

Length
Attack
Overhaul
Max HEAD
Max Grade
Max GPM
Laterals
9
8
7
6
5
4
3
2
1
0

1. **Select** (insert) mode: **'ATTACK'** vs. **'OVERHAUL'**
2. **Pull** insert "OUT" to current Hoselay **Length** in feet.
3. **Rotate** DIAL "A" to **TOTAL** of Nozzle Pressure (NP) + Friction Loss (FL) upon number of "Laterals" operating row by the **Nozzle FLOW** (NFPA 1002) (20/60C or 25/75C GPM **'ATTACK'**) column to LEFT.
4. Again **rotate** DIAL "A" until **estimated (+) HEAD** (in FEET) lines up with **TOTAL** of #3 (NP + FL)
5. Read **estimated ENGINE PRESSURE (EP)** upon **RED NEEDLE** of Dial "A" on 'Fixed' GAUGE "B"

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Laterals Operating

Note: **TOTAL** Friction Loss (FL) is calculated upon **10 GPM** Laterals w/ **10/23** or **10/30** Comb. Nozzles

'Fixed' GAUGE "B"

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"Is not Friction Loss a direct mathematical function of Gallons Per Minute?" Each individual (GPM) affected section of hose is subject to: [Friction Loss (FL) = (GPM/100)² * C * L/100'] (SDTDC-2005: "C" for 1.5" hose is 35 and 1" is 250) On a 32% Grade, the **Standard** method **MUST STOP** at 600' before exceeding **MAX 400 PSI**; at 1,100', pump **DOWNHILL -288'** The **'HENWAY'** pumps 25% more flow (60 vs. 75 GPM) @ 500' /83% **FARTHER** and 639' **HIGHER** in elevation for **SAFETY!**

75C	Standard	Length	75C	Standard	Length	75C	HEN-WAY	Length
	GPM FL Lat.	1,100'		GPM FL Lat.	1,100'		GPM FL Lat.	1,100'
	75 19.7 2.5	1,000'		75 19.7 2.5	1,000'		75 19.7 2.5	1,000'
	75 19.7 2.5	800'		85 25.3 2.5	1,000'		43 6.3 2.5	1,000'
	85 25.3 2.5	800'		85 25.3 2.5	800'		43 6.3 2.5	800'
	85 25.3 2.5	600'		95 31.6 2.5	800'		53 9.6 2.5	800'
	95 31.6 2.5	600'		95 31.6 2.5	600'		53 9.6 2.5	600'
	95 31.6 2.5	400'		105 38.6 2.5	600'		53 9.6 2.5	600'
	105 38.6 2.5	400'		105 38.6 2.5	400'		53 9.6 2.5	400'
	105 38.6 2.5	200'		115 46.3 2.5	400'		63 13.7 2.5	400'
	115 46.3 0	200'		115 46.3 2.5	200'		63 13.7 2.5	200'
	115 46.3 0	0'		125 54.7 0	200'		73 18.4 0	200'
	Total: 323 10	0'		125 54.7 0	0'		73 18.4 0	0'
	(+19.7 PSI/+6%) FL: 333 Only			Total: 413 12.5			Total: 135 12.5	
	Nozzle Pressure (NP): 100 5%			(+90 PSI/+28%) FL: 425 TOTAL			(-288 PSI/-67%) FL: 148 TOTAL	
	TOTAL (before 'HEAD'): 433 More			Nozzle Pressure (NP): 100 21%			Nozzle Pressure (NP): 100 53%	
				TOTAL (before 'HEAD'): 525 More			TOTAL (before 'HEAD'): 248 LESS	
	Avail. Pressure to 400: -33 MAX			Avail. Pressure to 400: -125 MAX			Avail. Pressure to 400: 152 639'@	
	Max. HEAD in Feet: -76 -8%			Max. HEAD in Feet: -288 -13%			Max. HEAD in Feet: 351 32%	
	Max. Length @ 32% Grd: 600 Grd.			Max. Length @ 32% Grd: 600 Grd.			Max. Length @ 32% Grd: 1100 +83%	

"HEN-WAY" 29 CFR 1910.156(c)(1) & (2) **NFPA 1002/1041 REQUIRES YOU to STOP at 400 PSI! - FIREFIGHTER SAFETY -**

"NP" and "FL" ("A" is 'NUL') Pressure Losses are one (1) variable for up to all laterals **flowing simultaneously** in both **'ATTACK'** and **'OVERHAUL'** modes. The remaining pressure **LESS** from the **MAX 400 PSI** when divided by **0.434** PSI/ft. determines the **MAX (+) HEAD; % Grade** then verifies the **MAX Length**

Use **'OVERHAUL'** inserts **AFTER** containment. **ALL** pressures are **"Color-Coded"** to indicate your **DANGER ZONE** in case **'ATTACK'** **PRESSURES** are required for an **ESCAPE** or severe **BLOW-UP!**

AFTER connected; (radio) **CONFIRM!**

RULE OF THUMB: **Install** at any time Nozzle Pressure reduces; **STOP** at **MAX 400 PSI (EP)**

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DO THE MATH!

This is a **1,000'** hoselay as illustrated:

There are **eight (8)** contour lines.

Each contour line is **40 feet INCREASED elevation.**

Eight (8) times (X) **40'**/contour line = **320'**

320' over a 1,000' run is a **32% Grade**

320' times 0.434 PSI/ft. = 139 PSI **HEAD** pressure.

Per **NFPA 1002**, 139 PSI **HEAD** pressure **LOSS [PLUS TOTAL (FL) AND (NP)] MUST BE COMPENSATED** at the pump for **SAFETY!**

The **Standard** method must **STOP** at **600'** on a **32% Grade** upon utilizing **75 GPM /10 GPM** nozzles for **HEAVY FIRE ATTACK** for far **BETTER PROTECTION** and **EFFICIENCY** to **INCREASE FIREFIGHTER SAFETY!**

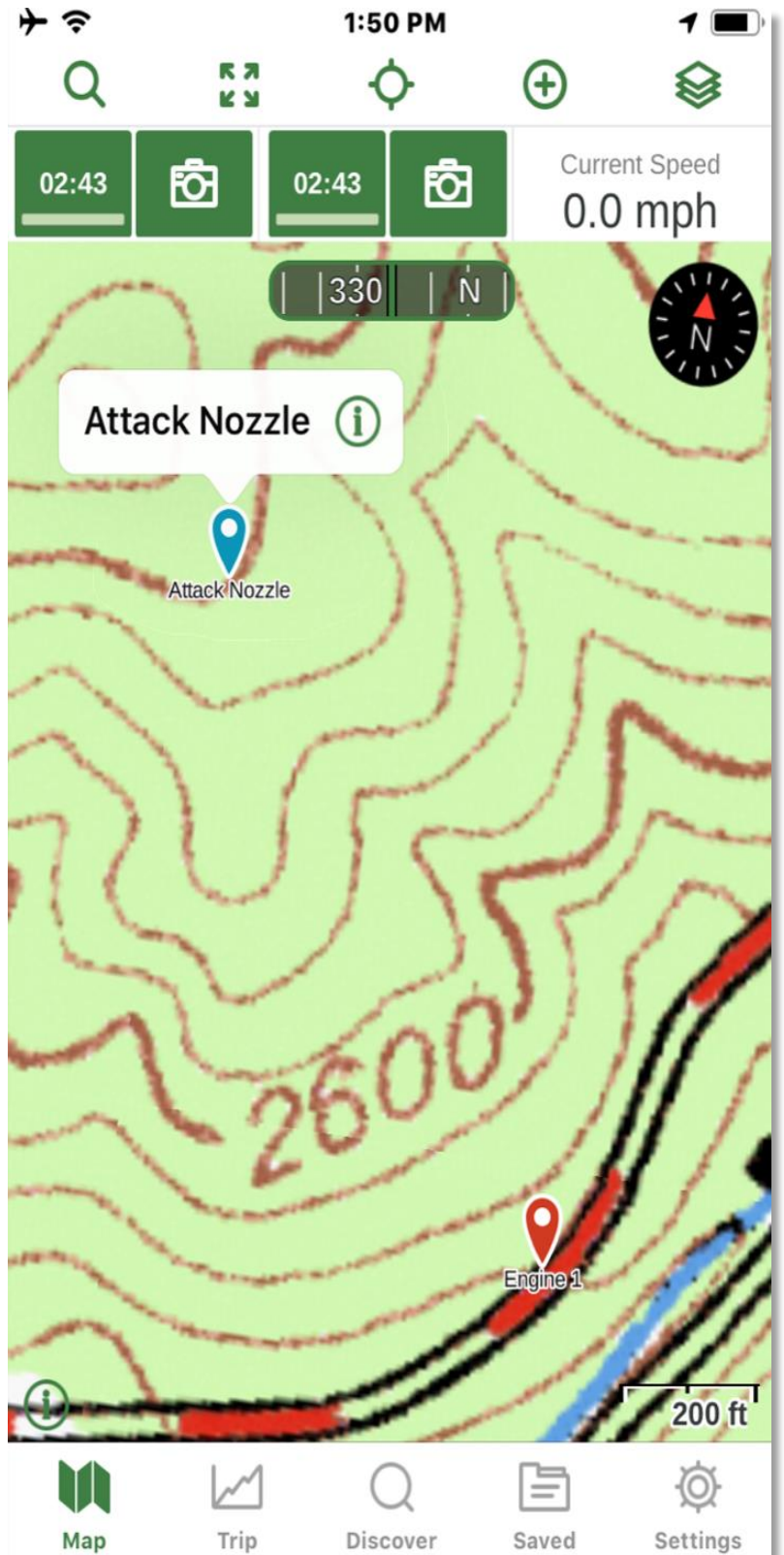
Upon extending **only** 100' from 900' feet to 1,000', **FL** increases by only 19.7 PSI or 6%...

BUT when extending only 100' from 1,000' to 1,100', and therefore **ADDING** an **FIFTH (5th)** lateral at 10 GPM, the **OVER ALL FLOW** from the Engine to the first lateral **increases** from 115 GPM to 125 GPM, and each **AFFECTED** section thereafter, to cause **FL** to **INCREASE** a **FULL 90 PSI** at 28%! **This SHALL NOT EVER be disregarded to ensure FIREFIGHTER SAFETY!**

The **HEN-WAY** method, **reduces the water flow (GPM)** to the **ATTACK** and each Lateral nozzle by **one-half (1/2)**; thus the overall Friction Loss (upon squaring this fraction of **1/2 X 1/2 = 1/4**), in each **INDIVIDUALLY AFFECTED SECTION** by an **INCREDIBLE:**

75% LESS FRICTION LOSS!!!

Thus, a 75 GPM /10 GPM hoselay can be SAFELY EXTENDED 500' @ 83% to 1,100' to INCREASE FIREFIGHTER SAFETY!



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