Street-Blaster 150-DP Wet Nitrous System

Wizards of NOS

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Table of Contents

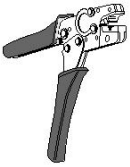
Tools Required

Drill

Phillips Screwdriver

Standard Screwdriver

Utility Knife



Wire Stripper/Cutter

Spanners

8mm / 4mm nuts
10mm / 5mm nuts
13mm / Jet holder
17mm / Inlet nut

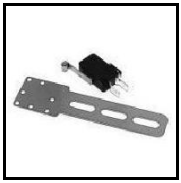
- ☐ 5Lb Cylinder
- ☐ 11Lb Cylinder
- ☐ Microswitch
- ☐ TPS Activation Switch

- ☐ Bracket

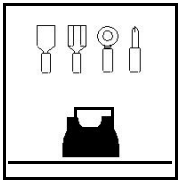
- ☐ Nitrous Pulsoid
- ☐ Fuel Pulsoid

- ☐ Jets

- ☐ Injector(s)



Micro Switch
& bracket



Wiring 3m

Connectors

Fuse holder

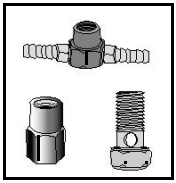
20 amp fuse

4mm (red)

4mm (blue)

5mm (red)

5mm (black)

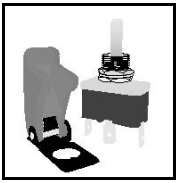


Fuel Fittings

Fuel barb

Schrader

Banjo bolt



Arming switch
& flip cover

5mm nuts/olives

4mm nuts/olives

Nitrous Bottle Installation

The nitrous bottle must be mounted exactly as shown (Fig.1). In this position **liquid** nitrous oxide will be delivered, which is essential for the system to work properly. The brackets supplied will provide a secure mounting with quick release for ease of refilling.

Position the bottle bracket to ensure that the valve end of the bottle is **higher** than the base end, with the outlet pipe connection pointing towards the floor (no other way). **Please contact us if you are unable to mount the cylinder as shown for vehicle specific advice.**

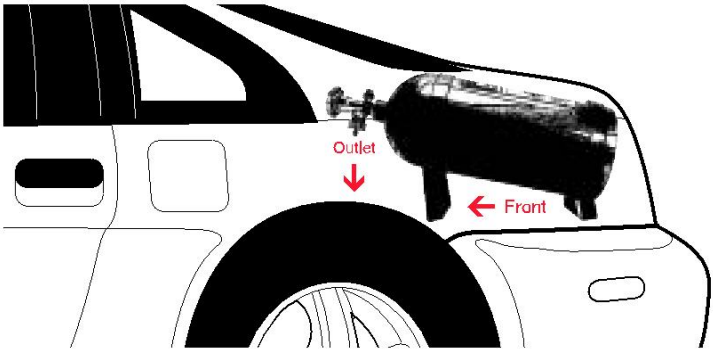


Fig. 1

⚠ WARNING

The bottle valve should not be opened unless the outlet is aimed into open space, or connected to the system. When the valve is opened nitrous is discharged at a high pressure (approx. 800 psi to 1,200 psi @ -129 degrees) and at this temperature it will cause a painful freeze burn if it makes contact with the skin.

The MaxFlow valve is equipped with an Safety Pressure Relief Valve (SPRV) The SPRV replaces the common **blow off disc** on other valves and works by opening and bleeding off excess **gaseous** pressure. When the safe pressure is reached the valve will close again. This cycle will always be repeated automatically.

Note: Wasted gaseous nitrous is very minimal. Please contact WON if adjustment is required from the 1,500 psi (approx.) factory setting.

Supply Pipe Routing

5mm Nylon Line: For best performance run the supply line through the inside of the car. Typically run within the door trim and into the scuttle area between the windscreen and engine bay (See Fig. 2). Depending on the location of pulsoids this may need to be routed further than the scuttle so pulsoid location will need to be determined in advance.

SS Braided Line: If your system is supplied with or you have chosen the optional braided line route it in a cool exterior location. You will likely have to drill a hole in your boot (trunk) floor to pull the line underneath the vehicle. **Before drilling it is Important** to check under the location for wires/fuel tank etc. Run the hose up to the engine bay and secure well along its length. If installing inside the vehicle ensure the hose is kept away or not allowed to rub against wiring.

Advice: Try to use existing grommets to go through bulkheads and bodywork. If a hole needs to be drilled, de-burr and fit a suitable grommet to protect the hose.

If you are unable for any reason to route the pipe as shown and explained, **please contact us for advice.**

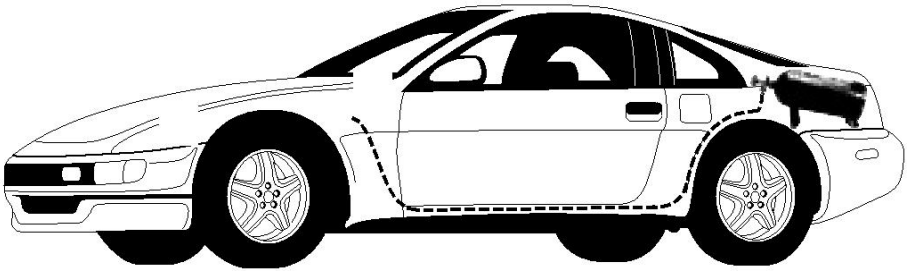


Fig. 2

⚠ WARNING

Always run the supply pipe in the coolest possible areas, heating causes the liquid nitrous to turn to gas which causes overfueling due to inadequate nitrous flow resulting in poor performance.

Pulsoid Installation

The Pulsoids should be mounted in the coolest possible location close to the Pro-Stud. **Try to keep the pipe between the Pulsoid and pro-stud under 12'' for optimum performance and safety.** A simple way to determine a good location is to hover your hand over possible mounting locations after the vehicle has been run to find the coolest position. Note: keeping the pipe length under 12" on some applications may not be practical. Use your best judgement to choose between a suitable mounting point vs. pipe length. We do not consider aesthetics to be a valid reason for increasing pipe lengths as performance and safety are of greater value.

Advice: There are two types of positions that affect pipe length. Engine mounted and body mounted. When mounting to the body, make the pipes slightly longer to account for engine movement. When mounted to the engine the same has to be done on the supply pipe.

Nylon & Braided Pipe Fittings

Nylon Pipe: Cut the pipe to length using a sharp utility knife or nylon pipe cutter. **Do not use** wire snips, pliers, etc. as these will squash the pipe affecting flow. Slide the nut and olive onto the pipe ends as shown below (Fig. 3). Insert the pipe ends into the fittings (bottle, Pulsoid, etc.). While keeping the pipe pushed in to the fitting tighten the nuts until you feel a sudden increase in tightness. Apply a tweak of extra tension to complete.

To check that the pipe is completely sealed, briefly turn on the nitrous bottle valve and inspect for leaks with soapy water at the connections. If a leak is detected, tighten up the nut (whilst avoiding contact with any escaping gas particles), until the leak is stopped. When you are satisfied that the system is leak proof, release the pressure in the system by using an optional purge if installed or loosening the fitting at the bottle nut.

Braided Hose: In most applications at least one braided end will be supplied free to allow trimming the hose to a more practical length. To install a braided hose end refer to our dedicated braided hose instructions on our website.

IMPORTANT: When tightening the fittings to secure pipes, we strongly advise the use of the correct size spanners otherwise damage may occur and the fittings may fail to do their job.

Nylon Pipe Fittings

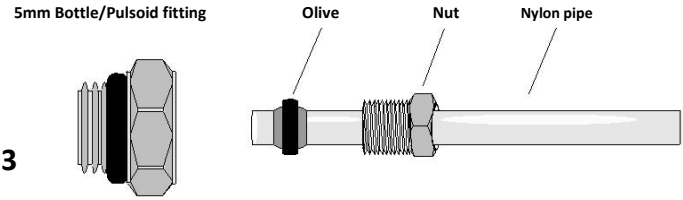


Fig. 3

Braided Hose Fittings

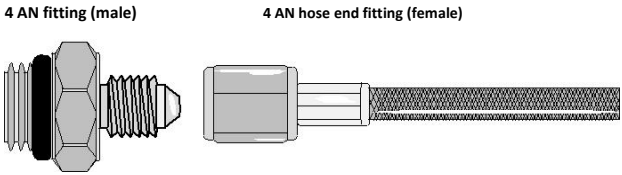


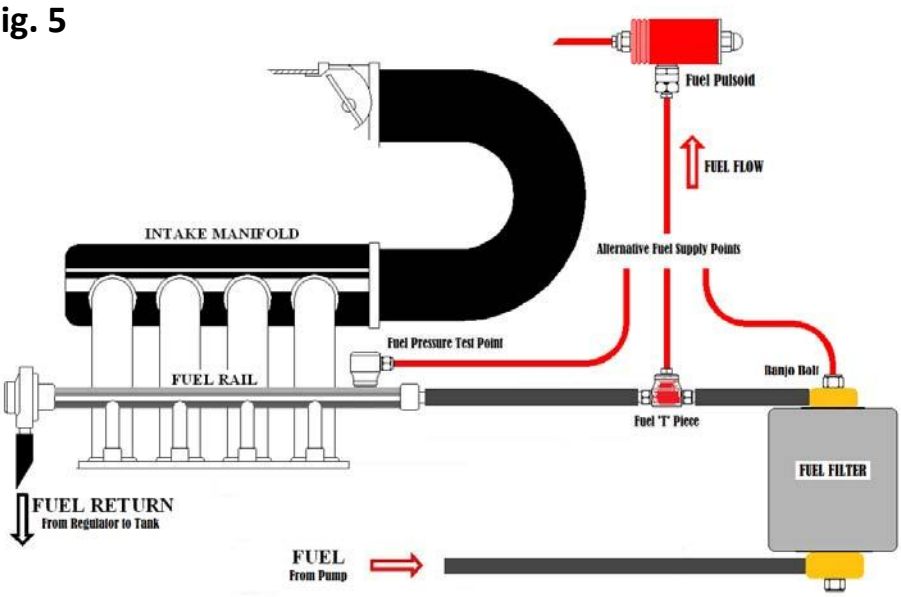
Fig. 4

NOTE: None of the above pipe fittings require sealant on the threads.

Fuel Supply (Take Off) Plumbing Instructions

To supply the system with fuel you will need to tee off from your vehicles existing fuel supply. Depending on vehicle there are a number of different places you can take this supply from. Universal systems will be provided with a barbed tee (See Fig. 4 in Hose Adapters) connecting to the common rubber hose application as shown in Fig. 5 below as “Fuel T Piece”.

Fig. 5



Using the following list of adapters and take-off points determine which method best suits your application. If the barbed tee is not suitable or a more practical method is available for your vehicle these adapters will be purchasable from any WON distributor.

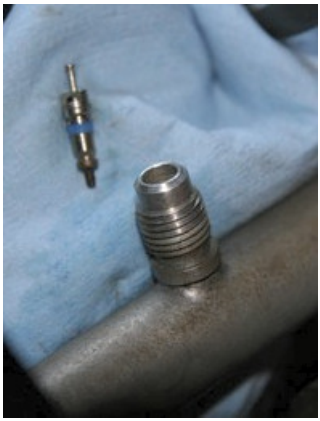
Please contact WON if you are unsure of the correct location.

Method 1. ***Pressure Port Adapter***

Our port adapter provides a simple connection for some cars and is the preferred method where available. The port is found on the fuel rail with a small cap screwed on top. There are two main port threads used (See Fig. 5a & 5b), one identical to a tyre valve and the second is larger. Both types have a small valve within the port.

Fig. 5a

Fig. 5b



Installation:

To install remove the blanking cap, carefully depress the valve stem to depressurise the system and catch the leaking fuel with a rag then dispose of it carefully. It is VITAL that the valve core is removed using the tool provided. Failure to do so will result in engine damage. For ports identical to a tyre valve a sealing washer is provided that needs installing between the port and the adapter. This can be fitted inside the female thread of the adapter then screwed in to place using a suitable liquid sealer. The larger of the port threads do not need a sealing washer but liquid sealer is still advised.

Method 2. ***Fuel Filter Banjo Adapter***

Our fuel filter banjo replaces the original bolt fitted to the fuel filter (Fig. 5c) or rail. Only use this method if the filter is in the engine bay, some filters are close to the tank are impractical to run a long fuel line.

Fig. 5c

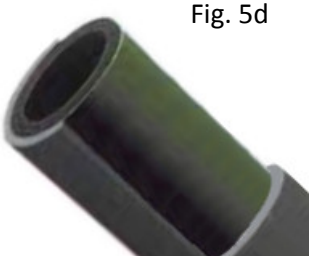
Installation:

When fitted to a filter it is very important to choose the outlet end so that the fuel supply is filtered for the nitrous system. To determine the correct fitting you may find an arrow printed or indented into the filter housing to show direction of flow. If an arrow is not present or un-viewable trace the hoses and choose the hose that goes to the engine and not the fuel tank (See Fig. 5). Loosen the original banjo bolt to release the fuel pressure. Catch leaking fuel with a rag then dispose of the rag carefully. Fit the new bolt ensuring that both the sealing washers are correctly position either side of the banjo and install the hose to the fuel solenoid before pressurising the fuel system.

Method 3. ***Rubber Fuel Hose Barbed T piece***

Our T-Pieces are supplied as standard on universal systems. These are designed to fit a wide range of rubber fuel pipe sizes by simple exchange of barbs. If the universal barb size is not suitable for your application smaller and larger barbs are available from any WON distributor.

Fig. 5d



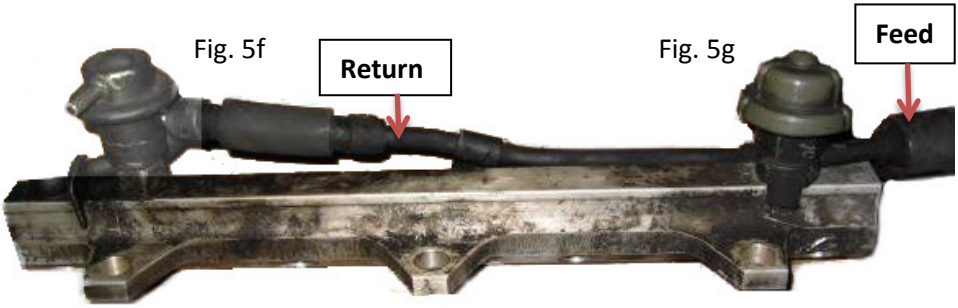
There are two main hose types fitted as factory, rubber hose (Fig 5e) and plastic hose (Fig 5d). It can be hard to determine which type you may have as the plastic hose is often supplied with a rubberised coating.

To determine which, simply try to squash the hose between your fingers. Rubber hose will squash whereas a plastic hose will only flex the outer surface and feel rigid. For plastic hose (See Method 4 compression tee).

Fig. 5e

It is very important to choose the correct fuel hose to tee in to. Engine damage may result if using the return. Most but not all vehicles have a feed hose (correct hose) and a return hose. There are a few signs to determine the correct hose as follows:

1. A single hose that enters the fuel rail(s) with no return fuel hose present. (Commonly found on FSI & TFSI engines, see after Fig. 5f)
2. Some hoses have a direction of flow printed on them. Select one that points towards the rail(s).
3. A return hose will exit from a regulator on the rail (Fig. 5f) or from a remote regulator. Use the other hose. Note some rails have dampers on the inlet which look like smaller versions of regulators. These typically do not have a small vacuum hose attached Fig. 5g.



FSI & TFSI Engines & Other direct injection engines:

It is increasingly common to find Direct Fuel Injection such as FSI & TSFI. On these engines they utilize a traditional fuel pump that feeds a mechanical pump on top of the engine (Fig 5h). To clarify fuel on these systems is taken from the rubber/plastic hosing that feeds the engine mounted pump as pictured in Fig. 5i.

Fig. 5h

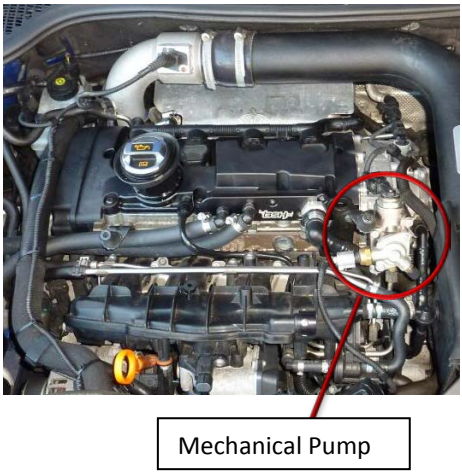
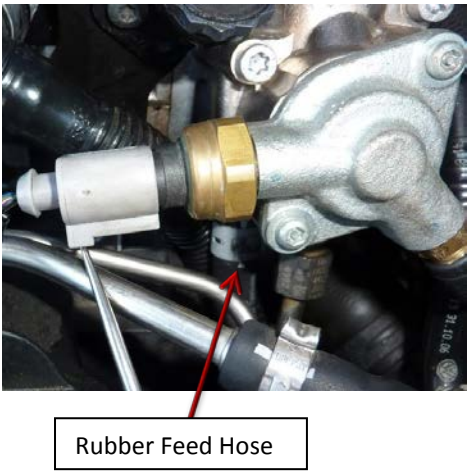


Fig. 5i



Some mechanical pumps will have a single rubber feed and others like regular fuel systems may have a return. The return will have a regulator in the engine bay. Choose the input to the mechanical pump.

Installation:

Once the correct hose is determined cut the original pipe at a suitable point. Catch leaking fuel with a rag then dispose of the rag carefully.

Insert the tee barbs in to the rubber hose until no barbs are visible. Secure the pipes with clips. Once the fuel adapter is fitted run the system fuel hose between the fuel supply and fuel (red) Pulsoid inlet and connect before pressurizing the fuel system.

Product may vary from the Image

Please contact WON if you are unsure of the correct location.

Method 4. ***Plastic Fuel Hose Compression Tee***

If your fuel system uses a plastic hose it is important to note that barbed tee's will not work on this pipe type. If supplied with the universal barbed Tee contact your local WON distributor for a compression Tee.

Installation:

First see method 3 to determine which hose needs the tee piece. Once determined using a knife or pipe cutter, slice the hose in a suitable location and trim square if needed. Catch leaking fuel with a rag then dispose of the rag carefully. If the plastic hose has the rubberised coating, using a knife trim the rubber approx. 1" back on each end of the cut. **Note it is important not to damage the plastic hose as this could cause leaks.**

Slide a nut and olive over the hose and slide the hose in to the tee. While keeping the hose pushed in to the tee tighten using a spanner until secured from coming out. Now hold the tee securely with a suitable spanner to tighten the nut fully. Once the fuel adapter is fitted run the system fuel hose between the fuel supply and fuel (red) Pulsoid inlet and connect before pressurizing the fuel system.

Fuel Adapters

1. Tire Schrader Adapter and Seal

2. Large 7/16 Schrader Adapter

3. Filter Banjo Adapter

4. Barbed Fuel Tee

5. Compression Tee

Is your hose type or application not listed?

For non-stock applications more adapters are available. For more advice on the full range of adapters such as Braided Tees, regulator take-off's or non-standard hose types and sizes please contact the WON technical team or local distributor.

⚠ WARNING

It's vital that the fuel adapter (take off) supplied with the kit is connected on the **high pressure** side of the fuel regulator. **Do not** connect to the low pressure **return** side of the regulator as this can result in engine damage.

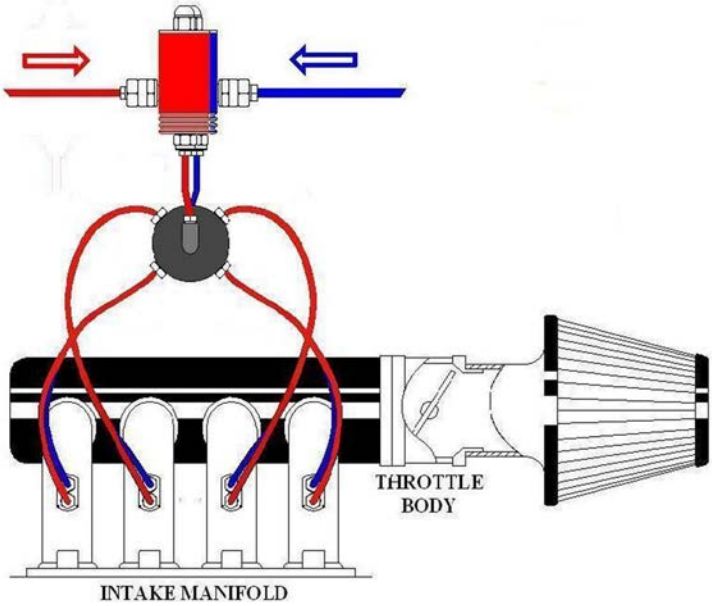
D-BLOCK FITTING

The most important aspects of D-Block mounting are;

1) It is **essential** that D-Block outlet ports are **perfectly horizontal.**
2) The nitrous side should use the lower section of a combined D-Block.
3) Whenever possible the injectors should be mounted in the underside of the runners with the D-Block mounted below them, so the pipes just run up hill.
4) If that's not possible and the injectors have to be mounted in the top of the runners then the D-Block should be mounted above the injectors so that the pipes run continuously downhill, Fig. 8.
5) If neither of the above options are possible and the outlet pipes have to loop up above the injector from the D-block, then the peaks of all the pipes should be at the same level.
6) When using elbow inlet fittings, the shorter of the 2 elbows should be used for the nitrous side and it should always be fitted with the black plastic restrictor in the outlet end that screw in to the D-Block.
7) Always try to arrange the feed pipes to the D-Block entries so they are perfectly straight for as long as possible, with a **minimum** of 2" before any bend. This is particularly important when using straight inlet fittings.
8) The D-Block should be situated as centrally as possible, relative to the number of injectors it is to feed. In the case of a V6 engine this would mean in the centre of the V, in the case of a straight 6 or 4 cylinder engine it would be between the middle cylinders.
9) Pipe lengths from the D-Block to the injectors should always be cut to **exactly** the same length and kept to the minimum length that produces a gentle run to the furthest injector/s.
10) When using 4 way D-Blocks, arrange the outlets so the pairs closest together point to each end of the engine, Fig. 7.
11) Run the pipes from the D-Block outlets furthest from the engine to the centre 2 cylinders and run those from the outlets closet to the engine to the end cylinders, as this results in a neat pipe layout, Fig. 7.
12) When using 6 way D-Blocks on straight 6 cylinder engines, arrange the pipes so that those feeding the end cylinders are connected to the D-Block ports that are closest to them. Then connect the pipes from the middle 2 cylinders to the ports in the D-Block they are furthest from and which will allow a gentle flow path that will use up the excess pipe length. Finally connect the remaining pipes to the remaining ports.

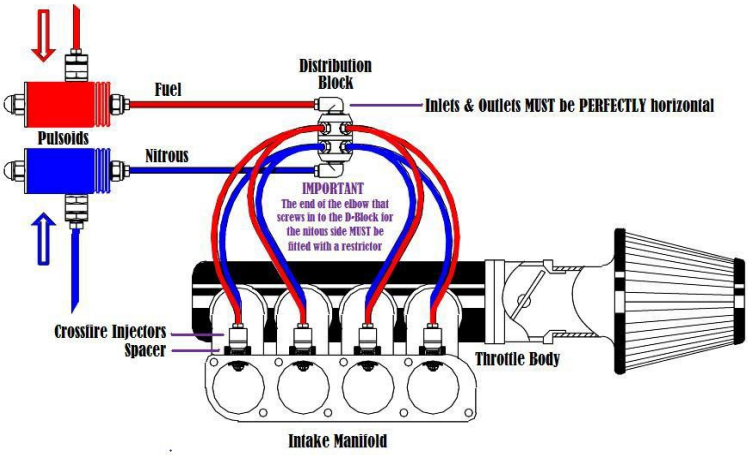
Distribution Block (D-Block) Mounting

Fig. 7



WARNING; Never mount a D-Block any other way than described above as it will result in uneven distribution, leading to potential engine failure. If you feel it is impossible to mount the D-Block as described on your particular vehicle please contact us for assistance.

Fig. 8



Crossfire Injector Installation

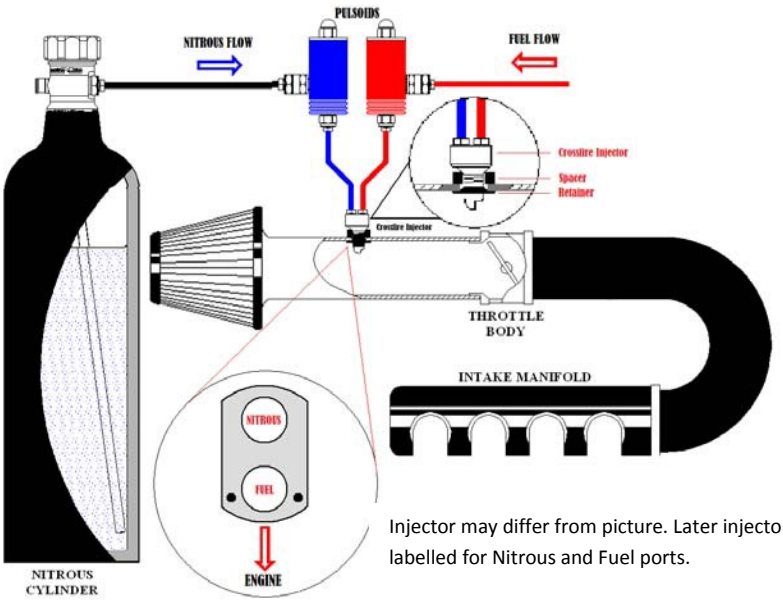
Single Crossfire injectors should be fitted to injected cars near to the throttle body in the intake tube, etc. from where the flow is all downwards towards the engine which will deliver the most even distribution while minimising fuel drop out.

To fit the injector into a rubber hose just punch an 8mm hole in a suitable location. Secure the injector by screwing on the retainer from the inside the hose (Fig. 7.)

The Crossfire can be fitted in to a plastic or metal section of the intake, by either drilling an 11mm hole and using the retainer as described above or by drilling a 9mm hole and tapping to 10x1mm at a suitable location as near as possible to the throttle body. To correctly position the injector in various applications, the most suitable length spacer should be fitted and then a small amount of liquid sealer applied to the external thread before being screwed (lightly) in to place.

Ensure the outlet ports protrude beyond the retainer and/or any part of the induction system, also avoid getting any sealer on the tip to ensure optimum flow (Fig. 7).

Fig. 7



Injector may differ from picture. Later injectors are labelled for Nitrous and Fuel ports.

NOTE: To achieve optimum results it is sometimes beneficial to rotate the Crossfire left or right by a few degrees (up to 15 either way), as this can help achieve optimum distribution, because it creates a vortex 'effect' - performing the static test (as described on the last page of these instructions), a number of times at different angles.

WARNING

Disregarding these instructions could result in poor performance and/or engine damage.

Metering jet size verification

Before connecting outlet pipes to the Pulsoids it is **essential** to check the metering jet(s) are fitted in the system. First check that these are the right sizes to suit your application. The jet will be found inside the inlet to the jet holder and would need removing to check the jet size using a suitable flat blade screwdriver. Once removed it should be possible to see a size/number on the side of the head. Fig 8. Below shows the typical location for jetting.

IMPORTANT: Remove and replace only one jet at a time, as it is very easy to mix up the jets and that could lead to poor performance.

Check the jet sizes against the parts list supplied with the system or the jet specification chart on our web site. Assuming you have the correct jet, screw the jet in to the holder and 'lightly' nip it up with the screwdriver to make a seal, then reassemble.

Fig. 8

CAUTION

The metering jets are made from brass and are easily damaged beyond use if a badly fitting screwdriver or excessive force is used on them.

NOTES

The nitrous filter is a white element located inside the Pulsoid inlet unit. Use two 17mm wrenches to separate the two sections to access the element. Replace for optimal flow.

No filter is required in the fuel Pulsoid as the OEM filter is more than adequate.

Jet Sizes

1) The 'theoretical' power rating is half the nitrous jet number (e.g. 200 = 100bhp).
2) The fuel jet is initially matched to the nitrous jet at a ratio of 2:1 to produce a very safe, rich A/F ratio. Example: a nitrous jet marked 200 would need a fuel jet of 100 and would have a theoretical power rating of 100 bhp (on n/a engine this 'may' result in a gain of less than 100hp whilst a t/c or s/c motor may see more than 100hp).
3) After initial tests have been carried out and reported back to us, any adjustments to the nitrous:fuel mixture ratio can be made by appropriate fuel jet changes.
4) Once the 'optimum' mixture ratio has been determined, this ratio of jet sizes should be maintained as you move up the power ladder.

For vehicles other than fuel injected, the initial ratio is 1:1
The ratios listed are approximations and fine tuning for individual vehicles may be required.

Wiring Diagrams

When all electrical components are fitted, wire the system as shown below. For simplicity systems are supplied without a relay but one can be added as shown in Fig. 9b if a suitable high current feed cannot be found. If a TPS activation switch is supplied use Fig 9c. (Combine 9b & 9c if using direct battery feed.)

Fig. 9a

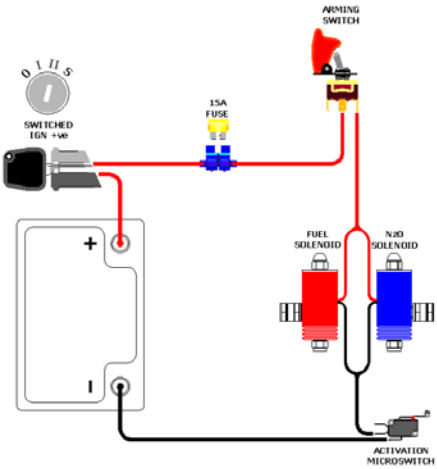
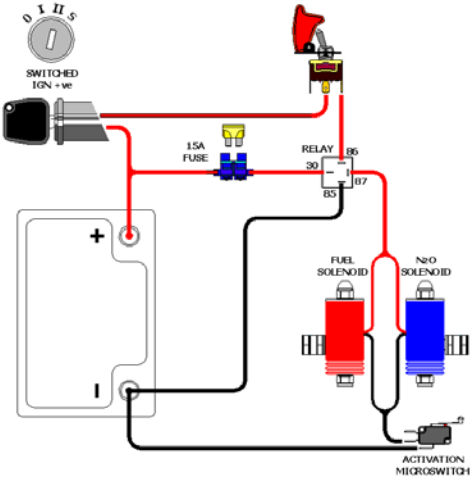


Fig. 9b



If using a nitrous controller use the wiring diagrams provided with the controller.

Microswitch Installation

All systems unless otherwise stated are provided with a micro-switch for activation of the system (See next section for TPS and push button).

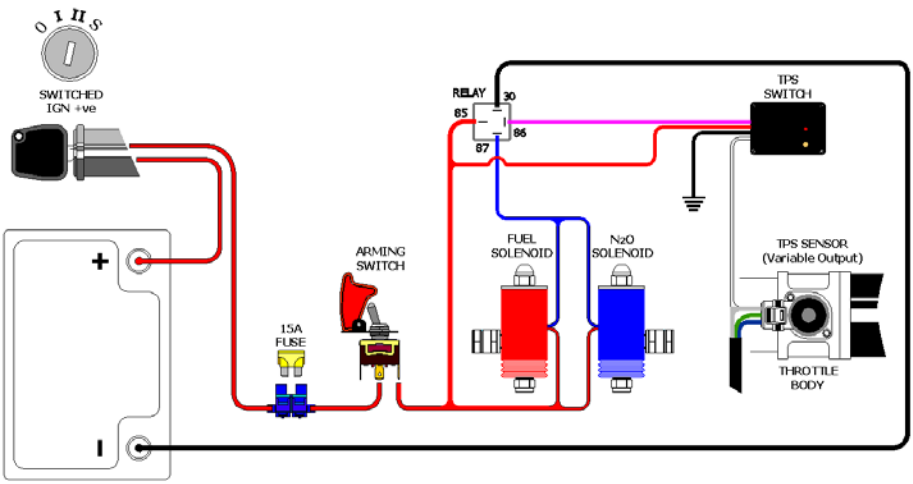
The micro-switch should be mounted to the throttle body or foot pedal using the mounting bracket supplied. It should be in a way that activates at full throttle ONLY. Once fitted check the operation in the following manner;

1. Have the **driver** sit in the drivers seat as **normal**.
2. Have the **driver** slowly press **fully** on the throttle pedal whilst an assistant watches the micro-switch and pedal/throttle mechanism.
3. Check that the micro-switch is operated at full throttle and that there are no chances of a microswitch being flexed out of the way or of the lever being trapped in the activated position.

IMPORTANT: Never rely on setting up the switch by hand operating the throttle mechanism, as this may not duplicate actual pedal movement.

TPS – Throttle Position Switch (Optional)

9c.



Refer to WON online for the latest instructions on how to setup the TPS switch. Check activation using the same procedure as stated for a micro-switch.

Push Button

WON do not provide push buttons for activations of nitrous systems. This is done for safety reasons as activation of the system while not at full throttle can cause a host of problems and driver safety concerns such as system backfires.

If a push button is desired or needed this will need to be purchased separately and is advised to be wired in series with a micro-switch or TPS in the activation wire.

⚠ WARNING

If the switches supplied with the system are replaced, it must be with suitable high Amps alternatives with a minimum rating of 15 Amps, unless a suitable relay of at least 15 Amps is added.

NOTE: If using multiple Pulsoids, connect in parallel as shown above for a single pair of Pulsoids. That means a wire from each Pulsoid should be connected together to a power and the remaining wires should be connected to a ground. A 30-40 amp relay must be added when multiple sets of Pulsoids are used without a progressive controller.

Fitting in Brief

1. Mount the nitrous bottle as shown in (Section 2).

2. Run the supply pipe and connect using as described (Section 5).

3. Mount the Pulsoids in as cool a location as possible yet close to carburettor.

4. Connect into the existing fuel supply line (**only** on the **delivery**, **not return** side of the system), using the appropriate adapter for your application (Sec. 6).

5. Install the Injector in to the intake (Section 7).

6. Run the red (fuel) and blue (nitrous) nylon pipes from the Pulsoid outlets to the Pro-stud and connect using the nuts and olives supplied (Fig. 3).

7. Mount and then connect the appropriate activation switches and connect all the electrical hardware as shown (Section 9).

Testing

Electrical

Always have the outlet pipes disconnected so that nitrous/fuel cannot be injected by mistake during testing.

Important: If nitrous is injected into the engine by mistake or even suspected to have been injected **DO NOT START THE ENGINE.** De-activate the ignition system by removing leads or coil pack connections and turn the engine over for 4-5 seconds to pump out all nitrous into the exhaust system before re-connecting.

Arm the system and check that the solenoids are not activated. If solenoids activate on arming immediately turn the system off.

Manually operate the activation switch and listen for a single click or pulsed clicking if using a controller.

Static Test

Jet Limits:

- For engines up to 3ltr do not use jets larger than 25Bhp for a static. Note the larger the engine the lower the expected rpm response.
- For engines greater than 3ltr start with 25Bhp jets unless advised to use maximum amount of up to 50Bhp.

Procedure:

1. Disconnect the outlet pipes from the injector/s and aim the N2O to atmosphere and the fuel pipe into a bottle. Hold both pipes securely and activate the system briefly. Fuel and N2O liquid should be seen flowing from the pipes as the system is activated and should stop flowing when the system is switched off.

Do not use the system if no fuel is seen in testing. Contact WON or your nearest agent for technical assistance.

2. If successful re-connect the nylon pipes to the injector/s.
3. Start the engine and run up to normal temperature.
4. Hold revs at approx. 1/3 of max. (e.g. max. rpm limit 6,000 test rpm 2,000).
5. Activate the nitrous and hold whilst monitoring the engine response and exhaust emissions. Keep activated until the engine rpm holds steady or is about to exceed the red line, bog badly or makes any unusual noises (Seek assistance).

Reading results:

Engine rpm should rise as if you had operated the throttle and then fall back to normal as you release the switch. The more it rises to redline the closer it is to optimum but keep in mind it means the mixture is leaner. You need to be confident about the strength and tune of your engine to run at those settings.

High Revs: Revving past redline indicates an overly lean mixture and the fuel jet size should be increased and retested.

Low Revs: A low rpm rise and sooty exhaust indicates the mixture is too rich and a smaller fuel jet will be needed to correct this then retested.

Bogging: If the engine stumbles and/or cuts out there is excessive fuel. A very sooty exhaust will confirm this. Re-check the correct jets are installed. If correct; check the system over again to confirm nitrous is being injected.

Quick rise halted at low rpm: If the rpm increases quickly but suddenly stops at a much lower rpm (ie. 3-4000rpm) then struggles to pass. This could be a sign that a lower rpm limiter is active on idle. This is found on some modern vehicles. Contact your local WON agent for further advice before proceeding.

Under Redline (Optimal): The response that delivers the best and safest result is one that rises to within 500 - 1000 rpm of the red line. Some vehicles with high rpm limits may not reach this level, providing a lively response is gained and rpm rises by 3000 rpm a road test will be safe. If unsure if the response is enough contact your local WON agent for technical assistance.

Road Testing

Once the optimal setting is achieved you can take the vehicle on the road and carry out the next tests.

a) Accelerate hard from say 30 mph up to 70 mph. Slow to a stop and then shut off the engine, stop the vehicle and remove the spark plugs for inspection.
b) Repeat the test using nitrous this time and compare the plug colour with the colour without nitrous. You should feel a stronger acceleration and the plugs should be the same or slightly darker colour. If you hear any noises other than a louder exhaust or you feel anything other than a smooth surge of power, cease testing.