LAVINA by SUPERABRASIVE

ELITE SERIES

LAVINA ELITE L32EU

User Manual

www.superabrasive.com / factory@superabrasive.com

CE

SUPERABRASIVE

1. GENERAL INFORMATION

This owner's manual is intended for the operator of the Lavina® 32EU 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® 32EU 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® 32EU machine is intended for grinding, polishing and buffing concrete, marble, granite, limestone and terrazzo surfaces with diamond tools.

The Lavina® 32EU is machine, which can be used wet or dry.

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

WARNING!

The Lavina® 32EU machine is manufactured and fitted for the above-mentioned applications only! Every other use may possess risks to the persons involved.

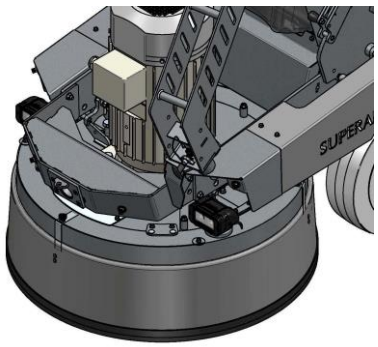


Figure 1.2

MACHINE CHARACTERISTICS

The Lavina®32EU is made of two main component sections:

LAVINA® 32EU MAIN DESIGN

The two main component sections are the carriage and main head.

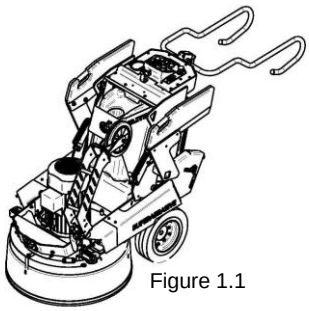


Figure 1.1

The handle on the frame is adjustable in height and enables the operator to work in a correct and safe posture.

The controls are positioned on top of the handle (fig.1.1)

Two LED lights (Fig.1.2) enable the operator to work in darker areas. The lamps are with magnet holder can be adjusted in different positions.

. **A LED light** (Fig.1.3) lights the grinded floor behind the machine. The lamp holder can be adjusted to different positions.

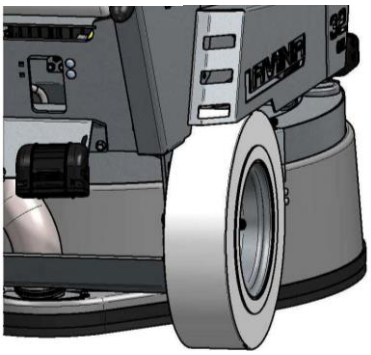


Figure 1.3

⚠ WARNING

Lighting system does not replace adequate overhead lighting.

The electrical box contains the electric switches and inverters. The motor feeding cable is plugged in the socket located on the bottom of the box.

The **main feeding cable** is connected with a plug and socket on the side of the box (fig.1.4).

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 water from the tank is supplied by a pump. 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 grinding heads with a belt system.

The **planetary head** is driven by a duplex roller chain.

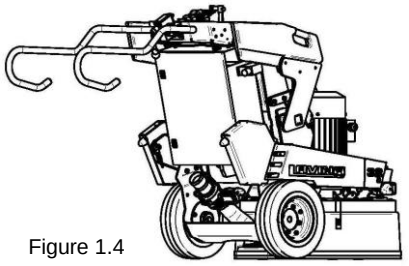


Figure 1.4

ENVIRONMENTAL CONDITIONS

The temperature range for operating the Lavina® 32EU outdoors is between 41°F and 86°F or 5°C and 30°C. Never use the Lavina® 32EU 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.

VACUUM CONNECTION

A connection for a vacuum dust extractor is located on the carriage. The Lavina® 32E/EHV 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 76 mm/ 3 inch. The vacuum dust extractor must be adapted for floor grinders and have a minimum air displacement of 600 m^3/h with a negative vacuum of 21 kPa.

TECHNICAL DATA

	LAVINA® 32EU			
Voltage/Hz	3ph x 380-400 V 50/60Hz			
Amperage	32 Amps			
Power	15 kW			20 HP
Tool holder rpm	400-1100 rpm			
Working width	814mm			32"
Tool holder diameter	3 x 225 mm			3 x 9"
Direction of rotation	The heads have counter-clockwise / left rotation			
Weight	700 kg			1453 lbs
Weight position	Pos.1	Pos.2	Pos.3	Pos.4
Grinding pressure	255 kg	299.5 kg	337,5 kg	383 kg
	562 lbs	660 lbs	744 lbs	844 lbs
Grinding pressure with third wheel	268.5 kg	313 kg	351.5 kg	397 kg
	592 lbs	690 lbs	775 lbs	875 lbs
Application	wet and dry			
Vacuum hose port	**Cam lock E300**			
Water tank capacity	46 l			12 gal
Water feed	Peripheral and front mist with pump			
Cable length	17.4 m			57 ft
Machine LxWxH	2460x862x1302 mm			92"x34"x52"
Packing crate LxWxH	1600x950x1604 mm			63"x37"x63,2"

CE-CERTIFICATION

The Lavina® 32REU 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® 32REU 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, 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 ISO 5349-1, BDS EN ISO 11201, BDS EN ISO 3744, BDS EN 1033:2002, BDS EN 60204-1,BDS EN 1837, BDS EN 61000-6-4, BDS EN 61000-6-2, BDS EN 61000-4-2, BDS EN 61000-4-4, BDS EN 61000-4-5,BDS EN 61000-4-11, BDS EN 55016-2-1

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 measured vibration value on the surface of gripping in case of guiding the machine is a_{hw}=2,95m/s^2. The measurement is made in accordance with the BDS EN ISO 1033 and BDS EN ISO 5349-1.

SONOROUS EMISSIONS

The maximum noise level at distance of the machine of 1m at idle does not exceed 70 db(a). The measurement is made in accordance with the BDS EN ISO 11201 and BDS EN ISO 3744.

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. or visit us at: www.superabrasive.com, where you can download a copy of this manual.

2. SAFETY ISTRUCTIONS

RECOMMENDED USE ⚠ WARNING

The Lavina® 32EU 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:
For applications apart from the ones stated in the General Description chapter.
For unsuitable 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 ⚠ WARNING

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

PROTECTION DEVICES ⚠ WARNING

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

ARREST FUNCTIONS ⚠ WARNING

Methods of arresting of the machine are following:
Button to stop the motor (category 1)
Emergency button (category 1)

SAFE USE ⚠ WARNING

The Lavina® 32EU is designed to reduce any risks correlated with its use. However, it is not possible to fully eliminate the risks of an 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. ⚠ WARNING

RESIDUAL RISKS ⚠ WARNING

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

BEFORE YOU BEGIN ⚠ WARNING

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

OPERATING MACHINE ⚠ WARNING

Never work with the machine without visual contact with it.
Never run the machine when you are situated between the handles of the wheel
When operating the Lavina® 32EU, 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.
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

⚠ WARNING

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Always wear safety shoes 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.

OPERATOR

The operator Lavina®32E machine must have an adequate technical knowledge and preparation.
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.
Always wear clothes suitable for the work environment.
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.

3. HANDLING AND TRANSPORTATION

3.1 POSITIONING THE HANDLE

By loosening the swivel bolt (Fig. 3.1-2), one can turn the steering bracket (Fig. 3.1-3) to a new position. To turn the steering bracket down (Fig. 3.3) you have to loosen the swivel bolt (Fig. 3.1-2) and push it in, for security reasons.

To change the handle positions pull the knob (Fig. 3.1-1, Fig. 3.4), and move the handle up or down.

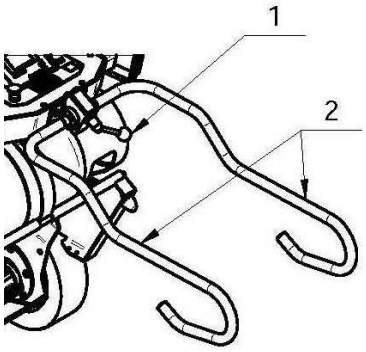


Figure 3.1

By loosening the swivel bolt (Fig. 3.1-2), one can turn the steering bracket (Fig. 3.1-3) to a new position. To turn the steering bracket down (Fig. 3.3), loosen the swivel bolt (Fig. 3.1-2) and push it in, for security reasons.

3.2 USING THE STEERING BRACKET

The handle can be positioned in in three different positions:
Transport position to store or to transport or to hoist the machine (fig. 3.2)
Working position (fig. 3.3) and Flipping position (fig. 3.4)

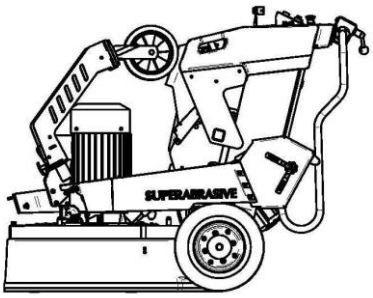


Figure 3.2


Figure

3.3 FLIPPING THE MACHINE UP

To change the tools, put the handle in the flipping (upright) position (Fig. 3.6), grab the steering bracket and pull the machine down using all bodyweight (one foot on the control box can help). Put the bracket down on the floor (Fig. 3.7) and change tools.
One foot on the control box can help again while putting the machine back.

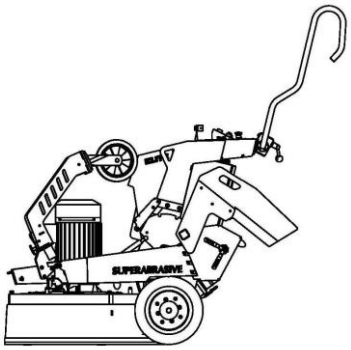


Figure 3.4

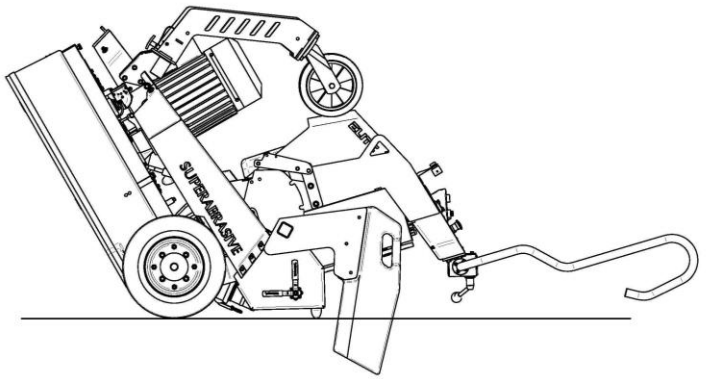


Figure 3.5

3.4 HANDLING WEIGHTS

The machine has two built in weights. Each one could stay in four different positions (Fig. 3.6)

Put the weights in pos.1 when the machine is in position to change the working tools.
The weights are locked in pos.2, pos.3 and pos.4 (Fig. 3.7).
The pressure on the working tools is different in each of the four weights positions. See the Technical Data/

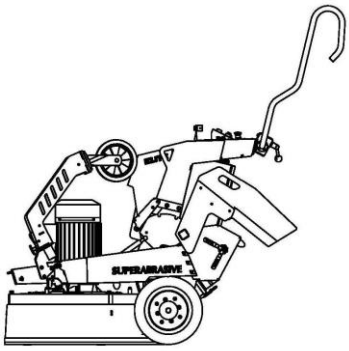


Figure 3.6,1

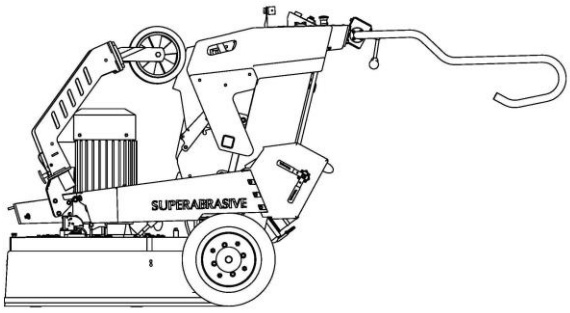


Figure 3.6.2

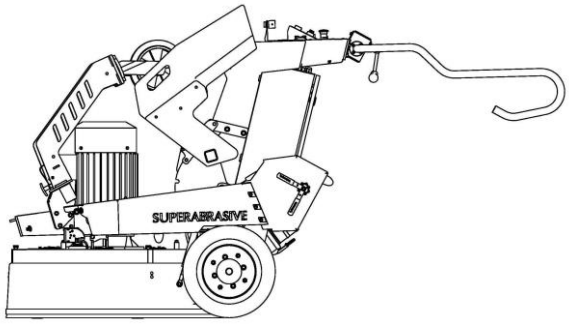


Figure 3.6.3

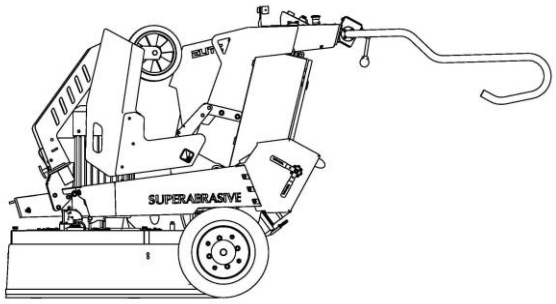


Figure 3.6.4

Figure 3.7

3.5 HANDLING THE GUARD

The self-leveling guard is designed to always have a contact on the surface with brush no matter the height of the tool used. During transport the guard can be hung up so it does not drag on the floor.

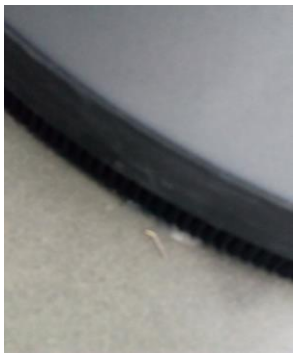


Figure 3.8.1


Figure 3.8.2


Figure 3.8.3

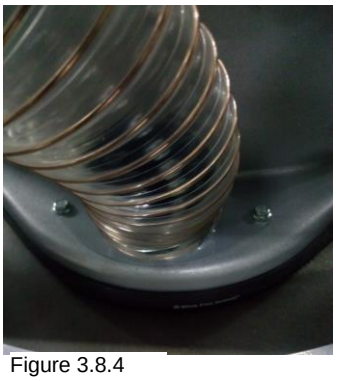


Figure 3.8.4

3.5.1 DISMOUNTING THE GUARD

After dismounting the guard the machine could pass through 32 inch (815 mm) wide doors.

1. Unscrew the two bolts about 1-1.5 turn /Fig. 3.9-2; Fig. 3.9-3;/.to disconnect the vacuum connector/Fig. 3.9-4/ from the carriage.
2. Put the machine in position to change the tools / Fig. 3.5/.
3.Unscrew the bolt holding the guard / Fig. 3.10.1/ and the two bolts on the back stoppers/ Fig. 3.10.2/
4.You can dismount the guard as shown on / Fig. 3.10.3/ and / Fig. 3.10.4/

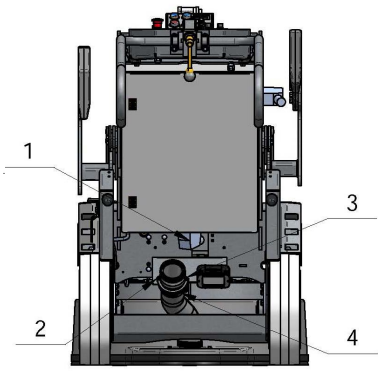


Figure 3.9


Figure 3.10


Figure 3.10.1


Figure 3.10.2


Figure 3.10.3

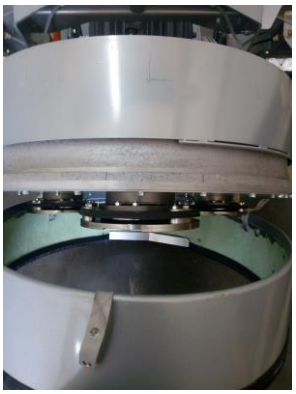


Figure 3.10.4

3.6 THIRD WHEEL

Lavina® 32EU has a third wheel for easier handling. It has two positions (fig.3.11.1 or fig.3.11.2) and is mounted and dismounted with a pin assembly (fig.3.11.3).


Figure 3.11.1

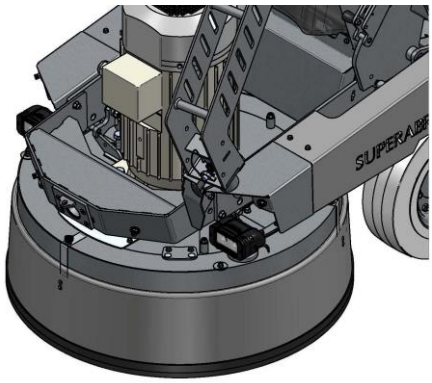


Figure 3.11.2


Figure 3.11.3

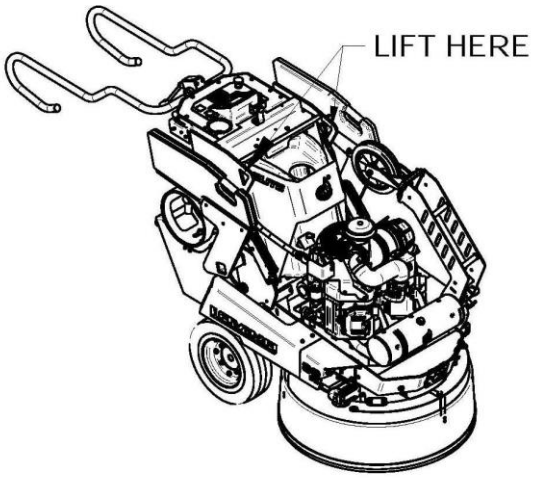


Figure 3.12

3.7 LIFTING

Lifting the machine by crane is possible by using the handles of the carriage (fig. 3.11). The design is rated only for the weight of the machine. Do not lift any other loads on the machine. Always use hoisting equipment rated for 800 kg (1300 lbs) or greater.

3.8 STORAGE

Always store and transport the Lavina® 32EU in a dry place. Never transport the Lavina® 32EU unprotected; it may be damaged if transported unprotected during rain or snow.

When the temperature may fall to 32º F (0º C) or less during the storage of the machine, water should be emptied from the system using the following steps:

-Pull out the hose of the tank (Fig.3.12)

-Using compressed air, blow out excess water from the system at each position of the tap water ball valve(Fig.3.12).

Figure 3.12

4. OPERATION

4.1 PRELIMINARY CONTROLS

Inspect the working area as explained in the safety instructions. For wet use, fill the water tank with the electrical cable disconnected. Connect the vacuum extractor and ensure that the vacuum hose is clear and able to follow the machine easily. Plug in the machine and make sure that the power cord is free to follow the working direction of the Lavina 32EU.

4.2 CONTROL OFTHE WATERFLOW

The operator can direct water to be sprayed in front of the machine (Fig.4.1) by positioning the lever in vertical position (Fig.4.2); the water will spray under the cover of the machine when the lever is in horizontal position(Fig.4.3).

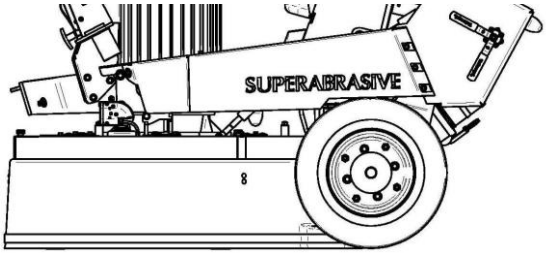


Figure 4.1

Figure 4.2

Figure 4.3

ALWAYS USE CLEAN WATER TO PROTECT THE SYSTEM FROM DIRT.

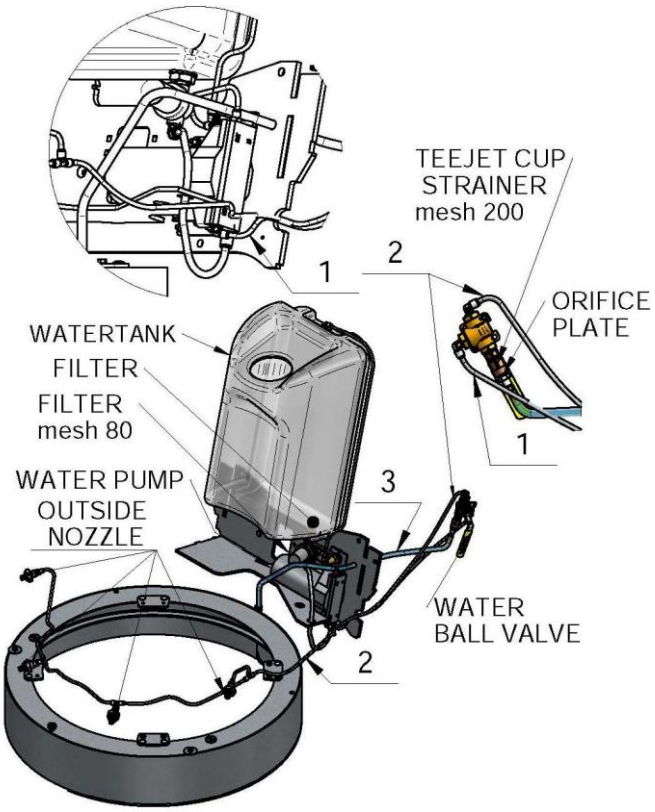


Figure 4.4

Figure 4.5

4.3 ADJUSTING AND MOUNTING TOOLS

The Holder A63 in the LAVINA® EU can work with either 3 or 6 rubber buffers, which will alter its elasticity (3 will be more flexible than 6). You can make the change after dismounting the holder as per the instructions in TROUBLESHOOTING.

In the Lavina 32EU, the holder is initially mounted with 6 buffers.

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.4.6), lock with the tool holder key (Fig.4.6) and make sure that the butterfly is securely locked at 90 degrees. Always use the tool holder key (Fig.5.3).

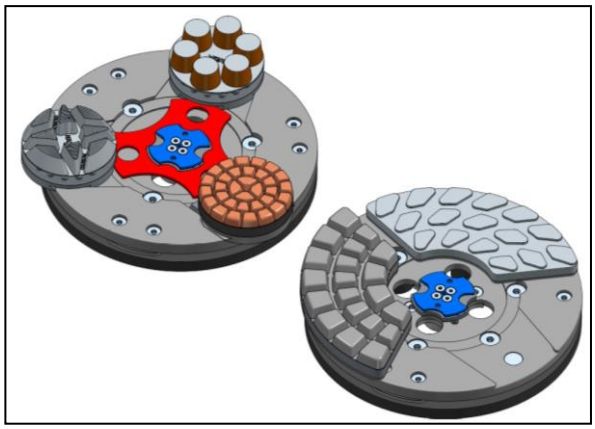


Figure 4.6

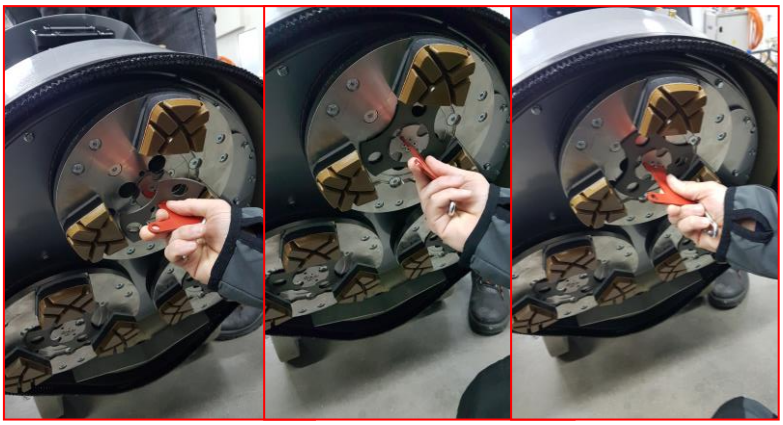


Figure 4.7

4.4 VACUUM CONNECTION

To connect a vacuum cleaner, the Lavina 32**EU** is supplied with vacuum hose Cam Lock inlet E300 / vacuum hose diam. 3 in (76mm).

Figure 4.8

4.5 CONTROL BOARD

1 Emergency button used to stop the motor in case of emergency

2 STOP button which stops the motor**.**

3 RUN button. Start the motor (ready ON/OFF switch must be ON).

4 READY led lights green when the power is on

5 Water pump switch. Glows in orange when the water pump is working.

6 HIGH VOLTAGE marking /When it is present the machine is for high voltage power supply/

7 LED lights switch.

8 QR code. When you scan it with your phone for example, it will redirect your browser to Lavina manuals page.

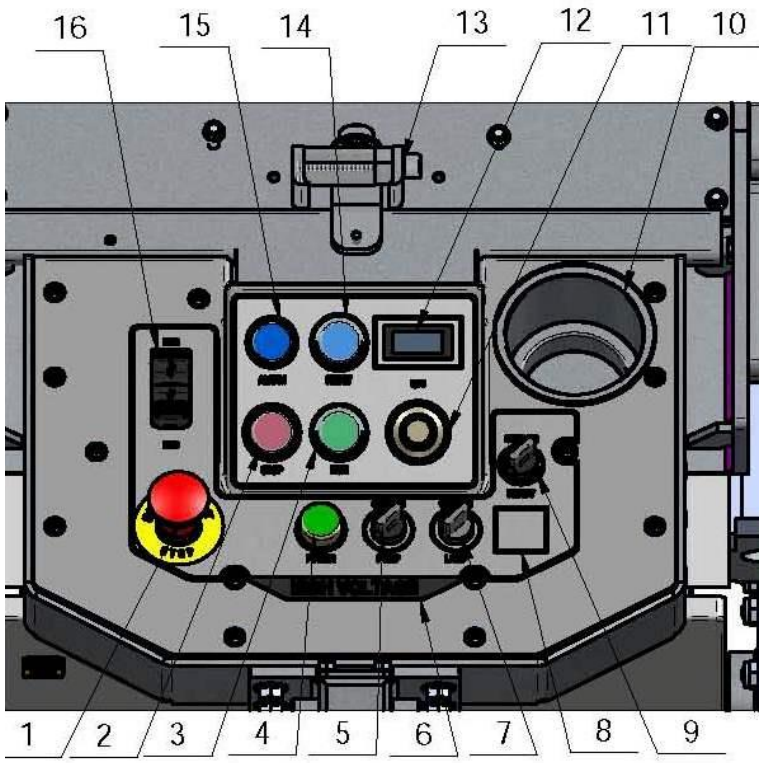


Figure 4.9

9 READY ON / OFF switch. The switch returns to its starting position after being released.

If you want to start the motor it must be ON as it puts the inventor into standby mode (it glows
when it's turned ON). If it's off the inventor will be out of standby mode and you cannot start the motor.

10 Cup holder.

11 Potentiometer controls the RPM of the grinding plates on a range of 300-1100

12 Digital Tachometer indicates the revolution per minute of the grinding plates (not the revolution per minute of the entire unit).

13 Phone holder

14 Reset button resets the alarm of the inverter

15 Inverter alarm led Lights blue when the inverter goes into alarm mode

16 USB charger

4.6 STARTING THE MACHINE

Strictly follow the instructions in "SAFETY INSTRUCTIONS".

NEVER WORK WITH THE MACHINE WITHOUT MAINTAINING VISUAL CONTACT WITH IT.

First, follow the directions in the chapter on Safety Devices and Safety Instructions. If working wet, add water to the floor surface. If working dry, instead switch on the vacuum unit. Next, pull the emergency stop (Fig.4.9-1) to ensure that the machine can be started. Check the potentiometer (Fig.4.9-11) and ensure that it is set at the working speed.

Finally, hold the machine firmly and turn the start button (Fig.4.9-3)

4.7 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 the tools' grit size. Avoid vibrations. Do not stop the Lavina® 32EU machine in one spot while the tools are still working because they will leave marks on the floor surface. When working wet, select the destination of the water feed with the water tap (fig. 4.2-1) and periodically run the pump (fig. 4.9-5) to release water onto the floor surface. Starting the pump is possible only if the machine motor is on. When working dry, check the floor surface periodically for dust accumulation. Check regularly to see if your vacuum works properly

4.8 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, switch the off switch (Fig.4.9-2). Use the Emergency button (Fig.4.9-1) only in emergency or to fully disconnect power

Remember not to hold the machine in one spot before turning off the motor.

4.9 ALARM

The Alarm light ((Fig.4.9 -15) will light if the inverter goes in alarm mode. The most common failure is motor overload. To reset the mode, push the reset button ((Fig.4.9-14).

5. TOOLS AND ACCESSORIES

TOOL HOLDER KEY

The tool holder key (Fig. 5.1) is used for adjusting, mounting and dismounting of the tools. Always use the key for mounting.

Item number is A03.00.00.00

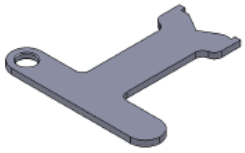


Figure 5.1

SECURITY PLATE FOR QUICKCHANGE PADS

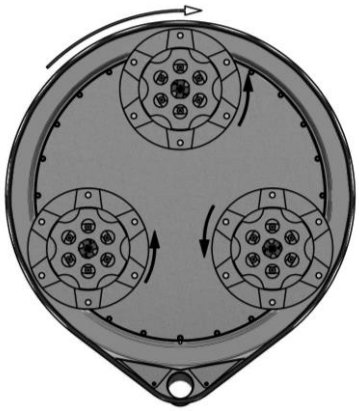
Plate (Fig.5.2) used to secure the "Quickchange" pads.

Item number is A63.00.01

Figure 5.2

6. POPULAR TOOLS

The heads have counter-clockwise / left rotation.
Use the blue PCDs and Carbide Scrapers.



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

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.

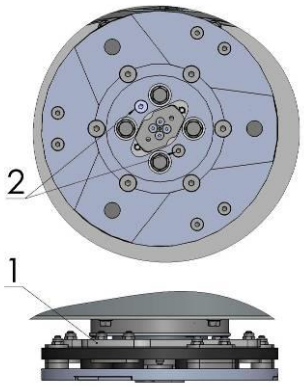


Figure 7.1

CHECK DAILY

After operating the Lavina® 32EU, 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. The key lock holders (butterflies) on the tool holders should be also checked.

Check the rubber buffers and make sure the holders are secure. The flange holding the buffers (Fig.7.1-1) has to be firmly secured to the unit. A gap seen here indicates loose screws securing the holder. The screws have to be tightened immediately to safely operate the machine. Working with loose screws could cause serious damage to the machine. The tightening force on the screws should be 22-25N.m (16-18ft·lbf).

It is very important to regularly check the screws that secure the "QuickChange" holder to the safety part (Fig.7.1- 2), so that the holder will not fly away if the buffers get damaged. The "QuickChange" should also be cleaned.

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 plugs, vacuum hoses and water tank/filter. Also, check the water flow of the pump. Check the guard assembly. Ensure the wheels are clean and rotate properly. Inspect the control buttons. If there are defective control parts, they should be replaced immediately. Replace any worn vacuum or water hoses.

Open the service cover on the motor base (to check the planetary chain. Lubricate the chain with chain lubricant and correct the sag if needed. (For sagging correction see TROUBLESHOOTING 8.4)

Dismount the tool holders (See TROUBLESHOOTING) and replace any parts (elastic element, buffers, sealer caps, "O" rings) showing any damage.

For more information, refer to chapter troubleshooting below.

CHECK EVERY 400 WORKING HOURS

In addition to checks made every 200 hours, check if sealers and bearings are in good condition and change if needed.

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

ELECTRICAL SYSTEM

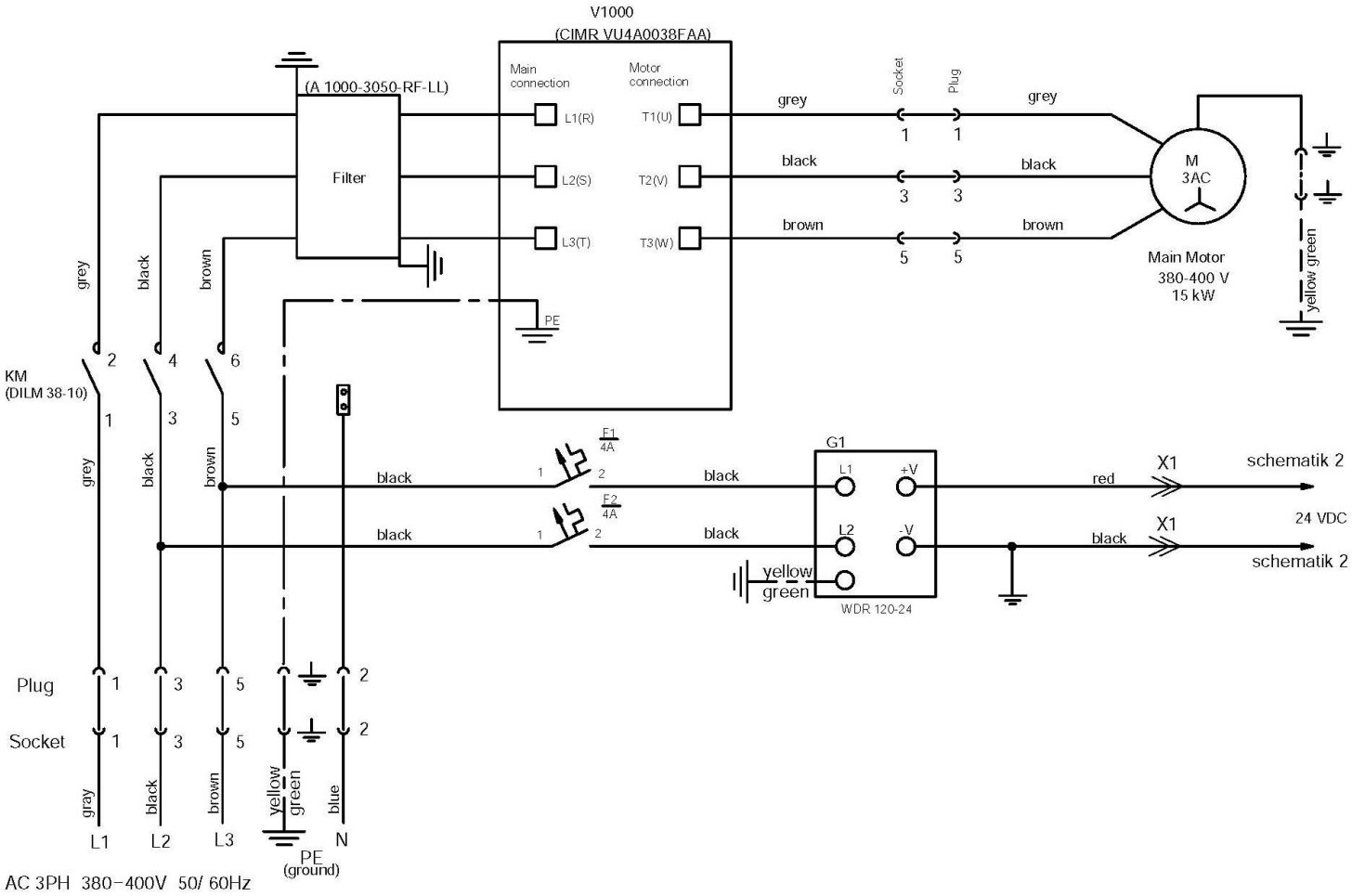
Dust should not enter the control box, as it will destroy the contacts. Remove (blow out) any dust present.

MECHANICAL PARTS

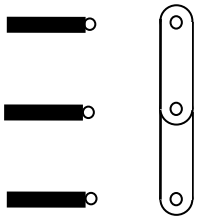
Parts such as the belt, seal rings, cap rings, spiders and buffers and guard assembly are subject to wear and should be replaced as needed.

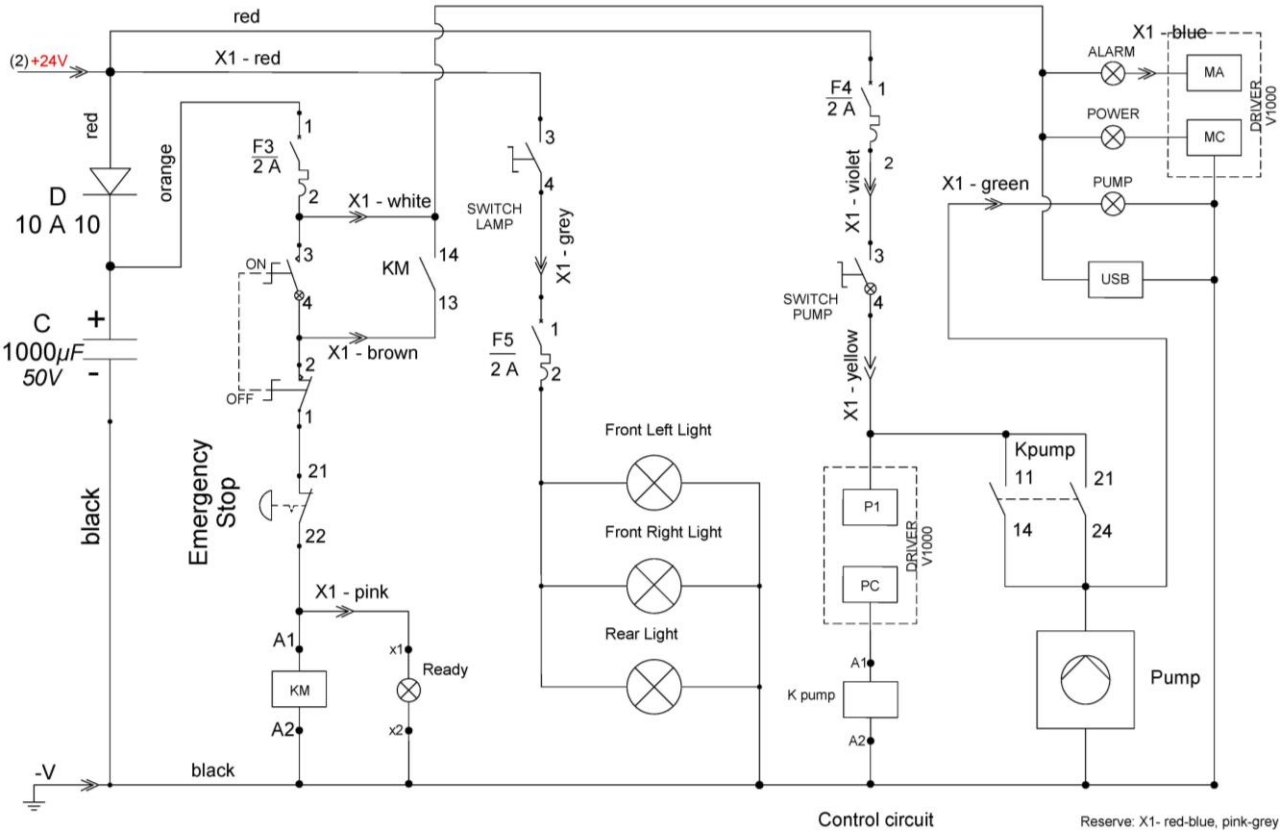
OPERATION	INTERVAL		
	Daily	Every 200 Hrs.	Every 400 Hrs.
Inspect power cords, plugs and vacuum hoses, loose bolt or screws.	X		
Check the rubber buffers, elastic element and fixing of the holders	X		
Inspect and clean the tool plate connections		X	
Inspect and clean water tank, filters mesh and misting nozzle		X	X
Inspect the seal rings and bearings of the grinding units		X	
Check the planetary chain and lubricate		X	X
Replace Felt-Ring and V-rings			X
Check belts and bearings			X

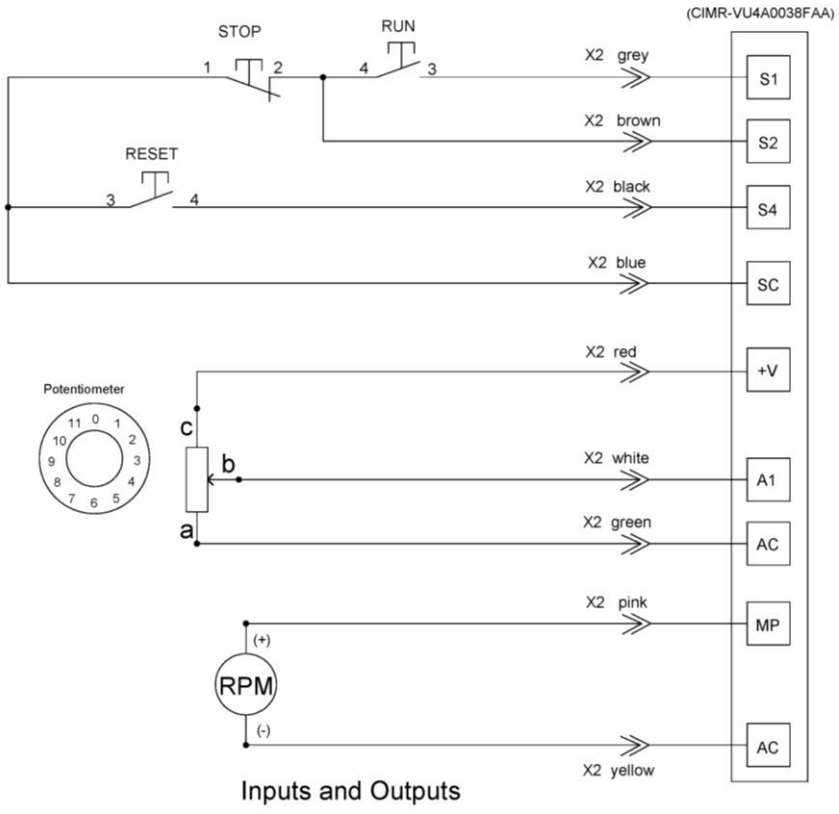
LAVINA®32EU ELECTRICAL SCHEMES WITH YASKAWA INVERTER 380-400 VOLT



The motor is connected in “Star” 380 Volt,
reminder for the wire connection of the motor.




red
(2) +24V
X1 - red
red
orange
D
10 A 10
C
1000µF
50V
black
-V
black
F3
2 A
X1 - white
ON
KM
OFF
X1 - brown
Emergency Stop
21
22
X1 - pink
A1
KM
A2
x1
Ready
x2
SWITCH LAMP
X1 - grey
F5
2 A
Front Left Light
Front Right Light
Rear Light
F4
2 A
X1 - violet
SWITCH PUMP
X1 - yellow
P1
PC
DRIVER V1000
A1
K pump
A2
Kpump
11
21
14
24
Pump
X1 - blue
ALARM
MA
POWER
MC
DRIVER V1000
X1 - green
PUMP
USB
Control circuit
Reserve: X1- red-blue, pink-grey


(CIMR-VU4A0038FAA)
STOP
RUN
RESET
X2 grey
X2 brown
X2 black
X2 blue
X2 red
X2 white
X2 green
X2 pink
X2 yellow
S1
S2
S4
SC
+V
A1
AC
MP
AC
Potentiometer
c
b
a
(+)
RPM
(-)
Inputs and Outputs

8. TROUBLESHOOTING

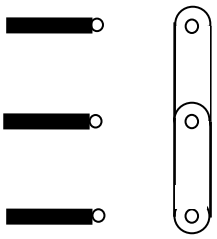
INDEX OF PROBLEMS AND SOLUTIONS

8.1 REPLACING POWER CORD AND PLUGS

When replacing the power cord or plugs, always use cords and plugs with the same specifications as the original ones. Do not use lower quality or different types of cords or plugs.
In addition, consider the distance between the appliance and the electrical source - the greater the distance, the greater the resistance and the less current that will be available at the other end. This will cause a voltage drop and the inverter will switch into alarm mode. This will also happen if several machines are working on the same line or the generator is not rated for the power needed. In general, our standard power cable can be doubled in length; longer lengths require replacing all the cables with cables of a larger gauge rate to account for the length and amperage.

8.2 MOTOR CONNECTION

When changing the motor, please check the cable connection to your motor.



Lavina® 32EU
The motor is connected in "Star" 380 Volt, reminder for the wire connection of the motor.

8.3 DISMOUTING TOOL HOLDERS TO CHANGING V-RINGS AND FELT RINGS


Figure 8.3.1


Figure 8.3.2

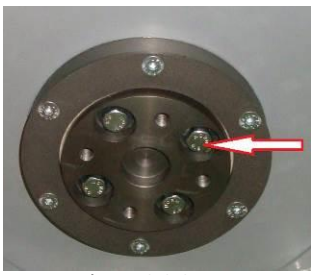


Figure 8.3.3

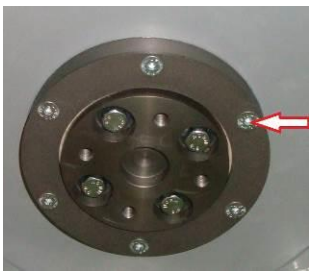


Figure 8.3.4

Figure 8.3.5

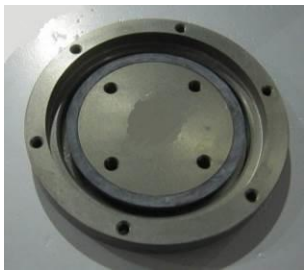


Figure 8.3.6

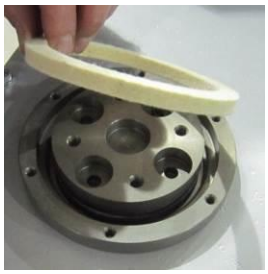


Figure 8.3.7

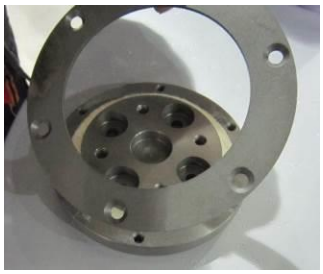


Figure 8.3.8

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.8.3.1) and remove the holder (Fig.8.3.2) When the tool holder is dismounted, you can change the sealers (V-Ring and Felt-Ring).
By loosening four Hex cap flange bolts (Fig.8.3.3) the adaptor comes loose. Unscrew the six screws of the cap (Fig.8.3.4) 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.8.3.5) - simply push the V-Ring so the top is on the same level as the pulley top (Fig.8.3.6). Then take the adaptor and push the V-Ring down with the adaptor (Fig.8.3.7). The lowest lip of the V-Ring should only barely touch its gliding surface. Mount the adaptor and the Felt-Ring on top (Fig.8.3.7). Close the sealers with the cap (Fig.8.3.8) and screw the bolts. Always use the original bolts. Do not push the V-ring down with fingers.

When the tool holder and adapter are dismounted, you can change the top key transmitting the movement to the planetary chain.

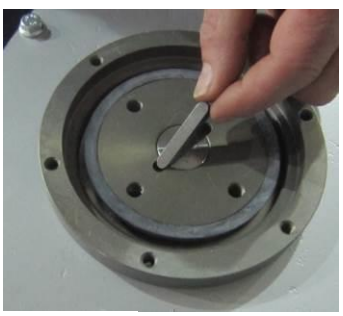


Figure 8.3.9


Figure 8.3.10

8.4 DISASSEMBLING AND MOUNTING TOOL HOLDERS TO CHANGING BUFFERS AND ELASTIC ELEMENT

When the TOOL HOLDER is disassembled you can change defective parts – elastic element, buffers, etc.
Lift the locking pin (Fig.8.4.1) to dismount the retaining washer (Fig.8.4.2). Take out the screws on the buffers and the nuts of the elastic element (Fig.8.4.3; Fig.8.4.4). Remove the elastic element from the QC plate (Fig.8.4.5). While the holder is dismounted (Fig.8.4.6; Fig.8.4.7), clean the parts and replace any defective ones with new ones. Assemble the holder with new buffers, new screws, and new elastic element. Replace the retaining washer (Fig.8.4.8) and push the locking pin (Fig.8.4.9). This will prevent the washer from falling while mounting the holder on the machine.


Figure 8.4.1


Figure 8.4.2

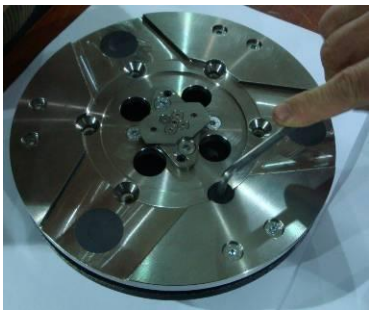


Figure 8.4.3

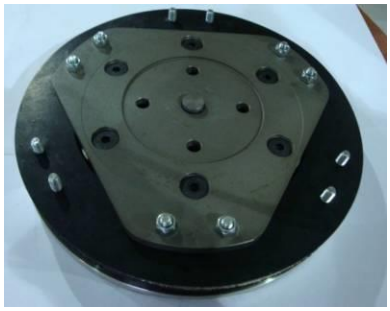


Figure 8.4.4


Figure 8.4.5


Figure 8.4.6


Figure 8.4.7

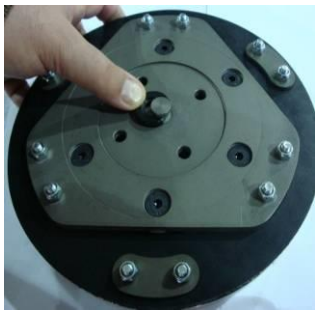


Figure 8.4.8

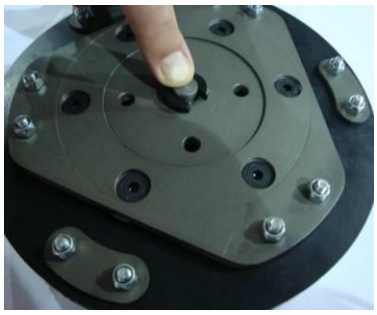


Figure 8.4.9

Make sure the four bolts holding the adaptor (Fig.8.4.12) are reliably tightened. Mount the holder on the machine using the same socket as in 8.3 (Fig.8.4.10; Fig.8.4.11). The retaining washer fits into the central hole C of adaptor and the four bolts into the thread holes T (Fig.8.4.12). 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 retaining washer (Fig.8.4.2) 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 8.4.10

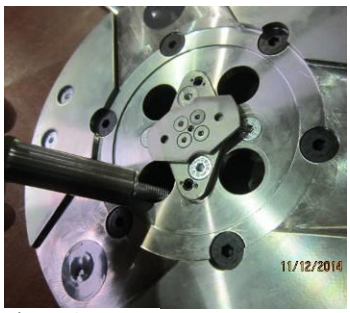


Figure 8.4.11

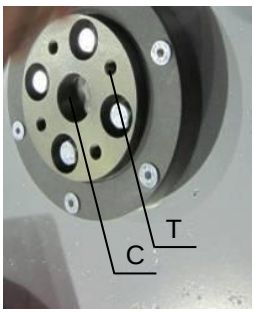


Figure 8.4.12

Fig.8.4.13 is 3-d section view of the holder, showing its parts. The numbering is the same as in Spare parts.

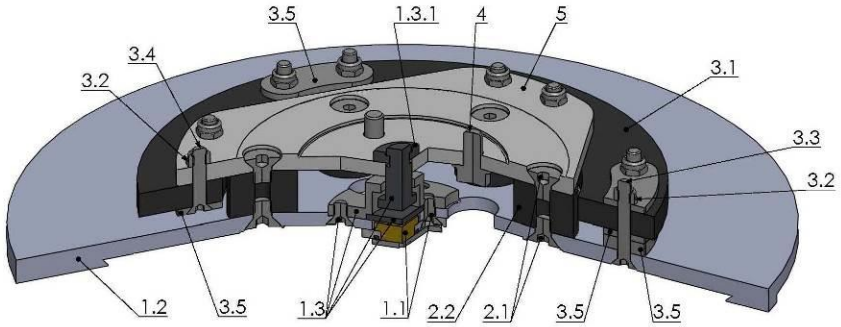


Figure 8.4.13

8.5 SEPARATING THE HEAD FROM THE CARRAGE

1. Unplug the motor cable plug from the control box
2. Unscrew the two bolts about 1-1.5 turn /Fig. 8.3.2-2; Fig. 8.3.2-3;/.to disconnect the vacuum connector/Fig. 8.3.2-4/ from the carriage.
3. Disconnect the flexible hose supplying water under the cover of the machine/Fig. 8.3.3-1/. All water connections in the machines are with fittings types„Push-In “and „Release button”.

4. Unscrew the two bolts /pos.2/ to remove the panel /pos.1 / /Fig.8.3.4/.
5. Remove the lamps /on magnetic attachment/ and disconnect the cable /pos.1 and pos.2 Fig. 8.3.5/.

Figure 8.3.1

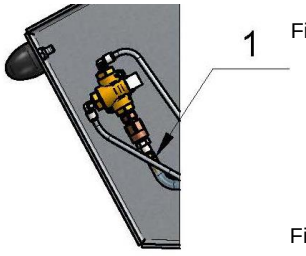
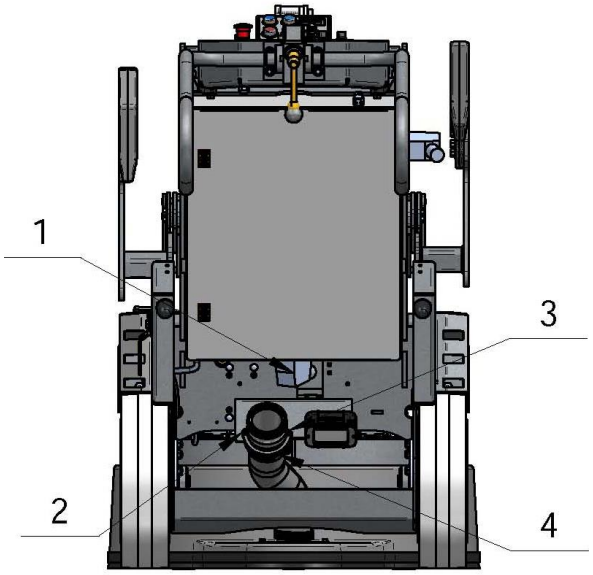


Figure 8.3.2

Figure 8.3.3



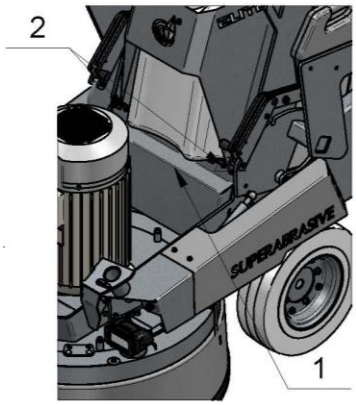


Figure 8.3.4

6. Disconnect the flexible hose supplying water to outside mist nozzles of the machine /pos.3 and pos.4 Fig. 8.3.5/. All water connections in the machines are with fittings types„Push-In "and „Release button".
7. Unscrew the four bolts with nuts /pos.1/ to remove the bridge with mist nozzles and holders for third wheel.

8. Unscrew the two nuts /pos.2, Fig. 8.3.9 /.

Now it is possible to separate the head by removing the bolts. This will require two people: one person holds the carriage while the other pulls the bolts. After removing the bolts, carefully pull the carriage backwards to ensure that there is no collision with the engine oil drain plug or other part of the main head.

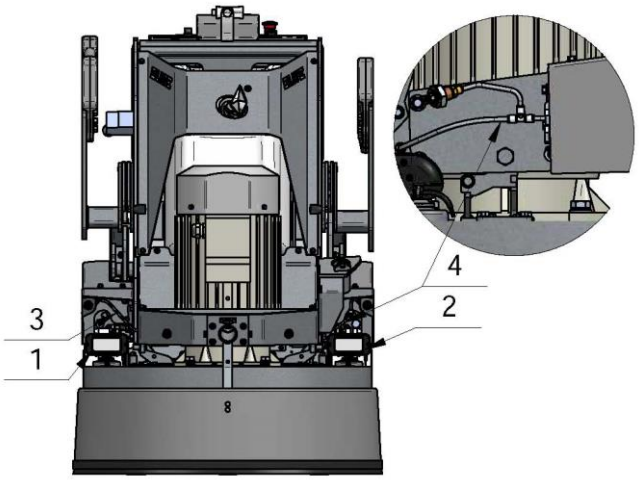


Figure 8.3.5

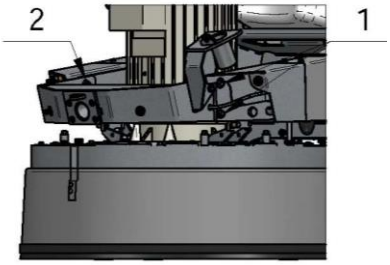


Figure 8.3.8

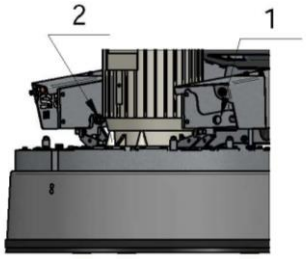


Figure 8.3.9

8.6 REPLACING THE MOTOR

When the motor or central shaft (or bearings of) need to be replaced, it is necessary to dismount the motor. To do this, unscrew the four bolts (3) fixing it to the base plate. The hole (3) at the central shaft can be used to clean surfaces if movement is hindered. Dismount the holders and the bottom cover (5), then unscrew the bolt (4) and remove the belts. Spray and give time to react with the screw ring M16 (6), screwed in the shaft thread; then remove the motor. Where the thread hole is not available at the end of the shaft use the rings at (7). You can find the items in Spare parts in the table "13 - LAVINA®32E motor FAN Parts."
When remounting the bolt (4), use thread locker, but first thoroughly clean the thread in the shaft and on the bolt.

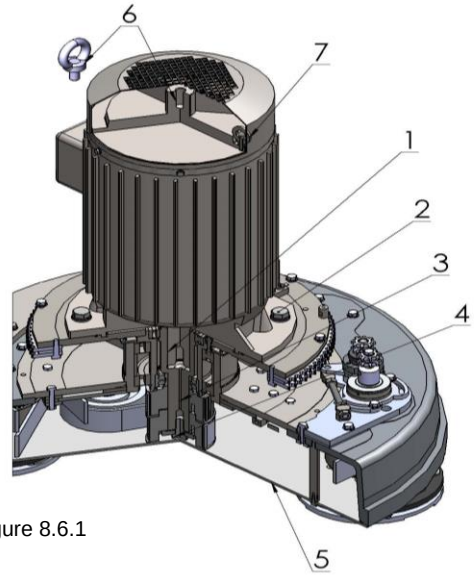


Figure 8.6.1

8.7 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	When the drive detects a fault: • 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. *Refer to Fault Reset Methods on page 264*.
Minor Faults and Alarms	When the drive detects an alarm or a minor fault: • 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	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. When the drive detects an operation error: • 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	Tuning errors occur while performing Auto-Tuning. When the drive detects a tuning error: • 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
bUS	bUS	Option Communication Error	*242*
CE	CE	MEMOBUS/Modbus Communication Error	*242*
CF	CF	Control Fault	*242*
CoF	CoF	Current Offset Fault	*242*
CPF02	CPF02	A/D Conversion Error	*242*
CPF03	CPF03	PWM Data Fault	*243*
CPF06	CPF06	Drive specification mismatch during Terminal Board or Control Board replacement	*243*
CPF07	CPF07	Terminal Board Communication Fault	*243*

LED Operator Display		Name	Page
CPF08	CPF08	EEPROM Serial Communications Fault	*243*
CPF11	CPF11	RAM Fault	*243*
CPF12	CPF12	FLASH Memory Fault	*243*
CPF13	CPF13	Watchdog Circuit Exception	*243*
CPF14	CPF14	Control Circuit Fault	*243*
CPF16	CPF16	Clock Fault	*243*
CPF17	CPF17	Timing Fault	*243*
CPF18	CPF18	Control Circuit Fault	*243*
CPF19	CPF19	Control Circuit Fault	*244*

LED Operator Display		Name	Page
CPF20 or CPF21	CPF20or CPF21	RAM Fault	244
		FLASH Memory Fault	244
		Watchdog Circuit Exception	244
		Clock Fault	244
oH3	oH3	Motor Overheat 1 (PTC input)	247
oH4	oH4	Motor Overheat 2 (PTC input)	248
oL1	oL1	Motor Overload	248
oL2	oL2	Drive Overload	248
oL3	oL3	Overtorque Detection 1	249
oL4	oL4	Overtorque Detection 2	249
oL5	oL5	Mechanical Weakening Detection 1	249
oL7	oL7	High Slip Braking oL	249
oPr	oPr	Operator Connection Fault	249
CPF22	CPF22	A/D Conversion Error	244
CPF23	CPF23	PWM Feedback Data Fault	244
CPF24	CPF24	Drive Capacity Signal Fault	244
dEv	dEv	Excessive Speed Deviation (for Simple V/f with PG)	244
EF0	EF0	Option Card External Fault	244
EF1 to EF7	EF1 to EF7	External Fault (input terminal S1 to S7)	244
FbH	FbH	Excessive PID Feedback	245
FbL	FbL	PID Feedback Loss	245

LED Operator Display		Name	Page
GF	GF	Ground Fault	245
LF	LF	Output Phase Loss	245
LF2	LF2	Output Open Phase	246
oC	oC	Overcurrent	246
oFA00	oFA00	Option Card Fault (port A)	246
oH	oH	Heatsink Overheat	247
oH1	oH1	Heatsink Overheat	247
PGo	PGo	PG Disconnect (for Simple V/f with PG)	250
rH	rH	Dynamic Braking Resistor	251
rr	rr	Dynamic Braking Transistor	251
SEr	SEr	Too Many Speed Search Restarts	251
STO	STO	Pull-Out Detection	251
UL3	UL3	Undertorque Detection 1	251
UL4	UL4	Undertorque Detection 2	251
UL5	UL5	Mechanical Weakening Detection 2	251
Uv1	Uv1	Undervoltage	252
Uv2	Uv2	Control Power Supply Undervoltage	252
Uv3	Uv3	Soft Charge Circuit Fault	252
oS	oS	Overspeed (for Simple V/f with PG)	249
ov	ov	Overvoltage	249
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
ov	ov	Overvoltage	YES	257
PASS	PASS	MEMOBUS/Modbus Test Mode Complete	No output	257
PGo	PGo	PG Disconnect (for Simple V/f with PG)	YES	257
rUn	rUn	During Run 2, Motor Switch Command Input	YES	258
rUnC	rUnC	Run Command Reset	YES	258
UL3	UL3	Undertorque 1	YES	258
UL4	UL4	Undertorque 2	YES	258
Uv	Uv	Undervoltage	YES	258

■ Operation Errors

Table 6.6 Operation Error Displays

LED Operator Display		Name	Page
oPE01	oPE01	Drive Unit Setting Error	259
oPE02	oPE02	Parameter Setting Range Error	259
oPE03	oPE03	Multi-Function Input Setting Error	259
oPE04	oPE04	Terminal Board Mismatch Error	260
oPE05	oPE05	Run Command Selection Error	260
oPE07	oPE07	Multi-Function Analog Input Selection Error	260

LED Operator Display		Name	Page
oPE08	oPE08	Parameter Selection Error	260
oPE09	oPE09	PID Control Selection Error	260
oPE10	oPE10	V/f Data Setting Error	261
oPE11	oPE11	Carrier Frequency Setting Error	261
oPE13	oPE13	Pulse Train Monitor Selection Error	261

8.8 CORRECTING SAG OF USED PLANETARY CHAIN

Unscrew the bolts of the maintenance window (see Fig.8.8.1) from the right side of the main head (Fig.8.8.2) (Fig.8.8.3) and lift the machine into tool-changing position. Manually turn the holders in order to turn the main head, stop when the chain link and the chain tensioner can be seen through the window.

Loosen two bolts of the chain tensioner a quarter to a half revolution (Fig.8.8.5). The tensioner should turn with minimum clearance, without inclination, and then unscrew the inner nut (Fig.8.8.6). To tension the chain screw, tighten the outer nut (Fig.8.8.7). The tensioner of the planetary chain should allow chain sagging of 3...5mm (1/8...3/16 in) measured in span X (Fig.8.8.7). When the tension is set, screw the two nuts (Fig.8.8.6) (Fig.8.8.7) and the two bolts (Fig.8.8.4) (Fig.8.8.5).

ATTENTION: NEVER "OVER" TENSION THE CHAIN, THE CHAIN WILL BE DAMAGED

8.9 MOUNTING NEW PLANETARY CHAIN


Figure 8.8.2


Figure 8.8.3


Figure 8.8.4


Figure 8.8.5


Figure 8.8.6

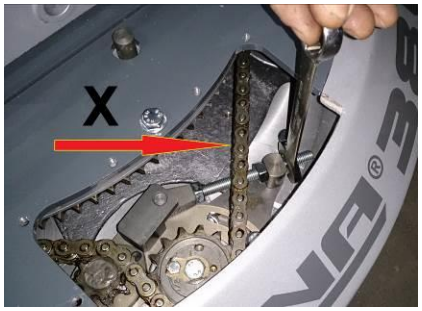


Figure 8.8.7

The planetary chain is replaced with new one when the step/drive of the chain tensioner is finished or there is a loss of integrity of the chain. Take off the maintenence window (see Fig.8.8.1) from the front of the main head (Fig.8.8.2) (Fig.8.8.3) and lift the machine into tool-changing position. Manually turn the holders in order to turn the main head, stop when the chain link and the chain tensioner can be seen through the window.

Figure 8.9.1

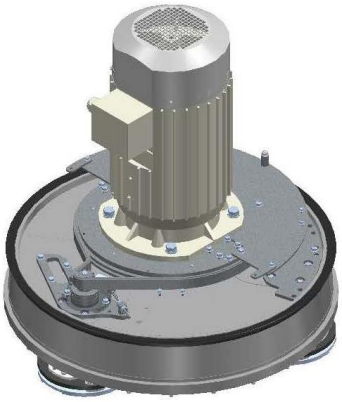


Figure 8.9.2

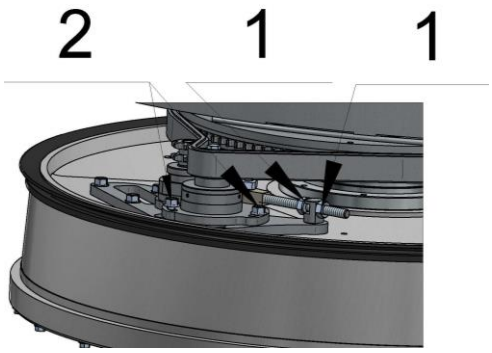


Figure 8.9.3

Seperate the main head from the carriage as described in the paragraph "Separating the head from the carriage", Dismount the top cover. Unscrew the eight bolts (Fig.8.9.1) and take off the top cover (Fig.8.9.2) (Fig.8.9.3).

Pull out the split pin (Fig.8.9.6) and the chain link pin (Fig.8.9.7) Remove the chain, and install the new chain in the same manner, then insert the chain link pin and the split pin (Fig.8.9.8) (Fig.8.9.9)

To tension the chain, screw the outer nut (Fig.8.9.4). The tensioner of the planetary chain should allow chain sag of 3...5mm (1/8...3/16 in) measured in span X (Fig.8.8.7). With tension set, screw the two nuts (Fig.8.9.3-1) (Fig.8.8.8) and the two bolts (Fig.8.9.3) (Fig.8.9.4).

ATTENTION: NEVER "OVER" TENSION THE CHAIN, THE CHAIN WILL BE DAMAGED

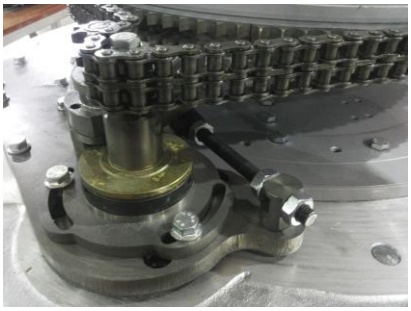


Figure 8.9.4

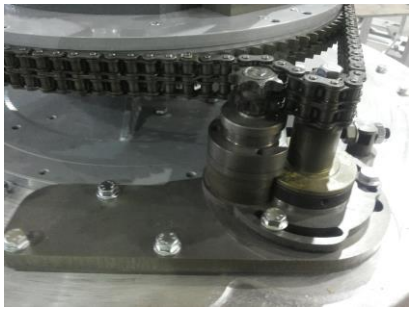


Figure 8.9.5

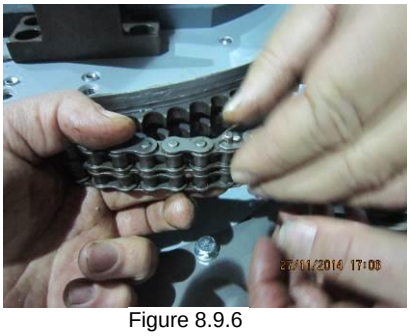


Figure 8.9.6

Figure 8.9.7

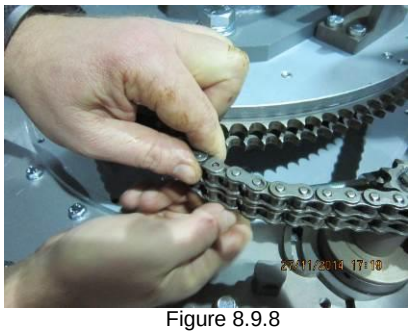


Figure 8.9.8

8.10 REPLAING THE FRONT KEY JOINT OF THE PLANETARY PULLEY

Find the driving pulley unit of the planetary movement. Dismount the holder (Fig.8.10.1) and the adaptor underneath (Fig.8.10.2), this will clear the access to the front key joint. (Fig. 8.10.4)

Figure 8.10.1

Figure 8.10.2

Figure 8.10.3

Figure 8.10.4

8.11TENSIONING AND REPLACING THE TRANSMISSION BELT

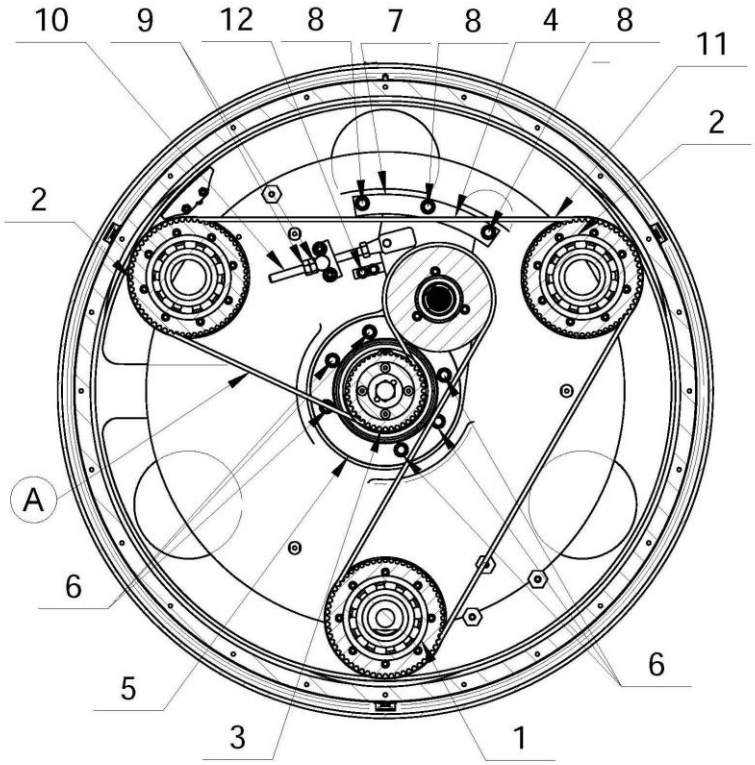


Figure 8.11.1

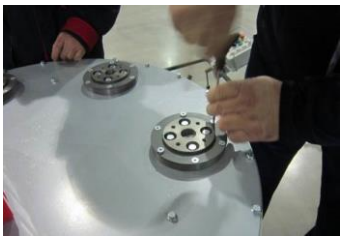


Figure 8.11.2

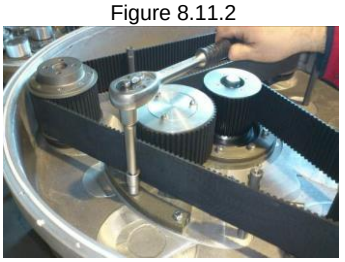


Figure 8.11.3

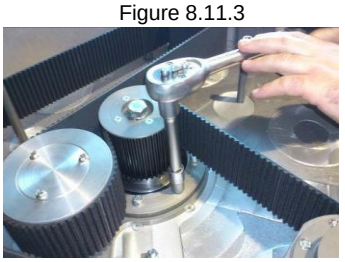


Figure 8.11.4

The transmission of the machine has one maintenance-free timing belt. To change the belt, remove all holders and dismount their adaptors. Dismount the sealing. Carefully check the friction surface (flanges of the lower cover and the outside diameter of the adaptors). Decide if they are in good condition (wear, smoothness of surface) and whether they can work until next inspection.

Remove the bottom cover by unscrewing the bolts around the edge and the three bolts of the spacers. (Fig.8.11.2). Under the cover there is a sealer around the edge, and the spacers have O-Rings. It is recommended to change all seals with the belts.

Fig.8.11.1 shows the scheme of the belt location. To mount the new belt, first unscrew the nuts at pos.8(Fig.8.11.5), pos.9(Fig.8.11.3) and the six bolts at pos.6(Fig.8.11.4) enough to be able to turn the tensioner around the central axle. Clean the washers and surrounding area, and check if all bearings of pulley units and tensioners are in good condition (check for too much clearance or rolling noise). Rotating the tensioner will allow the centre distance to be reduced so the timing belt may be fitted without force.

Figure 8.11.5

Put the belts in pos.11 as per the scheme, and pay attention to their correct orientation at each pulley. Ensure that you have loosened the nuts at pos.8 and the six bolts at pos.6, allowing the tensioner to rotate with minimal force. Using the nuts at pos.9, tighten the belt, and verify again the correct position of the belt and the correct gearing in every pulley. Rotate the gear while tensioning to allow for a regular tension distribution along the belt. Control the tension using Frequency tension Tester Optibelt 3 TT(Fig.8.11.2).

The tension in the span A(Fig.8.11.6) of the belt should be 113-123Hz. The belt tension can be tested manually by pushing with a force of 24 kg (53 lbs) in point A(Fig.8.11.1), at which the deflection of the belt must be 6 mm or ± 0,23 Inch.

Figure 8.11.6

It is possible to use the pre-installed supports (Fig. 8.11-12)(Fig. 8.11.7) as references to stop the tensioner at the desired belt tension, provided that the supports have not been moved from their factory position.

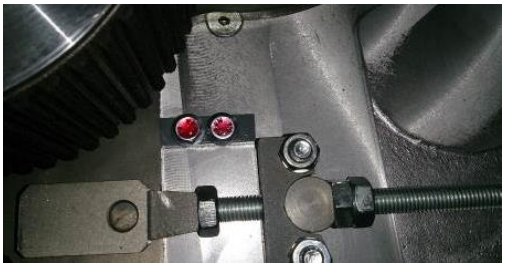


Figure 8.11.7

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

8.12 REPLACING THE PULLEYS

Fully loosen the belt and remove (see the previous section). After removing the belts, unscrew the four bolts of the pulleys on top of the disc (Fig. 8.12.1) and replace.

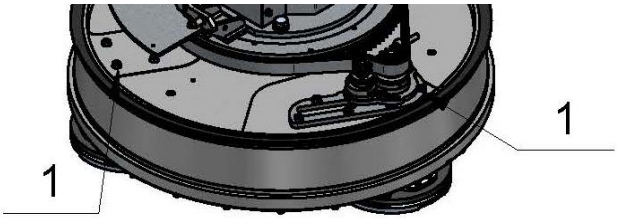


Figure 8.12.1

8.13 REPLACING THE PLANETARY DRIVING CHAIN WHEEL AND CENTRAL CHAIN WHEEL AND PLANETARY TENSIONER

Unscrew the bolt and remove the old gear. Put grease in the safety cap (Fig.8.13.1-3) of the new gear and mount to the shaft. Fold the safety washer as shown on Fig.8.13.1, and screw the bolt, using the "blue" thread locking adhesive. Tightening force on the bolts should be 22...25 N.m (16...18 lbf.ft). Screw the safety washer as shown on (Fig.8.13.1).

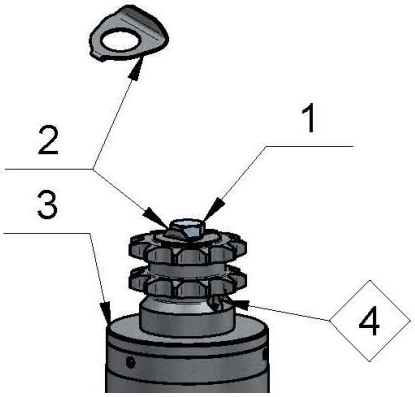


Figure 8.13.1

When mounting the new gear put silicone sealant in pos. 4 of Figure 8.13.1.
The central gear consists of two halves, which are replaceable by unscrewing the bolts on fig.8.13.2

Figure 8.13.2

When dismounting the chain, unscrew the nuts (1) on the pin. Unscrew the bolts (2) and lift the tensioning assembly.

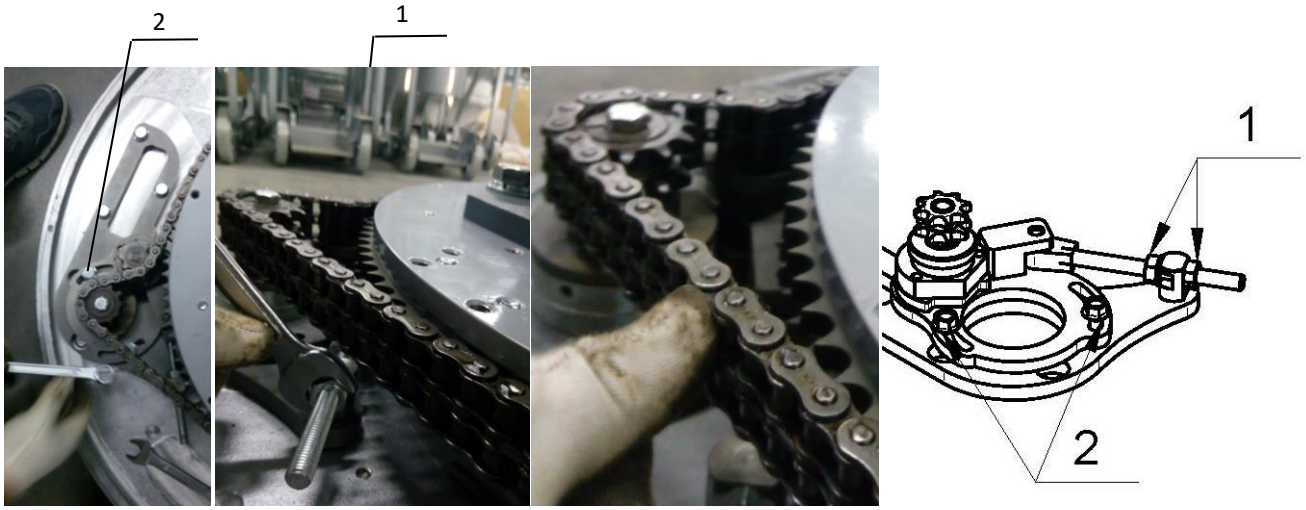


Figure 8.13.3

WARRANTY AND RETURNS

WARRANTY POLICY FOR THE LAVINA® ELITE MACHINE

Superabrasive Ltd. guarantees that the original purchaser of the Lavina® Elite machine will be covered against defects in material and workmanship for a period of 2 years from the date of delivery or 600 hours of use whichever comes first.
The following conditions pertain to this warranty:

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

The above warranty conditions may be changed only by Superabrasive. Superabrasive reserves the right to inspect and make a final decision on any machine returned under this warranty. This warranty applies to new, used and demo machines.
Superabrasive does not authorize any person or representative to make any other warranty or to assume for us any liability in connection with the sale and operation of our products

RETURN POLICY FOR LAVINA® ELITE MACHINES

The Lavina® Elite machines may be returned, subject to the following terms:
In no case, a machine is to be returned to Superabrasive Ltd. for credit or repair without prior authorization. Please contact Superabrasive Ltd. 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 Ltd. will not be responsible for these

9. DISPOSAL

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

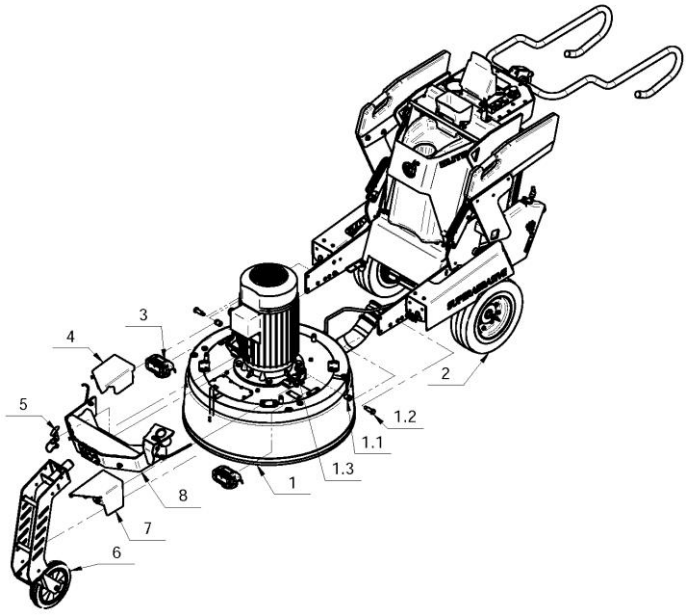
10. MANUFACTURER'S CONTACTS

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

Address: Rabotnicheska 2A, 6140Krun, Bulgaria
Email: factory@superabrasive.com
Tel.: +359 431 64477
Website: www.superabrasive.com

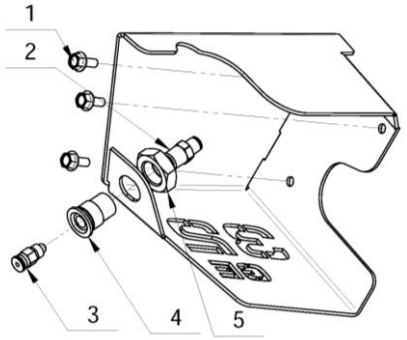
11. SPARE PARTS

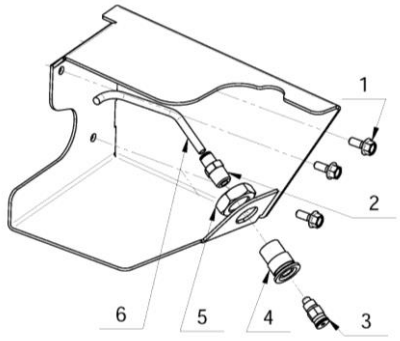
ASSEMBLY AND PARTS SPECIFICATIONS



11.1 LAVINA®32EU GENERAL PARTS				
No.		Item No.	Description	Pcs.
1		L32RE10.00.00	Main Head	1
	1.1	L32E10.00.23	Bush	2
	1.2	L32-00.00.00.00.02	Bolt	2
	1.3	30301240134	Nut M12DIN6923	2
2		L32EU20.00.00	Carriage	1
3		A50.00.00.00	LED light with magnetic base	2
4		L32EU02.00.00	Misting nozzle support L32EU	1
5		L32RE05.00.00	Pin Assembly	1
6		L32RE04.00.00	Third wheel L32RE	1
7		L32E03.00.00	Misting nozzle left support	1
8		L32E01.00.00-1	Front Frame L32E-1	1

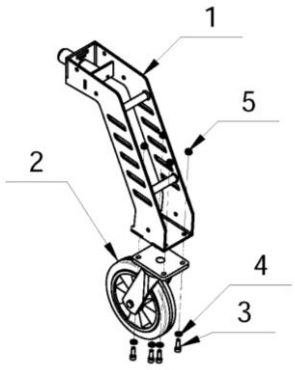
11.2 LAVINA®32EU MISTING NOZZLE SUPPORT L32EU			
No.	Item No.	Description	Pcs.
1	30301210051	BoltM6X16DIN6921	3
2	30313000344	Adapter 1/4 INC - NPT1/4	1
3	30313000064	Misting nozzle	1
4	L20GX-01.10.02	Insert for Misting nozzle	1
5	30301240015	Nut M20x1.5DIN439-B	1

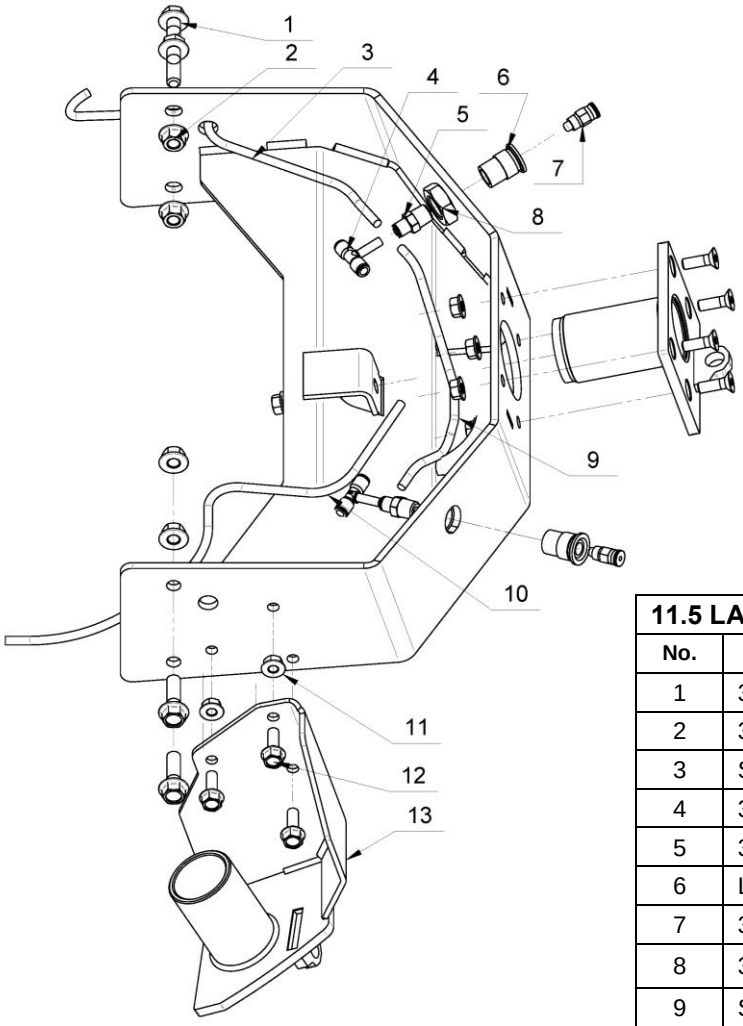




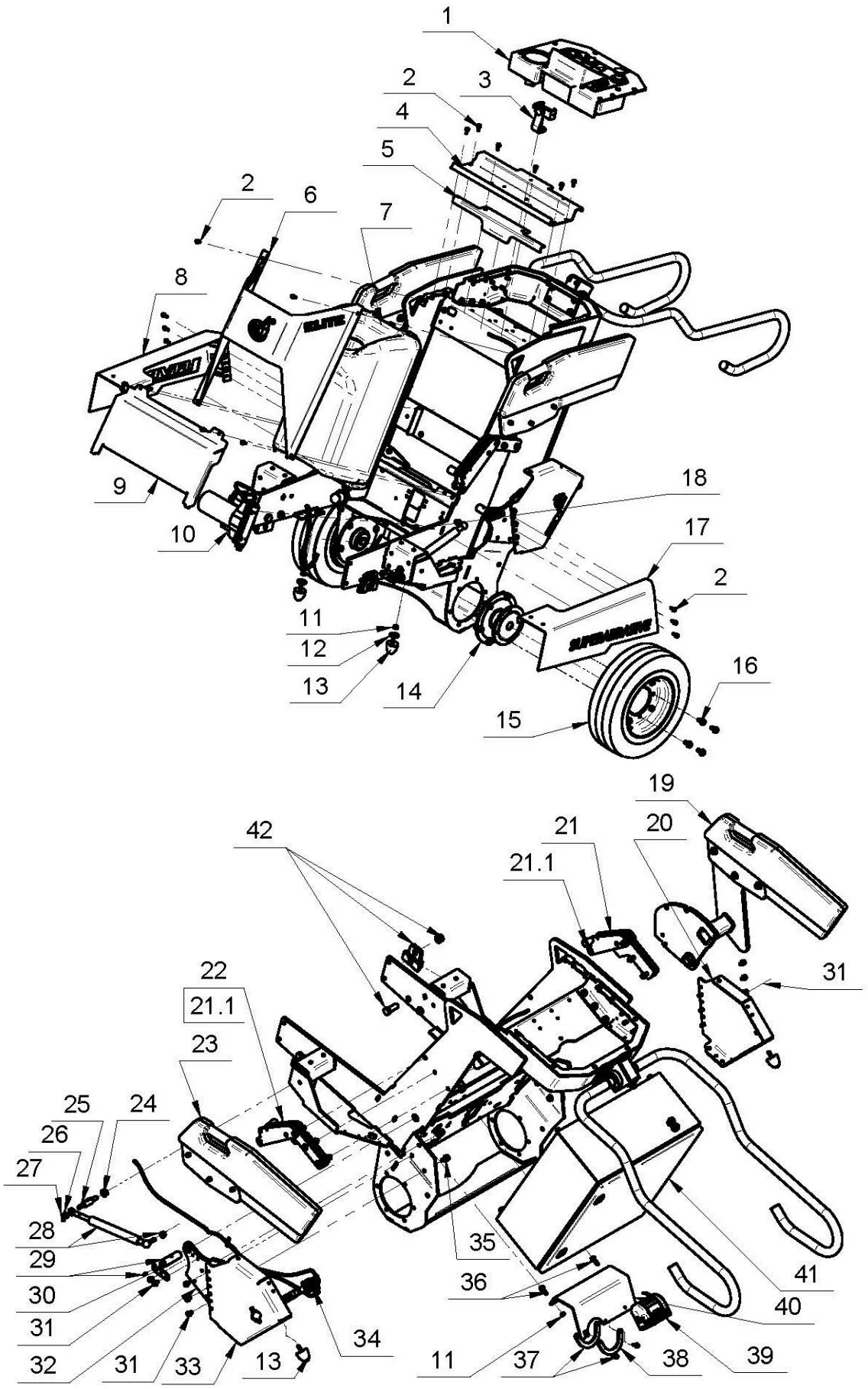
11.3 LAVINA®32E MISTING NOZZLE LEFT SUPPORT			
No.	Item No.	Description	Pcs.
1	30301210051	BoltM6X16DIN6921	3
2	30313000344	Adapter 1/4 INC - NPT1/4	1
3	30313000064	Misting nozzle	1
4	L20GX-01.10.02	Insert for Misting nozzle	1
5	30301240015	Nut M20x1.5DIN439-B	1
6	See table 11.8	PE Tube	1

11.4 LAVINA®32RE THIRD WHEEL			
No.	**Item No.**	**Description**	**Pcs.**
1	L32RE04.10.00	Frame	1
2	30301200053	Wheel	1
3	30301230049	Screw M10x30DIN912	4
4	30301221005	Washer M10DIN125A	4
5	30301240015	Nut M10DIN985	4





11.5 LAVINA®32E FRONT FRAME PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	30301210021	BoltM10x35	4
2	30301240084	NutM10DIN6923	4
3	See table 11.9	PE Tube	1
4	30313000343	EQUAL TEE-1/4 INC-1/4 INC	2
5	30313000344	Adapter 1/4 INC - NPT1/4	2
6	L20GX-01.10.02	Insert for Misting nozzle	2
7	30313000064	Misting nozzle	2
8	30301240015	Nut M20x1.5DIN439-B	2
9	See table 11.9	PE Tube	1
10	See table 11.9	PE Tube	1
11	30301240095	NutM8DIN6923	3
12	30301210038	Bolt M8x25DIN6921	3
13	L32E01.30.00	Third wheel carrier	1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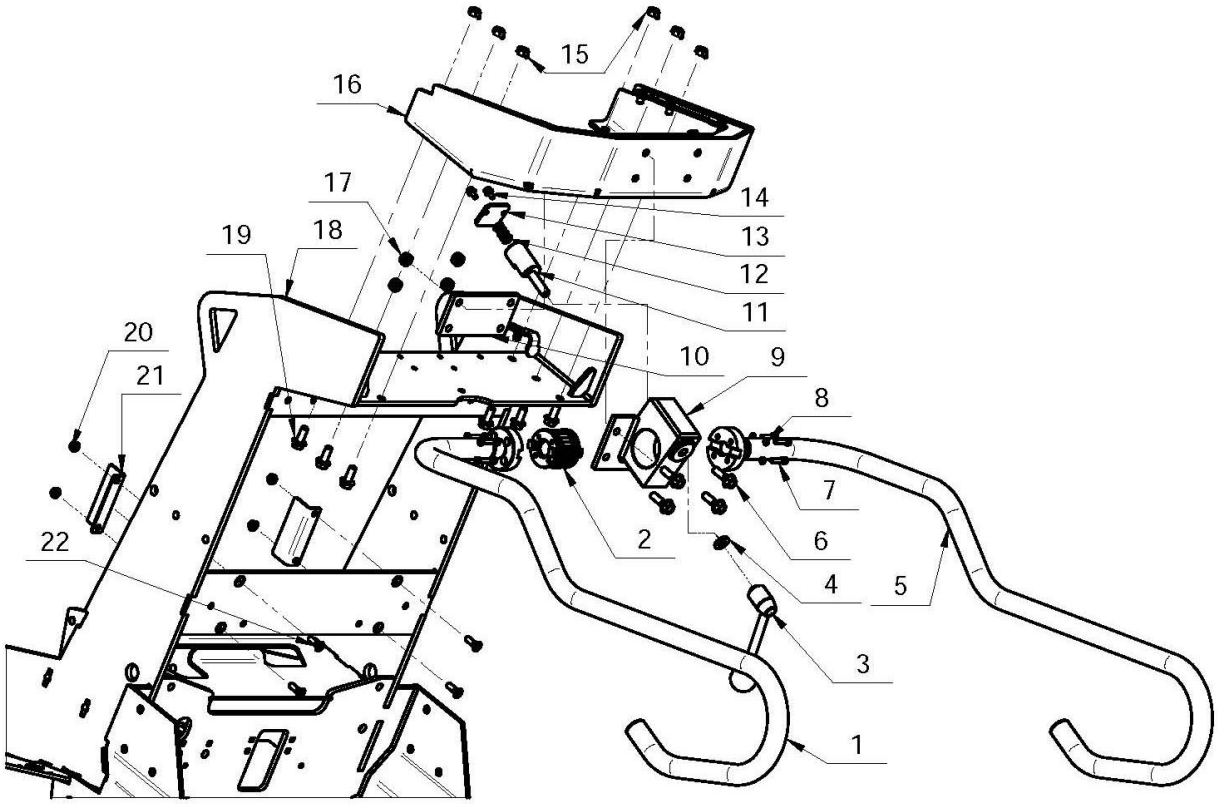
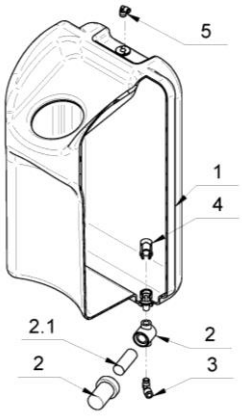
11.6 LAVINA®32EU CARRIAGE							
No.	**Item No.**	**Description**	**Pcs.**	**No.**	**Item No.**	**Description**	**Pcs.**
1	L32E24.00.00	Control board assembly	1	22	L32E20.40.00	Left Weight Support	1
2	30301210051	Bolt M6X16DIN6921	20		L32GE20.20.00	Left Weight	1
3	30350000044	Phone clip mount	1	24	30301240134	Nut M12DIN6923	2
4	L32E20.00.04	Front panel L32E	1	25	L32E20.00.06	Pivot shaft	2
5	L32E20.03.00	Tank plate set L32E	1	26	30301221005	Washer M10DIN125A	2
6	L32E20.00.01	Front panel	1	27	30316000069	Pin3.2x20DIN94	2
7	A56.00.00.00	Tank Assembly	1	28	30317000036	Gas spring	2
8	L32E20.00.02	Fender right	1	29	L32E20.00.07-K	Weight axis L32E	2
9	L32E20.00.14	Front cover	1	30	L32GE20.00.12	Plate for weight axis L32GE	2
10	A57.00.00.00	Water pump set A57	1	31	30301210058	Bolt M8X12DIN6921	10
11	30301240106	Nut M8DIN985	6	32	L32RE20.00.11	Weight support L32RE	2
12	L32D-10.00.24	Washer	2	33	L32E20.02.00	Left pad holder	1
13	30310000005	Pad	4	34	A58.00.00.00	Water Valve assembly L32E	1
14	L32E29.00.00	Wheel Bearing	2	35	30301210033	Bolt M10X20DIN6921	6
15	A66.00.00.00	Wheel assembly	2	36	30301210038	Bolt M8X25DIN6921	4
16	30301210033	Bolt M10X20DIN6921	8	37	L32E20.00.10-K	Clamp cam lock 3 in thread	1
17	L32E20.00.03	Fender left	1	38	L32E20.00.09	Clamp cam lock 3 in	1
18	30301210117	Bolt M6X20DIN6921	4	39	30311000749	LED Light	1
19	L32GE20.10.00	Right Weight	1	40	L32E20.00.05	Light and Cam lock holder	1
20	L32E20.01.00	Right pad holder	1	41	L32EU25.00.00	Control Box Assembly	1
21	L32E20.30.00	Right Weight Support	1				
21.1	30329000008	Knob BO751-107-25M08	2	42**	L32RE20.60.00	Hanger for carriage L32RE	2

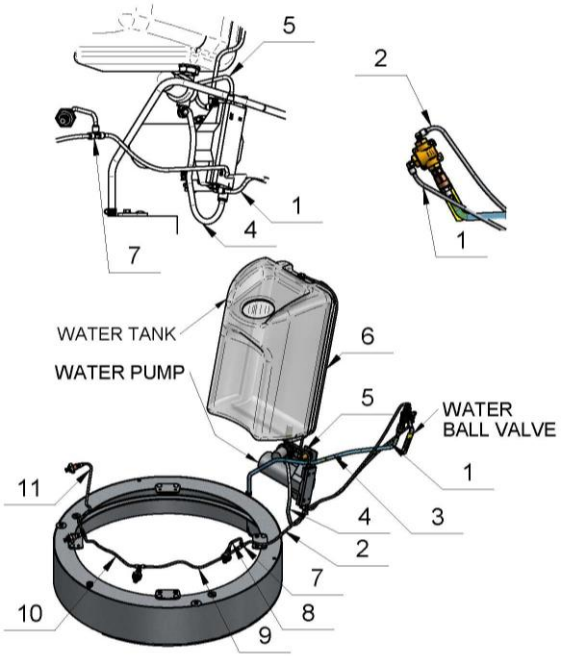
42**- This item is for machines with Ser.No:1906L32E2807; 1906L32E2808; 1906L32E2809; 1906L32E2810; 1906L32E2811; 1906L32E2812; 1906L32E28113; 1906L32E2814 and 1907L32EHV3105; 1907L32EHV3106; 1907L32EHV3107; 1907L32EHV3108. In this case the main head must be used with Right support 2 L32RE and Left support 2 L32RE .



11.7 LAVINA®32E FRAME AND STEERING BRACKET PARTS							
No.	**Item No.**	**Description**	**Pcs.**	**No.**	**Item No.**	**Description**	**Pcs.**
1	L32E23.20.00	Left Bracket	1	12	30317000010	Spring L32B-02.03.00.00.02	1
2	L32B-02.03.00.00.01-01	Sprocket	1	13	L32C.23.00.21	Housing	4
3	30329000000	Swivel Bolt GN212.3-28-M12-E	1	14	30301210048	BoltM6X12DIN6921	2
4	30301221006	Washer M12DIN125A	1	15	30301240084	NutM10DIN6923	6
5	L32E23.30.00	Right Bracket	1	16	L32E22.00.00	Support handle L32E	1
6	30301210021	Bolt M10X35DIN 6921	4	17	30301240092	Nut M10DIN985	4
7	30301230035	Screw M6X25DIN912	8	18	L32RE21.00.00-K	Frame	1
8	30301220013	Spring Washer M6DIN7980	8	19	30301210096	Bolt M10X35DIN 6921	6
9	L32E23.10.00	Handle support	1	20	30301240106	Nut M8DIN985	4
10	L32E20.00.13	Handle support plate	1	21	L32E20.00.08	Tank support	2
11	L32C.23.00.06	Screw	2	22	30301230027	Screw M8X25DIN7991	4

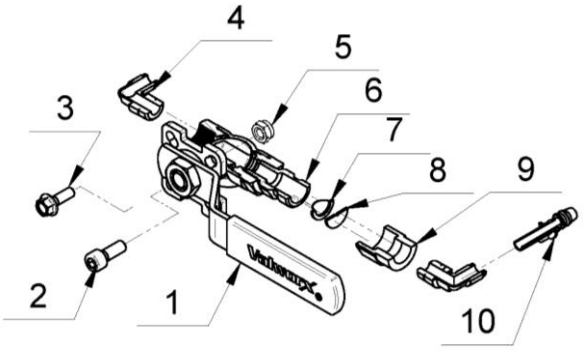
11.8 LAVINA® 32RE WATER TANK				
No.		**Item No.**	**Description**	**Pcs.**
1		A56.00.00.01-K	Water Tank A56	1
2		30323000209	Filter_LP 1/4 FNPT GFPP CB 80X80 SST CG BN	1
	2.1	30313000077	Filter	
3		30313000342	Fixed Elbow Male NPTF Thread -3/8 INC- NPT1/4	1
4		30316000001	Filter	1
5		30313000348	Fixed Elbow NPT Thread	1

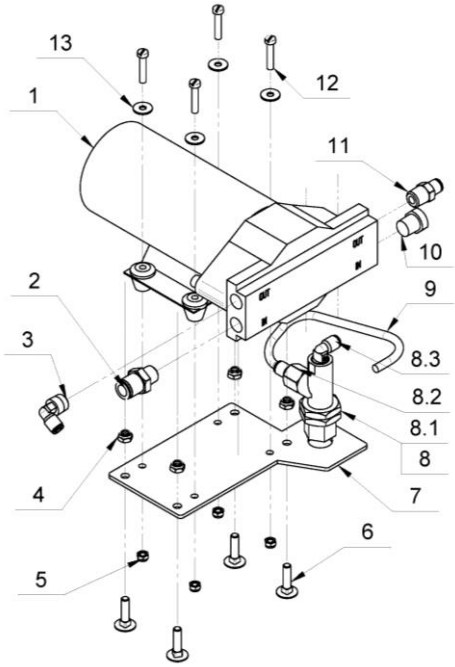




11.9 LAVINA® 32RE WATER INSTALLATION				
No.	**Item No.**	**Description**	**Pcs.**	**Destination**
1	025X600	PE Tube	1	Pump out - Ball valve
2	025X990	PE Tube	1	Ball valve – Equal Tee
3	L32E19.00.05	Tube	1	Ball valve -Top cover
4	038X550	PE Tube	1	Water tank out- Pump in
5	025X200	PE Tube	1	Pump out - Regulator
6	025X900	PE Tube	1	Regulator – Water tank in
7	30313000350	Equal Tee	1	
8	025X250	PE Tube	1	Equal Tee - Misting nozzle left support L32E
9	025X400	PE Tube	1	Equal Tee-Front Frame L32E
10	025X280	PE Tube		Front Frame L32E
11	025X330	PE Tube	1	Front Frame L32E - Misting nozzle left support

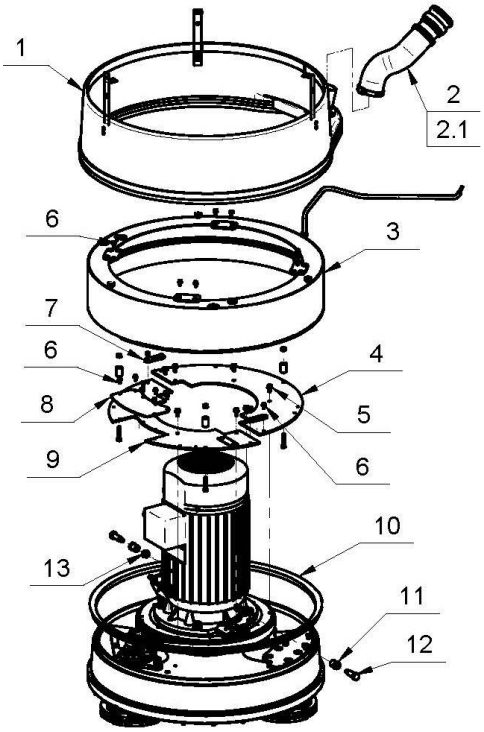
11.10 LAVINA® 32RE WATER BALL VALVE			
No.	**Item No.**	**Description**	**Pcs.**
1	30316000066	Ball valve	1
2	30301230098	Screw M6x16DIN 912	1
3	30301210110	Bolt M5x16DIN6921	1
4	30313000348	Fixed Elbow NPT Thread	3
5	30301240103	Nut M6DIN985	1
6	30313000057	UNIJET Body	1
7	30313000058	TEEJET Cup Strainer	1
8	A47.00.00.01	Orifice Plate	1
9	30313000060	UNIJET ADAPTER	1
10	30313000339	Tube To Hose Stem	1

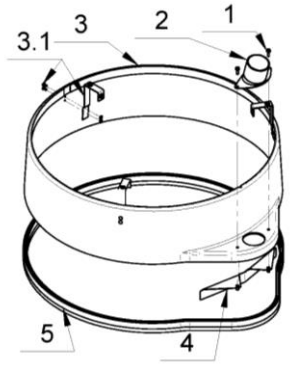




11.11 LAVINA®32RE WATER PUMP PARTS				
No.		**Item No.**	**Description**	**Pcs.**
1		30326000002	Pump 113C/M8234	1
2		30313000341	STUD FITTING	1
3		30313000348	FIXED ELBOW NPT THREAD	1
4		30301240103	NUT M6DIN985	4
5		30301240090	NUT M5DIN985	4
6		30301210088	Screw M6X25DIN603	4
7		A55.00.00.01	Plate for pump and regulator	1
8		A55.10.00.00	Regulator for Water pump with connectors	1
	8.1	30313000055	Water Pump Regulator	1
	8.2	30313000349	FEMALE STUD FITTING	1
	8.3	30313000348	Fixed Elbow NPT Thread	1
9		See table 11.8	PE Tube	1
10		30313000056	MALE HEX PLUG	1
11		30313000344	STUD FITTING	1
12		30301230113	Screw M5X25DIN84A	4
13		30301221015	Washer M5DIN9021	1

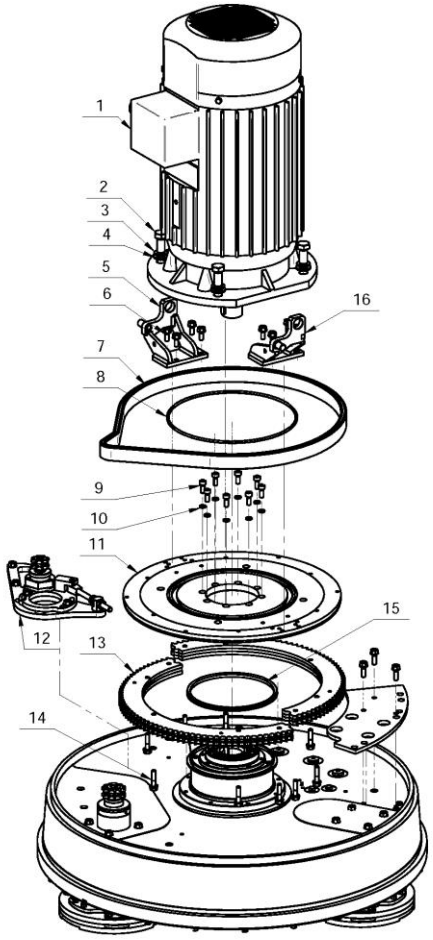
11.12 LAVINA® 32RE TOP COVER PARTS				
No.		Item No.	Description	Pcs.
1		L32E10.70.00	Gard Assembly	1
2		L32E10.03.00	Vacuum Hose	1
	2.1	D76X350PU	Soft Vacuum Hose	1
3		L32E19.00.00	Top Cover Assembly	1
4		L32E10.00.25-K	Rear Top Cover Base	1
5		30301210072	Bolt M8X16DIN6921	10
6		30301210048	Bolt M6X12DIN6921	12
7		L32E10.00.27	Connection Top Cover Base	2
8		L32E10.00.24	Front Top Cover Base	1
9		L32GX-19.30.03	Inspection Cover	1
10		30302000046	V-Ring Type A	1
11		L32E10.00.23	Bush	2
12		L32-00.00.00.00.02	Bolt	2
13		30301240134	Nut M12DIN6923	2



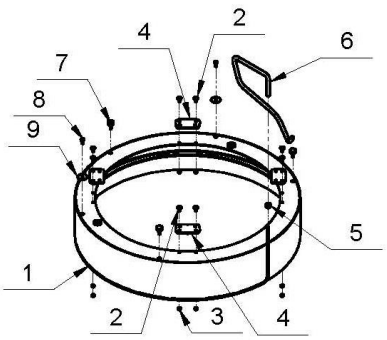


11.13 LAVINA® 32E GUARD ASSEMBLY				
No.		Item No.	Description	Pcs.
1		30301210117	Bolt M6X20DIN6921	2
2		L32E10.71.00	Vacuum Port L32E	1
3		L32E10.70.01-K	Guard set	1
	3.1	L32E10.73.00-K	Limitary tape set	3
4		L32E10.72.00	Bottom Vacuum Port	1
5		FBL1350-2780	Brush	1

11.14 LAVINA® 32RE PLANETARY CHAIN PARTS			
No.	Item No.	Description	Pcs.
1	S321	Electro Motor	1
2	30301210019	Bolt M16X35DIN933	4
3	30301220006	Spring Washer M16DIN127B	4
4	M16DIN125A	Washer M16DIN125A	4
5	L32RE10.01.00	Right carrier	1
5*	L32RE10.03.00	Right carrier 2 L32RE	1
6	30301210031	Bolt M8X20DIN6921	8
7	08B-2-121	Chain	1
8	D4x2x850	Seal	1
9	30301230087	Screw M8X20DIN912	8
10	30301220022	Spring Washer M8DIN7980	8
11	L32RE11.20.01	Supporting disc L32E	1
12	L32RE17.00.00	Planetary tensioning unit	1
13	L32X-11.30.00	Planetary Chain ring Set	2
14	30301210032	Bolt M8X35DIN6921	8
15	30302000007	V-Seal TWVL01700	1
16	L32RE10.02.00	Left carrier	1
16*	L32RE10.04.00	Left carrier 2 L32RE	1

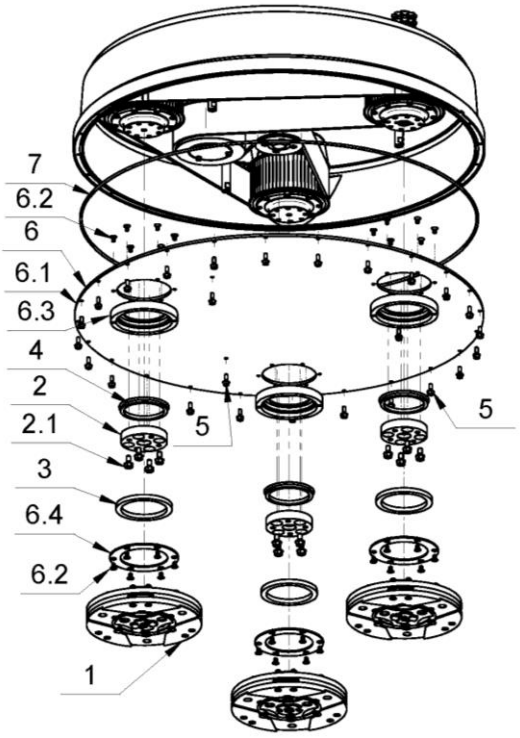


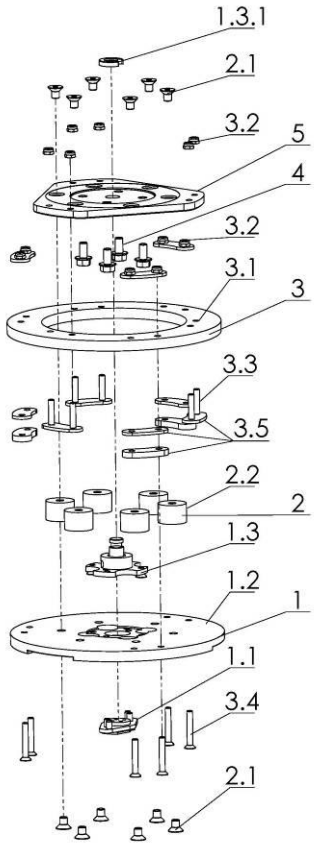
5*;16*-This item is for machine with Ser.No:1903L32EU1402 and bigger.



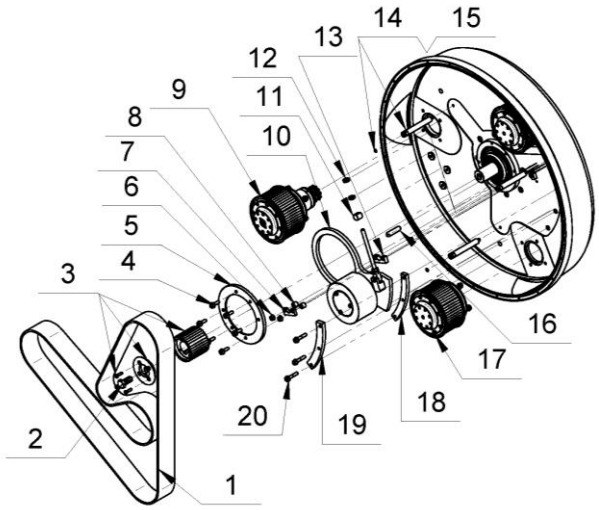
11.15 LAVINA® 32E TOP COVER			
No.	**Item No.**	**Description**	**Pcs.**
1	L32E19.10.00-K	Top Cover	1
2	30301210013	Screw M6X16DIN603	8
3	30301240103	Nut M6DIN985	8
4	L32E19.00.07	Carrier	4
5	30308000419	Clamp	1
6	L32E19.00.05	Tube	1
7	30329000041	Knob Bolt M6X16	3
8	30301210051	BoltM6X16DIN6921	2
9	30301221022	Washer D35x1.4	2

11.16 LAVINA® 32RE BOTTOM COVER PARTS				
No.		**Item No.**	**Description**	**Pcs.**
1		A63.00.00	Tool Holder A63	3
2		A42.03.00	Adaptor	3
	2.1	30301210072	Bolt M8x16DIN6921	4
3		30309000000	Felt Ring	3
4		30302000005	V-Ring Type A	3
5		30301210051	Bolt M6x16DIN6921	24
6		L32E10.08.00	Bottom Cover Assembly	1
	6.1	L32E10.08.01	Bottom Cover	1
	6.2	30301230017	Screw M6X10DIN7991/10.9/	36
	6.3	L25LS-14.00.02	Flange	3
	6.4	L25LS-14.00.03	Outer Cover	3
7		D4X2X2500	Seal	1





11.17 LAVINA®32RE TOOL HOLDER PARTS /SEE ALSO FIG.8.4.13/				
No.		**Item No.**	**Description**	**Pcs.**
1		A63.10.00	Quick Change Assembly	1
	1.1	A63.12.00	Keylock Set	1
	1.2	A41.11.00	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	6
	2.1	30301230161	Screw M8X12DIN7991/10.9/	12
	2.2	A25.00.10	Buffer	6
3		A41.20.03-K	Driving Set A41	1
	3.1	A41.20.03	Elastic Element	1
	3.2	30301240124	Self Locking Nut M6DIN980V	12
	3.3	30301230131	Screw M6X40DIN7991/10.9/	6
	3.4	30301230123	Screw M6X30DIN7991/10.9/	6
	3.5	A41.21.00	Set of plates	1
4		30301210072	Bolt M8x16DIN6921	4
5		A41.20.01	Flange	1



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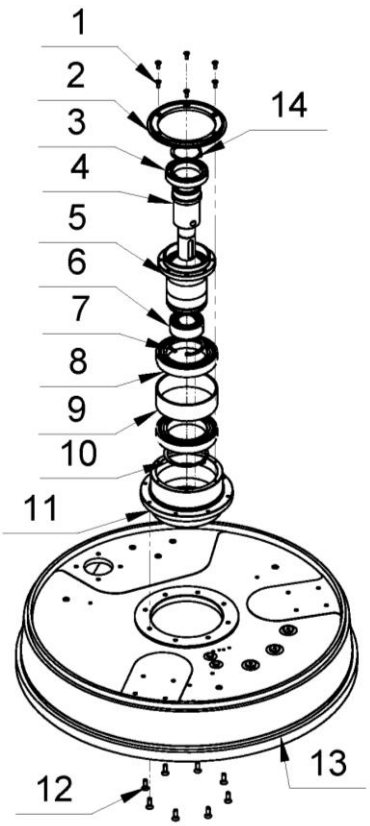
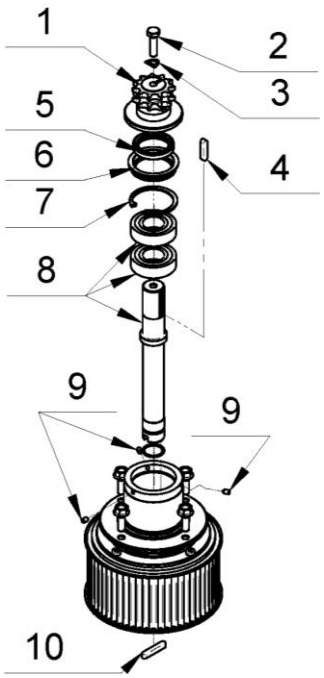
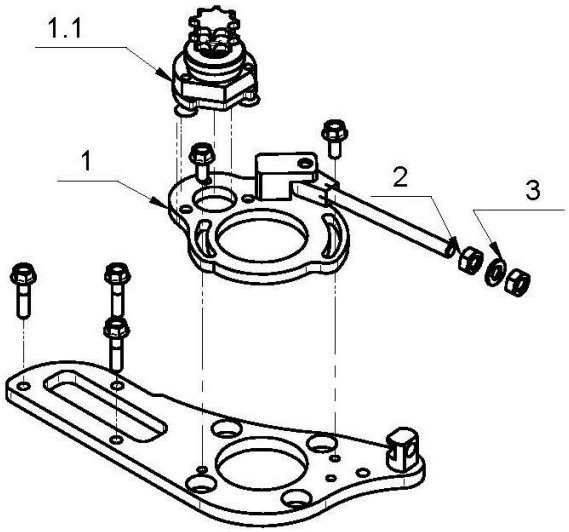
11.18 LAVINA® 32RE TRANSMISSION BELT PARTS			
No.	**Item no.**	**Description**	**Pcs.**
1	30308000148	Timing Belt 28008MHL70	1
2	30301210019	Bolt M16X35DIN933	1
3	L32RE11.10.00	Central Pulley Assembly	1
4	30301210038	Bolt M8x25DIN6921	6
5	L38GS-10.00.04	Cap	1
6	30301240095	Nut M8DIN6923	2
7	L25L-10.00.07	Support	1
8	L25L-10.00.08	Washer	2
9	L32E13.00.00	Driving Pulley Unit	1
10	L32RE14.00.00	Tensioning Support	1
11	L32C-14.20.04	Nut	1
12	30301240099	Nut M10DIN934	2
13	L38G-10.00.07	Support	1
14	30302000105	O-Ring 6x2	3
15	L32D-10.00.02	Distance Bolt	3
16	30301260069	Key12x8x56	1
17	L32E12.00.00	Pulley Unit	2
18	L38G-10.00.05	Sector 1	1
19	L38G-10.00.06	Sector 2	1
20	30301210092	Bolt M8x40DIN6921	1

11.19 LAVINA® 32RE CENTRAL SHAFT BEARNING PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	30301230002	Screw M6X16DIN7991	6
2	L32D-11.00.03	Cap	1
3	30303000012	Roller Assembly 6013	1
4	L32D-11.00.05-K	Extension Shaft	1
5	L32D-11.00.02	Central bushing L32D	1
6	30303000009	Roller Assembly 3208	1
7	30301250017	Retaining Ring A80DIN472	1
8	30303000008	Roller Assembly 6019	2
9	L32D-11.00.04	Spacer	1
10	30301250018	Retaining Ring B95DIN471	1
11	L32D-11.01.00	Housing	1
12	30301230027	Screw M8X25DIN7991	8
13	L32RE11.00.06-K	Disc	1
14	30301250002	Retaining Ring B65DIN471	1



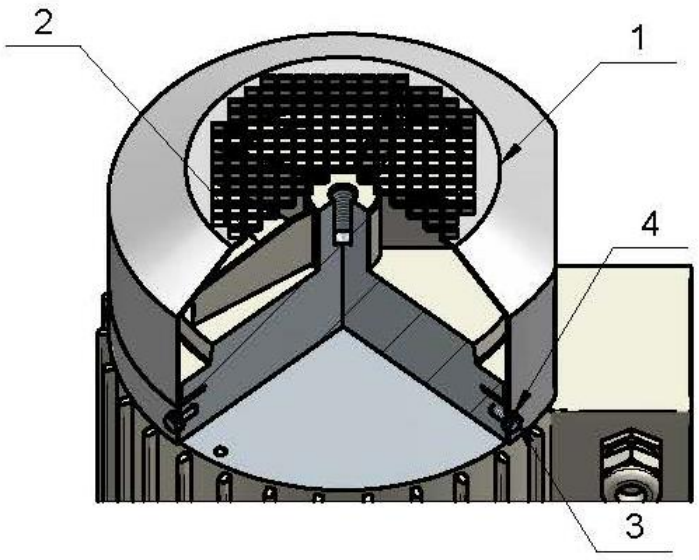
11.20 LAVINA® 32E DRIVING PULLEY UNIT PARTS				
No.		Item No.	Description	Pcs.
	1	L32E13.30.00	Drive chain pulley	1
	2	30301210001	Bolt M8X30DIN933	1
	3	L32X-13.00.25	Security washer	1
	4	30301260074	Key6X6X28	1
5		30302000042	Seal ring TRAA00350	1
6		L32GX-13.00.12	Cap	1
7		30301250007	Retaining Ring A52DIN472	1
8		L38GRX-13.00.06-R1-K	Shaft Assembly	1
9		30301230141	Screw M5X8DIN914	3
10		30301260051	Key6X6X36	1





11.21 LAVINA® 32RE PLANETARY TENSIONING UNIT				
No.		Item No.	Description	Pcs.
1		L32RE17.20.00	Tensioning Support	1
	1.1	L32RE17.21.00-K	Tensioning chain sprocket	1
2		30301240099	Nut M10DIN 934	2
3		30301221005	Washer M10DIN125A	1

11.22 LAVINA®32E MOTOR FAN PARTS			
No.	Item No.	Description	Pcs.
1	30305000309	Fan Cover	1
2	30305000310	Fan	1
3	30301210009	Bolt M6X12DIN933	4
4	30301221003	Washer M6DIN125A	4



11.23 LAVINA®32E CONTROL BOARD ASSEMBLY							
No.	**Item No.**	**Description**	**Pcs.**	**No.**	**Item No.**	**Description**	**Pcs.**
1	L32E24.10.00	Control board assembly kit	1	13	30311000703	Button	1
2	30313000173	USB charger	1	14	30311000741	Blue LED Alarm	1
3	30311000717	EMG Button	1	15	30311000750	Cap	3
4	30311000740	Power glowing button	1	16	L32E24.22.00	Cable X2	1
5	30311000721	Switch	2	17	L32E24.21.00	Cable X1	1
6	30311000731-K	Switch	1	18	L25E22.00.02	Box	1
7	30311000732-K	Switch	1	19	L25E22.00.01	Seal	1
8	30311000690	Potentiometer	1	20	30301230264	Screw M6x20ISO7380F-10.9	6
9	30350000045	Cup holder	1	21	30301221003	Washer M6DIN125A	6
10	30313000150	Tachometer	1	22	30301240103	Nut M6DIN985	6
11	30311000701	Button	1	23	30311000401	Cable Gland 16x1,5	2
12	30311000700	Button	1	24	L20GX-40.20.03	Clamp	1