



INSTALLATION INSTRUCTIONS

MSD V-Series™ Ignition for Harley-Davidson® PN 4226

Parts Included:

1 - V-Series Ignition

1 - Parts Bag

6 - Wire Ties

Additional required parts:

FX-series Big Twin and XL-series Sportster models prior to 1984, FL-series Big Twin models prior to 1985 and all models with OE points will require OE timing rotor PN 32402-83. This part is not included with the MSD V-Series Ignition. It can be purchased from your local Harley-Davidson® dealer. It is recommended to have the Service Manual for your motorcycle.

WARNING: When installing the MSD, disconnect the battery cables. When disconnecting, always remove the negative cable first and re-install it last.

Note: Do not discard the nose cone cover, timing plate screws or washers as they will be used with your new ignition.

WIRING	
RED	Connects to switched 12 volts (coil positive).
ORANGE*	Connects to negative side of Front cylinder coil in single fire mode.
BLACK*	Connects to negative side of Rear cylinder coil in single fire mode.
GRAY	Tachometer.
WHITE	VOES Switch.
VIOLET	Starter.

* In Dual Fire mode connect both Orange and Black wires to the negative side of the coil.

V-SERIES INSTALLATION

The supplied parts bag contains ring lug terminals for coil connections and male-female quick disconnects for connections to the tach and vacuum switch (VOES).

1. The two rivets on the nose cone cover will have to be drilled out in order to remove the existing trigger/points plate, point's cam and advance. Refer to your bike's service manual for proper procedure.
2. Run the wires from the V-Series ignition through the hole in the gear case cover.
3. Next, mount the ignition using the two previously removed timing plate screws, but do not lock it down.
4. Identify the switched 12 volt wire going to the coil. Refer to your service manual, or reconnect the battery and use a test light or voltmeter. The switched 12 volt wire will be hot when the ignition key is turned on.
5. Connect the Red wire to the coil terminal on the previously identified switched 12 volt wire. On a dual fire coil, the Orange and Black wires will connect together to the negative side of the coil (Figure 2). When using a single fire coil, the Orange wire will be used for the front cylinder negative terminal and the Black for the rear cylinder negative terminal (Figure 3).
6. On engines equipped with a VOES switch the White wire is connected to the VOES switch.
7. Connect the gray wire to the tachometer.

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8. The Violet wire is the optional Kick Start mode. This wire will be connected to the starter relay wire (This wire can be left disconnected, for minimum start up revolutions).
9. The self tapping screw provided in the parts bag can be used to thread the inner cover. Once plate has been threaded secure outer cover to the inner cover with supplied 10 -32 screws.

CHECKING STATIC TIMING:

Note: Remove spark plugs to ease rotating the engine. This also will prevent accidental starting of the engine.

1. Rotate the engine and bring the front cylinder to top dead center. Verify that top dead-center index is centered in the timing port (Refer to service manual for location). If the TDC index is not in view, rotate the engine until the front cylinder is on the compression firing stroke and the TDC index is centered in the timing port.
2. The TDC and advance timing marks are located on the flywheel and can be observed via an inspection hole (refer to service manual for details). Refer to figure 4 for typical timing marks.

Note: 1996 and later models (1995 and later export models) have a timing mark at 20° BTDC for setting the timing with OE ignition module. Do not use this mark for setting the timing. In most cases an additional mark will remain at 35° BTDC (Figure 5). Use this mark to set the timing with timing light.

3. Turn the ignition switch to the on position and observe the LED.
4. If the LED is on: Rotate the pickup plate clockwise slowly until the LED just turns off.
5. If the LED is off: Rotate the pickup plate counterclockwise until the LED turns on then, rotate the pickup plate clockwise slowly just until the LED turns off.
6. Tighten the standoff/hold-down screws.

VOES

The vacuum switch (VOES) provides the vacuum advance required by all street driven engines.

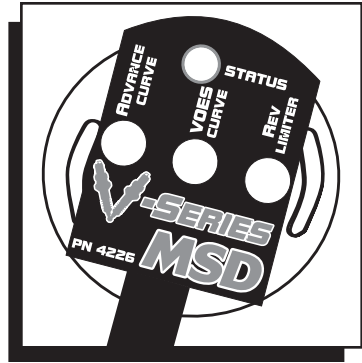


Figure 1

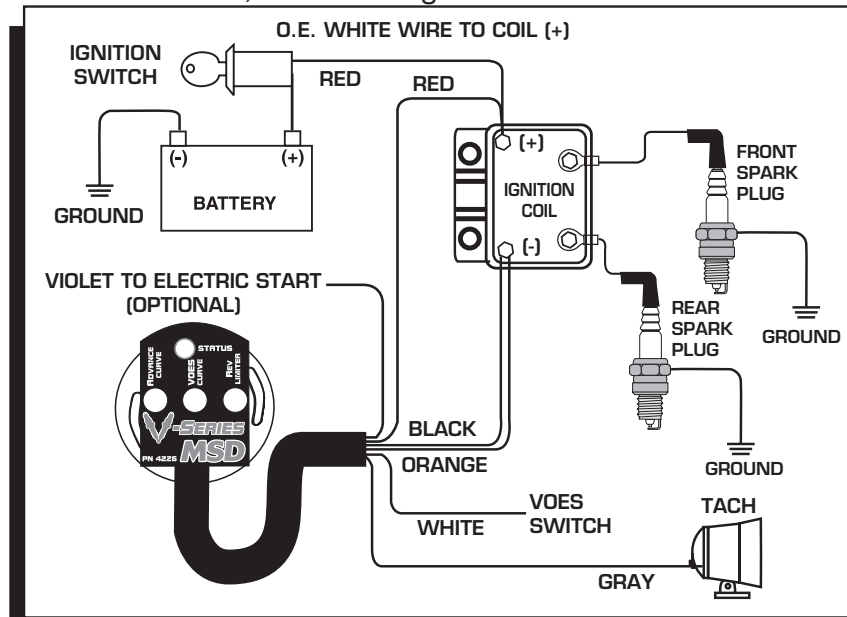


Figure 2 Dual Fire Ignition Hookup.

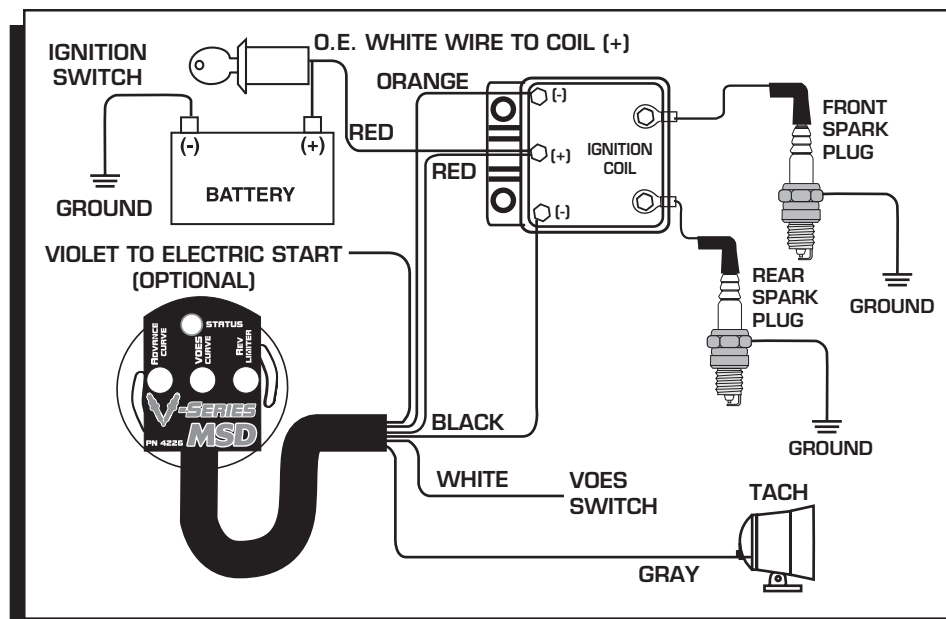


Figure 3 Single Fire Ignition Hookup.

The VOES switch has 10 settings that will alter your VOES curve from 5° to 9.5° in .5° increments depending on switch position. The curve will be altered from 400 rpm to 3,500 rpm and will return to the standard advance curve at 3,500 rpm. Additional advance under low manifold pressure conditions improves idle stability and fuel economy.

There is a 9.5° window of VOES timing adjustment. Each switch position represents .5° of timing change. Switch position 0 starts with 5° then each position there after represents .5°. If your bike detonates under heavy load at low rpm it is recommended that you try using a more retarded VOES switch selection.

Most stock or mildly modified harleys will benefit from the use of the VOES. The way the system works is; at part throttle or cruising speeds, when engine vacuum is high, the switch is closed and the ignition is at full advance by 3,500 rpm. This results in increased fuel economy and improved part throttle drivability. When under heavy acceleration, and engine vacuum is low, the switch opens, causing the V-Series to follow a slower advance curve. This helps to reduce detonation under heavy loads. More heavily modified motors can benefit from using the VOES switch wires in the optional modes outlined in the instruction manual.

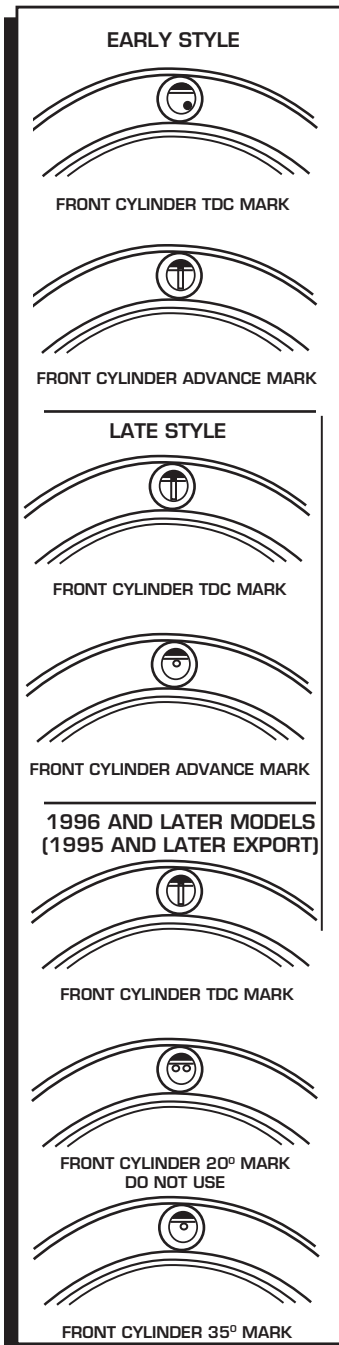


Figure 4 Top Dead Center and front Cylinder Advance Marks for Various Models.

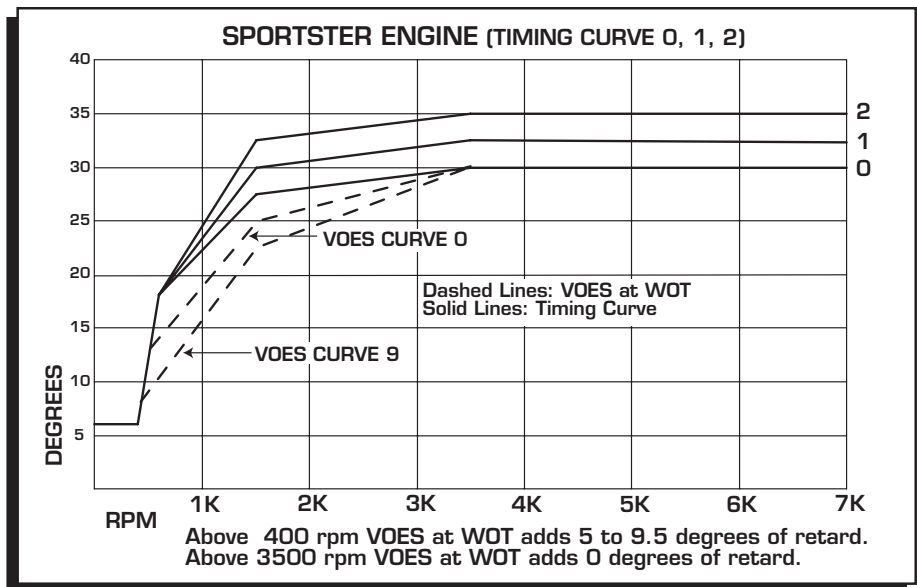


Figure 5 Timing Curves 0, 1 and 2.

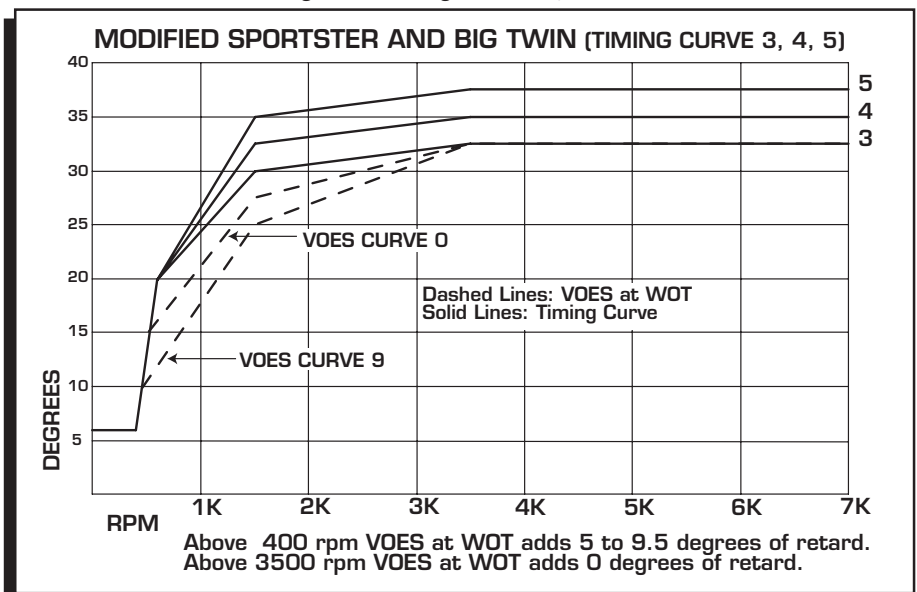


Figure 6 Timing Curves 3, 4 and 5.



INSTALLATION INSTRUCTIONS

TUNING TIPS

When tuning your engine above 3,500 RPM use the Advance curve switch to achieve proper performance.

When tuning your engine below 3,500 RPM use the VOES curve switch to achieve proper performance.

The three dials are as follows:

Dial 1: advance curves ten settings

Dial 2: VOES curves ten settings

Dial 3: Rev-Limiter 5,500-8,000 RPM in 250 RPM increments

See Figure 1 for switch location.

See Figure 5, 6, 7 for Timing Curves and VOES Curves.

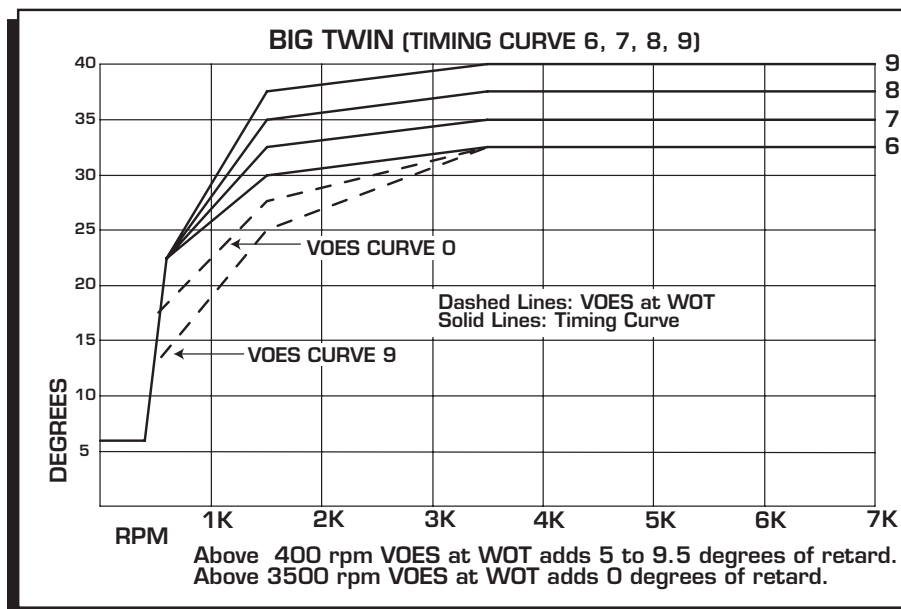


Figure 7 Timing Curves 6, 7, 8 and 9.

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 warranty service, **Proof of Purchase** must be supplied for verification. After the warranty period has expired, repair service is based on a minimum and maximum fee.

All returns must have a Return Material Authorization (RMA) number issued to them before being returned. To obtain an RMA number please contact MSD Customer Service at 1 (888) MSD-7859 or visit our website at www.msdpower.com/rma to automatically obtain a number and shipping information.

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 using Ground shipping methods (ground shipping is covered by warranty). For more information, call MSD at (915) 855-7123. MSD technicians are available from 7:00 a.m. to 5:00 p.m. Monday - Friday (mountain time).

Limited Warranty

MSD 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 MSD 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 MSD. Any item that is covered under this warranty will be returned free of charge using Ground shipping methods.

This shall constitute the sole remedy of the purchaser and the sole liability of MSD. 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 MSD 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 MSD. Any modifications to this item or if it is used on an application other than what MSD 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. MSD will accept no liability for custom applications.