CRYSTALBALST NAVIGATOR

OPERATOR'S MANUAL

IKONICS IMAGING®
PHOTOBRASIVE SYSTEMS

AN **IKONICS** COMPANY ISO 9001 CERTIFIED NASDAQ LISTED: IKNX

NAVIGATOR QUICK OPERATION GUIDE

This Quick Operation Sheet is not meant to replace the machine Manual or the Operational Guide.

You have just purchased the finest sandcarving system available on 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. Please review the compressed air requirements prior to operating the machine. Install an ambient air dryer if the temperature of the compressed air entering the cabinet is higher than surrounding ambient air temperature.

PROPER OPERATION OF THE STANDARD 3/32" i.d. NOZZLE REQUIRES 5.7 CFM OF COMPRESSED AIR AT 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 standard Navigator is not advised for nozzle operation larger than 1/8".

DO NOT BLAST ABOVE 50 PSI.
This machine is designed for sandcarving using lower pressures. Blasting at pressures in excess of 40 psi can cause premature wear on 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 air control requires 90-125 psi for machine ON-OFF controls. Line pressures that fluctuate below 90 psi may cause improper operation of the control circuit. Line pressures above 125 psi may damage the air controls.

ALWAYS DEPRESSURIZE THE POT WHEN YOU ARE FINISHED USING THE MACHINE. It is necessary to depressurize the pot when the supply 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 may open. The next time the air compressor is turned on, the system will immediately begin blasting until the air compressor builds up air inlet pressure of 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 IKONICS Corporation.

USE MBA REPLACEMENT COMPONENTS.
Replacement of worn components with parts not purchased from IKONICS 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 IKONICS FOR 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.

Memos

- Abrasives are available in different types and sizes. The difference in results between aluminum oxide and silicon carbide can be simply stated as personal preference. Use 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.
- Optional Ambient Air Dryer 26 cfm max. Part Number 100-03-003
- High Wear 3/32" Nozzle Part Number 109-19-594
- The Navigator has been equipped with a high-pressure On-Off Pinch Valve. This permits higher than 50 psi blasting pressures but other wear items will need replacement more often.
- Never regulate the air line pressure to the machine lower than 90 psi or higher than 125 psi.

QUICK OPERATION GUIDE

The information that follows will be used to get your new CrystalBlast Navigator 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.

- Remove the machine from the shipping container by removing the outside crating material. Do not remove the separate items from the shipping pallet(s), the pallet will be used for final placement of each item.
- Use a pallet jack or forklift to place the unit(s) into position.
- Remove any 3/8" lag-bolts used to attach the machine components to the shipping pallet only after the final placement of the machine has taken place. Take care when removing any strapping material used to fasten the components to the shipping pallet, steel strapping is under tension. Always wear safety glasses when removing items from shipping crates.
- ***Note:*** *The cabinet has been shipped with a removable front forklift lifting bar. Always lift with the forks spread to the outside lift bar location. Never lift higher than required for removal of the shipping skid. The unit will be unstable when lifting. NEVER MOVE THE UNIT INTO LOCATION WHILE THE CABINET IS ON THE FORKLIFT! ALWAYS USE THE SHIPPING PALLET.*
- Lift the machine vertically just enough to remove the shipping pallet and lower the cabinet onto the floor. Because of the weight of the cabinet, 477 pounds, make sure the unit is located in the final installation area. Final placement should be made by sliding the unit on the floor.
- Use the front and rear leveling pads to stabilize the cabinet after final placement.

The three components; cabinet, pressure generator, and dust collector, are connected with flexible abrasive and dust collector hoses. Longer hoses are available, but adding additional hose can cause blower performance problems.

- Always consult the factory when adding any additional abrasive or dust collector hoses. Refer to the Pneumatic Hose Diagram (page vi) for attachment of the Conveyor Air Intake, Abrasive Conveyor Hose and Cyclone Exhaust Hose to Dust Collector. This diagram also shows the placement of the foot valve and dust collector cleaning hose assemblies.
- Remove all items from inside the cabinet. After final placement of all components, allow clearance for machine loading and unloading. Locate and connect the smaller abrasive hose to the cabinet outlet and the other end to the cyclone abrasive and air inlet. This is the main abrasive conveyor hose.
- Attach the shorter of the larger flexible hoses, the abrasive conveyor air intake hose, from the cabinet to the cabinet pneumatic floor.
- Attach the remaining larger flexible hose to the top of the cyclone dust discharge and the other end to the dust collector dust inlet.
- Install all pneumatic air lines for the foot valve and dust collector cleaning cycle using the Pneumatic Hose Diagram (page vi).
- Attach air line to main air inlet located on the pressure generator air regulator making sure the pot exhaust valve is closed. All quick connectors are not the same and this machine has been shipped without fittings allowing the customer to maintain uniformity by installing currently used matching couplings. **Never use small standard quick disconnects or spiral hose if the unit is equipped with 1/8" blast nozzle.**
- The standard 6' track is already installed. This track is adjustable in height when using the track outside holding pins. This will allow the operator to become familiar with the machine controls.

Memos

- The "KIT" is available containing the wear parts required to keep your CrystalBlast operational without using that Overnight Delivery Service…ask for details.
- The Navigator uses a separate standing dust collector. The collector is connected to the exhaust outlet of the cyclone separator using the 8-inch diameter polyurethane flex hose.
- 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.
- Always install a master shut-off air valve before the main machine air inlet.
- 90-psi line pressure is required for proper operation of machine controls. Line pressure is needed for proper vibrator operation during the filter cleaning cycle.

QUICK OPERATION GUIDE CONTINUED

- Set the blasting pressure on the regulator using the air pressure regulator.
- Release the power cords, 120 volt, and plug into any standard outlet. The running amperage of the machine dust collector is 1500 watts or 12 amps. The cabinet also requires power connection and uses less than 2 amps for operation. Any outlet, unless already active, should operate the machine. Do not use extension cords.
- Make sure the air compressor is operational and the minimum line pressure is 90 psi with a maximum pressure to the machine of 125 psi. If your compressor isn't adequate the machine will start to blast and not stop when you remove your foot from the blast pedal. The CrystalBlast Navigator machine requires 20-30 psi more air pressure than the set machine blasting pressure for proper operation of the air controls.
- Turn the machine cabinet on-off switch to the on position. The switch is located on the right hand side of the top panel.
- Turn on the separate standing dust collector using the dust collector on-off switch.
- Open the access door and with the blower running pour 30-35 pounds of abrasive onto the lower perforated scalper screen. The running exhaust blower will prevent dust from exiting the machine during this process.
- Close the main air intake valve located on the pot assembly (refer to the Pressure Pot Valve Control on page iv).
- Open the Pot Exhaust Valve to depressurize the pot assembly. This will open the pot allowing abrasive to refill the pressure pot.
- The abrasive that is now stored in the hopper above the pot assembly will fill the pressure pot. The pneumatic conveyor transferred the abrasive from the cabinet to the outside storage hopper.

The machine is now almost operational….

ADJUSTING THE MIXING VALVE

ADJUSTING THE MIXING VALVE

Adjusting the media flow control valve is simple BUT YOU MUST OPERATE THE MACHINE FIRST TO ESTABLISH THE DIRECTION OF ADJUSTMENT. Locate the compressed air choke valve located at the bottom of the pot assembly opposite the pinch valve assembly. When the valve is completely open you will see very little abrasive exiting the nozzle. NEVER CLOSE THIS VALVE & adjust as follows:

- Set the valve at 45 degrees…test for blast by pressing on the foot pedal assembly. If very little abrasive is exiting the nozzle, close the valve by moving handle about 1/4". Just before the nozzle is delivering the proper amount of abrasive, the nozzle will pulse slightly. Close the valve a bit more and the pulse will slowly 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 being used.

Depressurize the pot often and never allow the pot to empty before refilling. During depressurization the abrasive in the pot assembly is mixed and mixing helps flow the abrasive.

Cleaning the dust collector is a simple process. Turn the dust collector blower off and open the air inlet located at the bottom front of the dust collector just above the dust drawer. Allow the vibrator to operate for about 3 minutes every 2 hours of machine operation. NEVER OPERATE THE VIBRATOR WITH THE BLOWER RUNNING, this can cause filter packing.

Always depressurize the pot assembly when the air compressor is going to be turned off for the day.

Memos

- Never operate the dust collector vibration cleaning cycle when the exhaust blower is running… dust will not release from the filter cartridge unless the blower is turned off.
- Never overfill the unit. Proper operation of the pot assembly requires no more than 30-35 pounds of abrasive inside the pot assembly. Overcharging the pot may result in plugged abrasive hoses.

You can use the abrasive hopper inspection port to view the abrasive level in the hopper. Never use this for abrasive filling as contamination may occur by not passing through the cabinet scalper screen.

- 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 air line into the valve.

ADJUSTING THE MIXING VALVE CONTINUED

PRESSURE POT VALVE CONTROL

The Navigator pressure generator includes two pot control valves, one for pot exhaust and one for the 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 valve positioning photos on next page).

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 inlet valve to pressurize the 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. Poorly sized air connections, low line pressure, long hoses and/or restrictive compressed air flow can require higher regulator settings for proper pot valve closure.

4. The machine is ready for blasting. Pressing down on the foot pedal will start the blast and 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 etching by not pointing it at the substrate. This will not occur again until the pot is refilled when the pop-up valve is opened.

DEPRESSURIZING THE POT FOR ABRASIVE RELOAD

1. Close the pot air inlet supply valve, (see photos on next page).

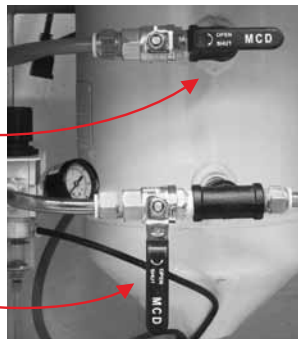
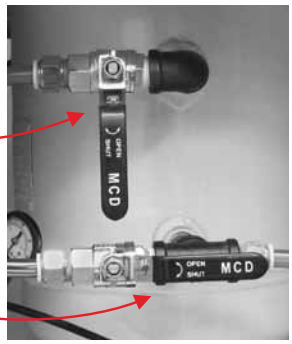
2. Open the pot exhaust valve, (see photos on next page).

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.

Memos

- 90-psi line pressure is required for proper operation.
- Always install a master shut-off air valve before the main machine air inlet.
- Never use extension cords for machine operation.

VALVE POSITIONING

TIP	OFF	ON FOR BLAST
	POT EXHAUST VALVE AIR INLET VALVE 	POT EXHAUST VALVE AIR INLET VALVE 
If both valve handles are parallel (same direction) the machine will not function properly.	Close air inlet valve and open pot exhaust valve. Pot depressurized for abrasive re-load… Pop-up valve opens… machine is OFF.	Close pot exhaust valve and open air inlet valve. Pop-up valve closed and machine is ready for blast.

CFM Consumption Table

PRESSURE BLAST CFM CONSUMPTION

NOZZLE SIZE		CFM CONSUMPTION AT SPECIFIC PRESSURES								
		20PSI	30PSI	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	13.10	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	44.5	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

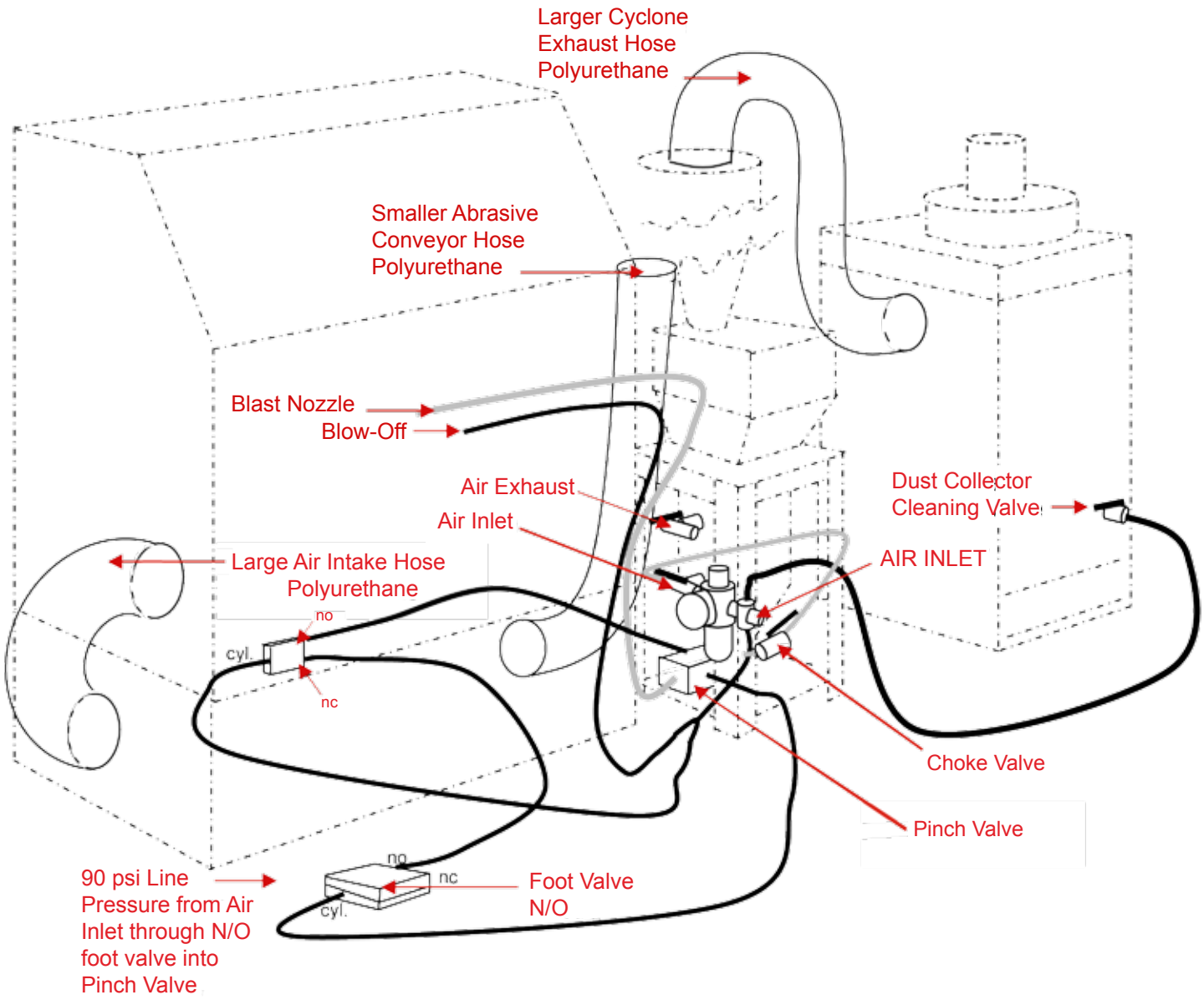
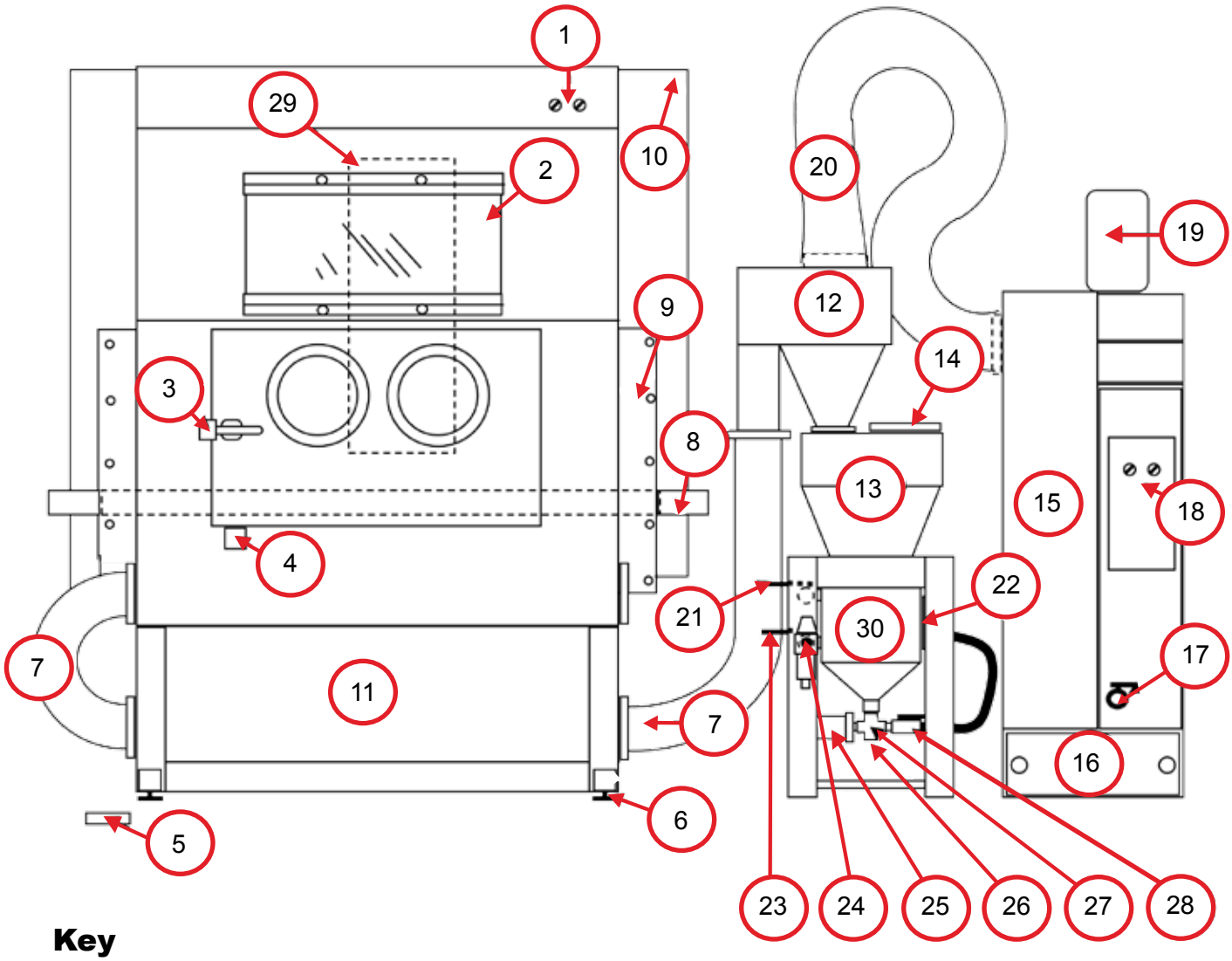

Larger Cyclone
Exhaust Hose
Polyurethane
Smaller Abrasive
Conveyor Hose
Polyurethane
Blast Nozzle
Blow-Off
Air Exhaust
Air Inlet
Dust Collector
Cleaning Valve
AIR INLET
Large Air Intake Hose
Polyurethane
no
cyl.
nc
Choke Valve
Pinch Valve
90 psi Line
Pressure from Air
Inlet through N/O
foot valve into
Pinch Valve
no
nc
cyl.
Foot Valve
N/O

TABLE OF CONTENTS

125 MAXIMUM INLET PRESSURE



Key

1. Cabinet ON-OFF lights and light table
2. Safety View Window & protector with holding brackets and release knobs
3. Door Latch and Strike
4. Safety Door Interlock
5. Foot Pedal Assembly
6. Machine Leveling Pads
7. Air Intake for Pneumatic Conveyor
8. Standard Roller Track
9. Adjustable Track Positioning Pin Bracket
10. Velocity Panels
11. Pneumatic Floor
12. Cyclone Separator
13. Abrasive Storage Hopper
14. Inspection Port Access Cover
15. Silencer
16. Removable Dust Storage Drawer
17. Dust Collector Cycle Cleaning Valve
18. Dust Collector ON-OFF Switch
19. Exhaust Blower, Motor…Impeller & Housing
20. Cyclone Dust Outlet Hose
21. Pressure Pot Exhaust Valve
22. Pot Access Cleanout Port
23. Pot Air Inlet Valve, controls pot valve
24. Air Regulator & Main Air Inlet
25. High-Pressure Pinch Valve
26. Secondary Drain for sediment
27. Metering Cross
28. Choke Valve
29. Rear Light Table
30. ASME Code 0.7cf Pressure Pot

GETTING STARTED MANUAL

INSTALLING THE MACHINE - 125 MAXIMUM INLET PRESSURE

UNIT PLACEMENT

Allow adequate clearance for loading and unloading the blast cabinet. IKONICS recommends 36" in front of the cabinet for the operator. Always leave adequate clearance on the left and right side of the cabinet to facilitate placement of the dust collector, adjustment of the pass through track assembly and adequate floor space for part entrance and exit. 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 ATTACHMENT

The Navigator uses a separate standing 220 square foot cartridge filter dust collector assembly complete with standard pneumatic filter cartridge cleaning assembly. IKONICS offers other optional dust collectors for long daily operation, higher air inlet velocities and other special applications for machine operation.

Connect the larger and longer flexible O.D. hose to the outlet of the cyclone separator reclaimer and the other end to the dust collector dust inlet. This is accomplished using the supplied band clamps. This is a suction hose with minimum bending radius. The separate dust collector requires its own power connection.

The standard machine configuration includes special low amperage 2 HP blower motor assembly of operation on any dedicated 20 amp. service outlet. Always check the motor tag for supplied or requested power voltage, phase and maximum amperage draw.

ELECTRICAL REQUIREMENTS AND CONNECTION

The CrystalBlast sandcarving cabinets are wired standard 120V / single phase service. IKONICS recommends that this cabinet be installed on a dedicated 20-amp breaker similar to any large single power appliance. The standard Navigator configuration includes a power cord for the blasting cabinet and a separate power cord for the dust collector. Because the standard configuration is often varied this permits operation of the standard unit from any dedicated 20 amp service outlet.

AIR REQUIREMENTS AND CONNECTION

The standard nozzle, 3/32" I.D., requires 5.7 cfm @ 30 psi. The optional 1/8" I.D. nozzle is not recommended for operation for blasting pressures higher than 40 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 usage (e.g., blasting 50 seconds of every minute will decrease the compressed air requirements by 16%…. Make sure that your air compressor exceeds the requirement by at least 75% (9-10 cfm for the 3/32" nozzle), otherwise nozzle wear may cause the air controls to function improperly. 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 set blasting pressure. IKONICS recommends any air compressor that automatically turns on when the air pressure drops below 90 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. Undersizing 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 (ambient air dryer, P/N 100-03-003).

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.*

The Navigator pressure generator assembly requires connection of the main air inlet line of a minimum air line I.D. of 3/8". The Navigator requires volume air flow for the proper adjustment of the abrasive flow-control, CHOKE VALVE. Connection of the main air inlet line using quick-disconnects, long hoses, curly hoses or undersized hoses can cause air volume flow restrictions. This can create problems with the adjustment of the abrasive flow when using the machine choke valve assembly.

INSTALLING THE FOOT PEDAL ASSEMBLY

The Navigator includes a separate movable foot pedal assembly. The pedal is an air-valve, normally open, that allows the air line pressure to pass directly through the valve. This compressed air is used to close the machine pinch valve and prevent blast. This air supply must not be regulated lower than 90 psi or higher than 125 psi or machine controls may not operate correctly.

Always install a main air line shut off valve and if installing a main air regulator, set the regulator at 120 psi and purchase a regulator that will supply a volume of air matched or larger than the supply of the air compressor. This will permit proper operation of the machine controls. The foot pedal assembly may be shipped separate and use the tubing push connectors for attachment to the correct outlets. Always make sure to push the tubing into the connector for 1/4 inch tubing set. This will lock the tube into position in the fitting. For tubing removal press in on the release collar and pull on the tube. This will release the tube from the fitting. **Always remove the air supply when servicing any part of the Navigator and depressurize the pot assembly to insure no compressed air is being stored in the lines.**

GETTING STARTED MANUAL CONTINUED

CHANGING THE ABRASIVE HOSE LOCATION

IKONICS recommends that the machine be operated for an hour prior to making the decision to move the abrasive hose from one side of the blast cabinet to the other side. Because the location of the pressure generator can vary with each installation, it will be necessary for the user to measure the distance from the abrasive pinch valve, located at the bottom of the pressure pot assembly, to the new cabinet hose inlet location. Make sure to add the amount required for inside cabinet length to the hose and call and order the new longer hose. Order this hose assembly with any required tubing needed for relocation of the blow-off gun assembly. The CrystalBlast system uses the most user-friendly abrasive hose on the market; most users find it unnecessary to relocate the hose. Use the following procedure to relocate the abrasive hose after the new hoses have arrived:

1. Open the front access door to view the abrasive hose and nozzle.
2. Remove the nozzle/nozzle holder from the end of the blast hose (See Inspecting and Replacing the Blast Nozzle in the *Maintenance* section, page 8).
3. It is advised that the existing blow-off gun assembly remain in the original location but longer tubing will permit relocation of this item to the opposite side of the cabinet.
4. Remove the abrasive hose located inside the blast cabinet.
5. Making sure the main air line is closed and the pot is depressurized, remove the abrasive hose from the pot pinch valve assembly. The abrasive hose fitting uses a push-in release collar that operates the same as the tube fittings. Push in on the release ring and rotate and pull on the abrasive hose for hose removal.
6. Loosen and unscrew the bulkhead tension nut located on the cabinet wall. If not equipped, the machine will be equipped with a rubber grommet permitting removal of the hose.
7. Install the new longer hose into the pinch valve on the abrasive pot assembly.
8. Remove the cabinet block-off plug at the new location and re-install this fitting in the old hose access hole.
9. Install the removed cabinet fitting or rubber grommet in the new hose location.
10. Install the nozzle with nozzle/holder on the new abrasive hose.
11. Use the same procedure when moving the blow-off gun assembly.

SELECTING THE RIGHT ABRASIVE

There are two different abrasive types 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 is less dusty than silicon carbide, 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 it is used, the abrasive particles become more rounded which continues to reduce the effectiveness of the etch.

Silicon Carbide -

Silicon Carbide is an aggressive abrasive that can be beneficial in achieving a much faster etch. In addition, silicon carbide never loses its sharp edge. It creates less static, leaving your blasted object free of abrasive.

Qualities and recommendations aside, the choice for blasting abrasive is personal. 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. This unit also operates with 50 micron, 220-240 mesh, for delicate half tones.

Note: *The use of silica sand, garnet, slag, Starblast™ or other non-recyclable abrasives in the system will void the CrystalBlast equipment warranty.*

GETTING STARTED MANUAL CONTINUED

LOADING THE SYSTEM WITH ABRASIVE

Make sure the cabinet and dust collector are operational. The abrasive of choice should be loaded through the cabinet door with the dust collector running. The CrystalBlast Navigator Pressure Generator requires an initial charge of 30-35 pounds of abrasive.

Note: *Adding abrasive to the system without checking the system for abrasive level can result in overfilling the system.*

There is no need to pre-screen the abrasive. The CrystalBlast system includes a small pneumatic 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. The pressure generator includes an observation access port. Use this port to check the amount of abrasive in the system after the pressure pot is empty. The abrasive in the system will be stored in the upper abrasive storage hopper above the pressure pot assembly. Shorter blasting 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 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 not to overload the system.*

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 (Pneumatics Reference Diagram) by changing from horizontal to vertical handle position. Open the pot exhaust valve. This allows the compressed air to leave the pot assembly and also drops the pop-up valve from the sealed position at the top of the blast pot. With the pot valve open, the abrasive will flow back into the blast pot. Occasionally “tapping” the storage 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 (see Pneumatics Diagram) located on the pressure generator 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 knob to release the lock. Push down on the knob assembly to lock pressure.*

ADJUSTING THE ABRASIVE FLOW

The abrasive flow is adjusted by rotating the arm of the abrasive flow choke valve (see Pneumatics Diagram). The valve is located on the inlet side of the pipe cross underneath the blast pot, opposite the pinch valve assembly. Never position the arm perpendicular to the hoses as 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 being delivered to the nozzle.

The abrasive flow valve arm should be set at approximately a 45° angle. Check the abrasive flow through the nozzle. If there is a steady visible flow of abrasive through the nozzle, then it is adjusted properly. If there is a heavy flow of abrasive through the nozzle with a pulsing surge, then rotate the abrasive flow valve arm more into the parallel position. If there is not enough abrasive exiting the nozzle, then rotate the ball valve arm more towards the closed 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.

UNPLUGGING A PLUGGED ABRASIVE HOSE

Always rotate the choke valve handle in very small increments. Should someone close the flow control choke valve, follow this recommended procedure. Completely closing the choke ball valve will plug the main abrasive hose and stop normal abrasive flow creating a solid stream of media or possible packed nozzle. If this happens, “depressurize the pot assembly” and remove the air supply to the machine. Remove the abrasive hose from the pinch valve using the hose release push in collar ring. Drain the hose of any abrasive until it is clear. Reinstall the abrasive hose and open the abrasive flow valve (ball valve located on the opposite side of the blue blast shut-off valve) until parallel with the supply hose.

If you see noticeable abrasive in the air supply hose (attached to the choke valve) remove and drain this hose assembly. After installing both drained hoses, reconnect the air supply and 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 the more closed position.

GETTING STARTED MANUAL CONTINUED

WEARING GLOVES

The CrystalBlast Navigator has the gloves attached to the cabinet. Other CrystalBlast units may permit operation of the unit with gloves removed. Due to the Pass-Through design of the Navigator, it is suggested and advised that the machine always remain with gloves attached. Use the access door for part placement and removal.

READY TO BLAST

The unit is now ready to be used for sandcarving. Make sure the electrical power to the machine is operational and the dust collector is running. Close the pressure pot exhaust valve and open the pressure pot air inlet valve. Open the access door and place a test substrate in the machine. The Navigator includes a lockable 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 substrate with the other, press down on the foot pedal and begin blasting. Remove or release the blast pedal to stop the blast cycle.

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

Note: *The IKONICS CrystalBlast Navigator 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 sandblasting is complete, 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.

MAINTENANCE

GENERAL EQUIPMENT MAINTENANCE (Intervals May Vary Depending on Equipment Usage)	DAILY	WEEKLY	MONTHLY	SEMI-ANNUALY	ANNUALY
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	

MAINTENANCE CONTINUED

CLEANING THE ABRASIVE SCALPER SCREEN

Open the machine access door located at the front of the cabinet. The Navigator includes a 1/16" perforated scalper screen located above the pneumatic floor assembly. Use any shop vacuum to clean the debris off the scalper screen. If the unit includes the integrated vacuum cleanup assembly you can use this to remove most of the debris found on the screen. Some items may require sweep-pan removal if the size and weight of the items are not removed using the vacuum cleaning feature. The pressure generator has a final filter screen located between the abrasive storage hopper and top pot flange. Clean using the hopper inspection port with the exhaust blower off and the pot depressurized.

INTEGRATED VACUUM CLEANING ASSEMBLY (Optional)

If the machine has been equipped with integrated vacuum clean-up, open the vacuum slide gate located on the rear of the dust collector chamber with the blower assembly operational. Sliding the gate open aligns the slide gate opening that permits operation of the vacuum assembly. Use the vacuum nozzle to remove unwanted items around the machine. Close the vacuum slide gate after use of this item or reduced pneumatic abrasive conveyor velocity may occur. The integrated vacuum assembly can be used for general housekeeping, scalper screen cleaning or final pot clean out when clearing or changing the blast media. All material being removed by this assembly will be sent to the spent side (dirty side) of the dust collector assembly. The removed material cannot be used again. This assembly can be attached to any Media Blast dust collector operating with the 12-inch diameter impeller normally used with the 2-hp blower assembly.

CLEANING THE DUST COLLECTOR CARTRIDGE FILTER

Navigator machines are equipped standard with a manual dust pneumatic filter cleaning system. The manual pneumatic filter cleaning system uses compressed air to operate a ball vibrator cleaning assembly. The ball vibrator shakes the filter(s), to remove the collected dust from the filter surface.

All Media Blast Production Machines include negative pressure dust collector operation. **With the exception of the automatic timed reverse pulse optional cleaning cycle, all machines require the exhaust blower to be turned off permitting dust collector filter cleaning.** The optional automatic timed filter-cleaning uses the ball vibrator to clean the filter but performs it automatically each time the machine is turned off. The optional manual reverse pulse filter cleaning cycle uses a pulse of compressed air to clean the filter and the automatic version cleans the filters at regular intervals when the machine is operating.

MANUAL PNEUMATIC FILTER CLEANING ASSEMBLY

(Standard): For optimum visibility, the dust collector filter cartridge should be cleaned every two hours of cabinet process time. To clean the dust collector filter cartridge, turn off the power to the machine blower.

Note: *Do not operate the filter cleaning cycle with the exhaust blower running…this will significantly decrease the life of the cartridge filter.*

WARNING: Operating the blast cabinet with moist compressed air will compromise the performance of the filter cleaning systems. It is critical that the compressed air entering the blast cabinet is dry. If there is a moisture concern, install the inline ambient air dryer (P/N# 100-03-003).

The vibrator shakes the cartridge, releasing dust trapped in the pleats of the filter. Run the vibrator for approximately 2-3 minutes. Turn off the vibrator by closing the ball valve.

AUTOMATIC TIMED FILTER CLEANING ASSEMBLY

(Optional): This filter cleaning assembly cleans the filters automatically every time the machine power is turned off. It uses the same pneumatic ball vibrator as the manual pneumatic filter cleaning assembly. A timer, located inside the main electrical enclosure, is set to permit adequate time for blower coasting to remove the negative pressure inside the dust collector housing.

REMOVING THE DUST FROM THE DUST COLLECTOR

Periodically, the dust must be removed from the dust collector storage chamber. IKONICS recommends removing the dust storage drawer once per week (more often depending on the type of abrasive used, the blasting pressures and the number of cabinet process hours per week). Always cycle the vibrator cleaning cycle with the blower not operating to remove any collected dust stored on the filter cartridge.

Remove the dust storage tightening handles and slide the dust drawer from inside the dust collector housing.

Empty all collected dust into a plastic trash bag and dispose of using standard waste removal methods.

Install the dust drawer into the dust collector housing and the integrated vacuum can now be used to remove any dust that is around the unit.

MAINTENANCE CONTINUED

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. A 3/32" and a 1/8" drill bit can be used to check for noticeable nozzle wear.

To replace the blast nozzle, 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 or pull back on the end ring of the nozzle holder pulling or pushing toward the nozzle (see diagram below). As you are pressing, pull the abrasive blast hose in the other direction and use some slight 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 INTERNAL CABINET BLAST HOSE

To replace the inside whip abrasive hose, first remove the blast nozzle and nozzle holder assembly using the instructions below. Pressing on the end ring of the cabinet fitting will remove the inside whip hose assembly.

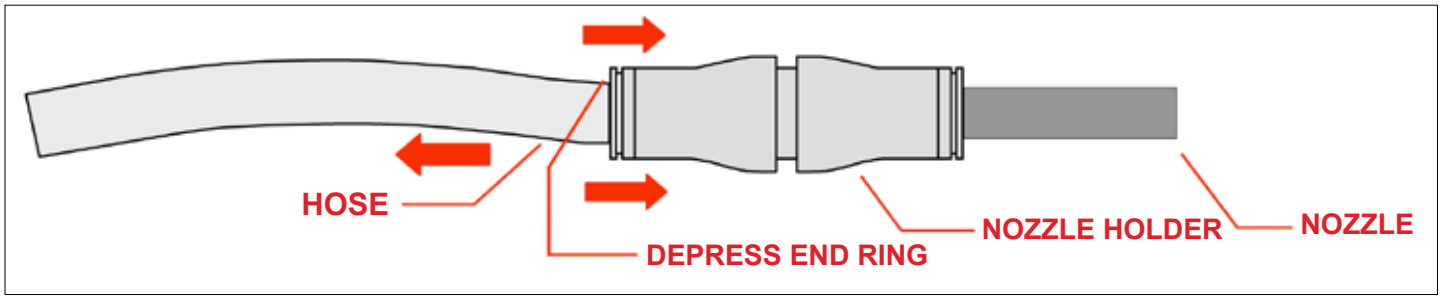
Note: *All hoses and tubing are removed using the same procedure.*

The Navigator standard configuration includes a single ½-inch O.D. abrasive blast hose that is removed by first removing the blast nozzle. Use the drawing below for proper procedure for nozzle removal.

Two types of cabinet fittings are used, either a simple rubber grommet or compression fitting. If the cabinet has the rubber grommet you can remove the blast hose after the nozzle has been removed. Cabinet compression fittings require loosening and removal of the compression nut from the fitting to loosen the compression tightener. When this is complete you can remove the abrasive blasting hose. Remember to install the compression nut and tighten on the new hose assembly before inserting into the cabinet.

Replace the nozzle on any new hose assembly and the hose is ready for use.

REPLACING THE INTERNAL CABINET BLAST HOSE



MAINTENANCE CONTINUED

REPLACING THE LIGHT BULBS

The Navigator includes two light fixtures, one at the front and one used for a rear wall light table. Unclip the four clips that hold the translucent light cover. Drop the light cover off the fixture. Twist the fluorescent bulb until it releases from the fixture. Remove the bulb and replace. Be sure to reattach all four clips when the light cover is replaced to ensure that no abrasive gets into the fixture. The rear light fixture is located inside the light housing.

REPLACING THE WINDOW OR WINDOW PROTECTOR GLASS

Remove the two thumbscrews that hold the upper window bracket in place. Loosen the two thumbscrews that hold the lower window bracket in place but do not remove. 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. Always make sure to clean both the operator safety window and the new window protector glass before installation.

REPLACING THE DUST COLLECTOR CARTRIDGE FILTER

IKONICS recommends replacing the cartridge filter every 500-1,000 blast hours or semi annually (filter may have to be replaced more frequently in regions experiencing high humidity and/or heavy production levels).

Dust collector with vertically mounted filters and pneumatic vibrator cleaning cycle: With the access door of the dust collector open, the cartridge filter and filter mounting assembly can be observed. The filter mounting assembly consists of two threaded rods located outside the filter, a ball vibrator and filter bracket at the bottom of the filter, and two filter retainer knobs with speed spacers.

The following steps outline the cartridge filter replacement:

1. Clean the dust collector cartridge filter (please refer to Cleaning the Dust Collector Cartridge Filter procedure on page 7).

2. Remove the dust from the dust collector (please refer to Removing the Dust from the Dust Collector on page 7).

3. If the blower is running, turn it off.

4. Insert one end of a lever bar (or short 2 x 4 lumber) under the filter vibrator and push down on the other end. This will reduce the tension on the filter retainer knobs. This is suggested to help remove the holding knobs and not to be used to collapse the filter.

5. Loosen the two knobs and remove the spacers while applying moderate steady pressure on the advised lever bar.

6. Allow the existing cartridge filter to drop, using the lever bar to control the descent.

7. Remove the cartridge from the dust collector housing by tilting the top of the cartridge through the access door followed by the cartridge bottom.

8. Replace the cartridge. Ensure that the center guide pin and sealing washer are located in the 1/2” assembly hole located on the bottom of the cartridge.

9. Hold the cartridge against the top seal. The new cartridge can easily be held in place while the ball vibrator and filter bracket is installed and filter retainer knobs tightened.

   Note: *The filter retainer knobs must be tight or dust and abrasive will escape through the blower exhaust. Thread the knobs snug plus one additional turn. (The knobs can be kept from loosening by threading a nylon tie strap around the knob and the filter bracket).*

10. 24-48 hours after installing the new cartridge, check cartridge to determine if it is still snug. Tighten the filter retainer knobs if the cartridge is loose.

WARNING: Use caution to not over-tighten or under-tighten the filter retainer knobs. Over-tightening the filter retaining knobs can collapse the filter pleats of the cartridge and under-tightening can allow the top-sealing gasket to leak and the filter to slip the holding position.

The filter cartridge can be repaired using 100% silicon sealing caulk. Clean the damaged area and seal with silicone. Make sure the seal is allowed to cure for 24 hours for proper curing.

MAINTENANCE CONTINUED

REPLACING THE STANDARD LOW-PRESSURE PINCH 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 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 wrench to engage the pinch valve bladder end cap closest to the pressure pot. Loosen the pinch valve 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 damage the plastic valve body. Use this to push the Pinch Valve Bladder through the body and out the other end.

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
109-20-200, Standard

Bladder Part
109-20-201, Standard

MAINTENANCE CONTINUED

REPLACING THE HIGH-PRESSURE PINCH 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 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 Tubomatic valve attached to the bottom of the pressure pot assembly. Removing the Tubomatic 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 sealed. 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 Tubomatic valve on the machine making sure no abrasive exists on the valve or pot nipple assembly.

8. Replace pressure pot access port making sure the pot seals properly. You may now charge the machine with abrasive.

9. Restore machine air.

Tubomatic Valve

Tubomatic Valve
with cover removed

109-20-301
Bladder

109-20-302
Core

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. This may or may not cause a noticeable difference in the blast productivity or etch finish. Often times, it will not be noticeable because additional abrasive has been added from time to time to make up for the abrasive that was worn or broken down. If a noticeable difference in the blast productivity or etch finish occurs, the abrasive may need to be replaced in the system.

1. Remove the perforated metal scalper screen from above the blast cabinet pneumatic floor with the dust collector blower running.

2. Brush down all visible abrasive from the walls of the cabinet including any ledges so the pneumatic conveyor transfers all the used abrasive to the abrasive hopper located above the pressure pot assembly.

Note: *If the unit includes the vacuum clean-up assembly you can also use it to clean the inside of the cabinet. Any abrasive removed will be transferred to the dirty side of the dust collector.*

3. Remove all compressed air from the blasting cabinet at this time.

4. Turn the dust collector blower off.

5. **Depressurize the blast pot.**

6. Place a shallow pan underneath the blast pot and pot access port cover.

MAINTENANCE CONTINUED

7. Remove the drain plug located on the pipe cross fitting beneath the blast pot. The abrasive will begin draining into the pan. This is not the drain but is used to remove any possible collected trash that might be at the bottom of the pot mixing cross.

8. 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.

9. You can completely remove the port cover by inserting the cover inside the pot and rotating the port 180-degrees. This will permit removal of the port with the holding stud exiting the pot last. This is the only way to re-install the port cover.

10. After almost all the abrasive has been removed from the pot you can now turn the dust collector blower on and use any shop vacuum or the vacuum clean-up assembly to remove the remaining abrasive from the pot assembly.

11. Replace and tighten the plug on the pipe cross fitting.

12. Replace the access port cover and port seal.

13. Tighten the cover using the holding bracket and nut assembly removed during port cover removal.

14. Add 30-35 pounds of new abrasive to the system using the perforated scalper screen to meter the speed of the pneumatic abrasive transfer into the abrasive storage hopper.

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

1. Remove machine compressed air line and 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. 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. Remove enough abrasive to expose the pot pop-up valve and valve guide riser nipple.

5. Unthread the pipe riser that guides the pop-up valve up and down.

6. Remove the pipe riser and pop-up valve as one single assembly.

7. Inspect the top of the pop-up valve for torching. This is a slight abrasive cut created by the leaking pot seal. Replace this valve with a new assembly if you were having pot leakage problems.

8. Locate the donut shaped pot seal on the abrasive inlet to the blast pot.

9. 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. If you are not familiar with this type of mechanics you are advised to contact the dealer for maintenance instructions.

10. 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 and use any small round item to seat the seal. Place the round tool inside the pot seal area and press against the seal while rotating the bar.

11. Replace the pop-up valve and pipe riser together. 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.

12. 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.

13. Repressurize and depressurize the blast pot several times before filling the pot with abrasive.

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 or drill bit 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 SYSTEM: Add 30-35 pounds of abrasive to the system. Be sure that the dust collector is on when the cabinet is loaded with abrasive. The pneumatic conveyor will transfer media.

ABRASIVE CHOKE VALVE IS NOT ADJUSTED CORRECTLY: Rotate valve arm to approximately 45° and test for abrasive flow. Refer to "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.

PLUGGED ABRASIVE HOSE: The pot was overfilled allowing abrasive to plug hose during depressurization cycle. See ADJUSTING THE ABRASIVE FLOW section of the manual.

"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.

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 the 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.

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.

AIR LEAK HEARD AFTER REFILLING THE BLAST POT WITH ABRASIVE

POP-UP VALVE DID NOT SEAL 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.

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 COMPLETELY: Remove the nozzle and nozzle holder and use a small, stiff wire to dislodge the obstruction.

ABRASIVE CHOKE VALVE COMPLETELY CLOSED: If the abrasive choke valve is completely closed (abrasive flow valve perpendicular to supply hose), 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 over filled allowing abrasive to plug hose during depressurization cycle. See ADJUSTING THE ABRASIVE FLOW section of the manual.

TROUBLESHOOTING CONTINUED

BLAST WILL NOT STOP

BLAST PINCH 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. Controls require 90-120 psi for proper operation.

AIR COMPRESSOR IS TOO SMALL: Air compressor does not generate enough volume of air to maintain a line pressure of 80 psi or more.

CHOKE VALVE WILL NOT ADJUST

QUICK-DISCONNECT USED DURING MAIN AIR LINE ATTACHMENT: The choke valve relies on compressed air volume to adjust the abrasive flow to the nozzle. If the volume is not adequate for the nozzle size being used, the result will be the inability to regulate down the media flow resulting in a pulsing abrasive delivery.

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.

POP-UP VALVE DID NOT SEAL PROPERLY WHEN BLAST POT WAS PRESSURIZED

POP-UP VALVE DID NOT SEAL PROPERLY: Depressurize blast pot and slightly increase blasting pressure to 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.

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.

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 much abrasive flow. Rotate abrasive flow valve arm in small increments towards a horizontal position. Refer to "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 inline ambient air dryer (P/N 100-03-003) to prevent reoccurrence.

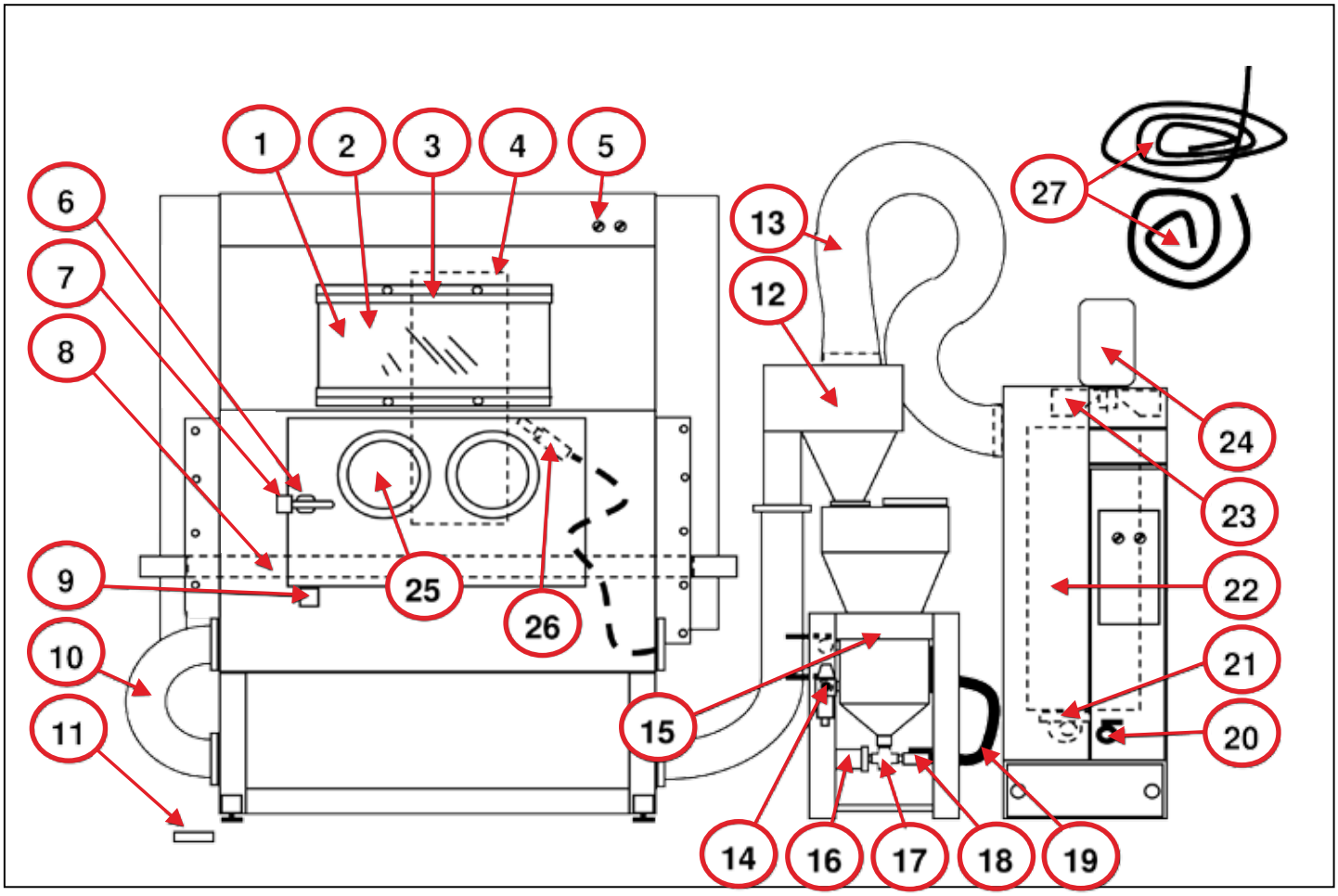
ABRASIVE IS WORN OUT: Replace the abrasive. Refer to the "Draining the Blast Pot and Replacing with New Abrasive" section of the manual for procedures in replacing the abrasive.

SYSTEMS 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 by the number descriptions.

CRYSTALBLAST NAVIGATOR PARTS DIAGRAM I

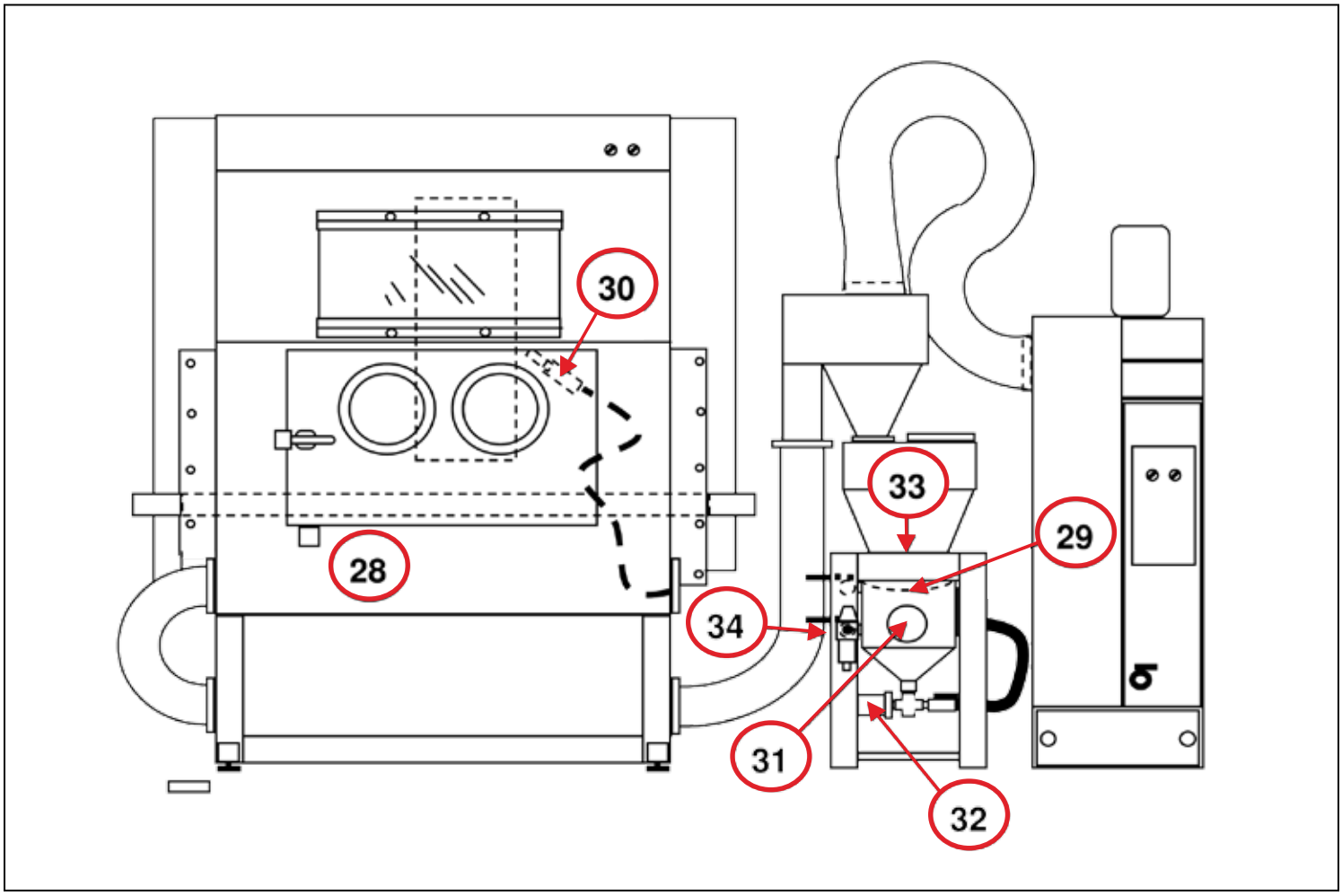


NAVIGATOR PARTS LIST I

Bubble	Part Number	Description
1	109-06-029	View Window 24” clear view
2	109-06-030	Window Protector Glass (not UPS shippable)
3	101-11-147	Window Bladder Seal (by the foot)
4	100-09-053	Light Fixture Complete with bulbs
4	100-09-054	Fluorescent Light Bulb
5	100-09-050	On-Off Light Switch
6	100-06-092	Door Latch
7	100-06-091	Door Strike
8	109-06-031	6-foot Track (complete with rollers)
8	109-06-032	Track Roller Assembly (press in)
8	109-06-033	Track Roller Assembly (blue wheel)
9	100-22-085	Door Interlock Switch
10	100-14-152	6-inch Flex Hose Pneumatic Conveyor
11	109-20-103	Foot Pedal Assembly
12	100-01-022	Cyclone Separator Reclaimer
13	106-14-001	8” Exhaust Hose
14	109-03-100	Air Regulator/Filter/Watertrap
15	104-12-178	Pot Valve
16	109-20-300	High-Pressure Pinch Valve
16	109-20-301	High-Pressure Pinch Valve Bladder
16	109-20-302	High-Pressure Pinch Valve Core
17	109-21-300	Abrasive Mixing Cross
18	100-26-098	Choke Valve
19	109-15-500	Abrasive Hose, ½” O.D.
20	100-26-007	Control Valve, Dust Collector Cleaning Cycle
21	100-08-131	Pneumatic Vibrator
22	100-08-010	Filter Cartridge, 220 sq.ft.
23	100-05-313	12” Impeller
24	111-05-600	2 HP 120 Volt Low Amperage Blower Motor
25	101-12-137	Gloves, pair
25	100-12-034	Glove Clamp (cabinet)
26	109-19-594	Nozzle 3/32” Long Wear with holder
27	100-11-040	Foam Seal 3/8” x 1/2” x 25’ roll
27	100-11-030	Foam Seal 1-1/2” x 1/2” x 25’ roll
27	101-11-147	Bladder Seal
27	109-15-500	1/2” O.D. Abrasive Hose
27	100-14-004	3/8” O.D. PVC Tubing
27	100-14-501	1/4” O.D. PVC Tubing

SYSTEMS PARTS LIST CONTINUED

CRYSTALBLAST NAVIGATOR PARTS DIAGRAM II



NAVIGATOR PARTS LIST II

Bubble	Part Number	Description
28	109-25-601	Work Grate
29	104-21-176	Pot Seal
30	109-19-092	3/32” Tungsten Carbide Nozzle & Holder
30	109-19-125	1/8” Tungsten Carbide Nozzle & Holder
31	104-21-171	Pot Access Cover Seal
32	109-20-105	Micro Filter Complete
32	109-20-106	Micro Filter Cartridge
33	109-25-001	Pot Screen, stainless steel
34	109-13-100	Pressure Gauge

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.

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