



WATER JETTING ACCESSORY
CATALOG

LEADING WATER JET TECHNOLOGY™

Water jet accessories for virtually any job

If you have an application for high-pressure water jets, you've come to the right place. After 40-plus years of helping customers harness the power of water jetting, this catalog is NLB's most comprehensive yet.

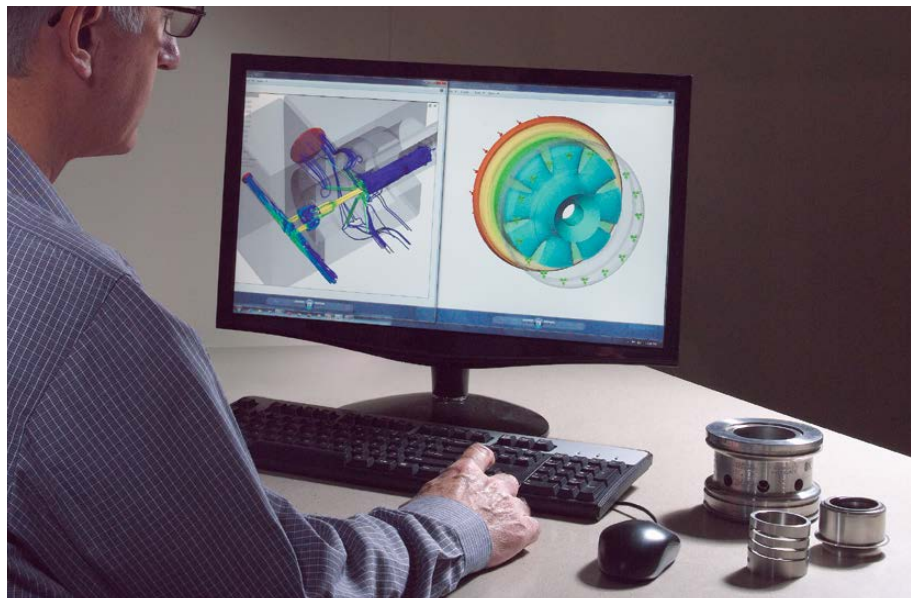
NLB is a global water jet leader, with the industry's widest range of pumps (a great selection of pressures, flows and horsepower), accessories and customer support. We are known for:

- › Top-quality equipment
- › Convenient regional branches and international distributors
- › Experienced application engineering
- › Readily available spare parts
- › Factory-trained service (always on-call)
- › Product and safety training
- › Purchase, lease and rental programs

From engineering through manufacturing (all done at our Wixom, Michigan headquarters), the NLB focus is on making the most productive, reliable equipment you can buy. And every item must pass rigorous testing before it is approved for shipment.


In each section of this catalog (indexed on the facing page), you will find product photos, specifications and details of key features. For further information, or to consult on an application, we invite you to call us at 248-624-5555. You can also find a lot of helpful information at our website, www.nlbcorp.com.

Thank you for your interest in NLB water jetting accessories. We hope to be your preferred supplier for many, many years.



DUE TO NLB'S CONTINUING PROGRAM OF PRODUCT IMPROVEMENT, SPECIFICATIONS IN THIS CATALOG ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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 **Field-Repairable!** Accessories with NLB's 60-second cartridge change are indicated by this symbol.

NLB quality to match your pressure and flow requirements

NLB pumps have set the standard for performance and reliability since 1971. Our triplex and quintuplex plunger models operate at low rpm to minimize wear and to simplify maintenance. These proven designs are regularly updated with the latest materials and features to keep operating costs as low as possible.

Units for any application, up to 40,000 psi (2,760 bar)

With dozens of units to choose from — most of them convertible to different pressures and flows — NLB pumps can handle just about any application you throw at them. All are available with either a hard-working diesel engine (trailer-mounted for easy towing to job sites) or an energy-efficient electric motor. Either way, you get:

- 97% operating efficiency** - Advanced engineering means minimal turbulence and 97% efficiency at 10,000 psi (690 bar).
- Long-life materials** - Valves and more are precision-machined of high-grade stainless steel, and hard-coated for durability.
- Simple maintenance** - Time-saving features include 5-minute packing change.
- Rebuild to extend ROI** - After 20,000 hours, some pumps are done for. Ours are designed to be rebuilt and keep on working. You can see the entire range of NLB units — with pressure, flow and horsepower data — on Pages 6-11.

Replacement pumps, too

NLB pumps are built for continuous, trouble-free operation, using a simple design proven in countless applications over more than four decades. Their mechanical efficiency is simply outstanding. One reason is a heavy-duty power frame that provides stability, gravity lubrication, and easy access to take out packing and plungers for inspection... without removing the cartridges.

Although these pumps were designed for NLB units, they also make great replacements when pumps wear out in other manufacturers' units. A selection of available pumps is shown on Page 11.



NLB convertible units: top quality with flexibility

NLB is known for the quality of its high-pressure and ultra-high pressure (UHP) water jet pump units. These include many models that you can convert to different operating pressures without a manifold change — you simply

change the cartridge, which usually takes less than 20 minutes.

Our convertible units operate at pressures from 4,000 psi to 40,000 psi (276-2,760 bar). Choose the level of power that best suits your needs,

from 60 hp to 1,000 hp (45 kW to 746 kW). They have a high degree of commonality — the 125, for example, is a smaller version of the 225, 325, 605, and 1005 — and few parts. All are easy to operate and maintain, too.

 Quick Change Conversion Kits Available



- 1 Field-repairable by-pass valve** - The BV series compensates for pressure changes, and doesn't need changing to convert the fluid end.
- 2 Heavy-duty fenders** - Bolt-on fenders are gusseted for extra support, and meet ICC regulations.
- 3 Smooth ride** - Rugged NLB trailers are designed to keep your unit from bouncing, and for easy hook-up and towing.
- 4 DOT-certified lights** - Trailer lights have all wiring protected inside conduit.
- 5 Rugged axles** - Count on our heavy-duty axles to last for years, with grease zerks for easy lubrication.
- 6 Low-rpm for less wear** - NLB pumps typically run slower than competitors' models, to generate the same flow with much less wear.
- 7 Extra-secure manifold** - Discharge manifold is held by 12 fasteners (50% more than other pumps), all torqued for security.
- 8 Rugged frame plate** - Solid stainless steel is more durable than castings, separate from the power end (should it ever need replacing) and double-ported.
- 9 Corrosion-resistant piping** - All inlet piping is brass or stainless steel, not galvanized, to eliminate rust.
- 10 Fast freeze protection** - Winterizing is simple and quick.

The world's biggest range of water jet pump units

The following tables provide key specifications to help you choose a high-pressure or UHP pump unit for your job. For full details, please contact NLB. Since we

are continuously upgrading and developing new models, specifications may be subject to change.



125 SERIES DIESEL

Model	gpm	lpm	psi	bar		
Model 145 - 145 hp (108 kW)						
6145D	32.5	123	6,000	414	Plunger Kit	Conversion Kit
8145D	24.5	93	8,000	552		
10145D	19.5	74	10,000	690		
15145D	13	49	15,000	1,035	Plunger Kit	Conversion Kit
20145D	10	38	20,000	1,380		
24145D	8	30	24,000	1,656		
35145D	5.5	21	35,000	2,415	Plunger Kit	Conversion Kit
40145D	4.8	18.3	40,000	2,760		
Model 125 - 125 hp (93 kW)						
6125D	29	110	6,000	414	Plunger Kit	Conversion Kit
8125D	22	83	8,000	552		
10125D	17.5	66	10,000	690		
15125D	12	45	15,000	1,035	Plunger Kit	Conversion Kit
20125D	9	34	20,000	1,380		
24125D	7.5	28	24,000	1,656		
35125D	5	18.9	35,000	2,415	Plunger Kit	Conversion Kit
40125D	4.4	16.5	40,000	2,760		

125 SERIES ELECTRIC

Model	gpm	lpm	psi	bar		
Model 125 - 125 hp (93 kW)						
6125E	32.5	123	6,000	414	Plunger Kit	Conversion Kit
8125E	24.5	93	8,000	552		
10125E	19.5	74	10,000	690		
15125E	13	49	15,000	1,035	Plunger Kit	Conversion Kit
20125E	10	38	20,000	1,380		
24125E	8	30	24,000	1,656		
35125E	5.5	21	35,000	2,415	Plunger Kit	Conversion Kit
40125E	4.8	18.2	40,000	2,760		
Model 105 - 100 hp (75 kW)						
6105E	28	106	6,000	414	Plunger Kit	Conversion Kit
8105E	20.5	77.5	8,000	552		
10105E	16	60.5	10,000	690		
15105E	11	41.5	15,000	1,035	Plunger Kit	Conversion Kit
20105E	8.5	32	20,000	1,380		
24105E	7	26.5	24,000	1,656		
35105E	5	18.9	35,000	2,415	Plunger Kit	Conversion Kit
40105E	4.4	16.5	40,000	2,760		
Model 75 - 75 hp (60 kW)						
675E	20	76	6,000	414	Plunger Kit	Conversion Kit
875E	16	60	8,000	552		
1075E	12	45	10,000	690		
1575E	9	34	15,000	1,035	Plunger Kit	Conversion Kit
2075E	6.5	24	20,000	1,380		
2475E	5.5	21	24,000	1,656		
3575E	3.4	12.9	35,000	2,415	Plunger Kit	Conversion Kit
4075E	3	11.3	40,000	2,760		
Model 60 - 60 hp (45 kW)						
660E	15	57	6,000	414	Plunger Kit	Conversion Kit
860E	12.5	47	8,000	552		
1060E	10	38	10,000	690		
1560E	6.75	25	15,000	1,035	Plunger Kit	Conversion Kit
2060E	5	19	20,000	1,380		
2460E	4	15	24,000	1,656		



225 SERIES DIESEL

Model	gpm	lpm	psi	bar		
Model 355 - 350 hp (261 kW)						
8355D	63	238	8,000	552	Plunger Kit	Conversion Kit
10355D	51.5	195	10,000	690		
15355D	34.5	131	15,000	1,035		
20355D	26	98	20,000	1,380		
Model 305 - 300 hp (224 kW)						
8305D	50	190	8,000	552	Plunger Kit	Conversion Kit
10305D	44	167	10,000	690		
12305D	36	136	12,000	828		
15305D	29	110	15,000	1,035		
20305D	23	87	20,000	1,380		
24305D	18	68	24,000	1,656		
35305D	13	47	35,000	2,415	Plunger Kit	Conversion Kit
40305D	10	38	40,000	2,760		
Model 275 - 275 hp (205 kW)						
8275D	44	167	8,000	552	Plunger Kit	Conversion Kit
10275D	38	142	10,000	690		
12275D	32	120	12,000	828		
15275D	25	94	15,000	1,035		
20275D	20	75	20,000	1,380		
24275D	16	60	24,000	1,656		
35275D	11	41	35,000	2,415	Plunger Kit	Conversion Kit
40275D	9	34	40,000	2,760		
Model 235 - 235 hp (172 kW)						
4235D	82	310	4,000	276	Plunger Kit	Conversion Kit
5235D	66	250	5,000	345		
6235D	55	208	6,000	414		
8235D	38	144	8,000	552		
10235D	34	128	10,000	690		
12235D	29	110	12,000	828		
15235D	21	79	15,000	1,035		
20235D	17	64	20,000	1,380		
24235D	13	49	24,000	1,656		
35235D	10	36	35,000	2,415		
40235D	8	30	40,000	2,760		
Model 215 - 200 hp (149 kW)						
4215D	62	235	4,000	276	Plunger Kit	Conversion Kit
5215D	50	189	5,000	345		
6215D	41	155	6,000	414		
8215D	29	110	8,000	552		
10215D	25	94	10,000	690		
12215D	19	71	12,000	828		
15215D	16	60	15,000	1,035		
20215D	13	49	20,000	1,380		
24215D	10	38	24,000	1,656		
35215D	7	27	35,000	2,415		
40215D	6	23	40,000	2,760		



225 SERIES ELECTRIC

Model	gpm	lpm	psi	bar		
Model 225 - 250 hp (186 kW)						
8225E	44	167	8,000	552	Plunger Kit	Conversion Kit
10225E	38	142	10,000	690		
12225E	32	120	12,000	828		
15225E	25	94	15,000	1,035		
20225E	20	75	20,000	1,380	Plunger Kit	Conversion Kit
24225E	16	60	24,000	1,656		
35225E	11	41	35,000	2,415		
40225E	9	34	40,000	2,760		
Model 205 - 200 hp (149 kW)						
4205E	82	310	4,000	276	Plunger Kit	Conversion Kit
5205E	66	250	5,000	345		
6205E	55	208	6,000	414		
8205E	38	144	8,000	552		
10205E	34	128	10,000	690		
12205E	28	105	12,000	828		
15205E	22	83	15,000	1,035	Plunger Kit	Conversion Kit
20205E	17	64	20,000	1,380		
24205E	13	49	24,000	1,656		
35205E	10	36	35,000	2,415	Plunger Kit	Conversion Kit
40205E	8	30	40,000	2,760		
Model 155 - 150 hp (112 kW)						
4155E	62	235	4,000	276	Plunger Kit	Conversion Kit
5155E	50	189	5,000	345		
6155E	41	155	6,000	414		
8155E	29	110	8,000	552		
10155E	25	94	10,000	690		
12155E	19	71	12,000	828		
15155E	16	60.5	15,000	1,035		
20155E	13	49	20,000	1,380		
24155E	10	38	24,000	1,656		
35155E	7	27	35,000	2,415		
40155E	6	23	40,000	2,760		

The world's biggest range of water jet pump units



325 SERIES DIESEL

Model	gpm	lpm	psi	bar		
Model 455 - 450 hp (336 kW)						
8455D	79	299	8,000	552	Plunger Kit Conversion Kit	
10455D	68	258	10,000	690		
12455D	57	216	12,000	828		
15455D	46	173	15,000	1,035		
20455D	34	130	20,000	1,380		
24455D	29	108	24,000	1,656	Plunger Kit Conversion Kit	
35455D	20	75	35,000	2,415		
40455D	16	60	40,000	2,760	Plunger Kit Conversion Kit	
Model 405 - 400 hp (298 kW)						
8405D	74	279	8,000	552		
10405D	60	228	10,000	690		
12405D	50	190	12,000	828		
15405D	40	152	15,000	1,035		
20405D	30	113	20,000	1,380	Plunger Kit Conversion Kit	
24405D	25	95	24,000	1,656		
35405D	17	66	35,000	2,415	Plunger Kit Conversion Kit	
40405D	14	53	40,000	2,760		
Model 365 - 365 hp (272 kW)						
8365D	64	242	8,000	552	Plunger Kit Conversion Kit	
10365D	51	194	10,000	690		
12365D	42	159	12,000	828		
15365D	34	128	15,000	1,035		
20365D	27	102	20,000	1,380		
24365D	22	83	24,000	1,656	Plunger Kit Conversion Kit	
35365D	15	56	35,000	2,415		
40365D	12	45	40,000	2,760	Plunger Kit Conversion Kit	



325 SERIES ELECTRIC

Model	gpm	lpm	psi	bar		
Model 355 - 350 hp (260 kW)						
8355E	74	279	8,000	552	Plunger Kit Conversion Kit	
10355E	60	228	10,000	690		
12355E	50	190	12,000	828		
15355E	40	152	15,000	1,035		
20355E	30	113	20,000	1,380		
24355E	25	95	24,000	1,656	Plunger Kit Conversion Kit	
35355E	17	66	35,000	2,415		
40355E	14	53	40,000	2,760	Plunger Kit Conversion Kit	
Model 305 - 300 hp (224 kW)						
8305E	64	242	8,000	552		
10305E	51	194	10,000	690		
12305E	42	159	12,000	828		
15305E	34	128	15,000	1,035		
20305E	27	102	20,000	1,380	Plunger Kit Conversion Kit	
24305E	22	83	24,000	1,656		
35305E	15	56	35,000	2,415	Plunger Kit Conversion Kit	
40305E	12	45	40,000	2,760		
Model 255 - 250 hp (186 kW)						
8255E	54	204	8,000	552	Plunger Kit Conversion Kit	
10255E	43	163	10,000	690		
12255E	36	136	12,000	828		
15255E	28	106	15,000	1,035		
20255E	21	79	20,000	1,380		
24255E	18	68	24,000	1,656	Plunger Kit Conversion Kit	
35255E	12	46	35,000	2,415		
40255E	10	38	40,000	2,760	Plunger Kit Conversion Kit	



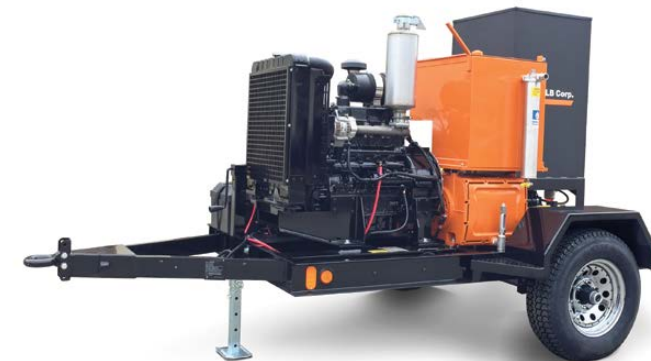
350 SERIES DIESEL

Model	gpm	lpm	psi	bar		
Model 425 - 425 hp (317 kW)						
8425D	74	279	8,000	552	Plunger Kit Conversion Kit	
10425D	60	228	10,000	690		
13425D	47	178	13,000	897		
15425D	40	152	15,000	1,035		
17425D	35	132	17,000	1,173		
20425D	30	113	20,000	1,380	Plunger Kit Conversion Kit	
Model 355 - 350 hp (261 kW)						
8355D	64	242	8,000	552		
10355D	51	194	10,000	690		
13355D	39	147	13,000	897		
15355D	34	128	15,000	1,035		
17355D	31	117	17,000	1,173	Plunger Kit Conversion Kit	
20355D	27	102	20,000	1,380		



350 SERIES ELECTRIC

Model	gpm	lpm	psi	bar		
Model 350 - 350 hp (261 kW)						
8350E	74	279	8,000	552	Plunger Kit Conversion Kit	
10350E	60	228	10,000	690		
13350E	47	178	13,000	897		
15350E	40	152	15,000	1,035		
17350E	35	132	17,000	1,173		
20350E	30	113	20,000	1,380	Plunger Kit Conversion Kit	
Model 300 - 300 hp (224 kW)						
8300E	64	242	8,000	552		
10300E	51	194	10,000	690		
13300E	39	147	13,000	897		
15300E	34	128	15,000	1,035		
17300E	31	117	17,000	1,173	Plunger Kit Conversion Kit	
20300E	27	102	20,000	1,380		



HOT WATER SERIES DIESEL

Model	gpm	lpm	psi	bar
Model 335 - 66 hp (49.25 kW)				
335-DHW-TRA-SA	15.5	58.7	3,500	240
Model 535 - 66 hp (49.25 kW)				
535-DHW-TRA-SA	9.4	35.6	4,950	340

The world's biggest range of water jet pump units



605 SERIES DIESEL

Model	gpm	lpm	psi	bar	Plunger Kit	Conversion Kit
Model 605 - 600 hp (447 kW)						
4605D	200	757	4,000	276		
6605D	143	541	6,000	414		
8605D	107	405	8,000	552		
10605D	86	326	10,000	690		
15605D	57	216	15,000	1,035		
20605D	43	163	20,000	1,380		
35605D	25	93	35,000	2,415		
40605D	22	83	40,000	2,760		
Model 525 - 525 hp (391 kW)						
4525D	180	681	4,000	276		
6525D	129	488	6,000	414		
8525D	97	367	8,000	552		
10525D	77	291	10,000	690		
15525D	52	197	15,000	1,035		
20525D	39	149	20,000	1,380		
35525D	22	84	35,000	2,415		
40525D	20	75	40,000	2,760		
Model 475 - 475 hp (354 kW)						
4475D	160	605	4,000	276		
6475D	114	431	6,000	414		
8475D	86	326	8,000	552		
10475D	69	261	10,000	690		
15475D	46	174	15,000	1,035		
20475D	34	129	20,000	1,380		
35475D	20	74	35,000	2,415		
40475D	18	65	40,000	2,760		



605 SERIES ELECTRIC

Model	gpm	lpm	psi	bar	Plunger Kit	Conversion Kit
Model 500 - 500 hp (372 kW)						
4500E	200	757	4,000	276		
6500E	143	541	6,000	414		
8500E	107	405	8,000	552		
10500E	86	326	10,000	690		
15500E	57	216	15,000	1,035		
20500E	43	163	20,000	1,380		
35500E	25	93	35,000	2,415		
40500E	22	83	40,000	2,760		



1005 SERIES DIESEL

Model	gpm	lpm	psi	bar	Plunger Kit	Conversion Kit
Model 1005 - 1000 hp (746 kW)						
41005D	333	1262	4,000	276		
61005D	238	900	6,000	414		
81005D	179	676	8,000	552		
101005D	143	541	10,000	690		
151005D	95	360	15,000	1,035		
201005D	72	271	20,000	1,380		
Model 755 - 750 hp (560 kW)						
4755D	260	989	4,000	276		
6755D	185	700	6,000	414		
8755D	140	528	8,000	552		
10755D	112	423	10,000	690		
15755D	75	282	15,000	1,035		
20755D	56	211	20,000	1,380		

UHP units and bare pumps

DEDICATED ULTRA-HIGH PRESSURE

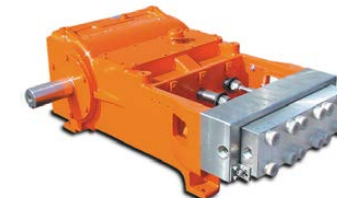
Models	Power	Pressure	Flow
3575D	110 hp (82 kW)	35,000 psi (2,415 bar)	4 gpm (15 lpm)
4075D	110 hp (82 kW)	40,000 psi (2,760 bar)	3 gpm (11.4 lpm)
40201D	185 hp (138 kW)	40,000 psi (2,760 bar)	6 gpm (23 lpm)
35220D	240 hp (179 kW)	35,000 psi (2,415 bar)	10 gpm (38 lpm)
40220D	240 hp (179 kW)	40,000 psi (2,760 bar)	8.2 gpm (31 lpm)
40250D	300 hp (224 kW)	40,000 psi (2,760 bar)	10 gpm (38 lpm)
40330D	350 hp (261 kW)	40,000 psi (2,760 bar)	13.3 gpm (50 lpm)



The heart of any NLB water jetting system is the pump, and ours are well-known for reliability and longevity. Their slow-running design minimizes wear and maximizes service life. So when it is finally time for a replacement, why choose anything else?

In fact, with the full line of convertible pumps NLB has, we can usually replace an older NLB triplex or quintuplex pump with a new convertible model to give you operating pressure flexibility and ease of maintenance.

And if you own a non-NLB unit, does the pump give you problems? Perhaps it is time to consider replacing it. NLB pumps last longer, cost less to operate, and provide a user experience unsurpassed in the industry.



225 Series



605 Series



325 Series



1005 Series

Actual pump capacity is approximately 95% of the displacement. Horsepower can be computed by using the formula:

$$\text{BHP} = \frac{\text{GPM} \times \text{PSI}}{1715}$$

Series	Pressure	Flow
125	6,000-40,000 psi (414-2,760 bar)	3-32.5 gpm (15-125 lpm)
225	4,000-40,000 psi (276-2,760 bar)	6-82 gpm (23-310 lpm)
325	4,000-40,000 psi (276-2,760 bar)	12-79 gpm (45-265 lpm)
350	8,000-20,000 psi (552-1,380 bar)	27-74 gpm (102-280 lpm)
605	4,000-40,000 psi (276-2,760 bar)	18-200 gpm (68-757 lpm)
1005	4,000-20,000 psi (276-1,380 bar)	56-333 gpm (211-1,262 lpm)
35220	35,000 psi (2,415 bar)	10 gpm (38 lpm)
4012	40,000 psi (2,760 bar)	3 gpm (11 lpm)
36200	40,000 psi (2,760 bar)	6 gpm (23 lpm)
40220	40,000 psi (2,760 bar)	8 gpm (30 lpm)
40250	40,000 psi (2,760 bar)	10 gpm (38 lpm)
40330	40,000 psi (2,760 bar)	13.3 gpm (50 lpm)



Hand Lances

Lances are the basic tools of water jetting, and NLB offers more choices — with more safety and ergonomic features — than any other manufacturer. From adjustable grips and shoulder supports to trigger locks and a patented quick-change cartridge seal, NLB leads the way in operator protection and comfort.

This section features **lances** that work with a wide range of nozzles — dual-trigger, underwater dump,

and shut-off models. All feature rigid stainless steel construction with quick-coupling hose hook-up.

Also in this section, you'll find related accessories — a 40,000 psi (2,760 bar) **rotating lance**, **vacuum attachment**, **lance stands**, and **whip hoses**.

Different barrel lengths available.

NOTE: Operators should not withstand back thrust of more than 1/3 their body weight for an extended time. Please refer to the thrust chart on Pages 108-109 and the formula on the back cover.

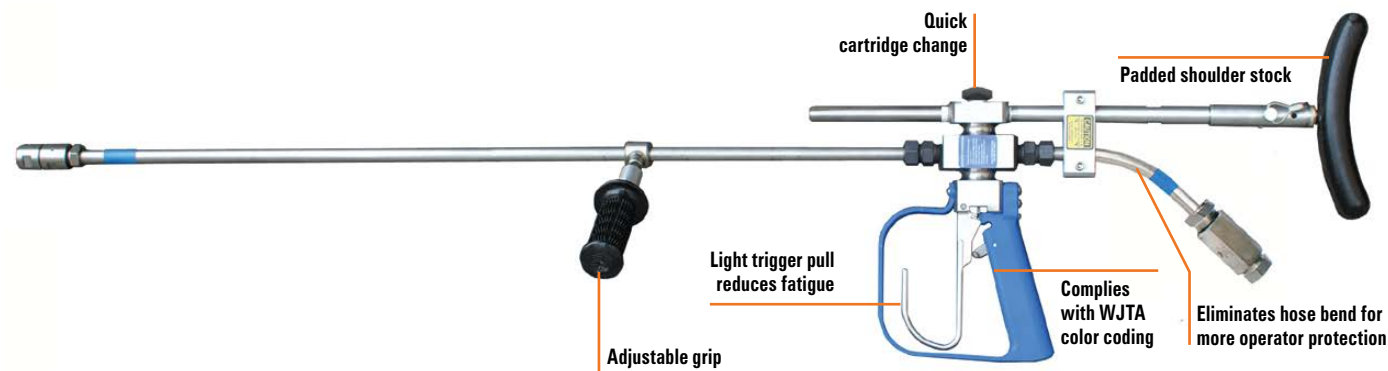
Top performance with more operator protection

The NLB 286B Series and NLB 535 Series give operators new features to enhance safety as well as the performance features they depend on. These lances also comply with the latest recommended practices of the WJTA.

NLB 286B lances reduce hose stress with a 45-degree inlet tube that eliminates the hose bend radius behind the inlet connection. Hose friction is also reduced, since the hose no longer passes through a loop in the shoulder stock.

Per WJTA recommendations, each NLB 286B and NLB 535 Series lance is color-coded to identify its operating pressure and each is designed to accept a safety shroud that enhances operator protection.

NLB 535 Series



Features and Benefits:

- › Dump type helps protect operator
- › Quick cartridge replacement design
- › Lightweight
- › Easy trigger actuation, 8 to 12 lbs. (3.6 to 5.5 kg)
- › Patented double-acting trigger design lets operator force lance into dump mode
- › 45° inlet tube reduces hose stress
- › One-finger latch to prevent accidental actuation
- › Adjustable shoulder stock and hand grip
- › Color-coded to indicate pressure, per WJTA standards

Operator-Friendly

Eliminates hose bend, reducing stress and risk

- › Accepts WJTA-recommended safety shroud
- › 3/8" barrel is lightweight for easy handling
- › 1/2" barrel is even more rugged and durable

More Protection:

Dual-trigger lance needs two hands to actuate

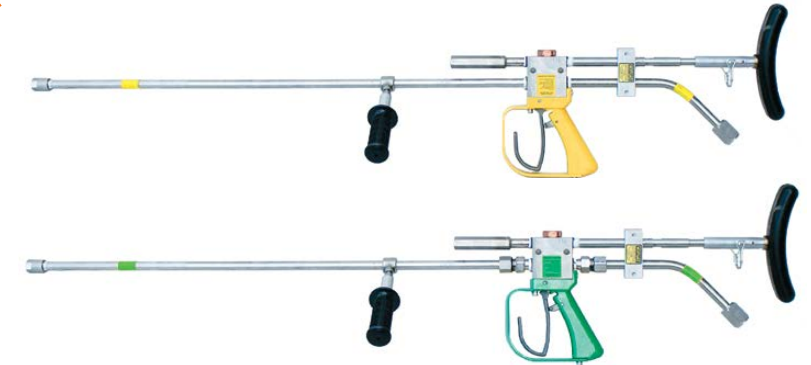
- › Must squeeze both triggers, enhancing safety
- › Lance can be forced into dump mode

Underwater Lances

Specially designed for underwater use

- › Ideal for piers, pilings, barnacle removal
- › Second nozzle at rear balances thrust of jetting action

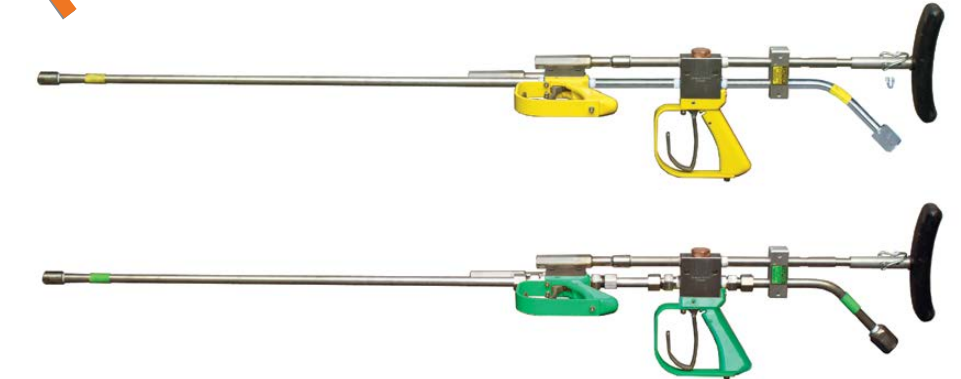
NCG10-286B-48, NCG15-286B-48



Part No.	Pressure Rating	Weight	Inlet Connection	Barrel Connection	Barrel Length	Replaceable Cartridge	Optional Whip Hose
NCG10-286B-1/2-48	10,000 psi (690 bar)	12 lbs. (5.5 kg)	1/2" NPT Female	1/2" NPT Male	48" (121.9 cm)	BM15915	See Pg. 18
NCG15-286B-3/8-48	15,000 psi (1,035 bar)	12 lbs. (5.5 kg)	1/2" NPT Female	3/8" NPT Male	48" (121.9 cm)	BM15915	See Pg. 18

Patent No. 5,636,789

NCG10-286BDT-48, NCG15-286BDT-48



Part No.	Pressure Rating	Weight	Inlet Connection	Barrel Connection	Barrel Length	Replaceable Cartridge	Optional Whip Hose
NCG10-286BDT-1/2-48	10,000 psi (690 bar)	16 lbs. (7.3 kg)	1/2" NPT Female	1/2" NPT Male	48" (121.9 cm)	BM15915	See Pg. 18
NCG15-286BDT-3/8-48	15,000 psi (1,035 bar)	16 lbs. (7.3 kg)	1/2" NPT Female	3/8" NPT Male	48" (121.9 cm)	BM15915	See Pg. 18

Patent No. 5,636,789

NCG15-286UW



Part No.	Pressure Rating	Weight	Inlet Connection	Barrel Connection	Barrel Length	Replaceable Cartridge	Optional Whip Hose
NCG15-286UW	15,000 psi (1,035 bar)	12 lbs. (5.5 kg)	1/2" NPT Female	3/8" NPT Male	36" (91.5 cm)	BM15915	See Pg. 18

Patent No. 5,636,789

Hand Lances

10,000 to 24,000 psi

Now the features that made NLB's 10,000 psi hand lances so popular are available at 24,000 psi!

- High flow (up to 35 gpm/ 133 lpm)
- Rebuild in 60 seconds
- WJTA-recommended safety shroud and color coding
- Padded shoulder stock

NCG24-535-48



Pressure Rating	Weight	Inlet Connection	Barrel Connection	Barrel Length	Replaceable Cartridge	Optional Whip Hose
24,000 psi (1,656 bar)	12 lbs. (5.5 kg)	9/16" MP LHF	9/16" MP LHF	48" (121.9 cm)	CM42545	See Pg. 18

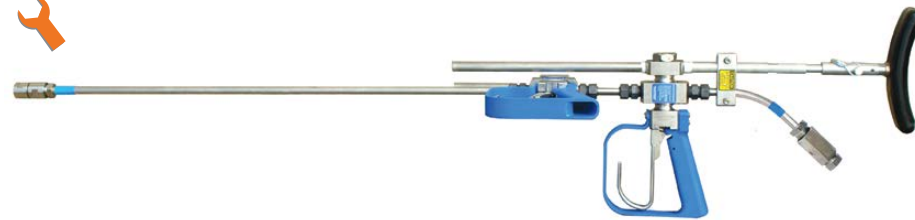
Patent No. 5,636,789

Dual-Trigger

The ultimate in operator protection:

- Requires two hands on the lance during operation
- Can be forced into dump mode with either trigger

NCG24-535DT-48



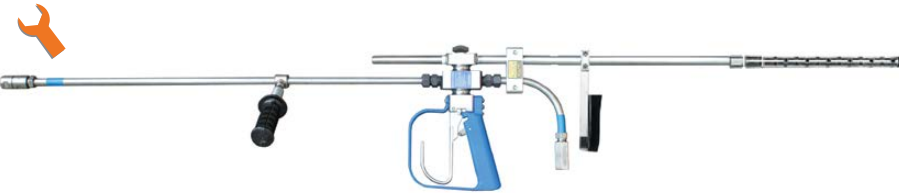
Pressure Rating	Weight	Inlet Connection	Barrel Connection	Barrel Length	Replaceable Cartridge	Optional Whip Hose
24,000 psi (1,656 bar)	16 lbs. (7.3 kg)	9/16" MP LHF	9/16" MP LHF	48" (121.9 cm)	CM42545	See Pg. 18

Patent No. 5,636,789

24K Underwater

- Ideal for underwater applications, such as barnacle removal and concrete hydrodemolition
- Balances thrust with a second nozzle at the rear

NCG24-535UW-48



Pressure Rating	Weight	Inlet Connection	Barrel Connection	Barrel Length	Replaceable Cartridge	Optional Whip Hose
24,000 psi (1,656 bar)	13.5 lbs. (6.1 kg)	9/16" MP LHF	9/16" MP LHF	48" (121.9 cm)	CM42545	See Pg. 18

Patent No. 5,636,789

NOTE: To choose a nozzle assembly and nozzle inserts (0° or 15°) for a lance on this page, please refer to Page 23.

UHP with Quick-Change Cartridge

UHP water jetting has never been so easy. This lance has all the easy-rebuild features as other NLB 286B accessories and:

- Lightweight, ergonomic design
- Lance can be used with NLB SRH40-77 to produce rotating water jets without any need for compressed air

NCG40-286B-48



Pressure Rating	Weight	Inlet Connection	Barrel Connection	Barrel Length	Replaceable Cartridge	Optional Whip Hose
40,000 psi (2,760 bar)	15 lbs. (6.8 kg)	9/16" HP LHF	9/16" HP LHF	48" (121.9 cm)	BM20935	See Pg. 18

Patent No. 5,636,789

NCG40-286BDT-48



Pressure Rating	Weight	Inlet Connection	Barrel Connection	Barrel Length	Replaceable Cartridge	Optional Whip Hose
40,000 psi (2,760 bar)	19 lbs. (8.6 kg)	9/16" HP LHF	9/16" HP LHF	48" (121.9 cm)	BM20935	See Pg. 18

Patent No. 5,636,789

NCG40-286BUW



Pressure Rating	Weight	Inlet Connection	Barrel Connection	Barrel Length	Replaceable Cartridge	Optional Whip Hose
40,000 psi (2,760 bar)	15 lbs. (6.8 kg)	9/16" HP LHF	9/16" HP LHF	36" (91.5 cm)	BM20935	See Pg. 18

Patent No. 5,636,789

Dry Shut-off

- For lower pressure applications
- Requires unloader valve (page 29)



Part No.	Pressure Rating	Weight	Inlet Connection	Barrel Connection	Barrel Length	Rebuild Kit	Optional Whip Hose
NSG-300A	10,000 psi (690 bar)	14 lbs. (6.4 kg)	1/2" NPT Female	3/8" NPT Male	36" (91.5 cm)	300ARBKT	See Pg. 18
NSG-600	6,000 psi (414 bar)	7 lbs. (3.2 kg)	1/2" NPT Female	1/2" NPT Male	36" (91.5 cm)	600RBKT	See Pg. 18
NSG-700	4,000 psi (276 bar)	7 lbs. (3.2 kg)	3/8" NPT Female	1/4" NPT Male	36" (91.5 cm)	700RBKT	See Pg. 18

NOTE: To choose a nozzle assembly and nozzle inserts (0° or 15°) for a lance on this page, please refer to Page 23.

Hand Lances

Rotating Lances

For ultra-high pressure water jetting in a wider spray pattern, the best choice is usually a **rotating lance** with one of our specially-designed **multi-orifice heads**. The NCG8450B and NCG8450B-L lances feature an air-driven swivel that drives the nozzle assembly. Use requires a **Bi-Mode™ valve** and a DM14150 hose assembly to connect them.

A Bi-Mode™ valve lets operators run multiple lances from a single pump unit. (Dual lance operation also requires a CM13027 "Y" adapter. See Page 28.)

Key features of NLB rotating lances include:

- Variable speed rotation, up to 3,000 rpm
- Field-repairable
- Dual-trigger actuation for operator protection
- Instant dump to low pressure when trigger is released
- Lightweight, ergonomic design
- Rebuild kit available



NCG8450B and NCG8450B-L

Part No.	Max. Pressure	Rotation Speed Up to	Air	Inlet Connection	Barrel Connection	Length	Weight	Rebuild Kit
NCG8450B	40,000 psi (2,760 bar)	3,000 rpm	22 cfm @ 90 psi (10.4 l/s @ 6 bar)	9/16" - 18	9/16" - 18 LH	40.5" (1.03 m)	16 lbs. (7.3 kg)	8450A-3RBKT
NCG8450B-L	40,000 psi (2,760 bar)	3,000 rpm	22 cfm @ 90 psi (10.4 l/s @ 6 bar)	9/16" - 18	9/16" - 18 LH	52.5" (1.33 m)	18 lbs. (8.2 kg)	8450A-3RBKT

Bi-Mode™ Valve

The field-repairable NLB Bi-Mode™ valve can significantly improve UHP system productivity. It has a quick-change cartridge valve, similar to those in our 286B series lances and foot controls. User-friendly features include:

- 60-second cartridge replacement
- Switch from 1-lance to 2-lance operation with a simple nozzle change
- Rounded frame for easier carrying

A DM14150 hose assembly is required to connect a rotating lance to a Bi-Mode™ valve.

NLB8488


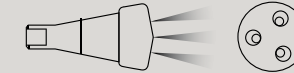
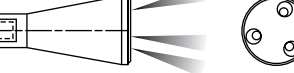
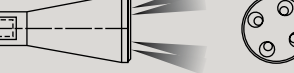
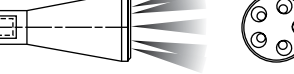
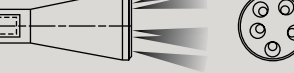



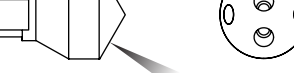



Max. Pressure	Inlet Connection	Outlet Connection	Weight	Cartridge
40,000 psi (2,760 bar)	1-1/8" - 12 UNF	9/16" - 18 male	55 lbs. (25 kg)	BM24521

UHP Rotating Heads

NLB offers a wide selection of multi-orifice heads for the NCG8450A-3 rotating lance. All but one use our standard

BN3539 0° nozzles and BA3894 nozzle retainers. The CM27174 uses a BM27289-XX nozzle with no retainer.

	Part No.	Orifices	Applications	Features/Benefits
	BM16592	2	Thick coatings, heavy deposits	Greater nozzle stand-off for operator flexibility
	CM22661	3	Thick coatings, heavy deposits	Greater nozzle stand-off for operator flexibility
	BN10096-1	3	Medium coatings	Can remove coatings one layer at a time
	BN10096-2	4	Thin-to-medium coatings and deposits	Smaller orifices reduce impact, simplify removal in layers
	BN10096-3	5	Quick removal of thin coatings	Ideal for steel and other flat substrates
	DN12560	5	Quick removal of thin coatings	Offset nozzle pattern (15° and 60° off centerline) ideal for irregular surfaces
	CN12094-1	4	I-beams, H-beams, interior corners	Two 15° orifices, two 60° orifices
	CN12094-2	4	I-beams, H-beams, interior corners	Two 15° orifices (different offsets), two 60° orifices
	CN12094-3	4	Tight spaces - I-beams, H-beams, interior corners	Two 15° orifices, two 90° orifices
	CM27174	1	Extra-thick coatings	Single orifice maximizes impact force (Uses BM27289 nozzle with no retainer)
	CM33796	4	I-beams, H-beams, interior corners	Two 15° orifices (different offsets), two 30° orifices

Vacuum Lances

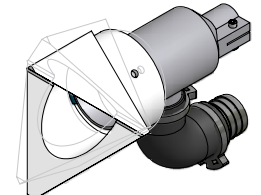
NLB VacLance attachments turn any NCG8450A-3 hand lance into a vacuum recovery surface preparation tool. Kit DM16546 converts any existing NCG8450A-3. Attach it to a vacuum source (approx. 100 CFM at 1-2 inches of vacuum) via NLB's 2" vac hose (PM16758).

Attachment DM32283 is designed to work in corners. It can be rotated to work vertically or horizontally.

DM16546



DM32283



Hand Lances

Whip Hoses

NLB whip hoses help protect hand lance operators from potentially dangerous hose failures. Each whip hose assembly consists of a short length of hose, usually no more than 10 feet (3.05m). This is covered with a heavy, dense fabric or reinforced plastic tubing designed to diffuse the energy released by a hose failure.

NLB offers whip hoses for all popular pressures, from 10,000 to 40,000 psi (690 to 2,760 bar).

Attachment to your hand lance may require additional fittings. Please consult NLB about your specific application.

STANDARD WHIP HOSE



Part No.	Pressure	Length (ft.)	Lance Fitting	Hose Fitting	Used on
SW-10K	10,000 psi (690 bar)	7	Male Quick Coupling	1/2" MNPT	NCG-250A-2, NSG-300A, NCG10-280, NCG10-286B-1/2
SW-15K-7	15,000 psi (1,035 bar)	7	1/2" MNPT	1/2" MNPT	NCG15-286B, NCG10-286B-1/2
SW-15K-10	15,000 psi (1,035 bar)	10	1/2" MNPT	1/2" MNPT	NCG15-286B, NCG10-286B-1/2
SW-255	10,000 psi (690 bar)	7	1/2" MNPT	1/2" MNPT	NCG-250A-2, NCG300
275-31	20,000 psi (1,380 bar)	7	3/4"-16 Tube Nipple	3/4"-16 Type M Swivel	NCG20-250, NCG20-280, NCG20-282
BM1966	24,000 psi (1,656 bar)	9	9/16" Tube Nipple w/gland and collar	3/4" Type M Swivel	NCG24-286B, NCG24-535
BM19662-10	24,000 psi (1,656 bar)	10	9/16" Tube Nipple w/gland and collar	3/4" Type M Swivel	NCG24-286B, NCG24-535
SW-40K-10	40,000 psi (2,760 bar)	10	9/16"-18 Type M	9/16"-18 Type M	NCG40-286B
BM21404-10	40,000 psi (2,760 bar)	10	9/16"-18 Type M	9/16"-18 Type M	NCG40-286B
BM21404-20	40,000 psi (2,760 bar)	20	9/16"-18 Type M	9/16"-18 Type M	NCG40-286B
DM14150	40,000 psi (2,760 bar)	35	9/16"-18 Type M to 3/8" HP Male	9/16"-18 Type M	NCG8450-A3

NOTE: For information on NLB's Sure Shroud™, please refer to Page 86.



Lance Stands

NLB mobile lance stands let operators share the load of holding a pressurized lance, reducing both strain and risk. Personnel can therefore be rotated less frequently. Models are available in 10,000 psi, 20,000 psi and 40,000 psi (690, 1,380 and 2,760 bar), some with shields for additional operator protection.

NLB lance stands have many advantages:

- › Absorb back thrust, minimizing fatigue
- › Allow use of greater volume and pressure
- › Instantaneous dump to low pressure upon lance trigger release
- › 60° pivot point allows broad coverage (horizontal and vertical), for fewer station moves
- › Easy maintenance
- › Non-skid surface reduces risk of injury
- › On wheels to go from job to job



MLS-10000-1A

Type	Max. Pressure	Max. Flow	Height Adjustment	Nozzle Adjustment	Horizontal Movement
Pneumatic Dump	10,000 psi (690 bar)	43 gpm (163 lpm)	36" to 50" (.9 to 1.27 m)	0-8" (0-20 cm)	60 degrees

Model MLS-10000-1A is also available as a dry shut-off unit.

MLS-24000-1A

Type	Max. Pressure	Max. Flow	Height Adjustment	Nozzle Adjustment	Horizontal Movement
Pneumatic Dump	24,000 psi (1,656 bar)	35 gpm (132 lpm)	36" to 50" (.9 to 1.27 m)	0-8" (0-20 cm)	60 degrees

MLS-36000-1A

Type	Max. Pressure	Max. Flow	Height Adjustment	Nozzle Adjustment	Horizontal Movement
Pneumatic Dump	40,000 psi (2,760 bar)	11 gpm (42 lpm)	41" to 53" (1 to 1.35 m)	0-8" (0-20 cm)	60 degrees



SPIN-NOZZLE®

The SPIN-NOZZLE® self-rotating head (U.S. patent no. 4,821,961) turns an ordinary high-pressure lance into a superior water jetting tool. It features a specially designed and balanced body, threaded for two standard jetting nozzles in an offset pattern. The SPIN-NOZZLE rotates by the reaction energy of the high-pressure water; no external driver is needed.

Features and Benefits:

- › Faster production rates due to wide spray pattern and force
- › Reduces back thrust for operator
- › Self-lubricated

Viper 24™ and Viper 40™

In the Viper 24™ and Viper 40™, NLB has taken its SPIN-NOZZLE® technology to a whole new level. Our latest self-rotating heads operate at higher pressures than ever, and are field-repairable in less than 5 minutes. That's right... you don't have to return them to the factory, like our older models.

Viper heads give you rotating action at the same pressures as the

NLB 225 convertible pump unit, up to 40,000 psi (2,760 bar). They easily attach to a standard NLB 286 Series lance, so you no longer need a specially designed, air-driven lance or an air source.

Three Viper 40™ heads are available. The standard SRH40-77 has nozzles mounted at 0°. For wider coverage and potentially higher production rates, nozzles on

the SRH40-77-15 are mounted at a 15° angle and on the SRH40-77-7.5, at a 7.5° angle.

All Viper heads have round bodies, precision machined of rugged stainless steel. This minimizes nozzle strikes and eliminates the need for a protective guard. The nozzle inserts (choose from a wide range) are flush-mounted to further minimize impact.



Original SPIN-NOZZLE® with protective guard

Model No.	Maximum Pressure	Inlet	Overall Length	Diameter	Weight	Speed	Rebuild Kit	Protection Guard
SRH3-77	3,000 psi (207 bar)	1/4" NPT	3" (7.6 cm)	1-15/16" (4.9 cm)	11 oz. (312 g)	3,300 rpm	N/A	BN1512
SRH5-77	5,000 psi (345 bar)	1/4" NPT	3" (7.6 cm)	1-15/16" (4.9 cm)	11 oz. (312 g)	4,250 rpm	N/A	BN1512
SRH10-77	10,000 psi (690 bar)	1/2" NPT	3-13/16" (9.7 cm)	2-1/2" (6.4 cm)	1 lb. - 6 oz. (624 g)	4,000 rpm	N/A	BN1190
SRH24-77 Viper 24*	24,000 psi (1,656 bar)	9/16" MP	4-1/4" (10.8 cm)	2-5/8" (6.7 cm)	2 lb. (907 g)	5,000 rpm	SRH24-77-RBKT	BM23604
SRH40-77 Viper 40	40,000 psi (2,760 bar)	9/16"-18 Type M	5" (12.7 cm)	2-3/8" (6.0 cm)	3 lbs. - 9 oz. (1.62 kg)	4,000 rpm	SRH40-77-RBKT	BM23604

*To use SRH24-77 with a 10K lance, order barrel adapter PM18424. For use with a 15K lance, order PM18422.

NEXT PAGE: To determine flow, select a nozzle size and read across to the column headed by the pressure you will be using. Actual nozzle flow will be about 1 gpm less, as some leakage is needed for lubrication.

40,000 psi

Field-repairable



SRH40-77, SRH40-77-15, SRH40-77-7.5, Viper 40™

Nozzles	Part Number	40,000 psi (2,760 bar)
#24	BN10095-24	5.9 gpm (22.3 lpm)
#23	BN10095-23	5.52 gpm (20.9 lpm)
#22	BN10095-22	5.12 gpm (19.4 lpm)
#21	BN10095-21	4.76 gpm (18.0 lpm)
#20	BN10095-20	4.42 gpm (16.7 lpm)

NLB recommends two BN10095-20 nozzles if your pump produces 6 gpm @ 40,000 psi. The use of larger nozzles may keep your system from reaching its maximum pressure, but may improve productivity for some applications. Please consult NLB for other pressure and flow combinations.

24,000 psi

Field-repairable



SRH24-77, Viper 24™

Nozzles	Part Number	10,000 psi (690 bar)	15,000 psi (1,035 bar)	20,000 psi (1,380 bar)	24,000 psi (1,656 bar)
#4	BN1123	11.9 gpm (45.0 lpm)	14.6 gpm (55.3 lpm)	N/A	N/A
#3	BN1122	9.4 gpm (35.6 lpm)	11.5 gpm (43.5 lpm)	13.5 gpm (51.1 lpm)	14.8 gpm (56.0 lpm)
#2	BN1121	6.8 gpm (25.7 lpm)	8.4 gpm (31.8 lpm)	9.8 gpm (37.1 lpm)	10.8 gpm (40.9 lpm)
#1.5	BN1137	5.0 gpm (18.9 lpm)	6.1 gpm (23.1 lpm)	7.2 gpm (27.3 lpm)	8 gpm (30.3 lpm)
#1	BN1135	3.5 gpm (13.2 lpm)	4.3 gpm (16.3 lpm)	5.1 gpm (19.3 lpm)	5.6 gpm (21.2 lpm)

This chart shows a few of many nozzle combinations. For more possibilities, please see our complete nozzle chart on pages 102-103.

10,000 psi



SRH10-77

Nozzles	Part Number	6,000 psi (414 bar)	8,000 psi (552 bar)	10,000 psi (690 bar)
#4	S2, S-7M, or SA	9.8 gpm (37.10 lpm)	11.2 gpm (42.40 lpm)	12.6 gpm (47.70 lpm)
#3	S2, S-7M, or SA	7.4 gpm (28.01 lpm)	8.4 gpm (31.80 lpm)	9.4 gpm (35.58 lpm)
#2	S2, S-7M, or SA	5.0 gpm (18.93 lpm)	5.6 gpm (21.20 lpm)	6.4 gpm (24.23 lpm)

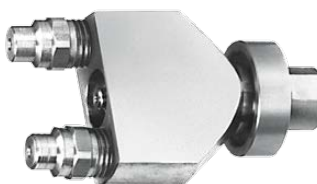
5,000 psi



SRH5-77

Nozzles	Part Number	3,000 psi (207 bar)	4,000 psi (276 bar)	5,000 psi (345 bar)
#3	S2, S-7M, or SA	5.2 gpm (19.68 lpm)	6.0 gpm (22.71 lpm)	6.8 gpm (25.74 lpm)
#2	S2, S-7M, or SA	3.4 gpm (12.87 lpm)	4.0 gpm (15.14 lpm)	4.4 gpm (16.66 lpm)
#1	S2, S-7M, or SA	1.1 gpm (4.16 lpm)	1.3 gpm (4.92 lpm)	1.5 gpm (5.68 lpm)

3,000 psi



SRH3-77

Nozzles	Part Number	1,000 psi (69 bar)	2,000 psi (138 bar)	3,000 psi (207 bar)
#5	S2, S-7M, or SA	5.0 gpm (18.95 lpm)	7.0 gpm (26.50 lpm)	8.6 gpm (32.55 lpm)
#4	S2, S-7M, or SA	4.0 gpm (15.14 lpm)	5.6 gpm (21.2 lpm)	7.0 gpm (26.50 lpm)
#3	S2, S-7M, or SA	3.0 gpm (11.36 lpm)	4.2 gpm (15.90 lpm)	5.2 gpm (19.68 lpm)
#2	S2, S-7M, or SA	2.0 gpm (7.57 lpm)	2.8 gpm (10.60 lpm)	3.4 gpm (12.87 lpm)
#1	S2, S-7M, or SA	0.6 gpm (2.27 lpm)	0.8 gpm (3.03 lpm)	1.1 gpm (4.16 lpm)

Standard Nozzles



When it comes to nozzles, "standard" doesn't mean off-the-shelf. While NLB standard nozzles are designed for general use (instead of specialized uses like pipe cleaning or abrasive cutting), each is custom-sized to suit your application. When ordering, be sure to consider not only the pressure and flow rate of your pump unit, but the actual pressure at the nozzle, which is always lower (see Page 104).

Our **standard nozzles** have a single orifice that can provide either a tightly focused 0° stream or a 15° fan spray, depending on your requirements. The six shown below are designed for a maximum pressure of 15,000 psi (1,035 bar), and simply screw on the end of any NLB lance (and other tools) rated for that pressure.

For pressures up to 40,000 psi (2,760 bar), we offer **UHP 0° and 15° nozzle assemblies**. Both attach easily to our NCG40-286 lance.

Designed and manufactured to the highest standards





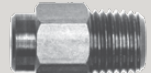

For decades, NLB's OEM nozzles have set the standard in the high-pressure water jet industry. They are specially designed for peak performance and made of hardened steel or stainless steel for durability.

For even longer life, orifices can be made of state-of-the-art materials like carbide and sapphire.

Although some people may claim that all nozzles are pretty much the

same, don't settle for imitations. Only NLB nozzles are specifically designed and manufactured to work with NLB high-pressure pumps and accessories.

Up to 15,000 psi (1,035 bar)

	Part No.	Thread	Orifice	Spray Pattern	Description - Benefit
	S-1	1/4" MNPT	Carbon Steel	0°	Longer orifice - cohesive jet pattern over long range
	S-2	1/4" MNPT	Carbon Steel	0°	Carbon steel orifice - improves nozzle life and performance
	S-3	1/4" MNPT	Carbon Steel	15°, 25°, 40°, 50°, 65°	Fan nozzle - widens jet coverage
	S-7M	1/4" MNPT	Carbide	0°	Carbide insert - longer nozzle life
	SA	1/4" MNPT	Sapphire	0°	Sapphire insert - the ultimate in nozzle life
	NLB-25	1/4" MNPT	Carbon Steel	0°	Low-profile nozzle

Note: For use as a plug, order NLB-25-UNDRILLED.

Nozzle Assemblies

A 0° nozzle assembly delivers a high-impact, solid stream spray... ideal for precision cutting and other applications requiring a tightly-focused pattern. It uses NLB

sapphire nozzle inserts (also used in rotating lance applications and UHP SPIN JET® systems).

A 15° fan nozzle assembly removes

loose material over a wider area than a solid stream, requiring less overlap and providing a more uniform impact across the cleaning path.



CM34556



CM34537



0°-BL7864



15°-BN6960

Part Number	Max Pressure	Spray Pattern	Nozzle Insert	Connection Thread	Used with Lance
CM34556	24,000 psi (1,656 bar)	0°	BN10095-XX	9/16"-18 Female	NCG24-286B
CM34537	24,000 psi (1,656 bar)	0°	BN11XX	9/16"-18 Female	NCG24-286B, NCG24-535
BL7864	40,000 psi (2,760 bar)	0°	BN3539-XX	9/16"-18 LHF	NCG40-286B
BN6960	40,000 psi (2,760 bar)	15°	S-8-15-XXXX	9/16"-18 LHF	NCG40-286B
BA11110	40,000 psi (2,760 bar)	0°	BN3539-XX	9/16"-18 RHF	NCG8450A-3 or -3L
BA11117	40,000 psi (2,760 bar)	15°	S-8-15-XXXX	9/16"-18 RHF	NCG8450A-3 or -3L

Nozzle Inserts

Nozzle inserts differ from standard nozzles in that they are held in place by a nozzle retaining assembly. Inserts are used in some of NLB's most popular accessories, including our SRH24 and SRH40 heads, the NLB3750 family of 3-D tools, and our NCG8450 UHP rotating lances.

The chart presented here contains basic pressure, spray pattern and application information for all NLB nozzle inserts, with cross-references to help you choose the best insert for your requirements.

	Part No.	Max. Pressure	Orifice	Spray Pattern	Description - Benefit	Reference Page
	S-8-15-XXXX	40,000 psi (2,760 bar)	Stainless Steel	15°	Wider coverage results in larger impact area	107
	BN11XX	20,000 psi (1,380 bar)	Carbide	0°	Used on many NLB 2-D and 3-D nozzles	102-103
	BM19048-X.XX	20,000 psi (1,380 bar)	Stainless Steel	0°	For high-flow applications, like hydrodemolition	106
	BN3539-XX	40,000 psi (2,760 bar)	Sapphire	0°	For UHP applications, with sapphire orifice for extended life	104-105
	BN10095-XX	40,000 psi (2,760 bar)	Sapphire	0°	The ultimate in long life: high cohesive with an engineered flow path for superior impact force - 3/8-24-UNF thread	104-105
	BM27289-XX	40,000 psi (2,760 bar)	Sapphire	0°	The ultimate in long life: high cohesive with an engineered flow path for superior impact force - 9/16-18-UNF thread	104-105



Abrasive Nozzles

The NLB wet abrasive blasting systems combine the force of a high-pressure water jet with the cleaning action of abrasive media — without the dust, costs or health and environmental hazards associated with dry sand blasting.

Wet abrasive blasting can clean steel to a white metal finish or

remove tightly bonded paint from concrete, steel or masonry. NLB offers 10,000 psi, 20,000 psi and 40,000 psi **abrasive nozzles** (690, 1,380 and 2,760 bar), with **rebuild kits**. A **hopper** is required to hold the abrasive media, whose flow rate is variable with the **metering disc** used (see next page for hoppers and discs).

Profiler™ Nozzle lets you abrasive blast at ultra-high pressures

Abrasive wet blasting at up to 40,000 psi (2,760 bar) is no problem for NLB's Profiler™ nozzle. It profiles a 4-inch (102mm) path at rates of up to 15 feet (5m) per minute, and leaves an excellent

bonding surface for new coatings. The Profiler operates at flows of 3-6 gpm (11-23 lpm).

This innovative tool works with various abrasive media, to suit

specific applications. The abrasive is fed to the nozzle from an abrasive feed hopper, through metering discs that restrict the flow to a predetermined rate. A typical flow is 2 lbs. (0.9 kg) per minute.

Profiler™ Nozzle

- Profiles metal and welds, for an ideal bonding surface
- Pressures from 20,000 to 40,000 psi (1,380 to 2,760 bar)
- Flows of 3-6 gpm (11-23 lpm)
- Designed to work with NCG24-286B or NCG40-286B UHP lance



Part Number	Pressure Rating	End Connections	Replacement Nozzles		
			40,000 psi @ 6 gpm	40,000 psi @ 3 gpm	20,000 psi @ 6 gpm
BM17994*	20,000 psi (1,380 bar)	9/16" MP LHF	N/A	N/A	PM18673
BM17994	40,000 psi (2,760 bar)	9/16" HP LHF	PM18671	PM18672	N/A

*at 20,000 psi, requires BM24622 adapter

NSB-25



10,000 psi (690 bar)

Part Number	Spool No.	Max. Flow	Inlet Connection	Rebuild Kit
NSB-25-1	NSB-25-03-1	14 gpm (53 lpm)	1/2" NPT Female	BV2177-1
NSB-25-2	NSB-25-03-2	16 gpm (61 lpm)	1/2" NPT Female	BV2177-2
NSB-25-3	NSB-25-03-3	19 gpm (72 lpm)	1/2" NPT Female	BV2177-3
NSB-25-4	NSB-25-03-4	6.5 gpm (25 lpm)	1/2" NPT Female	BV2177-4
NSB-25-5	NSB-25-03-5	4.5 gpm (17 lpm)	1/2" NPT Female	BV2177-5
NSB-25-6	NSB-25-03-6	10 gpm (38 lpm)	1/2" NPT Female	BV2177-6

NSB-25-20K



20,000 psi (1,380 bar)

Max. Pressure	Nozzle	Max. Flow	Inlet Connection
20,000 psi (1,380 bar)	S-7-0002-M	4.5 gpm (17 lpm)	Slip Fit/Set Screw
	S-7-0003-M	6.5 gpm (25 lpm)	
	S-7-0004-M	9.0 gpm (34 lpm)	
	S-7-0005-M	11 gpm (42 lpm)	

Abrasive Hopper

- NLB-300-AC hopper holds 300 lbs. (136 kg) of abrasive; NLB-600-AC holds 600 lbs. (272 kg)
- Includes NLB kit DM5820-05 to meter abrasive at adjustable rate (see chart for meter discs included)
- Pressurized hoppers available



NLB-300-AC

Metering Disc Kit

Part Number	Disc Size	Flow Rate Per Minute, #36 or #50 Garnet	Flow Rate Per Minute, #80 Garnet*	Flow Rate Per Minute, Silica Sand**
CA2031	10	1 lb./min. (0.5 kg/min.)	1.1 lbs./min. (0.5 kg/min.)	0.7 lbs./min. (0.3 kg/min.)
CA2032	15	1.5 lbs./min. (0.7 kg/min.)	1.6 lbs./min. (0.7 kg/min.)	1.1 lbs./min. (0.5 kg/min.)
CA2033	20	2 lbs./min. (0.9 kg/min.)	2.1 lbs./min. (0.9 kg/min.)	1.5 lbs./min. (0.7 kg/min.)
CA2034	30	3 lbs./min. (1.4 kg/min.)	3.2 lbs./min. (1.5 kg/min.)	2.2 lbs./min. (1.0 kg/min.)
CA2035	40	4 lbs./min. (1.8 kg/min.)	4.2 lbs./min. (1.9 kg/min.)	2.9 lbs./min. (1.3 kg/min.)
CA2036	50	5 lbs./min. (2.3 kg/min.)	5.3 lbs./min. (2.4 kg/min.)	3.7 lbs./min. (1.7 kg/min.)
CA2037	60	6 lbs./min. (2.7 kg/min.)	6.4 lbs./min. (2.9 kg/min.)	4.4 lbs./min. (2.0 kg/min.)
CA2038	70	7 lbs./min. (3.2 kg/min.)	7.4 lbs./min. (3.4 kg/min.)	5.1 lbs./min. (2.3 kg/min.)
CA2039	80	8 lbs./min. (3.6 kg/min.)	8.5 lbs./min. (3.9 kg/min.)	5.6 lbs./min. (2.5 kg/min.)
CA2040	90	9 lbs./min. (4.1 kg/min.)	9.5 lbs./min. (4.3 kg/min.)	6.6 lbs./min. (3.0 kg/min.)
CA2041	100	10 lbs./min. (4.5 kg/min.)	10.6 lbs./min. (4.8 kg/min.)	7.3 lbs./min. (3.3 kg/min.)

*The flow rate of #80 Garnet is approximately 6% higher than #36 or #50.

**Silica sand is used for wet abrasive blasting, but not recommended for abrasive cutting.

Foot Controls



When an operator has both hands busy (while cleaning tubes and pipes, for example) a **foot control valve** lets him control the water flow. NLB offers six models — dump-style and shut-off style — for applications from 10,000 to 40,000 psi (690 to 2,760 bar).

Features and Benefits:

- › Dump-style valves allow instantaneous dump to low pressure when the foot pedal is released
- › Muffler to minimize hydraulic shock
- › Shut-off valves minimize water in the work area because the dump is initiated some distance away, by an unloader valve

Advanced features for field repair and operator protection

NLB's 286B series foot control valves are designed for maximum operator protection as well as productivity. A patented pedal design (U.S. patent no. 5,636,789) lets you dump the pressure immediately by simply pushing the pedal forward. These valves also have dual dump ports for superior

stability in dump mode and are constructed from corrosion-resistant materials.

One of the most popular features of these valves is a unique quick-change cartridge that you can replace in the field in less than 60 seconds. It is available in all four

models, whose operating pressures range from 10,000 psi (690 bar) to 40,000 psi (2,760 bar). Please refer below for features and benefits, and to the tables on the facing page for key specifications.

Dual Dump Ports

- › Increased stability in "dump" mode

Wetted Parts

- › Stainless steel for durability

Foot Pedal

- › Minimal pressure
- › Instant dump when released



Enclosure

- › Doubles as handy carrying case

Field repairable in under a minute

All NLB dump-style foot controls are now field-repairable in less than 60 seconds, thanks to our exclusive quick-change cartridge valve. This cartridge valve, the same one used in our 286 series lances, simply screws in and out.



Operators will also appreciate the extra protection of NLB's patented pedal design, which lets them force the valve into dump mode.

FC10-286B



Type	Pressure Rating	Max. Flow	Weight	Inlet Connection	Outlet Connection	Rebuild Kit
Dump	10,000 psi (690 bar)	25 gpm (95 lpm)	21 lbs. (9.5 kg)	1/2" MNPT	1/2" MNPT	BM15915

Patent No. 5,636,789

FC15-286B



Type	Pressure Rating	Max. Flow	Weight	Inlet Connection	Outlet Connection	Rebuild Kit
Dump	15,000 psi (1,035 bar)	25 gpm (95 lpm)	21 lbs. (9.5 kg)	1/2" MNPT	1/2" MNPT	BM15915

Patent No. 5,636,789

FC10-800B



Type	Pressure Rating	Max. Flow	Weight	Inlet Connection	Outlet Connection	Rebuild Kit
Dump	10,000 psi (690 bar)	80 gpm (303 lpm)	27 lbs. (12.2 kg)	1" NPT Male	1" NPT Male	BM16345

Patent No. 5,636,789

FC-300



Type	Pressure Rating	Max. Flow	Weight	Inlet Connection	Outlet Connection	Rebuild Kit
Dry Shut-Off	10,000 psi (690 bar)	34 gpm (129 lpm)	30 lbs. (13.6 kg)	NQC-22M	NQC-22F	300ARBKT

NOTE: Dry shut-off foot controls require a UL-904 unloader valve to dump pressure (see page 29).

FC24-535



Type	Pressure Rating	Max. Flow	Weight	Inlet Connection	Outlet Connection	Rebuild Kit
Dump	24,000 psi (1,656 bar)	35 gpm (133 lpm)	31 lbs. (14.1 kg)	1"-12 UN Type M Male	1"-12 UN 3/4" MP Female	CM42545

Patent No. 5,636,789

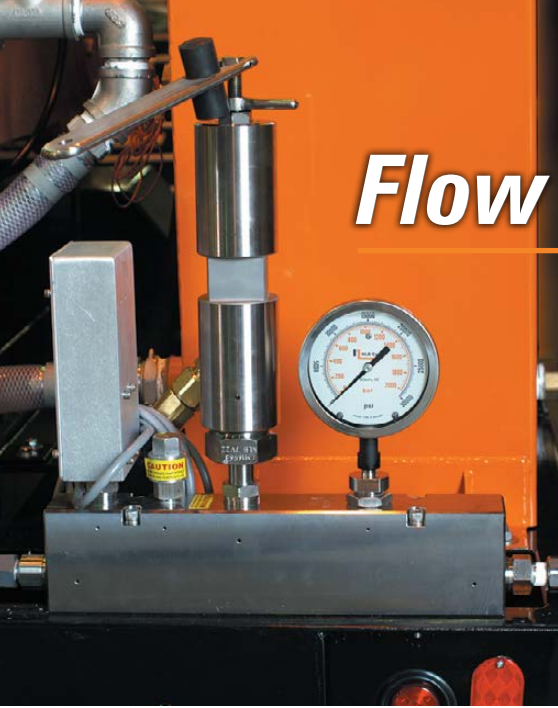
FC40-286B



Type	Pressure Rating	Max. Flow	Weight	Inlet Connection	Outlet Connection	Rebuild Kit
Dump	40,000 psi (2,760 bar)	10 gpm (38 lpm)	31 lbs. (14.1 kg)	1-1/8"-12 Type M Male	9/16" HP Type Female	BM20935

Patent No. 5,636,789

Flow and Pressure



Multi-gun valves let you feed two lances at once from a single high-pressure pump unit. **Unloader valves** (with a system valve) divert pressure back to the tank in

automated applications. **Pressure reducing stations** allow accurate pressure and flow adjustments when the pump is not located near the work being done.

Multi-Gun Valves

With NLB multi-gun valves, several lances can be operated from a single pump unit at the same time. These valves can be used with any dump-style lance, and the nozzles can be different sizes. You can even add a manifold to run several multi-gun valves at once.

Models are available to let you operate at pressures from 4,000 to

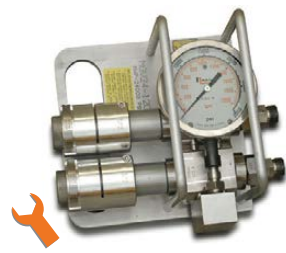
24,000 psi (276 to 1,656 bar). Key features include:

- › Each operator independently controls the loading and dumping of his lance
- › Switch from "pressure" mode to "dump" mode in a split-second, minimizing system pressure fluctuations
- › Simple design allows fast set-up in the field
- › Assembly includes mounting plate (for permanent installation), guard, pressure gauge, and quick-couplings for inlet/outlet connections
- › Rugged, long-life design

MGV15-3000



MGV24-1200



DO-805Y



CM13027



Model No.	Description	Pressure	Flow	Inlet/Outlet	Rebuild Kit
MGV15-3000	Multi-Gun Valve	4,000 to 15,000 psi (276 to 1,035 bar)	up to 30 gpm per side (up to 113.6 lpm per side)	1/2" NPT Male, 1/2" NPT Male	BM23073
MGV24-1200	Multi-Gun Valve	12,000 to 24,000 psi (828 to 1,656 bar)	2.8 to 12 gpm per side (10.6 to 45.4 lpm per side)	9/16" MP port, 1"-12 UN Male	BM38451
DO-805Y	45° Manifold	10,000 psi max. (690 bar max.)	32 gpm (121.1 lpm)	1/2" NPT Male, 1/2" NPT Male	N/A
DO20-805Y	45° Manifold	20,000 psi max. (1,380 bar max.)	23 gpm (87.1 lpm)	1"-12 UN Male, 1"-12 UN Male	N/A
CM13027	3-way Adapter	40,000 psi max. (2,760 bar max.)	10 gpm (37.9 lpm)	1-1/8" -12 HP Male, 1-1/8"-12HP Male	N/A
PM133135	3-way Adapter	20,000 psi max. (1,380 bar max.)	100 gpm (378.5 lpm)	1" MP (adapters required)	

Unloader Valves

Since shut-off-style lances and foot controls have no built-in means of dumping pressure, the safest way to use them is with an unloader valve. These are activated when an operator releases the trigger of the lance. In automated applications, unloader valves can also be used to divert water back to the tank when

flow is no longer required at the nozzle. This also requires a system valve.

NLB offers 25 gpm and 50 gpm models, both constructed of stainless steel for long life. Repair kits are available.



UL-452

Model No.	Max. Pressure	Max. Flow	Inlet Connection	Outlet Connection
UL-452	10,000 psi (690 bar)	25 gpm (95 lpm)	1/2" NPT	1/2" NPT
UL-904	10,000 psi (690 bar)	50 gpm (189 lpm)	1" NPT	1" NPT

Pressure Reducing Stations

When you want to use water jets at a location some distance from your high-pressure pump unit — either in a plant or in the field — the simplest

solution is a pressure reducing station. We have 10,000 and 20,000 psi units (690 and 1,380 bar), either plate-mounted or mobile. All feature

stainless-steel construction and include a rugged NLB by-pass valve, oil-filled pressure gauge and snubber.

Model No.	Max. Pressure	Max. Flow	Inlet Connection	Outlet Connection	Weight
PRS-270	10,000 psi (690 bar)	40 gpm (151 lpm)	1/2" NPT	1/2" NPT	50 lbs. (23 kg)
PRS-270-20K	20,000 psi (1,380 bar)	26 gpm (98 lpm)	3/4" NPT	3/4" MP port	53 lbs. (24 kg)
PRS-270-40K	40,000 psi (2,760 bar)	25 gpm (95 lpm)	9/16" NPT	9/16-18 LH HPF	53 lbs. (24 kg)

PRS-270 PRS-270-20K PRS-270-40K



PRS-270HC PRS-270HC-20K PRS-270HC-40K



Flex and Rigid Lances

NLB **flexible lances** make pipe and tube cleaning a breeze, snaking around bends and curves to remove even hardened deposits. For straight pipes and tubes (heat exchangers, boilers, etc.), we also offer **rigid lances**. Both reduce risk of injury by putting distance between operators and the water jets (up to 40,000 psi, or 2,760 bar).

Following the five pages of lances and **couplings** are **rotary hand lances**. Then come accessories to

help protect operators from nozzles rebounding unexpectedly out of the pipe, such as **flex lance guards** and **back-out preventers**. A **stinger**, which blocks the opening when needed, is another option; please consult NLB for lengths and diameters.

After this section, you'll find NLB's vast selection of **tube and pipe nozzles**, designed for use with flex and rigid lances.

10K and 15K Flex Lances

IMPORTANT: Be sure to allow clearance in the tube for loosened deposits to exit. The recommendations on this chart take this into account.

Model No.	Inlet Connection	Nozzle Thread Connection	Standard Nozzle	Button Nozzle	Multi-Row Nozzle	Polishing Nozzle	Rotating Nozzle	Footbox to Lance Coupling(s)	Dim. "A" Coupling Length	Dim. "B" Coupling OD	Dim. "C" Coupling ID	Bend Radius	Stinger
22RP-XX-1/16	1/16" MNPT	1/16" MNPT	TS-1	TB-1	TM-1	RLM-2-10K	RPN1506 RPN1510	PM17925 and NQC-22-M	1.06"	0.38"	0.12"	2.36"	RTL15-1/16-STING
24RP-XX-1/16	1/16" MNPT	1/16" MNPT	TS-1	TB-1	TM-1	RLM-2-10K	RPN1506 RPN1510	PM17925 and NQC-22-M	1.2"	0.44"	0.17"	2.95"	RTL15-1/16-STING
25RP-XX	1/8" MNPT	1/8" MNPT	TS-2	TB-2	TM-2	RLM-3-10K	RPN1510-1/8	PM17926 and NQC-22-M	1.28"	0.52"	0.20"	3.75"	RTL15-1/8-STING
27RP-XX	1/4" MNPT	1/4" MNPT	TS-3	TB-3	TM-3	RLM-4-10K	RPN1520	PM17927 and NQC-22-M	1.56"	0.62"	0.25"	3.50"	RTL15-1/4-STING
28RP-XX	3/8" MNPT	3/8" MNPT	TS-4	TB-4	TM-4	NA	NA	PM17928 and NQC-22-M	2.95"	0.75"	0.40"	3.00"	RTL15-3/8-STING
29RP-XX	1/2" MNPT	1/2" MNPT	TS-5	TB-5	TM-5	RLM-5-10K	NA	NQC-22-M	3.37"	1.00"	0.50"	4.00"	RTL15-1/2-STING
24SRV-XX	1/8" MNPT	1/8" MNPT	TS-2	TB-2	TM-2	RLM-3-10K	RPN1510-1/8	PM17926 and NQC-22-M	1.10"	0.47"	0.17"	4.00"	RTL15-1/8-STING
26SRV-XX	1/4" MNPT	1/4" MNPT	TS-3	TB-3	TM-3	RLM-4-10K	RPN1520	PM17927 and NQC-22-M	1.56"	0.63"	0.16"	5.00"	RTL15-1/4-STING

Choices for every I.D. and operating pressure

NLB flex lances have been proven time and again over the past 40 years. Key features include smooth inner core that minimizes pressure drop and a compact end connection to handle a tight bend radius.

RP hose has an abrasion-resistant

nylon outer cover with a smooth surface that reduces friction as it travels through the pipe or tube. SRV hose features two outer spirals of high-tensile stainless steel wire, for added kink resistance. Our **ultra-high pressure flex lance** features six layers of this

wire. NLB flex lances are stocked in 25', 35' and 50', and are also available in lengths up to 200' (7.6 m, 9.1 m, 15.2 m, and up to 61 m).

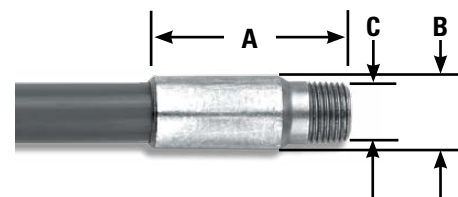
When specifying hose, refer to the pressure drop chart on Page 110.

How to Use These Charts:

1. Within your operating pressure, find the I.D. of your tube.
2. Choose a lance that will fit in your tube and establish the length that will be required for your application. **NOTE:** The XX in the model number refers to

length; 35' and 50' (10.7 m and 15.2 m) are standard.

3. Read across the chart for potential nozzles and stingers. Couplings can be found in the chart in the lower right-hand corner.



Nozzle Families

Standard for general cleaning



Polishing removes hard deposits and polishes



Button moves easily around bends



Multi Row removes soft material











Rotating maximizes cleaning power



Flex and Rigid Lances

20K Flex Lances

IMPORTANT: Be sure to allow clearance in the tube for loosened deposits to exit. The recommendations on this chart take this into account.

Model No.	Inlet Connection	Nozzle Thread Connection	Standard Nozzle	Button Nozzle	Multi-Row Nozzle	Polishing Nozzle	Rotating Nozzle	Footbox to Lance Coupling(s)	Dim. "A" Coupling Length	Dim. "B" Coupling OD	Dim. "C" Coupling ID	Bend Radius	Stinger
 44RP-XX-YYY	9/16"-18 Type M Female	MP 1/4"-28 LHM or RHM	TS-1-20K	*	TS-1-20K	RLM-2-20K-AF	RPN2006	DM6023-129	2.10"	0.463"	0.16"	4.10"	NA
 44RP-XX-1/4-YYY	9/16"-18 Type M Female	MP 1/4"-28 RHF	*	*	*	*	*	DM6023-129	1.91"	0.463"	0.16"	4.10"	NA
 44RP-XX-3/8-YYY	9/16"-18 Type M Female	MP 3/8"-24 LHM or RHM	*	*	*	*	*	DM6023-129	1.91"	0.463"	0.16"	4.10"	NA
 45RP-XX-YYY	9/16"-18 Type M Female	MP 1/4"-28 LHM or RHM	TS-1-20K	*	TS-1-20K	RLM-2-20K-AF	RPN2006	DM6023-129	2.71"	0.490"	0.20"	5.12"	NA
 45RP-XX-3/8-YYY	9/16"-18 Type M Female	MP 3/8"-24 RHF	*	*	*	*	NA	DM6023-129	1.98"	0.490"	0.20"	5.12"	NA
 46RP-XX-YYY	9/16"-18 Type M Female	MP 3/8"-24 LHM or RHM	TS-2-20K	NA	TS-2-20K	RLM-4-20K	RPN2410	DM6023-129	2.60"	0.570"	0.25"	6.10"	NA
 46RP-XX-3/8-YYY	9/16"-18 Type M Female	MP 3/8"-24 RHF	*	*	*	*	NA	DM6023-175	1.83"	0.570"	0.25"	6.10"	NA
 47RP-XX-YYY	3/4"-16 Type M Female	MP 9/16"-18 LHM or RHM	TS-3-20K	NA	TS-3-20K	RLM-6-20K	RPN2020	DM6023-129	3.83"	0.685"	0.32"	6.88"	NA

XX designates length (35' and 50' standard). YYY designates RH Male or RH Female. * Consult NLB for nozzle options.

40K Flex Lances

 PM7630-XX-YYY	9/16"-18 Type M Swivel	HP 3/8"-24 LHM or RHM	TS-1-40K	NA	NA	NA	RPN4009	DM6023-241	4.05"	0.82"	0.20"	6.00"	NA
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Rigid Lances

Rigid lances are available in various diameters, rated for all popular pressures. They come in lengths of




20 feet (6m), which can be assembled, with couplings, into longer lances. Optional hand

guides (BL13033) help an operator position the lance and support it without slowing the rotation speed.

15K Rigid Lances




Model No.	O.D.	I.D.	Inlet Connection	Nozzle Thread Connection	Standard Nozzle	Button Nozzle	Multi Row Nozzle	Polishing Nozzle	Lance to Lance Coupling(s)
 RTL15-1/16-25	.312	.182	1/16" MNPT	1/16" MNPT	TS-1	TB-1	TM-1	RLM-2-10K	RTLC-3
 RTL15-1/8-25	.406	.220	1/8" MNPT	1/8" MNPT	TS-1	TB-2	TM-2	RLM-3-10K	RTLC-2
 RTL15-1/4-25	.540	.302	1/4" MNPT	1/4" MNPT	TS-1-20K	TB-3	TM-3	RLM-4-10K	RTLC-4

20K Rigid Lances

 RTL20-1/4-25	.247	.109	MP 1/4"-28 LHM	MP 1/4"-28 LHM	TS-1-20K	NA	TS-1-20K	RLM-2-20K-AF	BM12268
 RTL20-3/8-25	.370	.203	MP 3/8"-24 LHM	MP 3/8"-24 LHM	TS-2-20K	NA	TS-2-20K	RLM-4-20K	BM13606
 RTL20-9/16-25	.557	.312	MP 9/16"-18 LHM	MP 9/16"-18 LHM	TS-3-20K	NA	TS-3-20K	RLM-6-20K	BM7684

Female and left-hand threads are available for 20,000 psi rigid lances.

40K Rigid Lances

 RTL40-1/4-25	.247	.089	HP 1/4"-28 LHM	HP 1/4"-28 LHM	TS-1-40K	NA	NA	NA	BM12268
 RTL40-3/8-25	.370	.125	HP 3/8"-24 LHM	HP 3/8"-24 LHM	TS-2-40K	NA	NA	NA	BM7683
 RTL40-9/16-25	.557	.187	HP 9/16"-18 LHM	HP 9/16"-18 LHM	TS-3-40K	NA	NA	NA	BM7684

Female and left-hand threads are available for 40,000 psi rigid lances.

Flex and Rigid Lances

Couplings

NLB's flex and rigid lance couplings are designed to provide the smallest possible O.D. while maximizing the flow of water. There are two basic styles: models with female threads to join two sections of lance with male threads on the ends, and models with male threads to join lance sections with female threads on the ends.

NLB also offers couplings with right-hand threads on one side and left-hand threads on the other to quickly join two different styles of lance.

The charts on pages 31-33 show the suggested coupling for each NLB flex and rigid lance.



Coupling	Description	Max. Diameter	Length	Tube Size
10,000 psi (690 bar)				
RTL-3	1/16" FNPT	.375"	.900"	1/16"
RTL-7	1/16" FNPT x 1/4" FNPT	NA	NA	1/4" x 1/16"
RTL-2	1/8" FNPT	.500"	.900"	1/8"
RTL-1	1/4"-28 UNF Fine Female	.315"	2.00"	1/4"
RTL-4	1/4" FNPT	.625"	1.125"	1/4"
RTL-5	3/8" FNPT	.815"	1.250"	3/8"
RTL-6	1/2" FNPT	1.0"	2.00"	1/2"
20,000 psi (1,380 bar)				
BM12268	1/4"-28 LHF	.375"	2.15"	1/4"
BM22604	1/4"-28 RHF	.375"	2.15"	1/4"
BM22605	1/4"-28 LHF X RHF	.375"	2.15"	1/4"
BL1218	1/4"-28 RHM	NA	NA	3/8"
PM33326	1/4"-28 LHF X 3/8"-24 RHF	.468"	2.250"	1/4" x 3/8"
BM13606	3/8"-24 LHF	.563"	2.00"	3/8"
BM22606	3/8"-24 RHF	.563"	2.00"	3/8"
BM22607	3/8"-24 RHF x LHF	.563"	2.00"	3/8"
BM22615	3/8" LHF x 9/16"-18" LHF	.660"	2.40"	3/8" x 9/16"
BM22616	3/8" RHF x 9/16"-18" RHF	.660"	2.40"	3/8" x 9/16"
BM20092	3/8"-24 RHM	.557"	3.25"	9/16"
BM20093	9/16"-18 RHF	.660"	2.40"	9/16"
BM20094	9/16"-18 LHF	.660"	2.40"	9/16"
BM22619	9/16"-18 LHF x RHF	.660"	2.40"	9/16"
40,000 psi (2,760 bar)				
BM12268	1/4"-28 LHF	.375"	2.15"	1/4"
BM22604	1/4"-28 RHF	.375"	2.15"	1/4"
BM22605	1/4"-28 RHF x LHF	.375"	2.15"	1/4"
BM7683	3/8"-24 LHF	.480"	2.15"	3/8"
BM22621	3/8"-24 RHF	.480"	2.15"	3/8"
BM17821	3/8"-24 RHF x LHF	.480"	2.15"	3/8"
BM22625	1/4"-28 RHM	.375"	2.50"	3/8"
BM18661	3/8"-24 LHF x 9/16"-18" LHF	.660"	2.40"	3/8" x 9/16"
BM22624	3/8"-24 RHF x 9/16"-18" RHF	.660"	2.40"	3/8" x 9/16"
BM18006	3/8"-24 RHM	.557"	3.25"	9/16"
BM7684	9/16"-18 LHF	.660"	2.40"	9/16"
BM19229	9/16"-18 RHF	.660"	2.40"	9/16"
BM17820	9/16"-18 LHF x RHF	.660"	2.40"	9/16"

For additional couplings, see Page 76.

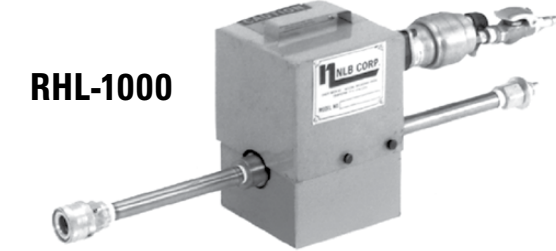
Stingers

Stingers prevent a nozzle from reversing in the tube or pipe and exiting toward the operator. A stinger should be at least the same length as the tube or pipe diameter. For example, cleaning out an 8" (20 cm) pipe would require at least an 8" (20 cm) stinger. Consult factory for available lengths and diameters. Please specify thread size.



RHL Lances

For real tube bundle cleaning efficiency, NLB has added an air-activated rotating SPIN JET® seal to a rigid lance to produce a rotary hand lance. The combination of high-pressure water with the 90 rpm rotating action clears almost any clog (and is also useful for polishing tubes). Our 10,000 psi, 20,000 psi, and 40,000 psi RHL lances all feature stainless steel construction, a fast-acting air valve for speed control, and economical repair kits for field maintenance. A rotary hand lance should always be used with one of NLB's foot control valves.



Part Number	Max. Pressure	Air	Speed Up to	Inlet Connection	Outlet Connection	Air Connection
RHL-1000	10,000 psi (690 bar)	20 cfm @ 90 psi (9.4 l/s @ 6 bar)	90 rpm	1/2" NPT	1/2" NPT	1/4" NPT
RHL-2000	20,000 psi (1,380 bar)	20 cfm @ 90 psi (9.4 l/s @ 6 bar)	90 rpm	9/16" NPT	9/16" NPT	1/4" NPT
RHL-3600	40,000 psi (2,760 bar)	20 cfm @ 90 psi (9.4 l/s @ 6 bar)	90 rpm	3/4" - 16 HP RH	9/16" - 18 HP RH	1/4" NPT

Back-Out Preventers

The DM15900 Pipe Back-Out Preventer gives an operator maximum protection against a flex lance unexpectedly coming out of a pipe while in use. It attaches easily to a flanged or non-flanged pipe and is adaptable to pipes with an O.D. from 6" to 36" (152 to 914 mm). It comes complete with mounting hardware, three sets of steel guards, and chains (to secure it to non-flanged pipes).

The PP42880 Flex Lance Stop device is an articulated arm that attaches easily to the tube sheet and is adaptable to vertical or horizontal applications.

Constructed of zinc-plated steel, with steel handles and an anodized aluminum housing, the device includes a Lexan® splash guard.

DM15900



PP42880



Flex Lance Guards

A flex lance guard fits around the end of the lance to help prevent a nozzle from being pulled out of a tube while under pressure. Each NLB model fits a variety of lance diameters, thanks to a series of interchangeable stops.



LG-1525A

Part Number	Minimum Tube I.D.	Stops Included for Nozzle O.D.
LG-1525A	0.81" (20.6 mm)	.320" (8.1 mm) .450" (11.4 mm) .515" (13.1 mm)
LG-1525B	1.00" (25.4 mm)	.320" (8.1 mm) .450" (11.4 mm) .515" (13.1 mm)

Pipe and Tube Nozzles

NLB offers more than 200 standard nozzles for cutting and/or polishing pipes and tubes of different diameters. All are specially designed for use with an NLB flex or rigid lance, a semi-automated Saflex™ tube bundle lancing system, or our fully-automated ATL-5000 (see pages 50-52).

Each of our five nozzle styles can be ordered with a variety of drill patterns to match your application, pressure and flow requirements. All are precision-machined and thread easily onto your NLB lance.

Nozzle Families

STANDARD for general cleaning



EVAPORATOR for heavily-fouled tubes



BUTTON moves easily around bends



RODDER screws onto rigid lance



MULTI ROW removes soft material



Count on NLB nozzles for fast work (and fast delivery)

The NLB line includes five nozzle styles, in 10,000 psi and 20,000 psi models (690 bar and 1,380 bar) all available for immediate delivery*:

- › **TS** – standard
- › **TM** – multi-row
- › **TB** – button
- › **TE** – evaporator
- › **TR** – rodder (attaches to a rod)

If one of these standard nozzles isn't quite right for your application, we can custom-engineer one that is. Just call **248-624-5555** or your nearest NLB branch. You'll find these locations on the back of this catalog.

*Should a standard nozzle not be in stock when you call, any order received by 3:00 p.m. EST/EDT can still be delivered the next day.

Legend:

T S - 3 C 15 20K LH

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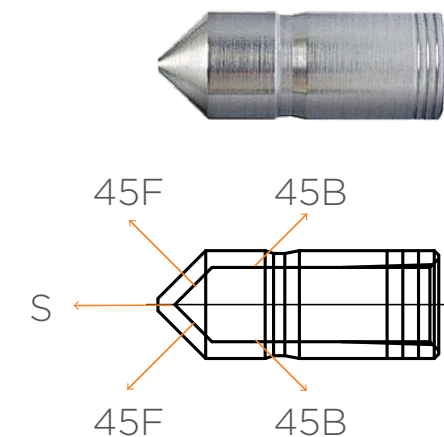
- | | |
|--------------------------------------|---------------------|
| 1. Standard | 4. Flow = 15 gpm |
| 2. Model 3 (1.25" long, 0.687" O.D.) | 5. 20,000 psi |
| 3. C for Cutting (or P for Pulling) | 6. Left-hand thread |

Standard Nozzles, 15,000 psi

TS-1 Models

O.D. - 0.385" (9.78 mm)
Length - 1.00" (25.4 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TS-1C5.6	1@S, 3@45F, 6@45B	5.6 gpm (21.2 lpm)	1/16" NPT
TS-1P5.6	1@S, 6@45B	5.6 gpm (21.2 lpm)	1/16" NPT
TS-1C6.8	1@S, 3@45F, 6@45B	6.8 gpm (25.7 lpm)	1/16" NPT
TS-1P6.8	1@S, 6@45B	6.8 gpm (25.7 lpm)	1/16" NPT
TS-1C8.2	1@S, 3@45F, 6@45B	8.25 gpm (31.2 lpm)	1/16" NPT
TS-1P8.2	1@S, 6@45B	8.25 gpm (31.2 lpm)	1/16" NPT
TS-1H	Custom	Custom	1/16" NPT



TS-2 Models

O.D. - 0.480" (12.19 mm)
Length - 1.25" (31.75 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TS-2C8	1@S, 3@45F, 6@45B	8 gpm (30.3 lpm)	1/8" NPT
TS-2P8	1@S, 6@45B	8 gpm (30.3 lpm)	1/8" NPT
TS-2C10	1@S, 3@45F, 6@45B	10 gpm (37.9 lpm)	1/8" NPT
TS-2P10	1@S, 6@45B	10 gpm (37.9 lpm)	1/8" NPT
TS-2C12	1@S, 3@45F, 6@45B	12 gpm (45.4 lpm)	1/8" NPT
TS-2P12	1@S, 6@45B	12 gpm (45.4 lpm)	1/8" NPT
TS-2H	Custom	Custom	1/8" NPT

TS-4 Models

O.D. - 0.855" (21.72 mm)
Length - 1.50" (38.1 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TS-4C17	1@S, 3@45F, 12@45B	17 gpm (64.4 lpm)	3/8" NPT
TS-4P17	1@S, 12@45B	17 gpm (64.4 lpm)	3/8" NPT
TS-4C19	1@S, 3@45F, 12@45B	19 gpm (71.9 lpm)	3/8" NPT
TS-4P19	1@S, 12@45B	19 gpm (71.9 lpm)	3/8" NPT
TS-4C30	1@S, 3@45F, 12@45B	30 gpm (113.6 lpm)	3/8" NPT
TS-4P30	1@S, 12@45B	30 gpm (113.6 lpm)	3/8" NPT
TS-4H	Custom	Custom	3/8" NPT

TS-3 Models

O.D. - 0.687" (17.45 mm)
Length - 1.25" (31.75 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TS-3C15	1@S, 3@45F, 8@45B	15 gpm (56.8 lpm)	1/4" NPT
TS-3P15	1@S, 8@45B	15 gpm (56.8 lpm)	1/4" NPT
TS-3C17	1@S, 3@45F, 8@45B	17 gpm (64.3 lpm)	1/4" NPT
TS-3P17	1@S, 8@45B	17 gpm (64.3 lpm)	1/4" NPT
TS-3C25	1@S, 3@45F, 8@45B	25 gpm (94.6 lpm)	1/4" NPT
TS-3P25	1@S, 8@45B	25 gpm (94.6 lpm)	1/4" NPT
TS-3H	Custom	Custom	1/4" NPT

TS-5 Models

O.D. - 1.062" (26.97 mm)
Length - 1.75" (45.45 mm)

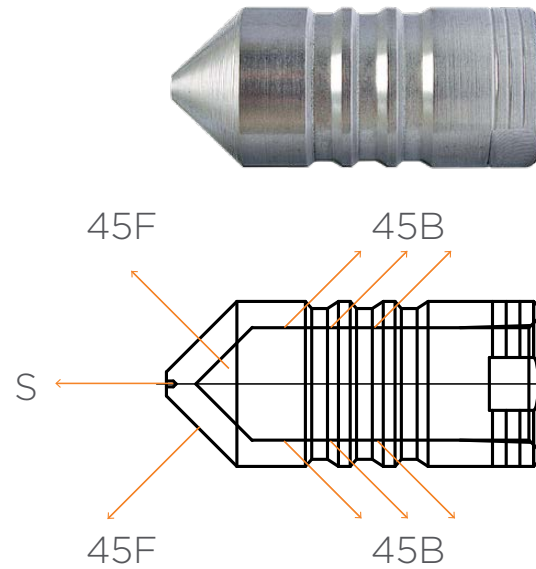
Part Number	Pattern	Flow at 10,000 psi	Thread
TS-5C24	1@S, 3@45F, 12@45B	24 gpm (90.8 lpm)	1/2" NPT
TS-5P24	1@S, 12@45B	24 gpm (90.8 lpm)	1/2" NPT
TS-5C30	1@S, 3@45F, 12@45B	30 gpm (113.5 lpm)	1/2" NPT
TS-5P30	1@S, 12@45B	30 gpm (113.5 lpm)	1/2" NPT
TS-5C35	1@S, 3@45F, 12@45B	35 gpm (132.5 lpm)	1/2" NPT
TS-5P35	1@S, 12@45B	35 gpm (132.5 lpm)	1/2" NPT
TS-5H	Custom	Custom	1/2" NPT

Pipe and Tube Nozzles

Multi-Row Nozzles, 15,000 psi

TM-1 Models O.D. - 0.385" (9.78 mm)
Length - 1.00" (25.4 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TM-1P5.6	1@S, 3@45B, 3@45B, 3@45B	5.6 gpm (21.2 lpm)	1/16" NPT
TM-1P6.8	1@S, 3@45B, 3@45B, 3@45B	6.8 gpm (25.7 lpm)	1/16" NPT
TM-1P8.2	1@S, 3@45B, 3@45B, 3@45B	8.2 gpm (31.0 lpm)	1/16" NPT
TM-1H	Custom	Custom	1/16" NPT



TM-2 Models O.D. - 0.480" (12.19 mm)
Length - 1.16" (29.46 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TM-2P8	1@S, 3@45B, 3@45B, 3@45B	8 gpm (30.3 lpm)	1/8" NPT
TM-2P10	1@S, 3@45B, 3@45B, 3@45B	10 gpm (37.9 lpm)	1/8" NPT
TM-2P12	1@S, 3@45B, 3@45B, 3@45B	12 gpm (45.4 lpm)	1/8" NPT
TM-2H	Custom	Custom	1/8" NPT

TM-4 Models O.D. - 0.855" (21.72 mm)
Length - 1.90" (48.26 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TM-4P17	1@S, 6@45B, 6@45B, 6@45B	17 gpm (64.4 lpm)	3/8" NPT
TM-4P19	1@S, 6@45B, 6@45B, 6@45B	19 gpm (71.9 lpm)	3/8" NPT
TM-4P25	1@S, 6@45B, 6@45B, 6@45B	25 gpm (94.6 lpm)	3/8" NPT
TM-4H	Custom	Custom	3/8" NPT

TM-3 Models O.D. - 0.687" (17.45 mm)
Length - 1.46" (37.08 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TM-3P15	1@S, 4@45B, 4@45B, 4@45B	15 gpm (56.8 lpm)	1/4" NPT
TM-3P17	1@S, 4@45B, 4@45B, 4@45B	17 gpm (64.4 lpm)	1/4" NPT
TM-3P25	1@S, 4@45B, 4@45B, 4@45B	25 gpm (94.6 lpm)	1/4" NPT
TM-3H	Custom	Custom	1/4" NPT

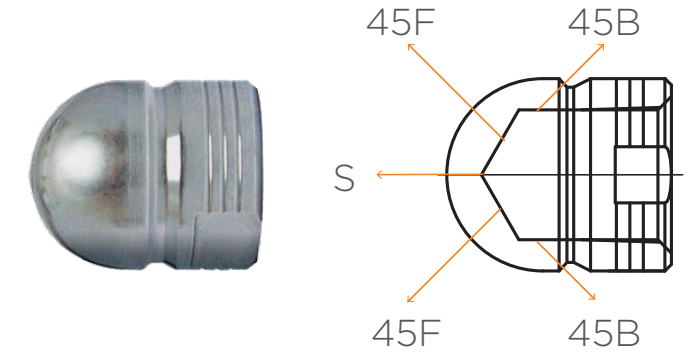
TM-5 Models O.D. - 1.062" (26.97 mm)
Length - 2.05" (52.07 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TM-5P24	1@S, 6@45B, 6@45B, 6@45B	24 gpm (90.9 lpm)	1/2" NPT
TM-5P30	1@S, 6@45B, 6@45B, 6@45B	30 gpm (113.6 lpm)	1/2" NPT
TM-5P35	1@S, 6@45B, 6@45B, 6@45B	35 gpm (132.5 lpm)	1/2" NPT
TM-5H	Custom	Custom	1/2" NPT

Button Nozzles, 15,000 psi

TB-1 Models O.D. - 0.385" (9.78 mm)
Length - 0.592" (15.04 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TB-1C5.6	1@S, 3@45F, 6@45B	5.6 gpm (21.2 lpm)	1/16" NPT
TB-1P5.6	1@S, 6@45B	5.6 gpm (21.2 lpm)	1/16" NPT
TB-1C6.8	1@S, 3@45F, 6@45B	6.8 gpm (25.7 lpm)	1/16" NPT
TB-1P6.8	1@S, 6@45B	6.8 gpm (25.7 lpm)	1/16" NPT
TB-1C8.2	1@S, 3@45F, 6@45B	8.25 gpm (31.2 lpm)	1/16" NPT
TB-1P8.2	1@S, 6@45B	8.25 gpm (31.2 lpm)	1/16" NPT
TB-1H	Custom	Custom	1/16" NPT



TB-2 Models O.D. - 0.480" (12.19 mm)
Length - 0.692" (17.58 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TB-2C8	1@S, 3@45F, 6@45B	8 gpm (30.3 lpm)	1/8" NPT
TB-2P8	1@S, 6@45B	8 gpm (30.3 lpm)	1/8" NPT
TB-2C10	1@S, 3@45F, 6@45B	10 gpm (37.9 lpm)	1/8" NPT
TB-2P10	1@S, 6@45B	10 gpm (37.9 lpm)	1/8" NPT
TB-2C12	1@S, 3@45F, 6@45B	12 gpm (45.4 lpm)	1/8" NPT
TB-2P12	1@S, 6@45B	12 gpm (45.4 lpm)	1/8" NPT
TB-2H	Custom	Custom	1/8" NPT

TB-4 Models O.D. - 0.855" (21.72 mm)
Length - 1.00" (25.4 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TB-4C17	1@S, 3@45F, 12@45B	17 gpm (64.4 lpm)	3/8" NPT
TB-4P17	1@S, 12@45B	17 gpm (64.4 lpm)	3/8" NPT
TB-4C19	1@S, 3@45F, 12@45B	19 gpm (71.9 lpm)	3/8" NPT
TB-4P19	1@S, 12@45B	19 gpm (71.9 lpm)	3/8" NPT
TB-4C25	1@S, 3@45F, 12@45B	25 gpm (94.6 lpm)	3/8" NPT
TB-4P25	1@S, 12@45B	25 gpm (94.6 lpm)	3/8" NPT
TB-4H	Custom	Custom	3/8" NPT

TB-3 Models O.D. - 0.701" (17.81 mm)
Length - 0.83" (21.08 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TB-3C15	1@S, 3@45F, 8@45B	15 gpm (56.8 lpm)	1/4" NPT
TB-3P15	1@S, 8@45B	15 gpm (56.8 lpm)	1/4" NPT
TB-3C17	1@S, 3@45F, 8@45B	17 gpm (64.4 lpm)	1/4" NPT
TB-3P17	1@S, 8@45B	17 gpm (64.4 lpm)	1/4" NPT
TB-3C25	1@S, 3@45F, 8@45B	25 gpm (94.6 lpm)	1/4" NPT
TB-3P25	1@S, 8@45B	25 gpm (94.6 lpm)	1/4" NPT
TB-3H	Custom	Custom	1/4" NPT

TB-5 Models O.D. - 1.062" (26.97 mm)
Length - 1.125" (28.58 mm)

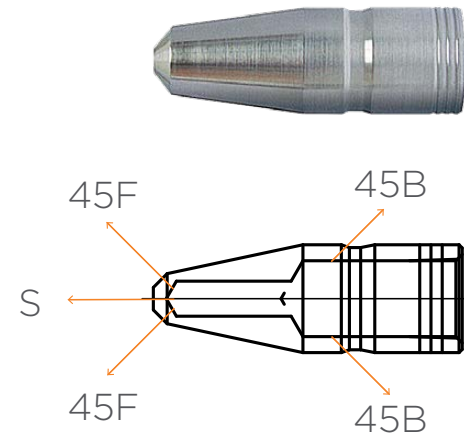
Part Number	Pattern	Flow at 10,000 psi	Thread
TB-5C24	1@S, 3@45F, 12@45B	24 gpm (90.9 lpm)	1/2" NPT
TB-5P24	1@S, 12@45B	24 gpm (90.9 lpm)	1/2" NPT
TB-5C30	1@S, 3@45F, 12@45B	30 gpm (113.6 lpm)	1/2" NPT
TB-5P30	1@S, 12@45B	30 gpm (113.6 lpm)	1/2" NPT
TB-5C35	1@S, 3@45F, 12@45B	35 gpm (132.5 lpm)	1/2" NPT
TB-5P35	1@S, 12@45B	35 gpm (132.5 lpm)	1/2" NPT
TB-5H	Custom	Custom	1/2" NPT

Pipe and Tube Nozzles

Evaporator Nozzles, 15,000 psi

TE-1 Models O.D. - 0.385" (9.78 mm)
Length - 1.00" (25.4 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TE-1C5.6	1@S, 3@45F, 6@45B	5.6 gpm (21.2 lpm)	1/16" NPT
TE-1P5.6	1@S, 6@45B	5.6 gpm (21.2 lpm)	1/16" NPT
TE-1C6.8	1@S, 3@45F, 6@45B	6.8 gpm (25.7 lpm)	1/16" NPT
TE-1P6.8	1@S, 6@45B	6.8 gpm (25.7 lpm)	1/16" NPT
TE-1C8.2	1@S, 3@45F, 6@45B	8.25 gpm (31.2 lpm)	1/16" NPT
TE-1P8.2	1@S, 6@45B	8.25 gpm (31.2 lpm)	1/16" NPT
TE-1H	Custom	Custom	1/16" NPT



TE-2 Models O.D. - 0.480" (12.19 mm)
Length - 1.375" (34.93 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TE-2C8	1@S, 3@45F, 6@45B	8 gpm (30.3 lpm)	1/8" NPT
TE-2P8	1@S, 6@45B	8 gpm (30.3 lpm)	1/8" NPT
TE-2C10	1@S, 3@45F, 6@45B	10 gpm (37.9 lpm)	1/8" NPT
TE-2P10	1@S, 6@45B	10 gpm (37.9 lpm)	1/8" NPT
TE-2C12	1@S, 3@45F, 6@45B	12 gpm (45.4 lpm)	1/8" NPT
TE-2P12	1@S, 6@45B	12 gpm (45.4 lpm)	1/8" NPT
TE-2H	Custom	Custom	1/8" NPT

TE-4 Models O.D. - 0.855" (21.72 mm)
Length - 1.90" (48.26 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TE-4C17	1@S, 3@45F, 12@45B	17 gpm (64.4 lpm)	3/8" NPT
TE-4P17	1@S, 12@45B	17 gpm (64.4 lpm)	3/8" NPT
TE-4C19	1@S, 3@45F, 12@45B	19 gpm (71.9 lpm)	3/8" NPT
TE-4P19	1@S, 12@45B	19 gpm (71.9 lpm)	3/8" NPT
TE-4C25	1@S, 3@45F, 12@45B	25 gpm (94.6 lpm)	3/8" NPT
TE-4P25	1@S, 12@45B	25 gpm (94.6 lpm)	3/8" NPT
TE-4H	Custom	Custom	3/8" NPT

TE-3 Models O.D. - 0.687" (17.45 mm)
Length - 1.75" (44.45 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TE-3C15	1@S, 3@45F, 8@45B	15 gpm (56.8 lpm)	1/4" NPT
TE-3P15	1@S, 8@45B	15 gpm (56.8 lpm)	1/4" NPT
TE-3C17	1@S, 3@45F, 8@45B	17 gpm (64.4 lpm)	1/4" NPT
TE-3P17	1@S, 8@45B	17 gpm (64.4 lpm)	1/4" NPT
TE-3C25	1@S, 3@45F, 8@45B	25 gpm (94.6 lpm)	1/4" NPT
TE-3P25	1@S, 8@45B	25 gpm (94.6 lpm)	1/4" NPT
TE-3H	Custom	Custom	1/4" NPT

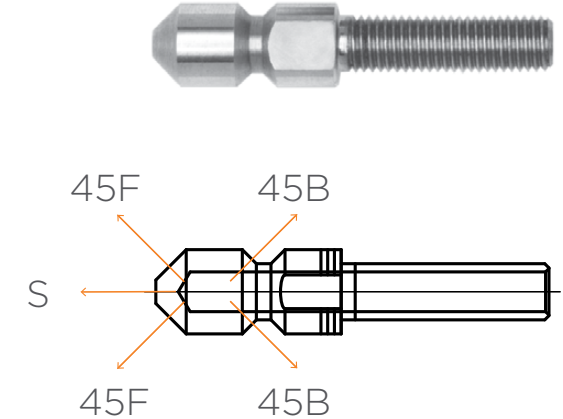
TE-5 Models O.D. - 1.062" (26.97 mm)
Length - 2.25" (57.15 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TE-5C24	1@S, 3@45F, 12@45B	24 gpm (90.9 lpm)	1/2" NPT
TE-5P24	1@S, 12@45B	24 gpm (90.9 lpm)	1/2" NPT
TE-5C30	1@S, 3@45F, 12@45B	30 gpm (113.6 lpm)	1/2" NPT
TE-5P30	1@S, 12@45B	30 gpm (113.6 lpm)	1/2" NPT
TE-5C35	1@S, 3@45F, 12@45B	35 gpm (132.5 lpm)	1/2" NPT
TE-5P35	1@S, 12@45B	35 gpm (132.5 lpm)	1/2" NPT
TE-5H	Custom	Custom	1/2" NPT

Rodder Nozzles, 15,000 psi

TR-1 Models O.D. - 0.375" (9.52 mm)
Length - 1.750" (44.45 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TR-1C5.6	1@S, 3@45F, 6@45B	5.6 gpm (21.2 lpm)	1/4-28" Male
TR-1C6.8	1@S, 3@45F, 6@45B	6.8 gpm (25.7 lpm)	1/4-28" Male
TR-1C8.2	1@S, 3@45F, 6@45B	8.25 gpm (31.2 lpm)	1/4-28" Male
TR-1H	Custom	Custom	1/4-28" Male



TR-2 Models O.D. - 0.375" (9.52 mm)
Length - 1.187" (30.15 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TR-2C8	1@S, 3@45F, 6@45B	8 gpm (30.3 lpm)	5/16-24" Male
TR-2C10	1@S, 3@45F, 6@45B	10 gpm (37.9 lpm)	5/16-24" Male
TR-2C12	1@S, 3@45F, 6@45B	12 gpm (45.4 lpm)	5/16-24" Male
TR-2H	Custom	Custom	5/16-24" Male

TR-3 Models O.D. - 0.500" (12.7 mm)
Length - 1.20" (30.5 mm)

Part Number	Pattern	Flow at 10,000 psi	Thread
TR-3C15	1@S, 3@45F, 8@45B	15 gpm (56.8 lpm)	3/8-24" Male
TR-3C17	1@S, 3@45F, 8@45B	17 gpm (64.3 lpm)	3/8-24" Male
TR-3C25	1@S, 3@45F, 8@45B	25 gpm (94.6 lpm)	3/8-24" Male
TR-3H	Custom	Custom	3/8-24" Male

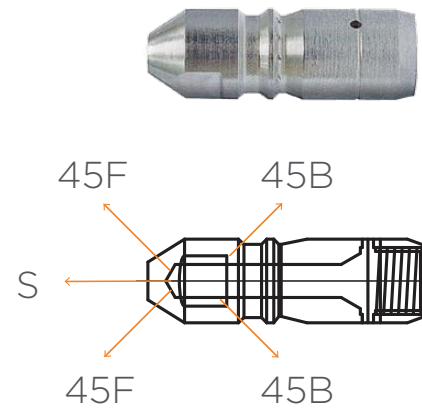
Pipe and Tube Nozzles

Standard Nozzles, 20,000 psi

TS-1-20KLH & TS-1-20KRH Models

O.D. - 0.372" (9.45 mm)
Length - 1.231" (31.3 mm)

Part Number	Pattern	Flow	Thread
TS-1-20KC4LH TS-1-20KC4RH	1@S, 2@45F, 2@45B	4 gpm (15.1 lpm)	1/4" UNF LH 1/4" UNF RH
TS-1-20KP4LH TS-1-20KP4RH	1@S, 4@45B	4 gpm (15.1 lpm)	1/4" UNF LH 1/4" UNF RH
TS-1-20KC6LH TS-1-20KC6RH	1@S, 2@45F, 4@45B	6 gpm (22.7 lpm)	1/4" UNF LH 1/4" UNF RH
TS-1-20KP6LH TS-1-20KP6RH	1@S, 6@45B	6 gpm (22.7 lpm)	1/4" UNF LH 1/4" UNF RH
TS-1-20KC10LH TS-1-20KC10RH	1@S, 3@45F, 6@45B	10 gpm (37.9 lpm)	1/4" UNF LH 1/4" UNF RH
TS-1-20KP10LH TS-1-20KP10RH	1@S, 6@45B	10 gpm (37.9 lpm)	1/4" UNF LH 1/4" UNF RH
TS-1-20KHLH TS-1-20KHRH	Custom	Custom	1/4" UNF LH 1/4" UNF RH



TS-2-20KLH & TS-2-20KRH Models

O.D. - 0.470" (11.94 mm)
Length - 1.375" (34.9 mm)

Part Number	Pattern	Flow	Thread
TS-2-20KC7LH TS-2-20KC7RH	1@S, 2@45F, 5@45B	7 gpm (26.5 lpm)	3/8" UNF LH 3/8" UNF RH
TS-2-20KP7LH TS-2-20KP7RH	1@S, 6@45B	7 gpm (26.5 lpm)	3/8" UNF LH 3/8" UNF RH
TS-2-20KC10LH TS-2-20KC10RH	1@S, 3@45F, 6@45B	10 gpm (37.9 lpm)	3/8" UNF LH 3/8" UNF RH
TS-2-20KP10LH TS-2-20KP10RH	1@S, 6@45B	10 gpm (37.9 lpm)	3/8" UNF LH 3/8" UNF RH
TS-2-20KC15LH TS-2-20KC15RH	1@S, 3@45F, 6@45B	15 gpm (56.8 lpm)	3/8" UNF LH 3/8" UNF RH
TS-2-20KP15LH TS-2-20KP15RH	1@S, 6@45B	15 gpm (56.8 lpm)	3/8" UNF LH 3/8" UNF RH
TS-2-20KHLH TS-2-20KHRH	Custom	Custom	3/8" UNF LH 3/8" UNF RH

TS-3-20KLH & TS-3-20KRH Models

O.D. - 0.687" (17.45 mm)
Length - 1.57" (39.9 mm)

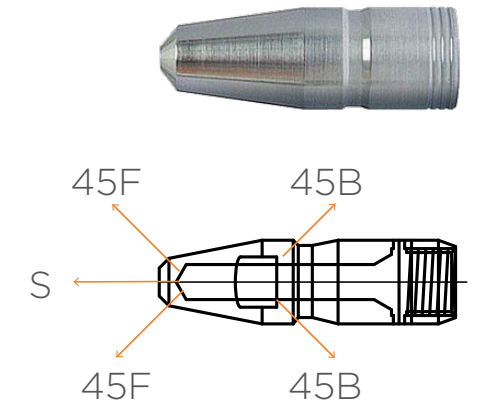
Part Number	Pattern	Flow	Thread
TS-3-20KC10LH TS-3-20KC10RH	1@S, 3@45F, 8@45B	10 gpm (37.9 lpm)	9/16" UNF LH 9/16" UNF RH
TS-3-20KP10LH TS-3-20KP10RH	1@S, 8@45B	10 gpm (37.9 lpm)	9/16" UNF LH 9/16" UNF RH
TS-3-20KC15LH TS-3-20KC15RH	1@S, 3@45F, 8@45B	15 gpm (56.8 lpm)	9/16" UNF LH 9/16" UNF RH
TS-3-20KP15LH TS-3-20KP15RH	1@S, 8@45B	15 gpm (56.8 lpm)	9/16" UNF LH 9/16" UNF RH
TS-3-20KC20LH TS-3-20KC20RH	1@S, 3@45F, 8@45B	20 gpm (75.7 lpm)	9/16" UNF LH 9/16" UNF RH
TS-3-20KP20LH TS-3-20KP20RH	1@S, 8@45B	20 gpm (75.7 lpm)	9/16" UNF LH 9/16" UNF RH
TS-3-20KHLH TS-3-20KHRH	Custom	Custom	9/16" UNF LH 9/16" UNF RH

Evaporator Nozzles, 20,000 psi

TE-1-20KLH & TE-1-20KRH Models

O.D. - 0.372" (9.45 mm)
Length - 1.319" (33.5 mm)

Part Number	Pattern	Flow	Thread
TE-1-20KC4LH TE-1-20KC4RH	1@S, 3@45F, 5@45B	4 gpm (15.1 lpm)	1/4" UNF LH 1/4" UNF RH
TE-1-20KP4LH TE-1-20KP4RH	1@S, 4@45B	4 gpm (15.1 lpm)	1/4" UNF LH 1/4" UNF RH
TE-1-20KC6LH TE-1-20KC6RH	1@S, 2@45F, 4@45B	6 gpm (22.7 lpm)	1/4" UNF LH 1/4" UNF RH
TE-1-20KP6LH TE-1-20KP6RH	1@S, 6@45B	6 gpm (22.7 lpm)	1/4" UNF LH 1/4" UNF RH
TE-1-20KC10LH TE-1-20KC10RH	1@S, 3@45F, 6@45B	10 gpm (37.9 lpm)	1/4" UNF LH 1/4" UNF RH
TE-1-20KP10LH TE-1-20KP10RH	1@S, 6@45B	10 gpm (37.9 lpm)	1/4" UNF LH 1/4" UNF RH
TE-1-20KHLH TE-1-20KHRH	Custom	Custom	1/4" UNF LH 1/4" UNF RH



TE-2-20KLH & TE-2-20KRH Models

O.D. - 0.470" (11.9 mm)
Length - 1.450" (36.8 mm)

Part Number	Pattern	Flow	Thread
TE-2-20KC7LH TE-2-20KC7RH	1@S, 2@45F, 5@45B	7 gpm (26.5 lpm)	3/8" UNF LH 3/8" UNF RH
TE-2-20KP7LH TE-2-20KP7RH	1@S, 6@45B	7 gpm (26.5 lpm)	3/8" UNF LH 3/8" UNF RH
TE-2-20KC10LH TE-2-20KC10RH	1@S, 3@45F, 6@45B	10 gpm (37.9 lpm)	3/8" UNF LH 3/8" UNF RH
TE-2-20KP10LH TE-2-20KP10RH	1@S, 6@45B	10 gpm (37.9 lpm)	3/8" UNF LH 3/8" UNF RH
TE-2-20KC15LH TE-2-20KC15RH	1@S, 3@45F, 6@45B	15 gpm (56.8 lpm)	3/8" UNF LH 3/8" UNF RH
TE-2-20KP15LH TE-2-20KP15RH	1@S, 6@45F	15 gpm (56.8 lpm)	3/8" UNF LH 3/8" UNF RH
TE-2-20KHLH TE-2-20KHRH	Custom	Custom	3/8" UNF LH 3/8" UNF RH

TE-3-20KLH & TE-3-20KRH Models

O.D. - 0.687" (17.45 mm)
Length - 1.684" (42.8 mm)

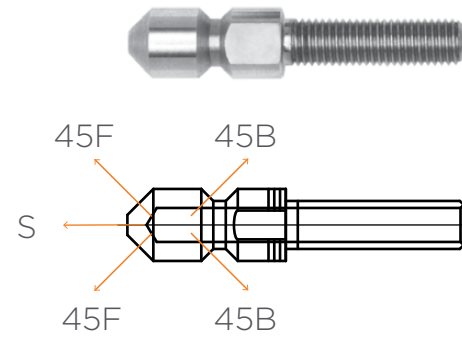
Part Number	Pattern	Flow	Thread
TE-3-20KC10LH TE-3-20KC10RH	1@S, 3@45F, 8@45B	10 gpm (37.9 lpm)	9/16" UNF LH 9/16" UNF RH
TE-3-20KP10LH TE-3-20KP10RH	1@S, 8@45B	10 gpm (37.9 lpm)	9/16" UNF LH 9/16" UNF RH
TE-3-20KC15LH TE-3-20KC15RH	1@S, 3@45F, 8@45B	15 gpm (56.8 lpm)	9/16" UNF LH 9/16" UNF RH
TE-3-20KP15LH TE-3-20KP15RH	1@S, 8@45B	15 gpm (56.8 lpm)	9/16" UNF LH 9/16" UNF RH
TE-3-20KC20LH TE-3-20KC20RH	1@S, 3@45F, 8@45B	20 gpm (75.7 lpm)	9/16" UNF LH 9/16" UNF RH
TE-3-20KP20LH TE-3-20KP20RH	1@S, 8@45B	20 gpm (75.7 lpm)	9/16" UNF LH 9/16" UNF RH
TE-3-20KHLH TE-3-20KHRH	Custom	Custom	9/16" UNF LH 9/16" UNF RH

Pipe and Tube Nozzles

Rodder Nozzles, 20,000 psi

TR-1-20K Models O.D. - 0.375" (9.5 mm)
Length - 1.750" (44.45 mm)

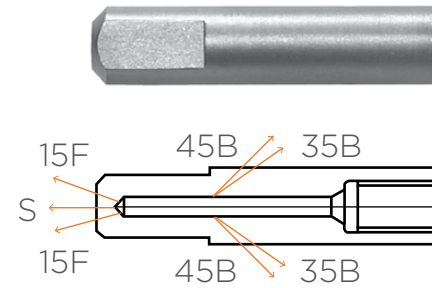
Part Number	Pattern	Flow	Thread
TR-1-20KC5.6	1@S, 2@45F, 3@45B	5.6 gpm (21.2 lpm)	1/4" UNF Male
TR-1-20KC6.8	1@S, 2@45F, 3@45B	6.8 gpm (25.7 lpm)	1/4" UNF Male
TR-1-20KC8.2	1@S, 3@45F, 6@45B	8.25 gpm (31.2 lpm)	1/4" UNF Male
TR-1-20KH	Custom	Custom	1/4" UNF Male



Standard Nozzles, 40,000 psi

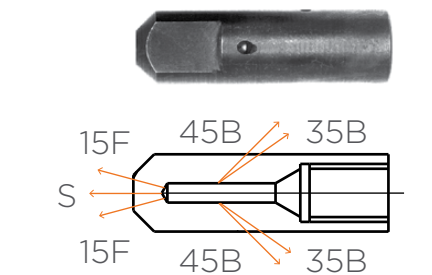
TS-1-40K Models O.D. - 0.375" (9.5 mm)
Length - 1.650" (41.9 mm)

Part Number	Pattern	Flow	Thread
TS-1-40KC4.75	2@15F, 2@35B	4.75 gpm (18 lpm)	1/4"-28 UNF LH
TS-1-40KP4.36	1@S, 3@45B	4.36 gpm (16.5 lpm)	1/4"-28 UNF LH
TS-1-40KC8.04	2@15F, 2@35B	8.04 gpm (30.4 lpm)	1/4"-28 UNF LH
TS-1-40KP8.08	1@S, 3@45B	8.08 gpm (30.6 lpm)	1/4"-28 UNF LH
TS-1-40KH	Custom	Custom	1/4"-28 UNF LH



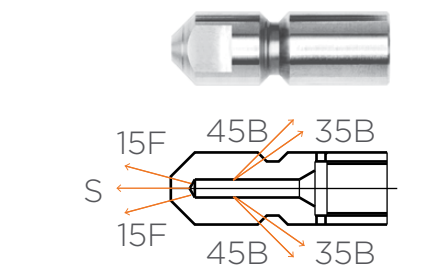
TS-2-40K Models O.D. - 0.50" (12.7 mm)
Length - 1.650" (41.9 mm)

Part Number	Pattern	Flow	Thread
TS-2-40KC4.75	2@15F, 2@35B	4.75 gpm (18 lpm)	3/8" UNF LH
TS-2-40KP4.36	1@S, 3@45B	4.36 gpm (16.5 lpm)	3/8" UNF LH
TS-2-40KC8.04	2@15F, 2@35B	8.04 gpm (30.4 lpm)	3/8" UNF LH
TS-2-40KP8.08	1@S, 3@45B	8.08 gpm (30.6 lpm)	3/8" UNF LH
TS-2-40KH	Custom	Custom	3/8" UNF LH



TS-3-40K Models O.D. - 0.75" (19.1 mm)
Length - 2.25" (57.2 mm)

Part Number	Pattern	Flow	Thread
TS-3-40KC4.75	2@15F, 2@35B	4.75 gpm (18 lpm)	9/16" UNF LH
TS-3-40KP4.36	1@S, 3@45B	4.36 gpm (16.5 lpm)	9/16" UNF LH
TS-3-40KC8.04	2@15F, 2@35B	8.04 gpm (30.4 lpm)	9/16" UNF LH
TS-3-40KP8.08	1@S, 3@45B	8.08 gpm (30.6 lpm)	9/16" UNF LH
TS-3-40KH	Custom	Custom	9/16" UNF LH



Pipe Cleaning Systems

Roto-Reel® automates pipe cleaning

NLB's automated Roto-Reel® accessories improve pipe cleaning two ways. They save the operator from the strain of feeding the high-pressure hose, and rotate the hose and line mole to maximize the water jet force and simplify getting through tight bends.

The Roto-Reel® 500 operates at up to 10,000 psi (690 bar) and can hold up to 500 feet (152 m) of hose. It is designed for easy conversion to 20,000 psi (1,380 bar) for customers who need to operate at higher pressures.

Features and Benefits:

- Improve cleaning coverage while reducing operator fatigue
- Feed hose out at up to 40 fpm (12 mpm)
- Rotate the reel at 30 rpm
- Come skid-mounted with cage
- Air or hydraulic power

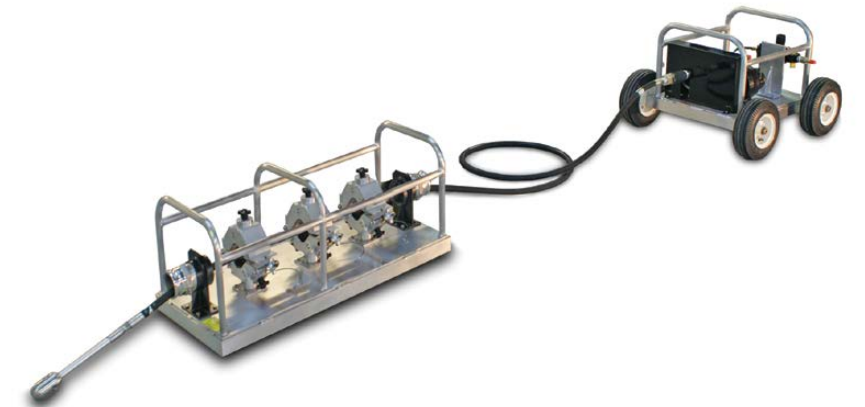
ROTO-REEL® 500



Model	Max. Pressure	Hose Feed	Hose Capacity	Hose Diameter	Rotation	Dimensions (on skid)	Weight
Roto-Reel® 500 (HR902DH-10R)	10,000 to 20,000 psi (690 to 1,380 bar)	Out: 40 fpm (12 mpm) In: 60 fpm (18 mpm)	500 ft. (152 m)	3/4" to 1" (19-25 cm)	30 rpm	13' x 6' x 6.5' (4 m x 2 m x 2 m)	5,600 lbs. (2,540 kg)

RHD Rotary Hose Device

For similar labor savings and rotating action in a more mobile package, we also offer the RHD Rotary Hose Devices. These are more compact units with adjustable rotation of the hose and line mole from 8 to 100 rpm. Both 12,000 and 20,000 psi (828 and 1,380 bar) models are available; they can be air-powered or hydraulically-powered.



Model	Max. Pressure	Flow	Rotation	Air
RHD-1000	12,000 psi (828 bar)	100 gpm (379 lpm)	8-100 rpm	90 psi @ 100 cfm
RHD-2000	20,000 psi (1,380 bar)	50 gpm (189 lpm)	8-100 rpm	90 psi @ 100 cfm

Pipe and Tube Nozzles

Typhoon™ 10 Self-Rotating Nozzles

Typhoon™ self-rotating pipe nozzles maximize cleaning power with significant design improvements. The rotating action comes from the nozzle instead of the barrel, which focuses the force of the high-pressure water up front, where it can be most effective.

Typhoon nozzles are coated with titanium nitride for long life and come in a variety of drill patterns to suit user needs. Heads must be ordered separately.

Please specify a cutting/cleaning head, a polishing head, or a universal head.

Features and Benefits:

- › Range of pressures and flows
- › Rotating speeds of up to 7,000 rpm
- › Field repairable
- › High-grade stainless steel for long life



Typhoon™ 10

The Typhoon™ 10 series is for tubes those with diameters as small as 1/2" (1.27 cm). They operate at pressures from 15,000 to 40,000 psi (1,035 to 2,760 bar). The first two

digits of the part number indicate its pressure and the last two indicate its flow — e.g., RPN2410 is rated for 24,000 psi and 10 gpm.

Part No.	Max. Pressure	Max. Flow	Rotation Speed	Weight	Inlet Connection	O.D.	Length	Pipe Diameter	Polishing Nozzles (4 orifices)	Cutting/Cleaning Nozzles (5 orifices)	Universal Nozzle
RPN1506	15,000 psi (1,035 bar)	6 gpm (22.7 lpm)	7,000 rpm	1 oz. (0.03 kg)	1/16" Female NPT	0.4" (1 cm)	2.63" (6.7 cm)	1/2" min. (1.27 cm)	CM43849	CM43848	CM43851
RPN2006	20,000 psi (1,380 bar)	6 gpm (22.7 lpm)	7,000 rpm	1 oz. (0.03 kg)	1/4-28 Female, RH or LH**	0.4" (1 cm)	2.63" (6.7 cm)	1/2" min. (1.27 cm)	CM43853	CM43852	CM43854
RPN1510	15,000 psi (1,035 bar)	10 gpm (38 lpm)	7,000 rpm	2 oz. (0.1 kg)	1/16" Female NPT or 1/8" Female NPT*	0.5" (1.27 cm)	3" (7.6 cm)	5/8" min. (1.6 cm)	CM31983 (10K) CM31985 (15K)	CM31981 (10K) CM31984 (15K)	CM40764 (10K) CM40765 (15K)
RPN2410	24,000 psi (1,656 bar)	10 gpm (38 lpm)	7,000 rpm	2 oz. (0.1 kg)	3/8-24 Female, RH or LH**	0.5" (1.27 cm)	3" (7.6 cm)	5/8" min. (1.6 cm min.)	CM31987 (24K)	CM31986 (24K)	CM40766 (24K)
RPN1520	15,000 psi (1,035 bar)	20 gpm (76 lpm)	7,000 rpm	4 oz. (0.2 kg)	1/4" Female NPT	0.68" (1.73 cm)	3.75" (9.5 cm)	3/4" min. (1.91 cm min.)	CM34412 (10K) CM34410 (15K)	CM34411 (10K) CM34409 (15K)	CM40767 (10K) CM40768 (15K)
RPN2020	20,000 psi (1,380 bar)	20 gpm (76 lpm)	7,000 rpm	4 oz. (0.2 kg)	9/16-18 Female, RH or LH**	0.68" (1.73 cm)	3.75" (9.5 cm)	3/4" min. (1.91 cm min.)	CM34408 (20 gpm) CM36157 (15 gpm)	CM34402 (20 gpm) CM36156 (15 gpm)	CM40769 (20 gpm) CM40770 (15 gpm)
RPN4009	40,000 psi (2,760 bar)	9 gpm (34 lpm)	7,000 rpm	4 oz. (0.2 kg)	3/8-24 LHF	.68" (1.73 cm)	4-3/4" (12.1 cm)	3/4" min. (1.91 cm min.)	BM42494	BM42493	N/A

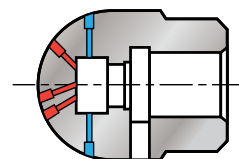
NOTE: Rebuild kits are available for the RPN2420 (order RPN2420-RPKT).
*When ordering, add -1/8 or -1/16 to part number. **When ordering, add -RH or -LH to part number.

Universal Nozzles

Universal nozzles for Typhoon™ self-rotating pipe and tube nozzles cut and polish at the same time, saving a nozzle change.

The nine nozzles in this series combine cutting orifices and polishing orifices in a single design.

They offer convenience to customers who don't want to change nozzles, but a nozzle designed for a specific task will usually provide superior performance.



- Orifices for polishing
- Orifices for cutting

Backward-facing orifices not shown.

Typhoon™ 20 Self-Rotating Nozzles



RPN2420 and RPN2420-TR

Typhoon™ 20 nozzles operate at up to 24,000 psi (1,656 bar) and flow up to 20 gpm (76 lpm). They have five sapphire nozzles*, one in front and four on the sides. The body is precision-machined of stainless steel for long life. A viscous oil brake insures superior speed control.

*BN10095-xx, 3/8"-24 (see page 23 and pages 104-105)



RPN20-TR (Tight Radius)

Part No.	Max. Pressure	Max. Flow	Rotation Speed	Weight	Inlet Connection	O.D.	Length	Pipe Diameter
RPN2420	24,000 psi (1,656 bar)	20 gpm (76 lpm)	300 rpm max.	4 lbs. (1.8 kg)	3/4" Type M	2.7" (6.9 cm)	4.7" (11.9 cm)	6"-10" (15.2-25.4 cm)
RPN2420-TR	24,000 psi (1,656 bar)	20 gpm (76 lpm)	300 rpm max.	3.6 lbs. (1.63 kg)	3/4" Type M	3.25" (8.3 cm)	4.2" (10.7 cm)	6"-10" (15.2-25.4 cm)

NOTE: Rebuild kits are available for the RPN2420 (order RPN2420-RPKT).

Typhoon™ 60 Self-Rotating Nozzle

RPN2460



Large blocked pipes (up to 50 inches in diameter, or 127 cm) can typically be cleared in a single pass with a Typhoon™ 60 nozzle. This high-flow, self-propelling nozzle works horizontally, vertically, or in tight elbows. It rotates at up to 500 rpm to maximize the powerful force of 24,000 psi (1,656 bar) water jets.

A viscous oil brake insures superior speed control.

The Typhoon 60 uses a nozzle block (sold separately; see below) with six high-cohesive nozzles. Order part number BN11XX, with XX replaced by the size you need.

Part No.	Max. Pressure	Max. Flow	Rotation Speed	Weight	Inlet Connection	O.D.	Length	Pipe Diameter
RPN2460	24,000 psi (1,656 bar)	60 gpm (227 lpm)	300 rpm max.	8 lbs. (3.63 kg)	3/4" MP Female	2.75" (7 cm)	10" (25.4 cm)	11"-50" (28-127 cm)

NOTE: Rebuild kits are available for the RPN2460 (order RPN2460-RPKT).

Nozzle Blocks and Centering Guides for the RPN2460

Five nozzle blocks are available for the RPN2460 — two small (for diameters 6" to 10") and three large (for 11" to 50"). Each has two drive nozzles and four ports (2 forward, 2

backward) for nozzle inserts.

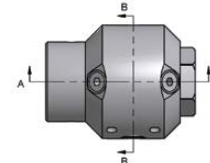
The ports on the large nozzle blocks also accept nozzle arms of various lengths. Consult NLB to determine which are best for your application.

NLB also offers four centering guides to make pipe cleaning more efficient and avoid impact with the interior walls.

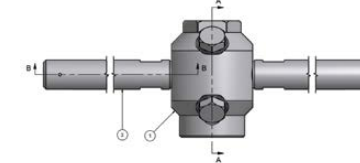
Part No.	Pressure Rating	Flow*	Block Size
CM44314	24,000 psi (1,656 bar)	10 gpm (37.9 lpm)	Large
CM28822	24,000 psi (1,656 bar)	20 gpm (77 lpm)	Small
CM28806	24,000 psi (1,656 bar)	30 gpm (114 lpm)	Small
CM28823	24,000 psi (1,656 bar)	20 gpm (77 lpm)	Large
CM28807	24,000 psi (1,656 bar)	30 gpm (114 lpm)	Large

*The amount of the total flow required to drive the nozzle rotation.

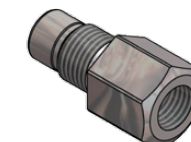
SMALL NOZZLE BLOCK



LARGE NOZZLE BLOCK



ADAPTER NOZZLE



SMALL CENTERING GUIDE

CM28667
6"-10" (152 mm-254 mm)



LARGE CENTERING GUIDE

BM28318
11"-26" (279 mm-660 mm)
CM28319
24"-40" (610 mm-1 m)
CM28320
40"-50" (1 m-1.35 m)



Pipe and Tube Nozzles

Line Moles

For pipes with diameters of 4" (100mm) or larger, you need NLB line moles. Simply thread one on the end of your lance for most jobs, or connect a towline to the forward port for really long runs or vertical pipes. Metric threads and British Standard Pipe threads are available.

Nozzles for NLB line moles are chosen to suit your application, as are the number and location of orifices where they will be inserted. All orifices must be filled with a nozzle or plug for efficient operation. For selection, refer to Page 22. All orifice threads are 1/4" MNPT.



Part No.	Pressure Rating	Inlet	Body Diameter	Length	Orifices
P-7-5	10,000 psi (690 bar)	1/2" NPT	2.2"	2-3/8"	5
P-7-7	10,000 psi (690 bar)	1/2" NPT	2.2"	2-3/8"	7
P-9-24-10K	10,000 psi (690 bar)	1/2" NPT	2.5"	2-3/4"	13
P-9-25	10,000 psi (690 bar)	1/2" NPT	2.5"	3-1/8"	17
CM19857-10K	10,000 psi (690 bar)	1/2" NPT	2.5"	3-7/8"	14
P-10	10,000 psi (690 bar)	1" NPT	3.0"	3-3/4"	13
P-7-4-15K	15,000 psi (1,035 bar)	1/2" NPT	2.2"	2-3/8"	4
P-9-24-15K	15,000 psi (1,035 bar)	1/2" NPT	2.5"	2-3/4"	24
P-7-4-20K	20,000 psi (1,380 bar)	3/4"-16 LHF	2.2"	2-3/8"	4
P-7-20K-5	20,000 psi (1,380 bar)	3/4"-16 LHF	2.2"	2-3/8"	5
P-7-7-20K	20,000 psi (1,380 bar)	3/4"-16 LHF	2.2"	2-3/8"	7
P-9-24-20K	20,000 psi (1,380 bar)	9/16"-18 LHF	2.5"	2-3/4"	13
CM19763-20K	20,000 psi (1,380 bar)	3/4"-16 LHF	2.5"	3-7/8"	14

Rotating Line Moles (RLM)

A rotating line mole (RLM) on a flex or rigid lance quickly blasts through hard deposits in pipes and tubes, polishing the I.D. as it goes.

NLB has over 40 models for tubes from 1/2-inch to 1-1/2-inch (12.7 mm to 38.1 mm). Choose the pressure (10,000 or 20,000 psi, 690 or 1,380 bar), thread (left-hand or right-hand) and rotating action (standard or custom drill patterns) that best suit your needs.

NLB's RLM nozzles have wrench flats to simplify attachment to the lance. Worn parts can be replaced in the field in less than five minutes with a simple rebuild kit, minimizing downtime.



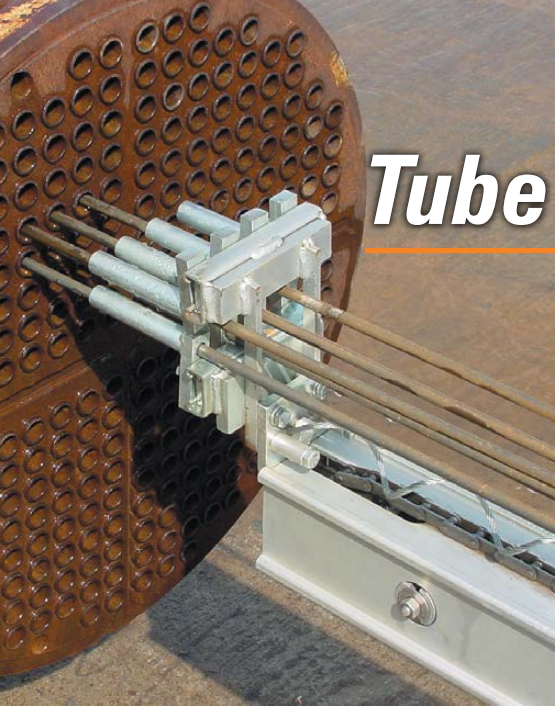
10K and 20K RLM Nozzles



	Nozzle	Pressure Rating	Inlet Thread	O.D. (Inch)	Length (Inch)	Max Flow Rate (GPM)	Nozzle Pattern*
RLM-2-10K Family	RLM-2-10K-A	10,000 psi (690 bar)	1/16" Female NPT	0.415	1.93	5	2@30F 6@45B
	RLM-2-10K-C	10,000 psi (690 bar)	1/16" Female NPT	0.415	1.93	5	Blank
	RLM-2-10K-H	10,000 psi (690 bar)	1/16" Female NPT	0.415	1.93	5	Custom Drilled
RLM-3-10K Family	RLM-3-10K-A	10,000 psi (690 bar)	1/8" Female NPT	0.515	2.32	10	1@S 3@50B
	RLM-3-10K-C	10,000 psi (690 bar)	1/8" Female NPT	0.515	2.32	10	Blank
	RLM-3-10K-H	10,000 psi (690 bar)	1/8" Female NPT	0.515	2.32	10	Custom Drilled
RLM-4-10K Family	RLM-4-10K-A	10,000 psi (690 bar)	1/4" Female NPT	0.66	2.88	12	1@S 3@30F 6@45B
	RLM-4-10K-H	10,000 psi (690 bar)	1/4" Female NPT	0.66	2.88	12	Custom Drilled
RLM-5-10K Family	RLM-5-10K-A	10,000 psi (690 bar)	1/2" Female NPT	1.04	4.12	25	1@S 3@50B
	RLM-5-10K-H	10,000 psi (690 bar)	1/2" Female NPT	1.04	4.12	25	Custom Drilled
RLM-2-20K Family	RLM-2-20K-AF	20,000 psi (1,380 bar)	1/4"-28 UNF Female Left	0.375	1.6	8	1@S 3@30B
	RLM-2-20K-AFR	20,000 psi (1,380 bar)	1/4"-28 UNF Female Right	0.375	1.6	8	1@S 3@30B
	RLM-2-20K-AM	20,000 psi (1,380 bar)	1/4"-28 UNF Male Right	0.375	1.6	8	1@S 3@30B
	RLM-2-20K-BF	20,000 psi (1,380 bar)	1/4"-28 UNF Female Left	0.375	1.6	8	Blank
	RLM-2-20K-BFR	20,000 psi (1,380 bar)	1/4"-28 UNF Female Right	0.375	1.6	8	Blank
	RLM-2-20K-BM	20,000 psi (1,380 bar)	1/4"-28 UNF Male Right	0.375	1.6	8	Blank
	RLM-2-20K-CF	20,000 psi (1,380 bar)	1/4"-28 UNF Female Left	0.375	1.6	8	Blank
	RLM-2-20K-CFR	20,000 psi (1,380 bar)	1/4"-28 UNF Female Right	0.375	1.6	8	Blank
	RLM-2-20K-DF	20,000 psi (1,380 bar)	1/4"-28 UNF Female Left	0.375	1.6	8	1@S 2@45F 6@45B
	RLM-2-20K-DFR	20,000 psi (1,380 bar)	1/4"-28 UNF Female Right	0.375	1.6	8	1@S 2@45F 6@45B
	RLM-2-20K-EF	20,000 psi (1,380 bar)	1/4"-28 UNF Female Left	0.375	1.6	8	1@S 6@45B
	RLM-2-20K-EFR	20,000 psi (1,380 bar)	1/4"-28 UNF Female Right	0.375	1.6	8	1@S 6@45B
	RLM-2-20K-HF	20,000 psi (1,380 bar)	1/4"-28 UNF Female Left	0.375	1.6	8	Custom Drilled
	RLM-2-20K-HFR	20,000 psi (1,380 bar)	1/4"-28 UNF Female Right	0.375	1.6	8	Custom Drilled
	RLM-2-20K-HM	20,000 psi (1,380 bar)	1/4"-28 UNF Male Right	0.375	1.6	8	Custom Drilled
	RLM-4-20K Family	RLM-4-20K-A	20,000 psi (1,380 bar)	3/8"-24 UNF Female Left	0.496	3	10
RLM-4-20K-AR		20,000 psi (1,380 bar)	3/8"-24 UNF Female Right	0.496	3	10	1@S 4@60B
RLM-4-20K-B		20,000 psi (1,380 bar)	3/8"-24 UNF Female Left	0.496	3	10	Blank
RLM-4-20K-BR		20,000 psi (1,380 bar)	3/8"-24 UNF Female Right	0.496	3	10	Blank
RLM-4-20K-CF		20,000 psi (1,380 bar)	3/8"-24 UNF Female Left	0.496	3.1	10	Blank
RLM-4-20K-CFR		20,000 psi (1,380 bar)	3/8"-24 UNF Female Right	0.496	3.1	10	Blank
RLM-4-20K-D		20,000 psi (1,380 bar)	3/8"-24 UNF Female Left	0.496	3.1	10	1@S 3@45F 6@45B
RLM-4-20K-DR		20,000 psi (1,380 bar)	3/8"-24 UNF Female Right	0.496	3.1	10	1@S 3@45F 6@45B
RLM-4-20K-E		20,000 psi (1,380 bar)	3/8"-24 UNF Female Left	0.496	3.1	10	1@S 6@45B
RLM-4-20K-ER		20,000 psi (1,380 bar)	3/8"-24 UNF Female Right	0.496	3.1	10	1@S 6@45B
RLM-4-20K-H		20,000 psi (1,380 bar)	3/8"-24 UNF Female Left	0.496	3	10	Blank
RLM-4-20K-HR		20,000 psi (1,380 bar)	3/8"-24 UNF Female Right	0.496	3	10	Blank
RLM-6-20K Family	RLM-6-20K-A	20,000 psi (1,380 bar)	9/16"-18 UNF Left	0.744	4	18	1@S 6@60B
	RLM-6-20K-AR	20,000 psi (1,380 bar)	9/16"-18 UNF Right	0.744	4	18	1@S 6@60B
	RLM-6-20K-B	20,000 psi (1,380 bar)	9/16"-18 UNF Left	0.744	4	18	Blank
	RLM-6-20K-BR	20,000 psi (1,380 bar)	9/16"-18 UNF Right	0.744	4	18	Blank
	RLM-6-20K-D	20,000 psi (1,380 bar)	9/16"-18 UNF Left	0.744	4.18	18	1@S 3@45F 6@45B
	RLM-6-20K-DR	20,000 psi (1,380 bar)	9/16"-18 UNF Right	0.744	4.18	18	1@S 3@45F 6@45B
	RLM-6-20K-H	20,000 psi (1,380 bar)	9/16"-18 UNF Left	0.744	4	18	Custom Drilled
	RLM-6-20K-HR	20,000 psi (1,380 bar)	9/16"-18 UNF Right	0.744	4	18	Custom Drilled

*S - straight-ahead jet, F - forward-facing jet, B - backward-facing jet

Tube Bundle Cleaning



NLB's automated and semi-automated tube lancers clean heat exchanger tubes in a fraction of the time required by manual methods. They minimize the exposure of operating personnel to debris and high-pressure water and take the variability out of the cleaning process.

No one has more tube lancing

solutions than NLB. We offer rigid or flexible lance systems at pressures up to 20,000 or 40,000 psi (1,380 to 2,760 bar). Systems are available to insert one, two, three or five lances into a tube bundle at once, for maximum productivity. All are easy to set up and operate, with either push-button or remote controls.

Let NLB improve your tube lancing productivity

NLB's automated tube lancers can be customized to suit your needs. Each system comes configured to clean tubes with lengths to 20' (6.1 m), but longer lengths can be accommodated. The systems can

also be configured to use rotating or non-rotating lances, and the number of lances can vary from one to seven. Heavy-gauge aluminum construction resists corrosion and assures long life.

Features and Benefits:

- › Higher productivity rates than manual cleaning
- › Minimizes operator exposure to debris and high-pressure water
- › Simplifies cleaning of tubes as long as 72' (21.9 m)

Rigid Lance Systems

NLB offers rigid lance systems in 10,000 psi, 20,000 psi and 40,000 psi (690, 1,380 and 2,760 bar). Key features include:

- › Multiple lances to accommodate different tube patterns
- › Rotary option to clean and polish (fewer nozzle orifices, more flow)
- › X, Y and Z movements are pneumatically controlled
- › Portable and easy to set up
- › Optional operator station has a seat and climate control

Systems are configured to your needs, as indicated by the part number. Choices include air or hydraulic power, number of lances (rotating or fixed), stroke length, and controls (on a stand, or wireless).



ATL-4010AR1-22C

1. 4010 - 40,000 psi
2. A - air power (or H for hydraulic)
3. R - rotating lances (or F for fixed lances)
4. 1 - number of lances
5. 22 - stroke length; e.g. 22" for a 20" bundle (other options: 32, 42 or 52)
6. C - control stand (or W for wireless controls)

Part Number	Max. Pressure	Max. Flow	Inlet Connection	Max. Speed	Tube Length
ATL-1010	10,000 psi (690 bar)	12 gpm (45 lpm) per lance	NPT	2 ft./sec. (61 cm/sec.)	20' (6.1 m) Standard
ATL-2010	20,000 psi (1,380 bar)	12 gpm (45 lpm) per lance	MP	2 ft./sec. (61 cm/sec.)	20' (6.1 m) Standard
ATL-4010	40,000 psi (2,760 bar)	11 gpm (42 lpm) per lance	HP	2 ft./sec. (61 cm/sec.)	20' (6.1 m) Standard

ATL-5015

The fully-automated ATL-5015 cleans tube bundles three times faster than manual methods and sets new standards for operator comfort and protection. A fully adjustable lance stroke length allows the machine to be configured for bundles of different lengths.

The system has five rigid lances, each with a specially-designed high-pressure nozzle (up to 20,000 psi, or 1,380 bar) to clear the tubes of hardened debris. A powerful hydraulic drive inserts the lances at 39" (1 m) per second, then withdraws them so they can be positioned to clean the next five tubes. All movements (in/out, up/down and left/right) are controlled by the operator from a convenient

Part Number	Max. Pressure	Max. Flow	Inlet Connection	Max. Speed	Stroke Length
ATL-5015	20,000 psi (1,380 bar)	50 gpm (189 lpm)	MP	39 in./sec. (1 m/sec.)	Adjustable lengths

overhead station, which provides excellent visibility at a safe distance from the action. The operator can even rotate the bundles with the optional bundle roller control package.

The diesel-powered ATL-5015 is completely self-contained. It requires no external power or air supply and can be taken by trailer to jobsites. Exclusive features include an optional HVAC package to keep the operator station cool and comfortable.



SSC9500

NLB's shellside systems are known for improving the productivity of heat exchanger cleaning vs. manual waterblasting, while minimizing operator exposure to debris and high-pressure water. The new ShellJet is more people-friendly than ever, with wireless controls that let the operator stay outside the work/waterblasting area.

Using high-pressure (10,000 psi) water from an NLB pump unit, a SPIN JET® head on a compact, knucklestyle crane blasts bundles as they rotate. This assures complete coverage for bundles up to 25' long and 8' in diameter, weighing up to 100,000 lbs. The SPIN JET head is articulated to minimize bundle rotations.

Features and Benefits:

- › Wireless controls for operator safety
- › Automatic cleaning cycle mode
- › An innovative, non-corrosive track to contain the high-pressure hose
- › Easy transportation to job sites with the urethane-painted trailer mounting
- › No required electrical supply
- › Custom-engineered systems to meet user needs
- › Elevated rollers simplify use with NLB's ATL-5015 and have open bottoms and guarded drives
- › Engine controls and fuel tank are low-mounted on unit for easy access
- › Reduced size and weight allow for Class B transport license operation



Model Number	Max. Pressure	Max. Flow	Bundle Length	Bundle Diameter	SPIN JET Rotation Speed
SSC9500	10,000 psi (690 bar)	140 gpm (530 lpm)	25 ft max. (7.62 m)	2' to 8' (0.6 m to 2.4 m)	400-600 rpm



Semi-Automated Systems

NLB has always devoted itself to developing water jet equipment that maximizes operator safety as well as productivity. Our latest semi-automated systems take reducing the risk of accident and injury to a new level.

NLB's Automated Remote Manipulator (ARM) lets an operator manipulate a variety of tools from the safety and comfort of a

climate-controlled cab.

He or she uses convenient joystick controls to position the tooling and then start and stop the flow of high-pressure water.

The ARM provides more operator protection while reducing downtime and expense. And for tight spots, try our compact, remote-controlled Mini-ARM.

The ARM Family: Versatility that enhances productivity & safety

With an ARM, Mini-ARM, or Micro-ARM an operator can do a range of jobs with specialized tooling while staying clear of the action. Both models reduce the fatigue that can affect the quality of manual water jetting. They also produce more consistent results than individual operators with different skill levels.

Features and Benefits:

- › a variety of accessories, including patented SPINJET and SPIN-NOZZLE heads
- › unique quick-connect system for fast, easy tooling changes
- › operation at pressures up to 40,000 psi (2,760 bar)
- › wide jet pattern for broad coverage
- › full range of motion: up, down, left, right
- › easy compliance with OSHA Personal Protective Equipment (PPE) requirements



ARM

- › full operator visibility from the cab
- › joystick controls for the boom and high-pressure water
- › vertical reach of 12 feet (approx.); horizontal reach of 17 feet (approx.)
- › boom swing of 50° right, 55° left (80° without stop)
- › high-performance powertrain that conserves fuel and reduces noise and emissions
- › convenient access for maintenance and service points



Mini-ARM

- › fits through a standard 30" door
- › user-friendly remote control (wireless or wired)
- › works with NLB high-pressure pump units up to 300 hp
- › maximum reach of 10 feet (approx.)
- › boom swing of 56° right, 55° left



Micro-ARM

- › precise motor controls for more consistent water jetting results
- › can be operated "off the pad" on uneven ground
- › maneuverable in tight spaces
- › lightweight and transportable
- › less operator fatigue
- › the hand-held remote package allows single-operator control from as far away as 700 feet
- › boom swing of 45° right, 45° left



Abrasive Cutting



With an abrasive cutting system from NLB, you can slice through concrete with rebar, cut inspection openings in petrochemical tanks, and cut up composites and many other hard materials.

An automated NLB system includes a self-focusing cutting head (24,000 or 40,000 psi, 1,656 or 2,760 bar), pipe cutter or track crawler, and hydraulic or pneumatic power unit with control stand. A hopper with metering

discs to feed the abrasive are also required.

Features and Benefits:

- › Adjustable nozzle angles
- › Speed is adjustable from 0.5" to 18" (1 cm to 46 cm) per minute
- › Vertical or horizontal cuts
- › Cuts round or flat materials
- › Hydraulic or air drive

Seven good reasons to cut with water jets

Decades of experience have shown that the combination of high-pressure water jets and abrasive has some major advantages over other cutting methods.

1) Cuts cleanly, without burrs, slag or warping

2) Leaves a smooth edge, with minimal kerf loss

3) Less dust, noise and heat

4) Without heat build-up, no thermal distortion or changes in metallurgy

5) Cuts a variety of materials and shapes

6) Easily automated to save labor and improve productivity

7) Spark-free, for use in explosive areas

Abrasive Cutting Head - 24,000 psi (1,656 bar)

- › Replaceable nozzle features carbide insert
- › Compact and lightweight to work with NLB cutter or crawler systems
- › Available flows from 1 to 6 gpm (3.8 to 22.7 lpm)
- › 9/16" MP female inlet connection
- › Stainless steel body for long life

NLB-24K-ACSA



Abrasive Cutting Head - 40,000 psi (2,760 bar)

- › Ultra-high pressure water with abrasive creates powerful cutting force
- › Adjusting rings assure proper angular and lateral alignment
- › Includes sapphire orifice nozzle BN3539
- › Requires connection kit BA8223

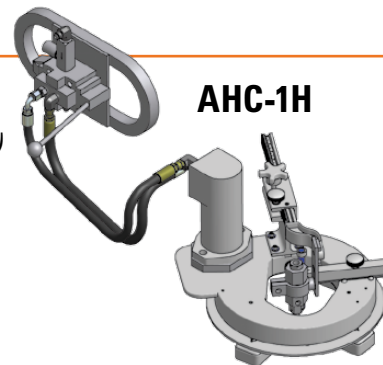
NLB7790



Hole Cutter

- › Cuts perfect holes in diameters from 1 inch to 8 inches (25.4 mm to 203 mm)
- › Compatible with 24,000 psi and 40,000 psi abrasive cutting heads
- › Available with magnetic or suction cup mounting system

AHC-1H



Abrasive Pipe Cutter, 20K-APC-1

- › Rugged, yet lightweight
- › Chain guides nozzle assembly around pipe
- › Adjustable to pipes of different diameters
- › Adjustable speed and nozzle angle
- › Requires NLB abrasive cutting head
- › Hydraulic power standard; for optional air power order Part No. 20K-APC-1P



Abrasive Hoppers

- › NLB-300-AC holds 300 lbs. (136 kg) of abrasive
- › NLB-600-AC holds 600 lbs. (272 kg) of abrasive
- › Both include NLB metering kit DM5820-05, with discs for 11 flow rates (see table)
- › Pressurized hoppers available



NLB-300-AC

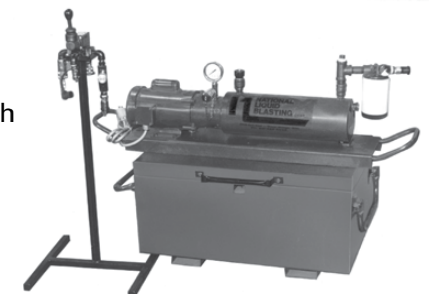
Abrasive Track Crawler, NLB ATS-1

- › 4' (1.2 m) heavy-duty stainless steel track in sections for long, continuous cuts
- › Lightweight steel base
- › Requires NLB abrasive cutting head
- › Hydraulic standard; for optional air power order Part No. ATS-1P
- › Held in place magnetically or by pneumatic suction cups (8 cfm per section)
- › For straight cuts or radial up to 3' (91 cm), order DA9687 (suction cup) or DA3377 (magnetic)
- › For radial cuts of 4" to 4' (10 cm to 1.2 m), order DA9688 (suction cup) or DA338 (magnetic)



Drive and Control Unit

- › Adjusts nozzle speed from 0.5" to 18" (1 to 46 cm) per minute
- › Hydraulic unit standard with Pipe Cutter or Track Crawler; pneumatic option available
- › Model CA2674 — 1/2 hp (.37 kW), 110 volt AC
- › Includes Control Stand BA1969 for forward/reverse and speed adjustment



CA2674

Metering Disc Kit DM5820-05 (with hopper)

Part Number	Disc Size	Flow Rate Per Minute, #36 or #50 Garnet	Flow Rate Per Minute, #80 Garnet*	Flow Rate Per Minute, Silica Sand**
CA2031	10	1 lb./min. (0.5 kg/min.)	1.1 lbs./min. (0.5 kg/min.)	0.7 lbs./min. (0.3 kg/min.)
CA2032	15	1.5 lbs./min. (0.7 kg/min.)	1.6 lbs./min. (0.7 kg/min.)	1.1 lbs./min. (0.5 kg/min.)
CA2033	20	2 lbs./min. (0.9 kg/min.)	2.1 lbs./min. (1.0 kg/min.)	1.5 lbs./min. (0.7 kg/min.)
CA2034	30	3 lbs./min. (1.4 kg/min.)	3.2 lbs./min. (1.5 kg/min.)	2.2 lbs./min. (1.0 kg/min.)
CA2035	40	4 lbs./min. (1.8 kg/min.)	4.2 lbs./min. (1.9 kg/min.)	2.9 lbs./min. (1.3 kg/min.)
CA2036	50	5 lbs./min. (2.3 kg/min.)	5.3 lbs./min. (2.4 kg/min.)	3.7 lbs./min. (1.7 kg/min.)
CA2037	60	6 lbs./min. (2.7 kg/min.)	6.4 lbs./min. (2.9 kg/min.)	4.4 lbs./min. (2.0 kg/min.)
CA2038	70	7 lbs./min. (3.2 kg/min.)	7.4 lbs./min. (3.4 kg/min.)	5.1 lbs./min. (2.3 kg/min.)
CA2039	80	8 lbs./min. (3.6 kg/min.)	8.5 lbs./min. (3.9 kg/min.)	5.6 lbs./min. (2.5 kg/min.)
CA2040	90	9 lbs./min. (4.1 kg/min.)	9.5 lbs./min. (4.3 kg/min.)	6.6 lbs./min. (3.0 kg/min.)
CA2041	100	10 lbs./min. (4.5 kg/min.)	10.6 lbs./min. (4.8 kg/min.)	7.3 lbs./min. (3.3 kg/min.)

*The flow rate of #80 Garnet is approximately 6% higher than #36 or #50.

**Silica sand is used for wet abrasive blasting, but not recommended for abrasive cutting.

SPIN JET® Floor and Grate Cleaners



NLB's patented SPIN JET® rotating spray system has long been one of the water jet industry's most effective tools. Our SPIN JET® floor and grate cleaners (maneuvered like a lawn mower) were originally designed to remove overspray from paint booth grates. Today they are also widely used for removing floor and ship deck coatings, highway stripes, runway rubber, and more... and even for concrete scarification.

SPIN JET® units reduce labor, operating costs and energy use. We

offer eight ergonomic models with a range of pressures, flows and cleaning path widths. Standard features include a dump valve that instantly reduces water pressure to near-zero and shields over moving components, hose and quick-disconnects.

Rotary seal and dump valve repair kits are available. Options include 4-arm and 6-arm configurations and pneumatic or hard rubber tires. Some models have vacuum recovery.

How to choose a SPIN JET® unit

NLB recommends self-rotating seals for most applications, as they allow faster rotating speeds without any power connection. However, pneumatically or hydraulically powered seals are excellent for controlling speed when flow rates are low. Here's a quick comparison:

Self-rotating

- › Faster rotation speeds
- › No need for compressed air
- › Only one hose hook-up
- › Economical to operate and maintain

Powered

- › Consistent speed at low flows
- › Ideal with lower horsepower pumps
- › Pneumatic

36-9900-15A



Seal Part No.	Discharge Pressure (Max.)	Max. Flow	Rotation Speed	Air	Weight	Width	Nozzles
DRS12481	40,000 psi (2,760 bar)	11 gpm (42 lpm)	2,000 rpm	65 psi @ 50 cfm (4.5 bar @ 23.6 l/s)	120 lbs. (54.4 kg)	16" (41 cm)	Up to 15

Recommended Spare Parts Kit: 36-9900-15A-1

36-9950-15A



Seal Part No.	Discharge Pressure (Max.)	Max. Flow	Rotation Speed	Air	Weight	Width	Nozzles
DRS12481	40,000 psi (2,760 bar)	11 gpm (42 lpm)	2,000 rpm	65 psi @ 50 cfm (4.5 bar @ 23.6 l/s)	138 lbs. (62.6 kg)	16" (41 cm)	Up to 15

Recommended Spare Parts Kit: 36-9950-15A-1

1115



Type	Seal Part No.	Discharge Pressure (Max.)	Max. Flow	Rotation Speed	Weight	Available Widths	Dump Valve Part No.
Self-Rotating	NLB1535	10,000 psi (690 bar)	50 gpm (189 lpm)	3,000 rpm	267 lbs. (121 kg)	18", 24", 30" (46, 61, 76 cm)	V-550

1550



Type	Seal Part No.	Discharge Pressure (Max.)	Max. Flow	Rotation Speed	Weight	Available Widths	Dump Valve Part No.
Self-Rotating	NLB1535	10,000 psi (690 bar)	50 gpm (189 lpm)	3,000 rpm	250 lbs. (113 kg)	20" (51 cm)	V-550

10-9900-15A and 24-9900-15A



Type	Seal Part No.	Discharge Pressure (Max.)	Max. Flow	Rotation Speed	Weight	Available Widths	Dump Valve Part No.
Air-Powered	DM17135	10,000 psi (690 bar)	32 gpm (121 lpm)	2,000 rpm	160-295 lbs. (73-134 kg)	13" (33 cm)	DM16940
Air-Powered	DM24431	24,000 psi (1,656 bar)	20 gpm (76 lpm)	2,000 rpm	180-235 lbs. (82-107 kg)	13" (33 cm)	DM24495

1115-20K



Type	Seal Part No.	Discharge Pressure (Max.)	Max. Flow	Rotation Speed	Weight	Available Widths	Dump Valve Part No.
Self-Rotating	NLB3620-2	20,000 (1,380 bar)	25 gpm (95 lpm)	3,000 rpm	270 lbs. (122 kg)	18", 24" (46, 61 cm)	CV8274

1550-20K



Type	Seal Part No.	Discharge Pressure (Max.)	Max. Flow	Rotation Speed	Weight	Available Widths	Dump Valve Part No.
Self-Rotating	NLB3620	20,000 psi (1,380 bar)	50 gpm (189 lpm)	3,000 rpm	250 lbs. (113 kg)	20" (51 cm)	V20-550-00

SPIN JET® Plate-Mounted



Rotating SPIN JET® units are often mounted in place for automated water jet applications, such as parts and fixture cleaning systems, or casting removal. NLB custom-engineers these systems to meet individual application requirements and specifications. For detail areas requiring precise control, smaller units can be mounted on robots.

Key Features Include:

- › Range of pressures — 10,000 to 40,000 psi (690 to 2,760 bar) — and flows
- › Choice of self-rotating, air, electric, or hydraulic
- › Versatile mounting bracket adapts to a wide range of fixtures
- › Quick-change packing for fast, easy maintenance
- › Rugged stainless steel housings

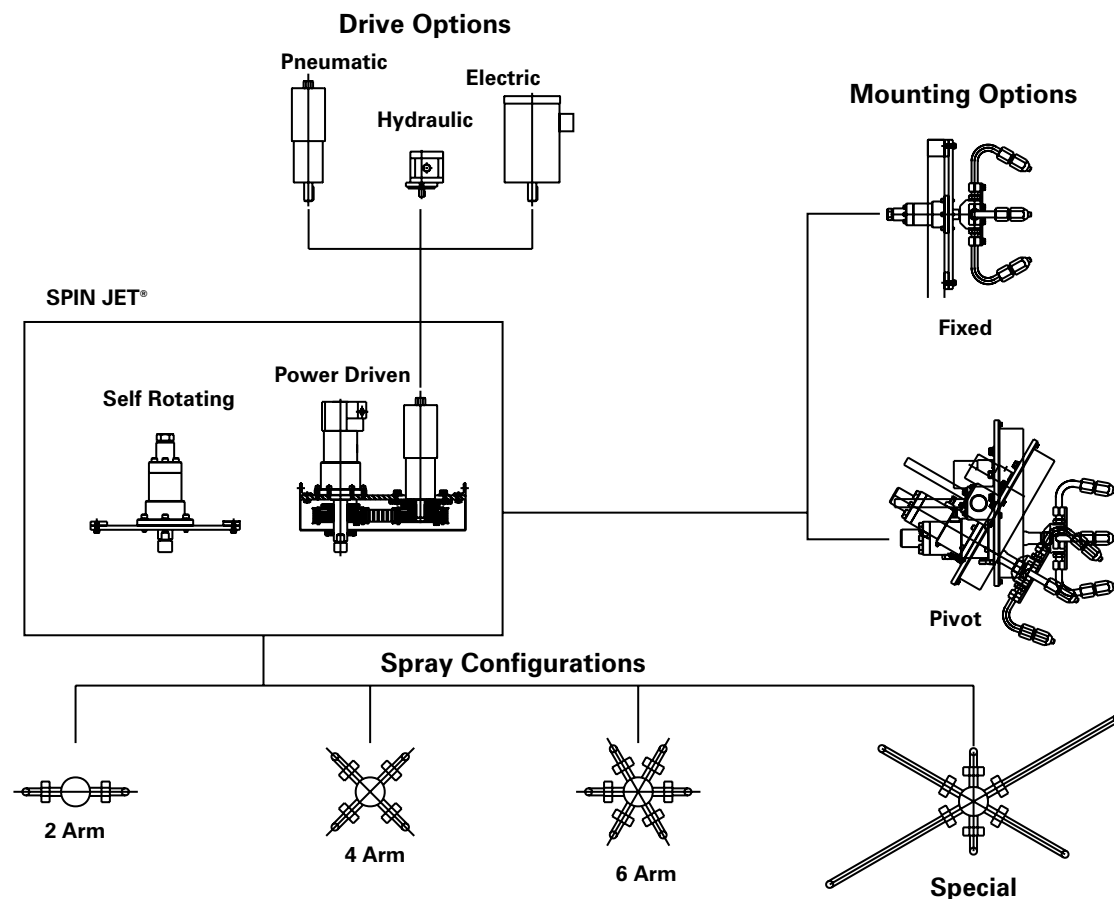
Rotating water jet power, customized for your application

NLB's plate-mounted SPIN JETs can be configured to match your exact needs. Many customers choose a self-rotating nozzle for ease of use and low maintenance, but if you need better control

over rotation speed, we offer pneumatic, hydraulic and electric drive options.

The area of coverage can also be customized to your application,

using our wide range of nozzle angles and nozzle arm configurations. Please contact the NLB Customer Service Department for help in ordering the right plate-mounted SPIN JETs for your job.



How to Order

Plate-mounted SPIN JET® units are available with a choice of drives, indicated by a letter following the model number: A, H, E, or S. For example:

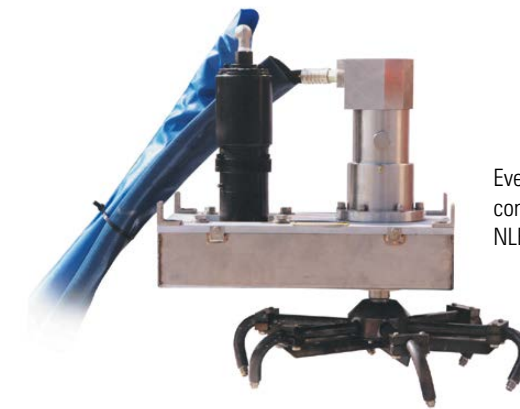
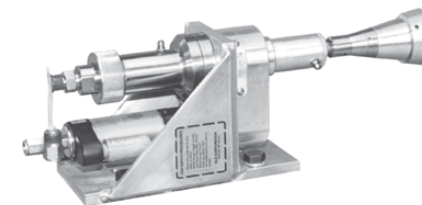
Model No.	Drive
NLB1200A	Air
NLB1200H	Hydraulic
NLB1200E	Electric
NLB1200S	Self-rotating

Operating pressure for all these models is 10,000 psi (690 bar). Models operating at up to 20,000 psi (1,380 bar) are indicated by the suffix, -20K (e.g., NLB1200A-20K). Ultra-high pressure models (up to 40,000 psi, or 2,760 bar) are indicated by the suffix, -40K (e.g. NLB1300A-40K).

Robotic Tooling

Tooling shown with standard head; see Page 17 for other nozzle configurations available.

1445A-1



Every plate-mounted SPIN JET® is configured to your application; consult NLB for complete information

High Flow

- › Pressure up to 20,000 psi (1,380 bar)
- › Flow up to 100 gpm (379 lpm)

Model No.	Max. Pressure	Max. Flow	Max. Rotation Speed	Est. Weight	Inlet
1200	10,000 psi (690 bar)	100 gpm (379 lpm)	3,000 rpm	120 lbs. (54 kg)	1/2" NPTF
1200-20K	20,000 psi (1,380 bar)	50 gpm (189 lpm)	3,000 rpm	120 lbs. (54 kg)	3/4" MP

Measurements for height, width and length are all approximate.

Low Flow

- › Pressure up to 20,000 psi (1,380 bar)
- › Flow up to 20 gpm (76 lpm)

Model No.	Max. Pressure	Max. Flow	Max. Rotation Speed	Est. Weight	Inlet
1300	10,000 psi (690 bar)	20 gpm (76 lpm)	3,000 rpm	60 lbs. (27 kg)	1/2" NPTF
1300-20K	20,000 psi (1,380 bar)	16 gpm (61 lpm)	3,000 rpm	60 lbs. (27 kg)	3/4" NPTF

Measurements for height, width and length are all approximate.

Ultra-High Pressure

- › Pressure up to 40,000 psi (2,760 bar)
- › Flow up to 11 gpm (42 lpm)

Model No.	Max. Pressure	Max. Flow	Max. Rotation Speed	Est. Weight	Inlet
1300-40K	40,000 psi (2,760 bar)	11 gpm (42 lpm)	3,000 rpm	60 lbs. (27 kg)	9/16-18" LH HPPF

Measurements for height, width and length are all approximate.

Stack and Pipe Cleaners

A self-rotating seal with NLB's patented SPIN JET® technology is the most efficient way to clean large pipes and stacks. As a towline pulls it through the pipe, spray arms (2 or 4) rotate high-pressure water jets 360° for full coverage. The rotational speed is adjustable up to 3,000 rpm.

Choose from **10,000 psi, 20,000 or 40,000 psi models** (690, 1,380 or 2,760 bar), with many popular features:

- › 2 or 4 spray arms
- › Various nozzle offsets available

- › Operates with cold or hot water
- › Built-in magnetic brake to adjust rotating speed up to 3,000 rpm
- › Rugged stainless steel construction
- › Optional, adjustable guide to center seal in pipe
- › Quick-change packing through top cap
- › Reconfigurable nozzle blocks for arms up to 15" (38 cm) long

Storm™: designed for high-flow applications

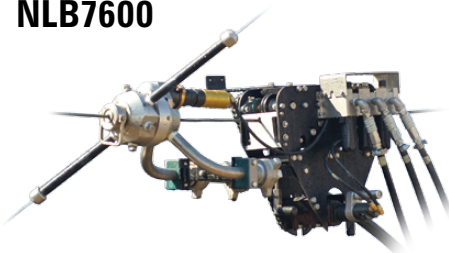
NLB's Storm™ nozzle makes SPIN JET® technology practical in high-flow applications, such as stacks, boilers, furnaces, and cokers. It has a 6-port head that allows multiple arm configurations and a wide range of angles to

meet diverse application requirements.

The Storm is usually used with one of the NLB 605 Series water jet pump units, which delivers unusually high water flow of 150

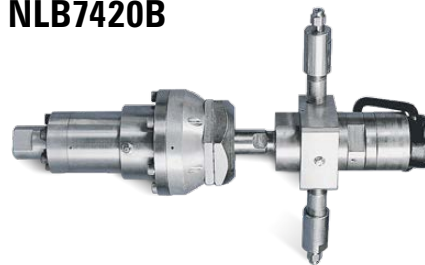
gpm (568 lpm) at pressures up to 10,000 psi (690 bar). It rotates (pneumatically) from 5 to 60 rpm, extending coverage and maximizing the impact of the water stream as it slides along a rod or cable. It weighs just 65 lbs. (29.5 kg).

NLB7600

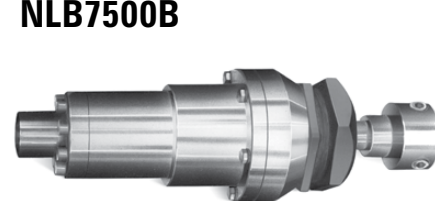


Shown with Storm Tracker (see next page)

NLB7420B

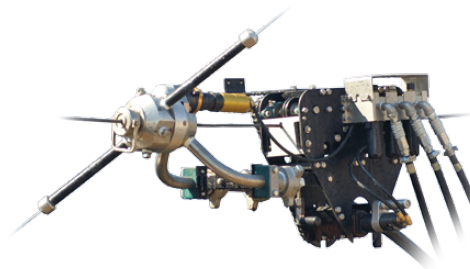


NLB7500B



Model No.	Max. Pressure	Flow	Rotation Speed	Weight	Inlet Connection	Length
NLB7600	10,000 psi (690 bar)	150 gpm (568 lpm)	5-60 rpm	65 lbs. (29.5 kg.)	1" NPT Male	20-1/2" (52.1 cm)
NLB7420B	10,000 psi (690 bar)	10 to 25 gpm (38 to 95 lpm)	200-3,000 rpm	26 lbs. (11.8 kg)	1/2" NPT Female	12-5/16" (31.3 cm)
NLB7500B	10,000 psi (690 bar)	100 gpm (379 lpm)	200-3,000 rpm	58 lbs. (26.3 kg)	1/2" NPT Female	17-3/4" (45.1 cm)
NLB7420B-20K	20,000 psi (1,380 bar)	16 gpm (61 lpm)	200-3,000 rpm	30 lbs. (13.6 kg)	3/4" MP Female	20-1/2" (52.1 cm)
NLB7500B-20K	20,000 psi (1,380 bar)	50 gpm (189 lpm)	200-3,000 rpm	60 lbs. (27.2 kg)	3/4" MP Female	25-7/8" (65.7 cm)
NLB7420B-40K	40,000 psi (2,760 bar)	20 gpm (76 lpm)	200-3,000 rpm	30 lbs. (13.6 kg)	3/4"-16 HP	19-1/8" (48.6 cm)

NLB Storm Tracker™



The Storm Tracker™ automates the maneuvering of the Storm nozzle (see preceding page) for maximum efficiency. This pneumatically-powered crawler allows operators to more easily feed the Storm nozzle into boilers and furnaces, eliminating the physical strain of pulling a towline under pressure. The Storm nozzle and Tracker are sold separately.

Directed from a remote control cabinet, the Storm Tracker can be programmed to intermittently pause, allowing time to clear especially-tough build-ups. Traversing speeds are adjustable up to 8 inches per second (203 mm per second). The controller can run multiple Storm Trackers and store their programs for future use.

Part No.	Speed	Min. Air	Weight (approx.)
DM29218*	0-8 in./sec. (0-203mm/sec.)	18 cfm @ 70 psi (8.5 l/s @ 6 bar)	90 lbs. (41 kg.)

*To order additional crawler assemblies that will be run from an existing controls cabinet, use Part No. DM29219.

Centering Guides

DA10094



Model No.	Adjustment	Connection
DA10094-1	10" to 14" (25.4 to 35.6 cm)	1" NPT Female
DA10094-2	14" to 23" (35.6 to 58.4 cm)	1" NPT Female
DA10094-3	23" to 36" (58.4 to 91.4 cm)	1" NPT Female
DA10094-4	34" to 50" (86.4 cm to 1.27 m)	1" NPT Female

Wheeled Centering Guides

DM20231

Shown with Stack Cleaner (not included)



- › Adjustable steel frame
- › 8 wheels for easy travel through straight or bent pipe
- › Configurable for pipe sizes 11" to 24" (279 mm to 610 mm)

Model No.	Pipe Size	Weight
DM20231	11" to 24" (28 to 61 cm)	36 lbs. (16.3 kg)

Tank Cleaning

NLB's 3-D water jet tank cleaning dramatically reduces cleaning time, respects the environment, and eliminates the need for anyone to enter a confined space. The dual cleaning action of the revolving/rotating head, powered by the reaction force of the high-pressure water jets, provides complete, 360° interior coverage of your tank or reactor.

The NLB3750 3-D heads have been removing the toughest chemical and resin build-up for decades —

everything from ABS and PVC to baked-on coke. Some customers have reduced man-hours by as much as 80 percent, while others report that they clean 6 times as many tanks or totes with water jets as with caustics or solvents.

We offer a complete system, with a selection of **3-D heads** and **telescopic lances** plus **swivel turrets**, **protective cages**, and a variety of **nozzle arms** and **extensions** to suit practically any application.

New Torrent™ heads – powerful cleaning plus longer life

Torrent™ tank cleaning heads from NLB optimize horsepower and flow for powerful rotating water jet action that delivers superior 3D coverage. For big jobs, the Torrent 200 combines 200 gpm with 2,300 hp. For smaller tanks, choose the

Torrent 50 at 50 gpm and 600 hp, and it fits through a 6-inch tank opening.

Torrent heads are rated to 20,000 psi with easy-to-replace seals that last hundreds of hours, a magnetic

brake that makes it easy to adjust rotation speeds, and nozzle arms to suit your needs. They are made of corrosion-resistant stainless steel to assure long life.



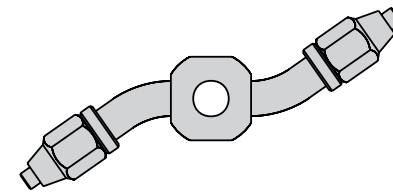
Model No.	Operating Pressure	Max. Flow Rate	Inlet Connection	Weight	Length	Min. Width	Rebuild Kit
NLB3750-40-10K	3,000 - 10,000 psi (207-690 bar)	40 gpm (151 lpm)	1/2" NPT Female	Bronze: 23 lbs. (10.4 kg)	14-1/4" (36.2 cm)	6-1/2" (16.5 cm)	NLB3750-10RBKT
NLB3750-40-20K	3,000 - 20,000 psi (207-1,380 bar)	40 gpm (151 lpm)	3/4" M/P	Bronze: 23 lbs. (10.4 kg)	14-1/4" (36.2 cm)	6-1/2" (16.5 cm)	NLB3750-20RBKT
NLB3760-50	5,000-20,000 psi (345-1,380 bar)	50 gpm (189 lpm)	3/4" MP	Stainless Steel: 42 lbs. (19.1 kg)	19.6" (49.8 cm)	6" (15.2 cm)	NLB3760-50-RBKT
NLB3750-150	4,000 - 10,000 psi (276-690 bar)	150 gpm (568 lpm)	1-1/4"- 11-1/2" NPT Female	Stainless Steel: 48 lbs. (21.8 kg)	20" (50.8 cm)	8" (20.3 cm)	PM7412-110NB
NLB3760-200	5,000-20,000 psi (345-1,380 bar)	200 gpm (757 lpm)	1-1/2" MP	Stainless Steel: 140 lbs. (63.5 kg)	30.8" (78.2 cm)	10.25" (26.0 cm)	NLB3760-200-RBKT

Nozzle size and rotor offsets are determined by the supply pump rating and pressure available at the 3-D head inlet. Consult NLB for proper nozzle sizes and rotor offsets to suit your application.

To order a 3-D head in aluminum, add "-AL". **Example:** NLB3750-40-20K-AL.

UPGRADES – Customers with older 3-D heads (NLB3750-50, NLB3750-80) can get the long-life features of the new models by purchasing and installing a CM2663 hub kit. Contact NLB for details.

Standard "S" Arms



DM32595-XX/ CM32189-XX

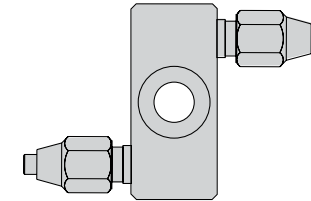


CM38138-XX

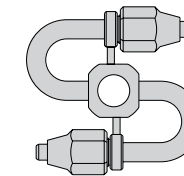
Model No. ¹	Use With	Offsets ²
DM32595-XX	NLB3750-40-10K	10-70 mm
CM32189-XX	NLB3750-150	10-90 mm
CM38138-XX	NLB3760-50	19.5-40.5 mm
CM38135-XX	NLB3760-50	8.25-16.8 mm
CM41227-XX	NLB3760-200	3.5-44.76 mm

¹ Last 2 digits in model number denote offset angle.
² Offsets available in 5mm increments; consult NLB for proper sizing.

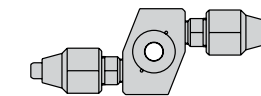
Compact Arms



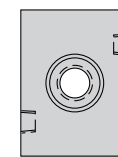
DA11510-XX



CA13600-XX



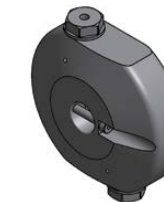
CM16114-XX



BA8149-XX
CM33448



BM38127-XX

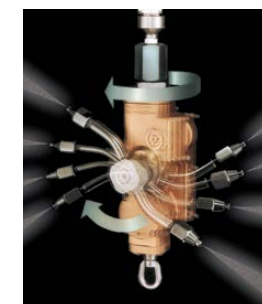


BM38133-XX

Model No. ¹	Use With	Offsets ²
DA11510-XX	NLB3750-150	15-55 mm
BA8149-XX	NLB3750-150	15-90 mm
CA13600-XX	NLB3750-150	45-70 mm
CM33448-XX	NLB3750-40K-10K	10-55 mm
CM16114-XX	NLB3750-40-20K	15-48 mm
BM38127-XX	NLB3760-50	19.5-30 mm
BM38133-XX	NLB3760-50	8.2-16.8 mm

¹ Last 2 digits in model number denote offset angle.
² Offsets available in 5mm increments; consult NLB for proper sizing. Custom configurations are available.

Extension Arms



are cleaning. This also helps stabilize the water flow.

Extension arms (see table) are available in a variety of lengths to suit your needs (12", 24", 30", etc.). The length is designated by the XX

In large-diameter vessels, an extension arm is attached to the "S" arm to get the nozzles closer to the surface they

are cleaning. Some NLB heads use one extension arm at lower pressures and at different one at higher pressures.

Adding an extension arm to an "S" arm requires an adapter and, in some cases, an o-ring. For details of the components required for arm configuration, please consult NLB.



Extension Arm



Adapter

3-D Head	Operating Pressure	Extension Arm
NLB3760-50	up to 13,000 psi (897 bar)	CM38135-XX
	up to 20,000 psi (1,380 bar)	CM38137-XX
NLB3760-200	up to 13,000 psi (897 bar)	CM41227-XX
	up to 20,000 psi (1,380 bar)	CM41243-XX
NLB3750-40-10K	up to 10,000 psi (690 bar)	BN7279-XX
NLB3750-40-20K	up to 13,000 psi (897 bar)	BN7279-XX
NLB3750-40-20K	up to 20,000 psi (1,380 bar)	BM16700-XX

Tank Cleaning

Swivel Turret

A Lance Swivel Turret (NLB5996) is generally used in small vessels to move the cleaning head into the required working position. The aluminum turret has three movements:

- › Extension/Retraction
- › Inclination
- › Rotation

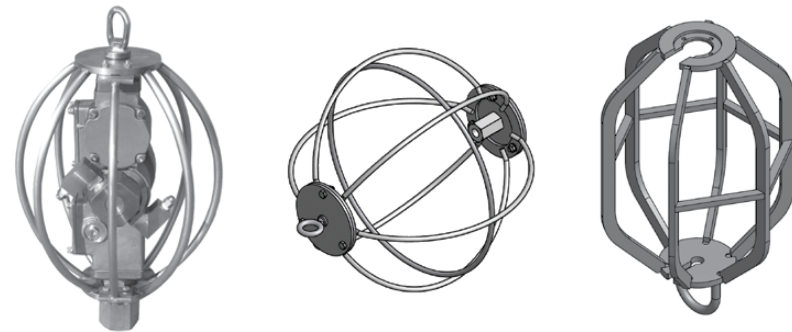
The swivel turret will mount to a vessel's manway with a custom adapter. It can be used in vertical or horizontal applications.

(NLB3750 head, shown in photo, is not included with Swivel Turret.)



Protective Cages

NLB offers seven different protective cages to accommodate a range of standard S arms and compact arms.



Automated Tank Cleaning Systems

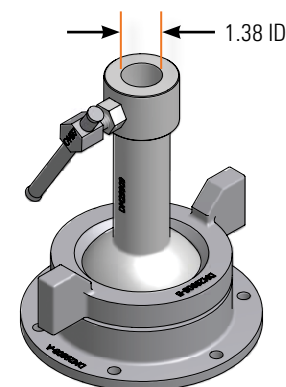
For high-volume cleaning of tanks and totes, NLB custom-engineers automated systems to suit individual needs. For example, totes can enter a cabinet via conveyor, or rotate while the 3-D water jet heads do their job. A wide variety of totes and tanks can be accommodated; please consult NLB about your specific requirements.



Model No.	Use With	Diameter
DA8141	NLB3750-150	12-1/4" (31.1 cm)
DM31913-1	NLB3750-150	18-3/4" (47.6 cm)
DA10185	NLB3750-40-10K	10" (25.4 cm)
DM16288	NLB3750-40-20K	13" (33.0 cm)
DM38150	NLB3760-50	9" (22.9 cm)
DM41302	NLB3760-200	21" (53.3 cm)
DM43269	NLB3760-200	11.5" (29.2 cm)

Ball and Socket

Model DM29907, made of stainless steel, can be used instead of the Swivel Turret Assembly when cleaning small vessels.



Telescopic Lances

A Telescopic Lance is used in large vessels and in areas where overhead height is limited. It features external handwheels to extend/retract, incline and rotate the 3-D head as needed. Custom-designed manway adapters are available to secure the lance to the vessel. Standard lance lengths range from 20" to 295" (.51 to 7.5 m) to service vessels from 121" to 334" (3.1 to 8.5 m) in height. Custom-engineered sizes are also available, as are fully-automated telescopic lances.

Features and Benefits:

- › Eliminates need for confined space entry
- › Increases uptime by shortening cleaning cycle time
- › Reduces manpower — can be operated by a single person
- › Corrosion resistant
- › External hand wheels for ease of nozzle placement
- › Nozzle can be repositioned while under pressure

Special Options

Lance Carts are available to transport telescopic lances and raise them into position.

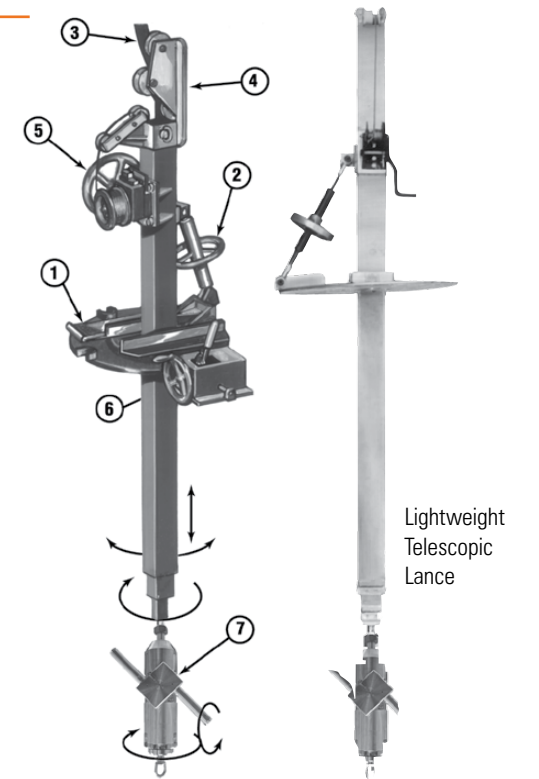
Automated Telescopic Lances are custom-designed to fit any tank, reactor or other vessel for between-batch cleaning. They are generally permanently attached to the vessel. The extension and retraction mechanisms can be electric, hydraulic or pneumatic.

The **Lightweight Telescopic Lance** has most of the same features as a standard NLB telescopic lance, but is made of aluminum and therefore weighs about 80% less. This makes it more maneuverable.

Please contact NLB for details of these special options.

Standard Telescopic Lance

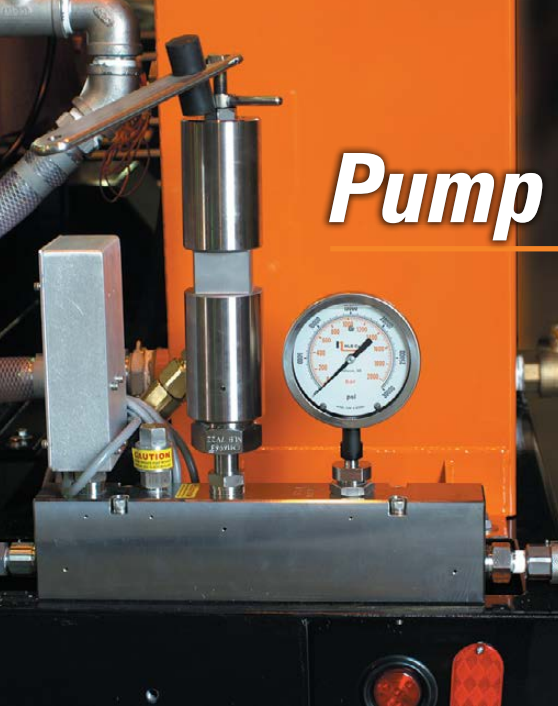
1. Manway Adapter Base
2. Inclination Tilting Handle
3. High-Pressure Hose
4. Hose Guide
5. Extension/Retraction Handle
6. Base Rotation Handle
7. NLB3760 Nozzle



Model No.	Min. Extension	Max. Extension	Vessel Height	Weight
TL3-35-3/4	33.9" (86 cm)	137.8" (3.5 m)	158-177" (4-4.5 m)	303 lbs. (137 kg)
TL3-45-3/4	46.9" (119 cm)	177.2" (4.5 m)	197-216" (5-5.5 m)	316 lbs. (143 kg)
TL3-55-3/4	59.8" (152 cm)	216.5" (5.5 m)	237-255" (6-6.5 m)	329 lbs. (149 kg)
TL3-65-3/4	72.2" (183 cm)	255.9" (6.5 m)	276-295" (7-7.5 m)	342 lbs. (155 kg)
TL4-35-3/4	20.9" (53 cm)	137.8" (3.5 m)	158-177" (4-4.5 m)	300 lbs. (136 kg)
TL4-45-3/4	30.7" (78 cm)	177.2" (4.5 m)	197-216" (5-5.5 m)	312 lbs. (142 kg)
TL4-55-3/4	40.6" (103 cm)	216.5" (5.5 m)	237-255" (6-6.5 m)	326 lbs. (148 kg)
TL4-65-3/4	50.4" (128 cm)	255.9" (6.5 m)	276-295" (7-7.5 m)	339 lbs. (154 kg)
TL4-75-3/4	60.2" (153 cm)	295.3" (7.5 m)	315-334" (8-8.5 m)	352 lbs. (160 kg)
TL4-35-1-1/4	26.0" (66 cm)	137.8" (3.5 m)	158-177" (4-4.5 m)	320 lbs. (145 kg)
TL4-45-1-1/4	35.8" (91 cm)	177.2" (4.5 m)	197-216" (5-5.5 m)	342 lbs. (155 kg)
TL4-55-1-1/4	45.7" (116 cm)	216.5" (5.5 m)	237-255" (6-6.5 m)	364 lbs. (165 kg)
TL4-65-1-1/4	55.5" (141 cm)	255.9" (6.5 m)	276-295" (7-7.5 m)	386 lbs. (175 kg)
TL4-75-1-1/4	65.4" (166 cm)	295.3" (7.5 m)	315-334" (8-8.5 m)	408 lbs. (185 kg)
Lightweight Telescopic Lances				
TL3-20L-3/4	23.6" (60 cm)	101.4" (2.6 m)	121-140" (3.1-3.6 m)	60 lbs. (27 kg)
TL3-32L-3/4	47.6" (121 cm)	173.4" (4.4 m)	193-212" (4.9-5.4 m)	70 lbs. (32 kg)
TL3-44L-3/4	71.6" (182 cm)	245.4" (6.2 m)	265-284" (6.7-7.2 m)	80 lbs. (36 kg)

Note: Special and custom manufactured lances are also available; please consult NLB.

Pump Controls



Some of the most important contributions to pump performance and safety are made by components you hardly ever notice. NLB pump controls can keep your unit operating reliably, year after year. They have earned a reputation for precision, durability and — wherever possible — ease of replacement.

In this section of the catalog you'll find **by-pass valves** and **pulsation dampeners** to regulate and

cushion the flow of high-pressure water, **gauges** to monitor operating pressure, and **snubbers** to enhance gauge accuracy.

Rupture disc assemblies relieve pressure in the event of a spike, while **shut-off valves** quickly close line flow. We also offer engine **throttle controls**, **filters** to keep pumps free of dirt, and **system valves** for remote control of water flow.

Easy on, easy off

NLB by-pass valves let you adjust the pressure on your pump unit with a simple turn of the handle... much like opening and closing a faucet. They are hydraulically cushioned for smooth pressure adjustment, and field repairable.

Models are available to handle all common operating pressures.

The housing and all major components are precision machined of rugged stainless steel. Air-assisted models (part

numbers with an A) are also available. We also offer simple conversion kits that allow older pump units to accept newer by-pass valves.

By-Pass Valves



BV10-400

NLB by-pass valves can be retrofitted to older NLB pump units. Our convenient conversion kits include everything you need.

By-Pass Valve	Conversion Kit
BV10-400	DM11267
BV10-650	DM12744
BV20-260	DM12699

Part No.	Max. Pressure	Max. Flow	Inlet Connection	Outlet Connection	Rebuild Kit
BV10-400	10,000 psi (690 bar)	40 gpm (151 lpm)	1" NPT	1/2" NPT	BV11316
BV10-650	10,000 psi (690 bar)	65 gpm (246 lpm)	1" NPT	1" NPT	BV12635
BV10-650A	10,000 psi (690 bar)	65 gpm (246 lpm)	1" NPT	1" NPT	BV12635
BV20-260	20,000 psi (1,380 bar)	26 gpm (98 lpm)	1" MP	1/2" NPT	BV11317
BV24-350	24,000 psi (1,656 bar)	35 gpm (132 lpm)	1" MP	1/2" NPT	BV18102
BV24-350A	24,000 psi (1,656 bar)	35 gpm (132 lpm)	1" MP	1/2" NPT	BV18102
BV40-010	40,000 psi (2,760 bar)	10 gpm (38 lpm)	1-1/8"-12 HPM	1/2" NPT	BV2180
BV40-260	40,000 psi (2,760 bar)	25 gpm (95 lpm)	1-5/6-12UN-2A M	1" NPT F	BV37864
BV40-260A	40,000 psi (2,760 bar)	25 gpm (95 lpm)	1-5/6-12UN-2A M	1" NPT F	BV37864
BV36-115	40,000 psi (2,760 bar)	15 gpm (57 lpm)	1-1/8"-12 HPM	1/2" NPT	BV2180

Pressure Gauges

NLB's high-pressure, heavy-duty pressure gauges are oil-filled and hermetically sealed. A throttle screw helps protect the gauge from erratic pressure surges. Standard gauges have bottom-mount connections and 4-1/4" (11 cm) faces. Certified gauges are available.

All display both English and metric units of measurement.



Model	Working Pressure	Connection
2009	5,000 psi (345 bar)	1/2" NPT
2008	10,000 psi (690 bar)	1/2" NPT
3008	20,000 psi (1,380 bar)	1/4" MP
5008	40,000 psi (2,760 bar)	1/4" HP

Certified gauges are available.

Note: NLB recommends that every pump be equipped with both a pressure gauge and a snubber.

Snubbers

NLB snubbers absorb the system pressure pulses that can cause gauge fluctuations. This enhances accuracy and prolongs gauge life.



Model	Max. Pressure	Inlet Connection	Outlet Connection	Use with Gauge
2010	10,000 psi (690 bar)	1/2" NPT Male	1/2" NPT Female	2008, 2009
BM13613*	10,000 psi (690 bar)	1-1/8" - 12	1/2" NPT Female	2008, 2009
3010	20,000 psi (1,380 bar)	1/4" MP port	1/4" MP port	3008
BM13614*	20,000 psi (1,380 bar)	1-1/8" - 12	1/4" MP port	3008
4010	40,000 psi (2,760 bar)	1/4" HP	1/4" HP	5008
BM13615	40,000 psi (2,760 bar)	1-1/8" - 12	1/4" HP	5008

*Snubber kit used with discharge manifolds or pressure reducing stations featuring NLB's "BV" family of By-Pass Valves.

Throttle Valve

Designed to throttle excess water from the pump to a low pressure outlet. Helps lower-power engines climb to torque curve from idle.



Model	Max. Pressure	Inlet Connection	Outlet Connection	Max. Flow
TV24-012	24,000 psi (1,654 bar)	1" MP Port	3/4" NPT Male	12 gpm @ 24,000 psi 45.4 lpm @ 1,654 bar


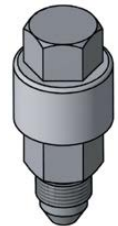
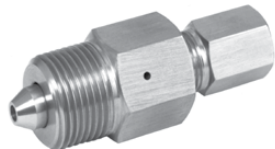


Pump Controls

Rupture Disc Assemblies and Discs

Every NLB high-pressure pump unit is equipped with a rupture disc to relieve system pressure in the event of a spike above the unit's maximum operating pressure. The replaceable discs, held in a rupture disc assembly, are available with pressure ratings from 2,000 psi to 40,000 psi (138 to 2,760 bar).

Rupture disc assemblies should always be used with a primary pressure relief or by-pass valve (page 66).



Model No.	Operating Pressure	Used With Rupture Disc Assembly	
NSP-2002-2	2,000 psi (138 bar)	 NSP-2000	
NSP-2002-3	3,000 psi (207 bar)		
NSP-2002-4	4,000 psi (276 bar)		
NSP-2002-5	5,000 psi (345 bar)		
NSP-2002-6	6,000 psi (414 bar)		
NSP-2002-8	8,000 psi (552 bar)		
NSP-2002-10	10,000 psi (690 bar)		
NSP-3002-8	8,000 psi (552 bar)		 NSP-3000
NSP-3002-10	10,000 psi (690 bar)		
NSP-3002-12	12,000 psi (828 bar)		
NSP-3002-15	15,000 psi (1,035 bar)		
NSP-3002-20	20,000 psi (1,380 bar)		
NSP-3002-24	24,000 psi (1,656 bar)		
NSP-4002-30	30,000 psi (2,070 bar)	 NSP-4000	
NSP-4002-34	34,000 psi (2,346 bar)		
NSP-4002-36	36,000 psi (2,484 bar)		
NSP-4002-40	40,000 psi (2,760 bar)		
NSP-4002-42	42,000 psi (2,898 bar)		
PM26756	4,000 psi (276 bar)		 BM 22093
PM22088	6,000 psi (414 bar)		
PM22089	8,000 psi (552 bar)		
PM22090	10,000 psi (690 bar)		
PM29714	12,000 psi (828 bar)		
PM26757	13,000 psi (897 bar)		 BM 22095
PM22091	15,000 psi (1,035 bar)		
PM26758	17,000 psi (1,173 bar)		
PM22092	20,000 psi (1,380 bar)		
PM29715	24,000 psi (1,656 bar)		

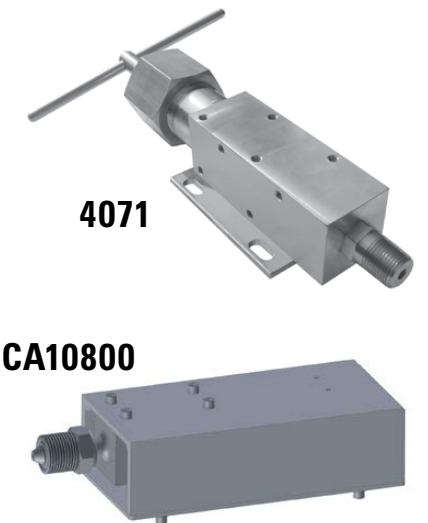
Throttle Controls

Throttle controls help reduce fuel consumption and pump engine wear and tear. They advance a pump's engine speed when a dump-style lance or foot control is activated, and return it to idle when the trigger or pedal is released. We offer four throttle controls, all with a common design, for 10,000 psi, 20,000 psi, 24,000 psi, and 40,000 psi applications (690, 1,380, 1,656, and 2,760 bar).

- Quick-change adapter fits all NLB pump units

- Long seal life
- Brass stop eliminates galling
- Stainless steel spring resists corrosion
- Rebuild with replacement seal PM14983.

Model No.	Max. Pressure	Rebuild Kit
4071-10	10,000 psi (690 bar)	PM14983
4071-20	20,000 psi (1,380 bar)	PM14983
4071-24	24,000 psi (1,656 bar)	PM14983
4071-40	40,000 psi (2,760 bar)	PM14983
CA10800-40E	40,000 psi (2,760 bar)	N/A

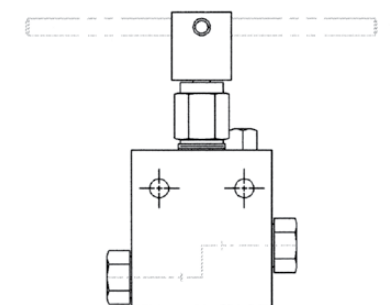
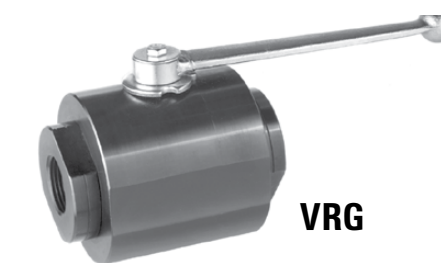


Shut-Off Valves

The quickest way to completely close line flow is with a shut-off valve. NLB has ball valves for 10,000 psi (690 bar) applications and needle valves for 24,000 psi (1,656 bar). All are silicone-free. Repair kits are available for the ball valves.

Model No.	Thread Size	Rebuild Kit
VRG-08	1/2" NPT	VRG-8RBKT
VRG-12	3/4" NPT	VRG-12RBKT
VRG-16	1" NPT	VRG-16RBKT
VRG-14	1-1/2" NPT	N/A

Model No.	Thread Size
PM2889	1" MP



PM2889

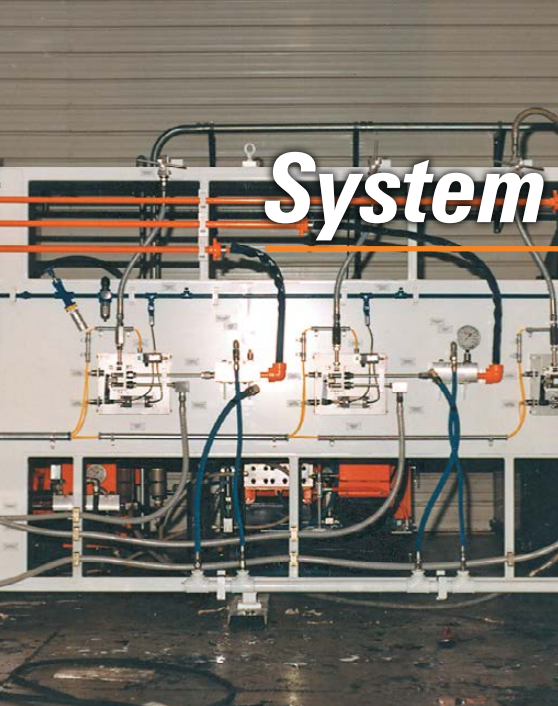
Pulsation Dampeners

- Reduce pulsations in permanent piping systems
- No moving parts
- No gas charging
- Can be permanently mounted



Model No.	Max. Pressure	Rebuild Kit
PM8576	3,000 psi (207 bar)	1" NPT
PDS2-16T	3,000 psi (207 bar)	2" NPT
PDS3-16T	5,000 psi (345 bar)	2" NPT
PDS1-16T	10,000 psi (690 bar)	1" NPT
DM9570	24,000 psi (1,656 bar)	1" MP port
DM7831	40,000 psi (2,760 bar)	9/16" HP Male

System Valves



When operators are working some distance from a pump unit, the ability to stop the high-pressure water flow without shutting down the pump is a real convenience. That's where NLB system valves come in.

They handle a wide range of flows and pressures, and you can choose from three actuation methods (see below). Some models can be equipped with proximity switches; some are even explosion-proof. Although usually mounted on a

remote workstation, a system valve can be mounted on the pump.

Features and Benefits:

- ▶ Stainless steel construction of all wetted components
- ▶ Standard enclosures protect in hostile environments
- ▶ Used with electric units for "no-load" start-ups
- ▶ Rebuild kits available for fast, easy maintenance

How to Choose a System Valve

When a **dump valve** is actuated, 95% of the high-pressure water is diverted to dump and the system pressure is reduced to near-zero. Until the valve is actuated, the water just passes through. If 100% shut-off is required, or if several workstations need the high-

pressure water at once, a **directional valve** is recommended.

Most NLB system valves can be ordered with air actuation, hydraulic actuation, or air over electric. Actuation method and special features are designated by

a suffix at the end of the model number, as illustrated in the chart below with the V-485 system valve.

If you have questions about which model is best-suited to a particular application, NLB is always happy to help.

Rebuild Kits

Rebuild kits for the latest NLB system valves — V10-595, V10-596, V40-660, V24-286, V10-800 and V40-286 — practically eliminate downtime with a quick-change cartridge like the one in NLB lances and foot controls.

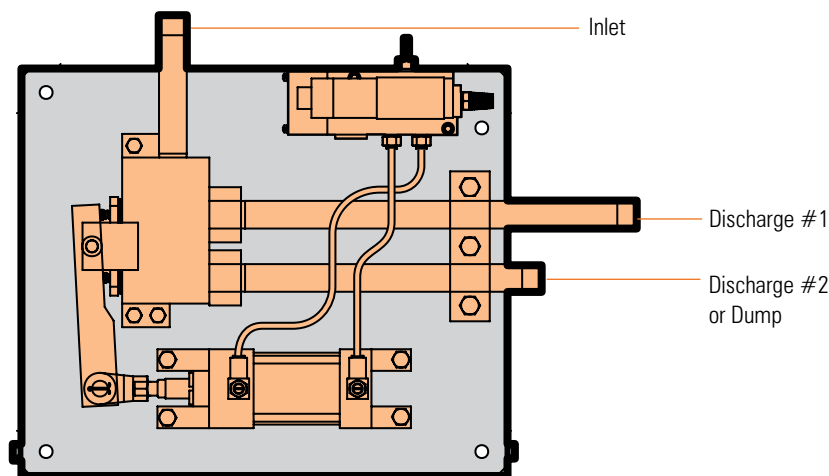
System Valve dimensions (all models except V20-495 series):

Length: 15 3/8" (39 cm)

Width: 13" (33 cm)

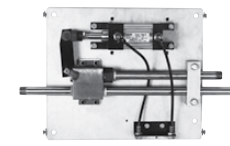
Height: 7" (18 cm)

Weight: 50 lbs. (23 kg)

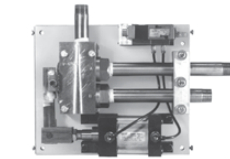


Model No.	Description
V-485	Air
V-485AE	Air over Electric
V-485H	Hydraulic
V-485AE-PROX	Air over Electric, with proximity switch
V-485AE-XP	Air over Electric, explosion-proof
V-485AE-24VDC	Air over Electric, 24 volt DC

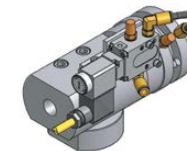
Directional and Dump System Valves



V-560



VH-685



V10-596



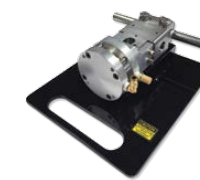
V20-095



V20-495



V40-660



DM48613

Model No.	Type	Max. Pressure	Max. Flow	Inlet Connection	Outlet Connection	Ports*	Rebuild Kit
V-560	Dump	10,000 psi (690 bar)	40 gpm (151 lpm)	1/2" NPT Male	1/2" NPT Male	1 HP inlet, 1 HP outlet, 1 LP outlet	550RBKT
V-660	Directional	10,000 psi (690 bar)	40 gpm (151 lpm)	1/2" NPT Male	1/2" NPT Male	1 HP inlet and 2 HP outlets	650RBKT
VH-485	Shut-off	10,000 psi (690 bar)	60 gpm (227 lpm)	1" NPT Male	1" NPT Male	1 HP inlet and 1 HP outlet	475RBKT
VH-685	Directional	10,000 psi (690 bar)	60 gpm (227 lpm)	1" NPT Male	1" NPT Male	1 HP inlet and 2 HP outlets	685RBKT
V10-495	Dump	10,000 psi (690 bar)	80 gpm (303 lpm)	1" NPT Female	1" NPT Female	1 HP inlet and 1 HP outlet	V10-495A-RBKT
V10-595	Dump	10,000 psi (690 bar)	42 gpm (159 lpm)	1/2" NPT Female	1/2" NPT Female	1 HP inlet and 1 LP outlet	BM19524
V10-596	Shut-off	10,000 psi (690 bar)	42 gpm (159 lpm)	1/2" NPT Female	1/2" NPT Female	1 HP inlet and 1 HP outlet	DM30615
V10-333	Dump	10,000 psi (690 bar)	333 gpm (1,261 lpm)	Manifold mounted	2" NPT Female	N/A	V10-333-ORKT
V10-800	Dump	10,000 psi (690 bar)	80 gpm (303 lpm)	1" NPT Male	1" NPT Male	1 HP inlet, 1 HP outlet, and 2 LP outlets	BM16345
V20-095	Dump	20,000 psi (1,380 bar)	95 gpm (360 lpm)	Manifold mounted	2" NPT Female	N/A	V20-095-ORKT
V20-660	Directional	24,000 psi (1,656 bar)	50 gpm (189 lpm)	9/16" MP Male	9/16" MP Male	1 HP inlet and 2 HP outlets	20-650RBKT
V20-495	Shut-off	20,000 psi (1,380 bar)	40 gpm (151 lpm)	1" MP Female	1" MP Female	1 HP inlet and 1 HP outlet	V20-495 RBKT
V24-286	Directional	24,000 psi (1,656 bar)	35 gpm (132 lpm)	9/16" MP Male	9/16" MP Male	1 HP inlet, 1 HP outlet, and 1 LP outlet	BM19524
V40-286	Directional	40,000 psi (2,760 bar)	13 gpm (49 lpm)	9/16" HP Male	9/16" HP Male	1 each HP inlet and outlet, and LP outlet	BM20935
V40-660	Directional	40,000 psi (2,760 bar)	13 gpm (49 lpm)	9/16" HP Male	9/16" HP Male	1 HP inlet and 2 HP outlets	BM24521
DM48613	Dump	24,000 psi (1,656 bar)	35 gpm (132 lpm)	9/16" MP LHF	9/16" MP LHF	1 HP inlet, 1 HP outlet, and 1 LP dump	BM19524

Plumb several V20-495 valves together to create a high-pressure header with multiple discharge points, activated as needed.

*HP designates a high-pressure port; LP designates a low-pressure port.

Filters—Bag, Screen or Cartridge

Dirty water can be the worst enemy of a high-pressure pump, but you can rely on NLB filters to keep it clean. Choices include bag filters, screen filters and cartridge filters

that can trap particles as small as 3 microns. Replacement gaskets and elements are available for all. For special conditions, please give us a call.

Model No.	Type	Flow	Inlet, Outlet Connection	Replacement Element	Typically Used On
DM20085	Bag	200 gpm (757 lpm)	3" Flange	FSP85-03 (25 Micron)	605 Series
FSP85/FSP85-SS	Bag	220 gpm (833 lpm)	2" NPT Female	FSP85-01 (3 Micron), FSP85-03 (25 Micron), FSP85-04 (50 Micron), FSP85-05 (5 Micron)	10250, 20400,
NLB-124-1 1/2	Screen	100 gpm (379 lpm)	1-1/2" NPT Female	NLB124-1.5-80 (80 Mesh)	1012, 10150, 10200
NLB-124-2	Screen	250 gpm (946 lpm)	2" NPT Female	NLB-124-2-80 (80 Mesh)	10250
NLB-157	Screen	200 gpm (757 lpm)	2" NPT Female	N/A	Diesel units
PM2958	Cartridge	8 gpm (30 lpm)	1" NPT Female	PM2959 (5 Micron) Absolute	4030, 4075
PM3350	Bag	30 gpm (114 lpm)	1-1/2" NPT Female	PM6962 (25 Micron) PM3801 (5-10 Micron)	20153, 20253 36200, 36201
PM10512	Cartridge	20 gpm (76 lpm)	1" NPT Female	PM10511 (4 Micron) Absolute	36200, 36201
PM10573	Cartridge	25 gpm (95 lpm)	2" NPT Female	PM11659 (5 Micron) Absolute	36250D 40250D
PM15120	Bag	100 gpm (379 lpm)	2" NPT Female	PM15121 (100 Micron)	10331D, 10331D-TPX
PM15583	Bag	220 gpm (833 lpm)	3" NPT Female	PM15584 (25 Micron)	10350D
PM15675	Bag	100 gpm (379 lpm)	2" NPT Female	PM16644 (25 Micron)	350 Series
PM19153	Bag	38 gpm (144 lpm)	2" NPT Female	PM16644 (25 Micron)	125, 225 Series



DM20085



FSP85/FSP85-SS



NLB-124-1 1/2



NLB-124-2



NLB-157



PM2958



PM3350



PM10512



PM10573



PM15120



PM15583



PM15675



PM19153

Hoses

NLB stocks a complete line of high-pressure hoses for all popular working pressures, up to 40,000 psi (2,760 bar). All are designed for long life and dependable service. Most hoses are stocked in 25', 50' and 100' lengths (7.6 m, 15.2 m and 30.5 m), and custom lengths are available.

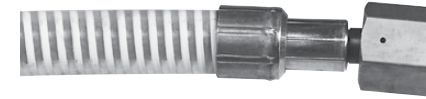
When ordering, please specify part number, length (the XX at the end), and end connection. For hose-to-hose couplings, please refer to Page 76.

Features and Benefits:

- › Smooth inner core to minimize pressure drop
- › High-tensile spiraled wire for strength and kink resistance
- › Tough outer cover to prevent abrasion and wire exposure
- › Short end connections allow movement around tight bend radii

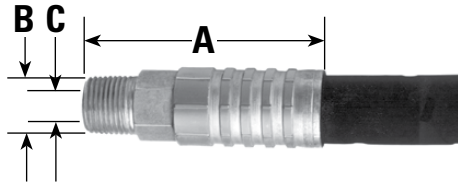
Ultra-High Pressure Hose, 40,000 psi (2,760 bar)

- › Steel wire reinforcement
- › Minimum bend radius of 6" (15.2 cm) for 3/16" hose; 8" (20.3 cm) for 5/16" hose



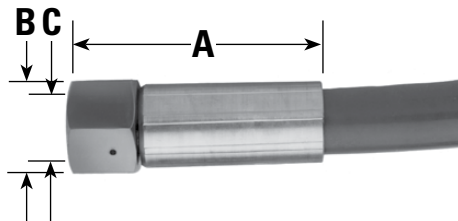
Model No.	Standard Lengths	Working Pressure	Thread Connection	I.D.	O.D.
NP40-3/16-15M	15' (4.6 m)	40,000 psi (2,760 bar)	3/8"-24 LH Male	.20" (5.1 mm)	.68" (17.3 mm)
NP40-3/16-15F	15' (4.6 m)	40,000 psi (2,760 bar)	9/16" Female Swivel	.20" (5.1 mm)	.85" (21.6 mm)
NP40-3/16-35F	35' (10.7 m)	40,000 psi (2,760 bar)	9/16" Female Swivel	.20" (5.1 mm)	.85" (21.6 mm)
NP40-3/16-50F	50' (15.2 m)	40,000 psi (2,760 bar)	9/16"-18 Female Swivel	.20" (5.1 mm)	.85" (21.6 mm)
NP40-5/16-8M	8' (2.4 m)	40,000 psi (2,760 bar)	9/16"-18 LH Male	.33" (8.4 mm)	.90" (22.9 mm)
NP40-5/16-8F	8' (2.4 m)	40,000 psi (2,760 bar)	1-1/8"-12 Female Swivel	.33" (8.4 mm)	1.60" (40.6 mm)
NP40-5/16-15M	15' (4.6 m)	40,000 psi (2,760 bar)	9/16"-18 LH Male	.33" (8.4 mm)	.90" (22.9 mm)
NP40-5/16-15F	15' (4.6 m)	40,000 psi (2,760 bar)	1-1/8"-12 Female Swivel	.33" (8.4 mm)	1.60" (40.6 mm)
NP40-5/16-50M	50' (15.2 m)	40,000 psi (2,760 bar)	9/16"-18 LH Male	.33" (8.4 mm)	.90" (22.9 mm)
NP40-5/16-50F	50' (15.2 m)	40,000 psi (2,760 bar)	1-1/8"-12 Female Swivel	.33" (8.4 mm)	1.60" (40.6 mm)

WP Hose, 10,000 to 15,000 psi (690 to 1,035 bar)



Part Number	Working Pressures Up To	End Connection	Dim. "A" Coupling Length	Dim. "B" Coupling O.D.	Dim. "C" Hose I.D.
WP3-3/8-XX	10,000 psi (690 bar)	3/8" MNPT	2.525" (6.4 cm)	0.915" (2.3 cm)	.38" (1.0 cm)
WP3-1/2-XX	10,000 psi (690 bar)	1/2" MNPT	3.385" (8.6 cm)	1.150" (2.9 cm)	.50" (1.3 cm)
WP3-3/4-XX	10,000 psi (690 bar)	3/4" MNPT	3.550" (9.0 cm)	1.400" (3.6 cm)	.75" (1.9 cm)
WP3-1-XX	10,000 psi (690 bar)	1" MNPT	4.500" (11.4 cm)	1.750" (4.5 cm)	1.0" (2.5 cm)
WP3-1/2-12K-XX	12,000 psi (828 bar)	1/2" MNPT	3.385" (8.6 cm)	1.150" (2.9 cm)	.50" (1.3 cm)
WP3-1/2-15K-XX	15,000 psi (1,035 bar)	1/2" MNPT	3.385" (8.6 cm)	1.150" (2.9 cm)	.50" (1.3 cm)

NP Hose, 20,000 to 24,000 psi (1,380 to 1,656 bar)



Part Number	Working Pressures Up To	End Connection	Dim. "A" Coupling Length	Dim. "B" Coupling O.D.	Dim. "C" Hose I.D.
NP20-5/16-XX	20,000 psi (1,380 bar)	9/16" M/P Nipple	4.000" (10.2 cm)	0.900" (2.3 cm)	.38" (1.0 cm)
NP20-3/8-XX	20,000 psi (1,380 bar)	9/16" M/P Nipple	4.000" (10.2 cm)	0.900" (2.3 cm)	.38" (1.0 cm)
NP20-1/2-XX	20,000 psi (1,380 bar)	1"-12 Swivel Nut	3.420" (8.7 cm)	1.440" (3.7 cm)	.50" (1.3 cm)
NP20-3/4-XX	20,000 psi (1,380 bar)	1-5/16"-12 Swivel Nut	3.500" (8.9 cm)	1.750" (4.5 cm)	.75" (1.9 cm)
NP20-1-XX	24,000 psi (1,656 bar)	1-3/8"-12 Swivel Nut	6.000" (15.2 cm)	1.95" (5.0 cm)	.995" (2.5 cm)
NP24-1/2-XX	24,000 psi (1,656 bar)	1"-12 Swivel Nut	4.250" (10.8 cm)	1.250" (3.2 cm)	.50" (1.3 cm)

NOTE: Some pressure drop is inevitable, and it varies with hose diameter. Please refer to the chart on Page 110.

Whip Hoses

NLB Whip Hoses help protect hand lance operators from potentially dangerous hose failures. Each whip hose assembly consists of a short length of hose, usually 10 feet (3 m) or less, covered with a heavy, dense fabric or reinforced plastic tubing designed to diffuse the energy released by a hose failure.

NLB offers whip hoses for all popular pressures, from 10,000 to 40,000 psi (690 to 2,760 bar).

For details of NLB whip hoses, please see Page 18.



Couplings and Fittings



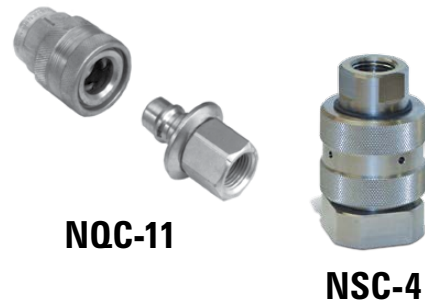
NLB can supply hose connections for virtually any water jet connection — **couplings** for up to 24,000 psi (1,656 bar) and **fittings** for ultra-high pressure, up to 40,000 psi (2,760 bar). Couplings

are available in quick-disconnect (sleeve-lock) and wing union (hammer-lock) styles, with economical o-rings for field repair.

Couplings-10,000 to 15,000 psi (690 to 1,035 bar)

QUICK-COUPPLINGS

NLB offers a variety of couplings in quick-disconnect (sleeve-lock) and screw-lock, or wing union, styles. Inexpensive o-rings are available for repairing all NLB couplings.



Part No.	Style	Pressure	Thread
NQC-11	Quick-Connect	10,000 psi (690 bar)	3/8" FNPT
NQC-22	Quick-Connect	10,000 psi (690 bar)	1/2" FNPT
NSC-4	Screw	15,000 psi (1,035 bar)	1/2" FNPT
NQC-22-15K	Quick-Connect	15,000 psi (1,035 bar)	1/2" FNPT
NSC-6	Screw	12,000 psi (828 bar)	3/4" FNPT
NSC-10	Screw	10,000 psi (690 bar)	1" FNPT

Coupling Shields

NLB high-pressure coupling shields provide a secondary means of protection in the event of coupling release. Hoses stay in place while high-pressure water is deflected.

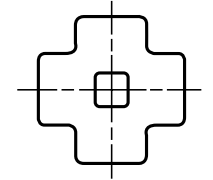


Part No.	Max. Pressure
CS-22	10,000 psi (690 bar)

10,000 to 15,000 psi (690 to 1,035 bar)

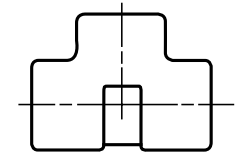
Crosses — Pipe Thread (NPT)

Part No.	Connection Type	Max. Pressure	
		psi	bar
04-CRS-10T-S	1/2" NPTF	10,000	690
06-CRS-6T-S	3/4" NPTF	10,000	690
10-CRS-6T-S	1" NPTF	10,000	690



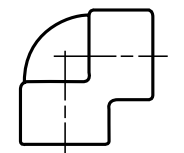
Tees — Pipe Thread (NPT)

Part No.	Connection Type	Max. Pressure	
		psi	bar
03-TEE-6T-S	3/8" NPTF	15,000	1,035
04-TEE-6T-S	1/2" NPTF	10,000	690
06-TEE-6T-S	3/4" NPTF	10,000	690
10-TEE-6T-S	1" NPTF	10,000	690



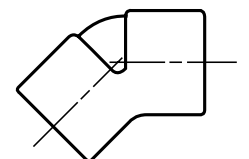
90° Elbows — Pipe Thread (NPT)

Part No.	Connection Type	Max. Pressure	
		psi	bar
01-ELB-90-6T-S	1/8" NPTF	15,000	1,035
02-ELB-90-6T-S	1/4" NPTF	15,000	1,035
03-ELB-90-6T-S	3/8" NPTF	15,000	1,035
04-ELB-90-6T-S	1/2" NPTF	10,000	690
06-ELB-90-6T-S	3/4" NPTF	10,000	690
10-ELB-90-10T-S	1" NPTF	10,000	690



45° Elbows — Pipe Thread (NPT)

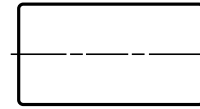
Part No.	Connection Type	Max. Pressure	
		psi	bar
03-ELB-45	3/8" NPTF	15,000	1,035
04-ELB-45-6T-S	1/2" NPTF	10,000	690
06-ELB-45-6T-S	3/4" NPTF	10,000	690
10-ELB-45-6T-S	1" NPTF	10,000	690



Couplings and Fittings

Couplings — Pipe Thread (NPT)

Part No.	Connection Type		Max. Pressure	
	Connection 1	Connection 2	psi	bar
03-02-RC-10T-S	3/8" NPTF	1/4" NPTF	15,000	1,035
04-03-RC-6T-S	1/2" NPTF	3/8" NPTF	10,000	690
06-04-RC-6T-S	3/4" NPTF	1/2" NPTF	10,000	690
10-04-RC-6T-SS	1" NPTF	1/2" NPTF	10,000	690
10-06-RC-6T-S	1" NPTF	3/4" NPTF	10,000	690



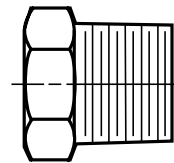
Wing Unions — Pipe Thread (NPT)

Part No.	Connection Type	Max. Pressure	
		psi	bar
PP17518	1/2" NPTF	10,000	690
WU-1002-06	3/4" NPTF	10,000	690
WU-1002-1	1" NPTF	10,000	690
WU-1002-2	2" NPTF	10,000	690
WU-1002-2.5	2-1/2" NPTF	10,000	690



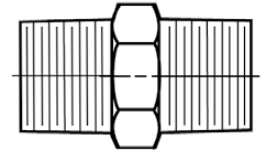
Reducing Bushing — Pipe Thread (NPT)

Part No.	Connection Type		Max. Pressure	
	Connection 1	Connection 2	psi	bar
02-01-RB-6T-S	1/4" NPTM	1/8" NPTF	15,000	1,035
03-01-RB-6T-S	3/8" NPTM	1/8" NPTF	15,000	1,035
03-02-RB-6T-S	3/8" NPTM	1/4" NPTF	15,000	1,035
04-01-RB-6T-S	1/2" NPTM	1/8" NPTF	10,000	690
04-02-RB-6T-S	1/2" NPTM	1/4" NPTF	10,000	690
04-03-RB-6T-S	1/2" NPTM	3/8" NPTF	10,000	690
06-01-RB-6T-S	3/4" NPTM	1/8" NPTF	10,000	690
06-02-RB-6T-S	3/4" NPTM	1/4" NPTF	10,000	690
06-03-RB-6T-S	3/4" NPTM	3/8" NPTF	10,000	690
06-04-RB-6T-S	3/4" NPTM	1/2" NPTF	10,000	690
10-04-RB-6T-S	1" NPTM	1/2" NPTF	10,000	690
10-06-RB-6T-S	1" NPTM	3/4" NPTF	10,000	690
12-10-RB-6T-S	1-1/4" NPTM	1" NPTF	10,000	690
14-10-RB-6T-S	1-1/2" NPTM	1" NPTF	10,000	690
20-10-RB-6T-S	2" NPTM	1" NPTF	10,000	690
20-14-RB-6T-S	2" NPTM	1-1/2" NPTF	10,000	690



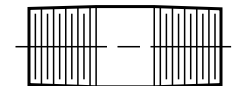
Hex Nipples — Pipe Thread (NPT)

Part No.	Connection Type		Max. Pressure	
	Connection 1	Connection 2	psi	bar
PM21837	3/8" NPTM	1/4" NPTM	15,000	1,035
PM21838	3/4" NPTM	1/2" NPTM	10,000	690
PM21840	1" NPTM	1/2" NPTM	10,000	690
PM21841	1" NPTM	3/8" NPTM	10,000	690
PM21839	1" NPTM	3/4" NPTM	7,000	483
PM3485	1-1/4" NPTM	1-1/4" NPTM	10,000	690



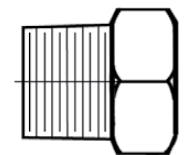
Nipples — Pipe Thread (NPT)

Part No.	Connection Type	Max. Pressure	
		psi	bar
01-XX-160-S	1/8" NPTM	15,000	1,035
02-XX-160-S	1/4" NPTM	15,000	1,035
03-XX-160-S	3/8" NPTM	15,000	1,035
04-XX-160-S	1/2" NPTM	10,000	690
06-XX-160-S	3/4" NPTM	10,000	690
10-XX-160-S	1" NPTM	10,000	690



Square Plugs — Pipe Thread (NPT)

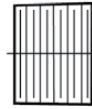
Part No.	Connection Type	Max. Pressure	
		psi	bar
01-PLG-6T-S	1/8" NPTM	15,000	1,035
02-PLG-6T-S	1/4" NPTM	15,000	1,035
03-PLG-6T-S	3/8" NPTM	15,000	1,035
04-PLG-6T-S	1/2" NPTM	10,000	690
06-PLG-6T-S	3/4" NPTM	10,000	690
10-PLG-6T-S	1" NPTM	10,000	690
12-PLG-6T-S	1-1/4" NPTM	10,000	690
14-PLG-6T-S	1-1/2" NPTM	10,000	690
20-PLG-6T-S	2" NPTM	10,000	690



Couplings and Fittings

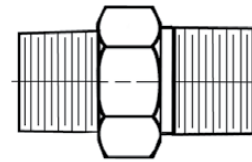
Plugs — Socket Head

Part No.	Connection Type	Max. Pressure	
		psi	bar
02-PLG-4H-10T-S	1/4" NPTM	15,000	1,035
04-PLG-6T-316	1/2" NPTM	10,000	690



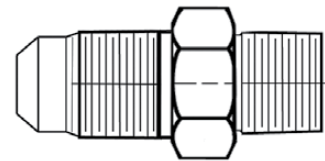
Pipe Thread Male (NPTM) To Type M Male Adapters

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
PM18386	1/4" NPTM	9/16" Type M Male	15,000	1,035
DM6023-354	1/4" NPTM	3/4"-16 Type M Male	15,000	1,035
PM17745	3/8" NPTM	9/16" Type M Male	15,000	1,035
DM6023-350	3/8" NPTM	3/4" Type M Male	15,000	1,035
PM15288	1/2" NPTM	9/16" Type M Male	10,000	690
PM20196	1/2" NPTM	3/4" Type M Male	10,000	690
PM17247	1/2" NPTM	3/4"-16 Type M Male	10,000	690
DM6023-174	1/2" NPTM	1" Type M Male	10,000	690
DM6023-351	3/4" NPTM	3/4" Type M Male	10,000	690
PM7698	3/4" NPTM	1" Type M Male	10,000	690
DM6023-165	1" NPTM	1" Type M Male	10,000	690
DM6023-171	1" NPTM	1-5/16" Type M Male	10,000	690



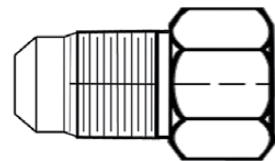
Pipe Thread Male (NPTM) To Medium Pressure Male Adapters

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
PP20569	1/2" NPTM	3/4" MP Male	10,000	690
PM17160	1/2" NPTM	1" MP Male	10,000	690
DM6023-339	3/4" NPTM	1" MP Male	10,000	690
CM10756	1" NPTM	1" MP Male	10,000	690



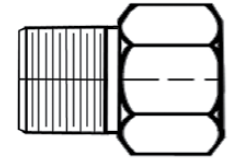
Pipe Thread Female (NPTF) To Medium Pressure Male Adapters

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
DM6023-181	1/4" NPTF	9/16" MP Male	15,000	1,035
PM18422	3/8" NPTF	9/16" MP Male	15,000	1,035
DM6023-130	1/2" NPTF	9/16" MP Male	10,000	690
DM6023-131	1/2" NPTF	3/4" MP Male	10,000	690
PM3549	1/2" NPTF	1" MP Male	10,000	690
CM24608	1/2" NPTF	1" MP Male	10,000	690
DM6023-169	3/4" NPTF	3/4" MP Male	10,000	690
CM12839	3/4" NPTF	1" MP Male	10,000	690
6023-162	1" NPTF	3/4" MP Male	10,000	690
PM17620	1" NPTF	1" MP Male	10,000	690
CM22205	1" NPTF	1-3/8" MP Male	10,000	690



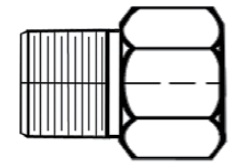
Pipe Thread Male (NPTM) To Medium Pressure Female Adapters

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
DM6023-180	1/4" NPTM	3/8" MP Female	15,000	1,035
PM18339	3/8" NPTM	9/16" MP Female	15,000	1,035
DM6023-134	1/2" NPTM	9/16" MP Female	10,000	690
DM6023-155	3/4" NPTM	3/4" MP Female	10,000	690
DM6023-166	1" NPTM	9/16" MP Female	10,000	690



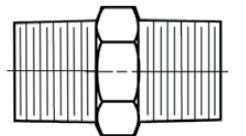
Pipe Thread Female (NPTF) To British Standard Pipe (BSP) Male Adapters

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
BJ2909-M09	1/2" NPTF	G1/2" BSP Male	10,000	690
BJ2909-M10	3/4" NPTF	G3/4" BSP Male	10,000	690



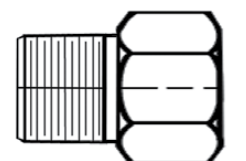
Pipe Thread Male (NPTM) To Metric Male Adapters

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
CA3407-5	1/2" NPTM	M22 x 1.5 Male	10,000	690
CA3407-2	1/2" NPTM	M24 x 1.5 Male	10,000	690
CA3407-7	3/4" NPTM	M24 x 1.5 Male	10,000	690
CA3407-4	1" NPTM	M22 x 1.5 Male	10,000	690
CA3407-1	1" NPTM	M24 x 1.5 Male	10,000	690



Pipe Thread Female (NPTF) To Metric Male Adapters

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
PM24744	1/2" NPTF	M22 x 1.5 Male	10,000	690
CA3407-8	1/2" NPTF	M24 x 1.5 Male	10,000	690



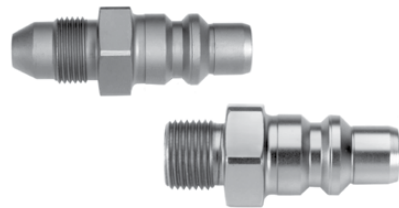
Couplings and Fittings

24,000 psi (1,656 bar)

Quick Couplings

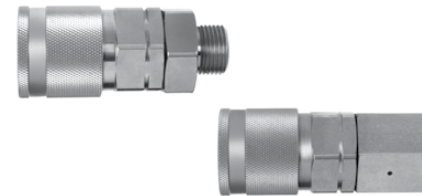
NLB quick-couplings provide solid connections, yet can be easily disconnected. Inexpensive o-rings are available for each model.

MALE



Part No.	Thread Connection
DM6023-112	1"-12 Male
DM6023-152	3/4"-16 Male
DM6023-114	9/16" MP Male
DM6023-128	3/4" MP Female
DM6023-124	9/16" MP Female

FEMALE



Part No.	Thread Connection
DM6023-115	1"-12 Male
DM6023-138	3/4"-16 Male
6023-125	9/16" MP Female
DM6023-127	3/4" MP Female

20K Coupling Shields

NLB high-pressure coupling shields provide a secondary means of protection in the event of coupling release. Hoses stay in place while high-pressure water is deflected.

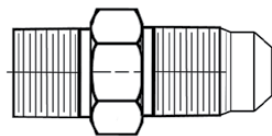


CS20-22

Part No.	Max. Pressure
CS20-22	24,000 psi (1,656 bar)

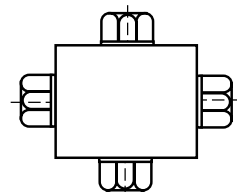
Type M Male To Medium Pressure Male Connectors

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
DM6023-246	1" Type M Male	3/8" MP Male	24,000	1,656
DM6023-126	1" Type M Male	9/16" MP Male	24,000	1,656
PM30512	1" Type M Male	1" MP	24,000	1,656



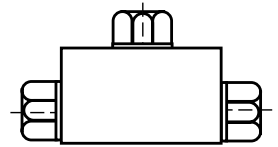
Medium Pressure Crosses

Part No.	Connection Type	Max. Pressure	
		psi	bar
DM6023-83	1/4" MP Female	24,000	1,656
DM6023-365	3/8" MP Female	24,000	1,656
DM6023-63	9/16" MP Female	24,000	1,656
DM6023-68	3/4" MP Female	24,000	1,656
DM6023-73	1" MP Female	24,000	1,656



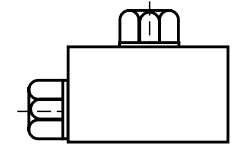
Medium Pressure Tees

Part No.	Connection Type	Max. Pressure	
		psi	bar
DM6023-82	1/4" MP Female	24,000	1,656
DM6023-72	9/16" MP Female	24,000	1,656
DM6023-67	3/4" MP Female	24,000	1,656
DM6023-62	1" MP Female	24,000	1,656



Medium Pressure Elbows

Part No.	Connection Type	Max. Pressure	
		psi	bar
DM6023-81	1/4" MP Female	24,000	1,656
DM6023-71	9/16" MP Female	24,000	1,656
DM6023-66	3/4" MP Female	24,000	1,656
DM6023-61	1" MP Female	24,000	1,656



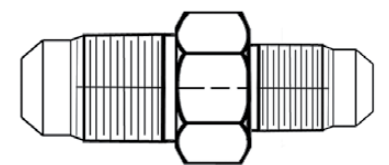
Medium Pressure Straight Couplings

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
DM6023-790	3/8" MP Female	3/8" MP Female	24,000	1,656
DM6023-132	9/16" MP Female	1/4" MP Female	24,000	1,656
DM6023-103	9/16" MP Female	3/8" MP Female	24,000	1,656
DM6023-74	9/16" MP Female	9/16" MP Female	24,000	1,656
DM6023-101	3/4" MP Female	3/8" MP Female	24,000	1,656
DM6023-104	3/4" MP Female	9/16" MP Female	24,000	1,656
DM6023-159	3/4" MP Female	3/4" MP Female	24,000	1,656
PP19867	1" MP Female	9/16" MP Female	24,000	1,656
DM6023-158	1" MP Female	3/4" MP Female	24,000	1,656
DM6023-64	1" MP Female	1" MP Female	24,000	1,656



Medium Pressure Male Connectors

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
DM6023-167V	9/16" MP Male	1/4" MP Male	24,000	1,656
PM10052	9/16" MP Male	9/16" MP Male	24,000	1,656
DM6023-102	3/4" MP Male	1/4" MP Male	24,000	1,656
DM6023-101	3/4" MP Male	3/8" MP Male	24,000	1,656
PM38434	3/4" MP Male	9/16" MP Male	24,000	1,656
PM17225	3/4" MP Male	3/4" MP Male	24,000	1,656
DM6023-244	1" MP Male	9/16" MP Male	24,000	1,656

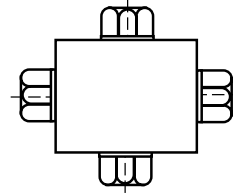


Couplings and Fittings

40,000 psi (2,760 bar)

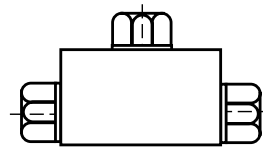
Ultra-High Pressure Crosses

Part No.	Connection Type	Max. Pressure	
		psi	bar
DM6023-203	1/4" HP Female	40,000	2,760
DM6023-204	3/8" HP Female	40,000	2,760
DM6023-205	9/16" HP Female	40,000	2,760



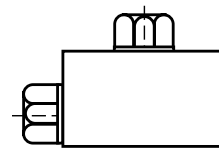
Ultra-High Pressure Tees

Part No.	Connection Type	Max. Pressure	
		psi	bar
DM6023-206	1/4" HP Female	40,000	2,760
DM6023-207	3/8" HP Female	40,000	2,760
DM6023-208	9/16" HP Female	40,000	2,760



Ultra-High Pressure Elbows

Part No.	Connection Type	Max. Pressure	
		psi	bar
DM6023-200	1/4" HP Female	40,000	2,760
DM6023-201	3/8" HP Female	40,000	2,760
DM6023-253	9/16" HP Female	40,000	2,760



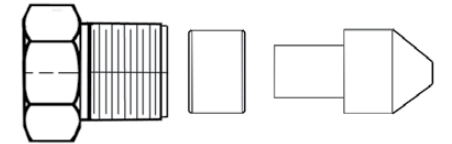
Ultra-High Pressure Straight Couplings

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
DM6023-218	1/4" HP Female	1/4" HP Female	40,000	2,760
DM6023-315	1/4" HP Female	3/8" HP Female	40,000	2,760
DM6023-317	1/4" HP Female	9/16" HP Female	40,000	2,760
DM6023-219	3/8" HP Female	3/8" HP Female	40,000	2,760
DM6023-108	3/8" HP Female	9/16" HP Female	40,000	2,760
DM6023-220	9/16" HP Female	9/16" HP Female	40,000	2,760



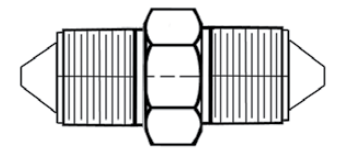
Ultra-High Pressure Gland Nuts, Collars and Plugs

Size	Gland	Collar	Plug
1/4"	DM6023-209	DM6023-212	DM6023-215
3/8"	DM6023-210	DM6023-213	DM6023-216
9/16"	DM6023-211	DM6023-214	DM6023-217



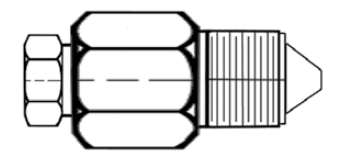
Ultra-High Pressure Male-To-Male Connectors

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
CM6146	1/4" HP Male	1/4" HP Male	40,000	2,760
PP19095	1/4" HP Male	9/16" HP Male	40,000	2,760
PM11143	3/8" HP Male	3/8" HP Male	40,000	2,760
PM11142	3/8" HP Male	9/16" HP Male	40,000	2,760
DM6023-176	9/16" HP Male	9/16" HP Male	40,000	2,760



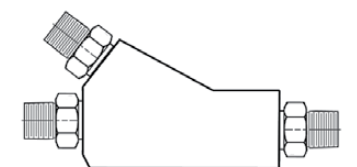
Ultra-High Pressure Male-To-Female Connectors

Part No.	Connection Type		Max. Pressure	
	Connection 1 (C1)	Connection 2 (C2)	psi	bar
DM6023-178	1/4" HP Male	3/8" HP Female	40,000	2,760
PM7879	1/4" HP Male	9/16" HP Female	40,000	2,760
DM6023-163 or 3	3/8" HP Male	9/16" HP Female	40,000	2,760
DM6023-182	9/16" HP Male	1/4" HP Female	40,000	2,760
DM6023-245	9/16" HP Male	3/8" HP Female	40,000	2,760



Y-Adapters

Part No.	Connection Type	Max. Pressure	
		psi	bar
CM13027	9/16" HP Female	40,000	2,760





Safety

Safety has been a priority at NLB since the company began in 1971. In addition to the many features we design into our water jetting pumps and accessories, we offer customers a full line of tools to maximize jobsite safety. These

Sure Shroud™

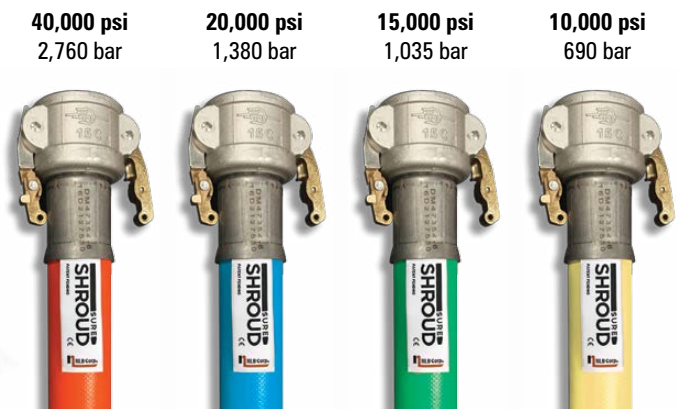
High pressure water jetting hose shrouds are only effective when operators actually use them. NLB's Sure Shroud's lighter weight and flexibility reduces operator fatigue and offers unmatched protection against high pressure hose ruptures.

The Sure Shroud pressure ratings meet almost any operating need from 10,000 to 40,000 psi and are designed to fit commonly available high-pressure water jetting hand lances.

include everything from space-age protective suits designed to withstand the impact of a 40,000 psi (2,760 bar) water jet to simple signs and barriers that help keep everyone aware of potential risks.

Features and Benefits:

- › Ballistic grade sheathing materials
- › USA made cast metal camlock couplings
- › 6' to 10' shroud lengths
- › Color coded outer sheathing for easy pressure rating identification
- › Greater flexibility reduces operator fatigue and improves productivity



Model	Color	Hose Dia.	At 6'	At 10'	Attachment Fitting	Swivel End Cap
DM47354		1.5"	DM47354-6	DM47354-10	N/A	NCG8450 - DM47449 NCG8400 - DM47450
DM47470		2.0"	DM47470-6	DM47470-10	DM47463	N/A
DM47457		2.0"	DM47457-6	DM47457-10	DM47463	N/A
DM47473		2.0"	DM47473-6	DM47473-10	DM47495	N/A
DM47474		2.0"	DM47474-6	DM47474-10	DM47496	N/A

NOTE: All Sure Shrouds have been tested to 40k psi operating criteria. Color coded outer coverings align with WJTA USA industry standard pressure ratings.

Whip Checks

The Whip Check cable is used to secure each high-pressure hose connection. In the event of coupling release, the cable limits hose movement. A nylon version is also available.



PM15924



PM7909

TurtleSkin® WaterArmor™

TurtleSkin® WaterArmor™ is the industry's most advanced protective apparel. Its composite materials are specially woven to withstand the impact of 40,000 psi (2,760 bar) water jets. The unique, "one-size-fits-all" design is adjustable to provide any operator with the ultimate in comfort and safety.

Level of Protection:

TurtleSkin WaterArmor was not penetrated when tested at 40,000 psi (2,760 bar) with a flow rate of 5 gpm (19 lpm), and a nozzle standoff of 3 inches (7.6 cm), traveling 8 feet (2.4 m) per second.

Features and Benefits:

- › One-size-fits-all
- › Fully adjustable straps
- › Lightweight - 11 lbs. (5 kg)
- › Replaceable panel sections
- › Worn under standard wet suits
- › Polypropylene outer cover adds chemical resistance
- › Can be cleaned with soap and water



Item	Part Number	Description
1	TWA (To order vest or chaps separately, specify TWA-vest or TWA-chaps)	TurtleSkin® WaterArmor™
2	TWAG	Gaiters
(Not Shown)	TWA-GAUNT	Gauntlet

TurtleSkin® and WaterArmor™ are trademarks of Warwick Mills.

Item	Part Number	Description
3	MB-951-size (07 through 14)	Boots, with steel metatarsal guard, sizes 7-14 available
4	HC-69	Hard Hat
5	7	Face Shield Holder
6	10	Face Shield
7	1100	Goggles
8	6780	Rubber Gloves
9	MX-01	Wet Suit, Small
	MX-02	Wet Suit, Medium
	MX-03	Wet Suit, Large
	MX-04	Wet Suit, X-Large
	MX-05	Wet Suit, XX-Large

Jackets and pants are also available separately. To order a jacket, simply add "01" to the part number of the suit size you need. To order pants, add "02".

EXAMPLES: Large suit: MX-03
Large jacket: MX-03-01
Large pants: MX-03-02

NLB now offers TurtleSkin's Coverall™ protective suit. For more information go to NLBCORP.COM.

NOTE: Always follow all recommended safety procedures, including wearing protective apparel with eye and ear protection. It is the user's responsibility to determine the proper personal protective equipment needed in each particular circumstance. All such equipment and apparel should always be used in strict accordance with the manufacturer's instructions.

HydroPrep®

NLB's versatile HydroPrep® system is the most efficient way to remove coatings (paint, epoxies, etc.), scale, and other tough adherents. Our **automated** and **semi-automated** accessories, connected to a rugged NLB water jet pump unit, leave metal and concrete undamaged and ready for recoating. (Steel is left with a "white metal" finish, per NACE, SSPC and SIS standards.)

Using nothing but ultra-high pressure water (up to 40,000 psi, or 2,760 bar), HydroPrep® is as

productive as grit blasting. Yet it saves you the associated expense, risks (environmental or sparks) and clean-up problems. You choose the level of automation you need, and vacuum recovery is available.



NLB Crawler takes surface prep to new heights

It's a tall order to strip epoxy coatings off a 125-foot-tall tank full of Liquefied Natural Gas (LNG), but the NLB Crawler cuts it down to size.

"We've used NLB for years," says B.R. Flowers, president of BR Flowers, Inc., a major surface prep

and painting contractor in Norfolk, Virginia. "I don't think you can get better equipment; it runs very reliably, without problems."

Using an automated Crawler, UHP pump units and other accessories (all from NLB), Flowers was able to remove up to 2,000 square feet

per day from the huge tank — without containment. The Crawler is a proven tool to:

- › Reduce operating costs
- › Keep projects on schedule
- › Minimize risk to personnel and the environment

NLB Crawler SRT-10-W1

For big vertical jobs, like 100-foot storage tanks and ship hulls, more and more contractors are moving up to the NLB SRT-10-W1 Crawler. While personnel stay safely on the ground, it crawls up, down and sideways — directed from wireless controls — while rotating SPIN JET® nozzles do all the work.

The Crawler uses a vacuum system to grip the surface and to recover wastewater and debris, minimizing clean-up. A winch skid assembly with locking pulleys allows an operator to position the unit and also serves as a fall arrest system.

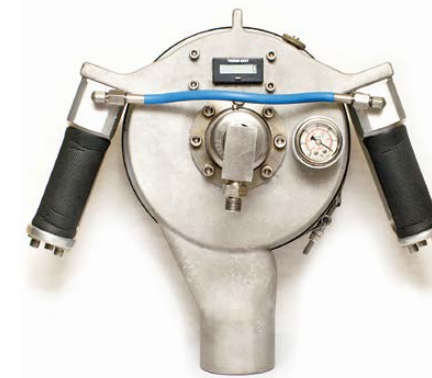
The SRT-10-W1 Crawler can be used horizontally as well as vertically. It cleans over welds and plates as thick as 1/2" (12.7 mm).



Type	Seal Type	Max. Pressure	Max. Flow	Nozzles	Rotation Speed	Weight	Vacuum Connection
Air-Powered	DS8850A-3	40,000 psi (2,760 bar)	10 gpm (37.9 lpm)	14	3,000 rpm 90 psi, 20 scfm	185 lbs. (84 kg)	4" (10.2 cm)

Patent No. 6,081,960

VertaJet™ SRT-6 and SRT-6LT



For "in-between" vertical surfaces (too large for manual water jetting but too small for a Crawler), try the NLB VertaJet™ SRT-6. These lightweight, hand-held systems work fast and collect debris.

The SRT-6 has adjustable rotation speed — ideal for soft substrates, like concrete — and a counterbalancing system to minimize operator fatigue. The SRT-6LT weighs just 20 lbs. (9 kg), and requires no air supply. It is ideal for removing coatings from steel

structures. Both have ergonomic handles and dual-trigger operation to dump pressure.

Features and Benefits:

- › Vacuum recovery standard
- › Counterbalanced to minimize operator fatigue
- › 6" (15 cm) cleaning path for high productivity rates
- › Uses NLB's exclusive BARJET™ and Bi-Mode™ valve technology

Part No.	Type	Seal Type	Max. Pressure	Max. Flow	Nozzles	Rotation Speed	Weight	Vacuum Connection
SRT-6	Air-Powered	DS8850A-9	40,000 psi (2,760 bar)	6 gpm (23 lpm)	8	3,000 rpm 90 psi, 20 scfm	35 lbs. (15.9 kg)	3" (7.6 cm)
SRT-6LT	Self-Rotating	DS8850A-9	40,000 psi (2,760 bar)	6 gpm (23 lpm)	8	3,000 rpm	20 lbs. (9.1 kg)	3" (7.6 cm)

SPIN JET® Floor and Grate Cleaners



You can quickly remove coatings, pavement markings, runway rubber, and more with a SPIN JET® unit from NLB.

Maneuverable, low-maintenance and ergonomically designed, these hard-working units are used on everything from ship decks to parking lots. Check out these key features:

- › Vacuum recovery available
- › Air-powered for consistent rotational speed
- › Hard rubber wheels for easy movement over different surfaces
- › Fast-acting dump valve reduces water pressure to near-zero
- › Includes NLB's ultra-high pressure BARJET™ spray bar

36-9900-15A and Vortex™ 36-9950-15A



- › No belt or chain drive (integral seal and motor)
- › Lightweight aluminum is easy to handle
- › Balanced design and adjustable handle
- › 4" vacuum attachment (only on the Vortex™ 36-9950-15A)

Seal Part No.	Discharge Pressure (Max.)	Max. Flow	Rotation Speed	Air	Weight	Width	Nozzles
36-9900-15A							
DRS12481	40,000 psi (2,760 bar)	11 gpm (42 lpm)	2,000 rpm	65 psi @ 50 cfm (4.5 bar @ 23.6 l/s)	120 lbs. (54.4 kg)	16" (41 cm)	Up to 15
Vortex™ 36-9950-15A							
DRS12481	40,000 psi (2,760 bar)	11 gpm (42 lpm)	2,000 rpm	65 psi @ 50 cfm (4.5 bar @ 23.6 l/s)	138 lbs. (62.6 kg)	16" (41 cm)	Up to 15

Recommended Spare Parts Kit: 36-9900-15A-1

HydroPrep®

Vacuum Lance Attachments

NLB VacLance attachments turn any NCG8450A-3 hand lance into a vacuum recovery surface preparation tool. Kit DM16546 converts any existing NCG8450A-3. Attach it to a vacuum source (approx. 100 CFM at 1-2 inches of vacuum) via NLB's 2" vac hose (PM16758).

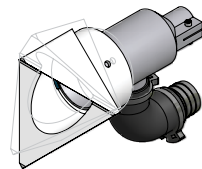
VacLance attachment DM32283 is designed to work in corners. It can be rotated to work vertically or horizontally.

NOTE: For details of the NCG8450A-3 rotating lance, see Page 16.

DM16546



DM32283



Profiler™ Nozzle

Abrasive wet blasting at up to 40,000 psi (2,760 bar) is no problem for NLB's Profiler™. It profiles a 4-inch (102 mm) path at up to 15 feet (5 m) per minute, and leaves an excellent bonding surface for new coatings. The Profiler operates at flows of 3-6 gpm (11-23 lpm).

This innovative tool works with various abrasive media, to suit specific applications. The abrasive is fed to the nozzle from an abrasive feed hopper, through metering discs that restrict the flow to a

predetermined rate. A typical flow is 2 lbs. (0.9 kg) per minute.

- › Profiles metal and welds, for an ideal bonding surface
- › Pressures from 24,000 to 40,000 psi (1,656 to 2,760 bar)
- › Flows of 3-6 gpm (11-23 lpm)
- › Designed to work with the NCG24-535 or NCG40-286B UHP lance, with quick-change cartridge.



Part Number	Pressure Rating	End Connections	Replacement Nozzles		
			40,000 psi @ 6 gpm	40,000 psi @ 3 gpm	24,000 psi @ 6 gpm
BM17994*	24,000 psi* (1,656 bar)	9/16" MP LHF	N/A	N/A	PM18673
BM17994	40,000 psi (2,760 bar)	9/16" HP LHF	PM18671	PM18672	N/A

*at 24,000 psi, requires BM24622 adapter

Ship Bottom Cleaner

With the NLB Ship Bottom Cleaner (SBC36-8300-15A), the entire bottom of a huge tanker ship can be cleaned by a single operator. The SBC is a self-propelled unit that cleans overhead as it travels, with our patented SPIN JET® nozzles.

Features and Benefits:

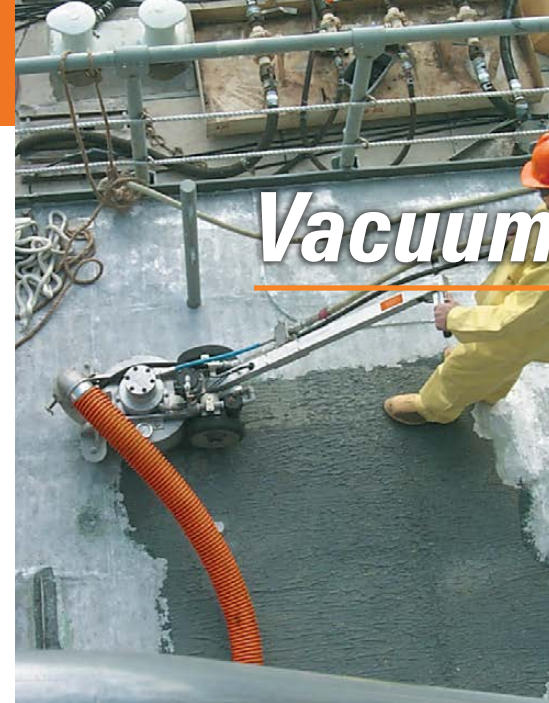
- › Speed of up to 5 feet per minute (1.5 m/min.)

- › Adjustable height, from 40.5" to 70.5" (103 cm to 179 cm)
- › Operating pressure up to 40,000 psi (2,760 bar); flow up to 10 gpm (37.9 lpm)
- › Optional vacuum recovery of water and debris
- › Convenient, handle-mounted controls
- › Pneumatic operation



Type	Seal Type	Max. Pressure	Max. Flow	Nozzles	Rotation Speed	Weight	Vacuum Connection
Air-Powered	DS8800A-3	40,000 psi (2,760 bar)	10 gpm (37.8 lpm)	14	3,000 rpm 90 psi, 20 scfm	185 lbs. (84 kg)	4" (10.2 cm)

Rebuild Kit: Part Number SRT-10-1



Vacuum Recovery

Vacuum recovery of debris and water lets you respect the environment while enhancing safety and productivity. NLB offers several vacuum systems with capacities and degrees of mobility to suit your particular needs.

This equipment is most commonly used with our HydroPrep® surface preparation systems and StarJet® pavement marking removal systems, but has also proven itself in other applications.

Mobile vacuum recovery goes anywhere

NLB's DM33618 vacuum system is designed to work with our HydroPrep® line of water jet surface preparation tools, simplifying the recovery of water and debris. The system's small footprint and lightweight design allows it to be mounted in the bed

of a one-ton truck, effectively turning any pick-up truck into a vac truck.

The vac system is driven by a 44 hp diesel engine and provides 1,000 cfm @ 6" to 8" of mercury. A 220-gallon tank collects all waste

and debris. The included transfer pump allows the water to be drawn off, leaving only solids in the tank. The standard mounting package includes a skid with forklift slots and lifting lugs.

Vacuum Recovery Units



DM33168

- › Compact and lightweight
- › Fits in a 1-ton pick-up truck
- › Angled debris tank



BM17421

- › Trailer-mounted for easy towing
- › High-capacity (1,200-gal.) debris tank
- › Fast access to washable, 10-micron filter



BM35294

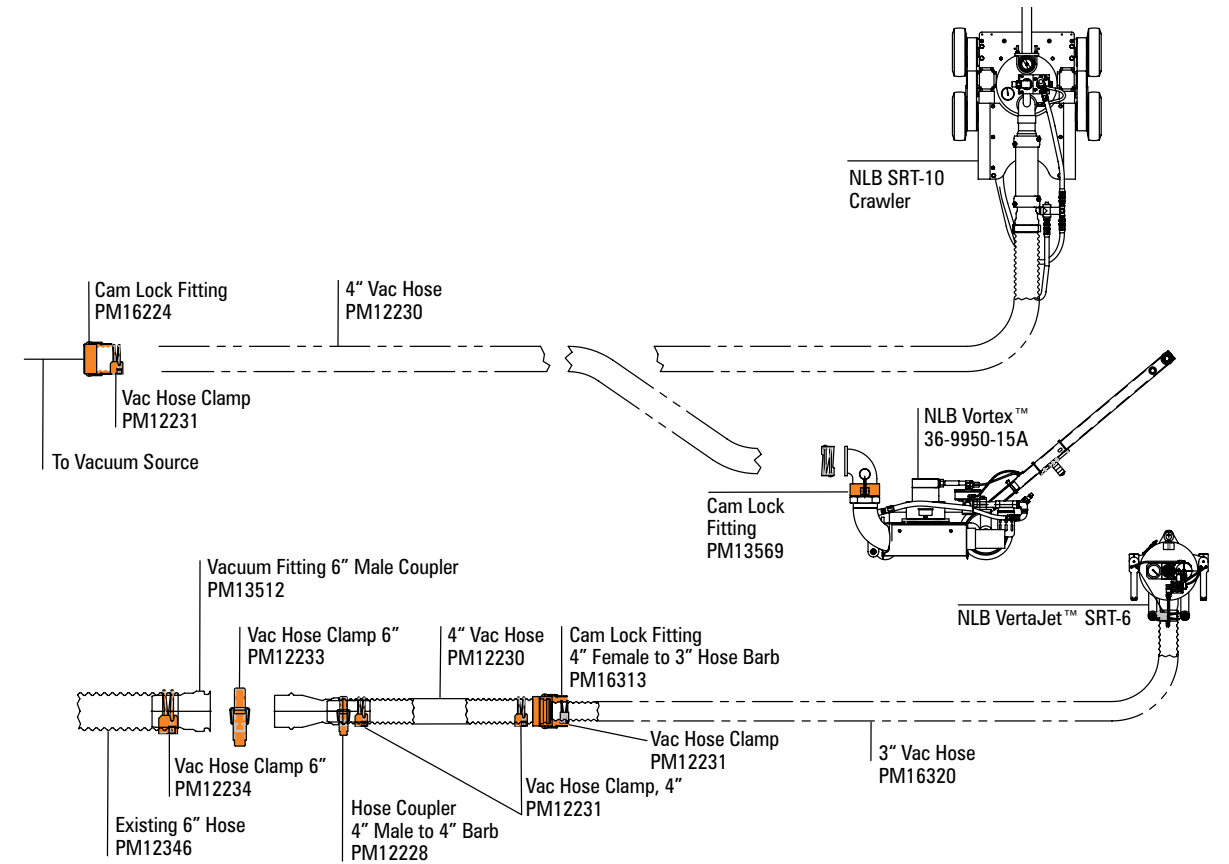
- › Positive displacement rotary lobe blower
- › Full-diameter, side-hinged rear door with four manual latches
- › Liquid return discharge pump is belt-driven (from diesel engine); rated for 70 gpm @ 30 psi

Part No.	Vacuum	Debris Tank	Diesel Engine
DM33168	1,000 cfm @ 6" to 8"	220 gal. (833 l)	44 hp (33 kW)
BM17421	1,000 cfm @ 6" to 8"	1,200 gal. (4,542 l)	44 hp (33 kW)
BM35294	1,975 cfm @ 27"	1,000 gal. (3,785 l)	152 hp (113 kW)

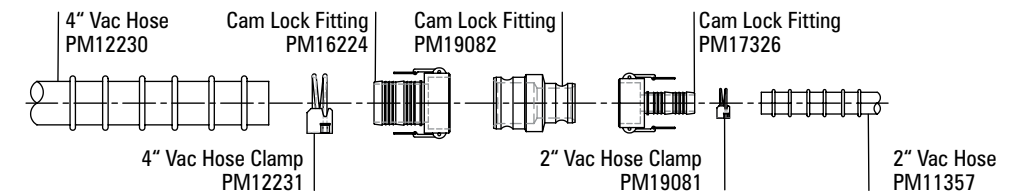
Vacuum Recovery

Vac Hose			
Part Number	Description	Connection 1	Connection 2
PM12346	Hose, Vacuum, 6" I.D.	N/A	N/A
PM12230	Hose, Vacuum, 4" I.D.	N/A	N/A
PM16320	Hose, Vacuum, 3" I.D.	N/A	N/A
PM11357	Hose, Vacuum, 2" I.D.	N/A	N/A
Vac Hose Clamps			
PM12234	Clamp, Hose, Vacuum, 6"	N/A	N/A
PM12231	Clamp, Hose, Vacuum, 4"	N/A	N/A
PM13826	Clamp, Hose, Vacuum, 3"	N/A	N/A
PM19081	Clamp, Hose, Vacuum, 2"	N/A	N/A
Vac Fittings			
Hose Couplers			
PM12345	Coupler, Vacuum, 6" Female to 6" Hose	6" Female Hose Coupler	6" Hose Barb
PM13508	Coupler, Vacuum, 6" Male to 4" Female	6" Female Hose Coupler	4" Hose Barb
PM12228	Coupler, Vacuum, 4" Male to 4" Hose	4" Male Hose Coupler	4" Hose
30-LAT-40-G	Coupler, "Y" Vacuum, 3" FNPT	3" Female NPT	2 X 3" FNPT
Cam Lock Fittings			
PM16314	Cam Lock, Vacuum, 4" Male to 4" Hose Barb	4" Male Cam Lock	4" Male Hose Barb
PM16224	Cam Lock, Vacuum, 4" Female to 4" Hose Barb	4" Female Cam Lock	4" Male Hose Barb
PM13569	Cam Lock, 90° Vacuum, 4" Female to 4" Hose Barb	4" Female Cam Lock	4" Male Hose Barb
PM16313	Cam Lock, Vacuum, 4" Female to 3" Hose Barb	4" Female Cam Lock	3" Male Hose Barb
PM19082	Cam Lock, Vacuum, 4" Male to 3" Male	4" Male Cam Lock	3" Male Cam Lock
PM17324	Cam Lock, Vacuum, 4" Male to 3" MNPT	4" Male Cam Lock	3" MNPT
PM17325	Cam Lock, Vacuum, 3" Male to 3" MNPT	3" Male Cam Lock	3" MNPT
PM17326	Cam Lock, Vacuum, 3" Female to 2" Hose Barb	3" Female Cam Lock	2" Male Hose Barb
Vacuum Clamps			
PM12233	Clamp, Vacuum, 6"	N/A	N/A
PM12229	Clamp, Vacuum, 4"	N/A	N/A

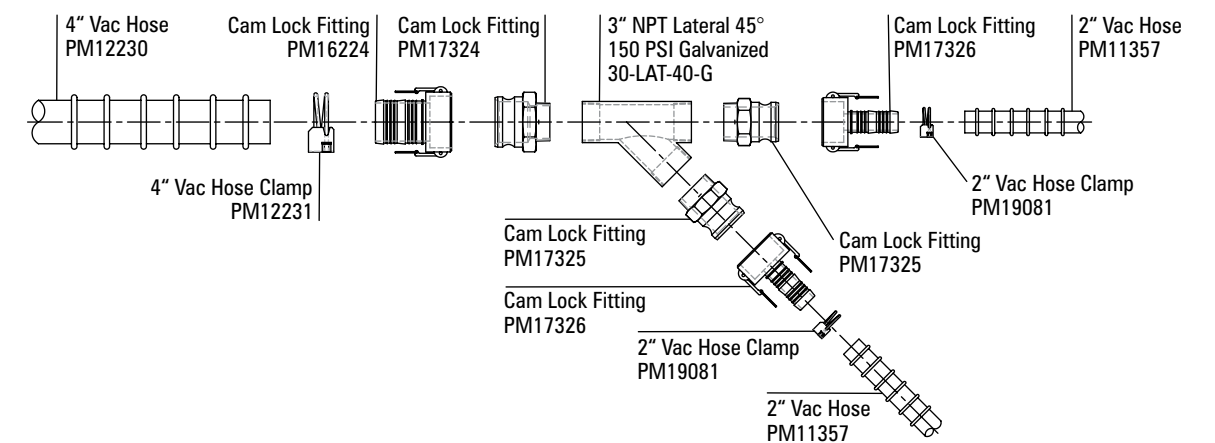
6" to 4" Hose Reduction



4" Hose to 2" Hose Reduction



4" Hose to 15° Splitter and 2" Hose Reduction





Stripe Removal



For over a decade, NLB has pioneered the removal of pavement markings and runway rubber with ultra-high pressure water jets. We have two mobile systems, both with rotating SPIN JET® assemblies mounted on a vehicle, connected to a water supply and NLB pump unit. The **StarJet®** does high-volume removal (like highways and runways), while the compact **StripeJet™** is ideal for parking garages and intersections.

The StripeJet system has all components — patented nozzle

assembly, UHP pump unit, water tank, and vacuum recovery — on a heavy-duty truck. It can remove up to 7,000 feet of markings per hour (2,134 meters per hour). All operating controls are conveniently located in the cab.

The StripeJet is very maneuverable, with a tight turning radius and smooth, consistent speed. Five heads are available for each system, for cleaning paths of 8", 10", 15", 20" or 24" (20.3, 25.4, 38.1, 50.8, or 61 cm). Vacuum recovery is optional.

NLB water jets put you miles ahead

The advantages of water jetting over abrasive methods for pavement marking removal are much better recognized today than they were a few years ago. UHP water jetting is not only faster and more productive, but when used properly, does virtually no damage to concrete or asphalt.

Features and Benefits:

- › Removes coatings, epoxy, membranes, thermoplastic, rubber build-up, and more
- › Eliminates dust and debris, with optional vacuum recovery
- › Complete removal, even from grooved pavement
- › Saves labor
- › Creates a stronger bond for restriping
- › No exposure (people or environment) to abrasive media or chemicals

StarJet features:

- › Vacuum recovery
- › Articulated robotic arm with proportional controls
- › Semi-automated controls for skip line removal
- › In-cab video with 3 cameras (2 front, 1 rear)
- › Dedicated horsepower for UHP pump to maximize productivity
- › Options: optical line tracking, GPS with weather forecasting, remote internet with email & webcam capabilities



StripeJet



Smaller, lighter SRV-1

For full details, visit www.nlbstarjet.com

Reference Section



To help customers get the most out of their water jetting equipment, NLB is pleased to present this reference section with a variety of helpful information.

On the following pages, you'll find **typical hook-up drawings** for single lances, dual lances, foot controls, and SPIN JET® grate cleaners, organized by operating pressure. Key accessories are cross-indexed to their respective

pages in the catalog.

Following the drawings are **flow charts** that project the flow of each NLB standard or sapphire orifice nozzle at a variety of operating pressures. These are followed by **pressure drop** calculations for all common hose sizes and a **nozzle thrust** table at any given pressure and flow. All data are presented in both English and metric.

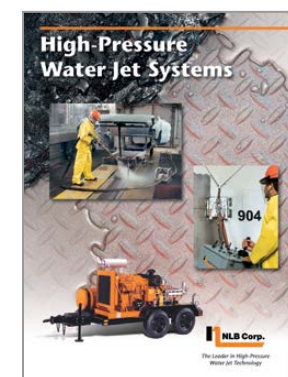
Get the latest information at the NLB website

Additional reference information — as well as the most up-to-date technical data, new products, application literature, and much more — is available 24/7 at our website, www.nlbcorp.com. You can even **request an online** quote

on most of the accessories in this catalog, without leaving your desk. Just click on the "Request for Quote" button on the home page.

All of the brochures shown below can be downloaded in PDF format

from our website. Or you can request them from the NLB marketing department by calling 248-624-5555 or sending an e-mail message to nlbmktg@nlbusa.com.



NLB Capabilities



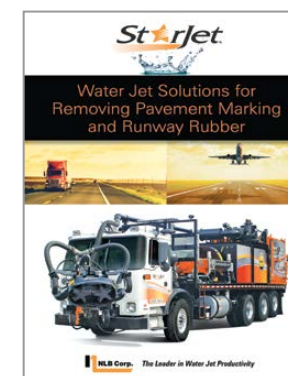
Surface Preparation



Paint Booth Cleaning



Industrial Product Removal



Pavement Marking Removal



Rental Programs



Tank Cleaning White Paper

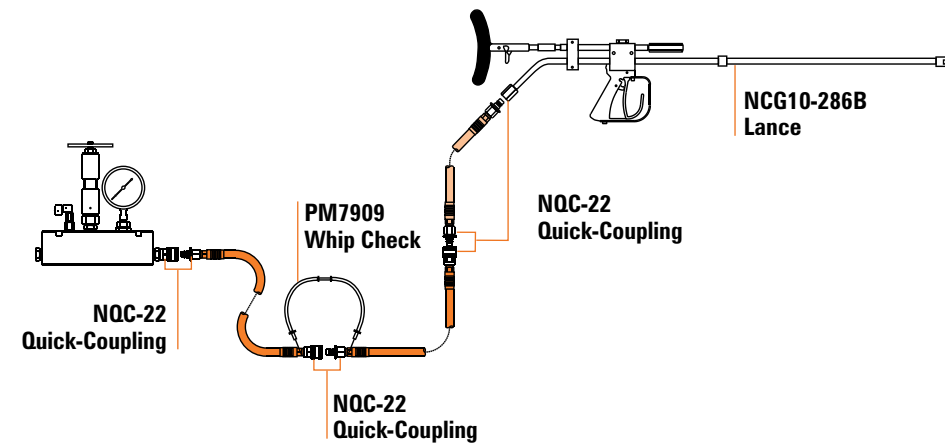


Concrete Application Guide

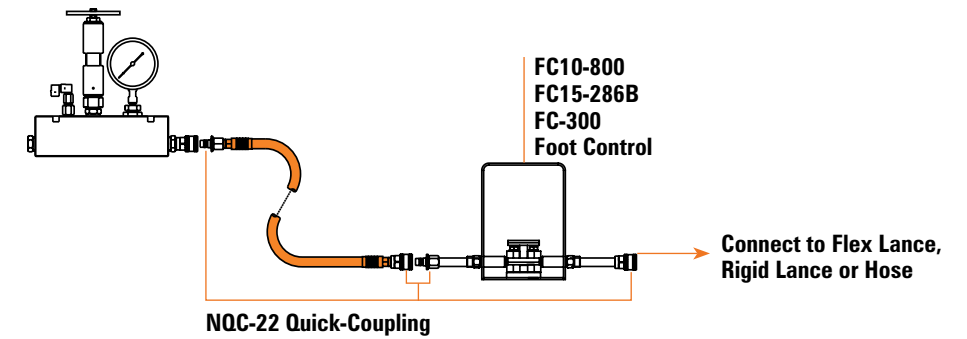
Reference Section

Typical hook-ups, 10,000 psi (690 bar)

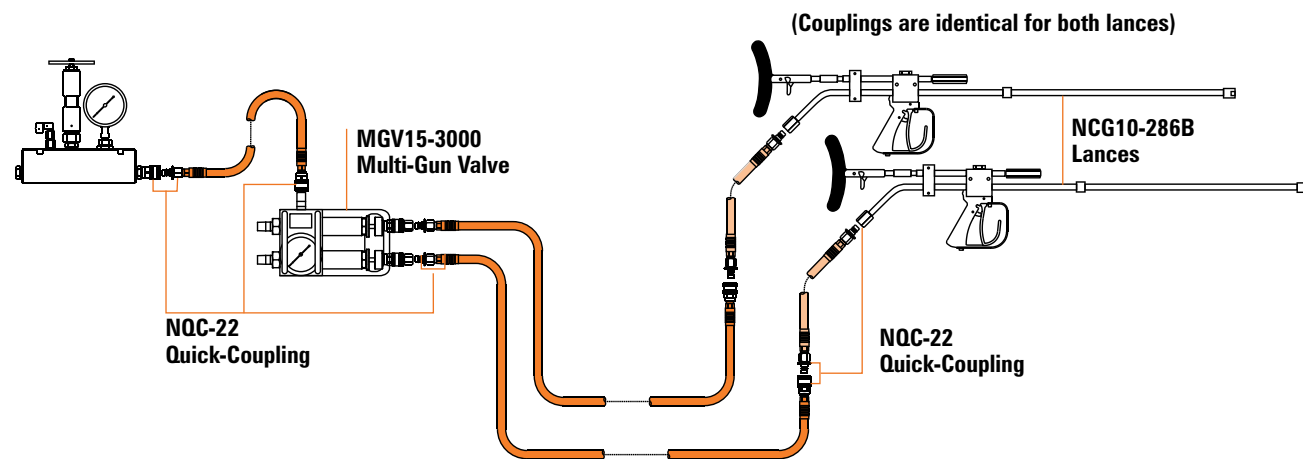
Single Lance



Foot Control



Dual Lances

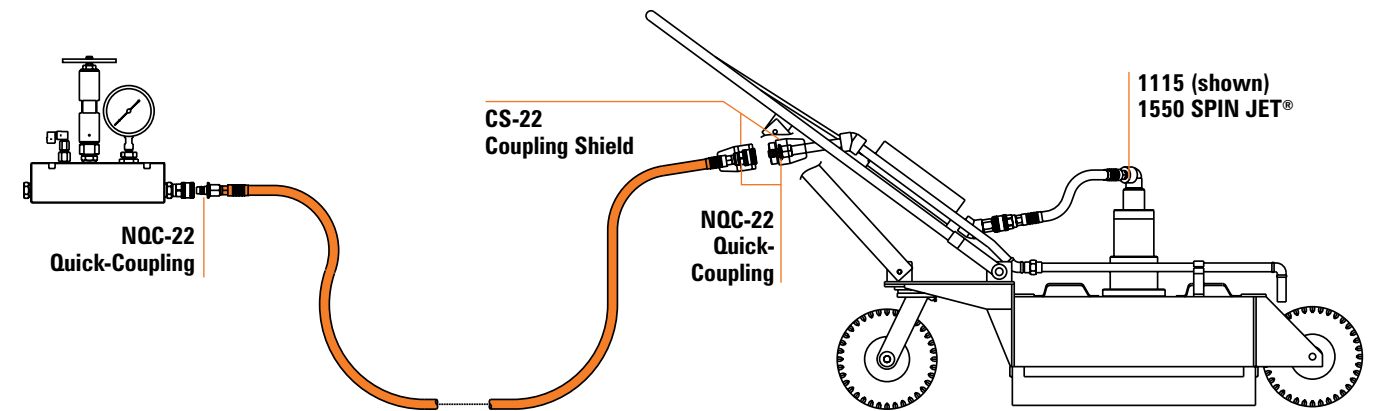


Note: Whip Check can be used on all hose connections, not just hose-to-hose.

LEGEND

- WP3-1/2-50 Hose
- SW-15K Whip Hose

SPIN JET® Floor and Grate Cleaner

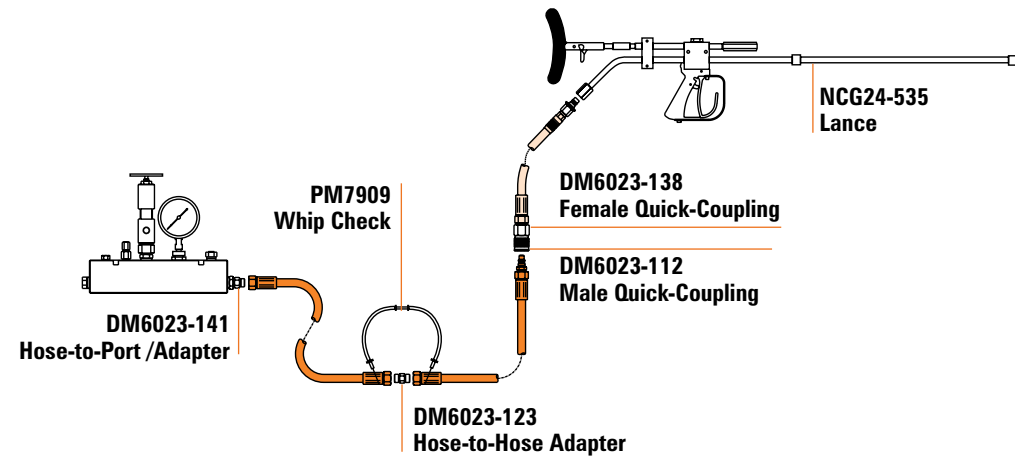


Accessory	Page
Lances	12-19
Foot Controls	26-27
SPIN JET®	56-57
Hoses	74-75
Couplings and Fittings	76-85
Whip Check	86-87

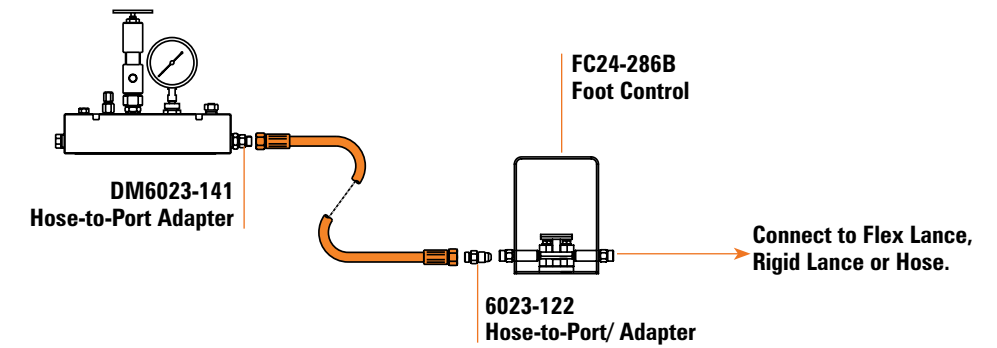
Reference Section

Typical hook-ups, 20,000 psi (1,380 bar)

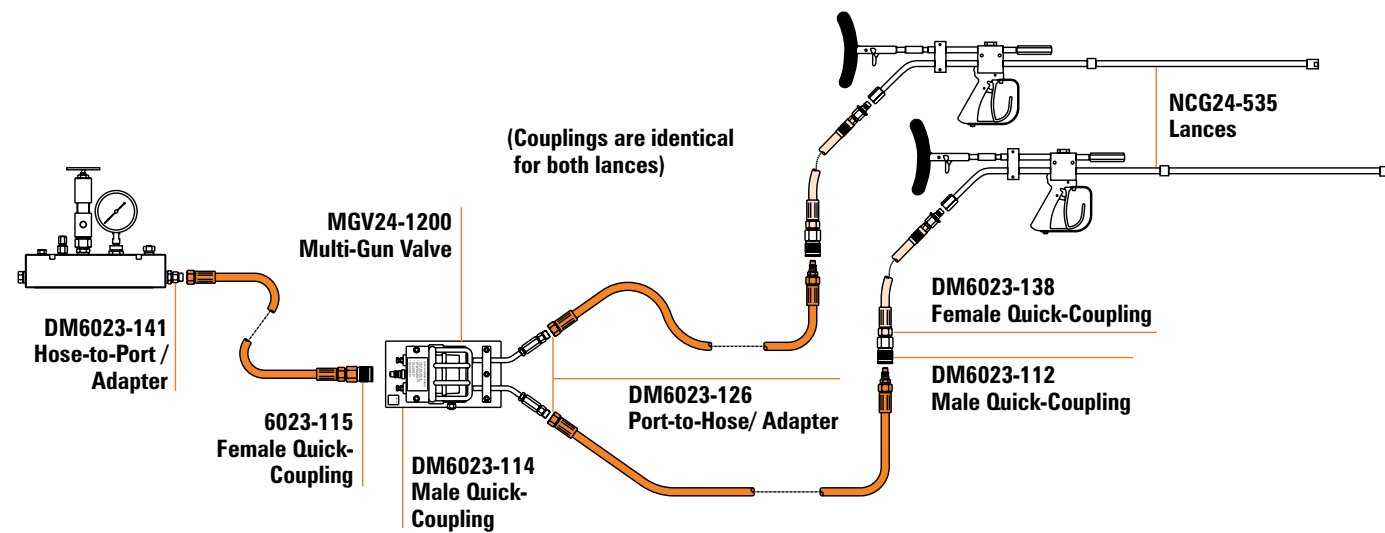
Single Lance



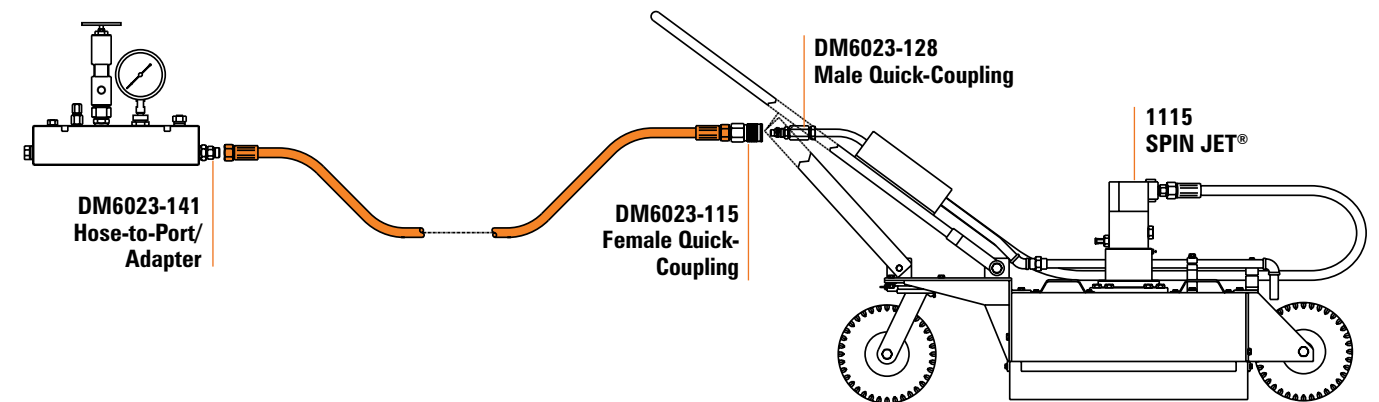
Foot Control



Dual Lance



SPIN JET® Floor and Grate Cleaner



Note: Whip Check can be used on all hose connections, not just hose-to-hose.

LEGEND

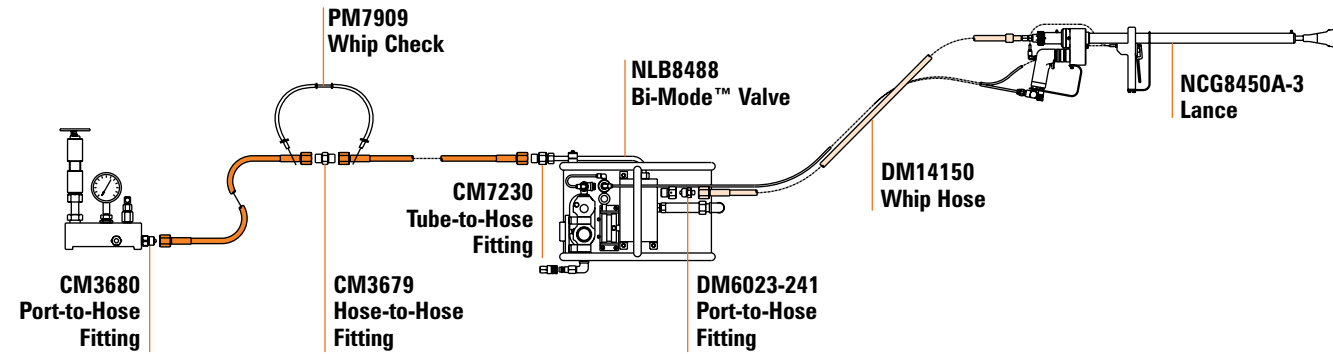
- NP20-1/2-50F
Hose with Swivel Nuts
- BM19662
Whip Hose

Accessory	Page
Lances	12-19
Foot Controls	26-27
SPIN JET®	56-57
Hoses	74-75
Couplings and Fittings	76-85
Whip Check	86-87

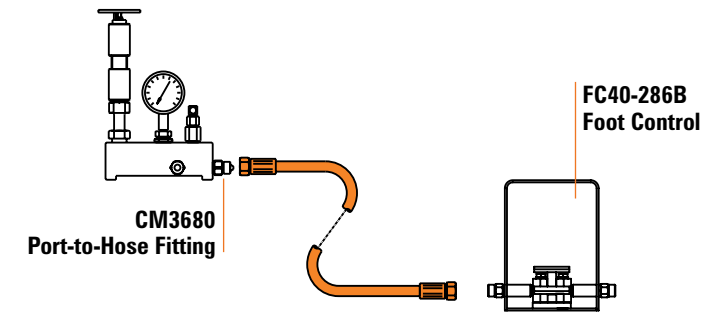
Reference Section

Typical hook-ups, 40,000 psi (2,760 bar)

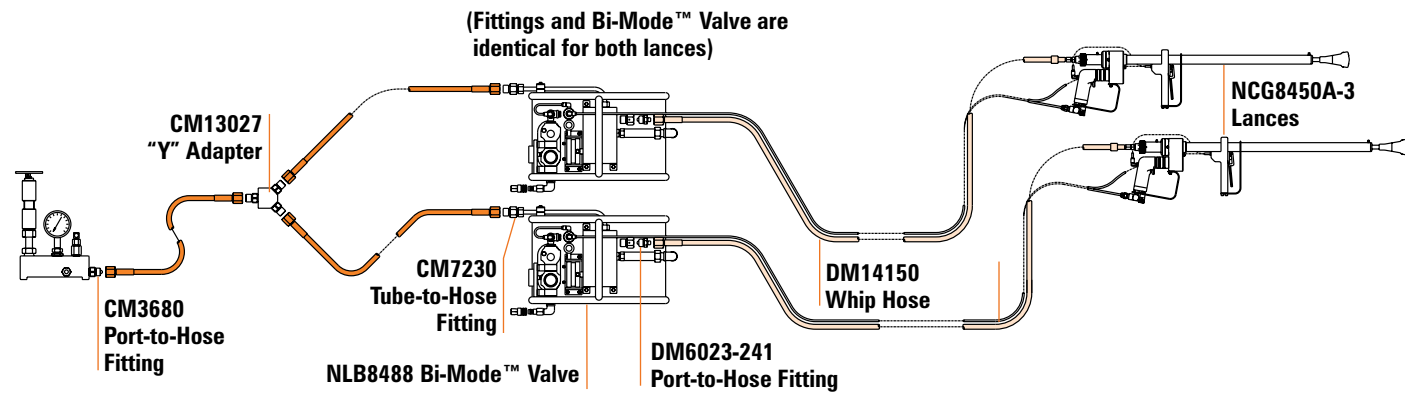
Single Lance



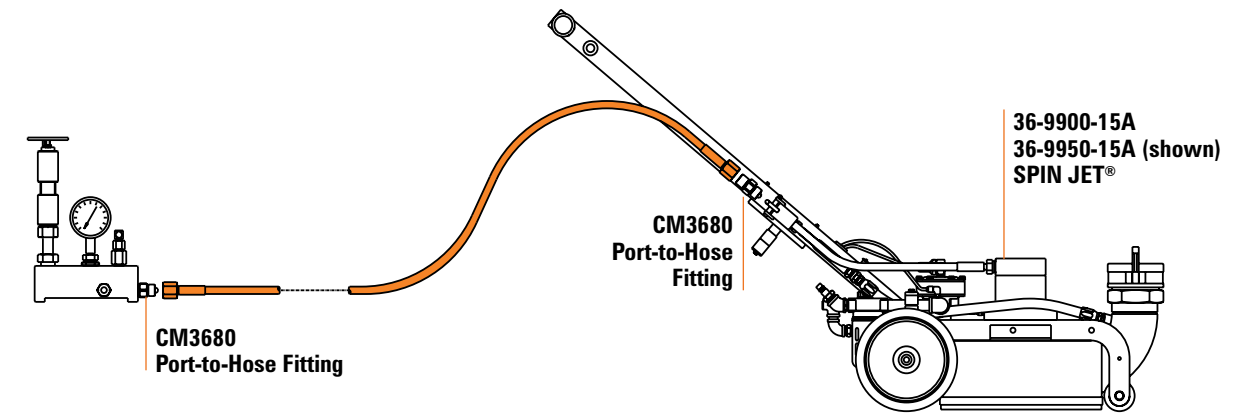
Foot Control



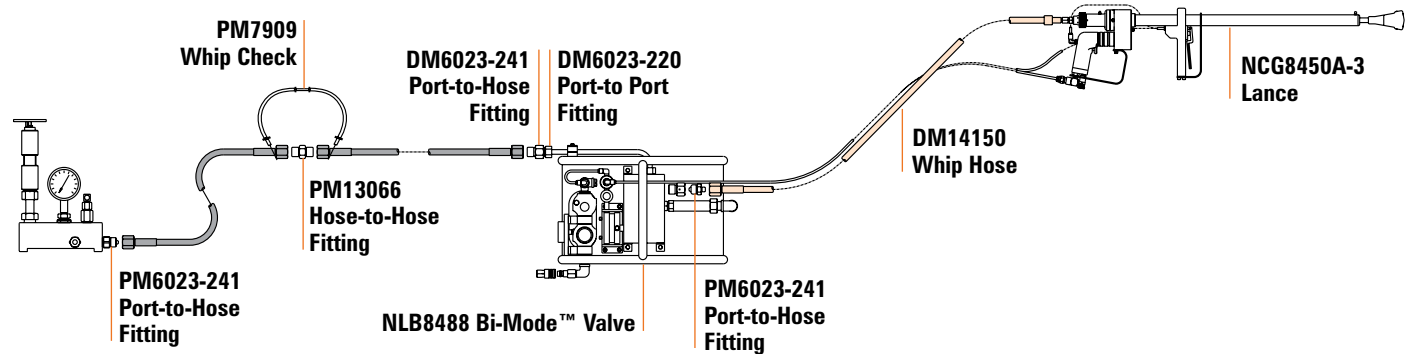
Dual Lances



SPIN JET® Floor and Grate Cleaner



Single Lance with Typical NLB 4075 Pump



LEGEND

 NP40-5/16-50F Hose	 DM14150 Whip Hose
 NP40-3/16-50F Hose	

Accessory	Page
Lances	12-19
Bi-Mode™ Valves	16
Foot Controls	26-27
"Y" Adapter	28
SPIN JET®	56-57
Hoses	74-75
Couplings and Fittings	76-85
Whip Check	86-87

Reference Section

Nozzle Flow Chart (Theoretical) for NLB 0° Sapphire Orifice Nozzle Inserts - GPM (LPM)

BN3539-XX, BN-10095-XX and BM27289-XX

Nozzle No.	Pressure PSI (BAR)							
	20,000 (1,380)	22,000 (1,518)	24,000 (1,656)	25,000 (1,725)	26,000 (1,794)	28,000 (1,932)	30,000 (2,070)	32,000 (2,208)
-6	0.11 (0.42)	0.11 (0.42)	0.12 (0.45)	0.12 (0.45)	0.12 (0.45)	0.13 (0.49)	0.13 (0.49)	0.14 (0.53)
-7	0.15 (0.57)	0.15 (0.57)	0.16 (0.61)	0.17 (0.64)	0.17 (0.64)	0.17 (0.64)	0.18 (0.68)	0.19 (0.72)
-8	0.19 (0.72)	0.20 (0.76)	0.21 (0.79)	0.22 (0.83)	0.22 (0.83)	0.23 (0.87)	0.24 (0.91)	0.24 (0.91)
-9	0.24 (0.91)	0.26 (0.98)	0.27 (1.02)	0.27 (1.02)	0.28 (1.06)	0.29 (1.10)	0.30 (1.14)	0.31 (1.17)
-10	0.30 (1.14)	0.32 (1.20)	0.33 (1.25)	0.34 (1.28)	0.34 (1.30)	0.36 (1.35)	0.37 (1.40)	0.38 (1.45)
-11	0.37 (1.38)	0.38 (1.45)	0.40 (1.51)	0.41 (1.54)	0.42 (1.58)	0.43 (1.64)	0.45 (1.70)	0.46 (1.75)
-12	0.43 (1.64)	0.46 (1.73)	0.48 (1.80)	0.49 (1.84)	0.50 (1.87)	0.51 (1.95)	0.53 (2.01)	0.55 (2.08)
-13	0.51 (1.93)	0.54 (2.03)	0.56 (2.11)	0.57 (2.16)	0.58 (2.20)	0.60 (2.28)	0.62 (2.36)	0.65 (2.44)
-14	0.59 (2.24)	0.62 (2.35)	0.65 (2.45)	0.66 (2.50)	0.67 (2.55)	0.70 (2.65)	0.72 (2.74)	0.75 (2.83)
-15	0.68 (2.60)	0.71 (2.70)	0.74 (2.82)	0.76 (2.87)	0.77 (2.93)	0.80 (3.04)	0.83 (3.15)	0.86 (3.25)
-16	0.77 (2.92)	0.81 (3.07)	0.85 (3.20)	0.86 (3.27)	0.88 (3.34)	0.91 (3.46)	0.95 (3.58)	0.98 (3.70)
-17	0.87 (3.30)	0.92 (3.46)	0.96 (3.62)	0.98 (3.69)	0.99 (3.76)	1.03 (3.91)	1.07 (4.04)	1.10 (4.18)
-18	0.98 (3.70)	1.03 (3.88)	1.07 (4.05)	1.09 (4.14)	1.12 (4.22)	1.16 (4.38)	1.20 (4.53)	1.24 (4.68)
-19	1.09 (4.12)	1.14 (4.33)	1.19 (4.52)	1.22 (4.61)	1.24 (4.70)	1.29 (4.88)	1.33 (5.05)	1.38 (5.22)
-20	1.21 (4.57)	1.27 (4.79)	1.32 (5.01)	1.35 (5.11)	1.38 (5.21)	1.43 (5.41)	1.48 (5.60)	1.53 (5.78)
-21	1.33 (5.04)	1.40 (5.28)	1.46 (5.52)	1.49 (5.63)	1.52 (5.75)	1.58 (5.96)	1.63 (6.17)	1.68 (6.37)
-22	1.46 (5.53)	1.53 (5.80)	1.60 (6.06)	1.63 (6.19)	1.67 (6.31)	1.73 (6.54)	1.79 (6.77)	1.85 (7.00)
-23	1.60 (6.05)	1.68 (6.34)	1.75 (6.62)	1.79 (6.76)	1.82 (6.89)	1.89 (7.15)	1.96 (7.40)	2.02 (7.65)
-24	1.74 (6.58)	1.82 (6.90)	1.91 (7.21)	1.94 (7.36)	1.98 (7.50)	2.06 (7.79)	2.13 (8.06)	2.20 (8.32)
-25	1.88 (7.10)	1.98 (7.49)	2.07 (7.82)	2.11 (7.98)	2.15 (8.14)	2.23 (8.45)	2.31 (8.75)	2.39 (9.04)
-26	2.04 (7.73)	2.14 (8.10)	2.24 (8.46)	2.28 (8.63)	2.33 (8.81)	2.42 (9.14)	2.50 (9.46)	2.58 (9.77)
-27	2.20 (8.33)	2.60 (9.86)	2.41 (9.13)	2.46 (9.31)	2.51 (9.50)	2.60 (9.86)	2.70 (10.20)	2.78 (10.54)
-28	2.37 (8.96)	2.48 (9.39)	2.59 (9.81)	2.65 (10.02)	2.70 (10.21)	2.80 (10.60)	2.90 (10.97)	2.99 (11.33)
-29	2.54 (9.61)	2.66 (10.08)	2.78 (10.53)	2.84 (10.74)	2.90 (10.96)	3.00 (11.37)	3.11 (11.77)	3.21 (12.15)
-30	2.72 (10.28)	2.85 (10.79)	2.98 (11.26)	3.04 (11.50)	3.10 (11.73)	3.22 (12.17)	3.33 (12.60)	3.44 (13.01)
-31	2.90 (11.00)	3.04 (11.52)	3.18 (12.03)	3.24 (12.28)	3.31 (12.52)	3.43 (12.99)	3.55 (13.45)	3.67 (13.89)
-32	3.09 (11.70)	3.24 (12.27)	3.39 (12.82)	3.46 (13.08)	3.53 (13.34)	3.66 (13.85)	3.79 (14.33)	3.91 (14.80)
-33	3.29 (12.45)	3.45 (13.05)	3.60 (13.63)	3.68 (13.91)	3.75 (14.19)	3.89 (14.72)	4.03 (15.24)	4.16 (15.74)
-34	3.49 (13.21)	3.66 (13.85)	3.82 (14.47)	3.90 (14.77)	3.98 (15.06)	4.13 (15.63)	4.27 (16.18)	4.41 (16.71)
-35	3.70 (14.00)	3.88 (14.68)	4.05 (15.33)	4.14 (15.65)	4.22 (15.96)	4.38 (16.56)	4.53 (17.14)	4.68 (17.71)
-36	3.91 (14.81)	4.10 (15.53)	4.29 (16.22)	4.37 (16.56)	4.46 (16.89)	4.63 (17.53)	4.79 (18.14)	4.95 (18.73)
-37	4.13 (15.64)	4.34 (16.41)	4.53 (17.14)	4.62 (17.49)	4.71 (17.84)	4.89 (18.51)	5.06 (19.16)	5.23 (19.79)
-38	4.36 (16.50)	4.57 (17.31)	4.78 (18.08)	4.87 (18.45)	4.97 (18.82)	5.16 (19.52)	5.34 (20.21)	5.51 (20.87)
-39	4.59 (17.38)	4.82 (18.23)	5.04 (19.07)	5.13 (19.43)	5.24 (19.82)	5.43 (20.56)	5.62 (21.29)	5.81 (21.99)
-40	4.83 (18.28)	5.07 (19.18)	5.29 (20.03)	5.40 (20.44)	5.51 (20.85)	5.72 (21.64)	5.92 (22.39)	6.11 (23.13)

Nozzle No.	Pressure PSI (BAR)							
	33,000 (2,277)	34,000 (2,346)	35,000 (2,415)	36,000 (2,484)	37,000 (2,553)	38,000 (2,622)	39,000 (2,691)	40,000 (2,760)
-6	0.14 (0.53)	0.14 (0.53)	0.14 (0.53)	0.15 (0.57)	0.15 (0.57)	0.15 (0.57)	0.15 (0.57)	0.15 (0.57)
-7	0.19 (0.72)	0.19 (0.72)	0.20 (0.76)	0.20 (0.76)	0.20 (0.76)	0.20 (0.76)	0.21 (0.79)	0.21 (0.79)
-8	0.25 (0.95)	0.25 (0.95)	0.26 (0.98)	0.26 (0.98)	0.26 (0.98)	0.27 (1.02)	0.27 (1.02)	0.27 (1.02)
-9	0.31 (1.17)	0.32 (1.21)	0.32 (1.21)	0.33 (1.25)	0.33 (1.25)	0.34 (1.29)	0.34 (1.29)	0.35 (1.32)
-10	0.39 (1.47)	0.39 (1.49)	0.40 (1.51)	0.40 (1.54)	0.41 (1.55)	0.42 (1.57)	0.42 (1.59)	0.43 (1.61)
-11	0.47 (1.78)	0.48 (1.80)	0.48 (1.83)	0.49 (1.86)	0.50 (1.88)	0.50 (1.90)	0.51 (1.93)	0.52 (1.95)
-12	0.56 (2.11)	0.57 (2.14)	0.58 (2.18)	0.58 (2.21)	0.59 (2.24)	0.60 (2.27)	0.61 (2.30)	0.61 (2.33)
-13	0.66 (2.48)	0.67 (2.52)	0.68 (2.56)	0.68 (2.59)	0.69 (2.62)	0.70 (2.66)	0.71 (2.69)	0.72 (2.73)
-14	0.76 (2.88)	0.77 (2.92)	0.78 (2.96)	0.79 (3.00)	0.80 (3.04)	0.81 (3.08)	0.83 (3.12)	0.84 (3.17)
-15	0.87 (3.30)	0.89 (3.35)	0.90 (3.40)	0.91 (3.45)	0.92 (3.49)	0.94 (3.54)	0.95 (3.59)	0.96 (3.63)
-16	0.99 (3.76)	1.01 (3.81)	1.02 (3.87)	1.04 (3.93)	1.05 (3.97)	1.06 (4.03)	1.08 (4.08)	1.09 (4.13)
-17	1.12 (4.24)	1.14 (4.30)	1.15 (4.37)	1.17 (4.43)	1.19 (4.49)	1.20 (4.55)	1.22 (4.61)	1.23 (4.67)
-18	1.26 (4.75)	1.28 (4.83)	1.29 (4.90)	1.31 (4.97)	1.33 (5.03)	1.35 (5.10)	1.36 (5.17)	1.38 (5.23)
-19	1.40 (5.30)	1.42 (5.38)	1.44 (5.45)	1.46 (5.53)	1.48 (5.60)	1.50 (5.68)	1.52 (5.76)	1.54 (5.83)
-20	1.55 (5.87)	1.57 (5.96)	1.60 (6.05)	1.62 (6.13)	1.64 (6.21)	1.66 (6.29)	1.68 (6.38)	1.71 (6.46)
-21	1.71 (6.47)	1.74 (6.57)	1.76 (6.67)	1.79 (6.76)	1.81 (6.85)	1.83 (6.94)	1.86 (7.03)	1.88 (7.12)
-22	1.88 (7.10)	1.91 (7.21)	1.93 (7.32)	1.96 (7.42)	1.99 (7.51)	2.01 (7.62)	2.04 (7.72)	2.06 (7.82)
-23	2.05 (7.76)	2.08 (7.88)	2.11 (7.99)	2.14 (8.11)	2.17 (8.21)	2.20 (8.32)	2.23 (8.43)	2.26 (8.54)
-24	2.23 (8.45)	2.27 (8.58)	2.30 (8.71)	2.33 (8.83)	2.36 (8.94)	2.39 (9.06)	2.43 (9.18)	2.46 (9.30)
-25	2.42 (9.18)	2.46 (9.31)	2.50 (9.45)	2.53 (9.58)	2.56 (9.70)	2.60 (9.83)	2.63 (9.96)	2.67 (10.09)
-26	2.62 (9.92)	2.66 (10.07)	2.70 (10.22)	2.74 (10.36)	2.77 (10.49)	2.81 (10.64)	2.85 (10.78)	2.88 (10.92)
-27	2.83 (10.70)	2.87 (10.86)	2.91 (11.02)	2.95 (11.18)	2.99 (11.32)	3.03 (11.47)	3.07 (11.62)	3.11 (11.77)
-28	3.04 (11.51)	3.09 (11.68)	3.13 (11.85)	3.18 (12.02)	3.22 (12.17)	3.26 (12.34)	3.30 (12.50)	3.34 (12.66)
-29	3.26 (12.34)	3.31 (12.53)	3.36 (12.71)	3.41 (12.89)	3.45 (13.05)	3.50 (13.23)	3.54 (13.41)	3.59 (13.58)
-30	3.49 (13.21)	3.54 (13.41)	3.59 (13.60)	3.65 (13.80)	3.69 (13.97)	3.74 (14.16)	3.79 (14.35)	3.84 (14.53)
-31	3.73 (14.11)	3.78 (14.32)	3.84 (14.53)	3.89 (14.73)	3.94 (14.92)	3.99 (15.12)	4.05 (15.32)	4.10 (15.52)
-32	3.97 (15.03)	4.03 (15.26)	4.09 (15.48)	4.15 (15.70)	4.20 (15.89)	4.26 (16.11)	4.31 (16.33)	4.37 (16.54)
-33	4.22 (15.98)	4.29 (16.23)	4.35 (16.46)	4.41 (16.70)	4.47 (16.90)	4.53 (17.13)	4.59 (17.36)	4.64 (17.59)
-34	4.48 (16.97)	4.55 (17.22)	4.62 (17.48)	4.68 (17.72)	4.74 (17.94)	4.80 (18.19)	4.87 (18.43)	4.93 (18.67)
-35	4.75 (17.98)	4.82 (18.25)	4.89 (18.52)	4.96 (18.78)	5.02 (19.01)	5.09 (19.27)	5.16 (19.53)	5.22 (19.78)
-36	5.03 (19.02)	5.10 (19.31)	5.18 (19.59)	5.25 (19.87)	5.32 (20.12)	5.39 (20.39)	5.46 (20.66)	5.53 (20.93)
-37	5.31 (20.10)	5.39 (20.40)	5.47 (20.70)	5.55 (21.00)	5.61 (21.25)	5.69 (21.54)	5.76 (21.83)	5.84 (22.11)
-38	5.60 (21.20)	5.68 (21.51)	5.77 (21.83)	5.85 (22.14)	5.92 (22.41)	6.00 (22.72)	6.08 (23.02)	6.16 (23.32)
-39	5.90 (22.33)	5.99 (22.66)	6.08 (22.99)	6.16 (23.32)	6.24 (23.61)	6.32 (23.93)	6.40 (24.25)	6.49 (24.56)
-40	6.21 (23.49)	6.30 (23.84)	6.39 (24.19)	6.48 (24.53)	6.56 (24.84)	6.65 (25.17)	6.74 (25.51)	6.82 (25.84)

Reference Section

Nozzle Flow Chart (Theoretical) for NLB 0° Carbide Orifice Nozzles — GPM (LPM)

BM19048-XXX

Nozzle No.	Pressure PSI (BAR)			
	5,000 (345)	10,000 (690)	15,000 (1,035)	20,000 (1,380)
0.25	0.2 (0.76)	0.3 (1.14)	0.3 (1.14)	0.4 (1.51)
0.30	0.3 (1.14)	0.4 (1.51)	0.5 (1.89)	0.6 (2.27)
0.35	0.4 (1.51)	0.5 (1.89)	0.7 (2.65)	0.8 (3.03)
0.40	0.5 (1.89)	0.7 (2.65)	0.9 (3.41)	1.0 (3.79)
0.50	0.8 (3.03)	1.1 (4.16)	1.4 (5.30)	1.6 (6.06)
0.60	1.1 (4.16)	1.6 (6.06)	2.0 (7.57)	2.3 (8.71)
0.70	1.5 (5.68)	2.2 (8.33)	2.7 (10.22)	3.1 (11.73)
0.80	2.0 (7.57)	2.8 (10.60)	3.5 (13.25)	4.0 (15.14)
0.90	2.5 (9.46)	3.6 (13.63)	4.4 (16.65)	5.1 (19.30)
1.00	3.1 (11.73)	4.4 (16.65)	5.4 (20.44)	6.3 (23.85)
1.10	3.8 (14.38)	5.4 (20.44)	6.6 (24.98)	7.6 (28.77)
1.20	4.5 (17.03)	6.4 (24.22)	7.8 (29.52)	9.0 (34.07)
1.30	5.3 (20.06)	7.5 (28.39)	9.2 (34.82)	10.6 (40.12)
1.40	6.2 (23.47)	8.7 (32.93)	10.7 (40.50)	12.3 (46.56)
1.50	7.1 (26.87)	10.0 (37.85)	12.2 (46.18)	14.1 (53.37)
1.60	8.0 (30.28)	11.4 (43.15)	13.9 (52.61)	16.1 (60.94)
1.70	9.1 (34.44)	12.8 (48.45)	15.7 (59.42)	18.1 (68.51)
1.80	10.2 (38.61)	14.4 (54.50)	17.6 (66.62)	20.3 (76.84)
1.90	11.3 (42.77)	16.0 (60.56)	19.6 (74.19)	22.7 (85.92)
2.00	12.6 (47.69)	17.8 (67.37)	21.8 (82.51)	25.1 (95.00)
2.10	13.8 (52.23)	19.6 (74.19)	24.0 (90.84)	27.7 (104.84)
2.20	15.2 (57.53)	21.5 (81.38)	26.3 (99.55)	30.4 (115.06)
2.30	16.6 (62.83)	23.5 (88.95)	28.8 (109.01)	33.2 (125.66)
2.40	18.1 (68.51)	25.6 (96.90)	31.3 (118.47)	36.2 (137.02)
2.50	19.6 (74.19)	27.8 (105.22)	34.0 (128.69)	39.2 (148.37)
2.60	21.2 (80.24)	30.0 (113.55)	36.8 (139.29)	42.5 (160.86)
2.70	22.9 (86.68)	32.4 (122.63)	39.6 (149.89)	45.8 (173.35)
2.80	24.6 (93.11)	34.8 (131.72)	42.6 (161.24)	49.2 (186.22)
2.90	26.4 (99.92)	37.3 (141.18)	45.7 (172.97)	52.8 (199.85)
3.00	28.3 (107.12)	40.0 (151.40)	48.9 (185.09)	56.5 (213.85)
3.10	30.2 (114.31)	42.7 (161.62)	52.3 (197.96)	60.3 (228.24)
3.20	32.2 (121.88)	45.5 (172.22)	55.7 (210.82)	64.3 (243.38)
3.30	34.2 (129.45)	48.4 (183.19)	59.2 (224.07)	68.4 (258.89)
3.40	36.3 (137.40)	51.3 (194.17)	62.9 (238.08)	72.6 (274.79)
3.50	38.5 (145.72)	54.4 (205.90)	66.6 (252.08)	76.9 (291.07)
3.60	40.7 (154.05)	57.5 (217.64)	70.5 (266.84)	81.4 (308.01)
3.70	43.0 (162.76)	60.8 (230.13)	74.5 (281.98)	86.0 (325.51)
3.80	45.3 (171.46)	64.1 (242.62)	78.5 (297.12)	90.7 (343.30)
3.90	47.8 (180.92)	67.5 (255.49)	82.7 (313.02)	95.5 (361.47)
4.00	50.2 (190.01)	71.0 (268.74)	87.0 (329.30)	100.5 (380.39)
4.20	55.44 (209.88)	78.41 (296.81)	96.03 (363.52)	110.89 (419.76)
4.30	58.12 (219.99)	82.19 (311.11)	100.66 (381.04)	116.23 (439.98)
4.50	63.65 (240.93)	90.01 (340.73)	110.24 (417.30)	127.29 (481.86)
4.70	69.43 (262.82)	98.19 (371.69)	120.26 (455.22)	138.86 (525.65)
5.00	78.58 (297.45)	111.12 (420.65)	136.10 (515.19)	157.15 (594.89)

Nozzle Flow Charts (Theoretical) for - GPM (LPM)

NLB 15° Fan Nozzles (S-8)

Part No.	Pressure PSI (BAR)								
	20,000 (1,380)	21,000 (1,449)	22,000 (1,518)	23,000 (1,587)	24,000 (1,656)	25,000 (1,725)	26,000 (1,794)	27,000 (1,863)	28,000 (1,932)
S-8-15005	1.09 (4.13)	1.12 (4.24)	1.15 (4.35)	1.17 (4.43)	1.20 (4.54)	1.22 (4.62)	1.25 (4.73)	1.27 (4.81)	1.32 (5.00)
S-8-15006	1.48 (5.60)	1.52 (5.75)	1.56 (5.91)	1.59 (6.02)	1.63 (6.17)	1.66 (6.28)	1.69 (6.40)	1.73 (6.55)	1.79 (6.78)
S-8-1501	2.28 (8.63)	2.34 (8.86)	2.39 (9.05)	2.44 (9.24)	2.50 (9.46)	2.55 (9.65)	2.60 (9.84)	2.65 (10.03)	2.76 (10.45)
S-8-15015	3.24 (12.26)	3.32 (12.57)	3.40 (12.87)	3.48 (13.17)	3.55 (13.44)	3.63 (13.74)	3.70 (14.00)	3.77 (14.27)	3.90 (14.76)
S-8-1502	4.38 (16.59)	4.49 (17.00)	4.59 (17.37)	4.69 (17.75)	4.78 (18.09)	4.89 (18.51)	4.99 (18.89)	5.09 (19.27)	5.27 (19.95)
S-8-1503	6.25 (23.66)	6.40 (24.22)	6.55 (24.79)	6.70 (25.36)	6.84 (25.89)	6.98 (26.42)	7.12 (26.95)	7.26 (27.48)	7.52 (28.46)
S-8-1504	11.04 (41.79)	11.32 (42.85)	11.59 (43.87)	11.85 (44.85)	12.10 (45.80)	12.35 (46.75)	12.59 (47.65)	12.83 (48.56)	13.30 (50.34)

Part No.	Pressure PSI (BAR)								
	29,000 (2,001)	30,000 (2,070)	31,000 (2,139)	32,000 (2,208)	33,000 (2,277)	34,000 (2,346)	35,000 (2,415)	36,000 (2,484)	40,000 (2,760)
S-8-15005	1.32 (5.00)	1.34 (5.07)	1.36 (5.15)	1.38 (5.22)	1.40 (5.30)	1.42 (5.38)	1.45 (5.49)	1.47 (5.56)	1.52 (5.75)
S-8-15006	1.79 (6.78)	1.82 (6.89)	1.85 (7.00)	1.88 (7.12)	1.91 (7.23)	1.94 (7.34)	1.97 (7.46)	2.00 (7.57)	2.13 (8.06)
S-8-1501	2.76 (10.45)	2.79 (10.56)	2.84 (10.75)	2.88 (10.90)	2.93 (11.09)	2.97 (11.24)	3.02 (11.43)	3.06 (11.58)	3.24 (12.26)
S-8-15015	3.90 (14.76)	3.98 (15.06)	4.04 (15.29)	4.10 (15.52)	4.17 (15.78)	4.23 (16.01)	4.29 (16.24)	4.35 (16.47)	4.56 (17.26)
S-8-1502	5.27 (19.95)	5.36 (20.29)	5.45 (20.63)	5.53 (20.93)	5.62 (21.27)	5.71 (21.61)	5.79 (21.92)	5.87 (22.22)	6.17 (23.35)
S-8-1503	7.52 (28.46)	7.65 (28.96)	7.77 (29.41)	7.90 (29.90)	8.02 (30.36)	8.14 (30.81)	8.26 (31.26)	8.38 (31.72)	8.87 (33.57)
S-8-1504	13.30 (50.34)	13.53 (51.21)	13.75 (52.04)	13.97 (52.88)	14.19 (53.71)	14.40 (54.50)	14.61 (55.30)	14.82 (56.09)	15.66 (59.27)

Reference Section

Pressure Drop (Theoretical) Calculated for 50-Foot Sections

PSI

GPM	Hose Diameter					
	3/16"	1/4"	3/8"	1/2"	3/4"	1"
2	332	82	11	3		
4	1098	295	41	10	1	
6	2337	625	87	22	3	
8	4320	1064	148	36	5	1
10	6528	1608	223	55	8	2
12	9147	2253	313	77	11	3
14	12165	2997	416	103	14	4
16		3837	533	132	18	5
18		4771	662	164	23	6
20		5798	805	198	28	7
25		8760	1216	299	42	10
30		12275	1704	419	58	14
35			2266	559	77	19
40			2901	715	99	24
45			3607	889	123	31
50			4384	1080	150	37
55			5229	1288	178	44
60			6142	1514	210	52
65			7123	1755	244	61
70			8170	2013	279	69
75			9282	2287	318	77
80			10459	2576	359	88
85				2882	399	97
90				3204	445	110
95				3542	492	120
100				3993	541	133
110				4644	646	158
120				5419	758	187
130				6325	879	216
140				7256	1009	248
150				8243	1144	281

BAR

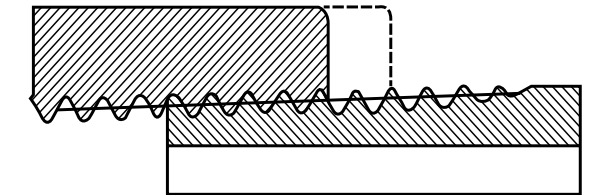
LPM	Hose Diameter					
	4.7 mm	6.4 mm	9.5 mm	13 mm	19 mm	25.4 mm
7.6	22.91	5.66	0.76	0.21		
15.1	75.76	20.36	2.83	0.69	0.07	
22.7	161.25	43.13	6.00	1.52	0.21	
30.3	298.08	73.42	10.21	2.48	0.35	0.07
37.9	450.43	110.95	15.39	3.80	0.55	0.14
45.4	631.14	155.46	21.60	5.31	0.76	0.21
53.0	839.39	206.79	28.70	7.11	0.97	0.28
60.6		264.75	36.78	9.11	1.24	0.35
68.1		329.20	45.68	11.32	1.59	0.41
75.7		400.06	55.55	13.66	1.93	0.48
94.6		604.44	83.90	20.63	2.90	0.69
113.6		846.98	117.58	28.91	4.00	0.97
132.5			156.35	38.57	5.31	1.31
151.4			200.17	49.34	6.83	1.66
170.3			248.88	61.34	8.49	2.14
189.3			302.50	74.52	10.35	2.55
208.2			360.80	88.87	12.28	3.04
227.1			423.80	104.47	14.49	3.59
246.0			491.49	121.10	16.84	4.21
265.0			563.73	138.90	19.25	4.76
283.9			640.46	157.80	21.94	5.31
302.8			721.67	177.74	24.77	6.07
321.7				198.86	27.53	6.69
340.7				221.08	30.71	7.59
359.6				244.40	33.95	8.28
378.5				275.52	37.33	9.18
416.4				320.44	44.57	10.90
454.2				373.91	52.30	12.90
492.1				436.43	60.65	14.90
529.9				500.66	69.62	17.11
567.8				568.77	78.94	19.39

Water Jet System Connections

National Pipe Tapered (NPT)

NPT fittings are threaded with a maximum working pressure of 10,000 psi (690 bar).

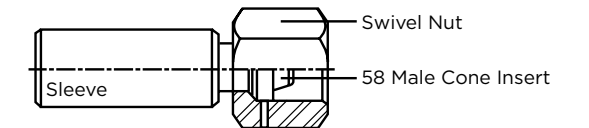
Thread Sizes
1/8"-27
1/4"-18
3/8"-18
1/2"-14
3/4"-14
1"-11.5



Type "M" Swivel Nut Connection

The Type "M" Swivel End Fitting is a swivel nut joint with a 58° male cone hose insert. Their maximum working pressure rating is 20,000 psi (1,380 bar).

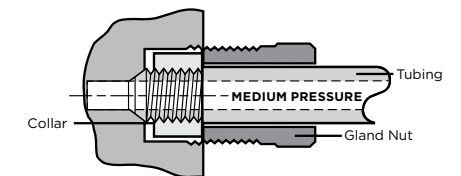
Thread Sizes Determined by Hose Type
9/16"-18
7/8"-14
3/4"-16
1"-12
1-5/16"-12



Medium-Pressure Connection

Medium-Pressure (sometimes known as "Slimline") Fittings have a 58°/60° coned and threaded tubing design. With large bore sizes, their maximum working pressure rating is 20,000 psi (1,380 bar).

Tube O.D.	Tube I.D.	Collar Thread	Gland Nut Thread
1/4"	.11"	1/4" - 28 LH	7/16" - 20
3/8"	.20"	3/8" - 24 LH	9/16" - 18
9/16"	.31"	9/16" - 18 LH	13/16" - 16
3/4"	.43"	3/4" - 16 LH	3/4" - 14 NPS
1"	.56"	1" - 14 LH	1-3/8" - 12

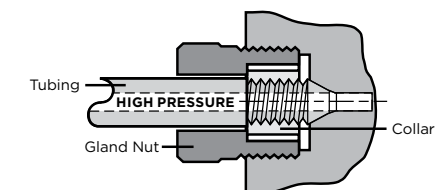


Identification is by tubing O.D.

High-Pressure Connection

A High-Pressure Fitting is a 58°/60° coned and threaded tubing design. With a small bore size, the maximum working pressure rating is 60,000 psi (4,140 bar).

Tube O.D.	Tube I.D.	Collar Thread	Gland Nut Thread
1/4"	.08"	1/4" - 28 LH	9/16" - 18
3/8"	.125"	3/8" - 24 LH	3/4" - 16
9/16"	.31"	9/16" - 18 LH	1-1/8" - 12



Identification is by tubing O.D.

English-Metric Conversions

Metric Equivalents

Measurement	Conversion	Example
Length	1 in. = 25.4 mm	12 in. x 25.4 = 304.8 mm
	1 in. = .0254 m	120 in. x .0254 = 3.05 m
	1 ft. = .3048 m	12 ft. x .3048 = 3.68 m
	1 mm = .03937 in.	100 mm x .03937 = 3.94 in.
	1 m = 39.37 in.	10 m x 39.37 = 393.7 in.
Weight	1 m = 3.281 ft.	10 m x 3.281 = 32.81 ft.
	1 lb. = .454 kg	10 lbs. x .454 = 4.54 kg
Pressure	1 kg = 2.205 lbs.	10 kg x 2.205 = 22.05 lbs.
	1 psi = .069 bar	20,000 psi x .069 = 1,380 bar
Flow	1 bar = 14.5 psi	1,000 bar x 14.5 = 14,500 psi
	1 gpm = 3.785 lpm	30 gpm x 3.785 = 113.55 lpm
Force	1 lpm = .264 gpm	100 lpm x .264 = 26.4 gpm
	1 lb. (f) = 4.44 N	100 lbs. (f) x 4.44 = 444 N
Power	1 N = .2248 lbs. (f)	900 N x .2248 = 202.32 lbs. (f)
	1 hp = .7457 kW	50 hp x .7457 = 37.29 kW
Air Flow	1 kW = 1.341 hp	50 kW x 1.341 = 67.05 hp
	1 cfm = .47195 l/s	10 cfm x .47195 = 4.72 l/s
	1 l/s = 2.1189 cfm	10 l/s x 2.1189 = 21.2 cfm

Quick-Reference Pressure Chart

U.S.	Metric	U.S.	Metric
40,000 psi	2,760 bar	12,000 psi	828 bar
36,000 psi	2,484 bar	11,000 psi	759 bar
35,000 psi	2,415 bar	10,000 psi	690 bar
32,000 psi	2,208 bar	8,000 psi	552 bar
30,000 psi	2,070 bar	6,000 psi	414 bar
24,000 psi	1,656 bar	5,000 psi	345 bar
20,000 psi	1,380 bar	4,000 psi	276 bar
17,000 psi	1,173 bar	3,000 psi	207 bar
15,000 psi	1,035 bar	2,000 psi	138 bar
13,000 psi	897 bar	1,000 psi	69 bar

Hydraulic Power Calculations

ENGLISH

$$\text{hhp} = \frac{\text{gpm} \times \text{psi}}{1715}$$

METRIC

$$\text{hkW} = \frac{\text{lpm} \times \text{bar}}{600}$$

Back Thrust Calculations

$$\text{lb.f} = .052 \times \text{gpm} \times \sqrt{\text{psi}}$$

$$N = .2357 \times \text{lpm} \times \sqrt{\text{bar}}$$

DUE TO NLB'S CONTINUING PROGRAM OF PRODUCT IMPROVEMENT, SPECIFICATIONS IN THIS CATALOG ARE SUBJECT TO CHANGE WITHOUT NOTICE.



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