



BUILDING BETTER FIREFIGHTERS

THE 5 MINUTE ENGINE CLINIC™

By Bryan T Smith

Volume 1, Issue# 3 June 17th, 2013

HOSE BASICS: THE 1 3/4" ATTACK LINE

The primary size of hose used for interior fire attack in the fire service today is 1 3/4"



The 1 3/4 inch attack line is a direct descendent of its predecessor the 1 1/2 inch attack line which came on to the scene after world war II but was not widely accepted at first due to its limited flow capabilities. 1 3/4 hose was developed primarily for the New York city fire department who at the time was

looking for a smaller and lighter hose capable of flow ranges higher than that of the 1 1/2 inch hose. The 1 3/4 was capable of achieving higher fire



flows (150-200gpm) then the 1 1/2 while still remaining light weight and maneuverable. The 1 3/4 inch attack line, although still widely used throughout the fire service has changed in the past years. There are roughly 26 different types and styles of fire attack hose on the market today and

they are not created equal! The question is how familiar are you with the hose carried on your engine?

1. What size attack lines are on your engine?
2. Do you know what they are capable of flowing?
3. Do you know how they are made?
4. Has your department established minimum acceptable fire flow requirements?
5. Does your department conduct formalized flow testing to ensure your current hose and nozzle configuration is achieving the appropriate fire flow?

Make sure you are going to battle armed with the appropriate fire flow, equipment and knowledge to safely accomplish your mission!

FLOW RANGE

**Traditional rubber lined
1 3/4 inch attack line**
Max flow-200 GPM
Friction Loss (# = lbs.)
35# per-100' @ 150GPM
50# per-100' @ 180GPM
60# per-100' @ 200GPM

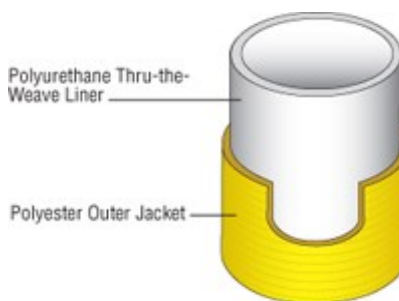
**Woven polyurethane lined
1 3/4 inch attack line**
Max flow-250 GPM
Friction Loss (# = lbs.)
19# per-100' @ 150GPM
32# per-100' @ 200GPM
47# per-100' @ 250GPM

Smooth Bore tips for 1 3/4
7/8 tip = 160GPM
15/16 tip = 180GPM
1 inch tip = 210GPM

**1 3/4 Combination Fog
Nozzle GPM settings**
95-GPM
150-GPM
200-GPM

HOSE DESIGN

How fire hose is made has changed in recent years. Many manufacturers no longer use adhesives to bond the outer layer and liner together they use extruded polyurethane inter-woven liners in place of rubber creating a smoother surface allowing much higher flows at standard pressures. This is due to reduced friction loss as much as 50% less than traditional hose. Many departments are purchasing new hi-flow hose, placing it on the engine without educating pump operators, firefighters and officers to ensure they understand its capabilities, limitations and safe use.



The more knowledge we possess about the attack lines we are using the better prepared we will be for the challenges of the modern fire ground.

Copyright 2013
Bryan T Smith
Firefighter Toolbox