NATIONAL FOAM

DATA SHEET
#NPR120

HANDLINE PROPORTIONERS

Description

National Foam Handline Proportioners are venturi devices that introduce Foam Concentrate into a flowing stream of water at a controlled rate of either 1%, 3% or 6%. As water flows through the venturi (water orifice) at a high velocity, a negative pressure area develops at the discharge of the venturi. This negative pressure creates a pressure differential across the foam concentrate metering orifice, thereby allowing atmospheric pressure to push foam concentrate in to the proportioner at the correct percentage. As the water pressure at the inlet to the proportionier increases or decreases the solution flow from the device will increase or decrease correspondingly. Because the amount of foam concentrate to be injected into the water stream is controlled by the relationship between the negative pressure area and atmospheric pressure the range over which proper injection occurs is limited. The Handline Proportioners are available in four sizes and are matched to specific nozzles (See chart). They are designed to operate with an inlet pressure of 200 psi. (13.8 Bar). Higher than design pressure will result in a leaner (lower percentage) mixture; lower than design pressure will result in a richer (higher percentage) mixture. In addition to water pressure, Handline Proportioners are sensitive to back pressure. Back pressure is the amount of pressure required down stream of the proportioner to discharge the total foam solution flow. This will include the pressure required at the inlet to the nozzle, elevation head and hose losses. The total allowable back pressure on the discharge side of the Handline Proportioner can not exceed 65% of the water inlet pressure. If back pressure exceeds 65%, the Handline Proportioner may not pick-up foam concentrate or the solution may be lean.

Handline Proportioners can be equipped with an optional metering valve to allow the desired percentage to be field set.

When using Handline Proportioners as portable proportioning devices, the foam concentrate is usually stored in 5 gallon pails, 55 gallon drums, tote tanks or trailers. Handline Proportioners are provided with a pickup tube which is used to draw foam concentrate from the portable foam containers.

Features

- Portable.
- Inexpensive.
- No moving parts.
- Minimal maintenance.
- Simple operation.
- Variable metering.
- 65% Allowable back pressures.
- Available in four different flows.
- Operates with inlet pressure of 200 PSI (13.8 Bar).

Applications

Handline Proportioners are designed for hose line applications. They are matched to specific nozzles and are designed for use with a fixed inlet pressure of 200 psi. (13.8 Bar). They are not suitable for use in applications requiring operation over a range of flows or pressures. They are not recommended for applications using sprinklers or other multiple small orifice discharge devices, where blockage of a portion of the discharge devices could increase the allowable back pressure sufficiently to cause proportioning failure.

Technical Specifications

National Foam Handline Proportioners shall be a venturi type proportioning device designed to inject foam concentrate into the water stream at a controlled rate of either 1%, 3% or 6% and shall be designed for use in a portable handline system. The proportioner shall be suitable for use with all foam concentrates. Units are designed for operation at 200 PSI (13.8 Bar). The proportioner shall be designed to proportion properly with back pressures up 65% of the inlet pressure.

The Handline Proportioner shall consist of a cast brass body, a machined jet and (venturi), receiver (recovery section) and foam concentrate orifice or metering valve. The jet shall be contoured to optimize water flow through the venturi thereby creating the negative pressure area. The receiver shall be shaped to minimize the unrecoverable pressure loss and increase the efficiency of the proportioner. The orifice shall be factory set for 3% or 6% foam injection at the design flow. An optional metering valve may be supplied in lieu of the fixed orifice, thereby providing field adjustable proportioning at 1%, 3% or 6%.

The proportioner shall have a female swivel, National Hose thread, water inlet connection, a male National Hose thread foam solution discharge connection, and FNPT foam concentrate inlet connection. Proportioner shall be painted with a red fused polyurethane powder coat finish.

A pick-up tube assembly shall be provided. For the HLP-6 & 9 line proportioners, the pick-up tube shall consist of a 3/4" OD stainless steel wand with strainer, 3/4" ID X 1-1/8" OD wire reinforced, clear PVC tubing and 1/2" MNPT brass connector. The pick-up tube shall have an overall length of approximately 60". For the HLP-17 to HLP-25 line proportioners, the pick-up tube shall consist of a 1" OD stainless steel wand, 1" ID X 1-3/8" OD wire reinforced, clear PVC tubing and 3/4" MNPT brass connector. The pick-up tube shall have an overall length of approximately 120". Each pick-up tube assembly shall include a check valve and pipe nipple of the appropriate size for connection to the Handline Proportioner.

Approvals and Listings

- Underwriters Laboratories: HLP-6M, HLP-9A, HLP-9, HLP-9M, HLP-17M, & HLP-25A.
- Factory Mutual: HLP-9A, HLP-9.

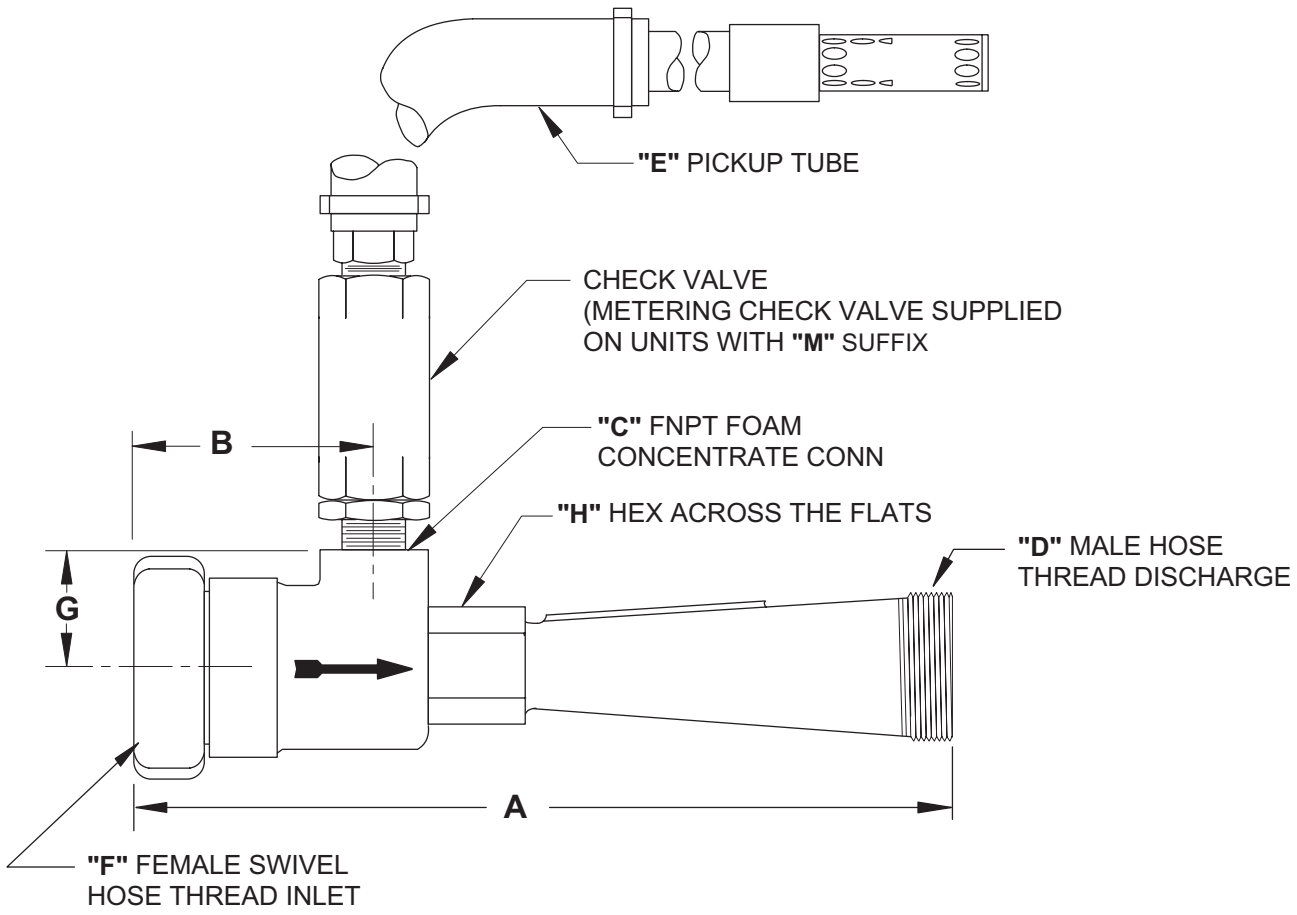
Technical Data

Material:

Body:	Cast Brass
Jet:	Brass
Foam Orifice:	Brass
Check Valve:	Brass
Pipe Nipple:	Brass
Pick-up Tube:	
Wand	Stainless Steel
Tube	Wire Reinforced Clear PVC
Thread connector	Brass
Finish:	Red fused polyurethane powdercoat finish
Flow Range @ 200 PSI (13.8 Bar):	• 60 gpm (227 lpm) • 100 gpm (379 lpm) • 250 gpm (946 lpm) • 375 gpm (1420 lpm)
Working Pressure:	200 PSI (13.8 Bar)
Max. ABP:	65% of inlet pressure

Options

- Metering valve



LINE PROPORTIONER DIMENSION CHART

TABLE OF DIMENSIONS - INCHES(MM)

	A	B	C	D	E	F	G	H	WEIGHT LBS(KGS)
HLP-6	10-5/8(270)	2-15/32(62.7)	1/2(12.7)	1-1/2(38.1)	1/2(12.7)	1-1/2(38.1)	1-19/32(40.4)	1-1/4(31.8)	6(2.7)
HLP-9	15-5/8(384)	2-7/8(73.2)	1/2(12.7)	1-1/2(38.1)	1/2(12.7)	1-1/2(38.1)	2-3/8(60.5)	2(50.8)	14(6.4)
HLP-17	16-7/8(429)	4-1/4(108)	1(25.4)	2-1/2(63.5)	1(25.4)	2-1/2(63.5)	2-11/16(68.3)	2-5/8(66.8)	20(9.1)
HLP-25	16-7/8(429)	4-1/4(108)	1(25.4)	2-1/2(63.5)	1(25.4)	2-1/2(63.5)	2-11/16(68.3)	2-5/8(66.8)	20(9.1)

HLP MODEL NUMBER DESIGNATION CHART

HLP Model	Hose Size	% Prop. Valve	Metering Check Only	Check Valve Only	E (PU Tube Length) in	E (PU Tube Length) (mm)	A (LP Length) in	A (LP Length) (mm)	Weight Lbs	Weight Kg
HLP-6A	1-1/2"	3	NO	YES	60	(1524)	9-3/4	(248)	6-1/2	3
HLP-6	1-1/2"	6	NO	YES	60	(1524)	9-3/4	(248)	6-1/2	3
HLP-6M①	1-1/2"	1,3 OR 6	YES	YES	60	(1524)	9-3/4	(248)	6-1/2	3
HLP-9A①②	1-1/2"	3	NO	YES	60	(1524)	11	(279)	8-1/2	4
HLP-9①②	1-1/2"	6	NO	YES	60	(1524)	11	(279)	8-1/2	4
HLP-9M①	1-1/2"	1,3 OR 6	YES	YES	60	(1524)	11	(279)	8-1/2	4
HLP-17A	2-1/2"	3	NO	YES	100	(2540)	17	(432)	25	11-1/4
HLP-17	2-1/2"	6	NO	YES	100	(2540)	17	(432)	25	11-1/4
HLP-17M①	2-1/2"	1,3 OR 6	YES	YES	100	(2540)	17	(432)	25	11-1/4
HLP-25A①	2-1/2"	3	NO	YES	100	(2540)	17	(432)	25	11-1/4
HLP-25	2-1/2"	6	NO	YES	100	(2540)	17	(432)	25	11-1/4

① Indicates UL Listed.

② Indicates FM Approved.

HANDLINE PROPORTIONER AND NOZZLE APPLICATION CHART

Model Model	GPM Flow @ 200 psi Inlet	Air Aspirating Nozzle Model No.	GPM Nozzle Nozzle Flow @ 100 psi	Inlet Hose Size and Maximum Hose Lay					
				1-1/2"	1-3/4"	2-1/2"	3"	4"	5"
HLP-6	60	JS-6	60	300'	400'				
HLP-9	100	JS-10	98	100'	200'				
HLP-17	250	PC-31	250			200'	500'		
HLP-25	375	PC-50	400			100'	250'	900'	2200'

Friction loss calculations from NFPA Handbook, 16th Edition

Ordering Information

Part Number	Description	Lb.	Kg.
1233-8510-1	HLP-6A, 1-1/2" NH Brass Line Proportioner 3%, 60 GPM @ 200 PSI	7	3.2
1233-8511-1	HLP-6A, 1-1/2" NPSH Brass Line Proportioner 3%, 60 GPM @ 200 PSI	7	3.2
1233-8520-1	HLP-6, 1-1/2" NH Brass Line Proportioner 6%, 60 GPM @ 200 PSI	7	3.2
1233-8521-1	HLP-6, 1-1/2" NPSH Brass Line Proportioner 6%, 60 GPM @ 200 PSI	7	3.2
1233-8530-1	HLP-6M, 1-1/2" NH Brass Line Proportioner 1,3,6% metering 60 GPM @ 200 PSI	8	3.4
1233-8531-1	HLP-6M, 1-1/2" NPSH Brass Line Proportioner 1,3,6% metering 60 GPM @ 200 PSI	8	3.4
1233-8540-1	HLP-9A, 1-1/2" NH Brass Line Proportioner 3%, 95 GPM @ 200 PSI	8	3.6
1233-8541-1	HLP-9A, 1-1/2" NPSH Brass Line Proportioner 3%, 95 GPM @ 200 PSI	8	3.6
1233-8542-1	HLP-9, 1-1/2" NH Brass Line Proportioner 6%, 95 GPM @ 200 PSI	8	3.6
1233-8543-1	HLP-9, 1-1/2" NPSH Brass Line Proportioner 6%, 95 GPM @ 200 PSI	8	3.6
1233-8544-1	HLP-9M, 1-1/2" NH Brass Line Proportioner 1,3,6% metering 95 GPM @ 200 PSI	9	3.9
1233-8545-1	HLP-9M, 1-1/2" NPSH Brass Line Proportioner 1,3,6% metering 95 GPM @ 200 PSI	9	3.9
1233-8550-1	HLP-17A, 2-1/2" NH Brass Line Proportioner 3%, 250 GPM @ 200 PSI	25	11.4
1233-8552-1	HLP-17, 2-1/2" NH Brass Line Proportioner 6%, 250 GPM @ 200 PSI	25	11.4
1233-8554-1	HLP-17M, 2-1/2" NH Brass Line Proportioner 1,3,6% metering 250 GPM @ 200 PSI	26	11.6
1233-8560-1	HLP-25, 2-1/2" NH Brass Line Proportioner 6%, 375 GPM @ 200 PSI	25	11.4
1233-8561-1	HLP-25A, 2-1/2" NN Brass Line Proportioner 3%, 375 GPM @ 200 PSI	25	11.4

06/05 (Rev D) Printed in U.S.A. (NPR120.PMD)

NATIONAL FOAM, INC.
P.O. Box 695 • Exton, PA 19341-0695 • (610) 363-1400 • Fax: (610) 524-9073
www.Kidde-Fire.com