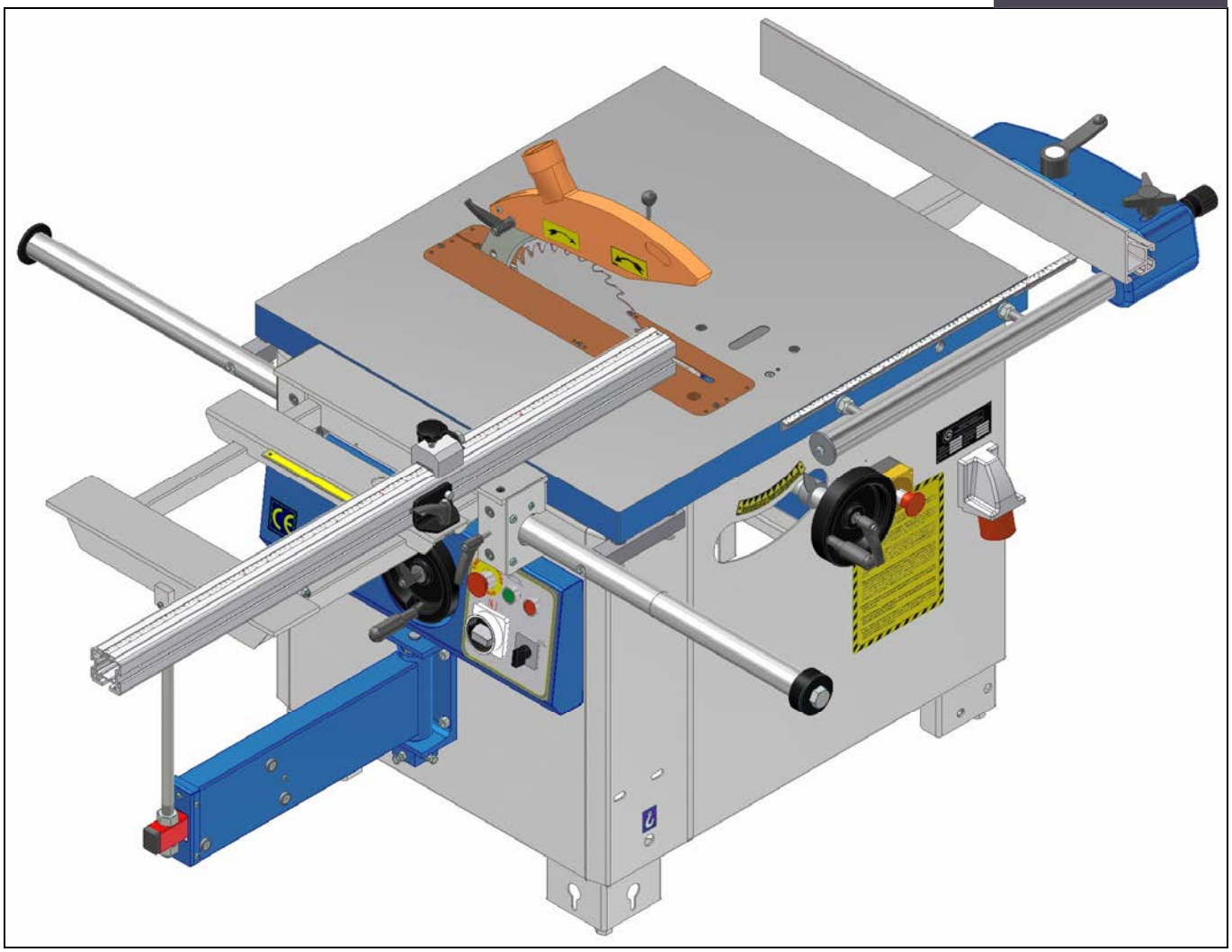
MACHINE : CIRCULAR SAW
TYPE: STA 315
OPERATION MANUAL

ZMM "STOMANA" JSC - SILISTRA



STA 315

OPERATION MANUAL

ATTENTION:	Before commissioning it is necessary to get acquainted with all the instructions of this manual. The manufacturer is not responsible for damages caused due to improper operation of the machine or amendments in the design.

TO OUR CUSTOMERS

This manual contains all the instructions required for the faultless operation of the machine and its respective maintenance, as well.

Thus, during the warranty period, you will receive for free all components that have presented eventual defects.

The producer is always at your disposal for resolving of problems that machine operators may encounter during operation, and for delivery of spare parts, too.

Your recommendations related to this manual are valuable contribution to the improvement of the products offered by ZMM “Stomana” JSC to its customers.

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CONTENTS

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SECTION A: GENERAL DATA

A.1. MANUFACTURER

ZMM "STOMANA" JSC , SILISTRA, BULGARIA

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A.2. INTRODUCTION

The present manual is designed for those who will operate the machine. You will find in it the necessary data for assembly, commissioning, maintenance and safety operation of the machine. The experience of the company manufacturer and its experts in considered in the preparation of this manual.

We recommend you to consider with responsibility our recommendations concerning the safety of work. The operations requiring disassembly of machine and electrical components should be performed by authorized and qualified personnel only. Repairs and settings not described in the present manual should not be performed. This manual is prepared by the manufacturer and is an integral part of the machine's delivery. The information contained herein is intended for specialists and is compulsory.

The manual defines the machine's field of application and contains all the information necessary for its proper and safety operation.

The permanent and exact observation of the instructions contained in this manual ensure safety of personnel and machine, profitable work as well as long life of the machine itself.

For better clarity this manual is divided in separate parts in which are contained the more important subjects.

The contents will allow you to find fast the specific subjects.

The important text is printed in bold and is marked by the following symbols:

WARNING

This means that you should proceed very carefully in order to avoid situations that could be dangerous to human life or may cause serious injury to the personnel.

ATTENTION

Provides information about situations that may occur during the life of the product, the system or the equipment and that may cause injury to the personnel, damages on the machine, environmental pollution or financial loss.

CAUTION

Means that you should be more cautious in order to avoid material damage.

INFORMATION

Very important instructions.

Some figures and information in this manual may not coincide with those of the machine purchased by you.

The producer is constantly working on the improvement and renovation of the product and may introduce modifications without prior notification.

At preparation of this manual are considered all the operations belonging to "normal servicing". Repair works and other operations not mentioned in the manual should not be undertaken.

All operations requiring disassembly of machine parts should be carried out by technically qualified personnel.

The instructions of this manual should be observed for correct usage of the machine.

Use only original spares of ZMM "Stomana" JSC.

The manufacturer should not be held responsible for damages caused by the use of spares which are not original.

INFORMATION

The machine can be operated and serviced only by specially trained personnel, well acquainted with this manual.

A.3. CORRESPONDENCE

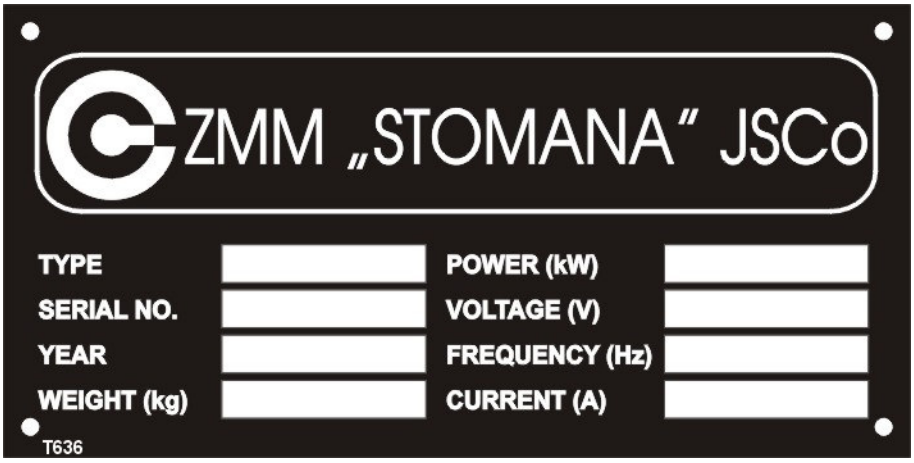
In case of technical problem please contact the Seller or Service department.

In the correspondence or telephone call with them concerning the purchased machine please supply the following information:

- Machine serial number
- Operating voltage and frequency
- Date of production
- Detailed description of the eventual failure
- Detailed description of the working process
- Total time of operation – working hours;

In case of enquiry concerning the electrical part is necessary to provide the data from the name plate.

A.4. NAME PLATE



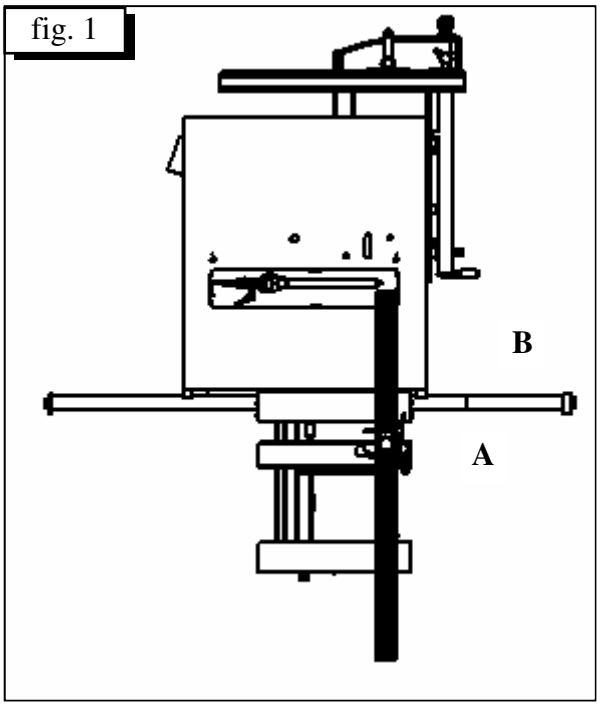
A.5. FIELD OF APPLICATION

This machine is designed for longitudinal cutting, transversal cutting, and cutting of planes of wood or other materials similar to wood (e.g. wooden-fiber plates, chipboards, plywood, laminated and non-laminated planes etc.)

You may not process on this machine materials, other than those as indicated above, or materials other than wood.

A.6. WORKING CONDITIONS AND REQUIREMENTS

fig. 1



ATTENTION

The machine is designed for one operator only.

A – Working place at longitudinal cutting

B – Working place at transversal cutting.

Tools that may be used:

May be installed and used on the machine tools complying with pr. EN847-1 related to manual feed only.

Working environment

The machine is designed for operation under the following environmental conditions:

Humidity	Max 90%
Temperature	Min +1°C Max +40°C
Altitude	Max 1000 м

The machine should not be open-air operated.
The machine should not be operated in environment presenting danger of explosions.

Defense to operate

- The operation of the machine under conditions differing from those above mentioned is prohibited.
- The operation of the machine without the protection devices provided, as well as the removal of any part of those devices, is prohibited.
- Materials differing from those described above may not be processed on the machine.
- Pieces, whose dimensions differ from those described above, may not be processed on the machine.
- Tools that do not comply with pr. EN847-1 and tools, whose dimensions do not comply with the cutting disk shaft diameter, may not be used.
- Introduction of modifications in the machine is prohibited.

The sole and exclusive liability in case of injury of personnel and damages of the machine as a result of processing of unspecified materials shall be borne by the machine operator.

A.7. TECHNICAL CHARACTERISTICS

Circular saw		***STA 315***
Diameter of the circular disk		
Max	mm	ø315
min	mm	ø250
Shaft diameter	mm	ø30
Shaft r.p.m.	min^{-1}	4000
Length of rip fence	mm	800
Maximal cutting length: with extension board	mm	620
Inclination of circular disk		0° to 45°
Maximal cutting height at 90°: Cutting disk with diameter ø 315 Cutting disk with diameter ø 250	 mm mm	 102 72
Maximal cutting height at 45°: Cutting disk with diameter ø 315 Cutting disk with diameter ø 250	 mm mm	 72 49
Diameter of aspiration tip	mm	ø120
Motor output 3- phase 1- phase	 kW (HP) kW (HP)	 3.0 (4.0) 2.2 (3.0)
Dimensions of the operation board	mm	800x970
Movable table - Dimension of the table - Max. length of cutting - Length of support ruler	 mm mm mm	 600x500 620 1219
Mass of the machine, about	kg	340
Required space :	m	3.5 x 2.5

Upon special request

Unit with scoring circular disk Diameter of undercutting disk Shaft diameter Shaft r.p.m. Power	 mm mm min^{-1} kW (HP)	 ø120 ø20 8000 0.75 (1.1)
Motor output 3- phase	kW (HP)	4.0 (5.5)
T- groove in the working table- 3/8" x ¾" (9.525x19.05 mm) from left side of the blade		
Cross cut fence. The support of the fence is made aluminum alloy with length 460 mm. There is a possibility for fixing through 15º with the help of pin. The fence mounted in T- groove in the working table		
Eccentric clamp with fine adjustment by height , mounted in movable frame		
Max cutting width with rip fence– including rip fence, extension table and 2 support legs	mm	950
Max cutting width with rip fence– including rip fence, extension table and 2 support legs	mm	1270
Length of the profile of the rip fence	mm	1100
Sucking pipe with hose, for max width of cut with rip fence	mm	950, 1270
Prolongation table Length Width	 mm mm	 850 700
Mobility kit		

A.8. NOISE CHARACTERISTICS

A continuous noise exposure over above 85 dB (A) may result in health injury. That is why we recommend using in such cases noise protection devices like ear-plugs, earphones, etc.

Statement on the emitted noise:

1. /A/ weighed level of noise pressure at idle

L_{pfA} = 79 dB

Indefiniteness K = 2 dB

2. /A/ weighed level of noise power at material processing

- L_{wA} = 108 dB

Indefiniteness - K = 2 dB

At 95% probability

SECTION B: SAFETY OF WORK

B.1. SAFETY INSTRUCTIONS

Before commissioning, use, servicing, repair, cleaning or any other operations on the machine read very carefully this manual.

The manufacturer shall not be liable for any damages on the machine or any injury of personnel occurred as a result of failure to observe the operation, maintenance and safety instructions.

- Only personnel trained and acquainted in detail with the operation of the machine and especially with the dangers during operation of this kind of machines and being safe and controlling completely their mind may operate the machine.
- Do not operate the machine beyond the safety instructions and without the protection devices.
- Follow strictly the Operation and service manual.
- During all preparation activities, removal of failures, maintenance works and other, switch off the machine from the electric mains by pulling the supply coupling from the connector of the starter.
- Before commissioning check the availability and the condition of all protection devices.
- Do not operate the machine with gloves.
- Clean thoroughly the machine from all dust and chips after work.
- Do not clean the machine by water neither when switched on nor when switched off.
- Always keep the working place of the machine in clean condition.
- Remove from the machine and the operation surface all adjustment tools before operation.
- Before any electrical connection, keep the machine switched off.
- Before commissioning of the machine make sure that the connection to the electric mains is properly effected.
- Use the machine and the tools only for the purpose they are intended for.
- Do not operate the machine in damp premises and do not leave it under the rain or at low temperatures
- Never leave the machine operate without control when you are apart of it.
- Do not work with loose clothing, free hair or long stoles.
- Remove all bracelets, watches, chains and other similar objects.
- The sleeves of the working clothing must be always buttoned.
- In order to protect yourself from the noise, always work with headphones.
- Always work with protection goggles, mask against the dust and with the other protection devices.
- Keep children apart from the machine and take care to prevent machine's operation by children.
- Teenagers under the age of 16 may operate the machine under the supervision of skilled expert – adult person only.
- Provided the machine operates longer, it should be connected to the chip and dust aspiration device.
- Before commissioning check the pieces for defects, e.g. free knots, fissures, nails, metal objects and other foreign objects.
- Use only perfectly sharpened tools.
- Do not use cracked, damaged, wrong-shaped or incorrectly sharpened tools.
- Keep always the tools with due care and do not allow unauthorized personnel to handle them.
- Do not use the tools under speeds that exceed the maximal ones as specified by the respective tool producer.
- Do not use in any case tools of alloyed steel HSS.
- Clean tools' coupling surfaces and check for presence of swellings and dints.
- Do not clean the tools by means of wire brush; do not use water in any case.
- When handling the tools, use protection gloves whenever possible.
- Do not open in any case the protection covers and doors while the machine is under operation.
- Always operate the machine with protection devices, support rulers etc. in good order.
- Do not pass your hands or other parts of your body to the mobile parts of the machine.

- Process only materials the machine is designed for.
- Ensure proper lighting (500 lux) that would not blind the eyes and avoid the stroboscopic effect.
- The repair or maintenance works on the machine must not be carried out by unauthorized personnel.
- The transportation, installation and assembly of the machine should be assigned to qualified personnel only possessing the required knowledge and equipment for that purpose.
- All interventions to the electrical equipment may be carried out solely and exclusively by qualified personnel who possess the required knowledge for that purpose.
- Do not modify in any case the electric equipment of the machine.
- Make use of splitting cutter complying with the norms and corresponding to the respective circular disk only.
- Whenever the distance between the circular disk and the parallel support ruler is less that 120 mm, make use of a pushing wooden bar
- The chip and dust aspiration device must ensure a minimal rate of air delivery of 1800 m^3/h at a speed of 25-30 m/sec.
- Provided the piece is fed by the feeding device, you must always use the splitting cutter in order to prevent the back hit.
- Do not switch on the machine when the covers of the electric board and the motors are opened.
- You may make trial sections to check the adjustment of the tools when the protection devices are mounted and are in good working condition only.
- There must be sufficient space around the machine in order to ensure that the operator can always stand outside the areas of potential danger.
- Clean regularly machine's board and the floor from dust and chips.
- Whenever stopping the machine for adjustment, repair, maintenance, cleaning and other purposes, set the main switch to position Zero, give warning to the other people by means of warning plate and lock the main switch by padlock.
- The key of the padlock must be kept by the authorized operator.

Training of the servicing personnel

All servicing personnel must be trained to operate and maintain the machine.
The training should include the following special features:
- General principles of machine's driving, the proper operation, adjustment of support rulers, as well as the use of appliances for special kinds of processing.
- The proper handling of the piece during processing.
- The position of the hands towards the cutting disks during processing and afterwards.

The servicing personnel must be informed about the dangers during machine's operation, as well as about the respective protection measures.
The servicing personnel must be trained to carry out periodical checks of the protection devices.
The servicing personnel must be informed about the use of the protection devices.

Additional dangers

Despite all operation and safety rules contained in this Operation and service manual, the following additional dangers may occur:
- Contact with the tool;
- Contact with the rotating parts of the driving (pulleys, belts etc.)
- Back hit of the piece or parts thereof;
- Possible danger of dust when operating without aspiration device.

However, the safety depends mainly on you.
Bear in mind that you always undertake some risk when operating the machine.

B.2. DESIGN MEASURES FOR ENSURING SAFETY FOR WORK

The machine includes the following safety equipment and measures:

➟ Forced splitting cutter
Prevents the back hit of the piece and be adjusted horizontally and vertically towards the circular disk.

➟ Protections cover of the circular disk above the board.
The protection cover is fixed on the splitting cutter and prevents the contact with the part of the circular disk that is not used for cutting.
The cover may be removed from the splitting cutter without tools for closed sections.
The protection cover is made out of material that may be easily broken by the circular disk.

➟ The whole circular unit may be lowered below the operation table; for that purpose it is required to remove the protection cover from the splitting cutter.

➟ Locking device of the circular disk position adjusted by height and inclination.

➟ Tool tightening flanges connected by means of a key to the shaft for prevention of tool self-loosening during machine's stop.

➟ Left-thread nut for tool tightening on the shaft.

➟ Sockets of scorring circular adjustment switches.

➟ Parallel support ruler.
Designed for support and precise guiding of the piece during longitudinal cutting; worked out of material that may be easily broken by the circular disk – aluminum.
Ruler's guiding plane may extend from board's front edge to the rear edge of the splitting cutter.
The parallel support ruler may be used with its high guiding plane (90 mm) and low guiding plane (12 mm), as well, when cutting narrow and thin pieces.
The parallel ruler may be adjusted towards the circular disk without tools, and its position may be read on a scale.

➟ Chip collector placed under machine's board.
Used for collection and leading away of ships and dust released during operation.

➟ Connection tip to the chip and dust aspiration device.

➟ Plate "arrow", showing the direction of circular disk rotation, fixed on the protection cover.

➟ Movable table equipped with support ruler, made out of material that may be easily broken by the circular disk – aluminum.
The support ruler may be rotated around the vertical axis within 0^o to -45^o and to be locked in the adjusted position.
All adjustment works on the telescopic ruler and the tightening device may be performed without tools.

➟ Perfectly sharpened tools.
The blunt tools present a danger of back hit, overload the machine and lead to bad processing of the surface.

ELECTROEQUIPMENT

➟ Electronic brake for electrodynamics stops of the motor.
Ensures the stop of tool's rotation for less than 10 seconds upon switching off of the motor.

➟ Ensure proper protection of motor at machine's overloading.

➟ Minimal voltage protection.
Provided the voltage falls off, the machine stops operating; provided the voltage is restored, the machine remains motionless.
In order to start the operation again, it is required to act as for initial commissioning.

➟ The body of the machine and the motors are nullified in order to prevent injury from the electric current.

➟ The electric board and the motors are secured against dust penetration (IP54).

➟ There is a protection lock provided in order to prevent the motion of the undercutting disk when the main disk is not switched on.

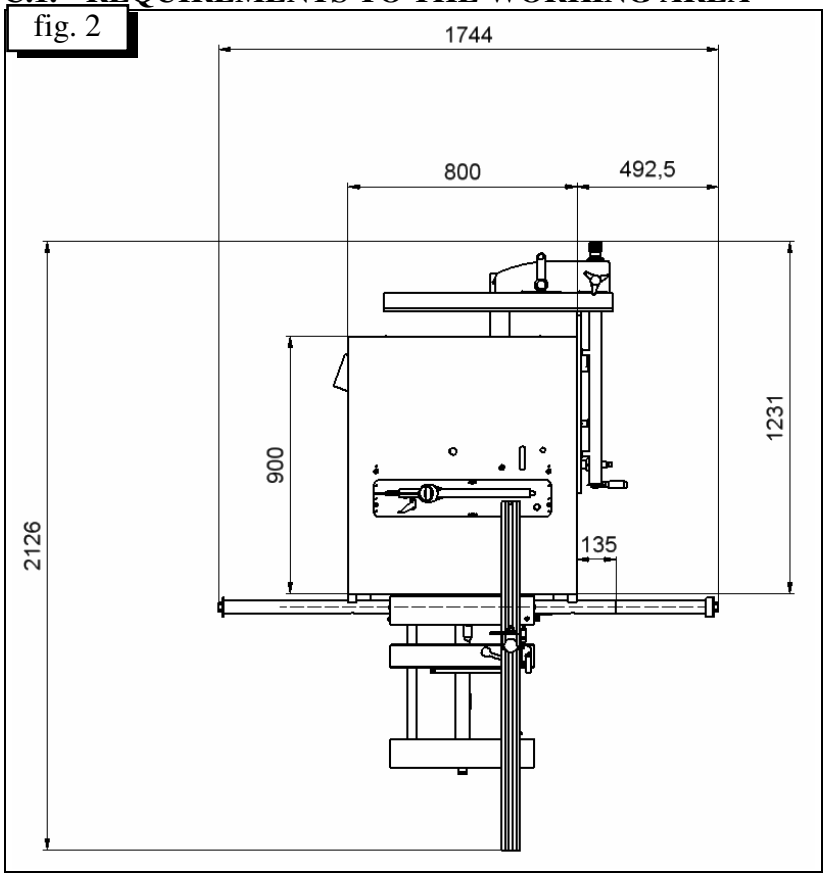
➟ There is a possibility to lock the main switch in order to prevent the accidental operation of the machine.

- End switch that does not allow the operation of the machine during replacement of the tools.
- Rest for the piece during the undercutting process.
- Emergency stop.
- Protecting the motors of overcharge.

SECTION C: ASSEMBLY OF MACHINE

C.1. REQUIREMENTS TO THE WORKING AREA

fig. 2



Choose suitable location for the machine, having in mind the shift of the mobile board.

Follow the instructions as specified in Section B.

The preliminary chosen positioning location must ensure suitable connection to the electric mains and to the chip and dust aspiration device.

Ensure proper lighting (500 lux) that would not blind the eyes and avoid the stroboscopic effect.

Check the loading capacity of the floor having in mind that the machine must be simultaneously leveled on its four support points.

Besides, it is necessary to ensure a distance of at least 0.8 m around the machine.

You must ensure suitable space for feeding and removal of long pieces at machine's inlet and outlet.

C.2. UNLOADING OF MACHINE

The hoisting and shifting of the machine must be carried out by suitable personnel especially trained for that kind of work and disposing of the required equipment.

WARNING

During loading and unloading operations the machine must be handled with extreme precaution and hits and pushes must be avoided in order to prevent injury of personnel and damage of the goods.

During hoisting and shifting there must be not people near to the load hung or within the operation scope of the crane

The shifting of the machine and its parts must be carried out only by transportation means that correspond to the weight of the machine, e.g.

- Fork-lift truck;
- Wheelbarrow;
- Crane;

ATTENTION

For hoisting of the machine you will need a fork-lift truck with fork long at least 1200 mm.

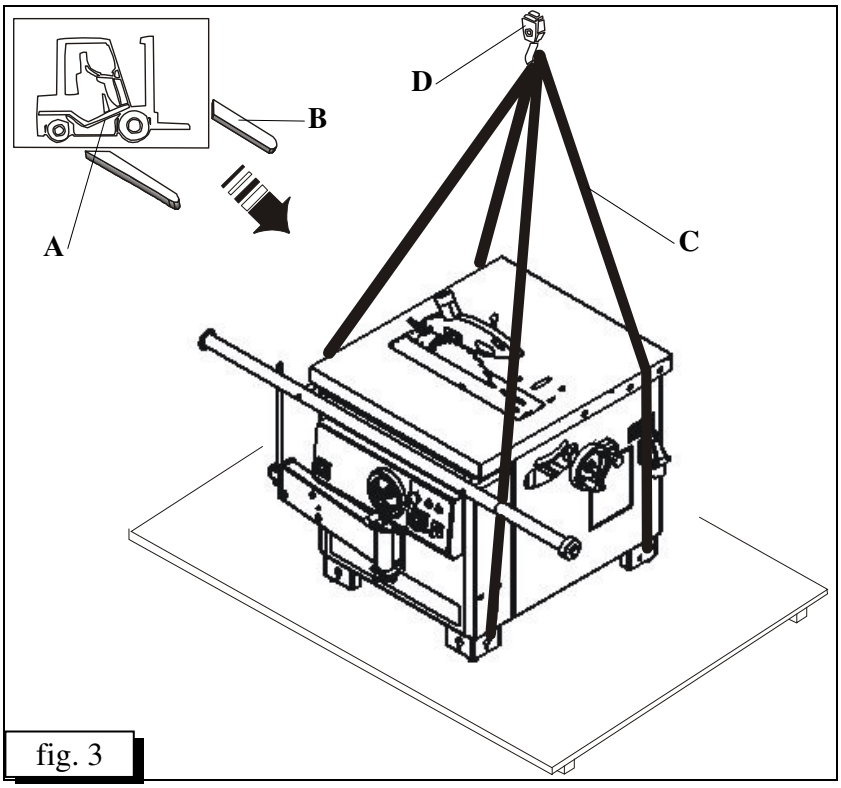


fig. 3

- Ensure a fork-lift truck **A** with the required loading capacity corresponding to machine's weight.
- The fork **B** should be brought under the machine in a way as presented in fig. 3.

In case you dispose of crane or other similar means, act as follows:
- prepare 2 ropes or belts **C** with the required loading capacity and length.
- The ropes should be hung on the hook of crane **D** with loading capacity corresponding to that of machine's weight.
- The ropes are hoisted by the crane and are hung on the four hooks provided for the hoisting of the machine.

WARNING

Check the secure fixing of the hoisting hooks to machine's body.

- ➟ Adjust the ropes well and, if required, the crane should move slightly apart in order to ensure the stable vertical hoisting without inclination of the machine.
- ➟ The machine must be hoisted slowly and with extreme precaution in order to avoid pushes and swinging of the load.
- ➟ After the machine is hoisted at 1 m height, stop the hoisting and mount the four leveling supports to machine's body.
- ➟ Place the machine on the chosen location by means of the crane.
- ➟ Level the machine by means of the four leveling supports in order to effect a stable state.

C.3. DESLUSHING OF MACHINE

Remove the anti-corrosion grease from all unpainted machine parts using kerosene, turpentine or ordinary cleaning products commercially available.

Do not use nitro- thinners or similar diluents and by no means use water.

C.4. FOUNDATIONS LAYOUT

The stable construction of the machine, ensuring precise leveling and vibration-free operation does not require any foundations.

Furthermore, an optional mobility device could be attached to the machine, allowing the machine to be moved.

C.5. ASSEMBLY OF THE DISASSEMBLED UNITS

With view to the transportation and packaging, some parts of the machine are delivered in unassembled condition.

You will find hereafter instructions concerning the assembly of those parts.

C.5.1. Assembly of extension support

One man is required to assemble the extension support.
- Release the screw **A** placed on the fixed board **B** of the machine.
- Mount enlarging support **D** to motionless table **B** watch the screw **A** get in the channel a support.
- Tighten slightly screws **A**.
- You can level (if applicable), by means of the leveling screws **C**, the front edge of the extension support to the fixed board.
- Tighten bolts **A**.

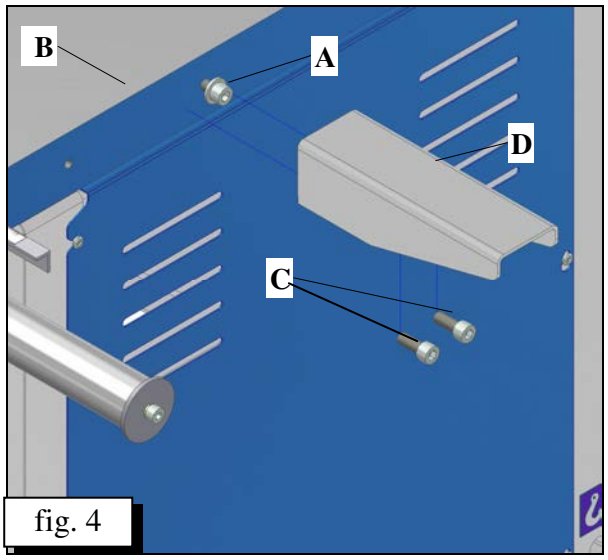


fig. 4

C.5.2. Assemble of movable table /fig. 5/

One man is required to assemble the movable table.

Unscrew bolt **D** together with a washer and the buffer, being on guiding **B**.

Release screw **C.**

Mount mobile table **A** to motionless guiding **B.**

Put support **F** in an aperture on mobile table to observe that screw **C** to get in the channel a support. Tighten screw **C**.

Screw up lengthening **E** to guiding **B**. Screw up bolt **D** together with a washer and the buffer to lengthening.

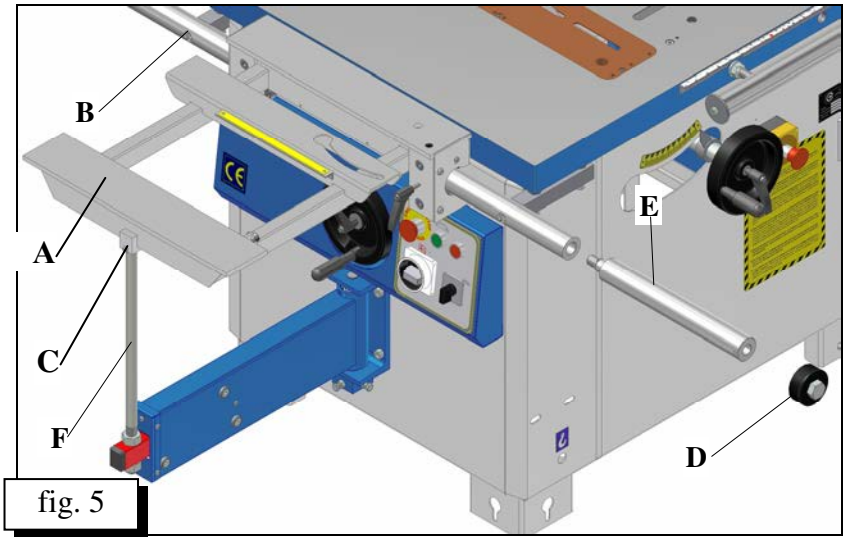


fig. 5

C.5.3. Assembly of parallel ruler

One man is required to assemble the parallel ruler.

- Unscrew nuts **D** (fig. 6) from studs **C** and remove one of the washers **E** placed on the studs.

ATTENTION

Do not alter the position of washers A, which are adjusted by the producer.

Make sure that each of nuts A has its washer E.

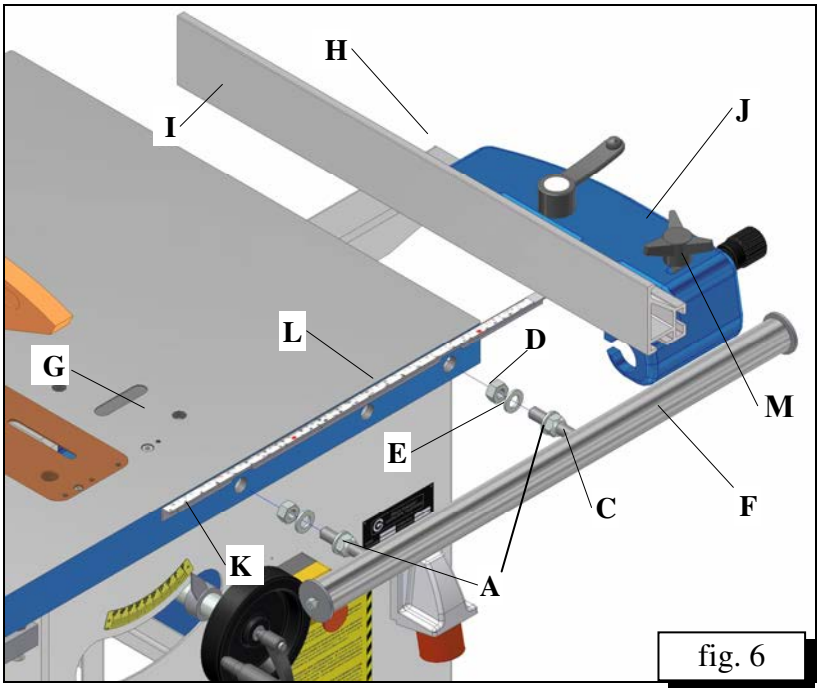


fig. 6

- Assemble the guiding girder **F** to the fixed board **G**.
- Place again the removed washers **E** and screw nuts **D** without tightening.
- Fit together the ruler **I** and the support **J** and assemble it to the girder **F** by tightening the handle **M** (see the plate). Center the ruler **I** by means of right angle (V-shaped steel) towards the fixed table **G**, by slop the girder **F**, and tighten those nuts **D**.

- Unscrew screws **K** from boards **G**.
- Assemble ruler **L** and tighten screws **K** without exercising pressure.
- Cut a sample piece, measure it and adjust the ruler **L** tighten screws **K**.

C.5.4. Assembly of circular disk protection cover.

- By means of the hand wheel **A** (fig. 7) raise the circular disk **B** and the splitting cutter **C** over the operation board **D**.
- Unscrew nut **E** of the protection cover **F**.
- Assemble the protection cover **F** on the splitting cutter **C** in a way to make the holes **H** and **I** in the splitting cutter and the protection cover coincide.
- Place and tighten nut **E**.

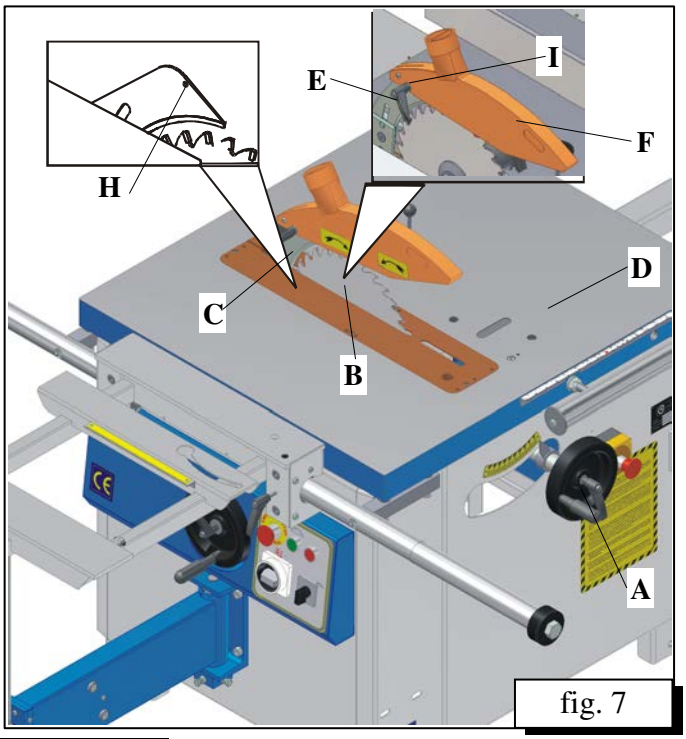


fig. 7

C.5.4. Assembly of the support ruler for transversal cutting

- Unscrew handle **A** (fig. 8).
- Mount support ruler **C** through pin **D** in centering aperture **E**.
- Adjustmobile rod **F** so cotter **B** to get in channel **G** on a basic frame.

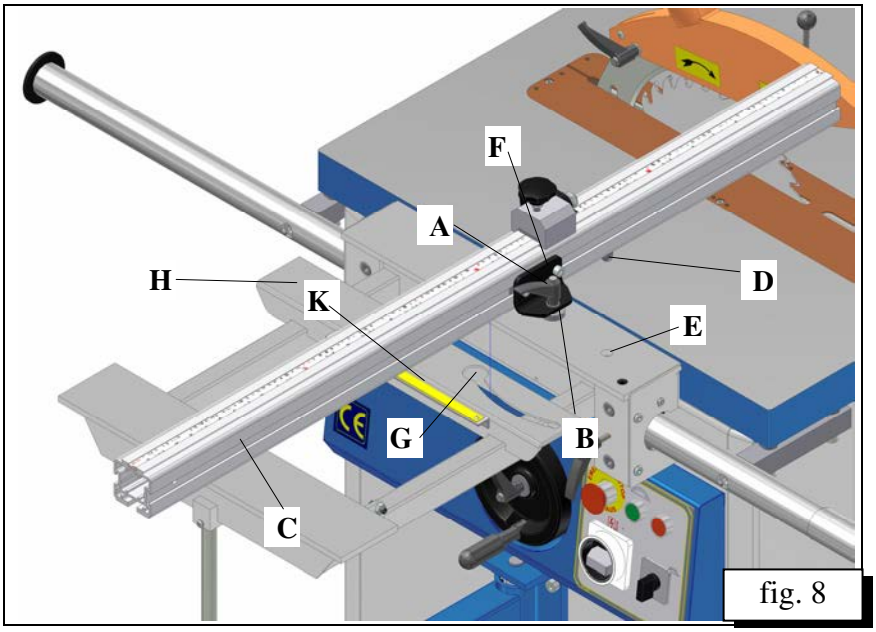


fig. 8

- You can adjust, by means of scale **K**, the ruler under some angle towards the circular disk.
- Upon adjustment of the ruler, tighten again the handle **A**.

C.6. CONNECTION TO THE MAINS

ATTENTION

The connection of the machine to the electric mains, as well as all subsequent checks, must be carried out by electrical technician only.

➠ Check by suitable apparatus the good condition of the nullifying and earthling device.
➠ Check whether the supply voltage and frequency of the current correspond to the data stated on machine's plate.
The deviation of the supply voltage must not exceed ± 5 %. (for instance: a machine operating under supply voltage of 400V can work within 370 to 420 V).
➠ In order to define the required section of the supply cable, refer to the data of the amperage, stated on machine's plate, as well as to the table below:

Electric current (A)	*Section of the cable*	*Fuse*
Up to 10	2.5 mm^2	12A AM
from 10 to 14	4.0 mm^2	16A AM
from 14 to 18	6.0 mm^2	20A AM
from 18 to 22	6.0 mm^2	25A AM
from 22 to 28	10.0 mm^2	32A AM
from 28 to 36	10.0 mm^2	40A AM
From 36 to 46	16.0 mm^2	50A AM

- We do recommend to use a rubber insulated supply cable type H07RN (WDE0282) and to take the necessary measures for its protection from mechanical damages.
- Connect the supply cable to the respective terminals in the incoming electric board (L1, L2, L3, N, and PE) (fig. 9).
- Provided there is CEE socket available (380V, 16A), the connection to the mains is carried out by means of respective CEE plug (L1, L2, L3, N, PE).

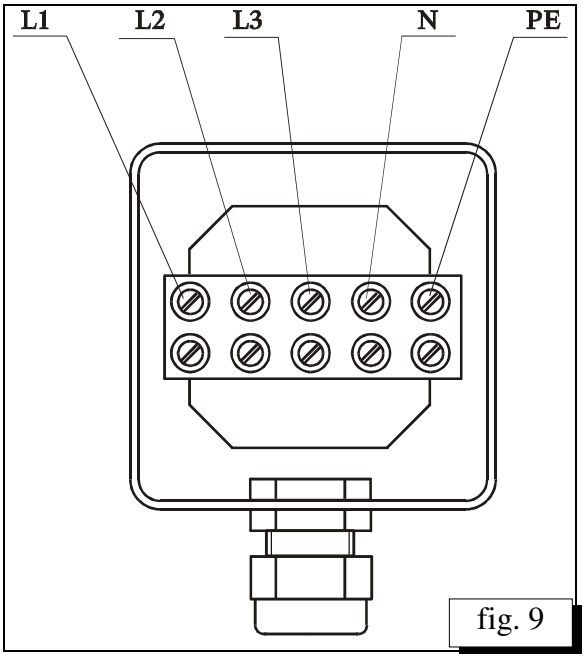


fig. 9

ATTENTION

During initial commissioning and after each modification of the connection to the three-phase mains, check whether the direction of rotation of the shaft corresponds to that indicated on the plate. Provided the rotation is in the opposite direction, change the connection points of the three-phase cables L1 and L2.

C.7. CONNECTION TO THE ASPIRATION DEVICE

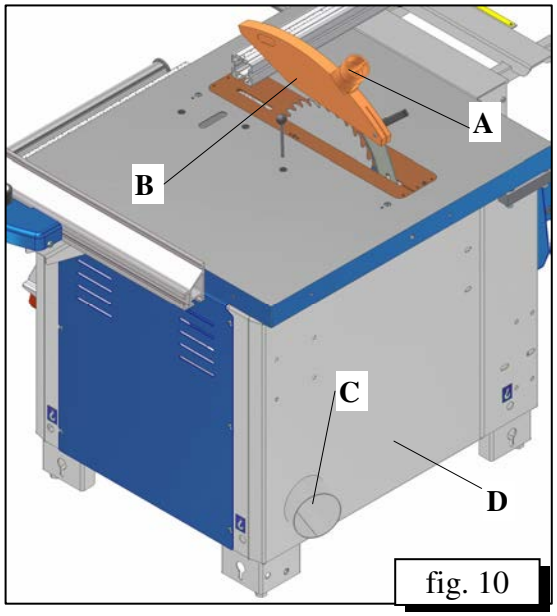


fig. 10

The chip and dust aspiration device must ensure a minimal rate of air delivery of 1800 m^3/h at a speed of 25-30 m/sec.

ATTENTION

The dust and chips aspiration device must be switched on simultaneously with the motor of the machine.

- Connect a hose with diameter ø60 mm to the aspiration tip **A** of the protection cover **B** and tighten the hose by means of a clamp.
- Connect a hose with diameter ø120 mm to the aspiration tip **C** placed on side **D** of the machine. Tighten the hose by means of a clamp.

SECTION D: FITTING AND OPERATING OF MACHINE

D.1. FITTING AND OPERATING OF MACHINE

D.1.1. Tool assembly and adjustment

Before any works on tool assembly and adjustment and on the splitting cutter, disconnect the machine from the electric mains.

You can place on the shaft of the machine standard circular disks with diameter of the hole of ø 30 mm and outside diameter within the range of ø250 to ø315 mm.

WARNING

Do not place in any case circular disks with diameter of the hole larger than ø 30 mm and bushes.

Check the circular disk for fissures, distortions, dints on the surface, damaged teeth, as well for the maximal permissible rotations per minute.

Clean well the operation surface of the board and remove all unnecessary objects.

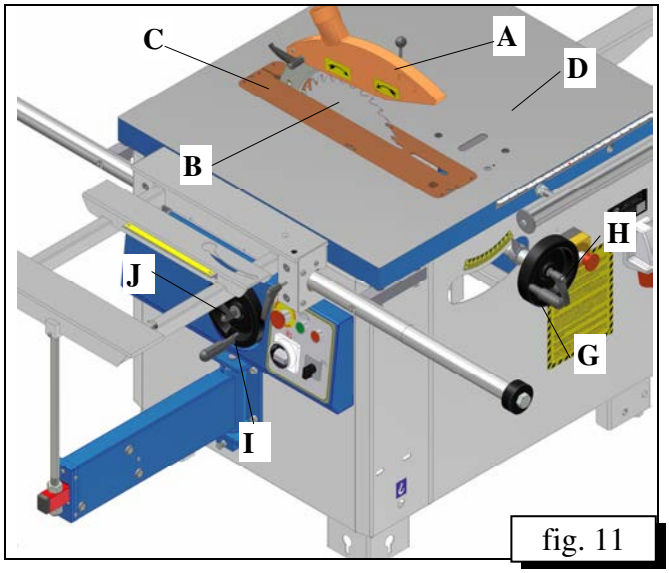


fig. 11

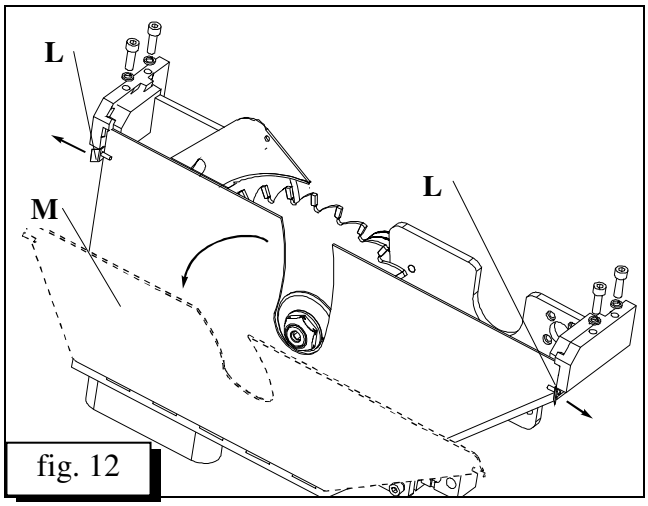


fig. 12

- Release the protecting cover of circular disk **A** (fig. 11) looking the fig. 7.
- Release the insert **C**, to ensure access to the shaft of the circular disk.
- By means of the hand wheel **G**, position the shaft of the circular disk in the lower position and lock by the lever **H**.
- By means of the hand wheel **I**, position the circular unit in position of 90° towards the operation board **D** and lock by the lever **J**.

Press wafers **L** (fig. 12) in the indicated direction in order to release the protection cover **M** and open the cover to ensure access to the shaft of the circular disk.

- Put the special wrench **T** (fig. 13) in hole over the shaft, and lock the spindle of circular saw.

- Unscrew the nut **P** by means of wrench **O** (S=36 mm) (fig. 13)

ATTENTION

The thread of the nut is left-hand!

- Remove carefully the external pressing

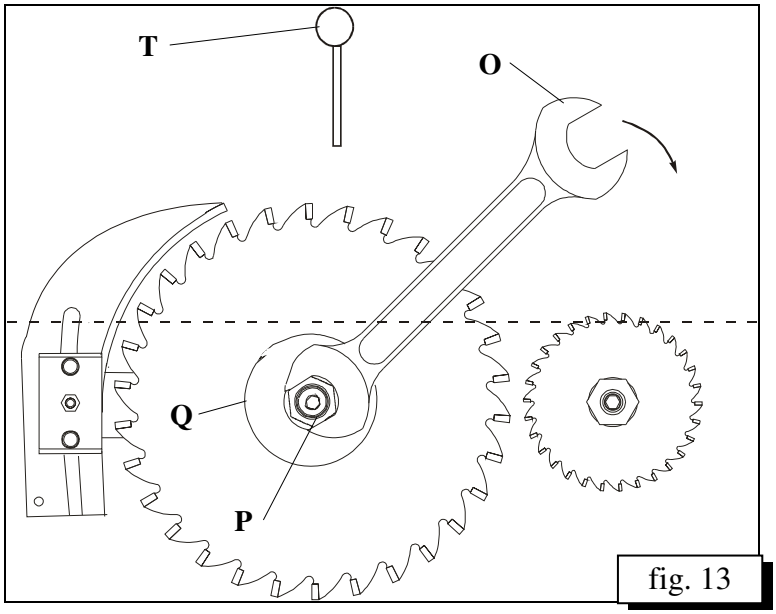


fig. 13

flange **Q** from the shaft.
- Clean thoroughly the surface of the shaft and the flanges.
- Check the surface of the shaft and the flanges for distortions, dints and sharp edges. The surface must be perfectly processed.

Check the circular disk for fissures, damaged teeth, distortions, maximal r.p.m. and the compliance of disk's hole with the shaft.

WARNING

Do not use damaged tools or tools in poor condition.

The utilization of distance bushes to equalize the diameter of the disk and the diameter of the shaft is prohibited.

Use only perfectly sharpened tools. Blunt tools present a danger of reverse hit of the piece or any parts thereof.

Use protection gloves when handling the circular disks.

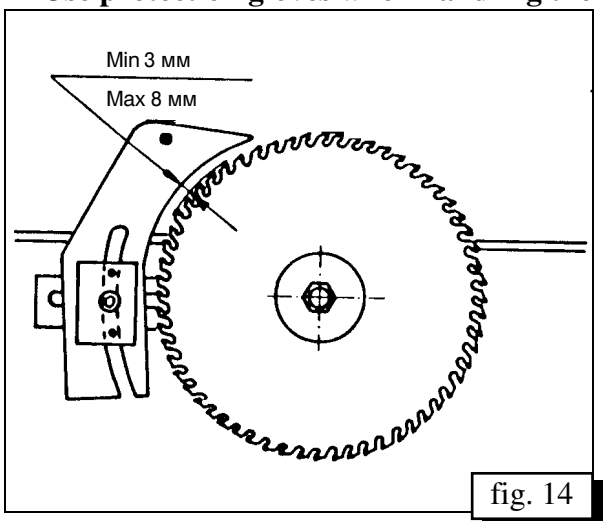


fig. 14

- Clean thouroughly the surface of the circular disk.
- Assemble the circular disk on the shaft, having in mind shaft's direction of rotation.
- Assemble again the external pressing flange **Q** and tighten well the nut **P**.
- Close the protection cover **M**.

D.1.2. Adjustment of splitting cutter

The splitting cutter must be adjusted so that the distance between it and the crown of the circular disk is 3-8 mm along the whole height of cutting; the upper point of the cutter must not be below the base of the upper tooth of the crown of the circular disk (fig. 14).

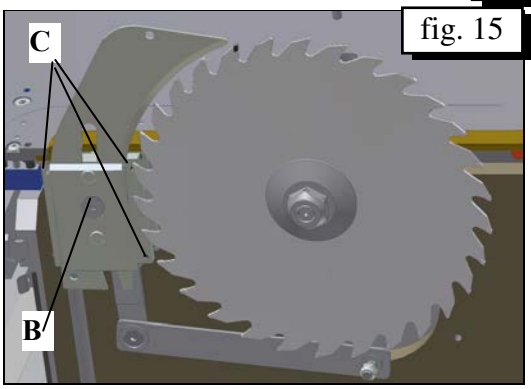


fig. 15

By means of spanner (S=6) release the screw **B**, you can already adjust the splitting cutter in horizontal and vertical direction in the plane of the circular disk (fig. 15).

The adjustment of the splitting cutter and the circular disk in one and the same plane is made through screws **C**.

Afterwards screw thouroughly the screw **B**, paying attention to not alter the adjusted position of the cutter (fig. 14). The splitting cutter must not be thicker than the width of the section obtained as a result of the cutting by the circular disk and must not be thinner that the body of the circular disk.

INFORMATION

The machine is delivered along with splitting cutter 2.8 mm thick.

D.1.3. Assembly and adjustment of the undercutting disk

Assembly of the undercutting disk

- Lock the shaft **B** (fig. 16) by means of internal hexahedral wrench **A** (S=8) and unscrew the nut **C** (**right-hand tread**) by means of the spanner **D** (S=36).
- Remove the pressing flange **E**.

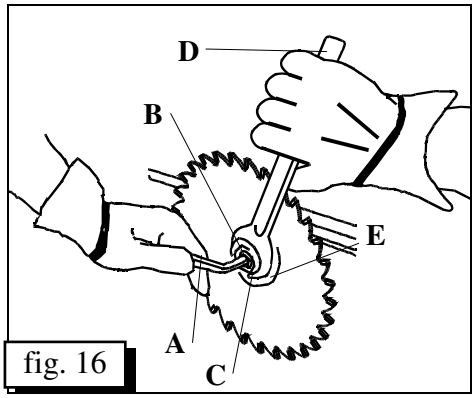


fig. 16

- Clean thouroughly the surface of the shaft and the flanges.
- Assemble the circular disk, having in mind the direction of rotation.

INFORMATION

The undercutting disk rotates in a direction opposite to that of the main circular disk.

- Assemble again the pressing flange **E** and tighten the nut **C**.

Adjustment of the scorring circular disk towards the main circular disk

The scorring circular disk must be adjusted in height in a way to effect a section 1,5-2 mm deep.

The adjustment of the scorring circular disk by height is performed in the following way:

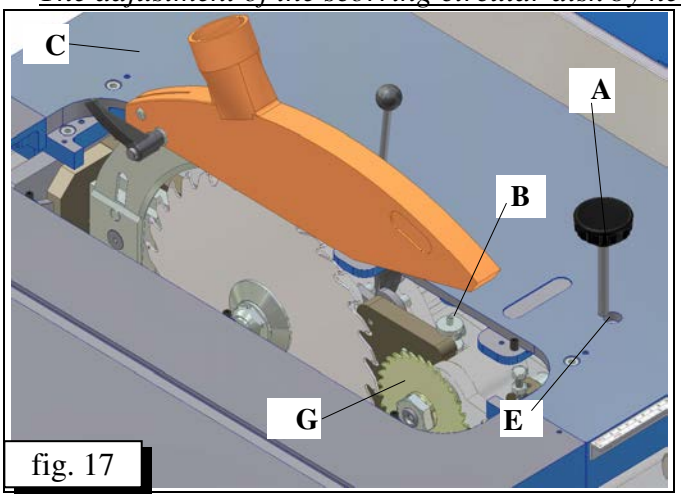


fig. 17

- Position the circular unit in position of 90° towards the operation board and lock it in that position (fig. 17) **.**
- Place the spanner **A** in the end of the lifting screw **B**, in order to adjust the scorring circular disk **G** to the required height above the operation table **C**.
- The adjustment range by height is within 0 to 5 mm.
- You can adjust the scorring circular disk in the plane of cutting of the main circular disk, as follows:
- Place spanner **A** in hole **E** of the operation board **C**.
- Turn the spanner **A** to adjust the scorring circular disk in the plane of the main disk. The undercutting disk shifts by 0.05 mm at each rotation of the spanner **A**.

The adjustment range is ± 1 mm.

*Upon completion of the adjustment, tighten again the screw by means of the spanner **A**.*

Make a trial section and check the correct adjustment of the scorring circular disk towards the main disk, and if required, keep on adjusting.

Operation of the scorring circular disk

The scorring circular disk is used to prevent the damage of the edges during cutting of plates covered by veneer or other decorative materials.

The scorring circular disks may by used in the following cases (fig. 18):

A – the thickness of the scorring circular disk equals that of the main circular disk.

B – doubled scorring circular disk: by placing distance pads between both parts of the disk you may achieve equal or larger thickness compared to the main circular disk;

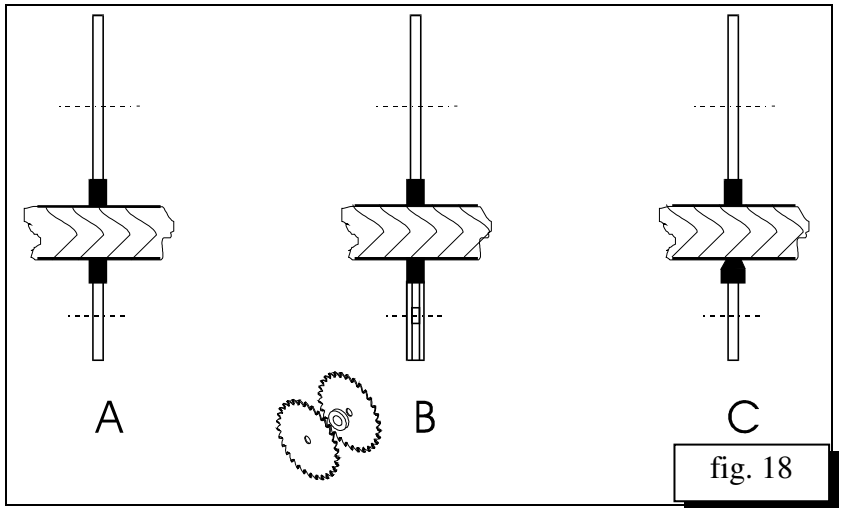


fig. 18

C – cone scorring circular disk to level with the thickness of the main circular disk when disks of different thickness are used.

During cutting, in order to prevent the damage of one edge of the piece only, you may use every kind of scorring circular disk.

In that case the main disk should be leveled with one side of the scorring circular disk only.

D.1.5. Operation of the circular saw

The circular saw can perform the following operations:

- Longitudinal cutting of pieces of massive wood;
- Transversal cutting of pieces of massive wood;
- Cutting of planes.

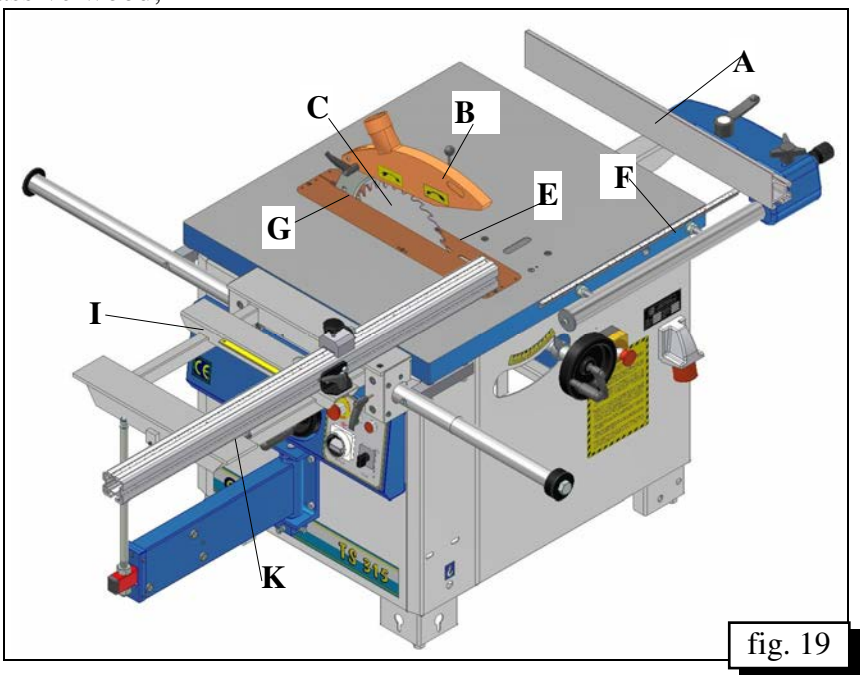


fig. 19

Longitudinal cutting of pieces of massive wood

In order to carry out this operation you must use the following safety devices:

- parallel ruler **A**;
- protection cover **B** of the circular disk **G**;
- splitting cutter **C**;
- insert **E** in the board;

The adjustment of the parallel ruler **A** towards the cutting disk is measured by the scale **F**.

Transversal cutting of pieces of massive wood

In order to carry out this operation you must use the following safety devices:

- mobile frame **J**;
- transversal support ruler **I** with support for the piece;
- protection cover **B** of the circular disk **G**;
- splitting cutter **C**;
- miter gauge **K**;
- insert **E** in the board;

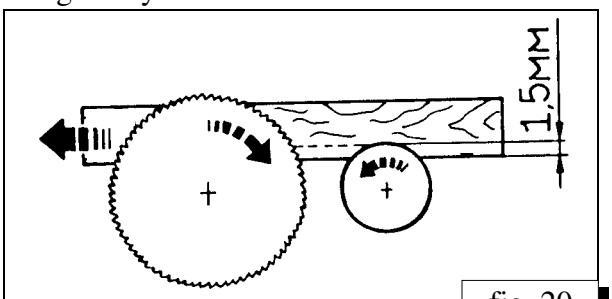


fig. 20

Cutting of planes

In order to carry out this operation you must use the following safety devices:

- mobile frame **J**;
- transversal support ruler **I** with support for the piece;
- protection cover **B** of the circular disk **G**;
- splitting cutter **C**;
- miter gauge **K**;
- insert **E** in the board;

INFORMATION

For cutting of laminated plates it is required to make use of the scorring circular disk in order to avoid the damage on the edges during cutting with the main disk.

The undercutting disk must be adjusted in height so that the depth of section is 1-1.5 mm (fig. 20).

Instructions on the use of the circular saw

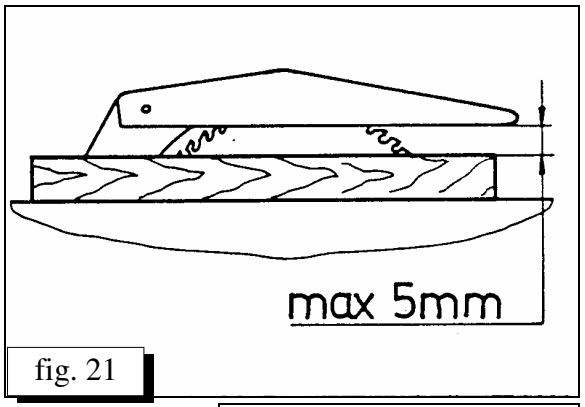


fig. 21

- Adjust the protection cover of the circular disk as shown on fig. 21.
- Feed the piece evenly, without pushing or taking it back until the final cut.
- Adjust the circular disk at a height so that the tooth crown is reliably covered by the protection cover (distance between the protection cover and the piece – max 5 mm, fig. 24).
- Adjust the circular disk by height and inclination if the machine is not operated only.
- Use only well sharpened tools.
- Use the pushing wooden bar at the end of the cutting and when the distance between the circular disk and the parallel support ruler is less than 120 mm;
- Make sure that the machine operates without vibrations.
- You must not place cracked or distorted circular disks. They must be immediately rejected and replaced by new ones.

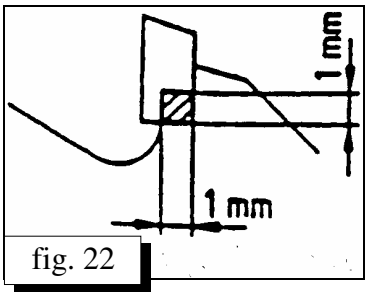


fig. 22

- During repair and maintenance of circular disks with welded plates (e.g. welding of new cutting plates), the structure of the disks (shape of teeth, width of teeth) must not be altered. For composite circular disks (i.e. disks with welded plates) the new sharpening may be carried out up to the minimal dimensions of the plate – 1 mm (fig. 22).

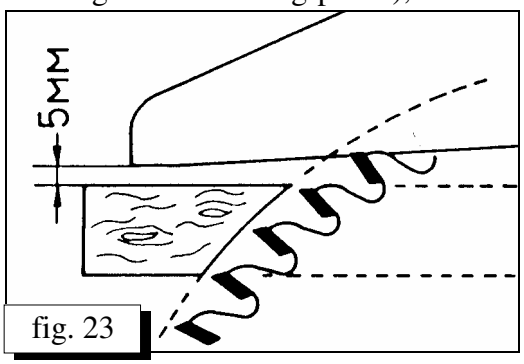


fig. 23

After that the circular disk must be rejected.

- choose the number of teeth of the circular disk so that at least 2-3 teeth operate simultaneously (fig. 23).

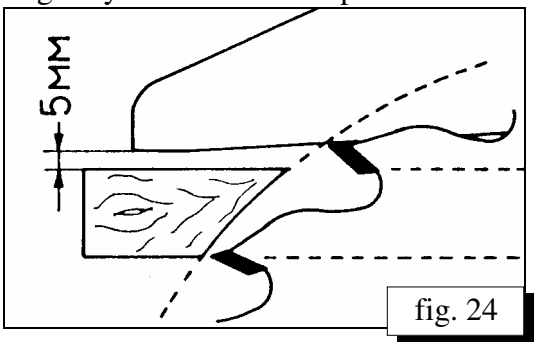
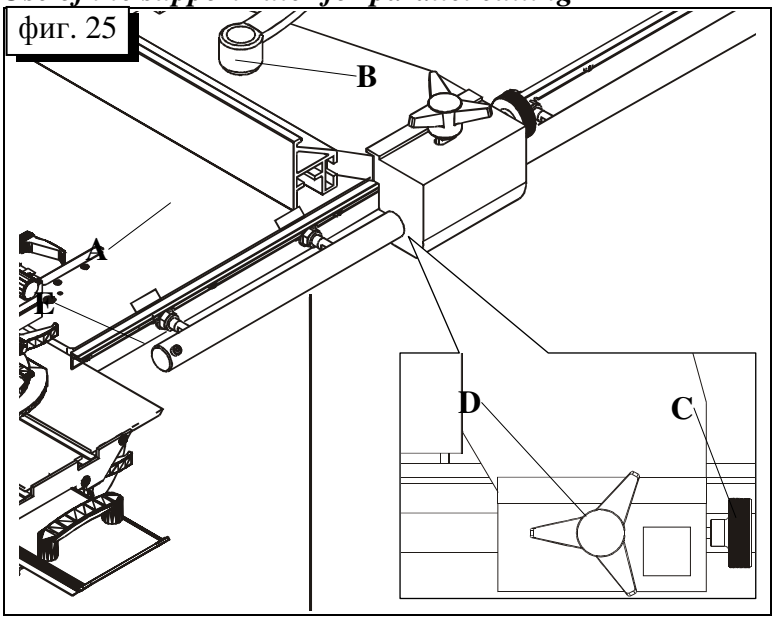


fig. 24

- If only one tooth (fig. 24) is in operation, you will achieve bad processing surface, the danger of reverse hit increases, as well as the vibrations and the noise load.

Use of the support ruler for parallel cutting



фиг. 25

You can use the support ruler for parallel cutting of widths of min. 2 mm.

The adjustment of the support ruler by width is effected, as follows (fig. 25):

Place the handle **D** in middle (neutral) position and shift the support ruler to the required dimensions, reading the data directly from scale **E**. For fine adjustment turn the handle **D** in right direction until complete tightening and turn the handle **C**. Upon achievement of the required dimensions turn the handle **D** in left direction until complete tightening.

The aluminum support ruler **A** may be shifted by length and locked by means of handle **B** (fig. 25 and 26).

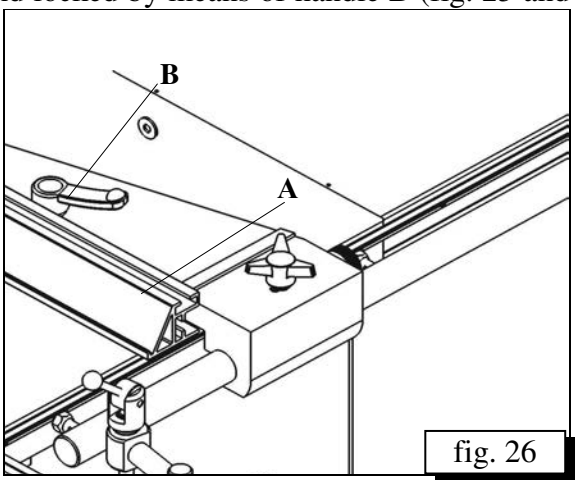


fig. 26

There are two possible positions of the ruler:

1). Horizontal position (fig. 26) – for cutting of thin pieces with 15 mm minimal width.

WARNING

Use the pushing bar whenever the width is less than 120 mm.

If the width of the piece is less than 15 mm, the ruler can enter into contact with the cutting disk.

Adjust the ruler for cutting width less than 120 mm when the machine is out of operation only.

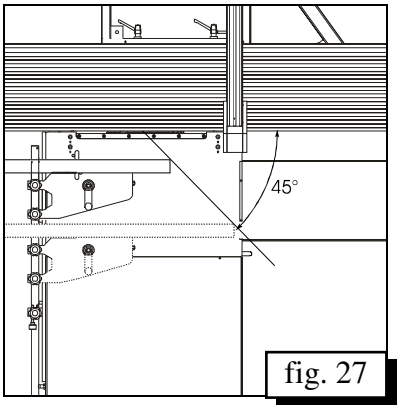


fig. 27

2). Vertical position (fig. 25) – for other cases of longitudinal sections. The parallel ruler should be pulled back in order to avoid the blocking of the piece.

As a practical rule we may suggest the following:

The back side of the parallel ruler touches an imaginary line beginning from the middle of the cutting disk and continuing backwards under 45° (fig. 27).

For transversal cutting in order to produce short details the parallel ruler should be pulled back so that its back side is placed ahead of the teeth crown of the circular disk.

Inclination sections

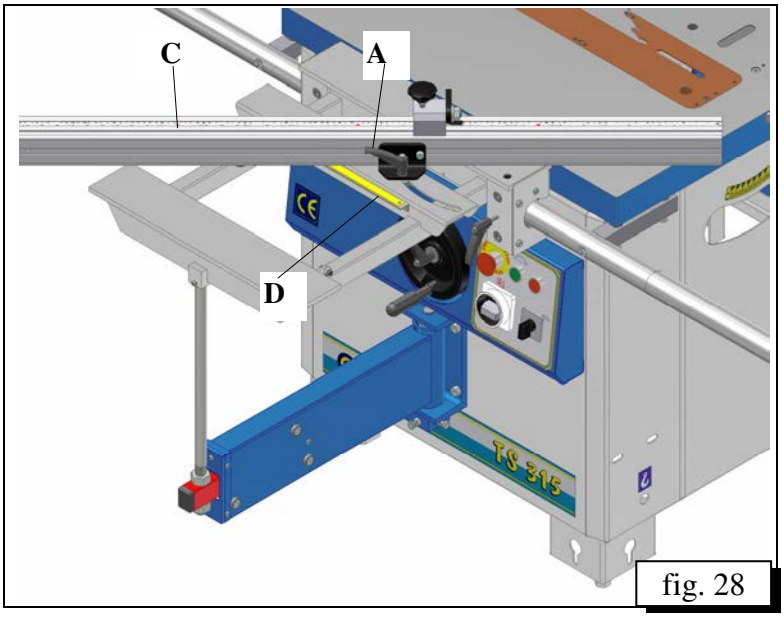


fig. 28

- Release the handle **A** (fig. 28), in order to rotate the support ruler **C** to the required angle according to scale **D**.
- Screw again the handle **A** and, after adjustment the support ruler in desire angle, tighten handle full.

D.2. CONTROL PANEL

Operation functions

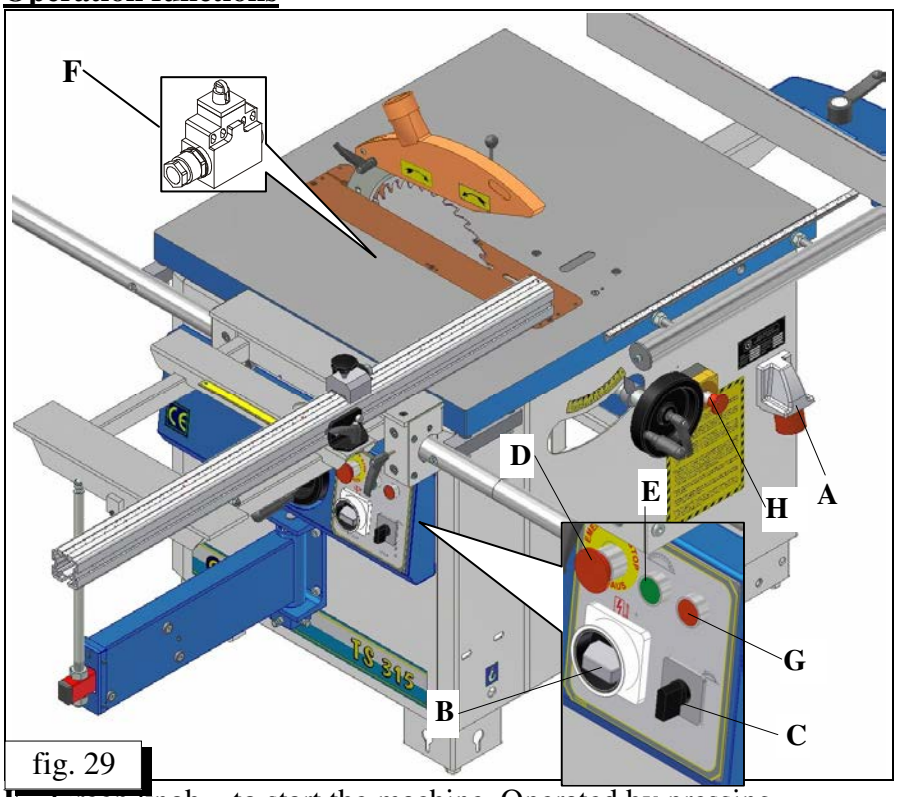


fig. 29

A-CEE-socket/3P+N+E; 400V; 16A/- for connection to and disconnection from the electric mains through CEE plug.
B- main circuit-breaker – for switching on and off of machine's electric supply. There is a possibility to lock it in position "0" in order to avoid accidental commissioning. Operated by turning. Position "1" – ON. Position "0" – OFF.
C- Switch – works for turning on of the scoring unit. Position "1" ON. Position "0" OFF.
D, H - Emergency stop knob – for normal or emergency stop. Acts by pressing, during which the knob is self-detained in pressed position. Released by turning at right or pulling. When the knob is not released, the machine cannot be switched on.
E - Green knob – to start the machine. Operated by pressing.
F - Breaker of disk's protection cover – for locking of machine's commissioning at open cover. If the machine is in operation, it stops upon opening of the cover.
G- Red knob – to normally stop the machine. Operated by pressing.

D.3. STARTING

ATTENTION

Always check the protection devices before commissioning. Follow the safety instructions according to the service manual.

The commissioning is made, as follows:
1. Switch the main circuit-breaker **B** to position "1".
2. Switch **C** rotating in position "1" if We desired work with scorer.
3. Press the green knob **G.**

D.4. STOPPING

Normal stop

The stop of the machine is effected by pressing the red knob **E**, thus actuating the electrodynamics brake of the motors.

Emergency stop

The emergency stop is effected by pressing the emergency knob **D** or **H**, thus actuating the electrodynamics brake of the motors.

ATTENTION

You must not stop the machine from the main circuit-breaker B, as in this case the electrodynamics break will not operate.

SECTION E: DESCRIPTION OF MACHINE

E.1. TECHNOLOGICAL PART

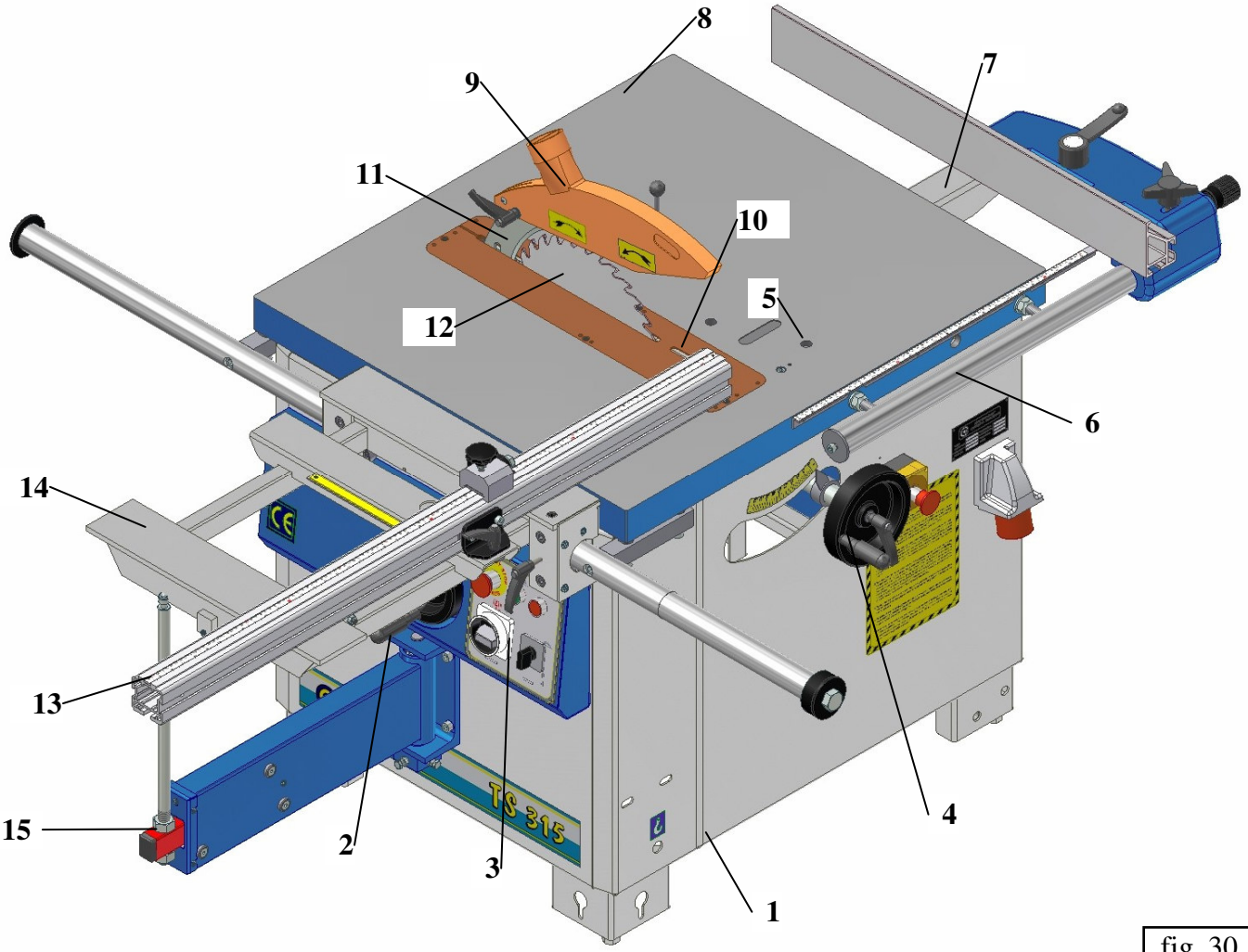


fig. 30

Main components

1. Body
2. Inclination adjustment mechanism of the cutting disk
3. Control devices
4. Height adjustment mechanism of the cutting disk
5. Adjustment mechanism of the scoring disk *
6. Parallel support ruler
7. Extension support
8. Fixed operation board
9. Protection cover with aspiration tip
10. Scoring disk *
11. Cutter
12. Main circular disk *
13. Support ruler
14. Movable board
15. Telescopic bar

*1) - Upon special request

The machine is designed for:

- Longitudinal cutting of wood and other materials similar to wood (e.g. wooden-fibre planes, chipboards, plywood, laminated and non-laminated surfaces etc.) by means of the parallel support ruler and pushing bar.
- Cutting out of planes.

The machine is made of steel sheet iron and steel profile corpus on which stable working table is assembled. The table is castled from gray cast iron and its working surface is smoothed.

The circular disk is placed inside the board and my be adjusted by height and inclination towards the operation board.

The tool support along with the gear are placed below the operation board.

Generally, the processed piece is placed on the board and is feed to the preliminary adjusted for the respective process circular disk by hand.

For feeding purposes you may make use of the feeding device, as well.

The machine may be additionally completed by undercutting disk designed for prevention of barking edges during the cutting operation of the main disk.

E.2. ELECTRICAL PART

The machine is equipped with:

- Thermal protection of the electrical motor
- Starter with CEE plug for connecting the machine to the mains
- The starter and motor are secured against penetration of dust /IP54/
- The starter is equipped with breaking unit which acts as emergency strop and provides its locking
- Protection against minimum voltage
- Breaker of disk's protection cover.

SECTION F: MAINTENANCE

F.1. CLEANING OF MACHINE

The general (complete) cleaning will guarantee long life of the machine and is one of safety factors.

WARNING

You must, before any cleaning, adjustment or disassembly activity of parts of the machine, stop the operation, turn the main circuit-breaker to position ZERO, place a warning plate for other people and lock the main circuit-breaker by means of padlock.

1. Wash every evening the board of the machine and the internal space by strong jet of compressed air.
2. Clean every week all mobile parts by turpentine or other suitable and safe solvents.
3. Pay special attention to the thorough cleaning of the guides of the support frame, all guides of the format board, the girder of the parallel ruler, the T-shaped grooves in the format board; clean by means of soft brush and turpentine or other suitable and safe solvents.

F.2. LUBRICATION OF MACHINE

In order to remove the dust and chips, clean once per 500 hours by means of soft brush all belts.
Clean thouroughly the machine by strong jet of compressed air and lay a thin layer of oil or grease on all machine's mobile parts.
Protect the belts and pulleys in order to avoid possible soiling by oil or grease.

F.3. CHECKING THE CONDITION OF SOME UNITS AFTER OPERATION

Before starting any maintenance works on the machine disconnect the electric supply, unplugging it from the mains.

F.3.1. Drawing of belts

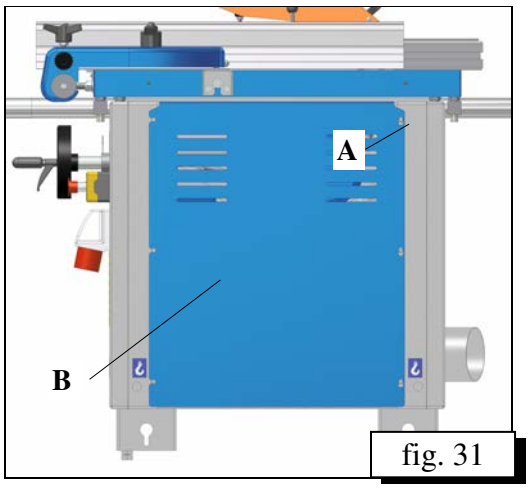


fig. 31

You must check the drawing of the belts after the first ten operating hours.

For this purpose make, as follows:

➟ Release screws **A** and remove the cover **B** from the machine (fig. 31/
➟ Release nut **C** first and screw nut **D** until the belts are completely bent (fig. 32);

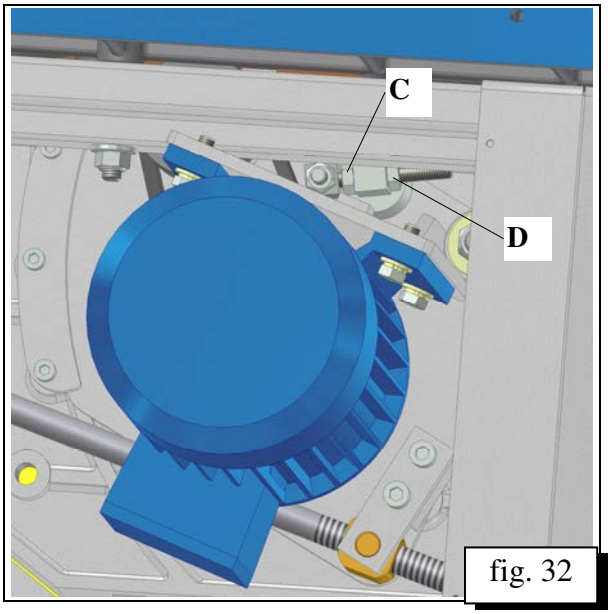


fig. 32

➟ Screw again nut **C**;
➟ Install the cover **B** and screws **A**.

You must check the drawing of the belts at least once per month.
The drawing of the flat belt is performed automatically, by means of a spring.

F.3.2. Check of the stop time of the circular disk

The machine is equipped with electronic brake for electrodynamics stop of the motor.
The time for complete stop of circular disk's rotation should not exceed 10 seconds from the moment of motor's switching off.
The stop time must be checked once per month.
Provided the stop time exceeds 10 seconds, the brake must be checked by electrical technician.
The brake must not be operated more than 10 times per hour.

F.3.3. Check of safety devices

The safe operation of the machine depends on the safety devices as described in **Section B2.**

- Check every week the operation of the emergency stop, as follows:
- During normal operation conditions press the knob "Emergency stop". The motor should stop.
- Check every week the operation of the micro switch for replacement of the tool, as follows:

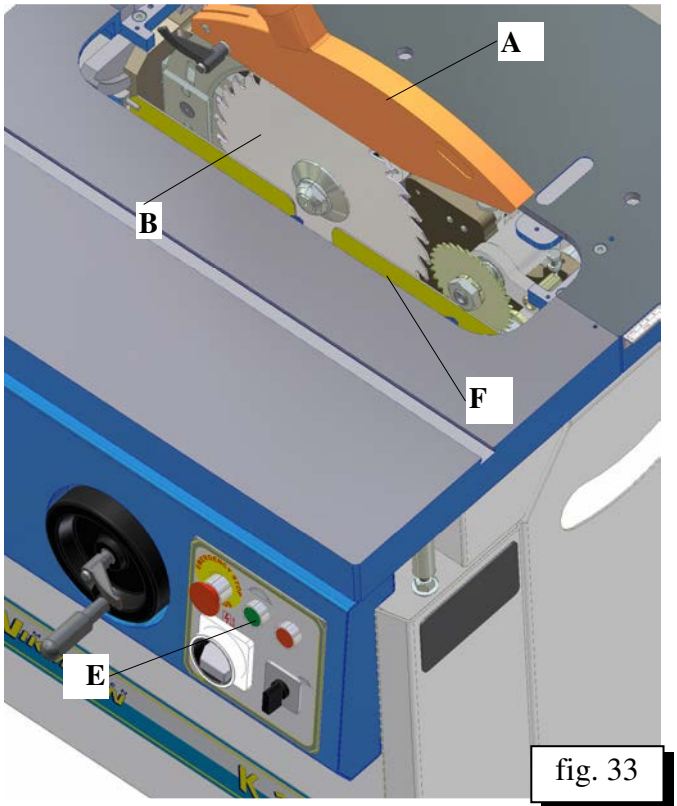


fig. 33

Release the protecting cover **A** of circular disk **B** (fig. 33) looking the fig. 7. Release the insert, to ensure access to the protection cover of the circular.
Open the protection cover **F** (fig. 33)**.**
Press the green knob.
The motor should not operate.

Check of the protection cover of the circular disk

Before operation, check the protection cover for*:*
- fissures;
- distortions;
- secure fixing on the splitting cutter;

You must not use cracked or distorted covers, nor covers that can not be fixed in a secure way.

Check of splitting cutter

Before operation check the splitting cutter for:
- fissures;
- distortions;
- secure fixing on the support;
- the distance between the splitting cutter and the teeth crown of the circular disk must be 3 to 8 mm along the whole cutting length;
- compliance with the thickness of the cutting circular disk.

You must not use cracked or distorted splitting cutters, nor cutters that do not comply with the thickness of the cutting disk.

GENERAL PROVISIONS

Check regularly for availability of warning plates on the machine and their good condition.

The plates must be available and legible.
It concerns especially the plate "Safety instructions".

Removal from operation, storage – disassembly (rejection) of the machine

Switch off all electrical equipment during removal of the machine.

Provided the machine would not be use for some time, after switching off of all electrical equipment, clean it thouroughly and process the operation board, the shaft of the circular disk and the other unpainted parts by roof-protection product.

You should not store the machine in damp places and must protect it from environmental effects.

The machine is produced by non-toxic and safe materials. Upon rejection divide the metal and plastic parts and smash them afterwards.

Emergency situations /states/

Switch off the electric supply immediately in case of flood of the operation area.
Before re-operation of the machine, it must be checked by trained authorized technician.
Switch off the electric supply in case of fire and use fire extinguishers.
Direct the jet to the base of the flame.
Before re-operation of the machine, it must be checked by trained authorized technician.
The operation area around the machine (please refer to Section C.1.) must always be unoccupied.
You must not operate the machine in environment presenting danger of explosion.

F.4. TROUBLE-SHOOTING

WARNING

Before starting any repair works switch off the electric supply of the machine.

The machine has been tested in the production plant and you can freely operate it.
The incorrect and out of function use of the machine may result in damages.

Fault:
The machine does not start

Reason:	**Repair:**
-The emergency stop knob is ON.	Switch off the emergency stop by pulling and turning at the right.
-The protection cover of the circular disk is opened, thus actuating the protection cut-out.	Close the cover.
-The cut-out of the operation loop is disconnected	Replace the cut-out. Remove the reason for cut-out's failure.
-The automatic cut-out is switched off.	Restore the automatic cut-out. Remove the reason for cut-out's failure.
-Lack of electric current of one or more phases	Check whether all 3 phases are under voltage

Failure:
The machine stops during operation

Reason:	**Removal:**
-Lack of electric current of one or more phases	Check whether all 3 phases are under tension
-The cut-out of the operation loop is disconnected	Replace the cutout. Remove the reason for cutout's failure.
-Overcharge compared to the output of the machine. The thermal switch of the motor is disconnected.	Wait until the motor cools down. Do not overcharge the machine.
- Failure of the motor	Replace the motor.

Failure:
The motor operates, but the circular disk stops when in contact with the piece

Reason:	**Removal:**
- The bents are loose	Draw the belts

- The belts and pulleys are soiled with grease or oil	Clean thoroughly the belts and the pulleys or replace the belts.

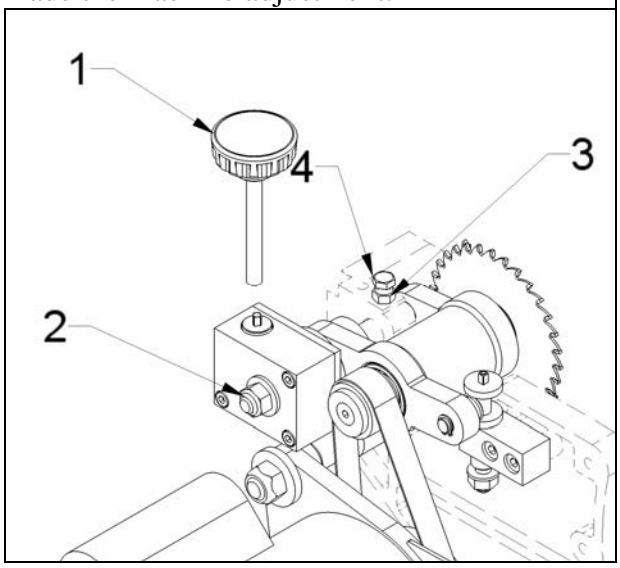
Failure:
Vibrations during operation

Reason:
- unbalanced tool

Removal:
- Sharpen properly the tool.
- Tighten the levers for height and inclination spindle fixing.
- Level well the machine by means of all 4-adjustment legs.
- Check the balance of the tool.

Fault:
There is no enough movement for adjusting of the scoring unit toward the cutting surface of the main circular saw

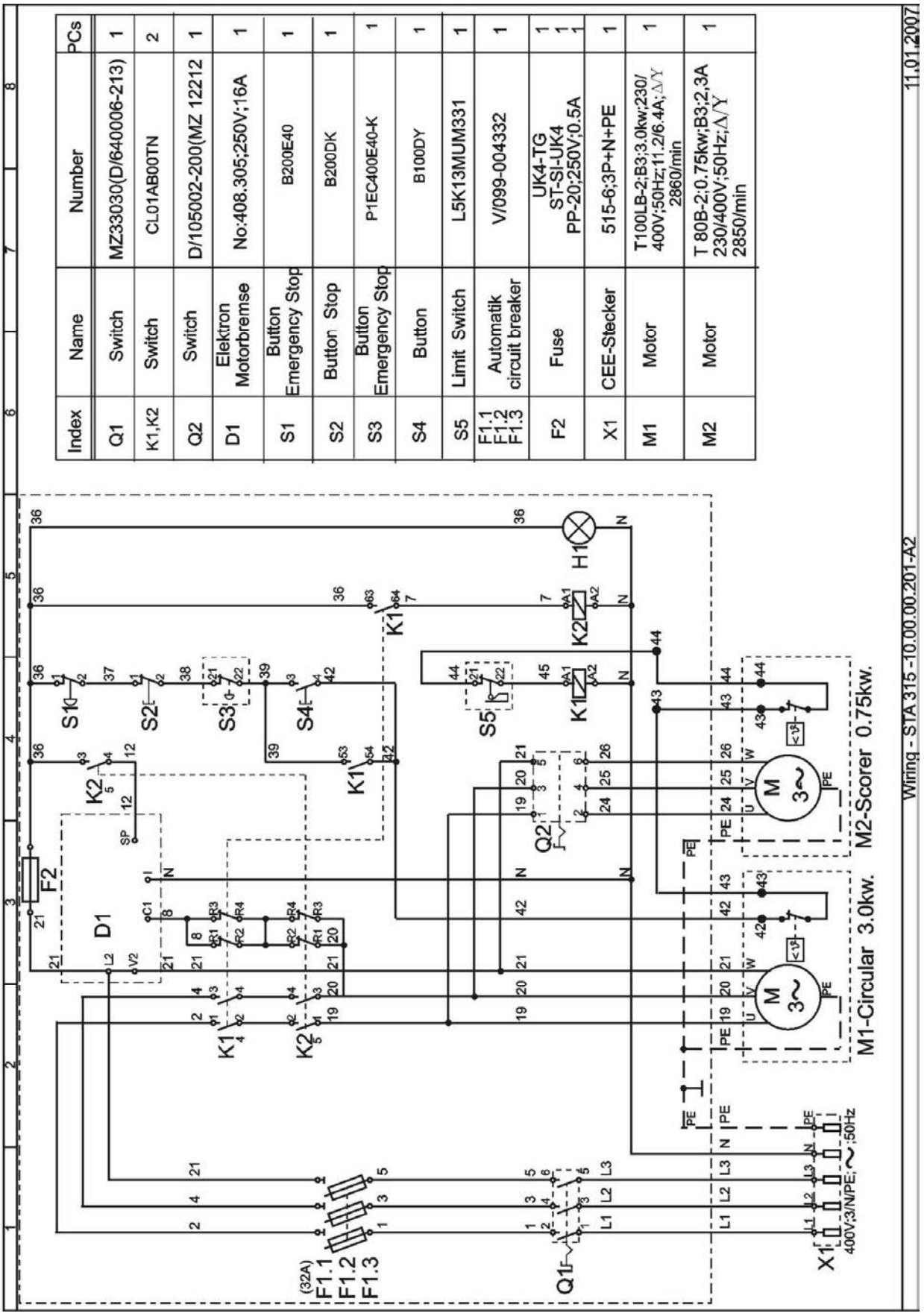
Reason:
There are different scoring discs– single and double. There is possibility your disc to be different than the disc with the help of which was made the machine adjustment.



Removal:
After rotating of the handle position 1 in one direction you reach the end, but that is not enough to adjust the scoring unit, you have to do the following:
1. Rotate the handle position 1 in opposite direction- around 10-12 revolutions.
2. Unscrew the nut M8 position 3 and bolt M8x25 position 4.
3. With light knocking on the axis, position 2 in the both directions adjust the scoring disc maximum close to the cutting surface of the main circular.
4. Screw the bolt M8x25 position 4 and nut M8 position 3.
5. Through rotating of the handle, position 1 in one or other direction you can adjust finely the scoring unit to the direction of the main circular. For one revolution of the handle, the scoring moves with 0,05 mm.

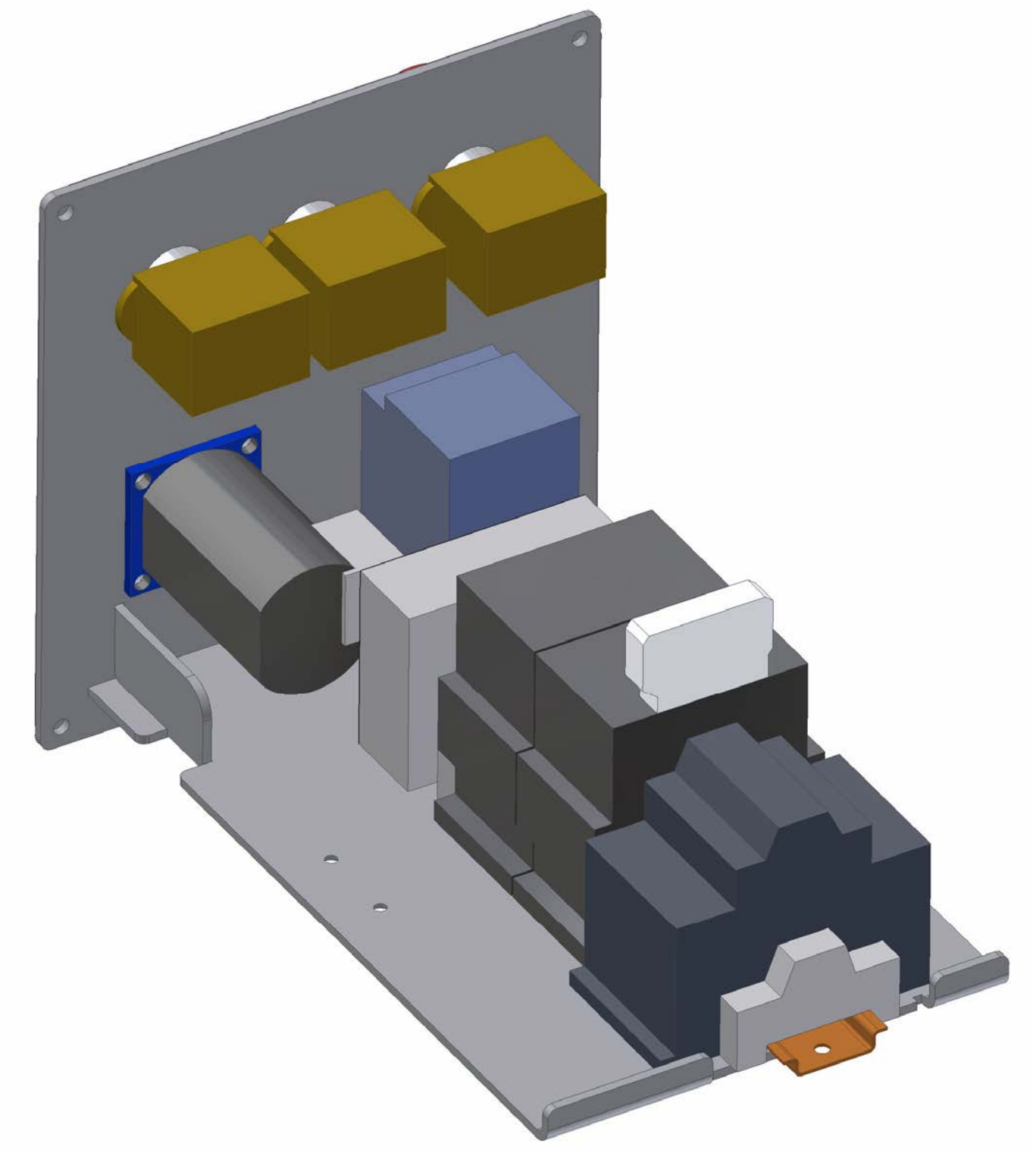
SECTION G: APPENDICES

G.1. WIRING DIAGRAM AND LIST OF THE ELECTRICAL COMPONENTS

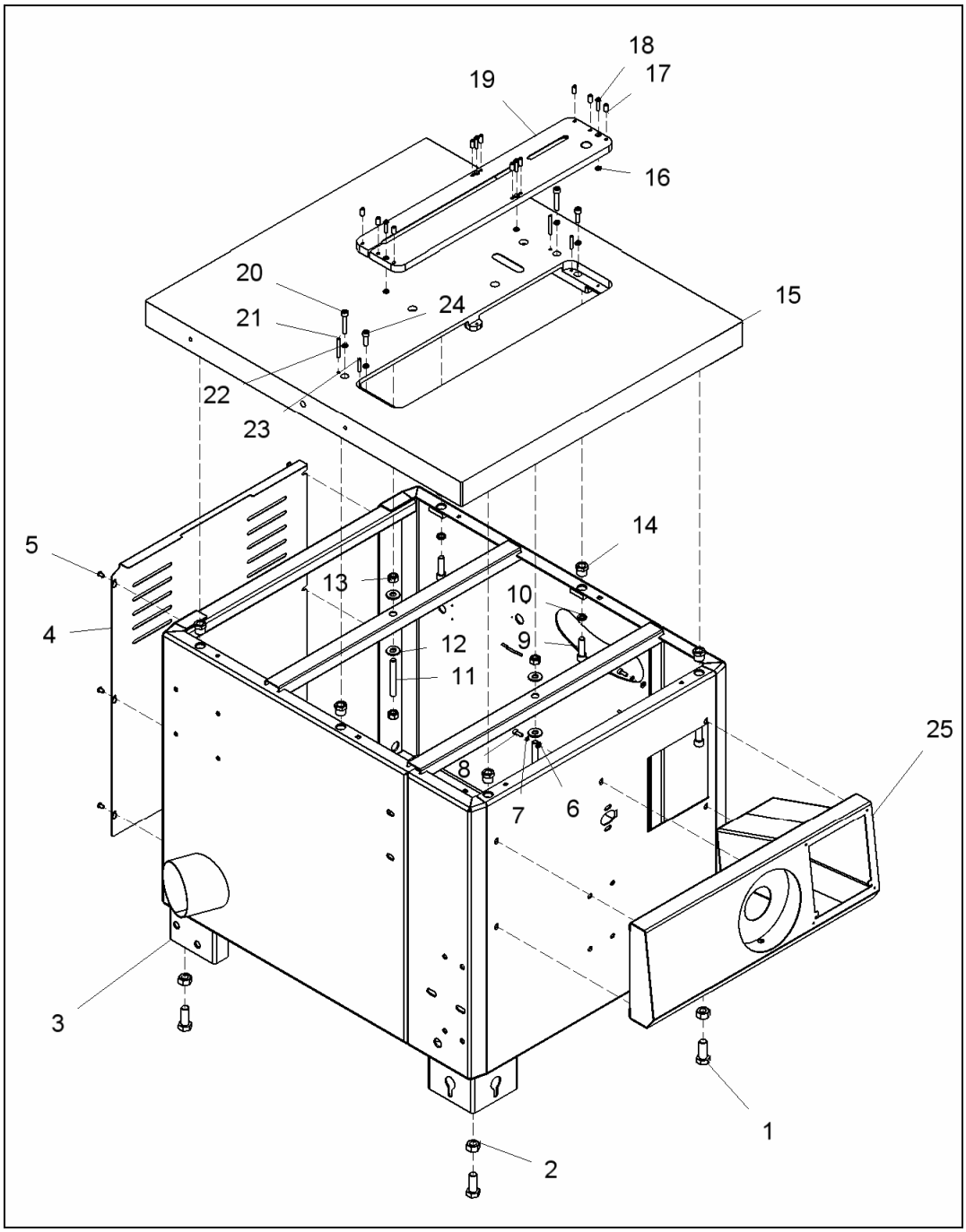


Index	Name	Number	PCs
Q1	Switch	MZ33030(D/640006-213)	1
K1,K2	Switch	CL01AB00TN	2
Q2	Switch	D/105002-200(MZ 12212	1
D1	Elektron Motorbremse	No:408.305;250V;16A	1
S1	Button Emergency Stop	B200E40	1
S2	Button Stop	B200DK	1
S3	Button Emergency Stop	P1EC400E40-K	1
S4	Button	B100DY	1
S5	Limit Switch	L5K13MUM331	1
F1.1 F1.2 F1.3	Automatik circuit breaker	V/099-004332	1
F2	Fuse	UK4-TG ST-SI-UK4 PP-20;250V;0.5A	1 1 1
X1	CEE-Stecker	515-6;3P+N+PE	1
M1	Motor	T100LB-2;B3;3.0kw;230/ 400V;50Hz;11.2/6.4A;ΔY 2860/min	1
M2	Motor	T 80B-2;0.75kw;B3;2,3A 230/400V;50Hz;Δ/Y 2850/min	1

G.2. ELECTRIC CABINET – LAYOUT OF COMPONENTS



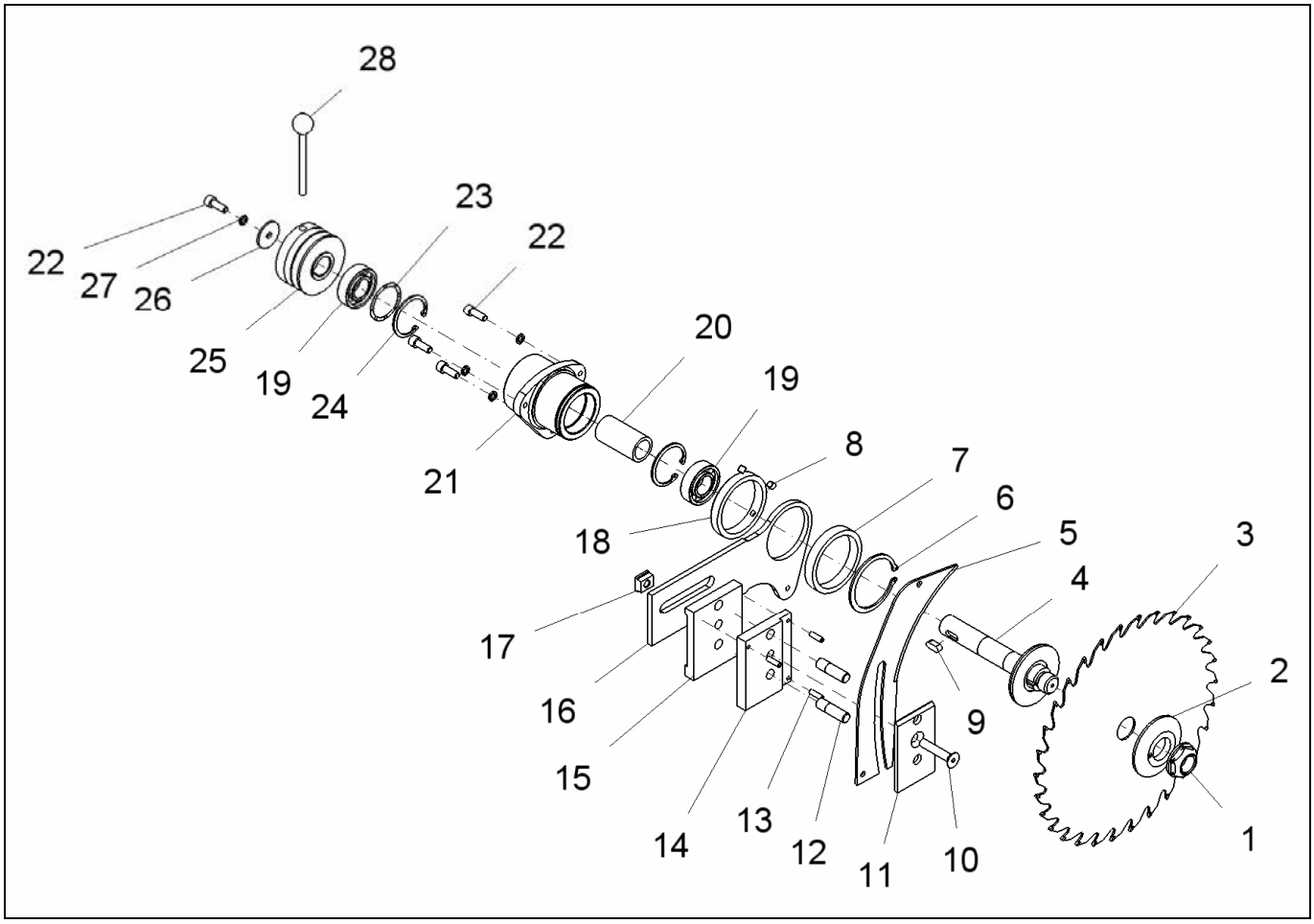
SECTION H: CATALOGUE OF SPARE PARTS



STA 315.01.00.00.00 BODY WITH PANEL

1	DIN 933	BOLT M16X40	4
2	DIN 934	NUT M16	4
3	TS315.01.00.00.00	BODY	1
4	S315.73.01.00.01	COVER	1
5	ISO 7380	SCREW M 6X10	6
6	DIN 125A	WASHER M6	5
7	DIN 7980	SPRING WASHER 2-6H	5
8	DIN 912	SCREW M 6X16	5
9	DIN 912	SCREW M12X40	6
10	DIN 7980	SPRING WASHER 2-12H	6
11	S315.04.00.00.08	STUD M12X88	2
12	DIN 134	WASHER M12	4
13	DIN 985	NUT M 12	4
14	КЗМ 01.00.00.17	HOLLOW BOLT	6
15	TS315.02.00.00.01	PANEL	1

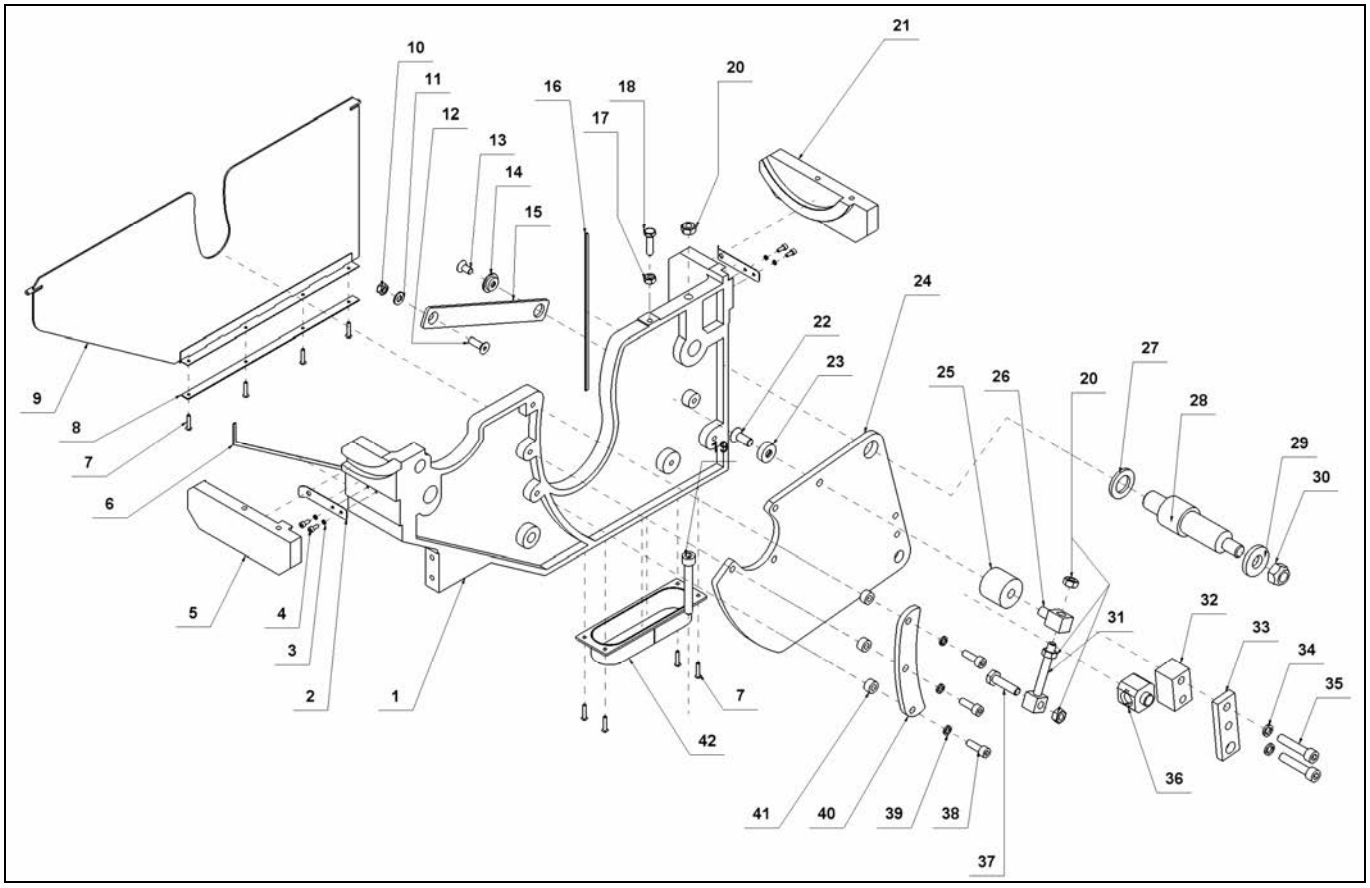
16	DIN 7967	NUT M6	4
17	DIN 913	FIXING SCREW M 8X16	10
18	ISO 7380	SCREW M6X16	4
19	TS315.02.02.00.01	INSERT	1
20	DIN 912	SCREW M8x45	2
21	DIN 1481	SPRING PIN Φ 6X45	2
22	DIN 7980	SPRING WASHER 2-8H	4
23	DIN 1481	SPRING PIN Φ 6X30	2
24	DIN 912	SCREW M8x25	2
25	TS315.17.00.00.00	FRONT COVER	1



S315.08.00.00.00 MAIN CIRCULAR

1	S315.08.00.00.01	NUT	1
2	S315.08.00.02.00	FLANGE EXTERIOR WITH COTTER	1
3 *		CIRCULAR SAW ø315Xø30X3	1
4	S315.08.00.27.00	SHAFT WITH FLANGE ø30	1
5	S315.08.00.00.05	RIVING KNIFE	1
6	DIN 471	RING FOR SHIFT Φ70	1
7	S315.08.00.00.24	SUPPORTING RING	1
8	DIN 913	FIXING SCREW M 8X8	2
9	DIN 6885A	COTTER A8X7X20	1
10	S315.09.00.00.03	SCREW M10X53	1
11	S315.09.00.00.04	FRONT STRAP	1
12	S315.09.00.00.07	PIN	2
13	DIN 913	FIXING SCREW M 6X20	3
14	S315.09.00.00.08	MIDDLE STRAP	1
15	S315.09.00.00.09	BACK STRAP	1
16	S315.09.00.00.10	CARRIER	1
17	S315.09.00.00.11	COTTER	1
18	S315.09.00.00.12	SUPPORTING RING	1
19		RADIAL BEARING 6205-ZZ	2
20	S315.08.00.00.15	DISTANCE BUSHING	1
21	S315.08.00.00.16	CARRIER	1
22	DIN 912	SCREW M 8X22	4
23		EQUALIZATION WASHER Φ42X51X0,5X3,4 K2	1
24	DIN 472	RING FOR HOLE Φ52	2
25	S315.09.00.00.19	BELT PULLEY	1
26	UN 732	WASHER Φ 8XΦ35X2,5	1
27	DIN 7980	SPRING WASHER 2-8H	4
28	S315.09.00.27.00	HANDLE WITH BALL	1

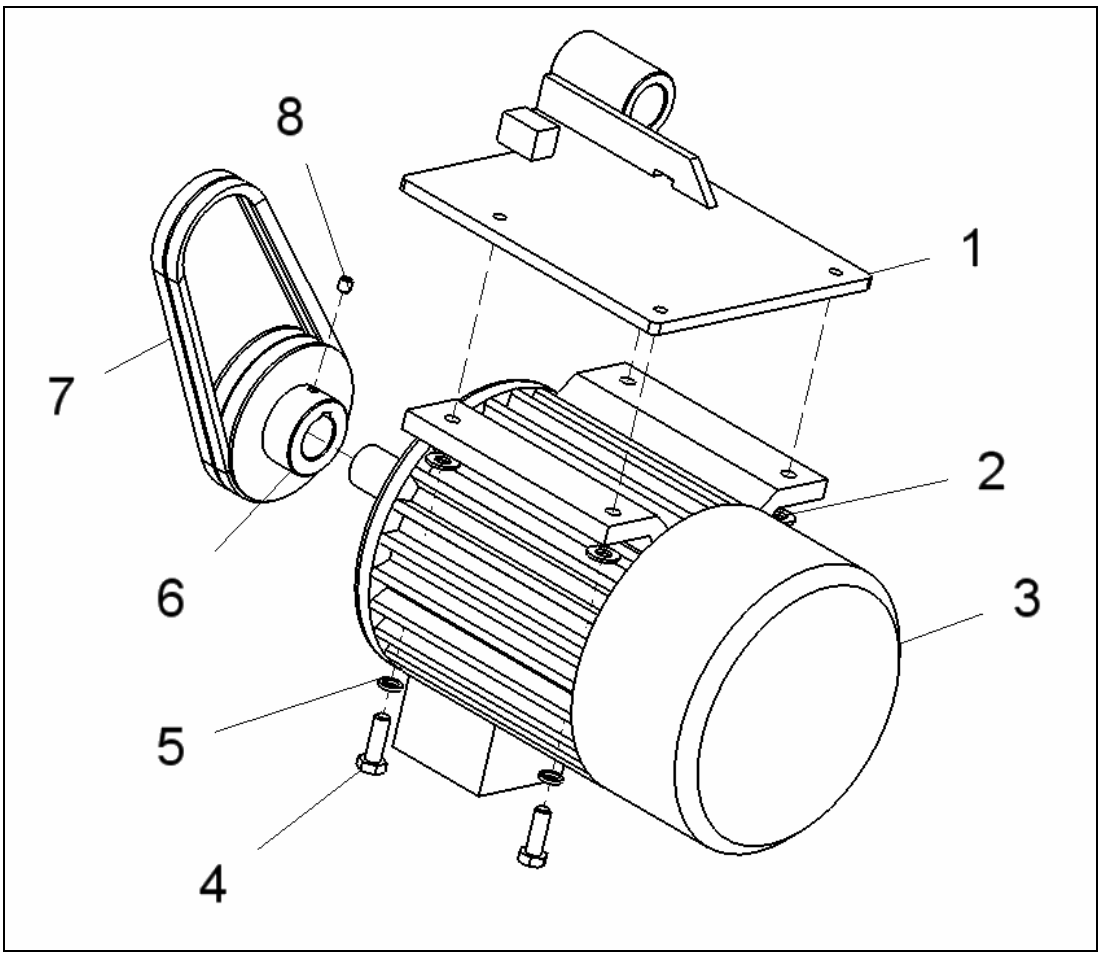
* BY SPECIAL ORDER



S315.05.00.00.00 CARRIER FOR CIRCULAR

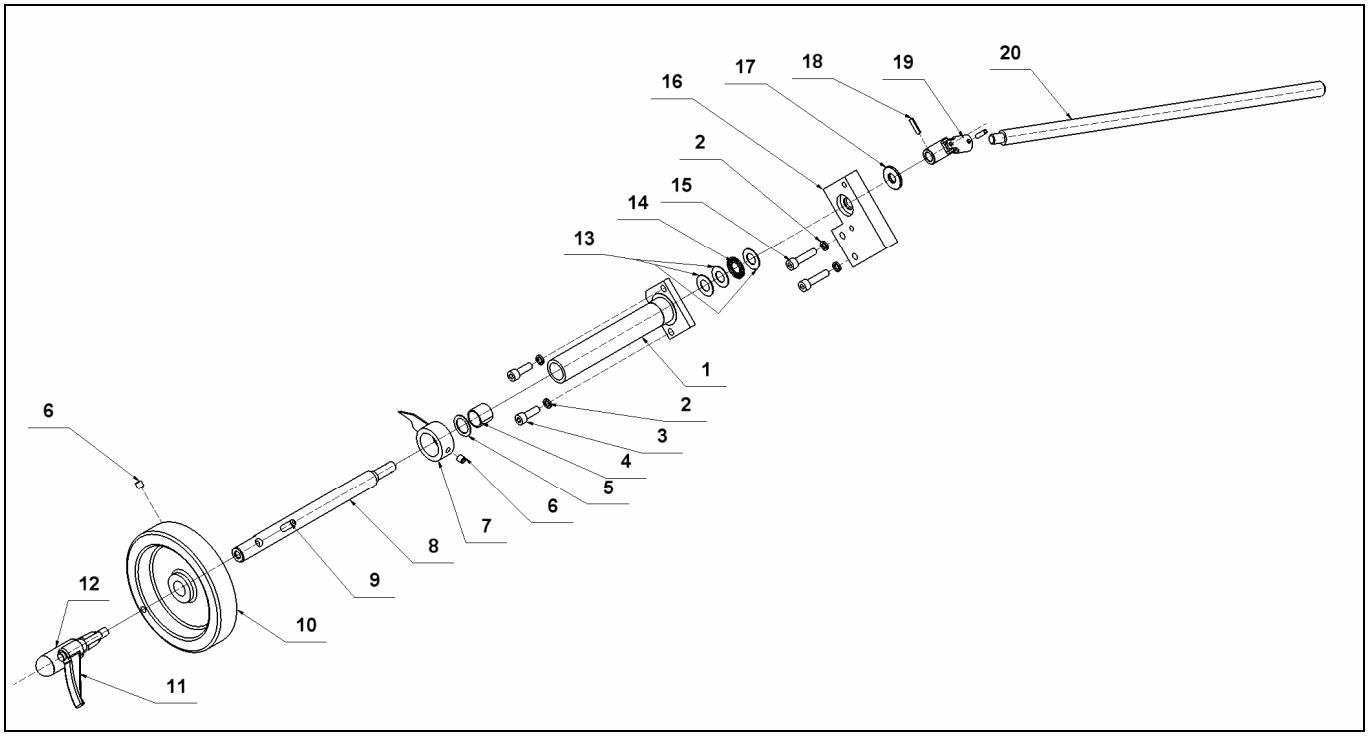
1	S315.05.00.00.01	BEAM	1
2	S315.05.00.00.02	SPRING	2
3	DIN 7980	SPRING WASHER 2-4H	4
4	DIN 912	SCREW M 4X10	4
5	S315.05.00.00.05	SECTOR RIGHT	1
6	S315.05.00.00.06	SEALING	1
7	DIN 7337 A	BLIND RIVET Ø4X20	8
8	S315.05.00.00.08	STABILIZE STRAP	1
9	S315.05.00.09.00	VALVE	1
10	DIN 985	NUT M 8	1
11	DIN 125A	WASHER M8	1
12	DIN 7991	SCREW M 8X25	1
13	DIN 7991	SCREW M 8X16	1
14	S315.05.00.00.14	STOP	1
15	S315.05.00.00.15	PANTOGRAPH STRAP	1
16	S315.05.00.00.16	SEALING	1
17	DIN 934	NUT M8	1
18	DIN 933	BOLT M8X30	1
19	S315.05.00.00.19	FIXING SCREW	1
20	DIN 934	NUT M10	4
21	S315.05.00.00.21	SECTOR LEFT	1
22	DIN 7991	SCREW M10X25	1
23	S315.05.00.00.23	WASHER Ø10,5XØ25X8	1
24	ST 01-02.00.00.02	CRADLE	1
25	S315.05.00.00.25	SUPPORT BLOCK	1
26	S315.05.00.00.26	BLOCK	1
27	S315.05.00.00.27	WASHER Ø40XØ24X4	1
28	S315.05.00.00.28	COLUMN	1
29	DIN 7349	WASHER M16	1
30	DIN 985	NUT M16	1
31	S315.05.00.00.31	BOLT SPECIAL	1
32	S315.05.00.00.32	BLOCK	1
33	S315.05.00.00.33	PLATE FOR TILTING	1

34	DIN 7980	SPRING WASHER 2-10H	2
35	DIN 912	SCREW M10X50	2
36	S315.05.00.00.36	NUT	1
37	DIN 933	BOLT M10X40	1
38	DIN 912	SCREW M 8X25	3
39	DIN 7980	SPRING WASHER 2-8H	3
40	S315.05.00.00.40	SUPPORT PLATE	1
41	S315.05.00.00.41	BUSHING	3
42	S315.05.00.42.00	ASPIRATION HOSE	1



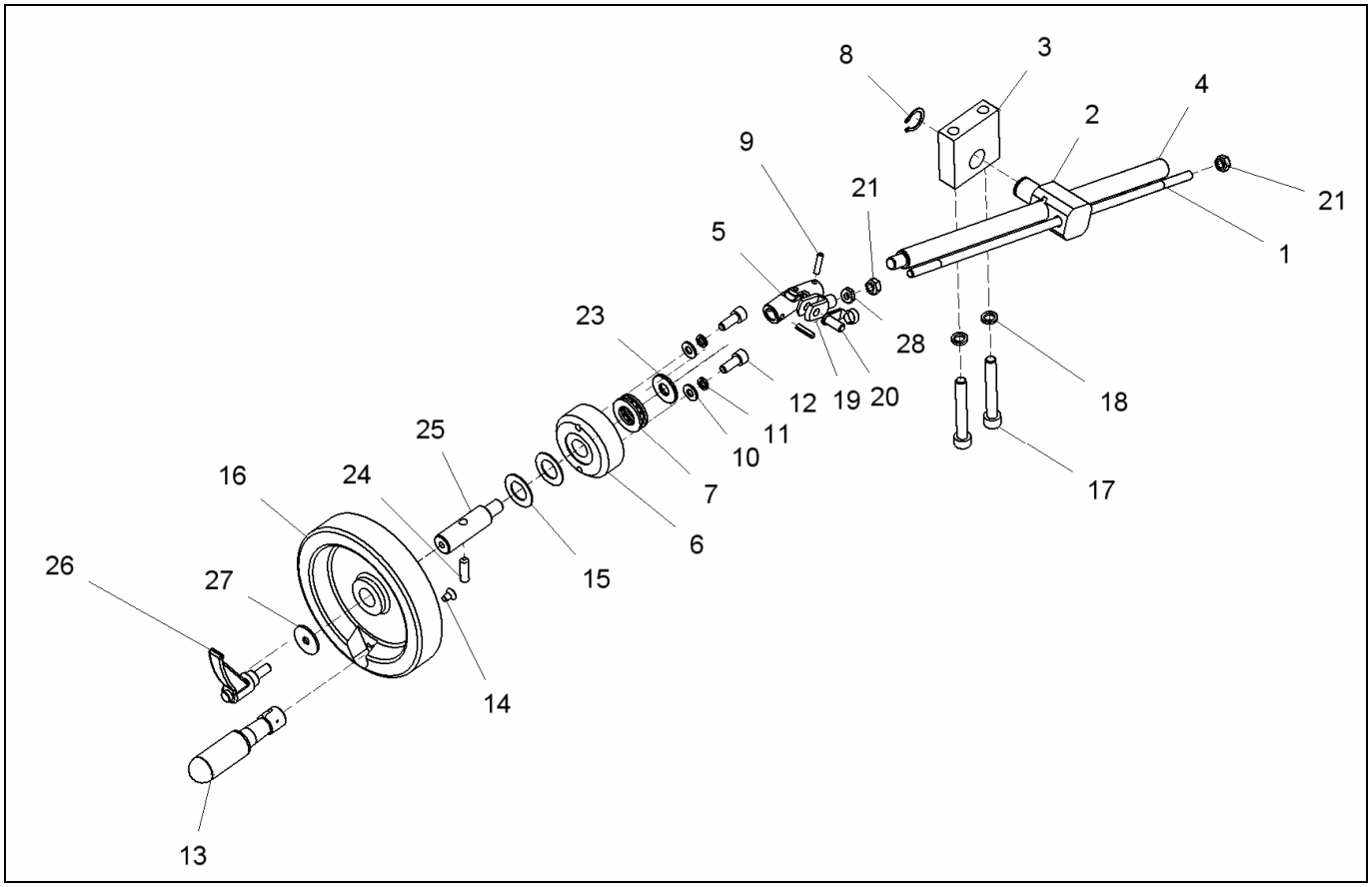
K5-32.03.03.00.00 CARRIER FOR MAIN MOTOR

1	K5-3203.03.01.00	CRADLE, T100	1
3		MOTOR	1
6	K5-32.03.03.00.03	BELT PULLEY	1
7	SPZ630MN	BELT L=630	2
4	DIN 931	BOLT M10X30	4
2	DIN 125 A	WASHER AM 10	4
5	DIN 7980	SPRING WASHER 2-10H	4
8	DIN 913	FIXING SCREW M 8X8	1



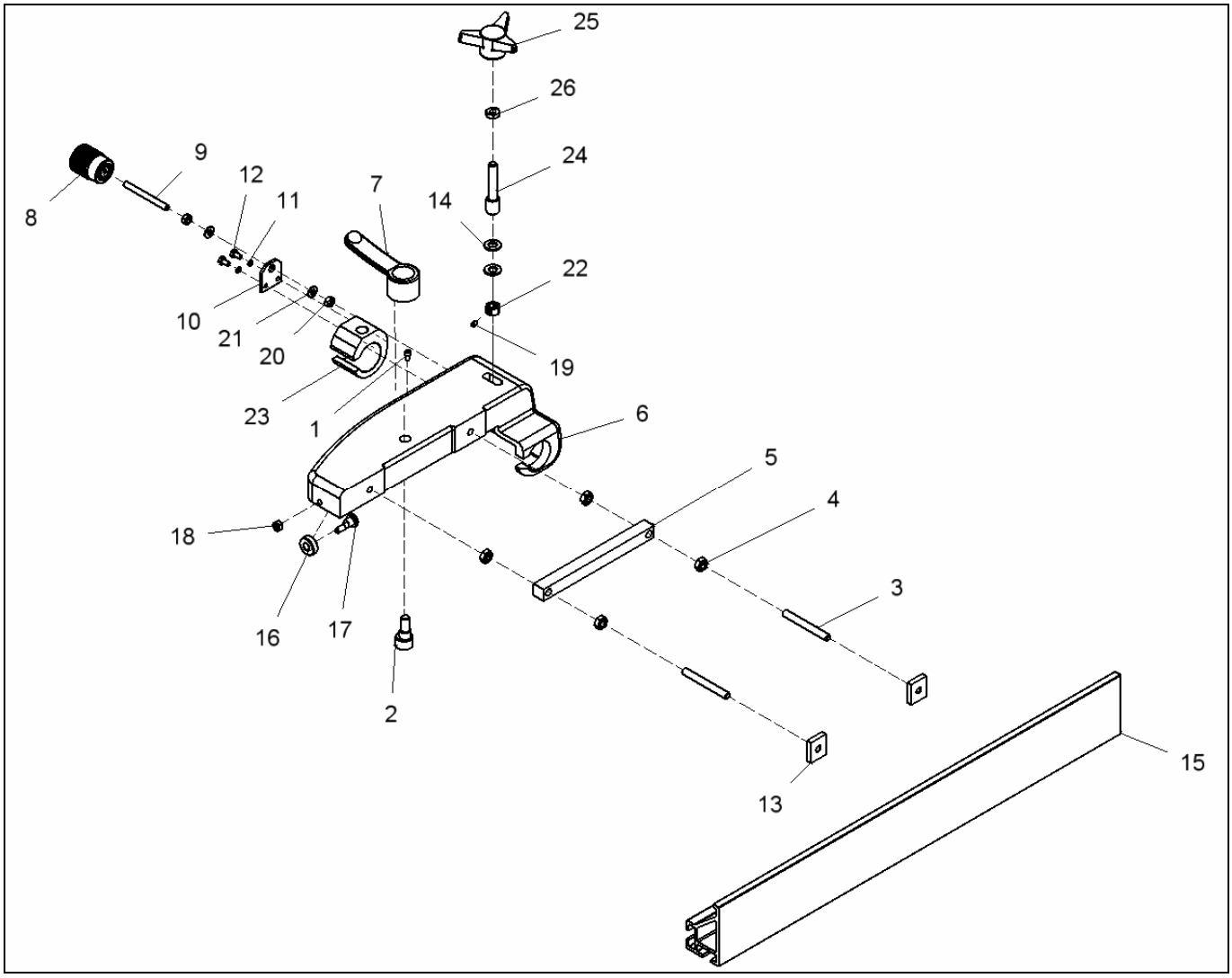
S315.06.00.00.00 DEVICE FOR LIFTING

1	S315.06.00.01.00	GUIDE FOR LIFTING	1
2	DIN 7980	SPRING WASHER 2-8H	4
3	DIN 912	SCREW M 8X25	2
4	PAP	BUSHING 2020 P10	1
5	DIN988	WASHER Φ20XΦ28X1	1
6	DIN 913	FIXING SCREW M 8X8	2
7	S315.06.00.07.00	INDEX	1
8	S315.06.00.00.08	SHAFT FOR LIFTING	1
9	S315.06.00.00.09	PIN	1
10	S315.06.00.00.10	FLYWHEEL Ø160	1
11	A586-65-M8-30	HANDLE M8X30	1
12	GN698-KU-24-M10	HANDLE	1
13		AXIS FOR BEARING 1528	3
14		AXIAL BEARING 1528	1
15	DIN 912	SCREW M8x35	2
16	S315.06.00.00.16	BASE	1
17	S315.06.00.00.17	WASHER	1
18	DIN 1481	SPRING PIN Φ 5X20	2
19	UL808.1-20-12-62E	HINGED CLUTCH	1
20	S315.06.00.00.20	SCREW FOR LIFTING	1



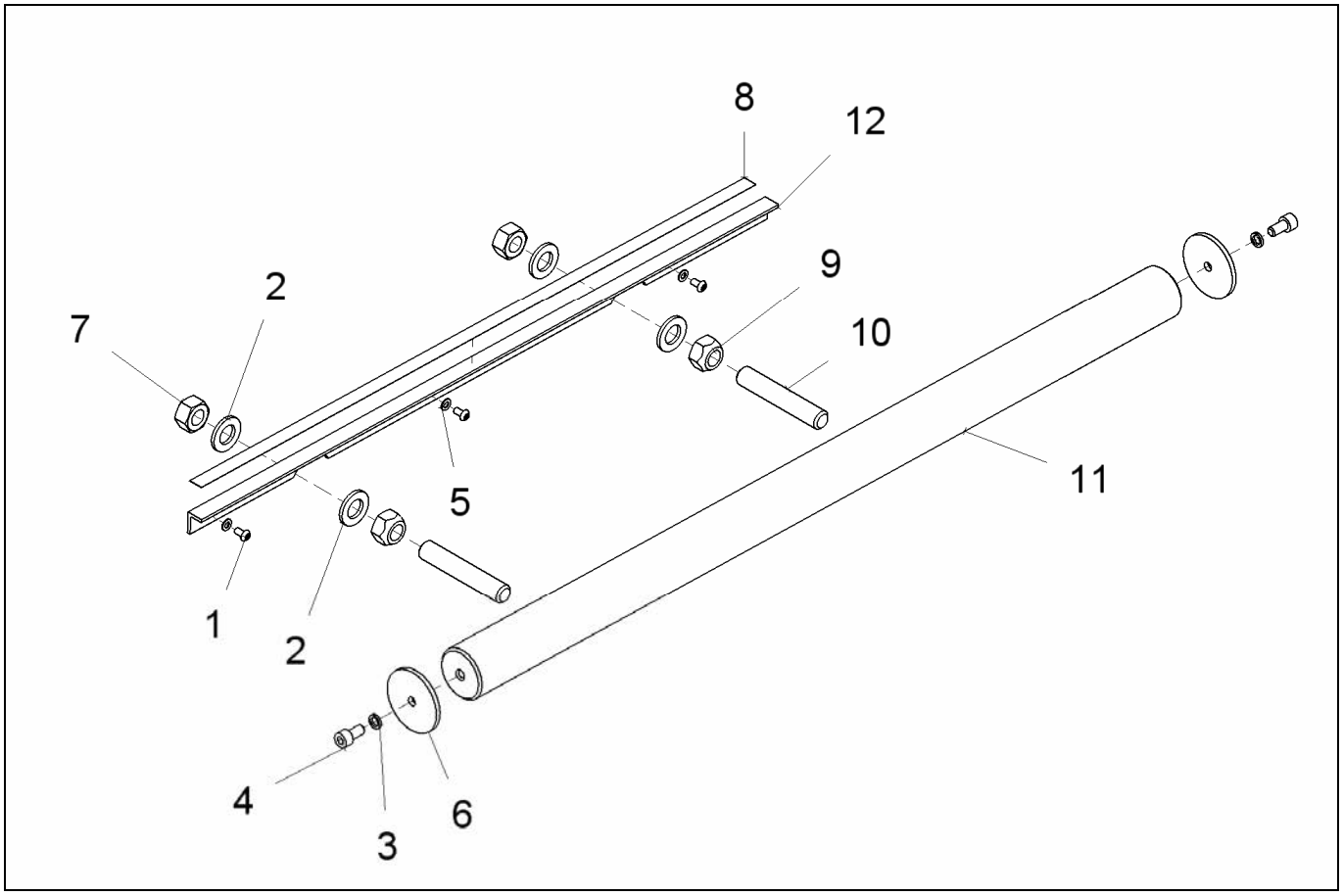
TS315.32.00.00.00 DEVICE FOR TILTING

1	S315.07.00.00.02	STUD	1
2	S315.07.00.00.01	NUT	1
3	S315.07.00.00.26	SUPPORT FOR TILTING	1
4	S315.07.00.00.24	SCREW FOR TILTING	1
5	UL808.1-20-12-62E	HINGED CLUTCH	1
6	S315.07.00.00.12	GUIDE FOR TILTING	1
7		AXIAL BEARING 8104	1
8	DIN 471	RING FOR SHIFT Φ20	1
9	DIN 1481	SPRING PINΦ 5X20	2
10	DIN 125A	WASHER M8	2
11	DIN 7980	SPRING WASHER 2-8H	2
12	DIN 912	SCREW M8x20	2
13	GN598.5-KU-28	HANDLE	1
14	DIN 7991	SCREW M 6X10	1
15	AS2035	AXIAL WASHER	2
16	S315.07.00.00.15	FLYWHEEL SMALL	1
17	DIN 912	SCREW M10X70	2
18	DIN 7980	SPRING WASHER 10H	2
19	T17634	FORK G 8X16 - M8	1
20	T17646	AXIS WITH SPRING LOCK G 8X16	1
21	DIN 985	NUT M 8	2
22	UL808.1-20-12-62E	HINGED CLUTCH	1
23	S315.06.00.00.17	WASHER	1
24	S315.06.00.00.09	PIN	1
25	TS315.32.00.00.14	SHAFT FOR TILTING	1
26	BOTECO A583-65-M8-20	HANDLE M8X20	1
27	UN 732	WASHER ф8хф30х2	1
28	DIN 439	NUT M 8	1



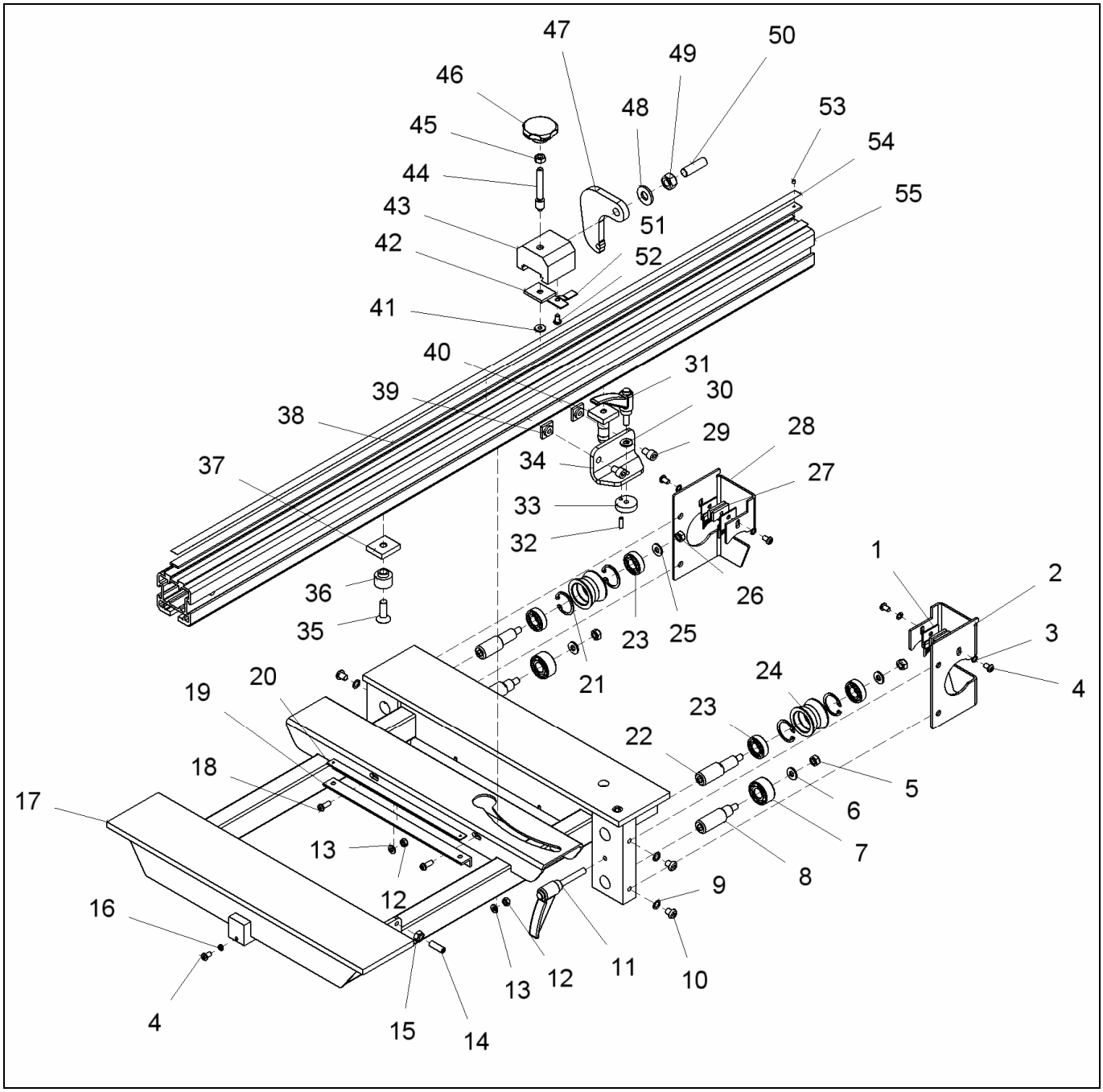
K5-32.20.00.00.00 PARALLEL RULER

1	DIN 912	SCREW M 5X10	1
2	S315.18.00.00.06	ECCENTRIC	1
3	K5-32.20.00.00.03	STUD	2
4	DIN 934	NUT M10	4
5	K5-32.20.00.00.05	PLATE	1
6	K5-32.20.00.00.10	PORTER	1
7	ELC.100 A-12-C3	HANDLE	1
8	N740-40 M8	HANDLE M8	1
9	K5-32.04.00.00.19	STUD	1
10	K5-32.04.00.00.16	PLATE	1
11	DIN 7980	SPRING WASHER 2-6H	2
12	DIN 933	BOLT M6X12	2
13	MFN2300-00.04.00.02	COTTER	2
14	DIN 125A	WASHER M12	2
15		PROFILE L=800 T4570	1
16	S2300.16.00.00.03	ROLL	1
17	S315.18.00.00.07	ECCENTRIC AXIS	1
18	DIN 934	NUT M8	1
19	DIN 913	FIXING SCREW M6X8	1
20	DIN 985	NUT M 8	2
21	DIN 125A	WASHER AM 8	2
22	S315.18.00.00.20	NUT M12-M6	1
23	K5-32.04.00.00.13	TAG	1
24	S315.18.00.00.18	STUD M12-M18x84	1
25	GN5330-100-M12-E	HANDLE	1
26	DIN 439	NUT M12	1



TS315.16.00.00.00 BEAM, CUT 630MM

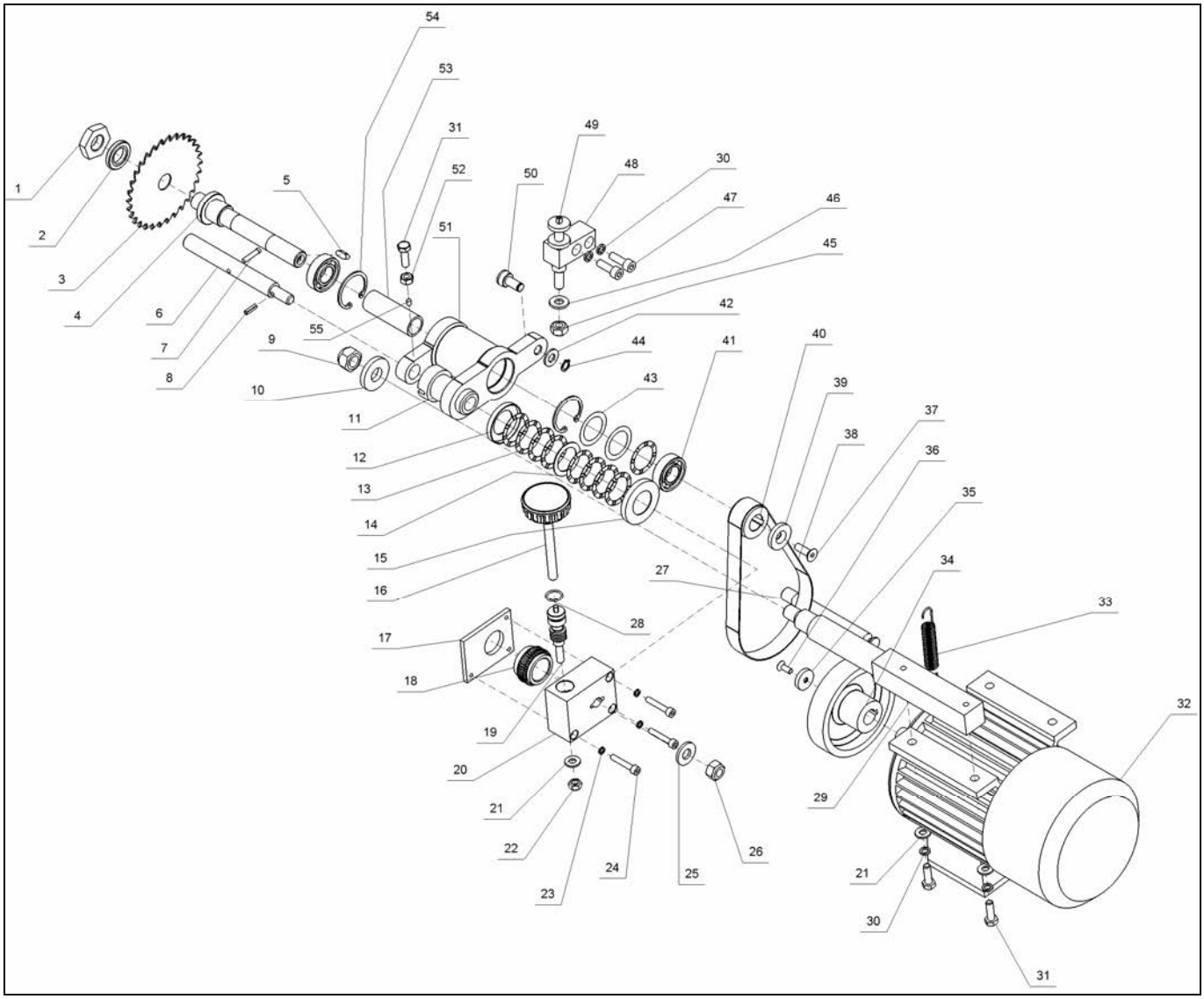
1	ISO 7380	SCREW M 5X10	3
2	DIN 125A	WASHER M16	4
3	DIN 7980	SPRING WASHER 2-8H	2
4	DIN 912	SCREW M8X20	2
5	DIN125A	WASHER AM5	3
6	К5-32.04.00.00.40	WASHER	2
7	DIN 934	NUT M16	2
8		RULER LEFT-RIGHT 0-600	1
9	DIN 985	NUT M16	2
10	S315.18.00.00.31	SUPPORT STUD	2
11	TS315.16.00.00.01	BEAM Φ45, CUT 620	1
12	TS315.16.00.00.02	L –SHAPE	1



TS315.21.00.00.00 MOBILE FRAME SMALL

1	TS315.21.01.00.12	BRUSH	4
2	TS315.21.01.00.04	COVER LEFT	1
3	UN 792	WASHER M6 (Φ6.4XΦ10.0X0.7)	4
4	ISO 7380	SCREW M 6X10	5
5	DIN 985	NUT M 8	1
6	DIN 134	WASHER M 8	1
7		RADIAL-BEARING 3202-2RS	1
8	TS315.21.01.07.01	ECCENTRIC AXIS	1
9	UN 792	WASHER M8 (Φ8.4XΦ13.0X0.8)	4
10	ISO 7380	SCREW M8X10	4
11	ERX 603-63-M8-50	HANDLE M8X50	1
12	DIN 985	NUT M 6	2
13	DIN 125A	WASHER M6	2
14	DIN 913	FIXING SCREW M 8X25	1
15	DIN 934	NUT M8	1
16	DIN 7980	SPRING WASHER 2-6H	1
17	TS315.21.01.01.00	FRAME	1
18	ISO 7380	SCREW M6X16	2

19	TS315.21.01.00.17	L –SHAPE	1
20	T1376	PLATE 0-45	1
21	DIN 472	RING FOR HOLE ø32	2
22	TS315.21.01.08.02	ECCENTRIC AXIS UPPER	1
23		RADIAL-BEARING 6002-ZZ	2
24	TS315.21.01.08.01	ROLL	1
25	DIN 134	WASHER M 8	1
26	DIN 985	NUT M 8	1
27	S2300M.11.00.03.03	THREADED PLATE M6	4
28	TS315.21.01.00.05	COVER RIGHT	1
29	DIN912	SCREW M8X20	2
30	DIN 125A	WASHER M8	1
31	BOTECO A583-65-M8-20	HANDLE M8X20	1
32	DIN 1481	SPRING PINΦ5X16	1
33	TS315.21.02.00.08	PLATE	1
34	TS315.21.02.00.04	BASE	1
35	DIN 7991	SCREW M10X30	1
36	TS315.21.02.00.11	STOP	1
37	MFN2300-00.04.00.02	COTTER	1
38	S315.48.00.00.07	RIM15X3, L=1219MM	1
39	S315.46.00.00.05	COTTER SQUARE	2
40	S315.82.02.00.08	SUPPORT	1
41	S2300.13.00.00.18	WASHER	1
42	U.00.07	PLATE	1
43	TS315.21.02.02.01	SLIDER	1
44	U.00.06	SCREW	1
45	DIN 934	NUT M8	1
46	GN6336-KU-50-M8-K	HANDLE STAR M8	1
47	TS315.21.02.02.07	STOP	1
48	DIN 134	WASHER M12	1
49	DIN 985	NUT M 12	1
50	DIN 913	FIXING SCREW M12X40	1
51	TS315.21.02.02.11	ARROW	1
52	ISO 7380	SCREW M 6X10	1
53	DIN 551	FIXING SCREW M 4X5	1
54		RULER 0-1219 (H110-2000R)	1
55	S315.48.00.00.06	PROFILE T4564, L=1219MM	1



S315.33.00.00.00 SCORING UNIT WITH MOTOR (OPTION)

1	S2300.28.00.00.10	NUT	1
2	S315.33.00.00.02	PRESSING WASHER	1
3	-	CIRCULAR DISK Ø120 X Ø20 X 2,5	1
4	S315.33.00.00.04	SHAFT	1
5	DIN 6885 A	COTTER 1-6X6X16	1
6	S315.33.00.00.06	GUIDING AXIS	1
7	S3200.28.00.00.16	PIN	1
8	DIN 1481	SPRING PIN ø5X16	1
9	DIN 985	NUT M16	1
10	DIN 7349	WASHER M16	1
11	S315.33.00.00.11	GUIDE	1
12	S400.28.00.00.52	SMALL INSERTION	1
13	-	LEVELING WASHER Φ30XΦ41X05X2,9 K2	9
14	DIN 988	WASHER Ø30X Ø42 X 1	1
15	S400.28.00.00.53	BIG INSERTION	1
16	S2300.28.00.02.00	HANDLE	1
17	S3200.28.00.00.19	COVER	1
18	S3200.28.00.36	WORM- WHEEL	1
19	S2300.28.00.00.08-01	WORM	1
20	S3200.28.00.00.20	CORPUS	1
21	DIN 134	WASHER M8	3
22	DIN 985	NUT M8	1
23	DIN 7980	SPRING WASHER 2-6H	3
24	DIN 912	SCREW M 6X35	3

25	DIN 134	WASHER M12	1
26	DIN 985	NUT M12	1
27	S315.33.00.00.27	STUD	1
28	-	O- RING Ø16X2	1
29	S315.33.00.00.29	AXIS FOR MOTOR	1
30	DIN 7980	SPRING WASHER 2-8H	4
31	DIN 933	BOLT M 8X25	3
32	ESR80	MOTOR	1
33	S315.33.00.00.33	SPRING	1
34	S315.00.00.25	BELT PULLEY	1
35	S315.33.00.00.35	WASHER	1
36	DIN 7991	SCREW M 6X16	1
37	DIN 7991	SCREW M 8X20	1
38	-	BELT 20X1.25, L=555	1
39	S2300.28.00.00.19	WASHER	1
40	S2300.28.00.00.20	BELT PULLEY	1
41	-	BEARING 6004.2RS.C3	2
42	DIN 125A	WASHER AM10	1
43	DIN 988	WASHER Ø30X Ø42 X0.1	2
44	DIN 471	RING FOR SHAFT Ø10	1
45	DIN 985	NUT M10	1
46	DIN 134	WASHER M10	1
47	DIN 912	SCREW M 8X25	2
48	S315.33.00.00.48	LIFTING BLOCK	1
49	S315.33.00.00.49	LIFTING SCREW	1
50	S315.33.00.00.50	ROLLER	1
51	S315.33.00.00.51	SUPPORT	1
52	DIN 934	NUT M8	1
53	S315.33.00.00.53	BUSHING	1
54	DIN 472	RING FOR HOLE Ø42	2
55	S315.82.02.00.09	BUFFER	1

* - BY SPECIAL ORDER

ZMM STOMANA JSC - SILISTRA

.....
/date of production/

QUALITY CERTIFICATE

We do certify that the **Circular saw STA 315** as per Production number _____ was duly checked and controlled.

It conforms to the technical documentation and to the Bulgarian State Standard 9136-87.

Inspector:.....

/date/

Manager:…….

ZMM STOMANA JSC - SILISTRA

.....
/date of production/
.....
/Number of warranty certificate/

WARRANTY CERTIFICATE

Description of item: **Circular saw STA 315**
Model: .....
Production number.....
Passport No.....
Components .....
Warranty period: .....
The machine is purchased by .....
Invoice No.....

This machine is produced under approved technical documentation in the producing plant and according to the effective norms in Bulgaria.

The producer guarantees the proper operation of the machine for 12 months upon the date of shipment provided that all requirements related to the assembly, servicing and operation as indicated in this Manual, are observed.

All claims produced to us must be effected upon presentation of this warranty certificate.

Service unit	Date of re-ceipt	Order No	Kind of repair works	Date of de-livery	Checked by

.....
(date)

Seller: .....
Buyer :.....
Address: .....