

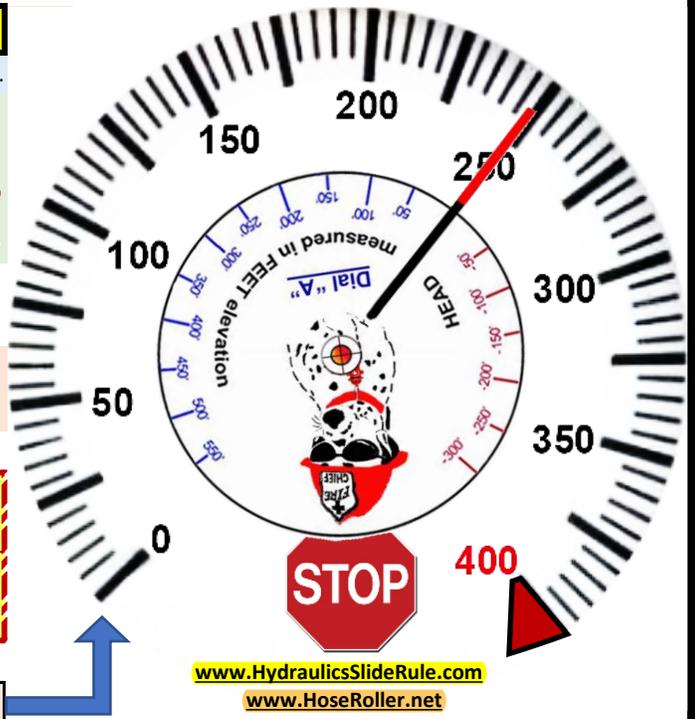
Length	1100	
Attack	60C	75C
Overhaul	10/23C	10/23C
Max HEAD	431	351
Max Grade	39%	32%
Max GPM	110	125
Max GPH	6600	7500
NAY' after		
Laterals	'(5th Lat.)'	
7		
6		
5	213	248
4	202	236
3	185	217
2	174	204
1	158	185
0	144	169

- Select** (insert) mode: **'ATTACK'** vs. **'OVERHAUL'**
- Pull** insert "OUT" to current Hoselay **Length** in feet.
- 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**.
- Again **rotate** DIAL "A" until **estimated (±) HEAD** (in FEET) lines up with **TOTAL of #3 (NP + FL)**
- Read** estimated **ENGINE PRESSURE (EP)** upon **RED NEEDLE** of Dial "A" on **'Fixed' GAUGE "B"**

Laterals Operating

5

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**; 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.	
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'
105	38.6	2.5	
105	38.6	2.5	
115	46.3	0	
115	46.3	0	
Total:			323 10
(+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.	
75	19.7	2.5	1,100'
85	25.3	2.5	1,000'
85	25.3	2.5	800'
95	31.6	2.5	600'
95	31.6	2.5	400'
105	38.6	2.5	200'
105	38.6	2.5	0'
115	46.3	0	
115	46.3	0	
Total:			413 12.5
(+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 -26%
Max. Length @ 32% Grd.:			600 Grd.

HEN-WAY			Length
GPM	FL	Lat.	
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	
73	18.4	0	
73	18.4	0	
Total:			135 12.5
(-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"

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)

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' 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 **OVERAL 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 'dual-hoselay' **HEN-WAY** method, reduces the **TOTAL** GPM to supply the **ATTACK** nozzle and each Lateral by **one-half (1/2)**; thus the square of the fraction (GPM/100) is **1/2 X 1/2 = 1/4**; Friction Loss in each **AFFECTED SECTION** is therefore reduced by an **INCREDIBLE:**

75% LESS FRICTION LOSS!!!

Thus, a **75 GPM /10 GPM** hoselay limited to 600' (at 25% **MORE** flow and therefore **56% 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 flowing **75 GPM in short bursts** (balloon effect), but we can also isolate (w/ hose clamps) and deploy/extend any portion of the '**Supply Line**' as we suspend the main 'Attack' nozzle and ALL unnecessary laterals to quickly **ATTACK** any '**ESCAPE**' at **FULL 75 GPM flow!** - **1,066% SAFER 'Knock-Down'** than any 10/23 GPM lateral! The "**Holy Grail**" of Wildland Firefighting is finally met upon confirmed personnel accountability and location; critical to estimate (+) or (-) **HEAD** that exponentially fulfills **PRIORITY ONE: PERSONNEL SAFETY!**



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