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PORTABLE & INDUSTRIAL SAWMILLS
WOOD PROCESSING EQUIPMENT
BLADES & BLADE MAINTENANCE

OPERATION AND INSTALLATION MANUAL

ORIGINAL
INSTRUCTION
MANUAL

CIRCULAR SAW

MS500

Form #2548

SWW-0794-138

CE

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1. BASIC INFORMATION

1.1. Purpose of the manual

To ensure safe and correct operation of your saw, please read this instruction manual carefully.

1.2. Correct use

The saw is designed for sawing carpentry and laminated boards as well as for longitudinal and transverse sawing of wood. Sawing plastics is also possible, but remember that when sawing plastics, considerable amounts of heat are emitted. This can cause the saw gullets to be gummed up with plasticized material. Sawing with such a dirty saw is prohibited.
No other intended use of the saw is expected. REMA is not liable for damage caused by improper use of the circular saw.
For proper operation, all information in the operating instructions must be observed.

1.3. Use the machine in accordance with its designated purpose

The circular saw is not suitable for sawing metals, foods, minerals, bones.

1.4. Warranty, liability for the manufactured product

Extension of warranty rights and the scope of manufacturer's liability for the product are excluded if all kinds of damage caused by the use of the machine tool resulted from the following causes:
- unintended use of the circular saw,
- improper assembly, commissioning, operation and maintenance of the circular saw,
- operation of the circular saw despite defective safety devices, malfunctioning and faulty protective systems,
- failure to observe the information in the instruction manual regarding transportation, storage, assembly, commissioning, maintenance and setting up of the circular saw,
- performing structural changes to the circular saw on your own,
- the use of a different type of electric motor with parameters different from those provided for,
- improper supervision of worn parts of the circular saw,
- improperly repaired circular saw,
- hard solids, e.g.: metal fragments, stones, getting into the cutting zone,
- other random cases.

The warranty period for the MS500 is 12 months.

1.5. Operation principle and design

The circular saw consists of the following elements: fixed table, body, spindle, top guard, electrical system, auxiliary table, undercutting spindle, angular ruler.
- The main table (made of cast iron) is attached to the body with help of bolts. A shaft, which serves as a guide for the longitudinal scale, is attached to the front plane on the front of the table. The longitudinal ruler is clamped to the guide shaft. Table extensions are screwed on the right side and at the back of the table.
- The body of the circular saw is welded. There is electrical equipment, a spindle assembly and an undercutting spindle assembly inside the circular saw body.

- The spindle assembly consists of the following mechanisms: a tilting and lifting mechanism of the spindle and a drive system (motor + belt transmission). The drive of the spindle tilting and lifting mechanism is carried out manually by means of wheels located on the body. The angular value and lifting height of the circular saw blade is indicated on inertia indicators mounted on handwheels. The circular saw wheel is at the same time the lower suction nozzle to which the port of the dust extraction system is screwed.
- The top guard is screwed to the body by means of a special bracket. The guard hood is made of steel with polycarbonate side panels. The handle and grip are used to adjust the guard to the correct height. The guard bracket is also equipped with a suction nozzle, to which the hose of the dust extraction system is connected.
- The auxiliary table assembly consists of two parts: a bracket and an auxiliary table. The auxiliary table assembly is supported by one end on the bracket and by the other end on the guide shaft. The auxiliary table assembly can be moved along the guide shaft. There is a stop ruler equipped with two longitudinal scales on the auxiliary table. The ruler can be screwed to the front or at the back of the auxiliary table assembly. The ruler can be set at an angle of 90º÷45º to the plane of the circular saw blade. The auxiliary table assembly must be locked on the guide rail of the mobile table during operation.
- The electrical mechanism is placed in a recess tightly closed with a cover. The control panel is located on the body of the circular saw. There are buttons "START" and "STOP" of the main spindle and a selector for work with or without the undercutting spindle on the control panel. The main switch is located in the rear part of the body. Electric motors are located inside the machine tool. They are protected against overload by thermal relays. The main spindle motor has an electromagnetic brake, which allows to stop the spindle in up to 10s.

1.6. Manufacturer reservations

The manufacturer may modify parts or accessories without updating the instruction manual and parts catalogue, where this does not have a significant effect on the performance of the circular saw and health and safety at work. The instruction manual is intended only for the machine tool to which it is attached.

1.7. Manufacturer

„REMA” Spółka Akcyjna
ul. Bolesława Chrobrego 5
11–440 RESZEL
phone no. (89) 755-00-05
fax: (89) 755-07-49

2. BASIC INFORMATION ON WORK SAFETY

2.1. Follow the information in the operation manual

- The basic condition for safe operation and proper functioning of the circular saw is the knowledge of basic information about safety at work and regulations in this scope.
- This instruction manual contains the most important information required for the safe operation of your circular saw.
- This instruction manual, and in particular the safety information, must be observed by all persons working on the circular saw.
- In addition, the accident prevention rules and regulations in force at the place of installation of the saw must be observed.

2.2. Obligations of the employer and operating personnel

The employer shall only allow persons to operate the saw if they:
- have familiarised themselves with the basic regulations on work safety and accident prevention and are prepared to use the circular saw,
- have read and understood the chapter on occupational safety and warning information in this instruction manual, having confirmed this with their own signatures,
- have had their operating competencies in such activities as assembly, commissioning, operation, maintenance and cleaning of the circular saw clearly defined

The check of the personnel operating the circular saw regarding the occupational safety observance must be carried out on a regular basis.
In the case of members of staff who are being trained to operate the circular saw, they may work on it under the supervision of an experienced staff member.
It is the responsibility of each employee to comply with the basic regulations on occupational safety and accident prevention.

2.3. Hazards associated with operating a circular saw

The circular saw is designed in accordance with the current state of the art and generally accepted technical safety regulations. Despite the above fact, it is important to be aware of the possibility of injury and hazard to life both for the operator and bystanders, as well as damage to the machine.
Only use the circular saw under the following conditions:
- the use of the circular saw is in accordance with its intended purpose,
- the condition of the circular saw meets the technical requirements for occupational safety,

Any malfunctions or disturbances that may impair the safety of your circular saw must be rectified on an ongoing basis.
The following hazard may occur when operating the circular saw:
- the throw of sawn material,
- electrocution,
- the saw blade can be touched by hand,
- an impact from a broken tooth of the circular saw blade,
- related to the presence of moving transmission elements,
- injury to bystanders, e.g. by the cut-off carriage.

2.4. Protective equipment

- All protective equipment must be properly installed and in good working order before each start-up of the circular saw.
- Dismantling of protective equipment is only possible in the following situations:

a) after the circular saw has come to a standstill,
b) after the circular saw has been protected against restarting,

- when delivering partial components, the user is obliged to fix the protective devices in accordance with the regulations.

The following safety devices are used in the saw:
- top guard covering the circular saw blade,
- lower suction nozzle cover with position marker protecting the circular saw,
- cover for the recess of electrical equipment,
- kerf riving knife to protect the cut from throw of sawn material,
- protective equipment against electric shock,

- belt transmission guard,
- protective colours indicating hazardous areas,
- spindle brake.

2.5. Personal protective equipment

When operating the circular saw wear ear protectors and safety goggles, tight-fitting protective clothing, and suitable footwear.

2.6. Explanation of symbols

	Voltage
	Risk of danger
	Direction of tool rotation
	Wear protective clothing
	Wear ear protectors
	Wear safety glasses
	Main spindle
	Undercutting spindle

2.7. Indirect protective operations

- Always keep this instruction manual at the place of use.
- As an addition to the operating instructions, generally applicable and local rules for accident prevention and environmental protection must be drawn up and fully complied with.
- All safety and hazard information on the circular saw must be maintained in a legible condition.
- Materials and consumables must be handled and disposed of properly.

2.8. Safety measures while using the circular saw

- The circular saw should only be started up if all the protective devices are in full working order.
- Before switching on the circular saw, ensure that no one is in danger when starting it.
- Check at least once during a shift that there is no externally visible damage to the circular saw and that the safety devices are functioning properly.

a) Brake - check that the machine tool comes to a standstill within a specified time (see 6.1.7),

b) main switch - by operation test,
c) emergency stop - by means of operation test,
d) suction nozzle switch - with the machine tool switched off, open the cover of the lower suction cup and press the START button, the machine should not start

2.9. Safety measures relating to the operation of an electric circular saw

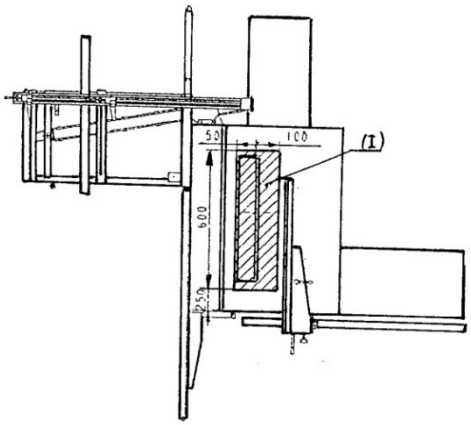
- The performance of work on the machine with electric power supply should be entrusted to employees with SEP qualifications.

In order to eliminate the danger of electric energy, it is necessary to:

- regularly check the electrical insulation of your circular saw and immediately remove loose connections and burnt cables,
- always leave the electrical recess closed,
- do not carry out repair work if the power supply is not cut off.

2.10. Special hazard zones

(I) The danger zone for your circular saw is shown in the figure below.



Here it is possible to touch the circular saw with your hand. Exercise particular caution when working within the range of the danger zone. Special attention should be paid to the saw of the undercutting spindle. Its braking time is longer than the braking time of the main saw.

2.11.Maintenance, service and damage repair

- Carry out regular adjustment, maintenance and inspection work.
- Before commencing maintenance and repair work, staff must be trained in this area.
- Use safe working methods when carrying out repairs and maintenance works.
- Replace any part of your circular saw that is in poor condition without delay.
- If loosening of the screwed connections is detected, it is necessary to restore them to the normal condition.
- After maintenance work, check the function of the safety devices.

When carrying out all maintenance, inspection and repair work, it is essential to:

- disconnect the circular saw from the mains using the main switch and secure it against unexpected restarting, e.g. with a padlock,
- use a sign forbidding the activation of the circular saw.

2.12. Making design modifications to your circular saw

- No changes, retrofitting or modifications may be made to the circular saw without the manufacturer's consent.
- All activities related to the reconstruction of the sawing machine require the absolute written consent of "REMA".
- When replacing worn parts, use only original spare parts.
- Where non-original spare parts are installed, it is not certain that they have been designed and manufactured in such a way as to meet the durability and safety requirements.

2.13. Noise level of the circular saw

The noise level of the saw running on idle mode is 82dB(A) and 87dB(A) during operation. The measured values according to PN-ISO7960 refer to emission levels and not necessarily to noise levels in the workplace. Although there is a relationship between emission and exposure levels, it is not possible to determine with certainty whether or not preventive measures are needed. Coefficients influencing the current level of exposure during work include the characteristics of the room and other sources of noise, e.g. the size of machine tools and those occurring in the vicinity of the machining. The exposure limit value may also vary from country to country. However, this information will allow the user of the machine tool to better identify the risks. Higher noise levels may occur during operation, causing too much strain on your hearing.
If the noise level exceeds 85 dB, it is necessary to apply appropriately shortened operating time or use hearing protectors.

2.14. Actions to be taken in case of accident or breakdown

In the event of an accident or malfunction, it is essential to switch off the machine tool and secure it against restarting by removing the plug from the socket. Continue with your local accident and emergency plan.

3. TRANSPORT AND STORAGE

3.1. Dimensions, weight, centre of gravity, packaging

The circular saw is partially disassembled for transport.

Due to the compact design of the circular saw, the centre of gravity is located around the centre of the saw's body.

3.2. Loading, transport, unloading

Loading and unloading of the circular saw as well as transport inside the plant may only be carried out with a forklift truck with a load capacity of at least 1200 kg. When loading and unloading, ensure that the saw does not slip off the forks of the forklift truck. Make sure that the forks of the forklift truck are of the correct length.
Transport outside the plant may only be carried out with covered means of transport, which protects the saw against weather conditions. Your circular saw should be carefully secured against displacement during transport.

3.3. Control during take-over by the customer

After receiving the shipment and carefully unpacking the saw, check its external condition and contents in the box of parts disassembled according to the shipping specifications (see point 4.2). We accept notifications and documentation of damage caused during transport in accordance with generally applicable regulations.

3.4. Place of storage, duration, security measures

For transport and storage, the circular saw is treated with anti-corrosive agents (unpainted parts, parts without galvanic coating). The circular saw in such a condition may be stored at -15ºC to 40ºC for two months. After this period, check the condition of the machine and, if necessary, carry out maintenance.

4. CIRCULAR SAW DATA

4.1. Name, type and serial number

Circular saw **MS500** Serial number .....Year of manufacture.....

4.2. Delivery scope

The saw is equipped with the following assemblies which are disassembled for transport:
a) the auxiliary table assembly,
b) the transverse ruler,
The circular saw is additionally equipped with:
- 1 riving knife
- 1 wrench “41x24” RUE-088,
- 1 wrench “19” RUE-055,
- 1 hex wrench “8”
- 1 material tappet fig. 128.23.00.000,
- 1 material tappet fig. 048.00.45.000,
- 1 instruction manual of the circular saw.

4.3. General view of the circular saw

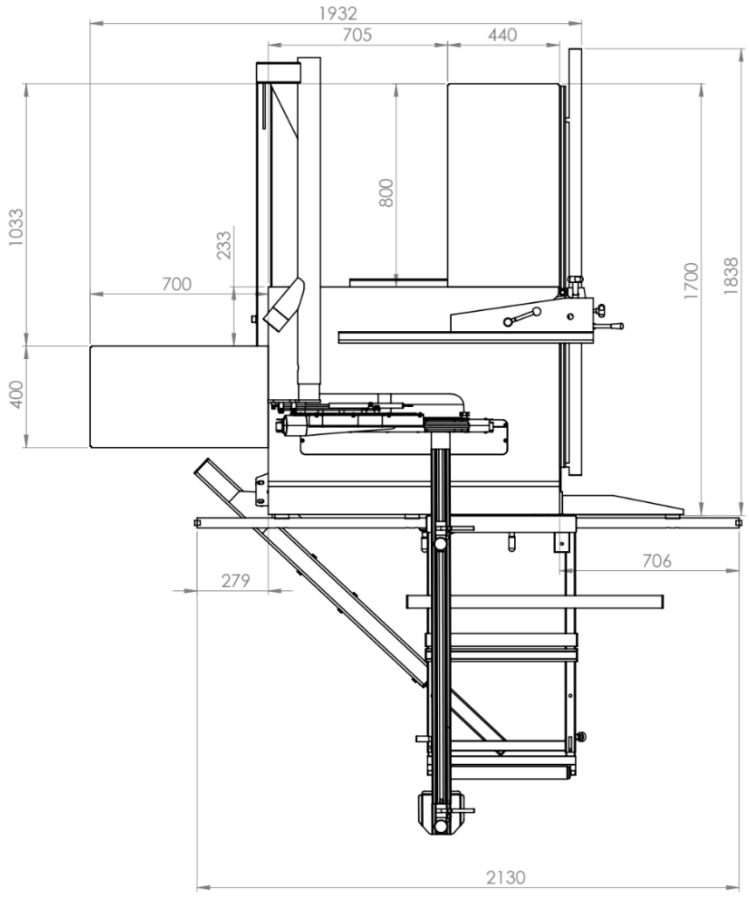


Fig. Auxiliary table guide roller at the front of the body.

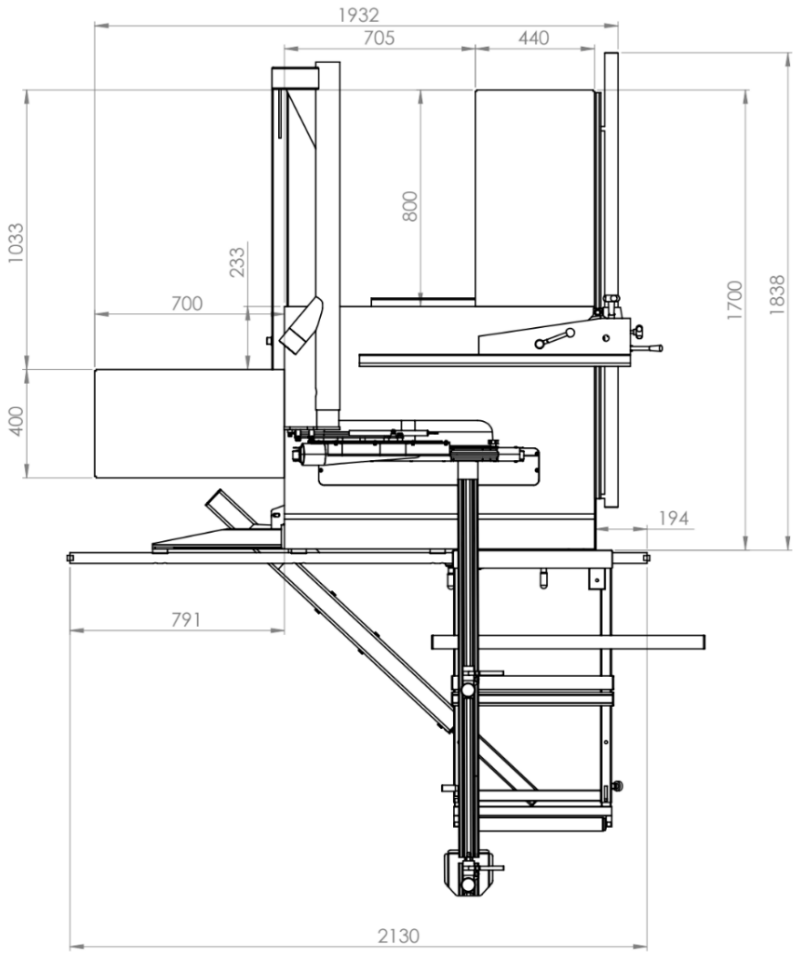


Fig. Auxiliary table guide roller at the back of the body.

4.4. Technical parameters

PARAMETER	VALUE
Circular saw tilt	0-45° (option 46°)
Main motor power	6 kW
Rotational speed of the main spindle	4000 RPM
Diameter of the main spindle tip	ϕ30 mm
Diameter of the main saw	ϕ300 - 400 mm
Diameter of the undercutting spindle saw	ϕ125 mm
Power of the undercutting spindle motor	0.75 kW
Rotational speed of the undercutting spindle	8500 RPM
Diameter of the undercutting spindle tip	ϕ20 mm
Max. distance between the longitudinal ruler and the saw blade	1260 mm
Width of sawing with bumpers on the auxiliary table	82 - 2500 mm
Extension of the auxiliary table roller	270 mm

Adjustment height of the main saw blade	**Vertical**	**Option**	**At 45°**	**Option for maximum height**
For ϕ 300 mm	0 – 80	90	0 - 55	0 - 60
For ϕ 350 mm	0 - 105	115	0 - 70	0 - 79
For ϕ 400 mm	38 - 130	140	27 - 90	27 - 96
Length of sawing with the	**With the work-rest at the front of the table**		**With the work-rest at the back of the table**	

undercutting spindle				
For guide roller at the front	970 mm		660 mm	
For guide roller at the back	470 mm		1150 mm	
Length of sawing for the ϕ400 mm saw without the undercutting spindle	**With the work-rest at the front of the table**		**With the work-rest at the back of the table**	
For guide roller at the front	1050 mm		660 mm	
For guide roller at the back	550 mm		1150 mm	
Width of material that can be stacked on the auxiliary table	**With the work-rest at the front of the table (with the auxiliary table)**	**With the work-rest at the front of the table (with work-rest)**	**With the work-rest at the back of the table (with the auxiliary table)**	**With the work-rest at the back of the table (with the work-rest)**
For guide roller at the front	500 mm	700 mm	500 mm	660 mm
For guide roller at the back	470 mm	470 mm	500 mm	870 mm
Maximum angular position of the transverse ruler				
For guide roller at the front	45°		45°	
For guide roller at the back	45°		9 °	
Outer diameter of the bottom suction nozzle port	ϕ125 mm			
Outer diameter of the upper cover suction nozzle port	ϕ80 mm			

Air consumption of the bottom suction nozzle	1000 m^3/h
Air consumption of the upper cover suction cup	250 m^3/h
Transport speed in the suction cup tube	22 m/s for dry sawdust; 28 m/s for wet sawdust
Weight	600 kg

* When working with a saw with a diameter of 400 mm it is necessary to dismantle the undercutting saw.

4.5. Operating temperature range

The manufacturer guarantees the correct operation of the saw in the temperature range: +10ºC ÷ +35ºC.

4.6. Corrosion protection

All parts of the circular saw that are not coated with paint or galvanic coating must be coated with an anti-corrosion coating for transportation or long shut down periods, e.g. Mulkator WD, Anticol M, Anticorit OHK, preparation WD40, Rust Check, Belzona Code Noto C-634, Protec-1000.

4.7. Disposal of sawing waste

The circular saw is equipped with a sawdust extraction port, which makes it possible to connect the sawdust extraction port to the sawdust extraction system before starting the machine. In the case of connection with a flexible hose, it must meet the condition of antistatic operation at the level of R<108 ohms, e.g.: pneumatic suction hose P2PU version AS manufactured by TUBES Poznań with internal diameter Ø125mm (lower suction nozzle), Ø80 (upper cover).
Store the remaining sawing waste in suitable containers for further use or disposal by handing it over to the appropriate authorised services.

5. SET-UP, INSTALLATION AND START-UP

5.1. Set-up location, operating station

The location of the circular saw in the production area depends on the type of production, means of transportation inside the factory, etc. The minimum space required for proper operation on the saw is shown in the figure in Section 4.3. The working positions are specified in the figure below.

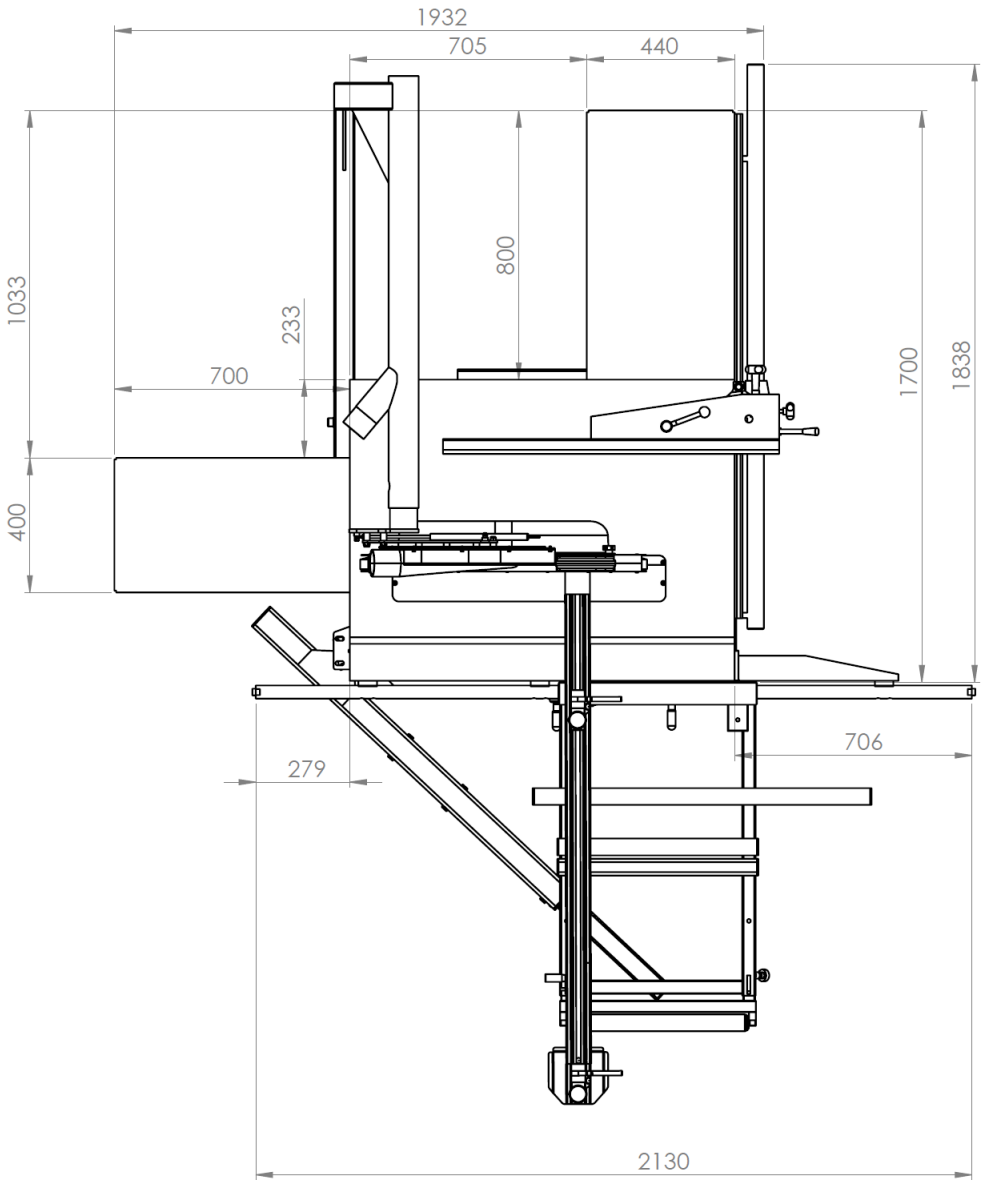


Fig. Auxiliary table guide roller at the front of the body.

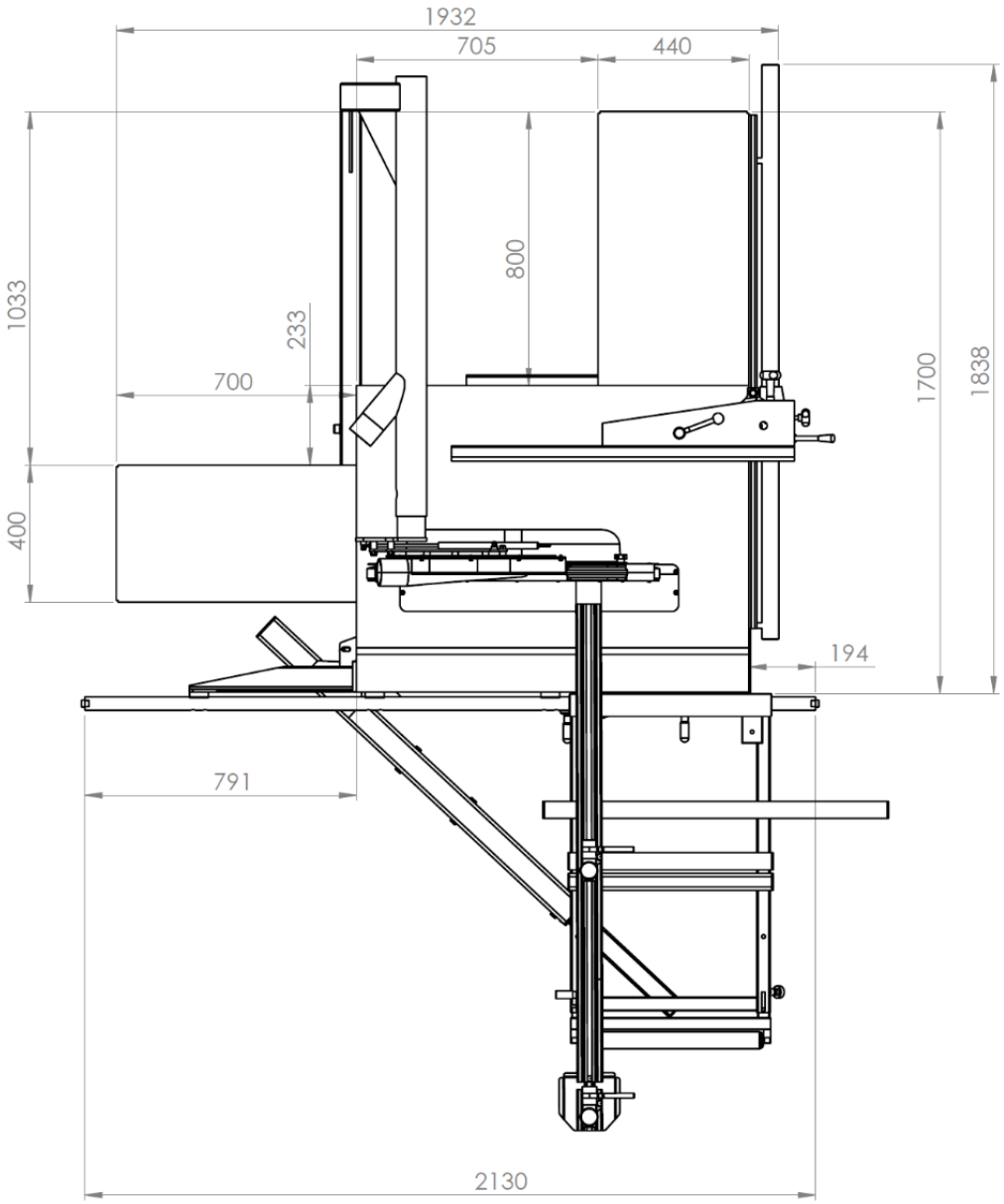
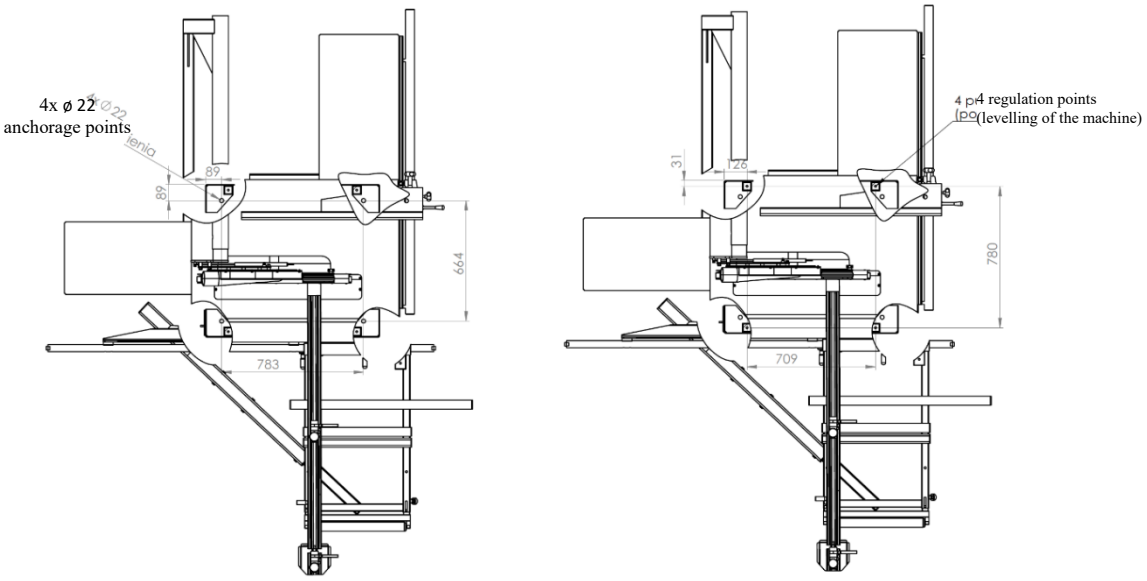


Fig. Auxiliary table guide roller at the back of the body.

5.2. Set-up

Place the saw on the concrete foundation, as shown in the following figure and secure it with four anchored bolts. Concrete on the foundation should be made in class B15. After placing the circular saw on the foundation, level it with accuracy of 0.3/1000mm.



5.3. Removal of safety elements

Prior to assembling the circular saw:
- remove the security elements installed in it for the time of transport,
- clean surfaces protected with maintenance grease using technical kerosene as a solvent,
- cover clean surfaces with a thin layer of spindle oil.

5.4. Connection to the power supply.

The saw should be connected to the power supply 3x400V+N+PE 50Hz with a 5x4mm² cable, max. 5 m long. Terminals L1, L2, L3, N, PE are located at the bottom of the electrical board.

5.5. Operating elements and scales

On the fixed table:
- handle for locking the aluminium section of the longitudinal ruler
- locking handle of the longitudinal ruler,
- locking handle of the micro adjustment cube,
- micro-adjustment handle (accurate movement of the longitudinal ruler),
- screw for locking the scale,
- scale for reading the sawing width.

On the control panel:
- buttons for starting and stopping the main saw and undercutting saw,

In the top guard assembly:
- handle for adjusting the height above the table,

In the auxiliary table assembly:
- handle for locking the stop ruler,
- handle locking the extension of the stop ruler,

- handle locking the extension of the support roller,
- handles locking the stop bumpers on the stop ruler,
- scale for reading the sawing width.

In the main spindle assembly:

- handwheel for adjusting the height of the saw,
- handwheel for adjusting the angle of saw inclination,
- inertia indicator for saw height,
- inertia indicator for saw inclination.

5.6. Processing features of the circular saw

You can do the following on your MS500:

a) at the longitudinal ruler:
- longitudinal sawing of sawn timber,
- sawing small and medium-size laminated boards and carpentry boards,
- sawing narrow and thin slats at the lower side of the aluminium section.

b) at the transverse ruler:
- transverse sawing of large-size laminated and carpentry boards, adjusted by means of bumpers according to the scale and with the scale from 90º to 45º in relation to the plane of the main saw according to the scale on the auxiliary table.

c) at the angular ruler:
- sawing small-size laminated boards and carpentry boards at an angle of -90º÷90º and locked at any point in the T-slot of the mobile table.

The transverse ruler can be set in relation to the plane of the saw in the range of 90º÷45º. In addition, the ruler can be attached to the back or front of the frame of the auxiliary table itself, which changes the length of the sawing.
The above operations can be carried out with the saw set at an angle of 0º÷45º and in the vertical position within the range of 0÷130 mm.

5.7. Preparation of the saw for initial commissioning

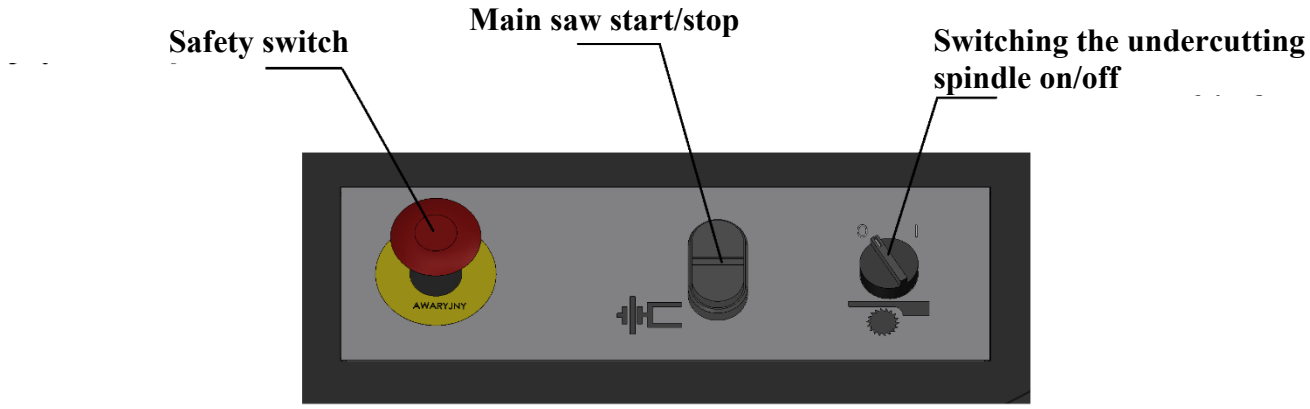
Before starting your saw:
- read and understand this instruction manual,
- check that the circular saws are correctly and securely attached,
- close the covers of the electric box, belt drive bay and the lower guard of the saw suction nozzle,
- lock the auxiliary table assembly on the mobile table,
- check that the saw blades do not come into contact with the saw parts (remove the cause if they come into contact),
- move the top guard of the saw to the surface of the table,
- connect the ports of the bottom and top suction nozzles to the sawdust extraction system.

5.8. Starting the circular saw at idling speed

In order to start the machine:
- move the main switch to position **"I"**
- select the type of work for your saw:

"O" - operation without the undercutting spindle - the undercutting spindle saw should be lowered below the working surface of the table,
"I" - operation with the undercutting spindle,
- start the saw by pressing the button switching on the main spindle

Check that:
- the direction of rotation of the circular saw blades corresponds to the direction marked with the arrow on the top guard of the saw blade, and in the case of discrepancies see point A.2.1. 6.3.



Note: It is forbidden to make any changes to the electrical system of the saw.

5.9. Switching off the circular saw

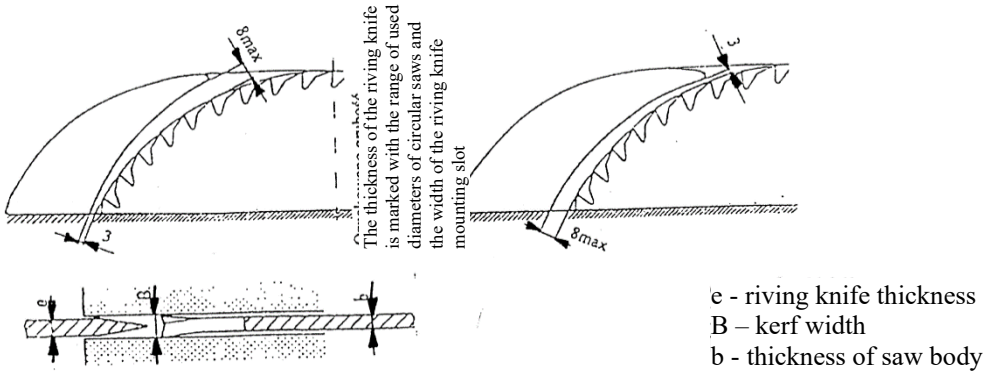
Normally, the tool is switched off by pressing the main saw's stop button. Caution! The safety switch is only used to stop the saw in dangerous situations. Switch off the main switch when you have finished working on your circular saw.

6. OPERATION

6.1. Adjustment and settings

6.1.1. Riving knife adjustment

- Unscrew the table inserts
- Position the knife towards the saw according to one of the following drawings:



e - riving knife thickness
B – kerf width
b - thickness of saw body

The thickness of the riving knife must be matched to the thickness of the circular saw blade and must fit between the width of the kerf and the thickness of the body of the sawing machine acc. to 5.2.5a PN-EN1870-1.

thickness of standard circular saw blade	riving knife thickness	thickness of carbide-tipped saw acc. to cat. F.P.N.	riving knife thickness
1.6	1.8±0.1	2.7	2.2±0.1
2	2.4±0.1	3.2	2.8±0.1
2.5	2.9±0.1	3.6	3±0.1
3.2	3.8±0.1	4	3.5±0.1

6.1.2. Sawing height adjustment

During sawing, the circular saw blade should protrude about 10 mm above the workpiece. There is a handwheel on the right hand side to adjust the circular saw blade:
- right - lift,
- left - lower.

The height of the saw blade is indicated on the inertia indicator.
Adjust only when the main and undercutting saw is stopped.

6.1.3. Setting the sawing angle in the vertical plane

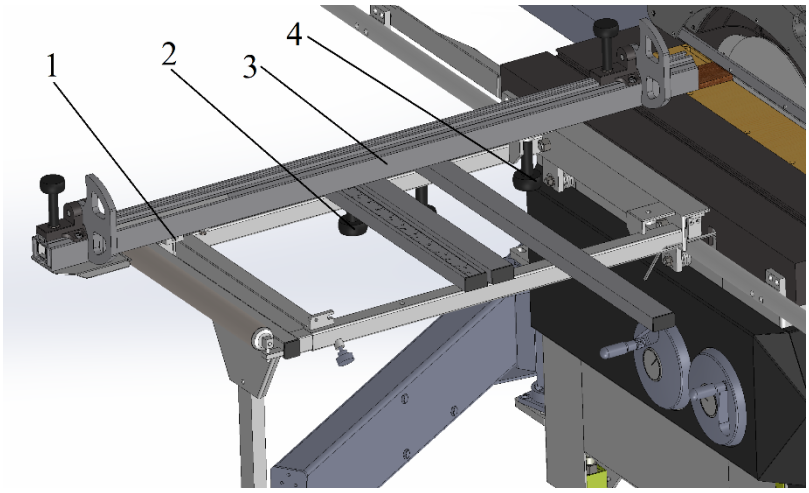
During sawing, the saw blade can be set at an angle of 0º÷45º.
There is a handwheel on the left hand side to adjust the circular saw blade:
- right - tilt,
- left - level.

The tilt of the saw blade is indicated on the inertia indicator.
Adjust only when the main and undercutting saw is stopped.

6.1.4. Adjusting the sawing width at the longitudinal ruler

- Unlock the eccentric clamp with the handle (1).
- Move the longitudinal ruler with the guide rail by reading the corresponding dimension on the scale,
- Block the clamp (1).

The longitudinal ruler has a fine adjustment mechanism (micro adjustment).
To do so, follow the procedure:
- Unlock the eccentric clamp with the handle (1).
- Lock the cube with the handle next to the eccentric clamp (3).
- By turning the other handle, set the exact sawing width (4).
- Lock the eccentric clamp with the handle and unlock the cube (3).

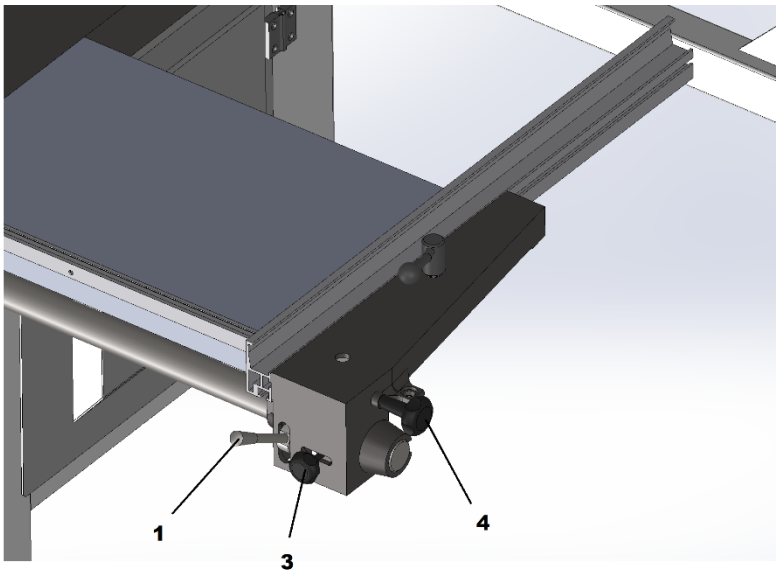


6.1.5. Adjusting the angle of sawing in the horizontal plane by means of the angular ruler placed on the mobile table

- Set the angular ruler in the T-slot of the movable table in the correct position.
- Lock the angular ruler with the handle when the appropriate angle has been adjusted.
- Position the bumper on the angular ruler by locking it with the handle.

6.1.6. Adjusting the sawing angle on the auxiliary table

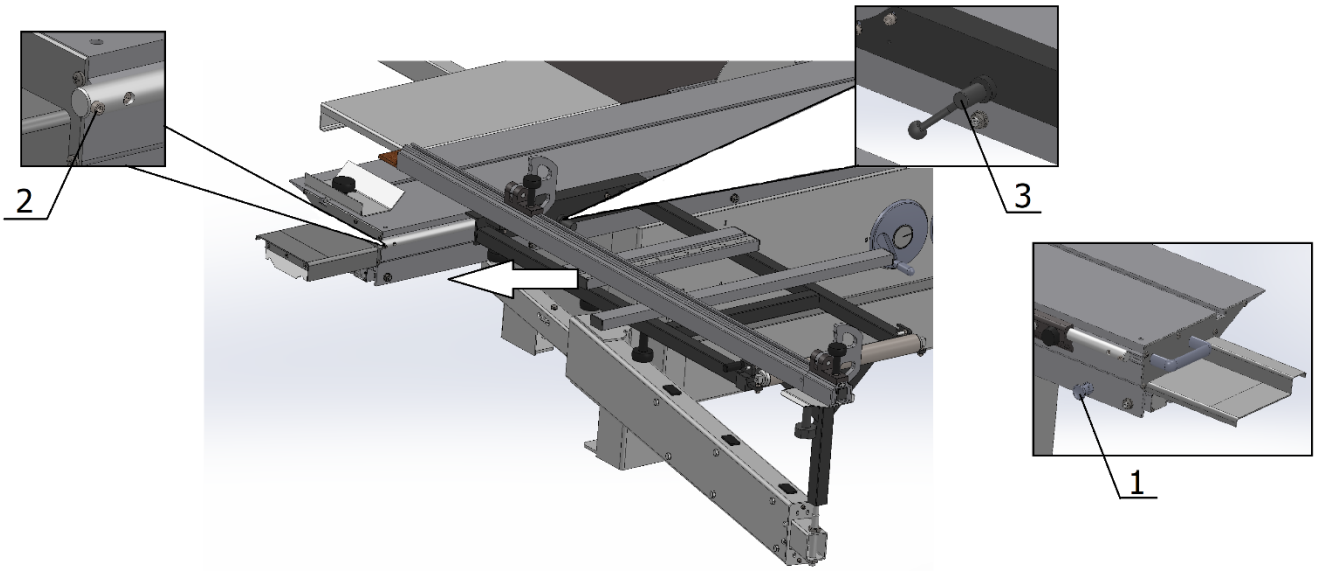
- Loosen the clamp lever (1), (2), (4).
- Set the stop bar (3) at the desired angle by reading the indications according to the scale on the section.
- Lock the clamp lever (4), (2).



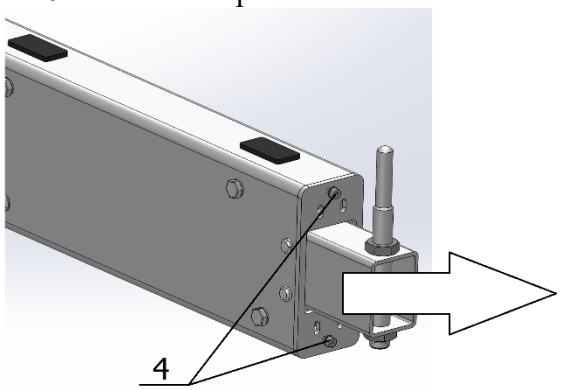
Note: The ruler (3) can be attached at the back or front of the frame of the auxiliary table itself, which changes the length of sawing.

6.1.7. Cleaning the drawbar of the swivel bracket

In case of uneven operation of the movable table, vibrations on the movable table, auxiliary table, clean the drawbar of the swivel bracket. To do so, follow the procedure:
- lock the moving table with the handle "1",
- unscrew the Allen screw "2" at the end of the guide shaft of the auxiliary table,
- loosen the auxiliary table for easy movement of the table “3”,
- remove the auxiliary table from the machine,



- unscrew the two allen screws M6 "4" and then pull out the drawbar of the bracket



- the surface of the drawbar should be cleaned, e.g. washed with e.g. extraction gasoline
- remove the blanking plugs from the bracket "5" and then clean the guide roller surfaces of the drawbar. The guide rollers are located at the top of the bracket and at the bottom.

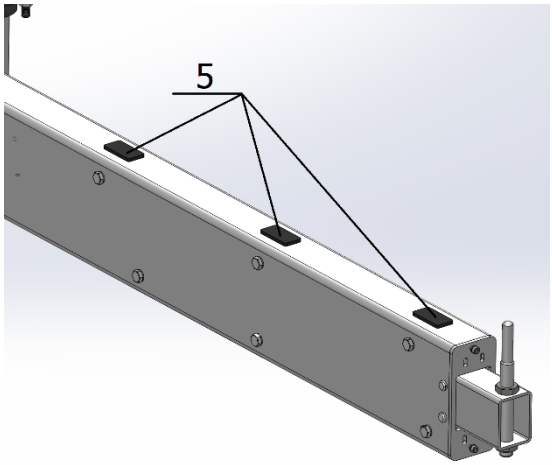


Fig. Auxiliary table guide roller at the front of the body.

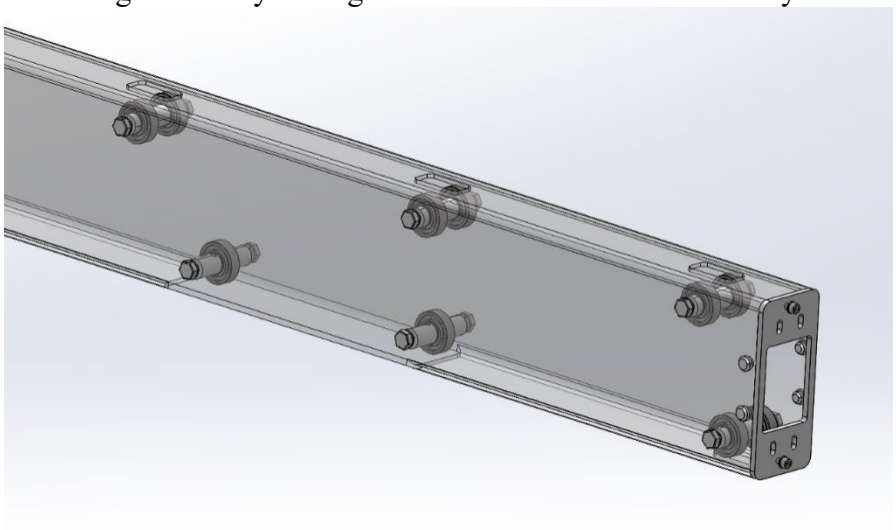
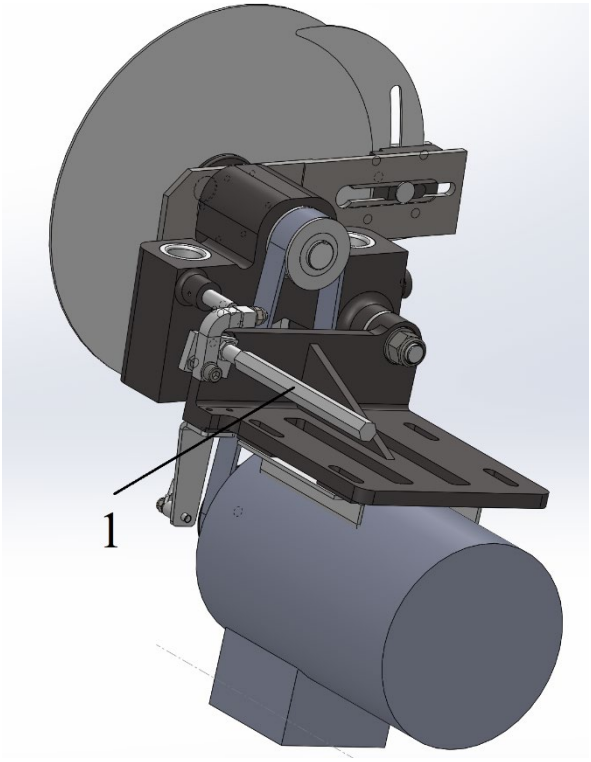


Fig. Auxiliary table guide roller at the front of the body.

- after cleaning the drawbar, assemble the swivel bracket in reverse order and then put on the auxiliary table.

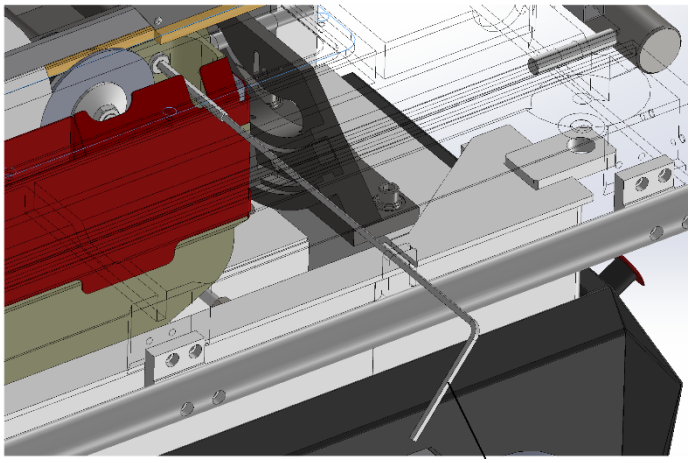
6.1.8. Tensioning and attaching the drive belt

1) Lower the spindle assembly to the lower position,
2) Tilt the spindle assembly to an angle of about 20º,
3) Loosen the drive belt with the lever (1),
4) Attach the drive belt,
5) Move the lever upwards (1),
6) Lift the spindle assembly to the desired position.

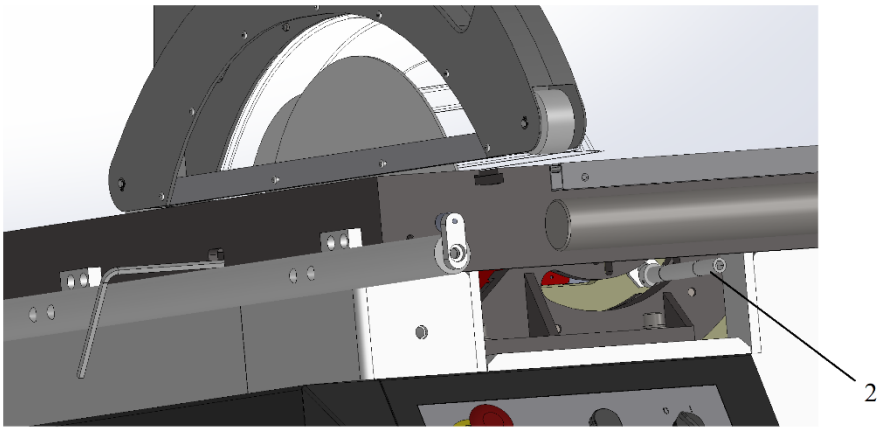


6.1.9. Adjustment of the undercutting spindle

Rollers (1) and (2) are used to adjust the movement of the saw blade of the undercutting spindle in vertical and horizontal direction.



vertical adjustment

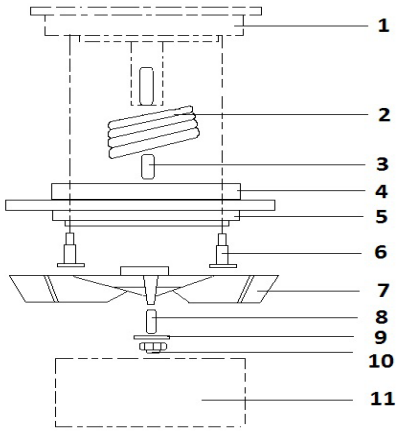


horizontal adjustment

6.1.10. Description of operation and adjustment of the brake

Adjust the brake if you can see that there is no braking. It is done with the main saw blade dismantled. In order to make the adjustment it is necessary to:
- lower the spindle as far down as possible,
- open the rear body cover,
- use socket wrench no. 17 to adjust the brake,
- check if the spindle stops within 10 seconds from the moment of pressing the STOP button, if the adjustment is not made again (the main saw blade must be mounted during the time measurement).

1. rear motor cover
2. spring
3. key
4. electromagnet
5. anchor
6. bolt
7. fan
8. pin
9. washer
10. self-locking nut
11. fan guard



6.2. Work safety information

Before starting work on the saw, make sure that:
- the riving knife is correctly mounted,

It is forbidden to work on a saw without the properly fitted riving knife The top guard must completely cover the part of the saw that protrudes above the sawn material.
It is forbidden to work with a circular saw blade, which:
- is dull and/or has damaged teeth,
- has scratches and/or altered shape and is dirty,
- does not correspond to the size recommended by the manufacturer,
- does not meet the requirements of the PN-EN-847-1 standard,
- It is also forbidden to:

- weld or solder the circular saw blade,
- brake the saw blade by lateral pressure after switching off the drive,
- keep hands within reach of the circular saw blade,
- open the guards before the saw stops and work with open guards and doors,
- machine materials containing foreign objects,

In addition to the above, it is essential to:

- position the longitudinal ruler bar so that no jamming of the sawn material occurs during sawing,
- only remove chips from the table with a long handle brush and only when the saw is switched off,
- when sawing in the hazardous area of the saw, do not move the material by hand, but by means of a pusher which must not be shorter than the distance between the edge of the saw and the edge of the table,
- pay attention to the rotating saw blade of the undercutting spindle when the main saw blade stops,
- fix the tool on the spindle tip in such a way that the direction of the teeth corresponds to the direction of rotation of the spindle,
- before starting work, check that the sawing machine is in good working order, that the tools and guards are securely attached and, if the sawing machine is found to be faulty, cut off its power supply, secure it against being switched on and remove the malfunction,
- do not leave the workstation until the saw blade has been switched off and stopped completely, and the main switch has been turned off and secured against restarting with, for example, a padlock,
- stop and prevent unintentional start-up when carrying out repair, adjustment or maintenance work on the circular saw,
- wear protective clothing that is tightly adhering to the body,
- not to work after consuming intoxicants, e.g. alcohol.

6.3. Troubleshooting Guide

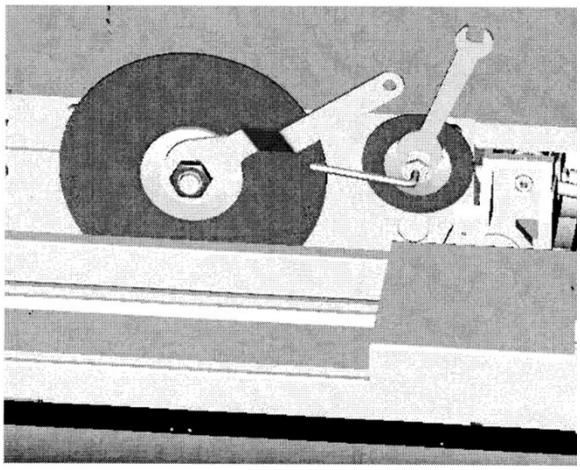
defects and malfunctions	cause	solution
Electromotor: no starting torque, unusual buzzing the direction of rotation is not proper	one phase is missing incorrectly connected phases	check the electrical system (voltage in particular phases) swap two phases in the place of power supply connection
the saw cannot be started	no power supply	check the electrical system check the correct closing of the lower suction nozzle cover
the main saw is running and the undercutting saw not	defective relay -K1T timer or Q4 contactor	replace damaged elements
difficulties in sawing material in a straight line	incorrectly aligned longitudinal ruler in the direction of the workpiece movement	align the ruler parallel or slightly divergent in relation to the saw by adjusting the nuts on the fixing bolts of the guide shaft
during sawing, excessive resistance of the sliding material occurs and the sawn surfaces are streaked	dull saw blade	sharpen the saw blade

6.4. Changing tools

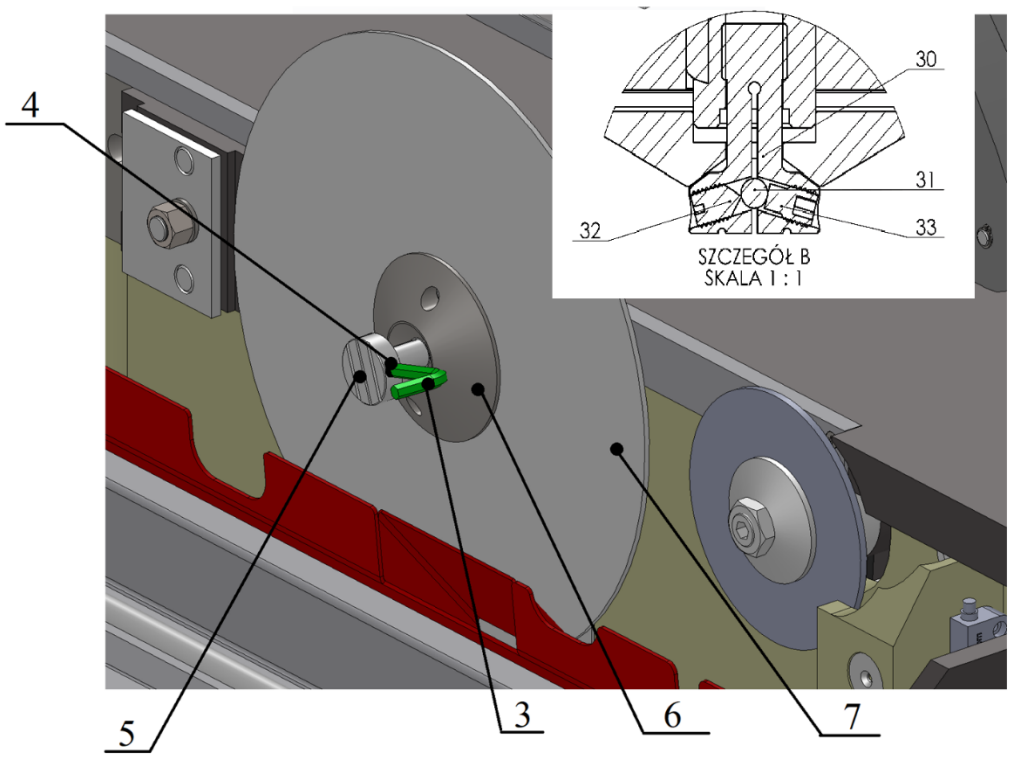
Before changing the tools, turn off the machine with the main switch.

Replacement of the circular saw blade of the main spindle:
- open the cover by removing the table inserts and lock the spindle with a wrench,
- use another wrench to unscrew the locking nut on the clamping flange and the circular saw blade (the left-hand thread),
- remove the clamping flange and the circular saw blade,
- attach a new circular saw blade (paying attention to the direction of teeth tilt and rotation),
- insert the clamping flange and tighten the nut,

Replacement of the circular saw blade of the undercutting spindle:
- use wrench no. 24 to unscrew the locking nut on the clamping flange and. at the same time, with a wrench spanner,
  immobilise the spindle through the hexagon socket at the end of the spindle,
- remove the clamping flange and the circular saw blade,
- attach a new circular saw blade (paying attention to the direction of teeth tilt and rotation),
- insert the clamping flange and tighten the nut, then close the suction nozzle cover,
- install the insert,



Replacing the main spindle saw blade:
- move the movable table (1) back to the extreme position,
- open the nozzle cover (2),
- use the allen key (3) to loosen the set screw (4) (there are two screws on the screw, one from it is protected with paint - this screw can not be loosened / tightened!) in the screw (5) and unscrew the bolt securing the clamping collar and the circular saw,
- remove the clamping collar (6) together with the screw and the circular saw (7) from the spindle,
- put on a new circular saw (pay attention to the direction of teeth inclination and turnover), put on the clamping flange and tighten the screw as far as it will go, tighten the set screw in the screw.



The main saw blade with a diameter of Ø400 is designed to work without the undercutting spindle.

7. MAINTENANCE AND SERVICE

7.1. Maintenance and inspections

To ensure a long service life, your circular saw should be properly maintained in accordance with the following basic principles:

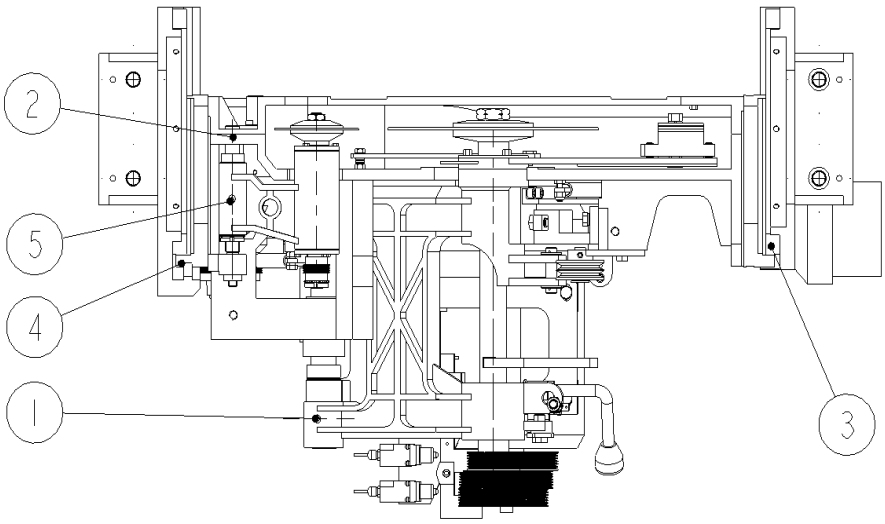
- clean your circular saw carefully every day after finishing work,
- use your saw in accordance with the requirements specified by the manufacturer and in accordance with the general regulations in force,
- the entire sawing machine should be periodically inspected and maintained,
- even the slightest defect or damage to your circular saw should be rectified as soon as it is noticed,
- pay particular attention to the condition of the tool fixing elements,
- if your saw is to be parked for a long period of time, you should carefully clean and maintain it after a thorough inspection.

7.2. Lubrication instructions

The following lubrication points are for an 8-hour working day on the saw.

lubrication point no.	lubrication area	lubricant type	lubrication interval
1	suspension of the main spindle body	machine oil	once per month
3, 4	spindle tilting arcs		every 8 hours by spreading lubricant on the surface of the guides

When lubricating the lubrication point no. 5, tilt the saw spindle to an angle of 45º.



7.3. Repairs and overhaul cycles

Planned repairs and overhauls should be carried out according to the following cycle:

KBBPBPSPBPBPK

Where:
P- periodic inspection
B - routine overhaul
S - medium-level overhaul
K - major overhaul
Frequency of carrying out particular types of overhaul:

Major overhaul	14000 M/H
Medium-level overhaul	7000 M/H
Routine overhaul	2600 M/H
Periodic inspection	1300 M/H

If any abnormalities are observed in the kinematic system, they should be rectified immediately.

8. MAINTENANCE SCHEDULES

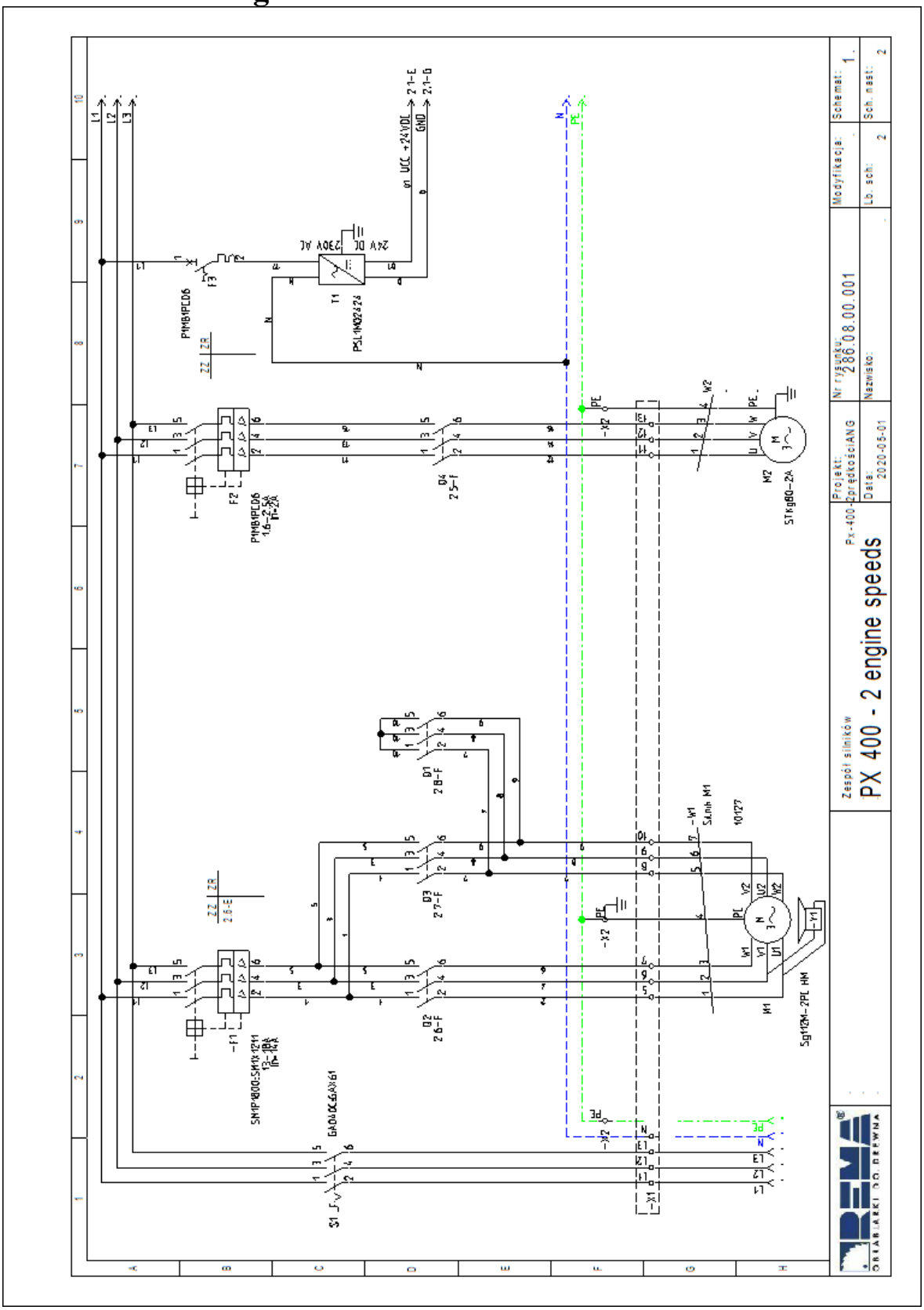
8.1. List of roller bearings

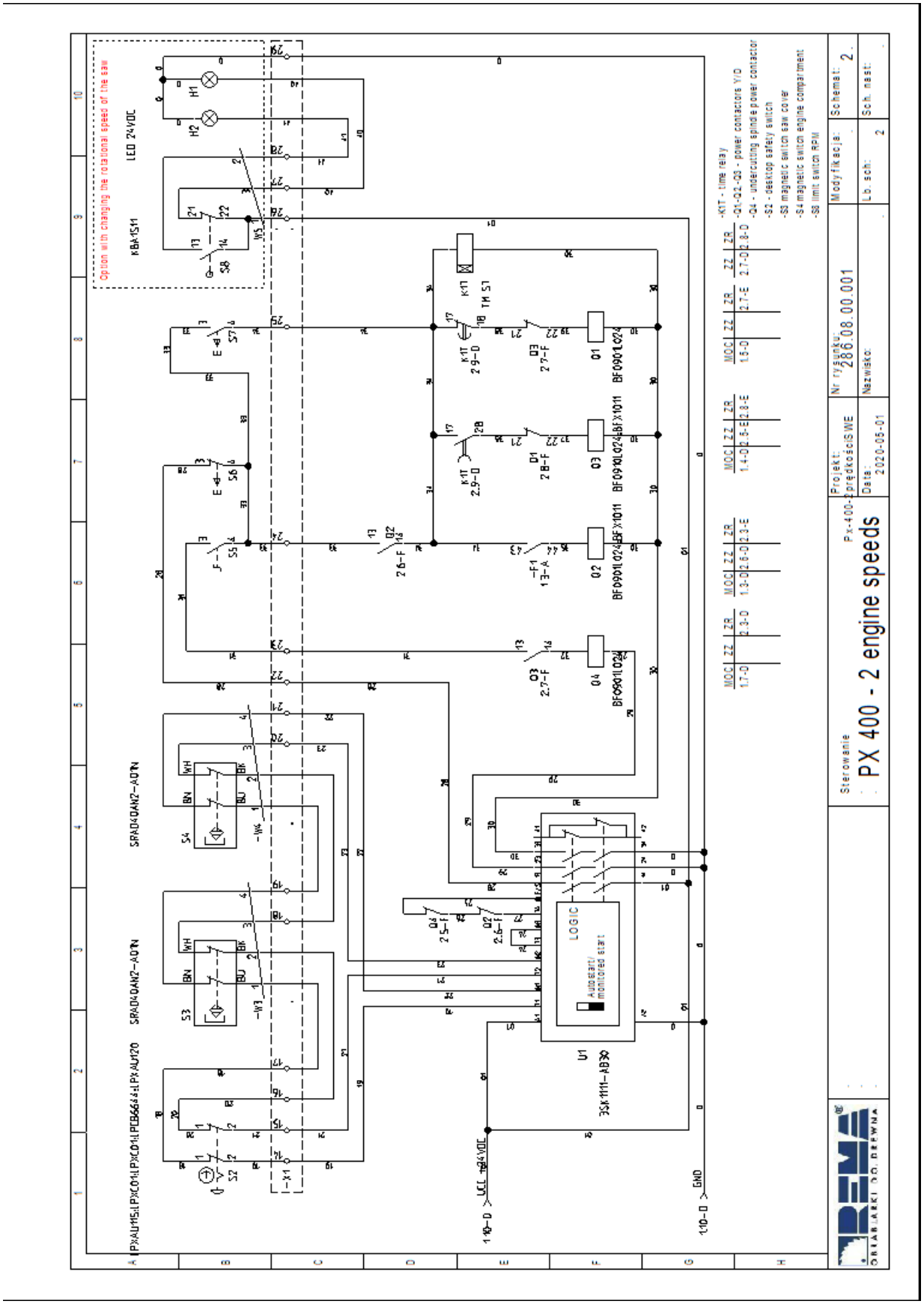
assembly	type of bearing	item no.	dimension	quantity
spindle	ball bearing	6206 2RS P66	Ø62/30x16	2
lifting and tilting of the spindle	ball bearing	6007RS	Ø62/35x14	4
auxiliary table assembly	ball bearing	6202 RS	Ø15/35x11	4
auxiliary table assembly	ball bearing	KLR-Z 12.41.16.2RS-KD-6201		1
fixed table	ball bearing	6000 2Z	Ø26/10x8	1
top guard	linear bearing	KH228 PP		4

8.2. List of components of electrical system

assembly	belt type	quantity
Main spindle belt	toothed belt 8M-30 L=856	1
Undercutting spindle belt	multiribbed belt V4PJ L-660	1

8.3. Electrical diagram




Option with changing the rotational speed of the saw
LED 24VDC
KBA-1511
SRADKOANZ-ADTN
SRADKOANZ-ADTN
LOGIC
Automatic/
monitored start
3SK1111-1AB30
Sterowanie
PX 400 - 2 engine speeds
Px-400-
Projekt:
prędkościSWE
Data:
2020-05-01
Nr rysunku:
286.08.00.001
Nazwisko:
Modyfikacja:
Lb. sch:
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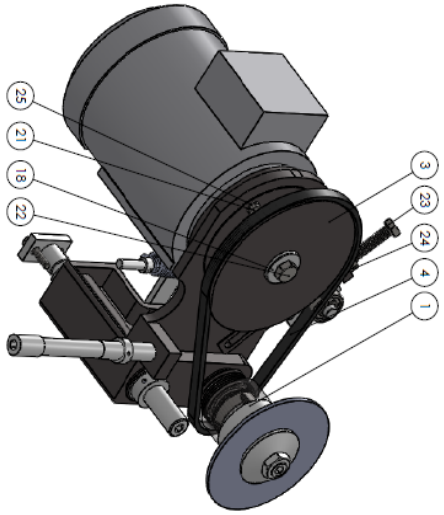
Schemat:
2.
Sch. nast:
-K1T - time relay
-Q1-Q2-Q3 - power contactors Y/D
-Q4 - undercutting spinde power contactor
-S2 - deskstop safety switch
-S3 - magnetic switch saw cover
-S4 - magnetic switch engine compartment
-S8 - limit switch RPM
LCL +24VDC
GND

8.4. Parts list with drawings

The list of parts with drawings is intended for users, maintenance, workshop, supply and inspection personnel of machine tool operators. It contains a list of machine tool parts with exploded drawings of individual assemblies.
The following lists are drawn up in the form of tables. Details included in the list can be made on the basis of a bilateral agreement between the manufacturer and the customer.

When putting an order, the user is obliged to specify:
- the type and serial number of the machine tool,
- the name and part number acc. to the list,
- quantity needed

257.10.00.000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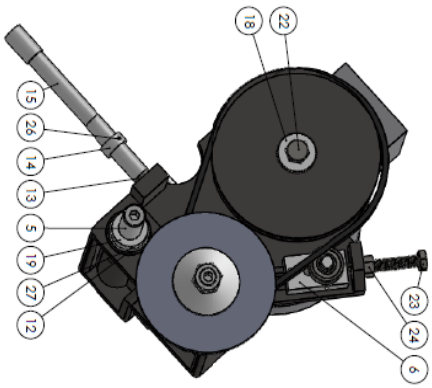
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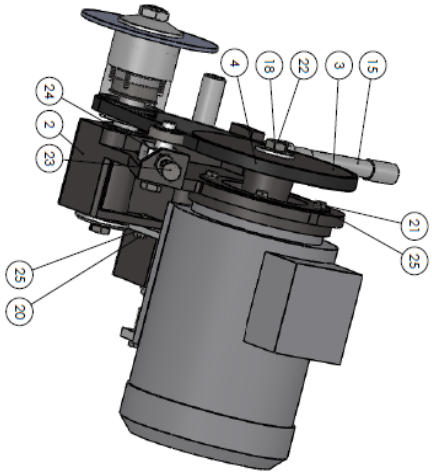
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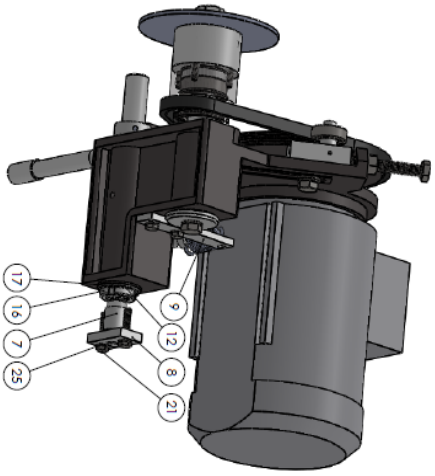
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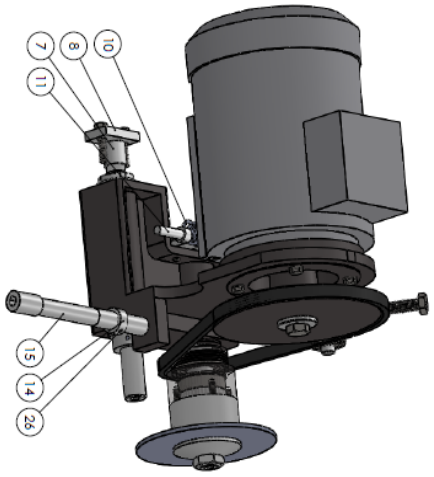
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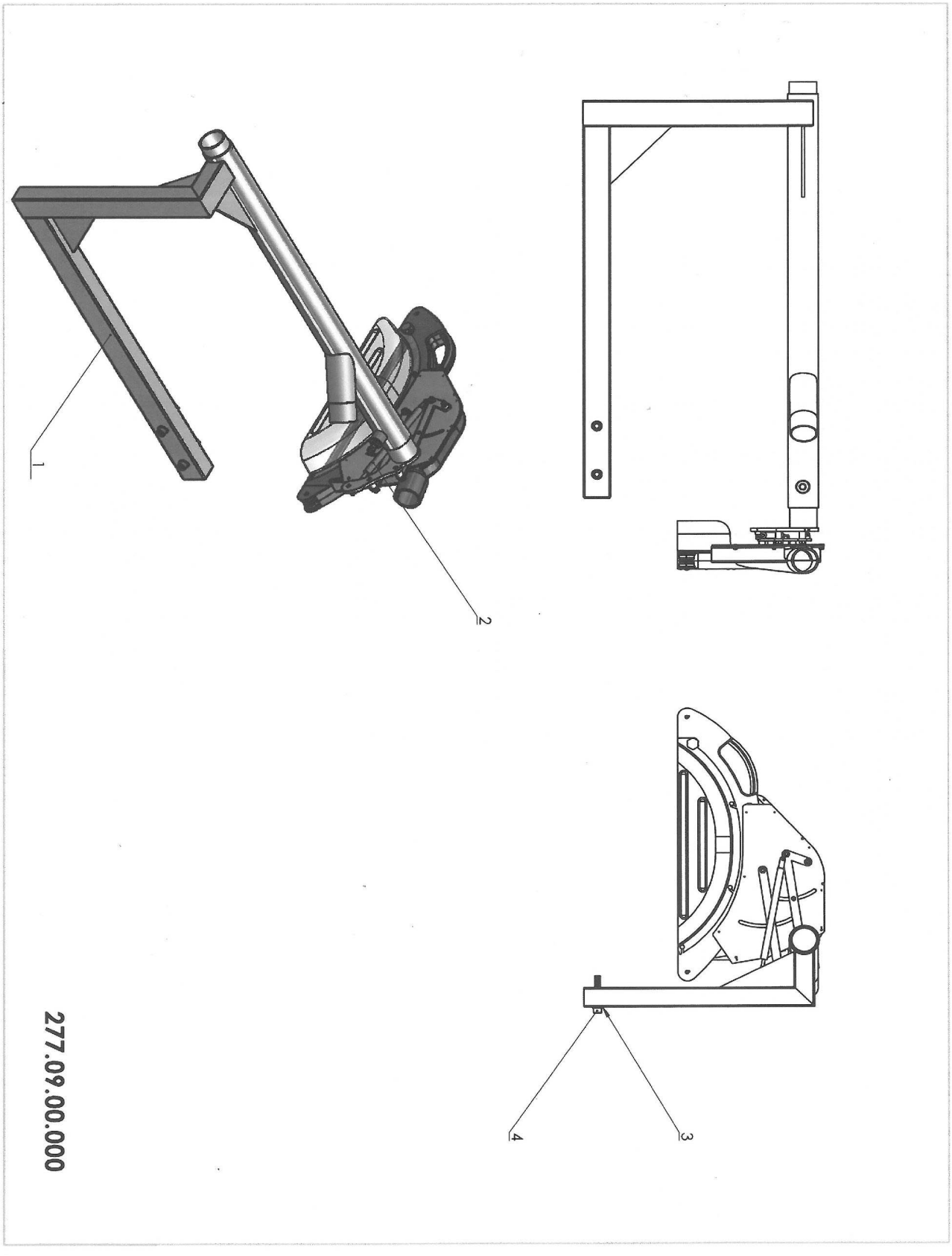
Poz.	Nr częścilubnormy.	Ilość sztuk.	Wymiar.	Uwagi.
Item	Drawing or standard no.	Quantity.	Dimension.	Notes.
Pos.	Zeichnunges-oder Norm-Nr.	Stückzahl.	Ausmaβ.	Bemerkungen.
1	2	3	4	5
1.	257.10.01.000	1		
2.	257.10.00.002	1		
3.	257.10.00.003	1		
4.	Micro - V4PJ 660	1		
5.	257.10.00.005	1		
6.	257.10.06.000	1		
7.	257.10.00.007	1		
8.	257.10.00.008	1		
9.	257.10.00.009	1		
10.	RUS-001	1	A-2.5x21x52	
11.	257.10.00.011	1		
12.	257.10.00.012	2		
13.	174.07.00.011-1	1		
14.	257.10.00.014	1		
15.	257.10.00.015	1		
16.	PN/M-86478	1	KM4	
17.	PN/M-86482	1	MB4	
18.	257.10.00.018	1		
19.	PN/M-85104	1		
20.	PN/M-82105	2	M6x16	
21.	PN/M-82105	6	M6x30	
22.	PN/M-82105	1	M12 LHx20	
23.	PN/M-82105	1	M10x65	
24.	PN/M-82144	1	M10	
25.	PN/M-82008	8	6	
26.	PN/M-85023	1	3x20	
27.	PN/M-85023	1	4x30	



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Poz.	Nr częścilubnormy.	Ilość sztuk.	Wymiar.	Uwagi.
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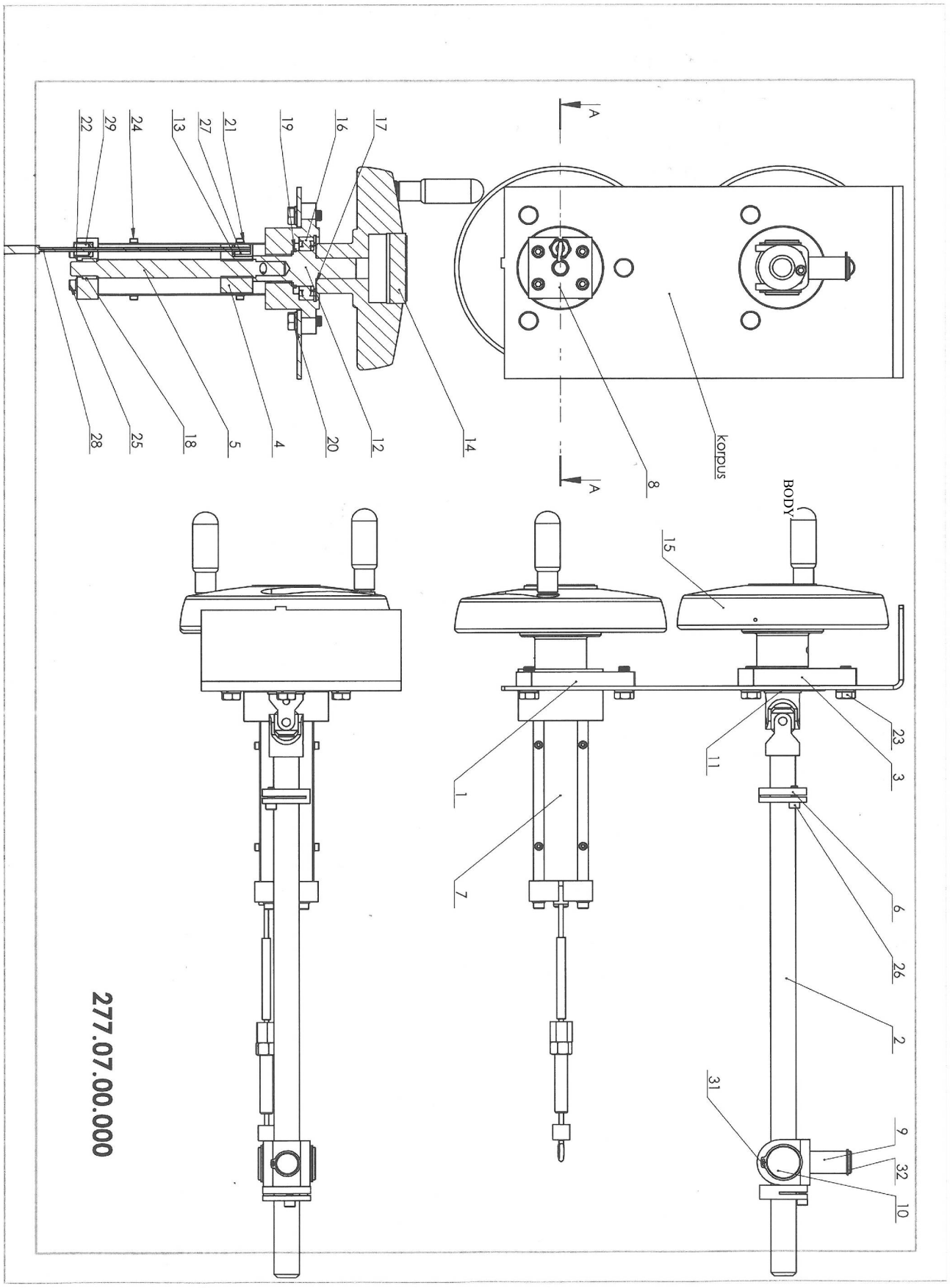
Pos.	Zeichnunges-oder Norm-Nr.	Stückzahl.	Ausmaβ.	Bemerkungen.
1	2	3	4	5
1.	277.09.01.000	1		
2.	245.09.16.000	1		
3.	PN/M-82005	2	17	
4.	PN/M-82302	2	M16x100	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Poz.	Nr częścilubnormy.	Ilość	Wymiar.	Uwagi.
Item	Drawing or standard no.	Quantity	Dimension.	Notes.
Pos.	Zeichnunges-oder Norm-Nr.	Stückzahl.	Ausmaβ.	Bemerkungen.
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2.	257.07.00.016	1		
3.	257.07.00.002	1		
4.	277.07.00.003	1		
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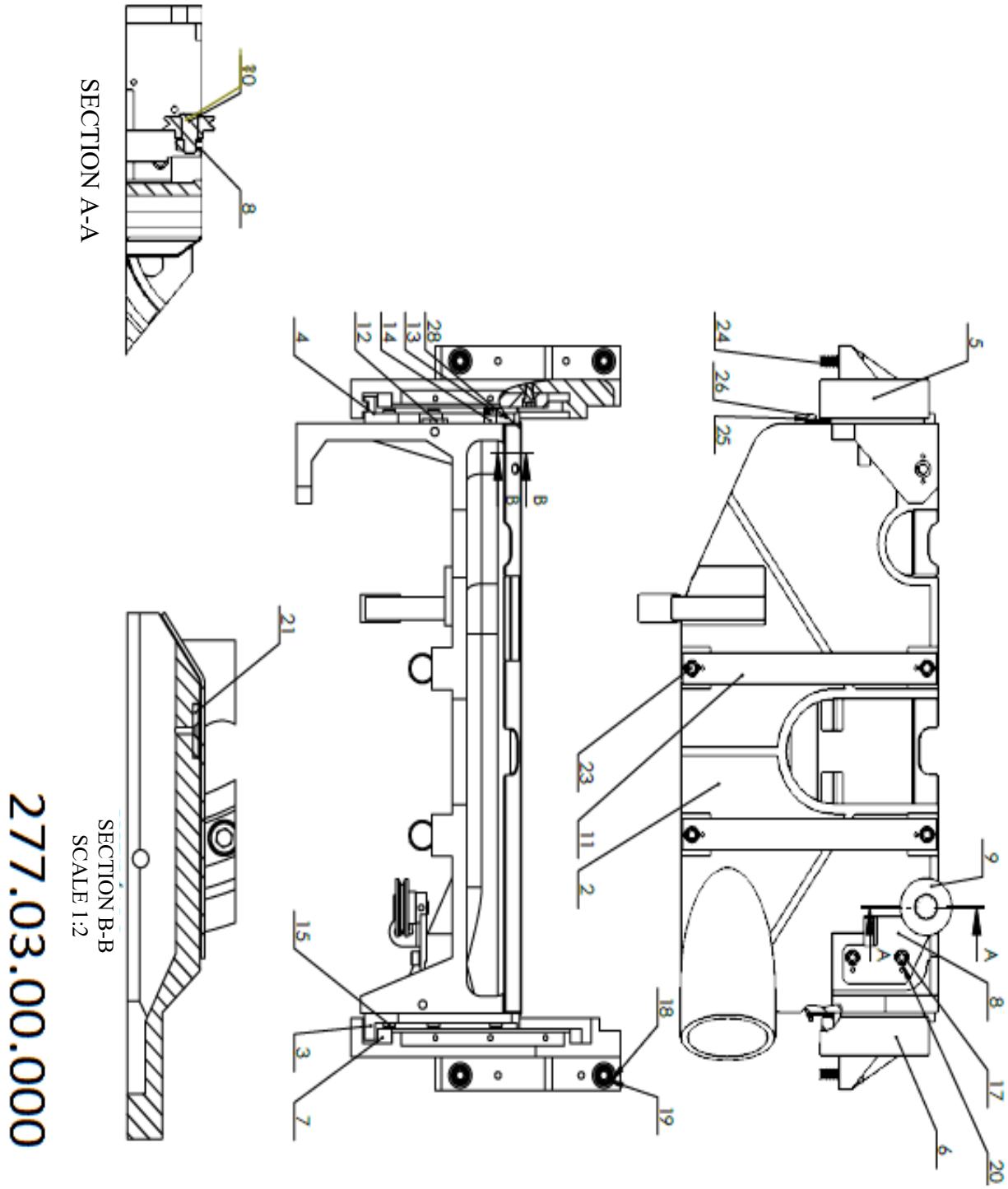
7.	257.07.00.006	2		
8.	257.07.00.007	1		
9.	277.07.00.008	1		
10.	257.07.00.009	1		
11.	257.07.00.030	1		
12.	257.07.00.011	1		
13.	257.07.00.012	1		
14.	Gravity indicator	2	GA 12-SPEC	
15.	245.14.01.002	2		
16.	Bearing	2	6007	
17.	PN/M-85111	2	W 62x2	
18.	A14/20x14	1		
19.	PN/M-85111	2	Z 35x1.5	
20.	PN/M-82008	6	10	
21.	PN/M-82008	8	4	
22.	PN/M-82008	4	6	
23.	PN/M-82105	6	M10x25	
24.	PN/M-82302	8	M4x12	
25.	PN/M-82302	4	M6x12	
26.	PN/M-82302	2	M6x16	
27.	257.07.00.013	1		
28.	257.07.03.000	1		
29.	123.03.05.001	1		
30.	245.14.02.003	1		
31.	PN/M-85111	2	Z 32x1.5	
32.	PN/M-85111	1	Z22x1.2	


SECTION A-A
SECTION B-B
SCALE 1:2
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Poz. Item Pos.	Nr częścilubnormy. Drawing or standard no. Zeichnunges-oder Norm-Nr.	Ilość Quantity Stückzahl.	Wymiar. Dimension. Ausmaβ.	Uwagi. Notes. Bemerkungen.
1	2	3	4	5
1.	258.03.01.000	1		
2.	277.03.00.001	1		
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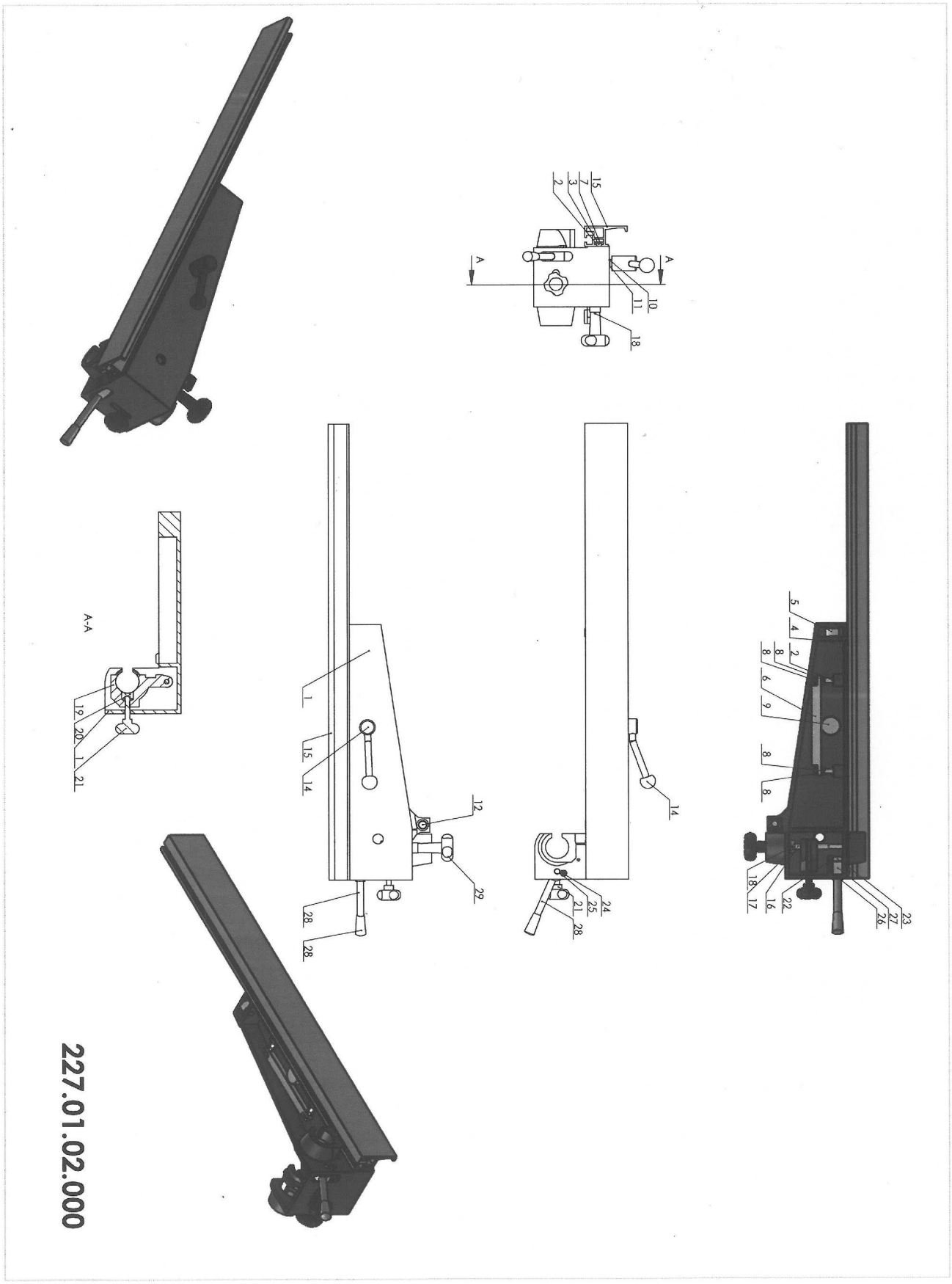
5.	257.03.00.004	1		
6.	257.03.00.005	1		
7.	257.03.00.006	2		
8.	174.03.00.022	1		
9.	257.03.00.010	1		
10.	128.03.00.012	1		
11.	257.03.00.012	2		
12.	257.03.00.013	1		
13.	Magnetic switch	1	XCSDMC	
14.	246.03.00.032	1		
15.	PN/M-82302	6	M10x25	
16.	PN/M-82302	4	M10x20	
17.	PN/M-82302	2	M10x30	
18.	PN/M-82005	4	13.5	
19.	PN/M-82008	4	12.2	
20.	PN/M-82008	2	10	
21.	Magnet	2	MP 25x7.5/4.5x3	
22.				
23.	PN/M-82302	4	M12x35	
24.	PN/M-82302	4	M12x45	
25.	PN/M-82008	2	6	
26.	PN/M-82302	2	M6x10	
27.	PN/M-82202	2	M3x8	
28.	PN/M-82202	2	M3x20	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Poz.	Nr częścilubnormy.	Ilość.	Wymiar.	Uwagi.
Item	Drawing or standard no.	Quantity.	Dimension.	Notes.
Pos.	Zeichnunges-oder Norm-Nr.	Stückzahl.	Ausmaβ.	Bemerkungen.
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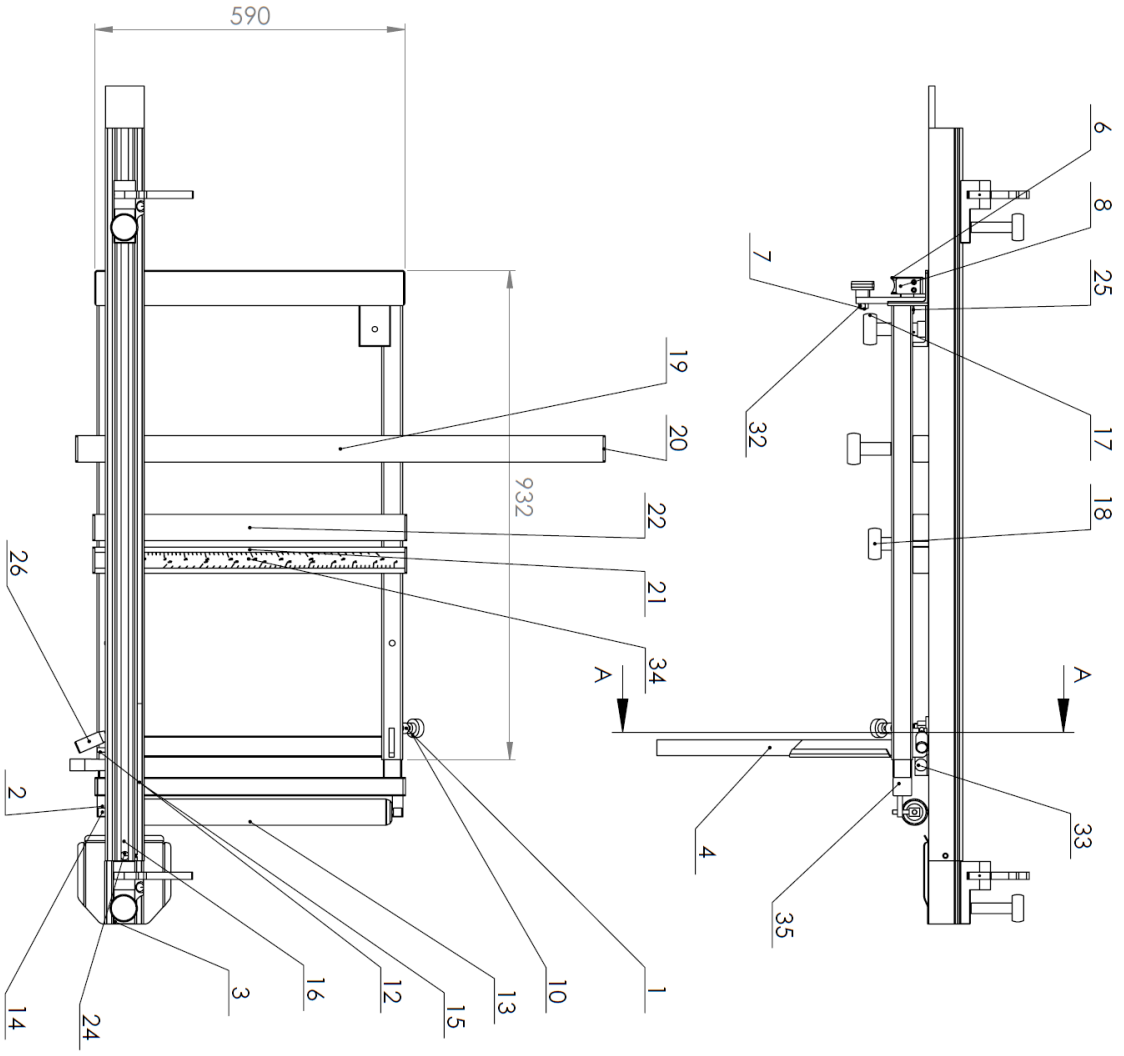
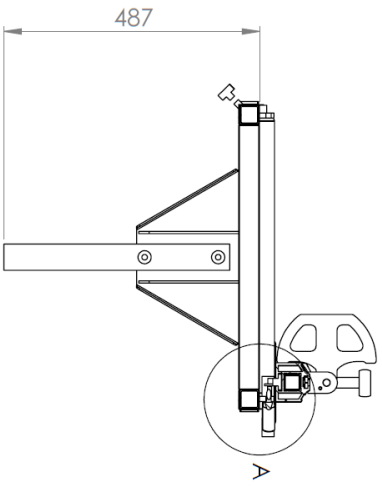
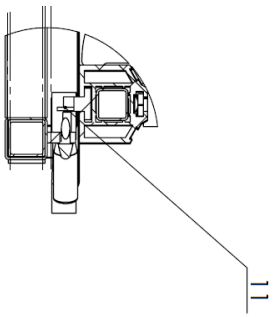
1.	227.40.00.001	1		
2.	123.01.20.000	1		
3.	123.01.00.057	2		
4.	093.01.00.034	1		
5.	227.01.00.041	1		
6.	128.01.00.018	1		
7.	123.01.00.019	1		
8.	123.01.00.056	1		
9.	123.01.00.009	1	L=1000	
10.	227.01.00.034	1		
11.	227.01.00.011	1		
12.	123.01.00.012	1		
13.	227.01.00.013	1		
14.	128.01.00.030	1		
15.	128.01.00.033	1		
16.	Eyelet	1	Ø 16	
17.	Grip	1	6.512.47	M10 H-145
18.	Konb	1	G734-60T60	M10
19.	Grip	1	6.512.47	M10 L-50
20.	Connection lever	1	16H7	
21.	Ball latch	1	GN 615-M8-K	
22.	PN/M-85104	1	10	
23.	PN/M-82021	1	6n6x40	
24.	PN/M-82105	2	M5x16	
25.	PN/M-82153	1	M8	
26.	PN/M-82144	4	M8	
27.	PN/M-85111	1		
28.	PN/M-85023	1	Ø 4x30	
29.	PN/M-85023	2	Ø 3x20	
30.	Glue Loctite 243			





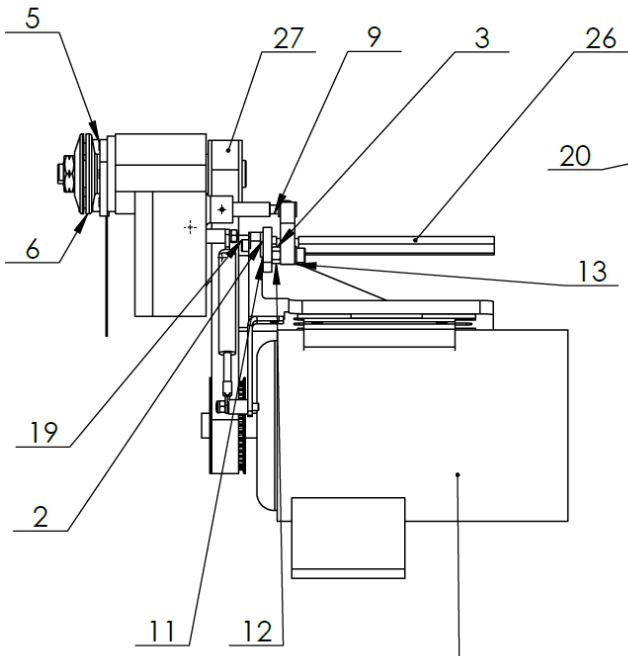
A-A
SKALA 1 : 10

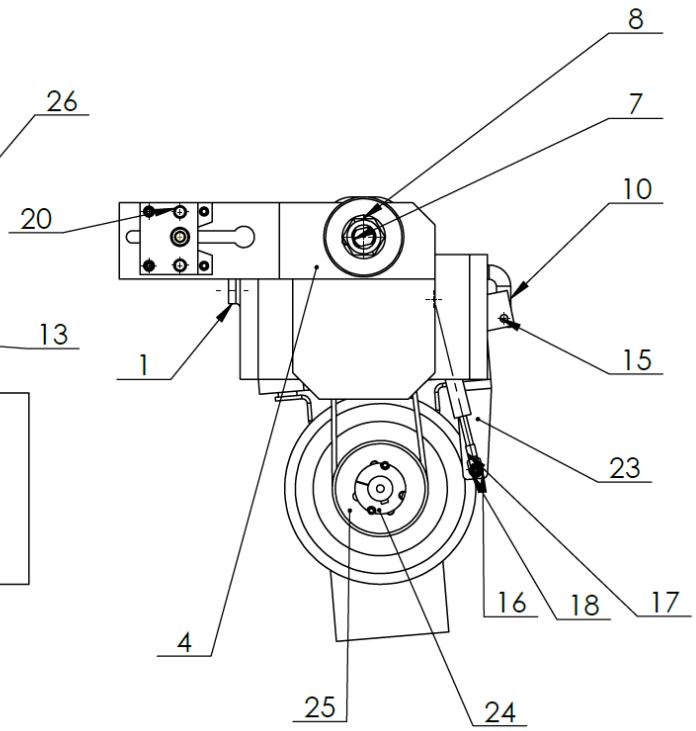


SZCZEGÓŁ A
SKALA 1 : 5

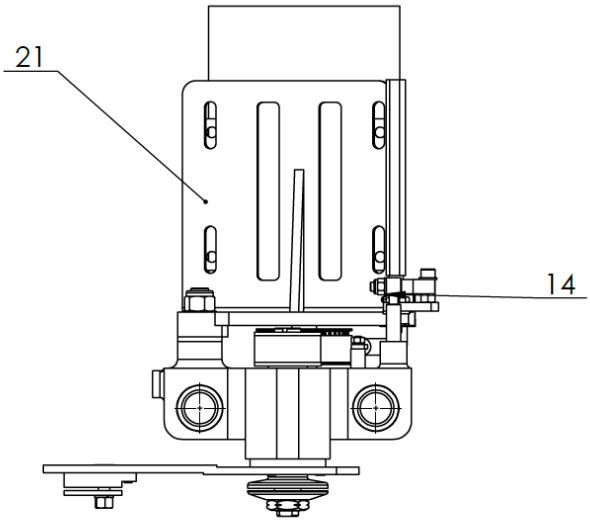
No. 286.05.00.000

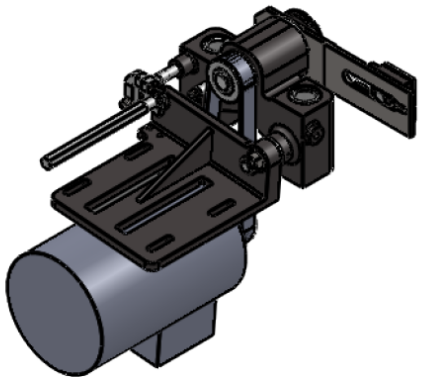
Poz.	Nr częścilubnormy.	Ilość.	Wymiar.	Uwagi.
Item	Drawing or standard no.	Quantity.	Dimension.	Notes.
Pos.	Zeichnunges-oder Norm-Nr.	Stückzahl.	Ausmaβ.	Bemerkungen.
1	2	3	4	5
1.	286.05.01.000	1		
2.	286.05.02.000	1		
3.	286.05.03.000	1		
4.	195.05.43.000	1		
5.	128.05.00.056	2		
6.	128.05.00.055	2		
7.	128.05.00.016	2		
8.	RUR 024	2		
9.	228.05.00.054	2		
10.	M-0879000220	1	M8x38	
11.	257.05.00.05	1		
12.	PIN	1	M8x45	
13.	M-1029710010	1		
14.	257.05.00.006	2		
15.	RICHTER	1		
16.	RICHTER	1		
17.	G734-60T80M106.0056	1		
18.	G735-60T60M106.0056	2		
19.	257.05.00.009	1		
20.	M-1115297073	6	50x30	
21.	257.05.00.010	1		
22.	257.05.00.011	1		
23.	257.05.00.004	1		
24.	RICHTER 16	1	M-271990106	
25.	PN/M-82144	2	M-0879000284	
26.	M8 6.0121.06.008	1	15x35x11	
27.	6202 M-0631110457	4	W35x1.5	
28.	PN/M-85111	4	Z12x1	
29.	093.44.34.000	2	11	
30.	PN/M-85111	2	M10	
31.	PN/M-82005	2		
32.	PN/M-82144	2		
33.	227.05.21.000	1		
34.	286.05.00.014	1		
35.	BK19.00480350352550	2		





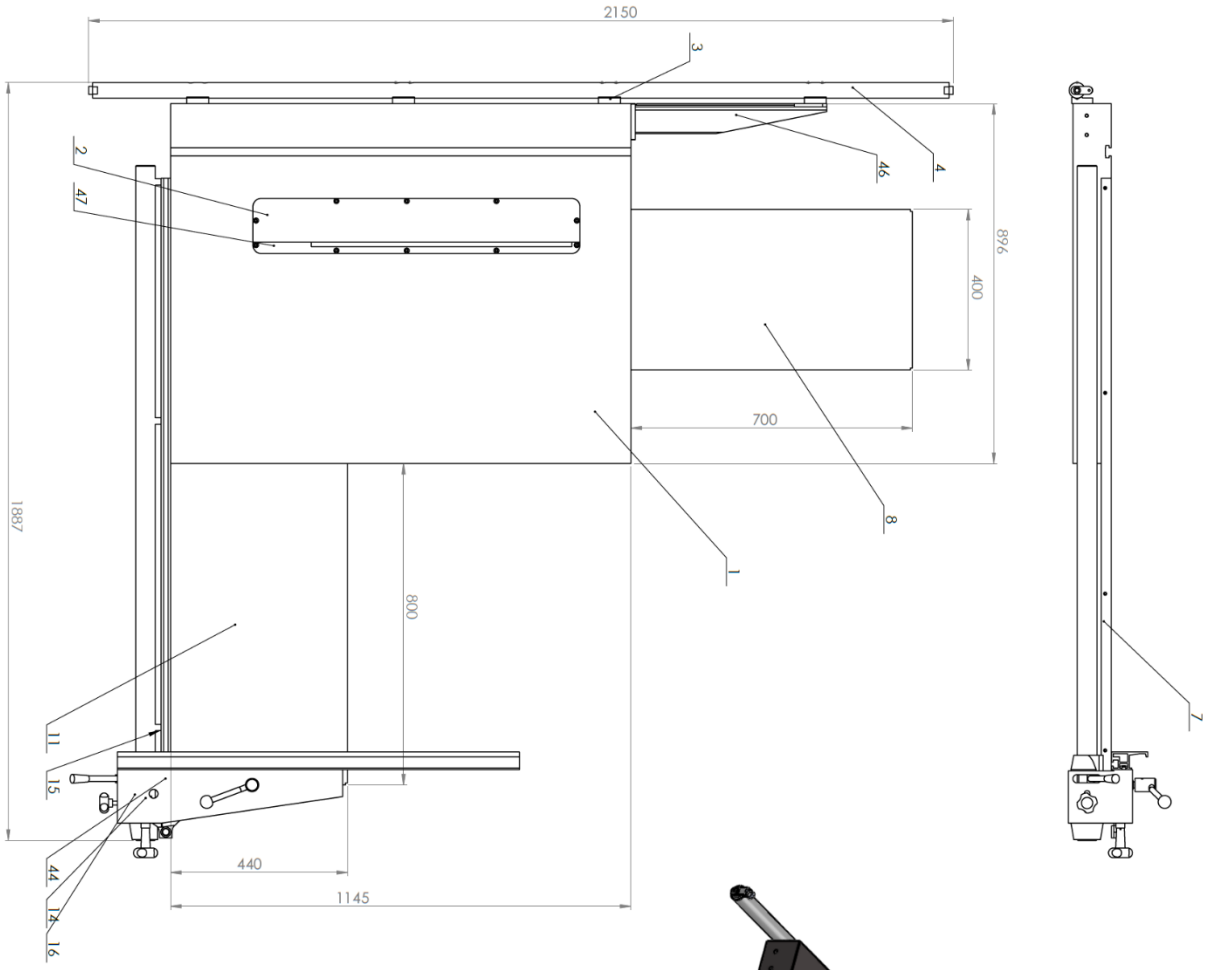
The ENGINE is in the electric system





No. 286.06.00.000

Poz.	Nr częścilubnormy.	Ilość.	Wymiar.	Uwagi.
Item	Drawing or standard no.	Quantity.	Dimension.	Notes.
Pos.	Zeichnunges-oder Norm-Nr.	Stückzahl.	Ausmaβ.	Bemerkungen.
1	2	3	4	5
1.	286.06.01.000	1		
2.	PN/M-82005	1	22	
3.	PN/M-82175	1	M20	
4.	257.06.05.000	1		
5.	PN/M-82302	3	M6x16	
6.	257.06.00.010	1		
7.	277.06.00.010	1		
8.	277.06.04.000	1		
9.	257.06.00.005	1		
10.	257.06.00.001	1		
11.	257.06.00.002	1	17.5	
12.	PN/M-82005	1	M10	
13.	PN/M-82144	3	11	
14.	PN/M-82005	1	M10	
15.	PN/M-82175	1	M10x35	
16.	PN/M-82302	2		
17.	257.06.00.004	1	F=130N	
18.	GAS SPRING	2	M8	
19.	PN/M-82175	1	M8x16	
20.	PN/M-82302	1		
21.	257.06.08.000			
22.	257.16.02.003	1		
23.		1		
24.	257.16.02.005	1		
25.	1615-028	1		
26.	40-8M-30	1		
27.	286.06.02.000	1		
28.	8M-30-856	1		
29.	SPRING HANDLE	1		


2150
3
46
4
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8
1
1887
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44
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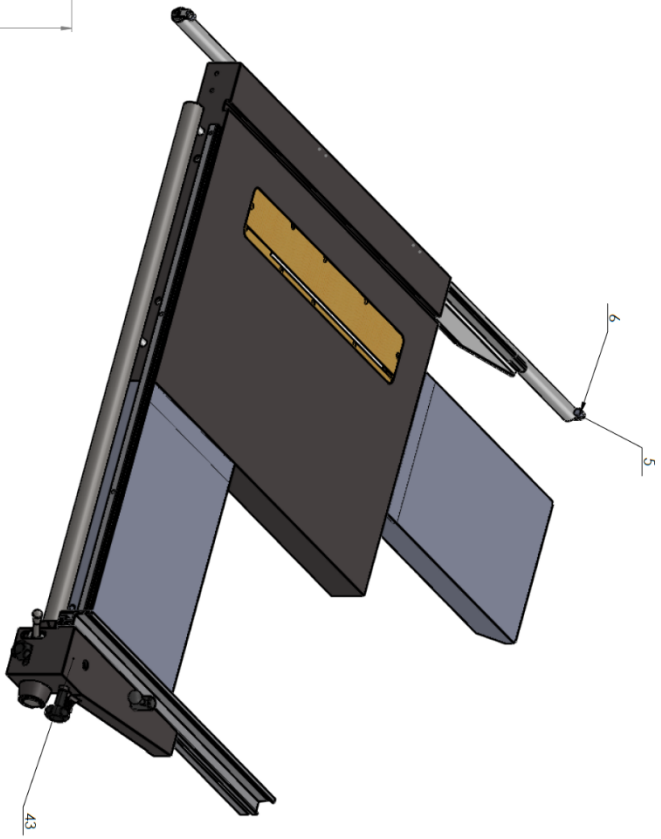
440
1145
7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43

No. 286.01.00.000

Poz.	Nr częścilubnormy.	Ilość.	Wymiar.	Uwagi.
Item	Drawing or standard no.	Quantity.	Dimension.	Notes.
Pos.	Zeichnunges-oder Norm-Nr.	Stückzahl.	Ausmaβ.	Bemerkungen.
1	2	3	4	5
1.	286.01.00.002	1		
2.	286.01.00.004	1		
3.	128.05.00.007	4		
4.	128.05.00.009	1		
5.	128.05.00.060	2		
6.	KAPA	2	18x11 M6	
7.	257.01.00.017	1		
8.	227.01.06.000	1		
9.	227.01.26.000	1		
10.	243.01.00.003a	1		
11.	123.01.00.023	3		
12.	227.01.02.000	1		
13.	257.01.00.018	1		
14.	257.01.00.007	1		
15.	286.01.01.000	1		
16.	286.01.00.003	1		

OHS WORKSTATION INSTRUCTIONS

1. Before using the **MS500** circular saw, please read the operating and assembly instructions.

2. The circular saw should be used according to its intended purpose.

3. All works related to electrical equipment, i.e. connection, failures, repairs, should be performed by a person with appropriate qualifications.

4. Before each start-up check whether:
- all covers and protective guards are in good working order and properly fixed,
- the riving knife is correctly fitted and matched to the circular saw blade,
- the circular saw blade is securely and correctly mounted,
- the support bar of the auxiliary table and the longitudinal ruler is locked,
- the auxiliary table is locked on the guide of the mobile table.

5. When sawing, be careful in the vicinity of the circular saw zone. Special attention should be paid to the circular saw blade of the undercutting spindle, which braking time is longer than the braking time of the main saw blade.

6. Use pusher to move the material close to the circular saw area.

7. All work on attaching and changing circular saw blades, troubleshooting and minor repairs should be carried out with the saw switched off (main switch in position "0") and disconnected from the power supply.

8. After the work has been completed, turn off the power of your saw, clean the material and prevent the machine from being accidentally started.

CE Declaration of Conformity

"REMA" S.A.
11-440 Reszel ul. Bolesława Chrobrego 5

hereby declares with full responsibility, that the machine:

Machine name: **CIRCULAR SAW**

Type: MS500 Serial number ..... Year of manufacture.....,

as detailed in this declaration fulfils the requirements of:

- European directives: 2006/42/EC (Machine Directive) / of 17 May 2006: LVD 2014/35/EU (Low Voltage Directive) / 2014/30/EU (Electromagnetic Compatibility Directive).
- Regulation of the Minister of Economy of October 21, 2008. on essential requirements for machines and safety components (Journal of Laws No. 199, item 1228), and the Regulation of the Minister of Development of June 2, 2016. on the requirements for electrical equipment (Journal of Laws of 2016, item 806),
  The Act of April 13, 2007 on electromagnetic compatibility (Journal of Laws No. 82 item 356).
  Regulation of the Minister of Transport and Construction of 27 December 2005 on conformity assessment of apparatus with the essential requirements for electromagnetic compatibility and the manner of its marking (Journal of Laws No. 265 item 2227).
- National standards: PN-EN ISO 19085-5:2017-12, PN-EN 60204-1:2018-12,PN-EN50370-1:2007, PN-EN50370-2:2005, PN-EN ISO 13857:2020-03, PN-EN ISO 12100-1:2012

and is in accordance with the technical documentation kept by:

REMA S.A
11-440 RESZEL
ul. Bolesława Chrobrego 5

Person responsible for preparation of the documentation:
Tomasz Pikała Święta Lipka 6/2 11-440 Reszel

Reszel.....

full name: **inż. Tomasz Pikała**
title: **Manager of Technical Department**

.....
signature