AIRLESS EQUIPMENT

SAFETY MANUAL
Injection Hazard

• **DO NOT POINT THE GUN AT ANY PERSON**

• **NEVER LOOK AT THE GUN FROM THE FRONT (NOZZLE END)**

• **NEVER** trigger an airless gun while it is aimed at a person. The hydraulic pressure may inject fluid into the flesh, causing injury or death. If the fluid penetrates the skin it **WILL** cause serious injury. Clothing, such as gloves will **NOT** provide protection. The system is capable of fluid pressure high enough to cause a **LETHAL INJECTION**.

• **TREAT THE APPLICATOR AS YOU WOULD A LOADED WEAPON.**

Before applying pressure to the system, **ALWAYS**:

• Follow the manufacturer’s operating instructions and maximum pressure recommendations.

• Secure the trigger in the OFF position and check all pressure connections.

• Use grounded, high pressure fluid lines.

• Check that the pump is properly grounded.

Before disassembly of ANY part of the pressure system (including the applicator or its nozzle) **ALWAYS**:

• Shut the pump OFF.

• Discharge the residual fluid and pressure from the applicator.

• Secure the trigger in the OFF position.

Follow these same three procedures anytime that operation is discontinued.

Do **NOT** undertake any of the following until pressure is relieved from the entire system:

• Loosen or remove the nozzle.

• Disassemble any part of the applicator.

• Loosen or disconnect any fluid line fittings.

• Disassemble any part of the pump.
Be sure that the power to the pump is OFF before undertaking ANY repair, maintenance or adjustment.

If it is necessary to adjust or clean the nozzle on site, be sure that it is aimed away from all personnel so that it may discharge safely if there is residual pressure in the system.

Do NOT use any replacement part that does not meet the manufacturer's specifications.

Correct packing or valve seal leaks **IMMEDIATELY**.

Frequently check the condition of all pressurized components, especially fluid lines. Replace worn lines and parts before they fail.

If nozzle clogging occurs frequently, use a fluid filter with proper mesh size.
PUMPING SYSTEM SAFETY INSTRUCTIONS

Use MVP replacement parts to assure compatible pressure rating. Read ALL warning and safety instructions carefully before operation of this unit. Heed all warnings.

WARNING: Never allow any part of the human body to come in front of, or in direct contact with, the material outlet. Accidental operation of the pump could cause an injection into the flesh. If injection occurs, medical aid must be immediately obtained from a physician.

Component Rupture: This unit is capable of producing high fluid pressure as stated on the pump model plate. To avoid component rupture, and possible injury, do not exceed 75 cycles per minute or operate at an air inlet pressure greater than 150 PSI (10 bar).

Servicing: Before servicing, cleaning or removing any component, ALWAYS disconnect or shut off power source and carefully relieve all fluid pressure from the system.

CAUTION: When pumping, flushing or recirculating volatile solvents, the area must be adequately ventilated.

CAUTION: Materials and solvent being pumped must be compatible with the parts of the pump that becomes wetted when in contact with material or solvent. Wetted parts consist of the following: stainless steel, copper, brass, steel, gray iron, leather, Teflon and Vellumoid.

CAUTION: Keep solvents away from heat, sparks and open flames. Keep containers closed when not in use.

Prevent Static Sparking: If static sparking occurs, fire or explosion could result. The pump, dispensing valve, and containers must be grounded when handling flammable fluids such as solvents, paints, lacquers, etc., and wherever discharge of static electricity is a hazard.

Use grounded hoses (static wire) and be sure the object being serviced is grounded if it can produce a static charge.

Continuity (a good static wire connection) of a hose can be checked by using an ohmmeter. Place one probe on one hose fitting and the other probe on the other hose fitting, continuity or proper grounding through hose is good when a reading is obtained on the ohmmeter.

Air and Lube Requirements: Excessive air pressure will shorten the life of the pump. Do not operate pump above recommended maximum air pressure. If necessary, an air
regulator should be installed to maintain the desired pressure when the pump is in operation.

Filtered and oiled air will allow the pump to operate more efficiently and yield a longer life to operating parts and mechanisms.

Keep oiler supplied with MVP Pump Motor Oil. A filter capable of filtering particles larger than 50 microns should be used with an oiler.

Maintenance: If the pump is to be inoperative for a lengthy period of time (even for a few hours) disconnect air and relieve all pressure from system.

Periodically flush pump with a solvent that is compatible with the material being pumped. Pour a little throat seal lubricant into the solvent cup to keep upper packings pliable and to keep material drag-thru soft. Material drag-thru that is allowed to harden, will score the piston rod. This will create excessive leakage and rapid packing wear.

Disassembly should be done on a clean work bench with clean cloths to keep parts clean.

If replacement parts are necessary, consult Parts List for identification.

Before assembling, lubricate parts where required. When assembling O-rings, or parts adjacent to O-rings, care must be exercised to prevent damage to O-ring and O-ring groove surfaces.

If you have any questions about safety or procedures, contact your Magnum Venus Products’ representative.

**CAUTION:** Materials and solvent being pumped must be compatible with the parts of the pump that becomes wetted when in contact with material or solvent. Wetted parts consist of the following: stainless steel, copper, brass, steel, gray iron, leather, Teflon and Vellumoid.

**CAUTION:** Keep solvents away from heat, sparks and open flames. Keep containers closed when not in use.
## Important safety information –

The below potential hazards may cause an injury or loss of life

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>CAUSE</th>
<th>SAFEGUARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire</td>
<td>Solvent and coatings can be highly flammable or combustible, especially when sprayed.</td>
<td>Adequate exhaust must be provided to keep air free of accumulations of flammable vapors. Smoking must NEVER be allowed in the spray area. Fire extinguishing equipment must be present in the spray area.</td>
</tr>
<tr>
<td>Solvent</td>
<td>During cleaning and flushing, solvents can be forcefully expelled from fluid and air passages. Some solvents can cause eye injury.</td>
<td>Wear eye protection.</td>
</tr>
<tr>
<td>Inhaling Toxic Substances</td>
<td>Certain materials may be harmful if inhaled or if there is contact with skin.</td>
<td>Follow the requirements of the Material Safety Data Sheet supplied by your coating material manufacturer. Adequate exhaust must be provided to keep the air free of accumulations of toxic materials.</td>
</tr>
<tr>
<td>Explosion Hazard – Incompatible Materials</td>
<td>Halogenated hydrocarbon solvents (for example; Methylene chloride and 1,1,1-Trichloroethane) can chemically react with aluminum. The chemical reaction caused by these solvents reacting with aluminum can become violent and lead to an equipment explosion.</td>
<td>Guns with Stainless Steel internal passageways may be used with these solvents. However, aluminum is widely used in other spray application equipment – such as material pumps, regulators, valves &amp; cups. Check all equipment items before use and make sure they can also be used safely with these solvents. Read the label or data sheet for the material you intend to spray. If in doubt as to whether or not a coating or cleaning material is compatible, contact your material supplier.</td>
</tr>
<tr>
<td>General Safety</td>
<td>Improper operation or maintenance of equipment.</td>
<td>Operators should be given adequate training in the safe use &amp; maintenance of the equipment (in accordance with the requirement of NFPA-33 Chapter 15). Users must comply with all local &amp; national codes of practice and insurance company requirements governing ventilation, fire precaution, operation, maintenance and house keeping. These are OSHA Section 1910.94 and 1910.107 and NFPA-33. Risk is reduced by avoiding or lessening factors 1-7.</td>
</tr>
</tbody>
</table>

All equipment must be grounded for static electricity in accordance with NFPA-77. Be sure to relieve all pressure from system before performing any maintenance. Spray equipment shall be used in spray areas in accordance with NFPA, OSHA and Country/State/local requirements.
**WARNING**

<table>
<thead>
<tr>
<th>Static Spark</th>
<th>Can Cause explosion resulting severe injury or death.</th>
<th>Ground pump and pumping system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injection Hazard</td>
<td>Any material injected into flesh can cause severe injury or death.</td>
<td>Keep body parts away from outlet device. If an injection occurs, immediately obtain medical attention.</td>
</tr>
<tr>
<td>Hazardous pressure</td>
<td>Sudden pressure release can cause severe injury or death.</td>
<td>Pumping system can remain pressurized when pump is not operating.</td>
</tr>
<tr>
<td>Excessive inlet pressure</td>
<td>Can cause severe injury or death</td>
<td>Do not exceed the maximum inlet pressure as stated on the model plate.</td>
</tr>
</tbody>
</table>

**INSPECTION AND MAINTENANCE OF UNIT**

1) Check solvent cup to be sure it is 1/3 full.
2) Check catalyst and material levels.
3) Inspect material spray tip and o-ring. Replace if necessary.
4) Inspect catalyst tip assembly and o-rings. Replace if necessary.
5) Inspect tip pin o-rings on front of gun head and replace if nicked or worn.
6) Assemble catalyst tip and material tip onto gun.
7) Lubricate threads on retaining ring and assembly onto gun.
8) Inspect hose assemblies and connections for leaks and wear and tear. Replace if necessary. Do not wait until hose is so worn that it may burst.
9) Check roving quantity (if applicable).
10) Inspect and replace if necessary:
    a) Chopper Blades
    b) Anvil Sleeve
    c) Cutter Head Bearing
    d) Idler Bearing
11) Inspect and adjust if necessary:
    a) Cutter head to Anvil Sleeve tension
    b) Idler Bearing to Anvil Sleeve tension
    c) Check Chopper position for most efficient disbursement of chop into spray pattern.
12) Oil Cutter assembly Air Motor with Magnum Air Motor Oil as necessary (normally 2 – 3 drops daily, depending on usage).
PREPARATION AND PRIMING OF “NEW” SYSTEM

1. Be sure all air regulators are turned completely to the left, shutting off air to the components.

2. Slowly open main air.

3. Prime empty catalyst line:
   a. Disengage catalyst pump
   b. Open ball valve on catalyst manifold (if applicable)
   c. Eliminate air pockets by manually hand pumping the catalyst 5-10 short strokes (2-3 in.). After eliminating air pockets, and while continuing to hand pump, close ball valve on catalyst manifold.
   d. Pull and hold trigger on gun while hand pumping catalyst pump with short strokes until there is a solid, steady catalyst flow from the head of the gun. This will ensure that all air is purged from the line. Release trigger.
   e. Continue to hand pump the catalyst with short strokes until catalyst is fully primed and pressurized (generally within 5 additional strokes or less).

   **NOTE:** Do **NOT** engage slave pump until material pump has been primed.

4. Material Pump: *(be sure catalyst pump is disengaged)* Place a container or bucket under ball valve located at the bottom of the resin filter assembly to catch material while priming. Open ball valve. Slowly bring up pressure on material pump regulator just enough to allow pump to stroke up and down evenly. After a smooth flow of material is flowing from the valve, turn regulator off and close the valve.

5. Remove mix chamber and turbulent mixer from front of gun. Pull trigger on gun and allow gun to hang above waste container. Slowly bring up pump pressure again to allow material to flow out of gun. Release trigger to close gun. Pump will cycle until it is fully primed and then will stall out.

PREPARATION AND PRIMING OF PREVIOUSLY USED (shut down) SYSTEM

1. Slowly open main air.

2. Material Pump: *(be sure catalyst pump is disengaged)* Place a container or bucket under ball valve located at the bottom of the resin filter assembly to catch material while priming. Open ball valve. Slowly bring up pressure on material pump regulator just enough to allow pump to stroke up and down evenly. After a smooth flow of material is flowing from the valve, turn regulator off and close the valve.

3. Catalyst Slave Pump:
   a. Disengage slave pump.
   b. Open ball valve of catalyst manifold (if applicable).
   c. Eliminate all air pockets in feed lines by manually pumping catalyst pump until catalyst exits ball valve. Close ball valve.
   d. Remove mix chamber and mixer from front of gun.
   e. Open gun by pulling trigger and continue hand pumping until catalyst exits gun.
   f. Leave Catalyst Pump disengaged.

4. Pull trigger on gun and allow gun to hang above waste container. Slowly bring up pump pressure again to allow material to flow out of gun. Release trigger to close gun. Pump will cycle until it is fully primed and then will stall out.

5. Flush gun into appropriate container.

**SHUT DOWN PROCEDURES FOR SPRAY EQUIPMENT**

1. Trigger gun until pump shaft is in the full down position (at bottom of stroke position).

2. Engage gun trigger lock.

3. Relieving pressures:
   a. Close main air valve to system.
   b. Purge excess air from system by relieving air from the bottom of the air filter or water trap.
   c. **Catalyst pressure:** “Dump” or relieve catalyst pressure at catalyst manifold (if applicable) by opening catalyst ball valve. Pressure will immediately be relieved. Close the ball valve at once to avoid draining of catalyst from catalyst line.
   d. **Material pressure:** Place a container under material ball valve at bottom of fluid filter assembly to catch material flow when relieving pressure. **Slowly** open material ball valve to relieve pressure.

*Remember - the pump is under extreme pressure.* Use the utmost caution when opening the valve to avoid injury or being sprayed with material. Once material pressure is relieved, close ball valve.

4. Remove catalyst and material tip assemblies from head of gun and clean thoroughly.

5. Thoroughly clean diffuser cavity in front of gun head.

6. Inspect entire gun and equipment for over spray and clean.

**System is now “shut-down” and ready for the next start-up**

**Important Notes:**

- When cleaning gun with solvents, avoid getting solvent in exhaust port of “air trigger” gun by covering port with thumb or finger while cleaning and pointing gun downward.
- Proper cleanliness habits of your spray equipment goes a long way in keeping down unnecessary maintenance and repair costs.
AIR PRESSURES

1. Air requirement recommendations:
   a. A minimum of 100 psi on main air.
   b. 20 - 30 CFM for chopper systems

2. Material pump: 30 - 50 psi

3. Catalyst Atomizing Air: Catalyst atomizing air should be balanced generally between a range of 15 - 25 psi. It should be low enough to reduce catalyst overspray and high enough to atomize catalyst efficiently. This allows user to attain and operate under optimum efficiency.

TESTING SPRAY PATTERN

1. Testing of your spray pattern should be performed away from original part. Use paper or cardboard to check the following:
2. Spray pattern width and output
3. Catalyzation
4. Spray pattern definition (fingers and tails):
5. Adjust as necessary with the “MVP Air Assist” adjustment screw to give the finest pattern available by eliminating fingers and tails.

6. Check glass distribution

After completion of the above procedures, you may now confidently use your MVP system