Liquid End Sheet

LE-20PBA/ LE-66PBA/ LE-76PBA/ LE-86PBA

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. *Note: See parts list for materials of construction*

A. INSTALLING INJECTION CHECK VALVE

- 1. The purpose of the injection check valve is to prevent backflow from the treated line.
- 2. A ¹/₂" NPT female fitting with sufficient depth will accept the injection check valve.
- 3. To insure correct seating of the ball inside the injection check valve, the injection check valve should be installed upwards (vertically) into bottom of the pipe.

B. CONNECTING DISCHARGE TUBING

NOTE: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Slide the small end of the coupling nut onto tubing.
- 3. Push tubing on the valve housing nozzle so that tubing flares out and butts up against valve housing and will not go any further.
- 4. Slide the coupling nut to the threads and engage. While pushing the tubing onto the valve housing nozzle, tighten the coupling nut by hand until tubing is held securely in place.

Excessive force will crack or distort fittings. DO NOT USE PIPE WRENCH.

C.CONNECTING SUCTION TUBING

Flooded Section (Preferred Method)

- 1. Mount pump 12" above the floor with the head extending beyond mounting surface so the suction tubing curves gently away from the pump to prevent kinking.
- 2. Install ¹/₂" or ³/₄" NPT shut off valve, with at least ³/₄" clear way through the valve, into reservoir. This is necessary to stop flow from reservoir while servicing the pump.
- 3. Install barbed connector (one of two supplied) into the valve. Attach ${}^{15}\!/_{16}$ " O.D. Vinyl tubing to the barbed connector. Secure with the hose clamp provided (use shortest length of suction tubing necessary).

4. Connect the other end of the suction fitting at the pump and secure with the hose clamp provided.

D. CONNECTING SUCTION TUBING Suction Lift (Pump Sitting on a Barrel: Maximum Lift 3.5 ft)

- 1. Connect the suction tubing to the barbed suction fitting on the pump. Secure with the hose clamp provided.
- 2. Cut tubing so it will only reach within 1"of the bottom of the barrel.
- 3. If tubing curl is a problem, fabricate a 1" Polypropylene or PVC pipe as a tubing straightener (pipe should be slightly longer than the depth of the barrel for ease of removal).
- 4. Place the tubing straightener over the suction tubing and lower into the barrel.

E. PRIMING

- 1. Temporarily remove tubing from the injection check valve and hold the end of tubing so it is above the level of the pump.
- 2. Start pump. Set at 80% speed and 100% stroke.
- 3. As soon as solution is visible through translucent discharge tubing, just past the discharge valve, stop the pump.
- 4. The pump is now primed.
- 5. Reconnect tubing to the injection check valve.

NOTE:

- (a) Pump is normally self-priming if suction lift is not more than 5 ft (1.5 m), valves in the pump are wet with water (pump is shipped from factory with water in pump head) and the above steps (**D**. Priming) are followed.
- (b) If the pump does not self prime, remove discharge valve housing and ball and pour water or solution slowly into discharge port until head is filled. Follow step **D. Priming** thereafter.
- 6. If difficulty is experienced on the initial prime, apply vacuum to discharge tubing by suitable means, such as a hand suction pump. Difficulty should not reoccur after pump is primed with a viscous liquid.



ISO9001

8 Post Office Square Acton, MA 01720 USA TEL: (978) 263-9800 FAX: (978) 264-9172 http://www.lmipumps.com

NOTE:

Threaded connections into pump head are 1"-12 straight threads. **DO NOT USE TEFLON® TAPE.** These joints are sealed by seal ring valve seats (item 6 on exploded view).

KEY	PART			Qua	ntity	
NO.	NO.	DESCRIPTION	20PBA	66PBA	76PBA	86PBA
4	25042	Ball, Stainless Steel	2	2	2	2
6	25128	Seal Ring, PTFE	2	2	2	2
10	35150a	Head Assembly, LE-66PBA, 76PBA		1	1	
	35151	Head Assembly, LE-86PBA				1
	35152	Head Assembly, LE-20PBA	1			
11	30481	Discharge Valve Assembly	1	1	1	1
12	26024	Valve Housing, PVC, ½" NPT	1	1	1	1
13	27053	Suction Valve Assembly	1	1	1	1
14	10340	Screw, 10-24 x ¾" SS	4	4	4	4
15	10524-4	Head, 3.0 High Viscosity Acrylic	1			
	25540-1	Head, 1.8 High Viscosity Acrylic		1	1	
	25550-1	Head, 0.9 High Viscosity Acrylic				1
16	31419	Liquifram™, 3.0 SI Fluorofilm [™]	1			
	31420	Liquifram™, 1.8 SI Fluorofilm [™]		1	1	
	30917	Liquifram™, 0.9 SI Fluorofilm [™]				1
17	25558	Spring, Stainless Steel	2	2	2	2
18	25649	Valve Seat, Polypropylene, Barbed	1	1	1	1
19	25651-3.5	Tubing, Vinyl, .938" O.D.	1	1	1	1
20	25650	Connector, Barbed, 1/2" NPT	1	1	1	1
21	25652	Hose Clamp	2	2	2	2
22	26558	Pipe Plug	1	1	1	1



Liquid End Sheet

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. *Note: See parts list for materials of construction*

A. INSTALLING INJECTION CHECK VALVE

- 1. The purpose of the injection check valve is to prevent backflow from the treated line.
- 2. A ¹/₄" NPT female fitting with sufficient depth will accept the injection check valve.
- 3. To insure correct seating of the ball inside the injection check valve, the injection check valve should be installed upwards (vertically) into bottom of the pipe.

B. CONNECTING DISCHARGE PIPE

- *NOTE:* Corrosion resistant ¹/₄" Schedule 80 or Schedule 120 should be used. DO NOT USE SMALLER PIPE SIZES.
- 1. Discharge valve has a ¹/₄" NPT male outlet. A short ¹/₄" NPT union should be connected to both discharge and suction valves so that the metering pump may be removed without disturbing piping.
- 2. It is recommended that Teflon[®] tape be used on tapered pipe threads so that there is a leakproof seal without overtightening of fittings.

Excessive force will crack or distort fittings. DO NOT OVERTIGHTEN.

C. CONNECTING SUCTION PIPE

1. Using the same size and material pipe as used on the discharge line, cut the suction pipe to length so that the foot valve is positioned just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5 m).

2. It is recommended that Teflon[®] tape be used on tapered pipe threads so that there is a leakproof seal without overtightening of fittings. Suction side leaks are invisible, but if present will cause pump to suck in air during each pump stroke.

D. PRIMING

- 1. Temporarily disconnect the union at the end of the discharge pipe run.
- **NOTE:** Stroke cannot be adjusted until pump is operating electrically. Turn lower knob while unit is stroking.
- 2. Start pump. Set at 80% speed and 100% stroke.
- 3. As soon as solution begins to enter the discharge pipe, stop the pump.
- 4. The pump is now primed.
- 5. Reconnect union at the end of the discharge pipe.

NOTE:

- (a) Pump is normally self-priming if suction lift is not more than 5 ft (1.5 m), valves in the pump are wet with water (pump is shipped from factory with water in pump head) and the above steps **(D. Priming)** are followed.
- (b) If the pump does not self prime, remove discharge valve housing and ball, and pour water or solution slowly into discharge port until head is filled. Follow step **D. Priming** thereafter.



8 Post Office Square Acton, MA 01720 USA TEL: (508) 263-9800 FAX: (508) 264-9172 http://www.Imipumps.com





© 1997 LMI Milton Roy - All Rights Reserved Printed in USA Specifications subject to change without notice.

Liquifram, Flourofilm are trademarks of Liquid Metronics, Inc. Teflon is a registered trademark of E. I. du Pont de Nemours & Co., Inc.

Liquid End Sheet

LE-281TT

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump.

Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection on the suction side.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



D. PRIMING WITH 3-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port. Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/4 turn CCW to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 3-function valve and cartridge and slowly pour water or solution into the pump head until it is filled. Replace cartridge and 3-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>

LE-281TT



Key Number	Description	Part Number	QTY
10	Head, 0.9 Molded PVC	37752	1
40	O-Ring, Polyprel	48349	4
100	O-Ring, Polyprel	36103	4
160	Screw, Head	10340	4
190	Liquifram™, 0.9 Fluorofilm	30917	1
230	Injection Fitting, PVC	48617	1
250	Weight, Ceramic	10322	1
260	Coupling, Foot Valve	36204	1
270	Strainer, Foot Valve	10123	1
350	Tubing, .375 x .062 Black PE	27342-10	1
351	Tubing, .375 x .062 Vinyl	10469-06	1
366	O-Ring, Polyprel	49138	1
354	Tubing, .250 x .062 PE	25636-06	1
602	Valve Asm, Suction PVC/Polyprel	49088	1
603	Cartridge Asm, PVDF/Polyprel	37338	3
607	Valve Asm, Foot PVC/Polyprel	49100	1
608	Valve Asm, Injection PVC/Polyprel	48728	1
613	Tubing Connection Kit , 3/8"	77383	4
615	Fitting, Single Ball PVC	48787	3
617	Cartridge Asm, Injection	48795	1
620	Valve Asm, 3FV	49148	1



LE-281TU

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection on the suction side.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



D. PRIMING WITH 3-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port. Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/4 turn CCW to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 3-function valve and cartridge and slowly pour water or solution into the pump head until it is filled. Replace cartridge and 3-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>

LE-281TU



Key Number	Description	Part Number	QTY
10	Head, 0.9 Molded PVC	37752	1
40	O-Ring, Polyprel	48349	4
100	O-Ring, Polyprel	36103	4
160	Screw, Head	10340	4
190	Liquifram™, 0.9 Fluorofilm	30917	1
230	Injection Fitting, PVC	48617	1
250	Weight, Ceramic	10322	1
260	Coupling, Foot Valve	36204	1
270	Strainer, Foot Valve	10123	1
350	Tubing, .375 x .062 Black PE	27342-10	1
351	Tubing, .375 x .062 Vinyl	10469-06	1
366	O-Ring, Polyprel	49138	1
354	Tubing, .250 x .062 PE	25636-06	1
602	Valve Asm, Suction PVC/Polyprel	49088	1
603	Cartridge Asm, PVDF/Polyprel	37338	3
607	Valve Asm, Foot PVC/Polyprel	49100	1
608	Valve Asm, Injection PVC/Polyprel	48728	1
613	Tubing Connection Kit , 3/8"	77383	4
615	Fitting, Single Ball PVC	48787	3
617	Cartridge Asm, Injection	48795	1
620	Valve Asm, 3FV	49148	1



LE-3X2NX, 3X8NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING—ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

LE - 3X2NX, 3X8NX

Key	Description	Part		QUAN	ITITY			QUAN	ITITY	
Number	Description	Number	312NX	352NX	362NX	392NX	318NX	358NX	368NX	398NX
		37980		1						
		37979				1				
		38543			1					
10	Duran Haad	36128	1							
10	Pump Head	37750						1		
		37752								1
		37754							1	
		37756					1			
40	O-Ring	48349	4	4	4	4	4	4	4	4
100	O-Ring	36103	4	4	4	4	4	4	4	4
		30916		1				1		
		30917				1				1
190	Liquifram™	31420			1				1	
Number 10 40 100 40 100 190 230 250 260 270 350 602 603 606 607 608 613 613		31419	1				1			
		48617					1	1	1	1
230	Injection Valve Body	48618	1	1	1	1				
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1
		25636-16		1				1		
	Tubing, Suction & Discharge	10342-16			1	1			1	1
	3XXNI ONLY	10142-16	1				1			
350		28636-16		1				1		
	Tubing, Suction & Discharge 3XXNU ONLY	27342-16			1	1			1	1
		27142-16	1				1			
		49089		2						
		49090	2		2	2				
Number 10 40 100 100 100 190 230 250 260 270 350 602 603 606 607 608 613 613	Check Valve	49087						2		
		49088					2		2	2
		37335		3				3		
603	Cartridge Valve	37338	.3		3	3	3		3	3
		49110		1	1	1				
606	Liquid End Hardware	49111	1				1	1	1	1
		49101	· ·	1						
		49102	1		1	1				
607	Foot Valve	49/102						1		
		49100					1		1	1
		48728					1	1	1	1
608	Injection Valve	48731	1	1	1	1				
		77382	- '	1	- '	- '		1		
	Tubing Connection Kit	77383			1	1			1	1
	3XXNI and 3XXNU	7728/	1				1			
613		77070		4			- +	1		
	Tubing Connection Kit	77270		4	1	1		4	1	1
	3XXNM ONLY	77200	4		4	4	A		4	4
		10707	4				- 1	1	Л	1
615	Check Valve Fitting	40/0/	4				4	4	4	4
617	Injustion Value Contrideo	40/00	4	4	4	4	4	4	4	4
01/	injection valve Cartridge	48/95					1	1	1	1

LE-3X2NX, 3X8NX



D. PRIMING

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 1. Plug in or switch the pump on.
- 2. While the pump is running, set at 100% speed and 100% stroke length.
- 3. The suction tubing should begin to fill with solution from the tank.
- 4. A small amount of solution will begin to discharge out the discharge valve. Once this happens, **SHUT THE PUMP OFF.**
- 5. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridge and slowly pour water or solution into the pump head until it is filled. Replace cartridge and discharge valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1 and 2 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE-3X2SX, 3X8SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ¹/₂" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- Pipe PTFE Tape Cross-Section on Pipe Attachment Only Variation Variation (cceptable Injection Check-Valve

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump. making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For $\frac{1}{4}$ or 6 mm OD tubing, cut tubing so that $\frac{1}{4}$ to $\frac{3}{8}$ (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING-ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

MILTON ROY

LE-3X2SX, 3X8SX

Key	Description	Part		QUAN	ITITY			QUAN	ITITY	
Number	Description	Number	312SX	352SX	362SX	392SX	318SX	358SX	368SX	398SX
		37980	ĺ	1						
		37979				1				
		38543			1					
10	Pump Hoad	36128	1							
10	Pullip Heau	37750						1		
		37752								1
		37754							1	
		37756					1			
40	0-Ring	48349	5	5	5	5	5	5	5	5
100	0-Ring	36103	4	4	4	4	4	4	4	4
		30916		1				1		
100	LiquifromIM	30917				1				1
190	Liquinanit	31420			1				1	
		31419	1				1			
220	Injection Valve Body	48617					1	1	1	1
230	injection valve body	48618	1	1	1	1				
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1
	Tubing Quation & Discharge	25636-16		1				1		
	TUDING, SUCTION & DISCHARGE	10342-16			1	1			1	1
350		10142-16	1				1			
350	Tubing Suction & Discharge	28636-16		1				1		
	axxsii oni y	27342-16			1	1			1	1
	UXX00 UNEI	27142-16	1				1			
354	Tubing, 4FV	25636-06	1	1	1	1	1	1	1	1
440	Bleed Nut	48622	1	1	1	1	1	1	1	1
	Suction Check Valve	49089		1						
602		49090	1		1	1				
002		49087						1		
		49088					1		1	1
603	Cartridge Valve	37335		4				4		
000	ourthoge valve	37338	4		4	4	4		4	4
606	Liquid End Hardware	49110		1	1	1				
000	Elquid End Hardward	49111	1				1	1	1	1
		49101		1						
607	Foot Valve	49102	1		1	1				
007		49099						1		
		49100					1		1	1
608	Injection Valve	48728					1	1	1	1
		48731	1	1	1	1				
	Tubing Connection Kit	77382		4				4		
	3XXSI and 3XXSU	77383			4	4			4	4
613		77384	4				4			
	Tubing Connection Kit	77378		4				4		
	3XXSM ONLY	77379			4	4			4	4
ļļ	-	77380	4				4			
615	Check Valve Fitting	48787					3	3	3	3
		48788	3	3	3	3	<u> </u>		<u> </u>	
617	Injection Valve Cartridge	48795	1	1	1	1	1	1	1	1
		48799		1						
620	4FV Assembly	48754	1		1	1				
	······································	48798			ļ		Ļ	1		
		48753					1		1	1
621	4FV Fitting Assembly	49254					1	1	1	1
	· · · · · · · · · · · · · · · · · · ·	49255	1	1	1	1				



D. PRIMING WITH 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (FIGURE 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.



E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

FIGURE 3

Note: The head drawing is for reference only; actual appearance may differ.

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE-3X3NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING—ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

LE—3X3NX

Key	Description	Part		QUAN	NTITY																																																																																																																																																																																								
Number	Description	Number	313NX	353NX	363NX	393NX																																																																																																																																																																																							
		37980		1																																																																																																																																																																																									
10	Dump Hood	37979				1																																																																																																																																																																																							
Key Number 10 40 90 100 190 230 250 260 270 350 602 603 606 607 608 613 615 617	Fullp Head	38543			1																																																																																																																																																																																								
		36128	1																																																																																																																																																																																										
40	O-Ring	48591	4	4	4	4																																																																																																																																																																																							
90	O-Ring	39413	4	4	4	4																																																																																																																																																																																							
100	O-Ring	48589	4	4	4	4																																																																																																																																																																																							
		30916		1																																																																																																																																																																																									
100	Lieu ifre es TM	30917				1																																																																																																																																																																																							
100 190 230 250 260 270 350 602 603	Liquinam	31420			1																																																																																																																																																																																								
		31419	1		Image: NX 363NX 393NX 1 1 1 1 1 1 4 4 4 4 4 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2 2 2 3 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 4 4 <tr <="" tbox<="" td=""><td></td></tr> <tr><td>230</td><td>Injection Valve Body</td><td>48618</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>250</td><td>Ceramic Weight</td><td>10322</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>260</td><td>Foot Valve Coupling</td><td>36204</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>270</td><td>Foot Valve Strainer</td><td>10123</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td rowspan="3">050</td><td rowspan="2">Tubing, Suction & Discharge</td><td>25636-16</td><td></td><td>1</td><td></td><td></td></tr> <tr><td>10342-16</td><td></td><td></td><td>1</td><td>1</td></tr> <tr><td>SAANI ONEI</td><td>10142-16</td><td>1</td><td></td><td></td><td></td></tr> <tr><td>350</td><td></td><td>28636-16</td><td></td><td>1</td><td></td><td></td></tr> <tr><td></td><td>Iubing, Suction & Discharge</td><td>27342-16</td><td></td><td></td><td>1</td><td>1</td></tr> <tr><td></td><td>SXANO ONET</td><td>25636-16 1 10342-16 1 10142-16 1 28636-16 1 27342-16 1 27142-16 1 49091 2 49092 2 37334 3</td><td></td></tr> <tr><td>600</td><td>Chaole Value</td><td>49091</td><td></td><td>2</td><td></td><td></td></tr> <tr><td>002</td><td>Check valve</td><td>49092</td><td>2</td><td></td><td>1 1 1 1 1 1 1 1 1 1 2 2 3 3 1 1</td><td>2</td></tr> <tr><td>602</td><td>Contridge Value</td><td>37334</td><td></td><td>3</td><td></td><td></td></tr> <tr><td>603</td><td>Cartridge valve</td><td>37337</td><td>3</td><td></td><td>3</td><td>3</td></tr> <tr><td>606</td><td>Liquid End Hardware</td><td>49110</td><td></td><td>1</td><td>1</td><td>1</td></tr> <tr><td>000</td><td></td><td>49111</td><td>1</td><td></td><td></td><td></td></tr> <tr><td>607</td><td>Faat Valva</td><td>49103</td><td></td><td>1</td><td></td><td></td></tr> <tr><td>607</td><td>Foot valve</td><td>49104</td><td>1</td><td></td><td>1</td><td>1</td></tr> <tr><td>608</td><td>Injection Valve</td><td>48732</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td></td><td></td><td>77382</td><td></td><td>4</td><td></td><td></td></tr> <tr><td></td><td>Iubing Connection Kit</td><td>77383</td><td></td><td></td><td>4</td><td>4</td></tr> <tr><td>610</td><td></td><td>77384</td><td>4</td><td></td><td></td><td></td></tr> <tr><td>013</td><td></td><td>77378</td><td></td><td>4</td><td></td><td></td></tr> <tr><td></td><td>Tubing Connection Kit</td><td>77379</td><td></td><td></td><td>4</td><td>4</td></tr> <tr><td></td><td></td><td>77380</td><td>4</td><td></td><td></td><td></td></tr> <tr><td>615</td><td>Check Valve Fitting</td><td>48789</td><td>4</td><td>4</td><td>4</td><td>4</td></tr> <tr><td>617</td><td>Injection Valve Cartridge</td><td>48795</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>		230	Injection Valve Body	48618	1	1	1	1	250	Ceramic Weight	10322	1	1	1	1	260	Foot Valve Coupling	36204	1	1	1	1	270	Foot Valve Strainer	10123	1	1	1	1	050	Tubing, Suction & Discharge	25636-16		1			10342-16			1	1	SAANI ONEI	10142-16	1				350		28636-16		1				Iubing, Suction & Discharge	27342-16			1	1		SXANO ONET	25636-16 1 10342-16 1 10142-16 1 28636-16 1 27342-16 1 27142-16 1 49091 2 49092 2 37334 3		600	Chaole Value	49091		2			002	Check valve	49092	2		1 1 1 1 1 1 1 1 1 1 2 2 3 3 1 1	2	602	Contridge Value	37334		3			603	Cartridge valve	37337	3		3	3	606	Liquid End Hardware	49110		1	1	1	000		49111	1				607	Faat Valva	49103		1			607	Foot valve	49104	1		1	1	608	Injection Valve	48732	1	1	1	1			77382		4				Iubing Connection Kit	77383			4	4	610		77384	4				013		77378		4				Tubing Connection Kit	77379			4	4			77380	4				615	Check Valve Fitting	48789	4	4	4	4	617	Injection Valve Cartridge	48795	1	1	1	1
230	Injection Valve Body	48618	1	1	1	1																																																																																																																																																																																							
250	Ceramic Weight	10322	1	1	1	1																																																																																																																																																																																							
260	Foot Valve Coupling	36204	1	1	1	1																																																																																																																																																																																							
270	Foot Valve Strainer	10123	1	1	1	1																																																																																																																																																																																							
050	Tubing, Suction & Discharge	25636-16		1																																																																																																																																																																																									
		10342-16			1	1																																																																																																																																																																																							
	SAANI ONEI	10142-16	1																																																																																																																																																																																										
350		28636-16		1																																																																																																																																																																																									
	Iubing, Suction & Discharge	27342-16			1	1																																																																																																																																																																																							
	SXANO ONET	25636-16 1 10342-16 1 10142-16 1 28636-16 1 27342-16 1 27142-16 1 49091 2 49092 2 37334 3																																																																																																																																																																																											
600	Chaole Value	49091		2																																																																																																																																																																																									
002	Check valve	49092	2		1 1 1 1 1 1 1 1 1 1 2 2 3 3 1 1	2																																																																																																																																																																																							
602	Contridge Value	37334		3																																																																																																																																																																																									
603	Cartridge valve	37337	3		3	3																																																																																																																																																																																							
606	Liquid End Hardware	49110		1	1	1																																																																																																																																																																																							
000		49111	1																																																																																																																																																																																										
607	Faat Valva	49103		1																																																																																																																																																																																									
607	Foot valve	49104	1		1	1																																																																																																																																																																																							
608	Injection Valve	48732	1	1	1	1																																																																																																																																																																																							
		77382		4																																																																																																																																																																																									
	Iubing Connection Kit	77383			4	4																																																																																																																																																																																							
610		77384	4																																																																																																																																																																																										
013		77378		4																																																																																																																																																																																									
	Tubing Connection Kit	77379			4	4																																																																																																																																																																																							
		77380	4																																																																																																																																																																																										
615	Check Valve Fitting	48789	4	4	4	4																																																																																																																																																																																							
617	Injection Valve Cartridge	48795	1	1	1	1																																																																																																																																																																																							

LE-3X3NX



D. PRIMING

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 1. Plug in or switch the pump on.
- 2. While the pump is running, set at 100% speed and 100% stroke length.
- 3. The suction tubing should begin to fill with solution from the tank.
- 4. A small amount of solution will begin to discharge out the discharge valve. Once this happens, **SHUT THE PUMP OFF.**
- 5. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridge and slowly pour water or solution into the pump head until it is filled. Replace cartridge and discharge valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1 and 2 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>

Liquid End Sheet

LE-3X3SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump.

Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING—ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

LE - 3X3SX

Key	Description	Part		QUAI	VTITY	
Number	Description	Number	313SX	353SX	363SX	393SX
		37980		1		
10	Dump Hood	37979				1
10	Pump nead	38543			1	
		36128	1			
40	O-Ring	48591	5	5	5	5
90	O-Ring	39413	4	4	4	4
100	O-Ring	48589	4	4	4	4
		30916		1		
100	LiquifromTM	30917				1
190	Liquiiram	31420			1	
		31419	1			
230	Injection Valve Body	48618	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1
		25636-16		1		
	Tubing, Suction & Discharge	10342-16			1	1
050	SAASI ONLY	10142-16	1			
350		28636-16		1		
	Tubing, Suction & Discharge	27342-16			1	1
	SAASU ONEI	27142-16	1			
354	Tubing, 4FV	25636-06	1	1	1	1
440	Bleed Nut	48622	1	1	1	1
000	Custian Chaple Value	49091		1		
602	Suction Check valve	49092	1		1	1
602	Contridge Velue	37334		4		
603	Cartridge valve	37337	4		4	4
606	Liquid End Hardwara	49110		1	1	1
000		49111	1			
607	Foot Valvo	49103		1		
007	FOOT Valve	49104	1		1	1
608	Injection Valve	48732	1	1	1	1
		77382		4		
	3XXSI and 3XXSI	77383			4	4
613		77384	4			
013	Tubing Opensorting Kit	77378		4		
		77379			4	4
		77380	4			
615	Check Valve Fitting	48789	3	3	3	3
617	Injection Valve Cartridge	48795	1	1	1	1
620	AEV Assombly	48800		1		
020	HI V ASSEILIDIY	48755	1		1*	1
621	4FV Fitting Assembly	49256	1	1	1	1

 $^{*}\mbox{For 363SP}$ liquid end, use 48800 4FV assembly.



D. PRIMING WITH 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (FIGURE 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.



E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

FIGURE 3

Note: The head drawing is for reference only; actual appearance may differ.

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE - 4X0NX, 4X8NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING—ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).



LE - 4X0NX, 4X8NX

Key	Description	Part		QUAI	NTITY			QUAI	NTITY	
Key Number 10 40 40 100 40 230 250 260 270 350 602 603 606 607 608 613	Description	Number	410NX	450NX	460NX	490NX	418NX	458NX	468NX	498NX
		38578		1						
		38579						1		
		38561				1				
10	During the ed	38562								1
10	Pump Head	38595			1					
		38596							1	
		36159	1		İ					
		37745			İ		1			
40	O-Ring	48349	4	4	4	4	4	4	4	4
100	O-Ring	36103	4	4	4	4	4	4	4	4
		30916		1				1		
		30917				1				1
190 230 250 260 270 350	Liquitram	31420			1				1	
		31419	1				1			
230	Injection Valve Body	48617	1	1	1	1	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1
	Tubing	25636-16	İ	1				1		
	Suction & Discharge	10342-16			1	1			1	1
	4XXNI ONLY	10142-16	1				1			
350	Tubing, Suction & Discharge 4XXNU ONLY	28636-16		1				1		
		27342-16			1	1			1	1
		27142-16	1				1			
		49087	i – – –	2			i	2		
602	Check Valve	49088	2		2	2	2		2	2
		37335		3				3		
603	Cartridge Valve	37338	3		3	3	3		3	3
		49109		1	1	1		1	1	1
606	Liquid End Hardware	49110	1				1			
		49099		1				1		
607	Foot Valve	49100	1		1	1	1		1	1
608	Injection Valve	48728	1	1	1	1	1	1	1	1
		77382		4				4		
	Tubing Connection Kit	77383			4	4			4	4
	4XXNI and 4XXNU	7738/	Δ			-7	Λ		-7	
613		77070		1				л		
	Tubing Connection Kit	11310		4	4	4		4	4	4
	4XXNM ONLY	//3/9			4	4			4	4
		77380	4			-	4		-	
615	Check Valve Fitting	48787	4	4	4	4	4	4	4	4
617	Injection Valve Cartridge	48795	1	1	1	1	1	1	1	1

LE - 4X0NX, 4X8NX



D. PRIMING

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 1. Plug in or switch the pump on.
- 2. While the pump is running, set at 100% speed and 100% stroke length.
- 3. The suction tubing should begin to fill with solution from the tank.
- 4. A small amount of solution will begin to discharge out the discharge valve. Once this happens, **SHUT THE PUMP OFF.**
- 5. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridge and slowly pour water or solution into the pump head until it is filled. Replace cartridge and discharge valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1 and 2 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE-4X0SX, 4X8SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ¹/₂" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- Pipe PTFE Tape Cross-Section on Pipe Attachment Only Variation Variation (cceptable Injection Check-Valve

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump. making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For $\frac{1}{4}$ or 6 mm OD tubing, cut tubing so that $\frac{1}{4}$ to $\frac{3}{8}$ (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING-ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

MILTON ROY

LE-4X0SX, 4X8SX

Key	Description	Part		QUAI	ITITY			QUAN	ITITY	
Number	Description	Number	410SX	450SX	460SX	490SX	418SX	458SX	468SX	498SX
		38578		1						
		38579						1		
		38561				1				
		38562								1
10	Pump Head	38595			1			İ		
		38596							1	
		36159	1							
		37745					1			
40	O-Ring	48349	5	5	5	5	5	5	5	5
100	O-Ring	36103	4	4	4	4	4	4	4	4
		30916		1				1		
		30917				1				1
190	Liquifram™	31420			1				1	
		31419	1				1			
230	Injection Valve Body	48617	1	1	1	1	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1
	Tubing	25636-16		1				1		
	Suction & Discharge	10342-16			1	1			1	1
350	4XXSI ONLY	10142-16	1				1			
	Tubing	28636-16		1				1		
	Suction & Discharge	27342-16			1	1			1	1
	4XXSU ONLY	27142-16	1				1			
354	Tubing, 4FV	25636-06	1	1	1	1	1	1	1	1
440	Bleed Nut	48622	1	1	1	1	1	1	1	1
		49087		1				1		
602	Suction Check Valve	49088	1		1	1	1		1	1
		37335		4				4		
603	Cartridge Valve	37338	4		4	4	4		4	4
		49109		1	1	1		1	1	1
606	Liquid End Hardware	49110	1				1			
		49099		1				1		
607	Foot Valve	49100	1		1	1	1		1	1
608	Injection Valve	48728	1	1	1	1	1	1	1	1
		77382		4				4		
	Tubing Connection Kit	77383			4	4			4	4
	4XXSI and 4XXSU	77384	4				4			
613		77378		4				4		
	Tubing Connection Kit	77379			4	4			4	4
	4XXSM ONLY	77380	4				4			
615	Check Valve Fitting	48787	3	.3	.3	.3	3	3	.3	3
617	Injection Valve Cartridge	48795	1	1	1	1	1	1	1	1
	injection valve Cartinge	48798	· ·	1	· ·			1		1
620	4FV Assembly	48753	1	<u> </u>	1	1	1	<u> </u>	1*	1*
621	4FV Fitting Assembly	49254	1	1	1	1	1	1	1	1
021		1 70207				1			1	1

*For 468SP and 498SP liquid ends, use 48798 4FV assembly.



D. PRIMING WITH 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (FIGURE 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.



E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

FIGURE 3

Note: The head drawing is for reference only; actual appearance may differ.

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE - 4X5NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING—ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).



LE - 4X5NX

Key Description Part	Part	QUANTITY					
Number	Description	Number	415NX	455NX	465NX	495NX	
		38580		1			
10	Pump Hood	38563				1	
10	Fullip flead	38597			1		
		37746	1				
40	O-Ring	48591	4	4	4	4	
90	O-Ring	39413	4	4	4	4	
100	O-Ring	48589	4	4	4	4	
		30916		1			
100	Liquifram™ Size Code	30917				1	
190	Liquifram Size Code	31420			1		
		31419	1				
230	Injection Valve Body	48619	1	1	1	1	
250	Ceramic Weight	10322	1	1	1	1	
260	Foot Valve Coupling	36204	1	1	1	1	
270	Foot Valve Strainer	10123	1	1	1	1	
		25636-16		1			
	Tubing, Suction & Discharge	10342-16			1	1	
		10142-16	1				
350		28636-16		1			
	Tubing, Suction & Discharge	27342-16			1	1	
		27142-16	1				
000		49095		2			
602	Check valve	49096	2		2	2	
000		37334		3			
603	Carrindge valve	37337	3		3	3	
000		49109		1	1	1	
606	Liquid End Hardware	49110	1				
007		49107		1			
607	Foot valve	49108	1		1	1	
608	Injection Valve	48729	1	1	1	1	
		77382		4			
	Tubing Connection Kit	77383			4	4	
010		77384	4				
613		77378		4			
	Tubing Connection Kit	77379			4	4	
		77380	4				
615	Check Valve Fitting	48790	4	4	4	4	
617	Injection Valve Cartridge	48795	1	1	1	1	
LE - 4X5NX



D. PRIMING

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 1. Plug in or switch the pump on.
- 2. While the pump is running, set at 100% speed and 100% stroke length.
- 3. The suction tubing should begin to fill with solution from the tank.
- 4. A small amount of solution will begin to discharge out the discharge valve. Once this happens, **SHUT THE PUMP OFF.**
- 5. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridge and slowly pour water or solution into the pump head until it is filled. Replace cartridge and discharge valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1 and 2 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

Liquid End Sheet

LE-4X5SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump.

Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- PTFE Tape on Pipe Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachment Only Real Bo Attachmenta

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING—ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).



LE-4X5SX

Key	Description	Part	QUANTITY				
Number	Description	Number	415SX	455SX	465SX	495SX	
		38580		1			
10	Pump Head	38563				1	
	r unp riedu	38597			1		
		37746	1				
40	O-Ring	48591	5	5	5	5	
90	O-Ring	39413	4	4	4	4	
100	O-Ring	48589	4	4	4	4	
		30916		1			
100		30917				1	
190	Liquinani Size Code	31420			1		
		31419	1				
230	Injection Valve Body	48619	1	1	1	1	
250	Ceramic Weight	10322	1	1	1	1	
260	Foot Valve Coupling	36204	1	1	1	1	
270	Foot Valve Strainer	10123	1	1	1	1	
		25636-16	1	1			
	Iubing, Suction & Discharge	10342-16	1	ĺ	1	1	
	42231 ONE1	10142-16	1				
350		28636-16		1			
	Tubing, Suction & Discharge	27342-16			1	1	
	42250 ONEF	27142-16	1				
354	Tubing, 4FV	25636-06	1	1	1	1	
440	Bleed Nut	48622	1	1	1	1	
		49095		1			
602	Suction Check Valve	49096	1		1	1	
		37334		4			
603	Cartridge valve	37337	4		4	4	
		49109		1	1	1	
606	Liquid End Hardware	49110	1				
		49107		1			
607	Foot Valve	49108	1		1	1	
608	Injection Valve	48729	1	1	1	1	
	-	77382		4			
	Tubing Connection Kit	77383	1		4	4	
	4XXSI and 4XXSU	77384	4				
613		77378	1	4			
	Tubing Connection Kit	77379			4	4	
		77380	4				
615	Check Valve Fitting	48790	3	3	3	3	
617	Injection Valve Cartridge	48795	1	1	1	1	
		48801	<u> </u>	1			
620	4FV Assembly	48756	1		1	1	
621	4FV Fitting Assembly	49257	1	1	1	1	
			I '	l '	<u> </u>		



D. PRIMING WITH 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (FIGURE 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.



E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

FIGURE 3

Note: The head drawing is for reference only; actual appearance may differ.



LE-4X9NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING—ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).



LE-4X9NX

Key	Description	Part	QUANTITY					
Number	Description	Number	419NX	459NX	469NX	499NX		
	Duran Hand	38578		1				
10		38561				1		
	Fump nead	38595			1			
		36159	1					
40	O-Ring	48349	4	4	4	4		
100	O-Ring	36103	4	4	4	4		
		30916		1				
100	LiquifromTM	30917				1		
190	Liquitant	31420			1			
		31419	1					
230	Injection Valve Body	48618	1	1	1	1		
250	Tubing Straightener	32293	1	1	1	1		
260	Foot Valve Coupling	36204	1	1	1	1		
270	Foot Valve Strainer	10123	1	1	1	1		
	Tubing, Suction & Discharge 4XXNI ONLY	25636-16		1				
		10342-16			1	1		
250		10142-16	1					
350		28636-16		1				
	Iubing, Suction & Discharge 4XXNU ONLY	27342-16			1	1		
		27142-16	1					
600	Check Valve	49093		2				
002		49094	2		2	2		
602	Cartridge Valve	37858		3				
003	Carmuge valve	37859	3		3	3		
606	Liquid End Hordword	49109		1	1	1		
000		49110	1					
607	Foot Volvo	49105		1				
007	Foot valve	49106	1		1	1		
608	Injection Valve	48730	1	1	1	1		
		77382		4				
	Tubing Connection Kit 4XXNI and 4XXNU	77383			4	4		
		77384	4					
013		77378		4				
	Tubing Connection Kit 4XXNM ONLY	77379			4	4		
		77380	4					
615	Check Valve Fitting	48788	4	4	4	4		
617	Injection Valve Cartridge	48796	1	1	1	1		

LE-4X9NX



D. PRIMING

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 1. Plug in or switch the pump on.
- 2. While the pump is running, set at 100% speed and 100% stroke length.
- 3. The suction tubing should begin to fill with solution from the tank.
- 4. A small amount of solution will begin to discharge out the discharge valve. Once this happens, **SHUT THE PUMP OFF.**
- 5. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridge and slowly pour water or solution into the pump head until it is filled. Replace cartridge and discharge valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1 and 2 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

Liquid End Sheet

LE-4X9SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ¹/₂" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- Pipe PTFE Tape on Pipe Attachment Only Variation Variation (cceptable Ъ. Injection Check-Valve

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump. making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For $\frac{1}{4}$ or 6 mm OD tubing, cut tubing so that $\frac{1}{4}$ to $\frac{3}{8}$ (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING-ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

MILTON ROY

LE-4X9SX

Key	Description	Part	QUANTITY			
Number	Description	Number	419SX	459SX	469SX	499SX
		38578		1		
10	Pump Hood	38561				1
10	Fullip Head	38595			1	
		36159	1			
40	O-Ring	48349	5	5	5	5
100	O-Ring	36103	4	4	4	4
		30916		1		
100	LiquifromTM	30917				1
190	Liquinant	31420			1	
		31419	1			
230	Injection Valve Body	48618	1	1	1	1
250	Tubing Straightener	32293	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1
		25636-16		1		
	Tubing, Suction & Discharge	10342-16			1	1
050			1			
350		28636-16		1		
	Tubing, Suction & Discharge	27342-16			1	1
	47730 ONE1	27142-16	1			ĺ
354	Tubing, 4FV	25636-06	1	1	1	1
440	Bleed Nut	48622	1	1	1	1
		49093		1		
602	Suction Check Valve	49094	1		1	1
		37858		4		
603	Cartridge valve	37859	4		4	4
		49109		1	1	1
606	Liquid End Hardware	49110	1			
007	F = 24 \ / 2 \ 22	49105		1		
607	FOOT VAIVE	49106	1		1	1
608	Injection Valve	48730	1	1	1	1
		77382		4		İ
	Tubing Connection Kit	77383			4	4
	47751 8110 47750	77384	4			
613		77378		4		İ
	Tubing Connection Kit	77379			4	4
		77380	4			
615	Check Valve Fitting	48788	3	3	3	3
617	Injection Valve Cartridge	48796	1	1	1	1
		48799		1		
620	4FV Assembly	48754	1		1	1
621	4FV Fitting Assembly	49255	1	1	1	1



D. PRIMING WITH 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (FIGURE 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.



E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

FIGURE 3

Note: The head drawing is for reference only; actual appearance may differ.



LE-4X0SX, 4X8SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ¹/₂" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- Pipe PTFE Tape Cross-Section on Pipe Attachment Only Variation Variation (cceptable Injection Check-Valve

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump. making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



3. Position female Ferrule about one inch (25 mm) from end of tubing.

- 4. For $\frac{1}{4}$ or 6 mm OD tubing, cut tubing so that $\frac{1}{4}$ to $\frac{3}{8}$ (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING-ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

MILTON ROY

LE-4X0SX, **4X8SX**

Key	Description	Part		QUANTITY			QUANTITY			
Number	Description	Number	410SX	450SX	460SX	490SX	418SX	458SX	468SX	498SX
		38578		1						
		38579						1		
		38561				1				
	5	38562	İ			Ì				1
10	Pump Head	38595			1					
		38596							1	
		36159	1							
		37745					1			
40	O-Ring	48349	5	5	5	5	5	5	5	5
100	O-Ring	36103	4	4	4	4	4	4	4	4
	5	30916		1				1		
		30917				1				1
190	Liquifram™	31420			1				1	
		31419	1				1			
230	Injection Valve Body	48617	1	1	1	1	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1
210		25636-16	· ·	1				1		
	Suction & Discharge 4XXSI ONLY	103/2-16		'	1	1		,	1	1
		101/2-16	1				1			1
350		28636-16		1			1	1		
	Suction & Discharge	273/2-16			1	1			1	1
		271/2-16	1			'	1			1
354	Tubing 4EV	25636-06	1	1	1	1	1	1	1	1
440	Bleed Nut	48622		1	1	1	1	1	1	1
	Blood Nat	49087	· ·	1				1		
602	Suction Check Valve	49088	1		1	1	1		1	1
		37335	· ·	4				4		- 1
603	Cartridge Valve	37338	4		4	4	4		4	4
		49109	· ·	1	1			1	1	1
606	Liquid End Hardware	49110	1				1			
		49099		1				1		
607	Foot Valve	49100	1		1	1	1		1	1
608	Injection Valve	/8728	1	1	1	1	1	1	1	1
000		77382		1		· ·		1		
	Tubing Connection Kit	77383		4	1	1		4	1	1
	4XXSI and 4XXSU	77294			4	4	1		4	+
613		77070	+	4			4	1		
	Tubing Connection Kit	77270		4	4			4	4	1
	4XXSM ONLY	77200			4	4	A		4	4
615	Chaole Volve Fitting	1/380	4				4			
015		40705	3	3	্র ন	3	্র ন	3	্র ন	3
61/	Injection valve Cartridge	48/95								
620	4FV Assembly	48/98						1		
		48/53								
621	4FV Fitting Assembly	49254	1	1	1	1	1	1	1	1



D. PRIMING WITH 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (FIGURE 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.



E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.

FIGURE 3

Note: The head drawing is for reference only; actual appearance may differ.



LE-7X8NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to 1/2" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For $\frac{1}{4}$ " or 6 mm OD tubing, cut tubing so that $\frac{1}{4}$ " to $\frac{3}{8}$ " (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime™ fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS **OR FITTINGS.**

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

LE-7X8NX

Key	Description	Part	QUANTITY				
Number	Description	Number	718NX	728NX	738NX	748NX	
		48360	1				
10	Pump Head Molded EastPrime™	48363		1			
	Fullip Head Molded FastFille	48366			1		
		48369				1	
40	O-Ring	48349	4	4	4	4	
90	O-Ring	39413	3	3	3	3	
100	O-Ring	36103	4	4	4	4	
140	O-Ring	48590	1	1	1	1	
150	O-Ring	48347	1	1	1	1	
		48186	1				
100	LiquifromTM	48187		1			
190	Liquitant	48188			1		
		48189				1	
230	Injection Check Valve Body	48617	1	1	1	1	
250	Ceramic Weight	10322	1	1	1	1	
260	Foot Valve Coupling	36204	1	1	1	1	
270	Foot Valve Strainer	10123	1	1	1	1	
	Tubing, Suction & Discharge	25636-16	1	1*			
050	7XXNI ONLY	10342-16		1#	1	1	
350	Tubing, Suction & Discharge	28636-16	1	1*			
	7XXNU ONLY	27342-16		1#	1	1	
352	Tubing, FastPrime™	10469-06	1	1	1	1	
601	EastPrimaIM Discharge Check Value	48663	1				
001	FastFillie Discharge Check valve	48664		1	1	1	
602	Suction Check Valvo	48675	1				
002	Suction Check valve	48676		1	1	1	
602	Cartridge Valve	48542	2				
003	Cartridge valve	48543		2	2	2	
604	EastPrimeTM Cartridge Valve	48548	1				
004	l'asti fille Califidge valve	48549		1	1	1	
605	FastPrime [™] Valve	48848	1	1	1	1	
606	Liquid End Hardware	48703	1	1	1	1	
607	Foot Valvo	48718	1				
007	1 Oot valve	48721		1	1	1	
608	Injection Valve	48728	1	1	1	1	
	Tubing Connection Kit	77382	4	4*			
613	7XXNI and 7XXNU	77383		4#	4	4	
013	Tubing Connection Kit	77378	4	4*			
	7XXNM ONLY	77379		4#	4	4	
615	Single Ball Check Valve Fitting	48787	4	4	4	4	
617	Injection Valve Cartridge	48795	1	1	1	1	

ROYTRONIC® Series A pumps * ROYTRONIC™ EXCEL Series A+ pumps



D. PRIMING FOR FastPrime™ LIQUID ENDS

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and discharge valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1 and 2 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

Be sure your relief tubing is connected to your FastPrime™ valve and runs back to your solution drum or tank.

2. Turn the FastPrime[™] knob one-and-a-half turns counter-clockwise . The discharge line is now depressurized. Keep valve open until solution drains back down the discharge tubing into solution drum or tank. Then turn the knob clockwise to tighten knob to closed position.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.





LE-7X8SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime™ fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE-7X8SX

Key	Description	Dart Number	QUANTITY				
Number	Description	Part Number	718SX	728SX	738SX	748SX	
		48360	1				
10	Dump Hood Moldod FootDrimoIM	48363		1			
	Pump Head Molded FastPhine***	48366			1		
		48369				1	
40	O-Ring	48590	5	5	5	5	
90	O-Ring	39413	4	4	4	4	
100	O-Ring	36103	4	4	4	4	
140	O-Ring	48590	1	1	1	1	
150	O-Ring	48347	1	1	1	1	
		48186	1				
100	LiquifromIM	48187		1			
190	Liquinani	48188			1		
		48189				1	
230	Injection Check Valve Body	48617	1	1	1	1	
250	Ceramic Weight	10322	1	1	1	1	
260	Foot Valve Coupling	36204	1	1	1	1	
270	Foot Valve Strainer	10123	1	1	1	1	
	Tubing, Suction & Discharge	25636-16	1	1*			
350	7XXSI ONLY	10342-16	ĺ	1#	1	1	
	Tubing, Suction & Discharge	28636-16	1	1*			
	7XXSU ONLY	27342-16		1#	1	1	
352	Tubing, FastPrime™	10469-06	1	1	1	1	
354	Tubing, 4FV	25636-06	1	1	1	1	
440	Bleed Nut	48622	1	1	1	1	
	Quetien Check/Value	48675	1				
602	Suction Check Valve	48676		1	1	1	
600	Contridere Value	48542	2				
603	Cartridge valve	48543		2	2	2	
604	FootDrime IM Contriduce Value	48548	1				
604	FastPrime "" Cartridge valve	48549		1	1	1	
605	FastPrime™ Valve	48848	1	1	1	1	
606	Liquid End Hardware	48703	1	1	1	1	
607	Fact Value	48718	1				
607	FOOL VAIVE	48721		1	1	1	
608	Injection Valve	48728	1	1	1	1	
	Tubing Connection Kit	77382	4	4*			
612	7XXSI and 7XXSU	77383		4#	4	4	
013	Tubing Connection Kit	77378	4	4*			
	7XXSM ONLY	77379		4#	4	4	
615	Single Ball Check Valve Fitting	48787	3	3	3	3	
617	Injection Valve Cartridge	48795	1	1	1	1	
600		48798	1	1*			
020	4FV ASSEIIDIY	48753		1#	1	1	
621	4FV Fitting Assembly	49254	1	1	1	1	

ROYTRONIC[®] Series A pumps * ROYTRONIC[™] EXCEL Series A+ pumps

(23) (10)



(354)

(603)

(608)

(613)

(620)

(40)

(617

(615

(613)

D. PRIMING WITH ROYTRONIC® 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. PRIMING WITH FastPrime™ VALVE

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

F. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about \mathcal{V}_8 turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.





LE-8X2NX, 8X8NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
 - PTFE Tape on Pipe Attachment Only No attach Attachment Only No attach At

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime[™] fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

LE-8X2NX, **8X8NX**

Key	Part Num- QUANTITY			QUAN	ITITY					
Number	Description	ber	812NX	822NX	832NX	842NX	818NX	828NX	838NX	848NX
		48360					1			
		48361	1							
		48363						1		
10	Duran Lie e d Malda d EastDrive a IM	48364		1						
10	Pump Head Molded FastPrime	48366							1	
		48367			1					
		48369								1
		48370				1				
40	O-Bing	48349	4	4	4	4	4	4	4	4
90	O-Bing	39413	5	5	5	5	5	5	5	5
100	O-Bing	36103	4	4	4	4	4	4	4	4
140	O-Bing	48590	1	1	1	1	1	1	1	1
150	O-Bing	48347	1	1	1	1	1	1	1	
100	0-1 ling	48186	1	<u> </u>	· ·	· ·	1		· ·	
		40100	· ·	1				1		
190	Liquifram™	40107								
		40100				1				
		40109						4	4	
230	Injection Check Valve Body	40017	4	4			I			
050		48618								
250		10322	1		1		1			
260	Foot valve Coupling	36204	1	1	1		1	1	1	
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1
	Tubing, Suction & Discharge	25636-16	1	1*			1	1*		
350	8XXNI ONLY	10342-16		1#	1	1		1#	1	1
	Tubing, Suction & Discharge	28636-16	1	1*			1	1*		L
	8XXNU ONLY	27342-16		1#	1	1		1#	1	1
352	Tubing, FastPrime™	10469-06	1	1	1	1	1	1	1	1
	FastPrima™ Discharge Check Valve	48665	1							
601		48667		1	1	1				
001	Tasti fille Discharge Offeck valve	48669					1			
		48672						1	1	1
		48677	1							
602	Suction Check Value	48679		1	1	1				
002	Suction Check valve	48681					1			
		48684						1	1	1
	Contraining Malera	48542	4				4			
603	Carinoge valve	48543		4	4	4		4	4	4
004		48548	1				1			
604	FastPrime [™] Cartridge valve	48549	İ	1	1	1		1	1	1
0.05		48700	1	1	1	1			1	
605	FastPrime ¹ Valve	48848					1	1	1	1
606	Liguid End Hardware	48703	1	1	1	1	1	1	1	1
		48718					1			
		48721						1	1	1
607	Foot Valve	48720	1							
		48723		1	1	1				
		48728		· · ·	· ·	· ·	1	1	1	1
608	Injection Valve	48731	1	1	1	1		· ·	· · ·	· · ·
	Tubing Connection Kit	77382	1	/×	<u> </u>	<u> </u>	Δ	⊿*		
	8XXNI and 8XXNII	77383		, л#	Л	Л	-	- Λ#	1	Λ
613	Tubing Connection Kit	77378	1	<u>-</u> π Δ*			4	<u></u> Δ*		
		77370		, л#	Л	1		- Λ#	1	Λ
		/8788	2	-+#	2	2		-+ π		
615	Single Ball Check Valve Fitting	40700	<u> </u>	<u> </u>	<u> </u>	<u> </u>	0	0	0	2
<u>├</u> ────┤	-	40/0/					2	2	2	2
616	Double Ball Check Valve Fitting	40/91					2			2
617	Injection Volve Contridue	40/92	<u>∠</u>		2	<u> </u>	4	4	4	4
01/	injection valve Cartridge	48/95								

ROYTRONIC® Series A pumps * ROYTRONIC EXCEL™ Series A+ pumps



D. PRIMING FOR FastPrime™ LIQUID ENDS

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and discharge valve and repeat steps above.
- Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE AND PUMP HEAD

ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1, 2 and 3 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a ROYTRONIC® 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.

3. Pump Head Depressurization:

Be sure your relief tubing is connected to your FastPrime™ valve and runs back to your solution drum or tank.

Turn the FastPrime[™] knob one-and-a-half turns counter-clockwise ♂. The Pump Head is now depressurized. Keep the valve open until solution drains into the solution drum or tank. Then turn the FastPrime[™] knob clockwise ♂ to tighten the knob to a closed position.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.





LE-8X2SX, 8X8SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime™ fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE-8X2SX, 8X8SX

Key	Description	Part		QUAN	ITITY			QUAN	ITITY	
Number	Description	Number	812SX	822SX	832SX	842SX	818SX	828SX	838SX	848SX
		48360					1			
		48361	1							
		48363						1		
		48364		1						
10	Pump Head Molded FastPrime [™]	48366							1	
		48367			1					
		48369								1
		48370				1				
40	O-Bing	48349	5	5	5	5	5	5	5	5
90	O-Bing	39413	5	5	5	5	5	5	5	5
100	O-Bing	36103	1	1	1	1	1	1	1	1
140	O-Bing	48590	1	1	1	1	1	1	1	1
150	O-Bing	48347	1	1	1	1	1	1	1	1
150	0-i ling	/8186	1	- 1	- 1	- 1	1			- 1
		40100	- 1	1			- 1	1		
190	Liquifram™	40107			1				1	
		40100			1					
		40109				- 1				1
230	Injection Check Valve Body	40017			- 1	- 1				1
050	Cororrig Weight	40010	- 1		- 1	- 1		4		
250	Ceramic Weight	10322								
260	Foot valve Coupling	36204								
270	Foot valve Strainer	10123		1	1					- 1
	Tubing, Suction & Discharge	25636-16	1	1^			1	1^		
350	8XXSI ONLY	10342-16		1#	1	1		1#	1	1
	Tubing, Suction & Discharge	28636-16	1	1*			1	1*		
	8XXSU ONLY	27342-16		1#	1	1		1#	1	1
352	Tubing, FastPrime™	10469-06	1	1	1	1	1	1	1	1
354	Tubing, 4FV	25636-06	1	1	1	1	1	1	1	1
440	Bleed Nut	48622	1	1	1	1	1	1	1	1
	Suction Check Valve	48677	1							
602		48679		1	1	1				
002		48681					1			
		48684						1	1	1
603	Cartridge Valve	48542	4				4			
005	Cartridge valve	48543		4	4	4		4	4	4
604	EastBrimaIM Cartridge Value	48548	1				1			
004	FastFille Callinge valve	48549		1	1	1		1	1	1
605	Faat Prima IM Valva	48700	1	1	1	1				
605	FastFilliette valve	48848					1	1	1	1
606	Liquid End Hardware	48703	1	1	1	1	1	1	1	1
		48718					1			
007		48721						1	1	1
607	Foot valve	48720	1							
		48723		1	1	1				
000		48728					1	1	1	1
608	Injection Valve	48731	1	1	1	1		· · ·		
	Tubing Connection Kit	77382	4	4*			4	4*		
	8XXSI and 8XXSI	77383		4#	4	4		4#	4	4
613	Tubing Connection Kit	77378	4	<u></u> 4*			4	<u></u> 4*	· ·	
	8XXSM ONI V	77379	т	Δ#	4	4	т	Δ#	4	4
		48788	2	2	2	2		<u> </u>	- T	r
615	Single Ball Check Valve Fitting	18797	<u> </u>		~	<u> </u>	2	2	2	2
<u>}</u> −−−− }		/8701					1	1	1	<u>د</u> 1
616	Double Ball Check Valve Fitting	18700	1	1	1	1				1
617	Injustion Value Cartridge	40/92	1		- 1		4	4	4	
01/		40/90			1		- 1	4*		1
		40/98						<u>і</u> 1	4	4
620	4FV Assembly	48/53	4	-1 *				1#		
	2	48/99		а <i>ш</i>	4	4				
001		48/54	4	#			4		4	4
621	4FV Fitting Assembly	49255								

ROYTRONIC[®] Series A pumps * ROYTRONIC EXCEL[™] Series A+ pumps



D. PRIMING WITH ROYTRONIC® 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. PRIMING WITH FastPrime™ VALVE

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

F. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about \mathcal{V}_8 turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.





LE-8X3NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
 - PTFE Tape on Pipe ttachment only No and the sector of the

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime[™] fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

LE-8X3NX

Key	Description	Part	QUANTITY				
Number	Description	Number	813NX	823NX	833NX	843NX	
		48361	1				
10	Dump Haad Maldad FaatDrimaTM	48364		1			
	Pump nead molded PastPhime***	48367			1		
		48370				1	
40	O-Ring	48591	4	4	4	4	
90	O-Ring	39413	5	5	5	5	
100	O-Ring	48589	4	4	4	4	
140	O-Ring	48590	1	1	1	1	
150	O-Ring	48347	1	1	1	1	
		48186	1				
100	LiquifromTM	48187		1			
190	Liquitati	48188			1		
		48189				1	
230	Injection Check Valve Body	48618	1	1	1	1	
250	Ceramic Weight	10322	1	1	1	1	
260	Foot Valve Coupling	36204	1	1	1	1	
270	Foot Valve Strainer	10123	1	1	1	1	
	Tubing, Suction & Discharge	25636-16	1	1*			
350	8XXNI ONLY	10342-16		1#	1	1	
	Tubing, Suction & Discharge	28636-16	1	1*			
	8XXNU ONLY	27342-16		1#	1	1	
352	Tubing, FastPrime™	10469-06	1	1	1	1	
	FastPrime™	48666	1				
601	Discharge Check Valve	48668		1	1	1	
	Suction	48678	1				
602	Check Valve	48680		1	1	1	
		48545	4				
603	Cartridge Valve	48546		4	4	4	
004	FastPrime™	48551	1				
604	Cartridge Valve	48552		1	1	1	
605	FastPrime™ Valve	48700	1	1	1	1	
606	Liquid End Hardware	48703	1	1	1	1	
607	Foot Velve	48724	1				
607	FOOL valve	48725		1	1	1	
608	Injection Valve	48732	1	1	1	1	
	Tubing Connection Kit	77382	4	4*			
612	8XXNI and 8XXNU	77383		4#	4	4	
013	Tubing Connection Kit	77378	4	4*			
	8XXNM ONLY	77379		4#	4	4	
615	Single Ball Check Valve Fitting	48789	2	2	2	2	
616	Double Ball Check Valve Fitting	48793	2	2	2	2	
617	Injection Valve Cartridge	48795	1	1	1	1	

ROYTRONIC® Series A pumps * ROYTRONIC EXCEL™ Series A+ pumps


D. PRIMING FOR FastPrime™ LIQUID ENDS

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and discharge valve and repeat steps above.
- Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE AND PUMP HEAD

ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1, 2 and 3 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a ROYTRONIC® 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.

3. Pump Head Depressurization:

Be sure your relief tubing is connected to your FastPrime™ valve and runs back to your solution drum or tank.

Turn the FastPrime[™] knob one-and-a-half turns counter-clockwise ♂. The Pump Head is now depressurized. Keep the valve open until solution drains into the solution drum or tank. Then turn the FastPrime[™] knob clockwise ♂ to tighten the knob to a closed position.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE-8X3SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime™ fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE-8X3SX

Key	Description	Dort Number		QUAI	ITITY	
Number	Description		813SX	823SX	833SX	843SX
		48361	1			
10	Dump Lload Moldad FastDrimeTM	48364		1		
10	Pump Head Molded FastPrime	48367			1	
		48370				1
40	O-Ring	48591	5	5	5	5
90	O-Ring	39413	5	5	5	5
100	O-Ring	48589	4	4	4	4
140	O-Ring	48590	1	1	1	1
150	O-Ring	48347	1	1	1	1
		48186	1			
100	LiquitromTM	48187		1		
190	Liquiram	48188			1	
		48189				1
230	Injection Check Valve Body	48618	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1
	Tubing, Suction & Discharge	25636-16	1	1*		
250	8XXSI ONLY	10342-16		1#	1	1
350	Tubing, Suction & Discharge	28636-16	1	1*		
	8XXSU ONLY	27342-16		1#	1	1
352	Tubing, FastPrime™	10469-06	1	1	1	1
354	Tubing, 4FV	25636-06	1	1	1	1
440	Bleed Nut	48622	1	1	1	1
602	Suction	48678	1			
002	Check Valve	48680		1	1	1
603	Cartridgo Valvo	48545	4			
003	Califidge valve	48546		4	4	4
604	FastPrime™	48551	1			
004	Cartridge Valve	48552		1	1	1
605	FastPrime [™] Valve	48700	1	1	1	1
606	Liquid End Hardware	48703	1	1	1	1
607	Foot Valve	48724	1			
007	1 OOT valve	48725		1	1	1
608	Injection Valve	48732	1	1	1	1
	Tubing Connection Kit	77382	4	4*		
613	8XXSI and 8XXSU	77383		4#	4	4
015	Tubing Connection Kit	77378	4	4*		
	8XXSM ONLY	77379		4#	4	4
615	Single Ball Check Valve Fitting	48789	2	2	2	2
616	Double Ball Check Valve Fitting	48793	1	1	1	1
617	Injection Valve Cartridge	48795	1	1	1	1
620	AEV Accombly	48800	1	1*		
020	H V ASSEIIDIY	48755		1#	1	1
621	4FV Fitting Assembly	49256	1	1	1	1

ROYTRONIC[®] Series A pumps * ROYTRONIC[™] EXCEL Series A+ pumps



D. PRIMING WITH ROYTRONIC® 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. PRIMING WITH FastPrime™ VALVE

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

F. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about \mathcal{V}_8 turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>

Liquid End Sheet LE-91S / LE-92S / LE-95S

When purping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering purp.

Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE

- 1. The purpose of the injection check valve is to prevent backflow from the treated line.
- 2. A 1/2" NPT female fitting with sufficient depth will accept the injection check valve.
- 3. To insure correct seating of the ball inside the injection check valve, the injection check valve should be installed upwards (vertically) into bottom of the pipe.

B. CONNECTING DISCHARGE TUBING

NOTE: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Slide the small end of the coupling nut onto tubing, then slide on the clamp ring.
- 3. Push tubing on the valve housing nozzle so that tubing flares out and butts up against valve housing and will not go any further.
- 4. Slide the clamp ring and coupling nut to the threads and engage. While pushing the tubing on to the valve housing nozzle, tighten the coupling nut by hand until tubing is held securely in place.

Excessive force will crack or distort fittings. DO NOT USE PIPE WRENCH.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5 m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (see **B. Connecting Discharge Tubing**).

D. PRIMING

- 1. Connect pressure relief tubing to pressure relief port on the four function valve.
- 2. Route tubing to solution reservoir and anchor with a plastic tie. Do not submerge tubing in solution.
- 3. Start pump. Set at 80% speed and 100% stroke.
- 4. Pull on Pressure Relief knob (red or black knob), holding knob out until solution is visible through translucent return tubing.
- 5. The pump is now primed.

NOTE:

- (a) Pump is normally self-priming if suction lift is not more than 5 ft (1.5 m), valves in the pump are wet with water (pump is shipped from factory with water in pump head) and the above steps (**D. Priming**) are followed.
- (b) If the pump does not self prime, remove discharge valve housing and ball and pour water or solution slowly into discharge port until head is filled. Follow step **D. Priming** thereafter.

E. DEPRESSURIZING DISCHARGE LINE

1. It is possible to depressurize the discharge line and pump head without removal of tubing or loosening of fittings.

Be sure injection check valve is properly installed and is operating. If a gate valve or globe has been installed downstream of injection check valve, it should be closed. Be certain relief tubing from the four function valve is connected and run to solution reservoir.

- 2. Pull on both anti-syphon and relief knobs.
- 3. The discharge line is now depressurized.
- 4. If injection check valve is of higher elevation than pump head, disconnecting tubing at injection check valve end will allow air to enter and cause solution to drain back to tank.



8 Post Office Square Acton, MA 01720 USA TEL: (508) 263-9800 FAX: (508) 264-9172 http://www.Imipumps.com



KEY	PART		(QUANTITY	
NO.	NO.	DESCRIPTION	LE-91S	LE-92S	LE-95S
	20220	Spring Delyethylene	4		
2	29339	Spring, Polyethylene	I	1	1
2	10339	Ball 275" Coromic	1	1	1
3	10330	Sool Bing, Toflon	4	4	4
4	10407	Velve Seet DVC	4	4	4
	10292	Valve Seat, FVC	2	2	2
6	10392	Coupling Nut, Polypropylene	4	1	<u> </u>
7	10299	Tubing 275" OD Polyothylopo	4	4	4
'	10342-10	Tubing, 375 O.D. Polyethylene		1	1
0	10342-10	Valva Housing, DVC	1	1	
•	10293	Valve Housing, PVC	1	I	1
0	10393	Sarow 10.24 x 2/4" SS	4	4	1
9	20017*	Julew, 10-24 X 3/4 33	4	4	4
10	30917	Liquinani ^o , 0.9 Si, Fluoronini Head, 0.0 Si, Aprilia	1	I	1
	10113	Head, 0.9 SI, Acrylic	1	1	
	10213	Head, 0.9 SI, PVC		1	1
10	1031310	Feed, 0.9 St Polypropylene	4	4	1
13	10978	Poot valve Seat	1	1	1
14	10123	Strainer, Polypropylene	1		
15	10501	Injection Check/Valve Assembly	1	4	
-	25233	Injection Check/Valve Assembly		1	4
47	25073	Injection Check/Valve Assembly			1
1/	25232	Suction Valve Assembly	1	1	
	25075	Suction Valve Assembly			1
18	25234	Foot Valve Assembly	1	1	
10	25076	Foot Valve Assembly			1
19	25696	Head Assembly, LE-91S	1		
	25697	Head Assembly, LE-92S		1	
	25832	Head Assembly, LE-95S			1
20	10469-06	Tubing, .375" O.D. Vinyl	1		
21	33050	Anti-Syphon/Pressure Release Valve Asm.	1		
	27048	Anti-Syphon/Pressure Release Valve Asm.		1	
	28022	Anti-Syphon/Pressure Release Valve Asm.			1
22	33024	Pressure Relief Cap Assembly	1		
	28447	Pressure Relief Cap Assembly		1	
	28446	Pressure Relief Cap Assembly			1
23	31138	Anti-Syphon Cap Assembly	1		
	27045	Anti-Syphon Cap Assembly		1	
	25838	Anti-Syphon Cap Assembly			1
24	25627	Screw, 6-32 x 1 1/4" SS	4	4	4
26	27352	Flapper Valve	1	1	
27	10294	Injector Fitting, PVC	1		
	26841	Injector Fitting, PVDF		1	
	10394	Injector Fitting, PPGF			1
35	30425	Valve Body, PVC	1		
	26847	Valve Body, PVDF		1	
	25869	Valve Body, PPGF			1
36	25628	Nut, 6-32 Hex SS	4	4	4
37	25631	Nut, Ferrule	1	1	1
38	25636-10	Tubing, .250" O.D. Polyethylene	1	1	1
39	26136	Clamp Ring	3	3	3
	32293	Suction Tubing Straightener (not shown)	1	1	1

*Parts included in Spare Parts Kit SP-U1



Note:

Threaded connections into pump head are 3/4" - 16 straight threads. DO NOT USE TEFLON TAPE. These joints are sealed by seal ring valve seats (Item 4 on exploded view).





© 1997 IMI Milton Roy - All Rights Reserved Printed in USA Specifications subject to change without notice. 8 Post Office Square Acton, MA 01720 USA TEL: (508) 263-9800 FAX: (508) 264-9172 http://www.Imipumps.com



LE-9X0AX, 9X8AX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Please note: The chemical discharges through the discharge valve which is mounted to the front of the AUTOPRIME[™] liquid end, as seen in Figure 3.

Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE - 9X0AX, 9X8AX

Key	Description	Part		QUAN	ITITY			QUAN	ITITY	
Number	Description	Number	910AX	920AX	930AX	940AX	918AX	928AX	938AX	948AX
		48422	1							
		48423					1			
		48425		1						
10	Pump Hood AutoPrimeIM	48426						1		
10	rump nead Adornme	48428			1					
		48429							1	
		48431				1				
		48432								1
40	O-Ring	48349	5	5	5	5	5	5	5	5
90	O-Ring	39413	6	6	6	6	6	6	6	6
100	O-Ring	36103	5	5	5	5	5	5	5	5
		48186	1				1			
100	LiquifromTM	48187		1				1		
190	Liquinani	48188			1				1	
		48189				1				1
230	Injection Check Valve Body	48617	1	1	1	1	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1
	Tubing, Suction & Discharge	25636-16	1	1*			1	1*		
	9XXAI ONLY	10342-16	ĺ	1#	1	1		1#	1	1
350	Tubing Suction & Discharge	28636-16	1	1*			1	1*		
	9XXAU ONLY	27342-16		1#	1	1		1#	1	1
356	Tubing AutoPrime™	10142-10	1	1	1	1	1	1	1	1
000		49166	1				1			
602	Suction Check Valve	40163		1	1	1		1	1	1
		49105	3	1	1	1	3	1	1	1
603	Cartridge Valve	40545	5	3	3	3	5	3	3	3
606	Liquid End Hardware	40340	1	1	1	1	1	1	1	1
000		40702	1	1	1	1	1	1	1	1
607	Foot Valve	49104		1	1	1	1	1	1	1
609	Injection Velvo	49100	1	1	1	1	- 1	1	1	1
608		48728	1	I	I	I	1	I	I	1
609	AutoPrime™ Disch. Check Valve	40704				- 1	- 1	- 1	- 1	
		46705	1	I	I	I	- 1	I	1	1
610	AutoPrime™ Disch. Cartridge Valve	40700				- 1	- 1	- 1	- 1	
011	Auto Drime IM Chuttle Make	40707	4	1	1	1		1	1	1
010	AutoPrime IM Contriduo Valve	48708		1	1	1	1			1
612	AutoPrime ···· Cartridge valve	48709		4*	1	1	1	1*	1	1
	Tubing Connection Kit	77000	4	4" 4#	4		4	4"		
613		77383		4*	4	4		4*	4	4
	Tubing Connection Kit	77378	4	4*			4	4*		
	9XXAM ONLY	77379		4#	4	4		4#	4	4
614	Tubing Connection Kit 9XXAI and 9XXAU	77384	1	1	1	1	1	1	1	1
	Tubing Connection Kit 9XXAM ONLY	77380	1	1	1	1	1	1	1	1
615	Single Ball Check Valve Fitting	48787	2	2	2	2	2	2	2	2
616	Double Ball Check Valve Fitting	48791	3	3	3	3	3	3	3	3
617	Injection Valve Cartridge	48795	1	1	1	1	1	1	1	1
622	Cartridge Valve	48545	1	1	1	1	1	1	1	1

* Roytronic Series A pumps

* Roytronic EXCEL Series AD pumps



D. CONNECTING AUTOPRIME™ TUBING

- 1. Using ½" 0.D. polyethylene tubing, cut AUTOPRIME™ tubing to length so that it returns to the solution tank. This tubing must not be submerged in the solution.
- 2. Follow the same procedure in connecting AUTOPRIME[™] tubing to the AUTOPRIME[™] valve (*see* **B. Connecting Discharge Tubing**).

E. PRIMING FOR AUTOPRIME™ LIQUID ENDS

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 1. Plug in or switch the pump on.
- 2. While the pump is running, set at 100% speed and 100% stroke length.
- 3. The suction tubing should begin to fill with solution from the tank.
- 4. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the AUTOPRIME[™] valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and AUTOPRIME[™] valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

F. DEPRESSURIZING THE DISCHARGE LINE AND PUMP HEAD

ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1 and 2 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a ROYTRONIC[®] 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE-9X0HX, **9X8HX**

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- Position female Ferrule about one inch (25 mm) from end of tubing.
 5. 1(1) 0. OD to bit income the bit of the state of t
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to %" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Please note: The chemical discharges through the ROYTRONIC[®] 4-function valve which is mounted to the front of the AUTOPRIME[™] liquid end, as seen in Figure 3.

Note: Cut tubing to length needed for discharge line.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE- 9X0HX, 9X8HX

Key	Description	Part		QUAN	ITITY			QUAN	ITITY	
Number	Description	Number	910HX	920HX	930HX	940HX	918HX	928HX	938HX	948HX
		48422	1							
		48423					1			
		48425		1						
10		48426						1		
10	Fump Head AutoFime	48428			1					
		48429							1	
		48431				1				
		48432								1
40	O-Ring	48349	6	6	6	6	6	6	6	6
90	O-Ring	39413	5	5	5	5	5	5	5	5
100	O-Ring	36103	5	5	5	5	5	5	5	5
		48186	1				1			
		48187		1				1		
190	Liquifram™	48188			1				1	
		48189				1				1
230	Injection Check Valve Body	48617	1	1	1	1	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1
	Tubing Suction & Discharge	25636-16	1	1			1	1		
	9XXHI ONLY	10342-16		1	1	1		1	1	1
350	Tubing Suction & Dischargo	28636-16	1	1			1	1		
	9XXHU ONLY	27342-16		1	1	1		1	1	1
354	Tubing 4EV	25636-06	1	1	1	1	1	1	1	1
356	Tubing AutoPrime™	10142-10	1	1	1	1	1	1	1	1
440	Bleed Nut	48622	1	1	1	1	1	1	1	1
110	Biood Hat	49166	1				1			
602	Suction Check Valve	49163		1	1	1		1	1	1
		48545	3				3			
603	Cartridge Valve	48546		3	3	3		3	3	3
606	Liquid End Hardware	48702	1	1	1	1	1	1	1	1
000		49164	1				1			
607	Foot Valve	49165		1	1	1		1	1	1
608	Injection Valve	48728	1	1	1	1	1	1	1	1
000		48706	1				1			1
610	AutoPrime™ Disch. Cartridge Valve	48707	- 1	1	1	1	- 1	1	1	1
611	AutoPrime™ Shuttle Valve	50042	1	1	1	1	1	1	1	1
612	AutoPrime TM Cartridge Valve	50042	1	1	1	1	1	1	1	1
012		77382	4	4			4	4		1
	9XXHI and 9XXHU	77383		4	1	1	-	4	1	4
613		77379	1	4	-	-	1	4	-	7
	9XXHM ONLY	77370	4	4	1	4	4	4	1	4
		77304	4	4	4	4		4	4	4
614		77200	1	1	1	1	1	1	1	1
615		11300	2	2	0	0	2	2	0	2
616	Double Ball Check Valve Fitting	40/0/	2	2	2	2	2	2	2	2
617		40/91								ے 1
017		40/90		1	I		1	1	I	I
620	4FV Assembly	48/98		1	4	4	1	1	4	4
001		48/53	4				4			1
621		49254		1	1		1	1	1	1
622	Cartridge Valve	48543	1	1	1	1	1	1	1	1



D. CONNECTING AUTOPRIME™ TUBING

- 1. Using 1/2" 0.D. polyethylene tubing, cut AUTOPRIME[™] tubing to length so that it returns to the solution tank. This tubing must not be submerged in the solution.
- 2. Follow the same procedure in connecting AUTOPRIME™ tubing to the AUTOPRIME™ valve (see **B. Connecting Discharge Tubing**).

E. PRIMING WITH ROYTRONIC® 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the AUTOPRIME[™] valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and AUTOPRIME[™] valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

F. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



FIGURE 3

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE-9X0NX, LE-9X8NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
 - PTFE Tape on Pipe Attachment Only Realities Re

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime[™] fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com

LE-9X0NX, LE-9X8NX

Key	Description	Part		QUAN	NTITY			QUAN	ITITY	
Number	Description	Number	910NX	920NX	930NX	940NX	918NX	928NX	938NX	948NX
		48214	1							
		48215					1			
		48218		1						
10	Dump Lload Machined FastDrimeTM	48219						1		
10	Pump Head Machined FastPhine	48222			1					
		48223							1	
		48226				1				
		48227								1
40	Tube Connect O-Ring	48349	4	4	4	4	4	4	4	4
90	O-Ring	39413	5	5	5	5	5	5	5	5
100	Cartridge Valve O-Ring	36103	4	4	4	4	4	4	4	4
140	FastPrime™ Valve Gasket	48590	1	1	1	1	1	1	1	1
150	FastPrime™ Valve O-Ring	48347	1	1	1	1	1	1	1	1
		48186	1				1			
100	LiquifromTM	48187		1				1		
190	Liquirani	48188			1				1	
		48189				1				1
230	Injection Check Valve Body	48617	1	1	1	1	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1
	Tubing, Suction & Discharge	25636-16	1	1*			1	1*		
250	9XXNI ONLY	10342-16		1#	1	1		1#	1	1
350	Tubing, Suction & Discharge	28636-16	1	1*			1	1*		
	9XXNU ONLY	27342-16		1#	1	1		1#	1	1
352	Tubing, FastPrime™	10469-06	1	1	1	1	1	1	1	1
601	EastPrima IM Discharge Check Valve	48669	1				1			
001	FastFille Discharge Check valve	48672		1	1	1		1	1	1
602	Suction Check Valvo	48681	1				1			
002	Suction Check valve	48684		1	1	1		1	1	1
602	Cartridge Valve	48542	4				4			
003	Cartilidge valve	48543		4	4	4		4	4	4
604	EastPrime M Cartridge Valve	48548	1				1			
004		48549		1	1	1		1	1	1
605	FastPrime™ Valve	48848	1	1	1	1	1	1	1	1
606	Liquid End Hardware	48702	1	1	1	1	1	1	1	1
607	East Valva	48718	1				1			
007		48721		1	1	1		1	1	1
608	Injection Valve	48728	1	1	1	1	1	1	1	1
	Tubing Connection Kit	77382	4	4*			4	4*		
612	9XXNI and 9XXNU	77383		4#	4	4		4#	4	4
013	Tubing Connection Kit	77378	4	4*			4	4*		
	9XXNM ONLY	77379		4#	4	4		4#	4	4
615	Single Ball Check Valve Fitting	48787	2	2	2	2	2	2	2	2
616	Double Ball Check Valve Fitting	48791	2	2	2	2	2	2	2	2
617	Injection Valve Cartridge	48795	1	1	1	1	1	1	1	1

ROYTRONIC® Series A pumps * ROYTRONIC EXCEL™ Series A+ pumps



D. PRIMING FOR FastPrime™ LIQUID ENDS

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and discharge valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE AND PUMP HEAD

ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1, 2 and 3 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a ROYTRONIC® 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.

3. Pump Head Depressurization:

Be sure your relief tubing is connected to your FastPrime[™] valve and runs back to your solution drum or tank. Turn the FastPrime[™] knob one-and-a-half turns counter-clock-

wise ♂. The Pump Head is now depressurized. Keep the valve open until solution drains into the solution drum or tank. Then turn the FastPrime[™] knob clockwise ひ to tighten the knob to a closed position.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



FIGURE 3

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at **www.Imipumps.com**



LE-9X0SX, LE-9X8SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime™ fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE-9X0SX, LE-9X8SX

Key	Description	Part		QUAN	ΙΤΙΤΥ			QUAI	ITITY	
Number	Description	Number	910SX	920SX	930SX	940SX	918SX	928SX	938SX	948SX
		48214	1							
		48215					1			
		48218		1						
10	Pump Hood Machined FootPrimeTM	48219						1		
	Fump nead Machined Fastrime	48222			1					
		48223							1	
		48226				1				
		48227								1
40	Tube Connect O-Ring	48349	5	5	5	5	5	5	5	5
90	O-Ring	39413	5	5	5	5	5	5	5	5
100	Cartridge Valve O-Ring	36103	4	4	4	4	4	4	4	4
140	FastPrime™ Valve Gasket	48590	1	1	1	1	1	1	1	1
150	FastPrime™ Valve O-Ring	48347	1	1	1	1	1	1	1	1
		48186	1				1			
		48187		1				1		
190	Liquifram	48188			1				1	
		48189				1				1
230	Injection Check Valve Body	48617	1	1	1	1	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1
	Tubing Suction & Discharge	25636-16	1	1*			1	1*		
	9XXSI ONLY	10342-16		1#	1	1		1#	1	1
350	Tubing Suction & Discharge	28636-16	1	1*			1	1*		
	9XXSU ONLY	27342-16		. 1#	1	1		1#	1	1
352	Tubing FastPrime™	10469-06	1	1	1	1	1	1	1	1
354	Tubing 4FV	25636-06	1	1	1	1	1	1	1	1
440	Bleed Nut	48622	1	1	1	1	1		1	1
110	Biood Hat	48681	1				1	·		
602	Suction Check Valve	48684	'	1	1	1	- '	1	1	1
		48542	1	-	- 1			· ·	- '	- 1
603	Cartridge Valve	40342	+	1	1	1	4	1	1	1
		19519	1			-	1	-		
604	FastPrime™ Cartridge Valve	40540			- 1	1		1	1	- 1
605	FastPrimeTM Valve	40349	1	1	1	1	1	1	1	1
606		40040	1	1	1	1	1	1	1	1
000		40702	1	1	1		1		1	1
607	Foot Valve	40710			1	1		1	1	- 1
609	Injection Valvo	40721	1	1	1	1	1	1	1	1
000		77200	1	/*	1		1	1*	- 1	- 1
		77202	4	4	A		4	4		4
613		77070	4	4#	4	4		4#	4	4
		77070	4	4" 4"	4	4	4	4" 4"		
015		1/3/9		4#	4	4		4#	4	4
615	Single Ball Check Valve Fitting	48/8/	2	2	2	2	2	2	2	2
616	Double Ball Check Valve Fitting	48/91								
61/	Injection Valve Cartridge	48795		1	1					
620	4FV Assembly	48/98		1*				1*		
		48/53		1#	1			1#		
621	4EV Fitting Assembly	49254	1	1	1	1	1	1	1	1

ROYTRONIC[®] Series A pumps * ROYTRONIC EXCEL[™] Series A+ pumps



D. PRIMING WITH ROYTRONIC® 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. PRIMING WITH FastPrime™ VALVE

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

F. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



FIGURE 3

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE-9X5NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime[™] fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com

LE-9X5NX

Key	Description	Part		QUAN	ITITY	
Number	Description	Number	915NX	925NX	935NX	945NX
		48216	1			
10	Dump Hood Machined FactDrime IM	48220		1		
	Fump near Machiner FastFime	48224			1	
		48228				1
40	O-Ring	48591	4	4	4	4
90	O-Ring	39413	5	5	5	5
100	O-Ring	48589	4	4	4	4
140	O-Ring	48590	1	1	1	1
150	O-Ring	48347	1	1	1	1
		48186	1			
100	Liquifrom TM Sizo Codo	48187		1		
190		48188			1	
		48189				1
230	Injection Check Valve Body	48619	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1
	Tubing, Suction & Discharge	25636-16	1	1*		
050	9XXNI ONLY	10342-16		1#	1	1
350	Tubing, Suction & Discharge	28636-16	1	1*		
	9XXNU ONLY	27342-16		1#	1	1
352	Tubing, FastPrime™	10469-06	1	1	1	1
0.01		48670	1			
601	FastPrime ¹ Discharge Check Valve	48673		1	1	1
600	Custion Check Volve	48682	1			
602	Suction Check valve	48685		1	1	1
600	Contrideo Molivo	48545	4			
603	Cannoge valve	48546		4	4	4
604	FootDrime IM Contridere Malue	48551	1			
004	FasiFille Callinge valve	48552		1	1	1
605	FastPrime™ Valve	48701	1	1	1	1
606	Liquid End Hardware	48702	1	1	1	1
607	Fact Value	48726	1			
607	FOOL VAIVE	48727		1	1	1
608	Injection Valve	48729	1	1	1	1
	Tubing Connection Kit	77382	4	4*		
010	9XXNI and 9XXNU	77383		4#	4	4
613	Tubing Connection Kit	77378	4	4*		
	9XXNM ONLY	77379		4#	4	4
615	Single Ball Check Valve Fitting	48790	2	2	2	2
616	Double Ball Check Valve Fitting	48794	2	2	2	2
617	Injection Valve Cartridge	48795	1	1	1	1

ROYTRONIC® Series A pumps * ROYTRONIC EXCEL™ Series A+ pumps

LE-9X5NX



D. PRIMING FOR FastPrime™ LIQUID ENDS

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and discharge valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE AND PUMP HEAD

ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1, 2 and 3 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a ROYTRONIC® 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.

3. Pump Head Depressurization:

Be sure your relief tubing is connected to your FastPrime[™] valve and runs back to your solution drum or tank. Turn the FastPrime[™] knob one-and-a-half turns counter-clock-

wise ♂. The Pump Head is now depressurized. Keep the valve open until solution drains into the solution drum or tank. Then turn the FastPrime[™] knob clockwise ひ to tighten the knob to a closed position.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



FIGURE 3

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at **www.Imipumps.com**



LE-9X5SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime™ fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE-9X5SX

Key	Departmen	Port Number		QUAI	ITITY	
Number	Description		915SX	925SX	935SX	945SX
		48216	1			
10	Dump Lload Machined FactDrimeTM	48220		1		
10	Pump Head Machined FastPhmerm	48224			1	
		48228				1
40	O-Ring	48591	5	5	5	5
90	O-Ring	39413	5	5	5	5
100	O-Ring	48589	4	4	4	4
140	O-Ring	48590	1	1	1	1
150	O-Ring	48347	1	1	1	1
		48186	1			
100	Liquifrom TM Size Code	48187		1		
190	Liquinarii ····· Size Code	48188			1	
		48189				1
230	Injection Check Valve Body	48619	1	1	1	1
250	Ceramic Weight	10322	1	1	1	1
260	Foot Valve Coupling	36204	1	1	1	1
270	Foot Valve Strainer	10123	1	1	1	1
	Tubing, Suction & Discharge	25636-16	1	1*		
250	9XXSI ONLY	10342-16		1#	1	1
350	Tubing, Suction & Discharge	28636-16	1	1*		
	9XXSU ONLY	27342-16		1#	1	1
352	Tubing, FastPrime™	10469-06	1	1	1	1
354	Tubing, 4FV	25636-06	1	1	1	1
440	Bleed Nut	48622	1	1	1	1
602	Suction Check Valve	48682	1			
002		48685		1	1	1
603	Cartridge Valve	48545	4			
000	Oarmage valve	48546		4	4	4
604	EastPrime™ Cartridge Valve	48551	1			
004	rasti nine Oaitinge valve	48552		1	1	1
605	FastPrime [™] Valve	48701	1	1	1	1
606	Liquid End Hardware	48702	1	1	1	1
607	Foot Valve	48726	1			
007		48727		1	1	1
608	Injection Valve	48729	1	1	1	1
	Tubing Connection Kit	77382	4	4*		
613	9XXSI and 9XXSU	77383		4#	4	4
010	Tubing Connection Kit	77378	4	4*		
	9XXSM ONLY	77379		4#	4	4
615	Single Ball Check Valve Fitting	48790	2	2	2	2
616	Double Ball Check Valve Fitting	48794	1	1	1	1
617	Injection Valve Cartridge	48795	1	1	1	1
620	4FV Assembly	48801	1	1*		
		48756		1#	1	1
621	4FV Fitting Assembly	49257	1	1	1	1

ROYTRONIC[®] Series A pumps * ROYTRONIC EXCEL[™] Series A+ pumps



D. PRIMING WITH ROYTRONIC® 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. PRIMING WITH FastPrime™ VALVE

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

F. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



FIGURE 3

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



When pumping solutions, make certain that all tubing and piping is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE

- The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. A ¼" NPT female fitting with sufficient depth will accept the injection check valve.
- 3. PTFE tape must be used on tapered pipe threads so that there is a leak-proof seal.
- 4. To insure correct seating of the ball inside the injection check valve, the injection check valve should be positioned so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.

B. CONNECTING DISCHARGE PIPE

- NOTE: Corrosion resistant ¼^{**} Schedule 80 or Schedule 120 pipe should be used. DO NOT USE SMALLER PIPE SIZES.
- The discharge valve has a ¼" NPT male outlet. A short ¼" NPT union should be connected to both discharge and suction valves so that the metering pump may be removed without disturbing the piping.
- 2. PTFE tape must be used on tapered pipe threads so that there is a leak-proof seal.
- 3. Do not use PTFE tape on the straight thread which connects the discharge fitting with the pump head.
- NOTE: Excessive force will crack or distort fittings. DO NOT OVERTIGHTEN.

C. CONNECTING SUCTION PIPE

 Using the same size and material pipe as used on the discharge line, cut the suction pipe to length so that the foot valve is positioned just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5 m). PTFE tape must be used on tapered pipe threads so that there is a leak-proof seal. Suction side leaks are invisible, but if present will cause pump to suck in air during each pump stroke.

D. PRIMING

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 1. Plug in or switch the pump on.
- 2. While the pump is running, set at 100% speed and 100% stroke length.
- 3. Turn the bleeder plug 1 to 2 turns counter-clockwise.
- 4. A small amount of solution will begin to discharge through the bleeder plug. Once this happens, turn the knob clockwise and snug tighten with a wrench. Shut the pump off.
- 5. The pump is now primed.

NOTE: Excessive force will crack or distort the bleeder plug. DO NOT OVERTIGHTEN.

- NOTE: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:
 - 1. Remove the discharge valve and slowly pour water or solution into the pump head until it is filled. Replace discharge valve and repeat steps above.
 - Temporarily improve suction conditions by pumping from a container closer to or above pump.



201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com

LE-9X7NP

Key		Part		Qua	ntity		
Number	Description	Number	917NP	927NP	937NP	947NP	
*	Injection Check Valve Asm.	32514	(1)	(1)	(1)	(1)	
ν*	Foot Valve Asm.	32515	(1)	(1)	(1)	(1)	CUSTOME
		48471	Ļ				
Ċ		48472		-			
2		48473			-		
		48474				Ļ	DO NOT A
06	O-ring	48966	1	-	٢	ł	TAPE TO 1
100	O-ring	48760	Ļ	F	Ļ	Ļ	
120	Bleeder Plug	BV202139	Ļ	ŀ	Ļ	Ļ	(606)
		48186	Ļ				<i>Y</i>
	MT~~ (*iii ····	48187		-			
130		48188			Ļ		
		48189				Ļ	
606	Liquid End Hardware	48703	-	-	-	-	
618	Check Valve Asm, Discharge	48767	Ļ	ŀ	Ļ	Ļ	
619	Check Valve Asm, Suction	48768	1	٢	1	1	,
* Quantiti∈ Assembl	es shown in () indicate optional valve ass lies	emblies not incl	uded with	standard	Liquid He	andling	




LE-9X9NX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
 - PTFE Tape on Pipe Attachment Only R Tail Bo R

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2) Note: *Cut tubing to length needed for discharge line.*

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime[™] fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com

LE-9X9NX

Key	Key		QUANTITY				
Number	Description		919NX	929NX	939NX	949NX	
		48214	1				
10	Pump Hood Machined FastPrimeTM	48218		1			
10	Pump nead Machined PastPhine	48222			1		
		48226				1	
40	Tube Connect O-Ring	48349	4	4	4	4	
90	O-Ring	39413	5	5	5	5	
100	Cartridge Valve O-Ring	36103	4	4	4	4	
140	FastPrime™ Valve Gasket	48590	1	1	1	1	
150	FastPrime™ Valve O-Ring	48347	1	1	1	1	
		48186	1				
100		48187		1			
190	Liquiram	48188			1		
		48189				1	
230	Injection Check Valve Body	48618	1	1	1	1	
250	Tubing Straightener	32293	1	1	1	1	
260	Foot Valve Coupling	36204	1	1	1	1	
270	Foot Valve Strainer	10123	1	1	1	1	
	Tubing, Suction & Discharge	25636-16	1	1*			
050	9XXNI ONLY	10342-16		1#	1	1	
350	Tubing, Suction & Discharge	28636-16	1	1*	İ		
	9XXNU ONLY	27342-16		1#	1	1	
352	Tubing, FastPrime™	10469-06	1	1	1	1	
0.01		48671	1				
601	FastPrime III Discharge Check valve	48674		1	1	1	
<u> </u>	Quetien Check/Value	48683	1				
602	Suction Check valve	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1	1			
600	Contridge Velve	48218 1 48222 1 48226 1 48349 4 4 39413 5 5 36103 4 4 48590 1 1 48347 1 1 48347 1 1 48387 1 1 48186 1 1 48187 1 1 48188 1 1 48189 1 1 48618 1 1 36204 1 1 10123 1 1 10342-16 1# 1 10342-16 1# 1 27342-16 1# 1 10469-06 1 1 1 1 1 1 1 48671 1 1 1 48683 1 1 1 48686 1 1 1					
603	Cannoge valve	48692		4	4	4	
CO.4	Fact Drime TM Cartridge Make	48697	1				
604	FastPrime "" Cartridge valve	48698		1	1	1	
605	FastPrime [™] Valve	48700	1	1	1	1	
606	Liquid End Hardware	48702	1	1	1	1	
607	Fact Value	48719	1				
607	FOOL VAIVE	48722		1	1	1	
608	Injection Valve	48730	1	1	1	1	
	Tubing Connection Kit	77382	4	4*			
010	9XXNI and 9XXNU	77383		4#	4	4	
613	Tubing Connection Kit	77378	4	4*			
	9XXNM ONLY	77379	Ì	4#	4	4	
615	Single Ball Check Valve Fitting	48788	2	2	2	2	
616	Double Ball Check Valve Fitting	48792	2	2	2	2	
617	Injection Valve Cartridge	48796	1	1	1	1	

ROYTRONIC® Series A pumps * ROYTRONIC EXCEL™ Series A+ pumps

LE-9X9NX



D. PRIMING FOR FastPrime™ LIQUID ENDS

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the discharge valve and discharge cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and discharge valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. DEPRESSURIZING THE DISCHARGE LINE AND PUMP HEAD

ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1, 2 and 3 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a ROYTRONIC® 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.

3. Pump Head Depressurization:

Be sure your relief tubing is connected to your FastPrime[™] valve and runs back to your solution drum or tank. Turn the FastPrime[™] knob one-and-a-half turns counter-clock-

wise ♂. The Pump Head is now depressurized. Keep the valve open until solution drains into the solution drum or tank. Then turn the FastPrime[™] knob clockwise ひ to tighten the knob to a closed position.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



FIGURE 3

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at **www.Imipumps.com**



LE-9X9SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for connection to the return line of the FastPrime™ fitting.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- Follow same procedure in connecting suction tubing to suction valve and foot valve (see B. Connecting Discharge Tubing).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE-9X9SX

Key	Description	Dart Number	QUANTITY					
Number	הבפרווהווחוו		919SX	929SX	939SX	949SX		
		48214	1					
10	Duran Lie ed Marshin ed EastDrive a IM	48218		1				
10	Pump Head Machined FastPhmerm	48222			1			
		48226				1		
40	Tube Connect O-Ring	48349	5	5	5	5		
90	O-Ring	39413	5	5	5	5		
100	Cartridge Valve O-Ring	36103	4	4	4	4		
140	FastPrime™ Valve Gasket	48590	1	1	1	1		
150	FastPrime™ Valve O-Ring	48347	1	1	1	1		
		48186	1					
100	LiquifromTM	48187	1	1				
190	Liquiram	48188	1		1			
		48189				1		
230	Injection Check Valve Body	48618	1	1	1	1		
250	Tubing Straightener	32293	1	1	1	1		
260	Foot Valve Coupling	36204	1	1	1	1		
270	Foot Valve Strainer	10123	1	1	1	1		
	Tubing, Suction & Discharge	25636-16	1	1*				
250	9XXSI ONLY	10342-16		1#	1	1		
350	Tubing, Suction & Discharge	28636-16	1	1*				
	9XXSU ONLY	27342-16		1#	1	1		
352	Tubing, FastPrime™	10469-06	1	1	1	1		
354	Tubing, 4FV	25636-06	1	1	1	1		
440	Bleed Nut	48622	1	1	1	1		
602	Suction Check Valvo	48683	1					
002	Suction Check valve	48686		1	1	1		
603	Cartridge Valve	48691	4					
000	Oarmage valve	48692		4	4	4		
604	EastPrime™ Cartridge Valve	48697	1					
004	rasti nine Oaitinge valve	48698		1	1	1		
605	FastPrime [™] Valve	48700	1	1	1	1		
606	Liquid End Hardware	48702	1	1	1	1		
607	Foot Valve	48719	1					
007		48722		1	1	1		
608	Injection Valve	48730	1	1	1	1		
	Tubing Connection Kit	77382	4	4*				
613	9XXSI and 9XXSU	77383		4#	4	4		
010	Tubing Connection Kit	77378	4	4*				
	9XXSM ONLY	77379		4#	4	4		
615	Single Ball Check Valve Fitting	48788	2	2	2	2		
616	Double Ball Check Valve Fitting	48792	1	1	1	1		
617	Injection Valve Cartridge	48796	1	1	1	1		
620	4FV Assembly	48799	1	1*				
		48754		1#	1	1		
621	4FV Fitting Assembly	49255	1	1	1	1		

ROYTRONIC[®] Series A pumps * ROYTRONIC EXCEL[™] Series A+ pumps



D. PRIMING WITH ROYTRONIC® 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

E. PRIMING WITH FastPrime™ VALVE

1. Connect the ¾" outer diameter clear vinyl tubing provided with the pump to the FastPrime[™] Valve barbed nozzle (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Plug in or switch the pump on.
- 3. While the pump is running, set at 100% speed and 100% stroke length.
- 4. Turn The FastPrime[™] knob 1 to 2 turns counter-clockwise ♂.
- 5. The suction tubing should begin to fill with solution from the tank.
- 6. A small amount of solution will begin to discharge out the return line of the FastPrime[™] valve. Once this happens, turn the knob clockwise ひ until hand tight and **SHUT THE PUMP OFF.**
- 7. The pump is now primed.

F. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



FIGURE 3

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE-DX0AX, DX8AX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.



- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com

FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Please note: The chemical discharges through the discharge valve which is mounted to the front of the AUTOPRIME[™] liquid end, as seen in Figure 3.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE - DX0AX, DX8AX

Key	Description	Part			QUANTITY			QUANTITY		
Number	Description	Number	D10AX	D50AX	D60AX	D90AX	D18AX	D58AX	D68AX	D98AX
		48743		1						
	48746	48746						1		
				1						
	Durran Lie e d'Aute Drive e TM	48747			1					1
10	Pump Head AutoPrime***	48745			1					
		48748			İ				1	
		50529	1							
		50530					1			
40	O-Ring	48349	5	5	5	5	5	5	5	5
90	O-Ring	39413	2	2	2	2	2	2	2	2
100	O-Ring	36103	5	5	5	5	5	5	5	5
		30916						1		
		30917				1				1
190	Liquifram™	31420			1				1	
		31419	1				1			
230	Injection Check Valve Body	48617	1	1	1	1	1	1	1	1
250	Ceramic Weight	10322	1			1	1	1		1
260	Foot Valve Coupling	36204	1			1	1	1		1
270	Foot Valve Strainer	10123	1			1	1	1		1
210		25636-16						1		
	Tubing, Suction & Discharge	10242 16			1	1			1	1
	DXXAI ONLY	10342-10	1				1			1
350		10142-10						4		
	Tubing, Suction & Discharge DXXAU ONLY	20030-10				4				4
		27342-10	4				4			
050	Tubing AutoDuing TM	2/142-16				4		4		4
350		10142-10								
602	Suction Check Valve	49087				4	4			4
		49088								
603	Cartridge Valve	37335		2				2		
		37338	2		2	2	2		2	2
606	Liquid End Hardware	49109				1		1		1
	· · ·	49110	1				1			
607	Foot Valve	49099		1				1		
		49100	1		1	1	1		1	1
608	Injection Valve	48728	1		1	1	1	1	1	1
609	AutoPrime™ Disch. Check Valve	48705		1				1		
		49098	1		1	1	1		1	1
610	AutoPrime™ Disch. Cartridge Valve	48707		1				1		
		49097	1		1	1	1			1
611	AutoPrime [™] Shuttle Valve	48708	1	1	1	1	1	1	1	1
612	AutoPrime™ Cartridge Valve	48709	1	1		1	1	1	1	1
	Tubing Connection Kit	77382		4				4		
	DXXAI and DXXAU	77383			4	4			4	4
613		77384	4				4			
	Tubing Connection Kit	77378		4				4		
	DXXAM ONLY	77379			4	4			4	4
		77380	4				4			
614	Tubing Connection Kit DXXAI and DXXAU	77384	1	1	1	1	1	1	1	1
	Tubing Connection Kit DXXAM ONLY	77380	1	1	1	1	1	1	1	1
615	Single Ball Check Valve Fitting	48787	3	3	3	3	3	3	3	3
616	Double Ball Check Valve Fitting	48791	2	2	2	2	2	2	2	2
617	Injection Valve Cartridge	48795	1	1	1	1	1	1	1	1
622	Cartridge Valve	48543	1	1	1	1	1	1	1	1



D. CONNECTING AUTOPRIME™ TUBING

- 1. Using ½" 0.D. polyethylene tubing, cut AUTOPRIME™ tubing to length so that it returns to the solution tank. This tubing must not be submerged in the solution.
- 2. Follow the same procedure in connecting AUTOPRIME™ tubing to the AUTOPRIME™ valve (see **B. Connecting Discharge Tubing**).

E. PRIMING FOR AUTOPRIME™ LIQUID ENDS

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 1. Plug in or switch the pump on.
- 2. While the pump is running, set at 100% speed and 100% stroke length.
- 3. The suction tubing should begin to fill with solution from the tank.
- 4. The pump is now primed.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the AUTOPRIME[™] valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and AUTOPRIME[™] valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

F. DEPRESSURIZING THE DISCHARGE LINE AND PUMP HEAD

ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

Read steps 1 and 2 below before proceeding.

1. Be sure the Injection Check Valve is properly installed and is operating. If a shut off valve has been installed downstream of the Injection Valve, it should be closed.

2. Line Depressurization:

To reduce the risk of chemical splash during disassembly or maintenance, all installations should be equipped with line depressurization capability. Installing a ROYTRONIC® 4-Function Valve is one way to include this capability. Refer to the operating instructions of the valve or device.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>



LE-DX0HX, DX8HX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Please note: The chemical discharges through the ROYTRONIC[®] 4-function valve which is mounted to the front of the AUTOPRIME[™] liquid end, as seen in Figure 3.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE-DX0HX, DX8HX

Key	Description	Part	QUANTITY					QUANTITY			
Number	Description	Number	D50HX	D90HX	D60HX	D10HX	D58HX	D98HX	D68HX	D18HX	
		48743	1								
		48746					1				
		48744		1							
10		48747						1			
10	Pump Head AutoPrime [™]	48745			1						
		48748							1		
		50529				1					
		50530								1	
40	O-Ring	48349	6	6	6	6	6	6	6	6	
90	O-Bing	39413	6	6	6	6	6	6	6	6	
100	O-Ring	36103	5	5	5	5	5	5	5	5	
	Çğ	30916	1				1				
		30917		1				1			
190	Liquifram™	31420			1				1		
		31419			· ·	1				1	
230	Injection Check Valve Body	48617	1	1	1	1	1	1	1	1	
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1	
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1	
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1	
270	Foot valve Strainer	25626 16	1				1	1	1	1	
	Tubing, Suction & Discharge	10242 16		1	1			1	1		
	DXXHI ONLY	10342-10				1		- 1	1	1	
350		10142-10				I				1	
	Tubing, Suction & Discharge	28636-16	1					4			
	DXXHU ONLY	27342-16							1		
054		27142-16									
354		25636-06	1	1	1	1	1	1	1	1	
356	Iubing, AutoPrime™	10142-10	1	1	1	1	1	1	1	1	
440	Bleed Nut	48622	1	1	1	1	1	1	1	1	
602	Suction Check Valve	49087	1				1				
		49088		1	1	1		1	1	1	
603	Cartridge Valve	37335	4				4				
		37338		4	4	4		4	4	4	
606	Liquid End Hardware	49109	1	1	1	1	1	1	1	1	
607	Foot Valve	49099	1				1				
	100114110	49100		1	1	1		1	1	1	
608	Injection Valve	48728	1	1	1	1	1	1	1	1	
610	AutoPrime™ Disch, Cartridge Valve	48707	1				1				
010	Autor nine Bisch. Cartinge valve	49097		1	1	1		1	1	1	
611	AutoPrime™ Shuttle Valve	48708	1	1	1	1	1	1	1	1	
612	AutoPrime™ Cartridge Valve	48709	1	1	1	1	1	1	1	1	
	Tubing Connection Kit	77382	4				4				
	DXXHI and DXXHII	77383		4	4			4	4		
610		77384				4				4	
013	Tubing Connection Kit	77378	4				4				
		77379		4	4			4	4		
		77380				4				4	
ĺ	Tubing Connection Kit	77004	4	4	4	4	4	4	4		
614	DXXHI and DXXHU	77384									
	Tubing Connection Kit	77000	_	_	_	_	_	_	_		
	DXXHM ONLY	77380	1	1	1	1	1	1	1	1	
615	Single Ball Check Valve Fitting	48787	2	2	2	2	2	2	2	2	
616	Double Ball Check Valve Fitting	48791	2	2	2	2	2	2	2	2	
617	Injection Valve Cartridge	48795	1	1	1	1	1	1	1		
	,	48798	1				1				
620	4FV Assembly	48753	· ·	1	1	1	· ·	1	1	1	
621	4FV Fitting Assembly	49254	1	1	1	1	1	1	1	1	



D. CONNECTING AUTOPRIME™ TUBING

- 1. Using 1/2" 0.D. polyethylene tubing, cut AUTOPRIME[™] tubing to length so that it returns to the solution tank. This tubing must not be submerged in the solution.
- 2. Follow the same procedure in connecting AUTOPRIME™ tubing to the AUTOPRIME™ valve (see **B. Connecting Discharge Tubing**).

E. PRIMING WITH ROYTRONIC® 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the AUTOPRIME[™] valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and AUTOPRIME[™] valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

F. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about $\frac{1}{8}$ turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



FIGURE 3

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at **www.Imipumps.com**



LE-DX0HX, DX8HX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump. Note: See parts list for materials of construction

A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

- 1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
- 2. Any size Female NPT fitting or pipe tee with a reducing bushing to ½" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
- 3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.
- 3. Position female Ferrule about one inch (25 mm) from end of tubing.
- 4. For ¼" or 6 mm OD tubing, cut tubing so that ¼" to ¾" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
- 5. Firmly hand tighten the coupling nut onto the fitting.



FIGURE 2

DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP.

DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS.

C. CONNECTING SUCTION TUBING

- 1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
- 2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see* **B. Connecting Discharge Tubing**).

201 Ivyland Road Ivyland, PA 18974 USA TEL: (215) 293-0401 FAX: (215) 293-0445 http://www.Imipumps.com



FIGURE 1

B. CONNECTING DISCHARGE TUBING (FIGURE 2)

Please note: The chemical discharges through the ROYTRONIC[®] 4-function valve which is mounted to the front of the AUTOPRIME[™] liquid end, as seen in Figure 3.

- 1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
- 2. Put coupling nut over tubing.



LE- DX0HX, DX8HX

Key	Description	Part			QUANTITY	1	QUANTITY				
Number	Description	Number	D10HX	D50HX	D60HX	D90HX	D18HX	D58HX	D68HX	D98HX	
		48743		1							
		48746						1			
		48744				1					
10		48747								1	
10	48745			1							
		48748							1		
		50529	1								
		50530					1				
40	O-Ring	48349	6	6	6	6	6	6	6	6	
90	O-Ring	39413	6	6	6	6	6	6	6	6	
100	O-Ring	36103	5	5	5	5	5	5	5	5	
		30916		1				1			
100	LiquifromTM	30917				1				1	
190	Liquiram	31420			1				1		
		31419	1				1				
230	Injection Check Valve Body	48617	1	1	1	1	1	1	1	1	
250	Ceramic Weight	10322	1	1	1	1	1	1	1	1	
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	1	
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	1	
	Tubing Quation & Discharge	25636-16		1				1			
		10342-16			1	1			1	1	
050		10142-16	1				1				
350	Tubing Quation & Discharge	28636-16		1				1			
	Tubing, Suction & Discharge	27342-16			1	1			1	1	
	DAXHO ONLY	27142-16	1				1				
354	Tubing, 4FV	25636-06	1	1	1	1	1	1	1	1	
356	Tubing, AutoPrime™	10142-10	1	1	1	1	1	1	1	1	
440	Bleed Nut	48622	1	1	1	1	1	1	1	1	
602	Suction Check Valve	49087		1				1			
002	Suction Check valve	49088	1		1	1	1		1	1	
603	Cartridge Valve	37335		3				3			
005	Carindge valve	37338	3		3	3	3		3	3	
606	Liquid End Hardware	49109	1	1	1	1	1	1	1	1	
607	Foot Valve	49099		1				1			
007	Foot valve	49100	1		1	1	1		1	1	
608	Injection Valve	48728	1	1	1	1	1	1	1	1	
610	AutoPrimeTM Disch, Cartridge Valve	48707		1				1			
010	Autor nine Disch. Cartildge valve	49097	1		1	1	1		1	1	
611	AutoPrime™ Shuttle Valve	48708	1	1	1	1	1	1	1	1	
612	AutoPrime™ Cartridge Valve	48709	1	1	1	1	1	1	1	1	
	Tubing Connection Kit	77382		4				4			
	DXXHI and DXXHII	77383			4	4			4	4	
613	DAXIII and DAXIIO	77384	4				4				
015	Tubing Connection Kit	77378		4				4			
	DXXHM ONLY	77379			4	4			4	4	
		77380	4				4				
	Tubing Connection Kit	77384	1	1	1	1	1	1	1	1	
614	DXXHI and DXXHU	11004							'		
517	Tubing Connection Kit	77380	1	1	1	1	1	1	1	1	
	DXXHM ONLY		<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>		<u> </u>	
615	Single Ball Check Valve Fitting	48787	3	3	3	3	3	3	3	3	
616	Double Ball Check Valve Fitting	48791	1	1	1	1	1	1	1	1	
617	Injection Valve Cartridge	48795	1	1	1	1	1	1	1	1	
620	4FV Assembly	48798		1				1			
		48753	1		1	1	1		1	1	
621	4FV Fitting Assembly	49254	1	1	1	1	1	1	1	1	



D. CONNECTING AUTOPRIME™ TUBING

- 1. Using 1/2" 0.D. polyethylene tubing, cut AUTOPRIME[™] tubing to length so that it returns to the solution tank. This tubing must not be submerged in the solution.
- 2. Follow the same procedure in connecting AUTOPRIME™ tubing to the AUTOPRIME™ valve (see **B. Connecting Discharge Tubing**).

E. PRIMING WITH ROYTRONIC® 4-FUNCTION VALVE

 Connect pressure relief tubing to the pressure relief port (Figure 3). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

- 2. Turn black knob about 1/8 turn CCW to stop point to open bypass port.
- 3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
- 4. Stop pump and return black knob to normal position.

Note: The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

- 1. Remove the AUTOPRIME[™] valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and AUTOPRIME[™] valve and repeat steps above.
- 2. Temporarily improve suction conditions by pumping from a container closer to or above pump.

F. DEPRESSURIZING THE DISCHARGE LINE ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.

- 1. Turn off the pump.
- 2. If any valves have been installed downstream of the pump, close them.
- 3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
- 4. Turn the black knob on the 4-function valve about \mathcal{V}_8 turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
- 5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow though the bypass port stops.



When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.



FIGURE 3

REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS. You may contact your local LMI Distributor for additional information or visit LMI on the web at <u>www.Imipumps.com</u>

© 2010 Milton Roy Company–All Rights Reserved Printed in USA Specifications subject to change without notice.