

CB-5000 Control Box

Manual

This manual is applicable
to the following models:

- CB-5000



Rev. March 2019



CORPORATE HEADQUARTERS

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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 and cyclo-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 Hyrdrocarbon (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, oversprayed 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 CB-5000 Control Box is used to manually control the resin transfer molding (RTM) process. It includes a pneumatic countdown resin meter. Pulses are sent from the air motor to the meter, and each pulse subtracts one count. When a preset number is counted, the gun and pump turn off.

Note ***If the control box is used with an automatic gun, a trigger package will also need to be added to start the system.***

This manual provides information for the operation, maintenance, and simple repair of the MVP CB-5000 Control Box. The following procedures are included:

- Step-by-step set-up and connecting instructions
- Step-by-step operation 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.

Controls

MVP's CB-5000 Control Box provides the following controls:

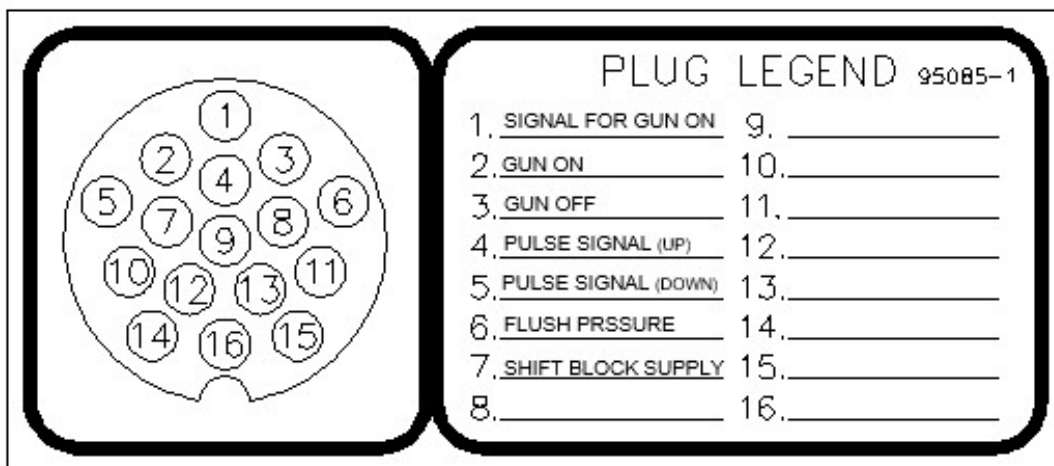
- ☐ PUMP PRESSURE
- ☐ SOLVENT FLUSH PRESSURE
- ☐ EMERGENCY STOP/PAUSE
- ☐ PNEUMATIC RESIN METER

Some units also include:

- ☐ GUN AND PURGE CONTROLS
- ☐ VACUUM AND RTM VALVE CONTROLS

Connecting Control Box

Below is a diagram of the signal connection for the CB-5000-PRV RTM Control Box:



It is best practice to organize and plan the routing of the tubing as it is installed to make the installation easier and neater. Use plastic ties or tape to pair similar tubing and control the tubing bundle.

Disassemble the Plug

1. Remove the four screws holding the outer shell of the plug together.
2. Remove the inner guard from the plug shell.

Note ***Remember to put the tubing through the inner guard before connecting it to the barb fitting.***

Connect Tubing

Gun On Input Signal

3. Mark both ends of the poly tube appropriately and put one end through the inner guard.
4. Slide the hose clamp onto the tube and then attach it to the #1 barb fitting.
5. Attach the other end of the tube to the source signal for the gun.

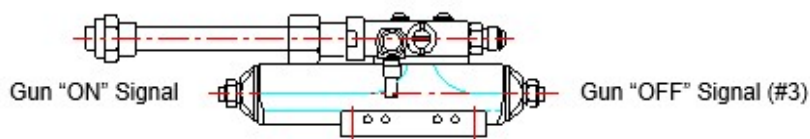
Note ***This is an input to the control box from a gun source. It could be a remote trigger setup or the gun handle.***

Solvent Tank Pressure

6. Mark both ends of the poly tube appropriately and put one end through the inner guard.
7. Slide the hose clamp onto the tube and then attach it to the #6 barb fitting.
8. Attach the other end of the poly tube to the flush tank on the side marked AIR.

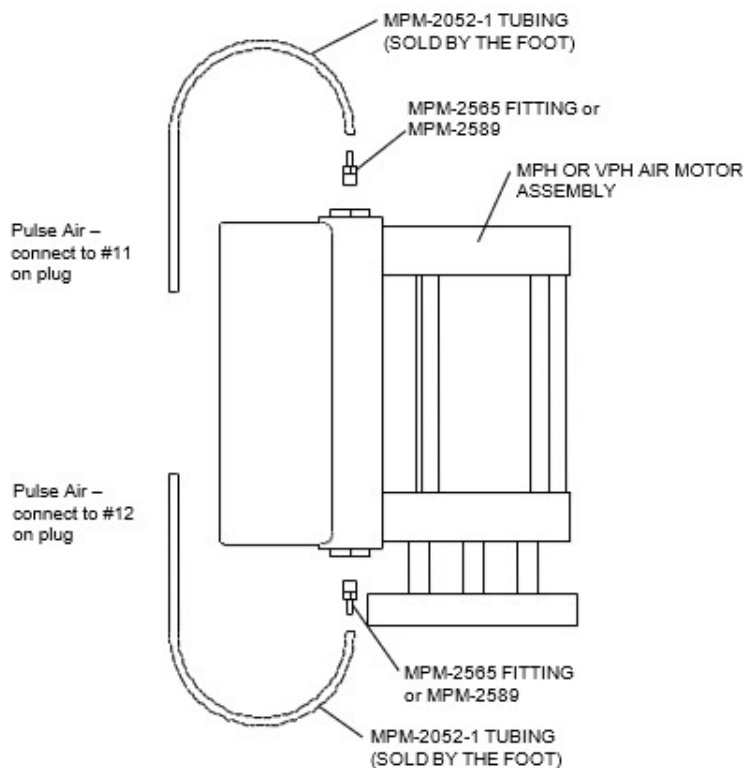
Gun Control

9. Mark both ends of the poly tube appropriately and put one end through the inner guard.
10. Slide the hose clamp onto the tube and then attach it to the #2 barb fitting (Gun ON signal).
11. Attach the other end into the fitting located on the front of the gun.
12. Mark both ends of the poly tube appropriately and put one end through the inner guard.
13. Slide the hose clamp onto the tube and then attach it to the #3 barb fitting (Gun OFF signal).
14. Attach the other end into the fitting located on the back of the gun.



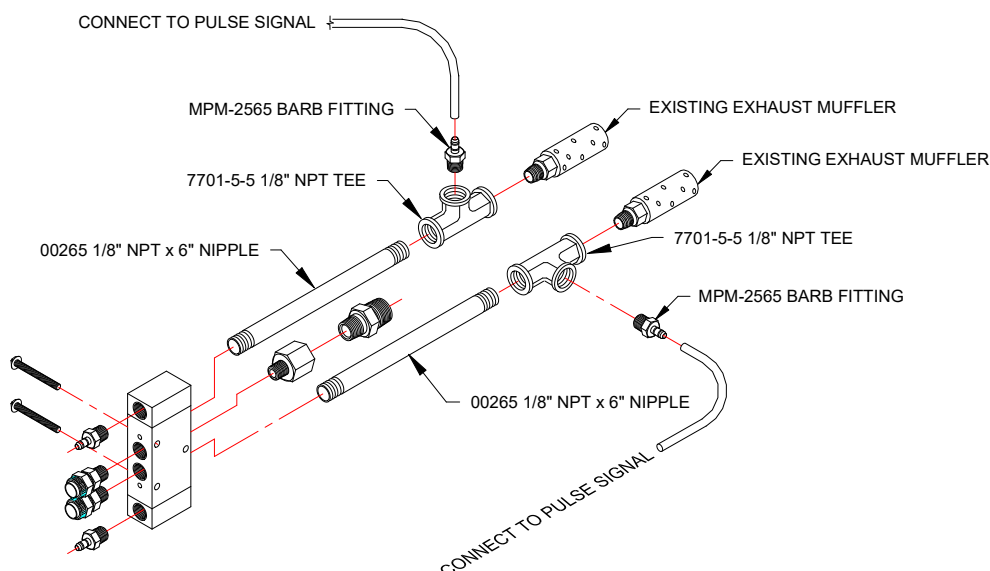
Pulse Signals

15. Mark both ends of some urethane tubing appropriately and put one end through the inner guard.
16. Attach it to the #4 barb fitting.
17. Attach the other end into the fitting located at the top of the air motor valve block.
18. Mark both ends of some urethane tubing appropriately and put one end through the inner guard.
19. Attach it to the #5 barb fitting.
20. Attach the other end into the fitting located at the bottom of the air motor valve block.



Shift Block Supply

21. Mark both ends of the poly tubing appropriately and put one end through the inner guard.
22. Attach it to the #7 barb fitting (Shift Block Supply).
23. Attach the other end into the fitting located on the side of the air motor valve block.



Connector Plug Assembly

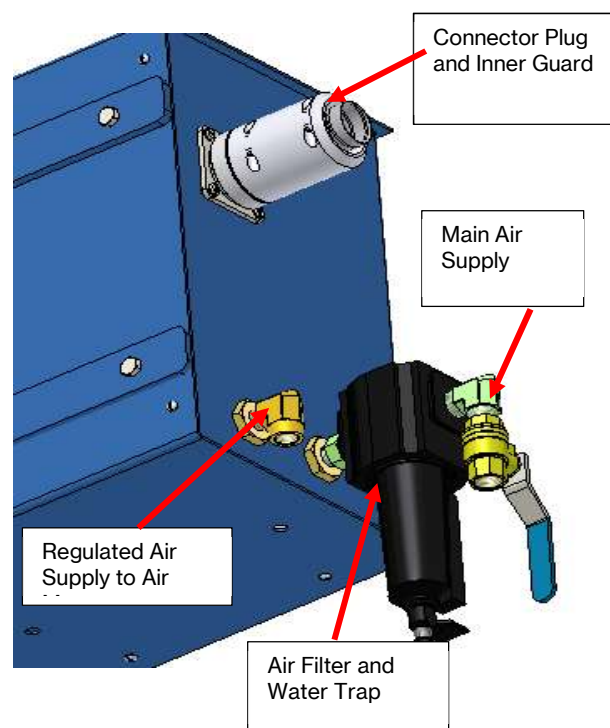
24. Install the two shell halves around the inner guard and plug base.
25. Install the four screws and nuts that hold the plug together.

Other Connections

26. Connect the main air supply to the control box supply valve.

Note *Supplied air should be clean and dry, with a minimum 8 CFM at 100 psi (7 bar).*

27. Connect the regulated pump air supply to the air motor inlet.



Setting Counter

The meter will take counts from a sensor assembly attached to the pump assembly. The sensor will send the meter a given number of counts per stroke depending on which sensor is installed. The more counts per stroke provided, the more accurate the metering will be.

Determine Your Preset Count

The preset count allows greater control over the amount of resin used for jobs. The meter will shut off the pump when the preset count is reached and return the display to zero to prepare for the next job.

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.

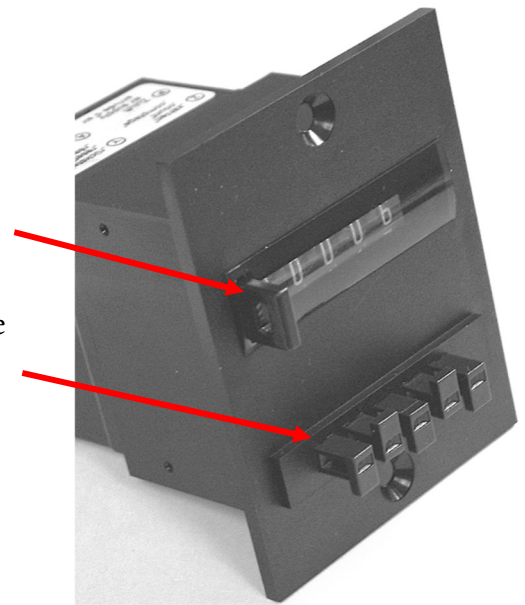
$$\frac{\text{Desired Weight}}{\text{Sample Weight}} = X$$

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

Set Preset Count

6. Press and hold the reset button on the front panel.
7. While holding in the reset button, push the increment button under the desired column to increase it by one count each time the button is pressed.
8. Release the button once the desired number is displayed.

Note ***Any time you press the reset button, the meter is reset to the original preset number.***



Operating Control Box

1. Refer to the he operations manual for your system for proper start-up and operation.
2. When the preset count is reached during the injection operation, the system will stop.
3. Reset the counter and mold and inject the next part, or follow the shut-down procedure for your system.

Emergency Stop Button

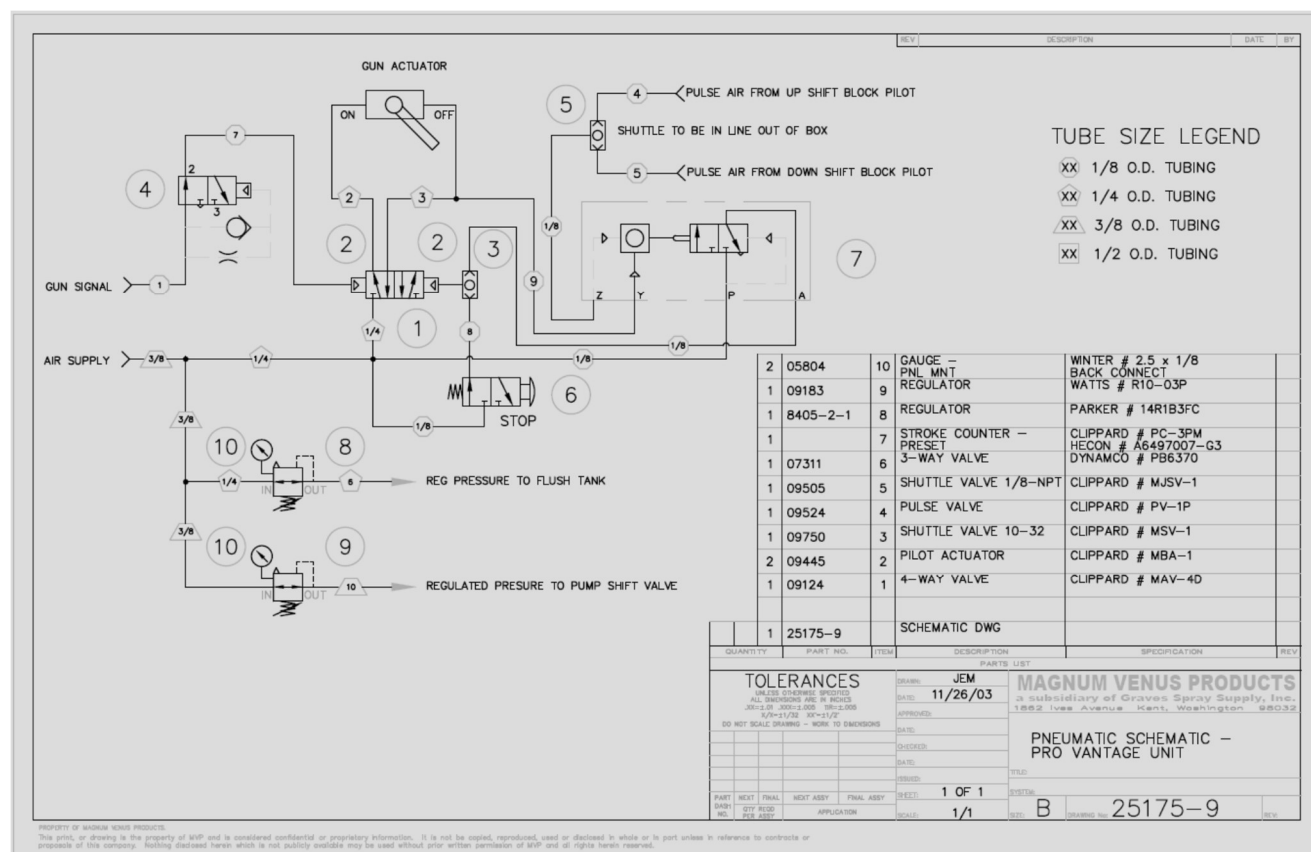
- If necessary, you may press the emergency stop button on the control box to stop the pump.
- To restart the system, pull out the emergency stop and restart the gun according to your system's procedure.

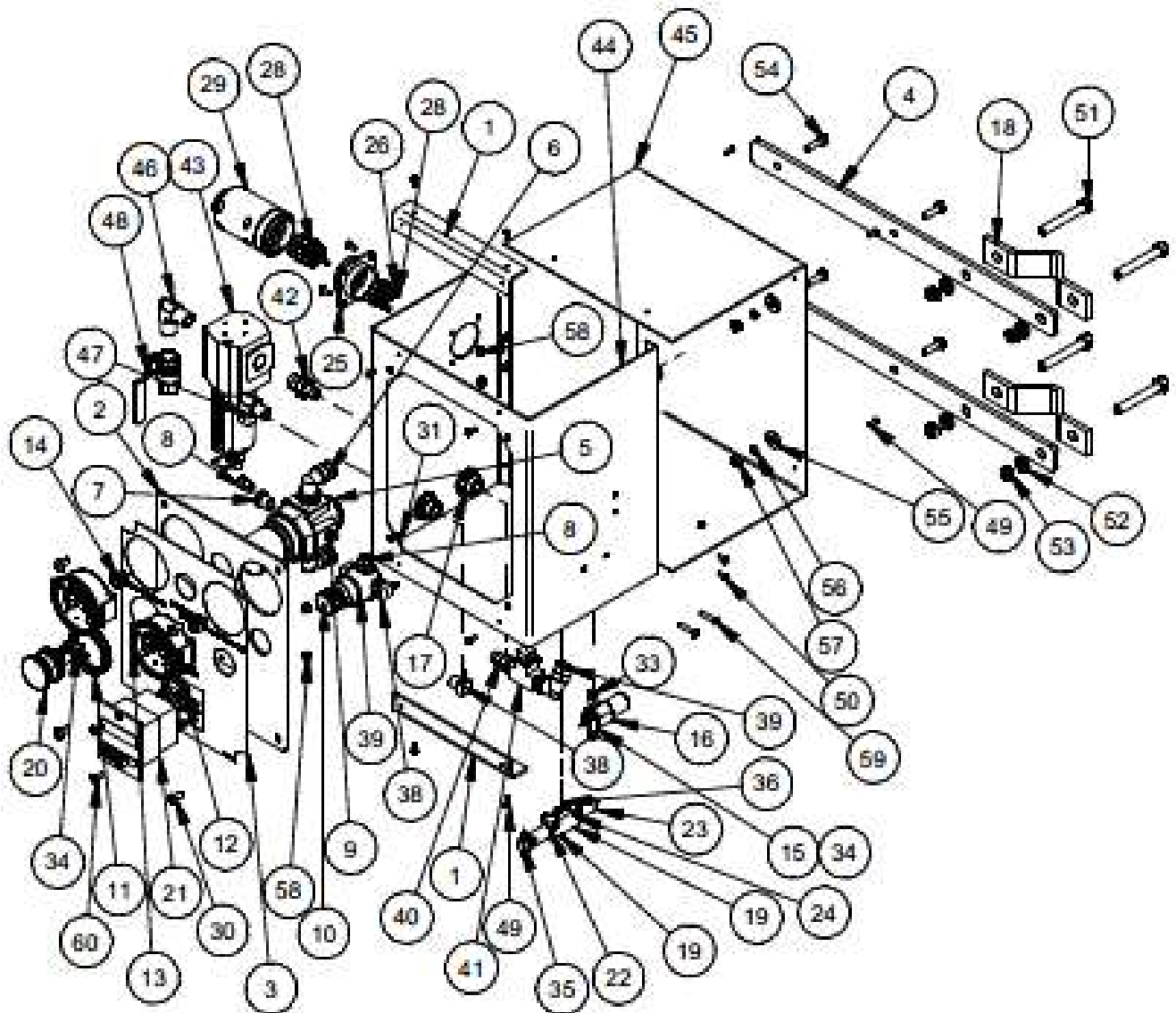
Note *It may take a second for the pump to stop travelling and a count might register on the counter. Be aware that you will need to monitor the amount of material injected into the mold and correct for this situation in the event of an emergency stop. This condition can also occur if the gun is turned off during injection.*

Parts Drawings

The following parts breakdowns are included for reference:

Parts Drawings	
Part Number	Description
CB-5000-PRV	RTM Control Box
CB-5000-PRX	PRX Control Box
CB-5000-PRX-P	PRX-P Control Box





MAGNUM VENUS PRODUCTS

ASSY - CONTROL BOX

CB-5000-PRV

REV:

45	CB-5001B-PRV	1	CONTROL BOX BACK
44	CB-5001A-PRV	1	
43	NOF-06 FILTER	1	
42	PF-HN-06-04	1	HEX NIPPLE
41	00446-1	1	.25 TEE
40	PF-HN-04	1	HEX NIPPLE
39	06968	1	SWIVEL ELBOW
38	MPM-2585	4	MALE ELBOW
37	PF-AP-02-SS	1	PIPE PLUG
36	7701-6-7	5	BARB FITTING
35	09750	2	SHUTTLE VALVE
34	08807	1	SWIVEL TEE
33	08801	11	1/16 barb to 10-32 connector
32	05500-1	1	PIPE THREAD SEAL
31	F-KN-04C	4	KEP NUT
30	F-BHCS-04-8	4	Hex Socket Button HeadCapScrew
29	07642 MULTI	1	MULTI PLUG
28	07645	11	TERMINAL PLUG - 1/4 TUBE
26	07647	3	TERMINAL SOCKET
25	07643	1	8 PLUG MULTI SOCKET
24	F-FW-03	4	FLAT WASHER
23	9807-1-1	2	PILOT OPERATOR
22	09987	2	STAR WASHER
21	06017	1	PNEUMATIC COUNTER
20	07311	1	PUSH BUTTON
19	09187	1	4-WAY VALVE - DUAL PILOT
18	COLUMN CLAMP	2	COLUMN CLAMP
17	7701-3-19	2	BULKHEAD FITTING
16	09524	1	PULSE VALVE
15	09068	1	ANGEL MNT BRKT - MINI VALVE
14	08185	2	FITTING
13	05804	2	PNL MNT GAUGE
12	08765	1	PANEL NUT
11	NOR-06-PN	1	REG PNL NUT
10	8405-2-1	1	REGULATOR
9	PF-AP-04	1	ALLEN PLUG
8	08804	2	ELBOW
7	PF-RB-04-02	1	PIPE BUSHING
6	06561	2	1/2 SWIVEL ELBOW
5	8405-1-1	1	1/2" REGULATOR
4	CB-5003-PRX	2	MOUNTING BRACKET
3	CB-5004-PRV	1	PANEL DECAL
2	CB-5002-PRV	1	CONTROL PANEL
1	CB-5005-PRX	2	ANGLE BRACKET
ITEM	PART NUMBER	QTY	DESCRIPTION
Parts List			

MAGNUM VENUS PRODUCTS

ASSY - CONTROL BOX

CB-5000-PRV

REV:

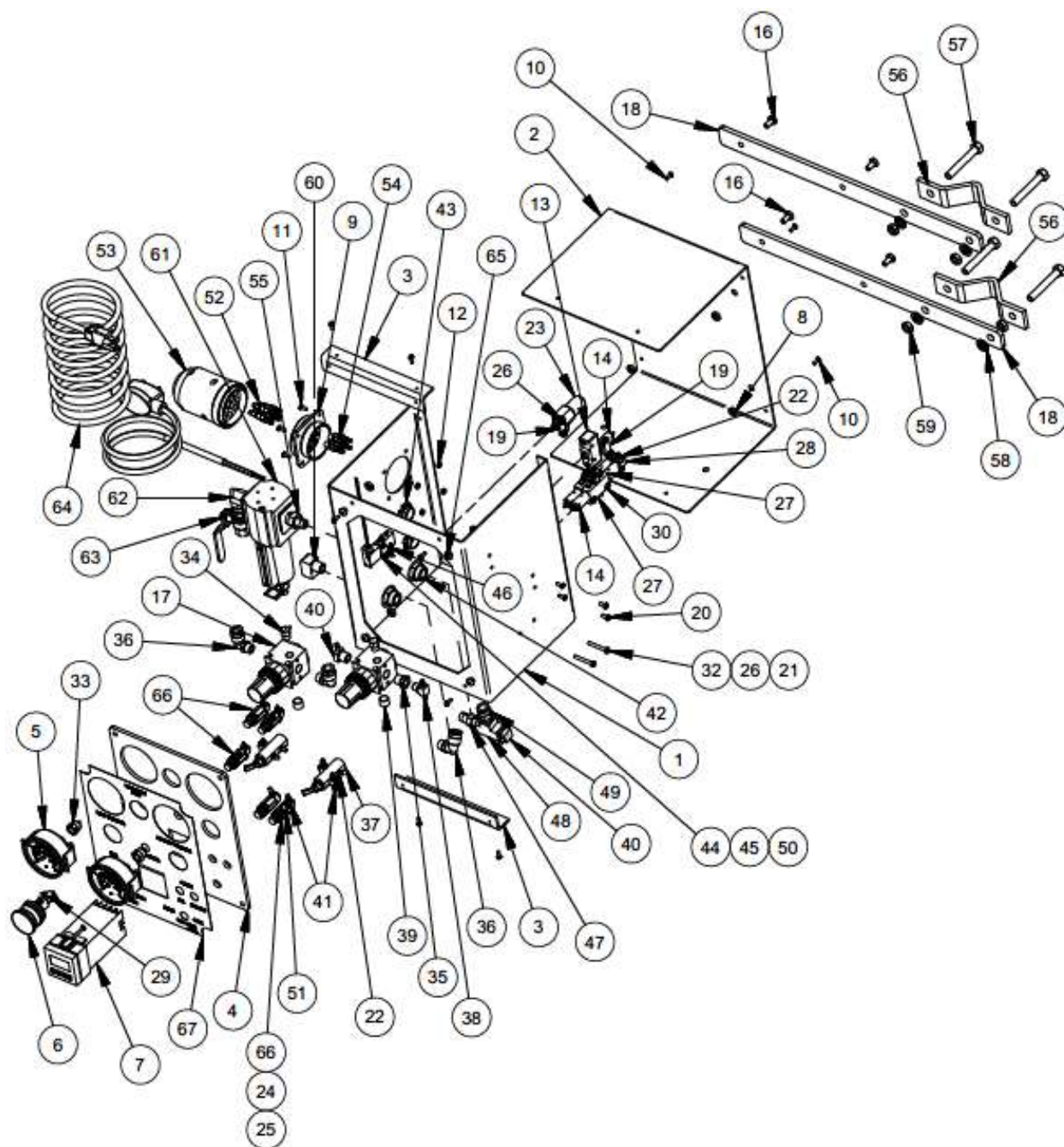
60	F-FHCS-1024-08	2	FLAT HEAD COUNTER SUNK SCREW
59	F-PH-832-14	2	PAN HEAD SCREW
58	F-KN-832	10	KEP NUT
57	F-HN-04C	4	PLATED HEX NUT
56	F-SW-04	4	LOCK WASHER
55	F-FW-04	4	FLAT WASHER
54	F-HB-04C-14	4	1/4 HEX BOLT
53	F-HN-06C	4	HEX NUT
52	F-SW-06	4	LOCK WASHER
51	F-HB-06C-40-GRS	4	HEX CAP SCREW
50	F-PH-832-06	6	PAN HEAD SCREW
49	F- STS-632-06	12	SELF TAPPING SCREW
48	BV-6F6F-LP	1	BALL VALVE
47	PF-SE-04	1	STREET ELBOW
46	PF-ME-06	1	MALE ELBOW
ITEM	PART NUMBER	QTY	DESCRIPTION
Parts List			

MAGNUM VENUS PRODUCTS

ASSY - CONTROL BOX

CB-5000-PRV

REV:



MAGNUM VENUS PRODUCTS

PRX CONTROL BOX ASSEMBLY

CB-5000-PRX

REV:A 07/14/2016

Parts List			
ITEM	PART NUMBER	QTY	DESCRIPTION
1	CB-5001A-PRX	1	PRIMAX CONTROL BOX FRONT
2	CB-5001B-PRX	1	PRIMAX CONTROL BOX
3	CB-5005-PRX	2	ANGLE BRACKET
4	CB-5002-PRX	1	CONTROL PANEL FACE
5	05804	2	PANEL MOUNT GAUGE
6	07311	1	PUSH BUTTON
7	9811-1-1	1	PRESET COUNTER
8	F-HN-04C	8	HEX NUT
9	07641	1	MULTI SOCKET
10	F-STS-632-06	12	SELF TAPPING SCREW
11	F-PH-632-06	6	PAN HEAD SCREW
12	F-HN-632	4	HEX NUT
13	9807-2-1	1	PRESSURE SWITCH
14	9807-1-1	5	PILOT OPERATOR
16	F-HB-04C-08	4	HEX BOLT
17	07414	2	REGULATOR
18	CB-5003-PRX	2	MOUNT BAR
19	09068	2	ANGLE MOUNT BRACKET
20	F-PH-832-06	2	PAN HEAD SCREW
21	F-KN-832	4	KEP NUT
22	08801	27	STRAIGHT CONNECTOR
23	09524	1	PULSE VALVE
24	INCLUDED W/ VALVE	1	NUT
25	INCLUDED W/ VALVE	1	LOCK WASHER
26	F-HN-832	4	HEX NUT
27	09187	2	4-WAY VALVE - DUAL PILOT
28	09750	3	SHUTTLE VALVE
29	08807	10	SWIVEL TEE
30	F-FW-03	2	FLAT WASHER
31	7701-6-7	15	BARB FITTING
32	F-PH-832-20	2	PAN HEAD SCREW
33	08185	2	FITTING
34	08804	2	ELBOW
35	PF-RB-04-02	1	PIPE BUSHING
36	07234	3	MALE POLY ELBOW
37	09852	2	4-WAY TOGGLE VALVE
38	00416	1	BRANCH TEE
39	PF-AP-04	2	ALLEN PLUG
40	MPM-2585	2	MALE ELBOW
41	7701-6-3	4	10-32 BARBED FITTING
42	7701-3-19	2	BULKHEAD FITTING
43	09575	2	BULKHEAD FITTING STRAIN RELIEF

MAGNUM VENUS PRODUCTS

PRX CONTROL BOX ASSEMBLY

CB-5000-PRX

REV:A 07/14/2016

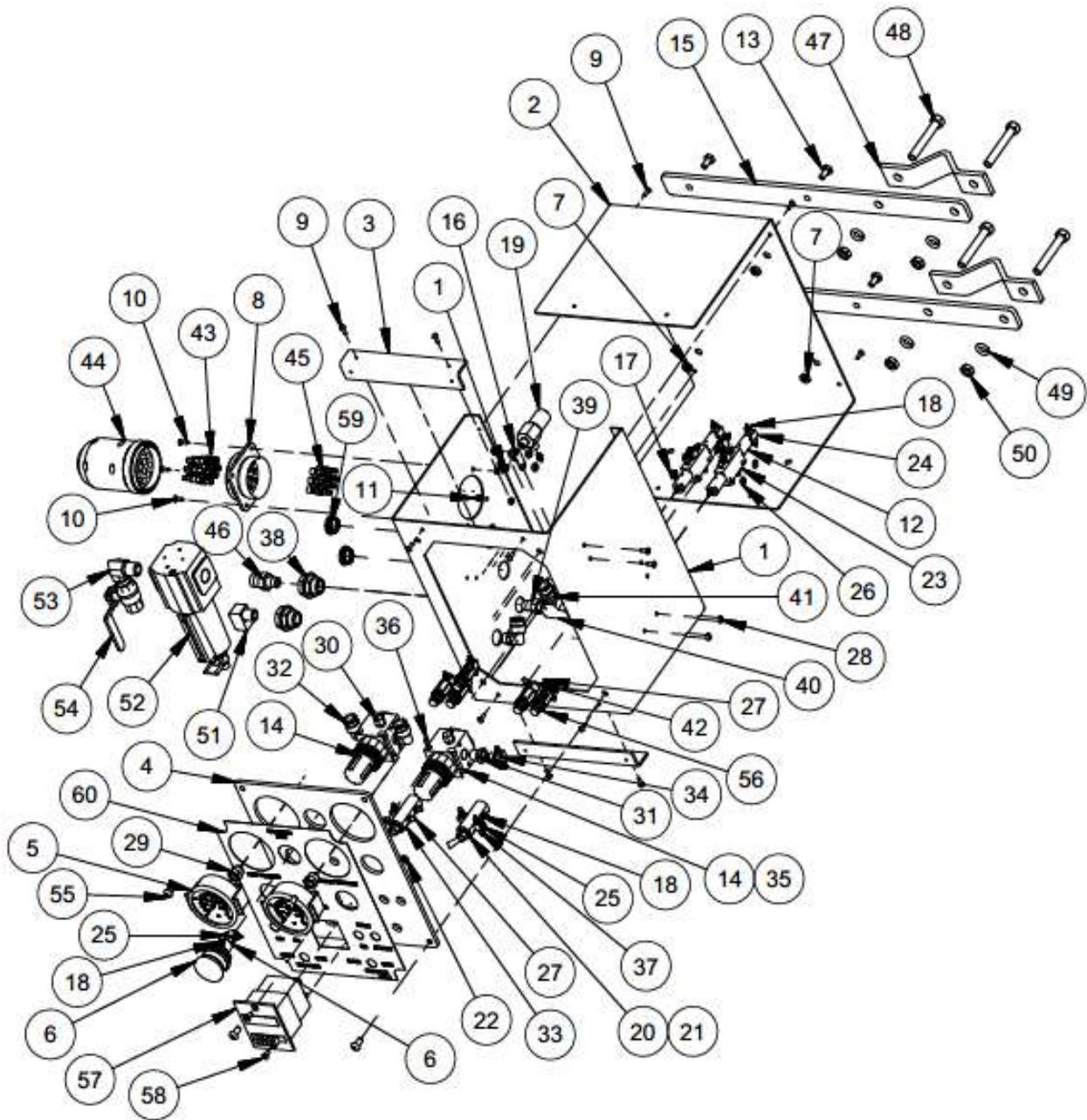
Parts List			
ITEM	PART NUMBER	QTY	DESCRIPTION
44	07254	1	SOLENOID VALVE
45	F-PH-440-10	2	PAN HEAD SCREW
46	F-KN-440	2	KEP NUT
47	PF-HN-04	1	HEX NIPPLE
48	00446	1	1/4 TEE
49	07225	1	MALE CONNECTOR
50	TRU-1021	2	SWIVEL ELBOW FITTING
51	01659	2	CHECK VALVE
52	07644	8	TERMINAL PLUG - 1/4 TUBE
53	07640	1	MULTI-PLUG
54	07645	8	TERMINAL SOCKET - 1/4 TUBE
55	PF-HN-06-04	1	HEX NIPPLE
56	COL-CLMP	2	COLUMN CLAMP
57	F-HB-06C-40-GR5	4	HEX BOLT
58	F-SW-06	4	LOCK WASHER
59	F-HN-06C	4	HEX NUT
60	PF-SE-04-BR	1	MALE ELBOW
61	NOF-06	1	AIR FILTER
62	PF-ME-06	1	MALE ELBOW
63	BV-6F6F-LP-REL	1	BALL VALVE
64	09613	1	CORD SET
65	F-BHCS-04C-08	4	BUTTON HEAD CAP SCREW
66	09169	5	3-WAY VALVE
67	CB-5004-PRX	1	PANEL DECAL

MAGNUM VENUS PRODUCTS

PRX CONTROL BOX ASSEMBLY

CB-5000-PRX

REV:A 07/14/2016



MAGNUM VENUS PRODUCTS

PRX-P CONTROL BOX ASSEMBLY

CB-5000-PRX-P

REV:A 07/14/2016

Parts List			
ITEM	PART NUMBER	QTY	DESCRIPTION
1	CB-5001A-PRX	1	PRIMAX CONTORL BOX FRONT
2	CB-5001B-PRX	1	PRIMAX CONTROL BOX
3	CB-5005-PRX	2	ANGLE BRACKET
4	CB-5002-PRX	1	CONTROL PANEL FACE
5	05804	2	PANEL MOUNT GAUGE
6	07311	1	PUSH BUTTON
7	F-HN-04C	8	HEX NUT
8	07641	1	MULTI SOCKET
9	F- STS-632-06	12	SELF TAPPING SCREW
10	F-PH-632-06	6	PAN HEAD SCREW
11	F-HN-632	4	HEX NUT
12	9807-1-1	4	PILOT OPERATOR
13	F-HB-04C-08	4	HEX BOLT
14	07414	2	REGULATOR
15	CB-5003-PRX	2	MOUNT BAR
16	09068	1	ANGLE MOUNT BRACKET
17	F-KN-832	2	KEP NUT
18	08801	24	STRAIGHT CONNECTOR
19	09524	1	PULSE VALVE
22	F-HN-832	6	HEX NUT
23	09187	2	4-WAY VALVE - DUAL PILOT
24	09750	3	SHUTTLE VALVE
25	08807	10	SWIVEL TEE
26	F-FW-03	2	FLAT WASHER
27	7701-6-7	15	BARB FITTING
28	F-PH-832-20	2	PAN HEAD SCREW
29	08185	2	FITTING
30	08804	2	ELBOW
31	PF-RB-04-02	1	PIPE BUSHING
32	07234	3	MALE POLY ELBOW
33	09852	2	4-WAY TOGGLE VALVE
34	00416	1	BRANCH TEE
35	PF-AP-04	2	ALLEN PLUG
36	MPM-2585	2	MALE ELBOW
37	7701-6-3	4	10-32 BARBED FITTING
38	7701-3-19	2	BULKHEAD FITTING
39	PF-HN-04	1	HEX NIPPLE
40	00446	1	1/4 TEE
41	07225	1	MALE CONNECTOR
42	TRU-1021	1	SWIVEL ELBOW FITTING
43	07644	12	TERMINAL PLUG - 1/4 TUBE

MAGNUM VENUS PRODUCTS

PRX-P CONTROL BOX ASSEMBLY

CB-5000-PRX-P

REV:A 07/14/2016

Parts List			
ITEM	PART NUMBER	QTY	DESCRIPTION
44	07640	1	MULTI-PLUG
45	07645	12	TERMINAL SOCKET - 1/4 TUBE
46	PF-HN-06-04	1	HEX NIPPLE
47	COL-CLMP	2	COLUMN CLAMP
48	F-HB-06C-40-GR5	4	HEX BOLT
49	F-SW-06	4	LOCK WASHER
50	F-HN-06C	4	HEX NUT
51	PF-SE-04-BR	1	MALE ELBOW
52	NOF-06	1	AIR FILTER
53	PF-ME-06	1	MALE ELBOW
54	BV-6F6F-LP-REL	1	BALL VALVE
55	F-BHCS-04C-08	4	BUTTON HEAD CAP SCREW
56	09169	5	3-WAY VALVE
57	06017	1	PNEUMATIC COUNTER
58	F-FHCS-832-6	2	FLAT HEAD SCREW
59	00872	2	3/4 " HOLE PLUG
60	CB-5004-PRX	1	PANEL DECAL

MAGNUM VENUS PRODUCTS

PRX-P CONTROL BOX ASSEMBLY

CB-5000-PRX-P

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