

Hand Held Nozzles		Hose Size	Standard Flow	FL / 100' of Hose
Fog Nozzles	N.P. (TFT-100 psi)			
Task force	1 3/4	150 gpm	25 psi	
Task force	1 3/4	160 gpm	30 psi	
Task force	1 3/4	170 gpm	35 psi	
Task force	2 1/2	250 gpm	15 psi	
Task force	3	300 gpm	9 psi	
<b>Solid Stream Nozzles (NP = 50 psi)</b>				
15/16 inch	1 3/4	180 gpm	40 psi	
1 inch	1 3/4	200 gpm	50 psi	
1 inch	2 1/2	200 gpm	10psi	
1 1/8 inch	2 1/2	250 gpm	15 psi	
1 1/4 inch	2 1/2	325 gpm	25 psi	
<b>Master Stream Nozzles</b>				
Hose Size		Standard Flow	FL / 100' of Hose	
Solid Stream Nozzles (NP = 80 psi)			2- 2 1/2", 2-3" & 5	
1 1/4 inch	2-2 1/2", 2-3" or 5	400 gpm	10 psi, 3 psi & 1.5 psi	
1 3/8 inch	2-2 1/2", 2-3" or 5	500 gpm	15 psi, 5 psi & 2 psi	
1 1/2 inch	2-2 1/2", 2-3" or 5	600 gpm	20 psi, 7 psi & 3 psi	
1 3/4 inch	2-2 1/2", 2-3" or 5	800 gpm	34 psi, 13 psi & 5 psi	
2 inch	2-2 1/2", 2-3" or 5	1000 gpm	50 psi, 20 psi & 8 psi	
Fog Nozzle (NP = 100 or 80 psi)	2-2 1/2" or 5	1000 gpm	40 psi & 8 psi	
<b>Other Nozzles</b>				
Hose Size		Standard Flow	FL / 100' of Hose	
Distributor Nozzle (NP = 100 psi)		400 gpm	34 psi	
1 3/4"		200 gpm	50 psi	

Appliance Loss	
Wye/Siamese >350 GPM	10 psi
Multiversal	25 psi
Standpipe	25 psi
Aerial Manifold	25 psi
<b>Elevation Pressure</b>	
Per 10 feet	± 5 psi
Per floor	± 5 psi
<b>Do not count the first floor</b>	
<b>Intake Pressure Drop</b>	
Up to 10%	3 like volumes
11% - 15%	2 like volumes
16%-25%	1 like volume
<b>Maintain 20 psi or more at intake</b>	
<b>Single Hose Coefficients</b>	
1 inch booster	150
1 3/4 inch hose	15.5
2 1/2 inch hose	2
3 inch hose	.8
4 inch hose	.2
5 inch hose	.08

### Formulas And Pumping information

Engine pressure (EP) and Pump discharge pressure (PDP)

$EP/PDP = \text{Nozzle pressure (NP)} + \text{Total hose friction loss (THFL)} + \text{Appliance loss (AL)} + \text{Elevation loss/gain (EP)}$

**Friction Loss formula -  $CxQ^2xL = THFL$ .**

THFL in Siamesed hose lines – Equal lengths and diameters/unequal diameters

Equal lengths and diameters -  $CxQ^2xL$  or divide total flow by number of lines and calculate for one line

Hose configuration

Two 2 ½

Three 2 ½

Two 3 inch with 2 ½ couplings

One 3 inch with 2 ½ couplings, one 2 ½

Unequal lengths/equal diameters

Average lengths and pump to the averaged length pressure

Coefficient

.5

.22

.2

.3

### Standpipe operations

In all cases Appliance loss in standpipes is considered 25 psi regardless of flow.

When a standpipe is known to have Pressure reducing valves (PRV's) installed, EP must be based on the total height of the standpipe.  
Supporting automatic sprinkler systems

- Set PDP to 150 psi
- Standard ½ inch head flows 20 gpm @ 15 psi
- One 1000 gpm pumper can supply 50 heads

### Supplying department Aerial Apparatus

General –  $PDP = NP + EP + AP + THFL$

All Department Aerials have flow meters installed