

# BNP 250 and 260 Wetblast Cabinets



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

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

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

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

## **OWNER'S MANUAL**

## 1.0 INTRODUCTION

### 1.1 Scope of Manual

1.1.1 These instructions cover set-up, operation, adjustments, maintenance, troubleshooting, and replacement parts for BNP 250 and BNP-260 Wetblast Cabinets. A supplemental manual is provided for the pump.

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

### 1.2 Safety Alerts

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



This is the safety alert symbol. It is used to alert the user of this equipment of potential personal injury hazards.

Obey all safety messages that follow this symbol to avoid possible injury or death.

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## CAUTION

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

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## CAUTION

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

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## WARNING

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

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## DANGER

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

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### 1.3 General Description

1.3.1 The BNP wetblast cabinets enclose the blasting environment to provide efficient blast cleaning while maintaining a clean surrounding work area. Production rates are influenced by size of air jet and nozzle, compressor output, working pressure, type and size of media, and angle and distance of the nozzle from the blast surface. BNP wetblast cabinets consist of three major components.

1. Cabinet Enclosure
2. Exhauster and Filter System
3. Diaphragm Pump

See Figures 1 and 2 for arrangement of components.

### 1.4 Theory of Operation

1.4.1 When the air, electric and water supplies are on, and the cabinet doors are closed, the cabinet is ready for actuation by the foot pedal. Fully depressing the foot pedal causes air to flow through the blast gun. The slurry of media and water is pumped from the cabinet hopper to the blast gun mixing chamber where it is combined with air and propelled out the nozzle. After striking the object being blasted, the blast media slurry, water and by-products generated by blasting, fall through the perforated work table and back into the cabinet hopper. To stop blasting, release pressure on the foot pedal.

1.4.2 The pump continues to run, circulating the slurry through the nozzle and agitator bypass until the pump switch on front of the cabinet is turned off. The bypass agitates the slurry to keep the media in suspension. The overflow pipe in the cabinet hopper allows oil and fine particles floating on top of the slurry to flow out of the machine.

1.4.3 An exhaust fan is located on the back of the cabinet to prevent condensation and fogging on the window. The exhaust is filtered to remove moisture and particulates prior to being vented.

1.4.4 An interior window washer, using clean water, is activated by depressing an arm-control lever.

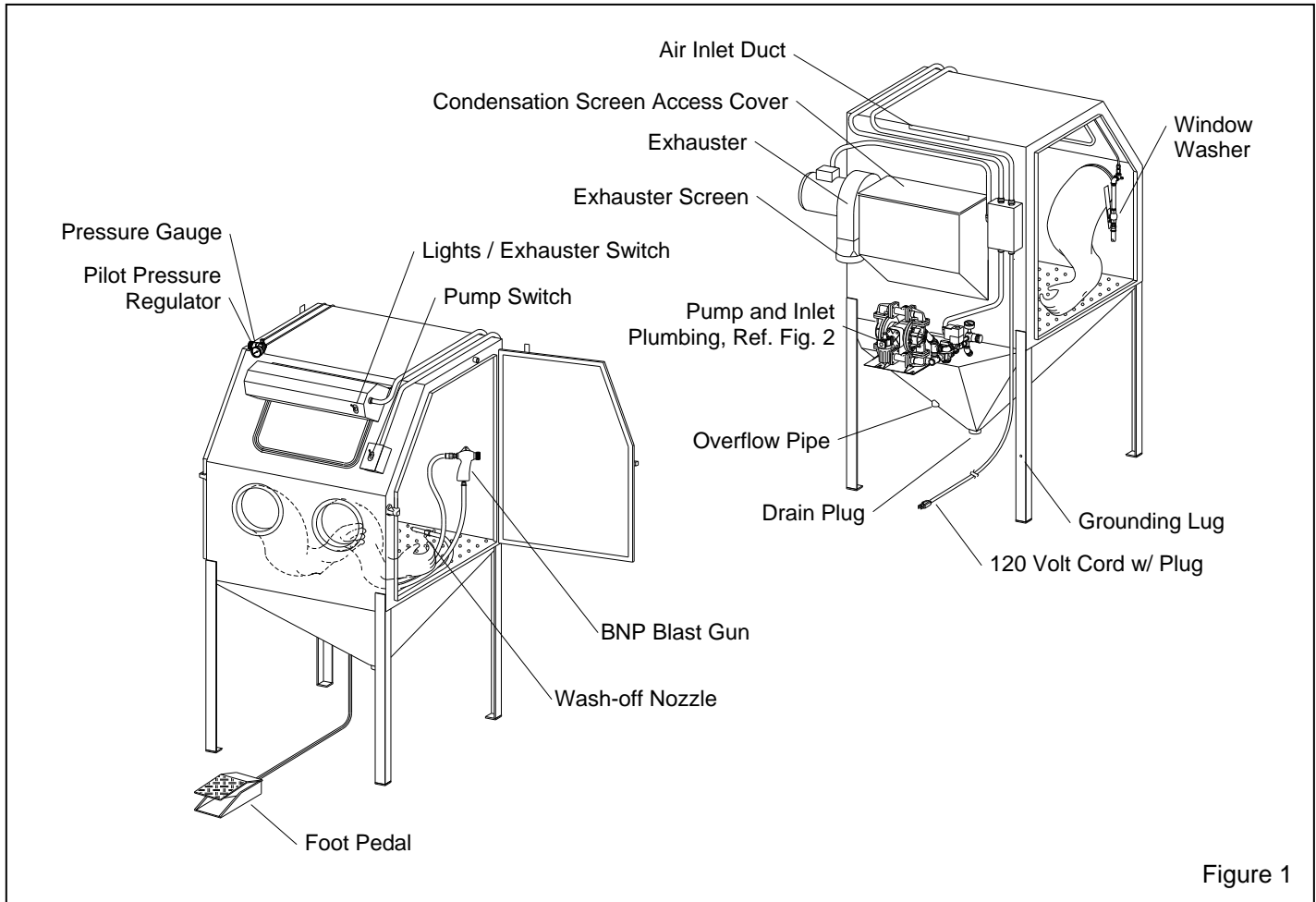


Figure 1

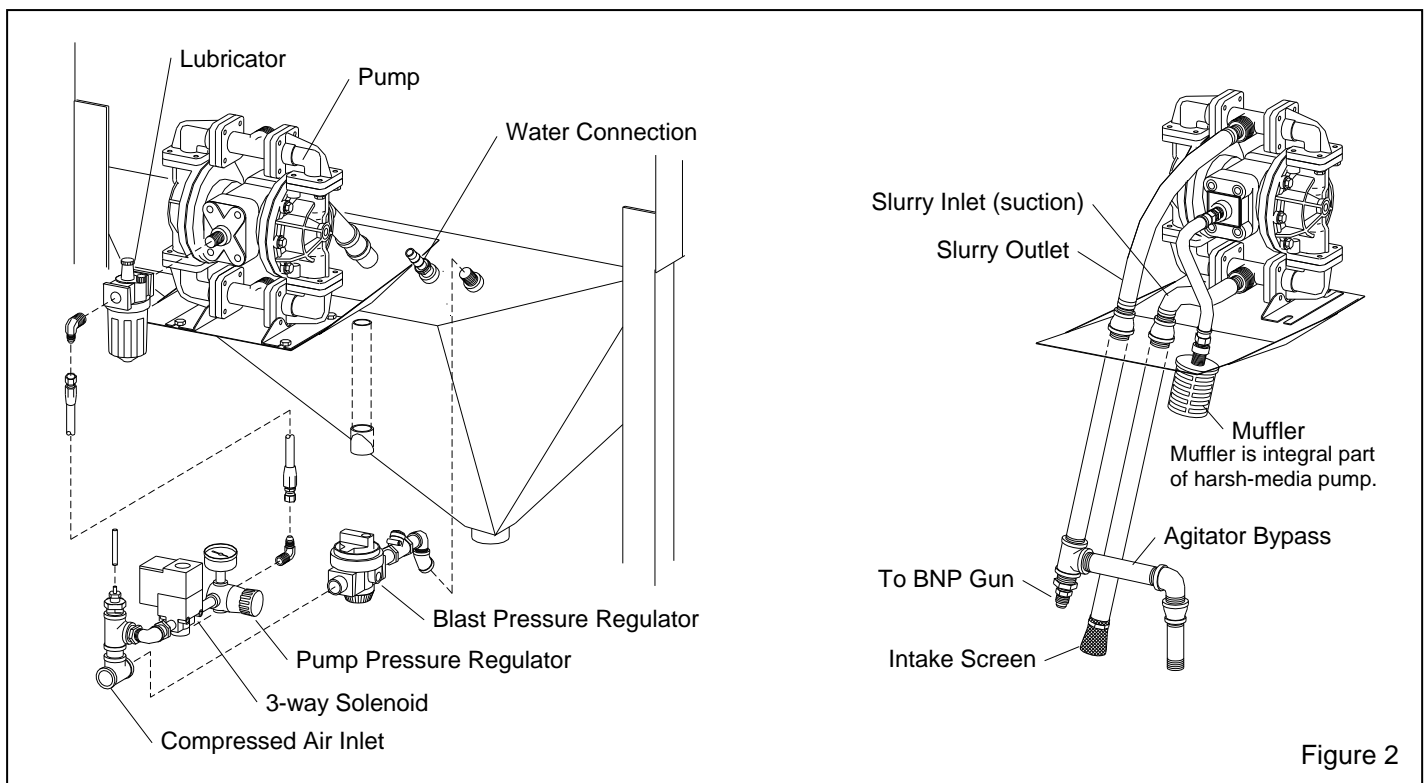


Figure 2

**1.5 Nozzle Options**

**1.5.1** Unless otherwise specified at the time of order, cabinets are shipped with a 5/16" orifice ceramic nozzle and No. 5 (5/32" orifice) air jet. More durable tungsten carbide and boron carbide nozzle are available and are shown in Section 8.6. Use boron carbide nozzles when blasting with aggressive media. Other size nozzles and jets are available, and shown in Section 8.6.

**1.6 Media**

**1.6.1** Glass beads and other non-aggressive media may be used in cabinets with a standard-use diaphragm pump. Sharp, angular abrasive such as aluminum oxide are not to be used with the standard-use diaphragm pump. An optional, abrasive resistant, aggressive-media pump is available for use with aggressive abrasives.

**1.6.2 Glass Bead:** Glass bead size should not exceed 50 mesh U.S. Sieve, Mil Spec #6.

**1.7 Compressed Air Requirements**

**1.7.1** In addition to the compressed air requirements of the blast gun, shown in Figure 3, the air-operated diaphragm pump requires 12 CFM of compressed air at 80 psi.

**CAUTION**

**Air supply pressure to the diaphragm pump must not exceed 100 psi. Recommended operating pressure is 80 psi. Pressure higher than 100 psi may damage the pump.**

**1.7.2** The size of the compressor required to operate the cabinet depends on the size of the air jet and blasting pressure. Unless specified otherwise, cabinets are supplied with a no. 5 (5/32" orifice) jet. See table in Figure 3 to determine cfm requirements. Consult with a compressor supplier for suggested compressor size based on the air consumption.

BNP Gun	Jet	Nozzle	CFM	PSI
No. 4	1/8"	5/16"	21	80
No. 5	5/32"	5/16"	32	80
No. 6	3/16"	3/8"	47	80

BNP Gun Air Consumption in CFM

Figure 3

**1.8 Electrical Requirements**

**1.8.1** 120 volt Ground Fault Circuit Interrupter (GFCI) protected receptacle is required.

**1.8.2** Standard cabinets are supplied with 1/3 HP, 120/240V, 1 PH, 60 HZ motors (wired 120).

European: 1/3 HP, 120/240V, 1 PH, 50 HZ (wired 120).

**1.8.3** A power cord is supplied. Additional electrical information is in Section 2.4.

**2.0 INSTALLATION**

**2.1 General**

**2.1.1** Select a location where compressed air, water 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.

**2.2 Connect Compressed Air Supply Line**

**2.2.1** See the table in Figure 4 to determine the minimum ID of air supply line. A smaller diameter hose may reduce blasting efficiency.

Air Line Length	Jet Size		
	No. 4	No. 5	No. 6
25 feet	3/4"	3/4"	1"
50 feet	3/4"	3/4"	1"
75 feet	3/4"	1"	1"
100 feet	3/4"	1"	1"
Minimum compressed air line ID			

Figure 4

**2.2.2** Install an isolation valve at the air source to enable depressurization for service, and connect air line from the air source to the inlet located on the back of the cabinet.

**WARNING**

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

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## 2.3 Ground Cabinet

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

## 2.4 Connect Electrical Service

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### WARNING

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

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**2.4.1** A power cord is supplied. GFCI receptacles and electrical service are required. No additional wiring is required. **SEE FOLLOWING IMPORTANT WARNINGS**

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### WARNING

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

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### WARNING

**Electrical service must be properly grounded. Receptacle and service must be GFCI protected. Electrical shock hazard may be present from water on the floor and other places when operator removes wet parts from the machine.**

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**2.4.2** Check the rotation of the motor by looking through the slots in the motor fan housing where rotation of the fan can easily be observed. Do not look into the exhaust outlet when paddle wheel is turning. Jog the starter (momentarily turn switch on and off). This will cause the motor to rotate slowly. Proper rotation is indicated by the rotation arrow on the exhaust housing. The fan should rotate clockwise when viewed from the fan end of the motor.

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### WARNING

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

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## 2.5 Water Hook-Up

**2.5.1** Connect water to the machine using a 1/2" ID hose. Push the hose over the brass barb stem on the back of the cabinet and securely clamp it in place. The clamp is not included. Connect the other end of the hose to a water faucet.

## 2.6 Final Assembly

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

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

**2.6.3** Fill the lubricator with lightweight oil (SAE 10 wt. max.)

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## 3.0 OPERATION

### 3.1 Slurry mixture

**3.1.1 Creating Slurry:** With the exhaust motor off, add approximately 0.5 cubic foot (50 lbs) of new media, by pouring it into the hopper through one of the cabinet side doors. The media level must remain below the bottom of the slurry pick up screen. Fill the hopper with water until it is just below the top of the overflow pipe.

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### CAUTION

**Keep media level below the slurry pick-up tube. Media above the pickup tube will solidify and block the tube.**

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**3.1.2 Additives:** Mild, low sudsing detergents may be added to the slurry to help remove oil residue from the part. Other mild additives may be used to retard rusting. Do not add harsh chemicals.

**3.1.3 Unloading Slurry:** To drain the slurry, place an empty container under the cabinet hopper. Unscrew the plug, permitting the slurry to drain into the container(s). If the slurry doesn't flow, the media has caked. Open the cabinet door and stir the slurry until it starts to flow. Replace the plug when the machine is empty. Let media settle in the bottom of the containers before dumping the water. Do not pour the slurry into a drain.

## 3.2 Slurry Agitation

**3.2.1** Start the pump approximately five minutes before blasting. If media has not mixed with the water after five minutes, force air back through the media line as follows: Press the exhaust end of the nozzle against a glove or cabinet wall, and depress the foot pedal for a few seconds. Repeat the process if necessary.

## 3.3 Loading and Unloading Parts

### WARNING

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

**3.3.1** Load and unload parts through either door.

**3.3.2** Close door. Make sure the door is sealed securely, or door interlock system will prevent blasting.

## 3.4 Blasting

### CAUTION

- **Always close cabinet doors before blasting. Keep all doors closed during blasting.**
- **Always wear blast gloves.**
- **Avoid pointing the blast nozzle toward the view window.**
- **Use the wash down nozzle to wash parts before opening doors or switching the exhauster off.**
- **After blasting, keep doors closed and exhauster on until the cabinet is clear of all airborne contaminants.**

**3.4.1** Check lubricator oil level and fill as necessary with lightweight oil (SAE 10 wt. max.).

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

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

**3.4.4** Adjust the pilot regulator located on the left, top of cabinet to the required blast pressure per Section 4.1.

**3.4.5** Switch on the diaphragm pump. The switch is to the right of the window. Allow the pump to run for five minutes before blasting.

**3.4.6** Adjust the pump's pressure regulator to 80 psi. The regulator is located on the pump piping assembly. Refer to Figure 2.

### CAUTION

**Recommended maximum operating pressure of the pump is 80 psi. Pressure higher than 100 psi may damage the pump.**

**3.4.7** Turn on lights and exhauster. The on/off toggle switch located on the face of the light enclosure performs both functions.

**3.4.8** Insert hands into gloves.

**3.4.9** To blast, hold the gun firmly and apply pressure to the foot pedal; blasting will begin almost immediately.

### WARNING

**Short term ingestion of toxic materials or liquids such as lead, poses an immediate danger to health. Toxicity and health risk vary with type of media and by-product generated by blasting. Identify all material being removed by blasting, and obtain a material safety data sheet for the blast media.**

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

**3.4.11** Clean the view window as needed to maintain a clear field of vision. The window is cleaned by the operator pressing their arm against the valve lever on the inside of the cabinet's front wall.

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### 3.5 Stop Blasting

**3.5.1** To stop blasting, remove pressure on the foot pedal.

**3.5.2** Use the wash-off nozzle to wash media off cleaned parts. Allow the exhauster to clear the cabinet of airborne contaminants before opening the door.

### 3.6 Shut Down

**3.6.1** Use the wash down nozzle to rinse off the inside of the cabinet.

**3.6.2** Switch off the lights/ exhauster and pump.

**3.6.3** Turn off the air and water supply.

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## 4.0 ADJUSTMENTS

### 4.1 Blasting Pressure

**4.1.1** The blast-pressure pilot-regulator located on the left, top of the cabinet enables the user to adjust blasting pressure to suit the application. The suitable pressure for most applications is 80 psi. Lower pressures may be used for delicate work. In all cases, highest production can be achieved only when pressure is carefully monitored.

**4.1.2** To adjust, turn the knob clockwise to increase pressure or counter-clockwise to decrease pressure. Pressure will usually drop from closed-line pressure when blasting is started.

### 4.2 Air Jet Adjustment

**4.2.1** The air jet should be screwed 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. See Section 8.6 for optional adjusting tool.

### 4.3 Lubricator

**4.3.1** Fill the lubricator with lightweight oil (SAE 10 wt. max.)

**4.3.2** Turn adjusting knob fully clockwise to close. Adjust the drip rate only when the pump is operating and there is a constant flow of air through the lubricator.

**4.3.3** Turn the adjusting knob counter-clockwise to start the oil flow. Observe the drip rate through the sight dome. All the oil drops seen in the dome go into the air stream. Begin with the drip rate at approximately one drop every two to three minutes.

**4.3.4** Increase the drip rate by rotating the adjustment knob counter-clockwise. To decrease the drip rate, rotate the knob clockwise.

### 4.4 Door Interlocks, Figure 5

NOTE: Before the initial use, check the door interlocks per section 4.4.5.

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## WARNING

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

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**4.4.1** The door interlocks disable the blasting control circuit when the doors are opened. To enable blasting, the door interlock switch must be engaged when the doors are closed. The interlocks are set at the factory and do not usually require field adjustment unless parts are replaced.

**4.4.2** Close cabinet doors.

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

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

**4.4.5** Test the operation with the doors open and then again closed. Point the nozzle away from the door during the tests, and only open the door enough to disengage the interlock switch. The interlocks should stop blasting when the doors are open, and permit blasting when the doors are closed. NOTE: Negative pressure inside the cabinet may cause the doors to flex inward. Tests should be performed with the exhauster on. The pump is not controlled by the interlocks. Slurry will continue to come out the nozzle even when doors are open. Shut off the pump with the switch to the right of the window.

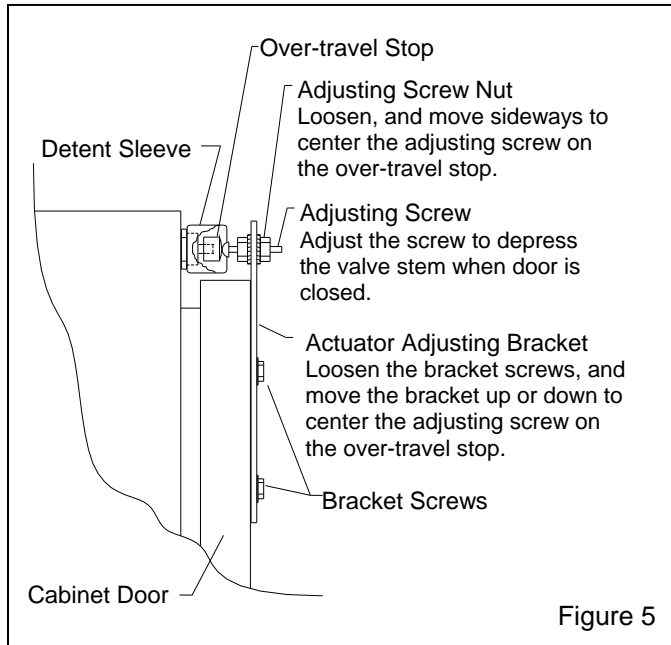


Figure 5

## 5.0 PREVENTIVE MAINTENANCE

### **⚠ WARNING**

**Accidental actuation of any component during service could cause death or serious injury. Before performing any service, lockout and tagout the compressed air supply and electrical power.**

#### 5.1 Diaphragm Pump

**5.1.1** Refer to the pump's service and operating manual for preventive maintenance.

#### 5.2 Daily

**5.2.1** Rinse the interior of the cabinet at the end of each work shift.

**5.2.2** Clean the inside and outside of the view window.

#### 5.3 Weekly

**5.3.1** Inspect the BNP Gun for wear. Inspection and replacement of the air jet cover before it wears through will prolong the life of the jet.

**5.3.2** Inspect condensation screens and clean as necessary.

**5.3.3** Inspect the media hose for thin spots, especially the outside radius.

#### 5.4 Quarterly

**5.4.1** Remove contamination from exhauster housing and paddle wheel.

#### 5.5 View Window Cover Lens

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

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

#### 5.6 Air Inlet Ducts

**5.6.1** Air inlet ducts, located on the back/top of the cabinet, allow air to be drawn into the cabinet. The air is required for ventilation, and visibility. The ducts must be kept open and free of obstruction at all times.



## 6.0 SERVICE MAINTENANCE

### **▲ WARNING**

Accidental actuation of any component during service could cause death or serious injury. Before performing any service, lockout and tagout the compressed air supply and electrical power.

### **▲ WARNING**

Failure to wear approved safety equipment when servicing contaminant-laden areas of the cabinet and when emptying the hopper could result in serious eye or skin irritation or other hazard. Toxicity and health risk vary with type of media and contaminants removed by blasting. Obtain a material safety data sheet for the blast media and all the contaminants being removed.

## 6.1 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.

6.1.1 Swing the light-shield up (as shown in Figure 6) and tie it in place.

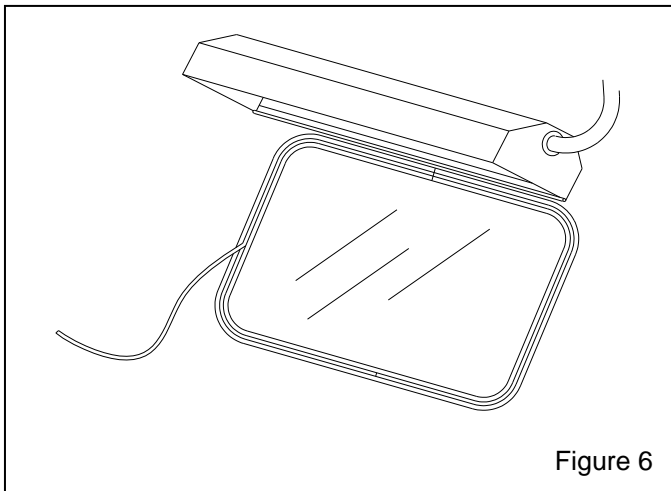


Figure 6

6.1.2 Remove the filler-strip by pulling it out of the window molding, as shown in Figure 6.

6.1.3 Place an arm into a glove, and push the bottom edge of the window out of the molding, as shown in Figure 7, while supporting the top of the window with the other hand.

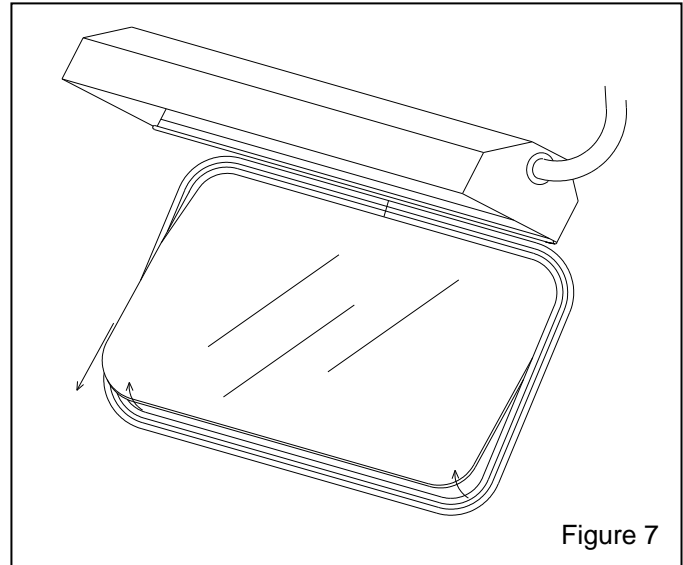


Figure 7

6.1.4 Pull the window downward to remove the window from the molding, as shown in Figure 8.

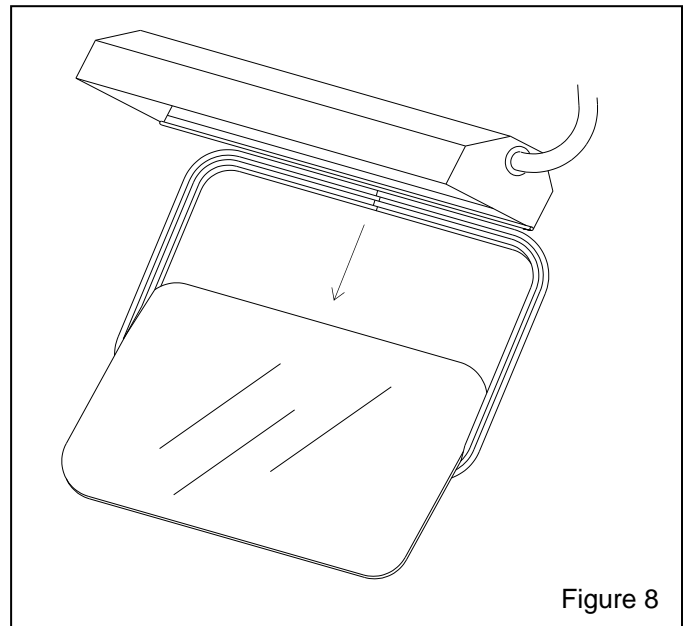
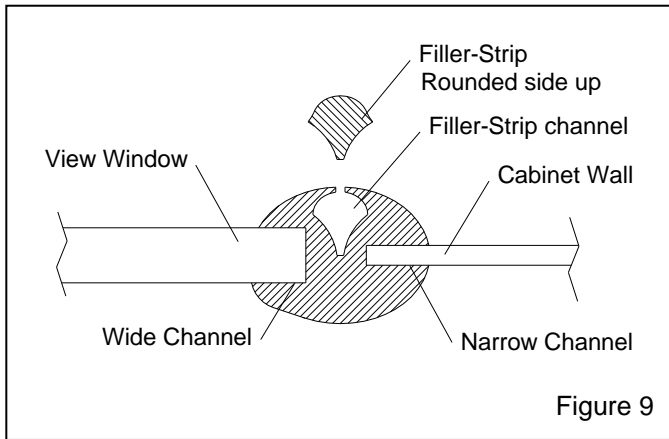


Figure 8

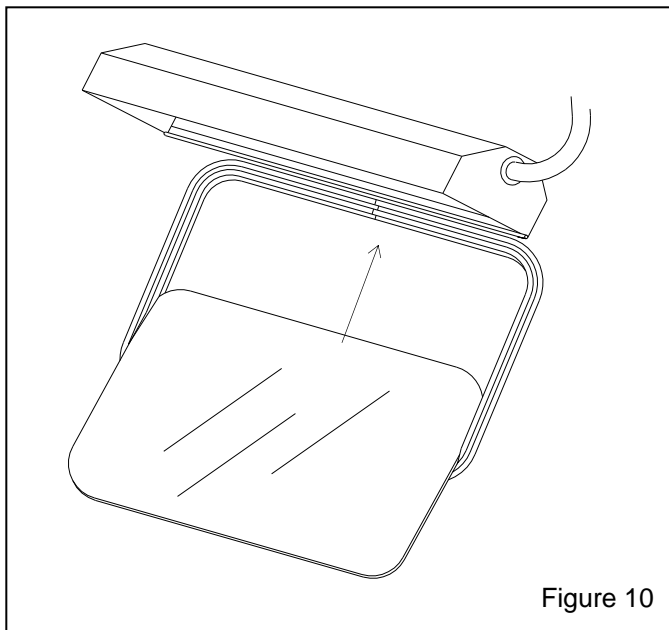
6.1.5 Inspect the window molding; replace it if it is dried or damaged.

6.1.6 Refer to Figure 9 to install the window molding. The narrow channel fits over the metal edge of the

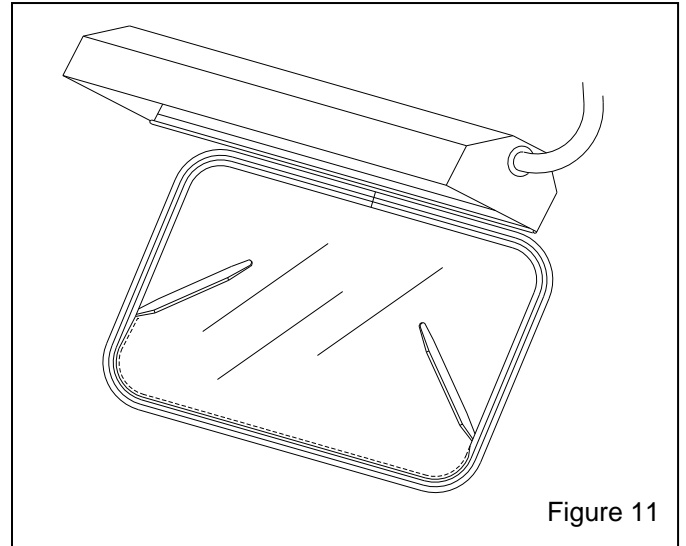
cabinet opening. The molding ends should meet in the middle of the top, straight section of the opening. Molding should be compressed so the ends are tightly sealed.



**6.1.7** Spray silicone lubricant into the window channel (wide channel) on the molding, and slide the window into the channel, as shown in Figure 10. Place an arm into a glove to support the top edge of the bottom side of the window with one hand, while guiding the top edge into the molding with the other.

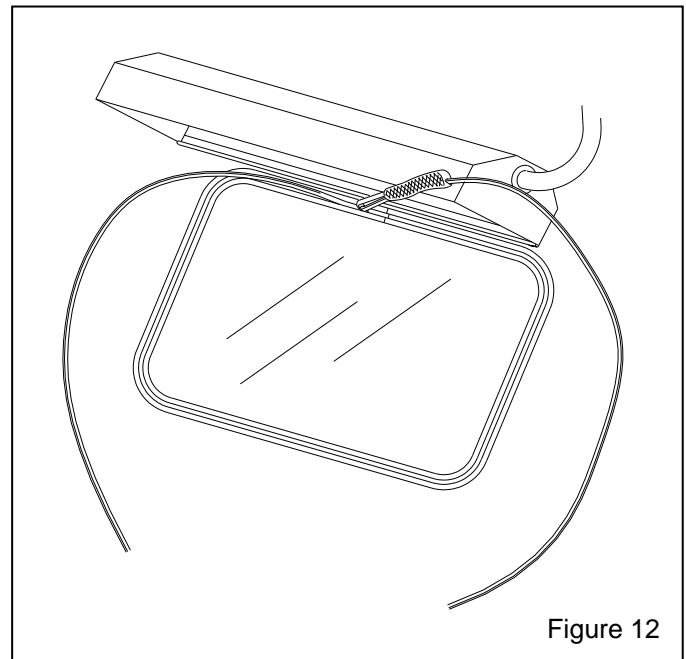


**6.1.8** Use a nylon, window installation stick, Stock No. 22933, as shown in Figure 11, and work the window channel lip over the glass. When this is done, the window should be entirely within the molding's window channel.



**6.1.9** Wipe, or spray the filler-strip with silicone lubricant to reduce friction. Thread about half of the strip into the filler-strip installation tool, Stock No. 12176.

**6.1.10** Insert the end of the installation tool and filler-strip into the filler-strip channel of the molding, about two inches to the left of the window molding ends, as shown in Figure 12. The rounded side of the filler-strip faces up.



**6.1.11** Feed the filler-strip while pulling the tool through the top of the channel, down the side and across the bottom until that end of the strip is in place. Refer to Figure 13.

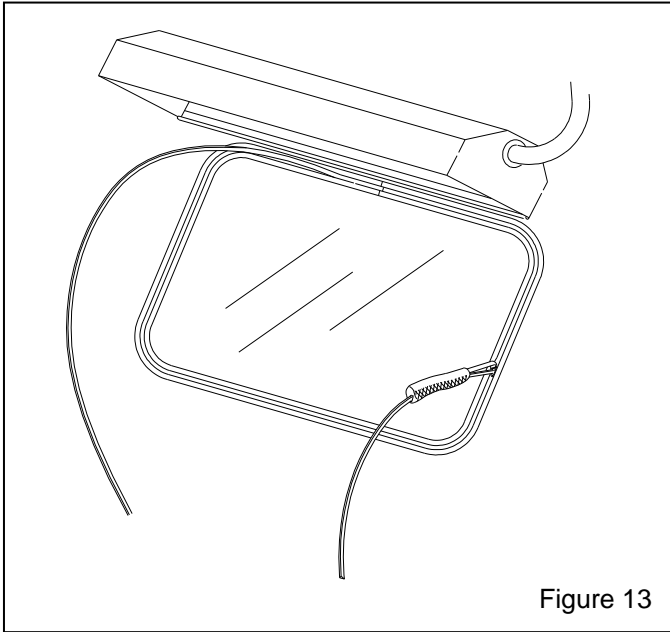


Figure 13

**6.1.12** Repeat 6.1.9 and 6.1.10 on the other end of the filler-strip. Use the window stick to push the filler-strip into the molding at any spot the strip is not fully seated. Place the light-shield in its normal position.

## 6.2 Gloves

**6.2.1** Special static-dissipating waterproof gloves are provided for operator comfort. It will be necessary to change gloves periodically as they wear.

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

## 6.3 Nozzle

**6.3.1** Replace the nozzle when its diameter has increased by 1/16", or sooner if suction diminishes noticeably. To change the nozzle; unscrew the nozzle holding nut from the gun end, and pull the existing 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 nozzle holding nut onto gun.

## 7.0 TROUBLESHOOTING

### **⚠ WARNING**

To avoid serious injury, observe the following when troubleshooting.

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

NOTE: Refer to the pump's operation and service manual for troubleshooting the diaphragm pump.

### 7.1 Poor Visibility

**7.1.1** Motor rotating backwards. The motor should rotate as indicated by the arrow on the housing. If it does not rotate in the proper direction, LOCKOUT AND TAGOUT POWER and switch the motor leads as shown on the motor plate. See Section 2.4.2.

**7.1.2** Condensation filters may be clogged. Rinse with clean water or replace.

**7.1.3** Paddle wheel or exhauster housing worn or requires cleaning. Clean and check for wear.

**7.1.4** Blocked air inlet duct. Check inlet duct for blockage.

### 7.2 Reduction In Blast Cleaning Rate

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

**7.2.2** Media has settled in bottom of hopper. Agitate slurry per Section 3.2.

**7.2.3** Media has broken down beyond its useful life. Drain hopper per Section 3.1.3. Rinse machine with clean water and recharge with new slurry. See Section 3.1.1.

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

**7.2.5** Blockage in media line or gun. Blockage may occur as a result of a missing or damaged pick-up screen or accumulation of oil or greases in the slurry or on the gun. Clean or replace as necessary.

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

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

**7.2.8** Air jet in gun out of adjustment. Check adjustment per Section 4.2.

### 7.3 No Slurry From Nozzle

**7.3.1** High media level blocking media flow through intake tube. Drain hopper per Section 3.1.3. Do not fill media above the bottom of the intake screen.

**7.3.2** Slurry level too low. Fill the hopper with water until it is just below the top of the overflow pipe.

**7.3.3** Pump not operating. Make sure the pump switch is on, check pump pressure at the regulator, check solenoid. Check pump per service manual.

### 7.4 No Air Comes Out The Nozzle When The Foot Pedal Is Pressed.

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

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

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

**7.4.4** Make sure lines are not reversed on the foot pedal or pilot regulator. Refer to the air plumbing schematic in Figure 15.

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

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

### 7.5 Blasting Does Not Stop When The Foot Pedal Is Released

**7.5.1** Make sure the 3-way valve in the foot pedal exhausts air when the pedal is released. If it does not,

check the line for blockage, and check the switch for defect.

### 7.6 Static Shocks

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

## 8.0 ACCESSORIES and REPLACEMENT PARTS

### 8.1 Foot Pedal Assembly, Figure 14

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

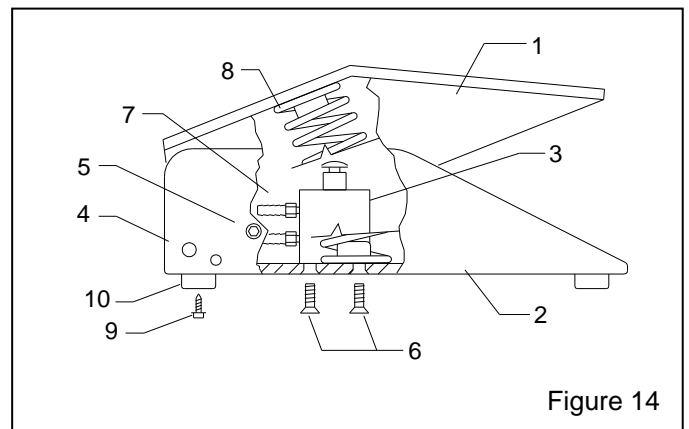


Figure 14

8.2 Air Plumbing Schematic, Figure 15

Item	Description	Stock No.
1.	Valve, 3 way	12202
2.	Fitting, 1/8" NPT x 1/8" barb	11732
3.	Tubing, 1/8" urethane, specify feet required	12475
4.	Tubing, 1/8" urethane twinline, specify feet required	19577
5.	Foot pedal assembly, less hose	20483
6.	Valve, 3-way solenoid	12199
7.	Hose end, 1/2" barb x 1/2" female swivel	15002
8.	Hose end, 1/2" barb x 3/8" male NPT	06369
9.	Hose, 1/2" air, six feet required	12472
10.	Gun assembly, BNP no. 5	12302

11.	Regulator, 1/2" pilot operated	11345
12.	Regulator, 1/8" pilot	12715
13.	Gauge, pressure, panel mount	01908
14.	Fitting, 1/8" NPT elbow x 1/8" barb	11733
15.	Bracket, regulator	12915
16.	Regulator w/ gauge, 1/4"	12050
17.	Check valve, 3/8"	12195
18.	Lubricator	12857
19.	Pump	
	1/2", standard, non aggressive media	20570
	1", aggressive media use	24427
20.	Elbow, 1/4" NPT adaptor	02513
21.	Hose, 3/16" x 18 inch, coupled.	02454
22.	Hose, 1/2" media, six feet required	12471
23.	Adaptor, 3/8" male NPT x 1/2" male hose	11726

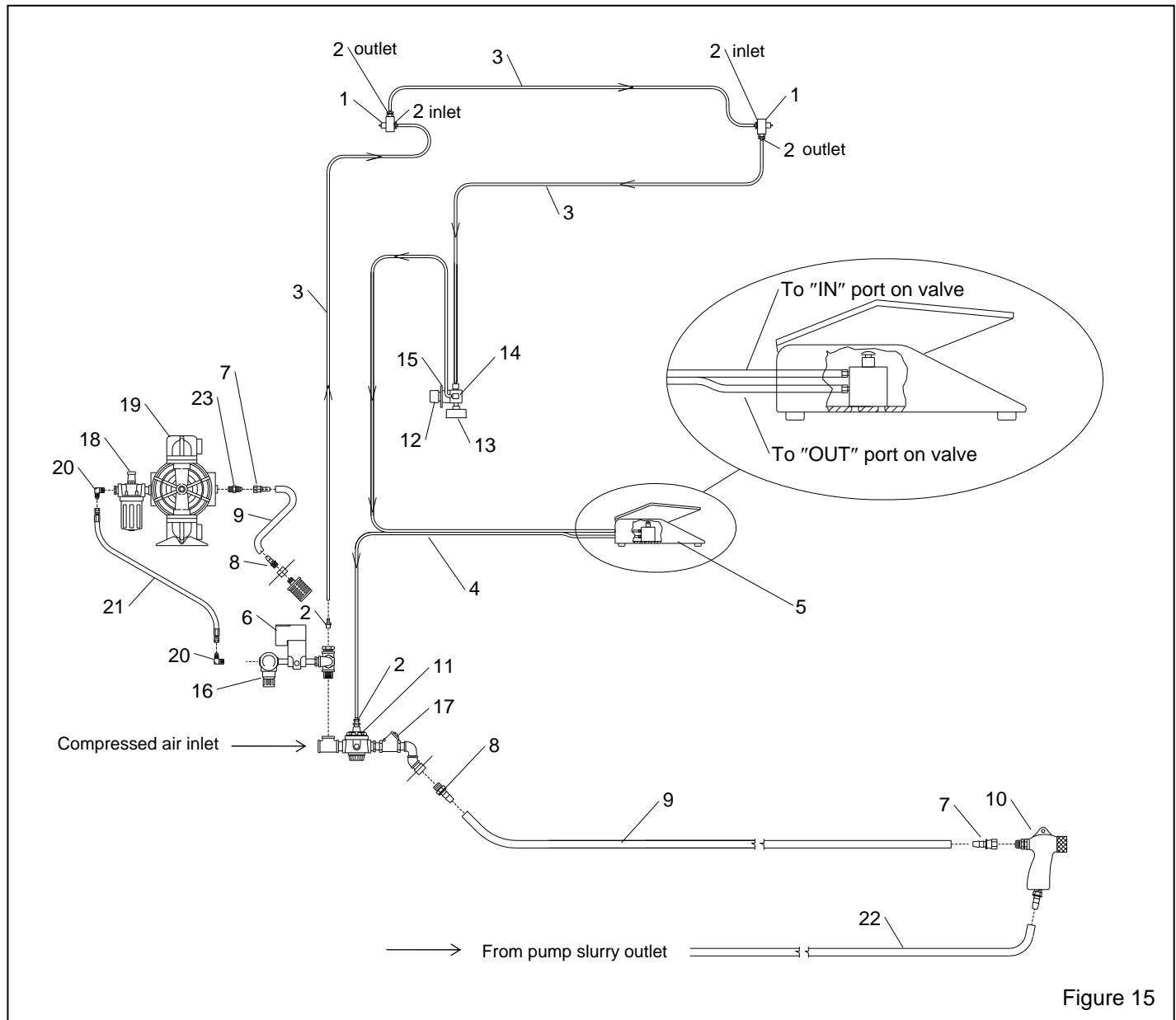


Figure 15

8.3 Water Plumbing Schematic, Figure 16

Item	Description	Stock No.
1.	Pump 1/2", standard, non aggressive media .....	20570
	1", aggressive media use .....	24427
2.	Screen, slurry suction .....	20582
3.	Clamp, 1-1/2" .....	02805
4.	Tubing, 5/8", specify feet required .....	20572
5.	Clamp, hose 3/4" .....	12756
6.	Adaptor, 3/8" male NPT x 1/2" male hose ...	11726
7.	Pipe assembly, window washer .....	14329
8.	Valve, 3/8" w/ lever extension .....	19532
9.	Hose end, 1/2" barb x 1/2" fem. swivel .....	15002
10.	Hose end, 1/2" barb x 3/8" male NPT .....	06369
11.	Hose, 1/2" air, specify feet required .....	12472
12.	Nozzle, blow off/wash down .....	06368
13.	Hose, 1/2" media, specify feet required .....	12471

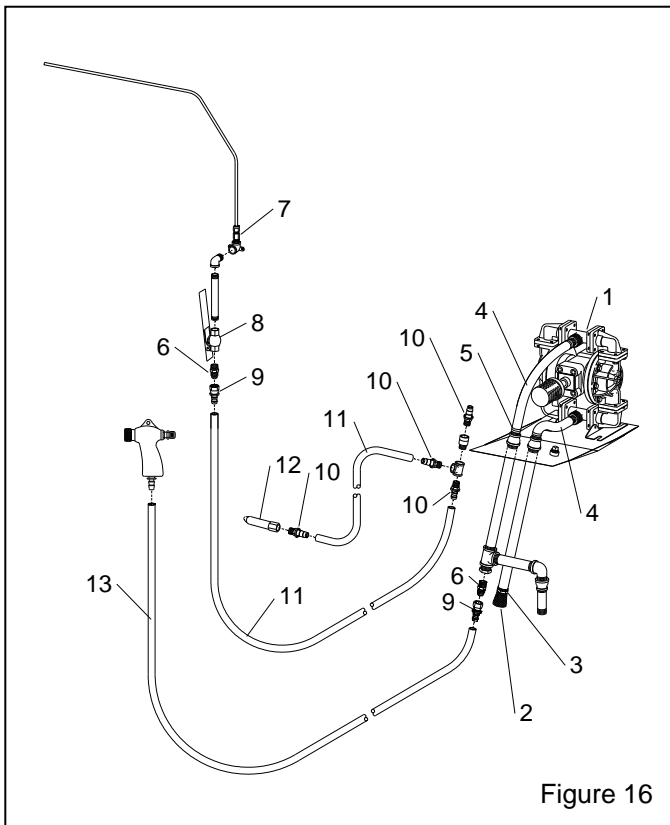


Figure 16

8.4 Light Shield Assembly, Figure 17

Item	Description	Stock No.
(-)	Light shield assembly with switch .....	11601
1.	Ballast .....	11553
2.	Lamp holder .....	11843
3.	Starter holder .....	12163
4.	Starter .....	12156
5.	Lamp, 15 watt .....	11872
6.	Connector, poly straight .....	02929
7.	Base plate, light shield .....	11561
8.	Trim edge, 2 ft. required .....	18460
9.	12127	

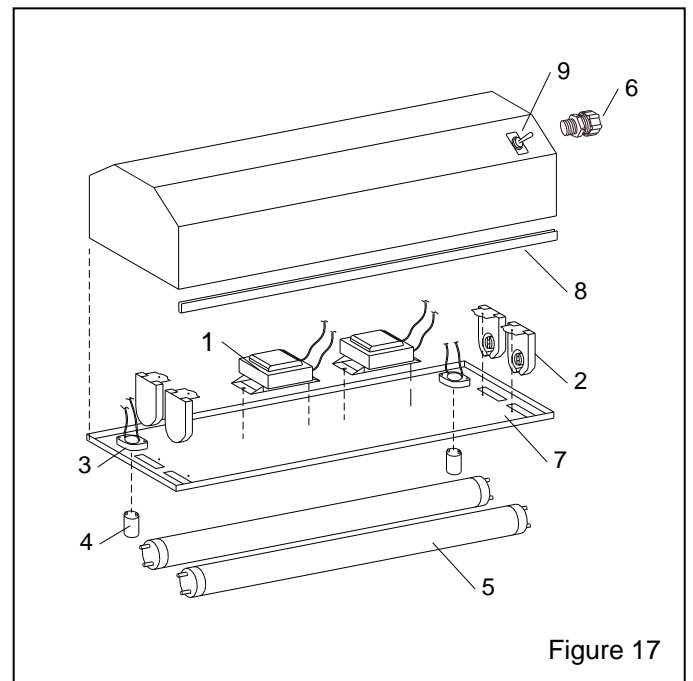


Figure 17

8.5 Cabinet Assembly, Figure 18

Item	Description	Stock No.
1.	Door gasket, specify feet required.....00187 BNP-250 requires 12 feet per door BNP-260 requires 13 feet per door	
2.	Light shield assembly with switch .....	11601
3.	Grate BNP-250 .....	11823
	BNP-260.....	Consult Clemco Distributor
4.	Cover lens, pkg. of 5 .....	06190
5.	Window glass 12.5" x 19.5" .....	12212
6.	Window gasket, 6 ft. required .....	12435
7.	Filler-strip, 6 ft. required .....	12436
8.	Latch kit, door .....	20064
9.	Screen, condensation, each .....	12144
10.	Gasket, pump bracket .....	16134
11.	Foot pedal assembly, less tubing .....	20483

12.	Glove, left .....	20453
13.	Glove, right .....	20454
14.	Clamp, glove .....	11576
15.	Motor, 1/3 H.P. ....	12316
16.	Paddle wheel .....	12339
17.	Seal, mastic, five feet required .....	06105
18.	Motor plate .....	12001
19.	Housing, exhauster .....	12269
20.	Air valve, 3 way, interlock .....	12202
21.	Over-travel stop, interlock .....	20004
22.	Detent sleeve, interlock .....	15042
23.	Actuator, adj., interlock .....	19152
24.	Clamp, 4" .....	11577
25.	Screen, exhauster outlet .....	13174
26.	Switch, on / off toggle .....	12127
27.	Regulator, 1/8" NPT pilot .....	12715
28.	Gauge, pressure .....	01908
29.	Boot, switch cover .....	14228
30.	Drain Plug .....	13295

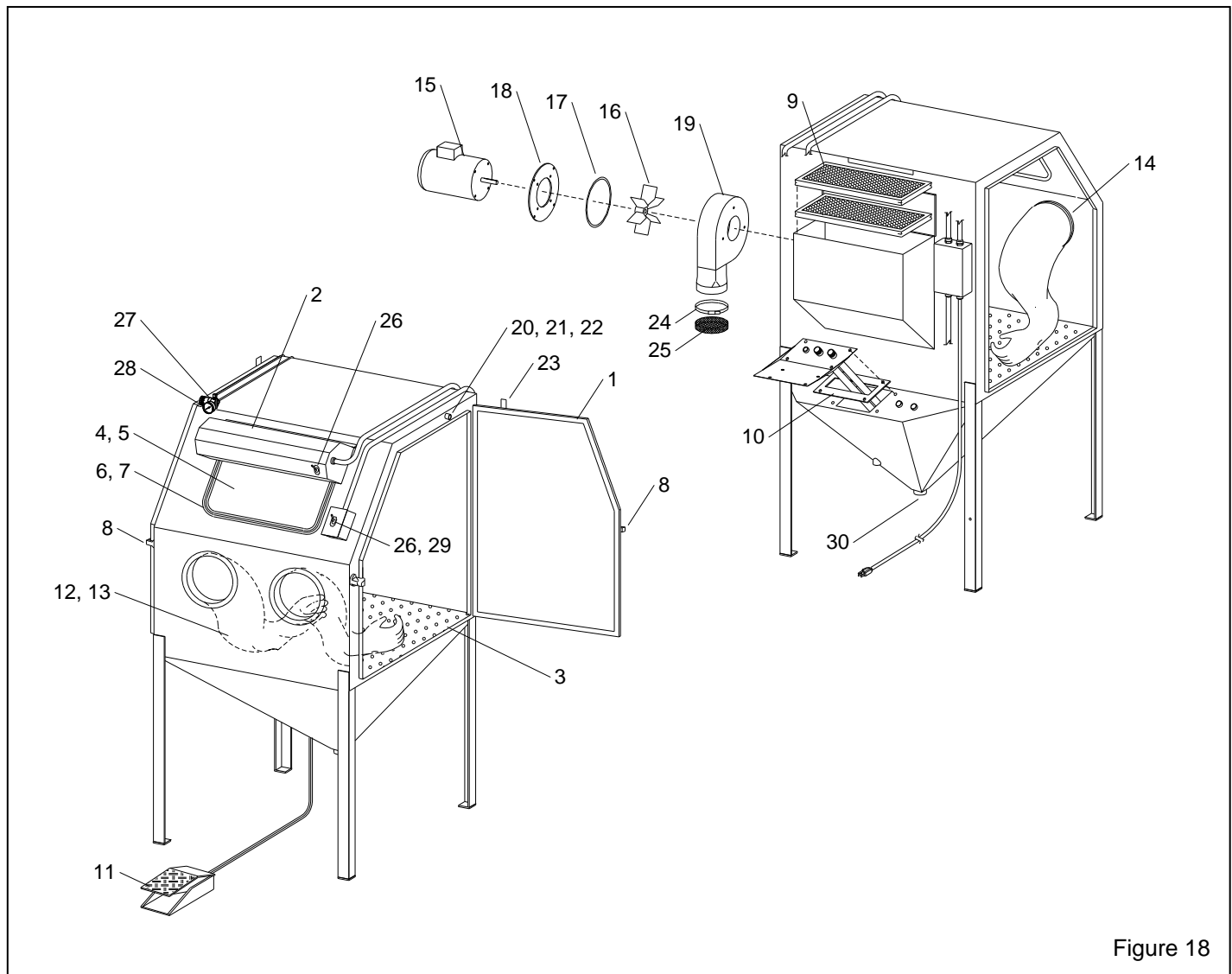


Figure 18

8.6 BNP Gun and Feed Assembly, Figure 19

Item	Description	Stock No.
(-)	BNP gun assemblies less nozzle, includes items 1 (brass) through 7	
	No. 4 Gun	12301
	No. 5 Gun	12302
	No. 6 Gun	12303
1.	Nut, nozzle holding	
	Standard, knurled brass	11914
	Urethane covered	11574
2.	O-ring	08975
3.	Gun body	11802
4.	Lock nut, air jet	11913
5.	Rubber sleeve	12097
6.	Air jet assembly w/ Item 5	
	No. 4	12342
	No. 5	12343
	No. 6	12344
7.	Hose end, 1/2" barb x 3/8" male NPT	06369
8.	Hose end, 1/2" barb x 1/2" fem. swivel	15002
9.	Nozzle, ceramic	
	No. 5	11930
	No. 6	11931
	Nozzle, boron carbide	
	No. 5	11935
	No. 6	11936
	Nozzle, tungsten carbide	
	No. 5	13118
10.	Hose, 1/2" air, six feet required	12472
11.	Hose, 1/2" media, six feet required	12471
12.	Wide spray nozzle	
	Tungsten carbide, No. 6	11947
	Boron carbide	
	No. 6	11934
13.	Wide spray nozzle nut	
	Knurled brass	11916
	Urethane covered	12906
14.	Wide spray retaining ring	12038
15.	Wide spray nozzle guard	12295
16.	Orifice adjusting tool	19041

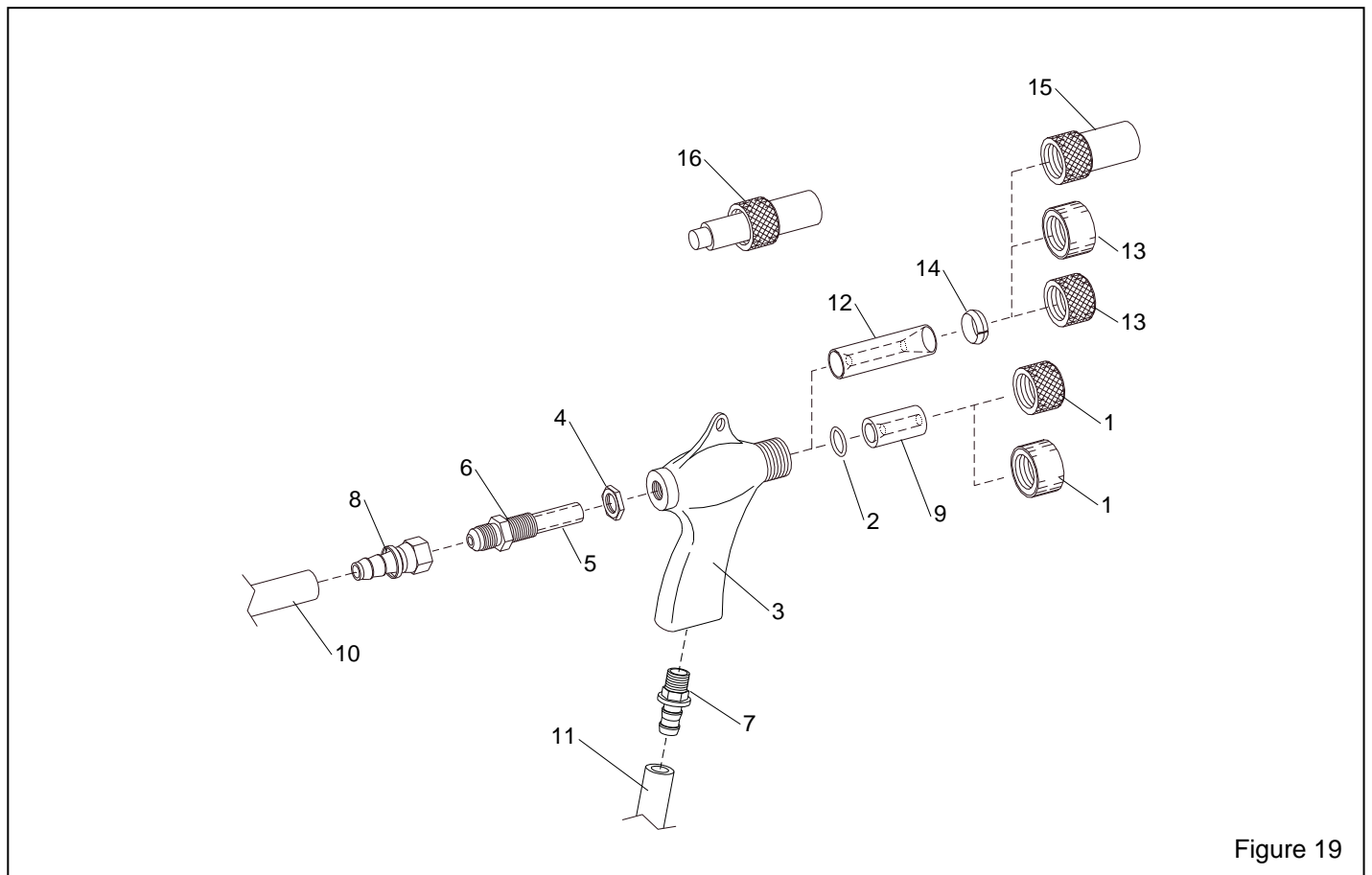


Figure 19