



DATA SHEET #NPR270

PORTABLE LINE PROPORTIONERS

Description

National Foam Line Proportioners are venturi devices that introduce Foam Concentrate into a flowing stream of water at a controlled rate of either 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 proportioner 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. Therefore, each model of line proportioner has an operating pressure range and to achieve optimum performance, the water inlet pressure must be maintained within this range. 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, LP's 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 discharge device(s), elevation head and line losses. The total allowable back pressure on the discharge side of the LP can not exceed 65% of the water inlet pressure. If back pressure exceeds 65%, the LP may not pick-up foam concentrate or the solution may be lean.

When line proportioners are used as portable proportioning devices, the foam concentrate is usually stored in 5 gallon pails, 55 gallon drums, tote tanks or trailers. Although the foam concentrate connection can be permanently piped to a trailer or similar device, the proportioner is normally provided with a pickup tube which is used to draw foam concentrate from the portable foam containers.

Features

- Inexpensive.
- No moving parts.
- Minimal maintenance.
- Simple operation.
- 65% Allowable back pressures
- Flows up to 250 GPM (946 LPM) @ 100 PSI (6.9 Bar)
- Operates with pressures from 75 PSI to 200 PSI (5.2 Bar to 13.8 Bar), however optimum performance is with pressures above 125 PSI (8.6 Bar)

Applications

The portable line proportioner is ideally suited for hose line applications as well as any proportioning application requiring a single fixed discharge flow and relatively high, consistent water pressure. 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

The National Foam Portable Line Proportioner shall be a venturi type proportioning device designed to inject foam concentrate into the water stream at a controlled rate of either 3% or 6% and shall be designed to be portable or permanently installed in a fixed piping system. The proportioner shall be suitable for use with all foam concentrates. Units are designed for operation from 75 PSI (5.2 Bar) to 200 PSI (13.8 Bar), however the model with the correct operating pressure range must be selected to insure proper injection. See chart for available flow and pressure ranges. The proportioner shall be designed to proportion properly with back pressures up 65% of the inlet pressure.

The line proportioner shall consist of a cast brass body, a

machined jet (venturi) and receiver (recovery section) and foam concentrate orifice. 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 rate and shall proportion within acceptable limits over the operating pressure range. 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 use in portable applications. For the SLP-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 SLP-12 to SLP-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 line proportioner.

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

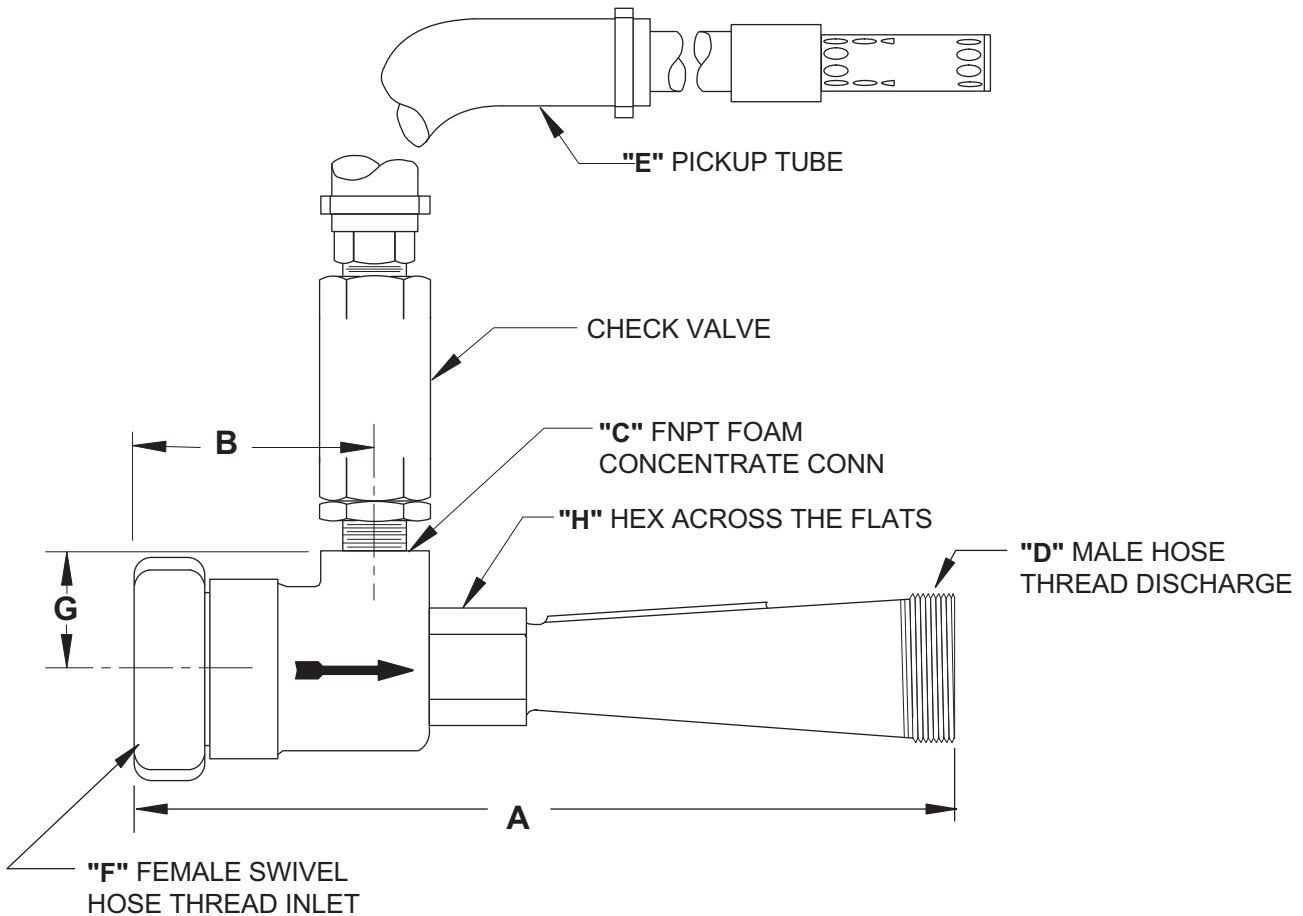
Flow Range: 45-250 gpm (170-946 lpm) @ 100 PSI (6.9 Bar)

Working Pressure: 75 PSI to 200 PSI (5.2 Bar to 13.8 Bar)

Max. ABP: 65% of inlet pressure

Options

- Pick-up tubes
- Special Hose Threads
- Special Flows



LINE PROPORTIONER SOLUTION FLOW CHART

MODEL	INLET PRESSURE		SOLUTION FLOW RATE *				MODEL	INLET PRESSURE		SOLUTION FLOW RATE *			
			3% (A SERIES)		6%					3% (A SERIES)		6%	
	PSI	BAR	GPM	LPM	GPM	LPM		PSI	BAR	GPM	LPM	GPM	LPM
SLP-6	90	6.2	44.3	168	45.7	173	SLP-17	90	6.2	167.5	634	172.9	654
	110	6.9	48.2	182	49.8	188		100	6.9	175.0	662	180.6	684
	125	7.5	51.0	193	52.7	199		110	7.5	182.3	690	188.1	712
	135	9.3	52.8	200	54.5	206		135	9.3	199.4	755	205.7	779
	165	11.3	57.2	216	59.0	223		165	11.3	216.4	819	223.3	845
	200	13.8	63.0	238	65.0	246		200	13.8	238.0	901	246.0	931
SLP-9	90	6.2	65.1	246	67.2	254	SLP-20	90	6.2	197.1	746	203.4	770
	110	6.9	70.9	268	73.2	277		100	6.9	206.0	780	212.6	805
	125	7.5	75.0	284	77.4	293		110	7.5	207.8	787	214.5	812
	135	9.3	77.5	293	80.0	303		135	9.3	234.6	888	242.1	916
	165	11.3	84.2	319	86.9	329		165	11.3	254.7	964	262.9	995
	200	13.8	92.7	351	95.6	362		200	13.8	280.5	1062	289.5	1096
SLP-12	90	6.2	89.5	339	92.3	349	SLP-25	90	6.2	246.9	935	254.8	964
	110	6.9	97.4	369	100.5	380		100	6.9	258.0	977	266.3	1008
	125	7.5	103.0	390	106.3	402		110	7.5	268.8	1017	277.3	1050
	135	9.3	106.5	403	109.9	416		135	9.3	293.9	1112	303.3	1148
	165	11.3	115.7	438	119.4	452		165	11.3	319.1	1208	329.3	1246
	200	13.8	127.3	482	131.4	497		200	13.8	351.3	1330	362.6	1372
SLP-15	90	6.2	148.4	562	153.1	579	* ALL FIGURES ARE ENGINEERING VALUES. ACTUAL FLOWS MAY VARY PLUS OR MINUS 4% OF STATED VALUES.						
	100	6.9	155.0	587	160.0	606	** PRESSURE RANGE FOR EACH MODEL NUMBER IS AS FOLLOWS:						
	110	7.5	161.4	611	166.6	631	LP-X-90 75 PSI TO 90 PSI (5.2 BAR TO 6.2 BAR)						
	135	9.3	176.6	668	182.2	690	LP-X-110 91 PSI TO 110 PSI (6.3 BAR TO 7.5 BAR)						
	165	11.3	191.8	726	197.9	749	LP-X-135 111 PSI TO 135 PSI (7.6 BAR TO 9.3 BAR)						
	200	13.8	211.0	799	217.8	824	LP-X-165 136 PSI TO 165 PSI (9.4 BAR TO 11.3 BAR)						
						LP-X-200 166 PSI TO 200 PSI (11.4 BAR TO 13.8 BAR)							

LINE PROPORTIONER DIMENSION CHART

TABLE OF DIMENSIONS - INCHES(MM)

	A	B	C	D	E	F	G	H	WEIGHT LBS(KGS)
SLP-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)
SLP-9	11(279)	2-5/8(66.8)	1/2(12.7)	1-1/2(38.1)	1/2(12.7)	1-1/2(38.1)	1-19/32(40.4)	1-3/8(35.1)	6(2.7)
SLP-12	15-5/8(384)	2-7/8(73.2)	1/2(12.7)	2-1/2(63.5)	1/2(12.7)	2-1/2(63.5)	2-3/8(60.5)	2(50.8)	14(6.4)
SLP-15	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)
SLP-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)
SLP-20	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)
SLP-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)

Ordering Information

Part Number	Model #	%	Description
1233-1100-3	SLP-6-90	(6%)	..Line Proportioner, NH
1233-1110-3	SLP-6-110	(6%)	..Line Proportioner, NH
1233-1120-3	SLP-6-135	(6%)	..Line Proportioner, NH
1233-1130-3	SLP-6-165	(6%)	..Line Proportioner, NH
1233-1140-3	SLP-6-200	(6%)	..Line Proportioner, NH
1233-1150-3	SLP-6A-90	(3%)	..Line Proportioner, NH
1233-1160-3	SLP-6A-110	(3%)	..Line Proportioner, NH
1233-1170-3	SLP-6A-135	(3%)	..Line Proportioner, NH
1233-1180-3	SLP-6A-165	(3%)	..Line Proportioner, NH
1233-1190-3	SLP-6A-200	(3%)	..Line Proportioner, NH
1233-1300-3	SLP-6-90	(6%)	..Line Proportioner, NPSH
1233-1305-3	SLP-6-110	(6%)	..Line Proportioner, NPSH
1233-1310-3	SLP-6-135	(6%)	..Line Proportioner, NPSH
1233-1315-3	SLP-6-165	(6%)	..Line Proportioner, NPSH
1233-1320-3	SLP-6-200	(6%)	..Line Proportioner, NPSH
1233-1350-3	SLP-6A-90	(3%)	..Line Proportioner, NPSH
1233-1355-3	SLP-6A-110	(3%)	..Line Proportioner, NPSH
1233-1360-3	SLP-6A-135	(3%)	..Line Proportioner, NPSH
1233-1365-3	SLP-6A-165	(3%)	..Line Proportioner, NPSH
1233-1370-3	SLP-6A-200	(3%)	..Line Proportioner, NPSH
1233-1500-3	SLP-9-90	(6%)	..Line Proportioner, NH
1233-1510-3	SLP-9-110	(6%)	..Line Proportioner, NH
1233-1520-3	SLP-9-135	(6%)	..Line Proportioner, NH
1233-1530-3	SLP-9-165	(6%)	..Line Proportioner, NH
1233-1540-3	SLP-9-200	(6%)	..Line Proportioner, NH
1233-1550-3	SLP-9A-90	(3%)	..Line Proportioner, NH
1233-1560-3	SLP-9A-110	(3%)	..Line Proportioner, NH
1233-1570-3	SLP-9A-135	(3%)	..Line Proportioner, NH
1233-1580-3	SLP-9A-165	(3%)	..Line Proportioner, NH
1233-1590-3	SLP-9A-200	(3%)	..Line Proportioner, NH
1233-1700-4	SLP-9-90	(6%)	..Line Proportioner, NPSH
1233-1710-3	SLP-9-110	(6%)	..Line Proportioner, NPSH
1233-1720-4	SLP-9-135	(6%)	..Line Proportioner, NPSH
1233-1730-3	SLP-9-165	(6%)	..Line Proportioner, NPSH
1233-1740-4	SLP-9-200	(6%)	..Line Proportioner, NPSH
1233-1750-3	SLP-9A-90	(3%)	..Line Proportioner, NPSH
1233-1760-3	SLP-9A-110	(3%)	..Line Proportioner, NPSH
1233-1770-3	SLP-9A-135	(3%)	..Line Proportioner, NPSH
1233-1780-3	SLP-9A-165	(3%)	..Line Proportioner, NPSH
1233-1790-4	SLP-9A-200	(3%)	..Line Proportioner, NPSH
1233-2100-3	SLP-12-90	(6%)	..Line Proportioner, NH
1233-2110-3	SLP-12-110	(6%)	..Line Proportioner, NH
1233-2120-3	SLP-12-135	(6%)	..Line Proportioner, NH
1233-2130-3	SLP-12-165	(6%)	..Line Proportioner, NH
1233-2140-3	SLP-12-200	(6%)	..Line Proportioner, NH
1233-2150-3	SLP-12A-90	(3%)	..Line Proportioner, NH
1233-2160-3	SLP-12A-110	(3%)	..Line Proportioner, NH
1233-2170-3	SLP-12A-135	(3%)	..Line Proportioner, NH
1233-2180-3	SLP-12A-165	(3%)	..Line Proportioner, NH
1233-2190-3	SLP-12A-200	(3%)	..Line Proportioner, NH

Part Number	Model #	%	Description
1233-2600-3	SLP-15-90	(6%)	...Line Proportioner, NH
1233-2610-3	SLP-15-110	(6%)	...Line Proportioner, NH
1233-2620-3	SLP-15-135	(6%)	...Line Proportioner, NH
1233-2630-3	SLP-15-165	(6%)	...Line Proportioner, NH
1233-2640-3	SLP-15-200	(6%)	...Line Proportioner, NH
1233-2650-3	SLP-15A-90	(3%)	...Line Proportioner, NH
1233-2660-3	SLP-15A-110	(3%)	...Line Proportioner, NH
1233-2670-3	SLP-15A-135	(3%)	...Line Proportioner, NH
1233-2680-3	SLP-15A-165	(3%)	...Line Proportioner, NH
1233-2690-3	SLP-15A-200	(3%)	...Line Proportioner, NH
1233-3100-3	SLP-17-90	(6%)	...Line Proportioner, NH
1233-3110-3	SLP-17-110	(6%)	...Line Proportioner, NH
1233-3120-3	SLP-17-135	(6%)	...Line Proportioner, NH
1233-3130-3	SLP-17-165	(6%)	...Line Proportioner, NH
1233-3140-3	SLP-17-200	(6%)	...Line Proportioner, NH
1233-3150-3	SLP-17A-90	(3%)	...Line Proportioner, NH
1233-3160-3	SLP-17A-110	(3%)	...Line Proportioner, NH
1233-3170-3	SLP-17A-135	(3%)	...Line Proportioner, NH
1233-3180-3	SLP-17A-165	(3%)	...Line Proportioner, NH
1233-3190-3	SLP-17A-200	(3%)	...Line Proportioner, NH
1233-4100-3	SLP-20-90	(6%)	...Line Proportioner, NH
1233-4110-3	SLP-20-110	(6%)	...Line Proportioner, NH
1233-4120-3	SLP-20-135	(6%)	...Line Proportioner, NH
1233-4130-3	SLP-20-165	(6%)	...Line Proportioner, NH
1233-4140-3	SLP-20-200	(6%)	...Line Proportioner, NH
1233-4150-3	SLP-20A-90	(3%)	...Line Proportioner, NH
1233-4160-3	SLP-20A-110	(3%)	...Line Proportioner, NH
1233-4170-3	SLP-20A-135	(3%)	...Line Proportioner, NH
1233-4180-3	SLP-20A-165	(3%)	...Line Proportioner, NH
1233-4190-3	SLP-20A-200	(3%)	...Line Proportioner, NH
1233-4600-3	SLP-25-90	(6%)	...Line Proportioner, NH
1233-4610-3	SLP-25-110	(6%)	...Line Proportioner, NH
1233-4620-3	SLP-25-135	(6%)	...Line Proportioner, NH
1233-4630-3	SLP-25-165	(6%)	...Line Proportioner, NH
1233-4640-3	SLP-25-200	(6%)	...Line Proportioner, NH
1233-4650-3	SLP-25A-90	(3%)	...Line Proportioner, NH
1233-4660-3	SLP-25A-110	(3%)	...Line Proportioner, NH
1233-4670-3	SLP-25A-135	(3%)	...Line Proportioner, NH
1233-4680-3	SLP-25A-165	(3%)	...Line Proportioner, NH
1233-4690-3	SLP-25A-200	(3%)	...Line Proportioner, NH

Pick-up Tube Assembly - SLP-6 & SLP-9

1231-1152-6	.....	1/2" Check Valve
9228-8341-5	.....	1/2" Nipple
1247-1020-3	.....	PT-2A Pick-Up Tube

Pick-up Tube Assembly - SLP-12 to SLP-25

1231-1155-1	.....	1" Check Valve
9228-8342-2	.....	1" Nipple
1247-1020-7	.....	PT-3A Pick-Up Tube

This information is only a general guideline, and each installation may require modifications to meet the applications or requirements of that situation. The company reserves the right to change any portion of this information without notice. Terms and conditions of sale apply and are available on request.

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