POWER GUN
SUCTION ABRASIVE BLAST TOOL
O. M. 24189

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⚠ WARNING

Do not use this equipment until you have READ this MANUAL and YOU UNDERSTAND its contents. *

These WARNINGS are included for the health and safety of the operator and those in the immediate vicinity.

***If you are using a Clemco Distributor Maintenance and Parts Guide, refer to the orange warnings insert preceding the Index before continuing with the enclosed instructions.**

Electronic files include a Preface containing important information.

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⚠ WARNING

- **Employers are responsible for identifying all job site hazards, educating and training all persons who will operate and maintain these products, and ensuring that all blast operators and their assistants understand the warnings and information contained in these instructions relating to safe and proper operation and maintenance of this equipment.**
- **Serious injury or death can result from failure to comply with all Occupational Safety and Health Administration (OSHA)regulations and all manufacturer's instructions.**
- **This equipment is not intended for use in any area considered hazardous per National Electric Code NFPA 70 2011, Article 500.**
- **Read this document and follow all instructions before using this equipment.**

OSHA regulations relating to abrasive blasting are contained in the Code of Federal Regulations, Title 29 (29 CFR 1910 General Industry; 1915 Maritime; 1926 Construction). The most pertinent include: 1910.94 Ventilation, 1910.95 Occupational Noise Exposure, 1910.132 Personal Protective Equipment, 1910.133 Eye and Face Protection, 1910.134 Respiratory Protection, 1910.135 Head Protection, 1910.244 (b) Remote Controls. Consult www.osha.gov for complete information.

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.

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.

It is possible that the products described in this material may be combined with other products by the user for purposes determined solely by the user. No representations are intended or made as to the suitability of or engineering balance of or compliance with regulations or standard practice of any such combination of products or components the user may employ.

Abrasive blast equipment is only one component of an abrasive blasting job. Other products, such as air compressors, air filters and receivers, abrasives, scaffolding, hydraulic work platforms or booms, equipment for lighting, painting, ventilating, dehumidifying, parts handling, or specialized respirators 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 job for warnings, information, training, and instruction relating to the proper and safe use of their equipment.

GENERAL INSTRUCTIONS

This material describes some, but not all, of the major requirements for safe and productive use of blast machines, remote controls, respirator systems, and related accessories. All equipment and accessories must be installed, tested, operated and maintained only by trained, knowledgeable, experienced users.

The blast operator and all workers in the vicinity must be properly protected from all job site hazards including those hazards generated by blasting.

Work environments involving abrasive blasting present numerous hazards. Hazards relate to the blast process from many sources that include, but are not limited to, dust generated by blasting or from material present on the surface being blasted. The hazards from toxic materials may include, but are not limited to, silica, cyanide, arsenic, or other toxins in the abrasives or in the coatings, such as lead or heavy metals. Other hazards from toxins include, but are not limited to, fumes from coating application, carbon monoxide from engine exhaust, contaminated water, chemicals or asbestos. In addition, physical hazards that may be present include, but are not limited to, uneven work surfaces, poor visibility, excessive noise, and electricity. Employers must identify all job site hazards and protect workers in accordance with OSHA regulations.

Never modify Clemco equipment or components or substitute parts from other manufacturers for any Clemco components or parts. Any unauthorized modification or substitution of supplied-air respirator parts violates OSHA regulations and voids the NIOSH approval.

IMPORTANT

Contact Clemco for free booklets:

Blast Off 2 – Guide to Safe, Productive, and Efficient Abrasive Blasting, and Abrasive Blasting Safety Practices – Guide to Safe Abrasive Blasting.

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OPERATIONAL INSTRUCTIONS

OPERATOR SAFETY EQUIPMENT

⚠ WARNING

- **OSHA regulation 1910.134 requires appropriate respiratory protection for blast operators and workers in the vicinity of blasting. These workers must wear properly-fitted, properly-maintained, NIOSH-approved, respiratory protection that is suitable for the job site hazards. Blast respirators are to be worn only in atmospheres not immediately dangerous to life or health from which wearers can escape without use of the respirator.**
- **The employer must develop and implement a written respiratory protection program with required worksite- specific procedures and elements for required respirator use. The employer must provide effective training to employees who are required to use respirators. The training must be comprehensive, understandable, and recur annually, and more often if necessary.**
- **NEVER use abrasives containing more than one percent crystalline silica. Fatal diseases, such as silicosis, asbestosis, lead or other poisoning, can result from inhalation of toxic dusts, which include, but are not limited to, crystalline silica, asbestos, and lead paint. Refer to NIOSH Alert 92-102; and OSHA CPL 03-00-007: "National Emphasis Program – Crystalline Silica", in which OSHA describes policies and procedures for implementing a national emphasis program to identify and reduce or eliminate health hazards from exposure to crystalline silica. Numerous topics associated with the hazards of crystalline silica in silica blasting sand can be found on http:// osha.gov/. Clemco urges users of silica blasting sand to visit this website, and read and heed the information it contains.**
- **Always make sure the breathing air supply (respirator hose) is not connected to plant lines that supply gases that include, but are not limited to, oxygen, nitrogen, acetylene, or other non-breathable gas. Never modify or change respirator air line connections without first testing the content of the line for safe breathing air. Failure to test the line may result in death to the respirator user.**

• Breathing air quality must be at least Grade D, as defined by the Compressed Gas Association specification G-7.1, per OSHA Regulation 29 CFR 1910.134. When compressed air is the breathing air source, a Clemco CPF (suitable sorbent bed filter) should be used. Respirator hose connecting the respirator to the filter must be NIOSH approved. Non- approved hose can cause illness from chemicals employed to manufacture the hose.

• All workers must always wear NIOSH-approved respirators when any dust is present. Exposure to dust can occur when handling or loading abrasive, blasting, cleaning up abrasive, or working in the vicinity of blasting. Before removing the respirator, test the air with a monitoring device to ensure it is safe to breathe.

• Clemco respirators DO NOT remove or protect against carbon monoxide or any other toxic gas. Monitoring devices must be used in conjunction with the respirator to ensure safe breathing air. Always locate compressors and ambient air pumps where contaminated air will not enter the air intake.

• Always use Clemco lenses with Clemco respirators; installing non-approved lenses voids the NIOSH approval. Respirator lenses are designed to protect the wearer from rebounding abrasive; they do not protect against flying objects, heavy high-speed materials, glare, liquids, or radiation.

INDUSTRY ORGANIZATIONS

For additional information, consult:

Occupational Safety and Health Administration (OSHA) - www.osha.gov
Compressed Gas Association (CGA) - www.cganet.com
The Society for Protective Coatings (SSPC) - www.sspc.org
National Association of Corrosion Engineers (NACE) - www.nace.org
American Society for Testing and Materials (ASTM) - www.astm.org
National Institute of Occupational Safety and Health (NIOSH) - www.niosh.gov
American National Standards Institute (ANSI) - www.ansi.org

PREFACE

BLAST MACHINES AND REMOTE CONTROLS

⚠ WARNING

OSHA regulation 1910.169 describes the necessity of pressure relief valves on compressed air equipment. Do not operate blast machines with air compressors that are not equipped with properly functioning pressure relief valves.

OSHA regulation 1910.244(b) requires the use of remote controls on blast machines.
Serious injury or death can result from many sources, among them:

- **Involuntary activation of the remote controls. Never modify or substitute remote control parts; parts are not compatible among different manufacturers. Welding hose is not suitable for remote control hose. Its ID and material composition make it unsafe for remote control use.**
- **Exceeding the maximum working pressure. Clemco blast machines are built to ASME-code and carry a 'U' or 'UM' stamp, and National Board/serial number. Every machine is marked with its maximum working pressure. Never exceed the maximum working pressure limits of the blast machine.**
- **Uncontrolled blast stream. High-velocity abrasive particles will inflict serious injury. Always point the blast nozzle in the direction of the blast surface only. Keep unprotected workers out of the blast area.**
- **Welding on the blast machine. Never weld on the blast machine; welding voids the National Board approval and may affect the dimensional integrity of the vessel.**
- **Moving the blast machine. Never manually move a blast machine containing abrasive, any machine containing abrasive must be moved with appropriate mechanical lifting equipment.**

HOSES, COUPLINGS, AND NOZZLE HOLDERS

- The inside diameter (ID) of air hoses, fittings, and connections should be at least four times larger than the nozzle orifice size. Blast hose ID should be three to four times the size of the nozzle orifice. Example: a #6 nozzle (3/8" diameter orifice) calls for 1-1/2" ID blast hose and 1-1/2" ID or larger compressor hose. All hose runs should be kept as short as possible and run in as straight a line as possible to reduce pressure loss.

- To install, squarely cut the end of the hose so that it fits snugly against the coupling or hose end shoulder. Always use the screws recommended by the manufacturer ensuring that they do not penetrate the inner wall. Make sure the couplings tightly fit the hose. Install cotter pins at every connection or use couplings with built-in lock-springs to prevent disengagement. Install safety cables at all connections to prevent whipping if hoses disengage or blow out.

MAINTENANCE AND REPAIR

- Completely read and follow all service instructions and recommended maintenance intervals. Always shut off compressor and depressurize blast machine before performing any maintenance. At every service interval, clean all filters, screens, and alarm systems. If spring-loaded abrasive valves are used, always cage spring before disassembly.

WARRANTY

The following is in lieu of all warranties, express, implied or statutory, and in no event shall seller or its agents, successors, nominees or assignees, or either, be liable for special or consequential damage arising out of a breach of warranty. This warranty does not apply to any damage or defect resulting from negligent or improper assembly or use of any item by the buyer or its agent or from alteration or attempted repair by any person other than an authorized agent of seller. All used, repaired, modified, or altered items are purchased "as is" and with all faults. In no event shall seller be liable for consequential or incidental damages. The sole and exclusive remedy of buyer for breach of warranty by seller shall be repair or replacement of defective parts or, at seller's option, refund of purchase price, as set forth below
:

1. Seller makes no warranty with respect to products used other than in accordance hereunder.

2. On products seller manufactures, seller warrants that all products are to be free from defects in workmanship and materials for a

period of one year from date of shipment to buyer, but no warranty is made that the products are fit for a particular purpose.

3. On products which seller buys and resells pursuant to this order, seller warrants that the products shall carry the then standard warranties of the manufacturers thereof, a copy of which shall be made available to the customer upon request.

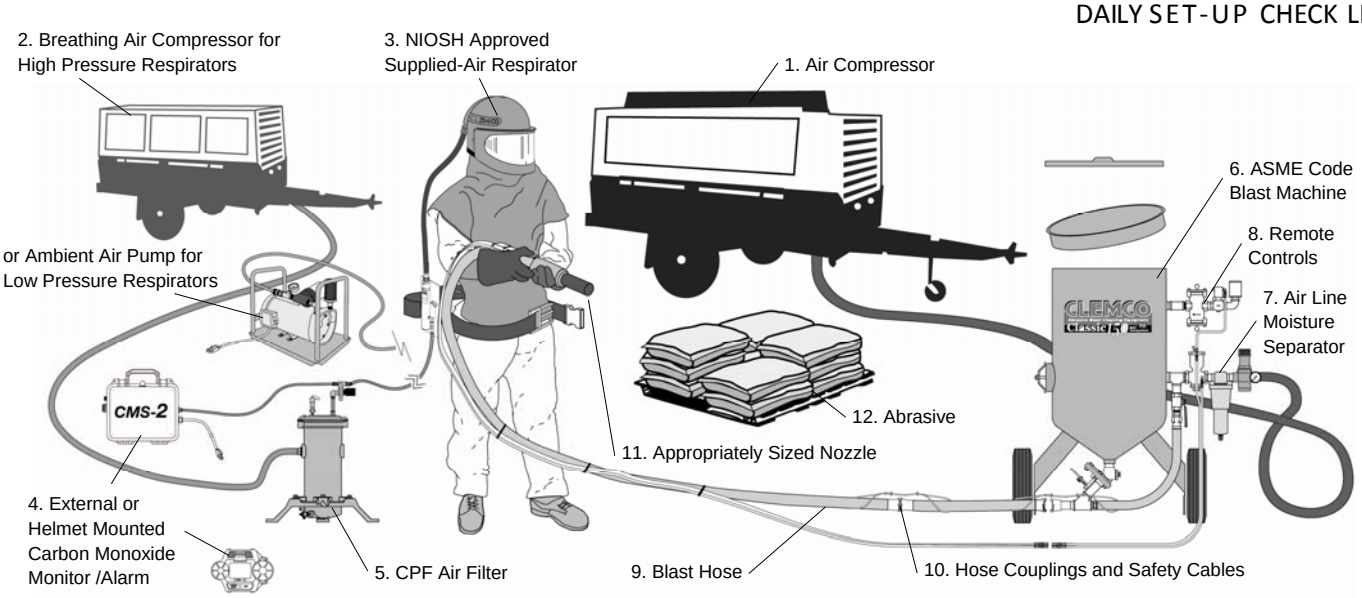
4. The use of any sample or model in connection with this order is for illustrative purposes only and is not to be construed as a warranty that the product will conform to the sample or model.

5. Seller makes no warranty that the products are delivered free of the rightful claim of any third party by way of patent infringement or the like.

6. This warranty is conditioned upon seller's receipt within ten (10) days after buyer's discovery of a defect, of a written notice stating in what specific material respects the product failed to meet this warranty. If such notice is timely given, seller will, at its option, either modify the product or part to correct the defect, replace the product or part with complying products or parts, or refund the amount paid for the defective product, any one of which will constitute the sole liability of the seller and a full settlement of all claims. No allowance will be made for alterations or repairs made by other than those authorized by seller without prior written consent of seller. Buyer shall afford seller prompt and reasonable opportunity to inspect the products for which any claim is made as above stated.

Except as expressly set forth above, all warranties, express, implied or statutory, including implied warranty of merchantability, are hereby disclaimed.

DAILY SET-UP CHECK LIST



Make sure all blast operators are properly trained and suitably attired with a blast suit, safety boots, leather gloves, respiratory and hearing protection. Every day before start up, check all equipment components, including piping, fittings, and hoses, and valves, for leaks, tightness, and wear. Repair or replace as needed. Use the following checklist.

☐ **1. PROPERLY-MAINTAINED AIR COMPRESSOR** sized to provide sufficient volume (cfm) at given pressure for nozzle and other tools. ADD 50% volume (cfm) reserve to allow for nozzle wear. Use large compressor outlet and air hose (at least 4 times the nozzle orifice diameter). For oil-lubricated compressors, the employer shall use a high- temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If only high-temperature alarms are used, the air supply shall be monitored at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm. Follow the manufacturer's checklist and maintenance instructions.

☐ **2. BREATHING-AIR COMPRESSOR** (or oil-less ambient air pump) capable of providing Grade D quality air, located in a dust free area. Read # 1 above.

☐ **3. CLEAN, PROPERLY-MAINTAINED NIOSH-APPROVED SUPPLIED-AIR RESPIRATOR** worn by blast operators, and other workers exposed to blast dust. Make sure all respirator components are in place — all lenses, inner collar, and cape. Thoroughly inspect all components for wear. The NIOSH approval (approval number is listed in the owner's manual) is for a complete assembly from point of attachment on the CPF (sorbent bed) filter to the complete respirator. Substitution of any part voids the NIOSH approval.

☐ **4. CARBON MONOXIDE MONITOR/ALARM** installed at the CPF filter or inside the supplied-air respirator for monitoring for the presence of deadly CO gas and warning the operator(s) when the CO level reaches an unacceptable level. When an ambient air pump is used for breathing air, a CO monitor provides a measure of safety. Read # 1 above.

☐ **5. BREATHING-AIR FILTER (OSHA-REQUIRED** sorbent bed filter) for removal of moisture and particulate matter in the compressed air breathing-air supply. Monitor the condition of the cartridge and replace when odor is detected or at 3 month intervals, whichever comes sooner. The breathing air filter does NOT detect or remove carbon monoxide (CO). Always install a CO monitor/alarm.

☐ **6. BLAST MACHINE** (bearing U or UM stamp, National Board Number, and Maximum Working Pressure) sized to hold a 30-minute abrasive supply. Examine pop-up valve for alignment. Check piping, fittings, screens, valves for tightness, leaks, and wear. Always ground the machine to eliminate hazard of static shock. Install a blast machine screen to keep out foreign objects. Use a blast machine cover if left outdoors overnight. Never exceed the maximum working pressure of the vessel.

☐ **7. AIR LINE FILTER** (moisture separator) installed as close as possible to the blast machine inlet and sized to match the size of the inlet piping or larger air supply line. Clean filter and drain often. Damp abrasive causes operational problems.

☐ **8. REMOTE CONTROLS** are required by OSHA and must be in perfect operating condition. Test and check all components to ensure all parts are present and fully functional. Use genuine replacement parts. NEVER mix parts from different manufacturers. Never use welding hose for remote control hose.

☐ **9. BLAST HOSE** should have an inside diameter sized to suit the blast nozzle. The ID should be three to four times the size of the nozzle orifice diameter. Blast hose should be arranged in as straight a line as possible from the blast machine to the work area, avoiding sharp bends.

☐ **10. COUPLINGS AND NOZZLE HOLDERS** should fit snugly on the hose and be installed with manufacturer recommended screws. Coupling lugs must snap firmly into locking position. Gasket must always be used to form a positive seal, and cotter pins must be installed. Replace gasket when wear, softness or distortion is detected. Check nozzle holder for thread wear; replace at any sign of wear. Install safety cables at all connections.

☐ **11. NOZZLE** orifice size should be checked and nozzle replaced when worn 1/16" from original size. (No. 5 nozzle has 5/16" orifice diameter; replace when it measures 3/8"). Threads should be inspected daily for wear and nozzle should be replaced when wear is detected. Always use a nozzle washer.

☐ **12. ABRASIVE** must be a material specifically manufactured for blasting. It should be properly sized for the job. Check material safety data sheet for free-silica, cyanide, arsenic, lead and other toxins and avoid use when these toxic, harmful substances are present.

☐ **SURFACE TO BE BLASTED** should be examined for hazardous substances. Take appropriate protective measures as required by OSHA to ensure the blast operator, other workers in the vicinity, and any bystanders are properly protected.

1.0 INTRODUCTION

1.1 Scope of manual

1.1.1 This manual covers the installation, operation, maintenance, and replacement parts of the Clemco Power Gun.

1.1.2 The operator and all personnel in and around the blasting area must be well informed of the hazards associated with abrasive blasting. Before using this machine, all personnel involved with the blast operation must read this entire manual and all accessory manuals, including the orange cover.

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 Power Gun is a suction-type abrasive blasting tool, available with or without the cart and 3-cu. ft. hopper. The Power Gun is ideally suited for light-duty, small, and touchup blasting jobs. The performance of the Power Gun approaches that of a small pressure system, but does not require a pressure vessel nor does it require the set-up time and maintenance of a pressure system.

1.4 Components and Operating Principles

1.4.1 Components

1.4.1.1 The components of the Power Gun are shown in Figure 1.

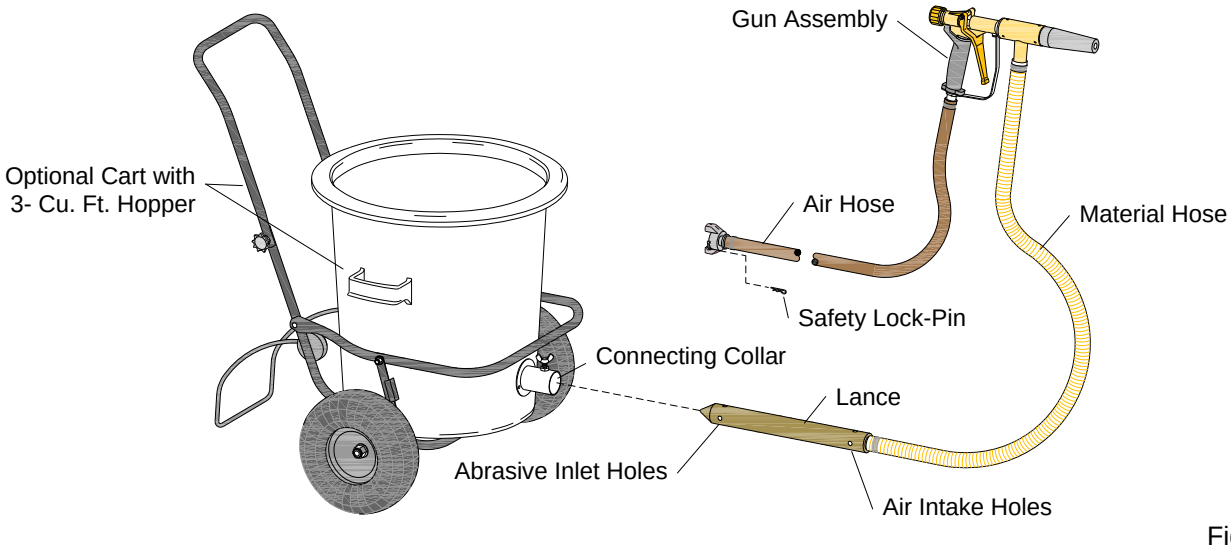


Figure 1

1.4.2 Operating Principals

1.4.2.1 When compressed air is supplied to the gun, and the trigger-lever is pulled, air flows through the gun, creating a partial vacuum in the material hose. As a result, abrasive is drawn into the lance, through the material hose and into the gun assembly. Abrasive mixes with the air stream at the gun, and is propelled out the nozzle.

1.4.3 Hose Limitations

1.4.3.1 Material Hose: The standard Power Gun assembly comes with 16 feet of material hose. Up to 30 feet may be used if adequate pressure is maintained at the gun, and if the nozzle and jet are maintained as noted in Section 6.0.

1.4.3.2 Air hose: The standard Power Gun assembly comes with 16 feet of air hose. Additional hose may be added, provided adequate pressure is maintained at the gun.

2.0 COMPRESSED-AIR and ABRASIVE

2.1 Compressed Air Requirements

2.1.1 The table in Figure 2 shows approximate air consumption (cfm) at various pressures (psi) for the Power Gun alone. Additional air is needed for a supplied-air respirator, plus other air tools that may be in use at the same time as the Power Gun. The table shows air consumption; it does not show the recommended compressor size. Check with a compressor supplier for compressor recommendations based on total compressed-air requirements.

2.1.2 For most applications, the compressor should be large enough to maintain 80-100 psi under working conditions. Delicate work may require lower pressure, and tough applications may require higher pressure.

2.1.3 The air jet orifice is 1/4" ID and the nozzle orifice is 1/2" ID.

Air consumption in cfm

PSI	40	50	60	75	90	100	120	140
CFM	40	50	60	70	80	90	105	120

Figure 2

2.2 Abrasive

2.2.1 Abrasive Size: The Power Gun utilizes common abrasives that are 12 mesh and finer. Limited air supply, low blast pressure, or heavy abrasive may limit abrasive to smaller sizes.

2.2.2 Use only abrasives specifically manufactured for blast cleaning, that are compatible with the surface being blasted. Abrasive produced for other applications may be inconsistent in size and shape, and produce an unsatisfactory finish. Some abrasive may contain salts, corrosives, or other materials that could contaminate the surface being blasted.

⚠ WARNING

Obtain a material safety data sheet (MSDS) for the blast abrasive. Abrasive blasting with sands containing crystalline (free) silica can lead to serious or fatal respiratory disease. As NIOSH recommends, do not use abrasives containing more than trace amounts (more than one percent) of free silica.

3.0 SET-UP

3.1 An air filter is recommended in the air supply to remove condensed moisture from the air line.

3.2 Connect the Power Gun's air hose to a 3/4" or larger air supply. An isolation valve is required at the air source to enable depressurization.

3.3 Secure all compressed-air supply hose connections with safety lock pins to prevent accidental disconnection. Lock pins are listed in Section 8.1.

⚠ WARNING

Hose disconnection while under pressure could cause serious injury or death. Use safety lock pins at all coupling connections to prevent hose couplings from accidental disconnection.

3.4 Make sure the setscrews securing the nozzle, jet, and gun assembly are tight.

4.0 OPERATION

4.1 Operator Safety Equipment

4.1.1 Operators and **anyone else that may be exposed to the hazards generated by the blasting process** must wear appropriate protective gear, including abrasive-resistant clothing, leather gloves, eye and hearing protection, and a NIOSH-approved Type CE Supplied-Air Respirator.

4.1.2 Don all protective blasting attire in a clean non-hazardous environment outside the blast area, free of contaminants, where the air is safe to breathe.

4.13 When finished blasting, and after cleanup is completed, remove the respirator and protective clothing in a clean environment, outside the blasting area, and where the air is safe to breathe.

4.2 Operation with Hopper Option

4.2.1 The hopper and cart assembly must be placed on a firm and level surface.

⚠ WARNING

The four-wheel cart rolls easily. It must remain on sound, level ground. Do not place the cart on scaffolding. Do not use on elevated surfaces unless it is adequately anchored to prevent movement.

4.2.2 Insert the lance about halfway into the connecting-collar, and tighten the thumbscrew to secure the lance. Pour abrasive into the hopper; remove any foreign material that may fall in.

4.2.3 Before pouring abrasive into the hopper, make sure the cart's rear support bar is down. Pour abrasive into the hopper; remove any foreign material that may fall in. Do not fill the hopper to a level that impairs easy maneuvering.
Note: Bagged abrasive may be placed inside the hopper, and the lance inserted into the bag as described below.

4.3 Operation without Hopper Option

4.3.1 Abrasive may be kept in the bag, or poured into a hopper, bucket or similar container. Insert the lance into the abrasive, making sure the upper (air-intake) holes remain open, and outside of the abrasive.

4.3.2 To use bagged abrasive, pierce the bag with the pointed end of the lance. Insert the lance into the abrasive. Using bagged abrasive requires repositioning of the lance as the abrasive level drops.

4.3.3 Pressurize the air supply line.

4.3.4 Put on the appropriate protective gear, including a NIOSH approved supplied-air respirator, abrasive resistant clothing, leather gloves, and hearing protection as required.

4.3.5 Hold the gun approximately 6 inches from the blast surface, and squeeze the trigger lever. Adjust the stand off distance and angle for optimum performance.

4.3.6 Stop blasting by releasing the trigger lever.

4.7 Shutdown

4.7.1 When finished blasting, remove the lance from the abrasive and shake abrasive from the material hose. If conditions are safe to do so, pull the trigger to further empty the hose.

4.7.2 Depressurize the air supply line and shutdown the compressor.

5.0 ADJUSTMENTS

5.1 Air Control Knob, refer to Figure 3

5.1.1 The control knob adjusts the force of air (blast pressure) coming out the nozzle. Turning the knob clockwise decreases the blasting force for delicate jobs, and turning it counterclockwise increases the blast force for tougher jobs.

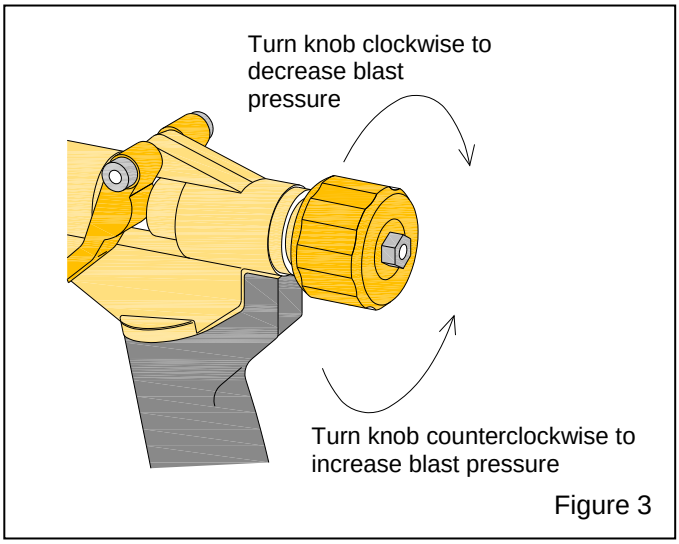


Figure 3

5.2 Hand Positioning, Figure 4

5.2.1 To change the orientation of the material hose with that of the handle grip, loosen the three setscrews securing the mixing chamber to the air jet assembly.

5.2.2 Rotate the mixing chamber to obtain the most comfortable position while holding the gun assembly and material hose.

5.2.3 Make sure the jet is fully seated into the mixing chamber before tightening the setscrews.

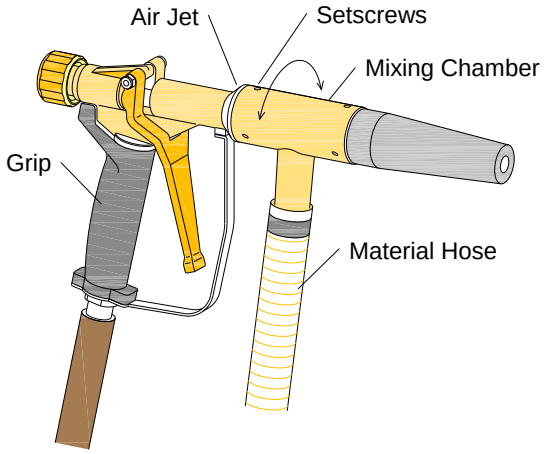


Figure 4

6.0 MAINTENANCE

⚠ WARNING

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

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

6.1 Periodically inspect the air jet, mixing chamber, nozzle, and material hose for wear.

6.1.1 A new nozzle has a 1/2" ID orifice. Replace the nozzle when its diameter has increased by more than 1/16" (9/16” ID) or sooner if suction diminishes noticeably.

6.1.2 Replace the air jet when wear reaches the orifice, and affects the overall length. New air jet orifices are 1/4" ID, and extend approximately 1-5/16" from the jet body.

6.2 Periodically inspect the gun and trigger assembly for air leaks. Repair at the first sign of leaks.

7.0 TROUBLESHOOTING

⚠ WARNING

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

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

7.1 No abrasive flow

7.1.1 Foreign material in the mixing chamber assembly. Remove nozzle and check for blockage in the suction head and nozzle.

7.1.2 Abrasive blockage in the material hose. If the material hose packs with abrasive, it is a sign that the abrasive mixture is too rich. Make sure the air-intake holes in the lance are open.

7.1.3 Worn nozzle. Replace the nozzle when the orifice is worn to 9/16”, or sooner if production decreases noticeably.

7.1.4 Air jet worn. Inspect end of air jet and replace when wear reaches the orifice.

7.1.5 Air jet and/or nozzle not seated correctly. The jet and nozzle must be fully seated into the mixing chamber, and the setscrews must be tight.

7.1.6 Abrasive bridging at the lance’s abrasive inlet holes. Frequent bridges or blockage are most likely caused by damp abrasive. Refer to Section 7.3.

7.1.7 Hole worn in material hose. Inspect hose for holes and inspect the clamps for leaks. Repair as needed.

7.2 Plugged nozzle

7.2.1 Foreign material in the nozzle. Clean and re-install.

7.2.2 Abrasive mixture too rich. Make sure the air-intake holes in the lance are open.

7.3 Abrasive bridging

7.3.1 Frequent bridging or blockage at the lance can be caused by damp abrasive. Some abrasives tend to absorb moisture from the air, especially fine-mesh abrasives in high-humidity areas. Empty the material hose and hopper of abrasive, and store the abrasive in an airtight container when not in use.

7.4 Neither air nor abrasive comes out the nozzle when the trigger is pulled.

7.4.1 Inspect nozzle for blockage. Refer to Section 7.2.

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

7.5 Air does not stop when trigger is released

7.5.1 Binding at the trigger, rod, or rod guide. Clean abrasive from parts and inspect for cause of resistance.

7.5.2 Worn or damaged rod tip or obstruction between the rod tip and air jet. Repair as needed.

7.6 Abrasive surge

7.6.1 Abrasive flow is too rich. Make sure the air-intake holes in the lance are open.

7.7 Poor suction in material hose

7.7.1 Inadequate air supply. Refer to the table in Figure 2.

7.7.2 Blockage in material hose or nozzle. Refer to Sections 7.1 and 7.2.

7.8 Blow-back through material hose

7.8.1 Blockage in nozzle. Remove the nozzle and check for blockage.

7.9 Air leak at the gun and trigger assembly

7.9.1 Faulty rod seal. Replace seal.

8.0 REPLACEMENT PARTS

8.1 Assembly Replacement Parts, Figure 5

Item	Description	Stock No.
(-)	Power gun with 3-cf. ft. cart and hopper	
	with 16-ft air and material hose	99860
	with 30-ft. air and material hose	24687
(-)	Power gun less cart and hopper	
	with 16-ft air and material hose	90253
	with 30-ft. air and material hose	24688
1.	Blast gun assembly	
	Refer to Figure 6 for individual parts	100477
2.	Lance	90214
3.	Hose, material, bulk specify feet required	
	16 ft. is standard length	24778
4.	Hose, air, bulk, specify feet required	
	16 ft. is standard length	24779
5.	Clamp, material hose	24780
6.*	Clamp, 3/4” OD band	28018
7.	Coupling, air hose	00595
8.	Lock pin, package of 25	11203
9.	Hopper and lid, 3-cu. ft.	25589
10.	Cart assembly	25591
11.	Hopper and cart assembly, 3-cu. ft.	99899
12.	Hose assembly, coupled air, includes:	
	three of Item 6 (one loose) and one Item 7	
	16 ft. long, standard length	28177
	30 ft. long	28178

* Field installation of this clamp requires a BAND-IT® tool, number C00169 or equal.

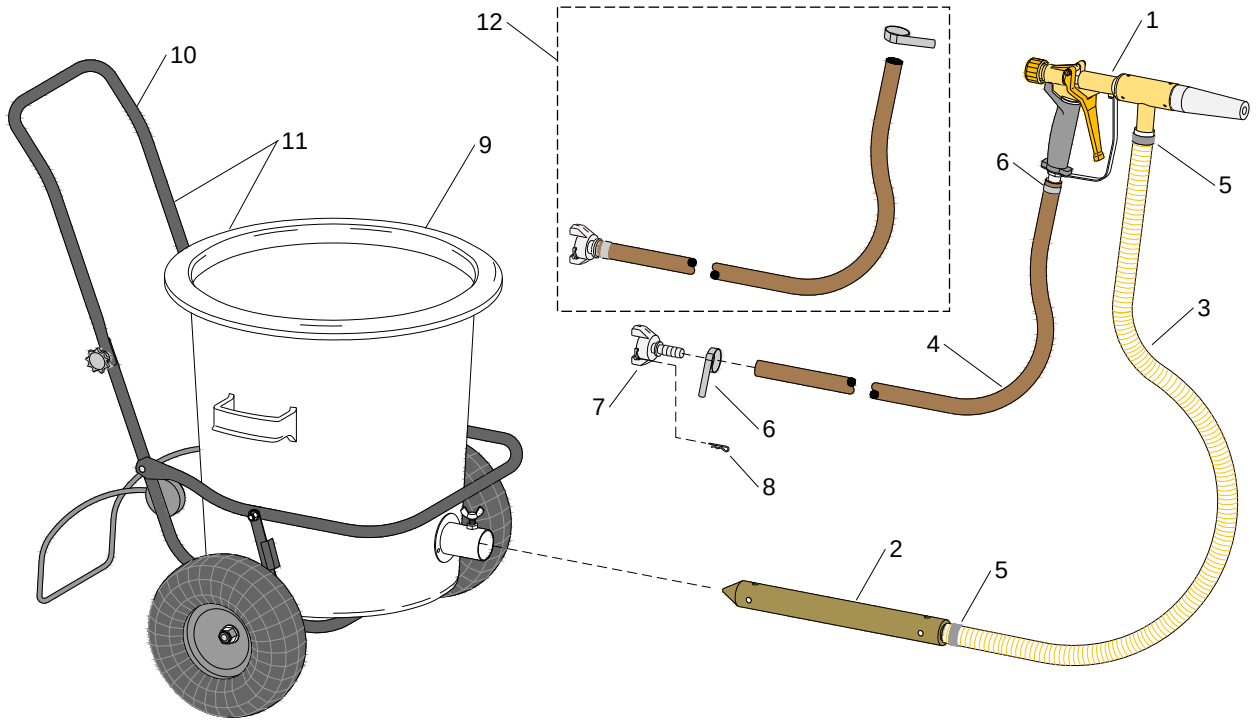


Figure 5

8.2 Blast Gun Assembly, Figure 6

Item	Description	Stock No.
(-)	Blast gun assembly includes all items shown in Figure 6	100477
1.	Gun and trigger assembly	27532
2.	Nozzle, 1/2" orifice w/tungsten liner	90209
3.	Air jet, 1/4" orifice, tungsten carbide	90213
4.	Mixing chamber	90366

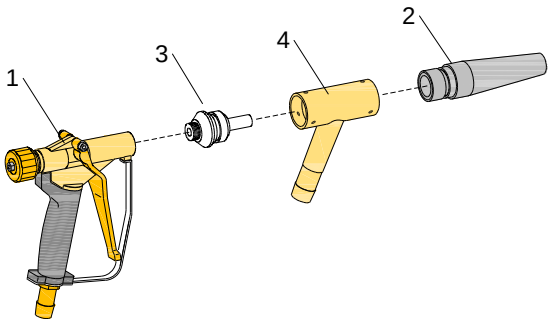


Figure 6

8.3 Gun Assembly, Figure 7

Item	Description	Stock No.
(-)	Gun and trigger assembly includes all items shown in Figure 7	27532
(-)	Service kit, gun assembly, Includes items 1 thru 12	90208
1.	Knob, control	90584
2.	Bushing, knob stem	90585
3.	Nut, control knob retaining	90586
4.	Stem, control knob	90587
5.	Screw, stem stop	90588
6.	Spring, control knob	90589
7.	Spring, return	90590
8.	Guide, rod	90591
9.	Setscrew, rod guide	90592
10.	Plug, rod and seal	90593
11.	Rod and tip assembly	90594
12.	Seal, rod	90595
13.	Gun body and trigger assembly	Not available as separate item

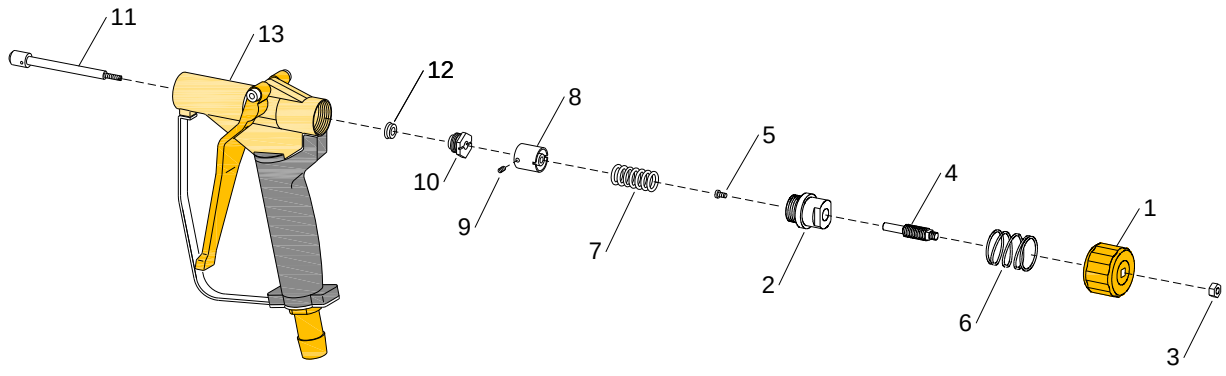


Figure 7