

Wood-Mizer[®]
FOUR-SIDED PLANING MACHINE
Safety, Setup, Operation
& Maintenance Manual

DSBA-40

rev. A1.00



Safety is our #1 concern! Read and understand all safety information and instructions before operating, setting up or maintaining this machine.

Form #995

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SECTION 1 INTRODUCTION

The present documentation contains information that should be used when preparing the machine for operation, working with it and when servicing or repairing it, as well.

1. High cutting speeds on wood working machines generate noise levels that exceed the admissible level NDN 85 dB. The producer requires that the operators use hearing protection and that the moulder should be in a soundproof enclosure.
2. Since the machine tool is subject to constant changes improving its design the present documentation is solely assigned to the machine tool to which it has been attached according to its serial number.
3. Starting the feed is only possible once the cutter shaft of the planing machine and heads are switched on.
(In order to start the feed without starting the cutter heads, move the heads out to their maximum position on the limit switches)
4. In order to ensure safe and continuous trouble – free operation one should:
 - Observe general and specific rules of Industrial Safety and Hygiene.
 - Only use the machine when connected to a dust extraction system
 - Observe the recommendations given in section „Maintenance and repairs”
5. To achieve optimum results the moulder should be used with timber with a Moisture Content lower than 18%. The recommended Moisture Content varies with the final use.

- Floor Boards	8-10 percent
- Furniture or construction woodwork for rooms with central heating	8-10 percent
- Furniture or construction timber for rooms with open fire heating	10-12 percent
- Construction woodwork exposed on one side to heated interior and to outdoor fresh air on the other side	12-15 percent
- Wood construction under roof but not closed	15-17 percent
6. Any element to be machined should have at least one straight face (towards the guide).
7. Machining of elements whose curvature exceeds the maximum permitted machining allowance is not admissible.
8. Before starting work, check the rotation direction of the cutter shafts, cutter heads and feed rollers. The rotation direction of the tools must be opposite to the feed direction and the same as the direction of the arrows located on the machine tool .

SECTION 2 GENERAL INFORMATION

2.1 Application of the product

The moulder is designed for use on wood or wood like materials, for planing, thickening and moulding. Using the machine correctly will allow you to produce an excellent surface and a high degree of accuracy.

With correct adjustments and correct tooling you can produce elements such as, skirting boards, moulding, trim, window elements, parquet, etc.

2.2 Brief description of the product

The four- sided planing machine DSBA-40 is composed of three main machining groups:

- surfacing - machining an element from the bottom.
- thickening - machining using top and bottom planers.
- side moulding or planing - using the two vertical cutter heads.

Moreover, the machine tool is equipped with the following auxiliary devices:

- shifting device
- adjustment device for the edging table - top-bottom
- adjustment device for thickening table - top-bottom
- table rollers
- clamp device - shift rollers
- protection devices - anti-kick-back fingers, brakes, screen etc.
- exhaust fan - to be connected to the dust exhauster
- control devices – mechanical and electrical

All of above have been built on to a single solid steel frame to allow for easy access and maintenance.

2.3 Technical parameters of the machine

Parameter	Unit	Dimension
Maximum cutting width - one side without the setting guide* - three side and four side with the setting guide	mm mm	400 320
Minimum width for four-side cutting	mm	40
Minimum thickness of machined element - one side without the setting guide - three-side and four-side with the setting guide	mm mm	3 15
Maximum thickness of machined element - one side without the setting guide - three-side and four-side with the setting guide	mm mm	170 100
Minimum length of machined element**	mm	350
Maximum cutting allowance cutting -from bottom on edging machine -from top on the thicknesser	mm mm	5 6
Feed speed	m/s [m/min]	0.1 ; 0.2 [6] ; 12]
Cutting speed of cutter shafts	M/s	~ 29
Rotation speed of spindle tools	Rotations Minute r.p.m	~ 5000
Maximum diameter of spindle tools***	mm	Ø 160
Power of drive motors for the edging, thicknessing machines and vertical heads	KW	4 x 4
Power of the feed motor	KW	0.8 / 1.1
Power of lifting motor	KW	0.75
Rated voltage	V	3x400 AC+PE
Rated frequency	Hz	50
Rated power consumption	KW	17

Rated current	A	37
Insulation level		I
Internal protection	IP	54
Overall dimensions- length - width - width (the heads set at extremes) - height	mm mm mm mm	~ 3120 ~1200 ~ 1600 ~ 1400
Weight of the machine	Kg	1790
Sawdust - extraction pipe diameter	mm	2x120 1x100
Air velocity	m /s	20-24
Dust Collection air demand	M ³ / h	3200-3800

* dismantling of heads on spindles is required

** in case of machining elements 350 up to 550 mm long one should apply an additional clamp assembly (see special equipment)

*** resetting of rear guidelines (items 7 and 8 in Fig. 3, page 9) is needed.

2.4 Standard equipment

Name of element	Drawing no Dimension	Quantity of pieces
Special spanner 17		1
Key to the cubicle	GN 119.1 VDE	1
Planing knives (mounted on shafts) DNS JA a	410x35x3 PN/D-54700	8
Box Spanner RWPd 41	105x35x3 PN/D-54700	8
Crank for setting of spindles	PN/M-65010	1
Bushes for moulding pins		1

2**General information***Special equipment*

Special spanner 17	Ø 30/50x5	2
	Ø 30/50x15	2
	Ø 30/50x25	2
	Ø 30/50x35	2
	Ø 30/50x50	2
	J255.01.07.05	

2.5 Special equipment

Name of element	Drawing No	Quantity
Instrument for setting of cutters (for thiknesser)	DUKB	1 set
Instrument for setting of cutter (for edging machine)	PUNA-3	1 set
Sub-assembly of extra clamp	J327.20.01.00	1 set

2.6 Industrial Safety and Hygiene

In order to avoid dangerous situations when using the machine tool one should strictly observe the following rules and instruction.

2.6.1 General requirements

- a) The moulder must be used according to its application
- b) The moulder should only be used by an operator trained in the use and maintenance and setting of the moulder, or by an operator trained in its use provided that the moulder has been set up by a qualified operator.
- c) The operator should operate the moulder in accordance with Health and Safety regulations and with the instructions contained in this manual. It is the duty of the operator to familiarise himself with the contents of this manual.
- d) Lighting should be at least 300 Lx.
- e) On no account should guarding be removed while the machine is running.
- f) The machine should be disconnected at the Master Switch before carrying out any maintenance, inspection or setting up.
- g) Cleaning of the machine should only be undertaken when the moulder is at a complete stop and isolated
- h) If the moulder is being operated by more than one person a communication system should be adhered to.
- i) Repairs and inspections should be carried out by a qualified and authorized person.
- j) Braking the moulder by hand or using any other tool is strictly forbidden.
- k) Do not check for surface finish or dimension while the moulder is in operation.
- l) When machining long material adequate additional supports must be used.
- m) The operator must:
 - check that the tooling is in good condition and that all guards and safety devices are operational.
 - inform authorised personnel if any faults are found
 - only restart the machine after repair, setting or servicing
 - use ear protection
- n) Should material become jammed in the machine it is forbidden to push it or otherwise try to extract it without first shutting off the moulder and lowering the table.

2.6.2 Detailed requirements

- a) Before starting work, check the tightness of the cutters.
- b) Whenever you leave the moulder disconnect it by using the Master Switch.
- c) Avoid accumulation of material, shavings and waste near the working stand.
- d) It is forbidden to machine material that comes from demolition in which foreign matter could be found.
- e) Always lock the table at its operating height.
- f) Provide the operators with ear protection.
- g) You mustn't use tools with rotation speeds lower than those attainable on the machine tool.
- h) It is forbidden to stand in the way of possible throw-back of material being machined.
- i) Work only when the dust collection system is connected.
- j) In case cutter is replaced the insert number and the groove number on the shaft should be consistent.
- k) It is forbidden to adjust rollers, pressure bars when the machine tool is running.
- l) It is forbidden to operate the moulder without the anti kick-back fingers in place.
- m) At least once a shift, check the operation of the anti kick-back fingers by carrying out the following steps:

2

General information

Detailed requirements

- Disconnect the moulder by use of Master Switch.
- Remove the upper guard
- Using a piece of wood, check that the fingers lift freely and descend under their own weight
- Visually check the condition of the finger edges - they must be sharp
- Set the table at, for instance, 30 mm
- Insert a piece of wood of 30 mm thickness
- Try to remove the piece of wood with a sudden backwards pull

You should not be able to withdraw the board.

- Replace the upper guard.

SECTION 3 PRELIMINARY OPERATIONS

3.1 Transport method

It is recommended to use a fork-lift truck when transporting the machine tool.

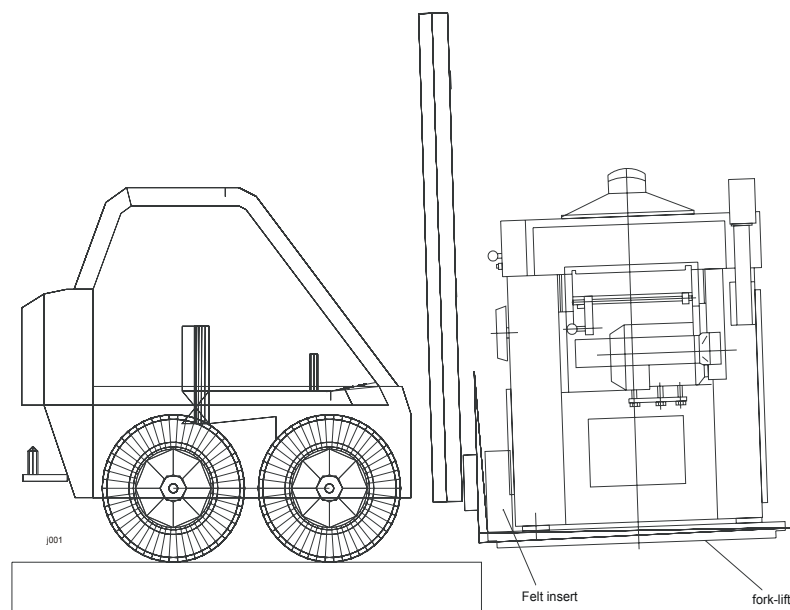


Fig.1

Remarks

1) The machine tool to be transported should be completely maintained and provided with transportation skid. Equipment elements should be packed in plastic bags.

2) After having transported the machine- tool and positioning it all the maintenance grease should be removed from all unpainted surfaces. Inspect all parts and in case paint coating has been damaged give it anti-corrosion protection.

Check if the following elements has been damaged or deformed:

- cutter shafts and their inserts, pressure screws, bearings and shaft housings.
- Electrical motors
- Material guideline
- Control buttons

The damaged elements should be replaced with new ones. After protective coating removal, mount all dismantled for transportation reasons elements back on the machine tool.

3.2 Foundation

The machine must be set up on a previously prepared concrete foundation minimum B20 grade. The dimensions that you need to prepare the foundation are shown in Figure 2.

Before securing the machine to the foundation, perform the following steps:

- Remove the transportation skid,
- Insert M12 x 120 foundation bolts through the holes in the machine body,
- Place the machine on the foundation,
- Reinstall all elements removed previously for transportation reasons,
- Level the machine within the accuracy of 0.1 mm to 1 mm in two rectangular directions by putting a level on the tables.

After performing the above steps, fasten the machine to the foundation.

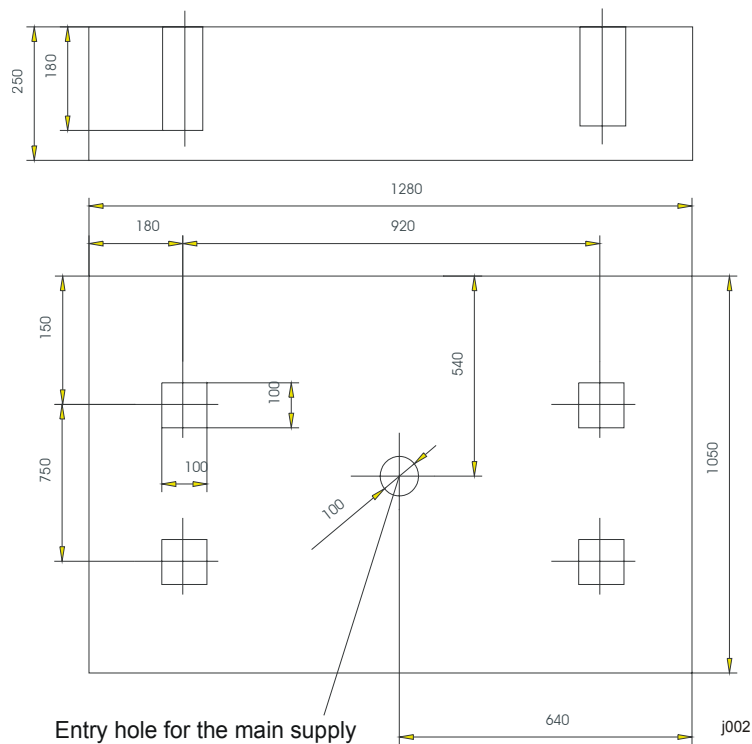


Fig.2

Notice:

Application of anti vibration insulators when fixing the machine on the foundation has a positive effect on the wear and tear of cutter shaft bearing nest and vertical spindles as well as on the noise emission.

3.3 Connecting the machine to the mains

The electrical installation is adopted to the supply Line TN-S (L1, L2, L3, PE). In case of four-lead supply line the connecting should be carried out respecting all valid regulations. The electrical equipment has no main protection. Such a protection should be made on the supply line using installation disconnectors of category C-35A. The machine tool should be fed with a cable OPd 5 x 6 mm².

Before connecting the machine tool to the mains one has to check the technical condition. If the resistance is lower than 0.5 M Ω m one has to dry all the equipment.

You must not connect the machine tool to the mains without having measured, previously, the insulation condition of the equipment. A protection network system should be provided according to the regulations in force.

The whole wiring system as well as the motors will function correctly if the supply voltage is not below 95 percent or higher than 110 percent of its nominal value.

The entry of the feeding cable is shown in the drawing presenting the foundation.

The length of cable ending allowance for connection should be about 1 m. The leads of feeding cable should be connected to appropriate terminals.

3.4 Connecting the machine to the exhaust installation

Before connecting the machine to the plant exhaust system one should check if the system satisfies the conditions started in Section 1..

After having inspected the system one should connect the machine tool to connector pipes using a flexible hose ? 120.

Place the hose on the connector pipe and fix it with a pressure band.

Notice !

1. It is forbidden to connect the machine to the shaving exhaust system to which electrical, welding or other devices that can generate sparks have already been connected.

2. It is forbidden to work on the machine tool without having connected the exhaust system- you risk losing the warranty when not observing that regulation.

3.5 Working conditions

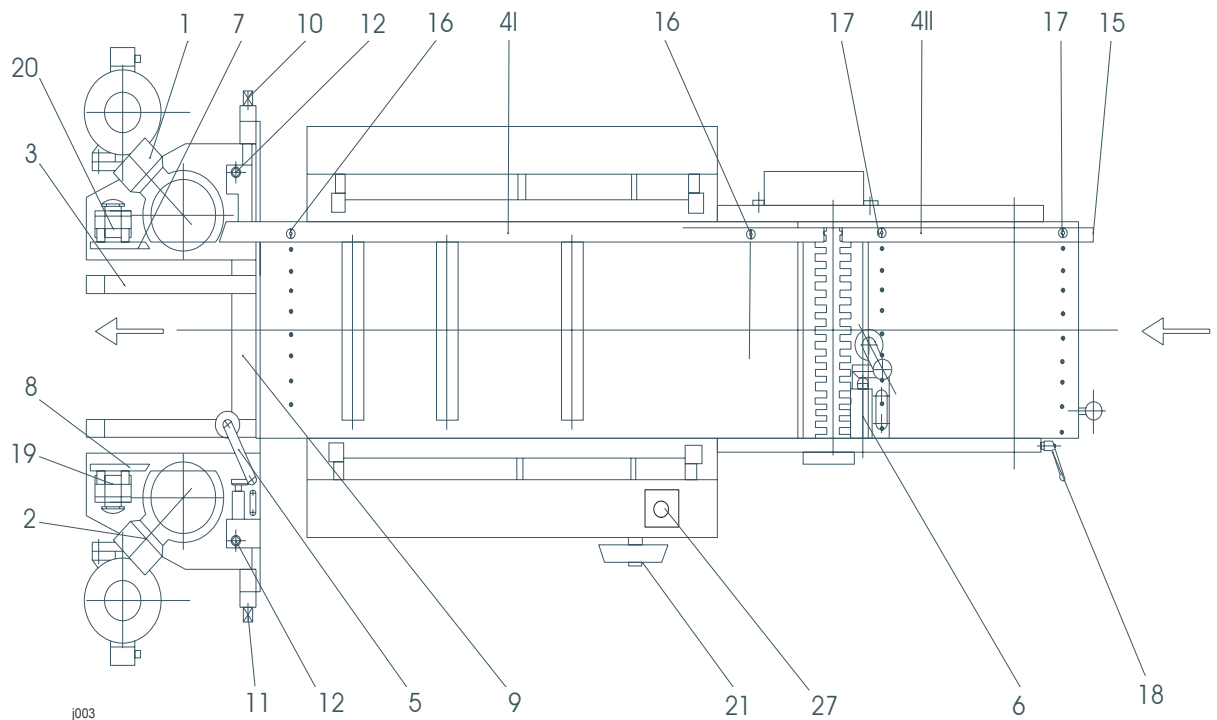
In order to ensure a failure free operation of all units of the machine tool one has to respect the following building conditions:

- 1) Kind of the room – closed with possible sound insulation screens being installed, minimum 3 m high, with the possibility of connecting dust exhaust system.
- 2) Temperature – the machine tool should operate in a room where the temperature stays within the range of + 5° C to +35°C.
- 3) Humidity- the maximal humidity in the room should not exceed 85 percent.
- 4) Lighting at the work stand – minimum 300 Lx.
- 5) One shift work – 8 working hours.

SECTION 3 CONTROLS

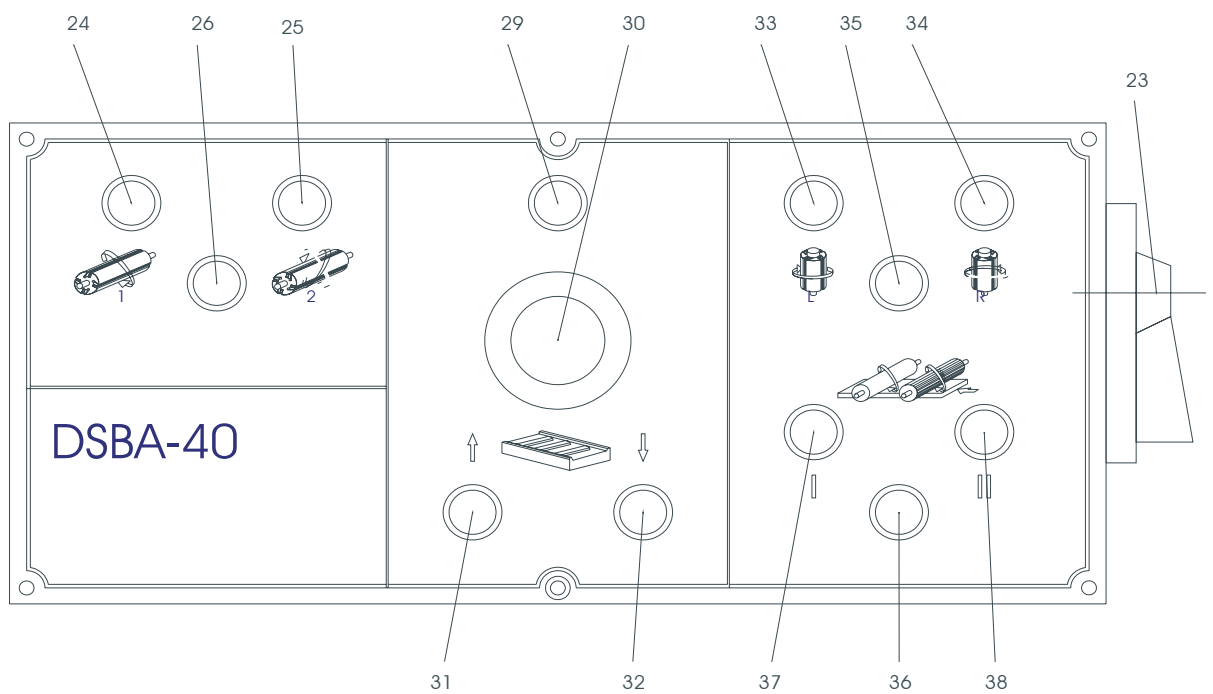
3.1 Setting, adjustment and control devices

- 1,2 Cutter Head shields
- 3 Clamp assembly
- 4I, 4 II Guide – adjustable
- 5, 6 Clamp element
- 7,8 Rear guides
- 9 Horizontal guide
- 10, 11 Adjustment screws for the width of 3-side machining
- 12 Screws for vertical adjustment
- 13, 14 Adjustment screws for V-belt tension
- 15 Lead in for setting bar-side of the table
- 16 Screw for adjustment of the guide on the thicknesser's table
- 17 Screw for adjustment of the guide on the edging machine table
- 18 Locking screw for the setting of edging machine table.
- 19, 20 Adjustment screw for setting of rear guides
- 21 Hand wheel for lifting/lowering of the table
- 23 MASTER SWITCH
- 24 On button for the edging machine
- 25 On button for the thicknesser.
- 26 Off button for the edging and thicknessing machine
- 27 Edging machine and thicknesser brake release switch (access to the switch is possible-only after opening the upper cover)
- 29 Signal lamp indicating the machine being switched on
- 30 EMERGENCY STOP disconnects all the motors
- 31 On button to lift the table
- 32 On button to lower the table
- 33 On button for the left head
- 34 On button for the right head
- 35 Off button for the left and right heads
- 36 Off button for the feed
- 37 On button for the feed at Speed I
- 38 On button for the feed at Speed II



Side view of the table from the top (without cover or clamp rollers)

Fig.3



View of the button plate

Fig.4

SECTION 4 STARTING – A TRY

After studying the manual and the operation of the moulder we can start the moulder as follows

1. Check that the cutter heads and knives are firmly and correctly in place
2. Check that all guards are in place
3. Check that the pressure rollers and guides are correctly aligned
4. Switch the Master Switch ON
5. Check the rotation direction of the cutting heads and feed rollers by starting each operation individually (The rotation direction of the tools must be opposite to the feed direction and the same as the direction of the arrows located on the machine tool.).
6. If the rotations is incorrect, isolate the moulder by use of the Master Switch and change phases on the supply terminals
7. Once all the heads and feed are operating correctly, start all the functions and leave the moulder to run for about one hour without and load
8. While the moulder is running check for any noise or vibration that may indicate a possible failure
9. Stop the moulder and check the bearing temperatures. They should not exceed ambient +50 °C.
10. Check for any loosening or misalignment and adjust as necessary

After performing all of the above checks and operations you may now start to use the moulder.

SECTION 5 WORKING ON THE MACHINE TOOL

5.1 Fixing and adjustment of cutters

The cutter head is designed to allow the use of planer blades with the dimensions 3mm x 35mm x 410mm according to PN/D-54700. The planer blades are locked in place by tightening the screws that press the wedge shaped bar against the planer blade. The whole assembly is dynamically balanced. The planer knives should be straight and correctly sharpened (blade angle should be 400 ± 2 degrees) and the length and thickness deviation should not exceed ± 0.5 mm. If these requirements are not met the balance of the assembly will be upset causing excessive vibration, bearing wear and the risk of material being thrown back.

The knives set 1.1mm above the cutter head should be tightened using the tool provided (see section 1.4) Extending the handle or hammering the handle is not permissible.

The planer knives must be less than 25 mm wide

The factory set for the planer knives is 1.1mm above the cutter head. To ensure accurate and trouble-free planing the deviation should not be more than ± 0.02 mm.

To adjust the planing knives use the special tool provided - Section 1.5, Special Equipment

Tool DUKB for cutter adjustment (relates to the thickneser)

The tool DUKB is used in the knife adjustment on the thickneser shaft with planing knives with the nominal diameter of 122 mm.

300701

Adjustment procedure

1. Set the indicator to zero using the check gauge
2. Insert the knife into a groove of the cutter shaft to about 1.5 mm of height and tighten lightly the two outside pressure screws.
3. The instrument set to zero should be put onto the cutter shaft
4. Strike the knife with a wooden block and lower the knife to 1.1 mm (read the distance on the indicator).
5. Repeat the procedure in three positions: middle, left and right (check the knife clearance 1.1mm)
6. Tighten carefully all screws starting from the middle to the left and right
7. Similarly, adjust the remaining knives.

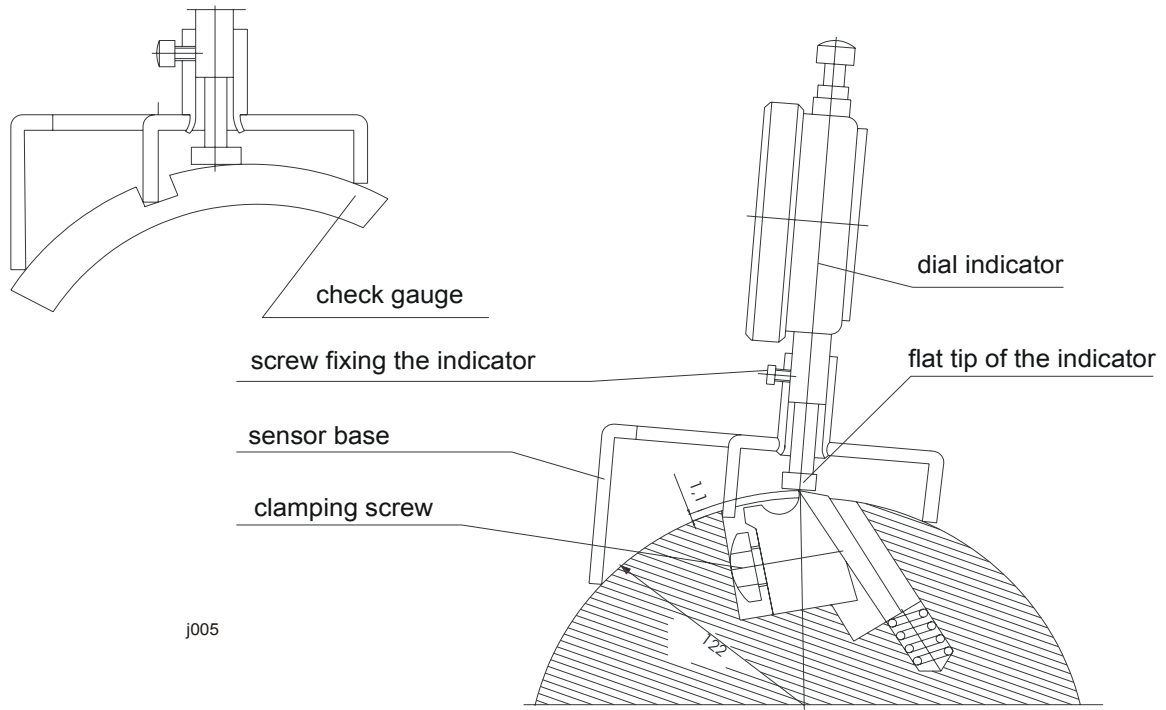
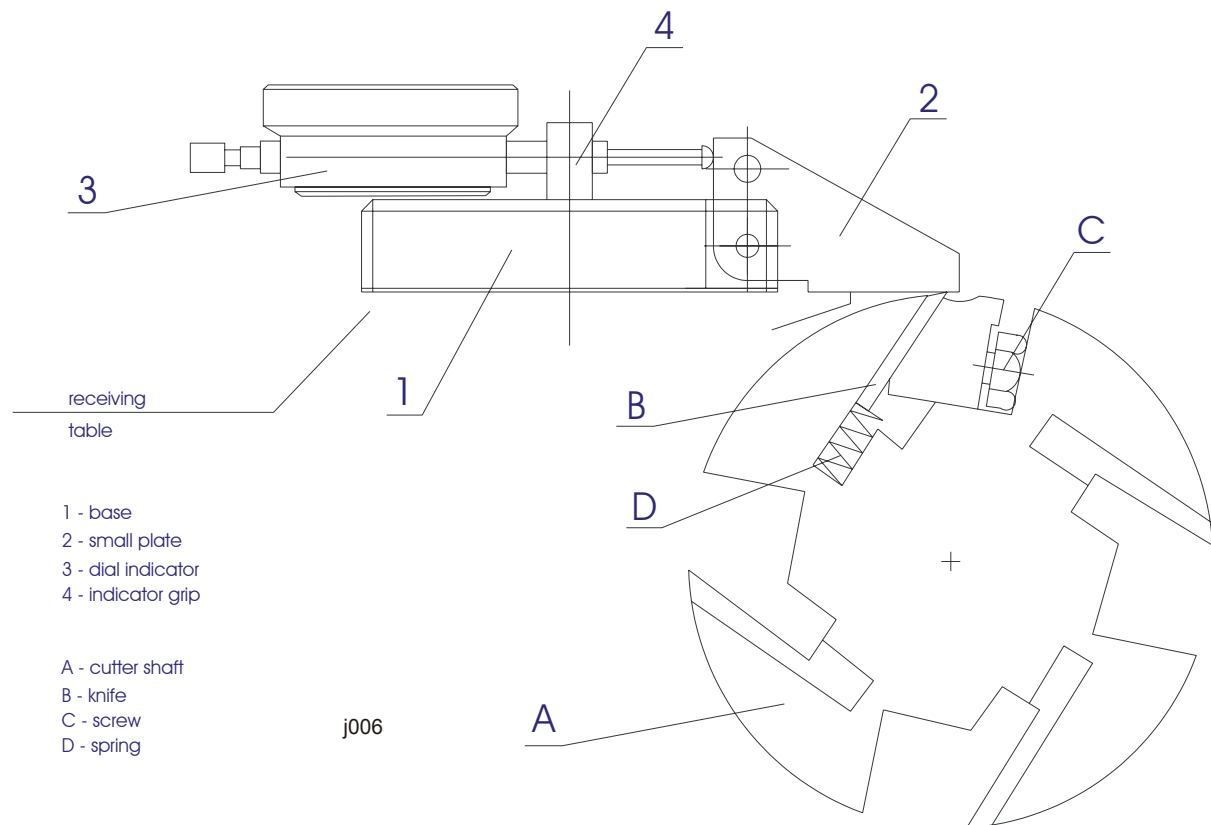


Fig.5

Note:

After having finished the adjustment you have to check the tightening of all screws – **otherwise you risk an accident.**

Instrument PUNA- 3 (for edging machine) for cutter adjustment.**Fig.6**

The correct setting of knives (B) in the cutter shaft determines the correct operation of the machine tool. The operation is possible by use of the instrument PUNA- 3.

Preparation procedure

The instrument with dial indicator (3) fixed in handle (4) is put on a flat surface (for instance, laying out plate or edging machine table). The foot of indicator should be level with the edge of self-aligning plate (2). We fix that position by turning the external scaled ring to the value "0". The instrument thus prepared is ready to serve as a base for adjustment of knives (B) in the cutter shaft (A).

Adjustment procedure

The instrument should be placed on the outfeed table of the edging machine which is the reference base. Shifting the instrument move plate (2) on the set knife (B) so that it sits on it. Turning cutter shaft (A) to the left and right the knife edge will move on the plate (2) edge causing the indicator (3) pointer to deflect.

Adjust the knife excess so that dial indicator (3) points finally to the value "0". After having checked the knife's excess at three points (at two extremes and in the middle) and confirmed the correct setting we tighten all screws (C) and start adjustment of the next knife.

5.2 Fixing of moulding cutters

The tools (arbor cutters, heads) are directly mounted on the spindles. After fixing the position of a tool (by use of spacers) one has to compensate the spindle height with spacers and tighten the nuts (Absolutely, one has to put a nosed bush in order to secure against loosening- immediately under the spindle nut).

One should pay particularly attention to the correct direction of edges for cutters (counter-cutting).

Notice: The maximum lowering of a moulding cutter below the table level is 10 mm.

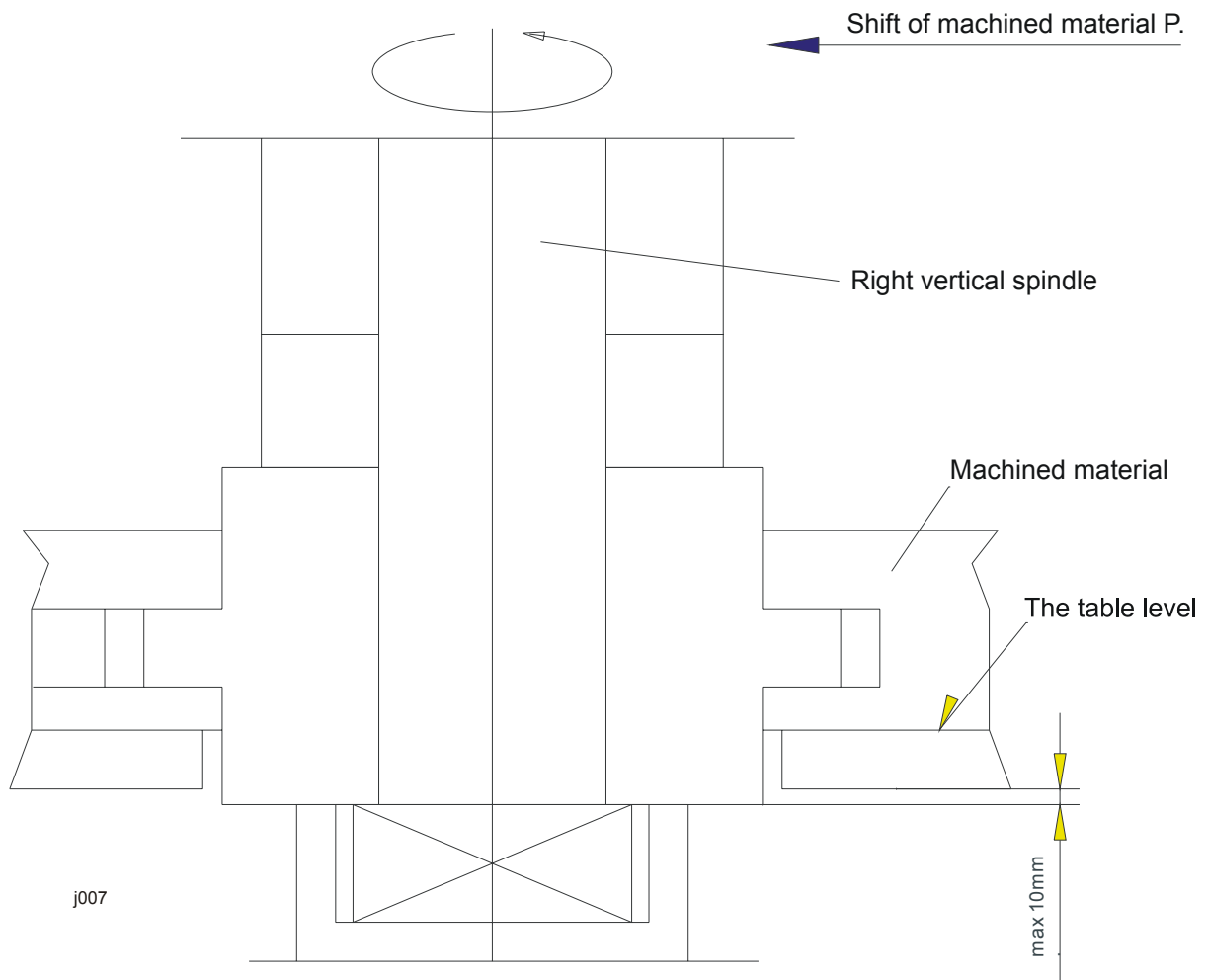


Fig.7

5.3 Adjustment of table shafts, feed rollers and pressure devices

The table rollers, feed rollers and pressure devices should be adjusted so that the parameters in the drawing below are observed.

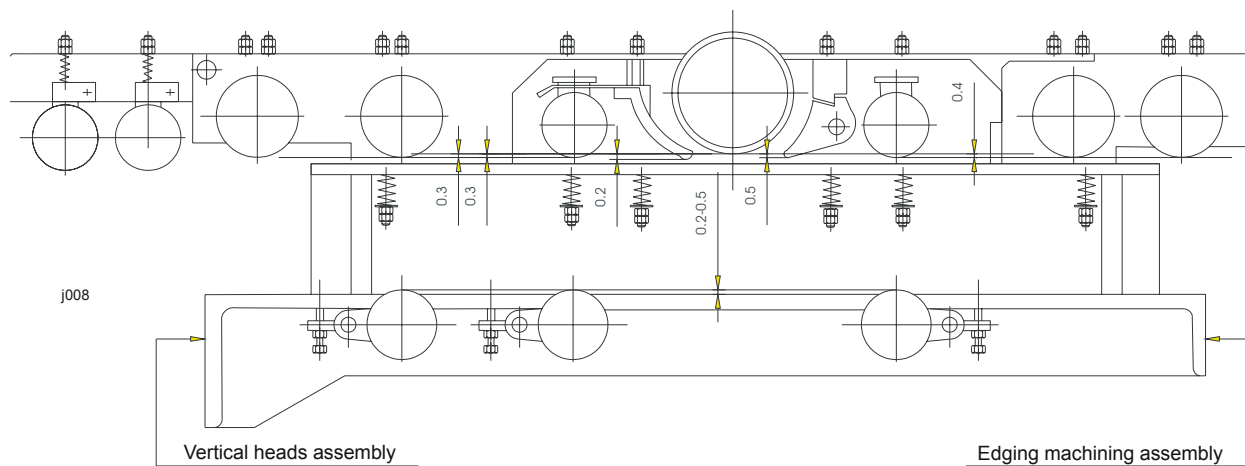


Fig.8

5.4 Table Adjustment and the operation of the Limit Switches

In order to avoid damage while raising or lowering the table the moulder is equipped with upper and lower safety limit switches. The lower disconnects the drive at a distance of 170mm and the upper one at 18mm from the planer knife in the thicknesser cutter shaft.

The permissible travel of the table is also blocked mechanically when using the handwheel (21) to raise the table. The operation of the mechanical limits is shown in Figure 9.

Item a) - shows the upper limit at a distance of 15mm from the knife - a guide should be used.

Item b) - shows the upper limit at a distance of 3mm from the knife - in this instance the guide bar 41 must be removed.

The factory settings are for a minimum setting of 15mm (Item a)). In order to reset the limit to 3mm (Figure 9, Item b)) one has to loosen screw 4 and then tighten screw 6 with the 17mm spanner. After adjusting the physical limit to desired dimension tighten screw 4 until secure.

Warning

1. It is forbidden to adjust the setting of nut 7 on screw 6 which is fixed with a rawl pin by the manufacturer. Violation of this instruction will invalidate the warranty.
2. You must remember to reset the mechanical limit to 15 mm from the knife (item a)) and in when the guide bar is replaced.

Not adhering to these instructions may cause an accident.

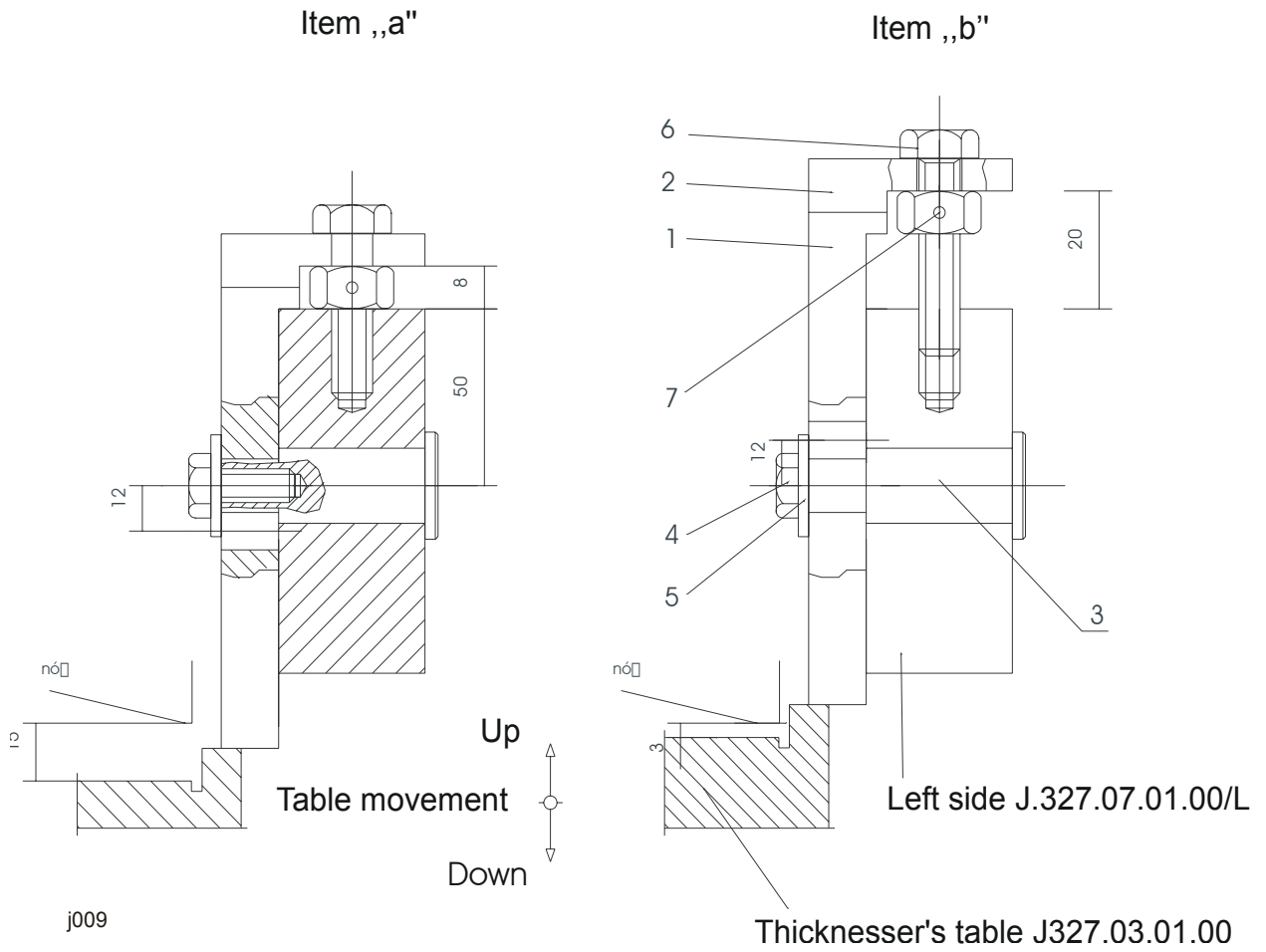


Fig.9

Item „a” – the minimum thickness is 15 mm when guide bar 41 is place (bar mounted)

Item „b” – the minimum thickness is 3 mm without the bar (the guide bar 41 dismantled)

5.5 Machining

Before we start machining we should respect the following rules:

1. Check the condition and tighten of knives

Notice:

In the event that the knives and tools are blunt the machining quality is deteriorated and resistance to the feed increases (motors overload)

2. Check the function of the anti kick-back fingers - they should be sharp and fall loosely under their weight
3. Connect the moulder to sawdust extractor
4. Set (according to Fig. 10)
 - a) adjust the required cutting width "B" by use of screws 10 and 11 (Fig. 3) distributing the machining allowances on samples x_3 and x_4 symmetrically, if possible, among individuals tools.

Notice:

The guide bars 4I, 4II and 4 III must be absolutely parallel the rear guide bar 7 (the rear guide bars left 7 & 8 must be set to allow the free outfeed travel of the wood after planing)

- b) adjust height of tools, in particular the profile cutters – by use of screws 12 (Fig. 3) (preliminary adjustment can be made by applying distance bushes)
- c) set the side pressure rollers 5 and 6 with a little pressure (if an element moves away from the guides 4 I and 4 II when being machined, increase the pressure).
- d) Set the thicknesser's table at the desired dimension "h" – to begin with buttons 31, 32 (Fig 4.), then precisely by using hand wheel 21 (Fig 3). To eliminate possible errors caused by play in worm- screw gears the dimension should always be set from down upwards.
- e) set the allowance " X_1 " by use of edging machine table (after the table has been set one has to lock it by use of wheel 18 (Fig 3)).

Notice:

One should pay, particular, attention not to violate the admissible allowances that have been assumed in the construction; for the edging machine 5 mm, and 6 mm for the thicknesser (in case the thickness of an starting element is greater than $[h + 5 + 6]$ mm one has to plan it preliminarily because of its thickness).

In order to protect the moulder from being damaged when violating the maximum allowance for machining on the thicknesser (X_2) the machine has been equipped with an electro-mechanical device witch disconnects the feed of the material on the table.

5 Working on the machine tool

Machining

In that case, one has to stop the moulder and reduce the allowance for machining. On no account should one reset the adjusted tolerances.

- f) adjust the upper pressure element 3 (Fig.3) (in case of a narrow element one should apply only one pressure roller – in case of a wide element, two pressure rollers placed as close as possible to the vertical heads).
- g) Set the lower guide, similarly as the upper pressing element, that is in case of a narrow element – one guide in the middle – in case of a wide element two guides, as close as possible to the vertical heads.

5. When starting the machine tool one should start up (Fig. 4) in the following order: edging machine 24, thicknesser 25, heads 33 and 34 and finally feed 37 or 38.

The feed speed should be selected according to the width of an element, machining amount as well as the species of the wood. In case we want to machine elements on only one or two sides one should set the vertical heads in their extreme side position (It allows power to the feed motor without disconnecting the head drive).

Notice:

The cutter shaft drive of the edging machine and the thicknesser must always be connected – therefore the edging table should be lifted to the table level of the thicknesser in case of one sided machining. When working with the machine tool one should respect the following principles:

1. One should always try to feed “butt to butt”.
The last element to be machined should be pushed out with the use of a piece of wood with the following dimensions.
 - thickness- the same as the machined element
 - width - smaller than the machined element (it must not be machined on the heads)
 - length - not shorter than 1.2 m.
2. At least once a shift, check the operation of anti kick-back fingers by carrying out the following steps:
 - Disconnect the machine by use of MASTER SWITCH.
 - Remove the upper shield
 - By use of a wooden bar, check if the pawls are free to be lifted and if they come down loosely under their weight.
 - Check visually the condition of pawl edge. (they must be sharp).
 - Set the table at dimension “x” (for instance x = 30 mm)
 - Put a board of dimension “x” between the table and the pawls
 - With a violent move reverse to the shift direction try to withdraw the board.

The withdrawal of the board should not be possible.

- Cover the upper shield

3. On a regular basis check the condition of feed rollers and table shafts (they must be clean

and free of resin).

4. Maximum allowances, very wide boards and hard wood should be planed at a slow feed speed (this will eliminate disconnection of motors caused by overloading).
5. When machining narrow elements local blunting of the knife edges that are mounted on cutter shafts of the edging and thicknessing heads takes place and one should move the guide bars 4 I and 4 II, vertical heads and pressure elements into a sharp area of the knives (the bars should be positioned parallel to the edge of the thicknesser's table). Additionally, one must interchange individually the fixed segments covered with rubber (according to the principle – narrow element – one segment set symmetrically a wide element – two or three segments set symmetrically as well).
6. One should not change the tension adjustment of the plate springs for the drive clutch for the rubber rollers (in the event that the clutch is blocked the wear of the rubber rollers will be accelerated)
7. When planing boards with resin spots one should smear the tables with a liquid mixture to dissolve the resin.
8. One should respect the rule stating that one of the surfaces should be straight for machining w.r.t the width; and for machining w.r.t the thickness the curvature of an element should not be greater than the half of machining allowance for the thickness.
9. When machining long and/or heavy material you should use additional adjustable supports level with the infeed table on the infeed side and level with the outfeed table on the outfeed side.
10. If you remove guide bar 4I and set the mechanical limit to 3mm you MUST NOT use the vertical heads.
11. After re-installing the guide bar 4I you must reset the 15mm mechanical table limit. Ignoring this rule could result in a serious accident.

Setting the machine tool to work

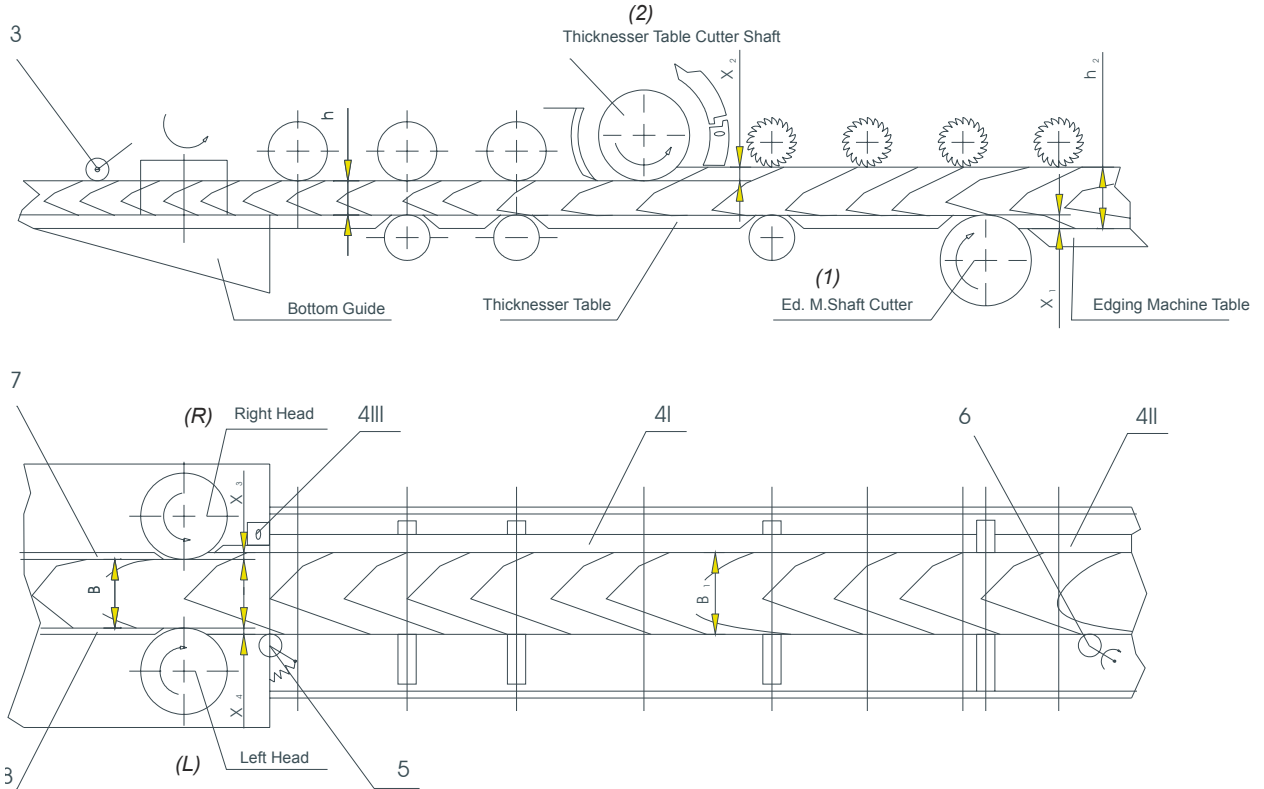


Fig.10

X_1 – edging allowance
 X_2 – thickening allowance
 X_3 – the right head allowance
 X_4 – the left allowance

h – height (thickness) of a machine element
 h_1 – height (thickness) of an element with allowances
 B – the width of an element after machining
 B_1 – the width of an element with allowances

SECTION 6 MAINTENANCE AND REPAIRS

6.1 Inspections and repairs

In order to ensure a trouble – free operation of the moulder you should follow exactly the rules given below:

1. Use the machine tool according to its application
2. Thoroughly clean the moulder after machining
3. Observe lubrication rules
4. Do periodic technical inspections
5. Avoid overloading electrical motors
6. During periodic inspections, check the condition of the protection cable (for breaks, damages or dirt on clamps) and remaining electrical wires and connections, tighten loosened clamps.

Don't lubricate contacts.

7. Don't allow for maladjustment of setting (shafts, pressure bars etc).
8. Pay close attention to the condition of:
 - cutter shafts
 - inserts and pressure screws
 - feed rollers
 - material guide
 - thickneser's table guides
 - suspension elements, drive and edging table adjustment
 - vertical spindles
 - elements of feed drive
 - segments of pressure bar
 - screws for table lifting
 - rolling bearing, sliding bearing
 - V-belts
 - function of motor brakes
 - chain tension
 - anti kick-back protection
 - Function of limit switches
9. In case the moulder is to be stopped for a long period of time it should be carefully inspected, cleaned and covered with protective coating.

6.2 Lubrication instructions

1. During use of the moulder one should check the condition of the bearings in the motors every 2800 working hours and in case some irregularities have been found (for instance, noisy action, excessive plays, excessive temperature increase) one should replace them.
2. Scaled bearings are not to be lubricated by the user since they have been filled with grease at the factory.
3. Other elements are to be lubricated as indicated in the table below.

Lubrication point	Lubricated element	Grease	Lubrication method	Tone period	Remarks
1	Horizontal guide	Machine oil L-AN 110	Oiler	Some drops every day	
2	Vertical guide	Machine oil L-AN 110	Oiler	Some drops every day	
3	Left screw	Machine oil L-AN 110	Oiler	Some drops every day	
4	Right screw	Machine oil L-AN 110	Oiler	Some drops every day	
5	Vertical screw	Machine oil L-AN 110	Oiler	Some drops every day	
6	Rear pressure element	Machine oil L-AN 110	Oiler	Some drops every day	
7	Front pressure element	Machine oil L-AN 110	Oiler	Some drops every day	
8	Sliding bearing of feed rollers	Grease £-AN10	Forced greaser	Every day	
9	Sliding guidelines of thicknesser table	Machine oil L-AN10	oiler	When needed	

10	Roller bearings of thickener's cutter shaft	Turms grease Li 802EP	greaser	Every 3000 working hours	After dismantling after having dismantled the cover, 70 g
11	Roller bearings of edging machine cutter shaft	Turms grease Li 802EP	greaser	Every 3000 working hours	After dismantling after having dismantled the cover, 70 g
12	Worm gear for table lifting	Grease ŁT-4	Spatula	Every 4 years	After having dismantled the rubber covers
13	Screws for table lifting	Grease ŁT-4	Spatula		After having dismantled the covers
14	Chain Tensioner	Machine oil L-AN 10	oiler	Every 50 hours	

Turmogrease Li802EP - LUBCON (Germany)

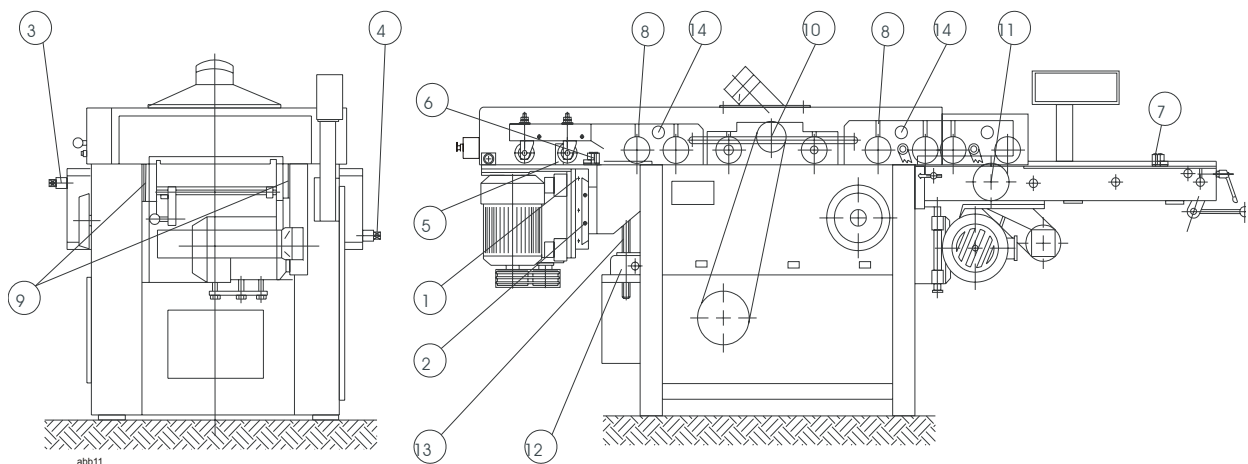


Fig.11

SECTION 7 LISTINGS

7.1 Roller bearings

Item	Assembly name	Bearing No.	Dimensions [m m]	Quantity
1	Thicknesser cutter shaft	1308 TNG	? 40/90 x 23	2
2	Edging cutter shaft	1208 TNG	? 40/80 x 18	2
3	Vertical Spindles	62022	? 50/90 x 20	4
4	Table rollers	6202 Z	? 15/35 x 11	6
5	Table lifting	6010 6205 RS	? 50/80 x 16 ? 25/52 x 15	8 8
6	Chain Tensioner	6005 2RS	? 25/47 x 12	4
7	Pressure rollers, side and top	6202 Z	? 15/35 x 11	4

7.2 List of V-belts

Item	Assembly name	Dimension	Quantity
1	Thicknesser cutter shaft drive	A 1700	2
2	Edging cutter shaft drive	HA 850	2
3	Spindle drive	Spz 937	6
4	Lifting drive	HZ 937 (HZ 1000)	1

7.3 List of chains

Item	Assembly name	Dimension [m m]	No. Of links	Symbol PN/M-841 68
1	Feed rollers drive -from motor to rollers at the cutter shaft	5/8 II t = 15,87	144	10.B
	-To feed roller II in the input assembly	½ II t=12.7 two rows	62	08 B-2-62
	-from roller II on roller I	½ II t= 12.7	68	08 B
	-from roller I on pressure roller	½ II	44	08B
	-from clutch to roller I to the left	½ II	54	08 B
	-from roller I to roller II to the left	½ II	41	08 B
2	Table lifting drive	½ II t=12.7	96	08 B
			148	08 B

7.4 List of wear parts

Item	Assembly name/type	Drawing No/Symbol
1	Clamping screw	J 125.06.24
2	V-belts	As in Section 7.2
3	Wide rubber roller	J 333.05.15.02 „segment”
4	Narrow rubber roller	J.327.11.02.03/a „Rolka”
5	Button covers	B 4-GL 2304

Remark: Parts under frequent wear and tear are not covered by warranty

SECTION 8 TROUBLESHOOTING GUIDE

Item	Fault	Cause	Remedy
1	Planed surface uneven	<ol style="list-style-type: none"> 1. Radial play of cutter shaft bearing 2. Machine vibration 3. Knives not set correctles out with permissable tolerance 	<ul style="list-style-type: none"> -replace bearings -balance dynamically quickly rotating parts + set knives to correct tolerances
2	Thickness of cross planed material uneven	<ol style="list-style-type: none"> 1. Knives on shaft set un-parallel to shaft 2. Table not parallel to cutter shaft 3. Table rollers not parallel to the table 4. Table has play in guides 	<ul style="list-style-type: none"> + set knives correctly Adjust the table, adjust supports + adjust their position + adjust the table eliminating play, clean and scrape guides
3	Break on the front end of machined element	<ol style="list-style-type: none"> 1. Too low pressure of front roller 2. Segmented bar pressure too weak 3. Segmented bar too high 4. Table rollers too highly placed 	<ul style="list-style-type: none"> + increase tension on springs + increase tension on springs + adjust + lower
4	Break on the rear end of machined element	<ol style="list-style-type: none"> 1. Too low pressure of rear bar 2. Rear bar too high 3. Too low pressure of rear bar 4. Table rollers placed too highly 	<ul style="list-style-type: none"> + increase tension on springs + lower + increase tension on springs + lower
5	Planed surface wavelike	<ol style="list-style-type: none"> 1. Table rollers too high over the table 2. Segmented bar and pressure too high 3. Radial play on cutter shaft bearings 	<ul style="list-style-type: none"> + lower + lower + replace bearings
6	Visible prints of grooved rollers on planed surface	Too high pressure of shift rollers	+ lift grooved roller so that it is dropped 0.4 mm w.r.t the cutting diameter
7	Machined material jammed	<ol style="list-style-type: none"> 1. Pressure bar too low 2. Segment bar or pressing bar pressure too high 3. Too low pressure of rear roller 	<ul style="list-style-type: none"> + lift it + reduce pressure + increase pressure by tension on springs
8	Visible untouched spots on planed material	Excessive material bowing	+ do not machine such material
9	Cavities on upper surface of planed material	Insufficient shaving extraction through the exhaust system	+ increase the efficiency

10	Can not start the machine tool	Cover limit switch not closing Master switch set at „0”	+ adjust the switch + set it at "1"
11	Can not start the edging machine motor	Motor switch damaged or disconnected	+ check, connect, replace
12	Can not start the thicknesser motor	1. Motor switch damaged or disconnected 2. The edging machine motor is not switched on	+ check, connect, replace + switch on the edging machine, check
13	Can not start the table lifting motor	1. Motor switch damaged or disconnected 2. Table blocked by the lever	+ check, connect replace + check, unblock, adjust limit switch
14	Can not lift the table (lowering is possible)	Limit switch for upper most position of the table is closed	+ check, adjust
15	Can not lower the table (lifting is possible)	Limit switch for upper most position of the table is closed	+ check, adjust
16	Planed surface uneven when machining on vertical heads	1. Knives on heads are not evenly set 2. Guide bars are not set 3. Play on support guide bars	+ adjust knives on heads + set guiding bars and pressure roller + adjust the horizontal guide bars and bars of vertical supports
17	Wavelike surface after machining on vertical head	1. Axial play in head bearings 2. Play in supports and pressure bars 3. Insufficient pressure roller impact	Replace bearings or eliminate play between covers and bearings + adjust the guide bars + increase pressure by adjustment
18	Burns in the surface	1. Incorrect tool angle 2. Tool blade is blunt 3. Spindle axle is not perpendicular to the table surface	+sharpen the tool, adjust shift + sharpen it + set the spindles correctly
19	Faces not 90° to each other	1. Spindle axle is not perpendicular and/or parallel to the table 2. Knives set incorrectly	Set the spindle correctly + set knives in the heads
20	Can not start the feet motor	1. Motor switch damaged or disconnected 2. Edging machine, thicknesser and head motors are disconnected	+ check, connect replace + connect, check
21	Can not start the vertical spindle motors	1. motor switch damaged or disconnected 2. Edging machine, thicknesser and head motors are disconnected	+ check, connect replace + connect, check

Remark: The adjustments in points marked with (+) can be performed by the User himself.

SECTION 9 BRAKING TIME ADJUSTMENT

1. Disconnect the machine using the master switch
2. Brake is mounted under the motor fan cover,
3. Tighten the self-locking nut 35 checking simultaneously, by turning the motor axe if there is friction between brake discs
4. If friction is present then one should make a 1/6 turn towards champing.
5. Check the brake performance. In case, some irregularities occur, repeat the adjustment.

Notice: It is recommended that the adjusted stopping time be between 5 and 8 seconds.

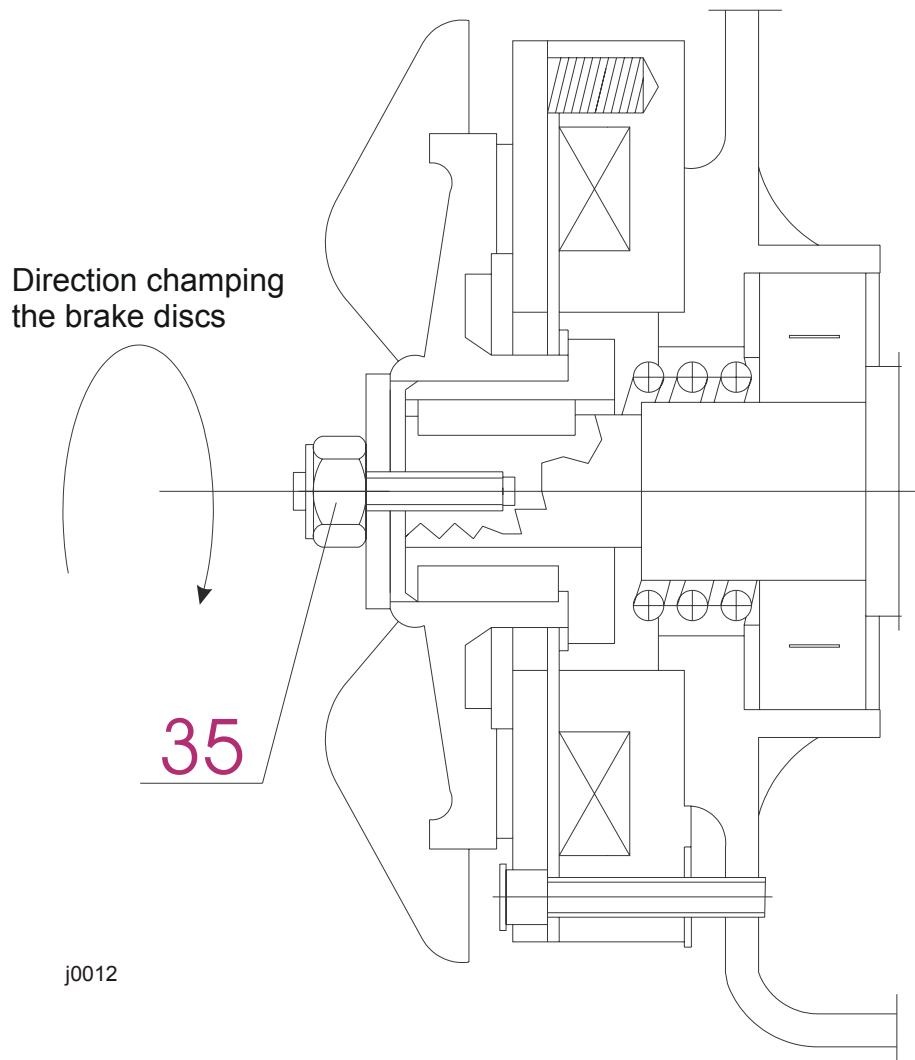


Fig.12

SECTION 10 DATA ON NOISE

10.1 Admissible noise levels

Measurement results on sound level

L _A noise level	Equivalent in dB	Maximum dB
Idling no load	85,1	85,8
Operating (planing, moulding) with dust extractors connected	95,4	98,8

L _W noise power level	Idling dB	Operating dB
	94,1	104,4

The measurement was performed in conformity with ISO 3746:1995

The given values are the emission level and are not the level for industrial safety. Despite the relationship between the emission and actual levels, it cannot be concluded if additional safety measures are required. Factors affecting the noise level at a particular working position include exposure time, interior architecture, other noise sources, e.g. number of machines and other adjacent machine tools. The admissible noise level is useful for the machine user to help to evaluate hazards and risks more effectively. The admissible noise level may vary from country to country.

The moulder exceeds the maximum admissible noise levels and it is recommended to limit the noise exposure time. The operator should use individual ear protection while working with the moulder.

The measured values refer to the noise emission levels as measured at the producer's plant and may not correspond to the noise level at the working position (different working conditions of the site) and are only of general indication.

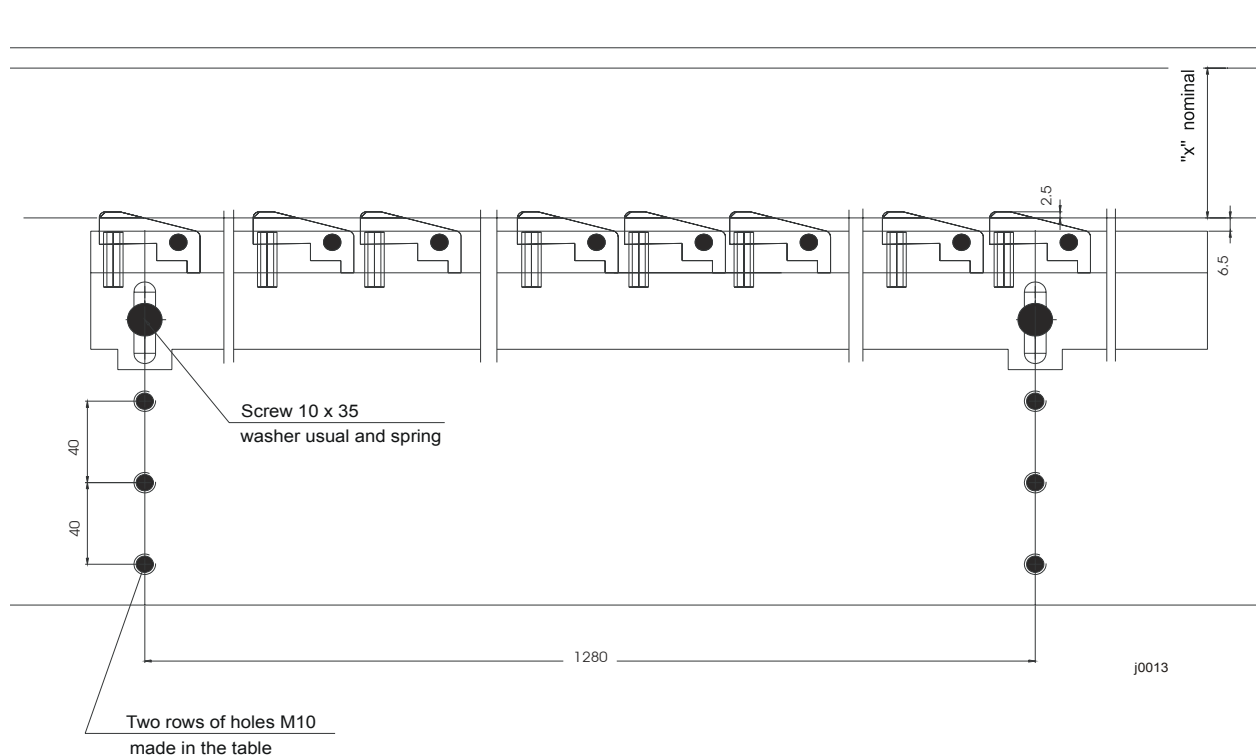
SECTION 11 SERVICE AND REPAIRS

- 1) All repairs within the warranty time period can only be performed by the authorized service team of Wood-Mizer Ind. – violation of this rule may invalide the warranty.

**Wood-Mizer Ind.
Customer Service
tel. +48 63 2626026**

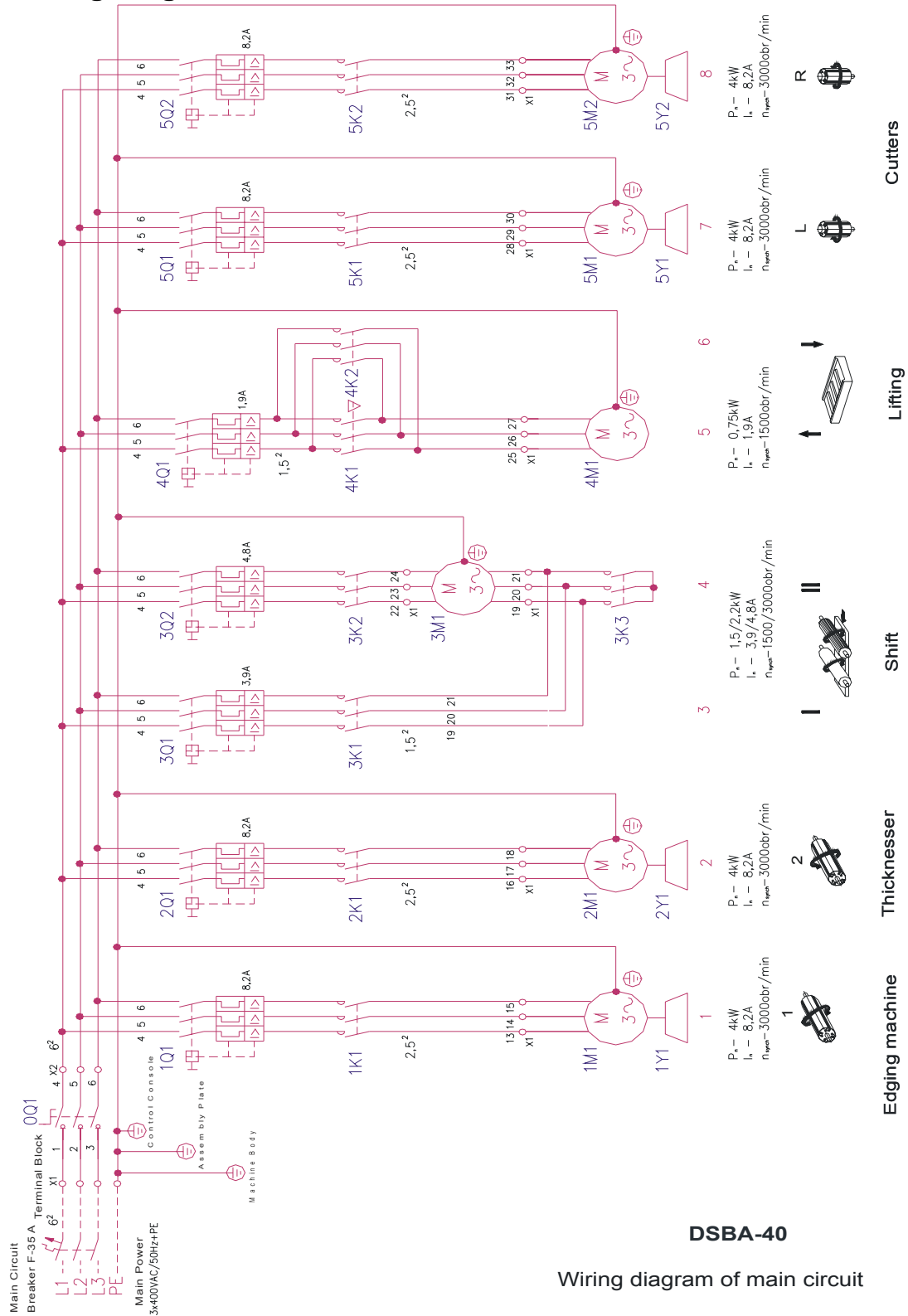
SECTION 12 ADDITIONAL CLAMP ASSEMBLY – SPECIAL EQUIPMENT

To prevent the machined element from shifting away from the guide bar, especially during machining elements 350 to 550 mm long, use the additional clamp assembly. To mount the additional clamp assembly, determine the nominal dimension (x) of the element to be machined and bolt the assembly to the thickener table using two M10x35 screws. The “x+6.5” dimension is the limit of the machined element width which is allowed to avoid excessive load on the vertical heads.

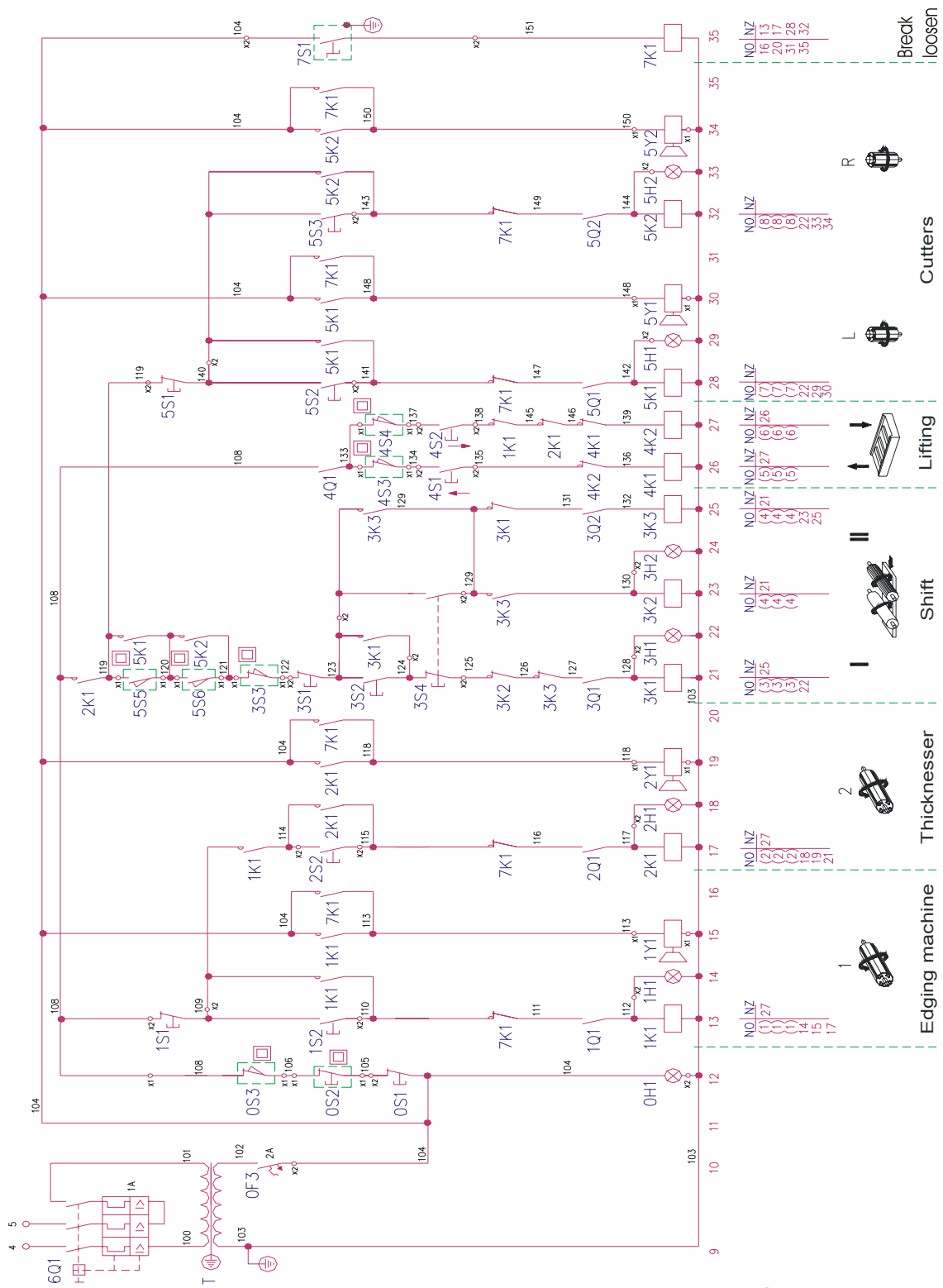


SECTION 13 ELECTRICAL INFORMATION

13.1 Wiring diagram of main circuit

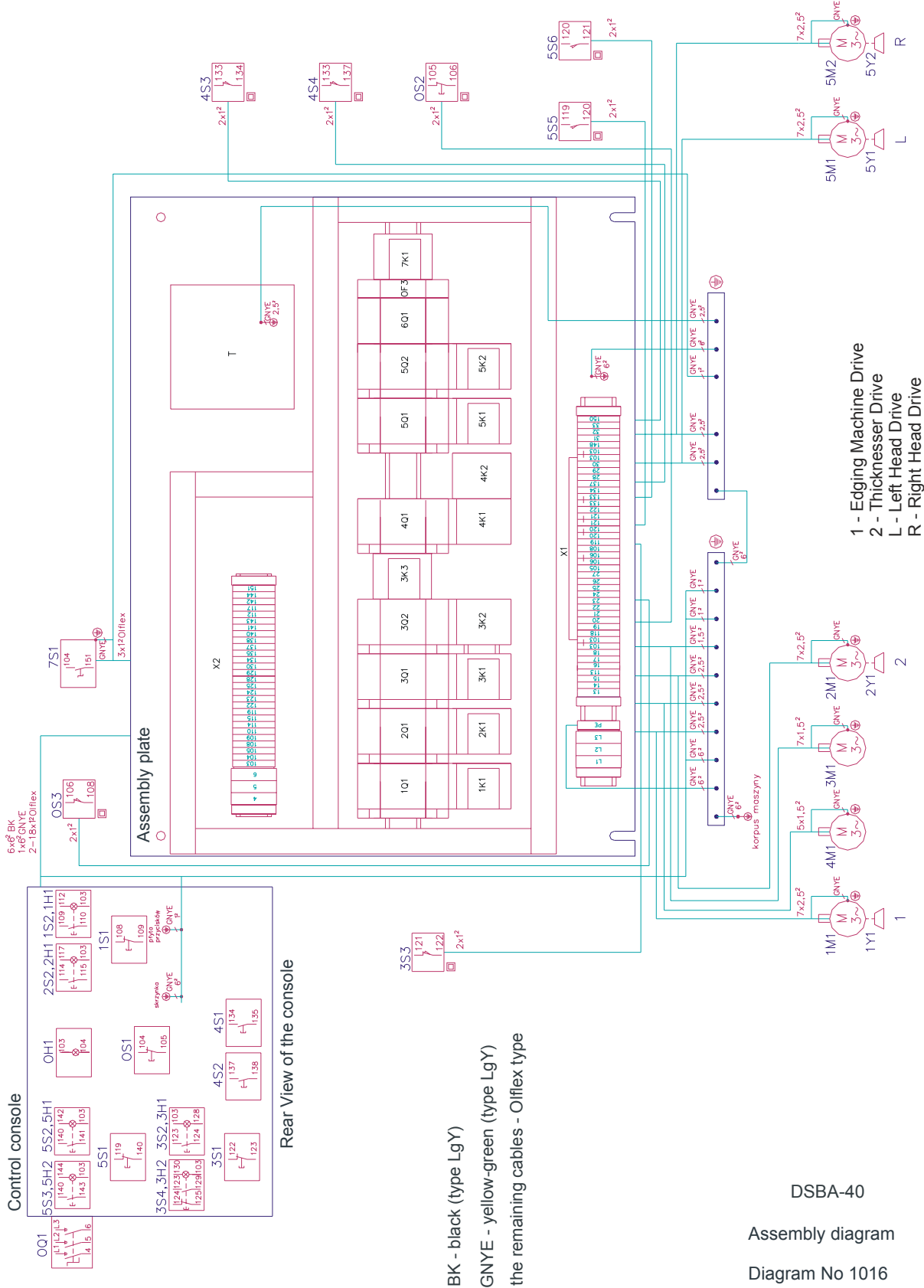


13.2 Wiring diagram of control circuits

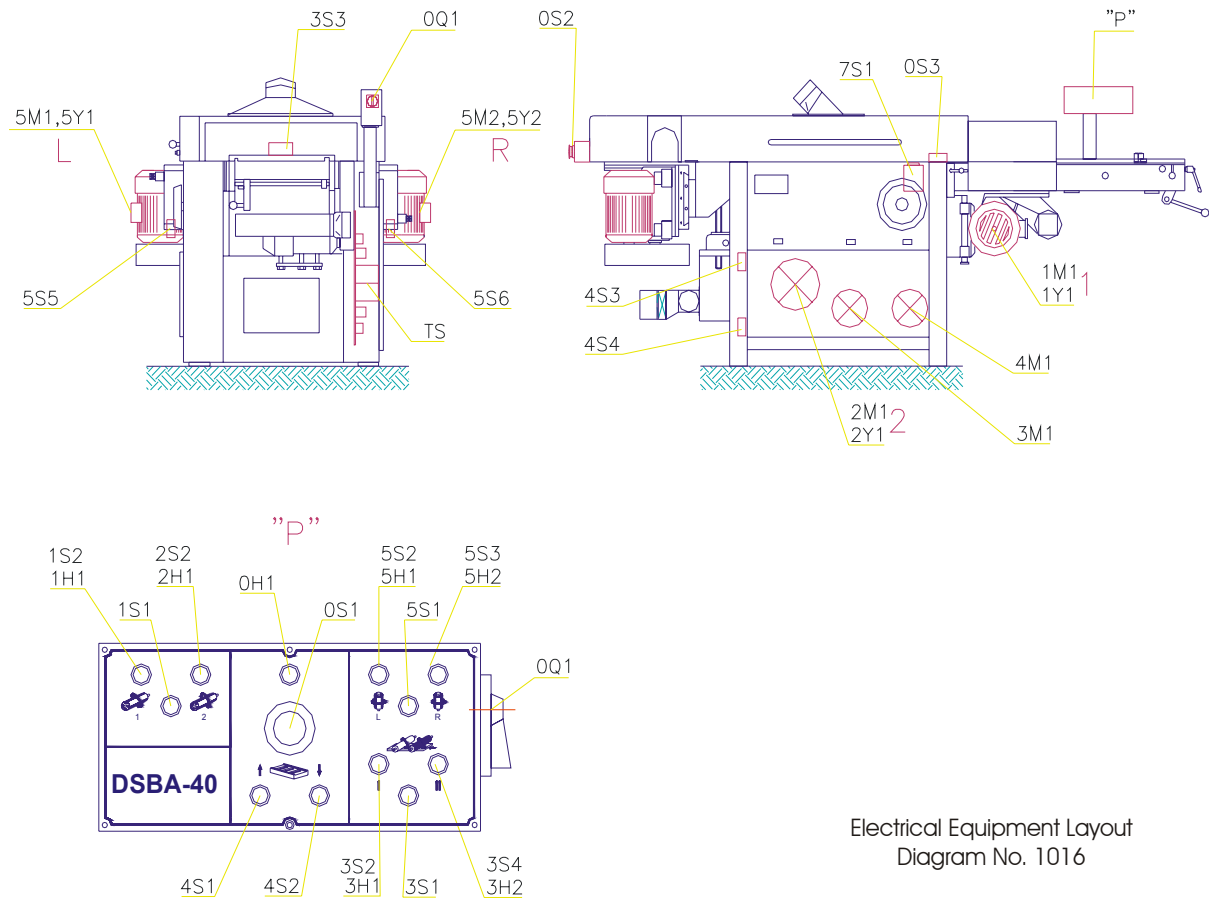


D S B A - 4 0
Wiring diagram
of control circuits
Diagram No 1016

13.3 Assembly diagram



13.4 Electrical Equipment Layout



Electrical Equipment Layout
 Diagram No. 1016

Symbol interpretation

1M1 , 1Y1	- Motor for driving the cutter shaft of edging machine (with a brake)
2M1 , 2Y1	- Motor for driving the cutter shaft of thicknesser (with a brake)
3M1	- Motoreducer of feed drive gearbox
4M1	- Motor for driving the table lifting
5M1, 5Y1	- Left cutter head drive motor (with brake)
5M2, 5Y2	- Right cutter head drive motor (with brake)
0Q1	- Master switch
0H1	- Signal lamp indicating switching on of machine tool
0S1 , 0S2	- Button "STOP-FAILURE"
0S3	- Upper cover limit switch starting the machine is only possible when the cover is closed
0S4	- Anti kick-back device limit switch starting the machine is only possible when the blocking screw is in
1S1	- Off button disconnecting the edging machine and thicknesser motors
1S2	- On button for the driving motor of the edging machine
1S3	- Brake release switch for the thicknesser and edging machine (the switch is located on the machine tool body - accessible only after opening the upper cover)
2S2	- On button for the driving motor for the thicknesser
2S3	- "shaft-brake" switch for the thicknesser (set at position\ enables connecting the shaft, set at position / enables releasing the brake)
3S1	- Off button for the feed motor
3S2 , 3H1	- On button for the feed speed I
3S3	- Limit switch protecting feed against excessive allowance
3S4 , 3H2	- On button for the feed speed II
4S1	- On button for table lifting
4S2	- On button for table lowering
4S3	- Limit switch for upper most table position
4S4	- Limit switch for lower most table position
5S1	- Off button for the head motor
5S2	- On button for the left head motor
5S3	- On button for the right head motor
5S5, 5S6	- Limit switch for feed interlock
TS	- Control panel

Remarks:

1. Because of electrical interlocks applied in the system of machining tools you may only start the feed when:

-All machining assemblies are started in the following order: 1. Edging machine, 2. Thicknesser. 3. Heads;

or in case of two-sided machining

-The assemblies 1. Edging machine 2. Thicknesser 3. Set the heads is activate limit switch 5S5 and 5S6

2. When machining assemblies are operative moving the table downwards in electrically blocked.

13.5 A list of electrical components

Item	Symbol	Quantity	Name	Type	Producer
1	1M1, 1Y1, 2M1, 2Y1, 5M1, 5Y1, 5M2, 5Y2	4	Introduction motor, 3-phase with brake	Power 4 kW Synchro.rot. 3000 Type Sg 112 M-2 + M112	Tamel S.A.
2	3M1	1	Motoreducer TRC/0.52	Power 0.8/1.1 kW Synchro.rot. 1500/3000 Type Skg 810 x4/2C	Besel S.A.
3	4M1	1	Induction motor, 3 phase	Power 0.75 kW Synchro.rot. 1500 Type Sg 80-4B	Besel S.A.
4	0Q1	1.00	Cam connector	P3-63/EA/SVB	Klockner-Moeller
5	0F1, 0F2	1.00	Installation switch-off	C60N ch.C 2p 1A	Merlin Gerin
6	0F3	1.00	Installation switch-off	C60N ch.C 1p 2A	Merlin Gerin
7	0S1, 0S2	2.00	Control button	B4P34+B3T01 RT	Benedikt&Jager
8	1S2, 2S2, 5S2, 5S3	4.00	Control button	B4D+B3T10 GN	Benedikt&Jager
9	1S3, 2S3	2.00	Control button	B4KN2+B3T11 SW	Benedikt&Jager
10	1S1, 3S1, 5S1	3.00	Control button	B4D+B3T01 RT	Benedikt&Jager
11	3S2, 3H1	1.00	Control button	B4DL+B3F+B3T10 GN	Benedikt&Jager
12	3S4, 3H2	1.00	Control button	B4DL+B3F+B3T11 GN	Benedikt&Jager
13	4S1, 4S2	2.00	Control button	B4D+B3T10 SW	Benedikt&Jager
14	1H1	1.00	Signal lamp	B4R+B3F+B4GL230K WS	Benedikt&Jager
15	1Q1, 2Q1, 5Q1, 5Q2	4.00	Motor switch-off	GZ1 - M14 + GZ1-AN20	Telemecanique
16	3Q2	1.00	Motor switch -off	GZ1 - M08 + GZ1-AN20	Telemecanique
17	3Q1, 4Q1	2.00	Motor switch-off	GZ1 - M07 + GZ1-AN20	Telemecanique

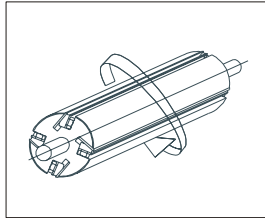
13

Electrical Information

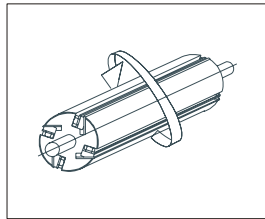
A list of electrical components

18	1K1, 2K1, 5K1, 5K2	4.00	Contacteur	LC1 - K1210M7 + LA1-KN22	Telemecanique
19	3K1, 3K3	2.00	Contacteur	LC1 - K0601M7 + LA1-KN22	Telemecanique
20	3K2	1.00	Contacteur	LC1 - K0601M7	Telemecanique
21	4K1, 4K2	1.00	Reversible contacteur	LC2 - K0601M7	Telemecanique
22	T	1.00	Transformer	STI-0,25 400/230V	Klockner-Moeller
23	0S3	1.00	Limit connector	XCS-PA591+XCS-Z12	Telemecanique
24	4S3 ; 4S4	2.00	Limit connector	XCK-P118	Telemecanique
25	0S4, 3S3, 5S5, 5S6	4.00	Limit connector	XCK-T511	Telemecanique
26	X1 ; X2	1 6 75 2	Link PE Link Link Protection bar	VS-PE10 VS-PA10 VS-PA 4 ZO - 02	Polam

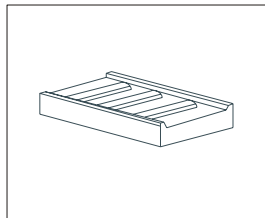
13.6 List of symbols used on the control panel



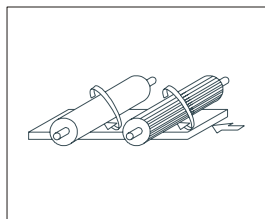
Edging machine shaft drive



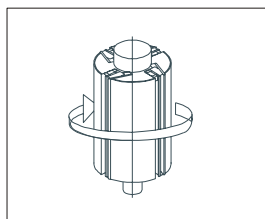
Edging machine shaft drive



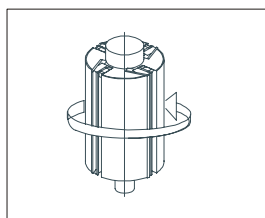
Raising/lowering the table



Feed drive I speed or II speed



Left head drive
(from infeed side)



Right head drive
(from infeed side)