

# LINE PROPORTIONERS "LP"

NPR260

Approvals: UL, ULC

- Simple Inexpensive & Accurate Foam Proportioning
- Inlet Pressure Choices 90-200 PSI
- Flow Rate 44-578 GPM
- Special Designs Available Flow & Pressure
- Salt Water Compatible



## 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 in a fixed piping systems, the foam concentrate is usually stored in a permanently installed storage tank with permanent piping between the tank and foam concentrate connection of the line proportioner.

## Features

- Inexpensive
- No moving parts
- Minimal maintenance
- Simple operation
- 65% Allowable back pressures
- Flows up to 578 GPM (2188 LPM) @ 200 PSI (6.9 Bar)
- Operates with pressures from 90 PSI to 200 PSI (6.2 Bar to 13.8 Bar), however optimum performance is with pressures above 125 PSI (8.6 Bar)

## Applications

The line proportioner is ideally suited to 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 grid could increase the allowable back pressure sufficiently to cause proportioning failure.

## Technical Specifications

The National Foam 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 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 to 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 FNPT water inlet connection, a MNPT foam solution discharge connection, and FNPT foam concentrate inlet connection. The proportioner shall be painted with a red fused polyurethane powder coat finish.

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## Materials of Construction

### Material:

Body: .....Cast Brass  
 Jet:.....Brass  
 Foam Orifice: .....Brass

### Finish:

Red fused polyurethane powder coat finish

### Flow Range:

45-400 gpm (170-1514 lpm) @ 100 PSI (6.9 Bar)

### Working Pressure:

75 PSI to 200 PSI (5.2 Bar to 13.8 Bar)

### Max. ABP:

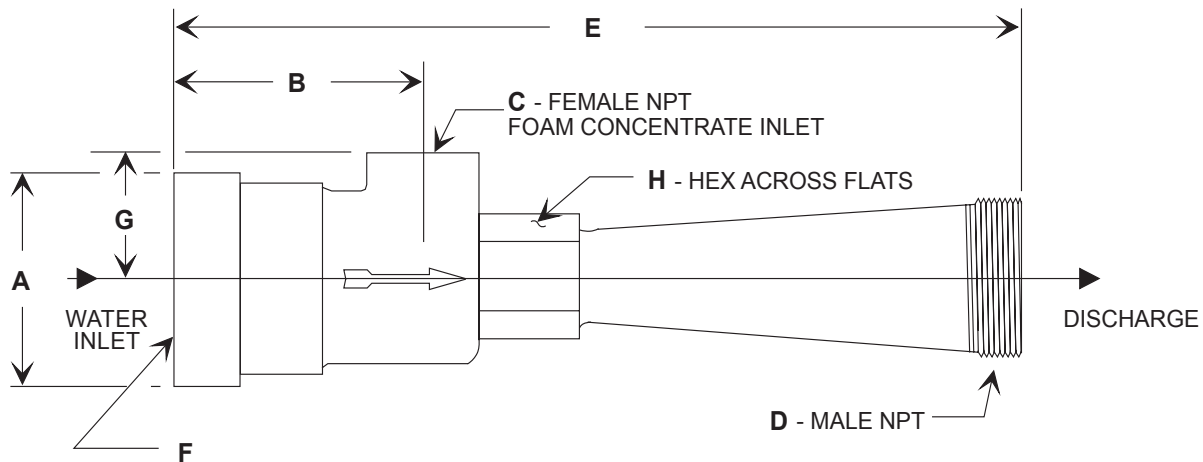
65% of inlet pressure

### Approvals and Listings

- Underwriters' Laboratories Inc. (UL)
- Underwriters' Laboratories of Canada (ULC)

### Options

- Pick-Up Tube Kits Available
- Special Flows & Pressures Upon Request



LINE PROPORTIONER DIMENSION CHART

TABLE OF DIMENSIONS - INCHES(MM)

	A	B	C	D	E	F	G	H	WEIGHT LBS (KGS)
LP-6	2-1/2(63.5)	2-15/32(62.7)	1/2(12.7)	1-1/2(38.1)	10(254)	1-1/2(38.1)	1-19/32(40.4)	1-1/4(31.8)	6(2.7)
LP-9	2-1/2(63.5)	2-5/8(66.8)	1/2(12.7)	1-1/2(38.1)	10-3/8(263.7)	1-1/2(38.1)	1-19/32(40.4)	1-3/8(35.1)	6(2.7)
LP-12	3-9/16(90.4)	2-7/8(73.2)	1/2(12.7)	2-1/2(63.5)	14-1/4(362)	2-1/2(63.5)	2-3/8(60.5)	2(50.8)	14(6.4)
LP-15	3-3/4(95.3)	4-1/4(108)	1(25.4)	2-1/2(63.5)	16(406.4)	2-1/2(63.5)	2-11/16(68.3)	2-5/8(66.8)	20(9.1)
LP-17	3-3/4(95.3)	4-1/4(108)	1(25.4)	2-1/2(63.5)	16(406.4)	2-1/2(63.5)	2-11/16(68.3)	2-5/8(66.8)	20(9.1)
LP-20	3-3/4(95.3)	4-1/4(108)	1(25.4)	2-1/2(63.5)	16(406.4)	2-1/2(63.5)	2-11/16(68.3)	2-5/8(66.8)	20(9.1)
LP-25	3-3/4(95.3)	4-1/4(108)	1(25.4)	2-1/2(63.5)	16(406.4)	2-1/2(63.5)	2-11/16(68.3)	2-5/8(66.8)	20(9.1)
LP-30	3-7/8(98.6)	4-3/4(120.7)	1(25.4)	3(76.2)	18-3/8(466.9)	2-1/2(63.5)	2-31/32(75.4)	3(76.2)	25(11.4)
LP-35	3-7/8(98.6)	4-3/4(120.7)	1(25.4)	3(76.2)	18-3/8(466.9)	2-1/2(63.5)	2-31/32(75.4)	3(76.2)	25(11.4)
LP-40	3-7/8(98.6)	4-3/4(120.7)	1(25.4)	3(76.2)	18-3/8(466.9)	2-1/2(63.5)	2-31/32(75.4)	3(76.2)	25(11.4)

1. "C" Dimension is minimum allowable foam concentrate supply pipe sizes.
2. Allow one(1) pipe size larger for AR-AFFF foam concentrate.  
 For Example: 1/2" pipe is 3/4" pipe; 1" pipe is 1-1/4" pipe; 1-1/4" pipe is 1-1/2" pipe etc.

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LINE PROPORTIONER SOLUTION FLOW CHART													
MODEL	INLET **		SOLUTION FLOW RATE *				MODEL	INLET **		SOLUTION FLOW RATE *			
	PRESSURE		3% (A SERIES)		6%			PRESSURE		3% (A SERIES)		6%	
	PSI	BAR	GPM	LPM	GPM	LPM		PSI	BAR	GPM	LPM	GPM	LPM
LP-6	90	6.2	44.3	168	45.7	173	LP-20	90	6.2	197.1	746	203.4	770
	110	7.5	48.2	182	49.8	188		110	7.5	207.8	787	214.5	812
	135	9.3	52.8	200	54.5	206		135	9.3	234.6	888	242.1	916
	165	11.3	57.2	216	59.0	223		165	11.3	254.7	964	262.9	995
	200	13.8	63.0	238	65.0	246		200	13.8	280.5	1062	289.5	1096
LP-9	90	6.2	65.1	246	67.2	254	LP-25	90	6.2	246.9	935	254.8	964
	110	7.5	70.9	268	73.2	277		110	7.5	268.8	1017	277.3	1050
	135	9.3	77.5	293	80.0	303		135	9.3	293.9	1112	303.3	1148
	165	11.3	84.2	319	86.9	329		165	11.3	319.1	1208	329.3	1246
	200	13.8	92.7	351	95.6	362		200	13.8	351.3	1330	362.6	1372
LP-12	90	6.2	89.5	339	92.3	349	LP-30	90	6.2	294.7	1115	304.1	1151
	110	7.5	103.0	390	106.3	402		110	7.5	320.8	1214	331.1	1253
	135	9.3	106.5	403	109.9	416		135	9.3	350.8	1328	362.0	1370
	165	11.3	115.7	438	119.4	452		165	11.3	380.9	1442	393.1	1488
	200	13.8	127.3	482	131.4	497		200	13.8	419.4	1587	432.8	1638
LP-15	90	6.2	148.4	562	153.1	579	LP-35	90	6.2	345.5	1308	356.5	1349
	110	7.5	161.4	611	166.6	631		110	7.5	376.0	1423	388.0	1469
	135	9.3	176.6	668	182.2	690		135	9.3	411.2	1556	424.4	1606
	165	11.3	191.8	726	197.9	749		165	11.3	446.4	1689	460.7	1744
	200	13.8	211.0	799	217.8	824		200	13.8	491.5	1860	507.2	1920
LP-17	90	6.2	167.5	634	172.9	654	LP-40	90	6.2	394.3	1492	406.9	1540
	110	7.5	182.3	690	188.1	712		110	7.5	429.2	1625	442.9	1676
	135	9.3	199.4	755	205.7	779		135	9.3	469.4	1777	484.4	1833
	165	11.3	216.4	819	223.3	845		165	11.3	509.6	1929	525.9	1991
	200	13.8	238.0	901	246.0	931		200	13.8	561.0	2123	578.9	2191

\* All figures are engineering values. Actual flows may vary plus or minus 4% of stated values.

\*\* Flow shown is for pressure noted. See model number suffix for acceptable pressure range for each model.

Example: LP-6-90. Pressure range for each model number is as follows:

LP-X-90 ..... 75 PSI TO 90 PSI (5.2 BAR TO 6.2 BAR)

LP-X-110 ..... 91 PSI TO 110 PSI (6.3 BAR TO 7.5 BAR)

LP-X-135 ..... 111 PSI TO 135 PSI (7.6 BAR TO 9.3 BAR)

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)

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ORDERING INFORMATION							
PART NUMBER	MODEL #	%	DESCRIPTION	PART NUMBER	MODEL #	%	DESCRIPTION
1233-1200-3	LP-6-90	(6%)	Line Proportioner	1233-4200-3	LP-20-90	(6%)	Line Proportioner
1233-1210-3	LP-6-110	(6%)	Line Proportioner	1233-4210-3	LP-20-110	(6%)	Line Proportioner
1233-1220-3	LP-6-135	(6%)	Line Proportioner	1233-4220-3	LP-20-135	(6%)	Line Proportioner
1233-1230-3	LP-6-165	(6%)	Line Proportioner	1233-4230-3	LP-20-165	(6%)	Line Proportioner
1233-1240-3	LP-6-200	(6%)	Line Proportioner	1233-4240-3	LP-20-200	(6%)	Line Proportioner
1233-1250-3	LP-6A-90	(3%)	Line Proportioner	1233-4250-3	LP-20A-90	(3%)	Line Proportioner
1233-1260-3	LP-6A-110	(3%)	Line Proportioner	1233-4260-3	LP-20A-110	(3%)	Line Proportioner
1233-1270-3 •	LP-6A-135	(3%)	Line Proportioner	1233-4270-3	LP-20A-135	(3%)	Line Proportioner
1233-1280-3 •	LP-6A-165	(3%)	Line Proportioner	1233-4280-3 •	LP-20A-165	(3%)	Line Proportioner
1233-1290-3 •	LP-6A-200	(3%)	Line Proportioner	1233-4290-3 •	LP-20A-200	(3%)	Line Proportioner
1233-1600-3	LP-9-90	(6%)	Line Proportioner	1233-4700-3	LP-25-90	(6%)	Line Proportioner
1233-1610-3	LP-9-110	(6%)	Line Proportioner	1233-4710-3	LP-25-110	(6%)	Line Proportioner
1233-1620-3	LP-9-135	(6%)	Line Proportioner	1233-4720-3	LP-25-135	(6%)	Line Proportioner
1233-1630-3	LP-9-165	(6%)	Line Proportioner	1233-4730-3	LP-25-165	(6%)	Line Proportioner
1233-1640-4	LP-9-200	(6%)	Line Proportioner	1233-4740-3	LP-25-200	(6%)	Line Proportioner
1233-1650-3	LP-9A-90	(3%)	Line Proportioner	1233-4750-3	LP-25A-90	(3%)	Line Proportioner
1233-1660-4	LP-9A-110	(3%)	Line Proportioner	1233-4760-3	LP-25A-110	(3%)	Line Proportioner
1233-1670-4 •	LP-9A-135	(3%)	Line Proportioner	1233-4770-3 •	LP-25A-135	(3%)	Line Proportioner
1233-1680-3 •	LP-9A-165	(3%)	Line Proportioner	1233-4780-3 •	LP-25A-165	(3%)	Line Proportioner
1233-1690-4	LP-9A-200	(3%)	Line Proportioner	1233-4790-3	LP-25A-200	(3%)	Line Proportioner
1233-2200-3	LP-12-90	(6%)	Line Proportioner	1233-5200-3	LP-30-90	(6%)	Line Proportioner
1233-2210-3	LP-12-110	(6%)	Line Proportioner	1233-5210-3	LP-30-110	(6%)	Line Proportioner
1233-2220-3	LP-12-135	(6%)	Line Proportioner	1233-5220-3	LP-30-135	(6%)	Line Proportioner
1233-2230-3	LP-12-165	(6%)	Line Proportioner	1233-5230-3	LP-30-165	(6%)	Line Proportioner
1233-2240-3	LP-12-200	(6%)	Line Proportioner	1233-5240-3	LP-30-200	(6%)	Line Proportioner
1233-2250-3	LP-12A-90	(3%)	Line Proportioner	1233-5250-3	LP-30A-90	(3%)	Line Proportioner
1233-2260-3	LP-12A-110	(3%)	Line Proportioner	1233-5260-3	LP-30A-110	(3%)	Line Proportioner
1233-2270-3 •	LP-12A-135	(3%)	Line Proportioner	1233-5270-3	LP-30A-135	(3%)	Line Proportioner
1233-2280-3 •	LP-12A-165	(3%)	Line Proportioner	1233-5280-3	LP-30A-165	(3%)	Line Proportioner
1233-2290-3	LP-12A-200	(3%)	Line Proportioner	1233-5290-3	LP-30A-200	(3%)	Line Proportioner
1233-2700-3	LP-15-90	(6%)	Line Proportioner	1233-5700-3	LP-35-90	(6%)	Line Proportioner
1233-2710-3	LP-15-110	(6%)	Line Proportioner	1233-5710-3	LP-35-110	(6%)	Line Proportioner
1233-2720-3	LP-15-135	(6%)	Line Proportioner	1233-5720-3	LP-35-135	(6%)	Line Proportioner
1233-2730-3	LP-15-165	(6%)	Line Proportioner	1233-5730-3	LP-35-165	(6%)	Line Proportioner
1233-2740-3	LP-15-200	(6%)	Line Proportioner	1233-5740-3	LP-35-200	(6%)	Line Proportioner
1233-2750-3	LP-15A-90	(3%)	Line Proportioner	1233-5750-3	LP-35A-90	(3%)	Line Proportioner
1233-2760-3	LP-15A-110	(3%)	Line Proportioner	1233-5760-3	LP-35A-110	(3%)	Line Proportioner
1233-2770-3	LP-15A-135	(3%)	Line Proportioner	1233-5770-3	LP-35A-135	(3%)	Line Proportioner
1233-2780-3	LP-15A-165	(3%)	Line Proportioner	1233-5780-3	LP-35A-165	(3%)	Line Proportioner
1233-2790-3	LP-15A-200	(3%)	Line Proportioner	1233-5790-3	LP-35A-200	(3%)	Line Proportioner
1233-3200-3	LP-17-90	(6%)	Line Proportioner	1233-6200-3	LP-40-90	(6%)	Line Proportioner
1233-3210-3	LP-17-110	(6%)	Line Proportioner	1233-6210-3	LP-40-110	(6%)	Line Proportioner
1233-3220-3	LP-17-135	(6%)	Line Proportioner	1233-6220-3	LP-40-135	(6%)	Line Proportioner
1233-3230-3	LP-17-165	(6%)	Line Proportioner	1233-6230-3	LP-40-165	(6%)	Line Proportioner
1233-3240-3	LP-17-200	(6%)	Line Proportioner	1233-6240-3	LP-40-200	(6%)	Line Proportioner
1233-3250-3	LP-17A-90	(3%)	Line Proportioner	1233-6250-3	LP-40A-90	(3%)	Line Proportioner
1233-3260-3	LP-17A-110	(3%)	Line Proportioner	1233-6260-3	LP-40A-110	(3%)	Line Proportioner
1233-3270-3	LP-17A-135	(3%)	Line Proportioner	1233-6270-3	LP-40A-135	(3%)	Line Proportioner
1233-3280-3	LP-17A-165	(3%)	Line Proportioner	1233-6280-3	LP-40A-165	(3%)	Line Proportioner
1233-3290-3	LP-17A-200	(3%)	Line Proportioner	1233-6290-3	LP-40A-200	(3%)	Line Proportioner

• Indicates UL, ULC Listed

**Note:** Ordering Information for Optional Equipment on Page 5.

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ORDERING INFORMATION OPTIONAL EQUIPMENT	
Part Number	Description
<b>Pick-up Tube Components LP-6, LP-9 &amp; LP-12</b>	
1231-1152-6	1/2" Check Valve
9228-8341-5	1/2" Nipple
1247-1020-3	PT-2A Pick-Up Tube
<b>Pick-up Tube Components LP-15 Through LP-25</b>	
1231-1155-1	1" Check Valve
9228-8342-2	1" Nipple
1247-1020-7	PT-3A Pick-Up Tube
<b>Pick-up Tube Components LP-30 Through LP40</b>	
1231-1155-1	1" Check Valve
9228-8342-2	1" Nipple
1247-1021-1	PT4A Pick Up Tube