Simple Assumptions Scoop Calcs

Determine the air volume per minute consumed by the engine
CID = 388
RPM = 6300

$$CFM_{engine} = CID\ X \frac{RPM}{3456}$$

$$CFM_{engine} = 388\ X \frac{6300}{3456} = 707$$

Determine the inlet area of the scoop (in square feet)
Width = 1.5/12 = 0.125
Length =10/12 = 0.833

$$Area = Width\ X\ Lenght$$

$$Area = (0.125\ X\ 0.833) = 0.10$$

To convert MPH into feet per minute

$$FPM = MPH\ X\ 88$$

The Volume per minute of air capable to pass through the scoop's inlet would be

$$CFM_{scoop} = Area\ X\ FPM$$

Assuming the engine's air comsumed is halved between each side, The MPH where the volume of air consumed by the engine equals the volume capability of the scoop would be

$$MPH_{static} = (CFM_{engine} / Area)/88$$

$$MPH_{static} = \frac{\frac{\frac{707}{2}}{0.10}}{88} = 40$$

The area of the supply 4" tubes would be

$$area = \pi\ X\ r^2$$

$$area = 3.14\ X\ 0.167^2 = 0.08$$

Given the tube area is less than the scoop entrance, the air velocity will be 120% greater than the MPH_{static} , thus about 50 MPH at 6300 rpms.

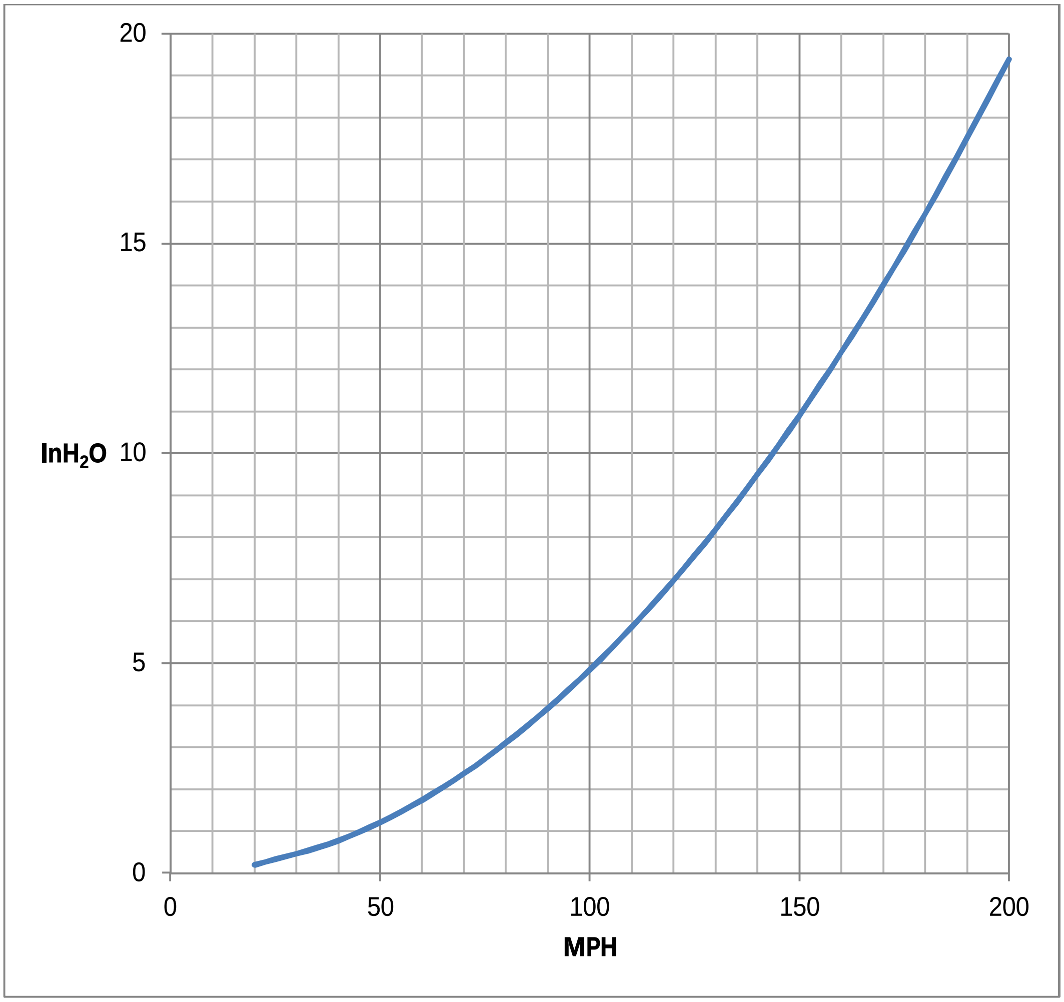
Speeds in excessive of where CFMs are equal will result in a pressure increase.
The ram effect pressure as per speed is

$$PSI_{ram} = 0.075\ X \frac{MPH^2}{4278}$$

Given the ram effect will only be a fraction of a PSI, converting to Inches of water will provide interger values.

$$InH_2O = PSI\ X\ 27.7$$

Chart - InH_20 versus MPH



20
15
InH2O 10
5
0
0
50
100
150
200
MPH