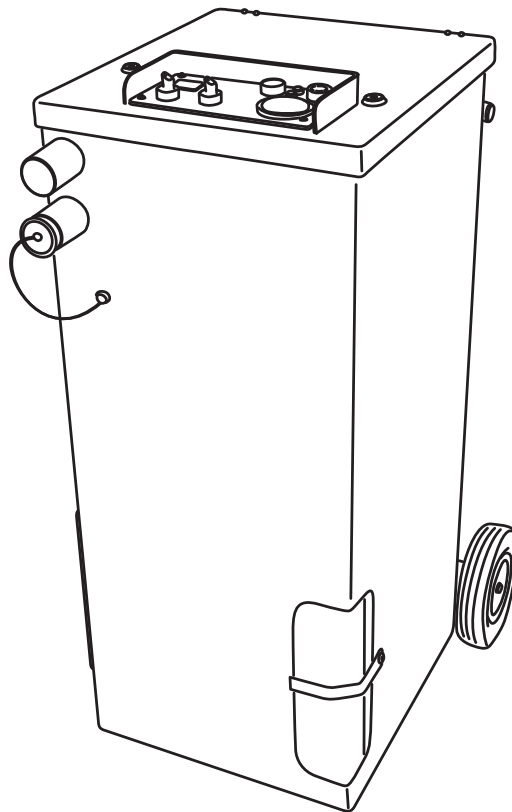




OWNER'S MANUAL & OPERATING INSTRUCTIONS

Original Instructions



575 Volt ProCube™ Portable Fume Extractor

Model Number: HVP-120-575
for Serial No. 25760 and higher

Manufactured by: RoboVent Product Group, Inc., 37900 Mound Rd, Sterling Heights, MI 48310, USA | (888) ROBOVENT | www.robovent.com

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Introduction



Thank you for choosing the RoboVent ProCube filtration machine. This high-vacuum unit is designed for industrial environments, collecting both fumes and dust at the source in welding and related processes. The energy-efficient motor is directly coupled to the regenerative blower and operated by onboard controls, combining what might otherwise be a very complex operation into a simple, user-friendly package. It ships completely assembled and pre-tested, making it easy to set up and use.

The ProCube machine has been designed for production use and has a few standout characteristics:

Regenerative blower: The backbone of the machine, it requires little maintenance, and the advanced design provides the powerful suction required.

Vertical cartridge filters: Vertical cartridge filters have superior loading and cleaning performance; RoboVent Endurex filters improve on these inherent characteristics with proprietary design features that optimize performance and promote effective pulse cleaning.

Pulsing system: Automatic and efficient, the pulse system ensures filter life is maximized. Online and offline modes work together as needed to ensure filter is consistently cleaned: a quick pulse sheds dust from the filter, causing it to fall into the hopper area and collect in the disposable containment tube. Effective pulsing is combined with a filter chamber designed to prevent re-entrainment of dust, resulting in maximum filter life.

Intuitive controls: Simple, intuitive controls are equipped with auto and manual blower modes. Optional sensors integrate filtration with welding processes. Additional electronics monitor airflow and motor speeds to indicate operating condition with green and yellow lights.

With user-friendly electronics and only requiring connections to electricity and compressed air, the ProCube machine is simple to set up. Additional details can be found in the section titled "Prerequisites for Use."

Persons involved with installing, operating, maintaining, and servicing this RoboVent ProCube machine must read these instructions prior to use. Keep this manual in a safe and convenient place for reference. In the case of loss or damage, please contact RoboVent for replacement.

RECEIVING & INSPECTION

The equipment will arrive on a pallet or in a crate. Perform a visual inspection before removing from the truck. If there is any damage, it should be noted on the shipping documents and photographed. It is the receiver's responsibility to file shortage reports and damage claims with the carrier. The carrier is responsible for any damage to the equipment while it is in transit. Notify RoboVent if any damage has occurred so repair can be arranged.

The filter cartridge will be shipped inside the machine.

Before discarding packing material, make sure no small parts are concealed within wrapping.

SAFETY SIGNS AND SYMBOLS

Below are the safety symbols and meanings as used throughout this manual and on the machine itself. Specific hazards and labels are shown in the "Specifications" section.



Warning Sign: Yellow Triangle with black edging. Specific icon shown on the face for specific concerns, or exclamation mark (as shown) for generic safety alerts to hazardous conditions.



Prohibition Sign: White circle with red edging and crossbar. Specific icon shown on the face for specific concerns, or STOP (as shown) for generic alerts to conditions that may lead to damage to the job, machine or other factor.



Mandatory Sign: Blue circle with white icon. Specific icon shown on the face for specific concerns, for example as shown, it is mandatory to consult the manual before operating.



Reference Sign: This symbol indicates that the reader should refer to the specific section and read about this identified component, task or location and learn more before continuing. Where this sign is shown, DO NOT attempt to continue before reading the section as indicated.

PURPOSE & LIMITATIONS

The ProCube filtration machine is designed for use with fume extraction welding guns in production applications. Its powerful suction, simple controls, and small footprint are suited for use in many facilities, including fabrication shops, production facilities, shipbuilding, and large structures. Optional smooth-rolling wheels and lifting handle enhance mobility for use in portable applications.

This machine is intended for filtration of airborne fumes and non-explosive dry dust captured at the source. The design and controls are optimized for welding processes, especially when used with fume extraction welding guns, but it can be used intermittently for related processes such as grinding or sanding.

Introduction



Whilst it can perform in 'high-loading' applications, such as robotic welding, plasma cutting, and grinding applications, these processes generate more fume and particles than what is practical for the collection capacity of the ProCube machine. Therefore, it is not recommended for use in such applications.

Some welding conditions or atmospheres can generate oily or sticky particulate that 'blinds' the filter media. Blinding occurs when the pores in the fiber of the media become blocked so that pulse cleaning does not remove the blockage, leading to diminished cleaning results, finally resulting in reduced filter life. If you notice decreased filter life, or if differential pressure of the filter does not drop after an offline cleaning cycle, it may indicate blinding. You can improve filter condition by welding clean material, reducing the amount of oil on parts, and/or limiting use of anti-spatter spray. Nozzle gel must not be used with fume extraction welding guns.

Metal particulate collected from welding or related processes can be combustible when built-up in the collector, on the filter, or in hoses. Combined with the presence of sparks in the incoming air stream, this presents a potential fire risk. Typically, turbulence in the hose extinguishes sparks; for additional protection, the machine is equipped with a Delta3 Spark Arrestor. Despite these features, it may be possible for a spark to get through. Observe the process periodically to ensure intake of sparks is not excessive. Often, the position of inlets can be adjusted to prevent a consistent intake of sparks or settings on the process can be adjusted to reduce sparks.

Follow all regulations applicable to your workplace and usage conditions. RoboVent or a consultant in your area can assist with compliance.

If the intake becomes obstructed, shut the machine down and fix the issue to prevent overheating of the motor and blower. Overpressure is indicated by the red band on the airflow gauge.

The blower motor is designed for continuous duty. Starting the motor more than six times per hour, however, can decrease its life. When using the AutoSaver function, it is possible for the number of starts to exceed this count. The program delays shut-off for one minute after welding stops to evacuate fumes from the hose and to allow for pauses between welds. Pay attention to a typical production cycle: if there are breaks in welding longer than one minute, keep track to make sure motor will not be required to start more than six times per hour. If this frequency will be exceeded, either switch the unit on before each period of welding, or leave the unit on throughout the day.



Personal Protective Equipment (PPE) is required when servicing the machine. Specific requirements are to be determined by applicable regulations, dust toxicity testing and your workplace policies. As a general rule, gloves, dust mask and safety goggles are recommended to prevent exposure to or inhalation of dust.



Some dusts collected from welding and related processes can be hazardous. The factory is responsible to test for toxicity and determining precautions for emptying and disposing hazardous waste.



The ProCube is not designed to filter gases, odors or noxious fumes.



This filtration machine is not approved for filtration of Carcinogenic, Mutagenic, or Reproductively-harmful (CMR) substances.



The ProCube unit is not designed for use in explosive atmospheres, potentially explosive atmospheres, or for extracting substances from such atmospheres. Neither is it intended to process substance which could create an explosive or potentially explosive atmosphere inside the machine. If the dust to be extracted may create aforementioned conditions, it must be sampled and tested for explosivity. Responsibility lies with the factory to perform testing and ensure compliance with NFPA guidelines.

PREREQUISITES FOR USE

All users and maintenance personnel must read this manual before installing, operating, or servicing the RoboVent ProCube. Maintenance personnel must thoroughly understand the troubleshooting and servicing sections of this manual.

The machine requires compressed air and electrical connections:

- Compressed air must be regulated to 5.86 bar (85 PSI) and must be clean and dry according to ISO 8573-1 Class 7. It is recommended to connect to the machine with a quick-disconnect fitting and flexible hose for portability and easy disconnection when performing maintenance.
- Electrical supply must be 400 Volts at 50 Hertz. The supply circuit shall be protected and capable of providing 5.1 Full Load Amps.
- Power cord and air connection are at rear of machine.

The machine will require adjustment of airflow to ensure effective capture; refer to the operating instructions. It is recommended to check airflow at the beginning of each shift to ensure fumes are being captured and settings are maintained.



When operating with both inlets, a two-inch ball valve may be required for balancing airflow. Refer to the "Testing & Commissioning" section.

The machine is limited by the amount of vacuum it can safely create. Too much resistance by such conditions as unsuitable hose, excessive hose length or constricted intake can overload the blower and prevent it from successfully capturing fumes. Changes can be made to setup if machine does not perform as expected. Review "Testing & Commissioning" section. If you need assistance with adjustment or setup, please contact RoboVent Customer Service & Tech Support at 888-ROBOVENT.

Specifications



SPECIFICATIONS CHART

Empty Weight	97.7 kg (215 lbs)
Weight Full	104.5 kg (230 lbs)
Filtration Efficiencies	MERV16; 99.9% @ 0.3 micron
Equivalent Filter Area	23.8 m ² (256 ft ²)
Filter Material	B16 PTFE Laminated Polyester Media
Maximum Airflow	93 m ³ /hr @ 25 kPa (55 CFM @ 100 in. w.c.)
Operating Temperature	10 – 50° C (50 – 120° F)
Cabinet Construction	14-gauge Steel, Polyester Powdercoat
Compressed Air Requirements	8.5 m ³ /hr (5SCFM) @ 5.86 bar (85 psi)
Compressed Air Connection	12.5mm (1/2") NPT with Quick-Connect
Voltage Supply	575 Volts, 60 Hertz, 3.9 Full Load Amps
Control Voltage	24 VDC
Noise Level	68 dB(A)
Floor Pressure	1.2 kg/cm ² (17.6 psi)

DATA PLATE INFO

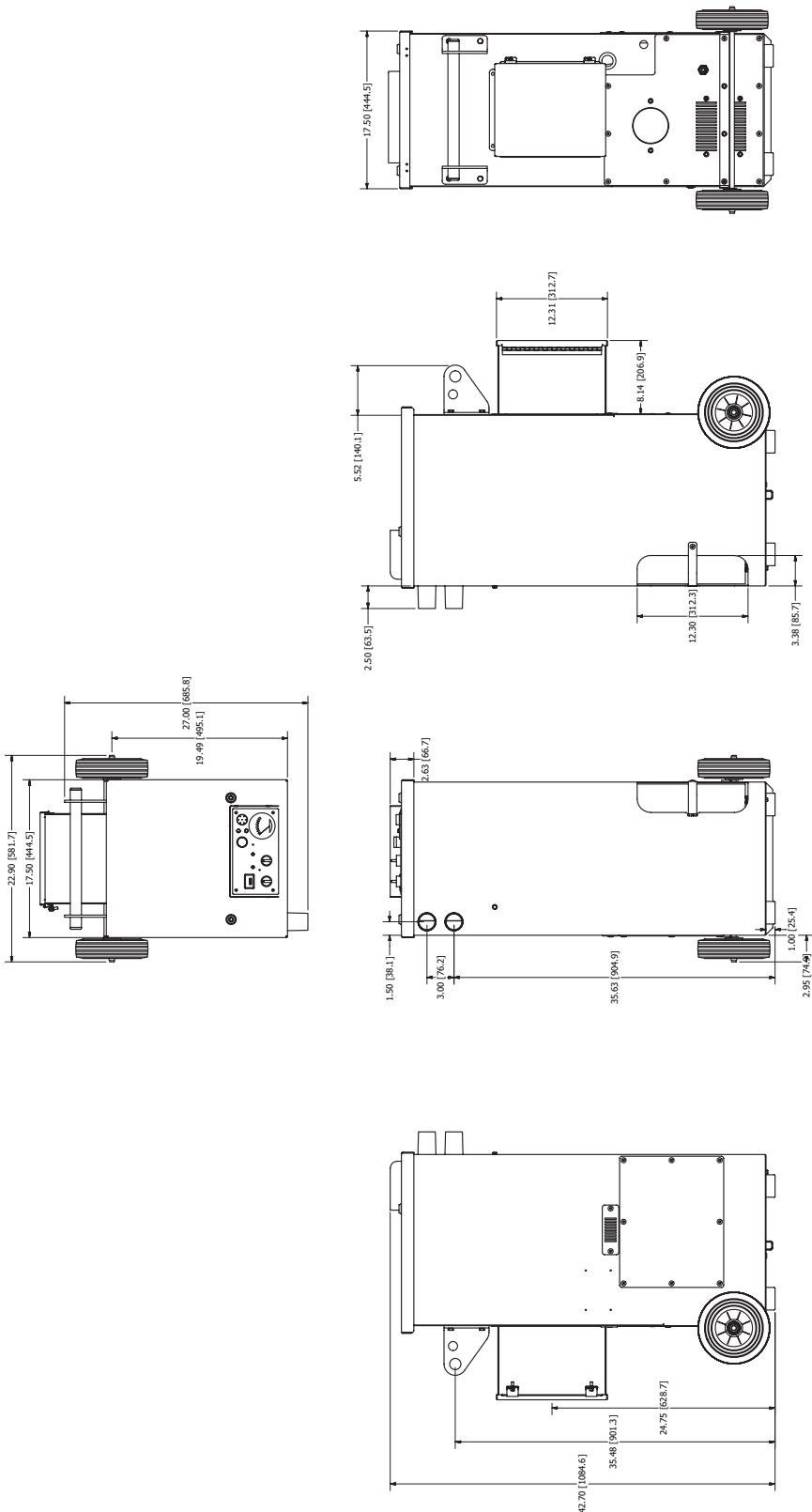
Locate the data plate and record model number, serial number and manufacture date here for quick reference.

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Serial No:	
Manufacture Date:	

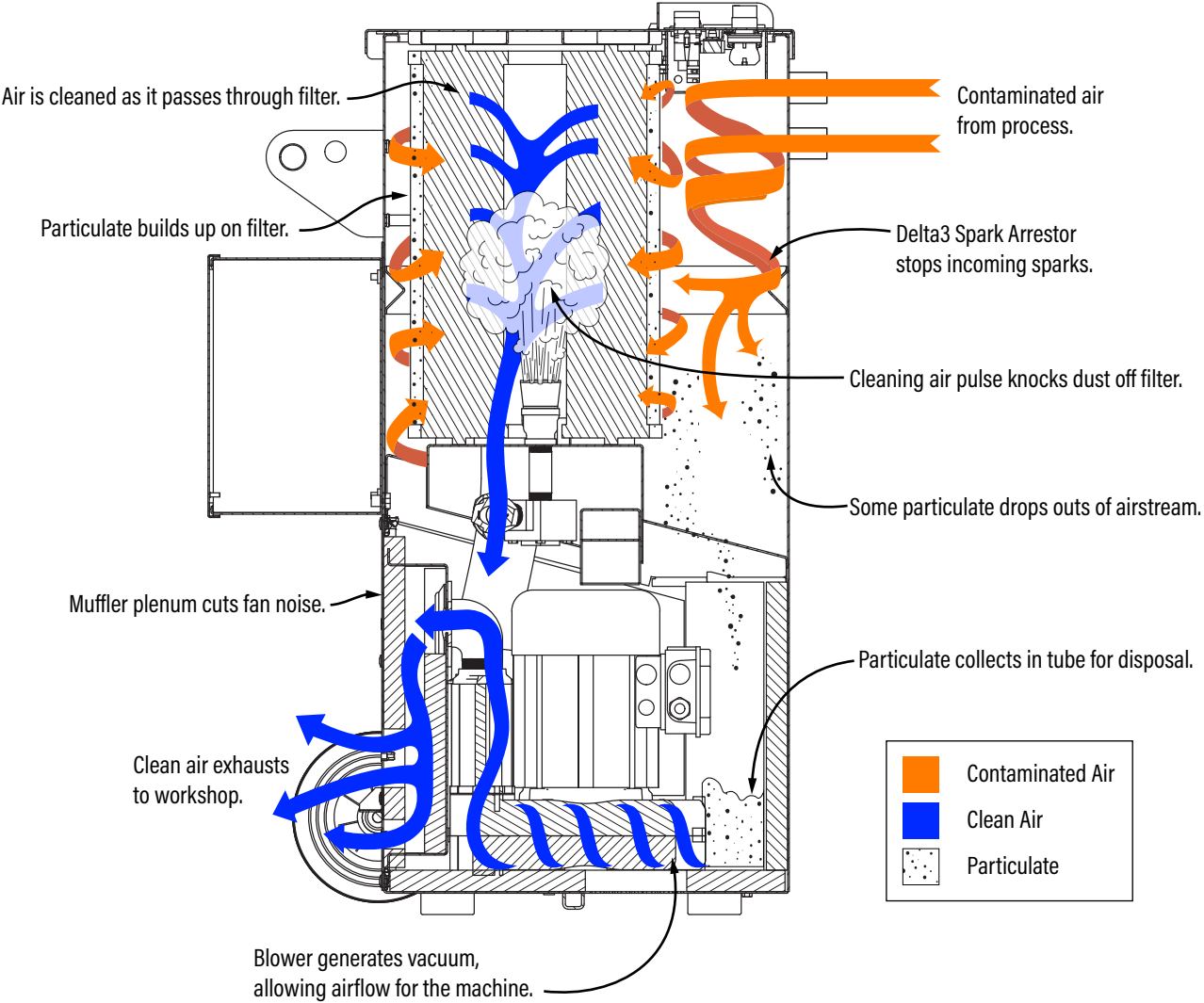
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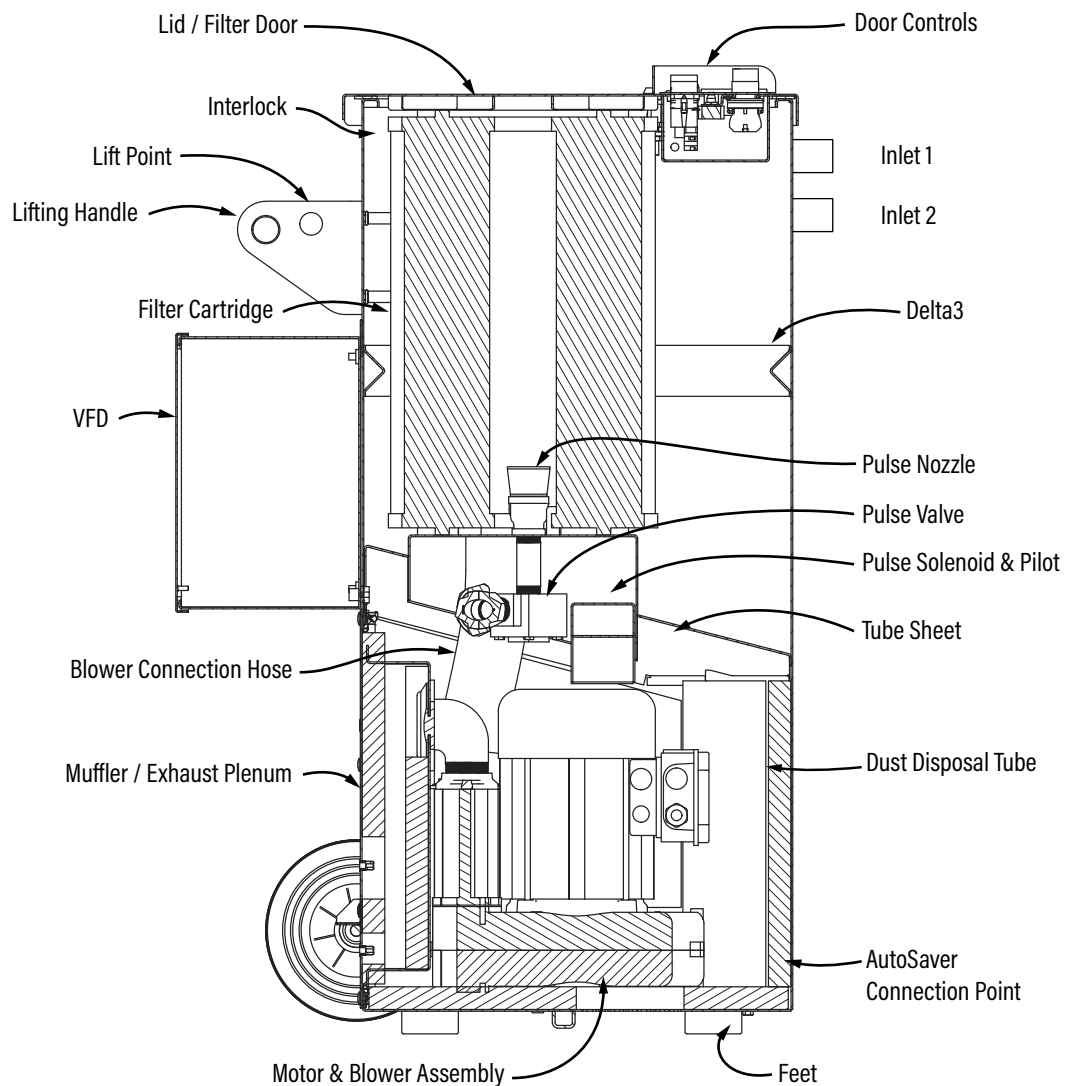
DIMENSIONS



AIRFLOW SCHEMATIC



COMPONENTS



Unpacking & Locating

Follow workplace safety guidelines when handling and unpacking this machine. Gloves, safety glasses and safety footwear are recommended.

Set aside a 3 m (9 ft) work area to allow adequate space for shipping material and lifting from pallet. Consider cordoning off to prevent traffic from entering the area.

ENVIRONMENTAL REQUIREMENTS & CONSTRAINTS

This machine is designed to operate in an environment with temperature 10 – 50° C (50 – 120° F) and relative humidity 40-70% (non-condensing).

The ProCube machine is designed for use indoors. Floor surface must be hard, flat, level, and capable of supporting 1.2 kg/cm² (17.6 psi) in order for the unit to remain safely stable. Atmosphere must be mostly free from contaminants such as dust, oil mist, water and airborne chemical solvents.

If outdoor use is required, the machine must be sheltered from wind, blown dust and precipitation. Storage must be indoors to prevent condensation in control panel and motor areas.

Explosive Atmospheres



The machine is neither certified nor designed for use in explosive atmospheres, potentially explosive atmospheres or for collecting explosive dusts. The user is therefore strictly prohibited from using it in such applications and conditions. Do not attempt to modify this machine for the purposes of use in any explosive environment.

Lighting

The machine's work area must be illuminated so that the control panel, power cord connection and gauges are clearly visible without the need for additional local lighting.

When servicing, additional temporary lighting may be needed by maintenance personnel.

Vibration

This machine has been assessed and determined, that in normal design use parameters, this machine offers no appreciable vibration hazards and as such, does not require any remedial or secondary action to reduce vibration.

Noise

The machine is designed in such a way as to offer reduced acoustic sound pressure levels. The machine noise level has been measured and does not exceed 68 dB(A).

PROCESS FOR LOCATING

Inspect packaging and machine for missing parts or shipping damage as described in the "Receiving & Inspection" section.

Use the following steps to unpack and locate:

1. Remove packing material and crating from sides.
2. Use a crane attached to lifting points to remove from pallet.
3. Roll the machine to designated area. Connect to process with 50mm. flexible hose.
4. Adjust airflow to ensure effective fume capture. Refer to operating instructions.

Testing & Commissioning



Once unit has been connected to power and compressed air, it is important to verify the machine is operating correctly and adjust airflow to ensure effective capture.

Record details of setup and settings through pictures and notes. Keep these on file with a logbook for daily checks.

Verify Machine Operation

Perform these quick checks to verify machine is running correctly:

1. Turn unit on. Listen for blower to ramp up and level off at running speed. Watch that gauges operate.
2. Flip gun switch. Listen for a change in motor speed.
3. Put your hand over the intake and hold. Unit should display yellow light and start alarm.
4. Press the pulse button, listen for a rush of air inside the filter cabinet indicating the pulse valve has opened.
5. Once the function has been confirmed, testing and adjustment can be performed.

Adjusting Airflow

Speed adjustments will need to be set for both one-gun and two-gun settings. The intake that is more commonly used should be connected to the top inlet and intermittent or 'lesser-use' intake should be connected to the bottom inlet, to allow the plug to be used on bottom inlet in one-gun mode.

When using two intakes, additional balancing may be required if there are any differences in hose length, fume gun setup or intake design. In these cases, install a 50mm ball valve (refer to instructions below). To avoid additional balancing, it is best to locate the machine centered between work areas and use identical hoses and intakes / fume guns.

Follow these steps to adjust the speed for one- and two-gun settings:

1. Switch to the two-gun setting and turn the machine on.
2. Compare the airflow at each inlet. The inlet with greater airflow will need a ball valve installed.
 - In the case of fume guns, compare the air flow meters side-by-side; the gun with more flow will need a ball valve.
 - When using a fume gun in conjunction with a hood-type inlet, the hood will need the ball valve. With flow starting at 100%, adjust the ball valve on the hood until the fume gun has reached target flow.
3. Once the intakes are balanced, adjust right speed dial until required flow is achieved.
4. Now, detach the second intake and plug the lower inlet.
5. Switch to one-gun setting. Measure airflow at the intake and adjust as needed.

Once settings have been determined, record the position of speed dials and the resulting air flow or pressure at each intake. Daily readings must be taken and compared to these values to ensure flow is maintained. As the filter loads, it may become necessary to increase motor speed to achieve the airflow originally set. Generally, this adjustment is not required unless it is 20% different from the setup value.

Installing Ball Valve

1. Use a ball valve for 50mm plastic pipe with slip joint connection.
2. Cut two lengths of pipe at 100mm.
3. Glue pipes into valve.
4. Cut hose where ball valve will not cause the hose to pull out of any connection on cause kinking. Which hose to cut is determined in "Adjusting Airflow" instructions above.
5. Fit hose over pipe stubs on either side of ball valve and use hose clamps to seal.
6. Now, adjustment of the ball valve will modify restriction and allow airflow to be balanced.

Fume Guns

Fume guns are a delicate balance between having enough airflow to capture the fume and not drawing away shielding gas. Below are a few tips:

- Areas of a weldment that are tight or partially enclosed can allow the suction to project throughout that volume or along the material and begin to draw away shielding gas. Changing the nozzle to a design suited for these applications is recommended if porosity occurs consistently.
- On right angles, a different nozzle is typically not necessary. Often, adjusting the angle of the nozzle during so intake ports are further away from the material is enough to correct porosity issues.
- Gas flow should be within recommendation specified by the fume gun manufacturer. Outside of this range can cause inconsistencies in the weld or capture.

Operating Instructions



Refer to diagram below for callouts of the control interface located on top of the filter access. Below are descriptions of the simple control modes.



More than six starts of the motor in one hour can be harmful. Refer to the "Purpose & Limitations" section for a detailed description.

Manual Mode Operation

Once airflow has been set up according to the "Testing & Commissioning" section, manual mode is simple to operate – just on when you need it, off when you don't. The blower is rated for continuous duty, so it can run for a complete shift if needed.

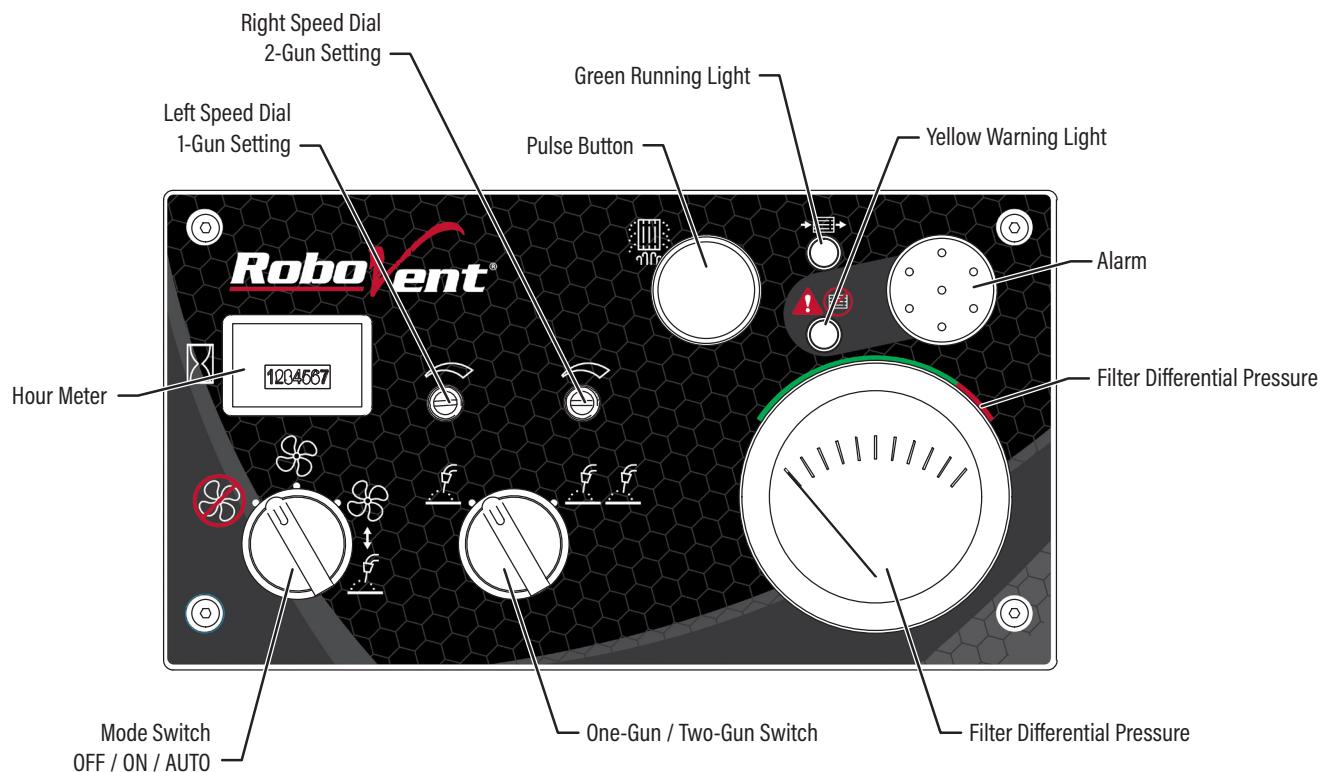
AutoSaver Mode Operation

The automatic mode is controlled by optional sensors on the weld unit's power cord. The optional cables connect to the rear of the machine.

Simply turn the mode switch to the far right 'auto' position and begin welding. The sensor will detect an increase in power drawn by the welder and signal the ProCube unit to start. Adjustment of the sensors' threshold screw may be required.

Pulse Cleaning

The ProCube machine is equipped with electronic pulse cleaning. Two modes are automatically activated, 'online' and 'offline'. Online cleaning pulses the unit after it has been running for 30 minutes continuously. Once the unit has been shut off after a 30-minute or longer work period, an offline pulsing cycle will be initiated. An additional pulsing cycle can be manual enacted after offline pulsing has run, by pressing the pulse button.



Safety

Changing or emptying the dust containment tube, performing monthly service or changing filters requires PPE to minimize exposure to metal dust. It is recommended to wear disposable coveralls, non-porous gloves, dust mask and safety goggles when performing these procedures. Follow company MSDS and PPE guidelines.

Dust collected by this machine may be hazardous. Toxicity testing must be performed by your local waster service provider and dust disposed of according to local disposal and workplace safety regulations.

Changing the Dust Containment Tube

Change or empty the tube as soon as it is full. The time between changes will vary with production schedules, processes or other factors. A good estimate of time required between tube changes can be determined after a few changes; record percentage full and hours each time to help you estimate when the next change is needed.

To minimize hazards from dust or hazardous chemicals within the dust, the tube can be capped and disposed.

To change the dust containment tube, follow these steps:

1. Open filter lid, make sure no piles of dust are built up at the bottom that will fall out when dust tube is removed. Dust tube level can also be checked here using a flashlight.
2. Grasp the tube around the middle and press down until top of tube is visible from the side.
3. Rotate top of tube outward. Once top is clear of machine, downward pressure can be released and dust either emptied or tube capped and disposed as deemed appropriate by safety policies.
4. Use a vacuum to pick up any dust that spills.
5. Record machine hours and service action.

Monthly Maintenance

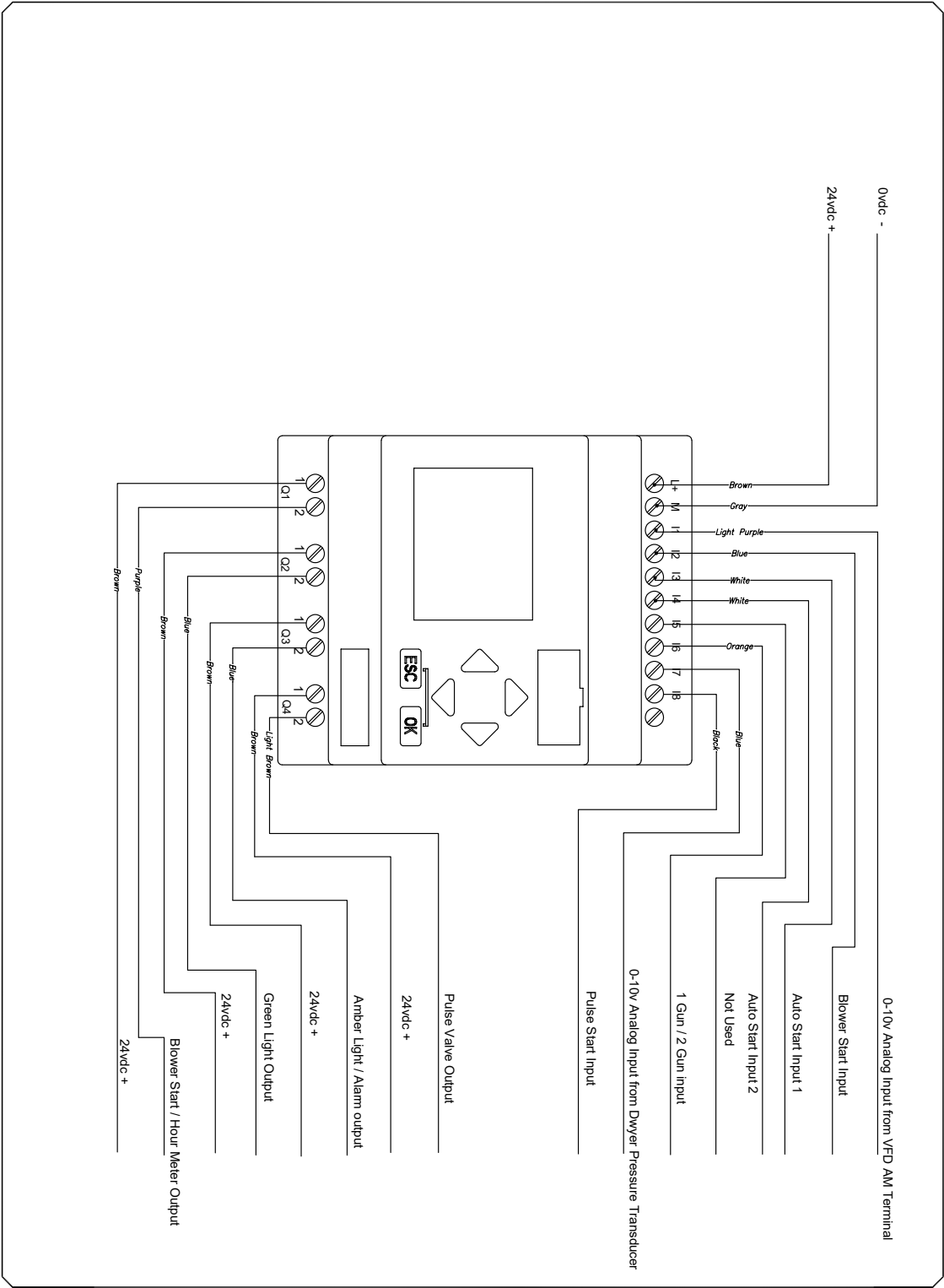
On a monthly schedule, perform the following steps and checks:

1. Start machine, allow it to ramp up. Record machine hours and filter differential pressure. Turn machine off once values are recorded.
2. Press the pulse to enact an offline cleaning cycle.
3. Once pulsing has finished, open filter cabinet and brush any piles of dust into containment tube at bottom.
4. Inspect inside of cabinet and vacuum out large build up of dust.
5. Inspect hoses for leaks and damage.
6. Close filter compartment and start machine again.
7. Record post-cleaning filter differential pressure.

Filter Change

Once the filter differential pressure gauge has reached the red zone (indicated by the green & red) above the gauge it is time to replace the filter.

Perform the procedures outlined in monthly maintenance. While filter compartment is open, and once cleaning of dust build-up is complete, replace the existing filter (Filter Part Number: EX3-11D18-B16)



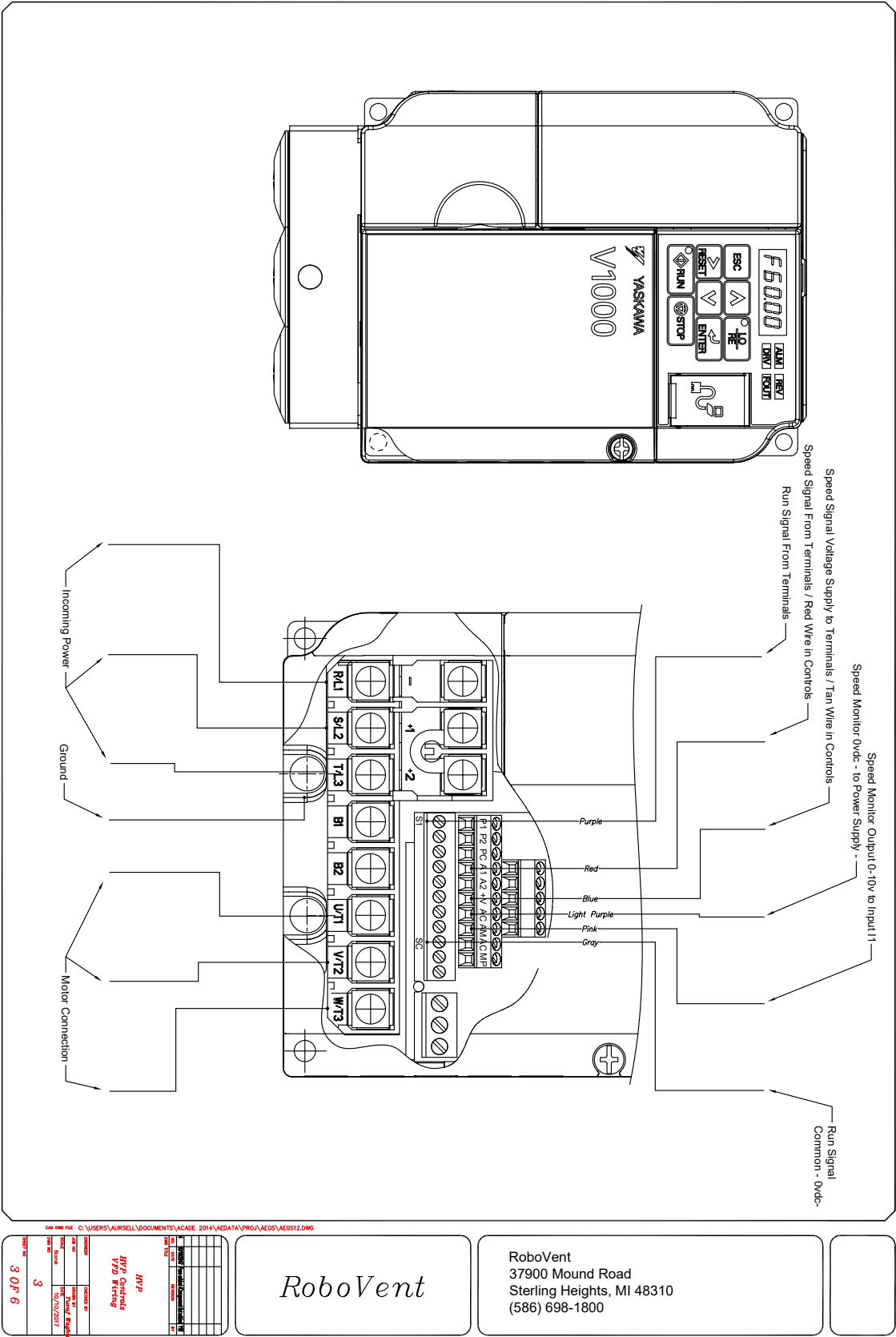
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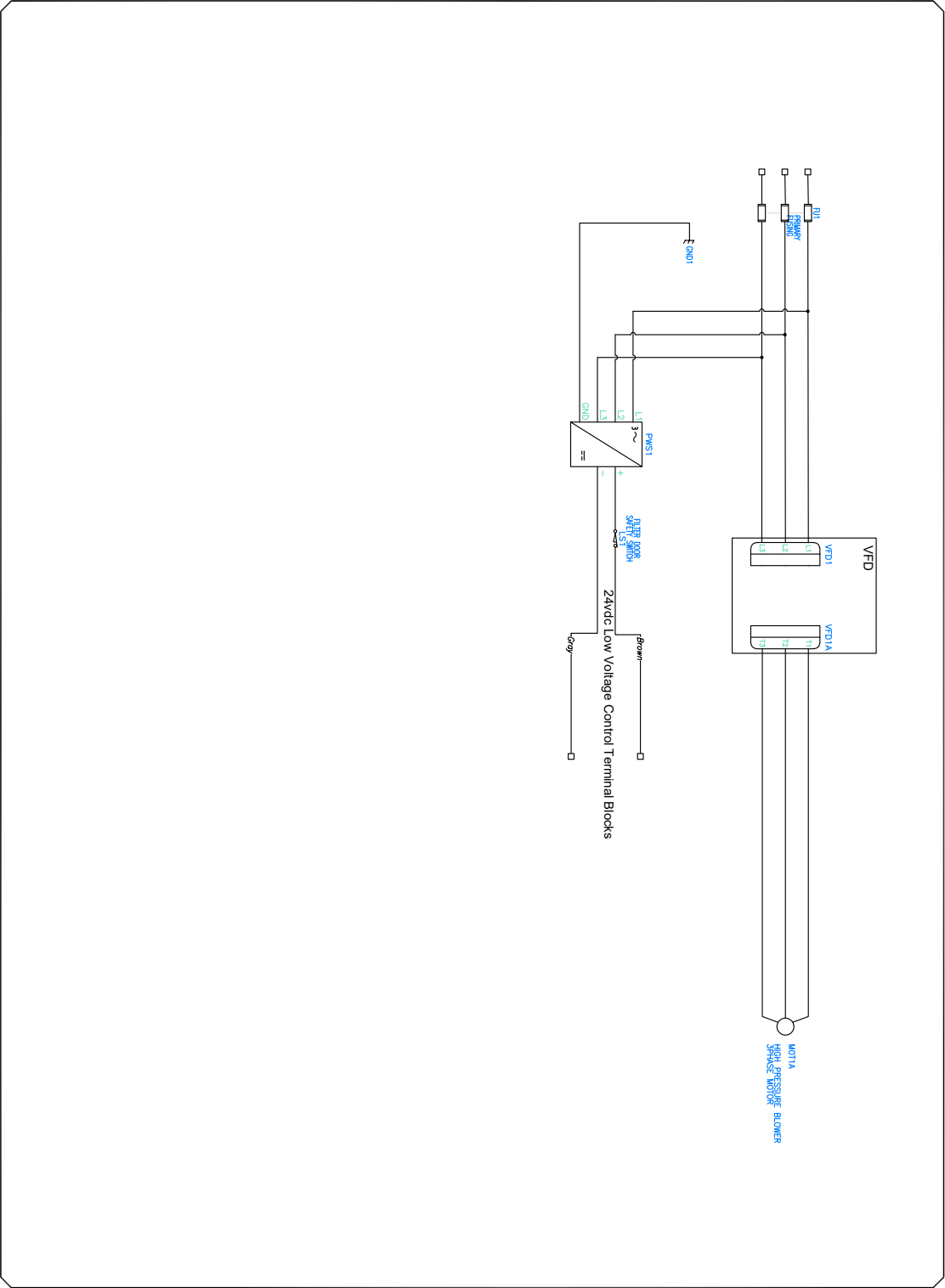
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4	10/10/2017	JURSELL	JURSELL	4
4	10/10/2017	JURSELL	JURSELL	4 OF 6

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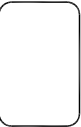


RoboVent
HVP Controls
Primary Wiring

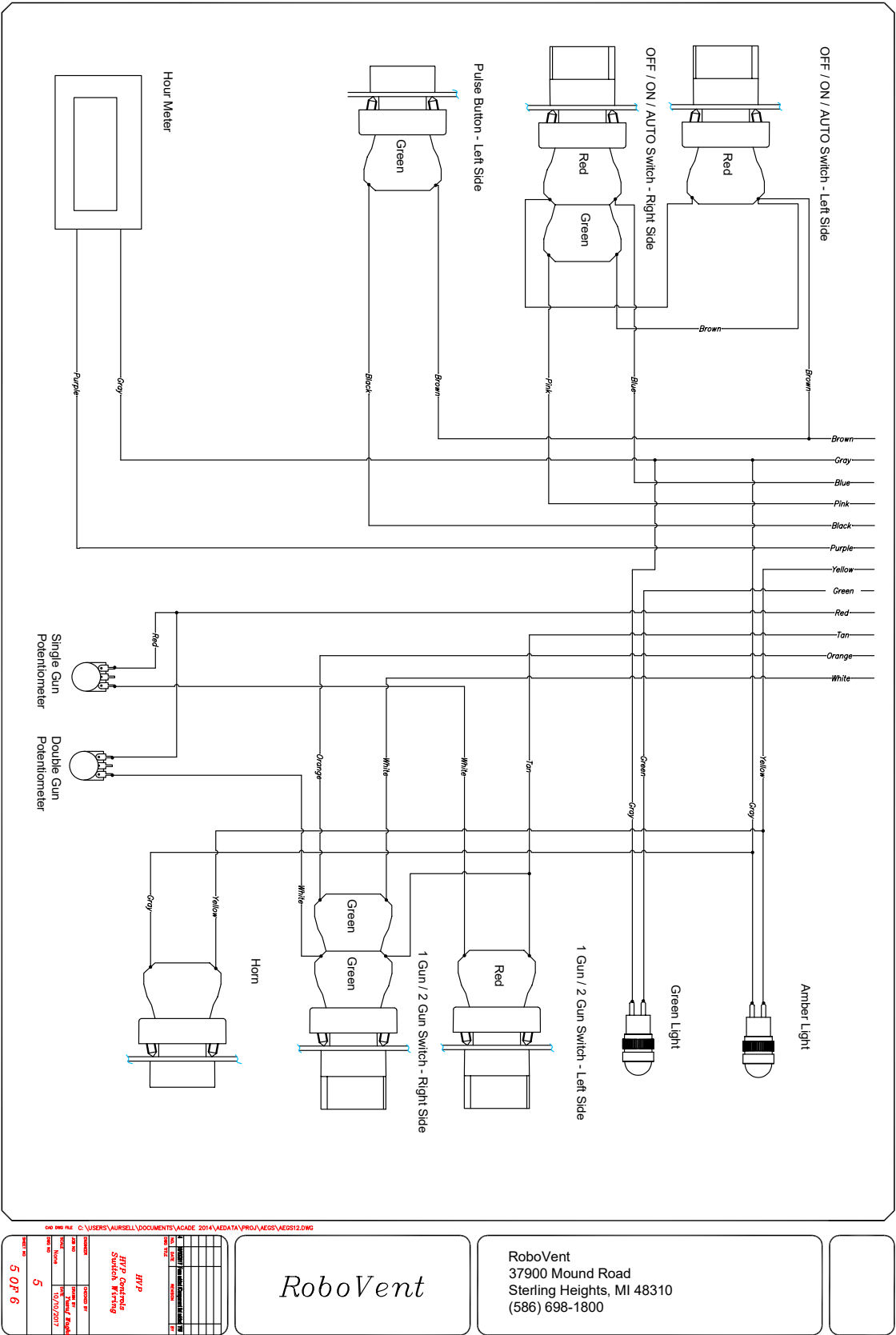
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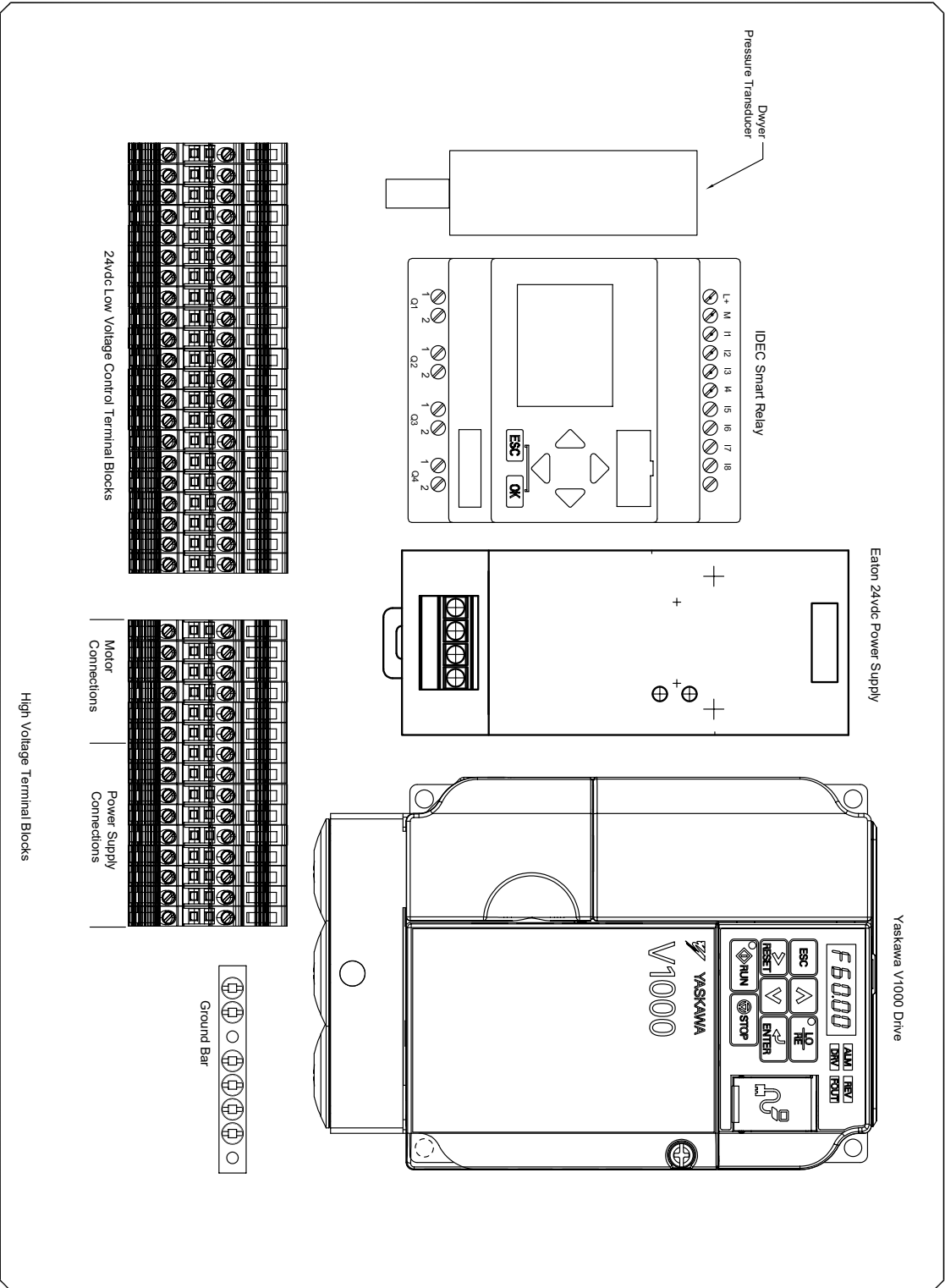
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Wiring Diagrams





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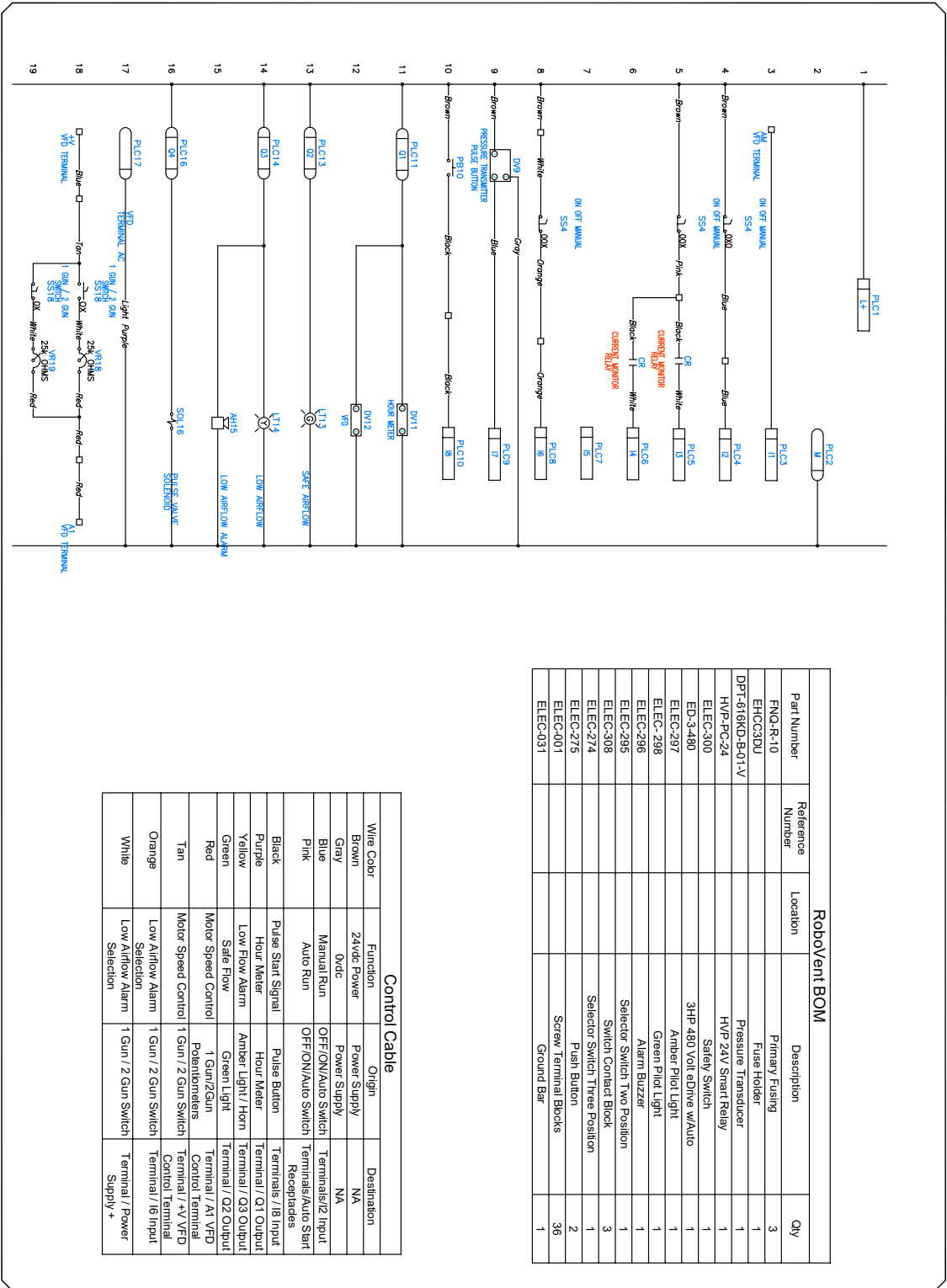
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Wiring Diagrams



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