

# Read all Instructions before beginning!!!!

Caution – EXTREME DANGER – Caution

Do not use or mix any other manufacturer's products with any Nitrous Express products.

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**THESE INSTRUCTIONS APPLY TO NITROUS EXPRESS PRODUCTS ONLY!**

**FOR SANCTIONED RACE USE ONLY - NOT FOR SALE OR USE IN CALIFORNIA**

ZX14 Spray Bar Instructions Part Number 62203-2.5P

READ...UNDERSTAND...AND FOLLOW these instructions. If there is something you don't understand STOP.... Call the factory tech department for help. Mon-Fri, 9AM-5PM PST.

## CAUTION

Adding a NX Nitrous system to your Power Sport machine is a job best handled by a professional mechanic with nitrous oxide installation experience, Nitrous Express Inc. urges you to seek professional help on all installation procedures.

Absolutely do not mix any other brand components, of any kind, with your NX system. Using non-compatible parts or accessories will void your warranty. Using non-compatible, mismatched parts can create a dangerous or potentially fatal event.

Nitrous Express Inc. instructions are as complete as possible, however every possibility cannot be covered in this instruction sheet, if you have any problem or question, STOP and call the NX tech line for help, 1-940-767-7694.

The installation procedures are divided into five sections.

Please pay particular attention to each one.

1. Mounting the Bottle.
2. Installing the nitrous spray bar.
3. Wiring the system.
4. Testing the system.
5. Tuning tips.

Before starting any installation steps, disconnect the negative battery terminal, and drain all fuel from the vehicle including the carburetors.

## SECTION 1: MOUNTING THE BOTTLE

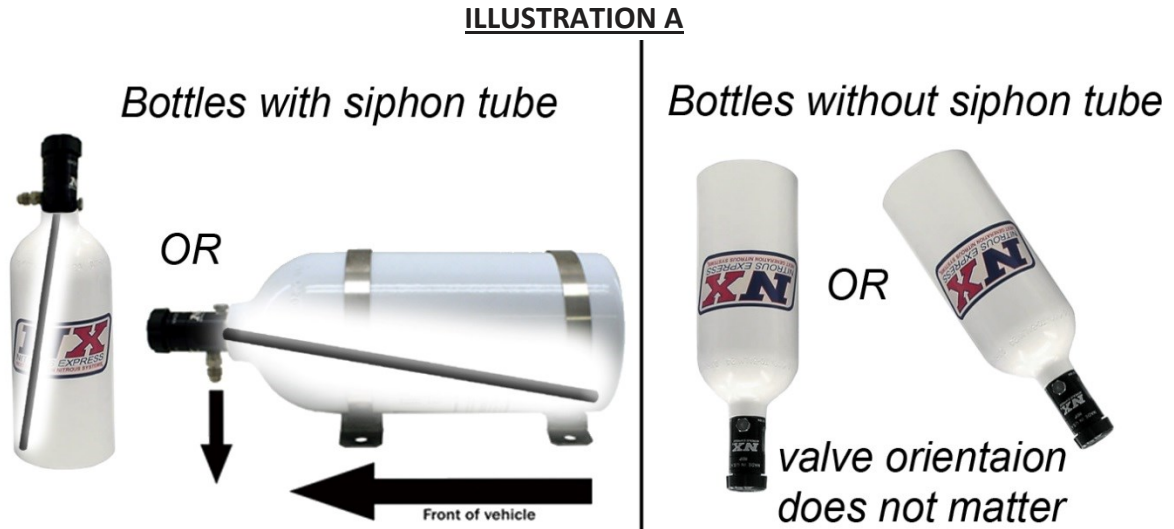
The bottle should be mounted in the storage area or away from the operator. The best positioning of the bottle is shown in illustration “A”. Mounting the bottle in this manner will allow the bottle valve or internal siphon tube to be covered with liquid nitrous at all times and properly supports the bottle. Assemble the brackets on the bottle; refer to the chart below to determine the suggested bracket spacing.

Bottle Size	Distance to Short/Bottom Bracket	Distance to Tall/Top Bracket	Billet Bracket Part Number	Contains Siphon Tube
3.5 Oz	1"	3"	11013P/11017P	NO
7 Oz	1 ¼"	7"	11013P/11017P	NO
10 Oz	1 ¼"	10 ¾"	11013P/11017P	NO
1 LB	1 ¼"	5 ½"	11029P	YES
1 1/4 LB	1 ¼"	6 ½"	11029P	YES
2 LB	1 ¼"	6"	11018P	YES
2.5 LB	1 ¼"	7 ½"	11018P	YES
5 LB	1 ¼"	10 ½"	11031	YES
10 LB	2 ¾"	11 ¾"	11108/11108B	YES
15 LB	2 ¾"	15 ¾"	11108/11108B	YES

This assembly will serve as a guide to locate the four mounting holes. The bottle brackets should be secured by grade 5 bolts and washers. Before drilling the holes be sure to check for clearance beneath the mounting surface, i.e.: fuel tank, fuel lines, and brake lines. Each dimension given above is from the bottom of the bottle to the center of the bracket, a 10% variance in spacing, if necessary, is acceptable.

Bracket spacing is especially critical when a bottle is mounted on an ATV or motorcycle, or when installed “standing up” (upright position). Bottles mounted with the brackets in or near the middle will oscillate causing metal fatigue resulting in bracket failure. Billet brackets are suggested for installations on ATV and motorcycles, or any vehicles used in rough terrain or where band style clamps allow vibration or oscillation to occur. If band style brackets are used a minimum of two brackets must be installed on systems that use a 7oz bottle or larger. Nitrous Express does not recommend the mounting of bottles to the swing arm or any portion of the suspension of an ATV or motorcycles.

SCTA and BNI require an approved blow down tube (PN 11711P) on all motorcycle installations. The bottle must be mounted as shown in “**Illustration A**”.



## SECTION 2: INSTALLING ZX14 SPRAY BAR

Before installing the Nitrous Express spray bar remove all necessary parts to gain access to the space needed to install you product.

1. Once necessary parts are removed clean the area you will be installing your nitrous spray bar.
2. Thread the 4 nozzles into the spraybar using the included NX thread locker and tighten with an aluminum wrench.
3. The two bolts that were in your kit will be the main bolts that mount in upside down in your ZX14 air box. They will be installed in the two farthest holes from the center.



4. You will use 4 of the original plate bolts but the two other holes will use the spray bar bolts and need nuts to hold the spray bar in place.
5. Make sure the nozzles in the spray bar and pointing down into your intake ports and not installed upside down, (it also shouldn't mount correctly if upside down).
6. The two braided lines will need to be ran through to your system, the longer line should be ran from your bottle into your nitrous solenoid.
7. The smaller line will connect to your nitrous out port on your solenoid and ran through your air box. Connect this line to your nitrous spray bar in your system.

## SECTION 3: WIRING THE SYSTEM



The triggering mechanism for NX Power Sports systems is a mechanical wide-open throttle micro switch. Follow the wiring diagram in “Illustration D”. If using a TPS auto learn switch for your triggering mechanism follow “Illustration E”. In all applications, always use the furnished relay, this will insure adequate voltage to the solenoids and take the high amperage load off of the trigger switch.

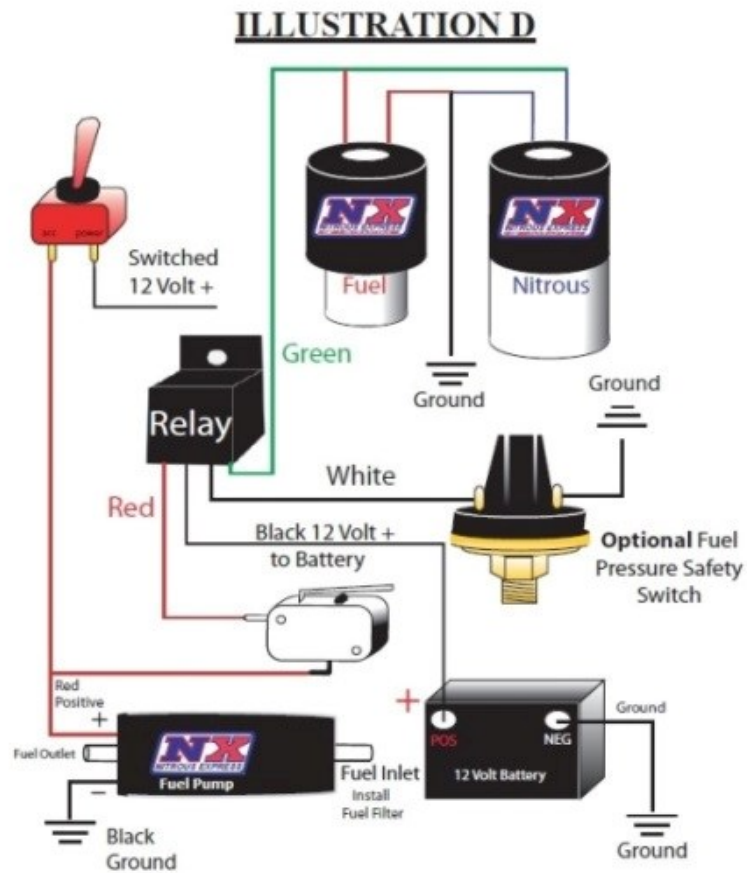
**PROGRAMMING a TPS Wide Open Throttle Module with two LEDs. –Note these instructions are for TPS modules with only 2 LEDs on the module. If you have an older version with only 1 LED on the module please refer to [nitrousexpress.com/instructions.html](http://nitrousexpress.com/instructions.html) for programming instructions.**

The NX TPAS is designed to trigger a relay, 1 amp maximum current draw, at or near wide open throttle and automatically calibrates itself to work with rising or falling signal.

1. The NX TPS Wide Open Throttle Module should be mounted in a place that it will be easy to access the learn button and view the LEDs. Make sure the unit is located away from any heat source, i.e. exhaust manifold, header, or EGR.
2. Following the wiring diagram, route all wires but make no connections.
3. You must determine which wire on your throttle body’s TPS is the output signal to the vehicles computer. Connect all wires per NX Self- Programming Throttle Position Activation Switch wiring diagram using a 1 to 3 amp fuse in series with the red wire.
4. On initial power up, press and hold the button while turning on switched +12 volts. The green LED should begin flashing indicating that the unit is not programmed.
5. Release the button.
6. With the throttle at idle position, press and hold the button until the red LED comes on (approximately 4 seconds). The green LED will continue to flash. Release the button and leave the throttle at Idle. The unit is now calibrating the idle position and making sure that the idle signal is stable. Wait for both LED’s to turn off.
7. Now move throttle to wide open and hold for 1 second, then release back to idle (Red LED should come on to indicate that its working and waiting to check the calibration).
8. To check the calibration, move throttle to wide open again and then release to idle a second time. Once the check is complete, the Red LED will turn off and the Green LED will turn on indicating that the unit is calibrated and armed.
9. Once calibrated, the unit will activate the relay when the throttle opens to 90% or more and it will remain on as long as the throttle is between 90% and 100%. (When the relay is activated, both the red and green LEDs will be on). When the throttle closes to less than 90%, the unit will turn the relay and the red LED off. The green LED will remain on indicating that the unit is rearmed and ready for the next run.
10. If at any time during the calibration process the green and red LED’s flash rapidly in an alternating pattern that means the calibration was not completed correctly. This can be the

result of one of two things. Either the throttle was moved while it was calibrating the idle position or the TPS signal is not stable. Check wiring and recalibrate.

**When using a Mechanical wide open throttle micro switch**



**When using an electronic wide open throttle module**

#### TPS Wire Color Chart

<b>Year</b>	<b>Make/Model</b>	<b>TPS Wire Color</b>
2004	Yamaha/R1	Yellow
2008	Harley/Street Glide	Blue/Green (Pin #59)
2010	Harley/Road Glide	Green/Purple
2013	Polaris/ Razor 900 XP	Green
99-07	Suzuki/Hayabusa	Yellow
08-14	Suzuki/Hayabusa	Pink/Black
01-02	Suzuki/GSXR 1000	Yellow
03-14	Suzuki/GSXR 1000	Pink/Black
06-14	Kawasaki/ZX14	Yellow/White

#### **SECTION 4: TESTING THE SYSTEM**

After all components have been assembled on the motorcycle and each piece has been verified that it is installed properly, (call the factory tech line if you have any questions) it is time to test the system. Reconnect the negative battery cable. **Be sure the nitrous bottle is turned off and there is no pressure in the supply line!** Now arm the system by turning the toggle switch to the “ON” position. You should hear the fuel pump come on. Blip the wide-open throttle switch , you should hear the solenoids “click”(the fuel solenoid will click “softer” than the N2o solenoid). Be sure both solenoids are operating.

Open the nitrous bottle and check all connections for leaks. With the lines disconnected from the solenoids, crack your nitrous bottle open to allow Nitrous pressure into the system. Check for any leaks that may be present, and tend to any that may exist. If the solenoid itself is not sealing, activate the nitrous solenoids a few times in rapid bursts to seat the plunger in the solenoids.

(Do not operate the system for prolonged time period with the engine off, fuel from the system will flood the engine.) Start the engine and let it warm to operating temperature. Choose a safe place to test ride your bike; **Always wear all appropriate safety equipment!** Switch the system to the “ON” position; DO NOT TURN ON THE NITROUS BOTTLE! Ride your bike using wide-open throttle, engaging the nitrous system several times or until the motor loses power and stumbles.

purges all air from the fuel circuit and insures it is working properly. If your nitrous system fails to produce this over rich stumble, STOP and recheck every detail of your installation. Once the problem has been located and corrected, rerun the procedure. Now it is time to turn on the bottle and have some real fun!!! EXERCISE EXTREME CAUTION when using your Nitrous Express Nitrous System; it is the most powerful system available anywhere!!! Using third gear at or above 3,000 RPM, go to wide-open throttle, while system is armed. An instant power surge should let you know the system is working. You are now ready for normal nitrous usage, have fun and be careful. Tuning is not normally necessary, do not change the factory recommended jetting patterns, if you have a problem contact the factory tech line.

## SECTION 5: TUNING TIPS

Nitrous oxide works well with all applications, 4 cycle, 2 cycle, diesel, and rotary engines. Each one has individual tuning characteristics and these tips apply generally to each one. Nitrous oxide is referred to as a "LIQUID SUPERCHARGER". THE BIGGEST ENEMY OF ANY SUPERCHARGED ENGINE IS DETONATION!!! Detonation can be caused by many things, lean fuel mixture, rich fuel mixtures, inadequate octane fuel, too much ignition timing, not enough ignition timing, or lugging the engine, just to mention a few!

1. Your vehicle engine should be tuned to its maximum power prior to nitrous use.
2. Your ignition system should be at its maximum. A stock ignition will be adequate on most street systems, but for competition use, you must have the very best available ignition components.
3. The stock spark plug may be too hot for use with Nitrous, We have found for most applications the NGK heat range # 9 is usually best. Do not use platinum tipped spark plugs, the spark kernel is too small for nitrous usage and cannot ignite the mixture at the cylinder pressures that nitrous creates. **Since manufacturers specifications on the plugs vary from make and model, call the tech line to find the right plug for your application.**
4. If you are running more than a 35 horsepower boost NX recommends retarding the timing 2 degrees for every 50 horsepower increment, i.e. if you jet your vehicle to 50 horsepower boost then timing should be retarded by 2 degrees, 100 horsepower boost 4 degrees of retard and so on.
5. The NX system is so advanced that huge amounts of timing retard are not required. If adequate octane fuel is used only small amount of timing retard may be needed. Be aware, Excessive timing retard in an internal combustion engine causes increased cylinder temperatures, engine overheating, and over rich fuel conditions.
6. The fuel system must be in top operating condition. Be sure the fuel filter is clean and there are no restrictions in the fuel supply line.
7. The engine should be at operating temperature before nitrous is used.
8. Never "LUG" the engine while using nitrous! Use the system at wide-open throttle only! Never engage the system below 3,000 RPM's. IF you do any of the above, a dangerous "BACKFIRE" condition may result in serious engine damage or physical injury.
9. **Do not attempt to drill or alter the jets or serious engine damage will result.** These items are engineered to their maximum capability. Any modifications you can make will decrease power and hurt engine parts.



10. All NX systems are designed to operate at 1050 PSI bottle pressure. This is extremely important and cannot be stressed enough!!! If the pressure is below this, the system will be rich, if it is above this it will be lean! The bottle pressure can be monitored easily with our bottle pressure gauge (PN 15509P). In cool weather a bottle heater is required (PN 15938P for 2.0lb or 2.5lb bottles or PN 15936P for 1.0-1.4lb bottles). The use of an insulated bottle jacket will allow the heater to work more efficiently and will also stabilize bottle pressure. In extremely hot weather a wet towel or chamois may be placed over the bottle to reduce pressure.
11. A purge valve (PN 15600P or 15603P) is a must on all competition systems and a plus on the street systems, as well. A purge valve is worth about a tenth of a second on a 1/4 mile pass. The correct purging procedures for drag racing is listed here:
  - A. Complete your burnout.
  - B. Light the pre-stage bulb.
  - C. Push the purge button three times, in one second increments.
  - D. Stage immediately, go fast!!!
12. If traction is a problem a progressive controller (PN15957P or PN15835P) may be used to reduce tire spin off the line, smoothly increasing power as the vehicle accelerates, eliminating ET robbing traction loss.
13. If there is a question about the purity of your nitrous supply, a filter (PN 15607P) should be used when refilling your nitrous bottle. Contaminated nitrous will cause serious damage to your system components.
14. Periodically check all fittings, connections, and mounting bolts for leaks and tightness.
15. Always turn the nitrous bottle off when not in use, even between runs.
16. Always start with the lowest power setting in your system. Start out small and work your way up, NX systems produce more "REAL" horsepower than any other on the market today!
17. If you run a 35+ HP system it is recommended that you run the highest motor octane racing fuel available. Here are some tips to help you choose fuel for your bike:
  - A. The relevant number to look at when choosing a racing fuel is the "MOTOR" octane number or MON, the research octane number is not a reliable gauge of fuel octane level.
  - B. Never store your fuel in a vented container; never store your fuel in white fuel jugs, or in direct sunlight. If you must use plastic, use only dark colors. Sunlight will oxidize the lead out of racing fuel. Lead is what makes it high octane. A steel "JERRY" can is the best.
  - C. Do not leave your racing fuel stored in the motorcycle tank. Keep it in a sealed, airtight container off the floor.
  - D. NEVER USE AVIATION GAS!!!!  
Instant engine damage will be the result! The specific gravity of avgas is very light and it is not formulated to operate in non-aircraft engines.
  - E. Never buy racing fuel from a vented container, or from an underground tank. Buy from a sealed drum only.

## IN CONCLUSION

This instruction sheet and power tuning tips are valid for NX systems only. If you have a kit from another manufacturer this information will not help you. The instruction sheet from another



manufacturer's kit will not help you with the NX system! If you need help call your dealer or the factory tech line.

**DO NOT MIX ANY COMPONENTS FROM ANY OTHER MANUFACTURER, THIS WILL VOID ALL WARRANTIES!!!!!!**

If you follow the foregoing suggestions, your NX system will operate trouble free. Got a problem? Call the factory tech line 9AM to 5PM CST 940-767-7694.

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FAX [www.nitrousexpress.com](http://www.nitrousexpress.com)

<b>Hayabusa and ZX14 Billet Spraybar Jetting</b>																			
<b>Select the desired horsepower level to determine the nitrous jet requirements i.e. if you want a 100 HP boost you would use a 52 Nitrous jet.</b>																			
<b>Spark plugs should be at least 2 steps colder than stock gapped no larger than .035. Do not use platinum tip, extended tip or any plug with multiple ground straps or split ground straps. When in doubt about heat range always go one step colder.</b>																			
<b>Ignition timing should be retarded 2 degrees per 50 hp of nitrous being sprayed.</b>																			
<b>CHECK ALL JETS FOR OBSTRUCTIONS UPON INSTALLATION!!!!!!!!!!</b>																			
<table border="1"><thead><tr><th>HP</th><th>N2O Jet</th></tr></thead><tbody><tr><td>15</td><td>22</td></tr><tr><td>20</td><td>24</td></tr><tr><td>25</td><td>26</td></tr><tr><td>50</td><td>35</td></tr><tr><td>75</td><td>41</td></tr><tr><td>100</td><td>52</td></tr><tr><td>150</td><td>62</td></tr><tr><td>200</td><td>78</td></tr></tbody></table>		HP	N2O Jet	15	22	20	24	25	26	50	35	75	41	100	52	150	62	200	78
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<b>Warning: This dry nitrous system injects only nitrous into the engine. You must ensure you are adding adequate fuel to properly enrich the nitrous!!! This is most commonly achieved by retuning the ECU or by using an ECU that has the ability to add enrichment fuel when the nitrous is activated.</b>																			
<b>This jetting chart is for informational purposes only, NX is not responsible for misuse or misapplication.</b>																			