BoonDocker Nitrous System Installation Instructions For Bombardier DS-650 ATV

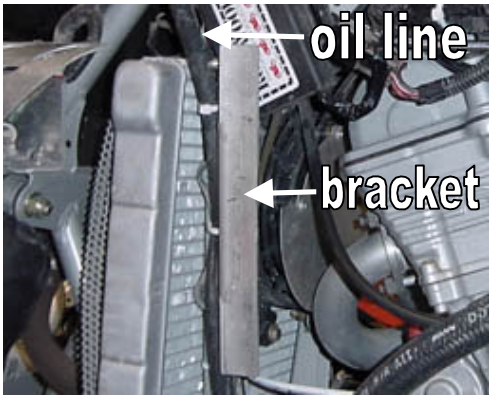
Before you begin, please read the instructions below and check kit contents

Nitrous Kit Contents:

1 – Nitrous Manifold with fittings installed
1 – Nitrous Bottle with 4AN fitting
2 – bottle clamps
1 – high pressure braided hose (3.5')
1 – 12" length of 1/8" black nylon hose
1 – solenoid
1 – solenoid holding bracket
1 – 1/8" NPT compression fitting for solenoid
1 – 1/8" NPT to 4AN adapter for solenoid
1 – pushbutton switch
2 – mounting clamps for pushbutton switch (1 bolt style, 1 crimp style)
1 – rectifier
2 – ¼" x ½" mounting bolts with washers for Nitrous Manifold
4 – misc. electrical connectors
2 – orifice cup plug (3/16" and 1/8")
1 – 3' length of ¼" tubing
1 – 3/16" x 3/16" x 3/16" barbed Tee
1 – 1/8" NPT x 3/16" barbed elbow

Part I – Bottle Installation

The bottle does not contain a siphon tube so the nitrous must be picked up from the valve end of the bottle. This means the bottle must be mounted upside down so the valve end of the bottle is down and towards the rear of the vehicle. Mount the bottle to the rear left side of the frame as shown below. A custom bottle bracket will need to be fabricated. Use supplied clamps to secure bottle to bracket. The oil line that runs inside the frame channel may need to be moved to the outside so it does not interfere with where the bracket is mounted.

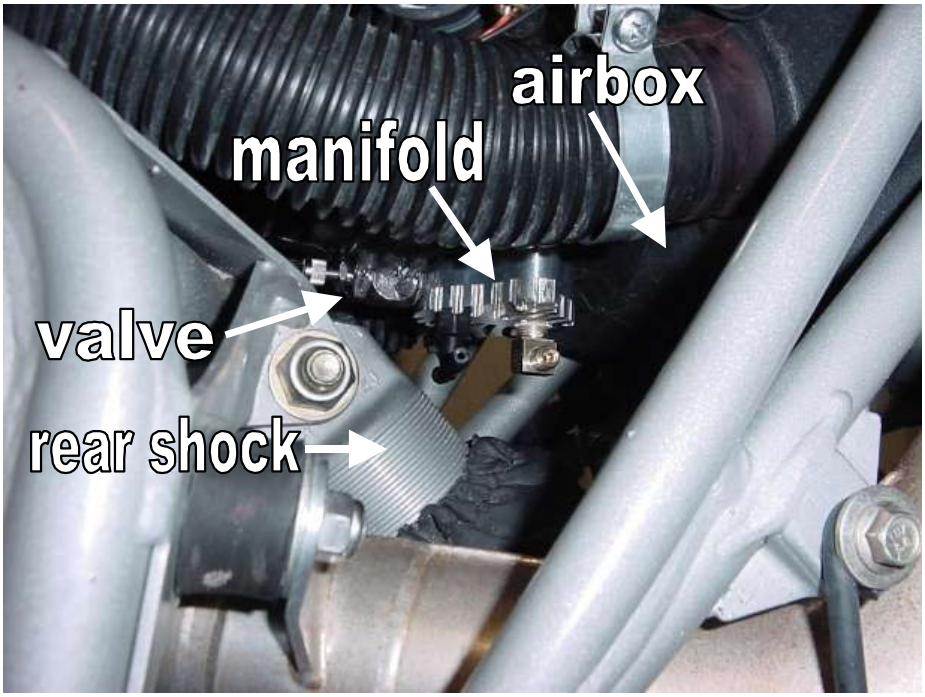


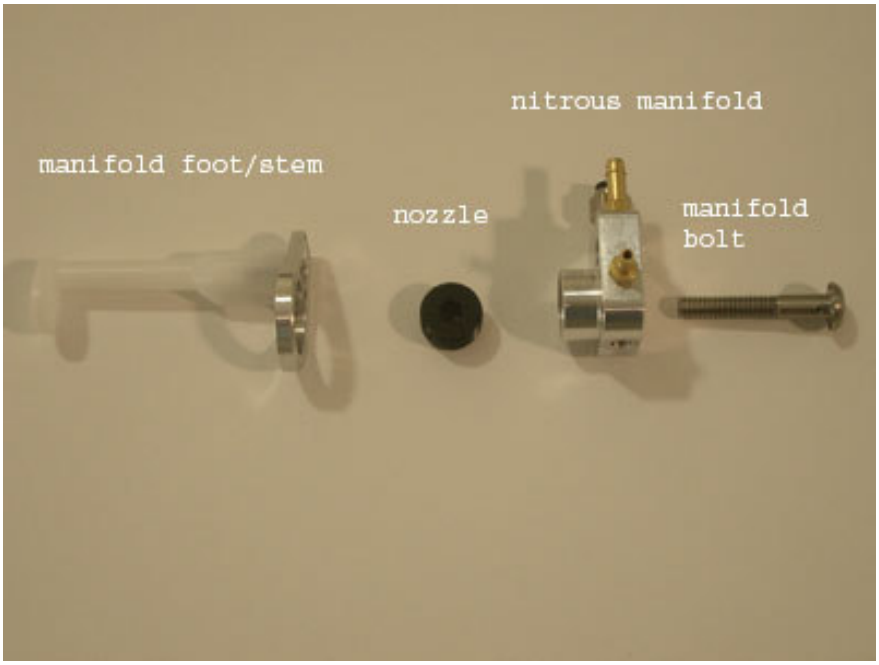
Part II – Nitrous Manifold Installation

Warning - Be careful when handling the manifold so that you do not touch the orifice plate! The small orifice holes can easily become plugged! Disassembling the manifold will void warranty!

1. The Nitrous Manifold should be located directly on the air intake tube that goes from the air box to the crab. There is just enough space to locate the manifold so it does not interfere with the shock. Use the cutout template (last page) as a guide.

2. Mount the Nitrous Manifold to the air tube using the ¼" bolts and washers. Loctite is recommended to prevent the mounting hardware from ending up in your motor! Use silicone to create an airtight seal between the manifold and the filter – any leak will allow dirt into the motor!



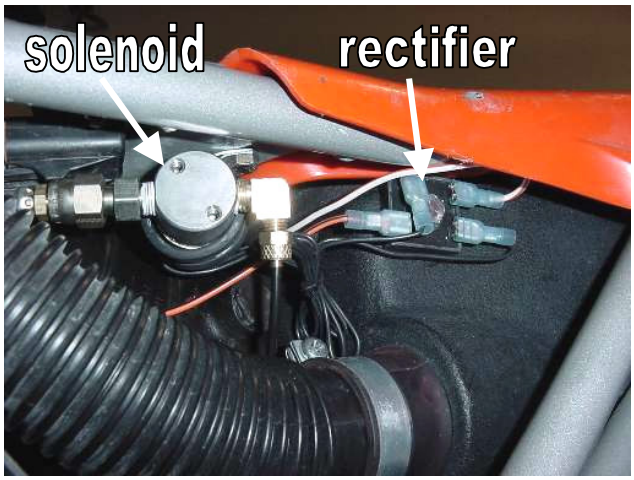


Part III – Solenoid / Hose Installation

Filter location in brass fitting

Note: There is a filter inside the brass fitting on the Manifold (see picture).). If debris gets in any of the hoses, it will quickly plug this filter.

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 battery box in the rear as shown in the picture. Use the padded strap and a self-tapping screw to secure the solenoid.

3. Drill a hole in the air box for the 1/8" black nylon line. This hole should be about where the brass compression fitting is on the manifold. Connect the 1/8" black nylon line from the solenoid to the nitrous manifold. Note – do not over tighten these fittings!

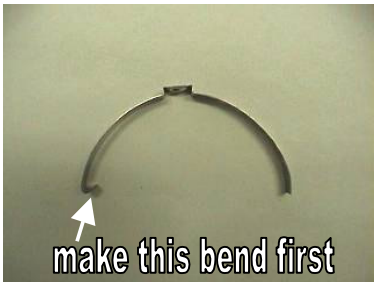
4. Connect the high-pressure braided hose from the bottle to the solenoid.

5. Tee the carburetor vent line (found on upper left side of carb) so one line goes down for the drain and the other line goes through the hole in the air box to the Nitrous Manifold (use supplied ¼" tubing). The tee must be located at a low point so the lines from the carb and the manifold can all drain down and so that fuel does not become trapped in the line.

7. Insert the ¼" orifice cup plug into the end of the carb vent line. Insert the 3/16" orifice cup plug into the end of the black hose that drains from the bottom of the carb float bowl. These plugs help retain the pressure that goes to the carburetor float bowl when nitrous is used as well as allow fuel to drain through the small holes.

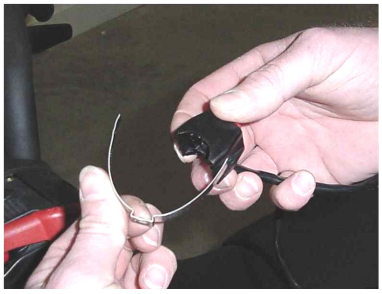
Part IV – Push-Button Installation

The pushbutton switch can be installed on the left or right handgrip. Shown are directions for installing the button on the left so the button can be pressed with the thumb. An alternative position is to install the button on the right side, rotated so it can be pressed with the index finger.

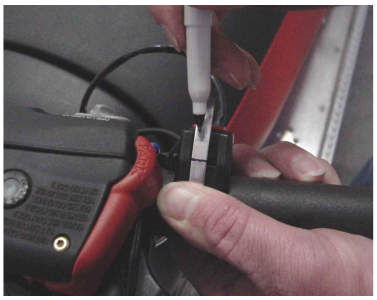


There are two clamps in the kit. The one with the screw is only useful if the button needs to be mounted directly to the handlebar. Directions for mounting the button directly to the handgrip using the crimp-on clamp are shown below:

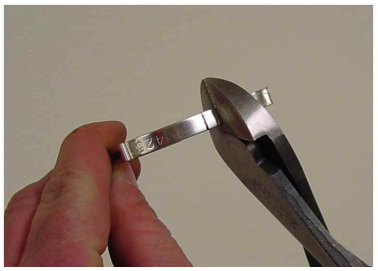
1. Using pliers, bend a hook into one end of the clamp.



2. Connect the clamp to the button as shown. Fit the hooked part of the clamp to the button so the straight part of the clamp is not connected.



3. Put the button on the left handlebar. With a pen, mark on the clamp where the mounting hole on the button and the clamp meet.



4. Remove the clamp and cut it approximately ¼" to 3/8" away from the mark. Bend this end with pliers so it is similar to the other hooked end.

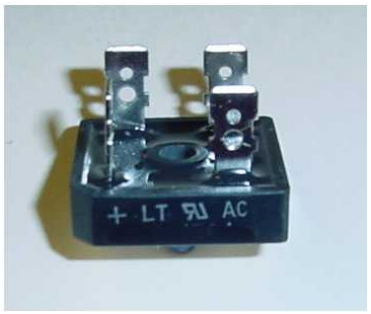
5. Put the button and clamp back on the handlebar. Tighten the clamp with side cutters so it is just snug. Do not over tighten.

6. The button should appear as shown in the picture.

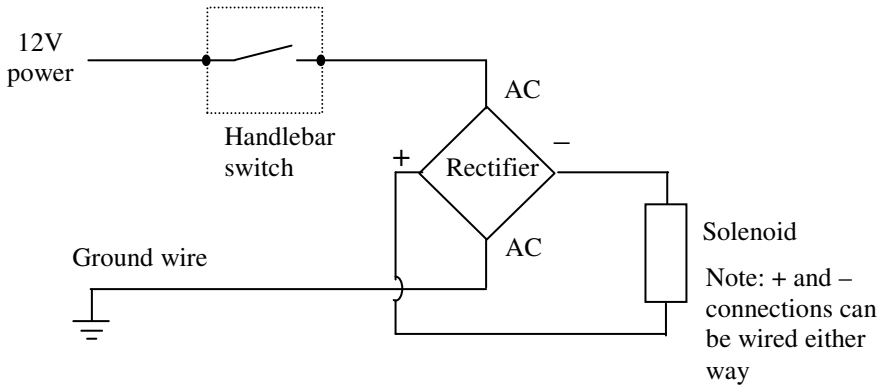
Part V – Electrical Installation

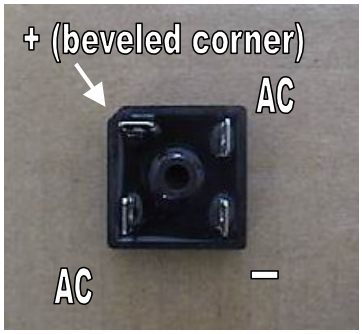
Wire the connections according to the diagram below. Use a 12V supply that is only on when the ignition key is turned on and the kill switch is in the "run" position. We still recommend using the rectifier even if the system has a battery – the diodes in the rectifier absorb the large current spike produced by the solenoid when the button breaks the connection (this prevents a spark). Even if a DC voltage is used, you must still connect the voltage supply to the two AC terminals.

Most rectifiers are labeled on the side "+", "AC", "-", "AC" (see picture). If the rectifier is not labeled, see the picture below.



Rectifier markings on the side





Rectifier terminals

For the DS650, the white wire from the key switch can be used for power.

Part VI – Tuning Instructions

Note: If the stock air filter is used, the jetting may need to go richer since the carb is now vented inside the air box. If a K&N filter has already been installed and the carb has been re-jetted, the jetting may not need to be changed as much since these filters are free flowing and create very little negative pressure inside the air box. Make sure the jetting is ok before proceeding with the tuning instructions below.

Warning: Only adjust the fuel mixture screw according to the steps below. The factory setting is the screw fully closed. Begin adjusting manifold with screw turned out two turns.

When using nitrous, a too rich condition will cause a loss in power. However, a too lean condition will produce power all the way up until the engine seizes! Turning the adjustable screw in (clockwise) will richen the mixture, and turning it out (counterclockwise) will lean the mixture. You are adjusting fuel, not nitrous. Nitrous adjustments are made by replacing the white orifice plate (check with your dealer for availability).

We strongly recommend using higher-octane fuel (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.

Note: Be sure to use filtered nitrous – always use a filter when filling your bottle!

Startup 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 one second. Engine rpm should increase if the nitrous system is functioning properly.

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 the adjustment process. Remember, safety first!

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 adjustment screw in (clockwise) ¼ turn. Activate 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 mixture screw out (counterclockwise) ¼ turn and note power. A power increase should be noted. Turn adjustment out ¼ 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 adjustment screw back in (clockwise) ¼ turn and set the lock nut.

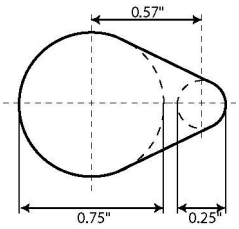
5. After this adjustment is made, if the engine does not run perfectly smooth when using nitrous, do not use it! If the exhaust note does not sound clean, the cause is likely detonation, which can quickly destroy the engine. Either use higher-octane fuel or reduce the engine's compression before using nitrous again.

Part VI – 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.



Manifold Cutout Template