

OPERATING INSTRUCTIONS

For

All Titan Barrel Blast Systems

Pressure & Suction

TITANABRASIVE SYSTEMS, INC.

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1.0 Installation:

- * Place Cabinet, dust collector and reclaim at desired locations on level floor. Standard installation has the reclaimer directly behind cabinet on RH side and collector to the immediate left.
- * Connect flex hose from bottom of cabinet to reclaim and from reclaim to collector.
- * Connect siphon hoses (clear hoses) to reclaimer at numbered connections.
- * Blast guns are adjustable, however, we recommend testing the unit with guns at factory setting before adjustments are performed.
- * To adjust gun position from front to back, loosen pipe union at end of gun tube (on outside of unit) and adjust tube to desired position. Secure union once position is set.
- * To adjust individual gun positioning, turn guns on elbows to desired positions.
- * To adjust media flow at reclaimer to guns, move pipe into siphon tee for increased flow, away to decrease flow.
- * NOTE: Barrel systems require 1 cu. ft. of media to be loaded into reclaim to compensate for additional nozzles.

1.1 Electrical:

Standard supply is 110 V – 1 Phase 20 Amp circuit. Simply plug in the power cord from cabinet and plug cord from dust collector into switch receptacle.

1.2 Compressed Air – Cabinet:

Minimum 1” I.D. supply line 100 P.S.I. connected to moisture separator air inlet. CFM requirements depend on nozzle size and quantity of guns. Use only clean, dry compressed air.

1.3 Compressed Air – Cartridge Dust Collectors:

Cartridge dust collectors with reverse pulse cleaning require a regulated 1” I.D. minimum supply line at Max 100 P.S.I. Attach to pulse valve air inlet.

2.0 Operation:

2.1 Selection of Media:

Next to choosing the proper equipment, selection of the proper media is the most important factor in determining how efficient your blasting operation will be. The type of media selected depends on the type of job to be done. Cleaning deburring, smoothing sharp edges, paint removal, preparation for coatings – each job has specific requirements best satisfied by specific medias. The size of media is very important also. Fine media results in more impacts per second over a given area than large media. Large media gives less number of impacts, but each impact has more force. For easy blasting jobs such as the removal of light rust from steel, fine media will give faster cleaning than large media. For difficult jobs such as removal of mill scale, large media gives better results. Sometimes large and fine medias are combined for optimum results.

Your system is designed to operate with a wide range of media. The chart on the next page lists which kinds of media are recommended. Certain media such as sand and slag are not recommended for use in cabinets since these media will pulverize on impact and cannot be recirculated.

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 pressure in the 20-60 PSI range. Above 60 PSI excessive breakdown of beads may occur.

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

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

When changing from one type media to another it is necessary to thoroughly clean out the cabinet interior and media hoses to avoid cross contamination.

CAUTION

If aggressive medias such as aluminum oxide, garnet or steel grit are to be used, we recommend optional heavy duty ducting, reclaimer wear plates, reclaimer lining, and tungsten carbide (or boron carbide with aluminum oxide) nozzles be purchased to prevent premature wear. If these options are not included on your machine, they can be easily added. Optional rubber curtains for interior cabinet surfaces are also available.

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

R – Recommended

NR – Not Recommended

* Recommend optional vibrating screen for mesh sizes 200-300 or when high humidity is a problem

** Recommend optional vibrating screen and aerated regulator for mesh sizes 200-300

2.2 Media Loading:

A. Cabinets with reclaimers – with the cabinet switch “off”, load media through the reclaimer access door. Total capacity (in pounds) for each system is shown in the chart below:

	GLASS BEADS	ALUMINUM OXIDE	METAL 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

B. Cabinets without reclaimers – with cabinet switch in “off” position, load media through the cabinet door. Total capacity (in pounds) is shown in the chart below:

	GLASS BEADS	ALUMINUM OXIDE	METAL SHOT OR GRIT	WALNUT SHELLS OR PLASTIC
Suction or Pressure*	75 lb	100 lb	200 lb	30 lb

* NOTE: You should be particularly careful not to overfill pressure systems as overfilling can cause malfunction and premature wear.

2.3 Equipment Start-Up

- A. After checking all piping and hose connections to be certain they are all tightly fastened – turn on plant compressed air and open manual valve(s) controlling flow of air to system.
- B. Turn on power switch.
- C. Place parts to be blast treated in the cabinet. Parts must be free of oil, grease and moisture. Close cabinet door(s) and reclaimer door. Do not overload barrel capacities for BT25 – 325 lbs. and BT35 – 375 lbs. The more parts in the barrel, the longer the time will be to process.
- D. Set the operating air pressure gauge for the desired pressure. Recommended operating pressure range for various medias are listed below:

	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	

- E. Position timer at desired setting. (Blasting will begin when timer is turned).

BLAST PATTERN DIAMETER AT DISTANCE LISTED				
	NOZZLE I.D.	6"	12"	18"
Suction Blast	1/4"	3/4"	1 1/4"	*
	5/16"	1"	1 1/2"	*
	7/16"	1 1/8"	1 1/34"	*
Pressure Blast	1/8"	3/4"	1 1/4"	2 1/4"
	3/16"	1"	1 1/2"	2 3/8"
	1/4"	1 1/8"	1 3/4"	2 1/2"

* Suction blast at a distance greater than 12" is usually not effective.

2.4 Equipment Shutdown

- A. Turn Cabinet switch and timer to “off”.
- B. Shut off plant air supply.

2.5 Equipment Adjustments

2.5.1 Ventilation Flow Adjustment – Systems With Reclaimers

All reclaimers are “tunable” – this means that they can be adjusted to control the average size of media retained in the reclaimer.

- A. Open reclaim access door and remove screen.
- B. Reach up into reclaim tube, locate (2) hex headlock screws, and loosen screws.
- C. To obtain less “carry over” of good media to dust collector move tube down. To remove more fines from media, move tube up.

Figure 2.5 is a schematic diagram of cabinet, reclaimer and dust collector showing basic operation of system as well as flow of air and media before and after blasting.

2.5.2 Media Flow – Suction Systems

The flow of media to suction blast guns is controlled by the amount of air which enters through the inlet port in the media regulator. The amount of air entering is controlled by how far the blast hose is inserted within the regulator. For normal operation, all but ¼” of the inlet port is blocked by the blast hose. With fine media the ¼” dimension may be varied slightly to give uniform flow.

Note: That it can easily be determined if media is flowing properly by observing through the media regulator air inlet while the gun is operating.

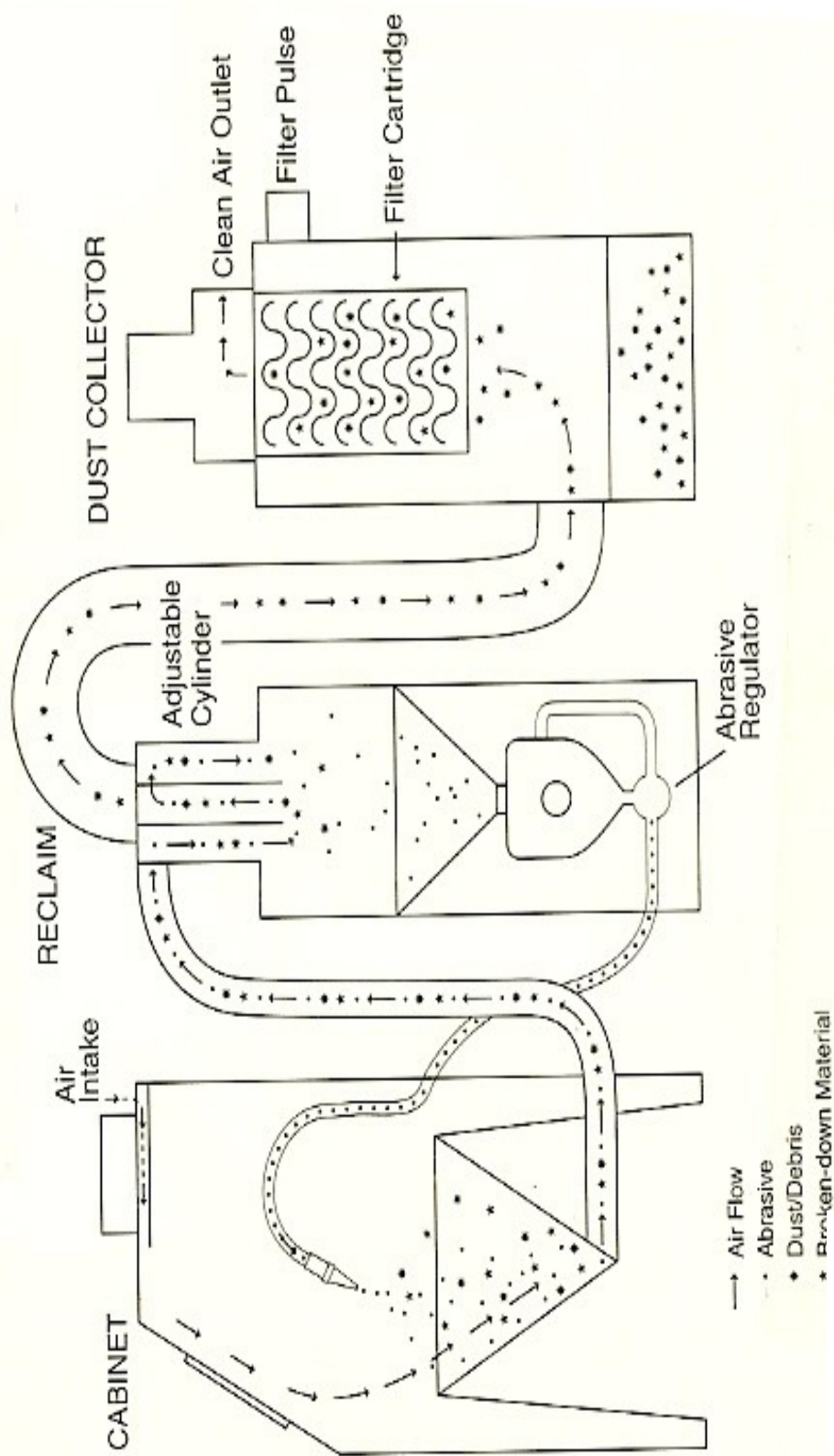


Figure 2.5

2.5.3 Media Flow – Pressure Systems

Pressure cabinets are supplied with an abrasive regulator. Media flow through this valve can be adjusted by turning the handle. To obtain the desired media flow, start with the valve fully closed by turning the handle clockwise until resistance is noticed. At this point the valve is fully closed. Then turn the handle counter clockwise in 90° increments until the desired flow is observed.

3.0 Daily Maintenance

- A. Check condition of media. If media is contaminated or broken down into dust, clean out system and reload (see section 2.2). Adjust reclaim tube if dusty condition is found (see section 2.5.1)
- B. Pulse filter cartridges after every 4 hours of operation. For single dust bag, this is accomplished by removing bag and shaking accumulated dust through bag bottom opening into appropriate container.
- C. Remove accumulated dust from dust collector hopper.
- D. Check light bulb and gauntlets.
- E. Remove debris from reclaimer screen (systems with reclaimer).
- F. Open the drain on the manual moisture separator in the cabinet piping and drain accumulated moisture. Close drain.
- G. Open the drain valve on the air compressor receiver tank to drain any water which may have accumulated.
- H. Check media level. For most efficient operation media level should not decrease to less than ½ of recommended capacity (see section 2.3). Media level in suction cabinets can be observed in the media storage area, either the reclaimer storage tank for cabinets with reclaimers or the cabinet hopper for cabinets without reclaimers.

The reclaimer level in pressure cabinets cannot be directly observed since it is contained within a closed vessel. * A brief discussion of how media flows through a typical pressure system will help to explain how to maintain it at the proper level.

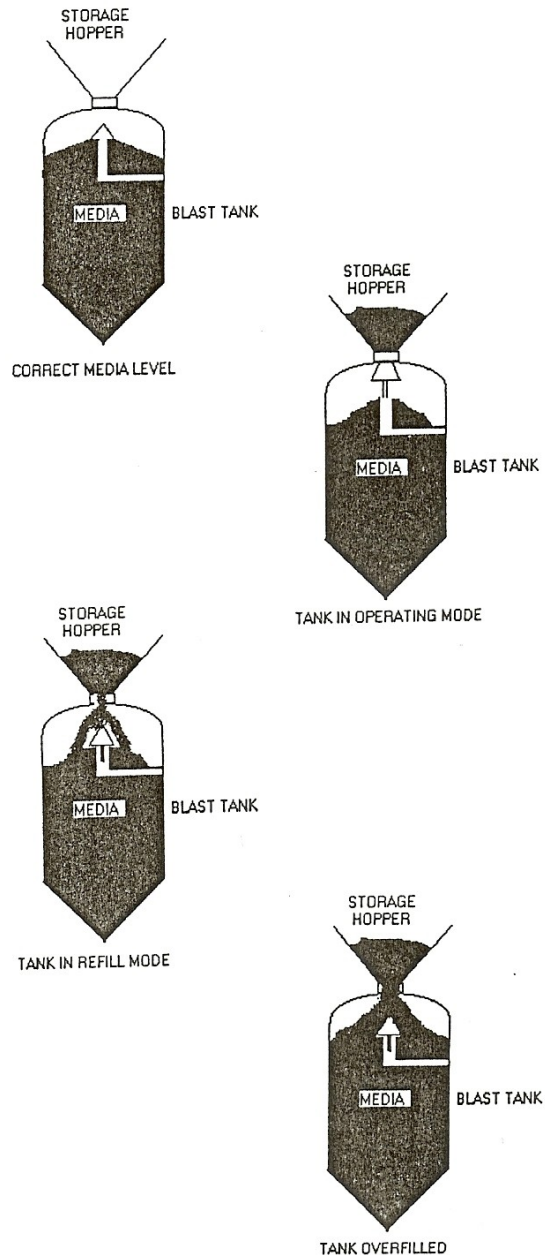
*Optional sight glasses and/or electronic level probe available as options.

When blasting starts the tank pressurizes and media in the tank transfers to the storage area. Continuous blasting time is limited by the volume of abrasive in the tank when blasting starts (normally 10-20 minutes with fully charged tank depending on nozzle size and operating air pressure). Each time the operator stops blasting, the blast tank sealing plunger drops and media in the storage area flows into the blast tank. If the blast is stopped long enough all media in the storage area will transfer into the blast tank.

Thus, the amount of media in the tank can be determined in two ways. The first way is to note the continuous blast time with a fully charged tank and compare this time with the present continuous blast time. The second way is to lightly rap on the side of the tank with a wooden mallet. The height of media within the tank can be determined by the resulting sound.

Overfilling the pressure tanks can result in improper operation and premature wear. When blasting stops, all media should flow from the storage area into the blast tank. After allowing sufficient time after blasting for the pressure tank to refill (maximum 2 minutes with fully charged system), observe to see if any media remains in the storage area. If media is observed, tank is overfilled. Remove clean out plug from media valve and allow media to flow from system until no media can be observed in storage area.

4.0 Weekly Maintenance



- A. Repeat daily maintenance procedures.
- B. Inspect all media carrying hoses for wear by feeling along hose length for soft spots. If soft spots are found, hoses should be replaced.
- C. Check nozzle for wear. When nozzle is worn 1/8" oversize, replace. A drill bit can be used to check nozzle size.
- D. On suction units, check air jet for wear. This is easily accomplished by loosening setscrew inside of gun body and removing jet. If air jet shows wear, rotate it 90° from original position, reinsert in gun and retighten set screw.

IMPORTANT

If an air jet is allowed to wear completely through, premature wear of mixing head body and nozzle will occur.

- E. Check nozzle adapter and mixing head body for wear – replace if necessary.
- F. Check window gasket for leaks. Replace if necessary.
- G. Check your spare parts inventory for replacement items.

5.0 Storage or Temporary Non-Use

If unit is not to be used for a period of several days or more, the following steps should be taken in order to prevent media from caking inside the machine.

A. For Suction Machines:

Empty media from cabinet hopper or reclaim storage.

For Pressure Machines

1. Reduce blast pressure to 20 PSI
2. Close choke valve on pressure tank
3. Remove blast nozzle and washer from hose
4. Pressurized tank as if to blast

Media will then flow from open end of blast hose in a controlled manner and can be directed into a container placed inside the cabinet. After tank is empty:

5. Open choke valve
6. Replace nozzle washer and nozzle
7. Return pressure setting to normal

B. Drain moisture separator. Keep drain valve closed.

6.0 Trouble Shooting

TROUBLE	PROBABLE CAUSE	REMEDY
Good media carried	New filters	Continue use until cartridge "cake"

to dust collector	<p>Reclaim tube too high</p> <p>Insufficient media in suction hopper allows secondary air to enter</p> <p>Media too fine</p> <p>Pressure systems – worn plunger or sealing ring leaks air into reclaim</p>	<p>forms (approximate 8 hours operation)</p> <p>Lower tube</p> <p>Add media to maintain recommended media level</p> <p>Use coarser media – see section 2.1</p> <p>Replace plunger and/or sealing ring</p>
Media escaping to work area from dust collector	Hole in cartridge or loss cartridge	Replace leaking cartridge
Poor visibility during blasting	<p>Clogged cartridge filter</p> <p>“Blinded” cartridge</p> <p>Fan rotation backward</p> <p>Media has high dust content</p> <p>Return hose blocked</p> <p>Cabinet air inlet plugged</p> <p>Dust collector door leaks</p> <p>Blast nozzle or air jet too large</p> <p>Operating air pressure, high</p>	<p>Pulse filters</p> <p>Over a period of years dust may penetrate the cartridge fibers to the extent that normal air flow is restricted even when pulsed regularly – when this condition is reached, filter should be replaced</p> <p>Reverse fan wiring</p> <p>Replace media – adjust tuning band – see section 2.5.1</p> <p>Remove return hose and inspect for obstruction</p> <p>Blow filter clean with air line</p> <p>Tighten door, replace gasket</p> <p>Replace nozzle with recom. size max. ¼” dia. nozzle for pressure max. 7/32 air jet for suction</p> <p>Decrease pressure within range</p>
TROUBLE	PROBABLE CAUSE	REMEDY
Poor production rate	Low air pressure	Increase pressure within the

	<p>Nozzle too small</p> <p>Improper media</p> <p>Improper media feed</p> <p>Low media level</p> <p>Part to be blasted is oily or wet</p> <p>Media has high dust count</p>	<p>range specified</p> <p>The smaller the nozzle, the smaller the blasting pattern. Install larger nozzle (and air jet on suction systems) to accommodate your production needs</p> <p>See Section 2.1</p> <p>See Section 2.5.3 or 2.5.4</p> <p>Add media to maintain recommended level</p> <p>Parts to be processed must be absolutely dry and free of any oil, grease, etc.</p> <p>Blasting media breaks down and must be changed on regular basis remove old media and replace</p>
<p>Static charge build-up annoys operator</p>	<p>“Cheap” blast hose (i.e. poor conductor of static charge)</p> <p>Machine improperly grounded</p> <p>Low ambient humidity</p>	<p>Static charges can build up by the action of air and media moving at high velocity through blast hose. Hose should be replaced with high quality blast hose. Inferior substitutes can amplify problem</p> <p>Ground machine</p> <p>Static build-up can be very troublesome if ambient humidity is very low. Even though above precautions are taken, optional static strap will reduce problem</p>

TROUBLE	PROBABLE CAUSE	REMEDY
No air or media flow	Compressed air line closed	Open all air valves from

	Doors not tightly closed	compressor Close doors
	Regulator adjusted to zero	Adjust regulator – see Section 2.3
	Nozzle clogged	Disassemble and clean nozzle
Air flow, but intermittent or no media flow	Low media level	Add media to maintain recommended level
	Operating air pressure too low	Maintain air pressure within the recommended range
	Clogged nozzle	Disassemble and clean nozzle
	Media damp	If media will form ball when squeezed in palm of hand, it is too damp to flow properly. Replace media. Air compressor is discharging excessive moisture or work pieces are wet or oily
	Suction systems – Improper jet/nozzle combination	Nozzle orifice size must be at least twice the air jet orifice size: 1/8” diameter air jet requires at least 1/4” diameter nozzle
	Suction systems – media hose improperly installed	Adjust media hose – see Section 2.5.3
	Suction systems – clogged media hose	Place your glove protected hand firmly over the end of the nozzle so no air can escape. Depressing foot control will force obstruction out of hose
Pressure systems – valve closed	Adjust valve – see Section 2.5.4	
Pressure systems – valve blocked	Shut off main air supply. Back off fixed bolt and handle. Check clean out plug	

Quantity	Part No.	Description	PRESSURE with D/C		SUCTION with D/C	
			With Reclaimer	With Out Reclaimer	With Reclaimer	With Out Reclaimer

1	09051	¼" Tungsten Carbide Nozzle			X	X
1	09051	5/16" Tungsten Carbide Nozzle			X	X
1	09051	7/16" Tungsten Carbide Nozzle			X	X
1	09051	1/8" Nozzle (Pressure)	X	X		
1	09051	3/16" Nozzle (Pressure)	X	X		
1	09051	¼" Nozzle (Pressure)	X	X		
2	08062	Lamp Shield	X	X	X	X
20'	08050	Door Gasket	X	X	X	X
1	09634	Exhaust Valve	X	X		
25'	09060	½" Blast Hose	X	X		
25'	09617	5/8" Blast Hose			X	X
10	09657	Nozzle Washer for Ceramic Nozzles	X	X		
10	09657	Nozzle Washer for Carbide Nozzles	X	X		
10	09623	Gasket	X	X		
1	09629	Foot Pedal Valve	X	X	X	X
2 pr.	08038	Rubber Gloves	X	X	X	X
1	08049	Window Gasket	X	X	X	X
1	09612	Window Safety Glass	X	X	X	X
1	09660	Safety Valve	X	X	X	X
1	09719	Filter Cartridge	X	X	X	X
1	09640	Stealing Ring	X	X		
1	09639	Plunger	X	X		
1	09713	6 x 11 Return Hose	X		X	
1	09055	Media Gun Body			X	X
2	09057	1/8" Air Jet			X	X
2	09057	3/16" Air Jet			X	X
6'	09714	Exhaust Hose	X	X		
1	09701	Repair Kit Media Regulator	X	X		

8.0 Helpful Hints For More Efficient Blasting

Whether or not your blasting operation will be an efficient one or not depends on four factors:

1. Proper Equipment Selection
2. Proper Media Selection
3. Proper Operation
4. Proper Maintenance

Some other factors which may help improve efficiency are listed below:

1. Use the largest nozzle practical for your operation. Generally speaking, blasting tasks can be accomplished more quickly with a larger nozzle than a small one. Of course, nozzle diameter may be limited by the amount of compressed air available, but an increased volume of compressed air may be easily justified by reduced labor costs. (Of course it doesn't make sense to blast a very small part with a large nozzle- most of the pattern will be over spray).
2. Use the highest pressure practical. Higher pressures generally mean faster cleaning. Maximum pressure for a given operation will be limited by type of media (some media like glass beads can break down rapidly above a certain pressure) and amount of material which must be removed from the workpiece.
3. Consider handling the work piece instead of the blast gun. If parts are small it may be more efficient to manipulate the part instead of the blast gun. An optional fixed nozzle holder can be supplied for any cabinet to allow the work piece to be handled instead of the blast gun.
4. Consider other standard options. Optional work cart and turntables can reduce part handling time. An optional oscillator combined with a turntable could result in a semi-automatic operation instead of a manual operation – at a fraction of the cost of a custom system.
5. Don't Underestimate the Importance of Clean Dry Air

More operational problems can be traced to the lack of clean dry air than any other single factor. Media quickly becomes contaminated if supply air is not of good quality causing flow problems and resulting in wasted media and operator down time.

9.0 Assembly of Components

Components removed for shipment are reinstalled as described in this section. Tools required: 7/16 wrench or socket, 9/16 wrench or socket, 6" adjustable wrench, medium flat blade screwdriver, medium Phillips head screwdriver.