



4 6 8 CYL. Direct Port Car & Truck Applications (EFI & Carburetor applications)

CONGRATULATIONS on purchasing your DynoTune Nitrous Oxide Injection System! Your system is composed of the highest quality components available. It should provide many miles of trouble-free performance when used correctly. If you have any questions regarding the performance of our system, call DynoTune Technical Service at 1-978-562-6040.

NOTICE: Installation of this DynoTune INC. Nitrous oxide system product signifies that you have read this document and have agreed to the terms stated within.

It is the purchaser's responsibility to follow all installation instruction guidelines and safety procedures supplied with the product as it is received. The purchaser is to determine the compatibility of the product with the vehicle the purchaser intends to install the product on.

DynoTune INC. assumes no responsibility for damages occurring from accident, misuse, abuse, improper installation, improper operation, lack of reasonable care, or all previously stated reasons resulting from incompatibility with other manufacturers' products.

DynoTune neither recommends nor condones the use of products manufactured or sold by DynoTune INC. on vehicles, which may be driven on public roads or highways, and assumes no responsibility for damages incurred by such use. This kit is for off road use only!

DynoTune nitrous oxide is legal for use in most states when used in accordance with state and local traffic laws. DynoTune does not recommend or condone the use of its products in illegal racing activities.

DynoTune has not pursued California Air Research Board (CARB) exemptions for this kit, hence, they are not legal for use on pollution-controlled vehicles in California. A correctly installed DynoTune nitrous system should not alter the emission control performance of your vehicle under standard EPA test cycle conditions.

HAZARDS DEFINED

This manual presents step-by-step instructions that describe the process of installing your DynoTune Nitrous Oxide Injection System. These procedures provide a framework for installation and operation of this kit. Parts are referenced by name and number to avoid confusion. Within the instructions, you are advised of potential hazards, pitfalls, and problems to avoid. The following examples explain the various hazard levels:

WARNING! Failure to comply with instructions may result in injury or death

CAUTION! Failure to comply with instructions may result in damage to equipment.

NOTE: This information is important, needs to be emphasized, and is set apart from the rest of the text.

HINT: These special instructions provide a handy work tip.

NITROUS OXIDE INJECTION SYSTEM SAFETY TIPS

WARNINGS

- ❑ Do not attempt to start the engine if the nitrous has been injected while the engine was not running. Disconnect the coil wire and turn the engine over with the throttle wide open for several revolutions before attempting to start. Failure to do so can result in extreme engine damage.
- ❑ Never permit oil, grease, or any other readily combustible substances to come in contact with cylinders, valves, solenoids, hoses, and fittings. Oil and certain gases (such as oxygen and nitrous oxide) may combine to produce a highly flammable condition.
- ❑ Never interchange or modify system components. Failure to follow these simple instructions can result in extreme engine damage and/or personal injury.
- ❑ Never drop or violently strike the bottle. Doing so may result in an explosive bottle failure.
- ❑ Never change pressure settings of safety relief valve on the nitrous bottle valve. Increasing the safety relief valve pressure settings may create an explosive bottle hazard.
- ❑ Identify the gas content by the Dynotune on the bottle before using. If the bottle is not identified to show the gas contained, call Dynotune INC.
- ❑ Do not deface or remove any markings, which are on the nitrous bottle.
- ❑ Nitrous bottle valves should always be closed when the system is not being used.
- ❑ Notify the supplier of any condition, which might have permitted any foreign matter to enter the valve or bottle.
- ❑ Keep the valves closed on all empty bottles to prevent accidental contamination.
- ❑ After storage, open the nitrous bottle valve for an instant to clear the opening of any possible dust or dirt.
- ❑ It is important that all threads on the valves and solenoids are properly mated. Never force connections that do not fit properly.
- ❑ **This DynoTune Nitrous kit is not intended for use on hatchback type vehicles without the use of a DynoTune blow-down tube system, ask DynoTune for help if you are not sure what is needed for your application.**

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WHAT IS NITROUS OXIDE?

Nitrous Oxide ...

... Is a cryogenic gas composed of nitrogen and oxygen molecules.

... Is 36% oxygen by weight.

... Is non-flammable by itself

... Is stored as a compressed liquid

... Exists in two grades --- U.S.P. and Nitrous Plus:

- U.S.P. is medical grade nitrous oxide; its common use is dental and veterinary anesthesia. It is commonly used as a propellant in canned whipped cream. U.S.P. is not available to the public.
- Nitrous Plus differs from U.S.P. in that it contains trace amounts of sulphur dioxide added to prevent substance abuse. Nitrous Plus is intended for automotive applications and is available for sale to the public.

In most applications, Nitrous is injected into the engine's intake manifold, which produces the following results:

- Lowers engine intake air temperature, producing a dense inlet charge.
- Increases the oxygen content of the inlet charge (air is only 22 percent oxygen by weight).
- Increase the rate at which combustion occurs in the engine's cylinders.

Do's and Don'ts of Nitrous Oxide

Do's

- ❑ Read all instructions before attempting to install your DynoTune nitrous system.
- ❑ Make sure your fuel delivery system is adequate for the nitrous jetting you have chosen. Inadequate fuel pressure or flow may result in engine damage.
- ❑ Use the supplied wire when installing electrical system components.
- ❑ Use high-quality connections at all electrical joints.
- ❑ Use Teflon-based paste on pipe-style fittings. Optionally you can use Teflon tape but care must be taken not to wrap the tape to close to the end of the fitting to avoid the tape getting trapped in the solenoids or jets.
- ❑ Make sure your engine and related components (ignition, fuel pump, and driveline) are in proper working condition. Do not use any performance chip or modified computer that advances timing more than stock.
- ❑ If nitrous is accidentally injected into the engine when it is not running, remove the engine coil wire, open the throttle, and crank the engine 10 to 15 seconds before starting. Failure to do so can result in an explosive engine failure.
- ❑ Use your DynoTune nitrous system only at wide-open throttle and at engine speeds above 3000 RPM.
- ❑ Use a high-quality fuel, as suggested in Chapter 3, Baseline Tuning Suggestions.

Don'ts

- ❑ Engage your nitrous system with the engine off. Severe engine damage can occur.
- ❑ Modify DynoTune nitrous systems (if you need a non-stock item, call DynoTune Technical Service for assistance).
- ❑ Over tighten AN type fittings.
- ❑ Use Teflon Tape on compression fittings.



- ❑ Use sealant of any kind on AN type fittings.
- ❑ Allow nitrous pressure to exceed 1100 psi. Excessive pressure can cause swelling or in extreme cases failure of the nitrous solenoid plunger.
- ❑ Inhale nitrous oxide. Death due to suffocation can occur.
- ❑ Allow nitrous oxide to come in contact with skin. Severe frostbite can occur.

Chapter 1. Introduction to your DynoTune Nitrous Oxide Kit

1.1 General Information

This kit is intended for Car/Truck carbureted applications. The DynoTune kit was designed to work with 4 stroke engines. The installation of the kit requires prior knowledge of Nitrous systems installation. It's highly recommended that you have this kit professionally installed and tuned. DynoTune will not be held liable for faulty workmanship due to a faulty installation.

Horsepower and torque increases due to these kits will vary with engine displacement and modifications. Approximate power increase estimates can be made based upon the massflow of nitrous oxide into the engine. The following table is provided to allow you to estimate the power increase you can expect for your application. Your kit comes with the lowest and Middle hp jets only. Additional jets are available from DynoTune.

4 CYL Jetting * Based on 5-6 PSI fuel pressure

Kits	Nitrous Jet / Fuel Jet*	Approximate Power Increase (BHP)
DynoTune Direct Port Kit	.016 / .016	50 HP
	.020 / .020	75 HP
	.024 / .024	100 HP
	.030 / .030	160 HP

6 CYL Jetting * Based on 5-6 PSI fuel pressure

Kits	Nitrous Jet / Fuel Jet*	Approximate Power Increase (BHP)
DynoTune Direct Port Kit	.014 / .014	50 HP
	.016 / .016	75 HP
	.020 / .020	100 HP
	.024 / .024	150 HP

8 CYL Jetting * Based on 5-6 PSI fuel pressure

Kits	Nitrous Jet / Fuel Jet*	Approximate Power Increase (BHP)
DynoTune Direct Port Kit	.020 / .020	125 HP
	.022 / .022	175 HP
	.024 / .024	200 HP
	.028 / .028	250 HP

1.2 System Requirements

When used correctly, this kit should work with stock internal engine components (a modified engine is required if adding more than 45% additional power). To ensure proper performance and engine life, the following is an absolute must:

- ❑ If the vehicle is to be exposed to severe operating conditions, such as drag strip usage, the standard clutch should be replaced with a high performance unit.
- ❑ Forged pistons and a modified engine is required if higher horsepower levels are to be used. Consult your engine builder/tuner to determine how much power your engine can safely use.
- ❑ Higher octane (100) should be used if your using this with an already modified engine, otherwise 92 octane should work fine for most lower compression engines. Do not use octane booster!
- ❑ An aftermarket high flow fuel pump must be used with this kit, in tank and or inline.
- ❑ **A fuel pressure regulator is required if your fuel pressure is higher than 6 PSI at WOT and mandatory on all EFI applications. Use the Holley fuel pressure regulator model 12-803 or equivalent.**

1.3 Kit Components

Before beginning the installation of your DynoTune nitrous kit, compare the components in your kit with those shown in Figure 1 and listed in Table 2.

Table 2. DynoTune Direct Port N2O Parts List 4 CYL kit

Item	Description	Quantity	P/N
1	Bottle nut 4AN	1	
2	Teflon bottle nut washer	1	
3	10LB Nitrous Bottle	1	
4	10LB Bottle Bracket Set	1	
5	Wet Fogger Nozzle	4	
6	4AN to 1/8" NPT adaptor Blue	1	
7	Not used in this kit	0	
8	Nitrous Solenoid (blue or black wires)	1	
9	Not used in this kit	1	
10	2 ft. 3AN Hose (Blue)	1	
11	Fuel Solenoid (Red power wires)	1	
12	Not used in this kit	0	
13	2 ft. 3AN Hose (Red)	1	
14	Solenoid Mounting Bracket(s) w/screws	1	
15	Flare Jets	16	
16	16 ft. 4AN Hose (Blue) Main Feed Line	1	
17	Not used in this kit	0	
18	Lighted Arming Switch	1	
19	Wiring Relay Harness	1	
20	Relay	1	
21	Fuse assembly	1	
22	Not used in this kit	0	
23	5/16", 5/16", 5/16" Hose Barb Fitting	1	
24	5/16" Hose Clamp Fittings	6	
25	1/16" NPT Pipe Tap	1	
26	Throttle Micro Switch Assembly	1	
27	3 feet rubber 5/16" fuel injection hose	1	
28	Fuel filter	1	
29-R	Tube sleeve (Red)	4	
29-B	Tube Sleeve (Blue)	4	
30	Tube Nut (Red)	4	
30	Tube Nut (Blue)	4	
31	3AN male to 1/8"npt male 90 degrees	2	
32	Tube Compression Fittings	8	
33-R	Red distribution block	1	
33-B	Blue distribution block	1	
34	Stainless tubing	10	

Table 2. DynoTune Direct Port N2O Parts List 6-8 CYL kits ** Qty varies

Item	Description	Quantity	P/N
1	Bottle nut 4AN	1	
2	Teflon bottle nut washer	1	
3	10LB Nitrous Bottle	1	
4	10LB Bottle Bracket Set	1	
5	Wet Fogger Nozzle	8 **	
6	4AN to 1/8" NPT adaptor Blue	1	
7	3AN to 1/8" NPT adaptor Blue	2	
8	Nitrous Solenoid (blue or black wires)	2	
9	Not used in this kit	0	
10	Not used in this kit	0	
11	Fuel Solenoid (Red power wires)	2	
12	1 ft 3AN Hose (Blue)	2	
13	Not used in this kit	0	
14	Not used in this kit	0	
15	Flare Jets	32 **	
16	16 ft. 4AN Hose (Blue) Main Feed Line	1	
17	1/8" to 1/8" NPT 90 Degree adaptor	4	
18	Lighted Arming Switch	1	
19	Wiring Relay Harness	1	
20	Relay	1	
21	Fuse assembly	1	
22	1/8" NPT plugs for distribution blocks	0 **	
23	5/16", 5/16", 5/16" Hose Barb Fitting	1	
24	5/16" Hose Clamp Fittings	6	
25	1/16" NPT Pipe Tap	1	
26	Throttle Micro Switch Assembly	1	
27	3 feet rubber 5/16" fuel injection hose	1	
28	Fuel filter	2	
29-R	Tube sleeve (Red)	8 **	
29-B	Tube Sleeve (Blue)	8 **	
30-R	Tube Nut (Red)	8 **	
30-B	Tube Nut (Blue)	8 **	
31	Not used in this kit	0	
32	Tube Compression Fittings	16 **	
33-R	Red distribution block	2 **	
33-B	Blue distribution block	2 **	
34	Stainless tubing	18 **	

Figure 1. Direct Port Kit Components (4 CYL kit shown)

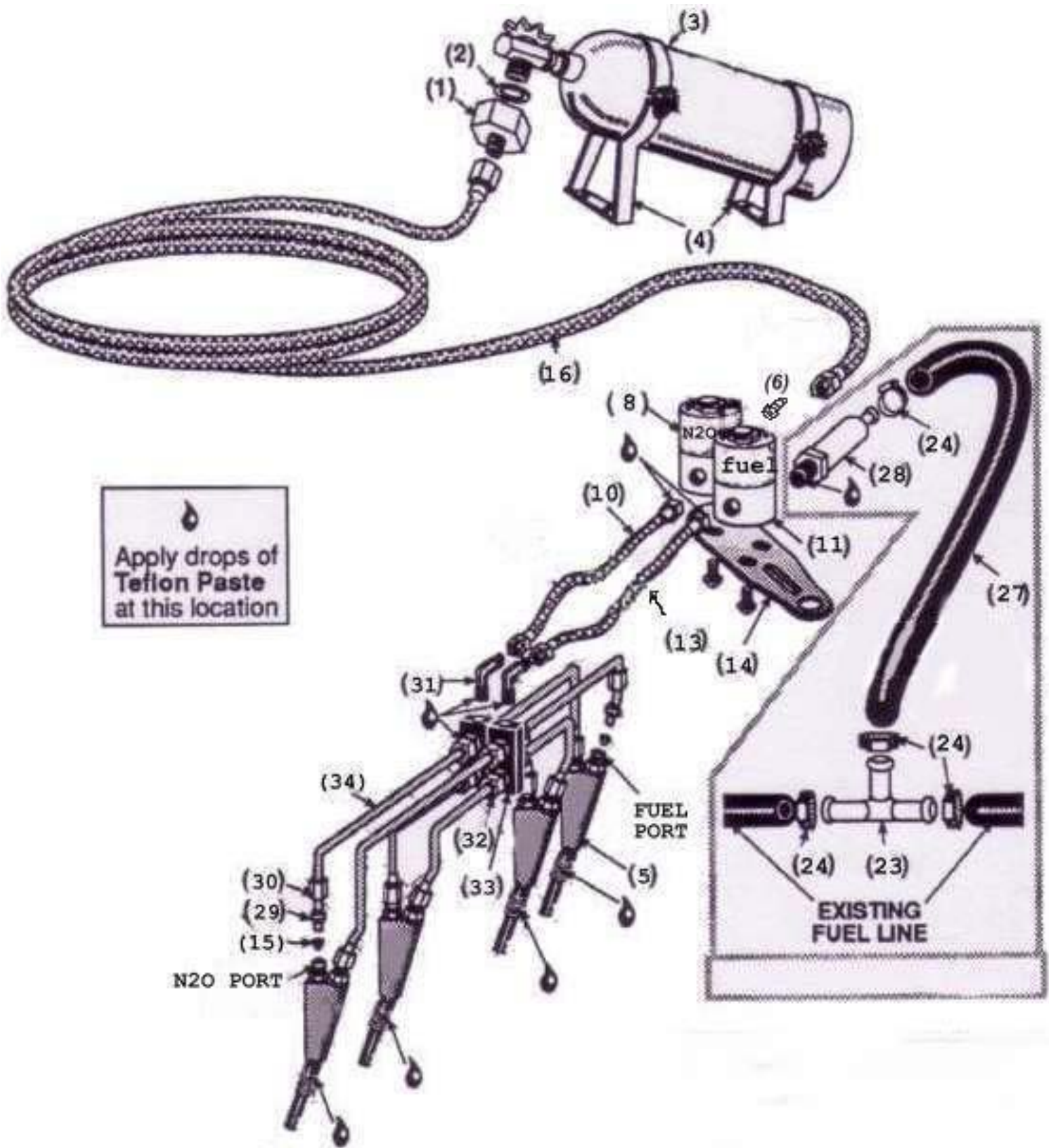
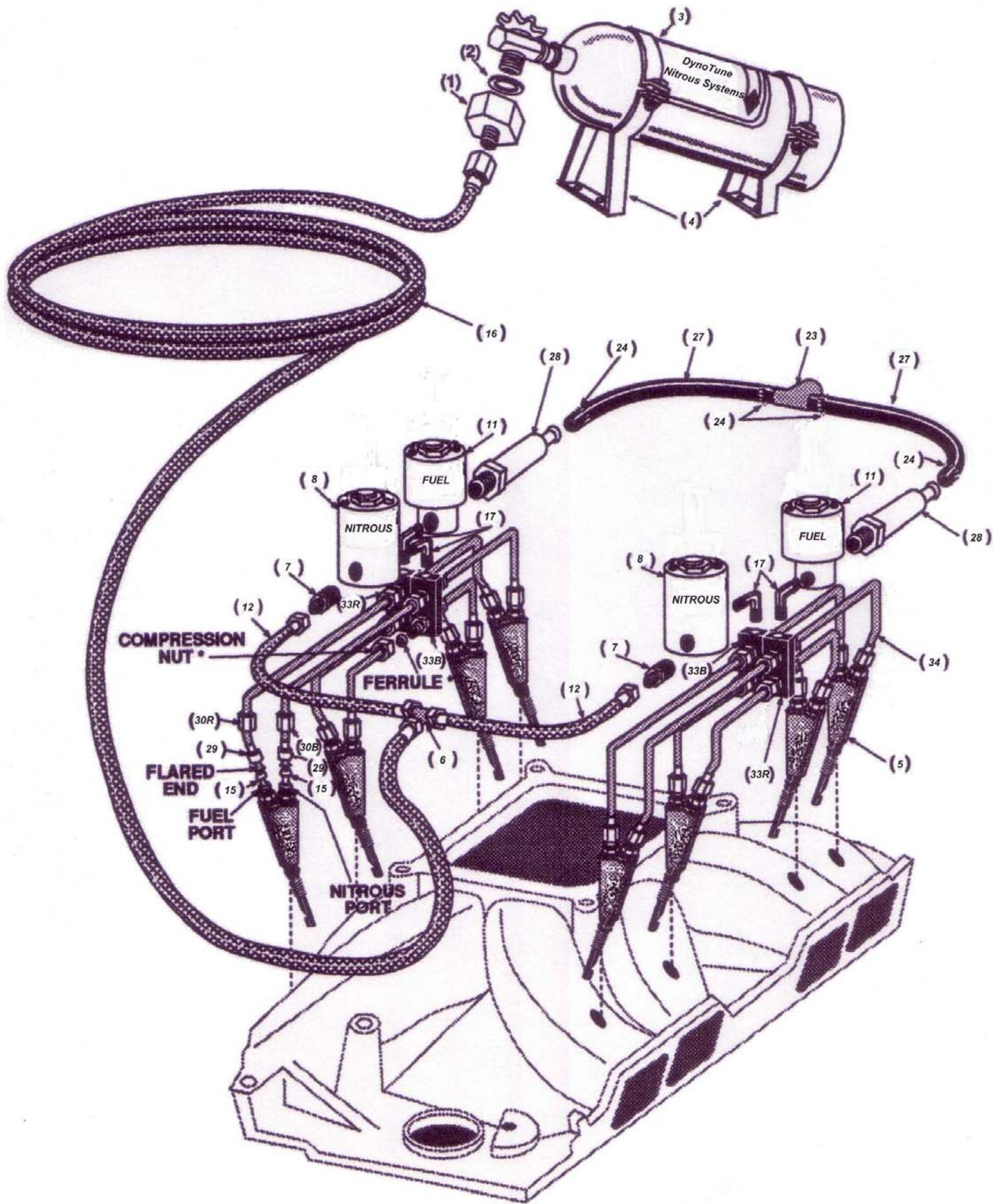


Figure 1A. Direct Port Kit Components (8 CYL kit shown)



Chapter 2. Kit Installation

2.1 Bottle Mounting Instructions

NOTE: Disconnect the battery ground before beginning installation.

2.1.1 Street Vehicles

Accurate calibration of your DynoTune nitrous system depends on the bottle remaining at a stable temperature. Mount the bottle away from heat sources, such as the engine compartment or exhaust system, and away from windows, where the bottle is exposed to direct sunlight.

Dynotune recommends that the bottle be environmentally separated from the driver's compartment. Because hatchback-type vehicles generally do not have a firewall between the trunk area and the driver's compartment, the safety pressure relief cap should be replaced with a Blow-Down kit that will vent the Nitrous outside the passenger compartment during an over pressure condition. The blow-down tube should be routed to the exterior of the vehicle (preferably under the vehicle). This procedure will prevent filling the driver's compartment with a cloud of nitrous oxide, If the safety pressure relief cap should happen to rupture for any reason.

2.1.2 Racing Vehicles

Before mounting a nitrous bottle in a racing vehicle intended for use in sanctioned events, check with the sanctioning association for any rules regarding this subject. Most associations require that the bottle be mounted within the confines of the safety roll cage with the safety pressure relief cap vented away from the driver's compartment.

Figure 2 Nitrous Bottle Siphon Tube Orientation

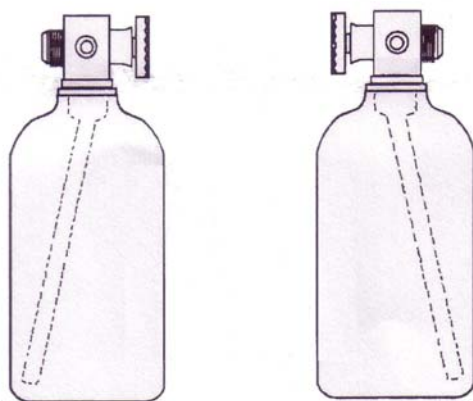
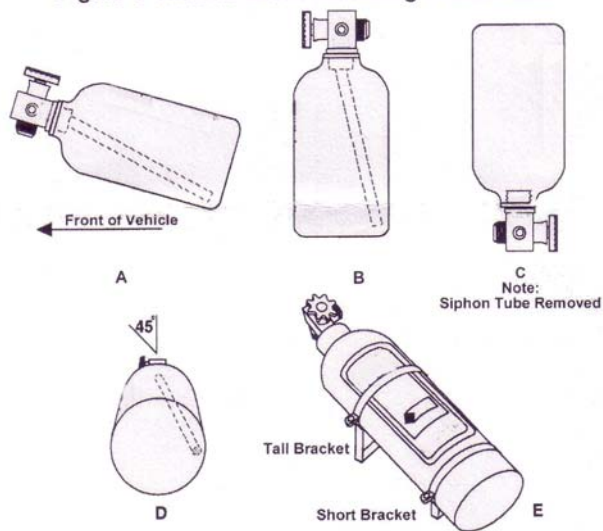


Figure 3 Nitrous Bottle Mounting Orientations



2.2 Bottle Orientation

Bottle placement is critical to the performance of your DynoTune nitrous system. It is important to understand how the bottle valve and siphon tube are assembled to properly orient the bottle in your vehicle and ensure that it picks up liquid nitrous while undergoing acceleration. All Dynotune nitrous bottles are assembled so that the bottom of the siphon tube is at the bottom of the bottle and opposite the bottle label (Figure 2).

Whenever the bottle is mounted in a lay-down position, the valve handle must be towards the front of the vehicle with the label facing up (Figure 3A).

If the bottle is mounted vertically, the label must face toward the front of the vehicle (Figure 3B). This orientation will position the siphon tube at the back of the bottle where the liquid N₂O will be during acceleration.

WARNING! DO NOT attempt to remove the siphon tube without completely emptying the bottle of all nitrous and pressure. Failure to completely empty the bottle will result in an explosive condition causing injury or death.

A bottle mounted upside-down must have the siphon tube removed before use (Figure 3C). Non-siphon bottles can be specially ordered from DynoTune.

If the bottle must be mounted parallel to the axles of the vehicle (sideways), the label must be angled at approximately 45 toward the front of the vehicle (Figure 3D). This orientation will position the siphon tube toward the rear of the bottle.

NOTE: When using a bottle with a siphon tube, the tall bracket should be at the valve end of the bottle and the short bracket at the bottom (Figure 3E).

The most efficient mounting is the lay-down position (Figure 3A) this position allows the greatest amount of liquid to be used before the siphon tube begins to pick up gaseous nitrous oxide.

2.3 Bottle Installation

After you have determined the location and orientation of the nitrous bottle, use the following procedure to install the bottle:

NOTE: Numbers in parentheses () refer to the parts list/assembly drawing number for the components.

- 1) Install the bottle nut adapter (1) and Teflon washer (2) on the nitrous bottle (3). Tighten securely.
- 2) Loosely install the bottle mounting brackets (4) on the nitrous bottle, as shown in fig 3E.
- 3) Locate the bottle/bracket assembly in the desired mounting location, ensuring that the location will provide easy access to the bottle valve, hose connection, and the bracket clamp bolts to facilitate bottle changing.
- 4) Use the assembled bottle/bracket unit as a pattern to mark and drill the four 5/16" holes in the mounting surface. **Caution: When Drilling or punching holes for the brackets, be aware of wires, hoses, fuel tanks etc that may be under or near the brackets!**
- 5) Mount the brackets securely to the surface. Secure the bottle into the mounting brackets and tighten the bracket clamps.

2.1 Solenoid mounting

Use the following procedures to install the nitrous and fuel solenoid. Remember, always use Teflon paste on the pipe threads.

- Hint: placement of the solenoids is often limited by the lack of possible mounting locations around the engine. Try your best to follow these installation requirements.
- Keep the solenoids and lines away from the exhaust.
- Keep the solenoids mounted above the fogger nozzles.
- Place the solenoids near the fogger Nozzles so that the lines will be as short as possible.
- Trial fit the solenoids, test fit to make sure all the lines will reach and clear the hood or moving parts.
- Solenoids can be mounted sideways or upside-down if needed.
- Note: Fuel solenoids have red wires!
- Note: Nitrous solenoids have Blue or Black wire

2.2 Solenoid Installation 4 CYL Applications

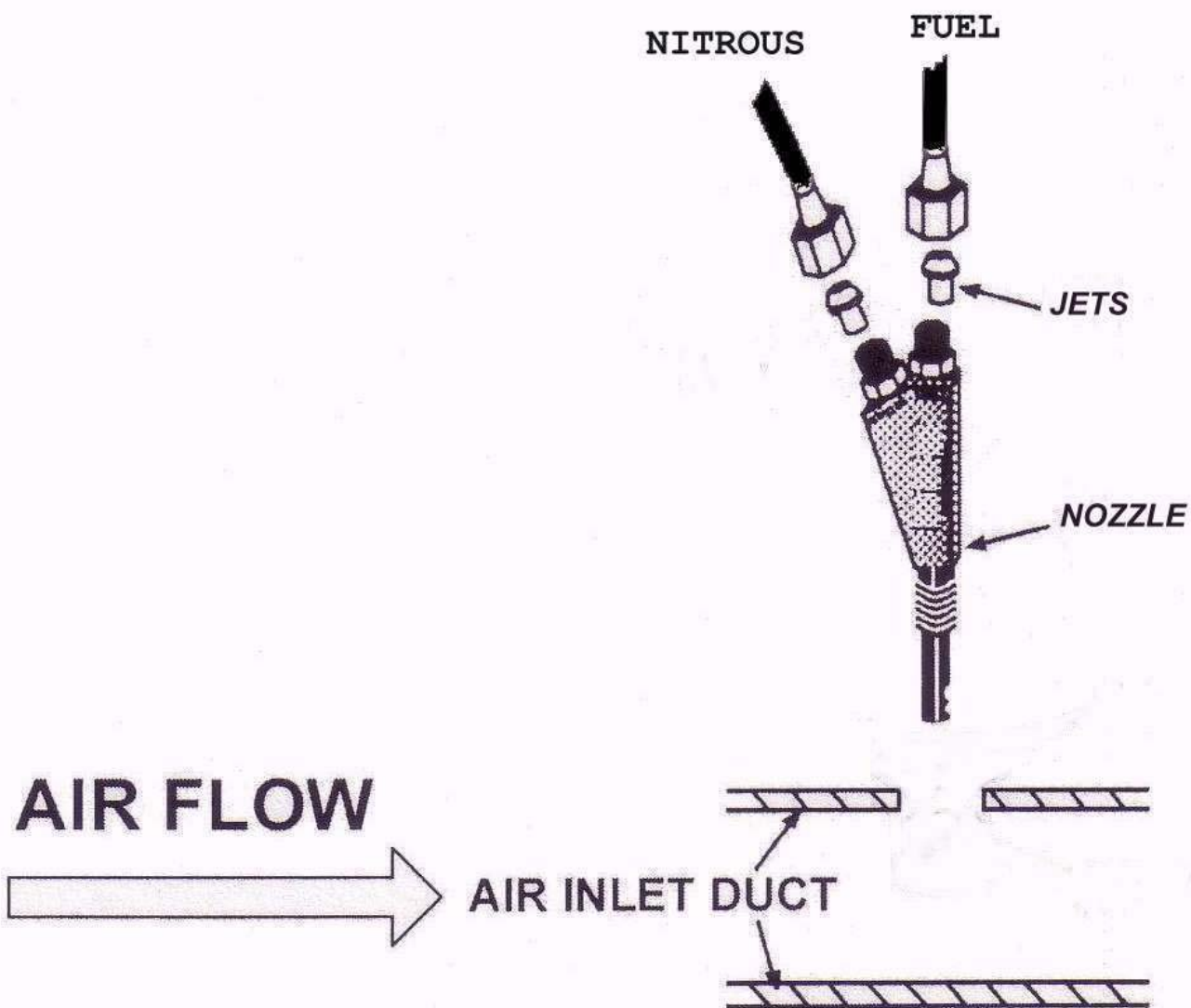
1. Clamp the nitrous solenoid in a bench vise.
2. Install the blue 24" Nitrous line into the "OUT" port of the nitrous solenoid. Don't forget to use Teflon paste on all pipe threads only.
3. Install the Blue 4AN to 1/8"NPT adaptor into the solenoid "IN" port, remove from vice. (Solenoid with blue or black wires)
4. Clamp the Fuel solenoid in a bench vise.
5. Install the Red 24" fuel line into the "OUT" port of the fuel solenoid. Don't forget to use Teflon paste on all pipe threads only. (Solenoid with red wires)
6. Screw the fuel filter into the "IN" Port on the Fuel solenoid. Secure both solenoids to the mounting bracket(s).

2.3 Solenoid Installation 6-8 CYL Applications

7. Clamp the nitrous solenoid in a bench vise.
8. Install the 1/8" to 1/8" NPT 90 degree adaptor into the "OUT" port of the nitrous solenoid. Don't forget to use Teflon paste on all pipe threads only.
9. Install the Blue 3AN to 1/8"NPT adaptor into the solenoid "IN" port, remove from vice. (Solenoid with blue or black wires)
10. Clamp the Fuel solenoid in a bench vise.
11. Install the 1/8" to 1/8" NPT 90 degree adaptor into the "OUT" port of the fuel solenoid. Don't forget to use Teflon paste on all pipe threads only. (Solenoid with red wires)
12. Screw the fuel filters into the "IN" Port on the Fuel solenoid.
13. Screw the "OUT" ports (90 degree fittings) on the solenoids into the distribution block as shown. Fuel solenoids screw into the red distribution blocks and Nitrous solenoids screw into the blue distribution blocks.

2.4 Nozzle Installation

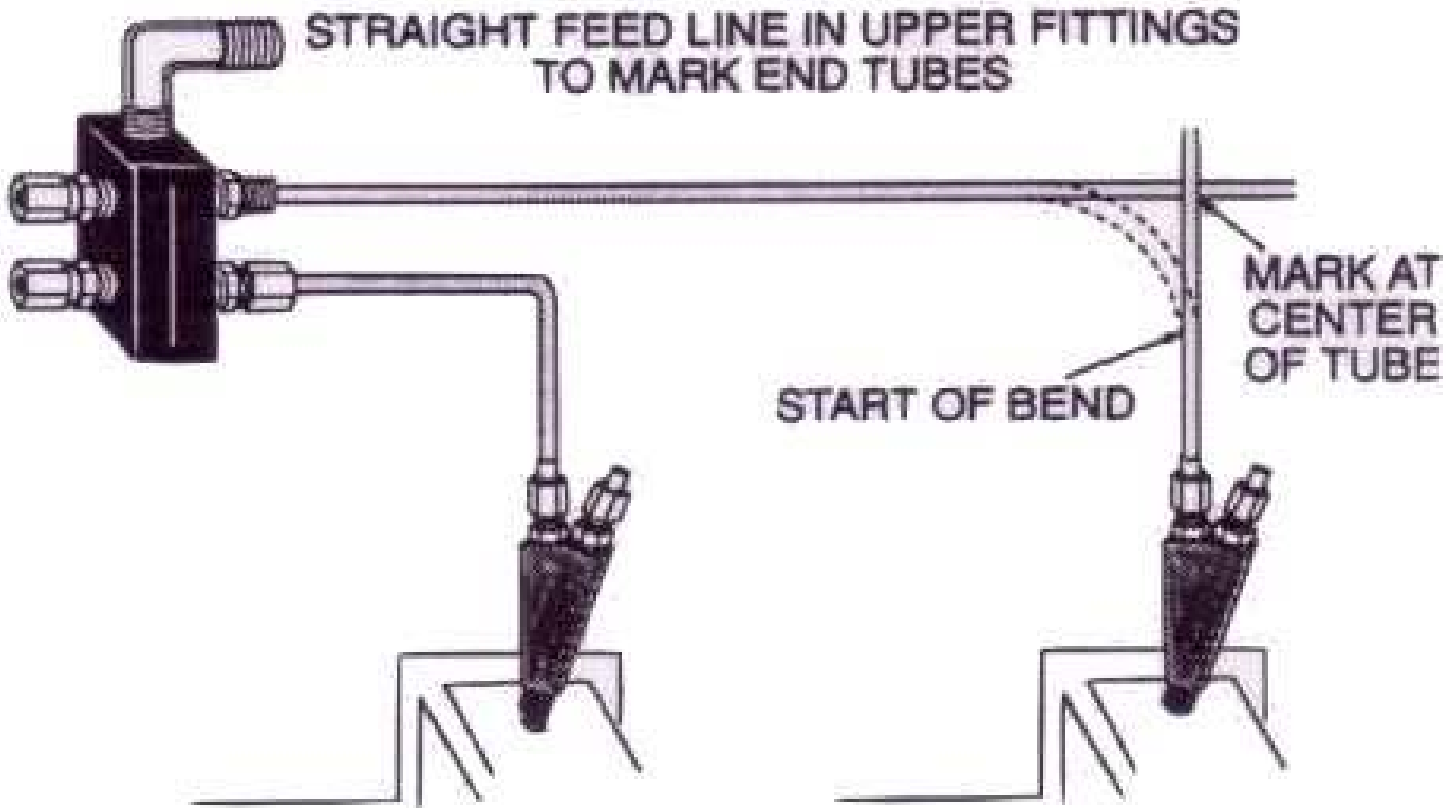
1. The nozzles should be mounted in the intake track with the outlets pointing toward the target CYL. It is always best to mount the nozzles on top or the sides of the intake track, only mount on the bottom as the last option.
2. Mark the drill locations and remove the intake.
3. See picture below for Nozzle installation.



4. Drill and tap the holes as needed for your application, use the tap provided. Make sure the holes are lined up so it looks nice. (The tap is 1/16" NPT)
5. Note: If you are tapping into metal you need to make sure and tap all the holes to the same depth.
6. Remove chips and or rubber from inside intake.
7. Secure the nozzles into the intake using Teflon paste.
8. Make sure the discharge of the nozzle is pointing toward the engine only and toward the target Cylinder.

2.5 Tube Bending

1. For professional results you will need a tubing bender.
2. It takes practice, we have provided a few practice pieces to test your skills. Practice with a coat hanger first before moving to the tubes.
3. Remove the compression fittings on the distribution block. Remove the compression nuts and fittings from the body. Apply Teflon paste to the pipe threads and install back onto the distribution block. Note: if you are not using all the holes in the distribution block simply plug them with 1/8" NPT plugs use Teflon paste.
4. Cut tubes to length using a small tube cutter. De-bur as needed and blow out debris from tubes. Bend as needed.



5. Slide the compression nut over the tube. Slide the compression ferrule onto the tube. Push the tube into the distribution block. Tighten the nut until the tube is secured. Repeat the process until all the tubes are installed. Repeat the process on the other distribution block. Note: The red distribution block is the fuel and the blue is for the nitrous. Reference back to the system layout as needed.

2.6 Nitrous Feed Line Mounting

Hint, most late model vehicles have access plugs in the trunk floor, which are convenient for nitrous line routing. Following the fuel lines along the underbody, and entering the engine bay through the front fender well between the plastic inner fender panel and the body, is the most common method of routing the line.

- 1) Determine the route for your nitrous feed line. Ensure the path is clear of the exhaust and moving parts like wheels, brakes, steering linkage etc.
- 2) Feed the nitrous supply line (16) along the route you have decided on.
- 3) Use nylon quick zips to secure the Line as needed.
- 4) Attach the Nitrous Feed line to the 4AN bottle nut (1) on the nitrous bottle. **Warning: Nitrous oxide can cause death if inhaled or cause severe frost bite if it contacts your skin, always point the line away for people or objects when purging the air from the line.**
- 5) Purge the nitrous supply line at the solenoid end.
 - a. Wrap the nitrous line open end with a rag and secure down.
 - b. Crack the bottle valve slightly to purge the line, it only takes a second to purge the line.
- 6) Attach the nitrous supply line to the solenoid fitting on the inlet port, again the nitrous solenoid has blue or black power wires. **(On 6 & 8 CYL kits you will run this line into one of the provided "T" fittings. Use the additional two nitrous lines and run them from the "T" to the Nitrous solenoids.**

2.7 Fuel Supply Connection

In all cases an aftermarket upgraded high flow fuel pump is recommended to supply adequate fuel delivery or severe engine damage can occur. A fuel pressure regulator is needed if wide open throttle fuel pressure is over 6 PSI. use the Holley #12-803 or equivalent.

2.7.1 Fuel Supply Connection by Tapping into the main Fuel Supply Hose (rubber hose only)

- 1) Locate the main fuel supply line. The main fuel supply line feeds pressurized fuel from the fuel pump (in-line or in-tank fuel pump) to the fuel filter and from the fuel filter to the Carburetor. The most desirable location to "Tap" into the fuel line is after the fuel filter. "T" into the fuel line as needed. It is most important that the fuel pump you are using is capable of keeping up with the extra power the nitrous will add plus your existing HP. Example, if you have 400hp normally aspirated and you add 200hp with the Nitrous kit your fuel pump must be capable of supporting 600hp! Make sure your fuel lines are capable of flowing the over the "MAX" HP you are planning on using. Do not tap into the carburetor regulator line!

WARNING! Certain vehicles are equipped with main fuel lines that are hard plastic with a rubber-like shell. DO NOT cut or splice into this type of line, since leak proof connections cannot be achieved with the supplied hardware. Leaking fuel lines may cause engine damage, injury or death.

- 2) Locate a section of the rubber main fuel supply line where the 5/16" hose barb can be easily installed and the fuel enrichment supply line can be easily connected without interfering with the engine and or any moving parts.
- 3) Assemble the 5/16" hose barb from the fuel filter to the 5/16" hose barb "T" (23). Use the provided hose clamps and hose to make the necessary connections.
- 4) Use hose clamps (24) on all connections using rubber hose. Connect the end of the rubber hose to the fuel solenoid, use the fuel filter and screw this into the solenoid using Teflon paste.
- 5) In all cases your wide-open fuel pressure should be 5-6 PSI or engine damage may occur.
- 6) The best Nitrous fuel system would use a dedicated inline fuel pump with regulator and return line to the gas tank that is energized via the arming switch, using its own fuel lines back to the tank.
- 7) If your fuel pressure is higher than 6PSI you will need to use a fuel pressure regulator.

(On 6 & 8 CYL kits use one of the provided "T" fittings and rubber fuel injection hose and run the rubber hose to each solenoid/filter assembly. Tap into the fuel system as shown in the previous diagrams.

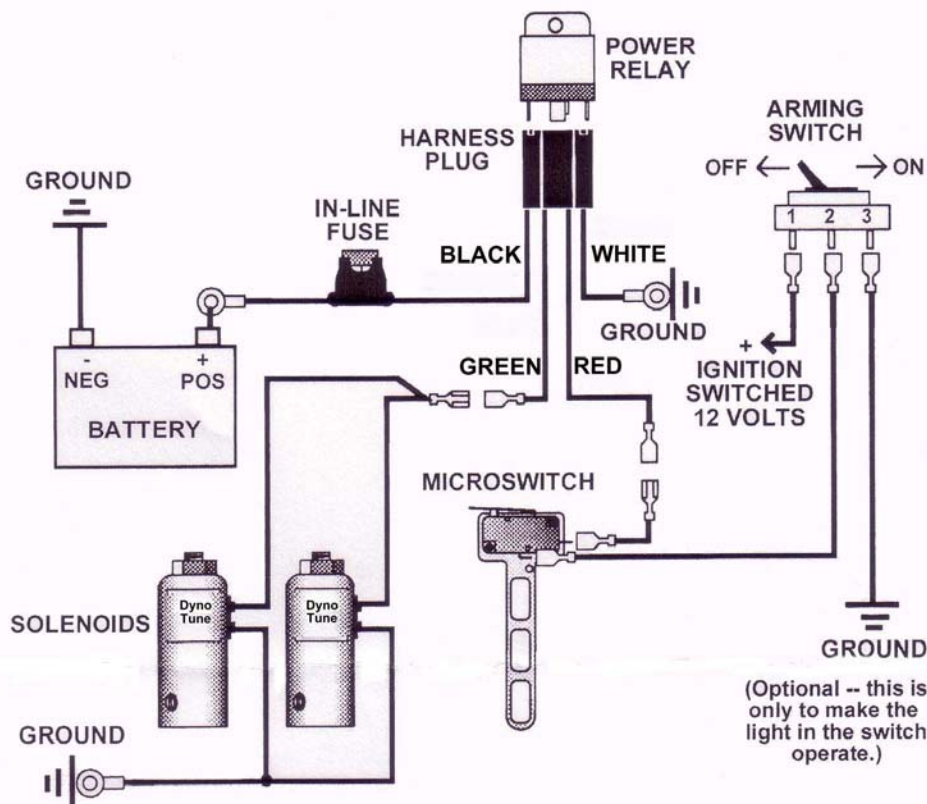


FIG. 9

2.8 Electrical System installation

Refer to figure 9 and the procedures in this section for electrical system installation. **WARNING! Death or injury may occur from working on a charged electrical system.**

- 1) Disconnect the battery at the ground cable (if not already done.)
- 2) Install the throttle micro switch (26) as follows: Hint, the micro-switch may be mounted to the bracket in a variety of positions and on either side of the bracket. The bracket may be bent to suit the application. **WARNING! Binding or dragging of the throttle linkage will create a potentially dangerous stuck-throttle condition. Ensure that the micro-switch does not interfere with the normal operation of the throttle linkage operation.**
 - a. Mount the throttle micro-switch on the throttle body/Carburetor so that the throttle linkage movement triggers the micro-switch.
 - b. Adjust the micro-switch to trigger at wide-open throttle by adjusting the micro-switches position to ensure the actuation of the micro-switch “clicks” at the same point the throttle linkage reaches wide-open throttle against the throttle stop (figure 10, position A).
 - c. Ensure that the throttle and switch can reach the activation position, as shown in figure 10, position B, by using the accelerator pedal. Have an assistant slowly press the pedal to the floor while you listen for the “Click” of the micro-switch.
- 3) Install the arming switch (18) in the vehicle interior, within easy reach from the drives seat. This switch will put power to the entire system. CAUTION! Never activate your nitrous system below 3000 RPMS as doing so could damage your engine. If an auxiliary inline fuel pump is used, hook the pump power to the arming switch through a relay so that the pump only turns on when the nitrous system is armed.
- 4) Install the relay (20) and the relay harness (19) in the engine compartment near the battery.
- 5) Connect one of the orange fuse wires to the battery (+) terminal. Connect the other fuse wire to the Black wire going to the relay. Install the fuse into the fuse holder
- 6) Connect one wire from each of the solenoids together. Join the solenoid wires to the Green relay wire. **(NOTE: Blue wire on relay not used)**
- 7) Join the remaining solenoid wires together. Connect to a good chassis ground.

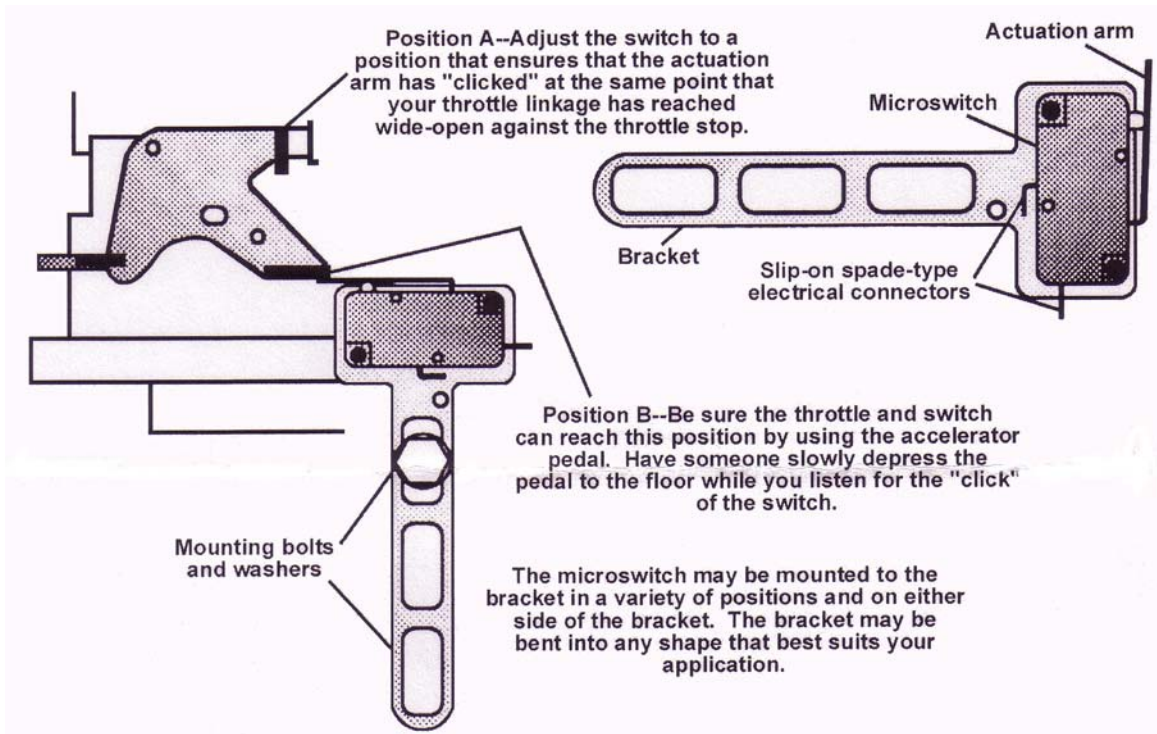


FIG. 10

- 1) Connect the White relay wire to a good solid ground.
- 2) Connect the red relay wire to either terminal on the throttle micro-switch.
- 3) Connect the open terminal on the micro-switch to the (#2) terminal (acc) on the arming switch.
- 4) Connect the #1 terminal (power) on the arming switch to a 12volt power source.
- 5) Connect the #3 terminal (ground) of the arming switch to ground.
- 6) Reconnect the battery.
- 7) Turn the arming switch on.
- 8) Push the throttle wide open while the engine is off. Each solenoid should make a clicking noise if it is working properly. If no Noise is heard, check all wiring connections and each wire in schematic per figure 9. **NOTE: Nitrous and Fuel flowing through the solenoids is needed to keep the coils from melting. Short, one second power cycles will not hurt them but more than 5 seconds with no nitrous or fuel flowing though them will melt the coils and void your warranty.**

Chapter 3 Baseline tuning suggestions

Your DynoTune system comes preset with nitrous and fuel jetting based upon engine displacement. The jetting combinations are conservative and are intended to work with stock ignition systems and +92 octane unleaded gasoline (lower HP levels only). Nitrous and fuel jetting combinations are derived based upon 950 PSI (85 degrees F) nitrous bottle pressure and fuel pressure as depicted in the jetting table. Using the listed jetting and suggested fuel and nitrous pressure levels should yield safe reliable power increases.

Caution! Use of excessive bottle pressure and or inadequate fuel pressure can result in an excessively lean condition. In extreme cases, this will produce major engine damage!

Chapter 4 Preparing for operation

Note: If jets for higher HP gains are being considered you need to have a professional Dynotune facility test your setup to make sure it is tuned properly.

Note: If jets for higher HP gains are being considered, care must be taken to ensure that the fuel delivery system of your vehicle is adequate to support the extra power. Before opening the nitrous bottle valve, with the vehicle under wide-open throttle acceleration. Fuel pressure should not deviate more than 1 psi when the fuel side of the nitrous system is activated. If the fuel pressure drop is greater than this, a supplemental fuel pump will be required. A Fuel pressure safety switch or Air/Fuel ratio switch is recommended to reduce the risk of engine damage should the fuel pressure drop to dangerous levels.

- 1) Open the nitrous bottle valve.
- 2) Inspect all the lines and fittings for leaks and adjust as needed.
- 3) Enjoy the power only a DynoTune Nitrous system can offer!

CAUTION! Never activate your nitrous system below 3000 RPM.

Chapter 5 Advanced Tuning for Maximum power

After performing the Baseline Tuning Suggestion-Chapter 3, if you desire to maximize the performance of your system, perform the following:

Note: Always perform the nitrous/fuel ratio modification listed in section 5.1 before attempting to optimize the ignition timing (section 5.2). Improper nitrous/fuel ratio combinations can mislead you when attempting to optimize the ignition timing.

5.1 Determining optimum Nitrous/Fuel jetting

The factory calibrated nitrous/fuel ratio included is provided to you with a safe starting point. Baseline Jetting is calibrated using a 950psi nitrous bottle pressure and fuel pressure as stated in the jetting table. In some instances, slight changes in fuel pressure may produce performance gains.

- 1) Stabilize the nitrous bottle pressure at 950 PSI.
- 2) Perform a dynamometer pull or a full throttle pass down the racetrack. Note the power reading or vehicle MPH (not ET). Examine the spark plugs for the indication of lean or rich nitrous/fuel conditions (refer to Figure 11 for tips on reading the spark plugs).
 - A. If the spark plugs appear to be excessively rich, decrease the fuel jet size 2 steps (ex. 26 to 24, 24 to 22, etc)
 - B. A. If the spark plugs appear to be excessively lean, increase the fuel jet size 2 steps (ex. 24 to 26, 22 to 24, etc)
 - C. If the spark plugs have a "like new" appearance on the porcelain and electrode, do not make a fuel jetting change.
- 3) Repeat steps 1 and 2 until the desired mixture is obtained.
- 4) Optionally a DynoTune Wideband air/fuel ratio gauge can be used to make tuning a snap.

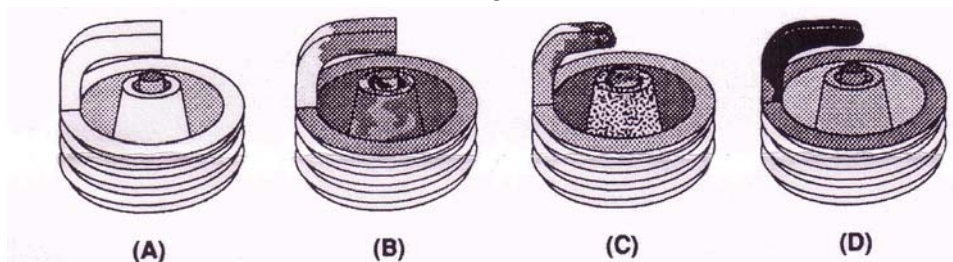


FIG. 11

How to read Spark plugs from a nitrous oxide injected Engine

A. Correct Timing, Mixture and spark plug heat range

Ground strap retains a "like new" appearance. Edges are crisp, with no signs of discoloration. Porcelain retains clear white appearance with no "peppering" or spotting.

B. Excessively Rich Mixture

Porcelain may be fuel stained appearing brown or black. In extreme cases, the ground strap, electrode, and porcelain may be damp with gasoline, or smell of fuel.

C. Detonation

Edges of the ground strap may become rounded. Porcelain has the appearance of being sprinkled with pepper, or may have aluminum speckles. During heavy detonation, the ground strap tip may be burnt off. This phenomena can result from excessive ignition timing, too high a heat range spark plug, or inadequate fuel octane.

D. Excessively Lean Mixture

Edges of the ground strap may become rounded. Under moderate overheating, the tip of the ground strap can discolor, usually turning purple in color, or the entire ground start can become discolored.

5.2 Determining Optimum Ignition Timing

IMPORTANT! Ignition timing should be retarded approximately 2 degrees per 50 hp increase due to nitrous oxide injection. Start with the engines best total timing and reduce from there. Use the initial settings, which are 2-3 degrees more retarded than you expect to be optimum.

EXAMPLE: Total ignition timing with nitrous-----38 Degrees
 100HP increase from nitrous---2 Degrees/50HP----4 Degrees retard
 Initial Safety margin-----2 Degrees retard
 Initial Timing with Nitrous-----32 Degrees

The following scheme for determining ignition timing should allow you to determine the optimum setting for you vehicle, without incurring engine damage during the tuning phase.

1. Estimate the reduced ignition timing that you think will produce the best power, based upon the 2-Degree retard per 50HP increase rule.
2. Set the ignition timing 2 to 3 degrees retarded from your best power estimate setting.
3. Stabilize the nitrous bottle pressure at 950PSI.
4. Perform a dynamometer pull or a full throttle pass down the racetrack. Note the power reading or vehicle MPH at the track.
5. Increase the ignition timing 2 degrees.
6. Perform a dynamometer pull or a full throttle pass down the racetrack. Note the power reading or vehicle MPH at the track. Examine the spark plugs for signs of detonation (refer to figure 11 for tips on reading spark plugs).

- A. If power increase or vehicle MPH increase **AND** spark plugs show no signs of overheating or detonation, increase the ignition 2 degrees.
 - B. If power increase or vehicle MPH increase **AND** spark plugs begin to show slight signs or detonation-**STOP**. Do not advance the timing further. You may choose to reduce the timing 2 degrees at this point for an extra margin of safety.
 - C. If power decreases or vehicle MPH decreases, reduce the ignition timing 2 degrees.
7. Repeat step 6 until optimum ignition timing is obtained.

Chapter 6 Routine Maintenance

6.1 Nitrous filters and lines

- 1) Clean the Filter in the nitrous solenoid inlet port if so equipped.
- 2) Inspect all fuel lines and nitrous lines for leaks and repair as needed.

6.2 Nitrous Solenoid Plunger

6.2.1 General information

The seals used in DynoTune nitrous oxide solenoids are designed to be used with nitrous oxide only. When kept from fuel contamination or over pressurization, they should provide trouble free performance. You should periodically (after every 20-30 pounds of nitrous usage) examine the seal in the Nitrous solenoid plunger. The seals used in the plungers are designed to work at pressures up to 1100psi. Exposing the plunger to excessive pressure can result in the seal in the plunger swelling or in extreme cases, the plunger seal disintegration resulting in a leaky solenoid.

NOTE: The swelling of the nitrous solenoid plunger seal will reduce nitrous flow (causing an excessively rich nitrous/Fuel condition and a loss of power).

DO NOT USE FUELS THAT CONTAIN ALCAHOL OR METHANAL AS THIS WILL DAMGAE THE FUEL SOLENOID PLUNGER. INSPECT THE FUEL PLUNGER FOR DAMAGE A FEW TIMES A YEAR OR MORE IF THEY SYSTEM IS USED MORE THAN NORMAL.

Nitrous / Fuel Solenoid plunger Disassembly and inspection

- 1) Close the valve on the nitrous bottle.
- 2) Empty the main nitrous supply line.
- 3) Remove the main nitrous supply line.
- 4) Remove the retaining nut form the nitrous solenoid and remove the coil and housing. Note any shims.
- 5) Unscrew the stem from the nitrous solenoid base. Do this by double nutting the stem; do not use pliers as this will damage the stem!
- 6) Remove the stem, spring and plunger from the solenoid base.
- 7) Examine the plunger seat for swelling. The seal surface should be flat, except for a small circular indentation in the center of the seal.

A fuel-contaminated seal will protrude from the plunger and be dome-shaped. A fuel-contaminated seal may return to its original shape if left in the fresh air over several days. A seal, which is flat, but protrudes from the plunger body has probably failed internally and should be replaced.

- 8) Re-assemble in reverse order.

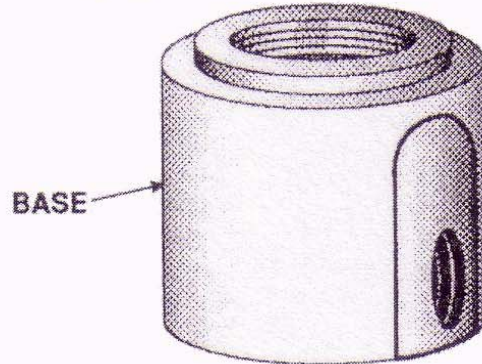
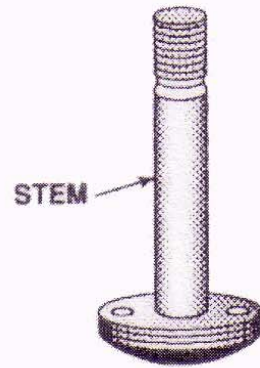
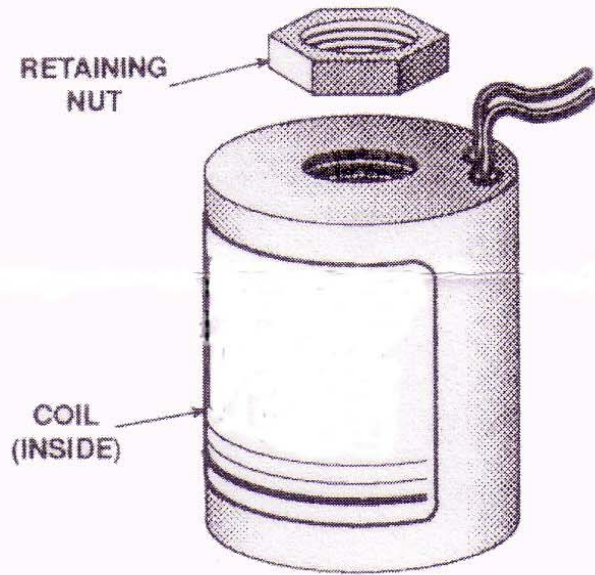


FIG. 12

Troubleshooting Chart

PROBLEM	POSSIBLE CAUSES	DIAGNOSTIC PROCEDURE	CORECTIVE ACTION
No change in engine speed when the fuel solenoid is activated (preparing for operation—chapter 4)	System wired incorrectly	Compare wiring to Wiring fig 9.	Wire per instructions.
	Restricted fuel line.	Inspect fuel line for restrictions (crimped or plugged).	Remove restriction
	malfunctioning fuel solenoid.	Turn arming switch on. Cycle the microswitch. Solenoid should make a "clicking" noise.	repair/replace solenoid
Change in engine speed when nitrous bottle valve is opened-preparing for operation chapter 4	Malfuntioning nitrous solenoid	Remove and inspect solenoid	repair/replace solenoid
Engine runs rich when system is activated	Bottle valve not fully opened	Check bottle valve	Open valve Fully
	Bottle mounted improperly	Check bottle orientation	mount bottle properly
	Plugged nitrosu filter	Inspect filter	Clean/Replace filter
	Low bottle pressure	Check bottle temp/pressure	Set bottle temp to 75-85 F or 950 PS pressure
	Inadequate nitrous supply	Weigh bottle	Fill bottle
	Mismatched nitrous.fuel jetting	compare jets to recommened jets	install correct jets
	Excessive fuel pressure	Install a fuel pressure gauge, measure pressure during acelleration with system activated	Regulate pressure down or install a smaller fuel jet
	Loose nitrous solenoid wiring	Inspect nitrous solenoid wiring	Repair wiring.
	Malfuntioning nitrous solenoid	Close the bottle valve. Disconnect the nitrous solenoid (+) lead. Open the nitrous bottle valve. Connect +12v to the solenoid lead. Nitrous should discharge at high rate.	Rebuild solenoid
No change in performance when system is activated.	System wired incorrectly	Compare wiring to schematic in figure 9	Wire system per instructions
	Loose ground wire(s)	Connect 12v test light to the battery (+) terminal. Check for continuity at grounds noted in figure 9	Tightem/Repair loose grounds
	Malfuntioning arming siwtch	Turn arming siwtch on. Connect 12V test light to battery (-) terminal. Check for power at pole #2	Replace pushbutton
	No power to arming switch	Connect 12v test light to battery (-) terminal. Check for power at pole #1 on arming switch.	Repair wiring.
	Malfuntioning throttle mircoswitch	Temporarily disconnect power relay red wire from microswitch. Connect 12V test light from battery (-) terminal. Manually set microswitch ON. Check for continuity at microswitch positive termial (fig 9)	Replace throttle microswitch
	Overly rich fuel conditon	Check for black smoke or backfiring thourgh the exhaust with system activated.	Install smaller fuel jet or decrease fuel pressure
Engine detonates mildly when system is activated	Excessive igtion timing	Check ignition timing	Reduce timing in 2 degree increamnets.
	Inadequate octane fuel		Use higher octane fuel
	Spark plug heat range to high.		Reduce spark plug heat range (maximun 2 steps)
	Too much nitrous flow	Check bottle pressure as it may be to high	Reduce nitrous jetting

Troubleshooting Chart Continued

PROBLEM	POSSIBLE CAUSES	DIAGNOSTIC PROCEDURE	CORRECTIVE ACTION
Engine detonates heavily when system is activated	Inadequate fuel delivery due to: Plugged fuel filter	Inspect filter	Clean or replace filter
	Crimped fuel line	Inspect fuel line	Replace crimped line
	Weak fuel pump	Replace fuel pump with high performance version	Repair/Replace fuel pump
High-RPM misfire when system is activated.	Excessive spark plug gap	Inspect spark plugs	Set spark plug gap at .030" to .035"
	Weak Ignition/Ignition component failure	Inspect components (Plug wires, distributor cap, etc.)	Replace worn parts.
Surges under acceleration when system is activated.	Inadequate supply of nitrous	Check bottle weight	Fill bottle
	Bottle mounted incorrectly	orientation to instructions (figures 2&3)	Mount Bottle in correct orientation