LAVINA® 21-X User Manual

SUPERABRASIVE

Tech Support Line: 800-987-8403 | www.superabrasive.com | info@superabrasive.us

Warranty Registration Card

Complete and submit this form within 30 days from the date of purchase. The registration is invalid without the machine serial number.

Section 1: Customer Information

Customer name

Address

City

State and Zip Code

Phone #

Email

Section 2: Machine Information

LAVINA model

Serial #

Purchase Date

Purchased From (distributor, dealer)

Email: warranty@superabrasive.us / Fax: 706-658-0357
Superabrasive Inc., 9411 Jackson Trail Rd, Hoschton, GA 30548

WARRANTY AND RETURNS

WARRANTY POLICY FOR LAVINA® X MACHINES

A warranty card must be submitted to Superabrasive within 30 days of purchase in order for the foregoing warranty to apply.

You can either mail a hard copy of the warranty card or submit it electronically - see page 2.
Superabrasive warrants, from the time of delivery and receipt by the original customer, new and unused products sold by Superabrasive or Superabrasive-appointed distributors or dealers. Goods shall be free from defects in materials and workmanship. Superabrasive or a Superabrasive-appointed repair facility shall either replace or repair any defects in the Goods resulting from faulty design, materials, or workmanship. Products repaired or replaced during the warranty period shall be covered by the foregoing warranty for the remainder of the original warranty period, or ninety (90) days from date of the repair or shipment of the replacement, whichever is longer. Spare parts for repair will be either new or equivalent to new.

Warranty period shall be 2 years from the time of delivery and receipt by the original customer, or 600 operating hours on the machine - whichever occurs first. Superabrasive will cover the shipping charges for the transportation of the machine to Superabrasive (or an approved repair facility) and back to the customer (within the contiguous 48 States) in the event that the damage occurs and is reported within 200 operating hours. Shipping charges, if covered by Superabrasive, must be agreed upon in advance and approved by Superabrasive. Thereafter, the customer will have to cover the shipping charges to Superabrasive and back. Superabrasive will not warranty Goods after a period of 2 years from the time of delivery and receipt by the original customer, or 600 operating hours on the machine - whichever occurs first.
Superabrasive shall not be liable for any defects that are caused by circumstances that occur after the Goods have been delivered and whilst the Goods are in the possession of the purchaser. Furthermore, the warranty does not include normal wear and tear or deterioration. Wear parts are not warranted. Superabrasive is not liable for defects arising out of use of non-OEM parts.

The Warranty is void if the purchaser has not followed the maintenance plan stipulated by the machine's manual and warranty card. The warranty is void if the purchaser repairs said Goods himself, or if repairs are conducted by a repair facility that is not approved by Superabrasive. Superabrasive's liability does not cover defects which are caused by faulty maintenance, incorrect operation, faulty repair by the purchaser, or by alterations conducted without Superabrasive's prior written consent. The same applies to any alterations of the Goods or services performed by another party other than Superabrasive, a Superabrasive-appointed distributor, or a Superabrasiveapproved repair facility. The warranty is not applicable on a defect that arises due to tools or parts that are not original to Superabrasive. Replaced defective parts shall be placed at Superabrasive's disposal and shall become property of Superabrasive. If such defective parts are replaced within the warranty period, the shipping charges will be covered by Superabrasive. In warranty complaint cases, when no defects are found for which Superabrasive is liable, Superabrasive shall be entitled to compensation for the labor, material cost, and shipping charges, incurred by Superabrasive as as a result of the complaint. The warranty herein is non-transferable, and only applies to the original owner or purchaser of the machine.

RETURN POLICY FOR LAVINA® X MACHINES

The Lavina® X 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 them. No machines will be credited after 90 days from the date of invoice.

All returns must be shipped freight prepaid. Returned machines 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
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TABLE OF CONTENTS

1. GENERAL INFORMATION

This owner's manual is intended for the operator of the Lavina® 21-X 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-X 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-X** machine is intended for grinding, polishing, and buffing concrete, marble, granite, limestone, and terrazzo surfaces with diamond tools. Additionally, the machine could be used for grinding wood floor surfaces.
The Lavina® 21-X is a three-disc machine, which can be used for wet or dry applications
For best results, only use tools manufactured or recommended by Superabrasive and its distributors.

⚠ WARNING The Lavina® 21-X 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-X is made of two main component sections

LAVINA 21 MAIN DESIGN

- **The two main components** are the main head (1) and carriage (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 electrical switches. The motor feeding cable and the main feeding cable are plugged in the socket located on the bottom of the frame.
- **The water tank** is on the opposite side of the frame, so that the weight of the water has no influence on the operation of the machine. The frame weight, on the other hand, is fully absorbed by the driving wheels.
- **The motor**, mounted on the base plate, drives the three heads with a belt system. The **planetary head** is driven by a second belt.
- **The self-leveling guard** is designed to maintain contact with the surface, regardless of tool height.

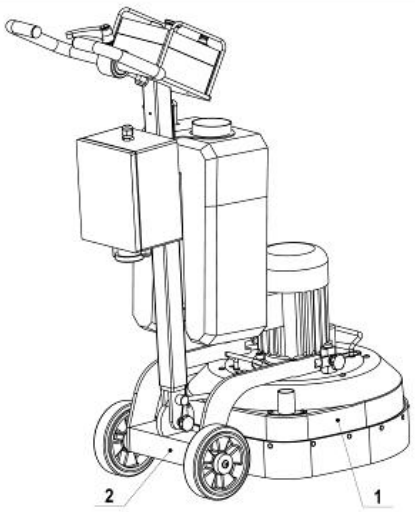

Figure 1.1

ENVIRONMENTAL CONDITIONS

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

ELECTRICAL CONNECTION

The voltage (Volt) and current (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.

Figure 1.2

VACUUM CONNECTION

A connection for a vacuum dust extractor is located on the carriage. The LAVINA® X 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 320 m^3/h with a negative vacuum of 21 kPa.

TECHNICAL DATA

	Lavina 21-X	
Voltage/Hz	**1 ph x 115 V 50- 60Hz**	
Amperage	**Max 16 Amps**	
Power	**1,8 kW**	**2.45 hp**
Tool holder rpm	**300 - 500 rpm**	
Working width	**508 mm**	**19.7”**
Tool holder diameter	**3 x 178 mm**	**3 x 7”**
Tool diameter	**3 x 178 mm**	**3 x 7”**
Weight	**99 kg**	**219 lbs**
Grinding pressure	**51 kg**	**113 lbs**
Additional weight	**max 4x8 kg**	**4x 18.5 lbs**
Application	**wet and dry**	
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 crate LxWxH	**1100x750x780 mm**	**43.3”x29.5”x30.7”**

VIBRATIONS

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

NOISE EMISSIONS

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

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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®X 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

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 the counterry, before using the machine, please ensure that all protection devices are mounted and function properly. ⚠ WARNING

ARREST FUNCTIONS

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-X is designed to eliminate all risks corre The Lavina® 21-X 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 abovementioned risks, we advise that machine operators will follow the instructions in the manual at all times.

RESIDUAL RISKS

- 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

- When operating the Lavina® 21-X 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

ALWAYS WEAR SAFETY

- Always wear safety shoes when working with the machine. ⚠ WARNING
- 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

- The Lavina®21-X machine. ⚠ WARNING

- 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.
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- 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

ADJUSTING THE COLUMN ANGLE

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

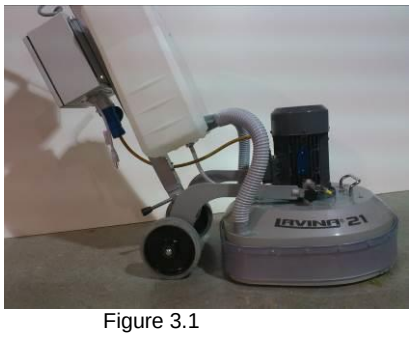


Figure 3.1

Figure 3.2

To adjust the column, turn the lever lock and rotate 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**. To adjust, simply pull the locking pin (fig.3.5) and move the frame. A loaded spring will return the pin and lock the handle in any of several positions (fig.3.6).** Choose the vertical position to easily move the machine.

Figure 3.5

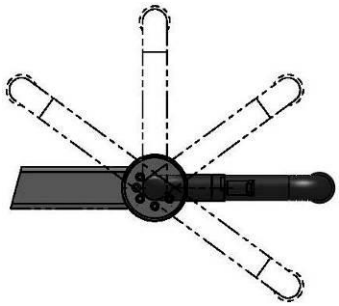


Figure 3.6

PREPARING THE MACHINE FOR TRANSPORTATION

Unplug Unplug the motor cable plug from the control box (Fig. 3.7) and disconnect the water hose from the main head (Fig.
3.8). Wind the electrical cable on the carriage. Release the pin sets at the base of the motor (Fig. 3.9), which attach the head to the carriage.

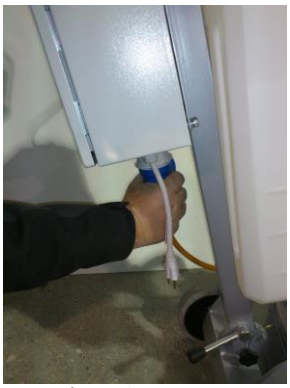


Figure 3.7

Figure 3.8

Figure 3.9

Figure 3.10

Figure 3.11

Figure 3.12

Disconnect the vacuum hoses and dismount the head from the carriage (Fig. 3.10) (Fig. 3.11).

The head of the Lavina® 21-X has two handles designed to facilitate transportation (Fig. 3.11, Fig. 3.12).

STORAGE

Always store and transport the LAVINA® X machine in a dry place. Never transport the LAVINA® X machine 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-X.

ADJUSTING AND MOUNTING TOOLS

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

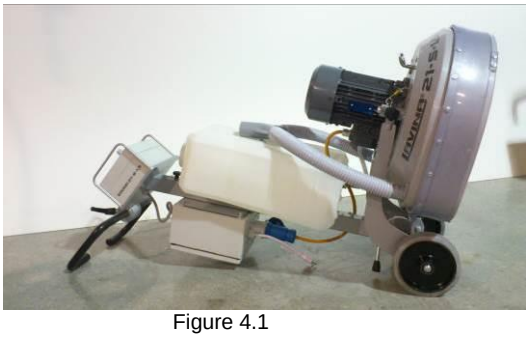


Figure 4.1

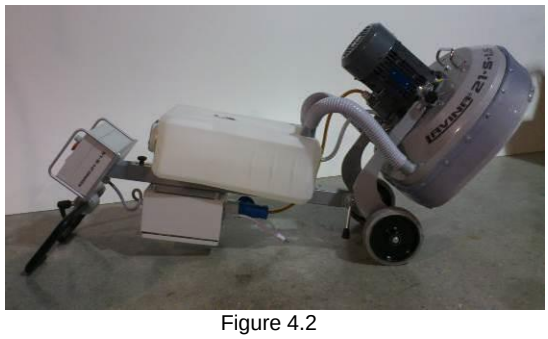


Figure 4.2

To change tools flip the carriage over to the floor. Ensure first if the handle (Fig. 4.1) or the column (Fig. 4.2) is in the upright position.

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

WARNING: Always Secure the Quick Change tools with the security plate (Fig.4.3), lock with the tool holder key (Fig.4.4) and make sure that the butterfly is securely locked at 90 degrees. Diamond tools with Velcro are attached on three foam plates (7 inch). The foam plates are mounted on the key lock (butterfly). Always use the tool holder key (Fig.5.2).

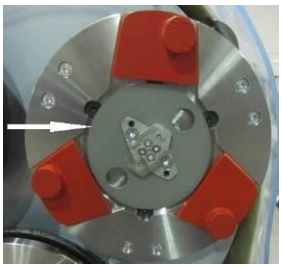


Figure 4.3


Figure 4.4

PLUG AND CABLE

A plug (min. 16A; 110V, IP55) should be attached to the cable. We recommend 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 the ground, and should not be connected to any live terminal.

⚠ WARNING The plug should be attached by a licenced electrician. .

CONTROL BOARD

Figure 4.5

1. **Working orking hours meter** displays total number of hours worked with the machine
2. **Emergency/stop button** stops motor
3. **ON button-Power led** starts the motor; lights green when on
4. **Potentiometer** Controls the RPM of the grinding plates on a range of 300-500 rpm

STARTING THE MACHINE

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

OPERATING THE MACHINE

Guide machine in straight lines across the floor, slightly overlapping the previously completed surface with each new line. 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 machine while tools are still running as they will mark the surface of the floor. When working wet, open the water tank periodically to release water onto the floor surface. When working dry, regularly check the floor surface for dust accumulation, and regularly check that the 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. TOOLS AND ACCESSORIES

WEIGHTS

Figure 5.1

Superabrasive offers additional weights of 18.5 lbs or 8 kg (Fig.5.1). The weights stack on the 3 posts around the outer bowl or on top of each other. The additional weights depend on the tools; it is not always possible to add weights. Some tools work too aggressively can cause the machine to stop. No more than 4 weights should be added. They can be ordered with item number L21-50.00.00.

TOOL HOLDER KEY
The tool holder key (Fig. 5.2) is used for adjusting, mounting and dismounting of the foam plates. Always use the key for mounting. Item number is A03.00.00.00

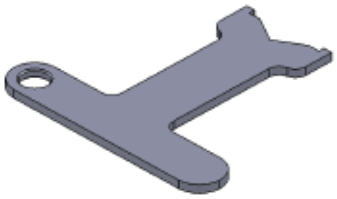


Figure 5.2

FOAM PLATE
Diamond tools with Velcro are mounted on the foam plate 7“(Fig.5.3). The foam plate is mounted on the “QuickChange” System.
Item number is LV-7-FP-S

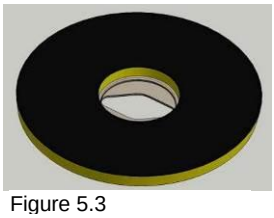


Figure 5.3

SECURITY PLATE FOR QUICKCHANGE PADS
Plate used to ensure the “Quickchange” pads. Item number is A38.00.04 (Fig.5.4)

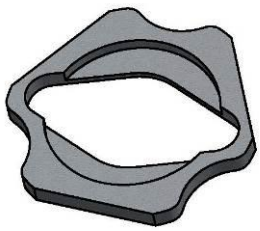


Figure 5.4

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. They are offered with 1 or 2 buttons or rectangular segments, 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 3-inch, with included Velcro back 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-integrated pads for floor maintenance. Available in a variety of sizes, they are great for daily use. When used wet, they require only water (no wax or chemicals needed), making them a very environmentally-friendly solution for maintaining floors.

Use Only Superabrasive's Recommended Tools. For More Tooling Options, Visit www.superabrasive.com

7. 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.

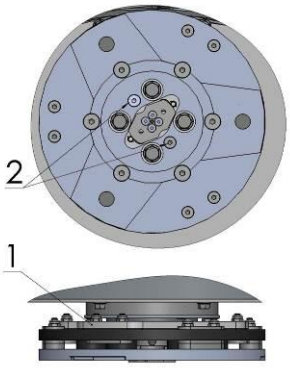


Figure 7.1

CHECK DAILY

After operating the Lavina® X machine, the operator should conduct a visual inspection of the machine. Any defect should be solved immediately. Pay attention to power cords, plugs and vacuum hoses, loose bolt or screws.
Tool holders: Buffers and elastic element are consumables and must be visually checked daily and replaced if needed. See that flanges or discs are mounted and locked well in place.
The key lock holders (butterflies) should be also checked.
Check the rubber buffers and fixing of the holders. The flange holding the buffers (Fig.7.1-1) has to be firmly fixed to the unit. A gap seen there means that there are loose screws fixing the holder. The screws have to be tightened immediately for safe operation. Working with loose screws on the holder could also cause bad damages on the machine. Tightening force on the screws should be 22...25 N.m(16...18 lbf.ft).
It is very important to regularly check the screws (Fig.7.1-2) that fix the “Quickchange” holder to the safety part, so that the holder will not fly away if the buffers get damaged. “Quickchange” should also be cleaned.

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 plugs, vacuum hoses and water tank. 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.

Separate the carriage from the main head. Unscrew the four bolts (Fig.7.2), and remove the upper cover (Fig.7.3). Check the planetary driving belt, by moving the main head, the belt should not slip on the Figure 7.2 planetary (central) pulley.
Dismount the tool holders (See TROUBLESHOOTING), and replace all parts (elastic element, buffers, sealer caps, “O” rings) that show any damage.


Figure 7.2

Separate the carriage from the main head. Unscrew the four bolts(Fig.7.2) and take the upper cover (Fig.7.3). Check the planetary driving belt, by moving the main head, the belt should not slip on the planetary /central/ pulley.
Dismount the tool holders (See TROUBLESHOOTING) and replace all parts (elastic element, buffers, sealer caps, “O” rings) that have the slightest damage.

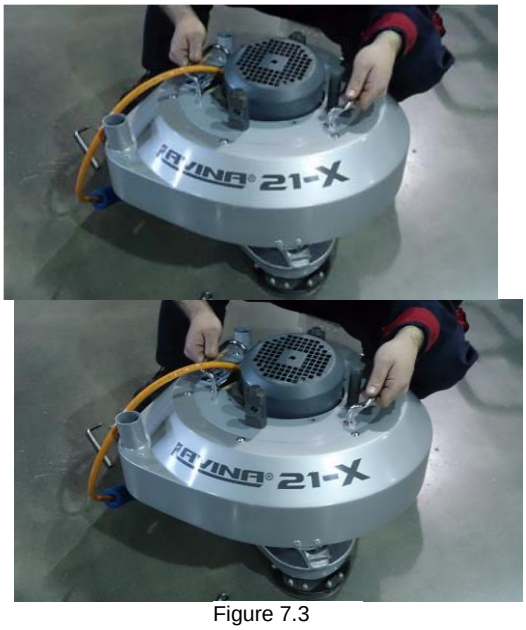


Figure 7.3

CHECK AND REPLACE EVERY 400 WORKING HOURS

Besides the checks of 200 working hours, replace sealer and V-rings like described in chapter “TROUBLESHOOTING - DISMOUNTING TOOL HOLDERS TO CHANGE V-RINGS AND FELT-RINGS.

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 belts, seal rings, cap rings, spiders, buffers and guard assembly are subject to wear and must be replaced as needed.

ELECTRICAL SYSTEM

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

ELECTRICAL SCHEME

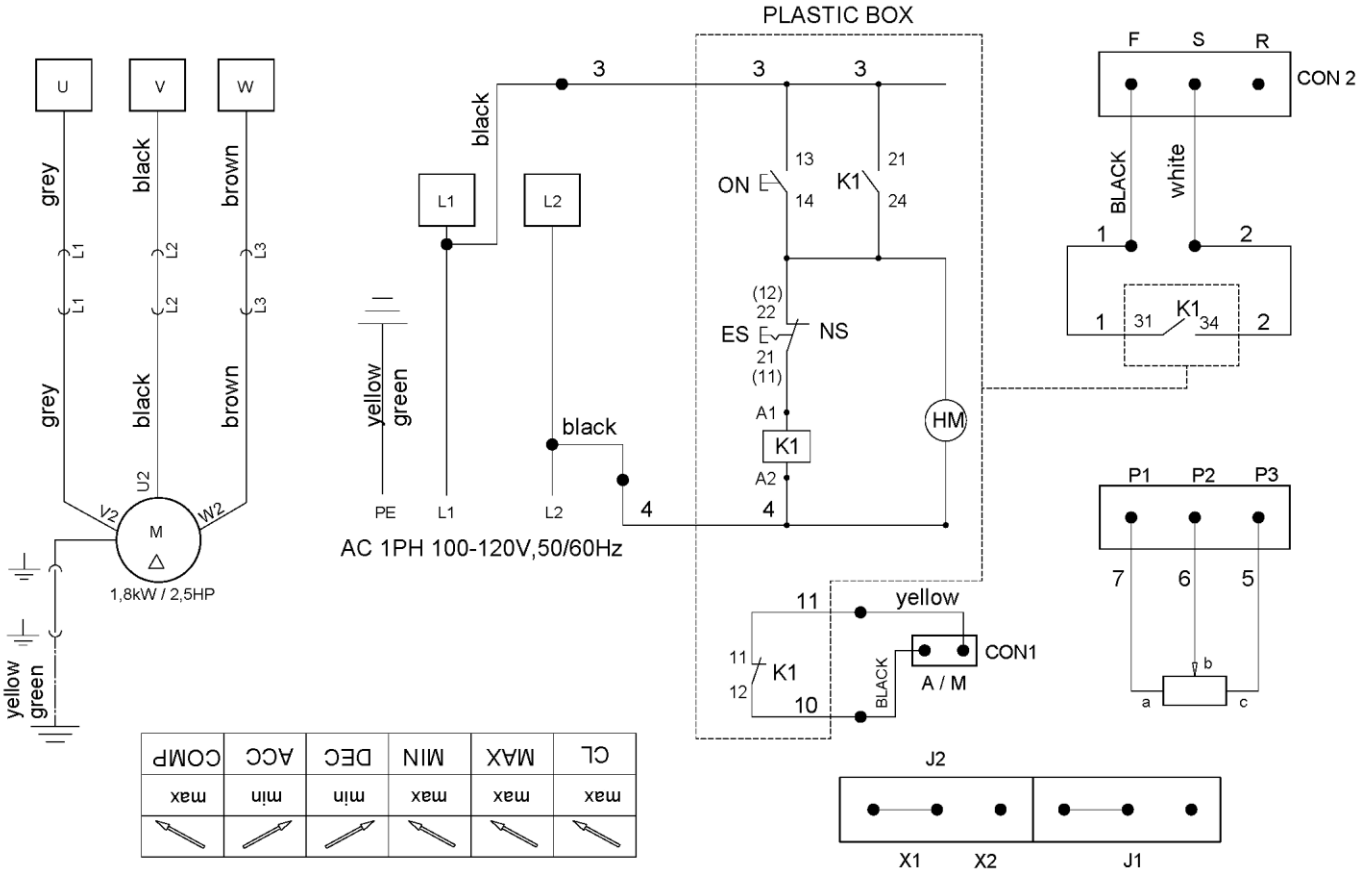
A plug should be attached to the cable (min. 16A; 110V, IP55) according to the standards of the country where the machine will be operated.

The plug should be attached by a a licenced electrician. The yellow-green cable is ground.

⚠ WARNING

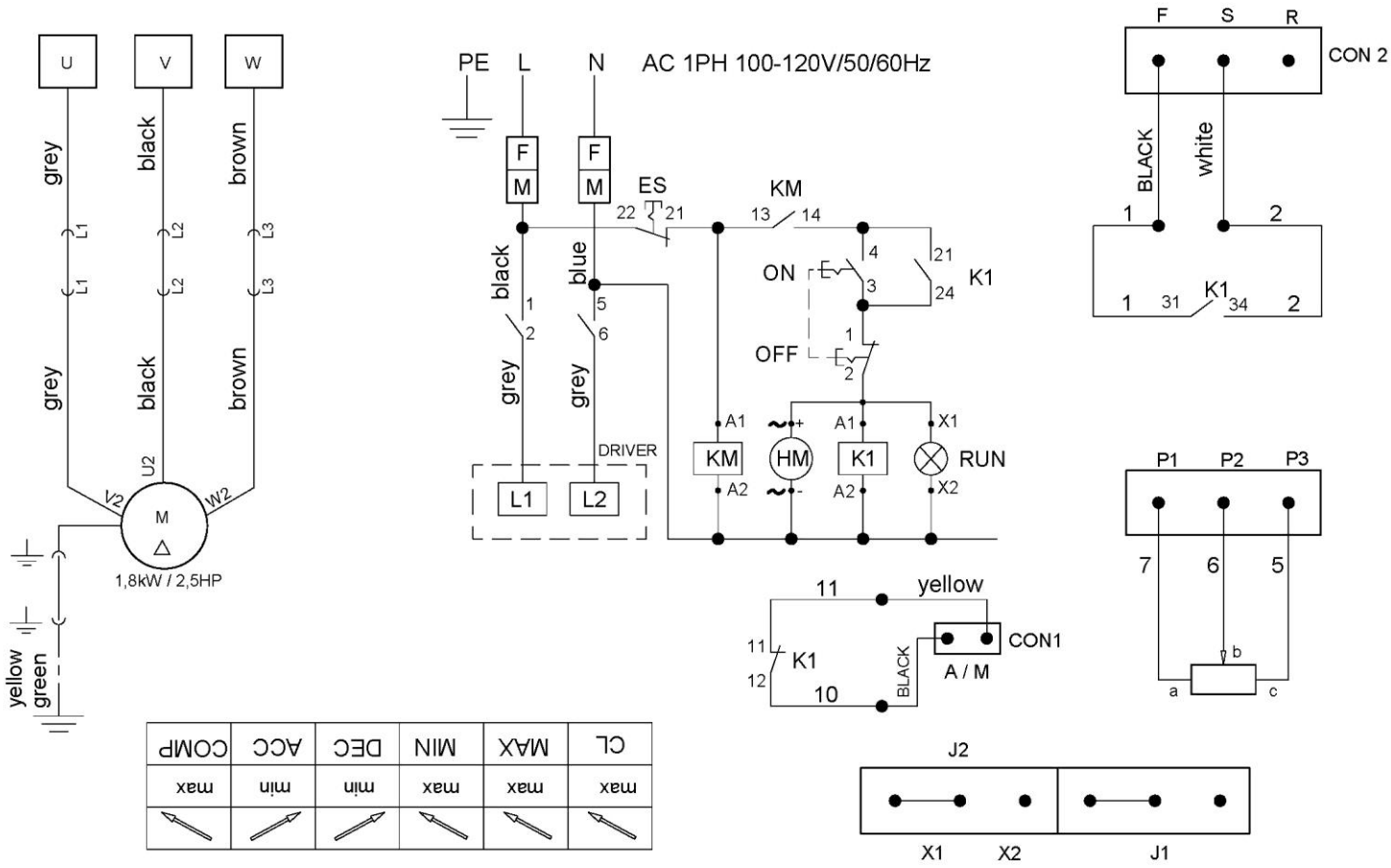
We recommend that the cable is H07BQ-F3x2,5mm² with a maximum length of 20 meters. A socket (min. 16A; 110V IP55) should be attached to the cable according to the standards of the country where the machine will be operated.

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



ELECTRICAL SCHEME FOR GFCI OUTLET

*** for machines after Serial No 1806L21X1871 and bigger



8. TROUBLESHOOTING

INDEX OF PROBLEMS AND SOLUTIONS

8.1 REPLACING POWER CORD AND PLUGS

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

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8.2 DISMOUNTING AND MOUNTING TOOL HOLDER TO CHANGING V-RINGS AND FELT-RINGS


Figure 8.2.1


Figure 8.2.2


Figure 8.2.3


Figure 8.2.4


Figure 8.2.5


Figure 8.2.6

To check or replace the buffers and the elastic elements, the tool holders have to be dismounted.
You will need a 13mm deep metric socket with an outside diameter of no more than 3/4in to unscrew the four bolts (Fig.8.2.1) and remove the holder (Fig.8.2.2) When the tool holder is dismounted, you can change the sealers (V-Ring and Felt-Ring).
By loosening four Hex cap flange bolts (Fig.8.2.3) the adaptor comes loose.
Unscrew the six screws of the cap (Fig.8.2.4) holding the felt-ring. Take out the Felt-Ring, adaptor and V-Ring.
Mount the V-Ring with the smallest lip of the V to the inside (Fig.8.2.5) - simply push the V-Ring so the top is on the same level as the pulley top (Fig.8.2.6). Then take the adaptor and push the V-Ring down with the adaptor (Fig.8.2.7). The lowest lip of the V-Ring should only barely touch its gliding surface. Mount the adaptor and the Felt-Ring on top (Fig.8.2.7). Always use the original bolts. Do not push the V-ring down with fingers.


Figure 8.2.7

8.3 DISASSEMBLING AND MOUNTING TOOL HOLDER TO CHANGE BUFFERS AND ELASTIC ELEMENT

When the TOOL HOLDER is disassembled you can change defective parts – elastic element, buffers, etc.
Lift the locking pin (Fig.8.3.1) to dismount the retaining washer (Fig.8.3.2). Take out the screws on the buffers and the nuts of the elastic element (Fig.8.3.3; Fig.8.3.4). Remove the elastic element from the QC plate (Fig.8.3.5). While the holder is dismounted (Fig.8.3.6; Fig.8.3.7), clean the parts and replace the defective with new ones. Assemble the holder with new buffers, screws, and elastic element. Put the retaining washer (Fig.8.3.8) and push the locking pin (Fig.8.3.9). This will prevent the washer from falling while mounting the holder to the machine.


Figure 8.3.1


Figure 8.3.2


Figure 8.3.3

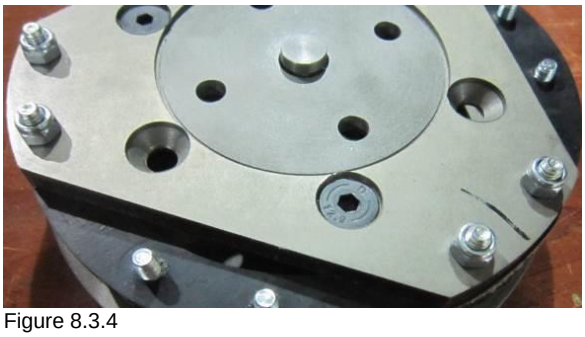


Figure 8.3.4


Figure 8.3.5


Figure 8.3.6


Figure 8.3.7


Figure 8.3.8


Figure 8.3.9

Mount the holder on the machine using the same socket as mentioned in 8.2 (Fig.8.3.10;Fig.8.3.11). The retaining washer fits into the central hole of adaptor and the four bolts into the thread holes. The holder is centered on the outside diameter of the adaptor. Ensure the connection of the holder on the forehead of the adaptor and then tight evenly the four bolts. Tightening force of the bolts has to be 22...25 N.m (16...18 lbf.ft). Mounting the holder without retaining washer (Fig.8.3.2) is **INADMISSIBLE** because the security system preventing the separation of part of the holder in case of broken buffers and elastic element will not function!
You can change the butterfly of the holder without dismounting the holder of the machine.


Figure 8.3.10

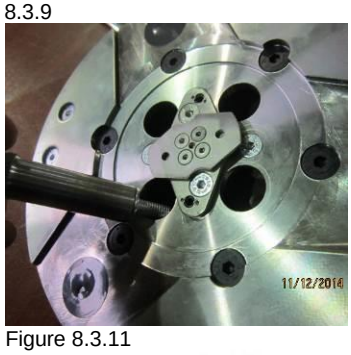


Figure 8.3.11

Fig.8.3.12 is 3-d section view of the holder, showing its parts. The numbering is the same as in Spare parts.

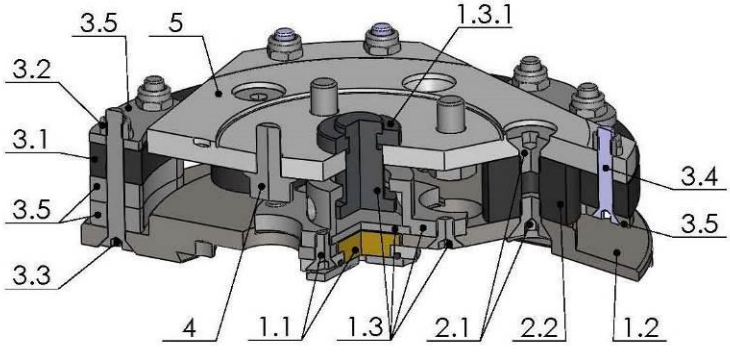


Figure 8.3.12

8.4 TENSIONING USED PLANETARY BELT

If the belt slips or breaks, separate the carriage from main head and disconnect the motor plug (Fig. 8.4.1), water hoses (Fig. 8.4.2) (Fig. 8.4.3), and vacuum tubes. Unscrew the four bolts (Fig.8.4.4) and remove top cover (Fig.8.4.5).

Figure 8.4.1

Figure 8.4.2

Figure 8.4.3

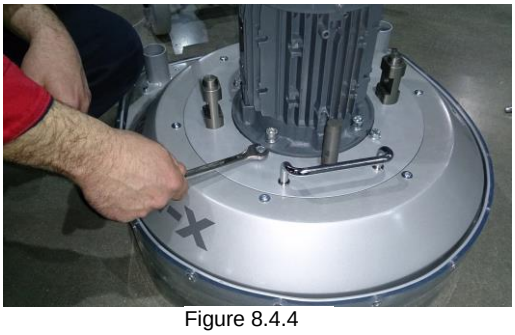


Figure 8.4.4

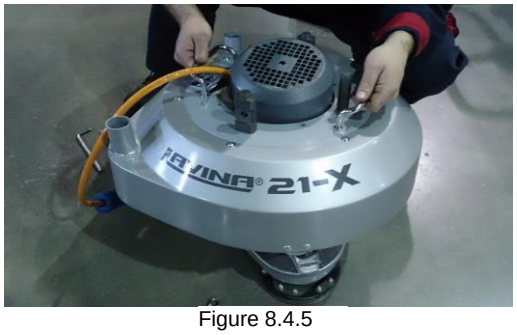


Figure 8.4.5

If the belt only slipped, it can be retightened. Slightly loosen the two bolts and the nut of the tensioner (Fig. 8.4.6)(Fig. 8.4.7)(Fig. 8.4.8). Unscrew the stop nut (Fig. 8.4.9). Correct the belt tension using the nut. Fig.8.4.10 shows how to measure the belt tension with an Optikrik I Device (Measuring range: 200-600 N) (Fig. 8.4.11). The tensioning force should be 250N.

Figure 8.4.6

Figure 8.4.7

Figure 8.4.8

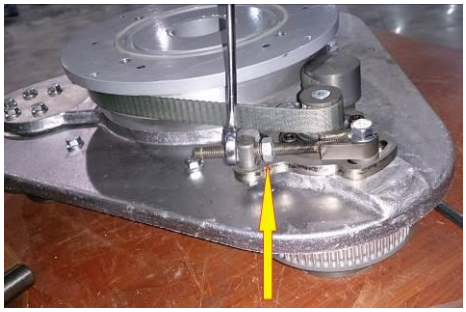


Figure 8.4.9

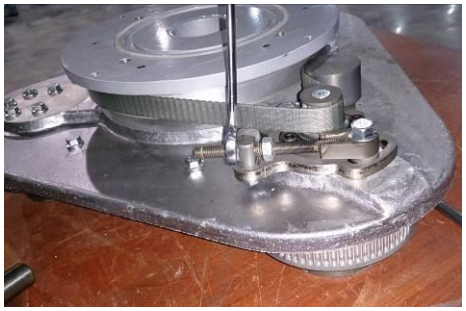


Figure 8.4.10

Figure 8.4.11

8.5 MOUNTING AND TENSIONING A NEW PLANETARY BELT

Unscrew the two bolts and the nut of the tensioner (Fig. 8.4.6)(Fig. 8.4.7)(Fig. 8.4.8). Unscrew the stop nut and turn the tensioner to loosen the belt (Fig. 8.4.9). Take off the old belt. Install the new belt (Fig. 8.5.1), and replace the bolts and nut o. Do not forget to lock the tensioner (Fig.8.4.10).

Figure 8.5.1

ATTENTION: NEVER "OVER" TENSION THE BELT, THE BELT WILL BE DAMAGED AND IT WILL NEVER RECOVER ITS ORIGINAL TENSION

8.6 TENSIONING AND REPLACING THE MAIN BELT

Figure 8.6.1

Figure 8.6.2

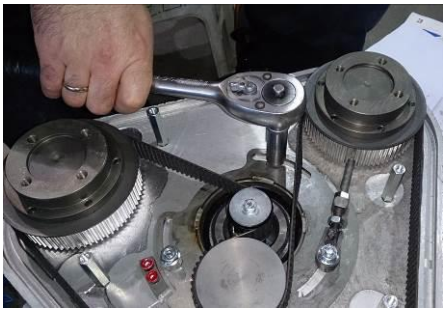


Figure 8.6.4

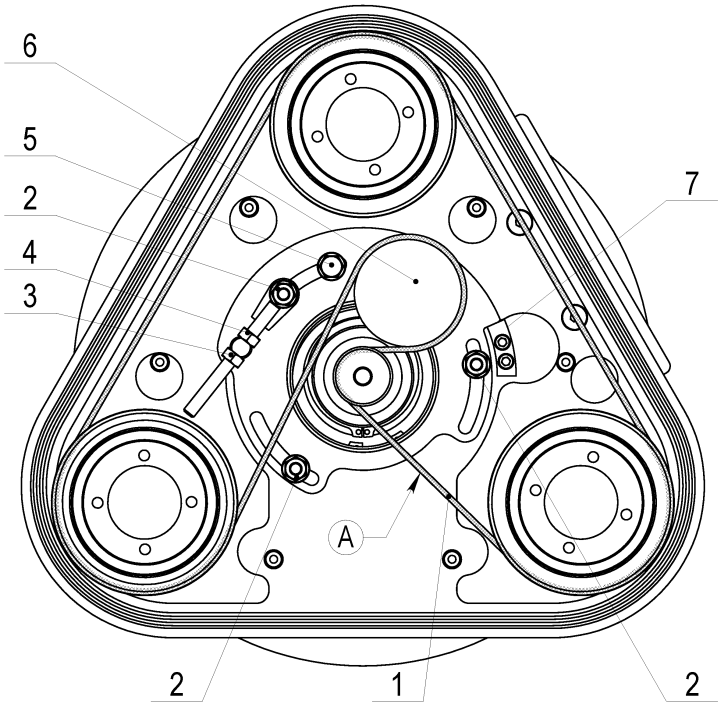


Figure 8.6.3

The transmission of the machine has one timing belt that rotates the three tools. To change the belt, remove all holders and adaptors. There will be sealing to remove as well. Carefully check any friction surfaces for wear, and replace if necessary. To remove the bottom cover, unscrew the bolts spaced around the edge of the cover (Fig.8.6.1). While changing belts, it is recommended to change all seals (O-Rings and seal around cover)

Fig.8.6.3 shows the scheme of the belt. To remove the belt (1), unscrew the bolt (5), the three nuts (2), and the nut (3) such that the tensioner (6) can be turned around the central axle. Clean the washers and surrounding area, and check all bearings of pulley units or tensioners for too much clearance or rolling noise). Rotating the tensioner will allow the central distance to be reduced in such a way that the timing belt may be fitted without force. Installation with the use of force is NOT permissible at any time as this can damage the high quality, low stretch tension cord and other components. This damage is often not visible. Put the belts in pos.1 as per the scheme, paying attention to their orientation and connection at every pulley. Loosen nuts (3) to the end of the bolt and fully loosen the nuts on the half-moon (2) (Fig. 8.6.4), allowing the rotation of

Figure 8.6.3 the tensioners with minimal force

Using nut (3) (Fig. 8.6.5), tighten the belt, verifying again the correct position of the belt, and the correct gearing in every pulley.

Rotate the gear while tensioning to allow regular tension distribution along the belt. Measure the tension using a Frequency Tension Tester (Optibelt 3 TT) (Fig. 8.6.6). Tension in span "A" of the belt should be 240-250Hz.

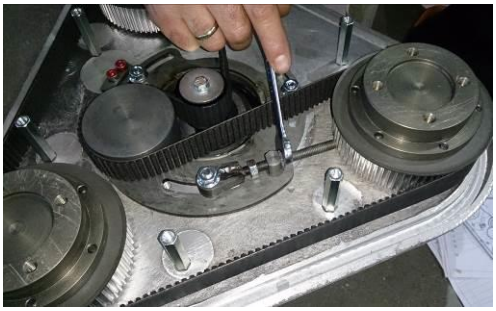


Figure 8.6.5

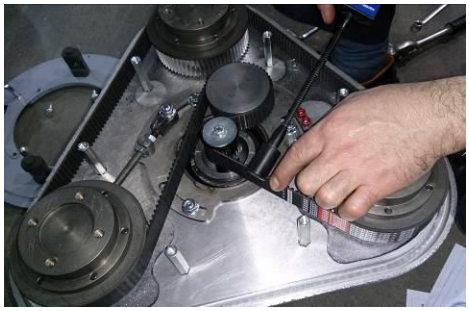


Figure 8.6.6

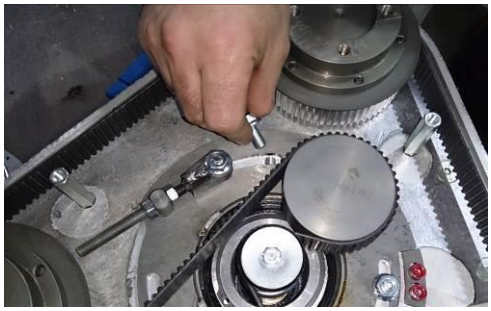


Figure 8.6.7

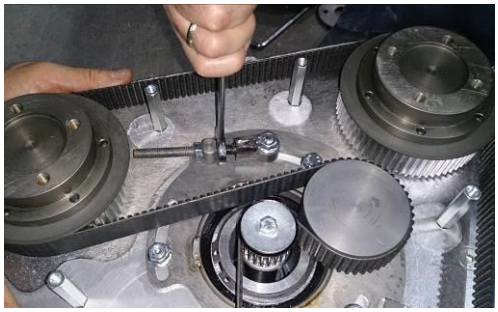


Figure 8.6.8

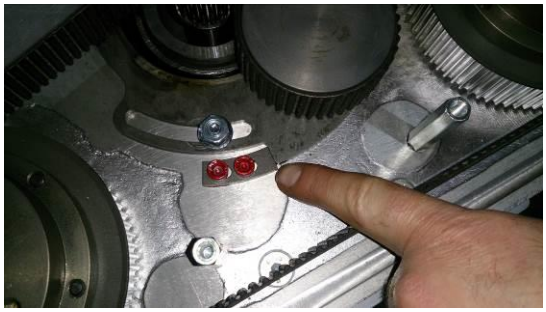


Figure 8.6.9

Tighten the three nuts (2) (Fig. 8.6.4), screw the bolt (5) (Fig. 8.6.7) and tighten the stopping nut (4) (Fig. 8.6.8). Measure again the tension of the belt to ensure nothing has changed (Fig. 8.6.6).

It is possible to use pre-installed support (Fig.8.6.3-7) (Fig.8.6.9) as a reference to stop the tensioner at the desired belt tension, provided that the supports have not been moved from their factory position.

ATTENTION: NEVER "OVER" TENSION THE BELT, THE BELT WILL BE DESTROYED AND IT WILL NEVER RECOVER ITS ORIGINAL TENSION

8.7 REPLACING THE PULLEY UNITS

Dismount guard, top cover, bottom cover and belts as previous described. Dismount the planetary tensioner. (Fig.8.7.1-1).

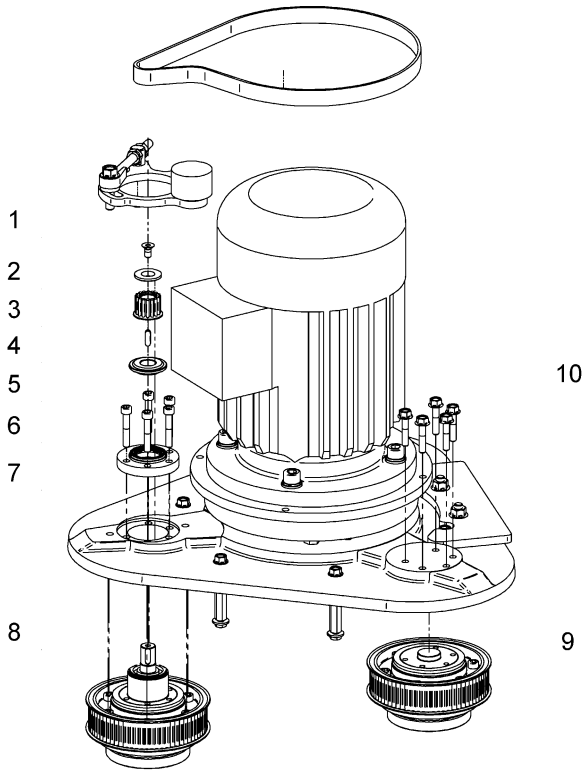


Figure 8.7.1

Unscrew the screw (2) and dismount the front washer (3), the drive pulley of the planetary belt (4), cotter (5) and security cap (6). Unscrew the five screws on (7) and dismount the driving pulley (8).

Unscrew the five bolts (10)(Fig.8.7.2) and dismount the other two units.

While mounting the pulley unit (8), apply lithium grease on the shaft and remount the cotter (5), security cap (6), front washer (3) and guiding washer of the planetary belt (4).

Tighten the screw (2) using the "blue" thread locking adhesive. Tightening force on the bolts should be 9...11N.m (6.6...8 lbf.ft).

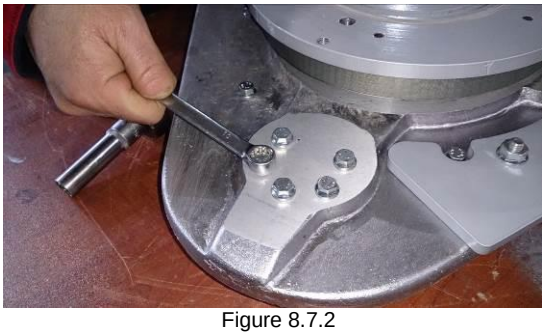


Figure 8.7.2

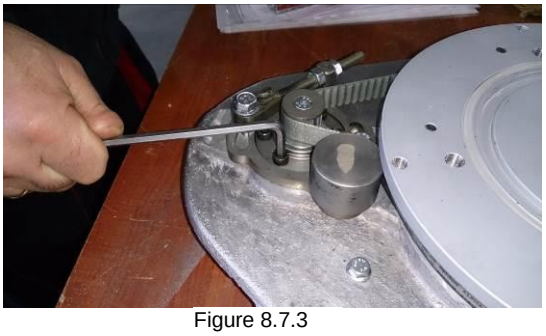


Figure 8.7.3

8.8 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®21X

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

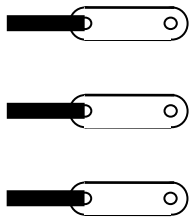
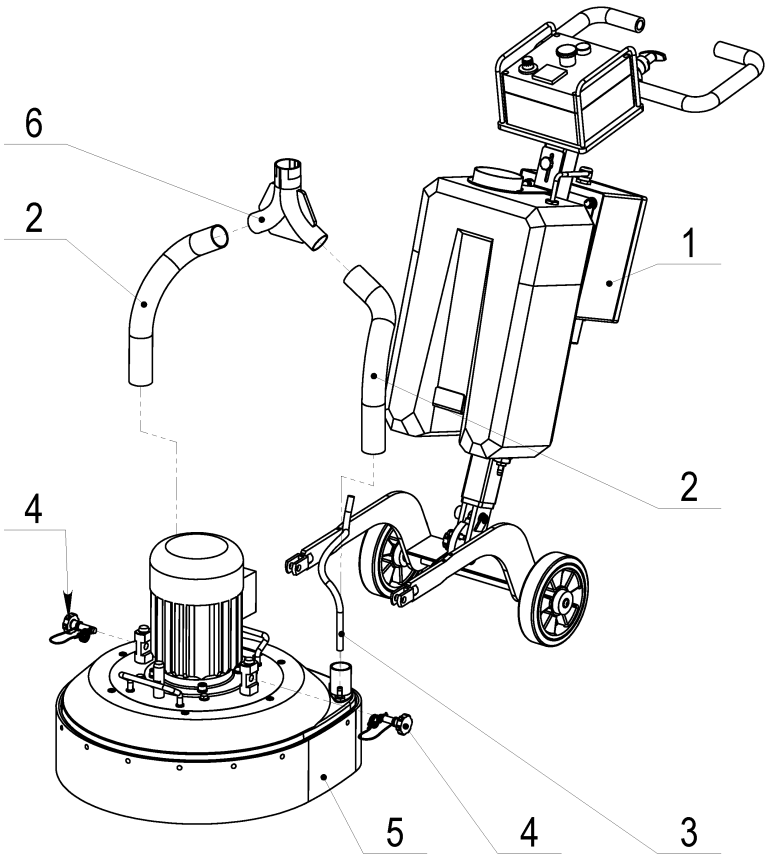
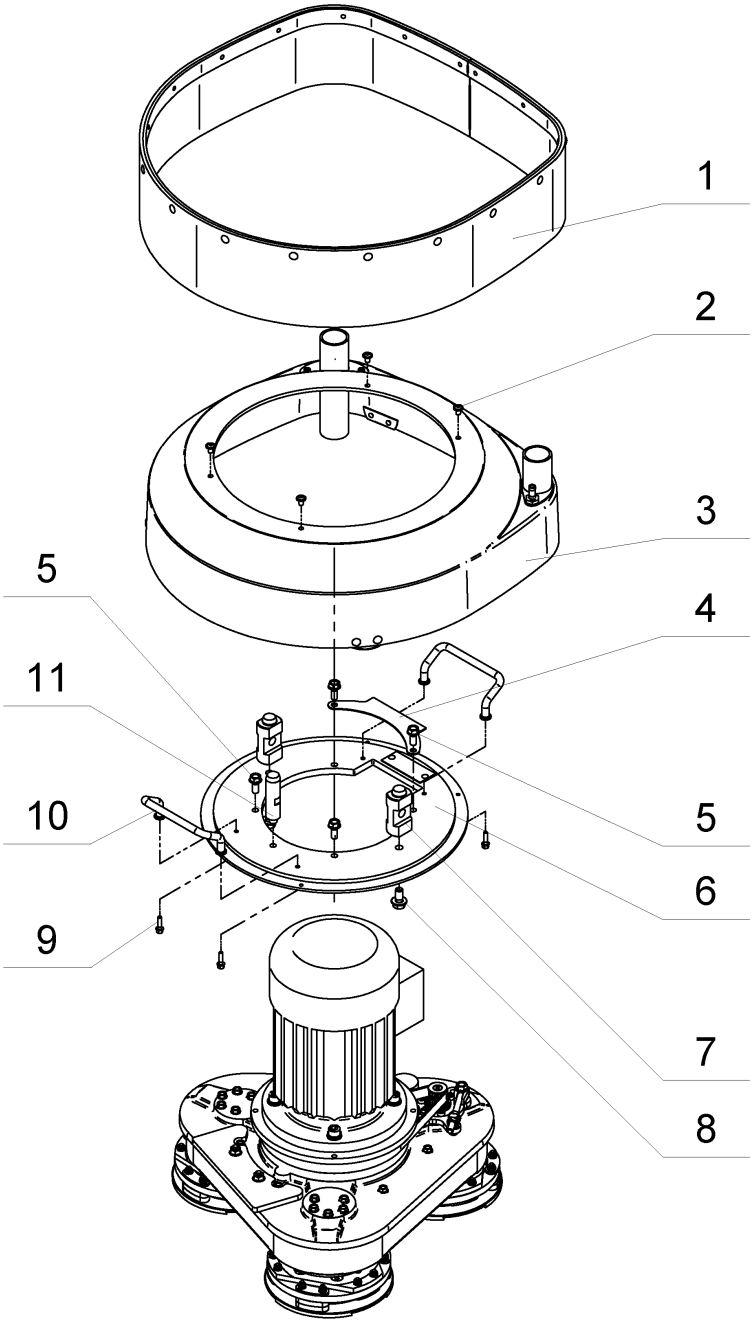


Figure 8.8

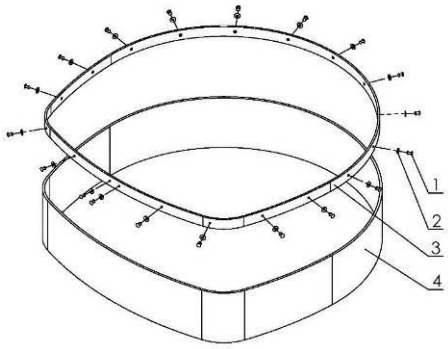
9. SPARE PARTS



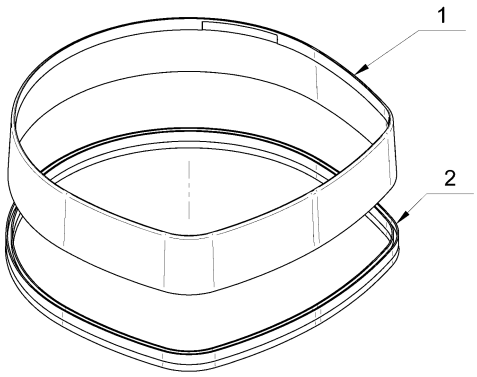
1. LAVINA®21-X GENERAL PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	L21X-20.00.00	Carriage	1
2	D40L430-K	VACUUM HOSE PU ANT WITH TWO CLAMPS	2
2.1	D40L430	Vacuum Hose	2
2.2	SB44-47	Clamp for Vacuum Hose	4
3	MAR8.380	Tube	1
4	L21-40.00.00	Pin Assembly	2
5	L21X-10.00.00	Main Head	1
6	L16P-00.00.00.01	Three-Way Air Duct	1



2. LAVINA®21-X TOP COVER PARTS 1			
No.	**Item No.**	**Description**	**Pcs.**
1	L20SPS-05.00.00.00	Guard Assembly	1
1**	L20X-05.00.00	Guard Assembly	1
2	M6X10ISO7380F	Screw	4
3	L20X-19.00.00	Top Cover	1
4	L21X-16.00.02	Cover	1
5	M8X20DIN6921	Bolt	4
6	L21X-16.00.01	Outer Ring	1
7	L21X-16.00.03	Carrier	2
8	M10X20DIN6921	Bolt	2
9	M5X20DIN6921	Bolt	4
10	GN 425.1-10-120-CR	Handle	2
11	L21-10.00.11	Weight Holder	1
** for machines after Serial No 1710L21X1690 and bigger .			

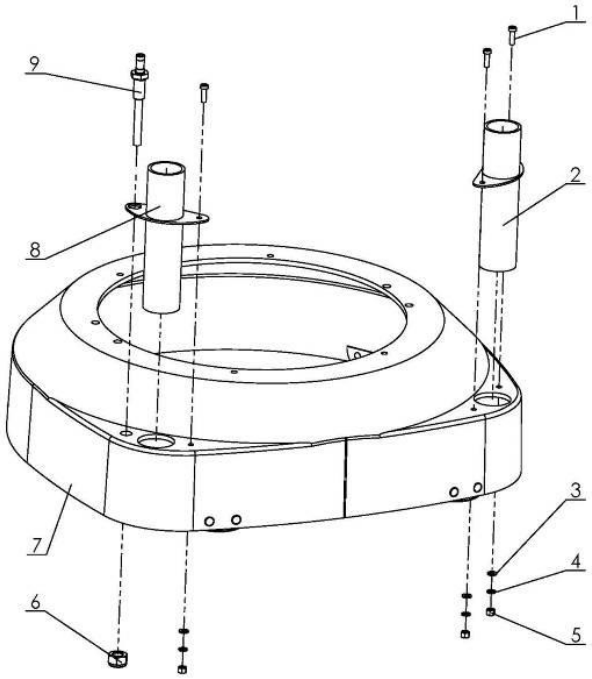


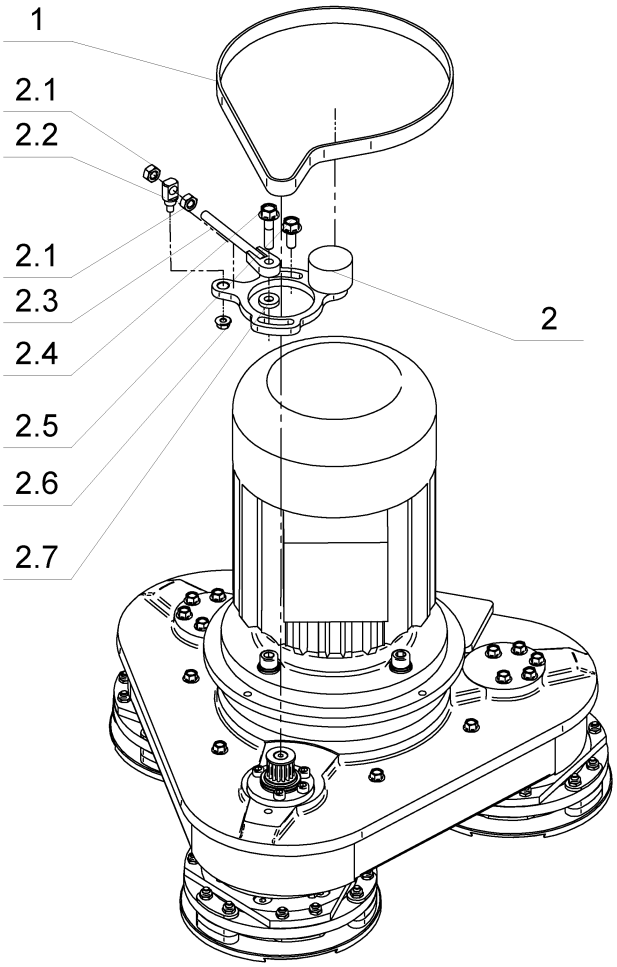
3. LAVINA®21-X GUARD PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	D4X10DIN7337	Rivet	18
2	M4DIN9021A	Washer	18
3	L20SPS-05.00.00.01	Ring	1
4	L20SPS-05.00.00.02	Guard	1



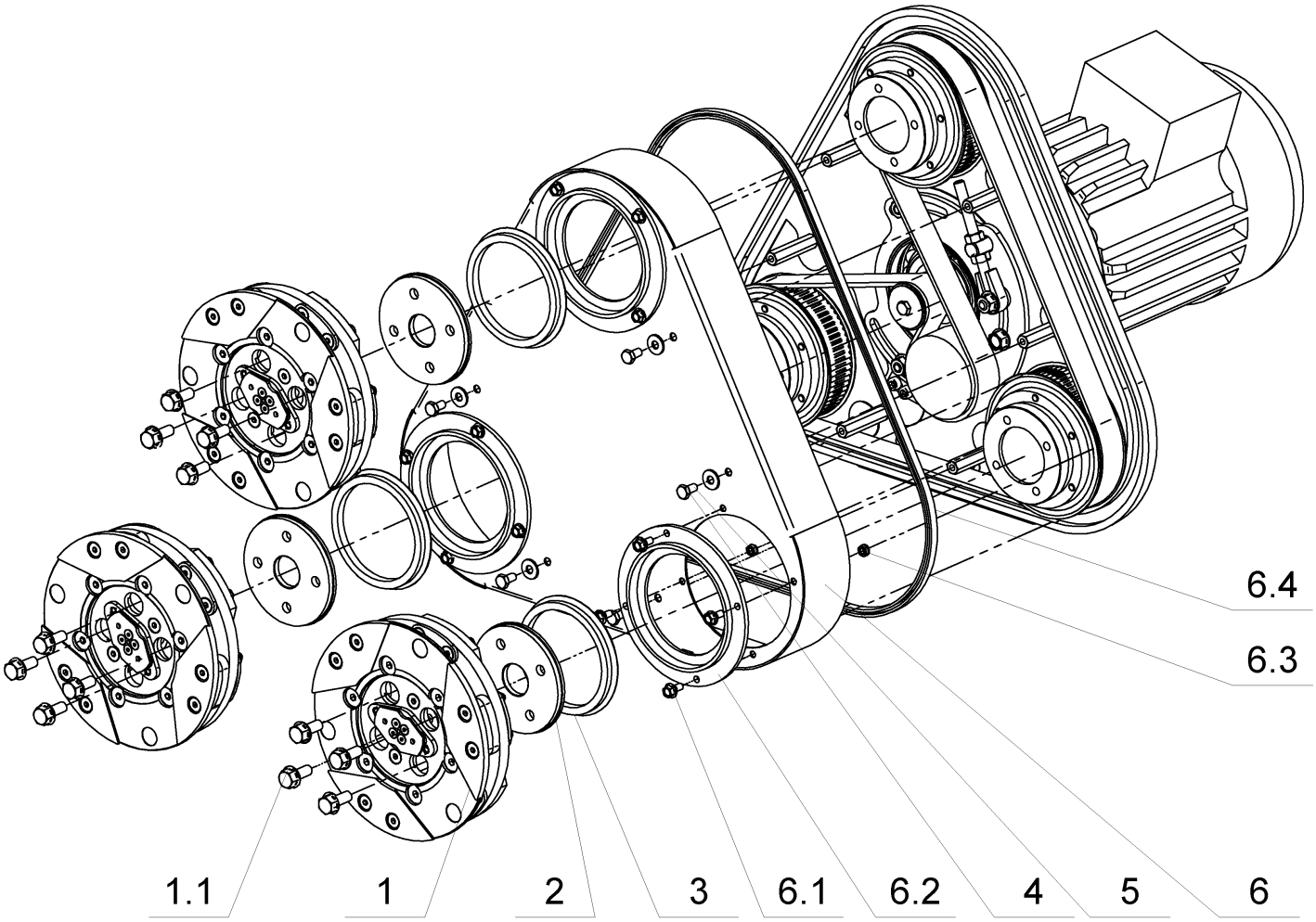
3. LAVINA®21-X GUARD PARTS / for machines after Serial No 1710L21X1690 /			
No.	**Item No.**	**Description**	**Pcs.**
1	L20X-05.00.00.01	Guard	1
2	FBL1350-1838	Brush	1

4. LAVINA®21-X TOP COVER PARTS 2			
No.	**Item No.**	**Description**	**Pcs.**
1	M5X16DIN84A	Screw	3
2	L25SPS-04.01.00.00	Vacuum Port	1
4	M5DIN127B	Spring Washer	3
3	M5DIN125A	Washer	3
5	M5DIN934	Nut	3
6	M12DIN985	Nut	1
7	L20X-19.00.01	Top Cover	1
8	L25GS-19.10.00	Vacuum Port	1
9	L21X-15.01.00	Water Fitting	1

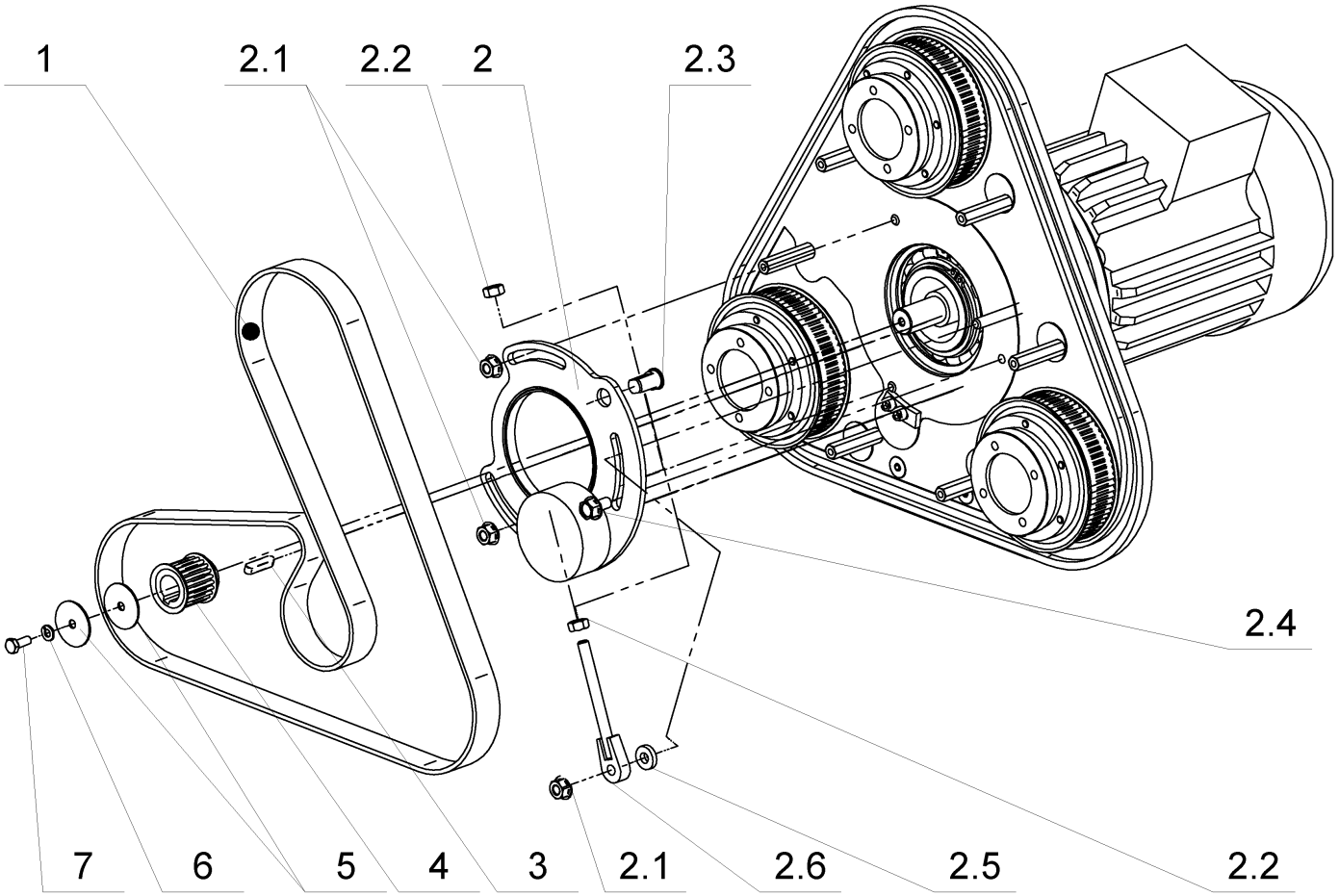




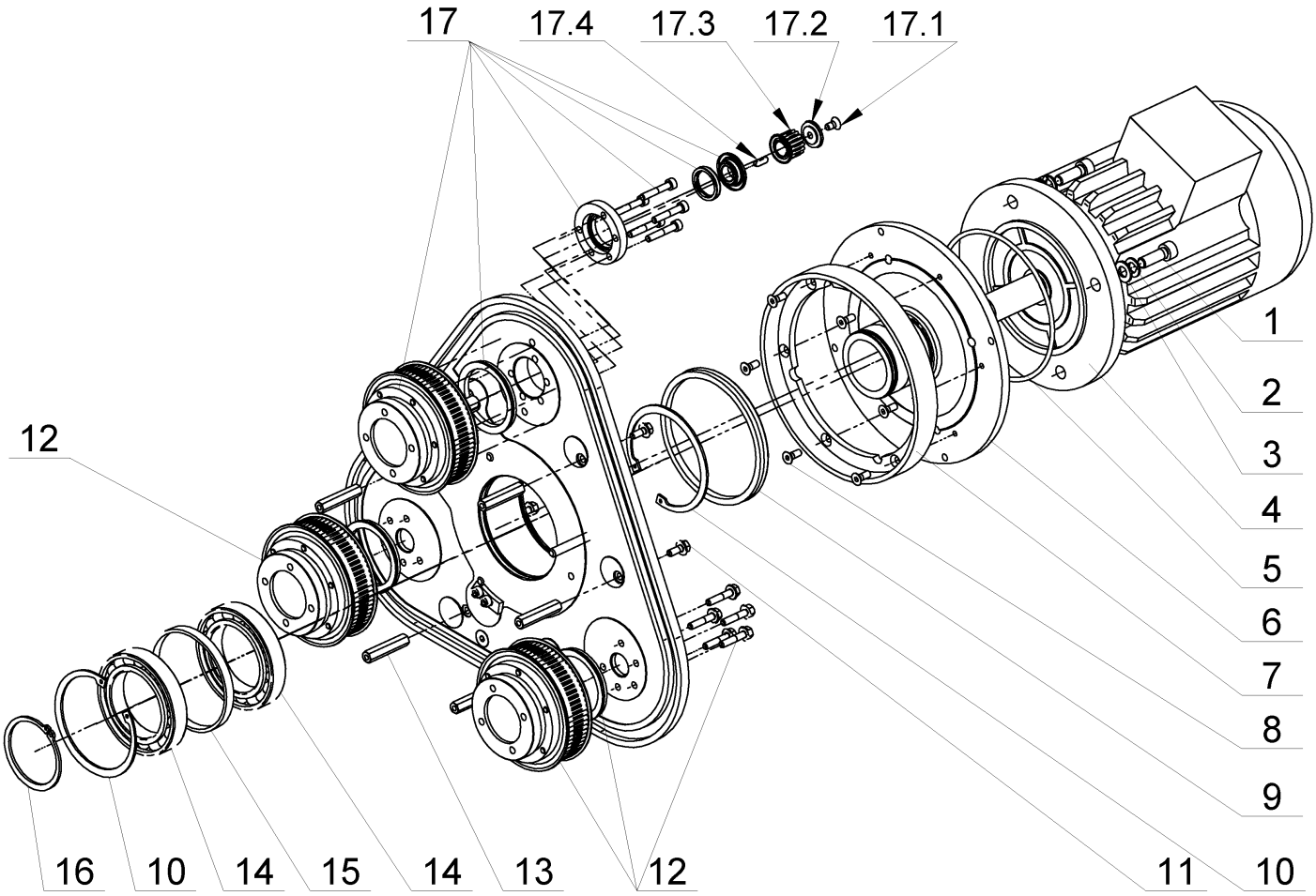
5. LAVINA®21-X PLANETARY DRIVE PARTS				
No.		Item No.	Description	Pcs.
1		750-AT5-16	Endless Transmission Belt	1
2		L21X-18.00.00	Planetary Tensioning Unit	1
	2.1	M8DIN934	Nut	2
	2.2	L21X-18.00.02	Pin	1
	2.3	L21X-17.30.00	Support	1
	2.4	M8X35DIN6921	Bolt	1
	2.5	M8X20DIN6921	Bolt	1
	2.6	M6DIN6923	Nut	1
	2.7	L21X-17.00.02	Plain Washer	1



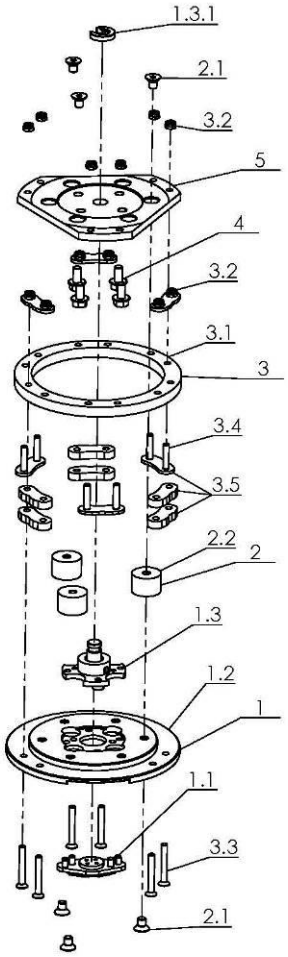
6. LAVINA®21-X BOTTOM COVER PARTS				
No.	**Item No.**		**Description**	**Pcs.**
1		A44.00.00	Tool Holder A44	3
	1.1	M8X20DIN6921	Bolt	12
2		A42.04.01	Adaptor	3
3		TWVA00800	V-Ring Type A	3
4		M6X12DIN933	Bolt	6
5		M6 /Zn/UN9440	Washer	6
6		L21X-13.00.00	Bottom Cover	1
	6.1	M5X12DIN6921	Bolt	12
	6.2	L21X-13.00.02	Flange	3
	6.3	M5DIN 985	Nut	12
	6.4	7X6X1280	Seal	1



7. LAVINA®21-X TRANSMISSION BELT PARTS				
No.	**Item No.**		**Description**	**Pcs.**
1		OMEGAHP15955MHP25	Endless Transmission Belt	1
2		L21X-17.00.00	Tensioning Support	1
	2.1	M8DIN6923	Nut	2
	2.2	M8DIN934	Nut	2
	2.3	L21X-17.00.01	Pin	1
	2.4	M8X16DIN6921	Bolt	1
	2.5	L21X-17.00.02	Plain Washer	1
	2.6	L21X-17.30.00	Support	1
3		DIN6885A6X6X28	Key	1
4		L21X-10.00.02	Central Pulley	1
5		M6X35X1.4	Washer	2
6		M6DIN128	Spring Washer	1
7		M6X16DIN933	Bolt	1

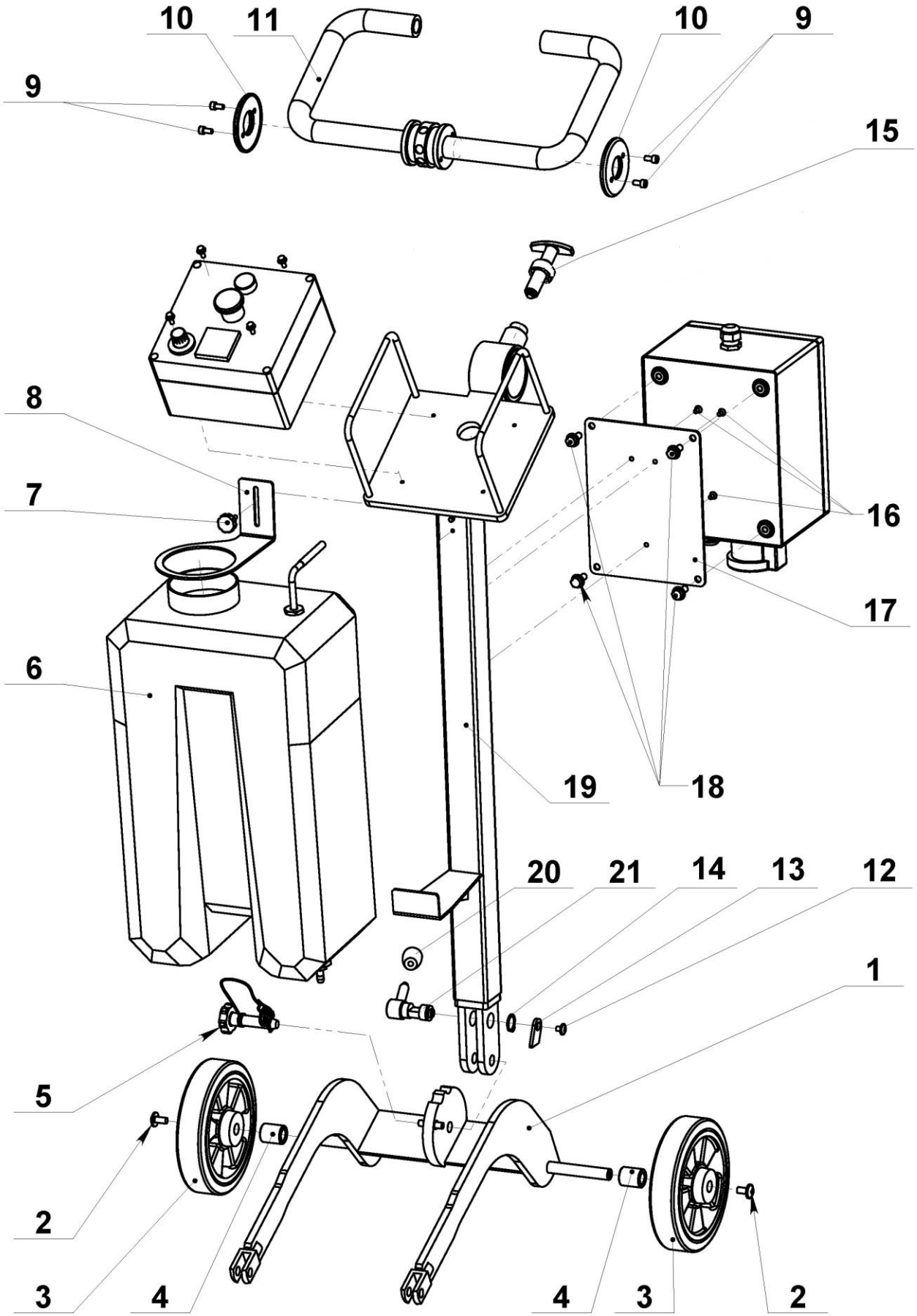


8. LAVINA®21-X PULLEY UNIT PARTS							
No.	**Item No.**	**Description**	**Pcs.**	**No.**	**Item No.**	**Description**	**Pcs.**
1	M10X30DIN912	Screw	4	13	UN3319E26395	Distance Screw	6
2	M10DIN128A	Washer	4	14	6013	Roller Assembly	2
3	M10DIN125A	Washer	4	15	L25SPS-00.00.00.34	Distance Ring	1
4	S216	Electro Motor	1	16	B65DIN471	Retaining Ring	1
5	D4X2X455	Seal	1	17	L21X-11.00.00	Pulley Unit Assembly	1
6	L21X-14.10.00	Base plate	1	17.1	M6X12DIN7991	Screw	1
7	L16S-15.00.05	Planetary Pulley	1	17.2	L21X-11.00.07	Cap	1
8	M6X16DIN7991	Screw	6	17.3	L20X-16.00.15	Driving pulley	1
9	TWVA01200	V-Ring Type A	1	17.4	DIN6885A5X3X16	Key	1
10	A10013943	Retaining Ring	2				
11	M6X16DIN6921	Bolt	6				
12	L21X-12.00.00	Pulley Unit Assembly	2				



9. LAVINA® 21-X TOOL HOLDER PARTS /SEE ALSO FIG.8.3.12/			
No.	**Item No.**	**Description**	**Pcs.**
1	A40.10.00	Quick Change Assembly	1
1.1	A31.12.00	Keylock Set	1
1.2	A40.11.00	Quick Change plate	1
1.3	A41.12.00	Security set	1
1.3.1	A41.00.05	Washer A41	1
2	A25.00.10-K	Buffer with two screw	3
2.1	M8X12DIN7991	Screw	6
2.2	A25.00.10	Buffer	3
3	A40.20.00 K	Driving Set	1
3.1	A40.20.02	Elastic Element	1
3.2	M6DIN985	Self Locking Nut	12
3.3	M6X45DIN7991	Screw	6
3.4	M6X30DIN7991	Screw	6
3.5	A40.21.00	Set of plates	1
4	M8x20DIN6921	Bolt	4
5	A40.20.01	Flange	1

10. LAVINA®21-X CARRIAGE PARTS							
No.	**Item No.**	**Description**	**Pcs.**	**No.**	**Item No.**	**Description**	**Pcs.**
1	L21X-21.00.00	Carriage	1	12	M6X10ISO7380F	Screw	1
2	M8X12ISO7380F	Screw	2	13	L21-20.00.03	Stopper	1
3	180X40	Wheel	2	14	B20DIN471	Retaining Ring	1
4	L21X-20.00.05	Bush	2	15	L20X-23.00.06-K	Locking bit	1
5	L25SPS-07.03.00.00	Pin Assembly	1	16	M5X10DIN7991	Screw	3
6	L21-25.00.00	Tank	1	17	L21S-1.5-27.00.01	Plate	1
7	T34391	Knob Bolt	1	18	M8X20DIN6921	Bolt	4
8	L21-20.00.09	Top Bracket	1	19	L21X-22.00.00	Frame	1
9	M6X12DIN912	Screw	4	20	BO751-107-25M08	Knob	1
10	L20-X-20.00.02	End Cover	2	21	L21-24.00.00	Positioning Handle	1
11	L20X-23.10.00	Handle Assembly	1				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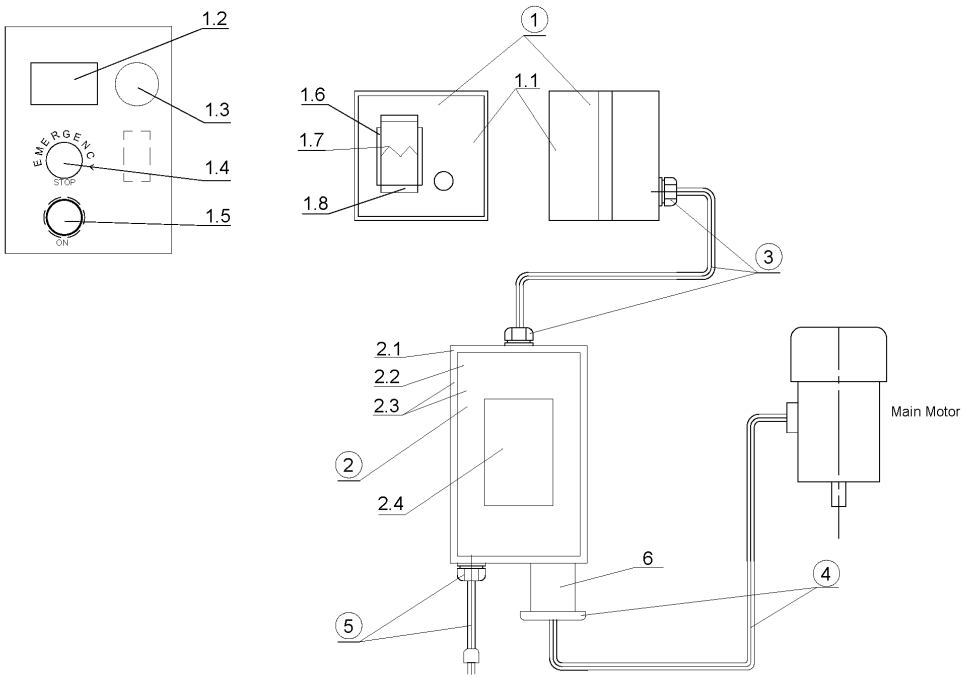
11. LAVINA® 21-X ELECTRICAL BOX PARTS 100-120 VOLT

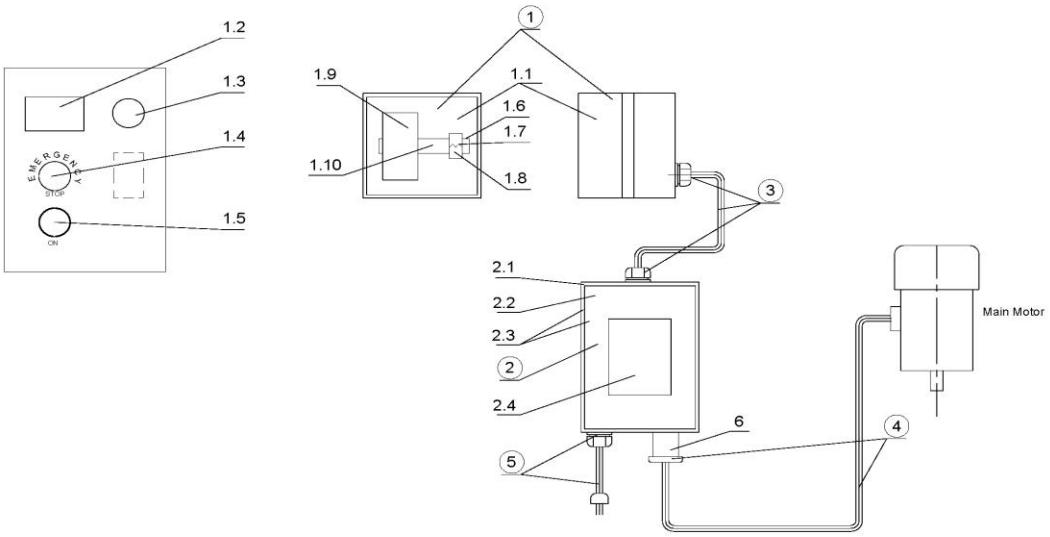
1.8kW 100-120V



No.	Item No.	Description	Pcs.
1	L21S-1,5-26.00.00	Control Box Assembly	1
1.1	L21S-1,5-26.00.01	Control Box/only/	1
1.2	L21X-30.00.01	Hour Meter 110V	1
1.3	L20NS-30.10.04	Potentiometer	1
1.4	L20NS-30.10.10	Emergency Stop Button	1
1.5	L21X-30.00.04	Button With Cap	1
1.6	L20NS-30.11.04	Relay Base	1
1.7	L20NS-30.11.06	Relay Bracket	1
1.8	L21X-30.00.02	Relay 110V	1
2	L21S-1,5-27.10.00	Electrical Box with cables	1
2.1	L21S-1,5-27.10.01	Electrical Box/only/	1
2.2	L21S-1,5-27.10.02	Mounting plate	1
2.3	L21S-1,5-27.10.10	Electrical Box with plate	1
2.4	L21X-30.20.17	Inverter	1
3	L21X-30.10.00	Cable and Gland	1
4	L21X-30.20.10	Socket –plug kit	1
5	L21X-30.30.00	Cable and Plug	1
6	L20S-30.10.03	Panel socket	1

11. LAVINA® 21-X ELECTRICAL BOX PARTS 100-120 VOLT FOR GFCI OUTLET

*** for machines after Serial No 1806L21X1871 and bigger



No.	Item No.	Description	Pcs.
1	L21X-26.00.00	Control Box Assembly	1
1.1	L21S-1,5-26.00.01	Control Box/only/	1
1.2	L21X-30.00.01	Hour Meter 110V	1
1.3	L20NS-30.10.04	Potentiometer	1
1.4	L20NS-30.10.10	Emergency Stop Button	1
1.5	L21X-30.00.05	Button ON/OF	1
1.6	L20NS-30.11.04	Relay Base	1
1.7	L20NS-30.11.06	Relay Bracket	1
1.8	L21X-30.00.02	Relay 110V	1
1.9	L21X-30.00.09	Contactor	1
1.10	L21X-30.00.10	Terminal	1
2	L21S-1,5-27.10.00	Electrical Box with cables	1
2.1	L21S-1,5-27.10.01	Electrical Box/only/	1
2.2	L21S-1,5-27.10.02	Mounting plate	1
2.3	L21S-1,5-27.10.10	Electrical Box with plate	1
2.4	L21X-30.20.17	Inverter	1
3	L21X-30.10.00-1	Cable and Gland	1
4	L21X-30.20.10	Socket –plug kit	1
5	L21X-30.30.00	Cable and Plug	1
6	L20S-30.10.03	Panel socket	1