



**HYFIRE® VII Series Electronic Ignition
Controls
Instruction Manual
Part#: 667S**



INSTALLATION INSTRUCTIONS

HYFIRE® VIIS SPORTSMAN CD IGNITION SYSTEM

Part No. 667S 4-12 Cylinder

Notice: This product is legal for sale or use only on vehicles which may never be used on highways.

The HYFIRE® VIIS Sportsman CD Ignition Controls are not compatible with distributorless systems or positive ground applications. The RPM Limiter in the HYFIRE® VIIS Sportsman CD Ignition Controls will not work properly with odd-fire or semi-even fire V6 applications. The HYFIRE® VIIS Ignition System is not designed for marine use.

GENERAL INFORMATION

The RPM limiter in the HYFIRE® VIIS Ignition System is not recommended as an engine speed governor. The use of the RPM limiters is not recommended for applications equipped with a catalytic converter. Similarly, forcing engine RPM past the RPM limiter continuously for long sustained intervals can cause problems resulting from fuel build up in the exhaust system that may adversely affect the application.

Ignition Ballast Resistor / Loom Resistance Wire

The HYFIRE® VIIS Ignition System's performance is not affected by the presence of the factory ignition resistors or ignition ballast resistors in the wire from the ignition switch. It is not necessary to install ignition ballast resistors as specified by the instructions for the particular distributor.

Ignition Coils

The HYFIRE® VIIS Ignition System is designed to work with Mallory PROMASTER® Coil Part No. 28880. Avoid using any other type of ignition coil.

Spark Plug Wires

YOU MUST USE suppression type (carbon core, spiral core) spark plug wire. We recommend spiral core ignition wire, such as Mallory PRO SIDEWINDER® Ignition Wire. Suppression type spark plug wires prevent false triggering and the possibility of premature ignition or accessory failures.

DO NOT USE solid core (copper core; stainless steel core) spark plug wire with any electronic ignition system or accessory. Solid core spark plug wire is a source of ignition noise, which can cause false triggering and premature ignition or accessory failure.

MOUNTING PROCEDURE

Step 1

Disconnect the battery (-) cable to cut power to the system.

Step 2

Select a convenient location to mount the HYFIRE® VIIS Ignition System. Keep the unit away from hot engine components or extreme heat such as the exhaust system and manifolds. Keep the unit away from moving devices, such as fans, belts and linkages. The location must be dry. Moisture will damage components inside the unit.

Spark Plug Gaps

For street applications, use your engine manufacturer's specifications. For racing applications, start with your engine manufacturer's specifications, then experiment with the plug gap to achieve maximum performance.

Electric Welding

Disconnect the HYFIRE® VIIS Ignition System and unplug any distributor harnesses (if possible) before any welding is done on the vehicle.

External RPM Limiters

Mallory RPM Limiter Part Nos. 641-4, 641-6, 641-8, 642, 643 and 644 WILL NOT function with the HYFIRE® VII Ignition Systems.

Mallory PRO TACH® I, IV and IV

The tachometer and shift light will work with the HYFIRE® VII Ignition Systems. However, the RPM limiter WILL NOT function with the HYFIRE® VII Ignition Systems. Turn the LIMIT RPM knob slightly past 11,000 to prevent the RPM limiter from interfering with the tachometer's other functions.

Step 3

Mounting to a flat surface with shock mounts

- Hold the unit in its mounting position and center punch the mounting pattern on the mounting surface for drilling mounting holes. Drill mounting holes using a 9/32" drill bit.
- Install the shock mounts into the bottom plate of the unit. Hold the unit in position where it will be mounted.
- From the backside of the mounting surface, insert the washers and the 1/4-20 nylock nuts onto the shock mount studs. Tighten each nut until snug.

WIRING PROCEDURE

Step 1

Ensure that your vehicle is equipped with a ground cable between the engine block and firewall (10 gauge or larger is required). Refer to Figure 1 while performing the following steps.

- Connect the HEAVY RED wire to the 12-volt battery (+) post or battery (+) terminal on the starter solenoid.
- Connect the HEAVY BLACK wire to engine or chassis ground.
- Connect wires between the COIL (+) and (-) terminals.
- Connect 12-volts from ignition switch to the +12V terminal.
- Connect the tach/RPM sensing wire and optional external RPM control to sockets.

Step 2

When wiring the HYFIRE® VIIS Pro CD Ignition System to an electronic ignition or magnetic pickup, refer to Figures 2 and 3, and trace wires for hookup.

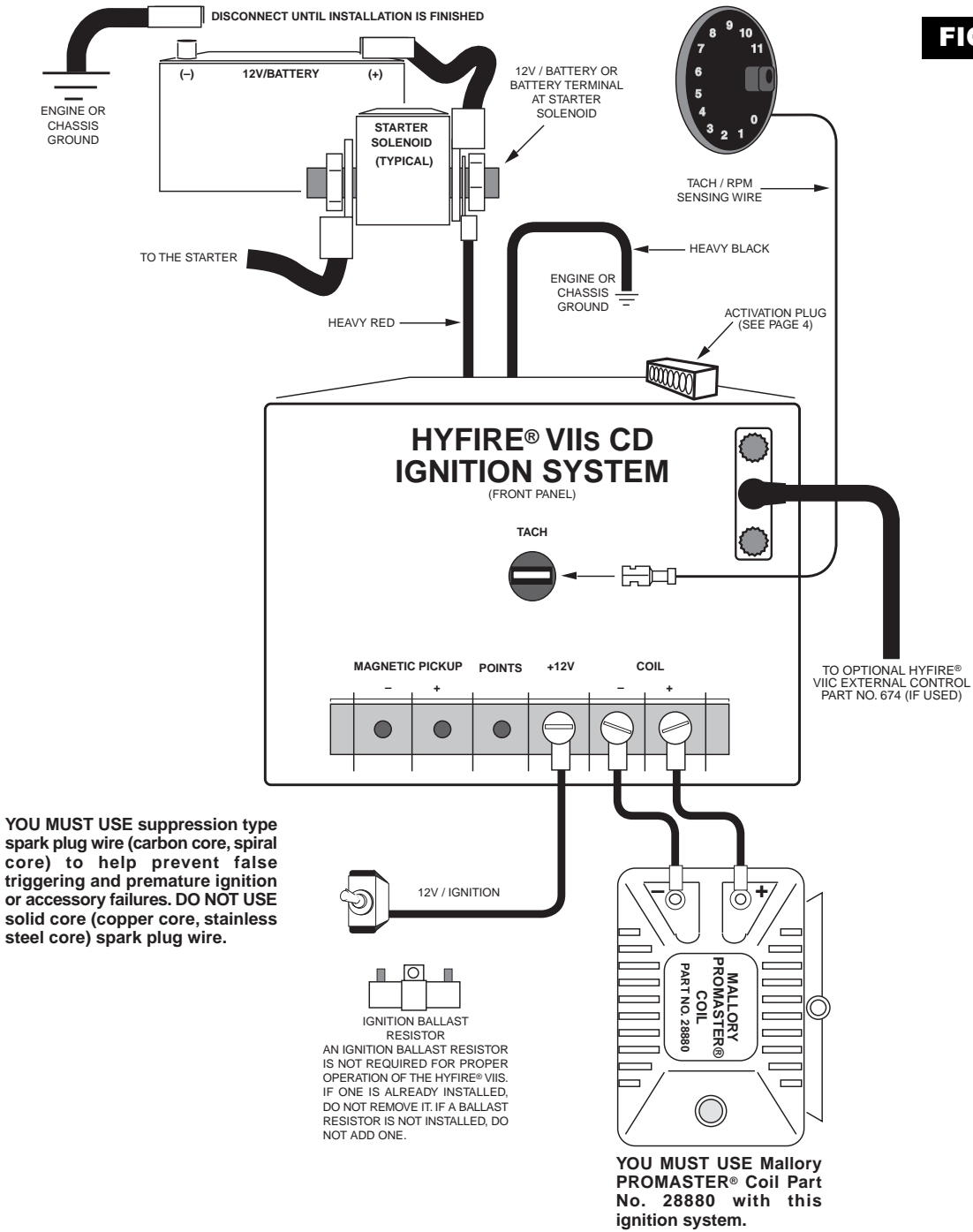


FIGURE 1

Figure 2

HOOKUP TO A MALLORY UNILITE® IGNITION, MAGNETIC BREAKERLESS IGNITION OR ELECTRONIC ADVANCE IGNITION (THREE WIRE: RED, BROWN, GREEN)

YOU MUST USE suppression type spark plug wire (carbon core, spiral core) to help prevent false triggering and premature ignition or accessory failures. **DO NOT USE** solid core (copper core, stainless steel core) spark plug wire.

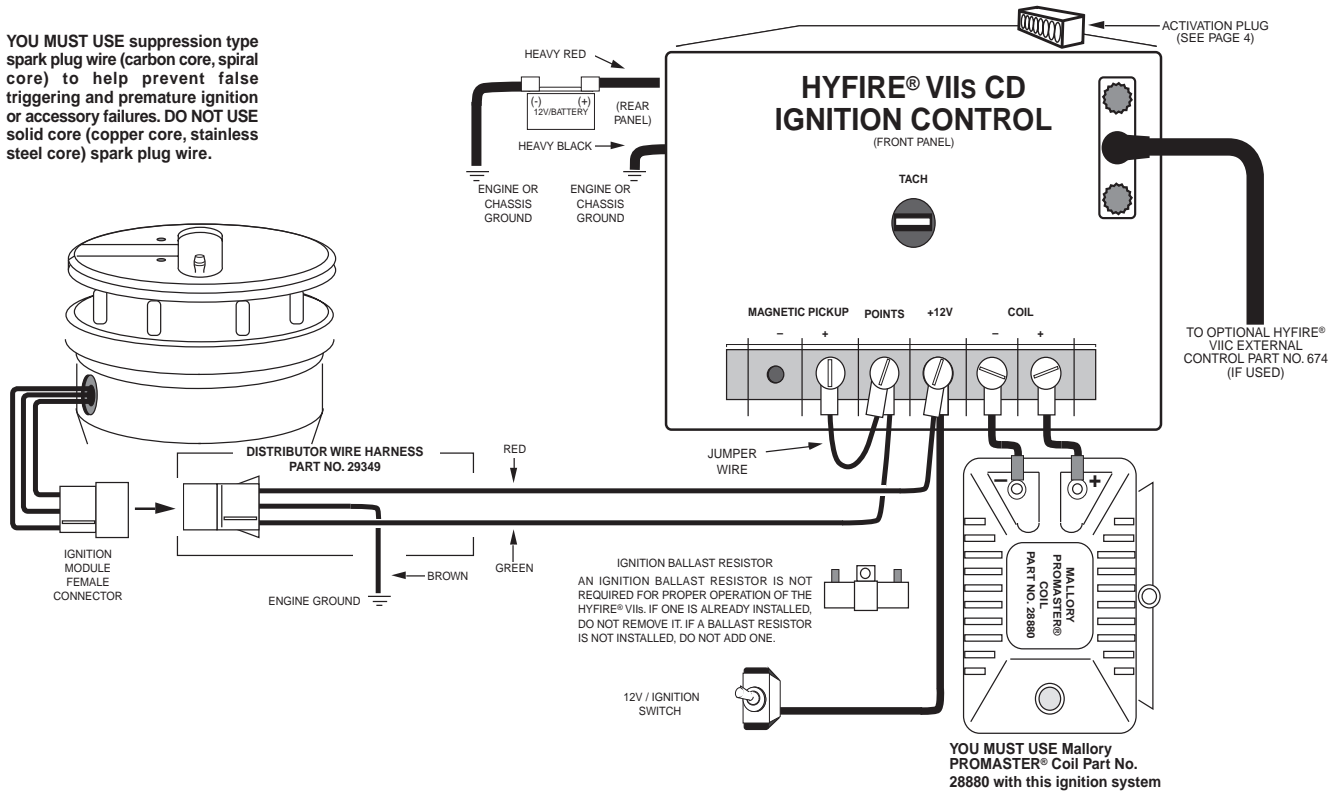
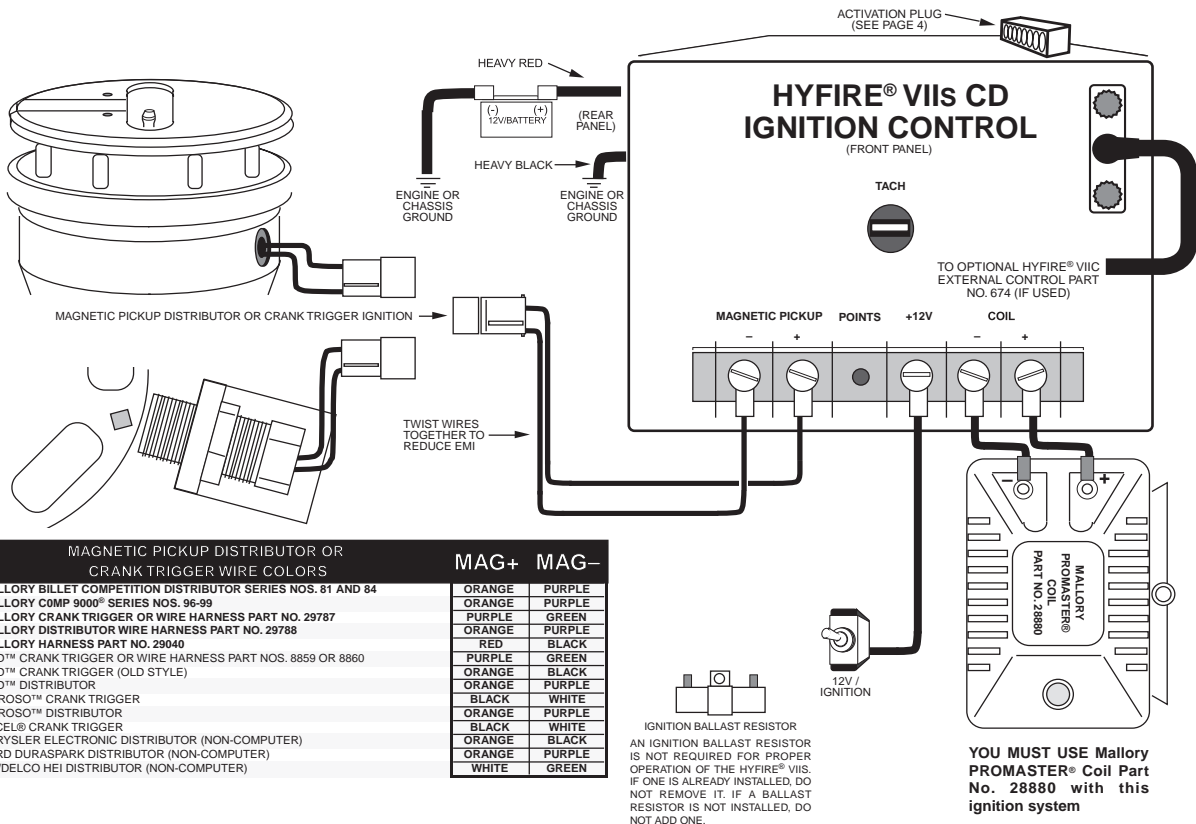


FIGURE 3

HOOKUP TO A MALLORY UNILITE® IGNITION, MAGNETIC BREAKERLESS IGNITION, OR ELECTRONIC ADVANCE IGNITION (3-WIRE: RED, BROWN, GREEN)



HYFIRE® VIIs TOP PANEL CONTROLS

Basic Operation

The top panel has a three-digit LED display, three LED indicators, and three switches. The switches are used to set the mode and mode values, and the 3 separate LEDs indicate the mode. The four modes are listed below:

RPML LED

Main RPML (normally used as an engine protection RPM limit)

This value is valid as long as another RPM limit has not been selected. The range is 1000 to 12800 RPM, in 100 RPM steps.

“AUX” LED

Aux RPML2 (normally used as a launching RPM control)

This value, if selected, overrides the main RPML. Range is 1000 to 12800 RPM, in 100 RPM steps.

“RET” LED

HS RETARD1

This is a high-speed retard function which will retard the engine timing when selected. The range is 1 to 15 degrees in .1 degree steps.

ALL MODE LEDs BLANK

CYLINDER NUMBER

This function allows you to select the engine cylinder number from 4 to 12 cylinders.

Setting Mode and Values

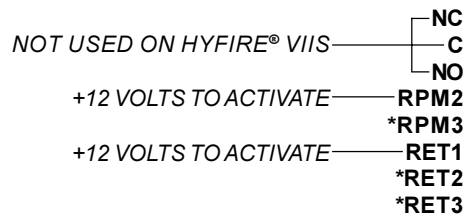
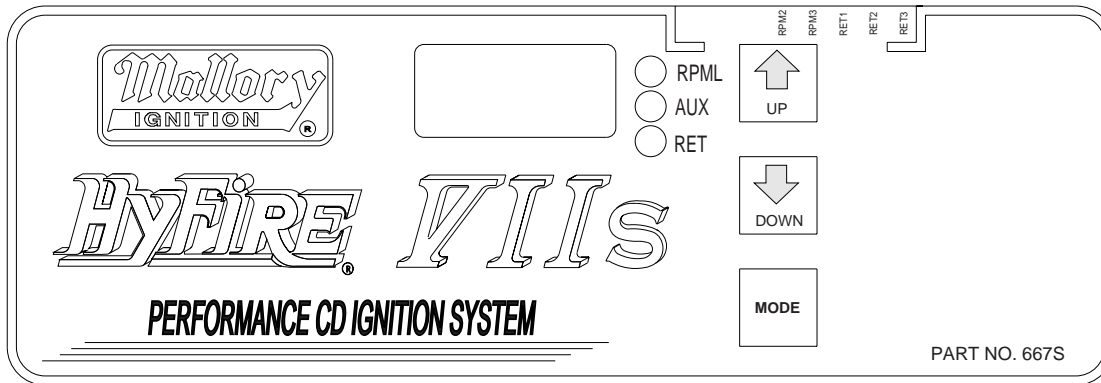
To adjust one of the modes, press the "MODE" switch until the proper mode LED is lit (or none are lit, if you're selecting the cylinder mode), then use the arrow keys to increase or decrease the value. If you go past one end of the mode range, the display will start over at the other end. For example, if you continue to increase the RPML value past 12,800, the display will start over at 1000 RPM.

Start Retard

The HYFIRE® VIIS has a feature shared with the HYFIRE® VIIC: a built-in automatic start retard. This automatically retards the engine timing below 500 RPM. The retard increases to 20 degrees at 100 RPM. Below 100 RPM, the retard is fixed at 30 milliseconds, and above 500 RPM there is no automatic retard.

Activation Plug

Although the activation plug has 8 contacts, **only two are used on the HYFIRE® VIIS**: RPML2 for the Aux RPML, and HSRET 1 for the High-Speed Retard function. If you add the optional HYFIRE® VIIC External Control Part No. 674, all other functions except the RPM switch relay contacts are available. The plug has clamp-type terminals that will accept up to 14 gauge wire (stranded is preferred, but solid will work). Insert the wire into the clamp, then tighten the screw to hold the wire in place. The plug also has screws at each end to firmly fasten to the socket on the HYFIRE® VIIS circuit board. Do not overtighten these screws. Each RPML or Retard function requires 12 volts to activate. Typical methods are clutch switch, trans brake switch, nitrous solenoid, or similar.



*Only used when optional PN674 is connected.

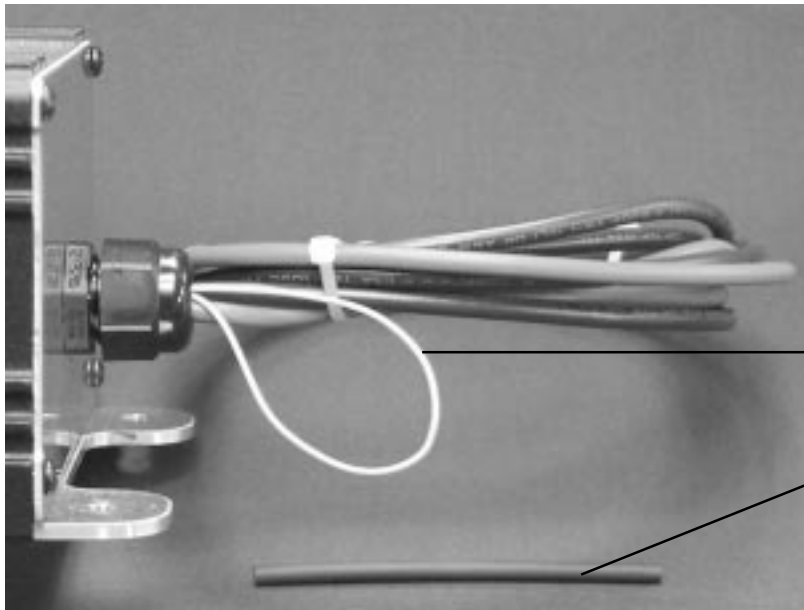
TECHNICAL BULLETIN

HYFIRE® VIIC AND VIIS IGNITION SYSTEMS

Part One: Start Retard

The Mallory HYFIRE® VIIC AND VIIS Ignition Systems both have a built-in start retard feature. This retard is 20 degrees at 100 RPM, and decreases to 0 degrees at 500 RPM. This is a very useful feature which eases the load on the starter motor when used with vehicles that have crank triggered ignition systems or distributors with locked advances and 30 or more degrees of timing. However, there are applications where the start retard is either not needed or not wanted. For example, motors with radical camshaft profiles, large carbs and timing in the 15 to 25 degree BTDC range (Pro Mod motors, for example) may experience lean-mixture backfiring during startup if the retard feature is active, especially if the temperature is colder than usual.

Current production versions of the HYFIRE® VIIC AND VIIS have a yellow wire loop which comes out of the back of the ignition box. Cutting this loop eliminates the start retard. Earlier versions of the ignition don't have this feature, but the start retard can still be shut off. You must either send your ignition in to our service department for modification, or, if you are attending an NHRA National event, you can bring your ignition to our race support trailer and have it modified.



CUT YELLOW WIRE LOOP TO
ELIMINATE START RETARD

AFTER CUTTING YELLOW WIRE,
USE SHRINK TUBING TO INSULATE
EXPOSED ENDS

Part Two: Function Selection

The instructions for the HYFIRE® VIIC AND VIIS tell the user what each of the different functions do (such as RPM limiters, timing retards, etc.). The instructions do not explain how to activate the functions.

To activate the functions of the HYFIRE® VIIC AND VIIS, you must apply 12 volts to the appropriate terminal. Whether the user has a clutch pedal switch, a shifter button, or uses a timer, the auxiliary RPM limiters and the timing retards need +12 volts to activate them.