



#82195 LS Perimeter Plate Nitrous System

Thank you for choosing ZEX™ nitrous; we are proud to be your manufacturer of choice.



Why Our Nitrous System Is Better:

- A complete nitrous system. Everything is included in this kit for an easy, professional installation.
- Adjustable from 100-250 HP; safe enough for stock engines, but powerful enough for all-out racing.
- The ZEX™ LS Perimeter Plate Nitrous System (part #82195) is activated at wide open throttle with advanced electronics that monitor your throttle position sensor (TPS). Easy and safe activation, especially with throttle-by-wire systems.
- Perimeter Plate design ensures optimum nitrous distribution for maximum power and engine safety.

Kit Parts List

Description	Qty.	Description	Qty.
Nitrous Solenoid	1	.028 N20/ Fuel Jet	1
Fuel Solenoid	1	.032 N20/ Fuel Jet	1
Solenoid Bracket	2	.038 N20/ Fuel Jet	1
Solenoid Bracket Screws	4	.043 N20/ Fuel Jet	1
12" -4AN Hose, 3 AN nut, 1/8 NPT end	2	.052 N20/ Fuel Jet	1
3' Hose, -4AN	1	.064 N20/ Fuel Jet	1
16' Hose, -4AN	1	.076 N20/ Fuel Jet	1
LS Perimeter Plate	1	.105 N20/ Fuel Jet	1
LS Perimeter Plate Adapter Insert	1	Arming Switch	1
Adapter Insert O-ring	2	Electronic Throttle Activation TPS Switch	1
45 deg. Jet Fittings	2	TPS Resistor Wire	1
102mm Gasket	1	Red 18 GA. Wire	15ft.
90mm Gasket	1	Red 14 GA. Wire	15ft.
Cap Screw Bolt, M6 x 1.0 x 40mm	4	30amp Fuse Holder	1
Cap Screw Bolt, M6 x 1.0 x 60mm	4	30amp Fuse	1
¼ NPT to -4 AN Filter Fitting	2	20amp Mini Relay	1
-4 AN to 1/8 NPT Fitting	1	5/16-18 X 1" Bolt for Bottle Brackets	4
10lb. Nitrous Bottle w/Valve	1	5/16 - 18 Nut for Bottle Brackets	4
Bottle Bracket (short)	1	5/16 Flat Washer	4
Bottle Bracket (long)	1	Schrader Valve Removal Tool	1

Quick Start Reference Guide:

How the ZEX™ LS Perimeter Plate Nitrous System works: The ZEX™ Part #82195 nitrous oxide injection system begins with a connection to a supply cylinder containing pressurized liquid nitrous oxide and a connection to the engine's fuel system. These connections go the fuel and nitrous solenoids. These solenoids are normally closed but are opened when the electronic TPS switch senses that the nitrous system is armed and the engine is at wide-open throttle. Once these solenoids open, the nitrous and fuel are delivered to the LS Perimeter Plate via flexible delivery lines. The amount of nitrous and fuel that is injected through the Perimeter Plate is adjustable by means of metering jets installed in the plate itself. These metering jets allow for easy changes in horsepower settings.

Work safely: Always wear eye protection and gloves when working with lines or hoses that contain pressurized nitrous oxide or fuel. Never transport nitrous cylinders loose in a trunk or the back of a pick-up truck and especially NOT within a vehicle's interior whether the cylinder is full OR empty. Always disconnect the GROUND side of the battery when working on any electrical components.

Nitrous oxide won't fix problems you already have: Before you install your nitrous system, be sure your engine is in good mechanical condition. Intermittent wiring problems, etc., can lead to erratic system performance and possible engine damage.

Never defeat operation of the safety relief disc in the nitrous cylinder's valve: It's required by law and is there for your safety. Never drill, machine, weld, deform, scratch, drop or modify a nitrous oxide tank in ANY way whatsoever!

Never overfill nitrous cylinders: That little bit extra will put you and others at risk of injury. More often than not, when the cylinder warms up, the pressure goes above the limit of the safety relief disc, and you lose all the nitrous you just paid for.

All the power comes from the fuel, not the nitrous: Nitrous oxide is simply a tool that allows you to adjust how much and how quickly the engine burns the fuel. If the fuel isn't there, the power won't be either.

Avoid detonation at all times: Nitrous enhanced detonation is much more damaging than detonation that occurs when naturally-aspirated due to the increased amount of fuel available for releasing energy and the fact that more oxygen is present.

When the system is activated, if something doesn't feel or sound right, BACK OFF: If you hear any detonation or feel anything unusual, get off the throttle. It's a lot easier to check everything over than it is to just try to drive through it and damage expensive parts. Don't activate or have the system activated when you hit the rev limiter.

Spark plugs and nitrous performance: Quite often, factory type, wide-gap, projected nose spark plugs will produce a detonation condition after a few seconds of nitrous use. The solution to the problem is to install spark plugs that have a colder heat range and proper ground strap design for nitrous use. Consult your preferred spark plug manufacturer to ensure you install the correct plugs for the nitrous level you choose to run. Also, due to the cooler and denser inlet air charge that nitrous creates, it may be necessary to close up your spark plug gaps to eliminate any misfiring. In our experience, .030 to .035 in. spark plug gaps typically will ensure proper ignition. You may be able to run a wider gap, or you may have to close them up, just be aware of this if you start to experience an ignition misfire when you are using your nitrous system.

Do not use Teflon sealing tape on any fittings in a ZEX™ nitrous system: It is easy for Teflon tape to get pulled into the system, causing blockages that can ultimately lead to incorrect nitrous system performance and potentially engine damage. Only use liquid thread sealer for all NPT type fittings. Do not use any thread sealing compound on AN style threads.

Do not attempt to start your engine if nitrous has been accidentally injected into the engine while it was not running: Disable the ignition, and with the throttle wide open, turn over the engine for several seconds to clear the nitrous from the engine. Failure to do this before restarting the engine can lead to a dangerous intake system backfire.

Do not engage your nitrous system below 2500 rpm: This ensures that you will not have excessive cylinder pressures that could cause engine damage. The ZEX™ Traction Control Window Switch (Part #82085) is ideal for controlling the rpm range that your nitrous system operates in.

When finished using your nitrous system, close the nitrous bottle valve and relieve the line pressure: This eliminates the possibility that nitrous could inadvertently accumulate in the intake manifold while the nitrous system is not being used.

Do not run excessive bottle pressures: Excessive bottle pressures, over 1100psi, are dangerous to your engine. Your ZEX™ nitrous system is calibrated and optimized to operate from 900-1000psi. Exceeding this will not improve performance. Over 1100psi also runs the danger of locking the nitrous solenoid closed due to excessive pressure working against the valve's plunger. If this happens, you must cool the nitrous bottle down to lower the pressure. This will allow the valve to operate properly again.

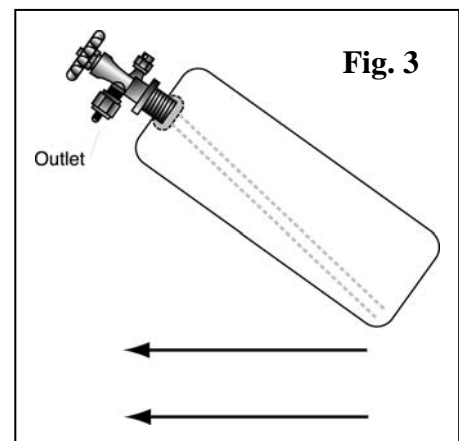
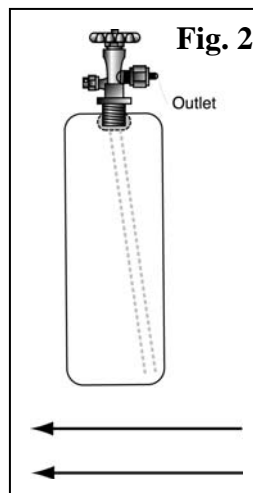
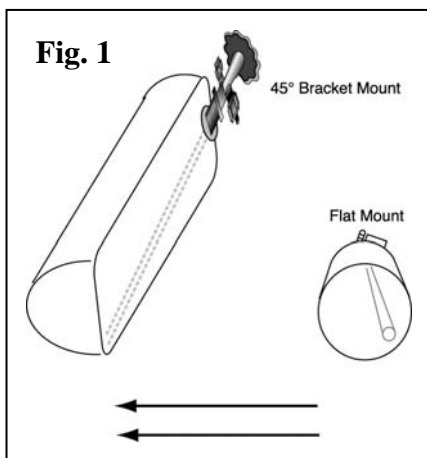
Start with the lowest horsepower setting, and work your way up: This ensures if you have any tuning issues to work out on your vehicle, they will get sorted out with a smaller shot of nitrous that will be less likely to damage your engine. Once you have the car working well on the smaller shot, you can then safely start to step up your nitrous kit horsepower.

Make sure your vehicle has an adequate fuel supply: Nitrous systems put a large demand on your vehicle's fuel system. Make sure you have a large enough fuel pump to handle the demands of your engine, as well as the nitrous system.

How to adjust power levels: The ZEX™ LS Perimeter Plate Nitrous System is designed for multiple power levels. Metering jets installed in the plate control these power levels. To change the power output, all you need to do is install the appropriate set of jets. The correct combination of jets is listed on the tune-up sheet at the back of this instruction manual.

Installation Instructions:

- 1. Decide where to put everything** – Before you start to install the various components of this kit, you'll have to find the best locations of each component by trial fitment and careful measurement. First, decide where you want to mount the nitrous and fuel solenoids. Remember, the stainless steel braided lines that connect the solenoids to the nitrous nozzle are 12" long. The arming switch should be installed in a position convenient to the driver, but not in an area where it could be accidentally armed. Next, decide where and how you'll mount the nitrous supply bottle, check Fig. 1, 2, 3, and 4 for technical restrictions on bottle mounting locations and positions. Finally, have a reputable performance shop fill your nitrous bottle with automotive grade nitrous oxide before you begin. Do not overfill the nitrous bottle.

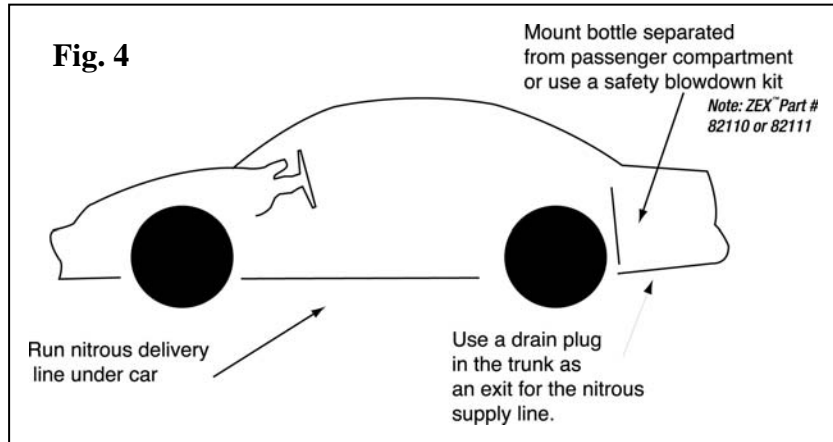


2. Mount Nitrous Supply Bottle

- A.** Mount the nitrous supply bottle so that it is separated from the passenger cabin. Fastback style cars that do not have separate trunk compartments have to be equipped with a safety blowdown tube (ZEX™ Part #82099). Route the tube from the safety pressure relief cap to the exterior of the car, preferably under the car. Doing so will prevent your car from filling with a cloud of nitrous oxide should the safety pressure relief cap rupture.

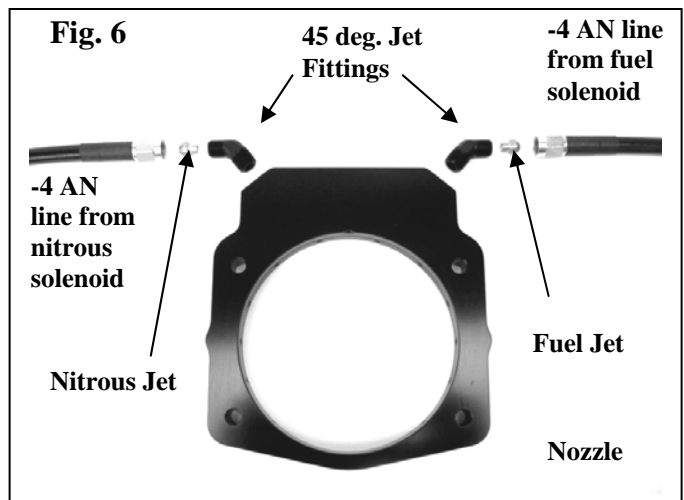
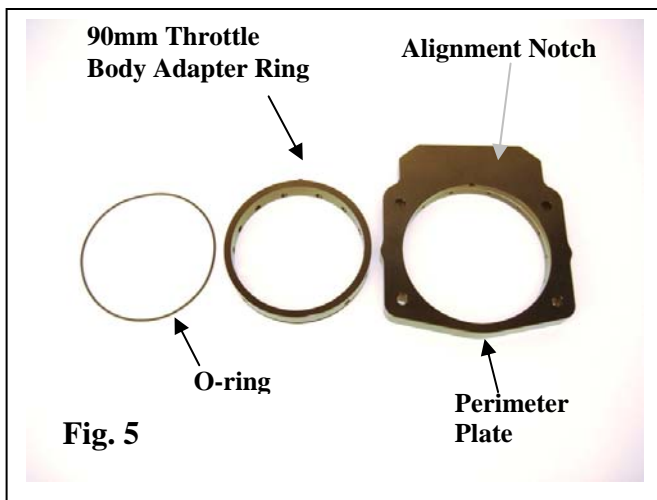
B. Index the pickup tube with bottle position (Refer to Fig. 1, 2, and 3). ZEX™ nitrous bottles are designed with the bottom of the siphon tube at the bottom of the bottle towards the outlet. Always mount the bottle so that as your car accelerates, the liquid flows toward the pickup tube.

3. **Mount nitrous delivery line under the car** – When routing the nitrous delivery line under the car, try to use the subframe as a conduit (Fig.4). This protects the line and eliminates the need to use clamps. The supplied cable ties work if you can run the line higher in the under-body so that it's safe from road level obstacles such as speed bumps.



4. **Mount Nitrous and Fuel Solenoids** – Assemble the -4AN filter fittings into the inlet side of both the nitrous and fuel solenoids. Install the 1 ft. long, -4AN hoses into the solenoid outlets. Make sure you use a liquid thread sealant on all NPT pipe threads. Attach the solenoid brackets to the solenoids using the pan head Allen screws, and find suitable mounting locations for them. Finally, attach the 16 ft. nitrous line to the inlet of the nitrous solenoid and attach the 3 ft. long, -4 AN fuel feed line to the inlet of the fuel solenoid.

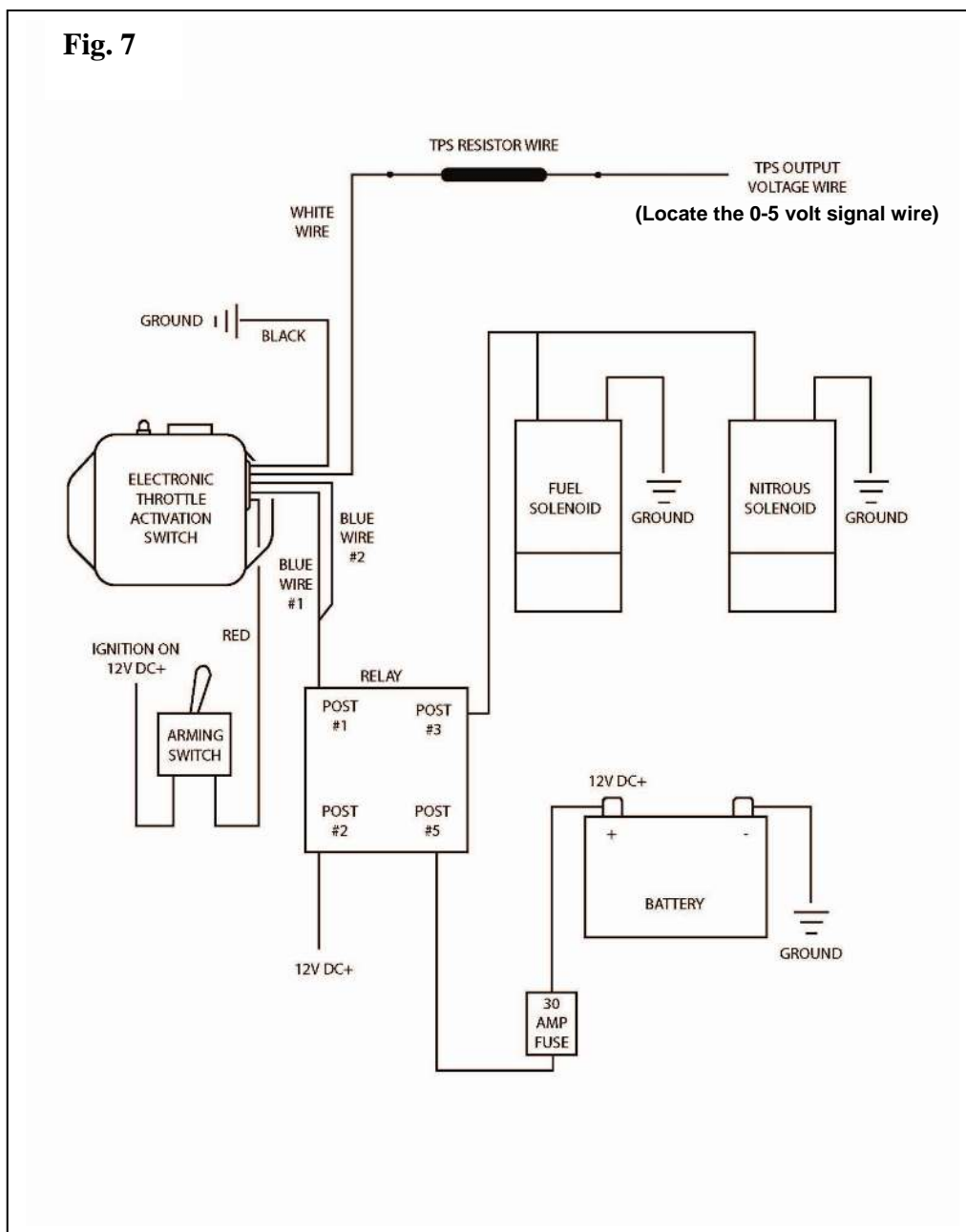
5. **Install LS Perimeter Plate** – Using a liquid thread sealant, install the 45 deg. jet fittings into the Perimeter Plate fuel and nitrous inlets (Fig. 6). If you are using a 90mm sized throttle body, install one of the supplied o-rings onto the Adapter Ring and after lubricating the o-ring with some WD-40, slide the Adapter Ring into the center of the Perimeter Plate (Fig. 5). Notice that the Adapter Ring has an extension which fits into the Perimeter Plate's alignment notch for proper orientation. If you are using a 102mm throttle body, there is no need to use the adapter ring. Using the included



metric cap screws, washers and appropriate gasket, assemble the throttle body and LS Perimeter Plate onto the intake manifold. Once the Perimeter Plate is installed, place the appropriate tuning jets in the jet fittings and attach the 1-foot long, -4AN hoses that come from the solenoids (Fig. 6).

6. Wiring

- A. Mount the arming switch in an easily accessible area for the driver.
- B. Using the supplied electrical connectors and wire, refer to the wiring diagram for proper routing and electrical connections for the nitrous system (see Fig. 7). Always use the supplied fuse for electrical system protection in the event of a short in the system. The best positive (+) power source for the nitrous system's solenoids is a direct connection from relay post #5 to the battery's positive (+) post. Do not splice into the factory wire harness, as it will not have the ability to supply the current required by the nitrous and fuel solenoids.



IMPORTANT TECH NOTE FOR THROTTLE-BY-WIRE VEHICLES!

Due to the sensitivity of GM's newer throttle by wire systems, the ZEX™ Electronic Throttle Activation Switch may cause intermittent check engine lights on some vehicles if the included TPS resistor wire (Fig. 8) is not used. It is required that you install the included white TPS resistor wire between the engine's Throttle Position Sensor (TPS) output wire (0-5 volt type signal) and the white TPS wire going to the ZEX™ Electronic Throttle Activation Switch. Use of this resistor will effectively isolate the Electronic Throttle Activation Switch and prevent check engine lights from occurring. This resistor in no way affects the activation or performance of your ZEX™ nitrous system.

- C. The next step is to program the Electronic Throttle Activation Switch. To begin, turn the vehicle's ignition on, but do not start the engine. Turn the nitrous arming switch to the "ON" position. Go to the Electronic Throttle Switch (ETS), and locate the push-button. Depress, then release, the push-button switch. Observe the ETS Operation Light. At this point, it should be RED. This RED light informs you that the ETS is in learn mode. Return to the driver's seat, and depress the accelerator pedal to the floor, holding it there for ten seconds. Release the accelerator pedal and go back to the ETS and observe the Operation Light. At this point, the light should be flashing continuously from RED to GREEN to OFF. This is the ETC's way of telling you that it has successfully learned the voltage curve of your engine's throttle position sensor. Go back to the driver's compartment and turn off the system's arming switch, then turn it back on. Go back to the ETC and observe the Operation Light. It should be solid GREEN at this point. This informs you that the system is armed and ready to activate at wide-open throttle. Return to the driver's seat and depress and release the accelerator pedal several times. You should hear the solenoids click each time you reach wide-open throttle. At this point, your Activation Switch is fully programmed and ready for use. If you ever transfer your nitrous system to another vehicle, perform this same procedure on the new vehicle to "relearn" the Throttle Activation Switch.



7. Install Fuel Delivery Line

WARNING!! EFI fuel systems maintain fuel pressure, even after the vehicle has been shut off.

- Before working on the vehicles fuel system, it is important to relieve the fuel system pressure. Refer to the factory service manual for the proper procedure in doing this.
- Once the fuel system's pressure has been bled off, we are ready to work on the fuel connections for the nitrous system. Most GM engines have a fuel pressure test port located on the factory fuel rail. This provides a convenient place for us to tap into for the nitrous system's fuel needs. First, locate the fitting and verify that it matches the threads on the 3ft. long -4AN fuel feed line provided in the nitrous kit. If everything checks-out, use the provided Schrader Valve Core Removal Tool to unscrew and remove the core inside this test port fitting.
- Attach the 3 ft. long -4 AN fuel line to the fuel pressure test port.

8. Check Fuel and Nitrous Pressure Lines

- Perform a final inspection of all plumbing and electrical connections to ensure that they are correct.
- Ensure that the nitrous bottle is turned off and the line pressure is relieved.

- C. Start the engine, and observe all fuel connections for any leaks. Fix any fuel leaks before proceeding.
 - D. Turn off the engine.
 - E. Open the nitrous bottle valve. Listen carefully for any leaks as your valve is opened. Leaks in the nitrous supply line will be obvious because they will be covered in frost.
 - F. If everything checks out, close the nitrous bottle and relieve the line pressure.
- 9. Check Fuel Quality & Ignition Timing** – The last thing to do before enjoying your new nitrous system is to ensure that the correct fuel for the HP you are making is in the tank and the engine’s ignition timing is set correctly. All recommended ignition timing retard amounts on the Tune-Up Sheet are calculated off of the base ignition setting. If the ignition timing is not set correctly, severe engine damage may occur.

ZEX™ #82195 Nitrous System Tune-Up Sheet

	100 HP	150 HP	200 HP	250 HP
Nitrous (950psi)	52	64	76	105
Fuel (58psi)	28	32	38	43
Ignition Retard (deg.)	4	6	8	10

Naturally aspirated tuning requirements: For engines less than 10.25-1 compression ratio using nitrous system settings of 100 hp or less, pump premium fuel is required for safe operation of your ZEX™ LS Perimeter Plate Nitrous System. For engines with 10.25-1 compression ratio or greater, using nitrous system settings higher than 100 hp, high octane racing fuel is required for safe operation of your ZEX™ LS Perimeter Plate Nitrous System. Nitrous system fuel pressure must be at least 55psi at the inlet of the fuel solenoid.