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# BNP 65 and 220 Pressure Blast Cabinets



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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

## 1.0 INTRODUCTION

### 1.1 Scope of Manual

1.1.1 These instructions cover set-up, operation, maintenance, troubleshooting, optional accessories, and replacement parts for BNP-65 and 220 pressure blast cabinets with all reclaimer, dry filter, and dust collector options. Supplemental manuals are provided for the Sentinel metering valve and optional reverse-pulse dust collector.

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.**

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## CAUTION

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

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## CAUTION

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

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## WARNING

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

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## DANGER

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

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### 1.3 General Description

1.3.1 BNP blast cabinets enclose 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, angle and distance of the nozzle from the blast surface. BNP pressure cabinets consist of four major components:

1. Cabinet Enclosure
2. Reclaimer
3. Blast Machine
4. Dust Collector

See Figure 1 for arrangement of components with a dry filter. Figure 2 shows the arrangement with a reverse-pulse dust collector.

### 1.4 Theory of Operation

1.4.1 When the air supply is on, and the cabinet doors are closed, the blast machine is ready for operation, by actuating the foot pedal. Fully depressing the foot pedal pressurizes the blast machine, and propels the media through the blast hose and out the nozzle. After striking the object being cleaned, the media, along with fines, dust, and by-products generated by the process, fall through the mesh worktable into the cabinet hopper. These particles are drawn into the reclaimer for separation. Dust and fines are first separated from the reusable media. Next, the media is screened of oversize particles, and held in the reclaimer hopper for reuse. Dust and fines are drawn through the reclaimer into the dry filter or dust collector, which traps the dust and discharges clean air. When the foot pedal is released, blasting stops as the blast machine depressurizes, allowing stored media to refill the machine.

### 1.5 Blast Machine and Remote Controls

1.5.1 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.

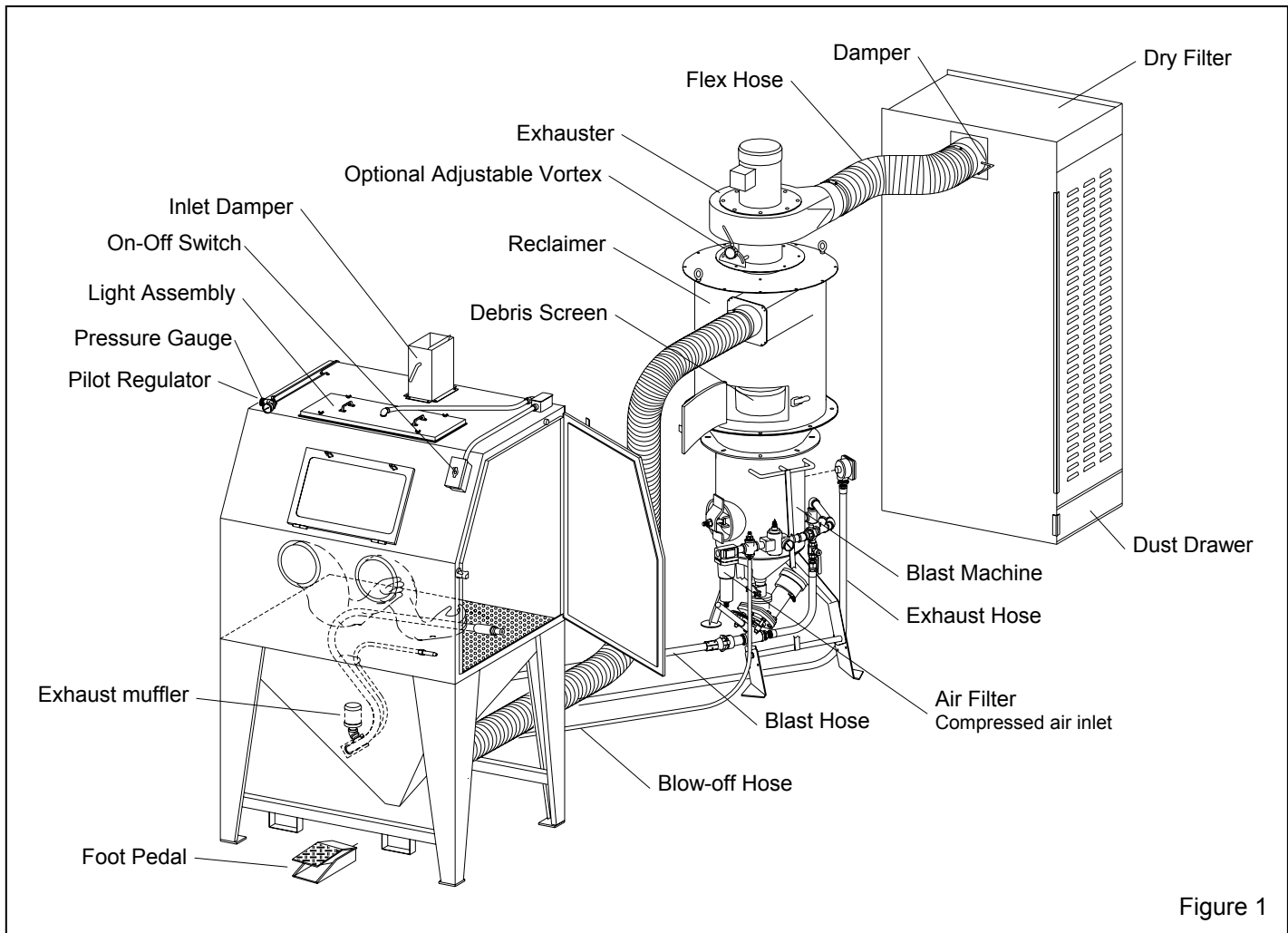


Figure 1

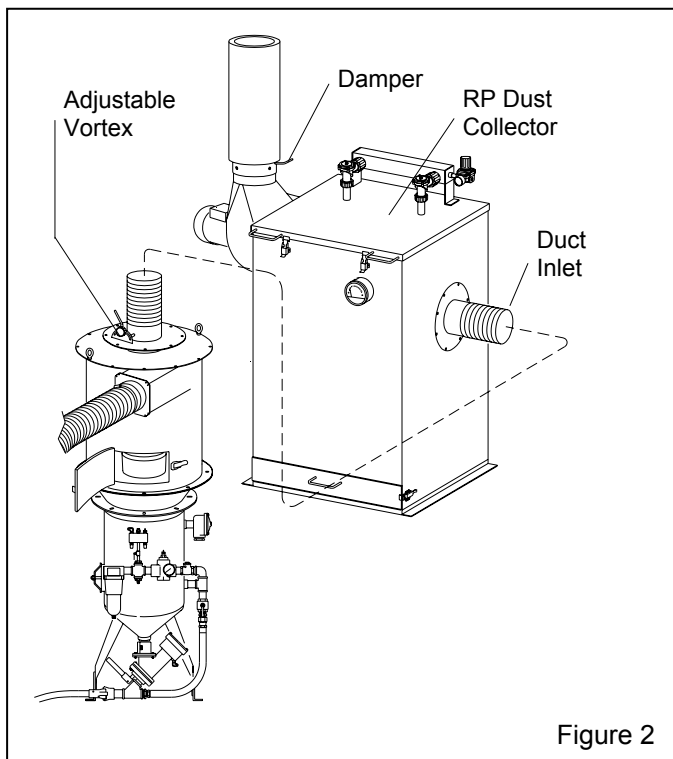


Figure 2

## **⚠ 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.**

**1.5.2** 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.

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

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 **WARNING**


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**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.**

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**1.5.4** OSHA does not require pressure relief valves on blast machines when air compressors supplying air to the blast machines are built to ASME<sup>(1)</sup> specifications and comply with OSHA<sup>(2)</sup> 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.

<sup>(1)</sup> American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, 1989

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

**1.5.5** When the air supply is on, and the cabinet doors are closed, the blast machine is ready for actuation by the foot pedal. Pressing 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. When pressure on the foot pedal is released, the blast machine depressurizes, and blasting stops.

## 1.6 Dust Collector Options

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 **WARNING**


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**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 reverse-pulse dust collectors with HEPA after-filters if lead coating or any other toxic materials are being removed by the blasting process. Do not use dust collectors with simple cloth filters for those applications.**

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**1.6.1 Dry Filter:** A push-through dry filter uses tubular filters, which trap dust on their inner surfaces. A dry filter is efficient for moderate dust contamination. The filters must be manually shaken every two hours and the dust drawer emptied regularly. This type of dust collection must never be used in applications that generate toxic dust.

**1.6.2 Reverse Pulse Dust Collector:** A pull-through reverse-pulse dust collector is the most efficient dust collector option. Cartridge filters are automatically cleaned by a periodic pulse of air. This type of dust collector used with the optional HEPA filter must be used in applications in which toxic dust is generated. See separate manual for operation of reverse-pulse dust collectors.

**1.6.3 HEPA Filter:** Optional HEPA after-filters provide additional filtration, and are available for use with reverse-pulse collector only. HEPA filters must be used when removing lead coatings or any other toxic materials. See Optional Accessories, Section 9.1.

## 1.7 Nozzle Options

**1.7.1** Unless specified at the time of order, cabinets are shipped with a 3/16" nozzle. Optional 1/8" nozzles are available for use with all cabinets, and 1/4" nozzles are for use with 900 cfm reclaimers only.

**1.7.2** Use boron carbide nozzles when blasting with aggressive media. See Optional Accessories, Section 9.1.

## 1.8 Metering Valve Options

**1.8.1** 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. The optional Sentinel metering valve is for use with 50-mesh and coarser media. Conversions kits easily convert the valves either way. Kits are listed under Optional Accessories in Section 9.1.

## 1.9 Media

**1.9.1** The cabinet 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 the addition of the optional, externally adjustable vortex cylinder. See Section 5.4. The vortex cylinder is standard on pull-through systems (cabinets with reverse-pulse dust collectors). Media coarser than those recommended may be too dense for the reclaimer to recover from the cabinet hopper.

**1.9.2 Steel:** Steel shot finer than 170 mesh and steel grit finer than 40 mesh may be used with 900 cfm reclaimers. Steel grit or shot should not be used with 600 cfm reclaimers. Conveying hose on cabinets using steel media should be reduced one size from standard and have a smooth durable lining. Rubber curtains should be used to protect the cabinet walls from peening and rapid wear. For these application cabinets can be ordered from the factory with conveying hose appropriately sized for steel grit, and with curtains installed. They may also be field installed at a later date. See Optional Accessories in Section 9.1.

**1.9.3 Sand and Slag:** Sand should never be used because of the hazards of using media containing free silica. Slags are not recommended because they rapidly breakdown.

**1.9.4 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, exhauster housing and paddle wheel, 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 and a reverse pulse dust collector. 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.

**1.9.5 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 any lumps.

**1.9.6 Fine-mesh Media:** The optional adjustable vortex cylinder is should be installed when using 200-mesh and finer media. NOTE: The adjustable vortex cylinder is standard on pull-through systems (cabinets with reverse-pulse dust collectors). When using very fine media (200 mesh and finer), the inlet baffle of the reclaimer may also need to be removed. Consult the factory before proceeding with this option.

**1.9.7 Lightweight Media:** The optional adjustable vortex cylinder should be used when using all plastic media, and most agricultural media. NOTE: The adjustable vortex cylinder is standard on pull-through systems (cabinets with reverse-pulse dust collectors).

## 1.10 Compressed Air Requirements

**1.10.1** The size of the compressor required to operate the cabinet depends on the size of the nozzle and blasting pressure. See the table in Figure 3 to determine the cfm requirements. The table shows air consumption of nozzles when new. It does not show the recommended compressor size. As nozzles wear, they will consume up to 70% to 80% more air. Consult with a compressor supplier for a suggested compressor size based on the air consumption.

NOTE: A separate air line is required for the optional RP dust collector.

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

\* Figures are approximate and for reference only, and may vary for different working conditions. Several variables, including media flow and nozzle wear affect cfm consumption.

Figure 3

**1.10.2** 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.

**1.11 Electrical Requirements**

**1.11.1** Electrical requirements depend on the size and phase of the motor. Standard cabinets are supplied as follows:

Cabinet w/600 cfm reclaimer: 1 HP, 115/230V, 1-PH, 60 HZ (wired 115)

Cabinet w/900 cfm reclaimer: 2 HP, 230/460V, 3-PH, 60 HZ (supplied with 230-volt control panel unless 460-volt is specified at time of order)

**1.11.2** If voltage is 115, 1-phase, a power cord is supplied. If voltage is 230/460, 3-phase, a starter and electrical panel are supplied. (wiring schematics are packed in the panels). Power from the user's disconnect has to be wired to the panel. Additional wiring information is in Section 2.11.

**2.0 INSTALLATION**

**2.1 General Installation Notes**

**2.1.1** See Figure 1 (and Figure 2 for optional reverse-pulse collector) for the general arrangement and Figure 4 for the control line schematic. Select a location where compressed air and electrical service are available. The cabinet location must comply with OSHA and local safety codes. Allow for full access to all doors and service areas, and for efficient handling of large parts. Provide enough clearance in front of the dust collector to remove the dust drawer without tipping. Ideally, locate the blast machine directly behind the cabinet with the blast hose connection toward the cabinet. The reclaimer may be rotated on the blast machine to enable hose connections with as few bends as possible. Determine the best location, and position all units before final assembly.

**2.2 Assemble Blast Machine and Reclaimer**

**2.2.1** Apply adhesive-backed strip gasket to the top of the flange on the blast machine. Punch out an opening at each bolt hole.

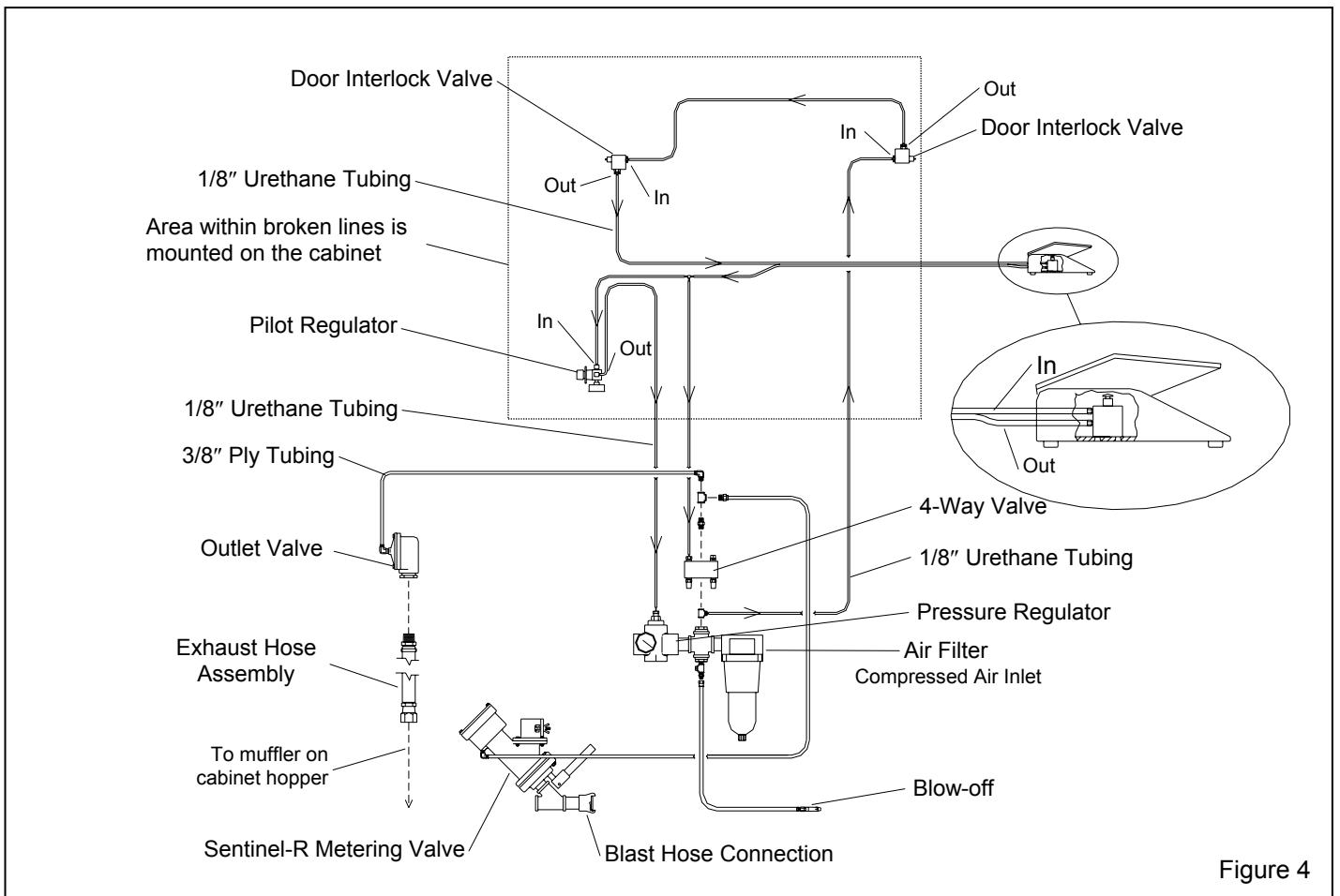


Figure 4

**2.2.2** Place the optional storage segment on the blast machine. The access door should be on the bottom, and rotated to allow access. Bolt into place. Apply gasket to the top flange as described in Section 2.2.1.

**2.2.3** Using a lift, raise the reclaimer over the blast machine assembly, and lower it in place. Attach with fasteners provided.

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## WARNING

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**Do not work under the reclaimer while it is hanging from the lifting device. Severe injury or death could occur if the reclaimer is released before it is secured to the blast machine.**

---

### 2.3 Support the Blast Machine

**2.3.1** Use ropes or other means to temporarily support the blast machine and reclaimer during final assembly.

### 2.4 Connect Conveying Hose

**2.4.1** Connect flexible conveying hose between the cabinet hopper transition and reclaimer inlet adaptor. It is easier to slip the hose over the adaptor and 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. NOTE: The 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. Clamp the flex hose securely with worm clamps provided.

### 2.5 Connect Blow-Off Hose

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

### 2.6 Connect Blast Hose

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## WARNING

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

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**2.6.1** Connect the blast hose from the cabinet hopper to the coupling at the bottom of the blast machine. Be

sure coupling gaskets are in place and couplings are secured with safety lock-pins.

### 2.7 Attach Air Exhaust Hose

**2.7.1** 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.

### 2.8 Connect Urethane Control Tubing

**2.8.1** Uncoil the 1/8" urethane control tubing. The end of each tubing is numbered 1, 2 or 3. Connect the tubing to the adaptor with the corresponding number on the pressure regulator, piping, and 4-way air valve. Check the schematic in Figure 4 to confirm the connections.

### 2.9 Connect Compressed Air Supply Line(s)

**2.9.1** 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 on the blast machine. A smaller diameter hose may reduce blasting efficiency.

NOTE: A separate air line is required for the optional RP dust collector.

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## WARNING

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

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### 2.10 Ground Cabinet

**2.10.1** To prevent static electricity build up, attach an external grounded wire from an earth ground to the grounding lug on the left rear of the cabinet.

### 2.11 Connect Electrical Service

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## WARNING

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**Shorting electrical components could result in serious electrical shocks, or equipment damage. All electrical work must be performed by a qualified electrician, and comply with applicable codes.**

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NOTE: 115 volt 1-phase wiring schematics are packaged with this manual, 3-phase schematics are packed in the electrical panel. After wiring is completed,



keep the schematic with the manual for future reference and for electrical replacement parts.

Conduit and wire are supplied from the cabinet panel for wiring reclaimer motors when used with dry filter collectors. Reverse-pulse collectors are usually too far from the cabinet to use flex conduit. Conduit and wiring for RP Collectors, and wiring from the user's disconnect to the cabinet panel must also be provided by the user.

**2.11.1 115-volt single phase wiring. For 3-phase wiring, see Section 2.11.2.**

**2.11.1.1** 600 cfm reclaimers do not require any wiring. 900 cfm reclaimers require connecting the flex conduit, and wiring the motor for low voltage, per instructions on the motor plate.

**2.11.1.2** Incoming power is supplied by a U-Ground plug, and requires only plugging into a 115-volt outlet.

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**⚠ WARNING**

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**Do not use electrical adaptors that eliminate the ground prong on 115 volt plugs. Doing so can cause electric shock and equipment damage.**

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**2.11.1.3** Observe the subsequent warning and check the rotation of the motor. To check, 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. Do not look into the exhaust outlet. Proper rotation is indicated by the arrow on the exhaust housing. The motor should rotate toward the exhaust outlet.

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**⚠ WARNING**

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

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**2.11.2 Three Phase Wiring. For 1-phase wiring, see Section 2.11.1.**

**2.11.2.1** As much wiring as possible has been completed at the factory. The electrician only needs to provide service to the motor starter in the electrical panel mounted on the cabinet, and connect the conduit and wiring from the starter to the motor. Refer to the schematic packed in the panel. NOTE: The user must provide conduit and wiring from the starter to the motor for RP Collectors.

**2.11.2.2** Whether voltage is 230 or 460 is determined at time of order, and control panels are provided accordingly. A wiring schematic for the cabinet and accessories is included in the panel.

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**⚠ WARNING**

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**Electrical power must be locked out and tagged out before continuing. Failure to do so could result in serious injury or death from electrical shock.**

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**2.11.2.3** Connect flex conduit, and wire the motor per instruction on the motor plate.

**2.11.2.4** Supply service from the user's disconnect to the electrical panel.

**2.11.2.5** Connect 3-phase power to terminals 1, 2, and 3 on the motor starter as shown on the schematic.

**2.11.2.6** Connect the ground wire to the grounding lug as shown in the schematic.

**2.11.2.7** 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 exhaust housing. The fan should rotate toward the exhaust outlet.

---

**⚠ WARNING**

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

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**2.11.2.8** Check the amperage on initial start up. If the motor draws excessive amperage, gradually close the damper until the amperage is within the specifications shown on the motor plate. The damper is located on the inlet of dry filters, and on the exhaust outlet of reverse-pulse collectors.

**2.12 Dry Filter Dust Collector. See separate manual for Reverse-pulse Dust Collector.**

**2.12.1** Dry filters can be converted to left or right hand inlet. If it is more convenient to have the inlet on the opposite side, switch the inlet adaptor for the blank cover.

**2.12.2** Connect the flexible exhaust hose between the reclaimer outlet and dry filter inlet. It is easier to slip the hose over the adaptors, and to create a tighter seal if the first two or three inches of wire are removed from the inside of the hose. Use care not to damage the hose. Secure the hose with worm clamps. NOTE: 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.

### 2.13 Anchor Blast Machine

**2.13.1** When all the components are in their permanent position, remove the temporary supports, and bolt the blast machine to the floor. Anchor holes are located in the blast machine leg pads. Anchor through the holes to secure the machine to the floor.

### 2.14 Inlet Damper

**2.14.1** Set the inlet damper to match the cabinet dimensions and reclaimer size. The decal on the damper show the settings in degrees. The initial settings are as follows:

65 w/ 600 .....	align handle to 30 degrees
65 w/ 900 .....	align handle to 0 degree (full open)
220 w/ 600 .....	align handle to 30 degrees
220 w/ 900 .....	align handle to 0 degree (full open)

See Section 5.6 for adjustment procedure.

**2.14.2** Loosen the lock nuts and position the damper. When correctly positioned, tighten the lock nuts to maintain the setting.

### 2.15 Final Assembly

**2.15.1** Position the foot pedal on the floor at the front of the cabinet.

**2.15.2** 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 6.2. When the cover lens becomes pitted or frosted, replace it.

## 3.0 FIELD INSTALLED ACCESSORIES

### 3.1 Alox Kit

**3.1.1** The optional aluminum oxide kit is available factory installed or may be field installed later. Factory installed Alox kits consists of four rubber curtains with eyelets, curtain hardware, and boron carbide nozzle. Refer to Section 3.2 for curtain installation.

NOTE: Wear plates and lined flex hose are standard on current cabinets. If the cabinet has both items and they are in good condition, reserve the new wear plate and hose for future replacement.

### 3.2 Curtain Installation

**3.2.1** Match curtains to corresponding wall and doors.

**3.2.2 Front and rear walls:** Position the curtain on the wall to be protected. Using the curtains as templates, mark each mounting point through the grommet holes along the upper edge of the curtain. NOTE: When laying out the attachment points, the upper edge of the rear curtain should be below the bottom edge of the air duct partition. Remove the curtains, and drill a .187" (3/16") diameter hole at each point marked. Install the curtains using the fasteners provided (machine screw, 11/16" OD flat washer, lock washer and nut) at each grommet. The flat washer is used between the screw head and the rubber curtain grommet on all curtains.

**3.2.3 Doors:** Using protectors against the curtains and outer doors, clamp the door curtains in place. NOTE: When laying out the attachment points, the upper edges of the door curtains should be even with the outer edges of the door's sound proofing panel. Insert a #10 self-drilling screw with an 11/16" OD flat washer through the grommet holes. Use a screw gun with a 5/16" socket to drill and thread the screws through the door's inner wall at each grommet.

### 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 Turntable with Workcart and Track

**3.4.1** The components of the turntable and track assembly are shown in Figure 5. The assembly consists of:

1. The inside track assembly, which is placed inside the cabinet.
2. The hinged track extension which is attached to the table, and swings up to clear the door.
3. The track support table.
4. Turntable and workcart assembly.

NOTE: The track may be placed on either side of the cabinet, allowing entry through either door. When installing the inside track, place it so the stops are opposite the entry door.

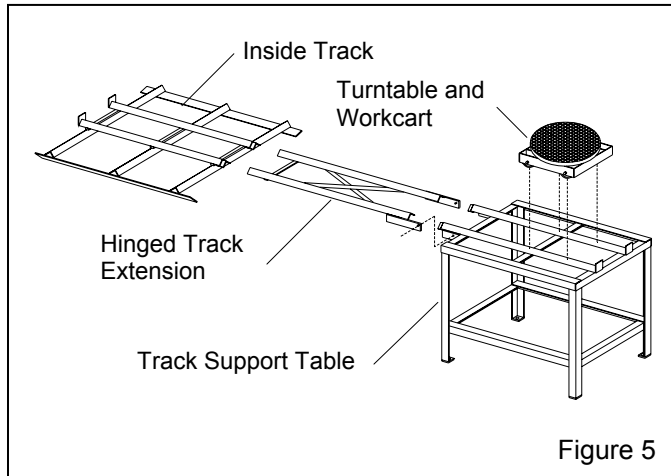


Figure 5

**3.4.2** Place the inside track in the cabinet over the existing grate as shown in Figure 6.

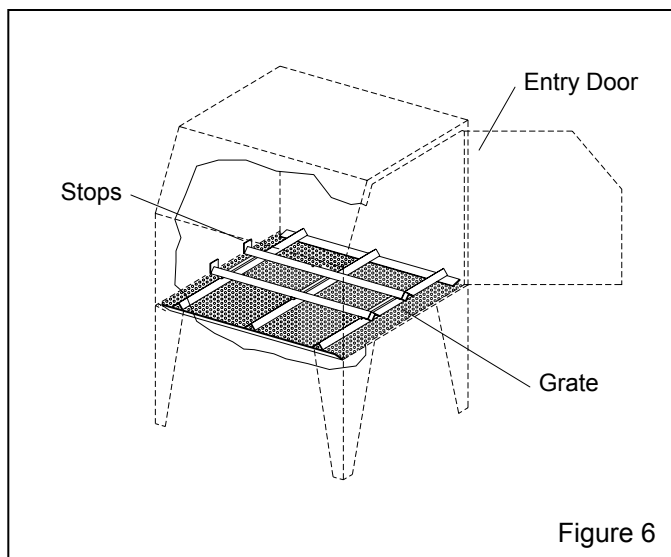


Figure 6

**3.4.3** Position the track support table and extension as shown in Figure 7. When the hinged extension is lowered, the extension tracks must rest on the angled locating supports welded to the bottom of the inside tracks, and butt against the inside tracks.

**3.4.4** Holes are provided on the track table leg pads, to permit anchoring when needed.

**3.4.5** Raise the track extension to allow opening and closing of the door.

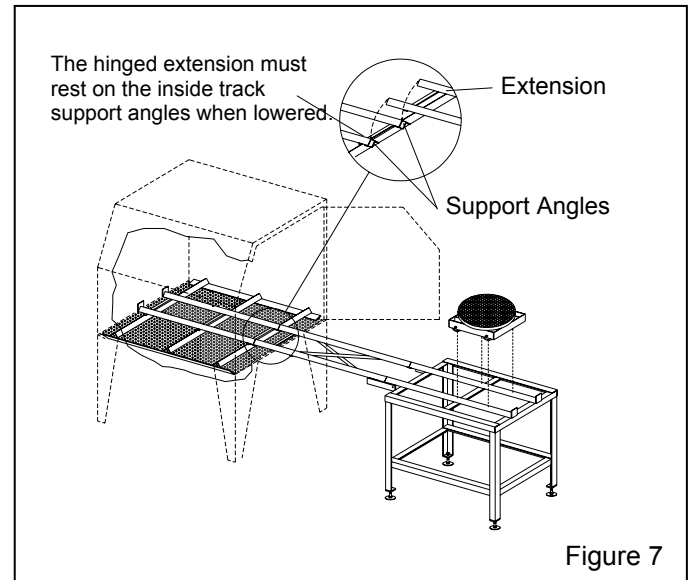


Figure 7

## 4.0 OPERATION

### 4.1 Media Loading and Unloading

**4.1.1 Media Capacity:** Media capacity depends on the reclaimer size. Media capacity of 600 cfm units is approximately 1.6 cu. ft. Full capacity will be below the opening of the pop-up valve. Capacity of 900 cfm units is approximately 2.0 cu. ft. Full capacity will be at the pop-up valve opening. Overfilling will result in media carryover to the dust collector and possible blockage in the conveying hose. The optional storage segment provides nearly 2 additional cubic feet of media storage, and raises the overall height by approximately 17 inches.

**4.1.2 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 may occur.** Overfilling will result in media carryover to the dust collector and possible blockage in the conveying hose. Refill only after all media has been recovered from the cabinet.

**4.1.3 Media Unloading:** To empty the cabinet and blast machine of media, allow all media to be recovered from the cabinet, and reduce pressure to 40 psi. Place an empty container, such as a bucket, on the cabinet grate. Remove 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. Return the

choke valve to the full open position. Clean the nozzle holder threads and inspect the threads on the nozzle and nozzle holder before reinstalling the nozzle washer and nozzle. If complete purging of media is required, use a vacuum to clean media residue in cabinet hopper and blast machine head.

#### 4.2 Loading and Unloading Parts

### 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.**

4.2.1 Load and unload parts through either door.

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

4.2.3 When cleaning very small parts, place an appropriately sized screen over the grate to prevent parts from falling into the hopper.

4.2.4 Close door. Be certain door is sealed securely, or door interlock system will prevent the machine from working.

#### 4.3 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 opening doors.**
- **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.**

4.3.1 Slowly open the air valve on the air supply hose to the blast machine. Check for air leaks on the initial start up and periodically thereafter.

4.3.2 Turn on the lights and exhauster. The on/off switch performs both functions.

4.3.3 Load parts.

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

4.3.5 Insert hands into rubber gloves.

4.3.6 Firmly grasp the nozzle and apply pressure to the foot pedal. Blasting will begin immediately.

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

### WARNING

**Shut down the cabinet immediately if dust discharges from the collector. Check that filters 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 dust generated by blasting. Identify all material being removed by blasting, and obtain a material safety data sheet for the media.**

4.3.7 Adjust the pilot pressure regulator located on the top, left side of the cabinet, to the required blasting pressure.

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

#### 4.4 Stop Blasting

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

4.4.2 The blast machine refills with media stored in the reclaimer each time the foot pedal is released. Refilling takes approximately 15 seconds.

4.4.3 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.

**4.4.4** Unload parts, shut off the air supply valve, and switch off the lights and exhauster.

## 4.5 Blasting Technique

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

## 5.0 ADJUSTMENTS

### 5.1 Blasting Pressure

**5.1.1** The pilot pressure regulator, located on the top, left side of the cabinet, enables the user to adjust the blasting pressure to suit the application. The suitable pressure for most purposes is around 80 psi. Lower pressures may be required on delicate substrates, and will reduce media breakdown. Higher pressure may be required for difficult blasting jobs on durable substrates, but will increase media breakdown. In all cases, highest production can only be achieved when pressure is carefully monitored.

**5.1.2** If the application requires blasting below 40 psi, first pressurize the blast machine at 40 psi, then turn the pressure to the required setting before blasting the part. If the initial pressure is below 40 psi, the pop-up valve may not seal.

**5.1.3** Pressure registers on the gauge only while blasting. While holding the nozzle securely, adjust air pressure at the pilot regulator located on the top, left side of the cabinet.

**5.1.4** To adjust, unlock the knob, and turn it clockwise to increase pressure or counter-clockwise to decrease pressure. Once operating pressure is set, 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

**5.3.1** Correct static pressure varies with size of reclaimer and the size, weight and type of media.

**5.3.2** Adjust static pressure by opening (handle horizontal) or closing (handle vertical) the damper. The damper is located on the dust collector inlet on dry filters, and on the outlet of reverse pulse collectors. If the damper is not opened enough, the reclaimer will not remove fines, resulting in dusty media, poor visibility, and possible media blockage in the conveying hose. If the damper is opened too far, it may cause carryover (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 when adjusting or monitoring static pressure. 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 13 .....	2-1/2 - 3"
Alox. 60 & coarser .....	4 - 5"
Alox. 80 & finer .....	2-1/2 - 3"
Steel Grit .....	6 - 7"

**5.3.4** If the damper has been adjusted and carryover or excessive dust in the media continues to be a problem, the optional adjustable vortex cylinder, which is standard on pull through reclaimers, 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, and Accessories in Section 9.1.

### 5.4 Optional Externally Adjustable Vortex Cylinder (standard on pull-through reclaimers). For use with fine-mesh or lightweight media.

**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.

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

## 5.5 Door Interlocks, Figure 8

### **⚠ 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.

**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. Point the nozzle away from the door during the tests, and only open the door enough to disengage the interlock switch. The interlocks should stop the blasting when the doors are opened, 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.

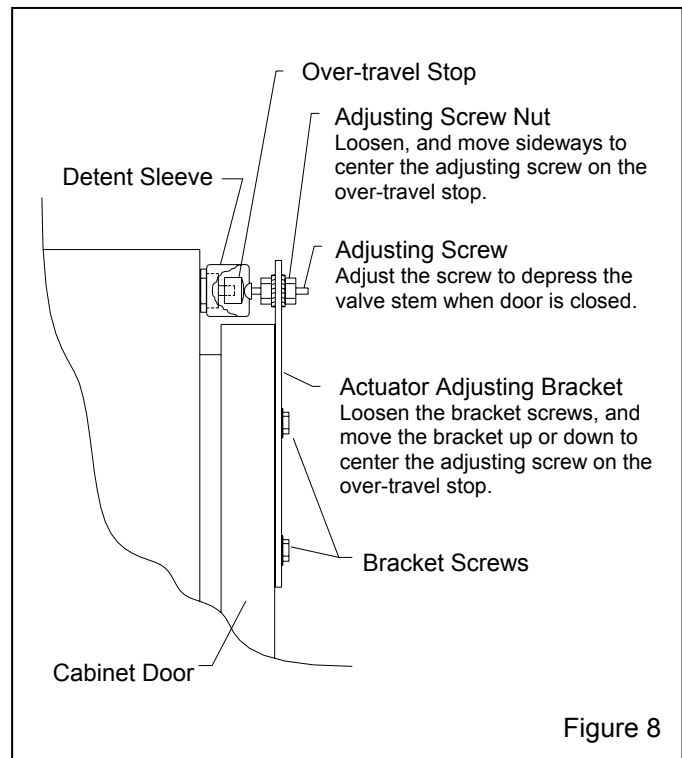


Figure 8

## 5.6 Inlet Damper

**5.6.1** Once the inlet is initially set per Section 2.14, 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.

**5.6.2** 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.

**5.6.3** 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.

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## 6.0 PREVENTIVE MAINTENANCE

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### **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 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. 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.**

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

### 6.1 Dry Filter Dust Collector

**6.1.1** The dry filter uses tubular filters which collect dust on their inner surfaces. A shaker arm accessible from the outside of the collector is used to shake the filters. Every two hours, turn off the exhauster and shake the filters vigorously.

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### **CAUTION**

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**Do not shake the filters when the exhauster is on. Doing so will accelerate wear on the filters around the shaker assembly, but not shake the dust loose.**

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**6.1.2** Empty the dust collector drawer regularly. Begin by checking the drawer daily and adjust frequency based on usage and break down rate of media. Dump the contents into a suitable disposal container.

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### **CAUTION**

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**Do not open the dust drawer door while the exhauster is on. The drawer chamber is under positive pressure when the exhauster is on. Opening the dust door while the exhauster is operating or the paddle wheel rotating, will allow dust to escape.**

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

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## 6.2 View Window Cover Lens

**6.2.1** 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.

**6.2.2** 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.

**6.2.3** 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.

## 6.3 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 media. Empty the screen more often if parts being blasted causes excessive debris. Do not operate the machine without the screen in place.

## 6.4 Air Filter

**6.4.1** The cabinet 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 after cooler may be required in the air supply line.

**6.5 Abrasive Trap (optional)**  
Recommended for 40 mesh and coarser media.

**6.5.1** Check and clean the abrasive trap screen and empty the trap twice a day.

## 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 for leaks and wear.

## 6.7 Sentinel Metering Valve

**6.7.1** A separate manual is provided for the metering valve. Refer to the metering valve manual for servicing and replacements parts.

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## 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 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 have been 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 its 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 optional view window cover lens per Section 6.2.

**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 9

**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.

**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 9. 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.

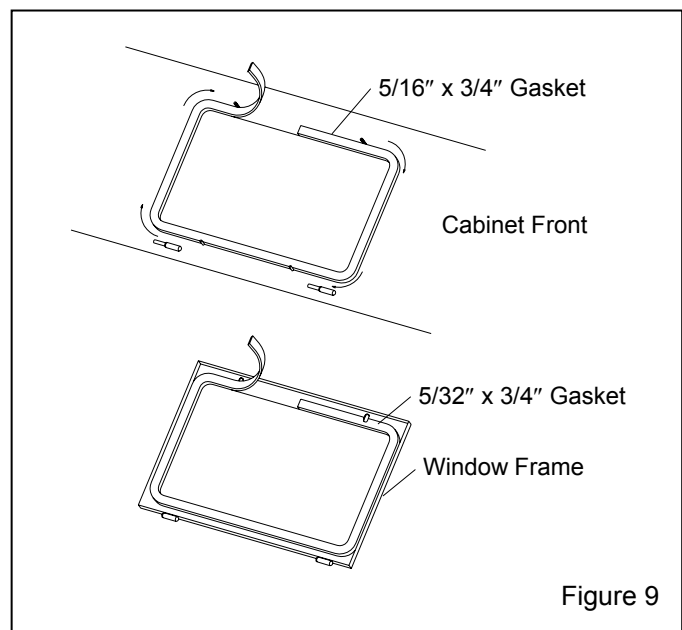


Figure 9

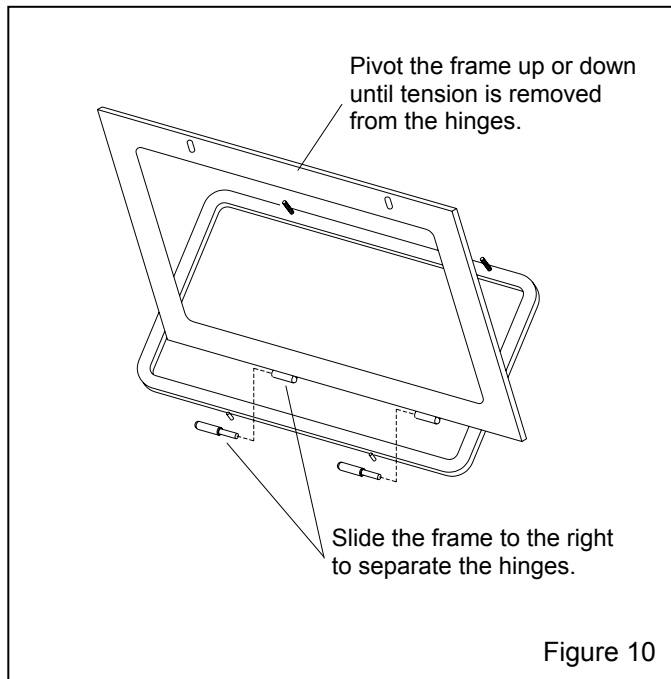
**7.4.5** Using 5/32" thick strip gasket, repeat the process on the window frame.



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

## 7.5 Window Frame Removal, Figure 10

**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 10.

**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

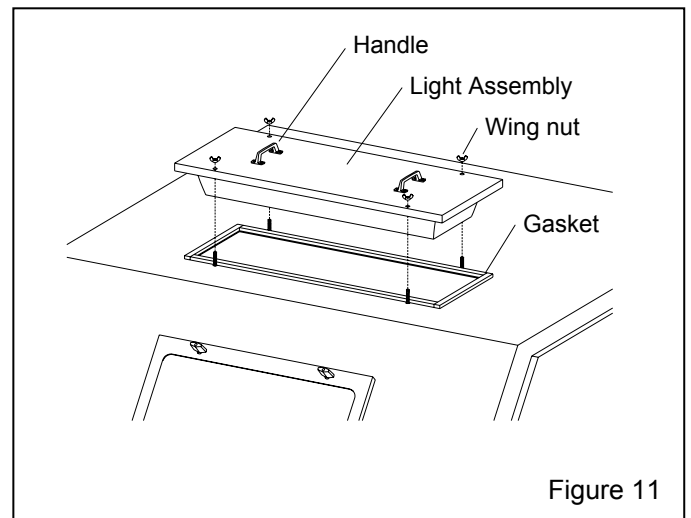
### CAUTION

**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 use the handles to lift the fixture off the cabinet, as shown in Figure 11.



**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 11. Press the gasket tightly to bond. Repeat the process for each side, compressing the ends to seal.

### 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 12.

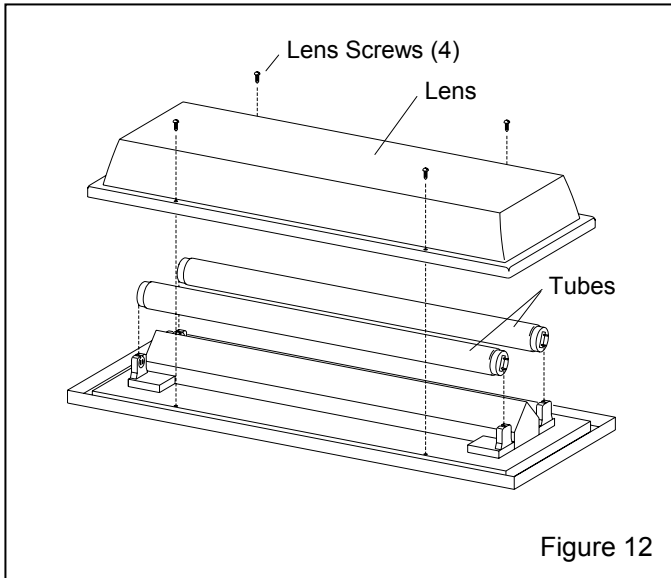


Figure 12

**7.6.3.3** Remove the four lens screws and remove the lens.

**7.6.3.4** Replace the lens or tubes as required.

**7.6.3.5** Inspect the gasket, and replace if worn or damaged.

**7.6.3.6** Reassemble in reverse order.

## 7.7 Dry Filter Tube Replacement, Figure 13

**7.7.1** Replace damaged filters immediately. Remove the old filters by pulling the spring rings off the bottom and top tube plates. Working from the back to the front, install one filter at a time. To install new filters, form the end of the spring ringed tubular filter into a shallow "c" shape, push the filter far enough into the hole of the top plate to allow one spring ring to snap into place above the tube plate and the other to snap into place below it. See the illustration in Figure 13.

### ⚠ CAUTION

- Do not bend spring ends tight enough to cause ends to kink.
- Do not use a sharp instrument to force spring rings into the opening. This could damage the filter and seriously impair the function of the dust collector.
- Install one filter at a time. Check the seating of the top and bottom spring rings, and that the tube is not twisted, before proceeding to the next.

**7.7.2** The tubular filter is held firmly by a spring ring above and below the perimeter of the holes in the top and bottom plate. The filters fit tight to prevent dust leakage. To ensure a tight seal, some force may be required by the installer. Check for proper seating at both ends, and remove any twist in the tube before proceeding to the next filter.

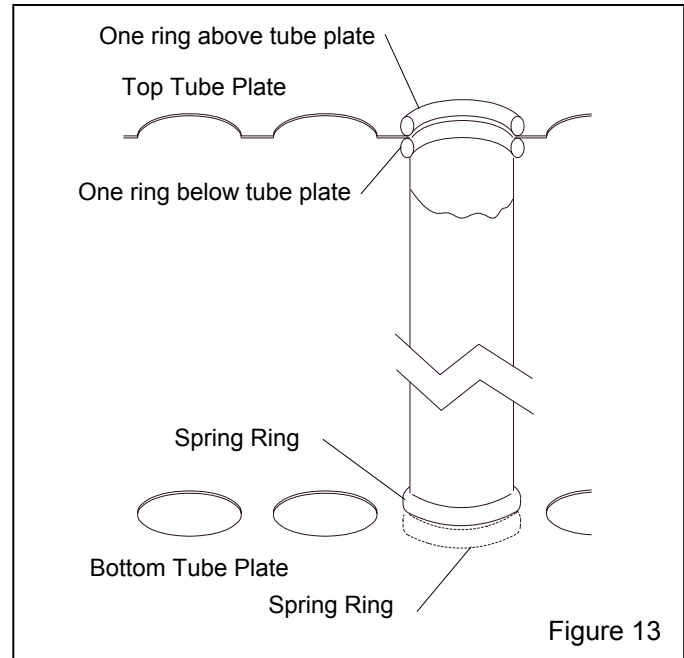


Figure 13

## 7.8 Pop-up Valve Replacement

**7.8.1** Empty the machine of media as described in Section 4.1.3.

**7.8.2** Depressurize the blast machine, and lock out and tag out the compressed-air supply.

### ⚠ WARNING

**Failure to observe the following procedure before performing any maintenance could cause serious injury or death from the sudden release of compressed air.**

- Depressurize the blast machine.
- Lock out and tag out the compressed air supply.
- Bleed the air supply line to the blast machine.

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

**7.8.4** Using a small pipe wrench, unscrew the pop-up valve guide (Figure 22 Item 12), by turning it counterclockwise. Remove the pop-up valve and guide

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from the machine. Place the new pop-up valve over the guide, and screw the valve guide (with the pop-up valve on it) back into position inside the machine. Tighten the guide as tight as possible without using a wrench.

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

## **7.9 Pop-up Valve Seat Replacement**

**7.9.1** The easiest method to replace the rubber pop-up seat is through the reclaimer access door. If for some reason replacement can not be made through the reclaimer, observe the warning in Section 7.8, and empty the machine and bleed the air supply line. Remove the inspection door assembly and work through the opening.

**7.9.2** Remove the old seat by using a finger, screwdriver, or similar object, to work the seat out of the retainer groove.

**7.9.3** Push the new seat all the way through the port and then fit it into the groove. For the last few inches, pull up on the seat and allow it to "pop" into position.

## **7.10 Reclaimer Wear Plate Replacement**

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

**7.10.2** Angle the new wear plate into reclaimer inlet until it is in position with the straight end at the reclaimer inlet. Using a board or similar object as leverage, pry the wear plate against the inner wall of the reclaimer and install sheet metal screws to hold in place. Caulk any gaps or voids around the wear plate to prevent rapid wear in those areas.

## **7.11 RP Dust Collector**

Optional reverse-pulse dust collectors are covered by a separate manual.

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## **8.0 TROUBLESHOOTING**

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### **WARNING**

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**To avoid serious injury, observe the following when troubleshooting.**

- **Turn off the air, and lock out and tag out 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 Poor Visibility**

**8.1.1** Dirty tube filters or filter cartridge. Shake tube filters, and empty dust drawer regularly. Ref. RP Dust Collector Manual for pulse pressure and sequence.

**8.1.2** Motor rotating backwards. The motor should rotate as indicated by the arrow on the housing. If it does not rotate in the proper direction, LOCK-OUT AND TAG-OUT POWER and switch the motor leads as shown on the motor plate. See Section 2.11.

**8.1.3** Using friable media that rapidly breaks down, or using media that is too fine or worn out.

**8.1.4** Outlet damper closed too far restricting air movement in cabinet. Adjust per Section 5.3.

**8.1.5** Inlet damper requires opening. Restrictions at the inlet damper reduces air movement in the cabinet. Open damper per Section 2.14 and 5.6.

**8.1.6** Hole worn in flex hose between cabinet hopper and reclaimer inlet (if RP collector is used also check hose between the reclaimer outlet and dust collector inlet). Replace hose and route it with as few bends as possible to prevent wear.

**8.1.7** Reclaimer door open.

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

**8.1.9** Paddle wheel worn. Check wheel for wear.

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## 8.2 Abnormally High Media Consumption

**8.2.1** Door on reclaimer open, or improper fit or worn door gasket. Air entering the reclaimer at this point will cause media to be carried into the dust collector. DO NOT operate unless all doors are closed.

**8.2.2** Dust collector damper open too far. Adjusts static pressure per Section 5.3.

**8.2.3** Media may be too fine or worn-out.

**8.2.4** Using friable media that rapidly breaks down.

**8.2.5** Nozzle pressure too high for the media, causing media to break down.

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

**8.2.7** Optional externally adjustable vortex cylinder out of adjustment, See Section 5.4.

**8.2.8** 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.

## 8.3 Reduction In Blast Cleaning Rate

**8.3.1** Low media level reducing media flow. Check and fill if low.

**8.3.2** Incorrect metering valve adjustment. Adjust per Section 5.2.

**8.3.3** Reduced air pressure. This may be caused by a malfunctioning regulator, a dirty filter element in air filter, partially closed air valve, leaking air line, or other air tools in use.

**8.3.4** Blockage in nozzle. Blockage may occur as a result of a missing debris screen.

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

## 8.4 Plugged Nozzle

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

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## 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 tends to absorb moisture from the air, especially fine-mesh media in high humidity areas. Empty the media and store it 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 Neither Media Nor Air Comes Out The Nozzle When The Foot Pedal Is Pressed

**8.6.1** Depressurize the blast machine, and check the nozzle to see if it is plugged. See Section 8.4.

**8.6.2** Check that the blast machine pressurizes when the foot pedal is pressed. If it does not, see Section 8.11.

**8.6.3** Check that the media metering valve and the choke valve are open.

## 8.7 Blast machine Will Not Depressurize Or Depressurizes Too Slowly

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

**8.7.2** Check that the 3-way valve in the foot pedal exhausts air when pedal is released. If it does not, check the line for blockage, and check the switch for defect.

**8.7.3** Check the outlet muffler that is located inside the cabinet, for blockage.

---

**8.7.4** Check 4-way air valve for jamming. See Section 8.10.4 and 8.10.5.

## **8.8 Heavy Media Flow**

**8.8.1** Make sure the choke valve is open.

**8.8.2** 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.

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

**8.9.1** Heavy media flow. Adjust per Section 5.2

**8.9.2** Empty, and depressurize the blast machine, and inspect the internal parts of the metering valve for wear.

## **8.10 Air Only (no media) Comes Out The Nozzle**

**8.10.1** Make sure the machine contains media.

**8.10.2** Check that the media metering valve is not closed.

**8.10.3** Check for minor blockage in the media metering valve by fully opening the metering valve, and closing the choke valve. 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.

**8.10.4** Check the muffler on the 4-way air valve. Air should exhaust from the muffler when the foot pedal is pressed. 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.

**8.10.5** 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. No air should exhaust from the tube adaptor. Press the foot pedal, air should start exhausting at the adaptor, and stop when pressure on the pedal is released. If it does not operate accordingly, the 4-way valve is probably faulty.

## **8.11 Blast Machine Will Not Pressurize**

**8.11.1** Make sure that the air compressor is on and air supply valves are open.

**8.11.2** Make sure the pressure regulator is not turned down. Minimum pressure is 40 psi. See Section 5.1.

**8.11.3** Door interlocks not engaging. Check door interlock adjustment per Section 5.5.

**8.11.4** Inadequate air supply. Check table in Figure 3.

**8.11.5** Inspect diaphragm in the outlet valve for wear.

**8.11.6** Inspect pop-up valve and seat for wear and alignment.

**8.11.7** Blocked or leaking control line. Check all fittings and urethane tubing for blockage or leaks.

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

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

**8.11.10** Check the 4-way valve per Sections 8.10.4 and 8.10.5.

**8.11.11** Inspect the check valve for obstruction or broken flap.

## **8.12 Static Shocks**

**8.12.1** Cabinet and/or operator not grounded. Abrasive blasting creates static electricity. The cabinet must be grounded to prevent static build-up. See Sections 2.10 and 2.12.2. If shocks persist, the operator may be building up static. Attach a small ground wire (such as a wrist strap) from the operator to the cabinet.

**8.12.2** Avoid holding parts off the grate. Static will build-up in the part if not dissipated through the metal cabinet.

## **8.13 Dust Leaking From Dust Collector**

Refer to RP Dust Collector Manual for service of reverse-pulse dust collectors.

**8.13.1** Check for damaged or loose filters.

**8.13.2** Check for a faulty seal on the dust drawer.

**8.13.3** Check that upper and lower tube sheets are sealed on both sides, front, and rear.

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9.0 ACCESSORIES AND REPLACEMENT PARTS

9.1 Optional Accessories

Turntables and 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.**

Description	Stock No.
Stationary turntable without bearing 20" diameter 25 lb capacity .....	12412

Stationary Turntable with Bearing, Figure 14

Item Description	Stock No.
(-) 20" dia. assembly, 250 lb. capacity .....	12411
(-) 30" dia. assembly, 500 lb. capacity .....	14138
1. Turntable, less base 20" diameter 250 lb. capacity .....	18329
30" diameter 500 lb. capacity .....	21390
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

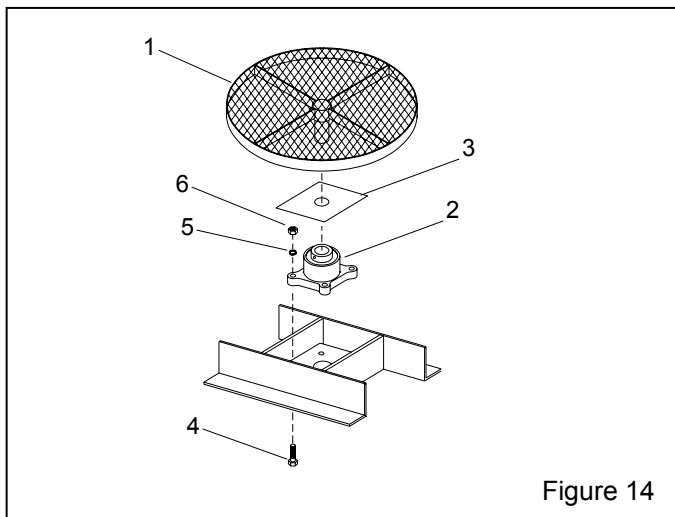


Figure 14

Turntable with Workcart and Track, 500 lb. Capacity, Figure 15

Item Description	Stock No.
(-) 20" diameter turntable and track assembly for 65 series .....	13530
for 220 series .....	12835
(-) 30" diameter turntable and track assembly for 220 series .....	24045
1. Turntable weldment 20" diameter .....	18329
30" diameter .....	24086
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.

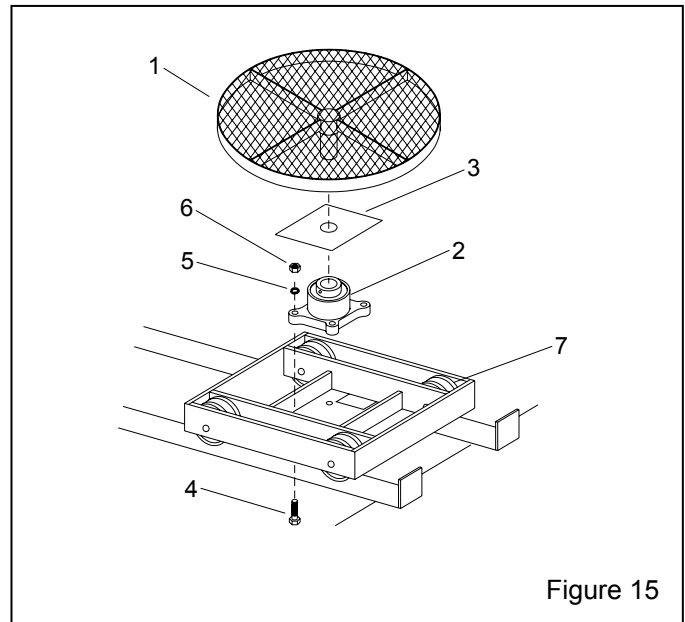


Figure 15

Description	Stock No.
Storage segment, 16": Fits between the reclaimer and blast machine. Provides nearly 2 additional cubic feet of media storage .....	21128
Pass-thru door, with 15 inch square cut-out	
Right door	
for 65 series .....	23610
for 220 series .....	23612
Left door	
for 65 series .....	23611
for 220 series .....	23613
Aluminum oxide kit: Includes #3 boron carbide nozzle, rubber curtains with eyelets and curtain hardware.	
for 65 series .....	13536
for 220 series .....	13474
NOTE: Current cabinets are furnished with light lined flex hose and reclaimer wear plate. For older cabinets order those items in addition to the oxide kit.	
Vortex cylinder assembly, adjustable for exhauster mounted reclaimer	
600 cfm .....	19062
900 cfm .....	23047
Flex hose, heavy lined, for heavy usage with aluminum oxide. Available in 15 ft. lengths only	
5" ID .....	12465
6" ID .....	12457
Boron carbide nozzle	
CTB-2, 1/8" orifice .....	21090
CTB-3, 3/16" orifice .....	21091
CTB-4, 1/4" orifice .....	21092
Rubber curtains, white	
Curtain set	
for 65 series .....	23541
for 220 series .....	23542
Rubber curtains, black	
curtain set	
for 65 series .....	23531
for 220 series .....	23532
Back curtain	
for 65 series .....	14243
for 220 series .....	14247
Front curtain	
for 65 series .....	14242
for 220 series .....	14246
Door curtain, 2 required	
for 65 series .....	14244
for 220 series .....	14245

HEPA Filter, for use with reverse pulse dust collectors	
600 cfm free stranding .....	23625
900 cfm free standing .....	23626
Lock pins (pkg of 25) for twist-on hose couplings .	11203
Safety cable, blast hose .....	15012
Manometer kit .....	12528
Abrasive trap .....	02011
Conversion kits, Sentinel metering valve	
To convert from fine mesh media to coarse ....	22848
To convert from coarse mesh media to fine ....	22849

**Abrasive Trap, Figure 16**

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" x 1" thumb .....	03289
7.	Shoulder screw, 3/8" x 3/8" .....	03291
8.	Gasket, screen .....	02434
9.	Decal .....	02129
(-)	Service kit (items 1, 2, 8 & 9) .....	01925

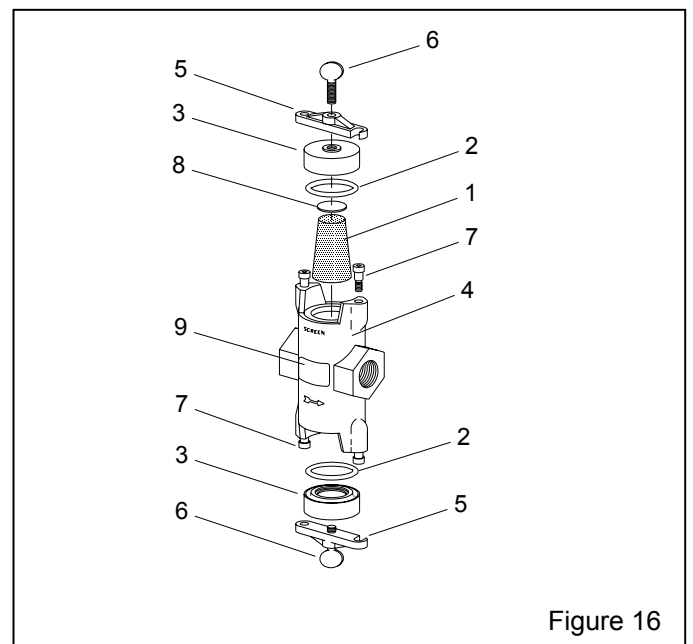


Figure 16

9.2 Cabinet Replacement Parts, Figure 17

Item	Description	Stock No.
1.	Gasket, door, adhesive backed, specify feet required BNP 65, 11 ft. per door .....00187 BNP 220, 13 ft. per door .....00187	
2.	Light assembly w/ cover .....23255	
3.	Window glass, 12.5" x 19.5" .....12212	
4.	Gasket, 5/16" x 3/4", applied to cabinet per foot, 6 feet required .....00189	
5.	Gasket, 5/32" x 3/4", applied to window frame per foot, 6 feet required .....00192	
6.	Cover lens, pkg. of 5 .....06190	
7.	Door assembly, left for 65 series .....20070 for 220 series .....20074	
8.	Door assembly, right for 65 series .....20071 for 220 series .....20075	
9.	Grate for 65 series .....11811 for 220 series .....11810	
10.	Latch kit, door .....20064	
11.	Glove set .....11215	
12.	Glove, left hand only .....12710	
13.	Glove, right hand only .....12711	
14.	Clamp, glove .....11576	
15.	Clamp, flex hose 5-1/2", for 65 .....11578 6-1/2", for 220 .....00750	
16.	Hose, flex, bulk, specify length required. 5" ID light lined for 65, 9 ft. required .....12467 6" ID light lined for 220, 9 ft. required .....12468	
17.	Grommet, blow-off hose .....11798	
18.	Grommet, blast hose .....00184	
19.	Adaptor pipe universal, flex hose 5" for 600 cfm or 900 cfm w/ steel media...23296 6" for 900 cfm .....23297	
20.	Gasket, flex hose adaptor pipe 5" for 600 cfm or 900 cfm w/ steel media...23259 6" for 900 cfm .....23291	
21.	Muffler, outlet .....05068	
22.	Adaptor, 1" male NPT x 1" male flare .....11720	
23.	Actuator, door interlock .....19152	
24.	Over-travel stop, door interlock .....20004	
25.	Detent sleeve, door interlock .....15042	
26.	Air valve, 3 way door interlock .....12202	
27.	Regulator, 1/8" NPT pilot .....12715	
28.	Gauge, pressure .....01908	
29.	Gasket, light assembly, applied to cabinet per foot, 7 ft. required .....00187	
30.	Gasket, hopper plate adaptor .....20247	
31.	Plate, hopper hose adaptor .....21657	
32.	Switch, toggle (single phase only) .....12127	
33.	Nut, plastic, window frame, 2 required .....23035	
34.	Foot pedal assembly, less tubing .....20483	

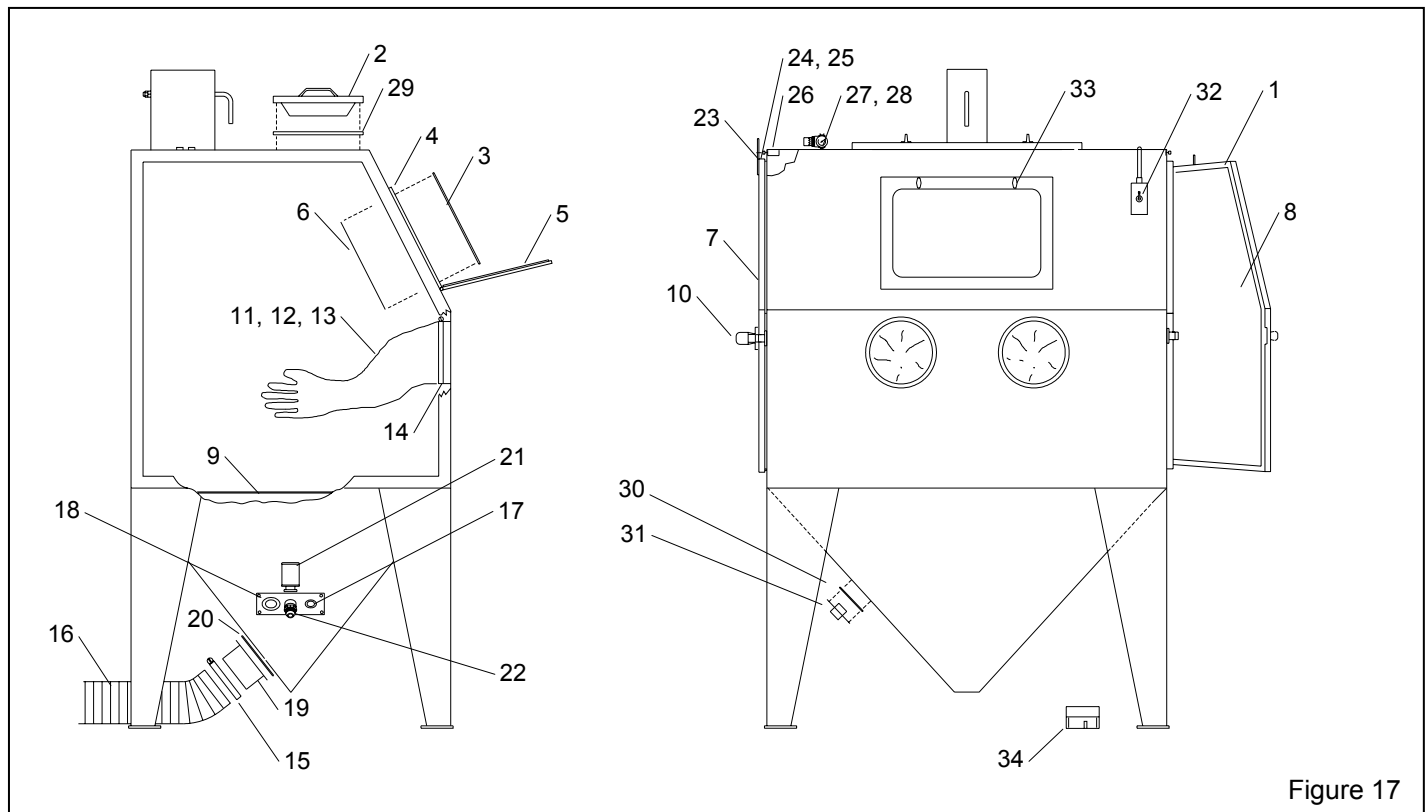


Figure 17



9.3 Light Assembly, Figure 18

Item	Description	Stock No.
(-)	Light assembly w/ cover .....	23255
1.	Light fixture (assembly less cover) .....	23251
2.	Reflector lens .....	23253
3.	Tube, fluorescent, 20w .....	23252

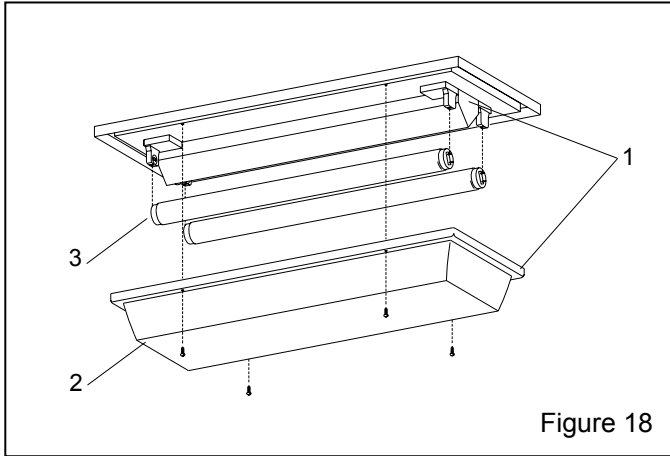


Figure 18

9.4 Foot Pedal Assembly, Figure 19

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 cutting .....	11389
10.	Bumper, rubber (feet) .....	21522

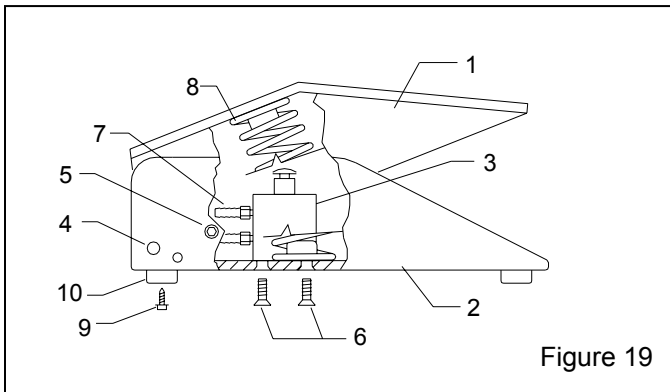


Figure 19

9.5 1" Diaphragm Outlet Valve, Figure 20

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

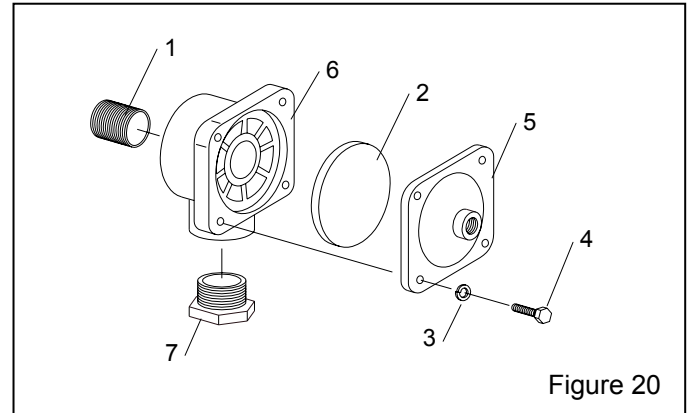


Figure 20

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 reqd.	12475
4.	Tubing, 1/8" ID twin urethane specify feet required	19577
5.	Adaptor, straight 1/4" MNPT 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.	Tee, 1/4" brass	02025
10.	Valve, 4-way air	12203

11.	Adaptor, elbow 1/4" male NPT x 3/8" tube	11685
12.	Valve, 1" diaphragm outlet	03371
13.	Nipple, 1/4" Hex	02808
14.	Filter, 1" w/ auto drain	22425
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 reqd.	12472
23.	Regulator, 1/8" NPT pilot	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

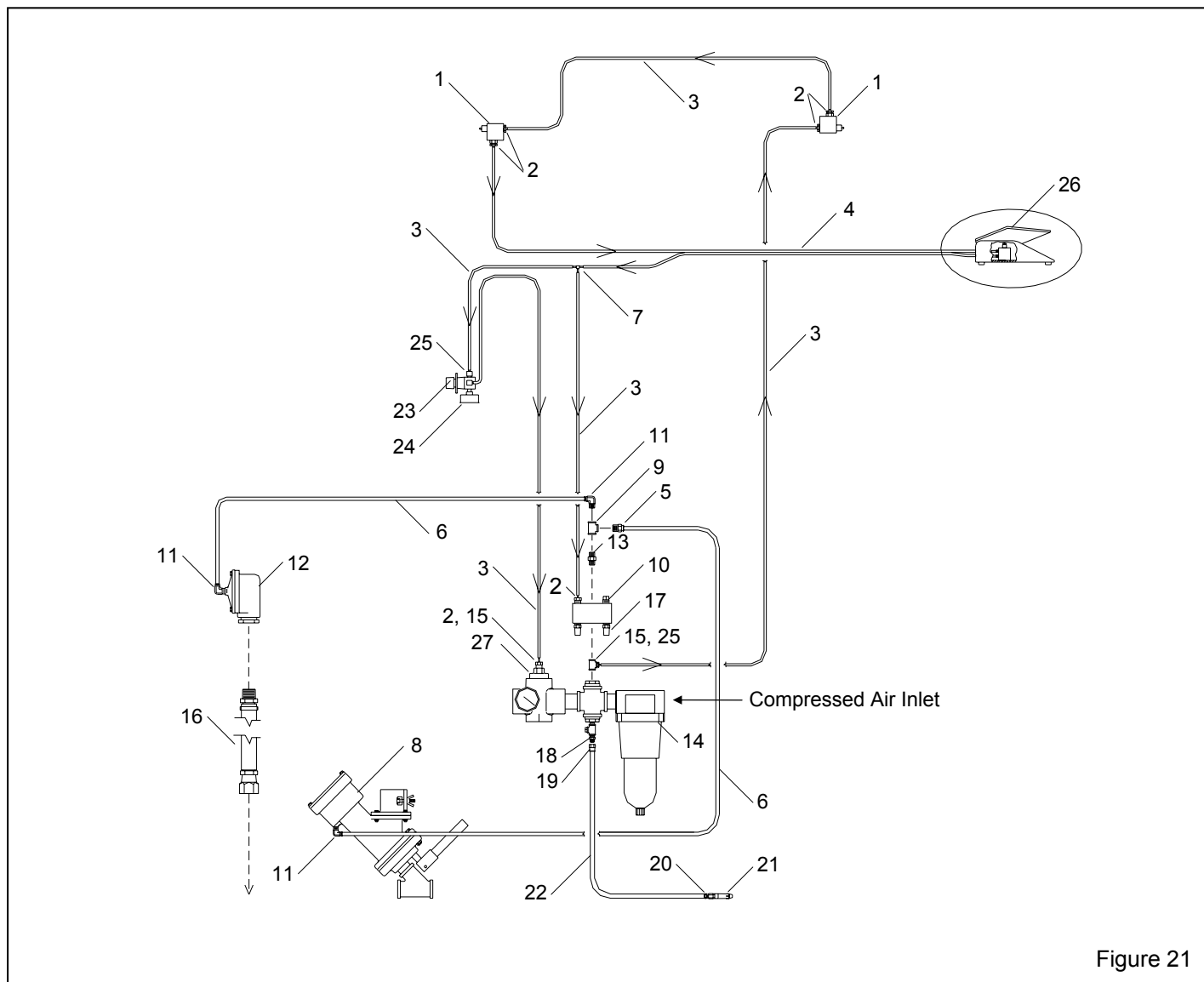


Figure 21

9.7 Blast Machine, Figure 22

Item	Description	Stock No.
(-)	Blast machine assembly, 16", 2 cu. ft. cap...	21135
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 w/ gauge .....	12052
16.	Gauge, 1/4" cbm .....	11830
17.	Filter, 1" w/ 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.	Adaptor, elbow 1/4" male NPT x 3/8" tube ..	11685
27.	Adaptor, straight 1/4" male NPT x 3/8" tube	11736
28.	Muffler, 1/4" bronze .....	03988
29.	Hose assembly, 1" x 10' exhaust .....	23915
30.	Lock pin, coupling (package of 25) .....	11203

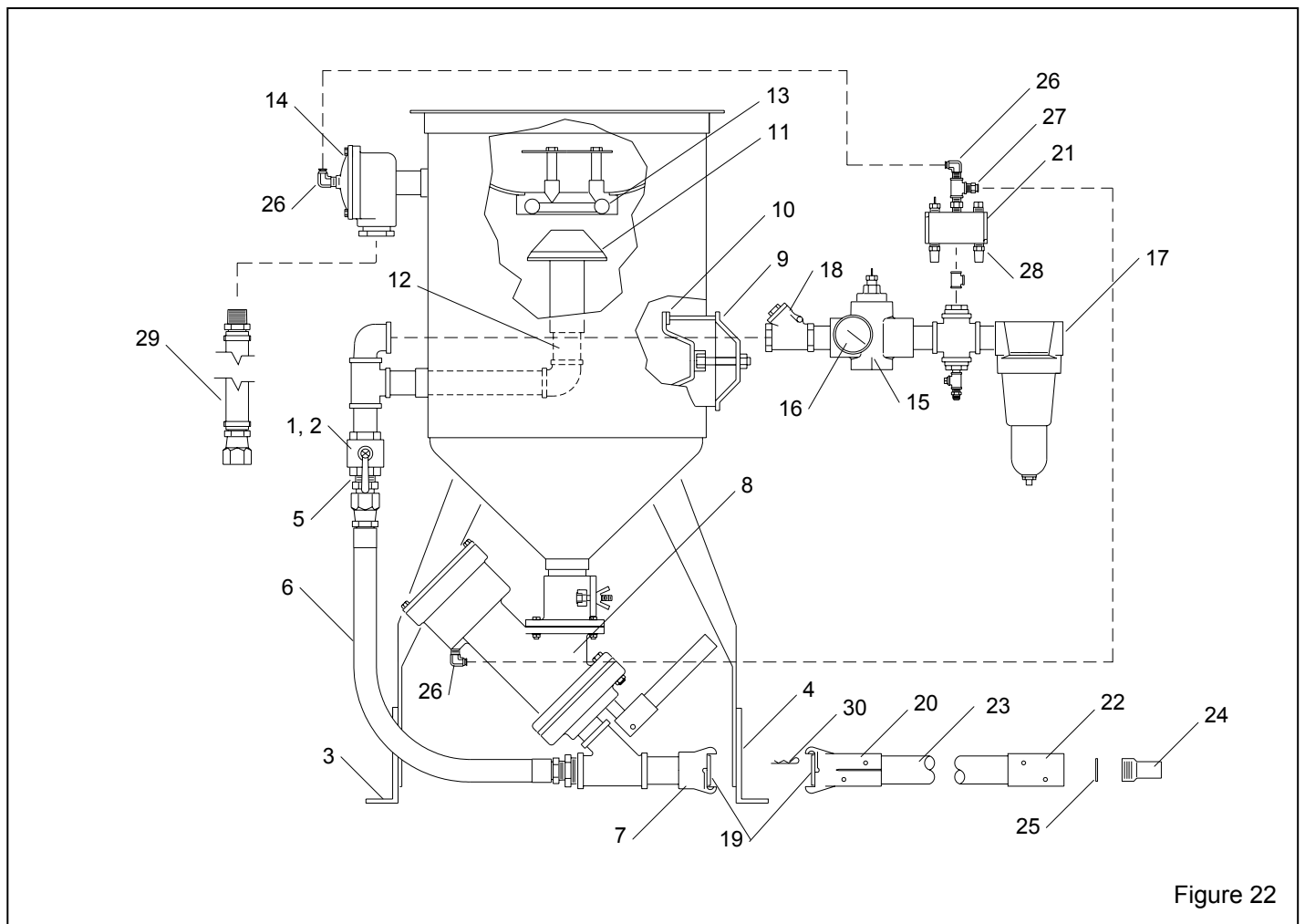


Figure 22

9.8 Sentinel Valve Replacement Parts

Refer to the Sentinel valve owner's manual for replacement parts.

9.9 Reclaimer, for 16 " Dia. Blast Machine  
Figure 23

NOTE: Flex hose, clamp and lower adhesive backed gasket are not supplied with replacement reclaimers.

Item	Description	Stock No.
(-)	Reclaimer assembly, with exhauster	
	600 cfm .....	21251
	900 cfm .....	21253
(-)	Reclaimer assembly, less exhauster	
	600 cfm .....	21250
	900 cfm .....	21252
(-)	Reclaimer assembly, pull-through type	
	600 cfm .....	21292
	900 cfm .....	21293
1.	Motor, exhauster	
	for 600 cfm reclaimer, 1 HP, 1-PH .....	12314
	for 900 cfm reclaimer, 2 HP, 3-PH .....	12309
2.	Plate, motor mount	
	600 cfm .....	12004
	900 cfm .....	12005
3.	Housing,	
	600 cfm exhauster .....	12272
	900 cfm exhauster .....	12271
4.	Gasket, 5/16" x 1" adhesive backed,	
	(4 ft. required for each location) .....	00187

5.	Paddle wheel	
	600 cfm .....	12334
	900 cfm .....	12335
6.	Inlet pipe adaptor	
	600 cfm, 5" .....	12361
	900 cfm, 6" .....	12363
	900 cfm, 5" for steel media .....	14411
7.	Gasket, inlet adaptor	
	600 cfm .....	11779
	900 cfm .....	11759
8.	Wear plate	
	600 cfm .....	13011
	900 cfm .....	14055
9.	Screen assembly .....	21265
10.	Gasket, door .....	11745
11.	Spring latch assembly .....	12263
12.	Gasket, 2" adhesive backed,	
	specify ft. required .....	13089
13.	Vortex cylinder assembly, adjustable,	
	for exhauster mounted reclaimer, optional	
	600 cfm .....	19062
	900 cfm .....	23047
14.	Vortex cylinder assembly, adjustable,	
	standard with pull-through reclaimer	
	600 cfm .....	19080
	900 cfm .....	23046
15.	Hose support inlet, optional for 900 cfm only	
	5", for use with steel media, w/5" hose ....	22324
	6", standard .....	16887
16.	Hose, light lined flex, specify feet required	
	5" ID for 600 cfm .....	12467
	6" ID for 900 cfm .....	12468
17.	Clamp, hose	
	For 600 cfm, 5-1/2" .....	11578
	For 900 cfm, 6-1/2" .....	00750

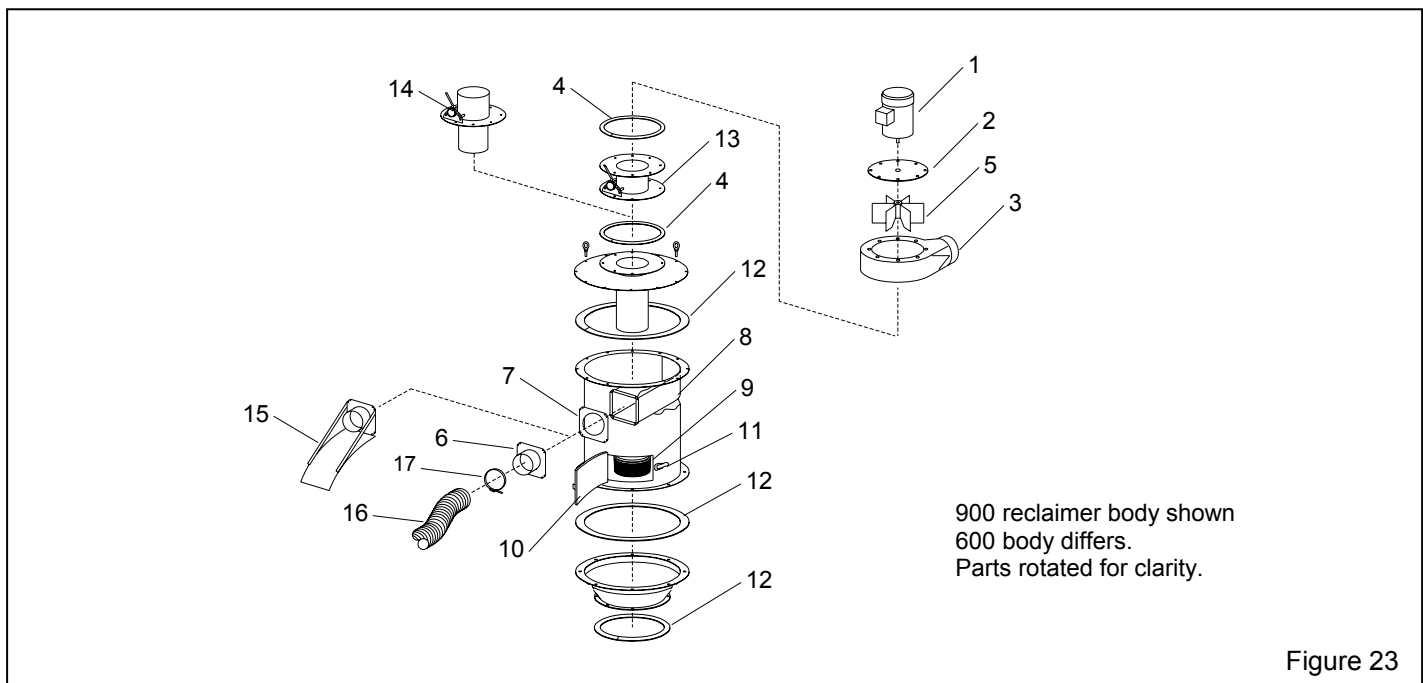


Figure 23

9.10 Dry Filter Dust Collector, Figure 24

Item	Description	Stock No.
(-)	Dry filter, complete	
	600 cfm .....	12700
	900 cfm .....	12701
1.	Hose, flex, bulk, specify ft. required, 5 ft. std.	
	6" ID for 600 cfm .....	12452
	7" ID for 900 cfm .....	12448
2.	Inlet adaptor w/ damper	
	6" for 600 cfm .....	14272
	7" for 900 cfm .....	14273
3.	Gasket, inlet adaptor	
	600 cfm .....	11762
	900 cfm .....	11763
4.	Gasket, dust drawer .....	11771
5.	Clamp, hose .....	11576
6.	Spring latch assembly .....	12263
7.	Drawer, dust	
	for 600 cfm .....	14275
	for 900 cfm .....	14276
8.	Plate, inlet cover	
	for 600 cfm .....	14277
	for 900 cfm .....	14278
9.	Tubular filter, each .....	11503
	600 cfm requires 25	
	900 cfm requires 40	
10.	Shaker, tube filter	
	600 cfm .....	12414
	900 cfm .....	12415
11.	Handle, shaker .....	12899

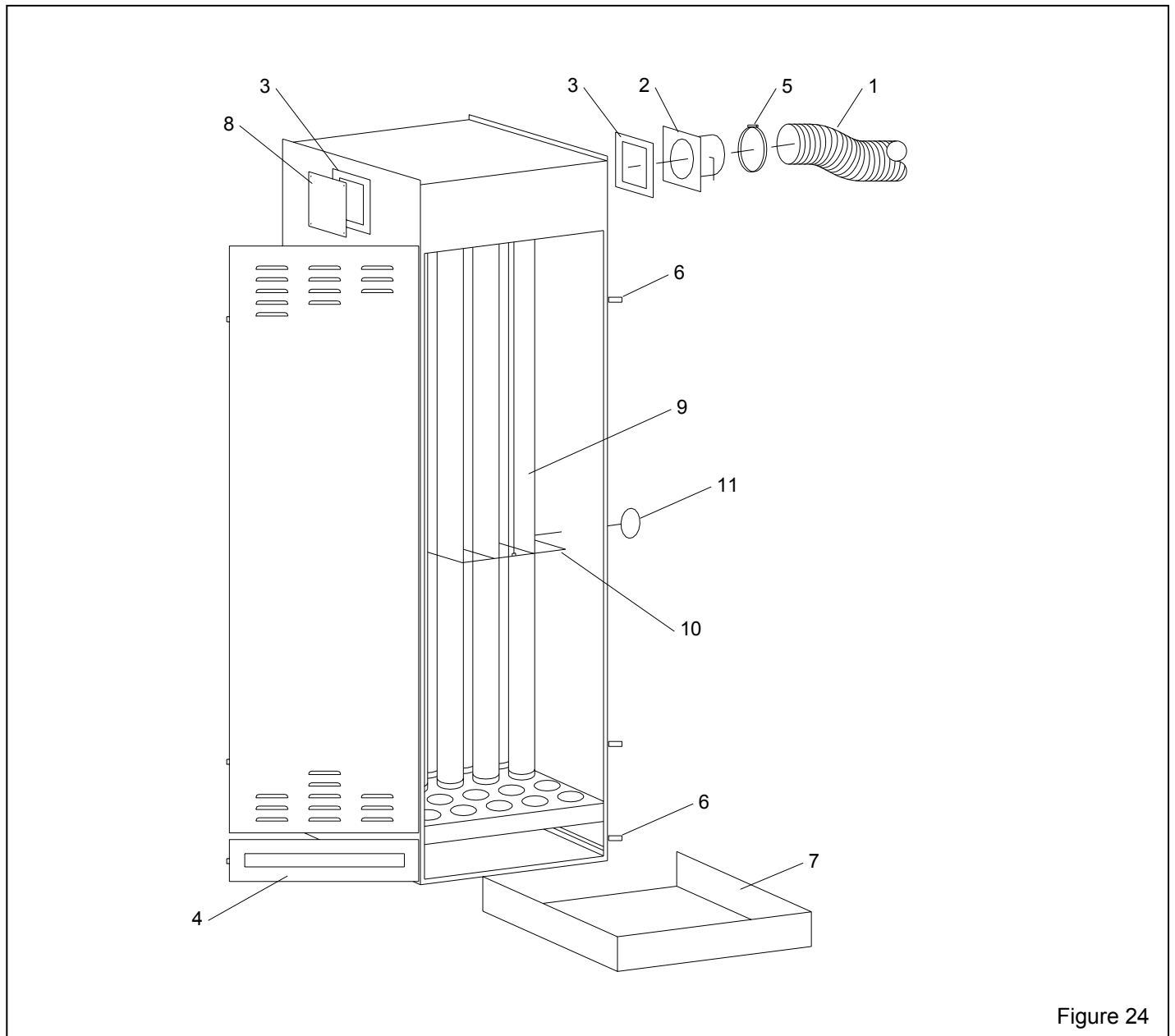


Figure 24