LAVINA® 21-S-1.5 User Manual

SUPERABRASIVE

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Съдържание

1. GENERAL INFORMATION

This owner's manual is intended for the operator of the Lavina®21-S-1.5 machine, the servicing technician as well as for anyone involved with operating or servicing the machine. We recommend that you read the instructions very carefully and follow them strictly. The manual includes information about assembling, using, handling, adjusting and maintaining your Lavina®21-S-1.5 floor grinding and polishing machine.

MANUFACTURER

Superabrasive was founded in 1987, as a manufacturer of high quality diamond tools for the stone and concrete industry. Today, Superabrasive is one of the world's leading companies in the production of diamond tools and floor grinding machinery. At Superabrasive, we strive to deliver the very best solutions to our customers, and enable them to work more efficiently.

GENERAL DESCRIPTION

The **Lavina®21-S-1.5** machine is intended for grinding, polishing, and buffing concrete, marble, granite, limestone, and terrazzo surfaces with diamond tools.
The Lavina®21-S-1.5 is a three-disc machine, which can be used dry as well as wet.
For best results, use only tools manufactured or recommended by Superabrasive and its distributors. Additionally, the machine could be used for grinding wood floor surfaces.

WARNING!
The Lavina®21-S-1.5 machine is manufactured and fitted for the above-mentioned applications only! Every other use may possess risks to the persons involved.

MACHINE CHARACTERISTICS

The Lavina®21-S-1.5 is made of two main component sections:

LAVINA 21 MAIN DESIGN

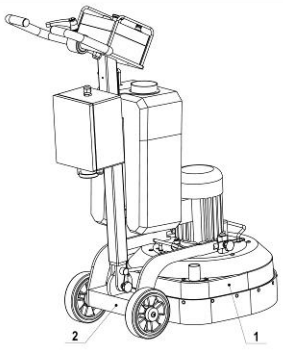


Figure 1.1

- **The two main component sections**, the carriage (1) and main head (2).
- **The handle on the frame** is adjustable in height and allows the operator
  to work in a correct and safe posture.
- **The controls** are positioned on top of the frame.
- **The electrical box** (fig.1.2) contains the electric switching devices. The motor feeding cable and the main feeding cable are plugged in the socket located on the bottom of the frame.

Figure 1.2

- **The water tank**

- **The motor**, mounted on the base plate, is driving the three heads with a belt system. The planetary motion derives from the friction between the tools and the floor, which is allowing the tools to spin in either clockwise or counterclockwise direction. The design ensures that the tools will not force themselves against the resistance of the floor surface. Instead, the machine will alternate directions to accommodate to a "high spot" or a "low spot" imperfections in the floor without causing damage to the floor or the machine.
- **The self-leveling Guard** is designed to have contact with the surface. Anytime, no matter the height of the tool used.
- **"Quickchange" tool holder** is designed to hold the tools with "Quickchange" connection (Fig.1.3) is mounted on each of the three grinding heads with pins.

Figure 1.3

- **The "Foam" tool holder** is designed to hold tools with Velcro connection. It is mounted on each of the three grinding heads with pins. The Velcro makes changing of tools fast and easy.(Fig.1.4)

Figure 1.4

TECHNICAL DATA

	Lavina 21-S-1,5	
Voltage/Hz	**1 ph x 115 V 50- 60Hz**	
Amperage	**Max 16 Amps**	
Power	**1,8 kW**	**2.45 hp**
Tool holder rpm	**300 - 700 rpm**	
Working width	**508 mm**	**20”**
Tool holder diameter	**3 x 197 mm**	**3 x 7.75”**
Tool diameter	**3 x 200 mm**	**3 x 8”**
Weight	**98 kg**	**216 lbs**
Grinding pressure	**59 kg**	**130 lbs**
Additional weight		
Application		
Vacuum hose port	**Ø 50,8 mm**	**2”**
Water tank capacity	**20 l**	**5.2 gal**
Water feed	**Peripheral**	
Machine LxWxH	**1500x540x1070 mm**	**59.1”x21.3” x42”**
Packing pallet LxWxH	**1100x750x1400 mm**	**43.3”x29.5”x55”**
Packing crate LxWxH	**1100x750x780 mm**	**43.3”x29.5”x30.7”**

ENVIRONMENTAL CONDITIONS

The temperature range for operating the Lavina®21-S-1.5 outdoors is between 41°F and 86°F or 5°C and 30°C. Never use the Lavina 21 during rain or snow when working outdoors. When working indoors, always operate the machine in well-ventilated areas.

ELECTRICAL CONNECTION

The voltage (Volt) and power (Ampere) are displayed on a label on the electrical control box to avoid any incorrect connection. Refer to these before connecting the power. To avoid electrical shocks, make sure the ground power supply is functioning properly.

VACUUM CONNECTION

A connection for a vacuum dust extractor is located on the carriage. The Lavina® S machine does not include a vacuum dust extractor. The customer must purchase the vacuum dust extractor separately. The hose of the vacuum extractor must be Ø 50.8 mm and can be glided over the pipe. The vacuum dust extractor must be adapted for floor grinders and have a minimum air displacement of 320m3/h with a negative vacuum of 21 kPa .

VIBRATIONS

The vibrations of the machine are within the limits of directives and harmonized standards from the European Union when the Lavina® S is operated with the recommended tools and in normal conditions.

SONOROUS EMISSIONS

The sonorous emissions are within the limits of directives and harmonized standards from the European Union when the Lavina® S is operated with the recommended tools and in normal conditions. However, as previously stated, the operator must wear ear protectors.

LABEL DATA

The data on the label provides the correct Voltage and kW (needed for operational purposes);
Weight (needed for transportation purposes); production year and serial number (needed for maintenance purposes).

CUSTOMER SERVICE

For customer assistance and technical support call your local distributor or call Superabrasive Inc. at 1-800-987-8403 or visit us at: www.superabrasive.com , where you can download a copy of this manual.

2. SAFETY INSTRUCTIONS

RECOMMENDED USE ⚠ WARNING

The Lavina®21-S-1.5 machine is designed and manufactured to grind and polish concrete, terrazzo and natural stone floors. It can be used for renovations as well as for polishing. The machine is designed for dry or wet use. When using it dry, use a vacuum of appropriate size. For more information, please refer to the chapter on handling the vacuum connection. ⚠ WARNING

PROHIBITED USE

The machine MUST NOT be used:

- For applications different from the ones stated in the General Description chapter.
- For not-suitable materials.
- In environments which:
- Possess risks of explosion
- Possess high concentration of powders or oil substances in the air
- Possess risks of fire
- Feature inclement conditions.
- Possess electromagnetic radiation.
- The machine should be not connected to electricity when changing the tools

PREPARATION FOR WORK ⚠ WARNING

Make sure that:

- You have closed the work area, so that no person unfamiliar with operating the machine can enter the area
- The tool plate and tools are adjusted to the machine properly
- There are no missing parts of the machine
- The machine is in upright working position
- The protection devices are working properly.
- The electrical cable is free to move and follow the machine easily. In order to keep the electrical cable from being damaged, no vehicle should cross the zone where electrical cables are situated.

PROTECTION DEVICES ⚠ WARNING

- The machine is equipped with several protection devices including the following:
- An emergency stop button
- A protection skirt and a hood for protecting the tool plates.
- These devices protect the operator and/or others persons from potential injuries. Do not remove them. On contrary, before using the machine, please ensure that all protection devices are mounted and function properly.

ARREST FUNCTIONS ⚠ WARNING

Functions of arresting of the machine are following:

- Button to stop the motor (category 1)
- Emergency button (category 1)

SAFE USE ⚠ WARNING

- The Lavina®21-S-1.5 is designed to eliminate all risks correlated with its use. However, it is not possible to eliminate the risks of an eventual accident with the machine. Unskilled or uninstructed operator may cause correlated residual risks. Such risks are:
  - Position Risks due to operator's incorrect working position
  - Tangling up Risks due to wearing inappropriate working clothes
  - Training Risks due to lack of operational training

NOTE: In order to reduce all consequences of the above-mentioned risks, we advise that machine operators will follow the instructions in the manual at all times.

RESIDUAL RISKS ⚠ WARNING

- During the normal operating and maintenance cycles, the operator is exposed to few residual risks, which cannot be eliminated due to the nature of the operations.

BEFORE YOU BEGIN ⚠ WARNING

- Working area must be clear from any debris or objects.
- A first-time operator must always read the manual and pay attention to all safety instructions.
- All electric connections and cables must be inspected for potential damages.
- Ground wire system of the power supply must be also inspected.
- Perform general daily inspections of the machine and inspect the machine before each use.
- Always inspect the safety devices:
- The emergency break must be clear and working
- The tool protector must be working
- The machine must be clean
- Never operate the machine in the rain!
- Confirm that there are no missing parts especially after transportation, repair or maintenance.
- Before filling the water tank with water make sure the machine is not working and the main switch is turned off.
- Before turning on the machine make sure that the base is placed on the floor, the machine MUST NOT be in an upright position when turned on!

OPERATING MACHINE ⚠ WARNING

- When operating the Lavina®21-S-1.5 make certain that there is no one, but you around the machine.
- Never leave the machine unattended while working.

The electrical cable must move freely and must be damage-free and should not go below the machine.

The water hose must move freely and must be damage-free.

- Check if the floor, you work on, is not too uneven. If this is the case, it may damage the machine.

AFTER WORK IS COMPLETED ⚠ WARNING

Clean the machine and its surroundings properly

- Empty and clean the water tank
- Unplug the machine and wind up the electrical cable
- Store the machine in a safe place

THE WORK AREA ⚠ WARNING

- Make certain that people or vehicles do not enter the work area.
- Avoid cables and hoses being in the way.
- Always check the floor for debris

PERSONAL PROTECTIVE EQUIPMENT (PPE) ⚠ WARNING

- Always wear safety shoes when working with the machine.
- Always wear ear protectors when working with the machine.
- All personnel in the immediate work area must wear safety glasses with side shields.
- Always wear safety gloves when changing the tools.
- Always wear clothes suitable for the work environment.

OPERATOR

⚠ WARNING

- The Lavina®21-S-1.5 machine.
- The operator must know the machine's work environment.
- Only one operator at a time can work with the machine.
- The operator must be properly trained and well instructed prior operating the machine.
- The operator must understand all the instructions in this manual.
- The operator must understand and interpret all the drawings and designs in manual.
- The operator must know all sanitation and safety regulations pertaining to the operation of
- The operator must have floor grinding experience.
- The operator must know what to do in case of emergency.
- The operator must have an adequate technical knowledge and preparation.

3. HANDLING AND TRANSPORTATION

ADJUSTING THE COLUMN ANGLE

You can adjust the angle of the column for several purposes for transporting or flipping the machine for tool change, putting the column straight makes it easier to work in narrow places (Fig. 3.1, Fig. 3.2).

Figure 3.1

Figure 3.2

To adjust the column, turn the blocking lever and flip the column (Fig. 3.3, Fig. 3.4).

Figure 3.3

Figure 3.4

ADJUSTING THE HANDLE

The Handle on the frame is adjustable in height and allows the operator to work in a correct and safe posture. Turn the handle in the upright position to change the tools (Fig. 3.5, Fig. 3.6, and Fig. 3.7).

Figure 3.5

Figure 3.6

Figure 3.7

PREPARING THE MACHINE FOR TRANSPORTATION

Unplug the motor cable plug from and disconnect the water hose from the main head by pulling it out (Fig. 3.8).

Figure 3.8

Figure 3.9

Figure 3.10

Release the pin sets, which attach the head to the carriage (Fig. 3.9) and dismount the head from the carriage (Fig. 3.10)

Figure 3.11

Figure 3.12

The head of the Lavina®21-S-1.5 has two handles intended for easy moving and transportation (Fig. 3.11, Fig. 3.12).

STORAGE

Always store and transport the Lavina®21-S-1.5 in a dry place. Never transport the Lavina®21-S-1.5 unprotected; it may be damaged if transported unprotected during rain or snow.

4. OPERATION

PRELIMINARY CONTROLS

Inspect the working area as explained in the safety instructions. For wet use, fill in the water tank when the electrical cable is disconnected. Connect the vacuum extractor and ensure that the vacuum hose is clear and it will follow the machine easily. Plug in the machine and also make sure that the power cord is free to follow the working direction of the Lavina®21-S-1.5.

MOUNTING TOOL HOLDERS

Push each tool holder onto the pins of the pulley units. (Fig. 4.1)

Figure 4.1

MOUNTING TOOLS

⚠ WARNING The machine should be not connected to electricity when changing the tools.

To change tools flip the carriage over to the floor. Ensure first if the handle (Fig. 4.2) or the column (Fig. 4.3) is in the upright position.

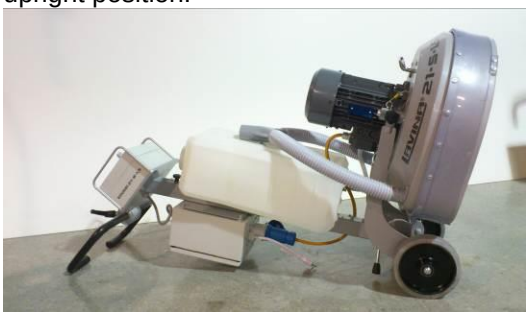


Figure 4.2

Figure 4.3

Mount the tools only after ensuring that there is enough diamond bond material left. Be sure that the plates are always clean before mounting.

PLUG AND CABLE

A plug (min. 16A; 110V, IP55) should be attached to the cable, recommended H07BQ-F3x2,5mm² with maximum length 20 meters, according to the standards of the country where the machine will work. The yellow/green cable is ground.

⚠ WARNING The plug should be attached by a technician.

CONTROL BOARD

Figure 4.4

1. **Working hours meter** counts the hours which the machine has worked
2. **Emergency/stop button** stops motor or used in Emergency situations
3. **ON button-Power led** starts the motor, lights green when power on
4. **Potentiometer** Adjusts the RPM of the grinding plates between 300-700 rpm

STARTING THE MACHINE

Follow the directions in chapter Safety Devices and Safety Instructions. Next, pull the emergency button (2) to ensure that the machine is in run/start mode. Check the potentiometer (4) and ensure that it is set at the proper working speed. If working wet, add water to the floor surface. If working dry, omit this step, and instead, switch on the vacuum unit. Finally, hold the machine firmly and push the start button (3)

OPERATING THE MACHINE

Guide the machine in straight lines across the floor, and with each new line overlap a little bit of the previously completed surface. Work at a constant speed allowing the tools time to work at a speed appropriate for the tools' grit

size. Avoid vibrations. Do not stop the Lavina 21 machine in one spot while the tools are still working because they will leave marks on the floor surface. When working wet, open the water tank periodically to release water onto the floor surface. When working dry, check the floor surface periodically to ensure that dust is not accumulating on the surface, also check regularly if your vacuum works properly.

STOPPING THE MACHINE

The stopping of the machine must be done gradually until the motor stops. Do not stop moving the machine before arresting the motor as the tools could damage the surface. To stop push the emergency/stop button (3).
Remember not to hold the machine in one spot before turning off the motor.

5. ACCESSORIES

Foam Plate

Diamond tools with Velcro are mounted on the foam plate 8“(Fig.5.1)
Item number is A22.00.00

Figure 5.1

6. POPULAR TOOLS

RECOMMENDED TOOLS

QuickChange System and Tooling feature extremely fast and convenient tool changes, and a long tool life, providing for great long-term cost savings. The QuickChange pads are produced in four different bonds for super hard, hard, medium and soft concrete, in a variety of grit sizes, with either 1 or 2 buttons, which allows you to customize the aggressiveness of the cut.

Calibra grinding discs: our popular ceramic bond discs are designed for the removal of difficult scratches and they save you valuable time by eliminating the need for multiple passes with metal tools. They can be used wet or dry, and are best for hard concrete applications.
They are with Velcro attachment.

NATO® polishing discs feature a special resin formula designed for both wet and dry applications and a unique design with wide channels allowing for work on a cleaner surface and ensuring a quality polish. Available in 3 and 4 in sizes. They are with Velcro attachment.

V-HARR® Premium Polishing Pads are designed for mechanically polishing and restoring concrete; also ideal for terrazzo and hard stone floors. V-HARR® pads are offered in a wide variety of diameters and grit sizes to accommodate many applications. Dry use is strongly recommended.

Shine Pro® are high quality diamond-impregnated pads for floor maintenance. Available in a variety of sizes, they are designed for use under swing machines and burnishers, and are great for daily use – they require only water (no wax or chemicals needed) and are a very environmentally friendly solution for maintaining floors.

Use only Superabrasive's recommended tools see www.superabrasive.com

7. EXPLOSION
GENERAL EXPLOSION OF THE LAVINA®21-S-1.5 (FIG.7.1)
EXPLOSION OF THE CARRIAGE OF THE LAVINA®21-S-1.5 (FIG.7.2)
EXPLOSION OF THE MAIN HEAD OF THE LAVINA®21-S-1.5 (FIG.7.3)
EXPLOSION OF THE BOTTOM COVER OF THE LAVINA®21-S-1.5 (FIG.7.4)
EXPLOSION OF THE PULLEYS OF THE LAVINA®21-S-1.5 (FIG.7.5)
EXPLOSION OF THE DRIVING BELTS OF THE LAVINA®21-S-1.5 (FIG.7.6)
EXPLOSION OF THE BASE PLATE (FIG.7.7)
EXPLOSION OF THE DISC ASSEMBLY (FIG.7.8)

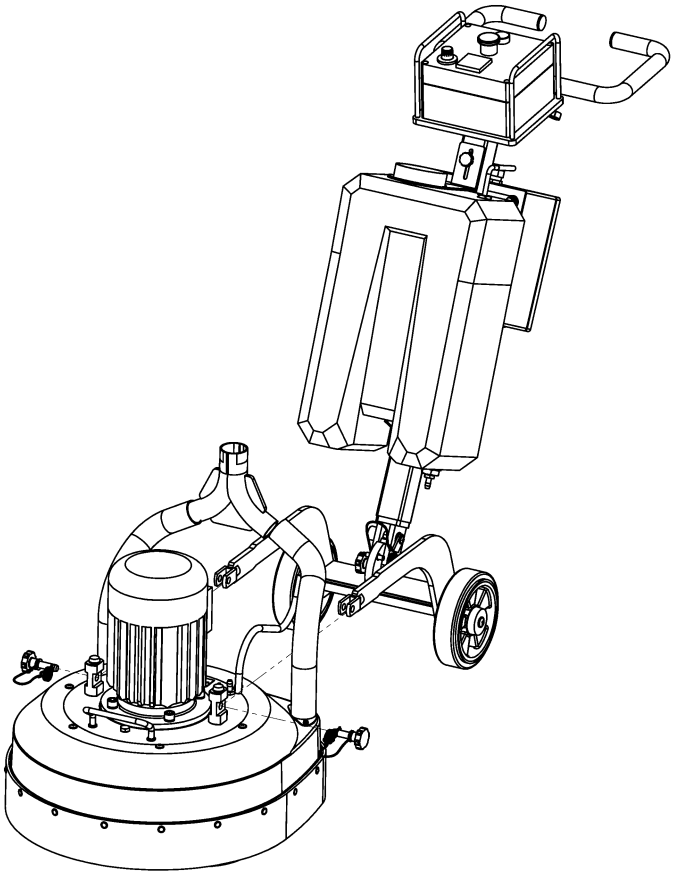


Figure 7.1

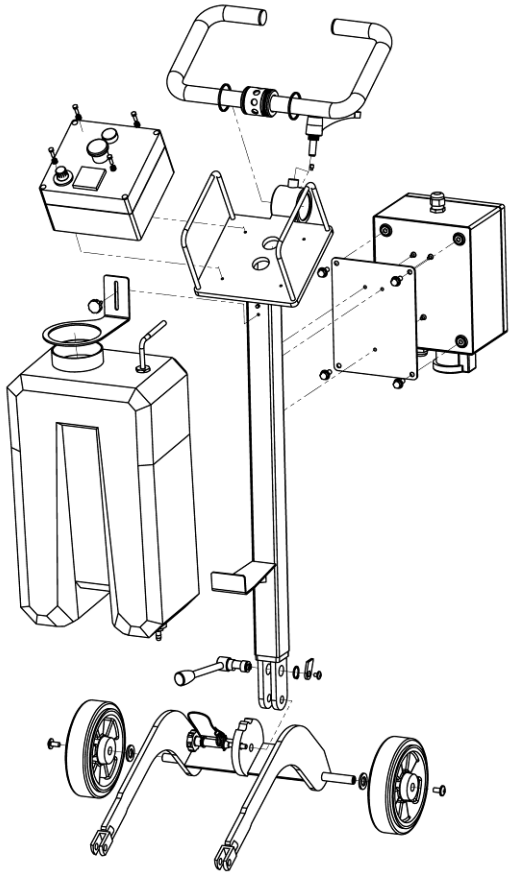


Figure 7.2

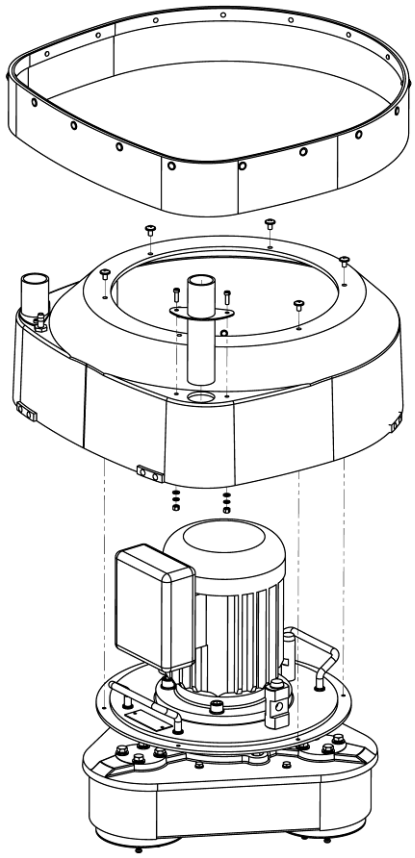


Figure 7.3

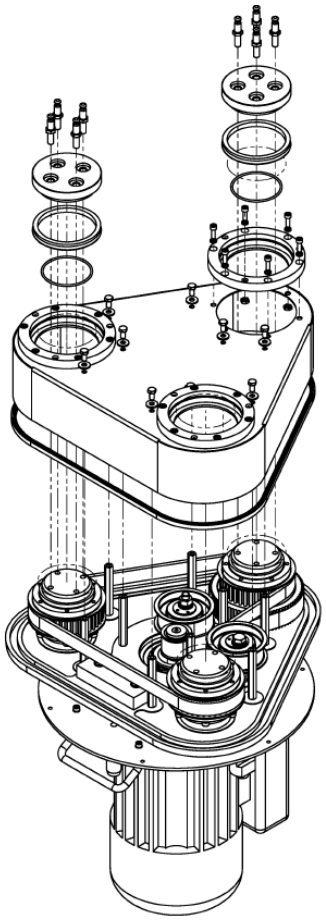


Figure 7.4

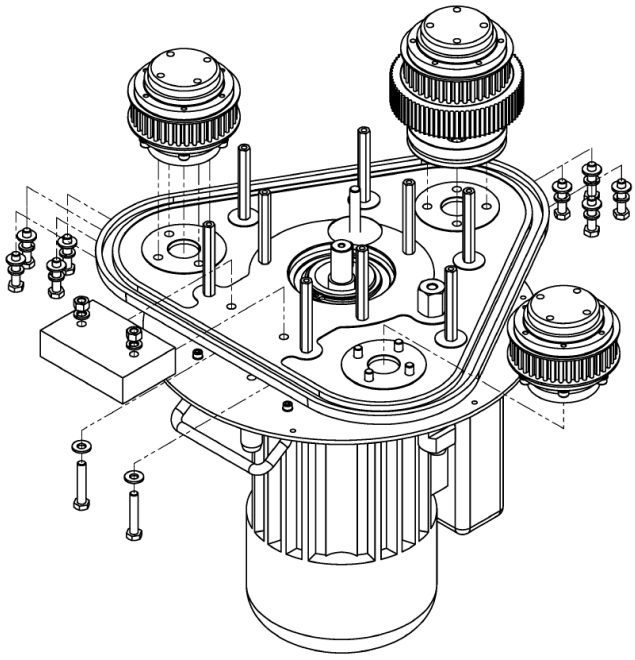


Figure 7.5

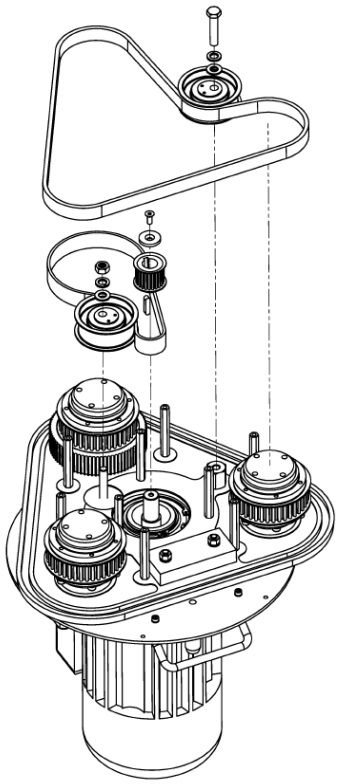


Figure 7.6

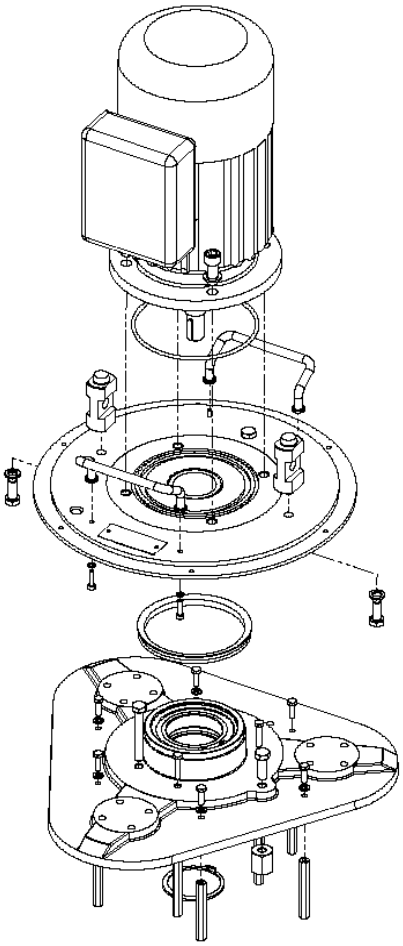


Figure 7.7

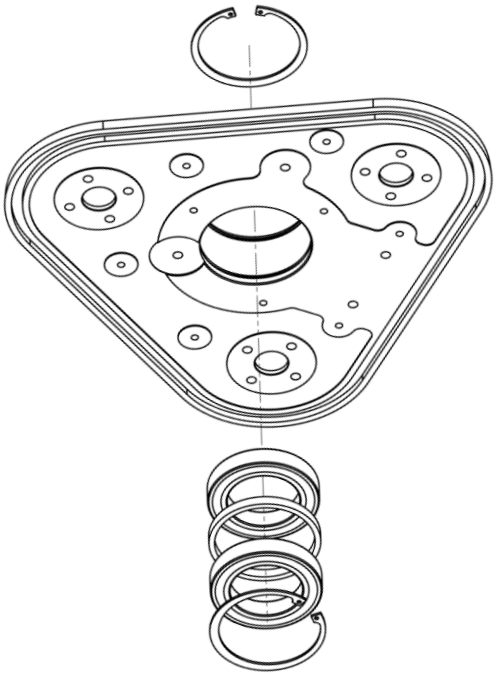


Figure 7.8

8. MAINTENANCE AND INSPECTION

CLEANING

Keep your machine clean. Cleaning the machine on a regular basis will help detect and solve potential problems before they cause damage to the machine. Most importantly, check and clean the tool plate connections, power cord and plugs, vacuum hoses and water tank.

CHECK DAILY

After operating the Lavina®21-S-1.5, the operator should conduct a visual inspection of the machine. Any defect should be solved immediately.

Shocks absorbers (Part #S0001) and front Sealers (Part # S0002) are consumables; they should be checked daily and replaced if needed.

CHECK AND REPLACE EVERY 200 WORKING HOURS

Every 200 working hours, the operator should inspect all parts of the machine carefully. Most importantly, inspect and clean the tool plate connections, power cord and plugs, vacuum hoses and water tank. Also, check the water flow. Check the guard assembly. Make certain the wheels are clean and rotate properly. Inspect the control buttons. If there are defective control parts, they should be replaced immediately. Replace worn vacuum- and water hoses.
Check visually all sealers from the bottom cover see (fig.9.4)

For further information, please refer to Section 9 (Troubleshooting).

CHECK AND REPLACE EVERY 500 WORKING HOURS

Every 500 working hours, a full service should be performed on the machine. Order a 500-hour Lavina®21-S-1.5 kit (Part #K0017) and install all of the new parts included in the kit (belts and tensioner pulleys).

Remove the pin set and discs from the pulleys, the retaining bolts for the bottom cover, and the bottom cover. Clean all of the internal parts and inspect for any wear or damage. When replacing the belts, both belts must be replaced at the same time. Also, be sure to install the tensioner pulleys included in the kit with the belts. The belts and tensioner pulleys are rated for the same operating lives.

Be sure to install a new Sealing Gasket (Part #A0003) when re-installing the bottom cover. When re-installing the pin sets and discs on the pulleys, be sure to install new V-Ring and O-Ring seals as well (Parts #S0016 and #S0017).

For further information, please refer to Section 9 (Troubleshooting).

ELECTRICAL SYSTEM

Dust should not enter the control box as it will destroy the contacts. Remove (blow out) any dust present.

ELECTRICAL SCHEME

A plug should be attached to the cable (min. 16A; 110V, IP55) according to the standards of the country where the machine will work.

The plug should be attached by a technician. The yellow-green cable is ground. ⚠ WARNING

We recommend the cable should be H07BQ-F3x2,5mm² with maximum length 20 meters. On the cable should be attached a socket (min. 16A; 110V IP55) according to the standards of the country where the machine will work.

When replacing the power cord or plugs always use cords and plugs with specifications as the original ones.
Never use lower quality or different type cord and plugs.

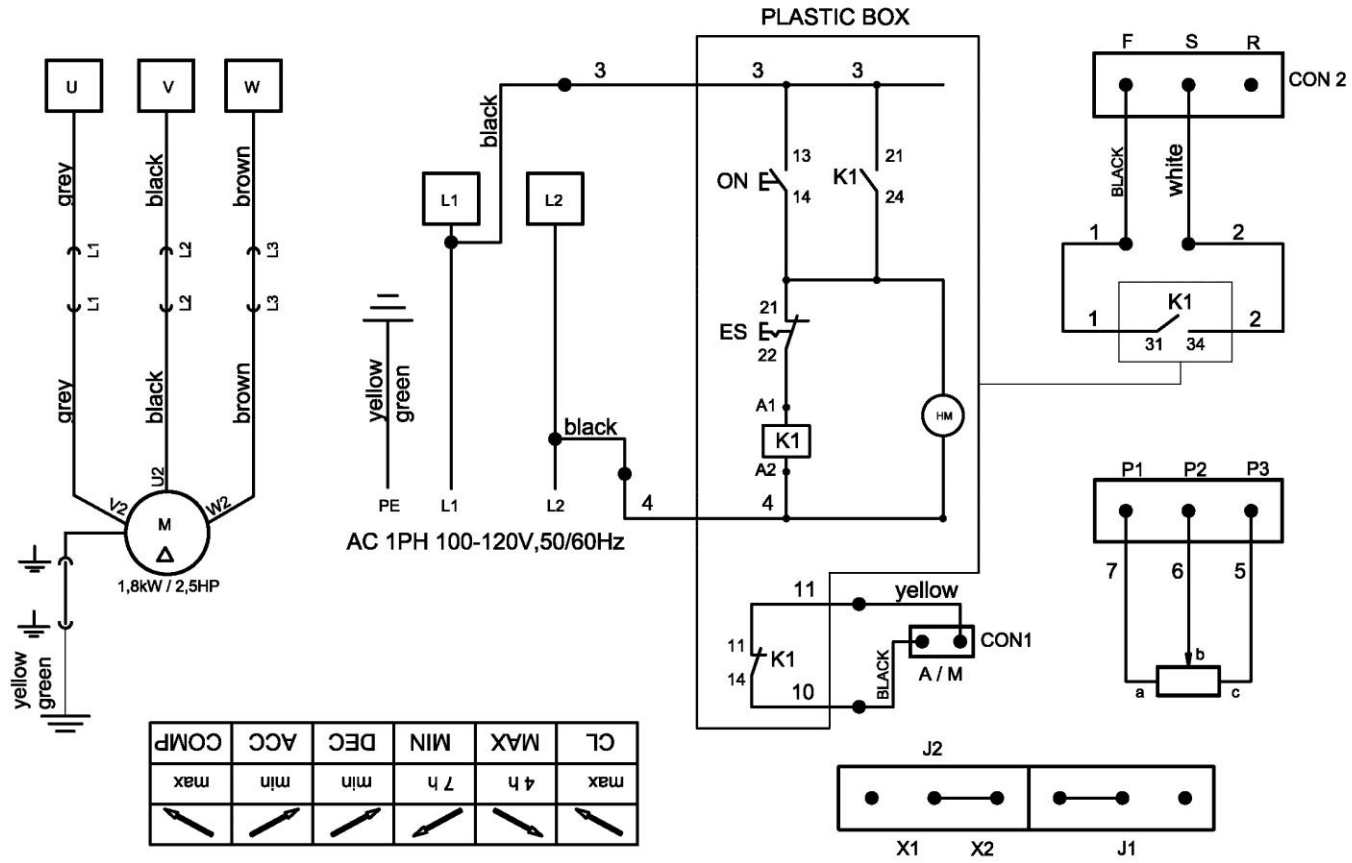


Figure:8.1

VACUUM
As stated previously, frequently check hoses and other parts for clogging.

WATER LEAKS
Replace any leaking parts immediately as the water could damage your machine

MECHANICAL PARTS
Parts such as the belt, seal rings, cap rings, sealers, shock absorbers, and guard assembly are subject to wear and should be replaced as needed.

9. TROUBLESHOOTING

INDEX OF PROBLEMS AND SOLUTIONS

9.1 REPLACING OF PLUGS

When replacing the plugs always use plugs with specifications as the original ones.
Never use lower quality or different type.

9.2 REPLACING OF PINS OF THE PULLEY UNITS


Figure 9.2.1

Remove the pins by using the proper size wrench. To prevent the pulley from rotating while loosening the pins, use another wrench to hold the pins of another pulley stationary. When re-installing, use a medium-strength, thread glue to secure the pins. (Fig. 9.2.1)

9.3 REPLACING OF V RING

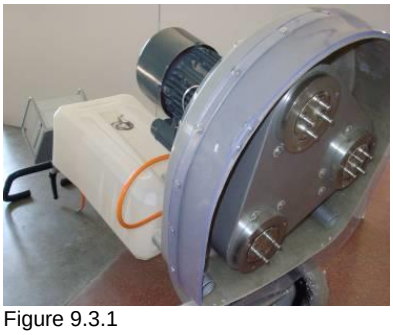


Figure 9.3.1


Figure 9.3.2


Figure 9.3.3


Figure 9.3.4


Figure 9.3.5

Turn off the machine from electricity. Place the machine in a position for changing the tools (Fig. 9.3.1), dismount the tools and tool holders

Unscrew the pins (Fig. 9.3.2), dismount the disc for the V Ring and replace it (Fig. 9.3.3). Dismount the O Ring (Fig. 9.3.4) and replace it (Fig. 9.3.5). Re-install everything in the reverse order.

9.4 PREPARING FOR REPLACING BELTS

Turn off the machine and unplug it from the electrical power source.

Figure 9.4.1


Figure 9.4.2

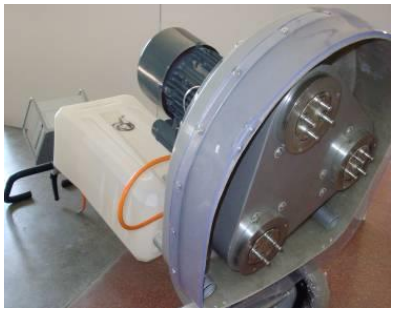


Figure 9.4.3

Remove the vacuum (Fig. 9.4.1) and water hoses (Fig. 9.4.2)
Place the machine in a position for changing the tools (Fig. 9.4.3)


Figure 9.4.4

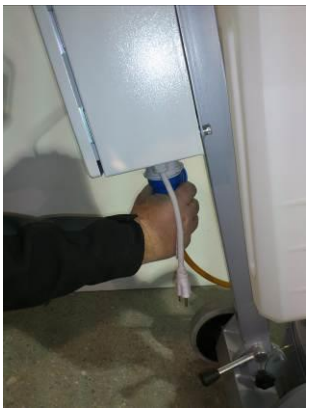


Figure 9.4.5


Figure 9.4.6

Remove the tools and the tool holders (Fig. 9.4.4)
Unplug the cable from the socket located under the water tank (Fig. 9.4.5)
Pull out the two pins (Fig. 9.4.6)
Separate the carriage from the main head (Fig. 9.4.6)


Figure 9.4.7


Figure 9.4.8


Figure 9.4.9

Remove the guard (Fig. 9.4.7) and the top cover (Fig. 9.4.8)
Remove the cover by sliding it upwards, over the motor (Fig. 9.4.9)
Turn the Main head of the machine upside down, and rest it on the cover of the motor.


Figure 9.4.10


Figure 9.4.11

Remove the pins (Fig. 9.4.10). Remove the V rings (Fig. 9.4.11).


Figure 9.4.12


Figure 9.4.13

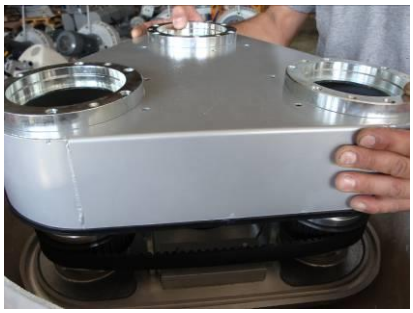


Figure 9.4.14

Remove the screws attaching the bottom cover and pull off the cover (Fig. 9.4.12) (Fig. 9.4.13) (Fig. 9.4.14)

9.5 DISMOUNTING BELTS


Figure 9.5.1


Figure 9.5.2

The Lavina 21 is driven using two drive belts, one upper belt (Fig. 9.5.1) and one lower belt. (Fig. 9.5.2)

The tensioning pulleys must be changed in conjunction with the belts. The rated operating lives are the same for both.

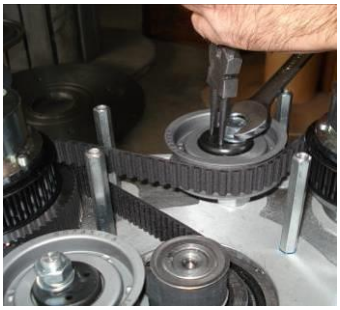


Figure 9.5.3


Figure 9.5.4

To release the belts, first loosen the bolt on top of the tension pulley for the top belt. A pair of snap ring pliers will be necessary to hold the pulley stationary while loosening the bolt (Fig. 9.5.3). The tensioning pulley can now be removed (Fig. 9.5.4). The same operation is then used to remove the lower belt.

9.6 CHANGING OF THE PULLEY UNITS

While the belts are dismounted, inspect the three pulley units. Rotate each one by hand and check to see if noticeable wear can be heard or felt. If needed, replace the damaged pulley(s). Re-install them using the same bolts and washers. Utilize new bolts and washers if they are damaged.

There are two normal pulley units and one driving pulley unit. These pulleys cannot be interchanged with one another. The driving pulley must be installed in the position located opposite of the balancing weight (Fig.9.6.1).

Figure 9.6.1

Figure 9.6.2

Figure 9.6.3

Release the bolts on the backside of the base plate and pull the pulleys of the motor base.

9.7. MOUNTING OF BELTS

Figure 9.7.1

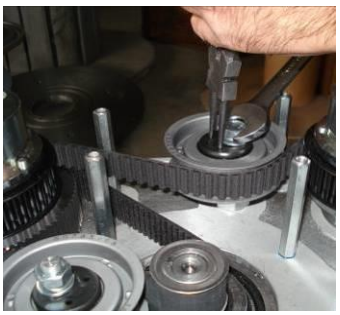


Figure 9.7.2

Figure 9.7.3

First, place into position the lower belt without tensioning pulley. Then install the tensioning pulley (Fig.9.7.1). Tension is placed on the belt by turning the tensioning pulley in the counter clockwise with snap ring pliers (Fig.9.7.2) To check the tension, use an “Optikrik” 1 device. This belt tension gauge measures the tension in Newton units (Fig.9.7.3). For the lower belt (motor belt) the proper tension should fall in the range of 300N-350 N, and 350N-400 N for the upper belt.

9.8 MOTOR CONNECTION

The cable from the outlet should not be longer than 20 m or 65 feet, because the use of longer cable or cable with lower section than the indicated above, could cause problems during the working process.

In case of changing the motor, please check the cable connection to your motor.

Lavina®21-S-1.5

The motor is connected in “Delta” (Triangle) 230 Volt,
reminder for the wire connection of the motor.

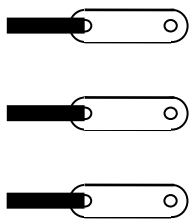


Figure 9.8.1

10. WARRANTY AND RETURNS

WARRANTY POLICY FOR LAVINA ® 21-S-1.5

If your warranty card is missing, call your local distributor and request a warranty card or visit us at www.superabrasive.com to download one.

The customer is responsible for filling out the card and mailing it to the manufacturer's address indicated on the card. To ensure registration and activation of the warranty coverage, the warranty card must be mailed to the manufacturer within 30 days from date of purchase. Failure to mail the warranty card within 30 days from date of purchase may void the warranty. Make sure you vide the manufacturer with all the information requested, and most importantly with the distributor's name, machine serial number and purchase date

Superabrasive Inc. guarantees that the original purchaser of the Lavina 21 machine will be covered against defects in material and workmanship for a period of 2 years from the date of delivery or 600 hours of use whichever comes first.

The following conditions pertain to this warranty:

- Applies only to the original owner and it is not transferable.
- Machine must not be dismantled and tampered with in any way.
- Covered components proven defective will be repaired or replaced at no charge. Covered components include motors, bearings and switches.
- This warranty does not apply to any repair arising from misuse, neglect or abuse, or to repair of proprietary parts.
- This warranty does not apply to ducts with aftermarket alterations, changes, or modifications.
- This warranty is in lieu of and excludes every condition of warranty not herein expressly set out and all liability for any form of consequential loss or damage is hereby expressly excluded.
- This warranty is limited to repair or replacement of covered components and reasonable labor expenses.
- All warranty returns must be shipped freight prepaid.

The above warranty conditions may be changed only by Superabrasive. Superabrasive reserves the right to inspect and make a final decision on any machine returned under this warranty. This warranty applies to new, used and demo machines.

Superabrasive does not authorize any person or representative to make any other warranty or to assume for us any liability in connection with the sale and operation of our ducts.

RETURN POLICY FOR LAVINA®21-S-1.5

Lavina®21-S-1.5 machines may be returned, subject to the following terms:

In no case, a machine is to be returned to Superabrasive Inc. for credit or repair without prior authorization. Please contact Superabrasive Inc. or your local distributor for an authorization and issuance of a return authorization number. This number along with the serial number of the machine must be included on all packages and correspondence. Machines returned without prior authorization will remain property of the sender and Superabrasive Inc. will not be responsible for these.

No machines will be credited after 90 days from the date of invoice.

All returns must be shipped freight prepaid. All returns may be exchanged for other equipment or parts of equal dollar value. If machines are not exchanged, they are subject to a fifteen percent (15%) restocking fee.

11. DISPOSAL

If your machine after time is not usable or needs to be replaced, send the machine back to Superabrasive or a local distributor, where a professional disposal complying with the environment laws and directives is guaranteed.

12. MANUFACTURER'S CONTACTS

If you need to contact Superabrasive Inc. with technical support questions, below is the contact information.

Address; 9411 Jackson Trail Road, Hoshton GA 30548, USA
Email: info@superabrasive.us
Tel.: 706 658 1122
Fax: 706 658 0357
Website: www.superabrasive.com

13.A. SPARE PARTS

Please note that some parts are offered only as sets, others as kits, and should be ordered and replaced as sets or kits.

Machines with Serial Numbers

L21-S-1.5/05.06.13.00.01
L21-S-1.5/05.06.13.00.02
L21-S-1.5/05.06.13.00.03
L21-S-1.5/05.06.13.00.04
L21-S-1.5/05.06.13.00.05
L21-S-1.5/05.06.13.00.06
L21-S-1.5/05.06.13.00.07
L21-S-1.5/05.06.13.00.08
L21-S-1.5/05.06.13.00.09
L21-S-1.5/05.06.13.00.10
L21-S-1.5/11.07.13.00.11
L21-S-1.5/11.07.13.00.12
L21-S-1.5/30.07.13.00.13
L21-S-1.5/30.07.13.00.14
L21-S-1.5/30.07.13.00.15
L21-S-1.5/30.07.13.00.16
L21-S-1.5/30.07.13.00.17
L21-S-1.5/30.07.13.00.18
L21-S-1.5/30.07.13.00.19
L21-S-1.5/30.07.13.00.20
L21-S-1.5/30.10.13.00.21
L21-S-1.5/30.10.13.00.22
L21-S-1.5/30.10.13.00.23
L21-S-1.5/30.10.13.00.24
L21-S-1.5/30.10.13.00.25
L21-S-1.5/30.10.13.00.26
L21-S-1.5/30.10.13.00.27
L21-S-1.5/30.10.13.00.28
L21-S-1.5/30.10.13.00.29
L21-S-1.5/30.10.13.00.30
L21-S-1.5/30.10.13.00.31
L21-S-1.5/30.10.13.00.32
L21-S-1.5/30.10.13.00.33

Fig Number	Article	Article Description	Quantity Parts In Article	Set Order Number	Set Description	Quantity Parts In Set	Kit	Kit Description	Quantity In Kit
1							K1003	Main Head Complete	1
1							K1004	Carriage Complete	1
1							K0005	Guard Kit	1
1				S0003	Pin Assembly Set	2			
1	A0001	Three-Way Air Duct	1						
1				S0004	Vacuum Hoses Set	2			
1	A0002	Water Hose	1						
2							K0001	QC Tool Holder Complete	1
2				S0001	Shock Absorber Set	12			
2				S0002	Sealers Front Set	3			
2							K0002	Foam Tool Holder Complete	1
3				S0013	Vacuum Port Complete Set	2	K0006	Top Cover Kit	1
4	A0003	Bottom Cover Sealer	1				K0039	Bottom Cover Kit	1
4							K0035	V ring kit	3
4				S0015	Pin set	12			
4				S0016	V ring set	3			
4				S0017	O ring set	3			3
5							K0017	Belt Kit	1
5							K0008	Central Pulley Kit	1
5						12	K0037	Driving Pulley kit	1
5							K0038	Pulley kit	1
6	A0015	Silicone Sealer	1						
6							K1020	Motor Kit 1.8 kW	1
6				S0011	Handle Set	2			
6	A0007	Fitting For Water	1						
7	A0008	Swivel Bolt	1	S1012	Bolt set	1	K0013	Handle Kit	1
7	A0004	Pin	1				K1040	Back plate Kit	1
7							K0012	Water Tank Kit	1
7							K0014	Positioning Handle Kit	1
7							K0015	Wheel Kit	2
7							K0016	Tank Support Kit	1
8A	A0005-1	Hour Meter 110V	1						
8A	A0006	Emergency Stop	1						
8A	A0009	Button With Cap	1						
8A	A1010	Control Box	1						
8A	A0011-1	Contactor 110V	1						

8A	A0013-1	Cable and Plug	1						
8A	A1014	Cable and Gland	1						
8A	A1016	Potentiometer	1						
8A	A1017	Inverter	1				K1019	Socket-Plug Kit 220V	1
8A	A1018	Electrical Box with cables	1						
8A	A1019	Mounting plate	1						
8A	A1020	Panel socket	1						

To order any parts, customer has to provide the machine model and serial number. Without this information, customer is responsible for ordering the correct part, and no shipping charges will be refunded if the part ordered is wrong.

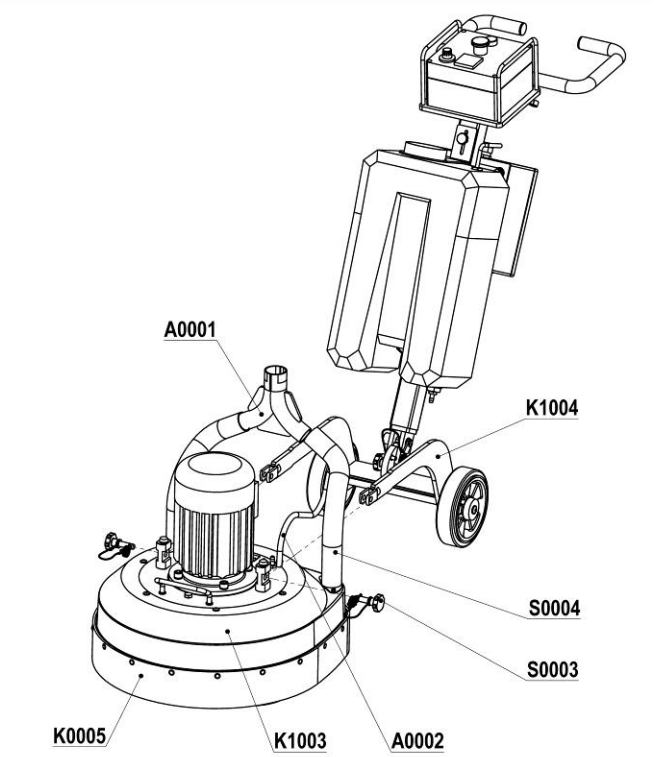


Figure 13.1

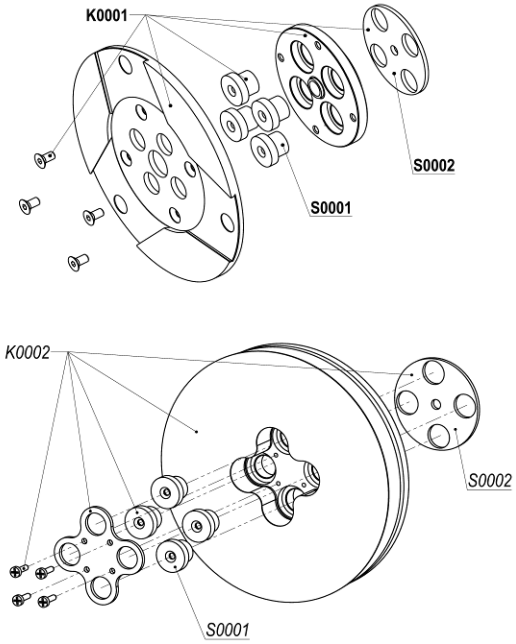


Figure 13.2

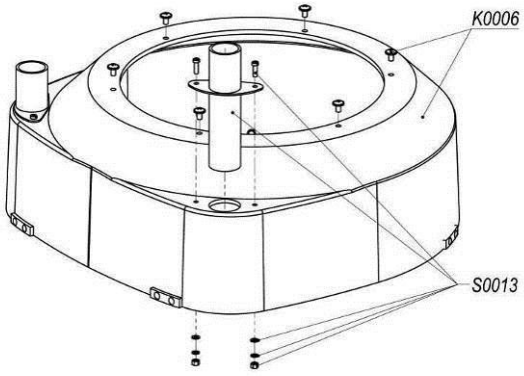


Figure 13.3

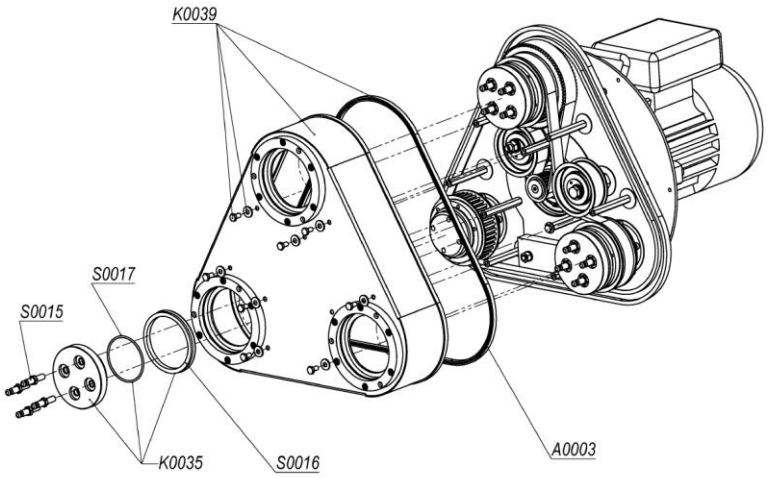


Figure 13.4

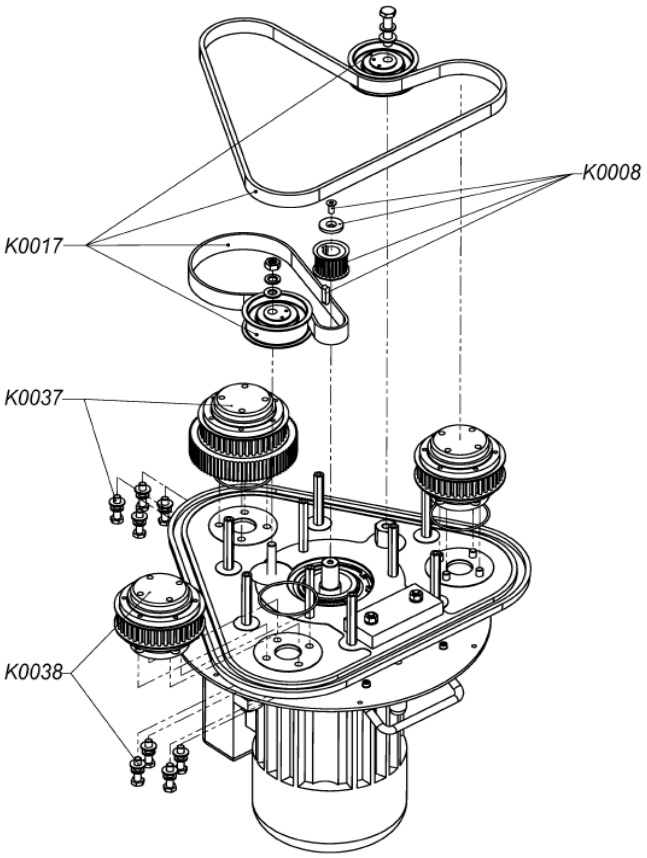


Figure 13.5

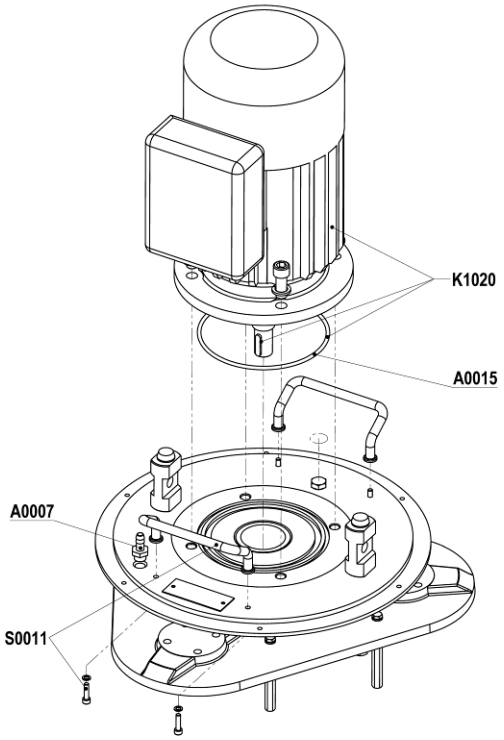


Figure 13.6

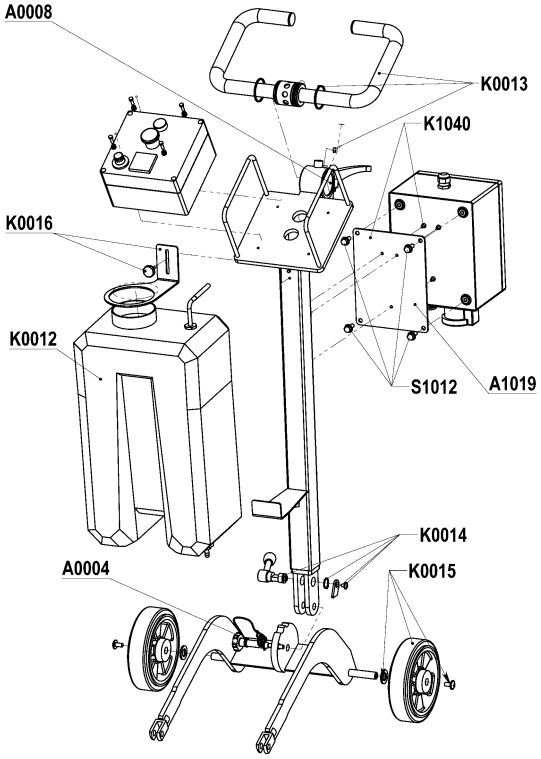
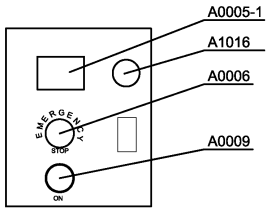


Figure 13.7



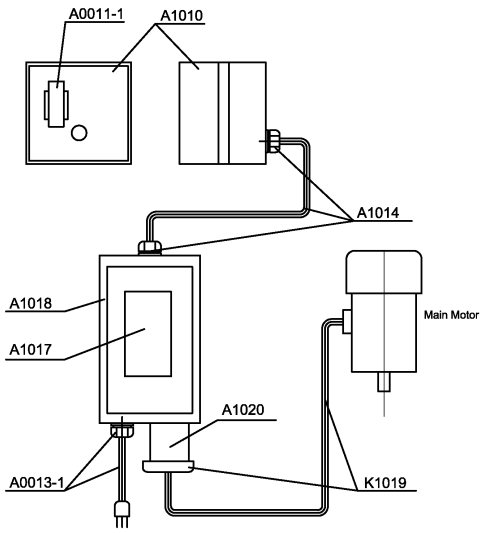


Figure 13.8 A
1.8 kW 110Volt

13.B SPARE PARTS

Please note that some parts are offered only as sets, others as kits, and should be ordered and replaced as sets or kits
For all machines with serial numbers after **L21-S-1.5 / 30.10.13.00.33**.

Fig Number	Article	Article Description	Quantity Parts In Article	Set Order Number	Set Description	Quantity Parts In Set	Kit	Kit Description	Quantity In Kit
1							K1003	Main Head Complete	1
1							K1004	Carriage Complete	1
1							K0005	Guard Kit	1
1				S0003	Pin Assembly Set	2			
1	A0001	Three-Way Air Duct	1						
1				S0004	Vacuum Hoses Set	2			
1	A0002	Water Hose	1						
2							K0001	QC Tool Holder Complete	1
2				S0001	Shock Absorber Set	12			
2				S0002	Sealers Front Set	3			
2							K0002	Foam Tool Holder Complete	1
3				S0013	Vacuum Port Complete Set	2	K0006	Top Cover Kit	1
4	A0003	Bottom Cover Sealer	1				K0039	Bottom Cover Kit	1
4							K0035	V ring kit	3
4				S0015	Pin set	12			
4				S0016	V ring set	3			
4				S0017	O ring set	3			3
5							K0017	Belt Kit	1
5							K0008	Central Pulley Kit	1
5						12	K0037	Driving Pulley kit	1
5							K0038	Pulley kit	1
6	A0015	Silicone Sealer	1						
6							K1020	Motor Kit 1.8 kW	1
6				S0011	Handle Set	2			
6	A0007	Fitting For Water	1						
7	A0008	Swivel Bolt	1	S1012	Bolt set	1	K0013	Handle Kit	1
7	A0004	Pin	1				K1040	Back plate Kit	1
7							K0012	Water Tank Kit	1
7							K0014	Positioning Handle Kit	1
7							K0015	Wheel Kit	2
7							K0016	Tank Support Kit	1
8B	A0005-1	Hour Meter 110V	1						
8B	A0006	Emergency Stop	1						
88B	A0009	Button With Cap	1						
8B	A1010-1	Control Box	1						
8B	A0011-2	Relay 110V	1						
8B	A1015	Relay Base	1						
8B	A1021	Relay Bracket	1						
8B	A0013-1	Cable and Plug	1						
8B	A1014	Cable and Gland	1						
8B	A1016	Potentiometer	1						
8B	A1017	Inverter	1				K1019	Socket-Plug Kit 220V	1
8B	A1018	Electrical Box with cables	1						
8B	A1019	Mounting plate	1						
8B	A1020	Panel socket	1						

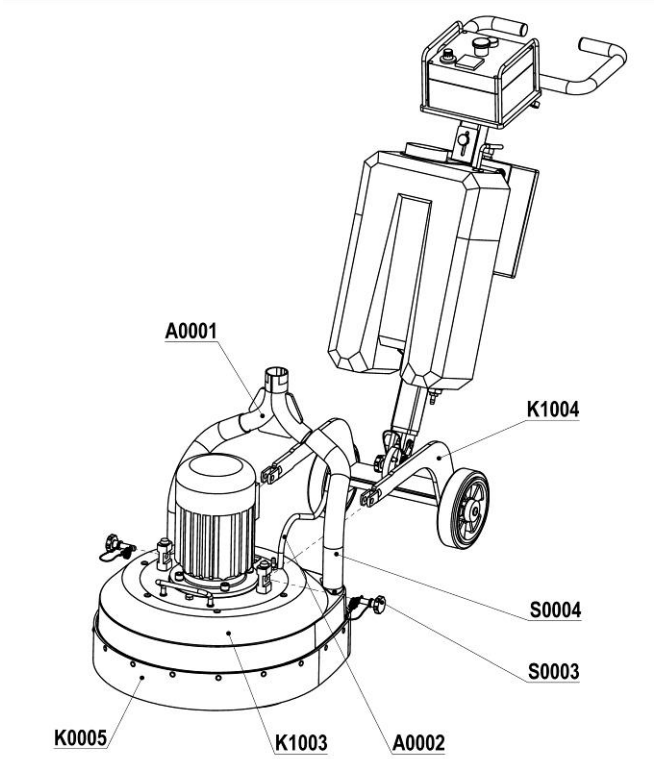


Figure 13.1

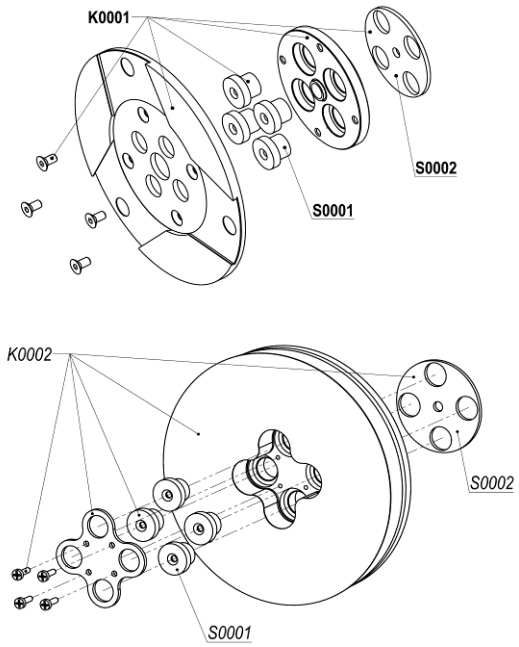


Figure 13.2

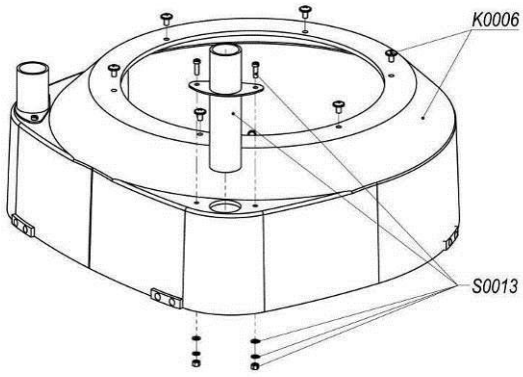


Figure 13.3

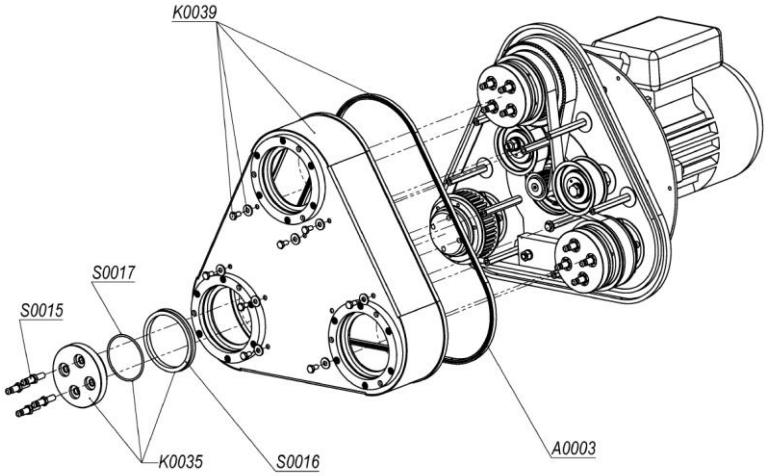


Figure 13.4

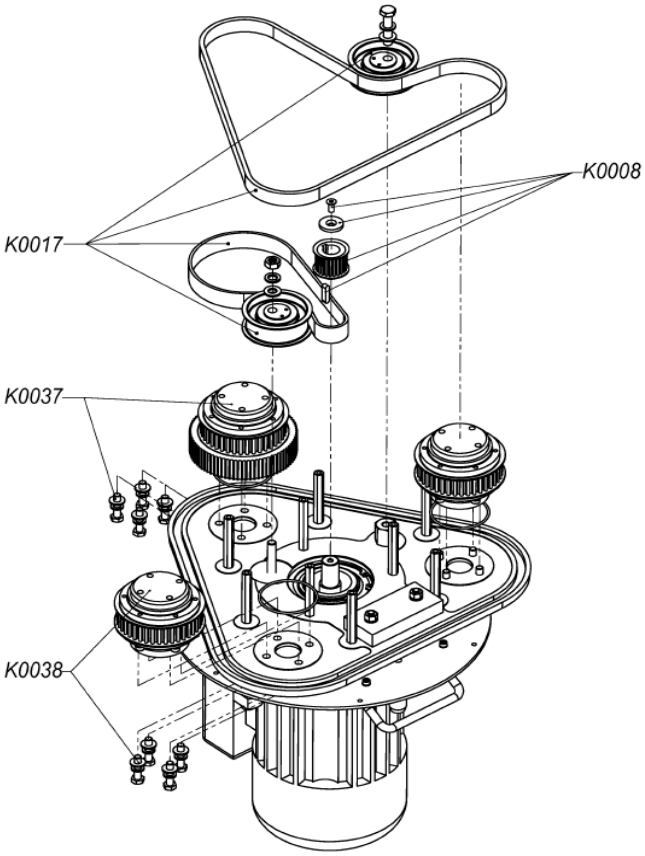


Figure 13.5

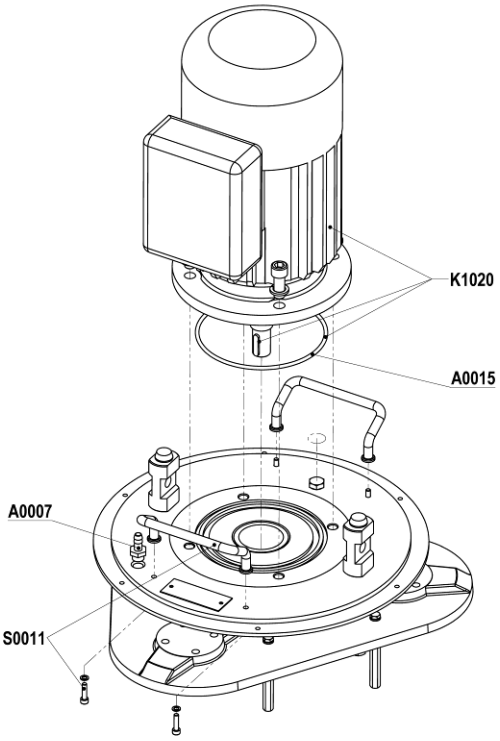


Figure 13.6

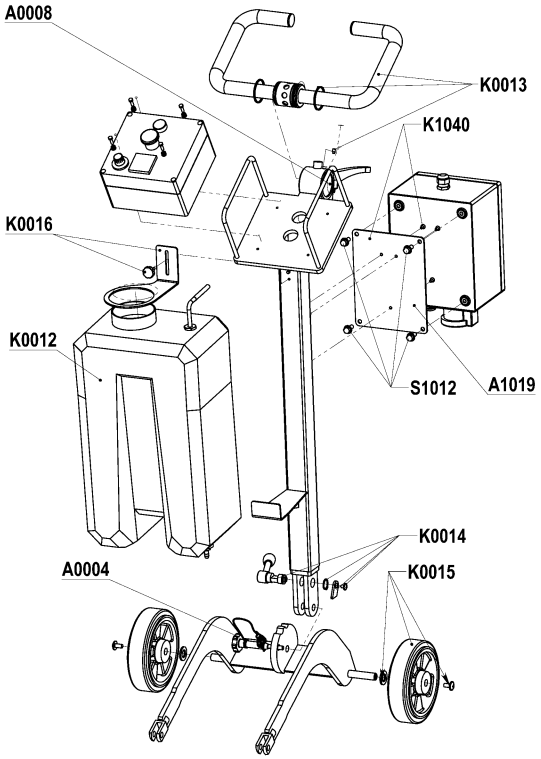


Figure 13.7

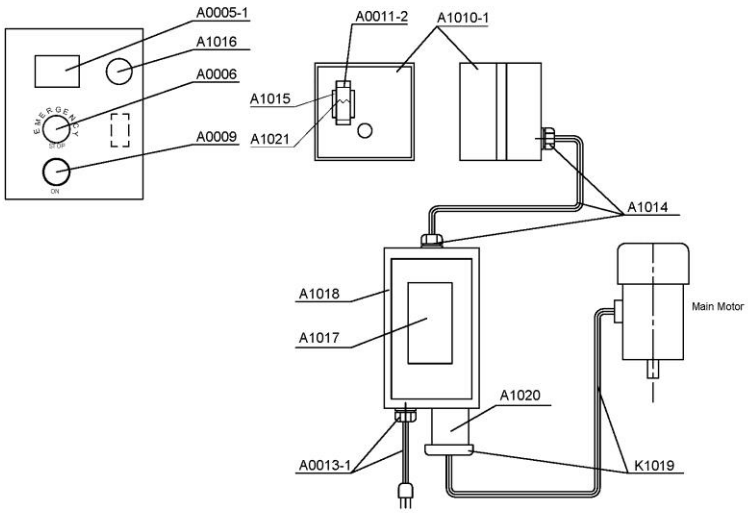


Figure 13.8 B
1.8 kW 110Volt