

NITROUS FLOW & PIPE ROUTING FOR Y-BLOCKS

When plumbing a nitrous system that does not 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.

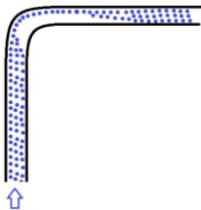


Diagram 1

- 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) The drawing below shows the resulting nitrous flow from a Y-Block that's been added to a pipe after a bend, which shows more nitrous flows out of the upper leg of the Y-Block, due to the nitrous molecules being thrown to the outer wall of the bend.

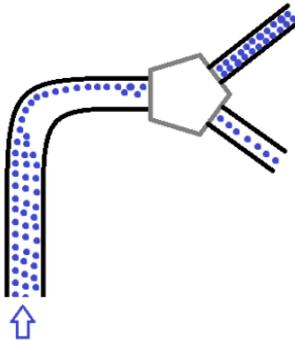


Diagram 2

7) 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.

8) We then determined that the best way to solve this problem is to neutralise the effect of one bend by adding another, thus creating an 'S' bend to the nitrous flow path.

9) The following diagrams show how such a plumbing arrangement would look;



Diagram 3

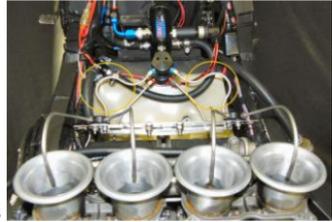


Diagram 4

10) Alternative arrangements for plumbing the Y-Blocks (to avoid the problems caused by bends), where the feed pipe to the Y-Block is bent at 90 degrees to its horizontal plane, are shown below.



Diagram 5

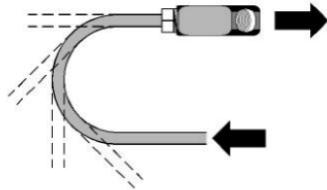


Diagram 6

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.