PULSAR® IX-P
Pressure Blast Cabinet

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NOTICE TO PURCHASERS AND USERS OF OUR PRODUCTS AND THIS INFORMATIONAL MATERIAL

The products described in this material, and the information relating to those products, is intended for knowledgeable, experienced users of abrasive blasting equipment.

No representation is intended or made as to the suitability of the products described herein for any particular purpose of application. No representations are intended or made as to the efficiency, production rate, or the useful life of the products described herein. Any estimate regarding production rates or production finishes are the responsibility of the user and must be derived solely from the user's experience and expertise, and must not be based on information in this material.

The products described in this material may be combined by the user in a variety of ways for purposes determined solely by the user. No representations are intended or made as to the suitability or engineering balance of the combination of products determined by the user in his selection, nor as to the compliance with regulations or standard practice of such combinations of components or products.

It is the responsibility of the knowledgeable, experienced users of the products mentioned in this material to familiarize themselves with the appropriate laws, regulations and safe practices that apply to these products, equipment that is connected to these products, and materials that may be used with these products.

It is the responsibility of the user to insure that proper training of operators has been performed and a safe work environment is provided.

Our company is proud to provide a variety of products to the abrasive blasting industry, and we have confidence that the professionals in our industry will utilize their knowledge and expertise in the safe efficient use of these products.

OWNER'S MANUAL

 • Stock No.: 23430 • Manual No.: 2156-0202 • Date of Issue: Feb. 2002, Rev. D, 01/07

1.0 INTRODUCTION

1.1 Scope of Manual

1.1.1 These instructions cover set-up, operation, adjustments, maintenance, troubleshooting, and replacement parts, for Pulsar IX Pressure Blast Cabinets. A separate manual is included for the Sentinel metering valve.

1.1.2 These instructions also contain important information required for safe operation of the cabinet. Before using this equipment, all personnel associated with the blast cabinet operation must read this entire manual, and all accessory manuals, to become familiar with the operation, parts and terminology.

1.2 Safety Alerts

1.2.1 Clemco uses safety alert signal words, based on ANSI Z535.4-1998, to alert the user of a potentially hazardous situation that may be encountered while operating this equipment. ANSI's definitions of the signal words are as follows:

This is the safety alert symbol. It is used to alert the user of this equipment of potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

CAUTION

Caution used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

⚠ CAUTION

Caution indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

⚠ WARNING

Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ DANGER

Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

1.3 General Description

1.3.1 The Pulsar pressure cabinet encloses the blasting environment to provide efficient blast cleaning while maintaining a clean surrounding work area. Production rates are influenced by size of nozzle, compressor output, working pressure, type and size of media, and angle and distance of the nozzle from the blast surface. Pulsar IX pressure cabinets consist of two major components.

1. Cabinet Enclosure
2. Power Module
   Includes: skid, blast machine, reclaimer, and reverse pulse dust collector.

See Figure 1 for components of the cabinet enclosure, and Figure 2 for arrangement and components of the power module.

1.3.2 Pulsar pressure cabinets are easily converted to suction feed systems, using the conversion kit listed under Optional Accessories in Section 9.1.

1.4 Theory of Operation

1.4.1 When the cabinet and power module are correctly set-up, the blast machine is ready for actuation by the foot pedal. Fully depressing the foot pedal opens the normally closed main inlet regulator, and closes the normally open outlet valve. The incoming air pressurizes the blast machine, and blasting begins by propelling the blast media through the blast hose and out the nozzle. After striking the object being blasted, the blast media, along with fines, dust, and by-products generated by blasting, fall through the grate into the cabinet hopper. These particles are drawn into the reclaimer for separation. Dust and fines are first separated from the reusable blast media. The media is screened of oversized particles, and held in the reclaimer hopper for reuse. When the foot pedal is released, the blast machine depressurizes, and blasting stops. Stored media automatically refills the machine each time it is depressurized. During this time, dust and fines are drawn through the reclaimer into the dust collector which traps the dust, discharging clean air.

1.4.2 The dust collector filter cartridges are cleaned by a pulse of high velocity compressed air expanding against the inner surface of the cartridges. The expanding air momentarily reverses the air flow, releasing trapped dust. The dust particles fall away from the cartridges and into the dust hopper for removal.

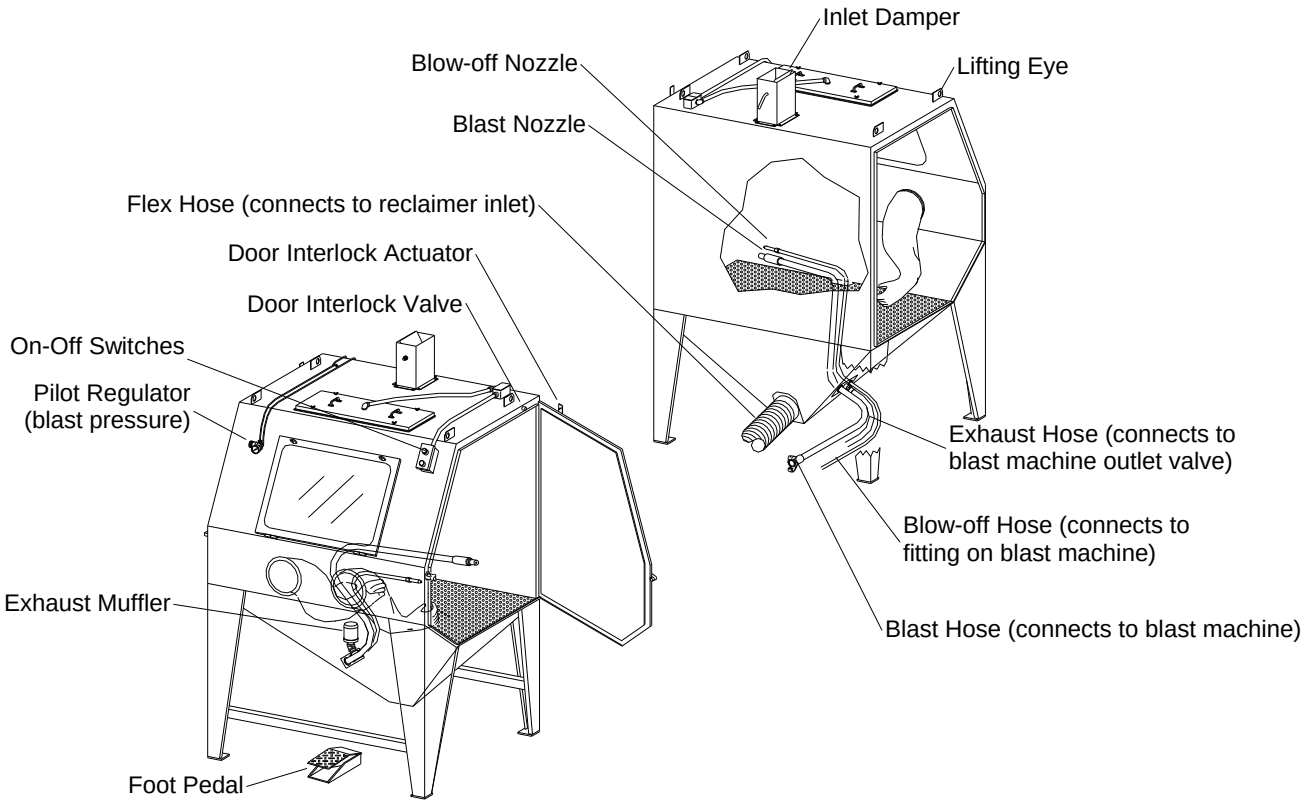


Figure 1

1.5 Cabinet Enclosure

1.5.1 The abrasive blasting takes place in the cabinet enclosure. Compressed air and blast media are delivered to the blast enclosure through the blast hose. The hose is attached to the blast machine mounted on the power module. The cabinet encloses the blasting environment to provide efficient blast cleaning while maintaining a clean surrounding work area.

1.5.2 Spent media and blasting byproducts are conveyed by way of the flex hose, from the cabinet to the reclaimer mounted on the power module.

1.6 Power Module

1.6.1 The vacuum for the media recovery is generated at the exhauster, mounted on the clean-air side of the dust collector. The Pulsar power module has a two cartridge reverse pulse dust collector, and a 900 cfm reclaimer mounted above a 2 cu. ft. blast machine.

1.6.2 Blast Machine and Remote Control

1.6.2.1 The blast machine pressure vessel is manufactured to American Society of Mechanical Engineers (ASME) standards, as described in Section VII, Div. 1, and carry a National Board certification. It is the owner's responsibility to maintain the integrity of the vessel as may be required by some states. This may include regular inspection and hydrostatic testing as described in National Board Inspection Code and Jurisdictional Regulations and /or Laws.

1.6.2.2 All welding repairs done on the vessel must be performed by certified welders, at shops holding a National Board ″R″ Stamp. Welding performed by any welder not properly qualified per the ASME Code voids ASME and National Board certification of the vessel
.

⚠ WARNING

Welding, grinding, or drilling on the blast machine could weaken the vessel. Compressed air pressure could cause a weakened vessel to rupture, resulting in death or serious injury. Welding, grinding, or drilling on the blast machine vessel, without a National Board ″R″ stamp voids the ASME and National Board certification.

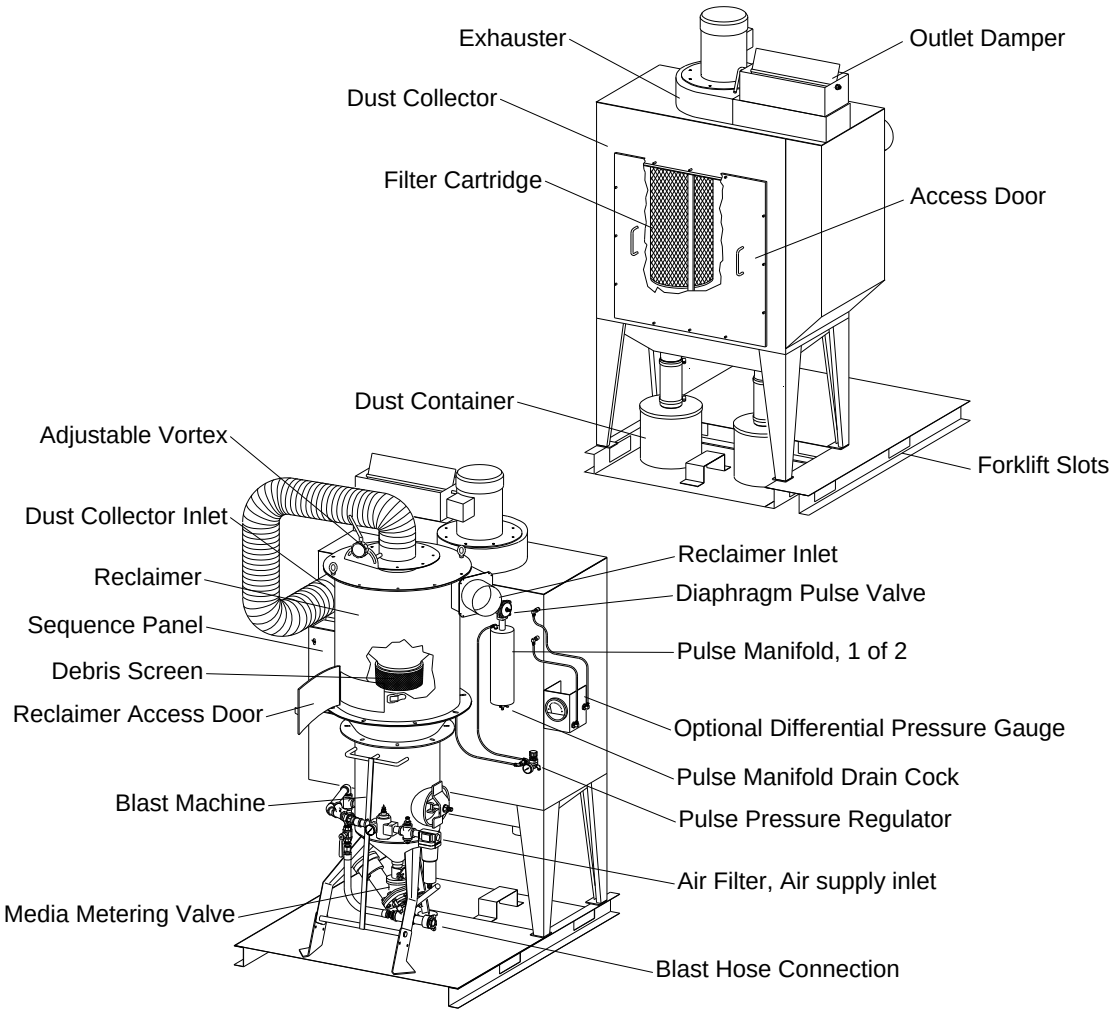


Figure 2

1.6.2.3 This vessel is rated for a maximum of 125 psi (pounds per square inch); do not exceed the rated pressure.

⚠ WARNING

Excessive air pressure could cause the blast machine to rupture. To prevent serious injury or death, do not exceed the rated pressure of the blast machine vessel.

1.6.2.4 OSHA does not require pressure relief valves on blast machines when air compressors supplying air to the blast machines are built to ASME[(1)] specifications and comply with OSHA[(2)] regulations. ASME Manual section VIII, Division 1, UG-125, paragraph A90 (g) states that pressure relief valves or protective devices **"...need not be installed directly on a pressure vessel when the source of pressure is external to the vessel and is under such positive control that the pressure in the vessel cannot exceed the maximum allowable working pressure at the operating temperature..."**. OSHA regulation 1910.169 refers to the above ASME code when describing the necessity of pressure relief valves on compressed air equipment. **DO NOT** operate blast machines with air compressors that are not equipped with properly functioning pressure relief valves.

(1) American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, 1989

(2) Occupational Safety and Health Administration, 29 CFR 1910, Subpart M - Compressed Gas and Compressed Air Equipment.

1.6.3 Reclaimer

1.6.3.1 The reclaimer is a pull-through cyclone separator, into which air, blast media, dust, fines, and by-products generated by the blasting process are drawn through a flex hose from the cabinet enclosure. The vacuum is created by the exhauster assembly mounted on the clean-air side of the dust collector. An adjustable vortex outlet pipe is mounted on top of the reclaimer, for the attachment of the flex hose leading to the dust collector inlet.

1.6.3.2 Dust and fines are first separated from the reusable blast media. Next, the media is screened of oversized particles and good media is returned to the reclaimer hopper and blast machine for reuse.

1.6.3.3 Air, dust and fines are drawn through the center of the reclaimer, and into the dust collector for further separation.

1.6.3.4 A constant static balance is necessary for efficient separation, as the reclaimer operates by a centrifugal balance of velocity, particle weight and size. The best way of ensuring a constant air balance is by setting, and monitoring static pressure with an optional manometer. See Section 9.1.

1.6.3.5 Rubber reclaimer liners should be used with aggressive media. Rubber liners are listed under Optional Accessories in Section 9.1 and in Section 9.10.

1.6.4 Dust Collector

1.6.4.1 The final stage of the recovery, reclaiming process takes place in the dust collector. Dust and fines drawn through the reclaimer are trapped on the outer surface of the filter cartridges, discharging clean air.

1.6.4.2 The dust collector filter cartridges are cleaned by a pulse of high velocity compressed air expanding against the inner surface of the cartridges. The dust particles fall away from the cartridges and into the dust hopper for removal.

1.6.4.3 The pulse interval is controlled by a timer located inside the sequence panel. The timer controls the "on" time (the length of time for each pulse) and "off" time (the length of time between each pulse). The "on" time should never be adjusted. The lower the setting for the "off" time means the shorter the length of time between each pulse.

1.6.4.4 A toggle switch (sequence switch) located on the sequence panel cover, enables or disables the timing sequence. If the sequence switch is kept "on", the timing sequence energizes when the exhauster is turned on, and the cartridges are automatically pulsed when the exhauster is running. If the switch is "off", the timer does not energize, and the cartridges are not pulsed.

1.7 Nozzle Options

1.7.1 Unless otherwise specified at the time of order, cabinets are shipped with a 3/16" orifice tungsten carbide nozzle. Optional 1/8", 1/4", and 5/16" orifice nozzles are also available. Use 5/16" nozzles only when necessary in applications that require a high volume of air. When using 5/16" nozzles, media flow should be lean, or recovery from the cabinet hopper may be impaired. A 5/16" orifice nozzle will substantially increase wear on blast hose. Use boron carbide nozzles when blasting with aggressive media. See Optional Accessories is Section 9.1.

1.8 HEPA Filter

1.8.1 Optional HEPA after-filters provide additional filtration, and must be used when removing lead coatings or any other toxic materials. See Section 9.1.

⚠ WARNING

Prolonged exposure to any dust could result in serious lung disease and death. Short term ingestion of toxic materials, such as lead dust or dust from other heavy metals and corrosives, could cause serious respiratory injury or death. Identify all materials that are to be removed by blasting. Use HEPA after-filters if lead coating or any other toxic materials are being removed by the blasting process.

1.9 Metering Valve Options

1.9.1 Unless specified at the time of order, cabinets are shipped with a fine-mesh Sentinel metering valve. The valve is for use with 50 mesh and finer media, and #10 and finer glass bead. An optional Sentinel metering valve is available for use with 50-mesh and coarser media. Conversion kits easily convert the valves either way. Kits are listed under Optional Accessories in Section 9.1.

1.10 Media

1.10.1 Pulsar pressure cabinets utilize most common reusable media 25 mesh and finer (with the appropriate metering valve) that is specifically manufactured for dry blasting. The usable media size range depends on the nozzle orifice size, media metering valve, and reclaimer cleaning rate. Several factors affecting the reclaimer cleaning rate include: air pressure, media/air mixture, media friability, contamination of parts being cleaned, and humidity. Media sizes shown under the media headings are guidelines only, based on standard 3/16″ orifice nozzle and average conditions.

As a rule, larger nozzles deliver more media, thus demand higher reclaimer cleaning rates. With larger nozzles, the maximum size of media decreases from those recommended. Media finer than those recommended may decrease visibility, and increase carryover to the dust collector. Using media in the 200

mesh and finer range will usually require adjustments to the vortex cylinder. See Section 5.4. Media coarser than those recommended may be too dense for the reclaimer to recover from the cabinet hopper.

1.10.2 Glass Bead: Most beads are treated to ensure free-flow operation even under moderately high humidity conditions. Glass beads subjected to excessive moisture may be reused after thorough drying and breaking up of any clumps.

1.10.3 Silicon Carbide, Aluminum Oxide, and Garnet: These are the most aggressive, high volume abrasive in the blasting industry. Aggressive media such as these may be used, but the service life will be reduced on any equipment components which come in contact with the abrasive. To avoid unscheduled down time, periodically inspect the reclaimer wear plate, hoses, and nozzle for abrasive wear.

When using aggressive abrasive occasionally, use an optional aluminum oxide kit. When these abrasives are used extensively, use a full rubber lined reclaimer. Interior rubber lining on cabinet is suggested. Nozzles lined with boron carbide are recommended to extend nozzle wear life. See Optional Accessories in Section 9.1.

1.10.4 Steel: Steel media may be used, but is limited in mesh size and nozzle size. Steel shot finer than 170 mesh, and steel grit 80 mesh and finer may be used with a 1/4" or smaller nozzle. Under ideal conditions steel grit 120 mesh and finer may be used with 5/16" or smaller nozzles. See the notation in Section 1.7, regarding 5/16" nozzles. The conveying hose on cabinets using steel should be lined, and reduced one diameter size from standard. Rubber curtains should be used to protect the cabinet walls from peening and rapid wear. For these applications cabinets can be ordered with reduced size flex hose appropriately sized for steel grit, and with rubber curtains installed. This special requirement may be specified at the time of order, or field installed at a later date. See Optional Accessories in Section 9.1.

1.10.5 Fine-mesh Media: When using 200-mesh and finer media, the adjustable vortex cylinder will require adjustment per Section 5.4. The inlet baffle may need to be removed, See Section 7.12.

1.10.6 Lightweight Media: The adjustable vortex cylinder will require adjustment when using lightweight media. See Section 5.4. When using lightweight media such as plastic or wheat starch, the inlet baffle of the reclaimer may need to be removed. See Section 7.12.

1.10.7 Sand and Slag: Do not use sand because of the respiratory hazards associated with the use of media containing free silica. Slags are not recommended because they rapidly break down.

1.11 Compressed Air Requirements

1.11.1 The size of the compressor required to operate the cabinet depends on the size of the nozzle and blasting pressure. Unless specified otherwise, cabinets are supplied with a 3/16" orifice nozzle. See the table in Figure 3 to determine cfm requirements. Add an additional six cfm for the dust collector pulse. The table shows air consumption of nozzles when new. It does not show the recommended compressor size. As nozzles wear, they will consume 70% to 80% more air. Consult with a compressor supplier for suggested compressor size based on the air consumption.

Nozzle size	Pressure (psi)			
	50	60	70	80
1/8"	11	13	15	17
3/16"	26	30	33	38
1/4"	47	54	61	68
5/16"	77	89	101	113

Air Consumption in cfm

Figure 3

1.11.2 The air filter at the blast machine inlet removes condensed water from the compressed air. Its use is especially important in areas of high humidity, or when fine-mesh media are used. Moisture causes media to clot and inhibits free flow through the metering valve. If moisture problems persist, an air dryer may be required.

1.12 Electrical Requirements

1.12.1 Standard voltage is 230/460, 3-phase. Wiring from the user's disconnect to the cabinet control panel must be provided by the user. Additional wiring information is in Section 2.4.

2.0 INSTALLATION

2.1 General

2.1.1 Select a location where compressed air and electrical service are available. Position the cabinet to provide ample space around the operator station and to load and unload parts. Provide unobstructed space at access doors and service areas. Determine the best location for both modules, and position them before final assembly.

2.2 Connect Compressed Air Supply Line

⚠ WARNING

Failure to observe the following before connecting the equipment to the compressed air source could cause serious injury or death from the sudden release of compressed air.

- **Lockout and Tagout the compressed air supply.**
- **Bleed the compressed air supply line.**

⚠ WARNING

To avoid the risk of injury from compressed air, install an isolation valve and bleed-off valve where the air supply it tapped into the compressed air system. This enables depressurization of the compressed air circuit before performing maintenance.

2.2.1 Install an air supply fitting to the air filter at the blast machine inlet that is compatible with the compressed-air supply hose. See Section 2.2.2.

2.2.2 Install an isolation valve at the air source to enable depressurization for service, and connect a 1" ID or larger air line from the air source to the air filter. A smaller diameter hose may reduce blasting performance.

⚠ WARNING

If twist-on type air hose couplings are used, they must be secured by safety lock pins or wires to prevent accidental disconnection while under pressure. Hose disconnection while under pressure could cause serious injury.

2.3 Ground Cabinet

2.3.1 To prevent static electricity build up, attach an external grounded wire from an earth ground to the grounding lug on the cabinet and dust collector.

2.4 Connect Electrical Service

⚠ WARNING

Lockout and Tagout the electrical supply before performing any electrical service. Shorting electrical components could result in death, serious injury from electrical shock, or equipment damage. All electrical work, or any work done inside an electrical panel, must be performed by qualified electricians, and comply with applicable codes.

NOTE: Wiring schematics are stored in the electrical panel. Use the schematics for making electrical connections. After wiring is completed, keep the schematics with the manual for future reference and for electrical replacement parts.

2.4.1 Where possible, all wiring has been completed at the factory. The electrician only needs to provide service from the user's disconnect to the motor starter in the electrical panel mounted on the side of the dust collector, and to connect conduit and wiring from the junction box on the cabinet to the electrical panel.

2.4.2 After the wiring is completed, observe the subsequent warning, and check the motor rotation. To check rotation, jog the starter (momentarily turn switch on and off). This will cause the motor to rotate slowly. Look through the slots in the fan housing on top of the motor where rotation of the fan can easily be observed. Proper rotation is indicated by the arrow on the exhauster housing. The fan should be rotating clockwise when viewed from the fan end of the motor.

⚠ WARNING

Do not look into the reclaimer exhauster outlet while the paddle wheel is turning. Injury to the eye or face could occur from objects being ejected from the exhauster.

2.4.3 Check the amperage on initial start up. If the motor draws excessive amperage, gradually close the outlet damper until the amperage is within the specifications shown on the motor plate.

2.5 Flex Hose Connections

2.5.1 To prevent excessive hose wear, avoid sharp bends and curves. Connect the 7″ diameter flex hose between the reclaimer outlet and dust collector inlet. Connect the 6″ diameter flex hose between the cabinet hopper and reclaimer inlet. It is easier to slip the hose over the connectors and to create a tighter seal if the

first two or three inches of wire is removed from the inside of the hose. Use care not to damage the hose. The hose wire helps dissipate static electricity in the conveying hose, and also helps ground each segment. In order for the hose wire to dissipate static electricity, the wire must touch the metal of each segment.

2.5.2 Clamp the flex hose securely in position with worm clamps provided.

2.6 Connect Blow-Off Hose

2.6.1 Attach the 1/2" blow-off hose coming from the cabinet hopper, to the compatible fitting on the blast machine piping, between the air filter and regulator. See the schematic in Figure 4.

2.7 Connect Blast Hose

2.7.1 Connect the blast hose coupling to the coupling at the bottom of the blast machine. Make sure coupling gaskets are in place and couplings are secured with safety lock-pins.

⚠ WARNING

Hose disconnection while under pressure could cause serious injury or death. Use safety lock-pins and safety cables on all coupling connections to prevent hose couplings from accidental disconnection while under pressure. Lock-pins and safety cables are listed under Optional Accessories in Section 9.1.

2.8 Attach Air Exhaust Hose

2.8.1 Screw the male end of the exhaust hose into the 1" coupling in the cabinet hopper, turning the hose as required. Connect the female swivel end to the adaptor on the blast machine outlet valve.

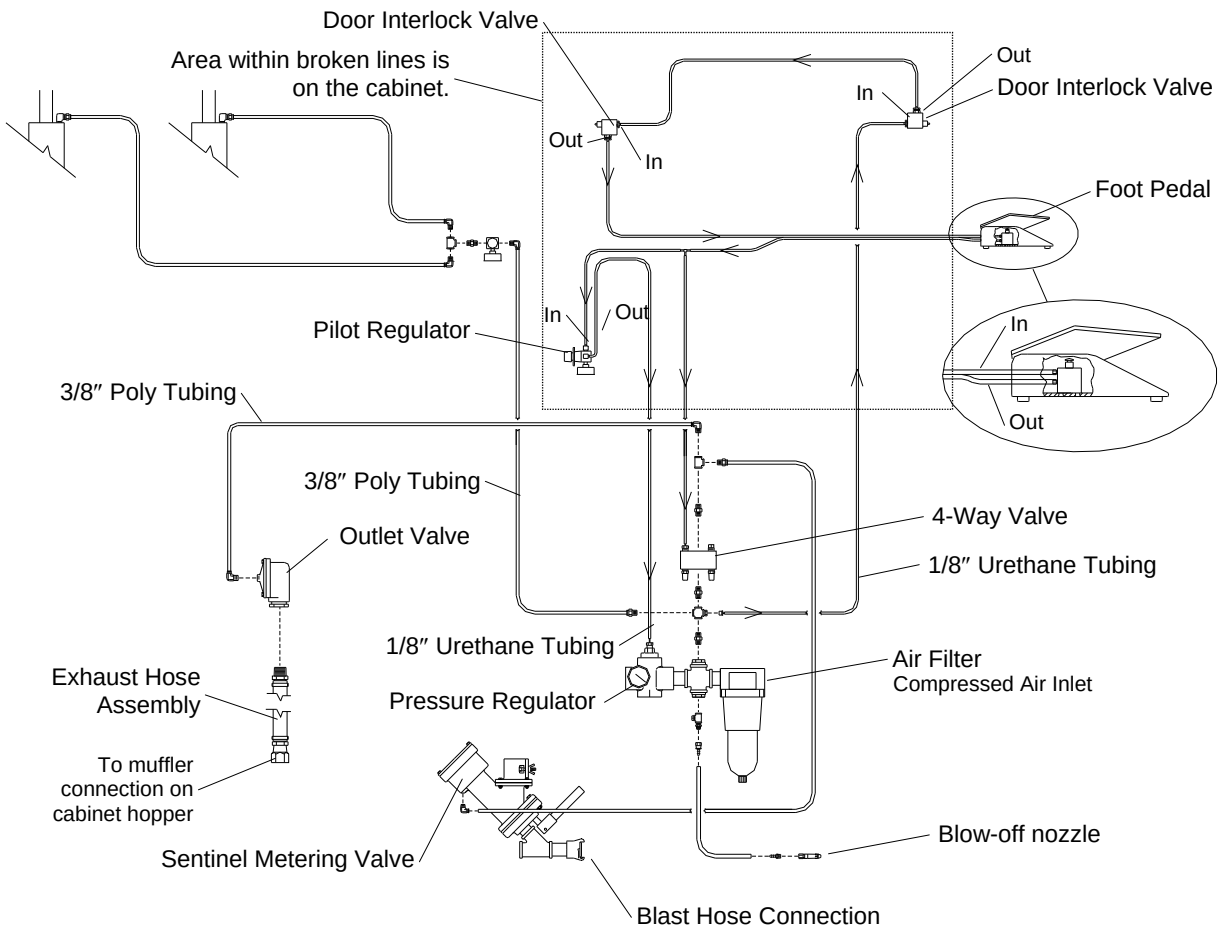


Figure 4

2.9 Connect Urethane Control Tubing

2.9.1 Uncoil the 1/8" urethane control tubing, from under the cabinet. The end of each tubing is numbered. Connect the tubing to the adaptor with the corresponding number on the pressure regulator and 4-way air valve. Check the schematic in Figure 4 to confirm the connections.

2.10 Inlet Damper

2.10.1 The inlet damper must be set to match the cabinet dimensions and reclaimer size. The decal on the damper shows the settings in degrees. For the initial setting, align the handle to 0 degrees (full open). See Section 5.8 for adjustment procedure.

2.10.2 Loosen the lock nuts and set the damper to the starting point. When correctly positioned, tighten the lock nuts to maintain the setting.

2.11 Final Assembly

2.11.1 Position the foot pedal on the floor at the front of the cabinet.

2.11.2 A package of 5 cover lenses is supplied with the cabinet. To install a cover lens, remove the adhesive backing and apply the lens to the clean, dry, inner surface of the view window per Section 6.4. When the cover lens becomes pitted or frosted, replace it.

3.0 FIELD INSTALLED ACCESSORIES

3.1 Alox Kit

3.1.1 An optional aluminum oxide kit is available factory-installed or may be field installed later. The factory-installed Alox kit consists of black rubber curtains with eyelets, curtain hardware, and boron carbide nozzle.

3.2 Rubber Curtains

3.2.1 Rubber curtains protect the cabinet walls and doors from rapid wear caused from abrasive overspray and rebounding media, and from peening (warping) caused by the impact of spherical media. Installation instructions are supplied with the curtains.

3.3 Manometer

3.3.1 A constant static pressure balance is necessary for precise separation, as the reclaimer's efficiency is accomplished by a centrifugal balance of particle weight and size. The air balance and static pressure are set by adjusting the outlet damper. The manometer measures static pressure. Use the instruction sheet provided with the manometer, for installation and operation instructions. The optional manometer kit is listed in Section 9.1.

3.4 Differential Pressure Gauge

3.4.1 The differential pressure gauge measures pressure drop across the cartridges. The gauge is the best way to monitor cleaning efficiency and dust build-up.

3.4.2 Remove 1/4″ pipe plugs from dust collector body, and install 1/4″ x 1/8″ bushings and snubber fittings as shown in Figure 5.

3.4.3 Plug the rear pressure ports on the gauge, and install the tube fittings supplied, to the side pressure ports as shown.

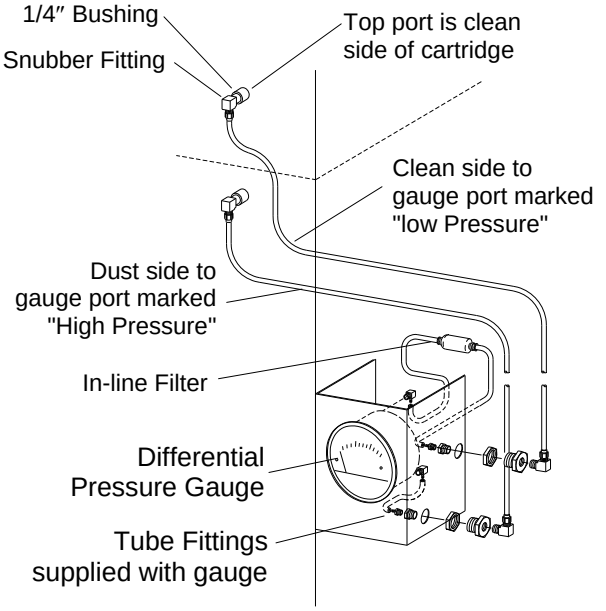


Figure 5

3.4.4 Follow the instructions packed with the gauge to mount the gauge to the side of the collector.

3.4.5 Connect the 1/4" tubing to the snubber fittings, filter, and gauge, as shown.

4.0 OPERATION

4.1 Season Filter Cartridges per Section 7.8.

CAUTION

Do not pulse new dust collectors and cartridges until the cartridges are seasoned. See Section 7.8. Premature pulsing decreases the efficiency of collector and cartridge life.

4.2 Media Loading and Unloading

4.2.1 Media Capacity: Media capacity of the Pulsar IX pressure cabinet is approximately 2 cu. ft. The machine is full when media reaches the level of the pop-up valve. Overfilling will result in media carryover to the dust collector and possible blockage in conveying hose.

4.2.2 Media Loading: With the exhauster off, add clean dry media, by pouring it into the reclaimer hopper through the reclaimer door. **Do not pour media directly into the cabinet hopper, as overfilling or blockage may occur.** Refill only after all media has been recovered from the cabinet.

4.2.3 Media Unloading: To empty the cabinet and blast machine of media, reduce pressure to 40 psi. Place an empty container, such as a bucket, on the cabinet grating. Remove the nozzle and nozzle washer, close the door, close the choke valve and press the foot pedal. Direct media flow into the container. Empty the container when full or before it is too heavy to handle, and repeat the process until the machine is empty. Clean the nozzle holder threads before reinstalling the nozzle washer and nozzle. If complete purging of media is required, use a vacuum to remove media residue in the cabinet hopper and blast machine head.

4.3 Loading and Unloading Parts

4.3.1 Load and unload parts through either door.

⚠ WARNING

Use solid fixturing to hold heavy parts in place. Do not remove lift equipment until the part is adequately supported to prevent movement. Moving heavy, unsupported parts may cause them to shift or topple, and cause severe injury. This is especially important with the use of turntables and turntables with tracks.

4.3.2 Parts must be free of oil, water, grease, or other contaminants that will cause media to clump, or clog filters.

4.3.3 When blasting very small parts, place an appropriately sized screen over the work table to prevent parts from falling into the hopper.

4.3.4 Close door. Be certain door is sealed securely, or door interlock system will prevent blasting.

4.4 Blasting Operation

⚠ CAUTION

- **Always close cabinet, reclaimer and dust collector doors before blasting. Keep all doors closed during blasting.**
- **Always wear blast gloves.**
- **Avoid pointing the blast nozzle toward the view window.**
- **Use the blow-off nozzle to blow media off parts before doors are opened, or exhauster is switched off.**
- **After blasting, keep doors closed and exhauster on until the cabinet is clear of all airborne dust.**
- **Stop blasting immediately if dust leaks are detected.**

4.4.1 Slowly turn on air supply to the cabinet. Check for air leaks on the initial start-up, and periodically thereafter.

4.4.2 Adjust the pulse pressure regulator to 70 psi. See Figure 2 for its location on the power module.

4.4.3 Turn on lights and exhauster. The on/off toggle switch performs both functions.

4.4.4 Make sure the dust collector pulse sequence switch is "on". NOTE: Cartridges must be seasoned before pulsing. Leave the sequence switch turned off until cartridges are seasoned per Section 7.8.

4.4.5 Load parts.

4.4.6 Close door. Be certain door is sealed securely, or door interlock system will prevent blasting.

4.4.7 Insert hands into gloves.

4.4.8 To blast, firmly grasp the nozzle and step on the foot pedal; blasting will begin almost immediately.

NOTE: When blasting small parts, use a solid back rest for the part. Without this assist, especially with long blasting operations, the operator will tire easily from resisting blast pressure. Whenever possible avoid holding small parts that require blasting into the glove.

4.4.9 Adjust the pressure regulator, located at the left of the view window, per Section 5.1.

4.4.10 When blasting very small parts, place an appropriately sized screen over the grate to prevent parts from falling into the hopper. If an object should fall through the grate, stop blasting and retrieve it.

⚠ WARNING

Shut down the cabinet immediately if dust discharges from the collector. Check that the cartridges are correctly seated and not worn or damaged. Prolonged breathing of any dust could result in serious lung disease or death. Short term ingestion of toxic dust such as lead, poses an immediate danger to health. Toxicity and health risk vary with type of media and dust generated by blasting. Identify all material being removed by blasting, and obtain a material safety data sheet for the blast media.

4.5 Stop Blasting

4.5.1 To stop blasting, remove pressure on the foot pedal. The blast machine will depressurize each time the foot pedal is released.

4.5.2. The blast machine refills with media each time the foot pedal is released. Refill takes approximately 15 seconds when the machine is empty.

4.5.3 Use the blow-off nozzle to blow media off cleaned parts. Allow the exhauster to clear the cabinet of airborne dust before opening the door.

4.5.4 Unload parts, shut off the air supply valve, drain the air filter and pulse manifolds, and switch off the lights and exhauster.

4.6 Blasting Technique

4.6.1 Blasting technique is similar to spray painting technique. Smooth continuous strokes are usually most effective. The distance from the part affects size of blast pattern. Under normal conditions, hold the gun approximately 6" from the surface of the part.

5.0 ADJUSTMENTS

5.1 Blasting Pressure

5.1.1 The blast pressure pilot regulator, located at the left of the view window, enables the user to adjust blasting pressure to suit the application. The suitable pressure for most purposes is 80 psi. Lower pressures may be used for delicate work. In all cases, highest production can be achieved only when pressure is carefully monitored.

5.1.2 Pressure registers on the gauge only while blasting. To adjust, unlock the knob, and turn it clockwise to increase pressure or counter-clockwise to decrease pressure. Once operating pressure is reached, lock the knob to maintain the setting.

5.2 Media Metering

These instructions are for a standard cabinet with Sentinel Metering Valve. Optional metering valves may function differently, but the process is similar.

5.2.1 Media flow is adjusted by the metering valve located at the bottom of the blast machine. The valve is closed when the handle is fully right. To adjust, close the valve and slowly move the handle to the left to increase media flow. Allow time for the flow to stabilize before further adjusting. The valve is fully open when the handle is at the full left position. The correct flow rate will depend on the type and size of media and blasting pressure, and can best be determined by experience. Use as little media as possible to do the job while maintaining the best cleaning rate. Generally, with the correct mixture, abrasive can be seen as light discoloration as it exits the nozzle.

5.3 Static Pressure (outlet damper)

5.3.1 Static pressure requirements vary with size, weight and type of media.

5.3.2 Adjust static pressure by opening or closing the outlet damper located above the dust collector (See Figure 2). If the damper is not opened far enough, the reclaimer will not remove fines, resulting in dusty media, poor visibility, or will not convey media, causing build-up in the flex hose between the cabinet hopper and reclaimer. If the damper is opened too far, it may cause carry-over (usable media carried into the dust collector) and result in excessive media consumption. Open only as far as necessary to obtain a balance of dust removal without media carryover.

5.3.3 A manometer is useful for adjusting and monitoring static pressure. The manometer kit is listed under Optional Accessories in Section 9.1. The following are static pressure starting points for given media. Static pressure may need to be lower with finer media, higher with coarser media.

Glass Bead No. 8 to 10 ..... 2-1/2 - 3"
Alox. 60 & coarser ..... 4 - 5"
Alox. 80 & finer ..... 2-1/2 - 3"

5.3.4 If the damper has been adjusted and carryover or excessive dust in the media continues to be a problem, the vortex cylinder may help retain media. The vortex cylinder is usually required only when using 200 mesh and finer media, or lightweight media. See Section 5.4.

5.3.5 As the cartridges develop a cake of dust, the static pressure will drop, requiring additional pulsing, as described in Section 5.7, or an increase in pulse pressure per Section 5.6. When pulsing no longer maintains the necessary static pressure, readjust the outlet damper.

5.4 Adjustable Vortex Cylinder

5.4.1 The adjusting lever for the vortex cylinder is mounted on the spacer above the reclaimer body. Start with the lever in the vertical position. Before adjusting the vortex cylinder, adjust the damper on the dust collector to increase or decrease static pressure per Section 5.3. Once the damper is adjusted, adjust the cylinder as follows.

5.4.2 Dusty Media: If the reclaimer is not removing sufficient quantities of dust, raise the cylinder by moving the lever left toward "COARSE", in 1/4" increments at the indicator plate. Do not adjust again until the media has gone through several cycles, to be certain further adjustment is required.

5.4.3 Media Carryover: If too much media is carried to the dust collector, lower the vortex cylinder by moving the lever right toward "FINE", in 1/4" increments at the indicator plate. NOTE: If the cylinder is lowered too far, the reclaimer will again begin to allow usable media to be carried over, and cause abnormally high static pressure.

5.5 Door Interlocks, Figure 6

⚠ WARNING

Never attempt to override the interlock system. Doing so could result in injury from unexpected blasting.

5.5.1 The door interlocks disable the blasting control circuit when the doors are open. To enable blasting, the door interlock switch must be engaged when the doors are closed. The interlocks are set at the factory and do not usually require field adjustment unless parts are replaced. When adjustment is required, proceed as follows.

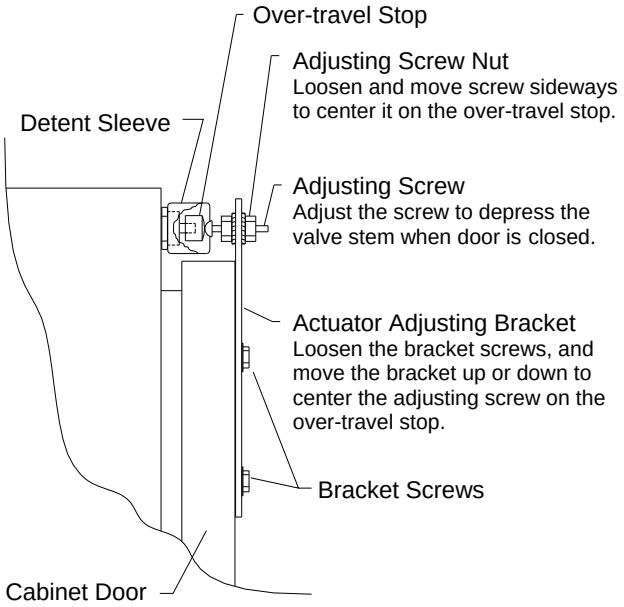


Figure 6

5.5.2 Close cabinet doors.

5.5.3 Loosen the actuator bracket screws and adjusting screw nut. Move the actuator adjusting bracket up or down, and the adjusting screw sideways, to center the adjusting screw on the over-travel stop. Tighten the bracket screws.

5.5.4 Turn the adjusting screw in or out as required to engage the switch without applying excessive pressure on it. Tighten the adjusting screw nuts.

5.5.5 Test the operation with the doors open and then again closed. The interlocks should prevent blasting when the doors are open, and permit blasting when the doors are closed. NOTE: Negative pressure inside the cabinet may cause the doors to flex inward. Tests should be performed with the exhauster on.

5.6 Pulse Manifold Pressure

5.6.1 Adjust pulse pressure using the pressure regulator mounted on the dust collector (See Figure 2). Begin pulse at 70 psi.

5.6.2 Do not increase pulse pressure until the pulse sequence is at maximum intervals as described in Section 5.7.

5.7 Pulse Sequence Control Panel and Timer

5.7.1 The toggle switch mounted on the sequence panel cover, enables or disables the timing sequence. When the switch is "on", the pulse sequence automatically starts whenever the dust collector exhauster is started. If the switch is "off" the pulse sequence will not occur. The switch should be left "off" (no pulse) until the cartridges are seasoned. See Section 7.8.

5.7.2 The timer is factory set at 40 seconds "off" and 15/100 of a second "on". Every 40 seconds the cartridges are pulsed.

5.7.3 As the cartridges cake with dust, the differential pressure increases. A pressure increase of around 2" greater than the initial reading, or reading higher than 4" is an indication that more frequent pulse cycles are needed. When the differential pressure gauge (optional accessory) shows a constant pressure difference greater than 4", adjust the "off" time setting by half. **Do not adjust "on" time**. Increasing "on" time will consume more air, but will NOT increase cleaning efficiency.

5.7.4 When the frequency of the pulse cycles will not lower the differential pressure to less than 4" above the initial reading or a decrease in visibility in the cabinet or media recovery is noted, increase pulse pressure in increments of 5 to 10 psi until the maximum of 100 psi is reached.

5.7.5 When the frequency of the pulse cycles and higher pulse pressure will not lower the differential pressure, the filter cartridges should be replaced per Section 7.7.

5.8 Inlet Damper

5.8.1 Once the inlet is initially set per Section 2.10, it seldom requires readjustment. The initial setting produces approximately .5″ to .75″ of static pressure in the cabinet enclosure. **Do not confuse cabinet static pressure with reclaimer static pressure as noted in Section 5.3, which is controlled by the outlet damper. Reclaimer pressure must be set before cabinet pressure.** In rare circumstances, cabinet pressure may need to be slightly higher or lower than the initial setting.

5.8.2 A manometer (listed in Section 9.1) is the most accurate method of monitoring and adjusting cabinet pressure. Following the instructions packed with the manometer, start the exhauster and insert the needle into a glove, and adjust pressure using the inlet damper. Open the damper further to decrease static pressure or close it further to decrease pressure.

5.8.3 If a manometer is not available, use the gloves as an indicator. With the exhauster on, the gloves should be inflated, but not elevated off the grate.

6.0 PREVENTIVE MAINTENANCE

⚠ WARNING

Failure to wear approved respirators and eye protection when servicing dust-laden areas of the cabinet and dust collector, and when emptying the container could result in serious eye irritation and lung disease. Toxicity and health risk vary with type of media and dust generated by blasting. The respirator must be approved for the type of dust generated. Identify all material being removed by blasting, and obtain a material safety data sheet for the blast media.

NOTE: To avoid unscheduled downtime, establish a weekly inspection schedule. Inspect all parts subjected to media contact, including; nozzle, media hose, flex hose, and wear plate, plus all items covered in this section.

6.1 Dust Collector Dust Containers

6.1.1 Empty the dust containers regularly. Start by checking the containers at least daily or when adding media, then adjust frequency based on usage, contamination and friability of the media.

6.1.2 Turn off the exhauster and release the dust containers from the cover. The cover's flexible inlet hose allows easy removal. Remove the containers and dump the contents into a suitable disposal container. Replace the containers being certain the covers are in place.

NOTE: Blasting media is usually non-toxic; however, some materials being removed by the process may be toxic. Check with proper authorities for disposal restrictions.

6.2 Pulse Manifolds

6.2.1 Open the drain petcocks to drain water from the pulse manifolds before and after each use. See Figure 2 for the location of the drain cock.

6.3 Reclaimer Debris Screen

6.3.1 The screen is accessible through the reclaimer door. With the exhauster off, remove the screen and empty it daily or when loading abrasive. Empty the screen more often if the parts blasted cause excessive debris. Always replace the screen after cleaning.

6.4 View Window Cover Lens

6.4.1 Rapid frosting of the view window can be avoided by directing ricocheting media away from the window, and by installing a cover lens on the inside surface of the window. Using cover lenses prolongs the life of the view window.

6.4.2 The best way to install a cover lens is to remove the window from the cabinet. If, for some reason, it is not helpful to remove the window, the lens may be applied with it in place.

6.4.3 To install a cover lens, remove the adhesive backing and apply the lens to the clean, dry, inner surface of the view window. When the cover lens becomes pitted or frosted, replace it.

6.5 Air Filter

6.5.1 The blast machine is equipped with an auto-drain air filter. The filter automatically drains when moisture fills the bowl to a certain level. Moist air inhibits the flow of media. If moisture continues to be a problem, a dryer or aftercooler may be required in the air supply line.

6.6 Blast Hose and Couplings

6.6.1 To avoid unscheduled down-time, inspect the blast hose for thin spots, by pinching it every 6 to 12 inches. Check coupling gaskets and couplings daily for leaks and wear.

6.7. Sentinel Metering Valve

6.7.1 Refer to the Sentinel valve owner's manual for maintenance.

6.8 Optional Differential Gauge Dust Filter

6.8.1 With the exhauster turned off, check the in-line dust filter for dust accumulation weekly. The filter is located on the side of the collector. See Figure 5.

7.0 SERVICE MAINTENANCE

⚠ WARNING

Failure to wear approved respirators and eye protection when servicing dust-laden areas of the cabinet and dust collector, and when emptying the dust bag or collector could result in serious eye irritation and lung disease or death. Toxicity and health risk vary with type of media and dust generated by blasting. Identify all material being removed by blasting, and obtain a material safety data sheet for the blast media.

7.1 Gloves

7.1.1 Special static-dissipating gloves are provided for operator comfort. It will be necessary to change gloves periodically as they wear. The first sign of deterioration may be excessive static shocks.

7.1.2 Gloves are held in place by metal bands on the inside of the cabinet. To replace, loosen the bands with a screwdriver, replace the gloves and tighten the bands.

7.2 Nozzle

7.2.1 Replace the nozzle when the orifice diameter has increased by 1/16", or sooner if pressure diminishes noticeably. Make sure the nozzle gasket is in place before screwing the nozzle into the nozzle holder.

7.3 View Window Replacement

⚠ WARNING

Do not use plate glass for replacement view windows. Plate glass shatters on impact and could cause severe injury. Use only genuine replacement parts.

7.3.1 Remove the two window frame nuts located on the upper edge of the window frame, and swing the window frame open. NOTE: If the frame is to remain open, for cleaning or other reasons, remove it per Section 7.5.

7.3.2 Remove the old window.

7.3.3 Inspect the window frame gaskets, both on the window frame and on the cabinet. If either gasket is damaged, replace it per Section 7.4.

7.3.4 Install view window cover lens per Section 6.4.

7.3.5 Set the new window (cover lens down) squarely over the window opening, ensuring that all edges of the window are centered and overlapping the window gasket, and that the window is resting on the lower locators.

7.3.6 Swing the window frame into place and tighten the frame nuts.

7.4 Window Gasket Replacement, Figure 7

7.4.1 Replace the window frame gasket and cabinet window opening gasket at the first sign of media leakage around the view window, or if gaskets appear damaged. Check the gaskets when changing the view window.

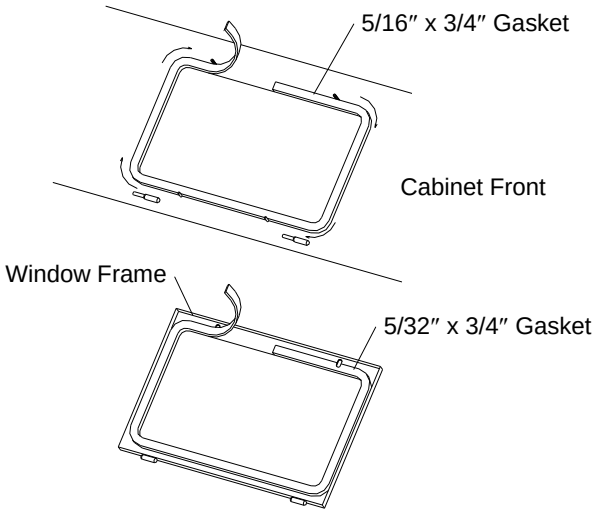


Figure 7

7.4.2 Remove the window and window frame per Section 7.5.

7.4.3 Remove all the old gasket material and clean the surfaces of the cabinet and window frame.

7.4.4 Peel a short section of adhesive backing from the 5/16¨ thick strip gasket, and adhere the gasket to the center of the top edge of the window opening as shown in Figure 7. Peel additional backing as needed, and work the strip around the radius of each corner, pressing it tightly to bond. Trim the gasket to fit and compress the ends to seal.

7.4.5 Using 5/32″ thick strip gasket, repeat the process on the window frame.

7.4.6 Trim around the window frame bolts slots, as needed.

7.5 Window Frame Removal, Figure 8

7.5.1 Remove the two window frame nuts located on the upper edge of the window frame, and swing the window frame open.

7.5.2 Remove the window to prevent breakage.

7.5.3 Pivot the window frame up or down until tension is off the frame hinges.

7.5.4 Slide the frame to the right, to remove. The hinges separate as shown in Figure 8.

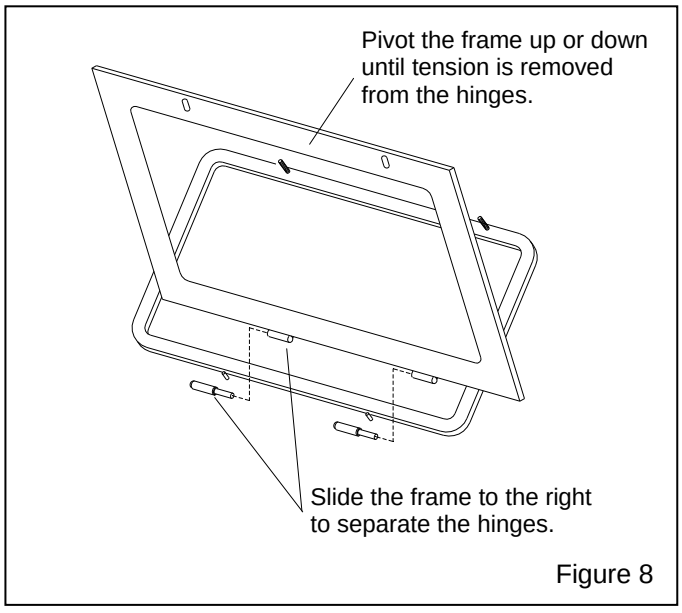


Figure 8

7.5.5 Replace the frame in reverse order. Align the top bolt holes with the bolts; slide the frame as necessary.

7.5.6 Set the window squarely over the window opening, ensuring that all edges of the window are centered and overlapping the window gasket, and resting on the lower locators.

7.5.7 Swing the window frame into place and tighten the frame nuts.

7.6 Light Assembly

CAUTION

Use an approved step ladder when servicing the light assembly. Do not climb on top of the cabinet. The cabinet top will not support the weight of a person.

7.6.1 Shut off electrical power.

7.6.2 Gasket Replacement

7.6.2.1 Remove the four holding wing nuts and lift the fixture off the cabinet, as shown in Figure 9.

7.6.2.2 Remove all the old gasket material and clean the surfaces of the cabinet.

7.6.2.3 Lay a section of strip gasket next to the opening, and cut to length, allowing 3/4″ overlap on each end. Peel a short section of adhesive backing and adhere the strip gasket to the top edge of the light opening, as shown in Figure 9. Press the gasket to bond. Repeat the process for each side, compressing the ends to seal.

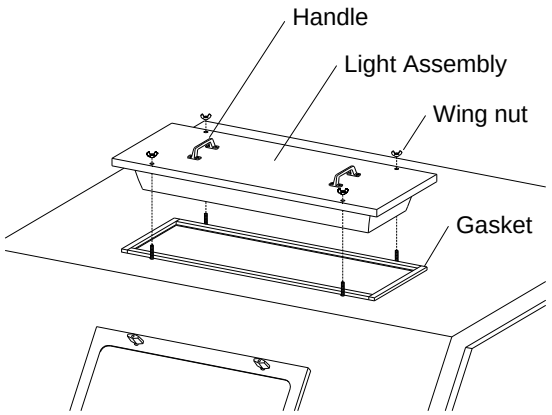


Figure 9

7.6.3 Lens and Tube Replacement

7.6.3.1 Remove the four holding wing nuts, and use the handles to lift the fixture off the cabinet.

7.6.3.2 Flip the assembly over to access the lens screws, ref. Figure 10.

7.6.3.3 Remove the four lens screws and remove the lens.

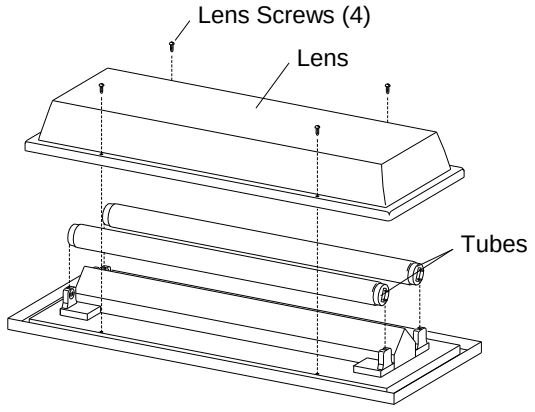


Figure 10

7.7 Filter Cartridge Replacement, Figure 11

⚠ WARNING

Failure to wear approved respirators and eye protection when servicing dust-laden areas of the cabinet and dust collector, and when changing filter cartridges, could result in death, lung disease or serious eye irritation. Toxicity and health risk vary with type of media and dust generated by blasting. The respirator must be approved for the type of dust generated. Identify all material being removed by blasting, and obtain a material safety data sheet for the blast media.

7.7.1 Shut the sequence switch "off".

7.7.2 Close the air supply valve and bleed all air from the pulse manifold.

7.7.3 Remove the dust collector access door.

7.7.4 Loosen the cartridge retaining nut to the bottom of the hanger rod, and rock the cartridge to loosen it from the cartridge sheet.

7.7.5 Swing the bottom of the cartridge out the access door, and remove the retaining nut, washer, and gasket.

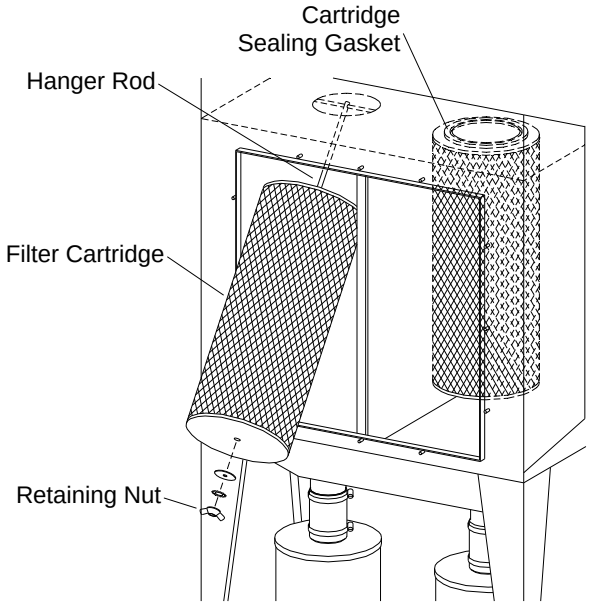


Figure 11

7.7.6 Slide the cartridge off the hanger rod.

7.7.7 Clean all parts that will be reused, especially around the cartridge sealing area. Scrape off any residual gasket material from the sealing surface.

7.7.8 Install the new cartridge and gasket. Tighten the retaining nut until the cartridge cannot be moved by hand. Tighten the nut one additional full turn.

7.7.9 Check the access door gasket for any condition that will prevent the gasket from sealing. Replace the gasket if necessary.

7.7.10 Attach the access door.

7.7.11 Reset the timer "off" time to 40 seconds, and reset the pressure to 70 psi. See Section 5.7.

7.7.12 Season cartridges per Section 7.8.

7.8 Seasoning Cartridges

7.8.1 New cartridges must be seasoned. Cartridges are seasoned by letting a dust layer develop on the outside surface of the filter media. The dust layer protects the filter cartridge, and enhances the filtering efficiency.

7.8.2 Operate the collector without pulsing (sequence switch off) until the differential pressure gauge reads four inches (4" w. c.).

7.8.3 After the differential pressure is reached, set the timer "off" time to 40 seconds, and set the pulse pressure at 70 psi.

7.8.4 Turn the sequence switch "on" to start the pulse cycle. See Section 5.7.

7.9 Pop-up Valve Replacement, Figure 12

7.9.1 Empty the machine of media as described in Section 4.2.3.

⚠ WARNING

Failure to observe the following procedure before performing any blast machine maintenance could cause serious injury from the sudden release of compressed air:

- **Depressurize the blast machine.**
- **Lockout and Tagout the compressed air supply.**
- **Bleed the air supply line to the blast machine**.

7.9.2 Depressurize the blast machine, and lockout and tagout the air supply.

7.9.3 To gain access to the pop-up valve, remove the inspection door assembly.

7.9.4 Using a small pipe wrench, unscrew the pop-up valve guide by turning it counterclockwise. Remove the pop-up valve and guide from the machine. Place the new pop-up valve in the guide, and screw the valve guide (with the pop-up valve in it) back into position inside the machine. Tighten the guide so it is snug but not wrench-tight.

7.9.5 Put a new gasket on the inspection door and bolt the door back onto the machine.

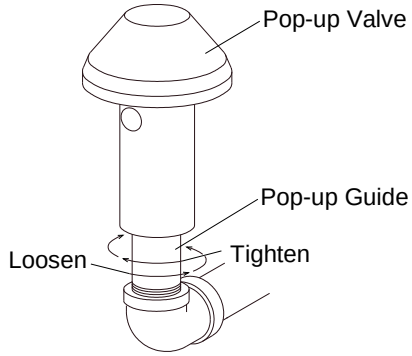


Figure 12

7.10 Pop-up Valve Seat Replacement

7.10.1 The easiest method to replace the seat is through the reclaimer door. If for some reason replacement cannot be made through the reclaimer, observe the warning in Section 7.9, and empty the machine and bleed the air supply line. Remove the blast machine inspection door, and work through the opening.

7.10.2 Remove the old seat by using a finger, screwdriver, or similar object.

7.10.3 Push the new rubber seat all the way through the port and then fit it into the groove. For the last few inches, push on the seat and allow it to "pop" into position.

7.11 Reclaimer Wear Plate Replacement

7.11.1 Remove the reclaimer from the blast machine.

7.11.2 Remove the top plate, inlet adaptor, and old wear plate. The wear plate is held in place by screws attached from the outside of the reclaimer.

7.11.3 Position the new wear plate into the reclaimer, with the straight end at the reclaimer inlet. NOTE: Make sure the top of the wear plate is aligned with the top of

the reclaimer. Gaps between the wear plate and top will cause premature wear.

7.11.4 Pry the wear plate against the inner wall of the reclaimer and install sheet metal screws to hold in place.

7.11.5 Caulk around the bottom and ends of the wear plate to prevent rapid wear in those areas.

7.11.6 Install the top plate, and caulk between the wear plate and top.

7.11.7 Reassemble the reclaimer.

7.12 Removing Reclaimer Inlet Baffle

When using lightweight media such as plastic or wheat starch, the inlet baffle of the reclaimer may need to be removed.

7.12.1 Remove the reclaimer top, two bolts securing the baffle to the left side of the reclaimer inlet.

7.12.2 Remove all caulking residue, and install reclaimer top.

7.13 Sentinel Metering Valve

7.13.1 A separate manual is provided for the metering valve. Refer to it for servicing and replacement parts.

8.0 TROUBLESHOOTING

⚠ WARNING

To avoid serious injury, observe the following when troubleshooting.

- **Turn off the air and Lockout and Tagout the air supply.**
- **If checking the controls requires air, always enlist the aid of another person to:**
  - **Hold the nozzle securely.**
  - **Operate the foot pedal.**
- **Never bypass the foot pedal or wedge it in the operating position.**
- **Never override the door interlock system**.

8.1 Neither Media nor Air Comes Out The Nozzle When The Foot Pedal Is Pressed

8.1.1 Depressurize the blast machine, and check the nozzle to see if it is plugged.

8.1.2 Check that the blast machine pressurizes when the foot pedal is pressed. If it does not, see Section 8.8.

8.1.3 Make sure the media metering valve and the choke valve are open.

8.2 Air Only (no media) Comes Out The Nozzle

8.2.1 Make sure the machine contains media.

8.2.2 Check that the metering valve is not closed.

8.2.3 Make sure the blast machine is pressurized. See Section 8.8.

8.2.4 Check for minor blockage in the media metering valve by fully opening the metering valve and closing the choke valve. Hold the nozzle and activate the foot pedal to blow out obstructions. If this procedure fails, depressurize the machine, open the metering valve clean out cap and check for foreign objects.

8.2.5 Check the muffler on the 4-way air valve. Air should exhaust from the muffler when the foot pedal is released. If air does not exhaust, remove the muffler and try again. If air exhausts now, the muffler is blocked. If air still does not exhaust, the 4-way valve may be faulty.

8.2.6 Check the 4-way valve as follows: Depressurize the air supply line. Remove the tubing leading to either the media metering valve or diaphragm outlet valve. Pressurize the air supply line. Air should not exhaust from the tube adaptors. Press the foot pedal, air should exhaust at the tube adaptor. Release the foot pedal, air should stop exhausting from the tube adaptors. If it operates accordingly, the metering valve requires service. If it does not operate accordingly, replace the 4-way valve.

8.3 Heavy Media Flow

8.3.1 Make sure the choke valve is open.

8.3.2 Media metering valve open too far. Adjust per Section 5.2. If adjusting the media valve does not regulate media flow, empty the machine, depressurize the machine, and inspect the internal parts of the valve for wear.

8.4 Media Surge: A small amount of surge is normal at start-up.

8.4.1 Heavy media flow. Adjust per Section 5.2.

8.4.2 Empty all media from the blast machine and depressurize the blast machine. Inspect the internal parts of the media metering valve for wear.

8.5 Media Bridging

8.5.1 Frequent bridging or blockage in the media metering valve can be caused by damp media. Media becomes damp by blasting parts that are slightly oily, from moisture in the compressed air line, or from absorption.

8.5.2 To avoid contaminating media from the workpiece, all parts put into the cabinet should be clean and dry. If parts are oily or greasy, degrease and dry them prior to blasting.

8.5.3 Moist compressed air may be due to a faulty compressor that overheats, or pumps oil or moisture into the air line, too long an air line permitting moisture to condense on the inside, and from high humidity. Drain filters and receiver tank regularly. If the problem persists, it may be necessary to change media more often, or install an aftercooler or air dryer.

8.5.4 Absorption. Some media absorbs moisture from the air, especially fine-mesh media in high humidity areas. Store media in an airtight container when cabinet is not in use.

8.5.5 A vibrator mounted either on the blast machine leg or on a bolt on the media metering valve may help prevent bridging of fine-mesh media.

8.6 Abnormally High Media Consumption

8.6.1 Fill door on reclaimer not in place, improper fit or worn gasket. Air entering reclaimer at this point will cause media to be carried into the dust collector. DO NOT operate system unless fill door is closed.

8.6.2 Outlet damper open too far. Adjust static pressure per Section 5.3.

8.6.3 Media may be too fine or worn-out.

8.6.4 Using friable media that rapidly breaks down.

8.6.5 Nozzle pressure too high for media, causing media to break down.

8.6.6 Hole worn in reclaimer, or leak in reclaimer seams. Check entire reclaimer for negative-pressure leaks.

8.6.7 Externally adjustable vortex cylinder out of adjustment, See Section 5.4.

8.6.8 If using very fine media (200 mesh and finer), the inlet baffle of the reclaimer may need to be removed. Consult the factory before proceeding with this option.

8.7 Plugged Nozzle

8.7.1 A damaged or missing reclaimer screen will allow large particles to pass and block the nozzle. Replace or re-install as necessary.

8.8 Blast Machine Will Not Pressurize

8.8.1 Make sure the compressor is on and air supply valve is open.

8.8.2 Check that the pressure regulator is not turned down. Minimum pressure is 40 psi.

8.8.3 Door interlocks not engaging. Check adjustment per Section 5.5.

8.8.4 Inspect the diaphragm in outlet valve for wear.

8.8.5 Check pop-up valve and seat for wear and misalignment.

8.8.6 Blocked or leaking control lines. Check all urethane tubing for blockage or leaks.

8.8.7 Foot pedal valve malfunction. Check foot pedal alignment, and inlet and outlet lines for pressure.

8.8.8 Make sure lines are not reversed on the foot pedal or pilot regulator. See schematic in Figure 4.

8.8.9 Check the 4-way valve for jamming per Sections 8.2.5 and 8.2.6. When the foot pedal is pressed, the valve should shift, pressurizing the line to the outlet valve and media metering valve.

8.8.10 Inspect the check valve for obstruction or broken flap.

8.9 Blast Machine Will Not Depressurize Or Depressurizes Too Slowly

8.9.1 Check for blockage in the 4-way valve mufflers**.**

8.9.2 Check that the foot pedal valve exhausts air when pedal is released. If it does not, replace the valve.

8.9.3 Check the outlet muffler, located inside the cabinet, for blockage.

8.9.4 Check 4-way air valve for jamming, per Sections 8.2.5 and 8.2.6.

8.9.5 Check for blockage in the screen of the optional abrasive trap.

8.10 Poor Visibility

8.10.1 Dirty filter cartridges. Empty the dust containers. Cycle pulse several times. Inspect and replace the cartridges if necessary.

8.10.2 Motor rotating backwards. The motor should rotate as indicated by the arrow on the housing. If it does not rotate in the proper direction, **Lockout and Tagout power** and switch the motor leads as shown on the motor plate. See Section 2.4.2.

8.10.3 Using friable media that rapidly breaks down, or using media that is too fine or worn out can cause poor visibility.

8.10.4 Outlet damper closed too far restricting air movement in cabinet. Adjust static pressure per Section 5.3.

8.10.5 Exhauster motor not operating. Exhauster must be in operation before blasting begins.

8.10.6 Inlet damper requires opening. Restriction at the inlet damper reduces air movement in the cabinet. Open damper per Sections 2.10 and 5.8.

8.10.7 Hole worn in flex hose between cabinet hopper and reclaimer inlet, or reclaimer and dust collector.

8.10.8 Reclaimer fill door open.

8.10.9 Obstruction in flex hose between the cabinet hopper and reclaimer inlet.

8.11 Static Shocks

8.11.1 Cabinet and/or operator not grounded. Abrasive blasting generates static electricity. The cabinet must be grounded to prevent static buildup. See Section 2.3. If shocks persist, the operator may be building up static electricity. Attach a small ground wire (such as a wrist strap), from the operator to the cabinet.

8.11.2 Avoid holding parts off the grating. Static will build in the part if not dissipated through the metal cabinet.

8.12 Reduction in blast Cleaning Rate

8.12.1 Incorrect metering valve adjustment. Adjust media flow per Section 5.2.

8.12.2 Reduced air pressure caused by a malfunctioning regulator, a dirty filter element in air filter, ruptured or leaking air line, or demand by other air tools in use.

8.12.3 Moist media. Frequent bridges or blockage in the area of the metering valve can be caused by moisture. See Section 8.5.

8.13 Dust Leaking From Dust Collector

8.13.1 Damaged or loose cartridge. Inspect cartridges.

8.13.2 Faulty seal on the dust collector access door, or dust containers. Inspect seals and hoses, and replace if damaged.

8.14 Dust Collector Not Pulsing

8.14.1 Check the pulse-pressure gauge. If the reading is low, check the regulator adjustment, and compressed air supply, look for a closed supply valve.

8.14.2 Check to make sure the sequence switch is not turned off.

8.14.3 Check the fuse in the sequence control panel. Replace as necessary.

8.15 One Cartridge Not Pulsing

8.15.1 Faulty solenoid. Check for electrical malfunction.

8.15.2 Check diaphragm valve. With the compressed air turned off, remove the four cover screws, inspect the diaphragm and clean the bleed port.

8.15.3 Check for blockage in the tubing to the diaphragm valves.

8.16 Pulse is a steady stream of air instead of a pulse.

8.16.1 Check for a leak in the tubing between the diaphragm valves and solenoid.

8.16.2 Solenoid remaining in open position. Check continuity, clean, replace.

8.17 Exhauster Not Running

8.17.1 Exhauster overload could be tripped. Reset and check for overload.

8.17.2 Make sure that the main disconnect is "on".

8.17.3 Motor faulty. Check motor.

8.18 Excessive Differential Pressure (as shown on optional gauge)

8.18.1 Valves may not be pulsing properly. See 8.14.

8.18.2 The differential pressure gauge lines may be plugged with dust. Check and clean.

8.18.3 Make sure the tubing has not been inserted so far into the tube connection that it blocks the tube ends.

8.18.4 The in-line dust filter may be blocked. Clean or replace.

8.18.5 Snubber fittings blocked with dust. Clean or replace. See Figure 5.

8.18.6 The sequence "off" time may need adjusting. See Section 5.7.

8.18.7 Filter cartridges may need to be replaced. See Section 7.7.

9.0 ACCESSORIES AND REPLACEMENT PARTS

9.1 Optional Accessories (field installed)

Turntables and Turntables with Tracks

⚠ WARNING

Turntable capacities are based on concentric loading. Use solid fixturing to hold heavy parts in place. Do not remove lift equipment until the part is adequately supported to prevent movement. Moving or rotating heavy, unsupported or off-centered parts may cause them to shift or topple, and cause severe injury.

Stationary Turntable with Bearing, 500 lb. Capacity Figure 13

Item	Description	Stock No.
(-)	30" dia., assembly 500 lb. capacity	14138
(-)	40" dia., assembly 500 lb. capacity	24042
1.	Turntable replacement	
	30” diameter	21390
	40" diameter	23879
2.	Bearing, 1-1/2" bore	11517
3.	Protector, bearing	13479
4.	Screw, 1/2-NC x 1-1/2" cap	03454
5.	Lock-washer, 1/2"	03516
6.	Nut, 1/2-NC hex	03511

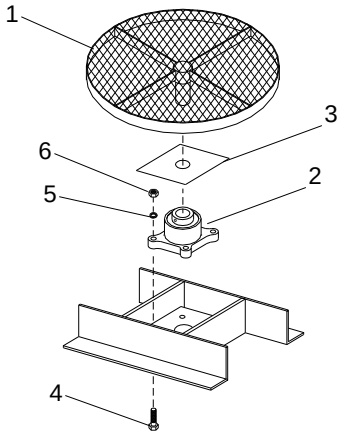


Figure 13

Turntable with Workcart and Track, 500 lb. Capacity, Figure 14

Item	Description	Stock No.
(-)	40” dia. turntable and track assembly	23885
1.	Turntable replacement	
	40" diameter	23879
2.	Bearing, 1-1/2" bore	11517
3.	Protector, bearing	13479
4.	Screw, 1/2-NC x 1-1/2" cap	03454
5.	Lock-washer, 1/2"	03516
6.	Nut, 1/2-NC hex	03511
7.	Caster, 4" V groove	11594

All other track items are special order. Contact distributor for price and availability.

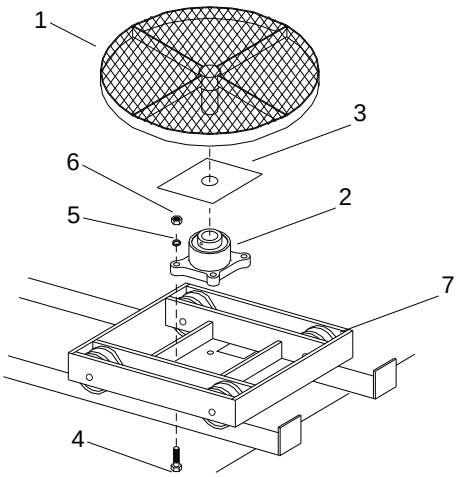


Figure 14

Description	Stock No.
Time delay door interlocks	23422
Aluminum oxide kit, use with aggressive media	22997
includes the following plus mounting hardware:	
CTB-3, 3/16" orifice boron carbide nozzle	21091
Rubber curtains, black	22998
Boron carbide nozzle	
CTB-2, 1/8" orifice	21090
CTB-3, 3/16" orifice	21091
CTB-4, 1/4" orifice	21092
Rubber curtains, set	
black curtains	22998
white curtains	22999
Lock pins (pkg. of 25) for twist-on hose couplings	11203
Safety cable, 1/2" hose	15012
Manometer kit	12528
Window cover lens, 20" x 30", pkg. of 5	23232
Supa hose, 3/4" ID x 25 feet, uncoupled	21121
NOTE: Supa hose requires the following accessories:	
Nozzle holder w/contr. thread, for 3/4" Supa hose	11398
Coupling, for 3/4" Supa hose	11395
Gasket, coupling for 3/4" Supa hose	08415
Nozzle, short venturi for use with Supa hose	
SYR-3, 3/16" orifice	04574
SYR-4, 1/4" orifice	04575
SYR-5, 5/16" orifice	04576
Conversion kits, Sentinel metering valve	
To convert from fine mesh media to coarse	22848
To convert from coarse mesh media to fine	22849
Conversion kit, pressure to suction	
Includes all accessories to convert pressure feed system to suction (venture) system	
	Special order, consult local distributor
Rubber liner set, for 900 reclaimer	23151
See Section 9.10 for individual liners	
HEPA Filter assembly	22807

Abrasive Trap, Optional, Figure 15

Item	Description	Stock No.
(-)	Abrasive trap, complete	02011
1.	Screen	02012
2.	O-Ring	02013
3.	Cap	02014
4.	Body	02015
5.	Lock bar	02016
6.	Screw, 3/8-NC x 1" thumb	03289
7.	Shoulder screw, 3/8-NC x 3/8"	03291
8.	Gasket, screen	02434
9.	Decal	02129
(-)	Service Kit (Items 1, 2 and 8)	01925

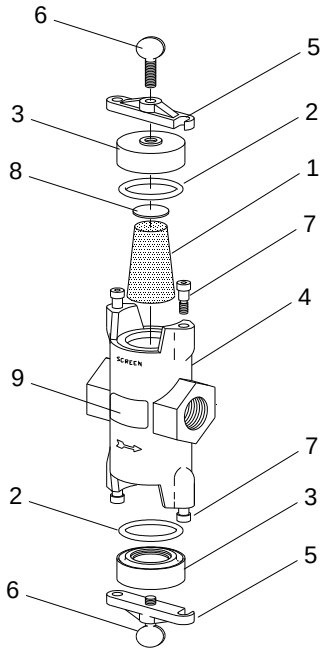


Figure 15

Differential Pressure Gauge Assembly, Figure 16

Item	Description	Stock No.
(-)	Differential pressure gauge assembly	23356
1.	Gauge, differential pressure	10188
2.	Snubber fitting	15786
3.	Tubing, 1/4" OD, specify feet required	15892
4.	Filter, in-line dust	23415
5.	Bushing, 1/4" x 1/8" NPT, brass	02010
6.	Elbow, 1/4 NPT x 1/4" tube	03428
7.	Fitting, 1/4 NPT bulkhead	05605
8.	Fitting, straight 1/8" NPT x 1/8" barb	11732
9.	Fitting, elbow 1/8" NPT x 1/8" barb	11733
10.	Tubing, 1/8" urethane, 1 foot minimum	12475

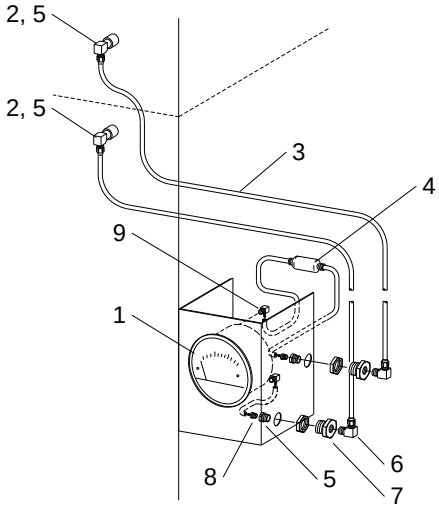


Figure 16

9.2 Light Assembly, Figure 17

Item	Description	Stock No.
(-)	Light assembly with cover	24740
1.	Light fixture (assembly less cover)	24740
2.	Reflector lens	23253
3.	Tube, fluorescent, 20w	24741

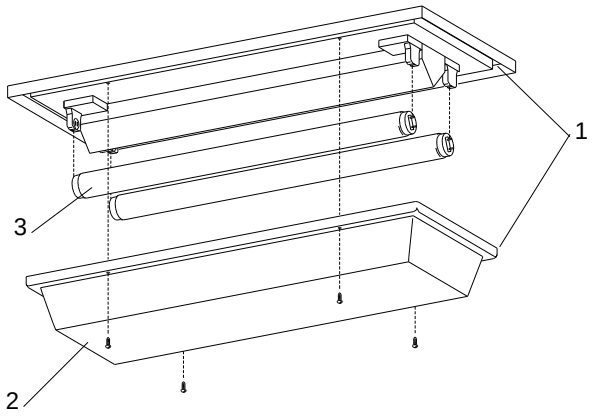


Figure 17

9.3 Foot Pedal Assembly, Figure 18

Item	Description	Stock No.
(-)	Foot pedal assembly, less tubing	20483
1.	Top, foot pedal	20017
2.	Base, foot pedal	19991
3.	Valve, 3 way n/c	20026
4.	Drive pin, grooved	20109
5.	Screw, 1/4 nf x 3/4" soc. hd.	03086
6.	Screw, 10-32 x 1/2" fh	19571
7.	Adaptor, 10-32 thrd. x 1/8 barb	11731
8.	Spring, 1-1/4" x 3-1/2"	20121
9.	Screw, 8-32 x 3/8" thread cut	11389
10.	Bumper, rubber	21522

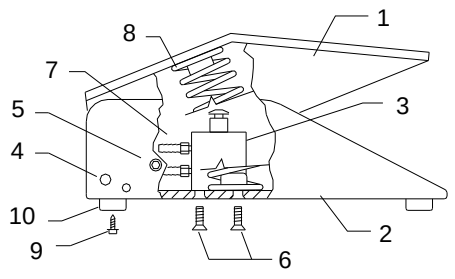


Figure 18

9.4 1" Diaphragm Outlet Valve, Figure 19

Item	Description	Stock No.
(-)	1" Diaphragm outlet valve, complete	03371
1.	Nipple, 1" x close	01701
2.	Diaphragm, outlet valve	06149
3.	Lock washer, 1/4"	03117
4.	Cap screw, 1/4" x 1"	03053
5.	Cap, diaphragm outlet	03393
6.	Body, diaphragm outlet	06135
7.	Bushing, 1-1/4" x 1"	01804

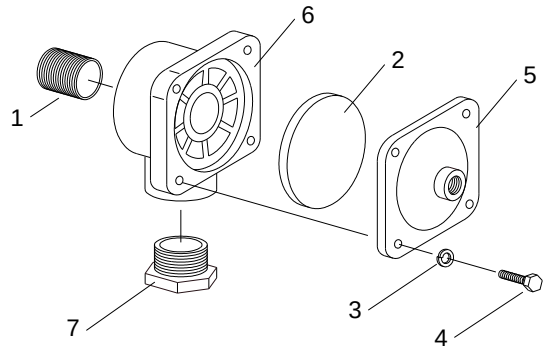


Figure 19

9.5 Cabinet Assembly, Figure 20

Item	Description	Stock No.
1.	Gasket, door, 15 ft. required per door	00187
2.	Door assembly, left (less bolt-on hrdwr.)	23204
3.	Door assembly, right (less bolt-on hrdwr.)	23203
4.	Grating, 3 required	23218
5.	Window glass, 20" x 30"	12213
6.	Gasket, 5/16" x 3/4", applied to cabinet per foot, 9 feet required	00189
7.	Gasket, 5/32" x 3/4", applied to window frame per foot, 9 feet required	00192
8.	Cover lens, 20" x 30", pkg. of 5	23232
9.	Latch kit, door	20064
10.	Adaptor pipe, 6" universal flex	23219
11.	Gasket, 6" flex hose adaptor pipe	23233
12.	Grommet, blow-off hose	11798
13.	Glove set	11215
14.	Glove, left only	12710
15.	Glove, right only	12711
16.	Clamp, glove	11576
17.	Air valve, 3 way, door interlock	12202
18.	Over-travel stop, door interlock	20004
19	Detent sleeve, door interlock	15042
20.	Actuator, adj., door interlock	19152
21.	Grommet, blast hose	00184
22.	Clamp, 8.5"	11576
23.	Gasket, hopper plate adaptor	20247
24.	Hose, 6" light flex, per foot, 9 ft required.	12468
25.	Foot pedal assembly, less tubing	20483
26.	Nut, plastic, window frame, each	23035
27.	Light assembly with cover	23255
28.	Gasket, light assembly, applied to cabinet per foot, 7 feet required	00187
29.	Regulator, 1/8" NPT pilot	12715
30.	Gauge, pressure	01908
31.	Plate, hopper hose	21657
32.	Muffler, 1" exhaust	05068
33.	Adaptor, 1" male NPT x 1" male flare	11720

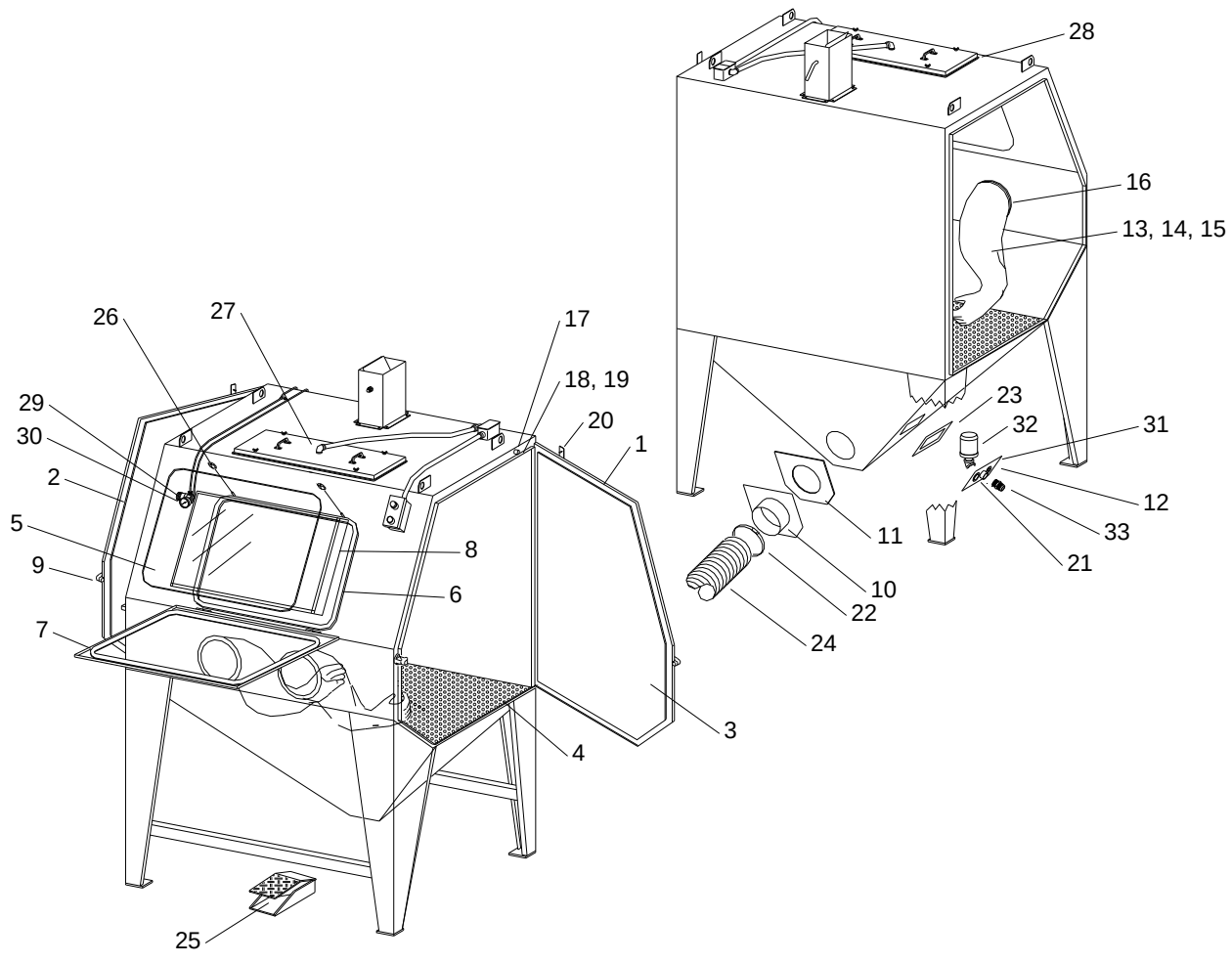


Figure 20

9.6 Plumbing Assembly, Figure 21

Item	Description	Stock No.
1.	Valve, 3-way	12202
2.	Adaptor, 1/8" NPT x 1/8" barb	11732
3.	Tubing, 1/8" ID urethane, specify ft req'd.	12475
4.	Tubing, 1/8" ID twin urethane specify feet required	19577
5.	Fitting, straight 1/4" NPT x 3/8" tube	11736
6.	Tubing, 3/8" OD poly, specify ft. required	12478
7.	Tee, 1/8" tube barb	11734
8.	Metering valve, Sentinel	
	for 50 mesh and finer media, standard	21439
	for 50 mesh and coarser media	20608
9.	Tubing, 1/4" OD, specify feet required	15892
10.	Valve, 4-way air	12203
11.	Fitting, elbow 1/4" NPT x 3/8" tube	11685
12.	Valve, 1" diaphragm outlet	03371
13.	Fitting, straight, 1/4" NPT x 1/4" tube	11737
14.	Elbow, 1/4" brass st.	02027
15.	Bushing 1/4" x 1/8" NPT.	02010
16.	Hose assembly, 1" x 10' exhaust	23915
17.	Muffler, 1/4" bronze	03988
18.	Adaptor, 1/2" NPT x 1/2" male flare	11351
19.	Hose end, 1/2" barb x 1/2" female swivel	15002
20.	Hose end, 1/2" barb x 3/8" male NPT	06369
21.	Blow-off nozzle	13116
22.	Hose, 1/2" ID air, bulk, specify feet req'd.	12472
23.	Regulator, 1/8" NPT pilot (blast pres.)	12715
24.	Gauge, pressure	01908
25.	Adaptor, 1/8" NPT elbow x 1/8" barb	11733
26.	Foot pedal assembly, less tubing	20483
27.	Regulator, 1" pilot operated w/ gauge	12052
28.	Fitting, elbow, 1/4" NPT x 1/4" tube	03428
29.	Nipple, 1/4" Hex	02808
30.	Air filter, 1" w/ auto drain	22425
31.	Regulator with gauge, 1/4" (pulse pres.)	12050

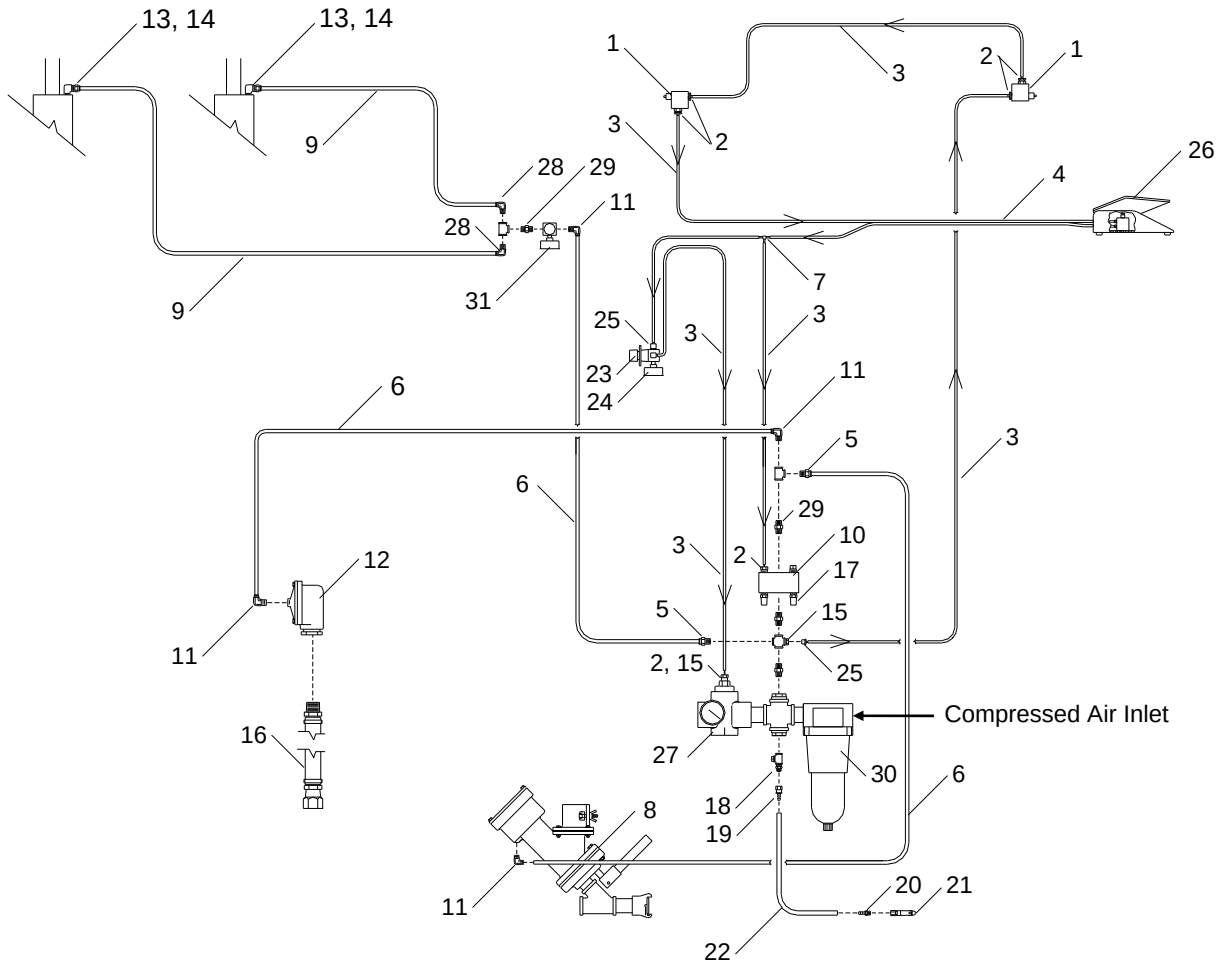


Figure 21

9.7 Blast Machine, Figure 22

Item	Description	Stock No.
(-)	Blast machine assembly, 16", 2 cu. ft. cap.	23182
1.	Ball valve, 1" with handle (choke valve)	02396
2.	Handle, 1" ball valve	22531
3.	Leg pad, right for 1642	20735
4.	Leg pad, left for 1642	20736
5.	Adaptor, 1" male NPT x 1" male flare	11720
6.	Hose assembly, 1" x 18" pusher line	22508
7.	CF Coupling 1-1/4″ NPT	00551
8.	Media metering valve, Sentinel	
	for 50 mesh and finer media, standard	21439
	for 50 mesh and coarser media	20608
9.	Inspection door assembly, 6" x 8"	02377
10.	Gasket, 6" x 8" inspection door	02369
11.	Pop-up valve with external sleeve	03699
12.	Guide 1-1/4" x 6" toe	01722
13.	Seat, pop-up valve	02325
14.	Valve, 1" diaphragm outlet	03371
15.	Regulator, 1" pilot operated with gauge	12052
16.	Gauge, 1/4" NPT cbm	11830
17.	Air filter, 1" with auto drain	22425
18.	Check valve, 1" swing	12187
19.	Gasket, CQG, pkg. of 10	00850
20.	Coupling, 1/2" ID hose, CQA-1/2	00599
21.	Valve, 4-way air	12203
22.	Nozzle holder, CHE-1/2	00577
23.	Blast hose, 1/2" ID x 16 ft. coupled, includes items 20 & 22	01251
24.	Nozzle, tungsten carbide	
	CT-2, 1/8" orifice	01351
	CT-3, 3/16" orifice, standard	01352
	CT-4, 1/4" orifice	01353
25.	Nozzle washer, NW-1, pkg. of 10	21580
26.	Muffler, 1/4" NPT bronze	03988
27.	Nipple, 1/4" Hex	02808
28.	Adaptor, 1/8" NPT elbow x 1/8" barb	11733
29.	Hose assembly, 1" x 10' exhaust	23915
30.	Lock pin, coupling (package of 25)	11203
31.	Fitting, elbow 1/4" male NPT x 3/8" tube	11685
32.	Fitting, straight 1/4" male NPT x 3/8" tube	11736

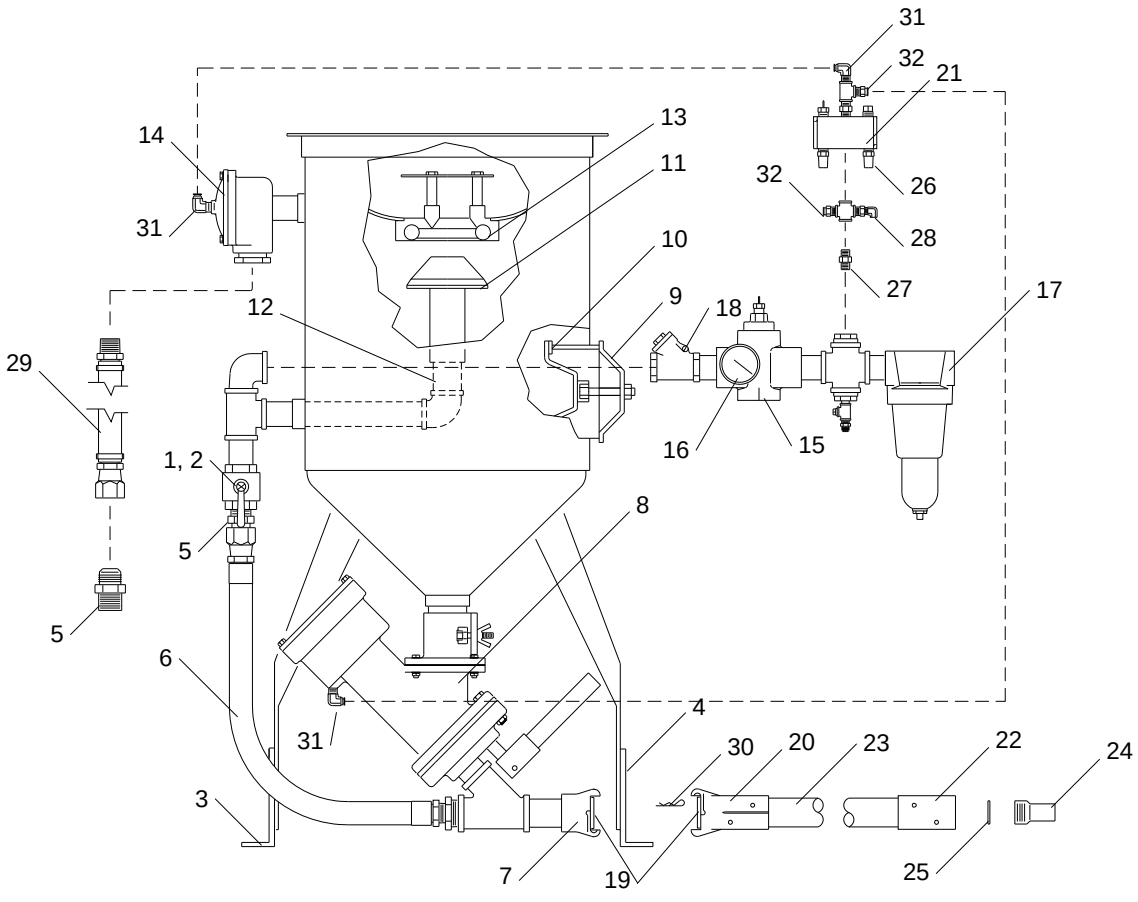
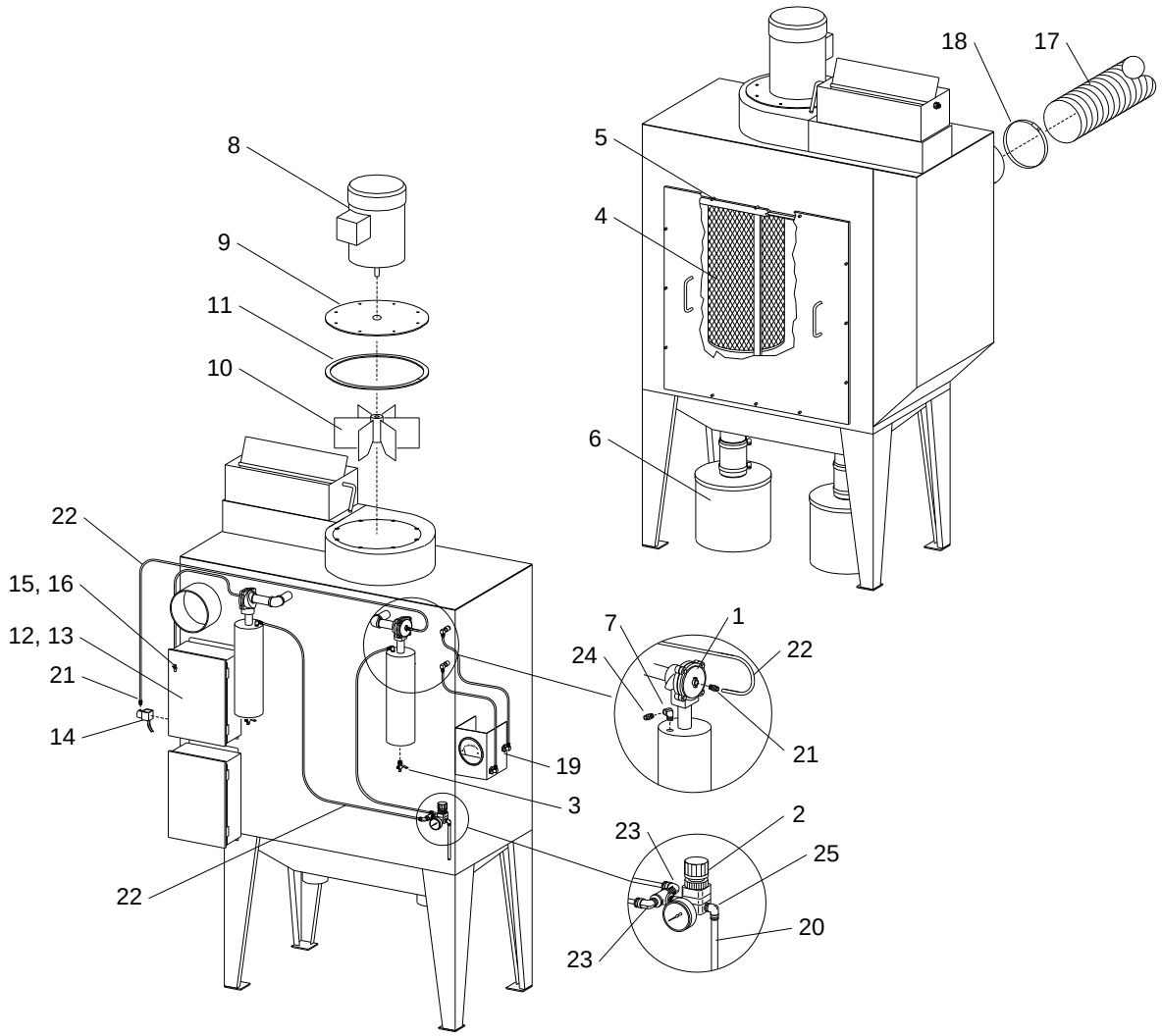


Figure 22

9.8 Dust Collector, Figure 23

Item	Description	Stock No.
(-)	Repair kit, diaph. pulse valve (Item 1)	21600
1.	Valve, 1" diaphragm pulse	19578
2.	Pressure regulator with gauge, 1/4"	12050
3.	Petcock	01993
4.	Filter cartridge, 12" x 30"	19121
5.	Gasket, 5/16" x 1" adhesive backed, Specify feet required	00187
6.	Dust container assembly	23411
7.	Elbow, 1/4" brass st.	02027
8.	Motor, exhauster, 2 HP, 3-PH	12309
9.	Plate, motor mount 900 cfm	12005
10.	Paddle wheel, 900 cfm	12335
11.	Gasket, 3/16" x 1" adhesive backed, Specify feet required	00186
12.	Sequence control panel assembly	15788
13.	Sequence control board (not shown)	10261
14.	Solenoid	10262
15.	Switch, toggle	12127
16.	Boot, toggle switch	14228
17.	Hose, 7" flex, light lined per foot, 5-ft. required	12469
18.	Clamp, hose	11576
19.	Differential pressure gauge assembly optional accessory	23356
20.	Tubing, 3/8" OD, specify ft. required	12478
21.	Fitting, straight, 1/8” NPT x 1/4” tube	11214
22.	Tubing, 1/4” OD, specify feet required	15892
23.	Fitting, elbow, 1/4” NPT x 1/4” tube	03428
24.	Fitting, straight, 1/4” NPT x 1/4” tube	11737
25.	Fitting, elbow, 1/4" NPT x 3/8" tube	11685



Some item are shown or rotated for clarity

Figure 23

9.9 Reclaimer, Figure 24

Item	Description	Stock No.
1.	Gasket, 5/16" x 1" adhesive backed, 4 ft. required	00187
2.	Inlet pipe adaptor, 900 cfm, 6" standard	12363
	900 cfm, 5" for steel media	14411
3.	Gasket, inlet adaptor, 900 cfm	11759
4.	Wear plate, 900 cfm	14055
5.	Screen assembly	21265
6.	Gasket, door	11745
7.	Spring latch assembly	12263
8.	Gasket, 2" adhesive backed, specify ft. required	13089
9.	Vortex cylinder assembly, adjustable, 900 cfm	23046
10.	Hose support inlet, optional 6", for standard use with 6" hose	16887
	5", for use with steel media, w/5" hose	22324
11.	Hose, 6" ID light lined flex, specify feet required	12468
12.	Clamp, hose 6-1/2"	00750

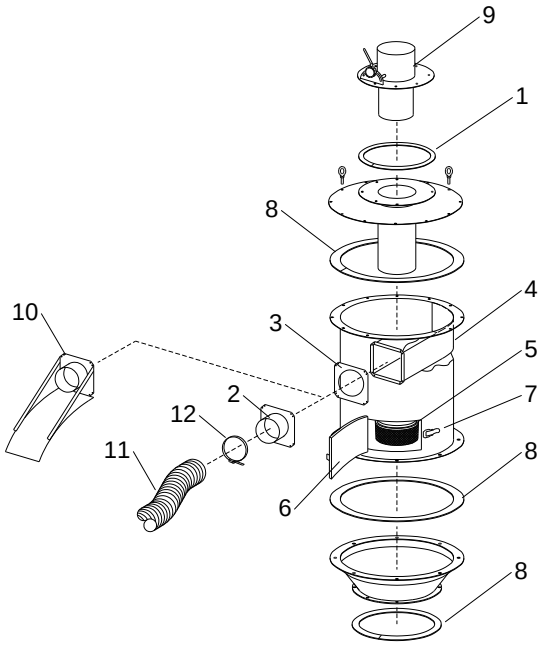


Figure 24

9.10 Rubber Liners, Option, Figure 25

Item	Description	Stock No.
(-)	Rubber liner set, for 900 reclaimer	23151
1.	Top liner, 900 cfm	23059
2.	Inlet baffle, 900 cfm (2-piece)	23416
3.	Body liner, 900 cfm	17008
4.	Inlet side liner, 900 cfm	12830
5.	Sump liner, inner cone, 900 cfm	16070
6.	Inlet top, 900 cfm	22827
7.	Screw, self drilling, 10-16 x 3/4″	12722

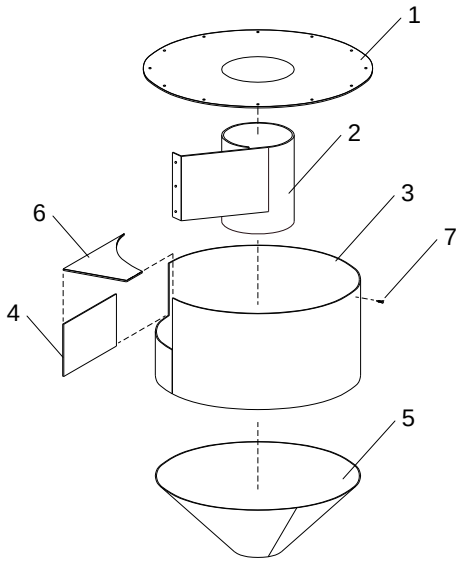


Figure 25