Operator's Manual

CRYSTALBLAST™

PRO

IKONICS IMAGING®

PHOTOBRASIVE SYSTEMS

An **IKONICS** Company ISO 9001 Certified NASDAQ Listed: **IKNX**

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Quick Operation Guide

The information that follows will be used to get your new CrystalBlast™ Pro machine setup and running in the shortest period of time. Use this sheet for the initial machine set-up and operation. You may refer to this sheet at any time, for more detailed operation instructions refer to the main operation manual.

First Step

- To remove the machine from the pallet, first remove the screws holding the cardboard box to the wooden pallet. Lift the box off over the top of the machine, if you do not have adequate vertical height, cut the box open at one of the corners and remove.

- Remove the four 3/8" lag-bolts located at the bottom of each leg. Do not remove the unpainted, temporary front leg support until after the machine has been placed in the final location. Machines are shipped with strapping over the pressure pot flange for stability. This strap is under extreme tension so always wear safety glasses and gloves when removing these shipping straps.

- THIS MACHINE WEIGHS 400 POUNDS SO USE CAUTION WHEN LIFTING OFF THE PALLET AND MOVING. IKONICS IMAGING RECOMMENDS THE USE OF AT LEAST TWO PEOPLE WHEN REMOVING THIS MACHINE FROM THE PALLET.

Note: *This machine is equipped with rear stability leg design, but care should always be taken when moving the machine to ensure the machine is always stabilized during machine movement. If the model includes a front unpainted leg brace, this brace is a temporary shipping brace only and should be removed once the machine is placed in position.*

- Standing at the front of the machine, you will be removing the machine from left to right from the right side of the machine. Use two people to slightly lift the machine vertically off the pallet just enough to pull the machine until the first two wheels can touch the ground. BE CAREFUL NOT TO LET THE PNEUMATIC PINCH VALVE WITH MICRO AIR FILTER HIT THE PALLET WHEN PULLING THE MACHINE (SEE PAGE 5 ITEM E). Lightly set the first two wheels on the ground but, do not let the machine slam down hard on the wheels. Next, pull the machine until the second set of wheels are at the edge of the pallet and lift the machine and set the second set of wheels lightly on the ground.

- Take care to stabilize the machine and move into position.

- THIS MACHINE WEIGHS 400 POUNDS SO USE CAUTION WHEN LIFTING OFF THE PALLET AND MOVING.

After the machine has been placed into position follow the steps listed below:

- Remove all items from inside the cabinet. Install the Foot Pedal Valve using the manual diagram to locate the two tubing inlets, one on the Pneumatic Pinch Valve and the second on the Main Air Inlet Valve. The Foot Pedal Valve is normally open, air will flow through the valve and close the on-off Pneumatic Pinch Valve when the pot is pressurized. Pressing down on the Foot Pedal Valve will allow the Pneumatic Pinch Valve to open and blasting will occur.

- If the machine has been shipped with the armrest removed, install the armrest now with the supplied fasteners. When securely fastened, press the padded rest into the armrest frame.

- Open a side access door and install both lights at this time and make sure the inside slinger washers are installed on the bulb stem prior to installing the bulb.

- Attach the compressor air supply line to the machine at the Main Air Inlet Valve located on the right side of the air regulator-filter-water trap. This machine has been shipped without fittings to allow the customer to maintain uniformity by installing matching fittings already in use at their facility. Match the air inlet fitting to the size of the Main Air Inlet Valve or use a plumbing reducer bushing if needed. Using coiled air hoses and or multiple quick-connectors is not advised, this may cause compressed air flow problems that may affect proper machine operation.

- Release the power cord, 120 volt, and plug into any standard 120 volt 60Hz service outlet. The running amperage of this machine is 1500 watts or 14-15 amps. Any available outlet should operate the machine. The use of extension cords is not recommended however, if you have to use an extension cord, make sure the cord amperage is adequate for the machine amperage rating. All extension cords have a printed maximum amperage rating listed on the cord. Never use extension cords rated at an amperage less than 15 amps.

- Use at least a 14 gauge cord for extensions exceeding 10 feet.

- Using the machine on-off switch located on the right side of the light housing, turn the dust collector blower and lighting switch to the on position.

Make sure the air compressor is operating with a minimum line pressure of 90 psi at all times. In order for the air controls to operate correctly, you must supply adequate compressed air volume and pressure. The CrystalBlast Pro machine requires 10-15 psi of airline pressure above the machine blasting pressure at all times. This is required for proper operation of the machine air controls. Always close the Main Air Inlet Valve at the end of the day and drain all compressed air from the pressure pot using the Foot Pedal Valve. Always drain the pressure pot with the machine blower running. Running the machine blower will prevent abrasive from escaping the cabinet.

- Open the access door and with the blower running, pour 40-50 pounds of abrasive onto the operator work grate and allow the abrasive to transfer into the pressure pot assembly. The exhaust blower will prevent dust from exiting the machine during this process. The abrasive will fill the pressure pot because the pot plunger is open at this time. If the Main Air Inlet Valve is closed, the abrasive will drain directly into the pressure pot from the machine hopper.

- Use the front operated Pot Plunger Assembly Handle to close the Pot Plunger by pulling back on the handle of the Pot Plunger Assembly. While pulling back on the handle, open the Main Air Inlet Valve located on the air regulator assembly on the right side of the air regulator. When the pot is first pressurized, the nozzle will blast until the pot pressure exceeds the blasting pressure, this is normal. Sometimes, when filling the pot with abrasive, the Pot Plunger may become stuck to the pot seal, if this happens, close the Main Air Inlet Valve and push in on the handle of the Pot Plunger Assembly. Pull back again on the Pot Plunger Assembly and open the Main Air Inlet Valve.

- Adjust the air regulator using the adjusting knob located at the top of the regulator. Normal blasting pressures range from 20-40 psi and it may become necessary to set the regulator again during the blasting process. The type and length of the air supply line used to connect the compressed air to the machine often creates a pressure drop during machine operation making a final regulator adjustment necessary. The resting pressure, when the blast is off, will be what is required for any blasting pressure based on machine set-up and installation materials.

- Stepping down on the Foot Pedal Valve will activate the blast. Releasing the Foot Pedal Valve will stop the blast.

Note: *The machine blast can be stopped at any time by releasing the Foot Pedal Valve. Closing the Main Air Inlet Valve will stop the flow of compressed air into the pressure pot assembly but, you will need to keep the Foot Pedal Valve in the on position to empty the air from the pot for abrasive loading.*

Adjusting the Abrasive Flow

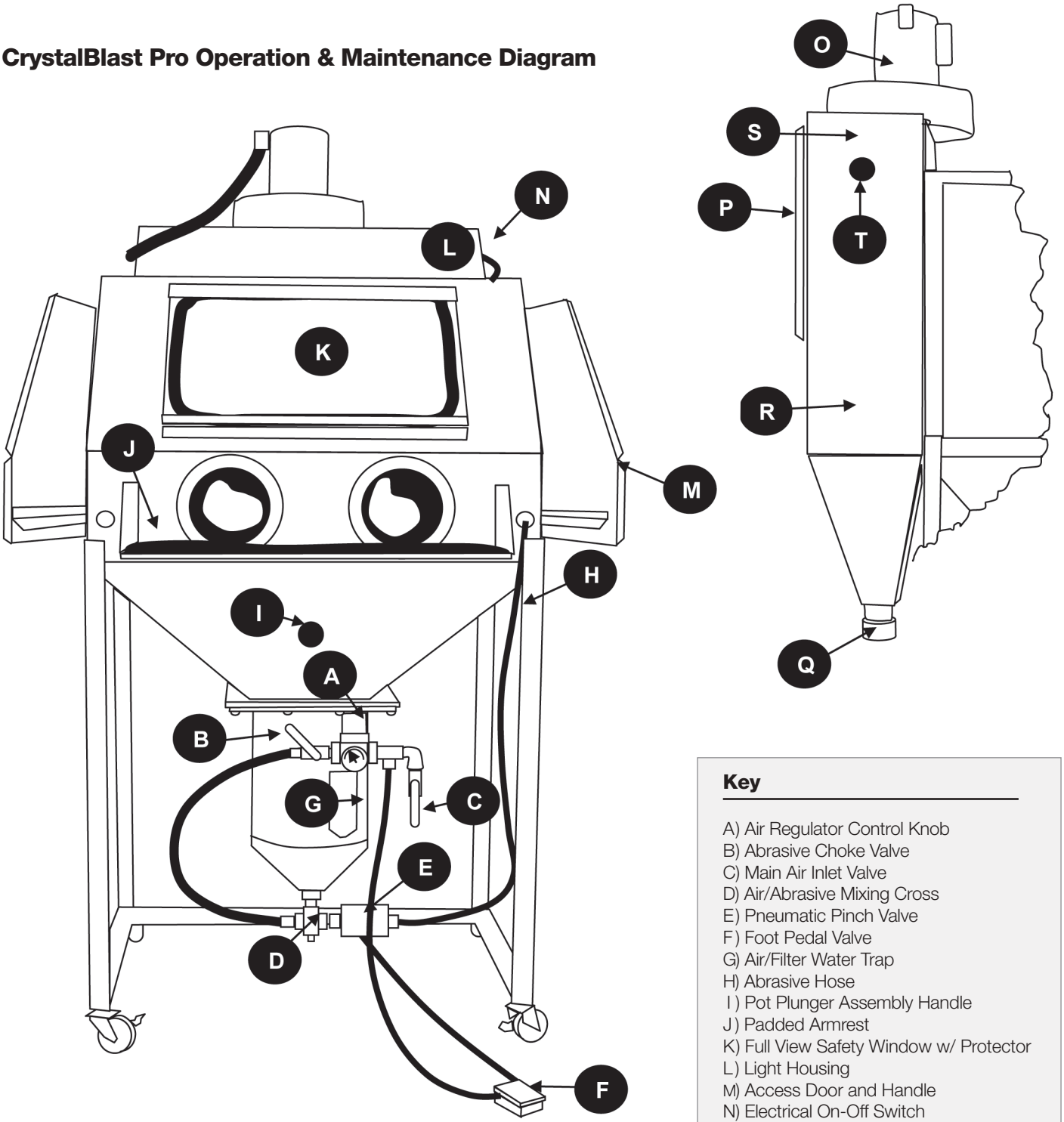
Adjusting the abrasive flow is simple. Locate the Abrasive Choke Valve on the left side of the air regulator opposite the Main Air Inlet Valve on the right of the air regulator. When the valve is completely open, you will see very little abrasive exiting the nozzle. Adjust as follows but, never close the valve completely:

- Set the Abrasive Choke Valve at 45 degrees and test for blast by pressing down on the Foot Pedal Valve. If very little abrasive is exiting the nozzle after 2-3 seconds, close the Abrasive Choke Valve a small amount by moving the handle about 1/4"-3/8" towards closed position. Just before the nozzle is delivering the proper amount of abrasive, the abrasive flow will pulse slightly. Close the Abrasive Choke Valve a bit more and the pulsing will disappear, the setting is now correct. This setting will stay correct unless you change the blasting pressure or abrasive mesh size.

Always, shut off the Main Air Inlet valve at the end of daily operation or when the air compressor will be turned off. Depressurize the pot assembly when the air compressor is going to be turned off for the day by closing the Main Air Inlet Valve and pressing down on the Foot Pedal Valve until, the air is emptied out of the pot. Always have the machine blower running to prevent abrasive from escaping the cabinet.

Maximum Machine Inlet Pressure 125 PSI
Minimum Line Pressuere 90 PSI

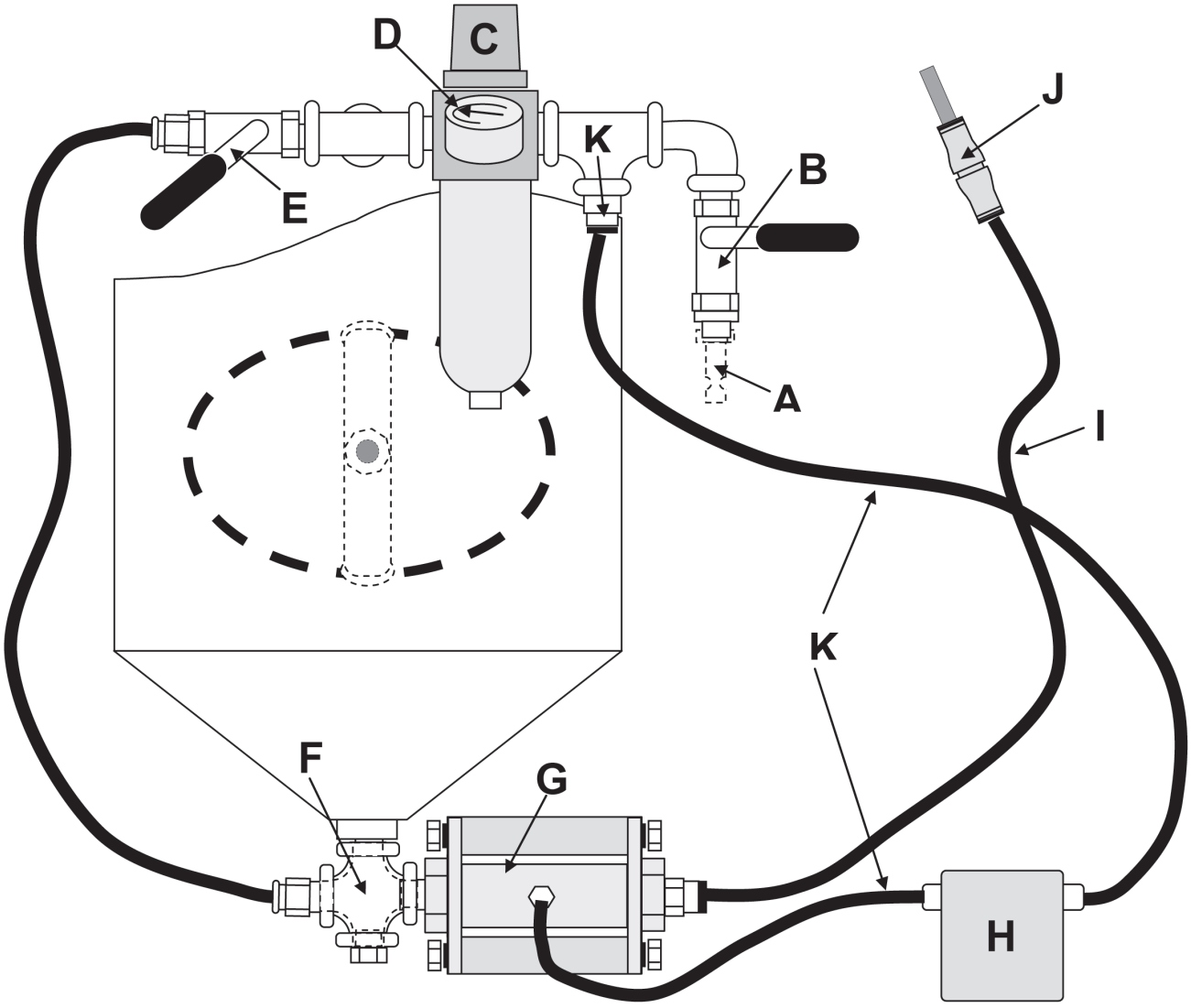
CrystalBlast Pro Operation & Maintenance Diagram



Key

A) Air Regulator Control Knob
B) Abrasive Choke Valve
C) Main Air Inlet Valve
D) Air/Abrasive Mixing Cross
E) Pneumatic Pinch Valve
F) Foot Pedal Valve
G) Air/Filter Water Trap
H) Abrasive Hose
I) Pot Plunger Assembly Handle
J) Padded Armrest
K) Full View Safety Window w/ Protector
L) Light Housing
M) Access Door and Handle
N) Electrical On-Off Switch
O) Exhaust Blower 550 cfm
P) Bag Access Door
Q) Drain Cap
R) Dust Bag Housing
S) MICRO Final Filter
T) Bag Rapper Handle, Left & Right

CrystalBlast Pro Pneumatics Reference Diagram



Key

A) Air Inlet Quick-Disconnect Fitting *(not supplied)*
B) Main Air inlet Valve
C) Air-Regulator Control Knob
D) Air Pressure Gauge
E) Abrasive Choke Valve
F) Air/Abrasive Mixing Cross
G) Pneumatic Pinch Valve *w/ micro air filter*
H) Foot Pedal Valve
I) Abrasive Hose
J) Nozzle and Nozzle Holder
K) Foot Pedal Valve Tubing, 1/4"

Important Information

Welcome to the CrystalBlast Family! You have just purchased the CB Pro model sandcarving cabinet. This machine is engineered, manufactured and supported in the USA by Media Blast Inc. and IKONICS Corporation. This machine is very easy to operate and maintain. However, there are several important issues of which you should be aware:

Always Use Clean, Dry Compressed Air.
Moisture will cause abrasive to stick together preventing flow. Your CrystalBlast Pro is equipped with 8 tubular dust bag filters and a disposable MICRO after filter assembly. Please review the compressed air requirements prior to operating this machine and install an ambient air dryer if hot air or moist air is entering the cabinet.

For Proper Operation, the Standard 3/32" i.d. Nozzle Requires 5.7 CFM of Compressed Air (@ 30 psi).
Make sure that your air compressor exceeds this requirement by at least 75%, otherwise your blast pressure may not reach the 90 psi required to operate the air controls. Premature compressor failure can be a secondary result of using a marginally sized air compressor. The optional 1/8" i.d. nozzle requires 8.38 cfm @ 30 psi. The 3/32" nozzle is recommended for operation using 9-10 cfm compressor volume and the 1/8" nozzle is recommended for operation using 14-16 cfm compressor air volume. Always look at cfm volume at 90-100 psi not displacement at 0 psi.

Do Not Blast Above 60 PSI.
This machine is designed for operation at low pressures. Blasting at pressures in excess of 60 psi will lead to premature breakdown of the abrasive and premature failure of wear components (blast hose, blast nozzles, window protector etc.). The Pro model includes the high pressure long wear abrasive control features but, an upgraded boron carbide nozzle is available for pressures above 60 psi.

Always Depressurize the Pot at the End of the Day.
It is necessary to depressurize the pot prior to turning off the air compressor. Otherwise, the nozzle will begin blasting once the line pressure drops to regulator blasting pressure. Also, the next time the air compressor is turned on, the system will immediately begin blasting until the air compressor builds up adequate air pressure for proper air control operation.

Regularly check the Bore of the Nozzle.
It is important to replace the nozzle after it has worn 1/32". Not only will the worn nozzle use more compressed air, but the abrasive will impact the part more aggressively and increase the potential for damaging the masking material. As the volume of air and abrasive increases, it will create additional wear on the blast hose. Always depressurize the pressure pot during any machine maintenance.

A Clean Dust Collector Will Keep the Cabinet Visibility Clear.
Cleaning the dust collector is key to maintaining optimum cabinet visibility. Use the right or left side bag rapper handle to rapidly shake the dust bag holding rack. Empty the dust storage hopper on an established schedule based on machine usage time.

Use IKONICS Imaging Replacement Components.
Replacement of worn components with non IKONICS Imaging parts will void the machine warranty. The components used by IKONICS Imaging are of the highest quality and will provide the longest serviceable life.

Review the Troubleshooting Guide and Follow the Instructions Prior to Calling IKONICS Imaging for Troubleshooting Assistance.
Most problems associated with the machine can be identified by simply consulting the Troubleshooting Guide. However, if your problem cannot be found in the Troubleshooting Guide, please give us a call. Nearly all equipment malfunction issues can be resolved over the telephone. Many times, it does not require the purchase of new components!

125 Maximum Inlet Pressure

Getting Started

Unit Placement

Allow adequate clearance for loading and unloading the blast cabinet. IKONICS Imaging recommends 36" in front of the cabinet for the operator and 36"on the door sides of the cabinet. The Pro includes two side access doors but locating the machine for one door operation is common practice when shop space is critical. Always leave at least 9" clearance behind the cabinet to facilitate airflow from the exhaust of the dust collectors. More room is required when servicing the dust collector but, this machine has casters so it can be moved easily. Never place the unit where direct light can strike the operator view window. This will cause reflections on the view window and make it uncomfortable and difficult for the operator to view the work in progress.

Installation of Foot Pedal Valve

Place the Foot Pedal Valve on the floor in front of the cabinet with the ¼" tubing pointing to rear of the cabinet. Push one ¼" tube into the tube fitting on the Pneumatic Pinch Valve, this valve stops the abrasive flow. (Item G - Pneumatics Reference Diagram). The Pneumatic Pinch Valve is equipped with a Micro Filter fitting for the installation of the Foot Pedal Valve ¼" tubing. The Micro Filter is used to prevent abrasive from flowing back into the Foot Pedal Valve assembly if the Pneumatic Pinch Valve bladder replacement is required. Push the second tube into the tube fitting located between the air regulator and Main Air Inlet Valve (Item K - Pneumatics Reference Diagram).

Electrical Requirements and Connection

All CrystalBlast sandcarving cabinets are wired standard for 120V/single phase service. IKONICS Imaging recommends that this cabinet be installed on a dedicated 20-amp breaker similar to any large single power-consuming appliance.

Air Requirements and Connection

The standard 3/32" i.d. nozzle requires 5.7 cfm @ 30 psi. The optional 1/8" i.d. nozzle requires 8.38 cfm @ 30 psi. Note: cfm – volume of compressed air in cubic feet per minute, psi – pressure of air in pounds per square inch. Stopping the blast during machine operation will save on compressed air (e.g., blasting 50 seconds of every minute will decrease the compressed air requirements by 16%. Make sure that your air compressor exceeds this requirement by at least 75% (9-10 cfm for the 3/32" nozzle and 14-16 cfm for the 1/8" nozzle). Premature compressor failure can be a secondary result of using a marginally sized air compressor.

Note: *The system must provide at least 10-15 psi more line pressure to the cabinet than the actual blast pressure. IKONICS Imaging recommends a two-stage air compressor but any air compressor capable of 9-10 cfm at 90-100 psi will be adequate for proper machine operation using the 3/32" nozzle. When using a two stage air compressor set the maximum line inlet pressure at no more than 125 psi. This may require installation of a master compressor air regulator, if unclear call factory for information.*

It is very important that the compressed air be clean and dry. Wet compressed air will cause the abrasive to bond together and stop flowing. Under sizing the air compressor, will create a situation that will not allow adequate time for the compressed air to cool in the air receiver tank. This warm compressed air enters the blast cabinet and immediately cools as the pressure drops. The resulting condensation will cause the abrasive to stick together. If wet compressed air is suspected, install an air dryer prior to the air entering the blast cabinet (Ambient Air Dryer, P/N 100-03-173).

Note: *As the blast nozzle wears, the air requirements for the system will increase. If the air compressor is not capable of handling the higher air volumes, the blast pressure will begin to decrease and loss of line pressure, will lead to poor machine performance.*

The minimum air hose size must be at least 1/4" ID but, 3/8" ID is recommended. Connect to the machine (Item B - Pneumatics Reference Diagram) using quick disconnect sleeve couplers. The Pro model includes a Main Air Inlet Valve to control air On/Off. This valve is used to pressurize the pressure pot assembly.

Changing the Abrasive Hose Location

The CrystalBlast Pro model includes two cabinet abrasive hose access fittings. It comes standard with the abrasive hose entry on the right side of the cabinet. If after operating the machine for a while, you find that you would be more comfortable with the left side entry, refer to the following instructions to change the location.

Always depressurize the pressure pot during any machine maintenance:

1. Remove the nozzle/nozzle holder (Item J – Pneumatics Reference Diagram) from the end of the blast hose (refer to Inspecting and Replacing the Blast Nozzle in the Maintenance section of this manual).
2. Remove the blast hose and grommet from the right side of the cabinet.
3. Remove the hole plug from the left side hose entry hole on the cabinet. Install the hole plug in the right hand hose entry hole.
4. Insert the cabinet grommet and abrasive hose into the new location on the left side of the cabinet.
5. Insert the nozzle holder onto the abrasive hose, (see Inspecting and Replacing the Blast Nozzle in the Maintenance section of this manual).

Selecting the Right Abrasive

There are two different basic types of abrasives that can be effectively used for etching and carving on glass; brown aluminum oxide and black silicon carbide. Each type has beneficial qualities:

Brown Aluminum Oxide –

Some manufacturers recommend and sell this abrasive. This abrasive is more forgiving than silicon carbide because it is not as aggressive. It normally has more dust than silicon carbide and it cuts glass slower than silicon carbide. For industrial applications, it is the most commonly used abrasive for surface preparation for coatings. However, the productivity of aluminum oxide is significantly slower than silicon carbide and as the abrasive is used, the abrasive particles become more rounded which continues to reduce the effectiveness of the etch. Aluminum oxide is a good abrasive to use when sandcarving for the first time.

Silicon Carbide -

This abrasive is not recommended for beginning sandcarvers. Silicon carbide is very aggressive and sharper than aluminum oxide and recommended for skilled sandcarvers. The aggressiveness can be beneficial; carving and etching can be accomplished much faster with the silicon carbide. In addition, the silicon carbide never loses its sharp edge.

Qualities and recommendations aside, the choice for blasting abrasive is personal. The typical size ranges used are 150 and 180 mesh. The finer sizes (150 mesh is larger than 180 mesh) provide a smoother finish on the blasted surfaces.

Note: *The use of silica sand, garnet, slag, Starblast™ or other non-recyclable abrasives in the system will void the CrystalBlast Pro equipment warranty. Sand contains free silica known to cause Siliceous.*

Loading the System with Abrasive

Turn on the power to the machine (Item N – Operation & Maintenance Diagram). The abrasive of choice should be loaded through the cabinet door with the dust collector blower running. The Pro model requires an initial charge of 40-50 pounds of abrasive.

Note: *Never add abrasive to the system unless the dust collector is running, this will lesson and control fine dust contained in the abrasive.*

There is no need to pre-screen the abrasive. The CrystalBlast Pro system includes a perforated scalper screen designed to remove all particles large enough to clog the nozzle. Additional abrasive

should be added from time to time to maintain maximum levels in the system. Shorter blast intervals between pot reload is a good indication that more abrasive needs to be added to the system. (EXAMPLE: The 3/32" blast nozzle consumes approximately 1.1 pounds per minute of abrasive for an approximate total blast duration of 30-40 minutes with a full abrasive charge in the blast pot and a new nozzle ID size. If the total blast time to empty the pot falls to 15 minutes, add 10 pounds of abrasive to the system to bring the system up to a full charge.)

Note: *Some abrasive will remain inside the cabinet and void abrasive use due to ledge stacking. This is normal; the addition of more abrasive will compensate for this stacking but it is not required.*

Filling the Blast Pot

Loading the system with abrasive will also fill the blast pot. With the pot de-pressurized the Pot Plunger will be open allowing the abrasive to drain through the perforated screen into the pot assembly. This can be accomplished by closing the Main Air Inlet Valve, (Item B - Pneumatics Reference Diagram). Once the Main Air Inlet Valve has been closed, activate the blasting Foot Pedal Valve, (Item H – Pneumatics Reference Diagram), to drain the pressure pot assembly. Always do this operation with the blower and dust collector running. To pressurize the pot, pull out on the Pot Plunger Assembly Handle (Item I – Operation & Maintenance Diagram) located on the front center of the blast cabinet hopper. This applies pressure on the Pot Plunger against the pot valve rubber seal seat, to seal the pot. While pulling out on the Pot Plunger Assembly Handle, open the Main Air Inlet Valve, (B – Pneumatics Reverence Diagram), to pressurize the pot. If any audible air leakage is noted after 2 seconds, depressurize the pot by closing the Main Air Inlet Valve, pushing down on the Foot Pedal Valve, then pull out again on the Pot Plunger Assembly Handle while opening the Main Air Inlet Valve.

Note: *The air compressor receiver tank must have a pressure of 80-90 psi prior to pressurizing the blast pot.*

The nozzle will blast during pot pressurization for 1-2 seconds, this is normal and when the pressure in the Pneumatic Pinch Valve exceeds the blasting pressure, the Pneumatic Pinch Valve will stop the blast nozzle.

Adjusting the Abrasive Flow

The blast pressure is adjusted from the pressure regulator (Item C – Pneumatics Reference Diagram) located on the front of the pressure pot assembly. Rotating the pressure regulator adjustment knob clockwise will increase the blast pressure. Rotating the pressure regulator adjustment knob counter-clockwise will reduce the blast pressure. Typical blast pressures for etching and carving on glass are 20 – 40 psi with 30 psi suggested.

Note: *This machine should not be operated at pressures greater than 60 psi.*

Adjusting the Abrasive Flow

The abrasive flow is adjusted using the Abrasive Choke Valve (Item E – Pneumatics Reference Diagram). The Abrasive Choke Valve is located on the left side of the air regulator opposite the Main Air Inlet Valve. When the Abrasive Choke Valve is completely open you, will see very little abrasive exiting the nozzle. Adjust as follows but, never close the Abrasive Choke Valve completely:

Set the Abrasive Choke Valve at 45 degrees and test the blast pattern by pressing on the Foot Pedal Valve assembly. If very little abrasive is exiting the nozzle after 2-3 seconds, close the Abrasive Choke Valve a small amount by moving the handle about 1/4"-3/8" towards closed position. Just before the nozzle is delivering the proper amount of abrasive, the abrasive flow will pulse slightly. Close the Abrasive Choke Valve a bit more and the pulsing will disappear, the setting is now correct. This setting will stay correct unless you change the blasting pressure or abrasive mesh size.

Always shut off the Main Air Inlet Valve at the end of daily operation or when the air compressor will be turned off. Depressurize the pot assembly when the air compressor is going to be turned off for the day by closing the Main Air Inlet Valve and pressing down on the Foot Pedal Valve until the pressure pot is empty. Remember to have the machine blower running to prevent abrasive escape.

Wearing Gloves

The CrystalBlast Pro sandcarving cabinet is equipped with open end gauntlets (or sleeves) and a box of disposable latex gloves. This gives the operator the choice of blasting with or without gloves. Abrasive can cause irritation or damage to the skin if accidentally exposed to the blast. IKONICS Imaging recommends that the operator wear gloves while blasting. Latex or nitrile gloves offer the highest degree of fingertip sensitivity while offering a comfortable degree of protection. All CrystalBlast Pro models are available with attached gloves upon customer request.

Ready to Blast

The unit is now ready for blasting. Turn on the electrical on-off switch (Item N– Operation & Maintenance Diagram). Place a practice piece of glass in the machine to test the blast. Using a pair of disposable gloves, place both arms in the arm ports and pick up the practice glass for the test. Rest your elbows on the padded arm rest and hold the nozzle/nozzle holder like a pencil about 3-4 inches from the part surface. Depress the Foot Pedal Valve and begin blasting the part and always remember to start the blasting, off of the part surface.

Note: *Never point the nozzle at the window. The abrasive will permanently frost the protector window.*

Note: *The CrystalBlast Pro system may provide different results than other blast systems. When the unit is first operated, use practice glass to become familiar with the nozzle pattern and speed. Place masking material on the scrap glass to see how long the mask material will stand up to the blast. The experienced operator may find that the CrystalBlast Pro system will be operated at lower blast pressures than previously experienced with other systems.*

Finishing Blast

At the end of the day, when the blasting is finished or when the air compressor is turned off, the blast pot must be depressurized. Close the Main Air Inlet Valve, (Item B Pneumatics Reference Diagram) and use the Foot Pedal Valve to drain the pressure pot.

Make sure the dust collector blower is running.

Pressure Blast CFM Consumption

Nozzle Size		CFM Consumption at Specific Pressures								
		20 PSI	30 PSI	40 PSI	50 PSI	60 PSI	70 PSI	80 PSI	90 PSI	100 PSI
1/16"	0.062	2.00	2.50	3.10	3.70	4.20	4.80	5.40	5.90	6.50
3/32"	0.094	4.40	5.70	7.00	8.20	9.50	10.80	12.10	13.30	14.60
1/8" (#2)	0.125	7.90	8.38	10.29	12.20	14.02	15.93	17.76	19.67	21.80
3/16" (#3)	0.187	15.00	18.92	23.24	27.39	31.54	35.85	40.08	44.15	49.00
1/4" (#4)	0.250	26.00	33.62	41.17	48.64	56.11	63.66	71.13	78.68	85.00
5/16" (#5)	0.312	42.00	54.61	67.06	79.10	91.13	103.63	115.66	127.74	140.00
3/8" (#6)	0.375	58.00	75.61	92.96	109.56	126.16	143.59	160.19	176.79	194.00
7/16" (#7)	0.437	83.00	105.03	128.65	152.31	175.55	199.20	222.44	245.68	268.00
1/2" (#8)	0.500	105.00	143.46	164.34	195.05	224.93	254.81	284.69	314.57	346.00

Maintenance

General Equipment Maintenance

(Intervals may vary depending on equipment usage)

	Daily	Weekly	Monthly	Semi-Annually	Annually
Drain Regulator Water Trap	X				
Clean the Dust Collector Filter Bags	X				
Clean the Abrasive Scalper Screen		X			
Remove Dust from Dust Collector		X			
Inspect the Blast Nozzle	X				
Inspect the Blast Hose		X			
Replace the Air Inlet Filters				X	
Replace the Filter Bags					X
Replace Disposable Micro After-Filter			X		

Cleaning the Abrasive Scalper Screen

Lift up the expanded metal work grate and remove the grate from the cabinet. Use a shop vacuum to clean the debris off the scalper screen. Replace the operator work grate.

Cleaning the Dust Collector Cartridge Filter

The dust collector filters should be cleaned daily or every one hour of machine use. Clean filters, mean clean machine and work area so, this operation is critical to the operation of any blasting cabinet. Using the right or left side bag rapper handle, use the palm of your hand to quickly bang and tap the ball of the handle to collapse the spring and shake the dust bags. This will release collected dust and drop the dust into the dust storage hopper. The Pro model includes a disposable MICRO after filter used to capture fine dust created with any tubular dust bag construction. Never clean the disposable MICRO after filter, MICRO filters are not cleanable and must be used as post primary filters.

Removing the Dust from the Dust Collector

Periodically the dust must be removed from the dust collector hopper. IKONICS Imaging recommends removing the dust at least once per week (more often depending on the type of abrasive used, the blasting pressures and the number of hours per week the machine is in use). Prior to removing the dust, perform the Cleaning the Dust Collector Filters procedure. When the filter cleaning has been completed, the dust collector is ready for dust removal.

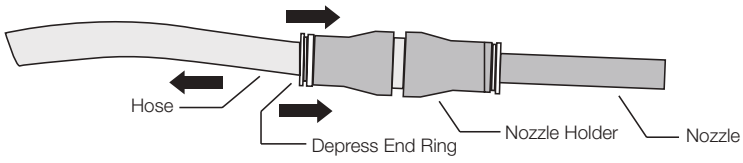
Unscrew the dust collector hopper drain cap (Item Q – Operation and Maintenance Diagram) but do not remove. With one hand, hold the neck of a plastic bag on the pipe nipple above the hopper drain cap (or use a garbage bag with tie straps and tie it to the pipe nipple). With the other hand, grasp the drain cap through one corner of the bottom of the plastic bag. Finish unscrewing the drain cap and move it aside to allow the dust to drain into the bag.

Continue to hold the cap through the plastic bag until all of the dust has been drained. Screw the drain cap back on the nipple. Grasp the neck of the plastic bag below the drain cap and remove the bag. The dust should be contained completely in the bag for disposal without exposing the surrounding area or the operator to the dust.

Inspecting and Replacing the Blast Nozzle

It is important to replace the nozzle after it has worn 1/32". Not only will the worn nozzle use more compressed air, but the abrasive will impact the part more aggressively. As the volume of air and abrasive increases, it will create additional wear on the blast hose too. The easiest way to know if your nozzle requires replacement is to keep a 1/8" drill bit nearby (or a 5/32" drill bit if the CrystalBlast Pro was purchased with a 1/8" nozzle). If the drill bit fits into the blast nozzle, then it is time to replace the nozzle. Replacement is not manditory but, a worn nozzle uses more compressed air and if the air compressor is margional, the machine controls will not operate properly unless 90 psi line pressure is maintained.

Always depressurize the pressure pot during any machine maintenance; To replace the blast nozzle, hold the nozzle and nozzle holder (Item J – Pneumatics Reference Diagram) in your right hand and the blast hose (Item I – Pneumatics Reference Diagram) in your left hand. With your right thumb and forefinger, press the end ring of the nozzle holder toward the nozzle (see diagram below). As you are pressing, pull the abrasive blast hose the other direction using a twisting motion. The hose should release from the nozzle holder. Note: Do not try to remove the nozzle from the nozzle holder. The nozzle holder is designed to be an integral part of the nozzle. Removal and reinstallation of the nozzle in the nozzle holder may cause the nozzle to become a projectile. Injury may occur as a result. Dispose of the nozzle holder with the nozzle when the nozzle has worn out.



Replacing the Blast Hose

Always depressurize the pressure pot during any machine maintenance; To replace the blast hose, hold the nozzle and nozzle holder in your right hand and the blast hose in your left hand. With your right thumb and forefinger, press the end ring of the nozzle holder toward the nozzle (see diagram). As you are pressing, pull the abrasive blast hose the opposite direction. Remove the other end of the hose from the connector using the same process.

Note: *All hoses and tubing are removed using this same procedure.*

Replace with new abrasive hose in reverse of above procedure.

Replacing the Light Bulbs

Replace the light bulbs by opening the cabinet door and unscrewing the spot light, (s), making sure to replace the cabinet heat resistant sealing washers. New washers are available as a spare part. These washers are a special material for usage on halogen spot lighting. Never use standard washers that may pose a possible fire hazard. Never replace a hot bulb and always wear safety gloves for hand protection.

Replacing the Window Protector or View Window

Remove the screws located on the top window bracket. Next loosen the bottom screws but do not remove the screws from the cabinet. The bottom bracket will hold the window and window protector during replacement of the protector window. Remove the operator view window, clean and set aside. Next remove the window protector glass. Replace with a clean protector glass and replace the operator view window. Install the top window bracket and hand tighten the fasteners. Tighten the bottom and top fasteners in a circular motion making sure not to over-tighten the fasteners.

Replacing the Dust Collector Filters

Prior to replacing the filters, clean the dust bags using the procedure in “Cleaning the Dust Collector Filters”. Make sure the power is turned off to allow the dust to drop off the inside of the filter bags. Remove the dust from the dust collector hopper first. (Please refer to the REMOVING THE DUST FROM THE DUST COLLECTOR procedure).

Open the bag access door and remove the Disposable MICRO after filter. This filter is not cleanable, replace with a new filter any time you are replacing the filter bags.

Loosen and slide the bottom bag clamp up from the bottom bag attachment fitting. Carefully lift the bag and remove the bag from the top hanger hook making sure to remove the bag clamp. Having a plastic trash bag will keep a clean area. Carefully drop the dust bag into the trash bag. Do this for all eight dust bags.

With a shop vacuum, vacuum the inside of the dust collector area to remove any dust that has dropped from the removed bags. Doing this will prolong the life of the MICRO after-filter. Replace each bag with a new bag by hanging the top of the dust bag on the hanger rack assembly, slipping the bottom bag clamp onto the outside of the bag and fitting the bottom of the bag onto the lower bag attachment fitting. Slip the clamp into position and tighten. Make sure the dust bag is taught, this will help shake the bag and release the collected dust from inside the dust bag.

Replacement of the Pneumatic Phinch Valve Bladder

1. Turn off machine air and depressurize pot assembly.
2. It is advisable to drain existing abrasive from the blast pot prior to Pneumatic Pinch Valve removal and or service. Remove all abrasive using the pressure pot access port described in the machine maintenance manual, “Draining the Blast Pot and Replacing with New Abrasive”.
3. Locate the Pneumatic Pinch Valve attached to the bottom of the pressure pot assembly. Removing the Pneumatic Pinch Valve from the machine is recommended for maintenance.
4. With a ½” wrench or socket, remove the 8 bolts holding the two end caps to the valve body. Remove both end caps.
5. Removing the Core, **Part #109-20-302**
   With end caps removed, remove damaged core and set aside.
   Replacing Bladder **Part #109-20-301**
   With core removed, use any flat screwdriver to carefully pry the damaged bladder from the valve body. Take care to not damage the valve body. Replace with the new bladder making sure the bladder is seated. Inspect core and replace with new core if old core appears worn. Install core in the center of the new bladder.
6. Replace End caps with the ½” bolts and lock washers making sure the contours of the end cap line up with the contours of the body.
7. Re-install the Pneumatic Pinch Valve on the machine and make sure no abrasive grains exist on the valve or pot nipple assembly.
8. Replace pressure pot access port, make sure the pot seal is located properly. You may now charge the machine with abrasive.
9. Turn the machine air back on.

109-20-302 109-20-301

Draining the Blast Pot and Replacing with New Abrasive

In general, as the abrasive breaks down, the dust will be carried to the dust collector. Small particles of abrasive will remain in the recyclable abrasive mix until it is too fine to be retained by the abrasive reclaim separator. This may or may not cause a noticeable difference in the blast productivity or etch finish. Oftentimes, it will not be noticeable because additional abrasive is added from time to time to make up for the abrasive that has been broken down. If a noticeable difference in the blast productivity or etch finish occurs, the abrasive may need to be replaced in the system. IKONICS Imaging recommends the following procedure for changing the abrasive:

1. Make sure that the lights and exhaust blower are running on the machine.
2. Depressurize the blast pot by closing the Main Air Inlet Valve and draining the pressure pot.
3. Push on the Pot Plunger Assembly Handle to make sure there is no pot pressure, if the plunger opens, the pot is depressurized.
4. Place a pan underneath the blast pot.
5. Remove the drain plug located on the Air/Abrasive Mixing Cross fitting (Item F – Pneumatics Reference Diagram) beneath the blast pot. The abrasive will begin draining into the pan.
6. Remove the expanded metal work grate from the cabinet.
7. Using a wide putty knife, move all the abrasive from the hopper corners and the ledges to the perforated scalper screen, the abrasive will drain into the blast pot.

   Note: *To ensure that no residual abrasive is left in the blast pot, the blast pot can be tapped with a rubber mallet to dislodge any trapped abrasive. To ensure nearly complete evacuation of abrasive, remove the pot cleanout port on the rear of the blast pot and use a shop vacuum to clean any residual abrasive out of the blast pot.*

8. Replace and tighten the plug in the Air/Abrasive Mixing Cross fitting.
9. Replace the cleanout port cover, if removed, make sure the gasket is seated correctly.
10. Install the port cover crab bracket and tighten.
11. Replace the expanded metal workgrate.
12. Add 40-50 pounds of new abrasive to the system.

Note: *If it is critical to remove all the abrasive, remove the access cover on the rear of the blast pot. To do this, remove the nut that holds the crab bracket in place. Once the nut and crab have been removed, the blast pot access cover can be manipulated out of the blast pot by turning 180 degrees. Use a shop vacuum to clean the rest of the abrasive out of the blast pot. When replacing the blast pot access cover, make sure that the rubber gasket and access cover are uniformly aligned across the access hole.*

Replacing the Pot Seal or the Pot Plunger

This maintenance procedure will unlikely need to be performed for many years however, eventually the blast pot seal will wear out requiring replacement.

1. Turn the machine on.
2. Turn off the Main Air Inlet Valve and depressurize the blast pot using the Foot Pedal Valve.
3. Place a pan under the blast pot to catch any abrasive that comes out of the blast pot.
4. Remove the expanded metal work grate from the cabinet.
5. Locate the clevis attached to the vertical rod that is attached to the Pot Plunger. Remove the cotter pin from the clevis pin.
6. Pull the clevis pin to disconnect the assembly from the Pot Plunger rod/clevis.
7. Unthread the clevis from the rod; the Pot Plunger should drop down inside the blast pot.
8. Remove the access cover on the rear of the blast pot by removing the nut that holds the crab bracket in place. Once the nut and crab have been removed, the blast pot access cover can be manipulated out of the blast pot.
9. Unthread the pipe riser inside the pot that guides the Pot Plunger up and down, do not over tighten this nipple when replacing.
10. Remove the pipe riser and Pot Plunger at the same time.
11. Locate the donut shaped pot seal on the abrasive inlet to the blast pot.
12. Wedge a small screwdriver between the metal lip of the blast pot and the blast pot seal. Pry the blast pot seal out of the blast pot, note location of the seal bevel.
13. Install the new blast pot seal, make sure the bevel is located at the bottom.
14. Replace the Pot Plunger and pipe riser together as a single assembly. The parts must be assembled together before putting inside the blast pot and the pipe riser threaded into place. Install the Pot Plunger with care; make sure the clevis rod passes through the hole in the scalper screen. Use caution and make sure to install the polyethylene seal washer on the clevis rod.
15. Reinstall the access cover on the rear of the blast pot. When replacing the blast pot access cover, make sure that the rubber gasket and access cover are uniformly aligned across the access hole. Tighten the nut that holds the access cover in place.
16. Thread the clevis back onto the Pot Plunger rod and tighten.
17. Attach the assembly to the clevis with the clevis pin.
18. Reattach the cotter pin to the clevis pin.
19. Check the operation of the Pot Plunger Assembly by pushing and pulling the handle several times.
20. Re-pressurize and depressurize the blast pot several times. Be sure to pull slightly on the handle each time the pot is pressurized and push the handle to drop the Pot Plunger each time the pot is depressurized.
21. Reinstall the expanded metal workgrate.

Troubleshooting

Will Not Blast: Compressed Air (But No Abrasive)

Blast Nozzle is Plugged
Remove the nozzle/nozzle holder from the blast hose. Use a small, stiff wire to dislodge the obstruction.

Blast Pot is Empty
Depressurize the blast pot using the Main Air Inlet Valve and Pot Plunger Assembly Handle, see procedure.

No Abrasive in the Cabinet
Add 40-50 pounds of abrasive to the system. Be sure that the dust collector is on when the cabinet is loaded with abrasive.

Abrasive Chock Valve is Not Adjusted Correctly
Rotate Abrasive Choke Valve arm to approximately 45° and test for abrasive flow. Refer to the "Adjusting the Abrasive Flow" section of the manual for adjustment procedures if the flow is not quite correct.

Abrasive is Damp
Wet abrasive sticks together. Clean the abrasive out of the machine and replace with fresh abrasive. Determine cause of moisture and repair problem to prevent reoccurrence. Check the filter trap on the air regulator; drain if there is water in it. Install Inline Ambient Air Dryer (P/N 100-03-003) to prevent reoccurrence.

Will Not Blast: Compressed Air (No Compressed Air or Abrasive)

Check Regulator
Is it turned off?

Compressed Air is Turned off or Disconnected from Blast Cabinet
Make certain that the compressed air is connected to the blast cabinet and turned on.

Blast Pot is Depressurized
Pressurize blast pot by rotating the Main Air Inlet Valve handle (Located on the right side of the air regulator) to the horizontal position.

Blast Nozzle is Plugged
Remove nozzle and use a small, stiff wire to dislodge the obstruction.

Abrasive Choke Valve Completely Closed
If the Abrasive Choke Valve is completely closed (Abrasive Choke Valve arm in the vertical position), then the abrasive hose is probably plugged with abrasive. Refer to abrasive hose unplugging procedure in the "Adjusting the Abrasive Flow" section and repair problem to prevent reoccurrence.

"V" Blast Pattern From Nozzle

Small Piece of Debris Lodged in Nozzle
Remove the nozzle/nozzle holder from the blast hose. Use a small, stiff wire to dislodge the obstruction.

Blast Will Not Stop

Pneumatic Pinch Valve Sleeve Has a Hole
Immediately decompress the blast pot. Turn off main supply of air to the blast cabinet. Refer to the "Replacement of the Pneumatic Pinch Valve Sleeve" section in the manual for repair procedure.

Blast nozzle is Worn Out
Air compressor cannot keep up with the air volume necessary to operate the larger blast orifice, so the compressor line pressure drops below 80 psi. Immediately decompress the blast pot. Replace nozzle.

Debris in the Pneumatic Pinch Valve
Immediately decompress the blast pot. Remove the Pneumatic Pinch Valve from the machine. Remove both hex nut covers. Clean out the valve. Inspect the sleeve for holes. Reassemble and reinstall.

Blast Pot was Not Depressurized and Compressor Was Turned Off
Depressurize blast pot.

Air Compressor Does Not Cycle on Until Pressure Drops Below 80 PSI
Replace air compressor or change control on compressor.

Air Compressor is Too Small
Air compressor does not generate enough volume of air to maintain a line pressure of 80 psi or more.

Erratic Abrasive Delivery From Nozzle

Nozzle is Worn Out
Replace nozzle.

Abrasive Flow Valve is Not Adjusted Correctly
Erratic abrasive delivery is usually caused by too rich abrasive flow. Rotate Abrasive Choke Valve arm in small increments towards a horizontal position. Refer to the "Adjusting the Abrasive Flow" section of the manual for adjustment procedures if the flow is not quite correct.

Abrasive is Damp
Wet abrasive sticks together. Clean the abrasive out of the machine and replace with fresh abrasive. Determine cause of moisture and repair problem to prevent reoccurrence. Install In-line Ambient Air Dryer (P/N 100-03-003) to prevent reoccurrence.

Abrasive is Worn Out
Replace the abrasive. Refer to the “Draining the Blast Pot and Replacing with New Abrasive” section of the manual for procedures in replacing the abrasive.

Large Surge of Abradsive at the Beginning of the Blast

Abrasive Flow Assembly is Worn Out
Replace the Air/Abrasive Mixing Cross located beneath the blast pot.

Blast Pot Will Not Seal

Compressed Air is Turned Off
Make certain that the compressed air to the blast cabinet is turned on.

Pot Seal is Worn Out
Refer to “Replacing the Pot Seal or Pot Plunger” section of the manual.

Blast Regulator is Set Too Low
Increase pressure 10 psi; try again.

Too Much Abrasive in System
Abrasive is resting on the Pot Plunger, keeping it from getting a good seal.

System Will Not Maintain Desired Blast Pressure

Nozzle is Worn Out
Compressor is not large enough to handle the additional air volume necessary to run a larger bore nozzle. Replace blast nozzle.

Air Leak Heard After Refilling Blast Pot with Abrasive

Pot Plunger Did Not Seat Properly When Blast Pot Was Pressureized
Depressurize blast pot, push in and pull back on the Pot Plunger Assembly Handle with a slight pressure and simultaneously pressurize the blast pot by opening the Main Air Inlet Valve.

Pot Seal is Worn Out
Refer to “Replacing the Pot Seal or Pot Plunger” section of the manual.

Operator is Getting Shocked by the Machine

Part is Being Held in Operator's Hand
Place part on the work surface while blasting or purchase Static Electricity Discharge Cuff (P/N 100-22-021) to ground the operator to the blast cabinet.

Part is Being Placed on a Rubber mat or Other Non-Metallic Surface
Place part on the work surface while blasting or purchase Static Electricity Discharge Cuff (P/N 100-22-021) to ground the operator to the blast cabinet.

Humidity is Low
Purchase Static Electricity Discharge Cuff (P/N 100-22-021) to ground the operator to the blast cabinet.

Abrasive and/or Dust is Coming Out of Exhaust Blower

Bag Filters Have a Hole or Have Come Loose
One or more of the dust filter bags has a hole in it or may have come loose from the bag attachment fitting on the bottom. Make sure all the bags are secured tightly at the bottom. If there is a hole in one or more of the bags they will show dirt on the outside of the bag. This is an indication that all the bags should be replaced unless the bags are new and one is defective from the factory.

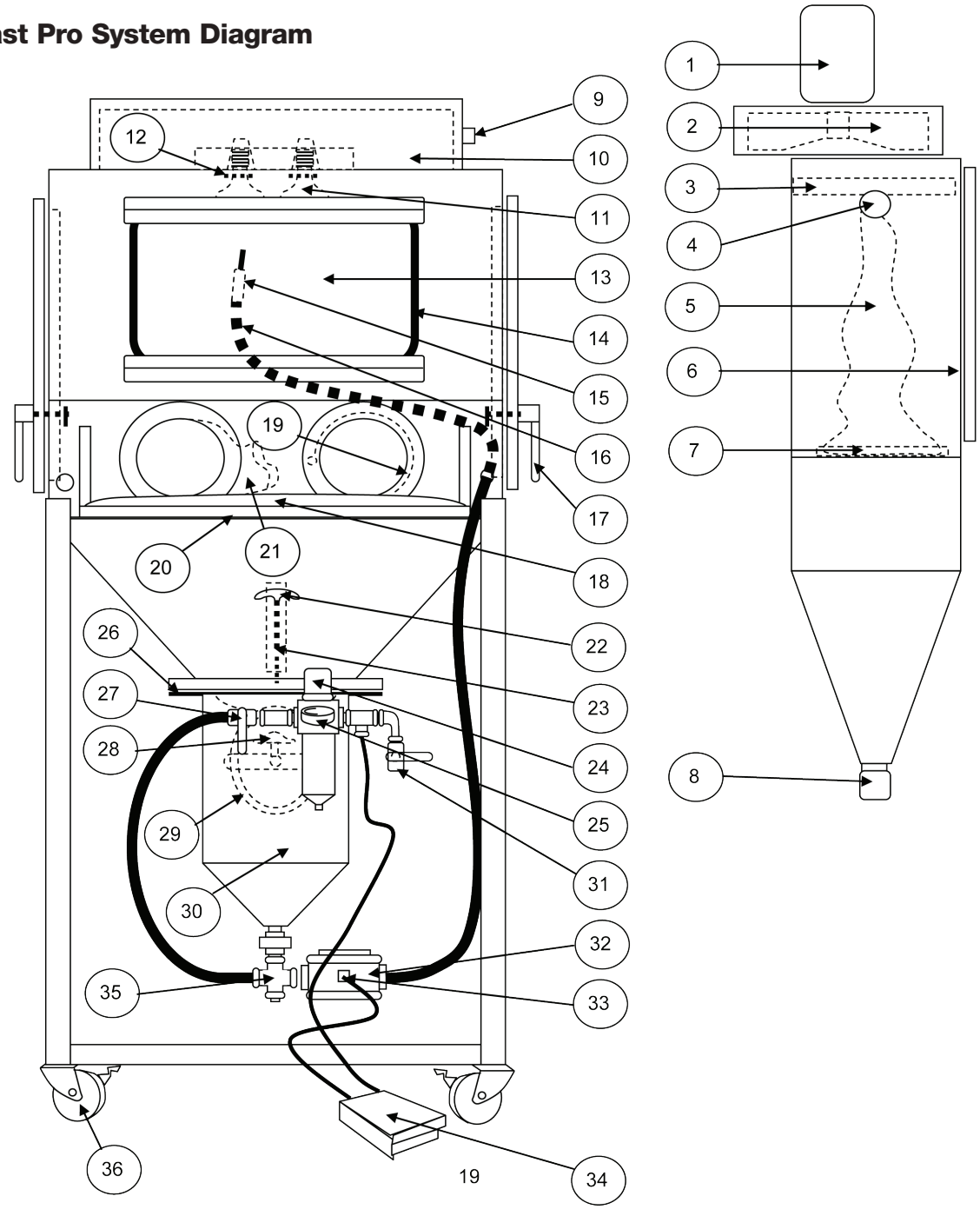
Make sure to replace the MICRO disposable after filter if dust has been seen exiting the blower exhaust.

CrystalBlast Pro System Diagram and Parts List

To find the part/part number for your machine:

1. Determine in which system the part is most likely to be found (hardware, pneumatic, dust collector, sheet metal,or electrical).
2. Refer to the appropriate diagram.
3. Find the location of the part and note to the corresponding diagram number.
4. Refer to the corresponding system section of the parts list and locate the corresponding diagram number.
5. If there are multiple listings for the diagram number, the correct part and part number can be determined from the diagram number descriptions.

CrystalBlast Pro System Diagram



CrystalBlast Pro Parts List

Diagram #	Part #	Description	Qty.
1.	100-05-101	1/2HP Blower Motor, 3450 RPM	1
2.	100-05-311	Blower Impeller, 9-1/4”	1
3.	109-08-002	Disposable Micro After filter	1
4.	109-08-003	Bag Rapper Handle	2
5.	109-08-001	Dust Bag Filter	8
6.	100-11-604	Door Seal, 20’ roll	20 ft.
7.	100-12-003	Bag Clamp	8
8.	100-08-142	Drain Cap	1
9.	100-09-610	On-Off Selector Switch Complete	1
10.	109-06-602	Air Inlet Filter	1
11.	100-09-052	Spot Lights, 90 watt	2
12.	100-11-120	Sealing Washer, heat shield	2
13.	109-06-029	Window, Safety Glass	1
13.	109-06-030	Window Protector Glass	1
14.	101-11-147	Window Seal	6 ft.
15.	109-19-092	3/32” Tungsten Nozzle with Holder for 1/2 hose	1
15.	109-19-093	3/32” Boron Carbide Nozzle with Holder 1/2 hose (optional)	--
15.	109-19-092	3/32” Tungsten Nozzle with Holder for 3/8 hose (optional)	--
15.	109-19-549	3/32” Boron Nozzle with Holder for 3/8 hose (optional)	--
16.	109-15-600	1/2” OD Micro Blast Hose	10 ft.
16.	109-15-601	3/8” OD Whip Hose (optional)	--
16.	109-19-602	3/8” to 1/2" Whip Hose Adaptor (optional)	--
17.	109-06-604	Door Handle Left	1
17.	109-06-603	Door Handle Right	1
18.	100-07-101	Armrest Pad	1
19.	102-12-038	Gauntlet Clamp	2
20.	109-25-600	Work Grate (expanded)	1
21.	109-12-105	Gauntlet (elastic cuff)	2
22.	109-21-601	Pot Plunger Assembly Handle	1
23.	109-21-602	Pot Plunger Assembly Complete	1
24.	100-03-080	Air Regulator/Filter	1
25.	109-13-101	Air Filter Gauge	1
26.	109-25-601	Pot Screen (perforated)	1
27.	100-26-098	Abrasive Choke Valve	1
28.	109-21-201	Pot Plunger	1
28.	104-21-176	Pot Seal	1
29.	104-21-171	Cleanout Port Gasket	1
30.	109-21-603	Pressure Pot, (50 pound capacity)	1
31.	100-26-098	Main Air Inlet Valve	1
32.	109-20-300	Pneumatic Pinch Valve	1
33.	109-20-105	Inline Micro Filter Complete	1
33.	109-20-106	Inline Micro Filter Element	1
34.	101-06-009	Foot Pedal Valve Complete	1
35.	109-21-300	Air/Abrasive Mixing Cross	1
36.	109-18-604	Wheels (front locking) Swivel	2
36.	109-18-606	Wheels (rear non-locking) Swivel	2

Warranty

Media Blast & Abrasives, Inc., hereinafter known as “Seller” warrants the equipment and products sold hereunder against defects in material and workmanship under normal use and service excluding abrasion, erosion and corrosion for a period of one (1) year from date of shipment to Buyer. Equipment, products or parts manufactured by others but furnished by Seller will be repaired or replaced only to the extent of the original manufacturer’s warranty (except motors). Buyer shall promptly report all asserted defects in the equipment, products or parts to Seller and shall afford Seller a reasonable opportunity to inspect all asserted defects. Seller’s entire liability, whether under warranty, contract, negligence, or otherwise, shall be limited to repair or replacement, F.O.B. Seller’s place of business, of the original equipment found to be defective within the warranty period. Seller may void warranty if replacement parts installed in the machine are not genuine Media Blast & Abrasives, Inc. parts. Buyer shall be liable for and indemnify Seller against any and all claims, losses, or causes of action or judgements of any kind arising from or on account of personal injuries or death or damages to property resulting from or caused by Buyer’s negligence or improper installation, operation or maintenance of the equipment.

The foregoing obligations are in lieu of all other obligations and liabilities including negligence and all warranties of merchantability or otherwise, expressed or implied in fact or by law, and state our entire and exclusive liability and buyer’s exclusive liability for any claim of damages in connection with the sale or furnishing of goods or parts, their design, suitability for use, installation or operation of the equipment covered by this agreement. Seller will in no event be liable for any special or consequential damages whatsoever, and our liability under no circumstances will exceed the contract price for the goods for which liability is claimed.

How to Order

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