LAVINA® 32M -X-HV
User Manual

SUPERABRASIVE

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

LAVINA by SUPERABRASIVE

Warranty Registration Card

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

Section 1: Customer Information

Customer name

Address | City | State and Zip Code

Phone # | Email

Section 2: Machine Information

LAVINA model | Serial #

Purchase Date | Purchased From (distributor, dealer)

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

WARRANTY AND RETURNS

WARRANTY POLICY FOR LAVINA®32M-X-HV 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 48 contiguous States) in the event that the damage occurs and is reported within 200 operating hours. Shipping charges, if covered by Superabrasive, must be agreed upon in advance and approved by Superabrasive. Thereafter, the customer will have to cover the shipping charges to Superabrasive and back. Superabrasive will not warranty Goods after a period of 2 years from the time of delivery and receipt by the original customer, or 600 operating hours on the machine - whichever occurs first.

Superabrasive shall not be liable for any defects that are caused by circumstances that occur after the Goods have been delivered and whilst the Goods are in the possession of the purchaser. Furthermore, the warranty does not include normal wear and tear or deterioration. Wear parts are not warranted. Superabrasive is not liable for defects arising out of use of non-OEM parts.

The Warranty is void if the purchaser has not followed the maintenance plan stipulated by the machine's manual and warranty card. The warranty is void if the purchaser repairs said Goods himself, or if repairs are conducted by a repair facility that is not approved by Superabrasive. Superabrasive's liability does not cover defects which are caused by faulty maintenance, incorrect operation, faulty repair by the purchaser, or by alterations conducted without Superabrasive's prior written consent. The same applies to any alterations of the Goods or services performed by another party other than Superabrasive, a Superabrasive-appointed distributor, or a 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 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®32M-X-HV MACHINES

The Lavina®32M-X-HV 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.

1. GENERAL INFORMATION

This owner's manual is intended for the operator of the Lavina® 32M-X-HV machine, the servicing technician as well as for anyone involved with operating or servicing the machine. We recommend that you read the instructions very carefully and follow them strictly. The manual includes information about assembling, using, handling, adjusting and maintaining your Lavina® 32M-X-HV 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® 32M-X-HV machine is intended for grinding, polishing and buffing concrete, marble, granite, limestone and terrazzo surfaces with diamond tools.
The Lavina® 32M-X-HV is a self-propelled six-disc machine which can be used for wet or dry applications.
For best results, use only tools manufactured or recommended by Superabrasive and its distributors.

Figure 1.1

WARNING!

The Lavina® 32M-X-HV 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® 32M-X-HV is made of two main component sections:

LAVINA® 32M-X-HV MAIN DESIGN

The two main component sections are the carriage and main head.
The wheels of the carriage are driven by a gear box that can run without constant operator input. The handle on the frame is adjustable in height and enables the operator to work in a correct and safe posture.

Figure 1.2

Two halogen spotlights (Fig.1.2) enable the operator to work in darker areas. The lamp holder can be adjusted in different positions.

⚠ WARNING Lighting system does not replace adequate overhead lighting.

The controls are positioned on top of the handle (fig.1.3)

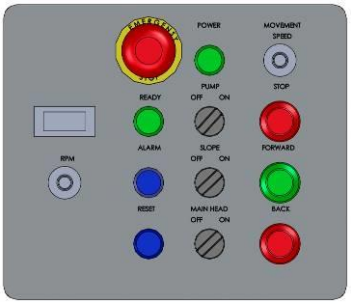


Figure1.3

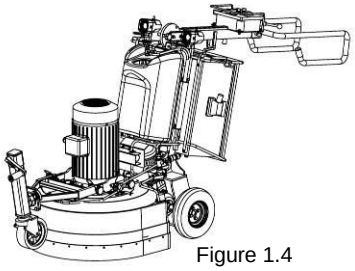


Figure 1.4

The electrical box contains the electric switching devices 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 working part motor is mounted on the base plate and drives the six grinding heads with a two-belt system. The **planetary head** is driven by a duplex roller chain.

ENVIRONMENTAL CONDITIONS

The temperature range for operating the Lavina® 32M-X-HV outdoors is between 41°F and 86°F or 5°C and 30°C. Never use the Lavina® 32M-X-HV 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® 32M-X-HV 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 and can be glided over the three-way pipe. The vacuum dust extractor must be adapted for floor grinders and have a minimum air displacement of 500m3/h with a negative vacuum of 21 kPa.

TECHNICAL DATA

	Lavina® 32M-X-HV	
Voltage/Hz	3ph x 440-480 V 50/60Hz	
Amperage	35 Amps	
Power	18.5 kW	25 hp
Tool holder rpm	300-1100 rpm	
Working width	814mm	32"
Tool holder diameter	6 x 225 mm	6 x 9"
Weight	564 kg	1245lbs
Grinding pressure	323 kg	715 lbs
Additional weight	max 4x29kg	4x64 lbs
Application	*3 operating heads	
	wet and dry	
Vacuum hose port	76 mm	3"
Water attachment	Quick change for ¾" hose	
Water tank capacity	46 l	12 gal
Water feed	Peripheral and front stream with pump and flow control	
Cable length	17.4 m	57 ft
Third wheel	option	
Slope of the floor	Max 15 %	
Machine LxWxH	2430x850x1300 mm	96"x34"x51"
Packing LxWxH	1460x1000x1520 mm	58"x37"x60"

VIBRATIONS

The vibrations of the machine are within the limits of directives and harmonized standards from the European Union when the Lavina®32M-X-HV 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®32M-X-HV 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).

* The machine can work with 3 OPERATING HEADS only when each working heads alternate with not working head.

CUSTOMER SERVICE

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

2. SAFETY ISTRUCTIONS

RECOMMENDED USE ⚠ WARNING

The Lavina®32M-X-HV 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 ⚠ WARNING

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

PREPARATION FOR WORK ⚠ WARNING

Make sure that:
You have closed the work area, so that no person unfamiliar with operating the machine can enter the area
The tool plate and tools are adjusted to the machine properly
There are no missing parts of the machine
The machine is in upright working position
The protection devices are working properly.

The electrical cable is free to move and follow the machine easily. In order to keep the electrical cable from being damaged, no vehicle should cross the zone where electrical cables are situated.

PROTECTION DEVICES ⚠ WARNING

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

ARREST FUNCTIONS ⚠ WARNING

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

SAFE USE ⚠ WARNING

The Lavina® 32M-X-HV is designed to reduce 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.

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.

OPERATOR ⚠ WARNING

The operator Lavina®32M-X-HV 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 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

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® 32M-X-HV, make certain that there is no one, but you around the machine. ⚠ WARNING
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

THE WORK AREA ⚠ WARNING

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

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Always wear safety 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.
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

POSITIONING THE HANDLE

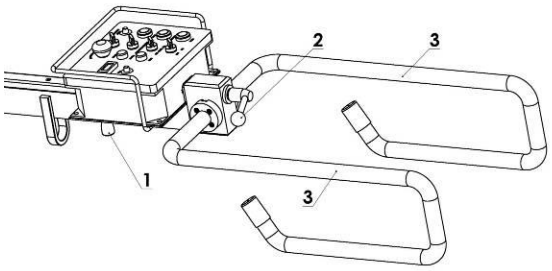


Figure 3.1

Figure 3.2

Figure 3.3

USING THE STEERING BRACKET

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.

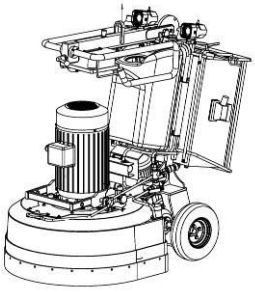


Figure 3.4

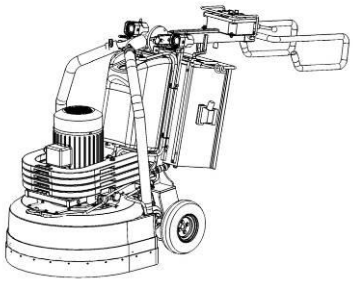


Figure 3.5

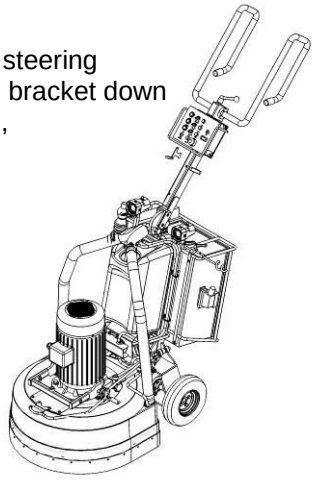


Figure 3.6

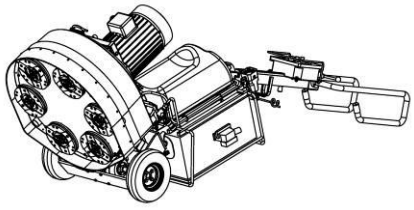


Figure 3.7

Figure 3.8

Figure 3.9

Figure 3.10

Figure 3.11

The handle can be positioned in three positions:
Transport position to store or to transport or to hoist the machine (fig. 3.4)
Working position (fig. 3.5) and Flipping position (fig. 3.6)
To change the handle positions, pull the knob (Fig. 3.1-1, Fig. 3.8, and Fig. 3.9), and move the handle up or down.
To choose the transport-position, pull the additional the security pin (Fig. 3.10, Fig. 3.11) out and replace when the handle is in position. Never lift the machine by the handle without mounting this pin.

FLIPPING THE MACHINE UP

To change the tools, put the handle in the flipping (vertical) 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.

SPLITTING THE CARRIAGE FROM THE MAIN HEAD

Unplug the motor cable plug from the control box (Fig. 3.12) and pull the water hose out of the connection at the main head (Fig. 3.13) (Fig. 3.14). Release the pin sets (Fig. 3.15) connecting the weight/3rd wheel frame to the carriage, and remove the frame (Fig. 3.15). Release the pin sets (Fig.3.16) and separate the carriage from the main head (Fig. 3.17).


Figure 3.12


Figure 3.14


Figure 3.14


Figure 3.15


Figure 3.16


Figure 3.17


Figure 3.18

LIFTING

Lifting the machine by crane is possible by using the hoisting ring mounted on the carriage (see Fig.3.18). The eye bolt and machine construction is rated only for the weight of the machine. Do not lift any other loads on the machine. Always use hoisting equipment rated for 600 kg (1300 lbs) or greater. Ensure the security pin (Fig. 3.9, Fig. 3.10) is mounted before lifting.

Figure 3.19


Figure 3.20

POWER CABLE MANAGEMENT

The power cable can be run through a shackle mounted on the hoisting ring (see fig. 3.19).
It is also possible to run it to either side of the machine, on a specially mounted rod (fig. 3.20; fig.3.21). The rod should be stored when not in use, as shown on fig. 3.22.


Figure 3.21

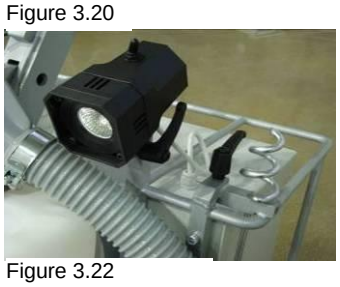


Figure 3.22

STORAGE

Always store and transport the Lavina® 32M-X-HV in a dry place. Never transport the Lavina® 32M-X-HV unprotected; it may be damaged if transported unprotected during rain or snow.
When the temperature may fall to 32F (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.3.25)
-Using compressed air, blow out the water from the system at each position of the lever (Fig. 3.26, Fig. 3.27, Fig. 3.28).

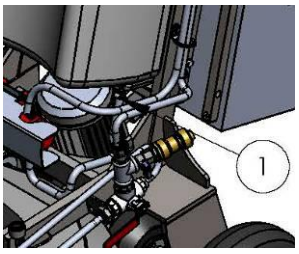


Figure 3.25


Figure 3.26


Figure 3.27


Figure 3.28

4. OPERATION

PRELIMINARY CONTROLS

Inspect the working area as explained in the safety instructions. For wet use, fill in the water tank with the electrical cable 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 make sure that the power cord is free to follow the working direction of the Lavina® 32M-X-HV .

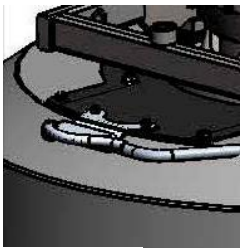


Figure 4.1

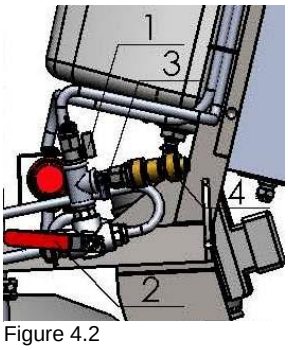


Figure 4.2

Figure 4.3

Figure 4.4

CONTROL OF THE WATERFLOW

The operator can choose where the water sprays with the red lever (Fig. 4.2-2). When the lever is perpendicular to the valve, water sprays in front of the machine (Fig 4.1). When the lever is parallel to the valve, water sprays under the cover of the machine.

One valve (Fig. 4.2-3) controls the flow from an external water supply, which can be connected via a 3/4" water tube at the quick connection (Fig. 4.2-4). The other valve (Fig. 4.2-1) should be closed to the external water supply to prevent water leaking into the tank.
The flow regulating valve located on the tank (Fig. 4.4) can increase or reduce the water flow to the working area (in front of the machine or under the main head cover of the machine).

ADJUSTING AND MOUNTING TOOLS

The Holder A41 in LAVINA® X can work with either 3 or 6 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 32M-X-HV, the holder is initially mounted with 6 buffers.

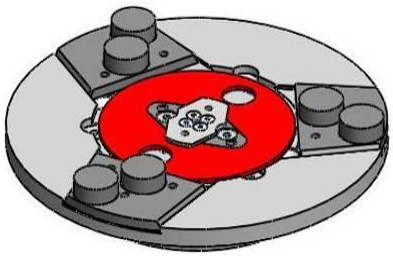


Figure 4.5

Figure 4.6

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.4.5), lock with the tool holder key (Fig.4.6) and make sure that the butterfly is securely locked at 90 degrees. Diamond tools with Velcro are attached on six foam plates (9 inch).The foam plates are mounted on the key lock (butterfly). Always use the tool holder key (Fig.5.3).

The machine can work with 3 operating heads by operating every other head as shown in Fig.4.7. For the inactive heads, remove the holders only (not adaptors), and screw the bolts mounting the holders into the free thread holes of the adaptors in order to protect them.(Fig.4.7)

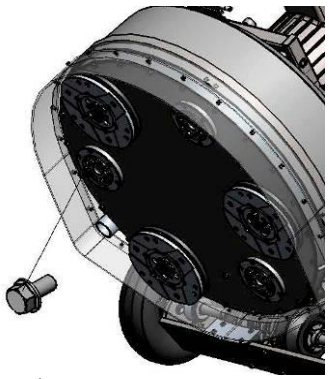


Figure 4.7

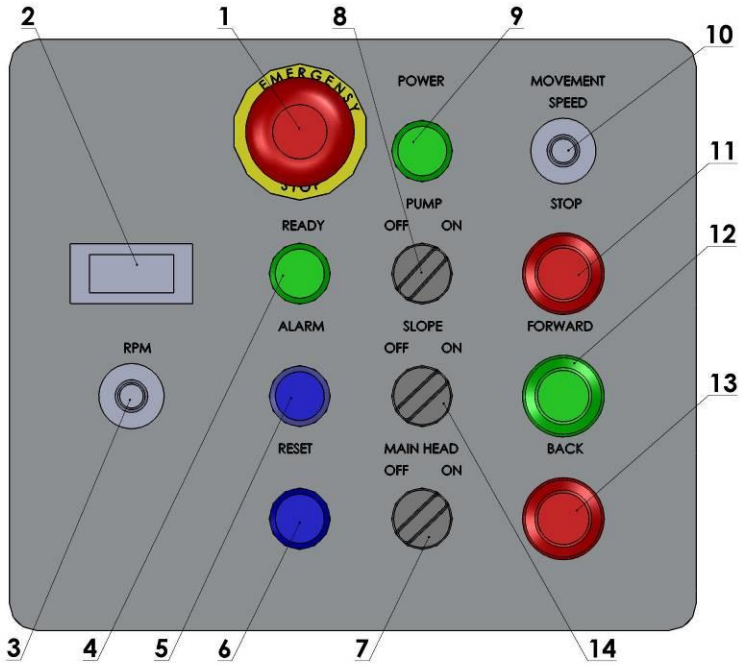


Figure 4.8

CONTROL BOARD

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

2 Digital Tachometer indicates the revolutions per minute of the grinding plates (not the revolutions per minute of the entire unit).

3 Potentiometer Controls the RPM of the grinding plates.

4 READY led lights green when the power is on

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

6 Reset button resets the alarm of the inverter

7 ON/OFF switch starts/stops the motor. Power led (integrated in some models) lights green when the power is on

8 Water pump switch Lights orange when the water pump is running.

9 Power led lights green when the power is on

10 Movement Speed changes the speed of the forward/backward movement.

11 STOP button stops the forward/backward movement, by disconnecting the wheels from the motor. By activating it, the machine can also be operated manually.

12 FORWARD button set direction forward. Lights green when active.

13 BACK button set direction backward. Lights red when active.

14 SLOPE switch ⚠ WARNING When set to ON, prevents the driving gears from disconnecting with the wheels, including from the STOP button (9) AND the emergency stop (14) - which now lock the wheels in place. This must be used when operating the machine on a slope for the security of the machine and operator. To disconnect the gears from the wheels, the switch must be turned off, and the STOP button should be compressed.

STARTING THE MACHINE

First, follow the directions in chapter 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.4.8-1) to ensure that the machine is able to be run. Check the potentiometer (Fig.4.8-3) and ensure that it is set at the working speed. Check the movement speed (Fig.4.8-10) for the required working speed.

Finally, hold the machine firmly, turn the start knob, (Fig.4.8-7) and set movement direction of the machine – forward or backward - using the corresponding button (Fig.4.8-12 and Fig.4.8-13).

OPERATING THE MACHINE

Guide the machine in straight lines across the floor, slightly overlapping the previously completed surface with each new line.

At the end of each line, you can reverse the direction of the machine by simply pressing the corresponding button (**FORWARD or BACK)** and using the handles to set a new path. To manually operate the machine for more complicated maneuvers, select the STOP button to disconnect the motor from the wheels. Once the machine is properly oriented, restart the self-propelled movement. Increases or decreases in the speed of the machine when operating can be made by adjusting the potentiometer (Fig.4.8-10)

Work at a constant speed, allowing the tools time to work at a speed appropriate for the tools' grit size. Avoid vibrations. Do not stop the machine while tools are still running as they will mark the surface of the floor. When working wet, select the destination of the water feed with the water tap (fig. 4.2-1) and periodically run the pump (fig. 4.8-8) 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.

If a sloped surface is too difficult to process by operating the machine manually, switch the SLOPE knob to ON. In this position, pressing STOP or Emergency Stop will prevent any movement of the machine instead of disconnecting the wheels from the motor. The machine can be operated with FORWARD, BACKWARD, and STOP, but it will not be possible to move it manually while on the slope. When manual movement is needed (or the sloped surface is completed), switch SLOPE to OFF and STOP will return to its normal function.

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.4.6-15). Use the Emergency button (Fig.4.6-14) only in case of emergency or to switch the power totally off.

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

The machine drive can be stopped by the button **STOP** (Fig.4.6-9) or **Emergency button** (Fig.4.6-14)

ALARM

The Alarm/Reset button (15) will light when the inverter goes in alarm mode. The most common failure is motor overload. To exit alarm mode, push the reset button (15). A code on the inverter's display indicates the type of the alarm. When the same alarm is repeated several times it is imperative to find and eliminate the cause of it, less the inverter become damaged.

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 64 lbs or 29kg. 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 weights stack onto three posts fixed around the outer bowl (Fig.5.2). Additional weights will largely depend on the tools; it is not always possible to add weights. Some tools work too aggressively and will cause the machine to stop. The weight can be ordered with item number A08.00.00.00

Figure 5.1

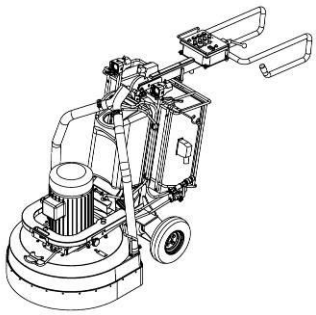


Figure 5.2

TOOL HOLDER KEY

The tool holder key (Fig. 5.3) is used for adjusting, mounting and dismounting of the tools. Always use the key to properly secure plates. Item number is A03.00.00.00

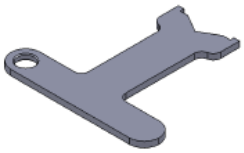


Figure 5.3

FOAM PLATE

Diamond tools with Velcro are mounted on the foam plate 9"(Fig.5.4). The foam plate is mounted on the flexible backer plate. Item number is LV-9-FP-S

Figure 5.4

SECURITY PLATE FOR QUICKCHANGE PADS

Plate (Fig.5.5) used to secure the "Quickchange" pads.
Item number is A38.00.01

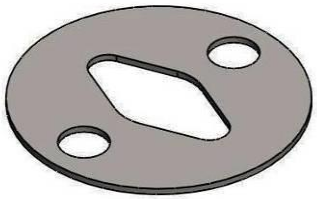


Figure 5.5

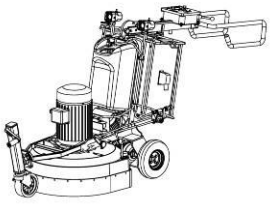


Figure 5.7

THIRD WHEEL

With the Lavina® 32-X/32-X-HV, it is possible to add a third wheel to make for better handling. It is purchased as a full assembly

item number L32S-04.00.00 (shown on fig.5.8)

It mounts/dismounts with a pin assembly (see fig. 5.8).

While working there is a possibility to turn the wheel support 90º(fig.5.8). Pull out the handle, turn it in 90°and fix again.

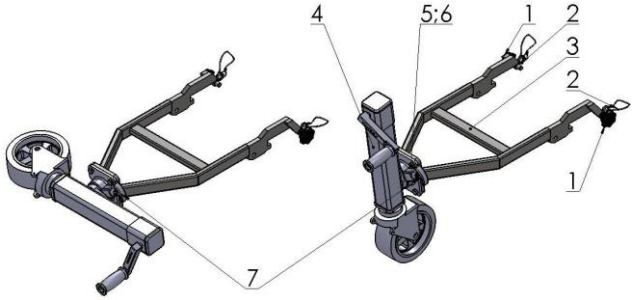


Figure 5.8

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.

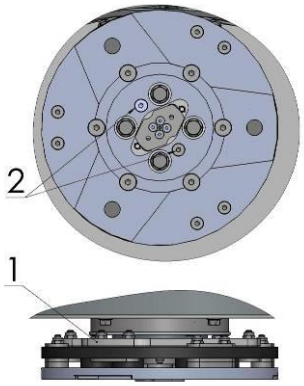


Figure 7.1

CHECK DAILY

After operating the Lavina® 32-X/32-X-HV, 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.

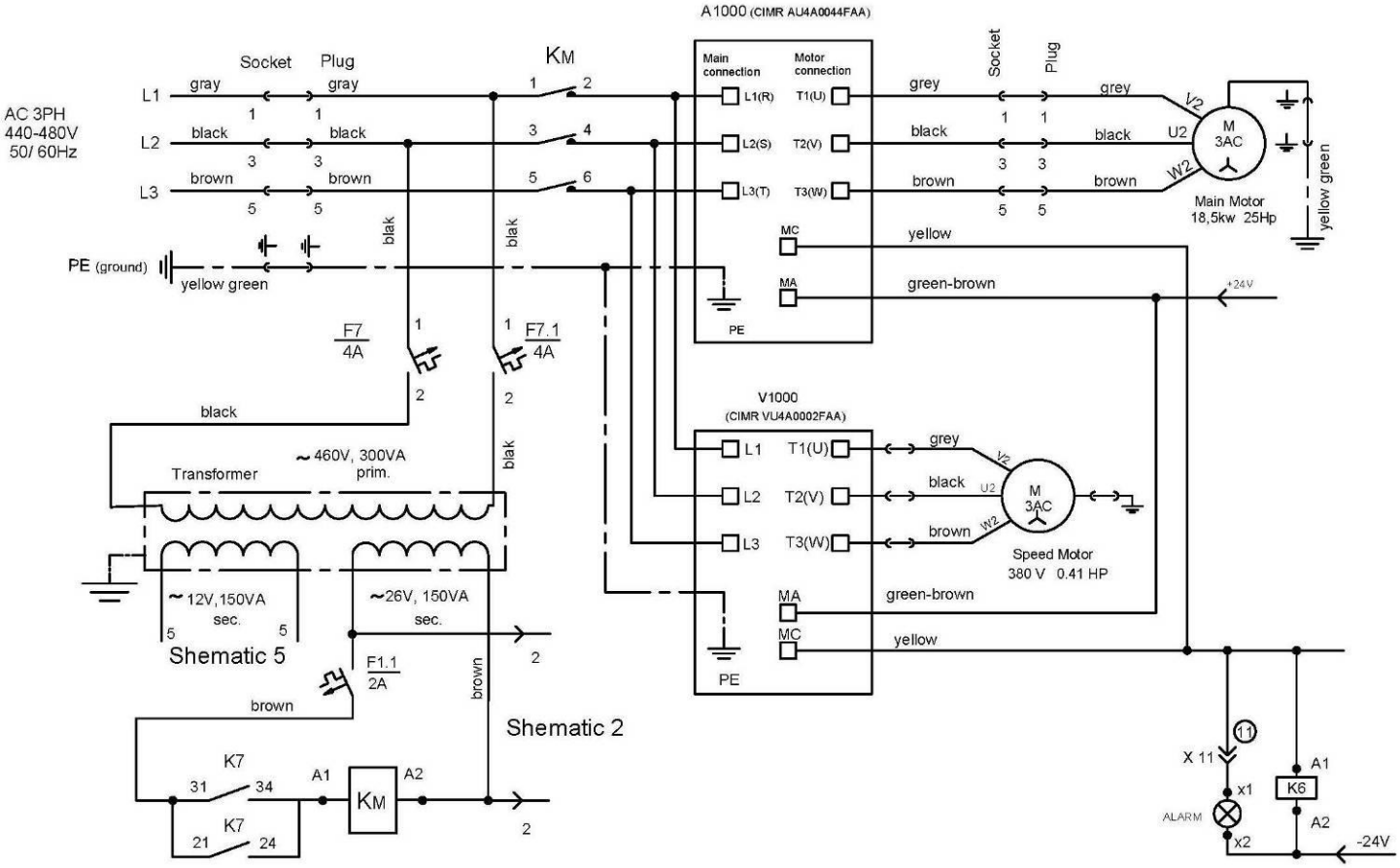
CARRIAGE

Check the pressure of the pneumatic tires and maintain it at the limits of 3.5-4 atm(50...60PSI).

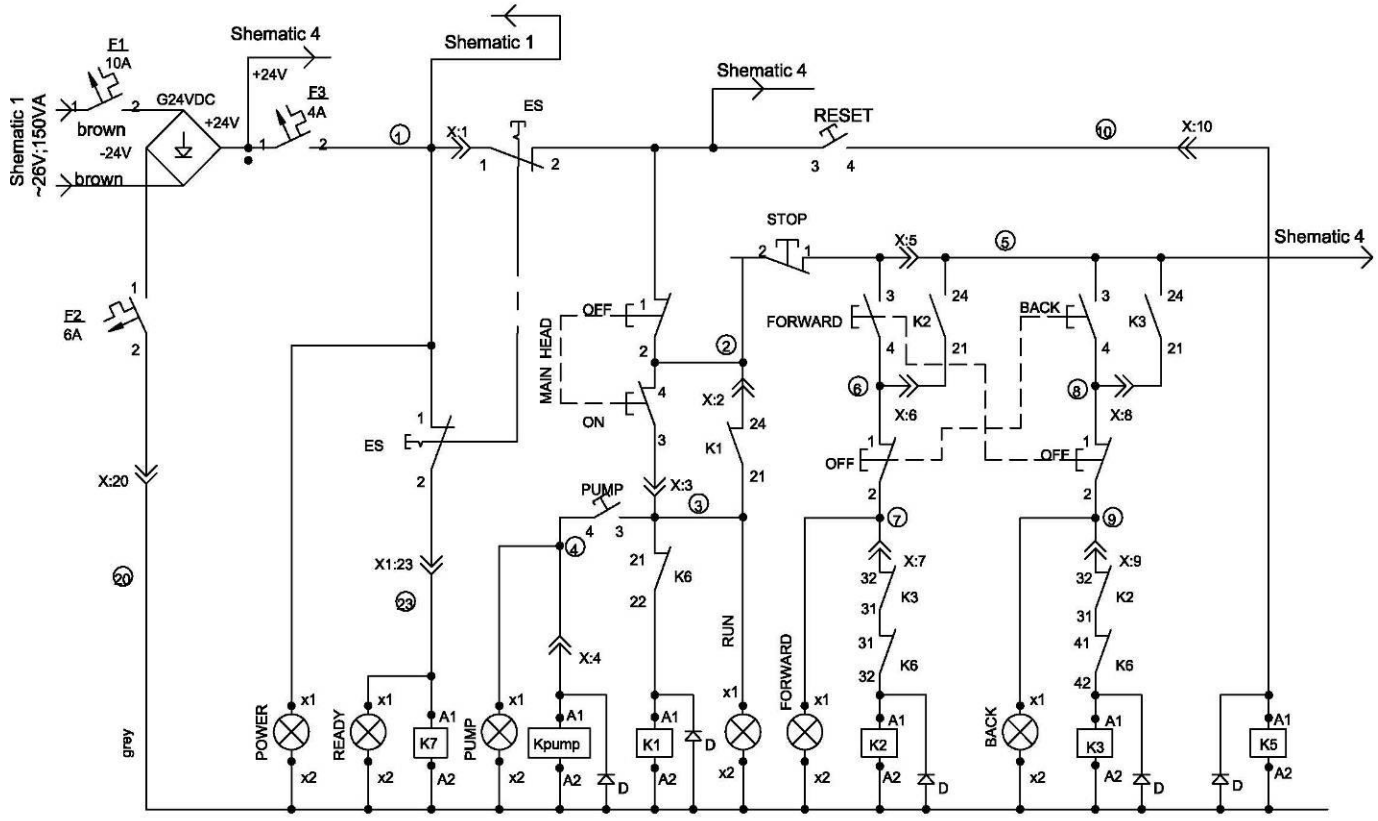
Check the seal rings on the driving unit and promptly replace in case of damage.

LAVINA®32M-X-HV ELECTRICAL SCHEMES WITH YASKAWA INVERTER 440-480 VOLT

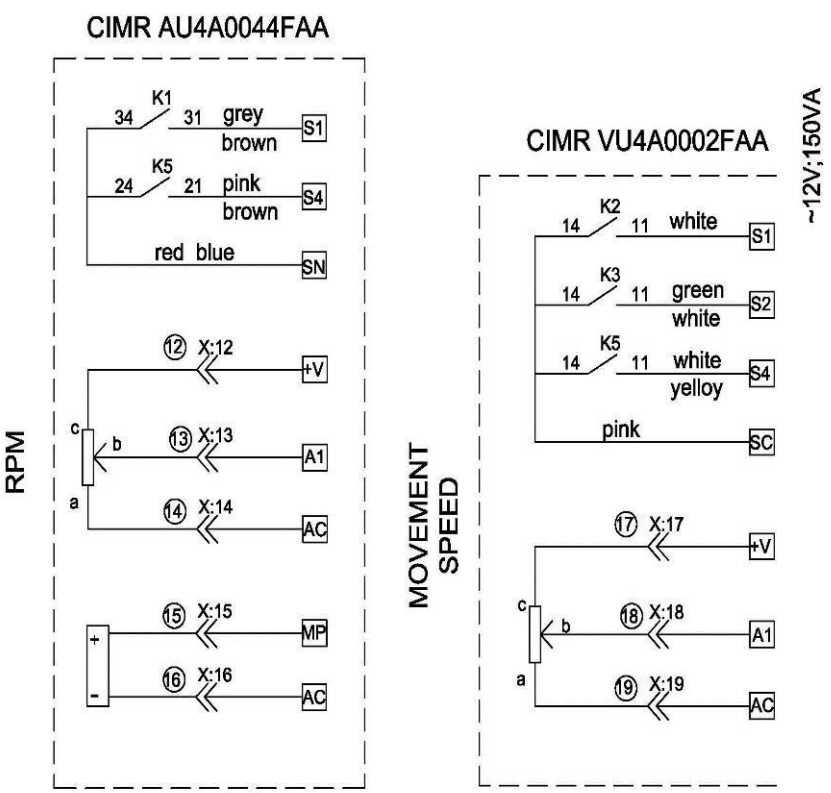
Shematic 1



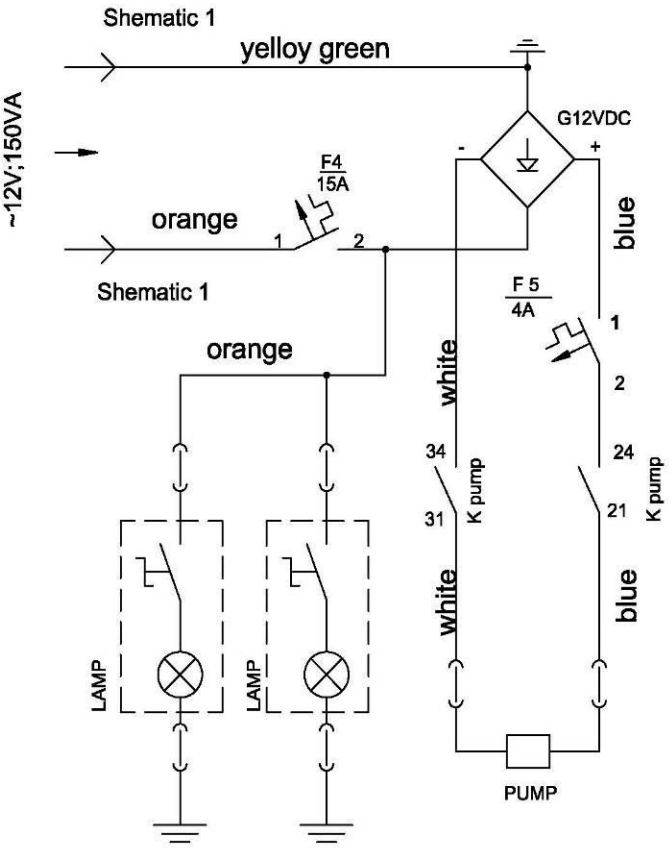
Shematic 2



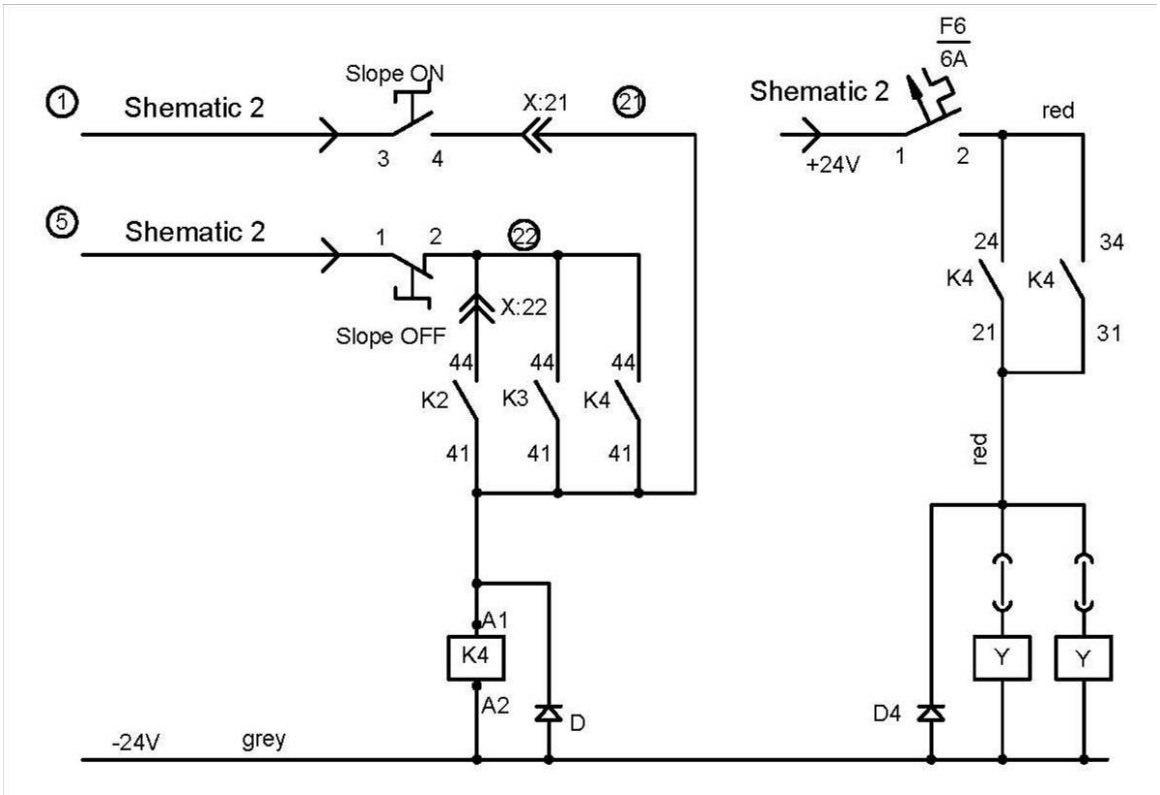
Shematic 3



Shematic 5



Shematic 4



8. TROUBLESHOOTING

INDEX OF PROBLEMS 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 DISMOUNTING AND MOUNTING TOOL HOLDER

TO CHANGE V-RINGS AND FELT-RINGS

Figure 8.2.1

Figure 8.2.2

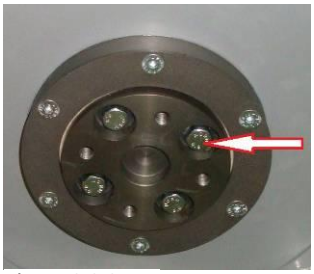


Figure 8.2.3

Figure 8.2.4

Figure 8.2.5

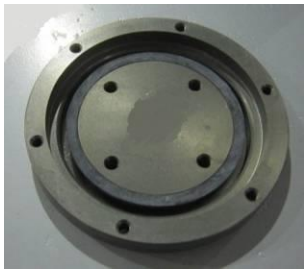


Figure 8.2.6

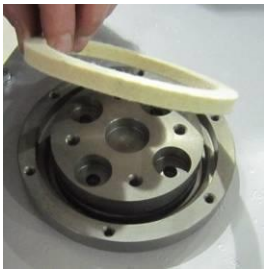


Figure 8.2.7

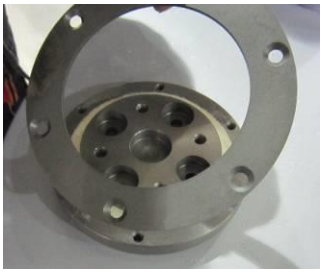


Figure 8.2.8

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.8.2.1) and remove the holder (Fig.8.2.2) When the tool holder is dismounted, you can change the sealers (V-Ring and Felt-Ring).

By loosening four Hex cap flange bolts (Fig.8.2.3) the adaptor comes loose. Unscrew the six screws of the cap (Fig.8.2.4) holding the felt-ring. Take out the Felt-Ring, adaptor and V-Ring.

Mount the V-Ring with the smallest lip of the V to the inside (Fig.8.2.5) - simply push the V-Ring so the top is on the same level as the pulley top (Fig.8.2.6). Then take the adaptor and push the V-Ring down with the adaptor (Fig.8.2.7). The lowest lip of the V-Ring should only barely touch its gliding surface. Mount the adaptor and the Felt-Ring on top (Fig.8.2.7). Close the sealers with the cap (Fig.8.2.8) and screw the bolts. Always use the original bolts. Do not push the V-ring down with fingers.

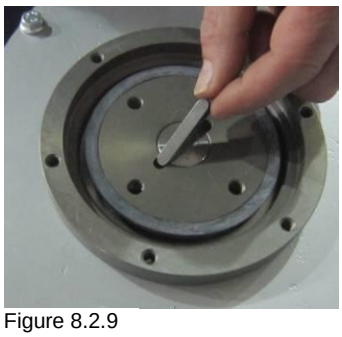


Figure 8.2.9

Figure 8.2.10

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

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

When the TOOL HOLDER is disassembled you can change defective parts – elastic element, buffers, etc.

Lift the locking pin (Fig.8.3.1) to dismount the retaining washer (Fig.8.3.2). Take out the screws on the buffers and the nuts of the elastic element (Fig.8.3.3;Fig.8.3.4). Remove the elastic element from the QC plate (Fig.8.3.5). While the holder is dismounted (Fig.8.3.6;Fig.8.3.7) clean the parts and replace the defective with new ones. Assemble the holder with new buffers 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 fall of the washer when mounting the holder on the machine.


Figure 8.3.1


Figure 8.3.2

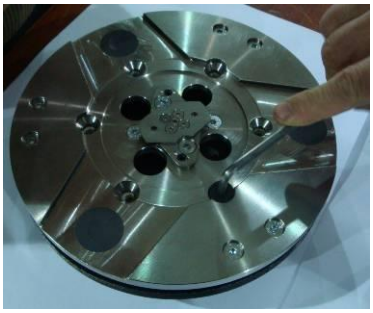


Figure 8.3.3

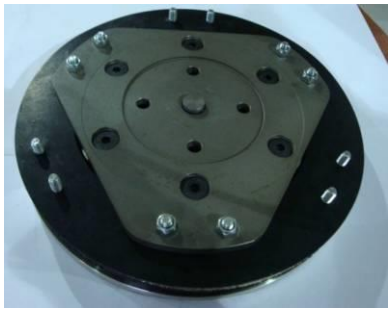


Figure 8.3.4

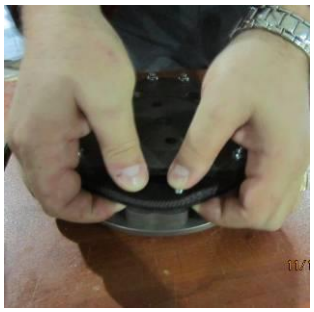


Figure 8.3.5


Figure 8.3.6


Figure 8.3.7

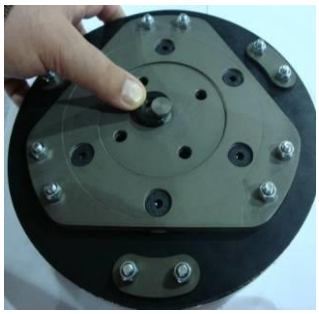


Figure 8.3.8

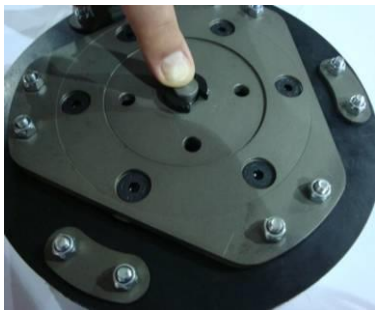


Figure 8.3.9

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 ft·lbf). Mounting the holder without the retaining washer (Fig.8.3.2) is **INADMISSIBLE** because the security system preventing the separation of part of the holder in case of broken buffers and elastic element will not function!


Figure 8.3.10


Figure 8.3.11

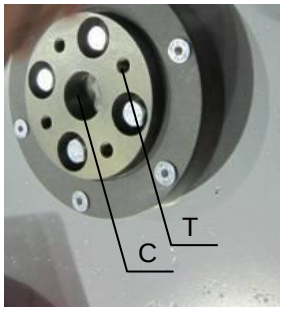


Figure 8.3.12

You can change the butterfly of the holder without dismounting the holder from the machine.

Fig.8.3.13 is 3-d section view of the holder, showing its parts. The numbering is the same as in Spare parts.

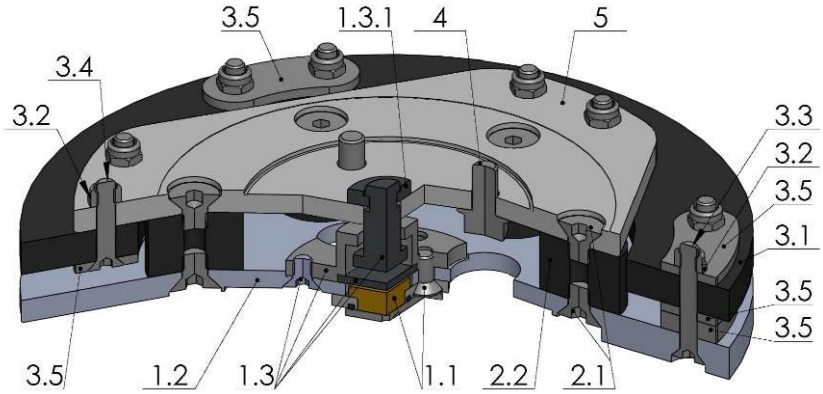


Figure 8.3.13

8.4 TENSIONING USED PLANETARY CHAIN

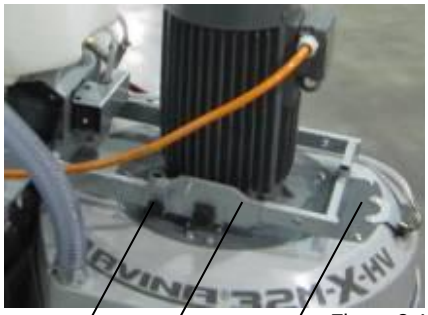


Figure 8.4.1

Figure 8.4.2

Figure 8.4.3

Remove the support frame of the weights(Fig.8.4.1-2) by releasing the fixing pins (Fig.8.4.1-1). Unscrew the 6 bolts and dismount the front part of the cover (Fig.8.4.1-3), (it is not necessary to disconnect hose from the sprayer). Lift the machine into change tool-changing position. Manually turn the holders in order to turn the main head, stopping when the chain tensioner can be seen through the window (Fig.8.4.3).

Loosen the two bolts of the chain tensioner a quarter to a half revolution(Fig.8.4.5). The tensioner should turn with minimum clearance, without inclination, and then unscrew the inner nut. To tension the chain screw, tighten the outer nut (Fig.8.4.6). The tensioner of the planetary chain should allow chain sagging of 3...5mm/1/8...3/16 in/ measured in span X (Fig.8.4.7). When set, screw the two nuts (Fig.8.4.6) and the 2 bolts (Fig.8.4.5).

8.5 MOUNTING AND TENSIONING A NEW PLANETARY CHAIN

The planetary chain is replaced with new one when the step/drive of the chain tensioner is finished or there is a break in the integrity of the chain. Take off the weight support (Fig.8.5.1), release the connector of the motor and separate the carriage from the main head, as described in "Splitting the carriage from the main head", Dismount the top cover.

Pull out the split pin (Fig.8.5.1) and the chain link pin (Fig.8.5.2). Install the new chain, and reinsert the chain link pin (Fig.8.8.5) (Fig.8.8.6) and the split pin (Fig.8.5.4).

To tension the chain, screw the outer nut (Fig.8.5.5-3). The tensioner of the planetary chain should allow chain sagging 3...5mm (1/8...3/16 in) measured in span X (Fig.8.5.5). When the tension is set, screw the two nuts ((Fig.8.5.5-2) and two bolts (Fig.8.5.5-3).


Figure 8.5.1

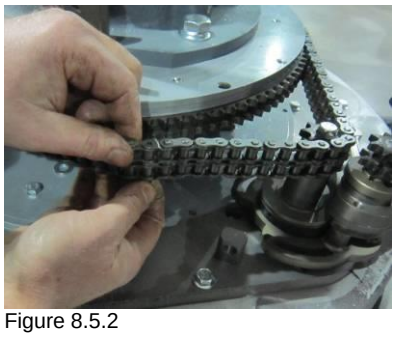


Figure 8.5.2

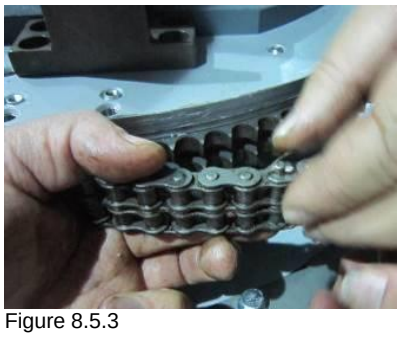


Figure 8.5.3


Figure 8.5.4

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

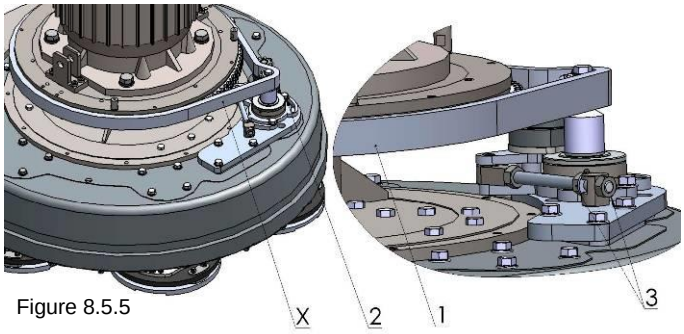


Figure 8.5.5

8.6 TENSIONING AND REPLACING THE BELTS


Figure 8.6.1


Figure 8.6.2

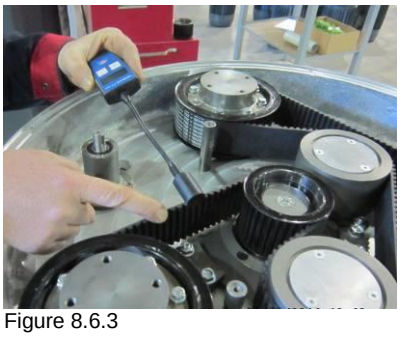


Figure 8.6.3

The transmission of the machine has two timing belts. To change the belts, you have to 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) for wear and replace if necessary. To remove the bottom cover, unscrew the bolts around the edge and the three bolts of the spacer (Fig. 8.6.1). Under the cover, a sealer lines the edge, and the spacers have O-Rings. When changing belts, it is recommended that all of these are replaced.

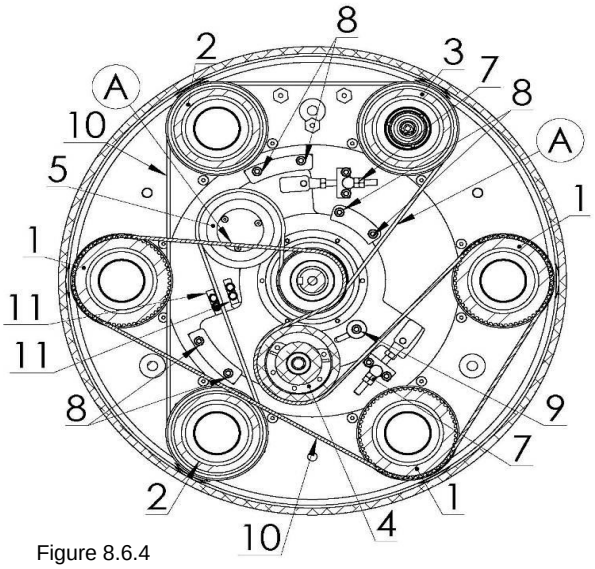


Figure 8.6.4

Fig. 8.6.4 shows the scheme of belts location. To mount the new belts, first unscrew nuts (7), (8), and (9) such that it is possible to rotate the tensioners (4) and (5) around central axle. Clean the washers and surrounding area, and check all bearings of pulley units/tensioners for too much clearance or rolling noise. Rotating the tensioner will allow the centre distance to be reduced in such a way that the timing belt may be fitted without any applied force. Installation with the use of force is NOT permissible at any time as this can damage the high quality, low-stretch tension cord and other components. This damage is often not visible.

Arrange the belts in pos.10 as per the scheme, paying attention for their correct orientation at every pulley. Loosen the nuts (7) to the end of the bolt, and loosen the nuts on the half-moon (8), allowing the rotation of the tensioners with minimal force.

Using nuts (7) tighten the belt, verifying again the correct position of the two belts, and the correct gearing in every pulley. Rotate the gear while tensioning to allow for regular tension distribution along the belt. Control the tension using Frequency tension Tester (Optibelt 3 TT) (Fig. 8.6.3). Tension in the span A of the belt should be 115-120Hz.

It is possible to use the pre-installed supports (Fig.8.6-11) as a reference to stop the tensioner at the desired belt tension, provided that the supports have not been moved from their factory position.

8.6.1 REPLACING THE PULLEYS

Loosen the belts and remove them. After removing the belts, unscrew the four bolts of the pulleys on top of the disc (Fig. 8.7.1). Replace pulley and reattach bolts.

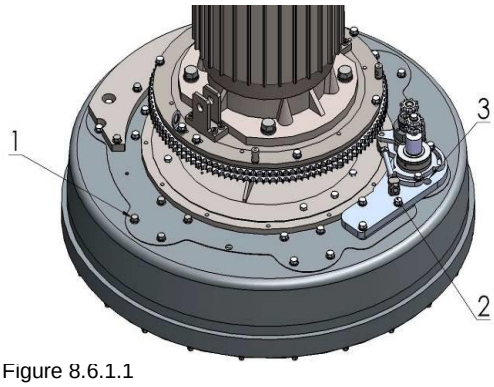


Figure 8.6.1.1

8.7 REPLACING THE PLANETARY DRIVING GEAR AND CENTRAL GEAR

Unscrew the bolt and remove the old gear. Put grease in the safety cap (Fig.8.7.1-3) of the new gear and mount to the shaft. Fold the safety washer as shown on Fig.8.7.1, and screw the bolt, using the "blue" thread locking adhesive. Tightening force on the bolts should be 22...25N.m (16...18 ft·lbf). Screw the safety washer as shown on (Fig.8.7.1).
The central gear consists of two halves, which are replaceable by unscrewing the bolts on fig.8.7.2

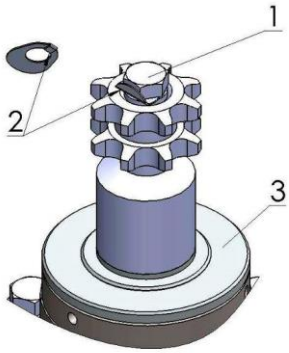


Figure 8.7.1


Figure 8.7.2

8.8 REPLACING THE PLANETARY TENSIONER

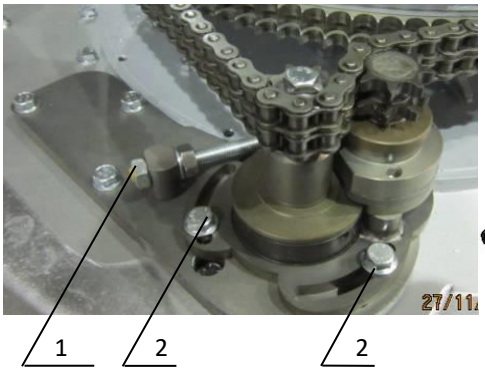


Figure 8.8.1

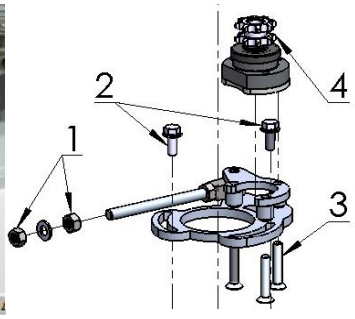


Figure 8.8.2

When dismounting the chain, unscrew the nuts (1) on the pin. Unscrew the bolts (2) and lift the tensioning assembly. Unscrew the bolts (3) and replace the tensioner with a new one. Mount the new tensioner, replace the chain and tension the chain.

8.9 REPLACING THE WHEEL

Lift the carriage on the side of the wheel to be changed and rest it on a piece of wood so the wheel is suspended in the air. Unscrew the four bolts and remove the wheel. Replace and resecure using the bolts.

Figure 8.9.1


8.9.2

8.10 REPLACING PARTS FROM THE DRIVING OF THE CARRIAGE

Lift the lorry so both wheels are in the air. Unscrew the four bolts (Fig. 8.10-1), and remove the bearing of the wheel (Fig. 8.10-2).

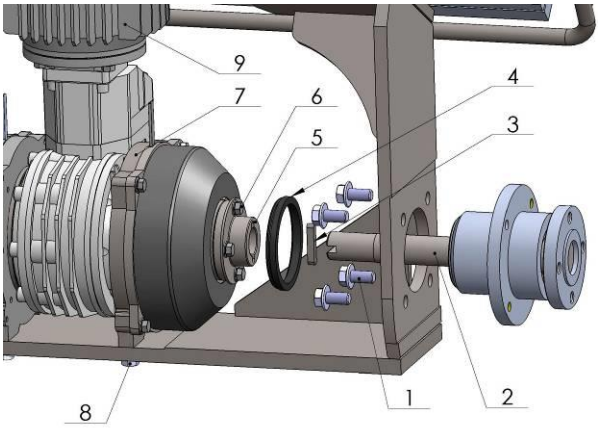


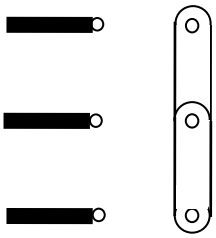
Figure 8.10.1

From this position you can replace the loose key (Fig. 8.10-3) or the sealing V ring (Fig.8.10-4) without dismounting other parts. If a replacement of the half clutch is necessary (Fig. 8.10-5), unscrew the four bolts (Fig. 8.10- 6). During reassembly, it is important to line the axis of the wheel bearing with that of the half clutch. Tighten the four bolts by hand (Fig. 8.10-1) and roll the bearing. There should be no increase or reduction in resistance (to rolling). Plug the carriage into the power supply, turn ON the SLOPE switch and tighten the four bolts (Fig. 8.10-1) to 45N.m. (this way the parts of the electromagnetic clutch will take working position). After releasing the electromagnetic clutch (switch **SLOPE** to **OFF** and press **STOP),** the bearing should scroll easily, without notable resistance by hand. To replace the whole driving unit (Fig. 8.10- 7) or engine (Fig. 8.10- 9), unscrew the bolts (Fig. 8.10- 8). During reassembly, ensure that the axes of the bearings line up with that of the driving unit.

8.11 MOTOR CONNECTION

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

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



8.12 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®32X motor FAN Parts."
When remounting the bolt (4), use thread locker, but first thoroughly clean the thread in the shaft and on the bolt.

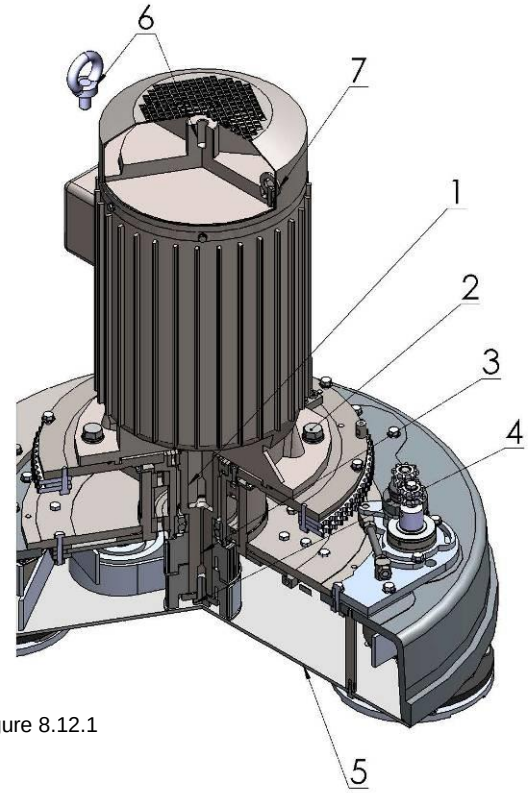


Figure 8.12.1

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

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 Inc. with technical support questions, below is the contact information.

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

11. SPARE PARTS

ASSEMBLY AND PARTS SPECIFICATIONS

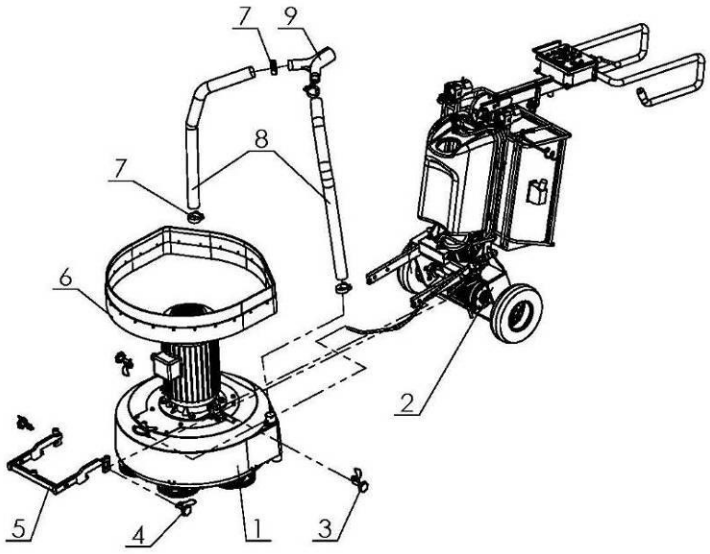
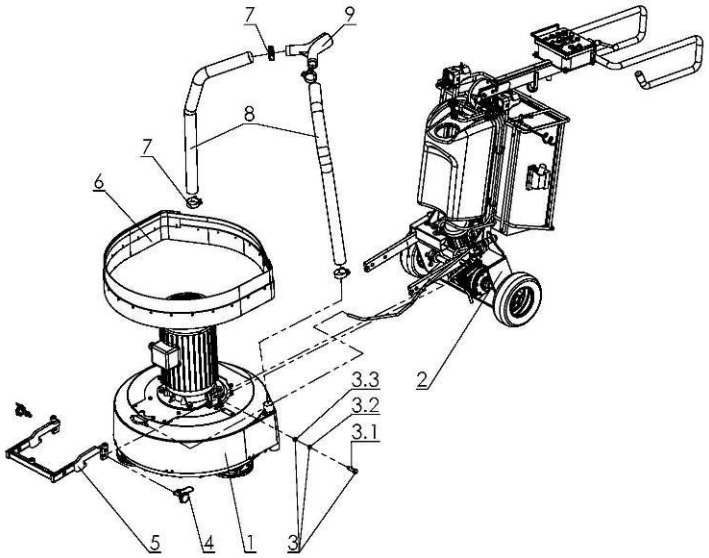


Table 1.1 is only for machines with Ser.No:1501L32MXHV0501; 1501L32MXHV0502;1502L32MXHV2703; 1502L32MXHV2704; 1502L32MXHV2705; 1502L32MXHV2706; 1502L32MXHV2707; 1502L32MXHV2708; 1502L32MXHV2709; 1502L32MXHV2710; 1502L32MXHV2711; 1502L32MXHV2712.

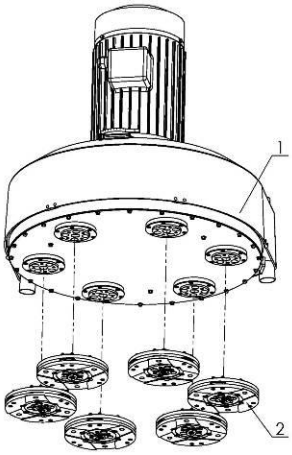
***Note**:pos. PIN ASSEMBLY may be changed with bolt with nut according table 1.2._pos.3.

1.1 LAVINA®32M-X GENERAL PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	L32NX-10.00.00	Main Head	1
2	L32MX-20.00.00	Carriage	1
3*	L32X-05.00.00	Pin Assembly	2
4	L25SPS-07.03.00.00	Pin Assembly	2
5	L32X-03.00.00	Weight Holder	1
6	L32X-02.00.00	Guard Assembly	1
7	SGBW156-59	Clamp	4
8	d50L1300	Vacuum Hose	2
9	L32B-00.00.00.00.01	Air Duct Three-Way	1

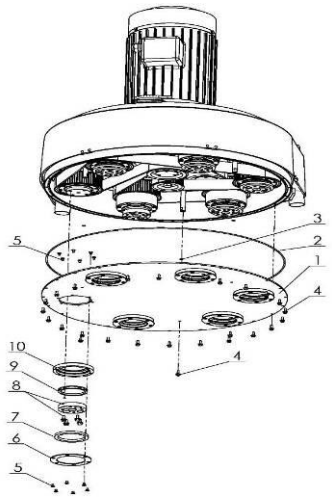
1.2 LAVINA®32M-X GENERAL PARTS				
No.		**Item No.**	**Description**	**Pcs.**
1		L32NX-10.00.00	Main Head	1
2		L32MX-20.00.00	Carriage	1
3		L32-00.00.00.00.02-K	Bolt with Nut Assembly	2
	3.1	L32-00.00.00.00.02	Bolt	2
	3.2	M12DIN127B	Spring Washer	2
	3.3	M12DIN934	Nut	2
4		L25SPS-07.03.00.00	Pin Assembly	2
5		L32X-03.00.00	Weight Holder	1
6		L32X-02.00.00	Guard Assembly	1
7		SGBW156-59	Clamp	4
8		d50L1300	Vacuum Hose	2
9		L32GX-06.00.00	Air Duct Three-Way	1

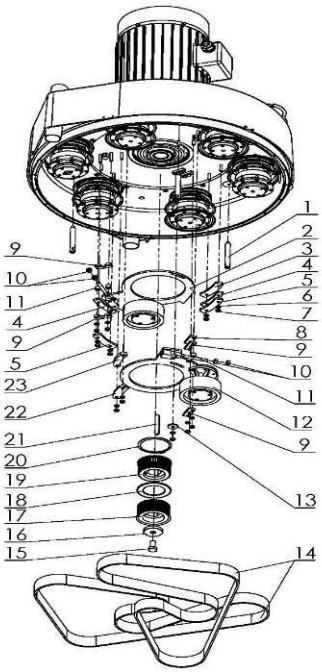


2 LAVINA®32M-X TOOL HOLDER FOR MACHINES PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	L32NX-10.00.00	Main Head	1
2	A41.00.00	Tool Holder A41	6



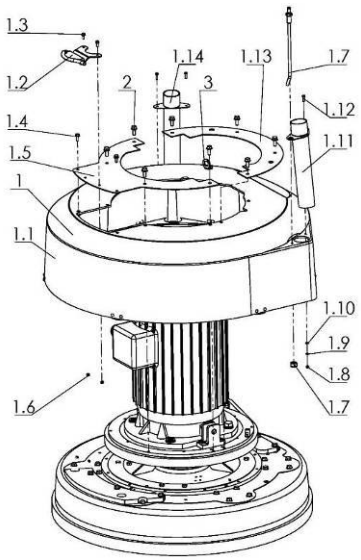
3 LAVINA®32M-X BOTTOM COVER ASSEMBLY PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	L32X-18.00.00	Bottom Cover Ass.	1
2	D4x2-2500	Seal	1
3	D6X2	O-Ring	3
4	M6X16DIN6921	Bolt	27
5	M6x10DIN7991	Screw	72
6	L25LS-14.00.03	Outer Cover	6
7	110x90x8.5	Felt Ring	6
8	A42.03.00	Adaptor	6
9	TWVA00800	V-Ring Type A	6
10	L32S-10.02.02	Flange	6





4 LAVINA®32M-X PULLEY UNIT PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	L32X-10.00.17	Distance Bolt	3
2	L32X-15.00.00	Tension Roller Bottom	1
3	L32X-10.00.13	Sector 3	1
4	L32X-10.00.11	Sector 1	2
5	L32X-10.00.12	Sector 2	2
6	M8DIN127B	Spring washer	11
7	M8DIN934	Nut	11
8	L32X-10.00.18	Support Plate 2	1
9	L25L-10.00.07	Support Plate	4
10	M10DIN 934	Nut	4
11	L25L-10.00.08	Washer	4
12	L32X-16.00.00	Tension Roller Top	1
13	L32D.10.00.24	Washer	1
14	HL24008MHL50	Timing Belt	2
15	M16X35DIN933	Bolt	1
16	L32X-11.00.10	Washer End	1
17	L32X-11.02.00	Gear Pulley 2	1
18	L32X-11.00.08	Spacer	1
19	L32X-11.01.00	Gear Pulley 1	1
20	B95DIN471	Retaining Ring	1
21	DIN6885A12x8x100	Key	1
22	L32X-10.00.14	Sector 4	1
23	L32X-10.00.15	Sector 5	1

5 LAVINA®32M-X TOP COVER PARTS				
No.		**Item No.**	**Description**	**Pcs.**
1		L32X-19.00.00	Cover Kit	1
	1.1	L32X-19.10.00	Top Cover	1
	1.2	A29.30.00	Spray Unit	1
	1.2.1	H766-21	Knob Bolt	1
	1.3	M5X12DIN6921	Bolt	2
	1.4	M6X16DIN6921	Bolt	2
	1.5	L32X-19.30.01	Cover 1	1
	1.6	M5DIN985	Nut	2
	1.7	L32X-19.20.00	Water Fitting	1
	1.8	M5DIN934	Nut	3
	1.9	M5DIN127B	Spring Washer	3
	1.10	M5DIN125A	Washer	3
	1.11	L32S.01.01.00	Vacuum Port	1
	1.12	M5X16DIN84A	Screw	3
	1.13	L32X-19.30.02	Cover 2	1
	1.14	L32D.01.01.00	Vacuum Port	1
2		M8X20DIN6921	Bolt	8
3		L25X-15.00.02	Plate Ring	1



6.1 LAVINA®32M-X CENTRAL SHAFT BEARING PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	M16X35DIN933	Bolt	4
2	M16DIN127B	Spring Washer	4
3	M16DIN125A	Washer	4
4	S322	Electro Motor	1
5	D4x2x850	Seal	1
6	B65DIN471	Retaining Ring	1
7	08B-2-120	Chain	1
8	6013	Roller Assembly	1
9	L32X-11.00.05	Extension Shaft	1
10	6019	Roller Assembly	2
11	L32X-11.00.04	Spacer	1
12	L32-01.02.00.00.01	Fork	2
13	M8X20DIN912	Screw	8
14	M8X35DIN6921	Bolt	10
15	L32X-11.30.00	Planetary Chain ring Set	2
16	TWVL01700-N6T50	V-Ring	1
17	M6X16DIN7991	Screw	6
18	A80DIN472	Retaining Ring	1
19	3208	Roller Assembly	1
20	L32D.11.00.03	Cap	1
21	B95DIN471	Retaining Ring	1
22	L32X-11.20.00	Disc Assembly	1

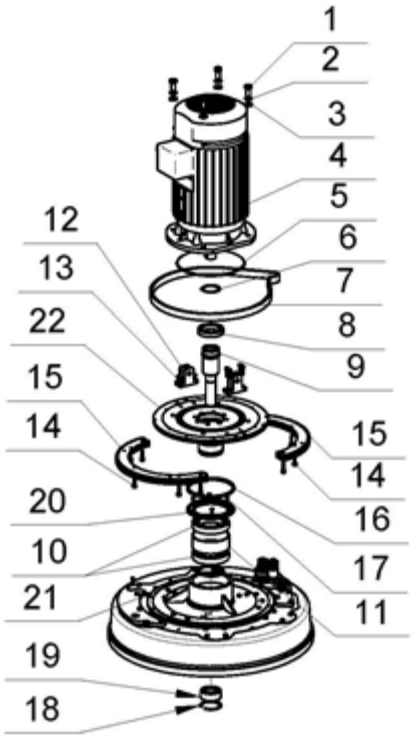
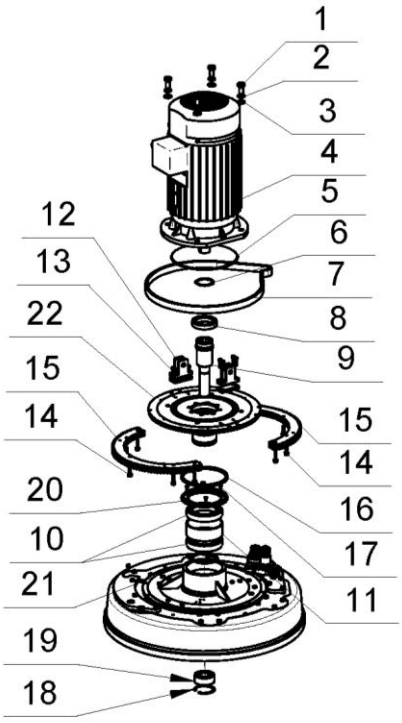
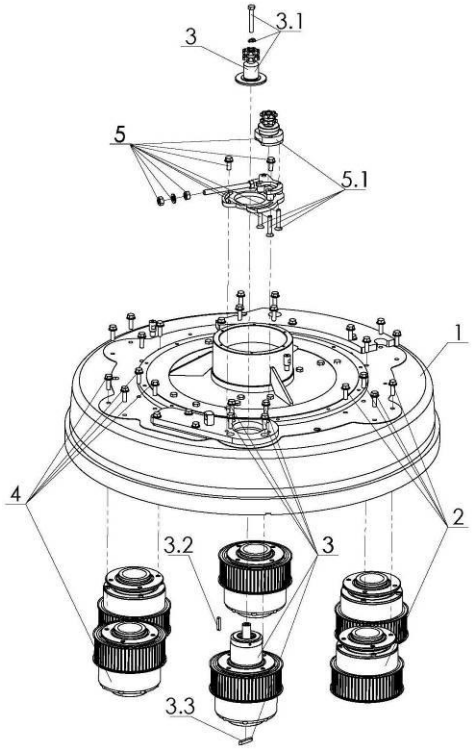


Table 6.1 is only for machines with Ser.No:1501L32MXHV0501; 1501L32MXHV0502;1502L32MXHV2703; 1502L32MXHV2704; 1502L32MXHV2705; 1502L32MXHV2706; 1502L32MXHV2707; 1502L32MXHV2708; 1502L32MXHV2709; 1502L32MXHV2710; 1502L32MXHV2711; 1502L32MXHV2712.

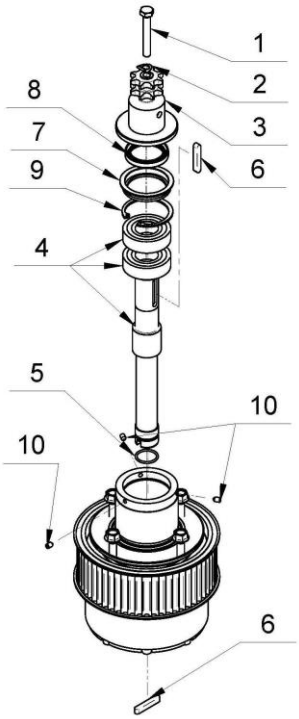


6.2 LAVINA®32M-X CENTRAL SHAFT BEARING PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	M16X35DIN933	Bolt	4
2	M16DIN127B	Spring Washer	4
3	M16DIN125A	Washer	4
4	S322	Electro Motor	1
5	D4x2x850	Seal	1
6	B65DIN471	Retaining Ring	1
7	08B-2-120	Chain	1
8	6013	Roller Assembly	1
9	L32X-11.00.05	Extension Shaft	1
10	6019	Roller Assembly	2
11	L32X-11.00.04	Spacer	1
12	L32-01.02.00.00.01	Fork	2
13	M8X30DIN912	Screw	8
14	M8X35DIN6921	Bolt	10
15	L32X-11.30.00	Planetary Chain ring Set	2
16	TWVL01700-N6T50	V-Ring	1
17	M6X16DIN7991	Screw	6
18	A80DIN472	Retaining Ring	1
19	3208	Roller Assembly	1
20	L32D.11.00.03	Cap	1
21	B95DIN471	Retaining Ring	1
22	L32X-11.20.00	Disc Assembly	1



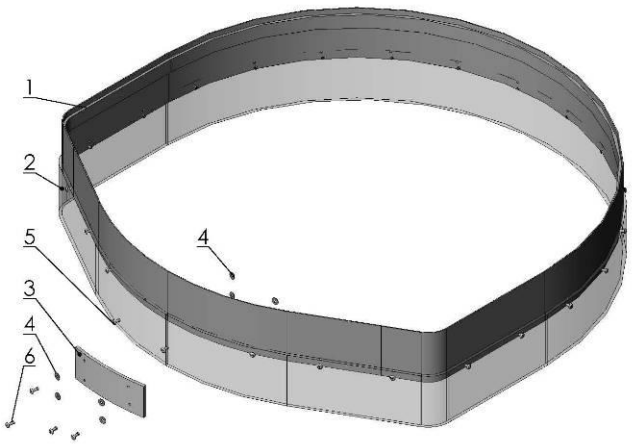
7. LAVINA®32M-X PULLEY UNITS PARTS				
No.		**Item No.**	**Description**	**Pcs.**
1		L32X-11.00.06	Disc	1
2		L32X-14.00.00	Pulley Top Belt	3
3		L32X-13.00.00	Driving Pulley Unit	1
	3.1	L32X-13.30.00-K	Driving chainring	1
		L32X-13.00.25	Security washer	1
		M8X55DIN933	Bolt	1
	3.2	DIN6885A5x5x30	Key	1
	3.3	DIN6885A6x6x36	Key	1
4		L32X-12.00.00	Pulley Bottom Belt	2
5		L32X-17.00.00	Planetary Tensioning Unit	1
	5.1	L32X-17.21.00-K	Planetary chain ring ass.	1

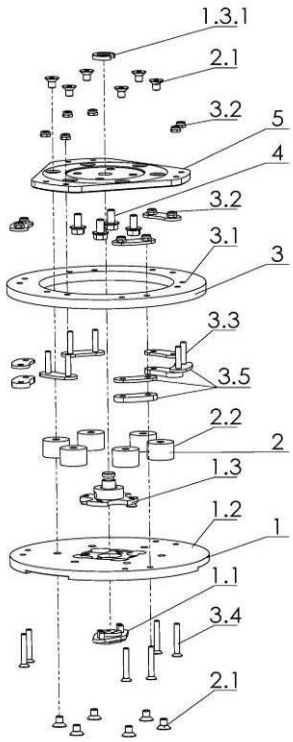
7.1 LAVINA®32M-X DRIVING PULLEY UNIT PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	M8X55DIN933	Bolt M8x55	1
2	L32X-13.00.25	Security washer	1
3	L32GX-13.30.00-K	Drive chainring	1
4	L32GX-13.00.09-K	Shaft Assembly	1
5	D21x2	O-Ring	1
6	DIN6885A6X6X36	Key	2
7	L32GX-13.00.12	Cap	1
8	TRAA00350	Seal ring	1
9	A52DIN472	Circlip A52	1
10	M5X8DIN914	Screw M5x8	3



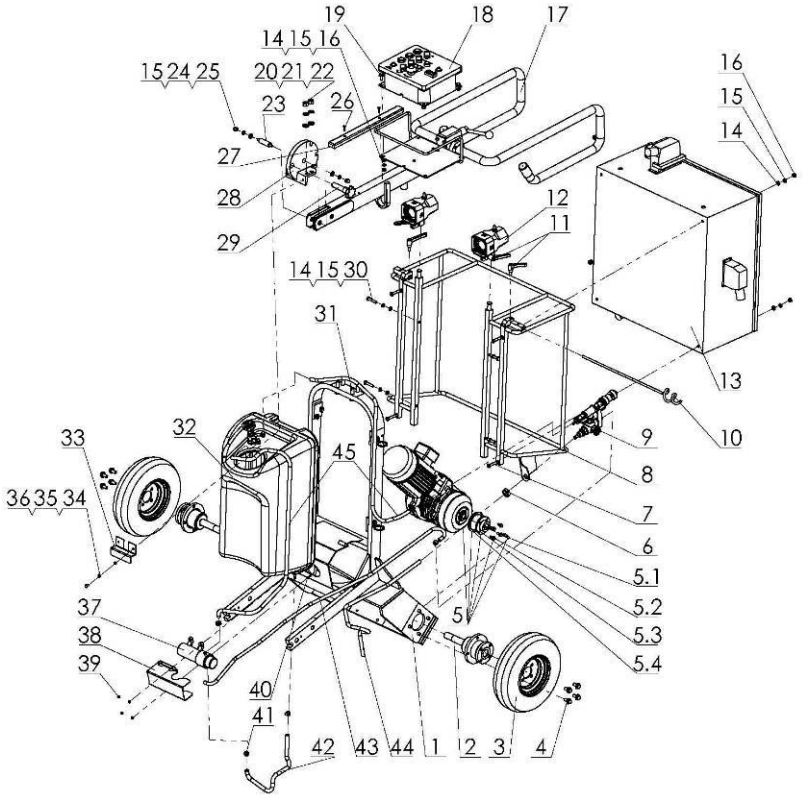
*To use the spare parts for machines with serial number before No1707L32X1701 you need first to change all parts of the driving pulley as per table 7.1 together.

8 LAVINA®32M-X GUARD ASSEMBLY PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	L32X-02.01.00	Ring	1
2	L32X-02.00.02	Guard	1
3	L32X-02.00.05	PVC Sheet	1
4	M4DIN9021A	Washer	8
5	D4X10DIN7337LF12	Rivet	24
6	D4X16DIN7337	Rivet	4

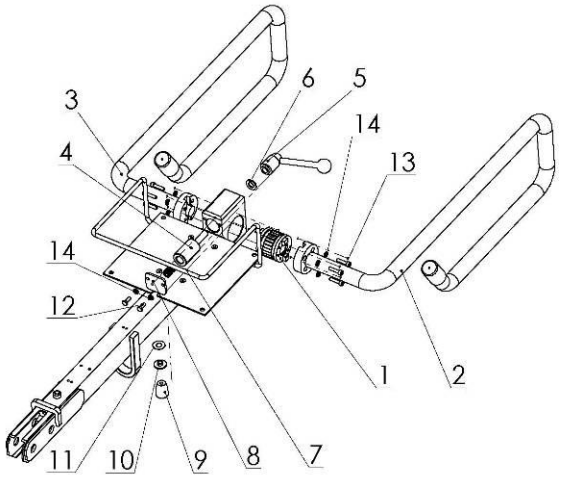




9. LAVINA®32M-X TOOL HOLDER PARTS/SEE ALSO FIG.8.3.13/ (POS.1 INCLUDE POS.1.1;1.2;1.3/POS.1.3 INCLUDE POS.1.3.1 and etc.)					
No.			**Item No.**	**Description**	**Pcs.**
1			A41.10.00	Quick Change Assembly	1
	1.1		A31.12.00	Key lock Set	1
	1.2		A41.11.00	Quick Change plate	1
	1.3	.	A41.12.00	Security set	1
		1.3.1	A41.00.05	Washer A41	1
2			A25.00.10-K	Buffer with two screw	6
	2.1		M8X12DIN7991	Screw	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		M6DIN985	Self Locking Nut	12
	3.3		M6X40DIN7991	Screw	6
	3.4		M6X30DIN7991	Screw	6
	3.5		A41.21.00	Set of plates	1
4			M8x16DIN6921	Bolt	4
5			A41.20.01	Flange	1

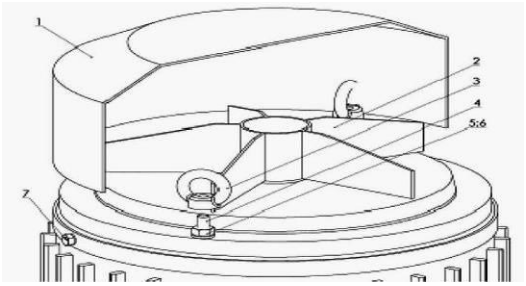


10. LAVINA®32M-X CARRIAGE PARTS								
No.		**Item No.**	**Description**	**Pcs.**	**No.**	**Item No.**	**Description**	**Pcs.**
1		L32MX-21.00.00	Frame	1	22	M12DIN934	Nut	4
2		L32MS-29.00.00	Wheel Bearing	2	23	L32-00.00.00.00.02	Pin	1
3		L32R-27.10.00	Wheel assembly	2	24	M8DIN9021A	Washer	2
4		M10X20DIN6921	Bolt	4	25	M8DIN1587	Nut	2
5		L32MS-27.00.00	Driving Unit	1	26	M5x20DIN7991	Screw	2
	5.1	DIN6885A6x6x36	Key	2	27	L32MX-23.05.00	Cord Cover	1
	5.2	M6x16DIN6921	Bolt	8	28	L32D.22.00.00	Handle Positioner	1
	5.3	L32MS-27.00.04	Coupling	2	29	L32-02.05.00.00.00	Pin Ass.	1
	5.4	TWVA00700	V-Seal	2	30	M8x40DIN933	Bolt	4
6		M20x1.5DIN439B	Nut	1	31	M12x45DIN933	Bolt	4
7		M8x45 DIN7991	Screw	4	32	A36.10.00	Tank assembly	1
8		L32MX-24.00.00	Guard	1	33	L32S-20.00.11	Upper Bracket	1
9		L32MX-20.01.00	Water Connection	1	34	M6DIN125A	Washer	2
10		L32R-20.00.31	Cable Guide	1	35	M6DIN7980	Spring Washer	2
11		A58165	Swivel Bolt	2	36	M6x12DIN933	Bolt	2
12		L20NS-30.30.00	Lamp Unit Incl. Cable	2	37	See table 14;pos.16	Water Pump	1
13		L32MX-30.00.00	Control Box	1	38	L25S-20.00.26	Guard	1
14		M8DIN433	Washer	12	39	M5DIN985	Nut	4
15		M8DIN127B	Spring Washer	14	40	M5X20DIN933	Bolt	4
16		M8DIN934	Nut	8	41	10-16DIN3017	Clamp	7
17		L32MX-23.00.00	Handle Assembly	1	42	MAR8.35	Tube	1
18		L32MX-26.00.00	Control panel with conn. end plug	1	43	MAR8.130	Tube	1
19		M8x20DIN6921	Bolt	8	44	MAR8.50	Tube	1
20		M12DIN125A	Washer	4	45	MAR8.115	Tube	2
21		M12DIN127B	Spring Washer	4				



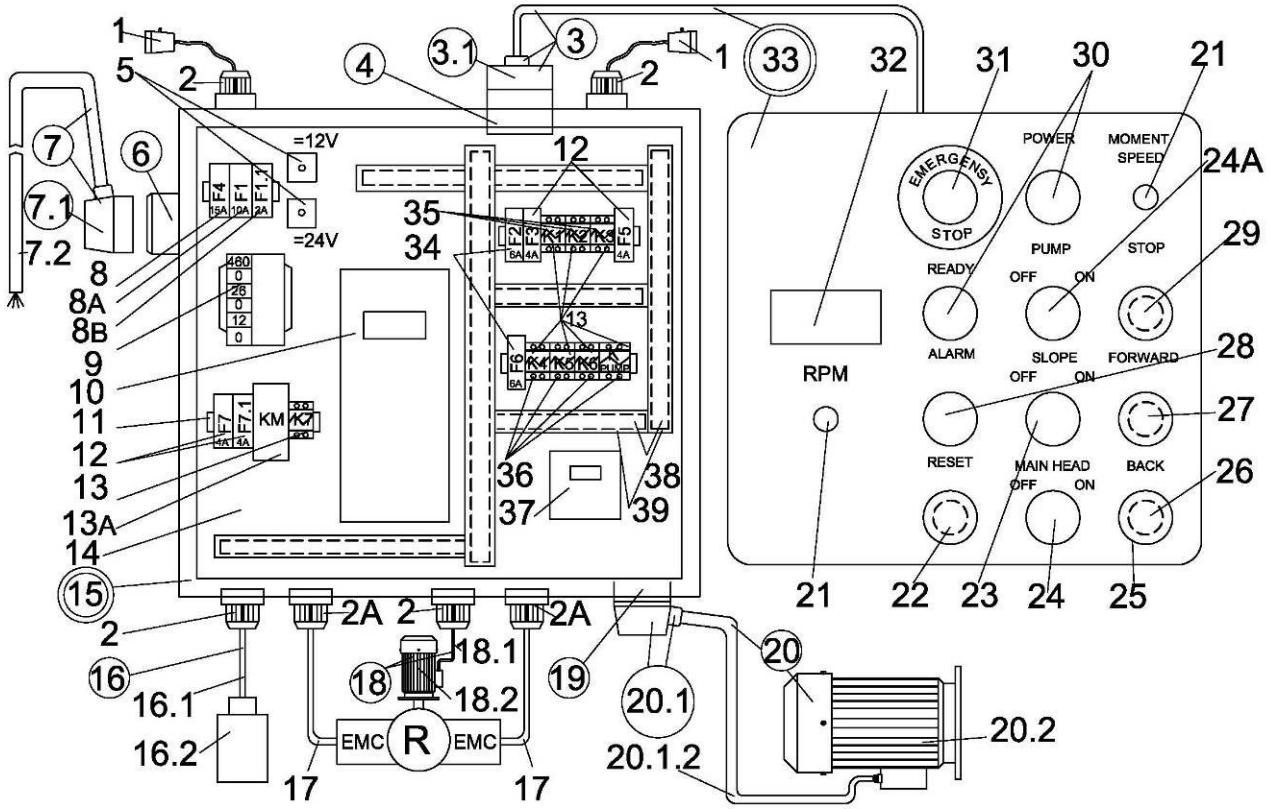
11. LAVINA®32M-X STEERING BRACKET PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	L32B-02.03.00.00.01-01	Sprocket	1
2	L32C.02.03.02.00.00	Left Bracket	1
3	L32C.02.03.03.00.00	Right Bracket	1
4	L32C.23.00.06	Screw	1
5	GN212.3-28-M12-E	Swivel Bolt	1
6	M12DIN125A	Washer	1
7	L32B-02.03.00.00.02	Spring	1
8	L32C.23.00.21	Housing	1
9	BO751-107-25M08	Knob	1
10	L32-02.03.00.00.01	Washer	1
11	L32-02.03.00.00.02	Teflon Washer	1
12	M6X16DIN933	Bolt	2
13	M6X25DIN912	Screw	8
14	M6DIN7980	Spring Washer	10

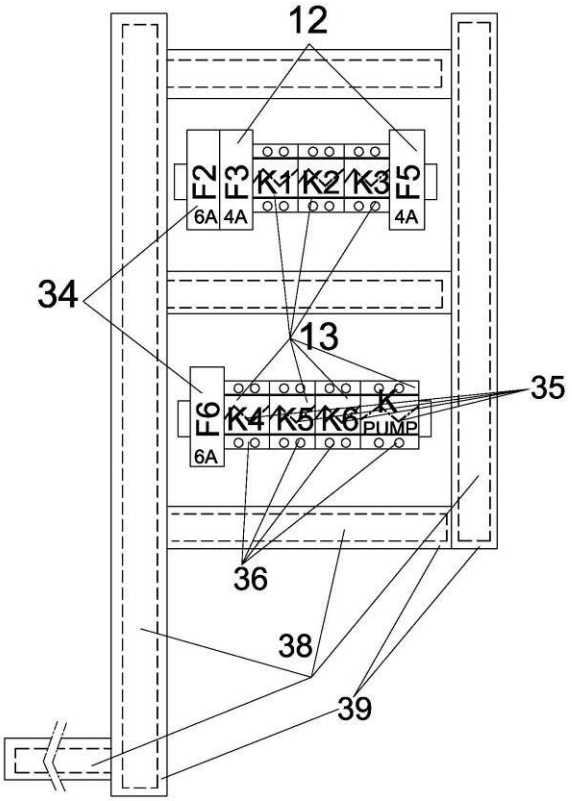
12. LAVINA®32M-X WATER TANK ASSEMBLY PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	1/2"	Filter	1
2	A29.50.00	Regulator	1



13 LAVINA®32M-X MOTOR FAN PARTS			
No.	**Item No.**	**Description**	**Pcs.**
1	L32DS.10.00.48.01	Fan Cover	1
2	L32DS.10.00.48.02	Fan	1
3*	M8DIN582	Eye Bolt Ring	2
4*	M8X60DIN939	Stud	2
5*	M8DIN934	Nut	2
6*	M8DIN7980	Spring Washer	2
7	M5x25DIN7985A	Screw	4

14 LAVINA® 32M-X-HV CONTROL BOX PARTS 440-480 VOLT





14 LAVINA®32M-X -HV Control Box Parts 440-480 Volt							
	Item No.	**Description**	**Pcs.**	**No.**	**Item No.**	**Description**	**Pcs.**
1	L20NS-30.30.00	Lamp Unit Incl. Cable	2	19	L32SHV-30.19.00	Panel socket ass./motor/F	1
2	L20NS-30.10.01	Cable Gland	4	20	L32MXHV-30.20.00	Electro Motor Assembly	1
2A	FXFPAL10M12B	Cable Gland	2	20.1	L32SHV-30.20.10	Plug assembly/motor/	1
3	L32MSHV-30.30.00	Cable with Connector and Plug	1	20.1.2	L32SHV-30.20.12	Cable for Electro Motor	1
3.1	L32MSHV-30.30.10	Connector Ass./male/	1	20.2	S322	Electro Motor	1
4	L32MSHV-30.40.00	Plug on Control Board ass./female/	1	21	L20NS-30.10.04	Potentiometer	2
5	L20NS-30.11.08	Rectifier	2	22	L32S-30.10.06	Reset Button	1
6	L32SHV-30.60.00	Plug on Control Board	1	23	L32S-30.10.26	Switch Button SLOPE	1
7	L32SHV-30.70.00	Cable with Connector and Plug	1	24	L32S-30.10.25	Switch Button ON/OFF Led green	1
7.1	L32SHV-30.70.10	Connector Ass.	1	24A	L20NS-30.10.13	Water Pump Button	1
7.2	L32SHV-30.70.20	Cable	1	25	L20NS-30.10.06	Cap	4
8	L32MXHV-30.11.15	Circuit Breaker/module/	1	26	L32MSHV -30.10.02	BACK Button/red/	1
8A	L32SHV-30.11.01	Circuit Breaker	1	27	L32MSHV -30.10.01	FOR Button/green/	1
8B	L32RSHV-30.00.11	Circuit Breaker	1	28	L20NS-30.10.14	Blue Led Alarm	1
9	L32MSHV -30.11.08	Transformer	1	29	L20NS-30.10.07	STOP Button	1
10	L32MSHV-30.11.21	Inverter Yaskawa (V1000)	1	30	L20NS-30.10.12	Button	2
11	L20NS-30.11.02	Rail	1	31	L32MXHV-30.10.10	Emergency Stop Button	1
12	L20NS-30.11.01	Circuit Breaker	4	32	L20NS-30.10.15	Revolution counter	1
13	L32RS-30.11.05	Rail	1	33	L32MXHV-26.00.00	Control panel with connector end plug	1
13A	L20NX-30.11.03	Contactor	8	34	L32MSHV -30.11.34	Circuit Breaker	2
14	L32MXHV -30.11.00	Metal box plate	1	35	L20NS-30.11.06	Rail Bracket	8
15	L32MXHV -30.10.00	Metal box	1	36	L20NS-30.11.04	Rail Base	8
16	L20NS-30.40.00	Water Pump with Cable	1	37	L25LMSHV-30.00.02	Inverter	1
17	FXFPAL10B50M	Goffer tube	2	38	L32MSHV -30.11.39	Rail Cable Guide	1
18	L32R-S-HV-30.13.00	Electro motor with cable	1	39	L32MSHV -30.11.38	Rail Cover	1
18.1	L32R-S-HV-30.13.10	Cable 4x1	1				
18.2	L32R-S-HV-30.13.20	Electro Motor	1				