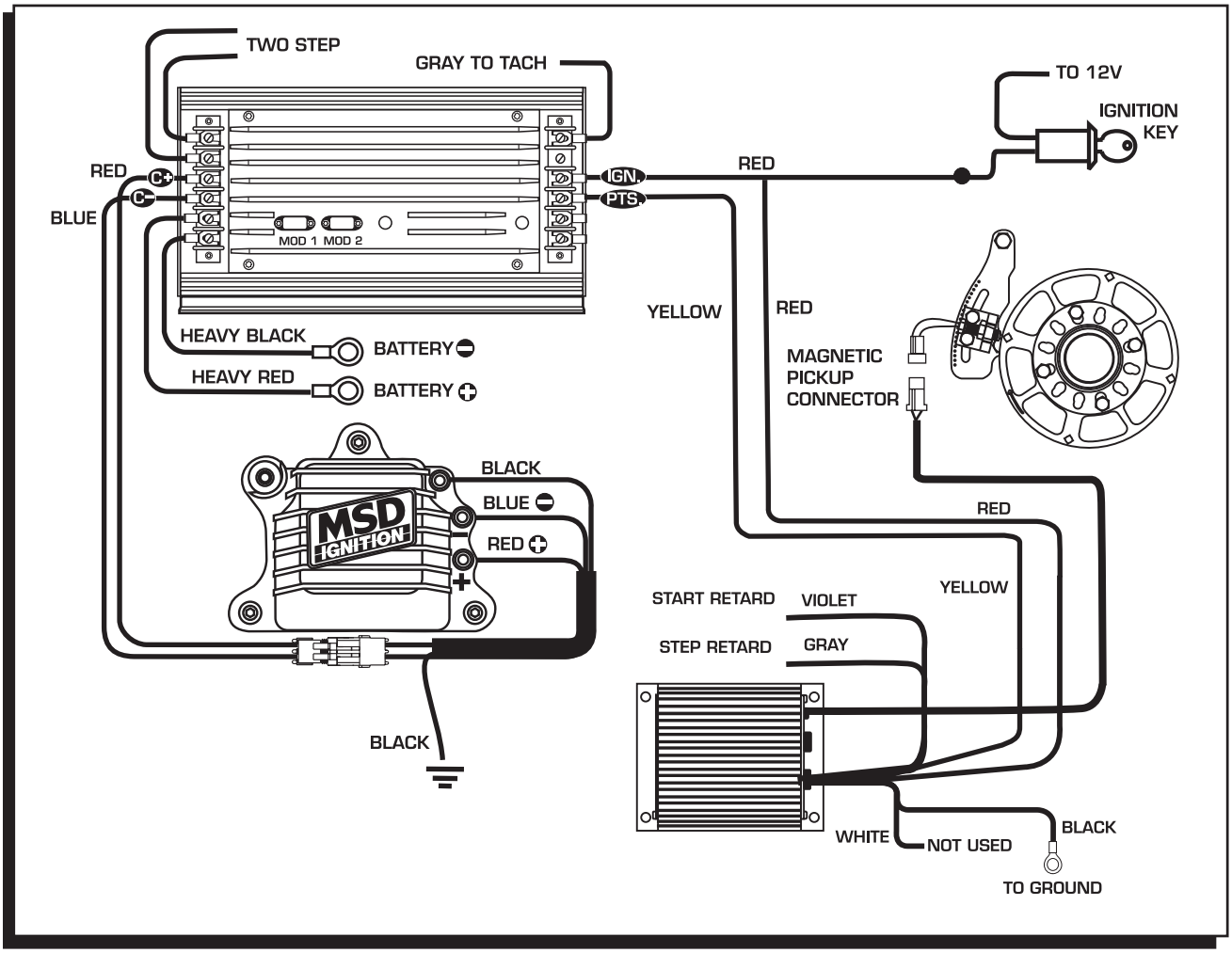


Figure 11 Wiring an MSD 10 PLUS with a Mag Pickup.

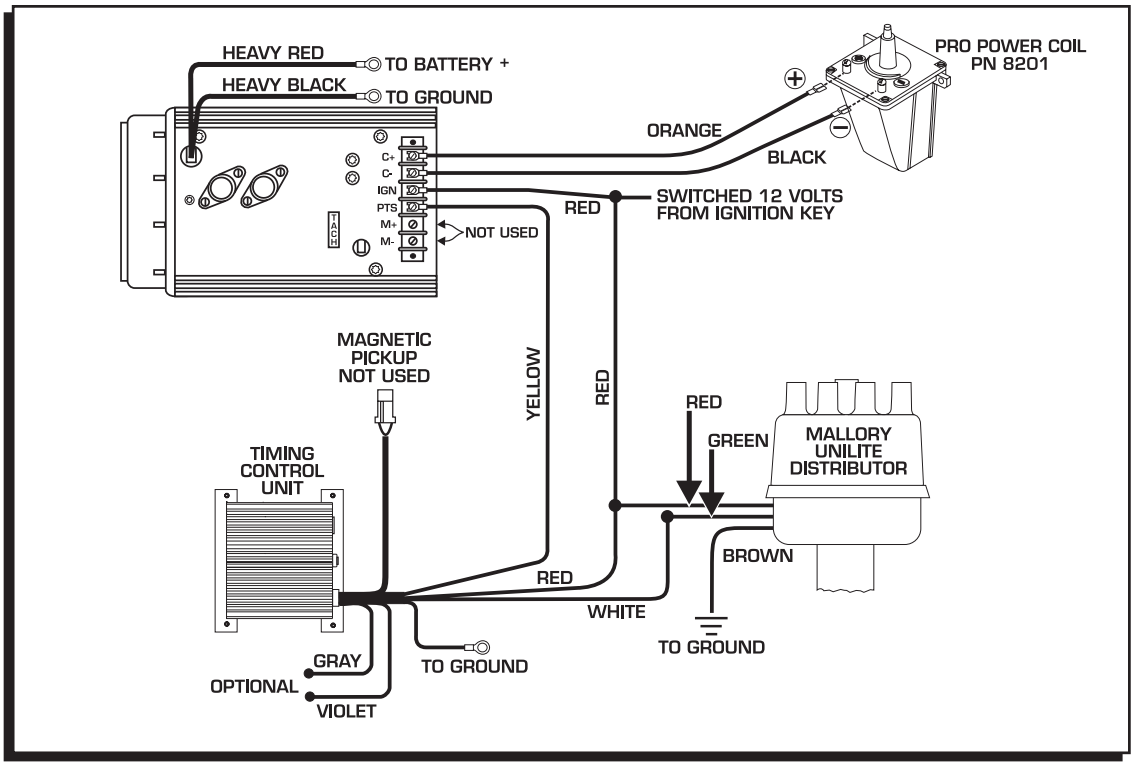


Figure 12 Installation with an MSD 7 and a Mallory Unilite Distributor.

CONNECTING THE HIGH SPEED RETARD

If your engine benefits from a little retard at high rpm, the Timing Computer offers several installations. The Gray wire is responsible for activating the retard. If there is not a module installed in the socket, no retard is possible. Part Numbers for addititonal Retard modules are listed at the end of the Instructions.

The easiest connection to use the retard is with a simple ON/OFF switch (or a micro-switch on the shifter). When the Gray wire is connected to ground, the retard is not activated (Figure 13). When open, the retard is activated (only when a module is installed).

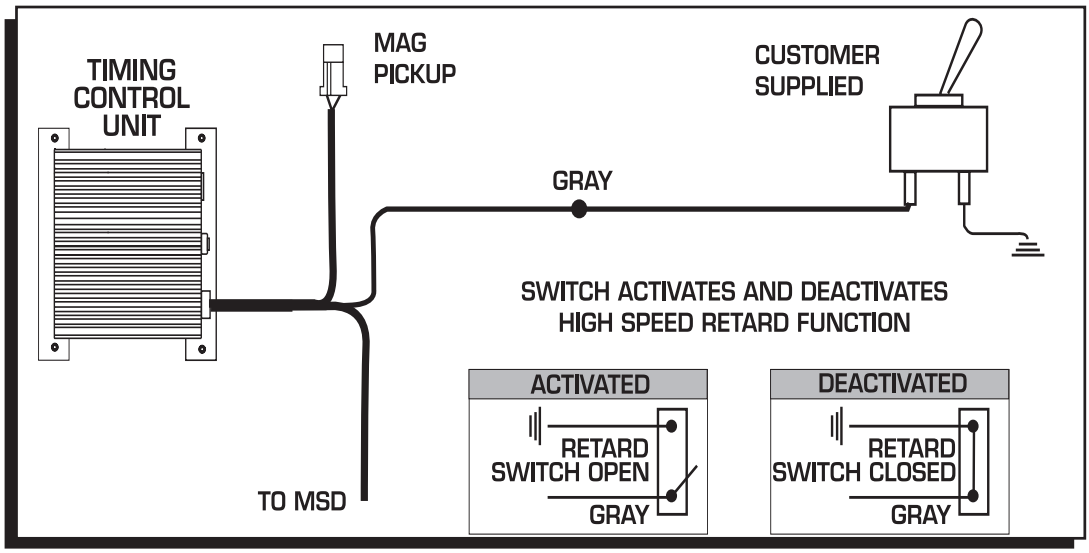


Figure 13 Activating the High Speed Retard Function with a Toggle Switch.

High Speed Retard with an RPM Activated Switch

To activate the High Speed Retard automatically at a desired rpm, an MSD RPM Activated Switch, PN 8950 **must** be used. With this switch, when the engine reaches the desired rpm, the High Speed Retard will be activated (Figure 14).

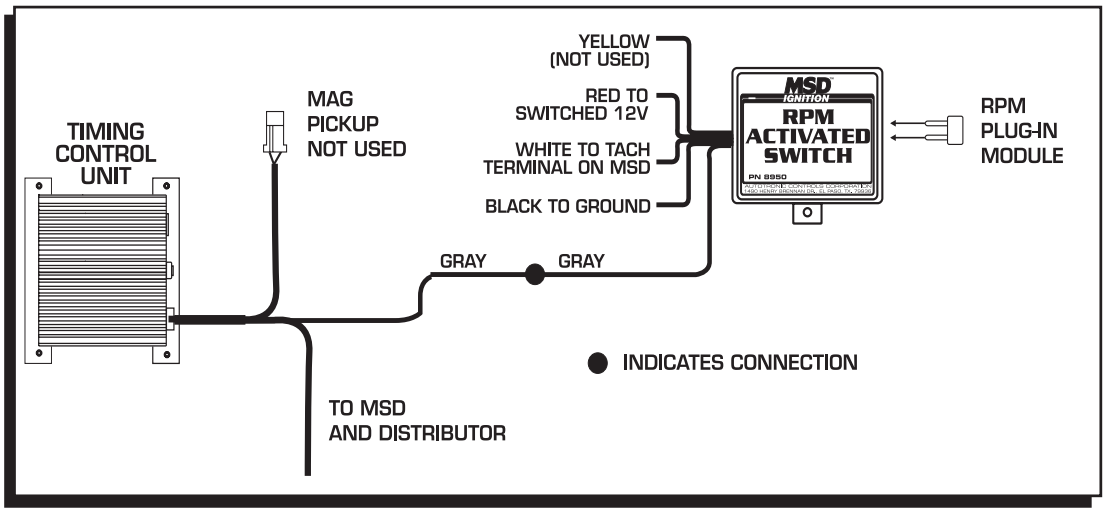


Figure 14 Activating the High Speed Retard with an RPM Activated Switch.

High Speed Retard with Nitrous

A little retard can be an engine saver in times of nitrous usage. The High Speed Retard function of the Timing Computer can be activated automatically through a nitrous solenoid. This way the Gray wire **is grounded through the solenoid when it is not activated.** When 12 volts is applied to the solenoid, the ground is removed and the retard is activated (Figure 15).

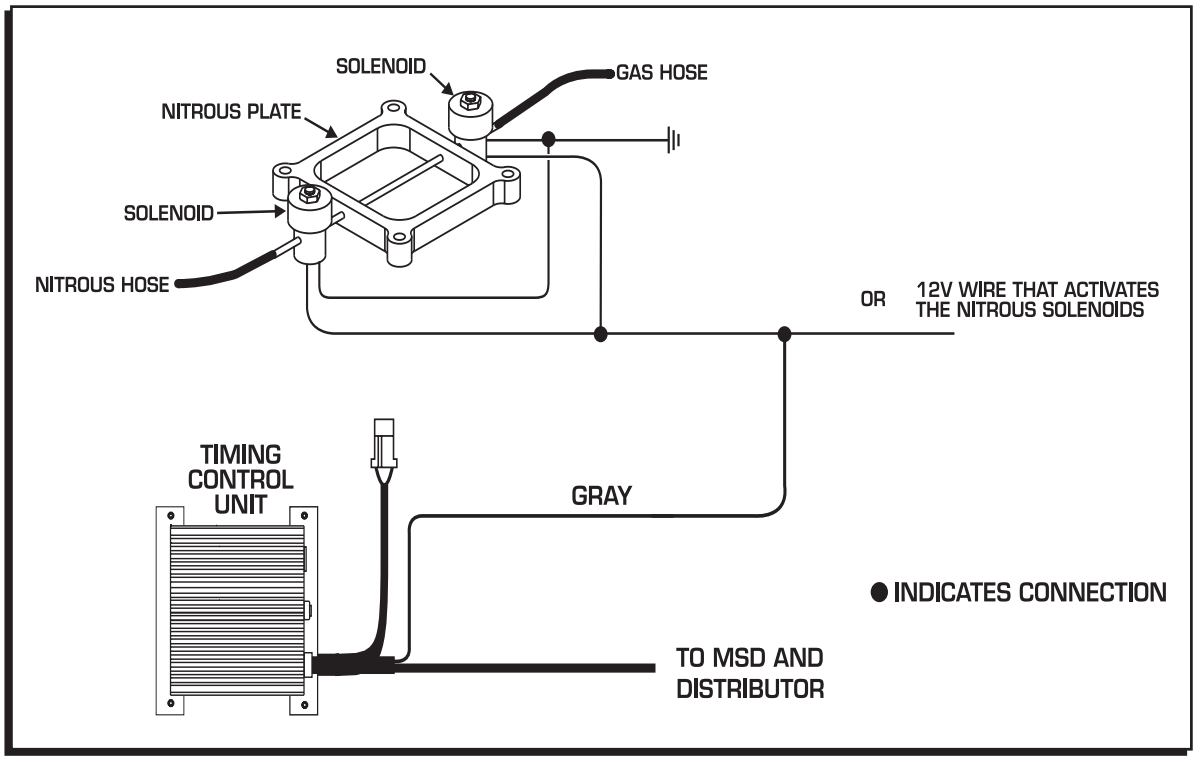


Figure 15 Activating the High Speed Retard through a Nitrous Solenoid.

Retard Module Kits		Retard Selectors*	
1°, 2°, 3°, 4°, 5°	PN 8777	0° - 11°	PN 8676
5°, 6°, 7°, 8°, 9°, 10°	PN 8776	0°/10° - 20°	PN 8678
11°, 12°, 13°, 14°, 15°	PN 8774		
16°, 17°, 18°, 19°, 20°	PN 8775		

*Retard Selectors provide 11 different retard rates at the turn of a knob.

TECH NOTES

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Service

In case of malfunction, this MSD component will be repaired free of charge according to the terms of the warranty. When returning MSD components for service, Proof of Purchase must be supplied for warranty verification. After the warranty period has expired, repair service is charged based on a minimum and maximum charge.

Send the unit prepaid with proof of purchase to the attention of: **Customer Service Department, Autotronic Controls Corporation, 12120 Esther Lama, Suite 114, El Paso, Texas 79936**.

When returning the unit for repair, leave all wires at the length in which you have them installed. Be sure to include a detailed account of any problems experienced, and what components and accessories are installed on the vehicle.

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).

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.

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