LAVINA

S7 SERIES

Operation Manual
20" Electric Grinders

L20S7
L20ES7
L200ES7

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

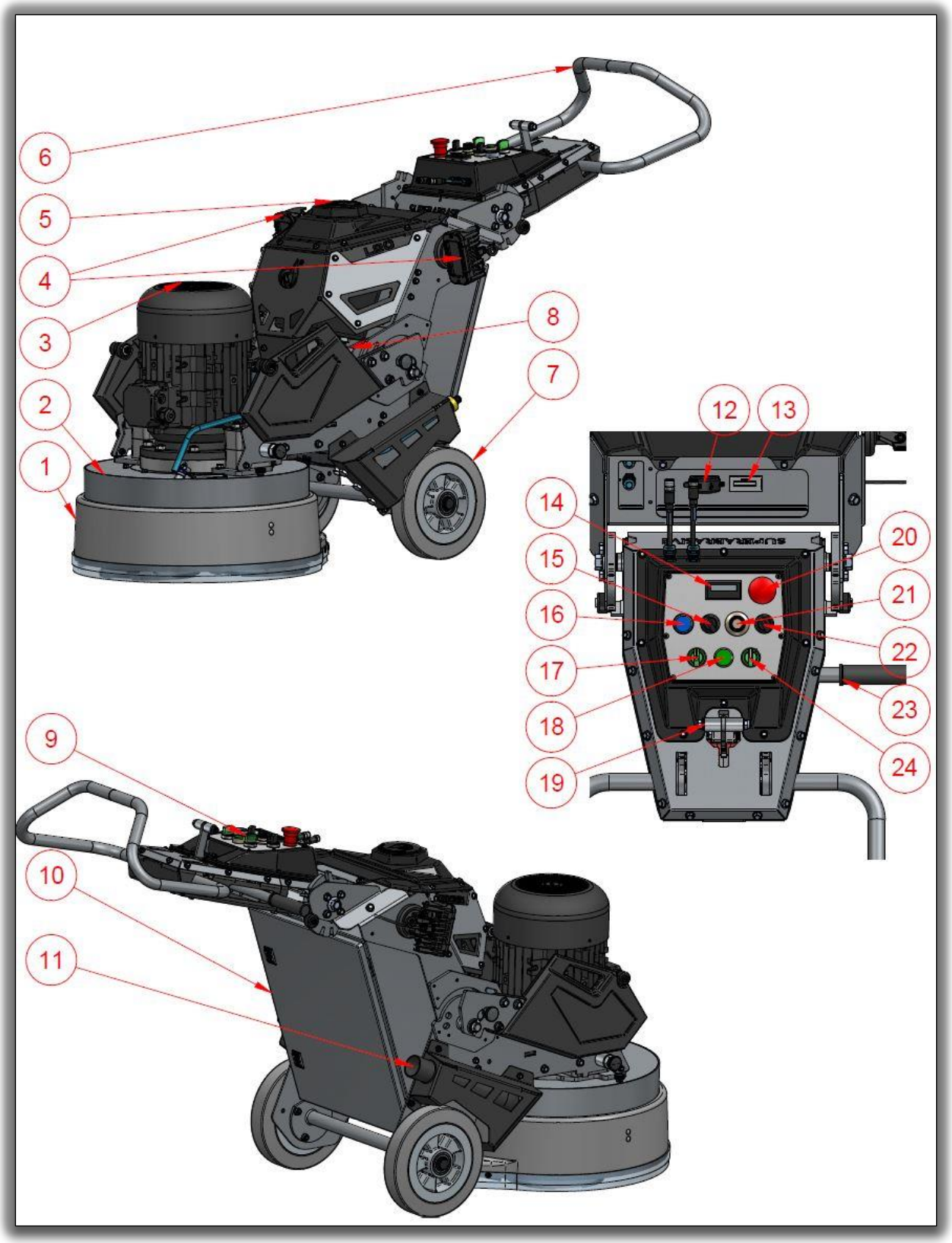
- The operator must know the machine's work environment.
- Only one operator can work with the machine at a time.
- The operator must be properly trained and well instructed prior operating the machine.
- The operator must understand all the instructions in this manual.
- The operator must understand 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 machine is equipped with two LED lights, which enable the operator to work in dark areas. Existing lighting system does not replace adequate overhead lightning.
- 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 three way water tap that provides the operator to choose between the water tank and external hose as a water source. Also a secondary water tap which allows the operator to adjust the water flow level.
- 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 two weights are designed to take four different positions for optimal grinding pressure.
- 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	17	READY ON/OFF
2	GRINDING HEAD	18	POWER INDICATOR
3	ELECTRICAL MOTOR	19	HANDLE FINE ADJUSTMENT
4	LAMP ON MAGNET BASE	20	EMG STOP BUTTON
5	WATER TANK	21	POTENTIOMETER
6	HANDLE	22	FORWARD/REVERSE
7	WHEEL	23	HANDLE ROUGH ADJUSTMENT
8	WATER MANAGEMENT	24	RUN/STOP
9	CONTROL PULT	25	
10	SWITCHBOARD	26	
11	VACUUM HOSE PORT	27	
12	USB CHARGER	28	
13	HOUR METER	29	
14	TACHOMETER	30	
15	LIGHTS ON/OFF	31	
16	RESET ALARMS		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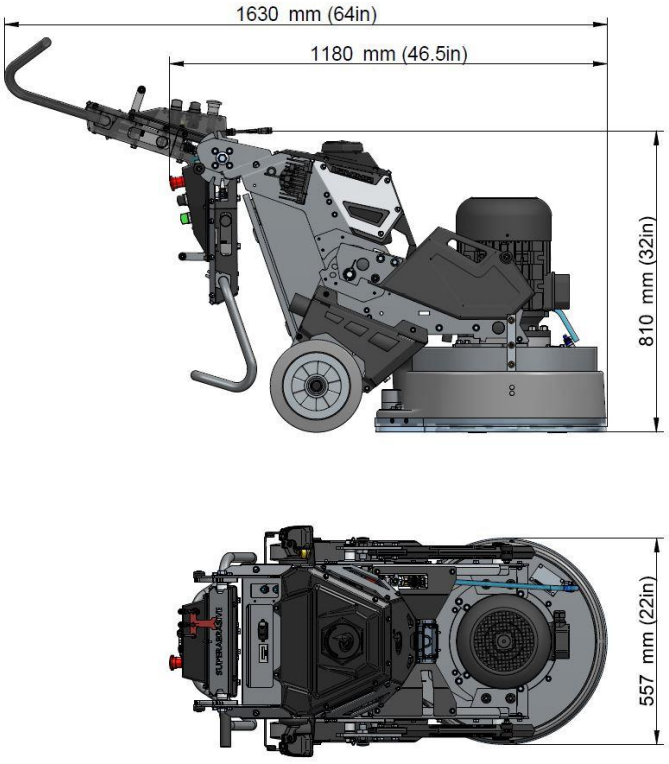
3.2. TECHNICAL DATA

MODEL	LAVINA® L20ES7	LAVINA® L200ES7	LAVINA® L20S7
Voltage/hz	3 ph x 380-400V 50-60hz	1 ph x 200-240V 50-60hz	1 or 3 ph x 200-240V 50-60hz
Amperage, amps	Max 15	Max 15	Max 30
Power, kW/hp	5.5/7.5		
Working width, mm/in	510/20”		
Tool holder direction of rotation	Adjustable direction of rotation (default rotation counterclockwise)		
Tool holder diameter, mm/in	3x 225/9”		
Tool holder speed of rotation, rpm	400-1100 rpm		
Tools cutting speed, m/s	4.8-13.6		
Weight (kg/lbs)	235/518		
Grinding pressure, kg/lbs	96-130/210-286		
Weights in position 1 (forward), kg/lbs	130/286		
Weights in position 2 (vertical 1), kg/lbs	120/242		
Weights in position 3 (vertical 2), kg/lbs	110/220		
Weights in position 4 (rearward), kg/lbs	105/210		
Water tank, L/gal	8/2.1		
Water feed	Water tank/External source		
Application	Wet and dry		
Vacuum hose port	Φ50mm/2in pipe		
Recommended dust extractor	V20E/GE or bigger		
Cable length (m/ft)	17.4/57		
Machine LxWxH (mm/in)	1180x557x810 46.5”x22”x32”		
Packing create LxWxH, mm/in	1320x620x1050/ 52”x24.5”x41”		



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

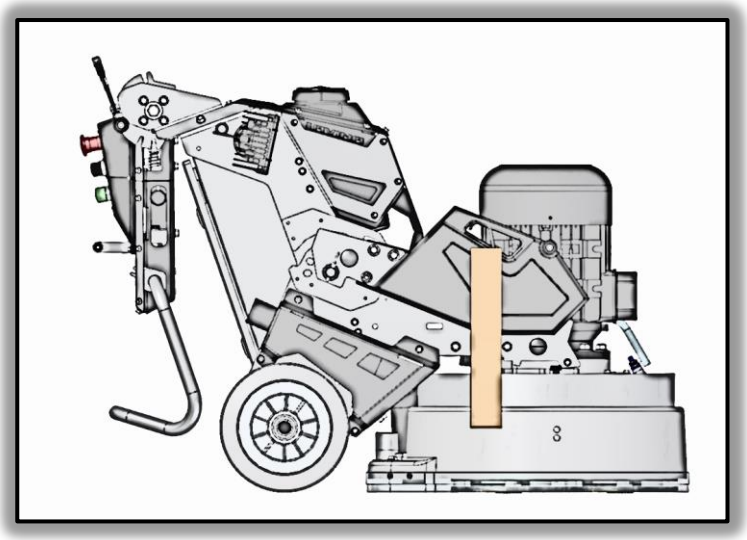
For customer assistance and technical support call your local distributor or call Superbarasive at 1-800-987-8403 for US or visit our website www.superabrasive.com.

4. TRANSPORTATION AND STORAGE

4.1. TRANSPORTATION

To transport the Lavina machine, use the weight handles as fixing point 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.

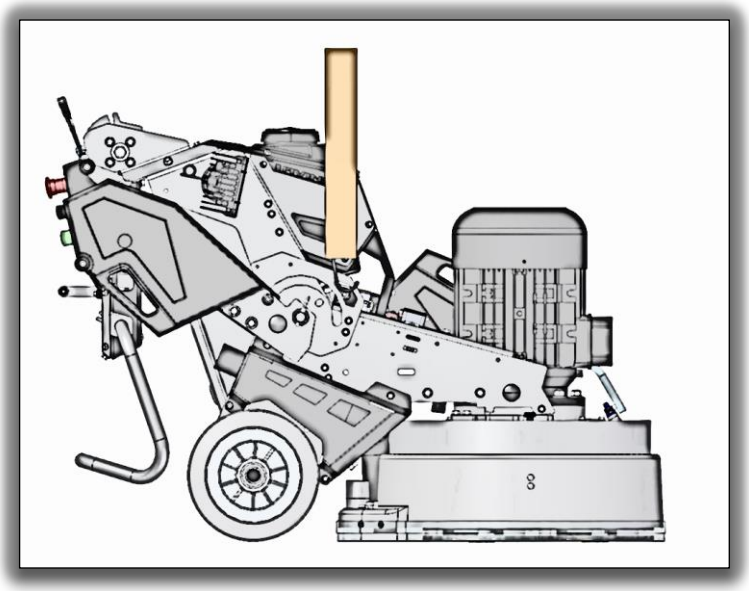


Never transport the machine unprotected. It can damaged if transported unprotected and exposed to rain or snow. The weights must be in pos. 1 as shown on the image.

4.2. LIFTING

To lift the machine, make sure that the weights are in its backwards position in order to keep the machine imbalanced.

Also in order to avoid braking it, make sure that the protective cover of the grinding head is locked in transport position (5.1).



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

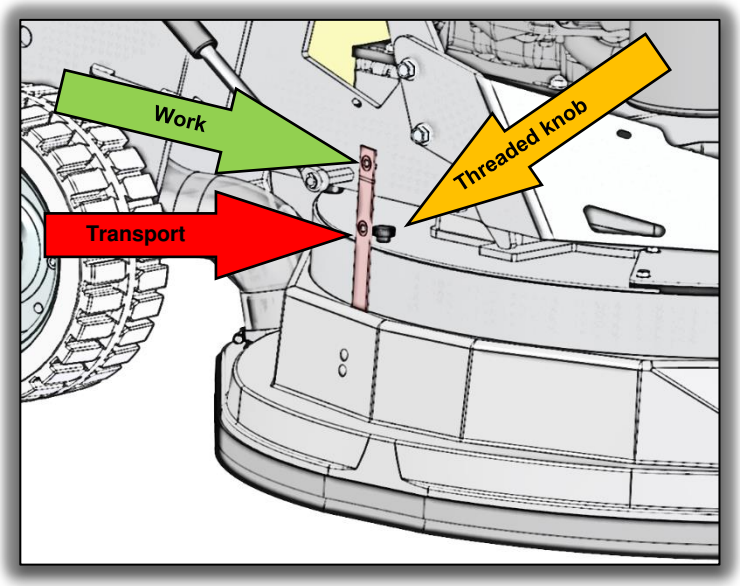
5. OPERATING THE MACHINE

5.1. PROTECTIVE COVER

The protective cover has two straps - one on each side.

The cover is mounted as the straps are screwed to the grinding head by the threaded knob.

Each strap has two holes in it. Depending on which hole the straps are mounted on defines whether the protective cover is mounted in the work or transport position.



If the straps are mounted on the first hole, the cover is in the **working position**.

If the straps are mounted on the second hole, the protective cover is fixed in to the **transport position**. In the transportation position the cover is hanged up so it does not drag on the surface.

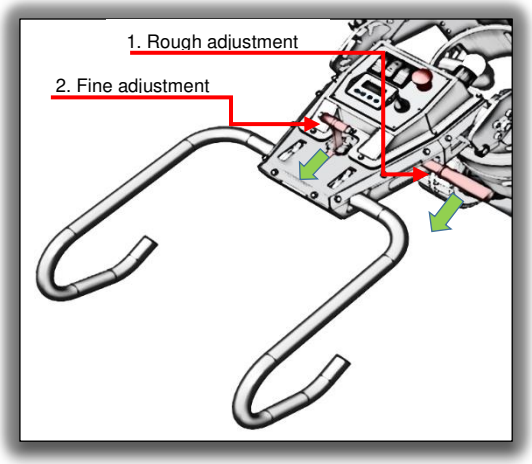
To dismount the protective cover detach the vacuum hose, unscrew the straps, remove one of the tools holders if your machine has 13" holders if it's with 9" holders, just unscrewing the straps is enough.

5.2. ADJUSTING THE HANDLE

The machine is equipped with two locking mechanisms – one for rough and one for fine adjustment of the handle position. They provide fast and stable handle adjustment.

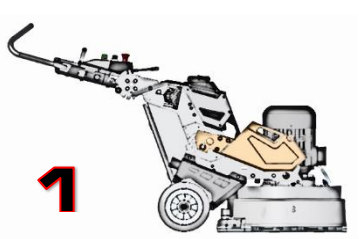
Both mechanism work as the lever is pulled towards the operator to unlock and after fixing into the desired position the mechanism locks itself back.

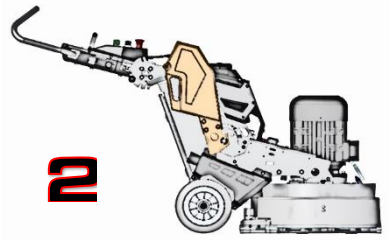
IMPORTANT! If the locking mechanisms start making noises or move roughly a lubrication with WD-40 or similar lubricant is recommended.

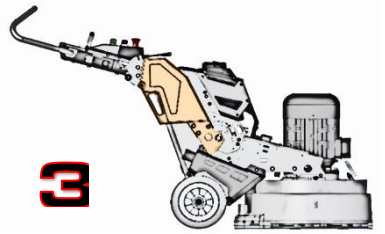


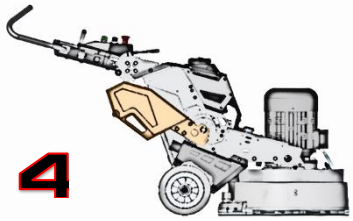
5.3. ADJUSTING THE WEIGHTS

The machine has four weights positions in order to deliver the best grinding pressure for the specific tools.

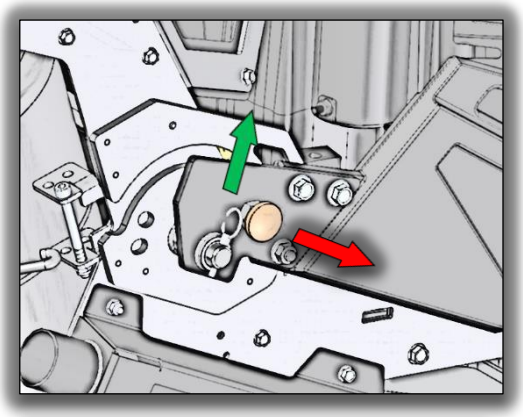






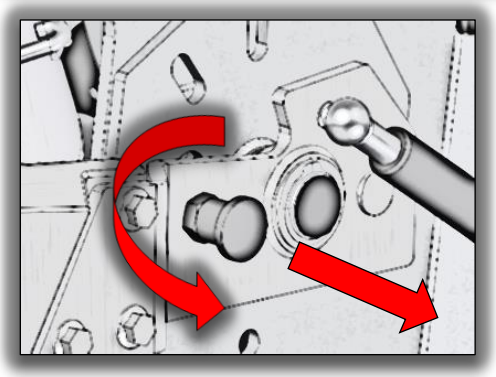


To move the weights release the locking knob by pulling it and then release it to lock into the new desired position.



To dismount the weight, remove the security knob (green arrow) and pull the weight out from the holder.

The locking knob has **rest position**. Pull it to unlock, rotate the handle to 90 degrees and it will stay fixed in this position leaving the weight free to move in all directions.

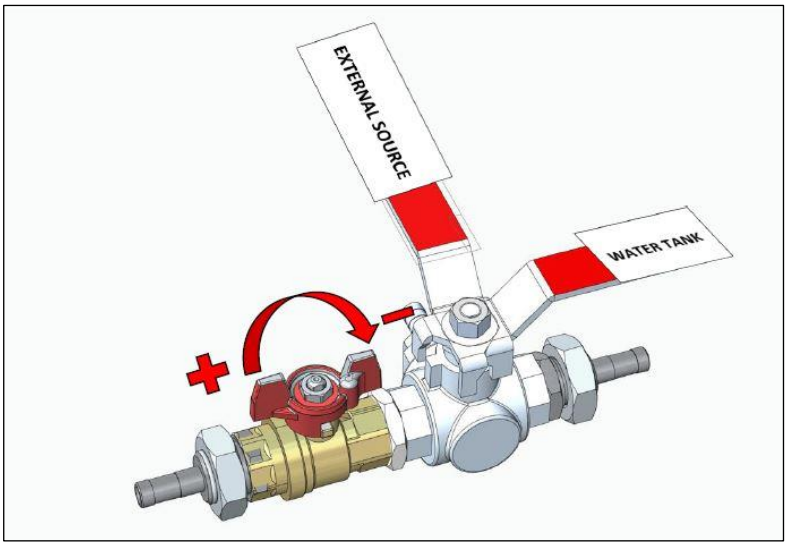


In order to tilt the machine for tool change, one of the weights must be in pos. 4 and the other in pos.3 depending whether you are using water hose or dust hose. The weight with position 4 must be the one with no connection underneath it. The operator can step on the one with pos. 4 in order to tilt the machine easily.

IMPORTANT!!! When flipping the machine, the knob must be in rest position

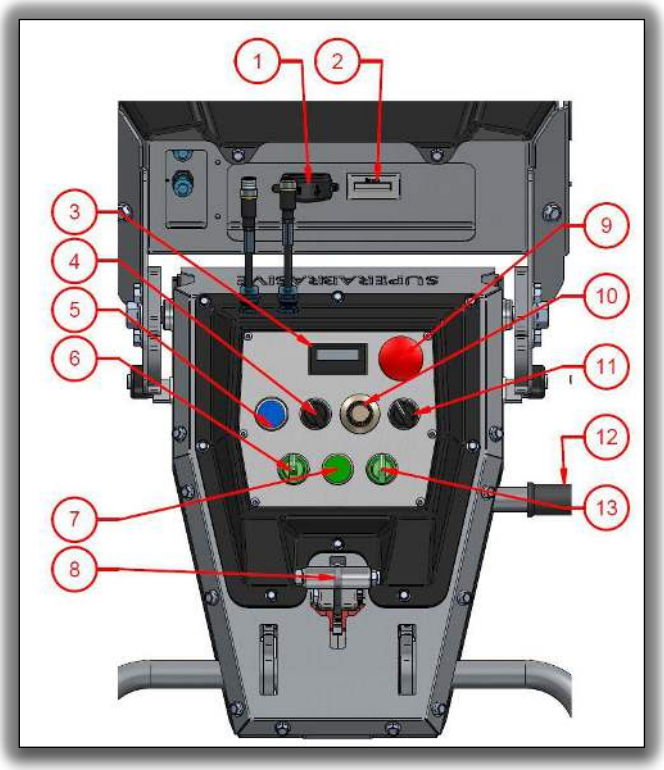
5.4. WATER FEED

The machine is equipped with three way water tap (1) that provides the operator to choose between the water tank and external hose as a water source. Also a secondary water tap (2) which allows the operator to adjust the water flow level.



5.5. CONTROL BOARD

1	USB port
2	Hour meter
3	Tachometer
4	Lights on/off
5	Reset alarms
6	Ready on/off
7	Power indicator
8	Handle fine adjustment
9	EMG stop button
10	Potentiometer
11	Forward/reverse
12	Handle rough adjustment
13	Run/stop
14	

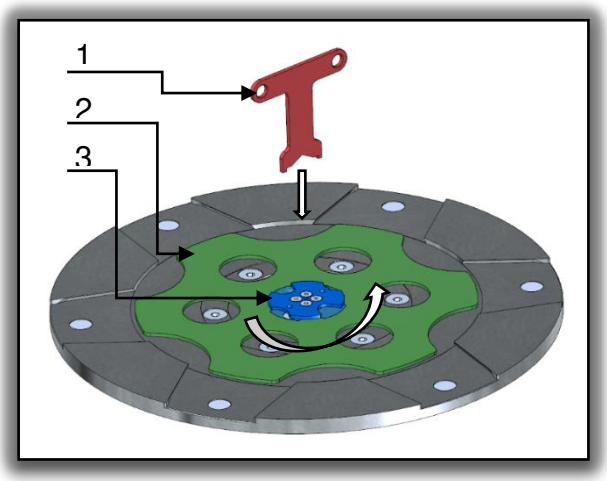


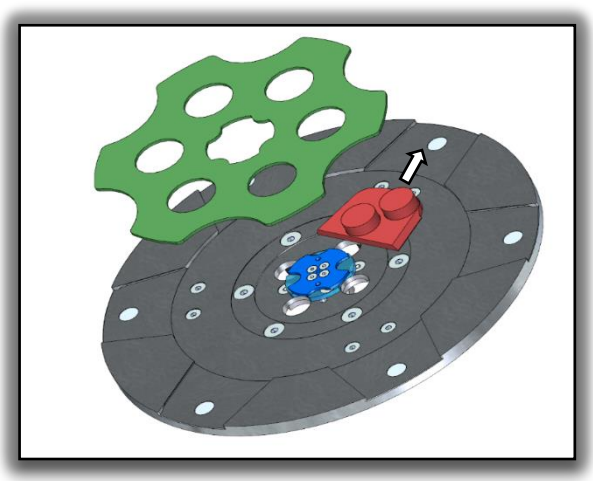
- USB port – can be used as charger.
- Hour meter – shows the working hours of the machine.
- Tachometer – displays the RPMs of the tool holders.
- Lights on/off – turn the machine lights on or off.
- Reset alarms – resets the occurred alarms.
- Ready on/off – turn on or off the power form the machine.
- Power indicator – glows in green if the machine is plugged into power supply.
- Handle fine adjustment.
- EMG stop button – stops the machine in case of emergency.
- Potentiometer – regulate the tool holder rotation speed.
- Forward/reverse – change the direction of the rotation of the tool holders.
- Handle rough adjustment.
- Run/stop – Start the machine or stop the machine

5.6. 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.





5.7. STARTING THE MACHINE

To start the machine follow the steps:

- Plug the machine into power supply. The power indicator must glow in green.
- Switch the “Ready on/off” button to on in order to let the power supply into the machines control board.
- Use the “Run/stop” switch to run the machine.

5.8. 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.

5.9. 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

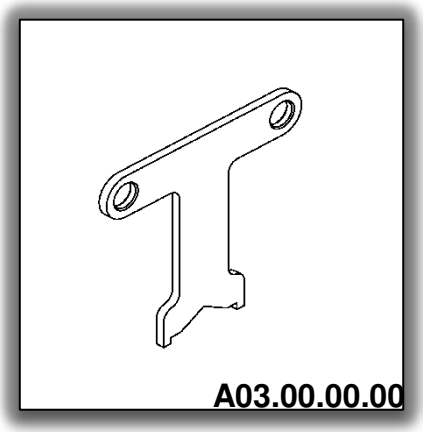


Figure 7.1

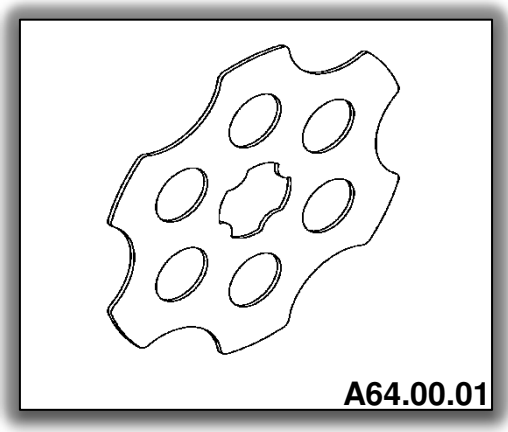


Figure 7.2

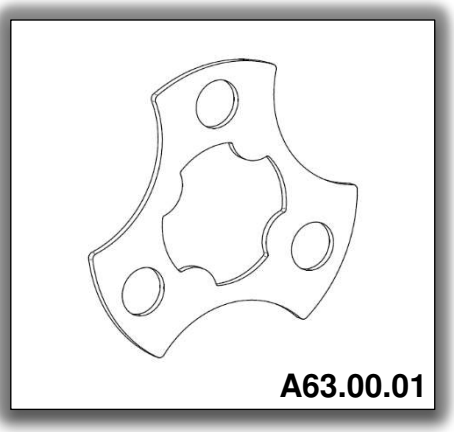


Figure 7.3

- 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.

Figure 7.4

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.

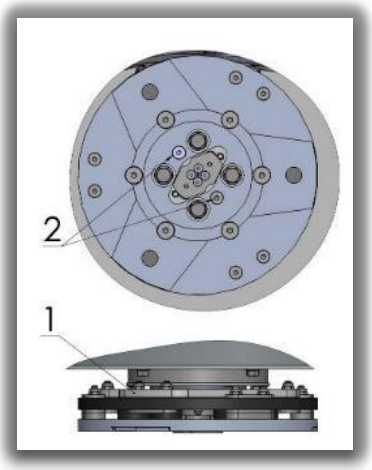
7.2. CLEANING

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.**

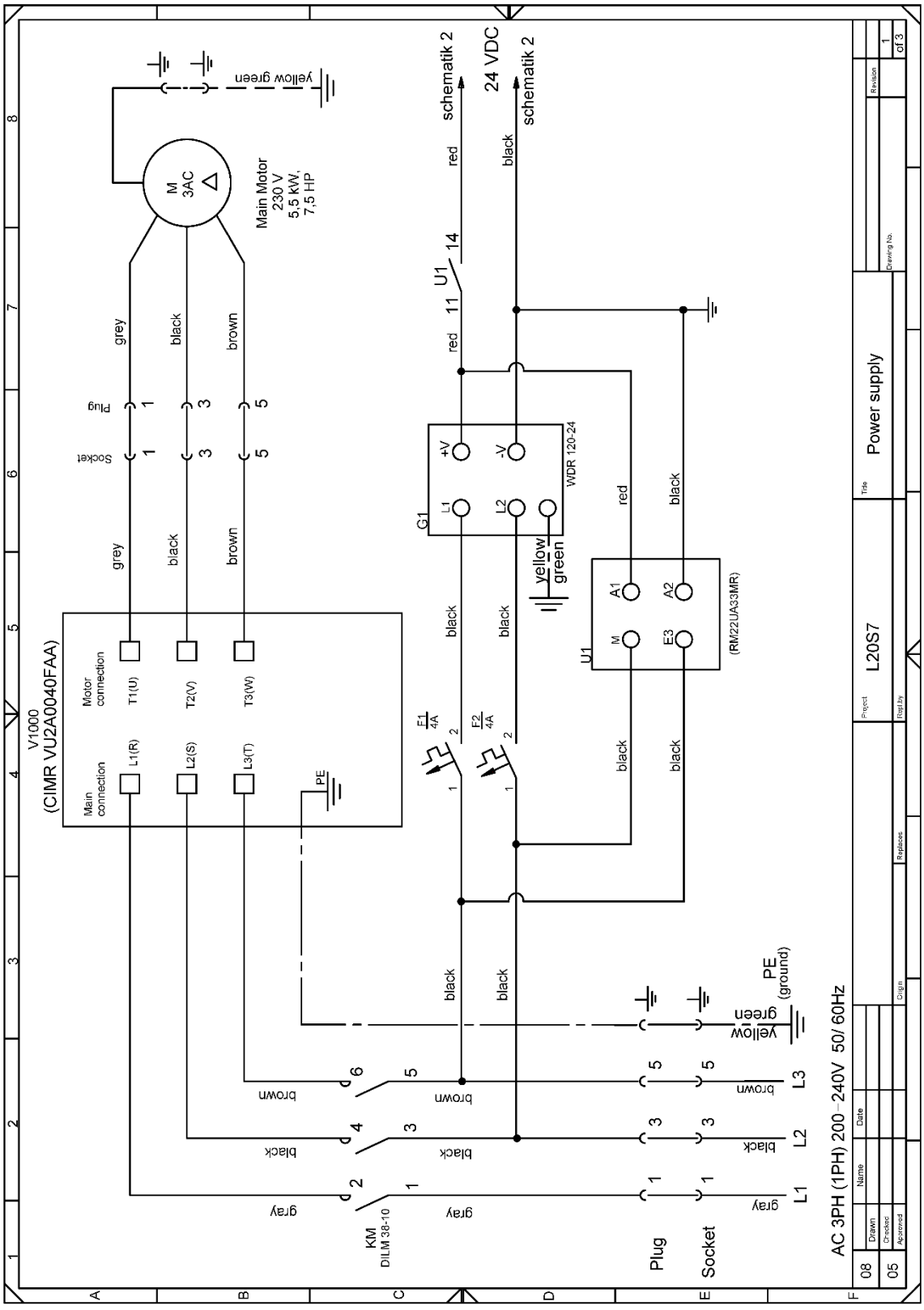
It is very important to check the screws (2) that fix the "Quickchange" holder to the safety part, so that the holder will not fly away if the buffers are damaged.

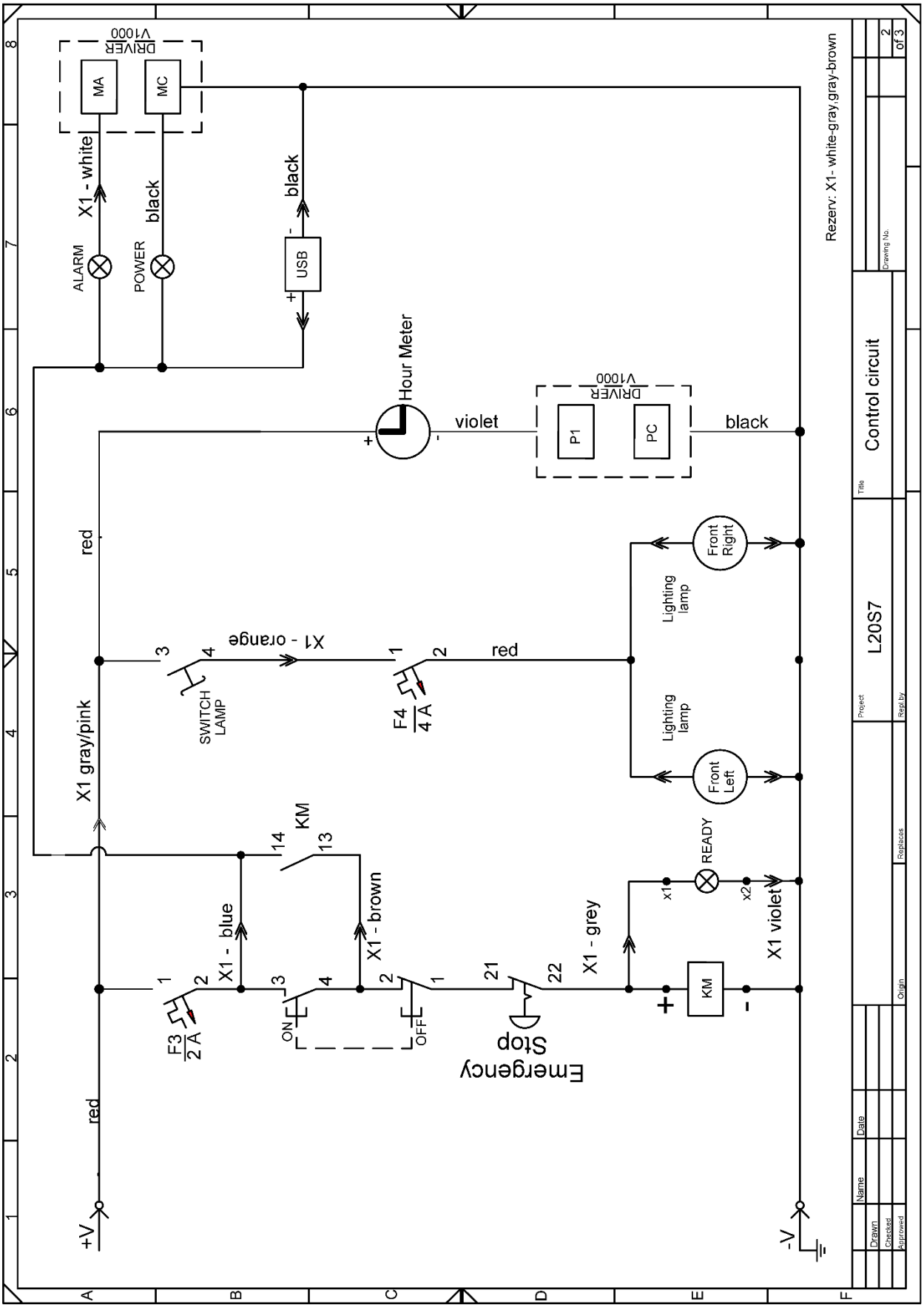
7.4. OVERALL MAINTENANCE

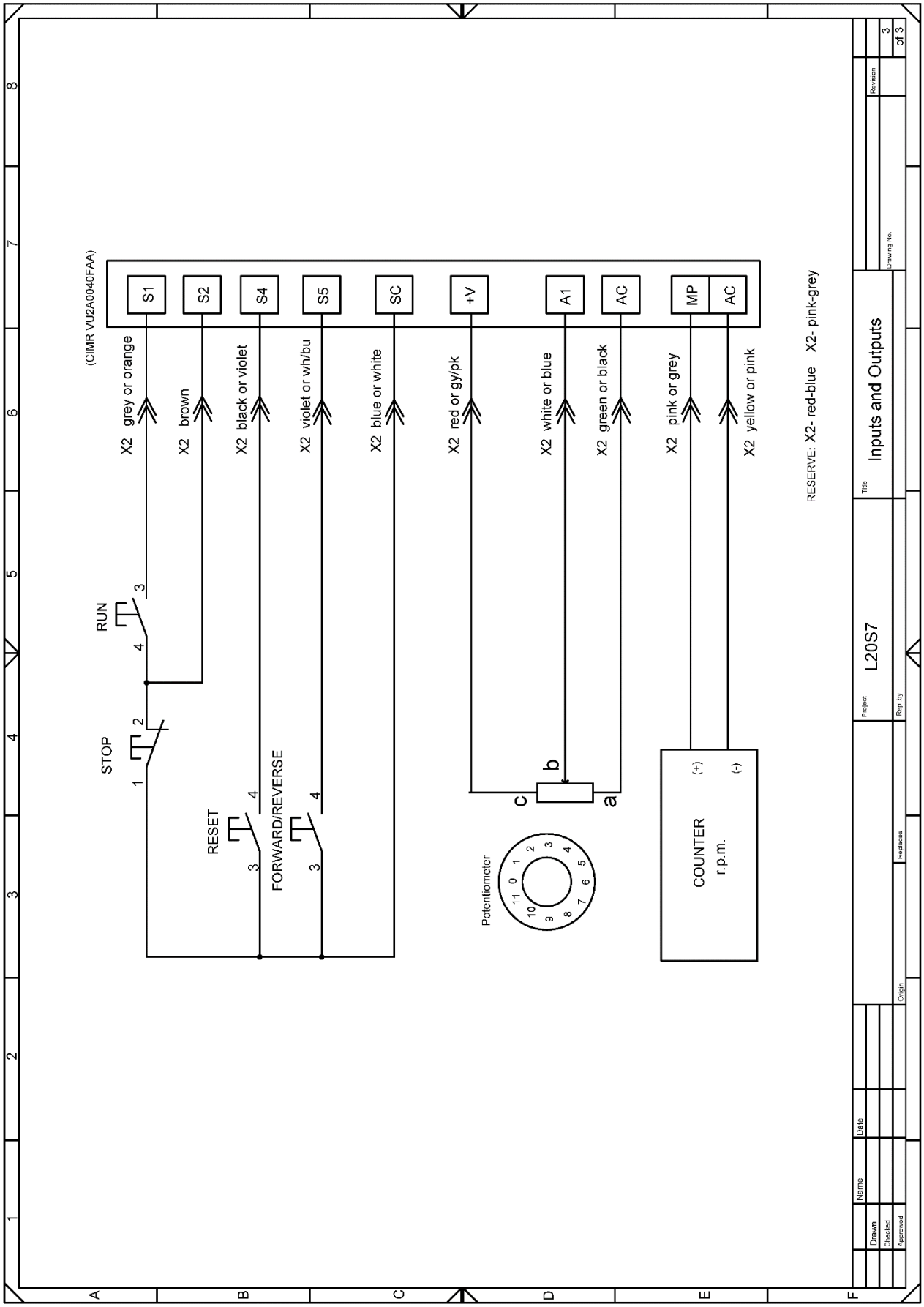
OPERATION	INTERVAL							
	Daily	First 8 Hrs.	Every 50 Hrs.	Every 100 Hrs.	Every 200 Hrs.	Every 300 Hrs.	Every 400 Hrs.	Every 500 Hrs.
Check for loose or lost fasteners	X							
Inspect power cords, plugs and vacuum hoses, loose bolt or screws.	X							
Check the rubber buffers, elastic element and fixing of the holders	X							
Inspect and clean the tool plate connections					X		X	
Inspect and clean water tank.					X		X	
Inspect the seal rings and bearings of the grinding units					X			
Check the planetary chain for any damage								X
Lubricate the planetary chain (only for variations with chain tensioner)					X			
Replace Felt-Ring and V-rings							X	
Check belts and bearings							X	
Check the ROTEX clutch plastic element for weariness								X

7.5. ELECTRICAL DIAGRAMS

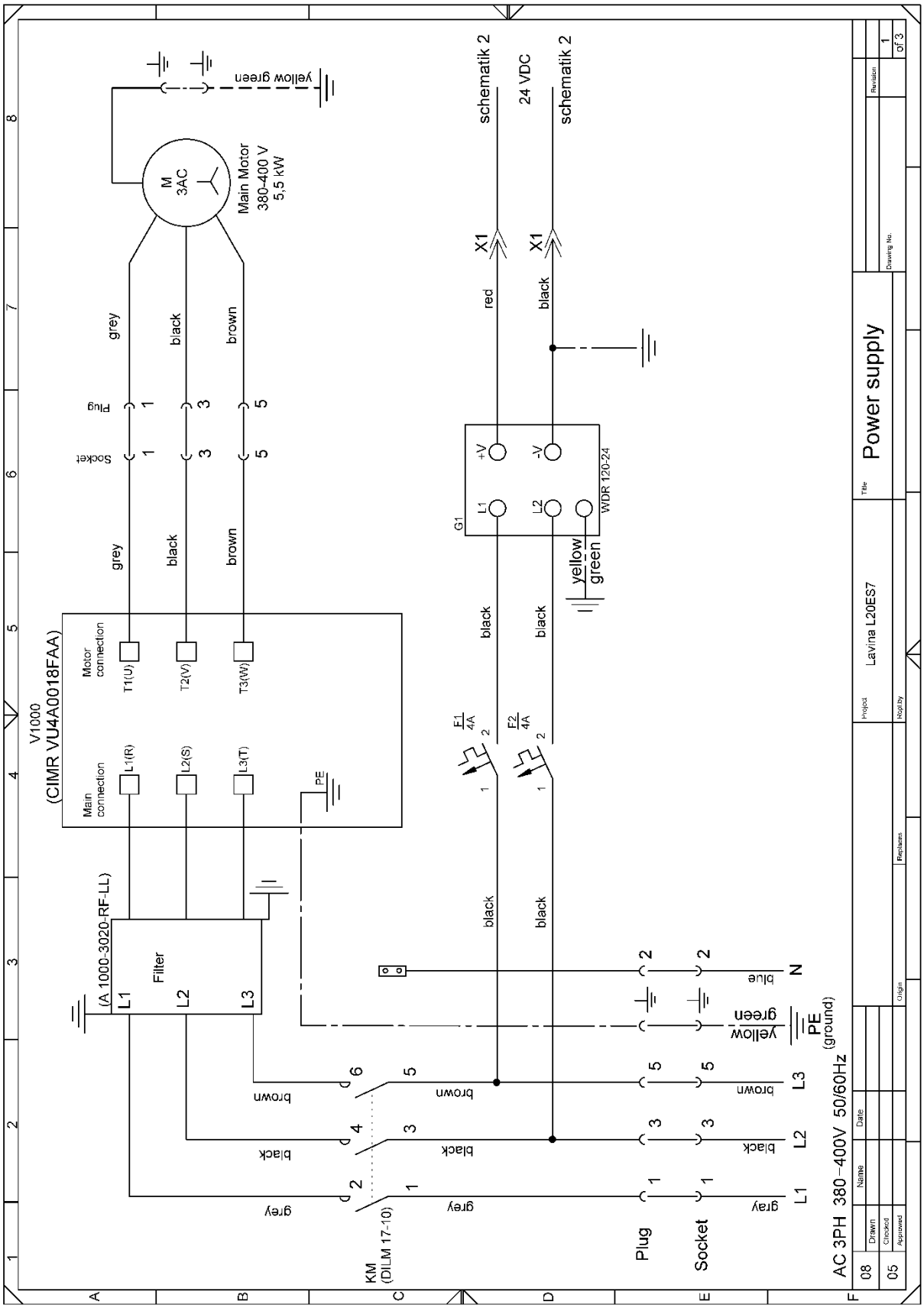
7.5.1. L20S7

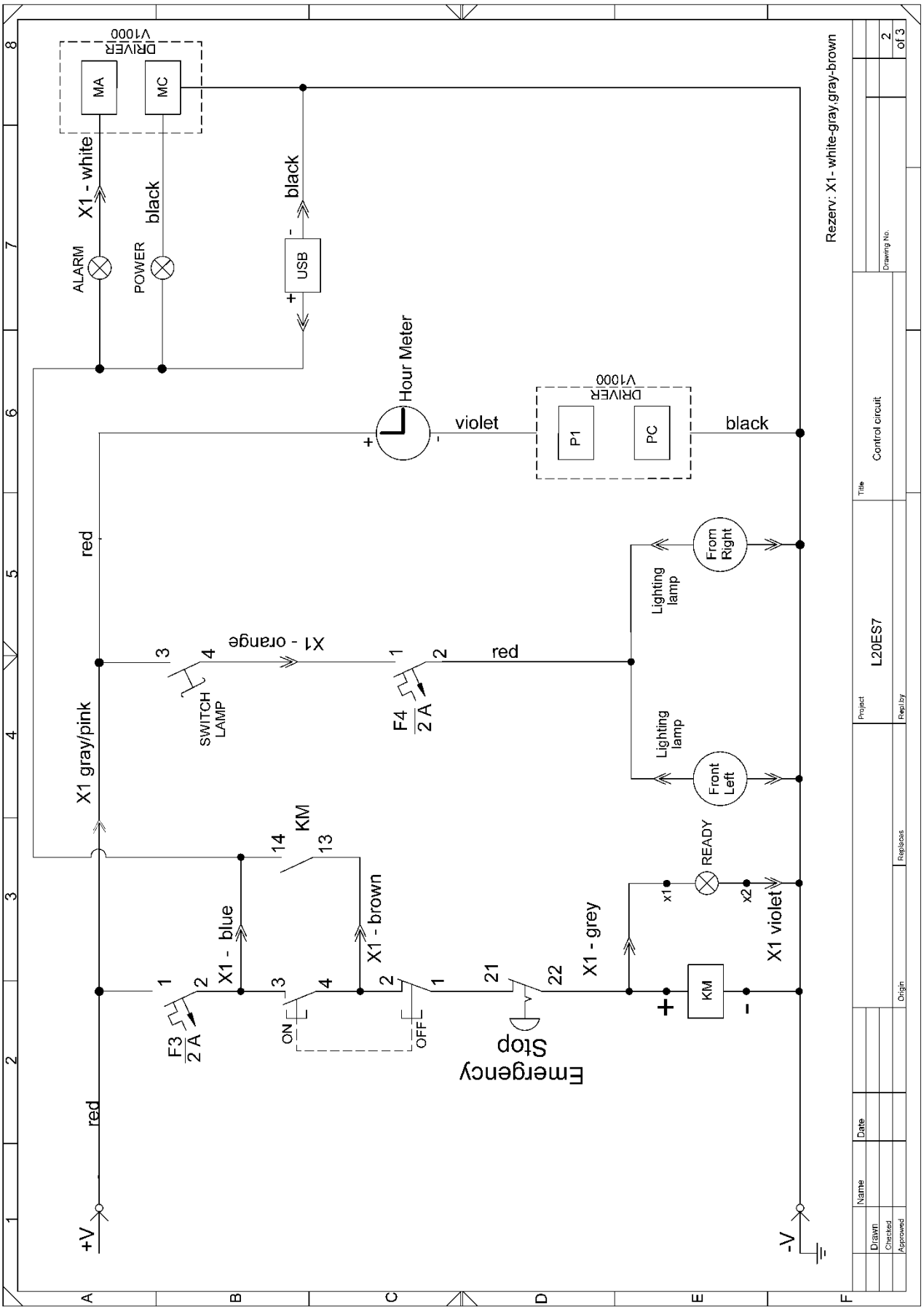


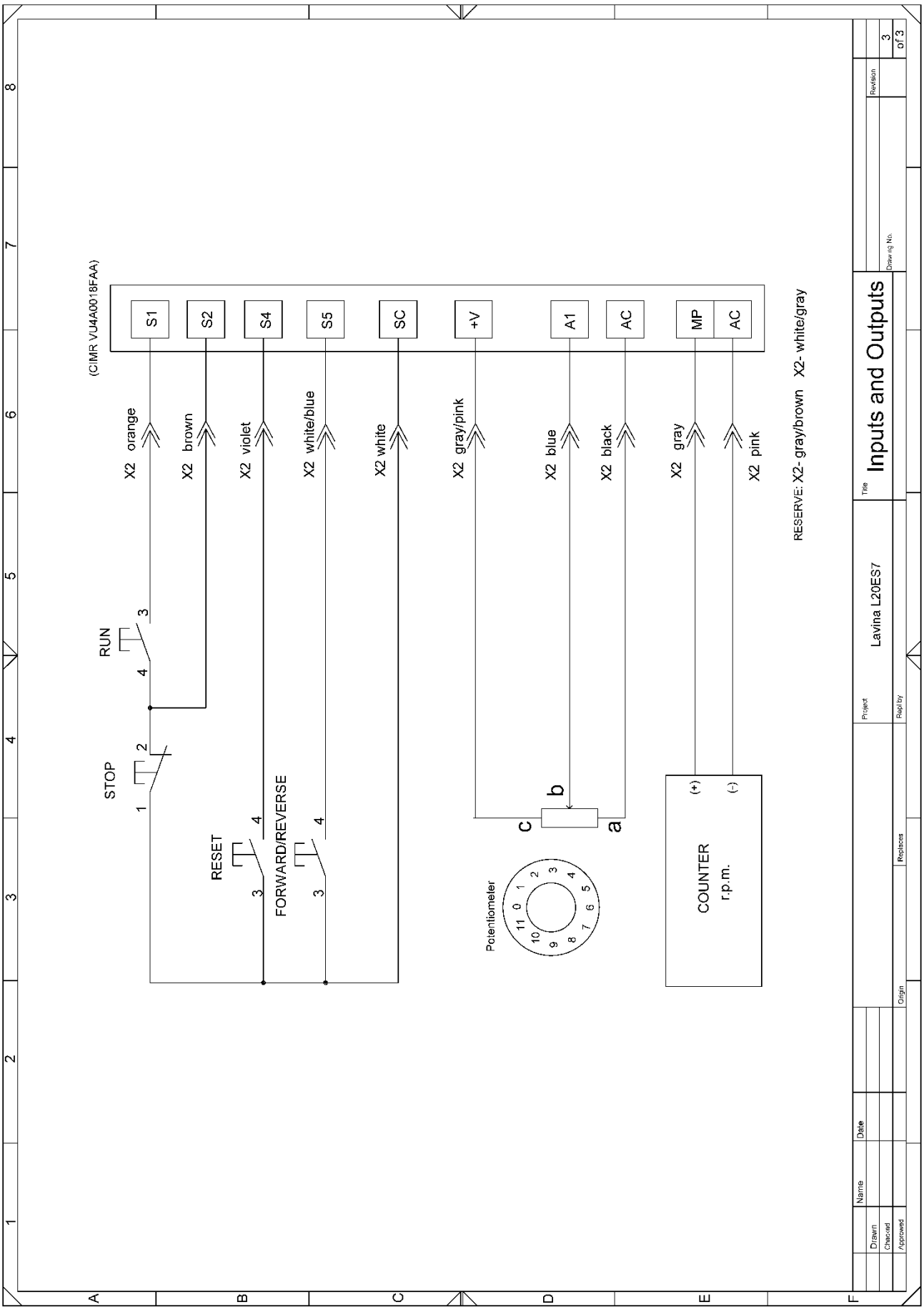

DRIVER V1000
MA
MC
X1 - white
black
black
ALARM
POWER
USB
Hour Meter
violet
DRIVER V1000
P1
PC
black
red
Front Right
Lighting lamp
X1 - orange
SWITCH LAMP
F4 4 A
red
Lighting lamp
Front Left
X1 gray/pink
KM
14
13
READY
x1
x2
X1 violet
X1 - blue
X1 - brown
X1 - grey
F3 2 A
ON
OFF
Emergency Stop
KM
+V
-V
red
Rezerv: X1- white-gray,gray-brown
Control circuit
L20S7
Title
Project
Drawing No.
2 of 3
Drawn
Checked
Approved
Name
Date
Origin
Replaces
Replaced by


(CIMR VU2A0040FAA)
S1
S2
S4
S5
SC
+V
A1
AC
MP
AC
X2 grey or orange
X2 brown
X2 black or violet
X2 violet or wh/bu
X2 blue or white
X2 red or gy/pk
X2 white or blue
X2 green or black
X2 pink or grey
X2 yellow or pink
RUN
STOP
RESET
FORWARD/REVERSE
Potentiometer
COUNTER
r.p.m.
(+)
(-)
RESERVE: X2- red-blue X2- pink-grey
Inputs and Outputs
L20S7
Drawn
Checked
Approved
Name
Date
Project
Title
Revision
Drawing No.
3
of 3

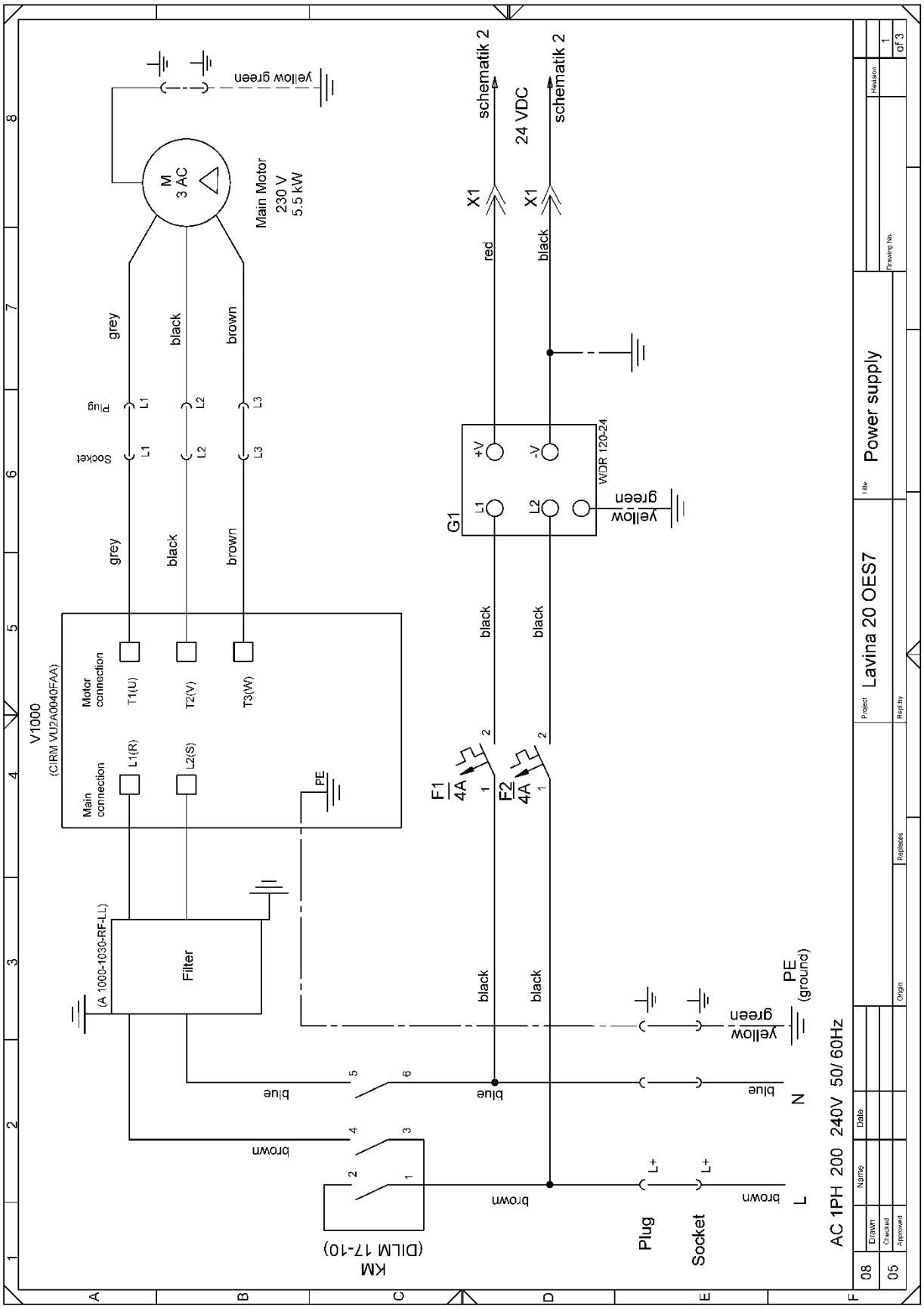
7.5.2. L20ES7

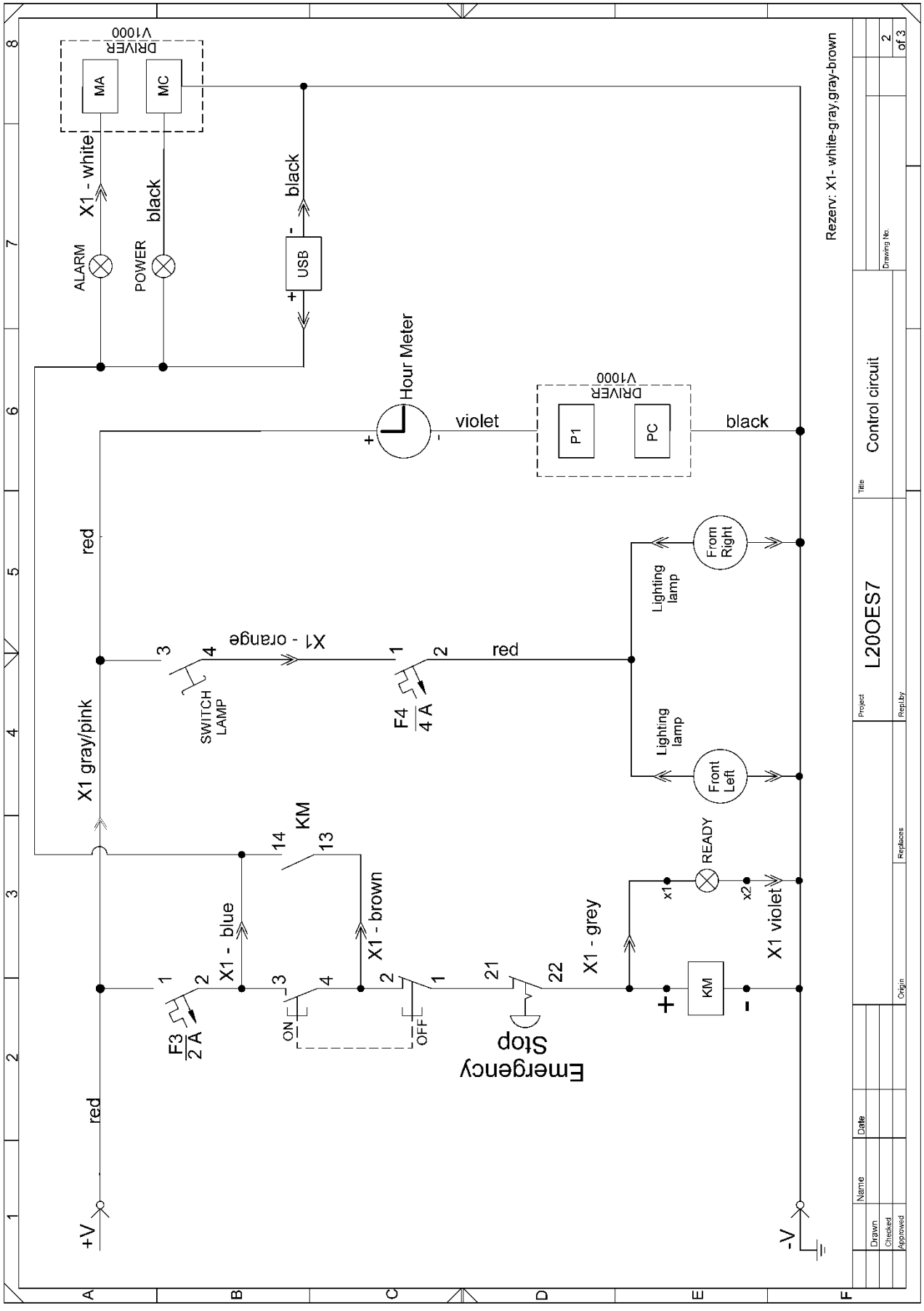

yellow green
M
3AC
Main Motor
380-400 V
5,5 kW
grey
black
brown
Plug
Socket
V1000
(CIMR VU4A0018FAA)
Motor connection
T1(U)
T2(V)
T3(W)
Main connection
L1(R)
L2(S)
L3(T)
PE
(A 1000-3020-RF-LL)
Filter
L1
L2
L3
schematik 2
24 VDC
schematik 2
X1
X1
red
black
+V
-V
L1
L2
G1
WDR 120-24
yellow
green
F1
4A
F2
4A
black
black
black
black
N
blue
yellow
green
PE
(ground)
brown
brown
L3
black
black
L2
grey
grey
L1
KM
(DILM 17-10)
Plug
Socket
AC 3PH 380-400V 50/60Hz
Power supply
Lavina L20ES7
Project
Title
Drawing No.
Revision
Name
Date
Drawn
Checked
Approved
Origin
Replaces
Modify
08
05
1
of 3

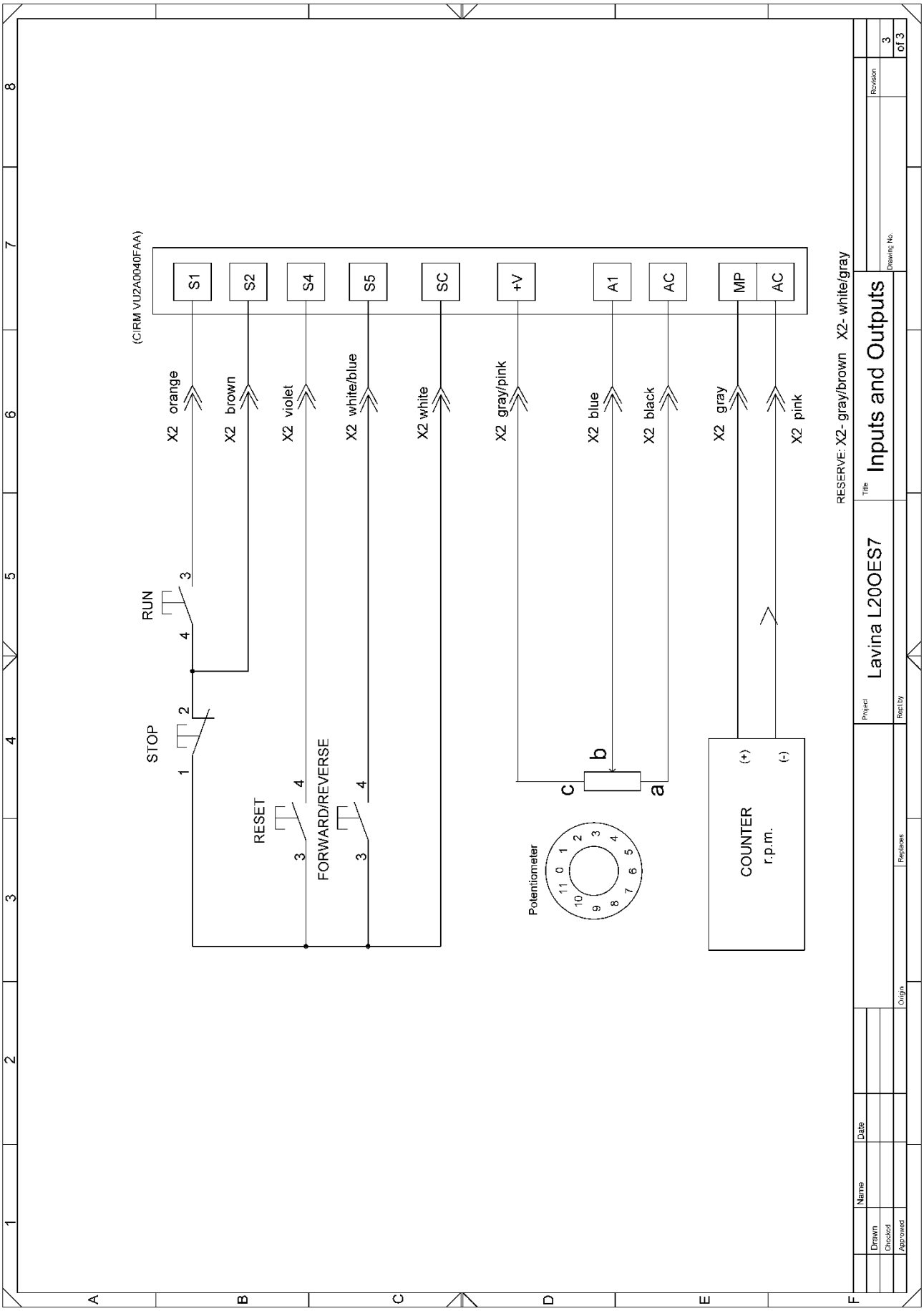

DRIVER V1000
MA
MC
X1 - white
black
black
ALARM
POWER
USB
Hour Meter
violet
DRIVER V1000
P1
PC
black
red
From Right
Lighting lamp
X1 - orange
3
4
1
2
red
SWITCH LAMP
F4 2 A
Lighting lamp
Front Left
X1 gray/pink
KM
14
13
READY
x1
x2
X1 violet
X1 - blue
X1 - brown
X1 - grey
1
2
3
4
2
1
21
22
KM
+
-
F3 2 A
ON
OFF
Emergency Stop
red
+V
-V
Rezerv: X1- white-gray,gray-brown
Drawn
Checked
Approved
Name
Date
Origin
Replaces
Project
L20ES7
Replaced by
Title
Control circuit
Drawing No.
2 of 3
A
B
C
D
E
F


(CIMR VU4A0018FAA)
S1
S2
S4
S5
SC
+V
A1
AC
MP
AC
X2 orange
X2 brown
X2 violet
X2 white/blue
X2 white
X2 gray/pink
X2 blue
X2 black
X2 gray
X2 pink
RESERVE: X2- gray/brown X2- white/gray
RUN
STOP
RESET
FORWARD/REVERSE
Potentiometer
COUNTER
r.p.m.
(+)
(-)
Inputs and Outputs
Lavina L20ES7
Project
Title
Drawing No.
Revision
Name
Date
Drawn
Checked
Approved
Origin
Replaces
Repl by
3
of 3

7.5.3. L200ES7

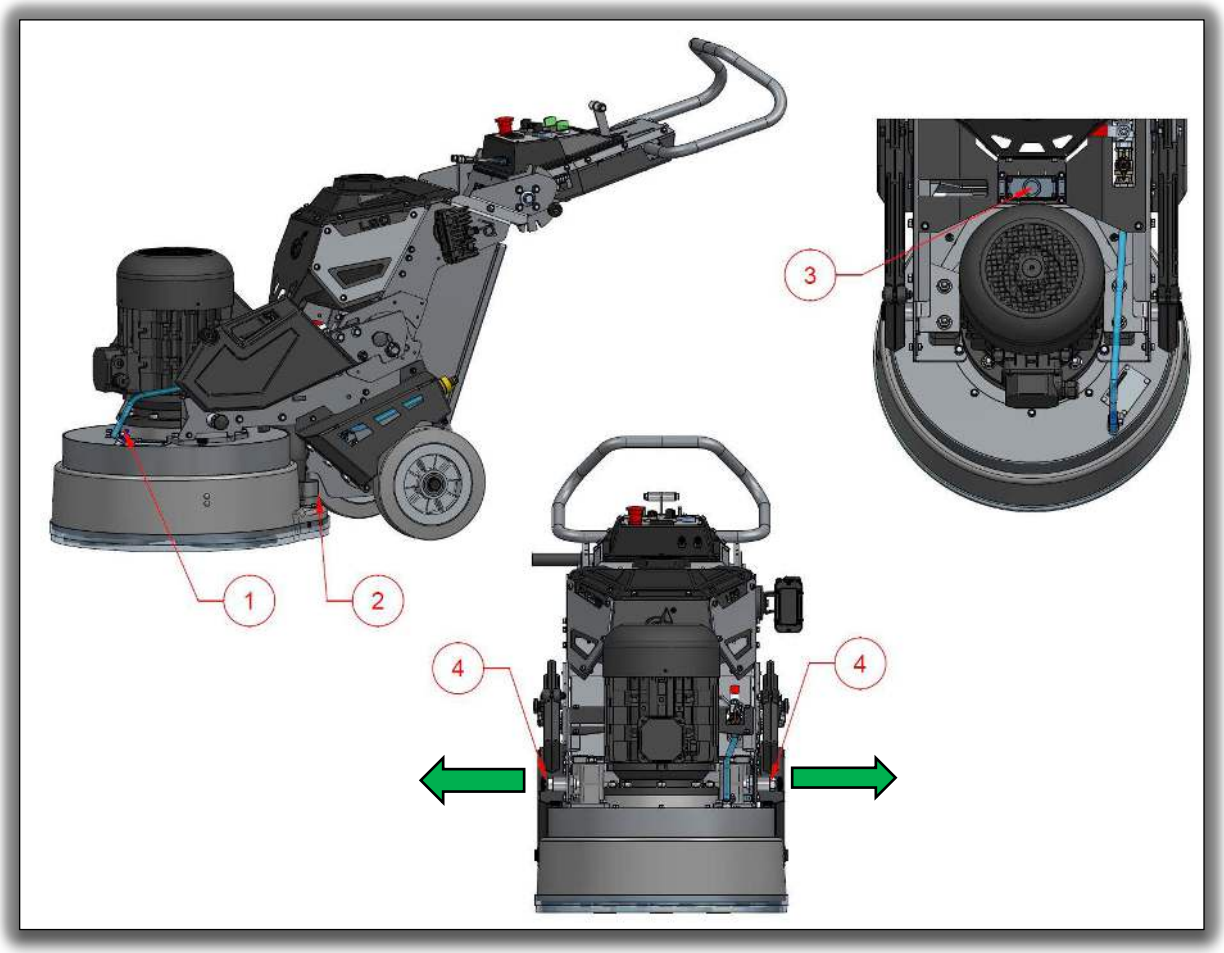

yellow green
M
3 AC
Main Motor
230 V
5.5 kW
grey
black
brown
Plug
Socket
L1
L2
L3
V1000
(CIRM VU2A0040FAA)
Motor connection
T1(U)
T2(V)
T3(W)
Main connection
L1(R)
L2(S)
PE
Filter
(A 1000-1030-RF-LL)
schematik 2
24 VDC
X1
red
black
G1
+V
-V
WDR 120-24
yellow green
F1 4A
F2 4A
blue
brown
KM
(DILM 17-10)
PE (ground)
N
L
AC 1PH 200 240V 50/ 60Hz
Power supply
Lavina 20 OES7
Project
Drawing No.
Revision
Drawn
Checked
Approved
Name
Date
Origin
Replaces
Replaced by
08
05
1
of 3


DRIVER V1000
MA
MC
X1 - white
black
black
ALARM
POWER
USB
Hour Meter
violet
DRIVER V1000
P1
PC
black
Rezerv: X1- white-gray,gray-brown
red
From Right
Lighting lamp
X1 - orange
3
4
1
2
red
SWITCH LAMP
F4 4 A
Lighting lamp
Front Left
X1 gray/pink
KM
14
13
READY
x1
x2
X1 violet
X1 - blue
X1 - brown
X1 - grey
1
2
3
4
2
1
21
22
KM
+
-
F3 2 A
ON
OFF
Emergency Stop
red
+V
-V
Control circuit
L20OES7
Drawing No.
2 of 3
Title
Project
Replaces
Replaced by
Origin
Drawn
Checked
Approved
Name
Date
A
B
C
D
E
F
1
2
3
4
5
6
7
8


(CIRM VU2A0040FAA)
S1
S2
S4
S5
SC
+V
A1
AC
MP
AC
X2 orange
X2 brown
X2 violet
X2 white/blue
X2 white
X2 gray/pink
X2 blue
X2 black
X2 gray
X2 pink
RUN
STOP
RESET
FORWARD/REVERSE
Potentiometer
COUNTER
r.p.m.
(+)
(-)
RESERVE: X2- gray/brown X2- white/gray
Lavina L20ES7
Inputs and Outputs
Drawn
Checked
Approved
Name
Date
Origin
Replaces
Rest by
Project
Title
Revision
Drawing No.
3
of 3

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:

- Unscrew the clamp and detach the vacuum hose (2).
- Detach the water supply hose (1).
- Disconnect the plug (3).
- Pull the knobs (4) outwards at the same time and detach the carriage by pushing it backwards.

IMPORTANT!!! The weights must be in pos. 1 (as shown on the image) in order to prevent the carriage from falling backwards when it's detached from the grinding head

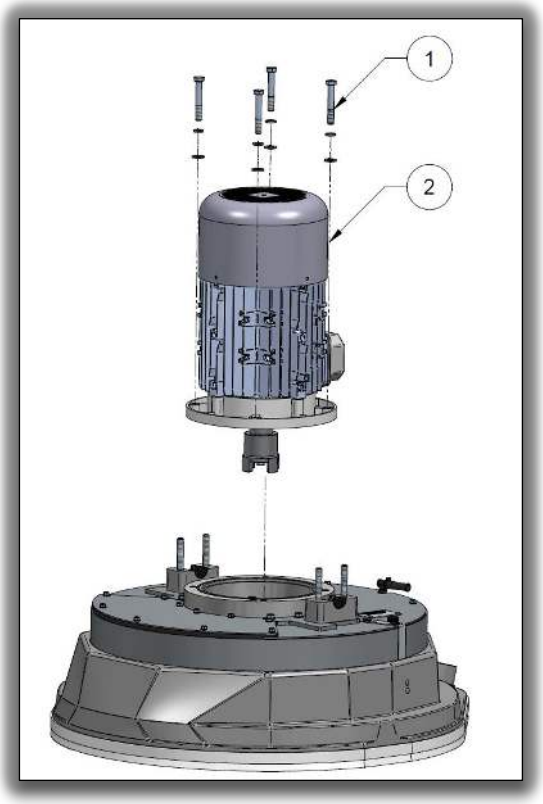
IMPORTANT!!! It is highly recommended to consult the torque requirement table prior to conducting any maintenance activities to prevent potential complications and ensure optimal performance. Adhering to this protocol can assist in maintaining the reliability and longevity of the equipment in question. 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. DISMOUNTING THE ELECTRICAL MOTOR

To dismount the electrical motor:

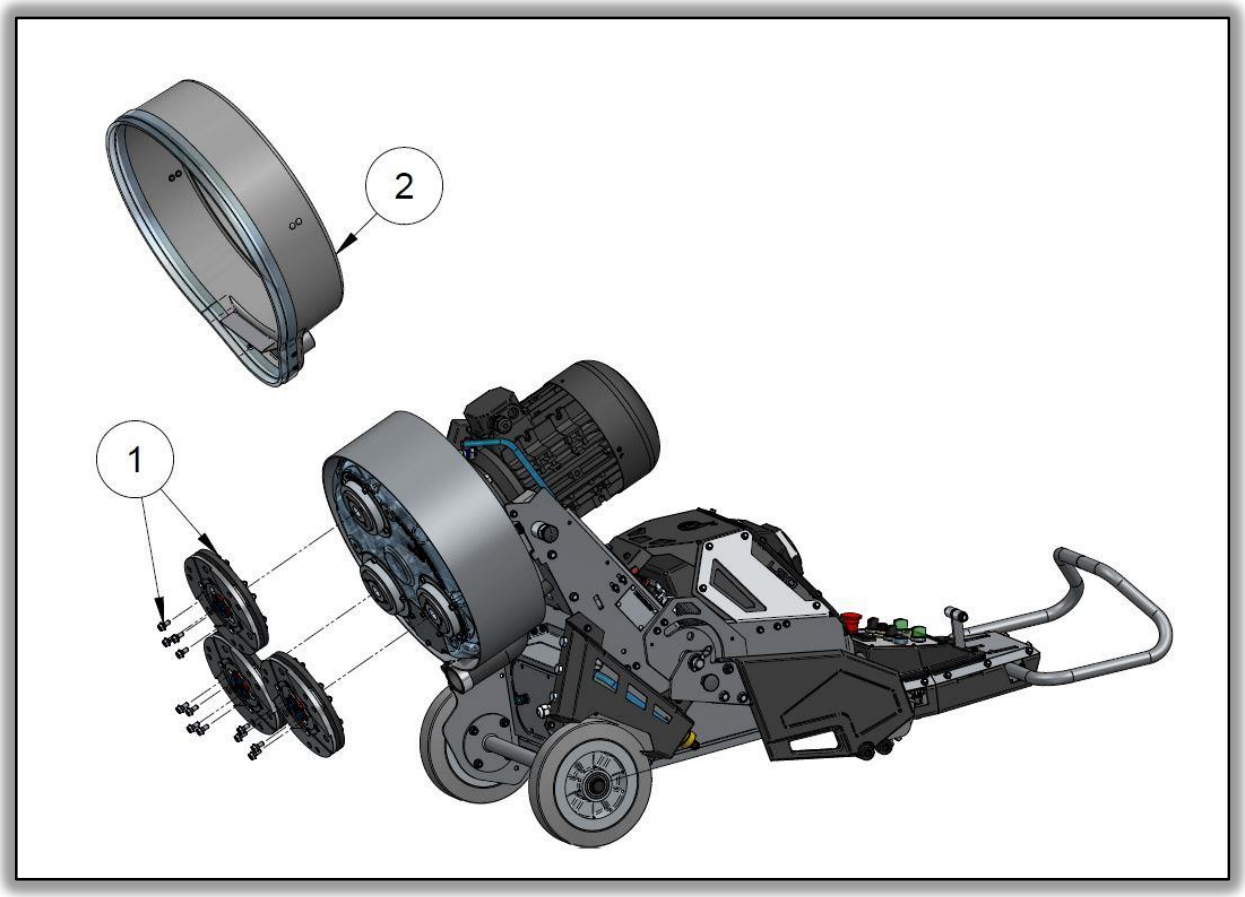
- Unscrew the four bolts (1).
- Eject the motor (2) vertically.

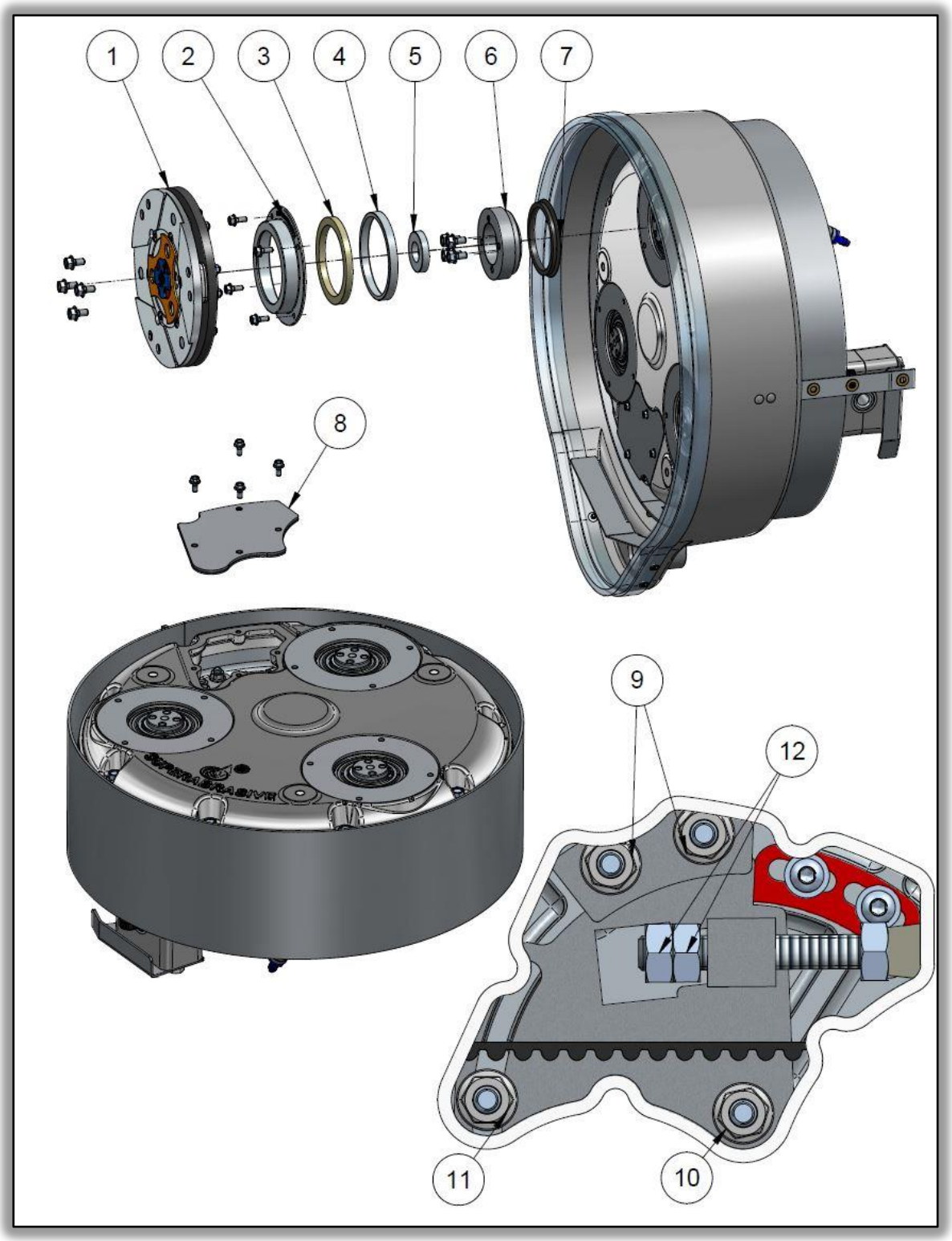


8.3. REPLACING THE MAIN TIMING BELT

To replace the main belt, set the machine into “tool change” position. Dismount the tool holders (1) and remove the protective cover (2) **(Check point 5.1. PROTECTIVE COVER)**. Once done follow the steps bellow.

IMPORTANT!!! KEEP THE TORQUE REQUIREMENTS FOR THE ALUMINUM CASTING

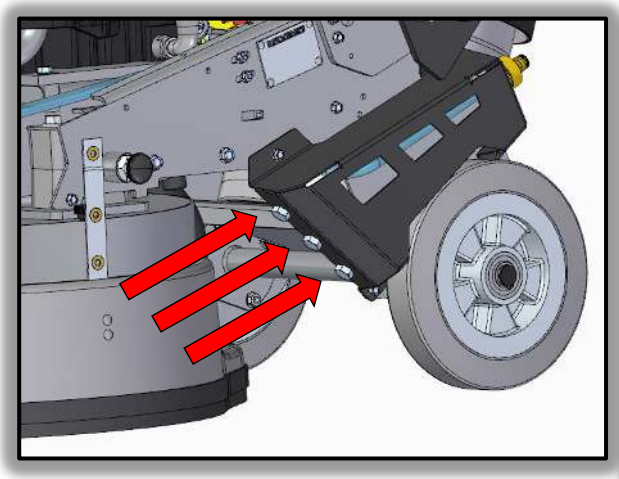


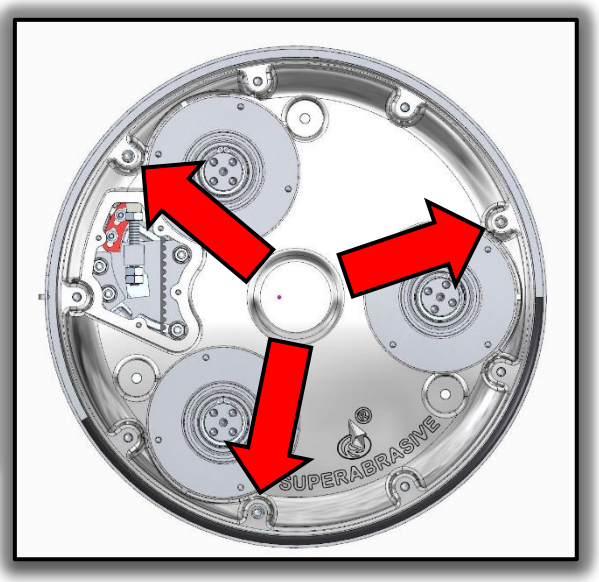

1
2
3
4
5
6
7
8
9
10
11
12

To replace the belt follow the steps:

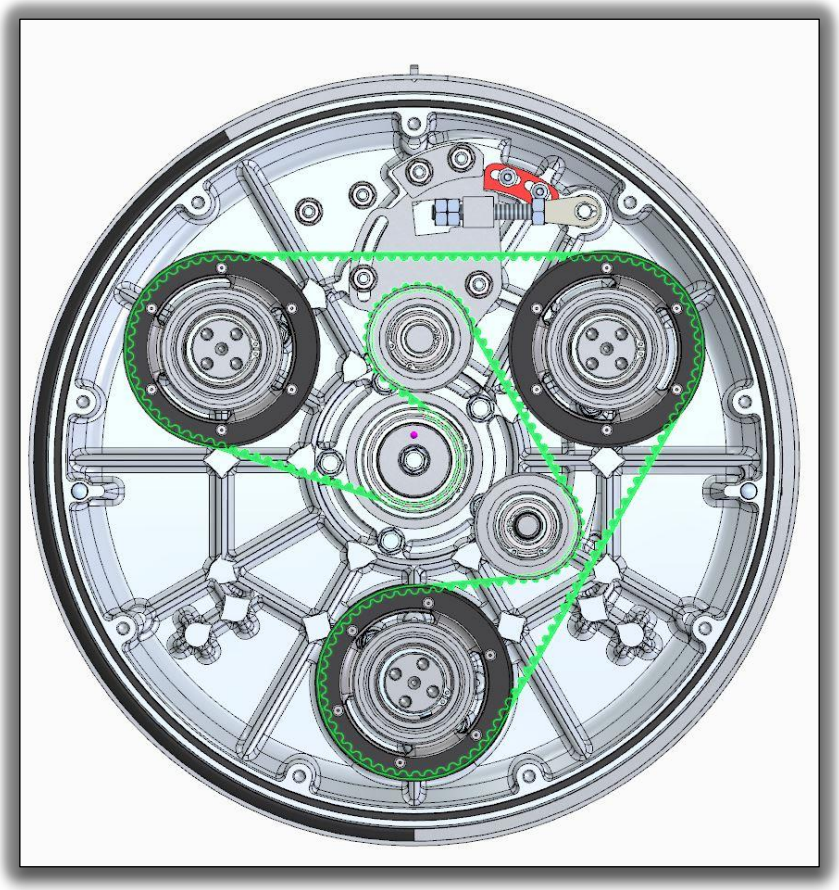
- Remove the tool holders (1) along with the outer cover (2), the felt ring (3), the ring (4), the washer (5), the seal (6) and the adaptor (7).
- Once all the tool holders are removed, open the service cover (8).
- Before manipulating the tensioner, make sure to loosen the nuts (9), (10) and (11).
- Once the above mentioned nuts are loosen, unscrew the nuts (12) enough to push the tensioner and loosen the belt.
- **IMPORTANT!!! The belt must be loosened before opening the transmission.**

- Once the belt is loosened, unscrew the bolts and dismount the bottom cover (12).
- **NOTE! Three of the nine bottom cover holes (shown on the images with red arrow) are threaded with M12. Their purpose is to screw 3 bolts M12x30 or longer at the same time in order to separate the bottom cover form the top one and open the grinding head. The bolts are mounted on the machines frame.**

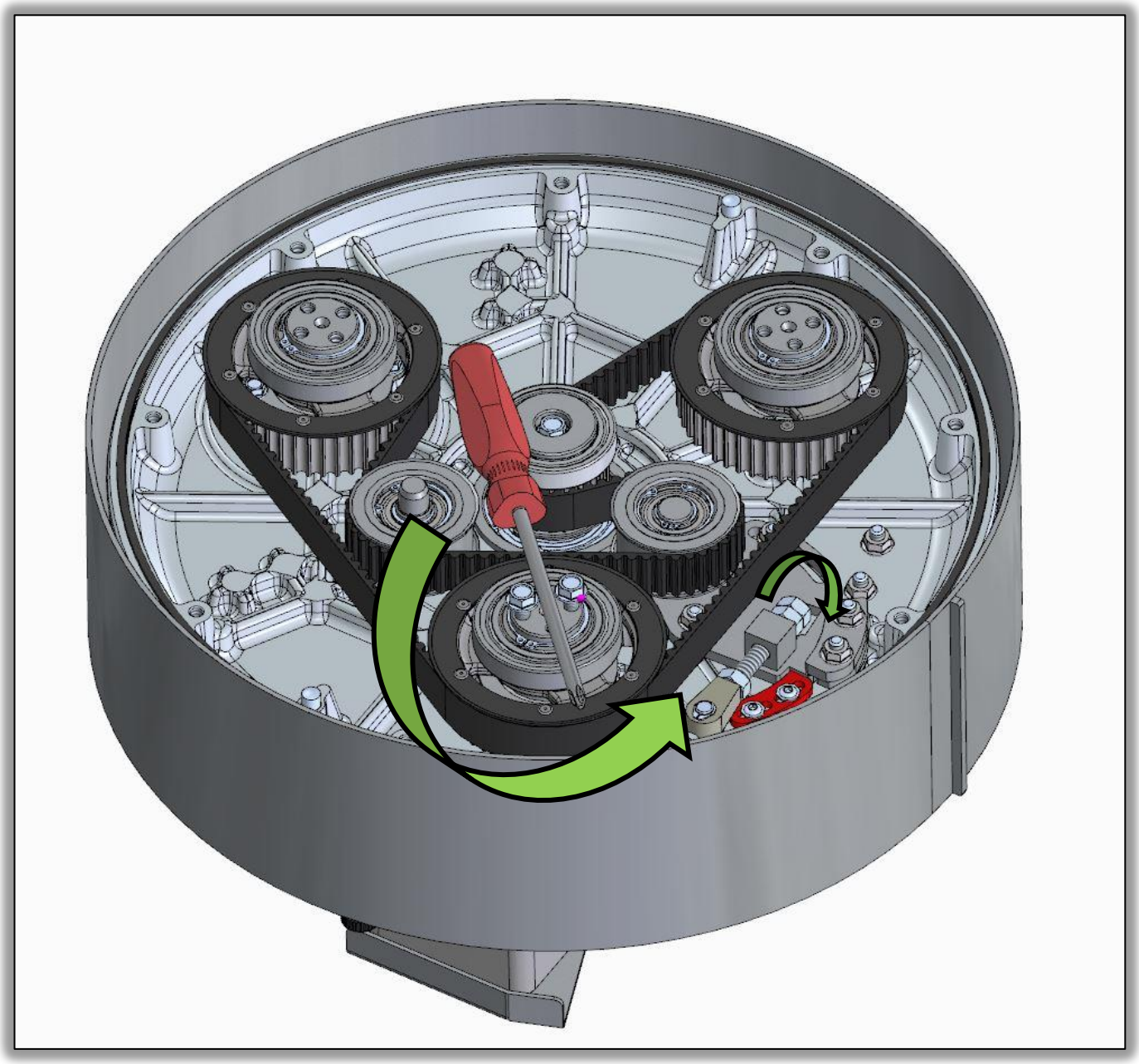




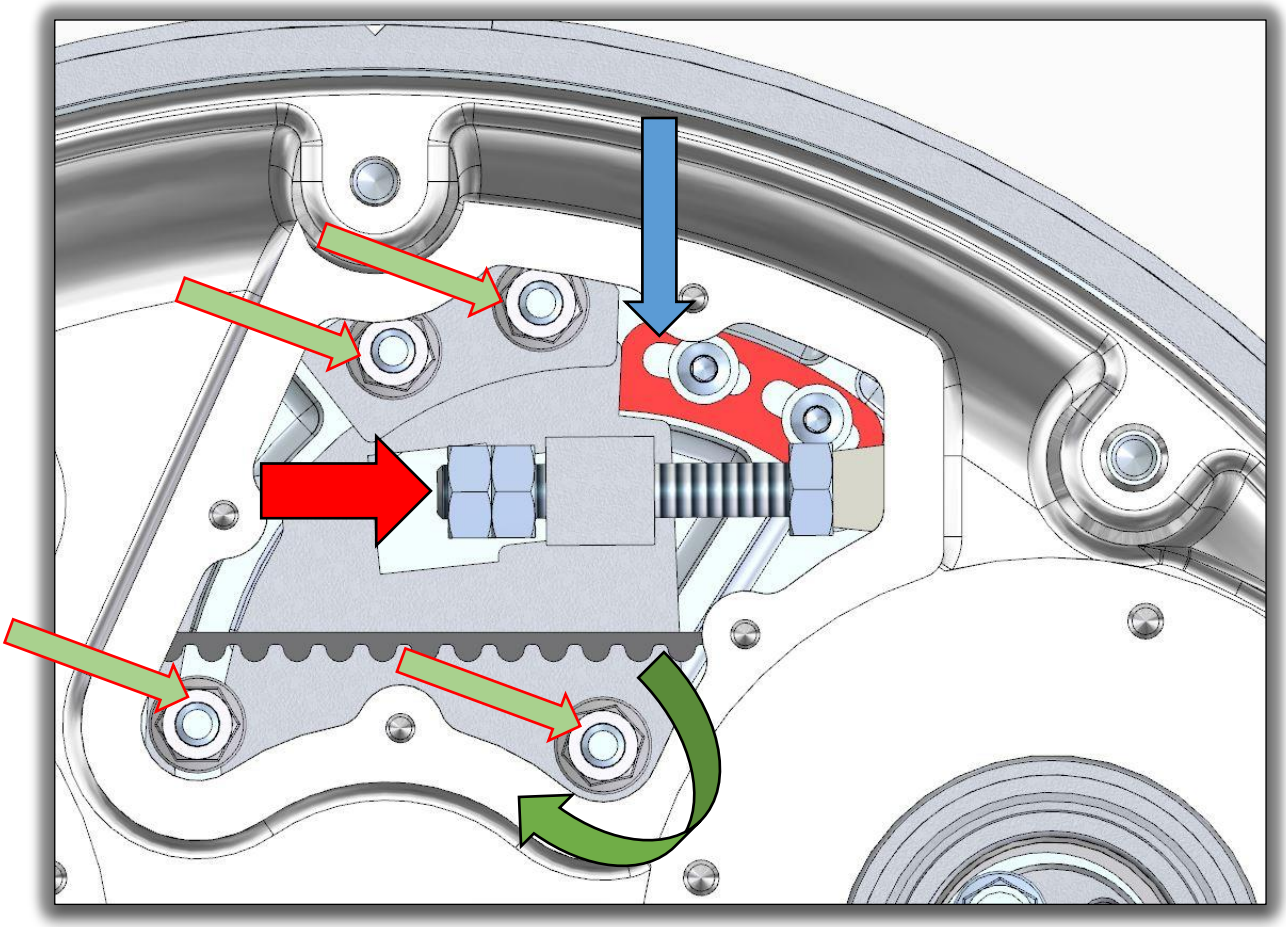
- When the grinding head is opened, the belt is already loosened and it can be dismounted. After the old belt is dismounted:
  - Clean the pulleys and the surrounding area.
  - Check all the bearings of the pulley units and tensioner for excessive clearance or noise.
- Rotating the tensioner will allow the center distance to be reduced so that the timing belt may be fitted without force. **Installation with the use of force is not permissible at any time as this can damage the high quality, low stretch tension cord and other components. This damage is not often visible.**
- Install the belt according to the diagram below, paying close attention to the orientation of the belt relative to every pulley.
- After the new belt is mounted, reinstall the bottom cover carefully by following the steps in reverse order. **The belt must be loose when mounting the bottom cover!**



- Once the belt is installed, make sure that the teeth of the belt are properly fitted into the teeth of the pulleys.
- Use the tensioner to slightly tighten the belt. When the belt is slightly tightened, use two of the M8 bolts (you have them from disassembling the toolholders) and screw them into one of the holders. Once done use a screwdriver to turn the holder 3-5 full rotations to make sure the belt is well fitted.



- After the new belt is mounted, reinstall the bottom cover carefully by following the steps in reverse order. **The belt must be loose when mounting the bottom cover!**



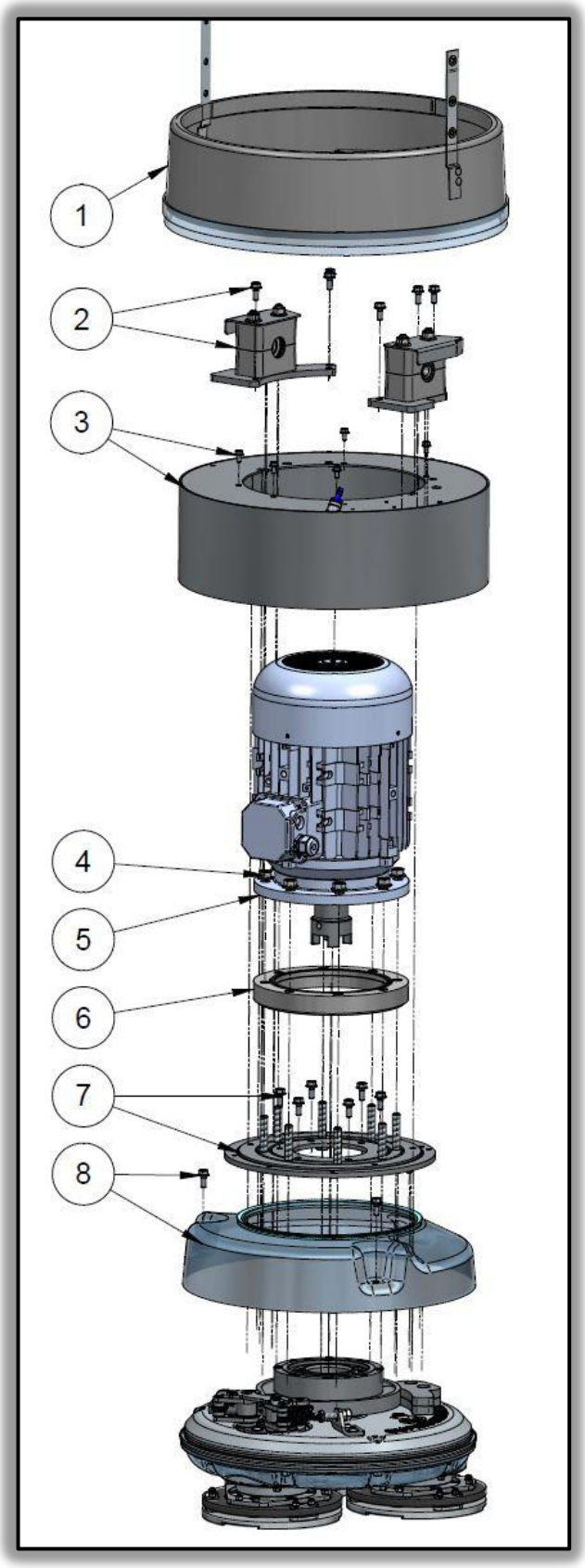
- Once the bottom cover is mounted firmly, tighten the nuts (**red arrow**) in order to tension the new belt. The belt must be tightened until the tensioner plate contacts the thrust plate (**in red pointed with blue arrow**). Once the tensioner plate touches the thrust plate, the new belt is ready. At last retighten the nuts pointed with **green arrows**. Once done, the cover can be closed and the tool holders mounted back.

  The belt can be also tensioned by using frequency tension tester (Optibelt 3 TT). Tension must be 121-130 Hz.

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

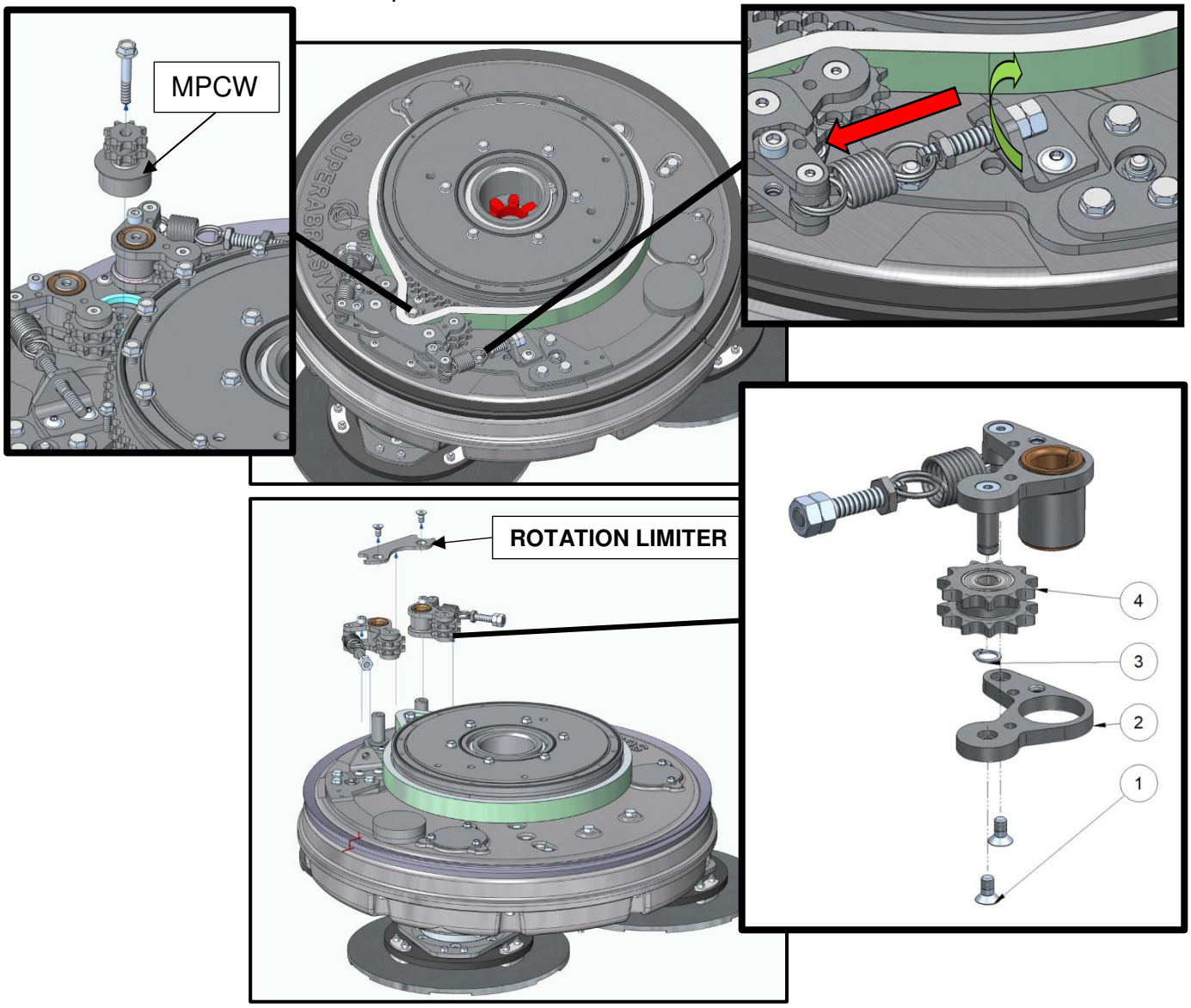
8.4. ACCESSING THE PLANETARY DRIVE

- Separate the carriage from the grinding head.
- Dismount the cover (1).
- Unscrew and dismount the holders (2).
- Unscrew and dismount the cover (3).
- Unscrew the nuts (4) and dismount the motor (5).
- Dismount the flange (6).
- Unscrew and dismount the plate (7).
- Unscrew and dismount the plastic cover (8).



8.5. PLANETARY DRIVE

1. **To replace the planetary chain or the springs follow the steps:**
   - Unscrew the nuts, which are holding the springs of the tensioner. Release the springs.
   - Unscrew and remove the rotation limiter. Now the chain can be replaced.
2. **To replace the main planetary chain wheel (MPCW):**
   - Once the chain is removed, unscrew the bolt, dismount and replace the main planetary chain wheel.
3. **To replace the chain wheel of the tensioner:**
   - Unscrew and dismount the plate pos. 2.
   - Remove the circlip pos.3.
   - Dismount the chain wheel and mount the new one by following the reversed order of the steps above.



8.5.1. MAINTENANCE

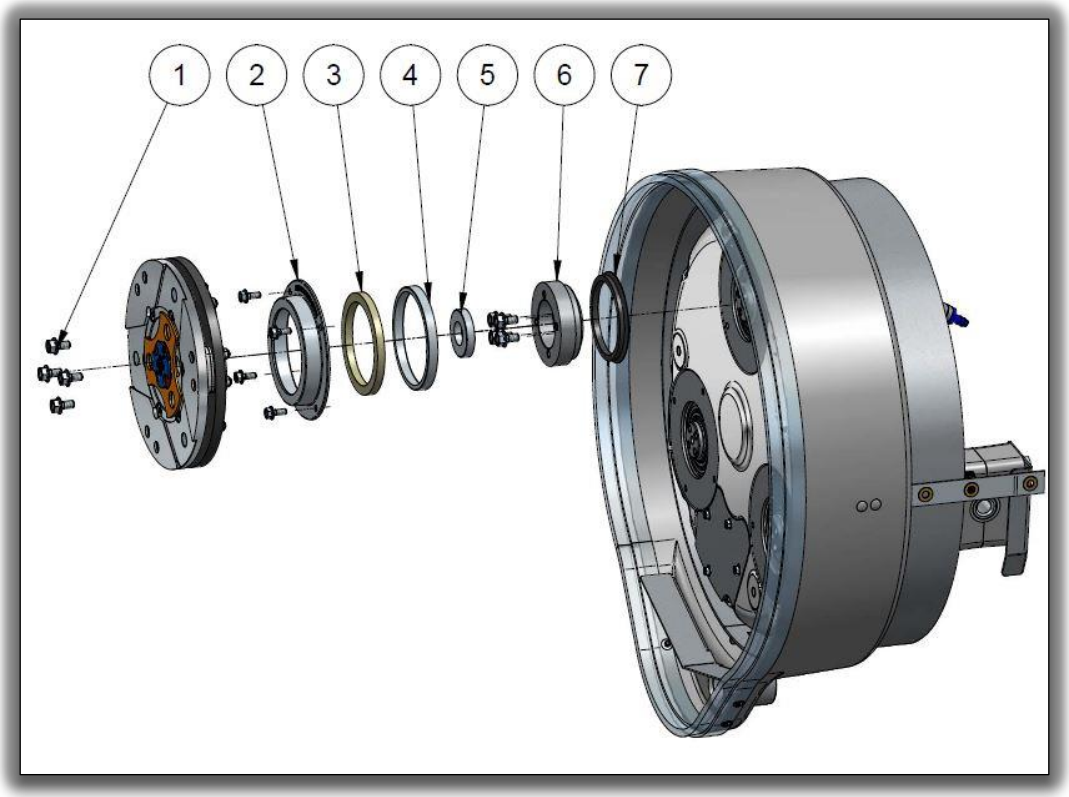
To ensure optimal performance and extend the life of the planetary drive we recomemned cleaning and lubricating the chain every **200 hours**.

Make sure to open the planetary drive by following the steps from above.

IMPORTANT!!! Once the planetary chamber is opened, make sure to lubricate the chain along its entire lenght.

8.6. TOOLHOLDER

8.6.1. REPLACING V RINGS AND FELT RINGS



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

- Unscrew and remove the tool holder (1).
- Unscrew and remove the outer cover (2) and the adaptor (6).
- Replace the V-ring or the felt ring and assemble in reversed order.

8.6.2. REPLACING THE BUFFERS AND THE ELASTIC ELEMENT

Figure 9.4.2.1

Figure 9.4.2.2

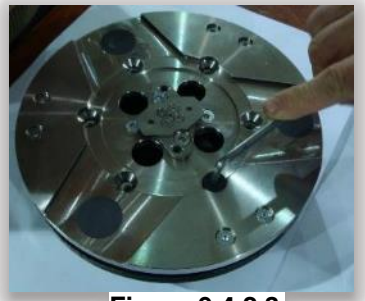


Figure 9.4.2.3

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

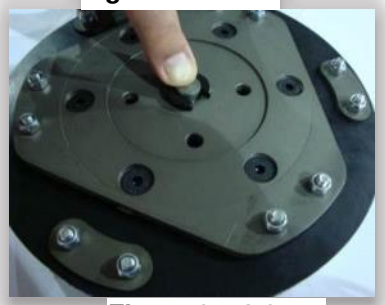


Figure 9.4.2.9

Figure 9.4.2.10

Figure 9.4.2.11

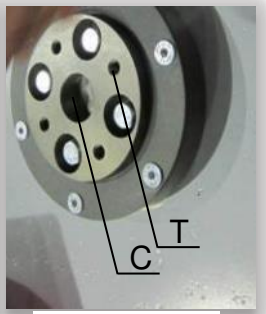


Figure 9.4.2.12

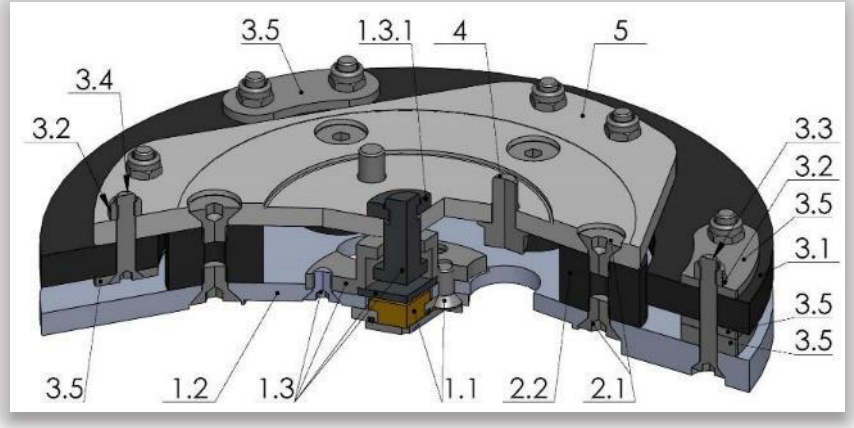


Figure 9.4.2.13

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.

8.7. REPLACING THE PULLEY UNITS

To replace the pulley remove the circlip and then dismount the pulley unit.