



BoonDocker Nitrous System BRP Outlander

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

Nitrous Kit Contents:

Quality and contents inspected by _____

- | | |
|---|---|
| 1 – Nitrous Manifold with fittings installed (3 hole nozzle) | 1 – 4 hole nozzle |
| 1 – Nitrous Bottle with bottle fittings(1/8 plug, 1/8x4an male, 4 an cap) | 1 – 5 hole nozzle |
| 2 – bottle clamps | 1 – pushbutton switch |
| 1 – 48” high pressure braided hose | 2 – mounting clamps for pushbutton switch (1 bolt style, 1 crimp style) |
| 1 – 18” length of 1/8” black nylon hose | 1 – Boondocker Control Box |
| 1 – solenoid/ pressure transducer | 1 – Nitrous Harness |
| 1 – solenoid holding bracket | 1—Power adaptor |
| | 3-- Bottle Brackets |

Tools Required:

- Drill + bits (3/4”, 1/4”)
- Side cutters
- Allen wrench set
- Basic wrench set
- Flat blade screwdriver
- Teflon Tape

Theory of Operation:

A common misconception about nitrous oxide is that it is explosive or flammable. Nitrous by itself does not burn, nor is it explosive. At 572 deg. F, nitrous oxide (N_2O) breaks apart and forms two parts nitrogen and one part oxygen. Inside an engine, this added oxygen speeds up the combustion process (the nitrogen plays an important part in buffering the reaction). Whenever nitrous is used, additional fuel is necessary; otherwise the added oxygen will act as a blowtorch inside your engine. When used properly, nitrous oxide provides the same benefits as turbo charging or supercharging your engine (extra power is made by burning more fuel and oxygen), but without the added cost or complexities.

Below is a diagram of the major components of the Boondocker Liquid Nitrous System. The simplicity of this system makes it the most reliable, easy to tune, and easy to install nitrous system available. By using the existing fuel system (carburetor) to add the required extra fuel for nitrous, the complexity and unreliability of extra components is eliminated.

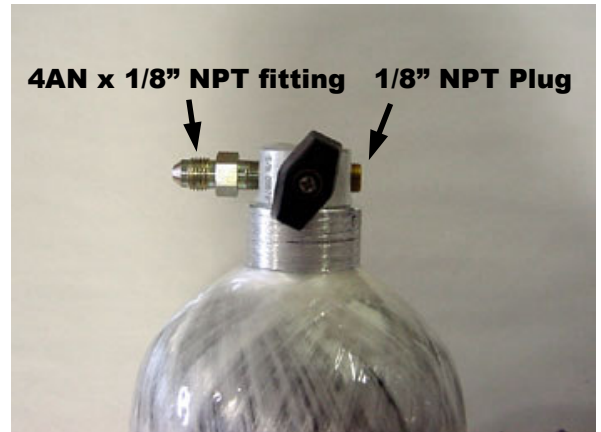
The part that makes the Boondocker nitrous system so unique is our patent pending Nitrous Manifold. This manifold simply mounts on the airbox or air filter where it sprays a fine mist of nitrous that is then drawn into the engine through the carburetor(s). This allows the nitrous to be naturally aspirated into the cylinder instead of being forced, which is much friendlier to the motor and allows the nitrous to be used in a much wider range of throttle and rpm settings.

Be sure to understand and follow the tuning instructions at the end of these instructions. Proper tuning is an important part of any performance-enhancing product.

Part I – Bottle Installation

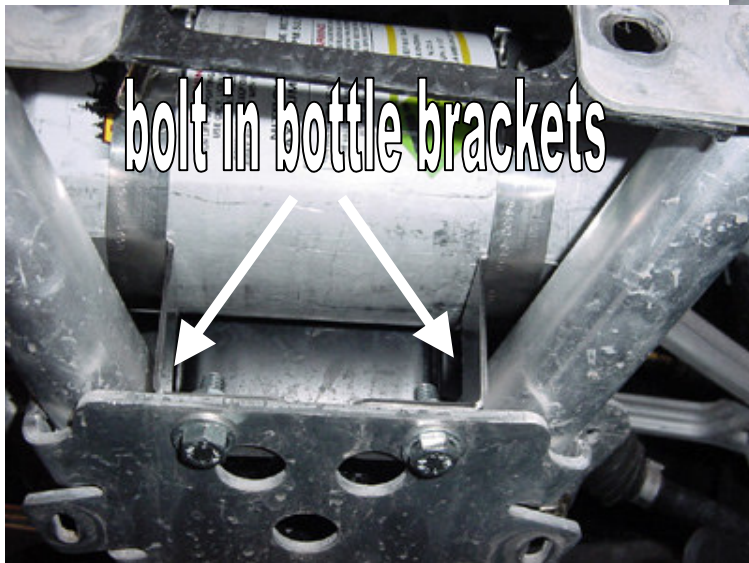
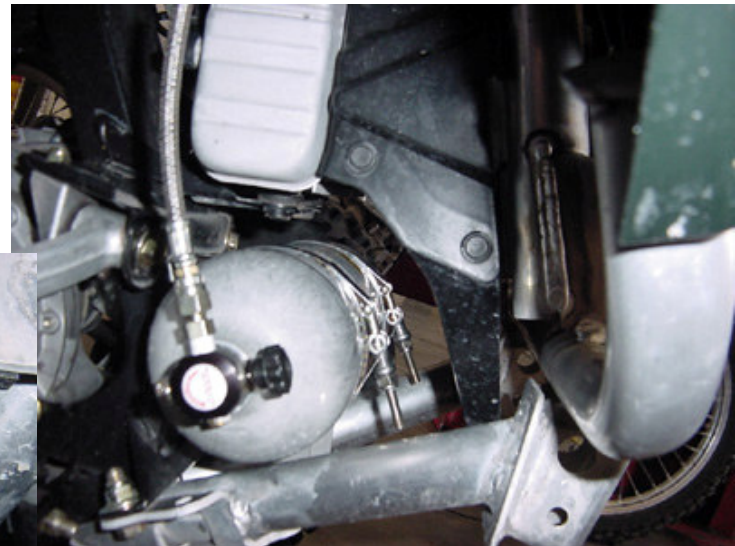
A. Bottle Valve Fittings

Insert the 4AN x 1/8" NPT fitting and the 1/8" NPT Plug into the bottle valve. Use Teflon tape to seal the threads – be sure not to get tape inside the threads!



B. Bottle mount installation.

Remove front lower plastic to access aluminum support bracket. Set Brackets in place and mark holes. Remove brackets, drill holes and replace brackets using supplied 5/16 hardware.



Alternate Bottle Mount



C. Bottle Filling /Weights

Automotive speed shops that sell nitrous kits can usually refill nitrous bottles. This bottle can be filled with non-medical grade nitrous oxide that contains a very small amount of sulfur dioxide (combines with water in your lungs and forms sulfuric acid if breathed too much). This is the same nitrous that is used for all nitrous oxide systems, usually with the name Nytrous-Plus.

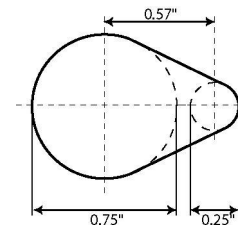
Fill the bottle according to the weights below. We do not recommend overfilling the bottle – when the bottle gets hot, it will rupture the blow-off disk.

<i>Note: all weights are in fractions of pounds, not ounces</i>	Bottle Size							
	4.0lb CF	2.9lb CF	3.0lb AL	2.5lb AL	20oz AL	16oz AL	12oz AL	9oz AL
Weight of Cylinder & Gas	7.4 lb	6.0 lb	6.1 lb	6.1 lb	3.0 lb	2.8 lb	2.1 lb	1.7 lb
Weight of Cylinder Empty	3.4 lb	3.1 lb	3.1 lb	3.6 lb	1.7 lb	1.8 lb	1.3 lb	1.1 lb
Weight of Gas	4.0 lb	2.9 lb	3.0 lb	2.5 lb	1.3 lb	1.0 lb	0.8 lb	0.6 lb

Part II – Nitrous Manifold Installation

1. Locate a suitable place on the airbox or air filter for the nitrous manifold. For best results the manifold should spray into the carburetor side of the air filter. Nitrous should not be sprayed through the filter.
 - a. If a K&N filter is available for your application, install the nitrous manifold directly on the back of the filter.
 - b. If enough room is available, the manifold can be installed on the air boot between the filter and the throttle body.
2. Using the template below as a guide, drill the holes shown by dotted lines. Then cut the solid line in order to allow the manifold to be installed without completely removing the Fastener plate (in some cases the filter/air box/air boot is difficult to remove). This is done by unscrewing the bolt so the Fastener plate extends past the body by ¼” (the Fastener plate is still attached to the bolt). Feed the Fastener plate through the mounting hole, then align the Fastener plate to the body and then tighten the bolt.
3. If the nitrous manifold is to be installed as two pieces, separate the Fastener plate from the nitrous manifold by completely unscrewing the bolt in the back, then install the manifold to the air boot with the Fastener plate half inside and the aluminum half on the outside. Align the two halves together then thread the bolt in so the two halves are tight against the air boot.

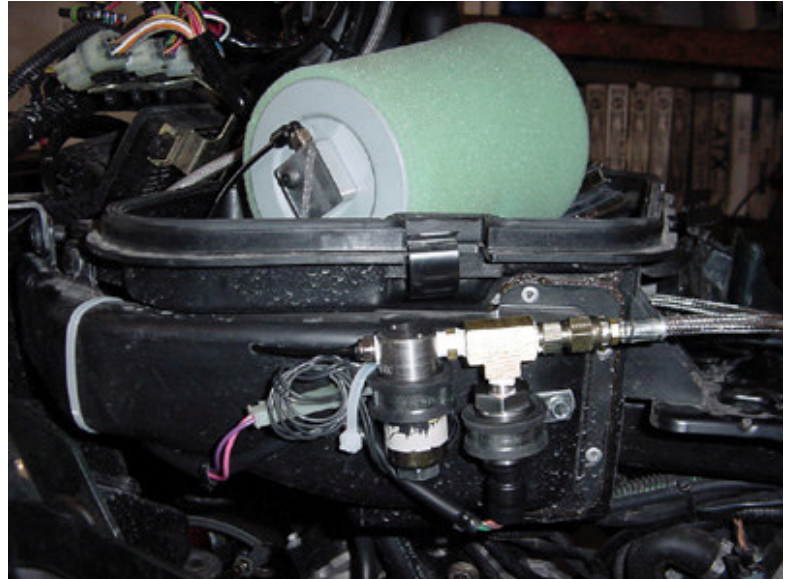
Note: Be sure to properly align the Fastener plate and nitrous manifold to ensure a positive seal in air boot and or air filter. If miss aligned it can also partially block nitrous flow.



Manifold Cutout Template

Part III – Solenoid/Transducer Installation

1. You can mount the solenoid/transducer assembly to the side of the air box using supplied line clamps.
2. Connect the 1/8" black nylon line from the solenoid push-to-connect fitting to the push-to-connect fitting in the nitrous manifold. Keep this away from hot items. Note – be sure to cut the end of the poly line squarely to prevent leaks.
3. Connect the high-pressure braided hose from the bottle to the solenoid. If a universal hose end is included, see the directions below. Do not use Teflon tape on the hose fittings - these 4AN fittings are designed to seal themselves as they are compressed together.
4. Plug the solenoid into the nitrous harness two-position connector. It will plug into the connector with the pink and purple wires.
5. Plug the pressure transducer into the three position black connector on the nitrous harness with the brown, orange and green wires.



Part IV – Install Boondocker Control Box

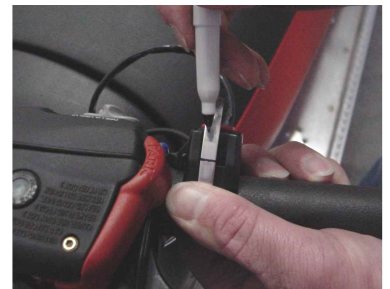
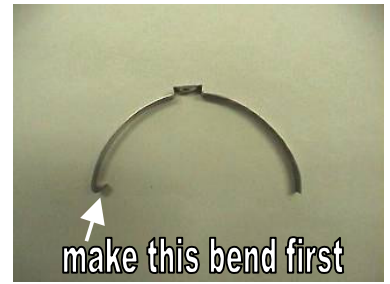
Refer to Boondocker Control Box instructions included with control box.

Part V – 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.

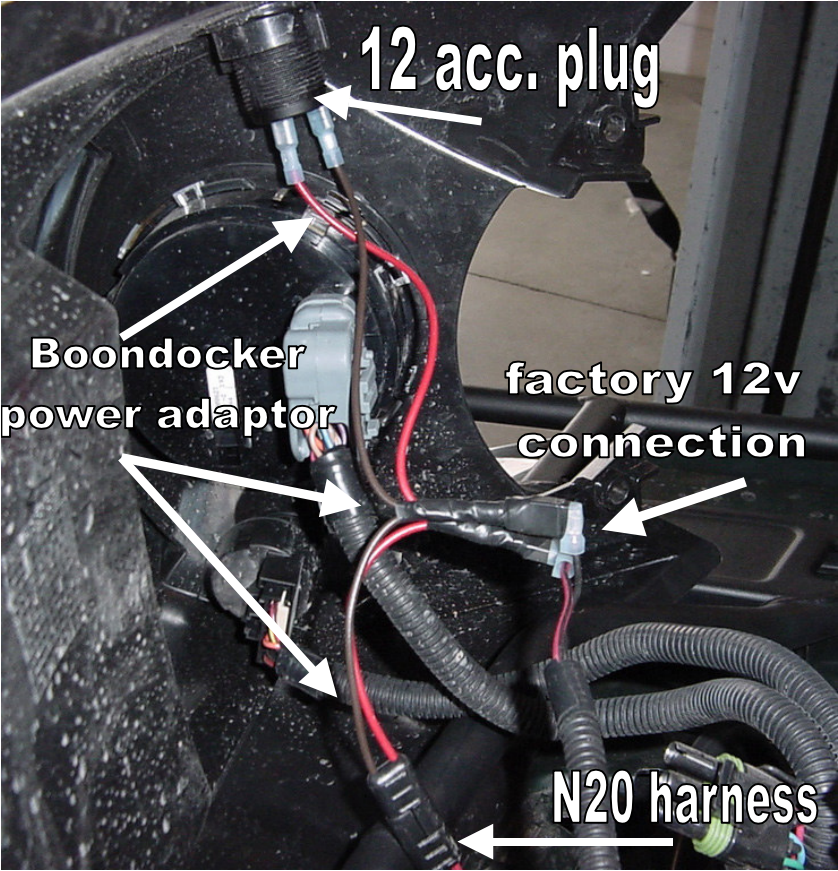
There are two clamps in the kit. The one with the screw can be used to mount on the handle bar and will be used in most cases. The crimp-on clamp allows the button to be mounted to a larger diameter surface. Directions for mounting the button directly to the handgrip using the crimp-on clamp are shown 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 1/4" 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.
7. Plug the push button connector into the nitrous wiring harness. It should plug into the connector with the tan and brown wires.

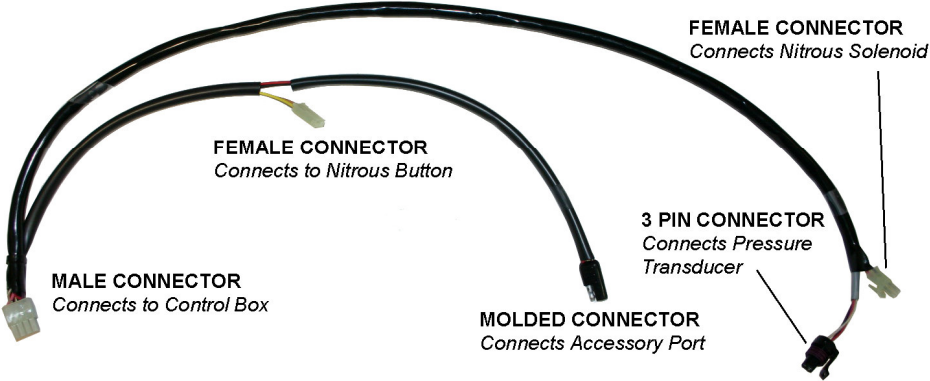


Part VI – Electrical Installation

Tie into the 12v accessory power supply with supplied power adaptor.



Picture of nitrous harness



Part VII - Startup and Tuning Procedures

A. Important Notes before using Nitrous:

1. 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.
2. We also recommend using one size colder spark plug (higher number = colder). In some cases decreasing the spark plug gap an additional .003”-.005” (total gap around .018”-.020”) achieves best results.
3. Be sure to use filtered nitrous – always use a filter when filling your bottle!
4. When tuning the system, do not use nitrous for more than 2 seconds at a time. Once the system is properly tuned (see steps below), we recommend not using nitrous for more than 8 seconds at a time. If nitrous is used for longer durations, it is critical that the system be carefully tuned and that no detonation problems are occurring.

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

See control box instructions for fuel adjustment.

Part VIII – Changing Nitrous Manifold Nozzles

It is possible to increase/decrease the amount of nitrous the nitrous manifold sprays by replacing the 3/4” nozzles with nozzles with more/less orifice holes. In general, each orifice hole that is sprayed is equivalent to a 3-5hp increase.

Read this before you increase nitrous!

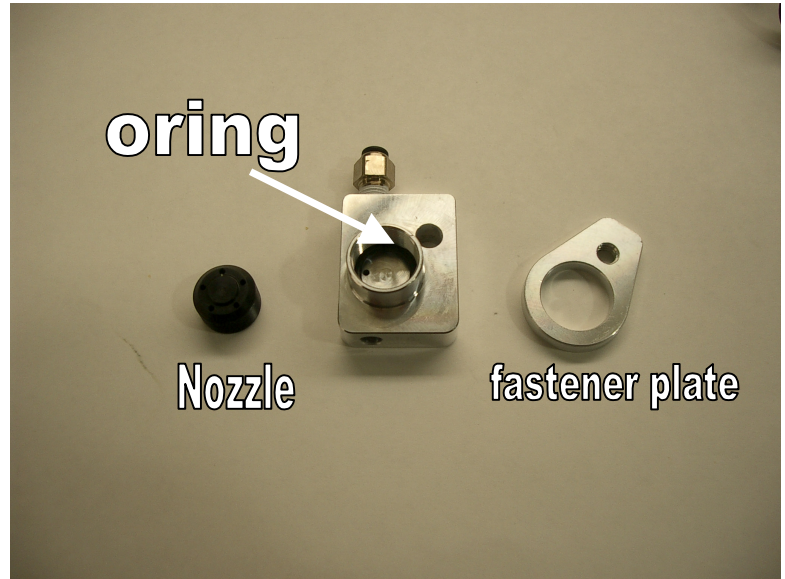
Be sure your engine is working well before you decide to increase the amount of nitrous. If you are not getting the power increase you are expecting with the original setup, something is likely wrong. Review the manifold tuning procedure and verify that you can tune the manifold so you know there is too much fuel. From there, if leaning the manifold mixture screw does not produce an increase in power, one of the following problems may exist:

1. Be sure your bottle is full, at the correct temperature (70-90 deg), and positioned correctly so the valve picks up liquid nitrous. The system will not work properly if nitrous vapor is being picked up or if the bottle is too cold.
2. Your engine could be detonating. Detonation can occur if your compression ratio is high, your timing has been advanced, or you are not using good octane fuel. Listen carefully to the motor - if it does not sound clean and you are not too rich, you are likely detonating! You can reduce your nitrous, increase your octane, retard your timing, and/or reduce your compression.
3. A bad power source or faulty electrical connection may cause the nitrous system to malfunction intermittently. This may be very difficult to diagnose – you may need to use a voltmeter and run the engine at full rpms. Carefully check all connections. If necessary, solder all connections. Sometimes a faulty voltage regulator be fine at idle but the voltage will drop as rpms increase.

4. Dirty nitrous can quickly plug the nitrous filter and obstruct the nitrous delivery. Remove and clean the sintered bronze filter element by blowing compressed air through it backwards. Always fill your bottle from a filtered source.

Installing / Removing Nozzles

1. Remove the nitrous manifold from the airbox.
2. Use a 7/32" hex wrench to carefully remove/install a nozzle. Be sure the o-ring is still in place before threading in a new nozzle. Be very careful not to over tighten the plastic nozzle – it needs to be just snug.
3. If you want to increase nitrous delivery, increase the number of nozzle holes by one for each manifold!
4. Retune the nitrous manifold according to the instructions above. Anytime the orifices are changed, the nitrous manifold pressure will change so retuning is necessary.



Part IX – 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