

FRICITION LOSS P/100' of 3" HOSE

$$FL=Q^2$$

FL = Friction Loss in PSI p/100' Hose
Q=Quantity of Water Flow in 100 GPM

Example: 300 GPM through 100' 3" Hose
FL=3x3 FL=9psi p/100' Hose

FRICITION LOSS P/100' of 2.5" HOSE

$$FL=2Q^2$$

FL = Friction Loss in PSI p/100' Hose
Q=Quantity of Water Flow in 100 GPM

Example: 300 GPM through 100' 2.5" Hose
FL=2x3x3 FL=18psi p/100' Hose

MEASURING FLOW

$$GPM=30xd^2\sqrt{p}$$

GPM=GPM Flow
30=Constant
D=Diameter of Opening in Inches
P=Nozzle Pressure in PSI

Example: 1.5" Nozzle @ 80 psi
GPM=30 x 2.25 x 8.9
GPM=601

ATTACK ENGINE PRESSURE

$$EP=FL\pm HP+D+NP$$

EP=Required Engine Pressure
FL=Friction Loss
HP=Head Pressure (5PSI P/10')
D=Devices (5 PSI P/Device)
NP=Nozzle Pressure (Solid Stream (SS) -Hand Line – 50 psi)
(SS Master Stream Device – 80 psi)
(Fog Pattern – Any – 100 psi)

SUPPLY ENGINE PRESSURE

$$\mathbf{EP=FL\pm HP+50}$$

EP=Required Engine Pressure

FL=Friction Loss

HP=Head Pressure (5PSI P/10')

50=Constant – Desired Residual Pressure @ the Supplied Pumper

Example: FL=500 gpm through 500' 3" (25 psi FL p/100' Hose) w/20' Elevation Rise

HP= 20' Elevation Difference (10)

$$\mathbf{EP=FL\ 125 + HP\ 10 + 50}$$

$$\mathbf{EP=185}$$