

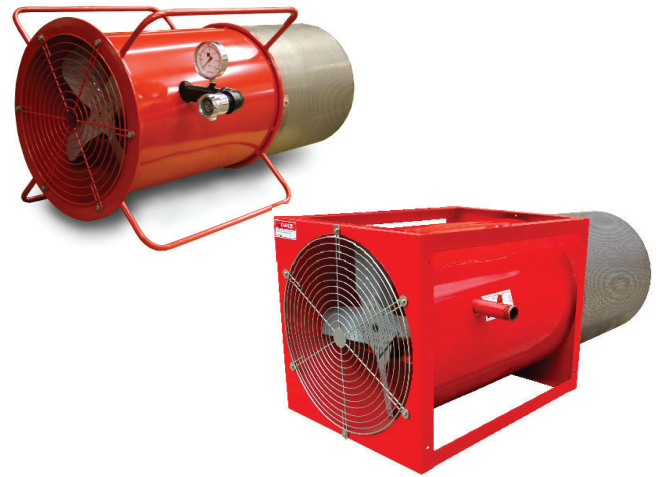
## HI-EX®

### WATER POWERED HIGH EXPANSION FOAM GENERATORS

NDD355

APPROVALS: UL

- Class A & B Fire Approved
- Inside and Outside Air Compatible
- 4000, 7500 and 28500 CFM Fixed Units
- 4000 CFM Portable Unit with Proportioner
- Available in Powder Coated Steel and Stainless Steel



#### Description

National Foam's HI-EX® Water Powered High Expansion Foam Generators are designed to achieve expansion rates of 350 to 600 gallons of foam for every one gallon of foam solution, depending on the generator selected, solution flow rate and operating pressure. This expansion ratio provides the optimum combination of expansion, wetness and water retention needed for fire performance. The high ratio of expansion of the high expansion generator is achieved by spraying foam solution into a stainless steel screen and forcing the solution through the screen with a high velocity air stream to produce a mass of foam bubbles. A water motor driven fan, powered by the foam solution used to create the high expansion foam, is used to produce the required air stream. This allows the water powered high expansion generator to be a self-contained unit requiring no external power for operation. With the continuous flow of the foam solution and movement of air through the screen, large volumes of expanded foam can be generated. National Foam HI-EX® Foam Concentrate is an environmentally responsible foaming agent designed to be used with National Foam's high expansion foam generating equipment. HI-EX® Foam Concentrate is to be proportioned at 2% concentration.

#### Features

- Four different models available.
- No outside source of power required – only the foam solution under pressure.
- UL Listed ranges from 2,500 cfm to 28,500 cfm depending on unit selected and inlet pressure.
- Largest UL Listed operating pressures between 40 psi and 100 psi.
- Stainless steel screen.
- Easy installation with units capable of being mounted and used in the horizontal or vertical configuration.
- Foam solution piping and discharge nozzle are of open design allowing passage of particles up to 1/4" in diameter without use of a strainer.
- Inlet gauge tap for system testing.
- Housing for fixed generator units constructed of mild steel with red epoxy coated finish or stainless steel.
- Housing for portable generator units constructed of aluminum with red epoxy coated finish.

#### Proportioning

High Expansion Foam Generators can be used with the following types of proportioning equipment:

- Bladder tank balanced pressure proportioning system.
- Balanced Pressure and In-line Balanced Pressure.
- Fixed or portable eductors (consult factory for use with 7,500 and 28,500 CFM units).

#### Typical Hazards

Typical hazards where National Foam High Expansion Foam Generators may be used to supply fire protection are:

- Aircraft hangars.
- LNG tank farms/loading facilities.
- Flammable liquid drum storage areas.
- Hazardous waste storage facilities.
- Shipboard engine rooms, bilges and holds.
- Roll paper warehouse.
- Chemical storage facilities.
- Flammable liquid packaging areas.
- Cable tunnels.
- Mines and Mining Conveyors.

#### Listings

Underwriters Laboratories, Inc. The following generator models are UL Listed:

- 4,000 CFM Generator Model NF HI-EX®-4000.
- 4,000 CFM Generator Model NF HI-EX®-4000 (Portable) with HLP proportioner.
- 7,500 CFM Generator Model NF HI-EX®-7500.
- 28,500 CFM Generator Model NF HI-EX®-28500.

Tested to the requirements of Subject 139, Outline of Investigation for High-Expansion Foam-Extinguishing System Equipment and Concentrates, Issue #4, July 18, 1997.

# HI-EX®

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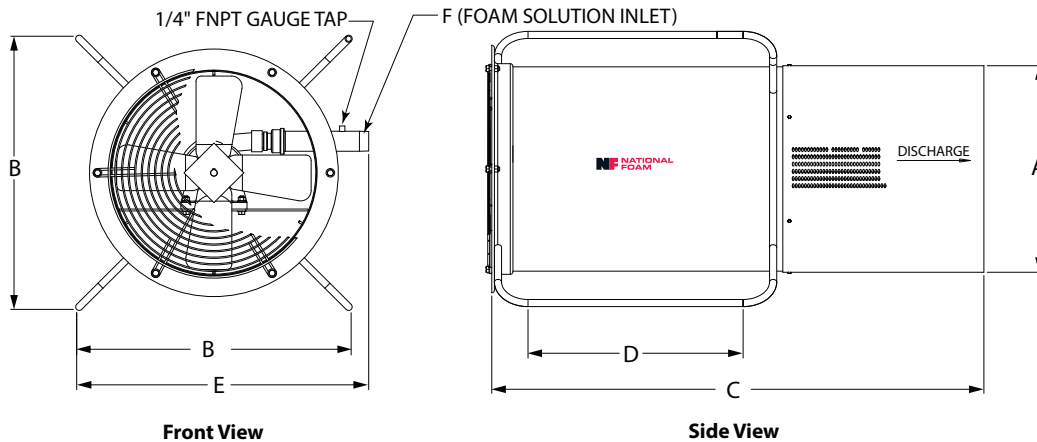
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DIMENSIONS							
Model	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	F (in.)	Wt. (lbs)
NF HI-EX®-4000	19.50	26.00	46.50	20.00	27.75	1.5	121
NF HI-EX®-4000 Portable	19.50	26.00	46.50	20.00	27.75	1.5	89
NF HI-EX®-7500	25.50	27.75	65.50	32.00	30.75	1.5	231
NF HI-EX®-285000	50.19	53.00	122.00	66.00	56.00	3.0	601

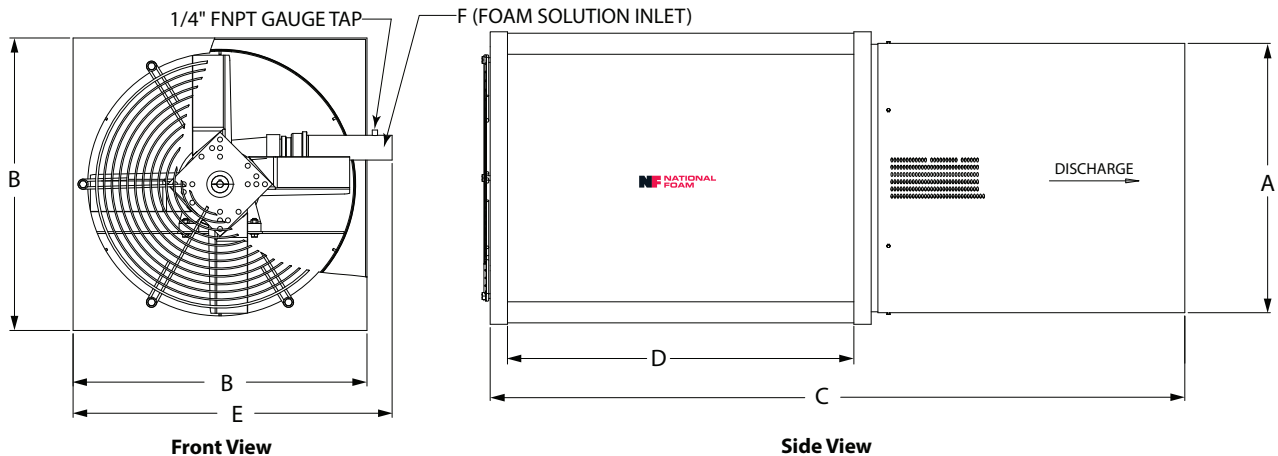
### Notes:

1. Fixed units are supplied with MNPT inlet threads.
2. Portable unit is supplied with FNH inlet threads and is designed to operate at 100 psi pressure at the generator inlet.
3. Portable unit is supplied with an eductor with FNH inlet and MNH outlet threads.
4. Dimensions are approximate and subject to change.

### NF HI-EX®-4000 Fixed and Portable



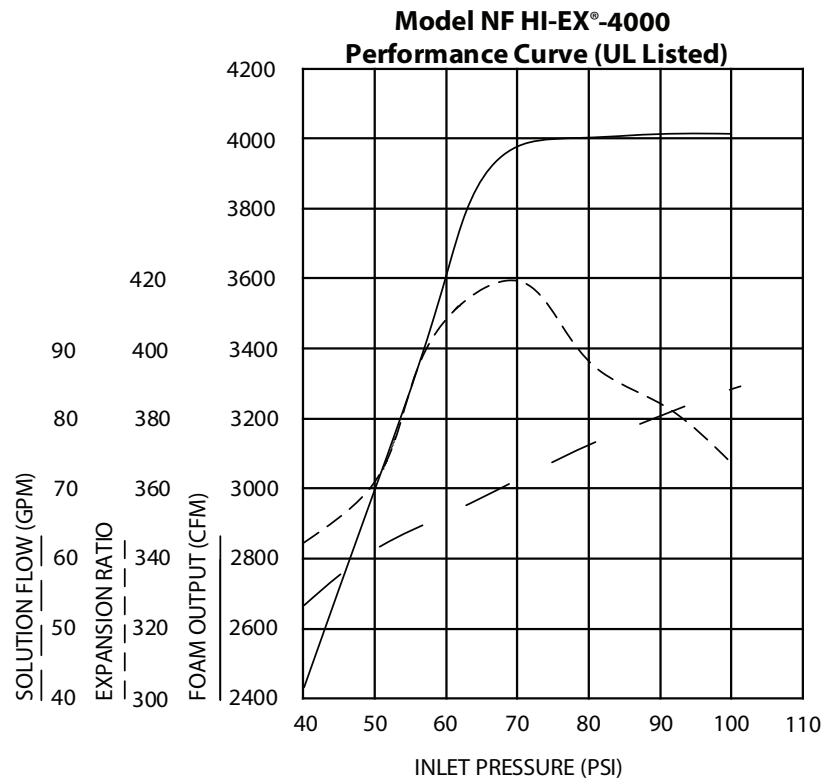
### NF HI-EX®-7500 and NF HI-EX®-28500



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## WATER POWERED HIGH EXPANSION FOAM GENERATORS

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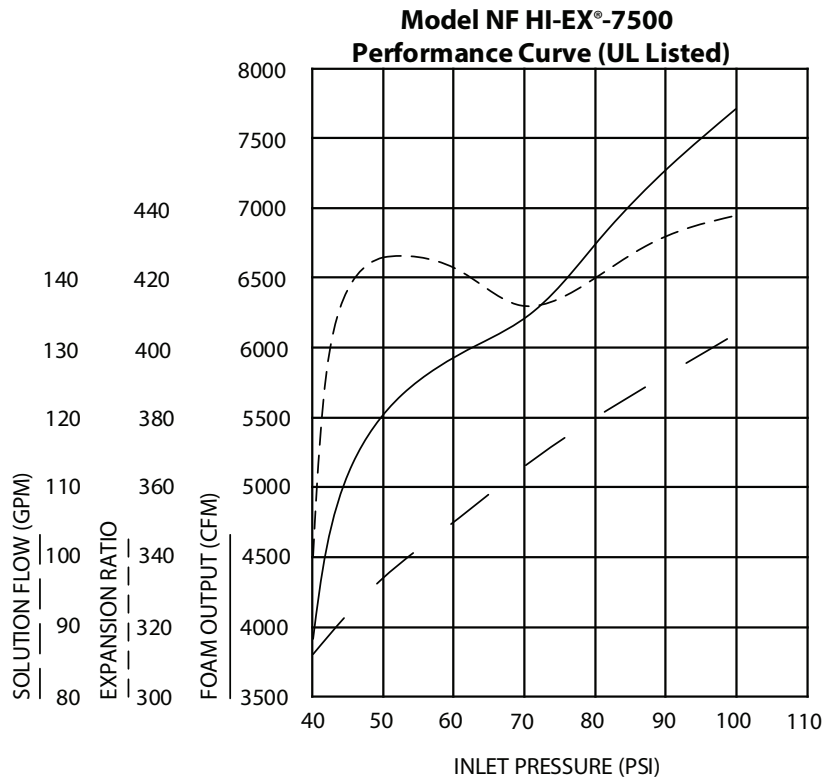
PSI (BAR)	CFM (CMM)	GPM (LPM)	EXPANSION
40 (2.76)	2,439 (69)	53 (201)	344:1
50 (3.45)	2,951 (84)	61 (231)	362:1
60 (4.14)	3,605 (102)	66 (250)	409:1
70 (4.83)	3,975 (113)	71 (269)	419:1
80 (5.52)	4,019 (114)	76 (288)	396:1
90 (6.21)	4,102 (116)	80 (303)	384:1
100 (6.89)	4,114 (117)	84 (318)	367:1
Foam Breakdown Constant: S = 2.4 CFM/GPM (0.018 CMM/LPM)			

### Foam Generator Performance Curve

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## WATER POWERED HIGH EXPANSION FOAM GENERATORS

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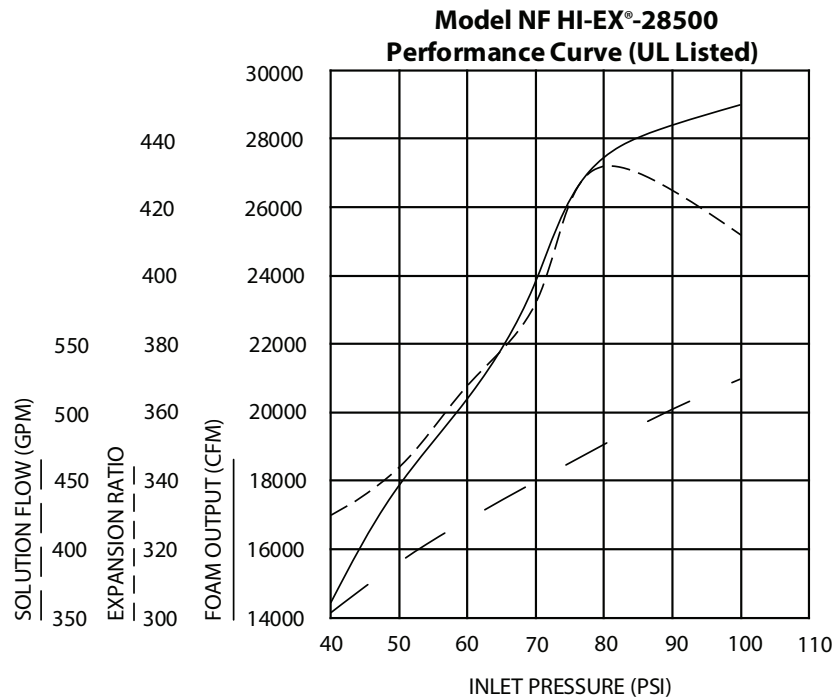
PSI (BAR)	CFM (CMM)	GPM (LPM)	EXPANSION
40 (2.76)	3,910 (111)	86 (326)	340:1
50 (3.45)	5,524 (156)	97 (367)	426:1
60 (4.14)	5,933 (168)	105 (397)	423:1
70 (4.83)	6,211 (176)	113 (428)	412:1
80 (5.52)	6,741 (191)	120 (454)	420:1
90 (6.21)	7,274 (206)	126 (477)	432:1
100 (6.89)	7,715 (218)	132 (500)	438:1
Foam Breakdown Constant: S = 2.9 CFM/GPM (0.0217 CMM/LPM)			

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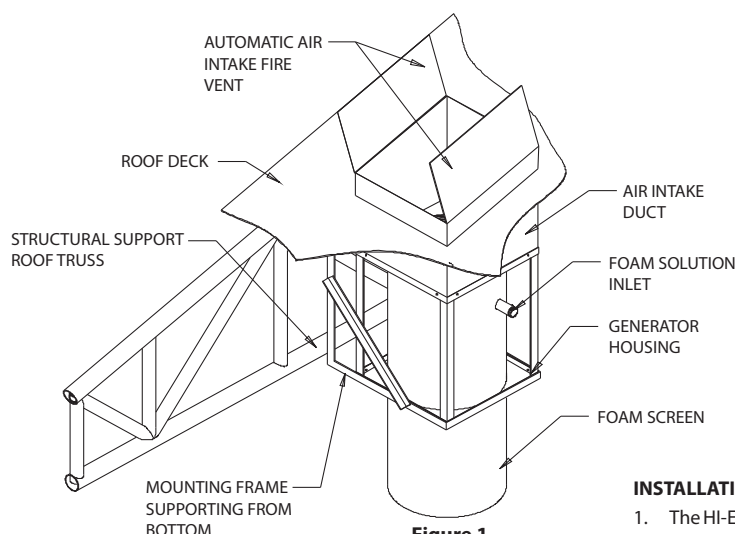
PSI (BAR)	CFM (CMM)	GPM (LPM)	EXPANSION
40 (2.76)	14,418 (408)	353 (1336)	330:1
50 (3.45)	17,851 (505)	390 (1476)	344:1
60 (4.14)	20,389 (577)	421 (1594)	364:1
70 (4.83)	23,550 (667)	449 (1700)	392:1
80 (5.52)	27,026 (778)	476 (1802)	432:1
90 (6.21)	28,398 (804)	502 (1900)	425:1
100 (6.89)	28,852 (817)	524 (1984)	412:1
Foam Breakdown Constant: S = 8.5 CFM/GPM (0.0636 CMM/LPM)			

### Foam Generator Performance Curve

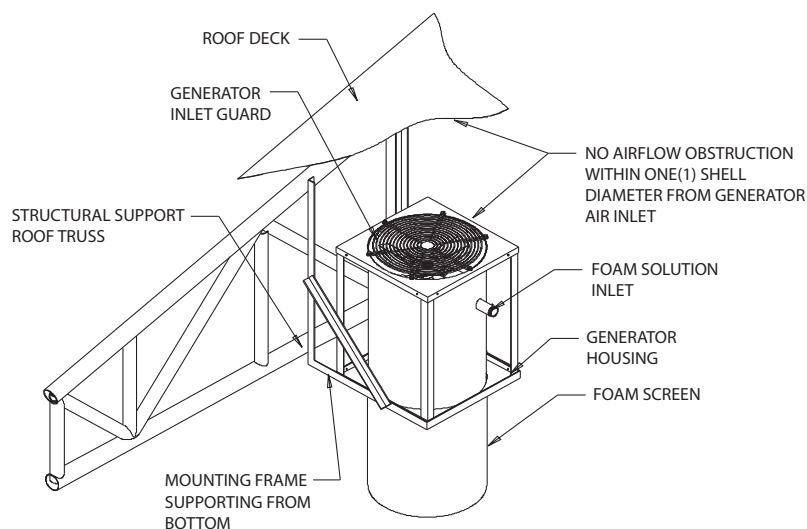
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## WATER POWERED HIGH EXPANSION FOAM GENERATORS

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**Figure 1**  
**Typical Outside Air**  
**Vertical Mount**



**Figure 2**  
**Typical Inside Air**  
**Vertical Mount**

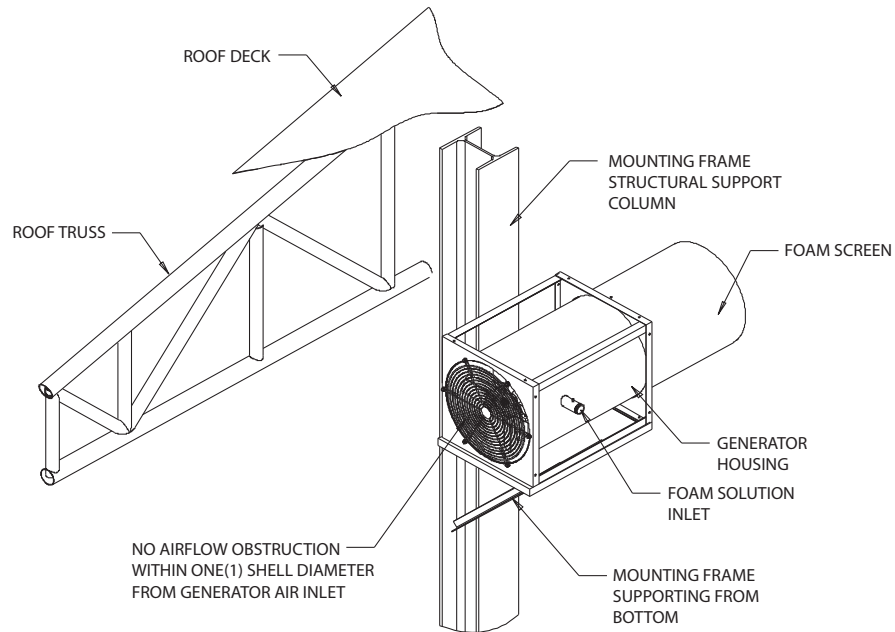
### INSTALLATION NOTES:

1. The HI-EX system components should be arranged and installed so that inspection, maintenance, system testing, or recharging will cause minimum disruption to the fire protection system.
2. The HI-EX generators may be installed in a vertical or a horizontal position.
3. The supporting structure for horizontal mount generator should be suitably designed and firmly fixed in position to ensure there is no flex or movement due to the propeller thrust during operation (Figures 3 & 4).
4. The vertical mount generator should be supported from the bottom and braced firmly to the supporting structure to ensure there is no oscillation when the system is in operation (Figures 1 & 2).
5. During installation, care should be taken to prevent distortion to the generator housing as this could interfere with alignment and the rotation of motor/fan assembly.
6. Lock nuts and washers are recommended for securing the generator to supporting frame.
7. There is to be no airflow obstruction within one(1) shell diameter from the generator air inlet (Figures 2 & 3).
8. It is recommended that HI-EX system equipment be installed according to the authority having jurisdiction, in accordance with all applicable codes, and by trained/experienced contractors.
9. The HI-EX generator supporting structure/frame should be sized and designed by the installer to ensure adequate strength.

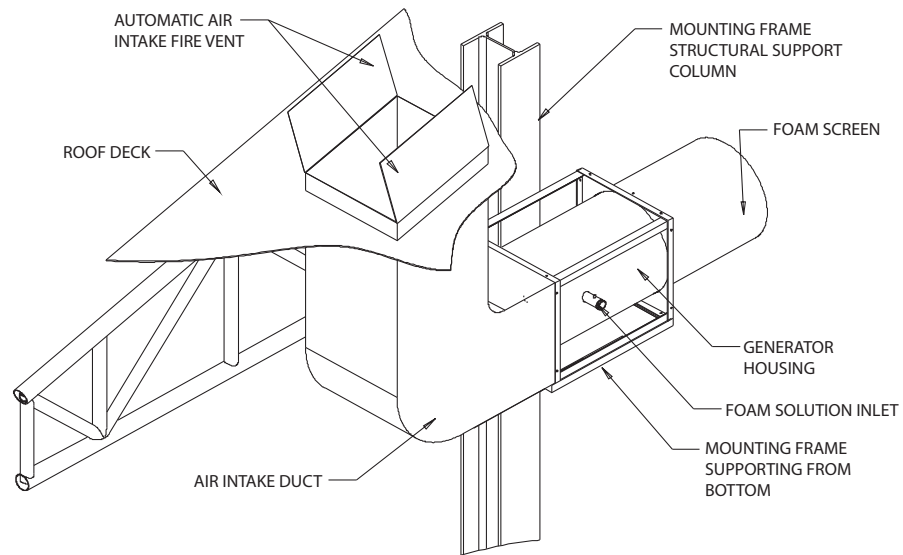
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# WATER POWERED HIGH EXPANSION FOAM GENERATORS

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**Figure 3  
Typical Inside Air  
Horizontal Mount**



**Figure 4  
Typical Outside Air  
Horizontal Mount**

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## WATER POWERED HIGH EXPANSION FOAM GENERATORS

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**Note:**

When ordering a National Foam High Expansion Foam Generator please provide the following information:

- Risk to be protected.
- Available residual water flow and pressure.
- Method of proportioning required.

**ORDERING INFORMATION**

Part Number	Description
1256-4000-0	4,000 CFM NF HI-EX®-4000, Epoxy Coated Carbon Steel
1256-4000-1	4,000 CFM NF HI-EX®-4000 (Portable), Epoxy Coated Aluminum with Line Proportioner Model HLP-9HX-165 (4000 CFM Unit Only)
1256-4000-2	4,000 CFM NF HI-EX®-4000, Epoxy Coated Stainless Steel
1256-4010-0	7,500 CFM NF HI-EX®-7500, Epoxy Coated Carbon Steel
1256-4010-2	7,500 CFM NF HI-EX®-7500, Epoxy Coated Stainless Steel
1256-4040-0	28,500 CFM NF HI-EX®-28500, Epoxy Coated Carbon Steel
1256-4030-9	28,500 CFM NF HI-EX®-28500, Epoxy Coated Stainless Steel
<b>Accessories</b>	
Call For Quote	Line Proportioner Model LP-9
1256-4047-4	Automatic Air Intake Fire Vent (48" x 48") - NF HI-EX-4000 and NF HI-EX-7,500
1256-4047-5	Automatic Air Intake Fire Vent (60" x 60") - NF HI-EX-28,500

**National Foam**

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24hr **RED ALERT**® : 610-363-1400 • Fax: 610-431-7084

[www.nationalfoam.com](http://www.nationalfoam.com)

National Foam operates a continuous program of product development. The right is therefore reserved to modify any specification without prior notice and National Foam should be contacted to ensure that the current issues of all technical data sheets are used.

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