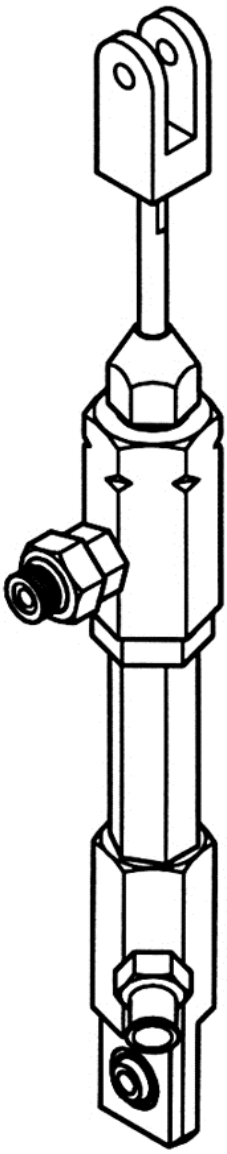
VHPC-1000 Series Metering Pump Manual



MagnumVenusPlastech

Rev. 05/2012



CORPORATE HEADQUARTERS and MANUFACTURING
11692 56th Court * Clearwater, FL 33760 * Tel 727-573-2955 * Fax 727-571-3636

TECHNOLOGY CENTER and MANUFACTURING
1862 Ives Ave. * Kent, WA 98032 * Tel 253-854-2660 * Fax 253-854-1666

MVP Plastech UK
Chilsworthy Beam, Gunnislake, Cornwall, PL18 9AT UK, * Tel: +44 (0) 1822 832621
Fax: +44 (0) 1822 833999

www.mvpind.com

TABLE OF CONTENTS:

SECTION:	Page
TERMS & CONDITIONS OF SALE	4
SAFETY & WARNING INFORMATION	6
INTRODUCTION	15
METERING PUMP DISASSEMBLY	17
METERING PUMP ASSEMBLY	20
PARTS DRAWINGS	23
REVISION INFORMATION	37

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 lamin sandings, or with any readily oxidizing material, such as brass or iron, will cau 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 contact 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 carcinoge 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 diluent 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, the ***VHPC-1000 Metering Pump Manual***, provides information you need to perform simple maintenance and repair on your equipment.

- 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.

DANGER: Always wear proper safety equipment, including eye protection and gloves when performing service and repair on this equipment.

During Disassembly:
As you disassemble the equipment, lay out the components on a clean surface in the correct order and direction. This will help you to reassemble them.

This manual covers the following Metering Pump Assemblies:

VHPC-1000	Metering Pump Assembly
VHPC-1000-C-3J	Metering Pump Assembly – Check Valve
VHPC-1000-C-UPS	Metering Pump Assembly – Check Valve – Suction Feed
VHPC-1000-RV-INT	Metering Pump Assembly – Relief Valve – International
VHPC-7200-C-3J	Metering Pump Assembly – Slave Arm
PHPC-7200-B	Metering Pump Assembly – Putty Units - BPO
PHPC-7200-M	Metering Pump Assembly – Putty Units - MEKP

Note: Some parts and part numbers will be different between the different Metering Pump Assemblies – it is important to have a current parts drawing for the Pump assembly you are working on.

Tools Required

1. 1” Open End Wrench (08378)
2. 3/4” Open End Wrench (08474)
3. 5/8” Open End Wrench (08474)
4. 6” Adjustable Wrench (2 required) (08466)
5. 12” Adjustable Wrench (08468)
6. 1/4” Wood Dowel – 6” long

Installation & Set-up

It is important to check the mounting of the Metering Pump to be sure it is securely connected to the drive linkage and that it is set to the desired percentage / ratio.

Snug / tighten the Metering pump packing nut approximately 1/8 – 1/4 turn clockwise to prevent leakage. Repeat this procedure when necessary to prevent material from leaking. Do not over tighten as this will reduce the life of the packing set and may cause damage to the pump.

Metering Pump Disassembly:

WARNING

Before removing Metering Pump and Surge Chamber assembly from the drive, be sure to bleed the fluid pressure from the system; before disconnecting any hoses or tubes. System may be under pressure and could cause injury.

Remove the catalyst hose from the outlet fitting.

Remove the catalyst jug from the bracket and hold it lower than the inlet fitting allowing the catalyst to drain out of the feed tube back into the jug. Now remove the catalyst feed tube.

When disassembling the catalyst pump always lay the components out on a clean towel in the order they are removed. Never use grease or oil in the catalyst pump. Clean catalyst pump parts with warm water.

For Systems with outlet Check Valve 4101-01-01 installed:

A. Remove Check Valve Body (4101-15-1) from Outlet Body (4101-14-1) and remove and discard the two O-Rings (O-S-013).

B. Remove the Spring Retainer (4101-17-1) and Compression Spring (4101-16-1) from the Check Valve Body (4101-15-1), and remove and discard the 7/32" SS Ball (9201-1-7).

C. Place the new 7/32" SS Ball (9201-1-7) down inside the Check Valve Body (4101-15-1) through the double threaded side.

D. Install the Compression Spring (4101-16-1) into the Check Valve Body (4101-15-1) onto the top of the new 7/32" SS Ball (9201-1-7).

E. Screw the Spring Retainer (4101-17-1) into the inside of the Check Valve Body (4101-15-1) compressing the spring between the Retainer and the SS Ball.

F. Place an O-Ring (O-S-013) over the single threaded end of the Check Valve Body (4101-15 1), and screw the Check Valve into the Outlet Body (4101-14-1).

G. Place an O-Ring (O-S-013) over the double threaded end of the Check Valve Body (4101-15-1) until it is in the thread relief area between the two sets of threads and against the end of the Jam Nut (4101-18-1).

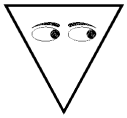
Metering Pump Disassembly:

1. Loosen Lock Nut (4101-1-1) and unscrew the Outlet Body (4101-14-1) from the Cylinder (4102-6-1).



NOTE
Carefully pull the Piston Rod out of Cylinder to avoid damaging the interior surface of Cylinder. Inspect the Piston Rod for scratches or other damage. Replace if necessary.

2. Remove the Seal Retainer (4102-9-1) from the Piston Body (4102-7-1).
3. Remove and discard the Piston Seal (7304-1-1) and Piston Guide (4102-8-1).
4. Remove the Piston Body (4102-7-1) from the Piston Rod (4102-2-1).



WARNING
Use wrench flats provided in order to avoid damaging the Piston Rod.

5. Remove and discard the 5/32” SS Ball (9201-1-5).
6. Remove and retain the Piston Rod Spring (4101-3-1).
7. Unscrew the Packing Nut (4102-3-1) and pull the Piston Rod (4102-2-1) out of the Outlet Body (4101-14-1). Inspect the Piston Rod for scratches or other damage and replace if necessary.
8. Insert a 1/4” dia. Dowel into the bottom of the Outlet Body (4101-14-1), force the Piston Rod Packing Set (4102-5-01) and Upper Guide (4102-4-1) out through the top of the Outlet Body and discard.



NOTE
Care must be taken not to damage the inside of the Outlet Body.

9. Unscrew the Cylinder (4102-6-1) from the Inlet Body (4101-7-1). Remove and discard the two O-Rings (O-S-014). Inspect the Cylinder for scratches, or other damage, and replace if necessary.
10. Remove and discard the 7/16” SS Ball (9201-1-14). Inspect the seat inside the Inlet Body (4101-7-1), for nicks, scratches, or other damage, and lap, or replace if necessary.



NOTE
Once disassembly is complete all parts should be cleaned and inspected for damage and replaced if necessary.

For systems with inlet Check Valve CV-2000 installed:

1. Remove the Check Valve (CV-2000) from the Inlet Body (4101-7-1).
2. Remove O-ring (O-S-013) and replace with new O-ring.
3. Remove the Inlet Tube Fitting from the Check Valve. Remove and discard the O-Ring (O-S-013) replace with new O-ring depending on the Inlet Fitting.
4. Remove the Seat Housing (CV-2001) from the Spring Housing (CV-2002).
5. Remove and clean Spring (CV-2004) and Piston (CV-2003) with warm water.
6. Remove and clean O-ring (O-S-011) with warm water, replace as necessary.
7. Clean Seat Housing and Spring housing with warm water and inspect for damage.
8. Install the Spring (CV-2004) into Piston then install the Piston into the Spring Housing.
9. Install a new O-ring (O-S-011) into the Seat Housing and thread Seat Housing onto Spring Housing.
10. Install the Tube Fitting into the outlet side of the Check Valve.
11. Install the rebuilt Check Valve (CV-2000) onto the Inlet Body.

Metering Pump Assembly:

1. Insert the 7/16” SS Ball (9201-1-14) into the Inlet Body (4101-7-1).

NOTE
Care must be taken to not scratch or dent SS Ball.

2. Position an O-Ring (O-S-014) onto the notched end of the Cylinder (4102-6-1).

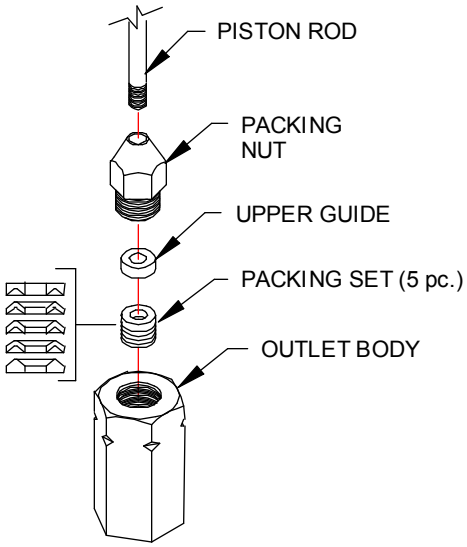
NOTE
Take care not to damage the O-ring on the threads.

3. Screw the notched end of the Cylinder (4102-6-1) into the Inlet Body (4101-7-1). Turn by hand until it bottoms on the Inlet Body, “snug tight”.

4. Thread the Lock Nut (4101-1-1) onto the Cylinder (4102-6-1) until it bottoms on the Cylinder shoulder.

5. Install an O-Ring (O-S-014) onto the long threaded end of the Cylinder (4102-6-1).

6. Install the Packing Nut (4102-3-1), Upper Guide (4102-4-1) and Packing Set (4102-5-1) onto the Piston Rod (4102-2-1). See orientation of the Packing Set below.



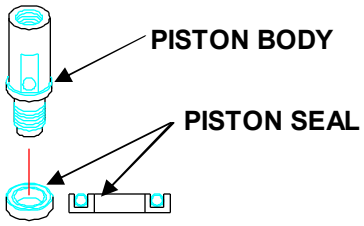
7. Carefully insert the Piston Rod (4102-2-1) through the Outlet body (4101-14-1).

NOTE
Care must be taken to not scratch the Piston Rod.

8. Carefully press the Piston Rod Packing Set (4102-5-01), and Upper Guide (4102-4-1) into Outlet Body (4101-14-1).

NOTE
Care must be taken to not damage the Piston Rod Packing Set.

9. Screw the Packing Nut (4102-3-1) into the Outlet Body (4102-14-1). Screw the Packing Nut until the Packing Set bottom in the Outlet Body cavity. Lightly snug the Packing Nut with a wrench.
10. Insert the Piston Rod Spring (4101-3-1) into the end of the Piston Rod (4102-2-1).
11. Insert the 5/32" SS Ball (9201-1-5) into the Piston Body (4102-7-1).
12. Screw the Piston Body (4102-7-1) onto the Piston Rod (4102-2-1), compressing the Piston Rod Spring (4101-3-1) onto the 5/32" SS Ball (9201-1-5).
13. Install the Piston Seal (7304-1-1) onto the treaded end of the Piston Body (4102-7-1) spring side up. See orientation of Piston Seal below.



14. Install the Piston Guide (4102-8-1) onto the Piston Body (4102-7-1) below the Piston Seal (7304-1-1).
15. Screw the Seal Retainer (4102-9-1) onto the Piston Body (4102-7-1) hand tight only.
16. Hold the Piston Rod (4102-2-1) with a wrench on the wrench flats, and tighten the Seal Retainer (4102-9-1) with another wrench.
17. Insert the Piston Rod assembly into the Cylinder (4102-6-1) screwing the Outlet Body (4101-14-1) onto the cylinder threads.

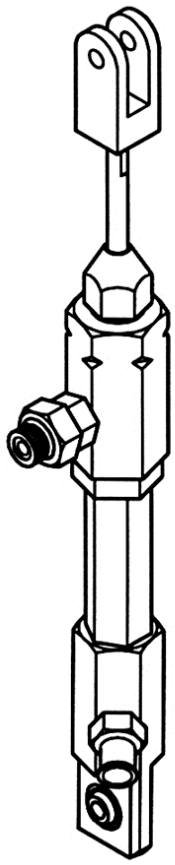
NOTE
Screw the Outlet body down until you feel the O-Ring start to compress.

18. Align the Outlet Body (4101-14-1) so the outlet port is one hex flat to the left of the inlet port of the Inlet Body (4101-7-1). **See Fig. 4.1.**

19. Tighten the Lock Nut (4101-1-1) up against the Outlet Body to secure it in position.

The Metering Pump Assembly is Complete.

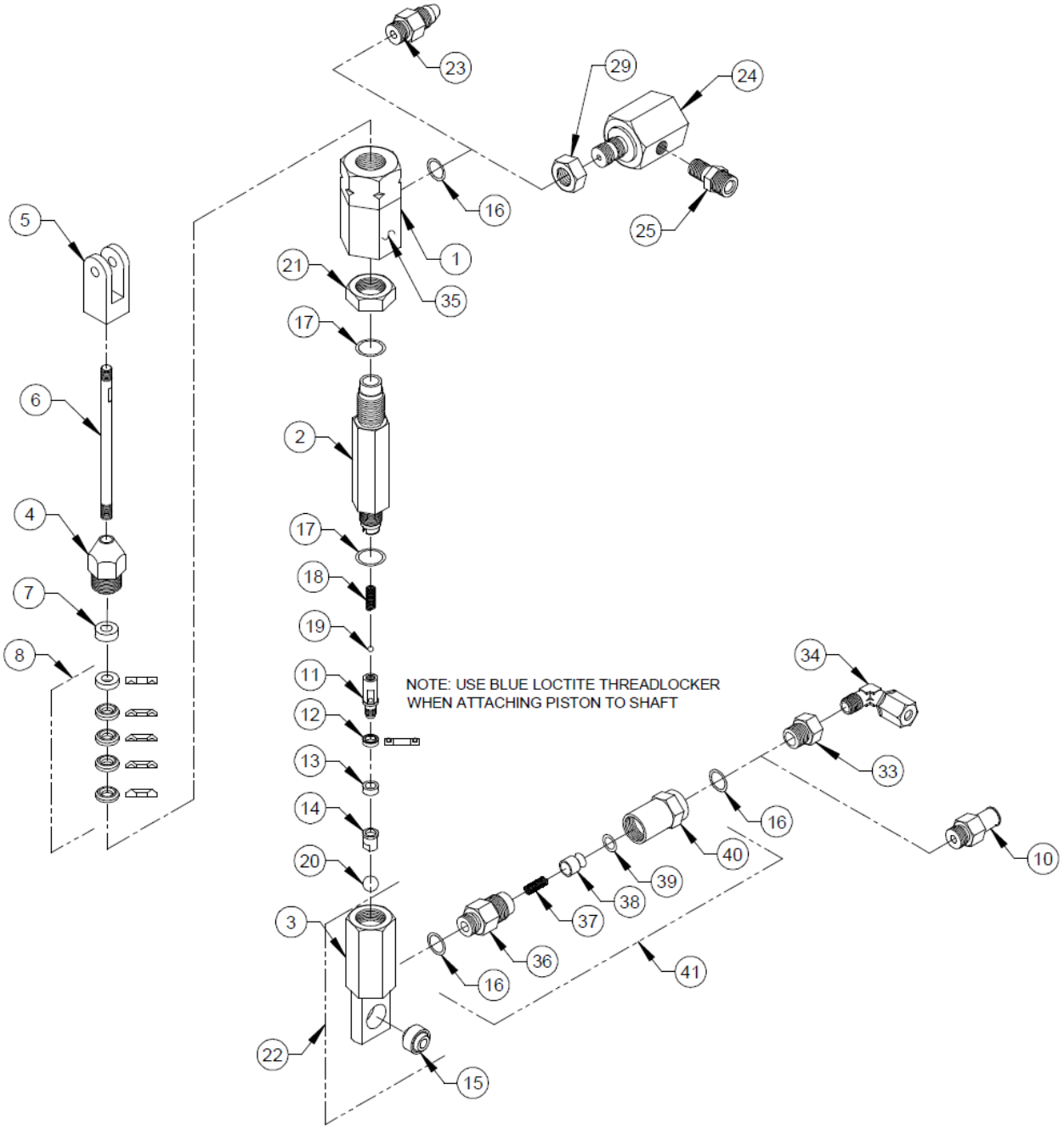
Fig. 4.1



Offset intake and outlet ports one flat hex as shown in figure.

Parts Drawings:

VHPC-1000-X	METERING PUMP ASSEMBLY
VHPC-1000-RV-INT	METERING PUMP – INTERNATIONAL
VHPC-7200-C-3J	METERING PUMP ASSEMBLY
PHPC-7200-B	METERING PUMP – PUTTY – BPO
PHPC-7200-M	METERING PUMP – PUTTY – MEKP
CV-2000	CHECK VALVE
VHPC-1000-RK	REPAIR KIT



MAGNUM VENUS PLASTECH

Catalyst Pump Assy (For Relief Valve)	VHPC-1000-RV
Catalyst Pump Assy (W/Check Valve)	VHPC-1000-C-3J
Catalyst Pump Assy (W/Check Valve)	VHPC-1000-C-UPS

REV. G = ADDED ITEM 40 CV-2000 TO DWG. 12/21/05 JEM
REV. H = DELETED VHPC-1000, VHPC-1000-3J, AND VHPC-1000-UPS FROM DRAWING 01/06/06 BT2
REV. I = ITEM 25 PF-HN-02-03J-SS, ITEM 39 WAS O-S-011 02/23/06 BT2
REV. J = ADDED THREADLOCKER NOTE 05/14/08 BT2

Catalyst Pump Assy VHPC-1000-RV
Catalyst Pump Assy VHPC-1000-C-3J
Catalyst Pump Assy VHPC-1000-C-UPS

COMMON ASSY PARTS LIST

	ITEM	PART NO.	QTY	DESCRIPTION
	1	4101-14-1	1	OUTLET BODY
	2	4102-6-1	1	CYLINDER
	3	4101-7-1	1	INLET BODY
	4	4102-3-1	1	PACKING NUT
	5	4102-1-1	1	CLEVIS
	6	4102-2-1	1	PISTON ROD
*	7	4102-4-1	1	UPPER GUIDE
*	8	4102-5-01	1	PISTON ROD PACK SPA
	11	4102-7-1	1	PISTON BODY
*	12	7304-1-1	1	PISTON SEAL
*	13	4102-8-1	1	PISTON GUIDE
	14	4102-9-1	1	SEAL RETAINER
	15	9202-1-1	1	SPHERICAL BEARING
*	16	O-S-013	3	O-RING
*	17	O-S-014	2	O-RING
*	18	4101-3-1	1	PISTON ROD SPRING
*	19	9201-1-5	1	5/32" SS BALL
*	20	9201-1-14	1	7/16" SS BALL
	21	4101-1-1	1	LOCK NUT
	35	6701-24-EN	1	WARNING DECAL
	36	CV-2002	1	SPRING HOUSING
	37	CV-2004	1	SPRING
	38	CV-2003	1	PISTON
*	39	O-S-011A	1	O-RING
	40	CV-2001	1	SEAT HOUSING

Catalyst Pump Assy VHPC-1000-RV PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
10	4101-8-1	1	INLET TUBE FITTING
24	RV-1021	1	ADAPTER
25	PF-HN-02-04S-SS	1	FITTING
29	4101-18-1	1	JAM NUT

Catalyst Pump Assy VHPC-1000-C-3J PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
10	4101-8-1	1	INLET TUBE FITTING
23	51501-1	1	OUTLET FITTING

Catalyst Pump Assy VHPC-1000-C-UPS PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
23	51501-1	1	OUTLET FITTING
33	VHPC-1003	1	INLET FITTING
34	MS-2053	1	ELBOW

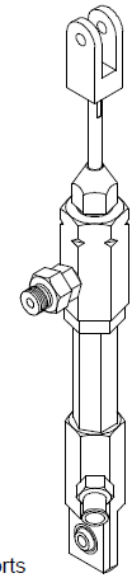
ASSOCIATED PARTS AND ASSEMBLIES

22	4101-7-01	1	INLET BODY ASSEMBLY
41	CV-2000	1	CHECK VALVE ASSY

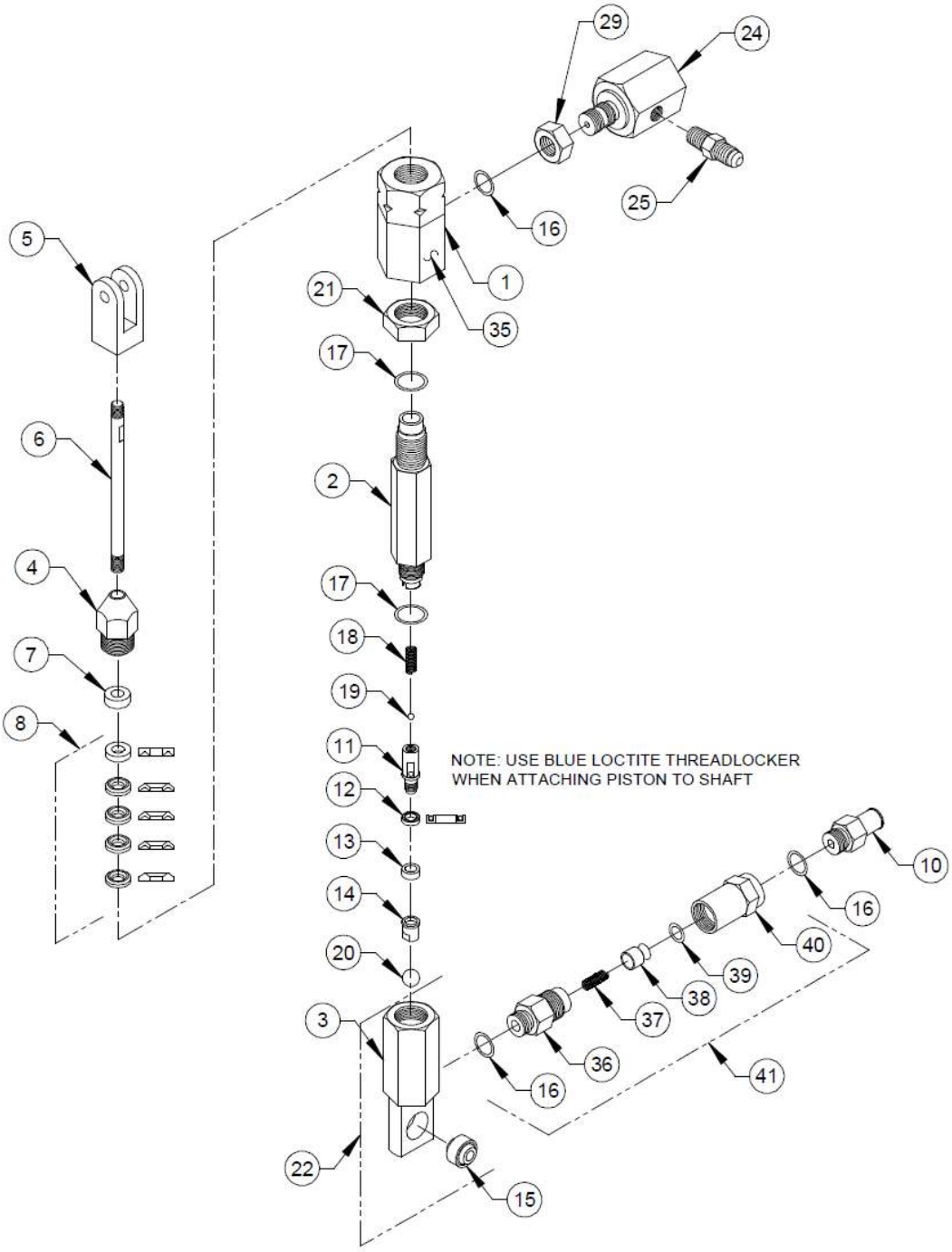
REPAIR KITS

	PART NO.	DESCRIPTION
*	VHPC-1000-RK	REPAIR KIT

FIGURE 1-1



Note:
Offset intake and outlet ports one flat on hex as shown in figure 1-1



MAGNUM VENUS PLASTECH

Catalyst Pump (For Relief Valve) - International	VHPC-1000-RV-INT

REV. 02/23/06 BT2
REV. A - ADDED THREADLOCKER NOTE 05/15/08 BT2

Catalyst Pump Assy VHPC-1000-RV-INT

PARTS LIST

	ITEM	PART NO.	QTY	DESCRIPTION
	1	4101-14-1	1	OUTLET BODY
	2	4102-6-1	1	CYLINDER
	3	4101-7-1	1	INLET BODY
	4	4102-3-1	1	PACKING NUT
	5	4102-1-1	1	CLEVIS
	6	4102-2-1	1	PISTON ROD
*	7	4102-4-1	1	UPPER GUIDE
*	8	4102-5-01	1	PISTON ROD PACK SPA
	10	4101-8-1	1	INLET TUBE FITTING
	11	4102-7-1	1	PISTON BODY
*	12	7304-1-1	1	PISTON SEAL
*	13	4102-8-1	1	PISTON GUIDE
	14	4102-9-1	1	SEAL RETAINER
	15	9202-1-1	1	SPHERICAL BEARING
*	16	O-S-013	3	O-RING
*	17	O-S-014	2	O-RING
*	18	4101-3-1	1	PISTON ROD SPRING
*	19	9201-1-5	1	5/32" SS BALL
*	20	9201-1-14	1	7/16" SS BALL
	21	4101-1-1	1	LOCK NUT
	24	RV-1021	1	ADAPTER
	25	PF-HN-02-03J-SS	1	OUTLET FITTING
	29	4101-18-1	1	JAM NUT
	35	6701-24-EN	1	WARNING DECAL
	36	CV-2002	1	SPRING HOUSING
	37	CV-2004	1	SPRING
	38	CV-2003	1	PISTON
*	39	O-S-011A	1	O-RING
	40	CV-2001	1	SEAT HOUSING

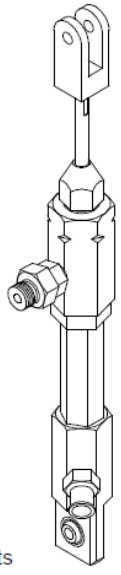
ASSOCIATED PARTS AND ASSEMBLIES

22	4101-7-01	1	INLET BODY ASSEMBLY
41	CV-2000	1	CHECK VALVE ASSY

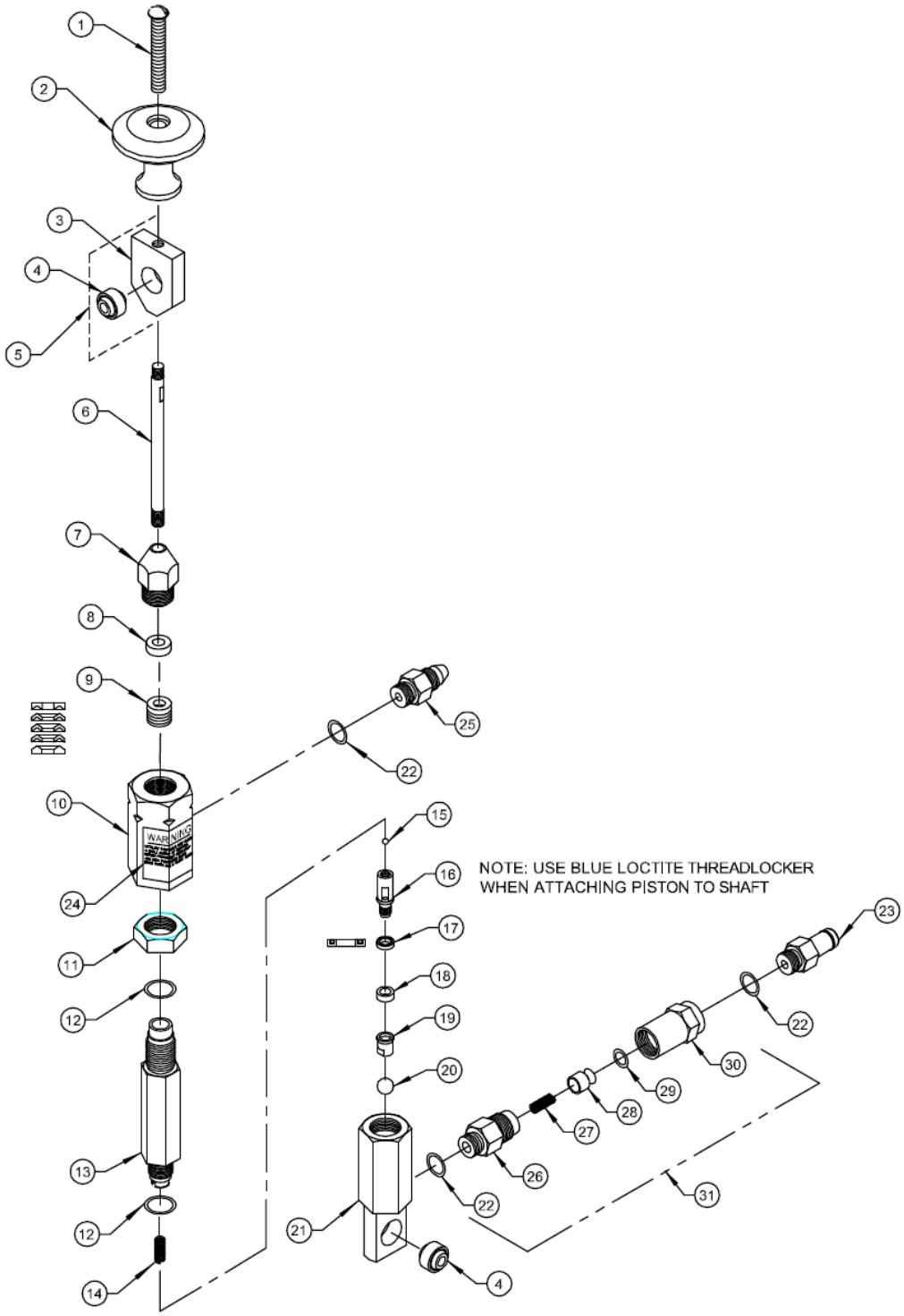
REPAIR KITS

	PART NO.	DESCRIPTION
*	VHPC-1000-RK	REPAIR KIT

FIGURE 1-1



Note:
Offset intake and outlet ports one flat on hex as shown in figure 1-1



MAGNUM VENUS PLASTECH

CATALYST PUMP ASSEMBLY	VHPC-7200-C-3J

REV. A = UPDATED DWG 8/16/02 JEM
REV. B = ADDED ITEM 31 TO DWG CV-2000 12/21/025 JEM
REV. C = DELETED THE UPPER CHECK VALVE, ADDED ITEM 25 01/06/06 BT2
REV. D = ADDED THREADLOCKER NOTE 05/15/08 BT2

CATALYST PUMP ASSY VHPC-7200-C-3J

PARTS LIST

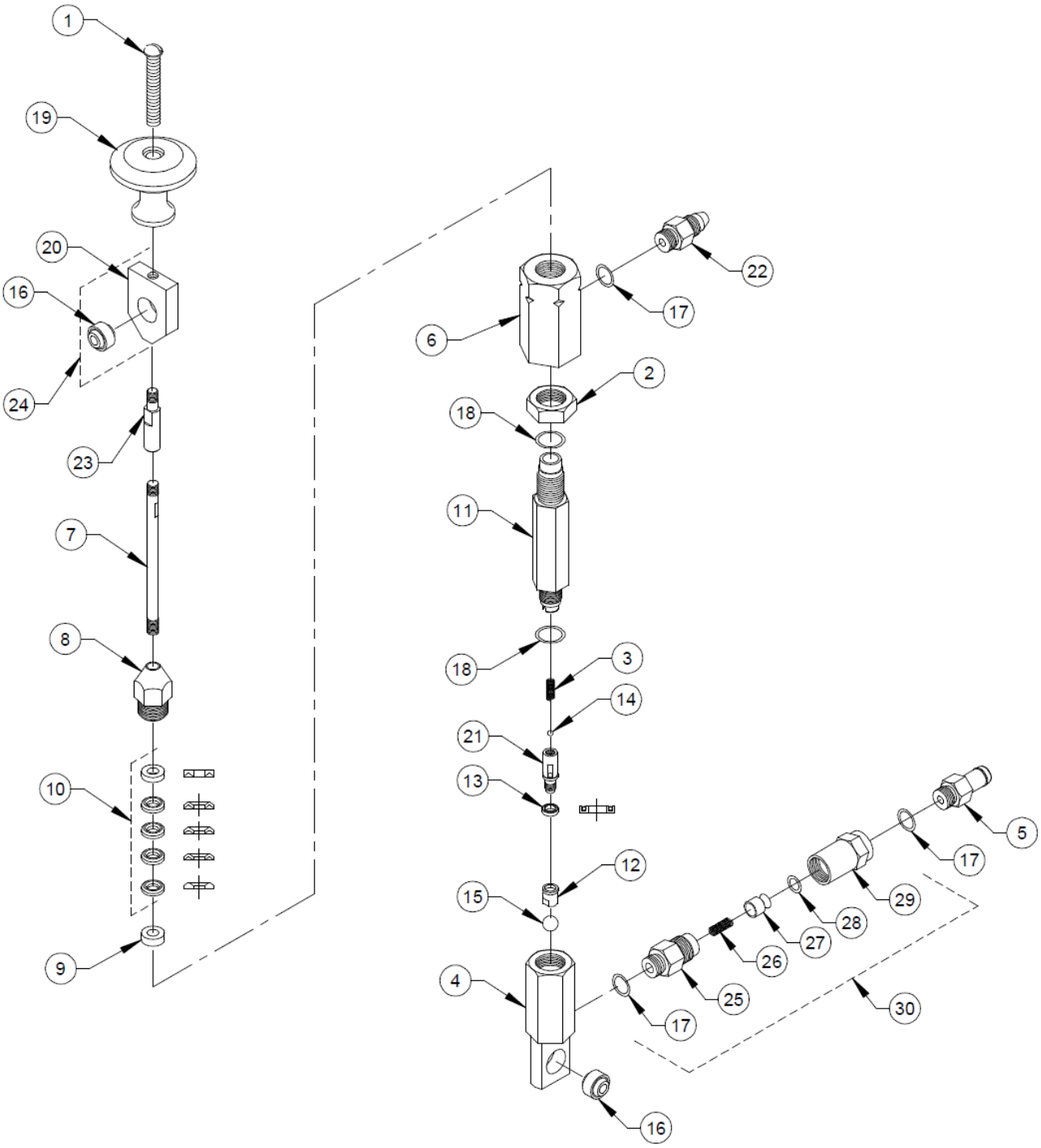
ITEM	PART NO.	QTY	DESCRIPTION
1	02849-16	1	MACHINE SCREW
2	50100-1	1	PRIMING KNOB
3	50210-1	1	BUSHING BLOCK
4	9202-1-1	2	SPHERICAL BEARING
6	4102-2-1	1	PISTON ROD
7	4102-3-1	1	PACKING NUT
8	4102-4-1	1	UPPER GUIDE
9	4102-5-01	1	PACKING SET ASSY
10	4101-14-1	1	OUTLET BODY
11	4101-1-1	1	LOCK NUT
12	O-S-014	2	O-RING
13	4102-6-1	1	CYLINDER
14	4101-3-1	1	PISTON ROD SPRING
15	9201-1-5	1	5/32" SS BALL
16	4102-7-1	1	PISTON BODY
17	7304-1-1	1	PISTON SEAL
18	4102-8-1	1	PISTON GUIDE
19	4102-9-1	1	SEAL RETAINER
20	9201-1-14	1	7/16" SS BALL
21	4101-7-1	1	INLET BODY
22	O-S-013	3	O-RING
23	4101-8-1	1	INLET TUBE FITTING
24	6701-24-EN	1	PUMP SEAL WARNING DECAL
25	51501-1	1	OUTLET FITTING
26	CV-2002	1	SPRING HOUSING
27	CV-2004	1	SPRING
28	CV-2003	1	PISTON
29	O-S-011A	1	O-RING
30	CV-2001	1	SEAT HOUSING

REPAIR KITS

PART NO.	DESCRIPTION
VHPC-1000-RK	REPAIR KIT

OPTIONAL PARTS & ASSEMBLIES

ITEM	PART NO.	QTY	DESCRIPTION
5	50210-3	1	ASSY - BUSHING BLOCK
31	CV-2000	1	CHECK VALVE ASSY



MAGNUM VENUS PRODUCTS

Putty High Pressure Catalyst Pump - BPO PHPC-7200-B

REV. 7/3/03 JEM
REV. A - ADDED CV-2000 AND ALL OF ITS COMPONENTS
REV. B - ITEM 28 WAS O-S-011 03/09/06 BT2

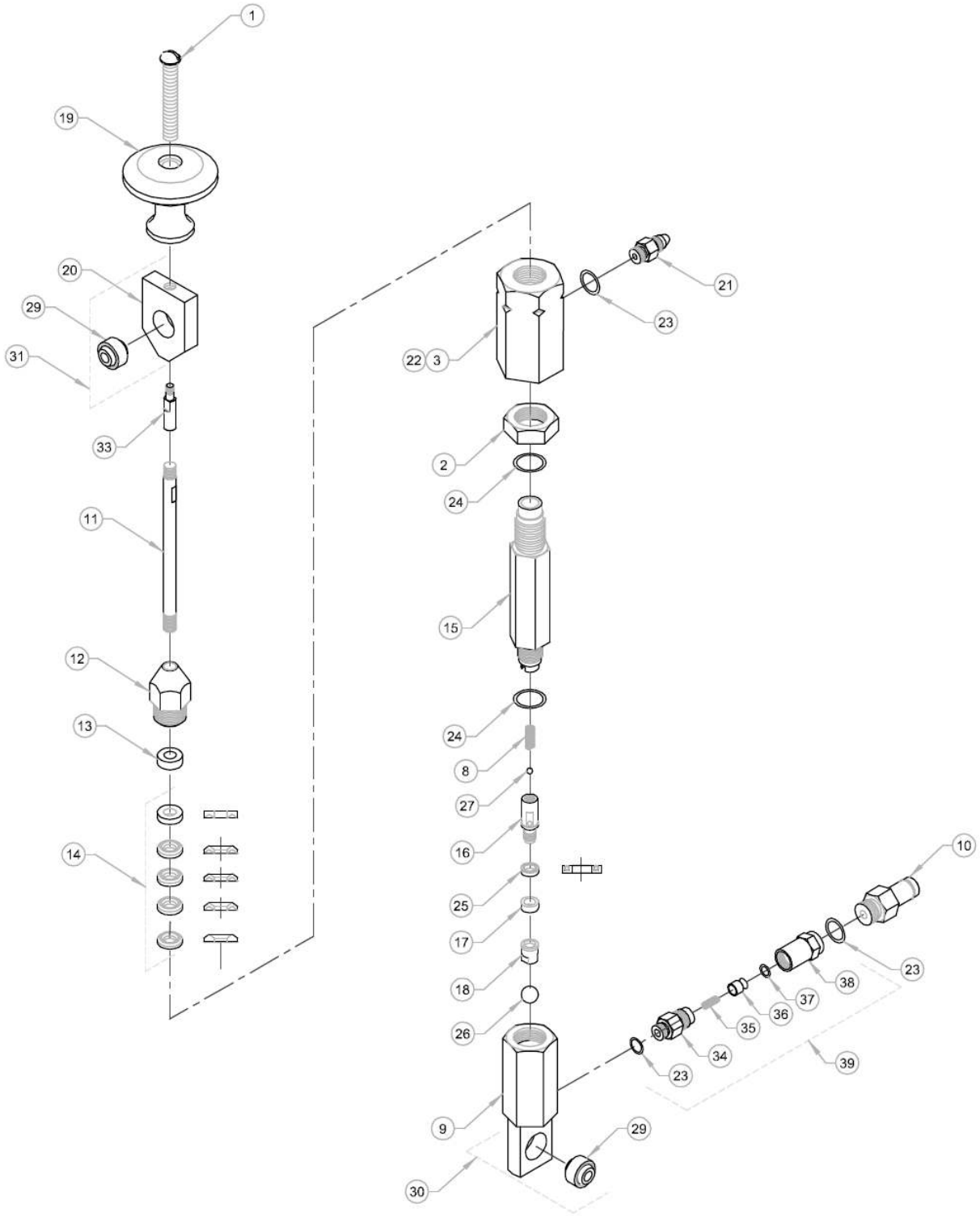
Putty High Pressure Catalyst Pump PHPC-7200-B

PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1	02849-16	1	MACHINE SCREW
2	4101-1-1	1	LOCK NUT
3	4101-3-1	1	SPRING
4	4101-7-1	1	INLET BODY
5	4101-8-1	1	TUBE FITTING
6	4101-14-1	1	OUTLET BODY
7	4102-2-1	1	PISTON ROD
8	4102-3-1	1	PACKING NUT
9	4102-4-1	1	UPPER GUIDE
10	4102-5-01	1	PACKING SET(4 PCS)
11	4102-6-1	1	CYLINDER
12	4102-9-1	1	SEAL RETAINER
13	7304-1-1	1	PISTON SEAL
14	9201-1-5	1	BALL
15	9201-1-14	1	BALL
16	9202-1-1	2	BEARING
17	O-S-013	3	O-RING
18	O-S-014	2	O-RING
19	50100-1	1	PRIMING KNOB
20	50210-1	1	BUSHING BLOCK
21	50410-1	1	PISTON BODY
22	51501-1	1	NIPPLE
23	CCP-1004	1	PISTON ROD EXTENSION
25	CV-2002	1	SPRING HOUSING
26	CV-2004	1	SPRING
27	CV-2003	1	PISTON
28	O-S-011A	1	O-RING
29	CV-2001	1	SEAT HOUSING

OPTIONAL PARTS AND ASSEMBLIES

ITEM	PART NO.	QTY	DESCRIPTION
24	50210-3	1	BUSHING BLOCK ASSY
30	CV-2000	1	CHECK VALVE



MAGNUM VENUS PLASTECH

ASSEMBLY - PUTTY CATALYST PUMP - MEKP	PHPC-7200-M

REV. A = PHPC-7200-M WAS 51556-1, ADDED CCP-1004 ROD EXTENSION 7/3/03 JEM
REV. B = DELETED ITEMS 5, 6, 7, 32, ITEM 21 WAS 51704-1, ADDED CV-2000 AND ALL OF ITS COMPONENTS
REV. C = ITEM 37 WAS O-S-011 03/09/06 BT2
REV. D = ITEM 24 WAS 7301-9-014 03/03/11 BT2

PUTTY CATALYST PUMP - MEKP PHPC-7200-M

PARTS LIST

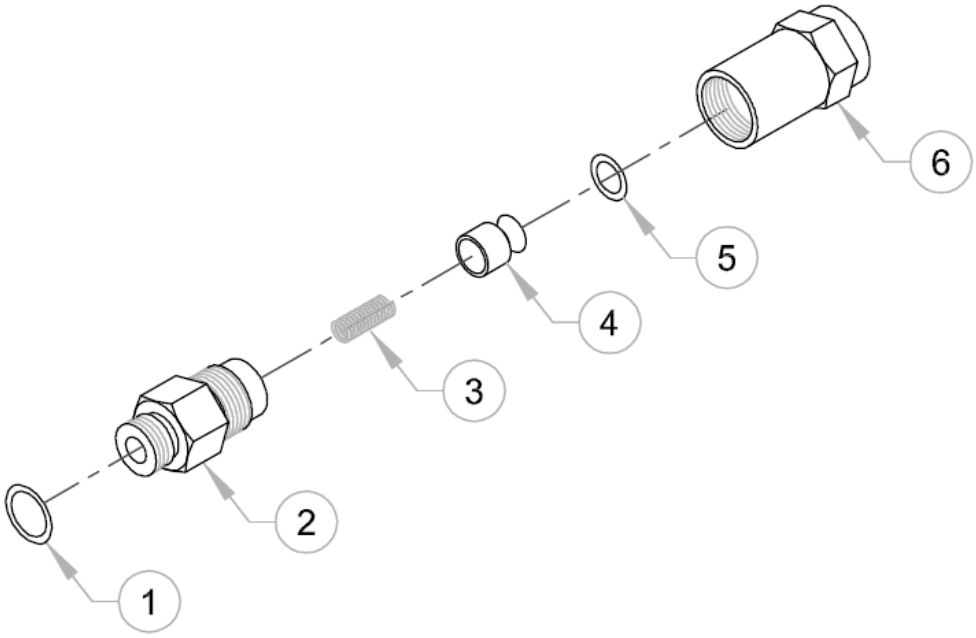
ITEM	PART NO.	QTY	DESCRIPTION
1	02849-16	1	SLOTTED MACHINE SCREW
2	4101-1-1	1	LOCKNUT
3	4101-14-1	1	OUTLET BODY
8	4101-3-1	1	PISTON ROD SPRING
9	4101-7-1	1	INLET BODY
10	4101-8-1	1	INLET TUBE FITTING
11	4102-2-1	1	PISTON ROD
12	4102-3-1	1	PACKING NUT
13	4102-4-1	1	UPPER GUIDE
14	4102-5-01	1	PACKING SET SPA
15	4102-6-1	1	CYLINDER
16	4102-7-1	1	PISTON BODY
17	4102-8-1	1	PISTON GUIDE
18	4102-9-1	1	SEAL RETAINER
19	50100-1	1	PRIMING KNOB
20	50210-1	2	BEARING BLOCK
21	51501-1	1	OUTLET FITTING
22	6701-24-EN	1	PUMP SEAL WARNING LABEL
23	O-S-013	3	O - RING
24	O-S-014	2	O - RING
25	7304-1-1	1	PISTON SEAL
26	9201-1-14	1	7/16" SS BALL
27	9201-1-5	1	5/32" SS BALL
29	9202-1-1	2	SPHERICAL BEARING
33	CCP-1004	1	PISTON ROD EXTENSION
34	CV-2002	1	SPRING HOUSING
35	CV-2004	1	SPRING
36	CV-2003	1	PISTON
37	O-S-011A	1	O-RING
38	CV-2001	1	SEAT HOUSING

OPTIONAL PARTS & ASSEMBLIES

30	4101-7-01	1	INLET BODY W/ BEARING
31	50210-3	1	BEARING BLOCK W/ BEARING
39	CV-2000	1	CHECK VALVE

REPAIR KITS

PART NO.	DESCRIPTION
VHPC-1000-RK	REPAIR KIT



MAGNUM VENUS PRODUCTS

Catalyst Pump Check Valve	CV-2000

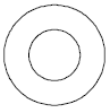
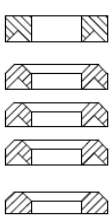
REV. 07/20/05 BT2
REV. A - ITEM 5 WAS O-S-011 03/09/06 BT2

Assy - Catalyst Pump CV-2000

COMMON ASSY PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1	O-S-013	1	O-RING
2	CV-2002	1	SPRING HOUSING
3	CV-2004	1	SPRING
4	CV-2003	1	PISTON
5	O-S-011A	1	O-RING
6	CV-2001	1	SEAT HOUSING

VHPC-1000-RK
METERING PUMP REPAIR KIT

1 PC		9201-1-5 5/32 SS BALL
1 PC		9201-1-14 7/16 SS BALL
1 PC		4102-8-1 PISTON GUIDE
1 PC		7304-1-1 PISTON SEAL
1 PC		4102-4-1 UPPER GUIDE
1 PCS		O-S-011A O-RING
3 PCS		O-S-013 O-RING
2 PCS		O-S-014 O-RING
1 PC 3 PCS 1 PC		PACKING SET ASSY 4102-5-01 (1 SET)
1 PC		4101-3-1 PISTON ROD SPRING

Revision Information:

Rev. 04/2010	Updated drawings, reformatted some text, added revision information
Rev. 06/2011	Added reference to the other Metering pump assemblies. Updated the parts drawing at the end of the manual.
Rev. 05/2012	Updated the Logo, MVP Address and the manual format, added the Terms and Conditions section.

MAGNUM VENUS PLASTECH

CORPORATE HEADQUARTERS and MANUFACTURING
11692 56th Court * Clearwater, FL 33760 * Tel 727-573-2955 * Fax 727-571-3636

TECHNOLOGY CENTER and MANUFACTURING
1862 Ives Ave. * Kent, WA 98032 * Tel 253-854-2660 * Fax 253-854-1666

MVP Plastech UK
Chilsworthy Beam, Gunnislake, Cornwall, PL18 9AT UK, * Tel: +44 (0) 1822 832621
Fax: +44 (0) 1822 833999

www.mvpind.com

Assemblies Covered in this Manual:

VHPC-1000	Metering Pump Assembly
VHPC-1000-C-3J	Metering Pump Assembly – Check Valve
VHPC-1000-C-UPS	Metering Pump Assembly – Check Valve – Suction Feed
VHPC-1000-RV-INT	Metering Pump Assembly – Relief Valve – International
VHPC-7200-C-3J	Metering Pump Assembly – Slave Arm
PHPC-7200-B	Metering Pump Assembly – Putty Units - BPO
PHPC-7200-M	Metering Pump Assembly – Putty Units - MEKP

Rev. 05/2012