

Length	1100	
Attack	60C	75C
Overhaul	10/23C	10/23C
Max HEAD	431	351
Max Grade	39%	32%
Max GPM	110	125
Max GPH	6600	7500
	NAY' after	
	' (5th Lat.)	
Laterals		
7		
6		
5	213	248
4	202	236
3	185	217
2	174	204
1	158	185
0	144	169

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"

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

Laterals Operating **5**

'Fixed' GAUGE "B"

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HFT-FIRE

"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**; or @ 1,100', pump **DOWNHILL -288'**. The **'HENWAY'** pumps 75 GPM (56% > 'knock-down' than 60 GPM) @ 500'/83% **FARTHER** and 639' **MORE HEAD** for **SAFETY!**

Standard	Length
GPM FL Lat. 1,100'	
75 19.7 2.5	1,000'
75 19.7 2.5	800'
85 25.3 2.5	600'
85 25.3 2.5	400'
95 31.6 2.5	200'
95 31.6 2.5	0'
Total: 323 10	0'
(+19.7 PSI/+6%) FL: 333 Only	
Nozzle Pressure (NP): 100 5%	
TOTAL (before 'HEAD'): 433 More	
Avail. Pressure to 400: -33 MAX	
Max. HEAD in Feet: -76 -8%	
Max. Length @ 32% Grd: 600 Grd.	

Standard	Length
GPM FL Lat. 1,100'	
75 19.7 2.5	1,000'
85 25.3 2.5	800'
85 25.3 2.5	600'
95 31.6 2.5	400'
95 31.6 2.5	200'
105 38.6 2.5	0'
105 38.6 2.5	0'
Total: 413 12.5	0'
(+90 PSI/+28%) FL: 425 TOTAL	
Nozzle Pressure (NP): 100 21%	
TOTAL (before 'HEAD'): 525 More	
Avail. Pressure to 400: -125 MAX	
Max. HEAD in Feet: -288 -13%	
Max. Length @ 32% Grd: 600 Grd.	

HEN-WAY	Length
GPM FL Lat. 1,100'	
75 19.7 2.5	1,000'
43 6.3 2.5	800'
43 6.3 2.5	600'
53 9.6 2.5	400'
53 9.6 2.5	200'
63 13.7 2.5	0'
63 13.7 2.5	0'
73 18.4 0	0'
73 18.4 0	0'
Total: 135 12.5	0'
(-288 PSI/-67%) FL: 148 TOTAL	
Nozzle Pressure (NP): 100 53%	
TOTAL (before 'HEAD'): 248 LESS	
Avail. Pressure to 400: 152 639'@	
Max. HEAD in Feet: 351 32%	
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** -

Attack fire w/ one (1) 1.5" hose; lay 'Supply' line dry. At 600', 1,000' & 1,400': Attach (2) Dbl. Females, a 'reversed' Gated-Wye, a Dbl. Male, an 1.5" X 1" Tee, and a Gated-Wye. Charge secondary 'Supply' line **ONLY** AFTER connected; (radio) **CONFIRM!** **RULE OF THUMB:** Install at any time Nozzle Pressure reduces; **STOP** at **MAX 400 PSI** (EP)

"NP" and "FL" ("A" is 'NUL') Pressure Losses are one (1) variable for up to all laterals **flowing simultaneously** in both '**ATTACK**' vs. '**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 you're in the **DANGER ZONE** if '**ATTACK**' **PRESSURES** are required for an **ESCAPE** or severe **BLOW-UP!**

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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!**

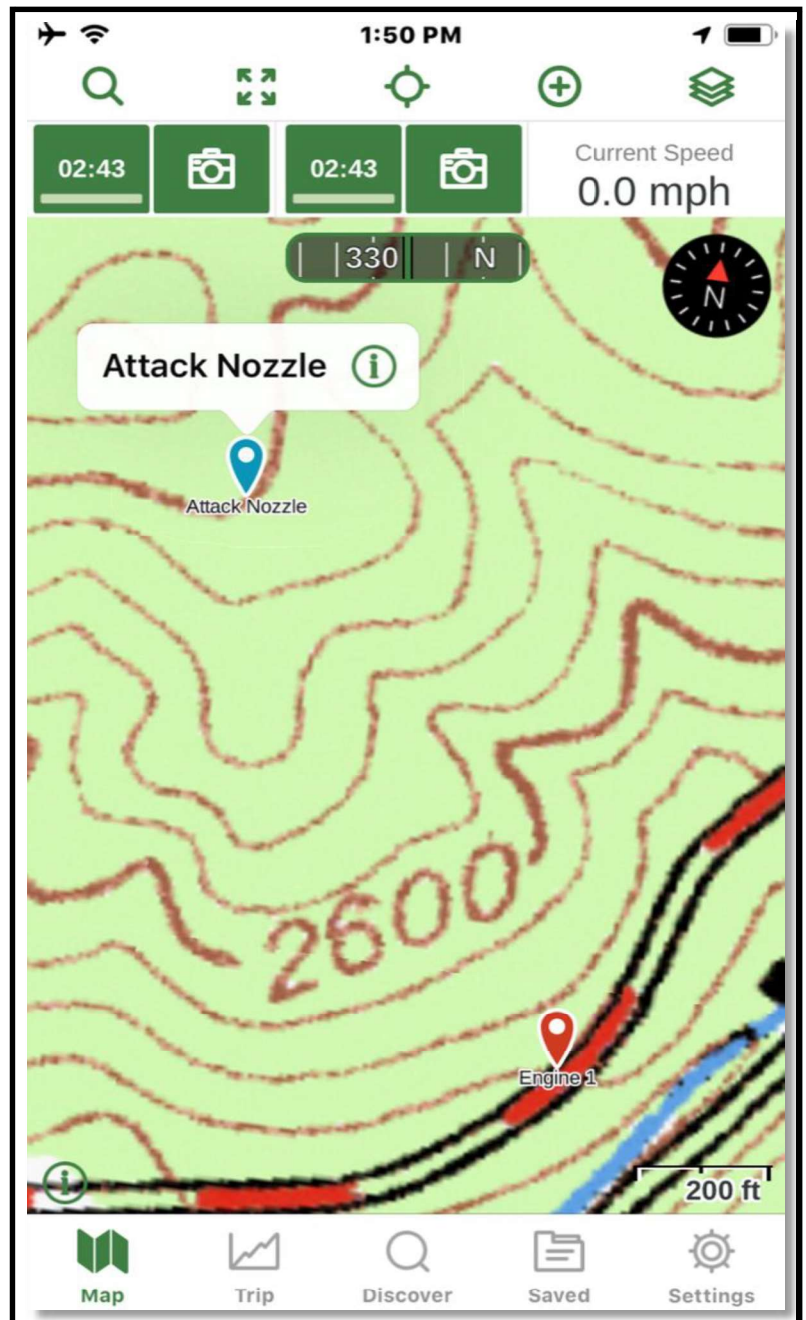
Upon extending **only** 100' from 900' feet to 1,000', **FL** increases by only 19.7 PSI or 6%...

BUT when extending only 100' from 1,000' to 1,100', and therefore **ADDING** a **FIFTH (5th)** lateral at 10 GPM, the **OVERALL FLOW** from the Engine to the first lateral **INCREASES** from 115 GPM to 125 GPM, **PLUS** the Friction Loss (FL) of each **AFFECTED** section thereafter, to cause FL to **INCREASE** a **FULL 90 PSI** at 28%! *The calculated evidenced **increase** in Friction Loss **SHALL NOT EVER be disregarded EVER** to ensure our highest priority: **FIREFIGHTER SAFETY!***

The **HEN-WAY** method, reduces the water flow (GPM) to supply the **ATTACK** nozzle and each Lateral thereafter by **one-half (1/2)**; upon squaring this fraction of **1/2 X 1/2 = 1/4**, Friction Loss in each **INDIVIDUALLY AFFECTED SECTION** is reduced by an **INCREDIBLE: 75% LESS FRICTION LOSS!!!**

Thus, a **75 GPM** /10 GPM hoselay limited to 600' (at 25% **MORE** flow and therefore **50% MORE "KNOCK-DOWN"** than 60 GPM) can be **SAFELY EXTENDED** an additional **500'** (83% further) to 1,100' ...and yet a **FULL 639'** higher (351' uphill vs. -288' downhill) to significantly **INCREASE FIREFIGHTER SAFETY!**

Not only can we then extend another 400' to 1,500' at 25 GPM (150% farther) on a 32% Grade and flow 75 GPM in short bursts (balloon effect), but we can isolate/deploy any portion of the "Supply Line" for a slop-over/escape at 75 GPM (close next gated-wye and ALL unnecessary laterals), **AND** meet the "**Holy Grail**" upon continuous resource 'Sit-Stat' simply by maintaining the same continuous communication with all personnel in the field.



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