

**LE 11 and 11S**  
**LIQUID HANDLING ASSEMBLIES**  
**FOR SERIES B**  
**with 3.0 Liquifram™**

LE11/LE11S

**Instructions for LE-11**

**CAUTION**

When pumping chemicals 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 when working on or near chemical metering pump.

**MATERIALS**

Fittings	PVC
Seal Rings	Polyprel™
Balls	Ceramic
Head	Acrylic
Liquifram	Teflon Face
Suction	.5" O.D. Vinyl
Discharge	.5" O.D. Polyethylene

**A. INSTALLING INJECTION CHECK/BACK PRESSURE VALVE**

1. The injection check valve should always be installed as close as possible to the point of chemical injection, at the very end of the tubing run.
2. Purpose of the injection check/back pressure valve is to prevent backflow from *treated line* and to prevent syphoning or overpumping of chemical.
3. A ½" NPT female fitting with sufficient depth will accept the injection check/back pressure valve.
4. In order to insure correct seating of the ball inside the check valve, the injection check/back pressure valve should be installed upwards.

**B. CONNECTING DISCHARGE TUBING**

1. Discharge tubing is relatively stiff translucent tubing.
2. Route tubing from injection check valve to chemical metering pump making sure it does not touch hot surfaces, sharp surfaces, or is bent so sharply that it kinks.
3. Slide small end of coupling nut onto tubing.
4. Push tubing over tapered nozzle of discharge valve housing so that tubing flares out and reaches the shoulder. (If tubing is stiff from cold, dip end in hot water.)
5. Slide down the coupling nut until threads are engaged. Tighten 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. Suction tubing is soft transparent tubing.
2. Cut suction tubing to a length such that the foot valve hangs just above the bottom of the chemical container. Maximum recommended vertical suction lift is 5 ft. (1.5m).
3. Follow same procedure (see B) in connecting suction tubing to suction valve and foot valve.
4. If a suction tube straightener is desired, one may be fabricated from a 3 ft. (1m) piece of ¾" Schedule 80 PVC pipe.
5. Dip end of PVC pipe in hot water for at least 1 minute.
6. Push pipe over small end of coupling nut.

**D. PRIMING**

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

**Note:**

- (a) Pump is normally self-priming if suction lift is no more than 5 ft. (1.5m), valves in the pump are wet with water (pump is shipped from factory with water in pump head and therefore valves are wet), and the above steps (D1 thru D3) are followed.
- (b) If the pump does not self prime, remove discharge valve housing and ball and pour water or chemical slowly into discharge port until it is filled. Follow steps D2 thru D5 thereafter.



**LIQUID METRONICS INCORPORATED**

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**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).

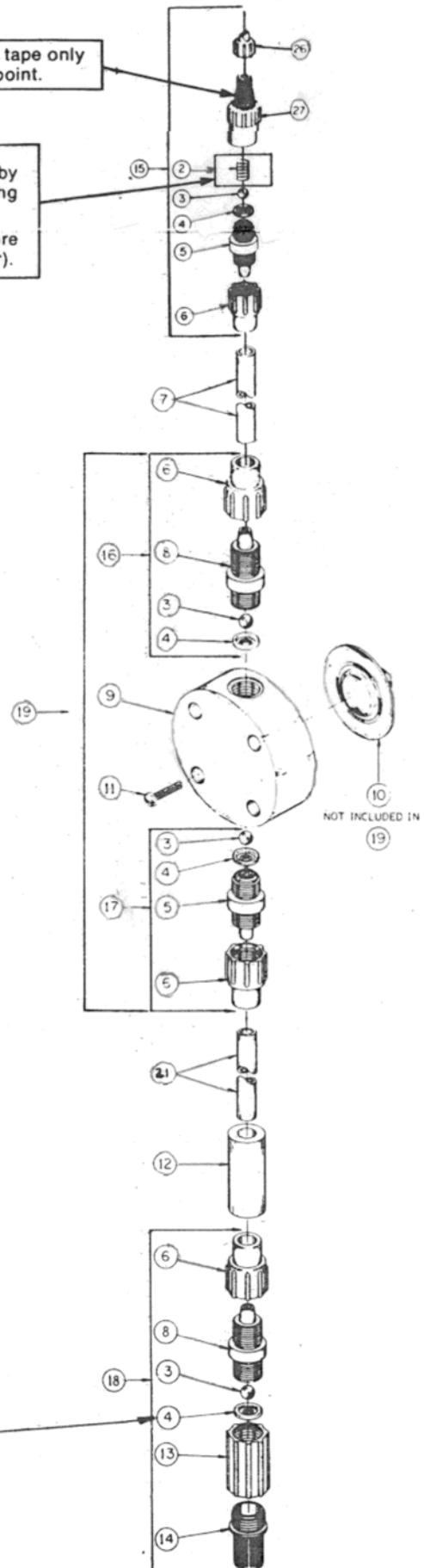
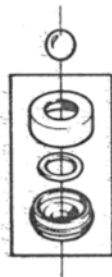
Use Teflon® tape only at this point.

1. Maximum pump pressure rating is reduced by 25 psi (1.7 bar) with back pressure spring installed.
2. Do not remove back pressure spring if pressure at injection point is less than 20 psi (1.4 bar).

**LE-11**

Ref No.	Part No.	Description	Quantity
2	29339*	Spring	1
3	10338*	Ball, Ceramic	4
4	29443*	Seal Ring, Polypropyl. SEE DETAIL	4
5	10492	Valve Seat, PVC	2
6	10211	Coupling Nut	4
7	10142-10	Tubing, Polyethylene, .5" OD	1
8	10493	Valve Housing, PVC	2
9	29552	Head, 3.0 SI Plexiglas	1
10	25319*	Liquifram, 3.0 SI, Teflon® Face	1
11	10340	Screw, 10-24 x $\frac{3}{4}$ " S.S.	4
12	10322	Weight, Ceramic	1
13	10978	Foot Valve Seat	1
14	10123	Strainer, Polypropylene	1
15	27610	Injection Check/Back Pressure Valve Asm.	1
16	27611	Discharge Valve Assembly	1
17	27612	Suction Valve Assembly	1
18	27613	Foot Valve Assembly	1
19	29747	Head Assembly, LE-11	1
21	10141-06	Tubing, Vinyl, .5" OD	1
26	27352	Flapper Valve	1
27	10294	Injector Fitting	1

\* Parts included in Spare Parts Kit No. SP-11.

**SEAL RING DETAIL**

## Instructions for LE-11S

### CAUTION

When pumping chemicals 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 when working on or near chemical metering pump.

### A. INSTALLING INJECTION CHECK VALVE

1. The injection check valve should always be installed as close as possible to the point of chemical injection, at the very end of the tubing run.
2. Purpose of injection check valve is to prevent backflow from treated line.
3. A 1/2" NPT female fitting with sufficient depth will accept the injection check valve.
4. In order to insure correct seating of the ball inside the check valve, the injection check valve must be installed vertically upwards.

### B. CONNECTING DISCHARGE TUBING

1. Discharge tubing is relatively stiff translucent tubing.
2. Route tubing from injection check valve to chemical metering pump making sure it does not touch hot surfaces, sharp surfaces, or is bent so sharply that it kinks.
3. Slide small end of coupling nut onto tubing.
4. Push tubing over tapered nozzle of discharge valve housing so that tubing flares out and reaches the shoulder. (If tubing is stiff from cold, dip end in hot water.)
5. Slide down the coupling nut until threads are engaged. Tighten 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. Suction tubing is soft transparent tubing.
2. Cut suction tubing to a length such that the foot valve hangs just above the bottom of the chemical container. Maximum recommended vertical suction lift is 5 ft. (1.5m).
3. Follow same procedure (see B) in connecting suction tubing to suction valve and foot valve.
4. If a suction tube straightener is desired, one may be fabricated from a 3 ft. (1m) piece of 3/4" schedule 80 PVC pipe.

### MATERIALS

Fittings	PVC
Seal Rings	Polyprel™
Balls	Ceramic
Head	Acrylic
Liquifram	Teflon® Face
Suction	.5" OD Vinyl
Discharge	.5" Polyethylene

5. Dip end of PVC pipe in hot water for at least 1 minute.
  6. Push pipe over small end of coupling nut on top of foot valve.
- ### D. PRIMING
1. Connect pressure release tubing to pressure release port.
  2. Route tubing to solution reservoir and anchor with plastic tie provided.
  3. Set pump at 80% speed and 100% stroke. Start pump.
  4. Pull on Pressure Release knob (red or black knob), holding knob out until chemical is visible through translucent return tubing.
  5. Pump is now primed.

### NOTE:

- (a) Pump is normally self-priming if suction lift is no more than 5 ft. (1.5m), valves in the pump are wet with water (pump is shipped from factory with water in pump head), and the above steps (D1 thru D3) are followed.
- (b) If the pump does not self-prime, remove Anti-Syphon/Pressure Release Valve Assembly and discharge valve ball, and pour water or chemical slowly into discharge port until head is filled. Replace valve ball and follow steps D1 thru D5 thereafter.

### E. DEPRESSURIZING DISCHARGE LINE

1. It is possible to depressurize 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 chemical to drain back to tank.

**NOTE:**  
 Threaded connections into pump head are 1/4"-16 straight threads. **Do not use Teflon tape.**  
 These joints are sealed by seal ring valve seats (Item 4 on exploded view).

1. Maximum pump pressure rating is reduced by 25 psi (1.7 bar) with back pressure spring installed.
2. Do not remove back pressure spring if pressure at injection point is less than 20 psi (1.4 bar).

**LE-11S**

Ref No.	Part No.	Description	Quantity
2	29339*	Spring	1
3	10338*	Ball, Ceramic	4
4	29443*	Seal Ring, Polypropyl. SEE DETAIL	4
5	10492	Valve Seat, PVC	2
6	10211	Coupling Nut, PVC	4
7	10142-10	Tubing, Polyethylene, 5" OD	1
8	10493	Valve Housing, PVC	1
9	10340	Screw, 10-24 x 3/4" S.S.	4
10	25319*	Liquifram, 3.0 SI, Teflon® Face	1
11	29552	Head, 3.0 SI, Plexiglas	1
12	10322	Weight, Ceramic	1
13	10978	Foot Valve Seat	1
14	10123	Strainer, Polypropylene	1
15	27610	Injection Check/Back Pressure Valve Assy.	1
17	27612	Suction Valve Assembly	1
18	27613	Foot Valve Assembly	1
19	29750	Head Assembly, LE-11S	1
20	10141-06	Tubing, Vinyl, 5" OD	1
21	25700	Anti-Syphon/Pressure Release Valve Assy.	1
22	28445	Pressure Release Cap Assy.	1
23	25692	Anti-Syphon Cap Assy.	1
24	25627	Screw, 6-32 x 1 1/4" S.S.	4
26	27352	Flapper Valve	1
27	10294	Injector Fitting	1
35	25500	Valve Body	1
36	25628	Nut, 6-32 Hex S.S.	4
37	25631	Nut, Ferrule	1
38	25636-10	Tubing, Polyethylene, .250" OD	1
41	10156	Plastic Tie (not shown)	1

\* Parts included in Spare Parts Kit No. SP-11.

