

**M-SECTION® SWEEP-IN
PNEUMATIC RECOVERY SYSTEM
O. M. 23647**

DATE OF ISSUE: 02/03
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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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INDUSTRIAL
Blast Facilities
by Clemco Industries Corp.

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/](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

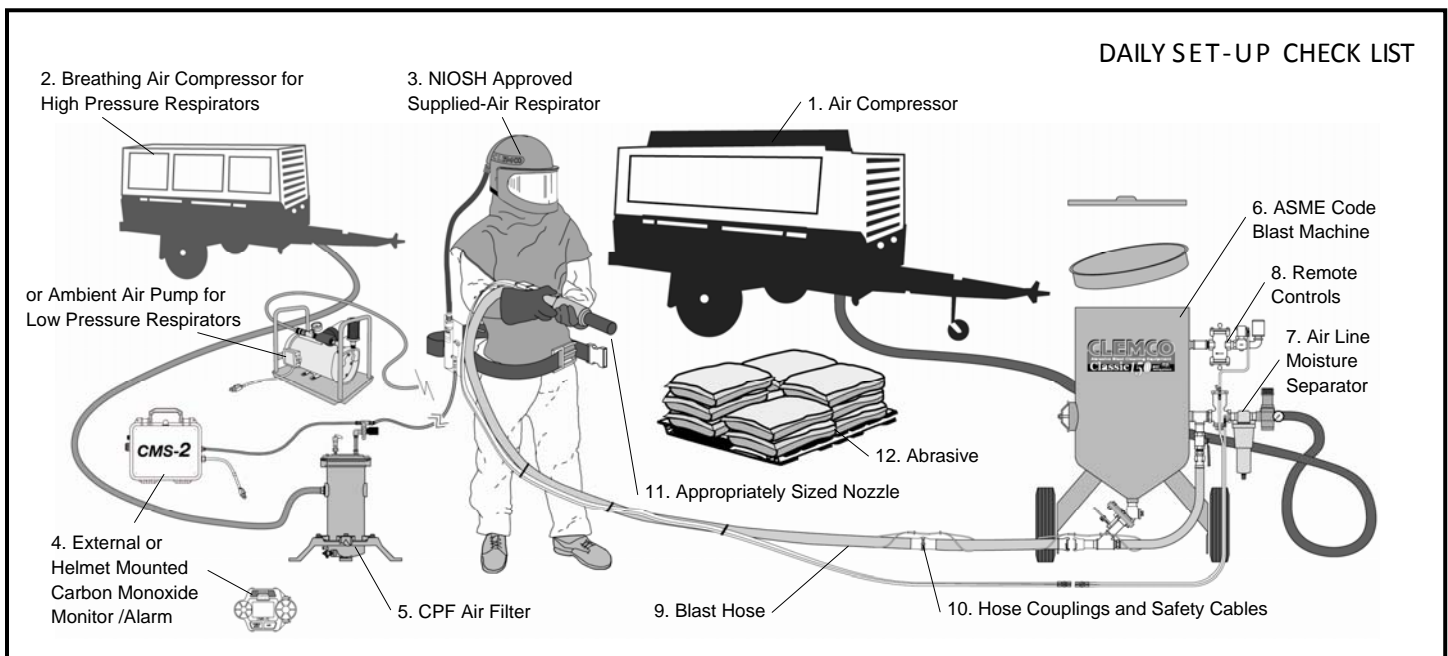
- Completely read and follow all service instructions and recommended maintenance intervals. Always shut off compressor and depressurize blast machine before performing any maintenance. At every service interval, clean all filters, screens, and alarm systems. If spring-loaded abrasive valves are used,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

PREFACE



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 (sorbet 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 sorbet 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.

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1.0 INTRODUCTION

1.1 Scope of Manual

1.1.1 This manual covers installation, operation, maintenance, and troubleshooting for a Clemco Sweep-in M-Section® pneumatic recovery system. Reviewing the process before beginning the installation will simplify the assembly. The following separate manuals are provided for equipment included with the system:

Industrial Blast Machine, Manual No. 23404
 RPH Dust Collector option, Manual No. 21449
 CDC-1 Dust Collector option, Manual No. 28225

1.1.2 All references made in these instructions are for 900 cfm reclaimers. If a larger reclaimer is requested, the system will be furnished as an engineered product and will include a separate reclaimer manual.

1.1.3 Engineered Project Equipment: If the recovery system is custom designed equipment and furnished on an engineered project order, assembly drawings for the specific M-Section® and accessories are supplied in the engineered project manual. This manual is not a shortcut to assemble engineered project equipment; use the manual as well as the drawings and accessory manuals, for placement and assembly of the M-Sections® and accessories. Refer to the table of contents shown at the beginning of the project manual for each component accessory manual and electrical drawings.

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 Figure 1 shows the components supplied with standard sweep-in M-Section® systems. If the system was supplied as an engineered project (tailored to customer requirements), refer to the project's general arrangement drawings for the layout of equipment. Standard sweep-in systems consists of:

- One 8-foot, 10-foot, or 12-foot long M-Section® with grating and transition elbow.
- 900 cfm reclaimer with 6 cu. ft. storage hopper.
- Choice of RPH-2 or CDC-1-900 reverse pulse dust collector, the vacuum source for the pneumatic recovery process, pulls recovery air from the M-Section, and through the reclaimer. Both dust collector options are shown in Figure 1.
- 6-cubic foot capacity industrial blast machine with 1-1/4-NPT piping, pressure release-remote controls, pressure regulator, and 1-1/2-NPT filter.
- Accessory package which includes coupled 1-1/4" ID blast hose and nozzle.
- Interconnecting flex hoses and hose clamps.

1.4 Dust Collector

WARNING

Prolonged exposure to any dust can 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, can cause serious respiratory injury or death. Identify all materials that are to be removed by blasting. Use reverse-pulse dust collectors with HEPA after-filters if lead coating or any other toxic materials are being removed by the blasting

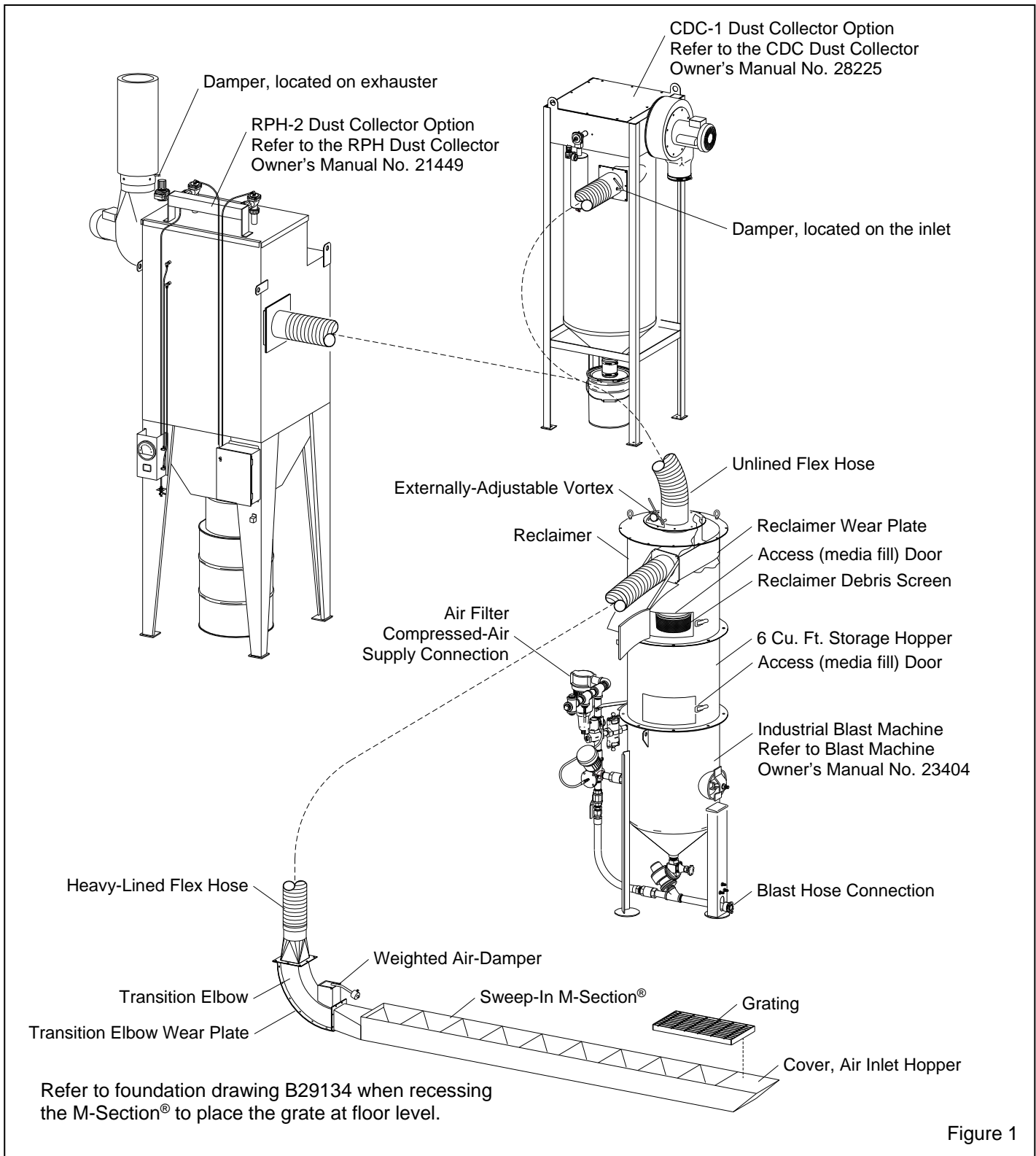


Figure 1

1.4.1 Reverse-pulse Dust Collector: A separate manual is provided with the CDC-1 or RPH dust collector option. Both are pull-thru reverse-pulse dust collectors. An optional HEPA filter must be used in applications in which toxic dust is produced.

1.4.2 HEPA (high-efficiency particulate air) Filter: A HEPA filter must be used when removing lead coatings or any other toxic materials. An optional HEPA after-filter provides additional filtration, and is used with a reverse-pulse collector only.

1.5 Reclaimer

NOTE: Replaceable rubber reclaimer liners prolong service life of the reclaimer, and should be installed when using aggressive media as noted in Section 1.6.4. The standard 900 cfm reclaimer is of universal design to accept liners installed at time of purchase or field-installed later. Rubber liners are shown in Section 14.1, Figure 12.

1.5.1 Reclaimers used with M-Sections® are pull-thru type, using an exhauster mounted on the outlet side of the reverse-pulse dust collector to pull recovery air through the reclaimer and dust collector filter cartridge(s). The M-Section® duct, reclaimer, and dust collector are under negative pressure.

1.5.2 Standard reclaimers are 900 cfm. All references made in these instructions are for 900 cfm reclaimers. If a larger reclaimer is requested, the system will be furnished on an engineered project order and will include a separate reclaimer manual.

1.6 Blasting Media

WARNING

Abrasives and dust from blasting may contain toxic materials (e.g., lead paint, silica) that are hazardous to workers. Obtain a safety data sheet (SDS) for the blast abrasive and identify all substances removed by the blasting process.

- **Silica sand (crystalline) can cause silicosis, lung cancer, and breathing problems in exposed workers.**
- **Slags can contain trace amounts of toxic metals such as arsenic, beryllium, and cadmium and have the potential to cause lung disease.**

NO DUST IS SAFE TO BREATHE. DUST PRODUCED FROM ANY ABRASIVE OR FROM THE BLASTING PROCESS CAN CAUSE SERIOUS LUNG DISEASE AND DEATH WHEN INHALED. It is the employer's responsibility to train employees to identify hazardous substances and to provide suitable policies, procedures, monitoring, recordkeeping and personal protective equipment.

1.6.1 Unless noted otherwise, standard M-Sections® utilize most common reusable media between 60 and 180-mesh that is specifically manufactured for dry blasting.

1.6.2 Steel: Steel shot and steel grit are not recommended for use with standard M-Section® pneumatic recovery systems. Smaller sized steel may be used on engineered project equipment, but this requirement must be stated ahead of time so that the equipment may be modified accordingly.

1.6.3 Sand and Slag: Sand should never be used because of the respiratory hazards associated with the use of media containing free silica. Slags are not recommended because they rapidly breakdown and are not recyclable, making them unsuitable for blast room applications.

1.6.4 Silicon Carbide, Aluminum Oxide, and Garnet: These are the most aggressive, high-volume abrasives used in the blasting industry. These abrasives, up to 36 mesh, may be used with a standard M-Section®, but the service life of any equipment components which come in contact with the abrasive will be reduced. Use a nozzle lined with boron carbide with these abrasives. To avoid unscheduled down time, periodically inspect the M-Section®, reclaimer, reclaimer booster exhauster, hoses, and nozzle for abrasive wear.

When occasionally using aggressive media, install an optional aluminum oxide kit. When these abrasives are used extensively, use a fully rubber-lined reclaimer. An M-Section® with a lined bottom is optional as an engineered project. Installation of rubber curtains on blast room walls is recommended. Nozzles lined with boron carbide are optional, but recommended to extend nozzle wear life.

1.6.5 Glass Bead, #6 thru #12: Most beads are treated to ensure free-flow operation even under moderately high-humidity conditions. Glass beads subjected to excessive moisture may be reused after thorough drying and breaking up any clumps.

1.6.6 Lightweight and Fine-mesh Media: When using lightweight (such as agricultural) media or fine mesh (180-mesh and finer) media, the reclaimer inlet baffle may need to be removed to retain media and avoid carryover. Current 900 cfm reclaimers have a bolt-on removable top, baffle removal and replacement is easily accomplished by remove the top and bolt-on baffle. If necessary to remove the baffle, make sure the baffle bolts are put back into the reclaimer bolt holes. Leaks in the reclaimer will cause problems with recovery and carryover.

1.6.7 Plastic Media: M-Sections® with 60° slope and blast machine with a 60° conical bottom are add-on option that can be provided when specified at the time of purchase. Refer to Clemco's AEROLYTE brand.

2.0 PREPARE ASSEMBLY SITE

A foundation drawing (Dwg. B29134) is provided for recessing the M-Section®, placing the top of the grate even with the floor.

2.1 Reclaimer and Blast Machine: Provide space to access the reclaimer access door, vortex adjustment, storage fill door, blast machine inspection door, abrasive trap, abrasive metering valve, compressed air line and blast hose connections.

2.2 Dust Collector: Provide space to run compressed air connections to the pulse manifold, remove waste drum from under the dust collector hopper, access the sequence control panel, and exhaust damper. Make sure there is ample space above the collector to change the filter cartridge.

CDC-1 collectors requires overall height of ... 149-inches.
RPH -2 collector requires overall height of 153-inches.

The height noted does not include space for lift equipment that may be needed to lift a heavily loaded filter cartridge.

2.3 Electrical Service: Make sure electrical service is available for all electrical controls. Standard dust collector motors are 2-HP, 230/460 volt, rated at 5.6/2.8 full load amps. 115-volt power is required for the RPH dust collector sequence panel.

2.4 Compressed Air: Compressed air must be plumbed to the blast machine inlet, dust collector pulse manifold, and available for any pneumatic accessories such as respirators and air blow-off nozzles. Refer to the appropriate owner manual for air requirements.

2.5 If the sweep-in is recessed, make sure the pit is large enough for the M-Sections® and transition. Refer to the foundation drawing.

3.0 PLACEMENT

WARNING

Failure to observe these warnings can result in serious injury or death.

- Weight and bulk of the components require that erection and placement of the equipment be performed by personnel experienced with handling structural steel, and able to safely operate material handling equipment needed to assemble the equipment. Assembly personnel must take care to recognize and avoid hazards associated with handling this type of equipment.
- To move this equipment use the lifting eyes that are provided on each segment. Never hoist the equipment by the legs, handle or piping, or with a sling through anything other than the lifting eyes.
- Keep the equipment level and upright when moving and lifting. Use rope or cable to steady the equipment during moving and placement, and to prevent equipment from tipping.
- Always use appropriately rated lifting apparatus (the lifting device, chains or slings, and attachment hardware) rated higher than the weight of the equipment.

Stay clear of equipment while it is being raised or moved; do not work under any elevated equipment.

Refer to individual manuals for detailed installation instructions for each component.

3.1 Move all the large components to their approximate location (refer to the assembly drawing on engineered project equipment), and position all units before final assembly.

3.2 The blast machine and dust collector must be placed on sound footing that will allow permanent anchoring.

3.3 All components must be protected from weather and water infiltration.

4.0 ASSEMBLY

4.1 M-Section®

4.1.1 If the M-Section® is recessed, make sure the pit is clear of debris.

4.1.2 Remove all debris, bolts, nuts, etc. from the M-Section® hoppers.

4.1.3 Set the M-Section® in the pit if it is recessed, or position it on the floor surface when surface mounted.

4.1.4 Install grating over the M-Section®, and temporarily cover the grate to prevent debris from falling into the hoppers during remaining assembly.

4.2 Blast Machine

Refer to the blast machine owner's manual for installation information concerning the blast machine, blast hose, remote control hose, blast room piping panel kit, and blast room remote mount exhaust hose assembly.

4.2.1 Rotate the blast machine to align the blast hose connection toward the blast room, and to provide the best access for compressed-air plumbing.

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

4.2.3 Place the storage hopper on the blast machine. The access door should be on the bottom, and rotated to allow full access to the door to load media. Carefully lower the storage hopper onto the blast machine; install bolts as the mating bolt holes are aligned. Be careful not to damage the flange gasket when lowering the storage section; an air leak at the flange will carry good media to the dust collector. Bolt into place. Apply adhesive-backed gasket to the top flange of the storage hopper as described in Paragraph 4.2.2.

4.3 Reclaimer

If the system was purchased as an engineered project, refer to the Table of Contents for the reclaimer manual, which contains additional essential information.

4.3.1 Rotate the reclaimer to enable full access to the door and to connect the flex hose from the transition elbow to the reclaimer inlet adaptor using the most direct route with as few bends as possible to prevent wear.

4.3.2 When necessary, rotate the externally-adjustable vortex cylinder to provide full access to the adjustment handle.

4.3.3 Use a lift to raise the reclaimer over the blast machine and storage hopper, and carefully lower it in place, being careful not to damage the flange gasket. An

air leak at the flange will carry good media to the dust collector. Bolt in place with fasteners provided.

WARNING

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

4.3.4 Use ropes or other means to temporarily support the blast machine and reclaimer during final assembly. Do not remove the temporary supports until the equipment is securely anchored.

4.4 Dust Collector: Refer to the RPH or CDC-1 Dust Collector Manual for additional assembly information.

4.4.1 Position the dust collector to align the flex hose from the reclaimer outlet to the dust collector inlet.

4.4.2 Connect a dust drum to the bottom of dust hopper.

4.4.3 Install dust collector filter cartridges if shipped separately.

4.5 Flex Hose Connections

4.5.1 Connect the heavy-lined flex hose between the transition outlet and reclaimer as shown in Figure 1. Clamp the hose to secure.

4.5.2 Connect the unlined flex hose between the reclaimer outlet (vortex tube) and dust collector inlet as shown in Figure 1. Clamp the hose to secure.

5.0 COMPRESSED AIR CONNECTIONS

5.1 The following equipment requires compressed air. Refer to the manuals shown in Paragraph 1.1.1. or the Table of Contents for engineered project equipment.

- Blast machine requires air to the inlet plumbing.
- Optional CPF air filter requires at least Grade "D" quality air for the supplied-air respirator.
- Optional carbon monoxide monitor (other than the CMS-3 in-helmet monitor) requires air from the line supplying air to the CPF filter.
- RPH and CDC-1 Dust collectors require air to the pulse manifold.

5.2 Refer to the table in Figure 2 to determine the maximum cfm through schedule-40 pipe. Size the air line accordingly. Do not use any restrictive fittings or adaptors that reduce the ID smaller than the size shown.

MAXIMUM CFM FLOW THROUGH SCHEDULE-40 PIPE					
Applied Pressure Psi	Nominal Standard Pipe Size In Inches				
	3/4	1	1-1/4	1-1/2	2
5	7	13	27	40	80
10	11	21	44	64	125
20	19	35	75	110	215
40	34	62	135	200	385
60	50	93	195	290	560
80	65	120	255	380	720
100	80	150	315	470	900
150	115	220	460	680	1350

Figure 2

5.3 Install an appropriately-sized isolation valve at each compressed-air branch to enable depressurization for service.

5.4 Refer to the blast machine owner’s manual, stock no. 23404, to determine where the piping panel (blast hose, control hose, and respirator supply enter the blast room) is located. Install the optional CPF filter and optional carbon monoxide monitor close by, following the installation instructions provided with those accessories.

6.0 ELECTRICAL SERVICE

⚠ WARNING

Lockout and tagout power before performing any electrical service. Shorting electrical components can result in serious electrical shocks, or equipment damage. All electrical work, or any work done inside an electrical panel, must be performed by a qualified electrician, and comply with applicable codes.

6.1 Standard Systems

6.1.1 If the optional electrical control panel was purchased with the system, a wiring schematic is included and stowed inside the panel. Provide 3 phase wiring from the motor and control panel to the customer-supplied disconnect.

RPH dust collector only: provide 115-volt wiring to the dust collector pulse sequence control panel (a schematic is packed in the sequence panel).

6.1.2 If the optional electrical control panel was not purchased, wire the electrical components according to the information on the motor plates to the customer-supplied panel and disconnect.

RPH dust collector only: Wire 115 volt to the dust collector pulse sequence control panel (a schematic is packed in the sequence panel).

6.2 Engineered Project Equipment:

6.2.1 A wiring schematic is provided for all electrical accessories furnished by Clemco. The schematics are packed in the control panel. An extra schematic is included with the manual. Use the schematics for making electrical connections.

6.3 After the wiring is completed, observe the warning below, and check the dust collector motor rotation. To check rotation, jog the starter (momentarily turn switch ON and OFF). This will cause the motor to rotate slowly. Look through the slots in the fan housing on top of the motor where rotation of the fan can easily be observed. Proper rotation is indicated by the arrow on the exhaustor housing. The fan should rotate toward the exhaustor outlet.

⚠ WARNING

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

6.4 Check the amperage on initial startup. If the motor draws excessive amperage, gradually close the damper until the amperage is within the specifications shown on the motor plate. The damper is located on the exhaustor outlet of the dust collector.

7.0 FINAL ASSEMBLY

7.1 Anchors

7.1.1 Holes are provided on the RPH dust collector and blast machine legs for anchor bolts. Anchor the equipment through the holes to sound footings.

7.1.2 Bolt a steel angle from a reclaimer mounting flange bolt or top bolt to a nearby, sound structural part.

7.2 Hose Connections

7.2.1 Make sure that all compressed-air supply hose connections are secured with safety lock pins and safety cables to prevent accidental separation or disconnection. Safety cables and lock pins are listed in Section 14.1.

WARNING

Hose disconnection while under pressure can cause serious injury or death. Use safety lock pins and safety cables on all coupling connections to help prevent hose couplings from accidental disconnection.

7.2.2 Install the blast hose and control hose per instructions in the blast machine and remote control manuals.

7.2.3 Connect the respirator supply hose from the CPF filter to the respirator per instructions in the CPF filter and respirator manuals.

8.0 PRE STARTUP CHECKS

8.1 Start the air compressor per the manufacturer's starting and operating procedures.

8.2 Shut OFF the sequence switch on the RPH dust collector sequence panel.

8.3 Slowly open the air supply valves for air lines to the blast machine and accessories. Check for air leaks on the initial startup and periodically thereafter.

8.4 Temporarily set pressure regulators as follows:

- Blast Machine 125 PSI
Maximum blast machine pressure rating is stamped into the ASME nameplate, which is welded to the side of the vessel.
- CPF Filter 95 PSI
- Dust Collector Manifold 20 PSI

8.5 At the control panel, start the recovery system.

8.6 Check operation of dust collector pulse:

8.6.1 RPH Dust Collector: Refer to the RPH dust collector manual and switch the dust collector pulse

sequencer ON to check pulse operation. Turn sequencer OFF when operation is confirmed.

8.6.2 CDC-1 Dust Collector: Refer to the CDC-1 dust collector manual and quickly press and release the manual pulse valve.

8.7 Test the operation of the blast machine and operator safety equipment.

8.8 Shut off the system at the control panel and shut down the compressed air system.

9.0 LOADING AND UNLOADING MEDIA

9.1 Media Capacity

9.1.1 If media is recovered while blasting the storage hopper must remain empty, media capacity in this application is approximately 6 cubic feet. The blast machine may be loaded with 6 cu. ft. of media through the storage hopper access door. The system is full at 6-cu. ft. when media reaches the level of the blast machine pop-up valve.

9.1.2 If recovery does not occur until blasting is finished, the storage hopper may be loaded with 6 cu. ft. of media through the reclaimer access door. In this application media capacity in a standard sweep-in system is approximately 12 cu. ft. The system is full at 12 cu. ft. when media level is at the flange where the reclaimer attaches to the storage hopper.

9.1.3 Overfilling will result in media carryover to the dust collector and possible blockage in the M-Section® or conveying hose.

9.2 **Media Loading:** If the system is completely emptied, media can be loaded by pouring it into the M-Sections® hoppers while the exhauster is running. When adding media, recover all media, turn OFF the exhauster, and pour clean, dry media into the storage hopper through the reclaimer access door. **Do not pour media directly into the hoppers if the current media level is unknown, as overfilling or blockage may occur.** Replenish with new media only after all media has been recovered from the blast area.

9.3 **Media Unloading:** To empty the blast machine and hopper of media, reduce pressure to 40 psi. Place an empty container, such as a drum, in the blast room. Close the choke valve, hold the blast hose securely, and pressurize the machine by activating the control handle. Be prepared for severe surging and recoil of the hose. Direct media flow into the container. Empty the container

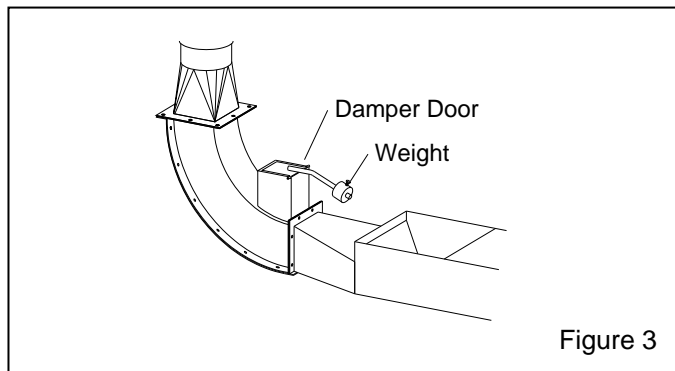
when full or before it is too heavy to maneuver, and repeat the process until the machine is empty. If complete purging of media is required, use a shop vacuum to remove media residue in the hopper and blast machine head.

10.0 ADJUSTMENTS

Refer to the appropriate manual to make adjustments to the blast machine, dust collector, and operator safety equipment.

10.1 Transition Inlet Damper, Figure 3

10.1.1 To adjust, loosen the weight on the damper assembly, and plug two M-Section® hoppers. Start the recovery system motor, and slide the weight on the rod until the damper door just begins to open. Tighten the weight to maintain the setting, and then remove the hopper plugs.



10.1.2 Once adjusted, the damper will open to clear the M-Section® transition should it become plugged.

10.2 Reclaimer Static-pressure

10.2.1 Constant static-pressure balance is necessary for precise media separation. Correct static-pressure varies with the size of reclaimer and the size, weight and type of media.

10.2.2 Adjust static pressure using the dust collector damper. Opening the damper (handle parallel with air flow) increases air flow and static pressure, while closing the damper (handle perpendicular to air flow) decreases air flow and static pressure. The damper is located on the inlet on a CDC-1 dust collector and on the exhaust outlet on an RPH dust collector, refer to Figure 1 and the dust collector manual. If the damper is not opened far enough, there is not enough air movement through the reclaimer to remove fines, resulting in dusty media and

may cause media blockage in the conveying hose. If the damper is opened too far, there is too much air movement through the reclaimer which can cause carryover (usable media carried into the dust collector) and result in excessive media consumption. Open only as far as necessary to obtain a balance of media recovery and dust removal without media carryover.

10.2.3 A manometer is useful when adjusting or monitoring static-pressure. The optional manometer kit is listed under Optional Accessories in Section 14.1. Refer to Section 10.4 for operation. The following are static-pressure starting points for given media. Static-pressure may need to be lower with finer media and higher with coarser media. Run the media through several recovery cycles allowing the reclaimer to function with these settings. Inspect the media in the reclaimer and fines in the dust collector as noted in Paragraphs 10.2.4 and 10.2.5. Continue adjusting static pressure until optimum media cleaning without carryover is attained.

Glass Bead No. 6 and 7	3-1/2" to 4"
Glass Bead No. 8 to 13	3" to 3-1/2"
Alox. 60 and coarser	4" to 5"
Alox. 80 and finer	3" to 3-1/2"

10.2.4 To Remove More Fines: Open the damper enough to increase static pressure by 1/4 inch.

10.2.5 To Remove Less Fines: Close the damper far enough to decrease static pressure by 1/4 inch.

10.2.6 Operate the system until the media has gone through several cycles before making additional adjustments. The objective is to obtain a balance of maximum dust removal without media carryover.

10.2.7 If the damper has been adjusted and carryover or excessive dust in the media continues, adjust the vortex cylinder per Section 10.3.

10.3 Externally-adjustable Vortex Cylinder

The vortex cylinder fine-tunes media separation. Before adjusting the cylinder, adjust static pressure per Section 10.2. After adjusting static pressure and media has gone through several recovery cycles, adjust the vortex cylinder as follows.

10.3.1 Adjustments are made by loosening the handle's tensioning knob and moving the handle to achieve the correct setting. When the correct setting is established, tighten the tensioning knob to prevent movement. Start with the lever slightly to the right of the vertical, at about the one o'clock position as shown in Figure 4.

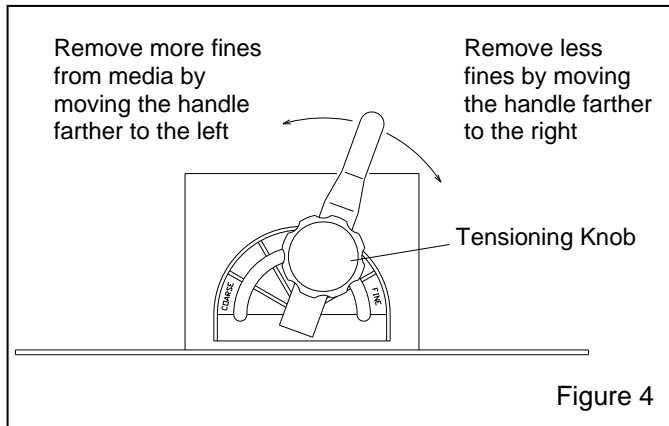


Figure 4

10.3.2 To Remove More Fines: If there is too much dust in the media, raise the cylinder by moving the lever left toward "COARSE", in 1/4" increments at the indicator plate. It may take a few recovery cycles to remove the fines; allow the media to go through several recovery cycles before determining if further adjustment is required.

10.3.3 To Remove Less Fines: If too much usable media is being carried to the dust collector, lower the vortex cylinder by moving the lever right toward "FINE", in 1/4" increments at the indicator plate. Run the media through several recovery cycles and check the dust container to determine if further adjustment is required. Note: If the cylinder is lowered too far, the reclaimer will again begin to allow usable media to be carried over, and cause abnormally high static pressure.

10.3.4 When using media finer than 180-mesh, the reclaimer inlet baffle may also need to be removed. Refer to Section 1.6.6.

10.4 Optional Manometer

NOTE: These instructions show several methods of taking static-pressure readings (negative pressure) on reclaimers using a flexible tube manometer. Use the method best suited for the application. The instruction explains the processes for taking periodic readings and shows how to permanently install the manometer for taking frequent readings. The readings are reference points so it doesn't matter where the readings are taken as long as they are always taken at the same location. Taking readings at different locations can produce different results. Static-pressure readings at the door are generally 1/2" to 1" lower than those taken above the reclaimer.

10.4.1 Refer to directions packed with the manometer for preparation and operating instructions for the manometer.

10.4.2 Connect one end of the 3/16" ID tubing to one of the tubing connectors (elbow) at the top of the manometer, by pushing it over the barbed adaptor.

10.4.3 Leave the needle protector on the needle and insert the needle into the other end of the tubing. The ends of the tubing must fit tight on the manometer and needle; leaks will give inaccurate readings.

10.4.4 Open both manometer valves (elbows) per the instructions with the manometer.

10.4.5 Magnets on the manometer hold it in position on the reclaimer body. The manometer must be vertically-plumb so the fluid is level on both sides.

10.4.6 Adjust the slide rule to align the zero with the fluid level. Refer to the upper part of Figure 6.

10.4.7 Needle placement: The illustration in Figure 5 shows the manometer set-up for taking both periodic and frequent static pressure readings.

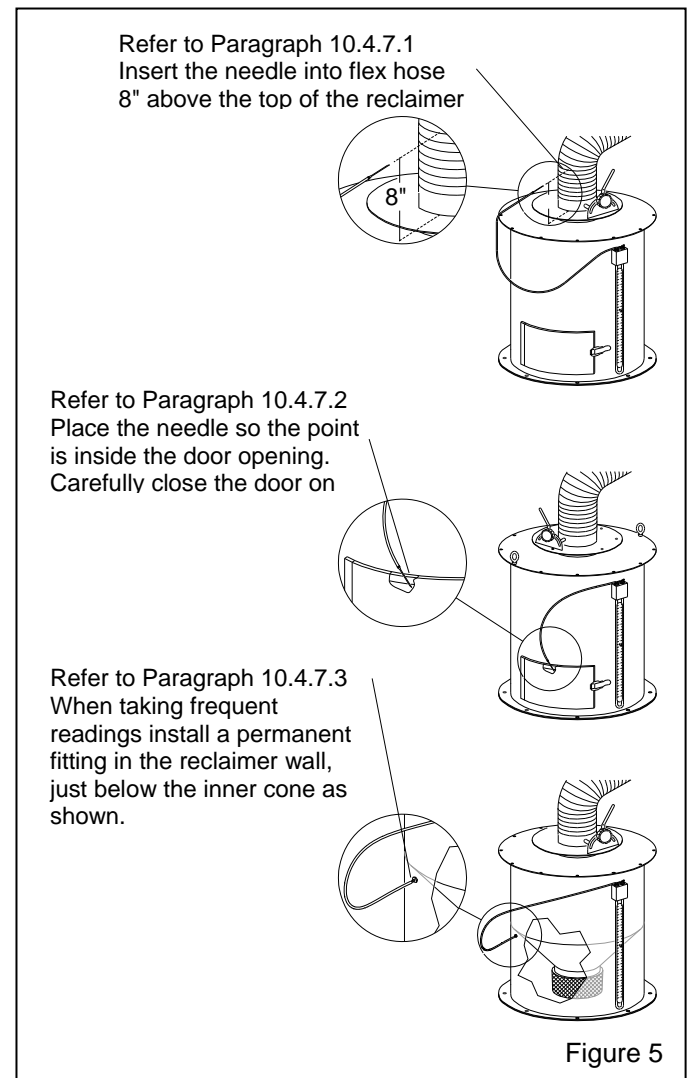
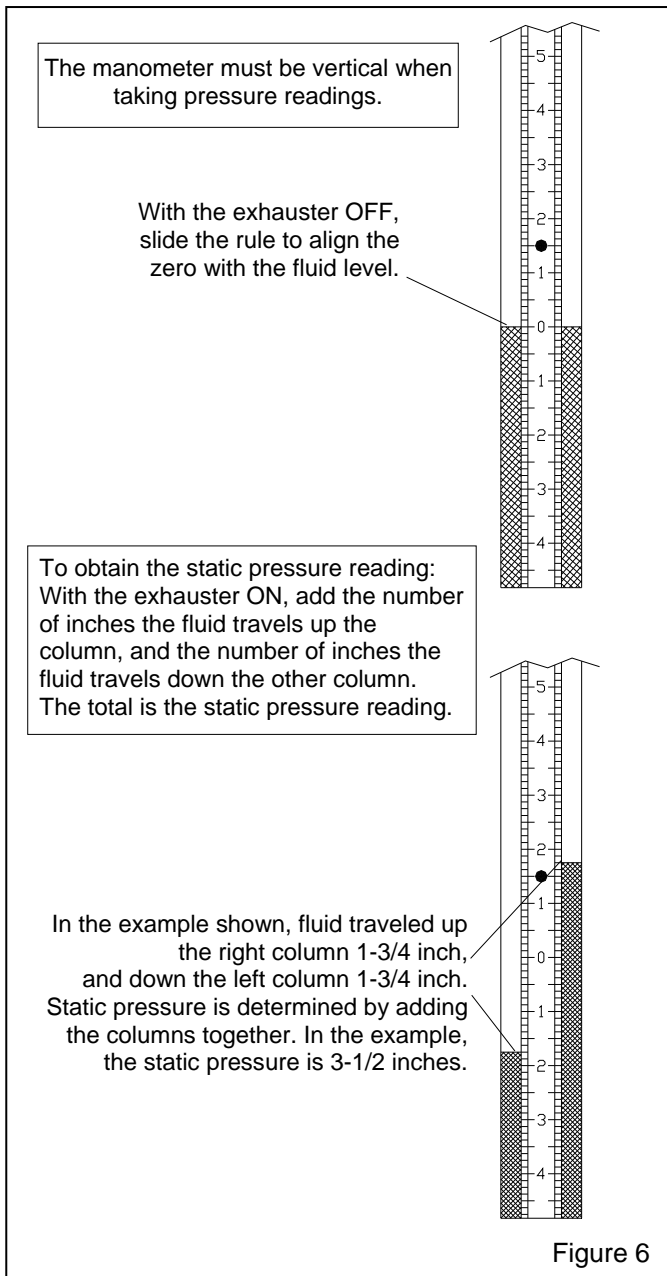


Figure 5

10.4.7.1 Taking readings in the flex hose: Remove the needle protector, and insert the needle into the flex hose approximately 8" from the top of the reclaimers.

10.4.7.2 Taking readings at the reclaimers door: Open the reclaimers fill door, remove the needle protector and place the needle so the point is inside the door opening. Carefully close the door on the needle. The side of the needle will embed into the rubber, creating an airtight seal.



10.4.7.3 Taking frequent readings using a permanent fitting: A permanent fitting may be installed in the reclaimers wall as shown in Figure 5 for taking frequent static pressure readings. Permanent fittings must have a

barb to accommodate the 3/16" ID tubing and have a means of sealing the fitting when the manometer is not in use. Use silicone sealer or other sealant to seal around the fitting to prevent leaks. The fitting should be capable of being capped when the manometer tube is removed. Sealing the fitting will prevent leaks that alter the reclaimers separation efficiency. Air drawn into the reclaimers will cause carryover of good media to the dust collector.

10.4.8 Turn the exhauster ON. The negative (static) pressure will move fluid in the tube.

10.4.9 To find the static pressure, add the number of inches the fluid travels up one column to the inches the fluid travels down the other column. Refer to the example in Figure 6.

10.4.10 After taking the readings, replace the needle protector. Close the manometer valves and store the manometer in the original container in a clean area. Note: If the manometer installation is permanent, the manometer may remain on the reclaimers body after the valves are closed.

11.0 PREVENTIVE MAINTENANCE

11.1 Debris Screen: Begin by checking the reclaimers debris screen daily and adjust to weekly inspection if the screen is empty. To clean, turn the exhauster OFF, open the access door, and remove screen. Empty the screen and replace it, making sure it is securely re-attached to the inner cone.

11.2. Periodically check for wear on the reclaimers inlet adaptor pipe, outlet vortex pipe, and flex hoses. Replace as required.

11.3 Inspect wear plate or optional rubber liners every two months. Replace liners when the rubber is worn-through.

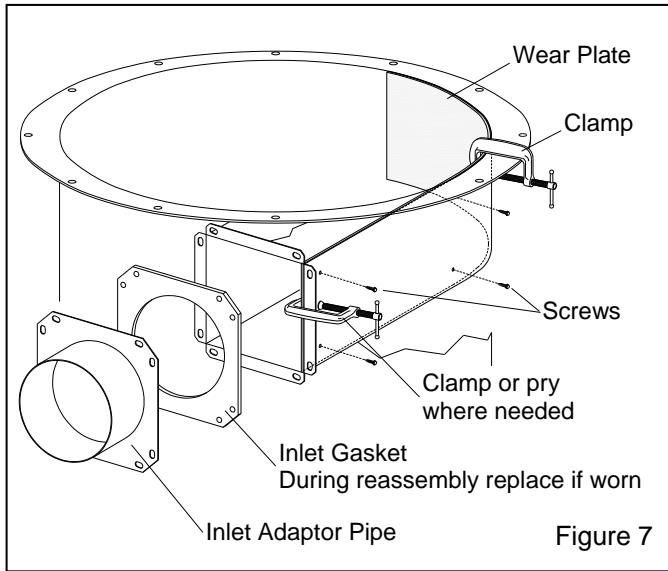
11.4 Inspect transition wear plate every two months. Replace when the rubber is worn-through.

12.0 SERVICE MAINTENANCE

12.1 Replacing Reclaimers Wear Plate, Figure 7

12.1.1 Remove the reclaimers top plate, inlet adaptor pipe, gasket and old wear plate. The wear plate is held

in place by screws attached from the outside of the reclaimer; remove the screws to remove the wear plate.



12.1.2 Remove what remains of old caulking from the reclaimer and top plate.

12.1.3 Insert the new wear plate into reclaimer inlet until it is in position with the straight end at the reclaimer inlet. Use locking pliers, clamps, board (2 x 4), or other means where needed to pry the wear plate against the side of the inlet and inner wall. Make sure the leading edge of the wear plate is aligned with the reclaimer inlet and that the top edge is even with the top of the reclaimer.

12.1.4 New self-drilling sheet metal screws are provided with the wear plate and are match-drilled through the old screw holes into the wear plate at each screw hole location. Rearrange the clamp(s) as needed to press the wear plate against the reclaimer wall when installing screws through the old holes.

12.1.5 Reattach the top plate.

12.1.6 To avoid rapid wear, apply RTV caulk to fill gaps at the seams on the top and bottom of the wear plate.

12.1.7 Reattach the inlet adaptor pipe, replacing the gasket if worn, compressed or otherwise damaged.

12.2 Replacing Rubber Reclaimer Liners, Figure 8

The reclaimer must be designed to accept liners and have a removable top. If the reclaimer is currently unlined, begin at the installation note preceding Paragraph 12.2.9.

12.2.1 Remove the flex hoses from the reclaimer inlet and outlet.

12.2.2 Remove the bolts and nuts, securing the reclaimer top, and then remove the top, top liner and tube (inner cylinder) liner.

12.2.3 Grind the tack welds from the bottom of the tube liner that secures the tube liner to the tube, then slide the liner off the inner tube.

12.2.4 Remove the bolts located along the side of the inlet, and remove the inlet baffle.

12.2.5 To remove the inlet-top liner, remove the self-drilling screws securing it to the top of the inlet.

12.2.6 Wall liner and inlet-side liner are held in place with self-drilling screws. From the outside of the reclaimer, remove the screws, and remove the liner.

12.2.7 Inner cone liners and cone-ring liners are glued onto the inner cone. Pull off the liners to remove them.

12.2.8 Remove old caulking and adhesive from the weldment.

Installation Note: The numbers in parenthesis (-) shown in Figure 8 and the applicable paragraphs, show the recommended order of installation. When installing the liners, make sure that seams are aligned. The final assembly must be smooth and free of protrusions, edges, and gaps. Any edges will disrupt the air flow, causing wear, and affect the reclaimer's media cleaning efficiency.

12.2.9 (1st) Place the cone-ring liner on the inside of the cone-ring; check fit and trim if needed. Apply medium-set contact cement to the fabric side and install the liner. Note: Follow the instructions provided with the adhesive, some adhesives require covering both surfaces to be cemented. Smooth out the liner to eliminate air pockets.

12.2.10 (2nd) Place the cone liner in the cone with the fabric side down, and check the fit; trim if necessary. Follow the instructions provided with the adhesive and apply medium-set contact cement to the fabric side, and install the cone liner. Smooth out the liner to eliminate air pockets.

12.2.11 (3rd) Position the inlet-side liner and inlet-top liner to make sure they fit; trimming is occasionally required. Align the inlet-side liner and inlet-top liner and clamp them in place. Use a self-drilling screw at each hole location in the weldment to secure replacement liners. Note: To field install new, first-time inlet-side liner and inlet-top liners, after clamping the liners, use self-drilling screws at each liner corner to secure them.

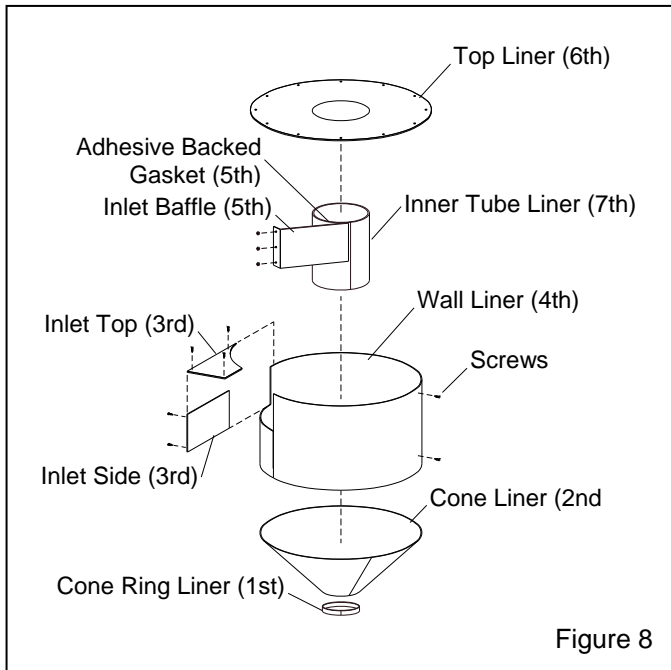


Figure 8

12.2.12 (4th) Clamp the wall liner in place, making sure it is flush with the top of the reclaimer body and the cutout is aligned with the reclaimer inlet. Mark the wall liner at the three bolt-hole locations for the inlet baffle. Remove the liner and drill the bolt holes. Reinstall the wall liner. Align the three bolt holes and temporarily place bolts through the holes to hold it in place. Clamp the liner, and while pushing the liner against the weldment, secure replacement liners, with self-drilling screws at each existing hole location. Note: To field install a new, first-time wall liner, use self-drilling screws to secure it at the seam and an inch or two from the top and bottom at each quadrant. Remove the temporary inlet baffle bolts after the liner is secured.

12.2.13 Apply silicone caulking to seal seams around the inlet-side liner and reclaimer weldment, and between the inlet-top liner and wall liner seam. Apply caulking at the seams of the cone-ring liner and cone liner and between the cone liner and wall liner. Wipe the caulking smooth.

NOTICE

All seams between each liner must be sealed, and all seams between the liners and reclaimer weldment must be sealed. Voids will cause premature wear.

12.2.14 (5th) Apply adhesive-backed strip gasket to the edge of the inlet baffle that fits against the inner tube. Install the inlet baffle; bolts should be installed from the inside of the reclaimer to attach nuts from the outside.

12.2.15 (6th) Slide the top liner over the inner tube and align the holes in the liner with those in the top. Note that the holes around the inlet are spaced differently from the others. Temporarily install a couple of bolts to maintain the alignment.

12.2.16 (7th) Place the tube liner over the inner tube, and use worm clamps to temporarily clamp the liner to the tube. Align it so the seam is on the backside of the baffle, as shown in Figure 8. Make sure the liner is tight against the top liner, then tack the liner to the bottom of the inner tube in three or four places. Remove the clamps when the tube liner is secured.

12.2.17 Apply caulking to the seam on the tube liner, and between the tube liner and top liner.

12.2.18 Apply caulking around the top edge of the wall liner and inlet-top liner.

12.2.19 Align the reclaimer top assembly and lower it into place being careful not to smear the caulking. Secure the top bolts and inlet baffle bolts.

12.2.20 Working through the reclaimer inlet, wipe the caulking seal smooth. Apply additional caulking to the seam between the baffle and wall liner. Re-caulk any voids.

12.2.21 Install flex hoses.

12.2.22 Allow time for the caulking to cure before putting the reclaimer in service.

12.3 Transition Elbow Wear Plate Figures 9 and 10

NOTE: If the M-Section® is short and light enough, and surface-mounted, the wear plate may be replaced by raising the transition end, otherwise remove the elbow as follows:

12.3.1 Remove the bolts securing the top adaptor and remove the top adaptor, as shown in Figure 9. Remove the flex hose if necessary.

12.3.2 Remove the bolts securing elbow to the transition and remove the elbow.

12.3.3 Remove the screws and wear plate from the outside radius on the elbow.

12.3.4 Attach the new wear plate elbow.

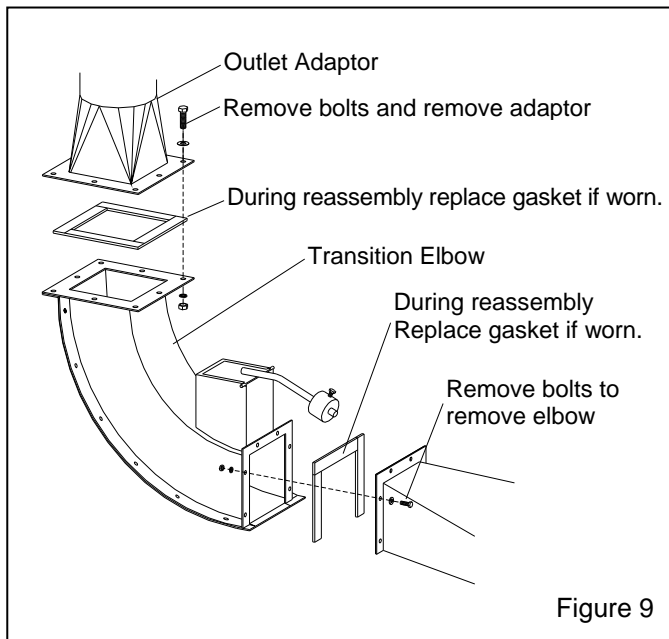


Figure 9

12.3.5 Apply a bead of caulking to the top side of the new wear plate as shown in Figure 10, and install the elbow onto the transition. Apply new gasket material if necessary.

12.3.6 After the elbow is securely attached to the transition, apply caulking to the lower seam to ensure an air tight seal.

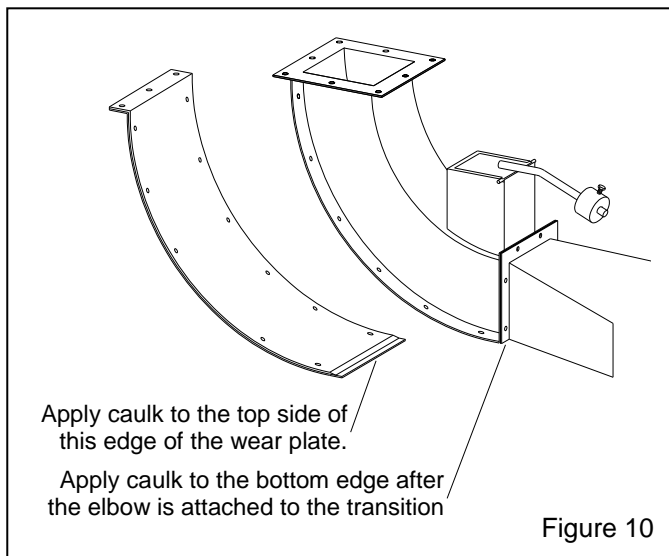


Figure 10

12.3.7 Reattach the top adaptor, using new gasket material if required.

13.0 TROUBLESHOOTING

13.1 Excessive media carryover

13.1.1 Dust collector damper open too far. Adjust static pressure per Section 10.2.

13.1.2 Vortex cylinder out of adjustment. Adjust vortex cylinder per Section 10.3.

13.1.3 Reclaimer or storage hopper door open or leaking. Check doors and gasket for leaks. 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.

13.1.4 Flange gasket between the blast machine, storage hopper, or reclaimer leaking. Check gaskets for negative pressure leak.

13.1.5 Leak in reclaimer weldment. Check entire reclaimer for leaks.

13.1.6 Media level too high. Load media per Section 9.0.

13.1.7 If using 180 mesh and finer media or very light-weight media, the inlet baffle of the reclaimer may need to be removed. Refer to Section 1.6.6.

13.1.8 Reclaimer debris screen blocked with debris. Check screen basket daily.

13.2 Media buildup in M-Section® hoppers, reclaimer not recovering media

13.2.1 Dirty dust collector filter cartridge(s). Refer to the reverse-pulse dust collector manual to adjust pulse pressure, pulse sequence, and changing cartridge(s).

13.2.2 Exhauster motor rotating backwards. The motor should rotate as indicated by the arrow on the exhauster housing. If it does not rotate in the proper direction, **lockout** and **tagout** electrical power and switch the motor leads as shown on the motor plate. Refer to the system's wiring schematic and Paragraph 6.3.

13.2.3 Dust collector damper closed too far restricting air movement through the M-Section®. Adjust static pressure per Section 10.2.

13.2.4 Blocked air inlet hopper. Air enters through the hopper farthest from the transition elbow, Refer to Figure 1. Blockage in the air intake restricts incoming air and reduces air movement through the M-Section®. Check for blockages.

13.2.5 Hole worn in flex hose between transition and reclaimer inlet or between the reclaimer outlet and dust collector inlet. Replace hoses and route them with as few bends as possible to prevent wear.

13.2.6 Reclaimer door open. DO NOT operate unless door is closed.

13.2.7 Obstruction in transition, flex hose, or any segment before the reclaimer inlet. Remove hose and check for blockage.

13.2.8 Exhauster paddle wheel worn. Check wheel for wear.

13.3 Abnormally high media consumption

13.3.1 Media carryover, refer to Section 13.1

13.3.2 Media may be too fine or worn-out. Replace media as necessary.

13.3.3 Using media that rapidly breaks down. If the application allows for it, change to durable media.

13.3.4 Blast pressure too high for the media, causing media to breakdown. If the application allows for it, lower blast pressure.

13.4 Reduction in blast cleaning rate

Also refer to the blast machine owner's manual.

13.4.1 Low media level reducing media flow. Check media level and refill as necessary.

13.4.2 Reduced air pressure. This may be caused by a malfunctioning regulator, a dirty filter element in moisture separator, partially closed air supply valve, leaking air line, or other air tools in use. Refer to the blast machine owner's manual.

13.5 Plugged blast nozzle

13.5.1 Damaged or missing reclaimer debris screen. When the filter screen is damaged or not in place, all media and blast cleaning by-products, such as paint chips, scale etc. pass directly into the blast, blocking the metering valve or nozzle. Check placement of the debris screen.

13.6 Media bridging

13.6.1 Frequent bridging or blockages in the media metering valve can be caused by damp media. Media becomes damp by blasting parts that are slightly oily, from moisture in the compressed air line, or from absorption from ambient air.

13.6.2 To avoid contaminating media from the workpiece, all parts should be clean and dry. If parts are oily or greasy, degrease and dry them prior to blasting.

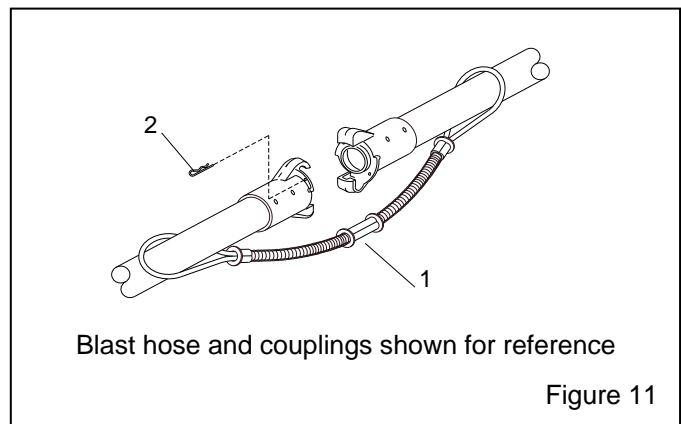
13.6.3 Moist compressed air may be due to a faulty compressor that overheats or pumps oil or moisture into the air line, too long an air line permitting moisture to condense on the inside, or from humidity. Moisture causes media to clump and inhibits free flow through the blast machine metering valve. If the filter does not remove enough moisture to keep media dry and flowing, it may be necessary to install an air dryer or aftercooler in the air supply line.

13.6.4 Absorption: Some media tends to absorb moisture from the air, especially fine-mesh media in high humidity areas.

14.0 ACCESSORIES AND REPLACEMENT PARTS

14.1 Options and Accessories, Figure 11

Item	Description	Stock No.
(-)	Manometer kit	12528
1.	Safety cable for 1-1/2" to 3" OD hose	15013
	for 1-1/2" to 4" OD hose	27405
2.	Lock pin, coupling (package of 25)	11203



14.2 Reclaimer Assembly, Figure 12

M-Section® systems come with options shown with an asterisk (*). **These items are not supplied with standard replacement reclaimers.** If asterisk (*) items are needed with a replacement reclaimer, order separately, request that item 2 be installed.

Item	Description	Stock No.
(-)	Reclaimer, pull-thru, for 24" blast mach. . .	24206
1.	Gasket, 5/16" x 1" adhesive-backed, specify feet required	00187
2.	Inlet pipe, w/hose support, 900 cfm, 6"	16887
3.	Gasket, inlet 900 cfm	11759
4.	Wear plate, 900 cfm, use w/bolt-on top	25071
5.	Screen assembly 8 mesh	21265
6.	Gasket, door, 900 cfm	11745
7.	Spring latch assembly	12263
8.	Vortex cylinder assembly, 900 pull-thru ...	23046
9.	Gasket, 2" adhesive-backed, specify feet required	13089
10.	Top, 900 reclaimer	23040
11.	Eyebolt, 1", 3/8-NC x 1-1/4"	00430
12.	Door, with latch	14271
13.	Body section, with door and wear plate, without top	27465
	with door, rubber liners, and top	27466
14.	Hose, 6" ID x 15-ft. heavy lined	12457
15.	Hose, 7" ID unlined flex, specify ft. req'd. ..	12448
16.	Clamp, 8" OD	11576
17.	Hose support, outlet (optional acc.)	20619

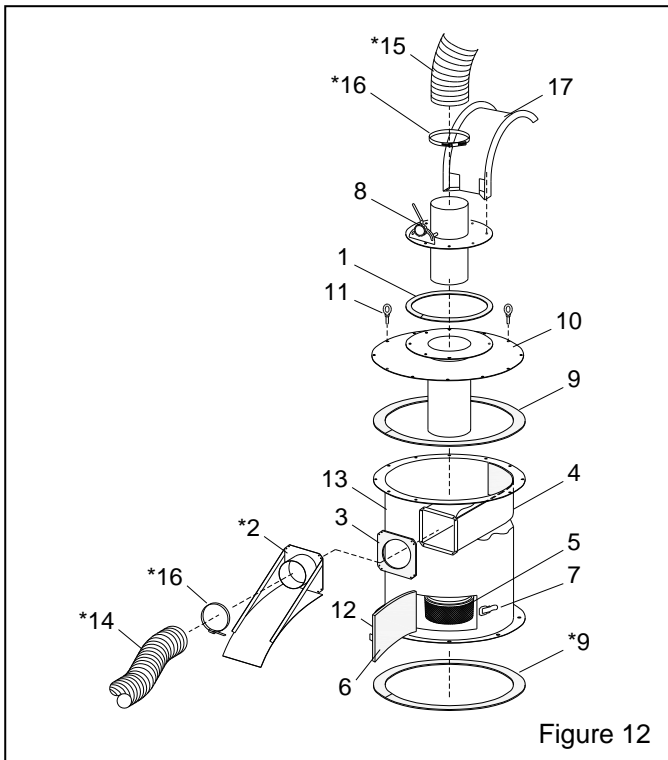


Figure 12

14.3 Transition Elbow Assembly, Figure 13

Item	Description	Stock No.
1.	Hose, 6" heavy lined flex (15 ft. only)	12457
2.	Clamp, hose, 8-inch	11576
3.	Gasket, 5/16" x 1" adhesive-backed specify feet required	00187
4.	Wear plate w/ fasteners	22377
5.	Adaptor, 6" outlet pipe	22375

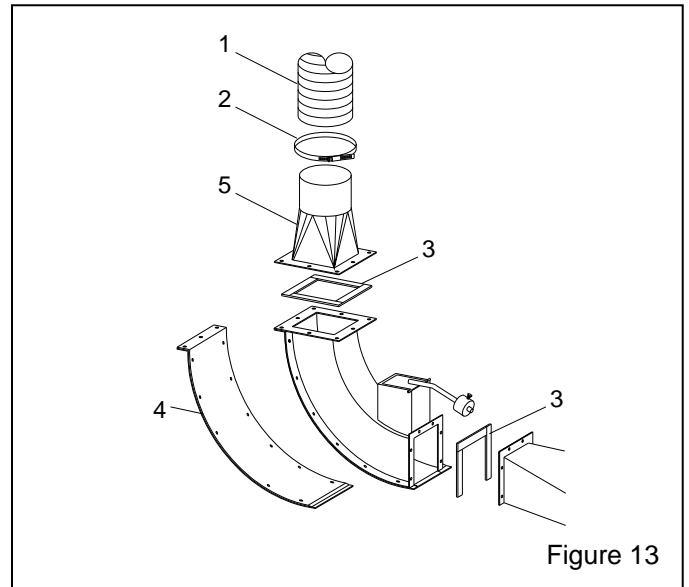


Figure 13

14.4 Storage Hopper, Figure 14

Item	Description	Stock No.
(-)	Storage hopper, 6-cu.ft., 24-inch dia.	21027
1.	Gasket, door, 900 cfm	11745
2.	Door, with latch	14271
3.	Spring latch assembly	12263
4.*	Gasket, 2" adhesive-backed, specify feet required	13089

Note: Item 4 is not included with replacement storage hoppers. Order separately if required.

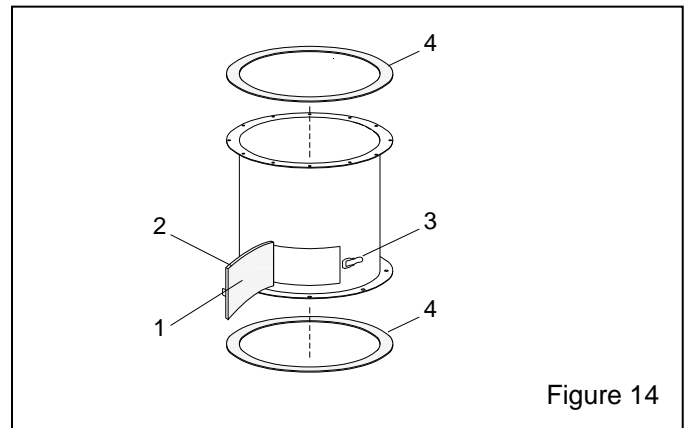


Figure 14

14.5 Rubber Liners, Figure 15

Item	Description	Stock No.
(-)	Rubber liner set, 900 cfm reclaimer	23151
1.	Top liner, 900 cfm	23059
2.	Inlet baffle and tube liner (2-piece)	23416
3.	Body liner, 900 cfm	17008
4.	Inlet side liner, 900 cfm	12830
5.	Inner cone liner, (2-piece)	16070
6.	Inlet top, 900 cfm	22827
7.	Screw, self-drilling, 10-16 x 3/4"	12722

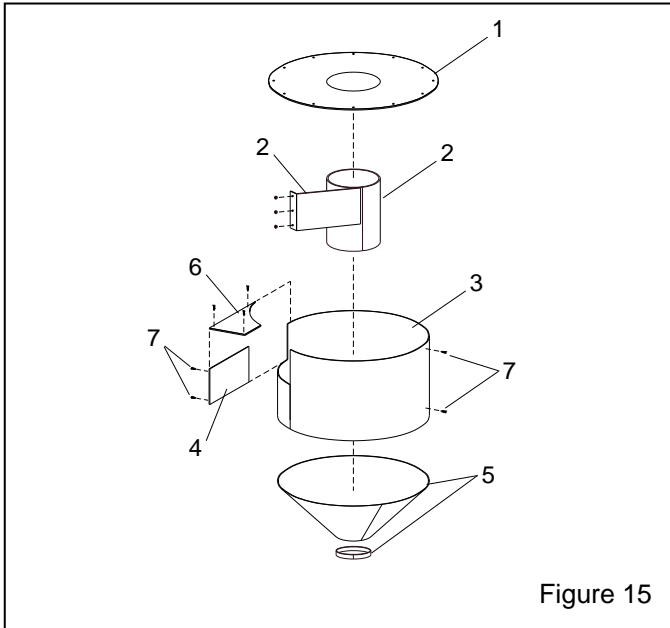


Figure 15