

# Liquid End Sheet

## LE-81S / LE-82S / LE-85S

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 injection check valve should always be installed as close as possible to the point of injection, at the very end of the tubing run.
2. The purpose of the injection check valve is to prevent backflow from a treated line.
3. A ½" NPT female fitting with sufficient depth will accept the injection check valve.
4. To insure correct seating of the ball inside the injection check valve, the injection check valve must be installed upwards (vertically).

### B. CONNECTING DISCHARGE TUBING

**NOTE:** Discharge tubing is relatively stiff translucent tubing, .250" O.D. (6.35 mm), 10 ft (3 m) long. Cut .500 O.D. tubing to length needed for return line.

1. Discharge tubing is relatively stiff translucent tubing.
2. 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.
3. Slide the small end of the coupling nut onto tubing.
4. Push tubing over tapered nozzle of discharge valve so that the tubing flares out and reaches the shoulder. (If tubing is stiff from cold, dip end in hot water.)
5. While pushing the tubing onto the valve housing, slide the coupling nut down to the threads and engage. Tighten coupling nut by hand until tubing is held securely in place.

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

6. Follow the same procedure for connecting tubing to injection valve.

### 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 as in **B. Connecting Discharge Tubing**.

### D. CONNECTING RETURN TUBING

1. Insert one end of tubing into the elbow connector and tighten white coupling nut.
2. Route the other end of tubing beside suction tubing and cut it so that its end is just above the highest level solution would be in the supply tank. It is important that return tubing end is not dipped into the solution.

### E. PRIMING

**NOTE:** Check the insertion valve and make sure it is properly installed before attempting to prime the pump.

1. Correct position of the relief and anti-syphon indicators are: Anti-syphon arrow must be vertical (word "Anti-Syphon" is upright).
2. Start the metering pump and adjust the output settings to maximum. If the pump does not prime, most likely pump heads and valves are dry. Remove complete discharge and anti-syphon valve, and put a small amount of solution into the pump head. Repeat procedure.
3. When solution is beginning to flow through the return tubing, rotate relief arrow to the vertical position.
4. The metering pump will now pressurize the discharge tubing and inject solution. At injection pressures below 25 psi (1.75 Bar), a slight buzzing noise may be made by the anti-syphon valve during each stroke of the metering pump. This is normal.



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## F. 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 is connected and run to chemical 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.

KEY NO.	PART NO.	DESCRIPTION	QUANTITY		
			LE-81S	LE-82S	LE-85S
2	29339*	Spring, PE	1		
	10339*	Spring, PVDF		1	1
3	10338*	Ball, Ceramic .375"	4	4	4
4	10407*	Seal Ring, PTFE	4	4	4
5	10492	Valve Seat, PVC	2	2	
	10792	Valve Seat, Polypropylene			2
6	10411	Coupling Nut	4	4	4
7	10142-10	Tubing, Polyethylene, 0.5" O.D.	1		
	10142-16	Tubing, Polyethylene, 0.5" O.D.		1	1
8	10493	Valve Housing, PVC			1
	10793	Valve Housing, Polypropylene	1	1	1
9	10340	Screw, 10-24 x 3/4" SS	4	4	4
10	30917*	Liquifram™, 0.9 SI, PTFE	1	1	1
11	10113	Head, 0.9 SI Acrylic	1		
	10213	Head, 0.9 SI PVC		1	
	10313M	Head, 0.9 SI Polypropylene			1
13	10978	Foot Valve Seat, Polypropylene	1	1	1
14	10123	Strainer, Polypropylene	1	1	1
15	25687	Injection Check/Back Pressure Valve Assembly	1		
	25203	Injection Check/Back Pressure Valve Assembly		1	
	25104	Injection Check/Back Pressure Valve Assembly			1
17	25202	Suction Valve Assembly	1	1	
	25107	Suction Valve Assembly			1
18	25204	Foot Valve Assembly	1	1	
	25109	Foot Valve Assembly			1
19	25835	Head Assembly, 0.9 Acrylic, LE-81S	1		
	25834	Head Assembly, 0.9 PVC, LE-82S		1	
	25830	Head Assembly, 0.9 Polypropylene, LE-85S			1
20	10141-06	Tubing, Vinyl, 0.5" O.D.	1		
21	33060	Anti-Syphon/Pressure Relief Valve Assembly	1		
	27043	Anti-Syphon/Pressure Relief Valve Assembly		1	
	25900	Anti-Syphon/Pressure Relief Valve Assembly			1
22	33024	Relief Cap Assembly	1		
	28447	Relief Cap Assembly		1	
	28446	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, Polypropylene			1
35	30426	Valve Body, PVC	1		
	26856	Valve Body, PVDF		1	
	25870	Valve Body, Polypropylene			1
36	25628	Hex Nut, 6-32 Hex SS	4	4	4
37	25631	Nut, Ferrule	1	1	1
38	25636-10	Tubing, Polyethylene, .250" O.D. PE	1	1	1
--	32293	Suction Tubing Straightener (not shown)	1	1	1

\*Parts included in Spare Parts Kit No. SP-U1.

**NOTE:**

Threaded connections into pump head are  $\frac{3}{4}$ "-16 straight threads. **DO NOT USE TEFLON® TAPE.** These joints are sealed by seal ring valve seats (item 4 on exploded view).



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