

LAVINA®



LAVINA® 16-X-E User Manual



 **SUPERABRASIVE**

www.superabrasive.com / factory@superabrasive.com

CE

Contents

1. GENERAL INFORMATION	3	Tool holder key.....	9
Manufacturer	3	Foam Plate	9
General Description.....	3	SECURITY PLATE FOR QUICKCHANGE PADS	9
Machine characteristics	3	6. POPULAR TOOLS.....	10
Lavina® 16-X-E Main design	3	RECOMMENDED TOOLS	10
Electrical Connection	3	7. MAINTENANCE AND INSPECTION	11
Vacuum Connection	3	Cleaning.....	11
Technical Data	4	CHECK DAILY	11
CE-Certification	4	Check Every 200 Working Hours.....	11
Vibrations.....	4	Check Every 400 Working Hours.....	11
Noise Emissions.....	4	Vacuum	11
Label Data	4	Water Leaks	11
Customer Service	4	Mechanical Parts	11
2. SAFETY INSTRUCTIONS	4	Electrical System.....	11
Recommended Use	4	ONE phase connection	11
Prohibited Use	4	Electrical System.....	12
Preparation for work.....	4	Lavina® 16-X-E Electrical schemes with Yaskawa Inverter	12
Protection Devices	4	Lavina® 16-X-E Electrical schemes Yaskawa.....	12
Arrest Functions.....	5	Connection Main Circuit Terminals.....	12
Safe Use	5	8. TROUBLESHOOTING	13
Residual Risks.....	5	Index of Problems and Solutions	13
Before You Begin.....	5	8.1 Replacing Power Cord and Plugs.....	13
Operating Machine	5	8.2 DISMOUNTING AND MOUNTING TOOL HOLDER TO	
After Work is completed.....	5	CHANGING SEALERS	13
The Work Area	5	8.3 DISASSEMBLING AND MOUNTING TOOL HOLDER TO	
PERSONAL PROTECTIVE Equipment (ppe)	5	CHANGE BUFFERS AND ELASTIC ELEMENT.....	13
Operator	5	Fig.8.3.13 is a 3-D section view of the holder, showing its	
3. HANDLING AND TRANSPORTATION	6	parts. The numbering is the same as in spare parts.....	14
Preparing the machine for transportation.....	6	8.4 ACCESSING THE PLANETARY BELT	15
Adjusting the HANDLE.....	6	8.5 Tensioning used planetary Belt.....	15
Storage.....	6	8.6 Mounting and tensioning a new planetary belt.....	15
4. OPERATION	7	8.7 Replacing Belt and Pulley units.....	16
Preliminary Controls	7	8.7.1 Replacement of the pulley unitS.....	17
Adjusting and Mounting Tools.....	7	8.7.2 mounting the belt.....	17
the Control PANEL	7	8.8 MOTOR CONNECTION	17
Starting the Machine	8	8.9 Fault diagnosis Inverter YASKAWA V1000	18
Operating the Machine	8	9. WARRANTY AND RETURNS	21
Stopping the Machine.....	8	10. DISPOSAL	21
Alarm	8	11. MANUFACTURER'S CONTACTS	21
POWER LOSS LED	8	12. SPARE PARTS	22
5. TOOLS AND ACCESSORIES	9	ASSEMBLY AND PARTS SPECIFICATIONS	22
Weights	9	6. LAVINA®16-X-E Tool Holder Parts/see also fig.8.3.13/	23
Belt replacing tool	9	CONTROL BOX 208-240 VOLT.....	25
		ELECTRICAL BOX 208-240 VOLT.....	26

1. GENERAL INFORMATION

This owner's manual is intended for the operator of the Lavina® 16-X-E machine, the servicing technician and anyone else 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® 16-X-E 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® 16-X-E 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® 16-X-E is a three-disc machine, which can be used for wet and dry applications.

For best results, use only tools manufactured or recommended by Superabrasive and its distributors.

WARNING

The Lavina® 16-X-E 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® 16-X-E is made of two main component sections:



Figure 1.1

located on the bottom of the box.

LAVINA® 16-X-E MAIN DESIGN

- **The two main component sections** are 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 (fig.1.2)
- **The electrical box** (fig.1.1) contains the electric switches and the inverter. The motor feeding cable and the main feeding cable are plugged in the socket located on the bottom of the box.
- **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** is mounted on the base plate and drives the three heads with a belt system. The planetary head is driven by a second flat belt.



Figure 1.2

ENVIRONMENTAL CONDITIONS

The temperature range for operating the Lavina® 16-X-E outdoors is between 41°F and 86°F or 5°C and 30°C. Never use the Lavina® 16-X-E 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® 16-X-E 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 40 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.

	Lavina® 16-X-E	
Voltage/Hz	1 ph x 200-240 V 50/60Hz	
Amperage	Max 12 Amps	
Power	2,2 kW	3 hp
Tool holder rpm	300-1100 rpm	
Working width	417 mm	16.4"
Tool diameter(QC Plate)	3 x 178 mm	3 x 7"
Weight	105 kg	231 lbs
Grinding pressure	65kg	143 lbs
Additional weight	max 1x10 kg	22 lbs
Application	wet and dry	
Vacuum hose port	yes	
Water tank capacity	20 l	5.2 gal
Water feed	Peripheral	
Cable length	17.4 m	57 ft
Machine LxWxH	1160x430x1070 mm	45.7"x16.9" x42"
Packing LxWxH	1150x730x1155 mm	45.2"x28.7"x45.5"

CE-CERTIFICATION

The Lavina® X-E machine is designed to operate correctly in an electromagnetic atmosphere of industrial type and is equipped with all the mechanical and electrical safety protections in conformity with the following European CEE rules and regulations:

The Lavina® X-E machine complies with the Safety Directive for machines 2006/42/EC, the EMC Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC.

Also complies with the norms in use BDS EN ISO 12100-1, BDS EN ISO 12100-2, BDS EN 13862, BDS EN ISO 13857, BDS EN 349, BDS EN ISO 13850, BDS EN 13732-1, BDS EN 953, BDS EN ISO 13849-1, BDS EN 1037, BDS EN 1837, BDS EN ISO 11201, BDS EN ISO

3744:2010, BDS EN 1033:2002, BDS EN ISO 14121-1, BDS EN 60204-2, BDS EN 61000-6-4

Test results are a part of the machine's technical information and can be sent upon a special request. The machine is delivered with the CE mark exposed and provided with a EC declaration of conformity.

VIBRATIONS

The vibrations of the machine are within the limits of directives and harmonized standards from the European Union when the Lavina® 16-X-E 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® 16-X-E 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 contact your local distributor or contact the producer Superabrasive Ltd. or visit us at www.superabrasive.com, where you can download a copy of this manual.

2. SAFETY INSTRUCTIONS

RECOMMENDED USE



WARNING

The Lavina® 16-X-E 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.

PROHIBITED USE

The machine **MUST NOT** be used:



WARNING

- 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.

PREPARATION FOR WORK

Make sure that:



WARNING

- 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®16-X-E 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
 - Entanglement 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

- When operating the Lavina® 16-X-E, 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. **WARNING**
- 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. **WARNING**

THE WORK AREA

- 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 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 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

PREPARING THE MACHINE FOR TRANSPORTATION



Figure 3.1



Figure 3.2



Figure 3.3



Figure 3.4



Figure 3.5

Unplug the motor cable plug from the control box and disconnect the water hose from the main head by pulling it out (Fig. 3.1). Wind the electrical cable on the carriage (Fig. 3.2). Pull out the vacuum hoses (Fig. 3.3).

Release the pin sets (Fig. 3.4) attaching the head to the carriage and dismount the head from the carriage (Fig. 3.5).

The head of the Lavina® 16-X-E has one bar and a support used as handles intended for easy moving and transportation.

The Lavina® 16-X-E is engineered with easy transportation in mind. The ability to dismantle the machine in two parts allows for convenient transportation and storage (Fig.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.3.6) and move the frame. A loaded spring will return the pin and lock the handle in any of several positions (fig.3.7).** Choose the vertical position to easily move the machine.



Figure 3.5



Figure 3.6

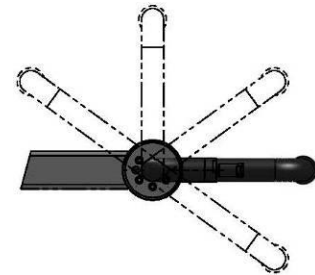


Figure 3.7

STORAGE

Always store and transport the Lavina® 16-X-E in a dry place. Never transport the Lavina® 16-X-E 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® 16-X-E.

ADJUSTING AND MOUNTING TOOLS

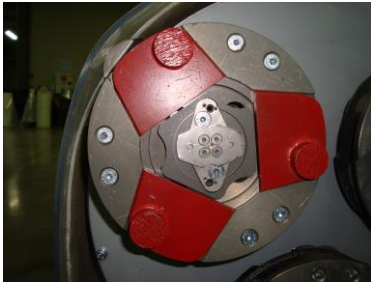


Figure 4.1

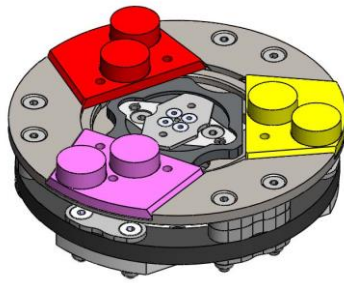


Figure 4.2



Figure 4.3

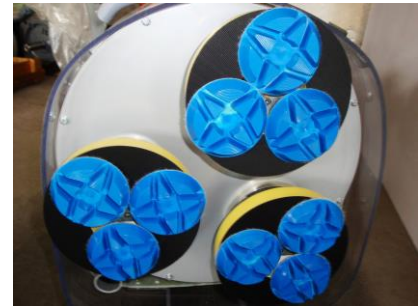


Figure 4.4

Mount the tools only after ensuring that there is enough diamond bond material left. Be sure that the plates are always clean before mounting (Fig.4.1).

WARNING: Always secure the "Quickchange" pads with the security plate (Fig.4.2), lock with the tool holder key (Fig.4.3). Diamond tools with Velcro are attached on three 7-inch foam plates. The foam plates are mounted on the key lock (butterfly). Always use the tool holder key (Fig.4.4).

THE CONTROL PANEL

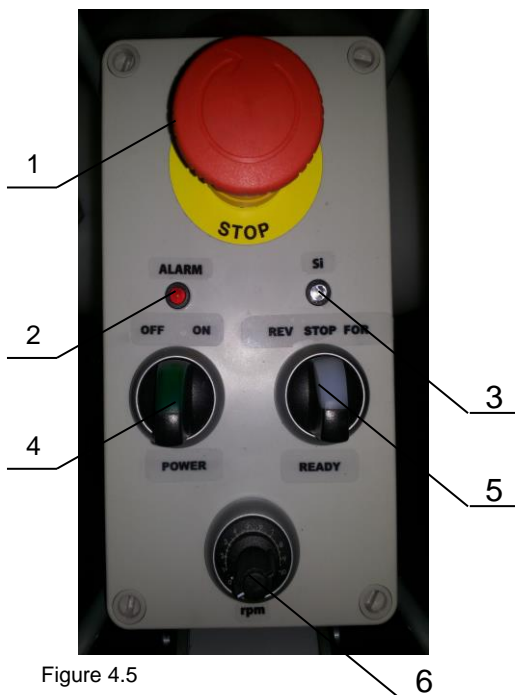


Figure 4.5

1. **Emergency button** used to stop the motor in case of emergency or disconnect fully from power
2. **Inverter alarm led** lights up if inverter is in alarm mode (see Alarm)
3. **Power loss led** Lights on loss of power connection (see Power loss)
4. **ON/ OFF – LED** starts/stops the motor, lights green when the power is on
5. **Forward/Reverse switch** choose forward for clockwise rotation of the grinding plates or reverse for counter-clockwise rotation of the grinding plates
6. **Potentiometer** controls the speed of the grinding plates on a range of 300-1100 rpm

STARTING THE MACHINE

Connect the machine to the power supply. Be sure the supply voltage corresponds to the voltage written on the plate of the machine. The ON/OFF switch will light green. Turn the switch to ON. The switch button Forward/Reverse Switch will light to indicate that it is ready, and the machine can be worked.

The Forward/Reverse Switch controls the direction of the tools. The switch should be set to forward, such that the motor turns in counterclockwise direction (there is a symbol showing it on the motor cover).

OPERATING THE MACHINE

Guide the 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 their 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, periodically open the water tank to release water to the working surface. When working dry, check the floor surface periodically for dust accumulation. Check regularly to see 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 the motor comes to rest, as the tools could damage the surface.

To stop the machine:

1. Move the Forward/Reverse Switch to STOP
2. Turn the On/Off Switch to OFF
3. Press the Emergency Stop to dsconnect the power.

ALARM

The Alarm led (2) will light if the inverter is in alarm mode. The most common failure is motor overload. To reset the alarm mode, disconnect the machine from the power supply.

POWER LOSS LED

When the machine stops working and the power loss led (3) flashes means that the power connection is disconnected.

5. TOOLS AND ACCESSORIES

WEIGHTS

Superabrasive offers additional weights used to increase the productivity of the machine (Fig.5.1). Each additional weight weighs about 21 lbs or 9,8 kg. Each individual application, type and condition of surface, power capacity of the outlet, etc. will determine the number of weights you can use without tripping a breaker. The weight stacks on to three posts around the outer bowl (Fig.5.2).



Figure 5.1



Figure 5.2

The additional weight depends on the tools; it is not always possible to add weight. Some tools work too aggressively and can cause the machine to stop.

The weight can be ordered with item number L16-12.00.00.00

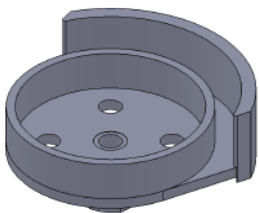


Figure 5.3

BELT REPLACING TOOL

You need the belt replacing (fig.5.3) tool when you want to replace the belt.

Detailed instructions can be found in Troubleshooting

This tool can be ordered with number L16P-11.00.00.00

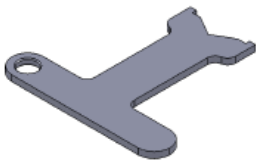


Figure 5.4

TOOL HOLDER KEY

The tool holder key (Fig. 5.4) is used for adjusting, mounting and dismounting of the tools. Always use the key for mounting. Item number is A03.00.00.00

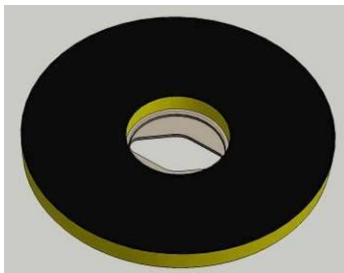


Figure 5.5

FOAM PLATE

Diamond tools with Velcro are mounted on the foam plate 7"(Fig.5.5). The foam plate is mounted on the "QuickChange" System. Item number is LV-7-FP-S.



Figure 5.6

SECURITY PLATE FOR QUICKCHANGE PADS

Plate used to secure the "Quickchange" pads.

Item number is A38.00.04 (fig.5.6)

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.

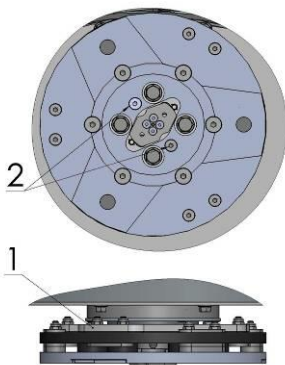


Figure 7.1

CHECK DAILY

After operating the Lavina® 16-X-E 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. Check that flanges or discs are mounted 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 here indicates 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 damages to the machine. Tightening force of the screws should be 25...30N.m (18...22 lbf.ft).

It is very important to check regularly the screws (Fig.7.1-2) that fix the "Quickchange" holder to the safety part, so that holder will not fly away if the buffers got damaged.

"Quickchange" should be clean. The tension of the planetary belt can be daily checked by moving the main head and feeling the resistance of the moving pulleys, if the belt slips, tension immediately as described in the chapter Troubleshooting.

CHECK 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. 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 the tension of the belt and to tighten if necessary. For the correct tension, see TROUBLESHOOTING. Dismount the tool holders (See Troubleshooting) replace all parts (Elastic element, buffers, sealer caps, "O" rings) showing damage or wear.

Open the inspection cover on the motor base to check of the planetary driving belt, by moving the main head the belt should not slip on the planetary pulley and drive the pulleys.

CHECK EVERY 400 WORKING HOURS

In addition to checks made every 200 working hours, replace sealer and V-rings as described in "TROUBLESHOOTING - REPLACING BELT AND PULLEY UNITS". Check if belts and bearings are in good condition, change if needed. Be wary when tensioning the belt to not "over tension"; the belt will never regain its original tension.

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 and buffers and guard assembly are subject to wear and should 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.

ONE PHASE CONNECTION

Please note: the power cable has 3 wires, one ground is yellow/green the other 2 other colors are "hot" wires and should be connected to the phases. (Fig. 7.2)



Figure 7.2

ELECTRICAL SYSTEM

**LAVINA® 16-X-E ELECTRICAL SCHEMES WITH YASKAWA INVERTER
200-240 Volt**

AC 1PH 200-240V 50/60Hz

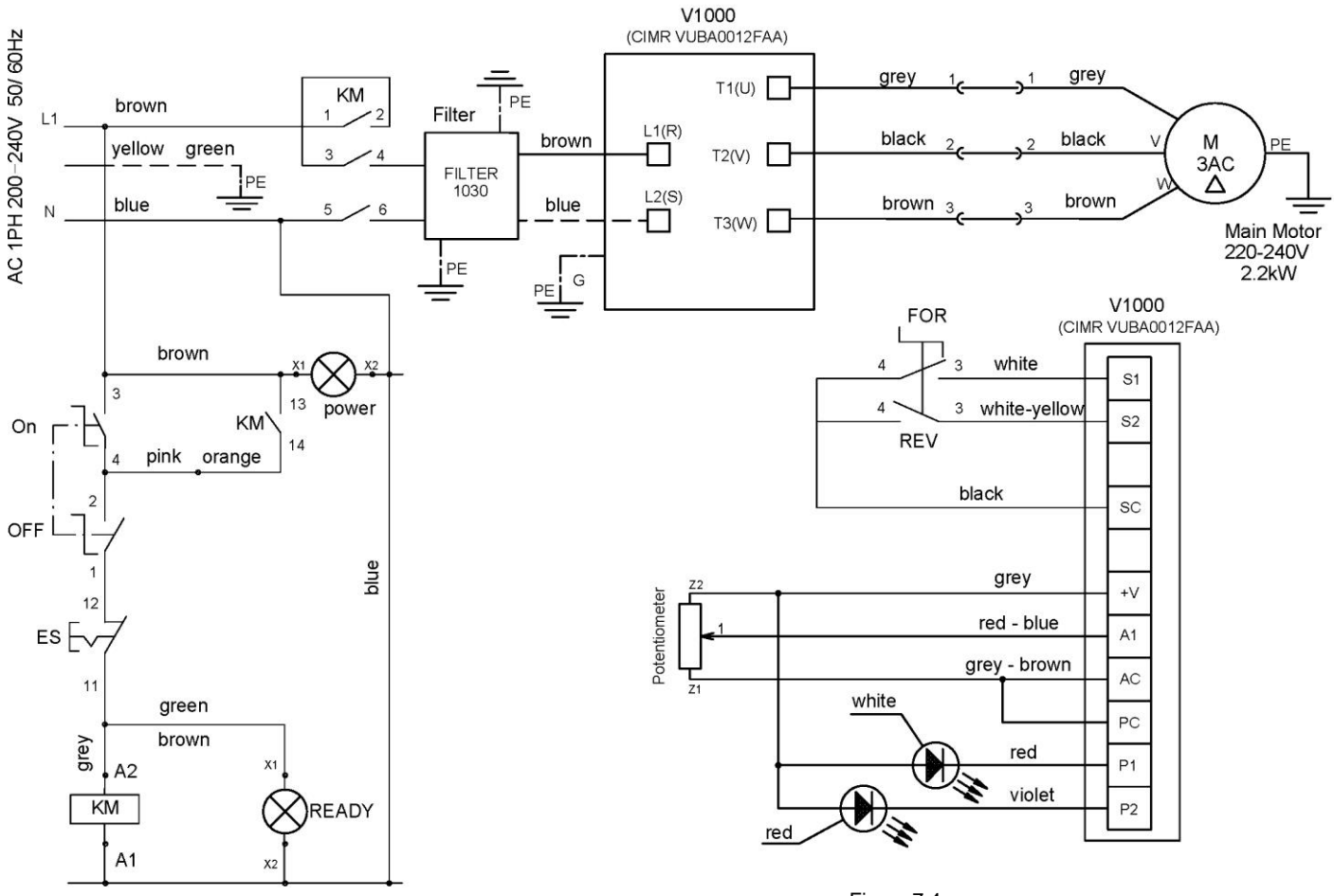


Figure 7.3

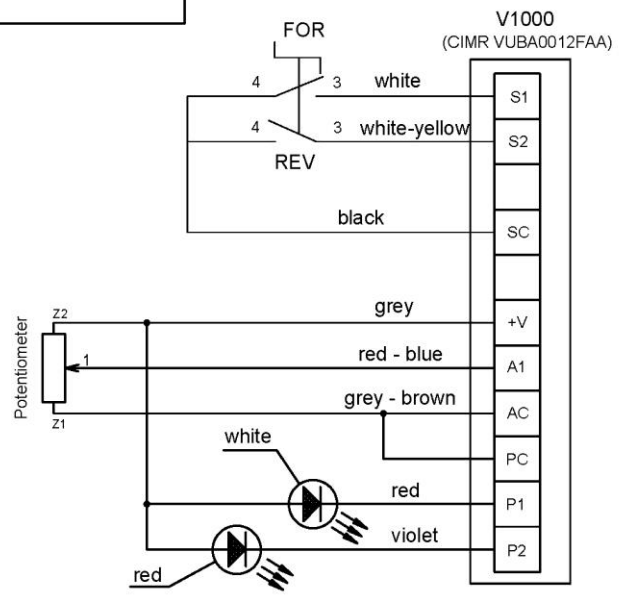


Figure 7.4

**LAVINA® 16-X-E ELECTRICAL SCHEMES YASKAWA
CONNECTION MAIN CIRCUIT TERMINALS**

The motor is connected in "Delta" (triangle) 230 Volt, reminder for the wire connection of the motor.

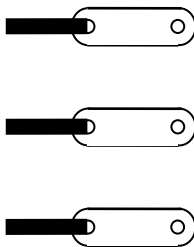


Figure 7.5

8. TROUBLESHOOTING

INDEX OF PROBLEMS AND SOLUTIONS

8.1 REPLACING POWER CORD AND PLUGS

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.

In addition, take into consideration the distance of the appliance from the electrical source. The greater the distance, the greater the resistance and the less current that will be available at the other end; there will be a voltage drop and the inverter will sign alarm mode. This can also happen if several machines are working on the same line or when the generator is underrated. In general our standard power cable can be doubled in length; if longer lengths are needed you have to replace all the cables with bigger gage rated cables for the length and amperage.

8.2 DISMOUNTING AND MOUNTING TOOL HOLDER TO CHANGING SEALERS



Figure 8.2.1



Figure 8.2.2

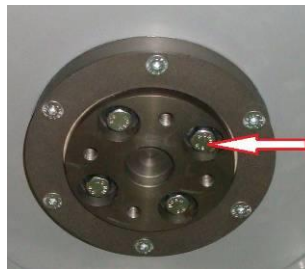


Figure 8.2.3



Figure 8.2.4



Figure 8.2.5

To check or replace the buffers and the elastic elements, the tool holders have to be dismantled.

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)

By loosening four Hex cap flange bolts (Fig.8.2.3), the adaptor comes loose. When the tool holder is dismantled, you can change the sealers (Fig.8.2.4).

Take out Adaptor with the sealer and change it (Fig.8.2.5).

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 dismantled (Fig.8.3.6;Fig.8.3.7) clean the parts and replace the defective with new ones. Assemble the holder with new buffers with new screws and new 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.

Make sure the four bolts holding the adaptor (Fig.8.3.12) are reliably tightened. Mount the holder on the machine using the same socket as in 8.2 (Fig.8.3.10; Fig.8.3.11). The retaining washer fits into the central hole C of adaptor and the four bolts into the thread holes T (Fig.8.3.12). The holder is centered on the outside diameter of the adaptor. Ensure the holder is properly connected to the plate of the adaptor and then tight evenly the four bolts. Tightening force on the bolts has to be 22...25N.m(16...18 lbf.ft). Mounting the holder without the retaining washer (Fig.8.3.2) is **INADMISSIBLE** because the security system preventing the separation in case of broken buffers and elastic element will not function.

You can change the butterfly of the holder without dismantling the holder of the machine.



Figure 8.3.1



Figure 8.3.2

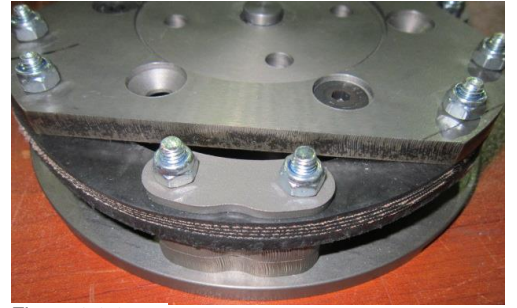


Figure 8.3.3

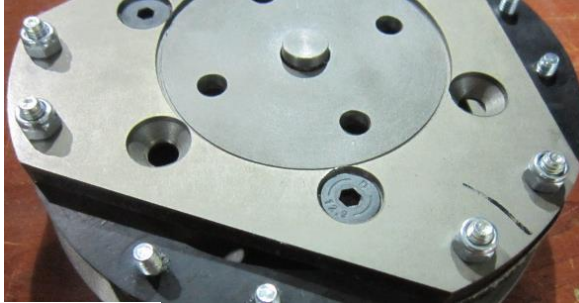


Figure 8.3.4



Figure 8.3.5



Figure 8.3.6



Figure 8.3.7

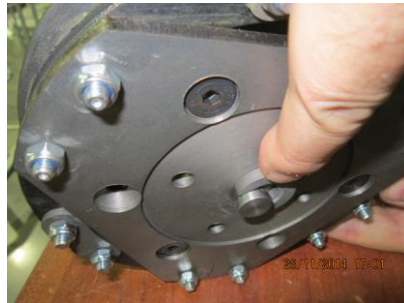


Figure 8.3.8

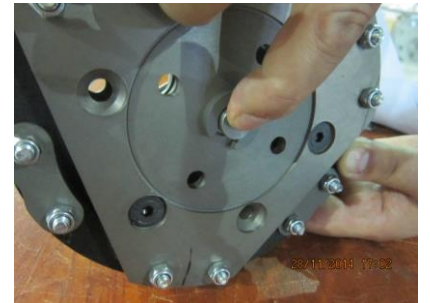


Figure 8.3.9



Figure 8.3.10



Figure 8.3.11

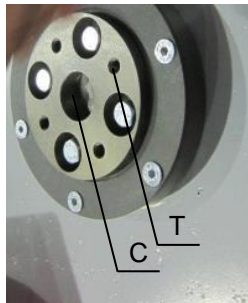


Figure 8.3.12

FIG.8.3.13 is a 3-D section view of the holder, showing its parts. The numbering is the same as in spare parts.

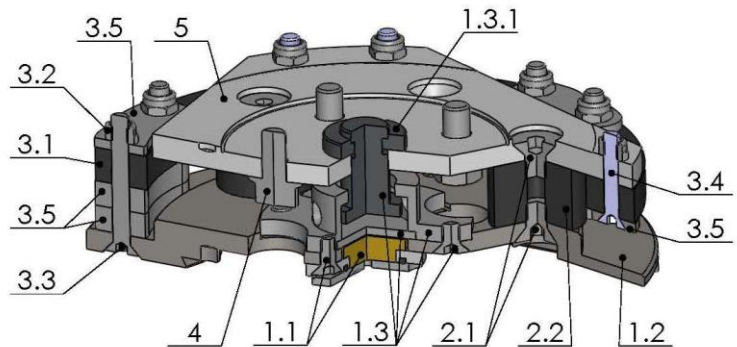


Figure 8.3.13

8.4 ACCESSING THE PLANETARY BELT



Figure 8.4.1



Figure 8.4.2



Figure 8.4.3



Figure 8.4.4



Figure 8.4.5

If the planetary belt slips or breaks, separate the carriage from main head, and disconnect the motor plug (Fig. 8.4.1), water-(Fig. 8.4.2) (Fig. 8.4.3) and vacuum tubes. Remove the two pins from the brackets (Fig. 8.4.3). Dismount the top cover (Fig. 8.4.4), (Fig. 8.4.5).

8.5 TENSIONING USED PLANETARY BELT



Figure 8.5.1



Figure 8.5.2

If there is a loss of speed in the planetary motion, it is possible to re-tension a used planetary belt by following the instructions in 8.6 - Mounting and tensioning a new planetary belt.

8.6 MOUNTING AND TENSIONING A NEW PLANETARY BELT



Figure 8.6.1



Figure 8.6.2



Figure 8.6.3



Figure 8.6.4



Figure 8.6.5



Figure 8.6.6

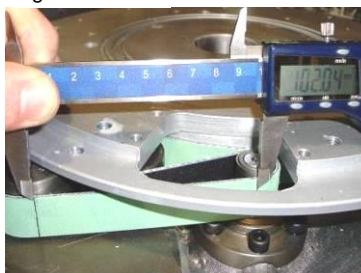


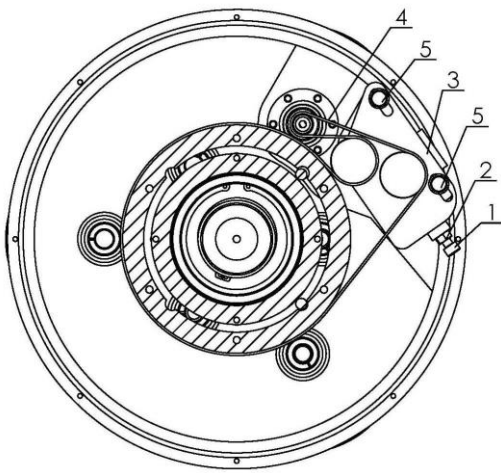
Figure 8.6.7



Figure 8.6.8



Figure 8.6.9



Completely remove the tensioner (Fig.8.6.10-1). Make 2 signs on the dismantled belt exactly 10 cm apart (on belt not under tension) (Fig. 8.6.2). When under tension, the marks should be 10.2 cm apart (2% extension), with a maximum of 10.25.

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

Reinstall the belt around the planetary pulley; ensuring the belt goes around the driving pulley (Fig. 8.6.3). Put the belt around the left roller of the tensioner (Fig. 8.6.4). Put the tensioner back in place and pull the belt from the roller on the right side (Fig. 8.6.5). Put the belt around the driving pulley (Fig. 8.6.6). Begin to tension until the 10 cm between the

marks stretches to 10.2 cm(Fig. 8.6.7) (Fig. 8.6.8). **Rotate the head while tensioning to allow regular tension distribution along the belt.** Tighten the tensioner by turning the bolt. Move the planetary head so the belt has freedom to move. (Fig.8.6.8). Do not forget to retighten the screws on the tensioner (Fig.8.6.9).

8.7 REPLACING BELT AND PULLEY UNITS

In this section, we explain how to replace the belt and the pulley units. In some instances, the belt can be replaced without replacing the pulley units, but it is always necessary to check that the pulley units are working properly.

Disconnect the extension cord from the power line and pull out the hoses. Pull out the socket from the motor cable to the carriage (Fig. 8.7.1). Pull the water hose from the tank (Fig. 8.7.2)

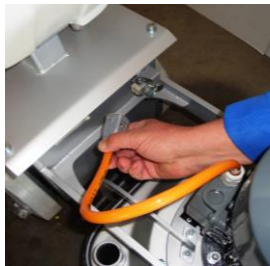


Figure 8.7.1



Figure 8.7.2



Figure 8.7.3

Dismount the tool holders as previously described (Fig. 8.7.3). Remove the two pins from the brackets (Fig.8.7.4) Separate the carriage from the main head. Dismount the machine support Dismount the guard assembly. (Fig. 8.7.5)

Unscrew the top cover and remove it by pulling it over the motor.(Fig. 8.7.6)

Mount back the machine support as this will make it easier to turn over the main head. (Fig. 8.7.7)



Figure 8.7.4



Figure8.7.5



Figure 8.7.6



Figure 8.7.7

8.7.1 REPLACEMENT OF THE PULLEY UNITS



Figure 8.7.1.1



Figure 8.7.1.2

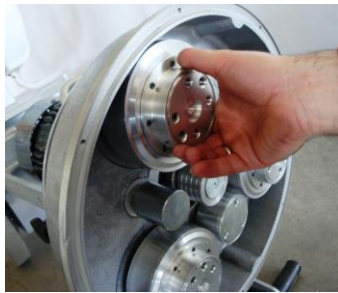


Figure 8.7.1.3

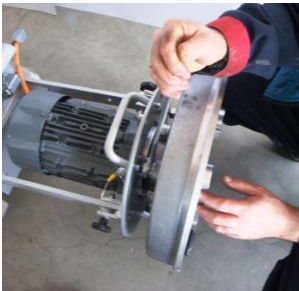


Figure 8.7.1.4



Figure 8.7.1.5

Set the bottom cover assembly aside (Fig.8.7.1.1) Remove the belt by turning the pulleys by hand, while pushing the belt off (Fig.8.7.1.2). Turn the units to ensure that the bearings are working properly. (Fig.8.7.1.3) Units whose bearings are worn out or do not turn with ease should be replaced. First, unscrew the nut, which is holding the pulley unit (Fig.8.7.1.4). When released, pull out the whole unit (Fig.8.7.1.5). Carefully pull out the unit with crowbars, but do not use excessive force.

8.7.2 MOUNTING THE BELT

Bolt on the belt-replacing tool according to the picture (Fig.8.7.2.1). See the belt-replacing tool is in down position (Fig. 8.7.2.2). Lay the belt with only 1/2 of its width showing over the pulleys (Fig. 8.7.2.2), and slowly begin to turn the belt replacing tool and the pulleys. Keep turning until the belt is on the pulleys (Fig. 8.7.2.3). Only putting 1/2 of the belt width is very important otherwise if the belt is initially mounted complete over the destroyed.



Figure 8.7.2.1



Figure 8.7.2.2



Figure 8.7.2.3

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

Apply the seal ring in the channel of the aluminum cover and close the machine. Reassemble in the same manner. Your Lavina® 16-X-E is now ready for use!

BELT WILL BE

8.8 MOTOR CONNECTION

In case of changing the motor, please check the cable connection to your motor. Lavina®16-X-E The motor is connected in "Delta" (Triangle) 230 Volt, reminder for the wire connection of the motor.

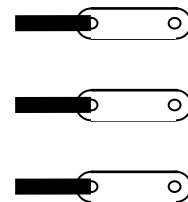


Figure 8.8

8.9 FAULT DIAGNOSIS INVERTER YASKAWA V1000

Pages are referring to

Yaskawa Electric SIEP C710606 18A YASKAWA AC Drive – V1000 Technical Manual

◆ Types of Alarms, Faults, and Errors

Check the LED operator for information about possible faults if the drive or motor fails to operate. *Refer to Using the Digital LED Operator on page 70.*

If problems occur that are not covered in this manual, contact the nearest Yaskawa representative with the following information:

- Drive model
- Software version
- Date of purchase
- Description of the problem

Table 6.4 contains descriptions of the various types of alarms, faults, and errors that may occur while operating the drive. Contact Yaskawa in the event of drive failure.

Table 6.4 Types of Alarms, Faults, and Errors

Type	Drive Responses to Alarms, Faults, and Errors
Faults	<p>When the drive detects a fault:</p> <ul style="list-style-type: none"> • The digital operator displays text that indicates the specific fault and the ALM indicator LED remains lit until the fault is reset. • The fault interrupts drive output and the motor coasts to a stop. • Depending on the setting, the drive and motor may stop via different methods than listed. • If a digital output is programmed for fault output (H2-□□ = E), it will close if a fault occurs. • When the drive detects a fault, it will remain inoperable until that fault has been reset. <i>Refer to Fault Reset Methods on page 264.</i>
Minor Faults and Alarms	<p>When the drive detects an alarm or a minor fault:</p> <ul style="list-style-type: none"> • The digital operator displays text that indicates the specific alarm or minor fault and the ALM indicator LED flashes. • The motor does not stop. • One of the multi-function contact outputs closes if set to be tripped by a minor fault (H2-□□ = 10), but not by an alarm. • The digital operator displays text indicating a specific alarm and ALM indicator LED flashes. • Remove the cause of an alarm or minor fault to automatically reset.
Operation Errors	<p>When parameter settings conflict with one another or do not match hardware settings (such as with an option card), it results in an operation error.</p> <p>When the drive detects an operation error:</p> <ul style="list-style-type: none"> • The digital operator displays text that indicates the specific error. • Multi-function contact outputs do not operate. • When the drive detects an operation error, it will not operate the motor until the error has been reset. Correct the settings that caused the operation error to reset.
Tuning Errors	<p>Tuning errors occur while performing Auto-Tuning.</p> <p>When the drive detects a tuning error:</p> <ul style="list-style-type: none"> • The digital operator displays text indicating the specific error. • Multi-function contact outputs do not operate. • Motor coasts to stop. • Remove the cause of the error and repeat the Auto-Tuning process.

◆ Alarm and Error Displays

■ Faults

When the drive detects a fault, the ALM indicator LEDs remain lit without flashing. If the LEDs flash, the drive has detected a minor fault or alarm. *Refer to Minor Faults and Alarms on page 240* for more information. An overvoltage situation trips both faults and minor faults, therefore it is important to note whether the LEDs remain lit or if the LEDs flash.

LED Operator Display	Name	Page	LED Operator Display	Name	Page
bUS	bUS Option Communication Error	242	CPF08	EEPROM Serial Communications Fault	243
CE	MEMOBUS/Modbus Communication Error	242	CPF11	RAM Fault	243
CF	Control Fault	242	CPF12	FLASH Memory Fault	243
CoF	Current Offset Fault	242	CPF13	Watchdog Circuit Exception	243
CPF02	A/D Conversion Error	242	CPF14	Control Circuit Fault	243
CPF03	PWM Data Fault	243	CPF16	Clock Fault	243
CPF06	Drive specification mismatch during Terminal Board or Control Board replacement	243	CPF17	Timing Fault	243
CPF07	Terminal Board Communication Fault	243	CPF18	Control Circuit Fault	243
			CPF19	Control Circuit Fault	244

LED Operator Display	Name	Page	LED Operator Display	Name	Page		
CPF20 or CPF21	RAM Fault	244	GF	Ground Fault	245		
	FLASH Memory Fault	244	LF	Output Phase Loss	245		
	Watchdog Circuit Exception	244	LF2	Output Open Phase	246		
	Clock Fault	244	oC	Overcurrent	246		
oH3	oH3	Motor Overheat 1 (PTC input)	247	oFA00	oFA00	Option Card Fault (port A)	246
oH4	oH4	Motor Overheat 2 (PTC input)	248	oH	oH	Heatsink Overheat	247
oL1	oL1	Motor Overload	248	oH1	oH1	Heatsink Overheat	247
oL2	oL2	Drive Overload	248	PGo	PGo	PG Disconnect (for Simple V/f with PG)	250
oL3	oL3	Overtorque Detection 1	249	rH	rH	Dynamic Braking Resistor	251
oL4	oL4	Overtorque Detection 2	249	rr	rr	Dynamic Braking Transistor	251
oL5	oL5	Mechanical Weakening Detection 1	249	SEr	SEr	Too Many Speed Search Restarts	251
oL7	oL7	High Slip Braking oL	249	STO	STO	Pull-Out Detection	251
oPr	oPr	Operator Connection Fault	249	UL3	UL3	Undertorque Detection 1	251
CPF22	CPF22	A/D Conversion Error	244	UL4	UL4	Undertorque Detection 2	251
CPF23	CPF23	PWM Feedback Data Fault	244	UL5	UL5	Mechanical Weakening Detection 2	251
CPF24	CPF24	Drive Capacity Signal Fault	244	Uv1	Uv1	Undervoltage	252
dEv	dEv	Excessive Speed Deviation (for Simple V/f with PG)	244	Uv2	Uv2	Control Power Supply Undervoltage	252
EF0	EF0	Option Card External Fault	244	Uv3	Uv3	Soft Charge Circuit Fault	252
EF1 to EF7	EF1 to EF7	External Fault (input terminal S1 to S7)	244	oS	oS	Overspeed (for Simple V/f with PG)	249
FbH	FbH	Excessive PID Feedback	245	ov	ov	Overvoltage	249
FbL	FbL	PID Feedback Loss	245	PF	PF	Input Phase Loss	250

Note: If faults CPF11 through CPF19 occur, the LED operator will display CPF00 or CPF11.

■ Minor Faults and Alarms

When a minor fault or alarm occurs, the ALM LED flashes and the text display shows an alarm code. A fault has occurred if the text remains lit and does not flash. *Refer to Alarm Detection on page 253.* An overvoltage situation, for example, can trigger both faults and minor faults. It is therefore important to note whether the LEDs remain lit or if the LEDs flash.

Table 6.5 Minor Fault and Alarm Displays

LED Operator Display	Name	Minor Fault Output (H2-□□ = 10)	Page	
bb	bb	Drive Baseblock	No output	253
bUS	bUS	Option Card Communications Error	YES	253
CALL	CALL	Serial Communication Transmission Error	YES	253
CE	CE	MEMOBUS/Modbus Communication Error	YES	253
CrSt	CrSt	Can Not Reset	YES	253
dEv	dEv	Excessive Speed Deviation (for Simple V/f with PG)	YES	254
dnE	dnE	Drive Disabled	YES	254
EF	EF	Run Command Input Error	YES	254
EF0	EF0	Option Card External Fault	YES	254
EF1 to EF7	EF1 to EF7	External Fault (input terminal S1 to S7)	YES	255
FbH	FbH	Excessive PID Feedback	YES	255
FbL	FbL	PID Feedback Loss	YES	255
Hbb	Hbb	Safe Disable Signal Input	YES	255
HbbF	HbbF	Safe Disable Signal Input	YES	255
SE	SE	MEMOBUS/Modbus Test Mode Fault	YES	—
oL5	oL5	Mechanical Weakening Detection 1	YES	249
UL5	UL5	Mechanical Weakening Detection 2	YES	251
dWAL	dWAL	DriveWorksEZ Alarm	YES	244
HCA	HCA	Current Alarm	YES	256
oH	oH	Heatsink Overheat	YES	256
oH2	oH2	Drive Overheat	YES	256
oH3	oH3	Motor Overheat	YES	256
oL3	oL3	Overtorque 1	YES	256
oL4	oL4	Overtorque 2	YES	257
oS	oS	Overspeed (for Simple V/f with PG)	YES	257

LED Operator Display		Name	Minor Fault Output (H2-□□ = 10)	Page
<i>ov</i>	ov	Overvoltage	YES	257
<i>PASS</i>	PASS	MEMOBUS/Modbus Test Mode Complete	No output	257
<i>PGo</i>	PGo	PG Disconnect (for Simple V/f with PG)	YES	257
<i>rUn</i>	rUn	During Run 2, Motor Switch Command Input	YES	258
<i>rUnC</i>	rUnC	Run Command Reset	YES	258
<i>UL3</i>	UL3	Undertorque 1	YES	258
<i>UL4</i>	UL4	Undertorque 2	YES	258
<i>Uv</i>	Uv	Undervoltage	YES	258

■ Operation Errors

Table 6.6 Operation Error Displays

LED Operator Display		Name	Page	LED Operator Display		Name	Page
<i>oPE01</i>	oPE01	Drive Unit Setting Error	259	<i>oPE08</i>	oPE08	Parameter Selection Error	260
<i>oPE02</i>	oPE02	Parameter Setting Range Error	259	<i>oPE09</i>	oPE09	PID Control Selection Error	260
<i>oPE03</i>	oPE03	Multi-Function Input Setting Error	259	<i>oPE10</i>	oPE10	V/f Data Setting Error	261
<i>oPE04</i>	oPE04	Terminal Board Mismatch Error	260	<i>oPE11</i>	oPE11	Carrier Frequency Setting Error	261
<i>oPE05</i>	oPE05	Run Command Selection Error	260	<i>oPE13</i>	oPE13	Pulse Train Monitor Selection Error	261
<i>oPE07</i>	oPE07	Multi-Function Analog Input Selection Error	260				

9. 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 United States) in the event that the damage occurs and is reported within the first 90 days or 200 operating hours - whichever occurs first. 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 Superabrasive-approved 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 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.

10. DISPOSAL

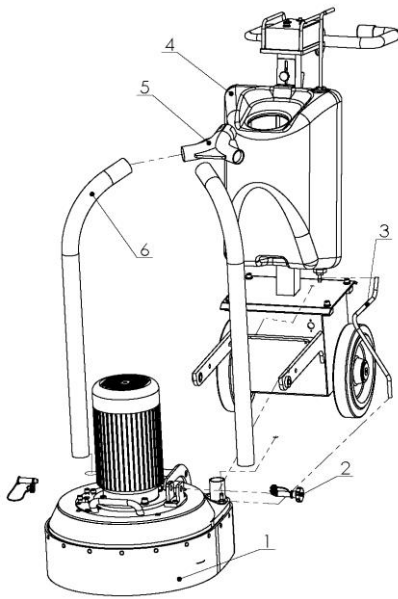
If your machine after time is not usable or needs to be replaced, send the machine back to Superabrasive or a local distributor, where a professional dismantle complying with the environment laws and directives is guaranteed.

11. MANUFACTURER'S CONTACTS

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

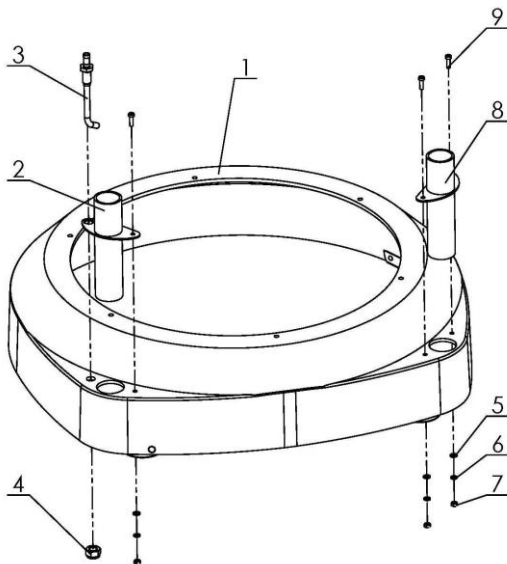
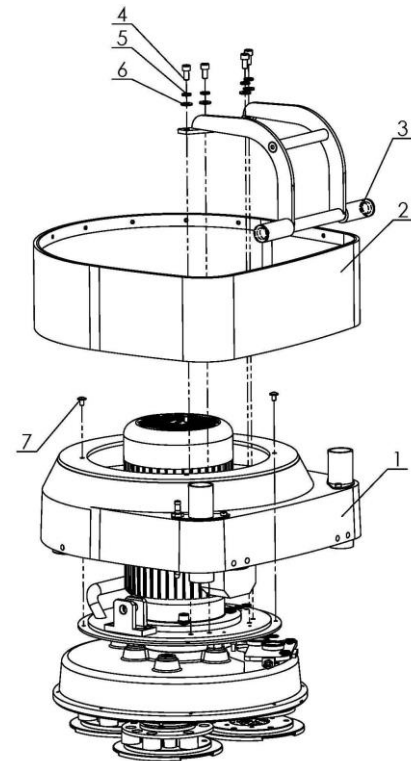
Address:	Superabrasive Ltd.	Email:	factory@superabrasive.com
	Rabotnicheska 2A	Tel.:	+359 431 6 44 77
	BG-6140 Krun	Fax:	+359 431 6 44 66
	Bulgaria	Website:	www.superabrasive.com

12. SPARE PARTS ASSEMBLY AND PARTS SPECIFICATIONS

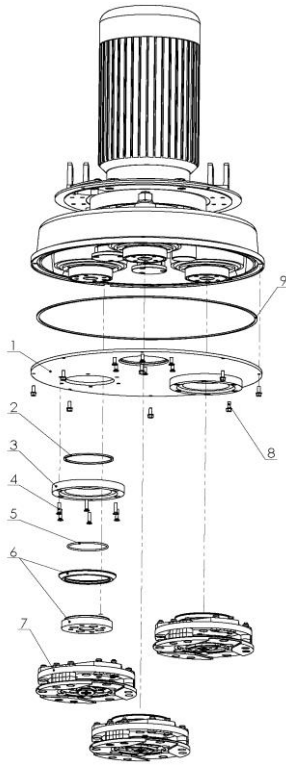


1. LAVINA® 16-X-E GENERAL PARTS			
No	Item Number	Description	Qty.
1	L16X-10.00.00	Main Head	1
2	L25SPS-07.03.00.00	Pin Assembly	2
3	D9L740	Water Hose	1
4	L16XE-20.00.00	Carriage With Control Box	1
5	L16P-00.00.00.01	Three-Way Air Duct	1
6	D40L950	Vacuum Hose	2

2. LAVINA® 16-X-E MAIN HEAD PARTS			
No	Item Number	Description	Qty.
1	L16S-19.00.00	Top Cover Assembly	1
2	L16S-04.00.00	Guard Assembly	1
3	L16-02.00.00.00	Machine Support	1
4	M8x16DIN912	Screw	4
5	M8DIN7980	Spring Washer	4
6	M8DIN125A	Washer	4
7	M6X10ISO7380F	Screw	4

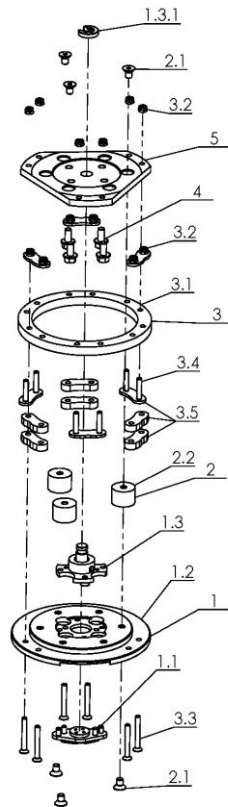
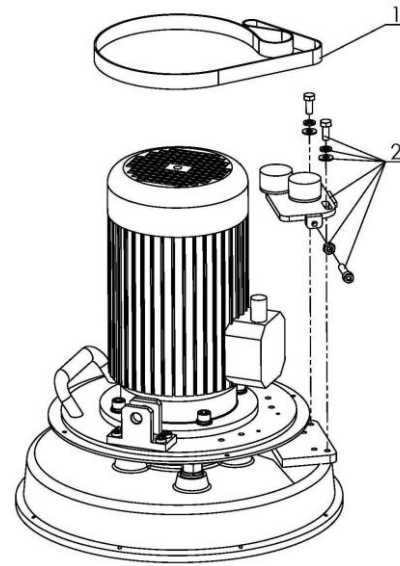


3. LAVINA® 16-X-E TOP COVER PARTS			
No	Item Number	Description	Qty.
1	L16S-19.00.01	Top Cover	1
2	L25GS-19.10.00	Vacuum Port	1
3	L25GS-19.20.00	Water Fitting	1
4	M12DIN985	Nut	1
5	M5DIN125A	Washer	3
6	M5DIN127B	Spring Washer	3
7	M5DIN934	Nut	3
8	L25SPS-04.01.00.00	Vacuum Port	1
9	M5X16DIN84A	Screw	3



No	Item Number	Description	Qty.
1	L16P-01.04.00.00	Bottom Cover Assembly	1
2	D3x2x310	Seal	3
3	L25P-01.05.00.02	Flange	3
4	M5x20 DIN 7991	Screw	18
5	D68X2.5	O-Ring	3
6	A42.02.00	Adaptor	3
7	A40.00.00	Tool Holder A40	3
8	M5X12DIN6921	Screw	8
9	D4X2X395	Seal	1

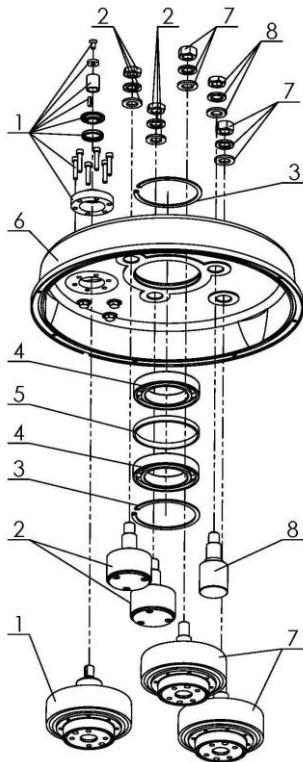
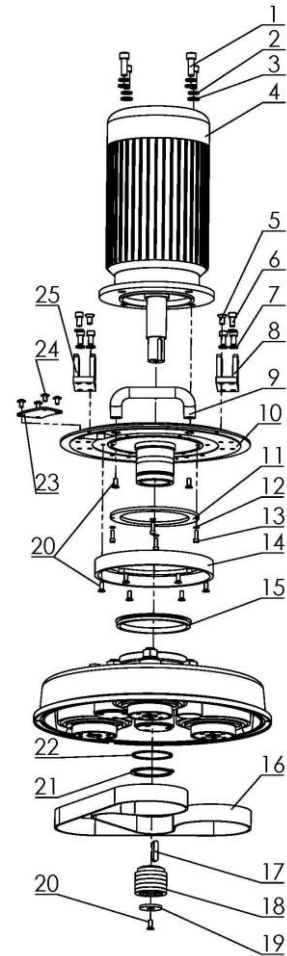
No	Item Number	Description	Qty.
1	TC-20EF960X20X2	Endless Transmission Flat Belt	1
2	L16S-17.00.00	Planetary Tensioning Unit	1



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	M8x16DIN6921	Bolt	4	
5	A40.20.01	Flange	1	

7. LAVINA® 16-X-E BOTTOM COVER PARTS 2

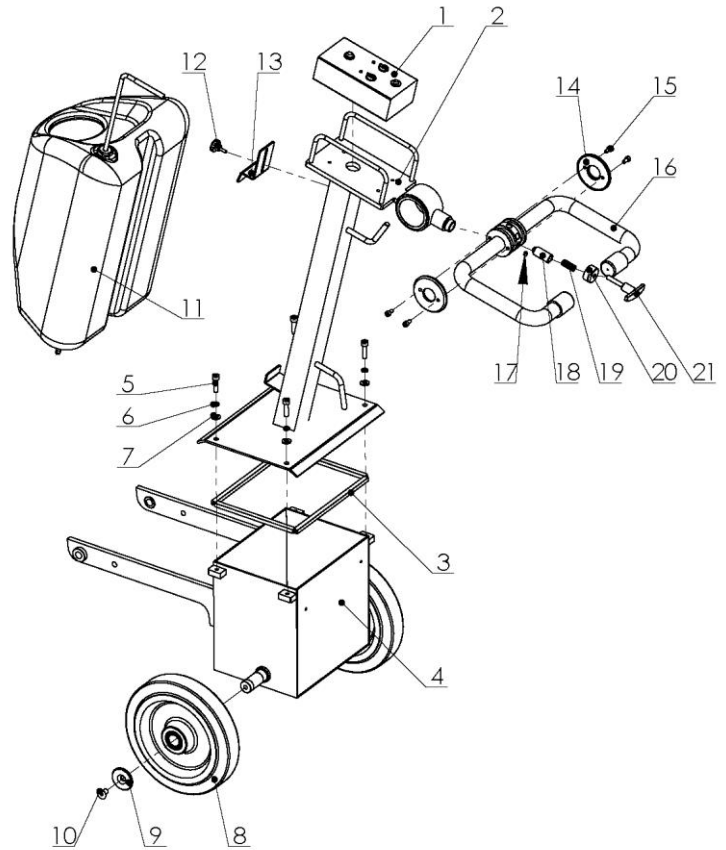
No	Item Number	Description	Qty.
1	M10x30DIN912	Screw	4
2	M10DIN127B	Spring Washer	4
3	M10DIN125A	Washer	4
4	S161	Electro Motor	1
5	M8x20DIN7991	Screw	2
6	M8x16DIN912	Screw	6
7	M8DIN7980	Spring Washer	6
8	L25SPS-07.00.00.02-L	Left Fork	1
9	GN565.2-128-BL	Handle	1
10	L16S-15.01.00	Base Plate	1
11	L25P-01.03.00.09	Flange	1
12	M5DIN7980	Spring Washer	4
13	M5x16DIN912	Screw	4
14	L16S-15.00.05	Planetary Pulley	1
15	TWVA120	V-Ring	1
16	TC-20EF1640X30X2.5	Flat Belt	1
17	DIN6885A8X7X36	Key	1
18	L430-00.00.00.01	Central Pulley	1
19	L25SPS-00.00.00.15	Front Washer	1
20	M6x16DIN7991	Screw	9
21	B65DIN471	Retaining Ring	1
22	L25SPS-00.00.00.23	Compensating Ring	1
23	L16S-15.00.06	Inspection Cover	1
24	M6x10ISO7380F	Screw	4
25	L25SPS-07.00.00.02-R	Right Fork	1



8. LAVINA® 16-X-E PULLEY UNIT PARTS

No	Item Number	Description	Qty.
1	L16S-16.00.00	Driving Pulley Unit	1
2	L16P-01.01.00.00	Roller Unit Assembly	2
3	A10013943	Retaining Ring	2
4	6013	Roller Assembly	2
5	L25SPS-00.00.00.34	Distance Ring	1
6	L16S-10.00.08	Disc	1
7	L16P-01.02.00.00-01	Pulley Unit Assembly	2
8	L16SPS-00.00.00.03	Balancing Roller Ass.	1

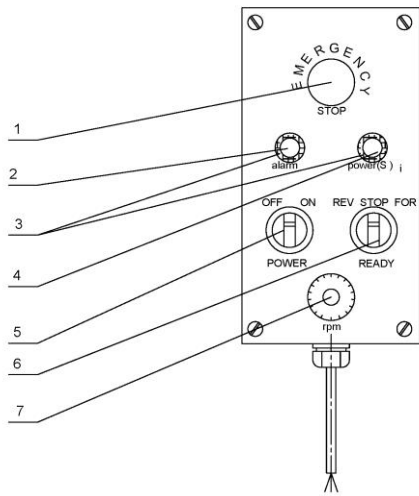
9. LAVINA® 16-X-E CARRIAGE PARTS 2			
Nº	Item Number	Description	Qty.
1	L16XE-30.10.00	Control Box with buttons	1
2	L16X-22.00.00	Upper Frame	1
3	P880	Seal	4
4	L16XE-21.00.00	Lower Frame	1
5	M8x30 DIN 912	Screw	4
6	M8DIN127B	Spring Washer	4
7	M8DIN125A	Washer	4
8	POEV250/25KSG	Wheel	2
8**	IFP250x50-25x60	Wheel	2
9	L16-01.00.00.01	Cap	2
9**	L25X-20.00.03	Wheel Cap	2
10	M10x16DIN7991	Screw	2
11	A26.00.00	Tank	1
12	T34391	Knob Bolt	1
13	L25P-02.00.00.01	Top Bracket	1
14	L20X-20.00.02	End Cover	2
15	M6x12DIN912	Screw	4
16	L16X-23.10.00	Handle Assembly	1
17	M6x8DIN915	Screw stopper	1
18	L20X-23.00.06	Locking bit	1
19	L25S-23.00.07	Spring	1
20	L25S-23.00.09	Nut	1
21	F27160	Knob Bolt	1



CONTROL BOX 208-240 VOLT



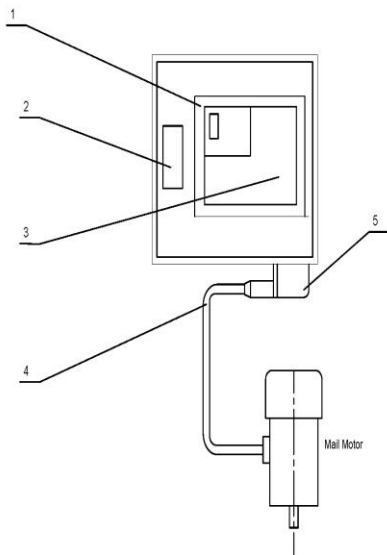
10. LAVINA® 16-X-E CONTROL BOX 1PARTS			
Nº	Item Number	Description	Qty.
1	L16XE-30.10.00	Control Box with buttons	1
2	PGFX	Fitting with Cable	1
2.1	L20XE-30.11.01	Connector- Plug	1



11. LAVINA® 16-X-E CONTROL WITH BUTTONS PARTS

Nº	Item Number	Description	Qty.
1	L20NS-30.10.10	Emergency Stop	1
2	L16S-30.10.13	Alarm Led	1
3	F5	Led Holder	2
4	L16S-30.10.14	Power Loss Led	1
5	L16S-30.10.12	Switch button (three positions) GREEN	1
6	L16XE-30.10.11	Switch button (three positions) WHITE	1
7	L16S-30.10.04	Potentiometer	1

ELECTRICAL BOX 208-240 VOLT



12. LAVINA® 16-X-E ELECTRICAL BOX PARTS

Nº	Item Number	Description	Qty.
1	L20SE-30.11.01	Filter	1
2	L16XE-30.11.02	Contactor	1
3	L16S-30.11.01	Inverter	1
4	L16S-30.12.00	Cable with Plug	1
5	L16S-30.13.00	Cable with Outlet	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.