

# MSD IGNITION INSTALLATION INSTRUCTIONS

## Programming Instructions for the SB6 Ignitions PN 4219 and PN 4227

The SB6 Ignitions, PN 4219 and PN 4227, feature PC programmability. A CD is supplied with the ignition or you can go to [www.msdpowersports.com](http://www.msdpowersports.com) to download the software (at no charge). The software requires a Windows based PC.

**Note:** It is recommended to contact the MSD Technical Help Desk with any questions, 888-258-3835.

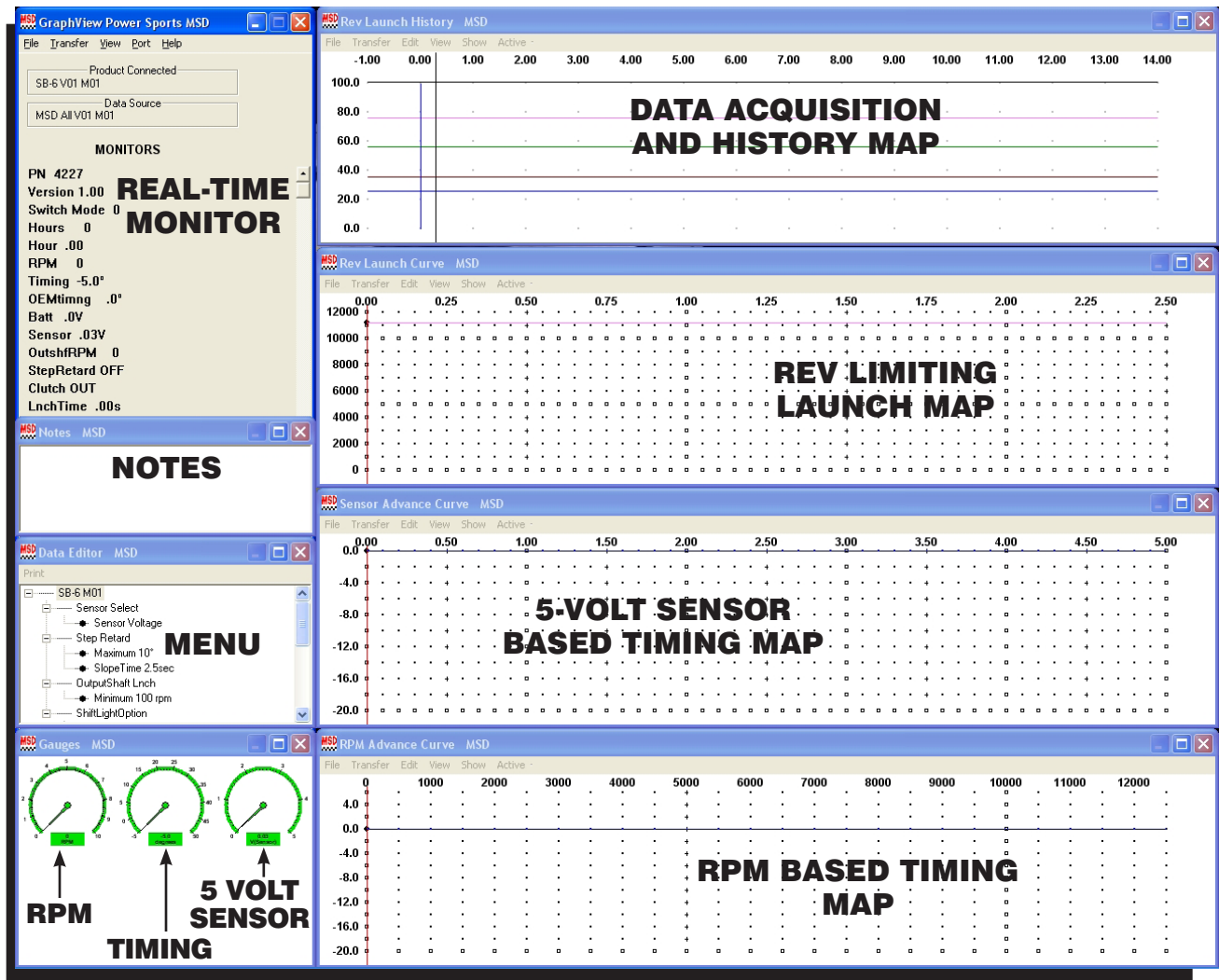


Figure 1 Pro-Data+ Software.

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## **PROGRAMMING FEATURES**

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The following are programmable features of the SB6 Ignition, PN 4219 and PN 4227.

### **FROM THE MENU TREE:**

#### **SENSOR SELECT**

This allows you to select the sensor input that you plan to use to program a 0 – 5 volt reference signal to timing map. The selections are MAP Sensors (1, 2 or 3-Bar) or an Air/Fuel Ratio Kit.

#### **STEP RETARD**

**Maximum:** This is the maximum timing retard when the Brown wire is connected to 12 Volts. An example is to retard the timing during the activation of a nitrous system. When 12 Volts are supplied to the Brown wire, the Step retard is activated. The retard can be adjusted from 0-15° in 1° increments. The default is 10°.

**Slope Time:** This is a time based control for the activation of the step retard. This controls how quickly the retard ramps up to the selected max retard. For instance, if 1.5 seconds is selected for the Slope Time and 10° for the Maximum retard, the timing retard will ramp from 0° retard to 10° retard within 1.5 seconds. This is adjustable from 0 – 5 seconds in 0.1 second increments. Default is 2.5 seconds.

#### **OUTPUT SHAFT LAUNCH**

This is the minimum speed of the output shaft that must be met to activate the Rev Launch Curve. It is adjustable from 0 – 500 rpm in 5 rpm increments and the default is 100 rpm.

#### **SHIFT LIGHT OPTION**

**Light Intensity:** Allows the brightness of the light to be adjusted from 100 (the brightest) to 0 (the most dim). Default is 100.

#### **SHIFT LIGHT ACTIVATION**

An RPM activation point can be programmed for each gear. The rpm is adjustable from 2,000-10,000 rpm in 100 rpm increments. Default is 10,000 rpm.

#### **SHIFT KILL**

**Kill Time:** This controls the duration of time that the ignition output will be disabled when the Shift Kill Wire (Yellow/Black) is connected to ground. Adjustable from 20 – 99 milliseconds. The default is 85 milliseconds.

**Kill Delay:** This is the delay from the time ground is applied to the Shift Kill wire (Yellow/Black) to when the ECU disables the ignition output. It is adjustable from 1-50 milliseconds. Default is 20 milliseconds.

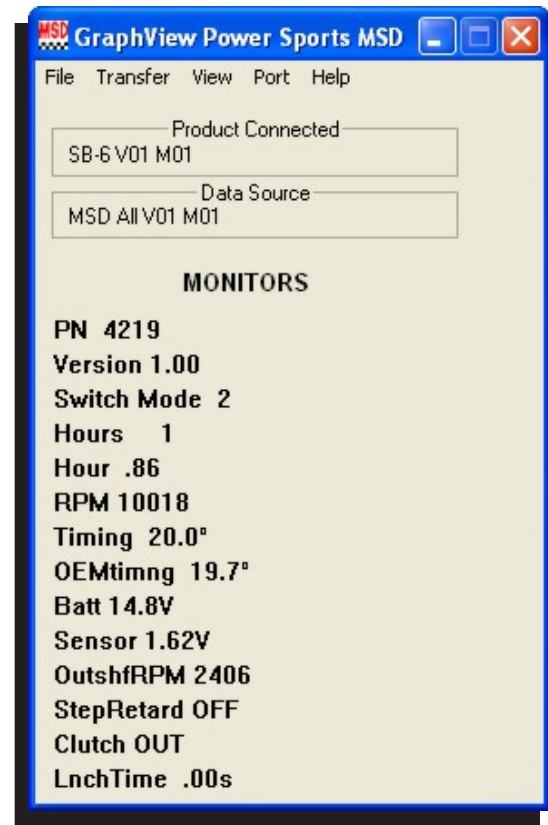
#### **DATA ACQUISITION**

The SB6 will generate a 15-second recording each time the motorcycle is launched and the rpm exceeds 8,000 rpm. The reset is activated through the Blue wire used for the Clutch Switch. History files can be viewed in the "Rev Launch History" file. See page 5 for details.

**MENU**

The Menu area of the Pro-Data+ Software displays real-time rpm, switch position and timing BTDC (Before Top Dead Center). Figure 2 shows an example.

- PN** – Part Number 4219
- Version** – Version 1 of the software
- Switch Mode** – The position of the rotary switch
- RPM** – Real time engine speed
- Timing** – Ignition timing in degrees BTDC
- OEM Timing** – This is the timing of cylinder one as measured by the SB6
- Batt** – Voltage to the SB6
- Sensor** – Input voltage of the selected sensor
- OutshfRPM** – The speed of the output shaft
- Step Retard** – The status of the Step Retard. On is when 12 Volts are applied to the Brown wire.
- Clutch** – Status of the clutch through the Blue wire of the SB6
- LnchTime** – The Rev Launch Curve time



**Figure 2 Menu Values.**

**PRO-DATA+ SOFTWARE**

**INSTALLATION OF THE PRO-DATA+ SOFTWARE**

1. Insert the installation CD into your CD drive.
2. In Windows, click on Start then select Run.
3. In the box type, "D:Setup" and press Enter.
4. The screen will walk you through several steps.
5. Once loaded, your monitor will have an MSD Graph View logo. Click on it to open the software.
6. A program will open. Go to the upper left corner of the screen and click on File, then Open.
7. This will open a menu of part numbers. Select "4219 or 4227".
8. This will open another menu of versions. Highlight and open the "4219vxx.IGN" (xx determines the versions, such as 02). This will open the Pro-Data+ software for the PN 4219/4227 ignition.

**SAVES AND TRANSFERS**

Whenever a change is made to a program, it either must be saved to a file in your PC or it needs to be transferred to the ignition. You will notice that whenever you make a change to a program, the bullet next to the modified value will turn red. It will remain red until you save it to a file or to the MSD. There are two ways to save your files.

**Save to MSD:** This step will save any changes directly into the ignition. If you are only making one or just a couple modifications, this works well.

**Save to PC:** This will save your changes to show on the PC screen only, indicated by a red bullet point next to any altered values. These modifications will not be active or saved until you save the file or transfer the information to the MSD.

## PROGRAMMING

It is recommended to go through the Help file of the Pro-Data+ software to familiarize yourself with the programming capabilities of the SB6 Ignition. Programming the timing and rpm curves are very important to the performance of your bike, however, adjustments must be made with care to the engine and its internal components. If you have any questions on tuning and programming, it is recommended to contact an MSD Tech at 888-258-3835.

### ROTARY SWITCH

The rotary switch next to the main connector of the SB6 allows you to easily select a programmed curve. The settings are designed to match the programs and timing maps that you create and save (Figure 3)

### PROGRAMMING TIMING/RPM MAPS

With the Pro-Data+ software opened, there will be four maps on the right with the main menu, menu items, notes tab and the gauges on the left column. Each window can be enlarged or closed (go to View and select Restore to open all the windows). You can map a timing curve in each of the four charts and save it to a corresponding selection on the rotary dial control of the ignition.

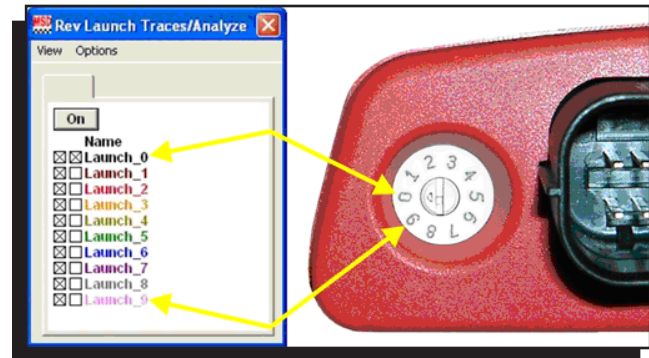


Figure 3 Rotary Switch.

**Rev Launch History:** This is the data acquisition field where you can review and analyze a previous pass. Each pass consists of a 15-second record including 6-seconds prior to the launch.

**Rev Launch Curve:** This chart allows you to map out a rev limit curve based on time. This curve is activated when the clutch switch is released. Up to seven rpm points can be mapped that will limit the rpm through the launch

**Sensor Advance Curve:** This chart allows you to retard the timing based on the input from a 0-5 volt reference sensor such as a MAP sensor.

**RPM Advance Curve:** This chart allows you to advance or retard the timing in regards to the factory timing curve based on the engine speed. You can plot up to seven different timing points.

**Note:** When programming a timing map, it is important to note that any timing alterations are based on the stock timing of the factory ECU. For instance, if you advance the timing 4° at 9,000 rpm, the timing is advanced 4° over the factory timing at that rpm.

### PROGRAMMING A MAP

The Pro-Data+ software provides an easy way to create a timing map.

1. From the top menu bar, select View and Trace/Analysis. This brings up the legend for the chart (Figure 4).

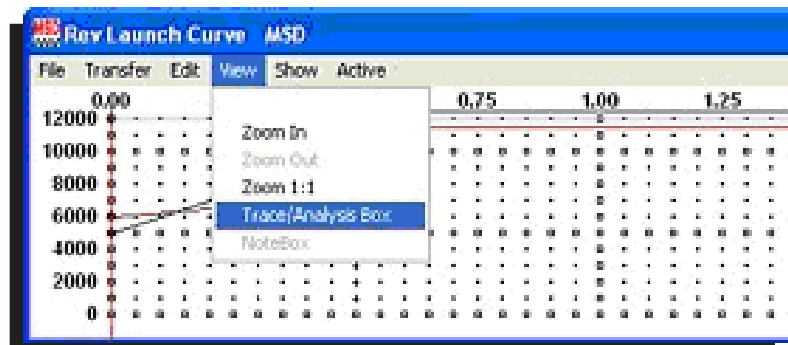


Figure 4 Viewing the Trace/Analysis Box.

- Note that the Traces box has two squares in front of each program. By selecting the left box, the curve will be displayed on the screen. All 10 curves can be displayed. The right box indicates which curve can be modified and only one can be selected at a time (Figure 5).
- To move an existing dot on the screen, left click the dot so it turns Red (active). You can then click and drag that dot to a new point on the screen (Figure 6).
- To add a new dot, right click when the cursor is in the area to program and select "Add Dot". You can then move the dot to the precise point (Figure 6).

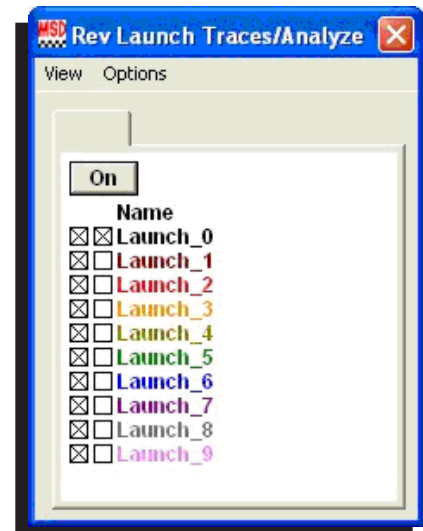


Figure 5 Trace/Analysis Controls.

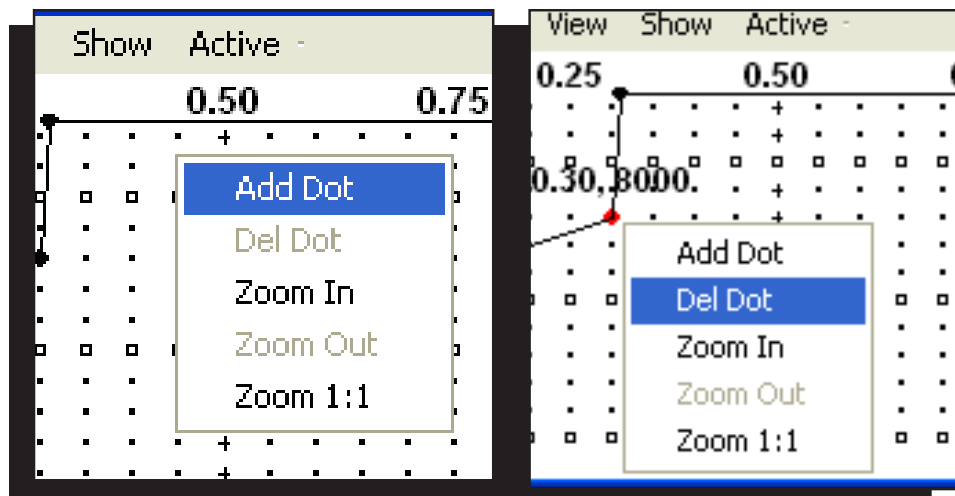


Figure 6 Adding and Deleting Points.

## DATA ACQUISITION

### Saving a Run

- Connect the USB cable from the ignition to a PC and open the software.
- Select Transfer from the Rev Launch History window and click on Acquire to Plot (Figure 7).

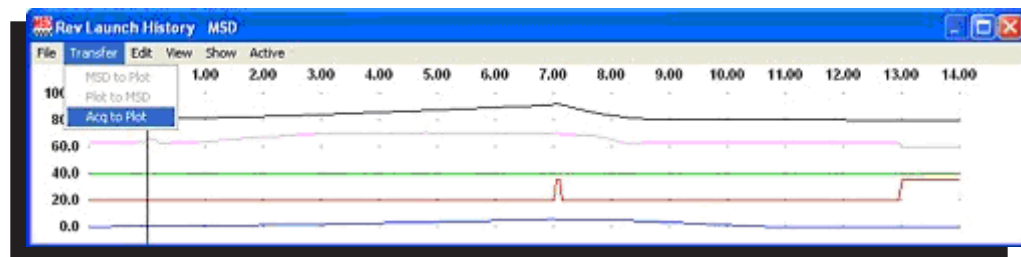
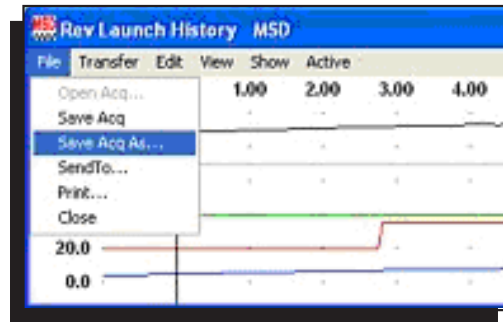


Figure 7 Opening an Acquisition File.

- At this point, it is recommended to name and save the file. From the menu bar of the Rev Launch History window, select File, followed by Save Acquire As (Figure 8).



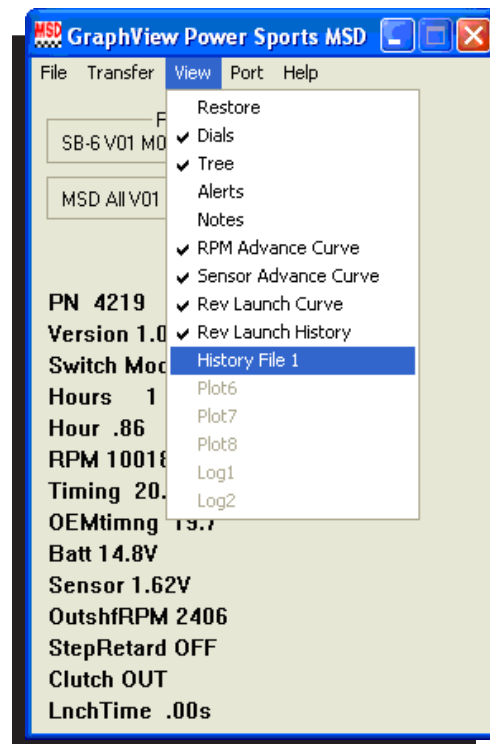
**Figure 8 Saving an Acquisition File.**

4. A window will come up that allows you to name the file and save it in the SB-6 file. Once named, click Save.

### Reviewing a Run

To view a saved recording:

1. From the menu bar of GraphView, select View.
2. From the View pull-down menu, select History File 1 to open the History File Window (Figure 9).
3. In the history file, the user can view RPM, Timing, Sensor voltage, Shift Light Output, and Output Shaft RPM values. Sliding the cursor over the traces shows the value in the Traces/Analyze box. Traces can be viewed stacked, as shown, or overlaid by clicking on the Tier button (Figure 10).



**Figure 9 Opening a Run File.**

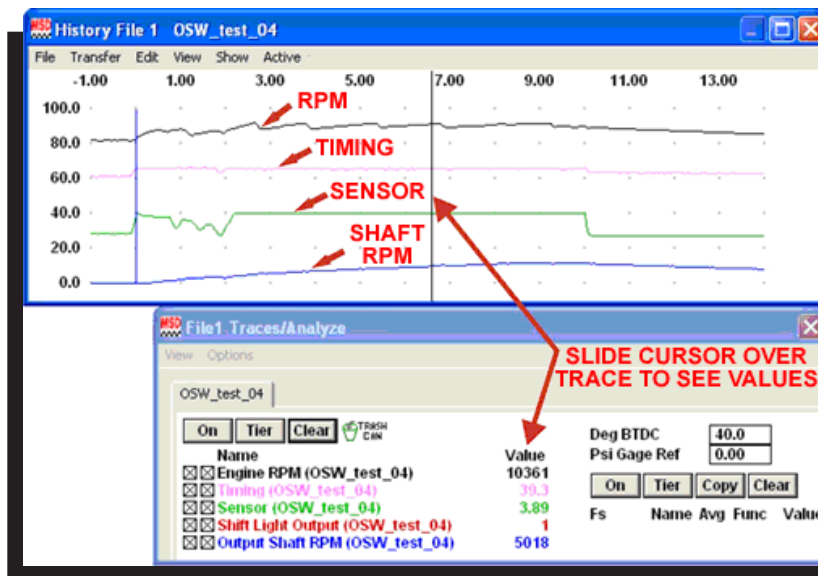


Figure 10 Reviewing Data from a Run.

EXAMPLES

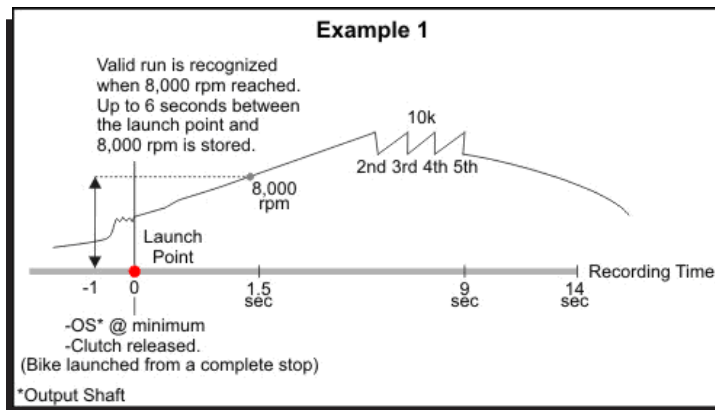


Figure 11 Valid Run Example.

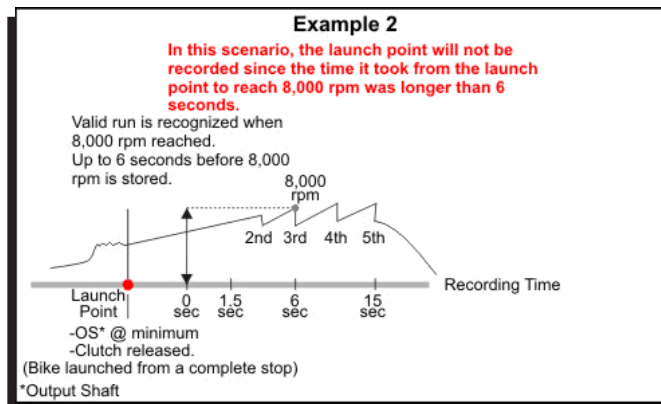


Figure 12 Example with No Launch Point.



# INSTALLATION INSTRUCTIONS

## 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 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 [www.msdivignition.com/rma](http://www.msdivignition.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 Powersports at (915) 858-3365. MSD Powersports technicians are available from 8:00 a.m. to 5:00 p.m. Monday - Friday (mountain time).

### Limited Warranty

MSD IGNITION 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 new products purchased through auction websites. If found to be defective as mentioned above, it will be repaired or replaced at the option of MSD Ignition. 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 Ignition. 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 Ignition 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 Ignition. Any modifications to this item or if it is used on an application other than what MSD Ignition 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 Ignition will accept no liability for custom applications.