# REVOLUTION™

SLAB LIFT

# Operator's Manual

PRIME RESINS

800-321-7212

www.primeresins.com

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## Forward

The Precision Lift compact slab lifting system includes four key components engineered and optimized to work as one:

- Precision Lift foam
- Revolution pump
- Equalizer gun
- Prime Practice (how-to guide)


This system targets the causes of settlement and creates long-term advantage:

- Erosion control
- Soil stabilization
- Lightweight void fill
- Controlled, precise slab lift

Please read and understand this operator's manual thoroughly before attempting to use a Revolution pump.

Our technical consultants and our Technical Services Department can assist you, and can be a wealth of knowledge to assure your operation goes smoothly and trouble free. Important safety, maintenance, and parts guides included are intended to make operation of the Revolution as trouble free as possible. **Please call if you have questions: 800-321-7212.**

Failure to follow these guidelines can result in injury, damage to property and equipment, or cause harm to the operator and others.

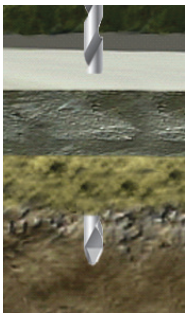
This operator's manual is meant as a general guide and point of reference. Information enclosed cannot cover all circumstances or actual field application. There is no substitution for hands on training by professionals.

The Revolution pump is a piece of industrial equipment and should be respected and operated by professionals in a controlled environment.

## Safety

**Attention must be paid to protective gear, including clothing, gloves, safety glasses, goggles, and footwear.**

When blind holes are being injected, prepare for each hole to reject materials. BE SURE TO REDRILL ANY PREVIOUSLY INJECTED HOLES. The drill bit should penetrate the foam layer under the slab OR REJECTION OF MATERIAL WILL OCCUR.



Familiarize yourself with the safety data sheet and product technical data sheets. Understand the reactive nature of materials installed to include compatibility, cream time, rise times, and set times. If you do not understand materials to be injected, STOP and call your technical consultant or our Technical Services Department.

Prior to starting the equipment, make sure an emergency plan is in order for spills, skin contact, eye contact or any incidental contact with chemicals.

Protective gear must be worn before operating this equipment!

## Specifications: Revolution #201SL

• Weight: 232 lbs.
• Dimensions: 45” h x 32” w x 40” d
• Power Consumption: 120 volt 20 amp circuit
• Auxiliary Equipment: Titan flush pump
• Output: 1 gpm @ 1,000 max.

- Weight is determined with empty tanks, no hose or flush pump attached.
- 1 - 120 volt recepticle
- Auxiliary flush pump has a receptacle on the side of the main enclosure and must be primed with water only for flush.

## Factory Settings

Your Revolution machine has been pressure and leak tested with synthetic oil at the factory.

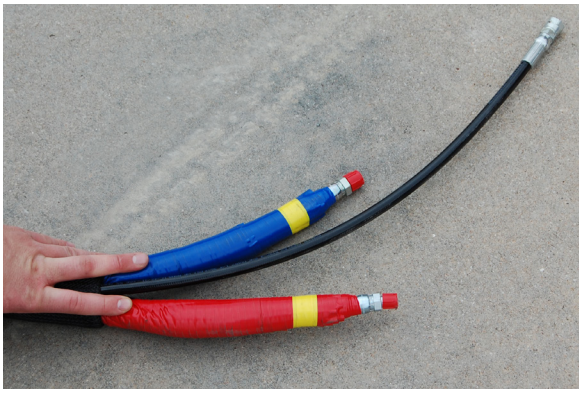
Under specific guidelines, temperature controls have been programmed to achieve maximum efficiency at 70% of output. No further adjustments are necessary for temperature control, other than arrow up or down, depending on ambient conditions.

Your Revolution machine comes equipped with a pressure switch, which shuts drive motor off, when stall pressure is reached. The pressure switch is factory set at 900-1,000 psi. No further adjustment is required for the pressure switch.

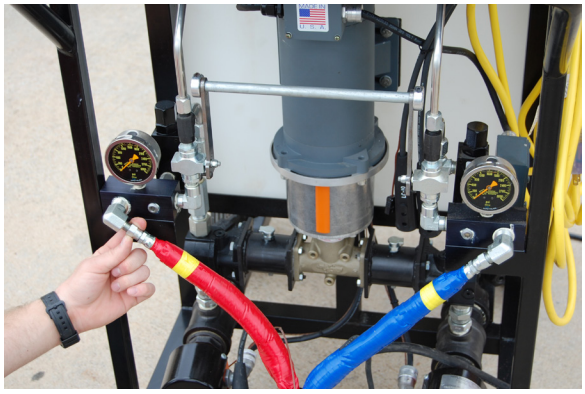
The pressure switch works in conjunction with dual pressure reliefs, which bleed excess fluid back to tanks when pressure over shoots. The pressure relief system is a critical component of the Revolution machine. The factory settings for the pressure relief system are 1,100 to 1,200 psi.

If you believe your pressure relief system or pressure switch requires adjustment or calibration, please contact your technical consultant or technical services.

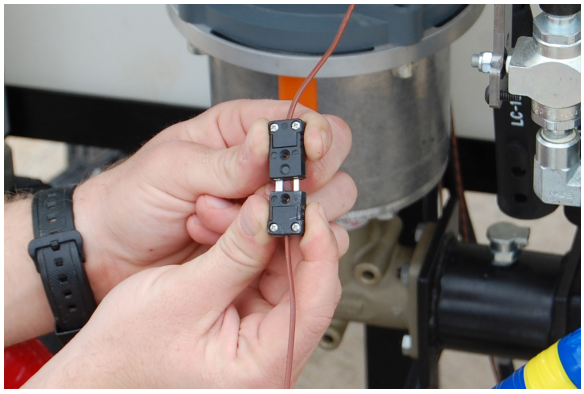
## Setup



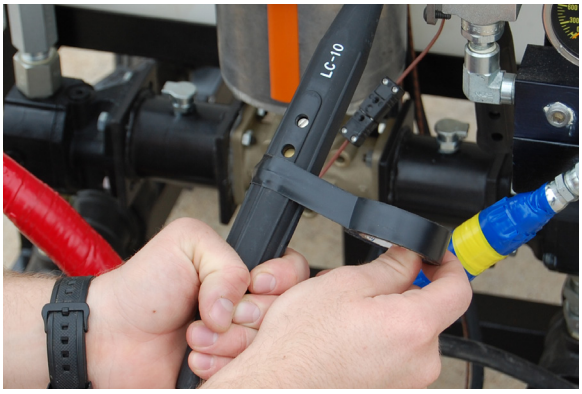
**1.** Identify A (red) and B (blue) heated hose ends. Lay hoses out flat and avoid kinking.



**2.** Attach hose to corresponding fitting on Revolution machine, A-#5 JIC, B- #6 JIC and tighten to finger tight only (to be further tightened later).



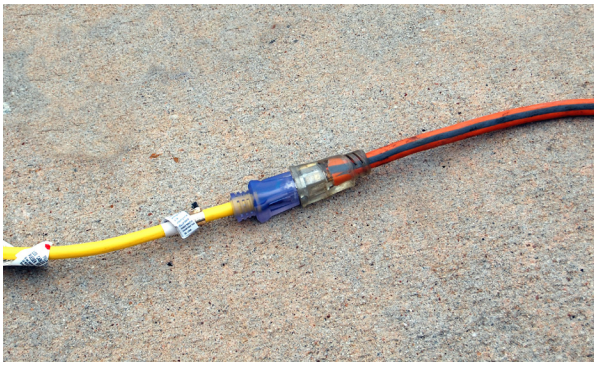
**3.** Connect thermocouple wire to hose with mini-pin connected; wrap with electrical tape to avoid false readings.



**4.** Plug heated hose together and twist to lock; ensure by attempting to pull apart. Once lugs are properly connected, tape joint to secure.

**5.** Tighten hose connections at machine, using wrench. Do not over tighten, JIC fittings do not require Teflon tape or pipe dope. Special care should be given to not twist hose, 2 wrenches are required.


**6.** Prepare flush by installing pump on rear carriage, (locking tabs on frame) and inserting dip tube into flush bucket. Plug flush pump electrical cord into receptacle located on side of box. DO NOT POWER ON FLUSH PUMP. Connect flush hose to the 1/4” fitting on the left side of the flush pump.



**7.** Ensure all switches are in off position. And plug in electrical cord of the Revolution machine.

* Warning - NEVER open electrical console with machine plugged in. There are no serviceable items within the enclosure, and it should be kept closed at all times!

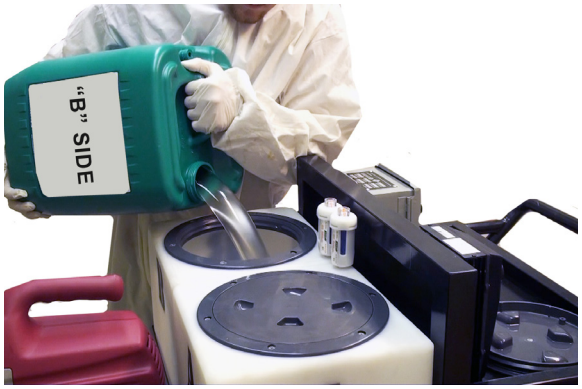
All safety gear previously mentioned is required before operations start.

## Operation Checklist

- Check that all fittings are tight
- Check electrical hookup
- All switches off
- Heated hose breaker off
- Actuation handle in dispense position (down).

## Bleed & Prime

**Your system has been tested with synthetic oil, which requires purging. Also, the system must be primed with material.**




**1.** Put approximately ½ gallon of material into each tank, making sure A and B material go into corresponding A and B tanks. Remove only one lid at a time to prevent accidental drips into the other tank.

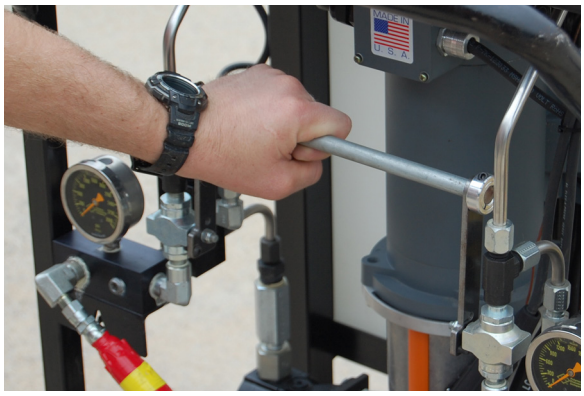

**2.** Place the ends of the A (red) and B (blue) heated hose in separate waste buckets.

**3.** Ensure the actuation handle is in dispense position on the machine, with handle in the horizontal (down) position. Turn the motor switch to on position and slowly increase speed knob to 6. Heaters are not required for this operation.

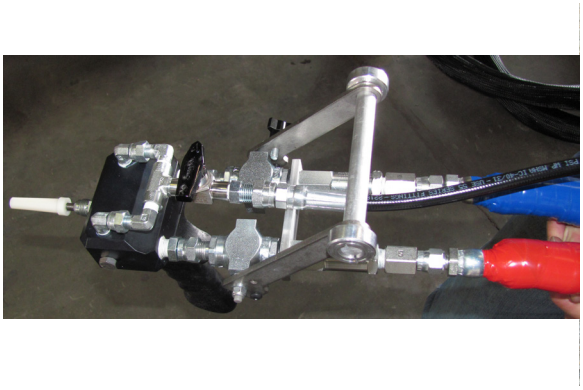
**4.** Within one minute, material should be flowing out of the A (red) and B (blue) heated hose ends into the separate waste buckets. This material is contaminated. Do not use it.

**5.** Flush all contaminated material until tanks are empty.

**6.** Contaminated material should be mixed together by hand to react it and then disposed of according to local regulations. It is inert when cured, so usually can be simply thrown away.



**7.** Shut machine off, return actuation handle to vertical (up, re-circulate) position.



**8.** Attach Equalizer to A (red) and B (blue) heated hose and flush line. Use two wrenches and be careful not to overtighten.


**9.** Screw a .035 stamped injector in the A (red) side of the Equalizer. Screw the other .035 stamped injector in the B (blue) side of the Equalizer.

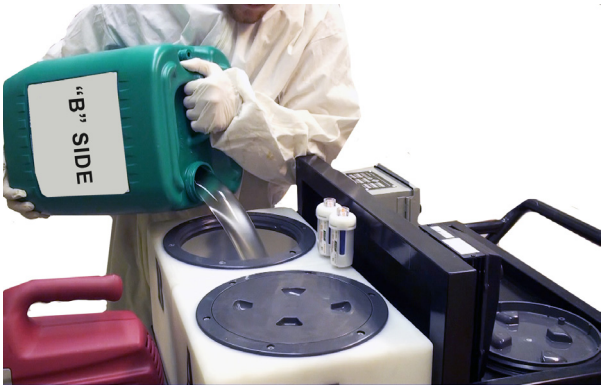
## Equalizer Water Flush Procedure

1. Install pail with four gallons of clean water into bracket below pump.
2. Insert pick up tube and prime tube into water.
3. Ensure that the flush control valve on the Equalizer is in the off position.
4. Put the control knob on the side of the Titan Advantage into ‘prime’ mode and turn on the pump.
5. The pump is primed when water is visible returning out of small primer tube.
6. Turn control knob to the spray position.
7. The pump should cycle until water is pushed to the Equalizer flush manifold; it will then pressure up and stop cycling.
8. Dispense a small amount of water by turning flush knob on the Equalizer on and off briefly once. Test flush by momentarily opening and closing valve.

**Note:** Never dispense resin until Equalizer flush pump is powered up, primed, and pressurized.

## Operations / Run

**Following all steps previously outlined, including all safety procedures:**




**1.** Pour desired amount of material into each tank. Again, only open one tank at a time to avoid cross contamination.


**2.** Turn motor switch to on position and slowly increase speed knob to 4 (ensure actuation handle is in up position, re-circulate).



**3.** Start each heater.



**4.** Start heated hose and engage breaker on right side of electrical enclosure.

• **Warning:** Do not kink heated hose, always lay out flat!

• **Note:** Heated hose does not have a delta rating, it only maintains material temperature. Hose temperature should be at an average of A & B heat. Give hose enough time to reach temperature before applying material.

## Operations / Dispense

**1.** Re-circulate until material has reached factory recommended temperature.

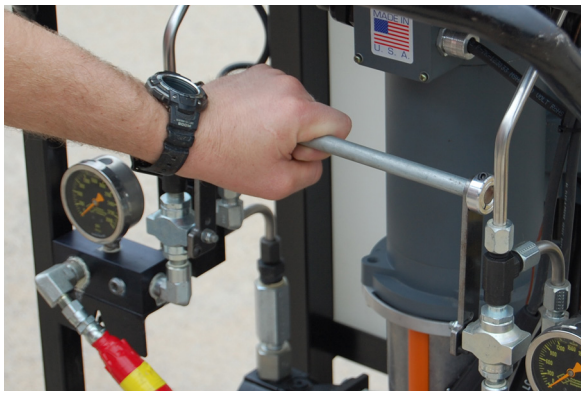

**2.** Once material and hose are to desired temperatures you are ready for a test shot.

**3.** Using a small pail or box, position it so you can watch the material reacting.

**4.** Engage actuation handle to dispense position (down) at machine. (The motor may bump a couple of times to achieve pressure.)

**5.** In one motion, open the Equalizer valve handle and dispense a 5 to 10 second shot.

**6.** Pull Equalizer handle back to rear position and flush with three quick bursts of water away from the reacting material or in another pail or bag; engage safety knob.



**7.** Return actuation handle on machine to re-circulate position (up).

**8.** Review material for cream, gel, and rise times. Properly reacted material produces a smooth, hard foam. Crunch foam is usually A-rich. Spongy foam is usually B-rich.

**Note:** Always have actuation handle on the machine in re-circulate position (up) when not dispensing. This will prevent unnecessary wear and avoid temperature spikes in material.

***Warning: The system is capable of delivering material at medium to high pressure. Be sure to read the Equalizer manual thoroughly to understand the dangers of high pressure fluid.***

**Note:** Read gauges at all times during dispense! Slab lifting is a “blind” procedure, and material is not seen to review during installation. Pressure gauges should be within 300 psi of each other during dispense.

**Note:** Dispense test shots of material into clean cups periodically to ensure material is reacting properly. Be careful of material splash from high pressure dispensing.

## Over Pressure Reliefs

Your Revolution machine is equipped with dual pressure reliefs. At any time if an over pressure reading occurs, excess material is bled back to tanks. This will show on the pressure gauges: a high pressure reading will indicate a clog in the system, and must be addressed before a crossover happens.

**Note:** Crossover is when A or B material crawls up into the opposite fluid path due to an obstruction. This can cause foam to react in the Equalizer block or material hoses.

## Maintenance

**Daily**
• Check tanks for debris.
• Lubricate the A-side tank lid with Vaseline or equivalent in threads. (That will protect the A side material from hardening in the threads and gluing the lid shut.)

**Weekly**
• Check level of lubricant in pump lubrication reservoirs.
• Check all fittings for leaks.
• Check hoses for kinks or abrasions.
• Check y-strainer screens.
• Recirculate pump and hoses.

**Monthly**
• Change pump lubrication fluid. Check color and consistency of material drained.
• Inspect system for leaks.
• Check desiccant dryers for color (purple = OK, pink = replace).
• See all other related manuals for maintence items (Equalizer).

## Troubleshooting

By following these procedures, a good operator should be able to locate and resolve problems quickly.

An experienced operator must know:

1. What good material looks like (see p. 8, step 8)
2. How gun and machine operate in normal conditions
3. Fluid paths of the entire system
4. Pressure switch and relief settings

**Note:** Always start troubleshooting by reading pressure gauges in dispense mode (down), while injecting material.

1. Identify missing material.
2. Check pressure gauge. If higher than normal, there is a restriction or blockage.
3. Always check gun injectors first.
4. If you are missing material and the guage is reading low pressure, there is a starvation issue. Check tank and Y-screen.

**Note:** High pressure issues are usually blockage at the gun; low pressure issues are usually at the machine due to low material level or Y-strainer screen clog.

***Warning: When addressing any problem, download all pressure by putting the actuation handle on the machine into re-circulation mode (up), and turn all systems off.***

**Note:** Never attempt to power through a clog. This will only force opposite material into the mixing chamber, leading to a crossover.

## Revolution hose storage

**Procedure: Storing Revolution heated hoses**

The Revolution pump itself cannot be winterized or otherwise stored long-term because of the reactive natureRevolution compact slab lifting system of the A-side material. We do, however, offer a flushing procedure for your heated hoses that allows you to remove and store them. This may save you from replacing a $600 heated hose due to incomplete recirculation during downtime.

We strongly recommend leaving at least one gallon of material in the tanks of your Revolution at all times. The Revolution pump is a sealed system that, with good (i.e. blue) desiccant tank dryers, will not allow moisture to contaminate the A material. Bi-weekly recirculation of the material in the tanks ensures you do not have material crystallizing in the system.

Supplies and steps needed to prepare your hoses for storage using your Titan flush pump:

**SUPPLIES**
1 gallon acetone
1 gallon Mesmol (Revolution pump lube)
1 extra clean flush bucket

**STEPS**
1. Remove heated hose from the Revolution pump and cap off the hose fittings at the pump.

2. Remove the valve body from the gun end of the hoses, disassemble and thoroughly clean it.

3. Cap and plug the B-side hose. This is the only step for the B side.

4. Use an air blow gun to purge the A-side material from the A hose.

5. Connect a ¼” female npt x -5 male jic adapter (available from Prime Resins or your local hydraulic supply store) to the outlet of the Titan flush pump.

6. Pour ½ gallon of acetone into the flush bucket and run this through the A-side hose into a waste pail.

7. Pour the other ½ gallon of acetone into the flush bucket. Put the gun end of the hose into the flush bucket, and recirculate the acetone through the hose back into the bucket for 5 minutes.

8. Purge the acetone into the waste pail.

9. Pour ½ gallon of Revolution pump lube oil into a different clean flush bucket, and purge this through the hose into the waste pail. (You want to use a different flush bucket for the Revolution pump lube so that you don’t have residue in your flush bucket the next time you use your system.)

10. Pour the other ½ gallon of Revolution pump lube into this flush bucket, and recirculate it through the hose for 10 minutes.

11. At this point, cap and plug the A hose with the Revolution pump lube still in it.

| Problem | Solution(s) |
|---|---|
| Machine will not shut off when engaged. | • Bring speed control to #7 on dial<br>• Leaking gun valve<br>• Low B-side material |
| | |
| Machine does not balance pressure at stall. | This is normal. Stall pressure is irrelevant on the Revolution. |
| | |
| Machine pressure does not balance on dispense. | • Check temperatures<br>• Check injectors for clogs<br>• Clean injectors, check hose for blockage |
| | |
| Flush pump continues to cycle when flush knob is turned to off position or flush continues to leak out of Equalizer gun. | • Pump is sucking air. Check the fittings and hose clamps on the intake hose and dispense hose for tightness. |
| | |
| Machine bumps in dispense or stall. | • B-side injector clogged<br>• Cold material<br>• Send actuation handle to re-circulate, then back to dispense. |
| | |
| *If for any reason the above is not clear, please contact your technical consultant or our Technical Services Department for assistance at 800-321-7212. Additional on site training or technical support is available on a fee-for-service basis.* | |

**WARRANTY**

The Revolution pump and Equalizer gun carry a one year warranty against defective materials or workmanship. Prime Resins, Inc. grants no warranty against normal wear and tear, unauthorized modifications or alterations, improper use, improper maintenance, misuse or neglect, or if the equipment is used for purposes for which it was not intended. Prime Resins, Inc. is not liable for any direct, indirect, or consequential damages arising out of or resulting from the use of a Prime Resins product.