



## “The Nozzle”

### Part II: The Fog / Constant Flow Nozzle

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In 1863 Doctor John Oyston was granted the 1<sup>st</sup> U.S. patent for a Fog Nozzle, thus starting the ever-continuing debate - Smooth Bore vs Fog Nozzle. Despite their long history, Fog Nozzles were virtually unknown through the first half of the 20<sup>th</sup> century. Then, in 1950 it all changed. Chief Lloyd Layman of Parkersburg, West Virginia presented a paper entitled “Little Drops of Water” at the Fire Department Instructors Conference (FDIC).\* This paper introduced a term called “indirect method of attack” to suppress interior building fires using the tremendous heat absorbing properties of expanding and condensing steam produced in great quantities by fog streams. As good as it may sound, this was not an instant success. The American Fire Service was still committed to the use of Solid Bore Nozzles for structural firefighting. It took several years of collecting data, testing, and demonstrating the theory of Fog Streams before it was an accepted tactic for the fire service.

All BCoFD Pierce Engine Companies are issued Elkhart XD Shutoffs (Break away) with Fog Nozzle as part of their “Attack Package” for the 1 3/4” handlines. (The bale is the same, it just has a Smooth Bore or Fog Nozzle)

- **Pierce Engines - Elkhart XD Shutoffs with Fixed Gallonge Fog Nozzle** = 175 GPM flow, Pumped at 50 PSI = 62 LBS of Nozzle Reaction



- **Rosenbauer Engines - Akron Brass Turbojet Adjustable Gallonge Fog Nozzles**
  - 95 GPM Pumped at 100 PSI = 47 LBS of Nozzle Reaction
  - 125 GPM Pumped at 100 PSI = 63 LBS of Nozzle Reaction
  - 150 GPM Pumped at 100 PSI = 75 LBS of Nozzle Reaction
  - 200 GPM Pumped at 100 PSI = 101 LBS of Nozzle Reaction



#### Pros

- Fog Nozzles have variable stream adjustments (Straight, Narrow, or Wide).
- Easy, more effective hydraulic ventilation.
- Reduce heat and provide protection.
- Provide a water curtain and vapor control capabilities.

#### Cons

- Fog Nozzles are easily clogged with debris.
- Do not provide a “solid” stream of water.
- Moving parts=increased maintenance
- Nozzle pattern and GPM can be adjusted accidentally without notice prior to operating.

The Fog Nozzle is an equally important tool in the engine company’s toolbox. All firefighters should know the pros, cons, and limitations of their equipment.

*\*Reference – Fire Engineering February 2000, Little Drops Of Water 50 years later by Andrew A Fredericks*