Operator's Manual

CRYSTALBLAST™

MOBILE COMPACT

Optional VAC-110

IKONICS IMAGING®

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

Made in USA

Engineered, manufactured and supported in the USA by MediaBlast, Inc. and IKONICS Corporation.

Mobile Compact Sandcarver QUICK-GUIDE

*This **Quick Operation Sheet** is not meant to replace the machine Manual and Operational Guide*

You have just purchased the finest Sancarving system available in the market today. This machine was designed by Media Blast, a company manufacturing blast machines since 1977.

All CrystalBlast machines are very easy to operate and maintain. However, there are several important issues we would like to point out during installation of the machine…

- **ALWAYS USE CLEAN, DRY COMPRESSED AIR.** Moisture will cause abrasive to stick together preventing flow. If the Mobile Compact has been purchased with the optional VAC-110 dust collector, excessive moisture can cause dust to stick to the filter. Please review the compressed air requirements prior to operating the machine. Install a Ambient Air Dryer if the temperature of the compressed air entering the cabinet is above surrounding ambient air temperature.

- **PROPER OPERATION OF 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%. Warm compressed air creates moisture and this can be a secondary problem created by using a marginally sized air compressor. The Mobile Compact is not advised for nozzle operation larger than 3/32"…

- **DO NOT BLAST ABOVE 50 PSI.** This machine is designed for sandcarving using low pressures. Blasting at pressures in excess of 40 psi can cause premature failure of the abrasive delivery components (blast hose, blast nozzles, pinch valve bladder etc.)

- **MAINTAIN A CONSTANT INPUT LINE PRESSURE OF 90-100 PSI.** Proper operation of the CrystalBlast air controls requires 90-125 psi for machine ON-OFF controls… line pressures that fluxuate may cause imporoper operation of the control circuit.

- **ALWAYS DEPRESSURIZE THE POT WHEN YOU ARE FINISHED USING THE MACHINE.** It is necessary to depressurize the pot when the suppy compressor air is shut-down. Line pressure from the compressor is used to prevent nozzle blast. When the line pressure drops below 60 psi the blast control circuit will open. The next time that the air compressor is turned on the system will immediately begin blasting until the air compressor builds up air pressure to 60 psi.

- **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 consume more compressed air, but the abrasive will impact the part more aggressively and increase the potential for damaging the mask. As the volume of air and abrasive increases more air is required. Marginal air compressor sizing can result in malfunction of the machine air controls. High wear nozzles are available from Media Blast or aurthorized Media Blast dealers.

MEMO

Abrasives are available in different types and sizes. The difference in results between aluminum oxide and silicon carbide can be simply stated as personnel preference.

Use 120-150 with 4-5 mil mask and thicker for line art carving…use 180 for combination of carving and etching…use 220-240 for 2-mil mask on detailed half-tones and surface etch only…
220 mesh requires more advanced operator control and is not for the beginner.

MEMO

Optional Ambient Air Dryer 26 cfm max. Part Number 100-03-003

MEMO

3/32" nozzle is suggested for operation with 9-10 cfm supply compressor

MEMO

Never regulate airline into machine lower than 90 psi or higher than 125 psi

MEMO

High Wear 3/32" Nozzle is available for extended wear…Part Number 109-19-594

- **USE MBA REPLACEMENT COMPONENTS.** Replacement of worn components with parts not purchased from MBA or aurthorized dealer will void the warranty. The components used by Media Blast are of the highest quality and will provide the longest serviceable life.

- **REVIEW THE TROUBLESHOOTING GUIDE AND FOLLOW THE INSTRUCTIONS PRIOR TO CALLING MBA 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..

QUICK OPERATION GUIDE

The information that follows will be used to get your new CrystalBlast Mobile Compact machine operational 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 operational instructions refer to the main operational manual.

FIRST

- Remove the machine from the cardboard box by removing the screws holding the cardboard box to the wooden pallet. Slip the box over the top of the machine if you have adequate vertical height or cut the box open at one of the corners and remove.
- Remove any 3/8” lag-bolts used to fasten the machine to the shipping pallet.
- Taking care to use proper work gloves and eye protection, cut the steel bands that fasten the machine to the shipping pallet.
- Lift the machine vertically allowing the shipping pallet to be removed.
- Because the Mobile Compact includes casters, you may roll the unit into position using the two swivel wheels for cart steering.

After machine placement follow the steps listed below…

- Remove any items from inside the cabinet. Install the foot valve using the operator manual diagram to locate the tubing inlet on the pinch valve and the compressed air outlet located on the machine regulator assembly.
- Close the pot air inlet valve, see photos below, and attach compressor airline to main air inlet located on the lower left side of the open cabinet work cart chamber. All Quick Connector are not the same and this machine has been shipped without disconnect fittings allowing the customer to maintain uniformity by installing matching couplings. The air inlet is 1/4" NPT.
- Set the blasting pressure on the regulator using the air pressure regulator, see manual.
- Release the power cord, 120 volt, and plug into any standard outlet. The running amperage of the machine is 1100 watts or 9 amps with the optional VAC-110 collector. Any outlet unless already active will operate the machine. Never use extension cords for the operation of any CrystalBlast machine unless properly rated.
- Attach the customer supplied or optionally purchased vacuum dust collector to the blast cabinet separator reclaimer outlet connector. Plug the dust collector power cord into the supplied service outlet located on the ON-OFF control switch. Turn the shop vacuum switch to the ON position.

MEMO

The “KIT” is available containing the wear parts required to keep your CrystalBlast operational without using that Overnight Delivery Service…ask for details

MEMO

This machine uses any standard shop vacuum for the proper operation of the separator reclaimer and cabinet. The vacuum attachemtn outlet has been supplied on the blast cabinet chamber. It is advised that you use a vacuum using a cartridge filter. Media Blast offers the optional VAC-110 vacuum dust collector.

MEMO

All Media Blast models use the push-in tubing connectors. Installation of the foot valve tubing is accomplished by inserting the tube into the fitting and using a firm push to seat the tubing.

MEMO

Always install a master shut-off air valve before the main machine air inlet

MEMO

90-psi line pressure is required for proper operation of machine controls. Line pressure is needed for proper on-off control and reverse pulse dust collector cleaning.

MEMO

Never use extension cords for machine operation

Use the blast cabinet control switch to operate the lights and dust collector. The machine is now almost operational. Make sure the air compressor is operational with a minimum line pressure of 90 psi. If your compressor does not supply enough compressed air volume, the machine will not function properly.

The CrystalBlast machine requires 30 psi more air line pressure than the machine blasting pressure for proper operation of all air controls. You can use the pot control valves to stop the air supply to the pressure pot and exhaust any air inside the pot assembly using the pot exhaust valve... **Never install a compressor regulator set at blasting pressure or any amount lowering the line pressure below 90 psi.**

- Turn the machine ON-OFF switch to the ON position. The switch is located on the blast cabinet right leg. Turning this switch to the ON position will also turn the shop vacuum dust collector and lights to the ON position.
- Open the access door and with the blower running, pour 1 bag, 30-50-pounds of abrasive onto the operator work grate. The running exhaust blower will help prevent dust from exiting the machine during this process.
- Before pressurizing to blast pot the pot abrasive pop-up valve will be open. Pouring the abrasive into the cabinet will fill or load the media into the pressure pot.
- When the abrasive has been loaded, pressurize the pot assembly using the pot control valves located on the pot assembly. Refer to the last page of this Quick Guide for pot valve control instructions. Close the pot Exhaust Valve and open the pot Air Inlet Valve.
- Stepping on the blast pedal will activate the blast. Releasing the blast pedal will stop the blast. Pressure will remain in the pot assembly until the pot is de-pressurized, see instruction below.

ADJUSTING THE MIXING VALVE

Adjusting the media flow control valve is simple. Locate the compressed air choke valve located at the bottom of the pot assembly opposite the blue pinch valve assembly. When the valve is completely open you will see very little abrasive exiting the nozzle. Adjust as follows:

- Set the valve at 45 degrees…test for blast by pressing on the foot pedal assembly. Allow 2 seconds for hose cleanout the first time…If very little abrasive is exiting the nozzle close the valve by moving the handle about 1/4". Just before the nozzle is delivering the proper amount the abrasive the nozzle will pulse similar to heart rhythm. Close the valve a bit more and the pulse will disappear. When the stream is steady the setting is correct. This setting will be correct unless you change the blasting pressure or the abrasive size.

Depressurize the pot often. Never allow the pot to empty before refilling. During depressurization the abrasive in the pot assembly is mixed and mixing helps with the flow of the abrasive. After 10 minutes of blasting and if you have finished the part, depressurize the pot and allow the abrasive to fall back into the pot assembly.

Always depressurize the pot assembly when the air compressor is going to be turned off for the day. The air controls will not function properly if the line pressure in the compressor tank falls below 60 psi or 30 psi less than blasting pressure setting.

MEMO

Never overcharge the unit. Proper operations of the pot assembly require no more than 45-50 pounds of abrasive inside the pot assembly. Overcharging the pot may result in plugged abrasive hoses.

MEMO

The machine can be stopped at any time by closing the pot air inlet and opening the pot exhaust outlet.

WARNING

Never close the choke valve. This can plug the abrasive delivery system. Start with the choke valve full open with the valve handle parallel to the airline into the valve.

MEMO

90-psi line pressure is required for proper operation of the reverse pulse cleaning assembly.

Pressure Pot Control Valve Adjustment

- The Mobile Compact includes two pot control valves, one for pot exhaust and one for pot air inlet.
- All machines are shipped with the compressed air inlet in the closed position. Before attaching the compressed air line, make sure this valve is in the closed position with the exhaust valve closed.

PRESSURIZING THE POT FOR BLAST

1. **Close the pot exhaust valve, (see photo below)**
2. **Install main machine air to machine regulator assembly.** After installation this line will be connected to the unit and not require installation.
3. **Open air valve to pressurize pot assembly with exhaust valve in the closed position.** Opening this valve will automatically close the pressure pot pop-up valve. The pop-up valve closes with the incoming compressed air. Proper pop-up valve operation depends on a minimum regulator setting of 15-20 psi regulator pressure and assumes a machine operating line pressure of 90 psi.
4. **The machine is ready for blast. Pressing down on the foot pedal will start the blast, letting up on the foot pedal will stop the blast.** When first pressurizing the pot assembly and closing the pot pop-up valve a small amount of media will be in the abrasive supply hose. Always clear this media before part processing. This will not occur again until the pot is refilled when the pop-up valve is opened.

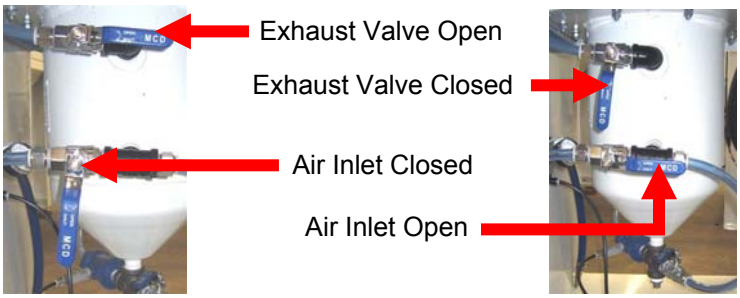
DE-PRESSURIZING THE POT FOR ABRASIVE RELOAD

1. **Close the pot air inlet supply valve, (see photo)**
2. **Open the pot exhaust valve, (see photo)**

This will depressurize the pot assembly and allow the pot pop-up valve to open. You will hear a metal tap when the valve opens, this is normal. The abrasive will filter back into the pot assembly. Close the pot exhaust valve and open the pot air inlet valve to close the pop-up valve and ready the machine for part processing.

TIP

If both valves are pointed in the same direction the machine will not function properly



OFF

Close Air Inlet and Open Pot Exhaust Valve. Pot depressurized for abrasive re-load, Pop-up valve opens… machine OFF

ON or BLAST

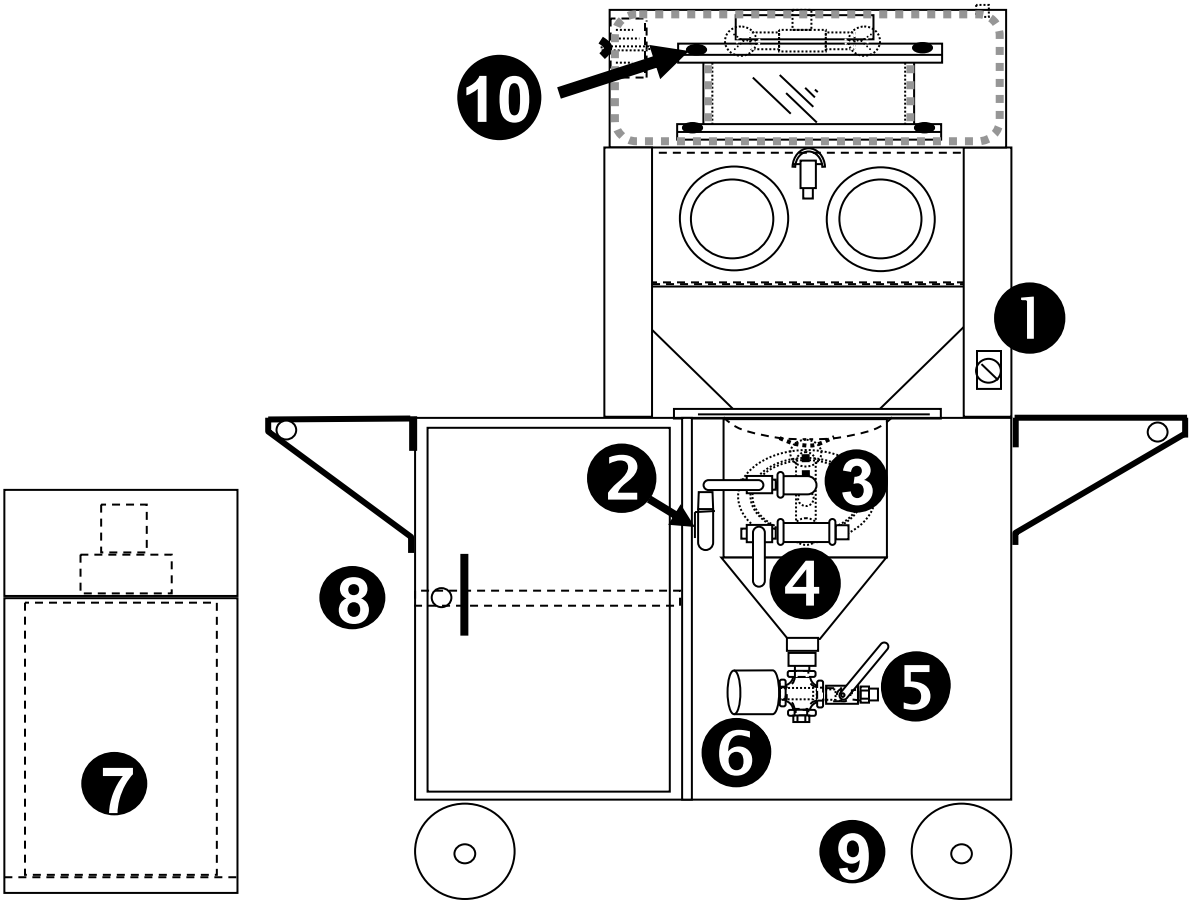
Close Pot Depressurize Valve and Open Air Inlet Valve. Pop-up valve closed and machine ready for blast.

PRESSURE BLAST CFM CONSUMPTION

Nozzle Size		CFM CONSUMPTION AT SPECIFIC PRESSURES								
		20 PSI	30 PSI	40PSI	50PSI	60PSI	70PSI	80PSI	90PSI	100PSI
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

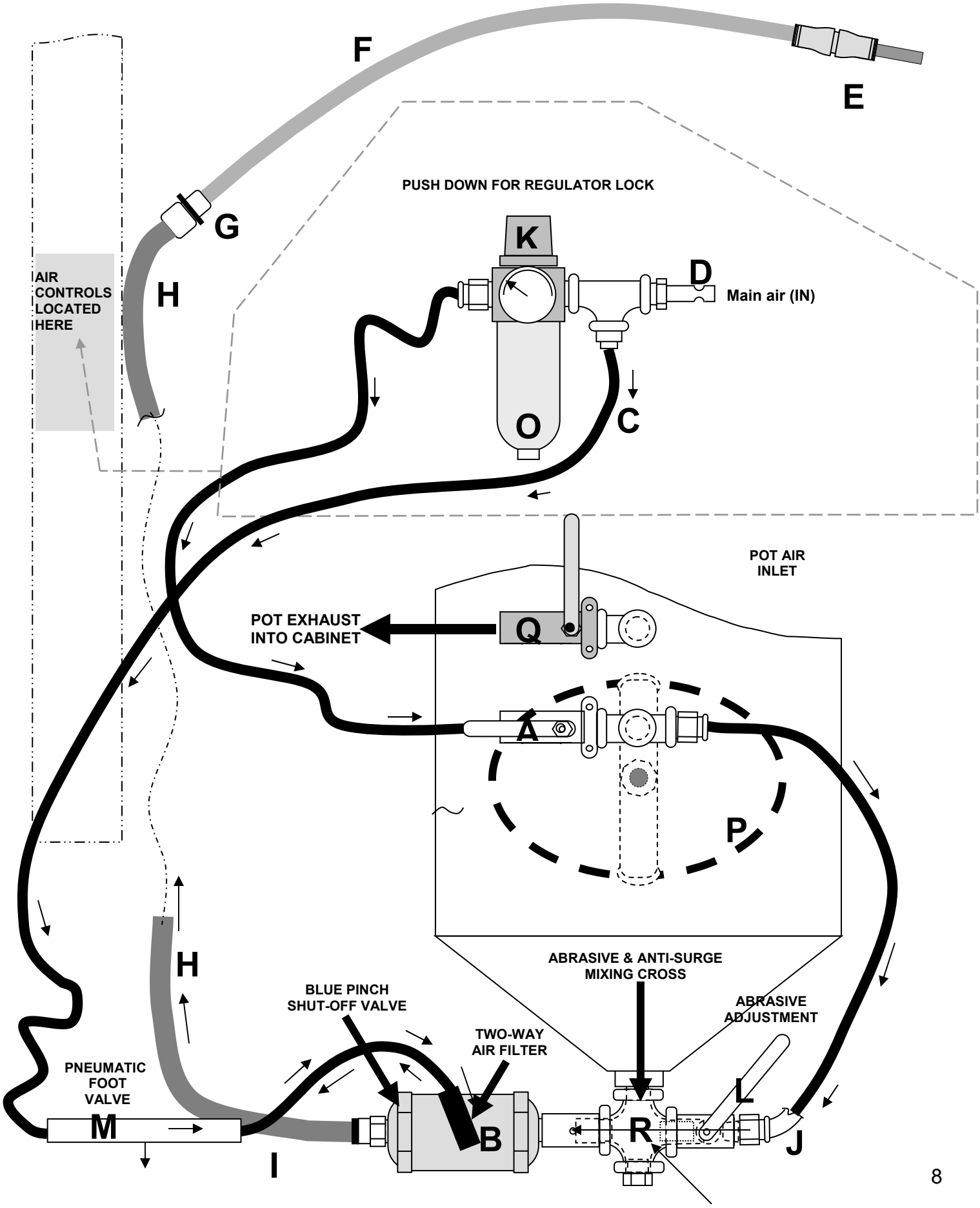
Mobile Compact Controls Diagram

125 MAXIMUM INLET PRESSURE



1. ON-OFF Control Switch for Machine and Dust Collector
2. Air Regulator… Blast
3. Pot Exhaust Valve
4. Pot Compressed Air Inlet Valve
5. Abrasive Flow Control Choke Valve
6. Pneumatic ON-OFF Pinch Valve
7. Optional VAC-110 collector (this unit must operate with attached vacuum)
8. Cabinet Lock
9. Swivel Wheels
10. Thumb Screws

CrystalBlast Pneumatics Reference Diagram



GETTING STARTED: **MANUAL**

INSTALLING THE MACHINE:

UNIT PLACEMENT: Allow adequate clearance for loading and unloading the blast cabinet. MBA recommends 36" in front of the cabinet for the operator. Always leave adequate clearance on the left side of the cabinet to facilitate placement of the dust collector. Never place 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.

DUST COLLECTOR ATTACHEMNT: The CrystalBlast Mobile Compact uses any Industrial Shop Vacuum for the dust collector… Media Blast offers the optional VAC-110 vacuum collector system, **(Item number 7 Machine Control diagram).** The optional VAC-110 uses the large 110 sq.ft. almost HEPA quality filter cartridge and the included abrasive separator reclaimer prevents abrasive escape from the cabinet during operation. Connect any 2" ID exhaust hose to the vacuum and side of the machine. Plug the dust collector service cord into the supplied service outlet.

ELECTRICAL REQUIREMENTS AND CONNECTION: The CrystalBlast sandcarving cabinets are wired for standard 120V / single phase service. MBA recommends that this cabinet be installed on a dedicated 20-amp breaker similar to any large single power appliance.

125 MAXIMUM INLET AIR PRESSURE

AIR REQUIREMENTS AND CONNECTION: The standard 3/32" i.d. nozzle requires 5.7 cfm @ 30 psi. The optional 1/8" i.d. nozzle is not recommended for operation in the Mobile Compact cabinet. *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 usage (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 25% (7.6 cfm for the 3/32" nozzle), otherwise nozzle wear may cause the air controls to function inproperly. Premature compressor failure can be a secondary result of using a marginally sized air compressor. *Note: The system must provide at least 30 psi more line pressure to the cabinet than the actual blasting pressure. MBA recommends any air compressor that automatically turns on when the air pressure drops below 95 psi. This eliminates any potential problem of losing the closure pressure on the blast shut-off or pinch valve.*

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 does 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. 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 (MBA 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 the air compressor will be strained. Optional High wear nozzle is available for this unit.*

The air supply hose must be at least ¼" i.d.. Couple to the machine (**Item D** - Pneumatics Reference Diagram) using quick disconnect coupler.

CHANGING THE ABRASIVE HOSE LOCATION: The Mobile Compact does not allow for the changing of the abrasive hose location.

SELECTING THE RIGHT ABRASIVE: There are three different types of abrasives that can be effectively used for etching and carving on glass; brown aluminum oxide, white aluminum oxide and 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 is less dusty than silicon carbide, it lasts longer, and it also costs less than the other two abrasives. 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.
- ***White Aluminum Oxide*** - White aluminum oxide differs from brown aluminum oxide because it has no iron content. This means that the abrasive will not leave a stain on the part that is blasted. Since the abrasive is screened to tighter specifications, it is also less dusty. Both white and brown aluminum oxide are more forgiving on the mask material. MBA recommends that aluminum oxide be used by beginner and less experienced operators.
- ***Silicon Carbide*** - This abrasive is not recommended for beginning blasters. Silicon carbide is so aggressive that it will tear through the masking material unless the blaster is skilled. However, the aggressiveness can be beneficial; the carving and etching can be accomplished much faster with the silicon carbide. In addition, the silicon carbide never loses its sharp edge. The blast operator will see a little more dust than the aluminum oxide, so it is critical that the blast cabinet be equipped with a good dust collector to evacuate the dust quickly from the blast cabinet.

Qualities and recommendations aside, the choice for blasting abrasive is personal. Some people will prefer the white aluminum oxide while others will prefer the brown aluminum oxide or the silicon carbide. The typical size range used is 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 equipment warranty. This unit also operates with 50 micron, 220-240 mesh, for delicate half-tones.*

LOADING THE SYSTEM WITH ABRASIVE: Turn the power ON to the machine (**Item 1** – Control Diagram). The abrasive of choice should be loaded through the cabinet enclosure door with the dust collector running. The CrystalBlast Mobile Compact system requires an initial charge of 30-50 pounds of abrasive*. Note: Adding abrasive to the system without cleaning the system can result in overcharging the system…*
There is no need to pre-screen the abrasive. The CrystalBlast system includes a stainless steel scalper screen designed to remove all particles large enough to clog the nozzle. Additional abrasive can be added from time to time to maintain maximum levels in the system. Shorter blast intervals between reloading abrasive into the blast pot 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 about 30 minutes with a full abrasive charge in the blast pot and a new nozzle size. If the total blast time to empty the pot falls to 15 minutes, this is indicating that only 15-20 pounds of media is inside the pressure pot assembly.)

Note: Some abrasive will remain inside the cabinet due to ledge stacking. This is normal; the addition of more abrasive will compensate for this stacking but care should be taken with the amount being added.

FILLING THE BLAST POT: To fill the blast pot, make sure that the blast pot has been depressurized. This is accomplished by closing the pot air inlet valve, (**Item A** - Pneumatics Reference Diagram) change from horizontal to vertical handle position. Open the pot exhaust valve, (**Item Q** Pneumatic Diagram … This allows the compressed air to leave the pot assembly and also drops the pop-up valve from the seated position at the top of the blast pot. At this time the abrasive to flow back into the blast pot. Occasionally "tapping" the front hopper will cause more of the abrasive to slide down the walls of the hopper and into the blast pot. To reseal and pressurize the blast pot close the pot exhaust valve and open the air inlet valve. This will pressurize and reseal the blast pot. If any audible air leakage is noted, depressurize the pot and seal again. Raising the blasting pressure will insure pressure pot sealing. This is known as a "hard seat" to seal the blast pot. *Note: Air compressor receiver tank must have a pressure of 80-90 psi prior to pressurizing the blast pot.*

ADJUSTING THE BLAST PRESSURE: The blast pressure is adjusted from the pressure regulator (**Item K** – Pneumatics Diagram) located on the inside of the pot side of the rolling cart 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 is 20 – 30 psi. *Note: The machine should not be operated at pressures greater than 50 psi.* The regulator includes a locking feature…pull vertical on the adjusting know to release the lock. Push down on the know assembly to lock pressure.

ADJUSTING THE ABRASIVE FLOW: The abrasive flow is adjusted by rotating the arm of the abrasive flow choke valve (**Item L** – Pneumatics Diagram)… the valve is located on the inlet side of the pipe cross underneath the blast pot, opposite the blue pinch valve). Never position the arm perpendicular to the hoses, all the air is passing through the blast pot and this valve position will plug the abrasive hose. When the arm is parallel to the hoses, the maximum amount of air is passing through the abrasive supply hose with a minimum amount of abrasive. The abrasive flow valve arm should be set at approximately a 45° angle. Check the abrasive flow through the nozzle. If there is steady visible perceptible flow of abrasive through the nozzle, then it is adjusted right. If there is a heavy flow of abrasive through the nozzle, then rotate the abrasive flow valve arm more into the horizontal position (or parallel to the floor). If there is not enough abrasive exiting the nozzle, then rotate the ball valve arm more into the vertical position. Once the abrasive flow has been adjusted, there should be little need to readjust unless the nozzle size, abrasive size or blasting pressure is changed.

> ***PROCEDURE FOR UNPLUGGING A PLUGGED ABRASIVE HOSE:*** *Always rotate the ball valve handle in very small increments. Should someone close the flow control choke valve, follow this recommended procedure. Completely closing the ball valve (arm in vertical position) will plug the main abrasive hose and stop abrasive flow completely or create a solid stream of media. If this happens, depressurize the pot assembly, remove the abrasive hose from the blue blast shut-off valve. Drain the hose until it is clear. Reinstall the abrasive hose and open the abrasive flow valve (ball valve located to the opposite side of the blue blast shut-off valve) until horizontal. If you see noticeable abrasive in the left air supply hose (attached to the choke valve) remove and drain this hose assembly. After installing both drained hoses, pressurize the pot assembly. Press down on the foot pedal to insure that the line has been cleared, then begin adjusting the abrasive flow valve in small increments by moving the abrasive flow valve arm towards a vertical position.*

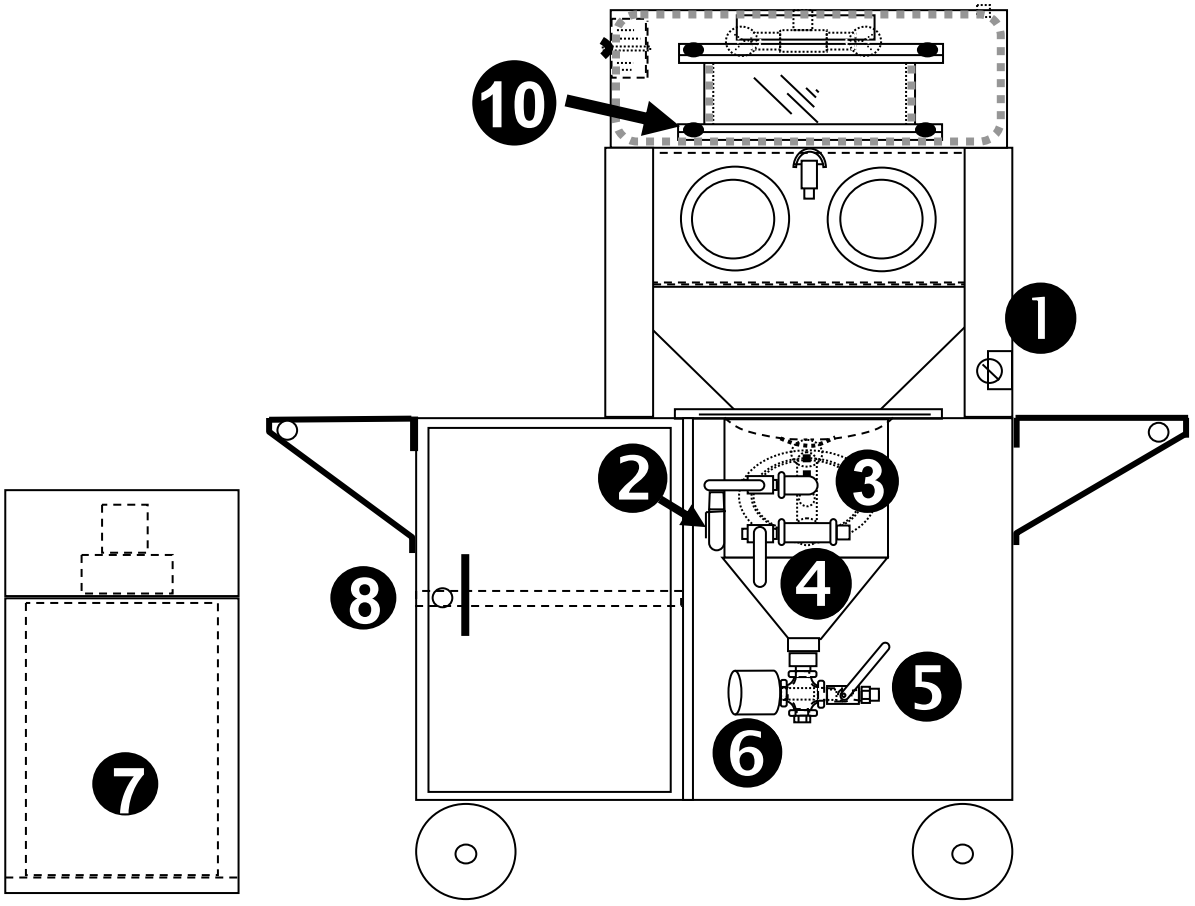
WEARING GLOVES: The CrystalBlast Mobile Compact has the gloves attached to the cabinet. Other CrystalBlast units include a larger blower assembly that permits operation of the unit with gloves removed. Due to the reduced blower airflow of the Mobile Compact the gloves must be attached.

READY TO BLAST: The unit is now ready to be used for sandcarving. Turn ON the power to the machine (**Item 1** – Operation Control Diagram). Open the vertical access door and place a scrap part in the machine to test. All Mobile Compact units include an adjustable door latch that requires positive door pressure to close. Place both arms in the operator gloves and holding the nozzle/nozzle holder like a pencil with one hand and the part with the other press down on the foot pedal and begin blasting the scrap part. *Note: Never point the nozzle at the window. The abrasive will permanently frost the protector window.*

Note: The MBA CrystalBlast system may provide different results than other blast systems. When the unit is first operated, use scrap 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 without moving the nozzle. The experienced operator may find that the CrystalBlast 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 pot Air Inlet Valve and open the pot Exhaust Valve.

Operation Controls Diagram



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		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 CARTRIDGE DUST FILTER				X	

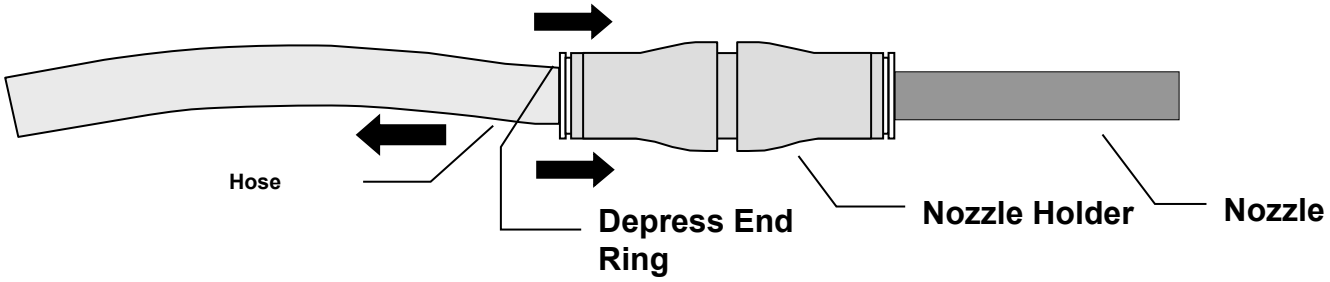
CLEANING THE ABRASIVE SCALPER SCREEN: Lift up the perforated metal work grate and remove from the cabinet. Use a shop vacuum to clean the debris off the scalper screen. Replace the work grate.

CLEANING THE DUST COLLECTOR CARTRIDGE FILTER: The optional VAC-110 dust collector cartridge filter should be cleaned at least once per week. Note: Cleaning the filter prior to operating the machine at the beginning of the day is advisable but not required. Oftentimes, compressed air has small traces of moisture present (especially if the compressor is operated without an air dryer). Allowing the filter to dry overnight will provide more effective cleaning of the filter. Clean customer supplied shop vacuum dust collectors according to maintenance schedules and procedures recommended by factory. Cleaning the filter is listed in the Removing the Dust for the Dust Collector below.

REMOVING THE DUST FROM THE DUST COLLECTOR: Periodically, the dust must be removed from any dust collector chamber and filter cartridge. MBA recommends removing the filter cartridge at least once per week (more often depending on the type of abrasive used, the blasting pressures

and the number of cabinet process hours per week). Prior to removing the filter cartridge, make sure you have a trash bag available.
If equipped with the VAC-110 dust collector, unplug the vacuum collector power cord from the service outlet. Unfasten the two blower housing latches and set housing aside. Reach inside the filter cartridge and unscrew the tightening knob that holds the filter inside the unit. Remove the knob and seal and set aside. Lift the filter cartridge from the housing taking care not to damage the cartridge. Place the cartridge inside a standard trash bag and seal the bag tight. Slap the bottom of the steel cartridge cap to loosen the attached dust. After loosening most of the dust, remove the filter from the bag and install inside the collector housing or further clean using any industrial vacuum. Take care to make sure the tightening seal is installed. Tighten the holding knob taking care not to over tighten
Replace the blower housing and reinstall power service. The filter cartridge can be repaired using 100% silicon sealing calk. Clean the damaged area and seal with silicone. Make sure the seal is allowed to cure for 24 hours or caulk direction for cure.

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 consume 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. The easiest way to know if your nozzle requires replacement is to keep a properly sized drill bit handy to check nozzle sizing. Purchase this item at any Hardware or Home Improvement Store.. ask for a 3/32" drill bit and use to check for noticeable nozzle wear.
To replace the blast nozzle, hold the nozzle and nozzle holder (**Item E** – Pneumatics Diagram) in your right hand and the blast hose (**Item F** – Pneumatics Diagram) in your left hand. With your right thumb and forefinger, press or pull back on the end ring of the nozzle holder pulling or pushing toward the nozzle (see diagram). As you are pressing, pull the abrasive blast hose the other direction. The hose should release from the nozzle holder. *Note: <u>Do not try to remove the nozzle from the nozzle holder</u>. 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 INTERNAL CABINET BLAST HOSE: To replace the inside whip abrasvie hose first remove the blast nozzle and nozzle holder asembly using the instruction above. Pressing on the end ring of the cabinet fitting will remove the inside whip hose assembly. *Note: All hoses and tubing are removed using the same procedure.*

REPLACING THE EXTERNAL CABINET BLAST HOSE: Use the same procedure as removing the nozzle and or whip hose; the connector end ring must be depressed as the hose is pulled.

REPLACING THE LIGHT BULBS: The Mobile Compact uses a Rough Service Plastic Coated bulb for lighting. If the plastic coating becomes stained it is possible that the light level may be reduced. Replace the bulbs with any 100-watt RS Plastic Coated bulb.

REPLACING THE WINDOW or WINDOW PROTECTOR GLASS: Remove the two thumbscrews (**Item 10** – Operation Controls Diagram) that hold the upper window bracket in place. Loosen the two thumbscrews that hold the lower window bracket in place. Remove the two pieces of glass and replace the top view window or the bottom view window protector glass. Replace the two pieces of glass with the laminated safety glass view window on top. Reattach the upper window bracket. Tighten the four thumbscrews.

REPLACING THE DUST COLLECTOR CARTRIDGE FILTER: Replace the filter cartridge on optional VAC-110 dust collector using the same procedure listed in the "Removing Dust from the Collector" listed above. Install new filter cartridge and dispose of old filter cartridge using any standard trash bag…

Note: Make sure that the rubber washer is affixed to the guide pin prior to tightening the filter. Dust will escape into the work area if the rubber washer is not in place.

REPLACING THE BLAST SHUT-OFF VALVE SLEEVE:

1. Turn Off Machine Air & depressurize pot assembly.

2. It is advisable to drain existing abrasive from the blast pot prior to pinch valve removal and/or service. Remove all abrasive using the pressure pot access port described in the machine maintenance manual, "Changing Abrasive".
3. Locate the Pinch Valve attached to the bottom of the pressure pot assembly. Detach the abrasive hose from the pinch valve by depressing the white quick release ring and pulling on the abrasive hose. Next, use a crescent and engage the pinch valve bladder end cap closest to the pressure pot. Loosen the pinch from this end cap, be careful not to damage the pinch valve. Removing the Pinch Valve from the machine is recommended for maintenance.
4. Remove both end caps with a large set of channel locks or crescent wrench. The caps are plastic and can easily be damaged, take care when removing.

5. With end caps removed use a blunt object approximately 1" in diameter i.e. a broomstick or anything that will not damaged the plastic valve body. Use this to push the Pinch Valve Bladder through the body and out the other side.
6. Remove any debris from the Valve Body and from the new Bladder. Insert the new Pinch Valve Bladder by squeezing one end of the Bladder and working it into the Valve Body. Push the Bladder through until it is seated flush on both ends.
7. Replace End caps. Do not over tighten. Plastic threads can be damaged.
8. Re-install the Pinch Valve on the machine making sure no abrasive grains exist on the valve or pot nipple assembly.
9. Replace pressure pot access port making sure the pot seal is located properly. You may now charge the machine with abrasive.
10. **Restore Machine Air**

Pinch Valve Part #'s
109-20-200, Standard
109-20-202, Long Wear

Bladder Part #'s
109-20-201, Standard
109-20-203, Long Wear

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 has been added from time to time to make up for the abrasive that was broken down. If a noticeable difference in the blast productivity or etch finish occurs, the abrasive may need to be replaced in the system. MBA recommends the following procedure for changing the abrasive:

1. Remove all compressed air from the blasting cabinet.
2. Make sure that the lights and exhaust blower are running on the machine.
3. **Depressurize the blast pot.**
4. Place a shallow pan underneath the blast pot.
5. Remove the drain plug located on the pipe cross fitting (**Item R** – Pneumatics Reference Diagram) beneath the blast pot. The abrasive will begin draining into the pan.
6. Loosen and remove the pot access port and seal allowing the abrasive to drain into the pan assembly located below the pot. Tip: use a baking pan with low vertical sides and always look at the visual volume of the new material for proper container sizing.
7. Remove the perforated metal work grates from the cabinet.
8. Brush down all of the abrasive from the walls of the hopper and the ledges so that it drains 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 tramp abrasive. To assure nearly complete evacuation of abrasive, remove the access cover on the front of the blast pot and use a shop vacuum to clean any residual abrasive out of the blast pot.*
9. Replace and tighten the plug on the pipe cross fitting.
10. Replace the perforated metal work grate.
11. Replace the access port and port seal and tighten.
12. Add 30-50 pounds of new abrasive to the system. *Note: If it is important to remove all the abrasive, remove the access cover on the front of the blast pot. This is accomplished by removing the nut that holds the crab in place. Once the nut and crab have been removed, the blast pot access cover can be manipulated out of the blast pot. 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 BLAST POT SEAL OR THE POP UP VALVE: This maintenance procedure will unlikely be performed for at least the first five years of machine operation. However, eventually the blast pot seal will wear out and need to be replaced.

1. Depressurize the blast pot.
2. Place a pan under the blast pot to catch any abrasive that comes out of the blast pot.
3. Remove the access cover on the front of the blast pot (**Item P** – Pneumatics Reference Diagram). This is accomplished 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. The access cover must be flipped allowing the hold stud to be removed last.
4. Unthread the pipe riser that guides the pop up valve up and down.
5. Remove the pipe riser and pop up valve as one single assembly.
6. Locate the donut shaped pot seal on the abrasive inlet to the blast pot.
7. 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.
8. Install the new blast pot seal making sure the seal is seated completely for 360 degrees. Feel for any wrinkles or bumps in the seal after installation.
9. Replace the pop up valve and pipe riser. The parts must be assembled together before putting inside the blast pot and the pipe riser threaded into place. Install the pop up valve with care.
10. Reinstall the access cover on the front 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.

11. Re-pressurize and depressurize the blast pot several times before filling the pot with abrasive.
12. Reinstall the perforated metal work grate.

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 and allow the media to flow back into the blast pot.*

NO ABRASIVE IN THE CABINET: *Add 48-50 pounds of abrasive to the system. Be sure that the dust collector is on when the cabinet is loaded with abrasive.*

ABRASIVE FLOW VALVE IS NOT ADJUSTED CORRECTLY: *Rotate 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 MBA Inline Ambient Air Dryer (P/N 100-03-173) to prevent reoccurrence.*

PLUGGED ABRASIVE HOSE: *The pot is overcharge allowing abrasive to plug hose during de-pressurization cycle. See* **ADJUSTING THE ABRASIVE FLOW ABOVE**

WILL NOT BLAST: 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 closing pot exhaust valve and opening air inlet valve.*

BLAST NOZZLE IS PLUGGED: *Remove the nozzle and nozzle holder and use a small, stiff wire to dislodge the obstruction.*

ABRASIVE FLOW VALVE COMPLETELY CLOSED: *If the abrasive flow valve is completely closed (abrasive flow 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 of the manual.*

PLUGGED ABRASIVE HOSE: *The pot is overcharge allowing abrasive to plug hose during de-pressurization cycle. See* **ADJUSTING THE ABRASIVE FLOW ABOVE**

"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	**BLAST SHUT-OFF VALVE SLEEVE HAS A HOLE:** *Immediately decompress the blast pot. Turn off main supply of air to the blast cabinet. Refer to the "Replacing the Blast Shut-off Valve Sleeve" section in the manual for repair procedure.* **BLAST NOZZLE IS WORN OUT:** *Air compressor cannot keep up with the air volume line pressure necessary to operate the larger blast orifice, line pressure drops below 80 psi. Immediately decompress the blast pot. Replace nozzle.* **DEBRIS IN THE BLAST SHUT-OFF VALVE:** *Immediately decompress the blast pot. Remove the blue blast shut-off 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 pressure on setting..* **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 flow 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 MBA Inline Ambient Air Dryer (P/N 100-03-173) 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 ABRASIVE AT THE BEGINNING OF THE BLAST	**ABRASIVE FLOW ASSEMBLY IS WORN OUT:** *Replace the pipe cross located beneath the blast pot.*
AIR LEAK HEARD AFTER REFILLING THE BLAST POT WITH ABRASIVE	**POP UP VALVE DID NOT SEAT PROPERLY WHEN BLAST POT WAS PRESSURIZED:** *Depressurize blast pot slightly increase blasting pressure and pressurize the blast pot.* **POT SEAL IS WORN OUT:** *Refer to "Replacing the Pot Seal or Pop Up Valve" section of the manual.*
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 Pop Up Valve" section of the manual.* **BLAST REGULATOR IS SET TOO LOW:** *Increase pressure to minimum 20 psi and try again.*
SYSTEM WON'T 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.*
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 MBA's 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 MBA's Static Electricity Discharge Cuff (P/N 100-22-021) to ground the operator to the blast cabinet.* **HUMIDITY IS LOW:** *Purchase MBA's Static Electricity Discharge Cuff (P/N 100-22-021) to ground the operator to the blast cabinet.*

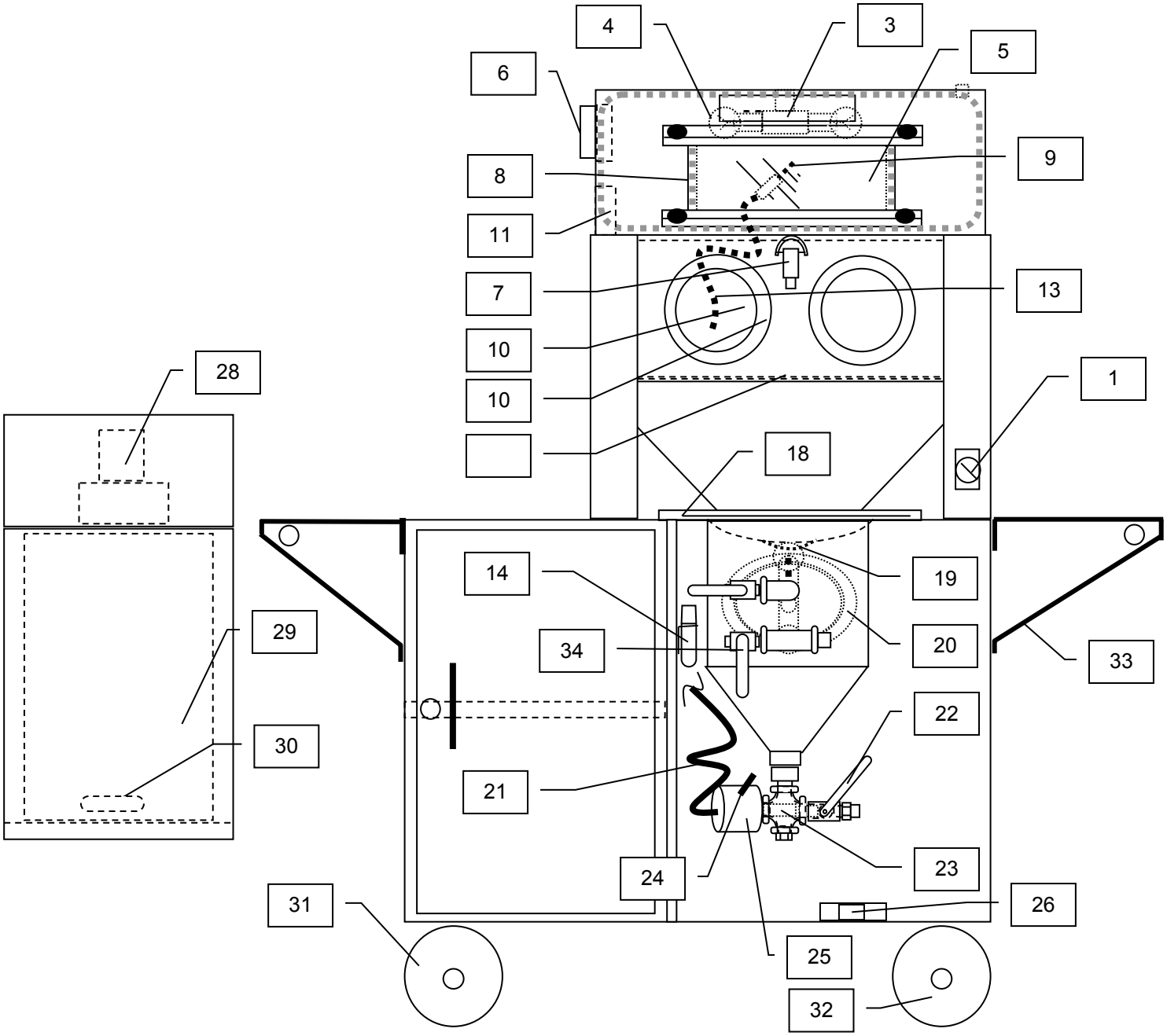
AIR LEAK AFTER REFILLING THE BLAST POT WITH ABRASIVE	**POP UP VALVE DID NOT SEAT PROPERLY WHEN BLAST POT WAS PRESSURIZED:** *Depressurize blast pot, pull the ball handle with a slight pressure and simultaneously pressurize the blast pot.* **POT SEAL IS WORN OUT:** *Refer to "Replacing the Pot Seal or Pop Up Valve" section of the manual.*
ABRASIVE AND/OR DUST IS COMING OUT OF THE DUST COLLECTOR EXHAUST	**CARTRIDGE FILTER IS NOT TIGHT:** *A loose filter will allow dust to escape from the dust collector. Refer to "Replacing the Cartridge Filter" section of the manual to determine procedure for tightening the cartridge filter.* **CARTRIDGE FILTER IS DAMAGED:** *Refer to "Replacing the Cartridge Filter" section of the manual.* **RUBBER WASHER NOT PLACED ON GUIDE PIN WHEN NEW FILTER WAS INSTALLED:** *The rubber washer seals the hole in the bottom of the cartridge filter. Replace the rubber washer on the guide pin. Refer to "Replacing the Cartridge Filter" section of the manual.*

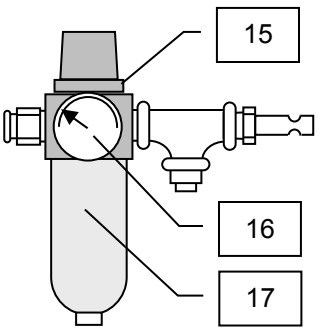
CRYSTALBLAST MOBILE COMPACT PARTS LIST

TO FIND THE PART AND 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 the corresponding bubble number.
4. Refer to the corresponding system section of the parts list and locate the corresponding bubble number.
5. If there are multiple listings for the bubble number, the correct part and part number can be determined from the bubble number descriptions.

PARTS LIST MOBILE COMPACT





Air Manifold

Bulk Hose & Tubing by the foot

Parts for Crystal Blast Mobile Compact

Bubble #	Part #	Description
1	000-00-00	On/Off Power Switch
3	100-09-033	Light Fixture, Dual
4	101-09-013	100 Watt RS Coated Light Bulb
5	101-06-016	View Window
5	100-06-123	Window Protector Glass (optional)
6	100-06-085	Inlet Filter
7	000-00-000	Door Latch Adjustable
8	101-11-147	Bladder Seal, Window
9	109-19-092	3/32 Tungsten Carbide Nozzle with Holder
9	109-19-594	Boron Carbide Nozzle (with holder) OPTIONAL
10	000-00-000	Gloves, pair
10	102-12-038	Glove Clamp
11	109-01-100	Abrasive Separator Reclaimer, rear or left side mounted
12	101-25-019	Work Grate Mobile Compact (set)
13	109-15-375	Abrasive Whip Hose to Nozzle, by the foot
14		see air manifold detail
18	109-25-001	Stainless Steel Screen, 14x14
19	109-21-200	Pot Plunger Seal
19	104-12-178	Pot Plunger Valve
20	109-11-100	Pot Access Cover Seal
21	109-15-500	Abrasive hose Pinch Valve to Cabinet
22	100-26-098	Choke Valve
23	109-21-300	Abrasive Mixing Valve Cross (anti surge)
24	109-20-105	Micro Filter
24	109-20-106	Replaceable Filter Element
25	109-20-200	Abrasive Pinch Valve
25	109-20-201	Abrasive Pinch Valve Bladder
26	100-26-086	Pneumatic Valve – valve only
27		see bulk hose detail
		Optional VAC-110 Vacuum Cartridge Dust Collector
28	100-05-010	Vac Motor
29	100-08-005	110 Sq.Ft. Filter Cartridge
30	100-08-141	Filter Bracket Tightening Knob & Seal
		Air Manifold Detail
15	109-03-100	Regulator-Filter-Gauge-Mounting Nut
16	109-13-100	Gauge Only 0-60 standard, 0-160 high-pressure option
17	109-03-100	Regulator-Gauge-Mounting Nut complete
		Bulk Hose Detail
27	109-15-375	3/8” OD Abrasive Hose, by the foot
27	109-15-500	1/2" OD Abrasive Hose, by the foot
27	100-14-051	1/4" PVC Tubing, by the foot
27	100-14-004	3/8” PVC Tubing, by the foot
25	100-14-005	1/2" PVC Tubing, by the foot
31	000-00-000	Wheels Fixed
32	000-00-000	Wheels Swivel
33	000-00-000	Shelf standard 6-inch
34	100-26-098	Air Inlet or Exhaust Valve

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 judgments 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.

MBA
MEDIA BLAST & ABRASIVES, INC.

140708

IKONICS IMAGING®

4832 Grand Avenue
Duluth, MN 55807, USA

Toll Free (800) 643-1037
Phone (218) 628-2002
Fax (218) 628-2064

Email info@ikonicsimaging.com
Web www.ikonicsimaging.com