

Original instructions

OPERATING INSTRUCTIONS 500E Global VERSION 2.7





Inspection comments

| | |
|---|-------|
| Inspection before initial operation on: | _____ |
| By: | _____ |
| Date of initial operation: | _____ |
| Serial number & Year of manufacture: | _____ |

Recurring inspections / maintenance log

| Date / Hour counter | Findings | Repairs / Cleaning | Test on | By* |
|---------------------|----------|--------------------|---------|-----|
| | | | | |

*Competent person



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1. Introduction

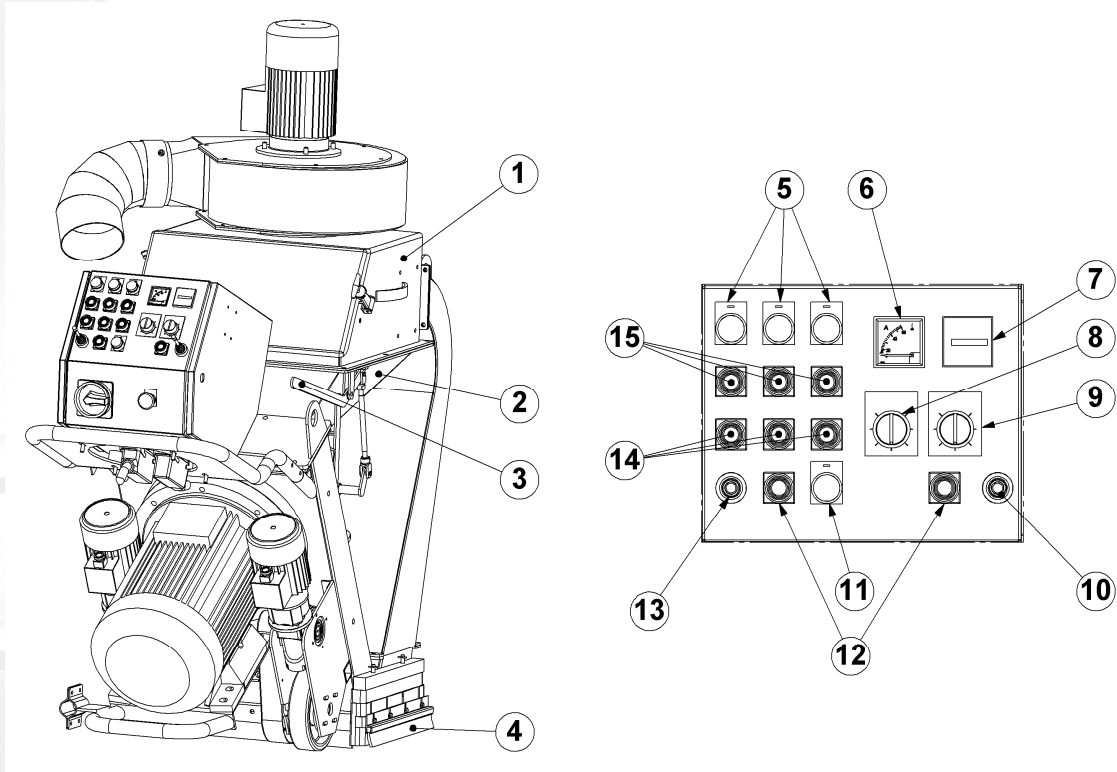
Before use, operators must be provided with information, instruction and training for the use of the machine and the substances for which it is to be used, including the safe method of removal and disposal of the material collected. All persons who are working with or maintaining this machine must read the manual carefully and understand it fully. In case you sell the unit, hand it on to the next owner. Keep this manual always with the machine, to enable it to be referred to at any time. Any other work not covered by this operating manual must not be carried out.

This machine is designed for industrial use by professionals. Only authorized and trained personnel may operate this machine. This machine is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge. **Blastrac BV** offers a course on the use of the machine in order to make the operating and maintenance personnel familiar with all elements of the machine. Always use common sense when working with machines.

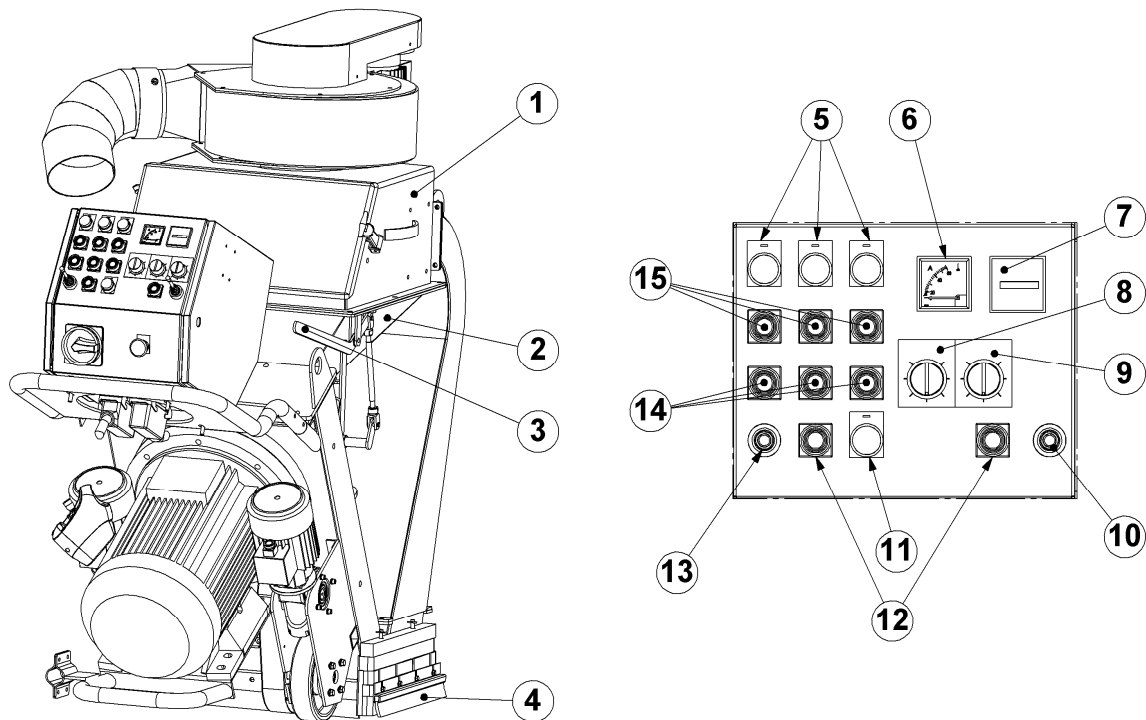
2. Machine description

The **Blastrac** blast cleaning machine 500E Global is a downward blasting machine with a closed abrasive circuit exclusively designed for the pre-treatment of dry, frost-free horizontal surfaces. The bouncing impact of metallic abrasive onto the surface to be treated thoroughly removes surface contaminants, coats of paint, sealants and thin coatings. The intended use of this machine is blast cleaning of steel surfaces. The machine may not be used for other purposes. The manufacturer will not be liable for damage resulting from incorrect usage, in these cases the user assumes all risks.

A suitable filter unit must be connected to the machine in order to separate the dust from the abrasive. A specially designed Blastrac dust collection system ensures dust-free operation of the machine and clean air at the workspace.



| | | | | | |
|---|-----------------------|----|----------------------------|----|---|
| 1 | Separator | 6 | Ammeter | 11 | Control light Voltage |
| 2 | Hopper | 7 | Hour counter | 12 | Drive motor L or R Stop |
| 3 | Abrasive valve handle | 8 | Speed control | 13 | Joystick drive motor left |
| 4 | Brush sealing | 9 | Tracking | 14 | Push buttons OFF: Drive/fan motor/blast motor |
| 5 | Control lights | 10 | Joystick drive motor right | 15 | Push buttons ON: Drive/fan motor/blast motor |



Blastrac 500-E with lowering-kit

3. Safety

Warning!

Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire, explosions and / or serious injuries.

Only authorized and trained personnel may operate this machine. This machine is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge.

In case of any inappropriate usage, improper operation or repair, the producer shall be exempt from liability.



3.1 Work area safety

- a) Do not use the machine in rain, damp or wet locations.
- b) Avoid dangerous environments: do not work in the presence of explosive atmospheres, in the presence of flammable liquids, gases or dust. Remove materials or debris that may be ignited by sparks.
- c) In some cases sparks could be created by the blast cleaning process.**
- d) The surface to be treated must be clean, make sure to remove all stones, screws etc..**
Any stones, screws, bolts, pieces of wire etc. could cause serious damage to the machine if it gets inside the machine!
- e) Make sure there is enough ambient light on the work area. Cluttered or dark areas invite accidents.
- f) Keep children and bystanders away while operating the machine. They are likely not to foresee the potential dangers of the machine. Distractions could cause you to lose control of the machine.
- g) Persons who are not operating the machine must not be permitted to stay in the surrounding area of at least 5 meter from the machine.
- h) Never use the machine when the surface is not clear and if there is a risk of stumbling or tripping.
- i) Remove electrical cables and dust hose(s) from the surface to be treated.
- j) Make sure that there are no cables or hoses in the driving direction of the machine



- k) Make sure that there is nothing standing or situated on the surface to be treated.
- l) Make sure the machine can travel over all inequalities on the surface, small inequalities like weld seams or (floor) joints are no barriers for the machine.
- m) Never operate the machine when workplace is wet.
Never stay in the rain with the machine.**
- n) Check if there are any obstacles that can snag the cables when the machine is moving.
- o) Remove all objects from the surface that can damage the machine. Remove reinforcing steel or other objects protruding from the surface in order to prevent damage to the machine.
- p) Warning! Make sure that the surface to be treated does not contain dangerous materials such as:**
 - combustible or explosive dusts or substances.
 - carcinogenic or pathogenic substances.
- q) It is necessary to provide for an adequate air change rate L in the room if the exhaust air is returned to the room. Comply with the National regulations.
- r) Secure the work area around the machine in public areas providing an adequate safety distance from the machine. Use a red and white safety chain and danger sign to enclose the work area.

3.2 Electrical safety

- a) Use only extension cables for extending the main cable that are sized and marked in accordance with the overall power consumption of the machine. Do not use damaged extension cables.
- b) Electrical cables must be rolled entirely off of the reels.
- c) Any damage to the electric cables and/or electrical components is not permitted.
- d) The voltage on the identification plate must comply with the power supply.
- e) Use an electrical power supply connection with earth connection and earth leakage circuit breaker.
- f) The circuit breaker of the power supply must have a "D" characteristic. Circuit breakers with a "C" or "B" characteristic can give problems when switching the machine on.
- g) Keep the machine original; The machine is always equipped with an earthed connection, do not change this** and always use earthed cables with an earthed plug.
- h) Inspect and test the electrical components regularly. The electrical components have to satisfy with the requirements set out in the harmonised norm EN60204-1.
- i) Always call a skilled electrician or your distributor when you have questions about the safety of the electrical components.
- j) Work on electrical equipment or operating materials may only be undertaken by a skilled electrician or by trained persons under the guidance and supervision of a skilled electrician as well as in accordance with the electrical engineering regulations.
- k) Always use tools that are insulated against voltages.
- l) Do not abuse the cables. Never use the cables for carrying, pulling or unplugging the machine. Keep cables away from heat, oil, sharp edges or moving parts. Damaged or entangled cables increase the risk of electric shock. Do not fold the cable or clamp it.
- m) Don't pull out the power supply cable out by the wire, but by the connector.
- n) Be careful with water on the treated surface. Electrical cables must not come into contact with water.
- o) The main power switch on the machine must be in the "Off" position before connecting to the power supply.
- p) During a long standstill of the machine, pull out the main plug.
- q) If the machine is to be operated using power from a generator, the generator must be operated in accordance with the current legal regulations and directives in force. (this applies to the protective earth conductor in particular) in order to ensure that all safety devices are functioning and to eliminate possible damage to electrical components.

3.3 Personal safety

- a) Always wear Personal Protective Equipment while working with the machine.**
 - Dust mask class FFP2 or higher
 - Ear protection
 - Safety glasses with lateral protection
 - Protecting gloves & Safety shoes
- b) Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts.
- c) Personnel must tie back long hair and not wear loose clothing or jewellery including rings.
- d) Stay alert, watch what you are doing and use common sense when operating the machine.
- e) Always seek professional medical attention immediately in case of injury.
- f) All persons surrounding the machine should wear Personal Protective Equipment.



3.4 Machine safety general

- a) Safety functions and operating functions must work correct.
- b) No loose bolts and nuts permitted.
- c) Never operate machine without the guards and/or safety devices in place.
- d) Never change anything on the safety devices on the machine!
- e) Do not use the machine when it is damaged.
- f) Do not **open** or **remove protective guards** while driving gears are running.
- g) Hoses and pipe work can be under high pressure. The temperature can be above 37° C. Use only hoses and pipe work that are sized and marked in accordance with the machine's overall power consumption.
- h) The machine, specially the handle grips must be dry and free of fats/oils.
- i) If the length of the brushes is, due to wear, less than 5mm or they are extremely deformed, the brushes have to be replaced. Check the Service Manual for the order numbers.
- j) All repair work has to be done by qualified Blastrac personnel, this guarantees a safe and reliable machine.
- k) Always use original Blastrac spare parts and abrasives. This will ensure the best performance. Only original parts meet the factory specifications and quality. Otherwise Blastrac BV cannot guarantee the safety of the machine. The part numbers can be found in the Service Manual.
- l) Check the rotating direction of the motor before operation. The correct direction is given with an arrow on the housing of the motor.
- m) If safety-critical changes occur to the machine or its working method, the machine must be shut down immediately! The cause of the fault must be established, and rectified.
- n) In the event of operational malfunctions the machine must be shut down immediately and secured!
- o) **Never use the machine without a suitable (Blastrac) dustcollector!**

3.5 Maintenance safety

- a) Pull out the main plug and place it in sight, before starting inspections and repairing on the machine..
- b) Wait for standstill of all drives before any inspections, adjustments and/or maintenance work is started.
- c) Block machine in stable position before doing any maintenance work.
- d) Failures due to inadequate or incorrect maintenance may generate very **high repair costs** and long standstill periods of the machine. **Regular** maintenance therefore is imperative.
- e) Operational safety and service life of the machine depends, among other things, on proper maintenance.
- f) Prevent premature wear by keeping the machine as dust free as possible. Clean the machine for this reason regularly with a dust collector and non-aggressive materials. Never use a high pressure water cleaner to clean the machine.
- g) It is advisable to stock all spare parts or wear parts that cannot be supplied quickly. As a rule, production standstill periods are more expensive than the cost for the corresponding spare part.

3.6 Shot/steelblasting safety

- a) Never lift the blast head during blasting! This could cause serious injury to yourself and others around you!
- b) **Abrasive can escape from the sides of the blast head at high speed!** Wear safety glasses with lateral protection and close-fitting protective clothing.
- c) Check the following parts daily for damage and wear to avoid unnecessary long and costly standstill on the workplace; blastwheel, feedspout, liners, magnet- and brush sealing;
Replace the parts when you can see obvious signs of wear and tear.
Wear grooves are acceptable until 75% of blade thickness has been worn away.
- d) Check the parts of the separator on wear and defects. Remove foreign bodies and dust deposits to prevent clogging of the separator.
- e) The cover of the separator and separator tray must be closed to keep the vacuum in the machine.
- f) The machine will heat up during blasting, don't risk getting burned, always wear gloves and only touch the handle grip(s).
- g) Check the level of abrasive in the storage hopper before work starts. Refill if necessary.
- h) Remove the abrasive from the abrasive storage hopper before storage.
- i) **In some cases sparks could be created by shot / steelblasting!**

3.7 Dustcollector safety

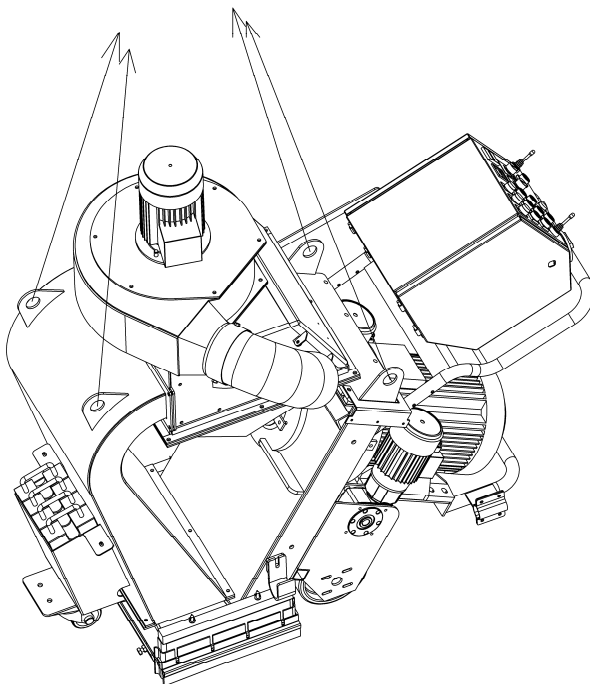
- a) Always use a Blastrac dust collector to ensure a dust-free operation of the machine and clean air at the workspace. Also the airflow helps to cool the machine and prevents overheating.
- b) Read the operating instructions of the dust collector before using it.
- c) The dust container/bag of the dustcollector must be emptied regularly. Comply with the local waste treatment regulations considering the removed material.
- d) The dust hose must be connected properly with a hose clamp and industrial tape.



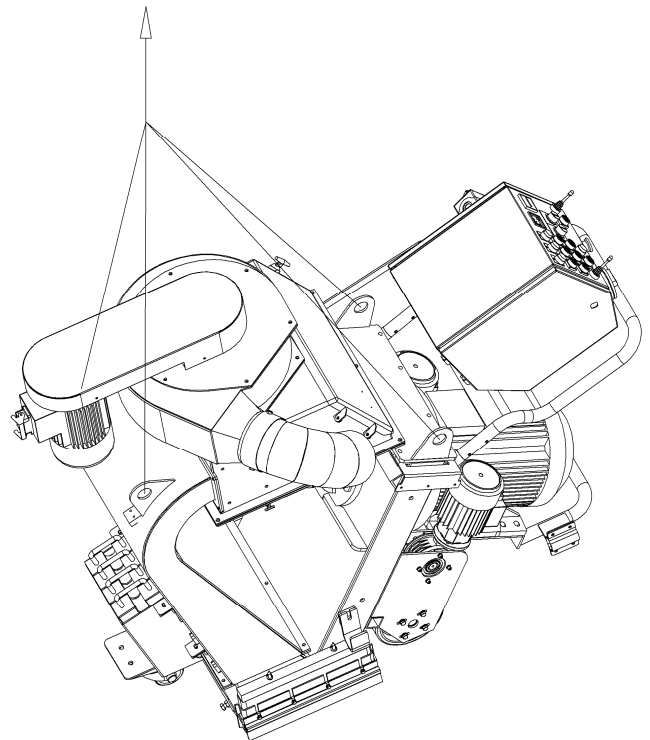
- e) The dust hose must be undamaged and free of obstructions.
- f) Always switch on the dust collector first!

3.8 Transport safety

- a) Be aware of your surroundings and machine operating level. Do not side hill, do not run on steep incline, this could cause machine to tip over.
- b) The weight of the blast machine is between 670 kg and 782 kg. Use a crane or lift when transporting the machine, use the lifting eyes of the machine.
- c) Before every use check the lifting eyes and welds for: deformation, damages, cracks, corrosion and wear.
- d) When lifting the machine from the ground, always use the lowest lifting speed. The cables must first be tensioned at this speed; they must not be slack when the machine is lifted from the ground.
- e) During hoisting make sure to be at a safe distance from the machine with the most optimal view on the machine and working environment.
- f) Never stand directly below the machine.
- g) When transporting the machine do so in such a manner that damage due to the effects of the use of force or incorrect loading and unloading is avoided.
- h) The lifting eyes can also be used to fasten the machine on a pallet or during transport.
- i) Always drive backwards when driving up to a ramp or grade, and forwards when driving of the ramp.
- j) Chock wheels for transport and keep control handles in neutral position.
- k) Don't leave the machine unsecured on jobsites.
- l) Park the machine always on a flat horizontal and levelled surface.
- m) Remove the abrasive from the machine before transport.
- n) Make sure the electrical cable and dust hose are disconnected before transport.
- o) Store the cleaned and dry machine in a humid free room. Protect the electrical motor from moisture, heat dust and shocks.
- p) Never use the machine for lifting persons or items.
- q) Only lift the machine as shown in the picture.



Blastrac 500-E
670 – 685 kg



Blastrac 500-E with lowering-kit
700 kg - 782 kg



3.9 Signs on the machine

The following stickers are placed on the machine. Meanings of these symbols are:

| | | | |
|--|--|--|---|
| | ! Danger Hazardous voltage in motor even when solid state controller is OFF. Disconnect main power before servicing motor, controller or associated wiring. | | Wear a dust mask class FFP2 or higher. |
| | Lifting point. | | Hearing protection is obliged. |
| | WARNING! It is not permitted to use Steel Abrasive harder than 50 Rockwell hardness. Abrasive harder than 50 Rockwell will damage the machine housing extremely. | | Safety glasses with lateral protection are obliged. |
| | No unauthorised person may operate this machine. | | CE-mark on this machine. |
| | | | Wear protecting gloves. |
| | | | Safety shoes obliged. |
| | | Consult the manual before operating the machine. | |

Type plate:

| | |
|--|---|
| | Name, address and CE mark. |
| | The machine type. |
| | The net weight of the machine in kilogram. |
| | The year of manufacture. |
| | The serial number of the machine. |
| | Email address, Website, Telephone & fax number. |

EU Declaration of Conformity:



4. Before operation

Before using the machine it is essential to inspect the machine.

It is not permitted to use the machine if the machine safety is not according the checkpoints below.

4.1 Checkpoints power supply

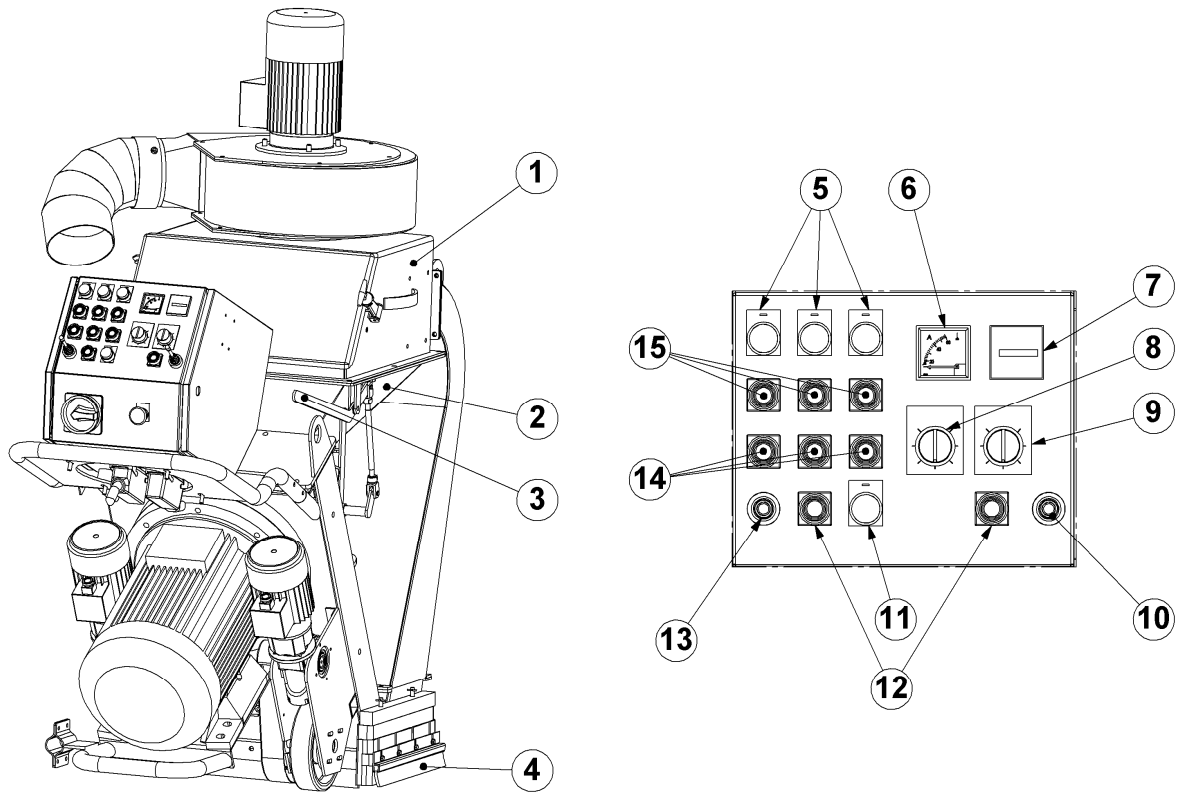
- Use only extension cables for extending the main cable that are sized and marked in accordance with the overall power consumption of the machine.
- Electrical cables must be fully unwind of them reels.
- No damage is permitted for electrical cables.
- Use an electrical power supply connection with earth connecting.
- The main switch of the machine should be put to 'Off' before connecting to the power supply.
- Make sure the power supply is in accordance with the machine specifications.
- The circuit breaker of the power supply must have a "D" characteristic. Circuit breakers with a "C" or "B" characteristic can give problems when switching the machine on.
- If the machine is to be operated using power from a generator, the generator must be operated in accordance with the current legal regulations and directives in force. (this applies to the protective earth conductor in particular) in order to ensure that all safety devices are functioning and to eliminate possible damage to electrical components.

4.2 Checkpoints of machine

- Safety functions and operating functions must work correct.
- Check all screws and other fasteners for tightness. No loose bolts and/or nuts are permitted.
- Check the electrical components, cables and connections for wear and/or damages.
- Dust hose connection must be reliable: use hose clamps and industrial tape.
- Dust hoses must be undamaged and free of obstructions
- Make sure that the dust bin / bigbag is empty and connected properly.
- Check the following parts for damage and wear: blastwheel, feedspout, liners, magnet- and brush sealing. Replace the parts when you can see obvious signs of wear and tear.
Wear grooves are acceptable until 75% of blade thickness has been worn away.
- Check de parts of the separator on wear and defects. Remove foreign bodies and dust deposits.



4.3 Getting to know the 500E



| | | | | | |
|---|-----------------------|----|----------------------------|----|---|
| 1 | Separator | 6 | Ammeter | 11 | Control light Voltage |
| 2 | Hopper | 7 | Hour counter | 12 | Drive motor L or R Stop |
| 3 | Abrasive valve handle | 8 | Speed control | 13 | Joystick drive motor left |
| 4 | Brush sealing | 9 | Tracking | 14 | Push buttons OFF: Drive/fan motor/blast motor |
| 5 | Control lights | 10 | Joystick drive motor right | 15 | Push buttons ON: Drive/fan motor/blast motor |

4.4 Separator

The abrasive separator is mounted to the end of the rebound plenum. It separates the abrasive from contaminants and feeds the cleaned abrasive back to the abrasive storage hopper. A wire mesh is fitted to prevent any large contaminants from getting into the blast wheel. In order to clean the wire mesh, the separator door can be opened to remove the large contaminants. Check and empty the wire mesh before and after each operation.

During operation U should check the wire mesh every 3 hours for foreign matter and large contaminants.

4.5 Hopper

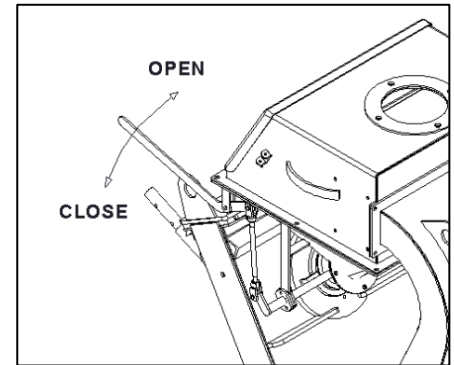
The abrasive storage hopper contains the abrasive before it is led to the feed spout and abrasive valve. Fill the separator equally with the selected abrasive up to the bottom of the separator tray. The abrasive valve must be closed whilst doing this. Check regularly and refill if necessary.



4.6 Control handle of the abrasive valve

Between the abrasive storage hopper and the blast housing there is a valve in order to control the abrasive flow towards the blast wheel. Any change in the opening of the valve causes the amount of abrasive fed to the blast wheel to change. The change in the abrasive fed can be read from the ammeter. The valve is hand-operated by the **abrasive valve handle**.

This lever is located on the right side of the control box and can be adjusted so that any quantity of abrasive can be fed to the blastwheel. Optimum blast cleaning power is reached when the ammeter indicates the operating current. It is not permitted to blast with a higher current value. Pull the handle upwards to open the shot valve, and push the handle downwards to close the shot valve.

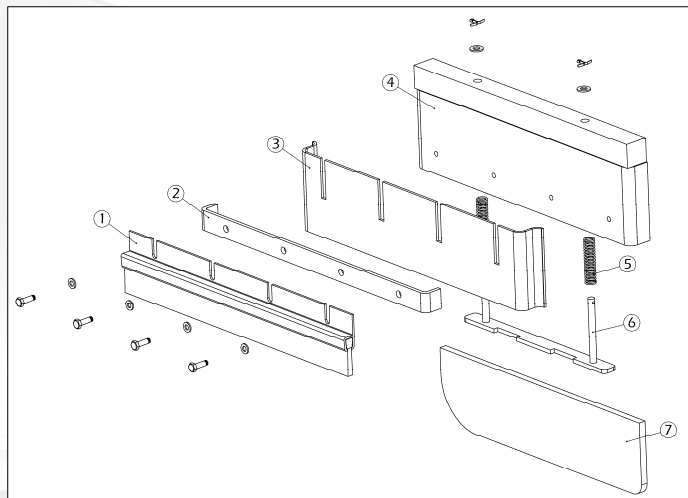


4.7 Abrasive sealing

The front seal system consists of three polyurethane seals to ensure that a good fit is maintained between the side seals and the work surface at the bottom.

The rear seal system comprises of one back brush, which is located inside the rear seal box.

Side seal system:



| | |
|---|-------------------------|
| 1 | Side brush |
| 2 | Side skirt fixing plate |
| 3 | Side skirt |
| 4 | Seal box |
| 5 | Side seal spring |
| 6 | Side seal spring plate |
| 7 | Side seal |

Method of installing side seals (7) :

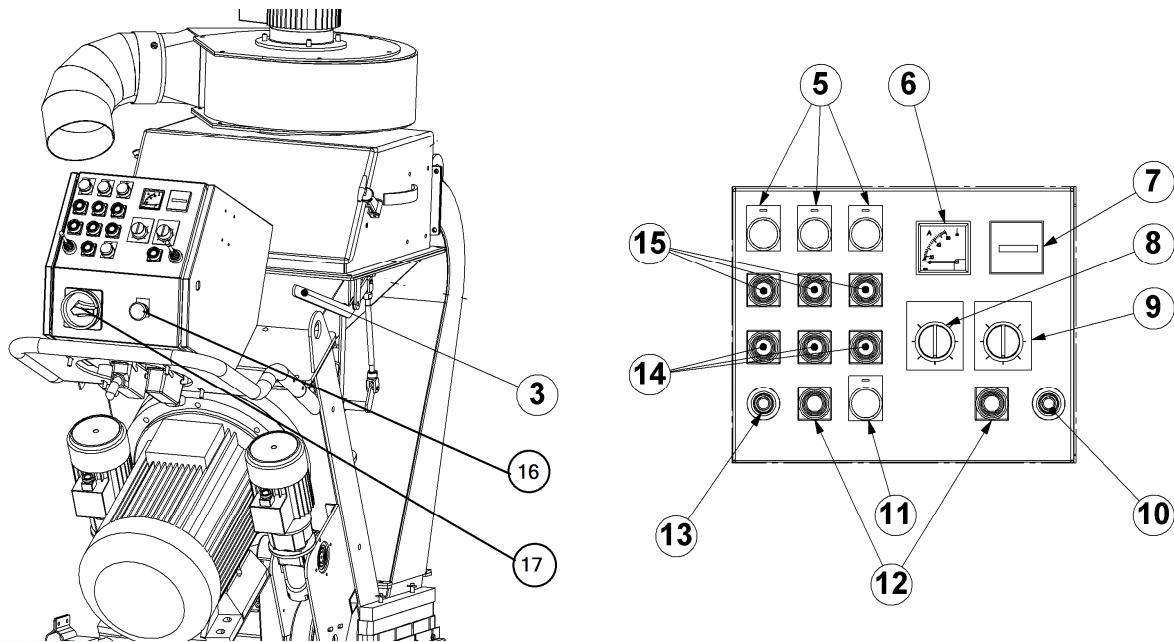
It is necessary to lift one side of the machine at a time to enable the seals to be put in place at the bottom. This is achieved as follows:

1. Check that power to the machine is on.
2. With the directional controls in central position (neutral) press the drive start button.
3. Place a drive ramp behind one of the drive wheels, position both joysticks in reverse, slowly turn the speed control clockwise and the machine will drive backwards on the drive ramp. When the side of machine is approx. 75 mm from ground level, turn the speed switch counter-clockwise to stop.
4. From the rear, slide the side seal into the seal box.
5. Position both joysticks in forward position, slowly turn the speed control clockwise. The machine will move forward and down the ramp. At the same time the side seal will fully locate into seal box. Check that both axles of the side seal spring plate have come out at the top of the seal box, to be sure that the side seal is positioned correctly.
6. Repeat this sequence of operations to install a new seal at the opposite side.



4.8 The control box

The control box is equipped with all control elements and instruments for monitoring and controlling the machine.



| | | | | | |
|---|-----------------------|----|----------------------------|----|---|
| 3 | Abrasive valve handle | 9 | Tracking | 14 | Push buttons OFF: Drive / Fan / Blast motor |
| 5 | Control lights | 10 | Joystick drive motor right | 15 | Push buttons ON: Drive / Fan / Blast motor |
| 6 | Ammeter | 11 | Control light Voltage | 16 | Emergency shutdown button |
| 7 | Hour counter | 12 | Drive motor L or R Stop | 17 | Main power switch |
| 8 | Speed control | 13 | Joystick drive motor left | | |

3. Abrasive valve handle

This lever is located at the right side of the control box and can be adjusted so that any quantity of abrasive can be fed to the blastwheel. Optimum blast cleaning power is reached when the ammeter indicates the operating current. It is not permitted to blast with a higher current value. Pull the handle upwards to open the shot valve, and push the handle downwards to close the shot valve.

5. Control lights for: Drive / Fan motor / Blast motor.

When lit it indicates that the selected item has been turned on.

6. Ammeter

This meter indicates the power consumption of the blastmotor in ampere. The ammeter shows the blast cleaning load onto the surface.

7. Hour counter

Shows the number of working hours. Useful for maintaining a proper maintenance schedule.

8. Speed control

Dial for setting the drive speed of both drive motors. Rotating the speed control dial in counter-clockwise direction reduces the directional speed of the machine to a full stop.



9. Tracking

This dial can be used to steer the machine slowly by tuning down the left or right drive motor.

10. + 13. Joystick drive motor right & left

Each joystick has 3 settings to control the corresponding drive motor : Forwards – Neutral – Reverse. Left and right controls are independent from each other, giving instant forward, reverse and precise steering control as follows:

| | | |
|--|---|---------------------------------------|
| Both controls in forward position | : | Machine drives forwards |
| Both controls in reverse position | : | Machine drives backwards |
| One control forward, one control reverse | : | Machine turns around its center point |

11. Control voltage lamp

When lit it indicates that the machine has power supply.

12. Drive motor L or R Stop

These buttons can be used to steer the machine by shortly actuating them. Pressing one of the buttons will make the corresponding drive-motor stop (as long as the button is pressed). Releasing the button will make the corresponding drive-motor drive again.

14. Push buttons OFF: Drive / Fan / Blast motor

Pressing the red STOP-buttons switches the corresponding parts of the machine OFF.

15. Push buttons ON: Drive / Fan / Blast motor

Pressing the green START-buttons turns the corresponding parts of the machine ON.

16. Emergency shutdown button

Red mushroom-shaped emergency shutdown push button, this button cuts off all power to the machine. Turn to unlock. After use of the emergency button, all functions have to be re-started manually.

17. Main power switch

The main power switch is located on the control box. It has to be switched OFF when connecting the machine to the power supply. It has to be switched ON before operating the machine. The main power switch can be locked in the "OFF" position by using a padlock and placing it through the main switch.



5. Operating

During operating the machine, the following additional safety instructions must be followed closely. Before switching on the machine make sure that no-one can be endangered when the machine starts up.

5.1 Before switch on

- Check the distance from brush sealing to the floor. This may be max. 1 mm.
- Fill the separator equally with the selected abrasive up to the bottom of the separator tray. The abrasive valve must be closed whilst doing this.
- Connect the blast machine and dust collector with the dust hose. This connection must be reliable.
- Connect the power supply cable of the dust collector with the main power supply / generator. Be sure that the electrical power supply is correct.

Checking the turning direction of the motor(s)

- Start the machine for a few seconds by pressing the green 'Blastmotor START' button.
- Stop the machine by pressing the red 'Blastmotor STOP' button.
- Check the rotating direction of the Blastmotor (indicated with an arrow).

Correcting the turning direction of the motor(s)

- Switch off the motor and put the main power switch to the OFF-position.
- Wait for a complete standstill of all drives.
- Unplug the machine from the power supply.
- Change the phases of the power supply.
- Reconnect the machine to the power supply and check the turning direction of the motor again.

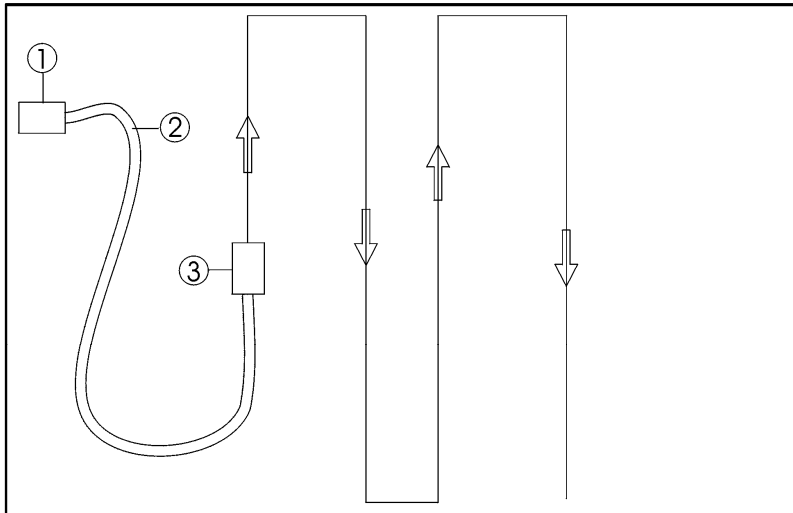
5.2 Switching the machine on

- Make sure the side seals are in place.
- Before switch on the blast machine, switch on the filter unit.
- Press the green push buttons "Fan START" and "Blast motor START" and check the rotating direction of the blast motor. The correct direction is given with a arrow on the housing of the motor.
- Select the speed using the speed control knob. (item 8 of machine description)
- Set both joysticks of the drive motors in the "FORWARD" position.
- Press the green "Drive START" button.
- When the machine is traveling, open the abrasive valve. Observe the ammeter. It may indicate the full load amperage. After having blasted aprox. 2 m, close the abrasive valve, stop the machine and check the blasted surface.
- If the 'hotspot' is too much on the right, turn the cage a little bit clockwise.

Never adjust the cage during blasting!!

5.3 Operation

Carry out blasting in parallel tracks in such way that the dust hose and electric cable do not become twisted. The next figure shows the recommended blast paths leading away from the dust collector.



| | |
|---|------------------------------|
| 1 | Dust collector |
| 2 | Dust hose and electric cable |
| 3 | Blast cleaning machine |

Make sure that no vehicles, such as forklift trucks and other equipment run over the electric cable and the dust hose.

The selection of the correct advancing speed of the blast machine is important for a good blast cleaning result. In the case that the surface has different characteristics (e.g. different hardness or different coating thicknesses), a uniform blast result can be achieved by varying the advancing speed during blast cleaning.

The advancing speed depends on the material of the surface to be blast cleaned and the desired profiling.

The correct advancing speed can be found out by observing the blasted surface and varying the speed during the blast cleaning process.

Check the separator tray every 3 hours for foreign matter and large contaminants.

5.4 Switching the machine off

- Close the abrasive valve.
- Stop the drive motors.
- Switch off the blast motor
- Switch off the fan motor
- Switch the main switch to position "OFF"
- Pull out the connector of the main power supply of the machine.
- Switch off the filter unit.
- Wait for standstill of all drives before any inspection or maintenance works are started.

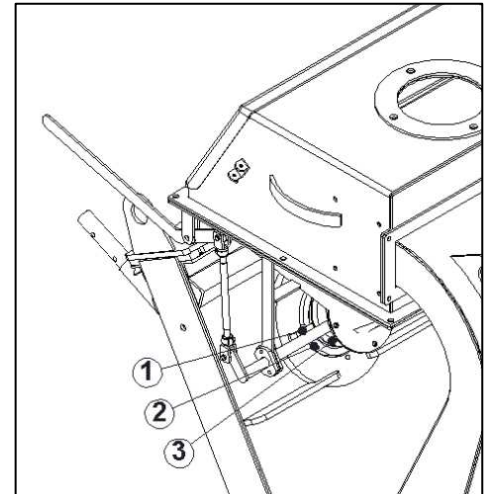


5.5 The blast pattern

Abrasive leaving the blast wheel blades is not thrown in all directions. Scatter is restricted to an angle of about 80°. This is achieved through the use of a control cage which surrounds the impeller. The position of the window in the control cage determines the blast pattern.

Correct adjustment of the control cage and thus of the blast pattern is the most important factor for optimum working with the blast cleaning machine.

Incorrect adjustment of the control cage results in very high wear and premature blasting-through of the liners in the blast wheel housing, as well as reduced blasting performance and a possible loss of the rebound energy of the abrasive.



| | |
|---|---|
| 1 | Cage clamp |
| 2 | Control cage |
| 3 | Shot valve housing And feed spout rubber |

The following 5 factors affect the blast pattern:

- The turning direction of the blast wheel must correspond to the instructions on the housing (arrow indicating the turning direction).
- With increased wear of the blast wheel, blades, impeller and control cage, the blast pattern will change.
- The size of the abrasive affects the blast pattern. With every exchange of abrasive, the blast pattern must be re-adjusted.
- The correct adjustment of the control cage is the most important factor to obtain an optimum blast pattern. Each control cage has a lateral window. The position of the window determines where the abrasive is fed onto the blast wheel blades and where it hits the surface to be treated.
- Different types and hardness of surfaces.

5.6 Adjusting the blast pattern

The adjustment is effected by loosening the cage clamps (1) and turning of the control cage (2). The cast grooves on the control cage(2) show the position of the control cage opening.

- a) Move the blast head of the blast machine onto a 5-8 mm thick steel plate and blast for 15 seconds at full amperage without moving the machine from the spot.
- b) Move the machine from the blast zone and carefully inspect the steel plate.
- c) You will find the hot spot on the blasted surface where the machine has developed the highest blast cleaning intensity. This spot is normally somewhat lighter than the rest of the blast cleaned area due to the large amount of heat that is generated.
- d) If the 'hotspot' is too much on the right, turn the control cage a little bit clockwise: Loosen the cage clamps to adjust the position (3-6mm). Look at the notches which indicate the upper and lower window edges. Tighten the cage clamps after adjusting.
If the 'hotspot' is too much on the left, turn the control cage a little bit counter-clockwise.
- e) Repeat the process until an even temperature across the blast pattern is achieved. An even temperature from left to right indicates that the control cage is correctly positioned.
- f) Now the blasting procedure can be started. When a concrete surface is to be blasted, check the blast pattern again after some meters and re-adjust slightly if necessary.

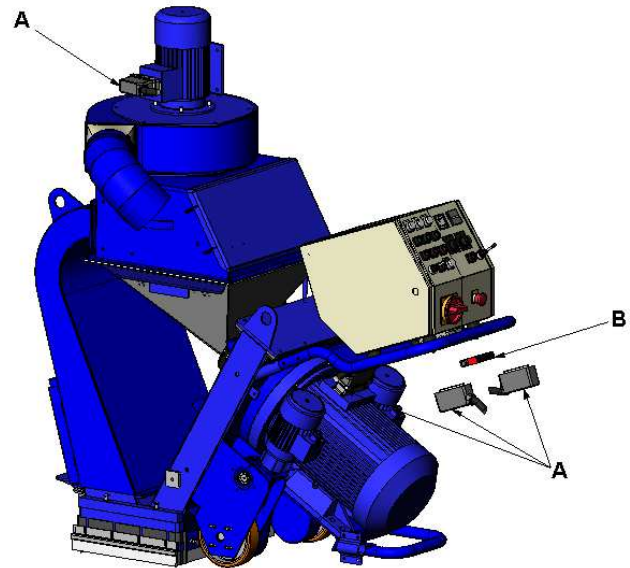
WARNING! Never loosen the cage clamps or try to adjust the control cage when the machine is in operation!!



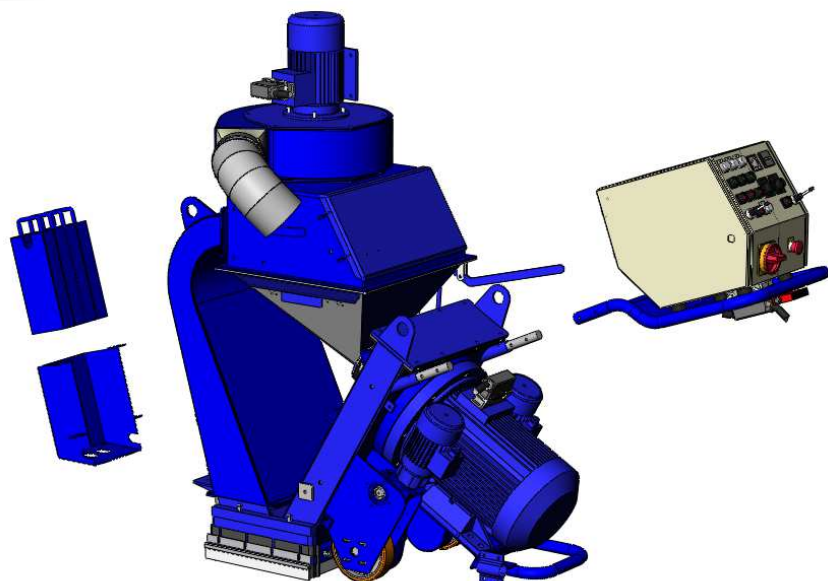
5.7 Disassemble procedure 500E Global

After disassembling the machine can fit through a 24"-man hole.

1. Make sure power supply is disconnected.
2. Remove the suction hose.
3. Remove cable ties of the power supply cables.
4. Disconnect cables of the electrical motors (A) and, if present, remove safety eye (B).
5. If present remove earth cables (yellow/green).

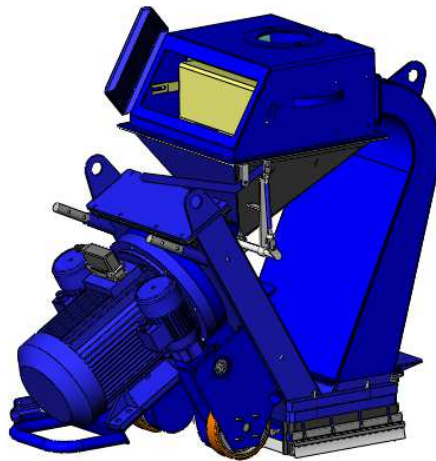
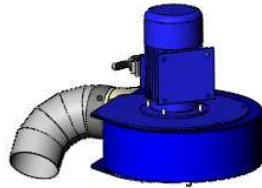


6. Remove handle with panel (M8 bolts)
7. Remove weights and weight bracket (M8 bolts)

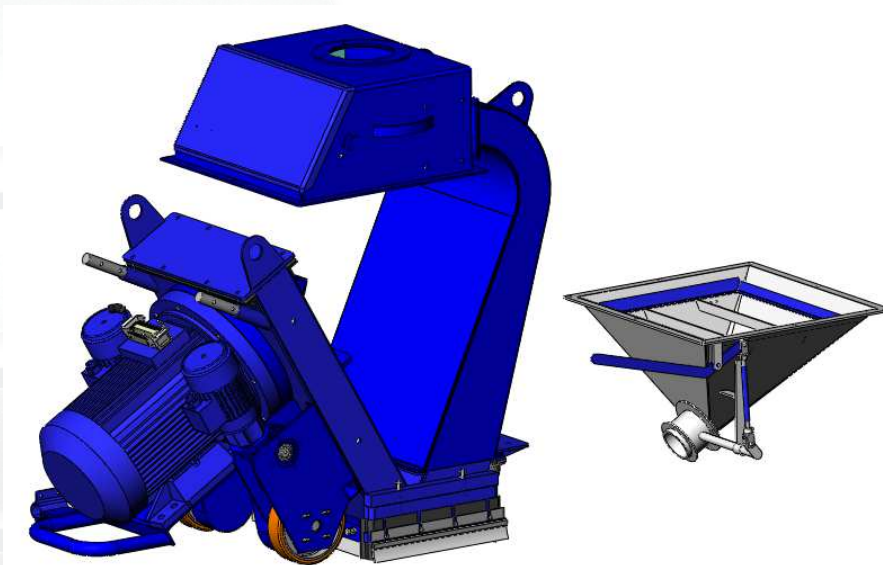




8. Open the separator door; this gives access to the nuts of the fan unit.
Remove fan unit (4x M12 nut).

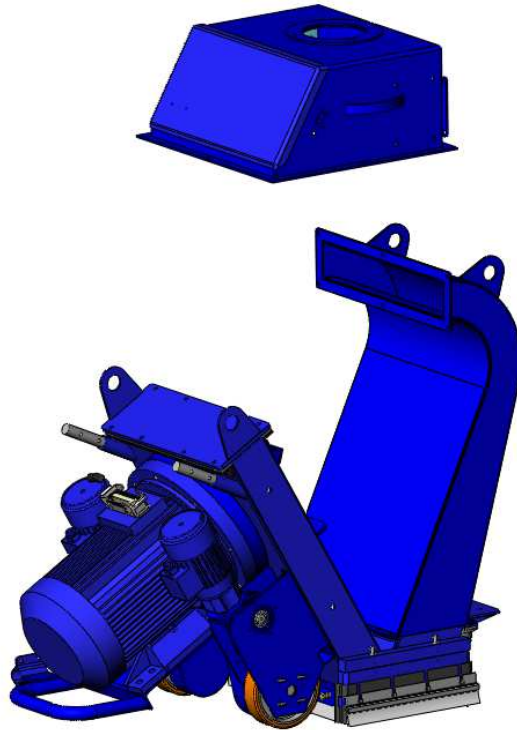


9. Remove hopper (8x M8 bolt). Move the hopper out at the side of the shotvalve handle.

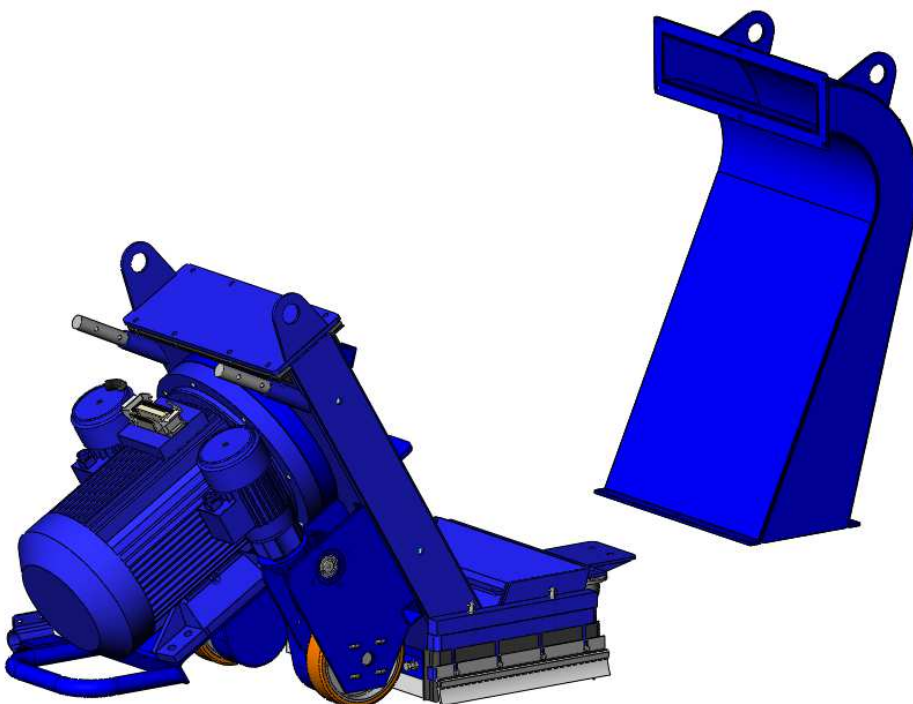




10. Remove separator (6x M8 bolt).

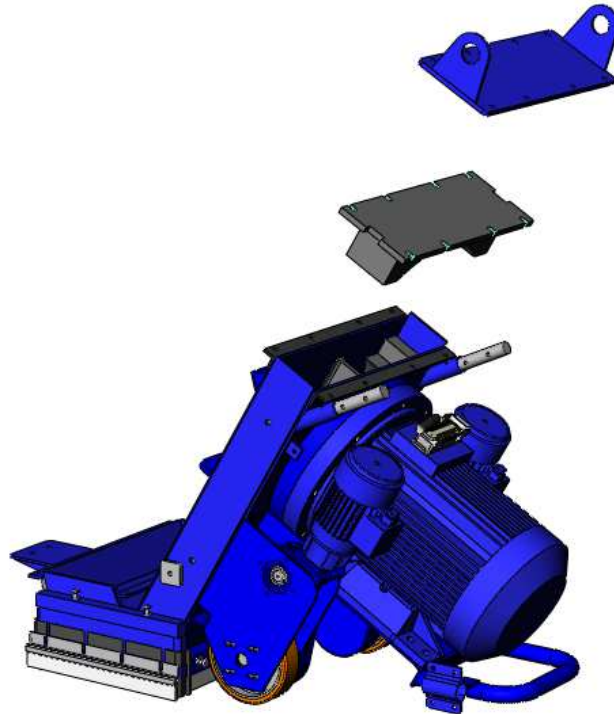


11. Remove rebound (6x M8 bolt). Remove lute/glue rests of the flanges.

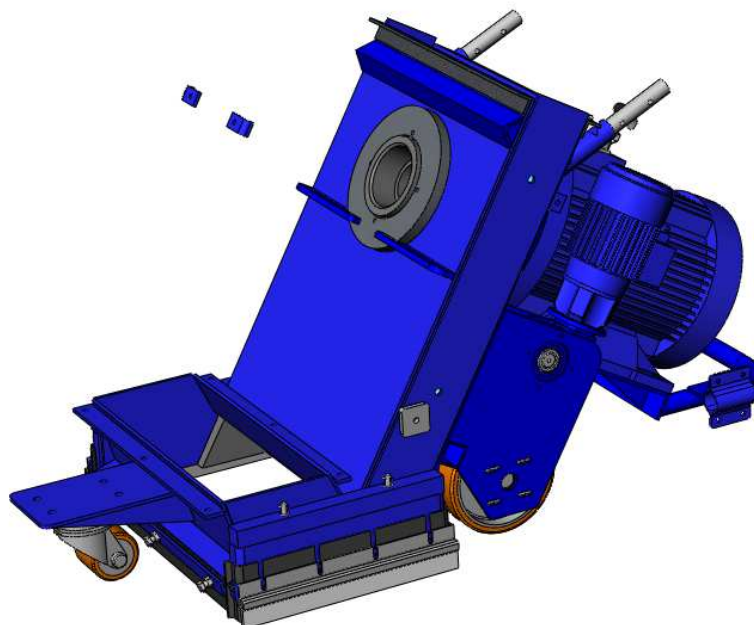




12. Remove top liner cover (8x M10 bolt).
13. Remove top liner with a crowbar or a solid screwdriver. Remove lute/glue rests.

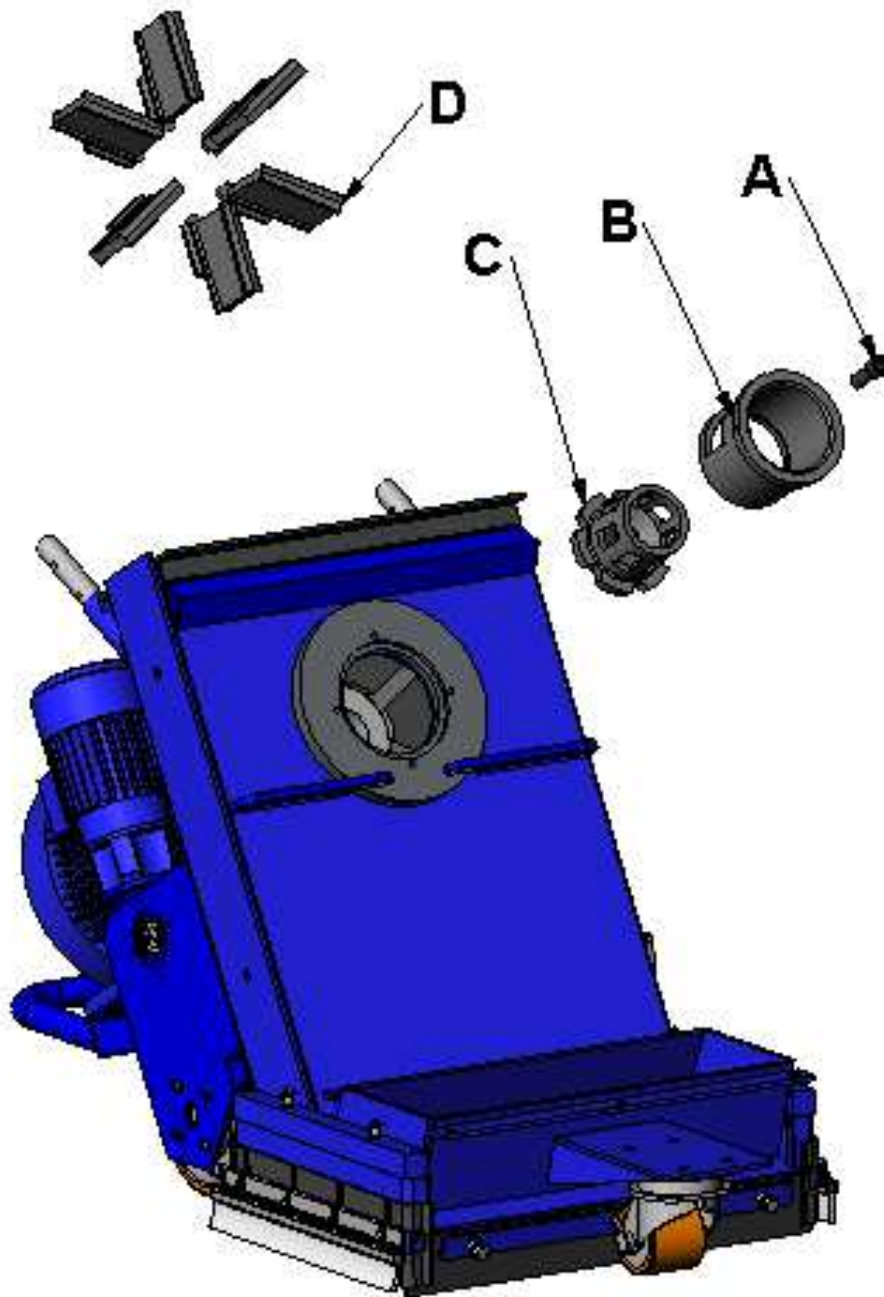


14. Remove cage clamps (2x M8 nut).



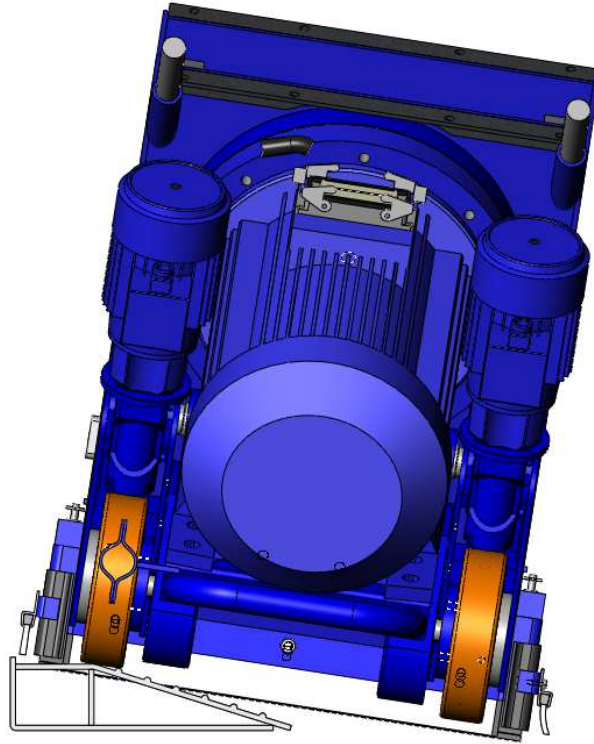


15. Remove cage (B), loosen with a hammer of copper or rubber hammer.
16. Remove impellor bolt (A) M16 hexagon bolt.
17. Remove impellor (C).
18. Remove 6 blades (D), loosen with a hammer of copper or rubber hammer.

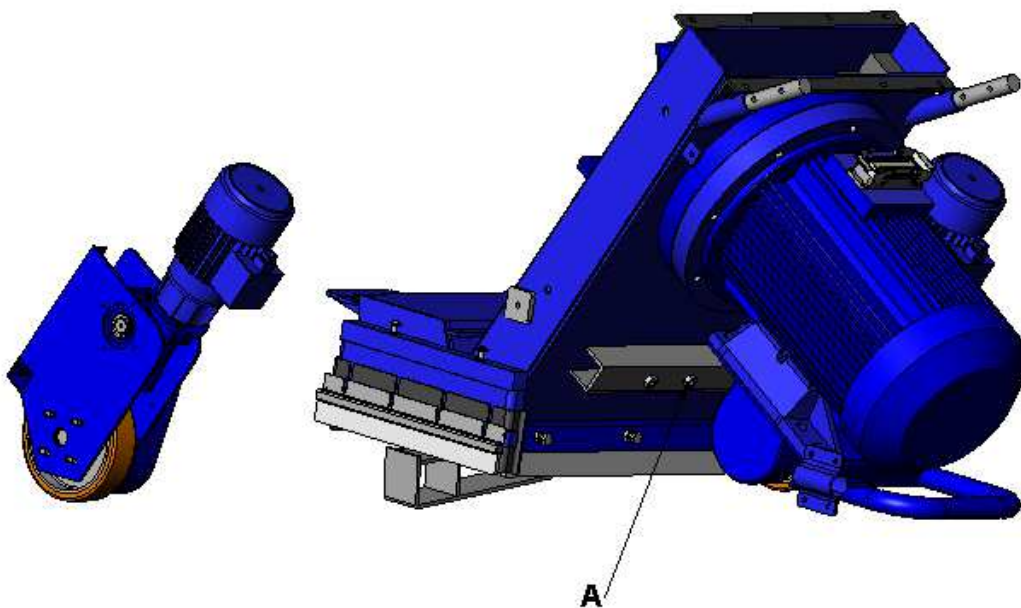




19. Slide a drive ramp under the body.

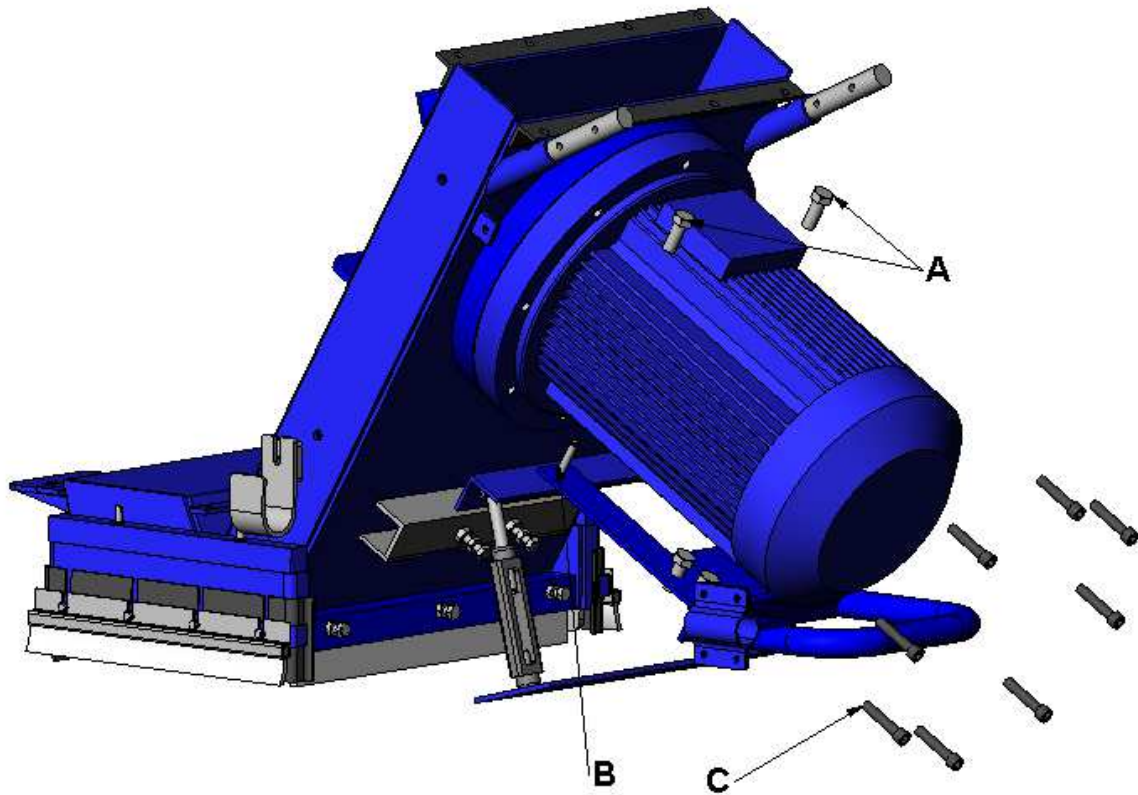


20. Loosen two nuts (A) M12 by the motor bracket body and pull off the drive wheel system.



21. Remove drive ramp and repeat point 19 and 20 by other side.

22. Remove the foremost two M12 bolts of the motor bracket (A)

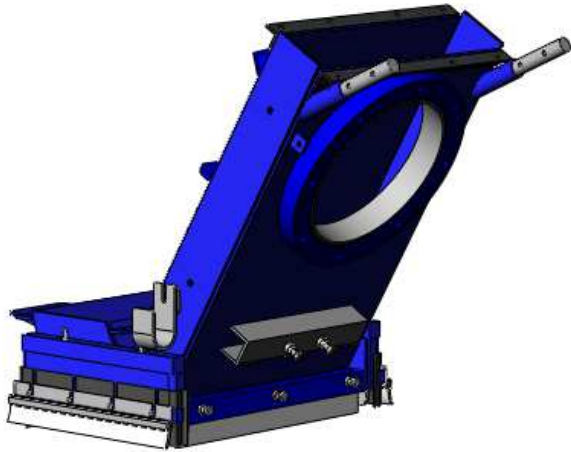


23. Place the blast motor dismantle bracket (B) under the motor bracket. The two wire ends fits into the holes of the motor bracket.

24. Remove 8x M10 hexagon bolts (C) of the motor flange.



25. Lift the body and move the body forwards.



The machine will now fit through a 24"-man hole. Before building up the machine clean the body and the blastwheel with air. Inspect the body, seals and brushes. Replace them when they are damaged or worn.

Building up the machine, do this program backwards.

At point 16 it is very important to clean the thread inside the motor axle and the thread of the impeller bolt before re-mounting the impeller bolt.



6. Maintenance

Pay attention to Chapter 3 "**Safety**" during maintenance and repair works.

Failures due to inadequate or incorrect maintenance may generate very **high repair costs** and long standstill periods of the machine. **Regular** maintenance therefore is imperative.

Operational safety and service life of the machine depends, among other things, on proper maintenance.

The following table shows recommendations about time, inspection and maintenance for the normal use of the machine.

| Operating hours/ time period | Inspection points, maintenance instructions |
|----------------------------------|--|
| 12 h after repairing | Check all accessible screw connections for tight seat. |
| Every 3 hour | Check the separator tray, the hopper, the feed spout and blast wheel unit for foreign matter and large contaminants. |
| Daily and prior to starting work | <ul style="list-style-type: none"> Check that all safety devices working adequate. Check the feed spout, and abrasive sealing. Check the blastwheel, control cage and liners. Check the electric connections for sediments of dirt or foreign bodies. Check the electric motors for dirt and other contaminants. Check the function of the residual current operated device. Check the hose connections for tightness and fixed seat. Check all hoses on the machine for damages or leakage. Make sure that the dust bin is emptied |
| Every 3 months | Check the tension of the V-belts |
| Annually | Full overhaul and cleaning of the complete machine. |

The time indications are based on uninterrupted operation. When the indicated number of working hours is not achieved during the corresponding period, the period can be extended. However a full overhaul must be carried out at least once a year.

Due to different working conditions it can't be foreseen how frequently inspections for wear check's, inspection, maintenance and repair works ought to be carried out. Prepare a suitable inspection schedule considering your own working conditions and experience.

Our specialists will be happy to assist you with more advice.

Prior to any repair works on the machine and its drives, secure the machine against unintentional switching on. Put the machine to its safety off position.

The machine is in a safe condition when it cannot generate any hazard.

Follow additional operating and maintenance instructions of Original Equipment Manufacturer if included during your service and maintenance work.

Further is advised:

Store the cleaned and dry machine in a dry and humid free room. Protect the electrical motors from moisture, heat, dust and shocks.

All repair work must to be done by qualified Blastrac personnel, this to guarantee a safe and reliable machine.



Any guarantee on the machine is expired when:

- Non original Blastrac parts have been used
- Repair work is not done by qualified Blastrac personnel
- Changes, add on's or conversions are undertaken without written permission of Blastrac BV

Screws, bolts etc. that have been removed must be replaced with those of the same quality, strength, material and design.

Do not weld, flame cut or perform grinding works on or near the machine. Danger of fire or explosion exists!

Provide adequate ventilation when working in a confined space.
Secure the maintenance area if necessary.

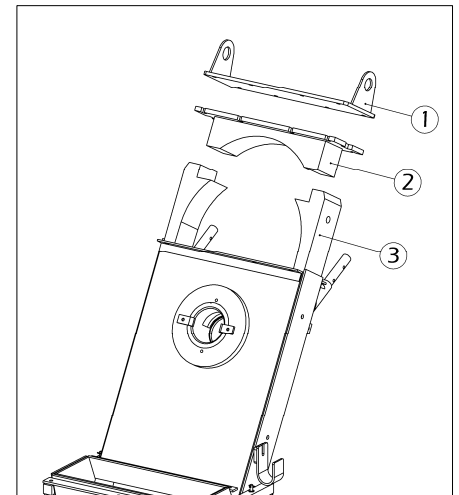
Clean the machine every day with air and non-aggressive materials. Never use a high pressure water cleaner to clean the machine.

6.1 Changing the liners

- Loose the bolts of the top liner cover and remove the cover and top liner.
- Loosen the nuts of the side liners. Take them out of the housing.

To mount the liners, keep on the following sequence:

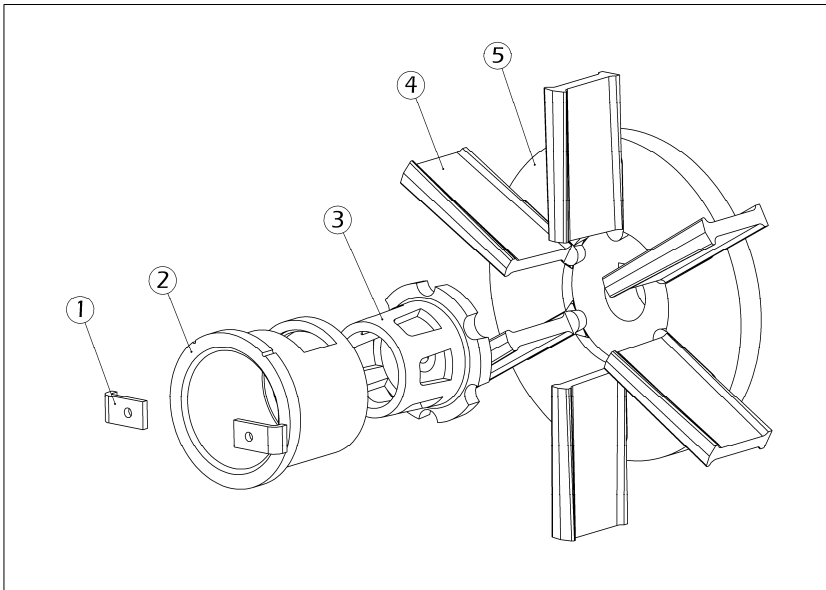
- Replace all worn items.
- Clean the liners and the inside of the blast housing thoroughly.
- Re-assemble the machine in reverse order, using kit between the top liner and the side liners, and between the top liner and the front and rear plates of the blast housing.
- Make sure that the top liner sits close at the edges of the side liners.



| | |
|---|-----------------|
| 1 | Top liner cover |
| 2 | Top liner |
| 3 | Side liner |

6.2 Changing the blast wheel blades and impeller

- Remove the abrasive storage hopper.
- Remove the cage clamps and cage.
- Block the blast wheel and remove the central fixing bolt.
- Remove the impeller using a wooden or brass drift.
- Remove the top liner cover and remove the top liner using a screwdriver or a crowbar.
- Clean the blast wheel and the blades with air.
- Through the opening of the blast housing: use a wooden or brass drift to tap out all six blades from the blast wheel towards the center of the blast wheel.



| | |
|---|-------------------|
| 1 | Cage clamp |
| 2 | Control cage |
| 3 | Impeller |
| 4 | Blades (set of 6) |
| 5 | Blast wheel |

Use a new central fixing bolt when mounting new blast wheel blades.

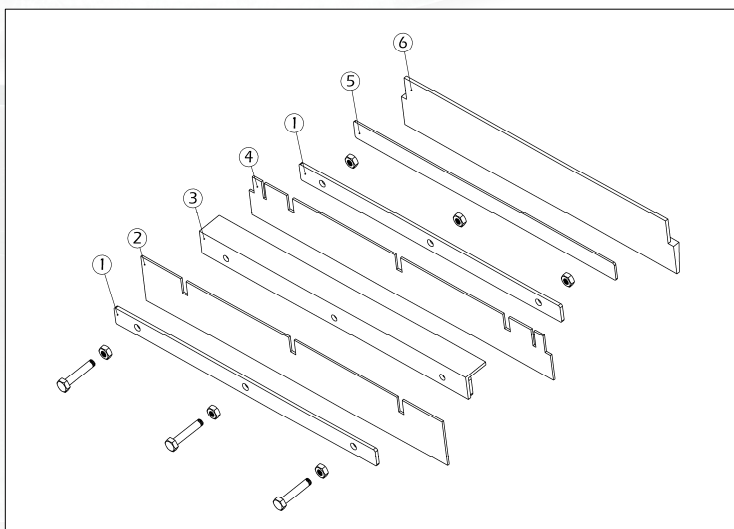
Replace the blades with six new ones and re-assemble the machine in reverse order. Note: blast wheel blades must be replaced as a set. Replacing only some of the blades can cause imbalance of the blast wheel.

6.3 Abrasive sealing

The front seal system comprises of three polyurethane seals to ensure that good fit is maintained between the side seals and the work surface at the bottom. The seals are located in a seal box at the front of the blast opening of the cabinet and are clamped into place by bolts and plates.

To obtain access to front seal system:

1. Connect the machine to the power supply, drive the machine backwards on the two drive ramps and lift the front side of the machine until the rear of the blast wheel motor rests on the work surface. **Important note:** to prevent injury lock the front side of the machine with a wooden block.
2. Unscrew the bolts at the front of the seal box. This releases the clamp plates holding the seals. Pull worn seals out of the locating box.
3. Replace worn seals. Fit new seals, each interspaced by a steel strip as shown below. Retighten the bolts and nuts.
4. Remove the wooden block, lower the front of the machine and drive the machine from the ramps.

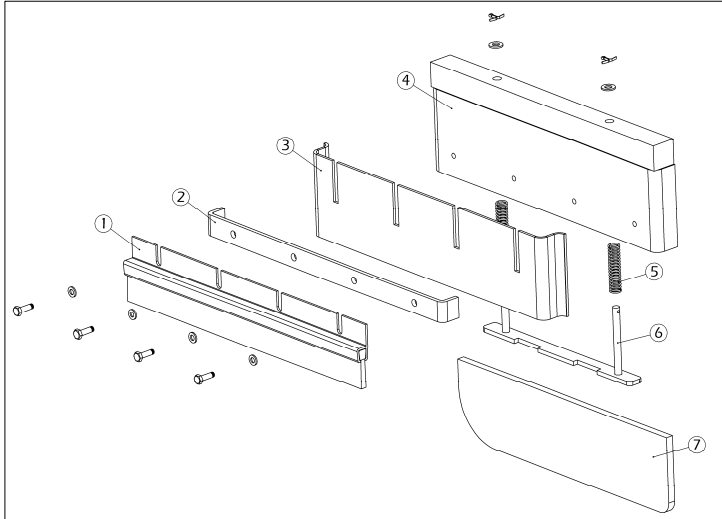


| | |
|---|----------------------------------|
| 1 | Front locating plate inner/outer |
| 2 | Front skirt outer |
| 3 | Front seal box (machine) |
| 4 | Front skirt intermediate |
| 5 | Front skirt fixing plate |
| 6 | Front skirt inner |



Side seal system:

The side skirts and brushes are fixed to each side seal box with a plate and four screws. To replace them: unscrew the screws and remove the side skirts and brush and replace them if necessary.



| | |
|---|-------------------------|
| 1 | Side brush |
| 2 | Side skirt fixing plate |
| 3 | Side skirt |
| 4 | Seal box |
| 5 | Side seal spring |
| 6 | Side seal spring plate |
| 7 | Side seal |

Method of installing side seals:

It is necessary to lift one side of the machine at a time to enable the seals to be put in place at the bottom. This is achieved as follows:

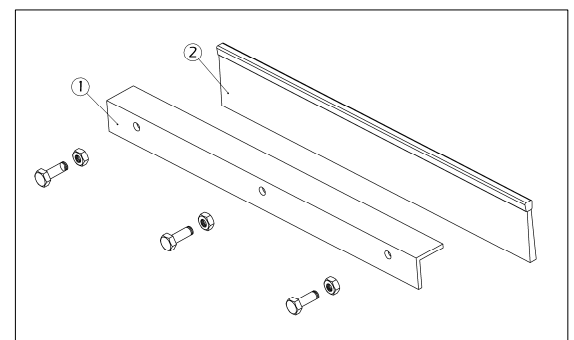
1. Check that power to the machine is on.
2. With the directional controls in central position (neutral) press the drive start button.
3. Place a drive ramp behind one of the drive wheels, position both joysticks in reverse, slowly turn the speed control clockwise and the machine will drive backwards on the drive ramp. When the side of machine is approx. 75 mm from ground level, turn the speed switch counter-clockwise to stop.
4. From the rear, slide the side seal into the seal box.
5. Position both joysticks in forward position, slowly turn the speed control clockwise. The machine will move forward and down the ramp. At the same time the side seal will fully locate into seal box. Check that both axles of the side seal spring plate have come out at the top of the seal box, to be sure that the side seal is positioned correctly.
6. Repeat this sequence of operations to install a new seal at the opposite side.

Rear seal system:

The rear seal system comprises of one back brush, which is located inside the rear seal box. It is clamped in place by locking screws.

To replace the back brush:

1. Drive the machine on the drive ramps as written above.
2. Unscrew the locking screws and pull out the worn brush.
3. Fit the new back brush inside the seal box and tighten the locking screws.



| | |
|---|---------------------------|
| 1 | Rear seal angle (machine) |
| 2 | Back brush |

6.4 The V-belts

The V-belt drives are designed for the installed driving power. To force a higher output through an excessive high tension of the V-belts will result in broken belts, damage to the bearings and causes loss of the total efficiency. Too low belt tension will cause slipping with the result of a very high temperature of the V-belt and a premature destruction of it. Temperatures over 70° for a longer period will decrease the working life and the efficiency of the V-belts. The grooves of the V-belt pulleys must be free of rust, fat and dirt and must not show any damages. The use of belt wax or similar substances in order to increase the friction coefficient is not necessary and it damages the V-belts. Soiling due to oil, grease or chemicals have to be avoided.

In order to get perfect power transmission the V-belt drives have to be checked every 3 months.

6.5 V-belt mounting

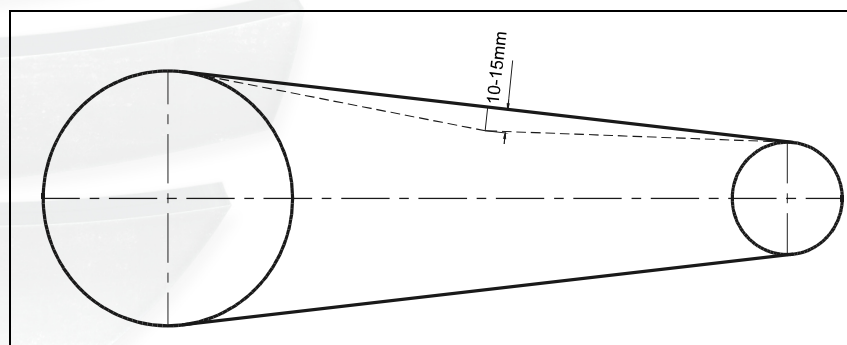
Remove the belt guard only when the driving motor is in standstill and the power supply cable of the machine is disconnected from the power source.

- Reduce the distance between the driving motor and the bearing to release the tension of the V-belt drive.
- Carefully put the V-belt in the grooves of the V-belt pulley by hand and without using the force.
- Increase the distance between the driving motor and the bearing to stretch the V-belt as following described.
- Fix the required driving gear guards.

6.6 V-belt tension

The correct V-belt tension is of utmost importance in order to obtain a perfect power transmission and to reach the usual working life of the V-belt. Too low or too high tension causes frequently a premature breakdown of the V-belt. Excessive belt tension results in damaged bearings at drives.

Check the tension of the V-belt by pressing the thumb on the belt. The belt has the correct tension if you can press it in about 10-15 mm at approx. 10 kg. pressure.





7. Selection of abrasive

The Blastrac blast cleaning machines are designed and built to operate with **Blastrac abrasive**.

Blastrac abrasive has a very high quality and has the rebounding ability required for the efficient use of the machine. The selection of abrasive is very important since this is the material to carry out the surface treatment.

Media nr. 2

Is often used when the surface is only subsequently sealed.

- creates fine profiles, e.g. on vacuum concrete and non-glazed tiles
- removes thin layers of rust on steel surfaces
- removes thin layers of paint

Media nr. 3 Abrasive S330

- creates a fine to medium texture on concrete.
- removes glazing from tiles prior to subsequently coating with antiskid floor sealings
- removes old impregnations and coatings about 1 mm thick

Media nr. 4 Abrasive S390

Standard abrasive, suitable for about 50-60 % of all applications. Creates a medium profile on concrete. Fulfills the same purpose as Media No. 3 when a higher speed of the machine is required, e.g. on asphalt, in order to keep the thermal load low.

- removes laitance from new concrete
- roughening of smooth concrete or natural stone
- removes coatings with a thickness of 1-3 mm
- cleaning of steel surfaces

Media nr. 5 Abrasive S460

This media is used to create a coarse profile or to increase the work speed in the case of surfaces hard to treat.

- removes sediments on concrete prior to coating
- removes thick paint coatings or rust from steel surfaces, bridges, tanks, etc.
- removes flexible coatings on parking house decks
- removes road markings and retexturing of asphalt and concrete roads

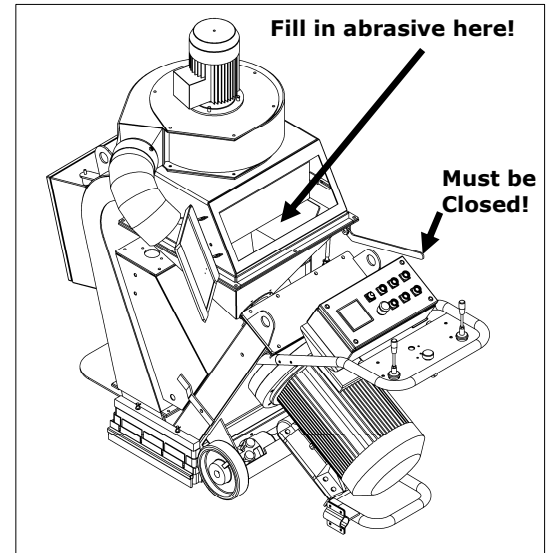
Media nr. 8 Abrasive SG25

Only as an addition to Media No. 3, No. 4 and No. 5 with maximum 30% content.

Media No. 8 should never be used without blending since otherwise the wear in the machine as a whole would increase disproportionately.

- removes polyurethane coatings
- removes adhesive remnants
- removes rubber deposits
- penetrates coatings hard to remove
- also suitable to be used on steel for extraordinary roughness

Please take into account that the use of incorrect abrasive increases wear.



Our service engineers have the experience to select the appropriate abrasive for the individual cases of application.

Please consult your local **Blastrac** customer service department if you have any questions about the selection of the best abrasive for your blast cleaning work.

8. Troubleshooting

| Fault | Possible cause | Remedy |
|---|--|---|
| Excessive vibration | Blast wheel is worn irregularly. Imbalance due to worn or broken wheel blades. Machine fan impeller is worn. | Replace the worn blast wheel parts and remove all broken parts from the machine. Replace the worn fan impeller. |
| Unusual noise | Too little play or poor alignment of the rotating parts. Loose and incorrect set screws. Squeaking wheels. Seizing motor. | Check alignment of the rotating parts (blast wheel and control cage). Check whether all screws and parts are fixed tightly). Replace the wheels. Replace the motor. |
| Reduced or no blasting performance | Inadequate abrasive supply to the blast wheel. Contaminated abrasive. Feeding of abrasive shot valve and abrasive storage hopper. Blast wheel or control cage. Adjustment of the shot valve. "Shocked blast wheel". At the start of the blast process too much abrasive at once hits the wheel. The travel speed is too high. | Clean wire mesh, top up abrasive if necessary. Abrasive is heavily contaminated, check the ventilation system. Check and clean blocked shot valve housing. Worn blast wheel or control cage, replace worn parts if necessary. Check the adjustment of the valve. Close the shot valve and stop the blast wheel motor. Start the blast process again and slowly open the valve. Reduce the travel speed. |
| Escaping abrasive | Poor sealing. | Check all seals and replace if necessary. |
| Abrasive loss on the surface or escaping abrasive at the blast head | Poor abrasive quality. Worn blast wheel parts. | Contact Blastrac . Replace worn blast wheel parts. |



| Fault | Possible cause | Remedy |
|---|---|---|
| Contaminated abrasive | The dust collector is not generating enough suction power so that dust remains in the abrasive. Clogged dust hose Ripped or damaged dust hose | Check the dust collector (filter-cartridges, dust hopper and seals). Check and clean the dust hose Replace dust hose |
| Excessive wear in blast housing and recovery duct | Wrong abrasive. Incorrect setting of the control cage | Contact Blastrac . The thrown abrasive blasts the housing and not the surface to be blasted. Adjust the blast pattern. |
| Machine is not moving | The travel speed is too low. | Increase the travel speed. |
| Control system does not switch on | Motor protection switch has triggered. | Check and switch on again. Check the mains power supply. |
| Control system switches off during operation | Connection cable is defective. Cables connecting the units are defective. Motor protection switch has triggered. Main switch of the dust collector switches off due to overload. | Replace the cable. Replace the cable. Have the fault checked by an electrician. Switch the main switch "ON" - with fault, have the unit checked by an electrician. |
| Machine does not travel | Fuse defective, short circuit in the travel motor lead or tachometer lead, motor defective. Control unit defective. Potentiometer defective. | Have the unit checked by an electrician. Replace the control unit. Replace the potentiometer. |

Note: If the motor protection switch of the blast wheel motor has been triggered by overload, it can be switched on again after a short cooling down period.

9. Technical data

| | EBE 500E Global 50Hz | EBE 500E Global 60Hz | EBE 500E Global 60Hz – 35HP |
|---|---|--------------------------------------|--------------------------------------|
| Power consumption blast motor | 18.5kW | 21.3kW | 26.4kW (35HP) |
| Electrical connection (voltage is given on the control box) | 400V / 50Hz, 63A | 440-480V / 60Hz, 63A | 440-480V / 60Hz, 63A |
| Blast width | 500 mm | | |
| Drive speed | 0 – 15 m/min | | |
| Length | 1938 mm | 1569 mm | 1569 mm |
| Length With lowering kit | 1938 mm | 1714 mm | 1714 mm |
| Width | 740 mm | | |
| Height | 1672 mm | | |
| Height with lowering kit | 1460 mm | | |
| Weight | 670 kg 782 kg (With lowering-kit) | 670 kg 700 kg (With lowering-kit) | 685 kg 715 kg (With lowering-kit) |
| Noise level (under load) | 92dB(A) | | |
| Vibration level | 1.2 m/s ² Allows >8 hrs. of working with the mentioned equipment without having to use anti vibration precaution measures. | | |
| Dust hose connection | Ø150 mm | | |
| Recommended filter unit | Contact Blastrac BV for a suitable filter unit | | |

The electrical diagrams of the electrical system are placed inside of the control panel.
Design and specifications are subject to change without notice by Blastrac BV.

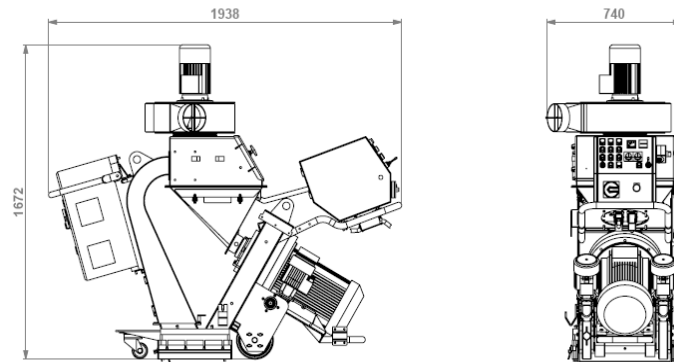
Old equipment contains valuable materials which are valuable for re-processing. **The machine parts must not be thrown away in the normal household waste**, but should be disposed of at a suitable proper collection system, e. g. via your communal disposal location. This way the materials can be re-used in an environmentally responsible manner.

Despite the fact that this guide is made with care, Blastrac takes no liability for errors in the manual and the possible consequences. We are naturally very interested in your findings and additions.

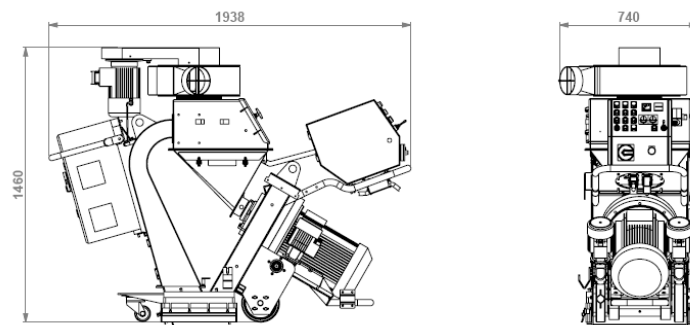
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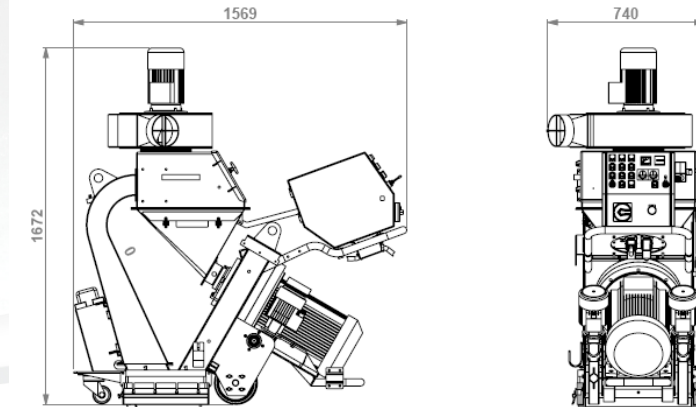
500-E Global 50Hz



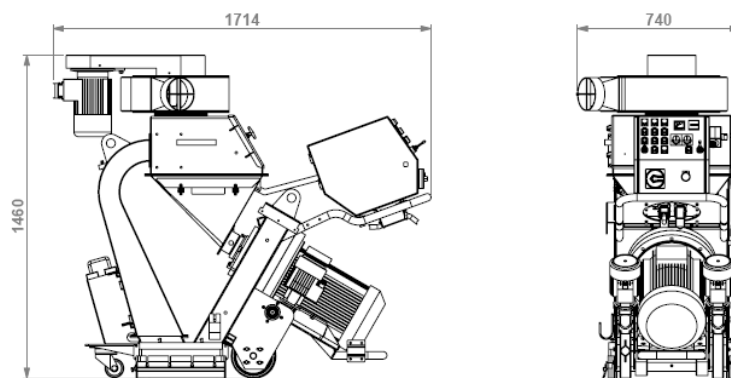
500-E Global 50Hz with lowering kit



500-E Global 60 Hz & 35HP version



500-E Global 60 Hz with lowering kit & 35HP version





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