FIREFIGHTING HOSE AND NOZZLE COMPARISON CHART

Nozzle Type	Nozzle Size in inches	Nozzle Pressure in P.S.I.	Nozzle Flow in G.P.M.	Nozzle Reaction lbsf	Prsnl. to Advance Nozzle	Cooling Capacity in MW	Adjusted Cooling Capacity	Iowa Formula Cov. cu. ft.	Friction Loss per 100' Hose	Engine Pressure 150' Line	Engine Pressure 200' Line	Engine Pressure 250' Line	Engine Pressure 300' Line

Nozzle Reaction lbsf (force) calculations: NR for Solid Stream Nozzles = 1.57 X d^2 X NP NR for Fog Stream Nozzles = 0.0505 X Q X $\sqrt{NP}$ (Q = Flow in Gallons Per Minute)
Personnel to Advance Nozzle: To 60± lbsf = 1 firefighter; To 75± lbsf = 2 firefighters; To 95± lbsf = 3 firefighters; To 110± lbsf = 2 firefighters in a fixed position only; >110 lbsf = Good Luck
Cooling Capacity (Theoretical) in MW = Flow in kg/second X 2.6 MJ/kg For reference: A modern living room fire produces a Heat Release Rate of approximately 9 MW to 12 MW
Adjusted Cooling Capacity in MW = Cooling Capacity in MW X Efficiency Factor (0.5 for straight streams and 0.75 for fog streams) Note: Efficiency may at times be as low as 20% (0.2)
Iowa Formula Coverage in cubic feet (for knock down of a closed compartment fire in 30 seconds using an Indirect Attack with water fog) = Nozzle Flow in G.P.M. X 100
Friction Loss in P.S.I. per 100' of Hose = C X $(Q/100)^2$ The coefficient "C" is an adjusted figure reflecting field conditions (the theoretical coefficient is used for results in parenthesis)
Adjusted and Theoretical Friction Loss Coefficients used for hose and engine pressure calculations: 1¾" Hose 12 (15.5) 2" Hose 6 (8) 2½ Hose 2 (2) 3" Hose 0.8 (1)
† Fog stream efficiency diminishes at nozzle pressures <100 P.S.I. as droplet size increases (>1mm) and droplet velocity decreases. ‡Short pulse fog use is limited to flows ≤150 G.P.M.