

## **Short Term Shutdown Procedure for the GMP or GRP series of equipment.**

The following is the recommend procedure for storing the GMP or GRP series of equipment for a short period of time. Please note that some items included in this procedure are not included with all supplied equipment. Please use all safety devices such as but not limited to gloves and eye protection. When working with solvents do so in a well-ventilated area free of combustible items. Take every effort not to mar any surface, which come in contact with materials.

### 1. Pump Unit Dry

#### 1.1. Pump Remaining Material

- 1.1.1. Remove static mixer and/or spray attachment
- 1.1.2. Operate machine until no material is being dispensed. Check that the hoses are allowed to drain completely (hoses should lead “downhill” towards dispense valve).
- 1.1.3. Clean the dispense manifold & reapply a layer of compatible lubricant.

#### 1.2. Flush System

- 1.2.1. Use only a cleaning solution most effective for removing your material, consult manufacturer for recommendations. Carefully observe all health and safety precautions listed on all labeling.
- 1.2.2. Fill each tank a minimum of 1/3 with a compatible cleaning solution.
- 1.2.3. Set pump speed control to slow setting.
- 1.2.4. Operate machine until the cleaning solution begins to come out of the machine.
- 1.2.5. Allow machine to sit for a period of time, depending on the effectiveness of the cleaning solution, not more than one hour. Most solvents will not damage any component unless allowed to remain in the system.
- 1.2.6. Continue pumping cleaning solution into container until machine is again empty. Observe cleaner as it is being pumped. As the solution is pumped, it should appear to become clean. If this is not observed, the same cleaner, after the impurities have settled, can be re-loaded into the machine and the

procedure repeated - if it is pumped out immediately. Do not allow any settled material back into the system.

### 1.3. Tank / Material Feed System

- 1.3.1. Clean & inspect tank lid sealing gaskets. Repair with RTV Silicone as necessary.
- 1.3.2. Check desiccant canister. Verify that crystals are blue in color through window in side of canister. Replace if crystals are not blue.
- 1.3.3. Check makeup air lines from desiccant canister to tank. Remove or repair any blockages.
- 1.3.4. Clean inside of tanks, concentrating on any material built up that might wind up in the pumps.

### 1.4. Re-fill System for Storage

- 1.4.1. Fill tanks with compatible oil/lubricant and trigger system to fill system. If material manufacturer has no recommendation for a non-solvent compatible lubricant, use Mobiltherm 506 mineral oil or equivalent.
- 1.4.2. Close ball valves.

## 2. Start-up Procedure

### 2.1. Prepare system for loading

- 2.1.1. Pre-season startup checks outlined below should be performed in advance of any intended use.
- 2.1.2. Assumes previous shut-down procedure was followed
- 2.1.3. Connect air supply and electrical power.
- 2.1.4. Open ball valves under tanks.
- 2.1.5. Test operation of machine. Verify that the oil loaded into the machine comes out both ports on the dispense valve when triggered.
- 2.1.6. Operate the system until empty.

## 2.2. Flush system with compatible solvent.

- 2.2.1. Fill each tank a minimum of 1/3 with a compatible cleaning solution.
- 2.2.2. Operate and observe behavior of system.
- 2.2.3. Note, gauges will not read normal pressures while pumping solvent due to the fact that solvents are less viscous and therefore require less pressure to pump.
- 2.2.4. Verify that flow is observed coming out of both ports in the dispense manifold.
- 2.2.5. Operate the system until empty. Please note that it is not harmful to pump machine dry.
- 2.2.6. If available, open the ball valve under the pump inlet block to verify that all solvent is drained from the tanks.
- 2.2.7. If possible, temporarily disconnect the material hoses from the dispense manifold and allow any trapped solvent to drain.
- 2.2.8. Fill zerks on dispense manifold with petrolatum grease until the lubricant coming out of the ports is clean.

## 2.3. Load & test material.

- 2.3.1. Load each material in the correct tank. Remember to keep one lid on while filling the other tank.
- 2.3.2. Verify that ball valves above each pump and at the outlet assembly are open.
- 2.3.3. Set the motor speed to low (30%) and actuate the trigger, operating the system until the correct material comes out both ports of the dispense manifold.
- 2.3.4. Observe the pressure gauges while filling the system. A spike in pressure would indicate a blockage downstream from the pump.
- 2.3.5. Operate the system until two uninterrupted streams of material come out of the dispense manifold. Release the trigger and wipe the manifold.

- 2.3.6. Attach a static mixer to the dispense manifold. Make several test shots of material in small cups or on aluminum foil and allow curing.
- 2.3.7. Discard the static mixer, wipe the manifold clean, and re-fill the manifold with petrolatum grease.
- 2.3.8. Check cured material for flaws and inconsistencies.
- 2.3.9. See “Troubleshooting” section in operator’s manual if any problems are observed.