ISP - 11

AUTOMATIC ADJUSTER

for the HORIZONTAL BANDSAW

INSTALLER AND USER MANUAL

The adjuster is designed for installation on single-saw horizontal bandsaw machines. It facilitates the rapid distribution of raw material, automating the cutting process.

Chapter I

Mechanical assembly of the adjuster

The adjuster can be mounted directly in the machine control panel (**Fig. 1a**), or in a dedicated external enclosure (**fig. 1b**).
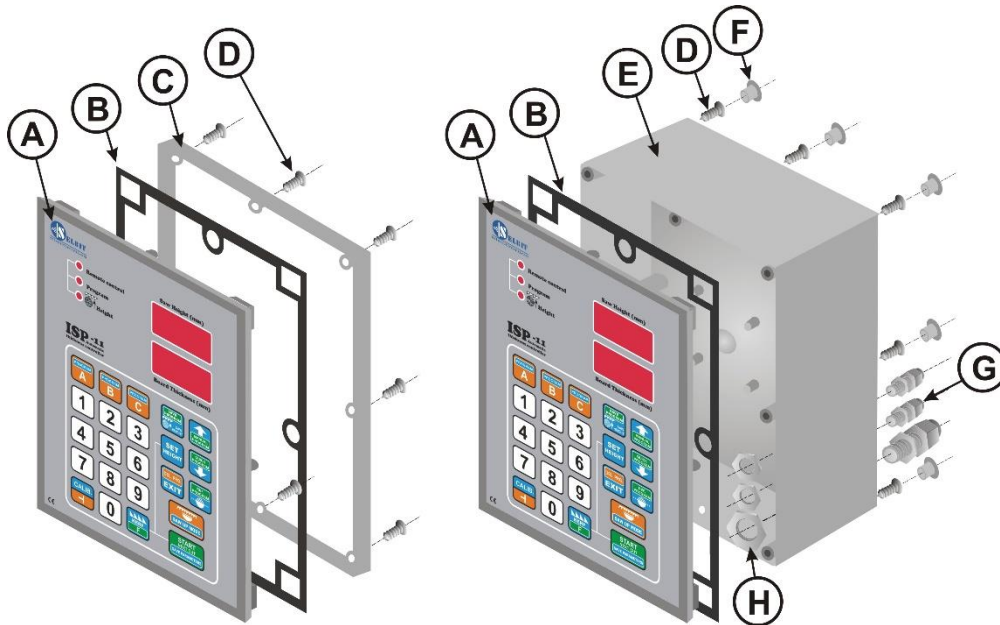

Fig. 1a   **Fig. 1b**

A - ISP-11 adjuster
B - gasket
C - mounting frame
D - screws 4.1x12 (8 pcs for panel mounting or 12 pcs for enclosure mounting)
E - supplementary enclosure
F - screw hole plugs (8 pcs.)
G - cable grommets (PG11 - 1pc, PG7 - 2pc)
H - fixing nuts for cable grommets

Mounting in the panel (Fig. 1a):

A rectangular hole of **175 x 140 mm** should be cut in the control panel. The hole should be carefully made to ensure that the rubber gasket of the front panel of the adjuster adheres around its entire circumference. Any uneven edges left after cutting should be smoothed with a fine file and protected against corrosion by painting with a good quality varnish.

**Mounting in a dedicated external enclosure (Fig. 1b):**

ATTENTION! Before screwing the adjuster panel (A) onto the enclosure (E), connect all the required cables, routing them through the grommets (G) into the housing.
The enclosure (E) can be screwed directly to the machine structure using the 4 screws (D) 4.1x12 supplied. This is achieved by 4 additional openings located at the rear of the enclosure. If necessary, an additional attachment can be made which, when tightened to the rear of the enclosure, will serve as a spacer bracket.

Installation of the MSK320 sensor (dedicated version for machines with chain hoist head)

The MSK 320 sensor should be mounted on a bracket bolted to the machine body (example in Fig.3).

A 0.8 - 1.5 mm
B ±0.5mm
C ±3˚
D ±1˚
E ± 3˚

Fig. 2   **Fig. 3**
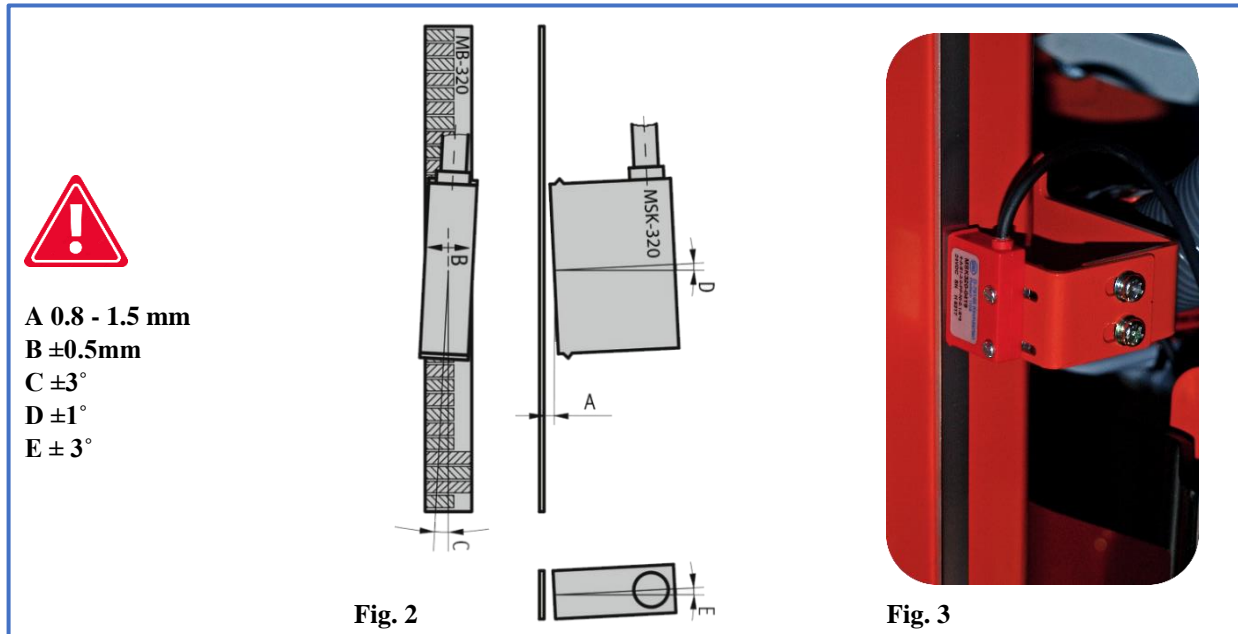
The sensor should be screwed on with two M3 screws passing through the enclosure. Use the included spring washers between the screws and the sensor. Tighten the screws with enough force not to damage the plastic housing of the sensor.
The permissible sensor mounting deviations are shown at **fig. 2**

The MSK 320 sensor should be mounted **on a part of the machine that is stationary** relative to the controller.
If the sensor is mounted as a movable sensor, its cable should be routed in a track that prevents it from bending uncontrollably.
When routing the sensor cable, care should be taken to keep it as far away as possible from other cables and electrical equipment.
Particular attention must be paid to the stability of the sensor and tape mounting so that these components do not vibrate excessively during operation.

Installing the MB 320 magnetic tape

The surface to be taped should be smooth and straight. The surface must be thoroughly cleaned and degreased using acetone or spirit.

The magnetic tape should be applied to a flat guide fixed directly to the moving head, so that the tape is moved in front of the MSK-320 sensor throughout the operating range. The mechanical millimetre gauge of the machine can be used for this purpose as long as it is sufficiently rigid and stable.
The tape consists of two parts equipped with a self-adhesive layer **(Fig. 4)**.
The first, thicker part **(B)** is glued on first. When gluing, only the part of the tape that protects the adhesive coating should be unfastened and then the first section should be glued starting from the top. Then gradually release the foil from further away while simultaneously sticking the tape to the substrate.
When applying, a rubber roller can be used to achieve even pressure. Apply the tape carefully so that no bulging forms and the tape is applied evenly in a straight line. Once the first part has been glued, apply the protective steel

tape **(A)** to it, following the same instructions as for the first gluing. Both tapes should be applied evenly, one on top of the other.
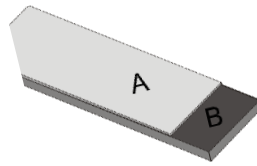

Fig. 4

The sensor and tape should be mounted in such a way that during the entire working movement of the head, the MSK-320 sensor along its entire length remains within the range of the magnetic tape beneath it.

Before, during and after installation, the magnetic tape must not be brought close to sources of magnetic field (permanent magnets, electromagnets).
From time to time, the surface of the tape should be cleaned of dust and dirt with a soft brush. Do not hit the tape or sensor.

Mounting of POI-xx encoder (dedicated version for machines with trapezoidal screw lift head)

The POI encoder is used to convert the rotary movement of the screw moving the head into electrical impulses which are then fed to the adjuster. The type of encoder (number of pulses/revolution) is directly related to the pitch of the screw. This relationship is shown in **Table 1 on page 7.**

The trapezoidal screw moving the machine head should have one end available (free) so that a hole can be drilled in it to screw in the end of the encoder coupling.

The hole should be drilled centrally, otherwise the mounted encoder may sway, leading to damage to the encoder. Once the hole has been drilled to a depth of approx. 15 mm , it should be threaded with an M8 tapping tool. You can now proceed to fix the encoder with the supplied fixing band (E). The clamp should be tightened to the machine structure using a bracket (F), (due to the differences in mechanical designs found on the sawmill market, you should make your own). An example view of an encoder mounted on the end of a trapezoidal screw is shown in Fig. 5 and 6.
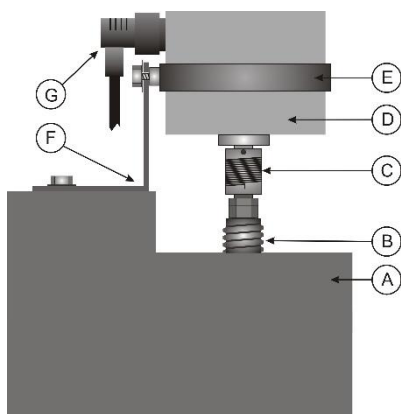

Fig. 5   **Fig. 6**

A - machine body B - trapezoidal screw C - encoder coupling D - encoder E - clamp F - bracket G - cable

Caution! Carefully check the tightness of the metal nut of the angle connector of the encoder cable to ensure the correct tightness of the connection!!!

Route the cable from the rotary encoder away from other electrical cables. Fixing it with cable ties, we bring it to the place where the adjuster will be mounted.

Chapter II

Electrical connection of the adjuster

ATTENTION!

Due to the risk of electric shock, all connections should only be made when the power supply to the machine is completely disconnected!

All connections should be made with double-insulated electric cables designed for control equipment supplied from the 230V AC mains.
Cables entering the enclosure should be circular, with a diameter suitable for the grommets supplied in the kit. The cable ends should be cleaned and fitted with sleeve lugs or tinned before tightening. This is important for correct and trouble-free operation of the adjuster in the future.
The machine in which the adjuster is installed must have operational limit switches for head movement, and the contactors switching on the motor should be cross-protected against switching on at the same time.

Installation of the TSS 8/001 power supply transformer

The power transformer supplied (TSS-8/001) must be fitted in the machine's power cabinet.
Mounting of the transformer is provided for a typical TS-35 mounting rail. The place for mounting the transformer should be selected so that it is as far away as possible from other electrical components (frequency converters, contactors, other transformers); this is important as electromagnetic interference can pass through the transformer to the controller electronics.
Connect the **230V** mains supply cables feeding the transformer to the terminals of the transformer marked 230V. The phase of the electrical installation to which the contactor coils and the inverter are not connected should be selected to supply the transformer.
Route 230V cables as far as possible from other cables in the enclosure.
To the transformer terminals marked **12V**, connect the wires supplying the electronic board of the adjuster. As with the previous connection, it should be routed as far as possible from the machine's other wires, including the 230V wires that supply the transformer.

Installation of EMC interference suppression glands

The **RC anti-interference gland s**included in the kit prevent excessive EMC emissions generated during contactor operation. **Their correct installation is very important for the correct operation of the adjuster.**

The glands are connected **in parallel to the coils of the contactors** controlling the head drive motor (points A1, A2).
An example of a wiring diagram is shown at **fig. 7**.

In parallel to the machine buttons, (**Sw1** - down feed and **Sw2** - up feed) controlling the raising and lowering of the saw head, connect the wires which are then tightened to the adjuster connectors described as **DWN and UP**. An example of a wiring diagram is shown at **fig. 7**.


Fig. 7
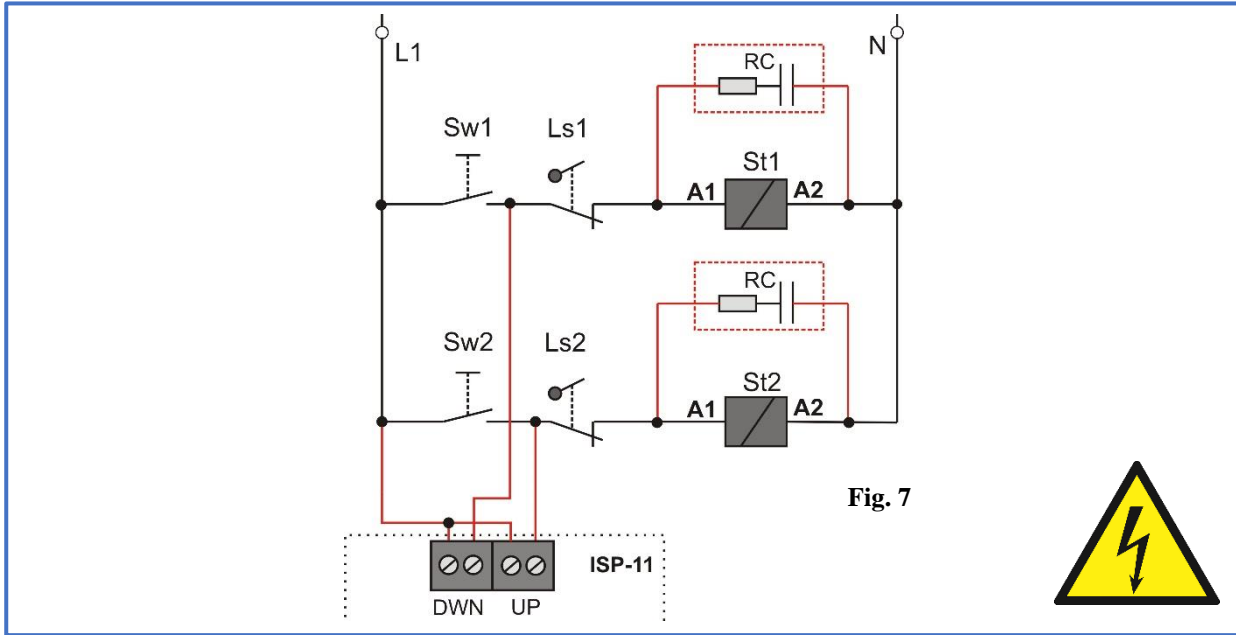
Connection of additional remote control buttons

Additional buttons in basic mode are used to manually lower and raise the head. In program mode, on the other hand, they function in the same way as the keys on the keypad of the '**START NEXT CUT**' and '**SAW UP**'.

Additional buttons should **be monostable with NO contacts**. We connect them to the ISP-11 board according to **fig. 8**.
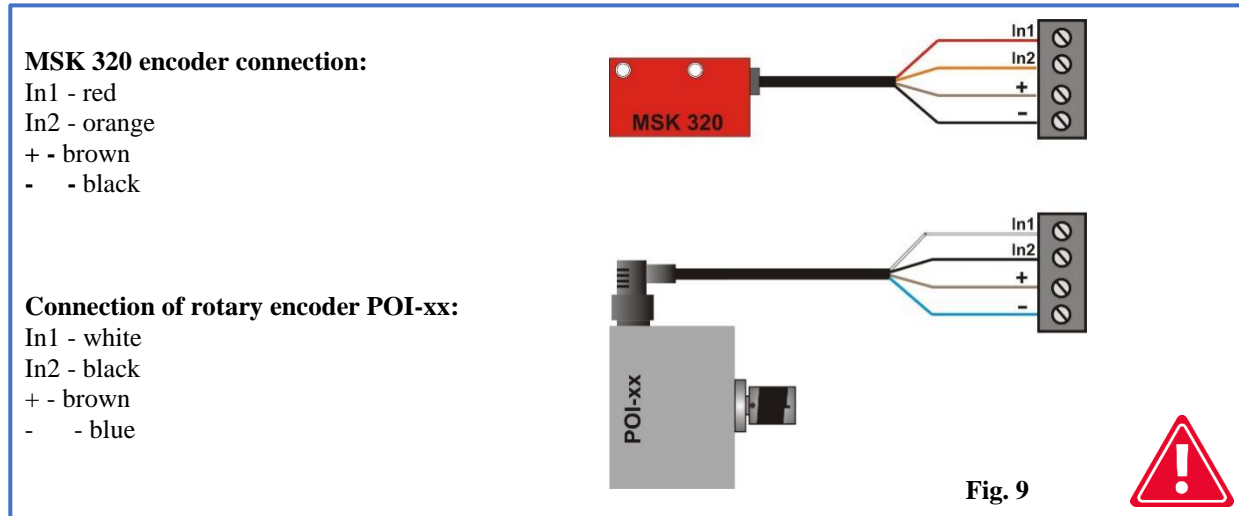The **Sw1** button activates the **downward** movement. The **Sw2** button engages the **upward movement**. **Wp** is the common point of the buttons.

Fig. 8
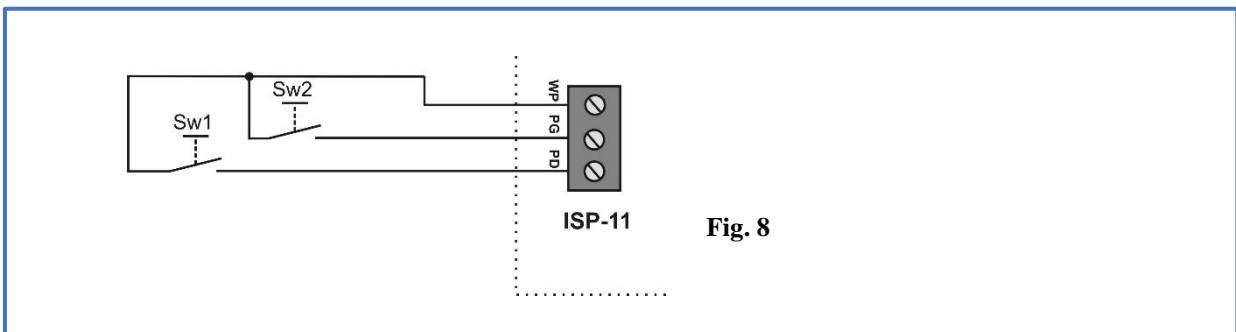
Connection of magnetic or rotary encoder

Connect the POI-xx or MSK320 encoder to the ISP-11 board according to **fig. 9**.

MSK 320 encoder connection:
In1 - red
In2 - orange
+ - brown
- - black

Connection of rotary encoder POI-xx:
In1 - white
In2 - black
+ - brown
- - blue

Fig. 9

Carefully check the order and colour of the connected wires before turning on the adjuster!
**Incorrect connection of the encoder can cause irreparable damage!**

Chapter III

Final programming of the adjuster

1 - Checking and saving the value of the input divider

Immediately after turning on the power, while displaying the inscription ISP-11, press and hold, for **3 seconds,** the 'CALIB' button. The upper display will show dashes and the lower display will show the divider symbol (rotated T) and its current value.
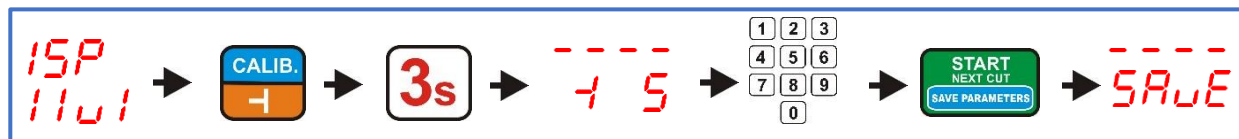
The dividers for the **POI-xx** rotary encoders and the **MSK-320** linear encoder are given in **Table 1**. To store the value of the entered divider, briefly press the **'START/NEXT CUT'** key. Saving the divider is signalled by the text **'SAvE'.**

| Screw pitch (mm.)	Encoder type	Divisor
3	POI - 42 imp/rev.	28
4	POI - 48 imp/rev.	24
5	POI - 50 imp/rev.	20
6	POI - 48 imp/rev.	16
7	POI - 42 imp/rev.	12
8	POI - 48 imp/rev.	12
10	POI - 50 imp/rev.	10
Not applicable	MSK-320 linear	5

Table 1 (Matching the divider value to the encoder type)

2 - Checking and saving the saw kerf

Press and hold down the key with the saw symbol for **3s** to check the value of the kerf, if necessary. The display will show the kerf symbol and its currently entered size. You can now SAvE or change its value depending on the saw you are using. When entering the new ordinate value, remember that it is given to one decimal place. If you want to enter a kerf size equal to e.g. 2mm, press the 2 key, followed immediately by the 0 key. The display should show the entered dimension as 2.0. Once the new kerf value has been checked or entered, it is saved by briefly pressing the **'START/NEXT CUT'** key. Saving is confirmed by 'SAvE' briefly visible on the display.
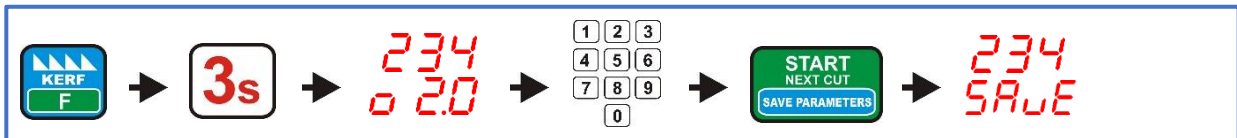
3 - Entry of the real height at which the saw is located

Check that the mechanical gauge of the machine (millimetre scale with pointer showing the height of the head) is correctly calibrated; the height of the head from the track of the machine shown by the pointer should correspond to the actual height of the saw from the track of the machine. A correctly calibrated gauge will make it easier to check the adjuster parameters later.

ATTENTION! Correct scaling is important for correct adjuster calibration.

Now position the head with the saw so that the pointer stops exactly at full millimetres, read exactly what height the mechanical tape measure shows and enter this value into the memory of the adjuster as follows:
Press and hold for approx. **3s** the 'SET HEIGHT' key, dashes will appear on the upper display. Now enter the dimension read from the machine's measure gauge using the numeric keys on the adjuster. Pressing consecutive keys with the digits of the dimension to be entered should be done **without unnecessary delay**; an excessively long pause is treated by the controller as the end of the number entry. If a mistake is made during entry, wait **3s** and then proceed to enter the dimension again. The dimension is entered in the normal order, e.g. dimension **125** is entered by sequentially pressing keys **1-2-5**. After entering the dimension, briefly press the **'START/NEXT CUT'** key. The inscription **'SAvE'** confirms that the dimension has been saved in the memory of the adjuster.
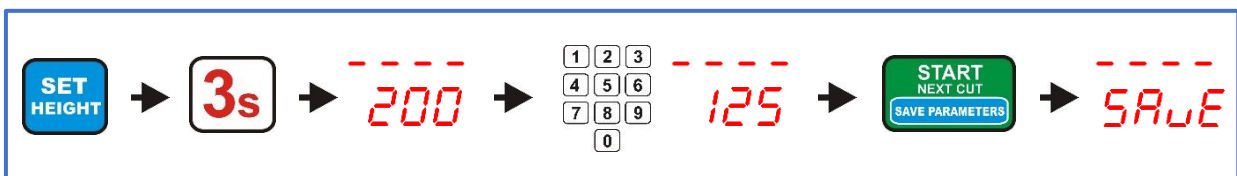
4 - Autocalibration (adjustment of the controller to the mechanical parameters of the machine)

Set the saw manually (using the manual control buttons on the machine control panel) at a height of approx. **250 mm** from track level.
Press and hold the **'CALIB.'** key for approx. **3s**. The display will show **'Auto CALL'**, now check that it is safe to start the head. If starting the head does not endanger the safety of the occupants, briefly press the **'CALIB.'** key. The controller will automatically make **4 downward movements** followed by **9 upward movements**. Once the calibration movements have been completed, the display will show **'End CALL'**, confirming that the self-calibration has been completed.

⚠️ *ATTENTION! We recommend performing autocalibration at least once a week.*

5 - Programming of saw return height in Saw UP function

The controller is programed at the factory in normal mode (LO).

The adjuster can be programed with **2 modes of saw return height** above the material by using the '**SAW UP**' key.

In normal (**LO**) mode, after pressing the '**SAW UP**' key, the adjuster raises the saw by a fixed height **approx. 12 mm** above the cut material. **In this mode, the cut board must be removed before the head returns to the start of the track**.

In the second available mode (**HI**), the adjuster, after pressing the '**SAW UP**' key, raises the saw **by 12 mm plus the last cut dimension**. In this mode, the head can be returned to the start of the track after cutting without removing the board.

Change of operating mode (LO/HI) :

Immediately after turning on the power, while displaying the inscription ISP-11, press and hold, for **3 seconds,** the '**SAW UP MODE**' button.

The lower display shows the current operating mode. The inscription **'LO'**, indicates a permanent lifting of the head in the **'SAW UP'** function by approx. **12 mm above the cutting line**, the inscription **'HI'**, means raising the head by a height equal to **the sum of the currently displayed cutting dimension and a fixed height of approx. 12 mm**. The '**SAW UP**' mode is changed using the keys with the arrow symbol. After selecting the required option, briefly press the '**START/NEXT CUT**' key.

Return of the head only **after removing the board**   Return of the head possible **without removing the board**
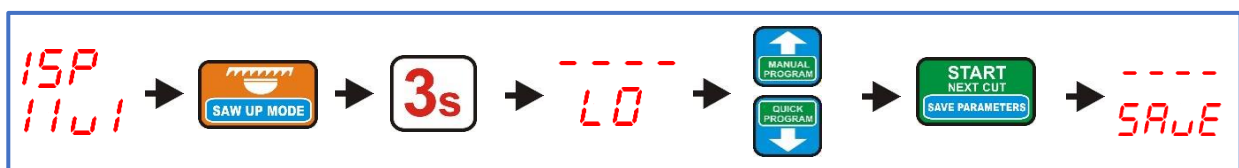
Practical application of the SAW UP function (LO-HI)

## 6 - Assignment of frequently used dimensions to keys A, B and C

The controller has three keys marked **A**, **B** and **C**.
When they are pressed briefly, the display shows the dimension previously assigned to the key in the adjuster's memory.

Assigning dimensions to keys A,B and C:

While ISP-011 is lit, press for **3s** and hold down the **A**, **B**, or **C** key for the adjuster displays **AbC on the upper display** and dashes on the lower display.
Now press one of the keys (**A,B or C**) whose dimension you want to change, the adjuster displays the letter of the selected key and the dimension assigned to it. Enter the new dimension and, if necessary, move on to the next key by pressing it briefly. Once the required dimensions have been entered, confirm the changes by pressing the **'START/NEXT CUT'** key, the **'SAvE'** text confirms that the changes have been saved.
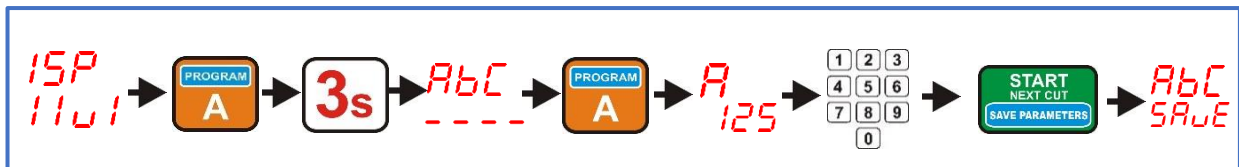

7 - Switching off or switching on access traffic from the top to the small dimensions

In most cases, it is not possible to position small dimensions (**< 30 mm**) using **downward travel** due to the **limit switches** installed in the machine. Therefore, the approach movement to the set dimension in this case takes place **automatically from above, which is indicated by the text ' -UP- ' on the top display during positioning.**

On machines where it is **technically possible** to produce a small dimension using the approach movement **from below,** it is possible to deactivate the **automatic dimension approach function from above**, which will improve the positioning accuracy of the machine (all dimensions will be positioned using the approach movement from below).

Setting up an automatic approach movement from above:

While the ISP-11 is lit, press and hold the **'KERF'** key for **3s** (the upper display will show '**toP**' and the lower display will show '**CLr**' or '**Set**' depending on the current parameter setting. Use the arrow keys to set the required operation mode (**CLr to disable automatic upward travel, Set to enable automatic upward travel**). Confirm your selection by briefly pressing the '**START/NEXT CUT**' key. The inscription '**SAvE**' confirms that the selection has been saved in the adjuster's memory.
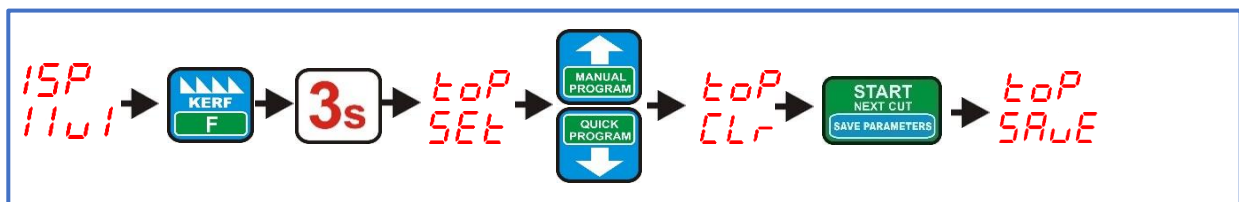
8 - *Switching off or on the movement of the ride below the set dimension:*

The standard procedure for setting the desired dimension for most machines consists of a **passing movement below the set dimension and a short upward movement to the dimension.** This **ensures maximum accuracy of** the dimension setting.

In the case of machines whose head moves **relatively slowly** and whose stopping inertia is therefore not very high, it is possible to dispense with the **travel movement below the set dimension,** thus reducing the time required for the head to move into position.

Setting the trip movement below the dimension:

With the adjuster normally switched on, press and hold the '**EXIT**' key for **3s** (the upper display will show **- UP -** and the lower display will show '**CLr**' or '**SEt**' depending on the current parameter setting. Use the arrow keys to set the required operating mode **(CLr to disable under travel movement, SEt to enable under travel movement**. Confirm your selection by briefly pressing the '**START/NEXT CUT**' key. The inscription '**SAvE**' confirms that the selection has been saved in the adjuster's memory.
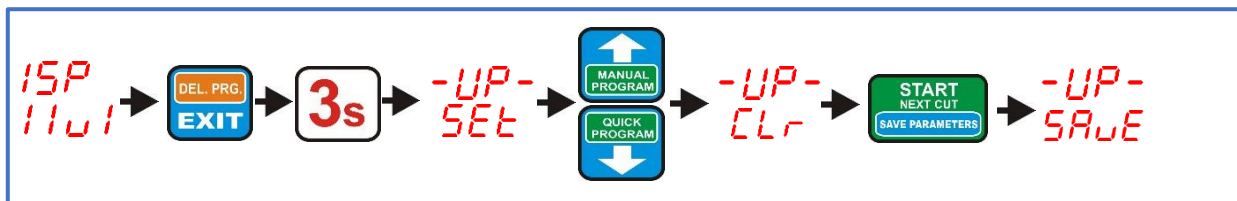
Chapter IV

## *Practical use of the adjuster*

Normal cutting (plank by plank)

Normal cutting is the simplest cutting method. In this mode, we size the log from the top into individual boards. To do this, position the saw with the hand control buttons, on the line of the first cut from the top. Cut through the log, remove the cut board from the log and then press the '**SAW UP**' key, which raises the saw above the material so that the head can be safely returned to the start of the track. We can now change the '**Board Thickness**' shown in the bottom display to a different thickness of the next cut, entered from the numeric keypad, or leave the currently displayed dimension unchanged. Once the thickness of the next cut has been selected, briefly press the '**START/NEXT CUT**' key, the adjuster will set the saw to the height according to the previously set thickness of the next board. Now we make another cut and, similarly, when it is finished, we remove another cut board from the log, press the '**SAW UP**' key and return to the start of the log. **When the saw is raised (by pressing the 'SAW UP' key), it is also possible to change the thickness of the next cut.** If the '**SAW UP' function is programed as 'HI'** on the controller (chap**. III**, item **5**), the head return can be made without removing the cut board from the machine track.

Normal cutting without removing boards after cutting (fixed return height)

We start cutting by setting the saw at such a height that it is slightly above the log, along its entire length. This will be the height to which the saw will be automatically raised **each** time the '**SAW UP**' key is pressed, thus avoiding the need to remove consecutive boards from the log. Once the saw has been positioned, briefly press the **'SAW HEIGHT**' key. Activation of the return height is indicated by the illumination of the LED with the description **'Height**'.

Setting and saving the height of the saw return   **Cutting further boards**
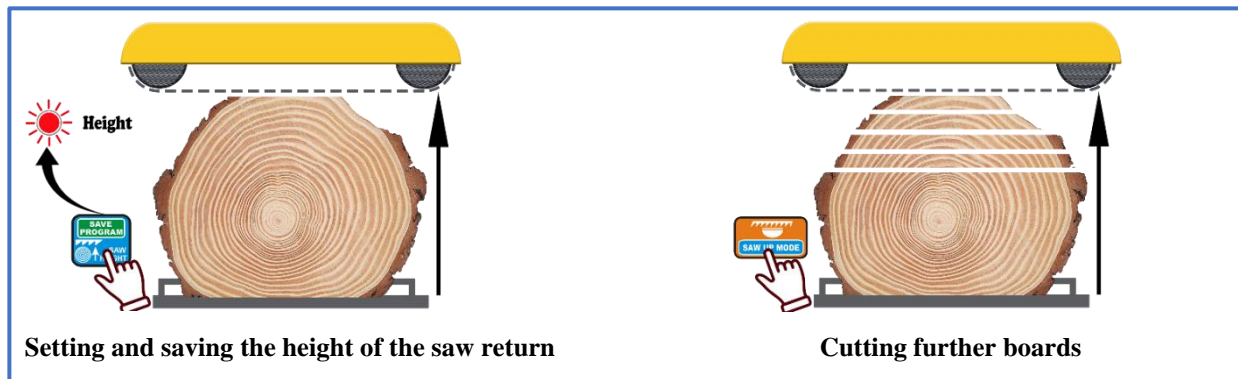
Now, using the machine's hand control buttons, we position the saw at the height where we want to make the first cut. Once positioned, we make the cut analogous to the 'board-by-board' method. After each successive cut, when the "**SAW UP'** key is used, the saw is raised to the **height set at the start of the cut**.

The return height can be switched off or on again at any time by briefly pressing the 'SAW HEIGHT ' key.

Cutting in 'manual program' mode

This program allows the log to be manually, (plank by plank) spaced **from the track level of the machine up to the height at which the saw is located.**

We start laying out the program by placing the saw on the line of the **top end of the log**.
Now briefly press the **'MANUAL PROGRAM**' key, the **'Program**' light comes on and the controller displays position **No. 1** and waits for the first dimension to be entered (**first from track level**).
After entering the first dimension, press the key with the **up arrow** symbol to move to the next position and then enter its dimension. In turn, we enter all the necessary items.
If, after moving to the next position or entering the next dimension, the height of the arranged program exceeds the **height at which the saw is set**, the adjuster signals this by **flashing the position number**.
At each position of the stacked program, we can check what height the saw will realistically be at by pressing the**' START/NEXT CUT**' key.
After entering all the necessary dimensions, press the '**START/NEXT CUT**' key to position the saw on the first cut line and confirm the program by pressing the '**SAVE PROGRAM**' key.
Once the program has been approved, we make the first cut from the top, press the '**SAW UP**' key, return the head to the beginning of the track, press the '**START/NEXT CUT**' key and the head moves to the next lower position.
Similarly, using the '**SAW UP**' and '**START/NEXT CUT**' keys continues the program cut up to position **P-1** which is the last position to be cut **(it stays on the track after the program is finished**). When position **P-1** is reached, the adjuster displays '**End Pro**'.

If you want to use the cutting method without taking the boards off the track, after setting the saw on the first cut line but **before validating the program**, raise the saw with the hand control buttons to a height above the log and only then press the 'SAVE PROGRAM' key. This causes the return height to be stored (the **'Height'** light comes on and the adjuster displays '**SAvE Pro**' and '**PrES Cut**' to remind you that the saw is no longer on the line of the first cut from the top. We now press the '**START/NEX CUT**' key, the saw sets to the line of the first cut and the software cut can begin.

The return height can also be activated or deactivated during an already running program by lifting the head up with the manual control keys and pressing the 'SAVE PROGRAM' key briefly.
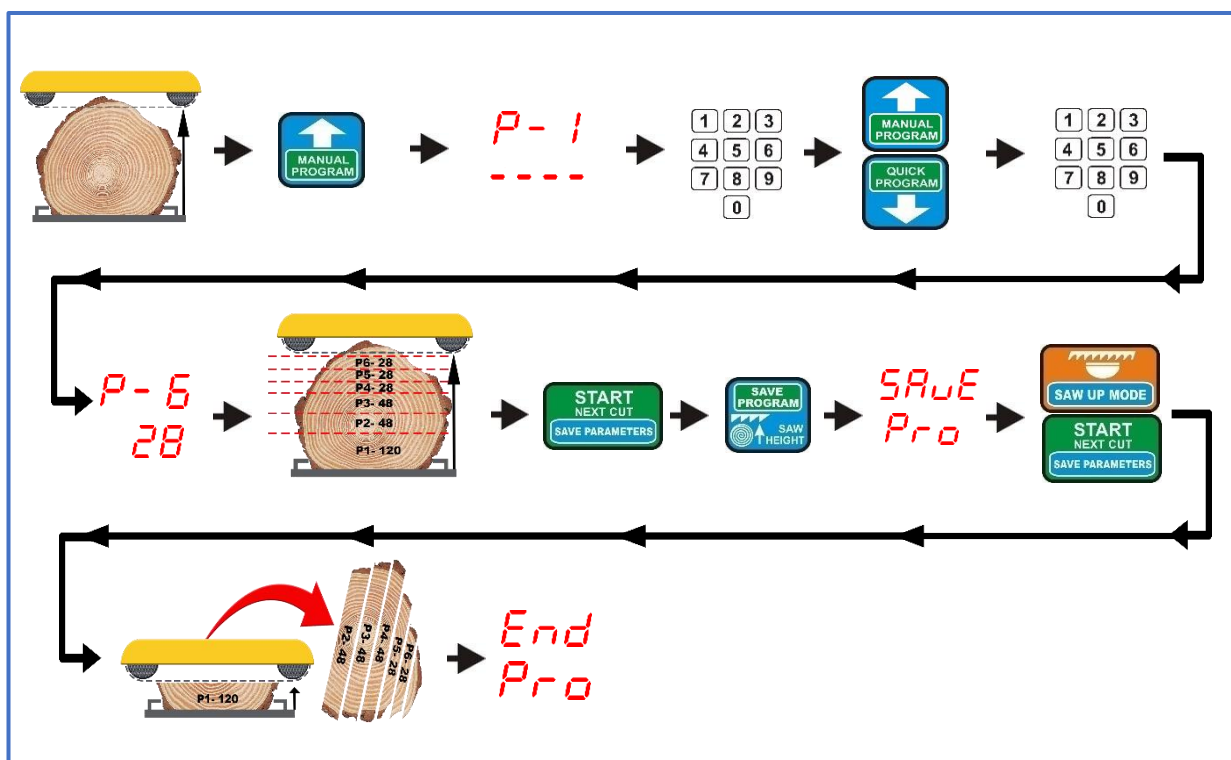
'Manual program' mode with no set return height
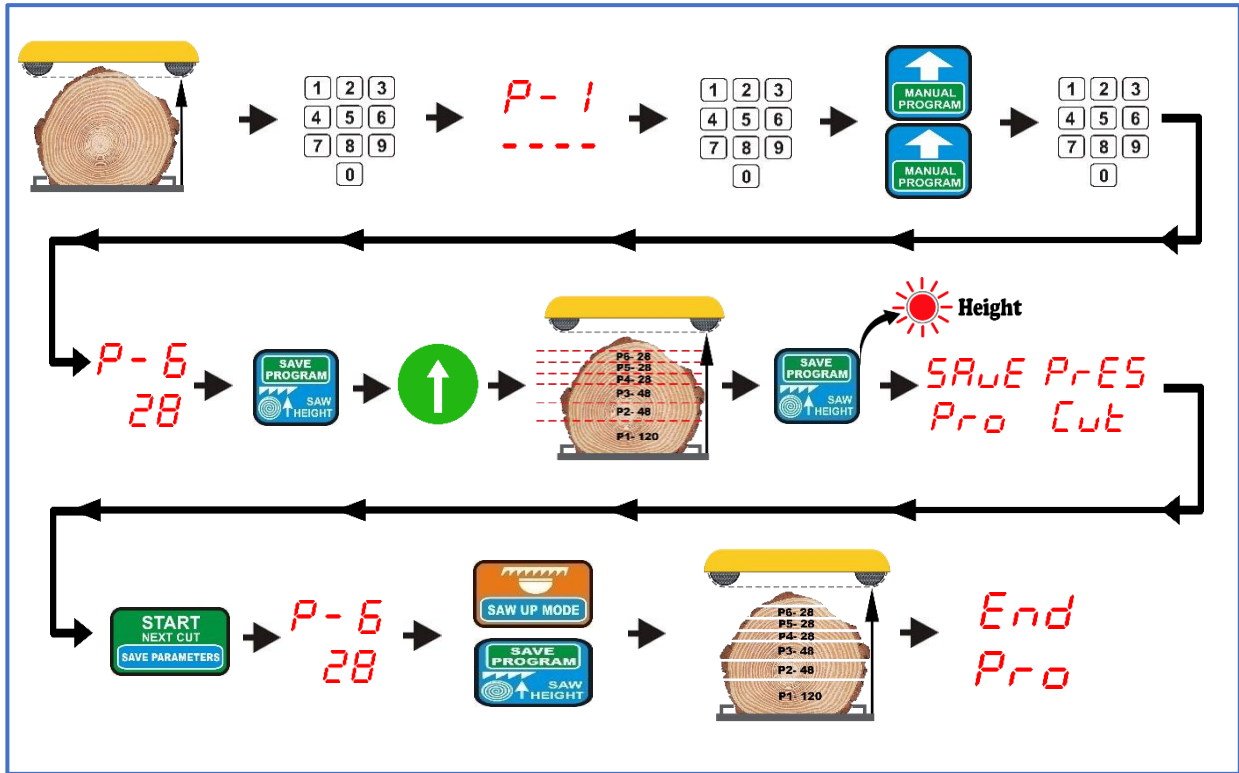
'Manual program' mode with fixed return height

Cutting in "quick program' mode

This mode is used to quickly size a log into boards of equal size. The adjuster calculates the number of boards from the track level to the height at which the saw is currently located. The calculation is based on the dimension currently visible in the 'Board Thickness' window.

Before using the 'QUICK PROGRAM' mode, enter the dimension which will be the basis for the layout, position the saw at the height of the upper end of the log on the line where you want to start cutting (**first cut from** the top). Now press the **'QUICK PROGRAM**' key briefly, the **'Program**' light comes on and the adjuster displays **'Str Pro**'. After recalculation, the adjuster will display the number of the nearest possible position to be cut, in relation to the height of the saw setting.

Now, alternatively, we can change the dimensions on any items to suit our needs or leave them unchanged.
When changing to larger dimensions, items that do not fit into the saw height are rejected automatically by the adjuster. If we change the dimensions to smaller ones and this allows a new position to be added, the adjuster automatically takes this into account, increasing the number of positions accordingly.

If we do not want to change the dimensions at any of the positions, we can immediately set the saw to the line of the first cut from the top by pressing the **'START/NEX CUT'** key.

Caution! An attempt to validate the program without setting the saw to the cut line is rejected by the adjuster and is indicated by the display of **'PrES Cut'**.

When the '**START/NEXT CUT**' button is pressed, the adjuster moves the saw to the first cutting position from the top.

If, after calculating the height, the controller determines that it is possible to add a position, it will briefly display the letter '**d-**' and next to it a hint (the **maximum dimension that can** be added). If you want to add an additional item, press the up arrow key to change the item number to a higher one, and enter its value **from the range within the value of the hint previously displayed by the controller**. If the entire dimension suggested by the adjuster is added, 'Pro FULL' is displayed when the 'START/NEXT CUT' key is used.

It is possible to add a position value greater than that suggested by the prompt adjuster, as well as further positions. Once a position has been added and the saw has been positioned on the first cut line by pressing the 'Start/Nex Cut' key, the adjuster will treat its new height as the basis for recalculating all other positions. If too many items have been added by mistake, the unnecessary ones can be removed by entering a zero for the item from which all others (counting upwards) are to be discarded.

Caution! After each change of dimension at any of the positions, the '**START/NEXT CUT**' key must be pressed to position the saw on the cutting line. Only then can the program be confirmed with the **'SAVE PROGRAM'** key. Alternatively, if using fixed height mode, raise the saw to the return height **before validating** and only then validate the program.

The return altitude can also be switched on or off during an already running program by briefly pressing the 'SAVE PROGRAM' key.
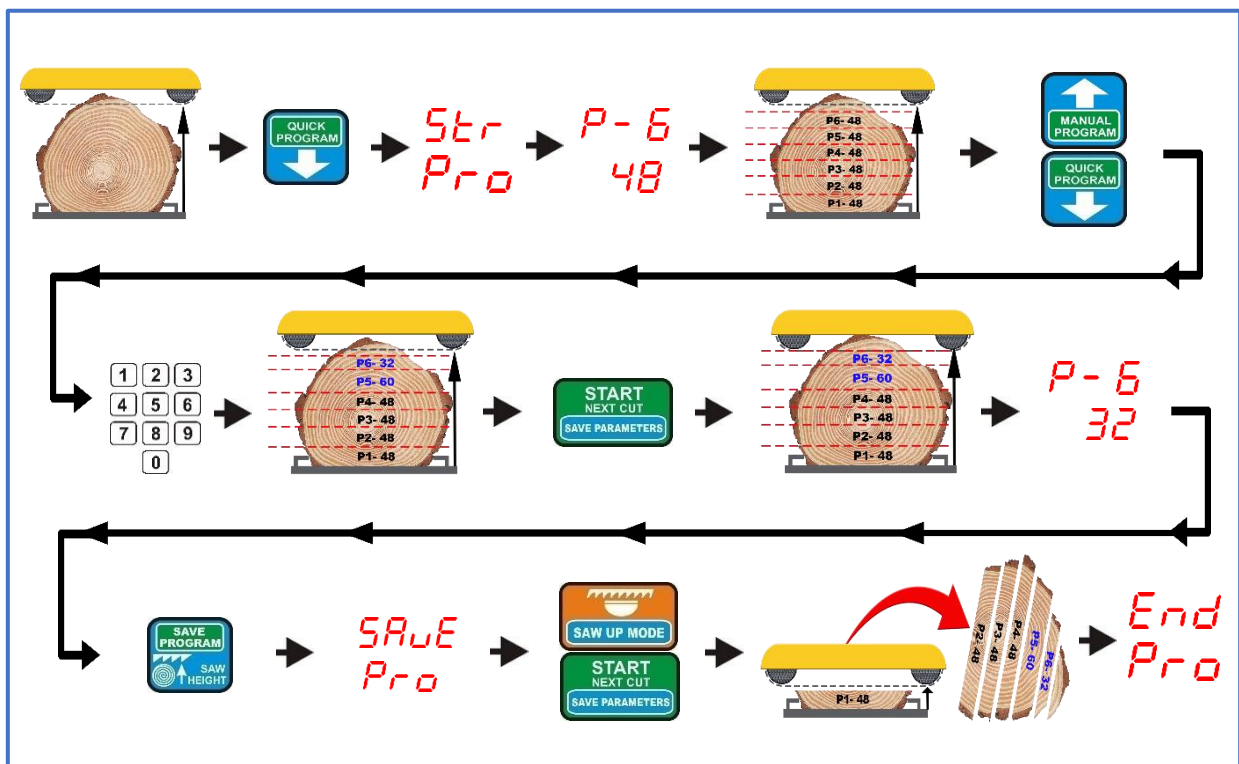
'Quick program' mode without fixed return height
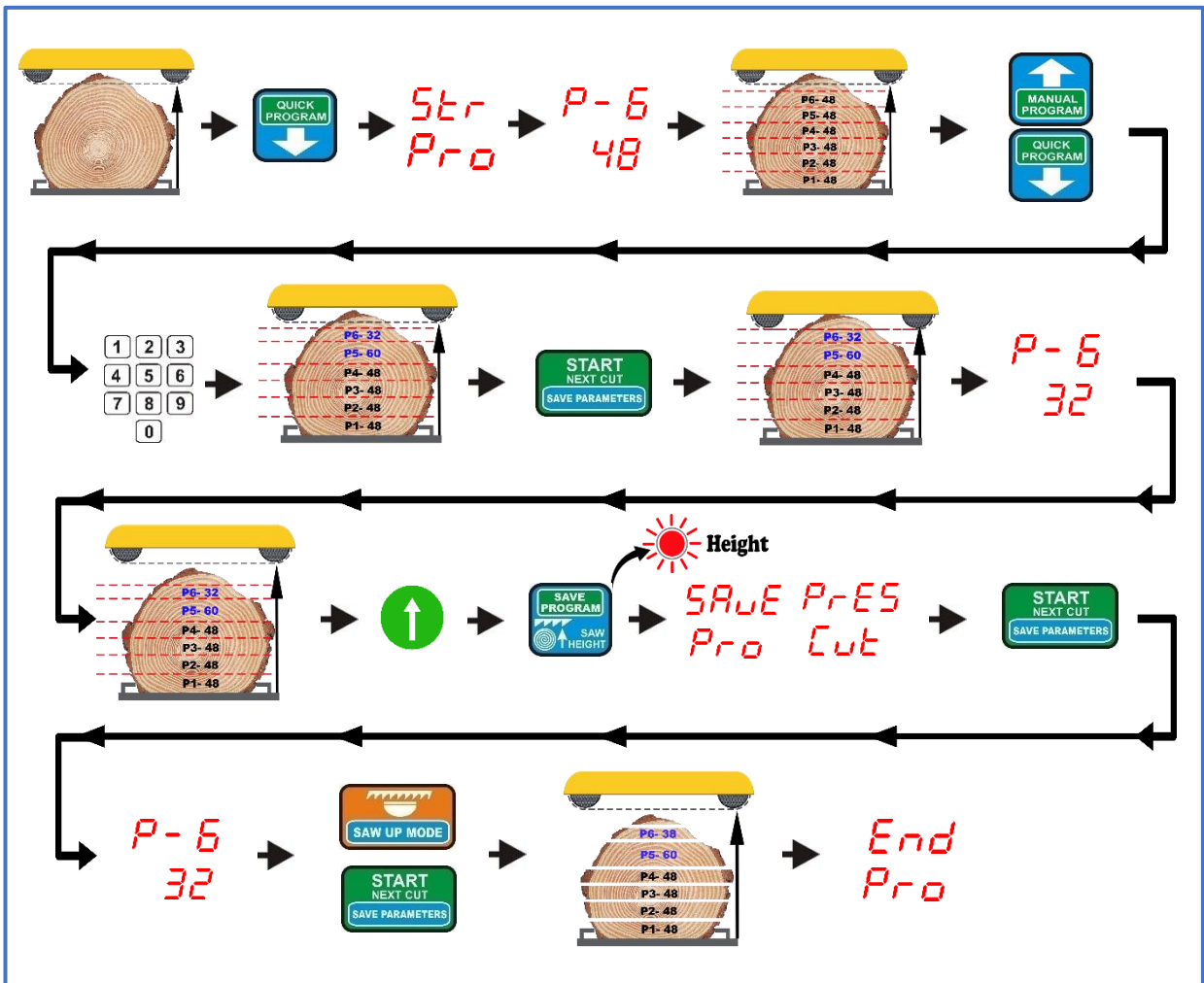
'Quick program' mode with fixed return height

Cutting using program A,B or C, stored in the adjuster memory

The adjuster allows three cutting programs of 60 positions each to be arranged and saved.

With frequent cutting of repetitive dimensions, this option significantly reduces the time needed to lay out individual boards.

The programs are marked on the keypad of the controller as 'PROGRAM A, B and C'. **Any of them is called up by holding down the key with its name for 3s**.

To create your own program, hold down for approx. **3 s** key with the selected program (A,B or C). When the adjuster displays the position number and its dimension, press and hold approx. **3s** key '**EXIT DEL. PROG.**' The controller will then briefly display '**CLr**' confirming that the selected program has been removed from the adjuster's memory.

Now press again for app. **3s** the key of a previously removed program. The adjuster displays the P-1 position and the dashes below it, pending the entry of the first dimension in the program. Enter the required dimension and then press the key with the arrow pointing upwards to move to the next higher position number. Repeat the process until all the necessary items have been entered.

Now press the '**SAVE PROGRAM**' key briefly. The controller briefly displays the flashing word '**SAvE**', confirming that the arranged program has been stored in memory.

We can arrange and save the other programs in an analogous way.

The cutting procedure using saved programs is the same as for the previously described '**QUICK PROGRAM**'. The thickness of individual boards can also be modified as required within the program called up from adjuster's memory. These changes are **only taken into account within the currently executing program**; they are not saved to memory once the cut is complete.
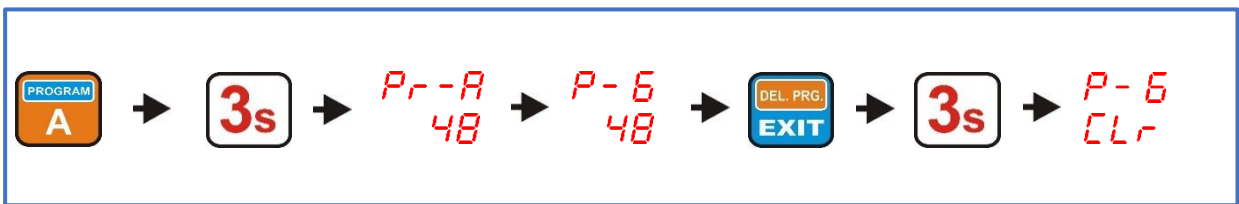
Program deletion in the adjuster's memory
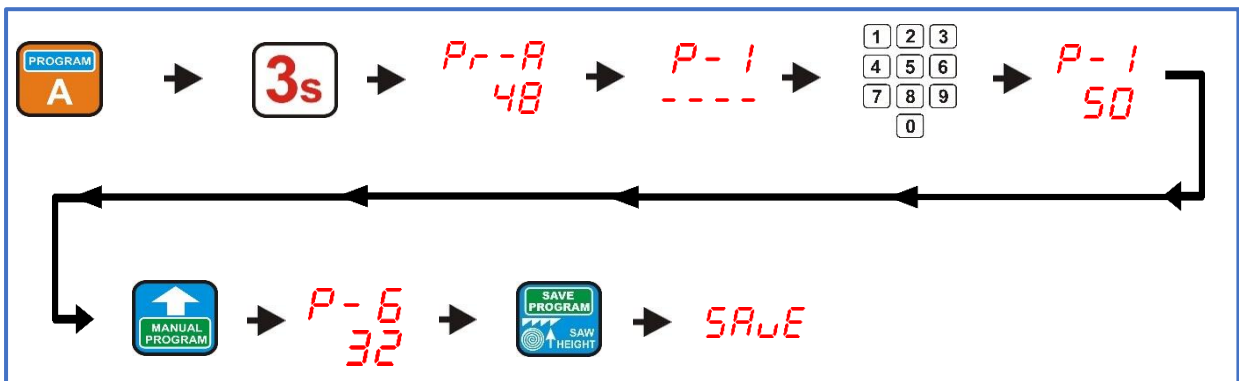
Programming and saving the program in the adjuster's memory

Cutting using a reference point (REFERENCE PROGRAM)

With the help of this program, it is possible to plan what part of the material is to **remain on the track**, so that when it **is turned** , the thickness and width of the wood can be used to maximum effect.
To use the software reference point, set the saw to the height you want to remain after cutting with this software reference point, then briefly press the key marked **'REF. PROGRAM'**

The height at which the saw is located when the 'REF. PROGRAM' is automatically treated as level zero (as is the track level in other programs).

We can now raise the saw head to the height of the top end of the log and start entering the thickness of the boards.
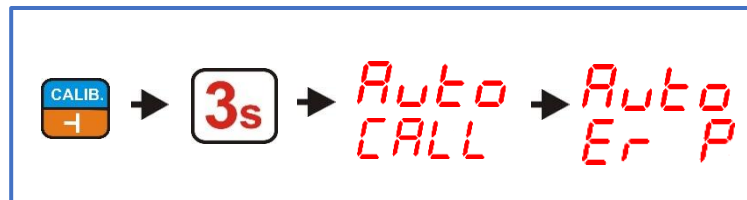Laying out a cutting program using a reference point is done in the same way as in the 'manual program' mode described earlier, **with the difference that the layout starts from the marked height and not from the level of the machine track.**
Item numbers in this program are displayed with '**rP**'.

Chapter V Operating errors of the adjuster

Error 1

When the '**START NEXT CUT**' or '**SAW UP**' key is pressed, the machine starts for a moment and then stops. The controller displays the message '**Er P**'.
Or:
When performing the auto-calibration function, the machine starts for a moment and then stops. The controller displays the message '**Auto Er P**'

The message indicates the **absence of valid pulses** coming from the encoder (rotary POI-xx or magnetic MSK-320).

In this case, check the connections of all wires going from the encoder to the connectors described as 'ENCODER' on the adjuster board. In the case of the POI-xx rotary encoder, the correct tightening of the angled cable connector on the encoder housing, the tightening of the screws of the flexible coupling, and whether the coupling itself is cracked or otherwise damaged should additionally be checked.

Error 2

When the '**START NEXT CUT**' or '**SAW UP**' key is pressed, the machine does not start. The controller displays the message '**Er P**'.
Or:
The machine does not start during the autocalibration function. The controller displays the message '**Auto ErP**'
The message indicates **a break in the control wires of the contactors that switch on the head movement**.

In this case, check the connections of all wires going from the contactors to the connectors on the adjuster plate described as '**DWN**' and '**UP**'.
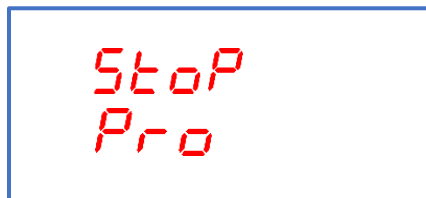
Error 3

The controller displays the message '**SEt HEI**'.
The inscription indicates that the Saw Height range has been exceeded.
In this case the correct value must be entered as described in Chapter III, point 3.

Error 4

A '**StoP Pro**' error is displayed if, during automatic movement, the manual control button is used in the opposite direction to that currently executed by the controller. The automatic movement is stopped.

Error 5

The machine does not stop during automatic dimensioning , the movement continues until the machine limit switches are operated.

If this is the case, check:

Value of the input divider **(Chapter III, point 1)**
Actual saw height measured from the track of the machine **(Chapter III, point 3)**

Error 6

Too large a discrepancy between the specified dimension and the dimension of the finished board.

If this is the case, check:

Value of the saved saw kerf (**Chapter III, point 2**)
Actual saw height measured from the track of the machine **(Chapter III, point 3)**
Carry out the auto-calibration procedure **(Chapter III, point 4)**

EMC compatibility

The ISP-11 controller complies with the electromagnetic compatibility (EMC) standards in force in this area.
The ISP-11 should be installed and configured in accordance with European and national standards. Fitters of electrical system of the machine's control system are responsible for adjusting the device and they should comply with EMC directive.
The adjuster ISP-010S must be weighed out as one of the components, this is not a machine or a device ready to use, in accordance with European directives (the Machinery Directive and Electromagnetic Compatibility Directive). It is the responsibility of the end user installing the ISP-11 adjuster to comply with these standards.
The product and the equipment described in this documentation may be changed and modified several times, both from a technical point of view and in the way it is operated.
Their description cannot in any way be regarded as a contract.

As a component that is integrated into the machine in which it is installed, the ISP-11 controller is not a stand-alone device. Its disposal should take place according to the rules laid down by the manufacturer of the entire machine, as an industrial large-scale appliance in the sense of the WEEE Directive.