

# SHOP-MATE™

## 2648 Suction Blast Cabinet

### O. M. 28692

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

Clemco proudly provides products for the abrasive blast industry and is confident that industry professionals will use their knowledge and expertise for the safe and efficient use of these products.

The products described in this material, and the information relating to these products, are intended for knowledgeable, experienced users. It is the responsibility of the user to ensure that proper training of operators has been performed and a safe work environment is provided.

No representation is intended or made as to the suitability of the products described here for any purpose or application, or to the efficiency, production rate, or useful life of these products. All estimates regarding production rates or finishes are the responsibility of the user and must be derived solely from the user's experience and expertise, not from information contained in this material.

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This equipment is only one component of a cabinet blasting operation. Other products, such as air compressors, air filters and receivers, abrasives, equipment for ventilating, dehumidifying, or other equipment, even if offered by Clemco, may have been manufactured or supplied by others. The information Clemco provides is intended to support the products Clemco manufactures. Users must contact each manufacturer and supplier of products used in the blast operation for warnings, information, training, and instruction relating to the proper and safe use of their equipment.

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## 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 the Shop-Mate™ 2648 suction blast cabinet with pull-thru dust collector.

1.1.2 The instructions 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 Z535.4-2011, 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 you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

## NOTICE

Notice indicates information that is considered important, but not hazard-related, if not avoided, could result in property damage.

## CAUTION

Caution indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

## WARNING

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

## DANGER

Danger indicates a hazardous situation that, if not avoided, will result in death or serious injury.

### 1.3 General Description

1.3.1 The Shop-Mate™ cabinet is intended for light-duty, occasional use. Refer to other ZERO® cabinets with media reclamation systems and reverse-pulse cartridge dust collectors for frequent or prolonged blasting applications. The blast cabinet encloses the blasting environment to provide efficient blasting 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, condition of the blast surface product to be removed, and finish required. The cabinet consists of two major components:

1. Cabinet enclosure
2. Pull-thru bag-type dust collector

#### 1.3.2 Cabinet Enclosure:

Overall cabinet dimensions:  
48" wide x 26" deep x 69" high.

Door opening dimensions:

Refer to the insert in Figure 1 for nominal dimensions.

1.3.3 **Dust Collector:** The pull-thru dust collector utilizes cloth bag filter which collects dust on the outer surface. Dust bags perform adequately for occasional cabinet use. This type of dust collection must never be used in applications which generate toxic dust.

1.3.4 Refer to Figure 1 for the general arrangement of the cabinet and dust collector, and callouts of main components. Refer to Figure 2 for the blast gun and feed assembly layout.

### 1.4 Theory of Operation

1.4.1 Once the cabinet is correctly setup and turned ON, the cabinet is ready for operation by actuation of the foot pedal. Fully depressing the foot pedal causes air to flow through the blast gun. Air moving through the gun draws media from the cabinet hopper and into the blast gun mixing chamber. The media mixes with the air stream and is propelled out the nozzle. After striking the object being blasted, the heavier, reusable blast media falls through the mesh grate into the cabinet hopper for reuse.

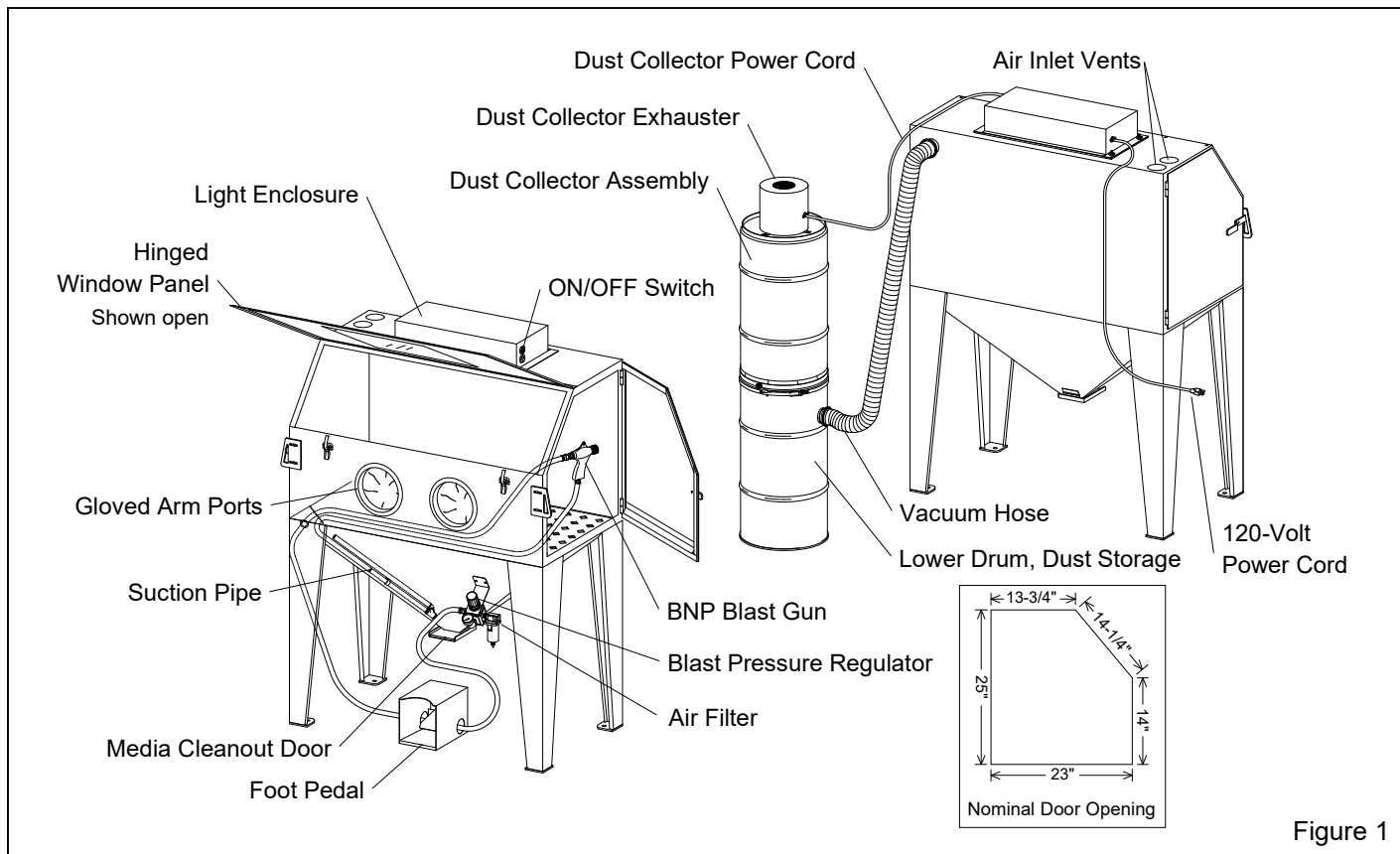


Figure 1

Lighter weight fines and dust which normally remain suspended are drawn from the cabinet and into the dust collector, which traps dust on the outer surface of the filter bag. Dust accumulates in the lower drum, and clean air discharges from the exhauster on the upper drum. When the foot pedal is released, blasting stops.

### 1.5 Gun and Feed Assembly

1.5.1 Refer to Figure 2 for the arrangement and components of the blast gun and feed assembly.

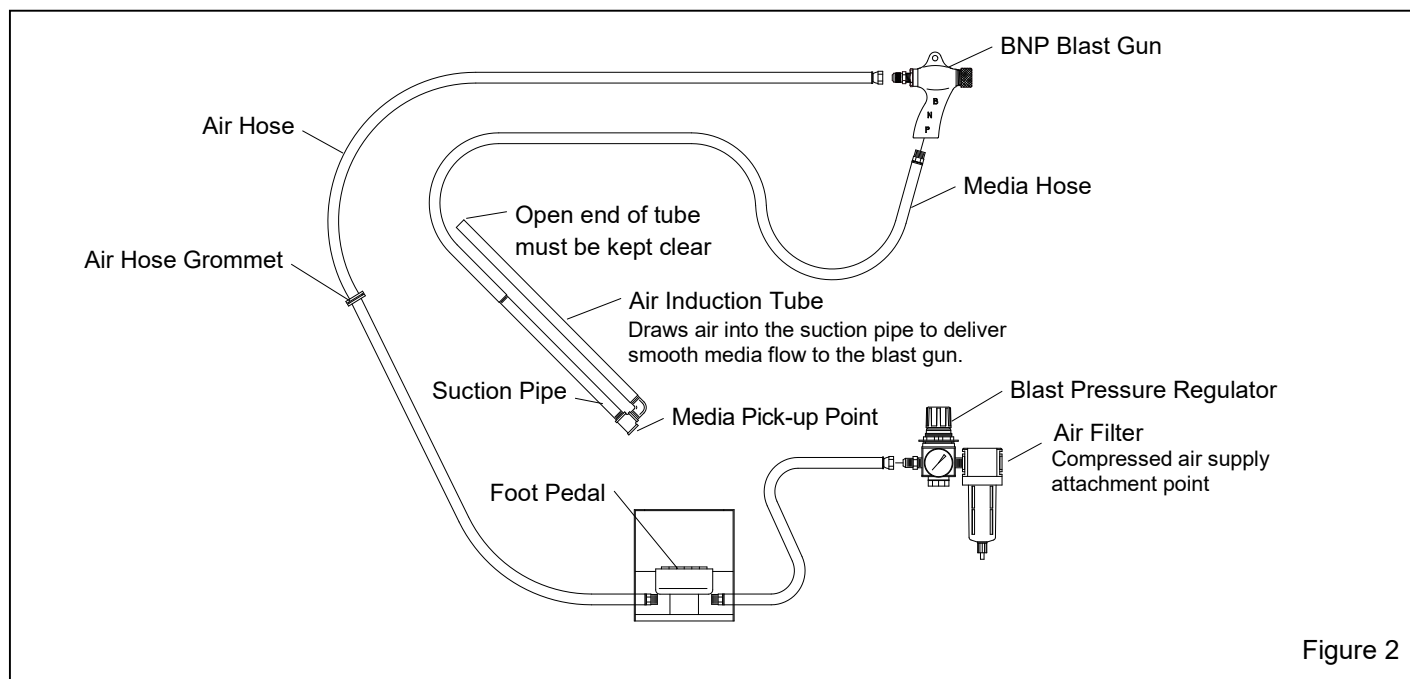


Figure 2

**1.6 Nozzle Options**

**1.6.1** The cabinet is furnished with a No. 5 (5/16" orifice) ceramic nozzle and No. 4 (1/8" orifice) air jet. A larger jet/nozzle combination, especially at higher pressures and with a dirty filter, may impair visibility or cause positive pressure within the cabinet and lead to dust leakage.

**1.6.2** Optional, more durable tungsten carbide and boron carbide nozzles are available and are shown under Section 11.4. Use boron carbide nozzles when blasting with aggressive media, as noted in Section 1.7.4.

**1.7 Media**

**1.7.1** Shop-Mate™ cabinet utilizes most common reusable media 18 mesh to 180 mesh, specifically manufactured for dry blasting. Media sizes shown are guidelines only, based on average conditions such as blast pressure and media friability.

Using coarser media than those recommended may result in flow problems. Media finer than those recommended may decrease visibility and increase carryover to the dust collector.

**1.7.2 Steel:** Steel grit or shot may be used. However, care must be taken to prevent ricocheting abrasive from peening the cabinet weldment.

**1.7.3 Sand and Slag:** Sand should never be used because of the respiratory hazards associated with media containing free silica. Slags are not recommended because they rapidly break down, are not recyclable, and produce excessive dust, making them unsuitable for cabinet applications.

**1.7.4 Silicon Carbide, Aluminum Oxide, and Garnet:** These are the most aggressive of the commonly used media. Aggressive media may be used, but the service life of any equipment components exposed to the media will be reduced. To avoid unscheduled down time, periodically inspect the blast hose, nozzle and internal gun parts, and dust bag for wear.

When using aggressive media, install rubber curtains for the cabinet interior and a boron carbide lined nozzle. Nozzles lined with boron carbide extend nozzle wear life. Refer to Section 11.4 Item 9.

**1.7.5 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 of any clumps.

**1.7.6 Fine-mesh Media:** Media finer than 180 could be too fine to avoid carryover. Fine media that remains suspended after blasting could be carried over into the dust collector.

**1.7.7 Lightweight Media:** Lightweight media that remains suspended in the air could be carried over to the dust collector.

**1.7.8 Plastic Media:** Plastic and similar lightweight and/or non-aggressive media are generally not recommended for suction-style cabinets because the lower blast velocity of suction blasting combined with the softer and lighter weight media, do not provide the media impact for productive blasting. Best performance from plastic media is achieved with pressure blasting, requiring a pressure vessel with a 60-degree conical bottom. Refer to Clemco's AEROLYTE cabinet line.

**1.8 Compressed Air Requirements**

**1.8.1** The size of the compressor required to operate the cabinet depends on the size of the air jet and blasting pressure. Unless otherwise specified, cabinets are supplied with a No. 4 (1/8" orifice) jet. Refer to the table in Figure 3 for the cfm requirements at different blast pressures. Consult with a compressor supplier for suggested compressor size based on the air consumption.

Air Consumption with No. 4 BNP Gun					
Blast Pressure PSI	50	60	70	80	90
CFM	15	17	19	21	24

Figure 3

**1.8.2** The air filter at the air inlet connection reduces condensed water from the compressed air. Its use is especially important in areas of high humidity, or when using fine-mesh media. Moisture causes media to clump and inhibits free flow through the feed assembly. If the filter does not remove enough moisture to keep media dry and flowing, it may be necessary to install an air dryer or aftercooler in the air supply line.

**1.9 Electrical Requirements**

**1.9.1** Electrical requirements: 120-VAC, 1-Ph, 60-Hz, with 15 Amps service. The cabinet draws approximately 8 amps.

**1.9.2** A power cord with u-ground plug is supplied on the cabinet and dust collector. The dust collector cord plugs into the receptacle located on the light enclosure; no additional wiring is required. Power is supplied to the collector when the cabinet is switched ON and shuts off when switched OFF.

## **⚠ WARNING**

**Do not use electrical adaptors that eliminate the ground prong on 120-volt plugs. Doing so can cause electric shock and equipment damage.**

## **2.0 INSTALLATION**

### **2.1 Assembly of Loose Components**

#### **2.1.1 Foot pedal, filter and regulator assembly**

Refer to Figure 4

The foot pedal, filter/regulator assembly, and interconnecting hose are packaged in a box and require minimal assembly.

**2.1.1.1** Remove the two screws located on the front cabinet hopper. Use the screws to attach the

filter/regulator assembly bracket to the same screw holes.

**2.1.1.2** Spray silicone or similar lubricant on the outside of the green BNP gun air hose and inside the hose grommet located on the left side of the cabinet hopper. Push the air hose through the grommet, leaving enough hose inside the cabinet to fully maneuver the BNP gun.

**2.1.1.3** Spray a small amount of lubricant on the inside of the open end of the air hose and push the hose onto the fitting threaded into the left side of the foot pedal.

**2.1.1.4** Connect the swivel connector on the air hose connected to the right side of the foot pedal to the fitting on the pressure regulator.

#### **2.1.2 Dust Collector**

The dust collector requires the installation of the filter bag and attachment of the upper drum to the lower storage drum. To install the filter bag, proceed as follows:

**2.1.2.1** Turn the upper drum upside down and place it on a padded surface to protect the exhaustor housing.

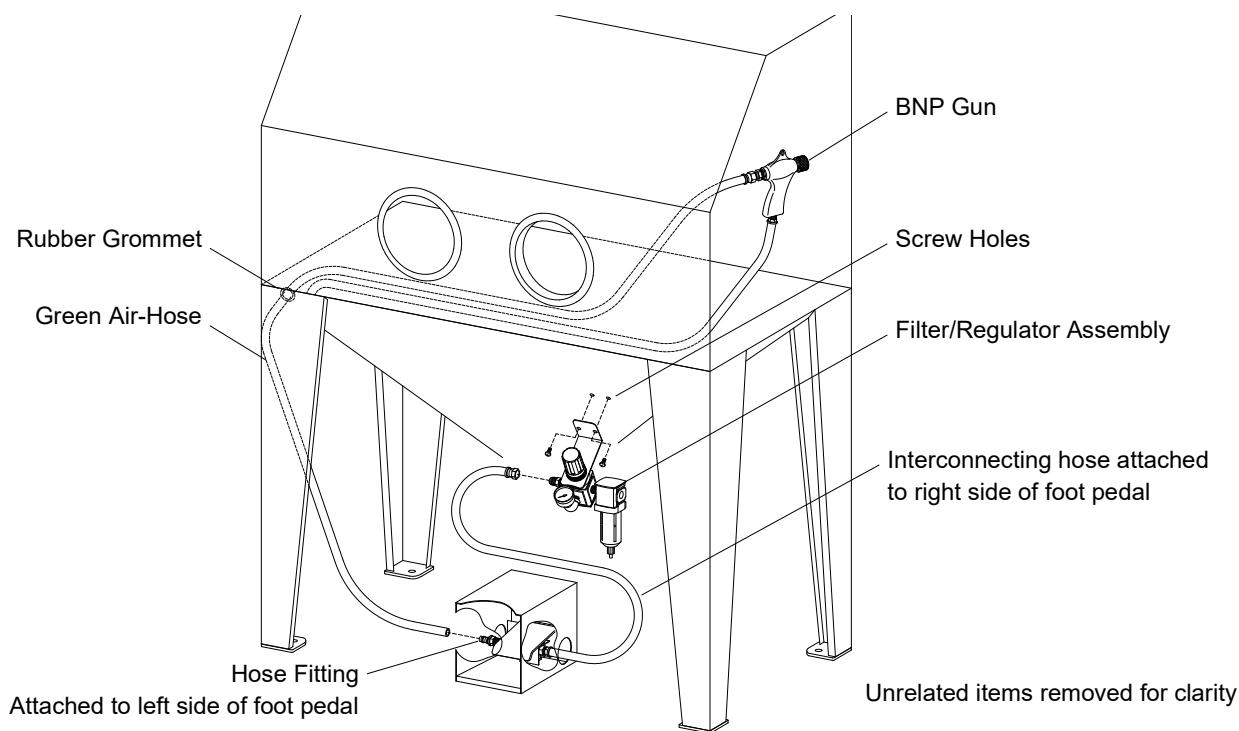
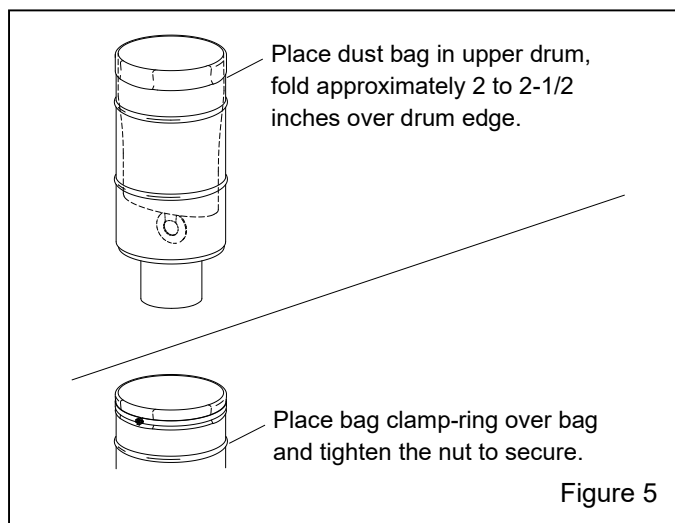
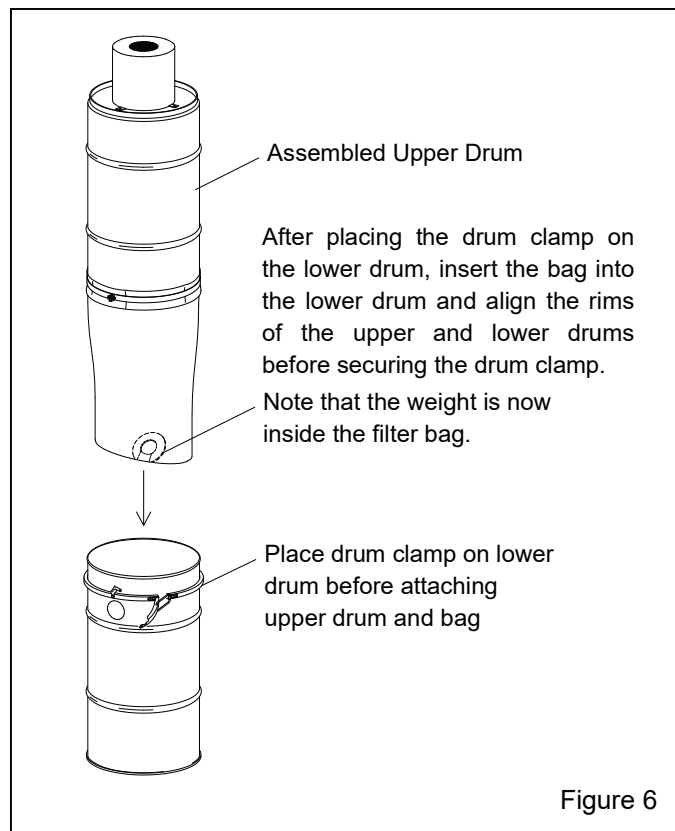


Figure 4

2.1.2.2 Insert the filter bag (weighted on the outside) into the drum and fold approximately 2" to 2-1/2" of the open end of the filter over the drum edge as shown in the upper illustration in Figure 5.



2.1.2.3 Place the bag clamp-ring over the bag and tighten the clamp bolt to secure. **NOTE: Make sure there is enough space between the clamp ring and drum rim to attach the drum clamp and connect the upper and lower drums as shown in Figure 7.**

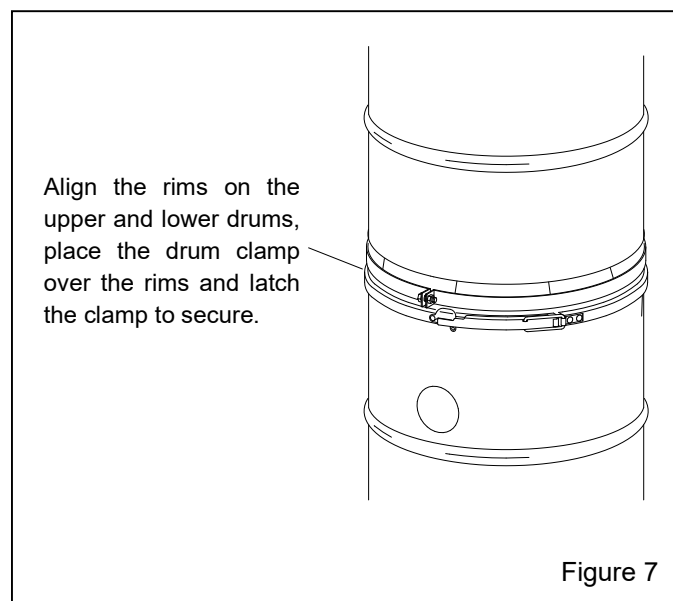


2.1.2.4 Place the lower drum on the floor and loosely place the drum clamp as shown in Figure 6.

2.1.2.5 Place the upper drum in an upright position and insert the dust bag into the lower drum as shown in Figure 6.

2.1.2.6 Place the upper drum onto the lower drum and align the rims.

2.1.2.7 Place the drum clamp over the rims of the upper and lower drums and latch the clamp to secure the two drums. Assembly of the dust collector is complete.



## 2.2 General Installation Notes

2.2.1 Refer to Figure 1 for the general arrangement. Place all components in a convenient 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. Place the dust collector behind the cabinet with hose connection toward the cabinet and with as few hose bends as possible. Provide enough clearance around the dust collector to remove the upper drum and empty the lower storage drum.

2.2.2 If there is a possibility of small parts falling off the object being blasted, or of paint chips or other material plugging the blast gun, place an appropriately-sized screen under the grate to trap that material from falling into the media.

## 2.3 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.

**2.3.1** Install an isolation valve and bleed-off valve where the air supply is tapped into the compressed air system. This enables depressurization of the compressed-air line before performing maintenance.

**2.3.2** Refer to Figure 8 Apply thread sealant to the male threads of an air fitting that is compatible with the air supply hose fitting and install it onto the 3/8-NPT air filter located under the cabinet hopper. If preferred, slip a short length of 1/4" tubing over the filter's drain barb to direct drain water into a container. **Note that the style of connection shown in Figure 8 is for reference only.**

**2.3.3** The recommended minimum ID of compressed-air supply hose to the cabinet is 1/2" ID; use 3/4" ID if the line is longer than 25 ft. A smaller diameter hose may reduce blasting efficiency.

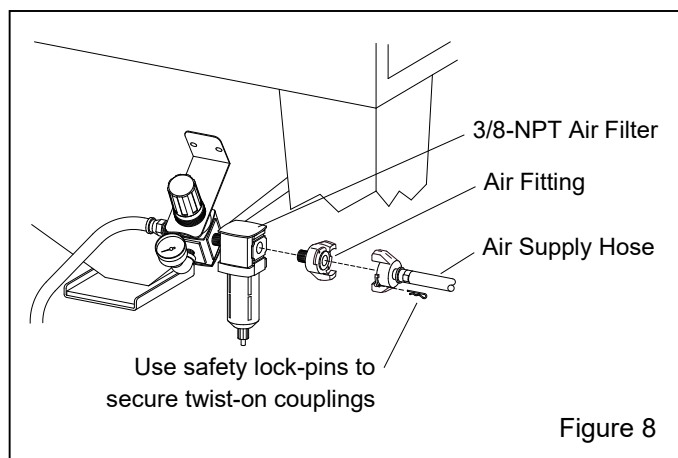


Figure 8

**2.3.4** Connect the air line from the air source to the air filter inlet.

## 2.4 Ground Cabinet

**2.4.1** To prevent static electricity build up, attach an external grounded wire from an earth ground to the grounding bolt on the right rear cabinet leg.

**2.5** Place the dust collector at a convenient location at the back of the cabinet.

## 2.6 Connect Vacuum Hose

**2.6.1** Make sure a vacuum hose grommet is installed on both ends of the vacuum hose and insert the hose into the opening in the back of the cabinet and side of the dust collector as shown in Figure 9.

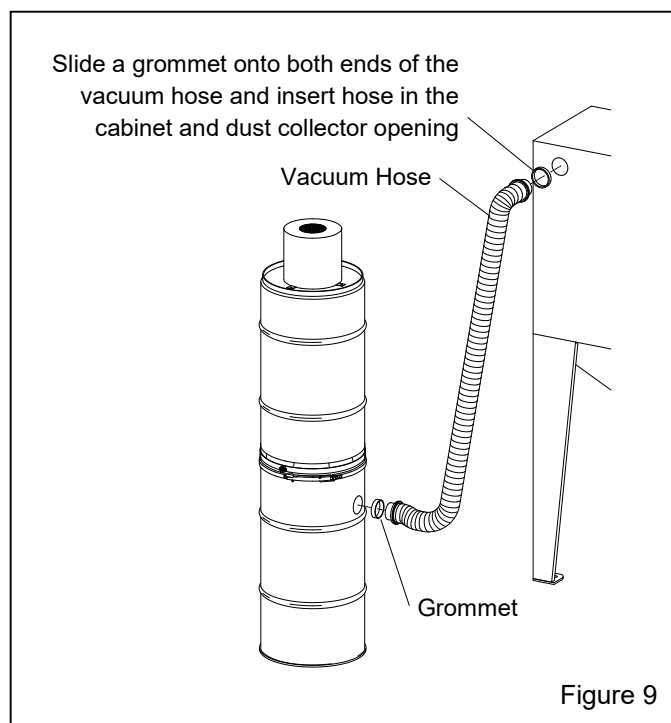


Figure 9

## 2.7 Connect Electrical Service

**2.7.1** The cabinet and dust collector are supplied with a u-ground plug. Plug the dust collector cord into the socket below the ON/OFF switch located on the light enclosure and plug the cabinet cord into a 115-volt outlet.

### **⚠ WARNING**

Do not use electrical adaptors that eliminate the ground prong on 120-volt plugs. Doing so could cause electric shock and equipment damage.

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

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### 3.0 INITIAL TESTS

- 3.1** Make sure the hopper is free of any packing, debris, or other materials.
- 3.2** Slowly open the air supply valve to the cabinet and listen for leaks or open lines. Shut off the valve immediately if any major leak is heard.
- 3.3** Check all fittings for air leaks. Shut off the air supply and correct any that is found.
- 3.4** Adjust the pressure regulator on the front of the cabinet hopper to 80 psi per Section 7.1.
- 3.5** Start the dust collector exhaust motor by placing the switch on the light enclosure to the ON position. When the dust collector cord is plugged into the socket below the switch, the switch operates both the lights and dust collector motor. Both should start when the switch is ON.
- 3.6** Insert hands into rubber gloves and grasp the BNP blast gun.
- 3.7** Step on the foot pedal within the guard and apply pressure to depress the pedal. NOTE: Blasting will start immediately. When satisfied the cabinet and dust collector are operational, release pressure on the foot pedal to stop blasting. Proceed to Section 4.
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### 4.0 MEDIA LOADING AND UNLOADING

NOTE: Before adding media, make sure the suction pipe is not resting on the media cleanout door. If necessary, loosen the clamp and adjust the tube so the tee is approximately 1/2" to 1" above the door.

#### 4.1 Media Loading

- 4.1.1** Pour approximately 25 lbs. of clean dry media through the grate into the cabinet hopper. Make sure the media is filled away from the open end of the air induction tube located next to the suction pipe.
- 4.1.2** Do not overfill; overfilling may cause media to pack around the inlet of the suction pipe (especially finer mesh media) and impede media flow.

#### 4.2 Media Unloading

- 4.2.1** Empty the cabinet of spent media by placing an empty suitable disposal container under the media cleanout door and press down on the front of the door to

open. Media will flow through the door until the cabinet is empty or the container is full, and the door is released. The door closes when hand-held pressure is released.

NOTE: Blasting media is usually non-toxic, however, some materials removed by blasting may have disposal restrictions. Obtain SDS sheets for media and identify all material removed by the blast process. Check with proper authorities for disposal restrictions.

**4.3 Purging the Cabinet of Spent Media.** When changing from one type of media to another, especially when changing from an aggressive media such as aluminum oxide or steel to a softer media such as glass bead, total purging may be needed.

**4.3.1** Unload spent media per Section 4.2. When the cabinet is empty, close the cleanout door and press the foot pedal. Blow down the inside of the cabinet to remove media and dust clinging to the walls and in corners. Open the cleanout to empty, repeat the process if needed. If total purging is required to prevent contaminating parts, remove the vacuum hose from the back of the cabinet, start the dust collector, and use the hose to vacuum the inside of the cabinet.

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### 5.0 LOADING and UNLOADING PARTS

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## 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 parts are on a turntable.**

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- 5.1** Load and unload parts through either side door or the hinged window-panel.
- 5.2** Parts must be free of oil, water, grease, or other contaminants that will cause media to clump, or clog filters.
- 5.3** When blasting small parts, place an appropriately-sized screen over the grate (or under the grate when frequently blasting small parts) to prevent parts from falling into the hopper.
- 5.4** Close and latch the door securely.
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## 6.0 Blasting Operation

### **⚠ CAUTION**

- Do not operate the foot pedal unless all doors are closed and securely latched.
- Always use blast gloves.
- Avoid pointing the blast nozzle toward the view window.
- Keep all doors closed during blasting.
- After blasting, keep doors closed and exhauster running until the cabinet is clear of all airborne dust.
- Stop blasting immediately if dust leaks are detected.

**6.1** Slowly open the air valve on the air supply hose to the cabinet. Check for air leaks on the initial start up, and periodically thereafter.

**6.2** Turn ON the lights and exhauster. The ON/OFF switch performs both functions.

**6.3** Load parts.

**6.4** Close door(s) and latch securely

**6.5** Insert hands into rubber gloves.

**6.6** To blast, hold the gun firmly, point the gun only at parts to be blasted, and apply pressure to the foot pedal; blasting begins immediately.

### **⚠ WARNING**

**Shut down the cabinet immediately if dust discharges from the dust collector or cabinet. Make sure the dust collector filter is correctly installed and not worn or damaged. Prolonged breathing of any dust could result in serious lung disease or death.**

**6.7** Adjust blast pressure per Section 7.1.

**NOTE:** When blasting parts off the grate, use a solid conductive back rest to support the part. Without this assist, static electricity could build up in the ungrounded part and cause static shocks. Whenever possible, avoid holding small parts that require blasting into the glove.

**6.8** When blasting small parts, place an appropriately-sized screen over the grate (or under the grate when frequently blasting small parts) to prevent parts from falling into the hopper. If an object should fall through the grate, stop blasting immediately and retrieve it.

## 6.9 Stop Blasting

**6.9.1** To stop blasting, remove pressure from the foot pedal.

**6.9.2** Keep doors closed and exhauster running until the cabinet is clear of all airborne dust.

**6.10** Unload parts. Shut off the air supply valve, drain the air filter, and switch OFF the lights and exhauster.

## 6.11 Blasting Technique

**6.11.1** 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 3" to 6" from the surface of the part.

## 7.0 ADJUSTMENTS

### 7.1 Blasting Pressure, Figure 10

**7.1.1** The pressure regulator located on the front of the cabinet hopper enables the user to adjust blasting pressure to suit the application. The suitable pressure for most purposes is 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 break down. If pressure is too high, suction in media hose will decrease, and if high enough, cause blow-back in the hose. In all cases, optimal production can only be achieved when pressure is carefully monitored.

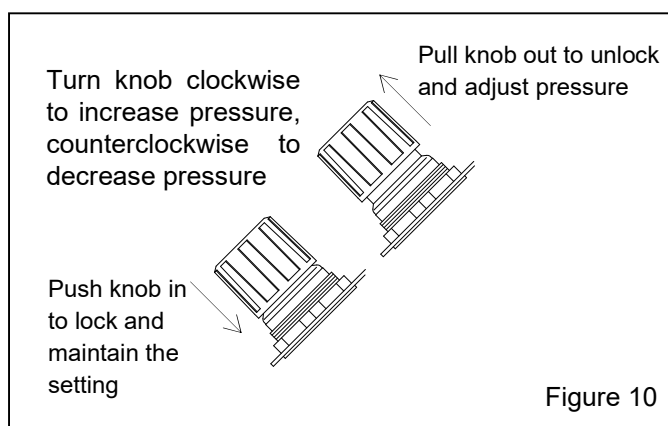


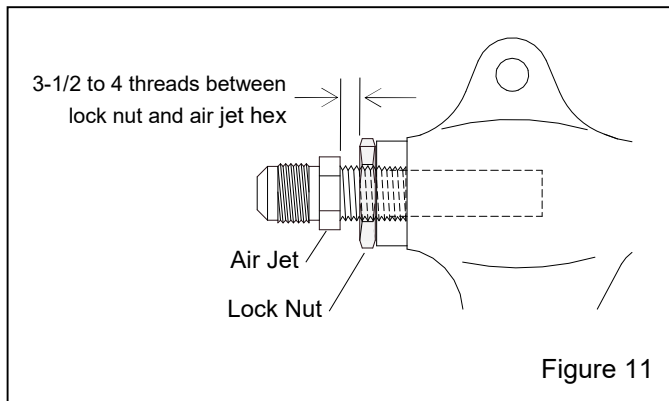
Figure 10

**7.1.2** To adjust, unlock the knob by pulling it out as shown in Figure 10, and turn it clockwise to increase pressure or counterclockwise to decrease pressure. Pressure will usually drop from closed-line pressure

when blasting starts. Once operating pressure is set, lock the knob to maintain the setting.

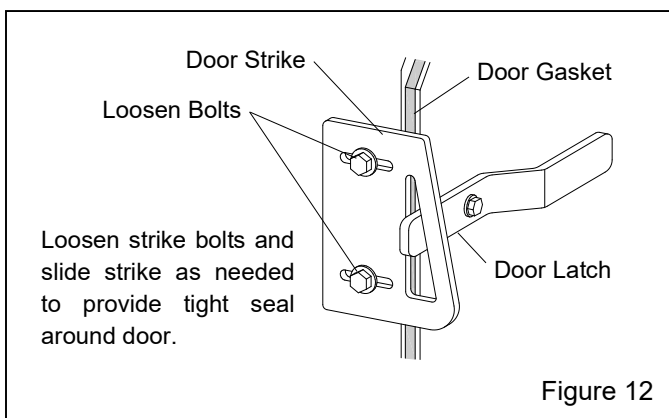
## 7.2 Air Jet Adjustment, Figure 11

**7.2.1** Thread the air jet 4-1/2 to 5 full turns into the gun body. Doing so will leave 3-1/2 to 4 threads exposed past the lock nut. Tighten the lock nut to hold the jet in place. Refer to Section 11.4, Item 25 for optional adjusting tool, which correctly positions the jet.



## 7.3 Side-Door Strike, Figure 12

**7.3.1** Loosen bolts and adjust the door strike to compress the door gasket and provide a positive seal around the door when the door is latched. Retighten bolts to secure.



**7.3.2** Replace the door gasket when the strike is adjusted fully inward the gasket does not provide a seal.

## 8.0 PREVENTIVE MAINTENANCE

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

### 8.1 Nozzle, Refer to Section 9.2

**8.1.1** Remove the nozzle nut, nozzle, and o-ring and inspect the nozzle for wear. Replace the nozzle when its diameter has increased by 1/16", or when suction diminishes noticeably.

**8.1.2** Inspect internal parts of the BNP gun for wear. Inspection and replacement of the air jet cover before it wears through will prolong the life of the jet.

### 8.2 Media Hose

**8.2.1** To avoid unscheduled down-time, periodically inspect the media hose for thin spots, by pinching it every 6 to 12 inches.

### 8.3 Pull-Out Protective Window Cover

**8.3.1** Rapid frosting of the view window can be avoided by directing ricocheting media away from the window, and by maintaining the pull-out window cover. Using the protective cover prolongs the life of the view window. Refer to Section 9.6 to replace the roll of window cover.

**8.3.2** To remove the frosted section of the window cover:

1. Loosen the four window-frame wing nuts enough to release pressure on the window frame and cover.
2. Grip the edge of the protective cover and pull it until the frosted section is removed from under the glass.
3. Trim the excess film, leaving enough to grip when the protector becomes frosted.
4. Tighten the window-frame wing nuts enough to compress the window gasket but do not overtighten; overtightening could damage the glass.

### 8.4 Compressed-Air Filter

**8.4.1** The cabinet is equipped with a manual-drain air filter located on the front of the cabinet hopper just ahead of the pressure regulator. Drain the filter at least once a day, and more often if water is present. Moist air inhibits the flow of media. If desirable, slip a short length of 1/4" tubing over the drain barb to direct drain water into a container. Drain the air line and receiver tank regularly. If the filter does not remove enough moisture to keep media dry and flowing, it may be necessary to install an air dryer or aftercooler in the compressed-air supply line.

## 8.5 Dust Collector

### **⚠ WARNING**

**Prior to doing any maintenance or opening the dust collector, the employer must meet OSHA standards required but not limited to 29CFR 1910 for**

- **Appropriate Respirator**
- **Protective Clothing**
- **Toxic and Hazardous Substances**

**Toxicity and health risk vary with type of dust generated by blasting. Identify all material that is being removed by blasting and obtain a Safety Data Sheet (SDS) for the blast media. Waste dust in the collector can cause serious injury or death through inhalation, absorption, or consumption.**

**8.5.1** Empty the dust drum regularly. Begin by checking the drum daily and adjust frequency based on usage and breakdown rate of media. Do not allow more than 2" to 3" to collect in the bottom of the drum.

**NOTE:** Obtain Safety Data Sheets (SDS) for the media and identify all material removed by the blast process. Check with proper authorities for disposal restrictions.

**8.5.2** Dust collects in the lower drum. To empty the dust drum:

1. Unplug the cord from the cabinet light enclosure.
2. Unlatch the drum clamp and remove the upper section from the lower drum.
3. Dump the contents into a suitable disposal container. **Check with proper authorities for disposal restrictions.**
4. Reassemble the upper and lower drums and latch securely. Plug cord into cabinet light enclosure.

**8.5.3** Replace the filter bag at least every four months.

- Replace bag sooner if blasting conditions have saturated the bag and prevent adequate air movement through the cabinet.
- Replace damaged filters immediately if dust is seen coming from the exhaustor.

Refer to Section 9.7 to replace the bag.

## 9.0 SERVICE MAINTENANCE

### 9.1 Gloves

**9.1.1** 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.

**9.1.2 Band-clamp type:** Band-clamp type gloves are held in place by metal band-clamps on the inside of the cabinet. To replace, loosen the clamps with a screwdriver, replace the gloves, and tighten the clamps.

**9.1.3 Quick-Change type, clampless installation:** Quick-change gloves are held in place using spring rings sewn into the attachment end of the glove. To install, insert the glove into the arm port, so one spring is on the inside of the port and the other is on the outside, sandwiching the arm port between both spring rings.

### 9.2 BNP Gun Assembly, Figure 13

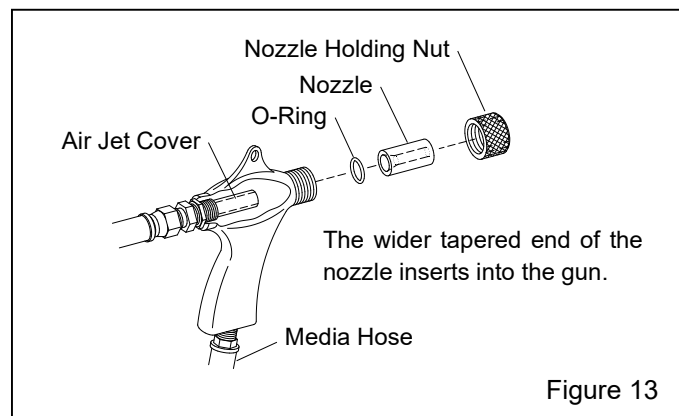


Figure 13

**9.2.1** Replace the nozzle when its diameter has increased by 1/16", or when suction diminishes noticeably. To change the nozzle, unscrew the holding nut from the gun end, and pull the nozzle from the gun. Inspect the nozzle o-ring and replace if worn or damaged. Insert a new nozzle, placing the tapered end toward the jet. Screw the holding nut onto the gun.

### 9.3 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.**

**9.3.1** Remove the four window-frame wing nuts and lift the window from off the studs.

**9.3.2** Remove the old window.

**9.3.3** Inspect the window gasket; if compressed or damaged, replace it per section 9.4.

**9.3.4** Set the new window on the lower studs, squarely over the window opening, making sure that all edges of the window are centered and overlapping the window gasket.

**9.3.5** Place the window frame over the studs and tighten the frame nuts. Tighten the window-frame wing nuts enough to compress the window gasket but do not overtighten; overtightening could damage the glass.

#### 9.4 Window Gasket Replacement, Figure 14

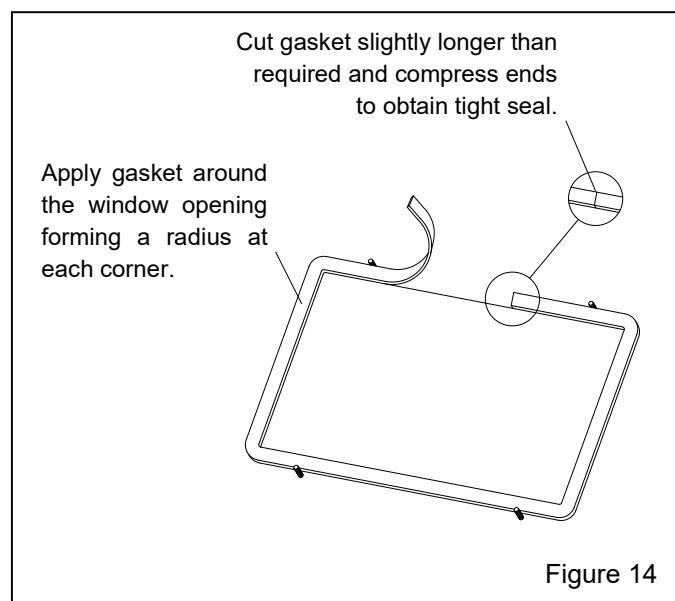
**9.4.1** Inspect the gaskets when changing the view window. Replace the gasket at the first sign of media leakage around the view window or if gasket is worn, compressed, or otherwise damaged.

**9.4.2** Remove the view window and window frame per Section 9.3.

**9.4.3** Fold the protective window cover over, away from the window opening.

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

**9.4.5** Peel a short section of adhesive backing from the strip gasket and adhere the gasket to the center of the top edge of the window opening, as shown in Figure 14. Peel additional backing as needed and work the strip around the radius of each corner, pressing it firmly to bond. Trim the gasket to fit and compress the ends to seal.



**9.4.6** Fold the window protector over the gasket, centering it between the upper and lower window studs.

**9.4.7.** Reassemble the view window and frame per Section 9.3, making sure the window projector extends past the end of the frame enough to grip it and pull the frosted section from the frame.

#### 9.5 Light Enclosure (Gasket, Lens, and Bulb)

### ⚠ WARNING

**Fall Hazard: Follow OSHA Regulations, found in 29CFR1910.Subpart D and F, for fall protection when working above 4 feet.**

**9.5.1** Unplug the power cord from the electrical supply.

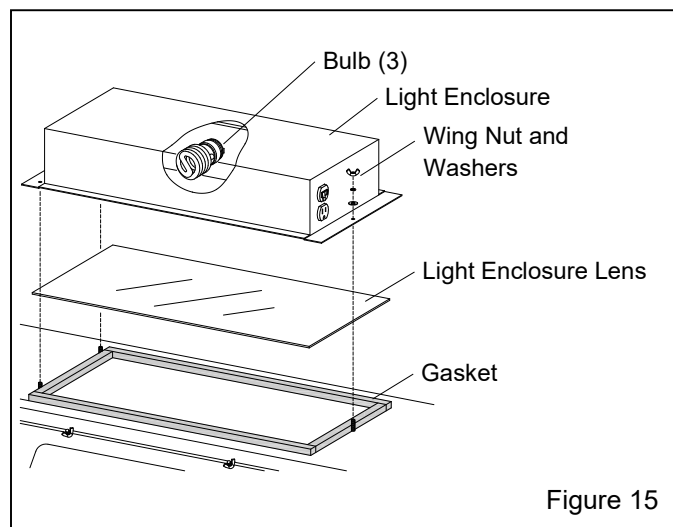
**9.5.2** Remove the three wing nuts and washers holding the light enclosure to the cabinet and lift the enclosure off the cabinet as shown in Figure 15.

#### 9.5.3 Gasket replacement

**9.5.3.1** Inspect the gasket and replace it if worn, compressed or damaged, or if there is a leak between the light enclosure and cabinet.

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

**9.5.3.3** Lay a section of strip gasket next to the opening, and cut to length, allowing 1" 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 15. Press the gasket firmly to bond. Repeat the process for each side, compressing the ends to seal.



### 9.5.4 Lens replacement

**9.5.4.1** Inspect the lens and replace if damaged or abraded from blasting.

**9.5.4.2** Place the lens squarely over the opening and between the light enclosure studs.

### 9.5.5 Bulb replacement

**9.5.5.1** Temporarily plug the power cord to the power supply and check bulbs. Note any bulb that is not lit, unplug the cord, and replace faulty bulb(s).

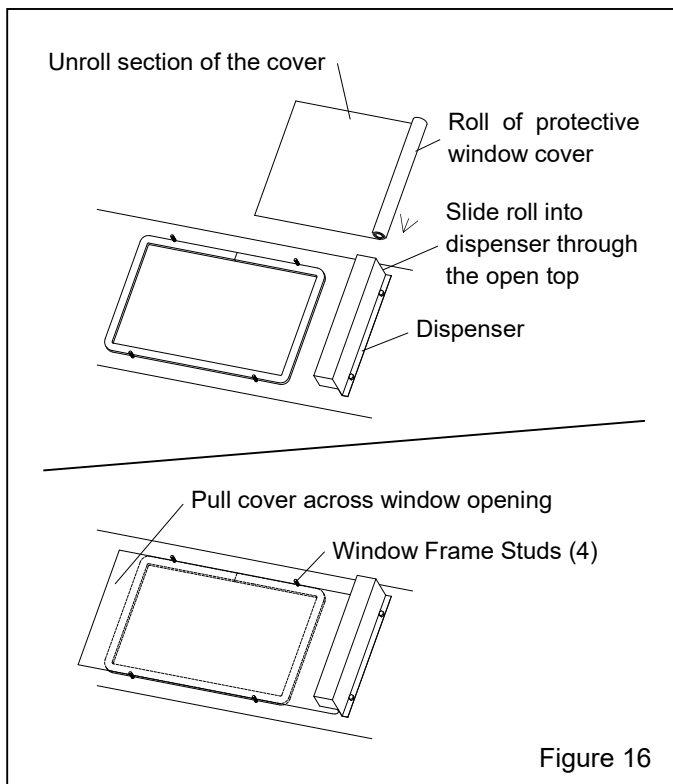
**9.5.6** Reattach the light enclosure assembly to the cabinet in reverse order.

## 9.6 Replace Pull-Out Protective Window Cover

**9.6.1** Remove window frame and window per Section 9.3.

**9.6.2** Unroll about a foot of the protective cover and slide the roll (flat-unrolled side toward the cabinet) into the open-top of dispenser as shown in Figure 16.

**9.6.3** Pull the cover across the window opening, placing it between the window frame studs.



**9.6.4** Replace the window frame making sure a short length of the cover extends past the frame to grip when the protector becomes frosted. Do not overtighten the window wing nuts; overtightening could damage the glass.

## 9.7 Filter Bag Replacement, Figure 17

**Replace damaged filters immediately if dust is seen coming from the exhauster.**

**9.7.1** Unplug dust collector power cord from cabinet light enclosure.

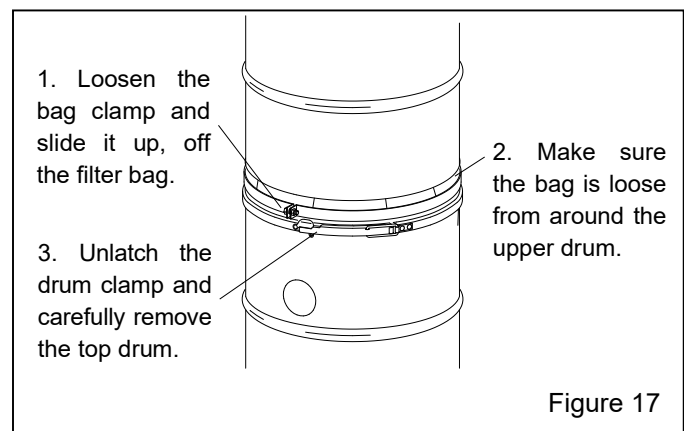
**9.7.2** Remove the vacuum hose from lower dust collector drum.

**9.7.3** Loosen the bolt securing the bag clamp to the upper drum, slide the bag clamp up off the bag and loosen the bag from the rim on the upper drum, as noted in Figure 17. Doing so loosens the bag from the upper drum assembly and keeps the old bag in the lower dust storage drum.

**9.7.4** Unlatch the drum clamp and remove the upper drum assembly, keeping the old bag in the lower drum.

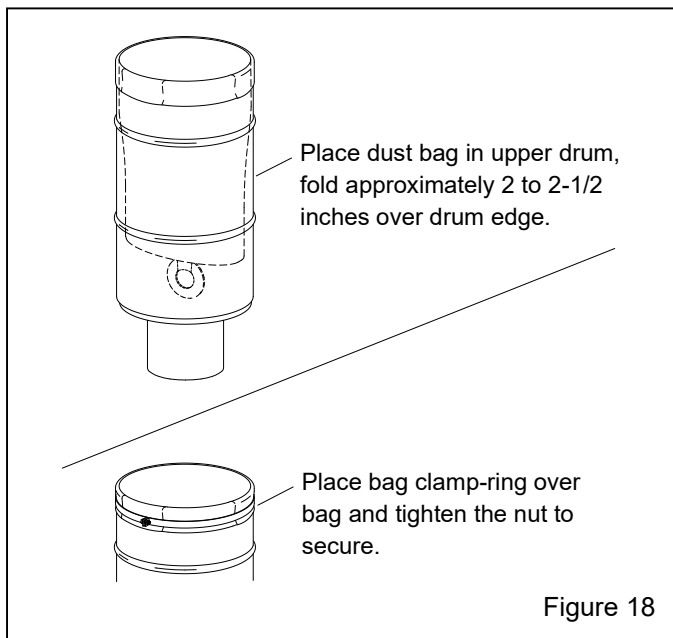
**9.7.5** Remove the upper drum assembly and place it upside down on a padded surface.

**9.7.6** Dump the contents of the lower drum, including the bag into a suitable disposal container. **Check with proper authorities for disposal restrictions.**



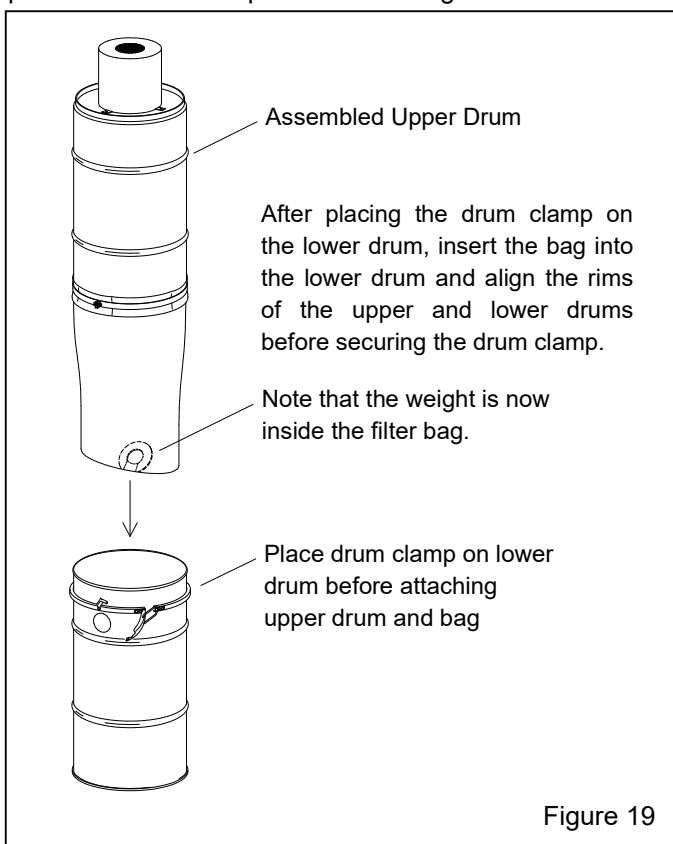
**9.7.7** Inspect the inside of the upper drum assembly and wipe off any dust residue with a damp cloth until clean.

**9.7.8** Insert a new filter bag (weighted on the outside) into the drum and fold approximately 2" to 2-1/2" of the open end of the filter over the drum edge as shown in the upper illustration in Figure 18.

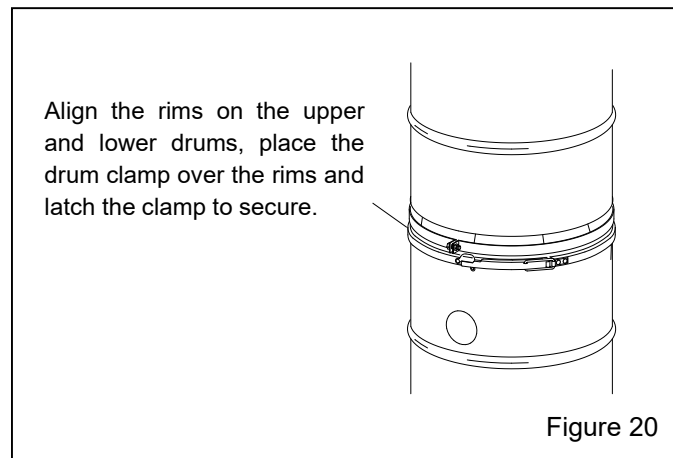


**9.7.9** Place the bag clamp-ring over the bag and tighten the clamp bolt to secure. **NOTE: Make sure there is enough space between the clamp ring and drum rim to attach the drum clamp and connect the upper and lower drums as shown in Figure 20.**

**9.7.10** Place the lower drum on the floor and loosely place the drum clamp as shown in Figure 19.



**9.7.11** Refer to Figure 20 and align the rims on the upper and lower drums, place the drum clamp over the rims and latch the clamp to secure



**9.7.12** Replace the vacuum hose and plug the power cord into the light enclosure.

## 10.0 TROUBLESHOOTING

### **⚠ WARNING**

**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 blast gun securely.
  - Operate the foot pedal.
- Never bypass the foot pedal or wedge it in the operating position.

#### 10.1 Poor visibility

**10.1.1** Dirty filter bag. Replace the filter bag at least every four months. Replace bag sooner if blasting conditions have saturated the bag and prevent adequate air movement through the cabinet.

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

**10.1.3** Air inlet vents blocked restricting air movement through the cabinet. Do not place any objects on top of cabinet that could block the inlet vents.

**10.1.4** Leak in vacuum hose. Inspect hose and grommets for leaks

**10.1.5** Blockage in vacuum hose. Inspect filter bag.

## **10.2 Abnormally high media consumption**

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

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

**10.2.3** Blast pressure too high for the media, causing media to break down.

## **10.3 Reduction in blast cleaning rate**

**10.3.1** Low media level reducing media flow. Check media level and replenish or replace as needed.

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

**10.3.3** Blockage in media hose or gun. Blockage may occur because of media in the air induction tube. Make sure the tube is clear of media.

**10.3.4** Suction pipe resting against the media clean-out door, raise suction pipe.

**10.3.5** Worn gun parts such as nozzle or air jet. Inspect and replace all worn parts.

**10.3.6** Worn media hose. Check hose for leaks and soft spots. Replace worn or damaged hose.

**10.3.7** Air jet in gun out of adjustment. Check adjustment per Section 7.2.

**10.3.8** Moist media. Frequent bridging or blockage in the suction pipe or gun can be caused by moisture. Refer to Section 10.5.

## **10.4 Plugged nozzle**

**10.4.1** Inspect inside of gun for blockage.

**10.4.2** Place an appropriately sized screen under the grate to trap foreign material from falling into the media.

## **10.5 Media bridging**

**10.5.1** Frequent bridging of media 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 from ambient air.

**10.5.2** 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.

**10.5.3** 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 the air filter and receiver tank regularly. Ongoing problems with moist air may require the installation of an air dryer or aftercooler in the air supply line.

**10.5.4** Absorption. Some media tends to absorb moisture from the air, especially fine-mesh media in areas of high humidity. Empty the media and store it in an airtight container when cabinet is not in use.

## **10.6 Blasting does not begin when the foot pedal is pressed.**

**10.6.1** Pressure regulator may be set too low or OFF. Check pressure on pilot regulator.

**10.6.2** Make sure that the air compressor is operating, and air supply valves are open.

**10.6.3** Check the nozzle to see if it is plugged. Refer to Section 10.4.

**10.6.4** Foot pedal valve malfunction. Check operation of valve.

## **10.7 Blockage in media hose**

**10.7.1** Wet or damp media. Refer to Section 10.5.

## **10.8 Poor suction in media hose**

**10.8.1** Inadequate air supply. Refer to Section 2.3.

**10.8.2** Air jet needs adjustment. Check adjustment per Section 7.2.

**10.8.3** Nozzle worn. Replace if worn 1/16" or more.

**10.8.4** Blockage in media hose or nozzle. Refer to Sections 10.4 and 10.5.

**10.8.5** Air jet sleeve extends past end of air jet. Cut the sleeve to align with the air jet.

**10.8.6** Blast pressure too high. Refer to Section 7.1.

**10.8.7** Nozzle inserted backward; the wider, tapered end of the nozzle inserts into the gun, toward the air jet.

**10.9 Air only (no abrasive) from nozzle**

**10.9.1** Suction pipe resting against the media clean-out door. Raise suction pipe.

**10.9.2** Make sure the air hose and media hose are not reversed on the gun; the green air hose attaches to the back of the gun and the clear media hose attaches to the bottom of the gun's grip. Refer to Figure 24.

**10.10 Blow-back through media hose**

**10.10.1** Blockage in nozzle. Remove the nozzle and check for blockage.

**10.10.2** Blast pressure too high, refer to Section 7.1.

**10.11 Static shocks**

**10.11.1** Cabinet and/or operator not grounded. Abrasive blasting generates static electricity. The cabinet must be earth-grounded to prevent static buildup. Refer to Section 2.4. 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.

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

**10.12 Dust leaking from dust collector**

**10.12.1** Damaged filter. Inspect filter and replace as needed.

**11.0 ACCESSORIES and REPLACEMENT PARTS**

**11.1 Optional Accessories**

**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.**

**Fixed-base Turntable without Bearing, 25 lb. Capacity**

Description	Stock No.
20" dia. 25 lb capacity .....	12412

**Fixed-base Turntable with Bearing, 500 lb. Capacity  
Figure 21**

Item	Description	Stock No.
(-)	20" dia. assembly, 500 lb. capacity .....	12411
1.	Turntable, 20" diameter, replacement .....	18329
2.	Bearing, 1-1/2" bore .....	11517
3.	Protector, bearing .....	13479
4.	Screw, 1/2-NC x 1-1/2" cap .....	03454
5.	Washer, 1/2" lock .....	03516
6.	Nut, 1/2-NC hex .....	03511

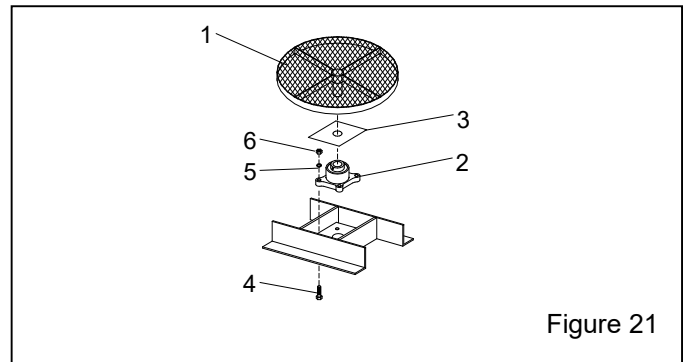


Figure 21



**11.2 Cabinet Assembly, Figure 22**

Item	Description	Stock No.
1.	Gasket, 1/2" x 1" adhesive-backed, per foot, specify feet required	28005
2.	Lens, 12" x 24" light	28673
3.	Socket, bulb base	27997
4.	Bulb, 23 watt spiral	27999
5.	Cord, 8 ft. u-ground power	27998
6.	Switch w/u-ground receptacle	10769
7.	Strain relief, 3/8"	27996
8.	Glove set	
	Band-clamp attachment	11215
	Quick-Change (clampless attachment)	28820

9.	Glove, left hand only	
	Band-clamp attachment	12710
	Quick-Change (clampless attachment)	28638
10.	Glove, right hand only	
	Band-clamp attachment	12711
	Quick-Change (clampless attachment)	28639
11.	Clamp, for clamp-attached glove	11576
12.	Grommet, media hose	11798
13.	Grate	28681
14.	Latch, front door panel	28670
15.	Spring, media cleanout door	28671
16.	Gasket, media cleanout door per foot, one foot required	28682
17.	Grommet, vacuum hose	28668

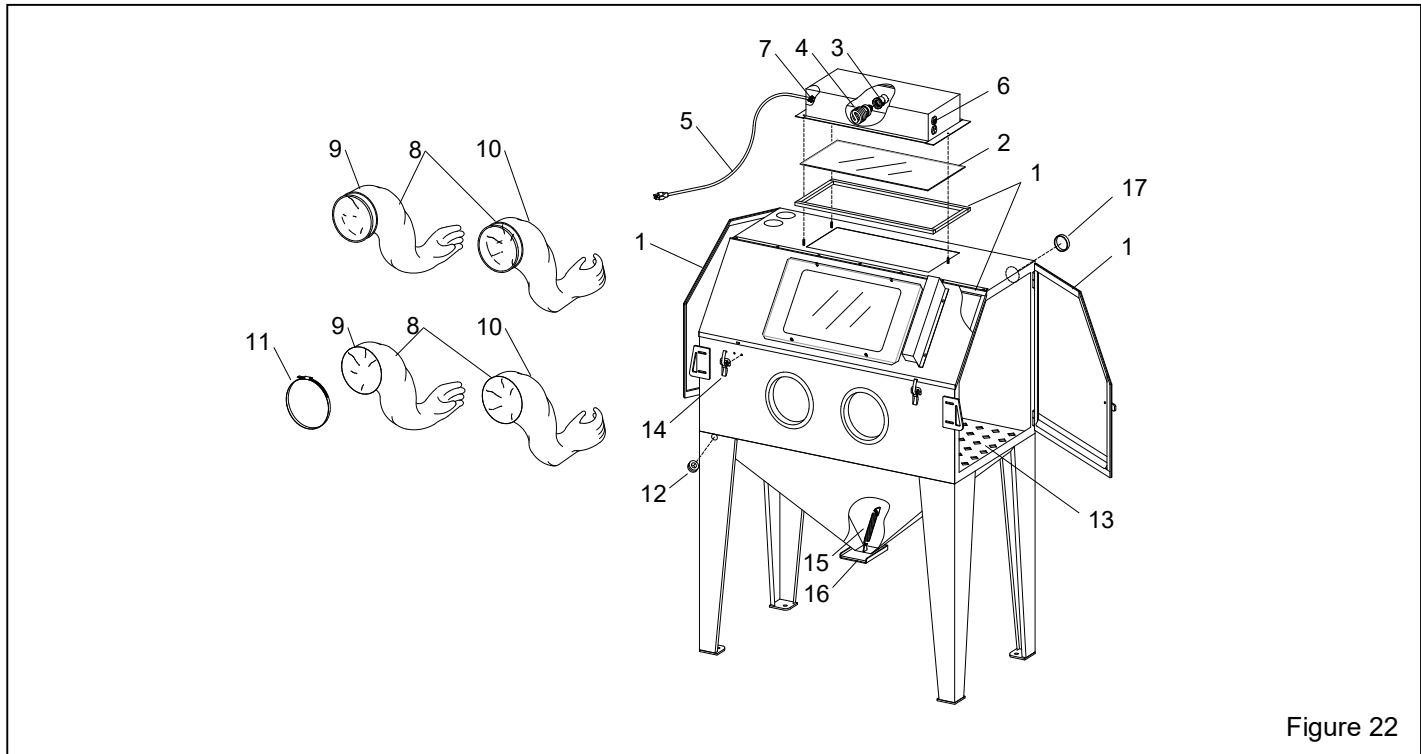


Figure 22

**11.3 View Window Assembly, Figure 23**

Item	Description	Stock No.
1.	Gasket, 1/2" x 1" adhesive-backed, per foot, specify feet required	28005
2.	Window, 12" x 24" view	28672
3.	Cover lens, window protector, 10 ft. roll	28675
4.	Dispenser, lens protector	27985
5.	Trim, edge, per foot, 1-foot required	18460
6.	Frame, window	27992

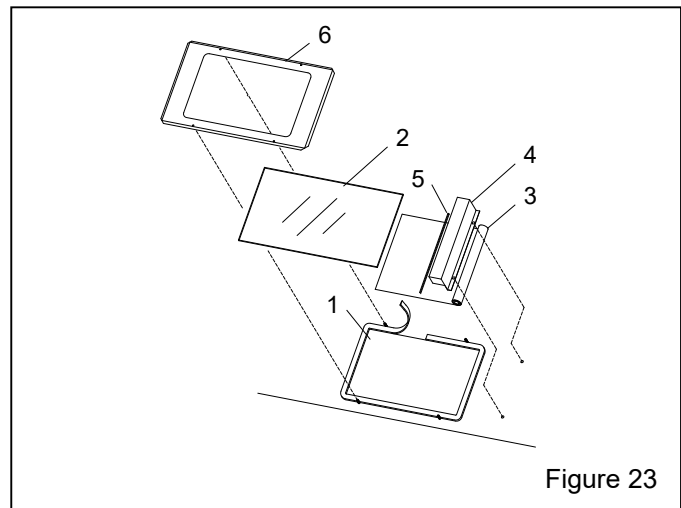


Figure 23

11.4 Air and Gun and Feed Assembly, Figure 24

Item	Description	Stock No.
1.	BNP No. 4 gun assembly without nozzle, includes items 2 through 8	12301
2.	Nut, nozzle holding, knurled brass	11914
3.	O-ring	08975
4.	Gun body	11802
5.	Lock nut, air jet	11913
6.	Rubber sleeve	12097
7.	Air jet assembly, No. 4, includes item 6	12342
8.	Fitting, hose, 3/8" NPT x 1/2" barb	06369
9.	Nozzle, standard, ceramic, No. 5	11930
	Nozzle, option, boron carbide, No. 5	11935
	Nozzle, option, tungsten carbide, No. 5	13118

10.	Hose end, 1/2" barb x 1/2" fem. swivel	15002
11.	Hose, 1/2" air, specify ft. required	12472
12.	Hose, media, clear, specify ft. required	12476
13.	Foot pedal assembly	28866
14.	Valve, 3/8-NPT foot pedal replacement	28831
15.	Regulator, 3/8-NPT pressure	12053
16.	Adaptor, 3/8-NPT x 1/2-JIC	11726
17.	Gauge, 1/8-NPT cbm pressure	01908
18.	Filter, 3/8-NPT air	27990
19.	Grommet, air hose	11798
20.	Bracket, pressure regulator	27988
21.	Nipple, 3/8-NPT x 12" (suction pipe)	28676
22.	Clamp, 3/8 pipe	28678
23.	Elbow, 3/8-NPT 90° male	28677
24.	Tee, 3/8-NPT	12819
25.	Adjusting tool, air jet, option	19041

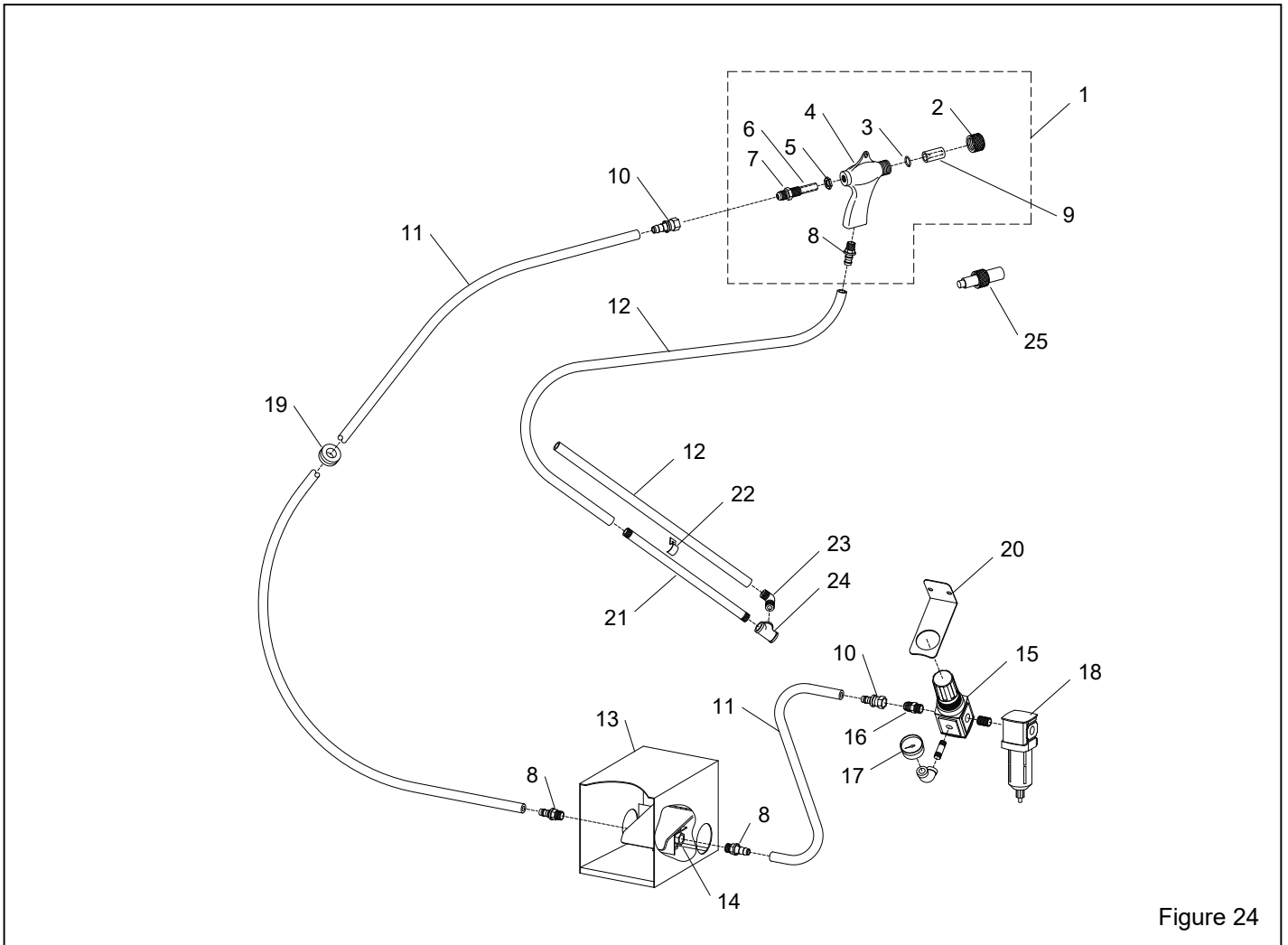


Figure 24

11.5 Dust Collector and Accessories, Figure 25

Item	Description	Stock No.
(-)	Dust collector assembly does not include vacuum hose .....	28867
1.	Filter bag .....	28009
2.	Hose, vacuum 4-ft nominal .....	28674
3.	Grommet, vacuum hose one provided with dust collector .....	28668
4.	Motor .....	28004
5.	Gasket, 1/2" x 1" adhesive-backed, per foot, two feet required .....	28005
6.	Cord, 8 ft. u-ground power .....	27998
7.	Strain relief, 3/8" .....	27996
8.	Clamp ring, filter bag .....	28008
9.	Clamp, drum .....	28669
10.	Drum, upper .....	28002
11.	Drum, lower (dust storage) .....	28003
12.	Screw, 1/4-NC x 1" cap .....	03053
13.	Nut 1/4-NC .....	03111

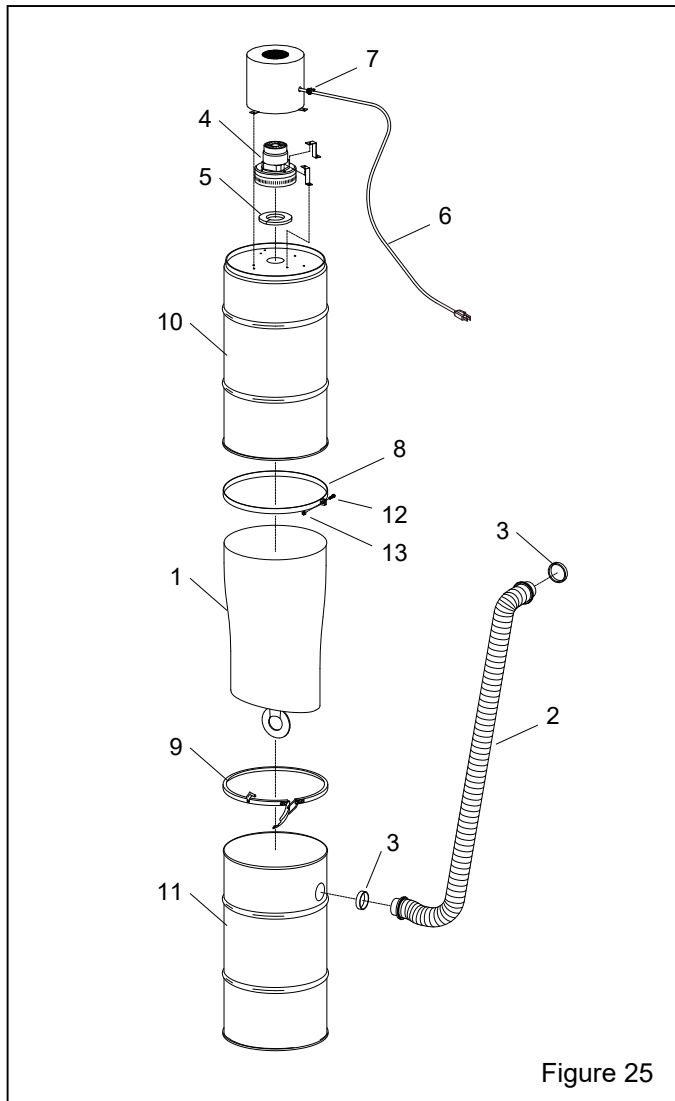


Figure 25