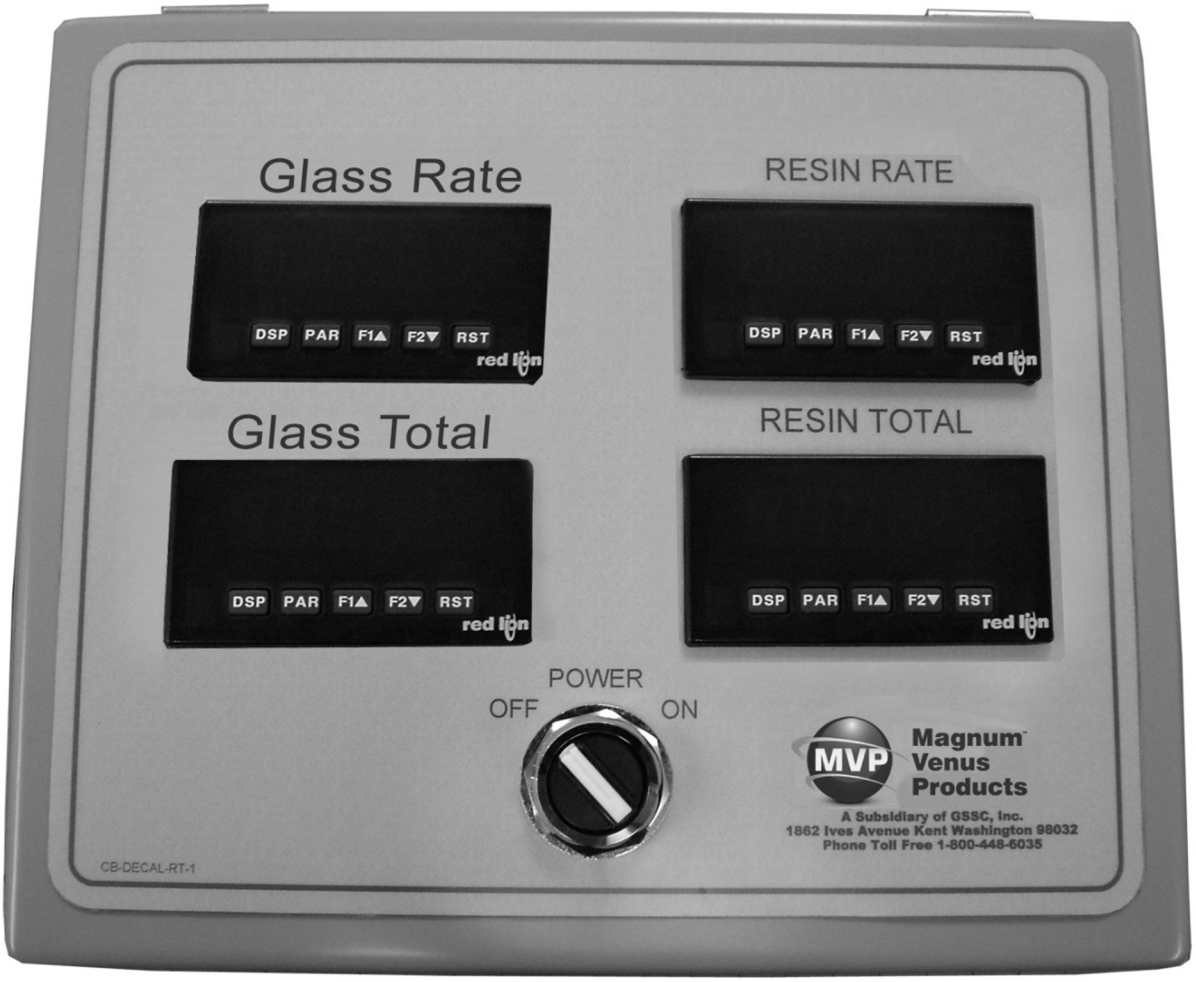
CB-6000 Monitor
Manual

This manual is applicable to the following models:

- CB-6000-GT
- CB-6000-RGT
- CB-6000-RT



MVP
MAGNUM VENUS PRODUCTS

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Use of this product confirms that Magnum Venus Products, Inc.'s standard terms and conditions of sale apply.

Table of Contents

Safety & Warning Information

Warnings

Due to the vast number of chemicals that could be used and their varying chemical reactions, the buyer and user of this equipment should determine all factors relating to the fluids used, including any of the potential hazards involved. Particular inquiry and investigation should be made into potential dangers relating to toxic fumes, fires, explosions, reaction times, and exposure of human beings to the individual components or their resultant mixtures. MVP assumes no responsibility for loss, damage, expense or claims for bodily injury or property damage, direct or consequential, arising from the use of such chemical components.

The end user is responsible for ensuring that the end product or system complies with all the relevant laws in the country where it is to be used and that all documentation is adhered to.

Recommended Occupational Safety & Health Act (OSHA) Documentation:

- 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

For Additional information, contact the Occupational Safety and Health Administration (OSHA) at https://www.osha.gov/about.html.

Recommended National Fire Protection Association (NFPA) Documentation:

- 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

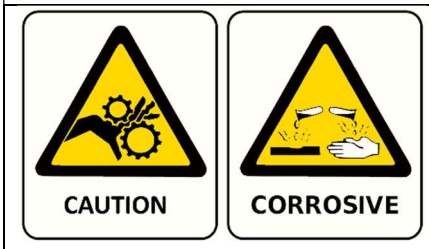
Fire Extinguisher – code ABC, rating number 4a60bc using Extinguishing Media –Foam, Carbon Dioxide, Dry Chemical, Water Fog, is recommended for this product and applications.

The following general warnings and guidelines are for the setup, use, grounding, maintenance, and repair of equipment. Additional product-specific warnings may be found throughout this manual as applicable. Please contact your nearest MVP Technical Service Representative if additional information is needed.

Safety Precautions
• Avoid skin contact and inhalation of all chemicals.
• Review Material Safety Data Sheet (MSDS) to promote the safe handling of chemicals in use.
• Restrict the use of all chemicals to designated areas with good ventilation.
• Chemicals are flammable and reactive.
• Noxious fumes released when combusted.
• Operate equipment in a ventilated environment only.
• Uncured liquid resins are highly flammable unless specifically labeled otherwise.
• Cured laminate, accumulations of overspray, and laminate sandings are highly combustible.
• Do not operate or move electrical equipment when flammable fumes are present.
• Ground all equipment.
• If a spark is seen or felt, immediately halt operation. Do not operate the equipment until the issue has been identified and repaired.
• Contaminated catalyst may cause fire or explosion.
• Containers may explode if exposed to fire / heat.
• Use and store chemicals away from heat, flames, and sparks.
• Do not smoke in work areas or near stored chemicals.
• Do not mix Methyl Ethyl Ketone Peroxide (MEKP) with materials other than polyethylene.
• Do not dilute MEKP.
• Keep food and drink away from work area.


Physical Hazards

- Never look directly into the spray gun fluid tip. Serious injury or death can result.
- Never aim the spray gun at or near another person. Serious injury or death can result.
- Chemical compounds can be severely irritating to the eyes and skin.
- Inhalation, ingestion, or injection may damage internal organs and lead to pulmonary disorders, cancers, lymphomas, and other diseases or health conditions.
- Other potential health effects include: irritation of the eyes and upper respiratory tract, headache, light-headedness, dizziness, confusion, drowsiness, nausea, vomiting, and occasionally abdominal pain.
- Eye contact: Immediately flush with water for at least 15 minutes and seek immediate medical attention.
- Skin Contact: Immediately wash with soap and water and seek immediate medical attention.
- Inhalation: Move the person to fresh air and seek immediate medical attention.
- Do not remove shields, covers, or safety features on equipment that is in use.
- 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 shoot liquid through the skin.
- Keep hands and body parts away from any moving equipment or components.
- Do not stand under plunger
- An improperly loaded drum may lead to an imbalance, causing a unit to tip over



Personal Protective Equipment (PPE)

- MVP recommends the use of personal safety equipment with all products in our catalog.
- Wear safety goggles, hearing protection, a respirator, and chemical resistant gloves.
- Wear long sleeve shirts or jackets and pants to minimize skin exposure.
- PPE should be worn by operators and service technicians to reduce the risk of injury.

For Additional information, contact the Occupational Safety and Health Administration (OSHA). https://www.osha.gov/about.html

Symbol Definitions

Indicates the risk of contact with chemicals that are hazardous, which may lead to injury or death.

Indicates the risk of contact with voltage / amperage that may lead to serious injury or death

Indicates that the materials being used are susceptible to combustion

Indicates the risk of contact with moving components that may lead to serious injury or death.

Indicates that the system or component should be grounded before proceeding with use or repair.

Indicates the use of lit cigarettes or cigars is prohibited, because the materials being used are susceptible to combustion.

Indicates that the materials and/or the process being performed can lead to ignition and explosion.

A recommendation for the use of Personal Protective Equipment (PPE) before using or repairing the product.

Polymer Matrix Materials: Advanced Composites

Potential health hazards associated with the use of advanced composites can be controlled through the implementation of an effective industrial hygiene and safety program.

https://www.osha.gov/dts/osta/otm/otm_iii/otm_iii_1.html#t iii:1_1

Resins		
Composite Component	**Organ System Target (Possible Target)**	**Known (Possible) Health Effect**
Epoxy resins	Skin, lungs, eyes	Contact and allergic dermatitis, conjunctivitis
Polyurethane resins	Lungs, skin, eyes	Respiratory sensitization, contact dermatitis, conjunctivitis
Phenol formaldehyde	Skin, lungs, eyes	As above (potential carcinogen)
Bismaleimides (BMI)	Skin, lungs, eyes	As above (potential carcinogen)
Polyamides	Skin, lungs, eyes	As above (potential carcinogen)
Reinforcing materials		
Composite Component	**Organ System Target (Possible Target)**	**Known (Possible) Health Effect**
Aramid fibers	Skin (lungs)	Skin and respiratory irritation, contact dermatitis (chronic interstitial lung disease)
Carbon/graphite fibers	Skin (lungs)	As noted for aramid fibers
Glass fibers (continuous filament)	Skin (lungs)	As noted for aramid fibers
Hardeners and curing agents		
Composite Component	**Organ System Target (Possible Target)**	**Known (Possible) Health Effect**
Diaminodiphenylsulfone	N/A	No known effects with workplace exposure
Methylenedianiline	Liver, skin	Hepatotoxicity, suspect human carcinogen
Other aromatic amines		
Composite Component	**Organ System Target (Possible Target)**	**Known (Possible) Health Effect**
Meta-phenylenediamine (MPDA)	Liver, skin (kidney, bladder)	Hepatitis, contact dermatitis (kidney and bladder cancer)
Aliphatic andcyclo-aliphatic amines	Eyes, skin	Severe irritation, contact dermatitis
Polyaminoamide	Eyes, skin	Irritation (sensitization)
Anhydride	Eyes, lungs, skin	Severe eye and skin irritation, respiratory sensitization, contact dermatitis

Catalyst - Methyl Ethyl Ketone Peroxide (MEKP)

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.

WARNING

Contamination with promoters, 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 be explosive in nature. Heat applied to MEKP or heat buildup from contamination reactions can cause the material to reach its Self-Accelerating Decomposition Temperature (SADT).

Researchers have reported measuring pressure rates-of-rise well over 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 regarding 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:

- Store MEKP in a cool, dry place in original containers away from direct sunlight and away from other chemicals.
- Keep MEKP away from heat, sparks, and open flames.
- Prevent contamination or MEKP with other materials, including polyester over spray and sandings, polymerization accelerators and promoters, brass, aluminum, and non-stainless steels.

- Never add MEKP to anything that is hot, since explosive decomposition may result.
- 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.
- Avoid spillage, which can heat up to the point of self-ignition.
- 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.
- Use only original equipment or equivalent parts from Magnum Venus Products in the catalyst system (i.e.: hoses, fitting, etc.) because a dangerous chemical reaction may result between substituted parts and MEKP.
- 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.

Clean-Up Solvents and Resin Diluents

WARNING

A hazardous situation may be present in your pressurized fluid system! Hydro carbon 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.). An explosion could cause serious injury, death, and/or substantial property damage. Cleaning agents, coatings, paints, etc. may contain Halogenated Hyrdrocarbon solvents. Some Magnum Venus Products spray equipment includes aluminum or galvanized components and will be affected by Halogenated Hydrocarbon solvents.

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

1.	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.
2.	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.
3.	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.

- 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. Mixing HHC solvents with other materials or solvents such as MEKP, alcohol, or toluene may render the inhibitors ineffective.
- The use of reclaimed solvents is particularly hazardous. Reclaimers may not add any inhibitors. The possible presence of water in reclaimed solvents could also feed the reaction.
- 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 to safely prevent the chemical reaction under all circumstances.
- 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 (VOCs), 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 (HHC) solvents in pressurized fluid systems having aluminum or galvanized wetted parts.
Magnum Venus Products is aware of NO stabilizers available to prevent HHC solvents from reaction under all conditions with aluminum components in closed fluid systems. HHC solvents are dangerous when used with aluminum components in a closed fluid system.

- Consult your material supplier to determine whether your solvent or coating contains Halogenated Hydrocarbon solvents.
- Magnum Venus Products recommends that you contact your solvent supplier regarding the best non-flammable clean-up solvent with the heat toxicity for your application.
- If, however, you find it necessary to use flammable solvents, they must be kept in approved, electrically grounded containers.
- Bulk solvent should be stored in a well-ventilated, separate building, 50 feet away from your main plant.
- You should only allow enough solvent for one day's use in your laminating area.
- NO SMOKING signs must be posted and observed in all areas of storage or where solvents and other flammable materials are used.
- 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.
- Solvents should be handled in accordance with OSHA Section 1910.106 and 1910.107.

Catalyst Diluents

Magnum Venus Products spray-up and gel-coat systems currently produced are designed so that catalyst diluents are not required. Magnum Venus Products therefore recommends that diluents not be used to avoid 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 diluent being contaminated through rust particles in drums, poor quality control on the part of the diluents suppliers, or any other reason. If diluents are absolutely required, contact your catalyst supplier and follow his instructions explicitly. Preferably the supplier should premix the catalyst to prevent possible "on the job" contamination while mixing.

WARNING

If diluents are not used, remember that catalyst spillage and gun, hose, and packing leaks are potentially more hazardous since each drop contains a higher concentration of catalyst and will therefore react more quickly with overspray and the leak.

Cured Laminate, Overspray and Laminate Sandings Accumulation

- Remove all accumulations of overspray, Fiberglass Reinforced Plastic (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.
- Floor coverings, if used, should be non-combustible.
- 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 spillage and leakage, you should:

1.	Maintain your Magnum Venus Products 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.

Toxicity of Chemicals

- Magnum Venus Products recommends that you consult OSHA Sections 1910.94, 1910.106, 1910.107 and NFPA No.33, Chapter 14, and NFPA No.91.
- 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.
- Also determine the best methods of first aid treatment for each chemical used in your plant.

Equipment Safety

Magnum Venus Products suggest 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!

CAUTION

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 OR AN ANIMAL.

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 from dirt, grease, or resin. Clean catalyst system components with clean water daily.

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.

Treatment of Chemical Injuries

CAUTION

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

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 Products 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 if 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 an injury. If the product's MSDS includes first aid instructions, administer first aid immediately after contacting a doctor.

Fast treatment of the outer skin and eyes that contact 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 may be incorrect for some chemicals; you must know the chemicals and treatment before an accident occurs. Treatment for swallowing a chemical frequently depends upon the nature of the chemical.

Emergency Stop Procedure

In an emergency, follow these steps to stop a system:

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.

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.***

2. Turn all system regulators to the "OFF" position (counter-clockwise) position.
3. Verify / secure the catalyst relief line, located on the catalyst relief valve.
4. Verify / secure the resin return line, located on the resin filter.
5. Place a container under the resin pump ball valve to catch ejected resin.
6. Locate the ball valve on the resin pump.
7. Rotate the ball valve 90 degrees to the "On" or open position.

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 Products 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.

CAUTION

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".

Introduction

The digital monitor is designed to display the resin and/or glass rate and total. Using a sensor assembly, signals are sent to the control box and converted to produce the count(s). The monitor is designed to be modular so that if one component becomes inoperative the rest of the system will continue to operate and the inoperative component can be easily replaced. It can be configured for use on various pump systems.

After calibration, the monitor will display the rates and totals you set. It will only need to be checked periodically for quality control. If a different resin or glass is used or the system becomes worn, the monitor may need to be re-calibrated.

This manual provides information for the operation, maintenance, and simple repair of the MVP CB-6000 Monitor. The following procedures are included:

- Installation and start-up instructions
- Calibration and calculation instructions

Please read this manual carefully and retain for future reference. Follow the steps in the order given, otherwise you may damage the equipment or injure yourself.

Models

MVP's CB-6000 Monitor can be configured to monitor glass only, resin only, or both resin and glass. Each configuration may be fitted to various MVP systems with the appropriate hardware/sensor kit. The part number for your model will include information about the system it is configured for.

- ❑ CB-6000-X-APS INCLUDES APS RESIN SENSOR HARDWARE KIT
- ❑ CB-6000-X-HV INCLUDES HV RESIN SENSOR HARDWARE KIT
- ❑ CB-6000-X-PAT INCLUDES THE PATRIOT RESIN SENSOR HARDWARE KIT
- ❑ CB-6000-X-UPS INCLUDES THE UPS RESIN SENSOR HARDWARE KIT

Setting Preset Value

The digital readout is designed to display the resin rate and total and/or the glass rate and total. After counting up to a preset number of counts, the unit sends a signa that can be used to turn off a resin pump and chopper or turn on/off some other device.

After the initial setup and calibration you can input the set point value and the pumping system will turn off at that valve.

Determine Set Point

Method 1 – Matching Previous Job Count

1. Set the counter at the maximum setting or very high for the first operation.
2. Complete a job as normal, allowing the meter to keep count.
3. Once you have filled your part with the desired amount of material, note the number on the display to determine where your preset count should be set.

Method 2 – Resin Volume Sample

1. Cycle the resin pump 10 full up and down strokes then note the number that appears on the display.
2. Weigh the resin sample that was discharged from the pump.
3. Divide the desired amount of resin (by weight) required to produce the part by the weight of the resin sample discharged in 10 cycles.

$$\frac{Desired\ Weight}{Sample\ Weight} = X$$

4. Multiply the number from the display in step 1 by the answer to the equation from step 3.
5. Set the answer as your preset count.

Resetting Set Point for Systems with Automatic Valving

1. Plug the unit into a power source and turn the power on.
2. Locate the resin total readout, the lower left display.

Note ***The readout will display zero ("0").*** 0.0

3. Press the **PAR** button on the readout you wish to set.

   The display changes to **Pro**.

4. Press the F1 or F2 button until the display shows **6 - SPt**.
5. Press the **PAR** button once, then press F1 or F2 until **SP - 1** is displayed.

6. Press the **PAR** button six times until **SP - 1** is displayed again.
7. Use the **RST** button to select the column you wish to change, then use **F1▲** and **F2▼** to enter the desired set point number.
8. To save the changes, press **PAR** until **END** is displayed.

Note ***Pressing the DSP key will exit programming mode without saving.***

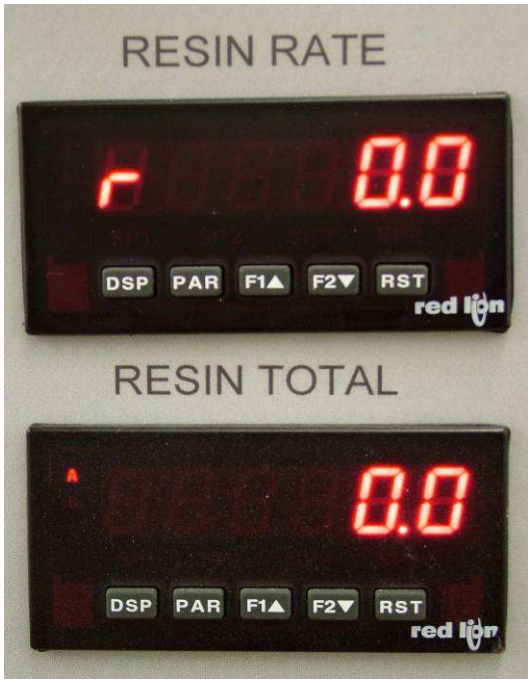
Calibrating Resin Rate and Total

If your unit is to measure glass only, skip to Calibrating Glass Total and Rate.

The resin total counter needs to be calibrated to display the desired value. To do so, you need to enter a scaling factor into the resin total display. The scaling factor will depend on the specific gravity of the resin, efficiency of the pumping system, size of the pumping system, and the number of counts per stroke. Once calibrated the unit will display the total amount of material dispensed in the units desired.

Note ***You can choose your preferred unit of measure for the display, either pounds or kilograms.***

The resin rate counter also needs to be calibrated to display the desired value. This is done by entering a display value and input value into he resin rate meter. These two values are determined by the material used, time units, and units of measure desired (kilograms per minute or pounds per minute). Once calibrated, the unit will display the rate at which the material is being dispensed in the units desired.



The resin rate meter should display an “r” at the left of the window to display the rate properly.

The resin total meter should display an “A” at the upper left of the window to display the total properly.

Resin Total Scaling Factor

The number of input counts is multiplied by the scale factor (ASCFAC) to obtain the desired process value. This is accomplished by the counter mode (A Cnt), scale factor (ASCFAC), scale multiplier (ASCALr), and decimal point (AdECPt).

Quick Start

1. Enter a number into the scale factor parameter (ASCFAC).
2. Pump some material and weight the output, then adjust the scale factor using the following parameters:

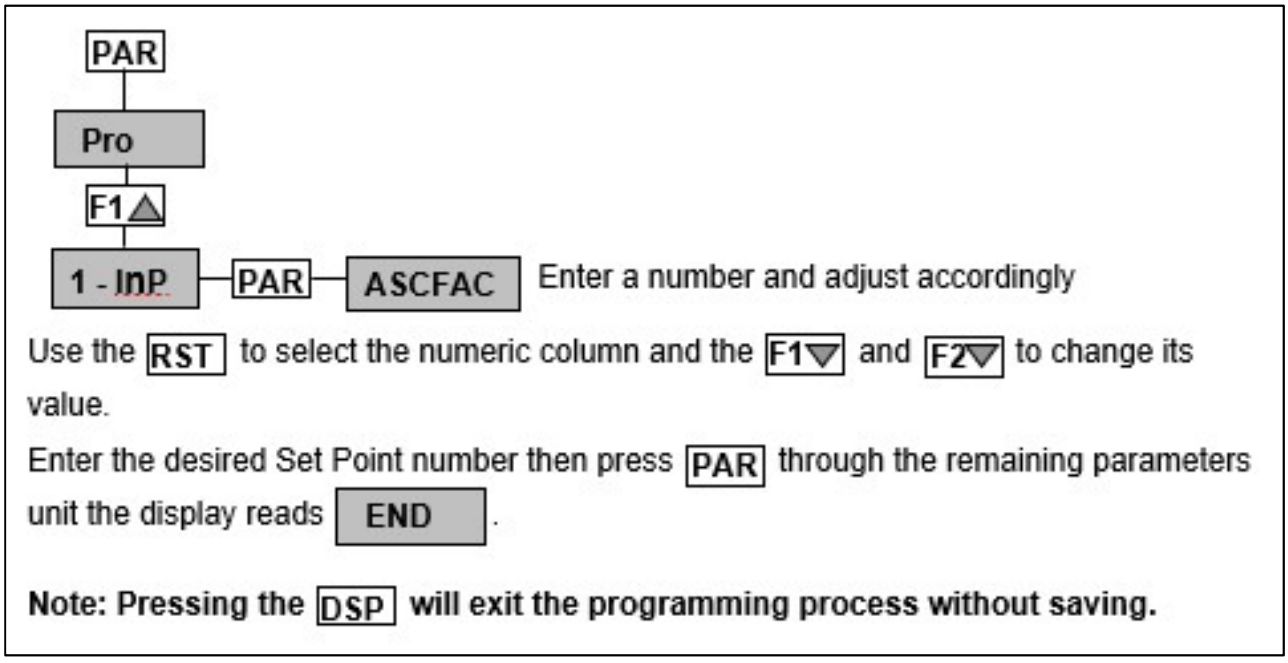
- (A Cnt) cnt = one count per pulse (recommended), cnt 2 = two counts per pulse
- (AdECPt) = 0.0 adjust the scale factor to desired units (x10 – 0.0)
- (ASCALr) = 1 multiplies scale factor by one (no change recommended)

3. Repeat this process until the unit displays the correct amount of material pumped.

   The unit is now calibrated.

   Periodically check the output weight to confirm the calibration and adjust accordingly. If you use a different resin or any changes are made to the pumping system, recalibrate the unit.

   The calibration process can be conducted before the catalyst system is primed so that the resin can be processed through the gun and returned to the source without fear of catalyzation. In this case, the total weight will be off by the amount of catalyst used.



Calculating Scale Factor

$$\text{SF (ASCFAC)} = \frac{Desired\ Display\ Decimal\ DDD}{Number\ of\ pulses\ per\ single\ unit\ x\ CM\ x\ SM}$$

Desired Displayed Decimal DDD	(AdECPt)	Counter Decimal Selection
1	0	None
10	0.0	Tenths
100	0.00	Hundredths
1000	0.000	Thousandths

Number of pulses per single unit is the pulses per unit generated by the process (i.e. number of pulses per pound or kilogram).

- CM: Counter Mode (A Cnt) times factor of the mode 1, 2, or 4. (MVP default 1 (cnt))
- SM: Scale Multiplier (ASCALr) selection of 1, 0.1, or 0.01. (MVP sets to default 1)
- One gallon of water = 8.33 pounds (3.78 kg)
- One gallon = 231 cubic inches (3785 cc)
- Once cubic centimeter (cc) or milliliter (ml) = 1 gram of water
- Resin specific gravity is the weight of 1 gallon of resin (in pounds) divided by 8.33
- Number of pulses per stroke is the number of pulses per one stroke generated by the sensor assembly installed

Note ***It is best to adjust the sensor assembly so that it is centered on the pump. This will help to stabilize the rate readings.***

- Resin weight per volume (cubic inches, cubic centimeters, gallons, or liters) – the weight of one unit of measure you wish to display or specific gravity of the resin

Table 1. Volumetric Displacement of Fluid Sections

Units / Stroke	Fluid Section						
	VLS-2400	VLS-4600	HVLS-1000	MLS-2400	MLS-4600	PAT-LS-12270	PAT-LS-24050
ci / Stroke	2.4	4.5	11.3	3.7	7.27	2.4	4.8
Gallons/Stroke	0.01039	0.01948	0.04892	0.01602	0.03147	0.01039	0.02078
cc / Stroke	39.336	73.755	185.207	60.643	119.1553	39.336	78.672
Liter / Stroke	0.04	0.074	0.185	0.061	0.119	0.04	0.079

Example Calculations

For this example, rates will be based on pounds or kilograms per minute with one decimal place (DDD = 10).

When working in pounds you can determine pounds per stroke or strokes per pound.

Pounds Per Stroke

Assume 9 pounds per gallon for the purposes of this example – check the material safety data sheet (MSDS) for your actual weight. Multiply the weight per gallon by the gallons per stroke for your fluid section.

Resin weight (pounds per gallon)	9.00
Gallons per stroke (MLS-4600 fluid section)	x 0.03147
Pounds per stroke	0.28323

To convert to strokes per pound:

	1.00
Pounds per stroke	÷ 0.28323
Strokes per pound	3.5307

To determine pulses per pound:

Multiply the number of strokes per pound by the number of pulses per stroke. For this example we will use four pulses per stroke.

Strokes per pound	3.5307
Pulses per stroke	x 4.00
Pulses per pound	14.1228

Round the answer to the nearest whole number. In this case, 14.

Resin Total Scale Factor in Pounds

Display Decimal (0.0 in this case)	10
Pulses per pound	÷ 14
Scale Factor (ASCFAC)	0.7143

Kilograms Per Stroke

If you know the specific gravity of the resin you can find the weight of the resin in grams by multiplying the cubic centimeters (cc) by the specific gravity . Using the same example resin, we know the specific gravity to be 1.08 (9 pounds per gallon of resin divided by 8.33 pounds in a gallon of water = 1.08 specific gravity).

cc per stroke (MLS-4600 fluid section)	119.1553
Specific gravity	x 1.08
Grams per stroke	128.6877

To convert to strokes per kilogram:

	1.00
Grams per stroke	÷ 128.6877
Strokes per gram	0.00777075
Convert to Kilograms	x 1000
Strokes per Kilogram	7.77075

To determine pulses per kilogram:

Multiply the number of strokes per kilogram by the number of pulses per stroke. For this example we will use four pulses per stroke.

Strokes per kilogram	7.77075
Pulses per stroke	x 4.00
Pulses per kilogram	31.083

Round the answer to the nearest whole number. In this case, 31.

Display Decimal (0.0 in this case)	10
Pulses per kilogram	÷ 31
Scale Factor (ASCFAC)	0.3226

Resin Rate Scaling Values

The resin rate is specified by two programmable parameters, a desired rate display value (rdSP 1) and a corresponding rate input value (r InP 1).

Quick Start

4. Enter a value into the display value (rdSP 1) and input value (r InP 1).

Note ***Display value (rdSP 1) = 60 represents minutes.***
Input value (r InP 1) = 50 (any number as a starting point).

5. If the resin total meter is working, run the pump for one minute.

   The displayed rate during that minute should be equal to the total amount of resin displayed after one minute.

Note ***For more accurate metering, run the tests for longer periods of time.***

The calibration process can be conducted before the catalyst system is primed so that the resin can be processed through the gun and returned to the source without fear of catalyzation.

The decimal place can be adjusted by multiplying the values by 10 or 100. Both values must be raised and lowered by the same proportion. Both values must be greater than 0.0.

Calculating Resin Rate

If the number of pulses per single unit (i.e. pulses per pound) is known, it can be entered as the scaling input value and the scaling display value will be entered accordingly:

- Display Value (rdSP 1) 1 = seconds, 60 = minutes, and 3600 = hours
- Input Value (r InP 1) = # of pulses per unit

Example Calculation

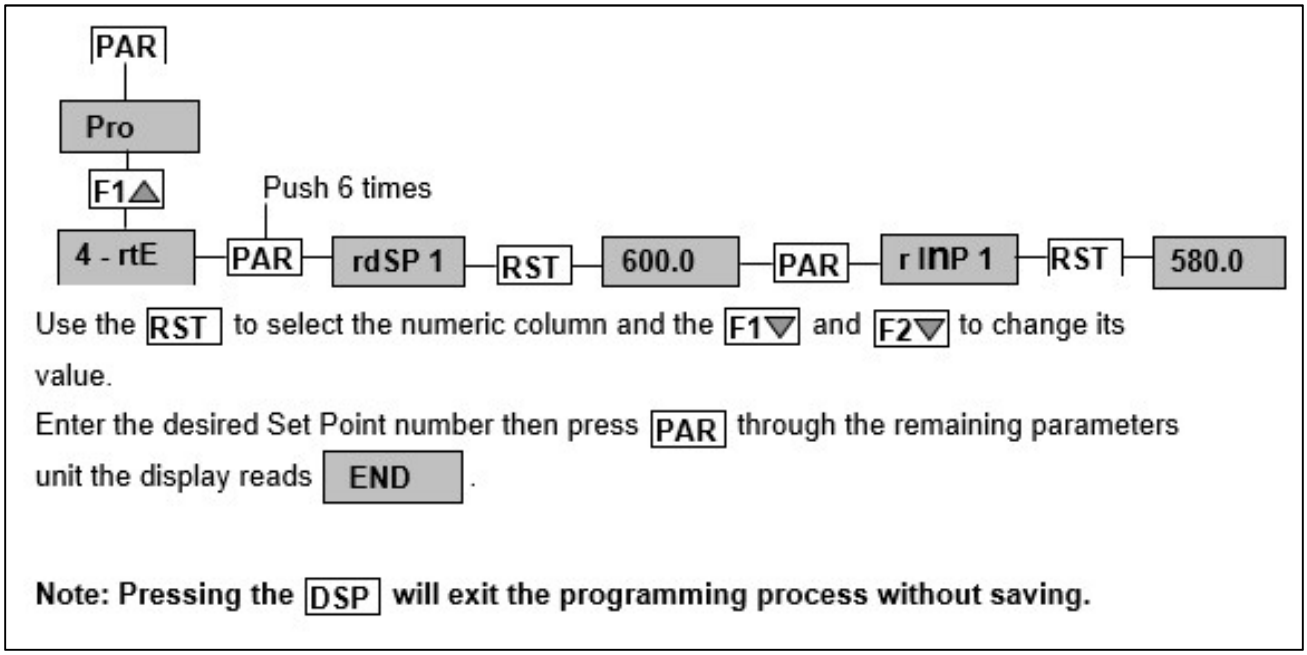
Using the same example from earlier, we know that there are 14 pulses per pound and 31 pulses per kilogram.

Resin Display Value = 60 for minutes multiplied by the decimal place set, in our example 10 (0.0).

Minutes	60
Decimal Display	x 10
Display Value (rdSP 1) (pounds or kilograms per min)	600

Resin Rate Input Value	**Pound**	**Kilogram**
Pulses per	14	31
Decimal Display	x 10	x 10
Input Value (r InP 1)	140	310

This number may need to be adjusted for the resin viscosity and specific gravity, but it is a starting point. Make note of all materials used on the resin data sheet, pump settings, nozzle size, and nozzle type to help duplicate this setup in the future.



Calibrating Glass Total and Rate

The glass total counter needs to be calibrated to display the desired value. This is done by entering a scaling factor into the glass total display. The scaling factor will depend on the glass yield and number of strands being used. Once calibrated, the unit will display the total amount of material processed in the units desired. You can use either pounds or kilograms as the unit of measure, whichever is preferable.

The glass rate counter also needs to be calibrated to display the desired value. This is done by entering a display value and an input value into the glass rate meter. These two values are determined by the material used, time units, and unit of measure (i.e. pounds per minute or kilograms per minute). Once calibrated, the unit will display the rate at which the material is being dispensed in the units desired.

The glass rate meter should display an “r” at the left of the window to display the rate properly.

The resin total meter should display an “A” at the upper left of the window to display the total properly.

Glass Total Scaling Factor

The glass total scaling factor is calibrated using the same procedure as the resin total scaling factor, only on the glass total meter. The glass total can be setup a couple of different ways depending on how many strands of glass are being used. The total can include both strands of glass or be calculated for one strand and then doubled to give the correct total.

Multiply the number of input counts by the scale factor (ASCFAC) to obtain the desired process value. This is accomplished by the counter mode (A Cnt), scale factor (ASCFAC), scale multiplier (ASCALr), and decimal point (AdECPt).

Quick Start

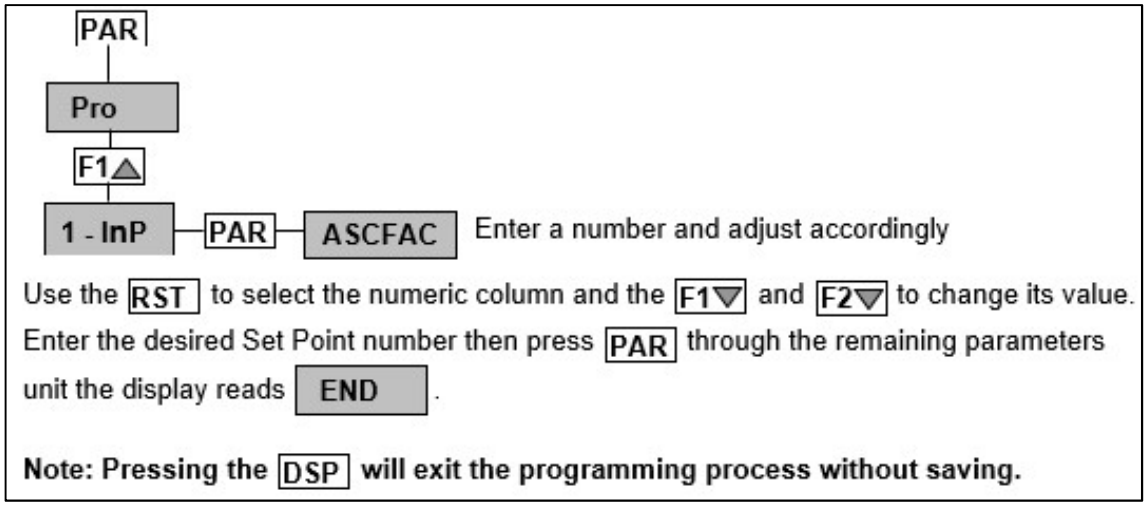
1. Enter a number into the glass scale total factor (ASCFAC).
2. Activate the chopper and output some glass into a bag.
3. Weigh the output, then adjust the scale factor parameter accordingly using the following parameters to obtain the correct total:

- (A Cnt) cnt = one count per pulse (recommended), cnt 2 = two counts per pulse
- (AdECPt) = 0.0; adjust the scale factor according to desired units (x10 – 0.0)
- (ASCALr) = 1 multiplies scale by one (no change)

4. Repeat this process until the unit displays the correct amount of glass.

   The unit is now calibrated.

Periodically check the output weight to confirm the calibration and adjust accordingly. Check the calibration if a different glass yield or Tex is used.



Calculating Glass Total Scale Factor

$$\text{SF (ASCFAC)} = \frac{Desired\ Display\ Decimal\ DDD}{Number\ of\ pulses\ per\ single\ unit\ x\ CM\ x\ SM}$$

Note ***Yield = yards per second***

Tex = gram per one kilometer of glass

One revolution or pulses = 3.767 inches or 95.682 mm

One yard = 36 inches, so we divide 36 by 3.767 to get the number of pulses per yard, 9.5567.

One kilometer = 1,000,000 millimeters, so we divide 1,000,000 by 95.682 mm to get the number of pulses per kilometer, 10,451.3.

Pounds per Yard

For this example we will use a yield of 206 yards per pound.

Multiply the number of pulses per yard by the yield (number of yards in a pound).

Pulses per yard	9.5567
Yards per pound	x 206
Pulses per pound	1968.68

Round to the nearest whole number. In this case, 1969 pulses per pound per strand of glass.

If using two strands of glass, divide by two.

Pulses per pound	1969
Two strands of glass	÷ 2
Pulses per pound	984

Kilogram per Stroke – using Tex

For this example we will use a Tex of 2400 grams per kilometer (2.4 kilograms per kilometer).

To convert to kilometers per kilogram:

	1.00
Kilograms per kilometer	÷ 2.4
Kilometers per kilogram	0.4167

Pulses per kilometer (from above)	10451.3
Kilometer per kilogram	x 0.4167
Pulses per kilogram	4355.0

Glass total scale factor (pounds) per strand of glass

Display Decimal (0 in this case)	1
Pulses per pound	÷ 1969
Scale Factor (ASCFAC)	0.000507

Glass total scale factor (pounds) per strand of glass

Display Decimal (0 in this case)	1
Pulses per kilogram	÷ 4355
Scale Factor (ASCFAC)	0.00023

Glass Rate Scaling Values

The glass rate is specified by two programmable parameters, a desired rate display value (rdSP 1) and a corresponding rate input value (r InP 1).

Quick Start

5. Enter a value into the display value (rdSP 1) and input value (r InP 1).

Note ***Display value (rdSP 1) = 60 represents minutes.***
Input value (r InP 1) = 1000 (any number as a starting point).

6. If the glass total meter is working, run the chopper form one minute.

   The displayed rate during that minute should be equal to the total amount of glass displayed after one minute.

Note ***The rate may jump up and down a little due to the sampling rate and pulses counted during that time.***

The decimal place can be adjusted by multiplying the values by 10 or 100. Both values must be raised and lowered by the same proportion. Both values must be greater than 0.0.

Calculating Glass Rate

If the number of pulses per single unit (i.e. pulses per pound or kilogram) is known, it can be entered as the scaling input value and the scaling display value will be entered accordingly:

- Display Value (rdSP 1) 1 = seconds, 60 = minutes, and 3600 = hours
- Input Value (r InP 1) = # of pulses per unit

Glass Rate in Pounds:

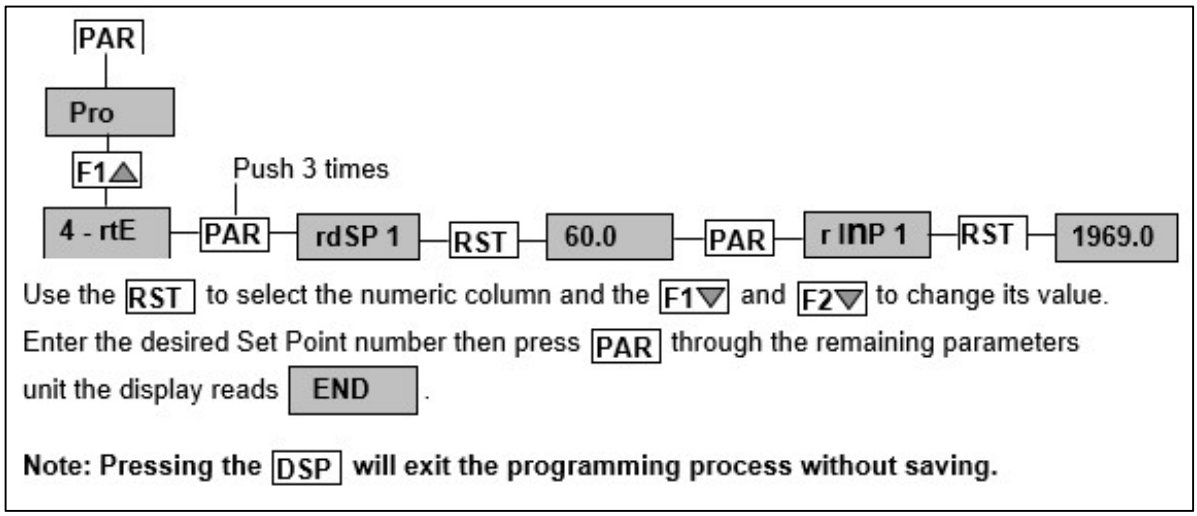
- Display Value (rdSP 1) = 60
- Input Value (r InP 1) = 1969 per strand of glass

Glass Rate in Kilograms

- Display Value (rdSP 1) = 60
- Input Value (r InP 1) = 4355 per strand of glass

This number may need to be adjusted slightly up or down to more accurately reflect the true output. Make several tests at different chopper speeds to help fine tune the accuracy.

Make note of all materials used and chopper settings to help duplicate the settings in the future.



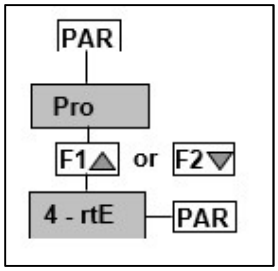
Meter Setup

Resin Rate Meter Setup

4 – rtE (Rate Input Parameters)

Display	Description	MVP Setting	Entry Needed (if applicable)
rAtEEn	Rate Assignment	rAtE – A	
LO – Udt	Low Update Time	2.0	
HI – Udt	High Update Time	4.0	
rtE dP	Rate Decimal Point	0.0	
rdSP 1	Display Value	60	Enter value
r InP 1	Input Value	1000.0	Enter value

Quick Reference



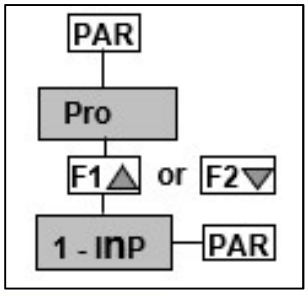
Resin Total Meter Setup

I – InP (Counter A Input Parameters)

Display	Description	MVP Setting	Entry Needed (if applicable)
A Cnt	Operating Mode	cnt	
ArESEt	Reset Action	2ErO	
AdECPt	Decimal Position	0.0	
ASCFAC	Scale Factor	1	Enter factor
ASCALr	Scale Multiplier	1	
ACNtLd	Count Load Factor	0	
A P-UP	Reset Power Up	YES	

Note ***All other parameters in I – InP remain as set by the electronics manufacturer.***

Quick Reference

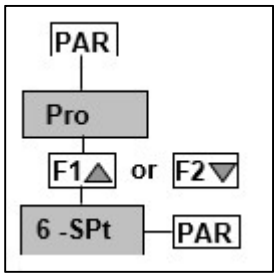


6 – SPt (Setpoint Alarm Parameters)

Display	Description	MVP Setting	Entry Needed (if applicable)
Lit – 1	Annunciators	nor	
Out – 1	Output Logic	nor	
SUP – 1	Power Up State	off	
Act – 1	Action	tOUt	
ASn – 1	Assignment	A Cnt	
SP – 1	Setpoint Value	100	Enter signal out value
tOUt – 1	Setpoint Time Out	2.00	
AUtO – 1	Auto Reset Action	2ErOAE	
rSd-1	Reset with Display	yes	

Note ***All other parameters remain as set by the electronics manufacturer.***

Quick Reference

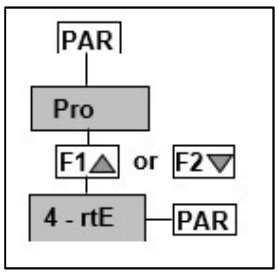


Glass Rate Meter Setup

4 – rtE (Rate Input Parameters)

Display	Description	MVP Setting	Entry Needed (if applicable)
rAtEEn	Rate Assignment	rAtE – A	
LO – Udt	Low Update Time	2.0	
HI – Udt	High Update Time	4.0	
rtE dP	Rate Decimal Point	0.0	
rdSP 1	Display Value	60	Enter value
r InP 1	Input Value	1000.0	Enter value

Quick Reference



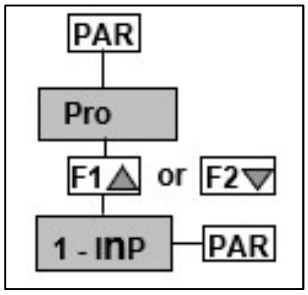
Glass Total Meter Setup

I – InP (Counter A Input Parameters)

Display	Description	MVP Setting	Entry Needed (if applicable)
A Cnt	Operating Mode	cnt	
ArESEt	Reset Action	2ErO	
AdECPt	Decimal Position	0.0	
ASCFAC	Scale Factor	1	Enter factor
ASCALr	Scale Multiplier	1	
ACNtLd	Count Load Factor	0	
A P-UP	Reset Power Up	YES	

Note ***All other parameters in I – InP remain as set by the electronics manufacturer.***

Quick Reference



Setting Up Remote Reset

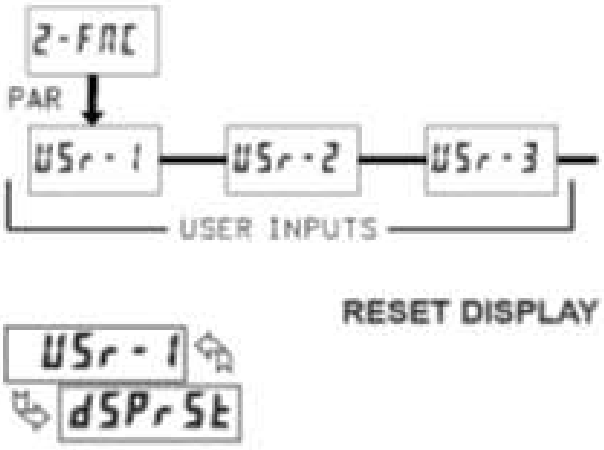
Note ***The remote reset is an available option for the meter. If you do not have this option, skip to the next section.***

You will need the following items for the remote reset:

- 1 bulkhead fitting (09125)
- 1 pressure switch (9807-2-1)
- 1 operator (9807-1-1)
- 1 bracket (09068)
- 1 fitting (08801)
- 1 length of 1/8 tubing (plus length to push button) (08810)
- 1 fitting (08802)
- 1 fitting (07223)
- 3 feet wire #18 AWG (color optional) (08247)
- 1 push button (09169)

1. Mount the pressure switch in the desired location in the control box and connect the operator to the switch.
2. Using wire, connect the switch to terminals 7 and 10 on the back of the resin meter.
3. Mount the push button at the remote location and connect with tubing – one end to the air supply and the other to the operator.

   When you push the button an air signal is sent to the operator on the switch and the circuit between terminals 7 and 10 is closed, causing the meter to reset.
4. In the resin total meter, confirm that parameter USr-1 is set to dSPrSt in module 2.



Calculation Worksheets

The following worksheets will assist you with making the calculations described earlier in this manual. There is a worksheet for each of the following:

- Resin Calculations
- Resin Quick Start
- Glass Calculations
- Glass Quick Start

Resin Calculations Worksheet

Pounds Calculations

Check the MSDS for your material for your actual weight.

Resin weight (pounds per gallon). Enter weight for your material.	
Multiply by gallons per stroke – see Table 1. Volumetric Displacement of Fluid Sections for your unit	x
Pounds per stroke	

Convert the answer to strokes per pound:

	1.00
Divide by pounds per stroke (enter answer from above)	÷
Strokes per pound	

Strokes per pound (enter answer from above)	
Multiply by pulses per stroke for your unit	x
Pulses per pound (round to the nearest whole number)	

Resin Total Scale Factor

Display Decimal Place (use 1 if your unit displays 0, 10 for 0.0, or 100 for 0.00)	
Divide by pulses per pound (enter whole number answer from above)	÷
Scale Factor (ASCFAC)	

Kilograms Calculations

Check the MSDS for your material for your specific gravity.

Enter cc per stroke – see Table 1. Volumetric Displacement of Fluid Sections for your unit	
Multiply by the specific gravity of the material you are using	x
Grams per stroke	

Convert the answer to strokes per gram:

	1.00
Divide by grams per stroke (enter answer from above)	÷
Strokes per gram	
Multiply by 1000 to get strokes per kilogram =	

Strokes per kilogram (enter answer from above)	
Multiply by pulses per stroke for your unit	x
Pulses per kilogram (round to the nearest whole number)	

Resin Total Scale Factor

Display Decimal Place (use 1 if your unit displays 0, 10 for 0.0, or 100 for 0.00)	
Divide by pulses per kilogram (enter whole number answer from above)	÷
Scale Factor (ASCFAC)	

Resin Rate Values

Both the Display Value (rdSP 1) and Input Value (r InP 1) must be adjusted by the same proportion as one another. Adjust by multiplying the values by 1, 10, or 100 according to the decimal display.

Time units desired (enter 1 for seconds, 60 for minutes, or 3600 for hours)	
Multiply by decimal display (use 1 if your unit displays 0, 10 for 0.0, or 100 for 0.00)	x
Display Value (rdSP 1)	

Resin Rate Input Value	**Pounds**	**Kilograms**
Pulses per unit		
Multiply by decimal display (use 1 if your unit displays 0, 10 for 0.0, or 100 for 0.00)	x	x
Input Value (r InP 1)		

Resin Rate and Resin Total Quick Start Worksheet

To calibrate the resin rate and resin total using the quick start method, follow these steps:

1. Set up the program parameters for the two displays as noted in the Meter Setup section.
2. Take a weight measurement for one minute to obtain your resin rate per minute.
3. Set the Resin Rate Display Value to 60 for minutes.
4. Adjust the Resin Rate Input Value so that the rate displayed equals the resin rate per minute measurement taken.

Note ***Be sure not to change any of the pump settings or you will need to take another measurement.***

5. Adjust the Scale Factor parameter so that the resin total displays the resin rate for every minute pumped.
6. Push the total reset and time one minute of pumping.

   The amount displayed should equal the rate displayed. Repeat the process until the unit displays the correct amount and rate of material pumped.

Note ***For more accurate metering, run the tests for a longer period of time.***

Note ***The calibration can be conducted through the return valve at the filter or before the catalyst system is primed, so the resin can be processed through the gun and returned to the source without fear of catalyzation.***

Glass Calculations Worksheet

Pounds Calculations

Pounds per Yard (Yield)

Check your material to determine your actual yield.

Pulses per yard	9.5567
Multiply by yards per pound (yield) of your material	x
Pulses per pound (round to the nearest whole number)	
If using two strands of glass, divide pulses per pound by 2	

Glass Total Scale Factor

Display Decimal Place (use 1 if your unit displays 0, 10 for 0.0, or 100 for 0.00)	
Divide by pulses per pound (enter whole number answer from above)	÷
Scale Factor (ASCFAC)	

Kilograms Calculations

Check your material for your actual tex.

Tex for your material (grams per kilometer)	
Divide by 1000 to convert grams to kilograms per kilometer	÷ 1000
Kilograms per kilometer	

Convert the answer to kilometers per kilogram:

	1.00
Divide by kilograms per kilometer (enter answer from above)	÷
Kilometers per kilogram	

Pulses per kilometer	10451.3
Multiply by kilometers per kilogram (enter answer from above)	x
Pulses per kilogram (round to the nearest whole number)	

Glass Total Scale Factor

Display Decimal Place (use 1 if your unit displays 0, 10 for 0.0, or 100 for 0.00)	
Divide by pulses per kilogram (enter whole number answer from above)	÷
Scale Factor (ASCFAC)	

Glass Rate Values

Both the Display Value (rdSP 1) and Input Value (r InP 1) must be adjusted by the same proportion as one another. Adjust by multiplying the values by 1, 10, or 100 according to the decimal display.

Time units desired (enter 1 for seconds, 60 for minutes, or 3600 for hours)	
Multiply by decimal display (use 1 if your unit displays 0, 10 for 0.0, or 100 for 0.00)	x
Display Value (rdSP 1)	

Resin Rate Input Value	**Pounds**	**Kilograms**
Pulses per unit		
Multiply by decimal display (use 1 if your unit displays 0, 10 for 0.0, or 100 for 0.00)	x	x
Input Value (r InP 1)		

Glass Rate and Glass Total Quick Start Worksheet

1. Before activating the chopper, make sure the pump pressure is set to zero and the fluid pressures have been relieved.

Note ***The Glass Rate and Glass Total are calibrated using the same procedure as the resin rate and total only on the glass meters. The glass rate and total can be setup a couple of different ways depending on how many strands of glass are being used. The total can include both strands of glass or calculated for one strand and then doubled to give the correct total.***

2. Setup the program parameters for the two displays as noted in the Meter Setup section.
3. Run the chopper for one minute, catching the glass in a bag.
4. Weigh the glass output to obtain your glass rate per minute.
5. Set the Glass Rate Display Value to 60 for minutes.

6. Activate the chopper and note the rate.
7. Adjust the Glass Rate Input Value so that the rate displayed equals the measurement taken.

Note ***Be sure not to change the chopper setting or you will need to take another measurement.***

8. Adjust the Scale Factor parameter so that the Glass Total displays the glass rate for every minute active.
9. Push the reset button and time operation for one minute.
10. Make sure the amount displayed equals the rate displayed.
11. Repeat this process until the unit displays the correct amount.

Note ***For more accurate metering, run the tests for a longer period of time.***

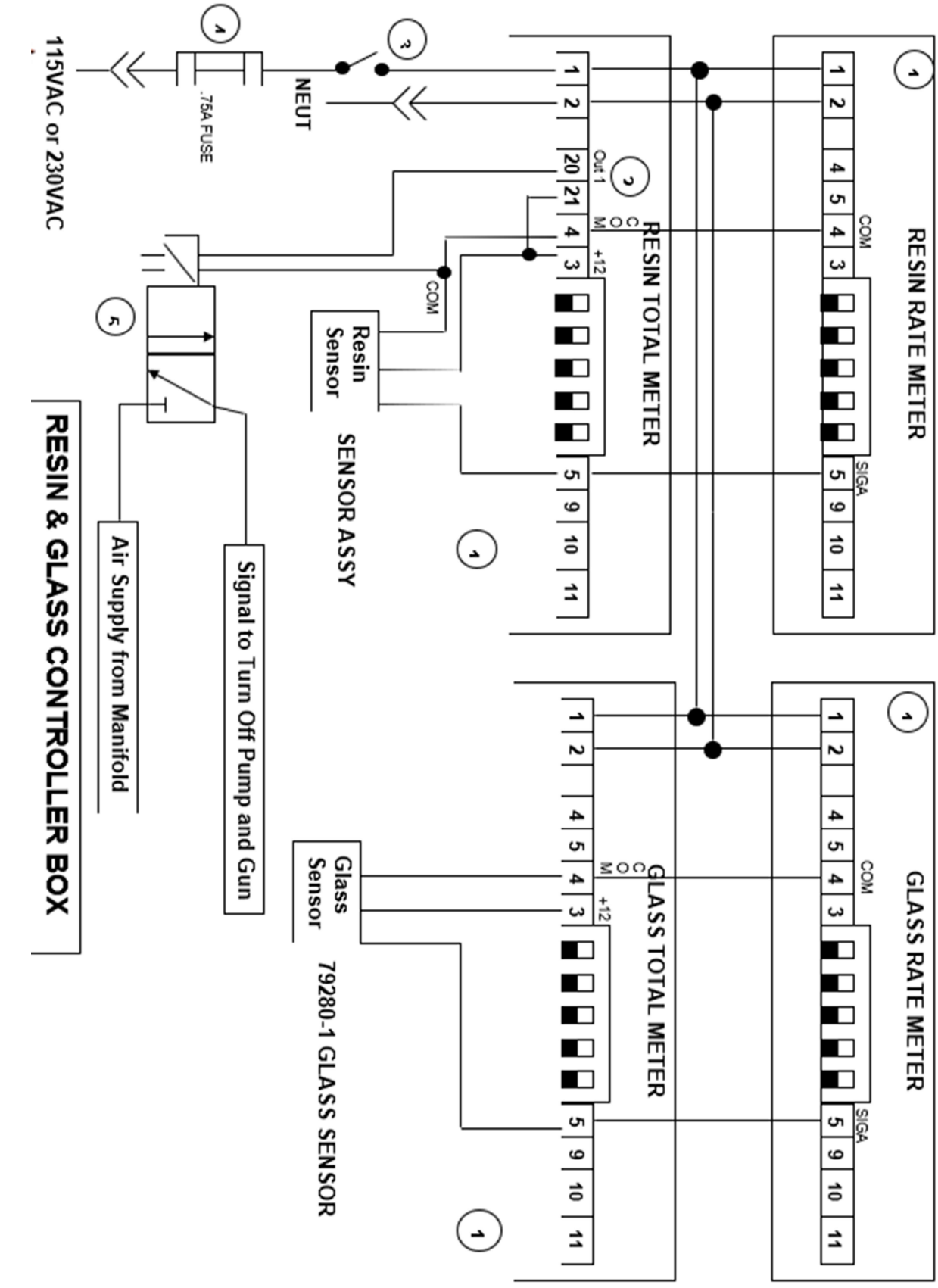
12. Periodically check the output weight to confirm the calibration and adjust as needed.

Parts Drawings

The following illustrations are included for reference when working on the unit or ordering parts.

- Control Box Connections
- System Connections
- Control Box Input Panel

Parts Drawings	
Part Number	**Description**
CSD-1000-APS	RESIN SENSOR ASSEMBLY - APS
CSD-1000-HV	RESIN SENSOR ASSEMBLY – HV
CSD-1000-UPS	RESIN SENSOR ASSEMBLY – UPS
CSD-1006	BASE PLATE – SENSOR MOUNTING
79280-1	GLASS SENSOR ASSEMBLY

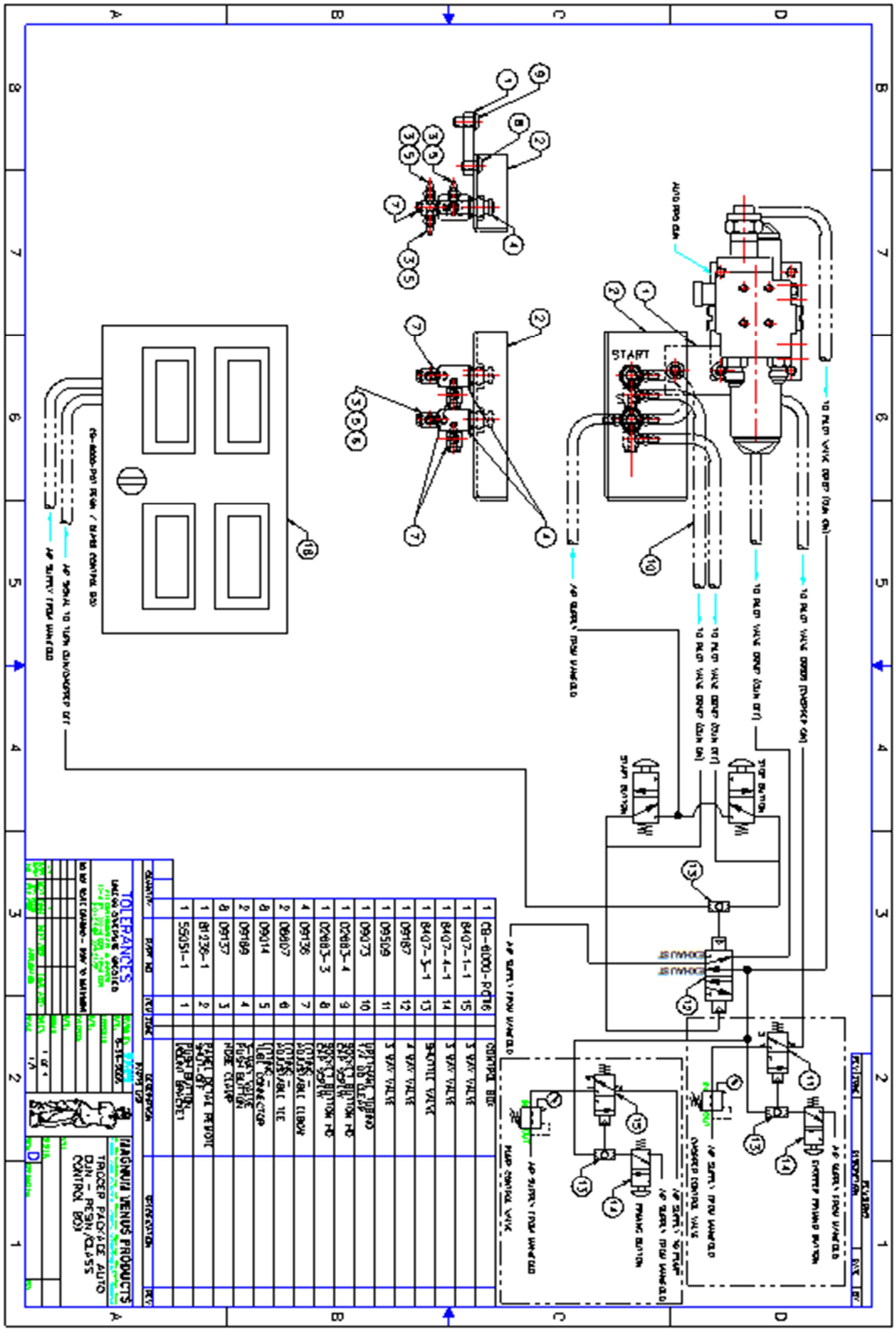

RESIN RATE METER
COM
SIGA
RESIN TOTAL METER
COM
Out 1
+12
COM
SIGA
GLASS RATE METER
COM
SIGA
GLASS TOTAL METER
COM
+12
SIGA
Resin Sensor
SENSOR ASSY
Glass Sensor
79280-1 GLASS SENSOR
NEUT
.75A FUSE
115VAC or 230VAC
Signal to Turn Off Pump and Gun
Air Supply from Manifold
RESIN & GLASS CONTROLLER BOX

RESIN / GLASS CONTROLLER BOX

PARTS LIST

ITEM	PART NO.	QTY.	DESCRIPTION
1	E-CRM-101	4	READ OUT
2	E-RM-101	1	RELAY MODUAL
3	06042	1	2 POSTION SWITCH
4	08332	1	.75 AMP FUSE
5	07254	1	SOLENOID VALVE

NOTE: Item number 2 is used with the special valve package.


START
MAGNUM VENUS PRODUCTS
TRACKER PACKAGE AUTO
DUN - REGN/GLASS
CONTROL BOX

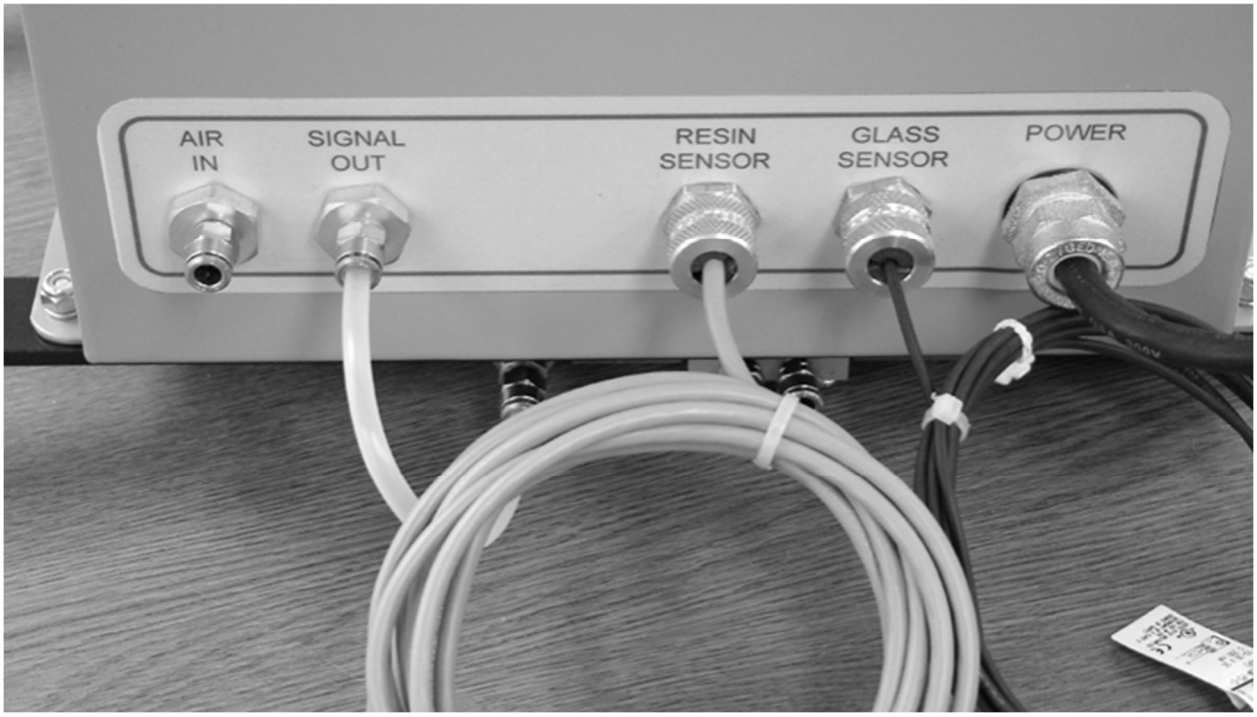
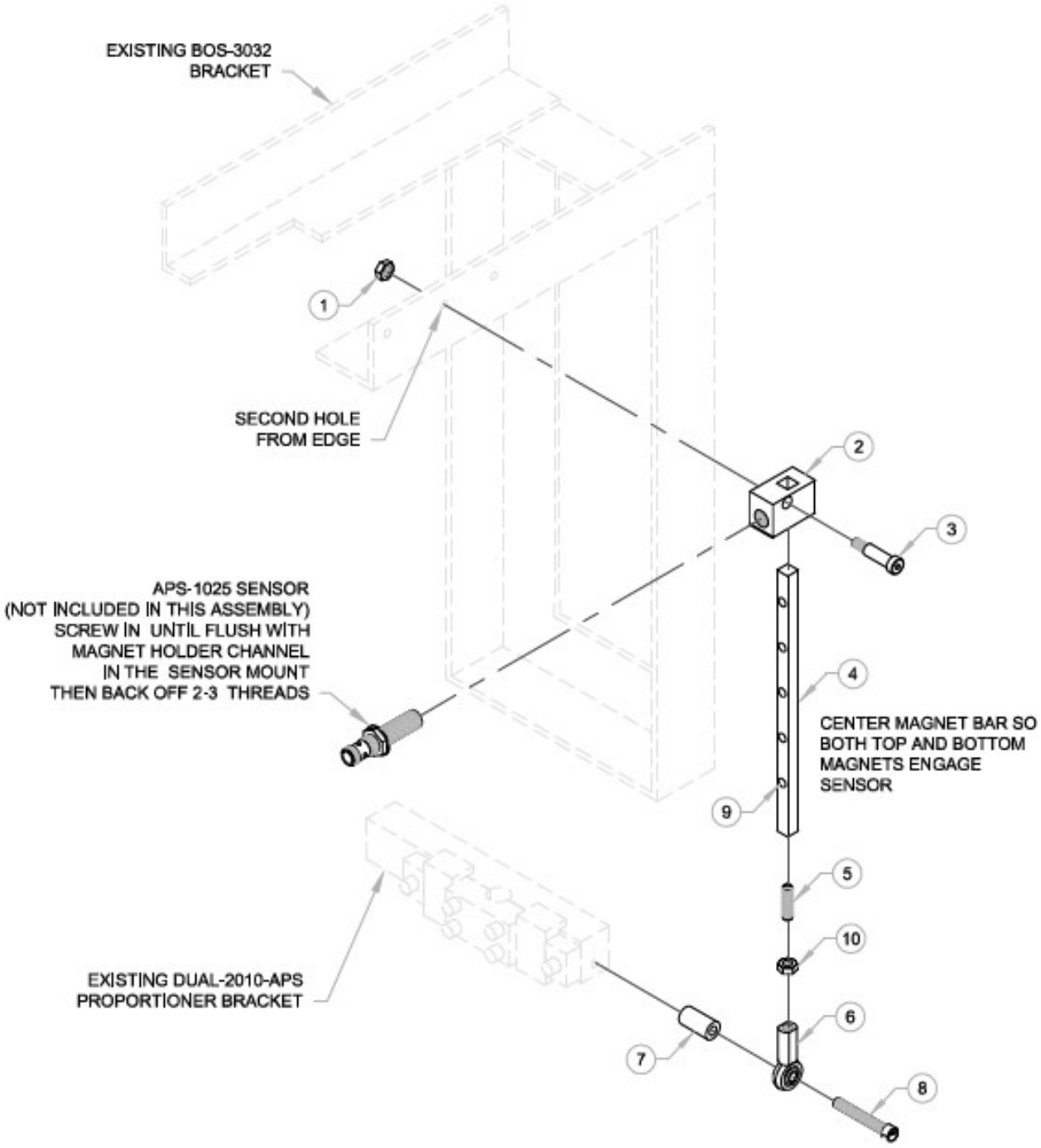


Figure 1. Control Box Input Panel



MAGNUM VENUS PLASTECH

Hardware Kit - APS Resin Sensor	CSD-1000-APS

REV. 08-25-06 BT2
REV. A - ITEM 1 WAS QTY. 2, ADDED ITEM 10 04-24-07 BT2
REV. C - ADDED BUBBLE I.D. FOR ITEM 9 12-09-09 BT2
REV. D - ADDED APS-1025 AND NOTE TO ILLUSTRATION, ITEM 3 WAS F-SB-05-14 02-07-13 BT2

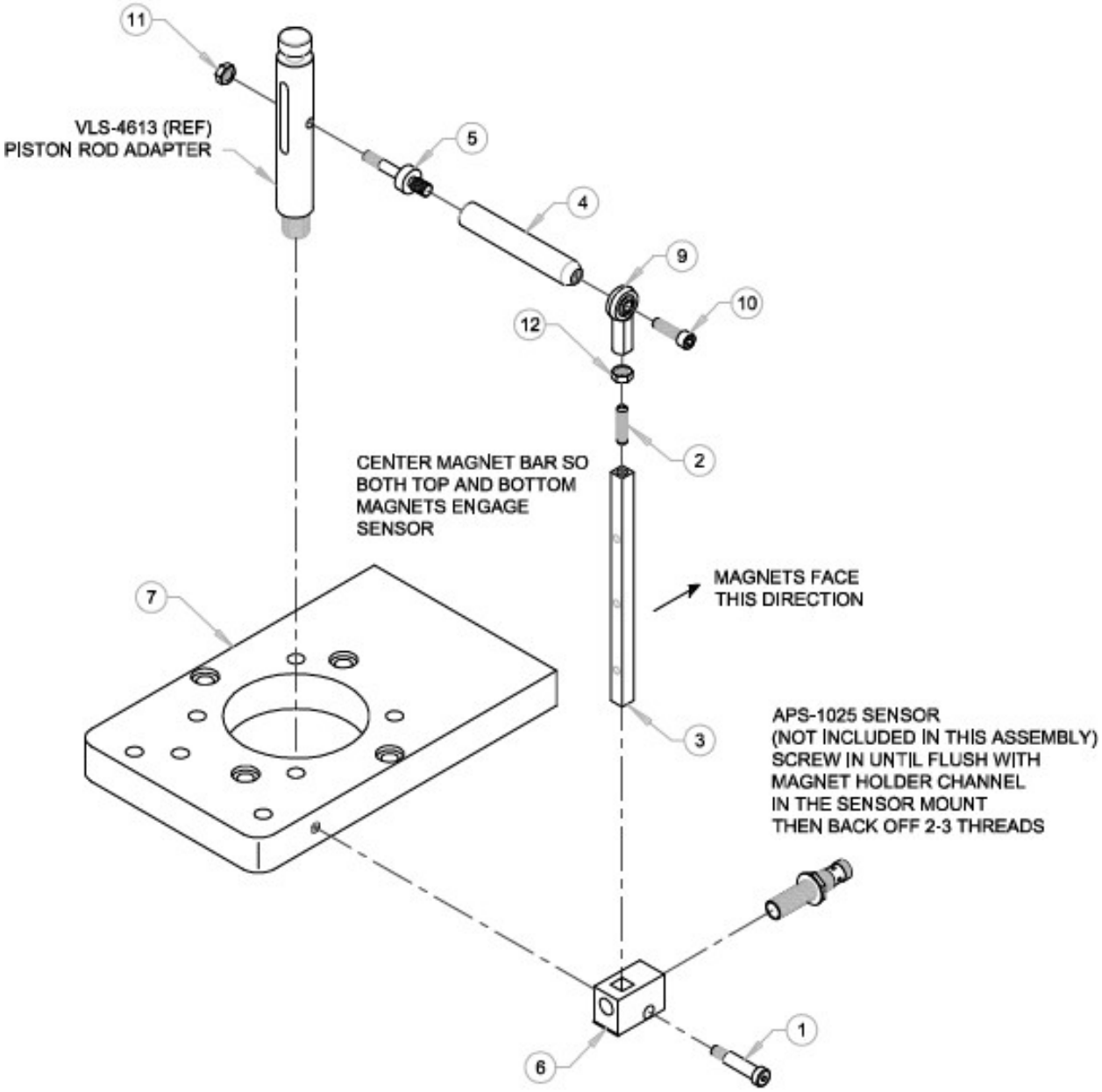
Hardware Kit - APS Resin Sensor CSD-1000-APS

PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1	F-JN-04C-SS	1	JAM NUT
2	CSD-1005-M12	1	SENSOR MOUNT
3	F-SB-05-14	1	SHOULDER BOLT
4	CSD-1002-APS	1	MAGNET HOLDER
5	7102-15-16	1	SET SCREW
6	CSD-1008	1	ROD END
7	CSD-1010	1	SPACER
8	F-CS-04C-28	1	CAP SCREW
10	F-HN-04F-SS	1	HEX NUT

OPTIONAL PARTS AND ASSEMBLIES

ITEM	PART NO.	QTY	DESCRIPTION
9	CSD-1007	5	MAGNET
	APS-1025		PROXIMITY SENSOR



MAGNUM VENUS PLASTECH

Hardware Kit - HVLS Resin Sensor	CSD-1000-HV

REV. 09-18-07 BT2
REV. A - ADDED APS-1025 AND NOTE TO ILLUSTRATION 02-07-13 BT2

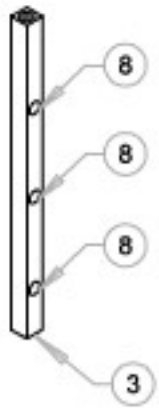
Hardware Kit - HVLS Resin Sensor CSD-1000-HV

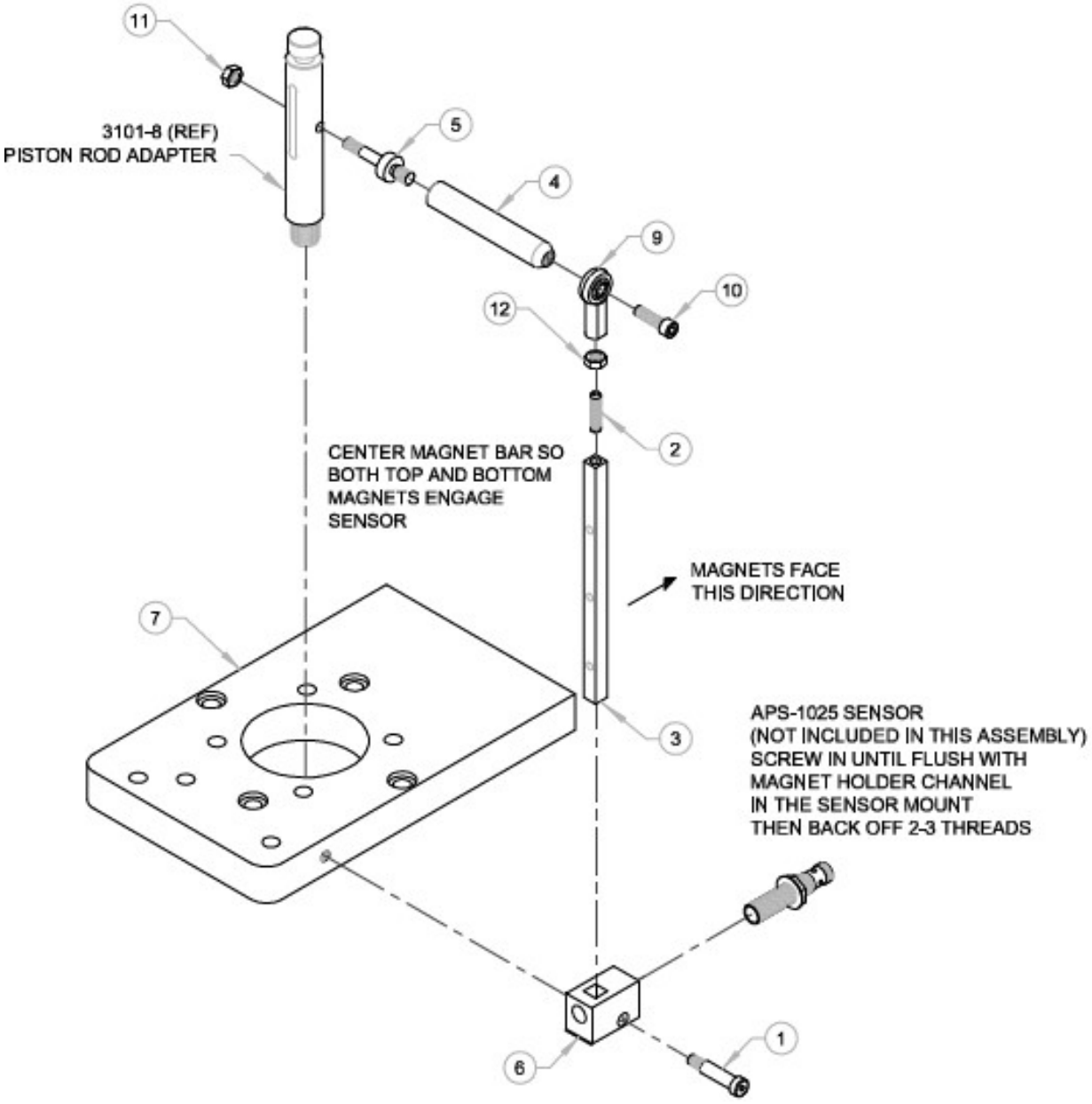
PARTS LIST

ITEM	PART NO.	QTY	DESCRIPTION
1	02670-8	1	SHOULDER BOLT
2	7102-15-16	1	SET SCREW
3	CSD-1002	1	ASSY - MAGNET HOLDER
4	CSD-1003-UPS	1	CONNECTING ROD
5	CSD-1004-UPS	1	PIN - CAT SENSOR MNT
6	CSD-1005-M12	1	SENSOR MOUNT
7	HVLS-1002-CSD	1	MODIFIED PUMP PLATE
9	CSD-1008	1	ROD END
10	F-CS-04C-12	1	SOCKET HEAD CAP SCREW
11	F-HN-04C	1	HEX NUT
12	F-HN-04F	1	HEX NUT

OPTIONAL PARTS AND ASSEMBLIES

ITEM	PART NO.	QTY	DESCRIPTION
6A	CSD-1005-M8	1	SENSOR MOUNT
8	CSD-1007	3	MAGNET
	APS-1025		PROXIMITY SENSOR





MAGNUM VENUS PLASTECH

Hardware Kit - UPS Resin Sensor	CSD-1000-UPS

REV. A - UPDATED KIT DESCRIPTION 06-21-06 BT2
REV. B - ADDED ITEM 8 TO ITEM 3, MOVED ITEM 8 TO OPTIONAL PARTS 06-29-06 JEM
REV. C - ADDED APS-1025 AND NOTE TO ILLUSTRATION 02-07-13 BT2

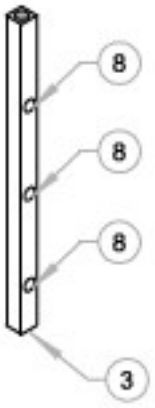
Hardware Kit – UPS Resin Sensor CSD-1000-UPS

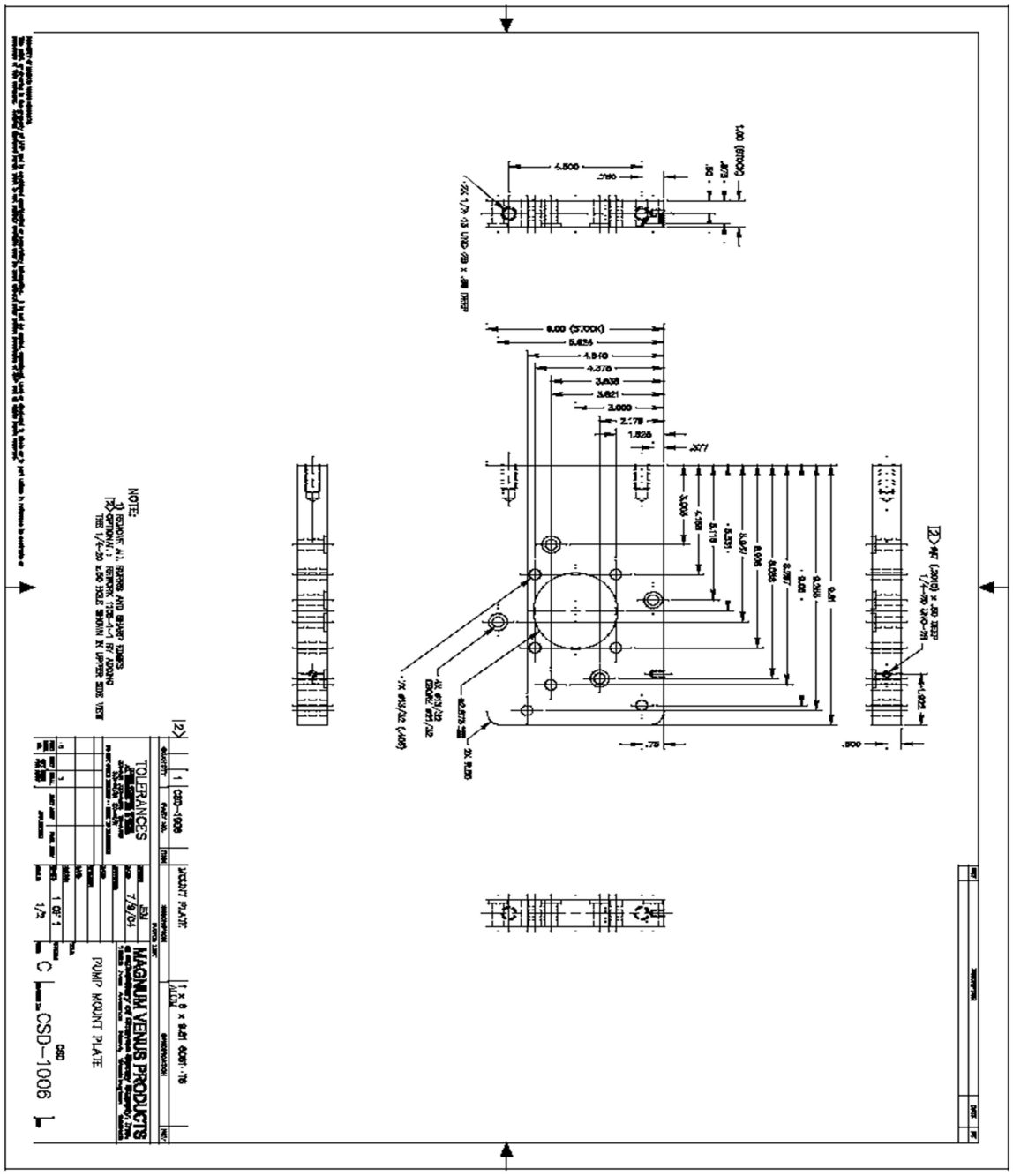
PARTS LIST

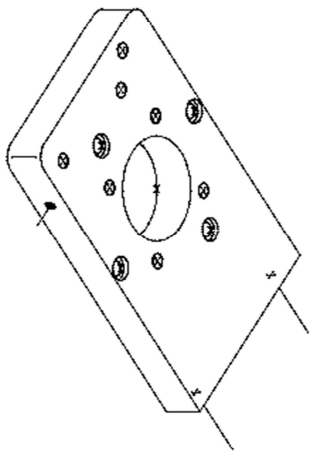
ITEM	PART NO.	QTY	DESCRIPTION
1	02670-8	1	SHOULDER BOLT
2	7102-15-16	1	SET SCREW
3	CSD-1002	1	ASSY - MAGNET HOLDER
4	CSD-1003-UPS	1	CONNECTING ROD
5	CSD-1004-UPS	1	PIN - CAT SENSOR MNT
6	CSD-1005-M12	1	SENSOR MOUNT
7	CSD-1006	1	MODIFIED PUMP PLATE
9	CSD-1008	1	ROD END
10	F-CS-04C-12	1	SOCKET HEAD CAP SCREW
11	F-HN-04C	1	HEX NUT
12	F-HN-04F	1	HEX NUT

OPTIONAL PARTS AND ASSEMBLIES

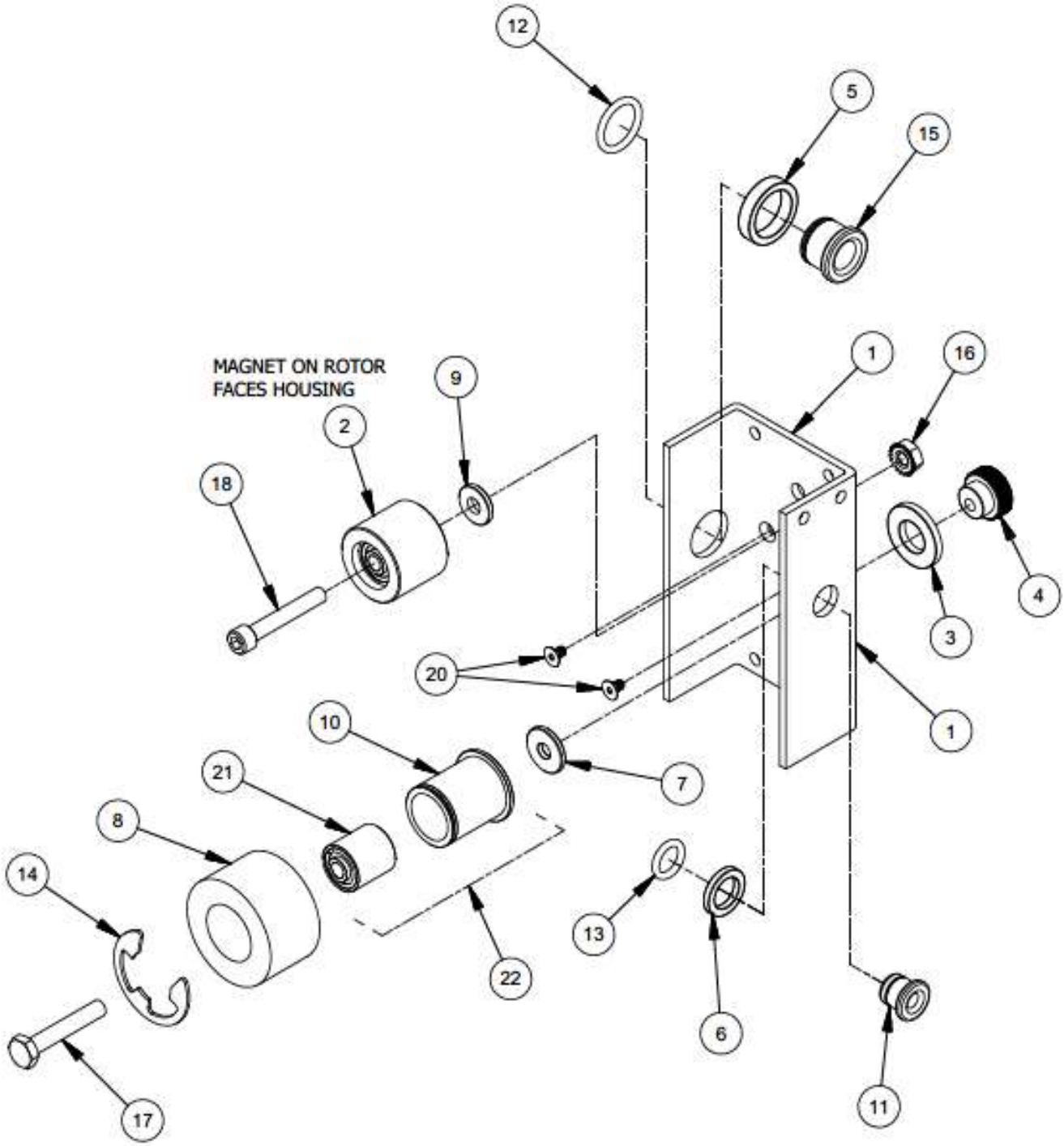
ITEM	PART NO.	QTY	DESCRIPTION
6A	CSD-1005-M8	1	SENSOR MOUNT
8	CSD-1007	3	MAGNET




MAGNUM VENUS PRODUCTS
PUMP MOUNT PLATE
CSD-1006
MOUNT PLATE
TOLERANCES
NOTE:



MAGNUM



MAGNUM VENUS PLASTECH

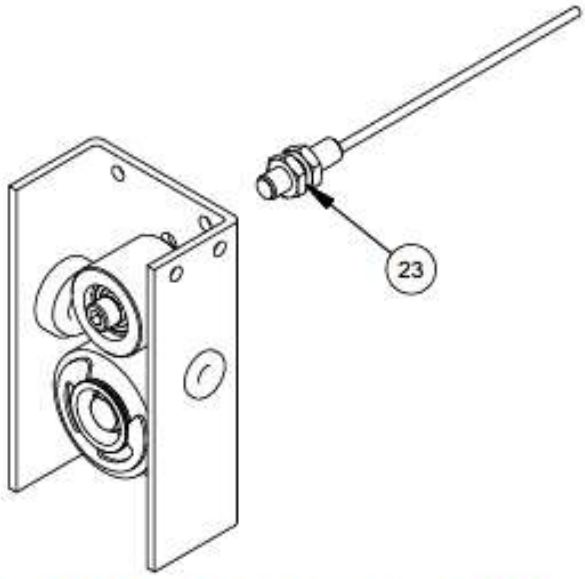
ROVING TENSIONER	79280-1

REV: A 03/30/2018 SHEET 1 / 2 11/19/2014

Parts List			
ITEM	PART NUMBER	QTY	DESCRIPTION
1	79281-1	1	HOUSING
2	79282-1	1	ROVING TENSIONER ROTOR
3	79283-1	1	ECCENTRIC NUT WASHER
4	5113-5-1	1	ECCENTRIC NUT
5	79284-1	1	1/2" CERAMIC GUIDE SPACER
6	79285-1	1	1/4" CERAMIC GUIDE SPACER
7	00201-1	1	SPACER - RUBBER ROLL
8	5103-6-1	1	CHOPPER RUBBER ROLL
9	5103-18-1	1	SPACER
10	5103-5-1	1	RUBBER ROLL MANDREL
11	04331	1	1/4" CERAMIC GUIDE
12	O-V-115	1	O-RING
13	O-V-111	1	O-RING
14	7205-3-31	1	E-RING
15	04332	1	1/2" CERAMIC GUIDE
16	F-KN-04C	1	KEP NUT
17	F-HB-04C-24	1	HEX BOLT
18	F-CS-04C-24	1	CAP SCREW
20	02780-2	2	SLOTTED MACHINE SCREW
21	RC-1018A	1	BEARING

OPTIONAL PARTS AND ASSEMBLIES AVAILABLE SEPARATELY

22	5103-5-01	MANDREL ASSEMBLY
23	06392	SENSOR



MAGNUM VENUS PLASTECH

ROVING TENSIONER	79280-1

REV: A 03/30/2018 SHEET 2 / 2 11/19/2014

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