



COMBINED PLANER AND THICKNESSER

SP 410
SP 510

translation of the original
Service instructions handbook

update 11 / 2011

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Foreword

This manual was created by the equipment manufacturer and forms an integral part of the machine supply. It contains the basic information for qualified operating personnel and describes the environment and the manners of use of the machine, for which it is designed and also contains all the needed information for correct and safe operation.

The machine is fitted with various safety equipment, namely both for the operator protection and the machine protection for its regular technological use. These measures, however, cannot cover all the safety aspects and therefore it is necessary that the operator, before using the machine, reads and understands this manual. This will prevent errors both during the installation and during the actual operation.

Do not attempt to commission the machine before reading all manuals supplied with the machine and understanding all functions and procedures.

Some information or sketches may not be designed for the machine purchased by you, because this manual contains all the information for various variants of this type, which we produce. By comparing the corresponding part of the manual with the specific machine you can find out, whether they match.

The producer reserves the right of partial changes within the scope of continuing technical development of the machine.

In order to emphasise important passages in the basic text, bold letters and marking with some of the following symbols is used:



An invitation that recommends proceeding exclusively according to the following instruction. In case of non-adherence to this instruction, death or severe danger to the health of the operating personnel may occur.



A warning against unsuitable working procedures or use of the machine that may cause danger to human health, machine function, the environment or economic losses.



Caution is an invitation to proper carefulness when performing the following activities. Non-adherence to this caution may cause minor injuries or machine damage.

Adhere to the instructions stated on labels fitted to the machine. Do not remove or damage these labels. In any case of label damage, contact the manufacturer and renew the label.

Warning

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1.0 Machine Use

The machine is designed as a combined planer and thicknesser for use in carpentry operations for longitudinal (against the fibres) wood and wood based material machining up to a width of 408 mm.

The machine is designed for operation by one operator.

Any machine handling by children and juveniles is forbidden.

1.1 Employee Qualification

Only an educated expert in the woodworking field or an employee informed and trained by this expert may work with the machine, namely regardless to gender. The operator is obliged to familiarise himself with this manual and to adhere to all safety regulations, directives, and provisions valid in the country in order to work with the machine.

1.2 Working Environment

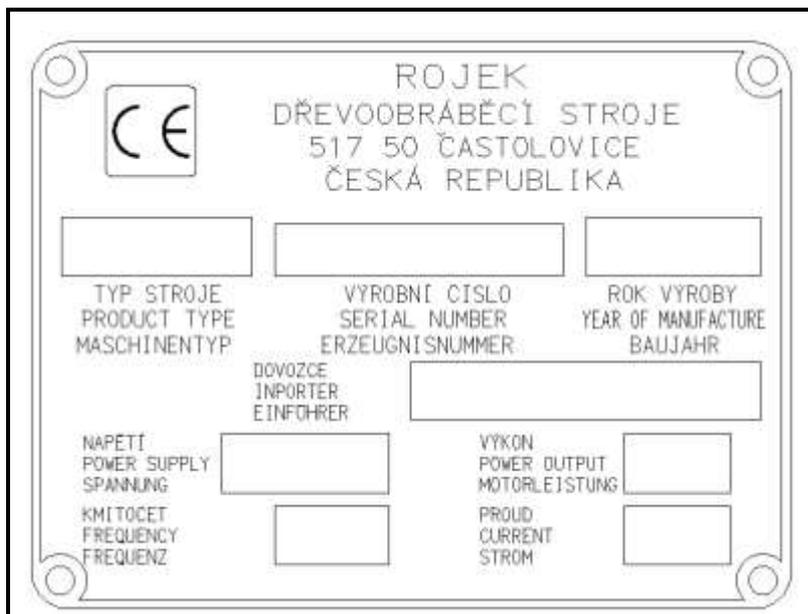
The machine must work in a workshop environment, whose temperature does not exceed +40 °C and does not drop below +5 °C. The relative air humidity is 30 % to 95 % - non-condensing. Altitude up to 1,000 m. Environment classification according to CSN 33 2000-3; CSN 33 2000-5-51 – danger of fire of flammable dusts (BE2N2)

2.0 Machine Marking

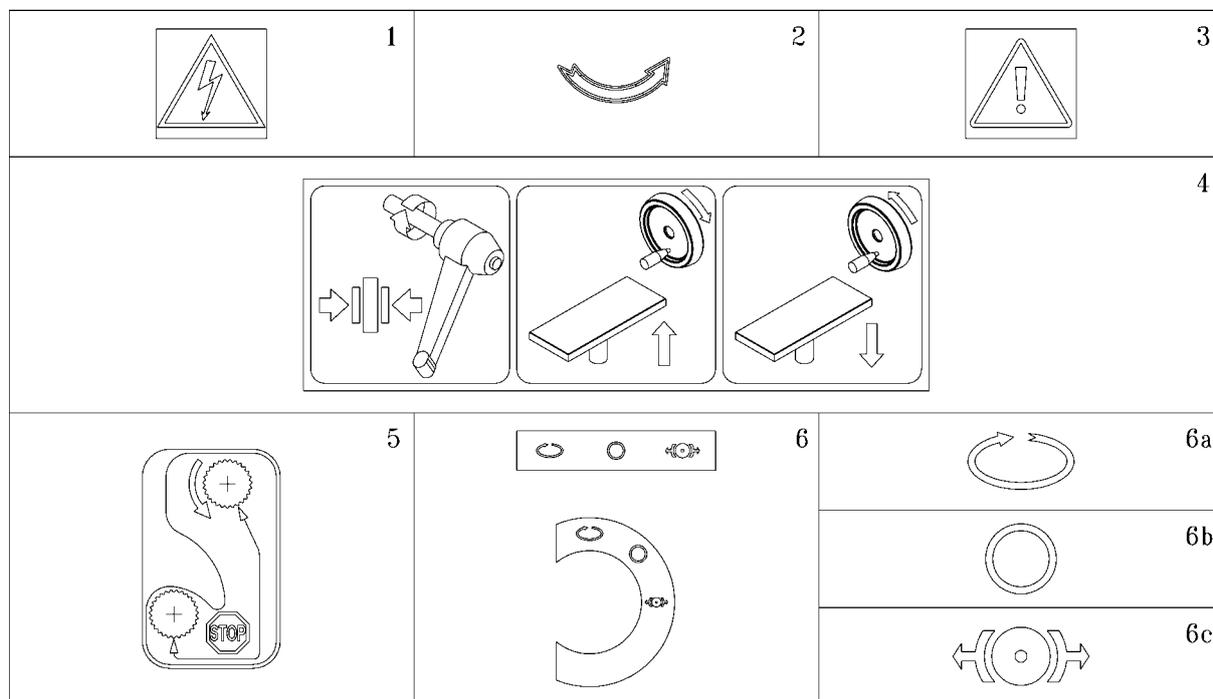
You can identify the machine type according to the production label, which is fastened to the machine stand.

SP 410 - combined planer and thicknesser with folding tables, working width 408 mm.

SP 510 - combined planer and thicknesser with folding tables, working width 508 mm.



On the machine, information labels and danger warning labels are placed.



1. Attention, electric equipment
2. Rotation direction
3. Attention, caution
4. Thickening table adjustment and fixing
5. Feed roller control
6. Selector switch for brake release of the working shaft
 - 6a Working rotating direction
 - 6b Off, rest condition
 - 6c Brake released.
7. Tightening of thickening table.



3.0 Technical Data

3.1 Technical Data of SP 410, SP 510

Motor output	3; 3.7; 4; 5.5; 7.5 kW	
Motor speed	2,860 rpm (3,432 rpm [60Hz])	
motor output	1.5 kW 1.1/0.75 kW	
Thicknessing table adjustment motor output	0.18 kW	
Cutter block diameter	95 mm	
roller diameter	40 mm	
Number of knives	4 (3)	
Tilting rule slope angle	0° ÷ 45°	
Cutter block speed	4,200 rpm	
Max. planing width	410 mm	
Max. thicknessing width	408 mm	
Max. thicknessing height	240 (250) mm	
Max. thicknessing splinter	5 mm	
Max. planing splinter	5 mm	
Thicknessing speed	7 m/min. 7/4.5 m/min. 12 m/min 12/7.5 m/min continuous 5 - 20 m/min friction gear 8.4 m/min	
Machine dimensions	SP 410	SP 510
Length	1,900 mm	2,300 mm
Width	790 mm	890 mm
Table height	918 mm	918 mm
Max. machine height	1,440 mm	1,440 mm
Planer table dimensions	1,900 x 425 mm	2,300 x 425
Thicknesser table dimensions	920 x 408 mm	920 x 508
Extraction diameter	120 mm	120 mm
Dimensions with packaging	1920 x 850 x 1150 mm	2400 x 950 x 1150 mm
Gross weight	540 kg	740 kg
Net weight	535 kg	735 kg
Other parameters		
Voltage / frequency	3x400V (3x230V 1x230V) / 50(60) Hz	
Line securing	16 A 25 A.	

3.2 Possible Machine Variants

	SP 410	SP 510
Electromotor output		
- 3 kW 3F		1
- 3.7 kW 3F		1
- 4 kW 3F		1
- 5.5 kW 3F		1
- 7.5 kW 3F		1
Operating voltage:		
- 3 x 230 V or 3 x 400 V		1
Grid frequency: 50 or 60 Hz		1
Separate thickening drive:		
- Single-speed motor with gearbox 1.5 kW		1
- Two-speed motor with gearbox 1.1 / 0.75 kW		1
- Frequency controlled motor with gearbox 1.5 kW		1
Main electromotor drive:		
- Friction gear		1
Cutter block 4 knives		1
3 knives		1
Tersa (3 knives)		1
Thickening table adjustment hand wheel		1
electromotor		1
Cutter block cover:		
- Own design		1
- CPS		1
Extension of the thickening table by rollers		1
Table rollers		1
Mortiser VDA 315		1
Undercarriage		1

3.3 Values of Removal, , and Output

Output (kW)	(m/min)	Worked width (mm)	Splinter (mm) according to
3	7 (4.5; 8.4)	400	1.5; (2.2; 1.2)
4			2; (3; 1.7)
5.5			2.7; (4.3; 2.3)
7.5			3.7; (5.8*; 3)

* limited by the machine design to the max. possible splinter of 5 mm

The stated values apply to pine wood of regular quality and humidity about 12 to 15 %, with sharp tools. These values can be considered initial when commissioning the machine. With longer use of the machine, these values may be partially modified. E.g. when machining harder wood species and tool dulling, it is necessary to consider an adequate decrease of the stated values.

The size of the removed splinter depending on the machined width and hardness of the work piece can be selected only up to those values, at which the electromotor of the drive is not overloaded. In the opposite case, the electromotor protection is engaged and the machine stops.

When machining materials of small thicknesses, it is necessary to consider a worse quality of machining due to the section springing.

3.4 Equipment Noise Data (EN 861:1998; ISO 7960:1995)

		SP 410	SP 510
Noise level A at the operator place ($L_{pA_{eq}}$)	without technology	$L_{pA_{eq}} = 72,7$ dB(A)	$L_{pA_{eq}} = 72,7$ dB(A)
	with technology	$L_{pA_{eq}} = 90,0$ dB(A)	$L_{pA_{eq}} = 90,0$ dB(A)
Acoustic output level A (L_{WA}) EN ISO 3746:1995 K = 4 dB	without technology	$L_{WA} = 83,4$ dB(A)	$L_{WA} = 83,4$ dB(A)
	with technology	$L_{WA} = 99,2$ dB(A)	$L_{WA} = 99,2$ dB(A)

The stated values are the values of emissions and do not have to represent safe working values. Although there is a correlation between the values of emissions and the levels of exposure, these values may not be used for a reliable determination, whether further measures are or are not necessary. The factors that affect the actual levels of employee exposure include the properties of the working space, other noise sources, etc., e.g. the number of machines and other neighbouring processes. Also the highest admissible levels of exposure may be different in individual countries. This information should serve the machine user for a better evaluation of the risk and the risk rate.

3.5 List of Used Documents

Directive 98/37/EC

by which the technical requirements for machinery are determined

Directive 2009/95/ES

by which the technical requirements for electric equipment of low voltage are determined

Directive 2004/108/ES

by which the technical for electromagnetic compatibility are determined

EN ISO 12100: 2011

Machinery safety - General fundamentals for designing - Risks appreciation and dispraise

EN 861 : 1998 (EN 861 : 1997)

Woodworking machine safety. Combined planers and thicknessers

EN 294 : 1994 (EN 294 : 1992)

Machinery safety. Safe distances for preventing the reach to dangerous places by upper limbs

EN 349 : 1994 (EN 349: 1993)

Machinery safety. Smallest gaps for preventing squeezing of human body parts.

EN ISO 13850: 2007

Machinery safety - Emergency stopping - Design guidelines

ISO 447: 1992

Direction and sense of controller movement

EN 953 : 1998 (EN 953 : 1997)

Machinery safety. Protective covers. General requirements for design and production of fixed and moving protective covers.

EN ISO 13849-1: 2008

Machinery safety - Safety parts of control systems . Part 1: General design guidelines

EN 1037 : 1997 (EN 1037: 1995)

Machinery safety. Prevention of unexpected start

EN 1088 : 1999 (EN 1088 : 1995)

Machinery safety. Interlocking equipment connected to protective covers. Guidelines for design and selection

ISO 364-3

Electric-technical regulations. Electric equipment. Part 3: Basic characteristic determination (environment types)

epv HD384.4.482 S1

Electric-technical regulations - Electric equipment - Part 4: Safety - Chapter 48: Selection of protective measures according to external effects - Section 482: Protection against fire in premises with a special risk or danger.

ISO 364-5-52

Electric-technical regulations - Electric equipment - Part 5: Selection and construction of electric equipment - Chapter 51: General regulations

EN 55011:1999 (EN 55011:1998)

Limits and methods of measuring the characteristics of electromagnetic interference in industrial, scientific, and medical facilities

EN 60204-1 ed.2: 2007 (EN 60204-1 : 2006)

Machinery safety. Electric equipment of machines. Part 1: General requirements

EN 60073: 2003 (EN 60073: 2002) Basic safety guidelines. Communicator coding guidelines.

ISO 7000 : 2005 (EN ISO 7000 : 2004)

Graphical signs replacing equipment inscriptions.

4.0 Safety Instructions

4.1 General

This machine is fitted with various safety equipment, namely both for the operator and the machine protection. However, this cannot cover all safety aspects and therefore the operator must read and understand this chapter before operating the machine. Furthermore, the operator must consider also other danger aspects, which are related to ambient conditions and material.

Three categories of safety instructions are included in this manual.



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A warning against unsuitable working procedures or use of the machine that may cause danger to human health, machine function, the environment or economic losses.



Caution is an invitation to proper carefulness when performing the following activities. Non-adherence to this caution may cause minor injuries or machine damage.

Adhere to the instructions stated on labels fitted to the machine. Do not remove or damage these labels. In any case of label damage, contact the manufacturer and renew the label.

4.2 Basic Safety Requirements



Do not touch the low voltage equipment at the electric control panel, transformers, motors, and terminal boards, which are fitted with a label under no circumstances.

- Make sure, before connecting the machine to the electric grid, whether all safety elements are in the active position and verify their function. In case of necessity of removing the doors or protective covers, turn off the main switch and lock it.
- Kick catchers must be freely moving and their function must be checked regularly even several times a day.
- Do not connect the machine to the grid, if a door or a protective cover is removed.



- In order to prevent incorrect operation, familiarise yourselves with the switch location before starting the machine.
- Remember the position (location) of the emergency switch, so that you can use it quickly at any time.
- Take care that you do not randomly touch some switches during machine operation.
- Under no circumstances touch the rotating tool with bare hands or something else.
- In case you do not work with the machine, turn it off with the switch on the control panel and disconnect the energy supply to the machine.
- Turn off and lock the main switch before cleaning the machine.
- Before performing maintenance inside the machine, always turn off and lock the main switch.
- If the machine is used by multiple employees, do not proceed to further work without informing the other employees about your procedure.

- Do not modify the machine in any way that could endanger its safe operation.
- If you doubt about the correctness of a procedure, contact the responsible employee.



- Do not neglect the performance of regular inspections in accordance with the operating manual.
- Check and make sure that nothing interfering from the user's part is located on the machine.
- After completing the work, adjust the machine so that it is ready for the next series of operations.
- If there is a power outage, turn off the main switch immediately.
- Do not paint, pollute, damage, modify or remove safety labels. In case of their illegibility or loss, contact the production plant and renew the labels.

4.3 Clothing and Personal Safety



- The experience shows that the cause of injuries are various personal objects, such as rings, watches, bracelets, etc. Therefore, remove them before commencing the work, button the sleeves, remove the necktie, which can be caught by various parts of the operating machine. Tie the hair, so that it does not wave freely, and wear suitable footwear recommended or prescribed by the work safety regulations of all countries.
- Wear safety equipment (glasses, apron, safety footwear, etc.).
- In case of overhead obstacles – in the working space, wear a helmet.
- Always wear a protective mask when machining material, which produces dust during machining.
- Never wear loose working clothes.
- Do not work with the machine under influence of drugs and alcohol.
- If you suffer from dizziness, weakening or fainting, do not work with the machine.

4.4 Safety Regulations for Operators



- Do not operate the machine, unless you have familiarised yourselves with the contents of the operating manual.
- Check, whether electric cables are not damaged, so that injury does not occur due to an electric current leak (electric shock).
- Regularly check, whether the safety covers are correctly mounted and whether they are not damaged. Immediately repair the damaged covers and replace with others.
- Do not start the machine with a removed cover.
- Never use deformed or broken tools.
- Always use a tool suitable for the work in question and complying with the machine specifications.
- Replace dull tools as soon as possible, because dull tools are a frequent cause of injuries and damage.
- Never use tools at higher speeds than recommended by their manufacturer.
- Stop all machine functions before replacing knives.
- Do not remove or otherwise tamper with the safety equipment, such as covers, end switches or do not perform their interlocking.
- When handling parts beyond your capacity, request assistance.
- We recommend not working with the machine during a storm.

4.5 Safety Regulations for Maintenance

Do not perform maintenance works before familiarising yourselves perfectly with the maintenance manual.



- Before performing any maintenance works, always turn off the main switch and lock it. This will prevent the possibility of random machine start by someone else.



- A qualified person must perform the maintenance works at the electrical parts of the equipment.
 - Even though the machine is stopped, the current is not turned off. Always turn off the main switch and lock it.
- Do not clean the machine or its peripherals even when the machine is completely turned off, unless the main switch is turned off and locked.
 - Have your fingers further from belts and pulleys, as well as chains and chain wheels.
 - When replacing electric parts of the equipment, turn off the main switch, lock it. Use products identical to the original specification for replacement of defective parts.
 - Do not remove or modify the interlocking of end switches or other safety equipment.
 - Do not start the machine, unless all covers removed for purpose of maintenance are returned to their place.
 - Always keep the space for maintenance, including the workplace, clean.



- Maintenance works must be performed by qualified personnel in accordance with the machine producer instructions.
 - Carefully read the entire maintenance manual.
- For replacement of parts and consumables procure in advance such that are identical to the original type or comply with the standards.
 - Use only specified types of lubrication oils and lubricants or equivalents.
 - In case one belt in the set of used belts is extended beyond the prescribed limit, replace the entire set.
 - Do not use compressed air for machine cleaning or splinter removal.
 - Check the maintenance results in presence of the responsible person.

4.6 Safety Regulations for the Workplace



- Always ensure sufficient working space and free access to the machine and peripherals.
 - Place the tools and other obstacles to a distant place designed for that purpose.
 - Ensure sufficient lighting in the working space, which will not create shadows or cause the stroboscopic effect. For safe and quality work, the hygienic standards state the minimum intensity of 500 lx.
- Never put tools or other objects on worktables or covers.

5.0 Transport and Storage

5.1 Transport and Storage

During transport and storage, be especially careful and entrust this activity to qualified personnel specially trained for this type of activity.



When loading and unloading the machine, you must ensure that persons or objects are not squeezed by the machine! Do not enter the space below the machine, which is lifted by a crane or a forklift!

During transport and storage, a machine must be protected against excessive vibrations and humidity. Storage must be performed under a roof within the temperature range from minus -25 °C to 55 °C. The machine is standard packaged into a foil and transported in this condition. Upon request, the machine can be packaged into a durable wooden crate.

5.2 Machine Lifting

The machine **or** its individual parts may only be lifted by approved lifting equipment with tested load capacity. We recommend using:

D – forklift

E – crane or other lifting equipment

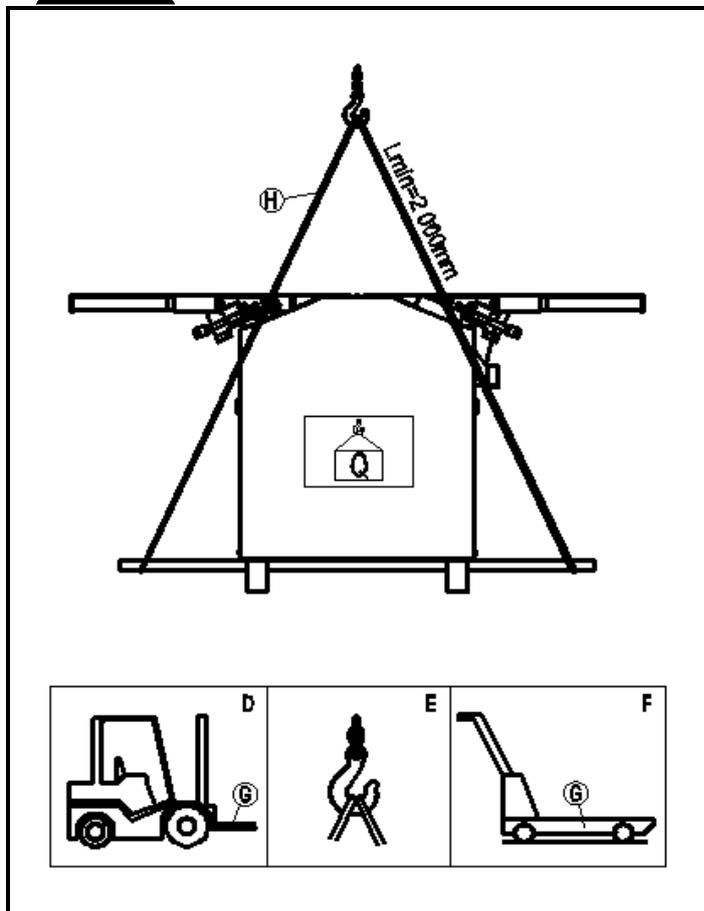
F – manual lifting cart.



Use a forklift with a sufficient fork length!



Never grab the machine by the planing tables!!! You can disturb machine adjustment by that.



Prepare the forklift (D) or the manual lifting cart (F) with a sufficient load capacity.

- Insert the forks (G) under the machine. If you use a crane (E) or similar lifting equipment, proceed as follows:

- Prepare for lifting ropes (H) of min. length 2 m.

- Fasten the ropes to the crane hook with a required load capacity.

- Place the other end of the ropes to the lifting bars according to the figure (the bars are not a part of the supply).

- With slight lifting, check the stability of machine suspension.

- Lift the machine carefully and slowly and then relocate it without sudden movement changes to the selected place.

Weight: SP 410 540 kg
SP 510 740 kg.

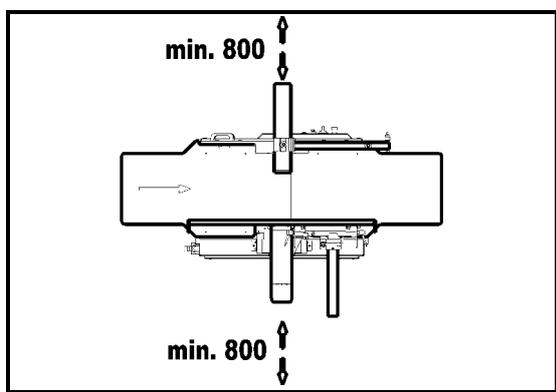
6.0 Machine Establishing

Remove the protective coat from the tables and other parts of the machine by a solvent. Do not use petrol and similar solvents for this activity, which could cause a decrease of the resistance of some parts of the machine to corrosion.

The size of the working space depends on the machine size, the expected working operations, and the size of the machined material.

Do not forget about the space for placing a sufficiently powerful extraction system or connection hoses with central extraction.

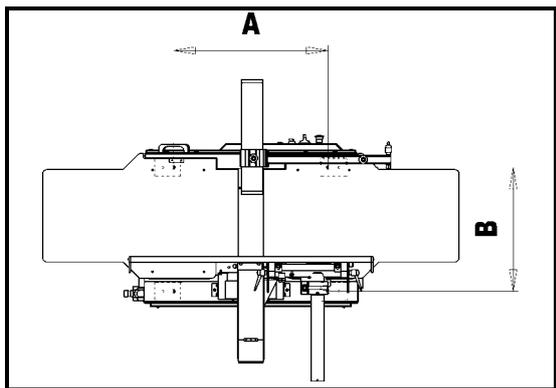
6.1 Working Space



It is important to maintain free space around the machine of at least 0.8 m, which is required for the working place.

If long material is being machined, it is necessary to have sufficient space in front of and behind the machine at the place of entry and exit of the material.

6.2 Machine Levelling and Fixing



The machine is equipped in the lower part of the stand with legs with levelling screws and holes for anchoring screws. Use steel pads under the levelling screws (they form a part of the supply) and level the machine into a horizontal level with a tolerance of 1 mm/1000 mm and screw it to the floor (anchor).

The attached sketch shows the placement of the anchoring holes at the machine.

SP 410 A x B = 707 x 570 mm
SP 510 A x B = 707 x 670 mm.

7.0 Extraction Connection

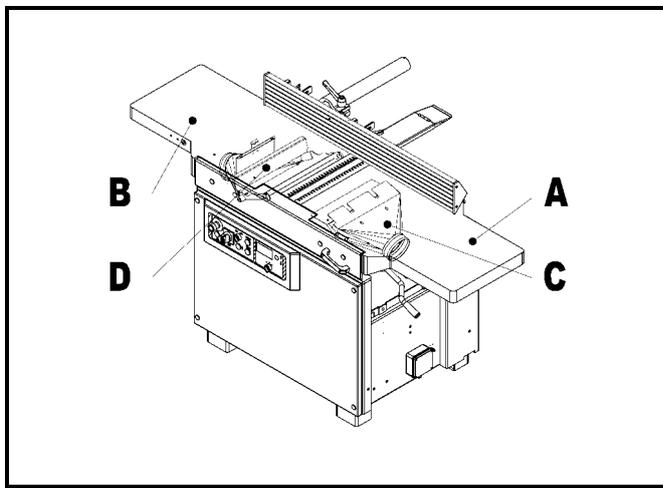


For a correct activity of the machine, extraction equipment with the minimum extraction capacity of 815 m³/hr and minimum air speed in the pipeline of 20 m/s for dry particles and 1,140 m³/hr and minimum air speed in the pipeline of 28 m/s for wet particles is necessary.

**Always work with the machine only with the extraction on!
Start the machine drive and the extraction equipment at once!**

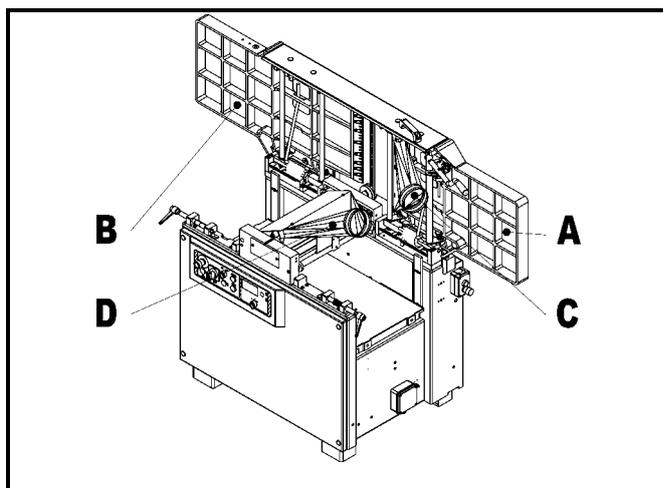
For connecting, use a flexible extraction hose with a diameter of 120 mm. Connect the extraction hose to the extraction nozzle, whose location is as follows:

7.1 Planing



When planing, the front (A) and the rear (B) table is closed. The extraction hose for planing (C) is fixed at the lower side of the front table (A). The extraction hose of thicknessing (D) is turned over into the space between the rear table (B) and the thicknessing table. For a sufficient gap between the tables, it is necessary to set the thicknessing table downwards to the value of about 120 mm according to the scale.

7.2 Thicknessing



When thicknessing, the front (A) and the rear (B) table is open including the extraction hose for planing (C). The extraction hose of thicknessing (D) must be turned over into the working position with the neck to the exit from the machine.

Wood waste disposal must be performed ecologically, so that the environment is not worsened.

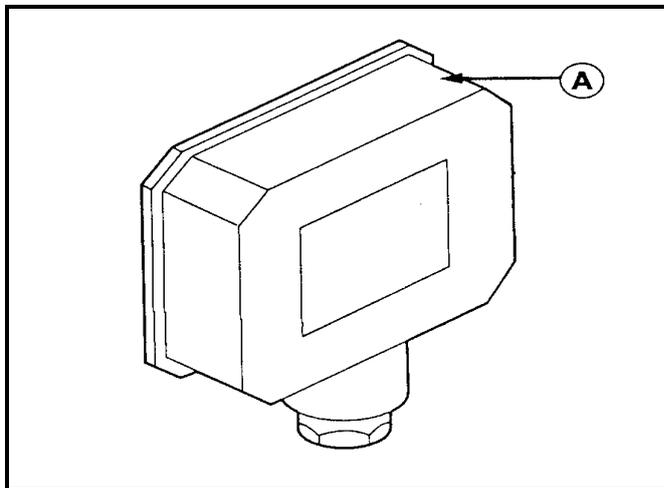
8.0 Power Grid Connection



The first connection of the machine to the power grid can only be performed by a qualified person.

8.1 Grid Connection

The supply to the machine must be grounded (or nulled) according to the regulations and secured by at least 25 Ampere melting fuse or a circuit breaker L. Pursuant to CSN 33 2000-4-482 (epv HD 384.4.482 S1, according to Art. 482.1.7) in a distribution system other than cables with mineral insulation and connection distribution systems, they must be protected against insulation failures in TN grids using current protectors with rated equipment differential current $I_{\Delta N} \leq 300$ mA (see IEC 364-5-53, Art. 531.2.4; corresponding standards for the product).



Before connecting make sure that there is no electric voltage in the supply. Unscrew the lid of the terminal board (A), pull the connecting cable into the box with the terminal board and connect the individual phase conductors to the corresponding terminals. Connect the protective conductor (yellow-green) to the PE terminal and connect the central conductor (light blue) to the N terminal, if required. The cross sections of the phase conductors and the protective conductor must be in accordance with the prescribed standards. Check the wiring correctness and screw back the terminal board lid.

8.2 Operating Safety



Damaged power lead must be replaced immediately by the corresponding expert. Operation with damaged supply cables is life threatening and therefore forbidden

Before commissioning the machine, make sure the voltage and the frequency stated at the type label of the machine corresponds with the values of the grid, to which it is connected.

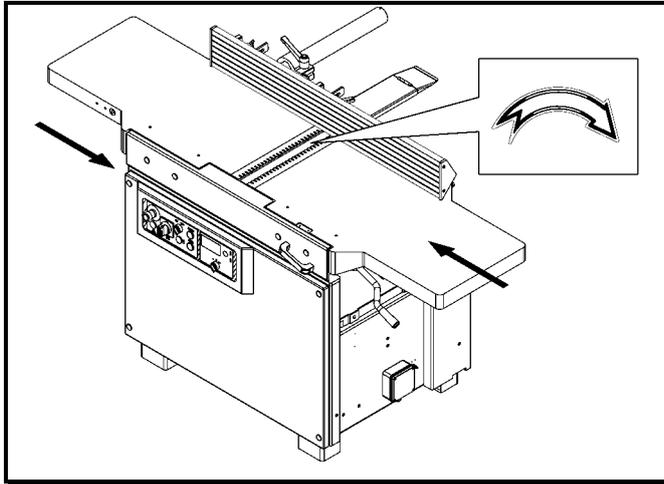


Before adjusting and replacing the tools and before all adjusting works, modifications and maintenance works, always turn off the main switch and lock it. This will prevent the possibility of random machine start by someone else.

8.3 Rotation Direction

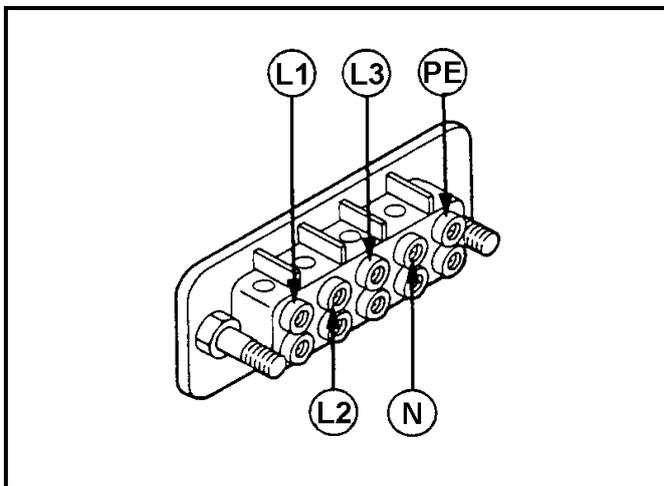


With an incorrect direction of rotation of the cutter block, there is a danger of injury.



If you stand at the side of the front table of the planer against the guide rule, the cutter block must rotate against the material entry, which is to the right, in the arrow direction.

8.4 Rotation Direction Change



With three-phase motors, it is possible to change the rotation direction by exchanging (reconnecting) two conductors (two black or a black and a brown) in the supply terminal board. Pay attention that the yellow-green conductor is not exchanged with the phase!

Modification of electric connection may be performed exclusively by an expert with the corresponding technical qualification !

So as to learn the rotating direction : Start the machine for a flash.

8.5 Electric Equipment Protection

The electromotor of the planer and the thicknesser is equipment with an electric brake that is capable of stopping the cutter block in the required time - up to 10 s.

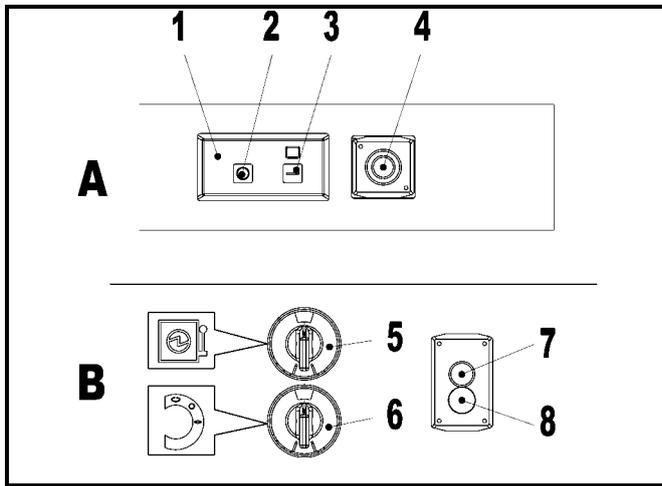
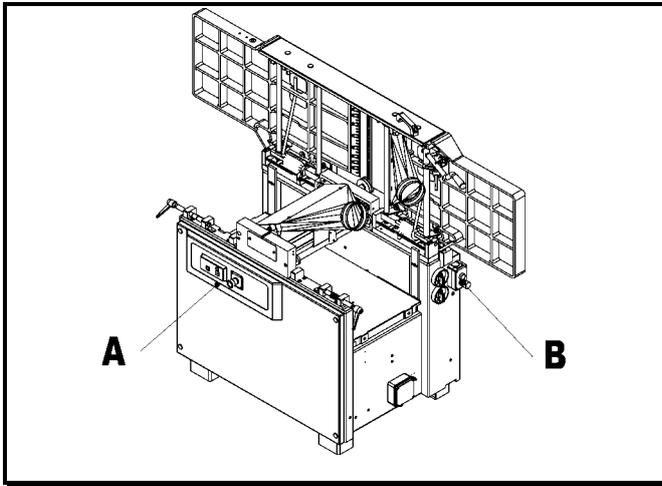
If the electric brake does not work well (the coasting of the cutter block is longer than 10 s), it is forbidden to work with the machine !

Protection against dangerous contact of non-live parts is performed by automatic disconnecting from the source according to Art. 6.3.1 EN 60 204-1 and IEC 60 346-4-41.

8.6 Machine Control

8.6.1. Operation Switch (Motor Starter)

- only for machines with motor output of the cutter block 3 kW; 3.7 kW with drive by a friction gearbox



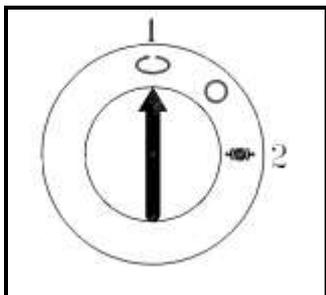
The connection or disconnection of the machine to the power grid is performed by turning on or off using the lockable main switch (5). Until the machine is connected to the grid, it cannot be started. The machine is started by pushing the green button (3) at the operating switch (1) at point (A) or by pushing the green button (7) at the auxiliary switching unit at point (B). Machine turning off is performed by pushing the red button (2) at the operating switch (1) at point (A) or by pushing the emergency stop control (4) at point (A) or (8) at point (B). After completing the work, disconnect the machine from the grid using the main switch (5) at point (B) and lock it.

Upon a voltage outage, the operation switch automatically disengages via the protection actuator, i.e. the machine has to be restarted after current supply renewal. If the motor is overloaded, the built-in circuit breaker of the motor turns the machine off. If the motor circuit breaker actuator turns off several times within a short period (2 to 3 times), check the machine (motor function, dull tool, etc.).

Emergency stop control (4) at point (A) or (8) at point (B) after use will remain secured in the off position and it must be released by turning the mushroom head before new machine starting. The machine cannot be started without this release!

The emergency stop controls are located so that they are reachable from individual workplaces.

For easier handling of the cutter block when replacing the knives, the machine is equipped with a selector switch for brake release (6) at point (B).



Position 1 – normal operation

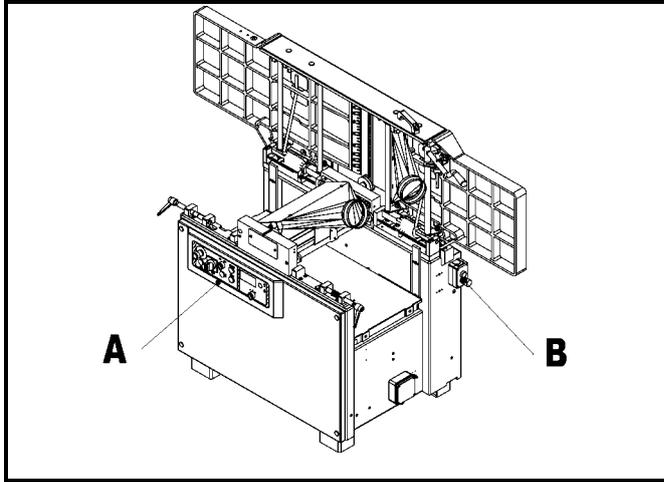
Position 2 – brake released, after switching to this position and pushing the green button (3) at the operating switch (1) at point (A) or pushing the green switch (7) at the auxiliary switching unit at point (B), the cutter block brake is released

Position 0 - off.

If the selector switch is switched via position 0, the machine must always be restarted by pushing the green button (3) at the operating switch (1) at point (A) or pushing the green button (7) at the auxiliary switching unit at point (B).

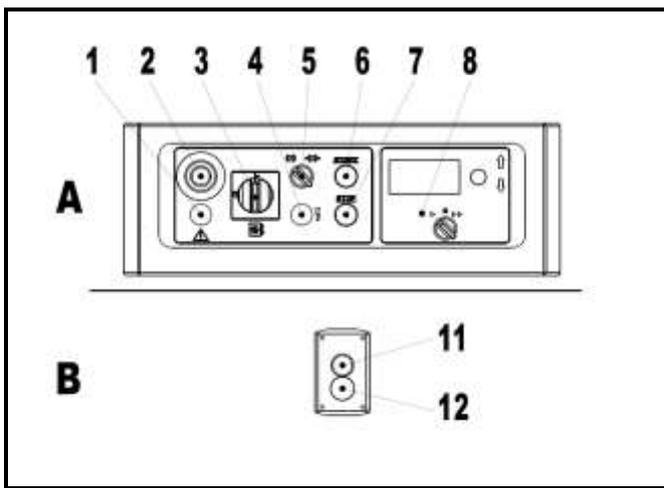
8.6.2. Control Panel

Machine connection or disconnection from the power grid is performed by turning on or off using the lockable main switch (3) at the control panel (A). Until the machine is connected to the grid, it cannot be started.



Machine connection to the power grid is indicated by the lit white signal light (4) at the control panel (A).
according to making-up

Failure is indicated by lit signal light (1) at the control panel (A) see Chap. 11.6.
according to making-up.



The cutter block drive motor is started by pushing the green button (6) at the control panel (A) or by pushing the green button (11) at the auxiliary switching unit at point (B). Machine turning off is performed by pushing the red button (7) at the control panel (A) or pushing the emergency stop control (2) at point (A) or (12) at point (B). After completing the work, disconnect the machine from the grid using the main switch (3) and lock it.

Upon a voltage outage, the machine is turned off using the contactor coil, i.e. the machine must be restarted after current supply renewal. If the motor is overloaded, the

built-in motor circuit breaker turns off the machine. If the motor circuit breaker actuator turns off the machine several times in a short period (2 to 3 times), check the machine (motor function, dull tool, etc.).

Emergency stop control (2) at point (A) or (12) at point (B) after use will remain secured in the off position and it must be released by turning the mushroom head before new machine starting. The machine cannot be started without this release!

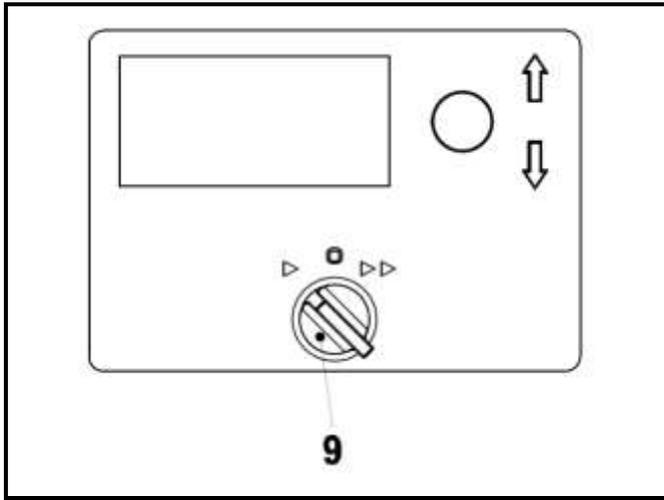
The emergency stop controls are located so that they are reachable from individual workplaces.

Brake release control (5) is switched into the left position with the normal working position, electro-motor braking is functional upon drive shutdown. In the right position, brake release is on and the cutter block can be turned freely. If the control (5) is switched into the brake released position during drive electromotor operation, the electromotor is turned off, braked and the brake is released after about 10 seconds.

The light indication of fault (4) (e.g. a pushed down emergency stop controller, a fault on circuit breaker, etc.) The fault cause will appear on display in a fault report.

The display field (8) of the control panel is bedded according to machine making-up in following chapters.

8.6.2.1 Altering of thickening table by hand wheel with position admeasuring on a scale



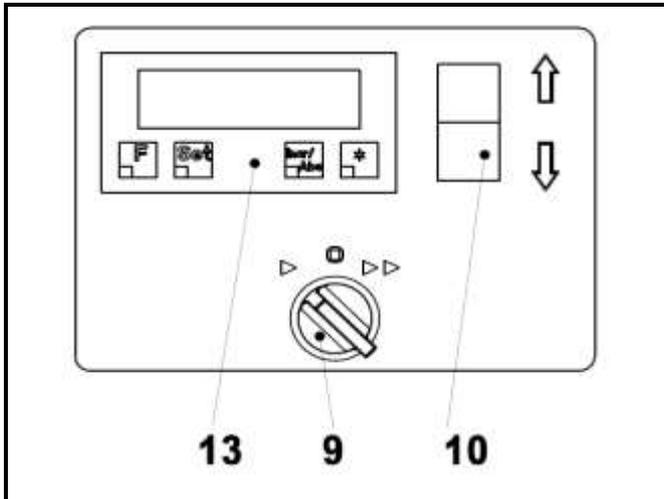
drive controller (9) is at a normal working position turned in the left.

If the machine is equipped with a feed drive 2-speed electric motor, it is possible to choose a faster speed by overswitching the controller into the right position.

The is switched off in position **0** zero.

The can be started only when cutter block motor is running.

8.6.2.2 Controlling panel (ELGO) without programmer (see enclosure E)



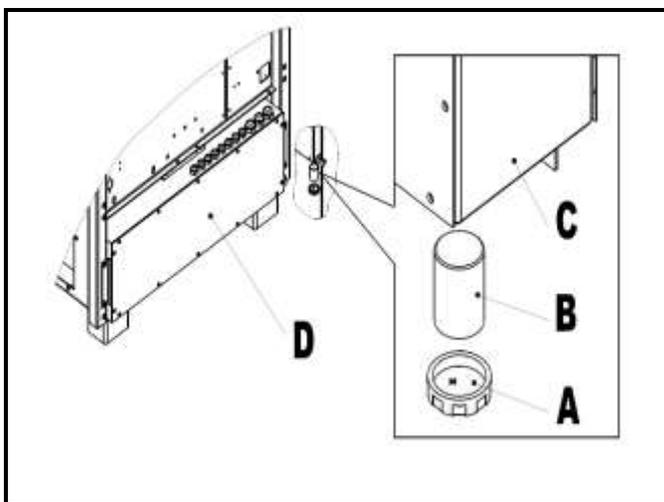
The feed drive controller (9) is at a normal working position turned in the left. If the machine is equipped with a feed drive 2-speed electric motor, it is possible to choose a faster speed by overswitching the controller to the right position. The is switched off with controller position on **0** zero.

If the machine is equipped with a feed drive 2-speed electric motor, it is possible to choose a faster speed by overswitching the controller to the right position.

The is switched off at a controller position on **0** zero. The can be started only when the cutterblock motor is running. **Table converting pusher (10)** kept pushed: table is converting \uparrow up or \downarrow down (acc. to $\uparrow\downarrow$). **ELGO**

lay indication (13) displays thickening table position.

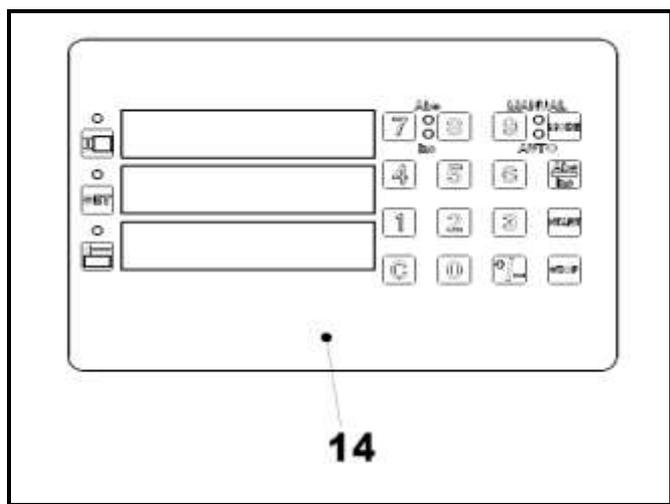
Battery exchange in position indicator



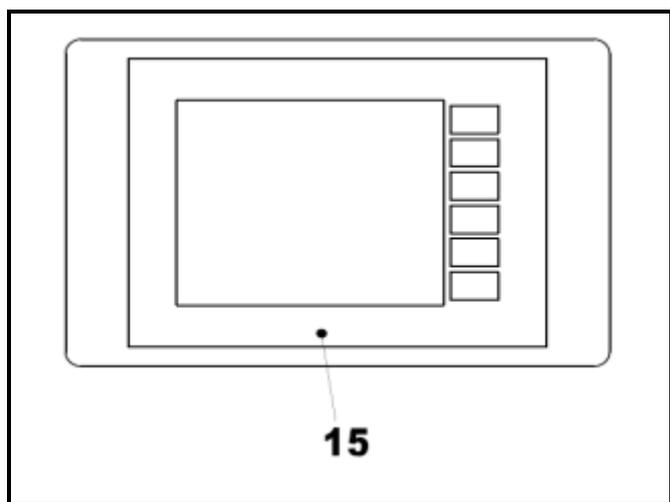
Remove or lift off the side cover of machine frame and unscrew that (D) of distributor. for battery exchange :

The lid (A) is on the bottom side of cut out box (C). Unscrew the lid (A) and exchange the battery. The battery installation is deccribed in Enclosure E - chapter 3.

8.6.2.3 Control panel ELGO with programmer (14) - see Enclosure C.



8.6.2.4 Touchable control panel (15) see Enclosure D.

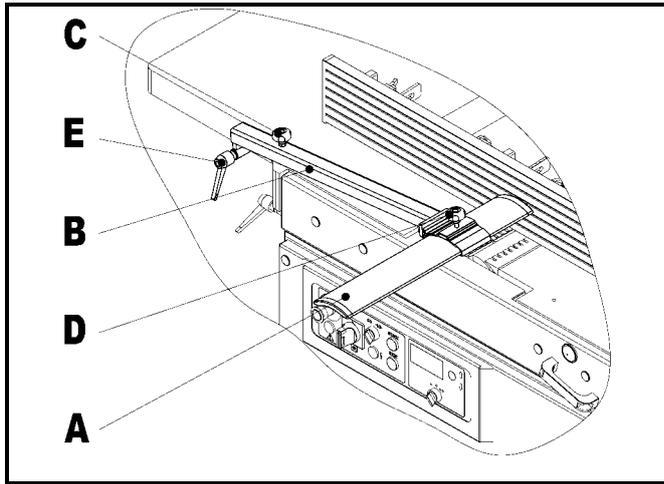


9.0 Machine Operation and Adjustment

9.1 Planer Adjustment

9.1.1 Protective Equipment Adjustment and Operation

The cutter block cover (A) is carried by arm (B), which is fastened at the exit table of the planer. Height setting of this cover is performed using the screw with the star head (C).
By turning right - the cover height is increased



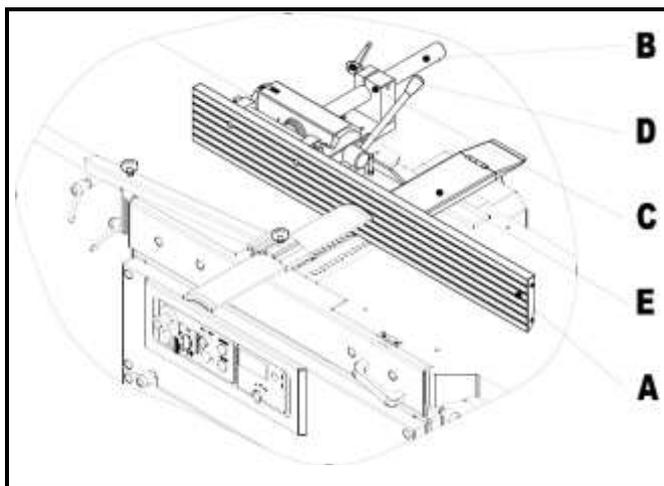
By turning left - the cover height is decreased.

When you loosen the second star screw (D), you can move the cutter block cover (A) in the lateral direction and thus change the width of cutter block overlap. After adjusting lightly tighten the star screw (D). After releasing the screw with the lever (E), the rule can be unfolded from the working position.

When planing, set the cutter block cover so that it is maximally 5 mm above the inserted piece.

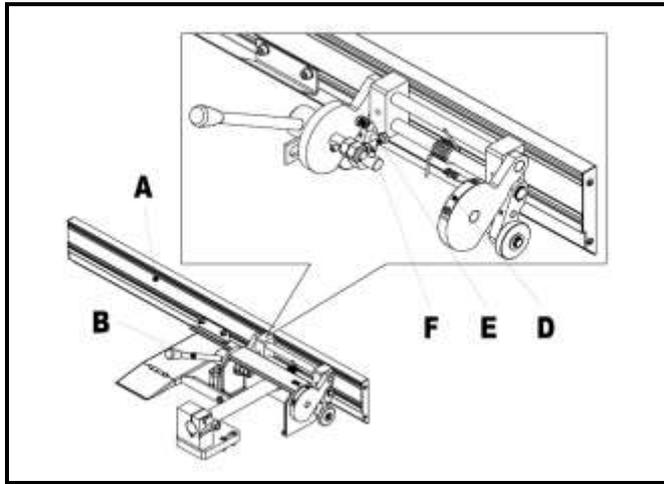
9.1.2 Tilting Rule

9.1.2.1 Side Adjustment of the Rule



The guide tilting rule of the surface (A) is fastened using the circular guide (B) and bushing (C) to the rear table of the machine. After releasing the screw with the lever (D), the rule (A) can be side adjusted and thus the machining point position can be changed against the cutter block width. The cutter block is covered from the rear side of the rule (A) with a cover (E), which is carried at the rule structure.

9.1.2.2 Rule Tilting

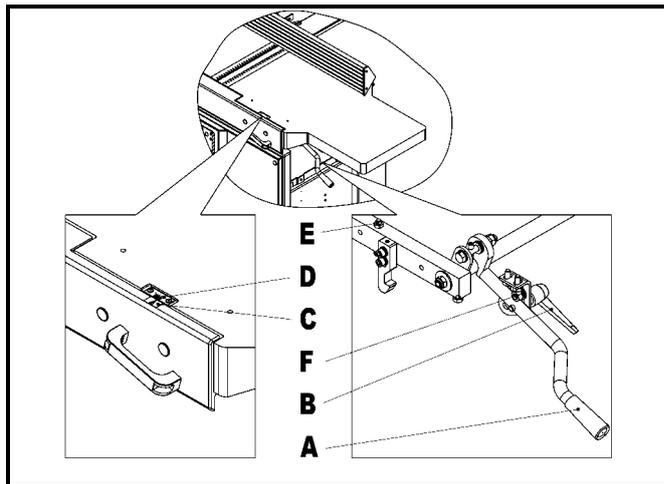


The rule (A) can be tilted after releasing the screws with the lever (B) from its perpendicular position up to 45°. The position of the tilt is shown by the needle with the angle scale (D) and the position 45° is given by a couple of setting screws with securing nuts (F).

After adjusting the rule (A) into its basic position, the perpendicularity is secured by a couple of setting screws with securing nuts (E).

9.1.3 Front Table Setting

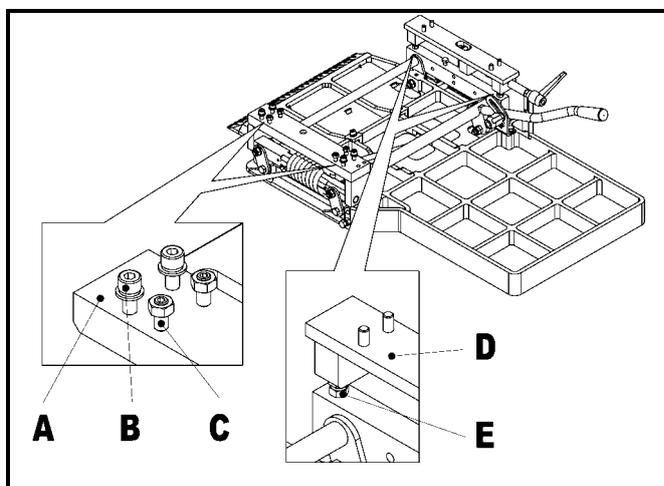
9.1.3.1 Splinter Setting



The front planing table is height adjusted using lever (A) after releasing the locking screw (B) – splinter setting.

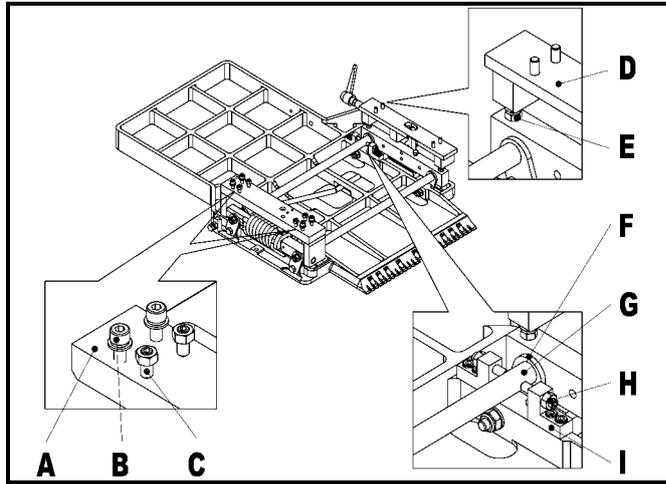
The value of the set splinter can be read using the arrow (C) and scale (D). Its max. value is 5 mm and it is limited by the stopper screw (E). The zero value of splinter – the upper position of the front table – is given by the stopper screw (F).

9.1.3.2 Front table adjustment into the plane with the rear table is performed at the side of the rotary suspension of the table by changing the position of the holder (A) fastened to the machine stand using screws (B) using a couple of pushing screws with securing nuts (C). At the other side, the holder (D) is fixed connected to the stand and using a change of the height of the seating screws (E), the plane of the front table can be adjusted.



9.1.4 Rear Table Setting

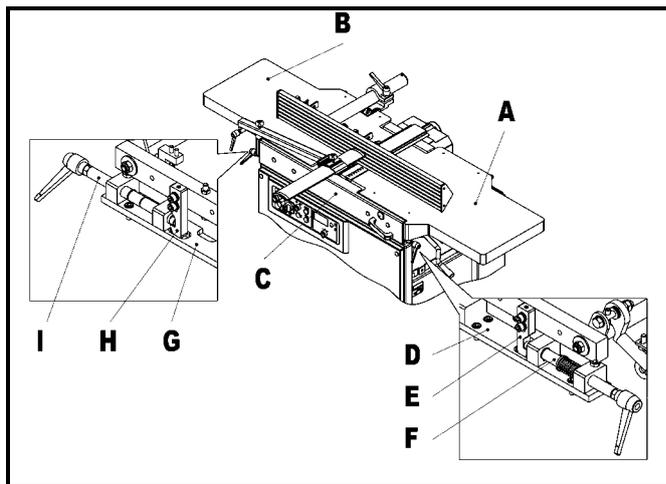
The adjustment of the rear table into the horizontal plane is performed at the side of the rotary suspension of the table by changing the position of holder (A) fastened to the stand of the machine using screws (B) using a couple of pushing screws with securing nuts (C). On the other side, the holder (D) is fixed connected to the stand and using the change of the height of the seating screws (E), the plane of the rear table can be adjusted.



After adjusting into the horizontal plane, it is necessary to set the height of the rear table to the same height with the cutter block (with its knives). The height change is performed by changing the position of the parallelogram (F) of the table seating by pushing by the connecting bar (G) using screws with locking nuts (H) in liners (I), which are fixed connected with the rear table.

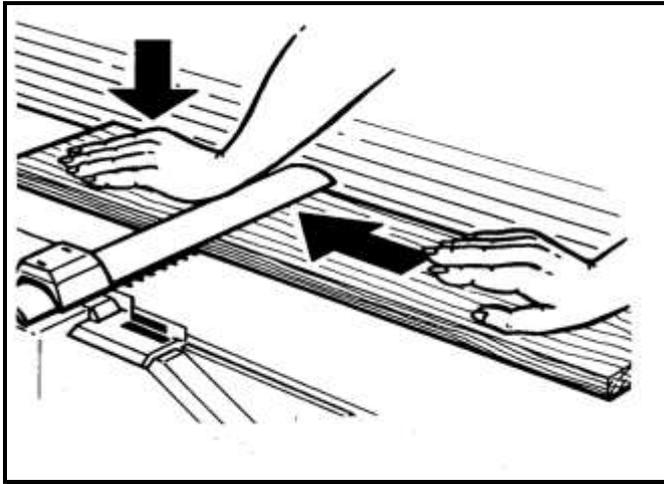
9.1.5 Locking of Planing Tables in the Working Position

The front planing (A) and the rear planing table (B) are connected by the front cover (C), which allows for their simultaneous unfolding around the rotary pivot (position during thicknessing) and returning to the working position.



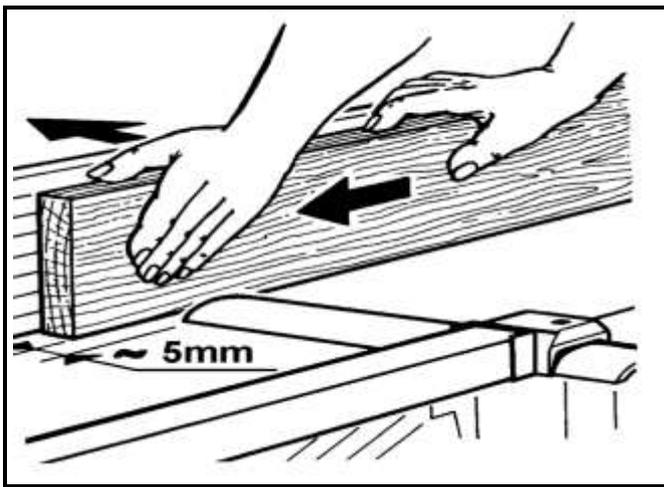
In the working position, the tables (A and B) are held and pushed to the seating patches of holders (D and G) using shape dice (E and H) using eccentric pivots with the lever (F and I). Shape dice (E and H) can be height adjusted after releasing their fastening screws so that the function of table pushing (A and B) to the seating patches is correct.

9.1.6 Planing of Flat Pieces



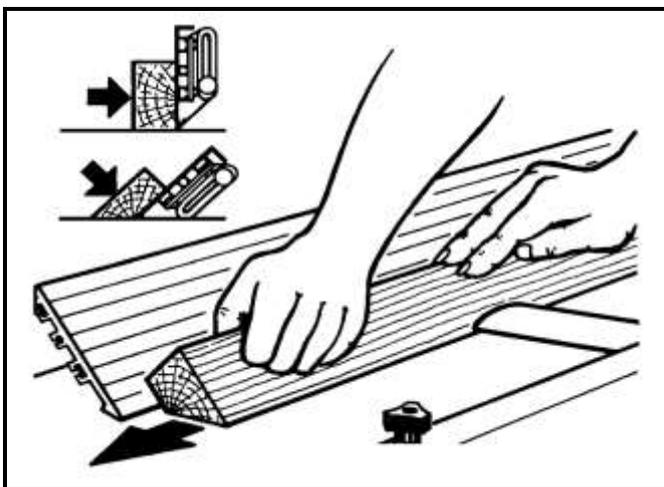
Put a flat piece on the front planing table, lift the cutter block cover with your left hand, adjust to the required height and start the machine. Push the machined piece and move above the cutter block, the hand is relocated above the cover, material shifting takes place using arms, not the body! You must not move the machined piece back over the cutter block!

9.1.7 Planing of Tall Pieces



When machining tall pieces, adjust the cover of the cutter block so that the gap between the machined piece and the cover is maximally 5 mm. Start the machine and push the machined piece and move above the cutter block between the cover and the rule.

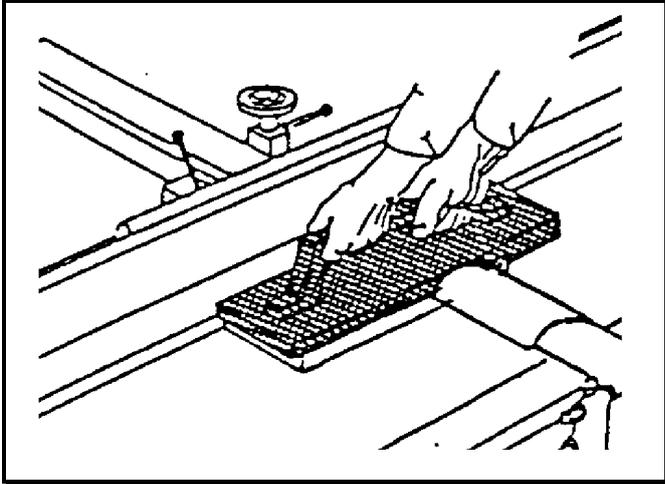
9.1.8 Planing with the Tilting Rule



Test the rule slope setting with released tightening levers (position 90° is secured), tighten the levers and start the machine. Push the bevelled machined piece towards the rule and forwards.

9.1.9 Planing of Short Pieces

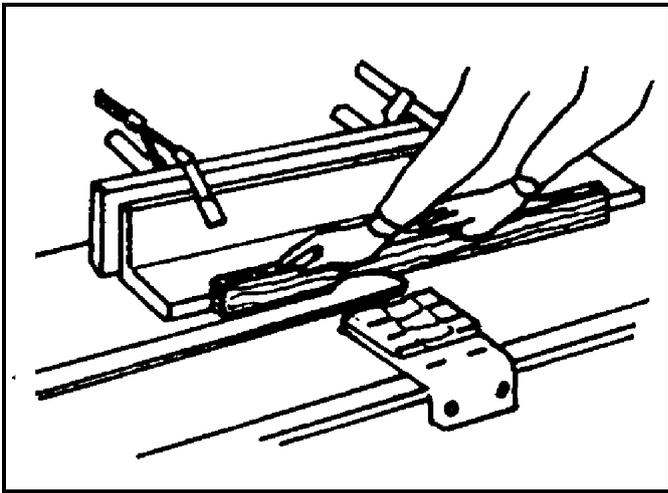
For planing of short pieces, you must use a shifting tool. A possible design is shown in the figure. The shifting tool can be ordered as special accessories of the machine.



9.1.10 Planing of Pieces with Small Cross Section

ATTENTION ! High danger of injury with incorrect guiding along the tall rule !

When machining thin materials, the rule must be complemented with an auxiliary rule. Its height must not be lower than 20 mm and higher than 25 mm, the width must be higher than 60 mm. The auxiliary rule can be ordered as special accessories of the machine.

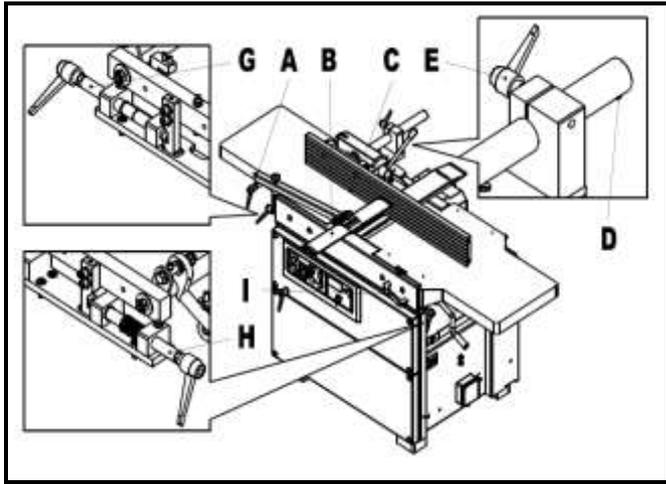


9.2 Thicknesser Adjustment

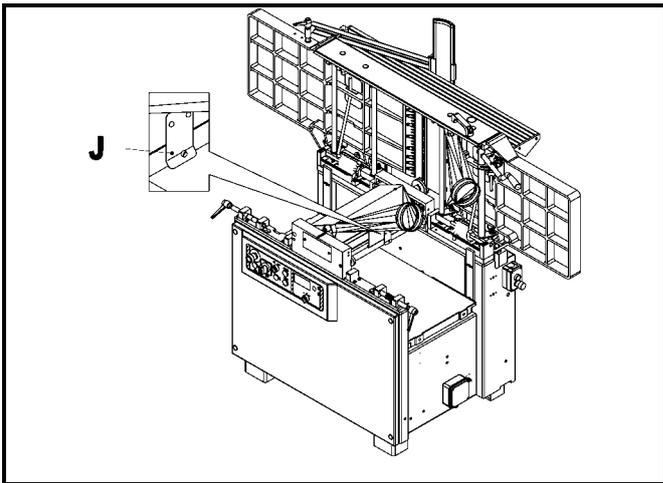
9.2.1 Thicknessing

First, it is necessary to turn the planer into the thicknesser.

- Release the locking lever (A) of the knife roller cover (B) and lift the cover.
- Slide the rule (C) after releasing the bushing screw (F) under the knife roller cover (B) up to the end position, which is given by the stopper screw (D) on the guide bar and the shape recess (E) in the locking bushing. Do not forget to tighten the bushing screw (F) well and thus secure the rule (C) against sliding during table unfolding.

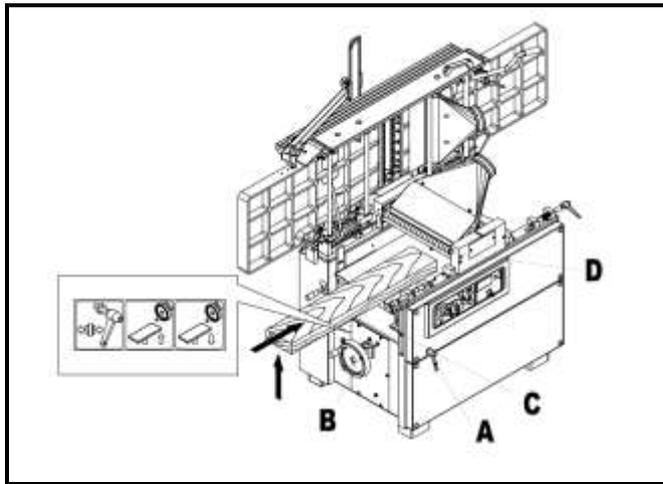


- Release the locking eccentric with the lever (G) and pull it out a bit.
- Hold the table by the holder (I) and simultaneously release the locking eccentric with the lever (H) and by overcoming the resistance from the spring pull it out a bit, unfold the tables smoothly without jerking up to the end position given by stopper screws.
- Turn over the extraction hose into the working position for thicknessing and secure it by snapping the flexible plate with the hole to the pin (J).



9.2.2 Machine Adjustment for Thickening

9.2.2.1 Thickening Table Height Adjustment

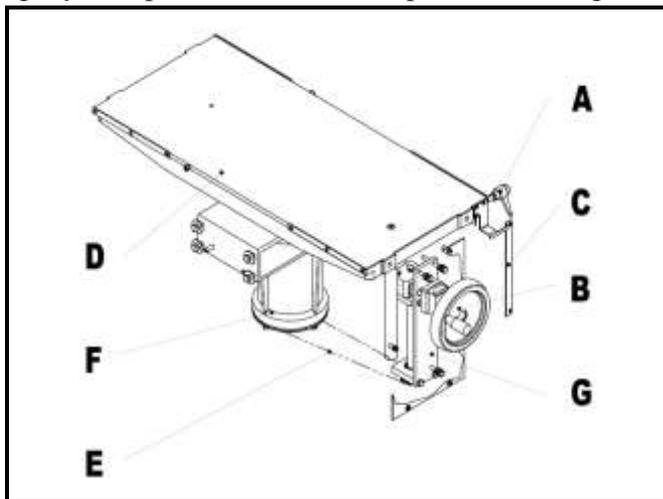


Release the table tightening lever (A) and set the thickening table to the required height using the hand wheel (B).

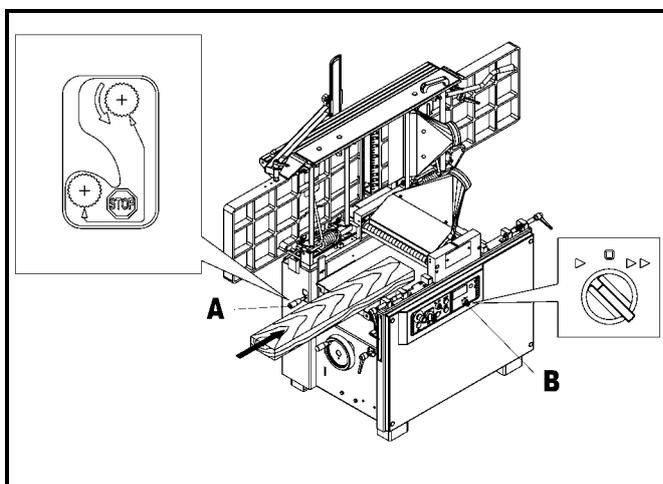
The hand wheel (B) and chain wheels are carried by holder (G). The hand wheel is (by chain E) connected with the chain wheel of motion screw. The motion screw is bedded in the body (F) with adjustable post.

Put the machined piece on the thickening table with the non-machined side upwards. Pull the table out by turning the hand wheel (B) into such height that the machine piece touches the limiting bracket of max. splinter (D). By reverse movement of the hand wheel move the table downwards to the

required removal (splinter). The splinter size is maximally 5 mm. The thickness of the machined piece can be read at the table position scale (C). **After adjusting tighten the table with the corresponding lever (A).** Start the machine and move the machined piece into the mesh. Insert unevenly thick pieces always with the thicker end forwards. For resin wood, we recommend smearing the thickening table lightly with paraffin in order to improve the sliding of the machine material.



9.2.2.2 Start



drive using a friction gearbox

If the machine is equipped with drive using a friction gearbox, the is turned on and off by the lever (A). In the upper position of the lever, the is on, in the lower position, it is off.

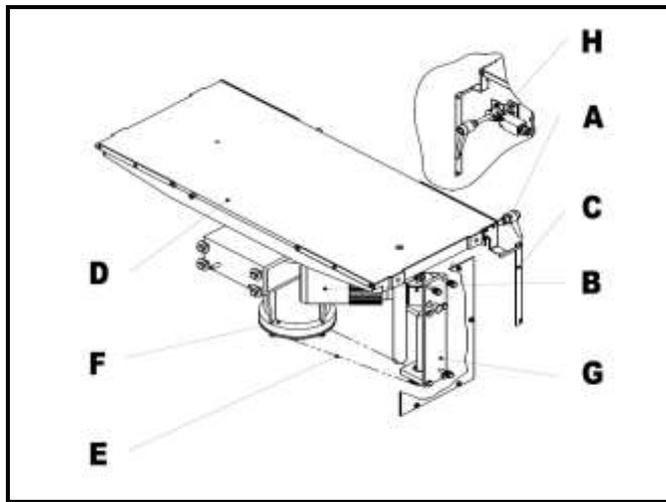
drive by a separate electromotor

If the machine is equipped with the drive by a separate electromotor, it can be started from the control panel by control (B).

For a more detailed description see the chapter 8.6.2 Control Panel.

9.2.2.3 Electromotive adjusting of thickening table height

The table height gets adjusted by a gearbox. The way is described in chapter 8.6.2.



Release the table tightening lever (A).
Set-up demanded height by gearbox (B).
Gearbox (B) with chain wheels are carried by a holder (G). The box is connected with the chain wheels of motion screw.
The chain wheels are held by a holder (G).
The chain (E) connects the box with chain wheel of motion screw. The screw is bedded in the body (F) with an adjustable post.
Put the machined piece on the thickening table with the non-machined side upwards.
The splinter size is maximally 5 mm.
The thickness (height) of workpiece can be read on the table measure scale (C) moreover.

After adjusting tighten the table with the corresponding lever (A).

The microswitch (H) gets switched on by tightening the lever (A). This blocking avoids any ineligible conversion of table position. Start the machine and move the workpiece into the mesh.



Do always tighten the thickening table by a lever (A) after every adjusting or change of the table height position.

Microswitch (H) gets switched on by tightening the lever (A). This blocking avoids any ineligible conversion of table position. Herewith you avoid eventual damaging of exhausting nozzle.

For resin wood, we recommend smearing the thickening table lightly with paraffin in order to improve the sliding of the machine material.

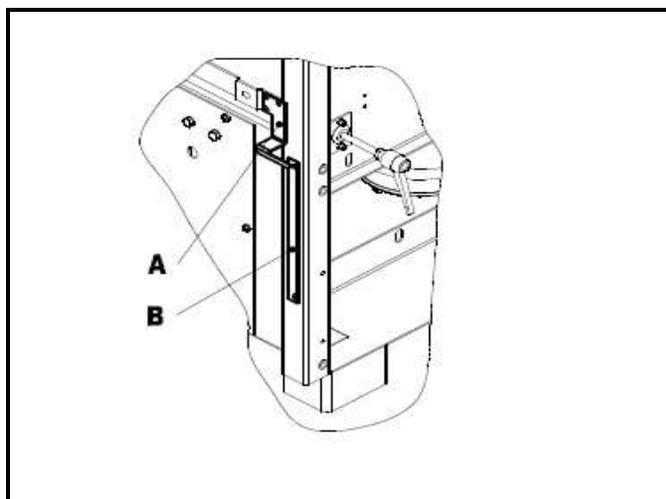
Parameter workpiece height (thickness) gets adjusted by change of table position (height conversion).



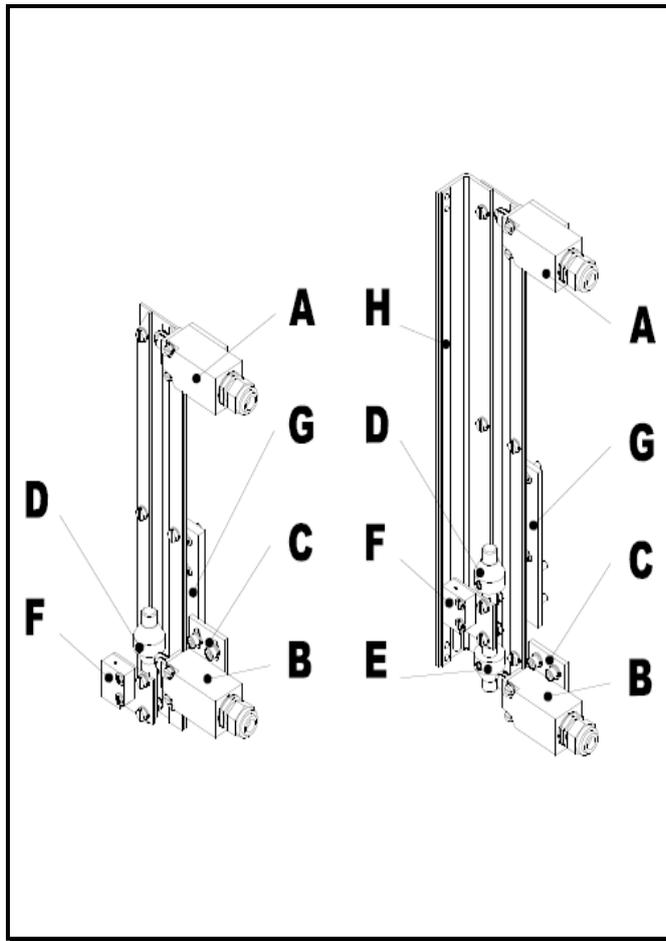
Insert unevenly thick pieces always with the thicker end forwards.
Insert unevenly wide pieces always with the thicker end forwards.

9.2.2.4 Adjusting of table scale measure

In case that the value read on measure scale differs from real workpiece thickness, a correction is possible by pushing the measure (B) in clamping slots against scale.



9.2.2.5 Adjusting of table extreme positions limit switches and table lay admeasuring sensor



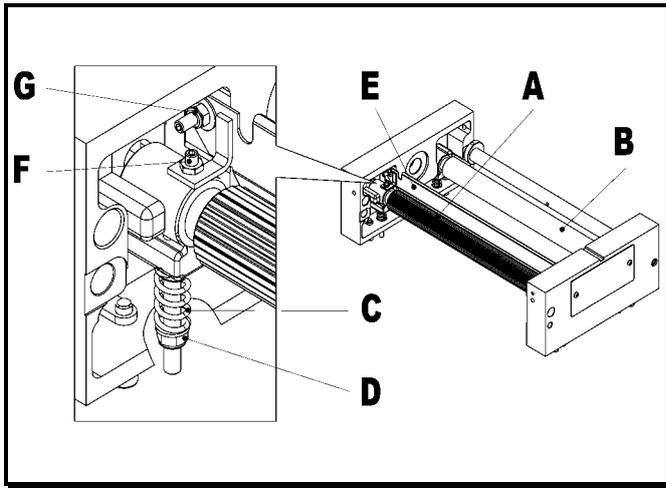
The upper (A) and low (B) table position switches are placed under the front machine frame casing. The switches are fastened to machine frame by holders (C). This enables horizontal adjusting of table. The backstops of the upper (D) and of the lower (E, D) table position are carried by holder (G). The holder is fastened to machine table. Both backstops (D, E) are vertically adjustable after releasing the arresting screws. Herewith the upper and low table limit position gets adjusted.

The backstops (D, E) bar carries also a sensor of impulses (F). It is necessary to set-up the sensor for a gap distance 1 mm up to 2 mm from magnetic tape. (H).

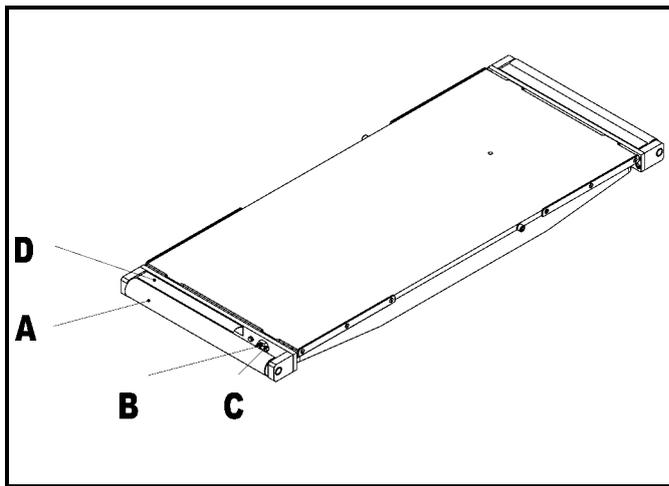
9.2.3 Adjustment of the Pushing Force of Rollers and the Splinter Rectifier

The rollers – insertion (A) – ejection (B) are at both ends of the seating fitted with springs (C). By changing the spring tension (C) using nuts (D), it is possible to change the size of the pushing force of these rollers.

The insertion roller (A) controls during its stroke the splinter rectifier (E). If the semi-finished product is under the insertion roller (A), the roller is lifted together with the splinter rectifier (E). The lower edge of the rectifier is adjusted using the screw with the locking nut (F) into the plane with the lower part of the roller (A). When the semi-finished product leaves the insertion roller and drops down, the rectifier slides with its lower edge on the semi-finished product until the semi-finished product leaves it. For this reason, the free movement of the rectifier must be preserved, therefore do not tighten the nut (G).



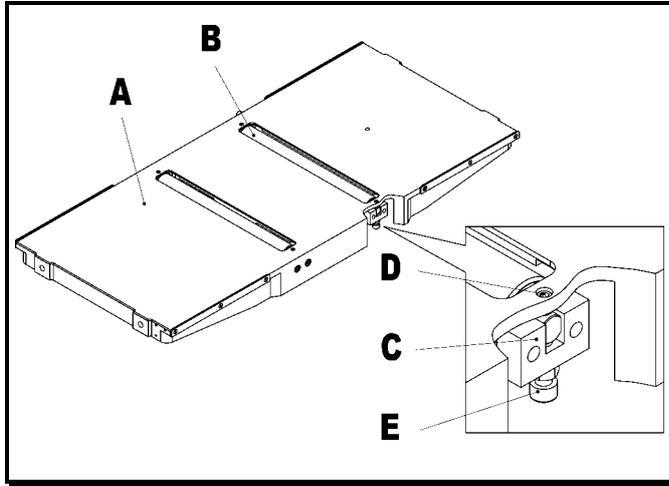
9.2.4 Extension of the Thicknessing Table - Additional Rollers



The extension may be located at the entry and the exit of the thicknessing table. The roller adjustment (A) is performed by turning the eccentric (B) after releasing the fastening screw (C). We recommend establishing the roller about 0.1 mm above the table plane. After adjusting, it is necessary to secure the eccentric position again by tightening the screw. Each side of the roller is adjusted separately. The gap between the roller and the edge is overlapped by the safety cover (D).

9.2.5 Table Rollers

The table rollers (B) are located in the specially modified table (A) and allow for better passage of the machined material through the machine. They are parallel with the possibility of height adjustment.

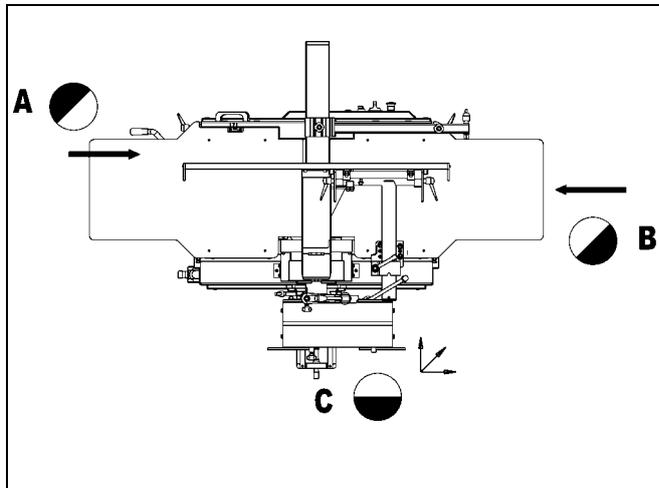


The ends of the roller shafts (B) are sliding seated in dice (C) and using a couple of screws, it is possible to change their position of ejection against the working area of the table (A). After releasing the upper screw (D), the roller (B) can be pushed by the lower screw with locking (E) from the table or vice versa. After setting the new position, it is necessary to tighten the securing nut of the lower screw (E) and the upper screw (D).

The size of the exposure of the rollers above the level of the table can be chosen according to the nature of the requirements for the accuracy of the machined area and the machined material. The higher the roller

exposure, the higher the breach of the planarity of the table and thus the possibility of quality worsening of the machined area.

9.3 Workplaces



The placement of the workplaces around the machine is shown in the figure.

Place A – planing – the operator stands with his side to the front planing table.

Place B – thicknessing – during inserting, the operator stands in front of the thicknessing table at the side of the hand wheel of setting of this table.

Place C – mortising – at this place, the operator stands in case of using the mortiser.

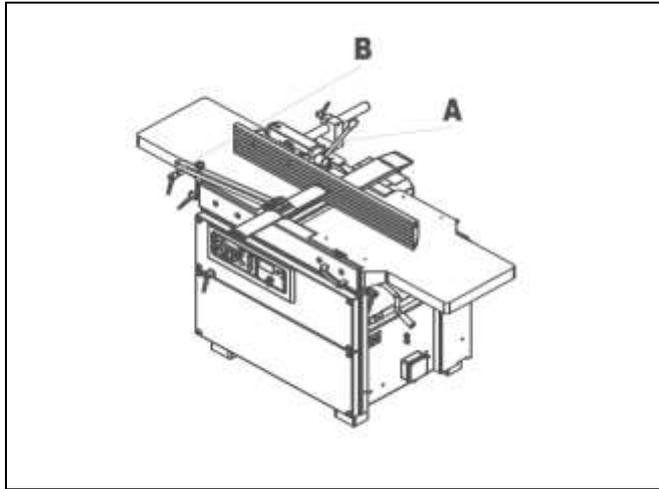
9.4 Protective tools

For work at the planer and thicknesser, a short reinforced apron and eye protection is prescribed. It is appropriate to use adequate hearing protectors and recommended work footwear. It is forbidden to use work cloaks.

9.5 Installation of Removable Parts

Do not mount dismantled parts to the machine before reading the entire manual and familiarising yourselves thoroughly with the machine.

The guide rule together with the bushing (A) is to be mounted to the rear table of the planer. Mount the cover of the knife roller (B).



9.6 Forbidden Handling



With the machine, it is forbidden to:

- **Perform any modifications of the machine safety elements without manufacturer's permission.**
- **Perform any handling in conflict with the safety instructions of this manual (chap. 3.0).**
- Touch the tool or its close vicinity and other moving parts.
- Machine other materials than wood and wood based materials.
- Machine sections laterally, the machine is designed for machining by milling only in the longitudinal direction of the wood fibres.
- Overload the machine when machining large semi-finished products.
- Remove the splinters from the vicinity of the tool by hand or any object during machine operation.
- Use other knives in the cutter block than those supplied or recommended by the machine manufacturer.
- Use knives, whose height is smaller than 20 mm.

10.0 Tools

10.1 Recommended Tools



Do not use other knives in the cutter block than those supplied or recommended by the machine manufacturer.

Do not use knives, whose height is smaller than 20 mm.

The cutter block must be marked with the name or logo (designation) of the manufacturer and the maximum permitted speed and must be produced according to EN 847 - 1: 1997.

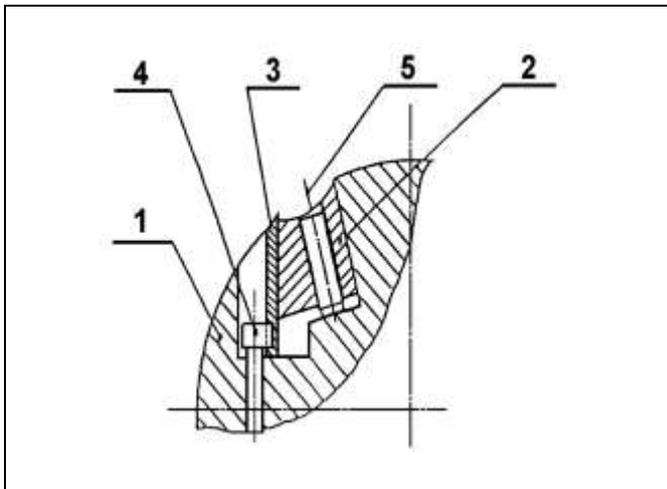
Suitable knives for use in this machine in the cutter block are planing knives 410 x 30 x 3 mm (length x height x thickness) with grooves for setting screws from HSS or HSS18 material.

10.2 Replacement and Adjustment of Planing Knives



The manufacturer recommends the ejection height of the knife tops in the range of 0.7 to 0.8 mm above the surface of the cutter block.

10.2.1 System, where the Knives are pushed from the Shaft by Screws.

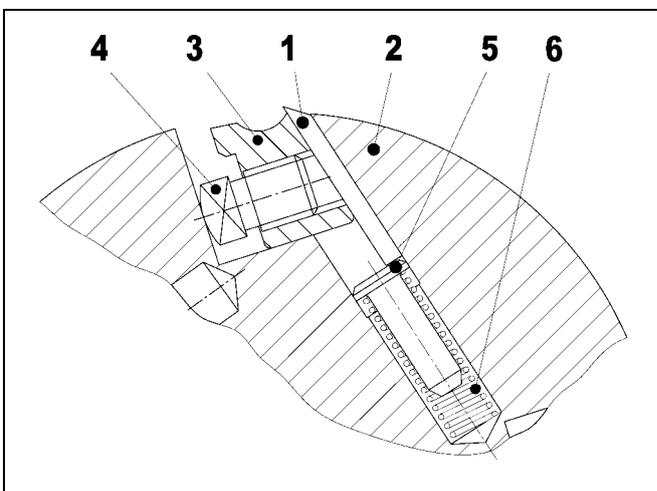


Before replacing the knives, unfold the planing tables. Loosen the three screws (5) in the pushing wedge (2) and release the pushing wedge (2) by knocking with a hammer over a piece of wood. Remove the knife (3) by unscrewing the two adjusting screws (4). The seating area of the wedge and the new knife are to be carefully cleaned. Insert the new knife by screwing two setting screws (4) so that the top of the edge juts by no more than 1 mm above the cutter block surface.

Then lightly tighten the pushing wedge (2) with the three screws (5) so that the knife could be freely moved, but not removed. Set the correct and final height of the knife e.g.

using a prism of hard wood by turning the screws (4). Then tighten all three screws (5) in the pushing wedge (2).

10.2.2 System, where the Knives are pushed from the Shaft by Springs.



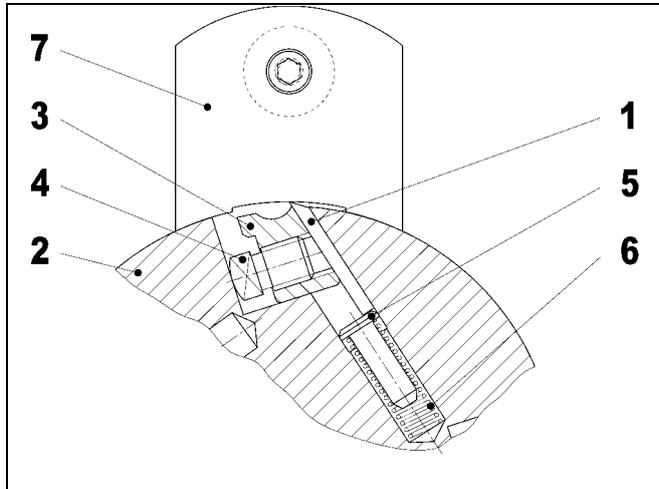
The planing knives (1) are fastened in the wedge groove of the cutter block (2) by a wedge (3). After releasing the screws (4), the knife is pushed out by the pivot (5) with the spring (6) and can be removed.

After inserting a new knife (1), its pushing into the level of the surface of the cutter block body (2), and light tightening of the screws (4), the knife is ready for adjustment. If the knives are changed for reason of wear, always replace all four !!!

10.3 Adjustment of Planing Knives

The quality of the machined surface depends on the accuracy of the knife adjustment!!!

10.3.1 Adjustment Using an Establishing Jig (Establisher)



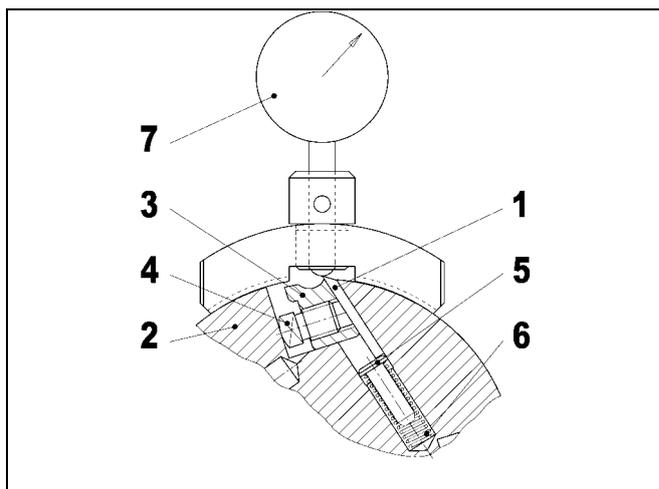
After releasing the screws (4) of the wedge (3), the spring (6) with the pivot (5) pushes the knife (1) of the cutter block (2) against the stirrup (7) of the establishing jig.

The stirrup serves as a stopper and the size of knife ejection (1) above the surface of the knife body (2) corresponds to the value of 0.9 mm.

Hold the establisher pushed above the knife (1) and gradually tighten the wedge screws (4), best gradually from the knife centre to the ends.

Repeat the procedure gradually with all knives.

10.3.2 Adjustment Using a Dial Indicator

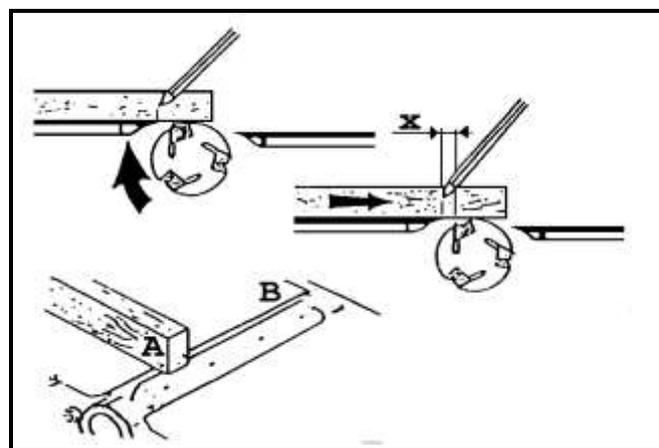


After releasing the screws (4) of the wedge (3), let the knife (1) being pushed out by the spring (6) with the pivot (5) above the body of the cutter block (2) to a value over 1 mm.

Using hard wood, a nylon chock or similar material, knock the knife (1) into the knife body (2) and check the value of ejection above the body of the cutter block using the dial indicator (7) as shown in the picture. The check must be performed always at both ends and in the centre of the knife with all knives in the cutter block.

After aligning the knives are to be gradually tightened with the wedge screws (4), best from the centre of the knife to the ends.

10.3.3 Adjustment using a Wood Prism

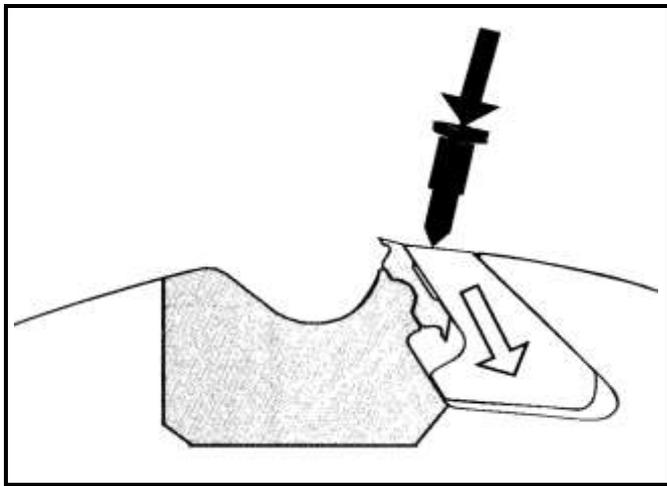


A quality machined area can be achieved only with correctly adjusted knives.

Put the prism of hard wood (A) on the rear planing table (B) and make a mark on the side at the point, where the table ends. Then manually turn the cutter block by about $\frac{1}{4}$ of a revolution. The wooden piece must be lightly moved. Then make a second mark and measure the distance between the marks. If the adjustment is correct, this distance is about three millimetres (value X in the picture). Perform adjustment of all four knives in two steps, always at the left and the right side of the cutter block. Then tighten all screws.

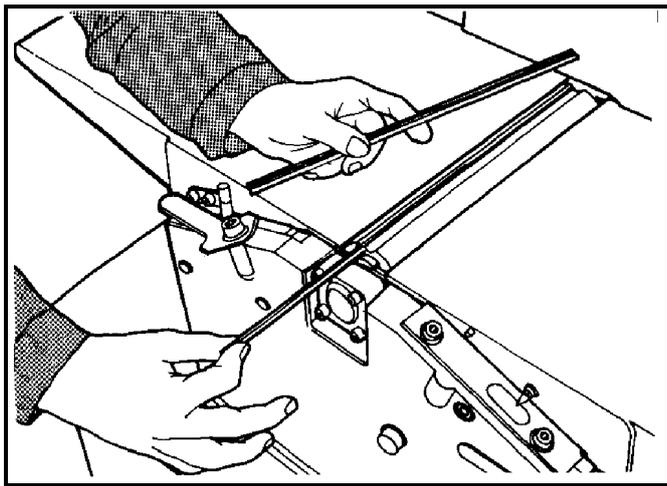
10.4 Replacement and Adjustment of the TERSA Planing Knives (Fitting with the cutter block only upon consumer's request)

10.4.1 First Step



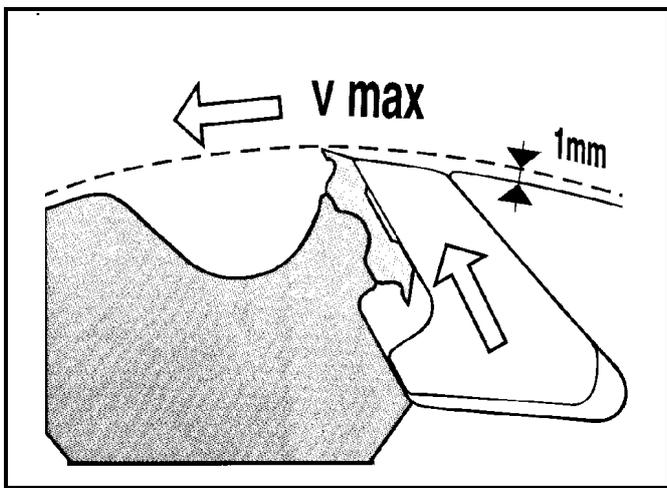
By knocking on the wedge over a striker, which is a part of the accessories, release the knife in the cutter block.

10.4.2 Second Step



Remove the dull knife from the roller and insert a new knife in its place.

10.4.3 Third Step



Securing of the knife position in the cutter block takes place due to the centrifugal force after starting the machine.

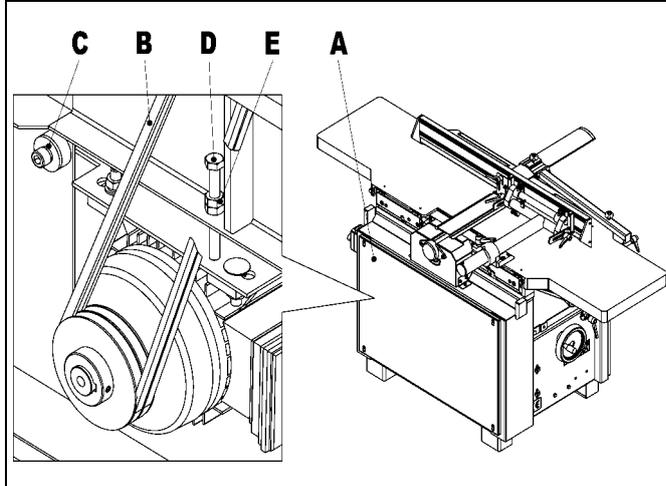
The knife is double-edged. After both edges get dull, do not grind the knife, but replace it with a new one!

Always replace all knives at the same time !

11.0 Maintenance and Repairs



Before commencing maintenance and repair works, always disconnect the machine from the grid! Turn off and lock the main switch. This will prevent the possibility of a random start of the machine by someone else.



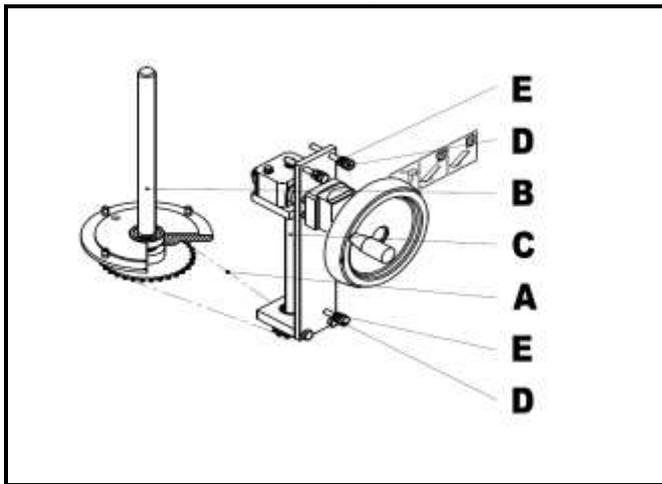
11.1 Cutterblock drive V-Belt tensioning

Remove the removable side cover of the machine (A). Tensioning of the V-belts (B) is performed by turning the motor holder around the seating pivot (C) using the pushing screw (D) with the locking nut (E) so that the tension is sufficient. Secure the position again by tightening the locking nut (E).

Do not forget to reassemble the cover (A).

11.2 Thickening table set-up drive V-belt tensioning

11.2.1 Drive V-belt tensioning of thickening table adjustment by a hand wheel

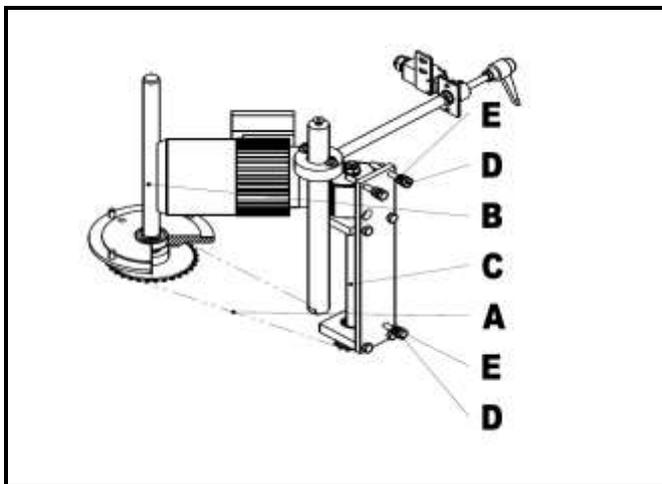


It is necessary to change interaxial spacing between motion screw (B) and chain wheel axis (C) of hand wheel control assembly.

Do release safeguarding nuts (E). Tension the chain (A) by shifting chain wheel axes (C) = shifting all holder of hand wheel assembly. . .

After belt tensioning it is necessary to slide a mechanical digital position pointer again to machine frame and to arrest the pointer.

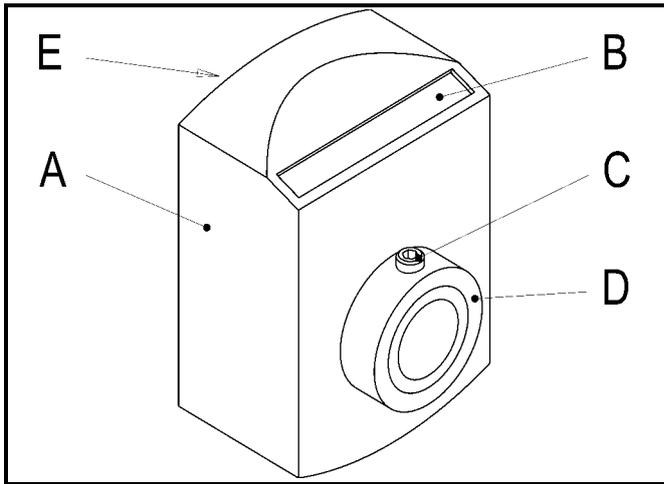
11.2.2. Electromotive V-belt tensioning of thickening table adjustment drive



It is necessary to change interaxial spacing between motion screw (B) and chain wheel axis (C) of hand wheel control assembly.

Do release safeguarding nuts (E). Tension the chain (A) by shifting chain wheel axes (C) = shifting all holder of hand wheel assembly.

11.3 Mechanic digital indication of thickening table position



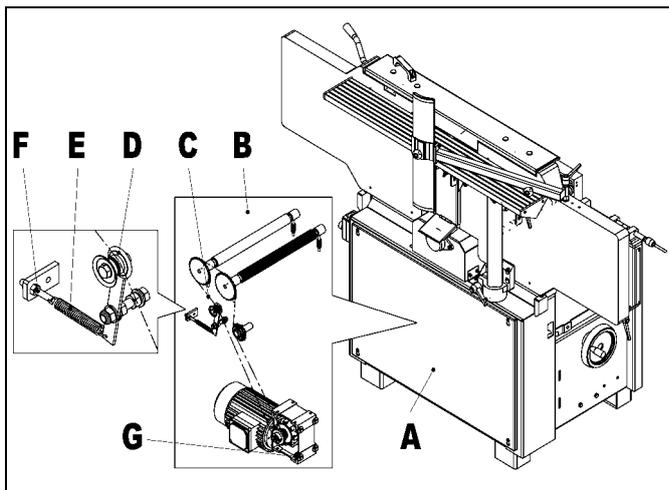
Do release a screw (C). Turn the ring (D) => herewith you can change the value on display (B). After setting-up the new value on display it is necessary to tighten the screw (C) again. The reaction catching pin (located E) - locking the pointer against turning - must be pushed into the positioning bore of machine frame.

11.4 drive chain tensioning by 2-speed motor or by a frequency-controlled motor

The chain transmits the torsion moment from motor onto the ling rolls and herewith the workpiece is pushed (fed) forwards. The drive enables either a fluent or a a step-up speed changing.



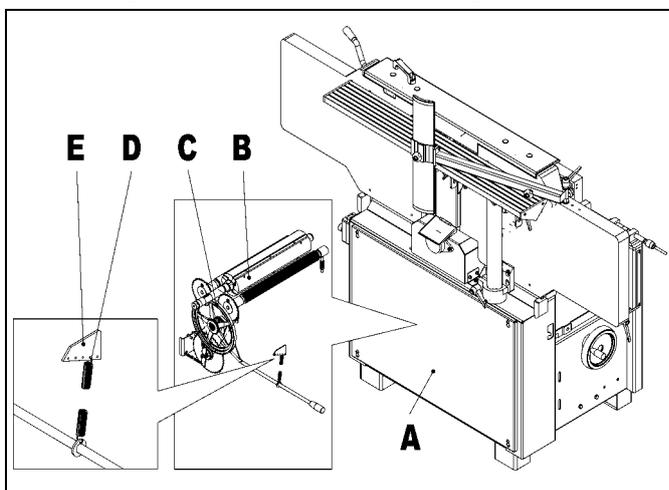
Always turn off the main switch and lock it or tow out the plug from socket and disconnect the machine. This will prevent any possibility of a random machine start by someone else.



Remove the removable side cover of the machine (A). Tensioning of the chain (C) of the drive (B) is automatic using a tensioning pulley (D) controlled by the spring (E). The force of the spring pulling (E) can be changed using the setting screw with nuts (F). If the length of the chain (C) requires and the tensioning pulley (D) would be non-functional, it is possible to modify the chain winding length (C) by changing the axial distance of the drive chain wheel by moving the electric gearbox downwards after releasing the screws (G) or vice versa. You can secure the new position again by tightening the screws (G).

Do not forget to reassemble the cover (A).

11.5 Change of the Amount of Pushing of the Friction Gearbox Gear



Remove the removable cover of the machine (A). The drive is derived from the cutter block (B). Using the wheel (C) with rubberised surface, which is pushed with the turned on (see Chap. 9.2.2.2) to the cutter block (B) by the lever with the spring (D). The amount of spring tension (D) and thus also the pushing force of the wheel (C) to the cutter block (B) can be changed by changing the position of fastening at the holder (E).

11.6 Cleaning and Lubrication

The machine must be regularly cleaned and bars, pivots, threads, and other parts subject to corrosion must be lubricated using suitable oil. The interval of this activity depends on the manner of work, but perform it at least once a month.

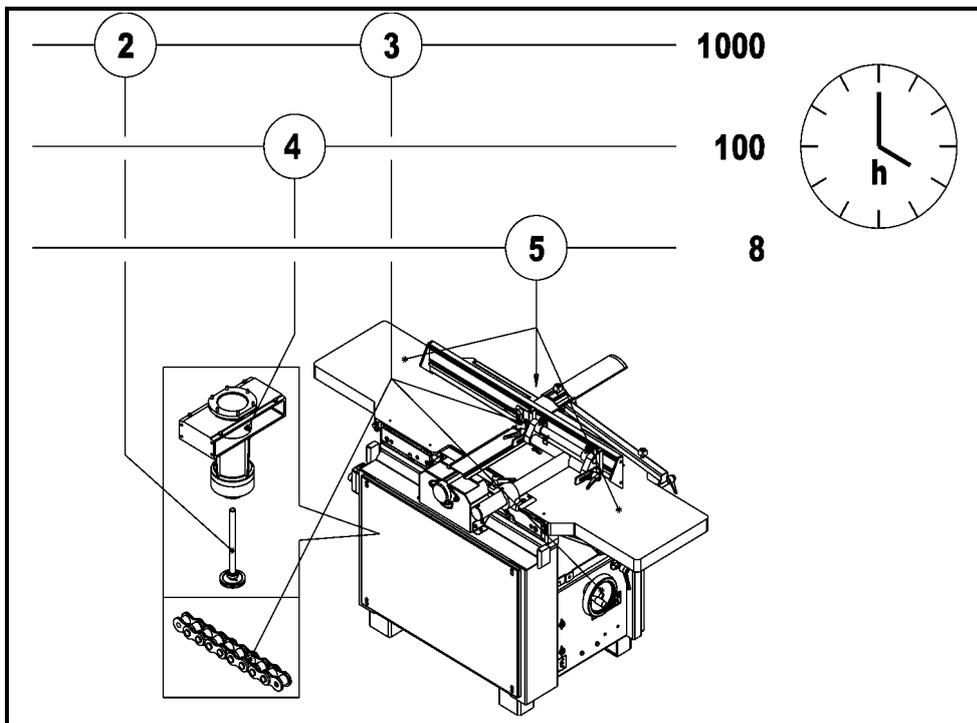
The bearings of the electromotor and the cutter block have a permanent grease fill, are enclosed from both sides and do not need to be lubricated.

Clean the tables from resin using a suitable solvent.

Prevent belt pollution with oil or lubrication grease. If it occurs, clean a belt only using paper or dry it. Dust cleaning is best performed using a vacuum cleaner. Perform this activity regularly once a week.

Lubrication Point Summary

	Spindle bearings	Movement screw of the thickening table	Chains and moving parts of other mechanisms	Thickening table guide (column in the body)	Table boards and cutter block
Lubric. point needy action	1 (hour)	2 (hours)	3 (hrs.)	4 (hrs.)	5 (hrs.)
Permanent grease fill	upon re- placement				
Lubricate by smearing		1000			
Lubrication press				100	
Lubricate with a lubricator			1000		8
Plastic lubricant or oil equivalent	LV-2-3	LV-2-3	OL B5	OL-B5	OL-B5
	ISO-L-XCBEA 3		ISO - LAN 68.		



11.1 Troubleshooting

With correct use and suitable maintenance, no failures should occur. If clogging of the splinter discharge occurs, it is necessary to turn off the machine before performing a remedy. Upon seizing of the work piece, immediately turn off the machine!

A dull milling tool is a frequent cause of electromotor overheating. If the machine shows increased vibration, check its establishment and anchoring, possibly the fastening and balancing of the used knives in the cutter block.

The machine does not work:

It is necessary to verify the electric installation and grid connection of the machine.

The thickening table moves with difficulty:

It is necessary to release the lever of table tightening or lubricate the column, possibly tension the belt of table adjustment.

The machine performance is poor:

The tools are not sharp.

To thick splinter is chosen - it is necessary to consider the width and hardness of wood.

Polluted thickening table

The V-belt of the cutter block is not sufficiently tensioned.

The motor does not work at full power - it is necessary to call an expert.

The machine vibrates:

Poorly sharpened or adjusted knives

The knives have an uneven width, height.

The machine does not stand level, it is not levelled well.

It is impossible to thickness using the machine:

Too large splinter

The thickening table is not clean.

The material hits the rear table:

Poor height adjusted knives or rear table.

A recess at the rear or front part of the machined piece:

Uneven area during planing

Poorly adjusted knives or tables

Poorly pushed or guided material during planing

Improperly chosen size of the pushing force of rollers.

The failure signal light is lit (from Chap. 8.6.2 Control Panel)

The emergency stop control is pushed or locked - release by turning the mushroom head or the extraction hose of thickening is not turned over into the correct position or the end switch of this nozzle is non-functional.

12.0 Supply Scope

Complete machine,
accessories according to the list,
operating manual,
special accessories (if ordered).

12.1 Accessories

Title		SP 410 SP 510	note
Wrench 13x16		1	
wrench 4		1	
wrench 6		1	
adjustment tool		1	for knife adjustment
PE bag with a zipper	250 x 350 mm	2	for attachment + manual
levelling pad		4	for machine levelling.

13.0 Special Accessories

Mortiser VDA 315,
knife establisher with an indicator,
short piece machining tool,
auxiliary rule for machining of thin and narrow pieces,
extension of the draw-through table - roller (a pair at the entry and exit),
table rollers (rollers in the draw-through table),
cutter block TERSA,
undercarriage.

14.0 Spare Parts

When ordering the spare parts, it is necessary to always state the serial number of the machine (from the production label), the machine type, and the production year. If an appendix with stated spare parts is a part of this manual, it is appropriate to state the numbers and titles of required spare parts according to this appendix.

15.0 Warranty

The works and activities not stated here require written consent of ROJEK a.s., Masarykova 16, the Czech Republic, 517 50 Castolovice. For every machine and accessories of the machine, a warranty card is attached. For the possibility of applying a warranty claim and in the interest of product safety it is necessary that you complete the warranty card immediately during the purchase. If the machine is not properly installed or forbidden handling is performed with it, its damage or injury may occur, for which we do not accept responsibility in such case. In case of applying a warranty claim, address the manufacturer directly.

After the expiry of the warranty period, you can have repairs performed by any expert company.

16.0 Packaging and machine disposal after service life expiry

16.1 Packaging Disposal

Our products are protected during transport to the customer by a carton or PE foil packaging. The producers of this packaging issued the prescribed declaration for their product and have a contract of securing the fulfilment of the obligation of return consumption and utilisation of the waste from the packaging concluded with an authorised company. Among the obligations of these companies belong also to inform the consumer about the manner of securing the return consumption.

16.2 Machine Disposal

The service life of this machine significantly depends on the manner of use and the intensity of the work application. A significant role also plays the frequency and type of performed maintenance.

Ten years is the time, for which the machine manufacturer is liable for damage demonstrably caused to the customer by this machine according to the law.

After the expiry of the machine service life, it is the owner's obligation to ensure ecological disposal of this machine so that the law about waste is adhered to and the environment cannot be endangered.

During the machine disposal, it is appropriate to proceed in the following manner:

- 1) Dismount all plastic parts and hand them over to the corresponding collection containers.
- 2) Divide the remaining metallic parts to ferrous and non-ferrous and hand them over separately for disposal to the corresponding specialized company.

ELECTRIC COMPONENTS LIST
SP 410, SP 510

Design	Function	Type, technical data	3-phases motor					Supplier	Replacement	Note
			3.0kW pcs.	3.7kW pcs.	4.0kW pcs.	5.5kW pcs.	7.5kW pcs.			
ELECTROMOTORS										
M1	planer and thicknesser drive	CEG M90L-2/FPC 3.0kW 3x400/230V 6.55/11.3A 50.60Hz 2850 /min IM B3	1	-	-	-	-	CEG Italy		
		CEG M90L-2/FPC 3.7kW 3x400/230V 9.3/16.1A 50.60Hz 2840 /min IM B3	-	1	-	-	-			at power voltage 3x230 V electric cabinet
		CEG M100L-2/FPC 4.0kW 3x400/230V 9.3/16.1A 50.60Hz 2840 /min IM B3	-	-	1	-	-			
		CEG M112MB-2/FPC 5.5kW 3x400/690V 12.2/7.1A 50.60Hz 2900 /min IM B14	-	-	-	1	-			for voltage 3 x 400 V
		CEG M112MC-2/FPC 7.5kW 3x400/690V 16.9/9.8A 50.60Hz 2880 /min IM B14	-	-	-	-	1			
		CEG M112MB-2/FPC 5.5kW 3x230/400V 21.2/12.3A 50.60Hz 2900 /min IM B14	-	-	-	1	-			for voltage 3 x 230 V
		CEG M112MC-2/FPC 7.5kW 3x230/400V 28.9/16.8A 50.60Hz 2900 /min IM B14	-	-	-	-	1			

ELECTRIC COMPONENTS LIST SP 410, SP 510

ELECTROMOTORS										
M2	drive	ELM1LA7096-4AA12 1.5kW 3x400/230V 3.45/5.9A 50/60Hz 1420 min ⁻¹	-	-	0(1)	0(1)	0(1)	Siemens		1-speed or continuously regulated
		CEG M90L 4/6P 1.1/0.75kW 3x400V 2.9/2.5A 50Hz 1425/920 /min B14	-	-	0(1)	0(1)	0(1)	CEG Italy		2-speed
SWITCHES										
SA1	Operation switch	LE – 1 M35U716 Uc=230V/50,60 Hz Ie=16A Ue=400V IP54	1	-	-	-	-	TELEMECANIQUE France		for 3 x 230 V
		LE – 1 M35N714 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	1	-	-	-	-			
		LE – 1 M35N716 Uc=400V/50,60 Hz Ie=16A Ue=400V IP54	-	1	-	-	-			
SA3	Brake release switch	VS 16 VZ1C PG21 Ie=16A Ue=400V IP 54	1	1	-	-	-	VD OBZOR Zlin		Variant of brake release or reversing
SB6	Table end switch	XCK – A 102 1“a“+1“b“ Ue=400V Ie=16A IP 54	1	1	-	-	-	TELEMECANIQUE France		
SB1	Emergency stop button	XAL K 178 1“a“+1“b“ Ue=400V Ie=16A IP 54	1	1	-	-	-	TELEMECANIQUE France		
QS	Main switch	VS 16 1104 A8 VSC VZ1C PG21 Ie=16A Ue=400V IP 54	1	1	-	-	-	VD OBZOR Zlin		
SB2,SB6	Double-button	XAL D02-H7 + accessories	1	1	1	1	1	TELEMECANIQUE France		start + emergency stop
-	Electr. switchboard	according to machine design	-	0(1)	1	1	1	BaK Pisek		
CONDUCTORS										
W1-10	Control circuit	H05VV-K1X1	according to machine variant						CYSY 2A x 1 mm ²	
W11-20 W31-40	Power circuits	H05VV-K3G2,5	according to machine variant						CYSY 3B x 2.5 mm ²	
		H05VV-K4G2,5	according to machine variant						CYSY 4B x 2.5 mm ²	
		H05VV-K4G1,5	according to machine variant						CYSY 4B x 1.5 mm ²	
		H05VV-K5G1,5	according to machine variant						CYSY 4B x 1.5 mm ²	
		H05VV-K7G1,5	according to machine variant						CYSY 5B x 1.5mm ²	
W21-30	Protective circuits	H05V-K1G1,5	according to machine variant						CYA 1.5 mm ²	
XT1	Terminal boards	Branch box	1	1	1	1	1	GEWISS.		

Note : The manufacturer reserves the right to change the components and the suppliers.