INSTALLATION INSTRUCTIONS

MSD 6-Mod Controller for Carbureted and EFI Gen III Engines

PN 6011

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Parts Included
1 - Ignition Controller, PN 6011
1 - Pro-Data+ Software CD
1 - Harness
1 - Parts Bag
1 - 2-Bar MAP Sensor

Optional Accessories
Hand Held Monitor, PN 7550
EFI Harness and Tach Adapter Kit, PN 88814

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

Note: Solid core spark plug wires or non-resistor spark plugs cannot be used with an MSD Ignition Control.

CARBURETOR

The PN 6011 Ignition Controller is designed for Ford Modular engines that have been retro-fit with an intake manifold and carburetor. The Controller is supplied with a wiring harness that connects to the factory connectors for a simple installation.

EFI

This Controller can also be used in stock EFI applications, by using accessory Harness PN 88814. This Harness allows the PN 6011 Controller to tap into the sensor signals without interrupting the OEM ECU. The ECU and coils operate as normal while the PN 6011 controls the timing and rpm. When using with an EFI system, a tach adapter harness will be required, PN 88813.

OPERATION

The MSD Controller offers several programmable features that allow rpm and timing adjustments. This can be achieved through the supplied Pro-Data+ software via a PC or with the optional Hand Held Programmer, PN 7550. Timing adjustments and selections can also be made with plug-in modules. Software installation, operation and the programmable features of the Controller are explained in detail in this document. More information can be found in the Pro-Data+ Software Help section.

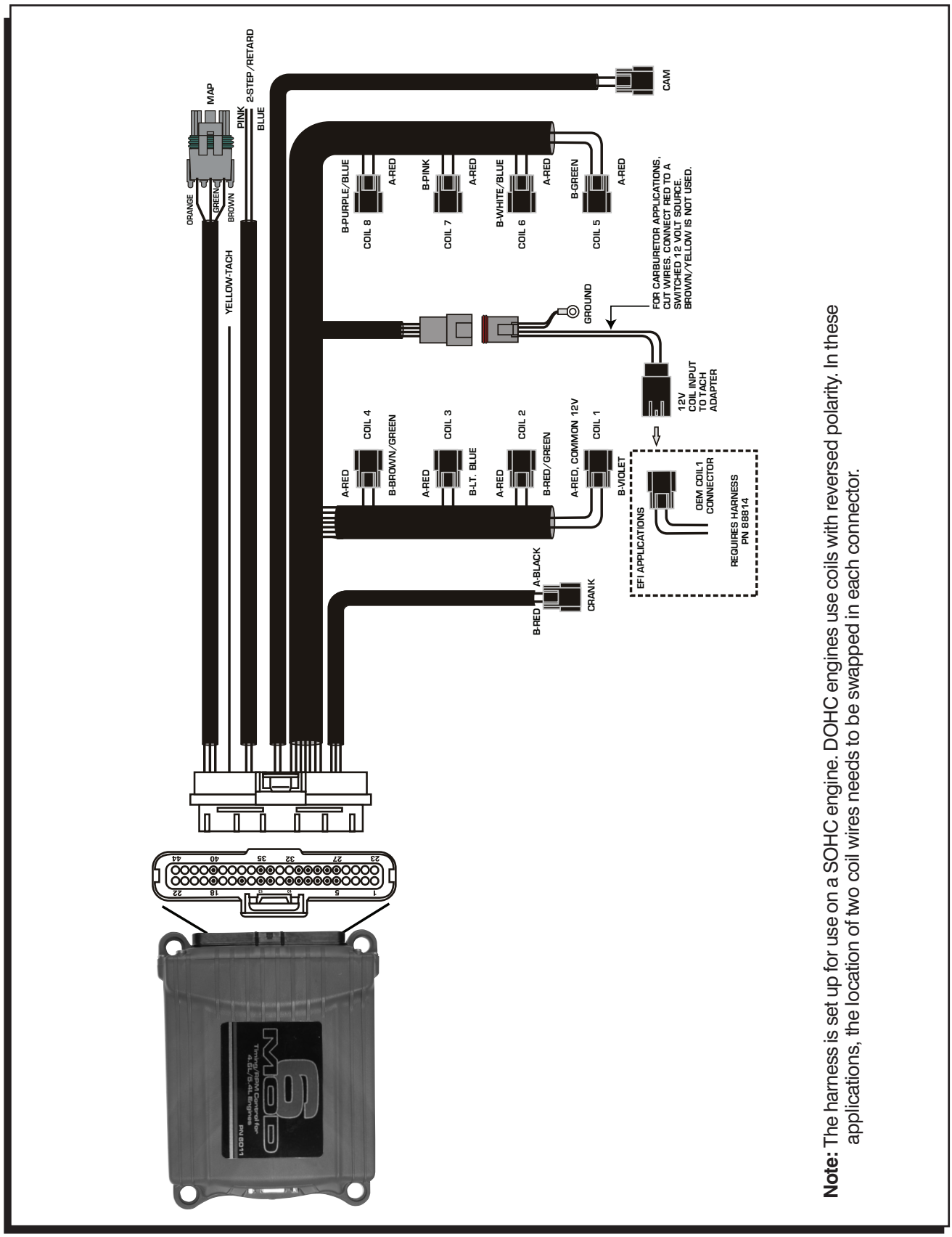
MOUNTING

The Controller is designed to be mounted under the hood or on the firewall. Do not mount the unit near exhaust. Find a suitable location, confirm that all of the wires reach their connections. Mark the mounting hole locations using the unit or the template shown in Figure 3, page 7. Drill the holes with a 3/16" bit.

WIRING

All of the wiring, except four wires, are routed into factory style connectors to ensure an easy installation on a SOHC engine. On DOHC engines the coil polarity is reversed. In these applications, the coil wiring needs to be relocated. It is recommended to look at the polarity markings on the coil to confirm the polarity. The wire descriptions follow in the chart on page 2.

	POWER WIRES	
Note: For carburetor applications this connector is cut off and the Brown/Yellow is not used. For EFI applications, this connects to the number one coil connector.		
RED		12-volt input. Connect to switched 12 volts.
BROWN/YELLOW		Use only with EFI. Coil input wire.
BLACK		Ground. Connect eyelet to ground.
	LOOSE WIRES	
YELLOW		Tach Signal. Provides a 12 volt square wave source.
PINK		Step Retard. When 12 volts are applied, the step retard is activated.
BLUE		2-Step. When 12 volts are applied, the RevLaunch rpm value is active.
	MAP SENSOR	
BROWN	Pin-A	Ground
GREEN	Pin-B	Map Signal
ORANGE	Pin-C	5-volt supply
	CRANKSHAFT SENSOR	
BLACK	Pin-A	Signal Negative (-)
RED	Pin-B	Signal Positive (+)
	CAMSHAFT SENSOR	
BROWN	Pin-A	Ground
TAN	Pin-B	Signal Wire
	COIL CONNECTORS	
***Note:** The harness is set up for use on a SOHC engine. DOHC engines use coils with reversed polarity. In these applications, the location of two coil wires needs to be swapped in each connector.		
RED	Pin-A*	12-volt supply
VIOLET	Pin-B*	Coil-1 Trigger
RED/GREEN	Pin-B*	Coil-2 Trigger
LT. BLUE	Pin-B*	Coil-3 Trigger
BROWN/GREEN	Pin-B*	Coil-4 Trigger
GREEN	Pin-B*	Coil-5 Trigger
WHITE/BLUE	Pin-B*	Coil-6 Trigger
PINK	Pin-B*	Coil-7 Trigger
VIOLET/BLUE	Pin-B*	Coil-8 Trigger



Note: The harness is set up for use on a SOHC engine. DOHC engines use coils with reversed polarity. In these applications, the location of two coil wires needs to be swapped in each connector.

Figure 1 Wiring the MSD Gen III Controller.

PROGRAMMABLE FEATURES

The following explains the programmable features of the PN 6011 Controller. The features are listed in the same order shown on the Data Editor list in the software. Note that the Help pull down menu of the software offers explanations of all the features.

Note: STATS Stat 1 or SCAN are display features only used with the Hand Held Monitors, PN 7550 or PN 7553.

RPM TABLE (RPMtbl)

This setting can only be modified from the RPM Timing Curve edit graph on the lower right of the screen (It can also be set with the Hand Held Monitor). The chart allows you to map out an entire timing curve, much like the centrifugal advance of a mechanical distributor.

To create a map, simply position the mouse at a point on the chart and right click to add a dot. Up to 10 points can be added. By moving the mouse over this point and a left click, the dot changes to red (active) and you can move it around the map by clicking and dragging.

Note: The timing has minimum and maximum limits that are set in the Data Editor Menu. These settings include the cumulative value of any vacuum advance or retard as well as the Switch Retard if used.

MAP TABLE (MAPtbl)

Note: In order to take advantage of a vacuum advance, a MAP sensor is required.

This is a Manifold Absolute Pressure (MAP) chart. It gives you the capability of modifying the timing curve based on manifold pressure (vacuum or boost). A curve can be created from the MAP Advance Curve graph on the upper right of the screen (It can also be set with the Hand Held Monitor). The chart allows you to map out an advance curve based on manifold vacuum (much like the vacuum advance on a mechanical distributor).

To create a map, simply position the mouse at a point on the chart and right click to add a dot. Up to 10 points can be added. By moving the mouse over this point and a left click, the dot changes to red (active) and you can move it around the map by clicking and dragging.

Note: The timing has minimum and maximum limits that are set in the Data Editor Menu. These settings include the cumulative value of any vacuum advance or retard as well as the Step Retard if activated.

MAP SENSOR SELECT

Allows the selection of a 1, 2 or 3-bar MAP sensor. This setting should be set to match the MAP Sensor in use: 1-bar (0-15 psia), 2-bar (0-30 psia), 3-bar (0-45 psia). A 2-bar Sensor is supplied.

TIMING LIMIT

There are two adjustments that set the limits of ignition timing. These settings are meant as safety targets to keep the timing in check. Both the Minimum and Max values include any timing retards or advancements.

Min Timing This is the minimum amount of timing advance. It is adjustable from 0°-20° BTDC with a default of 5°.

Max Timing This is the maximum amount of timing advance. It is adjustable from 25°-65° BTDC with a default of 45°.

PRO-DATA+

Installation of the Pro-Data+ Software

1. Insert the installation CD into your PC.
2. In Windows, click on Start then select Run.
3. In the box type, “D: Setup” and press Enter (or corresponding drive).
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 “6011”.
8. This will open another menu of versions. Highlight and open the “6011vxx.IGN” (xx determines the versions, such as 02). This will open the Pro-Data+ software for the Ignition Controller.

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 Controller. 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 Controller. If you are only making one or just a couple modifications this works well.

Save to PC: This will save your changes to only show on the PC screen (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.

You can create numerous files on your PC and download them for testing purposes or save programs you used at different races or events.

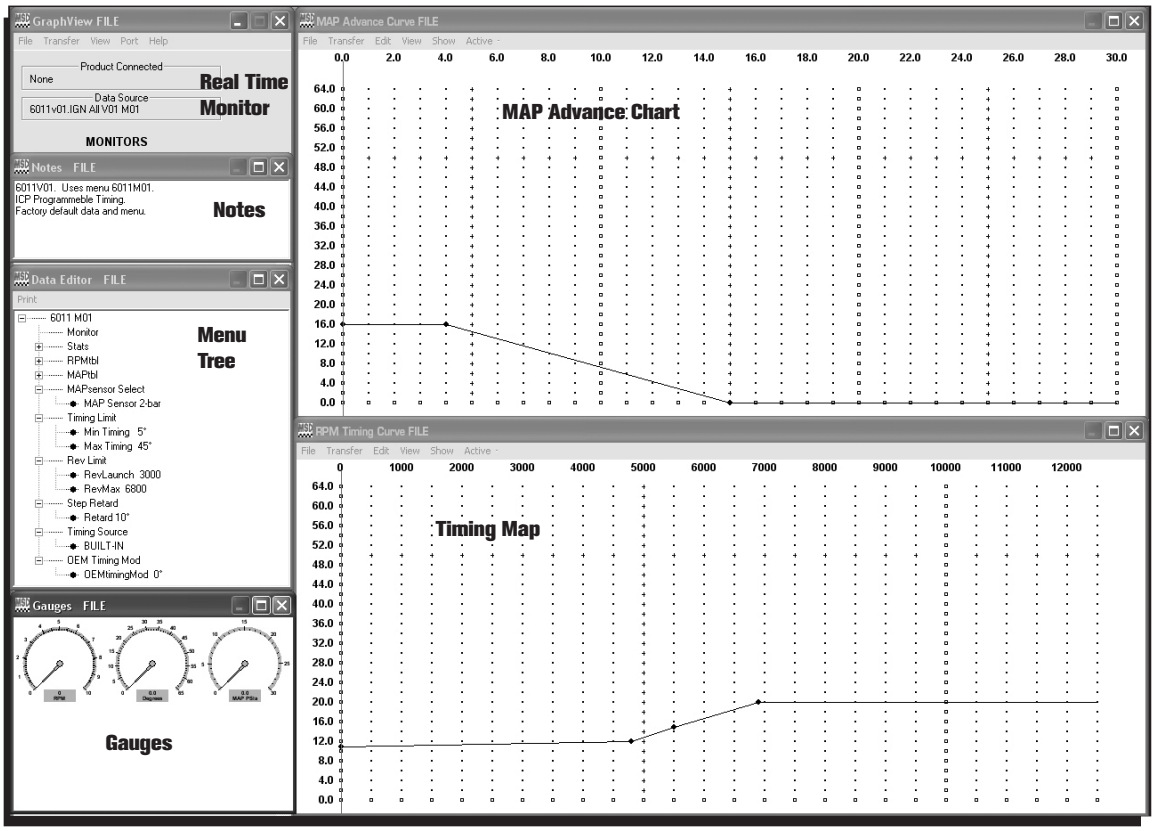


Figure 2 Pro-Data+ Screen and Programming Windows.

REV LIMITS

The Controller allows you to program two rev limits; one for an over-rev safety and another that provides a low limit for use as a launch, or two step limit.

RevLaunch This is the low rpm limit that is designed to be used while staged at the starting line. It is activated when the Blue wire is connected to 12 volts. When there is no 12 volts on this wire, the High Rev Limit is active. It is adjustable in 100 rpm increments from 2,000 - 12,500 rpm.

RevMax This is the high, or over-rev rpm limit. It is active whenever the Blue wire (RevLO) is **not** connected to 12 volts. It is adjustable in 100 rpm increments from 2,000 - 12,500 rpm.

STEP RETARD

A step retard will provide an adjustable amount of retard at a specific moment. This is ideal when using nitrous oxide. The amount of retard is adjustable from 0° - 15° in 1° increments. The retard is activated when the Pink wire is switched to 12 volts. Default is 10°.

TIMING SOURCE

This adjustment allows you to select a timing curve. The 6-Mod lets you run a Built-In default curve that can easily be modified by using the RPM Table chart. On engines using the factory EFI you can select OEM Advance or OEM Retard to use the factory ECU's timing map.

Built-In: This is a general timing curve that is designed to work well with most stock type engines. This chart is shown in the RPM Table and MAP Table charts. These can easily be modified by clicking and dragging on the dots, or by adding a dot (right click) and saving to the ignition.

OEM Advance: This selection is used with a factory EFI equipped engine. The 6-Mod will use the factory ECU's timing curve. By using the OEM Timing Mod option below, the entire timing curve will be advanced the amount you set.

OEM Retard: This selection is used with a factory EFI equipped engine. The 6-Mod will use the factory ECU's timing curve. By using the OEM Timing Mod option below, the entire timing curve will be retarded the amount you set.

OEM TIMING MOD

This option is available only when running the factory ECU's timing curve on EFI equipped engines (Selected as OEM Advance or Retard). Here you set the total amount of advance or retard for the factory timing curve. The default is 0°.

OEMtimingmod: Adjustable from 0° - 10°.

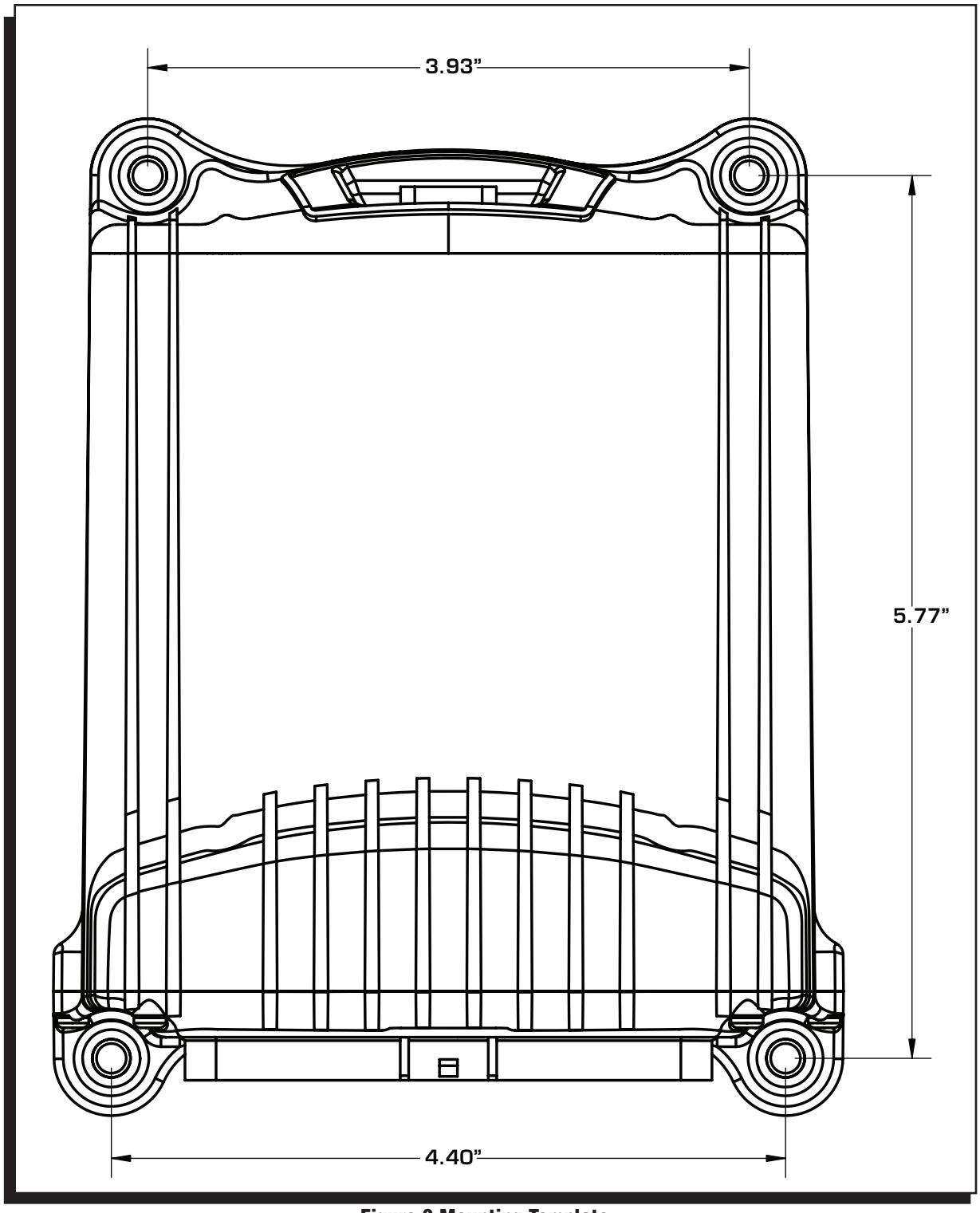


Figure 3 Mounting Template.

MSD INSTALLATION INSTRUCTIONS

TECH NOTES

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.msdperformance.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.

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