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**Operating Instructions**

**1-8DEC 230V**

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**Safety Instructions**

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**Section 1**

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- 1.1 Safety Instructions
- 1.2 Safety Mechanical
- 1.3 Safety Electrical
- 1.4 Safety Ventilation

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**1.1 Safety Instructions**

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**Note:** All operators and maintenance personnel should read this section and the safety instructions below before operating or maintaining this equipment.

This Blastrac® Operator's Manual has been specifically prepared for operating and maintenance personnel working with the Model 1-8DEC 208/230V shot-blasting system. The information in this manual is intended to provide an understanding of the equipment for safe operation and proper maintenance.

**Safety Instructions**

All operating and maintenance personnel must observe all warnings and precautions that are listed in this manual for the Model 1-8DEC 208/230V. **All safety and warning labels posted on the machine must be followed** as well as the safety program instituted by your individual management.

This Blastrac equipment has been manufactured for specific floor preparation applications. The engineering design of this airless media blast machine incorporates several basic elements. These include the airless media blast wheel, media recycling system and dust collection system. As a result of many years of operating and engineering experience, the features of these machines when used with the proper operating and maintenance procedures enable them to operate in a safe, efficient and trouble-free manner.

A thorough understanding of your Blastrac machine will help ensure that the machine can be operated efficiently and safely. No instructions, written or verbal, can be effective without the use of sound judgment and good work practices in the operation and maintenance of the equipment. Listed below are the practices that should always be observed.

**CAUTION**

Always keep the abrasive valve control lever in the off/closed position except when the machine is actually blast cleaning. Whenever an irregular, unusual or hazardous performance of the machine occurs, **immediately close the abrasive control valve.**

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**1.1 Continued**

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release the handle mounted traverse control lever to deactivate the travel limit switch and shut off the blast wheel motor. An emergency stop switch is also provided on the front of the control panel that may also be used in the event of an emergency situation.

Before actual shotblasting can begin, the operator should be certain that the machine can clear all obstructions in the work area. Work areas must be dry and clean (no loose debris) before cleaning can begin.

**Maintain all guards in place** - Blastrac machines are equipped with guards or coverings for parts that may be hazardous.

All personnel in the immediate work area **must wear safety glasses with side shields** whenever the machine is blasting. Protective clothing is also recommended. Long sleeve shirts and safety shoes should be worn and loose clothing should be avoided. The abrasive used in the machine impacts the work surface at high velocity. Any leakage during normal operation can sting personnel in the surrounding area. **The blast head must be sealed to the work surface during operation to prevent abrasive leakage.**

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**1.2 Safety Mechanical**

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1. Before performing any type of maintenance on your Blastrac equipment, be sure that all moving parts have completely stopped. The blast wheel, for example, may continue to rotate for a period of time once it has been deactivated.
  - Assure every power source that can produce mechanical movement has been deactivated and locked in the off position.
  - Assure all potential energy sources have been minimized. (Example: Move the machine to level ground before performing any maintenance so machine cannot move by gravitational force.)
  - Assure loose or freely moveable parts of the machine have been secured against accidental movement.

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**1.2 Continued**

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2. All drive guards must be kept in place and in good condition except during maintenance or when repair work is being performed. Once maintenance or repair work is complete, be sure all guards are securely remounted.
3. Safety glasses with side shields should always be worn when working with or near equipment in use. Gloves, when applicable, can be worn for added protection.
4. Loose fitting clothing and gloves should not be worn when working near belts, chains, sprockets, shafts and other moveable components.
5. The blast machine and all areas around the machine should be kept clean. Loose media in particular can become hazardous for foot traffic. All abrasive leaks should be repaired **immediately** to help keep the work area free of loose abrasive.
6. **Any condition(s) that may result in additional damage to the equipment or cause injury to nearby personnel should be repaired immediately.**
7. **Do not attempt to make adjustments to the feed spout or any control cage components while the machine is in motion or the blast wheel is operating. All adjustments must be made when the machine is stationary, the blast wheel is completely stopped and power has been disconnected.**
8. **Obey all safety and danger signs posted on the machine and all information posted where the machine is being operated.**
9. **Do not operate Blastrac machinery in the rain or when heavy moisture is present. Do not expose the abrasive supply to any type of moisture.** Sticky, tar related and rubber surfaces should be avoided when using Blastrac machinery. Always drain unused abrasive from the machine and empty the dust collector hopper before transporting the equipment.

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**1.3 Safety Electrical**

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1. **CAUTION - Line terminals may be alive when main switch is in "OFF" position. Disconnect all power before opening enclosure doors.**

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**1.3 Continued**

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2. **WARNING - DO NOT** operate the equipment with the electrical panel door(s) open.
3. **WARNING - The opening of any of the branch circuit protective devices may be an indication that a fault current has been interrupted. To ensure continued protection against fire or electric shock, current carrying parts and other components of the combination controller should be examined and replaced if damaged. If burnout of the current element of an overload relay occurs, the complete overload relay must be replaced.**
4. Some overload devices in the control panel have an adjustable feature. Assure these settings comply with settings provided for each device in the electrical schematics.
5. Never bypass overcurrent devices provided in this equipment. Never use oversized fuses or bypass any fuses to operate the machinery. Always refer to the electrical drawings provided for the individual machines for proper size and type of overcurrent protection and fuses.
6. When replacing electrical components, care should be taken to use the exact component that was originally supplied with the machine. These parts are listed in the electrical section of this manual. The electrical components in these systems have been coordinated for optimum protection of personnel and equipment – **DO NOT SUBSTITUTE ANY OF THESE COMPONENTS.**
7. Never connect or disconnect power cables with voltage present or while under load.
8. **Disconnect all power connections** and observe lock out / tag out procedures before attempting maintenance or repair of any electrical component.
9. Avoid all contact with rotating motor parts, drives or driven components.
10. Before energizing the equipment, check the condition of all power cables. All cabling should be checked for cuts and worn condition prior to connection to the power source.

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**1.3 Continued**

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11. Cable strain relief devices are provided for all power cabling. Assure that these strain relief devices are secured to the frame of the equipment with the hardware provided prior to energizing the equipment.
12. While safeguards have been provided in this equipment to protect operating personnel and equipment, **ALWAYS CHECK** that the proper power source is connected (voltage, frequency and phase). Check the motors for proper rotation once the power source has been verified. Sustained improper motor rotation can damage machine components.

Your Blastrac Blast Unit can be operated on 208/230 volt, single phase, 60-Hertz power ONLY. Do not attempt to operate this equipment on 50-Hertz power. A 50-Hertz blast unit is available by contacting Blastrac.

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**1.4 Safety Ventilation**

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All abrasive blast equipment must be properly ventilated to be environmentally effective. This benefits the operator, helps maintain efficiency and minimizes wear.

With all types of dust collectors, keep the filters as clean as possible and dispose of the dust regularly and safely. Follow all environmental regulations when disposing of the dust. Many types of dust have chemical and physical properties that can cause fire or explosion. These hazards are minimized when the dust is removed on a regular basis as recommended.



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**Operating Instructions**

**1-8DEC 230V**

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**Operator Responsibilities**

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**Section 2**

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2.1 Operator Responsibilities

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**2.1 Operator Responsibilities**

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1. The operator shall provide site electrical power and observe operation ampere maximums according to the following chart.

<b>Site Power Requirements and Blast Motor Maximum Blast Amps</b>	
<b>Parameter</b>	<b>1-8DEC 208/230V</b>
Minimum Ampere Circuit @ 208/230V	20 AMP
Maximum Ampere Circuit @ 208/230V	17 AMP

2. The operator shall provide personnel who have been trained by a Blastrac Technician for the operation and maintenance of Blastrac equipment.
3. The operator shall provide the necessary blasting media in accordance with the recommendations of a Blastrac technician so that the machine will operate at maximum efficiency.
4. The operator shall be responsible for the observance of all safety precautions expressed in this manual.
5. The operator shall perform all maintenance and basic repair functions as stated and described in this manual.
6. The operator shall maintain an inventory of “wear parts” as outlined in this manual.
7. The operator shall dispose of all dust collector refuse.
8. The operator shall provide the following tools and accessories:

Hammer	Screwdrivers
Metric Wrench Set	U. S. Wrench Set
Utility Knife	Metric Hex Key Set
5/16” Allen Wrench	Magnetic Broom
Buckets	

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**Section 3**

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- 3.1 Blast Unit – General
- 3.2 Blast Unit – Abrasive Cleaning Head
- 3.3 Blast Unit – Abrasive Control Valve
- 3.4 Blast Unit – Rebound Chamber (Plenum)
- 3.5 Blast Unit – Deflector Plate / Hopper
- 3.6 Blast Unit – Abrasive Seals
- 3.7 Blast Unit – Chassis
- 3.8 Blast Unit – Electrical Control Panel
- 3.9 Dust Collector – General
- 3.10 Dust Collector – Filter Chamber
- 3.11 Dust Collector – Control
- 3.12 Dust Collector – Ventilation System
- 3.13 Cleaning Media (Abrasive)

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### **3.1 Blast Unit – General**

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The Blastrac equipment series described herein includes the 1-8DEC 208/230V Blast Unit. This model is used in conjunction with the Turbo Vacuum Dust Collector. Each combination comprises a horizontal surface preparation, closed cycle, shotblasting system. The blast unit directs high velocity, metallic abrasive toward the work surface. The impact of each individual particle causes the surface to fracture and become loose. The abrasive and the loose surface particles are then directed upward due to the force of the impact and a strong airflow created by the dust collector. The mixture of shot and contaminants enters the rebound plenum and continues its upward movement until directed into a specially designed chamber called the separator. Inside this chamber, an air wash cleans the abrasive and allows the contaminants to be extracted back to the dust collector. The clean abrasive is then gravity fed to the blast wheel and the process repeats. The blast unit is manually propelled and the Turbo Vacuum Dust Collector must always be used. The blast units consist of the following elements:

- Abrasive Cleaning Head
- Abrasive Control Valve
- Rebound Chamber
- Deflector Plate / Hopper
- Abrasive Seals
- Chassis
- Operator Controls
- Dust Collector
- Filter Chamber
- Dust Collector Control
- Ventilation System
- Cleaning Media (Abrasive)

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### **3.2 Blast Unit – Abrasive Cleaning Head**

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Refer to Figure Number 2

The center of the patented abrasive cleaning head is the power driven, four bladed, six inch blast wheel that throws abrasive towards the surface being cleaned. This center fed centrifugal blast wheel propels the abrasive by centrifugal force at a speed of more than 200 mph.

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**3.2 Continued**

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This blast wheel is enclosed in an abrasion resistant housing that is also lined with abrasion resistant liners. These liners are located in areas where the most wear is present. The operator can change them periodically to protect the housing. A 3 horsepower, 3600-rpm electric motor, drive the blast wheel. The motor is then connected to a set of belts and sheaves that are in turn connected to a bearing unit.

The blast wheel is equipped with a cast in place impeller for easy maintenance. This impeller pre-accelerates the abrasive to the wheel blades in controlled portions. Abrasive that is gravity fed to the center of the wheel is accelerated in segments and directed through the control cage. The control cage determines where the abrasive is introduced onto the rotating blades of the wheel which in turn determines where the abrasive is being "aimed". The setting of the control cage is very important when setting up the "blast pattern" covered in Section 5.

An analog ammeter provides readout of the current of electric motor that drives the blast wheel. This provides a direct indication of how much abrasive is being delivered to the wheel. This reading should not exceed the full load amperage of the motor, which is 17 amps at 208/230 volts.

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**3.3 Abrasive Control Valve**

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Refer to Figure Number 3

The abrasive control valve regulates the amount of abrasive delivered to the blast wheel. The main component of this device is a butterfly valve surrounded by a ring of magnets, which, when closed, seals off the abrasive flow. A slight gap exists between the disk on the butterfly assembly and the inner wall of the valve. When the disk is horizontal, the magnets provide a seal that closes the gap with steel shot and stops the flow of abrasive. The valve is manually operated with the actuator below the handle. Do not allow this valve to open so far that the ammeter reading exceeds the full load amperage of the motor. (17.0 Amp @ 208/230 VAC) An adjustable stop is incorporated on the valve actuator at the handle, which allows for this adjustment.

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### **3.4 Rebound Chamber (Plenum)**

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Once the abrasive has impacted the work surface, the shot is directed into the rebound plenum. This curved portion of the machine absorbs a large percentage of the force exerted by the high velocity abrasive and helps dissipate the heat generated by the blast process. Once the abrasive and contaminant mixture reaches the top of the rebound plenum, it enters the separator.

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### **3.5 Deflector Plate / Hopper**

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Refer to Figure Number 4

Once the contaminated abrasive leaves the rebound plenum, it enters the separator and immediately encounters the deflector plate. The deflector plate slows the abrasive down even more before it enters a tray at the bottom of the deflector plate. The contaminated abrasive hits the abrasive already at the bottom of the plate and effectively absorbs any residual force left in the moving mixture. The contaminated abrasive then falls through a curtain of high velocity clean air, which physically separates the heavy abrasive and the lighter contaminants. The air wash pulls the contaminants through the separator towards the exhaust and eventually to the dust collector. The clean abrasive falls to the bottom of the separator, then into a hopper where it can be reused.

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### **3.6 Abrasive Seals**

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Refer to Figure Number 5

Magnetic abrasive seals are present on all sides of the rectangular opening at the bottom of the blast housing. These magnets are charged with a load of abrasive and draw any loose abrasive onto their surface, thus providing a “seal” to help contain the high impact abrasive from the surface being cleaned. The front and back have a brush attached. This brush drags across the work surface and allows clean air to be drawn inside the machine for cooling and to assist in the reclamation process.

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### **3.7 Chassis**

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All components on the blast unit are mounted on a hand-propelled unit.

The operator's handle can be pushed down to allow the operator to lift the blast seal over small obstructions. Once the machine is raised in this manner, gravity will force it down once the obstruction has been cleared.

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### **3.8 Electrical Control Panel**

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This panel was designed to safely operate in the range of 208/230 Volt, single phase, 60 Hertz power typically available in the U.S.

The control panel on the blast unit is provided with the following controls, instruments and components used to operate, monitor and safeguard the operator and the unit.

1. Ammeter – Provides readout of how much current the wheel motor is drawing. This allows the operator to monitor and control abrasive flow.
2. Blast Wheel Start / Stop / Run Switch - Allows operator to start or stop the blast wheel.
3. Abrasive Control Valve Throttle - Used to open or close abrasive valve that controls the flow of abrasive. (Located on the Handle)
4. Fuseless Motor and Circuit Protection – This control system was designed to comply with the National Electric Code as a “multi-motor and other loads” branch circuit.
5. Pilot Lamp – This lamp indicates when power is available to the control panel.

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### **3.9 Dust Collector – General**

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**The 1-8DEC 208/230V must not be used for blast cleaning unless attached to a proper air exhaust hose and dust collector.**

The Turbo Vacuum dust collector is normally attached to the 1-8DEC 208/230V with 25 feet of 2-1/4 inch diameter flexible exhaust hose. The Turbo Vac is mounted on casters for easy mobility. In operation, the 1-8DEC 208/230V cleans parallel to the dust collector.

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### **3.10 Filter Chamber**

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The central part of the Turbo Vacuum is the filter chamber. Dust laden air enters the chamber from the blast machine through the exhaust hose and into the vent hose connection located at the top of the separator lid. The dirty air passes through a vertically mounted filter cartridge. Dust is captured on the surface of these filters allowing clean air to pass to the clean air portion of the dust collector where it exhausts to the open atmosphere.

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### **3.11 Control**

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The operator control (on/off) for the Turbo Vacuum is located on top of the motor cover.

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### **3.12 Ventilation System**

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A controlled flow of air must pass through the blast unit and the dust collector during normal operation for the reasons listed below:

- Cools blast machine components.
- Helps remove residual abrasive and dust from work surface.
- Collects and separates dust and contaminants from recycled abrasive.
- Transports dust and contaminants to dust collector.

Ventilation air must follow a designed path through the machine(s). Any irregularities in the path can affect the performance of the system. The air sequence follows:

1. Air enters the area around the magnetic seals of the blast unit at a high velocity and helps sweep residual abrasive and dust from the work surface.
2. This air traverses up the rebound plenum and into the separator. The air movement up the rebound plenum helps keep the abrasive and the chamber walls cool.
3. Air enters the abrasive hopper and selectively conveys unwanted fine particles upward toward the exhaust port on the hopper. (See figure number 4.) The hopper must be properly seated and secure.

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**3.12 Continued**

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4. The dust-laden air from the air wash is directed through the separator and into the flexible hose. The air moves through the flexible hose to the dust collector with sufficient velocity to carry the dust and fine particles.
5. Air enters the dust collector, passes through the filter cartridge and exhausts out of the machine. Dust emitted from the dust collector port is an indication of a loose or damaged filter cartridge. Replacement of the faulty filter cartridge or tightening the wing nut holding the cartridge should be performed immediately.

The ventilation system should be monitored on a regular basis. Bad or improper ventilation can lead to poor component life and premature wear on a number of ventilation related items on the equipment. Some of the more important areas to monitor, relative to the ventilation system, are:

- The skirts around the blast housing should be kept in good repair.
- The seals around the separator lid should be checked regularly.
- The hose connections to the blast unit and the dust collector should be tight and held in place with metal clamps.
- The hose should be kept in good repair. Flattened spots, holes and wear spots should be corrected immediately. Replace hose if necessary.
- Elastomer seals on the dust collector must be maintained in good condition.

Any ventilation irregularities can have an adverse effect on the overall performance and efficiency of the system. Improper ventilation can cause poor abrasive cleaning which in turn increases blast wheel and liner wear. An important fact that is often ignored or misunderstood is:

**The steel abrasive causes minimum wear on the internal blast components. The dust and contaminants are the principal cause of component wear. A well-maintained ventilation system can minimize abrasive contamination which helps reduce operating costs and increases the overall efficiency of the shotblasting system.**

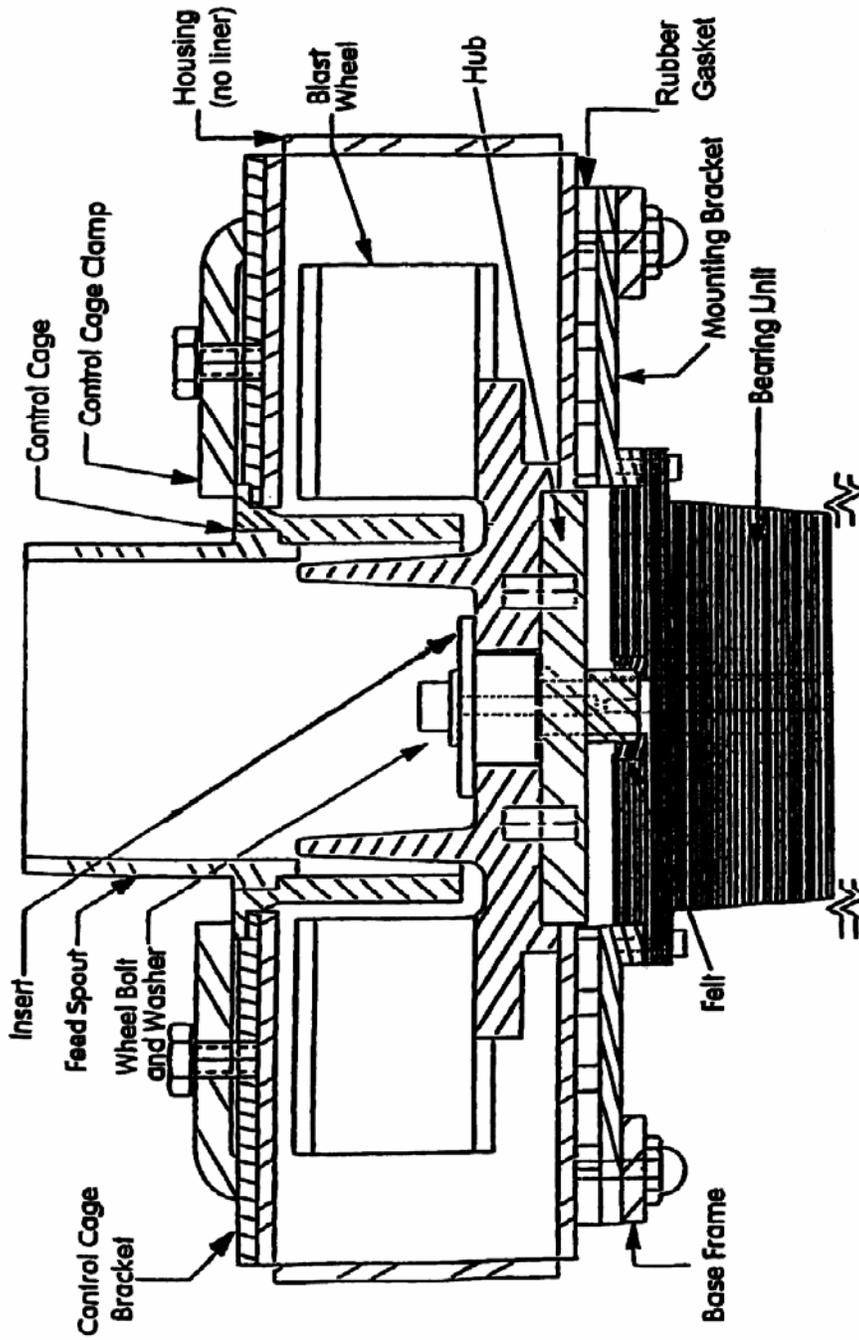
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**3.13 Cleaning Media (Abrasive)**

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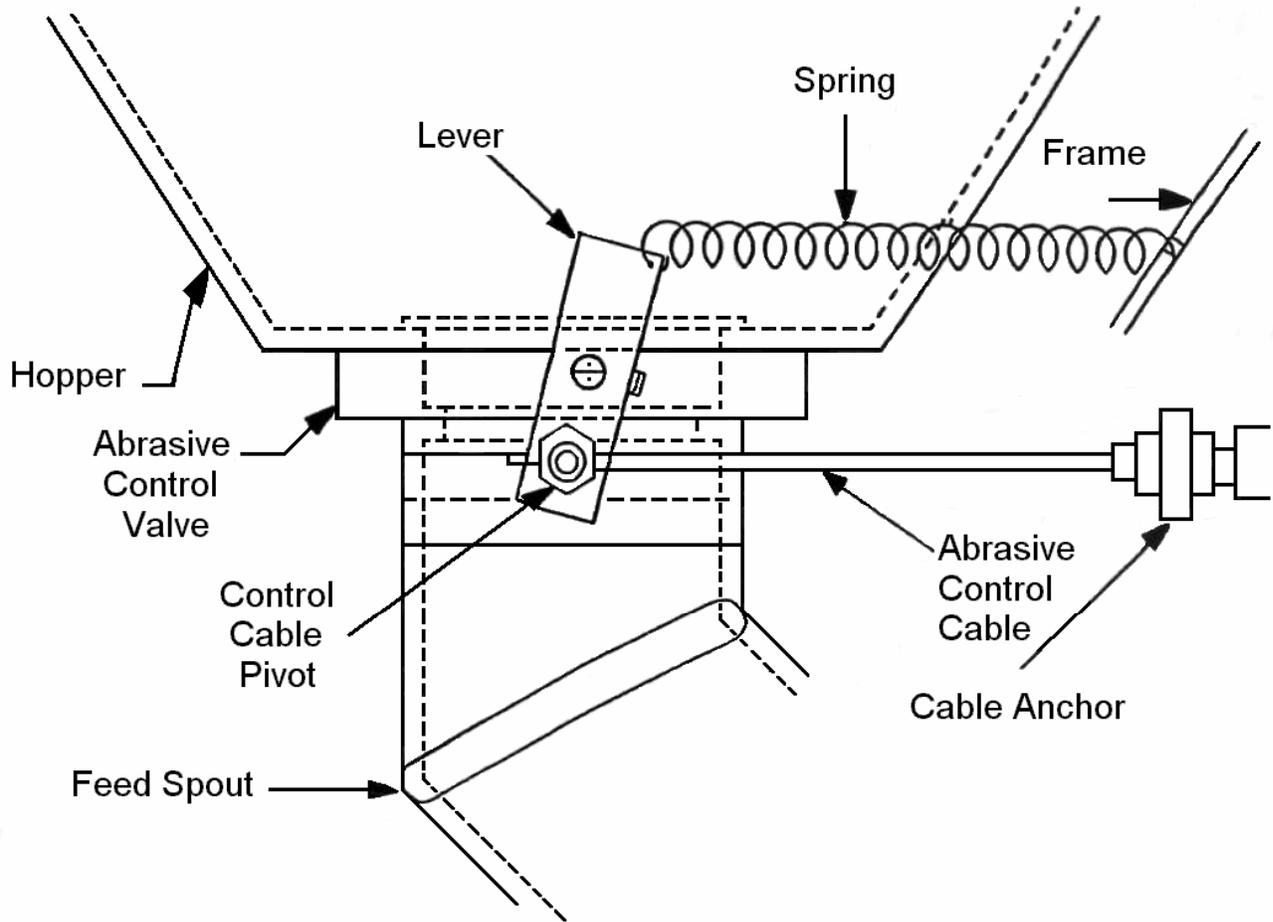
Blastrac provides a variety of special sized, high quality abrasive for Blastrac shot cleaning systems. This steel abrasive is made of high quality martensitic steel to provide long operating life and minimal abrasive breakdown.

The selection of proper abrasive is very important to the performance of the Blastrac shot cleaning system. Your Blastrac representative can help with the proper selection of abrasive for your particular application.



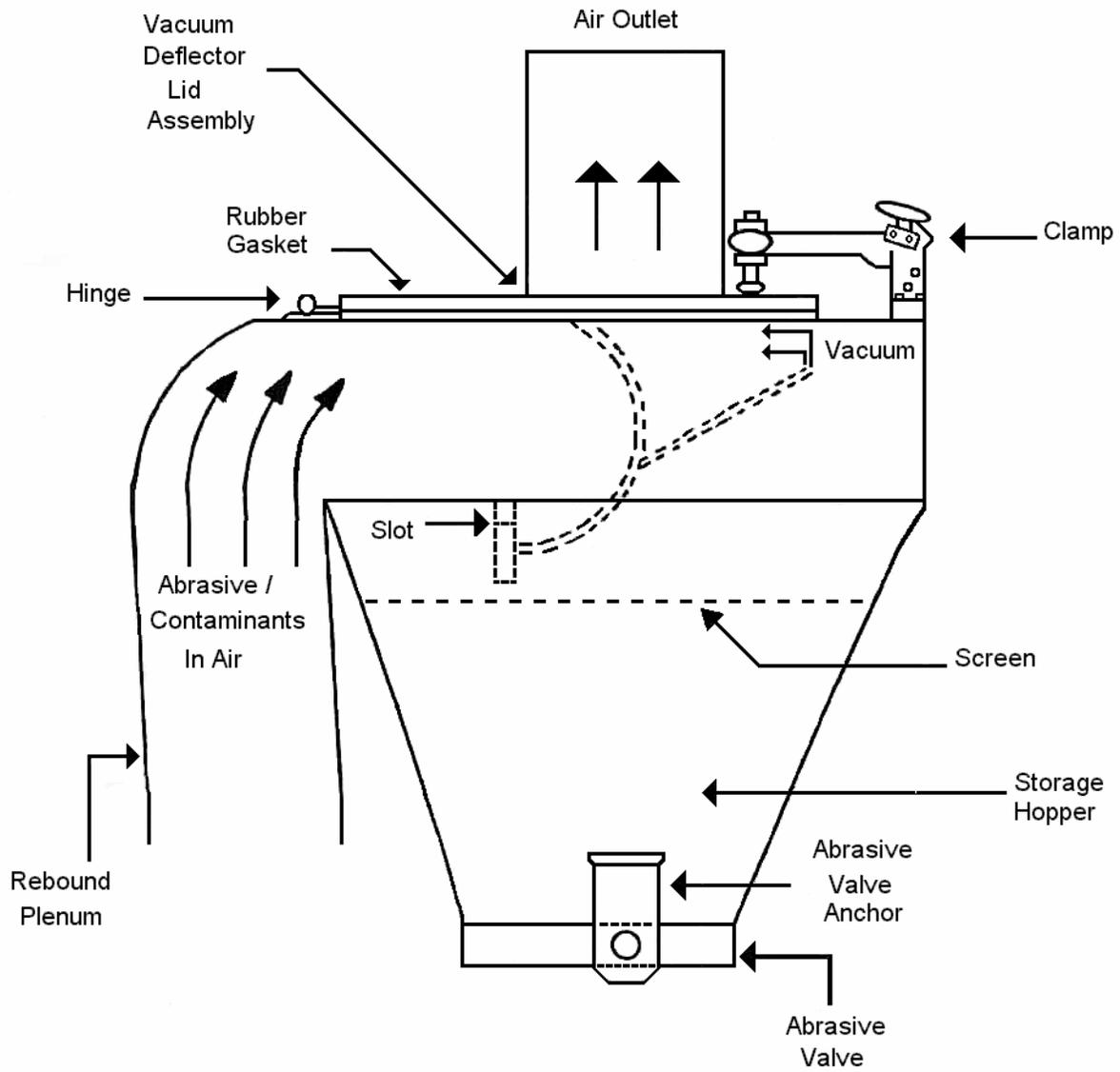
**ABRASIVE WHEEL ASSEMBLY 1-8DEC**

**FIGURE #2**



ABRASIVE CONTROL VALVE ASSEMBLY

FIGURE #3



## SEPARATOR 1-8DEC

Figure # 4



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**Operating Instructions**

**1-8DEC 230V**

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**Start-Up Procedures and Precautions**

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**Section 4**

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- 4.1 Start-Up
- 4.2 Blast Cleaning
- 4.3 Shut-Down

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## 4.1 Start-Up

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### Note:

All operating and maintenance personnel assigned to this machinery should read and understand all Warnings and Safety Instructions found in Section 1 of this manual before attempting any operational or maintenance work on this equipment. Also, Blastrac highly recommends that all operating and maintenance personnel receive a thorough training regimen from an authorized Blastrac representative before attempting to operate or maintain this equipment.

1. The blast unit and dust collector should be moved to the cleaning site. Both machines can be hand-towed.
2. Check the dustbin of the dust collector to be sure that it is empty. At the end of each job, the dustbin should be emptied.
3. Check the shot hopper of the blast unit to be sure that the shot has been drained. At the end of each job, the shot hopper should be emptied.
4. Check the blast wheel, control cage, feed spout, liners, seals and hopper parts for wear. Replace parts where necessary.
5. Inspect the electrical cables and connectors for damage, cuts, abrasions or wear. Replace all defective items before continuing.
6. Check the exhaust hose for holes, deformities, potential leaks or restrictions. Repair or replace all defective items before continuing.
7. Connect the exhaust hose and clamps to the blast unit and the dust collector. Be sure the clamps are secure.
8. Check the voltage source prior to presenting power to the equipment. Use a reliable voltmeter for this check. This equipment will operate normally on  $\pm 10\%$  of the required voltage.
9. All personnel in the immediate vicinity must now wear safety glasses with side shields.
10. Check the START - STOP switch on the machine. Assure that it is in the "OFF" position.

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**4.1 Continued**

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11. The amperage requirement of your Blastrac system is detailed in the “Operator Responsibility” section of this manual. Assure this requirement is met. If the circuit protection is too small for the load, undue stress will be applied to the circuit and the equipment will not operate properly. If the circuit protection exceeds the recommendation, an unsafe condition will be created.
12. **Proper grounding is critical to personnel safety.** Be absolutely certain that the green ground wire power cable is properly terminated to the site power ground bus. If a generator is to provide power, assure that the generator manufacturer’s grounding instructions are followed. **Serious injury can result from inadequate equipment grounding.** Once the power cord is connected and checked, energize the power source.
13. Check the area you are about to clean. Be sure that it is free of all debris that can clog or damage the equipment. Be sure that the surface is moisture free. Blastrac machinery is designed to work on clean, dry surfaces only.
14. Make certain that the abrasive control valve is in the closed position. Remove the separator lid and check that the shot hopper is free of debris and abrasive. Remove the screens and check the butterfly valve at the bottom of the hopper. It should be in the horizontal position. Replace the bottom screen and add approximately eight (8) to ten (10) pounds of abrasive. The level of this abrasive should reach the bottom of the boxed screen. **Do not overfill.** Replace the separator lid.

**CAUTION: BE SURE ALL ELECTRICAL DISCONNECTS ARE LOCKED IN THE “OFF” POSITION AND THAT ALL ROTATING PARTS ARE FULLY STOPPED BEFORE WORKING IN PANELS.**

16. Check the magnetic seals on the bottom of the blast unit for metallic contaminants such as nuts, bolts, etc., and remove. At the operator’s station, turn the travel speed on to drive the machine forward. Deposit a layer of abrasive on the floor in front of the magnets. Drive the machine over the abrasive to charge the magnets with a layer of shot. The shot will form a seal between the magnets and the floor. Remove any excess abrasive from the floor.

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**4.1 Continued**

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17. Energize the blast unit and the Turbo Vac. Once the machine is moving, ease the abrasive valve open and observe the ammeter. **Do not exceed the recommended amperage that is determined by the operating voltage.** The opening of the abrasive valve determines how much abrasive enters the blast wheel. As more abrasive flow is selected, the motor amperage will increase since the motor has to work harder. The abrasive control valve operator should be adjusted so that the fully open position can coincide with the full load amperage of the motor. This setting can vary from machine to machine and with the size of abrasive being used.
18. After cleaning a five-foot test strip, close the abrasive valve, stop the machine and check the cleaned area.
19. If the brightness or texture of the test strip is uneven, refer to Section 5, "Blast Pattern", to adjust the "HOT SPOT".

---

**4.2 Blast Cleaning**

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1. Ease the abrasive valve open while monitoring the ammeter readout. Do not exceed the amperage rating for the operating voltage. The operator will be walking forward to operate the machine in the forward direction.
2. If the cleaning is too severe or inadequate, adjust your travel speed. A faster pace will result in a lighter surface profile while a slower pace will be more aggressive and permit a deeper profile. If irregular surfaces are encountered, adjust your speed accordingly (see Section 7 - "Equipment Calibration").
3. The blast unit is maneuvered so that the dust collector is centrally located. Blasting in straight lines will always give the best, most consistent results. Keep the duct hose situated between the two units so that you never have to pass across it or the power cord.

**Caution: Do not allow any type of equipment to run over the power cable or the exhaust hose. Always avoid long power cord extensions. Contact a Blastrac representative for extension cord details.**

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**4.2 Continued**

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Blasting during a turn will create an uneven profile. Once an area has been cleaned, the blast unit and the dust collector can be moved to an adjacent location to continue cleaning.

4. The blast unit will clear small obstructions by pulling up on the steering handle. **Caution should be observed when clearing obstructions in this manner since the abrasive seal on the work surface may be broken. This may allow high velocity abrasive to escape.**
5. The blast pattern of the machine may change when the blast components start to wear. The operator should always note the blast pattern during normal cleaning and make adjustments or replace parts when necessary. (See Section 5 and 8.)
6. Check dust level in the dust collector regularly, at intervals determined by monitoring the amount of removal being done.

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**4.3 Shut-Down**

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1. Close the abrasive valve.
2. Turn off the blast wheel and move the blast unit disconnect switch to the "Off" position.
3. Turn off the dust collector.
4. At the end of each job, the dust bin and the shot hopper should be emptied.
5. Be sure all rotating parts are fully stopped and the machinery is in **Zero Mechanical State** condition before attempting to inspect or maintain the blast unit for the dust collector.



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**Operating Instructions**

**1-8DEC 230V**

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**Setting the Correct Blast Pattern**

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**Section 5**

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5.1 Setting the Correct Blast Pattern

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**Setting the Correct Blast Pattern**

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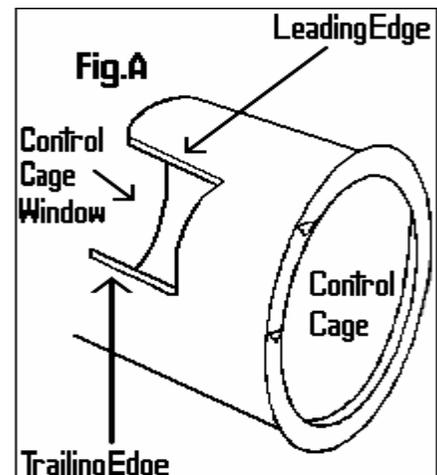
**5.1 Setting the Correct Blast Pattern**

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Setting the correct blast pattern is essential before an even, clean profile can be achieved when shotblasting with a Blastrac machine. An uneven blast pattern can leave shadows on either side of the floor surface and can cause premature wear to the internal components. The importance of setting the proper blast pattern cannot be overstressed.

There are four major factors that can affect the blast pattern. They are:

1. Wheel Rotation - The blast wheel must be rotating in the proper direction indicated on the housing that surrounds the blast wheel. Most Blastrac machines rotate in a counter-clockwise direction when looking at the machine from the operator's position.
2. Worn Wheel Kits - Wheel kit components such as blades, impellers and control cages vary in different machines but perform similar functions. These kits must be periodically replaced to ensure that they provide the proper blast pattern and to eliminate excessive wear which can cause internal component and bearing unit damage.
3. Abrasive Size - The size of the abrasive can affect the blast pattern. Different sized abrasives have different mass characteristics that can alter the "hot spot" setting. See Figure B.
4. Control Cage Setting -The setting of the control cage is the most critical factor in determining where the blast pattern is directed. Ideally, the blast pattern is centered so that the area being cleaned receives a consistent, even distribution of high velocity abrasive. Altering the setting of the control cage can move the blast pattern to the left or right depending on which direction the control cage is moved. Moving the control cage too far in either direction will direct the abrasive blast pattern to the side of the machine and cause premature wear to the internal components. The exact positioning of the control cage is done by trial and error. The initial setting of a machine rotating in a counter-clockwise direction should be between 11:30 and 9:30 as indicated in



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**5.1 Setting the Correct Blast Pattern**

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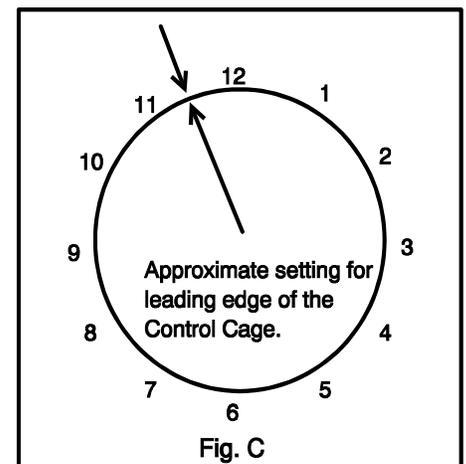
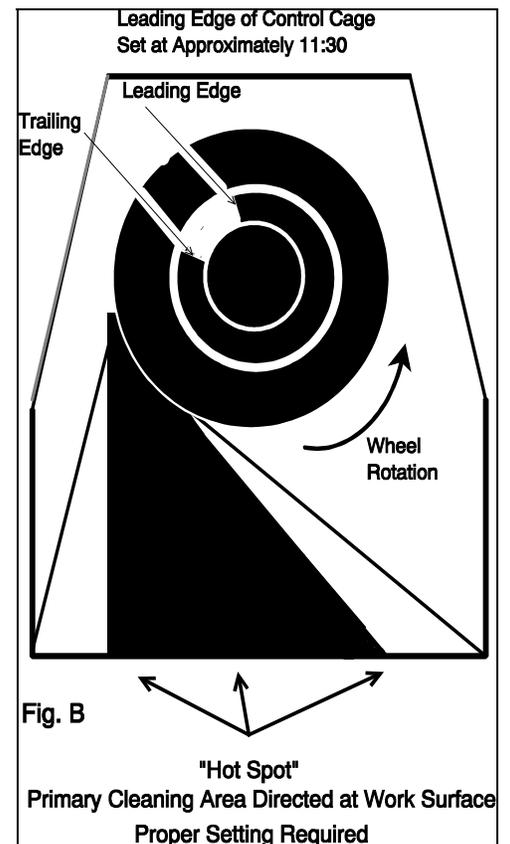
the illustrations. The resultant-cleaning path will determine the final setting.

These settings can vary with the abrasive size and the surface being cleaned. Once the proper control cage setting is obtained, the blast pattern should remain consistent. If the pattern begins to vary, check the blast wheel components for wear.

### Control Cage “Trial & Error” Setting

The initial setting of the control cage for a machine that has the blast wheel rotating in a counter-clockwise direction is between 11:30 and 9:30. The leading edge should be at 11:30. Refer to Figures A, B and C. Place a 3/16” or 1/4” steel plate beneath the machine and blast at full amperage for about 45 seconds. Do not move the machine during this test. The resulting “hot spot” should be centered as it appears on Figure B. If the “hot spot” is too far to the left, rotate the control cage in a counter-clockwise direction about 1/4” and recheck the blast pattern on the test strip. Small changes in the rotation of the control cage can move the “hot spot” significantly. If the “hot spot” is too far to the right, rotate the control cage in a clockwise direction. Once again, move the control cage in small increments until the blast pattern (“hot spot”) is centered.

**Note:** If the blast pattern cannot be centered, check the blast wheel and be sure it is properly mounted and seated on the wheel hub located behind the blast wheel. The two pins on the hub must be seated on the back of the blast wheel before the wheel can be secured. This check must be made whenever the blast wheel is changed.





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**Operating Instructions**

**1-8DEC 230V**

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**Edging Mode**

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**Section 6**

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6.1 Edging Mode

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**6.1 Edging Mode**

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Refer to Figure Number 5

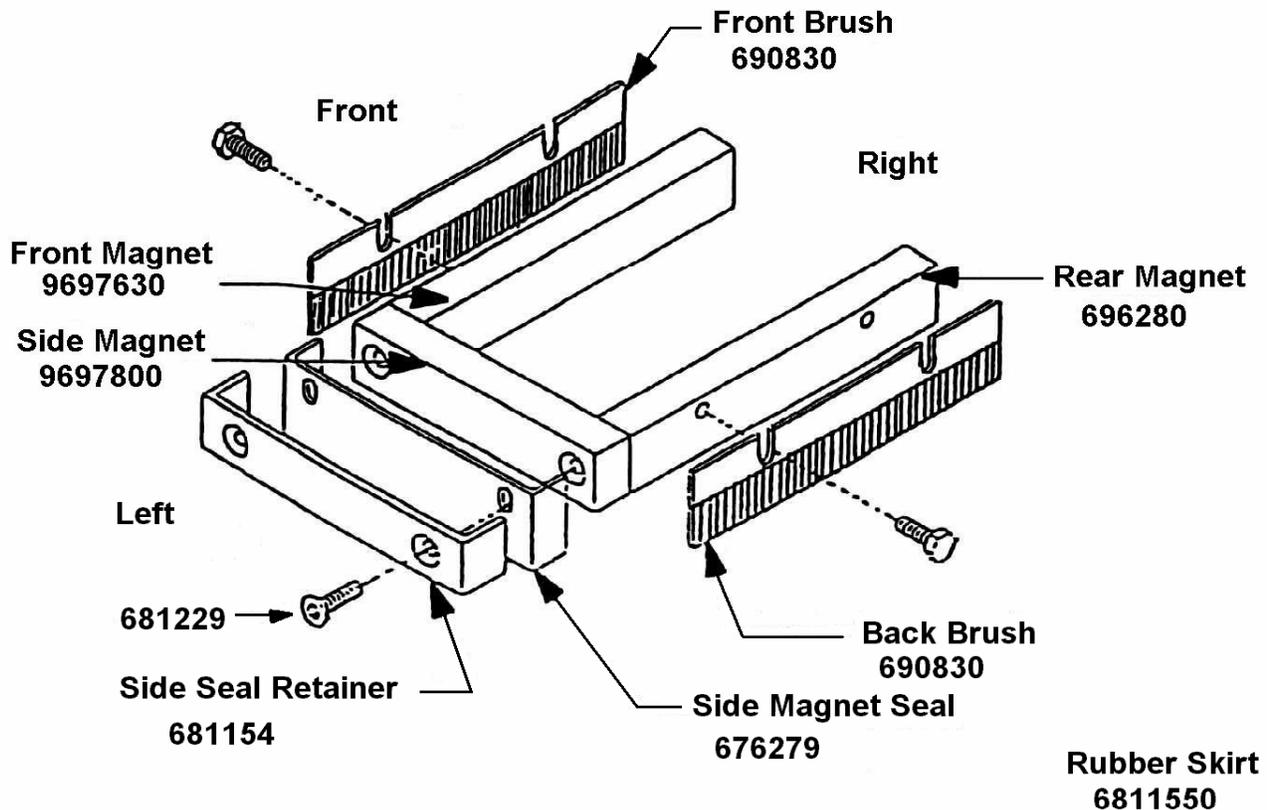
The model 1-8DEC 208/230V is capable of cleaning surfaces within 1 / 2 inch of vertical obstructions. (This is along the side of the machine. The 1-8DEC can be pushed as close as 1-1/2 inches from the front of the machine.) Performing the following steps sets up the edging mode:

1. Remove the two hex screws holding the retainer, seal and magnet on the side of the machine where the edging is required. This requires a 5-mm metric hex key. Be careful to keep abrasive from entering the holes in which the screws were secured. You may want to cover these two holes with duct tape while in the edging mode to protect the threads.
2. Move the machine to the area in which the edging will be done and see if the machine can be moved freely. Adjust the height of the machine if necessary.
3. Begin cleaning in the normal fashion. Do not blast when the machine is away from the vertical surface in the edging mode since the magnetic seal is no longer present. Abrasive will disperse more readily from the side if the magnet is not in place. Keep in mind that the machine will tend to lose more abrasive while in the edging mode since the magnetic seal has been removed.

**NOTE: Do not use the machine for normal blasting when it has been prepared for edging. The magnet, seal and retainer must be reinstalled first.**

**CAUTION: Close the abrasive valve before moving the 1-8DEC away from the vertical surface. Failure to do so may expose nearby personnel to flying abrasive.**

## Right Side Edge Mode



This magnet and seal illustration shows how the machine is set during the right side edging mode. This is achieved by simply removing the right side retainer, right side magnet seal and the right side magnet. For normal (non-edging) operation, the right and left side arrangements are identical. For left hand edging, reverse the above arrangement from right to left.

## MAGNETIC SEAL ASSEMBLY

FIGURE # 5



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**Operating Instructions**

**1-8DEC 230V**

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**Equipment Calibration**

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**Section 7**

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7.1 Equipment Calibration

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## 7.1 Equipment Calibration

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The following list of recommended set-up adjustments and reference values should be used to help obtain the optimal performance from your blast cleaning system. These should be used as starting points and can be fine-tuned after trial and observation.

**CAUTION:** CALIBRATION OF ITEMS 1, 2, 6 AND 7 MUST BE MADE WITH ALL ELECTRICAL DISCONNECTS IN THE “OFF” POSITION. ALL MOVING PARTS MUST BE COMPLETELY STOPPED BEFORE MAKING ANY ADJUSTMENTS OR PERFORMING MAINTENANCE.

1. Blast Housing Height - The bottom of the blast housing (magnets) should be between 1/8” to 1/2” above the surface being cleaned. A smaller clearance can be obtained for smooth surfaces and the height may need to be higher for rough surfaces.
2. Control Cage Setting - See Section 5, “Setting the Correct Blast Pattern”, figures A, B and C.
3. Abrasive Selection Recommendations (Steel Shot Size)
  - Brush blast of smooth concrete: S-170 to S-280 (smaller size will produce a brighter etch)
  - Rough concrete etch for coatings: S-330 to S-460
  - Heavy concrete removal: S-460
  - Cleaning scale or paint on steel: S-460
4. Exhaust Hose Length - 25 feet of 2-1/4-inch diameter exhaust hose; longer or shorter sections of hose may affect abrasive consumption or abrasive cleaning. Contact your Blastrac representative before changing the exhaust hose length.
5. Dust Collector – Inspect Dust Collector at 15-minute intervals to see how quickly the dustbin is being filled. Do not allow dustbin to overfill. Once fill time is determined, dump the dust at the corresponding time interval.
6. Handle Height – The handle height can be adjusted to match the individual operator’s height. This is accomplished by loosening the handle release levers and then moving the handle to the desired position. Secure the handle release levers when finished.

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**7.1 Continued**

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7. Amperage – The amperage reading during normal operation at 208/230 volts should not exceed 17 amps. To help ensure that this limit is not exceeded, the abrasive control handle has a screw/lock adjustment to keep the abrasive valve from opening too far. Once the operator determines the full load setting, the screw/lock can be adjusted so that the abrasive valve cannot be opened too far.



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**Operating Instructions**

**1-8DEC 230V**

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**Wear Parts**

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**Section 8**

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8.1 Wear Parts

8.2 Maintenance Log

**Wear Parts**


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**8.1 Wear Parts**


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Certain portions of the blast unit are continuously exposed to high velocity abrasive. These areas and their corresponding parts must be periodically inspected for wear and erosion to keep from damaging components that are not normally exposed to the abrasive blast. These parts are identified on the service drawings later in this manual along with part numbers. Maintenance personnel design all parts for relatively easy replacement. A preventive maintenance program should be performed to monitor these areas on a regular basis. The following list outlines these areas and the time intervals involved.

**Wear Parts Chart**

<b>Part</b>	<b>Inspection Interval</b>	<b>Wear Indication</b>	<b>Replacement Method</b>
Blast Wheel	5 Hrs.	Blades Worn by more than 50%	Remove hub bolt and replace
Feed Spout	50 Hrs.	Thin at Wheel Entry	Remove and replace
Control Cage	5 Hrs.	Eroded Edges	Remove and replace; adjust pattern
Rebound Chamber	50 Hrs.	Thin Sections; Wear on Welds.	Contact Blastrac Service Center
Abrasive Hopper	20 Hrs.	Thin Sections; Wear at Welds; warpage	Contact Blastrac Service Center
Liners	15 Hrs.	Thin Sections; Warpage; Holes	Loosen bolts, remove and replace
Blast Wheel Hub	Blast Wheel Replacement	Abrasive wear; pins missing	Remove and replace
Wheel Drive Belts	Blast Wheel Replacement	Wear spots; Thin sections	Loosen motor mounting bolts, Loosen belt tensioners, Remove belts and replace

Keep in mind that other portions of the machine require periodic inspections and maintenance. The parts mentioned above are associated with the internal abrasive blast. Electrical cable and exhaust hose, for example, also require close inspection and maintenance.

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**8.2 Maintenance Log**


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# **MAINTENANCE**

# **LOG**

## **Electric Equipment-**

Liners – Inspect for wear	Checked	<input type="checkbox"/>	OK	<input type="checkbox"/>	Change	<input type="checkbox"/>
Blastwheel/cage - Inspect for wear	Checked	<input type="checkbox"/>	OK	<input type="checkbox"/>	Change	<input type="checkbox"/>
Filters - Inspect – clean or replace	Checked	<input type="checkbox"/>	OK	<input type="checkbox"/>	Change	<input type="checkbox"/>
Airline - Inspect for leaks	Checked	<input type="checkbox"/>	OK	<input type="checkbox"/>	Change	<input type="checkbox"/>
Shot valve – Inspect	Checked	<input type="checkbox"/>	OK	<input type="checkbox"/>	Change	<input type="checkbox"/>
Seals – Inspect for wear	Checked	<input type="checkbox"/>	OK	<input type="checkbox"/>	Change	<input type="checkbox"/>
Bearings – Inspect set screws and grease	Checked	<input type="checkbox"/>	OK	<input type="checkbox"/>	Change	<input type="checkbox"/>
Inspect power cord for damage	Checked	<input type="checkbox"/>	OK	<input type="checkbox"/>	Change	<input type="checkbox"/>
Magnets & Seals – Inspect for wear	Checked	<input type="checkbox"/>	OK	<input type="checkbox"/>	Change	<input type="checkbox"/>
Traction Drive – Inspect chain & sprockets working smoothly		<input type="checkbox"/>	OK	<input type="checkbox"/>	Change	<input type="checkbox"/>

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**Operating Instructions**

**1-8DEC 230V**

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**Blast Wheel Replacement**

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**Section 9**

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9.1 Blast Wheel Replacement

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**9.1 Blast Wheel Replacement**

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**CAUTION: ALL ELECTRIC POWER MUST BE DISCONNECTED AND ALL ROTATING PARTS MUST BE COMPLETELY STOPPED BEFORE ATTEMPTING THIS PROCEDURE.**

1. Loosen the two control cage clamps that secure the feed spout and control cage.
2. Remove the feed spout and the control cage.
3. Outline the area around the control cage mounting assembly with a marking pen or pencil. This will allow for easier alignment when reinstalling this part later during this procedure. Remove the four mounting nuts, flat washers and lock washers that secure the control cage mounting assembly to the blast housing. Do not loosen any other screws on the control cage mounting assembly since they are used to set the gap between the blast wheel and the control cage. Remove the control cage mounting assembly.
4. Remove the socket head cap screw and lock washers from the blast wheel and remove the blast wheel.
5. Check the wheel hub for wear and replace if necessary.
6. Install new blast wheel using the new socket head cap screw and lock washers that are included in the wheel kit. Be sure that the new blast wheel is seated properly on the wheel hub before tightening the socket head cap screw.
7. Reinstall the control cage mounting assembly to the blast housing using the outline made before removing the assembly.
8. Install the new control cage that was included with the wheel kit. Rotate the wheel by hand to be sure the control cage and the wheel do not make contact. The initial window setting for the control cage should be between 9:30 and 11:30.
9. Reinstall the feed spout.
10. Energize the blast motor momentarily to check for good balance and proper clearance before shotblasting.

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**9.1 Continued**

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11. See Section 5, "Blast Pattern", before adjusting the control cage for the correct blast pattern.

The assembly of the blast wheel and its associated parts are illustrated on Figure Number 2. These parts must be maintained in good operating condition in order to enhance the life of the bearing unit and the electric motor that is used to deliver power to the blast wheel. Blastrac parts are supplied in a state of accurate balance with machined surfaces for safe, reliable operation.



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**Operating Instructions**

**1-8DEC 230V**

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**Lubrication**

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**Section 10**

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10.1 Lubrication

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**10.1 Lubrication**

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The bearing unit that is located directly behind the blast wheel outside the blast housing must receive periodic lubrication. This unit operates at a relatively high temperature (200 degrees Fahrenheit) and requires the use of a high temperature, lithium based grease. One example is Mobilux 77 EP-2.

**The bearing unit should receive several pumps of this high temperature, lithium based grease at least every 50 hours.** Several pumps of grease from a standard grease gun should be sufficient.

The grease needs to be inserted into the grease fittings on the bearing unit. Once the unit is greased, run the blast wheel for 10 - 15 minutes to purge any excess grease.

**Do not over-grease this unit.**

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**Section 11**

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- 11.1 Troubleshooting – Blast Unit
- 11.2 Troubleshooting – Ventilation System (Dust Collector)
- 11.3 Vacuum Adjustment
- 11.4 Troubleshooting - Electrical

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**11.1 Troubleshooting – Blast Unit**


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**NOTE: ALL SERVICE OF BLASTRAC EQUIPMENT REQUIRES A THOROUGH AWARENESS OF THE WARNINGS AND PRECAUTIONS IN SECTION 1 OF THIS MANUAL**

Troubleshooting List...Blast Unit...Mechanical Malfunctions

<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
Excessive vibration - usually indicates that the blast wheel is out of balance. This condition will eventually cause bearing failure in the motor or bearing unit.	Unevenly worn wheel.	Replace wheel kit. Check separator and ventilation system.
	Chipped, broken blades.	Chipped or broken blades will permanently unbalance the blast wheel and can cause damage to other components. Change wheel kit immediately.
Excessive noise - usually indicates misaligned components which causes premature wear and component failure.	Improper clearances or alignments between rotating parts, usually the control cage and the blast wheel.	Check alignment of control cage and wheel. Allow sufficient clearance between rotating parts.
	Loose bolts or mis-alignment.	Check bearing unit, belts, sheaves, motor mounting, wheel housing and any other associated parts to be sure of alignment and that they are firmly secured.

11.1 Continued

<p>Increased cleaning time.</p>	<p>Improper abrasive feed to wheel.</p> <p>Storage hopper.</p> <p>Contaminated abrasive.</p> <p>Abrasive feed and abrasive control valve.</p> <p>Wheel impeller, control cage wear.</p> <p>Drive belt.</p> <p>Loss of consistent blast pattern, "hot spot".</p> <p>Choked wheel.</p>	<p>Check ammeter reading. Low reading indicates insufficient abrasive getting to wheel.</p> <p>Check abrasive level.</p> <p>Abrasive may contain substantial percentage of fines and contaminants. Check ventilation.</p> <p>Check for obstructions in the abrasive feed, i.e. feed spout, abrasive control valve, and separator screen.</p> <p>May be worn. Replace wheel kit.</p> <p>Check belt for proper tension, alignment or wear.</p> <p>Check blast pattern. Check the blast wheel for proper seating with the wheel hub.</p> <p>Close abrasive valve and gradually reopen. Check abrasive valve operation. Check "over-amping" blast wheel.</p>
<p>Excessive wear on blast housing rebound chamber/liners.</p>	<p>Improper setting of control cage.</p>	<p>Abrasive is being misdirected into internal components instead of work area. Check blast pattern and readjust.</p>

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**11.1 Continued**


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Abrasive leakage.	Improper sealing.  Feed spout  Improper control cage setting. Abrasive valve setting	Check all seals for wear.  Check feed spout alignment and rubber seal.  Abrasive rebounding from side of machine. Check blast pattern. Be sure abrasive valve closes when handle is released. Readjust if necessary.
Machine hang-up.	Uneven work surface/ floor obstruction.	Pull up on steering handle to raise machine to clear small obstructions or uneven work surfaces. Shut abrasive valve if obstruction cannot be cleared. Pull back machine to clear. <b><u>Use caution when raising seal due to high velocity abrasive exposure.</u></b>
Loss of cleaning action.	Machine travel speed too fast.  Abrasive contaminated.	Slow travel speed.  Clean storage hopper and replace abrasive. Check ventilation system.

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**11.2 Troubleshooting – Ventilation System (Dust Collector)**


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Note: Once the Dust Collector has been in operation for several minutes, a stable operating level will result. Sudden changes in operation can usually be traced to a malfunction.

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**11.2 Continued**


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<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
Contaminated abrasive - fines and contaminants not being removed from abrasive.	<p>Very soft concrete removal. Excessive dust quantities entering system (will cause excessive component wear).</p> <p>Insufficient air flow being delivered by dust collector.</p>	<p>Increase machine speed to reduce the amount of concrete removal or reduce abrasive flow to wheel.</p> <p>Check filter: Clean or change if necessary.</p>
Visible dust discharge.	<p>Torn, punctured or improperly installed filter cartridges.</p> <p>Improper filter installation.</p>	<p>Check filters. Replace or reinstall.</p> <p>Refit properly.</p>

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**11.3 Vacuum Adjustment**


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**For normal concrete surfaces, Blastrac does not recommend using more than the 25 feet of exhaust hose supplied with the blast system.** Adding additional hose can cause insufficient suction, which will allow unwanted dust and contaminants to accumulate in the abrasive, thereby causing premature wear to the blast wheel and liners. Additional hose can only be added when cleaning steel surfaces. Contact your Blastrac representative for your specific steel cleaning application.

Normal shotblasting with the blast unit will usually be accomplished with the vacuum adjustment gate partially open. Too much suction will sometimes allow abrasive to be pulled from the blast unit and deposited into the dustpan. This is particularly true when using small sizes of abrasive such as S-170 and S-230.

**Troubleshooting**


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**11.3 Continued**


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A period of trial and error may be necessary for specific job applications. Generally speaking, the more dust generated by your shotblasting unit, the greater the suction you will need from the dust collector to keep the abrasive as clean as possible.

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**11.4 Troubleshooting – Electrical**


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<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
Electric Motor does not start.	Main power disconnected (Power on light should be on if power connected.)  Overload relay tripped.  Broken, damaged or loose wiring.  Long extension cord being used.	Check main power cable at electrical source. Must be 208/230 volt, 60hz single-phase power, 20-amp service.  Reset overload relay, check setting (17 A at 120 V.)  Inspect cable and panel for loose wires, terminal cuts or abrasions. Replace when necessary.  Decrease length or increase wire size.
Wheel motor ammeter reading unsteady.	Abrasive level low.  Loose connectors  Abrasive system clogged or damaged.  Abrasive valve closed or not open enough.  Belts loose  Ammeter faulty	Add abrasive to appropriate level.  Tighten connectors.  Clean or replace defective parts.  Adjust abrasive control valve.  Tighten or replace belts.  Replace



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**Operating Instructions**

**1-8DEC 230V**

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**Electrical Troubleshooting**

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**Section 12**

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12.1 Electrical Troubleshooting

12.2 General

12.3 Blast Unit

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**12.1 Electrical Troubleshooting**

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**NOTE: ALL SERVICE OF BLASTRAC EQUIPMENT REQUIRES A THOROUGH AWARENESS OF THE WARNINGS AND PRECAUTIONS IN SECTION 1 OF THIS MANUAL.**

The following icon is used in this section:  Equals a Troubleshooting suggestion.

**BEFORE BEGINNING TROUBLESHOOTING OR MAINTENANCE WORK ON THIS EQUIPMENT:**

1. All power sources (Electrical, Pneumatic, Mechanical) of energy must be locked off, tied off or otherwise neutralized to be considered harmless.
2. It is important that operators and maintenance personnel receive regular equipment safety training,
3. **AND** have a thorough working knowledge of all electrical, pneumatic and mechanical aspects of this equipment, and observe all warnings and precautions.

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**12.2 General**

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**No machine function will operate.**

**CAUTION: Only qualified personnel should perform maintenance or troubleshoot this equipment.**

- Check main power. Voltage must be within parameters set out in Section 4, "Startup Procedure", and Item 8.
- Assure main disconnect in the blast unit control panel is "on".
- Check the status of Emergency Stop switch on the panel. If off, assure that no emergency state exists, then reset the switch by pulling to release and reset to a "run" mode.

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**12.2 Continued**

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- ☑ **Lock out power supply at the source (generator, disconnect switch, distribution panel, etc.),** open panel door and check the status of the Control Power Overload (CPOL). Assure the overload device is in the “ON” position.

The 1-8DEC is designed to operate on 208/230 volt, single phase, 60-hertz power. The full load amperage of the wheel motor at 208/230 volts is 17 amps. **This amperage should not be exceeded or the life of the motor will be diminished.**

Blastrac recommends that if the machine is operated at 208/230 volts that the cable length not exceed 50 feet. If a longer cable is necessary, contact your Blastrac specialist for recommendations on new cable dimensions.

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**12.3 Blast Unit**

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**Blast Wheel will not operate.**

- ☑ **Lock out power supply at the source (generator, disconnect switch, distribution panel, etc.),** check 1M overload on the control panel. If tripped, use caution. **The opening of the branch-circuit protective device or a similar protective device downstream may be an indication that a FAULT CURRENT has been interrupted. To ensure continued protection against fire or electric shock, current carrying parts and other components of the combination controller should be examined and replaced if damaged. If burnout of the current-element of an overload relay occurs, the complete overload relay must be replaced. ONLY THEN** reset by turning “off”, then “on”. Check overload for proper setting according to the schematic. If problem persists check motor for excessive current.



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**Operating Instructions**

**1-8DEC 230V**

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**Specifications**

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**Section 13**

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13.1 Specifications




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**Operating Instructions**
**1-8DEC 230V**


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**Specifications**


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**13.1 Specifications**


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**Blastrac Model 1-8DEC 230V**
**Table 1: 1-8DEC MECHANICAL DATA**

Length (Base)	22 inches
Length (including handle in normal position)	40 inches
Height (excluding handle)	36 inches
Height (including handle in normal position)	37 inches
Width	12-3/8 inches
Weight	190 pounds
Vacuum Hose Length	25 feet
Production Capacity	Approx. 215 square feet / hour
Cleaning Path	8 inches
Travel Speed	Manual
Power Cord Length	25 feet
Amperage	11.5 Amps @ 208/230 Volt
Generator requirements	15 KW
Power Requirements 1-8DEC	208/230 Volt; Single Phase; 60 Hz; 20 Amp Service

**Dust Collector Specifications (Turbo Vac)**

Height	54 Inches
Width w/ Cart	24 Inches
Length w/ Cart	26 Inches
Weight	58 lbs.
Air Flow (Clean)	480 CFM (Cubic feet per minute)
Static vacuum	60" water
Power Requirements	230 volt, Single phase; 60hz; 1500 watt