

## 5.0 Troubleshooting

### 5.1 Troubleshooting Chart

<b><i>Trouble</i></b>	<b><i>Probable Cause</i></b>	<b><i>Remedy</i></b>
<b>1. Good media carried to dust collector.</b>	New bags.	Continue use until bag “cake” forms (approximately eight hours of operation).
	<b>Systems with reclaimers:</b> 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.
	<b>Systems without reclaimers:</b> slide gate is open too far.	Adjust slide gate.
	Media too fine.	Use more coarse media.
	<b>Pressure systems:</b> Worn plunger or sealing ring leaking air into reclaimer.	Replace plunger and/or sealing ring.
<b>2. Media escaping to the work area from dust collector.</b>	Hole in dust bag(s) or loose bag(s).	Replace leaking bag(s) or refasten bag(s).
<b>3. Poor visibility during blasting.</b>	Reclaimer not adjusted properly.	Adjust reclaimer air inlet settings See 3.6 <i>Equipment Adjustments</i>
	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 1/4” diameter pressure, maximum 7/32” air jet for suction.	

<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
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 <i>Troubleshooting Pneumatic Control Circuit</i> ).
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 <i>Media Selection and Use</i> .
	Improper media flow.	See 3.6 <i>Equipment Adjustments</i> .
	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 <i>Equipment Adjustments</i> .
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.

<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
7. Blast air flow, but intermittent or no media flow (continued).	<b>Suction System:</b> Improper air jet nozzle combination.	Nozzle orifice size must be twice the air jet orifice size 1/8" diameter air jet requires minimum 1/4" diameter nozzle.
	<b>Suction System:</b> 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
	<b>Suction System:</b> 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.
	<b>Pressure System:</b> Sure-Flo media regulator closed.	Adjust media regulator.
	<b>Pressure System:</b> Leaking sealing plunger and/or exhaust valve	Check for compressed air leaks and repair.
	<b>Pressure System:</b> 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

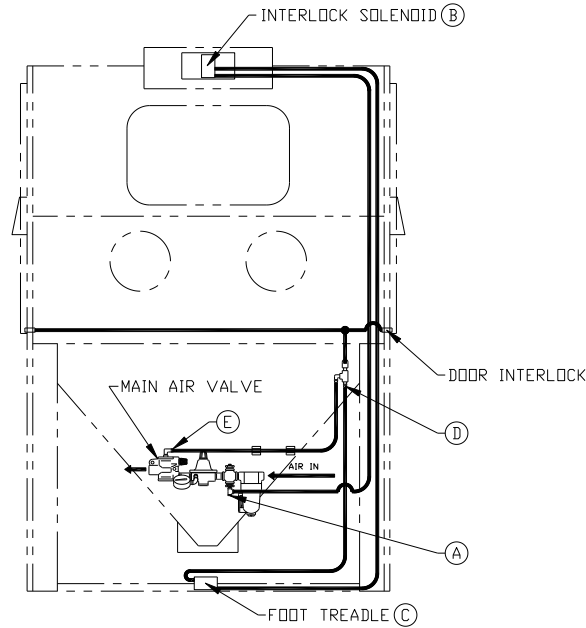
### Hand Tools Required:

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

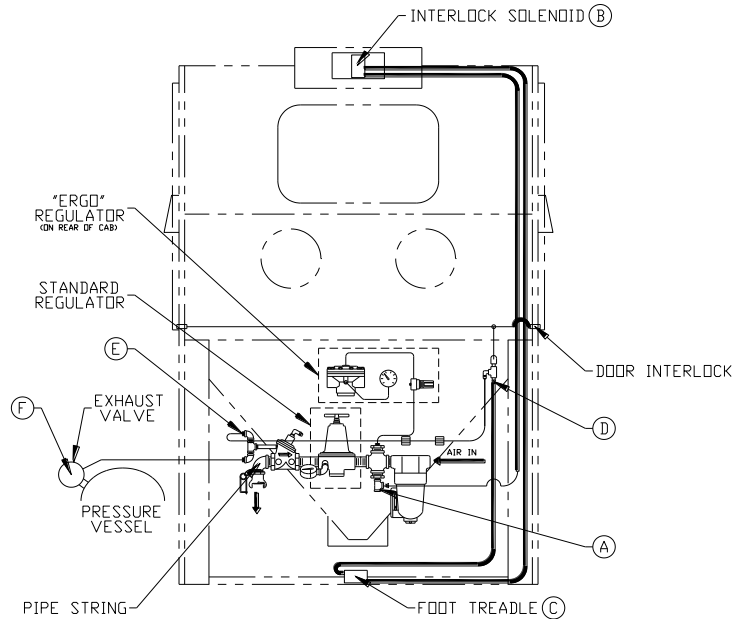
- Pressure tester (P/N 140382)
- 7/16" open end wrench
- Flat-blade screwdriver

### 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 Step 3.

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.