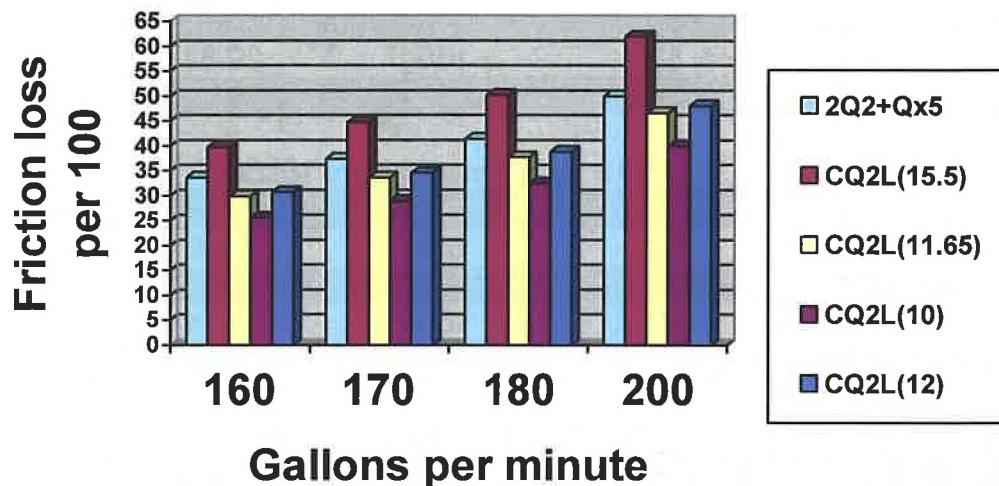
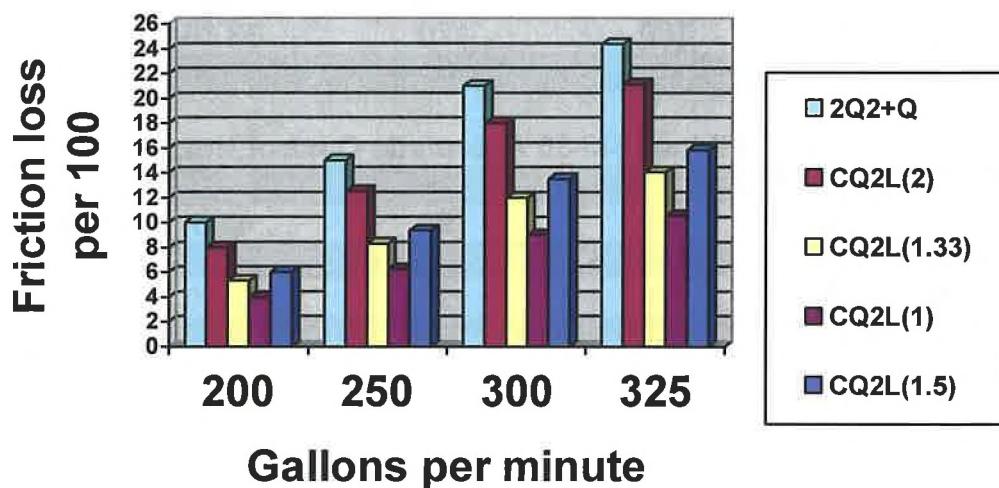


Comparison of friction loss in 1 ¾ and 2 ½ inch hose lines

1 ¾" hose friction loss



2 ½" hose friction loss



1 ¾ Inch friction loss comparison tables

7/8 Inch Smoothbore Nozzle

Formula/co.	N.P.	Flow/GPM	Psi. FL/100.	Difference
2Q ² +Q (x5)	50	160	33.6	Baseline=100%
CQ ² L (15.5)	50	160	39.68	118.06%
CQ ² L (11.65)	50	160	29.82	88.75%
CQ ² L (12)	50	160	30.72	91.42%

15/16 inch Smoothbore Nozzle

Formula/co.	N.P.	Flow/GPM	Psi. FL/100.	Difference
2Q ² +Q (x5)	50	180	41.4	Baseline=100%
CQ ² L (15.5)	50	180	50.22	121.30%
CQ ² L (11.65)	50	180	37.74	91.15%
CQ ² L (12)	50	180	38.88	93.91%

1 inch Smoothbore Nozzle

Formula/co.	N.P.	Flow/GPM	Psi. FL/100.	Difference
2Q ² +Q (x5)	50	200	50	Baseline=100%
CQ ² L (15.5)	50	200	62	124%
CQ ² L (11.65)	50	200	46.6	93.2%
CQ ² L (12)	50	200	48	96%

Task Force Tip Automatic Control Nozzle

Formula/co.	N.P.	Flow/GPM	Psi. FL/100.	Difference
2Q ² +Q (x5)	100	170	37.4	Baseline=100%
CQ ² L (15.5)	100	170	44.79	119.75%
CQ ² L (11.65)	100	170	33.66	97.84%
CQ ² L (12)	100	170	34.6	92.51%

Elkhart SM-30 Automatic Control Nozzle

Formula/co.	N.P.	Flow/GPM	Psi. FL/100.	Difference
2Q ² +Q (x5)	85	190	45.6	Baseline=100%
CQ ² L (15.5)	85	190	55.95	122.69%
CQ ² L (11.65)	85	190	42.05	92.21%
CQ ² L (12)	85	190	43.32	95%

2 ½ Inch friction loss comparison tables

1 Inch Smoothbore Nozzle

Formula/co.	N.P.	Flow/GPM	Psi. FL/100.	Difference
2Q ² +Q	50	200	10	Baseline=100%
CQ ² L (2)	50	200	8	80%
CQ ² L (1.33)	50	200	5.32	53.2%
CQ ² L (1)	50	200	4	40%
CQ ² L (1.5)	50	200	6	60%

1 1/8 Inch Smoothbore Nozzle

Formula/co.	N.P.	Flow/GPM	Psi. FL/100.	Difference
2Q ² +Q	50	250	15	Baseline=100%
CQ ² L (2)	50	250	12.5	83.33%
CQ ² L (1.33)	50	250	8.31	55.4%
CQ ² L (1.5)	50	250	9.37	62.46%

1 1/4 Inch Smoothbore Nozzle

Formula/co.	N.P.	Flow/GPM	Psi. FL/100.	Difference
2Q ² +Q	50	325	24.37	Baseline=100%
CQ ² L (2)	50	325	21.12	86.66%
CQ ² L (1.33)	50	325	14.04	57.61%
CQ ² L (1.5)	50	325	15.84	64.99%

Task Force Tip Automatic Control Nozzle

Formula/co.	N.P.	Flow/GPM	Psi. FL/100.	Difference
2Q ² +Q	100	250	15	Baseline=100%
CQ ² L (2)	100	250	12.5	83.33%
CQ ² L (1.33)	100	250	8.31	55.4%
CQ ² L (1.5)	100	250	9.37	62.46%

Elkhart SM-30 Automatic control Nozzle

Formula/co.	N.P.	Flow/GPM	Psi. FL/100.	Difference
2Q ² +Q	100	300	21	Baseline=100%
CQ ² L (2)	100	300	18	85.71%
CQ ² L (1.33)	100	300	11.97	57%
CQ ² L (1.5)	100	300	13.5	64.28%

Summary of friction loss differences

2Q²+Q

The underwriter's formula $2Q^2+Q$ is the baseline of our comparison and represents 100 percent of what we believe the total friction loss in our hose is. When calculating friction loss in 1 ¾ inch hose, we use the Conversion Factor (C_f) of 5. Simply stated, 1 ¾ inch hose has approximately 5 times the friction loss of 2 ½ inch hose.

CQ²xL

This is the most commonly used formula for calculating friction loss in fire US Fire Service today. The coefficients illustrated in the preceding tables and charts are listed in the following order.

1 ¾ inch hose

- 15.5 (IFSTA default coefficient)
- 11.65 (Coefficient as validated by the Engineer committee in May of 2007)
- 12 (Proposed coefficient as recommended by the Engineer committee and Apparatus Officer)

2 ½ inch hose

- 2 (IFSTA default coefficient)
- 1.33 (Coefficient as validated by the Engineer committee in May of 2007)
- 1.5 (Proposed coefficient as recommended by the Engineer committee and Apparatus Officer)