

BoonDocker Nitrous System Installation Instructions for Polaris Predator ATV

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

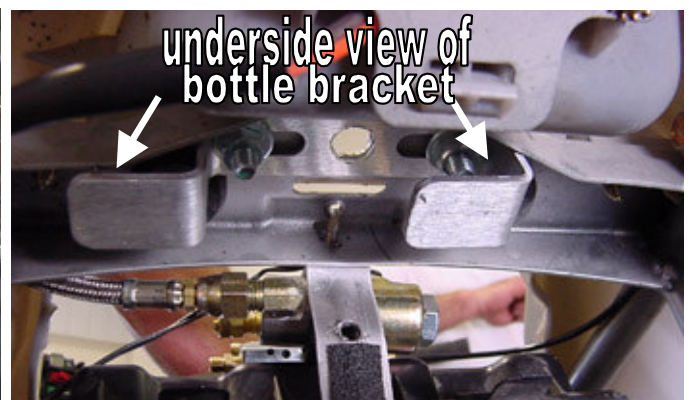
Nitrous Kit Contents:

- | | |
|---|---|
| 1 – Nitrous Manifold with fittings installed | 1 – 1/8" NPT to 4AN 90deg. adapter for solenoid |
| 1 – Nitrous Bottle with 4AN fitting | 1 – pushbutton switch |
| 2 – bottle clamps | 1 – mounting clamp for pushbutton switch |
| 1 – bottle bracket | 1 – rectifier |
| 1 – high pressure braided hose (1 foot) | 4 – misc. electrical connectors |
| 1 – 12" length of 1/8" black nylon hose | 3 – orificed cup plugs (1 large, 2 small) |
| 1 – solenoid | 1 – 3' length of 1/4" tubing |
| 1 – solenoid holding bracket | 2 – 1/4" x 1/4" x 1/4" barbed Tee |
| 1 – 1/8" NPT 90deg comp. fitting for solenoid | |

Part I – Bottle Installation

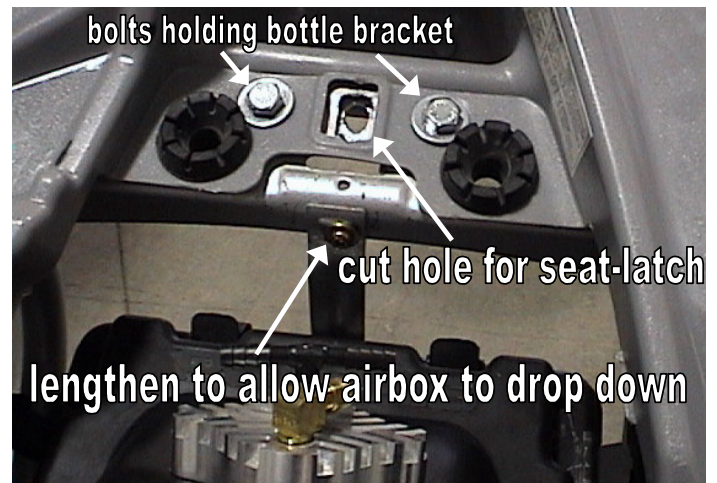
The bottle for this kit contains a siphon tube, which acts similar to a pickup tube inside an aerosol can so that only liquid is drawn to the valve. When the bottle is filled (our bottles are shipped empty), both nitrous liquid and nitrous gas are present inside the bottle under high pressure (900psi). 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 always mount the bottle as shown so the hose fitting on the valve points straight up.

1. Attach the bottle bracket so the bottle fits in front of the taillight as shown. The bottle bracket will need a hole drilled in the middle for the seat-latch to work (see picture below).

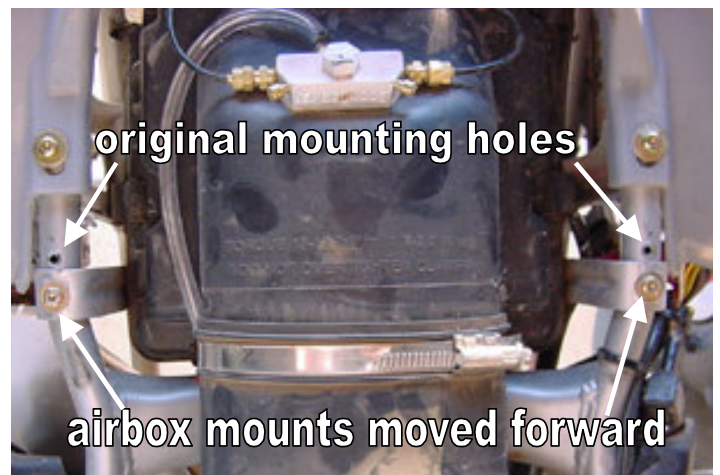


(Part I – Bottle Installation cont.)

2. The rear airbox mounting bracket will need to be lengthened in order to provide additional clearance for the nitrous manifold and seat.
 - a. Unscrew the bolt and bent the bracket so the curved part is now straight.
 - b. Drill a new hole into the frame that is 90 degrees from the original mounting hole.
 - c. Re-attach the rear bracket using this hole.

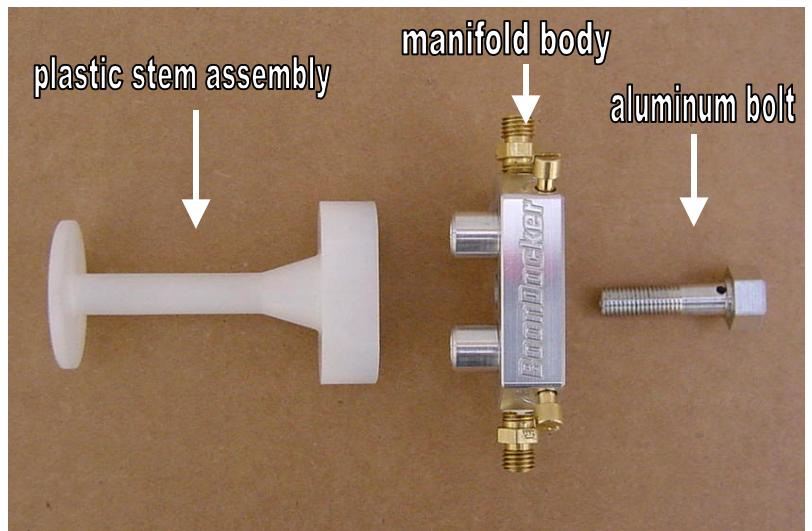


3. For some installations the airbox may need to be moved forward slightly to provide sufficient clearance for the bottle. Simply drill new mounting holes for the two side brackets that are forward of the original holes and remount the airbox using these holes.

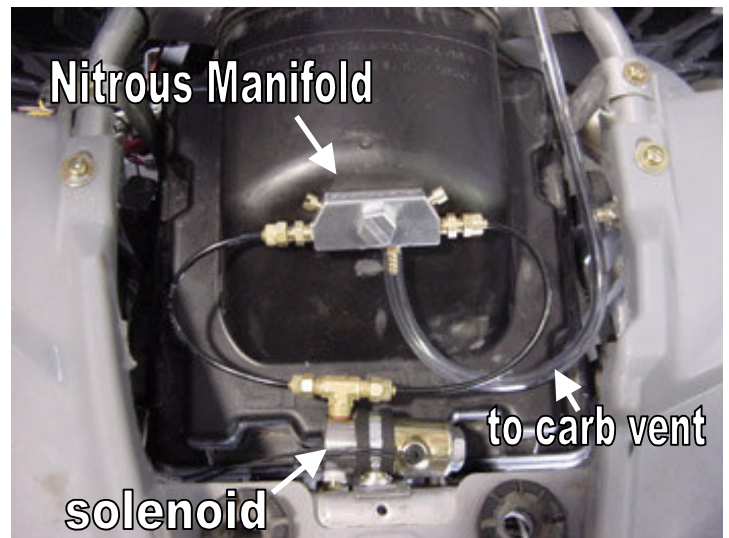


Part II – Nitrous Manifold Installation

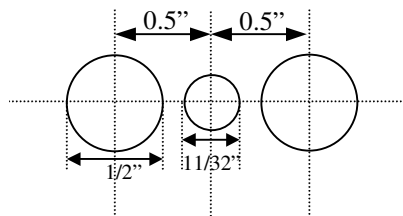
1. Dissassemble the nitrous manifold by first unscrewing the aluminum bolt. Carefully separate the plastic half from the aluminum body as show in the picture. Be careful not to allow debris inside the plastic piece or the aluminum body while the manifold is disassembled.



2. The Nitrous Manifold should be located on the airbox lid as shown in the picture. Using the template at the bottom of this sheet as a guide, drill the three holes shown using $\frac{1}{2}$ " and $\frac{11}{32}$ " (if not available use a $\frac{5}{16}$ ") drill bits. Before drilling the holes, make sure the stem part of the manifold clears the filter when the airbox lid is installed.



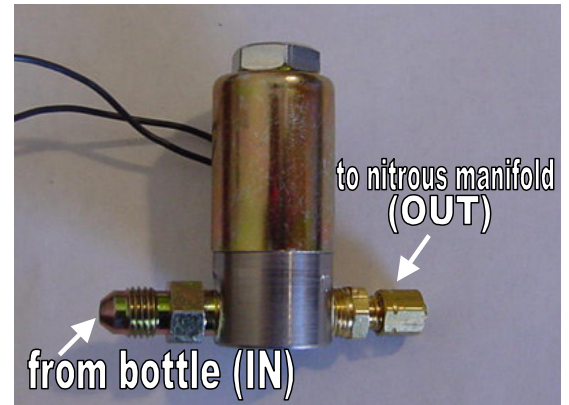
3. Install the manifold with the plastic half inside the filter/airbox and the aluminum half on the outside.
 - a. Make sure the manifold body forms a tight seal around the airbox – use thick grease or silicon to form an airtight seal if necessary.
 - b. Push the two halves together then thread the aluminum bolt in so the two halves are tight against the filter/airbox (be sure the o-rings are pushed on the aluminum body before tightening the bolt). Tighten to about 96in-lbs (8 ft-lbs).
4. The plastic hook on the seat that holds the tool pouch will need to be trimmed in order to clear the nitrous manifold.



Manifold Cutout Template

Part III – Solenoid / Hose Installation

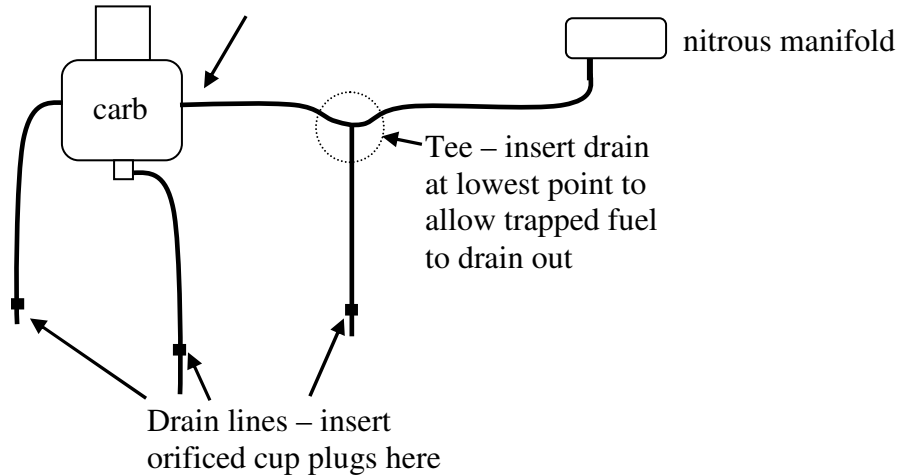
1. Before installing the following fittings, apply a thread sealant or teflon tape to the threads – be careful not to contaminate the insides of these fittings.
 - a. Connect the 1/8 NPT - 4AN fitting to the side of the solenoid marked “IN”.
 - b. Connect the brass compression fitting to the side of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



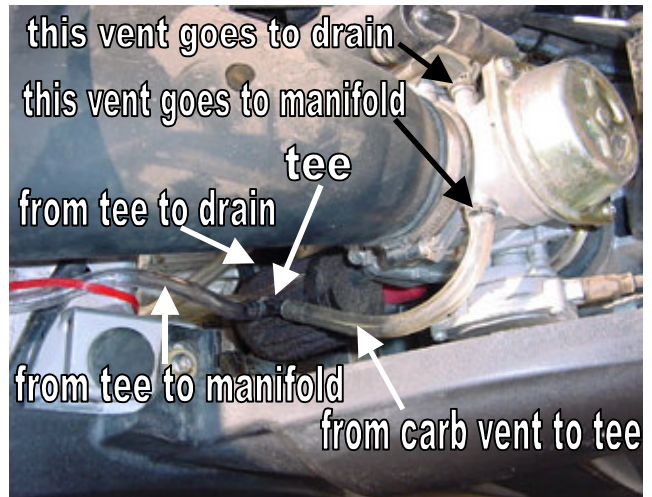
2. Locate the solenoid near the airbox as shown in the picture. The 1/8” black nylon hose going to the manifold and the high pressure hose from the bottle needs to easily reach the solenoid with no sharp bends.
3. Use the padded strap and a self-tapping screw to secure the solenoid on or near the airbox. The bolt holding the rear bracket on the airbox can be used.
4. Connect the 1/8” black nylon line from the solenoid brass fitting to the manifold brass fitting. Keep this away from hot items. Note – do not overtighten these fittings! Note: the picture shows two nitrous feeds going to the nitrous manifold – only one feed is necessary and is supplied with the kit.
5. Connect the high-pressure braided hose from the bottle to the solenoid.

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:

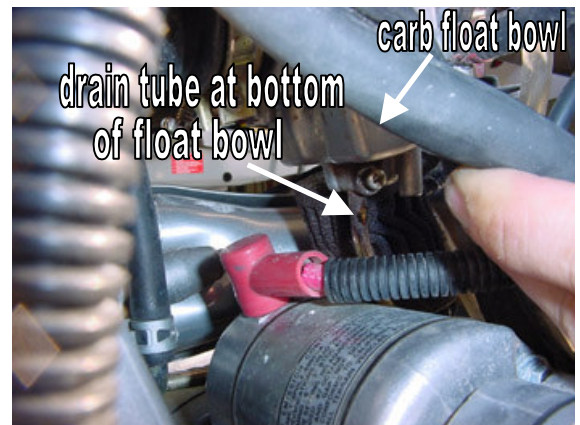


1. One of the upper vent lines is connected to the barbed fitting on the nitrous manifold. A fuel drain line needs to be Tee'd into this line in case fuel gets trapped in the line. Run a vent line from the carb vent to the manifold (use supplied ¼" tubing). Splice a plastic Tee at the low point and hang a piece of tubing down to allow for a drain. Insert a orificed 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.



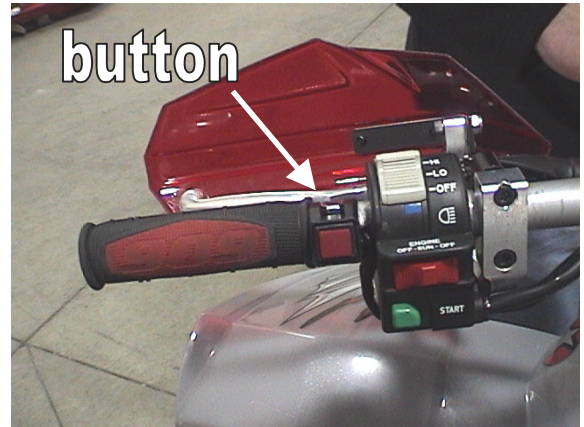
2. The other upper carb vent line hangs down and an orificed cup plug needs to be inserted into this line.

3. Insert an orificed 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.

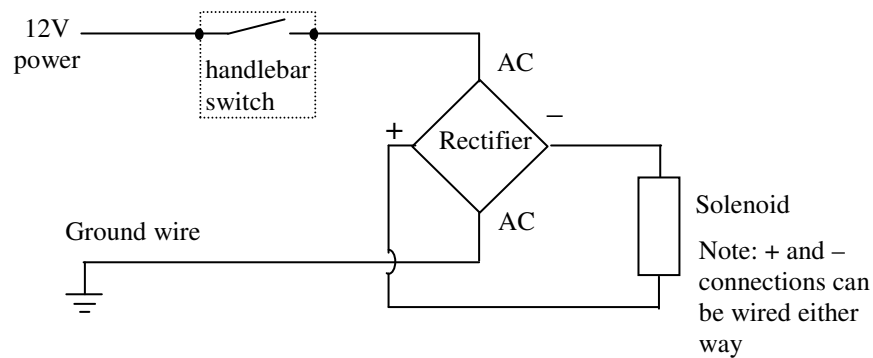


Part V – Push-Button and Electrical Installation

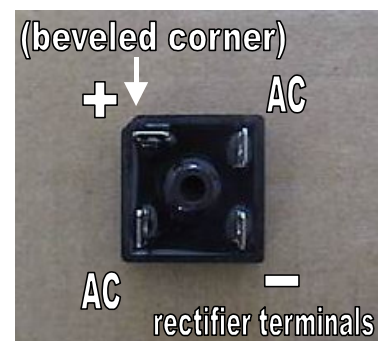
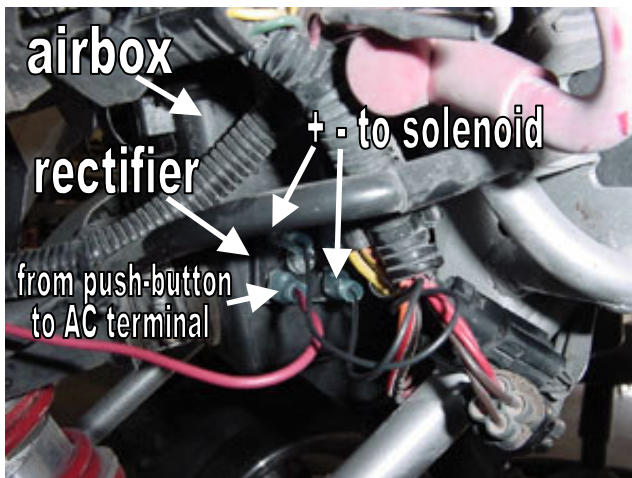
1. Attach the pushbutton switch to the left handlebar with the clamp provided as shown. The controls may need to be moved slightly in order to provide enough room for the button.



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



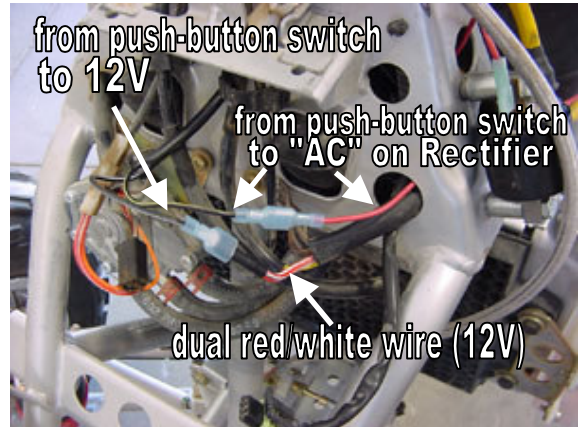
2. Mount the rectifier to the airbox. Use the picture to identify the beveled corner on the rectifier so the terminals (+, AC, -, AC) can be identified.



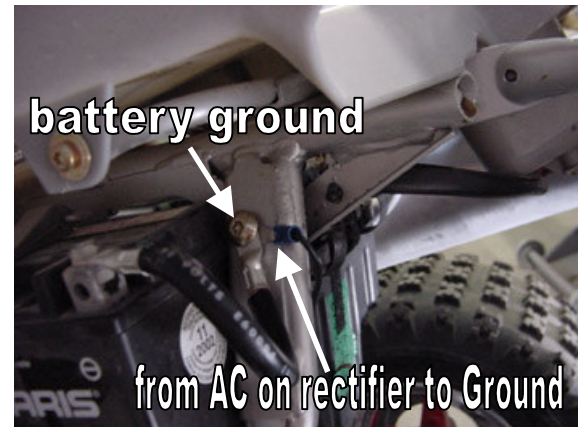
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(Part V – Push-Button and Electrical Installation – Cont.)

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.



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

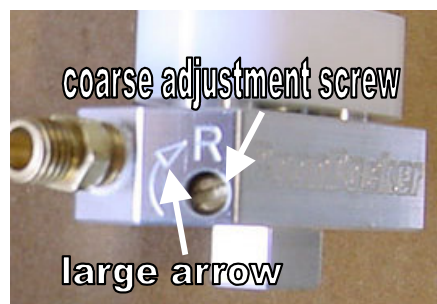
C. Nitrous Manifold Fuel Adjustment Procedure

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.

This adjustment process should only be performed by an experienced tuner. 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 should provide a good starting baseline. If this setting accidentally gets changed, turn the screws in (clockwise) all the way and then back out 2.5 turns each, then proceed with the steps below.

There are two fuel adjustment screws on the nitrous manifold. All adjustments below should be done using the **fine adjustment screw** (small arrow) first. The coarse adjustment screw should only be used if correct results cannot be obtained using the fine adjustment screw. Two turns on the fine adjustment screw equal one turn on the coarse adjustment screw.



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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. Enrichen 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.