

BLAST-HONE
OPERATION AND MAINTENANCE
MANUAL

BLAST - HONE
MAINTENANCE HIGHLIGHTS

*LOW DOWN TIME

*QUICK CHANGE ABRASIVE HOSE

*EASY CHANGE SLIDE OUT PLATE & SAFETY GLASS
WINDOWS

*SELF CONTAINED SEPARATOR - REMOVE & REPLACE
20 MINUTES

*ALL ELECTRIC WIRING AND PLUMBING ARE EASILY ACCESSIBLE ON TOP OF THE MACHINE

*LONG LIFE, 6 ENVELOPE TYPE, SELF CONTAINED FILTER BAGS, EASILY CHECKED OR CHANGED BY
REMOVING BACK PANEL

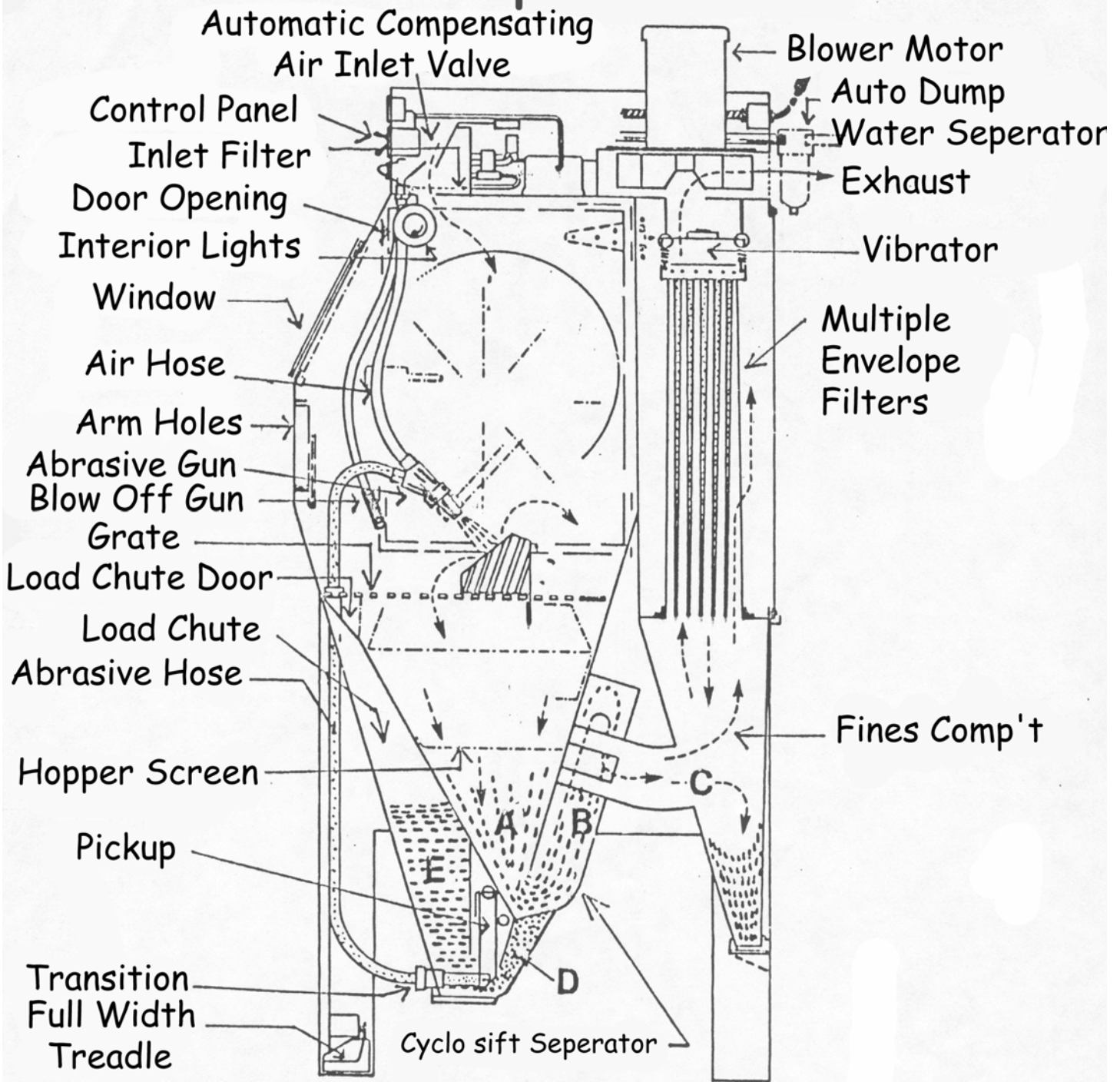
*PRIMARY AND SECONDARY GRATES, LIFT OUT FOR QUICK REPLACEMENT

*EASY CHANGE OR DISPOSAL OF "FINES"
COMPARTMENT

BLAST - HONE AIR FLOW DESCRIPTION

THIS SIDE VIEW SCHEMATIC PICTURES THE LOCATION OF THE VARIOUS COMPONENTS THAT ALLOW FOR THE BLAST-HONE ONE PIECE DESIGN. ONLY COMPRESSED AIR AND 110-VOLT POWER IS NEEDED. FOLLOWING BLAST, THE ABRASIVE AND DEBRIS WILL FALL THROUGH THE PRIMARY AND SECONDARY GRATING OF THE MAIN HOPPER, POINT "A". THIS MIXTURE OF PARTICLES THEN ENTERS THE SEPARATOR AT POINT "B", WHERE THE UNDERSIZED PARTICLES ARE REMOVED TO THE DUST COLLECTOR, POINT "C". MEANWHILE, THE PROPERLY SIZED ABRASIVE IS ROUTED FOR REUSE TO THE PICK-UP, POINT "D". AGAIN, AS ABRASIVE IS BROKEN AND IS EXHAUSTED, THE EXCLUSIVE BLAST-HONE ABRASIVE SUPPLY CHAMBER, POINT "E", WILL METER FRESH ABRASIVE TO COMPENSATE FOR, THAT MATERIAL WHICH IS REMOVED.

Air Flow & Component Schematic



Blast-Hone -- Series "C"

BLAST - HONE STANDARD FEATURES:

MACHINE CATAGORY:

1. THE BLAST-HONE IS AN INDUSTRIAL PRODUCTION MACHINE. IT PROVIDES A HIGH PRODUCTION RATE, WHILE MAINTAINING CONSTANT FINISHES, AND MINIMAL ABRASIVE CONSUMPTION. ANY SHOPDOING PRECISION WORK WOULD REQUIRE AND INDUSTRIAL PRODUCTION MACHINE.

CFM:

2. 375 - 400 VENTILATION AIR.

PNEUMATIC BAG SHAKER?:

3. YES- IS OPERATED BY FLIPPING A SWITCH. ALSO AVAILABLE IS AUTOMATIC BAG SHAKER SWHICH WILL SHAKE BAGS AFTER EACH USE. (TURNS ON WHEN MACHINE IS TURNED OFF.)

STEEL GAUGE:

4. CONSTRUCTED OF HEAVY 10 GAUGE STEEL

SAFETY FEATURES:

5. EACH CABINET HAS A BUILT-IN PRESSURE SENSING SWITCH WHICH SHUTS MACHINE OFF IF NEGATIVE PRESSURE IS NOT MAINTAINED IN CABINET. ALSO, PLATE AND SAFETY GLASS.

MEETS THE O.S.H.A. STANDARDS?

6. YES.

MEETS STIRICT CALIFORNIA A.Q.M.D. STANDARDS (4 CFM PER SQ.FT. AREA WITH A PRECLEANING SYSTEM).:

7. YES - FILTER RATIO IS 3.75 CFM. THIS MACHINE HAS AN INTEGRAL FILTER SYSTEM.

BAG WEAR:

8. LOW - NORMALLY LAST 10 - 15 YEARS.

SEPARATE ABRASIVE LOAD CHUTE?:

9. YES - SEPARATE LOAD CHUTE CUTS DOWN MEDIA CONTAMINATION. THIS IS THE MAJOR REASON WHY UNI-HONE CAN PROVIDE CONSISTANT FINISHES.

DUST COLLECTOR AND SEPARATOR PLACEMENT.:

10. BOTH ARE SELF-CONTAINED WITHIN THE CABINET (NO SIDE STANDING UNIT OR CONTAINERS TO OCCUPY VALUABLE SPACE).

STANDARD NOZZLE TYPE?:

11. TUNGSTEN CARBIDE, WITH BORON AS AN OPTION.

MEDIA TYPES?:

12. EACH BLAST-HONE IS BUILT FOR USE WITH ANY TYPE OF MEDIA.

GLOVE TYPE?:

13. STANDARD GLOVE FOR THE BLAST-HONE IS COTTON LINED, NEOPRENE GLOVES. THE GLOVES AND SLEEVES ARE SEPARATE, SO REPLACEMENT COST IS LOW.

FLOOR SPACE REQUIREMENTS:

14. BLAST-HONE OCCUPIES ABOUT 2/3 FLOOR SPACE THAT ITS COMPETITORS OCCUPY.

PRESSURE REGULATOR AND GAUGE MOUNTS:

15. THEY ARE MOUNTED AT EYE LEVEL AND ARE EASILY READ OR ADJUSTED WHILE WORKING.

TIME REQUIRED TO CHANGE MEDIA:

16. CHANGE MEDIA IN UNDER TWO MINUTES.

FILTER SYSTEM:

17. THE BLAST-HONE'S UNIQUE SEPARATING SYSTEM REMOVES BROKEN, OUT-OF-RANGE ABRASIVES AND CONTAMINATES (RUST, PAINT, METAL BURRS) TO "FINES" COMPARTMENTS WHILE IT RETURNS GOOD ABRASIVES FOR CONTINUED USE.

IMPORTANT START UP INSTRUCTIONS

1. Install so as to provide access to rear Fines (dust) compartment. This should be emptied regularly.
2. Load abrasive only into load chute (interior cabinet, below arm hole openings). Load until visually full each eight (8) hours of use.
3. Abrasive flow to the gun can be precisely and easily adjusted to provide maximum performance. The abrasive flow control is located on the left front cabinet leg. An adjustment should be made to provide a strong abrasive feed but one without pulsation.
4. The abrasive separator can be adjusted to accurately determine what sized abrasive particle is removed and what is recycled for reuse. In the event that a separator adjustment seems appropriate, please contact our office (714) 528-8893.
5. This machine is equipped with an exhaust monitoring device (Dwyer switch). If this switch disconnects the power to the blast gun, a problem with ventilation is present. Do not by-pass this switch. Shake the filter bags and empty the fines compartment.
6. If you find that you require further assistance please call our Service Department at (714) 528-8893.

1-4 AIR REQUIREMENTS

Air Consumption And Compressor Selection Chart

Supply Pressure		Air Consumed Cu. Ft./Min.		Compressor Output (Service Factor Considered)		
1/8" Air Jet		5 HP	7 1/2 HP	10 HP	15 HP	20 HP
10	6.1	Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
20	7.6					
30	9.9	Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
40	12.2					
50	14.5	Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
60	16.8					
70	19.1	Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
80	21.4					
90	23.7	Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
100	26.0					
3/16" Air Jet		Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
10	13.6					
20	17.0	Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
30	22.2					
40	27.3	Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
50	32.5					
60	37.7	Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
70	42.8					
80	48.0	Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
90	53.2					
100	58.3	Intermittent	Intermittent	Intermittent Operation	Intermittent Operation	Intermittent Operation
1/4" Air Jet						
10	24.1	Continuous	Continuous	Continuous Operation	Continuous Operation	Continuous Operation
20	30.4					
30	39.6	Continuous	Continuous	Continuous Operation	Continuous Operation	Continuous Operation
40	48.8					
50	57.0	Continuous	Continuous	Continuous Operation	Continuous Operation	Continuous Operation
60	67.2					
70	76.4	Continuous	Continuous	Continuous Operation	Continuous Operation	Continuous Operation
80	85.6					
90	94.8	Continuous	Continuous	Continuous Operation	Continuous Operation	Continuous Operation
100	104.6					
110	115.0	Continuous	Continuous	Continuous Operation	Continuous Operation	Continuous Operation

NOTE: Intermittent Operation is when the Compressor is off or idling at least 1 minute out of four.

CAPABILITIES

The **B.C.T. Blast-Hone** requires for its operation single phase (1) 110 volt electrical power and compressed air varying with the size of the air orifice installed in the blasting gun of the machine. A minimum of 20 cubic feet at 80 lbs. pressure for 1/8" orifice to a maximum of 85.6 cubic feet at 80 lbs. pressure for 1/4" orifice to obtain continuous operation.

The **B.C.T. Blast-Hone** consists of a cabinet, separator, and dust collector. The desired media is placed in the abrasive storage compartment and is automatically fed to the abrasive pickup on demand. Suction created in the blasting gun provides the vacuum required to lift the abrasive from the separator hopper to the gun where it is accelerated by compressed air.

The **B.C.T. Blast-Hone** is capable of using a wide range of shot and abrasive particles from large, heavy #14 steel grit to fine and light #325 glass bead. Operating pressure range from 2 to 125 pounds per square inch. Some types of media which have been successfully used are: **steel grit, steel shot, garnet, aluminum oxide, silica sand, walnut shell, ground corn cob, ground cotton seed hulls, rice hulls, and glass beads.**

The **B.C.T. Blast-Hone** separator designed for proper function with a negative .6" 1120 in work chamber and 6" in bag house.

Foreign objects in bottom of main hopper or interfering with air inlet on top of cabinet will prevent proper separator function.

The extreme flexibility provided by the wide range of air pressure

and media combinations makes possible a spectrum of finishing processes including cleaning, peening, polishing, buffing, and deburring unequalled by any other machine.

SECTION II OPERATION

2-1 INSTALLATION

The B.C.T. Blast-Hone should be installed at least 12 inches away from any obstruction that would block the blower exhaust at back of the machine and far enough away from obstructions at the sides to allow the door or doors to open all the way. The cabinet should be installed as close as possible to a source of compressed air and in a location presenting the lowest possible humidity. The machine should be installed so that the view window is not exposed to direct light, either from lighting fixtures, windows, or the sun itself, if machine is installed outside. It is advisable to install a shut off (gate) valve in the air line to the machine to facilitate service.

2-2 PREPARATION FOR USE

Be sure all electrical and air connections are properly made.

2.2.1 To Fill With Abrasive

Turn blower off before filling machine with abrasive. To fill the machine open the door to the abrasive storage compartment. This door is located inside the cabinet at the forward side just below the grate. The grate need not be removed to open the door or to add abrasive. Pour in 2 to 7 gallons of abrasive or enough to be visible at the door level, but in no instance less than 2 gallons.

(CAUTION: Abrasive level should be checked frequently to assure an adequate supply. If the abrasive level goes too low the air flow through the separator is altered and the remaining good abrasive will be carried over into the fines compartment).

A good practice is to fill the storage hopper to a visible point then when the fines compartment is emptied add an amount of abrasive equal to to the fines that are removed.

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION

1. No abrasive feeding to blasting gun

PROBABLE CAUSE

- A. Abrasive level too low
- B. Abrasive wet or contaminated
- C. Pickup clogged

- D. Hole worn in abrasive hose

- E. Obstruction in blasting gun

- F. Air & Abrasive hoses reversed at gun

- G. Airjet too far forward in gun; not creating venturi action

CORRECTIVE ACTION

- A. Add Abrasive
- B. Remove and replace abrasive
- C. Hold thumb over nozzle and turn air on for 112 second. This is called back pressuring. If condition repeats, remove abrasive and feel around pickup for obstruction and pour abrasive back in through screen to remove particles causing obstruction.

- D. Replace hose (In emergency wrap with tape to restore suction)

- E. Remove nozzle from gun-check for obstruction.

- F. Change connections

- G. Move airjet back. It should be adjusted to allow for the greatest amount of suction.

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION

PROBABLE CAUSE

CORRECTIVE ACTION

2. Dust and abrasive escaping from cabinet through air intakes, around window, and around doors.

A. Blasting gun running with blower off (occurs only in machines with manual air valve)

A. Turn blower on

B. Abrasive filling air chute at separator. Usually from abrasive being inadvertently dumped into air chute. abrasive to enter air chute.

B. Drain abrasive out of machine and pour it back into the abrasive storage hopper, taking care not to allow

C. Filter bags clogged shake 2 to 4 minutes. (check to be sure shaker is working)

C. Turn on shake- and allow to

D. Fines compartment full and stopping air flow.

D. Empty fines compartment

E. Impeller blade loose and not turning

E. Tighten set screw in impeller

F. Air leaking through torn glove or sleeve

F. Replace glove or sleeve

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION

PROBABLE CAUSE

CORRECTIVE ACTION

3. Dust escaping through blower exhaust

A. Loose seal around bottom bag attachments

A. Remove bag, clean, reseal, and reinstall bag. Use 510-608 door seal under bag.

B. Bag worn out or torn

B. Patch or replace bag.

4. Machine using excessive amount of abrasive

A. Abrasive level has been allowed to become too low in storage hopper and has been carried over into fines compartment.

A. Check abrasive level often and maintain proper level

B. Too frequent or too prolonged back pressuring.

B. When backpressure is required backpressure very briefly, 1/10th second will do. If very frequent backpressure is required the abrasive is contaminated or wet.

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION

PROBABLE CAUSE

CORRECTIVE ACTION

4. Continued
Machine using too
much abrasive

C. Too much air through the cabinet causes high velocity through separator, could be caused by any one of, or any combination of the following:

C-1 Air intakes improperly calibrated for the size air jet installed in machine.

C-1 Plug intake holes per chart. Page 20

C-2 Blasting with door open or torn seal around door

C-2 Close door-check seal

C-3 Blasting with torn sleeve or glove installed in cabinet

C-3 Replace sleeve or gloves

C-4 Intake air filter not covering air intake holes

C-4 Adjust filter so that all intake holes are covered

C-5 Improper seal around window

C-5 Check to see that window is in proper position and that seals are good

C-6 Abrasive size smaller than machine designed to handle

C-6 Check abrasive recommendations Page 21

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION

PROBABLE CAUSE

CORRECTIVE ACTION

5. Cleaning action
too slow

A. Insufficient abrasive in
storage hopper

A. Add abrasive

B. Using wrong abrasive

B. It is important to select the
proper abrasive for the job.
The proper abrasive can only
be determined by experimentation

C. Low air pressure

C. Increase air pressure

D. Insufficient abrasive
feeding to the gun

D. See section III-1

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
6. No air to gun or low air pressure	A. Air shut off in line from compressor	A. Open valve
	B. Low pressure from compressor	B. Increase pressure setting on compressor
	C. Electrical air valve not opening	C. Check electrical continuity to coil and clean inside of valve (See service sheet in manual)
	D. Regulator not open	D. Turn handle clockwise to increase
	E. Regulator screen plugged	E. Remove & clean screen
	F. Regulator defective	F. Overhaul or replace Regulator
	G. Screen in water separator plugged	G. Remove and clean screen (Dirt will be on inside so be sure to remove screen from filter to clean)
	H. Air jet and nozzle combination too large for available air supply	H. Change to smaller air jet and nozzle combination See page 2

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION

PROBABLE CAUSE

CORRECTIVE ACTION

7. Shaker will not operate

A. Solenoid valve not operating

A. Check electrical continuity to coil and clean inside of valve.
(See service sheet in manual)

B. Broken air line from solenoid valve to shaker

B. Replace line

C. Air shut off to machine

C. Turn air on

D. No electrical power to machine

D. Turn power on

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION

PROBABLE CAUSE

CORRECTIVE ACTION

8. Exhaust system does not remove dust
(Poor visibility)

A. Dust collector bags full

A. Shake bags (Allow shaker to run at least 2 minutes)

B. Fines compartment full

B. Empty fines compartment

C. Air intake filter clogged

C. Clean filter

D. Fine dust in abrasive being used

D. Usually the separator will separate the extremely fine dust out after a few cycles. If condition does not clear up after 15 minutes run time replace with clean abrasive

E. Motor not running.

- 1.** Motor burned out
- 2.** Loose electrical connections
- 3.** Switch burned out

E.

- 1.** Replace motor
- 2.** Check connections and continuity
- 3.** Replace switch

F. Abrasive filling air chute to the separator. Usually from abrasive being inadvertently dumped into air chute

F. Drain abrasive and refill storage hopper taking care not to allow abrasive to enter air chute

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
9. Irregular spray pattern from gun	A. Gun clogged with foreign particles	A. Remove nozzle and clean gun and nozzle throat
	B. Nozzle or air jet worn	B. Replace with new parts
10. Abrasive becoming weak or contaminated	A. Abrasive contaminated with oil from parts being cleaned	A. Degrease parts
	B. Abrasive contaminated by oil from the compressor	B. Install oil separator in line. (If compressor is pumping excessive amount of oil compressor should be overhauled)
	C. Abrasive contaminated by water from the compressed air	C. In most instances the water separator provided with the machine is sufficient, however if an excessive amount of moisture is induced an after cooler and water knockout drum should be installed in the line
	D. Abrasive contaminated by water because of failure of automatic dump valve on filter to operate	D. Overhaul or replace automatic water trap and filter

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION

PROBABLE CAUSE

CORRECTIVE ACTION

11. Separator not functioning
(Not removing fines)

- A.** Abrasive level has been allowed to run low and good abrasives have been carried over into fines compartment
- B.** Air flow through cabinet too high
- C.** Air flow through cabinet too low
- D.** Airflow stopped by excessive abrasive in air chute
pour abrasive in air chute
- E.** Airflow through cabinet restricted by clogged filter over air intakes

- A.** Restore proper level
- B.** Check for torn sleeves or gloves or back seals around doors
- C.** Shake bags and empty fines compartment
- D.** Empty abrasive and refill machine, be careful not to
- E.** Clean filter

**SECTION III
MAINTENANCE
3.2 TROUBLESHOOTING**

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
12. No air or abrasive to gun No power to foot treadle	A. Pressure sensing switch has shut off power to gun due to loss of negative pressure in the cabinet B. Filter system is clogged	A. Close doors Close windows B. Shake bags and empty fines compartment

Do not attempt to wire around the pressure sensing switch!

SECTION V ABRASIVE RECOMMENDATIONS

For the purposes of this paper we divided all abrasives listed into three categories: **round**, **angular**, and **soft**. The examples listed are by no means a complete list under each category but are the most commonly used.

Round	Angular	Soft
1. Glass Beads	1. Aluminum Oxide	1. Walnut Shell
2. Steel Shot	2. Garnet	2. Ground Cotton Seed
	3. Silica Sand	3. Ground Corn Cob
	4. Steel Grit	4. Ground Rice Hulls

ROUND ABRASIVES

GLASS BEADS

Glass Beads are widely used for cleaning, polishing, deburring, peening, and cold working of metal or other materials.

Specific gravity of the soda-lime type glass bead is about 2.4 which is generally considered low for good peening and cleaning action. In blasting thin sections of light alloys, this low specific gravity can be an advantage, since it is less likely to cause compressive overstressing of the section.

Glass Beads are at their best where, minimum stock removal is desirable. Their use results in a reasonable bright surface. Directional scratches are obliterated while developing a non-directional finish pattern. A compressively stressed "skin" is produced by the tiny beads improving the fatigue life of the part.

Results are best when blasting objects softer than the glass beads themselves (about 48 Rockwell C). The beads fracture much more readily when blasting objects harder than approximately 40 Rockwell C.

STEEL SHOT

Steel shot is used almost exclusively for short peening applications to improve the fatigue characteristics of metal parts. An occasional application is found where a dimpled finish is desired.

ANGULAR ABRASIVES

Angular abrasives present a true cutting action and should be used where metal removal is desirable. Their action is true abrasion which tends to open the surface rather than peening which tends to close the surface. They produce an excellent base for coatings or bondings.

ALUMINUM OXIDE

Individual particles of aluminum oxide grain are very tough, they break down slowly, and stay sharp. Use of this material avoids surface contamination of metal. This is particularly valuable in treating surfaces of electronic apparatus for bonding, where electronic properties must not be altered and in metalworking where welds or brazes are to be made.

This material is ideal for blasting in cabinets where the abrasives are recovered and recirculated, provided there are no contaminants that would ruin the abrasives before they have lost their cutting qualities.

GARNET

Garnet is a natural material widely used in abrasive blasting operations. Its working life is considerably greater than silica but slightly less than aluminum oxide. Garnet is generally less expensive to use and does most of the jobs aluminum oxide will do. It breaks down slowly and stays sharp. It is recommended for cabinet type blasting operations.

SILICA SAND

Silica Sand is not generally recommended for cabinet type blasting because it breaks down rapidly and leads up the dust collector causing visibility and ventilation problems. Health hazards are also involved. This is a good one Shot or expendable abrasive generally used for such operations as sandblasting houses where the abrasive is not recoverable.

STEEL GRIT

Steel grit is used for many cleaning and surface preparation operations where surface contaminations are not a problem. Ideal for preparing surfaces for flame spray or metalizing.

SOFT ABRASIVES

Soft abrasives are used for the removal of deposits or coatings from surfaces without etching, scratching or marring the cleaned areas. A number of deflashing and deburring operations are also accomplished with soft abrasives.

WALNUT SHELL

Walnut shell is the most widely used soft abrasive, typical applications are:

1. Cleaning rubber and tire molds.
2. Cleaning internal combustion engine cylinders, pistons, heads and blocks.
3. Cleaning of armatures and electric motors (Removal of old insulating materials) prior to rewinding.
4. Removal of paint from metallic and glass surfaces.
5. Cleaning and polishing jewelry.
6. Cleaning clogged and blinded wire screens.
7. Deburring molded plastics.
8. Cleaning of dentures made of acrylic plastic, removes plaster, dental stone, and foil.

COTTONSEED, CORN COB AND RICE HULLS

These are polishing material and have special applications best determined by experiment on the individual job. Most blasting operations requiring this type of material can also be accomplished with walnut shell.