



PUMP OPERATIONS & HYDRAULIC REFERENCE

October 2023



200' PRE-CONNECT (FIRST)

- 200' 1 3/4" **yellow** Mercedes KrakenExo hose
- Elkhart XD 7/8" smooth bore
- NP = 50 psi
- GPM = 180
- **PDP = 100 psi**

200' PRE-CONNECT (SECOND)

- 200' 1 3/4" **blue** Mercedes KrakenExo hose
- Elkhart XD 7/8" smooth bore
- NP = 50 psi
- GPM = 180
- **PDP = 100 psi**

LEADER LINE (Primary / Left)

- 100' 1 3/4" **blue** Mercedes KrakenExo hose with reducer to 300' 2" Mercedes KrakenExo hose
- Elkhart XD 7/8" smooth bore
- NP = 50 psi
- GPM = 180
- 100' 1 3/4" + 100' 2": **PDP = 90**
- 100' 1 3/4" + 200' 2": **PDP = 100**
- 100' 1 3/4" + 300' 2": **PDP = 110**

LEADER LINE (Second / Right)

- 100' 1 3/4" hose (not blue) with reducer to 300' 2 1/2" hose
- TFT Dual-Force automatic nozzle in **low pressure** setting
- 100' 1 3/4" + 100' 2": **PDP = 90**
- 100' 1 3/4" + 200' 2": **PDP = 100**
- 100' 1 3/4" + 300' 2": **PDP = 110**

NP = nozzle pressure

PDP = pump discharge pressure

GPM = gallons per minute

STANDPIPE HIGH RISE

- Elkhart XD stacked 1" and 1 1/8" smooth-bore tip nozzle without pistol grip.
- Three (3) 50-foot lengths of 2" hose packaged in the Denver Load configuration with designated hose straps.
- NP = 50 psi
- 1" tip with 100' of 2" hose
 - GPM = 220
 - **Standpipe pressure gauge = 60 psi**
- 1" tip with 150' of 2" hose
 - GPM = 220
 - **Standpipe pressure gauge = 70 psi**
- 1 1/8" tip with 100' of 2" hose
 - GPM = 270
 - **Standpipe pressure gauge = 60 psi**
- 1 1/8" tip with 150' of 2" hose
 - GPM = 270
 - **Standpipe pressure gauge = 80 psi**

If the standpipe is supplied by a fire pump, allow hydrant pressure to charge the standpipe. The supply engine shall remain at idle and make adjustments as needed per the request of the Forward D/O.

If supplying a dry standpipe or one supplied by domestic water pressure, supply it at 100 psi plus elevation (5psi /floor) as a starting point and adjust as needed per the request of the Forward D/O.

AUTOMATIC SPRINKLER - FIRE DEPARTMENT CONNECTION

Automatic sprinkler systems (**not standpipe operations**) with 2 1/2" or 5" with (5psi /floor) **PDP = 150**

DECK GUN / MONITOR NOZZLE

- NP = 80 psi
- **PDP = 90 psi**
- Tip size & gpm flow at 80 psi
 - 1 3/8", 500 gpm
 - 1 1/2", 596 gpm
 - 1 3/4", 813 gpm
 - 2", 1063 gpm

This chart is for reference purposes only. Fires are dynamic and unique, and it is the responsibility of the driver / operator to determine safe and appropriate pump discharge pressures.



PUMP OPERATIONS & HYDRAULIC REFERENCE

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2½" SOLID STREAM ATTACK

- TFT stacked 1" and 1 1/8" smooth-bore tip nozzle without pistol grip attached to 400' 2½" in static load
- NP = 50 psi
- 1" tip with 200' of 2½"
 - GPM = 220
 - **PDP = 50 psi**
- 1 1/8" tip with 200' of 2½"
 - GPM = 265
 - **PDP = 50 psi**

TFT BLITZFIRE

- 1" smoothbore
- NP = 80 psi
- GPM = 266
- **PDP = 130 psi (350', 2 ½" hose)**

2½" FOG STREAM NOZZLE

- TFT Dual-Force automatic nozzle in **low pressure** setting
- NP = 55 psi
- GPM = 95 - 225
- **PDP = 90 psi (350', 2 ½" hose)**

BOOSTER REEL

- 200', 1" rubber hose on reel
- GPM = 40
- **PDP = 120 psi**

FOAM OPERATIONS

Hydrocarbons - Class B foam at 3%

- Gasoline, kerosene, diesel

Polar Solvents - Class B foam at 6%

- Alcohols, acids, ketones
- Pressure at educator must be 200 psi
- Consider using 2½" line with reducer to reach educator to achieve 200 psi with lower friction loss
- Length from educator to nozzle must not exceed 150'
- GPM setting of nozzle must equal that of educator

5" SUPPLY (1,000 GPM), 50 PSI

AT RECEIVING INTAKE

- | | |
|-----------------|------------------|
| • 100' | • 500' |
| • PDP=58 | • PDP=98 |
| • 200' | • 600' |
| • PDP=66 | • PDP=100 |
| • 300' | • 700' |
| • PDP=74 | • PDP=106 |
| • 400' | • 800' |
| • PDP=82 | • PDP=114 |

LADDER OPERATIONS

Smooth Bore Stacked Tip

- NP = 80 psi
- **PDP = 130 psi**
- Tip size & gpm flow at 80 psi
 - 2", 1,000 gpm
 - 2 ¼", 1,347 gpm
 - 2 ½", 1,665 gpm

FRICTION LOSS RULE OF THUMB

- 1¾" = 25 psi / 100' @ 175 gpm
- 2½" = 15 psi / 100' @ 250 gpm
- 4" = 20 psi / 100' @ 1,000 gpm
- 5" = 8 psi / 100' @ 1,000 gpm

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