



INSTALLATION INSTRUCTIONS

MSD Kicker Ignition System Installation Instructions PN 4160

Parts Included

1 - Kicker Ignition	4 - Aluminum Spacers
1 - Trigger Mount (New Style Engine G23-LH)	4 - 10/32 Nylock Nuts
1 - Spark Plug Wire with Boots	2 - 10/32 Wing Nuts
1 - Round Timing Tape Decal (New Style Engine)	8 - 10/32 Flat Washers
2 - Foam Tape Strips	4 - 10/32 Flat Head Bolts 1 1/4" (Black)
2 - Battery Mounting Straps	2 - 10/32 Flat Head Bolts 1" (Black)

Tools Needed

1 - #2 Phillips Screw Driver	1 - 3/8" Open End Wrench
1 - 1/2" X 82 Degree Counter Sink Drill Bit	1 - 7/32" Drill Bit
1 - Straight Blade Screwdriver	1 - 3/8" Drill Motor
1 - 3mm Allen Wrench	1 - Timing Light with Battery (Optional)
1 - 1/8" Allen Wrench	

Parts Required But Not Included

- 1 - 7.2 Volt NiCad Battery 1500 Mah Minimum (RC Car Battery Pack)
- 1 - 2"X10.5" Aluminum Plate 1/4" Thick (Go-Quad Only)

TECHNICAL

The MSD Kicker Ignition System is a high output multiple spark capacitive discharge ignition system (MSD) with the ability to adjust the timing curve for different engine combinations. If you increase the compression, run high octane fuel, advance the initial timing, or have ported your engine, then you will need to adjust your timing curve accordingly.

The MSD Kicker Ignition allows you to adjust the rate of retard from .5° per thousand rpm to 1° per thousand rpm. This can be done with just a simple turn of a screw.

The MSD Super Conductor Spark Plug Wire is a super high quality, low resistance (50 Ohm's per foot) spark plug wire that has an extremely high Electro Magnetic Interference (EMI) suppression capability. The MSD Enhancer Ignition will only work with the Super Conductor Wire.

The MSD Kicker Ignition is a total loss ignition system. This means that all of the spark energy that is produced is supplied from a 7.2 volt NiCad battery. These batteries are available from most toy stores or hobby shops that carry radio controlled cars. If you have any problems locating a battery you can call MSD Ignition and we would be glad to make some alternate suggestions. A standard fully charged 1500 mah (milli-amp hour) battery will have an expected discharge rate of approximately 1.5 - 2 hours before needing to be recharged.

A standard spark plug can be used with the Kicker Ignition. However the spark plug gap may be increased to between .032" - .036". If you have a relatively stock engine then you can use the .036" gap. As you increase the amount of modifications then you will need to decrease the size of the spark plug gap. In extreme cases a smaller gap may be required.

ENGINE IDENTIFICATION

There are two different engines that have been used with the Go-Ped models. You will need to know which engine you have to properly install the MSD Kicker Ignition. The Kicker comes from the factory ready to install on the old style engine. On new model applications you will need to replace the pickup mounting plate with the new one supplied. Following are the ways to distinguish which engine your Go-Ped is equipped with.

OLD STYLE:

- Used on all models produced before 1995
- The engine number is G2D-58 which is located on an engine decal
- The spark plug is mounted straight up and down
- The flywheel has 12 cooling fins that face out towards the pull start cover
- The flywheel uses two widely spaced tabs for the pull start mechanism.

NEW STYLE:

- Used on all models produced in 1995 and after
- The engine number is G23-LH. This number will be on a decal on the engine.
- The spark plug on this model is mounted at an angle towards the front of the Go-Ped (Figure 1).
- The flywheel has 16 cooling fins facing in towards the engine.
- The flywheel uses four pull start tabs.

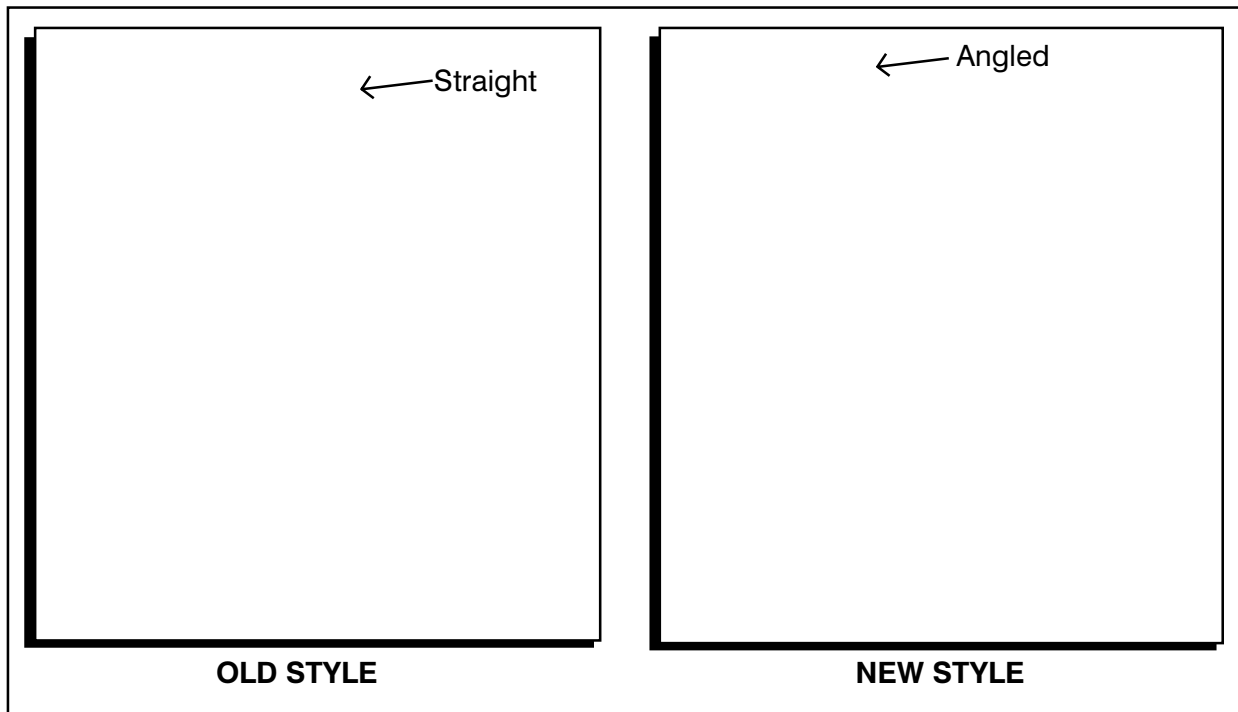


Figure 1 Identifying Your Engine.

REMOVING THE STOCK IGNITION

1. Remove the Phillips head screws that hold the pull starter assembly to the engine and remove the pull starter assembly.
2. Disconnect all wires from the factory coil assembly. The '95 and newer models will have only the coil assembly to unplug. The older models will have a coil assembly as well as an additional small square black module to unplug.
3. Remove the two screws that hold the coil assembly to the engine. Remove the entire factory ignition coil assembly. Make sure you retain any small plastic spacers that are under the stock coil assembly. You may need to reuse them later. On old style engines also remove the small square black module mounted below the engine.

MOUNTING

The mounting will vary depending on which model Ped you own. The Go-Ped will require no additional hardware while the Go-Quad will require an aluminum plate to be fabricated. (See attached template)

Go-Ped Mounting

1. With the Go-Ped upside down, position the Kicker Ignition on the right side (opposite the exhaust hole) so the spark plug wire post is to the rear of the Go-Ped. Press the back of the Kicker ignition tightly up to the frame rail with the spark plug lead facing out (Figure 2). Make sure the kick stand will still move freely without hitting or binding on the Kicker Ignition.

2. Use the Kicker Ignition as a guide and mark the position of the mounting holes. Use a 7/32" bit and drill the two holes in the deck.

NOTE: If you have an aluminum deck you may need to shorten the mounting screws. Turn the Go-Ped back over and counter sink the holes until the heads of the screws are flush with the top of the deck using 1/2" x 82° counter sink bit.

3. Route the ignition wires along the frame rail to the rear of the Go-Ped. Bolt the ignition to the deck using the supplied hardware. You may need to remove the deck.

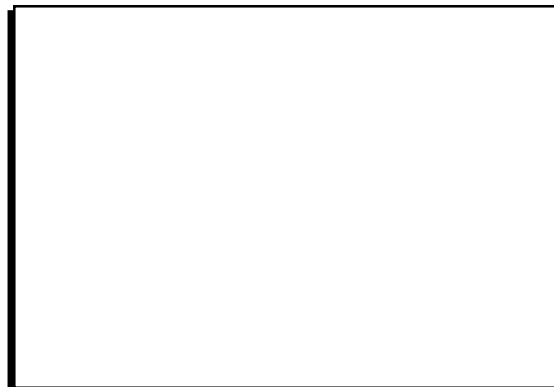


Figure 2 Mounting the MSD to a Go-Ped.

4. Next position the NiCad battery pack (not included) on the opposite side of the Kicker Ignition. Make sure that the battery does not interfere with the exhaust outlet on the frame rail. Place the two nylon straps over the battery and mark the holes to be drilled. Drill the mounting holes and counter sink the top side. (Note: to make the battery removal and installation easier, you may want to drill and tap the two outside holes. This will hold the bolt to the deck when the battery is being swapped.)
5. Bolt the two straps down on the inside only using two of the Nylock nuts. Place the two foam strips under the battery and position the battery with the connector to the rear of the Go-Ped. Place the straps over the bolts, then place the aluminum spacer and washers over the bolt and strap connector and tighten down. (Note: if you have an aluminum deck you may need to shorten the mounting screws.)

Go-Quad Mounting

1. The Quad-Ped will need a flat aluminum or steel plate to be fabricated. There is a template on page 8 that will help you fabricate the mounting plate.

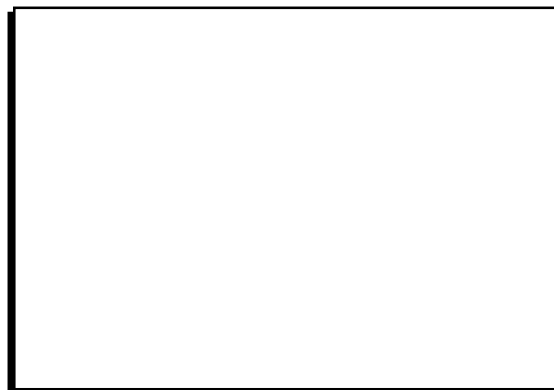
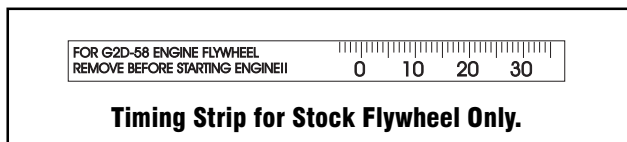


Figure 3 Go-Quad Mounting Plate

OLD STYLE ENGINE INSTALLATION

TRIGGER PICKUP INSTALLATION

1. The Kicker Ignition comes from the factory setup to be installed on the old style engine. All that is required is to bolt the pick up assembly to the engine using the factory bolts.
2. Verify that the "X" mark on the pickup is facing the flywheel (Fig. 4) and the trigger pickup is within 3/8" from the stock flywheel or 1/8" from the MSD billet flywheel.

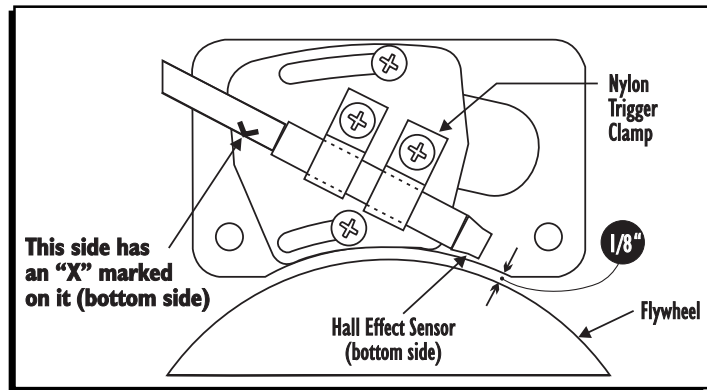


Figure 4 Installing the Trigger Pickup, Old Style Engine.

TIMING MARK INSTALLATION

If you are using the stock flywheel you will need to scribe the timing marks into the flywheel as described in the next procedure. The MSD Billet Flywheel already has timing marks in 2° increments.

1. Rotate the engine to top dead center. Locate and cut out the timing strip on the bottom of page 3 of this instruction manual. Position the timing strip on the top of the flywheel so that the "TDC" mark on the timing strip is straight up on the flywheel. Use clear tape to fasten the strip to the flywheel (Figure 5). Using the timing strip as a template scribe each timing mark onto the flywheel. The timing tape is strictly a template and is not meant to be permanently attached.
2. If you are using an MSD Billet Aluminum Flywheel you will notice the timing marks are already machined into the outer diameter of the flywheel in 2° increments. Position the engine at TDC.
3. Fasten a small wire (a small paper clip works well for this) to one of the upper engine cover mounting bolts and position it over the TDC mark scribed on the flywheel. Verify that the engine is at top dead center and that the pointer is directly over the TDC mark on the flywheel.
4. Temporarily connect the black wire from the MSD Kicker Ignition to the lower engine cover bolt. This will be placed on the outside of the cover after all of the timing checks have been made.

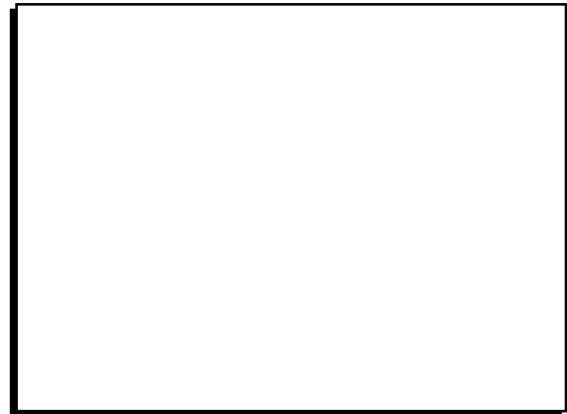


Figure 5 Timing Marks and Indicator.

CAUTION: Do not run the ignition system if the black ground wire from the MSD Kicker Ignition is not attached to the engine case.

NEW STYLE ENGINE INSTALLATION

TRIGGER PICKUP INSTALLATION

If you are installing the Kicker on a new style engine then you will need to remove the trigger pickup from the current mounting plate and reinstall it on the new style engine mounting plate.

1. Remove the existing mounting plate from the trigger pickup. Do not damage the nylon straps as these will need to be reused on the new style plate.
2. Locate the trigger bracket that is included with the Kicker ignition system (Figure 6). The MSD Kicker Ignition can be set up to be used with the stock flywheel or the MSD Billet Aluminum Flywheel. If the stock flywheel is used the upper trigger pick up hole will be used. (Fig. 6) The stock flywheel is larger in diameter so these holes will position the pickup further away. If the MSD Billet Flywheel is used, then the lower holes will be used which will position the pick up closer to the flywheel.
3. Rotate the trigger wire in the nylon straps until the "X" mark on the wire is facing up (Figure 6). This will calibrate the trigger for the new style engine flywheel.
4. Mount the pickup using the stock bolts and plastic spacers along with the aluminum spacers supplied with the kit. Position the pickup in the middle of the slots leaving the bolts loose (Figure 6). Verify that the trigger wire is located within $3/8"$ on the stock flywheel or $1/8"$ on the MSD aluminum flywheel.
5. Plug the brown wire from the MSD Kicker Ignition into the kill wire on the Ped.

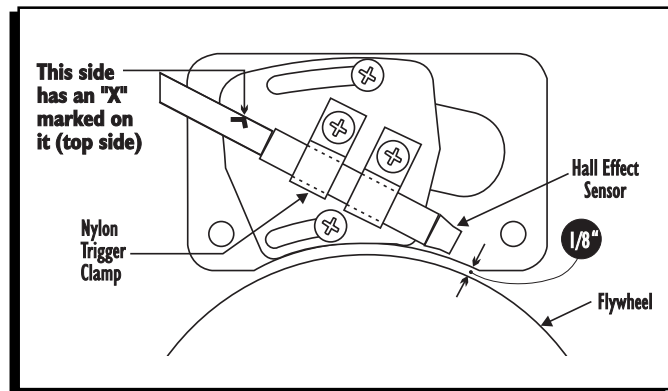


Figure 6 Locating the Pickup on the New Style Trigger Bracket.

CAUTION: Do not run the ignition system if the black ground wire from the MSD Kicker Ignition is not attached to the engine case.

TIMING MARK INSTALLATION

There are two options to choose from when installing a timing indicator with the New Style Engines.

Option 1

1. Rotate the engine to top dead center. Position the timing tape on the flywheel with the "TDC" mark towards the top of the engine.
2. Replace the engine side cover. Connect the Black wire terminal to the lower case cover bolt and fasten to the engine. Remove the pull starter assembly from the engine side cover.
3. Verify that the engine is at top dead center. Scribe a mark on the engine side cover that lines up with the "TDC" mark on the timing tape (Figure 7). You are ready to set the timing which is outlined in the next section.

Option 2

1. Fasten a small wire (a small paper clip works well for this) to one of the engine cover mounting bolts and position it over the TDC mark on the timing tape. Verify that the engine is at top dead center and that the pointer is directly over the TDC mark on the timing tape.

Temporarily connect the black wire from the MSD Kicker Ignition to the lower engine cover bolt. This will be placed on the outside of the cover after all of the timing checks have been made. You are ready to set the timing which is outlined in the next section.



Figure 7 Timing Indicator.

Note: Do not run the ignition system if the black ground wire from the MSD Kicker Ignition is not attached to the engine case.

SETTING THE IGNITION TIMING

1. Install the Super Conductor Plug Wire. One end of the wire has been shortened to fit the spark plug. Connect the MSD side of the wire and route the wire up to the spark plug so it will not interfere with the rider or the engine.
2. Remove the spark plug and connect it to the spark plug wire. Position the plug so it is securely against the engine case. This will allow the Kicker Ignition to fire the spark plug without the engine trying to run. Plug the NiCad battery into the Kicker Ignition.

CAUTION: Do not leave the spark plug in the cylinder as the engine may start or kick back and cause a serious injury.

3. At this point, all of the ignition wires should be connected and the battery should be plugged in. Rotate the flywheel in a clockwise rotation until the small LED light on the side of the ignition comes on. The spark plug should also spark at this point.
4. Check to see where the timing indicator is pointing. This is the static timing. If you feel comfortable with this timing spec tighten down the trigger mounting bolts and confirm the timing setting one more time.
5. Disconnect the battery, remove the wire pointer and disconnect the black wire on the ignition from the engine case (If the side cover is removed). MSD recommends that you start out at 27° BTDC. This will be approximately 7° advanced over stock.

Note: If the LED light does not come on, make sure the battery is fully charged and the trigger wire is within 3/8" of the stock flywheel or 1/8" from the billet flywheel. The position of the trigger pickup is critical. If you have a new style engine then the "X" mark on the pickup must be facing up, away from the flywheel. If you have an old style engine then the "X" mark will be facing down, towards the flywheel.

6. Reinstall the engine side cover or the pull starter. Bolt the black wire to the lower bolt on the cover. Adjust the timing screw on the kicker ignition to the full clockwise position. This will provide the highest amount of retard.

TEST RUNS AND ADJUSTMENTS

1. Make sure the engine starts easy and runs smooth. Let the engine warm up then go for a ride. Adjustments to carburetor may be necessary due to the increased voltage and fuel combustion.
2. If you are experiencing detonation at higher rpm, you will need to retard the static timing setting.

Note: For best performance set the static timing as high as possible without having detonation or signs of over heating. This should be in the 25 to 29 degree range.

Timing Retard

The Kicker Ignition has a built in timing adjustment. This adjustment provides a rate of retard as rpm increases. With the adjusting screw in the full counterclockwise position the Kicker Ignition will retard the ignition timing at a rate of $\frac{1}{2}^{\circ}$ per 1000 rpm. With the timing adjustment screw in the full clockwise position the MSD Kicker Ignition will retard the timing at a rate of 1° per 1000 rpm. Figure 8 shows the timing curve of the Kicker Ignition.

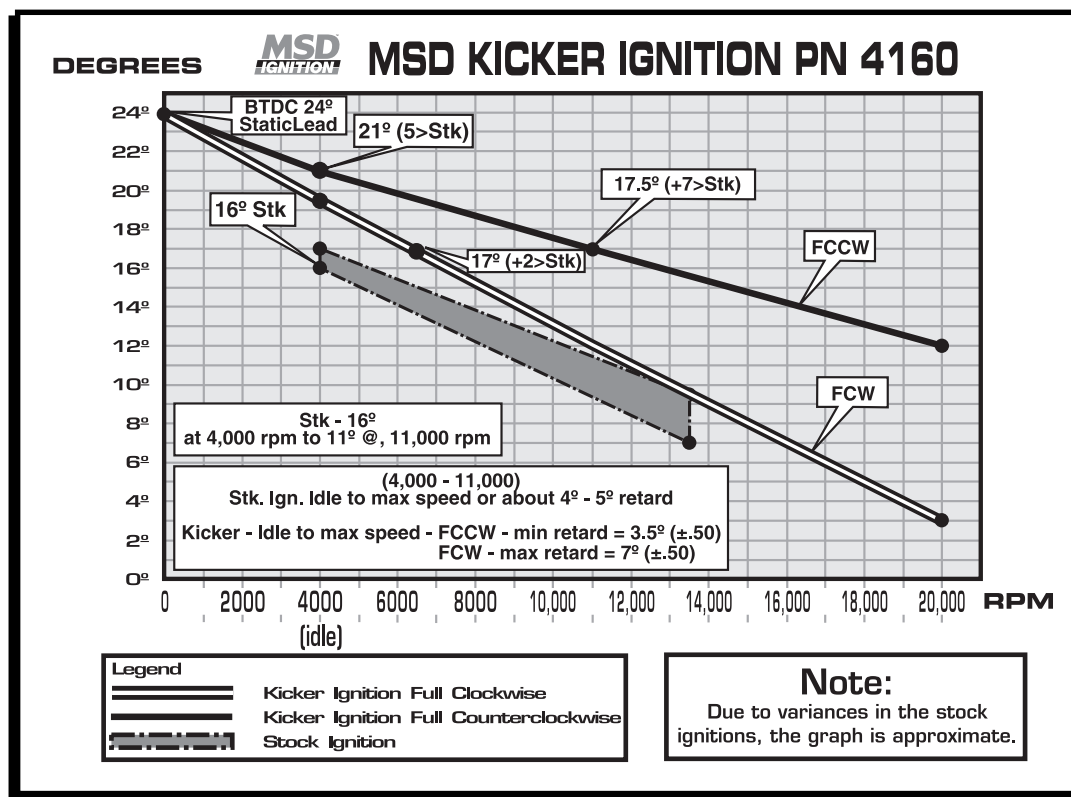


Figure 8 Kicker Ignition Curve.

TROUBLESHOOTING

Problem - The timing is way off and I can't get the adjustment that I want.

Solution - This is caused by the trigger wire being installed upside down. For the new style engines the "X" on the trigger wire must be facing up, away from the flywheel. For old style engines the "X" must be facing down, towards the flywheel.

Problem - No spark.

Solution - This can be caused by a number of things. The following are items to check.

INSTALLATION INSTRUCTIONS

- Check the status of the battery. There should be at least 7 volts at the battery.
- Next, check all wire connections paying especially close attention to the black ground wire.
- Make sure the kill wire is not grounding through the throttle cable, disconnect the kill switch wire and then try to restart the engine. If it starts then your throttle cable is grounded to the engine and must be isolated.
- Check the gap between the trigger and the flywheel. The gap should be no larger than 3/8" with the stock flywheel or an 1/8" on the billet flywheel.
- Check the Super Conductor Spark Plug Wire. Using an Ohm meter check the resistance of the wire. It should be about 50 ohms per foot of wire.

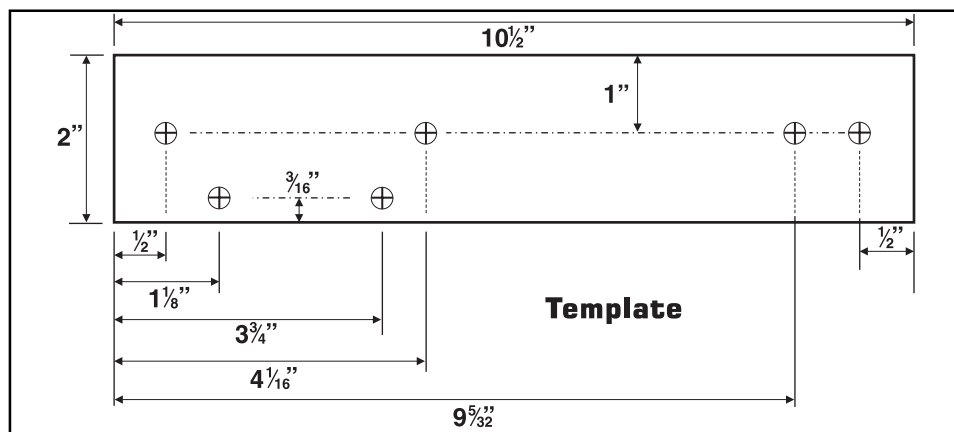


Figure 9 Mounting Template for Go-Quad.

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. For more information, call the MSD Customer Service Line (915) 857-5200. MSD technicians are available from 7:00 a.m. to 6:00 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.