



NOZZLE SECTION INDEX

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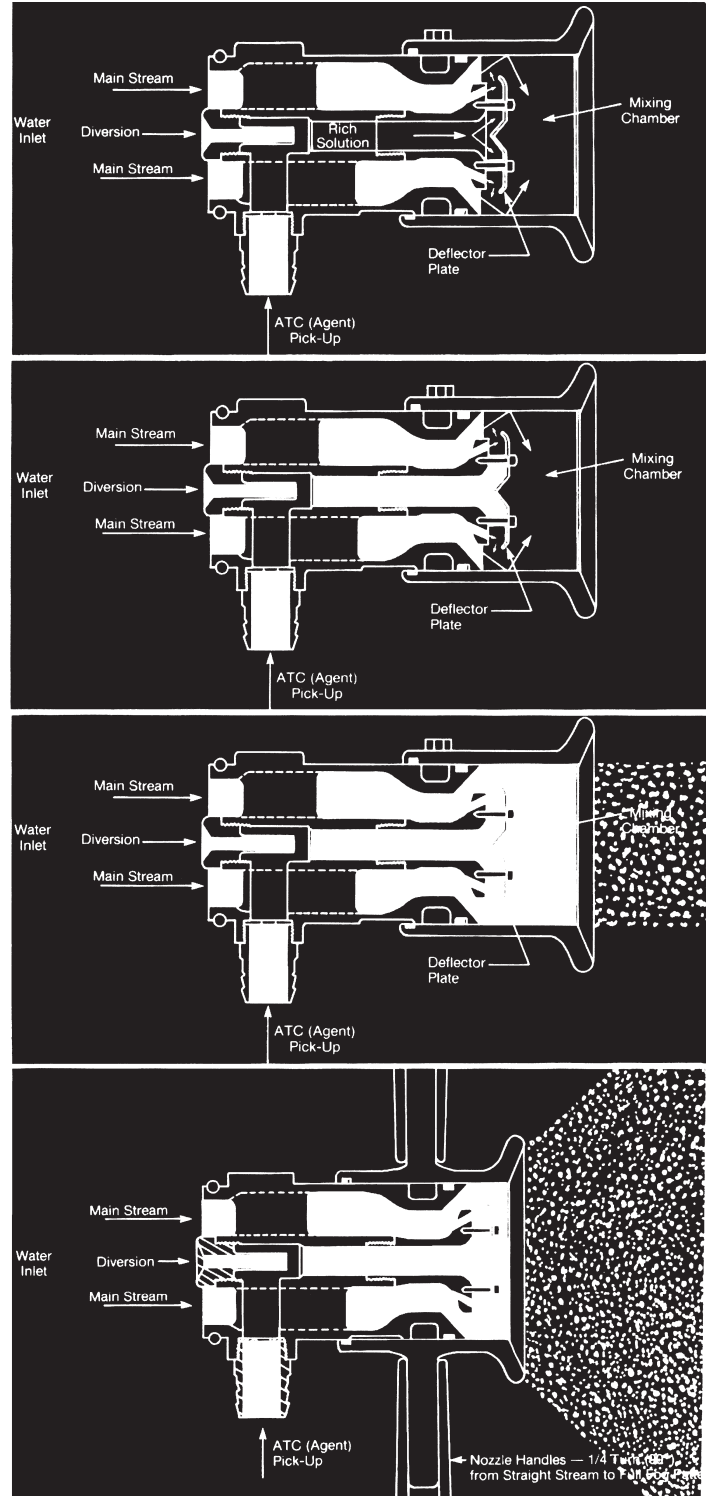


Hydro-Foam™ Technology

This proprietary and patented* method of foam proportioning and delivery is the cornerstone upon which our company has built its reputation. Hydro-Foam™ technology has been instrumental in Williams Fire & Hazard Control, Inc.'s® successful extinguishment of numerous large flammable liquid fires over the past several years. These incidents were handled successfully with minimum manpower and equipment, primarily because of the advantages of Hydro-Foam™ technology.

This all-hydraulic system dramatically simplifies the logistics of moving the high quantities of foam concentrate required to extinguish large flammable liquid fires. Utilizing a small amount of water, high efficiency venturi-type devices move the foam concentrate from a remote storage location to a matched Hydro-Foam™ nozzle, where it is proportioned and delivered to the fire.

Fundamental in design, equipment listed on the following pages utilizes Hydro-Foam™ technology which provides a simple, efficient, and accurate method of proportioning and delivering foam to the fire.



For US and Foreign Patent and Trademark information, please refer to page IP2



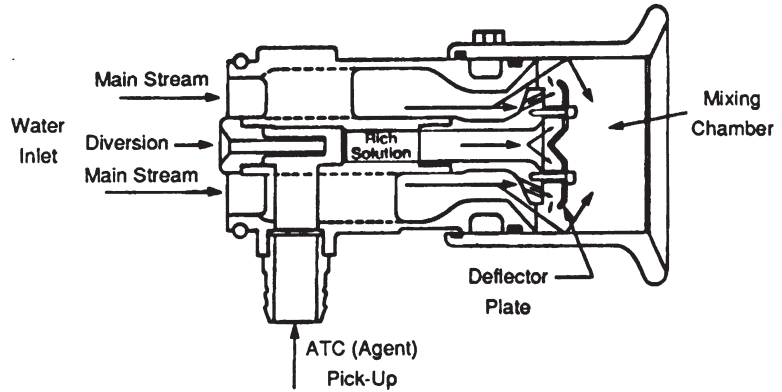
Hydro-Foam™ Technology

Hydro-Foam™ Technology

Overview

Proven Technology

The key role of high-volume foam delivery devices is to reliably produce optimum-quality firefighting foam, and deliver an effective amount to the fire for the time period needed to achieve extinguishment. Hydro-Foam's™ proven technology is based on efficient, all-hydraulic, self educting, non-aspirating nozzle design and has several distinct advantages.

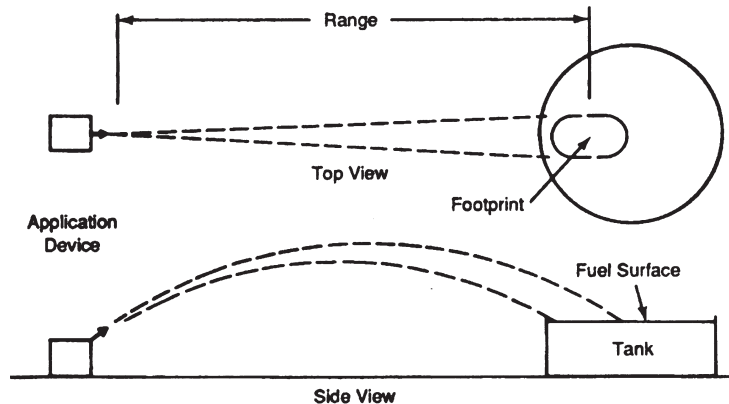


Simplicity, Reliability, and Efficiency of Operation

Delivery devices with an all-hydraulic design are simple and reliable because they do not have any moving parts. When supplied with adequate water pressure and volume, they work.

An efficient self-proportioning design allows the full energy of the available water power to be used to produce a foam stream with greater range. This design relies on the ease with which the synthetic multi-purpose ThunderStorm® ATC Foam Concentrates (which are approved for the delivery devices) can be proportioned.

Because less energy is needed to proportion the foam concentrate with water, the devices can operate effectively at nozzle pressures of (100 psi) 6.9 bar or less. An efficient foam-making process is one that effectively throws foam nearly as far as water. This means that the nozzle can be located farther from the fire and still be effective.



For US and Foreign Patent and Trademark information, please refer to page IP2



Hydro-Foam™ Technology

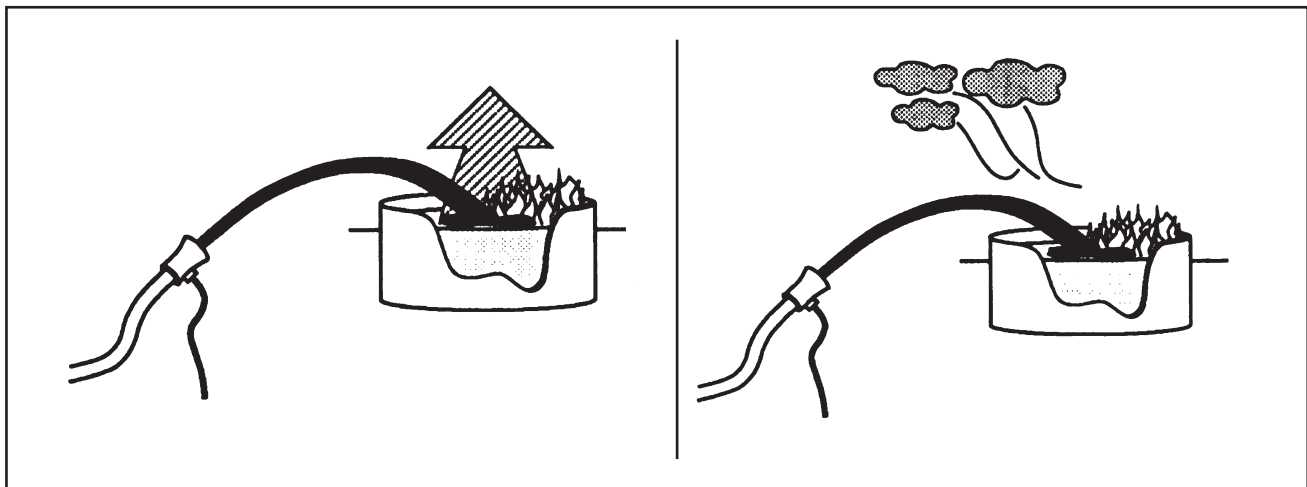
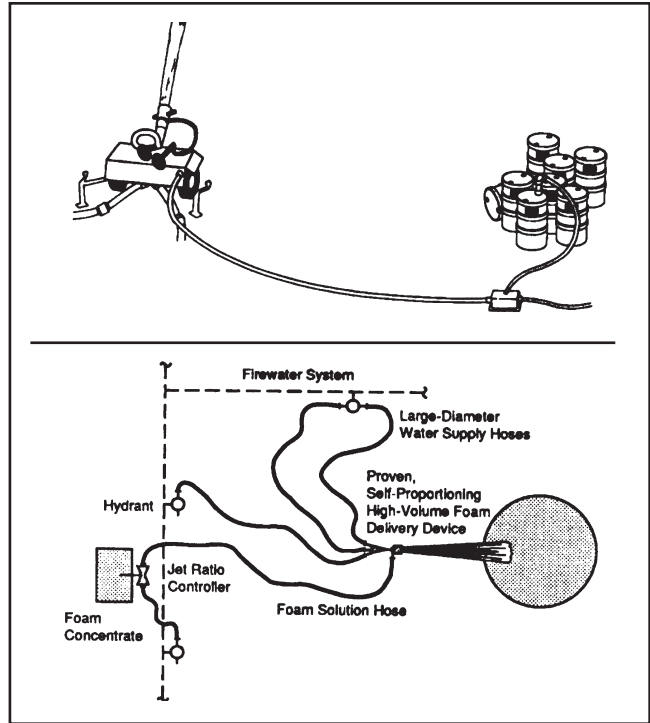
Simplified Logistics

Hydro-Foam™ delivery devices simplify fire ground logistics. Self-Educting nozzles operate in conjunction with special venturi-type devices (Jet Ratio Controllers) that move large quantities of foam concentrate from remote storage locations. With Hydro-Foam™ technology, the same firewater system is used to supply both water and foam concentrate to the nozzle. This eliminates the need for more elaborate foam concentrate proportioning and delivery systems which are susceptible to failure.

High-Quality Foam Stream

With the non-aspirating design, less air is entrained into the foam solution producing a “dense” bubble as it travels through the air toward the fire. This produces high quality foam that is expanded in the optimum range of 3:1 to 5:1. This expansion results in a foam stream that is able to combat atmospheric winds and penetrate the strong thermal updrafts present in large-scale storage tank fires.

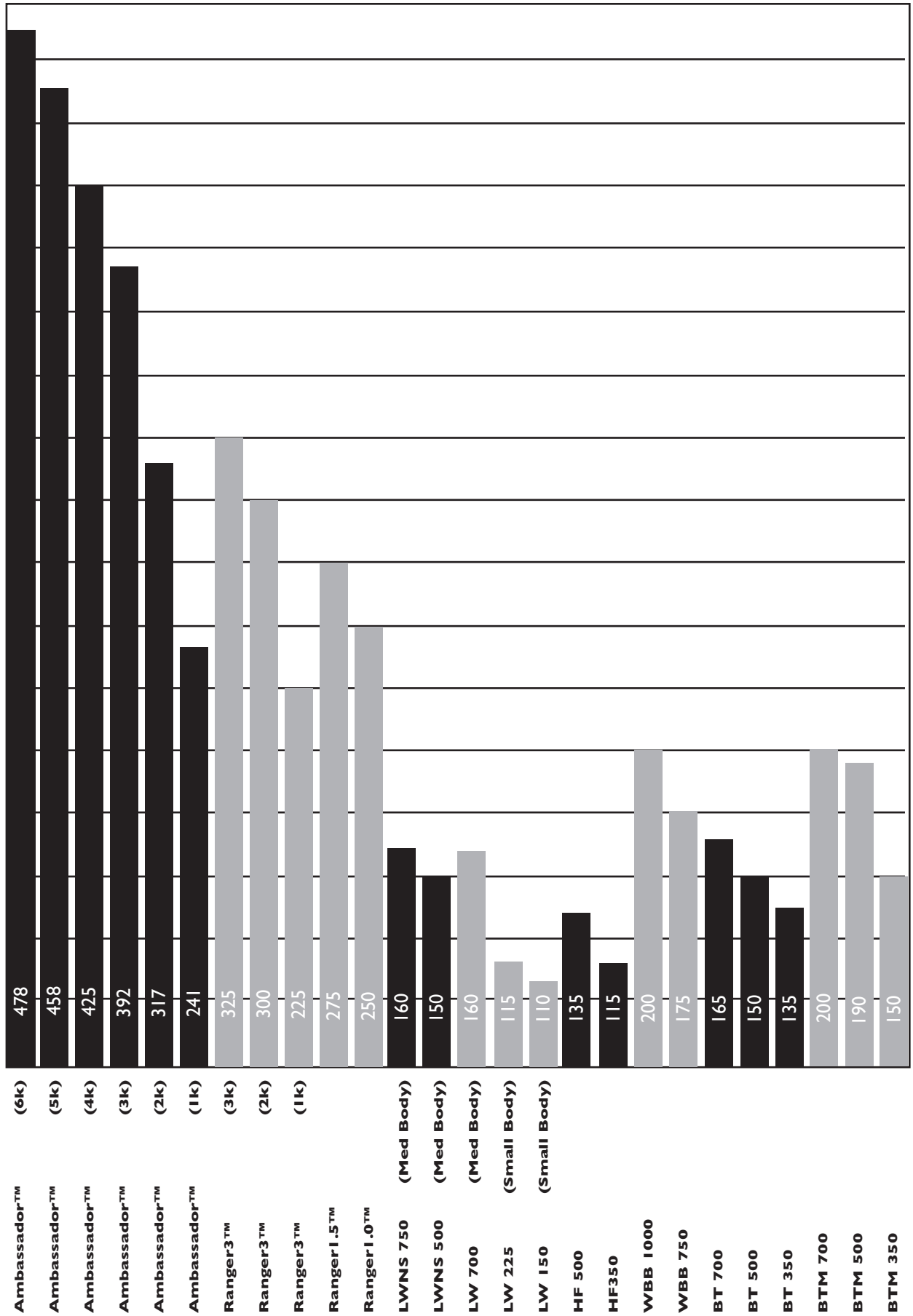
A high-quality stream is one in which at least 80 percent of the stream flow from the nozzle lands on the flammable liquid within a well defined, compact elliptical area (Footprint™).



For US and Foreign Patent and Trademark information, please refer to page IP2.



Williams Fire & Hazard Control, Inc.[®] — Nozzle Ranges



RANGE IN FEET — Nozzle Pressure at 100 PSI



Ranger3™ Nozzle

Product:

Ranger3™ Monitor/Nozzle

The Ranger3™, featuring “Smart Nozzle” Technology, was designed for today’s Industrial fire fighting and protection needs. Hazards involving flammable liquids in storage and liquids under pressure have met their match with the New Millennium Equipment from Williams Fire & Hazard Control, Inc.®.

The Ranger3™ nozzle combination is capable of not only self-educing foam concentrate, but can do so while maintaining a nearly constant pressure (+/-10%) and a constant foam percentage (1% or 3% selectable) regardless of the flow rate. Discharge flow rates from 1000-3000 USGPM (3800-11356 LPM) can be water only, Hydro-Foam™ (using jet pumps or automatic constant/selectable metering) or Hydro-Chem™ for extinguishing liquids and gases under pressure.



Advancing the Fire Fighter’s Ability with Equipment and Knowledge.

This “Hybrid” nozzle has the unique capability to perform as an automatic pressure or fixed gallonage nozzle. During automatic operation the nozzle will respond to varying flows to maintain a nearly constant tip pressure, thus maximizing effective range for a given discharge flow. Once the nozzle reaches the fixed gallonage set point (1000-3000 GPM), it performs as a conventional fixed gallonage nozzle. This is desirable for foam proportioning operations on storage tank fires or other hazards requiring specific application rates. This nozzle is capable of Hydro-Foam™ proportioning at rates up to 3000 GPM @ 3%. It can automatically maintain a nearly constant foam percentage (1% or 3%) throughout the entire flow range while self-educing. It can optionally be configured to proportion foam from remote locations using jet pump technology (thus forfeiting the constant/selectable metering feature). The extensive Ranger3™ options list allows this nozzle to be Hydro-Chem™ capable (without Hydro-Foam™ capability) with PKW™ flow rates from 25 lbs/s to 50 lbs/s. Pattern control from straight stream to full fog is accomplished via a full wrap-around handle attached to the outer sleeve.

*See Williams’ Nozzle Range Chart on page D5

Standard Features List:

Dual Mode Automatic/Fixed Operation
 Fixed Gallonage plugs: 1K, 2K, 3K
 Hydro-Foam™ Constant/Selectable
 1% or 3% Nozzle
 Wrap-around handle design for pattern control

Options:

Hydro-Chem™ Tip conversion
 Choke tubes (25 and 50 lbs/s)
 Dry chemical manifolds (4 inlet or 7 inlet)
 1.5JP30 Jet Pump w/stinger (one)
 2.0JP60 Jet Pump w/stinger (one)
 2.5" x 10" Dry Chemical Hose
 3-2.5" FNST x 3.0" MNPSH Siamese
 (Jet to Monitor Supply)
 1-2.5" FNST x 3-1.5" MNST Wye
 (Jet Pump Supply)

For US and Foreign Patent and Trademark information, please refer to page IP2



Hydro-Foam™ Nozzles

Product:

Ranger Lightning

Description:

Ranger Lightning is the latest in a series of innovative lightweight Hydro-Foam™, self-contained foam systems as defined by NFPA standard 1901, Section A-8-3.22.

This rugged design is the first in a series of master stream nozzles to feature Williams Fire & Hazard Control's Armor-Lyte™ construction.

Armor-Lyte™ is a composite of lightweight, non-corrosive materials that provide years of trouble-free service.

Features

- Self-educts foam concentrate directly from an atmospheric source.
- Selectable gallonage with matched foam proportioning of 1% and 3% at 350, 500, or 750 gpm at 100 psi operating pressure.
- Flush setting as recommended per NFPA 1964.
- Change flow rate, proportion rate, or flush without the need to shutdown.
- Positive lock feature for rate selection!
- Self-contained internal stream straightener to maximize range!
- T-handle for pattern control for full fog to straight stream.
- Complete unit weighs only 6 lbs!
- 1.00" MNPT foam inlet port.
- 2.50" FNST Swivel inlet connection.

Options

- Available in Hydro-Chem and Master Stream (water only) versions.
- Actuated pattern control in 12vdc, 24vdc, pneumatic, or hydraulic.
- Nickel-plated brass swivel inlet.
- Nozzles available at: .5% & 1% proportioning selections

Special inlet threads available upon request



Inlet view



Selectable gallonage with matched foam proportioning of 1% and 3%



Hydro-Foam™ Nozzles

Product:

HF Ranger™ “Select” - Automatic/Constant Metering

Foam Nozzle —1.0, 1.5, 2.0

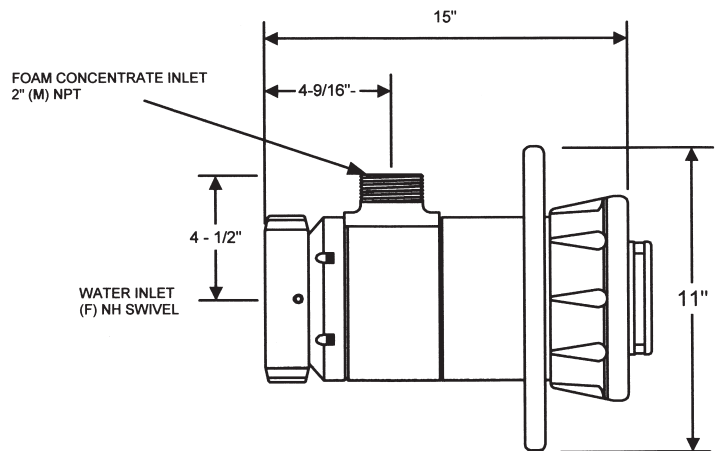
Description:

Introducing the most advanced foam fire fighting nozzle ever made! The Hydro-Foam™ Ranger™ “Select” Nozzle combines the effective range of an automatic nozzle, while incorporating the exclusive combination of self educting/selectable “constant metering” foam proportioning. It is capable of accurate foam proportioning (Selectable 1% or 3%) over a broad range of flows (250 - 2000 gpm), while maintaining automatic control of tip pressure (100 psi +/- 10%) over the entire flow range. This constant nozzle pressure capability maximizes the effective discharge reach for any given flow. The discharge pattern is adjustable from full fog to straight stream. Constructed of anodized aluminum with “wrap around” control handle and protective rubber bumper. Water inlet is available in nickel plated brass as an option. Manually operated nozzle is available with automatic controls: 12v; 24v; or hydraulic.



Options:

- 2.5” or 3.5” swivel
- Nickel plated brass swivel
- 12v, 24v or hydraulic pattern activation



Model Ranger™ Hydro-Foam™	Ranger™ HFR 1.0 M 2.5*	Ranger™ HFR 1.5 M 3.5*	Ranger™ HFR 2.0 M 3.5*	
Water Inlet *	2.5" (F) NH Swivel	3.5" (F) NH Swivel	3.5" (F) NH Swivel	
Foam Concentrate Inlet *	1.50 M/NPT w/1.5" x 8' Flexible Pickup Hose & 1.5" Rigid PVC Drum "Stinger"	2.00 (M) NPT w/2" x 8' Flexible Pickup Hose & 1.5" Rigid PVC Drum "Stinger"	2.00 (M) NPT w/2" x 8' Flexible Pickup Hose & 1.5" Rigid PVC Drum "Stinger"	
Foam/Water Flow (@ 100 psi)	250-1000 gpm	250-1500 gpm	250-2000 gpm	250-1500 gpm
Proportioning (Selectable)	1% or 3%	1% or 3%	1%	3% †
Application	Class "B" Liquid Fires			

*Refer to page D15 for complete part# and ordering information

† Use of jet pump will attain 2,000 gpm at 3%

For US and Foreign Patent and Trademark information, please refer to page IP2



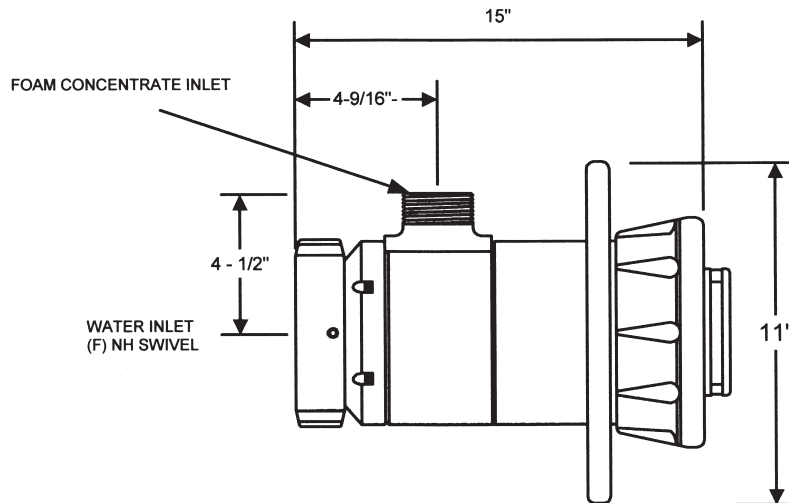
Hydro-Foam™ Nozzles

Product:

Constant Flow Ranger™ 750, 1000, 1250 & 1500 GPM

Description:

Water powered nozzle system that proportions and delivers either water or foam to the hazard area. Fully adjustable from straight stream to full fog. Constructed of hard anodized aluminum alloy with stainless steel trim. Water inlet is available in nickel plated brass as an option. Nozzle is supplied with flexible 8 ft. pick-up hose with 1.5" rigid pvc drum "stinger". Built in select feature provides proportioning at either 1% or 3%. Fixed foam proportioning may be proportioned directly from atmospheric source. Manually operated nozzle is also available with automatic controls: 12v; 24v; or hydraulic. Optional "Jet Pump" is available for remote proportioning.



	Fixed Ranger™ 750	Fixed Ranger™ 1000	Fixed Ranger™ 1250	Fixed Ranger™ 1500
Nominal Flow @ 100psi	750 gpm	1000 gpm	1250 gpm	1500 gpm
K-Factor	75	100	125	150
Nominal Range @ 100psi (straight stream)	215 ft.	250 ft.	260 ft.	275 ft.
Water inlet standard	2.5"NH (F)	2.5"NH (F)	3.5"NH (F)	3.5"NH (F)
Concentrate Inlet	1.5" NPT(M)	1.5" NPT(M)	2" NPT(M)	2" NPT(M)
Proportioning without jet	1% / 3%	1% / 3%	1% / 3%	1% / 3%

For US and Foreign Patent and Trademark information, please refer to page IP2



Monitor Foam Nozzles, Air Aspirating

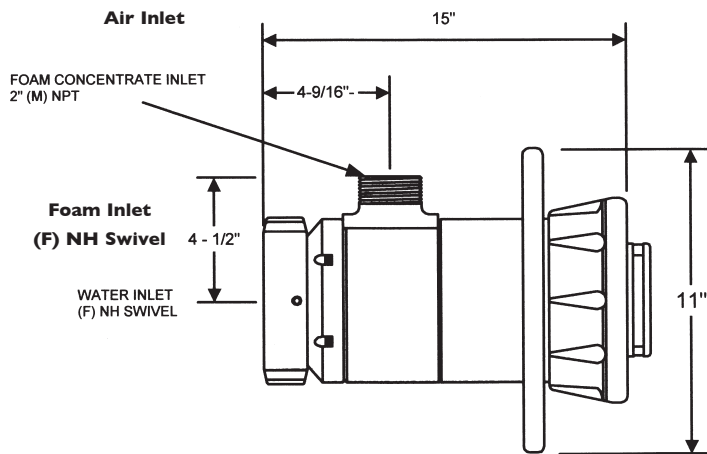
Product:

Hydro-Air Foam Monitor Nozzles

Medium (Not shown) & Big Body

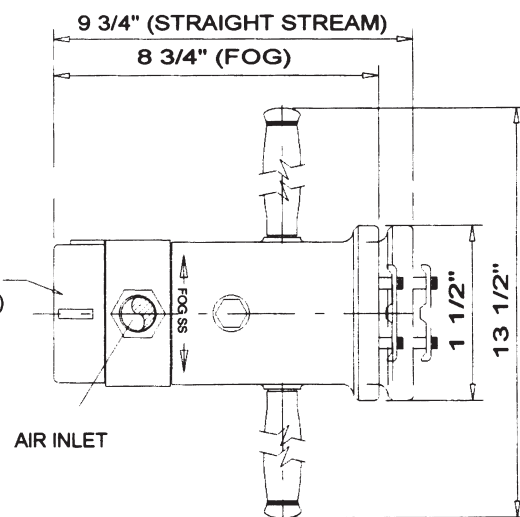
Description:

Exclusive super-compact, air aspirating foam nozzle with adjustable stream from full fog to straight stream! Has the appearance of a standard fog/straight stream monitor nozzle, yet the "Hydro-Air" venturi provides foam expansion ratios of up to 6:1 by actually inducting air into the center of the master stream. Medium Body Nozzles are available in lightweight anodized aluminum. Standard flow rates from 350 to 1500 gpm at 100 psi. As an option, nozzles can be factory modified to flow from 200 to 1500 gpm at specific inlet pressures.



**Big Body "Ranger™"
Hydro-Air Nozzle
750-1500 GPM**

**MEDIUM BODY
HYDRO-AIR NOZZLE
350 - 700 GPM**



	Medium Body HA-350	Medium Body HA-500	Medium Body HA-700	Big Body HA-1000*	Big Body HA-1250	Big Body HA-1500*
Flow @100 psi	350	500	700	1,000	1,250	1,500
Standard inlet	2.5"NH(F)	2.5"NH(F)	2.5"NH(F)	2.5" or 3.5"	2.5" or 3.5"	2.5" or 3.5"
Material	Brass	Brass	Brass	Aluminum	Aluminum	Aluminum

***Refer to page D15 for complete part# and ordering information**

For US and Foreign Patent and Trademark information, please refer to page IP



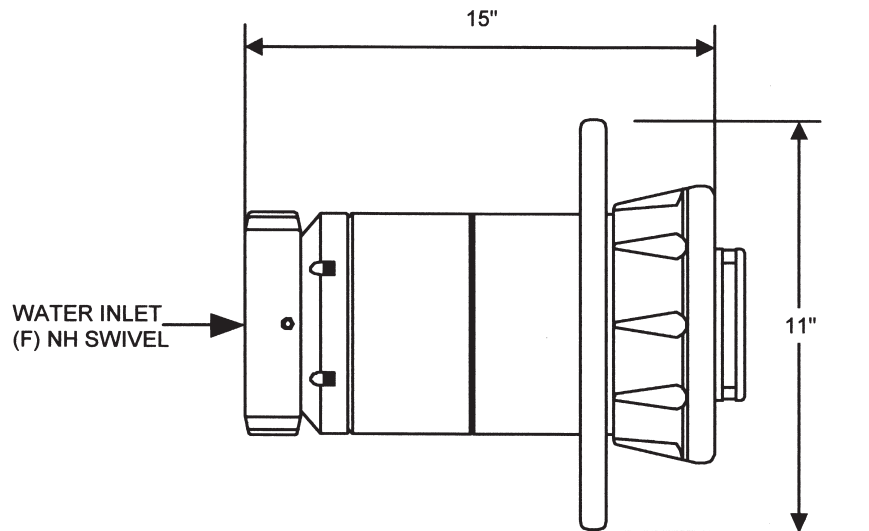
Monitor Nozzles

Product:

Ranger™ Automatic - Master Stream Nozzle

Description:

The Ranger™ Automatic Master Stream Nozzle is made for use on monitors, ladder pipes, deluge guns and aerial platforms. This nozzle's uniquely-designed constant-pressure feature assures maximum effective reach for either water or foam/water solution. The tip pressure is automatically controlled to maintain a constant pressure (100 psi +/- 10%) over the nozzle flow range, which is from 250 gpm to 1,500 gpm. (Other maximum flow stops available). The nozzle pattern is adjustable from full fog to straight stream. Constructed of anodized aluminum with exclusive "wrap-around" control handle and protective bumper. Water/foam solution inlet is available in nickel plated brass as an option. Nozzle is used in conjunction with an independent foam proportioning system when applicable. Manually operated nozzle is also available with automatic controls: 12v; 24v; or hydraulic.



Model	Nozzle Pattern Control	Solution Inlet*	Solution Rate (GPM)	Material of Construction
MSRI.O M 2.5	Manual	2.5"	250-1,000	Anodized Alum.
MSRI.5 M 3.5	Manual	3.5"	250-1,500	Anodized Alum.
MSRI.O A 2.5	12 vdc electric	2.5"	250-1,000	Anodized Alum.
MSRI.5 A 3.5	12 vdc electric	3.5"	250-1,500	Anodized Alum.
MSRI.O B 2.5	24 vdc electric	2.5"	250-1,000	Anodized Alum.
MSRI.5 B 3.5	24 vdc electric	3.5"	250-1,500	Anodized Alum.
MSRI.O H 2.5	Hydraulic	2.5"	250-1,000	Anodized Alum.
MSRI.5 H 3.5	Hydraulic	3.5"	250-1,500	Anodized Alum.

For US and Foreign Patent and Trademark information, please refer to page IP2

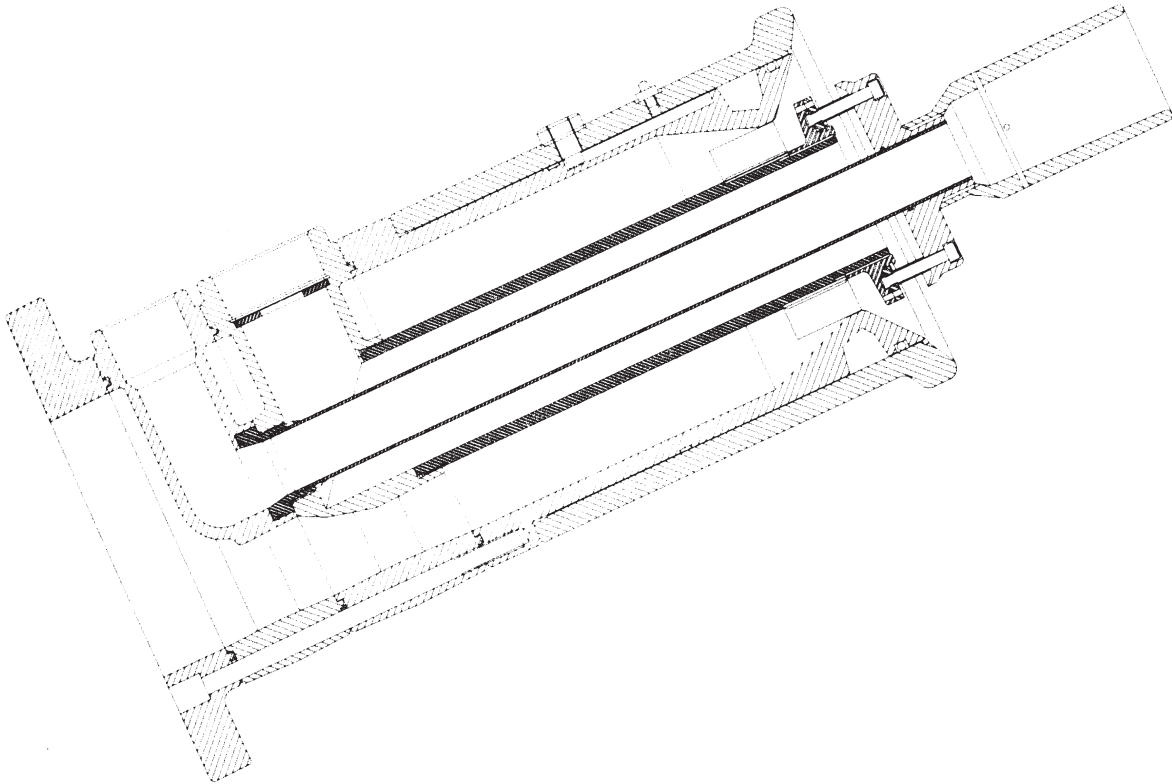


Hydro-Chem™ Technology

The most effective method for extinguishing large pressure and flowing fuel fires.*

By using foam solution as the means to propel, Hydro-Chem™ Systems project dry chemical approximately three to four times farther than that of conventional dry chemical equipment. Hydro-Chem™ technology gives the firefighter a safer and more efficient integrated system of delivering dry chemical onto large pressure and flowing fuel fires.

In operation, ground fires are extinguished using foam only. The foam solution applied then “ties-up” or harnesses the three dimensional fire, greatly reducing flame intensity. After this reduction in heat, dry chemical is then injected into the foam stream, resulting in a more proficient extinguishment of the fire. Each system is used in conjunction with customer-provided dry chemical storage equipment.



***Not normally intended for use on liquefied petroleum gas fires.**



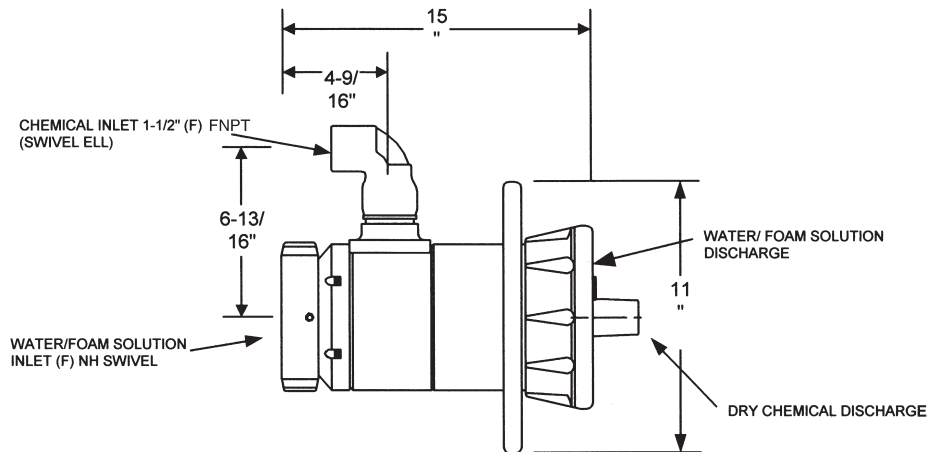
Hydro-Chem™ Nozzle

Product:

HC Ranger™-Automatic Hydro-Chem™ Nozzle

Description:

The Hydro-Chem™ Ranger™ Nozzle combines the effective range of an automatic nozzle, while incorporating the dry chemical/foam solution delivery capabilities of Hydro-Chem™ Technology. Designed to extinguish three dimensional and oxygenated fuel fires. This unique nozzle projects dry chemical (@ 20 lbs./sec.) through the center of the foam/water stream, resulting in an effective range not possible with conventional dry chemical equipment. The constant pressure feature assures maximum effective reach of the foam/water solution. The tip pressure is automatically controlled to maintain a constant pressure (100 psi +/- 10%) over the nozzle flow range, which is from 250 gpm to 1,500 gpm. The discharge pattern is adjustable from full fog to straight stream. Constructed of anodized aluminum, with "wrap-around" control handle and protective rubber bumper. Foam solution/water inlet is available in nickel plated brass as an option. Nozzle is used in conjunction with an independent foam proportioning and dry chemical delivery system.



Basic Model# *	Nozzle Pattern Control	Water Solution Inlet*	Solution Rate (GPM)	Material of Construction
HCRI.0 M 2.5	Manual	2.5"	250-1,000	Anodized Alum.
HCRI.5 M 3.5	Manual	3.5"	250-1,500	Anodized Alum.
HCRI.0 A 2.5	12 vdc electric	2.5"	250-1,000	Anodized Alum.
HCRI.5 A 3.5	12 vdc electric	3.5"	250-1,500	Anodized Alum.
HCRI.0 B 2.5	24 vdc electric	2.5"	250-1,000	Anodized Alum.
HCRI.5 B 3.5	24 vdc electric	3.5"	250-1,500	Anodized Alum.
HCRI.0 H 2.5	Hydraulic	2.5"	250-1,000	Anodized Alum.
HCRI.5 H 3.5	Hydraulic	3.5"	250-1,500	Anodized Alum.

***Refer to page D15 for complete part# and ordering information**

For US and Foreign Patent and Trademark information, please refer to page IP2



Hydro-Chem™ Nozzles

Product:

Handgun Hydro-Chem™ Variable Flow Nozzle

Description:

Dual-agent pistol grip handline nozzle incorporates a foam solution or water application with simultaneous Hydro-Chem™ Technology which projects dry chemical through the center of the foam/water stream to achieve ranges not possible with conventional equipment. Used in conjunction with a separate foam proportioning system.

The foam/water stream is adjustable from full fog to straight stream. Collar mounted ring adjustment allows quick selection of 60, 95 or 125 gpm flow rates — also features a flush setting. The nozzle features separate flow valves for water/foam and dry chemical operations. Constructed of hard anodized aluminum alloy. Total nozzle weight 7 lbs.

Options Include:

Three inlet valved dry chemical inlet manifold (not shown); flat lay dry chemical inlet hose, 1.5" x 50', coupled 1.5 (M) NH; "cross-over" adapter (for Ansul 350 lb wheeled unit) 1.25" (F) NPSH X 1.5" (M) NH



Part #	HCHG-S
Water/Foam Flow	60, 95, 125 gpm
Dry Chemical Flow*	5, 7.5, 10 lbs / sec
Water/Foam Solution Inlet NH (F)	1.5" Swivel NH (F)
Dry Chemical Inlet	1.5" Swivel NH (F)

NOTE: 1.0" NH (F) Swivel connections also available for water/foam and dry chemical

* **Varies depending on dry chemical delivery system and length of hose lay**

For US and Foreign Patent and Trademark information, please refer to page IP2



Ranger™ AUTOMATIC NOZZLE HF / HC / MS PART NUMBERING SYSTEM

		R	-	-	-	-
VERSION:						
—	HF - Hydro-Foam™					
—	HC - Hydro-Chem™ (1.5" (F)NPT CHEMICAL INLET STD.)					
—	MS - MASTER STREAM					
FLOW RANGE:						
—	1.0 250-1000 USGPM - Automatic					
—	1.5 250-1500 USGPM - Automatic					
—	X Special - Fixed Flow or Automatic (Requires Engineering Approval - Specify As Option)					
PROPORTIONING METHOD:						
—	N None (Required for HC & MS Versions)					
—	F Fixed Rate (HF Only)					
—	S Selectable Rate (HF Only)					
—	J Jet Pump (HF Only - Requires Engineering Approval - Limited to 750 GPM for 3% Proportioning)					
PROPORTIONING RATE:						
—	0 None (Required for HC & MS Versions)					
—	.5 .5% (Fixed Only) (1" MNPT Foam Inlet Std)					
—	1 1% (Fixed), .5% (Selectable) (1.5" MNPT Foam Inlet Std)					
—	3 3% (Fixed), 1-3% (Selectable) (2" MNPT Foam Inlet Std)					
—	X Special (Requires Engineering Approval)					
PATTERN CONTROL:						
—	M Manual					
—	A 12VDC Actuated					
—	B 24VDC Actuated					
—	H Hydraulic					
—	X Special					
INLET CONNECTIONS:						
—	2.5 2.5" FNST (Standard on 1.0 Flow Range)					
—	3.5 3.5" FNST (Standard on 1.5 Flow Range)					
—	64 64MM (2.5") FBSP					
—	89 89MM (3.5") FBSP					
—	X Special (Requires Engineering Approval)					
OPTIONS:						
—	0 None					
—	1 90° Swivel w/1.5" FNPT Foam/Chemical Inlet Port (Not recommended for HF1.5)					
—	2 90° Swivel w/1.5" FNST Swivel Foam/Chemical Inlet Port (Not recommended for HF1.5)					
—	3 Nickel Plated Brass Inlet Nut in Lieu of Standard Anodized Aluminum					
—	4 Straight 1.5" FNST Swivel Foam/Chemical Inlet Port (Not recommended for HF1.5)					
—	5 Straight 1.5" FNPT Rigid Foam/Chemical Inlet Port (Standard on HC - Not recommended for HF1.5)					
—	6 Male Cam-Lock Foam/Chemical Inlet Port (Same as Standard Size for Nozzle Configuration)					
—	7 Manual ON/OFF 1-3% Metering Valve					
—	A Automatic w/Maximum Flow Stop (Requires Engineering Approval)					
—	F Fixed Flow Maximum Stop Non-Automatic (Requires Engineering Approval)					
—	X Special (Requires Engineering Approval)					
NOTE:						
All "X" Selections Require Engineering Approval Prior to Ordering — A Detailed Description Must be Provided When Placing Order						



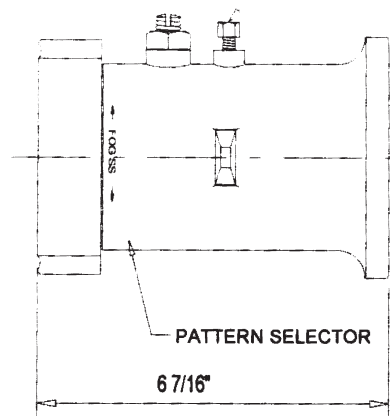
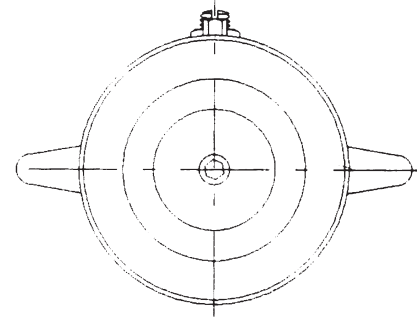
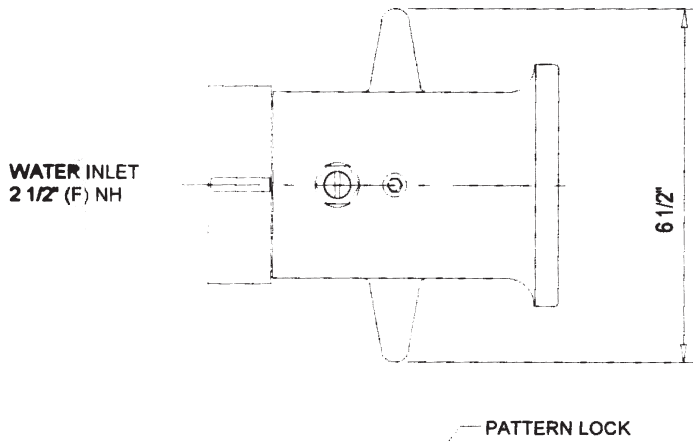
Monitor Nozzles

Product:

Monitor Nozzle - "BTM" Series

Description:

Standard industrial grade master stream nozzle. Fully adjustable from straight stream to full fog. Cast brass construction. Standard flow rates of 350, 500, and 700 gpm at 100 psi nozzle pressure. As an option, nozzle can be factory modified to any flow between 100 to 700 gpm at 100 psi (i.e. any K Factor between 10 and 70). Abbreviated style cast control handles. Standard jam nut locks foam or water stream at desired pattern. 2.5" NH (F) rigid inlet.



Model	Flow @ 100 psi	K-Factor	Inlet	Range Straight Stream	Material
BTM-350	350	35	2.5" NH (F)	150 ft.	Cast Brass
BTM-500	500	50	2.5" NH (F)	190 ft.	Cast Brass
BTM-700	700	70	2.5" NH (F)	200 ft.	Cast Brass



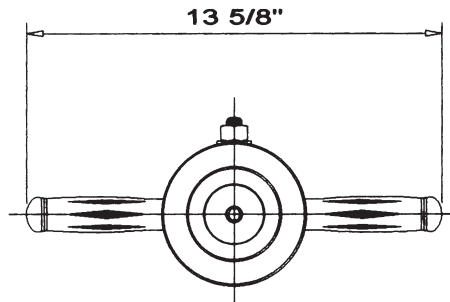
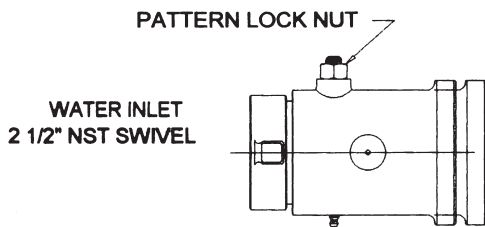
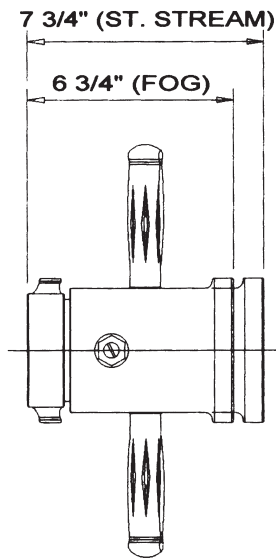
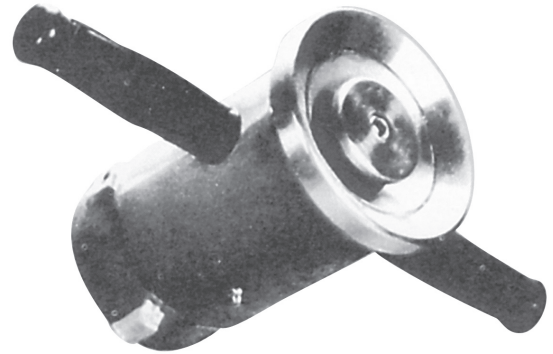
Monitor Nozzles

Product:

Premium Monitor Nozzle - "Big Tee"

Description:

Premium grade industrial master stream nozzle with exclusive "flush" feature. In flush position, nozzle will purge particulates up to .25" diameter. Fully adjustable from straight stream to full fog. Large composite rubber covered brass handles for positive stream control. All brass construction. Standard flow rates are 350 and 500 at 100 psi nozzle pressure.



Model	Flow @100 psi	K-Factor	Inlet	Range Straight Stream	Material
BT-350	350 gpm	35	2.5" NH (F) Swivel	135 ft.	Cast Brass
BT-500	500 gpm	50	2.5" NH (F) Swivel	150 ft.	Cast Brass



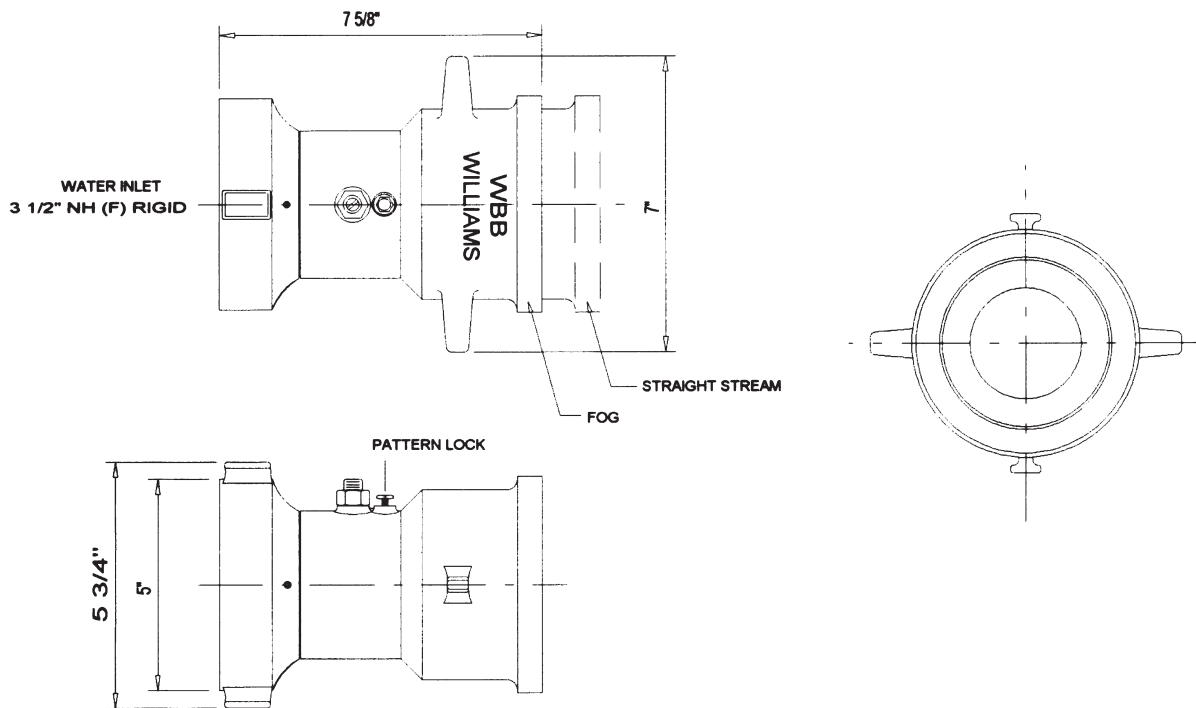
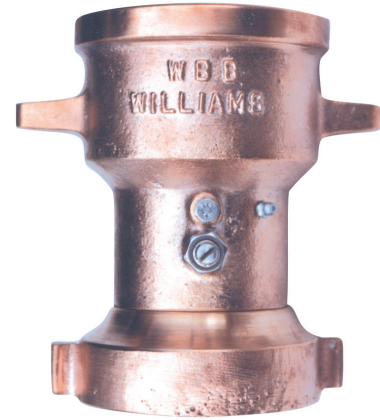
Monitor Nozzles

Product:

High Volume Monitor Nozzle - WBB "Big Boy"

Description:

High-volume, industrial-grade, master stream nozzle. Fully adjustable from straight stream to full fog. Cast brass construction. Standard flow rates of 750, and 1000 gpm at 100 psi. Abbreviated style cast control handles. Standard jam nut locks foam or water stream at desired pattern. Available with either 2.5" or 3.5" NH (F) inlet.



Model	Flow @100 psi	K-Factor	Inlet(s)	Range Straight Stream	Material
WBB-750	750 gpm	75	2.5" / 3.5" NH (F)	175 ft.	Cast Brass
WBB-1000	1000 gpm	100	2.5" / 3.5" NH (F)	200 ft.	Cast Brass



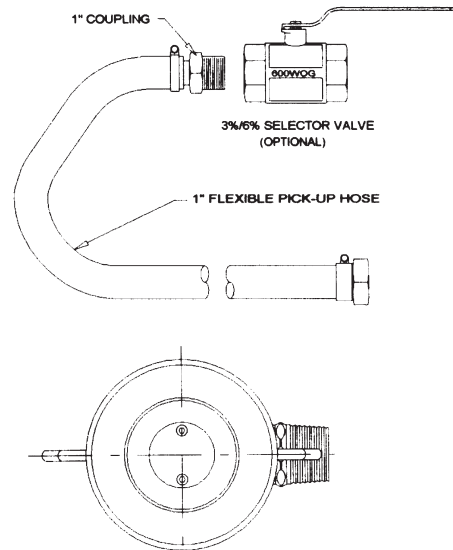
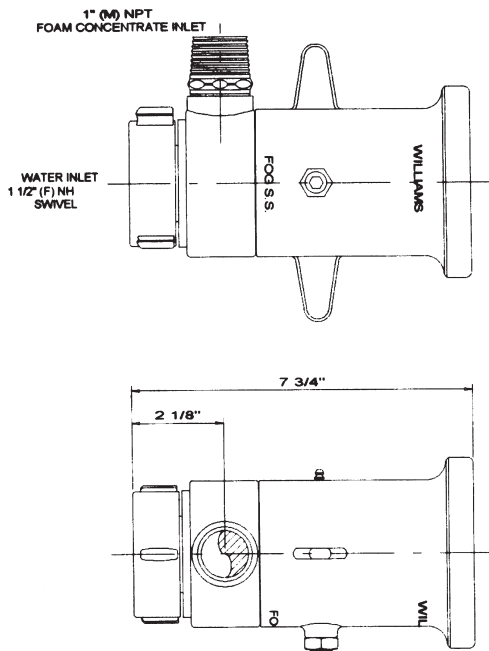
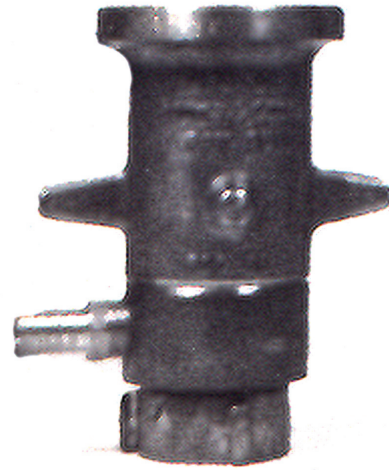
Hydro-Foam™ Nozzles

Product:

Hydro-Foam™ Monitor Nozzles — Small Body LW Series

Description:

Patented water powered nozzle system that proportions and delivers either water or foam to the hazard area. Fully adjustable from straight stream to full fog with flows of 150 or 225 gpm. Brass construction with stainless steel trim. Foam is proportioned directly from an atmospheric source at 1%, 3% or 6%.



Model # Hydro-Foam™ Nozzle	Flow @100psi	Range @100psi (straight stream)	Range@100psi (narrow fog)	Water inlet	Concentrate inlet	K-factor	Proportioning
Small Body LW150	150 gpm	110 ft.	60 ft.	1.5"NH (F)swivel	1"NPT(M)	15	1%, 3% or 6%
Small Body LW225	225 gpm	115 ft.	65 ft.	1.5"NH (F)swivel	1"NPT(M)	22.5	1%, 3% or 6%

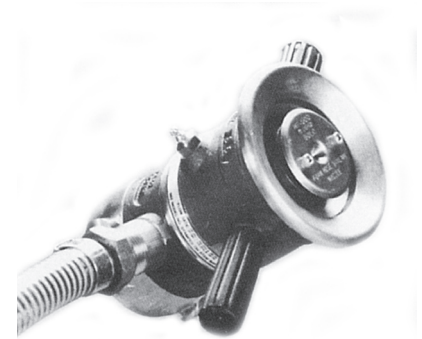
For US and Foreign Patent and Trademark information, please refer to page IP2



Hydro-Foam™ Nozzles

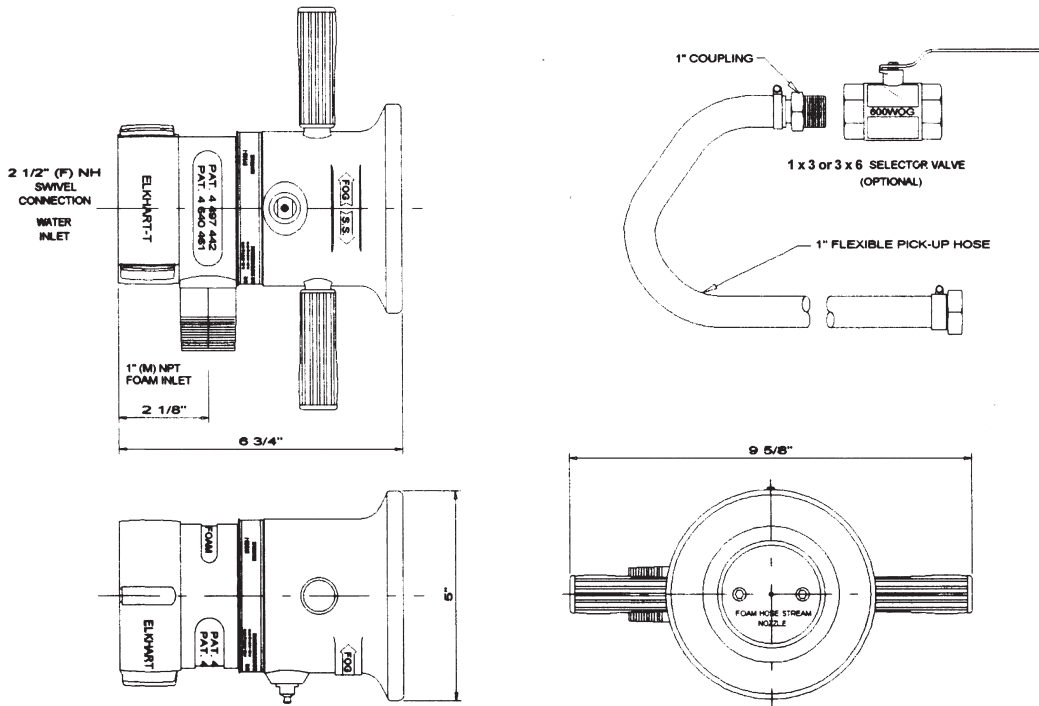
Product:

**Hydro-Foam™ Monitor Nozzles —
Medium Body HF Series - Elkhart**



Description:

Patented water powered nozzle system that proportions and delivers either water or foam to the hazard area. Fully adjustable from straight stream to full fog with flows of 350 or 500 gpm. Brass construction with stainless steel trim. Nozzle comes complete with 1" X 8 ft. flexible pick-up hose. Optional 1% or 3% selector provides dual proportioning capability. Foam concentrate is proportioned directly from an atmospheric source.



Model # Hydro-Foam™ Nozzle	Flow @100psi	Range @100psi (straight stream)	Range @100psi (narrow fog)	Water inlet	Concentrate inlet	K-factor	Proportioning
HF 350	350 gpm	145 ft.	65 ft.	2.5"NH (F)swivel	1"NPT(M)	35	1%, 3%
HF 500	500 gpm	155 ft.	75 ft.	2.5"NH (F)swivel	1"NPT(M)	50	1%, 3%

For US and Foreign Patent and Trademark information, please refer to page IP2



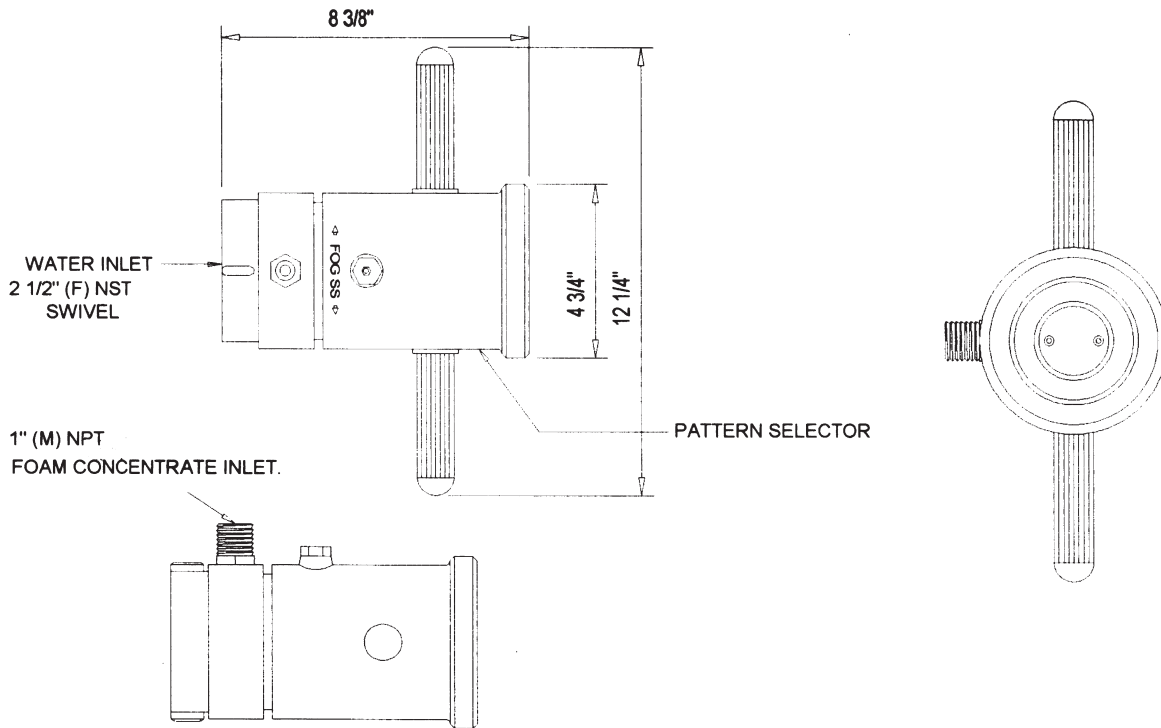
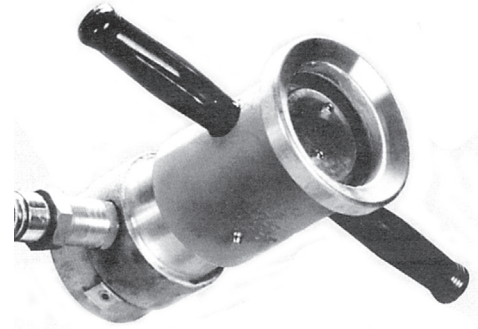
Hydro-Foam™ Nozzles

Product:

**Hydro-Foam™ Monitor Nozzles —
Medium Body LW 700**

Description:

Patented water powered nozzle system that proportions and delivers either water or foam to the hazard area. Fully adjustable from straight stream to full fog with a flow of 700 GPM @100 PSI. Brass construction with stainless steel trim. 1% or 3% proportioning. Nozzle is supplied with a 1" x 8 ft. flexible pick-up hose. Foam is proportioned directly from an atmospheric storage tank.



Model # Hydro-Foam™ Nozzle	Flow @100psi	Range @100psi (straight stream)	Water inlet	Concentrate inlet	K-factor	Proportioning
Medium Body LW700	700 gpm	160 ft.	2.5"NH (F)swivel	1"NPT(M)	70	1% or 3%

For US and Foreign Patent and Trademark information, please refer to page IP2



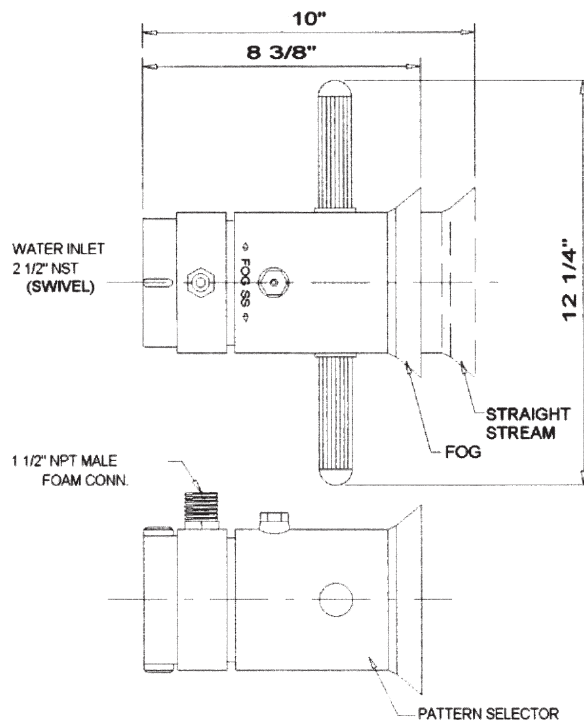
Hydro-Foam™ Nozzles

Product:

Hydro-Foam™ Monitor Nozzles Medium Body LWNS 350, 500 & 750

Description:

Patented water powered nozzle system that proportions and delivers either water or foam to the hazard area. Fully adjustable from straight stream to full fog. Brass construction with stainless steel trim. Flows 350, 500 or 750 gpm @ 100 psi, with 1% or 3% (6% @ 350 and 500 gpm) proportioning. An optional 1% / 3% (3% / 6% @ 350 and 500 gpm) selector valve provides dual proportioning. Foam concentrate is proportioned directly from an atmospheric storage tank or from a remote foam concentrate supply in conjunction with a matched Jet Ratio Controller at 1% or 3% only. Nozzle is supplied with 1.5" X 8 ft. flexible pick-up hose.



Model Hydro-Foam™ Nozzle	LWNS 350	LWNS 500	LWNS 750
Nominal Flow @ 100psi	350 gpm	500 gpm	750 gpm
Nominal Range @ 100psi (straight stream)	135 ft.	150 ft.	160 ft.
Water Inlet	2.5"NH (F) Swivel	2.5"NH (F) Swivel	2.5"NH (F) Swivel
Foam Concentrate Inlet	1.5" NPT(M)	1.5" NPT(M)	1.5" NPT(M)
Proportioning	1% / 3% / 6%	1% / 3% / 6%	1% / 3%

For US and Foreign Patent and Trademark information, please refer to page IP2



Handline Nozzles

Product:

HYDROJET HANDLINE NOZZLES

Viper Select Series

Description:

Superior quality fire fighting handline nozzles. Created from performance data gained through extensive research, as well as from actual field exposure on a multitude of large “fires in anger.”

- Multiple Gallonage/Constant Flow design.
- Compact and Lightweight Design in Extruded “E-Lite” Alloy.
- Molded Composite Rubber Pistol Grip for Precise Control.
- Durable Construction Provides Superior Impact Resistance.

Standard Features Include:

- » Constant Flow feature Allows for use with Matched Foam Eductor.
- » Factory Installed spinning teeth for Maximum Stream Break-up.
- » Combination Full Fog to Straight Stream.
- » Independent Pattern Selection with Indication.
- » Heavy Duty Rubber Bumper.
- » Fully Machined Waterway for Flow Efficiency.
- » Excellent for use with ThunderStorm[®] ATC Foam Concentrates.
- » Horseshoe Shutoff Provides Positive Flow Control.
- » Change Flow without Changing Pattern.
- » Full Flush Feature.



Model Hydrojet Nozzle	Nominal Flow	Inlet	Length	Weight
SG-3012	30,60,95,125	1.5" NH (F)	8.9"	4.25 lbs.
SG-7515	75,100,125,150	1.5" NH (F)	8.9"	4.25 lbs.
SG-9520	95,125,150,200	1.5" NH (F)	10.6"	6.5 lbs.

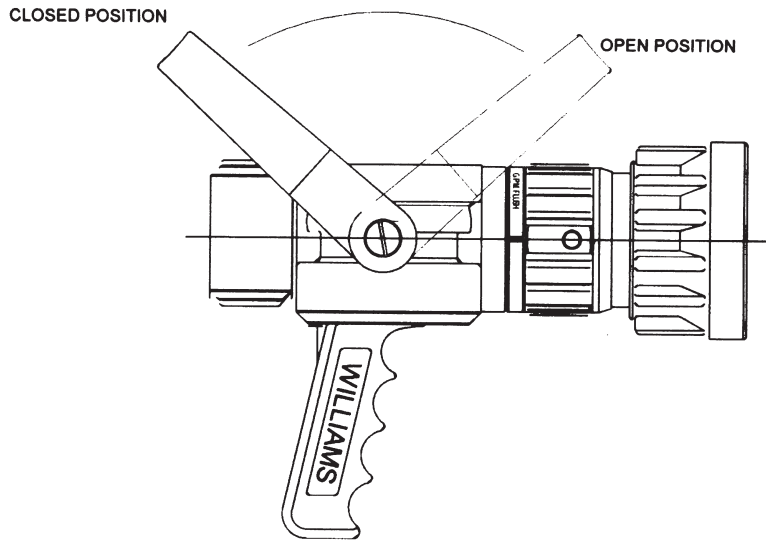


Handline Nozzles

Product:

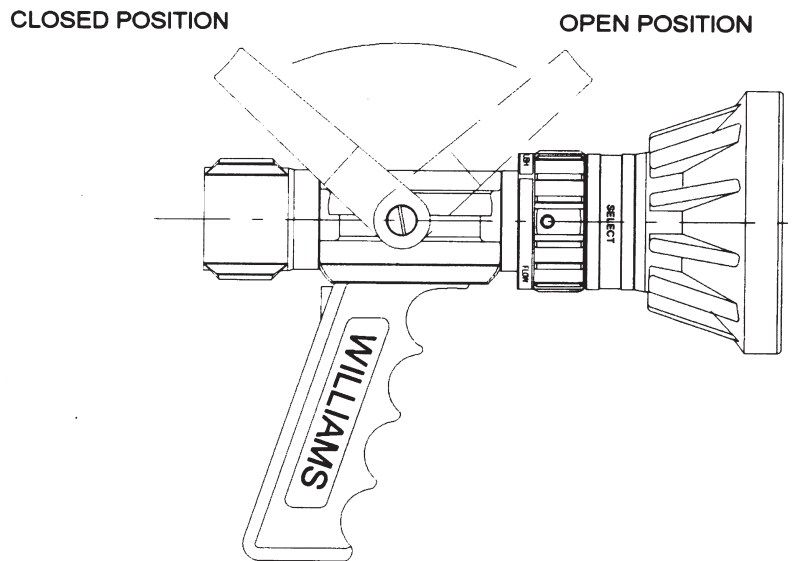
HYDROJET HANDLINE NOZZLES

Viper Select Series



Standard Viper Nozzle

SG-3012 / SG-7515



Viper Midrange Nozzle

SG-9520



Air Aspirating Foam Nozzle Model AFN-I

General Description

Constructed of hard anodized aluminum with stainless steel fasteners and adjustment rod, this air aspirating foam nozzle offers minimum weight with durability. Stream pattern is adjustable in the field from an even fan type to a full straight stream.

Flow rates are specifically tailored to individual protection by the insertion of a pre-engineered stainless steel orifice plate.

Orifice plates can be sized for flows from 250 to 1000 gpm (946 to 3785

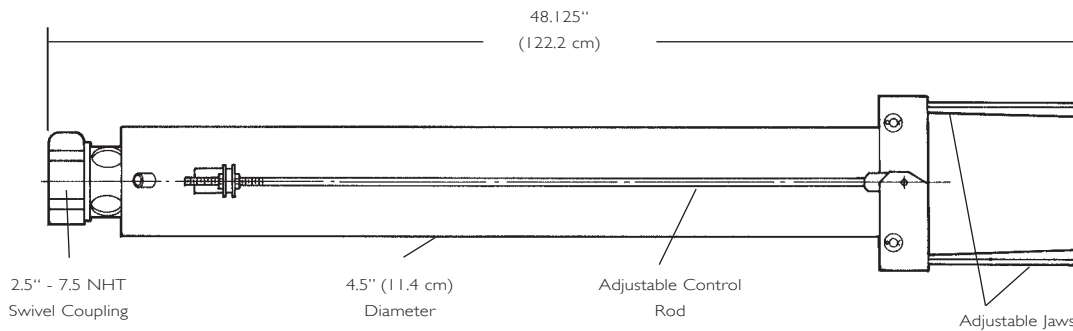
Lpm) within K-factors of 35 to 125 based on flowing nozzle inlet pressure. (Monitor friction loss must be deducted from monitor inlet pressure to use those K-factors.)

Connector is a female swivel, 2.5" – 7.5" TPI NHT.

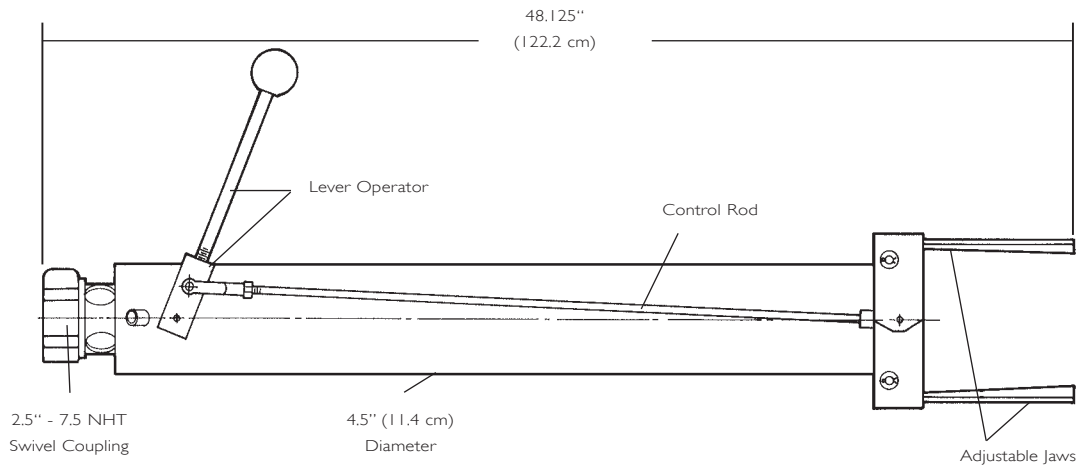
Ordering Information

Part No.	Description
400200	AFN-I Nozzle
400336	AFN-IM Nozzle with Lever Operator
400380	AFN-I-SS Stainless Steel Nozzle
400326	AFN-IM-SS Stainless Steel

AFN-I Nozzle



AFN-I Nozzle



Nozzle Flow and Range

Pressure psi	Flow Rate (kPa)	Flow Rate gpm (Lpm)	Range at 30° Elev.		Range at 22.5° Elev.		Range at 15° Elev.		Range at 0° Elev.	
			ft.	(m)	ft.	(m)	ft.	(m)	ft.	(m)
50	(345)	385 (1457)	135	(41)	135	(41)	115	(35)	50	(15)
100	(690)	534 (2021)	175	(53)	175	(53)	170	(52)	80	(24)
150	(1034)	656 (2483)	190	(58)	190	(58)	190	(58)	100	(30)

NOTE: Above based on orifice sized for 500 gpm @ 100 psi (1893 Lpm @ 690 kPa).



Air Aspirating Foam Nozzle Model AFN-2

General Description

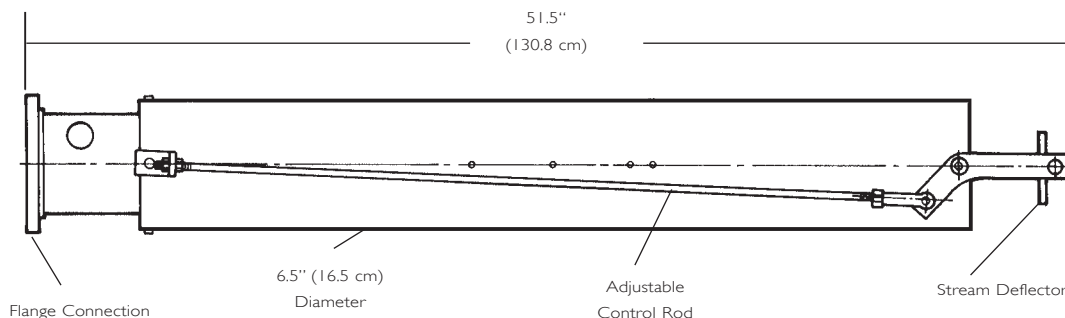
Constructed of hard anodized aluminum with stainless steel fasteners, adjustment rod and deflector; this air aspirating foam nozzle offers minimum weight with durability. Stream pattern is adjustable in the field to a dispersed stream or a full straight stream.

Flow rates are specifically tailored to individual protection by the insertion of a pre-engineered stainless steel orifice plate. Orifice plates can be sized for flows from 700 to 2000 gpm (2650 to 7571 Lpm) within K-factors of 57 to 233 based on flowing nozzle inlet pressure. (Monitor friction loss must be deducted from monitor inlet pressure to use these K-factors.)

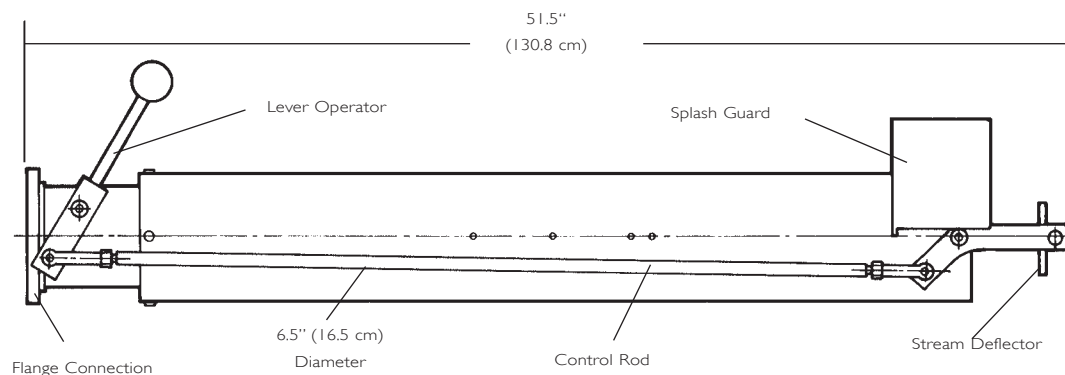
Ordering Information

Part No.	Description
77088	AFN-2 Nozzle
77115	AFN-2M Nozzle with Lever Operator

AFN-2 Nozzle



AFN-2M Nozzle



Nozzle Flow and Range

Pressure psi (kPa)	Flow Rate gpm (Lpm)	Range at 22.5° Elevation		Range at 15° Elevation		Range at 7° Elevation	
		ft.	(m)	ft.	(m)	ft.	(m)
50 (345)	722 (2733)	100	(30)	80	(24)	60	(18)
100 (690)	1053 (3986)	160	(49)	140	(43)	120	(37)
150 (1034)	1265 (4789)	200	(61)	180	(55)	160	(49)

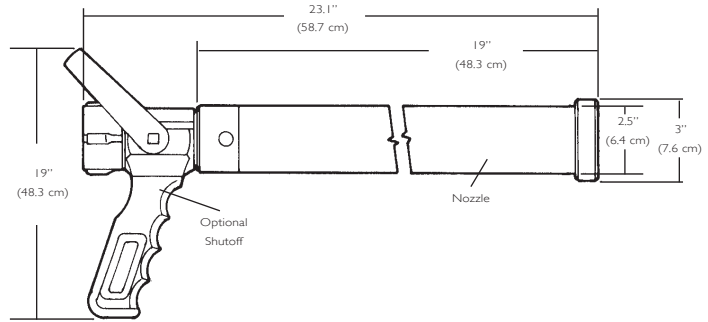
NOTE: Above based on orifice sized for 1000 gpm @ 100 psi (3785 Lpm @ 690 kPa).



Air Aspirating Handline Nozzles

Features

- Stainless Steel Construction for Use in Corrosive Environments
- Nominal Flow Rates of 60, 95, or 120 gpm (227, 360, or 454 Lpm)
- Compatible with Ansul PL-60, PL-95, and PL-120 Line Proportioners
- Optional Pistol-Grip Shutoff Available (Anodized Aluminum)
- Lightweight, Portable Design for Maximum Mobility



Application

Ansul (HL) foam handline nozzles can be used with all low expansion foam agents: protein foam, fluoroprotein foam, and AFFF. These portable, air aspirating nozzles can be used in a variety of flammable liquid hazard areas. Typical applications include use by municipal fire departments and crash-fire-rescue vehicles; or for handline applications around tank farms, loading racks, aircraft hangars, and chemical plants.

Description

Ansul handline nozzles are available in three sizes (HL-60, HL-95, and HL-120) with or without pistol-grip shutoff. The nozzles are constructed of stainless steel; the pistol-grip shutoff is anodized aluminum. Lightweight and compact, they maximize fire fighting mobility and ease of use.

Typical Foam Quality/Range Data

	Protein/Fluoro-protein		3% ARC
	AFFF		
Foam Expansion Ratio	8:1	10:1	7:1
Drain Time (25%)	7 min.	3 min.	8 min.
Stream Range @ 50 psi (345 kPa)	50 ft. (15.2 m)	50 ft. (15.2 m)	50 ft. (15.2 m)
Stream Range @ 75 psi (517 kPa)	65 ft. (19.8 m)	65 ft. (19.8 m)	65 ft. (19.8 m)
Stream Range @ 100 psi (690 kPa)	75 ft. (22.9 m)	75 ft. (22.9 m)	75 ft. (22.9 m)

Hose Length/Size Data

Handline Nozzle	Line Proportioner	Hose Size in.	Maximum Hose Length* ft. (m)
HL-60	PL-60	1.5"	200 (61.0)
HL-95	PL-95	1.5"	100 (30.5)
HL-120	PL-120	1.5"	100 (30.5)

* Maximum hose length is based on nozzle being elevated a maximum of 8 ft. (2.4 m) above line proportioner.

Ordering Information

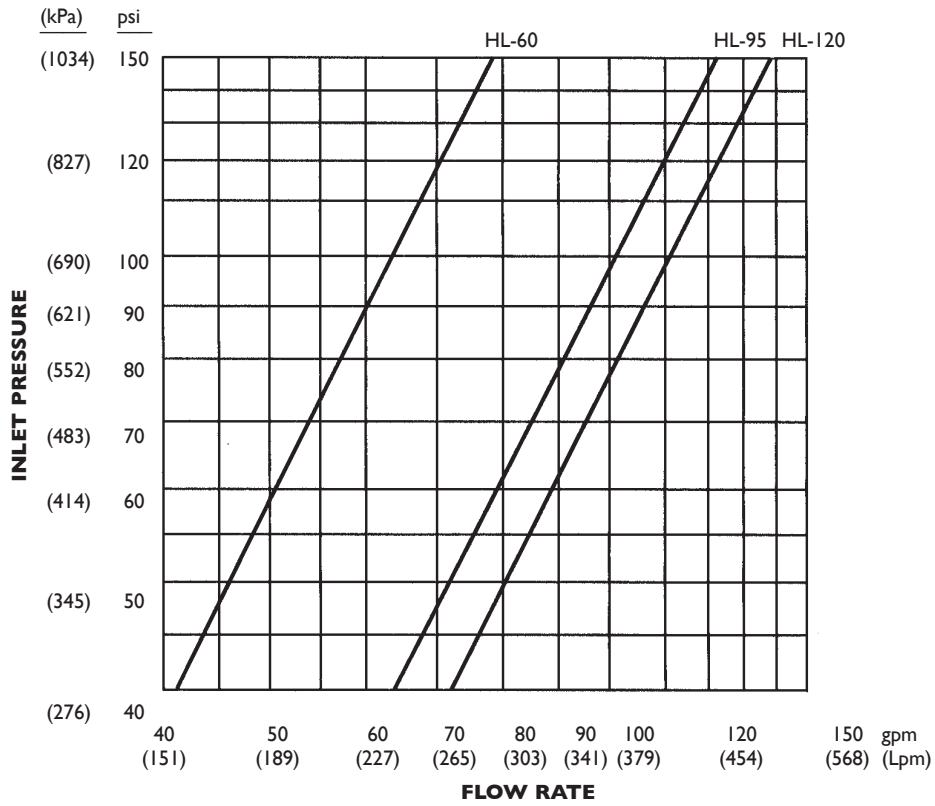
The models listed below are provided with 1.5" NHT female inlet threads. Other thread types are available upon request. The flow rates listed are nominal; see Flow Rate Data for actual flow rates based on inlet pressure.

Part No.	Description	Approx Shipping Weight lb. (kg)	Part No.	Description	Approx Shipping Weight lb. (kg)	Part No.	Description	Approx Shipping Weight lb. (kg)
77796*	HL-60 Nozzle without Shutoff, 60 gpm (227 Lpm)	5 (2.3)	77797*	HL-95 Nozzle without Shutoff, 95 gpm (360 Lpm)	5 (2.3)	77981	HL-120 Nozzle without Shutoff, 120 gpm (454 Lpm)	5 (2.3)
77792*	HL-60S Nozzle with Shutoff, 60 gpm (227 Lpm)	7 (3.2)	77793*	HL-95S Nozzle with Shutoff, 95 gpm (360 Lpm)	7 (3.2)	78419	HL-120S Nozzle with Shutoff,	7 (3.2)



Air Aspirating Handline Nozzles

Flow Rate Data



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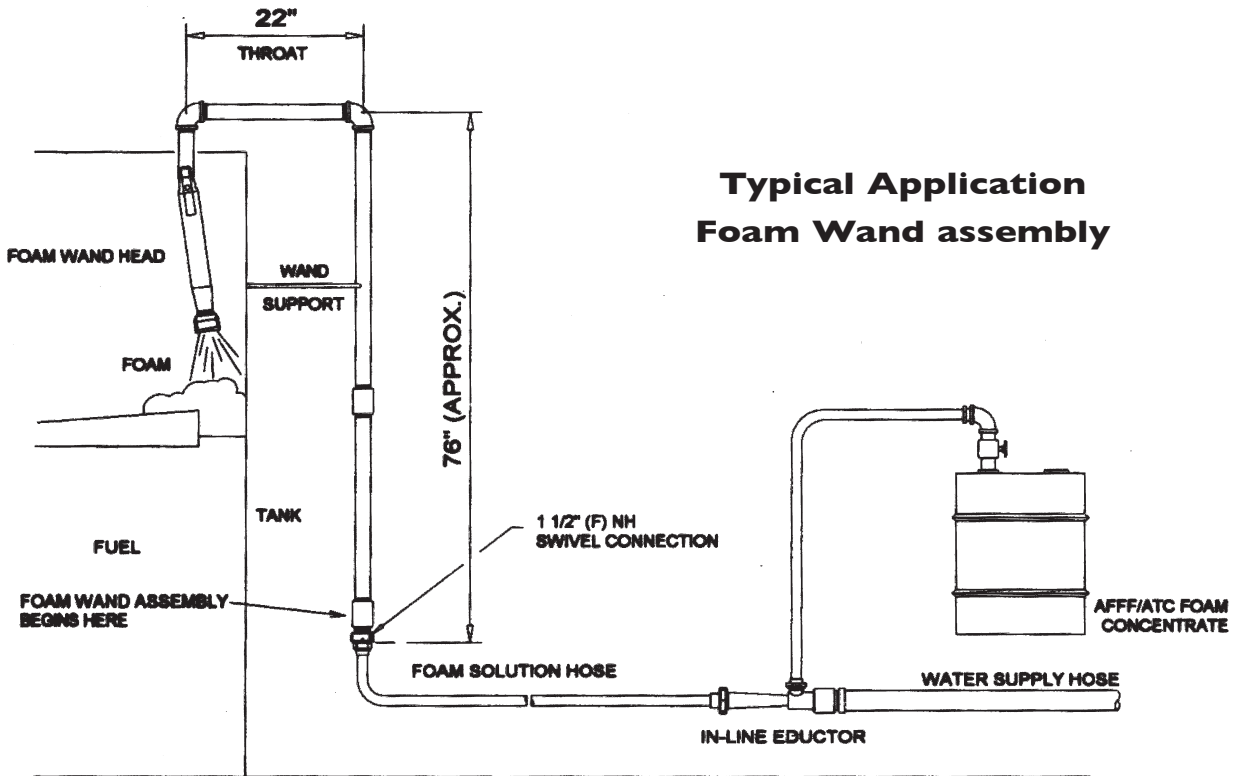
Foam Nozzles

Product:

Foam Wand

Description:

The Foam "Wand" is designed to expand and deliver foam into remote/hazardous areas where either logistics or safety considerations dictate that the foam nozzle be "unattended." The "wand" delivers high quality foam onto hard-to-access flammable liquid fires. Flow rate is 95 gpm @ 100 psi (K=9.5). Works in conjunction with a standard 95 gpm inline eductor or other foam proportioning system. Nominal foam expansion is 4:1. Assembly includes 1.5" NH (F) brass swivel foam solution inlet; carbon steel distribution piping; foam nozzle; detachable horizontal "stand-off", canvas carrying case.



**Typical Application
Foam Wand assembly**

Model Foam Wand	Nominal Flow @ 100 PSI	K-factor	Inlet	Body
95 gpm	95 gpm	9.5	1.5" NH(F) Swivel	Schedule 40 Carbon Steel