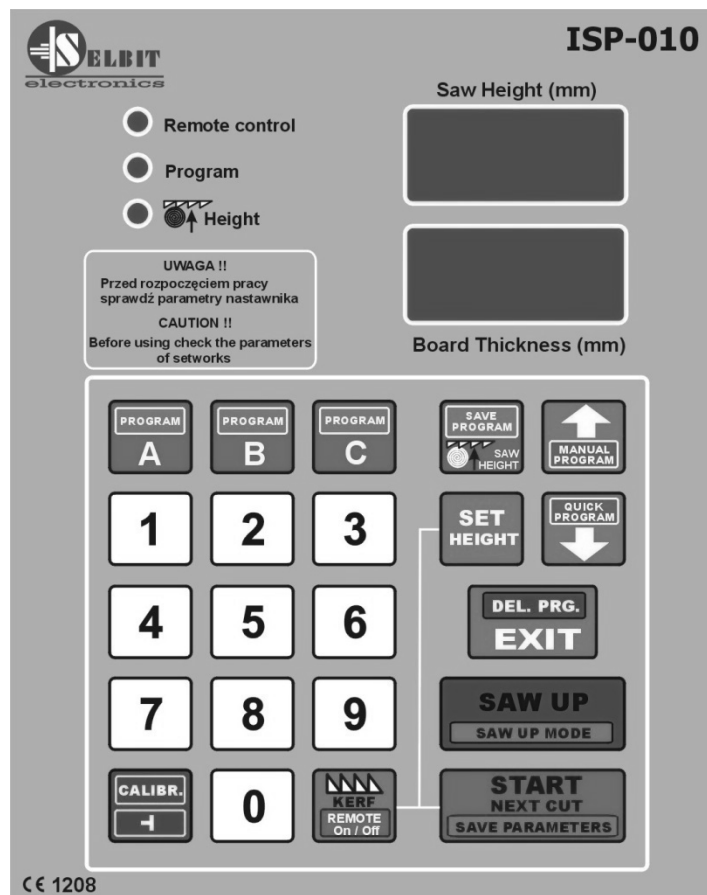


# MANUAL HANDBOOK

## Automatic thickness controller for sawing frame machines

### ISP - 010



Automatic thickness controller ISP-010 is designed to be mounted on the sawing frame machine.

Before assembly and start please read this handbook manual carefully, instructions provided help you in correct mounting and operating of our product.

## Content:

- Chapter 1 – Mounting and connections
- Chapter 2 - First start
- Chapter 3 – Checking controller's parameters
- Chapter 4 – Quick access buttons A, B, C
- Chapter 5 – Normal mode cutting (board after board)
- Chapter 6 – Normal mode cutting without board taking out
- Chapter 7 – Manual mode cutting (manual program)
- Chapter 8 – Automatic saw mode (quickprogram)
- Chapter 9 – Program saw mode (A, B, C)
- Chapter 10 - Operating order
- Chapter 11 – EMC Approval
- Chapter 12 – Possible errors and solutions

## CHAPTER 1

### Mounting and controller's connections

During controller's mounting is advised to follow this instructions correctly.

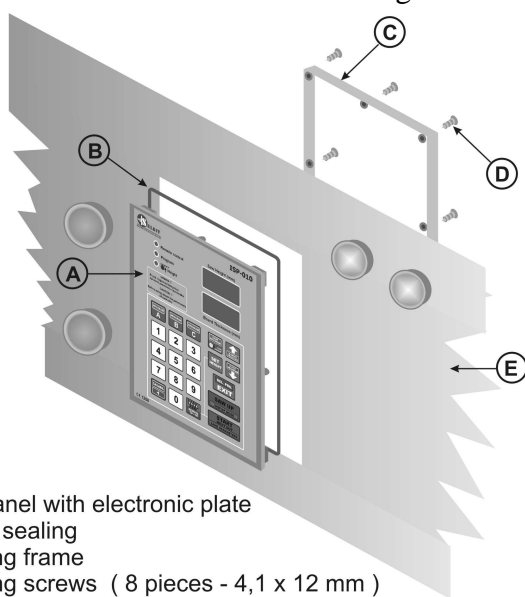
#### Point - 1

Before mounting in the main board (fig. 1) please cut off rectangle hole 175 x 140 mm. This hole should be made carefully thus rubber sealing is adjoined to the from panel. Eventually any irregularity created after incorrect cutting out please smooth them using small metal file and protect it by anti-corrosion painting. If on the main panel is no place to mount controller, it is possible to add it as separate device (fig. 2).

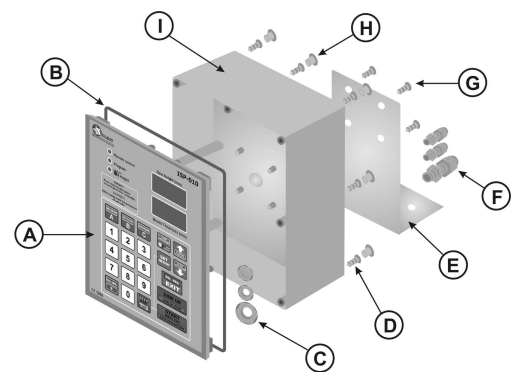
*Figure 1. Controller mounting on the main board.*

*Figure 2. Mounted controller as separate device.*

In case of controller mounting as a



- A - Front panel with electronic plate
- B - Rubber sealing
- C - Mounting frame
- D - Mounting screws ( 8 pieces - 4,1 x 12 mm )
- E - Main board with rectangle hole 175 x 140 mm



- A - Front panel with electronic plate
- B - Rubber sealing
- C - Fixing nuts for cable gland
- D - Back frame mounting screws ( 6 pieces - 4,1 x 12 mm )
- E - Mounting element (because of the variety of machines kind it is not included into the product)
- F - Cable gland
- G - Mounting screws ( 4 pieces 4,1 x 10 mm )
- H - Hole cap
- I - Back casing

separate device it is possible after its assembly to attached it to the machine's frame using 4 added screws for this purpose. In another case please made special fixing for mounting the controller which can be used as a distance support as well (fig. 2, E element).



**Electric montage**

**CAUTION !**

**During electrical assembly there is a possibility of a electric shock thus all actions should be made while electric power is off. For this purpose please turn off machine's main electric switch!!!**

**All cable connections should be made using special wires with double insulation oriented for use of the electric devices powered by 230V alternating current. Cables should be rounded with diameter suitable into holes in the controller back casing accordingly. Tips of the cables should be cleaned and special quill should be used or tips should be covered by thin tin layer. Please follow this instructions very carefully especially electric connections should be made according to provided instructions. It is required for correct and failure-free controller operating.**

**Machine where the controller is mounted should be equipped in well working head saw ending switchers and contactors of the up and down feeding should be protected to be on at the same time !!!**

### **Point - 2**

#### **Power transformer TSS-8/001 assembly**

In power cubicle added power transformer TSS-8/001 needs to be mounted. Mounting is designed for well known and used holding bus TSS-35. Please place the transformer as far as possible from other electrical elements ( e.g. frequency changer, contactors, other transformers). It is important because of the electromagnetic interference which may disturbing controller's electronics. Please connect to the connections marked as PRI power supply of 230V. For power supply please choose this phase of electric supply of the machine which is not connected to the any inductions coils, contactors or inverters. 230V supply cables should be placed as far as it is possible form other cables in the power cubicle. To the transformer's clips marked as SEC 12V please connect wires which feed electronic plate of the controller. Analogically please place this wires as far as it is possible from other power cables, especially from 230V which powered the transformer. Length of the cables (12V) should be chosen accordingly to the place where the controller is mounted.

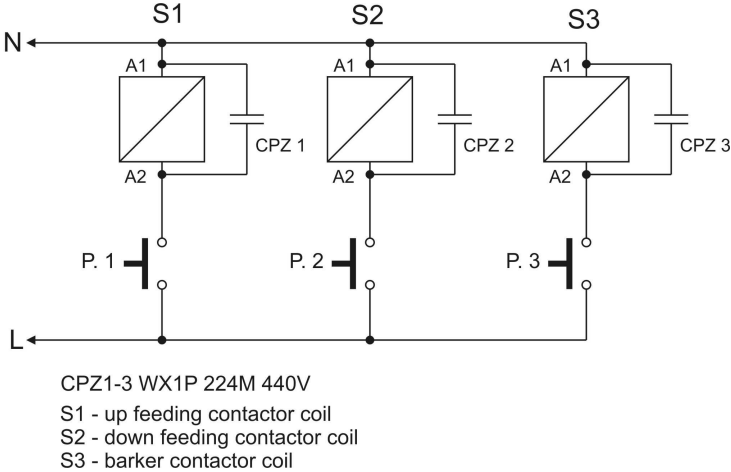
### **Point – 3**

#### **Choke CPZ mounting**

Anti-disturbance choke CPZ (WX1P 224M 440V) added in the controller kit is designed to protect from any other electromagnetic disturbance made by other electrical devices mounted on the frame machine saw. Its correct mounting is decisive for correct controller operating.

Those CPZ outputs should be connected in parallel to the contactors' coil. CPZ should be connected with contactor's coil of the down feeding, up feeding and barker contactor separately (if the sawing frame machine is equipped with barker).

**Fig. 3 Choke CPZ constructions and connections**



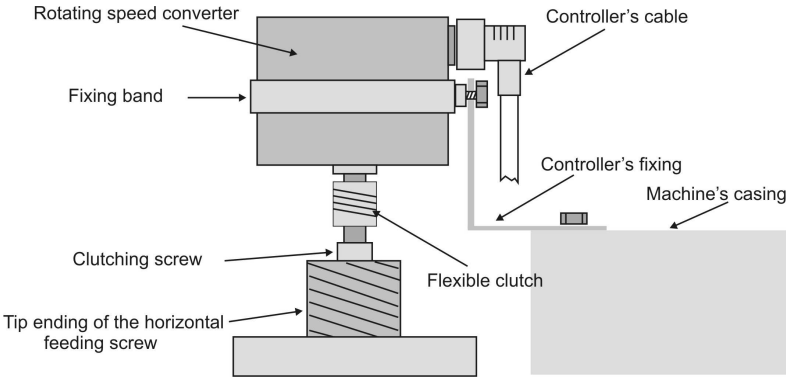
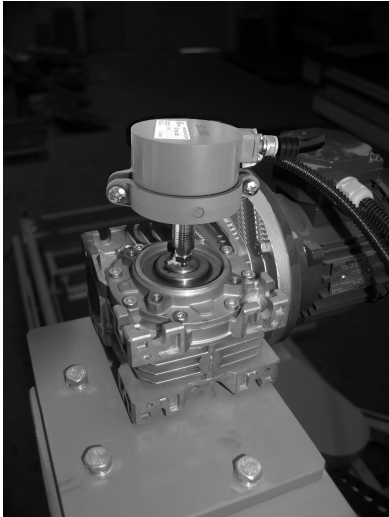
**Point -4**

**Rotating encoder mounting**

Added rotating encoder is designed to convert rotation of the head saw feeding screw for electrical impulses. Number of the impulses depends on screw pitch and this relation describes table 1. In most of the frame sawing machines this screw has got free tip where the encoder can be installed. Please make a concentric hole in the screw and mount encoder's clutch. Please make sure that this hole is concentric otherwise it can cause swinging and eventually incorrect encoder working and its damage. Please make hole around 15 mm and create thread M8. Next mount encoder using fixing band (fig.4). The band should be attached to the special fixing which because of the variety of the frame sawing machines should be created individually. Example of the encoder mounting is shown at the photo 4a below.

*Photo 4a. Example of the necoder mounting.*

*Fig. 4 Encoder mounting ex ample.*



**Table 1**

<b>Screw pitch [mm./obr.]</b>	<b>Encoder type [imp./rotation]</b>	<b>Devider</b>
<b>3</b>	<b>Rotating 42</b>	<b>28</b>
<b>4</b>	<b>Rotating 42</b>	<b>21</b>
<b>5</b>	<b>Rotating 50</b>	<b>20</b>
<b>6</b>	<b>Rotating 48</b>	<b>16</b>
<b>7</b>	<b>Rotating 42</b>	<b>12</b>
<b>8</b>	<b>Rotating 48</b>	<b>12</b>
<b>9</b>	<b>Linear MSK320 + MB3200</b>	<b>5</b>
<b>10</b>	<b>Rotating 50</b>	<b>10</b>
<b>Chain sawing frame machine</b>	<b>Linear MSK 320 + MB 320</b>	<b>5</b>

**Data from table 1 should be used during procedure of checking the controller's parameters.**

Cable connection of the encoder should be routed as far as it is possible from other electrical cables. Using special clip bands lead it to the place where the controller is mounted.

### **Point – 5**

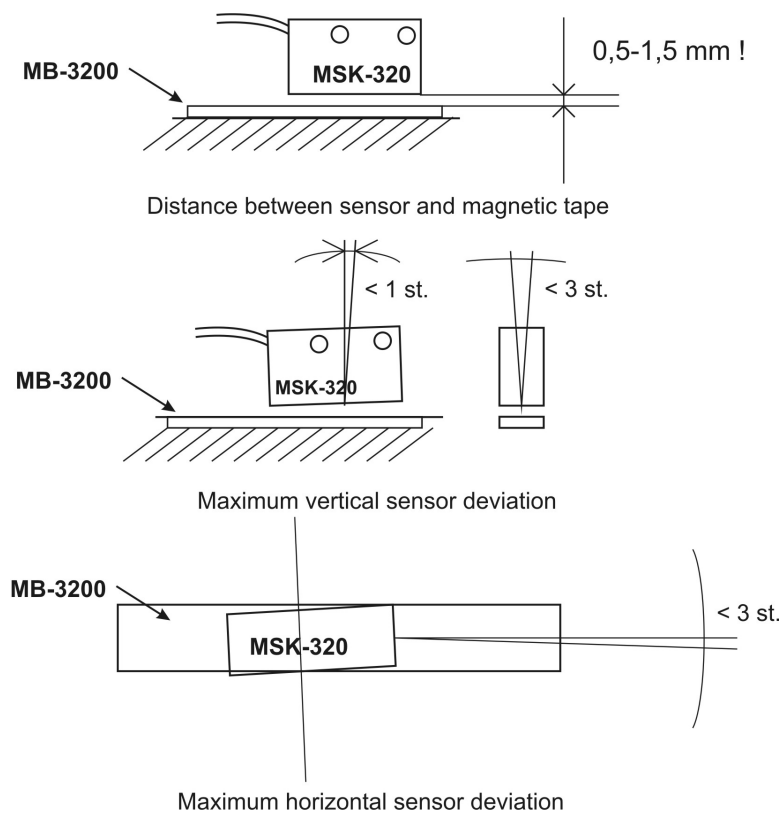
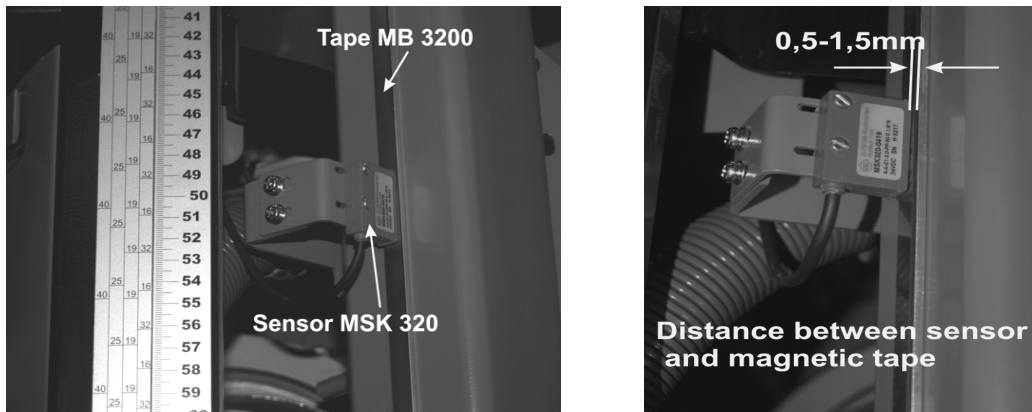
#### **Linear magnetic encoder mounting (version for chain sawing frame machines)**

In case of saw head fed with chain the linear magnetic encoder MSK-3200 needs to be used. It works together with magnetic tape MB-3200.

The magnetic tape contains two parts which contains with self-adhesive layer. First, thicker part please place on the smooth and flatten surface (please clean the surface carefully before sticking the tape using acetone or spirit). During sticking please get unstuck only small part of the tape on the tip and stick it to the surface. Next get unstuck rest of the tape slowly sticking it to the surface simultaneously. During sticking please use rubber roll to create bigger adhesive pressure. Please stick the tape very careful and try to not create any air bulging and notice to stick it straight. Next please stick the second part of the magnetic tape – steel protection strip using the same proceeding as above. Both tapes should be stuck in one line laying on each other creating two layers. Sensor MSK-3200 should be mounted on not moveable part of the machine (according to the controller) to not create any cable movements which can cause its damage. In case of mounting sensor on moveable part please protect cable from its non-controlled damage leading it in a special portable buses. Sensor should be mounted with two screws in a way that the magnetic tape should be in a 1 to 1,5 mm distance and in parallel with it. Please notice during leading the cable to place it as far as it is possible from other cables. Please do not place any sources of the magnetic field next to the magnetic tape during, before and after mounting. It may cause it serious damage and incorrect working of the controller. Please clean the surface of the tape from time to time with sift brush.

Please do not hit sensor or the tape. The sensor should be mounted in that way thus text SCALE SLIDE is faced on the magnetic tape side. The sensor and the tape should be mounted in a such way that during feeding sensor “is above” the tape in all range. Please notice the stability of the tape and the sensor during normal operating.

**Fig. 5 Sensor and magnetic tape mounting example**

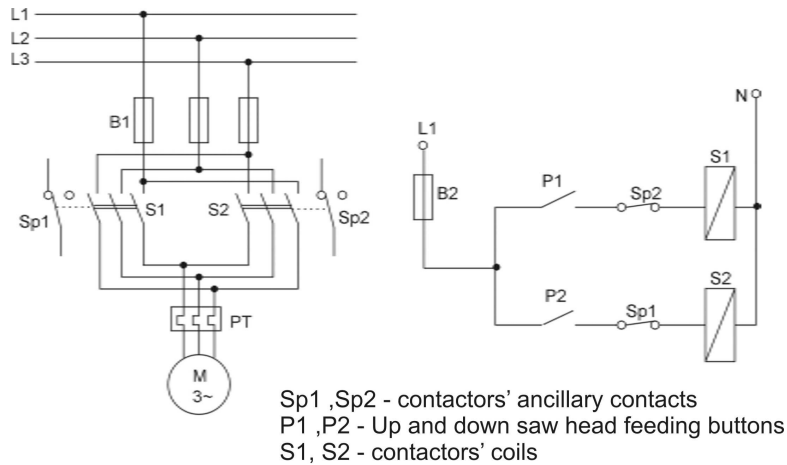


**Point – 6**

**Head saw steering outputs connection**

Sawing frame machine where the controller is mounted should be equipped with head saw up and down feeding contactors ( relays). Contactors steering should be connected in a such way that it is impossible to work them both in the same time (connecting of one contactors cause disconnecting of the other). To create such a way of connection please use ancillary contactors and connect them according to the diagram below.

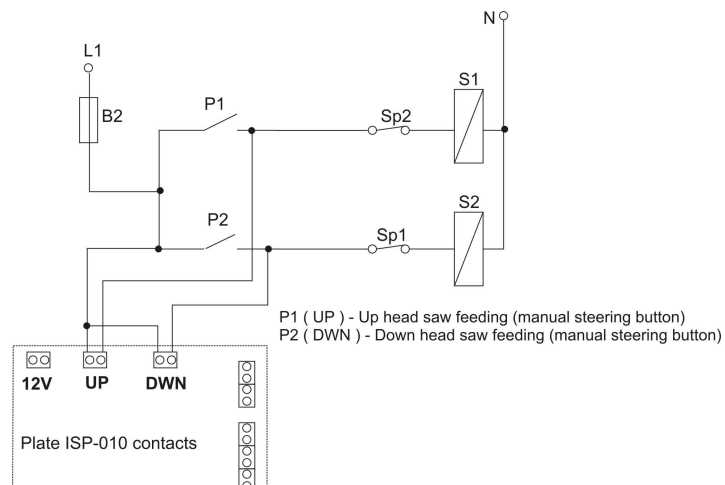
**Fig. 6 Contactors and ancillary contacts connection diagram.**



### Contactors steering cables connection

Head saw up and down feeding buttons which sawing frame machines contains should be without holding shot-circuit type (that cause of their contact only while pressing, when there is no press they should be disconnected). Please connect above buttons using cable which contains two pairs of wires in doubled round insulation with proper diameter to lead them through bigger of the hole in the back casing of the controller. One pair of the wires please connect in parallel with up head saw feeding button (fig. 7 ) and the second one with down head saw feeding button. Please use special clip or tined the tips of the wires. Please use also different wire colors which helps you in easy identification during connection with the controller's electronics main plate. Place the cable as far as it is possible from other wires and lead them in the place of controller's mounting.

**Fig. 7 Contactors steering cables diagram connections**



There is a possibility to connect contactors steering cables direct to the contactors thus to meet original connection configurations but instructions given above provide simpler solution.

**Point – 7**

**Prepared cables connections and casing assembly of the controller.**

After creation of the all required connections next step is to connect them with the controller's main plate.

In the back casing please screw in two PG chokes facing nuts from the inside. Please lead through mounted chokes follows cables:

- through the biggest one, wires of the head saw contactors steering (two pairs of the cables from steering buttons)
- through middle one, cable of the rotating encoder
- through choke which is the nearest of the casing middle, power cable 12 V (connection SEC 12 V from the transformer TSS8/001).

Please connect power cable 12 V (with prepared cables' tips) to the junction marked as 12 V on the controller's main plate.

Contactors steering wires connect with junctions on the controller's main plate as follow:

- no. 1 pair of cables of the down feeding with junction marked as DWN
- no. 2 pair of the up feeding with junction marked as UP.

**Rotating encoder's connection:**

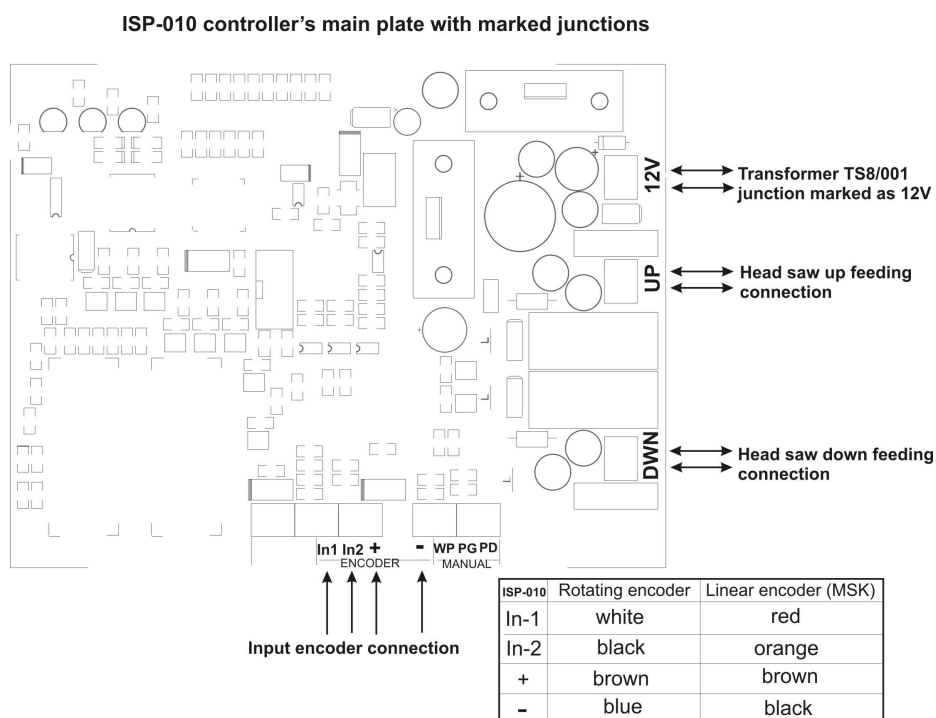
Encoder cables please connect with junctions marked ENCODER as follow:

- brown cable with (+) plus controller's connection
- blue cable with (-) minus controller's connection
- white cable with IN-1 connection
- black cable with IN-2 connection.

**Magnetic encoder's connection MSK-320 in chain sawing frame machine:**

Magnetic encoder cables please connect with junctions marked ENCODER as follow:

- brown cable of MSK-320 with controller's junction marked as (+) plus
- black cable of MSK-320 with controller's junction marked as (-) minus
- red cable of MSK-320 with controller's junction marked as IN-1
- orange cable of MSK-320 with controller's junction marked as IN-2







## CAUTION!!!

### **Incorrect connection of the rotating or magnetic encoder may cause its serious damage!!**

Next step after creating all of the connections is assembly of the controller's casing. Before connecting from panel with the back side please check if the rubber sealing is in the special groove. It is important in regarding sealing and protecting controller's main electronic plate from any contamination. After put the front panel in together with the back side please screw casing using included six screws 4,1x12. Before mounting the controller on the machine it is recommended to checking of proper controller's operating according to "first start" chapter (2). After checking of the controller's proper operating please use safety plugs in the places where screws are and mount the controller on the machine. Controller's mounting in the main machine's board is analogical, there is only one difference that front panel is screwed from the inside with plastic frame and main panel casing. After all mounting please carefully pull out cables which go out at the back side of the controller's casing to reduce their unnecessary length in the inside. Please be careful to not destroy any connection. After this operation please screw PG choke to create proper sealing. Next step, in case the controller as a separate device, please mount it using four 4,1x10 screws on the sawing frame machine. Screws should go through four holes in the back casing created for this purpose.

## CHAPTER 2

### First start



#### **Controller's connections checking**

To check correctness of the controller's connections, please follow the instruction below:

- after turning on please notice text ISP 010 on the display. If the text is doesn't show please check connections of the transformer TSS8/001 and try again.
- next after the sign disappear, please press head saw up feeding button placed on the main panel. During manual up or down feeding, please notice if the saw height on the display changes accordingly. During down feeding, the value should decrease and while up feeding should increase. If this operation brings false result, that means the value of the saw height increase during down feeding or decrease while up feeding, please switch the connections of the encoder. In case of the rotating encoder, please exchange black with white cable and in case of the magnetic encoder MSK-320 red with orange cable ( ENCODER junction, In1, In2). Next check values displaying once again. This operation is really important, if saw height counting goes wrongly, it may cause incorrect controller's working.
- after above operation, please press 8 button on the "Board Thickness" panel and the number 8 should be displayed. Now press "Start/Next Cut" button and the controller should move the head saw a little bit down. If this movement is up, please check the connections with up and down feeding and it is required exchange junctions DWN with

UP. Analogically it is important to check this connections and create a proper working. Otherwise it may cause incorrect controller's operating.

**If above checking instructions are correct please follow next step – controller's starting**

## CHAPTER 3

### Controller's parameters checking

To use those instructions it is required to check pitch of the feeding screw. Please measure it and write it down below:

*Pitch screw in this machine is ..... Mm*

Next, please check type of the encoder mounted on this machine at the end of the screw (photo 4a). Encoder's type is marked on its casing and shows impulses to rotation ratio generating. Please note this number below:

*Encoder's impulses to rotation ratio mounted on this machine is ..... imp/rot.*

Next, using table 1 from point 4 of this instruction check which divider is correct for this sawing frame machine. Example: for pitch screw 7 mm and encoder's impulses to rotation ratio 42 imp/rot. divider read from the table is 12.

After checking this values please note it below:

*Divider (table 1) .....*

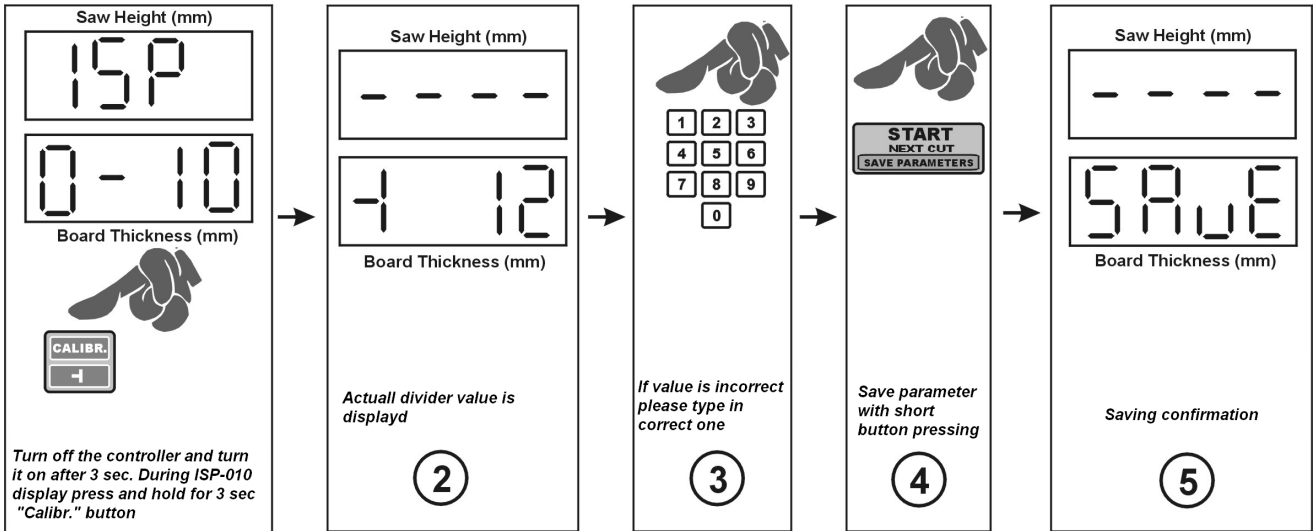
**If the controller is mounted on the chain sawing frame machine thus divider according to the table 1 is 5.**

**For checking all controller's parameters, please follow points 1...5 below.**

#### **1- Input divider checking**

For checking input divider value please turn on the controller and during the ISP 010 is displayed please press "Clibr." button. The controller display in "Board Thickness" window divider symbol at the left side and its value at the right one. Please compare read value with value which should be provided from the table 1. If the value is not correct, please type in required one and save it to the controller's memory pressing "Start/Next Cut" button. Text "Save" should be shown.

### Proceedings of checking and eventually changing input divider correct value

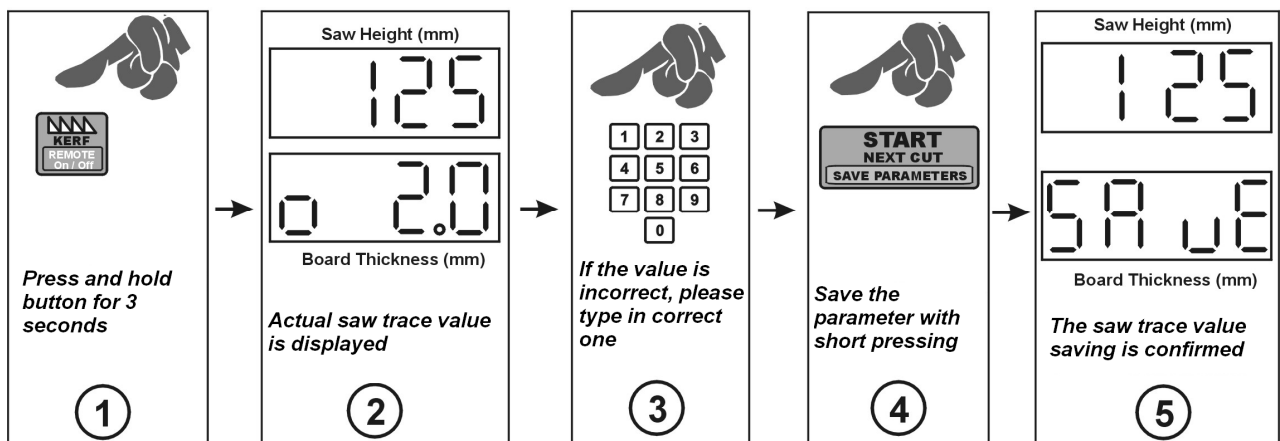


Please notice that after setting up the input divider it is needed to follow next starting instructions otherwise the controller will not work properly.

### 2 – Saw trace value checking

To check and eventually change the value of the saw trace please hold for 3 seconds button with saw symbol. The symbol of the saw trace and its value will be displayed. Now there is a possibility to check and eventually change this value depends on the saw type used. Typing in the saw trace please notice that the value is round off to one place after the come. Example: if you want to type 2 mm first press 2 button and then 0. On the screen 2.0 value will be displayed. After checking and eventually changing the value of the saw trace to save it to the controller's memory pressing "Start/Next Cut" button. Text "Save" should be shown.

### Proceedings of chcking and eventually changing the saw trace value

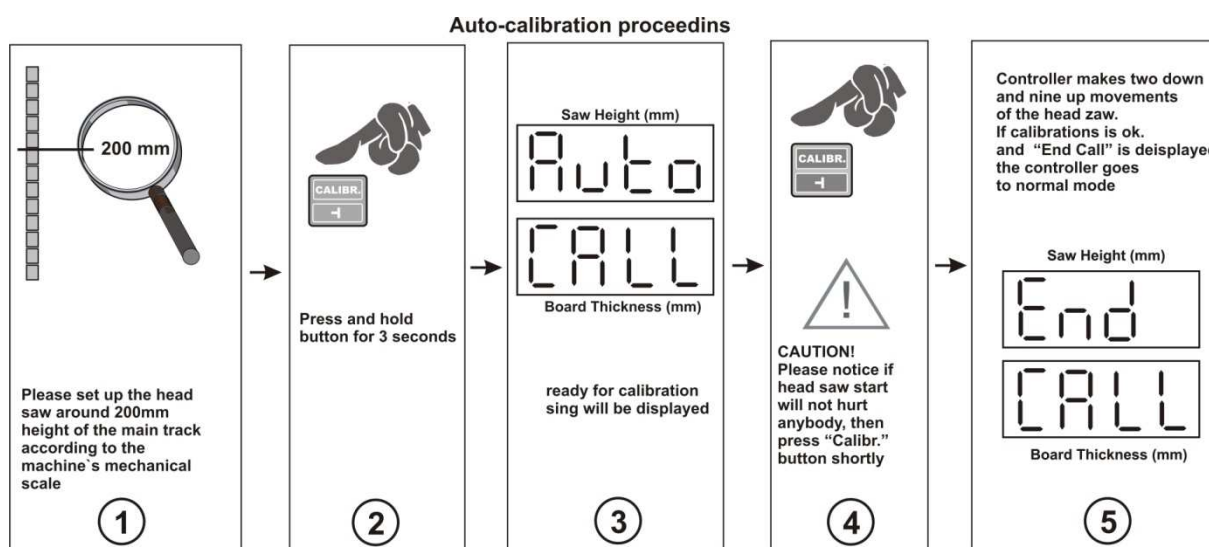


### 3 – Auto-calibration (controller's checking in with technical parameters of the sawing frame machine where its mounted)

Please set up manually saw height around 200 mm above the track level and next press and hold for 3 seconds “Calibr.” button. The text “AutoCall” will displayed and next please check if is save to start the head saw in automatic movement of auto-calibration. If starting the head saw is safe and not hurt anyone please press “Calibr. ” button. Controller make 4 movements of the head saw down and 9 up. Next, with “End Call” displayed controller will show end of the calibration and break power do the head saw.



**Because of the changes of the sawing frame machine’s mechanical parameters which depend on variety of factors such as temperature, frictions factors etc. it is recommended to use auto-calibration at least twice a week.**



#### 4 – real saw height settings

Please check if the mechanical scale (millimeter scaled strip with saw height indicate needle) is scaled correctly, thus shows real head saw height above the main track of the machine. It will help with checking rest of the parameters later on.



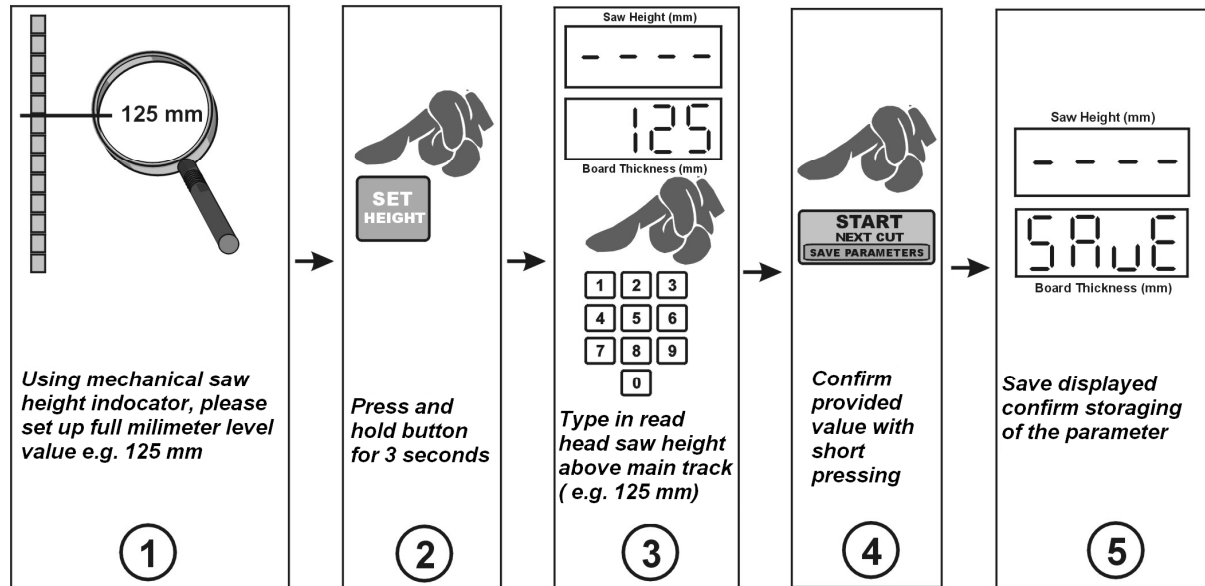
**Correct height indicator is important for correct controller’s calibration.**

When the indicator is scaled correctly please set up manually full millimeter value of the head saw, read it correctly and save it into controller’s memory as follow:

Press and hold “Set Height” button for 3 seconds and on the upper display dashes will be displayed. Next please type in the read actual saw height value using numeric keyboard. Please type the value briskly because with longer pause controller end this operation. If there

will be a mistyping in providing the real value, please wait 3 seconds and start again. Please type in value as follow: e.g. for giving 125 mm press 1-2-5 buttons. Next please storage the parameter shortly pressing “Start/Next Cut”. The save sign will confirm operation.

### **Real head saw height above main track settings**



### **5 – Backward feeding saw height settings in Saw UP function**

There is a possibility to program two separate modes of the backward feeding saw height above cut material which are available during cutting, using UP and LO or HI mode buttons. In normal mode (LO) after pressing UP button, controller rise up the head saw for about 12 mm above cut material. In this mode there is a need to take out cut material before going back on the track’s beginning with saw head.

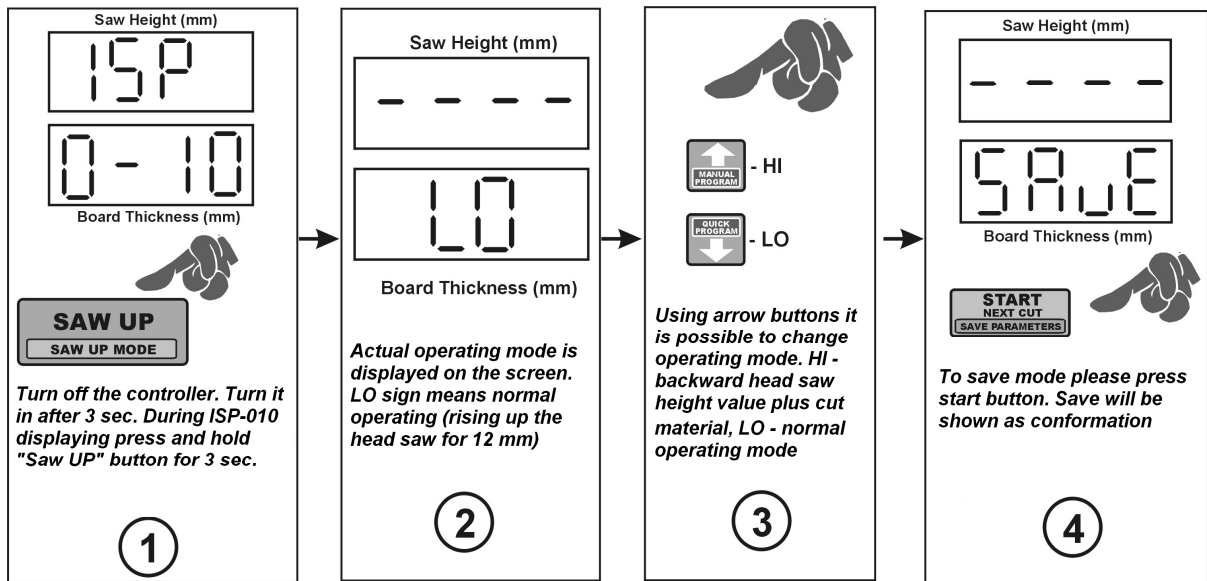
In the second available mode (HI), controller rise up the head saw for about 12 mm plus value of the just cut material. In this mode after cutting there is no need to take out cut material before going back with the head saw on the beginning of the track.

**Standard the controller operates in normal mode (LO).**

To check or change mode please follow:

- reboot the controller for about 3 seconds
- when ISP-010 is displayed, please press and hold for about 3 seconds “Saw UP” button.
- on the upper screen the actual mode is show. LO text means normal mode where controller feed up the head Saw for about 12 mm. “HI” says that controller operate in “Saw Up” mode and it feed up the head saw for about 12 mm plus last cut value.
- To change modes, please use arrow buttons.
- Please save mode with “Start/Next Cut” button.

### Backward feeding saw height settings in Saw UP function



After correct checking of all parameters described above, the controller is ready to use.

If there are any other reasons of controller's incorrect operating, please refer to chapter 12: "Possible errors and solutions".

### Controller's practical use

Controller takes into account trace of the saw, cutting thickness displayed on the screen is real cutting value of produced material. Next instructions describes cutting methods available in this controller.

## CHAPTER 4

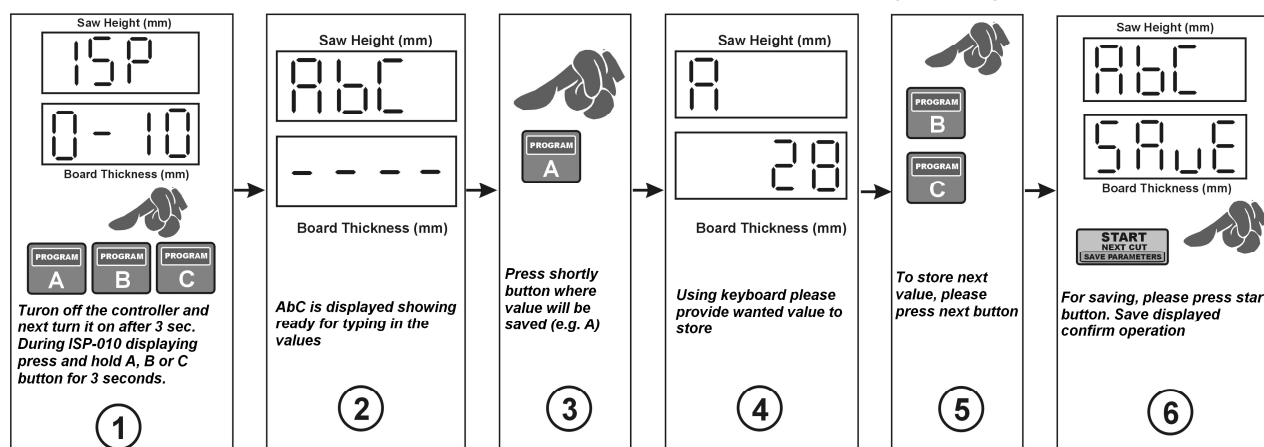
### Desired cutting values under A, B, C buttons

On the controller's panel there are three A, B, C buttons available. Please press one of them shortly and there is a possibility to storage cutting value under each those buttons.

To storage often use cutting value in one of the button follow:

- reboot the controller
- while ISP-010 is displaying press one of the A, B, C button and there will be Abc text and dashes shown on the screen
- next, please press again one of the button where the value will be saved, name of the value is shown (A, B or C)
- type in the value and eventually press next button to store next cutting value
- After desired values save them using "Start/Next Cut button". "Save" confirm operation.

**Desired cutting values under A, B, C buttons proceedings**



## CHAPTER 5

### Normal mode cutting (board by board)

Cutting in this mode is the most simply one. In this mode please make measurement and divide log from the top on separate boards. To make it, please set up the head saw on the level of first cut. Cut it and take away scraped material and then press „Saw UP” button which will cause rising up the head saw above the log for save backward at the beginning of the track. Now there is a possibility to change displayed thickness of the next material cut (Board Thickness) using the keyboard or use shown value without any change. After this operation, please press shortly “Start/Next Cut” button. Controller sets up the head saw on the required level. Next, please make a cut and then, analogically, take away scraped material from the track and press “Saw UP” button and return at the beginning of the main track. While the controller set up the head saw, there is a possibility to provide/ change thickness value of the next cut.

## CHAPTER 6

### Normal mode cutting without board taking out

Cutting in this mode starts from rising up the head saw above all log’s length. It is a level which the saw will be raised up to after every time the button “Saw UP” will be pressed and thanks to this operation there will be no need to taking out cut boards after each cutting. Next step is to press shortly “Saw Height” button. When the head saw is being installed on the return level “Height” text is displayed. Next set up manually the level of the first cut then cut analogically like in the board by board method. Every cutting operation when the “Saw UP” button is pressed, the head saw is being raised up on the initial level. To erased this level please press shortly “Saw Height” button.

## CHAPTER 7

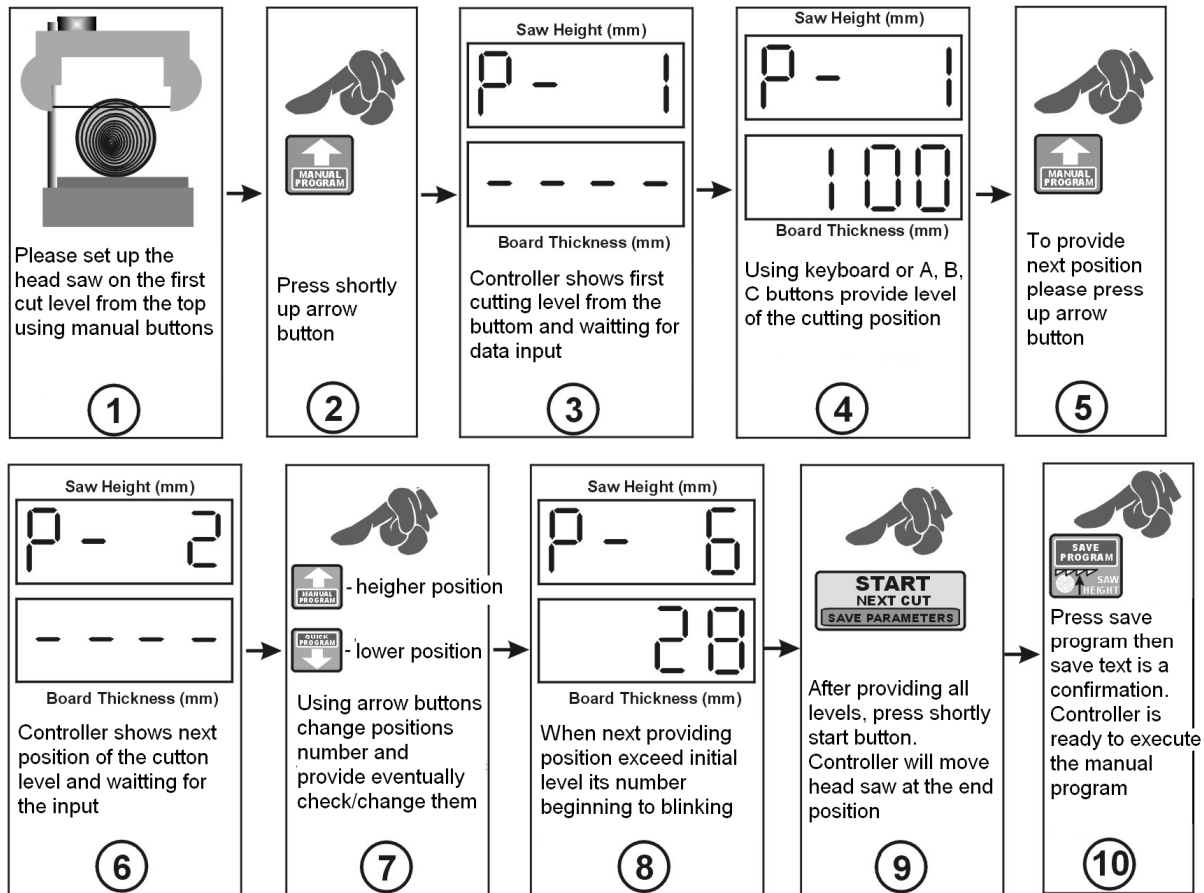
### Manual mode cutting

Cutting in this mode enable arranging own cutting program using “board by board” method. Programming goes from the position 1 (first cutting level from the bottom) through programmed cutting levels and ends on the actual head saw height.

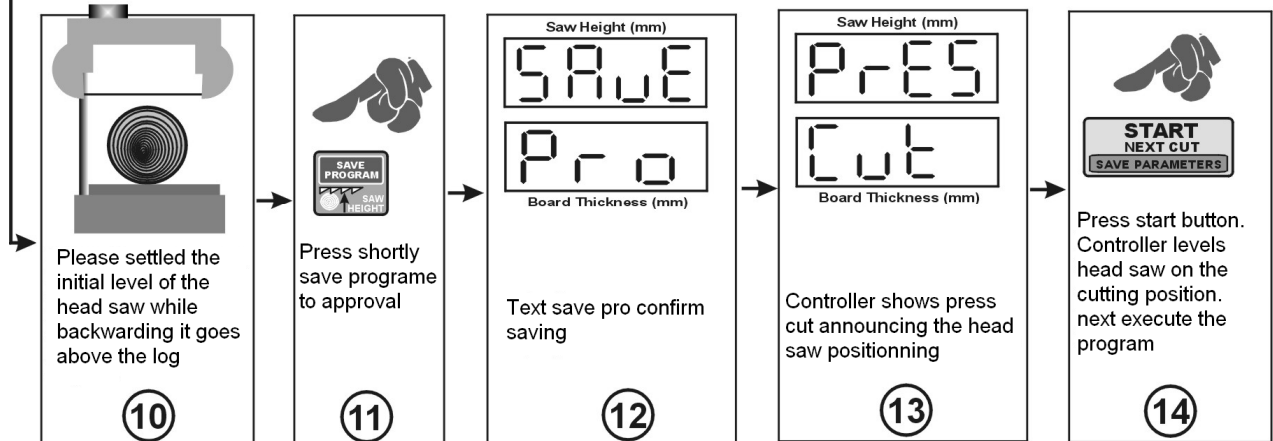
Reaching this final level is shown as a position blinking on the display which overlaps settled height. One program is used for cutting one log and is not stored in the controller’s memory. To program the controller for own cutting mode, please follow the instruction below. Set up the head saw on the top of the log (level of the last cutting). Then press shortly “Manual Program” and “Program” led is on and controller displays “Str Pro” and then position number 1 and waits for data input (position 1 from the bottom). After providing above value please use up arrow button and provide position number 2. Continue to provide all required position of the cutting. When provided values exceed head saw level, provided position number when it is happening will be blinking. At any moment during manual programming there is a possibility of leveling the head saw using “start/Next Cut” button. After providing all levels for own cutting program and we don’t want to use settled backward head saw height (mode where cut board is taken away from the log after each cutting operation) we can save program pressing shortly “Save Program”. When we want to use settled backward head saw height (cutting without board taken away after each operation) please settle the head saw on the required level just after the programming but before saving and then press “Save Program” button. It causes automatically backward head saw height to be stored (led “Height” is on) and the controller shows “Press Cut” on the display announcing that head saw is not on the first cut level. Next please press “Start/Next Cut” and controller sets up the saw on the first cut level and now the cutting process starts in manual mode.



## MANUAL PROGRAM cutting operation proceedings



### Settled backward head saw cutting



If you want to use settled backward head saw height (without taking out boards after each cutting after step 9 follow proceeding above

## CHAPTER 8

### Quick program mode

Using this mode you can easily and automatically divide laying log on the required cut dimension. Basic for dividing is provided dimension and its actual value is shown in the window "Board Thickness". Using this dimension the controller counts number of the boards available till the saw height. It gives the possibility of quick programming from any dimension provided by user before.

While using this mode the dimension can be easily change and user can use many positions and the controller each time counts the new number of boards available from actual head saw position. To use this quick program follow instructions below.

Set up the head saw on the top of the log (position of the first cut). Press shortly "Quick Program" button, the led is on and text "Str Pro" is displayed and then the nearest available cut positions is displayed as well.

Now the lower positions can be changed, fit them to the requirements or position the head saw using "Start/Next Cut" button. Trial without positioning of the head saw is automatically rejected by the controller and text "Pres Cut" is displayed.

During providing the changes on the each positions, those which can not be fit into are rejected by the controller.

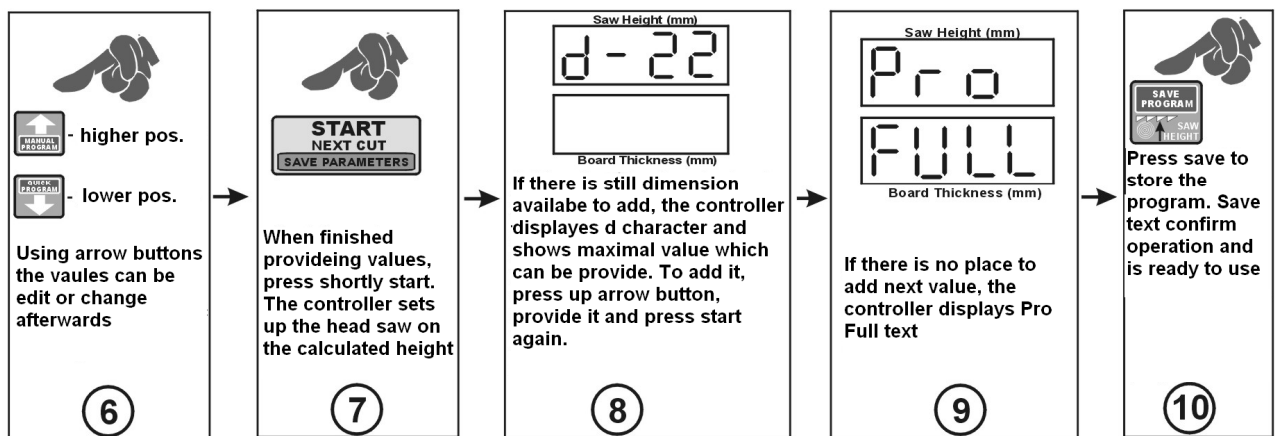
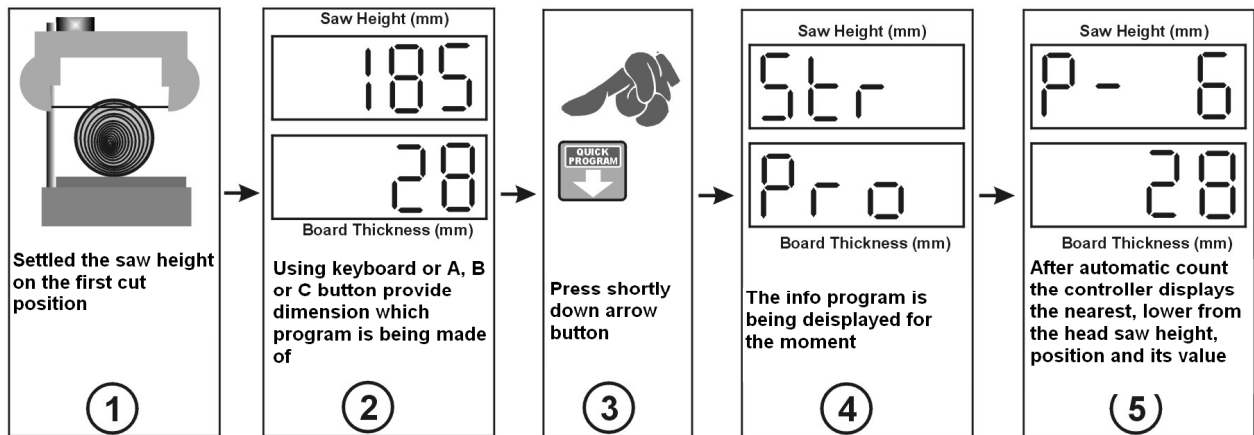
If changes on the positions (lower positions) allows to add new one to the program, the controller adds them automatically.

After programming, please position the head saw using "Start/Next Cut" button. The controller sets up the head saw automatically up to counted positions, if there is a possibility of adding any positions, the controller display d character and just next to it shows the maximal dimension available to add.

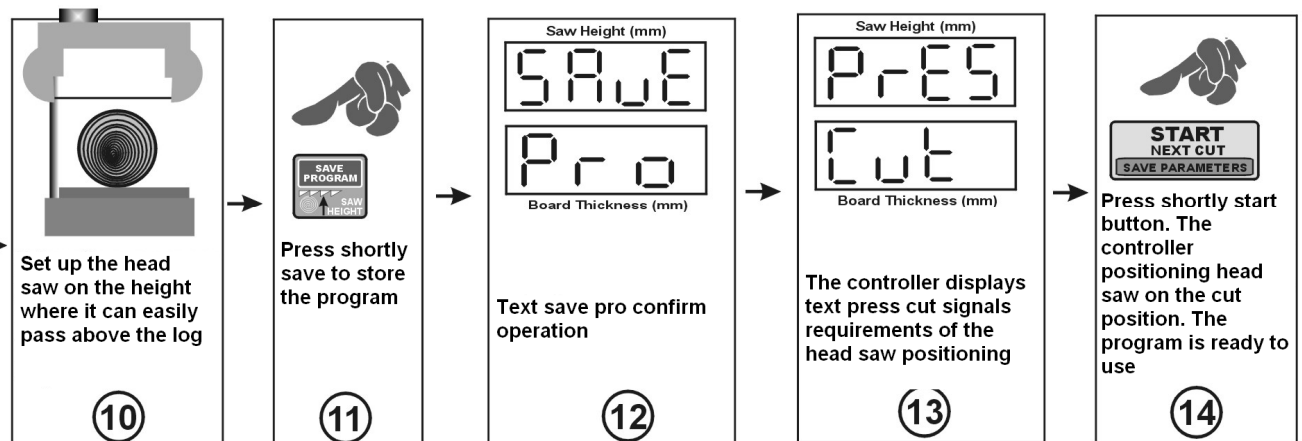
If it is required to add cut dimension, please using up arrow button go to upper position and provide new value from the range provided by the controller. Providing bigger dimension which exceed the saw height it is signal by displaying "Pro Full" text while position the head saw using "Start/Next Cut" button.

If the new positions was added, next it is possible to position the head saw again and save program using "Save Program" button or before saving set up the head saw on the backward height and then save the program (if it is required to use the settled backward saw height as it is in case manual program). If the tip dimension is not being used, please save the program without providing it.

## QUICK PROGRAM proceedings



## Settled backward saw height cutting



If you want to use settled backward head saw position (without taking out boards after each cutting) after 9 step follow proceeding introduced above

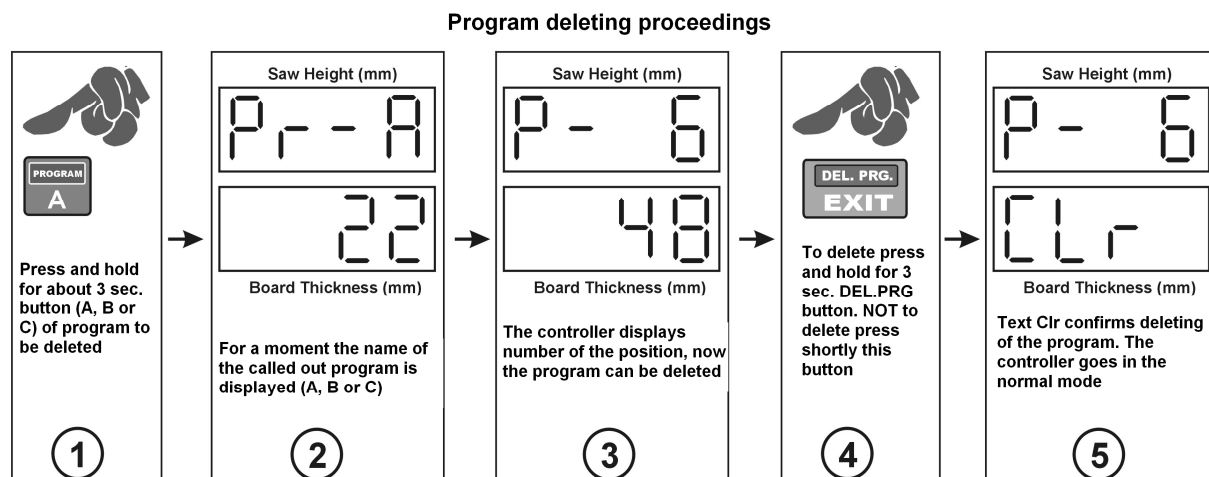
## CHAPTER 9

### Cutting using program made before (A, B, C)

The controller gives the possibility to create three cutting programs and storage them into its memory. This option allows for quick call out programs with very often used values thus shortage of the cutting program. Those programs are named A, B and C.

To use own created program which fulfil your requirements first after holding call out program needs to be deleted after holding A, B or C buttons.

To delete program first use A, B or C (holding for a while) to call it out. When the number is displayed, please press and hold "Exit Delete" button and the text "Clr" confirms this operation and controller goes to normal mode of working.

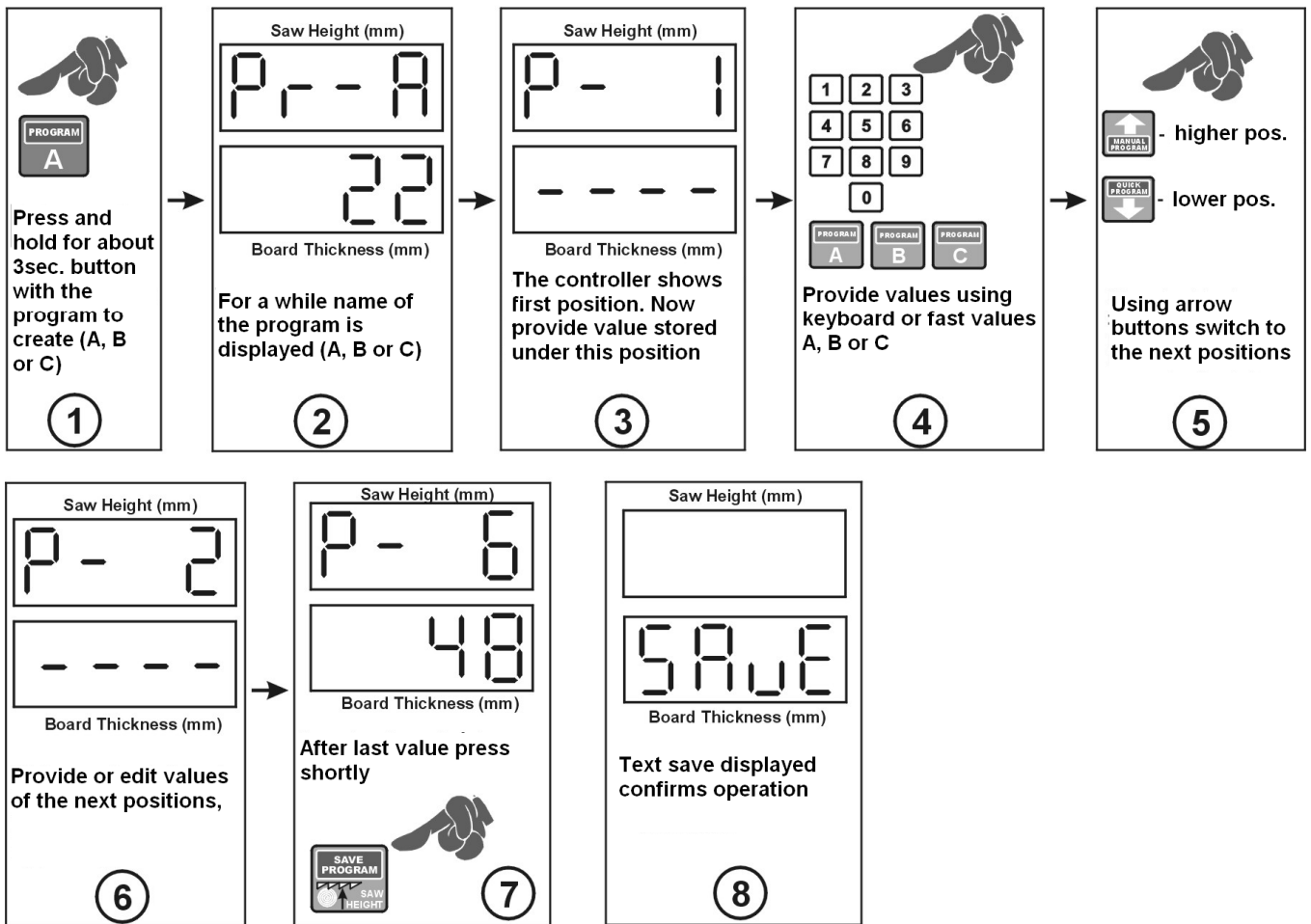


### Creating own cutting program

To create new program in place of the deleted one call it out and after displaying position number 1 with dashes displayed underneath provide dimensions for 1 to 60. After providing, save the program pressing "Save Program" button.

If all of the 60 position are not used, the controller automatically overwrite them with last provided position. Overwriting causes eventually fitting to bigger diameter of the log than predicted by the operator.

### Creating own cutting program (A, B or C)



**CAUTION! Program can be only created after deleting previous, saved one!**

### Using own created cutting programs (A, B C)

To call out the program press and hold A, B or C button. After calling out the proceedings is the same like in case of the quick program.

Changes of the value in any positions during executing the actual program are not saved, there are used only in the actual program thus after next call out the program is not changed.



**CAUTION!!!**

**If the cutting value is close to the point where the end switch will react the controller cause up movements of the head saw and then actual feed move. It is necessary for the controller to set up small value of the cut.**

In this case position of the head saw is make without under dimension movement and its stopped while moving from top to the bottom. In some cases it can cause increase of the accuracy of the last dimension positioning if its value is smaller or equal 30 mm.

## CHAPTER 10

### Operation recommendation

For having maximal good parameters of the cutting it is recommended to use auto-calibration at least twice a week. Auto-calibration proceedings are in details described in the point 3 of the chapter 3 “Auto-calibration (controller’s checking in with technical parameters of the sawing frame machine where its mounted)”. Before starting of the operation the “Saw Height” displayed needs to be checked and compared with the real head saw position. In case of the any divergence it needs to be corrected according to the procedure shows in the point 4 of the chapter 3 “real saw height settings”.

Do not press the keyboard using hard or sharp objects, it can cause irreversible damages. In case of the dirty keyboard, please use only proper medium to clean it up. Please remember to not press to hard membrane buttons. Pressing to hard of the buttons can cause damages and eventually exchange of the hole keyboard. The controller should not be exposed direct on getting wet with rain, water or any other fluids.

### Additional options

#### **Turning off and on the automatic downward approach motion to small dimensions:**

In most cases, it is not possible to position small dimensions (> 30 mm) using the **upward approach motion** due to **limit switches** installed in the machine. Therefore, in this case, the approach motion to the set dimension is **automatic from above, which is indicated by the message Auto UP on the upper display during positioning.**

In machines offering the **technical capability** of making a small dimension using the **upward approach motion**, you can block the function of the **automatic downward approach to dimension**, which will improve the positioning accuracy of the machine for the set dimension (**all dimensions will be positioned using the upward approach motion**).

#### **To turn off or on the automatic downward approach motion to small dimensions:**

1. Please turn on the controller and during the ISP 010 is displayed, press and hold the **Kerf (F)** button for approx. **3s** (the upper display will show **toP** and the lower display will show **Clr** or **Set**, depending on the current setting of the downward approach parameter
2. Use the arrow keys (arrow up and arrow down) to set the desired operating mode (**select Clr to disable the automatic downward approach motion; select Set to activate the automatic approach motion**).
3. Confirm your selection by briefly pressing the **START**key; the message **Save** on the display confirms that the selection has been saved.

**The adjuster saves the selection after disconnecting the power supply.**

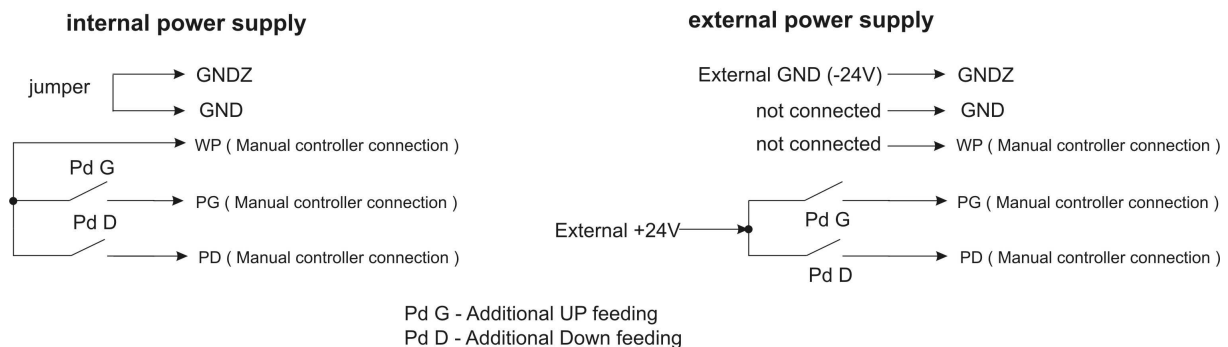
Controller ISP-010 is adapted to cooperation with additional control buttons “Saw UP” and “Start/Next Cut” which can be used for manual controlling of the up and down feeding of the head saw.



**Additional buttons should not be wired to any other electric circuit except main controller electric board in corresponding connection!!!**

Additional turning on and off of the controller is available by short pressing trace saw change button (Remote ON/OFF), turning on is signalized by “Remote Control” led on. In normal mode after turning on the additional controlling it cause move of the head saw in the corresponding directions till its pressing. In cutting program mode additional buttons work as “saw UP” and “Start/Next Cut”.

#### Additional buttons wiring



#### Turning off and on accessing movement to measurement from the bottom:

The standard procedure of an accessing movement to given measurement in case of most machine consists of a downward movement below given measurement and a short access movement to the measurement (upwards). This guarantees a maximally adequate precision of measurement adjustment.

In case of machines whose head moves relatively slowly, one can skip the upward movement, which shortens the time needed for head’s adjustment to given measurement.

The controller has a new functionality – the possibility to turn off the upward access movement.

#### In order to turn off/on the upward access movement, one should:

- 1 –Press and hold the EXIT button while the controller is on for about 3s (the word UP will appear on the top screen and Clror Set on the bottom screen depending on the current parameter settings)
- 2 –Buttons with arrows (up and down arrows) are used to adjust the desired working mode (**setting Clr results in turning off the upward movement, and setting Set results in turning on the upward movement**).
- 3 –The choice is confirmed by a short pressing START button, and Save button confirms the selected choice.

**The controller keeps the selected adjustment once the power is off.**

## CHAPTER 11

## EMC Approval

Controller ISP-010 is approved and fulfil all requirements concerning electromagnetic norms according to EMC. The controller ISP-010 should be set up and installed according to European and domestic norms. Responsible for adjusting the controller is person who set up the electric and control system on the sawing frame machine. It needs to be under EMC regulations. The controller need to be concern as a component of the sawing frame machine, it is not a separate machine or electronic device according to European directive (machine directive and electromagnetic compatibility directive).

The assembler of the controller ISP-010 is responsible for fulfil all those directives. Product and equipment described within this instruction can be modify as from technical as operational point of view. This written description – handbook manual can not be consider as a contract.

## CHAPTER 12

### Possible errors and solutions

#### **1 Controller after turning on is not working.**

Action:

- Check the Power transformer connection

#### **2 During manual controlling – is displayed**



Action:

- provide correct saw head height from main track (ch.3 p4)

#### **3 Cutting dimensions divergence**

Action:

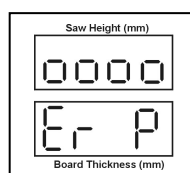
- make auto-calibration (ch.3 p.3)
- check saw trace value (ch. 3 p.2)

#### **4 Controller doesn't stop the head saw or position the head saw incorrect**

Action:

- check and eventually correct input divider value (ch. 3 p.1)
- check and eventually correct saw trace value (ch. 3 p.2)
- make auto-calibration (ch. 3 p. 3)
- 

#### **5 During automatic movements controller turns the feeding down and displays:**

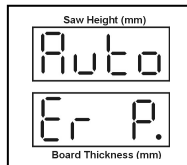




Action:

- check the rotating encoder clutch which connect encoder with the feeding screw
- check encoder connections with controller's main board
- in case of the MSK-320 encoder type check its mounting and distance from the magnetic tape
- check controlling connections DWN and UP with all electronic connections.

## 6 During auto-calibration controller stops and displays



Action:

- check as it is above.

