LAVINA

S7 SERIES

Operation Manual
19" Electric Grinders

L19S7
L19ES7
L19EUS7

SUPERABRASIVE
DIAMOND TOOLS AND EQUIPMENT

Table of Contents

1. INTRODUCTION

This owner's manual is intended for the operator of our machines, 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 machine.

1.1. MANUFACTURER

Superabrasive was founded in 1987, as a manufacturer of high quality diamond tools for 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.

1.2. GENERAL DESCRIPTION

The Lavina® machines are designed for grinding, polishing and buffing concrete, marble, granite, limestone and terrazzo surfaces with diamond tools. Additionally, the machine could be used for grinding wood floor surfaces.

This Lavina® machine is a three disc machine, which can be used wet or dry. For best results, use only tools manufactured or recommended by Superabrasive and its distributors.

This machine is manufactured and fitted for the above-mentioned applications only! Every other use may possess risks to the persons involved.

1.3. ENVIROMENTAL CONDITIONS

The temperature range of operating the machine is between 41ºF-86ºF or 5ºC-30ºC. Never use the machine during rain or snow when working outdoors. When working indoors, always operate the machine in well-ventilated areas.

1.4. WARRANTY AND RETURNS

1.4.1. WARRANTY POLICY FOR LAVINA® 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. Superabrasive warrants, from the time of delivery and receipt by the original customer, new and unused products sold by Superabrasive or Superabrasive-appointed distributors or dealers. Goods shall be free from defects in materials and workmanship. Superabrasive or a Superabrasive-appointed repair facility shall either replace or repair any defects in the Goods resulting from faulty design, materials, or workmanship. Products repaired or replaced during the warranty period shall be covered by the foregoing warranty for the remainder of the original warranty period, or ninety (90) days from date of the repair or shipment of the replacement, whichever is longer. Spare parts for repair will be either new or equivalent to new.

Warranty period shall be 2 years from the time of delivery and receipt by the original customer, or 600 operating hours on the machine - whichever occurs first. Superabrasive will cover the shipping charges for the transportation of the machine to Superabrasive (or an approved repair facility) and back to the customer (within the contiguous 48 United States) in the event that the damage occurs and is reported within 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 a result of the complaint.

The warranty herein is non-transferable, and only applies to the original owner or purchaser of the machine.

1.4.2. RETURN POLICY FOR LAVINA® MACHINES

The Lavina® 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.

2. SAFETY INSTRUCTIONS

2.1. RECCOMENDED USE

The Lavina® 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.

2.2. PROHIBITED USE

The machine MUST NOT be used:

- For applications different from the ones stated in the “General description” chapter.
- 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;
  - In nursing homes, hospitals, day-care centers, etc.;
  - In areas where loose tiles or other objects are preventing proper use of the machine;
  - In rooms without proper ventilation;

2.3. PREPARATION FOR WORK

Make sure that:

- The work area is closed so that no person unfamiliar with operating the machine can enter the area.
- There are no missing parts of the machine.
- The machine is in upright working position.
- The protection devices are working properly.

Protection devices

- The machine is equipped with several protection devices including following:
  - A protection skirt and hood for protecting the tool plates.

These devices protect the operator and/or other 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:

- Functions of arresting the machine are following:
  - Switch to stop the electrical motor;
  - EMG stop button;

2.4. SAFE USE

The Lavina machine is designed to reduce all risk 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 risk due to lack of operational training;

2.5. RESIDUAL RISKS

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

2.6. BEFORE YOU BEGIN

- Clear the working area of any debris or objects.
- A first-time operator must always read the manual and pay attention to all safety instructions.
- All propane connections and cables must be inspected for potential damages.
- Perform general daily inspections of the machine and inspect the machine before each use.
- Always inspect the safety devices.
- The tool protector must be working.
- Mount the security disk when working with "Quickchange" pads.
- The machine must be clean.
- Never operate the machine outdoors in rainy or snowy weather.
- 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 running 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 a titled position when starting.

2.7. OPERATING THE MACHINE

- When operating the machine, make sure that there is no one, but you around the machine.
- Never leave the machine unattended while working.
- The water hose must move freely and must be damage-free.
- Make sure the working surface is not tii uneven. If it is, it may damage the machine.

2.8. AFTER WORK IS COMPLETED

- Clean the machine and its surroundings properly.
- Empty and clean the water tank.
- Store the machine in a safe place.

2.9. THE WORK AREA

- Prevent people or vehicles from entering the work area.
- Clear all hoses and cables from the work area.
- Always check the floor for debris.

2.10. PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Always wear a 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.

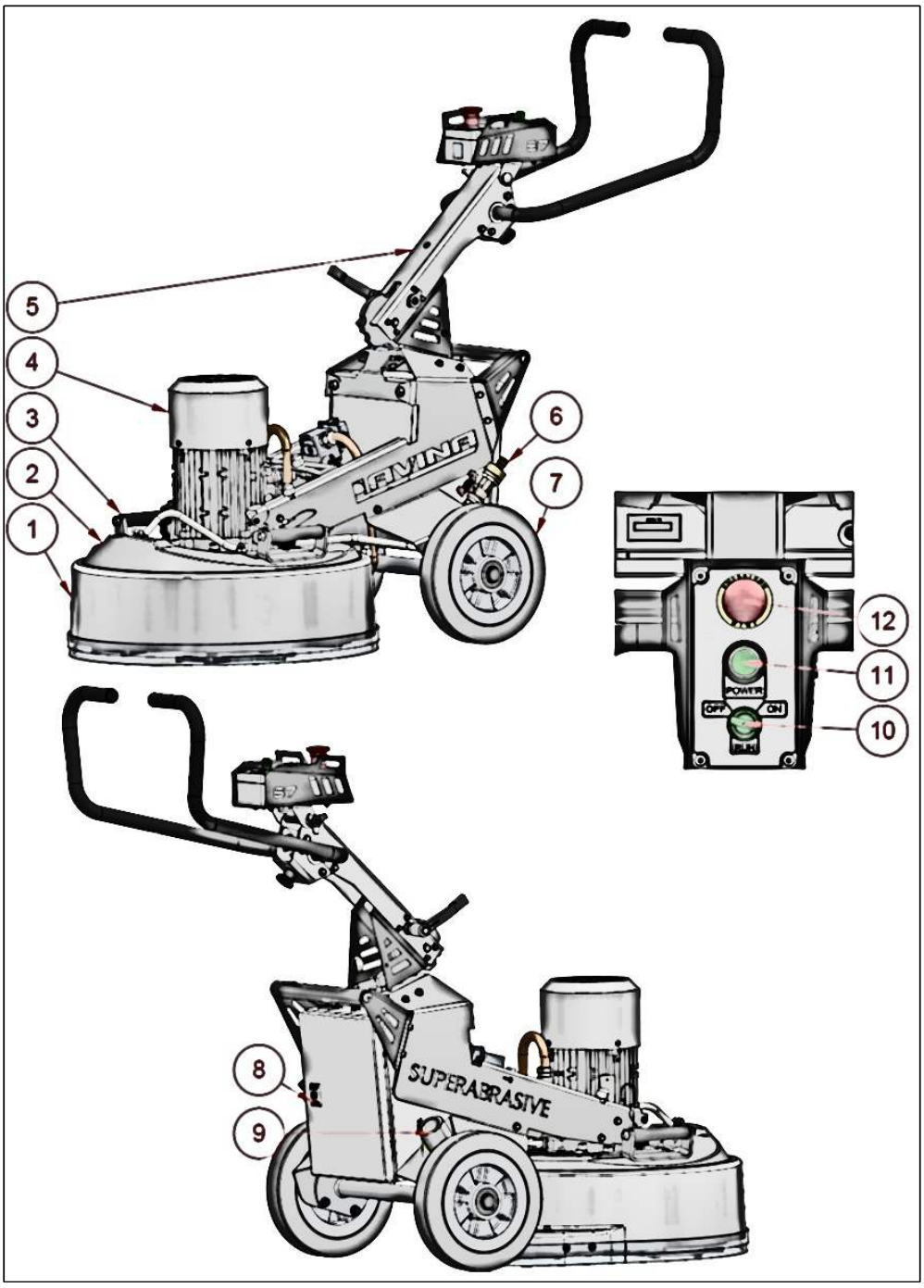
2.11. OPERATOR

- The operator must know the machine's work environment.
- Only one operator can work with the machine at a time.
- The operator must be properly trained and well instructed prior operating the machine.
- The operator must understand all the instructions in this manual.
- The operator must understand and be able to interpret all drawings and designs in manual.
- The operator must know all sanitation and safety regulations pertaining to the operation of the machine.
- The operator must know what to do in case of emergency.
- The operator is expected to operate his equipment safely and responsibly. He is responsible for the proper handling and storage of propane cylinders, identifying potential hazards associated with his job and avoiding these hazards at all times.

3. MACHINE DESIGN

3.1. MAIN COMPONENTS

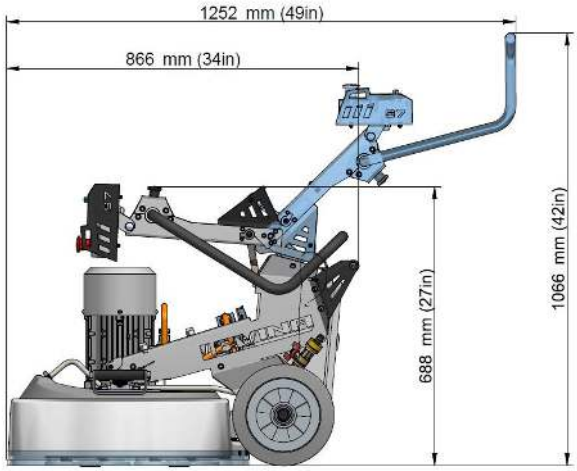
- The machine contains two main components – the carriage and the grinding head.
- The control panel is positioned on the machine's handle bar.
- The handle bar is equipped with two positioning mechanisms, which are designed to provide the operator with the most convenient operating position for him.
- The machine is equipped with quick connection for external water source.
- The vacuum hose port is situated on the back of the machine. It's pipe with diameter of 50mm or 2inches. Most of the vacuums for this size machine have hose with cuff at the end. To connect the vacuum, make sure that cuff responds to the above mentioned diameter of the pipe. Install the cuff on the pipe.
- The machine's power source is the electrical motor mounted on the top of the grinding head.
- There are three "QUICKCHANGE" tool holders on the bottom of the grinding head. They provide fast and secure mount and dismount of our "QUICKCHANGE" tools.

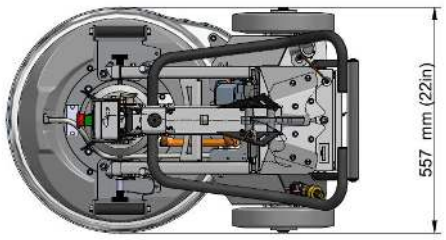


1	COVER	**7**	WHEEL
2	GRINDING HEAD	**8**	SWITCHBOARD
3	HEAD HANDLE	**9**	VACUUM HOSE PORT
4	ELECTRICAL MOTOR	**10**	ON/OFF SWITCH
5	HADNLE	**11**	POWER INDICATOR
6	QUICK WATER CONNECTION	**12**	EMG STOP BUTTON

3.2. TECHNICAL DATA

MODEL	LAVINA® L19S7	LAVINA® L19EUS7	LAVINA® L19ES7
Voltage/hz	1 ph x 115V 60Hz	1 ph x 200-240V 60Hz	1 ph x 200-240V 50Hz
Amperage, amps	Max 20	Max 14	Max 14
Power, kW/hp	1.8/2.4	2.2/3	
Working width, mm/in	510/20”		
Tool holder direction of rotation	Clockwise		
Tool holder diameter, mm/in	3x 225/9”		
Tool holder speed of rotation, rpm	530	530	440
Tools cutting speed, m/s	6.4	6.4	5.3
Weight (kg/lbs)	100/221		
Grinding pressure, kg/lbs	63/139		
Grinding pressure with accessory weight	Accessory weight is not recommended for the 115V version	80/176	
Water tank, L/gal	N/A		
Water feed	External source		
Application	Wet and dry		
Vacuum hose port	Φ50mm/2in pipe		
Recommended dust extractor	V20E/GE or bigger		
Cable length (m/ft)	Check the accessory page 17m/56ft		
Machine LxWxH (mm/in)	866x557x688 34’’x22’’x27’’		
Packing create LxWxH, mm/in	920x586x850 36’’x23’’x33.5’’		





3.3. VIBRATIONS

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

3.4. SONOROUS EMISSIONS

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

3.5. LABEL DATA

The data on the label provides correct information about the machine:

- Electrical motor power;
- Weight;
- Year of production;
- Serial number;

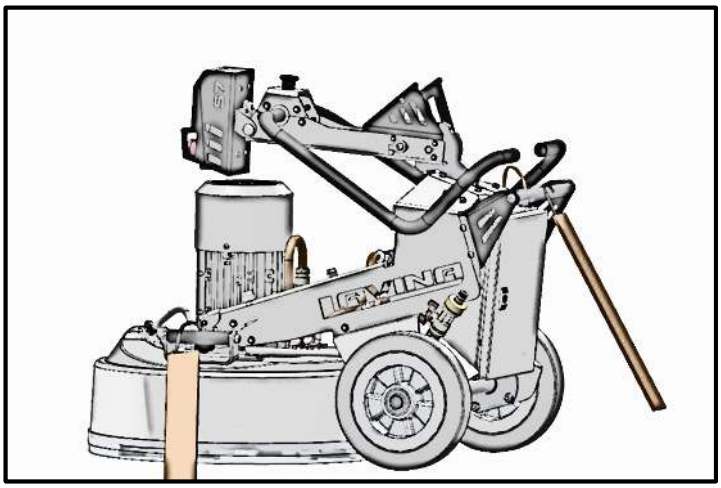
3.6. CUSTOMER SERVICE

For customer assistance and technical support call your local distributor or call Superbarasive at 1-800-987-8403 for US or visit our website www.superabrasive.com.

4. TRANSPORTATION AND STORAGE

4.1. TRANSPORTATION

To transport the Lavina machine, use the handles of the grinding head and the rear bar as anchoring points for strapping the machine during transportation.



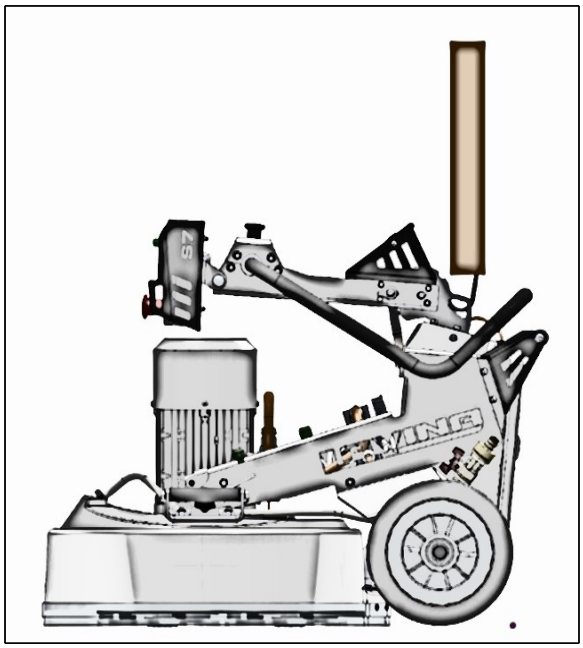
NOTE: Always make sure that the machine is securely anchored to its surroundings and that the grinding head is lowered on to the surface. Tighten the securing straps, or other equipment used for anchoring during transport over non-moving parts, e.g. the machine's chassis.

Never transport the machine unprotected. It can damaged if transported unprotected and exposed to rain or snow.

4.2. LIFTING

The carriage and the grinding head are light enough to be lifted by hand (two man required).

The carriage though has a lifting point, situated just under the handlebar as it’s shown on the image.



4.3. STORAGE

Always store the machine in dry place.

When the machine is in storage and the temperatures are falling down below 32F or (0ºC) you must empty the water from the system to avoid freezing it.

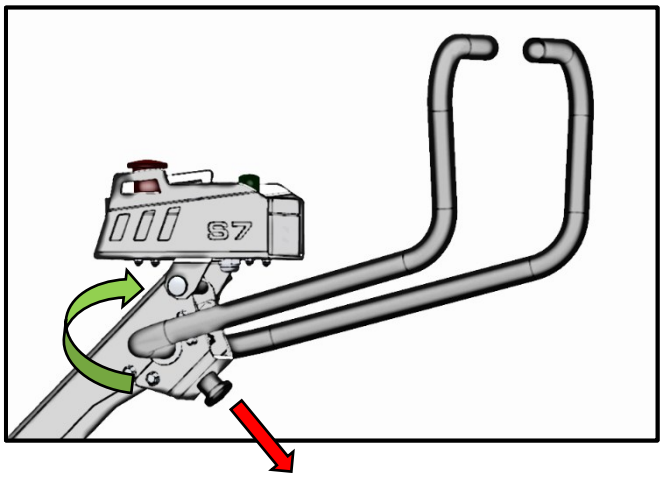
Leave opened internal and external valves in order to drain the water from the system

5. OPERATING THE MACHINE

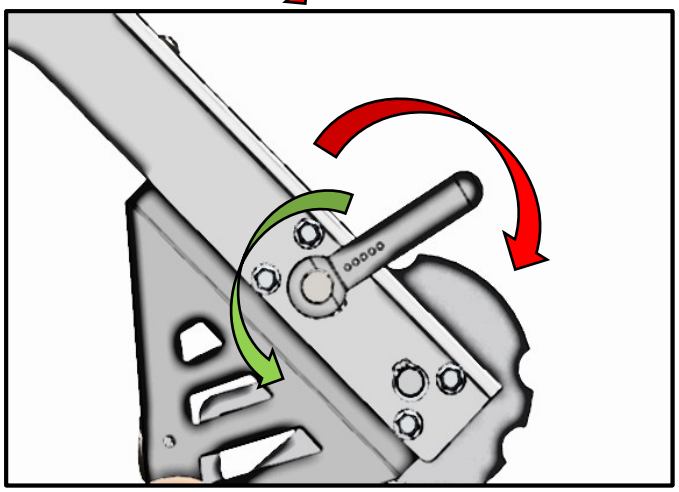
5.1. ADJUSTING THE HANDLE

The machine is equipped with two locking mechanisms – one for the handles and one for the whole handlebar.

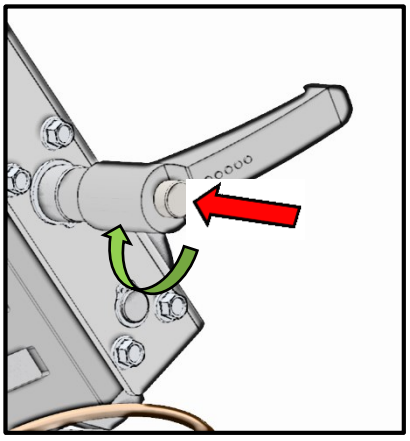
Pull the knob (red arrow) and rotate the handles to the desired position.



To rotate the whole handlebar use the lever (red arrow for lock direction) and (green arrow for unlock direction).



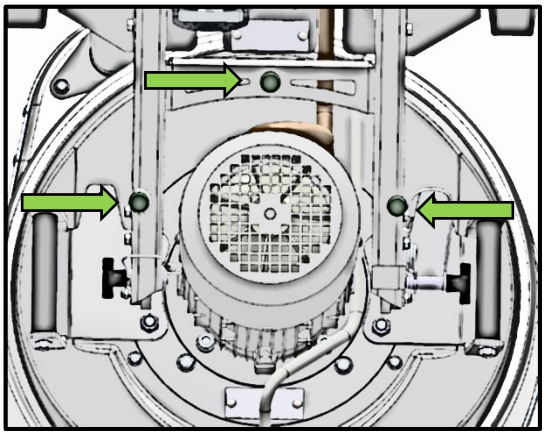
The handle is adjustable. To set it into more convenient position press the button and rotate the lever.

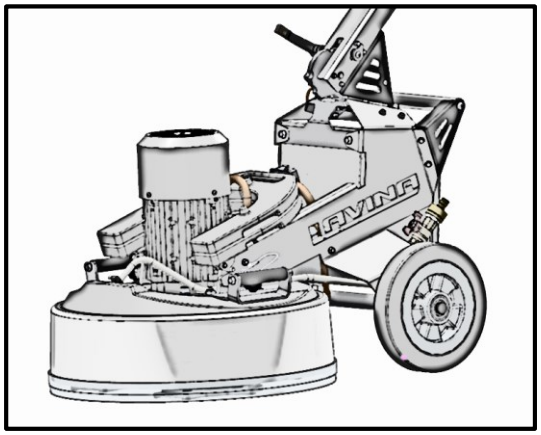


5.2. ACCESSORY WEIGHTS

The machine can be equipped with two accessory weights (L21-50.00.00). To install them, just fit them onto the three slots shown with green arrows.

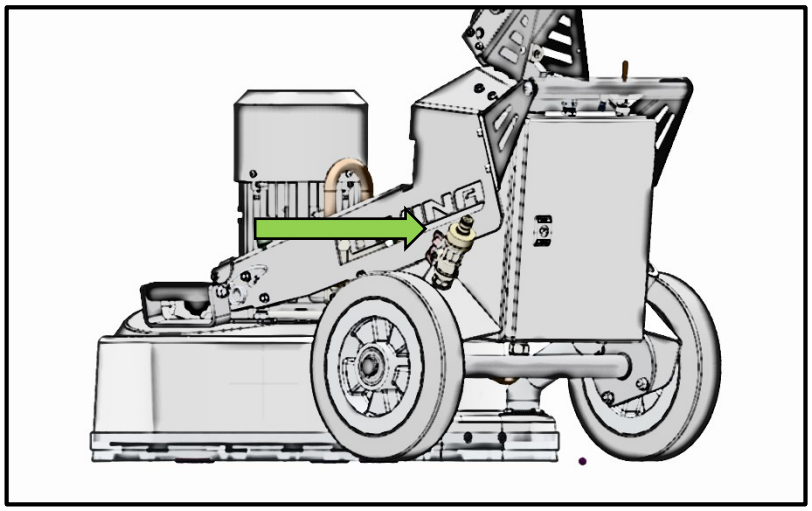
Note: The weights add 16kg more to the grinding pressure.





5.3. WATER FEED

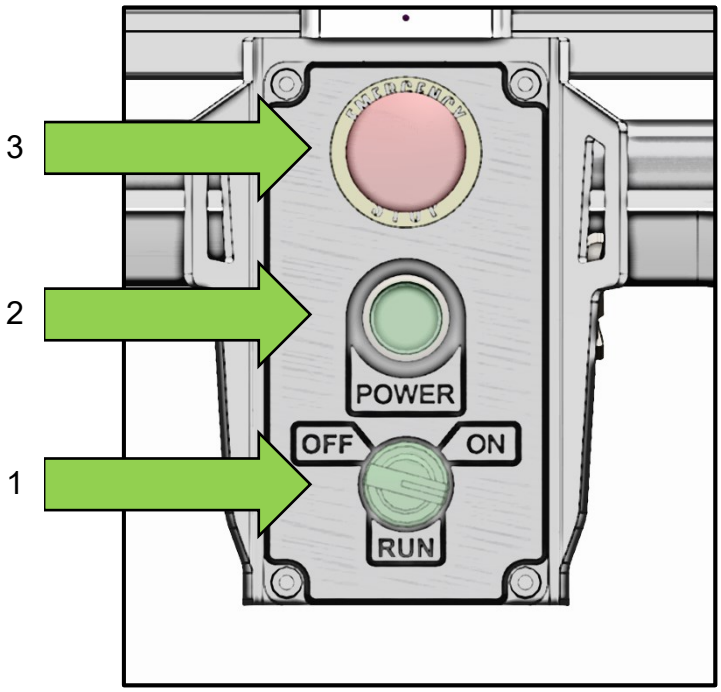
The machine is equipped with quick connection for a hose and a valve to control the water flow.



5.4. CONTROL BOARD

1	Start/Stop switch
2	Power indicator
3	EMG stop button

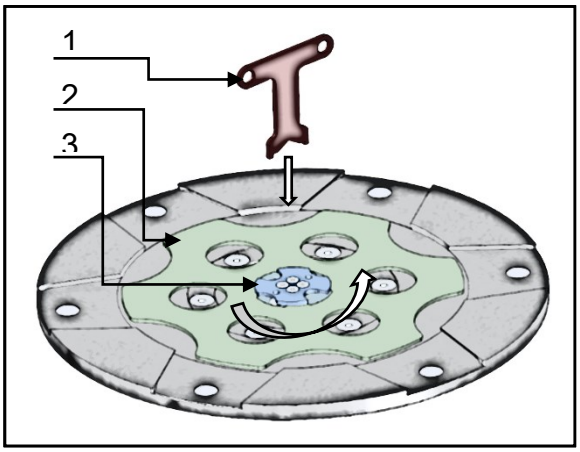
- Start/Stop switch – turn the machine on and off.
- Power indicator – glows when the machine is plugged into power supply.
- EMG stop button – immediately stops the machine in case of emergency.

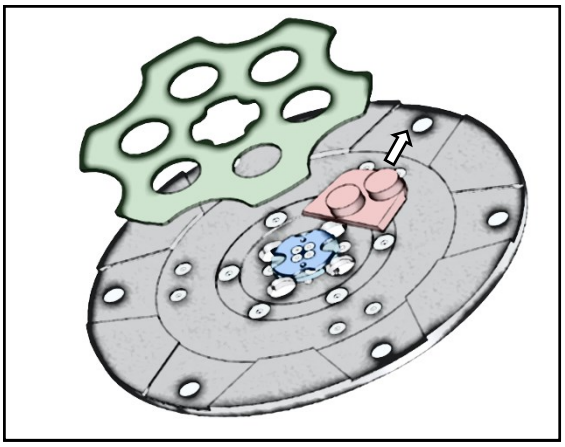


5.5. MOUNTING TOOLS

Use the tool holder key (1) to rotate the key lock (3) in order to unlock and dismount the security plate (2).

Install tools into the tool holder's nests and by following the steps in reversed order lock install the security plate (2) and lock it.





5.6. STARTING THE MACHINE

To start the machine follow the steps:

- Plug the machine into power supply. The power indicator must glow in green.
- Use the "Run/stop" switch to run the machine.

5.7. WHILE 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 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 and periodically to release water onto the floor surface. When working dry, check the floor surface periodically for dust accumulation. Check regularly to see if your vacuum works properly.

5.8. STOPPING THE MACHINE

To stop the machine either rotate the “Run/stop” switch into the “stop” direction or use the EMG stop button.

In case of emergency always press the “Emergency stop button”.

6. TOOLS AND ACCESSORIES

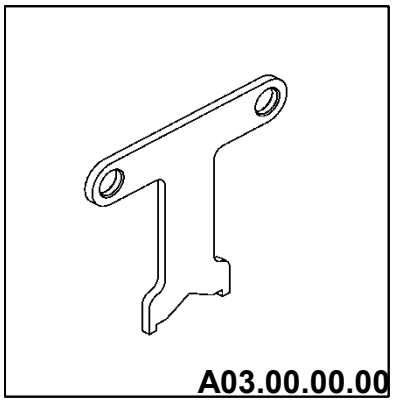


Figure 7.1

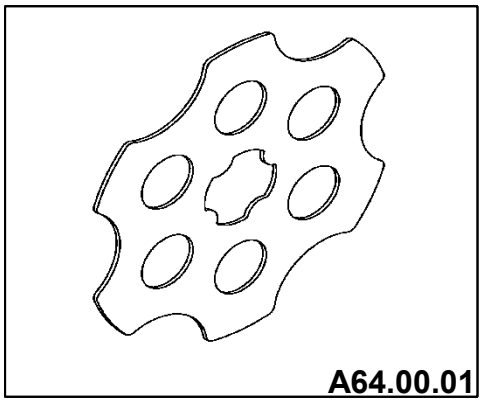


Figure 7.2

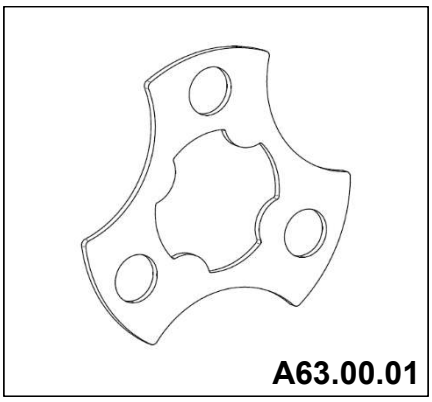


Figure 7.3

- Tool holder key (fig. 7.1) – It is used for mounting and dismounting the security plate.
- Security plate (fig. 7.2) – It is used to secure the “Quickchange” tools. A64.00.01 is for 13’’ plates.
- Security plate (fig. 7.3) – It is used to secure the “Quickchange” tools. A63.00.01 is for 9’’ plates.
- Security plate for “Ring tools” A85.00.00 – It is used to ensure the “Ring tools”. Applies only to with 9” plates.
- Additional weights (2 pcs. Recommended) L21-50.00.00
- L20XE30.02.00 - Accessory extension cord for L19ES7
- A137 - Accessory extension cord for L19S7
- A138 - Accessory extension cord for L19EUS7

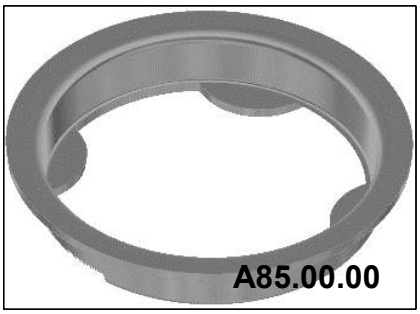


Figure 7.4

Figure 7.5

6.1. RECOMMENDED TOOLS

"Quickchange" system and tooling feature extremely fast and convenient tool changes and a long 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 one or two buttons or rectangular segments, which allows you to customize the aggressiveness of the cut.

- Corsa Hybrid Discs with "Quickchange" attachment for wet and dry – The new Corsa hybrid discs are designed for scratch removal and transitioning from metal to resin tools. They are similar to Calibra but the ceramic bond has been modified for more efficient use on soft and medium concrete.

- NATO ® with "Quickchange" attachment – Superabrasive's NATO resin pucks are a great tool choice for soft and hard concrete polishing applications. Among the thickest diamond pads on the market featuring a thick 12mm layer of resin and diamonds for extra-long life. Wide channels and unique patented design allows for work on a cleaner surface, ensuring a quality polish. Offered in wet and dry bond.

- V-HARR® Premium polishing pads now available in "Quickchange" style for 9" and 13" holders. V-HARR felt diamond pads are one of Superabrasive's most versatile and successful diamond tools for concrete polishing. They are also ideal for polishing terrazzo and hard stone floors. V-HARR polishing pads should be used dry on

concrete! However, they will produce remarkable gloss results on black granite when used wet.

- Hybrid and resin tool rings – Exceptional flexibility with a thick layer of flexible foam. Quick and easy magnetic attachment directly to the grinding heads. Offered in 9” and 13”, compatible with Lavina® grinders and trowels.

7. MAINTANANCE AND INSPECTATION

7.1. MECHANICAL PARTS

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

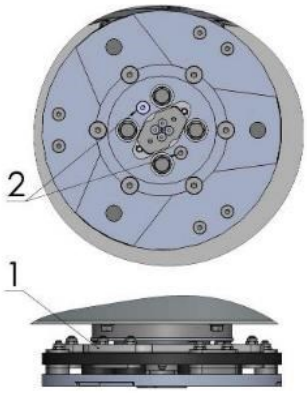
7.2. CLEANING

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, vacuum hoses, water tank and the propane installation.

7.3. CHECK DAILY

After operating the machine, the operator should conduct a visual inspection of the machine. Any defect should be solved immediately. Pay attention to power cords, plugs and vacuum hoses, loose bolts or screws.

7.3.1. TOOL HOLDERS



Buffers and elastic element are consumable and must be visually checked daily and replaced if needed. See that flanges or discs are mounted and locked well in place. The key lock holders (butterflies) should be also checked.

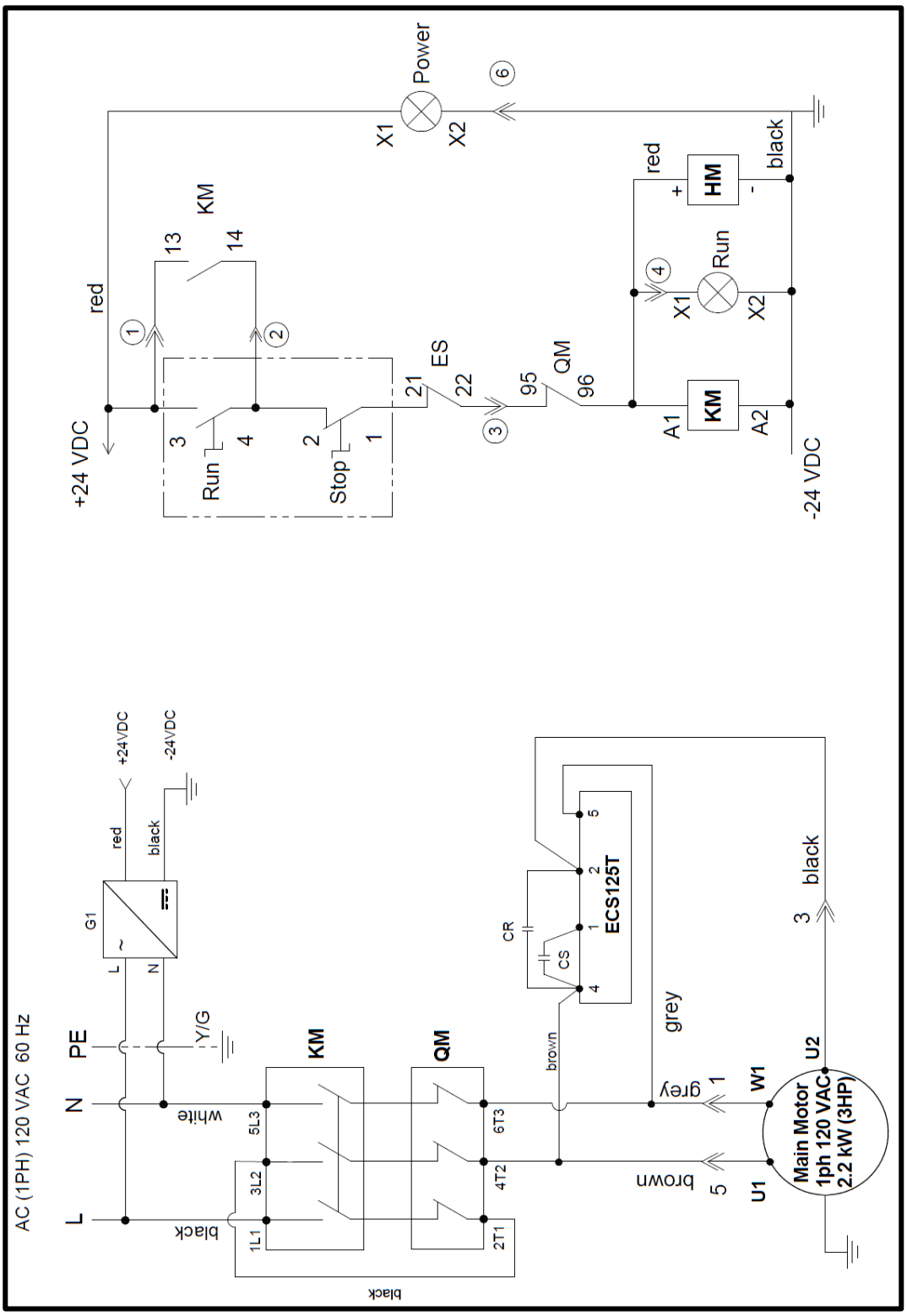
Check the rubber buffers and fixing of the holders. The flange which hold the buffers (1) has to be firmly fixed to the unit. The screws have to be tightened immediately for safe operation. Working with loose screws on the holder could also cause bad damages on the machine. **Tightening force of the screws must be 22-25Nm or 16-18ft/lbs.**

It is very important to check the screws (2) that fix the “Quickchange” holder to the safety part, so that the holder will not fly away if the buffers are damaged.

7.4. OVERALL MAINTENANCE

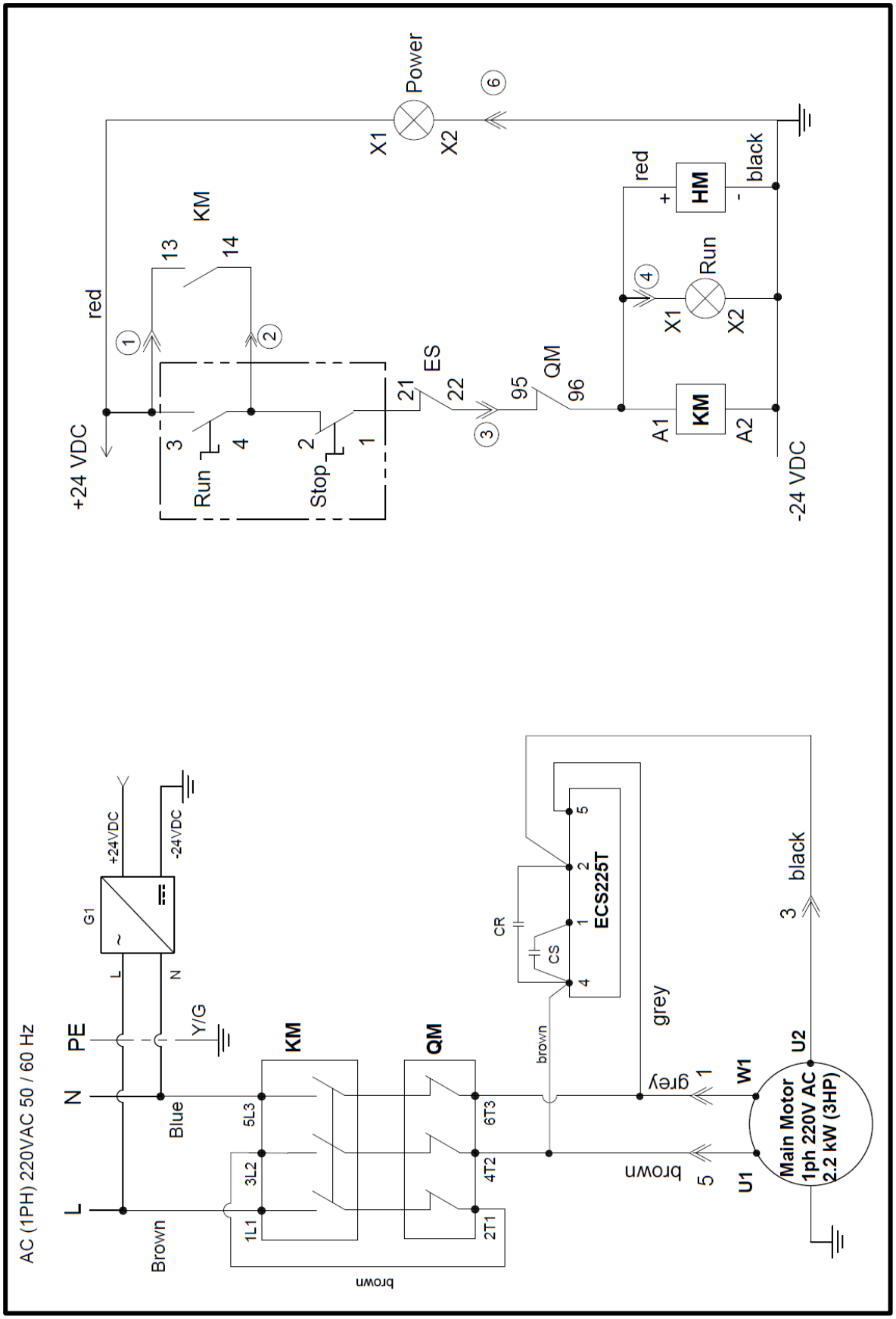
OPERATION	INTERVAL							
	Daily	First 8 Hrs.	Every 50 Hrs.	Every 100 Hrs.	Every 200 Hrs.	Every 300 Hrs.	Every 400 Hrs.	Every 500 Hrs.
Check for loose or lost fasteners	X							
Inspect power cords, plugs and vacuum hoses, loose bolt or screws.	X							
Check the rubber buffers, elastic element and fixing of the holders	X							
Inspect and clean the tool plate connections					X		X	
Inspect the seal rings and bearings of the grinding units					X			
Replace V-rings							X	
Check belts and bearings							X	

7.5. ELECTRICAL DIAGRAMS



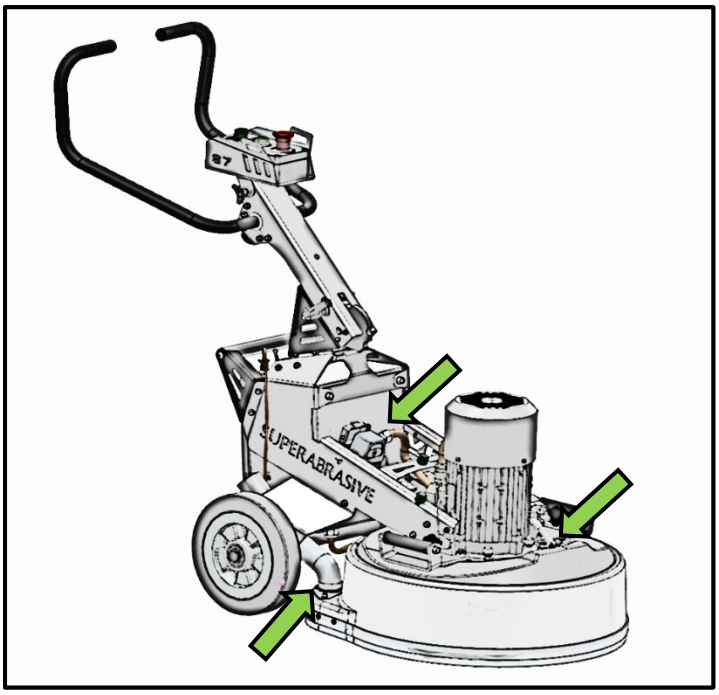
7.5.1. L19S7

7.5.2. L19EUS7 & L19ES



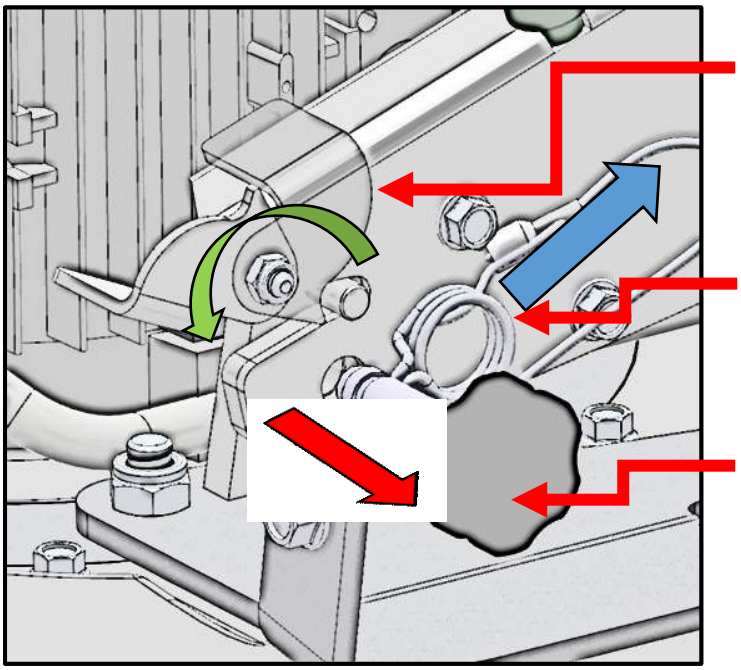
8. TROUBLESHOOTING

8.1. SEPARATING THE CARRIAGE FROM THE GRINDING HEAD



To separate the grinding head from the carriage of the machine follow the steps:

- Detach the vacuum hose.
- Detach the water supply hose.
- Disconnect the plug.



- Rotate the plate to unlock the carriage.
- Unplug the safety clips.
- Remove the pins.

IMPORTANT!!! It is highly recommended to consult the torque requirement table prior to conducting any maintenance activities to prevent potential complications and ensure optimal performance. Adhering to this protocol can assist in maintaining the reliability and longevity of the equipment in question. It is therefore strongly advised to prioritize the reference of the torque requirement table when planning and executing any maintenance procedures.

BOLT/SCREW SIZE	TORQUE STEEL (Nm)				TORQUE ALUMINUM (Nm)
GRADE	5.8	8.8	10.9	12.5	ALL
M6	5.6	9.9	14	16.5	8
M8	13.6	24	34	40	20
M10	27	48	67	81	30
M12	47	83	117	140	

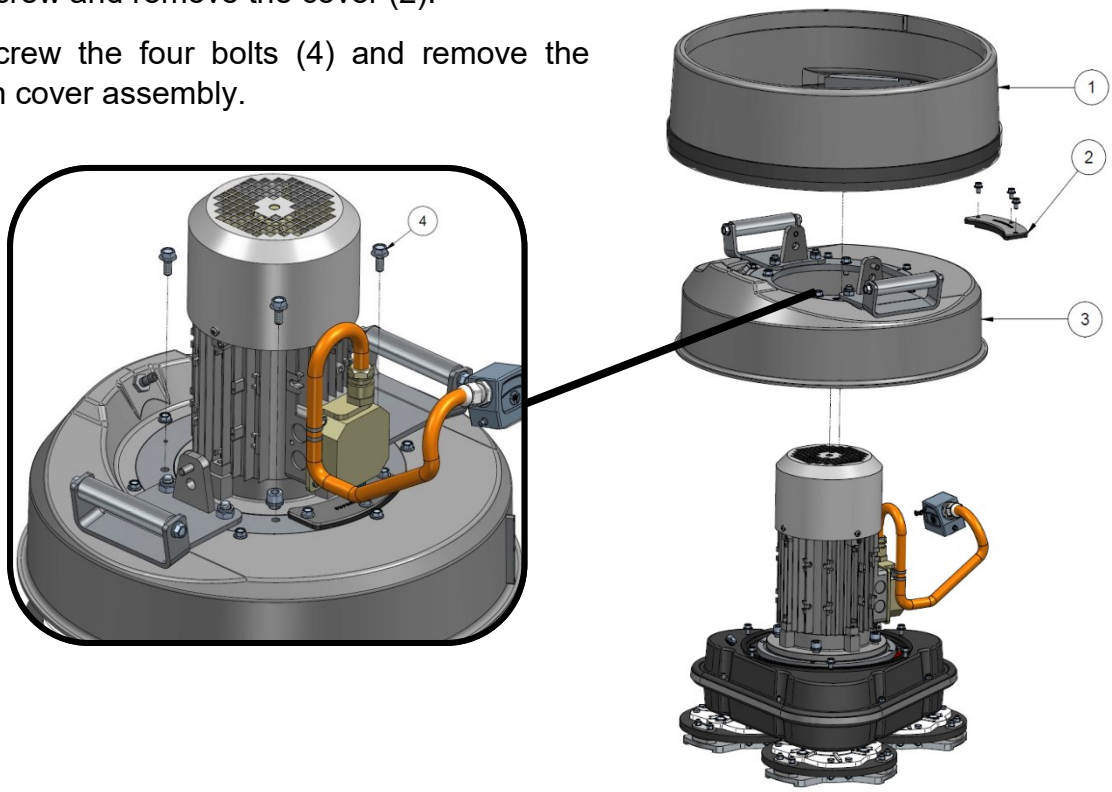
8.2. REPLACING THE MAIN TIMING BELT

8.2.1. STEP 1

After separating the carriage from the grinding head, dismount the protective cover (1).

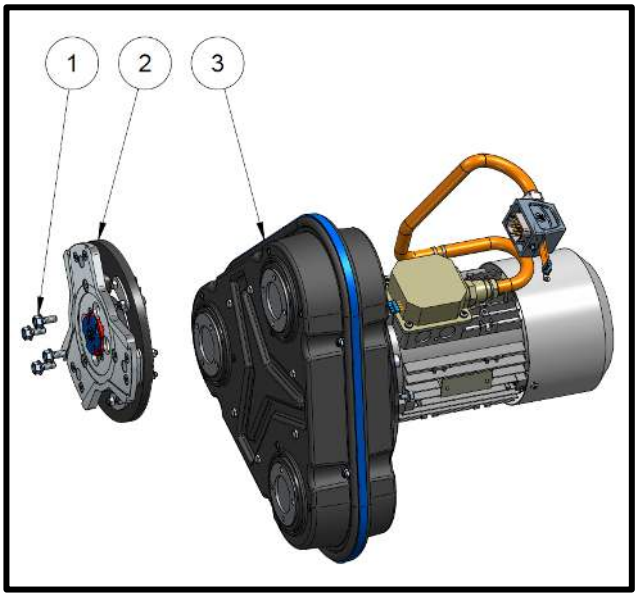
Unscrew and remove the cover (2).

Unscrew the four bolts (4) and remove the main cover assembly.



8.2.2. STEP 2

Unscrew the bolts (1) and dismount the three tool holders (2).



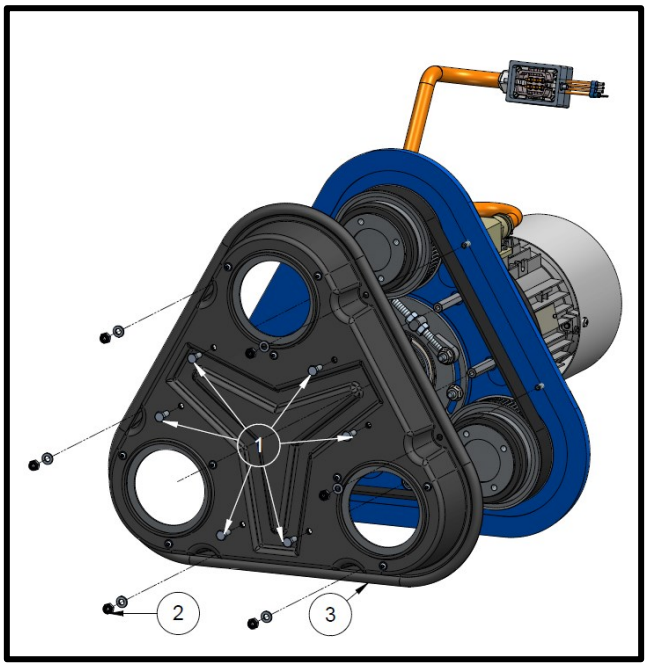
8.2.3. STEP 3

Unscrew the six bolts (1).

Unscrew the nuts (2) and remove the washers. Remove the plastic bottom cover.

IMPORTANT!

The plastic cover has 9 screws M4. Do not unscrew it!



8.2.4. STEP 4

To dismount the old belt, first loosen the three nuts (1).

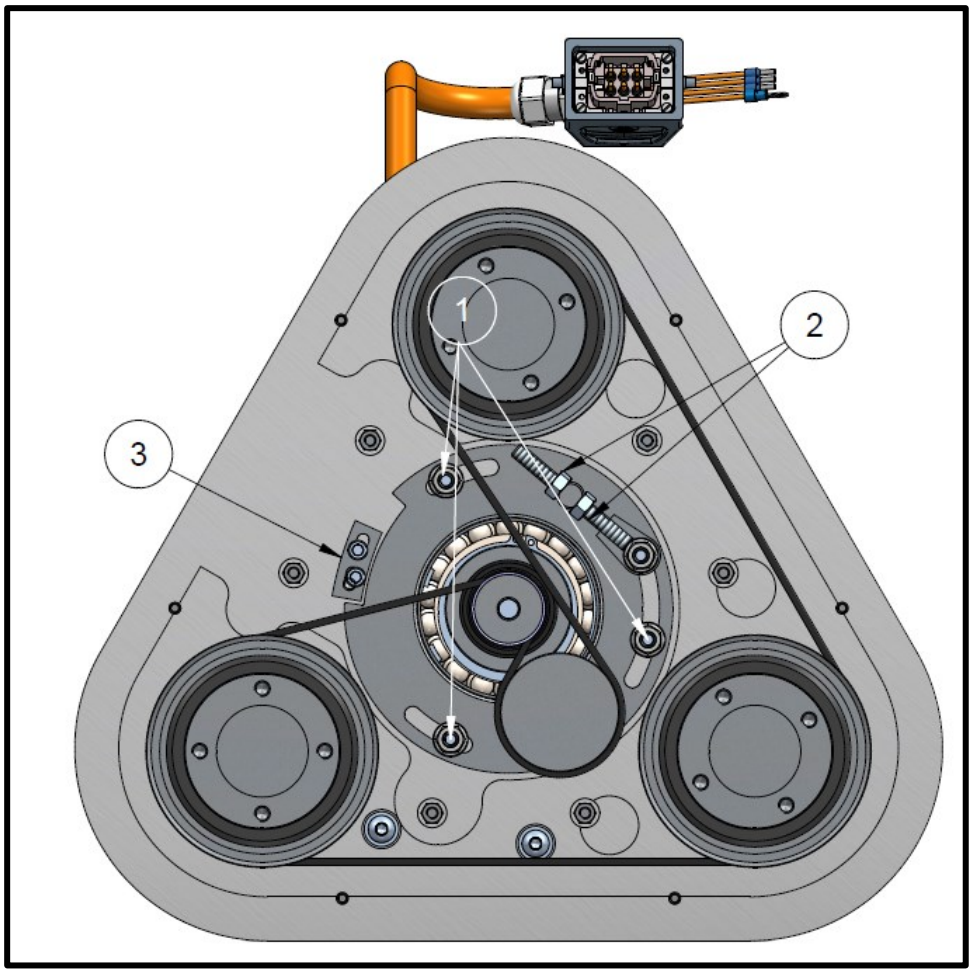
By unscrewing the nuts (2) loosen the belt and dismount it.

When mount the new belt, use the nuts 2 to tighten it until the tensioner's base plate touches the plate pos. 3. When it does, tighten the nuts pos. 1.

IMPORTANT!

After the new belt is mounted, make 3-4 full rotations of the pulleys to make sure the belt is well fitted.

The belt can be also tensioned by using frequency tension tester (optibelt 3 TT). Tension must be 238-250 Hz.

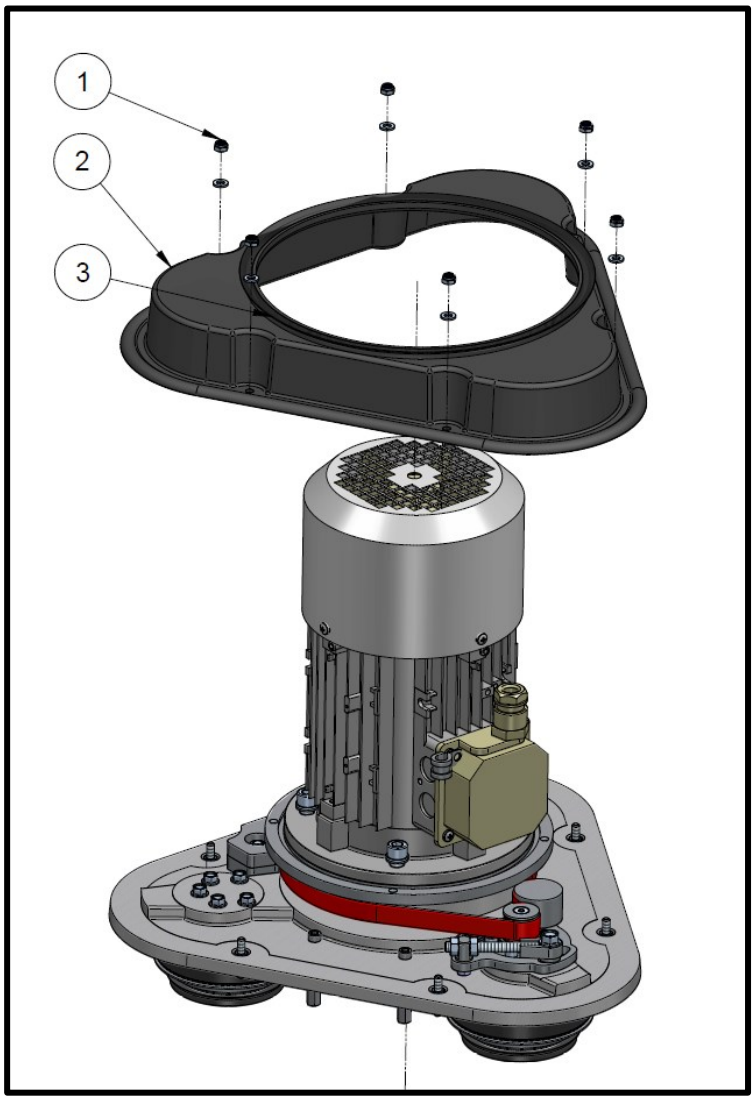


8.3. PLANETARY DRIVE

8.3.1. ACCESSING THE PLANETARY DRIVE

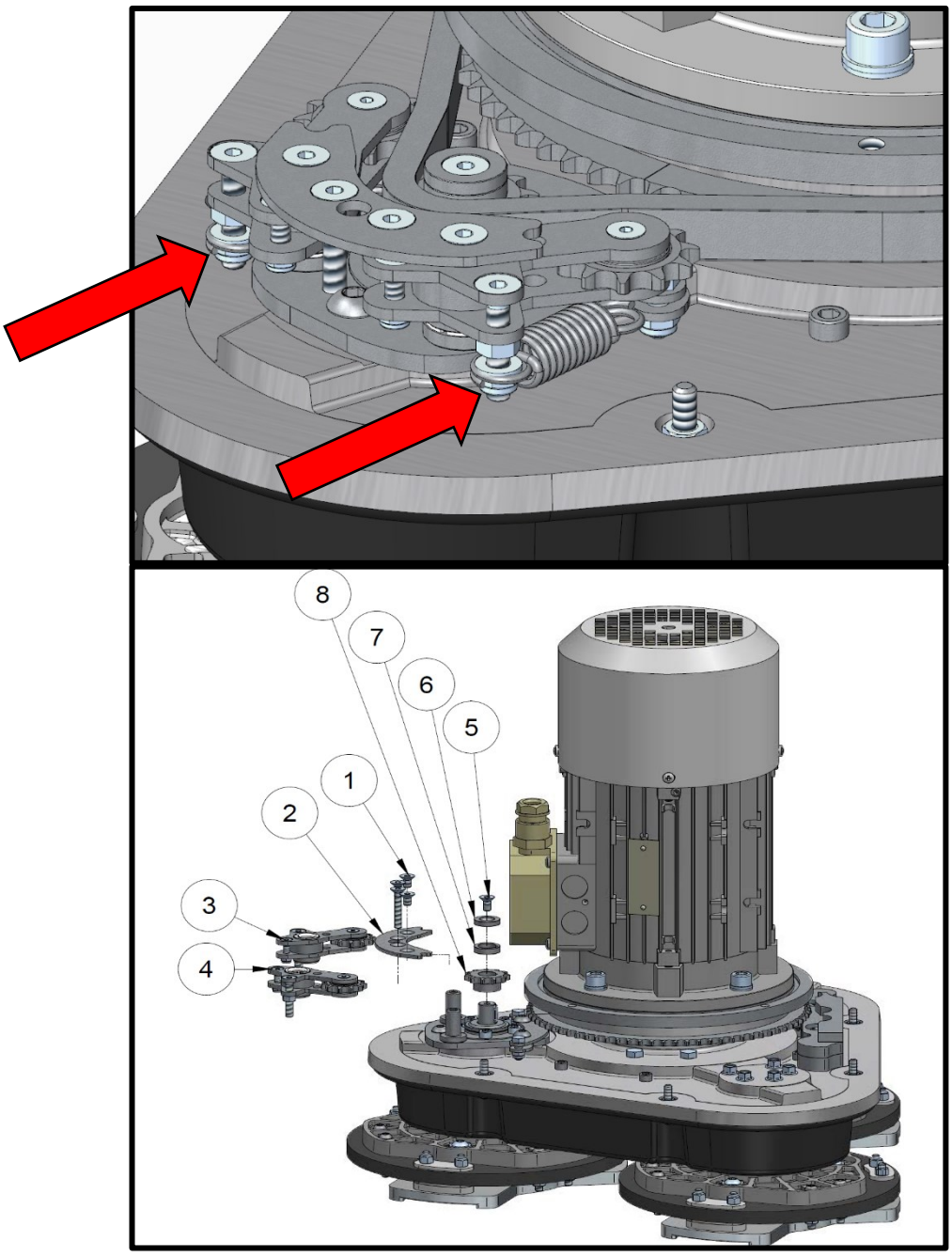
To access the planetary drive follow the steps form 8.2.1.

Unscrew the nuts (2) and remove the plastic cover (2). Check the V-ring (3) for any damage and replace it if necessary.



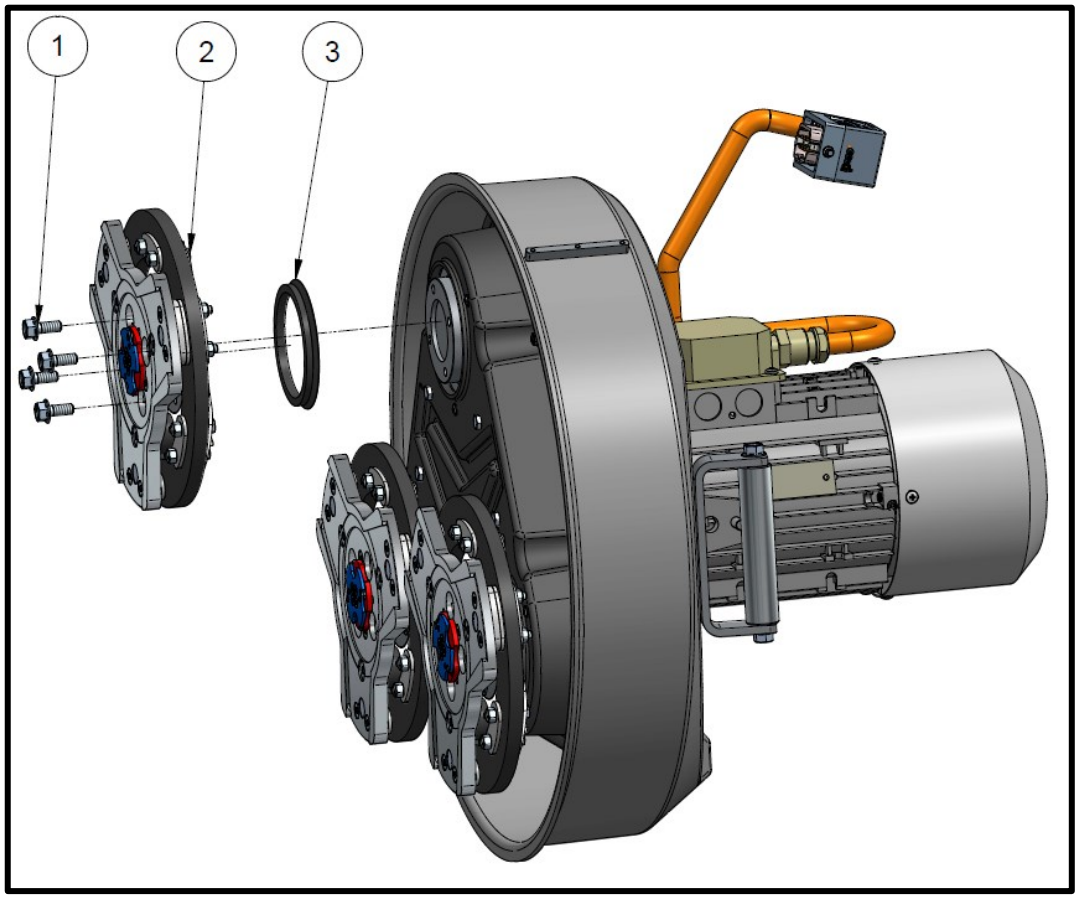
8.3.2. MAINTAIN THE PLANETARY DRIVE

1. To replace the planetary chain - unscrew the nuts shown with red arrow and detach the springs. Now the planetary chain is loosened and it can be replaced.
2. To replace any of the planetary tension gears (3) or (4) – unscrew and remove the plate (2). Once the plate is removed you have full access to the tension gears.
3. To replace the main planetary gear – unscrew the screw (5), remove the sleeves (6) and (7), remove and replace the main planetary gear.



8.4. TOOLHOLDER

8.4.1. REPLACING V RINGS



To replace the V-ring and the felt ring follow the steps:

- Unscrew the bolts (1).
- Dismount the tool holder (2).
- Replace the V-ring (3).

8.4.2. REPLACING THE BUFFERS AND THE ELASTIC ELEMENT

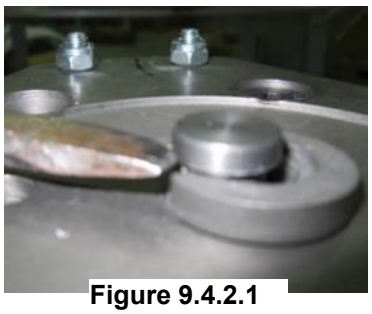


Figure 9.4.2.1

Figure 9.4.2.2

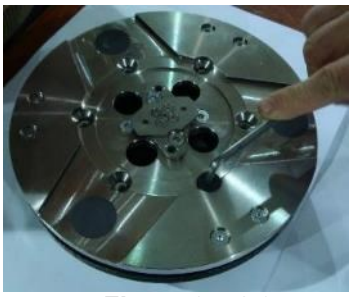


Figure 9.4.2.3

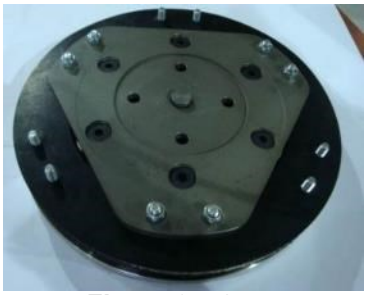


Figure 9.4.2.4

Figure 9.4.2.5

Figure 9.4.2.6

Figure 9.4.2.7

Figure 9.4.2.8

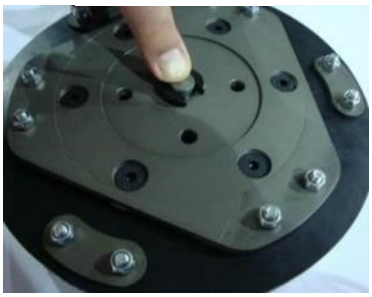


Figure 9.4.2.9

Figure 9.4.2.10

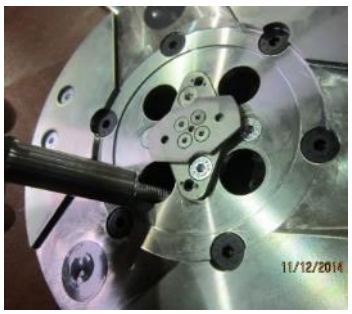


Figure 9.4.2.11

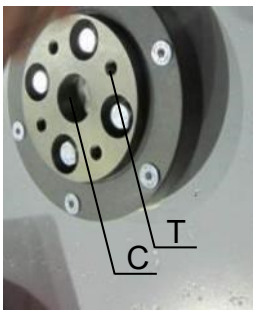


Figure 9.4.2.12

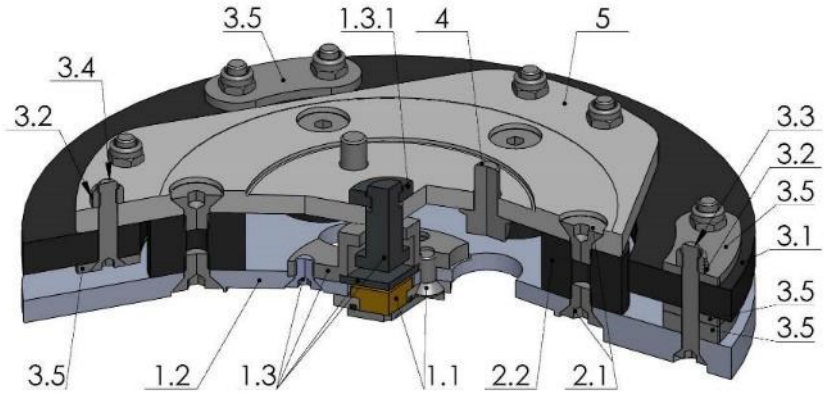


Figure 9.4.2.13

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

Lift the locking pin (Fig. 9.4.2.1) to dismount the retaining washer (Fig. 9.4.2.2). Take out the screws on the buffers and the nuts of the elastic element (Fig. 9.4.2.3;Fig. 9.4.2.4). Remove the elastic element from the QC plate (Fig. 9.4.2.5). While the holder is dismounted (Fig. 9.4.2.6;Fig. 9.4.2.7) clean the parts and replace the defective with new ones.

Assemble the holder with new buffers, new screws and new elastic element. Put the retaining washer (Fig. 9.4.2.8) and push the locking pin (Fig. 9.4.2.9). This will prevent the fall of the washer when mounting the holder on the machine.

Make sure the four bolts which are holding the adaptor (Fig. 9.4.2.12) are reliably tighten. Mount the holder on the machine using the same socket as mentioned above (Fig. 9.4.2.10;Fig. 9.4.2.11). The retaining washer fits into the central hole C of adaptor and the four bolts into the thread holes (Fig. 9.4.2.12). The holder is centered on the outside diameter of the adaptor. Ensure the connection of the holder on the forehead of the adaptor and then tight evenly the four bolts. Tightening force of the bolts has to be 22...25N.m(16...18 ft/lbs). Mounting the holder without retaining washer (Fig. 9.4.2.2) 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. Fig. 9.4.2.13 is 3-d section view of the holder, showing its parts. The numbering is the same as in Spare parts.