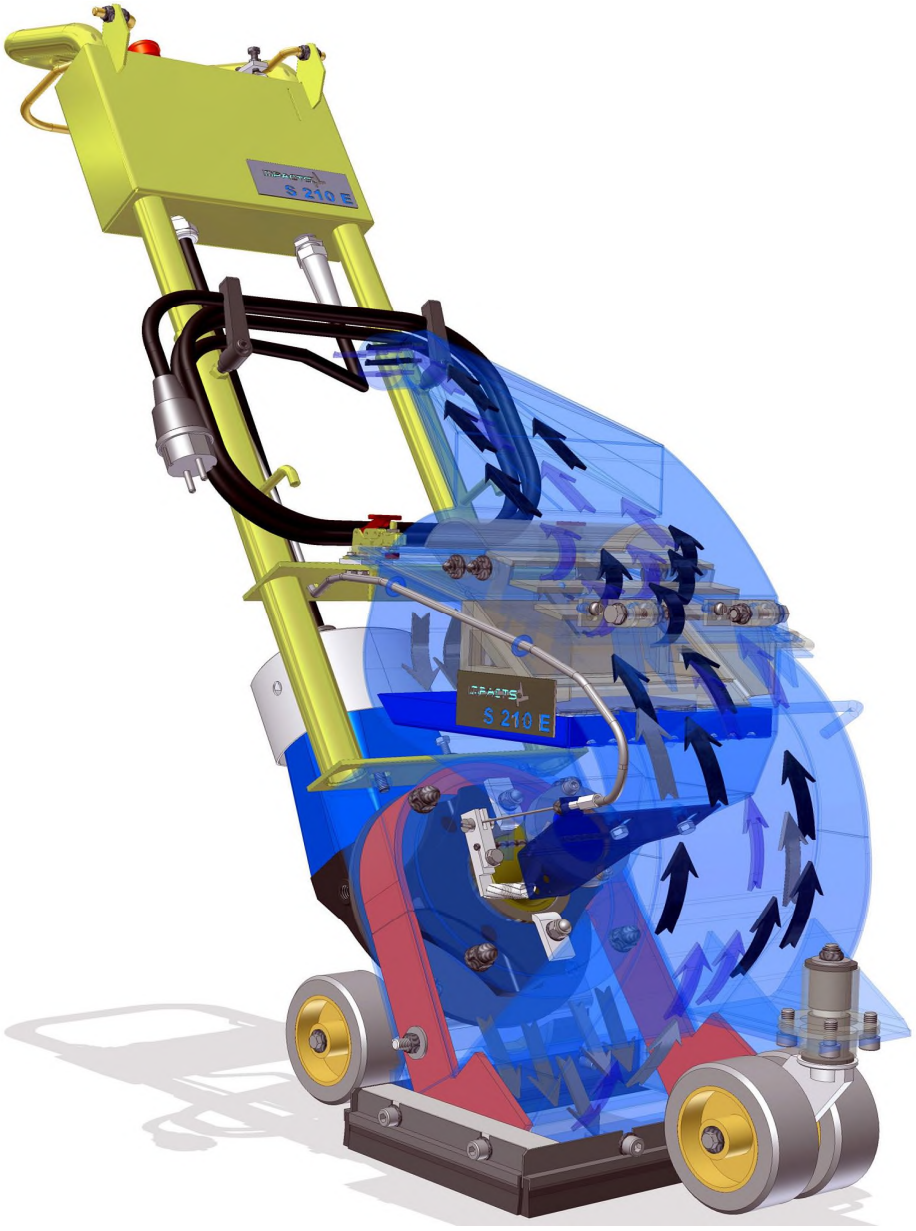
Operating Manual
IMPACTS Blast Machine
Model: S210E



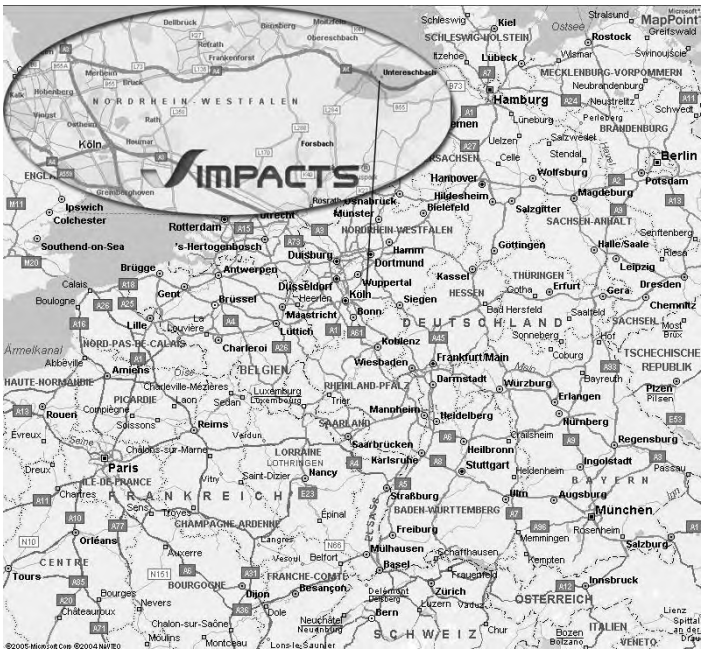
Original instructions

IMPACTS GmbH Germany

IMPACTS GmbH
Zöllnerstrasse 7
51491 Overath
Germany

Tel.: +49(0)2204 -4042-0
Fax: +49(0)2204 -4042-22

E-mail: info@impactsgmbh.de
Website: www.impactsgmbh.de

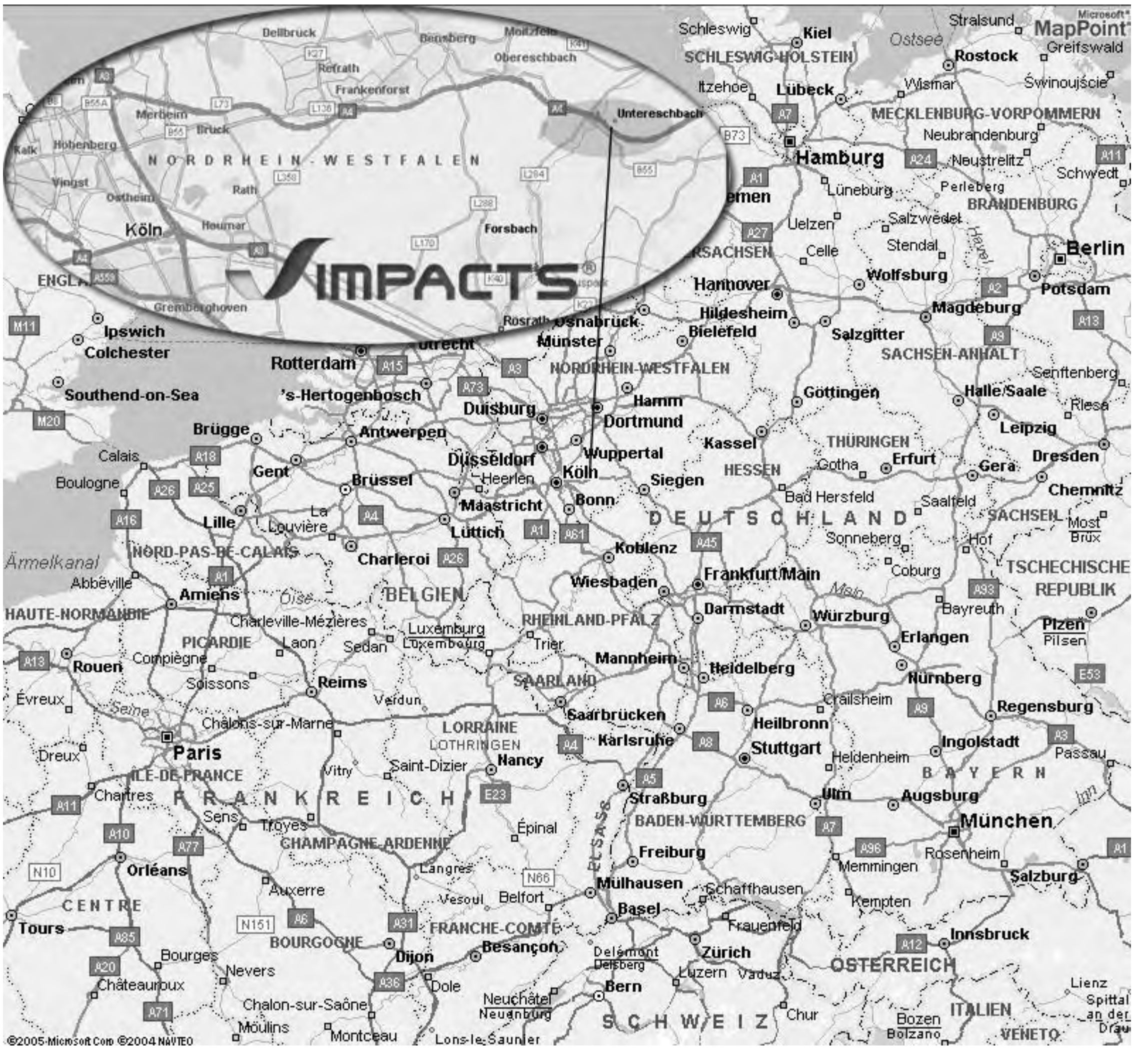


TECHNICAL DATA

Changes to technical data reserved
Version: September 2022

IMPACTS®

You will find us here



NOTES:

Chapter 1

Technical Data

1.1 Rating

Machine: **IMPACTS Blast machine**

Machine-Type: **S210E**

Manufacturer: **IMPACTS GmbH**
Zöllnerstrasse 7
51491 Overath, Germany

1.2 Unit – specifications

Dimensions:

	Machine	Dust collector Optional
	S210E	DC3003
Length	895 mm-1045mm	670 mm
Width	295 mm	660 mm
Height	795 mm-1030 mm	1350 mm
Weight	50 kg	68 kg

Connected loads of the electrical system:

	Blast machine	Cable (fixed to machine)
Power	2,4 kW/4,5 HP (230/110 V)	
Electrical connection	230V, 50 Hz Schuko plug, Fuse 16 A	Schuko plug 230V 16Amp. 3x4mm²
	110V, 60 Hz, Plug, Fuse 20 A	Plug 110V 24Amp. 3x4mm²

Recommended Dust Collector (Optional)

Dust collector	DC3003
Power	3,45 kW
Electrical connection	230 V, 50 Hz Schuko plug, Fuse 16 A, slow-acting

1.3 Operative range and intended use

The blast machine S210E is designed to be used on clean, dry, horizontal surfaces without obstacles. The machine cannot be used for other purposes. The manufacturer will not be liable for damages resulting from such incorrect usage. In case of wrong usage, the user assumes all risks.

1.4 Reasonably foreseeable misuse

The machine may not be used for any other purposes than those described in these original instructions.

The machine shall only be operated by instructed and authorized persons.

Do not lift up the machine during operation.

The machine may only be used while in full working order. (Do not operate machine when for example: seals, protections or cables are damaged).

1.5 Stand–by power supply (generator)

If the blast machine S210E is operated using a generator, the generator must be operated in accordance with the current VDE directives. This applies in special to the protective earth conductor, in order to ensure that all safety devices are functioning and to be able to eliminate possible damage to electrical components.

1.6 Advice for operators of the blast machine

During the operation of the blast machine S210E, it may be possible to exceed the acceptable noise level of 85 dB (A). This is depended on the different locations and the local circumstances. When the noise level is 85 dB (A) or more, the machine operator and the persons working near the machine must wear sound –insulating devices.

Declared dual-number noise emission values in accordance with ISO 4871	**Idle**	**Load**
A-weighted middle enveloping surface sound pressure level L'_{pA} in dB	91,1	88,8
Uncertainty K_{pA} in dB	1,0	1,0
A-weighted sound power level L_{WA} in dB	105,1	102,8
Uncertainty K_{WA} in dB	1,0	1,0

The noise level was determinate in accordance with noise emission measuring DIN 45635, Part 1 – enveloping surface method. Idle: Machine on an outside concrete surface. Load: Blasting procedure with dust collector on an outside concrete surface.

For the use of the machine, the operator must be carried out a **task-based risk assessment** according to local work protection law and local industrial Health and Safety Ordinance.

Operator workplace:

During operation, the machine operator must stand behind the machine and move the machine by hand in the working direction. The operator can reach all operating and control devices from this position.

1.7 Machine type designation

Machine type:	**S210E**
Unit / designation:	**Blast machine**
Working width:	**210 mm**
Travel speed:	**manual**
Blasting capacity:	**up to 40 m²/h**
Abrasive consumption:	**100 g/m²**
Dust hose connection:	**50 mm**
Recommended filter unit:	**at least DC3003**

1.8 EC Declaration of Conformity

EC declaration of conformity in accordance with Machinery Directive

Declaration

IMPACTS GmbH
Zöllnerstrasse 7
51491 Overath, Germany

We declare that the

Blast -Machine	**according to this operating manual**
Model	**according to this operating manual**

conforms to the latest version of the Machinery Directive 2006/42/EC.

Personnel authorised to compile the technical documents:

See EC declaration of conformity

IMPACTS GmbH

Chapter 2

2.1 Explanation of warnings and symbols

The following denominations and symbols are used in the operating manual to highlight areas of particular importance:

Symbol of operational safety.

This symbol will be shown in this operating manual next to all safety precautions that are to be taken in order to ensure prevention to life and injury. Follow always these instructions and take special care in these circumstances. In addition to these instructions, the general safety precautions and the local accident prevention guidelines are also to be followed. Please check, whether there are special regulations for the particular job site.

Information, instructions and restrictions with regards to possible risks to persons or extensive material damages.

Particular details regarding the economical use of the equipment.

Warning against dangerous voltages.	
Indications relating to protective devices of electrical equipment.	
Indications where consultation with the manufacturer is necessary.	
Instructions relating to periodical checks.	
Reference to important instructions contained in the operating manual.	

2.2 Organizational measures

The operating manual has to be kept near the location where the machine is located and must be reachable all the time!

2

In addition to the operating manual general and legal regulations regarding accident prevention and environmental protection must be with and indicated every time!

Such duties may for example relate to the handling of hazardous substances or to the provision and wearing of personal protection equipment as well as compliance with local traffic regulations.

The operating manual must be supplemented by instructions including the duty to supervise and report relating to particular local working practices, for example work organisation, work procedures and personnel allocation.

Personnel entrusted with working with the machine must have read the **Operating Manual** before starting the work; in particular the chapter about **Safety Instructions**. This has to be done before starting any work with the machine. This particularly applies to incidental activities such as setting up the machine, carrying out maintenance work or training staff to work with the machine.

From time to time the working practices of the staff are to be checked regarding awareness of **safety and hazards**.

Personnel must tie back long hair and not wear loose clothing or jewellery rings. There is a risk of injury through getting stuck or being drawn into moving machinery.

Use **personal protection equipment** if necessary or required by regulations! Take notice of **all** safety and hazard notices on the machine!

All **safety and hazard notices** on the machine must be kept complete and **readable**! Replace them, if necessary.

If **safety-critical changes** occur to the machine or its performance**,** the machine must be **shut down immediately!** The cause of the fault has to be established immediately and has to be repaired before starting the work again!

Changes, add-ons or conversions of the machine which might have an influence to the safety of the machine must not be undertaken without the **permission of the manufacturer**!

This applies in particular to the fitting and adjustment of safety devices and to welding on major and load bearing parts.

Spare parts must conform with the requirements specified by the manufacturer. This is always guaranteed with original spare parts.

Inspection intervals and intervals for recurring checks specified in this operating manual must be complied with. At the same time, it is necessary to meet the legal requirements.

To perform maintenance work correctly it is important to be equipped with proper tools for the task in question.

The **location** and the operation of **fire extinguishers** must be made known on each building site!

Take note of the facilities for fire reporting and fighting fires!

2.3 Personnel selection and qualification

Fundamental duties:

Only reliable personnel are allowed to work on the machine.

Only trained personnel can be used to operate the machine. **Note the statutory minimum age!** Specify clearly the responsibilities of personnel for operation, set-up, service and maintenance work!

Make sure that only **authorised** personnel operate or work on the machine!

Select clearly the **machine operator**. Define his responsibilities also regarding to **traffic safety regulations** and empower him to decline instructions from third parties which are not complying with the safety requirements!

Personnel being trained or made acquainted with the equipment may only be deployed **under constant supervision of an experienced person**.

2

Work on the electrical parts of the equipment may only be undertaken by a **skilled electrician** or by a **trained** person under the **guidance** and **supervision** of a **skilled electrician** as well as in accordance with **the electrical engineering regulations**.

2.4 Safety precautions applicable to different operating conditions

Avoid any method of working that **impairs safety**!

All precautions have to be taken, that the machine will only be used in a safe and functional status!

Only operate the machine when all **safety devices** and related **safety equipment**, e.g. detachable **safety devices**, emergency stops and suction devices are present and **operational!**

The machine has to be checked visually at least once a day for any **damage** and **defects**!

In the event of **operational malfunctions,** the machine must be **shut down immediately** and secured. The fault must be rectified before starting the machine again!

Secure the **work area** around the machine in **public areas** providing a **safety distance** of at least 2 m around the machine.

Default must be rectified immediately!

Start-up and switch off operations and control devices have to be handled in accordance with the operating manual!

All persons in the proximity of the machine must wear safety glasses with lateral protection as well as safety shoes. Ear protection may be required. The operator is obliged to wear close fitting protective clothing.

Use only extension cables for extending the main cable that are sized and marked in accordance with the overall power consumption of the machine and the valid VDE and local guidelines.

Before starting the machine make sure that nobody can be endangered when the machine starts running!

Do not switch of or remove the exhaust and ventilation devices when the machine is running!

2.5 Repair work, maintenance activities, and default repair on the job site

Mechanical service work:

Before starting any servicing work on the machine, put the machine in the **Safety off position** as described in chapter 2.6 in order to prevent the machine from being switched on accidentally**.**

Please follow any special **safety instructions** in the various chapters on servicing the machine. **See chapter 7**

Adjustments, servicing and inspection work and inspection intervals specified in this operating manual as well as any information on the replacement of parts and systems of the machine must be **undertaken and / or complied with**!

These activities can only be undertaken by **qualified personnel**.

Safety Instructions

Before starting any maintenance or repair work the **operator** of the machine has to **be informed** about it!

During all work related to the use, the modification or the adjustment of the machine and of the safety devices as well as inspection, maintenance and repair, the start-up and shut off procedures have to be done in accordance with the operating manual!

2

Has the machine been shut off completely for **repair or maintenance work** the plug has to be **disconnected** in order to prevent the machine from being switched on **accidentally**! **See chapter 2.6 Safety off position**

The dust bin of a connected filter unit has to be emptied before transportation. Please handle in accordance with the regulation how to dispose the dust and make sure that you meet the local regulations.
Do not use any **aggressive cleaning materials**! Use lint-free cleaning cloths!

Always tighten any screw connections that are undone during servicing and maintenance work!

If **safety devices** need to be **dismantled** during setting up, servicing and repair work, these **safety devices** must be **reinstalled** and inspected immediately after completion of the servicing and repair work.

Make sure that process materials and replacement parts are disposed of safely and in an environmentally-friendly manner!

Work on the electrical parts of the equipment may only be undertaken by a **skilled electrician** or by a **trained** person under the **guidance** and **supervision** of a **skilled electrician** as well as in accordance with **the electrical engineering regulations**.

Make sure that the exchanged electrical components correspond to the original parts and they must be set correctly, if required. Especially FI circuit breaker, motor protection switches and electronic components require special attention.

2.6 Definition of the Safety off position

Definition:

The **safety off position** is the position of the machine when it cannot generate any hazard.

Putting the machine in the safety off position means:

- ☑ **Switch off the blast machine.**
- ☑ **Switch off the filter unit.**
- ☑ **Wait for standstill of all drives.**
- ☑ **Pull out main plugs.**
- ☑ **Secure the machine against accidental start up.**

2.7 Dangerous aspects of the machine

Every machine, if it is **not used according to the regulations**, may be **hazardous** for operating, setting-up and service personnel. The **operating authority** is responsible for **compliance with the safety regulations** during operation and maintenance of **safety devices** supplied with the machine as well as the provision of appropriate additional safety devices!

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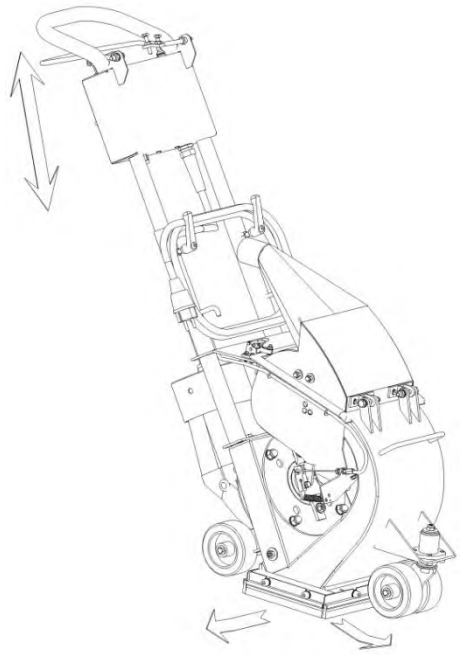


Danger of injury!

Abrasive leaves housing with high speed!
Moving parts!

(S)

Lift and tilt the machine only when it is in Safety off position!

(H)

It is not allowed to stay within the working radius of the machine!

2.8 Electrical engineering regulations

Work on the electrical parts of the equipment may only be undertaken by a **skilled electrician** or by a **trained** person under the **guidance** and **supervision** of a **skilled electrician** as well as in accordance with **the electrical engineering regulations**.

Use only extension cables for extending the main cable that are sized and marked in accordance with the overall power consumption of the machine and the valid local guidelines.

In case there is any question ask the manufacturer or a skilled electrician.

The electrical parts of the machine must be **inspected regularly**. Please note in particular the **specified recurring inspections according DGUV V3 or local regulations.** Defects such as **loose** connections or **scorched** cables must be rectified immediately. **Call a skilled electrician or the manufacturer customer service.**

If work on **life** parts is necessary, a **second person** must be deployed who can pull out the plug in an emergency. The working area must be sealed with a red and white **safety chain** and a danger sign. Use tools that are **insulated against voltages**.

Only start work, once you are familiar with the **electrical engineering regulations** that apply to your area.

Only use voltage seekers that comply with the regulations when troubleshooting. From time to time, check voltage seekers to ensure that they are operationally efficient.

2.9 For special attention

Use only proper and fault free tools. Damaged tools have to be repaired immediately or to be replaced.

While working, for your own safety, the required safety **equipment** and **safety cloths must be worn.** (e.g. safety glasses, safety shoes, safety gloves).

Please instruct your operators and the repair personnel about the following points:

- Greasing-, cleaning-, and repair work is only allowed if the machine is shut off. (**safety off position**)
- Make sure, that during the work on the machine, the machine cannot be started.
- It is not allowed to open or remove **safety covers** while the machine is **running**.
- Do not forget to bring all safety covers and safety devices in **place again** after cleaning, repair and maintenance work.

Safety Instructions

- Do not touch **moving parts** and do not walk into the working path of the machine.
- Please check after repair- cleaning- and maintenance work and before you start the machine again, that no person is in the working area and could be endangered by the machine.

Chapter 3

General

3.1 Operative range

The **IMPACTS** blast machine **S210E** is a downward blasting machine with a closed abrasive circuit designed for the pre-treatment of 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.

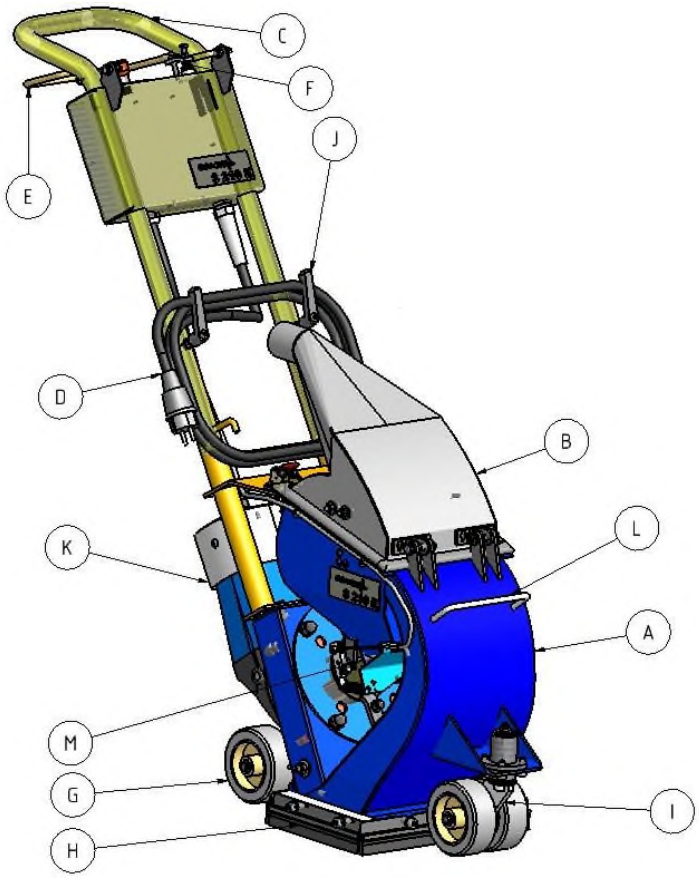
A suitable filter unit must be connected to the machine in order to separate the dust from the abrasive. A specially designed dust collection system ensures dust-free operation of the machine and clean air at the workspace.

3.2 Scope of supply

Scope of supply:

- **Blast machine (S210E)**
- **Operating Manual (1 x)**
- **Maintenance Box (Option)**
- **Filter unit (Option)**
- **Magnetic Cart (Option)**
- **Magnetic Broom (Option)**

3.3 Description of the machine



A	Wheel housing	H	Base seal
B	Separator	I	Steering wheel
C	Handle	J	Clamp screw
D	Cable	K	Wheel motor
E	Control lever	L	Lifting handle
F	Switch	M	Abrasive feeding
G	Wheel		

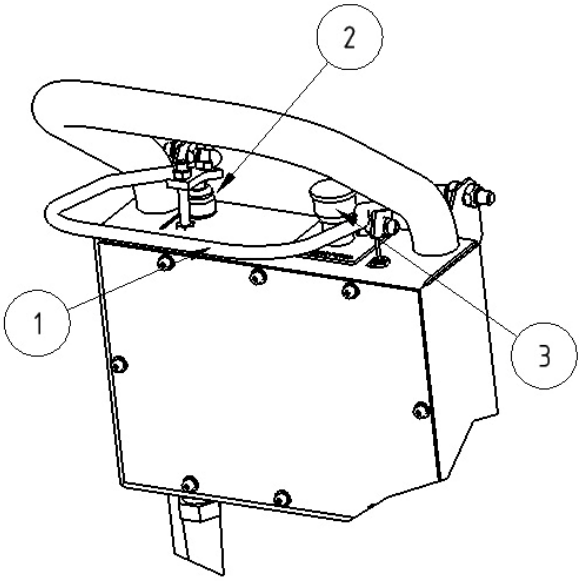
As revolutionary invention, the blast wheel method, based on a simple principle: After mechanical pre-acceleration, the abrasive is thrown onto the surface at high speed by the blast wheel. Once the abrasive has impacted the surface it rebounds into a rebound plenum. The rebound plenum deflects the abrasive into an air current separator. Here dust and other contaminants are removed from the abrasive so that only abrasive containing a very small amount of dust is falling back into the abrasive storage hopper to flow back again to the blast wheel.

For the removal of the dust it is necessary to connect the blast machine with a capable dust collector. The height of the blast machine can have varied by the adjustable handle. This in connection with the lifting handle on the housing makes it easy to transport the machine.

The connection of the machine with the right dust collector gives an environmental friendly usage of the machine and clean air at the working place.

3.4 Operating elements

The dead man`s switch (1), at the handle opens the magnetic valve and switches via the incorporated micro switch (2) the wheel motor ON and OFF.

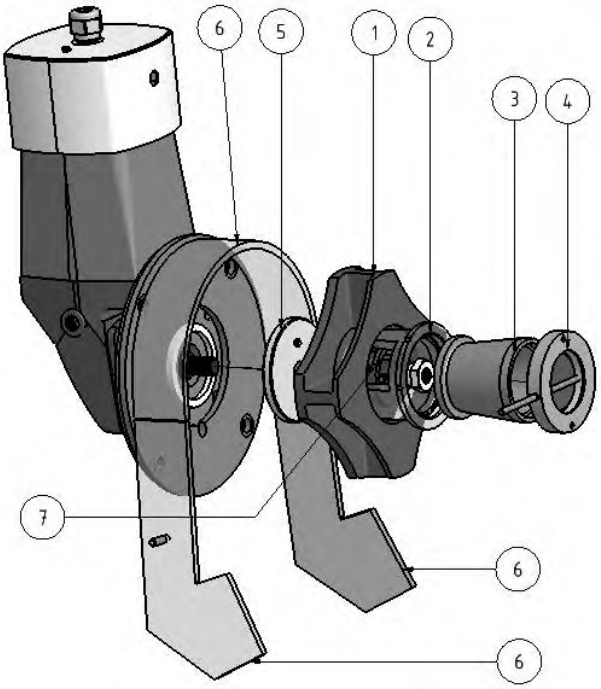


If the dead man`s switch (1) is released it goes down through a feather mechanism, the motor is cut off and at the same time the magnetic valve is closed and the abrasive feed is stopped.

In case of an emergency the wheel motor can be stopped through the emergency stop switch (3).

3.5 The wheel kit

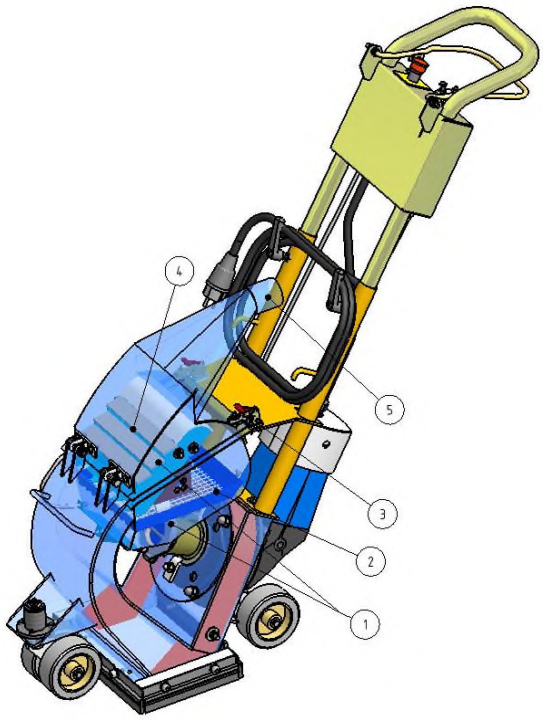
The heart of the blast machine is the blast wheel (1), which throws abrasive onto the surface. The blast wheel is placed in a protective housing with replaceable wear plates (6). The blast wheel is driven by an electrical motor via a wheel hub (5).



1 Blast wheel
2 Control cage
3 Feed spout
4 Magnetic valve
5 Wheel hub
6 Lining system
7 Blast wheel impellor

Around the centre of the blast wheel there are 4 notches, the impellor (7). It is feeding dosed quantities of abrasives onto the blades of the turning blast wheel. On top of this is the control cage (2) which, once it is carefully set, regulates the flow of abrasive.

3.6 The separator

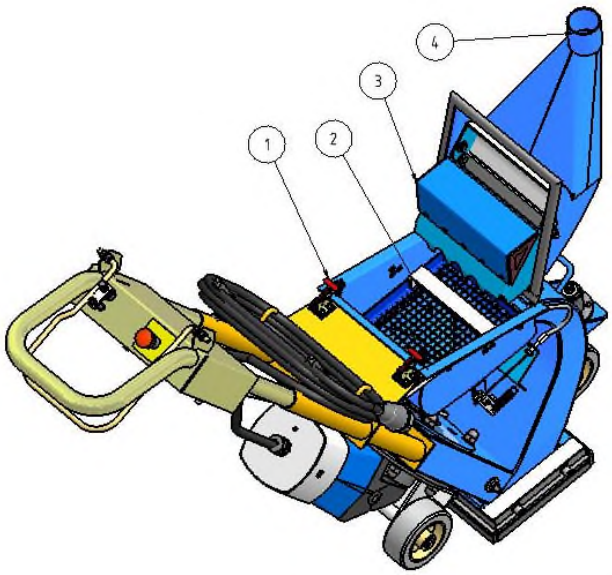


The separator is mounted to the end of the rebound plenum. The separator separates the abrasive from contaminants and feeds the cleaned abrasive back to the abrasive circuit.

1 Separator
2 Wire mesh
3 Clamp
4 Deflector
5 Dust hose connection

A wire mesh is fitted on the bottom of the abrasive hopper to prevent any course contaminates from getting into the blast wheel.

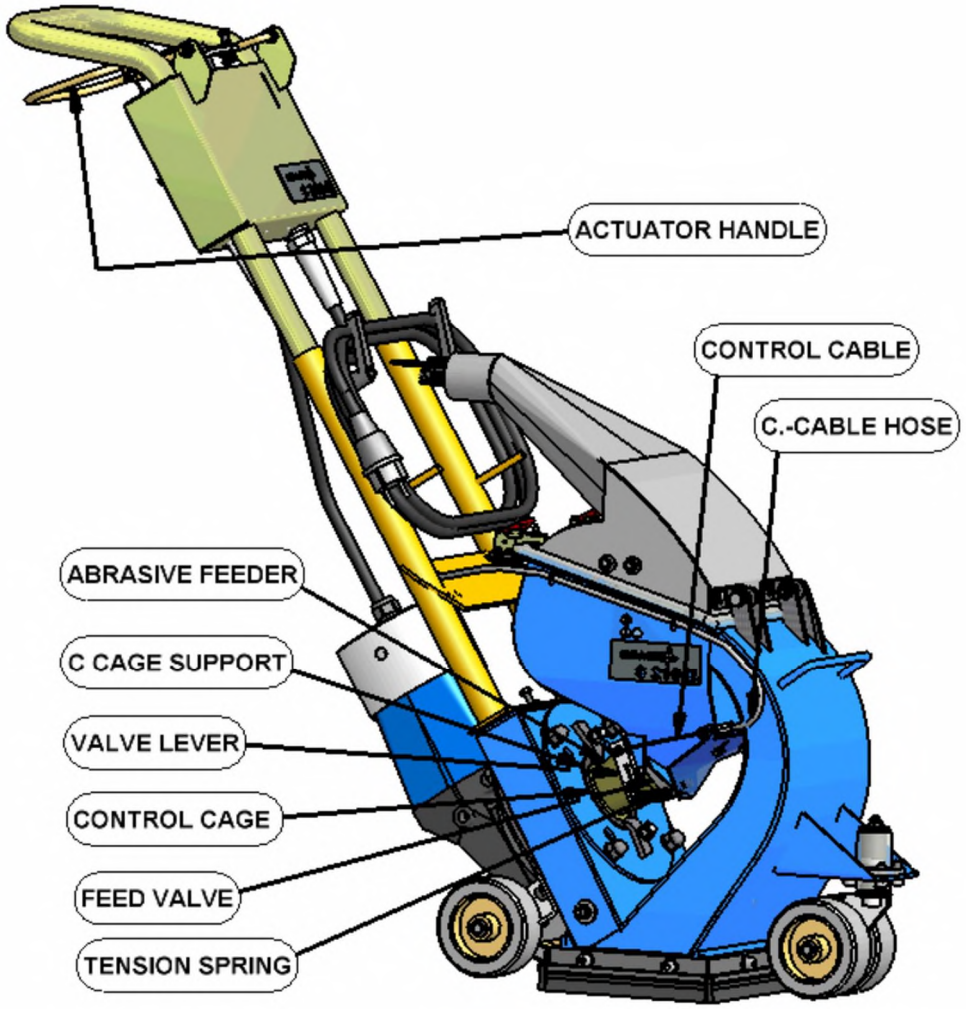
For cleaning the wire mesh, open the separator only if the motor is shut off. Safety off position (Chap. 2.6)



1 Closing clamp
2 Wire mesh
3 Deflector
4 Dust hose connection

3.7 The abrasive feed

In order to control the abrasive flow towards the blast wheel, there is a magnetic valve incorporated between the abrasive storage hopper and the feed spout. Any change in the opening of the magnetic valve, causes a change of the amount of abrasive fed to the blast wheel. The valve is hand operated via a control cable and can be set to each amount of abrasive throughput. The maximum blast efficiency is reached, if the handle (dead man`s handle) is totally pull up and therefore the magnetic valve is open in a right angle.



3.8 The base seal

There are seals in the front, in the rear and on the two sides of the blast head. The sealing system on the sides and in the front are magnetic seals with brush seals on the outside. The rear seal is a brush only. These sealing together form the blast head sealing.

The blast head sealing is employed to seal the blasting area in a way to avoid leakage of abrasive.

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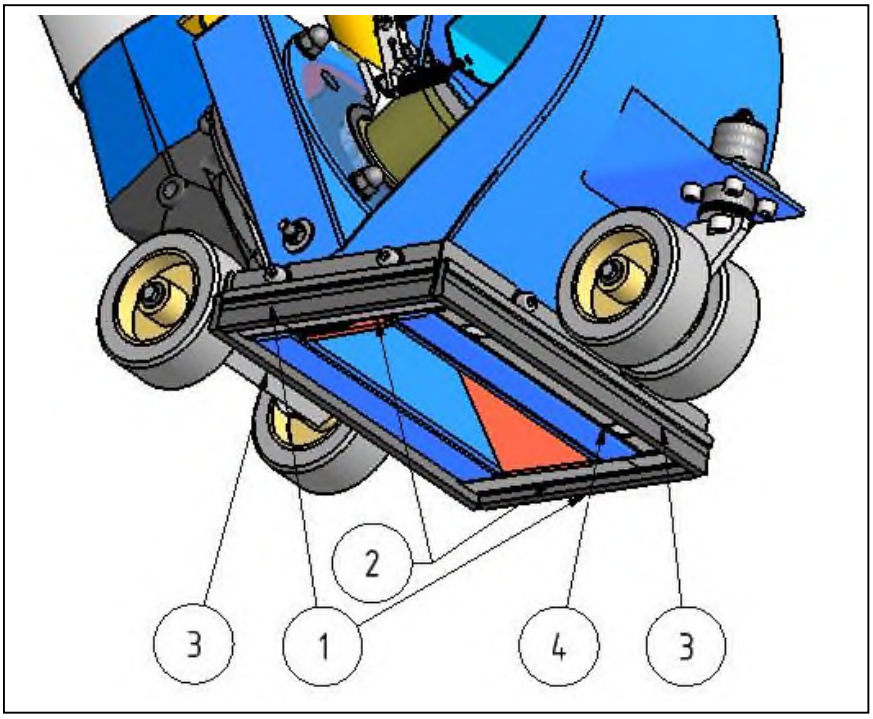
The correct height adjustment of the magnetic seals (6-8 mm) is very important for an optimum performance of the machine. The adjustment can be carried out by setting screws of back wheel fixing and adding distance rings to the front wheel fixing.



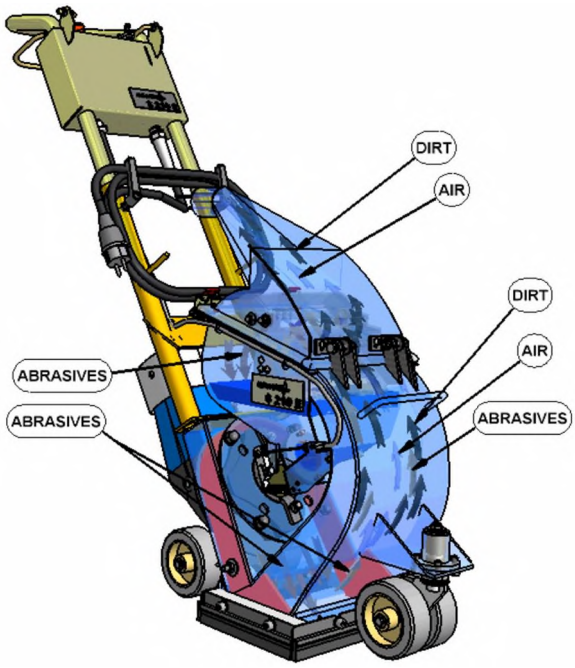
1 Side brush seals
2 Side magnets
3 Brush seals front and rear
4 Front magnet

3.9 The suction system

During the operation of the machine and the dust collector the airflow (air suction) has the following effects:

- Coaling of blast wheel, abrasive and of the blast housing.
- Transportation of the abrasive and the dust through the system.
- Separation of the dust from the abrasive.
- Transportation of the dust to the dust collector.

The airflow takes the following way through the machine:



The blast head sealings are responsible for the regulation of the air in the inside of the machine.

The airflow enters the machine through the rear and goes through the rebound channel. It transports abrasive and dust upwards. At the same time the airflow gives cooling to the abrasive and the rebound channel.

The airflow enters the separator, separates fine dust from the abrasive and transports the dust through the exit opening to the dust collector. The separator head is completely sealed by a special sealing.

Make sure that there are no holes (unsealed areas) in the blast housing, the feed spout and the separator.

Then the airflow goes through the flexible dust hose and takes dust and fine particles to the dust collector.

All connecting points have to be sealed carefully, the dust hose has to be fixed with special clamps.

Now the airflow comes into the filter chamber of the dust collector. Here dust and fine particles are separated and the clean air goes back to the environment.

The Dust collector housing must be sealed carefully, all sealings have to be in good conditions!

If dust comes out of the dust collector, either the dust collector is damaged or it is not correctly sealed. Please make sure, that only correct material will be used. The use of damaged filter cartridges or damaged filter bags can damage the health.

Required dust collector:

Suction power	**min.**	**:**	**500**	**m^3/h**
Electrical power		**:**	**3000**	**W**
Length of electrical cable		**:**	**15**	**m**

Dust hose:

Length	**:**	**10**	**m**
Diameter	**:**	**50**	**mm**

3.13 Abrasive media

In order to operate the **IMPACTS** blast machine S210E you need hardened, round abrasive.

The **IMPACTS** abrasives IMPACTOR S330 and S390 are standard abrasives, which can used for most of the applications.

The machine has been specially designed to use these abrasives.

The **IMPACTS** abrasive **IMPACTOR** is a very high-quality blast media. It has the right rebound power to use the S210E blast machine very efficient. The selection of the blast media is very important, if you consider that this is the material which gives the treatment to the surface.

The effectiveness of the **S210E** depends on the rebound effect that ensures that the abrasive can be re-used.

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 **IMPACTS** customer service department, if you have any questions about the selection of the best abrasive for your blast cleaning work.

3.10 Care and maintenance

Special attendance and regular maintenance of the machine and its parts are imperative for functioning and safety.

In order to prevent unnecessary downtimes, it is recommended to keep original spare and wear parts on stock as listed in the maintenance box.

3

All persons in the proximity of the machine in operation must wear safety glasses with lateral protection and safety shoes. The machine operator must wear close-fitting protective clothing.

Chapter 4

4.1 Manual moving of the machine

In order to move the machine on a building site, you have to push the handle down so that the front of the machine will lift and is around 10-20 cm above the floor.

Keep the handle pushed down and move the machine by using the rear wheels into the new position.

Make sure, that you do not draw the lever (dead's man handle), otherwise you open the magnetic valve and abrasive will drop on the floor.

The transport of the machine has to be done separately:

- Blast machine S210E
- Dust collector DC3003 (Option)
- other material

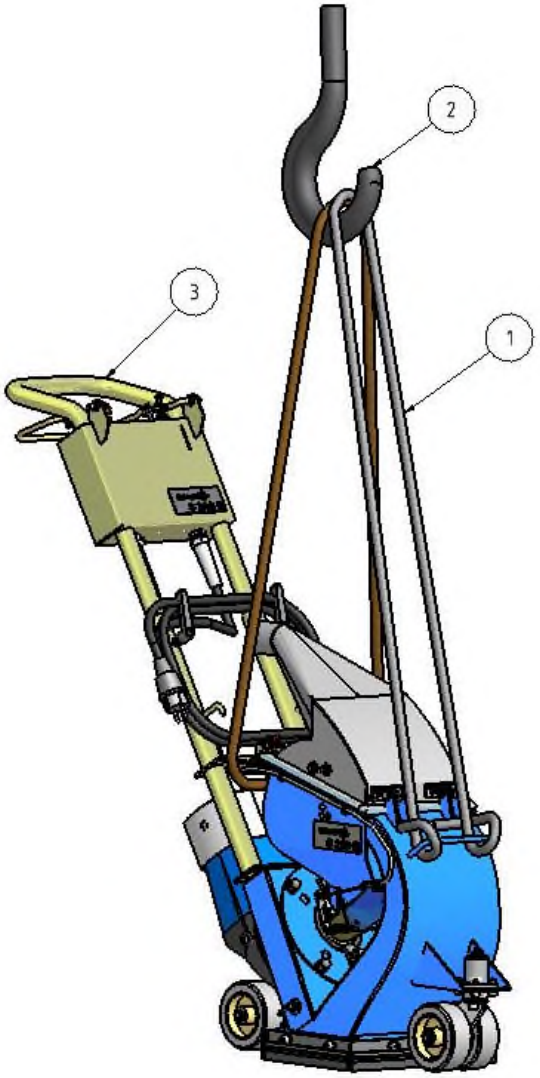
4.2 Transport of the machine with hoisting equipment

When transporting the machine with hoisting equipment like a crane or a lift, check the total weight permitted.

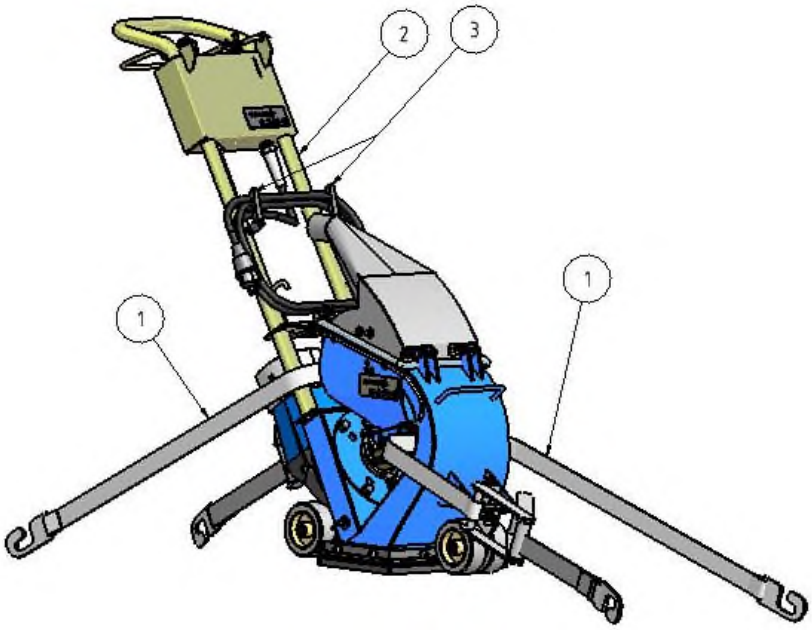
(Chapter 1.2 dimensions)

Please use only appropriate, allowed and qualified hoisting equipment (2) as well as ropes and chains (1). You will find the weight of the equipment in chapter 1.2 or on the serial plate on the machine.

Do not fix any rope or chain (1) to the handle (3), The handle is only fixed with two fixing screws and **cannot at all been used for transport or to fix ropes or hoisting equipment!**



Transport



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4.3 Transport of the machine with vehicles

When transporting the machine with vehicles, proceed in such a manner that damage due to the effects of force or incorrect loading and unloading is avoided. Use straps (1) to tighten the machine to the cabin of the vehicle.

Use at least two straps or tighten the machine with one strap to the cabin wall of the vehicle. Make sure, that all parts of the machine are fixed.

To reduce the height of the machine, you can slide the handle (2) down. In order to achieve this, you have to loosen the two fixing screws (3) and to slide the handle down. Do not forget to fix the fixing screws again, otherwise you will lose them.

4.4 Moving the machine during blasting work

Please look into **chapter 5, "Initial operation"**.

Chapter 5

Initial Operation

5.1 General notes

Before the machine is used for the first time, **IMPACTS** authorised dealers offer a course to familiarise maintenance and operating personnel with all elements of the machine. We are not liable for damage caused by incorrect use of the machine by personnel not trained by **IMPACTS**.

5.2 Preparing for initial operation

Move the blast machine and the dust collector to the working site. Check the blast wheel, control cage, feed spout, all liners and the separator for damages and wear. Worn and damaged parts have to be changed before starting the work.

Before switching on make sure that all existing protective housings are mounted and that a sufficient dust collector is connected correctly.

All persons in the proximity of the machine must wear safety glasses with lateral protection as well as safety shoes. The operator of the machine is obliged to wear close-fitting protective clothing.

Handle all plugs, cables, hoses and operating devices with care. Avoid any contact with live wires.

Works on the electrical system must only be carried out by a qualified electrician.

Check the surface to be treated; it should be free of loose parts (nails, screws, etc.), these must be removed. Ensure that the machine can run over all inequalities on the surface. Small inequalities like welding seams or floor joints aren't a barrier for the machine.

Before start-up operators and other personnel must be familiar with the safety regulations given in this operating manual.

Check the height adjustment of the (approx. 6- 8 mm) of the blast machine. See Chapter 7 of the operating manual.

Check the separator parts for wear and defects. Remove foreign bodies and dust deposits in order to prevent the separator from being blocked.

Remove any dust deposits by aspiration, do not use compressed air to remove dust.

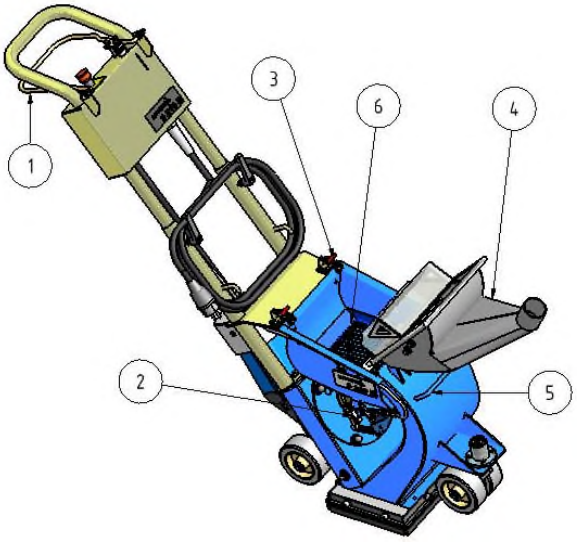
Check the main power cable and the dust hose for damage. Replace or repair all damaged parts before starting the machine.

Connect the blast-machine and the filter unit with the dust hose. Use hose clamps at the connections.

Connect the supply cable of the dust collector with the site supply.

Connect the supply cable of the blast machine with the site supply.

Make sure, that the right connection (230 V, 50 Hz, 16A) is available.



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5.2 Filling the abrasive hopper

After you have checked the blast machine for safety, make sure that the lever (dead man's handle) **(1)** is in the lower position and the magnetic valve **(2)** is closed. Open the clamps **(3)** and move the cover **(4)** upwards. Put the cover on the transportation handle **(5)**.

Fill now the right **IMPACTOR abrasive** in the hopper until you have reached a **level just below the wire mesh (6)**.

Now close the cover and fix it with the clamps. **(3)**

Check that the dust container of the dust collector has been emptied.

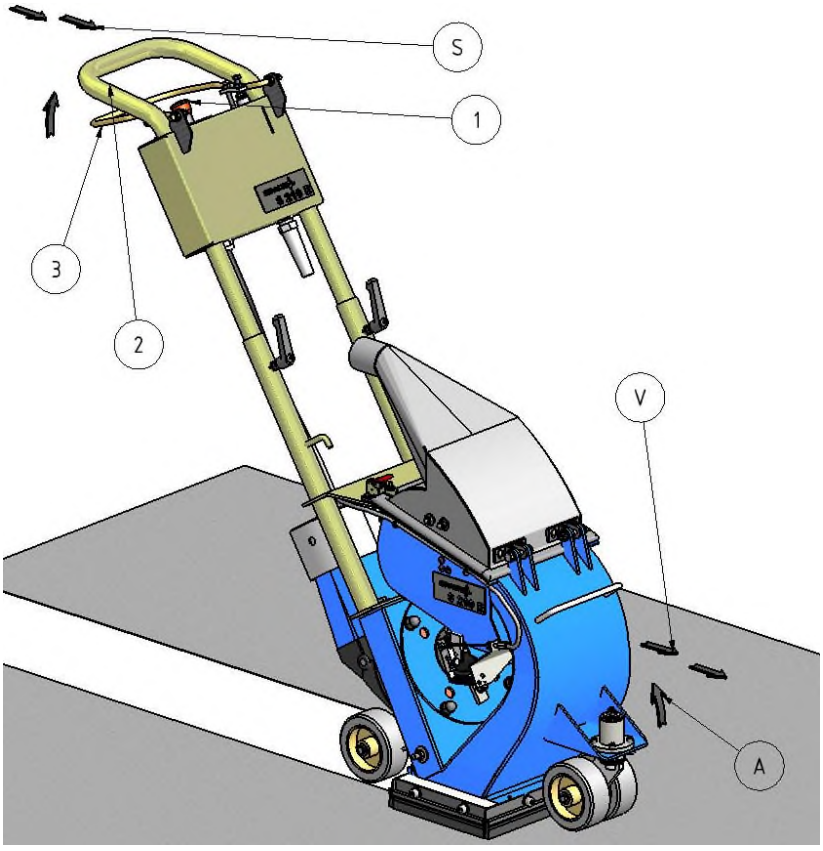
Initial Operation

All persons in the proximity of the machine must wear safety glasses with lateral protection as well as safety shoes. The operator of the machine is obliged to wear close-fitting protective clothing.

5.2 Initial operation

The working and moving direction of the blast machine is in the direction of the arrow **(V) shown on the picture.**
The blast machine and the dust collector will be started in the following sequence:

1) Switch on the dust collector.
2) After the dust collector is running start up the blast machine as described below.



3) Make sure that the emergency switch **(1**) is in the upper position and not pushed down.

4) Push the machine by using the handle **(2)** slowly in the direction of the arrow **(S)** forward **(V)** and at the same time pull the lever **(3)** slowly up as much as you can. This action starts the wheel motor and at the same time the magnetic valve opens and abrasive flows into the blast wheel.

5) Continue to push the machine slowly in direction of the arrow **(V)** and watch carefully the blasted area. If necessary change the moving speed to achieve the blast pattern you require.

Do not push the machine down or move it up on the handle (2) during the blast cleaning process.

When blast cleaning concrete or asphalt the magnetic valve may only be opened when the blast machine is travelling!

If the machine does not move and the valve is open, deep holes may be blasted into the surface within seconds.

5

Alter the travel direction (V) only after having closed the magnetic valve.

The dust bin of the dust collector must be emptied regularly. Comply with the local waste treatment regulations considering the removed material.

Initial Operation

Notes:

Chapter 6

Operation

6.1 Daily operation

This Operating manual has to be always with the machine at the working site!

Use only educated and trained personnel. **Take note of the legal minimum age.** Clearly define the responsibility of the personnel for operating, repair and maintenance! Make sure that only those people work on the machine who have been empowered to do so.

Regular inspections are important in order to avoid downtimes of your blast machine. Chapter 7 Maintenance

For daily operation of the **IMPACTS blast machine S210E** please consider the following points:

6

Check daily before starting the operation whether all machine parts are assembled safely and correctly.

Before switching on the machine, check that all safety covers are in the right position and that the filter unit is connected correctly.

IMPACTS hardly recommend, to use only a filter unit which has the right suction power and offers an optimal dust separation.

All persons in the proximity to the machine must wear safety glasses with lateral protection as well as safety shoes. The operator of the machine is obliged to wear close-fitting protective clothing.

Treat all plugs, cables, hoses, and operating devices with special care. Avoid any contact with live wires.

Check the surface to be treated; it should be free of loose parts (nails, screws, etc.), these must be removed.

Remove protruding reinforcement or **any obstacles from the surface** in order to avoid damage to the machine sealing.

Using the dust collector make sure to comply with the health and safety regulations and the local waste treatment regulations considering the removed material.

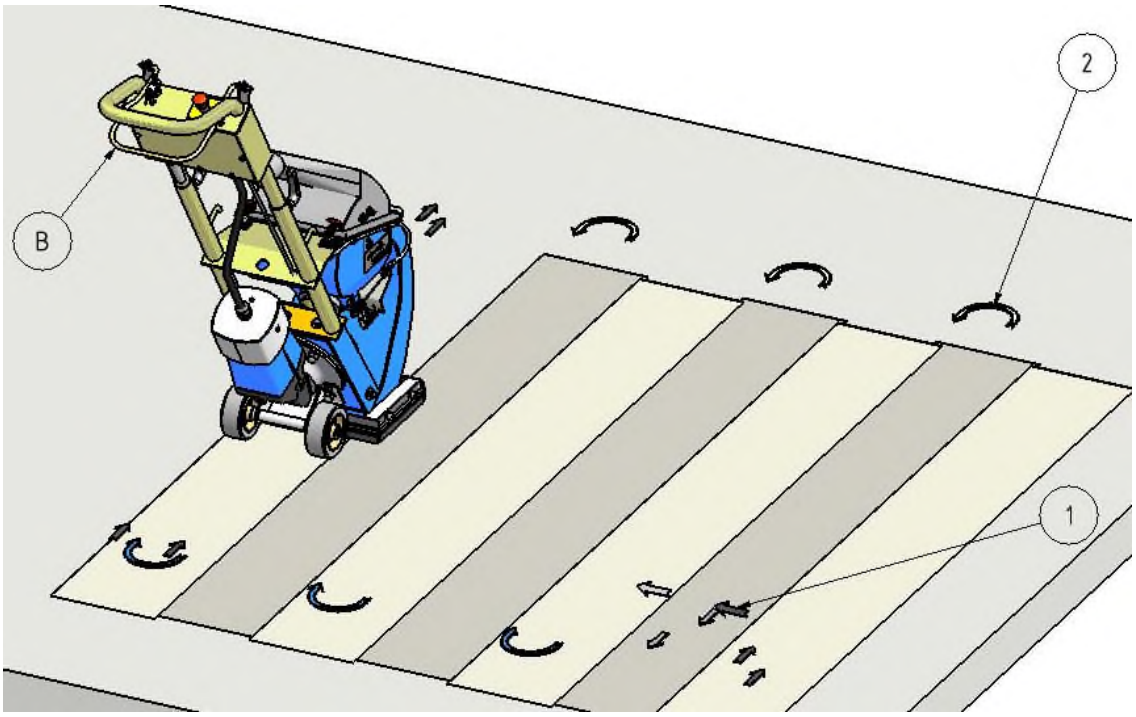
For initial operation look into **Chapter 5.2** of this operating manual.

6.2 Information about travel speed and abrasive feeding

The working direction **(1)** should be always away from the dust collector, in such a way that the electrical cable and the dust hose will not be damaged.

Carry out blasting in parallel tracks in such a way that the dust hose and the electrical cable do not become twisted. At the end of each track release the lever **(B)** and turn the machine around.

Start the new track in the opposite direction of the last one with some overlapping.



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The travel speed of the blast machine depends on the material of the surface and the desired profiling.

The correct travel speed can be found out by observing the blasted surface and varying the speed during the blasting process.

Is a very fin and homogeneous blasting result required, it can be, depending on the surface, necessary to blast always in the same direction.

Slight profiling on concrete requires a higher speed than coarse profiling.

Blasting on steel requires a very low travel speed of the machine.

The selected abrasive will as well influence the profiling of the surface.

The selection of a fine or coarse abrasive in relation to the surface to be blasted can give an advantage in connection with the profiling as well as for the blasting capacity.

The selection of the right travel speed of the blast machine is important for the blasting result.

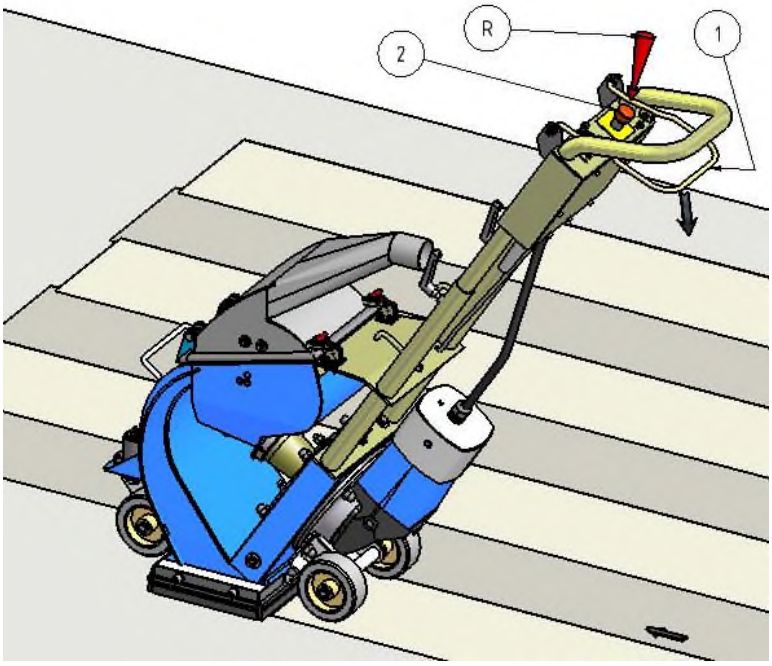
If the surface shows different characteristics (hardness or different thickness of the coating), a uniform blast result can be achieved by varying the travel speed of the blast machine during blasting.

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

6.3 Switching –off the machine

To switch-off the machine please follow the described procedure:
Release slowly the lever **(1)** so that it goes back into the starting position.
Herewith the magnetic valve will be closed and the blast wheel motor stops after 5-10 seconds.
Continue to push the machine forward until you are sure, that no abrasive is anymore flowing through the magnetic valve into the blast wheel. Doing this you avoid blasting holes in the floor during the switching –off procedure.
Make sure that all turning parts of the machine have come to a complete stand still before you start with the inspection or maintenance work.
To avoid unexpected restart of the machine, push the emergency switch **(2)** in the direction of the arrow**(R)**, It is now fixed and can be released by turning and lifting.
If the **IMPACTS** blast machine S210E is put out of operation for a longer period of time, pull out the main plug and cover the machine with a plastic foil.

6

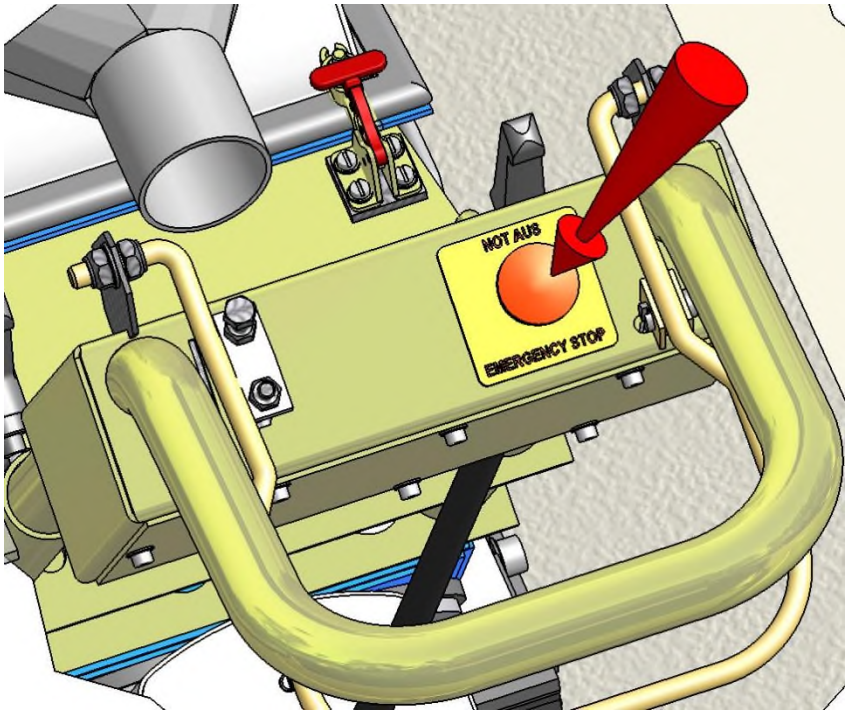


In case of emergency and or other faults like vibration or very strong noises stop the machine immediately by pushing the emergency switch.

6.4 Failure occurs

In a case of emergency, you can stop the machine immediately by pushing the emergency switch.

To release the emergency switch, turn the red button and move it upwards.



For repair work bring the machine in the **safety-off position (Chapter 2.6)**

Make sure that all turning machine parts have come to a standstill before any inspection or maintenance works are started. **(safety off position Chapter 2.6**

Irrespective of the following information in Chapter 7, the local safety regulations are valid in any case for the operation of the machine.

6.5 Restarting after a fault

After a fault make sure that you find the reason of the fault before you restart the machine. Leave the emergency switch pushed down and bring the machine in the **safety-off** position before you start to find out the fault.

If you do not find the fault or if you are unsure about the reason for the fault, please contact your **IMPACTS** contact person and ask for help.

Please consider in special the regulations in DGUV V3 and the VDE-0701. These regulations describe the necessary considerations and actions after repairing and changing electrical Equipment. **For initial operation of the machine see chapter 5**

6.6 Measures before and after long stand stills

Before a long standstill period

In case a long standstill of the **IMPACTS blast machine S210E** is planed, please consider the following points:

1) Remove all abrasive out of the machine.
2) Remove all abrasive from the magnetic seals.
3) Clean the machine carefully.
4) Storage the machine in a dry area.
5) Preserve bright parts of the machine with oil or grease.
6) Cover the machine with a plastic foil.

Remove any dust deposits by aspiration, do not use compressed air to remove dust.

After longer standstill

See **Chap 5** Initial operation.

Chapter 7

7.1 Recommendations

Prior to any repair work on the machine and its drives, secure the machine against unintentional switch-on. Put the machine to its Safety Off Position as described in chapter 2.6

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

Safety and service life of the machine depend, among other things, on proper maintenance.

The following table will show recommendations about time, inspection and maintenance for the normal use of the 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 yearly.

Due to different working conditions it cannot be foreseen how frequently inspections for wear checks, inspection, maintenance and repair works ought to be carried out. Prepare a suitable inspection schedule considering your own working conditions.

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

Sub-Supplier's operating and maintenance instructions should be followed during service and maintenance. Highest attention should be paid when replacing electric parts and components.

7.2 Maintenance and inspection list

Operating hours/ time period	Inspection points, maintenance instructions
12 h after repairing	Check function of all safety devices. Check all accessible screw connections for tight seat.
Every 3 h	Check whether there is any foreign matter in the hopper, the feed spout or in the blast wheel unit. Check the amount of abrasive in the hopper. Refill if necessary.
Daily prior operation	Check the hose connections for tightness and fixed seat. Check the hose to the filter for damages. Make sure that the dustbin of the filter has been dumped. Check blast wheel, feed spout, liners and fasteners for wear and damage. Check the separator parts for wear and defects. Remove foreign bodies and dust deposits. Check the magnetic and brush seals for wear and replace if necessary. Check the electric connections for sediments of dirt or foreign bodies. Check the electric motor for dirt and other contaminants.
Yearly	Fully overhaul and clean the complete machine.

Remove any dust deposits by aspiration, do not use compressed air to remove dust.

7.3 Maintenance

As already mentioned in chapter 5 "Initial operation" we recommend accomplishing the first repair works on the machine with the help of **IMPACTS**-personnel. Using this option, your maintenance personnel will have the opportunity to get an intensive training.

Only those repair works are described which occur within the context of maintenance or which are required to replace wear parts.

If you replace parts yourself for specific reasons, the following instructions and work sequence have to be observed.

You should also stock all spare or wear parts that you need at the job side. As a rule, production standstill periods are more expensive than the cost for the corresponding spare part.

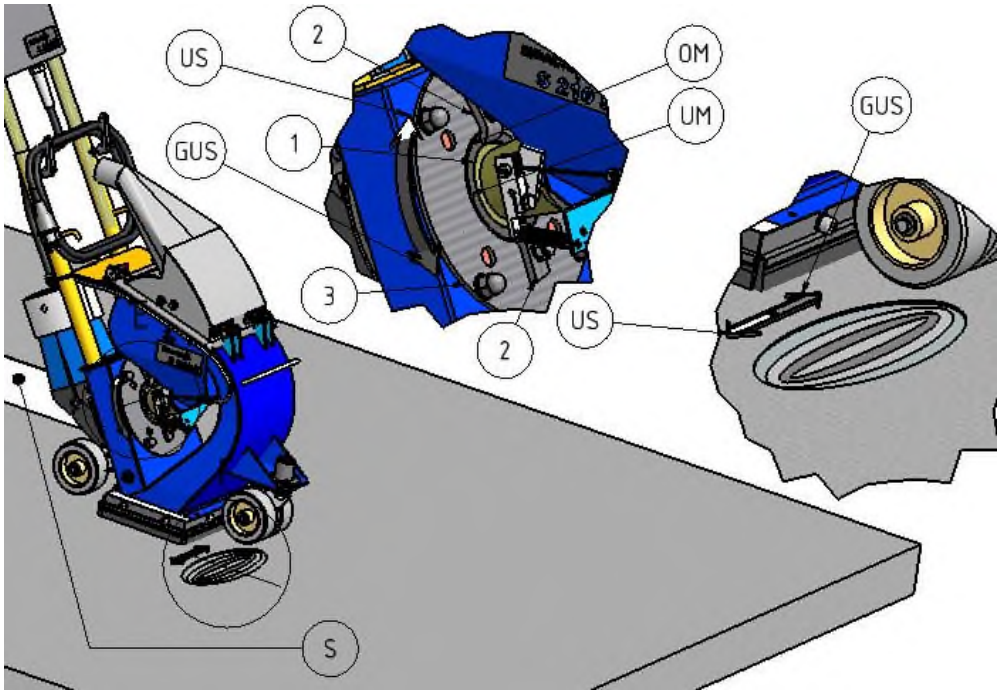
Screws that have been removed must be replaced with those of the same quality (strength, material) and design.

7

Prior to any repair works on the machine and its drives, secure the machine against unintentional switching-on. Pull out the mains plug in order to do this. Store the plug near the machine to avoid accidents.

7.4 The blast pattern

During blasting of the surface material should be removed within the whole width of the internal dimension of the blast housing and the machine should achieve and equal blast pattern. **(S)**.
The abrasive leaving the blast wheel blades is not thrown uncontrolled in all directions. The width of the blast pattern is achieved through the opening of the control cage. **(1)**. Responsible for the direction in which the abrasive is thrown is the position of the control cage.
If the machine produces a one-sided, uneven blast pattern, is this in the most cases coursed by a wrong position of the control cage.
The adjustment is affected by loosening the cage clamps **(2).** The control cage can now be turned in the front plate **(3)** To set the blast pattern correctly, you have to loosen the cage clamps **(2)** and to turn the control cage as shown in the picture. This should be done step by step.
Each control cage has two grooves which show the position of the control cage opening. The grooves should be in the following position**. UM at 9 o'clock AM and OM at 11 o'clock AM.**

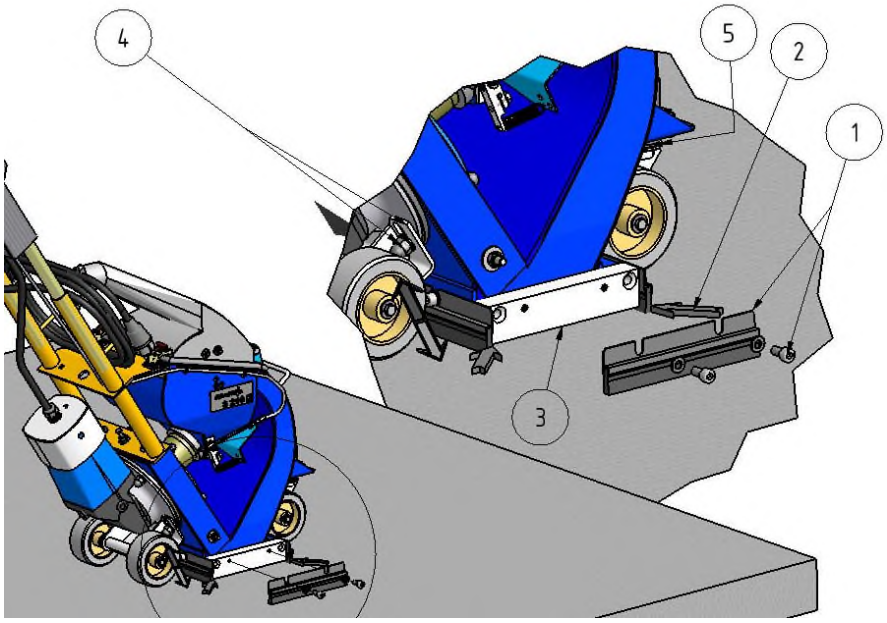


The position of the control cage has been pre –adjusted by **IMPACTS** to work with the **IMPACTOR** abrasive S330 and S390, in order to make the use of the blast machine **S210** as easy as possible. Using a different abrasive can result in changing the blast pattern.

7.5 Magnetic seals

Prior to any repair work on the machine and its drives, secure the machine against unintentional switch-on. Put the machine to its Safety Off Position as described in chapter 2.6

The correct height of the magnetic seals is important for the sealing of the machine and vital for the airflow through the machine. The adjustment height of the magnetic seals, parallel to the surface to be treated, should be set about 6-8mm everywhere.
If the blast machine has to be used on very rough surfaces, it can be necessary to set the machine at the max. height of 8 mm.

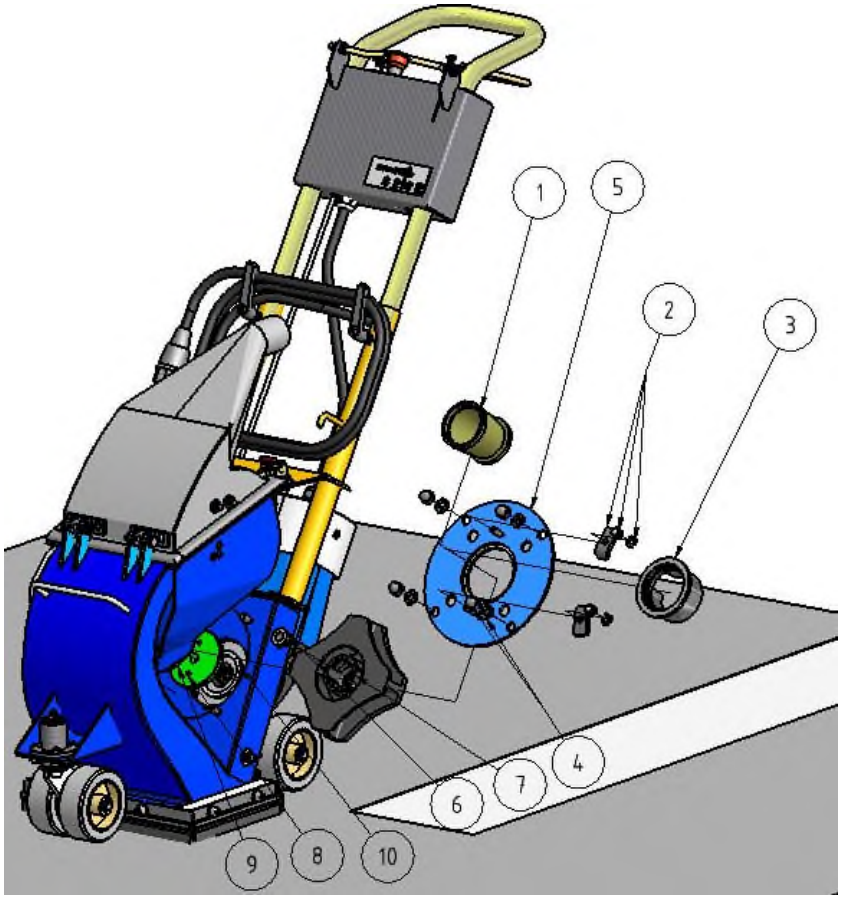


For the height adjustment you can use 4 steal strips **(2)** of 8 mm, to be used as shown in the picture. Remove the brush seals **(1)** and putt he strips under the magnetic seals **(3)**. Now loosen the fixing screws of wheel bracket **(4)** and move the wheel bracket until the wheels touch the surface.
Than fix the wheel bracket again. If necessary you can lower the wheel bracket in the front **(5)** by using additional distance rings. Afterwards adjust the height of the brushes that way that the brushes **(1)** slightly touch the surface.

7.6 Replacing the wheel kit

The wheel kit consists of blast wheel and control cage.

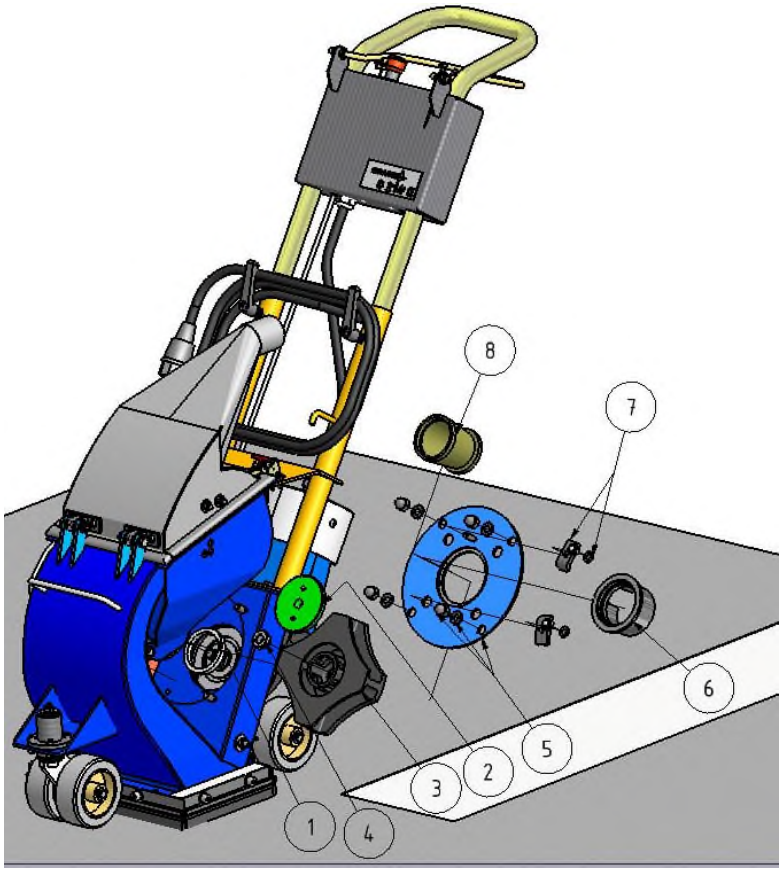
Disassembly:



1) Remove the feed spout **(1)**, by pulling it out of the housing.
2) Loosen the cage clamps **(2)**
3) Remove the control cage **(3)**
4) Unscrew the screws **(4)** of the front plate **(5)** and remove those.
5) Fix the wheel **(7)** with a piece of wood
6) Loosen the fixing screw of the blast wheel **(6),** using an open-end wrench No. 24
7) Remove the blast wheel **(7)**
8) Check the wheel hub **(8)** for wear
9) Check the sealing **(10)** for wear

Assembly:

Before you start mounting clean all threads and use a new blast wheel fixing screw.
Replace the sealing **(1)** if it is worn.



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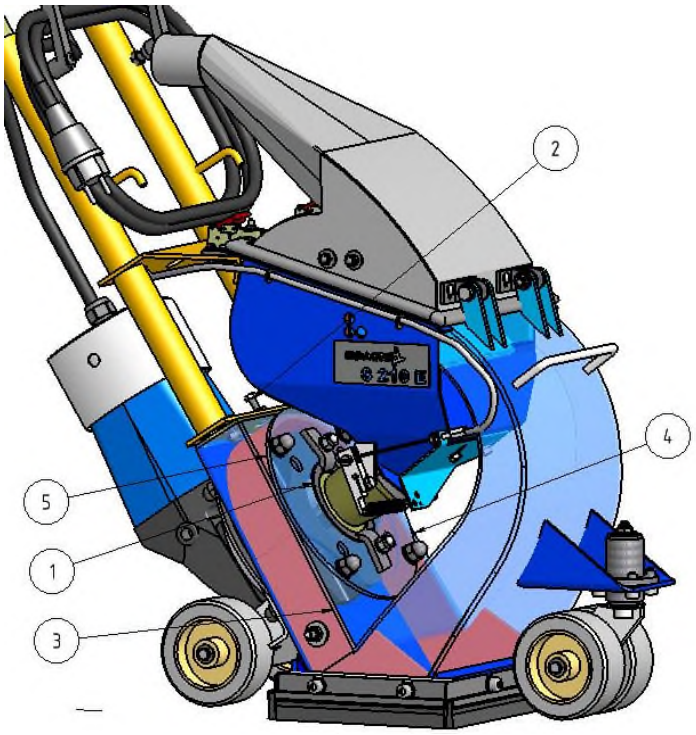
1) Put the wheel hub **(2)** on the shaft of the wheel motor. Make sure that it is on both sides in the right position. In order to control it, turn the wheel hub. It must turn the wheel motor as well.
2) Put the blast wheel **(3)** through the opening of the housing on the pins of the wheel hub. **(2)**
3) Fix the wheel **(3)** with the blast wheel fixing screw. **(4)**.
4) Fix the front plate **(5)** with the 4 fixing screws.
5) Put in the control cage **(6)**.
6) Clamp the control cage with the cage clamps **(7),** check the distance to the impellor of the wheel and make sure that the wheel can rotate freely. Now fix the cage clamps correctly.
7) Now place the feed spout.

7.7 Replacing liners

Disassembly:

The removing of the liners is only possible if the blast wheel is removed as well. Before starting to remove the liners, remove the blast wheel and the wheel hub as described in Chapter 7.



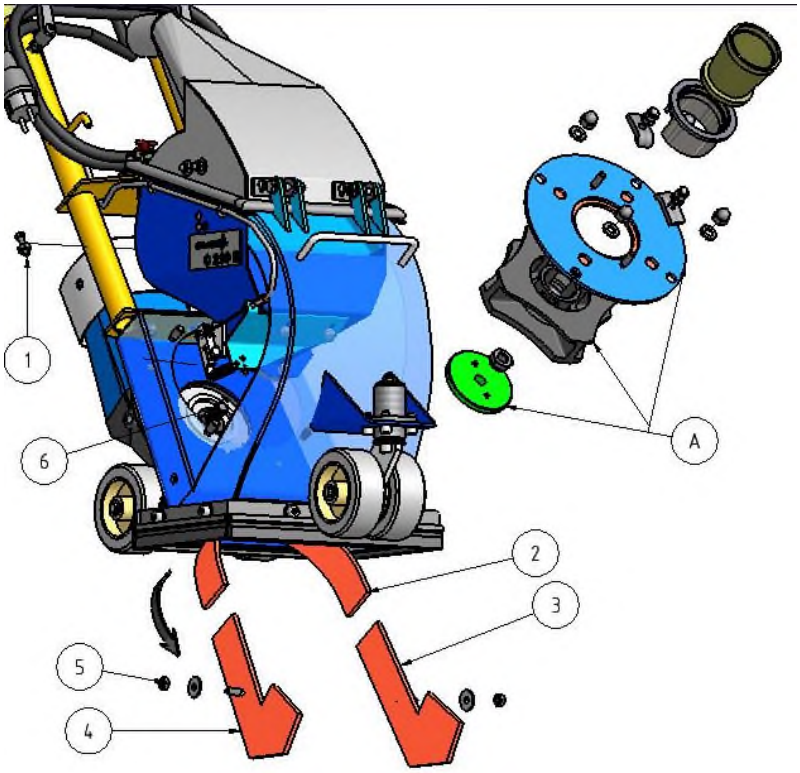
1) Loosen the fastening screw of the left hand **(3)** and right hand **(4)** liner, turn the liners towards the inside of the blast housing and take them out at the bottom of the housing.

2) Loosen the counter screw **(2)** of the pressure screw of the top liner **(5)** and turn it completely up.

3) Loosen the pressure screw **(2)** of the top liner **(5)** to the end and turn it back till you can remove it. Now put a small nail through the threat opening and hit it down onto the top liner **(5)** till it slides downwards. Turn the top liner around the motor shaft and take it out through the bottom of the housing.

4) Take the top liner out through the bottom opening of the housing.

Assembly:
Prior to mounting new liners, you should check the wheelhousing and specially the corners for wear.



1) Put the pressure screw **(1)** fort the top liner in place.
2) Move the top liner **(2)** through the opening of the wheel housing and turn it around the motor shaft **(6)** into the upper part of the housing.
3) Place the side liners **(3 u.4)** that way in the housing, that the bolts can be pushed through the holes in the side of the housing.
4) Put the screws **(5)** on the bolts and tighten them slightly
5) Place the side liners **(3 u.4)** inside the housing in a way that the liner sticks out approx. 2 mm at the bottom of the housing. Fasten the side liners now with the screws.
6) Now fix the pressure screw **(1)** that way, that the edges of the top liner sitting on the upper edges of the side liners.
7) Now mount the remaining components **(A),** as described in Chapter 7.6, mounting of the blast wheel.
8) Set the control cage as described in Chapter 7.6.

7.8 Maintenance intervals

The motor is designed for long life. Damages of the motor can be realised through unusual noises and faults of the function.

Keep the motor always free of dirt. (overheating)
Keep the cover of the motor fan always free and do not put anything on it.
If the motor does not perform normally anymore, please contact an electrical specialist.

If the fault of the motor cannot be repaired, please contact the **IMPACTS** – customer service.

Inspections-interval	Part	Sign of wear	Repairing action
10-20 h	Blast wheel Control cage	Blades of the blast wheel are worn 1/3, deep groves	Replace the blast wheel kit
200 h	Feed spout	Worn out	Replace by a new one
50 h	Liners in the wheel housing	Partly worn up to 1/3 of the original thickness	Replace liners
200 h	Rebound chamber	Worn welding's	Rewelding through **IMPACTS**-Service
100 h	Rebound plate in the separator	Ware of the rebound plate	Replace rebound plate
150 h	Abrasive hopper separator	Wear mainly on the welding seams	Rewelding through **IMPACTS**-Service
daily	Brush sealings	Wear at the lower end	Replace brush seals
daily	Fixing screws of the liners	Wear on the fixing screws	Replace screws.

7.9 Other maintenance

Watch the wear of the brush seals and change them latest, when there is no sufficient sealing anymore. Doing that you stop dust coming to the environment.

This saves additional cost from time to time you should put oil on the dead men handle and other moving parts.

7.10 Recommended spare parts list

To avoid long standstill of the machine **IMPACTS** recommends to keep the following spare parts on stock:

Part No.	Description	Qty
201000145	Wheel kit	2
201000201	Top liner	1
201000199	Liner L.H.	1
201000200	Liner R.H.	1
201000202	Brush seals, side	2
201000203	Brush seal front	2
201000186	Felt seal ring	1
201000210	Blast wheel nut	1
201000204	Abrasive control cable	1

As a special service to customers **IMPACTS** offers a tool kit which contains all the above listed parts and in addition to that the most important tools for maintenance work.

After the change of any wear parts, you should always adjust the blast pattern. Only this gives you the guarantee to work most economical and to save unnecessary wear and repair costs.

Chapter 8

8.1 Hints for the electrics

Shut off completely the machine for **repair or maintenance work.** All plugs have to be **disconnected,** keep all cables and plugs near the machine in order to prevent the machine from being switched on **accidentally. Chapter 2.6**

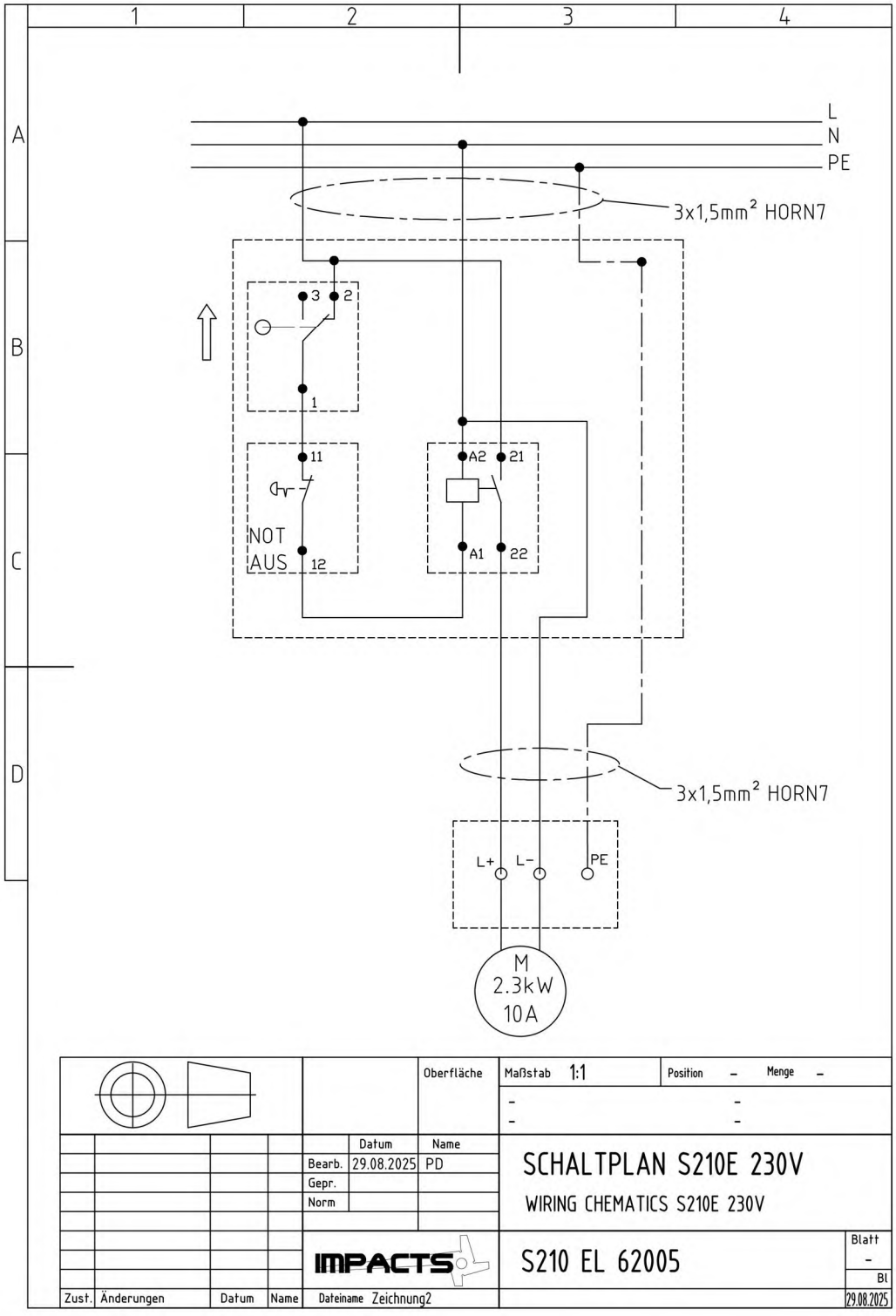
Electric spares need to be ordered with reference to the electric circuit diagram within this chapter. If there is any doubt about it, you need to call your **IMPACTS** service technician.

The electrical parts of the machine must be **inspected regularly**. Please note in particular the sp**ecified recurring inspections according DGUV V3 or other local regulations.** Defects such as **loose** connections or **scorched** cables must be rectified immediately. **Call a skilled electrician or the IMPACTS customer service**.

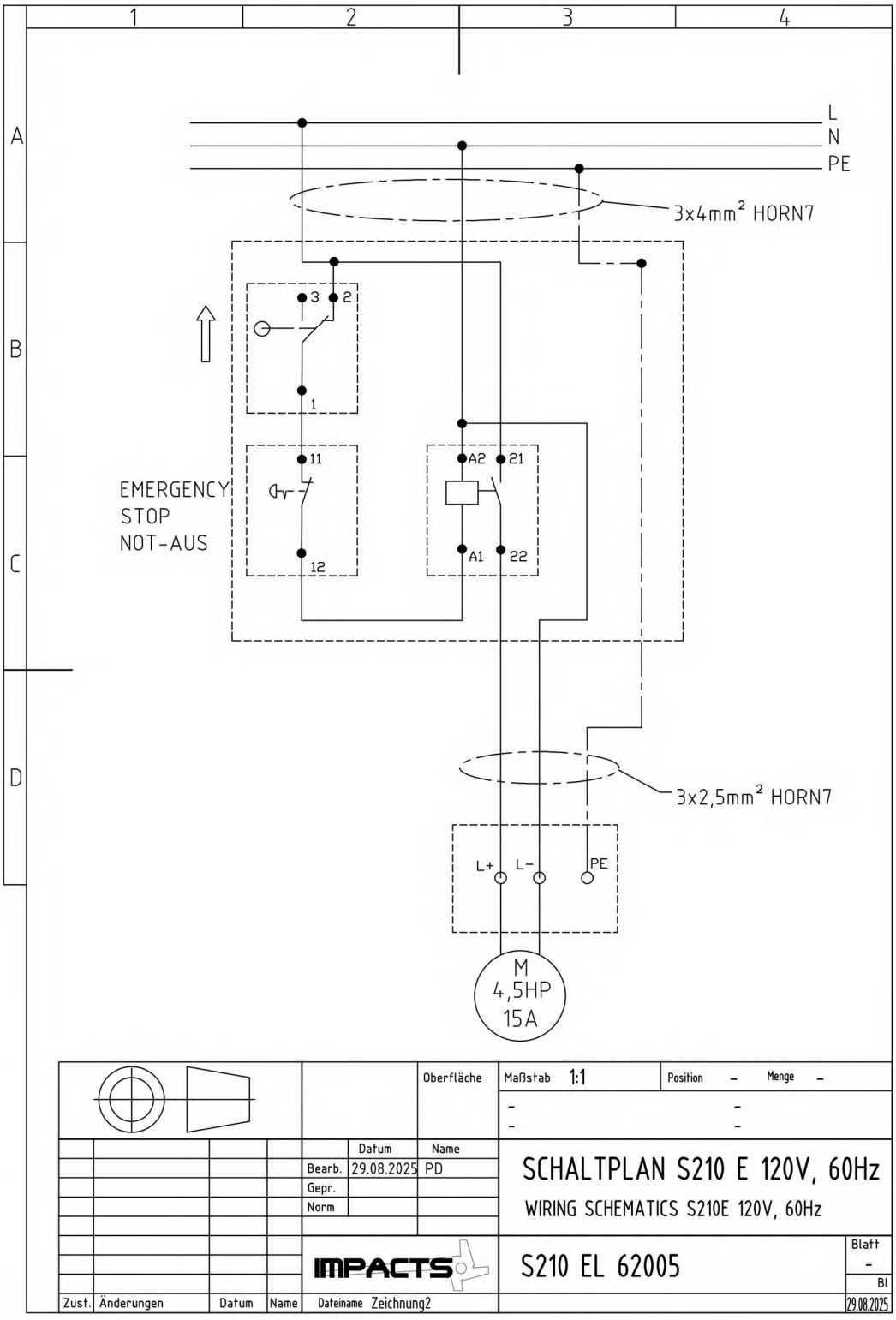
8

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**.

8.2 Electric wiring diagram



8.3 Electric wiring diagram 110 V, 60 Hz



Chapter 9

9.1 Diagnosis of blast machine failures

Prior to any repair works on the machine or its drives, the machine must be secured against unintentional switch-on. Put the machine to its Safety off position.

Failure	Possible reasons for failure	Failure corrective actions
Unusual Vibrations	Uneven wear of the Blast wheel, unbalance due to broken parts or blades	Replace Blast Wheel Set. Check separator and all other sections of the machine. Remove all broken parts
	Wheel hub worn out.	Replace Wheel Hub.
Unusual Noise	Low Clearances or bad adjustments of turning parts.	Check parts adjustments (Blast wheel and Control Cage).
	Loose or lost screws.	Check screws and bolts to be fitted correctly, tighten where necessary.
	Shrieking wheels	Replace wheels.
	Motor Bearings worn	Replace Bearings
Reduced performance or no performance.	Insufficient flow of abrasive in front of the Blast wheel	Clean wire mesh. Check feed spout to be clean.
	Not enough abrasive in storage	Fill up abrasive.
	Loose valve lever.	Tighten up set screw.
	Valve adjustment.	Adjust valve lever and valve disk.
	Too much dust and sand in the circuit	Check all seals, dust hose. Check filtration unit to be sealed properly (Dust Bin).

Failure	Possible reasons for failure	Failure corrective actions
Reduced performance or no performance.	Blast wheel or control cage.	Blast wheel or control cage worn out. Replace worn items.
	Valve does not close properly and abrasive is blocking the Blast wheel when switch on.	Close Valve, stop motor. Readjust Valve.
	Too much abrasive admitted when switched on.	Ensure motor got max speed before opening the valve.
	Feed motion too fast.	Reduce speed.
Dumping or loosing abrasive.	Bad seals.	Check base seals readjust and replace when worn.
	Elevation adjustment of magnets.	Check elevation not to be higher than 8 mm.
	Magnets lost field.	Replace magnets.
	Poor abrasive quality.	Use quality abrasives.
	Wheel kit wear out.	Replace wheel kit.
	Too much dust and sand in system.	Check filter.
Too much dust and other particles in storage.	Insufficient air flow towards filtration unit.	Check rated performance of the filter unit connected. Check all seals Check dust hose Check differential pressure and replace filter elements if pressure too high

9.2 Diagnosis of electrical failures

Prior to any repair works on the machine or its drives the machine must be secured against unintentional switching-on. Put the machine to its Safety off position.

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**.

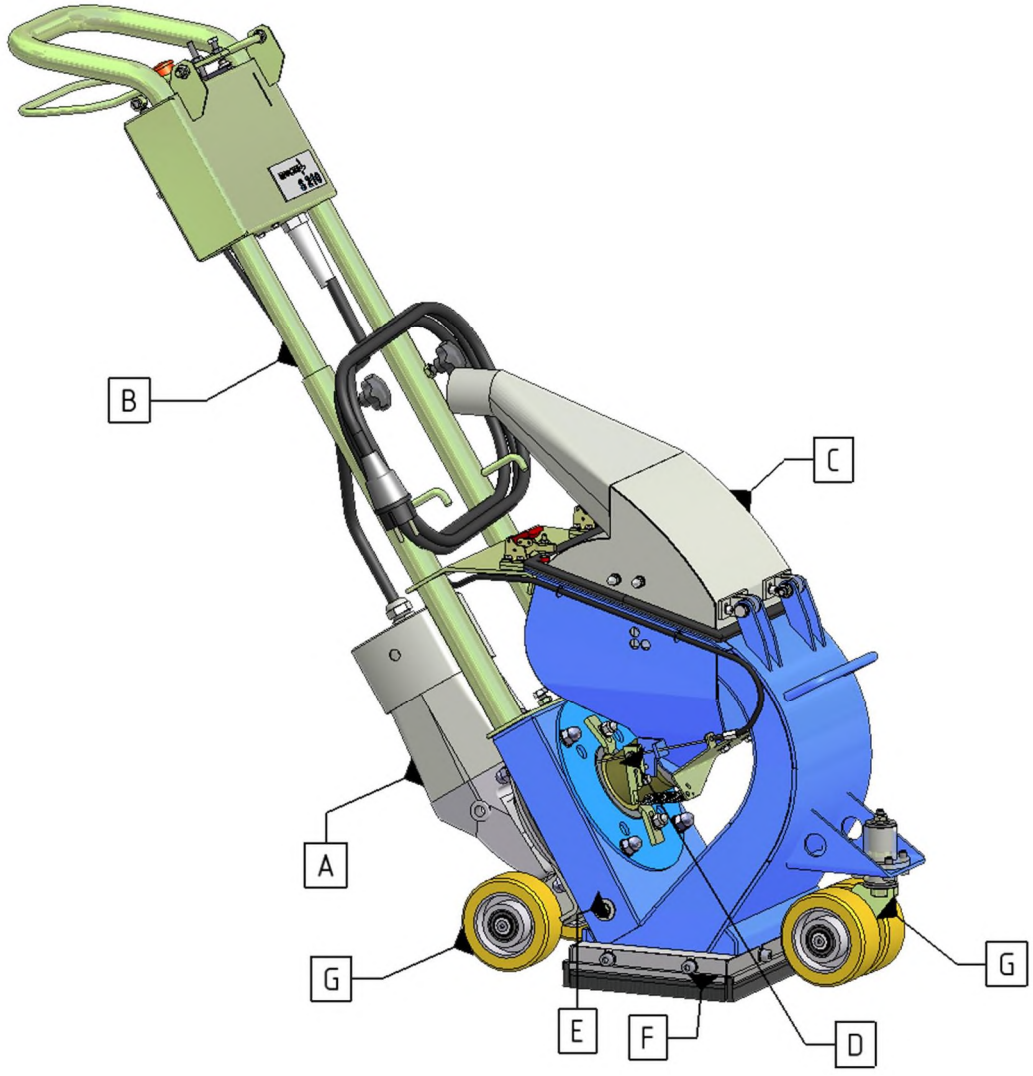
Failure	Possible reason for failure	Failure corrective actions
Motor does not start up.	Missing phase.	Check power supply
	Faulty Switch or relays	Diagnosis and replacement by electrician.
	Emergency stop locked	Unlock emergency stop bottom
Motor stops during operation	Current too high-power supply circuit breaker disengaged	Disconnect plug Reset Circuit breaker or replace fuse
		Adjust max. abrasive feeding (Needs Amp meter)
	Motor is damaged	Check Motor

Chapter 10

Spare Parts

Overview:

AREA	DESCRIPTION
A	Blast wheel drive and front section
B	Handle section
C	Separation and top section
D	Abrasive feeding
E	Liner and wheel housing
F	Seals
G	Undercarriage



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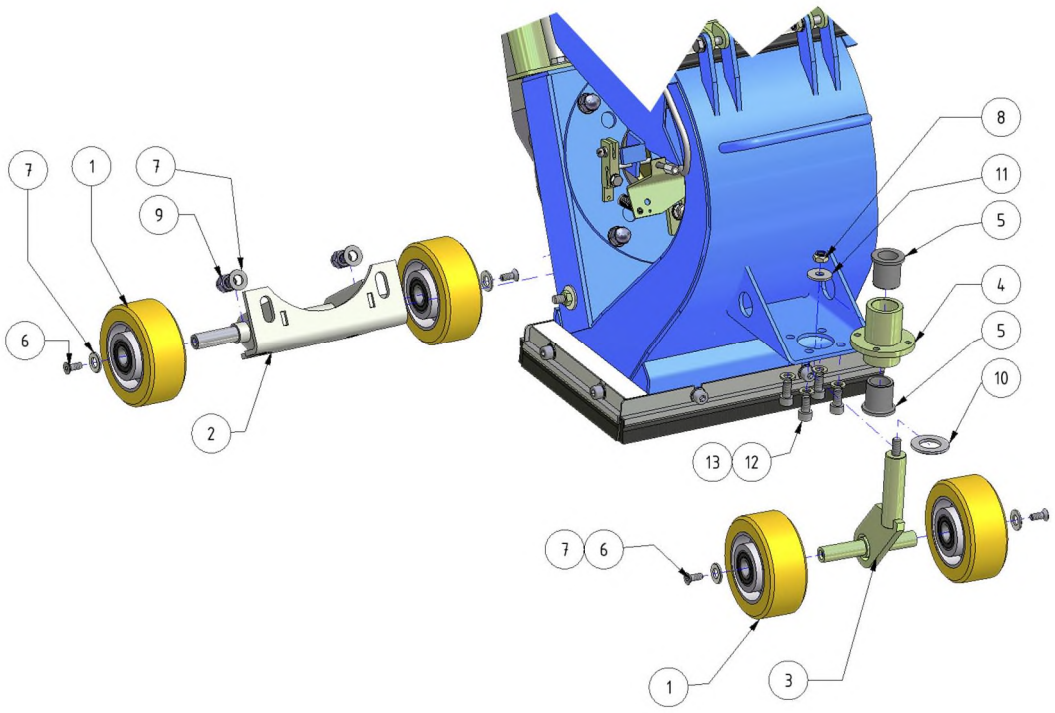
Undercarriage:

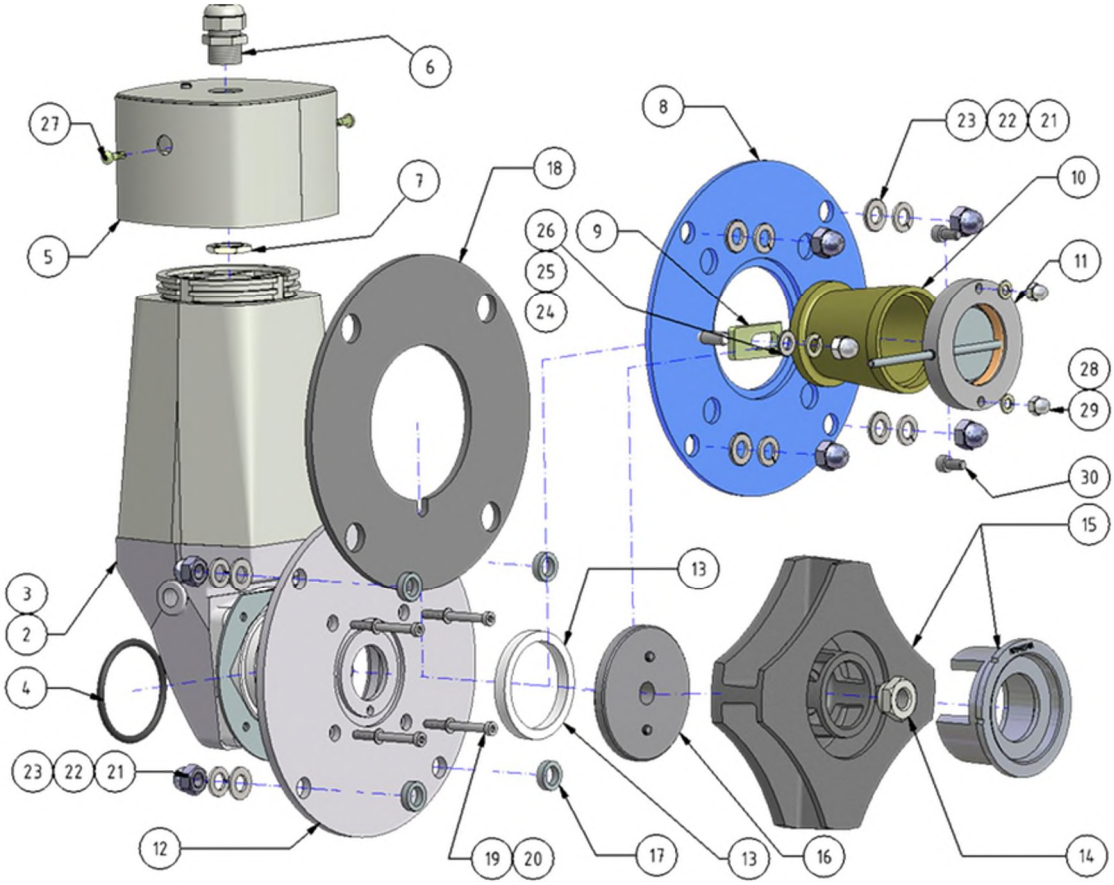


POS	QTY	DESCRIPTION	PART No.
1	4	WHEEL 100	304 000 013
2	1	REAR BRACKET	201 000 227
3	1	SWIVEL BRACKET	201 000 211
4	1	SWIVEL BUSH	201 000 212
5	2	BUSHING	314 000 002
6	4	HEX.SOCK. COUNT.HD. SCREW	DIN 7991 M6x16 Zn
7	6	WASHER	DIN 125 B 10,5 Zn
8	1	LOCK NUT	ISO 7040 M8 Zn
9	2	CAP NUT	DIN 1587 M10 Zn
10	1	WASHER	DIN 125 B21 Zn
11	1	WASHER 3D	DIN 9021 8,4 Zn
12	4	HEX SOCK HEAD CAP SCREW	DIN 912 M8x16 Zn
13	4	LOCK WASHER	DIN 128 A8 Zn

Spare Parts

Blast wheel drive and front section:

POS	QTY	DESCRIPTION	PART No.
1	1	WHEELHOUSING S210E	201 000 554
2	1	MOTOR 230V	601 000 009
2a	1	ADAPTER METABO	201 001 562
3	1	MOTOR 110V	601 000 016
4	1	O-RING	403 771 005
5	1	WHEELMOTOR GUARD	201 000 205
6	1	CABLE GLAND	612 000 008
7	1	NUT FLAT M20x1,5	612 000 009
8	1	CONTROL CAGE SUPPORT	201 000 216
9	2	CONTROL CAGE CLAMP	201 000 192
10	1	ABRASIVE FEEDER	201 000 224
11	1	FEED VALVE S210 SERIE	201 000 218
12	1	MOTOR SUPPORT PLATE METABO	201 000 142
13	1	FELT SEAL	201 000 186
14	1	WHEEL NUT S210E	201 000 210
15	1	BLASTWHEEL DD TYPE	201 000 145
16	1	WHEEL ADAPTER S210E	201 000 209
17	4	SPACER 5mm	201 000 585
18	1	SPACER S210E 5mm	201 000 584
19	4	HEX.HD.SOCK.LOW HEAD.SC.	DIN 6912 M5x50 Zn
20	4	LOCK WASHER	DIN 128 A5 Zn
21	8	CAP NUT	DIN 1587 M10
22	8	LOCK WASHER	DIN 128 A10 Zn
23	8	WASHER	DIN 125 B 10,5 Zn
24	2	CAP NUT	DIN 1597 M8 Zn
25	2	LOCK WASHER	DIN 128 A8 Zn
26	2	WASHER	DIN 125-1 B 8,4 Zn
27	2	SELF DRILLING SCREW	0206 42 16
28	2	LOCK WASHER	DIN 128 A6 Zn
29	2	LOCK NUT	DIN 1587 M6 Zn
30	2	HEX. SOCK. Hd. CAP SCREW	DIN 912 M6x12 Zn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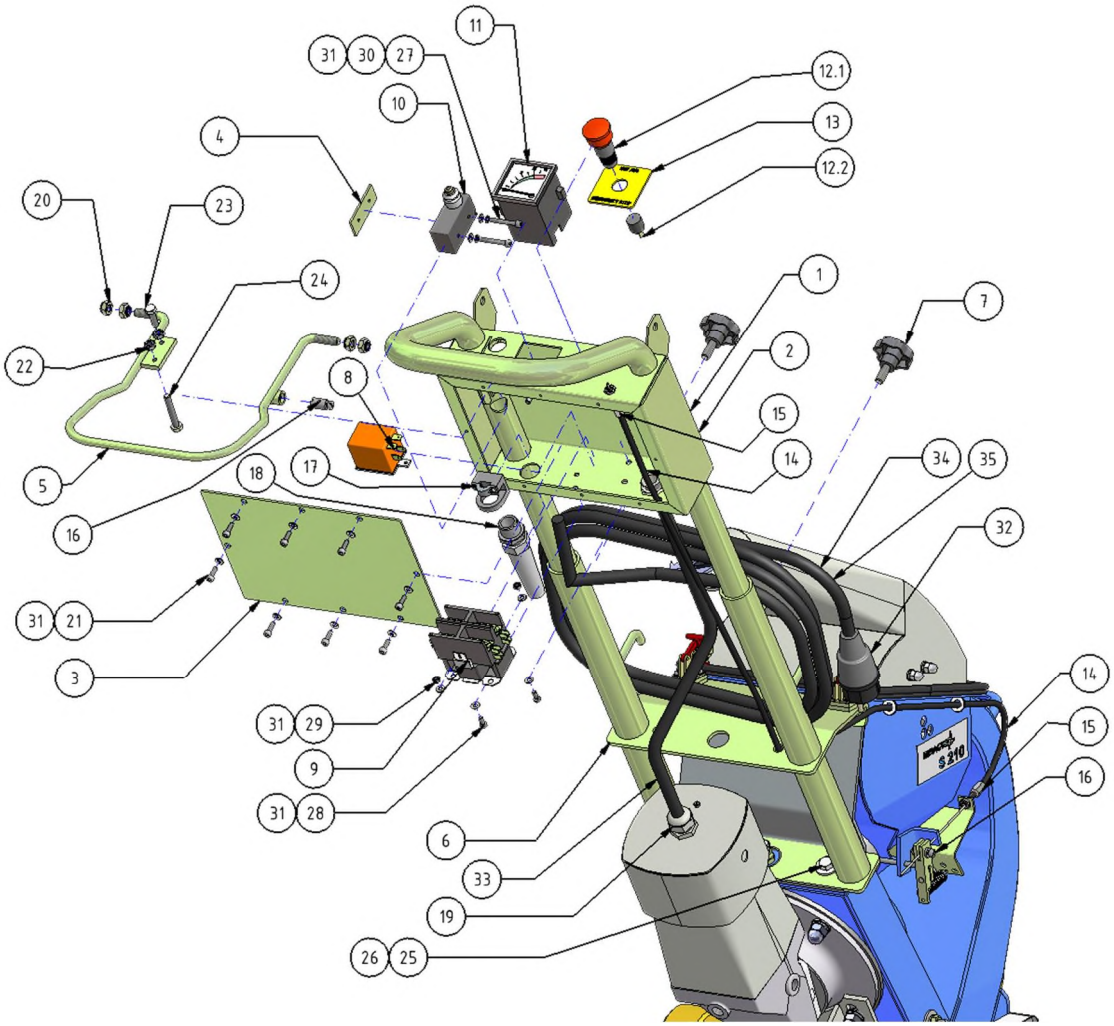
Spare Parts

Handle section:

POS	QTY	DESCRIPTION	PART No.
1	1	TOP HANDLE S210E	201 000 221
2	1	HANDLE FOR AMPMETER	201 001 710
3	1	REAR COVER	201 001 732
4	1	CLAMPING PLATE	201 002 860
5	1	ACTUATOR HANDLE	201 000 223
6	1	BOTTOM HANDLE	201 000 222
7	2	STAR GRIP	310 000 007
8	1	RELAY 230 V	612 000 019
9	1	2 POLE CONTACTOR 110 V 30A	606 000 002
10	1	MICRO SWITCH	605 000 005
11	1	AMPMETER 110V	608 000 011
11a	1	AMPMETER 230V	608 000 003
11b	1	SQUARE LAMELLAR PLUG	314 000 187
12.1	1	EMERGENCY CONTROL BUTTON	612 000 029
12.2	1	CONTACT ELEMENT	605 000 013
13	1	LABEL EMERGENCY STOP	612 000 030
14	1	ABRASIVE CONTROL CABLE	201 000 204
15	2	ADJUSTER NIPPLE	201 000 231
16	2	NIPPLE	201 000 230
17	1	CABLE CLAMP M20	612 000 018
18	1	CABLE GUIDE M20	612 000 017
19	2	CABLE GLAND	612 000 008
20	4	LOCK NUT	ISO 7040 M8 Zn
21	8	CYL. HEAD CAP SCREW	DIN 912 M4x12 Zn
22	2	NUT	DIN 934 M6 Zn
23	1	HEX HEAD BOLT	DIN EN 24018 M6x20
24	1	HEX HEAD BOLT	DIN EN 24018 M6x40
25	2	HEX HEAD BOLT	DIN EN 24018 M8x20
26	2	WASHER	DIN 9021 8,4 Zn
27	2	CYL. HEAD CAP SCREW	DIN 912 M4x30 Zn
28	2	CYL SLOT SCREW	DIN 84 M4x10
29	2	NUT	DIN EN 24032 M4 Zn
30	2	LOCK WASHER	DIN 128 A4
31	14	WASHER	DIN 125-1 B4,3
32	1	PLUG 230V ONLY	603 000 001
33	1m	MOTOR CABLE 110V	602 000 001
	1m	MOTOR CABLE 230V	602 000 008
34	10 m	MAIN CABLE 110 VOLT	602 000 020
35	10 m	MAIN CABLE 230 VOLT	602 000 008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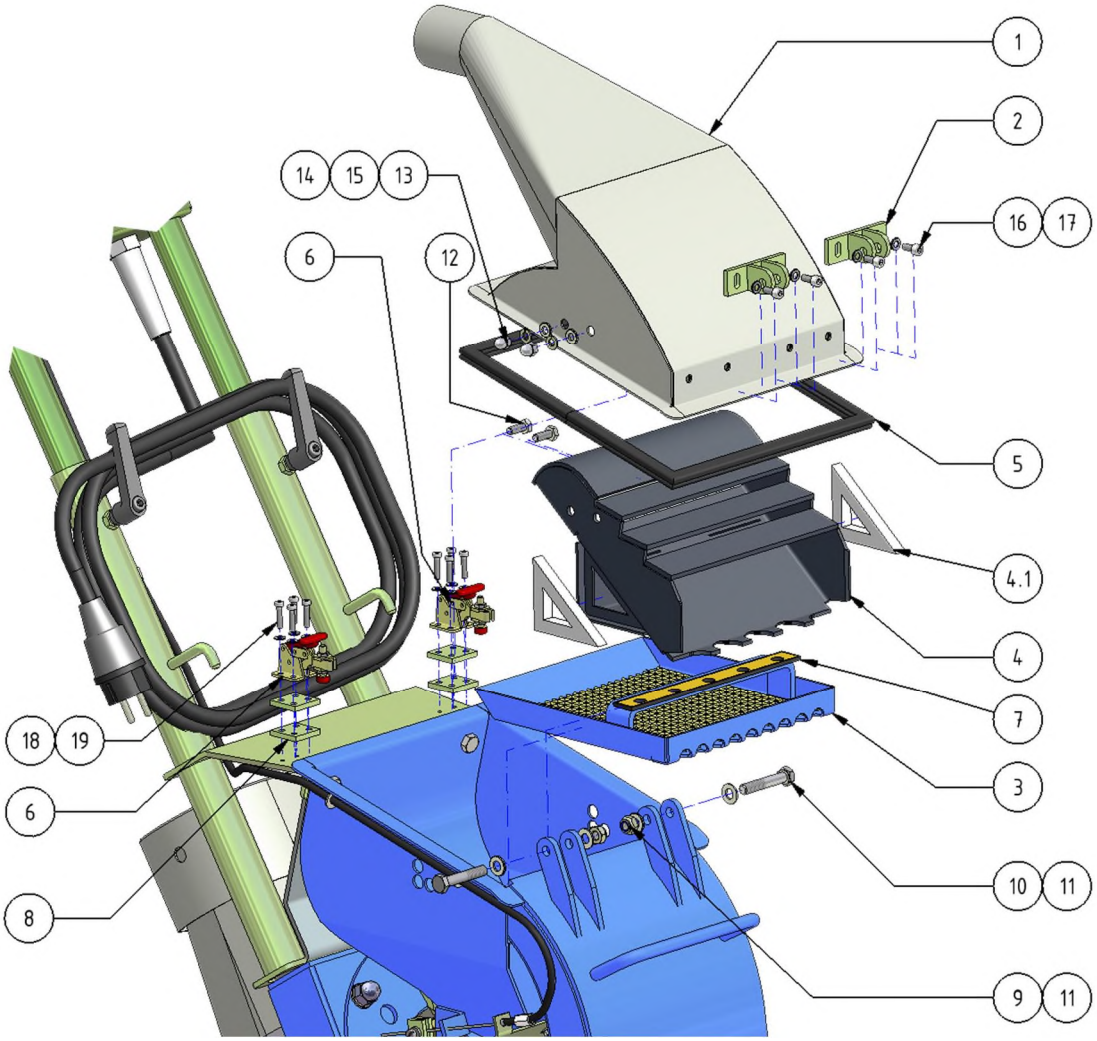
Spare Parts

Separation and top section:

POS	QTY	DESCRIPTION	PART No.
1	1	SEP COVER	201 000 228
2	2	HINGE TOP SECTION	201 000 215
3	1	TRAY INSERT	201 000 220
4	1	VENTILATION INSERT	201 000 219
4.1	2	FELT SEAL	201 000 319
5	1	U SHAPE RUBBER SEAL	314 000 056
6	2	CLAMP	311 000 012
7	1	SEAL SEP INSERT	201 001 557
8	4	SPACER PLATE	201 000 229
9	7	LOCK NUT	ISO 7040 M8 Zn
10	2	HEX HEAD BOLT	DIN EN 24014 M8x45 Zn
11	4	WASHER	DIN 125-1 B 8,4 Zn
12	4	HEX HEAD BOLT	DIN EN 24018 M6x16 Zn
13	4	CAP NUT	DIN 1587 M6 Zn
14	4	WASHER	DIN 125-1 B6 Zn
15	4	LOCK WASHER	DIN 128 A6 Zn
16	4	HEX SOCK. HD. CAP.	DIN 912 M5x12 Zn
17	4	WASHER	DIN 125-1 B5,3 Zn
18	8	WASHER	DIN 125-1 B4,3
19	8	HEX.SOCK.HD.CAP SCREW	DIN 7984 M4x18 Zn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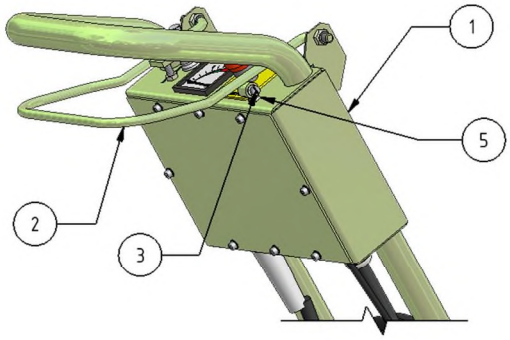
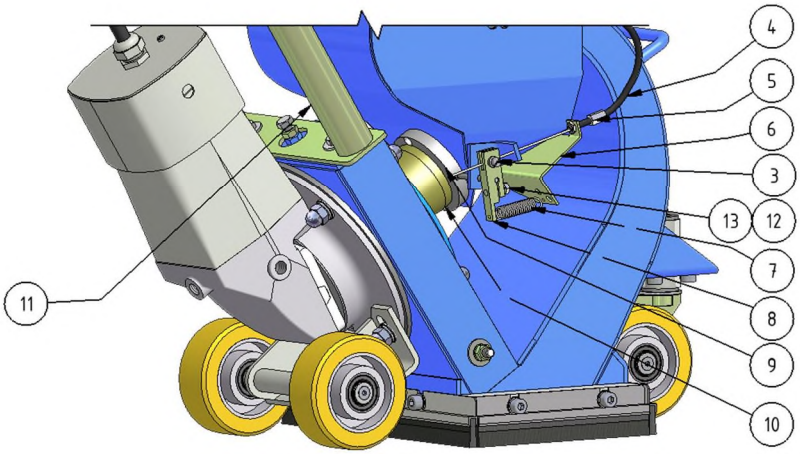
Abrasive feeding:

POS	QTY	DESCRIPTION	PART No.
1	1	TOP HANDLE FOR AMPMETER	201 001 710
2	1	ACTUATOR HANDLE S210E	201 000 223
3	2	NIPPLE	201 000 230
4	1	ABRASIVE CONTROL CABLE	201 000 204
5	2	ADJUSTER NIPPLE	201 000 231
6	1	CONTROL CDABLE BRACKET	201 000 226
7	1	TENSION SPRING	201 000 131
8	1	VALVE LEVER	201 000 225
9	1	FEED VALVE S210 SERIE	201 000 218
10	1	ABRASIVE FEEDER	201 000 224
11	1	BOTTOM HANDLE	201 000 222
12	5	WASHER	DIN 125-1 B6,4 Zn
13	3	HEX HEAD BOLT	DIN EN 24018 M6x12





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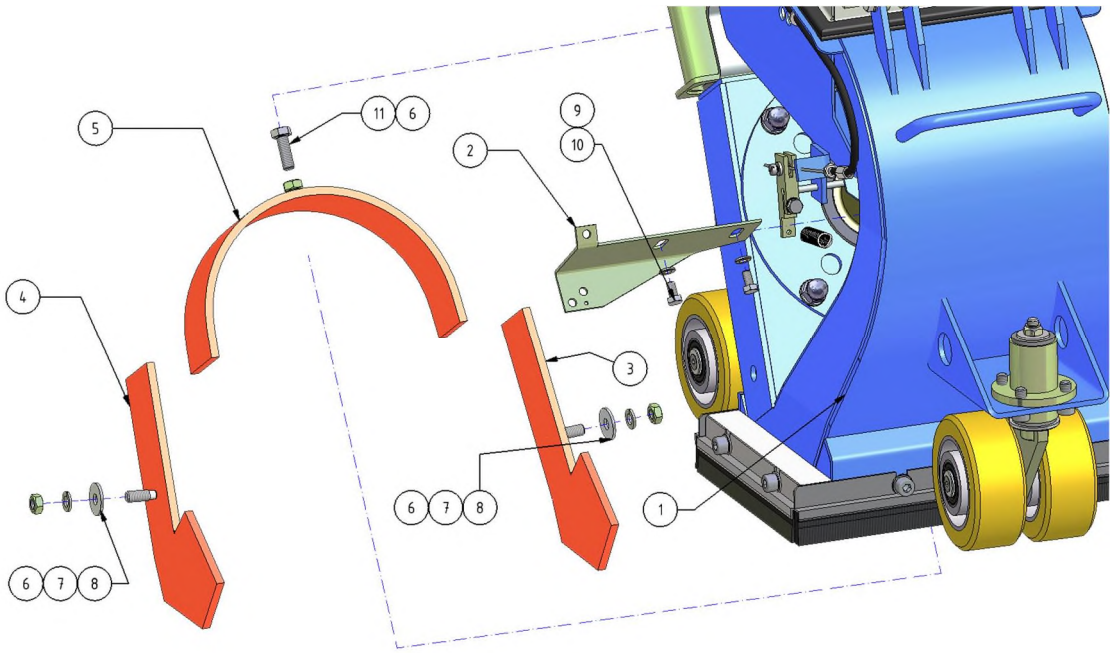
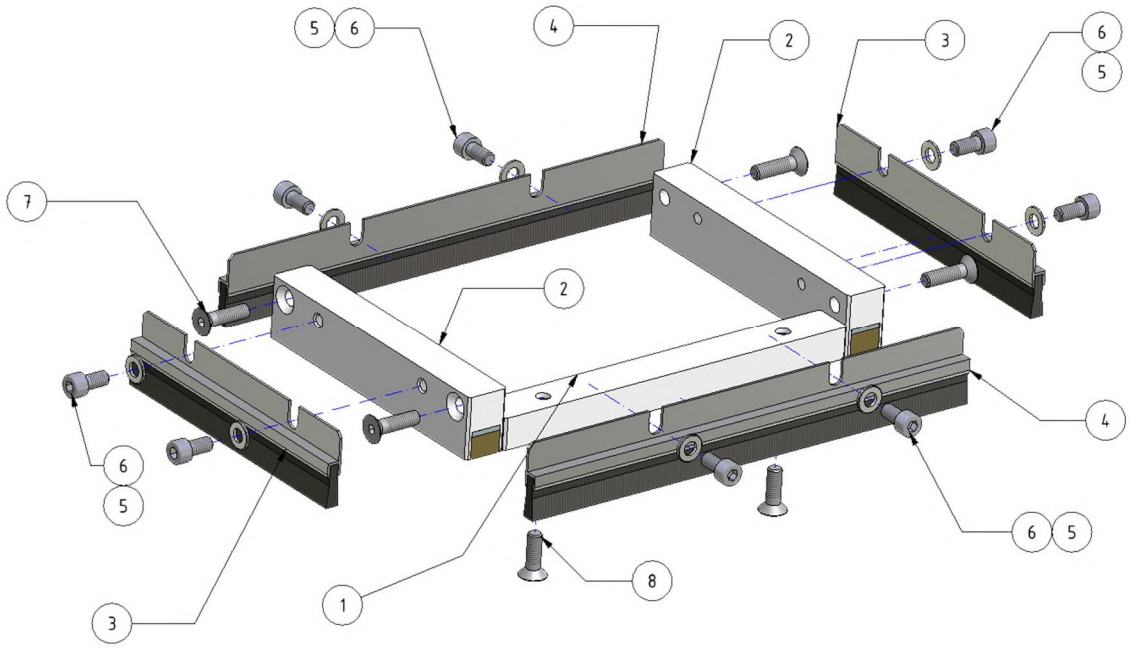
Liner and wheel housing:



POS	QTY	DESCRIPTION	PART No.
1	1	WHEELHOUSING S210E	201 000 554
2	1	CONTROL CABLE BRKT	201 000 226
3	1	RH SIDE LINER S210	201 000 200
4	1	LH SIDE LINER S210	201 000 199
5	1	TOP LINER	201 000 201
6	3	NUT	DIN 934 M8 Zn
7	2	LOCK WASHER	DIN 128 A8 Zn
8	2	WASHER	DIN 9021 8,4 Zn
9	2	WASHER	DIN 125-1 B6,4 Zn
10	2	HEX HEAD BOLT	DIN EN 24018 M6x12
11	1	HEX HEAD BOLT	DIN EN 24018 M8x25

Spare Parts

Seals:



POS	QTY	DESCRIPTION	PART No.
1	1	FRONT MAGNET S210	201 000 213
2	2	SIDE MAGNET	201 000 214
3	2	SIDE BRUSH S210	201 000 202
4	2	FRONT BRUSH S210	201 000 203
5	8	WASHER	DIN 125-1 B 8,4 Zn
6	8	HEX SOCK HEAD CAP SCREW	DIN 912 M8x16 Zn
7	4	HEX. SOCK. COUNT. HD. SCREW	DIN 7991 M8x30 Zn
8	2	HEX. SOCK. COUNT. HD. SCREW	DIN 7991 M8x25 Zn