



STREAMER
Premium Shotblasters

Operating Manual
S210E-40R



Your Partner for Mobile Surface Preparation
IMPACTSamericas.com



IMPACTS Americas
1384 Bungalow Rd.
Morris, IL 60450 USA
(815) 941-4800
(815) 941-4600 Fax
www.IMPACTSAmericas.com

[April 2018]

Table of Contents

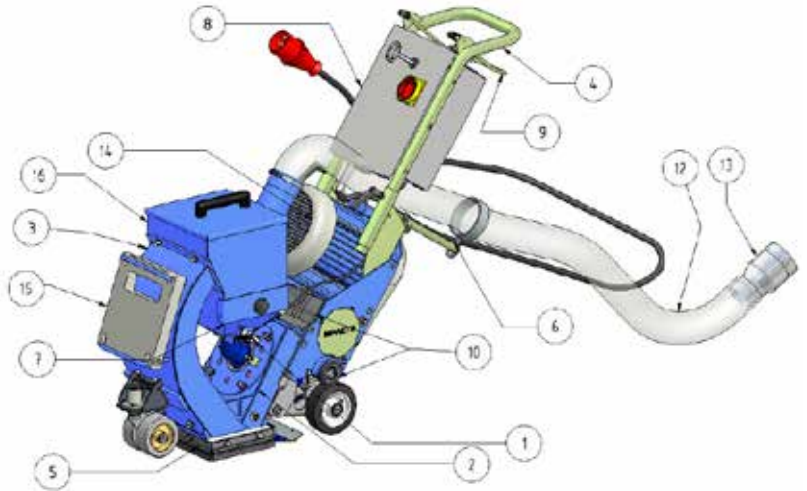
1.0	Technical Data	3
2.0	Safety Instructions	5
3.0	General Information	11
4.0	Transportation.	20
5.0	Start Up	22
6.0	Operation.	25
7.0	Maintenance	30
8.0	Electrical System	41
9.0	Error Diagnostics	42
10.0	Spare Parts	45



Please note: The following safety instructions must be followed as shown in this operating manual. Failure to do so may result in hazard to health or possible death.

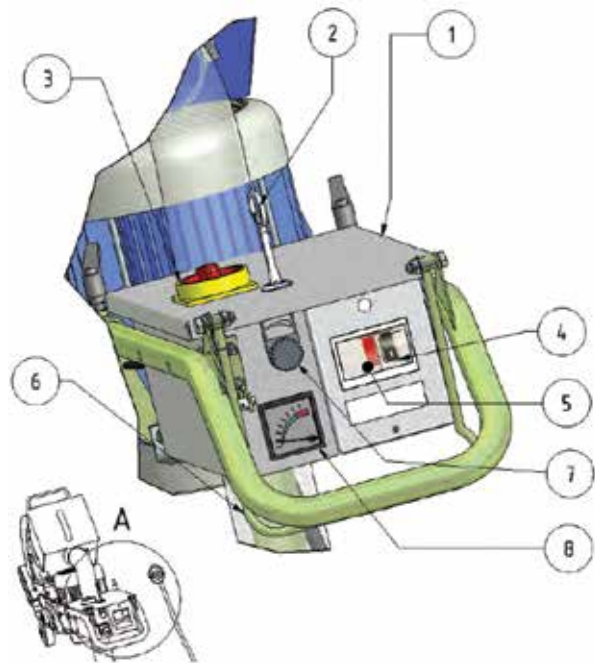
Machine Parts

- | | |
|----|---------------------------------------|
| 1 | Abrasive Feeding |
| 2 | Side-force Wheel Housing |
| 3 | Rebound |
| 4 | Combination Operation Handle |
| 5 | Base Seal |
| 6 | Cable a. D. Hose Guide |
| 7 | Separation Tray |
| 8 | Control Panel |
| 9 | Lever T. Drive-Abrasive Control Cable |
| 10 | Traction Drive |
| 11 | Power Supply Cable |
| 12 | Dust Hose |
| 13 | Hose Adapter |
| 14 | Wheel Motor |
| 15 | Add on Weight |
| 16 | Separator |



Control Panel Console

- | | |
|---|---|
| 1 | Control Panel |
| 2 | Control Panel Key |
| 3 | Main Switch |
| 4 | Switch Wheel ON |
| 5 | Switch Wheel OFF |
| 6 | Combination Traction-Drive and Abrasive Control Lever |
| 7 | Potentiometer Traction Drive |
| 8 | Amp meter (30 Amp Max.) |



Chapter 1.0 Technical Data

- 1.1 Rating
- 1.2 Unit Specifications
- 1.3 Operative Range and Correct Usage
- 1.4 Stand-by Power Supply (Generator)
- 1.5 Advice for Operator of the Blast Machine
- 1.6 Machine Type Designation

1.1 Rating

Machine: IMPACTS Blast Machine
 Machine-Type: S210E-40R
 Manufacturer: IMPACTS Americas
 1384 Bungalow Rd.
 Morris, IL 60450 U.S.A.

1.2 Unit Specifications

	Machine S210E-40R	Dust Collector (optional) PM3003AR
Length	43.7 in. (1110 mm)	32 in. (80 cm)
Width	11.8 in. (300 mm)	24 in. (60 cm)
Height	39.3 in. (1000 mm)	46 in. (118 cm)
Weight	251 lb. (114 kg)	186 lbs. (84 kg)

Connected loads of the electrical system:

Power	5.8 HP (4.37 kW)	3 x 1.3HP (2.4 kW)
Electrical Connection	400V, 50 Hz, 3 Phase Plug CEE, 32 AMP Fused 32 AMP	120V/60Hz, 20A

1.3 Operative Range and Correct Usage



The blast machine is designed to be used on clean, dry, horizontal surfaces without any obstacles. The machine cannot be used for any other purpose. The manufacturer will not be held liable for damages resulting from incorrect usage. In cases of wrong usage, the user will assume all risks and damages.

1.4 Stand-by Power Supply (Generator)



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

1.5 Advice for Operators of the Blast Machine



During the operation of the machine, it may be possible to exceed the acceptable noise levels of 85 dB(A). This is dependent on various locations and 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.

1.6 Machine Type Designation

Machine Type:	S210E-40R
Unit / Designation:	IMPACTS Blast Machine
Working Width:	8.26 in. / 210mm
Drive:	Progressively adjustable 1-59 ft/min / 0-18 m/min
Blasting Capacity:	Up to 800 SF/hr / 80 m ² /h
Abrasive Consumption:	~100 g/m ²
Dust Hose Connection:	3 in. / 75mm
Recommended Dust Collector:	PM3003AR

Chapter 2.0 Safety Instructions

- 2.1 Explanation of Warnings and Symbols
- 2.2 Organizational Measures
- 2.3 Personnel Selection and Qualification
- 2.4 Safety Precautions Applicable to Different Operating Conditions
- 2.5 Repair Work, Maintenance Activities, and Default Repair on the Job Side
- 2.6 Definition of the Safety Off Position
- 2.7 Dangerous Aspects of the Machine
- 2.8 Electrical Engineering Regulations
- 2.9 For Special Attention

2.1 Explanation of Warnings and Symbols

The following symbols are used in the operating instructions to highlight areas of particular importance:



Operational Safety

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



Safety Goggles/ Ear Protection

Information, instructions, and restrictions with regards to possible risks of personal injury or extensive damage to materials.



Electrical Warning

Warning against dangerous voltages.

2.2 Organizational Measures



The Operating Instructions are to be kept near the machine and must be reachable all the times!

In addition to the Operating Instructions, general and legal regulations regarding accident prevention and environmental protection must be 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 Instructions must be supplemented by instructions including the duty to supervise and report relating to particular local working practices; for example, work organization, work procedures, and personnel allocation.

Personnel working with the machine must read the Operating Instructions before starting the work, in particular. Chapter 2 "Safety Instructions." This must be done before starting any work with the machine. This applies to certain 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 should be checked regarding awareness of safety and hazards.



Personnel must tie back long hair and not wear loose clothing or any jewelry. There is risk of injury in getting stuck or being drawn into moving machinery. Use personal protection equipment whenever necessary and required by regulations!

Take notice of all safety and hazard notices on the machine. They must be kept complete and legible.



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

Changes, add-ons, or conversions 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 always comply with the technical requirements and the specification of the manufacturer. Original spare parts by the manufacturer are guaranteed compliant.

Inspection intervals and intervals for recurring checks specified in these Operating Instructions must be followed. At the same time, it is necessary to meet all 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 at each job site. Take note of the facilities for fire reporting and fighting fires!

2.3 Personnel Selection and Qualification

Fundamental Duties



*Only trained personnel can operate and perform work on the machine. **Note the statutory minimum age!** Clearly specify the responsibilities of personnel for operation, setup, service, and maintenance work.*

Clearly define the machine operator's responsibilities regarding traffic safety regulations and empower him/her to decline instructions from third parties who are not complying with the safety requirements.

Personnel being trained or individuals testing the equipment must always be supervised by an experienced operator.



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 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. The machine must only be used in a safe and functional condition.



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 error 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 7 ft./ 2m around the machine.

Default must be rectified immediately!

Start up / switch off operations and control devices have to be handled in accordance with the Operating Instructions.



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 required 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 following valid VDE and local guidelines.

Before starting the machine ensure that no person in the job site can be endangered when the machine starts running.



Do not switch off 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



These activities can only be undertaken by qualified personnel. Please follow any special safety instructions in the various chapters on servicing the machine (see Chapter 7).

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.

Adjustments, servicing, and inspection work and inspection intervals specified in these Operating Instructions as well as any information on the replacement on parts and systems of the machine must be undertaken and/or complied with.

The operator must be informed of any maintenance or repair work done to the machine.

Startup and shut off procedures must be done in accordance with the Operating Instructions during all work related to the use, repair, and adjustment of the machine. The repair personnel must also be aware of the safety devices during inspection, maintenance, and repair.



The machine must be shut off completely for repair or maintenance work. Please disconnect the main plug in order to prevent the machine from being switched on accidentally.

The dust collector bin must 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 only lint-free cleaning cloths.

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

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

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 in accordance with the electrical engineering regulations.

Make sure that electrical components used for replacement purpose comply with the original parts and are correctly adjusted if necessary.

2.6 Definition of the Safety Off Position

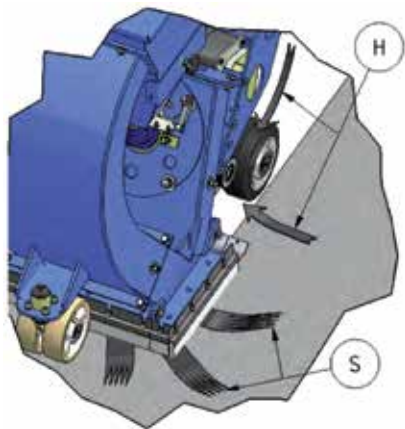
The safety off position is the position of the machine when it cannot generate any hazard. Setting the machine in the safety off position means:

1. Switch off the blast machine.
2. Switch off the dust collector.
3. Wait for standstill of all drives.
4. Pull out main plugs.
5. Secure the machine against accidental start up.

2.7 Particular Dangerous Aspects of the Machine



Every machine not used according to the regulations may be hazardous for personnel during operating, setting-up, and service. 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.



S: Moving Parts (Shot)

Abrasive leaves the blast housing at high speed!

H: Turning Parts (Wheels)

Lift and tip the machine only when it is in the Safety Off position!

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 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 following valid VDE and 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 to BGV A3 or local regulations. Defects such as loose connections or scorched cables must be rectified immediately. Call a skilled electrician or the IMPACTS customer service.



If work on live parts is necessary, a second person must be deployed who can pull out the main 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 default free tools for your work. Damaged tools have to be repaired immediately or be replaced.

Use safety equipment and clothing (e.g. safety glasses, safety shoes, safety gloves) during operation of the machine at all times for your safety.

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

- Greasing, cleaning, and all repair work is only allowed if the machine is in the safety off position (see Section 2.6).
- No one is allowed to open or remove safety covers while the machine is running.
- Replace all safety covers and safety devices after cleaning, repair, and maintenance work.
- Do not touch moving parts or walk into the working path of the machine.
- Before start up of the machine after any cleaning, repair, or maintenance work, ensure that no person in the working area could be endangered by the machine.

Chapter 3.0 General Information

- 3.1 Operative Range
- 3.2 Scope of Supply
- 3.3 Description of the Machine
- 3.4 Operating Elements
- 3.5 The Wheel Kit
- 3.6 The Separator
- 3.7 The Traction Drive
- 3.8 Base Seals
- 3.9 Abrasive Media
- 3.10 Selecting Abrasive Media
- 3.11 Care and Maintenance

3.1 Operative Range

The IMPACTS blast machine S210E-40R 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 thoroughly removes surface contaminants, coats of paint, sealants, and thin coatings.

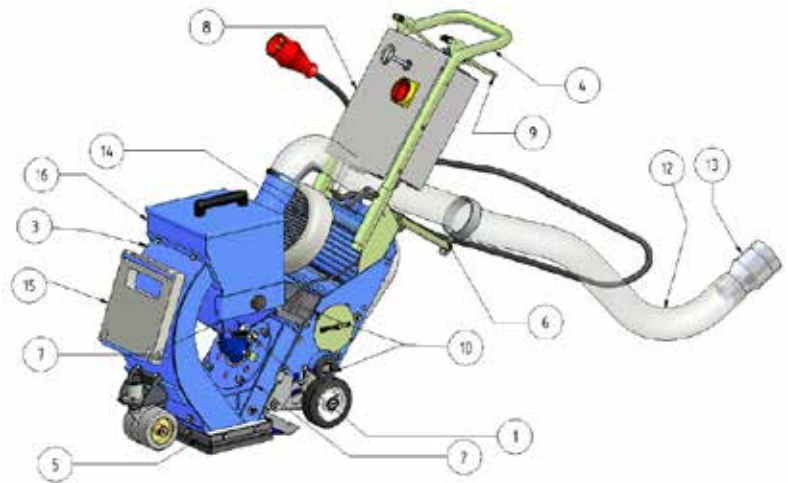
A suitable filter unit must be connected to the machine in order to separate the dust from the abrasive. A specially designed dust collection system ensures dust-free operation of the machine and clean air at the workspace. IMPACTS recommends the PM3003AR to work in conjunction with the S210E-40R.

3.2 Scope of Supply

- Blast Machine (S210E-40R)
- Manual (1)
- Dust Collector PM3003AR (optional)
- Dust Hose (sold separately)
- Maintenance Box (optional)
- Magnetic Broom (optional)

3.3 Description of the Machine

1	Abrasive Feeding
2	Side Force-Wheel Housing
3	Rebound
4	Combination Operation Handle
5	Base Seal
6	Cable a. D. hose Guide
7	Separation Tray
8	Control Panel
9	Lever T. Drive-Abrasive Control Cable
10	Traction Drive
12	Dust Hose
13	Hose Adapter
14	Wheel Motor
15	Add-on Weight
16	Separator



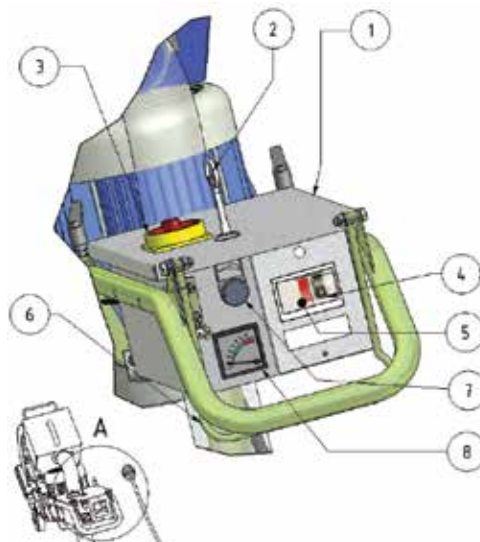
The blast wheel method is a revolutionary invention based on a simple principle:

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. In this location, 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 reflow to the blast wheel.

3.4 Operating Elements

The Control Panel contains all controls and instruments used for supervision and control of the machine.

1	Control Panel
2	Control Panel Key
3	Main Switch
4	Switch Wheel ON
5	Switch Wheel OFF
6	Combination Traction-Drive and Abrasive Control Lever
7	Potentiometer Traction Drive
8	Amp meter



Control Panel Housing

The Control Panel Housing (1) contains all necessary electrical components for monitoring and control of the Wheel Motor wheel engine as well as for the Traction Drive.

Control Panel Key

The Control Panel Key (2) serves to open of the Panel by an electrician. Keep the key in a safe place at all times.

Main Switch

The Main Switch (3) serves for the security against unintentional turning on as well as the control of the main voltage to the installed electrical components.

Switch Wheel ON / OFF

Pushing Button (4) (I) the Wheel Motor will start up.
Pushing Button (5) (0) the Wheel Motor will stop.

Combination Traction-Drive and Abrasive Control Lever

With the Combination Lever (6) below the handle the Traction Drive will be switched ON OFF. If this lever will be pulled upward approx. 10mm the T.-Drive starts up. When pulled further upward the Abrasive Control Valve will open as well.

Potentiometer Traction Drive

The operation speed is set by the Potentiometer (7). Although this indication does not allow direct reading of the actual speed, it shows comparison numbers allowing the operator to set the appropriate speed.

Add On Weight

The Add On Weight gives better balance under unfavorable conditions. It may also be used when working on very rough or inclined surfaces.

Ammeter

The Ammeter (8) shows the load consumption of the blast wheel motor. When switching on the motor, the current value is high (starting current peak). For no load current and operating current, please see the following values:

Machine	Non Load Current	Operating Current
S210E-40R	Approx. 15 Amp max.	30 Amp

Main Plug

The Main Plug (9) serves to connect the machine to the power supply.

Phase Reverse

The Phase Reverse (10), integrated in the Main Plug, serves to adjust the direction of rotation on the Wheel Motor.

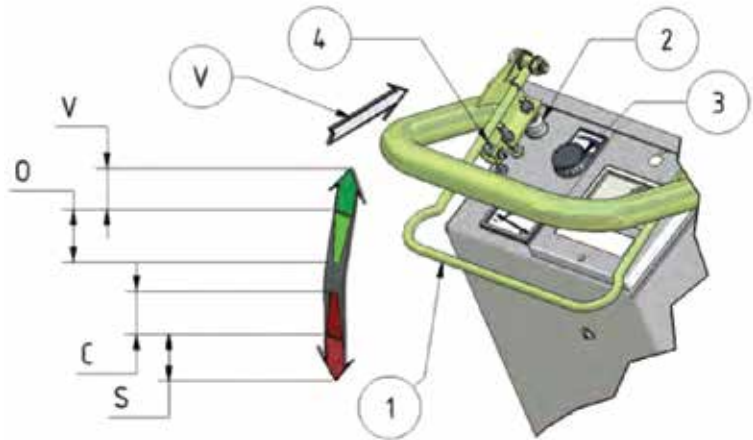
Combination Lever (Traction Drive)

This lever (1) is located above the Control Panel and turns on a Microswitch (2) that will start or stop the Traction-Drive.

If you pull this lever slightly upward, the Traction Drive Motor will start up and the machine will move in a forward direction (V). The speed is dependent on the setting of the Potentiometer (3).

Lowering the lever (1) into area (S) will cause the Traction Drive to stop.

Lifting the lever further upward into area (O) will open the Abrasive Control valve (7) via the installed control cable (4).



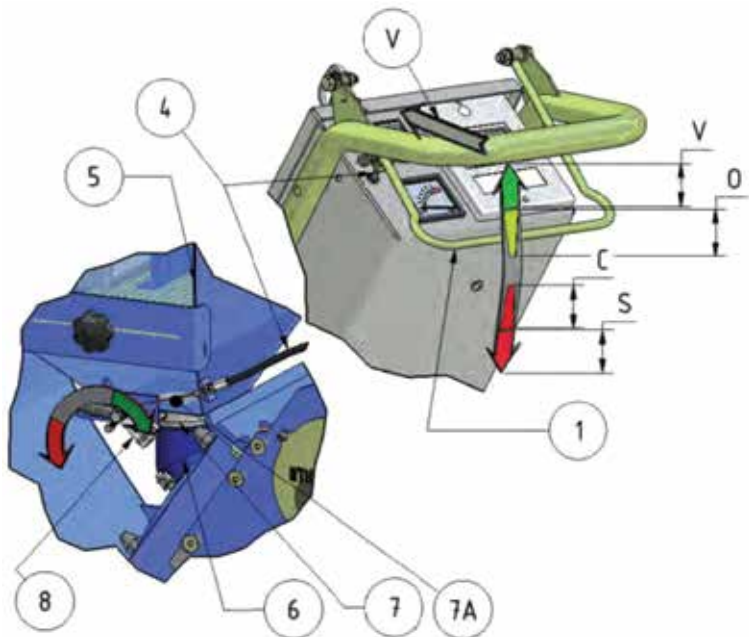
Combination Lever (Abrasive Control Valve)

To regulate the flow of abrasive to the blast-wheel use the Magnetic Valve (7) fitted between Storage-Hopper (5) and feed spout (6.) This valve has a turnable shutter (7A) that is linked to a lever (8) controlled by the Combination Lever (1).

Changing the angle of the shutter position results in a different amount of abrasive flowing to the blast wheel. Feeding more abrasive to the wheel increases the blast as well the load on the blast wheel motor.

Load on the motor is indicated by the Amp meter.

Do not load more abrasive than recommended for the S270E-75. The maximum load is 15.5 Amp. A higher load will cause the motor to fail or damage the motor.



3.5 The Wheel Kit

The heart of every blast-machine is the blast wheel (1). The Blast Wheel throws the abrasive to the surface using centrifugal forces.

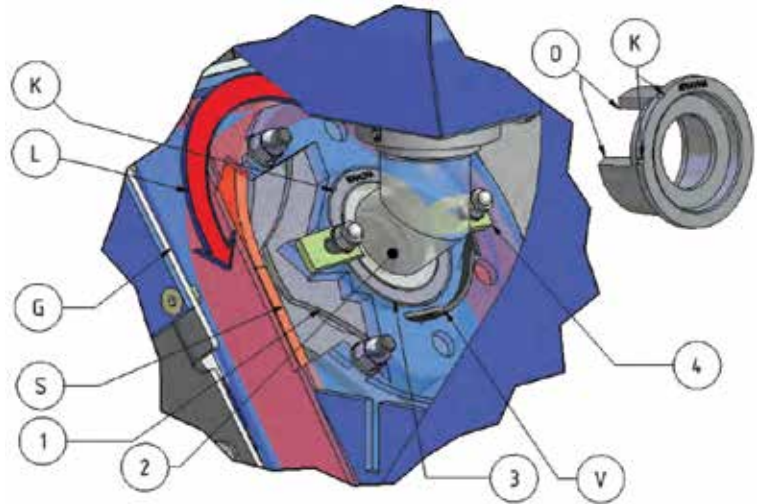
The blast wheel is contained in a wheel housing (G) protected with replaceable wear plates (S). The blast wheel is driven by an electric motor via a belt drive and mounted on a bearing unit. The correct rotation of the S210E-40R blast wheel is Counter-ClockWise (L).

The center of the blast wheel is a pre-accelerator called an Impeller (2) which feeds certain quantities of abrasive onto the turning blades of the blast wheel. The abrasive passes the opening (O) at the Control Cage (3)

This control cage (6) is held by two clamps (4). The clamps need adjustment so the flow of the abrasive flows to the center of the machine.

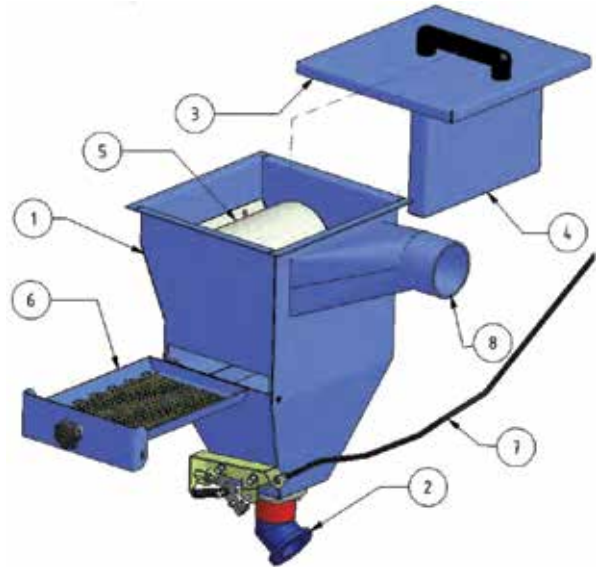
Two grooves (K) indicate the location of the opening for the Control Cage.

Turning the control cage CCW will move the Blast Pattern to the right and turning it CW will move the blast pattern to the left.



3.6 The Separator

1	Separator Housing
2	Feed Spout
3	Separator Lid
4	Baffle Plate
5	Deflector
6	Wire Mesh Tray
7	Control Cable
8	Hose Connector



The Separator (1) is mounted to the end of the Rebound plenum. The deflector (5) and Baffle Plate (4) stop the reflected abrasive.

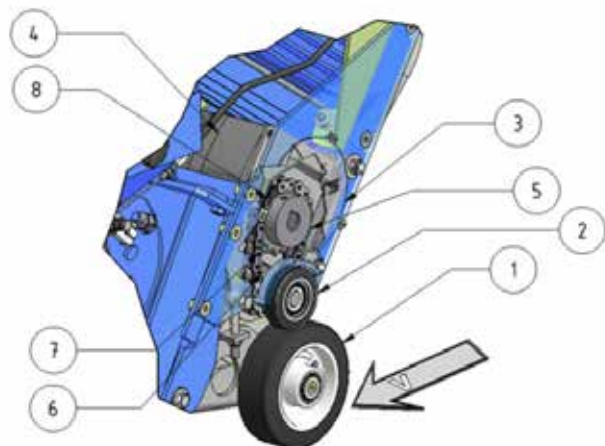
The filter is connected to the Hose Connector (8) and generates an appropriate airflow within the separator as it separates dust from abrasive.

The abrasive drops back to the storage unit where it passes a Wire Mesh Tray (6). The tray prevents any coarse contaminants from getting into the blast wheel. To clean the wire mesh tray, remove it from the side.

In this storage section, the abrasive runs through a magnetic control valve and feed spout (2) into the blast wheel. The valve is controlled by the Control Cable (7).

3.7 The Traction Drive

1	Wheel
2	Drive Wheel
3	Cover
4	Gear Motor
5	Sprocket
6	Drive sprocket
7	Chain
8	Chain link



IMPACTS S210E-40R is driven by a 0.25 kW Gear Motor. The power transmission works by a chain drive. The wheel (1) and sprockets (5) (6) of the chain-drive are firmly connected by the chain. The lower sprocket (6) drives the drive shaft and the driving wheel (2) in working direction (V).

The driving wheel (2) transfers the force of the Gear-Motor only in the working direction (V), therefore the machine can be pushed manually faster forward than the driving speed chosen with the potentiometer.

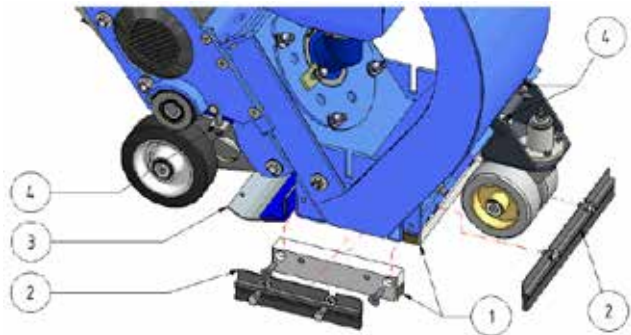
3.8 The Base Seals

- | | |
|---|----------------|
| 1 | Magnetic Seal |
| 2 | Brush Seal |
| 3 | Tail Seal |
| 4 | Adjuster Screw |

The Magnetic Seals (1) are located on the front and side and are surrounded by Brush Seals (2).

The Tail Seal (3) is located at the rear. The Tail Seal slides over the surface and hinders abrasive getting out of the blast area. All seals should be placed correctly to ensure against abrasive spray.

The correct setting of the magnets is 1/4 inch/8mm above the floor depending on the application. The adjustment is done by screws on the traction drive and the rear (4).



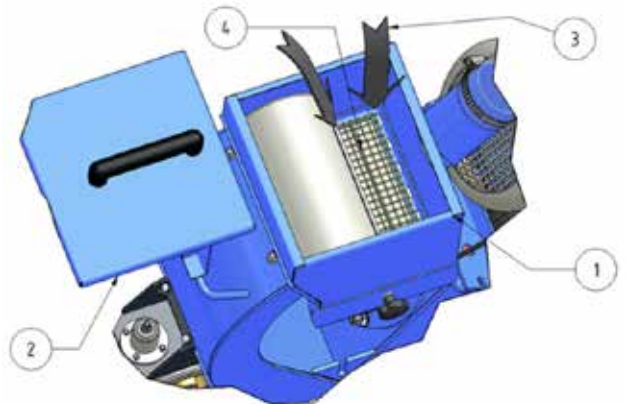
3.9 Abrasive Media

In order to operate IMPACTS blast-machine S210E-40R you need hardened, spherical abrasive. The machine S210E-40R has been especially designed to be operated with IMPACTS abrasive.

The IMPACTS abrasive is of very high quality and has the rebounding ability required for the efficient use of model S270E-75. The selection of the abrasive is very important since this is the material to carry out the surface treatment.

To add the abrasive:

Remove the lid (2) from the separator (1) making sure that the wire mesh tray (4) is in place and fill up abrasive (3) distributed equal up to the bottom of the mesh. Occasionally check the function of the deflector shutter as abrasive is being added.



3.10 Selecting Abrasive Media

Media IMPACTOR S 290

Applications:

- Creates fine profiles and is often used when the surface is only subsequently sealed, for example, on vacuumed concrete or for the removal of thin layers of paint on non-glazed tiles

Media IMPACTOR S 330 (preferred)**Applications:**

- Creates a fine to medium texture on concrete
- Removes glazing from tiles prior to subsequently coating with anti-skid floor sealing
- Removes old impregnations and coatings about 1 mm thick

Media IMPACTOR S 390 (preferred)**Applications:**

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, i.e. 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 IMPACTOR S 460**Applications:**

Used to generate a rough profile and to improve work output

- Removes laitance from new concrete
- Removes thicker paints or rust from steel surfaces
- Removes flex coatings from parking decks
- Removes painted road lines
- Re-texturing on asphalt surface and concrete roads

Media IMPACTOR GL18**Applications:**

Use only in addition to Media No. 3 and No. 4 with maximum 30% content. This media should never be used without blending, otherwise the wear in the machine would increase disproportionately.

- Removes polyurethane coatings
- Removes adhesive remnants
- Removes rubber deposits
- Penetrates hard to remove coatings
- Also suitable for use on steel

The effectiveness of the S210E-40R is dependent on the rebound effect which 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.

3.11 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.

A list of contents of the maintenance box is provided in Chapter 10 to enable the above mentioned work to be carried out quickly.



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 4.0 Transportation

- 4.1 General Notes
- 4.2 Transport
- 4.3 Operation Conditions
- 4.4 Transport of the Machine by Vehicle
- 4.5 Machine Specifications

4.1 General Notes



Before the machine is used for the first time, IMPACTS authorized dealers offer a course to familiarize 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.

4.2 Transport

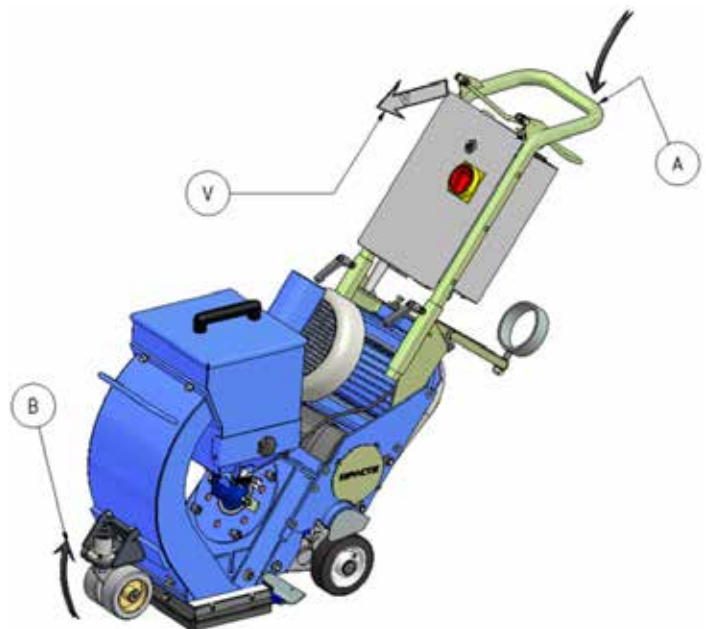
In order to transport the machine from a vehicle to the working area you need to lift the machine up. In order to do so use the Handle (A).

Push the Handle (A) downward so the front of the machine lifts up (B) from the ground. On the handle (A) push the machine in a forward direction (V) as shown. Never pull the machine backward—this could cause the rear seals to become damaged.

Hoisting Equipment

When transporting the machine with hoisting equipment like a crane or lift, check the total weight permitted (see Chapter 1 Dimensions).

(See Figure on following page): Please use only appropriate, allowed, and qualified hoisting equipment (A) as well as ropes and chains (A). See Chapter 1 for the weight of the equipment or look on the serial plate of the machine. Do not fix any rope or chain (A) to the handle. Fix ropes and chains only at locations as shown in the next figure.



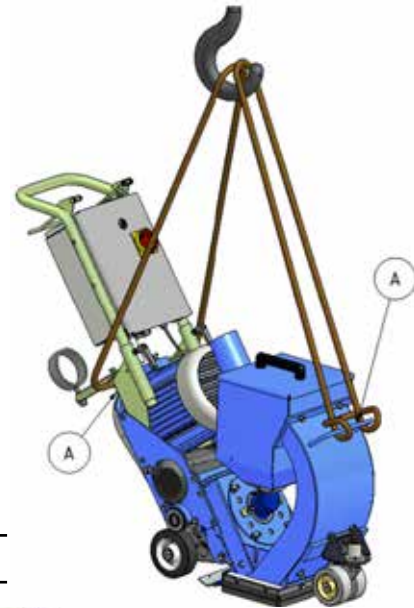
The handle of the machine is only fixed with two fixing screws and cannot be used for transportation, to fix ropes, or hoisting equipment!

The machine transportation is divided into:

- Machine S210E-40R
- Filter unit (PM3003AR)
- General accessories



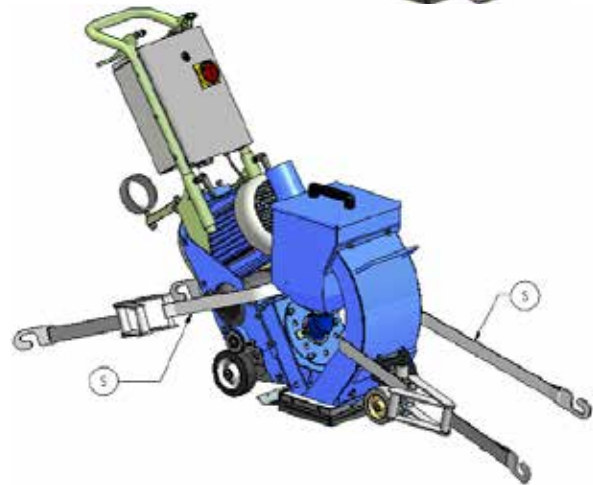
Remove all abrasives from the machine before transport. The machine may only be lifted as shown. Weight and dimensions are shown in Chapter 1 "Technical Data."



4.3 Transport of the Machine with Vehicles

Use straps (S) 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 may slide the handle down. In order to achieve this, you have to slacken the two fixing screws. Secure the fixing screws again ore you may lose them.



4.4 Operation Conditions

Check the surface before treatment for loose parts (stones, screws, etc.). The surface must be swept if necessary. Make sure that the machine can travel over all inequalities on the surface. Smaller inequalities, like weld seams or floor joints, will not effect the performance of the machine.

The machine must be operated in accordance with instructions given in Chapter 5 "Initial Operation."



Whenever the machine is not used for blasting, the abrasive valve must always be closed!

4.5 Dimensions

Main dimensions and unit specifications of the machine assembly are shown in Chapter 1 "Technical Data."

Chapter 5.0 Start Up

5.1 Preparing for Start Up

5.2 Start Up

5.3 Initial Operation

5.1 Preparing for Start Up

Before start up, ensure that all existing protective housings are fitted and the filter unit 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 is obliged to wear close fitting protective clothing.

Carefully handle all plugs, cables, hoses, and operating devices. Avoid any contact with live wires.

Any work on the electrical system has to be done only by qualified specialists.

Check the surface before treatment for loose parts (stones, screws, etc.). The surface must be swept if necessary. Make sure that the machine can travel over all inequalities on the surface. Smaller inequalities, like weld seams or floor joints, will not effect the performance of the machine.

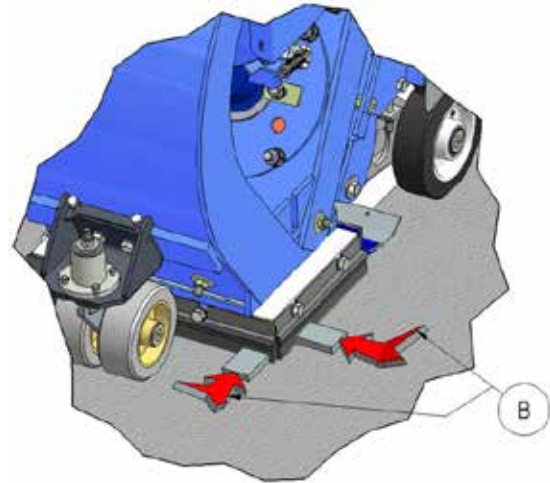
In order to avoid downtimes, a regular inspection is essential. Carry out the following checks before any start-up:

- Check whether all machine parts are assembled safely and correctly.
- Check all screws and other fasteners for tight seat.
- Check the abrasive storage hopper, the feed spout, and the blast wheel parts for foreign bodies and remove them.
- Check blast wheel blades, impeller, control cage, liners, and fastening screws for damages and wear.
- Check the magnetic and brush seals for wear.
- Check the tightness of the hose connections and the condition of the hose to the filter.
- Make sure the dust container of the filter unit is empty. Please comply with the local waste treatment regulations considering the removed material.
- Check the separator parts for wear and defects. Remove foreign bodies and dust deposits in order to prevent the separator from being blocked.
- Check the electrical connections for dirt and foreign body deposits.
- Check the electrical motors for dirt and other contaminants.
- Check the level of abrasive in the storage hopper. Fill up if necessary.



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

- Place the blast machine and the filter unit onto the surface to be treated.
- Check the height adjustment (approx. 1/4 inch / 8 mm max.) of the blasting machine and the distance between magnet and surface.
- For the height adjustment, a 8 mm sheet steel strip is shifted below the magnetic sealing (B). In order to adjust it, set the Set screws (1) and (2) (see also Chapter 7).
- Check the main power cable and the dust hose for damage. Replace or repair all damaged parts before starting the machine.
- Connect the machine to the filter unit with the dust hose. Use hose clamps at the connections.
- Check setting of the outlet damper on the filter. Some types of machines require lower airflows.
- Connect the power supply cable of the blast machine with the site supply or filter unit. Make sure that the correct electric supply is available (400V, 50Hz, 16A CEE type-plug).
- Fill the separator equally with the selected abrasive (see Chapter 3) up to the bottom of the separator tray. The magnetic feed valve has to be closed while doing this.
- Check that the filter dust bin is empty. Comply with local waste treatment regulations considering the removed materials.



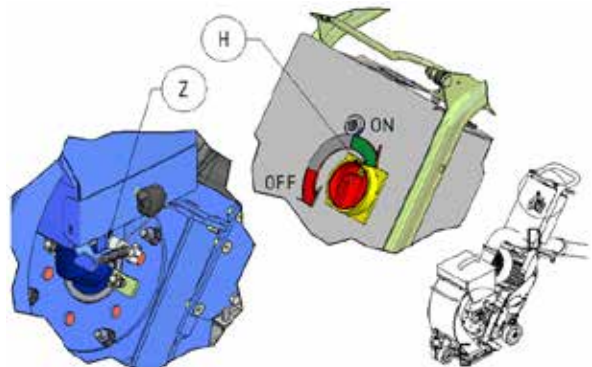
5.2 Start Up



All persons near the machine must wear safety glasses with lateral protection, ear protection as well as safety shoes. The operator is obliged to wear close fitted protective clothing.

The start up of the blast machine and the filter unit should be done in the following order:

1. Switch on the filter unit. (Please refer to the operating instructions of the filter unit.)
2. Initial operation of the Blast Cleaning Machine:
 - Check that the magnetic valve is closed. Lever (Z) should rest on the set screw located at the Separator Hopper.
 - Switch ON the main switch (H).





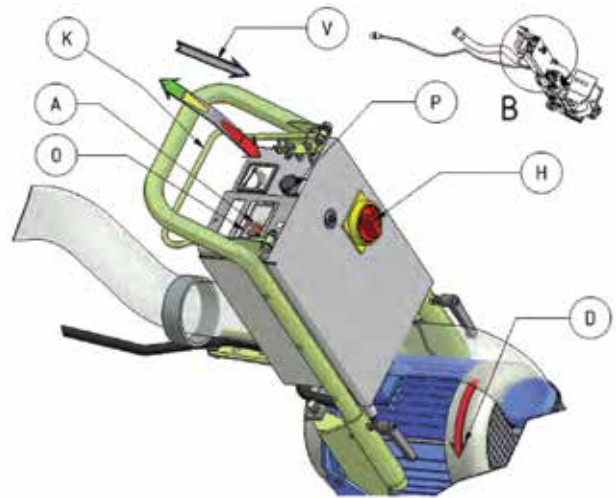
BEWARE: When blasting concrete the abrasive feed valve only may be opened when the blast-machine is in forward motion! If the machine is at a standstill and the valve is opened deep grooves are blasted into the concrete surface within seconds.



Warning: when the blast head is lifted from the floor, abrasive will spurt out of the sides of the blast head at high speed. If the machine is moved with the blast head raised, the abrasive feed valve must be fully closed.

5.3 Initial Operation

1. Set the Main Switch (H) into the "ON" position.
2. Turn ON the Wheel Motor at switch (O) and switch OFF immediately in order to check the rotation direction of the Wheel Motor. The fan blade of the motor should turn as shown (D), Counter Clockwise. (Viewing Direction: on the fan blade.)
3. Set the Potentiometer (P) in position 2-3 (low speed setting).
4. Pull the Combination Lever (K) upward about 1/4 inch / 8mm only. The machine will start moving forward as shown (V).
5. After the machine starts to move forwards (V) pull the Combination Lever (K) further upward in order to open the Abrasive Control valve and in order to start blasting the surface.
6. Watch the Ammeter (A), to control the load of the wheel motor. During start-up, the motor will need its starting current until maximum speed of the motor is reached. Make sure the Ammeter does not exceed 15.5 Amps.
7. To turn off the machine, lower the Combination Lever (K). The Abrasive Feed Valve will close and as the Lever approaches its lowest position the Traction Drive Motor will switch off. Push down switch (A) on top of the Control Panel to switch off the Wheel Motor.



Advice:

When the machine is moving, pull the Combination Lever (K) to operate the feed valve. Watch the ammeter to monitor the full load amperage.

An indication exceeding the full load value means overloading of the motor, whereas an indication below the full load value shows that there is not enough abrasive fed to the blast wheel. If necessary, re-adjust the cable to the magnetic valve or refill the hopper with abrasive.

After having approx. 2 ft./1-2 m blasted, close the abrasive valve, stop the machine and check the blasted surface.

If the blast pattern is irregular, it may be necessary to re-adjust the blast pattern (see Chapter 7 “Setting the blast pattern”) or select different speed for the machine.



Only alter the travel direction while the feed valve is closed. Regularly dump the dustbin of the filter unit. Do not overfill the bin to avoid dust exposure when opening the bin. Comply with the local waste treatment regulations considering the removed material.

Chapter 6.0 Operation

- 6.1 Daily Operation
- 6.2 Information about the Chart Speed
- 6.3 Recommended Blast Paths
- 6.4 Turning Off the Machine
- 6.5 If Failure Occurs
- 6.6 Safety Shutdown
- 6.7 Restart
- 6.8 Proceedings Prior and After Longer Stoppage

6.1 Daily Operation

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



*Only trained personnel can operate and perform work on the machine. **Note the statutory minimum age!** Clearly specify the responsibilities of personnel for operation, setup, service, and maintenance work.*

Instructions for daily operation of the blast machine:

- Before starting the operation, check daily 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 dust collector is connected correctly.
- Use only a dust collector which that has the right suction power and offers an optimal dust separation.
- Treat all plugs, cables, hoses, and operating devices with special care. Avoid any contact with live wires.

- Check the surface to be treated for loose parts (Stones, screws, etc.) The surface must be swept if necessary. Remove all objects from the surface in order to avoid damage to the machine seals or serious damage to blast wheel and wheel-drive.
- Make sure that no vehicles, such as forklift trucks and other equipment run over the electric cable and the dust hose.
- When using the dust collector, make sure to comply with the health and safety regulations and the local waste treatment regulations considering the removed material.
- Perform regular inspections in order to avoid downtimes of your blast machine (see Chapter 7 "Maintenance").



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.

6.2 Information about the Chart Speed

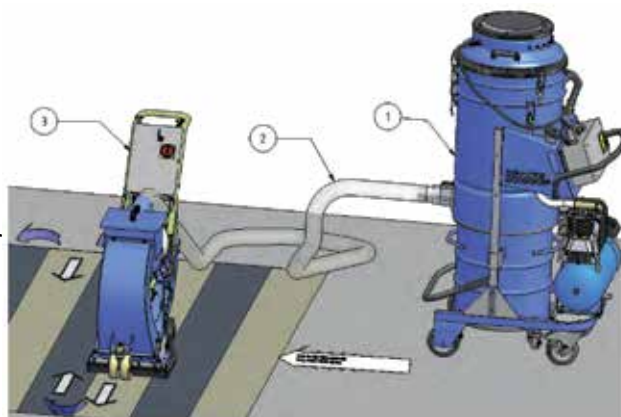
The chart speed depends on the material of the surface to be blasted and the desired profiling. The correct chart speed can best be determined by observing the blasted surface and varying the speed during the blast cleaning process, for example:

- Slight profiling on concrete requires a higher speed than coarse profiling (6-10)
- Blasting on steel requires a very low chart speed (1-3).

6.3 Recommended Blast Paths

- | | |
|---|---------------|
| 1 | Filter Unit |
| 2 | Dust Hose |
| 3 | Blast Machine |

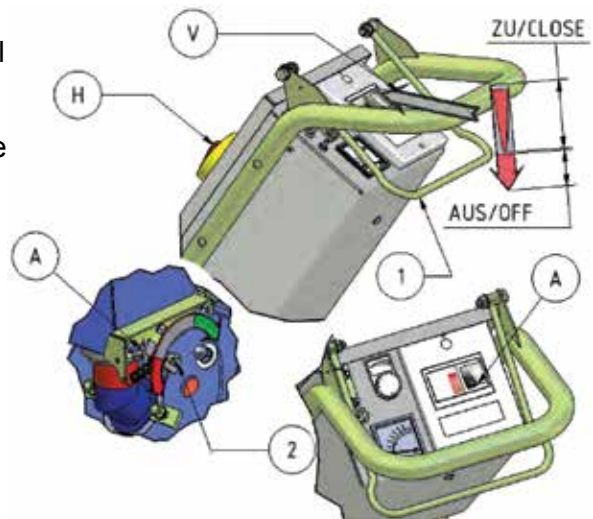
- Follow normal start-up and operation of the blast machine as described in Chapter 5 "Initial Operation."
- Cut blast paths in parallel tracks in order to cover the entire surface completely and to keep the dust hose and electric cable untwisted.
- Connect the blast machine and filter with the dust hose.
- Check setting of the outlet damper on the filter.



- The illustration shows the correct placement of the dust collector and hose. The dust collector hose must not be confined in any way.
- Recommended blast paths always lead away from the location the filter unit and the power supply source. Be aware of the maximum length of the cable and dust hose during operation.
- Turn the blast machine around at the end of the path by first closing the feed valve. Then turn the machine and guide it back in an arc to place the machine next to the last blasted path. Repeat this procedure in order to complete the surface, always moving away from the filter toward the open surface.
- Finally, move the filter to the surface already blasted and finish the area where the filter was first located.

6.4 Turning Off the Machine

1. First, close the Abrasive Feed Valve by lowering the Combination Lever (1) while the machine is still moving forward (V).
2. Keep the traction drive switched on so the machine moves toward (V) as long as the feed valve (2) is not fully closed to assure no grooves are blasted into the surface.
3. Release the Combination Lever (1) so it swings back into its previous position. The Traction drive switches off and the machine stops.
4. Press the Wheel Motor Off Switch (A).
5. Switch off the Main Switch (H).
6. Finally, switch off compressor and blower on the filter unit.



If the machine will not be used for an extended period of time, pull out the main plug. Store the machine and cover by a tarp.

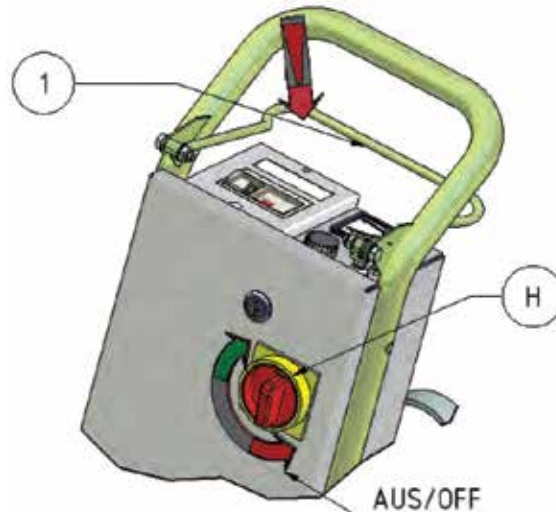
6.5 If Failure Occurs

In a case of emergency, you can stop the machine immediately by turning the Main Switch (H) off. In an emergency, immediately release the Combination Lever (1) and turn OFF the Main Switch (H).

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

Assure all rotating machine parts have come to a standstill before inspection or maintenance work begins.

Always maintain the Safety Off Position of the machine as described in Chapter 2.



6.6 Safety Switch Off



The machine must be set into its "Safety Off Position" before starting any kind of maintenance or repair work. See Chapter 2 "Safety Instructions."

6.7 Restart

After a mechanical failure, please ensure that you find the reason of the failure 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 failure.

If you can't find the failure or if you are unsure about the reason for the failure, please contact your IMPACTS contact person and ask for help.



Please be aware of the regulations for electric equipment such as BGV A3 and VDE-0701. These regulations describe the necessary considerations and actions after repair and changes on electrical Equipment (see Chapter 5 for "Startup of the Machine").



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.

6.8 Proceedings Prior and After Longer Stoppage

Stoppage Longer Than 3 Months:

- Switch off the machine (see Chapter 6).
- Remove all abrasive out of the machine.
- Remove all abrasive from magnets.
- Clean the machine and cover with a tarp.
- Ensure that motors, cables, and plugs are protected against moisture, dust, heat, and shock.
- Protect bright parts of the machine and power pack with a preservative oil.

After Longer Stoppage:

- See Chapter 5 "Initial Operation."

Chapter 7.0 Maintenance

- 7.1 Recommendations
- 7.2 Maintenance and Inspection
- 7.3 Maintenance
- 7.4 The Blast-Pattern
- 7.5 Adjusting the Blast-Pattern and Control Cage
- 7.6 Adjusting Magnets and Seals
- 7.7 The Belt
- 7.8 Fitting Belts
- 7.9 Belt Tension
- 7.10 Taper-Lock Bushes
- 7.11 The Chain Drive
- 7.12 Fitting Sprockets
- 7.13 Fitting the Chain
- 7.14 Maintenance and Repair of the Chain
- 7.15 Adjust Chain Tension of the Traction Drive
- 7.16 Wear Parts
- 7.17 Replacing the Wheel Kit
- 7.18 Replacing Liners

7.1 Recommendations

Prior to any repair work on the machine and its drives, secure the machine against unintentional switch-on. Put the machine in its Safety Off Position as described in Chapter 2.



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

- Safety and service life of the machine depend, among other things, on proper maintenance.
- 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 need to occur for wear checks, inspection, maintenance and repair works. Prepare a suitable inspection schedule considering your own working conditions. Our specialists will be pleased to assist you with any issues you may encounter.



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

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

Operating Hours / Time Period	Inspection Points & Maintenance Instructions
12 hours — after repairing	Check function of all safety devices. Check all accessible screw connections for tight seat.
Every 3 hours	Check whether there is any foreign matter in the hopper, the feed spout, or in the blast wheel unit.
Daily — prior to operation	Check the hose connections for tightness and fixed seat. Check the hose to the filter for damages. Make sure that the dust bin 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 level of abrasive in the storage hopper. Refill to bottom of wire mesh if necessary. Check the magnetic and 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 entire machine.

7.3 Maintenance

As already mentioned in Chapter 5 “Initial operation,” we recommend you make your first repair work on the machine with the help of an IMPACTS personnel. Using this recommendation, your maintenance personnel will have the opportunity to get an extensive 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 cannot be supplied quickly. 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.



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

7.4 The Blast Pattern

Abrasive leaving the blast wheel blades is not thrown in all directions. Scatter is restricted to an angle of about 55°. 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 direction and HOT ZONE of 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 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.

Each time the Wheel Kit cage is replaced, the thread of the blast wheel fastening screw should be checked. Make sure that this screw is tightened correctly. In addition, absolute care must be taken to clean the thread from dust and abrasive.

After each blast wheel repair work, switch on the blast wheel motor for a short period (without feeding abrasive) in order to find out whether the rotating parts turn freely and without vibration. After that, the blast cleaning procedure can be continued.

The blast wheel motor is designed for a long service life. Damages to the blast wheel motor can be detected by unusual noises or functional failure of the electric motor. In this case notify our service department.

7.5 Adjusting the Blast Pattern and Control Cage

In order to get a uniform and perfect blast pattern on the surfaces to be treated, the correct adjustment of the blast pattern is most important.

Prior to any maintenance or repair work on the machine and its drives, secure the machine against unintended switch-on. Put the machine to its Safety Off Position.

Incorrect adjustment of the blast pattern results in:

- Uneven cleaning (shadows on the right or left hand side)
- Extreme high wear (Wheel kit and the liners)

Four factors affect the blast pattern:**1. *Rotation direction of the blast wheel:***

The rotation direction of the blast wheel must correspond to the instructions on the housing (arrow indicating the turning direction).

2. *Worn tune-up kit:*

With increased wear of the Wheel Kit (impeller, control cage), the blast pattern will change

3. *Size of Abrasive*

The size of the abrasive affects the blast pattern. Every change of abrasive requires the blast pattern to be set or to be re-adjusted.

4. *Position of the Control Cage*

The correct adjustment of the control cage is most important to obtain an optimum blast pattern. The control cage has a lateral window. The position of this window determines where the abrasive is fed on the blast wheel blades and where it hits the surface to be treated. After changing the Wheel Kit, the adjustment of the control cage must be checked and re-adjusted. To do so, you need to create a blast pattern. The same applies for blasting on another type of surface.

Adjustment of the Control Cage

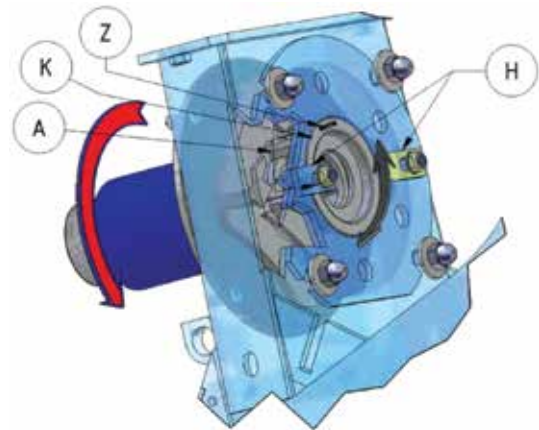
The adjustment is done as follows:

Slack the cage clamps (H) and turn the control cage (Z) into a pre-setting position. The cast grooves on the control cage show the position of the control cage opening. The feed spout remains in its former position.

The following adjustment standard value is valid: the control cage opening is approximately opposite to the throwing angle.

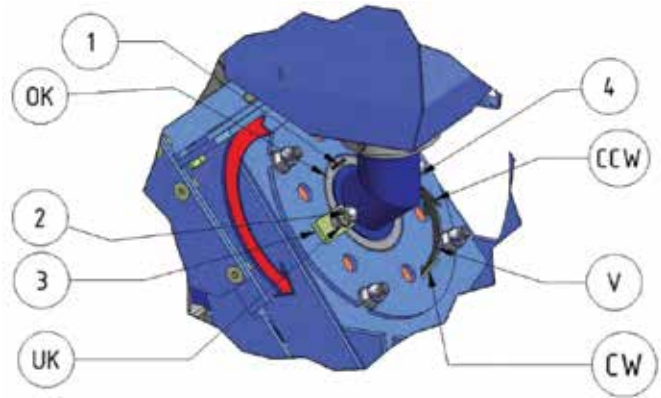
The abrasive grain size plays an important role. Different types of abrasive have different throwing characteristics due to their different weights and frictional resistance. This explains why the blast pattern needs to be adjusted after presetting and testing.

After fitting new spares always, check the blast pattern in order to get best performance. This is the only way to grant economical work and to avoid unnecessary wear and repair costs.



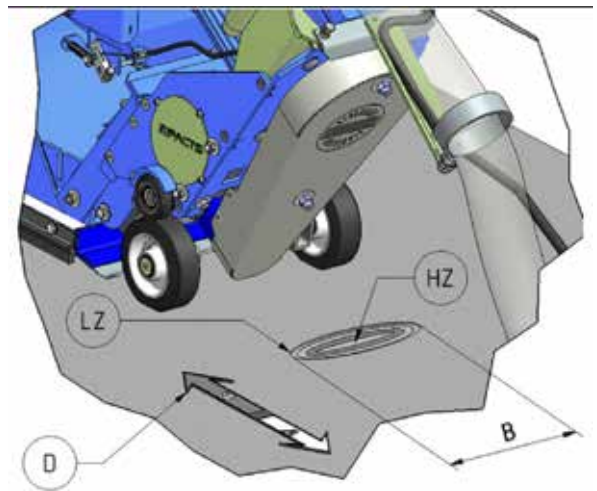
The adjustment can be carried out as follows:

- Determine the upper (OK) and lower (UK) window edges of the Control Cage (1).
- Set the upper window edge (OK) of the control cage to imaginary 11.00 of a dial. Place the cage clamps (3) and fix them with nuts (2). Finally replace the feed spout (4) into the control cage.
- Move the blast machine in direction (D) on a 5-8 mm thick steel plate, set the Potentiometer to 0 and blast for 45 seconds at full amperage without moving the machine.
- Move the machine from the blast zone and carefully inspect the steel plate.



You will find the Hot Zone on the blasted surface where the machine has developed the highest blast intensity. This Zone is normally a little lighter and warmer than the rest of the blast cleaned area due to the heat that is generated by the impacts of abrasive. Adjust the control cage until the Hot Zone (HZ) is exactly in the middle of the blast pattern (B)

- Now the blast procedure can be started. When a concrete surface is to be blasted, check the blast pattern again after some meters and readjust slightly if necessary. The blast pattern will change with and increased wear of the Wheel Kit and when the size of the abrasive is changed.
- If the blast result shows strong blasting on the right-hand side and weak blasting on the left-hand side (shadows), turn the upper edge of the control cage clockwise (CW) for 2-4 mm.
- If the blast result shows strong blasting on the left-hand side and weak blasting on the right-hand side (shadows), turn the upper edge of the control cage counter-clockwise (CCW) for 2-4 mm.
- Adjust the control cage until the Hot Zone (HZ) is exactly in the middle of the blast pattern (B).
- Note: All description seen from the front into the blast wheel



Never slacken cage clamps or try to adjust the control cage when the machine is in operation.

7.6 Adjusting Magnets and Seals

The adjusted height of the magnetic seals, parallel to the surface to treated, should be set equal at about 1/4 in. / 8 mm.

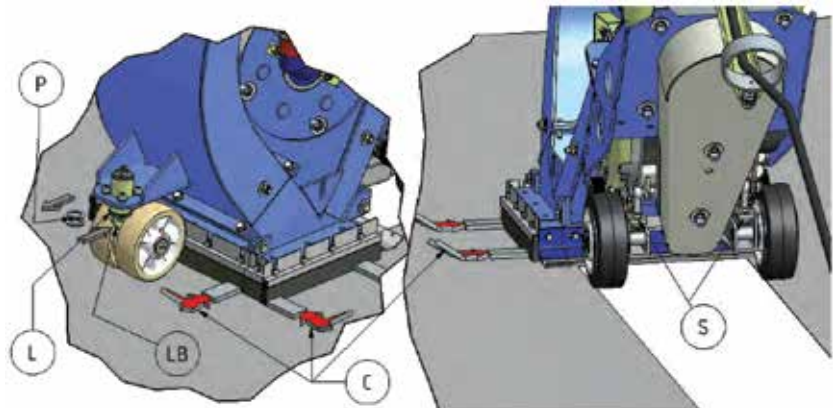
For the height adjustment an 6-8mm stainless-steel strip (C) is shifted below the magnetic sealing.

Front Set-Washer (1)

Quantity: Various

Rear setscrew (2)

Quantity: 2 (1xRH / 1xLH)



Adjust the height with the setting screws until the correct distance of 1/4 in. / 6-8 mm has been set.

On the IMPACTS S210E-40R the adjustment on the rear is done by 2 set-nuts (one nut (S) each side at the rear wheels and by washers (P) to adjust the height of the front swivel casters (LB). These washers are placed between the caster jack and the bottom bearing.

The height of the brush seals should be maximum 1 mm above the surface.

The adjustment is possible within the slots of the seal elements. The setting depends on the structure of the surface to be treated. In general, the rougher the surface, the lower the setting.

Set it down as far as possible if working on steel.

7.7 Belt Drive

The V-belt is designed for the installed drive power. Forcing the drive to grant a higher output by over tensioning the V-belt results in belt breaks, bearing damage, and thus lower efficiency. A low V-belt tension results in slippage causing an increased belt temperature and premature destruction of the V-belts.

Temperatures exceeding 70°C for a long period reduce the service life and performance of the V-belts. The grooves of the V-belt pulleys have to be free from rust, grease, dirt, and damages. The use of belt wax or similar substances to increase the friction coefficient is unnecessary and damages the V-belts. Avoid any contaminations by oil, grease, or chemicals.

In order to grant a perfect output transmission, the V-belt drive needs continuous observation.

7.8 Fitting Belts



Remove the belt guard only when the blast wheel motor is at a standstill and the main switch of the blast machine is in Safety Off Position as described in Chapter 2.

Release the tension of the V-belt drive by reducing the distance between the shafts of the blast wheel motor and wheel-bearing unit.

Insert the V-belt in the V-belt pulley grooves manually without forcing the belt.

Adjust the tension the V-belt by increasing the distance between the shafts of the blast wheel motor and the wheel-bearing unit as described next.

Fasten the required protection equipment has been fitted before.

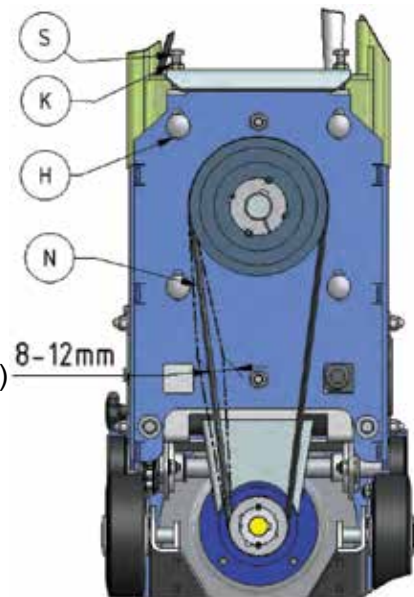
7.9 Belt Tension

To achieve a maximum power transfer and live time the correct setting of the belt tension is essential. Often belts are set with the wrong tension and fail before normal service time. Belts that are set with too much tension may cause bearing problems on motors or bearing units.

Check the correct pre-tension in accordance with the illustration by pressing on the belt. The displaced distance of the belt should be 8-12 mm.

To adjust the correct belt tension, slacken the motor fixing screws (H) and the locknut (K). Adjust the belt tension by the adjuster screws (S) and then tighten the locknut (K).

Finally, draw up the motor screws (H) and fit the belt guard again.



7.10 Taper-Lock Bushes

Taper locks are used to shrink-fit hubs on shafts. Mounting and demounting only requires a screw driver DIN 911 (Allen key). Tightening and loosening is affected with the same threaded pins or screws.

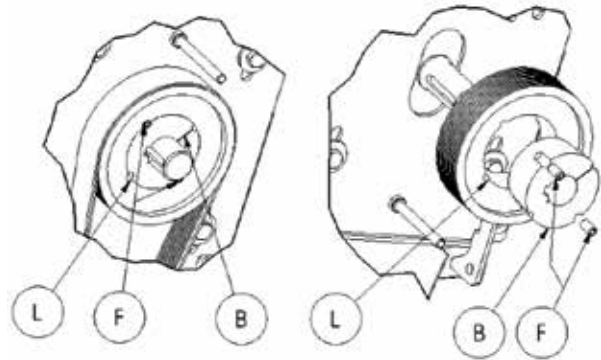
Taper locks are cylindrical on the inside, tapered on the outside, and slit longitudinally. The smaller bushes 2 and 3 have in the large face their cylindrical blind holes in parallel to the axis, which, however, are only placed half in the bush material. The other halves of these blind holes are threaded and are placed inside the hub.

Threaded pins or screws are screwed to the stop in the boreholes using an Allen key. When the screws are tightened further using a certain amount of force the hub is drawn up to the tapered bush which is pressed onto the shaft with great force.

Demount

Demount the screws (F) in the belt pulley. Lubricate the thread and the tip of the screw and turn it into the bore (L) as shown.

Turn the screw until the taper lock (B) gets loose inside the pulley and the assembly is loose on the shaft. Take the pulley and the taper lock from the shaft.



Mounting

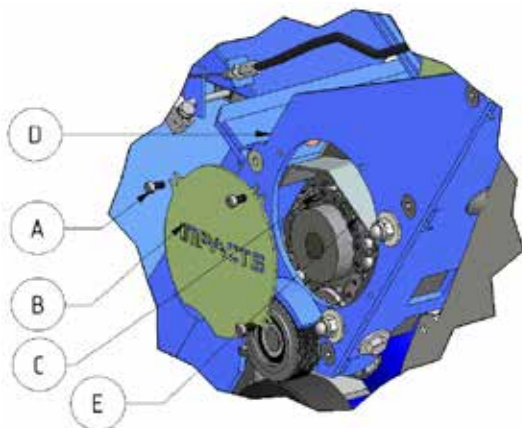
Assure that all contact surfaces are free from dirt and oil. Place the taper lock into the pulley. Lubricate the screws slightly and insert them into the respecting threaded holes.

Clean the shaft, shift the pulley with the taper lock, as one unit, onto the shaft, and position the assembly. Note, that first the taper lock is fixed on the shaft before the pulley reaches its final position on the bush.

Use an Allen key to fit the screws. Knock the frontal face of the bush lightly with a hammer to make sure that the bush is seated in the center of the pulley (use a mandrel to avoid any damages).

Now tighten the screws. Repeat the alternating hammering and tightening until all screws fully tightened.

7.11 The Chain Drive




The mounting, demounting, and repair work always needs to be done with appropriate tools. With these works, the prevailing safety regulations must be strictly observed.

Chain drives (C) are relatively robust and reliable even under unfavorable operating conditions. Incorrect mounting and insufficient lubrication and maintenance can cause premature wear of the chain and the chain wheels.

Careful fitting of the chain drives and appropriate maintenance therefore both contribute to a long service life.

Replacing chain or traction drive (E) parts of the S210E-40R should only be done in a specialized workshop because it needs to dismantle the complete Traction Drive unit and components of the friction wheel and drive shaft need to be arranged and pressed in a special way to work and function.

 **Remove the chain guard only when the drive motor is at a standstill and the main switch of the blast cleaning machine is locked (see chapter 2 "Safety off position").**

7.12 Fitting Sprockets

Chain sprockets must be aligned. In order to achieve this, both shafts and the chain sprockets must be parallel and dimensioned according to the load. Check the mounting precision by a ruler putted to the chain wheels. This has to be done several times with different chain wheel positions. Incorrect mounting makes the internal chain link plates press against the external link plates and accelerates the chain wear or even causes the chain wheels to lock up.

7.13 Fitting the Chain

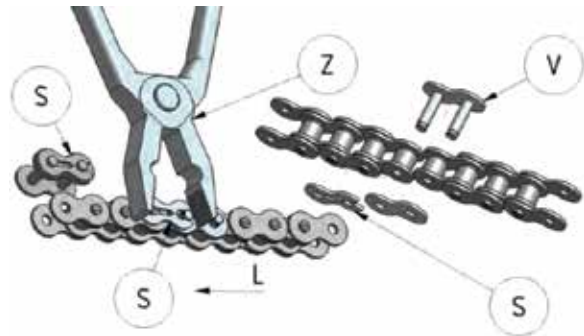
Before mounting the chain it must be degreased to prevent any abrasive or abrasive particles from adhering. The chain is supplied as a chain string and has to be prepared during mounting.

This is done as follows:

- Place the chain on the chain wheels so that the links lie in two adjacent gaps between the teeth. Now close the chain using a chain link. With heavy chains or big distances between the shafts use a pre-stressing tool in order to bring the two end links so close together that the coupling link can be inserted without being deformed.

Chain Links with springs:

- Their closed sides should point to the running direction (L) of the chain (S). Slide in the link adapter (V) and place the link plate opposite place the spring onto the link plate and press it over the pin into the ring groove by means of a pair of tongs. Demount the spring in the reverse order.



7.14 Maintenance and Repair of the Chain

A chain drive needs little maintenance only if the correct chain has been selected, is mounted correctly for the application, and is not lubricated with grease. A chain guard protects the drive chain. The chain guard prevents excessive contamination and prevents accidents.

The chain drive needs to be cleaned every three months. On these occasions, check the alignment of the chain sprockets and the chain tension. In order to clean thoroughly, first remove the dirt adhering to the outside of the chain drive using a hard or wire brush. Then wash the chain in petroleum ether or a similar substance.

After this, clean the dirt from the internal parts of the chain. To do this, place the chain for approximately 24 hours in petroleum ether, diesel, or another solvent in order to soften the dirt and hardened lubricant remnants in the chain joints. Move the chain several times back and forward in the bath to clean the joints.

7.15 Adjust Chain Tension of the Traction Drive

The traction drive motor and drive shaft are fitted in a fixed position and the chain length is selected so it does not need any adjustment.

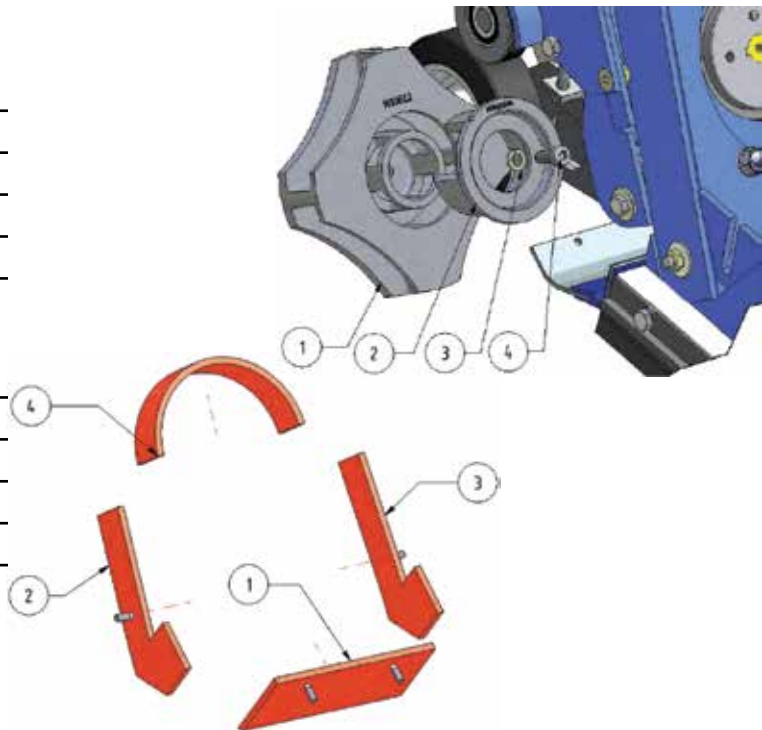
7.16 Wear Parts

The Wheel Kit

- | | |
|---|--------------|
| 1 | Blast Wheel |
| 2 | Control Cage |
| 3 | Lock Washer |
| 4 | Bolt Liners |

Liners

- | | |
|---|----------------------|
| 1 | Bottom Liner Rebound |
| 2 | Side Liner LH |
| 3 | Side Liner RH |
| 4 | Top Liner |

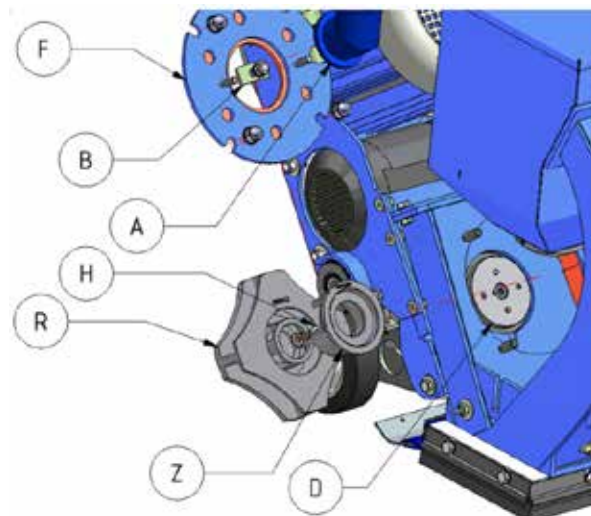


7.17 Replacing the Wheel Kit

The Wheel Kit consists of a Blast Wheel, Control Cage, Lock Washer, and Bolt.

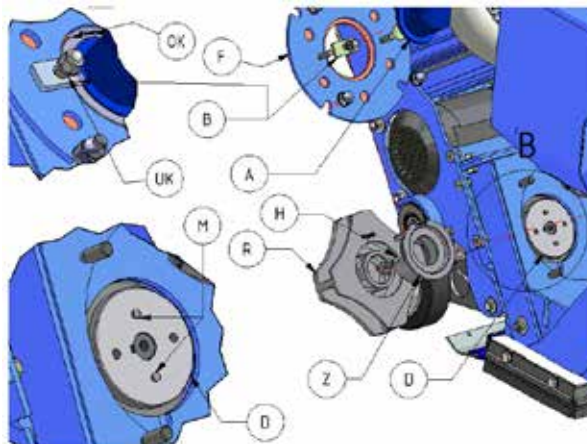
Demounting

1. Remove the Feed Spout (A) by pulling it out of the Control Cage.
2. Loosen the Cage Clamps (B) and remove the Control Cage (Z).
3. Unscrew the 4 screws of the front Cover Plate (F) and take it off.
4. Unscrew the fixing screw (H) of the blast wheel (R) while holding the blast wheel still. Take the blast wheel out of the housing.
5. Check the Wheel Adapter (D) for wear and replace if necessary.



Mounting

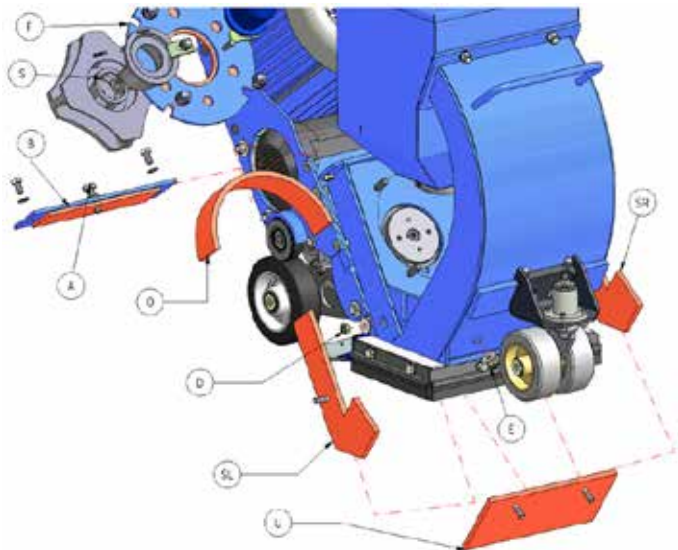
1. Clean all threads and use a new blast wheel fixing screw. Place the Blast Wheel (R) on the Wheel Hub (D) through the blast housing opening. Ensure the blast wheel fits with the adapter pins (M) in line. Tighten the blast wheel by the fixing screw (H).
2. Fix the front Cover Plate (F) using the four washers and nuts.
3. Insert the Control Cage (Z) in the center (see Chapter 7.5 "Setting the blast pattern") and clamp the Control Cage with the Cage Clamps (B) so that the blast wheel can rotate free with an overall clearance of 3mm to the impeller. Turn the blast wheel manually to rotate free.
4. Check upper position (OK) or (UK) to be approximately in a position as shown. To adjust the blast pattern, see Chapter 7.6.
5. Place the feed spout (A) in the housing and secure it with the nuts.



7.18 Replacing Liners

Demounting

1. Remove the Front Plate (F) and Wheel Kit (S).
2. Slacken the setscrew (A) of the top liner.
3. Take off the screws of the cover (B) and remove the cover.
4. Bring the machine in a position as shown.
5. Slacken the nuts (D) of both side-liner RH and LH and put them at side.
6. Slacken the nuts (E) of the bottom liner.
7. Push both side-liner (SL) and (SR) inward, turn them and remove them out of the housing toward the bottom.
8. On RH or LH push the top liner (O) inward, push it back upward again, and remove the top liner (O) turning it toward the side and pull out of the top of the housing.
9. Slacken the nuts (E) of the bottom rebound liner (U) push the liner inward. Fully take off the nuts (E) and remove the liner (U) downward away from the housing.
10. Check the condition of the RH rebound liner (R) and replace if obvious extensive wear is visible.



Mounting

1. Before fitting any new liner, make sure all threads are clean of dirt and abrasives. Clean where necessary.
2. From the bottom or top, place the top liner (O) first.
3. Afterward place the bottom liner (U), put the nuts (E) on, but do not tighten them fully. Adjust it so it sticks out on the bottom approx. 2-3mm and tighten up the screws.
4. Place the rebound side liner (R) and put the nuts (E) on. Push it down to the bottom liner and tighten them fully.
5. Place both side liner (SL) and (SR) into the housing and fit washer and nuts.
6. Close the cover (B) and fit the screws. Set the setscrew (A) cover so the top liner is forced downward to the upper surfaces of the side liners. Both side liners should now show out of the bottom 2-3mm. Fix the nuts of the side liners and tighten up the set screw of the top liner again to ensure the top liner sits on top of the side liners
7. Fit the blast wheel, front plate, and control cage as described in Chapter 7.17.

Chapter 8.0 Electrical System

8.1 Hints for the Electronics

8.2 Circuit Diagram

8.1 Hints for the Electronics



Completely shut off 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.

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



The electrical parts of the machine must be inspected regularly. Please note in particular the specified recurring inspections according VBG 4 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.



Work on the electrical parts of the equipment have to be undertaken by a skilled electrician or by a trained person under the guidance and supervision of a skilled electrician in accordance with the electrical engineering regulations.

Chapter 9.0 Error Diagnostics

9.1 Diagnosis of Errors

9.2 Diagnosis of Electrical Failures

9.1 Diagnosis of Errors



Prior to any repair work on the machine or its drives, the machine has to be secured against unintentional switching on. Put the machine to its Safety off position as described in Chapter 2.

Failure	Possible Reasons for Failure	Failure Corrective Actions
Unusual Vibrations	Uneven wear of the blast wheel	Replace blast wheel set
	Unbalance due to broken parts or blades.	Check separator and all other sections of the machine. Remove all broken parts.
	Wheel hub worn out	Replace wheel hub
	Drive shaft bent	Replace shaft or complete bearing unit
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	Apply oil or grease. Replace if worn.
	Motor bearings worn	Replace bearings
Reduced performance or no performance	Insufficient flow of abrasive in front of the blast wheel	Clean wire mesh and check feed spout for cleaning
	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 and 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.
	Belt tension	Check and adjust
	Valve does not close properly and abrasive is blocking the blast wheel when switch is on.	Close valve, stop motor, and readjust valve.
	Too much abrasive emitted when switched on.	Ensure motor has max speed before opening the valve,
	Feed motion too fast.	Reduce speed.
Loosing Abrasive	Bad seals	Check base seals readjust and replace when worn.
	Elevation adjustment of magnets	Check elevation to be no higher than 8mm.
	Magnets lost field	Replace magnets
	Filter unit	Adjust reducing damper
Dumping or Loosing Abrasive	Poor Abrasive quality	Use Quality abrasives
	Blast Wheel worn	Replace Blast Wheel
	Worn Seals	Replace Seals
	Elevation adjustment of magnets	Readjust elevation of magnets and adjust seals
	Too much dust and sand in system	Check filter
Too much dust and other particles in storage	Insufficient air flow toward filtration unit	<p>Check rated performance of the filter unit connected.</p> <p>Check all seals</p> <p>Check dust hose</p> <p>Check differential pressure and replace filter elements if pressure is too high.</p>

9.2 Diagnosis of Electrical Failures



Prior to any repair work on the machine or its drives, the machine has to be secured against unintentional switching on. Put the machine to its Safety off position as described in Chapter 2.



Work on the electrical parts of the equipment have to be undertaken by a skilled electrician or by a trained person under the guidance and supervision of a skilled electrician in accordance with the electrical engineering regulations.

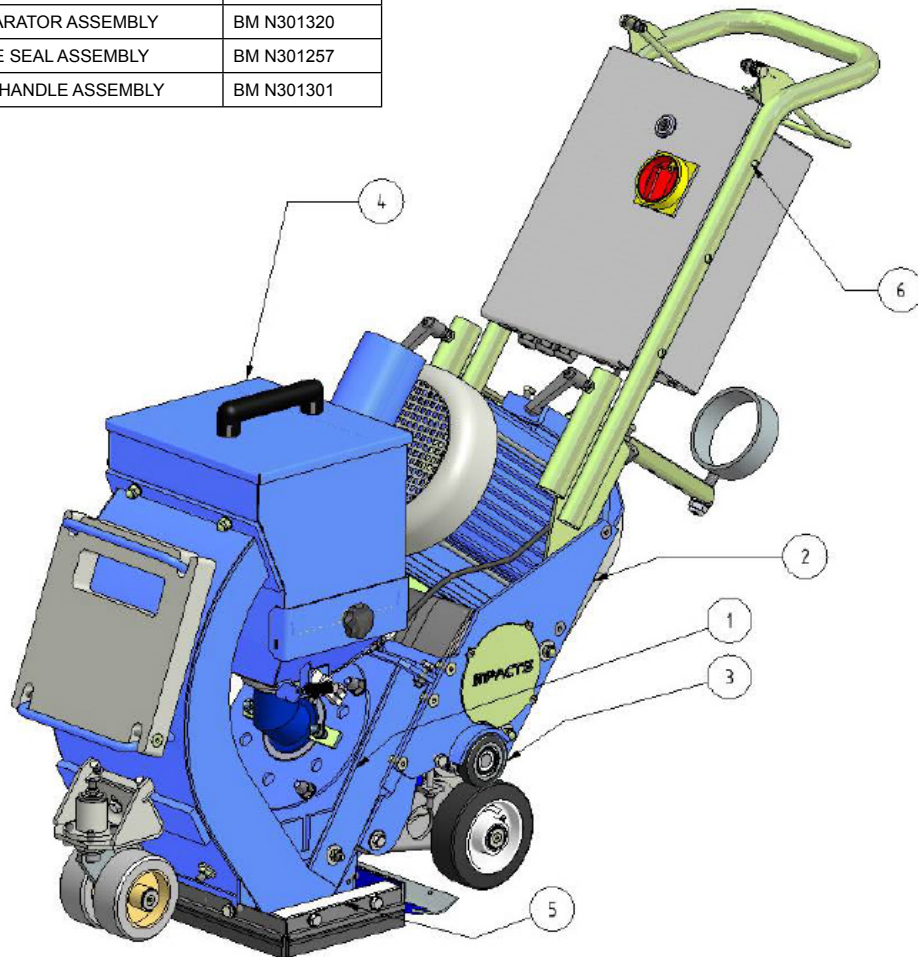
Failure	Possible Reasons for Failure	Failure Corrective Actions
Motor does not start up	Missing Phase	Check power supply
	Faulty Switch or relays	Diagnosis and replacement by electrician
	Emergency Stop	Unlock Emergency Stop Button
Motor stops during operation	Current too high	Disconnect plug
	Power supply circuit breaker disengaged	Reset circuit breaker or replace fuse. Adjust maximum abrasive feeding (use Amp meter)
	Motor is damaged	Check motor

Chapter 10.0 Spare Parts

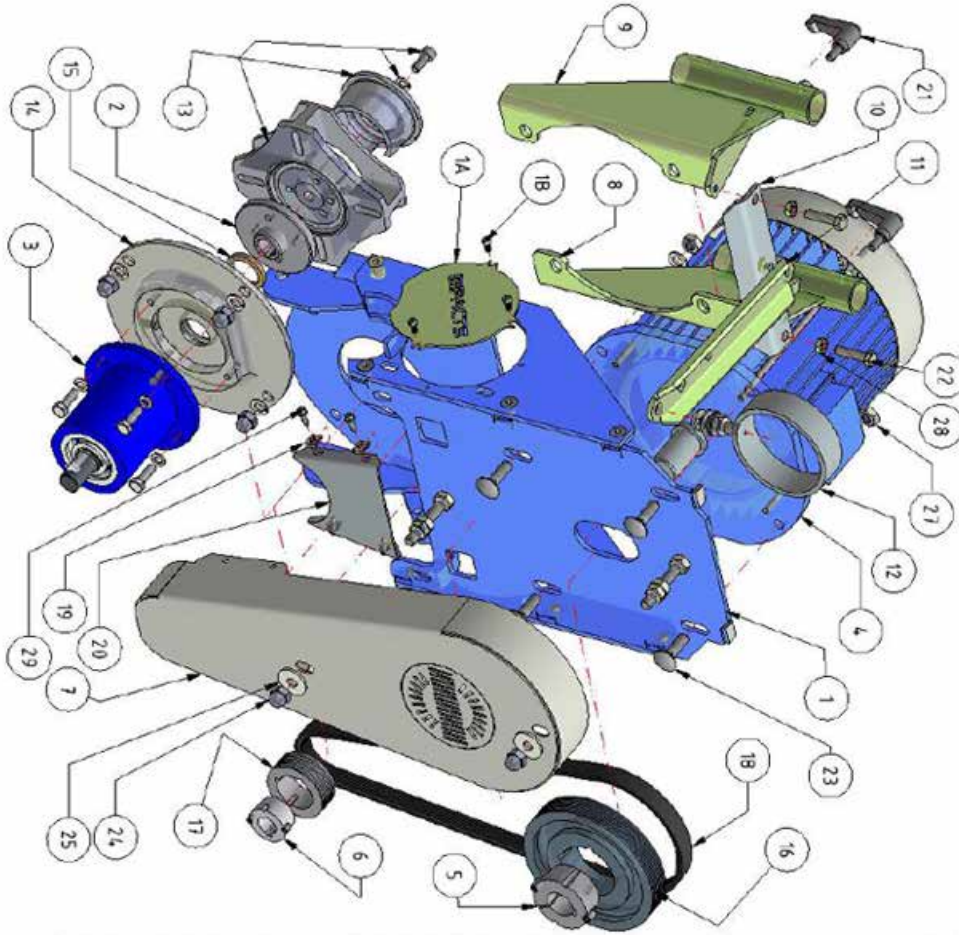
- 10.1 Machine Overview
- 10.2 Wheel Drive Assembly
- 10.3 Wheel Housing Assembly
- 10.4 Traction Drive Assembly
- 10.5 Separator Assembly
- 10.6 Top Handle Assembly
- 10.7 Base Seal Assembly

10.1 Machine Overview

#	QTY	DESCRIPTION	ASSEMBLY No.
1	1	WHEEL HOUSING ASSEMBLY	BM N301267
2	1	WHELL DRIVE ASSEMBLY	BM N301308
3	1	TRACTION DRIVE ASSEMBLY	BM N301310
4	1	SEPARATOR ASSEMBLY	BM N301320
5	1	BASE SEAL ASSEMBLY	BM N301257
6	1	TOP HANDLE ASSEMBLY	BM N301301

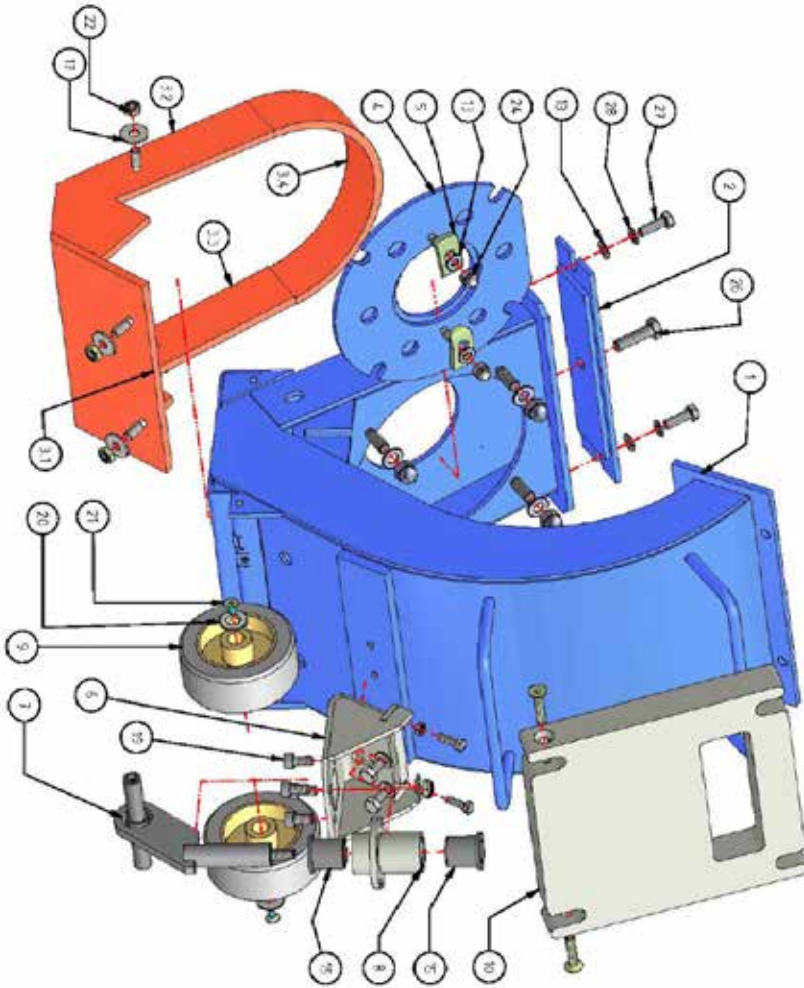


10.2 Wheel Drive Assembly



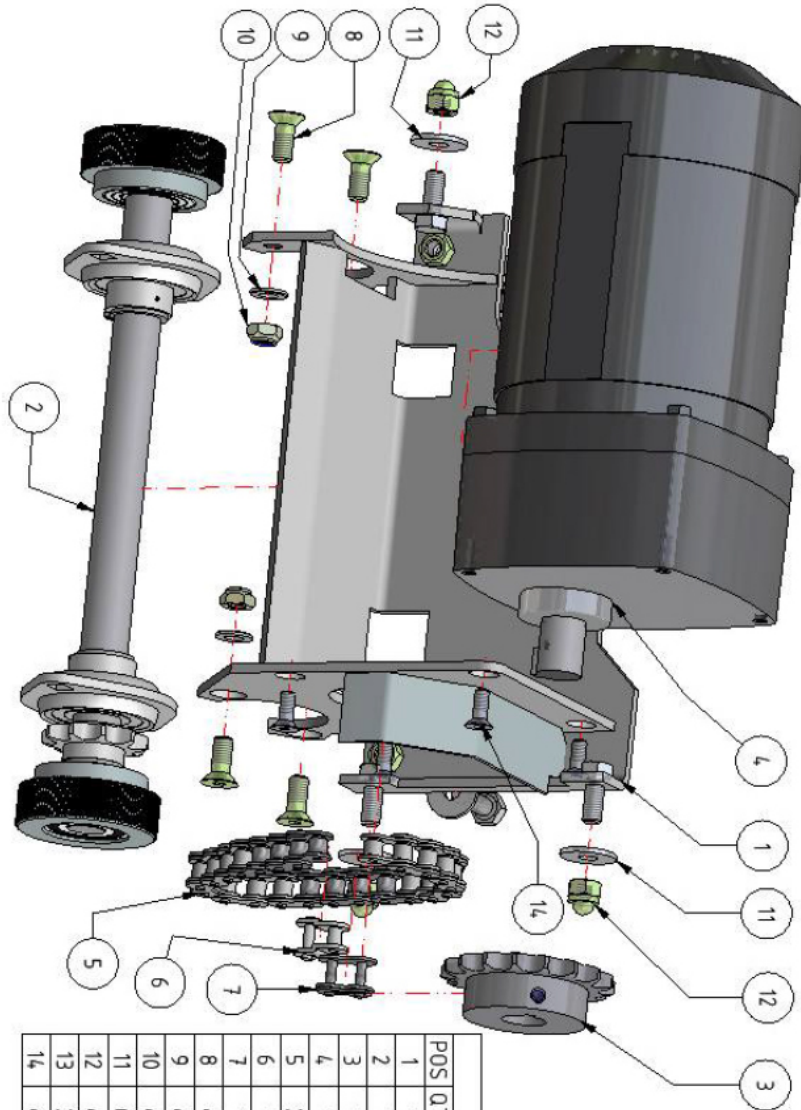
#	QTY.	DESCRIPTION	PART No.
1	1	DRIVE BRKT.	201 000 634
1A	1	COVER PLATE	201 000 643
1B	3	SL. CYL. HD SCREW	DIN 84 M6x10 Zn
2	1	WHEEL ADAPTER S200S S210-XX	201 000 428
3	1	BEARING UNIT	201 000 389
4	1	ZEP. MOTOR	601 000 031
5	1	T LOCK BUSH	303 000 010
6	1	TAPER LOCK BUSH	303 000 008
7	1	BELT GUARD S210-XX	201 000 649
8	1	RH HANDLE SUPPORT	201 000 641
9	1	LH HANDLE SUPPORT	201 000 640
10	1	CROSS BAR HOSE SUP	201 000 811
11	1	HOSE SUP. BAR	201 000 812
12	1	HOSE GUIDE	201 000 813
13	1	BLAST WHEEL KIT	201 000 002
14	1	BEARING UNIT SUP. PLATE	201 000 141
15	1	FELT SEAL	201 000 109
16	1	SHEAVE 140	302 000 010
17	1	SHEAVE 60	303 000 011
18	1	FLAT V BELT	301 000 013
19	4	PLATE NUT 1,7MM	0500 131333
20	1	REAR B GUARD COVER	201 000 591
21	2	CLAMPING LEVER	311 000 009
22	2	HEX HEAD BOLT	DIN EN 24018 MBx35 Zn
23	4	BOLT W SQUARED HEAD SEC.	DIN603 M10x35 Zn
24	6	CAP NUT M10	DIN 1587 M10
25	2	WASHER	ISO 7093 ST 10
26	4	WASHER	DIN 125 B 10,5 Zn
27	4	HEX NUT M10	DIN 934 M10
28	2	HEX NUT M8	DIN 934 M8 Zn
29	4	TAPPING SCREW	0129 084816
30	4	HEX HEAD BOLT	DIN EN 24018 MBx25 Zn
31	4	LOCK WASHER	DIN 128 AB Zn
32	4	LOCK WASHER 10MM	DIN 128 A10 Zn

10.3 Wheel Housing Assembly



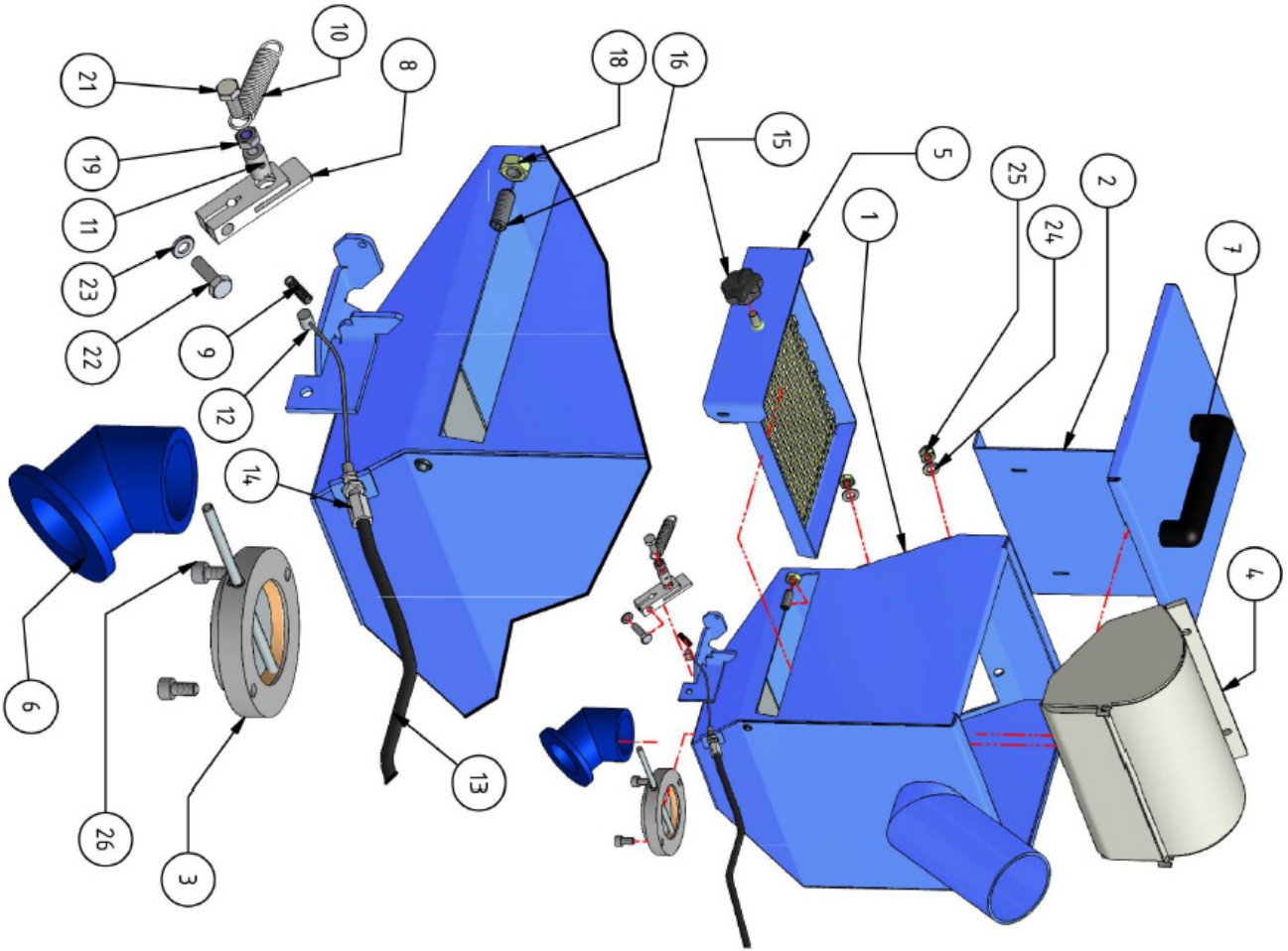
#	QTY.	DESCRIPTION	ASSEMBLY NO.
1	1	WHEEL HOUSING	201 000 601
2	1	WHEEL HOUSING COVER	201 000 091
3	1	LINER SET	
3.1	1	BOTTOM LINER RBC	201 000 069
3.2	1	SIDE LINER RH	201 000 070
3.3	1	SIDE LINER LH	201 000 071
3.4	1	TOP LINER	201 000 072
4	1	C. CAGE SUP BRKT	201 000 092
5	2	CLAMP CONTROL CAGE	201 000 192
6	1	FRONT WHEEL BRKT.	201 000 586
7	1	SWIVEL BRACKET	201 000 211
8	1	SWIVEL BUSH	201 000 212
9	2	WHEEL	304 000 010
10	1	ADD ON WEIGHT	201 000 804
11	2	HEX NUT M6	DIN 934 M6 Zn
12	2	HEX HEAD BOLT	DIN EN 24018 M6x20 Zn
13	6	WASHER	DIN 125-1 B 8.4 Zn
14	2	HEX HEAD BOLT	DIN EN 24018 M8x16 Zn
15	2	BUSHING	314 000 002
16	1	BOLT M8X30	DIN 835 M8x30
17	5	WASHER	DIN 9021 8.4 Zn
18	1	LOCK NUT M8	ISO 7040 M8 Zn
19	4	HEX SOCK HEAD CAP SCREW	DIN 912 M8x16 Zn
20	2	WASHER	DIN 9021 8.4 Zn
21	2	C.S. HEAD SCREW	DIN 7991 M6x12-Zn
22	4	HEX NUT M8	DIN 934 M8 Zn
23	4	CAP NUT M10	DIN 7587 M10
24	2	CAP NUT	DIN 986 M8-Zn
25	4	WASHER	DIN 125 B 10.5 Zn
26	1	HEX HEAD BOLT	DIN EN 24018 M10x35
27	2	HEX HEAD BOLT	DIN EN 24018 M8x25 Zn
28	2	LOCK WASHER	DIN 128 AB Zn

10.4 Traction Drive Assembly



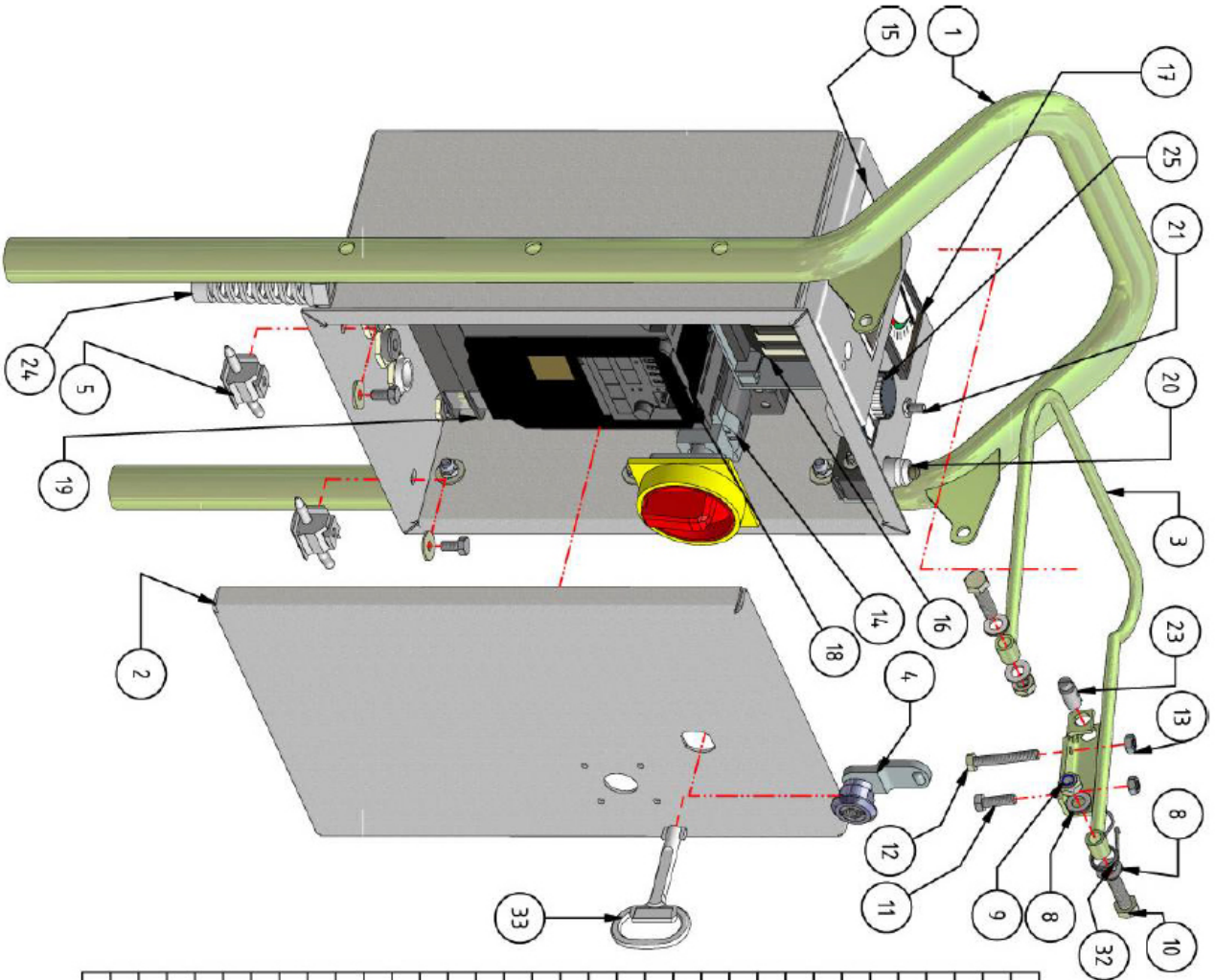
POS	QTY	DESCRIPTION	PART No.
1	1	DR.MOT.BRKT	201 000 636
2	1	DRIVE SHAFT ASSEMBLY	201 000 803
3	1	SPROCKET	201 000 796
4	1	GEARED MOTOR	601 000 034
5	2	DRIVE CHAIN 292lg 23 LINK	309 000 003
6	1	CHAIN LINKAGE	309 000 013
7	1	CHAIN LINK	309 000 004
8	4	COUNTERSINK HEAD SCREW	DIN 7991 M8x20 Zn
9	4	WASHER	DIN 125-1 B 8.4 Zn
10	4	LOCK NUT M8	ISO 7040 M8 Zn
11	6	WASHER	DIN 9021 8.4 Zn
12	4	CAP NUT	DIN 986 M8-Zn
13	2	HEX HEAD BOLT	DIN EN 24018 M8x25 Zn
14	4	C.SINK HD. SCREW	DIN 7991 UNF 1/4x28x3/4

10.5 Separator Assembly



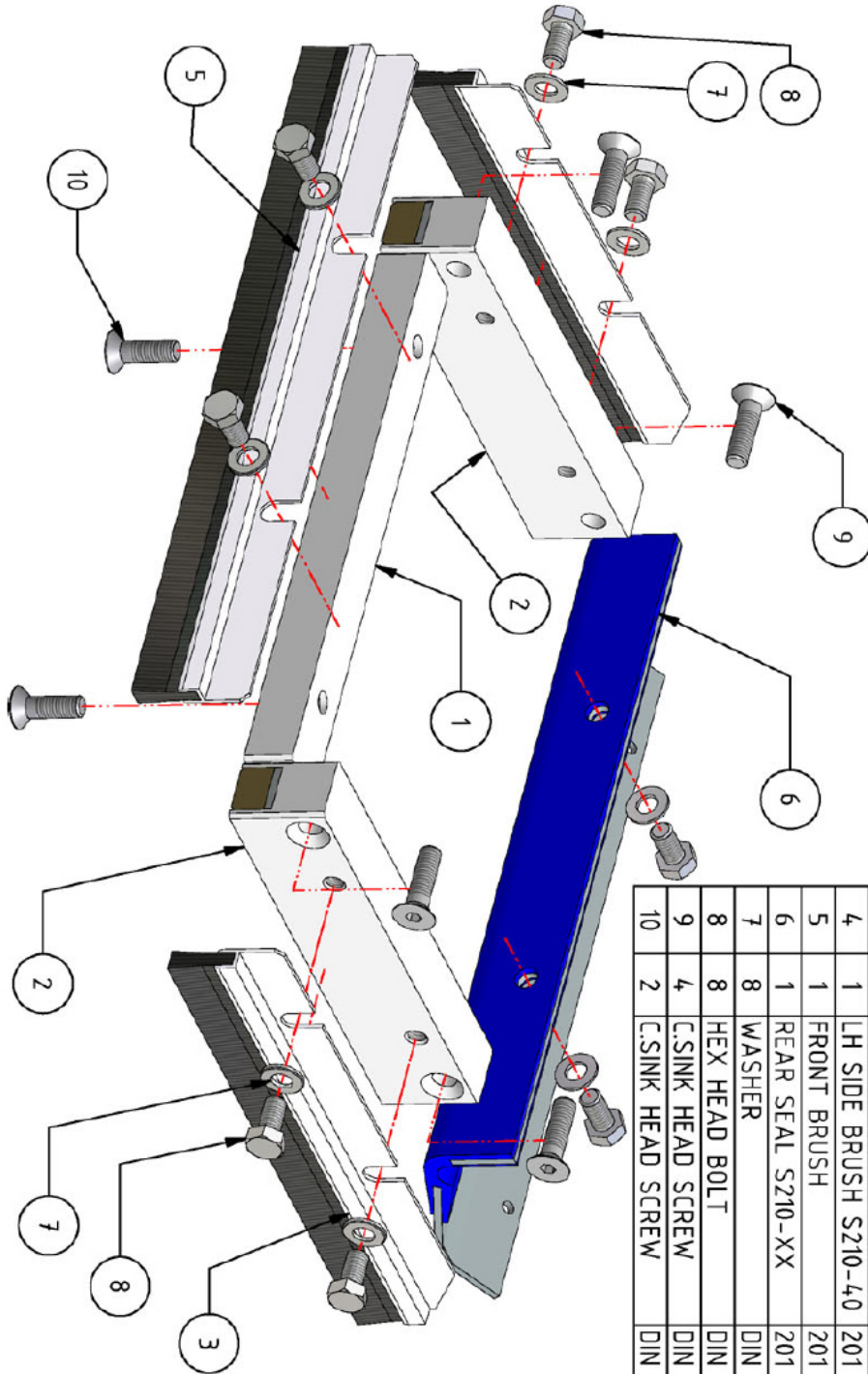
SEPARATOR ASSEMBLY			PART No.
POS	QTY	DESCRIPTION	
1	1	SEP HOUSING	201 000 651
2	1	SEP LID	201 000 098
3	1	FEED VALVE	201 000 218
4	1	DEFLECTOR	201 000 149
5	1	SEP TRAY	201 000 099
6	1	FEED SPOUT	201 000 129
7	1	HANDLE	310 000 002
8	1	VALVE LEVER	201 000 652
9	1	COMPRESSION SPRING	201 000 816
10	1	TENSION SPRING	201 000 131
11	1	CLAMP NIPPLE	201 000 230 M1
12	1	C CABLE	201 000 815
13	1	SLEEVE 690lg	314 000 018
14	1	ADJUSTER NIPPLE	201 000 231
15	1	STAR KNOB	310 000 005
16	2	SET SCREW M8	311 000 018
17	2	CAP NUT	DIN 986 M6 Zn
18	4	HEX NUT M8	DIN 934 M8 Zn
19	1	HEX NUT M6	DIN 934 M6 Zn
20	2	HEX HEAD BOLT	DIN EN 24018 M8x16 Zn
21	1	HEX HEAD BOLT	DIN EN 24018 M6x16 Zn
22	1	HEX HEAD BOLT	DIN EN 24018 M6x20 Zn
23	1	WASHER	DIN 125-1 B6 Zn
24	6	WASHER	DIN 125-1 B 8,4 Zn
25	2	CAP NUT	DIN 986 M8-Zn
26	2	CYL.HD.SCREW	DIN 912 M6x12 Zn

10.6 Top Handle Assembly



TOP HANDLE ASSEMBLY		
POS	QTY	PART No.
1	1	HANDLE 201 000 647
2	1	SWITCH BOARD 201 000 646
3	1	SWITCH LEVER S210-XX 201 000 650
4	1	DOOR LOCK 314 000 020
5	2	HINGE 314 000 130
6	6	HEX. SOCK HD. CAP SCREW DIN 912 M6x16 Zn
7	8	WASHER DIN 9021 6,4 Zn
8	4	WASHER DIN 125-1 B 8,4 Zn
9	2	LOCK NUT M8 ISO 7040 M8 Zn
10	2	HEX HEAD BOLT DIN EN 24,018 M8x30 Zn
11	1	HEX HEAD BOLT DIN EN 24,018 M6x20 Zn
12	1	HEX HEAD BOLT DIN EN 24,018 M6x40 Zn
13	2	HEX NUT M6 DIN 934 M6 Zn
14	1	MAINS CONNECTOR 605 000 006
15	1	INSTALLATION HOUSING 611 000 005
16	1	MOTORPROTECTION-SWITCH 607 000 009
17	1	AMPMETER 608 000 003
18	1	INVERTER 604 000 013
19	1	LINE FILTER 604 000 014
20	1	MICRO SWITCH 605000005
21	1	ADJUSTER NIPPLE 201 000 231
22	1	SPACER PLATE 201 000 564
23	1	NIPPLE 201 000 230
24	1	CABLE-ANTIKINK 612 000 017
25	1	POTENTIOMETER 612 000 035
26	1	LOW VOLTAGE RELEASE 612 000 001
28	2	CABELGLAND 086 233
29	2	SLOTTED CYL.HD. SCREW DIN 84 - M3,5 X 30
30	2	WASHER DIN 9021 ST 3,7 Zn
31	2	LOCK NUT DIN 985 M3 Zn
32	1	LEG SPRING 201 000 814
33	1	DOOR KEY 314 000 021

10.7 Base Seal Assembly



BASE SEAL ASSEMBLY			PART No.
POS	QTY	DESCRIPTION	
1	1	FRONTMAGNET S210	201 000 213
2	2	SIDE MAGNET	201 000 214
3	1	RH SIDE BRUSH S210-40	201 000 800
4	1	LH SIDE BRUSH S210-40	201 000 799
5	1	FRONT BRUSH	201 000 203
6	1	REAR SEAL S210-XX	201 000 590
7	8	WASHER	DIN 125-1 B 8,4 Zn
8	8	HEX HEAD BOLT	DIN EN 24018 M8x16 Zn
9	4	C.SINK HEAD SCREW	DIN 7991 M8x30 Zn
10	2	C.SINK HEAD SCREW	DIN 7991 M8x25 Zn



IMPACTS Americas
1384 Bungalow Rd.
Morris, IL 60450 USA
(815) 941-4800
(815) 941-4600 Fax
www.IMPACTSAmericas.com