

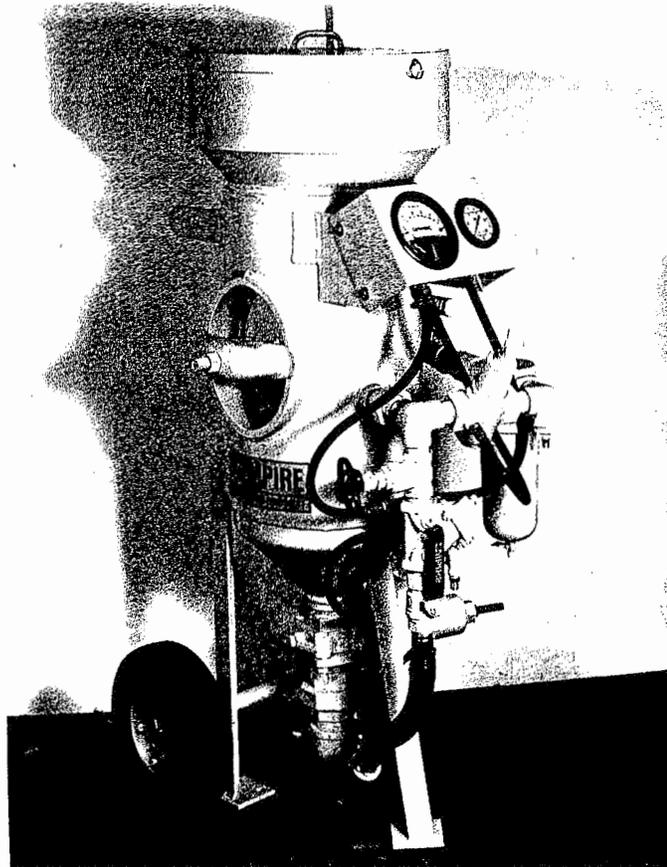
# OPERATING & MAINTENANCE INSTRUCTIONS

## SAFESTRIP™

### Fine Media

PRESSURE BLAST SYSTEM

780 Saf-Stop II® Controls



### ProFinish® Cabinet Integration

The SAFESTRIP™ Fine Media Pressure Blast System with 780 controls may be integrated with Empire's ProFinish® cabinet.

# ***SAFESTRIP***<sup>™</sup> Fine Media Pressure Blast System

## 780 System with Saf-Stop II<sup>®</sup> Remote Controls

### **1. Description**

The SAFESTRIP<sup>™</sup> Fine Media Pressure Blast System with 780 Saf-Stop II remote controls is illustrated in Figure 1 and the Parts List is provided in Table 1. Reference numbers in Figure 1 correspond to the numbered items in Table 1.

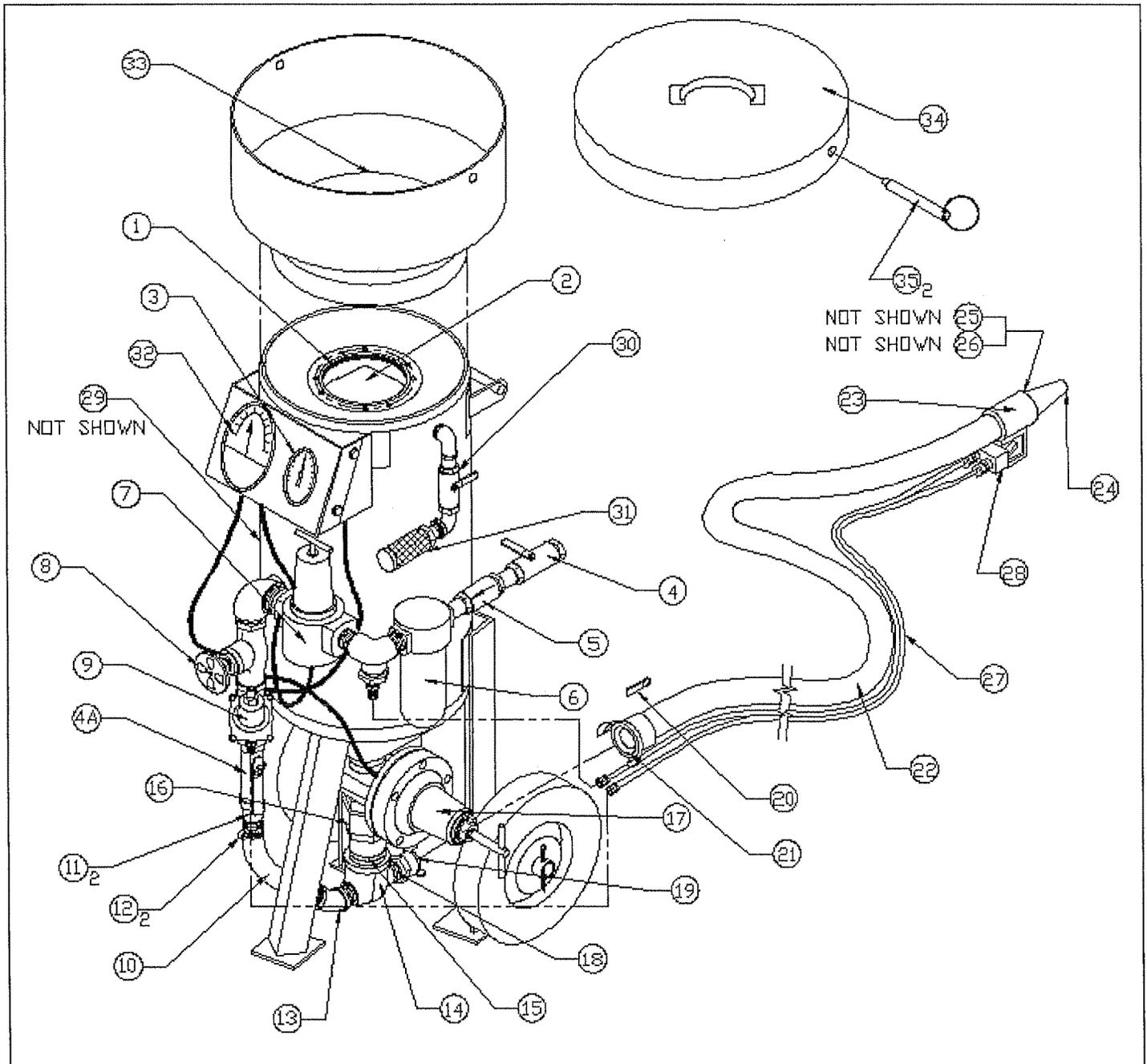
### **2. Principles of Operation**

The SAFESTRIP<sup>™</sup> Fine Media Pressure Blast System with 780 Saf-Stop II remote controls starts blasting when the Saf-Stop II remote control handle is depressed, and stops blasting when the control handle is released. The pressure vessel is manually pressurized and de-pressurized.

The SAFESTRIP system is designed to use fine media including bicarbonate of soda.

### **ProFinish<sup>®</sup> Cabinet Integration**

The SAFESTRIP<sup>™</sup> Fine Media Pressure Blast System with 780 controls may be integrated with Empire's ProFinish<sup>®</sup> cabinet.



**FIGURE 1 SAFESTRIP™ Fine Media Pressure Blast System  
780 System with Saf-Stop II Remote Control**

**Table 1 Parts List for SAFESTRIP™ Fine Media Pressure Blast System  
780 System with Saf-Stop II Remote Control**

Ref.	Part Number	Part Description
1	523872	“O” Ring, 6” rubber
2	525072	Sealing Plunger, (PVC coated), 6”
3	550391	Blast Pressure Gauge, liquid filled
4,4A	518492	Manual Air Valve, 1” NPT
	504352	Replacement Handle, air valve
5	517503	Check Valve, 1” NPT
6	517271	Filter, 1” 5 micron
	508003	Replacement Filter Element, 5 micron
7	517251	Regulator, 1”non relieving
8	515430	Gate Valve, 1” bronze non-rising stem
9	518052	Valve, Automatic, 1” N.O., S.A.C. Bleed
	517582	Diaphragm/Seal Kit
	518352	Internal Parts Kit, bleed
10	520912	Air Hose, 1”, per foot (2 foot required)
11	520181	Hose Barb, 1” steel (2 per assembly)
12	520581	Hose Clamp. 1” (2 required per assembly)
13	544512	Reducing Bushing, 1-1/4”x1”
14	545752	Tee. 1-1/4”x2”
15	546542	Nipple, 2”x close
16	340038	Regulator, 2” fixed orifice
	754633	2” Metering Disc, 1/8” orifice (factory installed)
	754643	2” Metering Disc, 5/32” orifice (shipped loose with system)
	754653	2” Metering Disc, 3/16” orifice (shipped loose with system)
17	290215	Automatic Sure-Flo Valve Assembly (refer to parts section)
18	546292	Nipple, Heavy Duty 1 1/4”x close
19	753262	Tank Coupling (TC), 1 1/4” NPT aluminum (standard)
	753272	Tank Coupling (TCB), 1 1/4” NPT brass (optional)
	524032	Coupling Washer, TC and QC (package of 10)
20	510511	Safety Pin
21	751062	Quick Coupling (QC) 3/4”, aluminum
22	521742	Blast Hose , 3/4” ID 25 Ft. with QC and NC (refer to parts section)
23	753212	Nozzle Coupling (NC) 3/4”, aluminum (refer to parts section)
24	502372	Nozzle, CN3-4, ceramic (refer to parts section)
25	504942	Nozzle Adapter, NA-3
26	524041	Nozzle Washer, NW-5 use with Ceramic Nozzles only (package of 10)
		Additional Nozzles and Washers (refer to parts section)
27	521962	Dual Line Hose with Fittings, 30 Ft.
		Additional Dual Line Hose and Fittings (refer to parts section)
28	290164	Pneumatic Saf-Stop II Remote Control Handle
		Repair Parts For Saf-Stop (refer to parts section)
29		Inspection Door Clevis (not shown)
		Inspection Door Gasket (not shown)
30	518472	Manual Air Valve, 1/2” NPT
31	506445	Muffler, 1/2”
32	571185	Differential Pressure Gage
33	504325	Hopper with Screen.
34	504326	Hopper Cover
35	510506	Pin, Self Locking (2 required per assembly)

### 3. Set-up

Refer to Figure 1. Use the following procedure to set up the SAFESTRIP™ Fine Media Pressure Blast System with 780 Saf-Stop II remote controls.

Reference numbers refer to Figure 1 and Table 1

Step	Procedure
1	Remove the inspection door (29) and inspect for and remove any debris that may have fallen into the pressure vessel cone. This will eliminate potential media blockage at initial start-up. Install inspection cover with gasket and tighten. The cover must be air tight.
2	<b>**WARNING**</b> Liquid filled gauge vent must be opened before operation.
3	Locate the panel mounted oil filled pressure gauge (3). The gauge case is vented to prevent air pressure build up and gauge case failure. The vent has been closed for shipment. Locate the small silver pin at 12 o'clock on the back of the gauge case just behind the mounting panel. Depress the vent pin until the head of the pin contacts the gauge case opening the gauge vent
4	Locate the Automatic Sure-Flo media valve (17) with tank coupling (19) at the bottom of the pressure vessel. Connect the blast hose with coupling (21) to the tank coupling (19). Ensure that each quick coupling has a rubber washer and a safety pin (20) or wire installed for safe operation.
5	Install nozzle washer (26) inside the nozzle coupling (23) between the nozzle (24) and the blast hose end. Insert nozzle (24) into nozzle adapter (25) and screw nozzle adapter into the threaded nozzle coupling until the nozzle seats and seals on the nozzle washer.
6	The SAFESTRIP™ Fine Media Pressure Blast System is equipped with pneumatic Saf-Stop II remote control handle (28) and “dual-line” hose (27). Connect the dual-line hose to the Saf-Stop II remote control handle (28) and to the appropriate fittings on the vessel pipe string.
7	Attach the Saf-Stop II handle (28) to the blast hose just behind the nozzle coupling (23). The Saf-Stop II brass fittings must be facing away from the nozzle (24).
8	Starting 18” to 24” from the Saf-Stop II handle (28), attach the dual-line hose to the blast hose approximately every four feet. Leave slack in the dual-line hose between the Saf-Stop II handle and the first point of attachment for flexibility. Friction tape, duct tape, ty-wraps or similar material may be used.
9	Open the exhaust valve (30) and choke valve (4A). Both handles of the ball valves should be parallel to the valve body. Open gate valve (8) by turned handle fully counterclockwise.
10	Close the main air valve (4).
11	Install compressed air supply hose (not supplied) to main air valve (4). Do not use couplings or fitting that will restrict air flow and keep the hose length as short as possible. Use an air line supply at least three (3) times the I.D. of the nozzle orifice.
12	<b>**WARNING**</b> If quick couplings are used for connecting the compressed air supply, safety pins must be installed for safe operation.
13	Each SAFESTRIP™ Fine Media Pressure Blast System is supplied with a Media Loading Hopper with screen (33) and Hopper Cover (34). Locking pins (35) are supplied with each hopper to secure the cover.
14	<b>**WARNING**</b> Hopper Cover and Pins must be properly installed before blasting.

**NOTE:** Refer to Section 4.1 of this manual for media loading instructions

## 4.0 Operation

Use the following procedure to operate the SAFESTRIP™ Fine Media Pressure Blast System . For proper operation of your SAFESTRIP™ System, follow these instructions and maintain the equipment regularly according to the maintenance schedules.

### 4.1 Filling Pressure Vessel with Media

Follow these instructions to fill the SAFESTRIP™ System pressure vessel with media.

#### **CAUTION**

NEVER turn off the compressor or compressed air supply before de-pressurizing the pressure vessel.

Reference numbers refer to Figure 1 and Table 1

Step	Procedure
1	Close the main air valve (4) and open the exhaust valve (30) to release compressed air from vessel.
2	When vessel is fully de-pressurize, the Sealing Plunger (2) will fall open.
3	Remove and set aside Hopper Cover Pins (35) and Hopper Cover (34).
4	Add media to the pressure vessel through the Hopper and Screen (33) on top of the pressure vessel. Vessel does not require being full to blast.
5	<b><u>Caution</u></b> Overfilling the pressure vessel may prevent the sealing plunger from closing properly and will cause needless wear.
6	The pressure vessel is full when the media level is no higher than the bottom of the Sealing Plunger (2).
7	<b><u>**WARNING**</u></b> The Hopper Cover and Pins must be properly installed after loading media and before blasting.
8	Install Hopper Cover (34) and Pins (35) after media has been loaded into the pressure vessel.

### 4.2 Blast Operation

#### **\*\*WARNING\*\***

The Blast Operator must be equipped with recommended protective clothing. NIOSH/OSHA require the Blast Operator to use a respirator (air-fed hood), remote controls, canvas jacket, pants, and leather gloves.

OSHA requires that the respirator be supplied with Grade "D" compressed air and equipped with a personal air filter and C.O. monitor or ambient air pump.

#### **Before Blasting:**

- 1 Check the personal air filter and C.O. Monitor or ambient air pump for proper operation.
- 2 Use safety pins or wires when joining blast hose and air hose quick couplings.
- 3 Make sure there is adequate CLEAN, DRY air supply for both the Operator's respirator, and the blast system.

Reference numbers refer to Figure 1 and Table 1.

Step	Procedure
1	Check system installation, refer to section 3.0, that equipment is installed correctly and perform appropriate maintenance schedules. <b>Review 4.2 Operation WARNING before Blasting</b>
2	<b>**WARNING**</b> The Hopper Cover and Pins must be installed after loading media, before pressurizing vessel, and blasting
3	Install Hopper Cover (34) and Pins (35) correctly before pressurizing the vessel.
4	Close the Main Air Valve (4). In the closed position, the handle is perpendicular to the valve, as illustrated in Figure 1. Pressurize the air line that connects the compressed air supply to the pressure vessel.
5	BEFORE BLASTING, the Operator must dress in protective clothing and respirator and observe section "4.2 Blast Operation <b>**WARNING**</b> " above.
6	<b>**WARNING**</b> <b>AVOID SEVERE INJURY, NEVER AIM BLAST NOZZLE AT PERSONNEL OR AT SELF.</b>
7	The Operator aims nozzle at work piece and depresses the Saf-Stop II control handle (28). Blasting will start with air and media exiting the blast nozzle.
8	While the Operator continues to blast, the "Pot Tender" must adjust the blast pressure regulator. Refer to Section 5.1. Refer to Section 5.2 instructions for adjusting media flow from the nozzle.
9	To stop blasting, the Operator releases hand pressure from the Saf-Stop II control handle. Blasting will stop, the vessel will stay pressurized.

**NOTE:**

The amount of Differential Pressure required to achieve steady media flow will vary depending on the type and size of media used and the blast pressure selected.

**NOTE:**

1. For best results, hold the nozzle 6-12" from the work piece, and at a 90-degree angle to its surface. Overlapping strokes are recommended.
2. The optimum "dwell time" depends on the final finish required. For example, move the nozzle faster for a "brush-off" finish, slower for a "white metal" finish.

**4.3 Emptying Media from Vessel**

To avoid problems associated with condensation and compacted media in the pressure vessel, at the end of the day or when the blast system will be idle for an extended time, the blast media should be removed from the vessel. The most efficient way to empty the vessel is to use up the media in the vessel through normal blasting. If the media in the vessel is to be emptied quickly, use a container to catch and store the media, and proceed as follows.

Step	Procedure
1	Place the storage container in a convenient location to catch the media.
2	Remove the Nozzle Adapter(25), Nozzle (24), and Washer (26) from the Nozzle Coupling (23).
3	Close the Choke Valve (4A) and Exhaust Valve (30).
4	Follow Section 4.2 Blasting Operation Procedure, Steps 1 through 6.
5	Open the Main Air Valve (4).
6	Operator position yourself to begin blasting. Aim the Nozzle Coupling (23) into the container and depress the Saf-Stop II remote control handle (28). The vessel will "pump" the media out through the Nozzle Coupling (23) very quickly. Catch the media in the container.
7	When the vessel has been emptied, release the Remote Control Handle (28), close the Main Air Valve (4), and open the Exhaust Valve (30).
8	Refer to Section 4.4 Shut Down.

## 4.4 Shut Down

Follow these instructions to shut down the SAFESTRIP™ Fine Media Pressure Blast System at the end of the day and/or when it will be idle, not in use.

**\*\*WARNING\*\***

**Always released trapped compressed air from the pressure vessel, pipe string, and all hoses BEFORE disconnecting any hoses.**

Reference numbers refer to Figure 1 and Table 1

Step	Procedure
1	Close the main air valve (4) and open the exhaust valve (30) to de-pressurize the vessel.
2	Turn off the compressed air supply to the system.
3	Release trapped air between the main air valve (4) and the compressed air supply valve before disconnecting any hose(s). See Warning above.

## 5.0 System Blast Adjustments

### 5.1 Blast Pressure

Blast pressure is adjusted with the non-relieving Pressure Regulator (7) mounted on the pipe string of the vessel. Follow the procedure below to adjust blast pressure.

Reference numbers refer to Figure 1 and Table 1

Step	Procedure
1	The operator must continue to blast with the system while the “Pot Tender” makes blast pressure adjustments.
2	The “Pot Tender” must slowly adjust the Blast Pressure Regulator (7). Turning the handle clockwise will increase and turning counter-clockwise will decrease blast pressure.
3	Refer to the right panel mounted pressure gauge (3) for the set blast pressure.

**NOTE:** Adjustments to blast pressure will not be immediate, the system may require as much as 30 seconds to adjust to the new regulator setting.

### 5.2 Media Flow from Nozzle

Media flow is adjusted with the pipe string mounted Differential Pressure Gate Valve (8). While the Operator holds the blasting nozzle, the “Pot Tender” must turn the Differential Pressure Gate Valve Handle clockwise, closing the gate valve while watching the “Capsuhelic” gage (23). As the differential pressure increases, media flow from the nozzle will increase. If differential pressure is decreased, media flow will decrease. The optimum differential pressure is 0.1 – 1.0 psi., as indicated by the panel mounted “Capsuhelic” gage.

**NOTE:** The amount of Differential Pressure required to achieve steady media flow will vary depending on the type and size of media used, nozzle size and the selected blast pressure.

### 5.3 Fixed Media Metering Disc Selection

The Fixed Media Metering Disc is located under the pressure vessel within the specially machined 2" Regulator (16). It's purpose is to supply a consistent flow of media at a constant rate (Pounds per Minute, Lbs./min.) from the vessel into the blast air stream and out the pressure blast nozzle. The larger the orifice opening, the greater the media flow (lbs./min.) will be from the nozzle.

Metering Disc supplied with this system is 1/8" (installed), and 5/32" and 3/16" are shipped loose. Pressure differential provides a wide range of media flow adjustment without having to change the disc.

The following recommendations will assist you when choosing an alternative Metering Disc.

NOZZLE SIZE	BLAST PRESSURE	ORIFICE SIZE
3/16	10-100	1/8
1/4	10-50	1/8
1/4	50-100	5/32
5/16	10-50	5/32
5/16	50-100	3/16

## 6.0 Troubleshooting

Problem	Probable Cause	Remedy
Vessel will not pressurize	Compressed air supply not on	Start the compressor and open the compressed air valves to the vessel.
	Blast pressure regulator set very low.	Adjust regulator to desired pressure.
	Exhaust valve open	Close exhaust valve.
No air or media emerges from nozzle	Vessel not pressurized	See remedies for "Vessel will not pressurize" above.
	Choke and media valves closed	Open choke valve and adjust media valve.
	Saf-Stop II control	Refer to table for Saf-Stop II Remote Control Handle
Air but no media flow from nozzle	Vessel empty	Fill the vessel with media.
	Media valve closed or set incorrectly	Open the media valve and adjust for desired media flow.
	Low control air pressure	To open fully, the Sure-Flo media valve requires line pressure of 80 PSI (min.) when blasting. Valve closes at 40 PSI.
	Leaking or defective diaphragm in air valve or media valve	<b>**WARNING**</b> <b>Shut-off air supply, open exhaust valve, and depressurize vessel.</b> Repair/replace leaking and worn parts. Tighten the fittings at the bottom of the vessel.
	Low volume of compressed air	Verify that supply air valve(s) is (are) fully open.
	Supply hose too long or diameter too small for required air volume (causing excessive friction loss)	Use minimum 1 1/4", I.D. air hose.
	Compressor too small or using too much air	Replace worn nozzle, use smaller nozzle, or use larger compressor.

	Air leak(s) at one or more of the following locations: Sealing plunger/"O" ring Exhaust valve Media valve Fittings at bottom of vessel	<b>**WARNING**</b> <b>Shut-off air supply, open exhaust valve, and depressurize vessel.</b> Repair/replace leaking and worn parts. Tighten the fittings at the bottom of the vessel.
	Sure-Flo media valve plugged	1) Open the Sure-Flo media valve completely. Close the choke valve, remove the nozzle and nozzle washer from the nozzle coupling, and depress the Saf-Stop II operator's handle. All air pressure will be through the media valve.
		If there is still no media flow: 2) Back the stationary roller bolt out ¼" and repeat Step #1. If there is still no media flow, see "Vessel Outlet Plugged," below.
	Metering orifice plugged	<b>**WARNING**</b> <b>Shut-off air supply, open exhaust valve, and depressurize vessel.</b> Separate 2" fixed orifice media regulator, remove disc, and clean accumulated debris.
	Vessel outlet plugged	<b>**WARNING**</b> <b>Shut-off air supply, open exhaust valve, and depressurize vessel.</b> Lay the vessel down on the handle and disassemble the Sure-Flo media valve. Remove the pinch tube and clear the obstruction. It may be necessary to empty the vessel to remove accumulated debris.
	Wet/damp media from compressed air supply	<b>**WARNING**</b> <b>Shut-off air supply, open exhaust valve, and depressurize vessel.</b> Remove the vessel inspection door. Remove media from the vessel, or follow "Sure-flo media Valve Plugged" remedy (above).
Very heavy media flow with occasional spurts of air	Choke valve closed	Open the choke valve completely.
	Low blast pressure	Check the air supply pressure and verify that all air supply valves are open completely.
	Pressure differential too great	Reduce media flow by turning the handle of the differential pressure gate valve full counter-clockwise. Note pressure on Capsuhelic gage. (Normal operation gage should be 0.1 to 1.0 psi.)
Uneven media flow at nozzle	Media flow too rich	Check differential pressure is set correctly by referring to gage. (see above item)
Hole in mixing tee under media valve	Choke valve partly closed when blasting	Operate the system with the choke valve fully open.
Premature blast hose failure	Nozzle/hose size incorrect	The blast hose I.D. should be 3 times larger than the nozzle orifice. Example: ¼" nozzle – ¾" blast hose.
	Media flow too rich	Reduce differential pressure or change media metering orifice. (Normal operation gage should be 0.1 to 1.0 psi.)

Poor production	Part condition	The part must be dry and free of oil and grease.
	Media flow	Adjust media flow. Media should be just visible as it exits the nozzle.
	Nozzle type	The Venturi nozzle concentrates media as it exits the nozzle.
	Distance between nozzle and part.	Close up – smaller, more intense blast pattern. Farther back – larger, less intense blast pattern.
	Low blast pressure	Try each of the following: 3. Change worn nozzle 4. Use a smaller nozzle 3. Use a larger compressor and/or air supply line.
	Media size and/or type	Wrong application for media being used.

## 7.0 Regular Maintenance

The SAFESTRIP™ Fine Media Pressure Blast System with Saf-Stop II remote controls should be maintained at regulator intervals to ensure operator safety, optimize system performance, and extend equipment life. This section describes the daily, weekly, and monthly maintenance routines that should be performed on your SafeStrip™ 780 System..

### **\*\*WARNING\*\***

**BEFORE PERFORMING ANY MAINTENANCE ON VESSEL, COMPONENTS AND ASSOCIATED EQUIPMENT, SHUT OFF COMPRESSED AIR SUPPLY, DE-PRESSURIZE VESSEL, BLEED OFF ALL TRAPPED COMPRESSED AIR FROM PNEUMATIC CONTROLS, PIPE STRING, and COMPRESSED AIR SUPPLY LINES AND DISCONNECT COMPRESSED AIR SUPPLY.**

## 7.1 Daily Maintenance

Reference numbers refer to Figure 1 and Table 1

Step	Procedure
1	<b>Review 7.0 Regular Maintenance <b>**WARNING**</b> before performing any maintenance</b>
2	Check the operator's protective equipment, including respirator, lens, gloves, and protective clothing.
3	Verify that all rubber washers for nozzle (24), blast hose (21), tank (19), and air line couplings are properly installed and in good condition.
4	Verify that all couplings are equipped with a Safety Pin (20) or wire.
5	Verify that the Nozzle (24) is tightly secured in the Nozzle Coupling (23) with the proper nozzle washer (26).  <b>CAUTION</b> DO NOT use the nozzle without the nozzle washer. This will cause premature wear to the nozzle and coupling. Nozzle washer I.D. must be the same as the nozzle entrance I.D.
6	Open the manual drain valve at the bottom of the General Purpose Filter (6) to remove any accumulated liquids.
7	Verify that the Dual Line Control Hose (27) is in good condition and tightly secured to both the operator's Saf-Stop Control (28) and at the pressure vessel with no air leaks.
8	Verify that all control hoses are in good condition, tightly secured at both ends, and with no air leaks.
9	Verify that the Main Air Valve (9), Exhaust Valve (30), and Differential Pressure Valve (8) are in good operating condition, opening and closing easily.

## 7.2 Weekly Maintenance

Reference numbers refer to Figure 1 and Table 1

Step	Weekly Maintenance Procedures
	<b>Review 7.1 Regular Maintenance <u>WARNING</u> before performing any maintenance</b>
1	Perform all steps in the Daily Maintenance Procedure (Section 7.1).
2	Check the Blast Nozzle (24) for wear. A nozzle is considered worn out when the nozzle orifice is approximately 1 1/2 times the original size. Use a drill bit to measure the orifice for wear. (Examples: 3/16" increases to 1/4", 1/4" to 3/8", and 5/16" to 7/16")
3	Check the specially constructed Blast Hose (22) for signs of wear. Check the hose for wear by pinching along its length with particular attention to bends and turns in the hose which are high wear areas.
4	Inspect the O-Ring (1) and Sealing Plunger (2) for wear. If either are worn, cut, or damaged in any way, replace both before operating the system.
5	Verify that the rubber diaphragm in the Automatic Air Valve (9) is in good condition.

## 7.3 Monthly (Every 200 Hours) Maintenance

Item numbers refer to parts listed in Individual Components section.

Step	Monthly Maintenance Procedures
	<b>Review 7.1 Regular Maintenance <u>WARNING</u> before performing any maintenance</b>
1	Perform all the steps in the Daily and Weekly Maintenance Procedures (Sections 7.1 and 7.2).
2	Check the Metering Tube (1) in the Automatic Sure-Flo media valve for wear or rupture. An indication of metering tube wear is media and/or air leaking from the blast nozzle after the Saf-Stop II control has been released.
3	Verify that the Rubber Diaphragm (30) in the Automatic Sure-Flo media regulator is in good condition. Air leaking through or around the diaphragm will escape through the vent hole in the Spring Enclosure (22).

## 7.4 Automatic Sure-Flo Media Regulator Maintenance

**\*\*WARNING\*\***

**BEFORE PERFORMING ANY MAINTENANCE ON VESSEL, COMPONENTS, and/or ASSOCIATED EQUIPMENT, SHUT OFF COMPRESSED AIR SUPPLY, DE-PRESSURIZE VESSEL, BLEED OFF ALL TRAPPED COMPRESSED AIR FROM PNEUMATIC CONTROLS, PIPE STRING, and COMPRESSED AIR SUPPLY LINES AND DISCONNECT COMPRESSED AIR SUPPLY.**

### 7.4.1 Metering Tube Maintenance

Use the following procedure to remove, inspect, and replace the metering tube. The metering tube is made of a specific abrasive resistant material. Use only **Empire Genuine Replacement Parts** to ensure optimum performance and preserve your warranty.

Item numbers refer to parts listed in Individual Components section.

Step	Procedure
1	<b>Review 7.4 Sure-Flo Maintenance <u>WARNING</u> before performing any maintenance</b>
2	Empty blast media from vessel. (Alternative: after Step 3, lay the vessel back to rest on handle.)
3	Disconnect the blast hose at the Quick Coupling (QC) from the Tank Coupling (TC).
4	Separate the Fixed Orifice Media Regulator halves and place the O-ring and Disc aside.
	<b>Refer to Sure-Flo illustration and item numbers on page xx for the following instructions.</b>

5	Loosen the Jam Nut (11) and rotate T-Handle (17) CCW until handle stops turning freely.
6	Loosen the Spring Tensioner (21) and rotate it CCW out approximately 1 ½” of the Spring Enclosure (22).
7	Loosen Stationary Bolt (3), backing it out approximately ¼” to remove tension on the Stationary Roller and Metering Tube.
8	Remove 4 Nuts, Lock Washers, and Carriage Bolts (8,9,10) from Valve Body (2) and Flange (7). <b>Note:</b> The valve body and flange will separate to relieve the compression of the metering tube.
9	Remove Flange (7), loosen 2 Screws (5) and remove Roller Stop/Holder (4) by sliding it out from under the loose screws and over the metering tube.
10	Remove 2 Rollers (6) and Metering Tube (1). Inspect tube. It is normal to see cuts from the edge of the rollers in the metering tube but they should not penetrate the tube ID. If the tube wall is worn thin in the area of roller contact, replace the tube. <b>NOTE: The Standard metering tube is ¾” ID. There are several other size tubes available.</b>
11	To re-assemble Sure-Flo Media Regulator, install Metering Tube in the Valve Body (2), install 2 Brass Rollers (6), one on each side of Metering Tube, and install Roller Stop/Holder (4) securing with 2 screws (5).
12	Install Flange (7) over Metering Tube and install Bolts, Lock Washers, and Nuts (8)(9)(10) compressing Metering Tube inside of valve assembly. Tighten nuts.
13	Re-assemble Fixed Orifice Media Regulator with Disc and O-ring insuring it is air tight.
14	Before connect the blast hose Quick Coupling (QC) to the Tank Coupling (TC), check the condition of both QC and TC Washer, replace if damaged or worn, connect the hose, and install the <b>SAFETY PIN</b>

#### 7.4.2 Automatic Sure-Flo Diaphragm Maintenance

**\*\*WARNING\*\***

**BEFORE PERFORMING ANY MAINTENANCE ON VESSEL, COMPONENTS, and/or ASSOCIATED EQUIPMENT, SHUT OFF COMPRESSED AIR SUPPLY, DE-PRESSURIZE VESSEL, BLEED OFF ALL TRAPPED COMPRESSED AIR FROM PNEUMATIC CONTROLS, PIPE STRING, and COMPRESSED AIR SUPPLY LINES AND DISCONNECT COMPRESSED AIR SUPPLY.**

**\*\*WARNING\*\***

**NEVER DISASSEMBLE THE SPRING ASSEMBLY**

**The spring assembly is under compression. Removing components other than described below cause personnel injury**

Item numbers refer to parts listed in Individual Components section.

Step	Procedure
1	See <b>**WARNING**</b> ABOVE
2	Release tension on the assembly by unscrewing Spring Tensioner (21) 1 ½” out of Spring Enclosure (22). DO NOT remove the Spring Tensioner and T-Handle from the Spring Enclosure (22).
3	Remove the ¼” control airline from the Spring Enclosure Control Air Fitting (24) and attach a shop airline to the ¼” fitting. Supply air pressure to the shop airline. This will aid in the removal and replacement of the Spring Enclosure from Valve Body (2).
4	Supporting the Spring Enclosure (22), remove two 3/8” Bolt (15) from Extension Nuts (16), and remove the Assembly from the Valve Body. Remove shop air and airline from Control Air Fitting (24).
5	Remove two Extension Nuts (16) and four hex nuts from six Carriage Bolts (8). (Note the orientation of the Control Air Fitting (24) and Extension Nuts (16) for re-assembly). Remove bolts and separate Diaphragm Cover (23) from Spring Enclosure (22) exposing Spring &

	Diaphragm Assembly (Detail B). Remove Spring & Diaphragm Assembly.
6	Unscrew Plunger (27) and remove Washer (28), Gasket (29), Diaphragm (30) from Spring Assembly (31). DO NOT DISASSEMBLE SPRING ASSEMBLY (31), SEE **WARNING** ABOVE.
7	Install new Diaphragm (30), Gasket (29), Washer (28) and Plunger (27) on Spring Assembly (31) and tighten. Replace Plunger O-Ring (26) and apply a light coating of lithium grease to O-Ring.
8	Clean sealing, mating surfaces of Diaphragm Cover (23) and Spring Enclosure (22). This will aid in creating an airtight assembly.
9	Install Spring & Diaphragm Assembly, sliding Plunger (27) into Plunger Guide (25). Align bolt holes of Diaphragm (30), Diaphragm Cover (23), Spring Housing (22), and install six Bolts (8). Install Lock Washers (9) and nuts (locate two Extension Nuts (16) as noted in Step 5 above). Tighten nuts.
10	Attach ¼" shop airline and pressurize assembly. Check for air leaks at Diaphragm, Plunger and Plunger Guide and Bleed Hole in Spring Enclosure. If no air leaks are found, attach Actuator Assembly to Valve Body (2) using Lock Washers (9) and Bolts (15)
11	Remove shop air and airline from Actuator. Install ¼" control airline, screw Spring Tensioner (21) fully into Spring Enclosure (22) and back T-Handle (17) fully out.

## 7.5 Changing the Fixed Media Orifice Plate

### **\*\*WARNING\*\***

**BEFORE ATTEMPTING TO CHANGE THE FIXED MEDIA ORIFICE PLATE, SHUT OFF COMPRESSED AIR SUPPLY, DE-PRESSURIZE VESSEL, and DISCONNECT COMPRESSED AIR SUPPLY. BLEED OFF ALL TRAPPED COMPRESSED AIR FROM PNEUMATIC CONTROLS AND PIPE STRING.**

Item numbers refer to parts listed in Individual Components section.

Step	Procedure
1	Shut off compressed air supply, de-pressurize vessel, and bleed off trapped compressed air from the pneumatic controls and system pipe string.
2	Locate the metering orifice assembly (specially machined 2" union) under the pressure vessel.
3	For ease of handling parts, remove safety pin from blast hose/tank couplings and disconnect the blast hose from the system.
4	Separate the union by loosening the nut (unscrew the nut counter clockwise as viewed from above). The lower half of the union will separate from the assembly.
5	Remove the orifice plate and o-ring, clean both threaded surfaces of the union.
6	Hold the lower half of the union so that the sealing surface is horizontal, place the new orifice plate on the lower union half, and place the o-ring around the outside of the plate.
7	Center the plate and o-ring and raise the lower union half up to the upper half and thread the union nut onto the lower half.
8	Tighten the union nut to compress the o-ring and make an air tight seal between the two union halves, o-ring, and orifice plate.
9	Reconnect the blast hose/tank couplings and insert the safety pin through the two couplings.

Individual Component Parts

**Automatic Sure-Flo Regulator Parts**

**Automatic Air Valve Parts**

**Pneumatic Saf-Stop II Remote Control Handle Parts**

**Electric Saf-Stop II Remote Control Handle Parts**

**12 Volt DC Electric Remote Control Parts**

**120 Volt AC Electric Remote Control Parts**

**Nozzles – Ceramic, Silicon Carbide, Tungsten Carbide, Boron Carbide**

**Nozzle Couplings and Washers**

**Blast Hose Couplings and Washers**

**Blast Hoses and Dual Line Hose Assemblies**