

# BNP 160 TUMBLE BASKET SUCTION BLAST CABINET

O. M. 25993

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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 insure 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

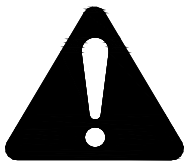
### 1.1 Scope of Manual

1.1.1 These instructions cover set-up, operation, maintenance, troubleshooting, optional accessories, and replacement parts for the BNP-160 tumble basket blast cabinet.

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 Z535.4-2011, 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.

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## NOTICE

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

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## CAUTION

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

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## WARNING

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

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## DANGER

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

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### 1.3 General Description

1.3.1 The BNP-160 tumble cabinet blasts small batches of parts, using a fixed nozzle and rotating basket. Refer to Figure 1 for arrangement and callouts of primary components. The cabinet consists of three major segments.

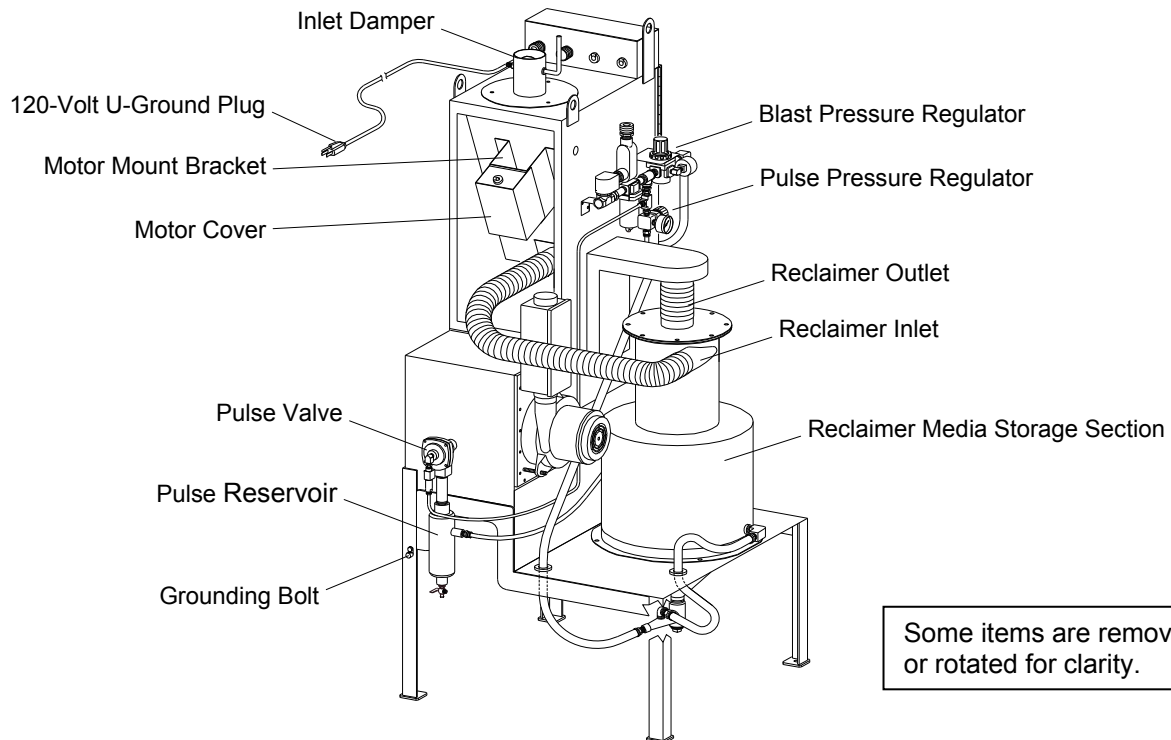
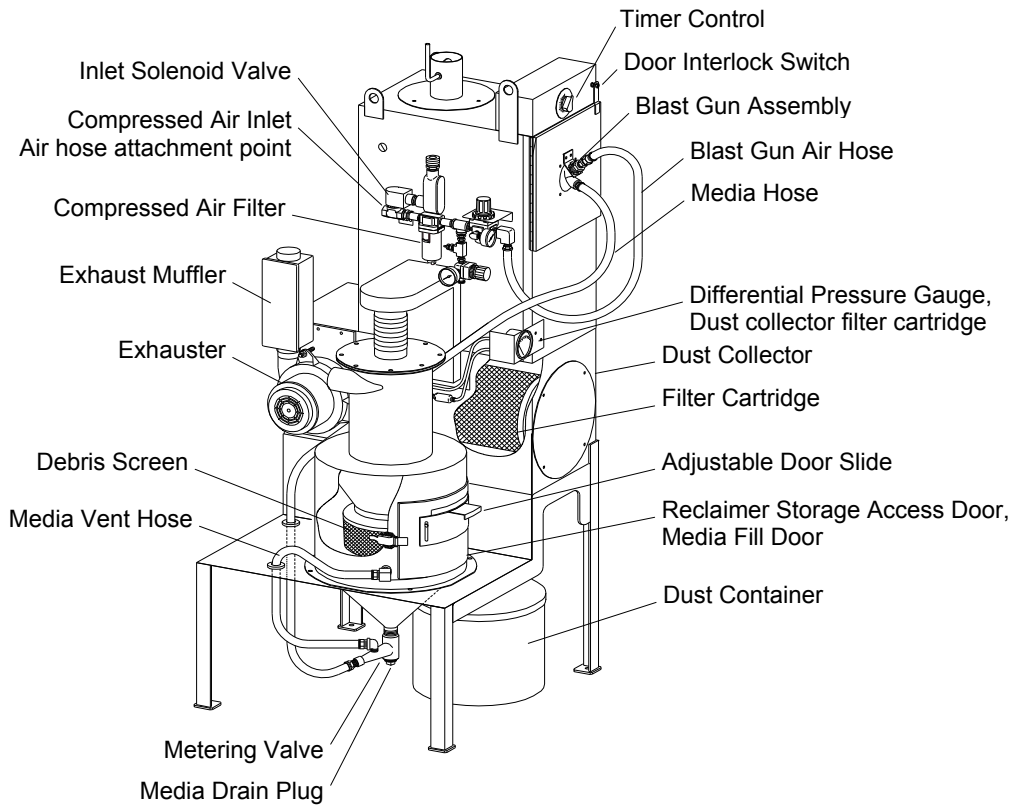
1. Cabinet enclosure
2. Reclaimer
3. Reverse pulse dust collector

1.3.2 The maximum capacity of the basket is 25 lbs.

1.3.3 The cabinet requires approximately 33 cfm of compressed air at a maximum of 80 psi.

### 1.4 Theory of Operation

1.4.1 Once parts are loaded into the basket, the air supply and exhaust are turned "on", and the cabinet door is closed, the cabinet is ready for operation after setting the timer located in the control box atop the cabinet enclosure. Starting the timer causes air to flow through the fixed blast gun mounted through the cabinet door. Air moving through the gun draws media into the blast gun mixing chamber. The media mixes with the air and is propelled out the nozzle. As the basket rotates, the parts tumble in the blast stream ensuring that all parts and surfaces are uniformly blasted. The blast media flows through the perforated drum and into the cabinet hopper. These particles are drawn into the reclaimer for separation. First dust and fines are separated from the reusable blast media. Reusable media is retained in the reclaimer hopper for reuse. Then dust and fines are drawn out of the reclaimer and through the filter cartridge in the reverse pulse dust collector. The filter cartridge traps dust on the outer surface and discharges clean air through the outlet damper atop the collector. The filter cartridge is cleaned by a pulse of high-velocity compressed air expanding against the inner surface of the cartridge at regular intervals. The expanding air momentarily reverses airflow through the cartridge to release dust accumulated on the outer surface. The dust particles fall away from the cartridges and into the hopper and dust container for removal.



Some items are removed or rotated for clarity.

Figure 1

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## 1.5 Dust Collection

**1.5.1** The BNP-160 cartridge dust collector is not suitable for use in applications which generate dust from lead coatings, heavy metals or any other toxic materials.

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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. This machine is not to be used in applications which generate dust from lead coatings, heavy metals or any other toxic materials. Identify all materials that are to be removed by blasting and obtain a material safety data sheet for the blast media.**

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## 1.6 Nozzle Options

**1.6.1** Ventilation requirements limit standard cabinets to No.5 (5/16" orifice) nozzle and No. 5 (5/32" orifice) air jet. Unless otherwise specified at the time of order, cabinets are supplied with a tungsten carbide lined nozzle. More durable boron carbide nozzles are available and are shown in Section 8.4. Use boron carbide nozzles when blasting with aggressive media such as those listed in Section 1.8.4.

## 1.7 Tumble Basket Options

**1.7.1** Standard baskets are perforated with 3/16" holes. An optional basket with 1/16" holes is available for use with fine abrasive or applications that produce small chips or other byproducts that could plug the blast nozzle. Refer to Section 8.1 Optional Accessories.

## 1.8 Media

**1.8.1** The BNP-160 utilizes most common reusable media 60 mesh to 180 mesh that is specifically manufactured for dry blasting. Media finer than those recommended may carryover to the dust collector. Media coarser than those recommended may not convey through the media hose or recovery hose. Media life can be extended by mixing the media in the hopper after each cycle.

**1.8.2 Steel:** Steel grit 50 mesh to 120 grit or S70 to S170 shot may be used.

**1.8.3 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 break down.

**1.8.4 Aluminum Oxide, Silicon Carbide, and Garnet:** Aggressive media such as these between 60 mesh and 180 mesh may be used but consideration should be given to accelerated wear on all parts of the cabinet, basket, nozzle and hoses, which come in contact with the media. Boron carbide nozzles are recommended when using aggressive media.

**1.8.5 Glass Bead: Recommended range is #6 thru #13.** 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.

**1.8.6 Fine-mesh Media:** In most cases media finer than 180 will carryover to the dust collector.

**1.8.7 Lightweight Media:** In most cases plastic media and most agricultural media are not recommended with the tumble cabinet. They are usually too light for suction blast applications, and may bridge in the basket and hopper.

## 1.9 Compressed Air Requirements

**1.9.1** The cabinet requires approximately 33 cfm of compressed air at a maximum of 80 psi.

**1.9.2** The 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 fine-mesh media are used. Moisture causes media to clot and inhibits free flow through the feed assembly. If moisture problems persist, an air dryer may be required.

## 1.10 Electrical Requirements

**1.10.1** The system requires 115-VAC, 1-Ph, 60-Hz, with 15 Amps service. A 7-foot power cord is supplied. No additional wiring is required.

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## 2.0 INSTALLATION

### 2.1 General Installation Notes

**2.1.1** Place the cabinet in a convenient location where compressed air and electrical service are available. Allow full access to the doors and service areas.

### 2.2 Connect Compressed Air Supply Line

**2.2.1** The minimum air supply line from the compressor to the attachment branch should be 1-inch ID. Install an isolation valve at the attachment branch to enable depressurization for service. Connect a 1/2-inch or larger air line from the branch to the air hose attachment point, as shown in Figure 1. The inlet size is 1/2" NPT.

## **⚠ WARNING**

**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.**

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

**2.4** Plug the cabinet power cord into a grounded, 115-volt outlet.

## **⚠ WARNING**

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

## 3.0 OPERATION

### 3.1 Control Functions

**3.1.1 Timer:** Sets duration of the blast cycle up to 60 minutes. Blasting begins as soon as the timer is set. Blasting automatically stops when the timed cycle is complete.

**3.1.2 Door Interlock:** When the door is open, the blast gun is disengaged, preventing blasting.

### 3.2 Media Loading and Unloading

**3.2.1 Media Loading:** With the timer off, add clean dry media, by pouring it through the reclaimer access door. Do not fill above the storage section's cone.

**3.2.2 Media Unloading:** To empty the cabinet and reclaimer of spent media, allow all media to be recovered from the cabinet, turn off the exhauster and place an empty container under the media metering valve located under the reclaimer storage section. Unscrew the plastic plug, permitting media to flow into the container. If media does not flow, it has caked. Open the fill door and stir media until it starts to flow. Replace the drain plug when the storage section is empty.

**3.2.3** When changing media type, use a vacuum and thoroughly purge the cabinet of media especially when changing from coarse media to fine, or when changing from hard media to soft.

### 3.3 Loading and Unloading Parts

**3.3.1** Parts must be free of oil, water, grease, or other contaminants that will cause media to clump or contaminate parts.

**3.3.2** Load parts directly into the tumble basket. Do not overload the basket; maximum load should not exceed 25 lb., or the bottom edge of the retainer as shown in Figure 2.

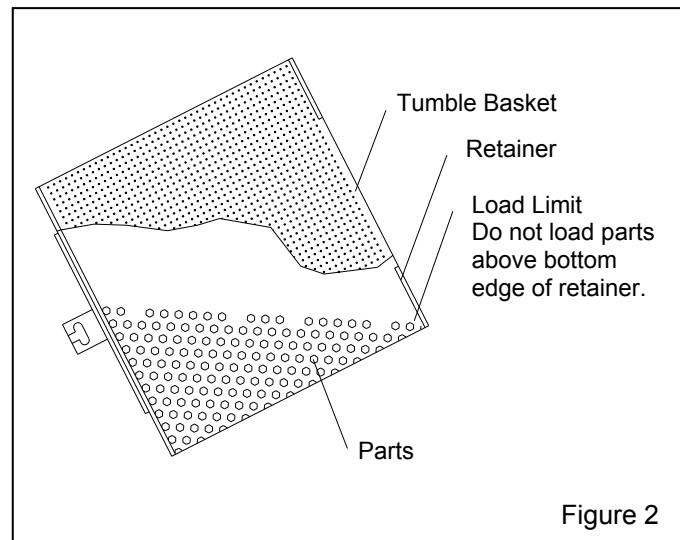


Figure 2

**3.3.3** Do not under-load with parts, under-loading will result in rapid wear to the tumble basket. When blasting small loads, to prevent the blast stream from blasting the basket, add filler material (dunnage) as shown in Figure 3, such as an abrasive-resistant tumble media that is compatible with the parts being blasted.

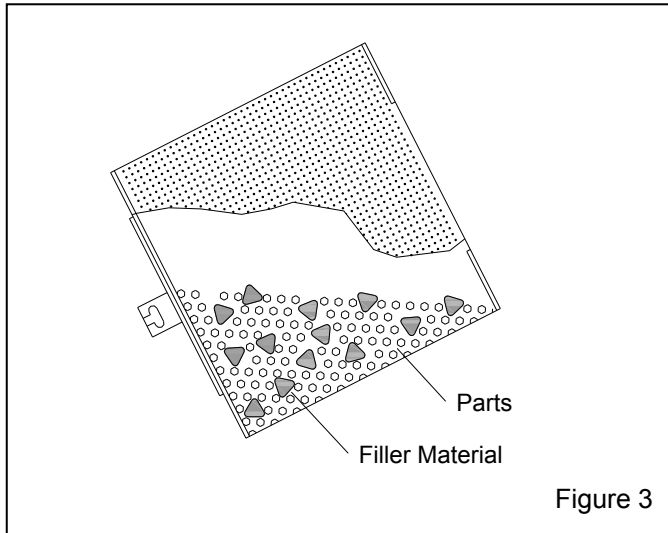


Figure 3

3.3.4 Close door and latch securely.

### 3.4 Blasting Operation

## ⚠ WARNING

- Keep door closed during blasting.
- Stop blasting immediately if dust leaks are detected.

3.4.1 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.

3.4.2 Adjust the blast pressure regulator located on the side of the cabinet, to the required blast pressure per Section 4.1.

3.4.3 Adjust the pulse pressure regulator located on the side of the cabinet, to the required pulse pressure per Section 4.2.

## NOTICE

**Do not pulse new dust collectors or replacement cartridges until the cartridge is properly seasoned. Refer to Section 6.5. Pulsing unseasoned cartridges could cause premature cartridge failure or decrease the efficiency of dust collector.**

3.4.4 Load media and parts. Note load limit in Figure 2.

3.4.5 Close the cabinet door. Make sure the door is latched securely, or door interlock system will prevent blasting.

3.4.6 Start the blast cycle by setting the timer for the blast duration. Blasting begins as soon as the timer is set.

## ⚠ WARNING

**Shut down the cabinet immediately if dust discharges from the collector. Prolonged breathing of any dust could result in serious lung disease. Short term ingestion of toxic dust such as lead poses an immediate danger to health. Toxicity and health risk vary with type of media and dust generated by blasting. Identify all material being removed by blasting, and obtain a material safety data sheet for the blast media.**

### 3.5 Stop Blasting

3.5.1 Blasting, basket rotation, and the exhauster stop when the timer cycle is complete.

3.5.2 Open the door only enough to disengage the door interlock, and turn the timer on. Let it run for several seconds to clear airborne dust, then turn the switch off.

3.5.3 Remove parts and check blast coverage.

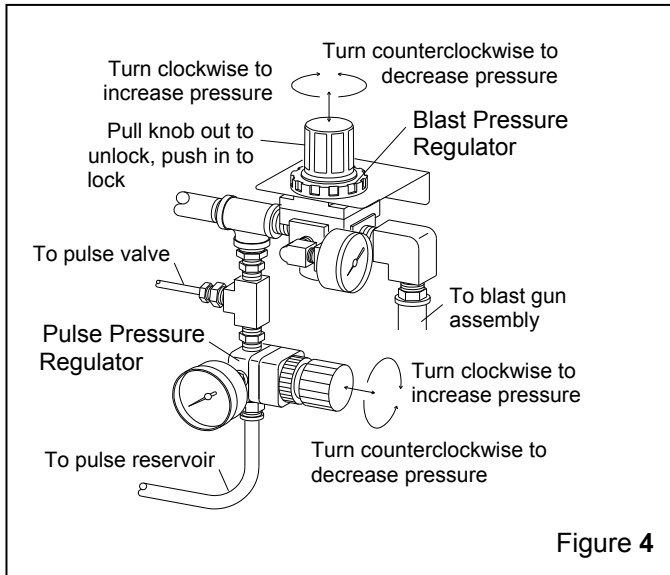
3.5.4 Reload additional parts, or when finished blasting, shut off the air supply valve, drain the air filter and dust collector pulse reservoir.

## 4.0 ADJUSTMENTS

### 4.1 Blasting Pressure, Refer to Figure 4

4.1.1 The blast-pressure regulator enables the user to adjust blasting pressure to suit the application. The maximum recommended pressure is 80 psi. Lower pressure may be used for delicate work. Higher pressure may cause dust or media to escape from the cabinet.

4.1.2 To adjust, unlock the knob by pulling it out, and turn it clockwise to increase pressure or counter-clockwise to decrease pressure. Pressure will usually drop from closed-line pressure when blasting begins. Once operating pressure is set, push the knob in to lock it and maintain the setting.



#### 4.2 Pulse Pressure, Refer to Figure 4

### NOTICE

**Do not pulse new dust collectors or replacement cartridges until the cartridge is properly seasoned. Refer to Section 6.5. Pulsing unseasoned cartridges could cause premature cartridge failure or decrease the efficiency of dust collector.**

**4.2.1** The pulse-pressure regulator enables the user to adjust pressure of the dust collector pulse. After the cartridge is seasoned, set the pulse pressure to 40 psi. When differential pressure reaches 8-inches (as noted on the differential pressure gauge), do additional pulsing as noted in Section 5.3, increase pulse pressure by 10 psi. Continue to do additional pulsing and increase pressure by 10 psi when differential pressure reaches 8 inches until the maximum of 80 psi is reached. Replace the cartridge when 80 psi does not lower pressure below 8-inches, or sooner if media recovery is impaired.

**4.2.2** To adjust, unlock the knob by pulling it out, and turn it clockwise to increase pressure or counterclockwise to decrease pressure. Once operating pressure is set, push the knob in to lock it and maintain the setting.

#### 4.3 Timer

**4.3.1** Set the timer for the duration of the blast cycle. Blasting automatically stops when the timed cycle is complete. Trial and error will determine the timer setting for the most favorable results. After the part is correctly

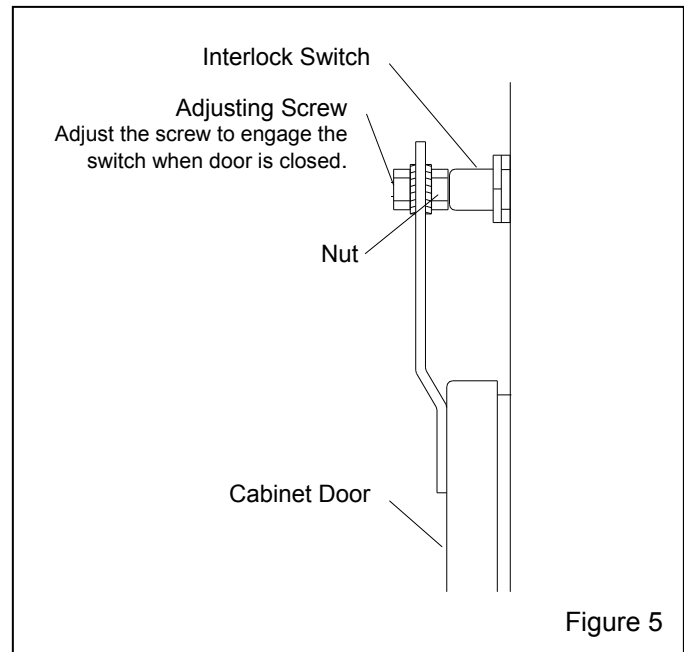
processed, make a note of the total blast time for future runs of similar parts.

#### 4.4 Door Interlock, Refer to Figure 5

### WARNING

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

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



**4.4.2** Close cabinet door.

**4.4.3** Loosen the adjusting screw nut.

**4.4.4** Center the screw on the switch, and turn the adjusting screw in or out as required to engage the switch without applying excessive pressure. Tighten the adjusting screw nut to maintain the setting.

**4.4.5** Test the operation with the door open only enough to disengage the interlock switch, and then again with the door closed. The interlock should stop the blasting when the door is opened, and permit blasting when the door is closed.

## 4.5 Inlet Damper

4.5.1 Operate with the damper fully open.

## 4.6 Adjustable Door Slide, Reclaimer Storage Section, Refer to Figure 6

4.6.1 The door slide is adjustable from fully closed to various degrees of open. The adjustment controls the amount of fines that are retained or removed from recycled media. When the slide is closed, no ambient air enters the reclaimer and finer media is retained. As the slide is gradually opened, ambient air is drawn in, drawing out fines into the dust collector. The further the slide is opened, the more air is drawn in, which pulls out larger particles of spent media.

4.6.2 Begin with the slide closed.

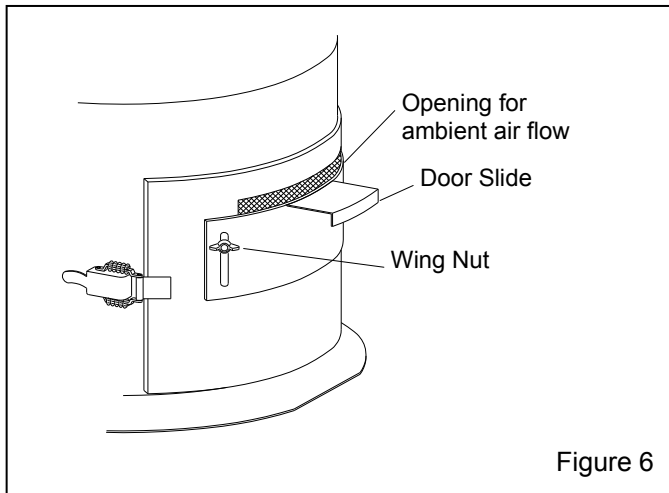


Figure 6

4.6.3 **To Remove More Fines:** (Too much dust in media) Loosen the wing nuts and lower the door by no more than 1/16" increments. It may take a few cycles to remove the fines; allow the media to go through several cycles before further adjustment. Lower the door to remove more fines, raise the door to retain more media. The following are examples of the door slide setting during factory tests.

- 1) #13 glass beads – slotted door shut
- 2) #8 glass beads – slotted door open about 3/16 inch
- 3) #11 glass beads – slotted door open about 3/32 inch
- 4) 180 mesh aluminum oxide – slotted door open about 3/32 inch
- 5) 80 mesh aluminum oxide – slotted door open about 1/8 inch

4.6.4 **To Remove less Fines:** (Too much good media carried over to the dust collector) Loosen the wing nuts and raise the door by no more than 1/16" increments.

## 4.7 Pulse Valve/Cam Follower Adjustment Dust collector pulse, Refer to Figure 7

4.7.1 The pulse activating mechanism is located within the motor mount bracket, Refer to Figure 1.

4.7.2 The dust collector pulses once with each revolution of the basket. When the screw on the split collar rotates over the cam follower, it pushing in the plunger on the 3-way pulse valve and triggers the pulse.

4.7.3 Loosen the collar set screws and rotate the split collar so the cam screw is riding on the cam follower. Tighten the set screws to secure the collar.

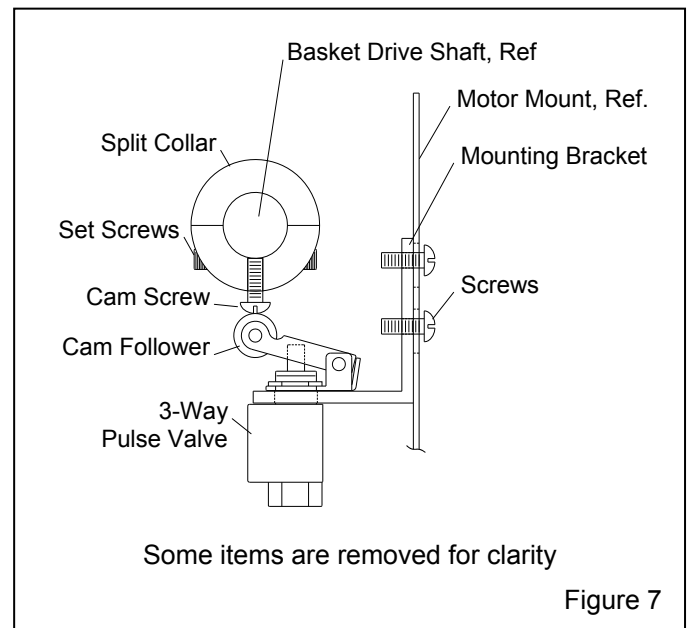


Figure 7

4.7.4 Loosen the mounting bracket screws and adjust the height so the cam follower depresses the plunger on the 3-way pulse valve. Snug the screws to hold the bracket in place.

4.7.5 Set the blast pressure regulator to zero psi and set the pulse pressure regulator to 40 psi.

4.7.6 Turn the timer to start the basket rotation.

4.7.7 The collector should pulse each time the cam screw rides onto the cam follower and stop when the screw rides off the follower.

4.7.8 Adjust the mounting bracket up or down until the pulse functions accordingly. Tighten the mounting screws to maintain the setting.



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## 5.0 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 container could result in serious eye irritation and lung disease. Toxicity and health risk vary with type of media and dust generated by blasting. The respirator must be approved for the type of dust generated. Identify all material being removed by blasting, and obtain a material safety data sheet for the blast media.**

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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, wear plate, and all items covered in this section.

#### 5.1 Empty Dust Collector Dust Container

**Note: Placing a small poly bag inside the dust container, draping the top over the container before installing the cover, makes it easier to empty the container; remove the bag and replace it with another when full.**

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

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

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

#### 5.2 Drain Pulse reservoir

**5.2.1** Open the petcock to drain water from the pulse reservoir before and after each use. Refer to Figure 1 for the location of the drain petcock.

#### 5.3 Cartridge Pulsing

**5.3.1** The cartridge is pulsed with each revolution of the basket. Additional pulsing should be performed before adjusting the pulse pressure.

**5.3.2** Turn blast pressure to 0 psi.

**5.3.3** Turn exhauster ON.

**5.3.4** Set timer to five minutes.

**5.3.5** After the five minute cycle is complete, check the differential pressure gauge. If differential pressure stays at around 8 inches, increase pulse pressure by 10 psi increments as noted on Section 4.2.

**5.3.6** Repeat the process once or twice.

#### 5.4 Empty Reclaimer Debris Screen

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

#### 5.5 Drain Compressed Air Filter

**5.5.1** The cabinet is equipped with a manual-drain air filter. Drain the filter daily or more often if water is present. Moist air inhibits the flow of media. Drain the air line and receiver tank regularly. If the moisture problem persists, it may be necessary to install an aftercooler or air dryer.

#### 5.6 Flex Hoses

**5.6.1** Periodically inspect flex hoses for wear.

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## 6.0 SERVICE MAINTENANCE

### **⚠ WARNING**

This machine is not to be used for applications which generate dust from lead coatings, heavy metals or any other toxic materials. Failure to wear approved respirators and eye protection when servicing dust-laden areas of the cabinet, and when emptying the dust container could result in serious eye irritation and lung disease. Toxicity and health risk vary with type of media and dust generated by blasting. The respirator must be approved for the type of dust generated. Identify all material being removed by blasting, and obtain a material safety data sheet for the blast media.

NOTE: To avoid unscheduled downtime, establish a weekly inspection schedule. Inspect all parts subjected to media contact, including; the gun, nozzle, media hose, and tumble basket.

### 6.1 Nozzle

6.1.1 Replace the nozzle(s) when its orifice diameter has increased to 3/8" (increased by 1/16" larger than when new), or when suction diminishes noticeably.

6.1.2 Open the cabinet door, unscrew the holding nut from the gun end, and pull the nozzle from the gun. Inspect the nozzle o-ring and replace it if worn or damaged. Insert a new nozzle, placing the tapered end toward the jet. Screw the holding nut onto the gun.

### 6.2 Media Hose

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

### 6.3 Tumble Basket

6.3.1 Periodically inspect the basket and bottom liner for wear.

6.3.2 The bottom liner is adhered to the bottom of the basket with rubber cement. Remove the liner by peeling it from the bottom of the basket. Apply rubber-based cement to the new liner and press into position at the bottom of the basket. Allow it to cure before putting it in use.

6.3.3 Replace the basket as soon as it is worn thin.

## 6.4 Filter Cartridge Replacement, Figures 8 and 9

### **⚠ WARNING**

Failure to wear approved respirators and eye protection when servicing dust-laden areas of the cabinet and dust collector, and when changing the filter cartridge could result in serious eye irritation and lung disease or death.

6.4.1 Close the air supply valve and bleed all air from the pulse reservoir.

6.4.2 Remove the four (4) wing nuts and washers securing the cover plate and remove the cover plate.

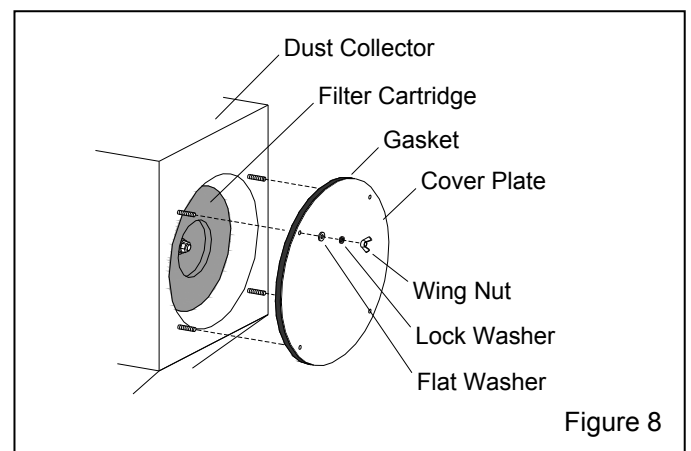


Figure 8

6.4.3 Remove the nut, lock washer, flat washer and rubber gasket from the cartridge support, as shown in Figure 9. Remove the cartridge through the open, sliding it off the support. NOTE: Contain dust by sliding a durable plastic bag over the cartridge as it is removed.

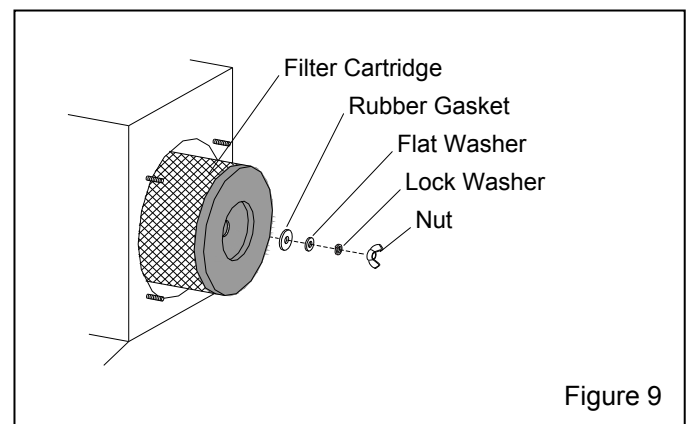


Figure 9

6.4.4 After the cartridge is removed, clean the inside of the collector to remove loose dust or hardened dust clumps, particularly from the cartridge sealing surface (front side of the cartridge sheet).

**6.4.5** A new rubber gasket comes with the new cartridge. Use the new gasket, reuse the fasteners and install the cartridge in reverse order.

**6.4.6** Inspect the cover gasket for any condition that will prevent the gasket from sealing. Replace the gasket if necessary.

**6.4.7** Install the cover plate and secure.

**6.4.8** Season cartridge per Section 6.5.

## 6.5 Seasoning Cartridges

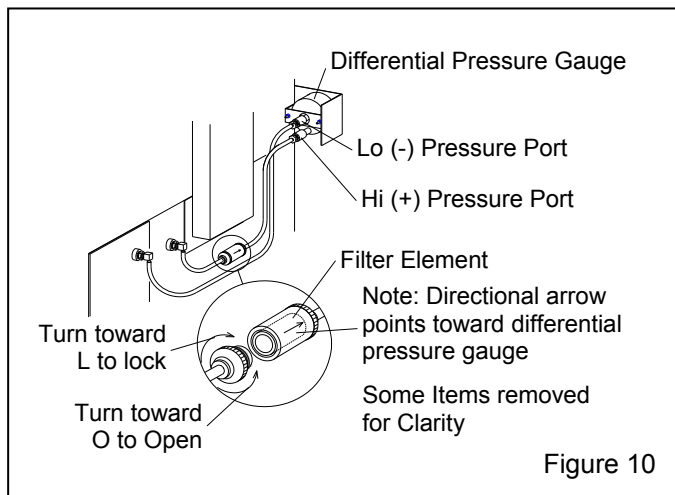
**6.5.1** New cartridges must be seasoned. Cartridges are seasoned by letting a dust cake develop on the filter media before starting the pulsing cycles.

**6.5.2** To prevent the pulsing, turn the pulse regulator off (to 0 psi).

**6.5.3** Operate the cabinet without pulsing until the differential pressure gauge reaches 2-inches. At that time, turn the pulse regulator to 40 psi, to start the pulsing cycle. Refer to Section 4.2 to adjust pulse pressure.

## 6.6 Inline Filter, Differential Pressure Gauge Refer to Figure 10

**6.6.1** Periodically inspect the inline filter for dust. Dust collects on the outer surface of the element.



**6.6.2** To remove the dust and clean the element, turn the inlet end cap toward O, as stamped on the cap and pull the cap from the clear housing. **Note: Only the inlet cap opens.** Refer to Section 6.7 if the tubing needs to be removed.

**6.6.3** Remove the element and empty dust from the housing.

**6.6.4** Shake the cap and tubing to see if dust is in the tubing. If dust is present, remove the tubing from the cap and shake the tubing until all dust is removed.

## NOTICE

**If the inline filter is removed from the tubing, reinstall it with the directional arrow pointing toward the Hi (+) pressure port on the differential pressure gauge, as shown in Figure 10.**

**6.6.5** Before attaching the inlet cap, be sure the filter is correctly positioned. Align the tabs on the cap with the recesses on the housing. Make sure the end of the cap enters the ID of the element as it is pushed into position. Turn the cap toward L to lock it in place.

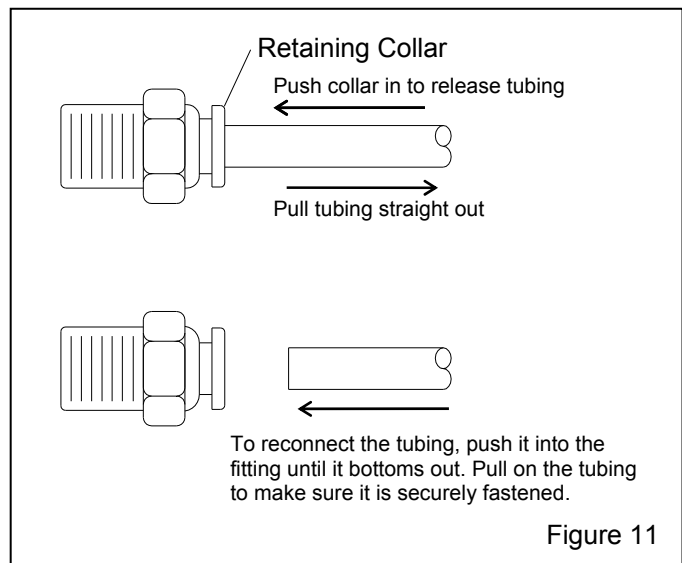
## 6.7 Tube-lock Fittings, Refer to Figure 11

### WARNING

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

- \* **Lock out and tag out the compressed air supply.**
- \* **Bleed all compressed air supply lines.**

**6.7.1** To remove the tubing, push the retaining collar toward the fitting, releasing the tubing so it can be easily removed by pulling it out. Do not force it; only a slight pull on the tubing is required if the collar is pushed-in correctly.



**6.7.2** Reconnect the tubing by inserting it into the retaining collar until it seats. Tug on the tubing to make sure it is secured.

### 6.8 Reclaimer Wear Plate Installation Refer to Figure 12

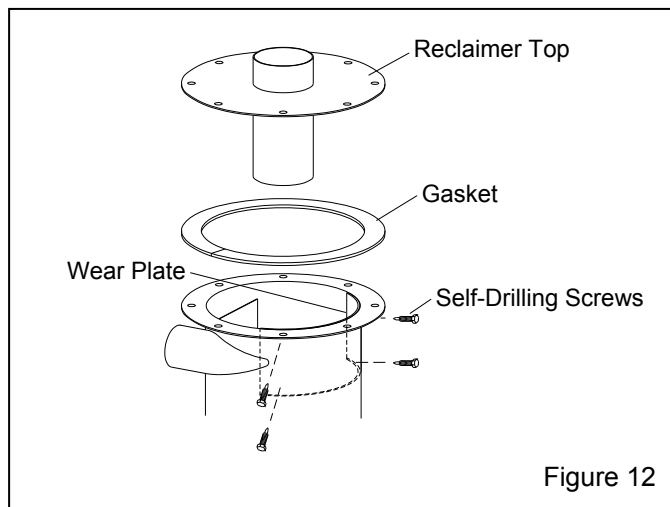
**6.8.1** Remove the fasteners holding the reclaimer top to the body, and remove the top.

**6.8.2** The gasket should adhere to the reclaimer when the top is removed. Inspect the gasket and replace it if damaged.

**6.8.3** Remove the screws that hold the wear plate to the body, and remove the old wear plate.

**6.8.4** Press or clamp the new wear plate into position and use self-drilling screws inserting through the existing screw holes to secure the wear plate.

**6.8.5** Replace the top and secure with fasteners.



## 7.0 TROUBLESHOOTING

### **⚠ WARNING**

**To avoid serious injury, observe the following when troubleshooting. Turn off the air, and lock out and tag out the air supply.**

### 7.1 Dust Leaking From the Cabinet Enclosure

**7.1.1** Dirty filter cartridge. Inspect differential pressure gauge. Refer to Sections 4.2 and 5.3.

**7.1.2** Damaged door gaskets. Inspect and replace damaged gaskets.

**7.1.3** Blast pressure too high. Maximum blast pressure is 80 psi.

**7.1.4** Blockage in flex hose between cabinet sump and reclaimer inlet. Inspect hose for blockage.

**7.1.5** Exhauster not operating. Make sure exhauster motor is operation. If not have the motor and circuit checked by a qualified electrician.

### 7.2 Abnormally High Media Consumption

**7.2.1** Door on reclaimer opened, 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.

**7.2.2** Slide door open. Refer to Section 4.6.

**7.2.3** Media may be too fine or worn-out. Refer to Section 1.8 for recommended media size.

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

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

### 7.3 Reduction in Blast Cleaning Rate

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

**7.3.2** 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.

**7.3.3** Blockage in media line or gun.

**7.3.4** Kink or blockage in vent hose between metering valve and reclaimer. Make sure hose is clear.

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

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

**7.3.7** Moist media. Frequent bridges or blockage in the area of the metering valve can be caused by moisture. See Section 7.6.

#### 7.4 Plugged Nozzle

**7.4.1** Remove nozzle and check for blockage from foreign material. If the standard tumble basket allows large particles to pass and block the nozzle, use the optional basket with 1/16" diameter holes. Refer to Section 8.1. If nozzle is blocked by hardened or caked media, moisture is present. Refer to Section 7.6

#### 7.5 Blockage in Media Hose

**7.5.1** Wet or damp media. Refer to Section 7.6.

**7.5.2** Kink or blockage in vent hose between metering valve and reclaimer. Make sure hose is clear.

#### 7.6 Media Bridging

**7.6.1** 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, or from moisture in the compressed air line, or from absorption from ambient air.

**7.6.2** 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.

**7.6.3** 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. If the problem persists, it may be necessary to change media more often, or install an aftercooler or air dryer.

**7.6.4** 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.

**7.6.5** Using lightweight or low-density media as noted in Section 1.8.7.

#### 7.7 Neither Media or Air Comes Out the Nozzle When the Blast Cycle is Engaged.

**7.7.1** Door interlocks not engaging. Check adjustment per Section 4.4.

**7.7.2** Pressure regulator may be turned down or off. Check pressure on pilot regulator.

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

**7.7.4** Plugged nozzle. Refer to Section 7.4

**7.7.5** Inspect timer and inlet solenoid valve for malfunctions.

#### 7.8 Poor Suction in Media Hose

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

**7.8.2** Blockage in media hose or nozzle. Refer to Sections 7.4 and 7.5.

**7.8.3** Air pressure too high. Reduce pressure to 80 psi maximum.

#### 7.9 Blow-Back Through Media Hose

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

**7.9.2** Air jet washer (Figure 15 item 5) not tightly sealed against air jet. Tighten the bushing into the gun body.

**7.9.3** Air pressure too high. Reduce pressure to 80 psi maximum.

#### 7.10 Static Shocks

**7.10.1** Cabinet not grounded. Abrasive blasting generates static electricity. The cabinet must be grounded to prevent static buildup. Refer to Section 2.3.

#### 7.11 Dust Leaking from Dust Collector Door

**7.11.1** Dust collector door loose. Tighten door wing nuts.

**7.11.2** Inspect gasket on dust collector door. Replace if damaged

#### 7.12 Dust Leaking from Exhaust Muffler

**7.12.1** Damaged or loose cartridge. Inspect filter cartridge.

**7.12.2** Cartridge not seasoned, Refer to Section 6.5.

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**7.13 Dust Collector Not Pulsing**

**7.13.1** Check the pulse pressure regulator gauge. If pressure is low, check the compressed air supply; look for a closed supply valve.

**7.13.2** Check function of the pulse pressure regulator. Make sure it is not too low.

**7.13.3** Make sure the pulse valve and cam follower are operational. Refer to Section 4.7

**7.13.4** Inspect the diaphragm in diaphragm pulse valves for damage.

**7.13.5** Check for blockage in the tubing between the diaphragm valve and 3-way pulse valve.

**7.14 Pulse Is a Steady Stream of Air Instead of a Quick Pulse**

**7.14.1** Check for a leak or split in the tubing between the diaphragm valve and 3-way pulse valve.

**7.14.2** 3-way pulse valve or cam follower remaining in open position. Refer to Section 4.7.

**7.15 Exhauster Not Running**

**7.15.1** Motor faulty. Have a qualified electrician check for electrical malfunction.

**7.15.2** Timer or inlet solenoid valve malfunctioning. Have a qualified electrician check for electrical malfunction.

**7.16 Excessive Differential Pressure**

**7.16.1** Valves may not be pulsing properly. Refer to 7.13.

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

**7.16.3** The in-line dust filter may be blocked. Clean or replace. Refer to Section 6.6

**7.16.4** Pulse pressure may need to be increased. Refer Sections 4.2 and 5.3.

**7.16.5** The filter cartridges may need to be replaced. Refer to Sections 4.2 and 6.4.

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**7.17 No Reading on Differential Pressure Gauge**

**7.17.1** Make sure low and high-pressure lines are not reversed. Refer to Figure 10.

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8.0 ACCESSORIES AND REPLACEMENT PARTS

(-) BNP-160 Tumble Blast Cabinet .....25861

8.1 Optional Accessories

Tumble basket w/ 1/16" holes .....18254  
 Lock pins (pkg. of 25)  
 for twist-on air hose couplings .....11203

8.2 Cabinet and Exhauster Assembly, Figure 13

Item	Description	Stock No.
1.	Gasket, door, 5/8" x 1-1/4" adhesive backed 4-feet required	27464
2.	Latch, spring, each	12263
3.	Gasket, 3/32" x 3/4" adhesive backed specify feet required	00192
4.	Adaptor, sump pipe, 2-1/4" flex	25844
5.	Clamp, 2-1/2"	02817
6.	Hose, 2-1/4" light lined flex, 3-ft required	24977
7.	Switch, push button (door interlock)	12119
8.	Dust seal, push button switch	25872
9.	Timer, 60 minute	12180
10.	Gasket, gun mount back plate	11782
11.	Plate, gun mount back	12811
12.	Connector, strain relief, aluminum 0.50" - 0.625" cord	11629
13.	Strain relief, Nylon snap-in	13936
14.	Damper, inlet	25860
15.	Cord w/plug, 120-v	11669
16.	Screw, self-drill	12974
17.	Connector, strain relief, aluminum 0.25" - 0.375" cord	11631

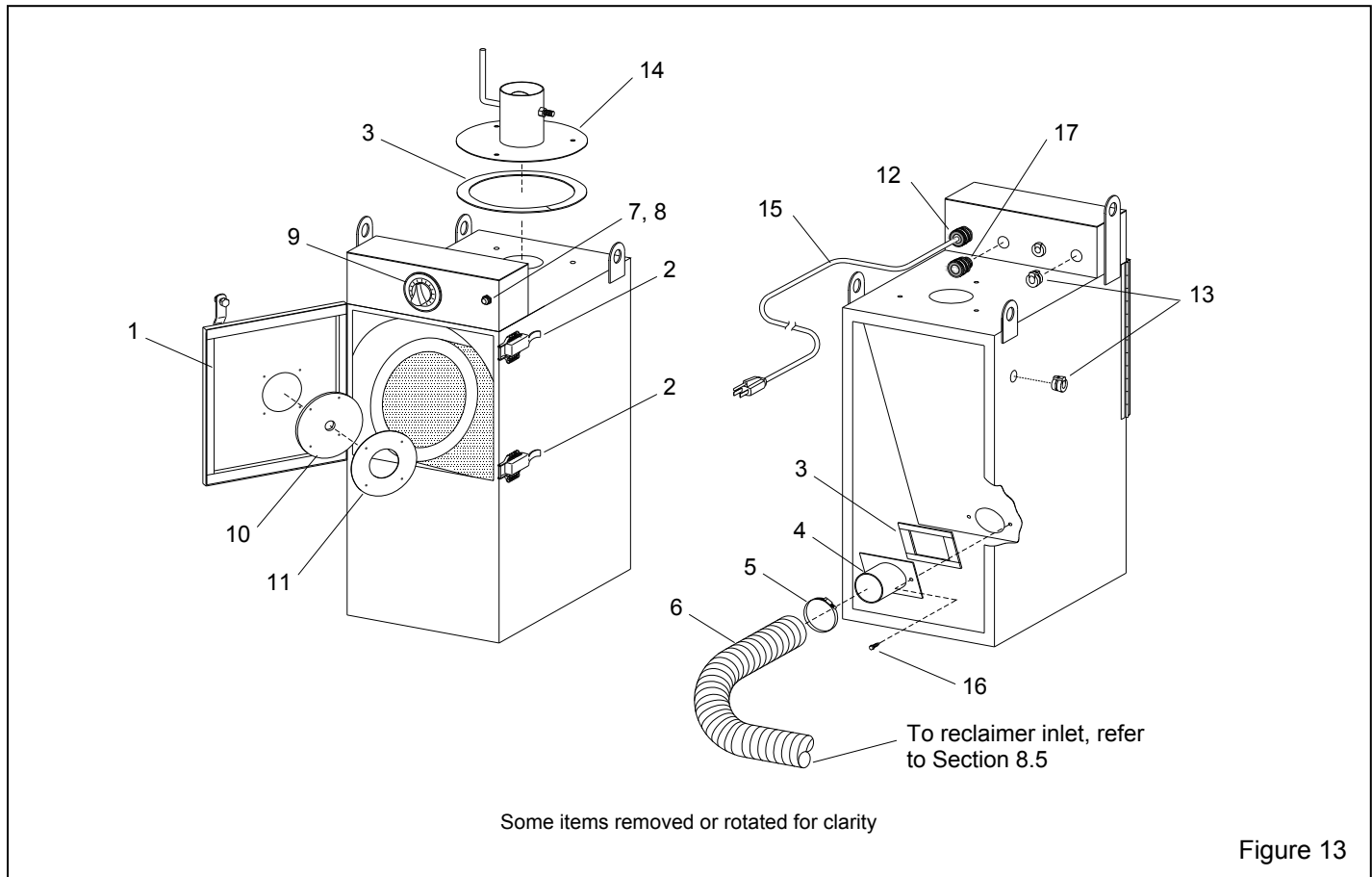


Figure 13

8.3 Basket and Drive Assembly, Figure 14

Item	Description	Stock No.
1.	Basket assembly, includes item 19 Standard, with 3/16" diameter holes.....	12230
	Optional, with 1/16" diameter holes.....	18254
2.	Shaft, basket drive, includes items 13 & 14..	25732
3.	Grommet, rubber .....	11798
4.	Bearing, 3/4" bore, each .....	11521
5.	Bracket, drive motor mount.....	25842
6.	Motor, speed reduced, 3/8" shaft.....	25864
7.	Bolt and nut, 1/4-NC x 3/4" elevator .....	03119

8.	Washer, #10 flat (between motor and brkt) ..	03303
9.	Cap screw, 1/4-NC x 1" .....	03053
10.	Washer 1/4 lock .....	03117
11.	Nut, 1/4-NC hex .....	03111
12.	Screw, #10 x 1/2" truss .....	12062
13.	Roll pin, 1/4" x 1" .....	12815
14.	Screw, 1/4-NC x 3/16" set, each (2-req.) .....	25871
15.	Cover, motor .....	25879
16.	Strain relief, Nylon snap-in .....	13936
17.	Screw, 10 x 3/4 self-drilling .....	12722
18.	Collar, split, shown for reference Refer to Section 8.7 for pulse parts .....	25866
19.	Liner, 1/4" urethane bottom (current).....	28158
(-).	*Liner, 1/8" Neoprene bottom .....	24972

\*For replacement only, cannot be used with current basket design with 5" diameter opening

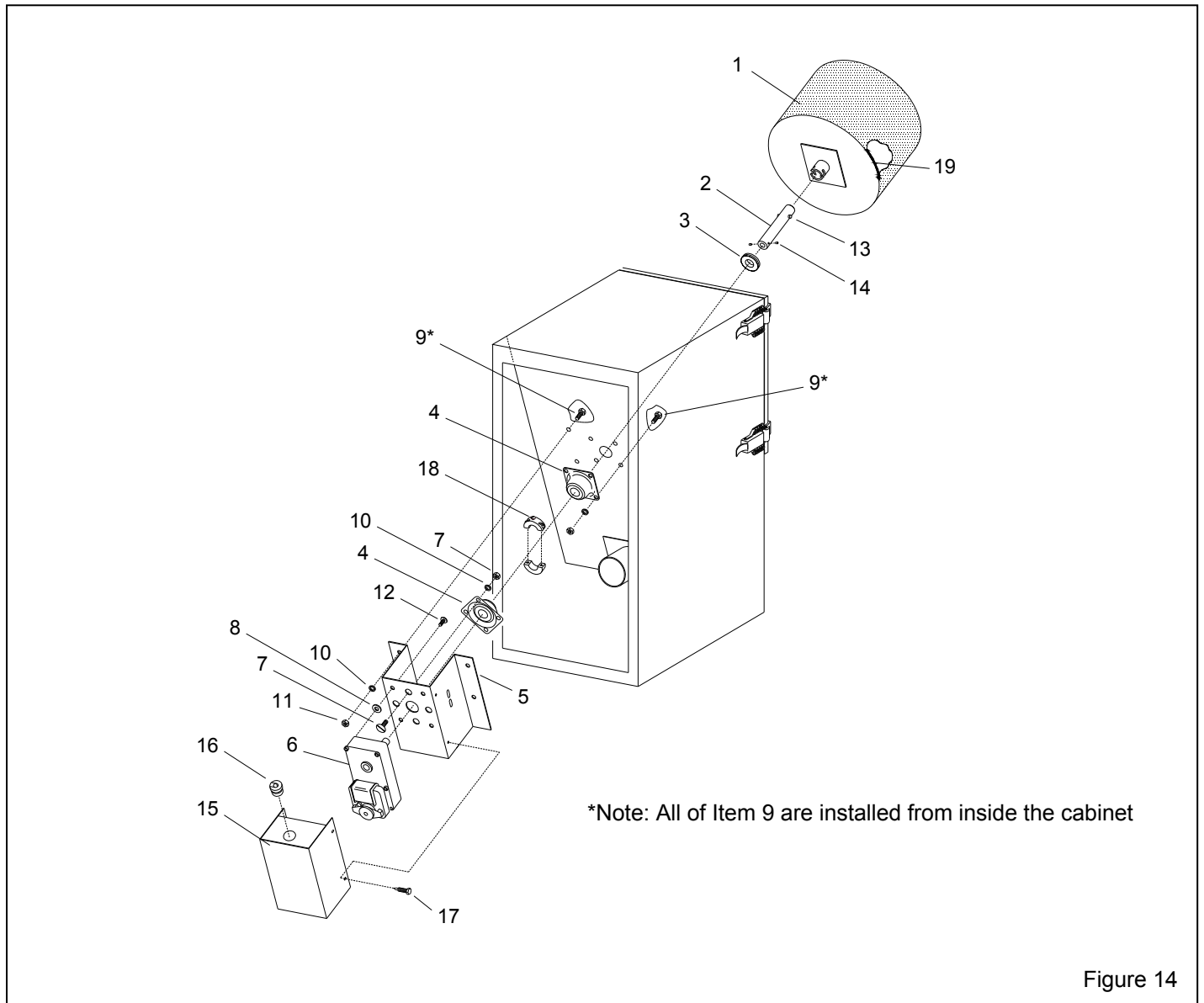


Figure 14



8.4 Gun, Media Feed and Plumbing Assembly  
Figure 15

Item	Description	Stock No.
1.	Nut, nozzle holding .....	11914
2.	Body, gun .....	12267
3.	Air jet No. 5 .....	11952
4.	Nozzle	
	ceramic No. 5, (standard) .....	11930
	tungsten carbide, No. 5 .....	13118
	boron carbide, No. 5 .....	11935
5.	Washer .....	04396
6.	Nut, 3/4" lock .....	12807
7.	Bushing, 3/4" x 3/8" .....	12748
8.	Adaptor, 3/8" male NPT x 1/2" male flare .....	11726
9.	Fitting, hose, 1/2" barb x 1/2" fem. swivel .....	15002
10.	Hose, 1/2" clear media, 6-ft. required .....	12476

11.	Bracket, gun mount .....	12806
12.	Valve 1/2" NPT 2- way w/115-v solenoid .....	12191
13.	Filter, 3/8" NPT, manual drain .....	25870
14.	Gauge, 1/8" cbm (replacement) .....	01908
15.	Fitting, hose, 3/8" NPT male x 1/2" barb .....	06369
16.	Hose, 1/2" air, 4-ft. required .....	12472
17.	Fitting, straight, 1/8" NPT x 1/8" barb .....	11732
18.	Regulator, 1/4" NPT pressure w/gauge .....	12050
19.	Fitting, straight 1/4" NPT x 3/8 tube .....	11736
20.	Regulator, 3/8" NPT pressure w/gauge .....	25869
21.	Metering valve body .....	11532
22.	Plug, metering valve .....	12011
23.	Connector, strain relief, alum. .....	11631
24.	Nipple, 1/4" NPT brass hex .....	02808
25.	Bushing 1/4" NPT x 1/8" NPT brass .....	02010
26.	Elbow, 3/8" NPT x 90° St., brass .....	03595
27.	Screw, #10 x 1/2" truss .....	12062
28.	Nut, 10-24 lock .....	12731

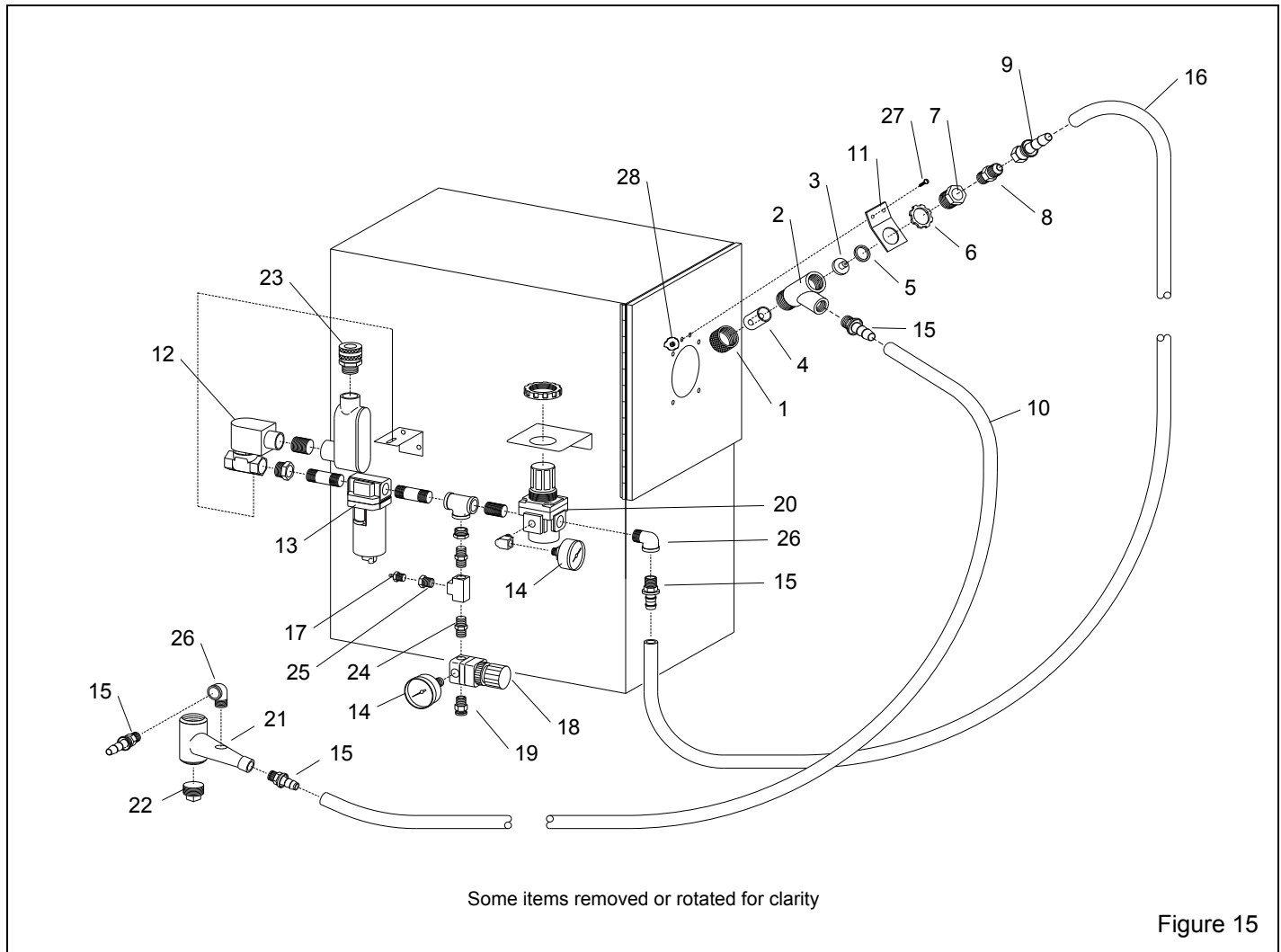
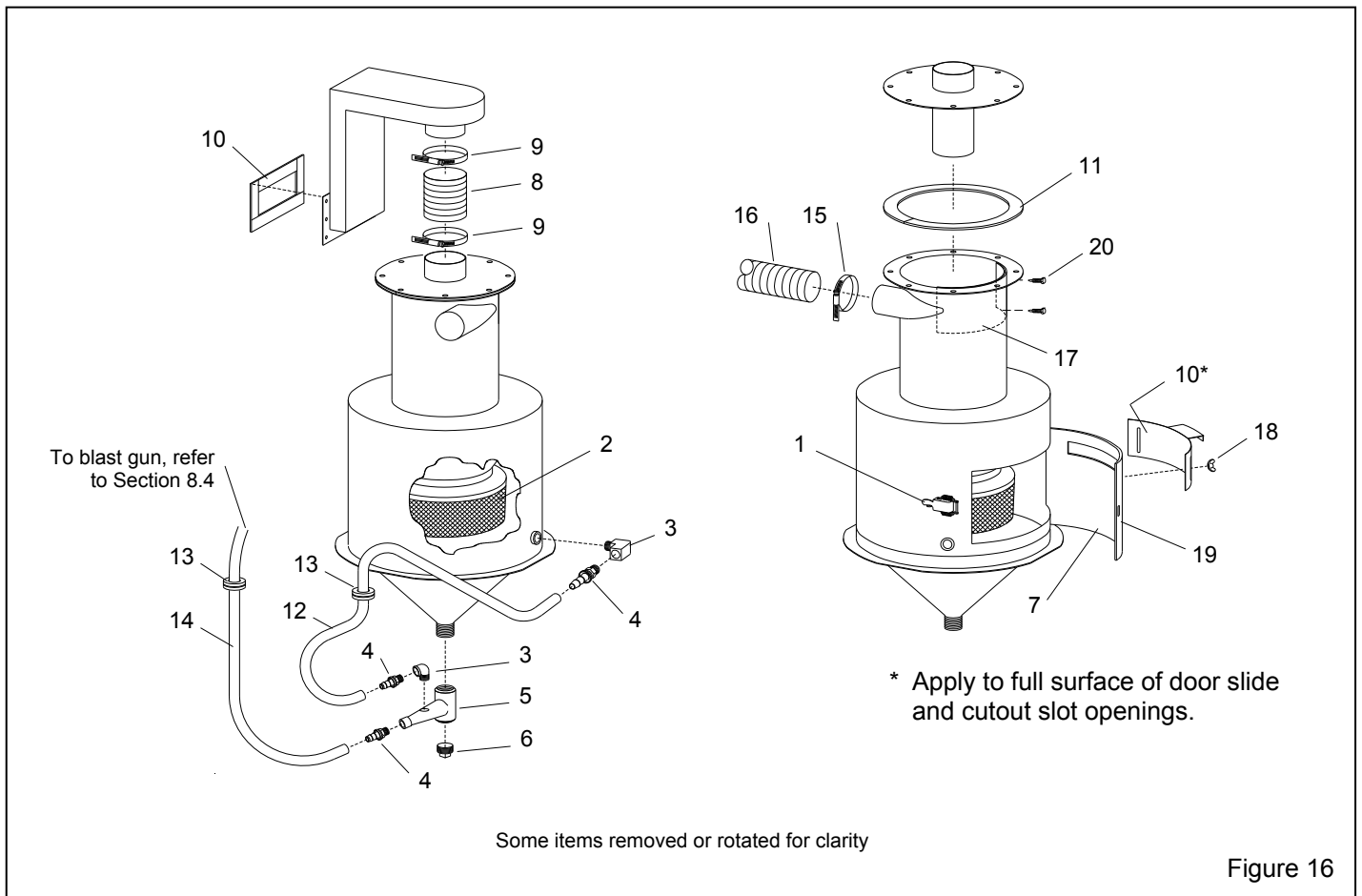


Figure 15

**8.5 Reclaimer Assembly  
Figure 16**

Item	Description	Stock No.
1.	Latch, spring assembly .....	12263
2.	Screen assembly, 8-mesh .....	21265
3.	Elbow, 3/8" NPT street, brass .....	03595
4.	Fitting, hose, 3/8" NPT male x 1/2" barb .....	06369
5.	Body, metering valve .....	11532
6.	Plug, 1" Nylon pipe .....	12011
7.	Gasket, slotted door .....	24974
8.	Hose, 3" unlined flex, 1-ft minimum .....	25873
9.	Clamp, 3" OD, each .....	02816

10.	Gasket, 3/16" x 1" adhesive backed specify feet required .....	13089
11.	Gasket, 5/16" x 1" adhesive backed 3-feet required .....	00187
12.	Hose, 1/2" air, 3-feet required .....	12472
13.	Grommet, rubber .....	11798
14.	Hose, 1/2" clear media, 6-ft Required .....	12476
15.	Clamp, 2-1/2" .....	02817
16.	Hose, 2-1/4" light lined flex, 3-ft required .....	24977
17.	Wear plate, reclaimer .....	24969
18.	Nut, 1/4-NC wing .....	03113
19.	Door with slide, order gaskets separately .....	24967
20.	Screw, 10 x 3/4 self-drilling .....	12722



**8.6 Dust Collector Assembly, Figure 17**  
**Refer to Section 8.7 for pulse components**

Item	Description	Stock No.
1.	Filter cartridge 8" x 16" w/gasket	25874
2.	Gasket, 5/16" x 1" adhesive backed 4-feet required	00187
3.	Blower/motor assembly	24975
4.	Band, blower motor	16409
5.	Muffler, blower	24976
6.	Valve, 3/4" NPT diaphragm pulse	25867
7.	Elbow, 1/8" NPT brass st	03993
8.	Nipple, 1/8" NPT hex	01962
9.	Valve, 3 way	12202
10.	Actuator, air pilot	19123
11.	Fitting, straight 1/8" NPT x 1/8" barb	11732

12.	Petcock, drain	01993
13.	Fitting, straight 1/4" NPT x 3/8 tube	11736
14.	Clamp, 4"	11577
15.	Hose, 4" unlined flex, 1-ft minimum	12447
16.	Dust drum, 3.5 gallon	23417
17.	Lid, dust drum	23419
18.	Gasket, 3/16" x 1" adhesive backed specify feet required	00186
19.	Washer, 1/4 flat	03116
20.	Washer, 1/4 lock	03117
21.	Nut, 1/4-NC wing	03113
22.	Washer, 5/16 flat	03216
23.	Washer, 5/16 lock	03217
24.	Nut, 5/16-NC hex	03211
25.	Washer, 3/8 flat	03317
26.	Washer, 3/8 lock	03318
27.	Nut, 3/8-NC wing	03313
28.	Brushes, blower motor, not shown	28157

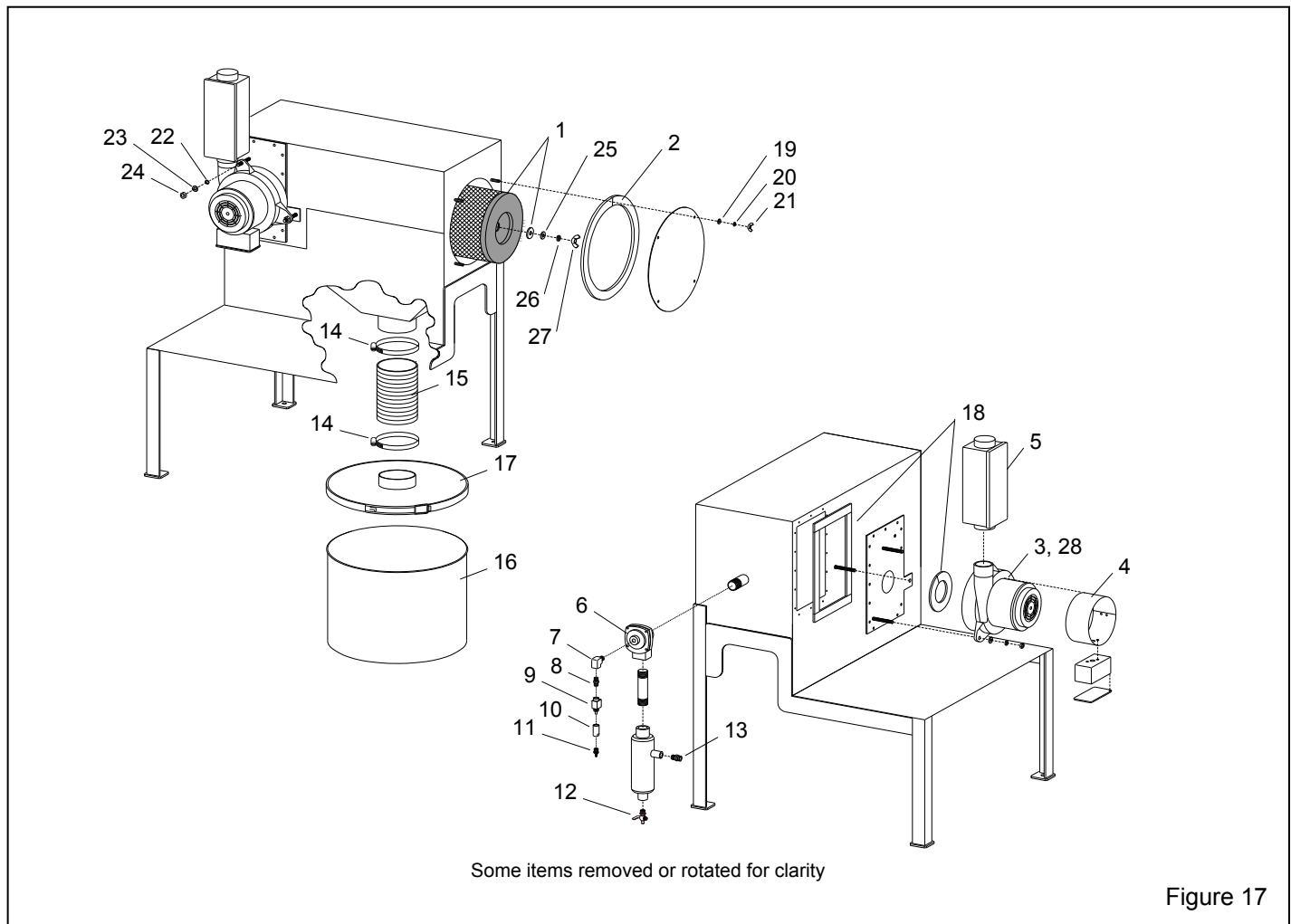


Figure 17

8.7 Dust Collector Pulse and Plumbing, Figure 18

Item	Description	Stock No.
1.	Collar, split .....	25866
2.	Screw, 10-24 x 1/2 .....	03886
3.	Cam follower .....	19576
4.	Roll pin, 1/8", each, two required .....	20479
5.	Bracket, pulse valve .....	25863
6.	Valve, 3-way .....	12202
7.	Fitting, elbow 1/8" NPT x 1/8" barb .....	11733
8.	Tubing, 1/8" urethane, specify ft. required ...	12475

9.	Valve, 3/4" NPT diaphragm pulse .....	25867
10.	Elbow, 1/8" NPT brass st .....	03993
11.	Nipple, 1/8" NPT hex .....	01962
12.	Actuator, air pilot .....	19123
13.	Fitting, straight 1/8" NPT x 1/8" barb .....	11732
14.	Fitting, straight 1/4" NPT x 3/8 tube .....	11736
15.	Gauge, differential pressure .....	25868
16.	Coupling, 1/8" NPT galv. ....	13232
17.	Filter, inline, 1/4" tube .....	23415
18.	Bushing 1/4" NPT x 1/8" NPT brass .....	02010
19.	Tubing, 3/8" OD poly, 3-ft. required .....	12478

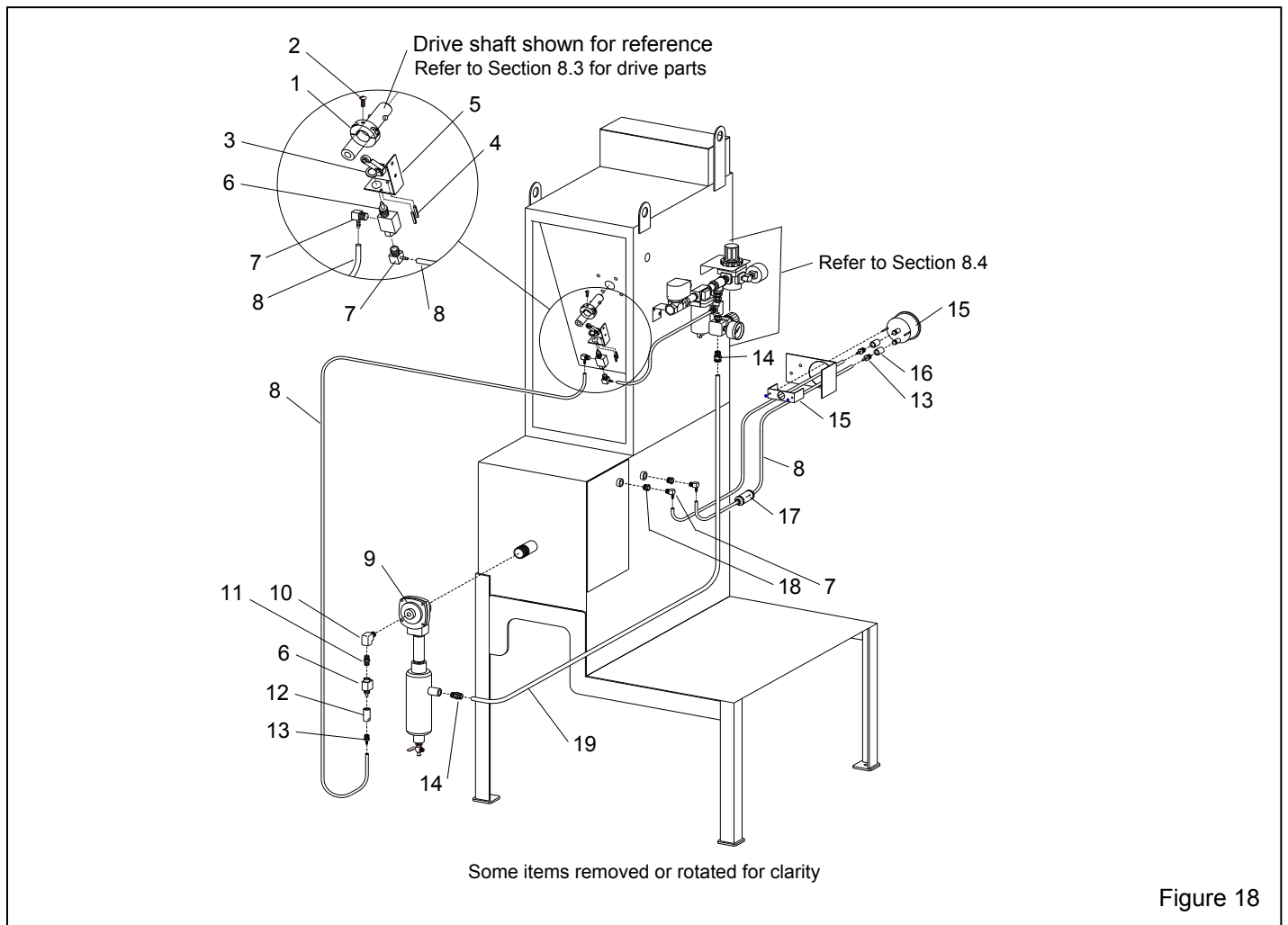


Figure 18