Mini Pro Gel Coater Operations Manual

MagnumVenusPlastech

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Terms & Conditions of Sale:

- Customs duties, import and export licenses and certificates, if required, and all local taxes are excluded from this offer. If US state and local taxes are applicable and not included in equipment invoice, such amount may be invoiced later.

- Delivery dates or shipping schedules are approximate and based upon the most recent information available at the time of order. Dates may be adjusted upon receipt of subsequent information or modification of order. Seller will ship prior to the delivery date if possible, but not without Buyer's consent on Advanced Equipment sales.

- All contract dates and timelines begin upon receipt at MVP of customer purchase order, signed Terms and Conditions of Sale (if applicable), and down payment per quotation (if applicable).

- If shipments are delayed by the Buyer, or because the Buyer's account is in arrears, payments shall become due on the date when the Seller is prepared to make shipment. Products held by the Seller for the Buyer shall be at the risk and expense of the Buyer.

- Damages, defects or shortages must be communicated immediately to MVP. Discrepancy in pricing and/or quantities on invoices must be reported within 30 days of the invoice date. Claims made 30 days or more following the invoice date will not be honored.

- Permission to return items must be requested and granted in advance. No credit will be given if items are returned prior to requesting and receiving permission. All returns are subject to a restocking fee. The standard 15% charges may be increased or decreased depending on the reason for the return. Special ordered items may not be returned.

- Seller warrants that the mechanical operation of the goods as specified shall be free from faults in respect to materials and workmanship for a period of 12 months for parts from the date of invoice. For systems, 12 months from start-up or, if earlier, 18 months from the date of the Bills of Lading. The warranty does not cover general wear and tear or damage due to negligence or improper use. Seller's liability under the warranty shall be limited solely to repair or replacement costs, and has no responsibility for reimbursing repair cost incurred by Buyer in connection with equipment without first giving written authorization for such charges. Seller makes no express warranties except those set forth in this agreement, and disclaims all other warranties, expressed or implied, including without limitation, implied warranties of non-infringement merchantability and fitness for a particular purpose. Seller accepts no liability for loss of production, loss of profits, or other direct or indirect damages. In any claim by the Buyer

against the Seller in respect of the goods, the liability of the Seller shall be limited to the value of the goods.

- Many factors beyond Seller's control contribute to the success of Buyer's finished products, such as raw materials used to manufacture the product. Equipment is warranted to perform to specifications detailed in quotation, but Seller is not liable for quality or quantity of finished products produced by Buyer.

- The country of origin is the United States of America. Sale, installation and all rights of the parties are governed by the laws of the state of Florida. Venue with regard to any litigation shall be in Pinellas County, Florida. The parties agree to waive all rights to trial by jury as to any and all disputes.

- The goods remain the property of the Seller until full payment is received.

- Sale of equipment is subject to application and issuance of proper US Government export license and regulations, if applicable.

- Installation of equipment is responsibility of Buyer and Seller, with cost responsibility and number of days provided as detailed in original customer Quotation. Seller will provide installation supervision personnel within 30 days of customer request. If installation is delayed by the Buyer more than six months from the date of shipment, or if customer facility or material/parts are not prepared for installation, seller will invoice full installation costs, up to $1,250 a day plus expenses, for each MVP installation technician on site. Seller has the option to waive this fee at its discretion.

- Parties shall be excused for delays caused by embargoes, acts of civil or military authorities, Acts of God, or other circumstances beyond the reasonable control of the parties. Notification of such delays must be made in writing within ten days of occurrence.

- Our agreement supersedes any previous agreement and applies in full.

SAFETY & WARNING INFORMATION:

OPERATING YOUR POLYESTER SYSTEM SAFELY

1. Introduction

Any tool, if used improperly, can be dangerous. Safety is ultimately the responsibility of those using the tool. In like manner, safe operation of polyester processes is the responsibility of those who use such processes and those who operate the equipment. This manual outlines procedures to be followed in conducting polyester operations safety. This system has been specifically designed for use of Polyester Resin, Gel-Coat, and Methyl Ethyl Ketone Peroxides (MEKP) applications. Other formulations or blends considered for use in this equipment is strictly prohibited without the expressed consent by Magnum Venus Plastech Inc. Magnum Venus Plastech cannot eliminate every danger nor foresee every circumstance that might cause an injury during equipment operation. Some risks, such as the high pressure liquid stream that exits the spray tip, are inherent to the nature of the machine operation and are necessary to the process in order to manufacture the end-product. For this reason, ALL personnel involved in polyester operations should read and understand the Safety Manual. It is very important for the safety of employees involved in the operation that equipment operators, maintenance and supervisory personnel understand the requirements for safe operation. Each user should examine his own operation, develop his own safety program and be assured that his equipment operators follow correct procedures. Magnum Venus Plastech hopes that this manual is helpful to the user and recommends that the precautions in this manual be included in any such program. Magnum Venus Plastech recommends this Safety Manual remain on your equipment at all times for your personnel safety. In addition to the manual, Magnum Venus Plastech recommends that the user consult the regulations established under the Occupational Safety & Health Act (OSHA), particularly the following sections:

1910.94 Pertaining to Ventilation.

1910.106 Pertaining to flammable liquids

1910.107 Pertaining to spray finishing operations, particularly Paragraph (m) Organic Peroxides and Dual Component Coatings.

Other standards and recognized authorities to consult are the National Fire Protection Association (NFPA) bulletins as follows:

NFPA No.33 Chapter 14, Organic Peroxides and Dual Component Materials

NFPA No.63 Dust Explosion Prevention

NFPA No.70 National Electrical Code

NFPA No.77 Static Electricity

NFPA No.91 Blower and Exhaust System

NFPA No.654 Plastics Industry Dust Hazards

Type of Fire Extinguishing equipment recommended: Fire Extinguisher – code ABC, rating number 4a60bc.

Extinguishing Media – Foam, Carbon Dioxide, Dry Chemical, Water Fog.

Copies of the above bulletins are available, at a nominal charge from:

National Fire Protection Association
470 Atlantic Avenue
Boston, MA 02210

Research Report No.11 of the American Insurance Association deal with “Fire, Explosion and Health Hazards of Organic Peroxides”. It is published by:

American Insurance Association
85 John Street
New York, NY 10038

Local codes and authorities also have standards to be followed in the operation of your spraying equipment. Your insurance carrier will be helpful in answering questions that arise in your development of safe procedures.

1.2 Personal Safety Equipment

Magnum Venus Plastech recommends the following Personal Safety Equipment for conducting safe operations of the Polyester Systems:

Magnum Venus Plastech recommends that the user consult the state and local regulations established for all Safety equipment listed.

2.0 Material Safety

2.1 Hazards Associated with Laminating Operations

The major hazards which should be guarded against in polyester laminating operations are those associated with:

1. The flammability and explosion dangers of the catalyst normally used – Methyl Ethyl Ketone Peroxide (MEKP).

2. The flammability dangers of clean-up solvents sometimes used (Magnum Venus Plastech recommends that clean-up solvents be non-flammable), and of resin diluents used, such as styrene.

3. The flammability dangers of catalyst diluents, if used. (Magnum Venus Plastech recommends that catalyst not be diluted.

4. The flammability dangers of the uncured liquid resins used.

5. The combustibility dangers of the cured laminate, accumulations of over spray, and laminate sandings.

6. The toxicity dangers of all the chemicals used in laminating operations with respect to ingestion, inhalation and skin and eye hazards.

2.2 Catalyst (Methyl Ethyl Ketone Peroxide)

MEKP is among the more hazardous materials found in commercial channels. The safe handling of the “unstable (reactive)” chemicals presents a definite challenge to the plastics industry. The highly reactive property which makes MEKP valuable to the plastics industry in producing the curing reaction of polyester resins also produces the hazards which require great care and caution in its storage, transportation, handling, processing and disposal. MEKP is a single chemical. Various polymeric forms may exist which are more or less hazardous with respect to each other. These differences may arise not only from different molecular structures (all are, nevertheless, called “MEKP”) and from possible trace impurities left from the manufacture of the chemicals, but may also arise by contamination of MEKP with other materials in its storage or use. Even a small amount of contamination with acetone, for instance, may produce an extremely shock-sensitive and explosive compound.

Contamination with promoters or materials containing promoters, such as laminate sandings, or with any readily oxidizing material, such as brass or iron, will cause exothermic “redox” reactions which can become explosive in nature. Heat applied to MEKP, or heat build-up from contamination reactions can cause it to reach what is called its Self-Accelerating Decomposition Temperature (SADT).

Researchers have reported measuring pressure rates-of-rise well in excess of 100,000 psi per second when certain MEKP’s reach their SADT. (For comparison, the highest pressure rate-of-rise listed in NFPA Bulletin NO.68, “Explosion Venting”, is 12,000 psi per second for an explosion of 12% acetylene and air. The maximum value listed for a hydrogen explosion is 10,000 psi per second. Some forms of MEKP, if allowed to reach their SADT, will burst even an open topped container. This suggests that it is not possible to design a relief valve to vent this order of magnitude of pressure rate-of-rise. The user should be aware that any closed container, be it a pressure vessel, surge chamber, or pressure accumulator, could explode under certain conditions. There is no engineering substitute for care by the user in handling organic peroxide catalysts. If, at any time, the pressure relieve valve on top of the catalyst tank should vent, the area should be evacuated at once and the fire department called. The venting could be the first indication of a heat, and therefore, pressure build-up that could eventually lead to an explosion. Moreover, if a catalyst tank is sufficiently full when the pressure relief valve vents, some catalyst may spray out, which could cause eye injury. For this reason, and many others, anyone whose job puts them in an area where this vented spray might go, should always wear full eye protection even when laminating operations are not taking place.

Safety in handling MEKP depends to a great extent on employee education, proper safety instructions and safe use of the chemicals and equipment. Workers should be thoroughly informed of the hazards that may result from improper handling of MEKP, especially in regards to contamination, heat, friction and impact. They should be thoroughly instructed regarding the proper action to be taken in the storage, use and disposal of MEKP and other hazardous materials used in the laminating operation. In addition, users should make every effort to:

A. Store MEKP in a cool, dry place in original containers away from direct sunlight and away from other chemicals.

B. Keep MEKP away from heat, sparks and open flames.

C. Prevent contamination of MEKP with other materials, including polyester over spray and sandings, polymerization accelerators and promoters, brass, aluminum and non-stainless steels.

D. Never add MEKP to anything that is hot, since explosive decomposition may result.

E. Avoid contact with skin, eyes and clothing. Protective equipment should be worn at all times. During clean-up of spilled MEKP, personal safety equipment, gloves and eye protection must be worn. Firefighting equipment should be at hand and ready.

F. Avoid spillage, which can heat up to the point of self-ignition.

G. Repair any leaks discovered in the catalyst system immediately, and clean up the leaked catalyst at once in accordance with the catalyst manufacturer's instructions.

H. Use only original equipment or equivalent parts from Magnum Venus Plastech in the catalyst system (i.e.: hoses, fitting, etc.) because a dangerous chemical reaction may result between substituted parts and MEKP.

I. Catalyst accumulated from the purging of hoses or the measurement of fluid output deliveries should never be returned to the supply tank, such catalyst should be diluted with copious quantities of clean water and disposed of in accordance with the catalyst manufacturer's instructions.

The extent to which the user is successful in accomplishing these ends and any additional recommendations by the catalyst manufacturer determines largely the safety that will be present in his operation.

2.3 Clean-Up Solvents and Resin Diluents

WARNING

A hazardous situation may be present in your pressurized fluid system! Hydrocarbon Solvents can cause an explosion when used with aluminum or galvanized components in a closed (pressurized) fluid system (pump, heaters, filters, valves, spray guns, tanks, etc.). The explosion could cause serious injury, death and/or substantial property damage. Cleaning agents, coatings, paints, etc. may contain Halogenated Hydrocarbon Solvents. Some Magnum Venus Plastech spray equipment includes aluminum or galvanized components and will be affected by Halogenated Hydrocarbon Solvents.

A. There are three key elements to the Halogenated Hydrocarbon (HHC) solvent hazard.

a. The presence of HHC solvents. 1,1,1 – Trichloroethane and Methylene Chloride are the most common of these solvents. However, other HHC solvents are suspect if used; either as part of paint or adhesives formulation, or for clean-up flushing. b. Aluminum or Galvanized Parts. Most handling equipment contains these elements. In contact with these metals, HHC solvents could generate a corrosive reaction of a catalytic nature.

b. Equipment capable of withstanding pressure. When HHC solvent contacts aluminum or galvanized parts inside a closed container such as a pump, spray gun, or fluid handling system, the chemical reaction can, over time, result in a build-up of heat and pressure, which can reach explosive proportions.

When all three elements are present, the result can be an extremely violent explosion. The reaction can be sustained with very little aluminum or galvanized metal; any amount of aluminum is too much.

A. The reaction is unpredictable. Prior use of an HHC solvent without incident (corrosion or explosion) does NOT mean that such use is safe. These solvents can be dangerous alone (as a clean-up or flushing agent) or when used as a component or a coating material. There is no known inhibitor that is effective under all circumstances. Furthermore, the mixing of HHC solvents with other materials or solvents, such as MEKP, alcohol, and toluene, may render the inhibitors ineffective.

B. The use of reclaimed solvents is particularly hazardous. Reclaimers may not add any inhibitors. Also, the possible presence of water in reclaimed solvents could feed the reaction.

C. Anodized or other oxide coatings cannot be relied upon to prevent the explosive reaction. Such coatings can be worn, cracked, scratched, or too thin to prevent contact. There is no known way to make oxide coatings or to employ aluminum alloys, which will safely prevent the chemical reaction under all circumstances.

D. Several solvent suppliers have recently begun promoting HHC solvents for use in coating systems. The increasing use of HHC solvents is increasing the risk. Because of their exemption from many State Implementation Plans as Volatile Organic Compounds

(VOC's), their low flammability hazard, and their not being classified as toxic or carcinogenic substances, HHC solvents are very desirable in many respects.

WARNING: **Do not use Halogenated Hydrocarbon solvents in pressurized fluid systems having aluminum or galvanized wetted parts.**

NOTE: **Magnum Venus Plastech is aware of NO stabilizers available to prevent Halogenated Hydrocarbon solvents from reaction under all conditions with aluminum components in closed fluid system.** ***TAKE IMMEDIATE ACTION…*** **Halogenated Hydrocarbon solvents are dangerous when used with aluminum components in a closed fluid system.**

A. Consult your material supplier to determine whether your solvent or coating contains Halogenated Hydrocarbon Solvents.

B. Magnum Venus Plastech recommends that you contact your solvent supplier regarding the best non-flammable clean-up solvent with the heat toxicity for your application.

C. If, however, you find it necessary to use flammable solvents, they must be kept in approved, electrically grounded containers.

D. Bulk solvent should be stored in a well-ventilated, separate building, 50 feet away from your main plant.

E. You should allow only enough solvent for one day's use in your laminating area.

F. "NO SMOKING" signs must be posted and observed in all areas of storage or where solvents and other flammable materials are used.

G. Adequate ventilation (as covered in OSHA Section 1910.94 and NFPA No.91) is important wherever solvents are stored or used, to minimize, confine and exhaust the solvent vapors.

H. Solvents should be handled in accordance with OSHA Section 1910.106 and 1910.107.

2.4 Catalyst Diluents

Magnum Venus Plastech spray-up and gel-coat systems currently produced are designed so that catalyst diluents are not required. Magnum Venus Plastech, therefore, recommends that diluents not be used. This avoids the possible contamination which could lead to an explosion due to the handling and mixing of MEKP and diluents. In addition, it eliminates any problems from the diluents being contaminated through rust particles in drums, poor quality control on the part of the diluents suppliers, or any other reason. If, however, diluents are absolutely required, contact your catalyst supplier and follow his instructions explicitly. Preferable, the supplier should premix the catalyst to prevent possible “on the job” contamination while mixing.

WARNING

If diluents are not used, it should be remembered that catalyst spillage, gun, hose and packing leaks are potentially more hazardous, since each drop contains a higher concentration of catalyst, and therefore will react quicker with over spray and the leak.

2.5 Cured Laminate, Overspray and Laminate Sandings Accumulation

A. Remove all accumulations of overspray, FRP sandings, etc. from the building as they occur. If this waste is allowed to build up, spillage of catalyst is more likely to start a fire; in addition, the fire would burn hotter and longer.

B. Floor coverings, if used, should be non-combustible.

C. Spilled or leaked catalyst may cause a fire if it comes in contact with an FRP product, over-sprayed chop or resin, FRP sandings or any other material with MEKP.

To prevent this spillage and leakage, you should:

1. Maintain your Magnum Venus Plastech System. Check the gun several times daily for catalyst and resin packing or valve leaks. REPAIR ALL LEAKS IMMEDIATELY.

2. Never leave the gun hanging over, or lying inside the mold. A catalyst leak in this situation would certainly damage the part, possibly the mold, and may cause a fire.

3. Inspect resin and catalyst hoses daily for wear or stress at the entry and exits of the boom sections and at the hose and fittings. Replace if wear or weakness is evident or suspected.

4. Arrange the hoses and fiberglass roving guides so that the fiberglass strands DO NOT rub against any of the hoses at any point. If allowed to rub, the hose will be cut through, causing a hazardous leakage of material which could increase the danger of fire. Also, the material may spew onto personnel in the area.

2.7 Toxicity of Chemicals

A. Magnum Venus Plastech recommends that you consult OSHA Sections 1910.94, 1910.106, 1910.107 and NFPA No.33, Chapter 14, and NFPA No.91.

B. Contact your chemical supplier(s) and determine the toxicity of the various chemicals used as well as the best methods to prevent injury, irritation and danger to personnel.

C. Also determine the best methods of first aid treatment for each chemical used in your plant.

2.8 Treatment of Chemical Injuries

Great care should be used in handling the chemicals (resins, catalyst and solvents) used in polyester systems. Such chemicals should be treated as if they hurt your skin and eyes and as if they are poison to your body. For this reason, Magnum Venus Plastech recommends the use of protective clothing and eye wear in using polyester systems. However, users should be prepared in the event of such an injury. Precautions include:

1. Know precisely what chemicals you are using and obtain information from your chemical supplier on what to do in the event the chemical gets onto your skin or into the eyes, or is swallowed.

2. Keep this information together and easily available so that it may be used by those administering first aid or treating the injured person.

3. Be sure the information from your chemical supplier includes instructions on how to treat any toxic effects the chemicals have.

WARNING

Contact your doctor immediately in the event of any injury and give him the information you have collected. If your information includes first aid instructions, administer first aid immediately while you are contacting your doctor.

Fast treatment of the outer skin and eyes that contact such chemicals generally includes immediate and thorough washing of the exposed skin and immediate and continuous flushing of the eyes with lots of clean water for at least 15 minutes or more. These general instructions of first aid treatment, however, may be incorrect for some chemicals; that is why you must know the chemicals and treatment before an accident occurs. Treatment for swallowing a chemical frequently depends upon the nature of the chemical.

NOTE: **Refer to your System User Manual for complete and detailed operating instructions and service information.**

3.0 Equipment Safety

WARNING

Magnum Venus Plastech suggests that personal safety equipment such as EYE GOGGLES, GLOVES, EAR PROTECTION, and RESPIRATORS be worn when servicing or operating this equipment. Ear protection should be worn when operating a fiberglass chopper to protect against hearing loss since noise levels can be as high as 116 dB (decibels). This equipment should only be operated or serviced by technically trained personnel!

WARNING

Never place fingers, hands, or any body part near or directly in front of the spray gun fluid tip. The force of the liquid as it exits the spray tip can cause serious injury by shooting liquid through the skin. NEVER LOOK DIRECTLY INTO THE GUN SPRAY TIP OR POINT THE GUN AT OR NEAR ANOTHER PERSON. (TREAT THE GUN AS IF IT WERE A LOADED PISTOL.)

3.1 Emergency Stop Procedures

The following steps should be followed in order to stop the machinery in an emergency situation

1. The ball valve located where the air enters the power head of the resin pump, should be moved to the “OFF” or closed position. To do this, simply rotate the lever on the ball valve 90 degrees. Doing this will cause all the system air to bleed out of the system in a matter of a few seconds, making the system incapable of operating

NOTE: Step 2 is a precautionary step and should be followed whenever the above mentioned ball valve is activated to the stop mode. Failure to do so, can damage the regulators and components on reactivating to the “ON” position.

2. Turn all system regulators to the “OFF” position (counter-clockwise) position

NOTE: Verify that the Catalyst relief line, located on the catalyst manifold, and the resin return line, located on the resin filter, are secured relieving catalyst and resin fluid pressure.

3. Catalyst pressure in the catalyst pump can be eliminated by rotating the ball valve on the catalyst manifold 90 degrees to the “open” or “on” position.

Note: The “open” or “on” position is when the ball valve handle is parallel (in line) with the ball valve body. The “closed” or “off” position is when the ball valve handle is perpendicular (across) the ball valve body.

4. Resin pressure in the resin pump can be eliminated by rotating the ball valve on the resin filter 90 degrees to the “open” or “on” position. Place a container under the ball valve to catch any resin that is ejected out of the valve.

3.2 Grounding

Grounding an object means providing an adequate path for the flow of the electrical charge from the object to the ground. An adequate path is one that permits charge to flow from the object fast enough that it will not accumulate to the extent that a spark can be formed. It is not possible to define exactly what will be an adequate path under all conditions since it depends on many variables. In any event, the grounding means should have the lowest possible electrical resistance. Grounding straps should be installed on all loose conductive objects in the spraying area. This includes material containers and equipment. Magnum Venus Plastech recommends grounding straps be made of AWG No.18 stranded wire as a minimum and the larger wire be used where possible. NFPA Bulletin No77 states that the electrical resistance of such a leakage path may be as low as 1 meg ohm (10 ohms) but that resistance as high as 10,000 meg ohms will produce an adequate leakage path in some cases. Whenever flammable or combustible liquids are transferred from one container to another, or from one container to the equipment, both containers or container and equipment shall be effectively bonded and grounded to dissipate static electricity. For further information, see **National Fire Protection Association** (NFPA) 77, titled "Recommended Practice on Static Electrical". Refer especially to section 7-7 titled "Spray Application of Flammable and Combustible Materials". Check with local codes and authorities for other specific standards that might apply to your application. NEVER USE HARD MATERIALS SUCH AS WIRE, PINS, ETC., TO CLEAR A PLUGGED GUN. HARD MATERIALS CAN CAUSE PERMANENT DAMAGE. DAB WITH A BRISTLE BRUSH, BLOW BACKWARDS WITH AIR UNTIL CLEAR WHILE WEARING A PROTECTIVE EYE SHIELD. REPEAT AS MANY TIMES AS NECESSARY. DO NOT PERFORM ANY MAINTENANCE OR REPAIRS UNTIL YOU HAVE FOLLOWED THE PRECAUTIONS STATED ABOVE. IF YOU, AS AN EQUIPMENT OPERATOR OR SUPERVISOR, DO NOT FEEL THAT YOU HAVE BEEN ADEQUATELY TRAINED OR INSTRUCTED AND THAT YOU LACK THE TECHNICAL KNOWLEDGE TO OPERATE OR PERFORM MAINTENANCE ON A PIECE OF MAGNUM VENUS PLASTECH EQUIPMENT, PLEASE CALL MAGNUM VENUS PLASTECH BEFORE OPERATING OR PERFORMING MAINTENANCE ON THE EQUIPMENT. IF YOU HAVE ANY QUESTIONS REGARDING THE ABOVE PRECAUTIONS OR ANY SERVICE OR OPERATION PRECEDURES, CALL YOUR MAGNUM VENUS PLASTECH DISTRIBUTOR OR MAGNUM VENUS PLASTECH.

NOTICE: All statements, information and data given herein are believed to be accurate and reliable but are presented without guaranty, warranty or responsibility of any kind express or implied. The user should not assume that all safety measures are indicated or that other measures are not required.

DANGER: Contaminated catalyst may cause Fire or Explosion. Before working on the catalyst pump or catalyst accumulator, wash hands and tools thoroughly. Be sure work area is free of dirt, grease or resin. Clean catalyst system components with clean water only.

DANGER: Eye, skin and respiration hazard. The Catalyst, MEKP, may cause blindness, skin irritation or breathing difficulty. Keep hands away from face. Keep food and drink away from work area.

WARNING: Please refer to your catalyst manufacturer's safety information regarding the safe handling and storage of catalyst. Wear appropriate safety equipment as recommended.

Introduction:

This manual provides information needed to properly operate and perform simple maintenance and repair on this equipment.

- Step-by-step operations procedures are provided.
- This manual includes Installation, Start-up and Shut-Down instructions.
- Step-by-step assembly and disassembly procedures are included for each component.

Please read the manual carefully. Follow the steps in the order given, otherwise you may damage the equipment or injure yourself.

Major Components:

The Mini Pro Gel Coater consists of the following major components:

- Resin Pump Fluid section and Air Motor.
- Shift Block Assembly.
- Catalyst Pump Assembly
- Gun Assembly

Description of Controls for Spray unit:

Familiarize yourself with the Air Manifold controls, which consist of the following regulators and gauges:

- PUMP PRESSURE gauge and regulator. This controls the main air pressure to the resin pump Air Motor.
- ATOMIZING-AIR gauge and regulator. This is controls the air pressure to the catalyst nozzle on the gun. This is normally set to 18 – 25psi (1 -1.5 bar)
- RESIN DUMP VALVE – This located at the bottom of the Filter Body. This is used to relieve gel coat pressure.

Getting Started:

Air Requirements:

Clean, dry compressed air must be available at 90 – 100 psi (6 – 7 bar) and a minimum volume of 10 CFM (0.3 m^3). Air must be provided through an air hose with a diameter of 0.5 inch (1.3 cm) or greater.

Lubrication:

Throughout this manual, directions are given for lubricating various parts of the Pro Pump. There are three types of lubricant used:

- If the part contacts resin, use MVP Red Grease (6706-2-1).
- If the part is located where it will contact air, use Lubriplate® (08465).
- Throat Seal Oil (TSL-3200) used in the oil reservoir of the pump.

Other Supplies:

- Solvent for cleaning.
- A small Chip / Paint Brush for cleaning.
- Small cup or container for the solvent.
- Wet Gel Gauge to determine Gel Coat thickness.

Installation and Setup:

1. Unpack unit & components – report any damaged or missing items
2. Assemble unit – mount Pump to the cart, install Catalyst Pump onto the Slave Arms
3. Install Catalyst Jug into the Catalyst jug bracket
4. Connect the Relief Valve tube to the top port in the Catalyst Jug.
5. Connect the Feed tube from the Catalyst jug outlet to the Catalyst pump Inlet.
6. Connect the Catalyst hose to the Catalyst Pump outlet
7. Install Gel coat Filter & Surge Chamber assembly
8. Attach the Gel coat hose to the Outlet of the Filter assembly
9. Install Air Manifold - connect Air Hose to Powerhead & Air Supply to the Shift Block.
10. Attach hose fittings, catalyst atomizing hose and gun air supply
11. Attach Pickup Hoses to the Inlet of the pump
12. Double check all hose fittings and connections are tight.

Note: it is important to be sure all fittings and connections are tight to prevent catalyst or gel coat leaking.

Priming the Unit:

Priming Gel Coat to Gun:

NOTE: The resin pump was tested using oil. It may require up to 1/2 gallon (1 – 2 liters) of gel coat to be run through the unit to purge any remaining oil from the system.

1. Fill the Reservoir cavity 1/2 full with TSL oil or suitable oil.

2. Insert the gel coat suction wand into container of gel coat. Clamp or tape the return hose coming from the bottom of the in-line filter to the pickup wand and into the drum / pail.

3. Remove the Catalyst Tip and Spray Tip from the front of the gel coat gun.

4. Position the gun over an appropriate container and with the gun trigger locked in the open position, slowly increase pump regulator pressure until pump is running at a slow but steady rate. Allow pump to run until a steady stream of gel coat is being dispensed.

5. Close the gun and brush the front of the gun head clean with solvent.

6. Slowly increase gel coat pump pressure to 100 psi (7 bar). Allow the unit to set under static load for 15 to 30 minutes to seat the resin packing set.

Turn the pump regulator to zero. Slowly open the ball valve at the bottom of the resin filter to drain the fluid pressure

Priming Catalyst to Gun:

1. Remove the catalyst tip and spray tip from the front of the gun.

2. Tighten the catalyst packing nut – 1/8 to 1/4 of a turn to snug packing.

3. Fill the catalyst jug ¾ full, purge the air out of the catalyst feed line by slightly tilting the catalyst jug toward the outlet fitting.

4. Lock or hold the gun trigger in the open position over an appropriate container.

5. Remove the pin from the slave arm and catalyst pump bearing block. Use the priming knob to hand prime catalyst out to the gun until a steady stream is achieved.

6. Release the trigger to close the gun.

7. Replace the pin into the slave arm and catalyst pump bearing block – be sure that the catalyst pump is positioned at the correct percentage.

Note: Be sure the top and bottom of the catalyst pump are set to the same percentage on the slave arm to prevent damage to the catalyst pump.

Gun Set-Up & Spray:

Note: Use a little red grease on the o-rings and threads before installing the spray tip, catalyst tip and retainer.

1. Install the Gel Coat Spray Tip into the front of the gun block.

2. Install the Catalyst Tip over the Spray Tip. Use caution not to damage the o-rings on the front of the gun block.

3. Install the retainer to secure Catalyst Tip and Spray Tip in place.

4. Spray a test pattern: Slowly make gel coat pump pressure adjustments until a fairly uniform pattern is achieved. There should be slight horns (lines) on either side of the spray fan. For the ATG-3500 Gel Coat Gun - Slowly open the air-assist needle valve located on the side of the gun handle until a soft uniform pattern is achieved.

One of the most important concepts is to use just enough pressure to the power head to establish a good spray fan, and no more. Then use the Air Assist to fine tune or do final adjustment to the spray pattern.

Daily Start-up & Shut-down:

Daily Start-Up:

1. Check all hoses for damage.

2. Check all material supplies and fill or replace as needed.

3. Open main inlet air valve on the manifold.

4. Check pump pressure: if adjustment is needed, remove the pin from the slave arms & catalyst pump bearing block – this will prevent over pressure in the catalyst system. Slowly turn up the pump air pressure to the operating pressure.

Note: Always lean the catalyst pump away from the gel coat pump (towards the connecting arm) when it is unpinned from the slave arms – this will help prevent damage to the catalyst pump.

5. Replace the Pin into the Slave arm and catalyst pump bearing block.

6. Check atomizing air pressure, adjust as necessary. It should be set to 18 – 25psi (1 -1.5 bar)

7. Lubricate the spray tip o-rings, stud o-rings and gun front threads

8. Install nozzle, catalyst tip and retaining ring onto the front of the gun.

Daily Shut-Down:

1. Wipe the face of the nozzle and catalyst tip with solvent.

2. Turn off the main air ball valve at the air manifold.

3. Remove the Catalyst tip and Spray tip clean with solvent.

4. Wipe the gun face clean with a rag or brush clean with solvent.

5. Hang the gun with the gun block exit holes facing downwards

Trouble Shooting Guide:

The most common problems with the equipment are diagnosed by analyzing the cured part.

NOTE: Many problems are the direct result of a failure to maintain the equipment.

PROBLEM	CAUSE	SOLUTION
Slow cure during upstroke	S.S. Ball in catalyst pump piston body not seating	Clean ball and inspect seat. Replace ball, piston seal or piston body if questionable.
Slow cure during down stroke	S.S. Ball in catalyst pump inlet body not seating.	Clean ball and inspect seat. Replace ball or have seat repaired if questionable.
	Catalyst Check Valve (CV-2000) not working correctly.	Check and Repair the Catalyst Check Valve (CV-2000).
No cure or slow over-all cure	Catalyst pump set at too low or too high of a percentage.	Move catalyst pump to a higher setting (closer to the gel coat pump). Be sure to attach the catalyst pump in a vertical position.
	Catalyst supply below outlet fitting on jug.	Fill catalyst jug 1/3 full.
	Quick pin not attached to pump or slave arm.	Install quick pin. Be sure to attach the catalyst pump vertically.
	Catalyst leak.	Check all fittings. The catalyst system must be fluid tight.
	Catalyst relief valve on catalyst pump is leaking.	Relieve pressure from Pro pump. Clean and repair the Relief Valve
	Catalyst suction screen in catalyst jug clogged.	Clean catalyst suction screen and ensure that catalyst supply is not contaminated.

PROBLEM	CAUSE	SOLUTION
	Air lock in catalyst pump.	Remove air lock. See Appendix: Air Lock in the Catalyst Pump.
	Catalyst pump piston seal worn or damaged	Replace piston seal. During reassembly, be sure spring in seal faces top of pump
	Catalyst pump outlet body damaged.	Replace catalyst pump outlet body and piston seal. During reassembly, be sure spring in seal faces top of pump. Prevent by connecting catalyst pump vertically.
	Catalyst pump check valve blocked or stuck.	Disassemble check valve and remove blockage.
	Catalyst hose plugged. **Danger: In the next steps you will be dealing with fluids under high pressure. Catalyst will be sprayed from the hose fitting when the fitting is loosened. Follow safety instructions read the Safety & Warning section in the beginning of this manual.**	Relieve pressure from the system. Replace the catalyst hose with new one.
	Resin or gel coat too cold.	Consult your materials supplier for proper temperature. Maintain a draft-free environment of about 70 degrees F. An auxiliary heat source may be required to reduce gel time.
	Piston cups, piston ball, or pump cylinder worn.	Inspect the piston cups, piston ball, and pump cylinder. Clean and replace any damaged components. See Chapter 6: Pro Pump.
Low output on upstroke of Pro pump	Screen of pump pick-up wand blocked.	Unscrew screen from hose and clean.
No fan, constant low output, or fast cure	Resin filter blocked.	Disassemble and clean filter body and screen, with solvent

PROBLEM	CAUSE	SOLUTION
	Resin hose plugged. **Danger: To prevent injury, always relieve fluid pressure before attempting to remove components.**	Flush hose with solvent. If material is hard, replace hose.
	Pick-up wand assembly leaking.	Tighten assembly fittings.
	Resin filter clogged.	Disassemble and clean the resin filter. See Chapter 7: Accumulator & Filter.
	Material too cold or air pressure low.	Heat material or increase pump pressure.
Narrow Fan	Material too cold, nozzle too large or air pressure low.	Heat Material, use smaller nozzle, or as a last resort increase pump pressure.
	Resin filter clogged.	Disassemble and clean the resin filter.
Wide Fan	Air pressure too high.	Lower pressure then increase pressure to the desired fan.
	Nozzle too small or too wide.	Change nozzle.
Round fan	Orifice in nozzle worn, clogged, or damaged.	Push fine wire through orifice from back side. Use fingernail to clean material form “V” shaped notch in front. Soak hardened material in solvent. If notch is rough or worn, replace nozzle.
	Air-assist pressure too high.	Decrease air-assist pressure.
Excessive Misting	Air pressure too high.	Reduce air pressure to gel coat pump.
Heavy pulsation	Resin accumulator plugged. **Danger: To prevent injury, always relieve fluid pressure before attempting to remove components.**	Disassemble accumulator and clean.
Pump jumps on upstroke	Piston ball worn or not seating properly.	Replace piston ball and piston cups. Be sure to lubricate ball and cups thoroughly with Red Grease. See Chapter 6: Pro Pump.

PROBLEM	CAUSE	SOLUTION
Pump dives on down stroke	Foot valve, spring retainer, or foot valve ball damaged or dirty.	Clean or replace foot valve, spring retainer and foot valve ball. Be sure to lubricate ball thoroughly with Red Grease. See Chapter 6: Pro Pump.
	Pick-up wand assembly not tight.	Tighten or seal joints of pick-up wand.
	Air in material.	Agitate material to remove air.
Low output on upstroke	Piston cups, piston ball, or pump cylinder worn.	Inspect the piston cups, piston ball, and pump cylinder. Clean and replace any damaged components. See Chapter 6: Pro Pump.
Pump does not run	Silencers on valve block plugged.	Turn off air to pump and unscrew silencers. Clean silencers and re-install.
	Actuator valve or socket cap screw at shift block broken.	Replace the broken cartridge valve or socket cap screw. See Chapter 6: Pro Pump.
	Pro pump or hose plugged. **Danger: To prevent injury, always relieve fluid pressure before attempting to remove components.**	Disassemble and clean Pro pump. Replace any worn parts. Replace hose as required.
	Air not connected.	Check that air hose is connected at manifold, and regulator is at 20 psi or more.
	Air restricted.	Straighten any kinks in air hoses.
Material in oil reservoir	Packing worn.	Replace packing set in lower part of the pump. See Chapter 6: Pro Pump.
	Piston rod worn or scored.	Replace piston rod. See Chapter 6: Pro Pump.
No Gel coat delivery on down stroke	Foot valve, spring retainer, or foot valve ball damaged or dirty.	Clean or replace foot valve, spring retainer, and foot valve ball. Be sure to lubricate ball thoroughly with Red Grease. See Chapter 6: Pro Pump.
Hose leaks at fittings	Fitting loose	Tighten fitting. Check all fittings for leaks before operating.

PROBLEM	CAUSE	SOLUTION
	Fitting or nipple damaged. **Danger: To prevent injury, always relieve fluid pressure before attempting to remove components.**	Replace damaged parts.
	Crimped hose. **Danger: To prevent injury, always relieve fluid pressure before attempting to remove components.**	If the hose has been sharply bent, the plastic liner may be ruptured. Remove and replace hose.
Slow Cure on one side of the fan.	Turbulent Mixer partly clogged or damaged.	Clean or replace the Turbulent Mixer.
	Distribution Ring partly clogged.	Remove the mix chamber and clean the distribution ring.
	Mix Housing damaged	Replace as needed.
Fingers – heavy lines in the spray fan.	Gel Coat too cold	Increase gel coat temperature. Use Inline resin heater.
	Pump air pressure too low	Slowly increase the pump pressure in 5psi (1/2 bar) increments and check spray fan.
	Air- Assist pressure is too low	Slowly Increase Air- Assist pressure as needed.
Pump has short travel – stuttering near top or bottom of stroke	Valve block is not shifting all the way or shifting before completing a full stroke.	Check air supply to shift block it should be 90 -100psi (6 – 7bar). Replace Actuator Valve (MPM-2589) or Valve (VPRO-2003) as needed.

Basic Troubleshooting for AT Guns:

Problem	Possible Cause(s)	Recommended Solution
Air leaking from exhaust port on back handle while trigger is OFF position.	O-ring material worn or cut.	Replace O-rings.
	O-rings on catalyst piston worn or cut.	
	O-rings on trigger valve worn or cut.	
Air leaking from exhaust port on back of handle while trigger in OFF or ON position.	O-rings on trigger valve worn or cut.	Replace O-rings.
	O-rings on catalyst valve and/or material piston worn or nicked.	
Catalyst leaking from catalyst tip while gun is sitting, not being triggered.	O-rings on catalyst valve worn or cut.	Replace O-rings.
Catalyst leaks from week hole on catalyst side of gun.	O-rings on catalyst valve worn or cut.	Replace O-rings.
Catalyst leaks from week hole on catalyst side of gun.	O-rings on catalyst valve worn or cut.	Replace O-rings.
No catalyst is coming from gun.	Catalyst air piston is not actuating.	Check for clogged catalyst air passages (small holes underneath back cylinder). Note: There is more than one passageway from holes.
	Plugged catalyst restrictor (allen screw with orifice located in front of catalyst valve).	Clean and clear orifice in front of catalyst valve.
	Plugged catalyst passageway in head of gun or catalyst tips.	Inspect, clean and clear passageways.
	No catalyst flow to gun.	See “Slave Pump-Trouble Shooting”
Material is leaking from tip (front of gun).	Loose diffuser seat.	Tighten diffuser seat 1/4 to 1/2 turn at a time until snug and then one more 1/4 turn. Over tightening of diffuser seat may cause bindng of material needle.
	Worn needle and/or seat.	Replace worn items.
	O-ring on diffuser nicked or cut.	Replace O-rings.

Material is leaking from weep hole on material side of gun.	Loose diffuser seat.	Adjust until snug. Then turn 1/4 to 1/2 turn more. Don't over tighten.
	Worn needle packing	Replace packing and adjust as indicated above.

Catalyst Pump - Air Lock:

DANGER: Fluids under High Pressure. Before performing any service and repair on this equipment, be sure to relieve air and fluid pressure.

DANGER: Always wear appropriate eye protection when working with this equipment.

WARNING: When removing hoses, place a rag over the hose before loosening it.

What is an Air Lock?

An air lock is an air bubble in the catalyst pump that prevents catalyst flow. The piston body moves inside the bubble of air instead of pumping catalyst.
If you have determined that there is an air lock in your catalyst pump, follow the procedures in this section.

1. Relieve line pressure from the catalyst pump by locking the gun open over an empty bucket. Leave the gun in this position.

WARNING: Relieve pressure from the catalyst pump before continuing.

2. Remove the catalyst hose from the nipple on the catalyst pump.

WARNING: When removing hose, place a rag over the hose and fitting before loosening it.

3. Remove the quick pin from the catalyst bearing block and upper slave arm.

4. Tilt the pump toward the resin pump to release the bubble.

NOTE: If the bubble does not appear in the inlet tube, remove the lower quick pin and turn the pump upside-down.

5. Slowly hand-pump the catalyst into a suitable container until catalyst spurts from the nipple an equal amount on both the upstroke and down stroke.

6. Reconnect the catalyst hose to the nipple.

7. Hand-pump the catalyst pump until catalyst comes out through the gun.

8. Install the pump and quick pin into the slave arm.

9. Close the gun

Optional Process:

The air bubble can be quickly removed if the PRO-RECIRC option is installed on this equipment. Simply open the recirculation valve and hand prime catalyst back to the catalyst jug until there is a bubble free flow, then return the recirculation valve back to flow out the gun.

Pump Repair Procedures:

The Mini Pro Gel Coat system uses the VPRO-45220 Pump assembly – for repair and maintenance instructions reference the manual "**VPRO-45220 Series Pump Manual**".

Catalyst Pump Repair:

The Mini Pro Gel Coat system uses the PCP-2000 Catalyst Pump assembly – for repair and maintenance instructions reference the manual "**PCP-2000 Catalyst Pump Manual - Low Range"**.

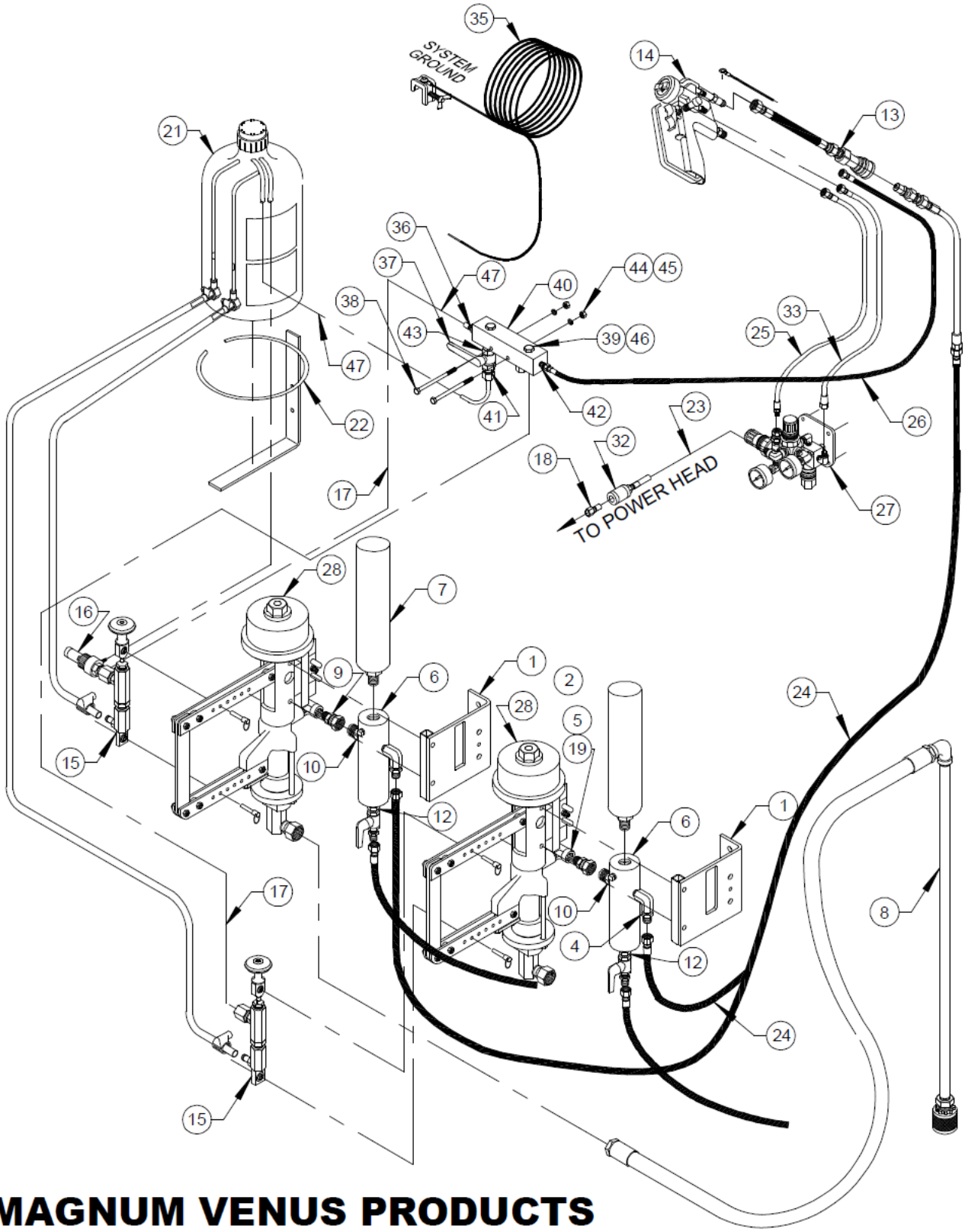
Gel Coat Gun Repair:

The Mini Pro Gel Coat system comes standard the ATG-3500 Gel Coat Assembly – for repair and maintenance instructions reference the manual "**ATG-3500 Repair and Maintenance Manual"**.

The EMG-1000 Gel Coat gun is an option on the Mini Pro Gel Coat system for detailed repair and Maintenance instructions reference the manual "**EMG-1000 & EMG-1500 Gel Coat Gun Manual**".

Parts Drawings:

MGS-PRO-2-22	**EXTERNAL MIX GEL COATER W/ATG3500**
MA-16	**AIR MANIFOLD**
CJ-2000	**CATALYST JUG ASSEMBLY**
HSA-1000	**3/4” SIPHON ASSEMBLY**



MAGNUM VENUS PRODUCTS

EXTERNAL GELCOAT W/ATG-3500	MGS-PRO-2-22

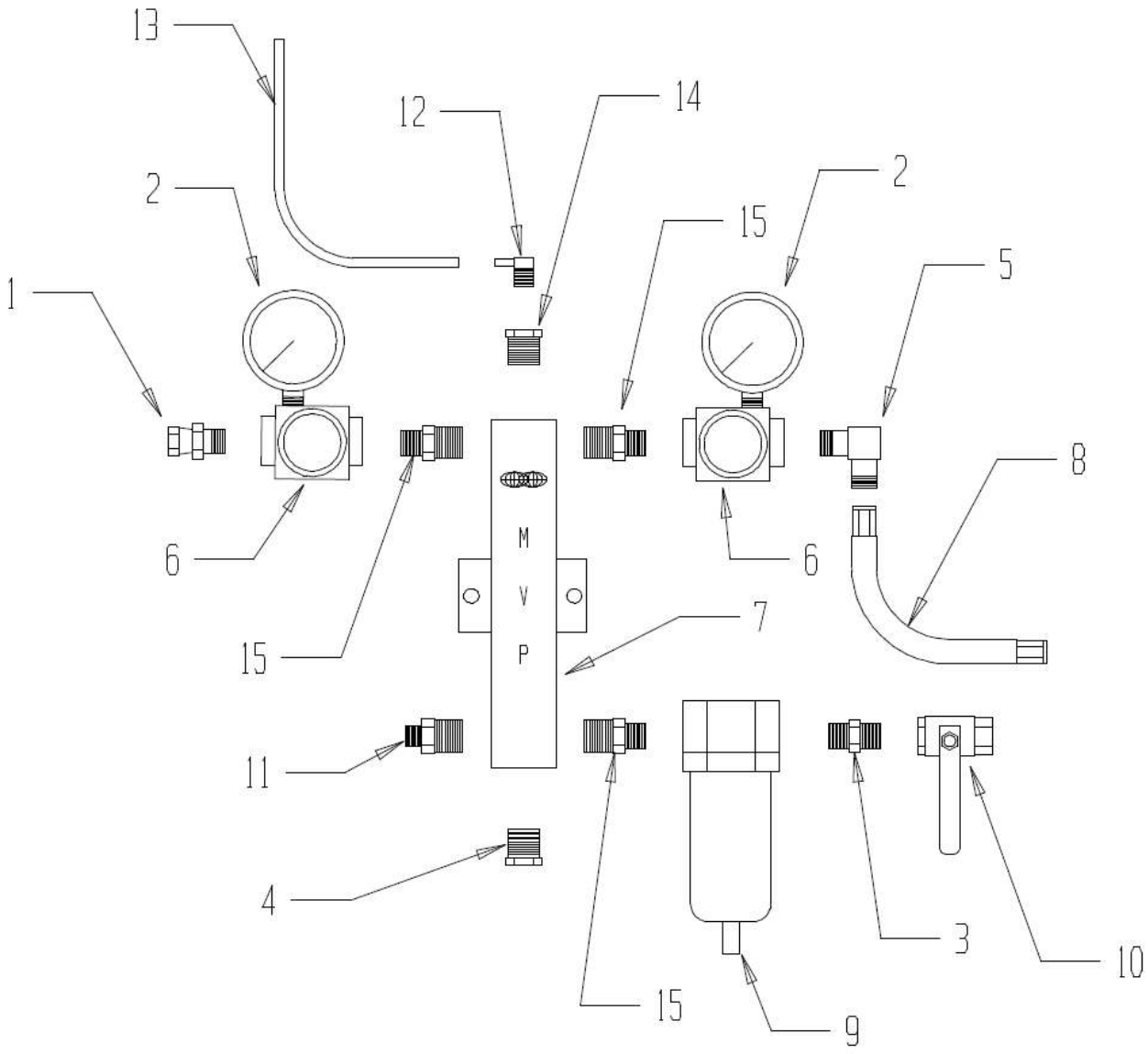
REV. - 8/4/03 JEM

EXRERNAL GELCOAT W/ATG-3500 MGS-PRO-2-22
PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1	85770-69	2	PUMP MNT BRKT
2	08690	1	MALE QUICK DISCONNECT
3	00817	2	NIPPLE
4	05627	2	COUPLING
5	05501	2	PIPE THREAD SEAL
6	FF-5000-100	2	RESIN FILTER W/100 MESH
7	SC-2510	2	SURGE CHAMBER
8	HSA-1000	2	3/4" x 8' SIPHONE ASSY
9	PF-SW-06	2	SWIVEL FITTING MxF
10	PF-HN-08-06	4	NIPPLE
11	BV-44-HP	2	BALL VALVE
12	PF-HN-04-04S	2	NIPPLE
13	PF-HN-04	4	NIPPLE
14	ATG-3500	1	GELCOAT GUN ASSY
15	PCP-2000-RV	2	CAT PUMP ASSY
16	RV-1000-1500	1	RELIEF VALVE
17	01189-3	2	CATALYST HOSE ASSY 3 FT
18	08936	2	MALE QUICK DISCONNECT
19	7701-1-2	2	ELBOW FITTING
20	00036	2	STREET ELBOW
21	59440-3	1	2 GAL CAT JUG ASSY
22	85730-1	1	CAT JUG BRACKET
23	HAW-0344-5	2	AIR HOSE ASSY - 5 FT
24	HAW-044M-20	2	HOSE ASSY
25	HA-0344-25	1	HOSE ASSY 25 FT
26	HC-0224-25	1	HOSE ASSY 1/8" x 25 FT
27	PR-1080	1	AIR MANIFOLD
28	VPRO-45220	2	GELCOAT PUMP
29	01446	8.0 FT	1/4" POLY TUBE
30	MP-2535	1	MALE RUN POLY TEE
31	HA-0644-10	1	AIR HOSE ASSY
32	7701-7-1	1	FEMALE QUICK DISCONNECT
33	HA-0224-25	1	AIR HOSE ASSY
34	HA-0224-25	2	STREET ELBOW
35	6703-02-020	1	UNIT GROUNG
36	CM-1052	1	FITTING
37	CM-1005	1	BALL VALVE
38	F-HB-04C-32	2	BOLT
39	CM-1053	1	PLUG
40	CM-1051	1	MANIFOLD BLOCK
41	CPRV-1002-A	1	FITTING
42	CM-1054	1	FITTING
43	CM-1056	1	FITTING
44	F-HN-04C	2	NUT
45	F-SW-04	2	LOCK WASHER
46	O-S-013	7	O-RING
47	MS-2052-30"	2	TUBE
	TSL-800	1	TSL. 1/2 PT
	6706-2-1	1	WHITE GREASE (NOT SHOWN)
	VHPC-2200-SK	1	SEAL KIT (NOT SHOWN)

MA-16
AIR MANIFOLD FOR EXTERNAL MIX F.I.T. GELCOAT SYSTEM

03-24-03 (BT2)



MA-16
SYSTEM AIR MANIFOLD
03-24-03
CUSTOMER PARTS KEY

ITEM	PART #	DESCRIPTION	QTY.
1	PF-SW-06M-04F	SWIVEL ADAPTER	1
2	AG-B2-100	AIR GUAGE, 100#	2
3	PF-HN-06	NIPPLE	1
4	PF-HP-08	HEX PLUG	1
5	PF-ME-06	MALE ELBOW	1
6	NOR-06	AIR REGULATOR	2
7	MA-2001	MANIFOLD	1
8	HA-0666-3	AIR HOSE	1
9	NOF-06	AIR FILTER	1
10	BV-6F6F-LP-REL	3/8" BALL VALVE	1
11	PF-HN-08-04	NIPPLE	1
12	MPM-2585	ELBOW	1
13	MPM-2052-30"	TUBE	1
14	PF-RB-08-04	BUSHING	1
15	PF-HN-08-06	NIPPLE	3

ITEMS SOLD SEPARATELY:

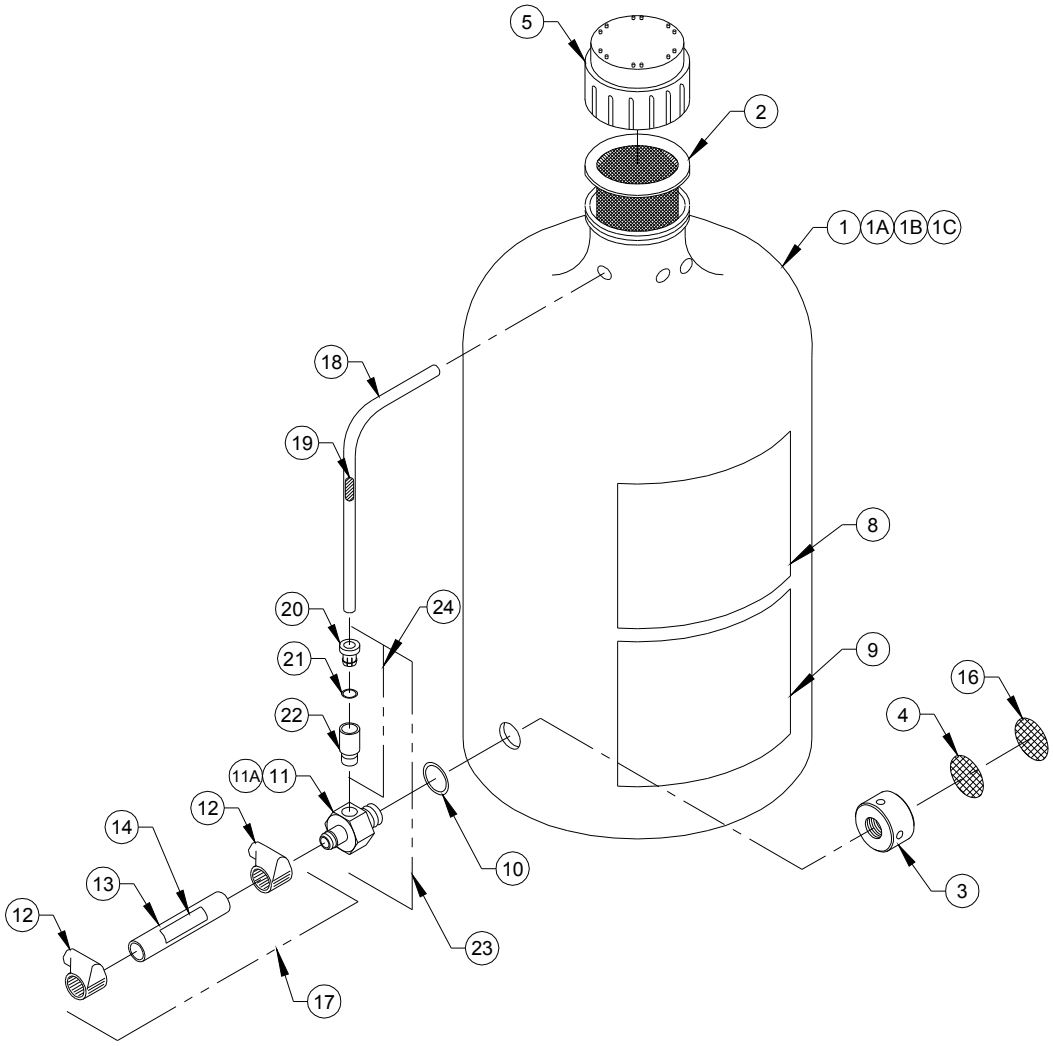
NOR-06-RK	REGULATOR REPAIR KIT
NOF-06-K1	SIGHT GLASS KIT FOR NOF-06
NOF-06-B	FILTER ELEMENT FOR NOF-06

OPTIONAL:

MOD-106	2-STAGE FILTER

INCLUDED BUT NOT SHOWN:

F-UB-06C-40	U-BOLT
F-SW-06	SPLIT WASHER
F-HN-06C	HEX NUT



MAGNUM VENUS PRODUCTS

Catalyst Jug Assy W/ Recirc - W/O Sight Tube	CJ-2000-4
Catalyst Jug Assy W/ Recirc - W/O Sight Tube	CJ-2000-4-R
Catalyst Jug Assy W/ Recirc - W/ Sight Tube	CJ-2000-4-RS
Catalyst Jug Assy W/ Recirc - W/ Sight Tube	CJ-2000-4-RSP

REV. D = ADDED CJ-2000-4 TO DRAWING 4/16/04 JEM
E = ADDED CJ-2000-4-RSP TO DWG 03/21/06 BT2
F = ITEM 12 WAS QTY. 12 11/14/07 BT2
G = ADDED ITEM 5, DELETED ITEM 7 02/01/08 BT2

Common Assembly Parts For:
Catalyst Jug W/ Recirc W/O Sight Tube CJ-2000-4
Catalyst Jug W/ Recirc W/O Sight Tube CJ-2000-4-R
Catalyst Jug W/ Recirc W/ Sight Tube CJ-2000-4-RS
Catalyst Jug W/ Recirc W/ Sight Tube CJ-2000-4-RSP

PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
2	8801-1-100	1	100 MESH 2 GAL CAT JUG SCREEN
3	4105-10-1	1	FILTER SCREEN NUT
4	4105-7-1	1	60 MESH SS SCREEN
10	O-S-016	1	O-RING
12	7701-2-2	2	1/2" SUCTION HOSE CLAMP
13	01419	3FT	1/2" POLY TUBE
14	6701-16-EN	1	CAT JUG SUCTION HOSE DECAL
15	4105-8-1	1	CAT JUG NUT PIN WRENCH (NOT SHOWN)
16	4105-6-1	1	100 MESH SS SCREEN

ASSOCIATED PARTS AND ASSEMBLIES

ITEM	PART NO.	QTY	DESCRIPTION
5	8802-1-1	1	CAP
8	6701-4-EN	1	CONTAMINATES CAUTION DECAL
9	6701-15-EN	1	DAILY MONTHLY INTST DECAL
17	4105-2-01	1	1/2" x 4' FEED LINE
23	4105-12-01	1	OUTLET FITTING
24	4105-1-01	1	TUBE FITTING

Catalyst Jug W/ Recirc W/O Sight Tube CJ-2000-4

PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1	4105-11-04	1	2 GAL CAT JUG W/ CAP
11	59371-1	1	CAT JUG TUBE FITTING

Catalyst Jug W/ Recirc W/O Sight Tube CJ-2000-4-R

PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1A	4105-11-03	1	2 GAL CAT JUG W/ CAP
11	59371-1	1	CAT JUG TUBE FITTING

Catalyst Jug W/ Recirc W/ Sight Tube CJ-2000-4-RS

PARTS LIST

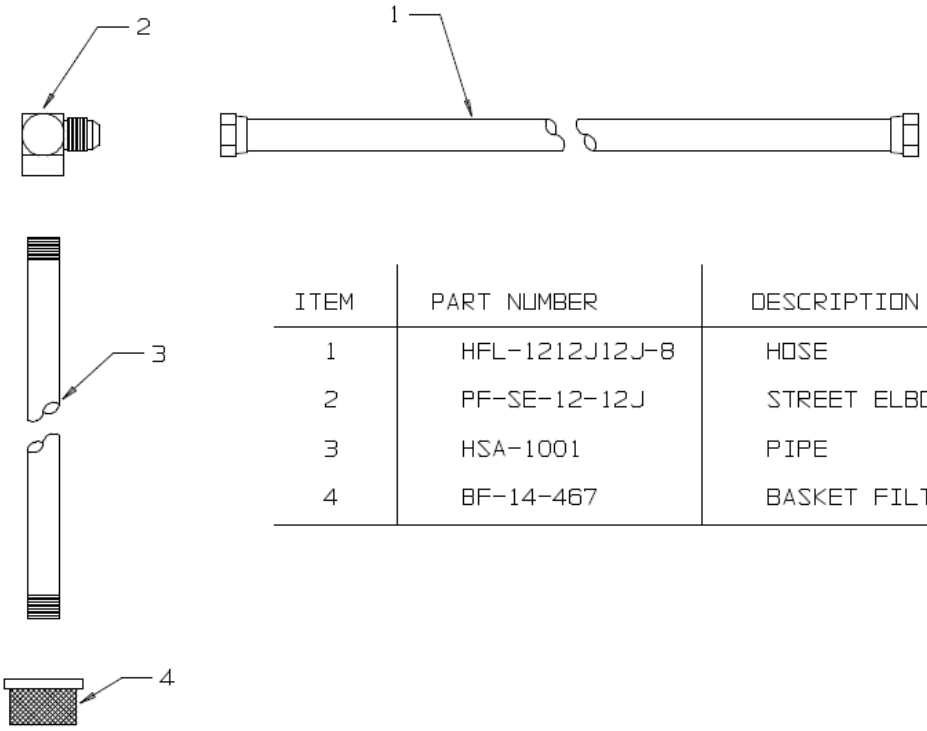
ITEM	PART NO.	QTY	DESCRIPTION
1B	4105-11-02	1	2 GAL CAT JUG W/ CAP
11A	4105-12-1	1	CAT JUG TUBE FITTING
18	4105-4-1	1	1/4" x 14" SIGHT TUBE
19	4105-9-1	1	SIGHT TUBE FLOAT
20	4105-5-1	1	SPLIT BUSHING
21	O-S-010	1	O-RING
22	4105-1-1	1	TUBE FITTING BODY

Catalyst Jug W/ Recirc W/ Sight Tube CJ-2000-4-RSP

PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1C	4105-11-05	1	2 GAL CAT JUG W/ CAP
11A	4105-12-1	1	CAT JUG TUBE FITTING
18	4105-4-1	1	1/4" x 14" SIGHT TUBE
19	4105-9-1	1	SIGHT TUBE FLOAT
20	4105-5-1	1	SPLIT BUSHING
21	O-S-010	1	O-RING
22	4105-1-1	1	TUBE FITTING BODY

HSA-1000
SIPHON HOSE ASS'Y
05-14-03 (BT2)



ITEM	PART NUMBER	DESCRIPTION	QUANTITY
1	HFL-1212J12J-8	HOSE	1
2	PF-SE-12-12J	STREET ELBOW	1
3	HSA-1001	PIPE	1
4	BF-14-467	BASKET FILTER	1

Revision Information:

Rev. 04/2010	Assembled This Manual
Rev: 09/2012	Updated the manual format and Address. Added the Terms & Conditions of Sale section to the manual. Updated the drawings.

MAGNUM VENUS PLASTECH

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Included with this operations manual are the following component manuals:

- ❑ VPRO-45220 PRO PUMP MAINTENANCE AND REPAIR MANUAL
- ❑ PCP-2000 PRO LOW RANGE CATALYST PUMP MANUAL
- ❑ ATG-3500 REPAIR AND MAINTENANCE MANUAL

or

- ❑ EMG-1000 & EMG-1500 GEL COAT GUN MANUAL