

## BoonDocker Nitrous System Installation Instructions For Polaris Outlaw ATV



Before you begin, please read the instructions below and check kit contents

### Nitrous Kit Contents:

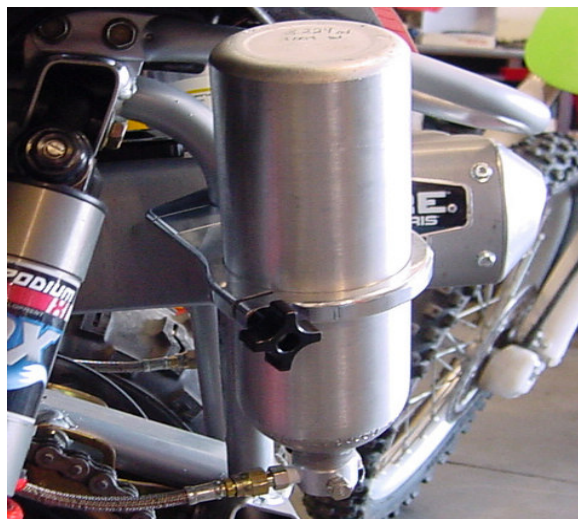
- |  |   |
|--|---|
| 1 – Nitrous Manifold with fittings installed         | 1 – 1/8" NPT to 4AN 90deg. adapter for solenoid |
| 2 – Nitrous Bottle with 4AN fitting                  | 1 – pushbutton switch                           |
| 2 – bottle clamps                                    | 1 – mounting clamp for pushbutton switch        |
| 2 – bottle bracket                                   | 1 – rectifier                                   |
| 1 – high pressure braided hose 24"                   | 4 – misc. electrical connectors                 |
| 2 – high pressure braided hose 18"                   | 3 – orifice cup plugs (1 large, 2 small)        |
| 1 – 12" length of 1/8" black nylon hose              | 1 – 3' length of 1/4" tubing                    |
| 1 – solenoid   | 2 – 1/4" x 1/4" x 1/4" barbed Tee               |
| 1 – solenoid holding bracket                         | 1 – 4 an x 1/8 npt female                       |
| 1 – crimp on ring terminal                           | 1 – 4 an x 4 an x 1/8 npt male tee fitting      |
| 1 – 1/8" NPT 90deg push connect Fitting for solenoid |   |

### Part I – Bottle Installation

When the bottle is filled (our bottles are shipped empty), both nitrous liquid and nitrous gas are present inside the bottle under high pressure (900psi). Due to gravity and acceleration forces from the ATV, the liquid portion of the nitrous will be at the bottom and rearward areas of the bottle. It is important to mount bottle so that the valve is down so you can draw the liquid nitrous from the bottle.

### (Part I – Bottle Installation cont.)

The Pro-Werks clamps are a two piece design. One part of the clamp will clamp the bottle while the other half will clamp on the frame of the atv. It may be necessary to remove the exhaust in order to tighten the Pro-Werks clamps to the frame of the atv. You simply tighten the black knob on the clamp to secure the bottle.

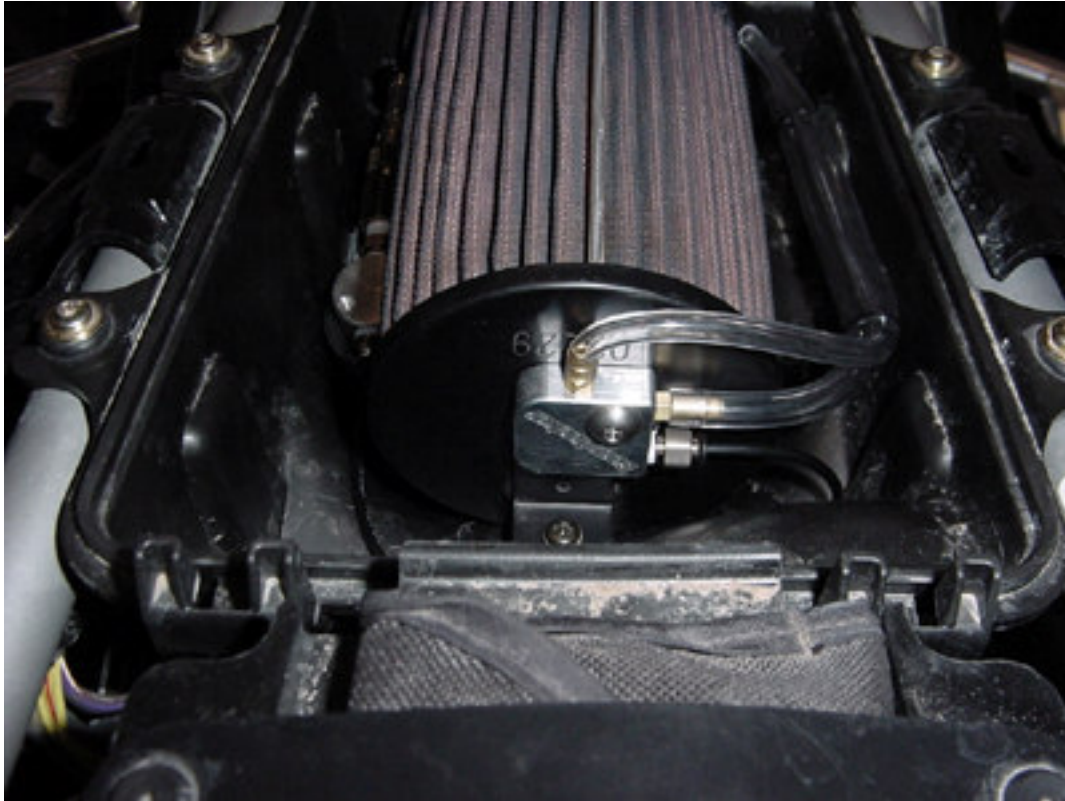


### Part II – Nitrous Manifold Installation

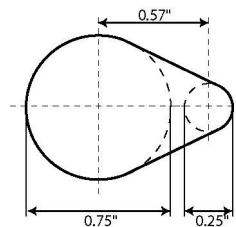
1. Disassemble the nitrous manifold by first unscrewing the bolt. Carefully separate the plastic half from the aluminum body as show in the picture. Be careful not to allow debris inside the plastic piece or the aluminum body while the manifold is disassembled.



2. The Nitrous Manifold should be located on the air filter as shown in the picture. Using the template at the bottom of this sheet as a guide, drill the two holes shown using 3/4" and 1/4" drill bits.
3. Install the manifold with the plastic half inside the filter/air box and the aluminum half on the outside.
  - a. Make sure the manifold body forms a tight seal around the air box.
  - b. Push the two halves together then thread the bolt in so the two halves are tight against the filter/air box. Tighten to about 96in-lbs (8 ft-lbs).



### Manifold Cutout Template



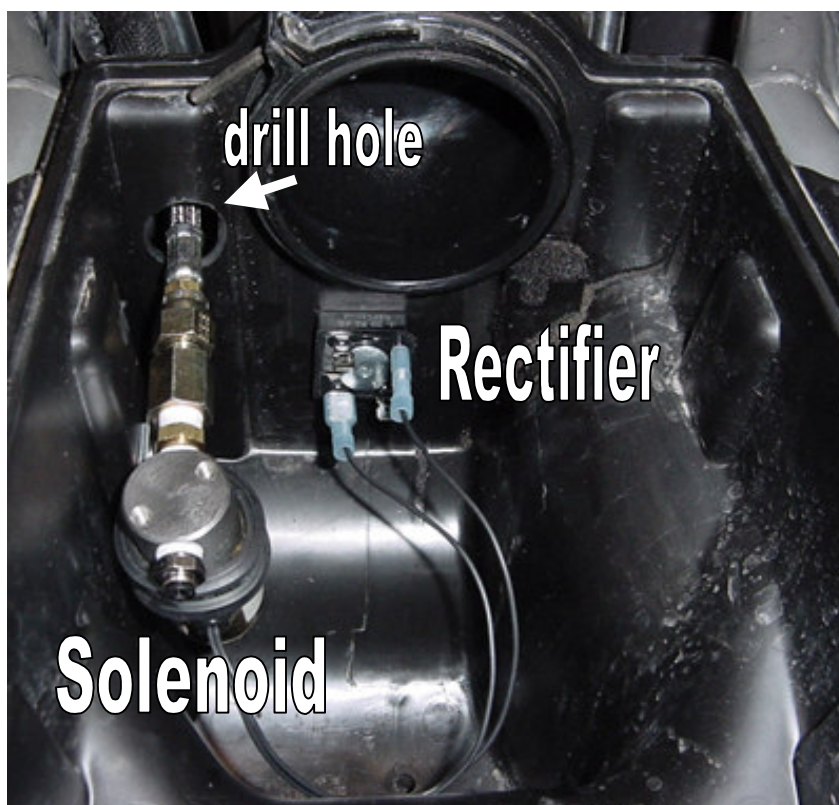


### Part III – Solenoid / Hose Installation

1. Before installing the following fittings, apply a thread sealant or Teflon tape to the threads – be careful not to contaminate the insides of these fittings.
  - a. Connect the 1/8 NPT - 4AN female, 1/8 male x 1/8 male filter, fitting to the side of the solenoid marked “IN”.
  - b. Connect the push to connect fitting to the side of the solenoid marked “OUT”.

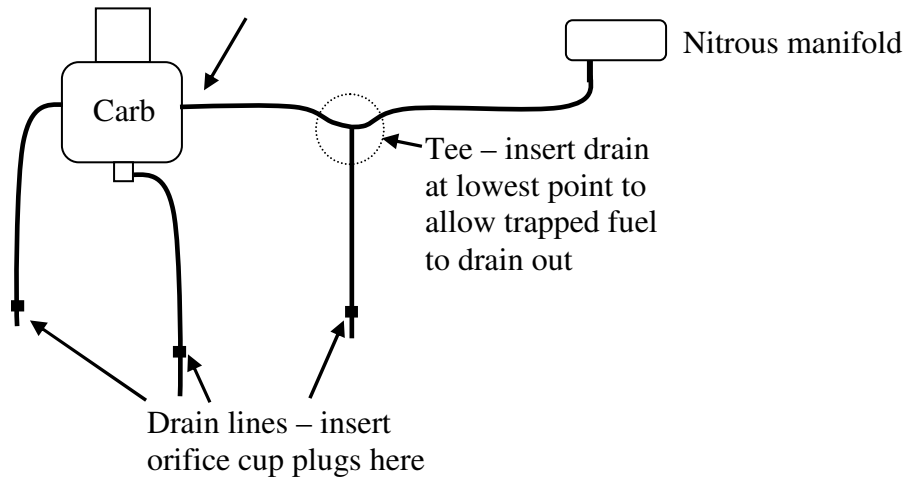


2. Locate the solenoid inside the air box as shown in the picture. The 1/8” black nylon hose going to the manifold and the high-pressure hose from the bottle needs to easily reach the solenoid with no sharp bends.
3. Use the self-tapping screw to secure the solenoid in the air box.
4. Connect the 1/8” black nylon line from the solenoid push to connect fitting to the manifold push to connect fitting. Keep this away from hot items.
5. Connect the high-pressure braided hose from the bottle to the solenoid.
6. You will need to drill a 3/4 “ hole in air box to allow high pressure hose to enter air box.

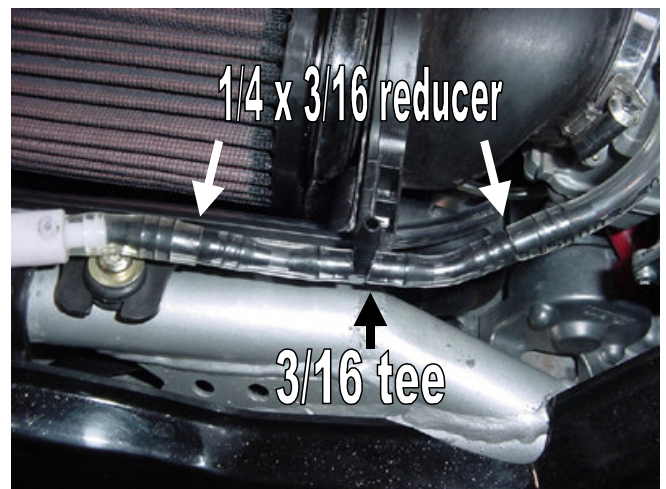
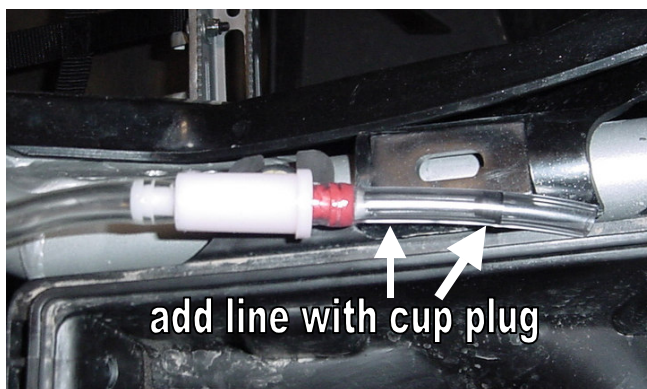
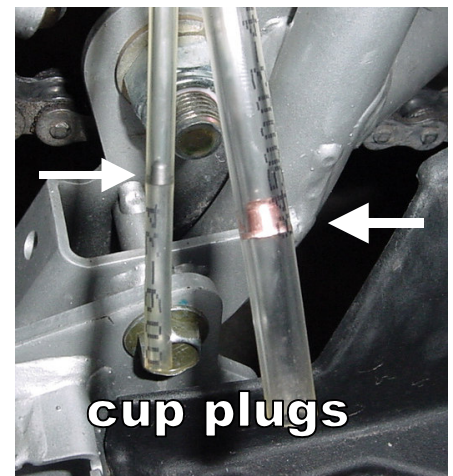


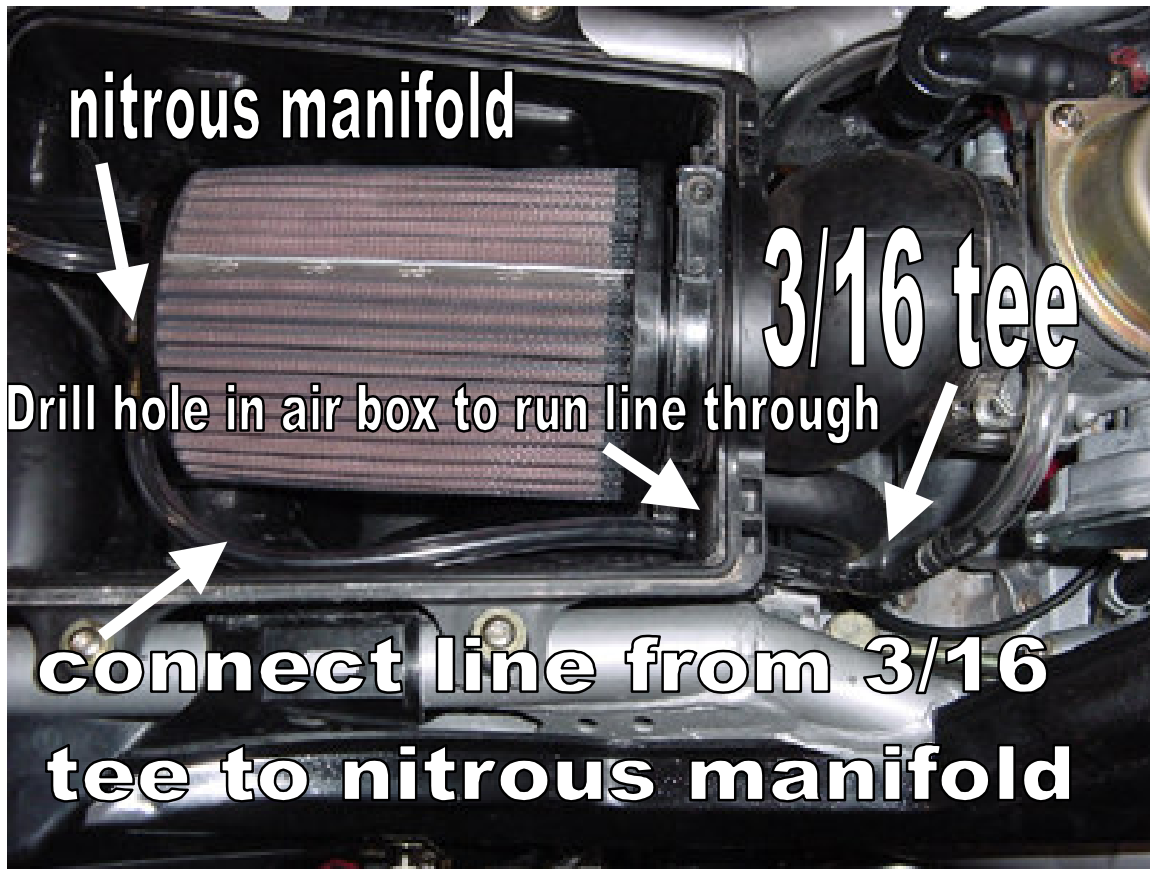
## Part IV – Carb Vent to Nitrous Manifold Installation

The carburetor has two vent lines near the top and one drain line near the bottom of the carburetor. Connect these lines as follows:



1. One of the upper vent lines is connected to the barbed fitting on the nitrous manifold. A fuel drain line needs to be added to this line in case fuel gets trapped in the line. Run a vent line from the carb vent to the manifold (use supplied  $\frac{1}{4}$ " tubing). Splice a plastic Tee at the low point and hang a piece of tubing down to allow for a drain. Insert an orifice cup plug into the end of this tubing – the plug will retain pressure in the float bowl and the small orifice hole will allow any trapped fuel to drain.
2. The other upper carb vent line hangs down and an orifice cup plug needs to be inserted into this line.
3. Insert an orifice cup plug into the drain line that goes from the bottom of the carb float bowl.
4. Use zip-ties to secure the vent lines so they do not touch the hot exhaust or get pinched between the seat and the frame.





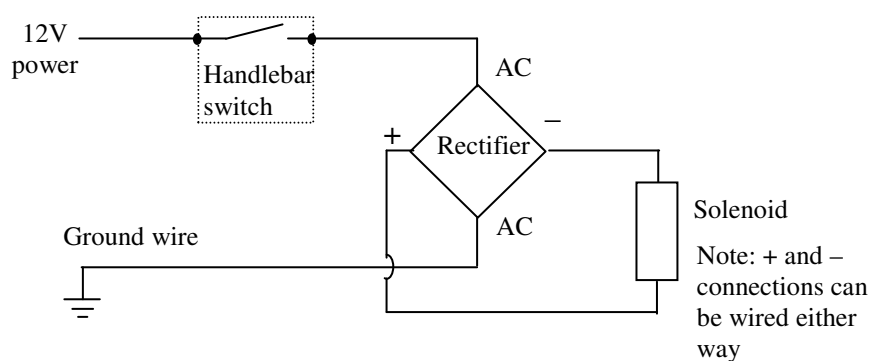


## Part V – Push-Button and Electrical Installation

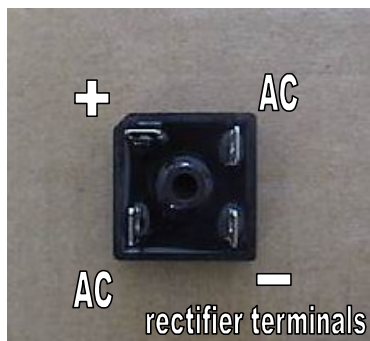
1. Attach the pushbutton switch to the left handlebar with the clamp provided as shown. The controls may need to be moved slightly in order to provide enough room for the button.



The electrical connections will be wired according to the diagram below in the following steps:



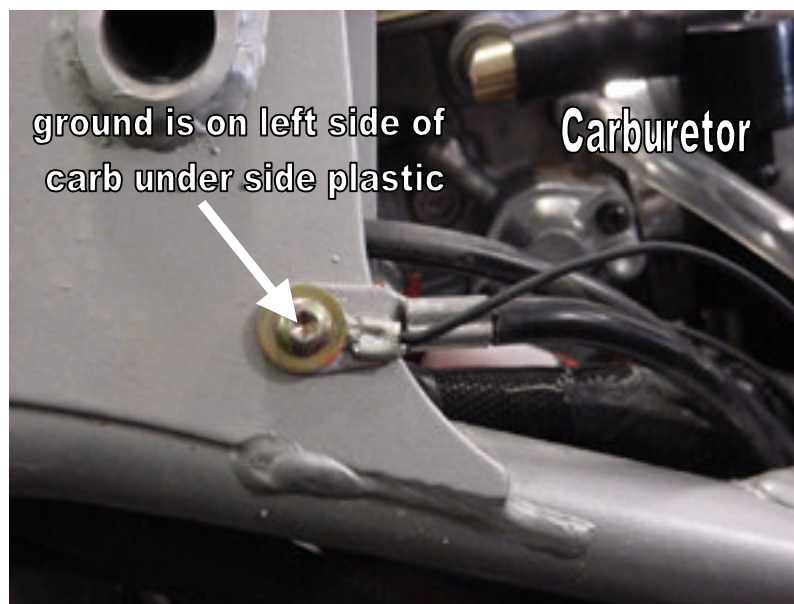
2. Mount the rectifier to the air box. Use the picture to identify the beveled corner on the rectifier so the terminals (+, AC, -, AC) can be identified.



(Continued on next page)

## (Part V – Push-Button and Electrical Installation – Cont.)

3. Wire the push-button switch from a 12V supply to one of the AC terminals on the rectifier as follows:
  - a. Find a 12V power source that is on when the ignition key is turned on and the kill switch is in the “run” position. On the Predator there are two unused red/white wires tied together to an unused connector behind the front plastic – see picture.
  - b. Connect this 12V supply to one of the push-button switch wires.
  - c. Connect the remaining push-button switch wire to one of the AC terminals on the rectifier.
4. Connect the remaining AC terminal of the rectifier to ground. The battery ground connection on the frame is an easy location.



Wire the solenoid to the remaining + and – connections on the rectifier (it does not matter which wire goes to + or -).

5. With the engine off and the bottle valve off, turn on the key to “on” and set the kill switch to “run”. Push the button and listen for an audible click, which will indicate the solenoid is being activated. If the solenoid is not being activated, review the above connections.

Note: a common mistake is to wire the + and – on the rectifier to +12V and Gnd. Power (through the switch) and Ground are connected to the two AC terminals of the rectifier and the solenoid is connected to + and – of the rectifier!



## Part VI – Startup and Tuning Instructions

### A. Important Notes before using Nitrous:

1. Because the carb venting is changed from atmosphere to the air box, the main jet size will need to be increased. We recommend an increase of about 5 or 6 sizes richer (for example, go from a 150 to 165).
2. We strongly recommend using high-octane fuel (at least 94 for most stock motors, more for modified motors). We have found that race fuel or Boondocker race fuel concentrate mixed with premium gas can provide the necessary octane.
3. We also recommend using one size colder spark plug (higher number = colder) and decreasing the gap to around .020” for best results.
4. Be sure to use filtered nitrous – always use a filter when filling your bottle!

### B. Startup & Leak Test Procedure

The rider must do the following steps every time the bottle is turned on and before doing the fuel adjustment procedure.

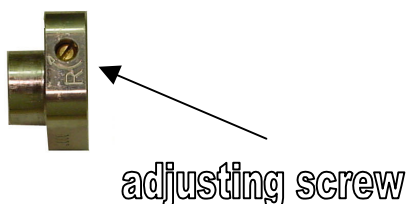
1. With the engine off, open the bottle valve and check for leaks. Shut the bottle valve off. With the valve shut, the hose will still have pressure in it.
2. With pressure in the hose and the bottle valve closed, start the engine. Check to make sure the solenoid does not discharge hose pressure.
3. With the engine running (be ready to shut down engine if necessary), open the bottle valve. Push the nitrous button for about one second or less. Engine rpm should increase if the nitrous system is functioning properly.

### C. Nitrous Manifold Fuel Adjustment Procedure

The steps below should be done with a full nitrous bottle that is at the proper operating temperature (70-90deg F). Make sure the engine is at normal operating temperature. Do not exceed 2 seconds of nitrous use until the fuel adjustment is complete and correct.

An experienced tuner should only perform this adjustment process. If you are not an experienced tuner, find someone who is. Remember, safety first!

**Warning: Only adjust the fuel mixture screws according to the steps below. The factory setting is fully closed. Begin adjustment by turning the screw out 2 full turns.**



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1. Run the vehicle in an open area at full throttle and apply nitrous for 1 or 2 seconds. Note engine power and rpms when the button is pushed.
2. Richen the mixture by turning the nitrous manifold adjustment screw in (clockwise) 1/2 turn. Run nitrous for 1 or 2 seconds again and note power and rpm difference. If no power loss is noted, repeat step 2 until a loss is noted. A power loss indicates you are rich enough (be sure!) - go to step 3.
3. To find where the mixture starts to become too lean, turn the nitrous manifold adjustment screw out (counterclockwise) 1/2 turn and note power. A power increase should be noted. Turn nitrous manifold adjustment out 1/2 turn and compare to previous run. If no power increase is noted, go to step 4. If power increase is noted, repeat step 3 until no power increase is noted. Use extreme caution - you can go too lean!
4. For the final setting, turn the nitrous manifold adjustment screw back in (clockwise) 1/2 turn.
5. After this adjustment is made, if the engine does not run perfectly smooth when using nitrous, do not use it! If the exhaust note does not sound clean, the cause is likely detonation, which can quickly destroy the engine. Either use higher-octane fuel or reduce the engine's compression before using nitrous again.

## **Part VII – Warranty, Terms & Conditions**

**Returned Goods** – No merchandise will be accepted without prior approval. A RMA number (Return Merchandise Authorization) provided by Boondocker is required before a return will be accepted. A 20% handling and restocking charge will be applied to returned merchandise. No unauthorized returns will be accepted.

**Limited Warranty** – Boondocker warrants its product to the original purchaser against workmanship defects for a period of 90 days, commencing from the date of product delivery to the Consumer.

**Maximum Liability** – The maximum liability of Boondocker in connection with this warranty shall not under any circumstances exceed the price of the product claimed to be defective.