# Operating Instructions
for the
Pro-Finish® Cabinet System
Pressure and Suction
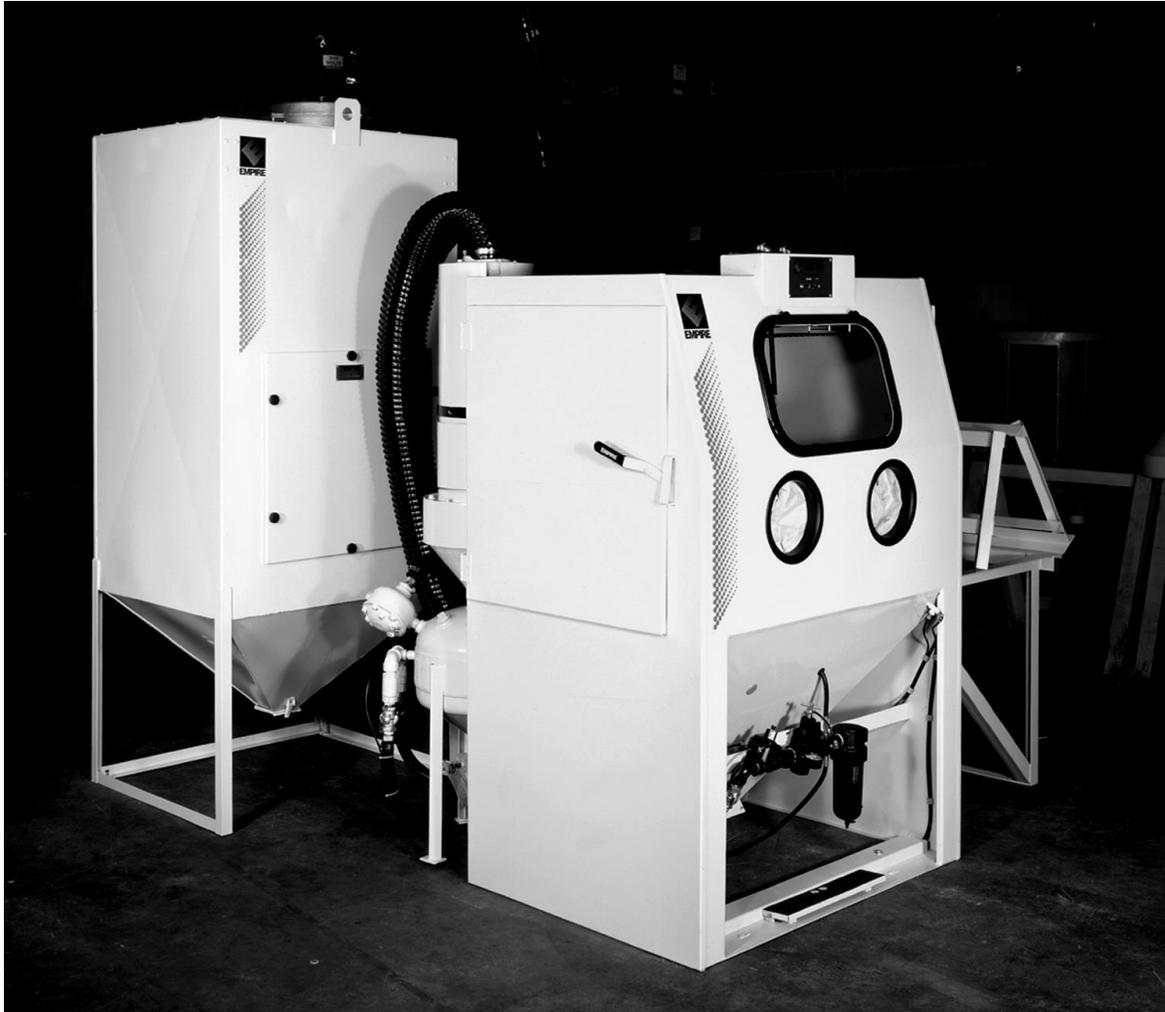
EMPIRE
ABRASIVE EQUIPMENT
2101 West Cabot Boulevard
Langhorne, PA 19047-1893
www.empire-airblast.com

Manufactured by: EMPIRE ABRASIVE EQUIPMENT COMPANY
2101 West Cabot Boulevard
Langhorne, PA 19047-1893
Phone: 215-752-8800, Fax: 215-752-9373

Empire equipment should be properly maintained per the operating instructions. For peak performance of your equipment, use only genuine Empire replacement parts; accept no substitutes! **The use of non-Empire parts will void the warranty.**

PARTS AND SERVICE
1-800-497-4543

To order Empire replacement parts, contact your local authorized Empire distributor. For the name of your local distributor, call Empire Customer Service, 1-800-497-4543, or fax us at 215-752-9373, or e-mail us on our website www.empire-airblast.com and we will call you back.

CAUTION
Never use silica-based abrasives
in Empire blast systems.

Model Number: _____

Serial Number: _____

Date of Purchase: _____

Date of Installation: _____

Distributor Purchased From:

Name: _____

Address: _____

_____

Phone: _____

CABINET OPTIONS

_____

_____

_____

_____

_____

Table of Contents

Introduction

Congratulations on your selection of the Pro-Finish® Cabinet System from Empire Abrasive Equipment Company. This manual is provided to assist you with the unpacking, assembly, use, and maintenance of your Pro-Finish® Cabinet System.

Please read this manual carefully and keep it in the handy plastic pouch attached to your system for future reference. If you have any questions about the operation or maintenance of your equipment, contact your Empire distributor.

Empire: The leader in air-blast technology.

Empire specializes in the design and manufacture of air-blast equipment, and has continued as an industry leader of more than 50 years. Today, Empire produces the most extensive line of air-blast products in the world. In addition to Pro-Finish® systems, our product line includes ProFormer Cabinets, ECON-O-FINISH™ Cabinets, Modified Systems, Automated Blast Systems, Blast Rooms, and SuperBlast™ Portable Blasters.

Empire Abrasive Equipment Company's reputation as a leader in air-blast technology is the result of meeting our customer's demand for quality equipment and systems that deliver increased productivity. We support our equipment with training, service, and testing programs. When you need advice, assistance, or equipment on short notice, our national network of distributors assures that help is nearby.

Figure 1. Pro-Finish® Cabinet System

1.0 Preparing for Installation

1.1 Hand Tools Required

The following tools are recommended for the installation of your Pro-Finish® Cabinet system:

- 7/16" wrench or socket
- 6" adjustable wrench
- 9/16" wrench or socket
- medium flat-blade screwdriver

- 14" Pipe wrenches
- medium Phillips head screwdriver
- Channel Lock Pliers

1.2 Step-by-Step Procedure

Step 1: Unwrap and remove cabinet and the components from the pallet.

Step 2: Most cabinet systems are shipped with the reclaimer mounted to the cabinet. If your system was shipped with the reclaimer NOT installed, install the reclaimer as follows:

   a. Lift the reclaimer assembly and set in place against the rear of the cabinet so that the slots in the reclaimer bracket set down on the "Z-strip".

   b. Push the reclaimer assembly up against the rear of the cabinet so that the mounting bolts protruding from the rear wall of the cabinet are inserted into the keyhole slots in the bracket. See Figure 2.

Step 3: With the reclaimer in position, tighten the bolts.
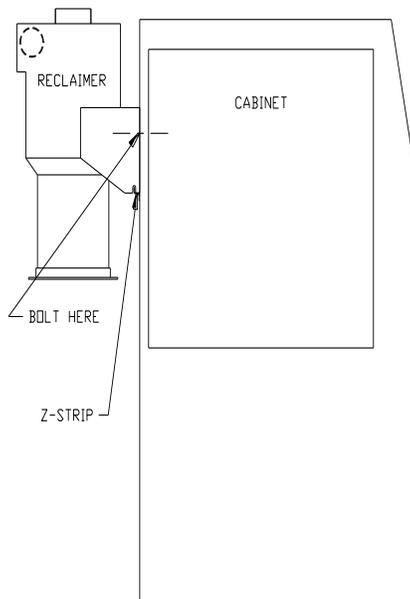

Figure 2. Reclaimer Mounting

Step 4: Attach one end of the conveying hose to the cabinet hose adapter. Attach the other end of the hose to the reclaimer inlet. See Figure 3. Use supplied hose clamp to make connections airtight.
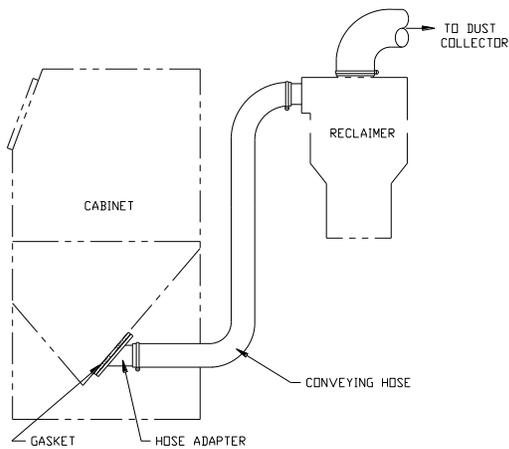
**Figure 3. Conveying Hose
Installation or Assembly**

**Steps 5 through 12 apply to pressure
systems only. (Suction systems are
not equipped with a pressure vessel.)**

Step 5: Move the pressure vessel into
position as shown in Figure 4.
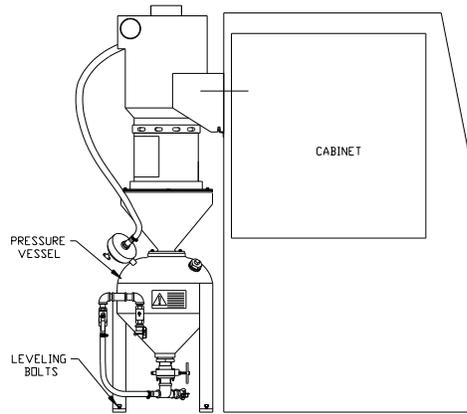
Figure 4. Pressure Vessel Installation

Step 6: Adjust the leveling bolts on the
pressure vessel legs so that the weight
of the assembly is evenly distributed on
the floor and the hopper flange mates
with the pressure vessel.

Step 7: Install and tighten the six bolts
connecting the storage hopper flange to
the top of the pressure vessel.

Step 8: Connect the quick coupling
ends of the air hose / tubing harness
and to the 1" pipe string on the front of
the cabinet and on the vessel. See
Figure 5.
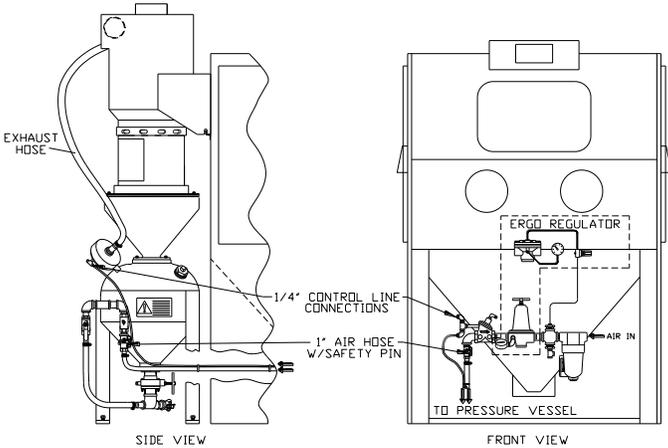
**Figure 5. Air Hose Assembly to Pipe
String Assembly**

Step 9: Install the safety pin through
the holes in both halves of each quick
coupling. See Figure 5.

Step 10: Connect the harness ¼" O.D.
control tubing to the exhaust valve and
air valve fittings as shown in Figure 5.
Making sure the connection is tight.

Step 11: Connect the 1" exhaust hose
from the MG-78 exhaust valve to the
hose barb located at the reclaimer inlet.

Step 12: Connect the blast hose quick
coupling as shown in Figure 6 to the
tank coupling below the Sure-Flo Media
Regulator. Install the safety pin.

Figure 6. Hose/Coupling Connection

Steps 13 and 18 apply to single-phase systems only.

If your system includes a dust collector, make the electrical connection between the fan motor and the cabinet electrical control box as follows:

Step 13: Remove the four screws from the corners of the control box cover.

Step 14: Slide out the terminal strip plate as shown in Figure 7.
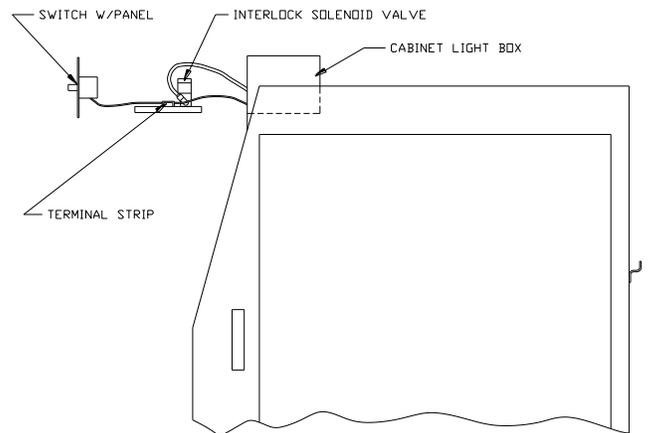
Figure 7. Terminal Strip

Step 15: Insert wiring from the fan motor into the strain relief on the top of the electrical box, as shown in Figure 8.
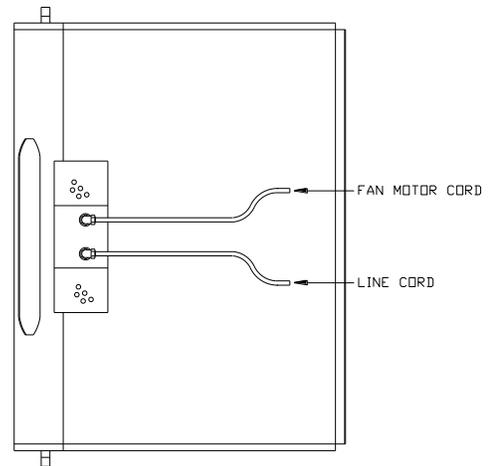
Figure 8. Strain Relief

Step 16: Pull about 16 inches of cord into the electrical box.

Step 17: Notice that the fan motor cord wires are numbered. Connect each wire to the terminal of the same number.

Step 18: Replace the terminal strip plate and control box cover. Tighten the strain relief where the connecting cord enters the control box.

The single phase electrical schematics shown in Figure 9 and Figure 10 also appear on the back of the control box cover.

Consult the schematic that applies to the specific type of electrical power that will be supplied to the cabinet. Your power supply must match the label power supply of the cabinet and dust collector fan motor.
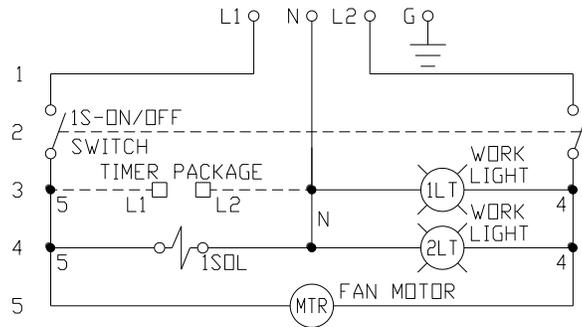
SINGLE PHASE SCHEMATIC DRAWING: 220-240 VOLTS
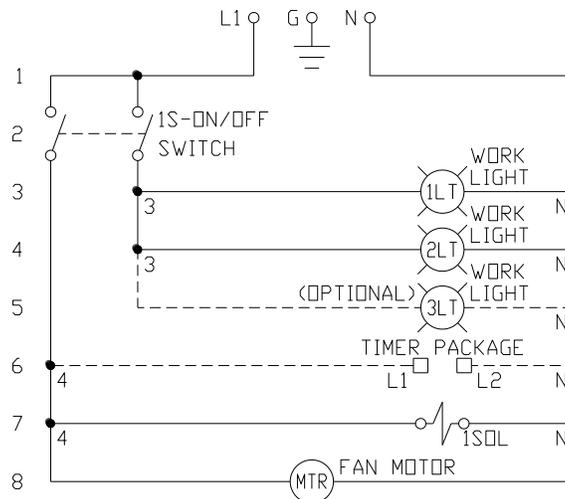
SINGLE PHASE SCHEMATIC DRAWING: 110-120 VOLTS

Figure 9 and Figure 10.

Step 19: If your system has a fan and dust bag, fasten the dust bag to the fan outlet and secure with the clamp provided.

Step 20: Install the dust hose between the reclaimer outlet and the dust collector inlet.

Step 21: Secure the hose ends with the clamps provided.

Step 22: Connect your system to utilities as described in the *Installation* section following.

2.0 Installation

Your Pro-Finish® system may arrive fully assembled or in easily assembled modular packages. All equipment must be well grounded and mounted on a level surface. *DO NOT* install your Pro-Finish® system on a wooden floor, a rubber mat, or a floor subject to wet conditions.

IMPORTANT

All electrical connections to the Pro-Finish® cabinet should be made by a qualified electrician and must adhere to the codes, standards, and procedures specified by the authority having jurisdiction.

The customer is responsible for providing appropriate disconnecting means adjacent to the equipment for each incoming power circuit.

2.1 Installing the Optional Dust Collector

If your system includes a dust collector, you should install it before your install the cabinet, because in many instances, the dust collector is located behind the cabinet. Install the dust collector as follows:

Step 1: Place the dust collector on a level surface behind or adjacent to your Pro-Finish® Cabinet location.

Step 2: Be sure the access door and pneumatic shaker control on the dust collector are easily accessible and the dust hose inlet is directed toward the cabinet.

Step 3: Allow enough space for the cabinet doors to open freely. Also allow enough room to remove the dust from the dust collector hopper.

Step 4: Stabilize the dust collector by adjusting its leveling bolts to compensate for any unevenness in the supporting floor.

Step 5: A separate ¼" air line is supplied for the dust collector shaker mechanism. Attach the free end of this air line to the dust collector compressed air inlet connection.

2.2 Installing the System

Step 1: Place the cabinet on a level surface. Ensure that there is enough space around the system for easy access to components. There should be enough space for work pieces to be easily loaded and unloaded through the cabinet doors.

Step 2: Stabilize the cabinet by adjusting its leveling bolts to compensate for any unevenness in the supporting floor.

2.3 Electrical Connections

The standard power supply for the 400 CFM (1 HP) systems is 115-volts/60 cycle/single phase. The standard electrical supply for 600 CFM (1 ½ HP) and 900 CFM (2 HP) systems is 230-volts/60cycle/single phase. Cabinets are also available prewired for the optional power supplies listed in *Section 7.0 Options and Accessories*. Standard single-phase systems are supplied with a line cord (except for systems delivered to Canada).

| 380V/50HZ | 5 HP | **9.5 A** |

If your system is designed for three-phase power, make the electrical connections as shown in Figure 11.

For both single-phase and three-phase systems, cabinets equipped with any of the standard electrical supplies require a minimum 20 AMP service and minimum 12 gauge copper wire.

SINGLE-PHASE SINGLE SOURCE		
SOURCE	MOTOR	CURRENT
110-120V/60HZ	1 HP	**19.0 A**
220-240V/60HZ	1 HP	**11.0 A**
110-120V/50HZ	1 HP	**22.2 A**
220-240V/50HZ	1 HP	**12.6 A**
110-120V/60HZ	1 ½ HP	**23.0 A**
220-240V/60HZ	1 ½ HP	**13.0 A**
220-240V/50HZ	1 ½ HP	**15.0 A**
110-120V/60HZ	2 HP	**27.0 A**
220-240V/60HZ	2 HP	**15.0 A**
220-240V/50HZ	2 HP	**17.4 A**

(% marks row 110-120V/60HZ 1 HP; # marks row 110-120V/60HZ 1 ½ HP; @ marks row 220-240V/60HZ 2 HP)

THREE-PHASE SINGLE SOURCE		
SOURCE	MOTOR	CURRENT
208V/60HZ	1 HP	**7.2 A**
220-240V/60HZ	1 HP	**6.3 A**
440-480V/60HZ	1 HP	**3.1 A**
550-600V/60HZ	1 HP	**2.5 A**
380/50HZ	1 HP	**3.0 A**
208V/60HZ	1 ½ HP	**9.3 A**
220-240V/60HZ	1 ½ HP	**8.1 A**
440-480V/60HZ	1 ½ HP	**4.0 A**
550-600V/60HZ	1 ½ HP	**3.2 A**
380V/50HZ	1 ½ HP	**3.9 A**
208V/60HZ	2 HP	**10.2 A**
220-240V/60HZ	2 HP	**8.9 A**
440-480V/60HZ	2 HP	**4.4 A**
550-600V/60HZ	2 HP	**3.5 A**
380V/50HZ	2 HP	**4.7 A**
208V/60HZ	5 HP	**19.9 A**
220-240V/60HZ	5 HP	**17.3 A**
440-480V/60HZ	5 HP	**8.6 A**
550-600V/60HZ	5 HP	**3.9 A**

(+ marks row 220-240V/60HZ 5 HP)

THREE-PHASE DUAL SOURCE		
SOURCE	MOTOR	CURRENT
208V/60HZ	1 HP	**4.8 A**
220-240V/60HZ	1 HP	**4.2 A**
440-480V/60HZ	1 HP	**2.1 A**
550-600V/60HZ	1 HP	**1.7 A**
380/50HZ	1 HP	**1.7 A**
208V/60HZ	1 ½ HP	**6.9 A**
220-240V/60HZ	1 ½ HP	**6.0 A**
440-480V/60HZ	1 ½ HP	**3.0 A**
550-600V/60HZ	1 ½ HP	**2.4 A**
380V/50HZ	1 ½ HP	**2.6 A**
208V/60HZ	2 HP	**7.8 A**
220-240V/60HZ	2 HP	**6.8 A**
440-480V/60HZ	2 HP	**3.4 A**
550-600V/60HZ	2 HP	**2.7 A**
380V/50HZ	2 HP	**3.4 A**
208V/60HZ	5 HP	**17.5 A**
220-240V/60HZ	5 HP	**15.2 A**
440-480V/60HZ	5 HP	**7.6 A**
550-600V/60HZ	5 HP	**6.1 A**
380V/50HZ	5 HP	**8.2 A**

NOTE
The approximate single-phase current draw for all dual source systems is 3 amps at 110-120 VAC.

% = 400 CFM (-4)
# = 600 CFM (-6)
@ = 900 CFM (-9)
+ = 1200 CFM (-12)
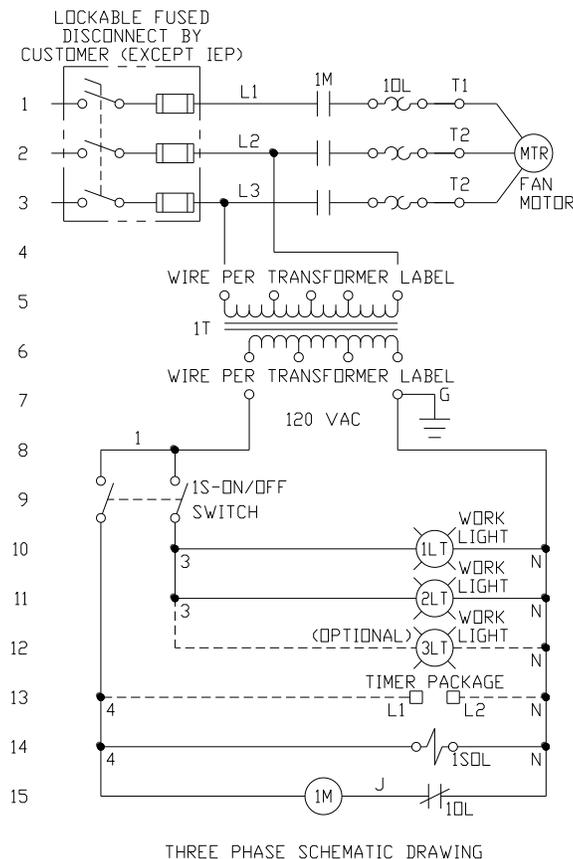
Figure 11. Three-Phase Schematic Diagram

2.4 Installing the Compressed Air Supply

Step 1: Using the following two charts to determine the proper air volume needed for your Pro-Finish® system. The volume of air required for efficient operation of your system depends on the size of the nozzle you are using and the desired blast pressure. The chart lists the minimum air requirements in SCFM for various nozzles and pressures.

AIR REQUIREMENTS (SCFM) FOR SUCTION BLAST

	40 psi	60 psi	80 psi	100 psi
¼" nozzle, 1/8" air jet	12	17	21	26
5/16" nozzle*,5/32" air jet	19	27	34	42
7/16" nozzle, 7/32" air jet	38	52	66	80

* Standard nozzle

AIR REQUIREMENTS (SCFM) FOR PRESSURE BLAST

	40 psi	60 psi	80 psi	100 psi
1/8" nozzle	10	14	17	20
3/16" nozzle*	22	30	38	45
¼" nozzle	41	54	68	81

* Standard nozzle

Step 2: Use the chart below to determine the size of the air line needed for your cabinet. Even when the compressor is properly sized, the air line that connects it to your cabinet must be large enough to avoid a large pressure drop, which can cause inefficient blasting.

Example: Your systems includes:
  (a) A 125 foot long air line which requires a 1" line (according to the table).
  (b) An air volume of 80 CFM, which requires a 1-1/4" line size

Choose the larger line size (1-1/4").

Line Size (in)	Length of Air Line (ft)	Air Volume (SCFM)
¾	Up to 95	13 to 38
1	95 to 190	38 to 59
1-1/4	190 to 350	59 to 85

IMPORTANT
To operate properly, your Pro-Finish® system requires clean, dry air. Moisture or oil in the compressed air supply can contaminate the abrasive, which can prevent it from flowing freely and cause inefficient blasting. Though your system is equipped with a general purpose filter to remove small amounts of condensed water and oil from compressed air supply, this filter is not designed to clean grossly contaminated air.

3.0 General Equipment Operation

3.1 Media Selection and Use

Proper media selection strongly influences the efficiency of your blasting operation. Your choice of media depends on the kind of job to be done (cleaning, deburring, smoothing sharp edges, paint removal, preparation for coatings, etc.) The size of the media depends on the results you need.

Fine media results in more impacts per second over a given area. Therefore, fine media is preferred for easy blasting jobs, such as the removal of light rust from steel.

Large media results in fewer impacts, but each impact has more force, so that large media is more suitable for difficult jobs, such as removal of mill scale.

Sometimes large and find media may be combined for optimum results.

The chart below lists the range of media recommended for each Pro-Finish® Blast System. Certain media, such as sand and slag, are *not to be used in Pro-Finish® cabinets,* both for health reasons and because they pulverize on impact and cannot be recirculated.

Media Type		Aluminum Oxide or Garnet		Glass Beads		Steel Grit		Steel Shot		Walnut Shells or Plastic
Media Size		46 to 80 Mesh	100 to 300 Mesh	25 to 180 Mesh	200 to 300 Mesh	G-16 to G-50	G-80 to G-200	S-390 to S-170	S-110 to S-70	Any Size
Suction	W/Reclaimer	R	R*	R	R*	NR	R	NR	R	R
Suction	W/O Reclaimer	R	NR	NR	NR	R	R	R	R	NR
Pressure	W/Reclaimer	R	R**	R	R**	NR	R	NR	R	R
Pressure	W/O Reclaimer	R	NR	NR	NR	R	R	R	R	NR

R – Recommended. * Recommended optional vibrating screen for mesh sizes 200 to 300 or when high humidity is a problem. NR – Not Recommended. ** Recommended optional vibrating screen and aerated media regulator for mesh sizes 200 to 300.

Spherical media, such as glass beads, are used for general purpose cleaning and finishing where a satin-like finish is desired with little dimensional change. Glass beads are effective when used with pressures in the 20 to 60 PSI range. Above 60 PSI, excessive bead breakdown will occur.

Angular aggressive media, such as aluminum oxide, steel grit, and garnet generally provide faster cleaning and produce a less-polished finish compared to glass beads. Aluminum oxide and steel grit are suitable for use at pressures up to 100 PSI. Garnet breaks down quickly at pressures greater than 40 PSI.

Walnut shells or plastic are sometimes used for delicate parts, paint removal, or when a polished finish is required. Pressures from 20 to 100 PSI may be used with these media, depending on the application.

When changing from one type of media to another, clean the cabinet interior and media hoses thoroughly to avoid cross contamination.

CAUTION

If your application requires aggressive media, such as aluminum oxide, garnet, or steel grit, it is recommended that you use optional heavy duty ducting, reclaimer lining, and DI-CARB or BORON nozzles to prevent premature wear.

Empire strongly recommends using boron carbide nozzles when blasting with Aluminum oxide, which is the most abrasive media.

If these options are not included with your system, they can be added. Optional Rubber curtains for interior cabinet surfaces are also available. Consult your Empire distributor for details.

3.2 Media Loading

Cabinets With Reclaimers:

Step 1: With the cabinet switch OFF, load media through the reclaimer access door. Total capacity for each media and system is shown below:

	Glass Beads	Aluminum Oxide	Steel Shot or Grit	Walnut Shells or Plastic
Suction	10 lb.	15 lb.	25 lb.	5 lb.
Pressure	75 lb.	100 lb.	200 lb.	30 lb.

Cabinets Without Reclaimers:

Step 1: With the cabinet switch ON, load media through the cabinet door. Total capacity for each media is shown below:

	Glass Beads	Aluminum Oxide	Steel Shot or Grit	Walnut Shells or Plastic
Suction	75 lb.	100 lb.	200 lb.	30 lb.

IMPORTANT
Be careful not to overfill pressure systems. Overfilling will cause malfunction and premature wear. See *Subsection 4.1 Daily Maintenance.*

3.3 Pneumatic Controls

The Pro-Finish® system uses a patented pneumatic control circuit to protect workers, workers environment, and activate the blast.

Step 1: Turning the system ON/OFF Switch to ON, energizes the interlock Solenoid valve, permits air to enter the control air line to the foot treadle, illuminates cabinet lights and start the fan motor.

Step 2: The operator steps on the foot treadle opening a three way control air valve. Air enters the door interlock supply tubing continuing to the door air jets. If the part load/unload doors are closed, latched, and door air jets are sealed, the control air lines pressurize and open the main blast air valve (and the pressure systems exhaust valve to close). The opening of the main air valve starts the blast.

Step 3: When the operator removes his foot from the foot treadle, the three way air valve close, shutting off air to the controls, and exhausting all down stream air. The control air line pressure bleeds from the door interlock supply tubing, main blast air valve (and the pressure system exhaust valve). This permits the main blast air valve to close (and the pressure system exhaust valve to open) stopping the blast.

Step 4: When a part load/unload door is opened, the pad covering the door interlock air jet is unseated. When the foot treadle is pressed with a door open, control air bleeds from the door air jet opening, preventing the control circuit from pressurizing. The main blast air valve will not open, and blasting will not occur.

The following schematic diagrams illustrate the pneumatic control circuits for suction systems (Figure 12A) and pressure systems (Figures 12B). For each system type, the cabinets are shown in blasting and non-blasting modes (shaded pipe is pressurized).

SUCTION SYSTEM OFF -
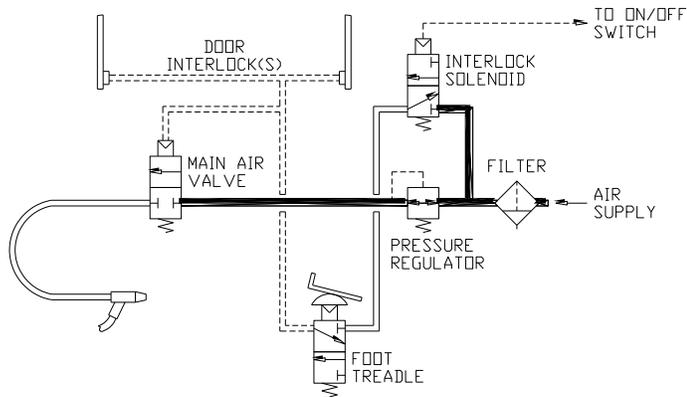
SUCTION SYSTEM ON - FOOT TREADLE PRESSED
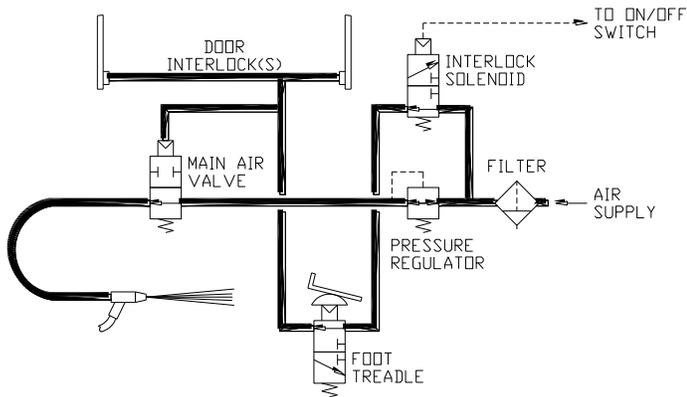
Figure 12A.

PRESSURE SYSTEM OFF -
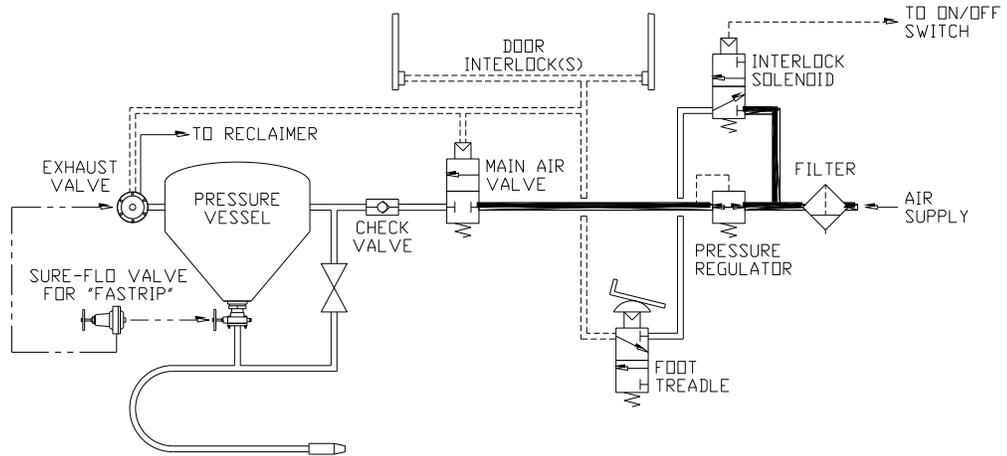
PRESSURE SYSTEM ON - FOOT TREADLE PRESSED
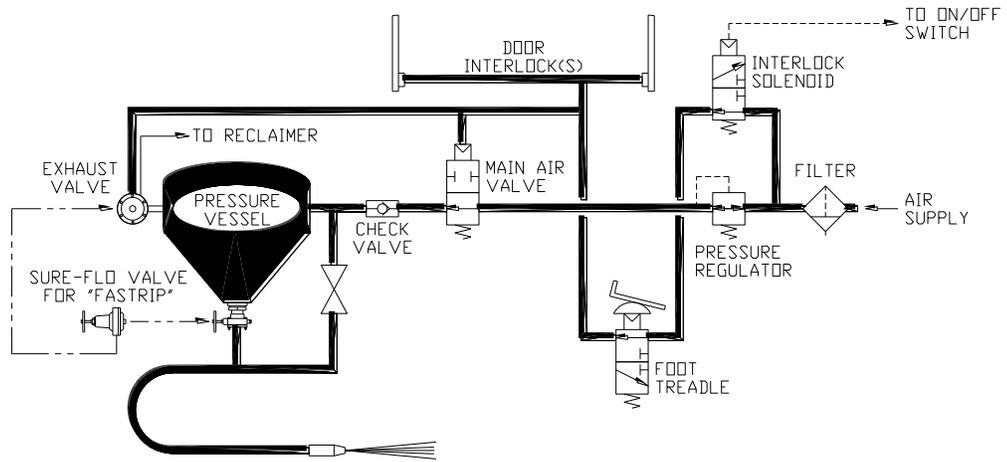
Figure 12B.

3.4 Equipment Start-up

Step 1: After checking that all pipe and hose connections are tightly fastened, turn on the plant compressed air and open the (user furnished) manual (ball) valve(s) controlling air flow to the system.

Step 2: Turn the cabinet power switch ON.

Step 3: Place parts to be blast-treated in the cabinet. The parts must be free of oil, grease, and moisture.

Step 4: Close the cabinet door(s).

Step 5: Set the blast air pressure regulator at the desired pressure. Recommended operating pressure ranges for various media are listed in the table below. Do not exceed 125 PSI blast pressure.

Step 6: Grip the suction gun or pressure nozzle assembly firmly and step on the foot treadle. After a few seconds the abrasive flow will stabilize and you will be ready for blasting.

	Suction Blast	**Pressure Blast**
Glass Beads	30-60 PSI	20-60 PSI
Aluminum Oxide	30-100 PSI	20-80 PSI
Steel shot or grit	80-100 PSI	20-80 PSI
Walnut shells or plastic	20-100 PSI	20-80 PSI

Step 7: Hold the gun or nozzle at a distance that produces the fastest action. This distance may vary from 3 to 18 inches, depending on the work piece and the desired finish. Avoid pumping the foot treadle, as this will decrease your efficiency and cause premature wear of components.

The size of the effective blasting pattern varies with the type and length of the nozzle, air pressure, and the nature of the work piece. Use the following chart and diagram as a guide, but be aware that the approximate pattern diameters can only be determined by considering each case individually.
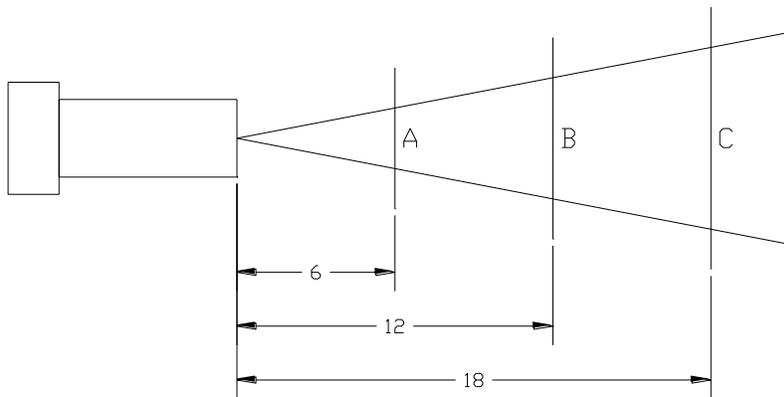
Blast Pattern Diameter at Distance Listed

	Nozzle ID	A	B	C
Suction Blast	¼	¾	1 ¼	*
	5/16	1	1 ½	*
	7/16	1 1/8	1 ¾	*
Pressure Blast	1/8	¾	1 ¼	2 ¼
	3/16	1	1 ½	2 3/8
	¼	1 1/8	1 ¾	2 1/2

Suction Blast at a distance of greater than 12" is usually not effective.

3.5 Equipment Shut-down

Step 1: Turn cabinet power switch OFF.

Step 2: Shut off the plant air supply.

3.6 Equipment Adjustments

Ventilation Flow Reclaimer Adjustment (for systems with reclaimers):

All Pro-Finish® reclaimers can be adjusted to control the average size of media retained by the reclaimer. The reclaimer is supplied with a "tune-able" secondary air adjustment. When the band is properly adjusted reusable media will be returned to the media storage hopper. Unwanted dust and broken down media (fines) will be removed from the system and conveyed to the dust collector. See Figure 5

Empire's reclaimer design has vertical slots with a solid tuning band. The original Pro-Finish® reclaimers have horizontal slots in both the reclaimer and tuning band.

Fine tuning adjustments of both reclaimers are similar. Just remember to move the band in the direction of the reclaimer slots; horizontal slots rotate the band, vertical slots slide band up or down.

The tuning band is joined at both ends by a bolt and wing nut that must be loosened before the band can be adjusted. The slot pattern around the reclaimer body has one slot omitted. The joined ends of the tuning band must be located over the area of the omitted slot.

NOTE
Dust collectors require a coating of dust on the filter cartridges to achieve maximum filter efficiency, also known as "seasoning". The filters are seasoned when the static pressure reading on the collector gauge is 2 or greater.

Step 1: Start with no reclaimer slots visible. Adjust the band in one direction until 1/16" of opening is created between the band and reclaimer slots.

HELPFUL HINT
Place a reference pencil mark on reclaimer body (and a corresponding reference mark on the tuning band if horizontal slots).

Step 2: Operate the blast system for at least one hour.

Step 3: Turn the cabinet power switch OFF.

Step 4: Inspect the dust collector waste drum for reusable media.

Step 5: If no media is found in the waste, adjust the tuning band to expose 1/16" more reclaimer body slot area.

Step 6: Make a new reference mark on the reclaimer body.

Step 7: Repeat Steps 2 through 7 until a small amount of media is found in the dust collector waste. Adjustment is complete.

NOTE
As a new system is used, the filters become coated with dust, "seasoned" and the airflow in the recovery system will decease to the normal operating rate. This will affect previous reclaimer tuning band adjustments.

If visibility becomes poor inside the cabinet when blasting, there is too much dust mixed with the blast media. The reclaimer tuning band should be re-adjusted. **Follow Step 2 though 7.**

NOTE
For systems with large quantities of dust mixed with blast media, all dust and media should be removed from the system and new media installed.

Step 8: If more than a small amount of media is found in the dust collector waste, additional reclaimer tuning band adjustment may be required. **Follow Steps 9 through 13.**

Step 9: Adjust the tuning band back to the previous reference mark on the reclaimer body, **reducing the opening** between the reclaimer and the band.

Step 10: After operating the blast system for at least one (1) hour, turn the cabinet power switch OFF. Inspect the dust drum waste for reusable media.

Step 11: If no media is found in the waste, adjust the tuning band to expose 1/16" **less** reclaimer body slot area.

Step 12: Make a new reference mark on the reclaimer body.

Step 13: Repeat **Steps 8 through 13** until a small amount of media is found in the dust collector waste. Adjustment is complete.

The schematic diagrams in Figure 13 illustrate:

    (1) the basic operation of the system.
    (2) the air and media flow before and after blasting.

PRESSURE SYSTEMS   SUCTION SYSTEMS

⇨   DIRECTION OF AIR FLOW
▷   COMPRESSED AIR
●   MEDIA
✳   DUST
✴   DEBRIS
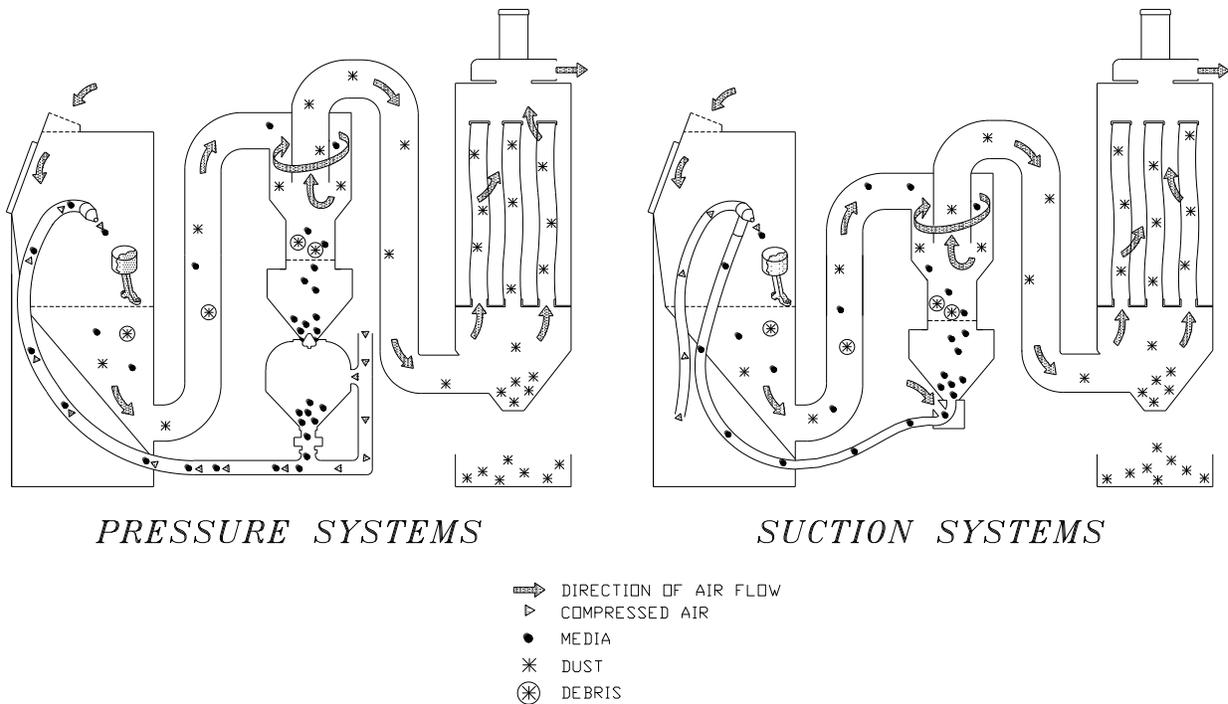
Figure 13. Operating Principles

IMPORTANT
An insufficient volume of secondary air entering the reclaimer will cause dust to accumulate with the "good" media in the storage hopper or pressure vessel. This accumulation leads to inefficient blasting. Conversely, too much secondary air will cause useful media to be carried to the dust collector and be wasted.

To avoid these conditions, adjust the tuning band to meet your specific blasting requirements. When your system is new, it will be necessary to readjust the tuning band periodically until the filters are "seasoned".

WARNINGS
Explosive Dust: Explosive dust is generated from blast media, removed coatings and substrates. An extreme concentration of dust may combust if ignited by spark or flame. As a precaution, clean the system and empty the dust collector often. Change media that has excessive dust concentration.

Emptying the Dust Collector: Always wear an appropriate dust mask when emptying the dust collector and changing filters. Empty the dust collector daily.

Ventilation Flow Adjustment Systems Without Reclaimers:

For these systems, ventilation air is drawn directly from the cabinet. The slide gate on the cabinet ventilation outlet should be adjusted to give the maximum flow of ventilation air without carrying good media from the cabinet.

The proper adjustment of the gate can be found through trial and error. Fine media cannot be used in systems of this type without having some of it carried over to the dust collector or bag.

NOTE
If your media requirements change, you can easily add a reclaimer to your Pro-Finish® system.

Media Flow (Suction Systems):

Pro-Finish® suction blast systems are equipped with the SAR-2 media regulator to control the flow of media to the Suction Blast Gun. The regulator is located at the bottom of the Storage Hopper assembly.

The amount of media entering the hose is controlled by how far the media hose is inserted into the regulator. For normal operation, approximately ½ of the air inlet port is blocked by the media hose. This may vary slightly

when changing media size nozzle size, and/or blast pressure.

To find a uniform media flow, loosen the thumbscrew and slide the media hose into the SAR-2 regulator to increase and withdraw the hose to decrease media flow at the nozzle. To determine if media is flowing, look through the media regulator air inlet while the gun is operating. Listen for the sound of the blast to be smooth and constant.

Media Flow (Pressure Systems):

Pro-Finish® pressure cabinets are supplied with the patented Sure-Flo® grit valve. Adjust the media flow through this valve by turning the T-handle. Start with the valve fully closed by turning the T-handle clockwise until you notice resistance.

clockwise until you notice resistance. Then turn the T-handle counter-clockwise in 1/4 turn or 1/8 turn increments until you observe the desired flow.

3.7 Helpful Hints for More Efficient Blasting

The efficiency of your blasting operation depends on four factors:

1) ***Equipment selection***
2) ***Media selection***
3) ***Operating procedures***
4) ***Maintenance***

With the help of your Empire Distributor and/or Empire factory representative, you now own equipment that will properly meet your blasting requirements.

You can select the proper media, operating procedures, and maintenance steps by following the recommendations in this manual. If you need more information about any aspect of your machine's operation or the blasting process, contact your local distributor or the factory.

The following measures will also help you improve the efficiency of your blasting operation:

Step 1: To accomplish more in less time, use the largest nozzle practical for your operation. Of course, nozzle diameter may be limited by the amount of compressed air available, but an increased volume of compressed air is often justified by reduced labor costs. Also, if you are blasting small parts, it doesn't make sense to use a big nozzle, as most of the blast pattern will be overspray.

Step 2: For faster cleaning, use the highest pressure practical for your operation. Maximum pressure for a given operation is limited by type of media (e.g. glass beads can break down rapidly above a certain pressure) and amount of material which must be removed from the workpiece.

Step 3: If you are blasting small parts, it may be more efficient to manipulate the part with tow hands and use an optional fixed nozzle holder.

Step 4: <u>Never underestimate the importance of clean, dry air.</u> More operational problems are traceable to the lack of clean dry air than any other single factor. If the supply air is not clean and dry, media quickly becomes contaminated, causing flow problems, which wastes media and leads to excessive operator downtime.

4.0 Maintenance

4.1 Daily Maintenance

Step 1: Check the condition of the media. If the media is contaminated or broken down into dust, thoroughly clean the inside of the cabinet and recovery system and reload with new media.

Step 2: Adjust the reclaimer tuning band if you observe a dusty condition. See section *3.6 Equipment Adjustments.*

Step 3: Clean the filter bag or shake the dust collector bags after every 2-4 hours of operation.

    A. For a **single dust bag,** remove the bottom bag clip and shake the accumulated dust through the bag bottom into an appropriate container.

    B. For systems equipped with a (baghouse) dust collectors, turn off the cabinet power switch and remove the dust from the bags by pressing the bag-shake button 15 to 20 times.

    C. Cartridge collector (CDC), empty the dust drum when 2/3 full. Dispose of the waste properly.

Step 4: Check light bulbs and gloves

Step 5: Remove debris from the reclaimer screen.

Step 6: Open the manual drain on the general-purpose filter in the cabinet pipe string and drain any accumulated moisture and oil. Close the drain.

Step 7: Check the media level. For optimal operation, the media level should not drop below one-half the recommended capacity.

    A. The media level in **suction** can be observed in the media storage hopper.

    C. The media level in **pressure systems** can be observed by looking through the sight glasses or the reclaimer door down into the top of the vessel. When the vessel is de-pressurized, the sealing plunger must be visible. Add media until just visible at the sealing plunger.

Step 8: All quick coupling connections *must* be equipped with safety pins. Inspect all couplings and blast hoses daily for splits, bubbles, soft spots, etc. Screws should be flush with coupling surfaces. Tighten screws, if necessary.

The following drawings show media flow through a typical pressure system and are provided to help you understand how to maintain the media at the proper level.

Pictured at right is a fully charged system with the vessel depressurized (no blasting). Note that the media fills the pressure vessel but that there is not media in the storage hopper.
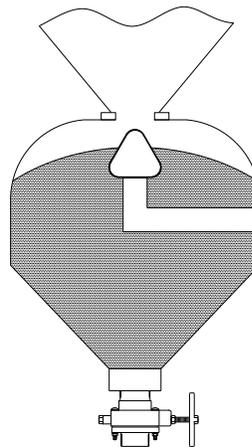
Before Blasting

When blasting starts, the vessel pressurizes, the media impacts the part being blasted, and reusable media is recovered and accumulates in the storage hopper. Continuous blasting time is limited by the type and amount of abrasive in the in the vessel when blasting starts (normally 8 to 15 minutes with a fully charged 1 cubic foot vessel, depending on nozzle size and blast air pressure). Each time the operator stops blasting, the vessel de-pressurizes and the sealing plunger drops. Media in the storage hopper flows into the vessel. If blasting is stopped long enough (usually 1-2 minutes), all media in the storage hopper will transfer into the pressure vessel.
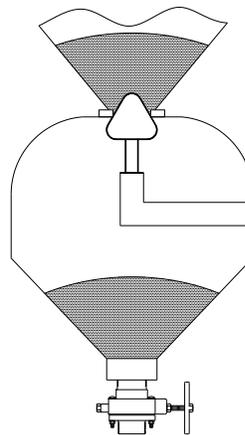
During Blasting

Thus, you can determine the amount of media in the vessel in either of two ways: (1) note how much continuous blast time you can achieve with a fully charged vessel and compare this with your current continuous blast time; or (2) stop blasting, open the reclaimer door, and visually determine the media level by looking into the top of the vessel.
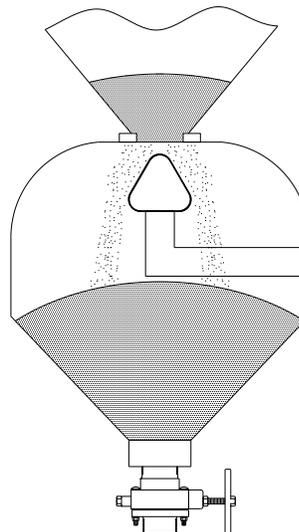
After Blasting

Overfilling pressure vessels will cause improper operation and premature wear. Allow sufficient time after blasting for the pressure vessel to refill (2 minutes). When the pressure vessel is filled, check to see if any media has remained in the storage hopper, indicating that the vessel is overfilled, the sealing plunger may not seat tightly when you start blasting.

See *Section 4.3 Storage or Temporary Non-Use* for instructions on how to empty the pressure vessel.

Refer to *Section 3.2 Media Loading* for instructions to add media.
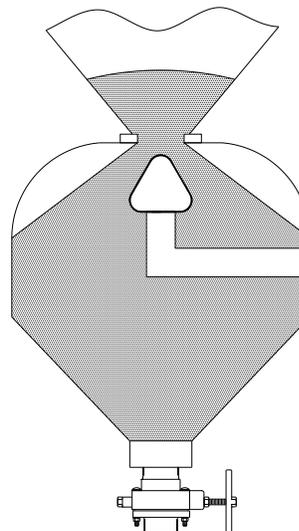
Pressure Vessel Overfilled

4.2 Weekly Maintenance

Step 1: Repeat the daily maintenance procedures.

Step 2: Inspect all media-carrying hoses for wear by feeling along the length of the hose for soft spots. Hoses with soft spots should be replaced.

Step 3: Check the nozzle for wear. When the nozzle is worn 1/8" oversize, replace it. A drill bit can be inserted into the nozzle to check its size.

Step 4: On suction systems, check the air jet for wear.

Step 5: Loosen the set screw in the side of the gun body and remove the air jet. See Figure 14.
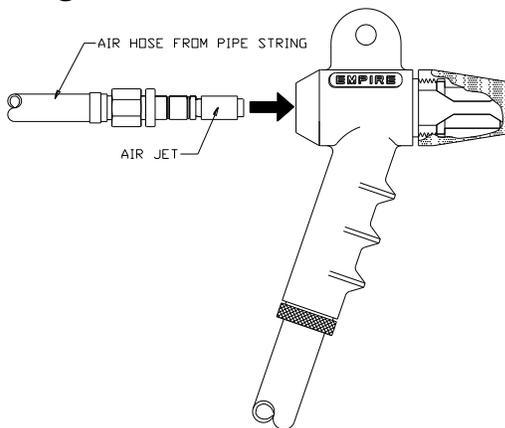
Figure 14. Air Jet

Step 6: If the air jet shows wear, rotate it 90° and reinsert it into the gun.

Step 7: Re-tighten the set screw.

IMPORTANT
If an air jet is allowed to wear completely through, it will cause premature wear of the gun body and nozzle.

Step 8: Check the nozzle adapter and gun body for wear. Replace if necessary.

Step 9: Check the window gaskets for leaks. Replace if necessary.

Step 10: Check your spare parts inventory. Ensure that you have an adequate supply of replacement items.

4.3 Storage or Temporary Non-Use

If your Pro-Finish® system will not be used for several days (or more), follow these steps to remove media and prevent media from caking inside the system:

Step 1:

- *Suction systems:*

Empty media from the cabinet and storage hopper. To remove the media from the storage hopper: remove the rubber plug from the bottom of the SAR-2 regulator.

- *For pressure systems:*

A) Reduce blast pressure to 40 PSI.

B) Close the choke (ball) valve on the pressure vessel pipe string. (see Figure 15).

Remove the blast nozzle and washer from the blast hose.

C) Pressurize the vessel as if to blast.

These steps will cause the media to flow from the open end of the blast hose in a controlled manner. The media can now be directed into a suitable container or receptacle.

After the pressure vessel is empty:

D) Open the choke valve.
E) Replace the nozzle washer and nozzle.
F) Return the blast pressure setting to normal.

Step 2: Drain the general purpose filter. Close the drain valve.

BALL VALVE
SHOWN IN
OFF POSITION
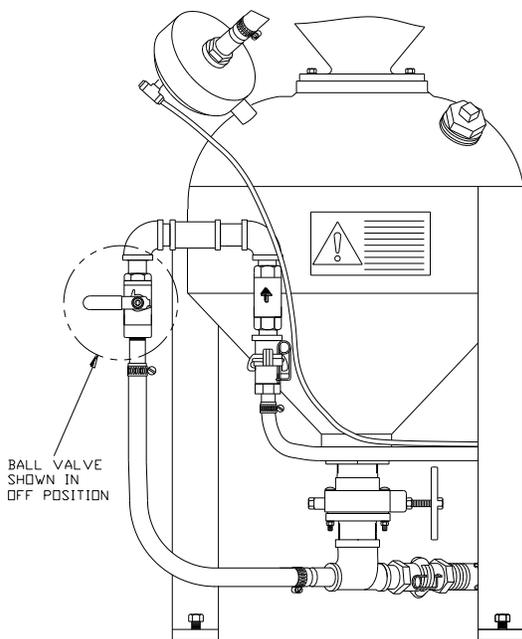
Figure 15. Closed Choke Valve

5.0 Troubleshooting

5.1 Troubleshooting Chart

Trouble	Probable Cause	Remedy
1. Good media carried to dust collector.	New bags.	Continue use until bag "cake" forms (approximately eight hours of operation).
	Systems with reclaimers: tuning band is open too far.	Adjust tuning band.
	Insufficient media in suction hopper allows secondary air to enter.	Add media to recommended media level.
	Systems without reclaimers: slide gate is open too far.	Adjust slide gate.
	Media too fine.	Use more coarse media.
	Pressure systems: Worn plunger or sealing ring leaking air into reclaimer.	Replace plunger and/or sealing ring.
2. Media escaping to the work area from dust collector.	Hole in dust bag(s)or loose bag(s).	Replace leaking bag(s)or refasten bag(s).
3. Poor visibility during blasting.	Reclaimer not adjusted properly.	Adjust reclaimer air inlet settings See 3.6 *Equipment Adjustments*
	Clogged dust bag(s).	Shake dust bag or dust collector bags.
	"Blinded" filters (reduced air flow due to age of bag).	Over a period of years dust may penetrate the dust bag to the extent that normal air flow is restricted even when bags are shaken regularly. When this condition is reached, replace the filters.
	Fan rotation backwards.	Reverse the fan rotation.
	Media has high dust content.	Replace media and adjust reclaimer tuning band.
	Recovery hose blocked.	Remove hose, inspect and remove obstruction.
	Cabinet air inlet plugged.	Blow filter clean with air line.
	Dust collector door leaks air.	Tighten door, replace gasket if necessary.
	Blast nozzle or air jet too large.	Replace worn nozzle with recommended size: maximum ¼" diameter pressure, maximum 7/32" air jet for suction.

Trouble	Probable Cause	Remedy
3. Poor visibility during blasting (continued).	Operating air pressure too high.	Decrease pressure to within recommended range.
4. No air or media flow from nozzle.	Compressed air line shut off.	Open all air valves from compressor.
	Cabinet Doors not tightly closed.	Close cabinet doors sealing door interlock.
	Regulator adjusted to zero.	Adjust regulator.
	Nozzle clogged.	Disassemble and clean nozzle.
	Door interlock air hose leaking.	Replace hose (if problem continues see 5.2 *Troubleshooting Pneumatic Control Circuit*).
5. Poor production rate.	Low blast air pressure.	Increase pressure within the specified range.
	Nozzle too small (the smaller the nozzle, the smaller the blast pattern).	Install a larger nozzle (and air jet on suction systems) to accommodate your production needs.
	Improper media.	See 3.1 *Media Selection and Use.*
	Improper media flow.	See 3.6 *Equipment Adjustments.*
	Low media level.	Add media to maintain recommended level.
	Parts to be blasted are oily or wet.	Parts to be processed must be absolutely dry and free of oil, grease, etc.
	Media has high dust content (Blast media breaks down and must be replaced on a regular basis).	Remove old media from system and replace with new. Adjust reclaimer tuning band. See 3.6 *Equipment Adjustments.*
6. Static charge build-up and discharge annoys the operator.	Low quality blast hose (poor conductor of static charge).	Replace blast hose with one of high quality. Static charges are created and build up by the air and media moving at high velocity through the blast hose.
	System grounded improperly.	Earth ground the system.
	Part insulated, resting on rubber mat.	Place part on metal surface, i.e. cabinet floor or turntable top.
	Low compressed air and ambient humidity.	Install Empire Anti Static Strap, part 510411.
7. Blast air flow, but intermittent or no media flow.	Blast air pressure too low.	Adjust and maintain pressure within recommended range.
	Clogged nozzle.	Disassemble and clean nozzle.
	Damp media (If media stays formed in a ball after squeezed in the palm of the hand, it is too damp to flow properly).	Remove damp media from system and replace with new, dry media. Check compressed air supply filters. Do not blast wet or oily parts.

Trouble	*Probable Cause*	*Remedy*
7. Blast air flow, but intermittent or no media flow (continued).	**Suction System:** Improper air jet nozzle combination.	Nozzle orifice size must be twice the air jet orifice size 1/8"diameter air jet requires minimum ¼" diameter nozzle.
	Suction System: Media hose improperly installed.	Adjust media hose in media regulator. Check media hose at entry to the suction gun body, hose clamp nut, o-ring, and hose must create an air tight seal
	Suction System: Clogged media hose.	Remove media hose from media regulator at the bottom to the media storage hopper, bring that end of the hose through an open door and into the cabinet. Remove the nozzle from the suction gun, insert the blow-off gun nozzle in the open end of the media hose, and blow accumulated media and/or debris out through the suction gun.
	Pressure System: Sure-Flo media regulator closed.	Adjust media regulator.
	Pressure System: Leaking sealing plunger and/or exhaust valve	Check for compressed air leaks and repair.
	Pressure System: Sure-Flo media regulator obstructed.	Open Sure-Flo media regulator to full open, close the choke valve, remove blast nozzle, set blast pressure at 70-80 PSIG and attempt to blast. All air will be forced through the media regulator clearing the obstruction. If media flow problems persist, shut off and lock out compressed air supply, disassemble media regulator and clear obstruction.

5.2 Troubleshooting the Pneumatic Control Circuit

Hand Tools Required:

The following tools are required to troubleshoot the pneumatic control circuit:

- Pressure tester (P/N 140382)
- 7/16" open end wrench
- Flat-blade screwdriver

Step-by-Step Procedures:

Refer to the control circuit schematics shown in Figure 7 and the troubleshooting procedures listed on the pages following the figures.
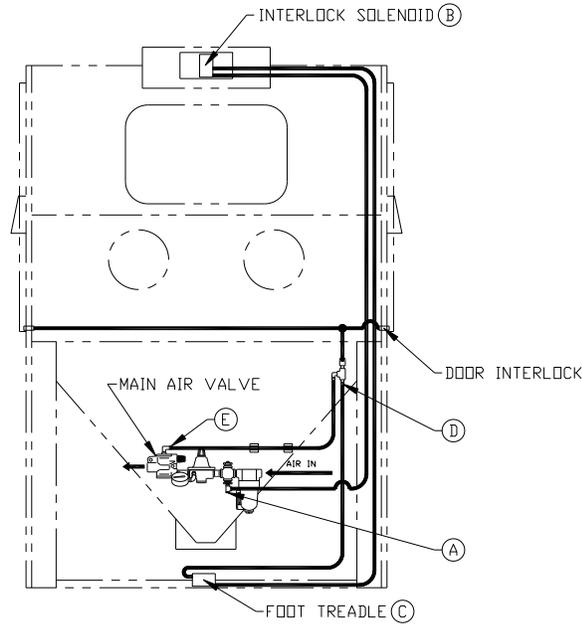
Figure 11. Pneumatic Circuit - Suction
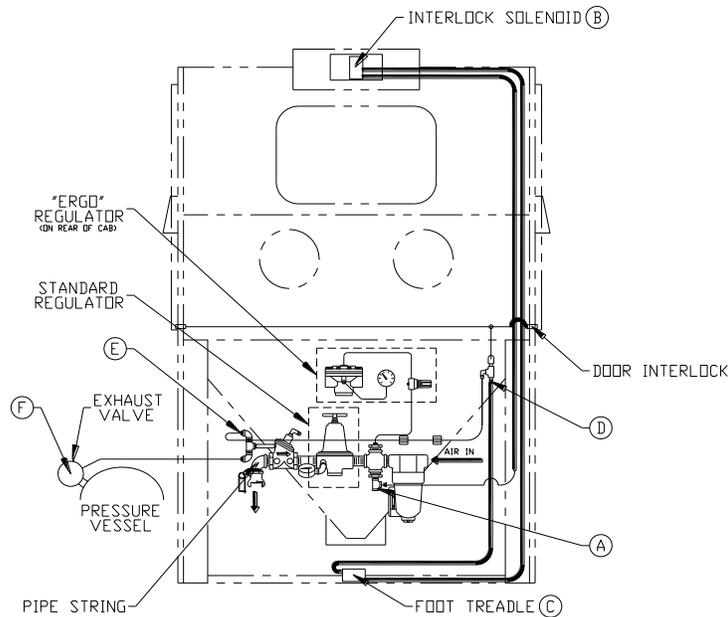
Figure 12. Pneumatic Circuit - Pressure

Problem: *Lights and blower work, but blast will not activate.*

Step 1: Verify that the main air supply is on and that the cabinet is receiving air blast and regulator is set at proper pressure. Check for obvious control air leaks:

- Are the doors tightly closed?
- Are the door air jet seals in good condition?

With the main switch ON and foot treadle pressed, listen for air leaks.

Repair any air leaks that you find.

Step 2: Turn the cabinet switch ON and OFF.

If you hear a slight air hiss when the switch is turned OFF, proceed to Step3.

If you do not hear an air hiss, the absence of the blast could be the result of either of the following (Refer to Figure 11 or Figure 12, as appropriate for your system):

A. *There is a leak between* **A** *and the foot treadle valve* **C**. Check for leaks in the tubing between **A** and the interlock solenoid **B**.

   Disconnect electrical power to the cabinet.

   Remove the Empire nameplate to verify that tubing ends are firmly connected.

   Check for air leaks between **B** and **C**.

B. *The interlock solenoid* **B** *is faulty.* If no air leaks are found using the procedure outlined in Step 2A, replace the interlock solenoid.

Step 3: With the power switch ON, step on and off the foot treadle several times. You should hear a slight hiss of air at the foot treadle when you release it.

If you hear the hiss, the blast, problem is being caused either by:

- a tubing leak, or
- a faulty main air valve or pressure system exhaust valve

If you do *not* hear an air hiss, the absence of the blast is being caused by one of the following:

A. *The foot treadle tab does not fully press the foot treadle valve.* To verify this condition, remove the treadle by taking out the bolt at each end.

   With the cabinet switch ON, manually press the foot treadle valve plunger.

   If the blast is activated, you can correct the problem by adjusting the foot treadle tab, as follows:

   - Loosen the two screws on top of the foot treadle.
   - Slide the tab forward so that it fully contacts the foot treadle plunger.

B. *The foot treadle is faulty.* To assess the condition of the foot treadle, remove the air line **D** downstream of the foot treadle.

   If no air escapes when the foot treadle valve is manually pressed, the valve is faulty and should be replaced.

C. *There is an air leak downstream from the foot treadle valve.* If neither Step 3A nor Step 3B reactivate the blast, disconnect the tubing at **D** and connect a test gauge to the tubing.

Manually press the foot treadle valve.

If the gauge does *NOT* read full line pressure when the foot treadle is pressed, either the tubing upstream of the door interlock or the foot treadle valve is faulty and must be repaired or replaced.

If the gauge reads full line pressure when the foot treadle valve is pressed, the problem is a leak downstream from (in either the door interlock **D** or control tubing).

Step 4 describes the procedure to correct a line leak.

Step 4: To repair a leak in the tubing downstream from the foot treadle, proceed as follows:

Connect a pressure test gauge to the tubing at **E**.

With the switch ON, press the foot treadle.

If the test gauge indicates full pressure when the foot treadle is pressed, but the blast is not activated, the main air valve is faulty and must be replaced.

If the test gauge does not indicate full pressure, the problem is being caused by a leak between **D** and **E** at the door interlock.

Check the tubing for leaks. For pressure systems, perform Step 5, as necessary.

Step 5: *(Pressure systems only)* To determine if the exhaust valve or the exhaust valve control line (**E** to **F**) is leaking, proceed as follows:

If the control tubing between **E** and **F** is intact and has no leaks, connect the test gauge to the tubing at **F**.

If the blast activates when the foot treadle is pressed, the problem is a leaking exhaust valve or a ruptured diaphragm in the exhaust valve. Repair or replace the exhaust valve.

Problem: *Excessive delay between stepping on the foot treadle and blast activation.*

(This delay should be between ½ and 1 second for suction systems and 1 to 2 seconds for pressure systems.)

Remove the tubing at **E** and connect a test gauge to the tubing.

With the cabinet switch ON, press the foot treadle.

If the gauge pressurizes slowly to full line pressure, the problem is restricted flow. This condition could be caused by either A or B below:

A. *The foot treadle tab does not fully press the foot treadle valve plunger.* To verify this condition, remove the treadle by taking out the bolt at each end.

With the cabinet switch ON, manually press the foot treadle valve plunger.

If the blast activates in normal time, you can correct the problem by adjusting the foot treadle tab as follows:

- Loosen the two screws on top of the foot treadle.

- Slide the tab forward so that it fully contacts the foot treadle plunger.

B. *The control air line is kinked or crimped.* Check the condition of the control air lines.

If the test gauge pressurizes to a pressure significantly lower than full line pressure, there is a leak in the control circuit. Proceed as follows:

Trace leaks by moving the test gauge upstream until full pressure is observed. Check **D** and **E**.

Full pressure at **D** indicates leaking door interlocks.

Low pressure at **D** indicates a leak between:

D and **C**, or
C and **B**, or
B and **A**.

On pressure systems only:

- If the test gauge at **F** pressurizes rapidly to full line pressure, the exhaust valve has a leak or a ruptured diaphragm.

6.0 Recommended Spare Parts

The following chart lists the parts you should maintain in inventory to ensure continuous operation of your Pro-Finish® system.

Qty	Part No.	Description	Pressure	Suction
1	501331	¼" Di-carb nozzle (suction) or		X
	501341	5/16" Di-carb nozzle (suction) or		
	401351	7/16" Di-carb nozzle (suction)		
1	501272	1/8" Di-carb nozzle (pressure) or	X	
	501282	3/16" Di-carb nozzle (pressure) or		
	501292	¼" Di-carb nozzle (pressure)		
2	532701	Floodlights	X	X
20'	524441	Door gasket	X	X
1	290182	Exhaust valve	X	
25'	520792	½" blast hose	X	
10	520802	5/8" blast hose		X
10	524052	NW-5 nozzle washer for ceramic nozzles	X	
10	524101	QC washer	X	
1	517221	Foot treadle valve	X	X
2 pair	509891	Rubber gloves	X	X
1	524451	Window gasket	X	X
1	510401	Window safety glass	X	X
1	519001	Interlock solenoid	X	X
2	515521	Filter/Bag for DCM Collectors or	X	X
	515525	Filter/Cartridge for CDC Collectors		
1	523942	Sealing ring	X	
1	510431	Plunger, for 1 cu. ft. pressure vessel	X	
1	522351	4 x 8 return hose or	X	X
	516101	6 x 11 Recovery hose		
1	753551	MH-2 Gun Body		X
2	505651	3/32" air jet or		X
	505661	1/8" air jet or		
	505671	5/32" air jet or		
	505691	7/32" air jet		
6'	520822	Exhaust hose	X	
2	520252	Tubing fittings	X	
1	523592	Sure-Flo metering tube, ¾"	X	

7.0 Options and Accessories

A variety of standard accessories are available for any Pro-Finish® system. These accessories can be either factory installed or customer installed with a minimum of cabinet modification.

If your production requirements change, you can add the options you need to update your system.

Category	Options	Description
1. Optional Electricals	220-240/50/1 208/60/3 220-240/60/3 380/50/3 440-480/60/3 550-600/60/3	Voltage/Frequency/Phase of power available.
2. Turntables - Stationary or Tracks		Available with Manual, turntables facilitate the handling of heavy parts. The turntable dolly travels on a track, or is fixed inside the cabinet. Most stationary designs feature a low profile that provides operators with easy "over-the-top" access and does not waste interior cabinet space. Turntable size 24" diameter with standard capacities ranging from 300 to 1000 pounds.
3. Fine-Tuning Controls		Pressure blast systems incorporating Empire's automatic Sure-Flo media regulator, allow the operator to adjust the richness of the air-to-media mixture from the workstation at the front of the cabinet. As a result, dialing in the optimum air-to-media ratio for a particular job is greatly simplified. To further assist the operator, an indicator gauge displays relative media richness.
4. Fine-Tuning with Choke		In applications where media is changed frequently, or where contamination can cause periodic clogging of the media regulator, a push-button choke is available with fine tuning.
5. Fixed-Orifice Media Regulator		In applications such as shot peening, in which very precise metering of media is required, a fixed-orifice media regulator is attached below the Sure-Flo media regulator.
6. Low Media-Level Sensor and Indicator (Factory Installed Option)		The low media-level sensor and indicator warns the operator when the media supply in the pressure vessel is low. The indicator/sensor consists of an electronic probe in the vessel that activates a signal light mounted on the front of the cabinet.
7. Harsh Media and Extended Wear Components		Empire's extended wear components increase service life in an aggressive or high-use environment. These components are normally very cost-effective because they reduce downtime, repair interval, and maintenance costs. Extended wear components are sold individually so you can tailor features to your application needs and budget
	Inlet wear plate	An easily replaceable inlet wear plate protects the most vulnerable area of the reclaimer.
	Reclaimer urethane coating	The urethane coating extends the service life of interior wear surfaces by five times.
	Reclaimer Ultra-Wear lining	The Ultra-Wear lining increases normal service life by a factor of ten.
	Di-Carb® (tungsten carbide) nozzles	Di-Carb nozzles are for use with steel abrasives and glass beads.
	Boron carbide Nozzles	Boron carbide nozzles are for use with aluminum oxide, silicon carbide, and garnet media.
	Rubber curtains	Cabinet life is increased with the use of rubber curtains. Free-hanging curtains are made of black 1/8" neoprene and held in place with rubber knobs for easy replacement. These curtains actually last longer than steel. White curtains are available to brighten the cabinet interior, and it doesn't degrade with use, as does white paint on steel.
	Window protectors	Window protectors can be provided in clear plastic or as a perforated screen to reduce frosting and pitting of the cabinet window.
	Matting	To pad parts and prolong the life of steel support surfaces, mats are offered for turntable tops and cabinet floors.
8. Fixed Gun (or Nozzle) Holder		Suction blast systems The fixed gun holder is adjustable to position any gun in any orientation so the operator can use both hands to manipulate work pieces in the blast stream. Pressure blast systems

Category	Options	Description
		The fixed nozzle holder, which bolts anywhere on the cabinet wall, can be adjusted to position the nozzle in any orientation, leaving both of the operator's hands free to manipulate work pieces.
9. Fine Media Kits	Vibrating screen and (for pressure systems only) aerated media regulator	A vibrating screen in the reclaimer (plus an aerated media regulator for pressure systems) overcome flow problems associated with very find abrasives (200 to 300 mesh range), lightweight blast media (plastics, walnut shells, etc.), and high humidity.
10. Magnetic Reclaim Separator		Magnetic reclaim separator reduces possible damage to delicate substrates by removing steel and other ferrous contaminants from the blast media as it passes through the reclaimer. The separator consists of an industrial magnet that can be removed through the reclaimer door for cleaning.
11. Dust Collector Option NOTE: For more information about options, contact your Empire distributor or the factory.	Photohelic Controlled pulse jet cleaning	Automatically pulse the filters as required.

8.0 Pro-Finish® Parts

8.1 Reclaimers
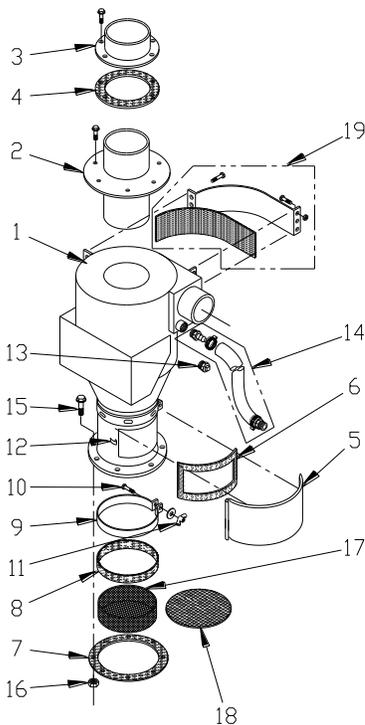
Item	All Sizes	400 Only	600 Only	900-1200 Only	Description
1	—	140438	—	—	Reclaimer Body Assembly with 1 HP 115V/60Hz/1ph blower and bag
	—	140439	140440	140441	Reclaimer Body Assembly (includes items 1-12)
2	—	—	766741	766751	Removable top
3	—	751501	—	—	Outlet flange (6")
4	—	524361	—	—	Gasket, outlet flange (1 required)
5	760721	—	—	—	Door, reclaimer
6	524331	—	—	—	Gasket, reclaimer door
7	524371	—	—	—	Gasket, reclaimer to storage hopper
8	524342	—	—	—	Gasket, tuning band
9	767581	—	—	—	Tuning Band (steel part only)
10	551782	—	—	—	Bolt, 1/4" -20 x 2"
11	552392	—	—	—	Wing nut, 1/4" -20
12	509581	—	—	—	Latch and keeper (requires welding)
13	544122	—	—	—	Plug, 1" NPT (Suction systems only)
14	522611	—	—	—	Exhaust hose assembly for std. 1 cu. ft. pressure vessel (Pressure system only)
15	551842	—	—	—	Bolt, 3/8" -16 x 1" (8 required)
16	552542	—	—	—	Nut, 3/8" -16 (1 gun suction systems) 8 required
	522762				Lock Washer 3/8
17	739041	—	—	—	Screen, fine, 11-1/2" OD 8 Mesh
	739051	—	—	—	Screen, coarse, 11-1/2" OD 4 Mesh
18	760711	—	—	—	Screen, flat, 5/16"; 13" OD
Additional parts used with Reclaimers					
19		—	—	—	Wearplate assembly

8.2 Pressure Blast Systems
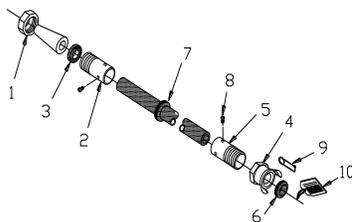
Parts for Blast Hose Assembly – Standard 1/2"

Item	Part Number	Model Number	Description
1	504912	NA-2	Nozzle Adapter
2	505232	NC-1/2	Nozzle Coupling
3	524041	NW-5	Nozzle Washer, Ceramic nozzles, 5/8" ID (110 pack)
	524052	NW-2	Nozzle Washer, Di-Carb/Boron, 1/2" ID (10 pack)
4	505222	QC-1/2	Quick Coupling with washer + screw package item 4,5.6
5	505782	UF-100	Tank Coupling, 1" FPT with AHCW
6	524101	AHCW	Coupling Washer (10 pack)
	525102	AHCW	Coupling Washer (25 pack)
7	523931	(1" x 1-3/8")	Grommet, blast hose
8	554242	(#8 x 3/8")	Screws (4 pack)
9	510511		Safety pin
10	564822		Tag, safety, screw/coupling
11	520792	PBH-1/2	Blast Hose (Maximum length: 50')
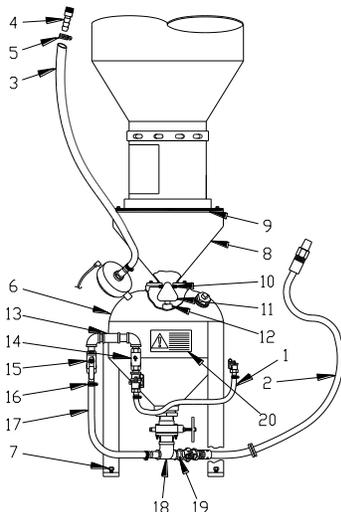
Blast & Air Hoses

Item	Bulk	2636 Only	3648 3696 Only	4848 Only	6060 60120 Only	7272 Only	Description
1	—	140301	140302	140303	140304	140654	Air hose assembly, 1" ID
	520912	—	—	—	—	—	Air hose, 1" ID
		(43")	(5')	(6')	(7')	(9')	(Air hose length)
2	—	522551	522541	521672	522561	516281	**Blast hose assembly, 1/2" ID (items 16-24)**
	—	522541	516271	522561	—	—	Blast hose assembly, 1/2" ID, *ERGO*
	520792	—	—	—	—	—	Blast hose, 1/2" ID
		(7.5')	(9')	(10')	(13')	(16')	(Blast hose length, std cabinet)
		(9')	(12')	(13')	—	—	(Blast hose length, *ERGO*)
							(Maximum blast hose length: 50')

Exhaust Hose

Item	Part Number	Description
3	522611	Exhaust hose (with 1" NPT barb ends), 67" for standard 1 cu. ft. vessel
	140691	Exhaust hose (with 1" NPT barb ends), 9 ft. for optional 3 cu. ft. vessel
	520822	Exhaust hose (1" ID blast hose) (Maximum length: 50')
4	520181	Hose barb, 1" NPT x 1" ID hose (1 each end)
5	520512	Hose clamp, 2" (1 each end)

Pressure Vessel

Item	Part Number	Description
6	140300	Pressure vessel assembly, 1 cu. ft., Includes shaded items shown.
	760811	Pressure vessel only, 1 cu. ft.
	504041	Pressure vessel only, 1 cu. ft., with 1" NPT port for level probe
7	551742	Leveling bolt, 3/8" – 16 x 2", 1 cu. ft. (3 per assembly)
	551982	Leveling bolt, 1/2" – 13 x 2-3/4", 3 cu. ft. (3 per assembly)
8	760741	Hopper, 1-cubic foot
9	524371	Gasket, reclaimer to hopper)
10	523942	Sealing ring, rubber, 2-1/8" ID
11	510431	Plunger, sealing, PVC coated
12	546072	Plunger guide (1/2" NPT x 3-1/2" nipple)
13	545702	Tee, 1" x 1" x 1/2" NPT
14	517503	Check valve, 1" NPT
15	518492	Ball valve, 1" NPT
16	520581	Hose clamp for 1" ID hose (1 each end)
17	520912	Hose, 1" ID (specify 1.5' for 1 cu. ft.; 3.5' for 3 cu. ft.)
18	545822	Tee, 1" x 2" x 1' NPT
19	546192	Nipple, 1" NPT x close, HD
20	567332	Label, WARNING "Do not disassemble…"
	567312	Label, WARNING "Flange above…"

8.3 Suction Blast Systems
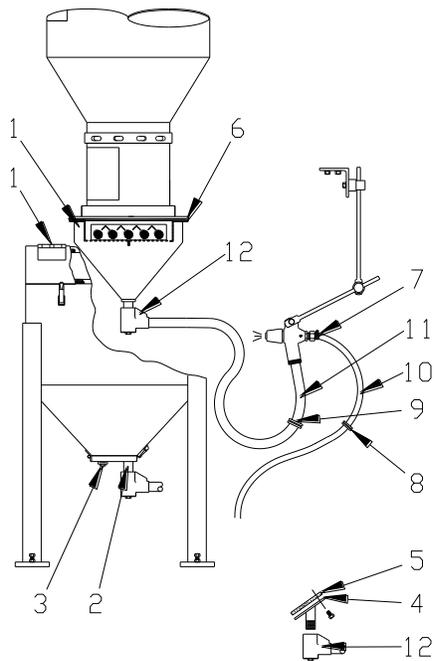
Components

Item	Part Number	Description
1	760751	Hopper, 1 – gun suction
	140487	Hopper, Multi-gun (4 outlet)
2	546332	Nipple, 1-1/4" NPT x 3"
3	544142	Plug, 1-1/4" NPT
4	760441	Outlet adapter, cabinet, 1-1/4"NPT for SAR-2 (no reclaimer)
5	524381	Gasket, cabinet outlet
6	524371	Gasket, reclaimer to hopper (2 required with magnet)
7	520502	Hose clamp, 1/2" air hose (2 per hose)
8	523921	Grommet, air hose, 3/4" x 1-1/16"
9	523931	Grommet, blast hose, 1" x 1-3/8"

Blast & Air Hoses

Item	Bulk	2636 Only	3648 3696 Only	4848 Only	6060 60120 Only	7272 Only	Description
10	—	522831	522841	522851	522861	516261	Air hose assembly, 1/2" ID
	—	522861	522861	516261	—	—	Air hose, 1/2" ID, *ERGO*
	520861	—	—	—	—	—	Air hose, 1/2" ID
		(7.5')	(7')	(8')	(10')	(12')	(Air hose length, std cabinet)
		(10')	(10')	(12')	—	—	(Air hose length, *ERGO*)
11	—	522571	522581	522591	522601	521201	**Blast hose section, 5/8" ID**
	—	522591	522601	522601	—	—	Blast hose section, 5/8" ID, *ERGO*
	520802	—	—	—	—	—	Blast hose, 5/8" ID
		(6')	(8')	(9')	(13')	(16')	(Blast hose length, std cabinet)
		(9')	(11.5')	(13')	—	—	(Blast hose length, *ERGO*)
							(Maximum blast hose length: 50')
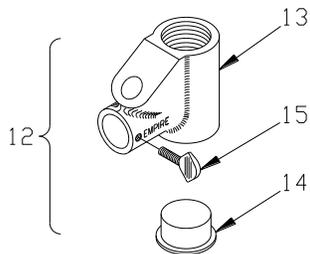
SAR-2 Media Regulator

Item	Part Number	Description
12	290156	SAR-2 Media Regulator, complete, 1-1/4" FPT
13	753351	Regulator body, SAR-2
14	510121	Plug, clean out
15	551042	Thumb screw, 1/4"-20 x 1"
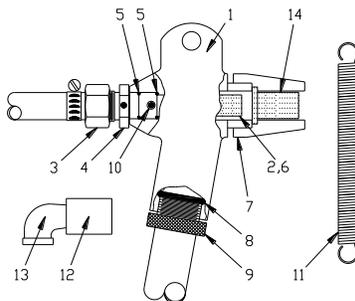
PARTS for MH-2 Guns

Item	Part Number	Description
1	753551	Gun body, MH-2 LONG handle
	753561	Gun body, MH-2 SHORT handle
2	505651	Air jet, 3/32" (orange)
	505661	Air jet, 1/8" (yellow)
	505671	Air jet, 5/32" (green)
	505681	Air jet, 3/16" (blue)
	505691	Air jet, 7/32" (white)
	505701	Air jet, 1/4" (red)
3	520402	Hose barb, 1/2" FPT x 1/2" hose
4	505621	Connector, MH-2
5	523912	O-Ring, 1/2" ID x 5/8" OD (2 required)
6	526171	Sleeve, rubber, for air jet
7	505641	Nozzle adapter, plastic (standard)
	504931	Nozzle adapter, steel
8	523881	O-Ring, 1-1/16" ID x 1-5/16" OD
9	520081	Nut, hose clamp, MH-2
10	551702	Set screw, 1/4"-20 x 3/8"
11	511251	Spring, suction gun assist
12	544862	Coupling, 1/2" NPT (BB4-1 A only)
13	543532	Elbow, 1/2" NPT street (BB4-1 A only; 2 per gun)
14	—	For replacement nozzles please contact your local Empire Distributor

8.4 Dust Collectors
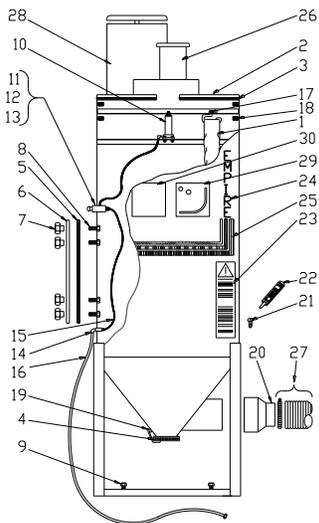
Components

Item	Part Number	Description
1	515521	Dust bags
		QTY: DCM-80A & DCR-80 (12), DCM-200 & DCM-200A (30)
2	760841	Top plate DCM-80A
	760901	Top plate DCM-200 & DCM-200A
3	523551	Gasket, top plate, 1/8" x 1/4" (DCM-80A uses 8 ft; others use 12 ft.)
4	524351	Gasket, clean out door, dust collectors
5	525711	Gasket, access door, dust collectors 5/8" x 5/8" (103" section)
	525061	Gasket, 5/8"x 5/8"
6	760851	Access door, dust collector
7	510461	Knob, 3/8"-16, (6 required)
8	551852	Bolt, 3/8"-16 x 1-1/4", (6 required)
9	551742	Bolt, leveling, 3/8"-16 x 2", (4 required)
10	515981	Air cylinder, standard collector and auto shaker
	515771	Air cylinder, auto-*pneumatic* bag shaker *only*
11	517221	Valve, pushbutton, 1/8" NPT & #10-32, "3P"
12	521101	Barbed fitting, 1/4" tube x #10-32, 1 per assembly
13	520432	Adapter, 1/4" tube x 1/8" MPT, 90° (for air cylinder)
14	521081	Adapter, 1/4" tube x 1/4" MPT (inlet)
15	510541	Tubing, 1/4" O.D.** (8 ft. needed)
16	523161	Hose with fittings, 1/4" x 16 ft. dust collector
17	760861	Bag Rack Weldment (DCM-80A)
	760921	Bag Rack Weldment (DCM-200A)
18	523541	Rubber bumper, 8 required
19	509581	Latch and keeper (requires welding)
20	761801	Adapter, 10" ID x 6" OD, DCM-200
21	551522	Screw, #10-32 x 1/2", 2 required
22	566712	Caulk, tube
23	567401	Decal, Instruction/Warning
24	564305	Decal, Empire logo
25	564301	Decal, orange dot strip
	564471	Paint, 6 oz. aerosol, Beige
ADDITIONAL PARTS used with Dust Collectors		
26	—	Blowers & blower motors
27	—	Ducting and adapters
28	—	Silencers (optional)
29	—	Manometer (optional)
30	—	Automatic bag shaker (optional)
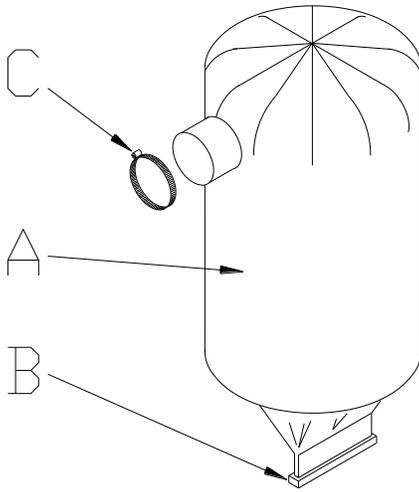
Large Dust Bag

Item	Part Number	Description
A	515841	Dust bag, 4" inlet, 30 sq. ft.
B	520461	Closure clamp
C	520531	Clamp, 4" adjustable
D	—	Blower
E	—	Slide gate
F	—	Deflector (baffle)
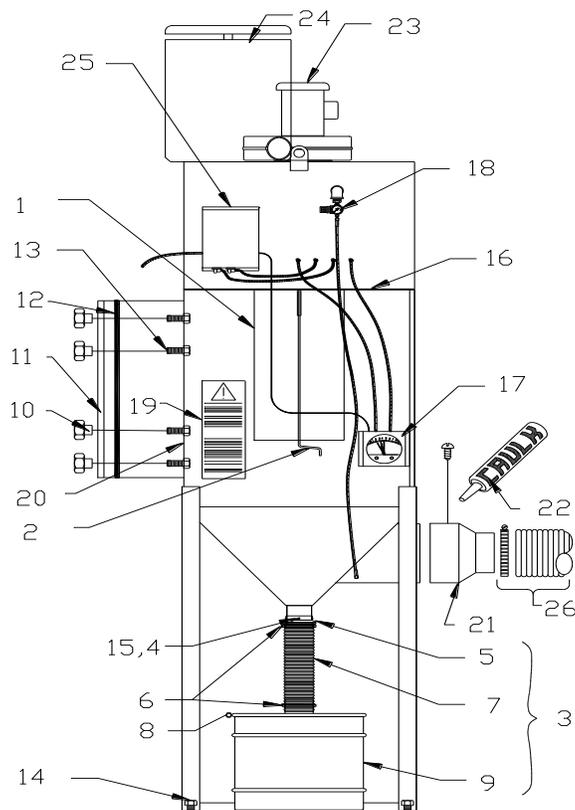
Components

Item	Part Number	Description
1	515525	Cartridge Filter, Qty. (2)
2	515526	Crank for Filter Cartridge, Qty. (2)
3	113015	16 Gallon Drum Assembly
4	554232	Screw, #8 x 5/8", Qty. (4)
5	515473	Slide Gate, 4"
6	520531	Hose Clamp, 4", Qty. (2)
7	515591	Dust Hose, 4"
8	770686	Lid for 16 Gallon Drum
8	504020	Locking Ring for Lid
9	504016	16 Gallon Drum
10	510461	Knob, 3/8"-16, Qty. (6)
11	760851	Access Door
12	525711	Gasket, Access Door 5/8" x 5/8"
13	551852	Bolt, 3/8"- 16 x 1-1/4", Qty. (6)
14	551742	Bolt, Leveling 3/8" – 16 x 2", Qty. (4)
15	567415	Label, Slide Gate Open
16	524471	Gasket, 1/16" x 1"
17	550450	Mini-Helic Package, Std. on CDC
18	140851	Air Supply Assembly
19	567401	Decal Instruction/Warning
20	564305	Decal, Empire logo
21	761801	Adapter, 10" ID x 6" OD, for CDC-6
22	566712	Caulk, Tube
ADDITIONAL PARTS used with Dust Collectors		
23	—	Blowers and blower motors
24	—	Silencers (Optional)
25	140900	Photohelic/Timer Package (Optional)
26	—	Ducting and Adapters

8.5 Blowers (Fan & Motor)

Blower Assemblies

Part Number	Horsepower	Standard Electrical	CFM @ 6" S.P.	Used with	Notes
140311	1	115/60/1	400	DCM-80A & DUST BAG	Does not include bag.
140312	1-1/2	230/60/1	600	DCM-200/CDC-6	
140313	2	230/60/1	900	DCM-200A/CDC-9	10" SP @ 600 CFM
140651	5	230/50-60/3	1200	DCM-200B/CDC-12	10" SP @ 1200 CFM

Note: Motor starters, contactors, interconnecting wiring and ducting not included.
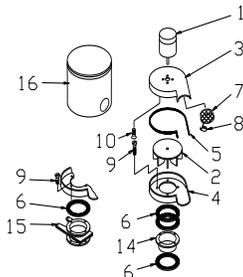
Aluminum Housings:
1 HP, 1 ½ HP, 2 HP, 5 HP

Components

Item	All Sizes	1 HP Only	1-1/2 HP Only	2 HP Only	5 HP Only	Description
1	—	**549531**	**549681**	**549691**	N/A	Motor, 115/230V, 60 Hz, Single phase
	—	549701	549721	549711	**549961**	Motor, 220-480V, 50/60 Hz, 3-Phase
	—	549731	549741	549751	549971	Motor, 550-600V, 60 Hz, 3-Phase
	—	549761	549771	549781	N/A	Motor, 110/220V, 50 Hz, Single phase

(Motor part numbers shown in BOLD are supplied as standard most often.)

Item	All Sizes	1 HP Only	1-1/2 HP Only	2 HP Only	5 HP Only	Description
2	—	753021	—	—	—	Impeller (fan blade), 10-5/8" dia., 5/8" ID
	—	—	753661	—	—	Impeller (fan blade), 11-1/2" dia., 5/8" ID
	—	—	—	753031	—	Impeller (fan blade), 12-1/2" dia., 5/8" ID
	—	—	—	—	753051	Impeller (fan blade), 16" dia., 1 1/8" ID
3	—	753511	753511	753515	752513	Housing, fan, top
4	—	753521	753521	753525	752493	Housing, fan, bottom
5	523251	—	—	—	—	Gasket, fan housing, 1/8" x 1/4" (5' section)
6	—	524361	524361	—	—	Gasket, mounting (3 required)
7	—	739011	739011	739021	739031	Guard, fan outlet
8	554431	—	—	—	—	Clip, fan guard (4 required)
9	—	553182	553182	—	—	Screw, flat head 3/8" -16 x 2-1/4" (dust collector)
	—	551312	551312	—	—	Screw, flat head 3/8"-16 x 1-1/4" (slide gate)
10	—	552072	552072	—	—	Screw, flat head 3/8" -16 x 1
11	—	—	—	553564	—	Bolt, 1/4" –20 x 3/4"
12	—	—	—	552632	—	Clip, 1/4"-20
13	—	—	—	553554	—	Bolt, 1/4"-20 x 1
14	—	751501	751501	—	—	Flange
15	—	—	—	—	—	Slide gates, see next page
16	—	140361	140361	140769	140680	Silencer (optional)

8.6 Ducting/Hoses
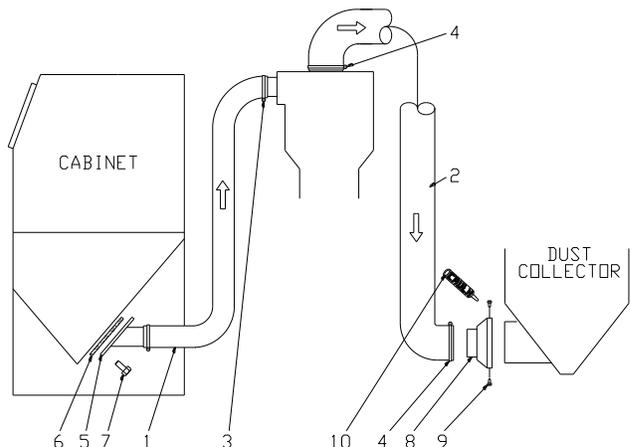
Conveying Hose

Standard Systems – Suction or Pressure with Reclaimer & Collector

Item	400 CFM		600 CFM		900 CFM		1200 CFM		Description
	Customer Installed	**Factory Upgrade**	**Customer Installed**	**Factory Upgrade**	**Customer Installed**	**Factory Upgrade**	**Customer Installed**	**Factory Upgrade**	
1	522351 4" x 8'		522351 4" x 8'		516101 6" x 11'		516101 6" x 11'		**Standard Duty** Conveying Hose w/o clamps I.D. x length
	140354 4" x 9'	140338 4" x 9'	140354 4" x 9'	140338 4" x 9'	140355 6" x 12'	140339 6" x 12'	140355 6" x 12'	140339 6" x 12'	**Heavy Duty** Conveying Hose w/clamps I.D. x length

Conveying Hose for Optional 3-Cubic Foot Pressure Systems

Item	400 CFM		600 CFM		900 CFM		1200 CFM		Description
1	516033 4" x 15'		516033 4" x 15'		516213 6" x 15'		516213 6" x 15'		**Standard Duty** Conveying Hose w/o clamps I.D. x length
	140611 4" x 15'	140613 4" x 15'	140611 4" x 15'	140613 4" x 15'	140612 6" x 15'	140614 6" x 15'	140612 6" x 15'	140614 6" x 15'	**Heavy Duty** Conveying Hose w/clamps I.D. x length

Dust Hose

Item	400 CFM	600 CFM	900 CFM	1200 CFM	Description
2	516101 6" x 11'	516101 6" x 12'	516999 10" x 15'	516999 10" x 15'	Standard Dust Hose, w/o clamps I.D. x length
	516211 6" x 14'	516211 6" x 14'	516153 10" x 15'	516153 10" x 15'	Dust Hose for optional 3 cu. ft. Pressure Systems, w/o clamps I.D. x length

Clamps and Adapters

Item	400 CFM	600 CFM	900 CFM	1200 CFM	Description
3	520531	520531	520551	520551	Hose clamp, Standard Duty conveying hose
	522953	522953	522963	522963	Hose clamp, Heavy Duty conveying hose
	(4")	(4")	(6")	(6")	(Nominal hose diameter)
4	520551	520551	522314	522314	Hose clamp, dust hose
	(6")	(6")	(10")	(10")	(Nominal hose diameter)
5	760421	760421	760431	N/A	Outlet Adapter, cabinet
	(4")	(4")	(6")		(Nominal hose diameter)
6	524381	524381	524381	N/A	Gasket, cabinet outlet
7	551212	551212	551212	N/A	Bolt, 1/4"-20 x 1" (4 required)
8	—	761801	—	—	Adapter, 6" O.D. x 10" I.D., DCM-200

Note: (2) hose clamps are required per hose.

Item	Part Number	Description
9	551522	Screw, #10-32 x 1/2" (2 required)
10	566712	Caulk, tube
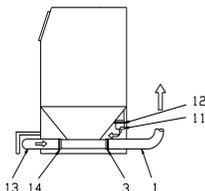
7272 Cabinets Only

Item	Part Number	Description
11	516221	Hose, 6" Standard duty x 3-1/2 feet
12	520551	Hose clamp for 6" nominal hose (2 required)
13	516231	Hose, 6" heavy duty x 9 feet
14	522963	Hose clamp for 6" nominal H.D. hose (2 required)
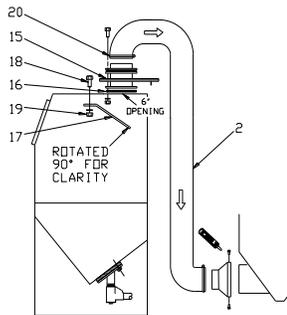
"SC" Systems with Dust Collector but no Reclaimer

Item	Part Number	Description
15	140317	Slide gate assembly for 6" hose (shown)
	140316	Slide gate assembly for blower mount
16	524361	Gasket, slide gate (one required with 140317; 2 required with 140316)
17	760471	Baffle, ventilation, 2636 cabinet
	760481	Baffle, ventilation, 3648, 3696, 4848
	760491	Baffle, ventilation, 6060, 60120
18	553554	Bolt, 1/4"-20 x 1" (5 required)
19	552522	Nut, 1/4"-20
20	520551	Hose clamp for 6" nominal hose

8.7 Pipe Strings

Pipe String Assemblies

Part Number	Pipe String Size	Used With
140279	1/2"	Suction – 1 gun
140280	1"	Pressure, FaStrip, Multi-gun
140479	1"	All *Ergo* systems

Pipe String Mounting Hardware

Part Number	Quantity	Description
564121	4	1/4" flat head bolt
552882	4	1/4" washer
552522	4	1/4" hex nut
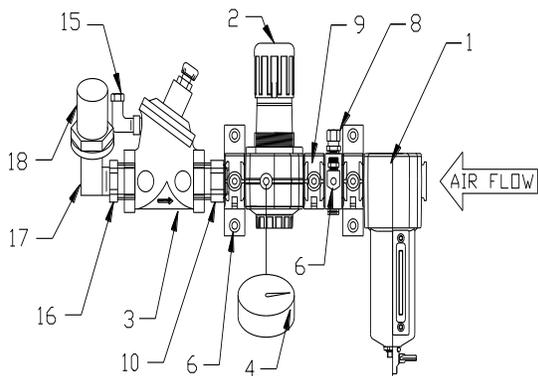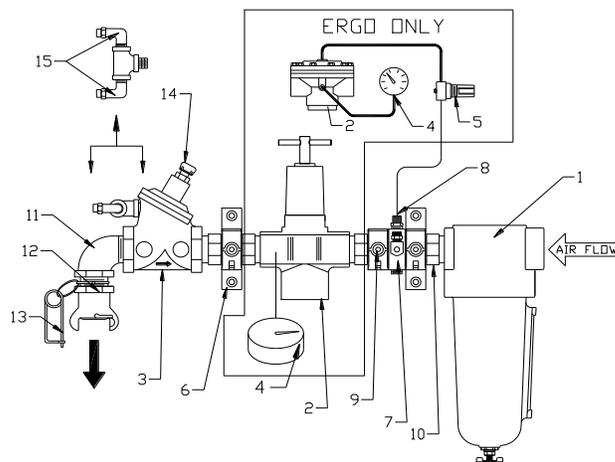
1/2" Pipe String   **1" Pipe String**

Components

Item	All Sizes	1/2" Only	1" Only	Ergo Only	Description
1	—	**522160**	**517271**	**517271**	Air Filter (1/2" manual, 1" manual; Norgren)
	—	508012	508002	508002	Element for Norgren air filter, 5µ
	—	508112	505161	549751	O-ring and gasket kit for Norgren air filter
2	—	517141	517251	517631	Air Pressure Regulator (Norgren)
	—	508102	508161	508211	Diaphragm & O-ring kit for Norgren regulator
3	517042	—	—	—	Main Air Valve (1" Aquamatic)
	517582	—	—	—	Diaphragm and seal kit for 1" Aquamatic
	518512	—	—	—	Special wrench for 1" Aquamatic
	517583	—	—	—	Repair Kit for 1" Aquamatic
4	—	550232	550232	550212	Gauge, (550232 1/4" NPT; 550212 1/8" NPT back mount)
5	—	—	—	518681	Regulator, 1/4" NPT
6	522155	—	—	—	Mounting Feet/Quick Clamp
7	522157	—	—	—	Porting Block
8	520222	—	—	—	Hose adapter, 1/4" x 1/4"
9	522154	—	—	—	Quick Clamp
10	522156	—	—	—	Adapter
11	—	—	543542	543542	Elbow, 1" NPT street
12	—	—	505782	505782	Coupling, 1" FPT, UF-100
13	—	—	510511	510511	Safety pin
14	523261	—	—	—	Vent
15	520432	—	—	—	Adapter 1/4" Tube x 1/4" NPT 90°
16	—	544497	—	—	Bushing, 1" x 1/2" Brass
17	—	543533	—	—	Elbow, 1/2" x 90°
18	—	520362	—	—	Hose Barb, 1/2"
Repair kit P/N 517583 includes the seal kit P/N 517582.					
O-Ring for modular pipe strings P/N 522162.					

8.8 Pressure Blast Systems

Sure-Flo Media Regulators

Part Number	Catalog Name	Description	Shipping Weight
290383	Manual	Manual Sure-Flo Media Regulator (grit valve) normally open, 9" clearance required	25 lbs.
290215	Automatic	Automatic Sure-Flo Media Regulator (grit valve) normally closed, 9" clearance required	30 lbs.
290188	Conversion kit	Converts Manual Sure-Flo to Automatic	25 lbs.
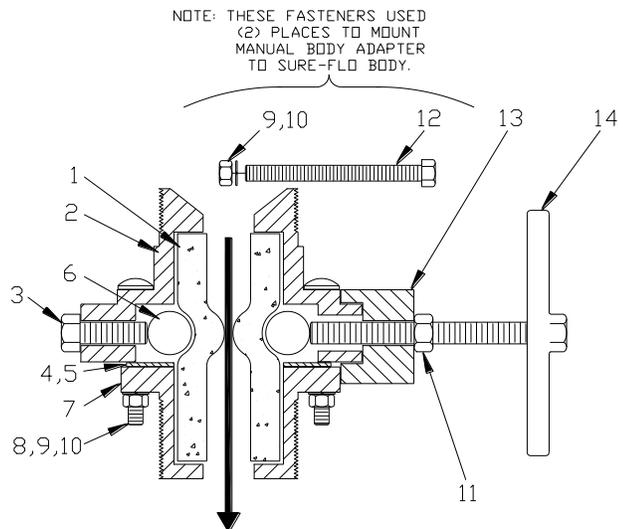
Manual Sure-Flo Media Regulator Parts

Item	Part Number	Description	Nozzle	Grit	Comments
1	525451	Metering tube, 3/8" ID	Small	Fine	Back out roller bolt 1/2"
	525782	Metering tube, 1/2" ID	Small-Med	Fine-Med	Back out roller 1/2"
	523592	**Metering tube, 3/4" ID**	**Medium**	**Medium**	**Supplied as standard**
	523512	Metering tube, 3/4" ID	Medium	Medium	Use below 32° F. (red)
	525792	Metering tube, 5/8" ID	Med-large	Med-coarse	—
	525802	Metering tube, 7/8" ID	Large	Coarse	High production use
2	753692	Valve body, 2" MPT			
3	552222	Bolt, 7/16"-14 x 1-1/4"			
4	753092	Roller stop/holder			
5	551352	Screw, 8-32 x 1/2" (2 per assembly)			
6	753632	Pinch roller (2 per assembly)			
7	753292	Flange, 2" MPT			
8	552052	Bolt, carriage, 3/8"-16 x 2-1/2" (4)			
9	552762	Lock washer, 3/8" ID (6)			
10	552542	Nut, hex 3/8" -16 (6)			
11	552672	1/2" Jam nut			
12	551902	Bolt, hex 3/8" -16 x 3" (2)			
13	753372	Adapter, manual body, Sure-Flo			
14	290384	Handle assembly, 1/2" -13 x 4"			
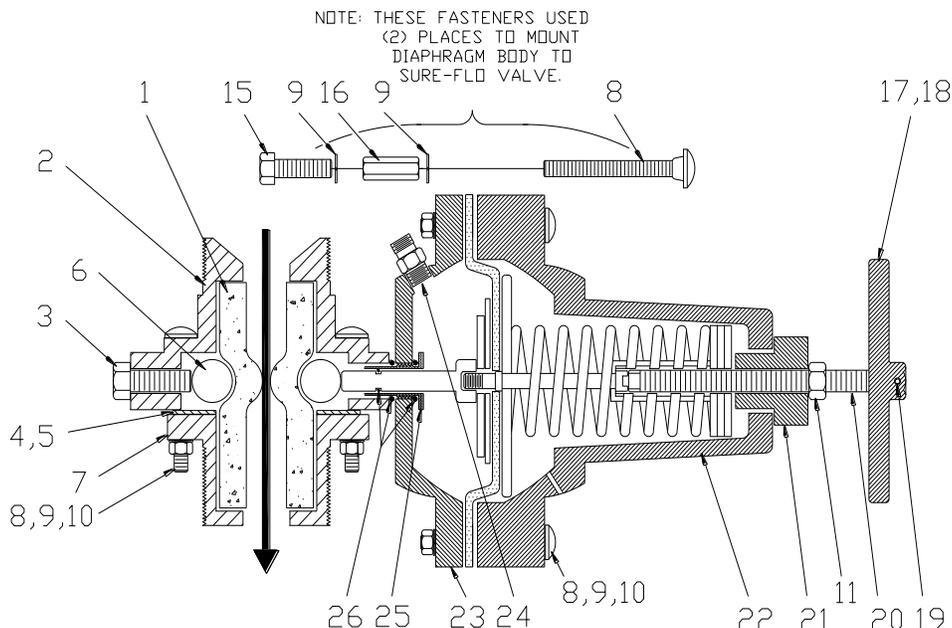
NOTE: THESE FASTENERS USED (2) PLACES TO MOUNT DIAPHRAGM BODY TO SURE-FLO VALVE.

Automatic Sure-Flo Media Regulator Parts

Item	Part Number	Description	Nozzle	Grit	Comments
1	525451	Metering tube, 3/8" ID	Small	Fine	Back out roller bolt 1/2"
	525782	Metering tube, 1/2" ID	Small-Med	Fine-Med	Back out roller bolt 1/2"
	523592	**Metering tube, 3/4" ID**	**Medium**	**Medium**	**Supplied as standard**
	523512	Metering tube, 3/4" ID	Medium	Medium	Use below 32° F. (red)
	525792	Metering tube, 5/8" ID	Med-large	Med-coarse	—
	525802	Metering tube, 7/8" ID	Large	Coarse	High production use
2	753692	Valve body, 2" MPT			
3	552222	Bolt, 7/16" - 14 x 1-1/4"			
4	753092	Roller stop/holder			
5	551352	Screw, 8-32 x 1/2" (2 per assembly)			
6	753632	Pinch roller (2 per assembly)			
7	753292	Flange, 2" MPT			
8	552052	Bolt, carriage, 3/8"- 16 x 2-1/2" (10)			
9	552762	Lock washer, 3/8" ID (12)			
10	552542	Nut, hex 3/8" – 16 (8)			
11	552672	1/2" Jam nut (1/2"-13)			
12	N/A	(Not shown in drawing)			
13	N/A	(Not shown in drawing)			
14	N/A	(Not shown in drawing)			
15	551852	Bolt, 3/8" – 16 x 1-1/4" (2/Auto Sure-Flo)			
16	552662	Nut, extension 3/8" – 16 (2/Auto Sure-Flo)			
17	290217	Handle assembly, 1/2" – 13, Automatic Sure-Flo			
	290211	Handle assembly, 7/16" – 14 x 4"			
18	753622	Handle (only), 1/2" – 13			
19	551732	Set screw, 1/2" – 13 x 1/2", nyloc			
20	505802	Shaft, handle			
21	505822	Spring tensioner			
22	753682	Spring enclosure			
23	753112	Diaphragm cover			
24	521081	Adapter, 1/4" NPT x 1/4" Tube)			
25	753462	Plunger guide			
26	561422	O-ring kit (includes 2 for guide & 1 for plunger)			
27	505872	Plunger with O-ring			
28	552842	Washer, 1/2" ID			
29	525002	Gasket, diaphragm			
30	525012	Diaphragm			
31	290296	Spring assembly (includes item shown in Detail B)			
32	565452	Tag, instructions, Sure-Flo			

26 27   30   31

28   29

WARNING: DO NOT
DISASSEMBLE SPRING
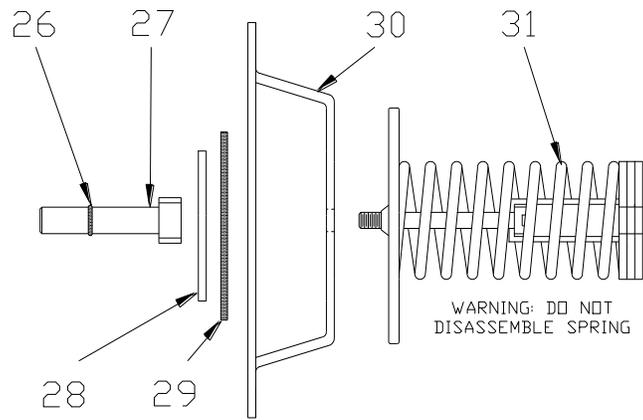
Spring & Diaphragm Assembly Detail

WARNING
Never attempt to disassemble the spring assembly in the automatic Sure-Flo. The spring is under tension and could cause injury to personnel.

MG-78 Exhaust Valve Assembly & Options

| Item	Part Number	Description
	290182	Exhaust valve, MG-78 (with ceramic restrictor kit)
	290184	Boron carbide upgrade for restrictor kit, extended wear, Factory Installed (option)
	502081	Boron carbide upgrade replacement restrictor.
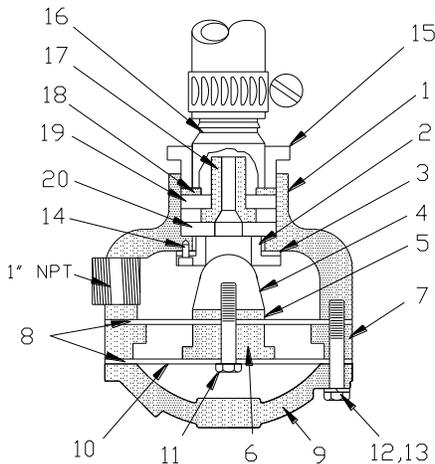
Exhaust Valve Components

Item	Part Number	Description
	290183	Rebuild Kit, MG-78 (Seat & gasket, ball, diaphragm, 3 screws, drawing).(items 2,3,4,14) *Note: MG-78 castings must be in good condition to use PN 290183 effectively.*
1	753332	Valve body
2	753412	Seat, valve ball (steel)
3	524132	Gasket, seat
4	525322	Valve ball (also used on 411 & 412 valves)
5	553412	Spacer washer, steel (1/2" ID x 2" OD x 1/4" thick)
6	753392	Spacer ring, inner
7	753402	Spacer ring, outer
8	523672	Diaphragm (2 per assembly)
9	753382	Cover, valve
10	552842	Washer (1/2" ID x 2" OD x 1/16" thick)
11	551962	Bolt, 1/2" -13 x 1-3/4"
12	553982	Bolt, 3/8" -16 x 2"
13	552762	Lock washer, 3/8"
14	551122	Screws, seat, 1/4" -20 x 1/2" (pack of 3)
15	544512	Reducer bushing, 1-1/4" MPT x 1" FPT
16	520181	Hose Barb 1"
Restrictor Parts		
17	290218	Ceramic Restrictor kit (standard)
	502431	Ceramic nozzle (standard)
	502081	Boron carbide upgrade for restrictor kit, customer installed (extended wear)
	290184	Boron carbide upgrade for restrictor kit, factory installed (extended wear)
18	552952	Washer, steel
19	524062	Washer, nozzle, NW-1 (1" ID x 1-1/2" OD x 1/4" thick) (pack of 10)
20	524082	Washer, nozzle, NW-4 (3/4" ID x 1-1/2" OD x 1/4" thick) (pack of 10)

8.9 Basic Cabinet Assembly
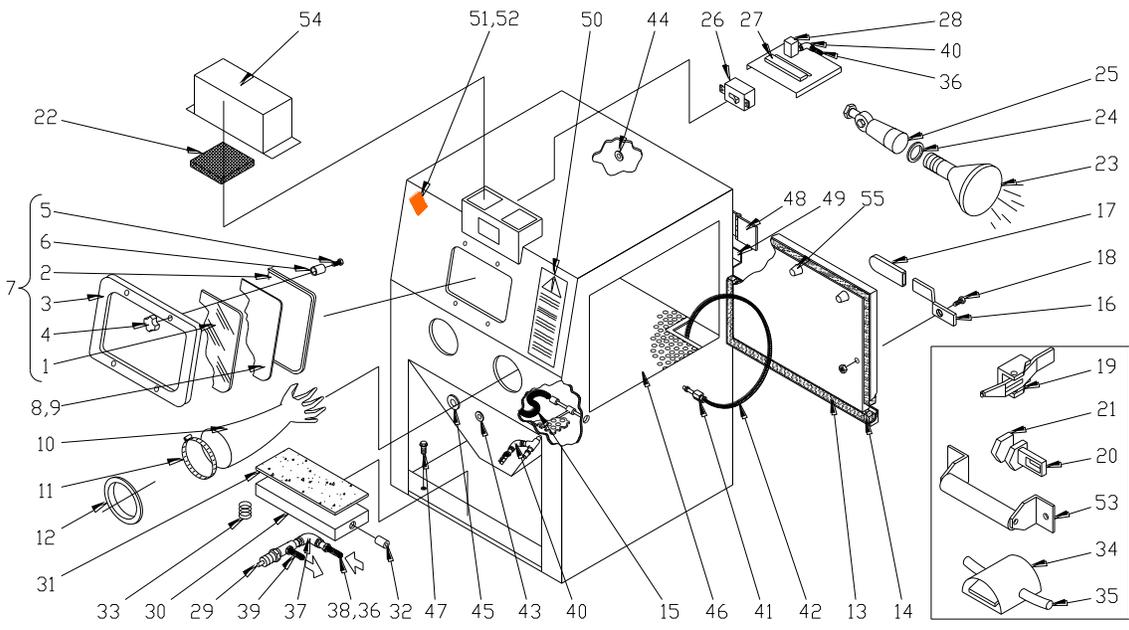
Components

Item	All Sizes	2636 Only	3648 3696 Only	4848 Only	6060 60120 Only	7272 Only	Description
1*	510401	—	—	—	—	—	Safety Glass, 14" x 22" Δ
2†	524451	—	—	—	—	—	Gasket, window (6' section)
	525941	—	—	—	—	—	Gasket, 1/4" x 1/4" **
3	760291	—	—	—	—	—	Frame, window
	523551	—	—	—	—	—	Gasket, window frame per ft. (6ft. req.)
4	510461	—	—	—	—	—	Knob, 3/8" -16, 4 required
5	551852	—	—	—	—	—	Bolt, 3/8" -16 x 1-1/4"
6	525931	—	—	—	—	—	Spacer, window, 4 required
7	140544	—	—	—	—	—	Window Kit (items 1-6)
8*	509191	—	—	—	—	—	Plastic window protector (option)
9	509201	—	—	—	—	—	Screen window protector (option)
10*	509891	—	—	—	—	—	Gloves, pair
*	510821	—	—	—	—	—	Glove, left hand
11	520561	—	—	—	—	—	Clamp, 8", per glove
12	555016	—	—	—	—	—	Glove Hole Flange, Plastic
13*	—	525671	525681	525691	525701	523651/ 525170	Gasket, Door (1 per door)
		25' swing door/16' fold-down door					
		(7'2")	(10'4")	(12'7")	(15'0")	(25'0"/16 '0")	(Door gasket length)
	524441	—	—	—	—	—	Gasket, 3/4" x 3/4" per ft. **
14†	525041	—	—	—	—	—	Bumper, urethane
15†	—	522671 ††	140855	140855	140857	140854 ††	Interlock hose
16	760361	—	—	—	—	N/A	Handle, door
17	509571	—	—	—	—	N/A	Cover, handle
18	552151	—	—	—	—	N/A	Bolt, door, 3/8" –16 x 2" SHCS
	553952	—	—	—	—	N/A	Nut, 3/8" –16 (ESNA)
19	—	N/A	N/A	N/A	N/A	509371	Latch, door (w/o handle hole)
20	—	N/A	N/A	N/A	N/A	751241	Catch, door
21	—	N/A	N/A	N/A	N/A	509381	Spacer, catch – ("SHIM" ONLY)
22	—	510491	510491	510491	510491	510521	Filter, Kleensweep™ inlet, (2 required)
23†	532701	—	—	—	—	—	Floodlight bulb
24*	580191	—	—	—	—	—	Gasket, light bulb, 1 per bulb
25	532711	—	—	—	—	—	Light fixture, with gasket
26†	534561	—	—	—	—	—	Switch, On/Off, 20 amp

27	533611	—	—	—	—	—	Terminal strip, 10 pole
28†	519001	—	—	—	—	—	Solenoid valve, Standard and CSA
	517311	—	—	—	—	—	Solenoid valve, I.E.P. (JIC) systems (Option)
29†	517221	—	—	—	—	N/A	Valve, foot treadle "3" (exc. *ERGO*)
	521101	—	—	—	—	N/A	Barbed fitting 1/4" tube # 10-2 with gasket
30	760041	—	—	—	—	N/A	Foot treadle base (except *ERGO*)
31	524351	—	—	—	—	N/A	Grip/cover, treadle
32	510501	—	—	—	—	N/A	Brass bushing, treadle, (2 required)
33†	510421	—	—	—	—	N/A	Spring, treadle return (2 required)
34†	—	—	—	—	—	518651	Foot treadle, 7272 & *ERGO*
	—	—	—	—	—	518661	Valve for 7272/*ERGO* treadle
	—	—	—	—	—	518671	Repair kit for treadle valve
35	—	—	—	—	—	522661	Hose assembly, 1/4" for treadle
36†	510541	—	—	—	—	—	Tubing, 1/4" O.D.**
37	534822	—	—	—	—	—	Elbow 1/8"
38	521101	—	—	—	—	—	Adapter, 1/4"tube x 1/8" MPT
39	520252	—	—	—	—	—	Barbed fitting, 1/4" tube x #10-32
40	520432	—	—	—	—	—	Adapter, 1/4" tube x 1/8" MPT, 90°
41	509821	—	—	—	—	—	Gun, dust off
42		522631	522641	521481	522661	522661	Hose with fittings, dust off gun
43	523951	—	—	—	—	—	Grommet, dust off hose 1/4"-5/8" x 7/8"
44	523931	—	—	—	—	—	Grommet, blast hose, 1"x 1-3/8"
45	523921	—	—	—	—	—	Grommet, suction air hose, 3/4" x 1-1/16"
	536391	—	—	—	—	—	Hole seal
46	—	760541	760551	760561	760571	770911	Floor section, std cabinet, 2 required
	—	770191	770201	770211	N/A	N/A	Floor section, *ERGO,* 2 required
	509002	—	—	—	—	—	Matting, 2' wide** (optional)
		(3 ft.)	(6/12 ft.)	(8 ft.)	(13/25 ft.)	(18 ft.)	to protect interior cabinet floor
47	—	551742	551742	551742	551742	—	Leveling bolt, 3/8" -16 x 2", 4 required
	—	—	—	—	—	554471	Leveling bolt, 3/4" -10 x 3", 4 required
48		509531	—	—	—	N/A	Hinge, 3"
49	—	760151	760161	760161	760171	760151	Z-strip, reclaimer mount (not shown)
50	567391	—	—	—	—	—	Decal, Instruction/Warnings
51	566481	—	—	—	—	—	Decal, Empire logo
52	566491	(8 ft.)	(10/14 ft.)	(10 ft.)	(11/16 ft.)	(13 ft.)	Decal, orange dot strip **
	564476	—	—	—	—	—	Paint, Touch up kit

Additional parts often used with cabinets

53††	—	140595	140596	140596	N/A	N/A	Arm rest assembly, *ERGO*
54††	—	140597	140597	140597	140687	140652	Cabinet silencer
55††	523533	—	—	—	—	—	Rubber nut, 1/4"-20 (for curtains)

*   Recommended spare part – Consumable wear item
†   Essential component-to prevent downtime
††   For systems with optional equipment
**   Specify length (per foot)

WARNING
Replace the window with Empire safety glass only. Failure to do so could result in serious injury.

9.0 Warranty

Empire Abrasive Equipment Company ("Empire") warrants all parts and equipment against defect in material and workmanship to the original purchaser for a period of **_three (3) years_** after shipment. Upon prompt notification by the buyer, to Empire, components that are determined by Empire to be defective will be repaired or replaced at not additional charge.

LIMITATIONS:

1. This warranty does not apply to normal wear items such as nozzles, blast hose, and reclaimers or to other components that are exposed to direct contact with blast media.

2. The buyer must follow all recommended maintenance schedules; see Operating Instruction on prior pages.

3. Does not apply to misapplication of product.

4. Unauthorized service, repair, improper installation, improper operation, improper maintenance, alternations, misuse, neglect, accident or excessive ambient conditions will void the warranty.

5. **If genuine Empire replacement parts are not used the warranty is void.**

6. Returned Material Authorization (RMA) form must be completed and accompany all returned goods. Returns are not recognized without prior authorization and RMA number.

7. Associated installation costs are excluded.

8. Freight costs for goods returned to Empire are to be assumed by the buyer unless the parts are determined defective by Empire.

9. Parts that are not supplied by Empire are not covered. Commercial components are warranted under term of the original manufacturer.