

**FIREFIGHTING HOSE AND NOZZLE COMPARISON CHART**      **1 3/4 Inch Hose with 1 1/2 Inch Couplings**

**1 3/4 Inch Fire Hose with Fixed Pressure (Automatic) Combination Nozzle or Fixed Flow Combination Nozzle**

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
Combination		50	95	34	1	15.6	7.8/†	†	11 (14)	67 (71)	72 (78)	78 (85)	83 (92)
		75	95	42	1	15.6	7.8/†	†	11 (14)	92 (96)	97 (103)	103 (110)	108 (117)
		100	95	48	1	15.6	7.8/10.9	9,500	11 (14)	117 (121)	122 (128)	128 (135)	133 (142)
Combination		50	125	45	1	20.5	10.3/†	†	19 (24)	79 (86)	88 (98)	98 (110)	107 (122)
		75	125	55	1	20.5	10.3/†	†	19 (24)	104 (111)	113 (123)	123 (135)	132 (147)
		100	125	63	2	20.5	10.3/15.4	12,500	19 (24)	129 (136)	138 (148)	148 (160)	157 (172)
Combination		50	134	48	1	22	11/†	†	22 (28)	83 (92)	94 (106)	105 (120)	116 (134)
		75	134	59	1	22	11/†	†	22 (28)	108 (117)	119 (131)	130 (145)	141 (159)
		100	134	68	2	22	11/16.5	13,400	22 (28)	133 (142)	144 (156)	155 (170)	166 (184)
Combination		50	150	54	1	24.6	12.3/†	†	27 (35)	91 (103)	104 (120)	118 (138)	131 (155)
		75	150	66	2	24.6	12.3/†	†	27 (35)	116 (128)	129 (145)	143 (163)	156 (180)
		100	150	76	3	24.6	12.3/18.5	15,000	27 (35)	141 (153)	154 (170)	168 (188)	181 (205)
Combination		50	175	62	2	28.7	14.4/†	†	37 (47)	106 (121)	124 (144)	143 (168)	161 (191)
		75	175	77	3	28.7	14.4/†	†	37 (47)	131 (146)	149 (169)	168 (193)	186 (216)
		100	175	88	3	28.7	14.4/21.5†	17,500	37 (47)	156 (171)	174 (194)	193 (218)	211 (241)
Combination		50	185	66	2	30.4	15.2/†	†	41 (53)	112 (130)	132 (156)	153 (183)	173 (209)
		75	185	81	3	30.4	15.2/†	†	41 (53)	137 (155)	157 (181)	178 (208)	198 (234)
		100	185	93	3	30.4	15.2/22.8†	18,500	41 (53)	162 (180)	182 (206)	203 (233)	223 (259)
Combination		50	200	71	2	32.8	16.4/†	†	48 (62)	122 (143)	146 (174)	170 (205)	194 (236)
		75	200	87	3	32.8	16.4/†	†	48 (62)	147 (168)	171 (199)	195 (230)	219 (261)
		100	200	101	2-fixed	32.8	16.4/24.6†	20,000	48 (62)	172 (193)	196 (224)	220 (255)	244 (286)
Navy Fog on Applicator	1 1/2	100	50	25	1	8.2	6.2	?	3(4)	105(106)	106(108)	108(110)	109(112)

Nozzle Reaction lbsf (force) calculations: NR for Solid Stream Nozzles = 1.57 X d<sup>2</sup> X NP    NR for Fog Stream Nozzles = 0.0505 X Q X \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)<sup>2</sup>    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: 1 3/4" Hose 12 (15.5)    2" Hose 6 (8)    2 1/2" 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.