

NITROUS FLOW & DISTRIBUTION

The following information is applicable to all nitrous systems but when plumbing a system that doesn't have metering jets at the injectors / nozzles, it is **essential** to act on the following instructions;

- 1) Nitrous oxide has mass and just as with anything else that has mass, when it is flowing in a given direction it wants to continue flowing in that direction.
- 2) Therefore when nitrous flows along a straight section of pipe in to a bend, the nitrous wants to continue flowing in a straight line, which results in the nitrous molecules concentrating along the outer wall of the bend, rather than evenly throughout the tube section, as shown below.

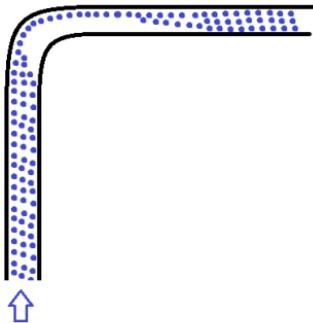


Diagram 1

- 3) A simple analogy of the phenomena that we're dealing with here, is a car with unsecured occupants driving round a sharp corner, which as we all know results in all the occupants being thrown to the side of the car on the outside of the bend.

4) Furthermore, just as it takes times for the car occupants to return to their normal positions in the car after exiting the bend, it takes time for the nitrous to return to flowing in an evenly distributed manner, throughout the cross section of the tube.

5) Now this is not a major concern, as long as the tube is the only component involved but when other components which are designed to split the flow **in an even manner** are involved, it becomes a **major problem**.

6) This problem applies to any component that is intended to distribute the nitrous and therefore applies to all distribution blocks and as most people use a 90 degree elbow on the entry, the problem is an unavoidable.

7) The drawing below shows the resulting nitrous flow from a D-Block that's been fitted with a 90 degree bend in the inlet, showing that more nitrous flows out of the legs opposite the direction of the entry flow, due to the nitrous molecules being thrown to the outer wall of the bend.

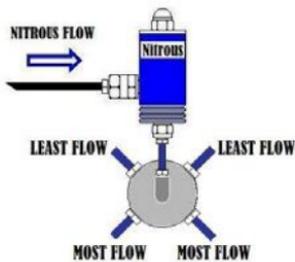


Diagram 2

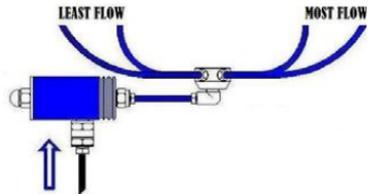
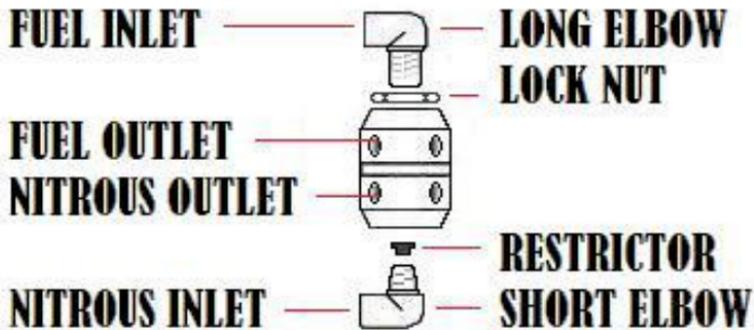


Diagram 3

8) After we discovered the full extent this phenomenon has on nitrous flow and the consequential adverse effects it has on distribution, we carried out extensive R&D to determine ways to address them.

9) As a result of the R&D we discovered that the best solution to the problem is to neutralise the effect, by adding a restrictor to straighten out the flow prior to distribution.

The drawing below shows the location of the 'restrictor'.



All flow suffers from the same forces & the higher the pressure & the sharper the bend, the more severe the effect on the flow & distribution, therefore fuel suffers the same problems but to a lesser extent.