KEY FIRE HOSE

"Excellence in Manufacturing since 1988"

FRICTION LOSS & HOSE by Mac McGarry

The final element of a water delivery system, which cannot be overlooked, is the hose. Modern fire hose has improved tremendously therefore many of "the rules" such as tip size in relation to hose diameter, and maximum flow capabilities have changed.

It is now possible to get big water through 1 ¾" 2" and 2 ½" hose.

All fire hose is certainly not created equal and therefore a thorough, objective comparison is vital when making a decision regarding your fire flow needs and water delivery system.

Nozzles and hose must be considered as a package and must be evaluated as such in order to achieve the best results.

Friction loss, especially at higher flows, can vary greatly.

During a recent nozzle test we were able to flow 265 gallons per minute through one particular brand of 1.75" hose with a 1 1/8" smooth bore tip with only 48 psi of friction loss in a 100 foot length. Other 1 ¾" hose brands tested during the evaluation had an excess of 90 psi of friction loss in a 100 foot length.

Another department was sold 2" hose by a sales rep. for their attack lines. This was designed to replace their current 1 ¾" Attack Lines. When the department decided to evaluate new nozzles they were shocked to find that the 2" hose they had purchased had more friction loss per 100' length than their older 1 ¾" hose flowing 200 g.p.m.

Many departments continue to use 1.75" hose for standpipe operations. I do not advocate this potentially dangerous tactic; However, if the department refuses to change, it is vital that hose with the lowest possible friction loss and a smooth bore nozzle that is designed to operate at a nozzle pressure of 50 psi be selected. This is important because of the potential limits in pressure due to friction loss, pressure reducing valves and other factors within the standpipe system.

Some of the lighter weight 1 ¾" and 2 ½" hose manufactured today is more prone to kinking at lower pressures. This is typical of a smooth bore or low pressure fog nozzle application. The light weight hose tends to snap violently when the stream is whipped aggressively even at moderate flow rates. This is not the fault of the nozzle as some firefighters think, but is a direct result of the way the hose is designed and manufactured.

High flow rates through 1.75" hose should only be considered under extreme situations for a short period of time while larger attack lines are placed into service.

Test your hose before you buy!

KEY FIRE HOSE

"Excellence in Manufacturing since 1988"

If your fire department is looking at purchasing 1 ¾" 2" or 2 ½" hose in the near future, you need to consider the following:

Friction Loss
Inner tube or liner
Kink Resistance
Outer jacket material in terms of durability
Test Pressure
Burst Pressure

If your 1 ¾", 2" or 2 ½" pre-connects are 200' then evaluate 200' of hose from the manufacturer or dealer that is trying to sell you the hose. Test the hose in a training tower or burn building for kinking issues using your nozzles, while flowing the g.p.m. you normally flow on an interior attack line.

More aggressive fire departments are looking at a target flow of 200 gallons per minute for residential fire attack. As a driver engineer, wouldn't you rather pump that line at 125 psi discharge pressure to get 200 gpm rather than 185 psi?