

Lost Audio GmbH

A77-NEO

**Tape Drive Control
for Revox A77 MK I-IV**

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1 A77-NEO

Your new tape transport control for the Revox A77 takes over all functions previously handled by the original control system and adds several enhancements, such as active braking support, tape tangle protection, a pause function during recording, a dynamic light barrier, and timer-controlled start for PLAY or RECORD.

The new control system is fully semiconductor-based and contains no wear-prone mechanical relays. This eliminates failures due to wear or faulty contacts caused by loose relays.

When you connect your A77 to a Wi-Fi network, you can control it via your preferred device (smartphone, tablet, or PC) through a browser. If you have a home automation system, it can also be integrated using HTTP commands.

Enjoy the new freedom of your A77-NEO.

2 Installation instructions

For the installation, you will need screwdrivers and a long, thin pair of pliers to thread cable ties. If you are a surgeon, this might actually be an advantage. You should also have some experience operating the A77 outside of its housing. ESD protection and knowledge of handling mains voltage are essential. No soldering is required.

2.1 Opening the A77

Disconnect all cables from your A77, including the power supply. On the back, you'll find four easily accessible Phillips-head screws that secure your A77 in the wooden case or carrying frame. Loosen these four screws while the unit is standing in front of you. Once the screws are removed, carefully pull the A77 forward and out of the housing or case. Proceed very gently; a slight rocking motion may help. As soon as the metal chassis becomes visible and accessible, hold the unit by the frame and remove it completely. Once the machine has been taken out of its case, it cannot be operated without specific tools or bypasses. Do not attempt to power it on — it will not function and could be dangerous.

When viewing the unit from the rear, you will see the drive control board with three large relays on the right side just below center. This is the component to be replaced. The following steps explain how.

2.2 Disassembling the front panel

To replace the control unit, continue working from the front of the machine. Lay the A77 on its back with the feet facing toward you. First, take a photo of the current layout for reference during reassembly.

Pull off all 4 or 8 knobs from the front. First the outer parts, then the disc-shaped rear parts. Finally, remove the power switch knob, which may be tight.

Open the long flap on the front. You will find a large screw on each side. Remove them carefully and do not lose any washers. The entire front panel (from flap to bottom) can now be removed with some skill. Watch out for the flap, which can sometimes catch slightly.

Once the front is removed, you can access the five pushbuttons. Remove the two inner screws at the very bottom left. These are located below the keyboard and are fairly close together. After removing these two screws, you can lift all five pushbuttons as one unit.

2.3 Installing the new A77-Neo control unit

You will now see the five actual switches of the drive control that were operated by the five pushbuttons and their levers. These switches still belong to the old control unit. To the left and right of these switches, there is one screw each that you now need to remove. Once these two screws are removed, carefully place the machine back on its feet so you can view it from the back.

The control unit is now loose and can be gently pulled forward. Do this carefully, as cables may come loose if the connectors are not tight. Take photos from all angles to help reassign any disconnected cables. If everything is well documented, you can start transferring the cables from the old control board to the new one, one by one.

Always work cable by cable until all are transferred to the new control board (except the 10 remote control wires—they are too short to be done one by one). Two cables for the remote control, located among the switches, have been slightly repositioned on the new board but can be identified by wire color: 'wht' means white, 'blk' means black. (If swapped, the FF and REW commands on the remote would be reversed, but no harm is done.) Otherwise, all connectors are in the same place on the new board.

PROCEDURE: Start with the two usually green cables FH1 and FH2 far on the left. The new board can hang below the old one while you plug them in. Then transfer DF1 and DF2, followed by DF4, DF3, and CF1. Next, take the three cables in the middle (typically orange, black, and blue) between the relays. Once that's done, unplug all 10 cables at the switches from the old board and plug them into the new one. These belong to the remote control. Take a photo beforehand. The cable colors are printed and usually match. Finally, unplug the six cables near the large resistor and reconnect them to the new board one by one.

If a connector no longer fits snugly, you can carefully pinch the flat plug slightly with pliers (without bending it) to tighten it. Do this very gently. The connectors should then hold firmly again.

During the cable transfer, the two boards may need to be repositioned. Always handle the new board by the edges, not the components. ESD protection of components should always be ensured.

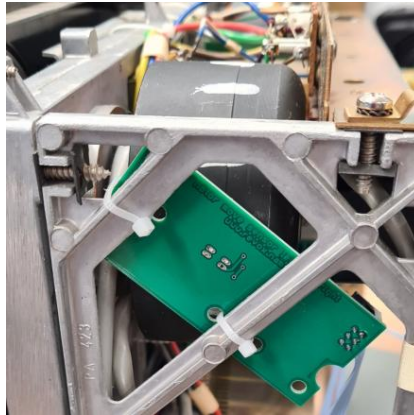
If everything is wired correctly, then no cables should be disconnected. Now check your photos to make sure that every cable is positioned as it was in the photos. First, check the colors and then the "origin" of the cables. This is a good way to ensure that everything is connected correctly. Since Revox did not always use the same cable color in every case, I cannot give general instructions. However, the cable color is noted on the new circuit board based on the documentation available from Revox.

Mount the new control board in the same position as the old one. Use the two new sheet metal screws provided to fasten the board. The screws go into the gray plastic base. The board should sit firmly without wobbling, but do not overtighten the screws.

2.4 Installing the motor sensors

Both motor sensor boards are essentially identical. Depending on the version, you may receive two identical or two slightly different boards (only differing in mounting holes). The one with more holes is for the right motor (when viewed from the front), the one with fewer holes is for the left motor.

The circuit board for the right-hand motor is simply attached to the aluminum housing basket with 2 cable ties. The holes in the circuit board are optimally positioned, please refer to the following picture for the exact installation. On the long strut, the cable tie should be directly above the round thickening to prevent it from slipping.



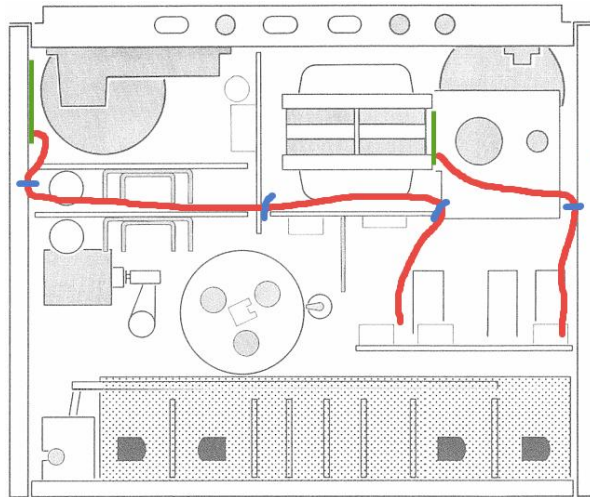
The circuit board for the left motor is fastened with a screw and a cable tie. To do this, unscrew the front screw on the transformer that secures the voltage selection panel. Insert the circuit board and screw the screw first through the circuit board, then through the voltage selection panel and then through the transformer. The circuit board rests on the voltage selection panel, but is at an angle of 1.6 mm due to the shoulder.



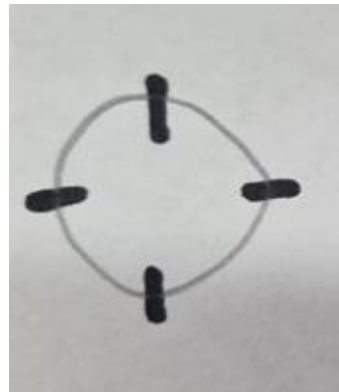
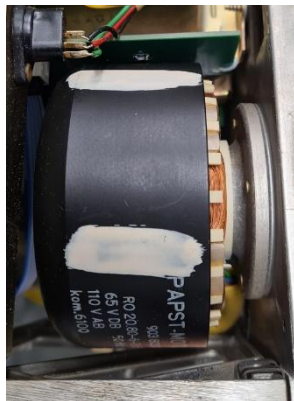
To avoid having to dismantle the device, simply secure the rear part with a cable tie that goes through the circuit board and the other hole on the transformer. There is no screw in this hole. Use long tweezers or long thin pliers for this. Experience as a surgeon is definitely an advantage here. If you leave the front screw very loose, this makes assembly easier as the circuit board can be moved easily. Only tighten the front screw at the end.

Finally, use the two ribbon cables supplied to connect the sensors to the TapeDriveControl board. The left motor (seen from the front) is connected to the SENSE-L connector, the right motor to SENSE-R) The cables cannot be connected the wrong way round, pay attention to the lug on the connector. Secure the cables with cable ties so that they can never touch the moving parts of a motor.

Here is a suggestion on how best to lay the cables. The two sensor boards are green, the cables are red and the best place to attach the ribbon cable is in blue using a cable tie. Make sure that the cable ties do not interfere with the subsequent installation in the housing.



In order for the sensors to detect movement, white markings are now required on the outside of the motor, which can be detected by the light barrier. You can create these using a little paint, Tipp-Ex, or white insulating tape. If you use insulating tape, make sure that it does not come off later; paint is definitely better. The four markings should be applied as evenly as possible. Exact positioning is not important for the sensor, but since the motor is a flywheel, the markings should be as precise as possible. Start with two lines 180° opposite each other. Then add one line between each of these. The lines can be about 1 cm wide and should be bright white so that they are clearly visible to the light barrier. Below is an example using white paint. The lines must be where the light barrier scans or along the entire length..



2.5 Check the motor sensors light barriers

The correct function of the motor sensors can be easily checked in the setup menu for the winding motor photoelectric sensors in chapter 3.4.11

To do this, you must have the device open in front of you and it must be in operation. The device must be connected to the mains via an isolating transformer to protect you from fatal electric shocks. Do not touch any live parts! You must be trained and aware of the dangers in order to do this. For the machine to function, the safety switch must be bridged; you can do this with two unconnected “4 mm banana plugs”.

First, briefly familiarize yourself with the topic of dummy plugs: 3.2

Go to the setup menu for the winding motor photocells 3.4.11, activate it and now turn the left and right belt plates individually. This works best when an empty reel is fitted. As soon as you turn and a white marking passes the light barrier, the brake is briefly released and then tightened again. If the winding motor rotates fast enough, the brake is no longer applied. You can now check each individual marker to see whether it is recognized by the light barrier or not. Each individual mark should be recognized. If not, the marking must be repositioned or the light barrier must be mechanically positioned better. In principle, however, the light barrier is very good-natured.

2.6 Setting the end-of-band light barrier

To set the light barrier, you must have the device open in front of you and it must be in operation. You can then use the setting menu 3.4.9 to set the photocell 3.4.9 without any measuring devices.

To do this, you must have the device open in front of you and it must be in operation. The device must be connected to the mains via an isolating transformer to protect you from fatal electric shocks. Do not touch any live parts! You must be trained and aware of the dangers in order to do this. For the machine to function, the safety switch must be bridged; you can do this with two unconnected “4 mm banana plugs”.

First, briefly familiarize yourself with the topic of dummy plugs: 3.2

Turn the adjustment potentiometer counterclockwise as far as it will go when looking at the machine from behind. Insert a belt and make sure that the pre-tensioning belt is positioned near the light barrier. Make sure that there is no interfering light source that could affect the light barrier (head cover should be in place, no lamps shining into the light barrier). Set the machine to the menu item for light barrier adjustment. Make sure that the belt is tensioned normally and hold the two belt spools with your hands so that the belt always remains tensioned as the brake is released. (Do not tighten so much that the tape is pressed against the sound heads, only as it would be in normal STOP) Now turn this adjustment potentiometer very slowly clockwise until the brake is felt and stops. Now turn a little further, but not much. Now move both tape reels with both hands so that you alternately turn the pre-tension tape and the normal tape into the light barrier, while the tape should always be tensioned. The brake should always brake or release alternately, depending on whether the pre-tensioning tape or the tape is currently in the light barrier. If this changeover works perfectly, the setting is complete. You can now exit the menu again by pressing STOP.

Please note that the setting can vary greatly from appliance to appliance, depending on how brightly the small light bulb shines. The age of the bulb can also have an influence on the light intensity. Likewise, of course, the different pretensioning bands that are available.

2.7 First functional test

Before reassembling everything, switch the machine on and test all drive functions to see if they work as desired.

To do this, you must have the appliance open in front of you and it must be in operation. The appliance must be connected to the mains via an isolating transformer to protect you from fatal electric shocks. Do not touch any live parts! You must be trained and aware of the dangers in order to do this. For the machine to function, the safety switch must be bridged; you can do this with two unconnected “4 mm banana plugs”.

First, familiarize yourself briefly with the subject of dummy plugs: 3.2

2.8 Installation of shielding plate

Under certain circumstances, the WLAN module may cause interference. However, this can be easily avoided by slightly enlarging the shielding plate on the audio circuit boards. To do this, install the enclosed plate as follows:

Carefully place the A77 on its front so that you are looking at the machine from below. Loosen the shielding plate below the audio boards using the two screws and remove it.

Remove the first two audio plug-in boards from the right side when viewed from the rear, but first make a note of which one was in which slot.

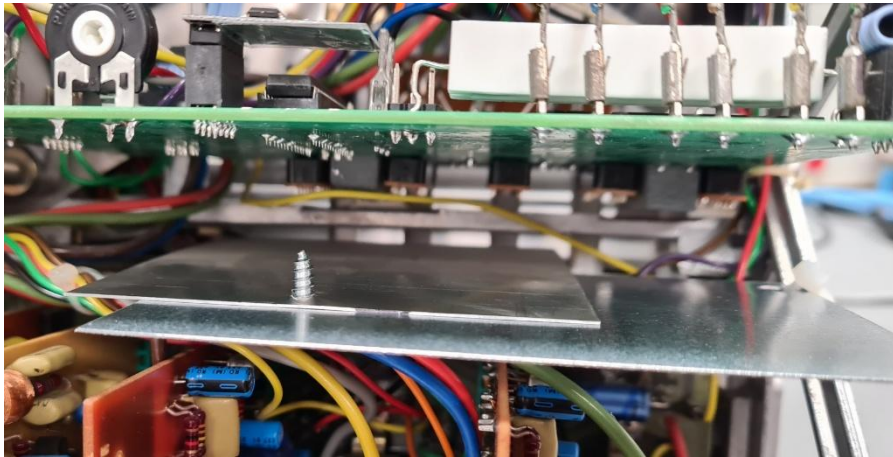
Take a felt-tip pen. Now insert the shielding plate from behind underneath the original shielding plate so that it fits exactly into the “angle” of the frame on the right-hand side of the frame construction and also fits

exactly into the angle of the slanted strut at the hole in the plate. Once the plate is in the optimal position, you can use the felt-tip pen to mark the hole on the left side of the original shielding plate.

Now remove the new sheet metal again. Cover the potentiometers and open connectors well with paper-towel and then carefully drill the hole in the original shielding plate with a 2 mm drill bit. It is best to place a small piece of wood behind the shielding plate to secure it and then drill into the wood.

Once the hole has been drilled, remove the cloths so that no chips fall into the machine. Reinsert the plate as you marked it. Secure it with the screw. Reinsert the two audio plug-in boards and secure the lower base plate again with the two screws. All audio boards should have a little bit of play to the left and right; only then can the lower base plate be inserted correctly.

Put the machine back in place and secure the metal sheet on the right with a cable tie through the hole in the corner of the sheet and around the slanted strut in the housing.



2.9 Assembling

Now lay the machine back down in front of you, just as it was when you removed the keys. Now replace the keyboard, the levers should be positioned on the switches and the 2 screws must now secure the keyboard again.

Now place the front back on the machine, but do not press it down firmly yet. With the long flap folded down, you can use your fingers to align the individual keys of the keyboard with the holes in the front, and as soon as the keys fit into the front, the long levers of the keys should be aligned with the switches again so that they also work. Press the front closer and closer and also pay attention to the two VU meters so that they fit correctly into the front, as well as the two buttons to the left and right of the VU meters. If everything fits perfectly, the front can definitely be pressed on. It should “click into place”.

Now reinsert the two screws on the far left and right under the flap and tighten them.

Now check again whether the 5 buttons are working correctly and have approximately the same stroke; they should all feel the same when pressed. If something is wrong, loosen the two screws on the front again, lift the front slightly and align the buttons or long levers again and close everything again and tighten the screws.

2.10 Closing the housing of A77

The machine must now be reinstalled in its housing. Remove any bridges from the safety switch first! Now carefully push the machine back into its housing while both are in front of you. Once the machine is fully inserted, fasten the 4 screws from the rear. The installation is now complete and must be tested.

You can reconnect the dummy plug, but you do not have to.

2.11 Test the new Control

The machine has now been fully converted, reconnect it to the power supply.

When you switch the machine on and you hear 2 plus 1 clicks, the machine has detected a change in the dummy plug or cable remote control. You must confirm this with the REW “<<” button and then the machine is ready for use. Now insert and thread a tape and test all the functions of your machine. Make a recording and play it back. Rewind forwards and backwards. Press PLAY or RECORD during the rewinding process and see how the machine works.

2.12 The dummy plug

You can leave the dummy plug on the A77 if you wish, but you can also leave it off. The machine recognizes this automatically and only needs to briefly confirm like described here: 3.2

2.13 The wired remote control

The PLAY and RECORD buttons on your wired remote control must be deactivated in order for the control to work properly. If this is not done, the remote control will work, but the light barrier will not. This modification is completely reversible.

To do this, open your cable remote control with a small screwdriver of about size 2. You must carefully remove the 4 tabs that are clearly visible in the plastic, then the plastic housing can be lifted off.



To the right of the RECORD button, as soon as you press the PLAY button, you will see a metal slider slide out and fall back into place. This is the latching spring. If you then press STOP, FF or REW, this slider is actuated again and releases the latched button.



A small wire approx. 1 mm thick is inserted into this small gap that is created as soon as the REW button is pressed, bent and secured with a cable tie on the right.



This now holds the slider in the right-hand position, but does not affect the function of the PLAY and RECORD buttons. All buttons are now only functional as buttons and no longer engage.

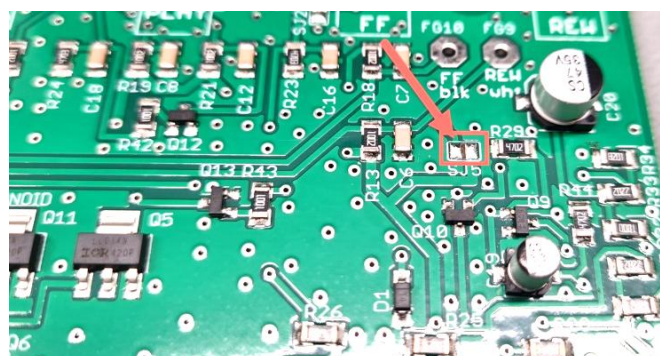
Close the remote control again. Using the same screwdriver as when you opened it, push the 4 tabs back into the plastic cover.

You will find cable ties and a short wire or a paper clip in the enclosures to do this.

2.14 Connect of a B202

If you want to operate a B202 infrared receiver on your A77, you will need to close a small solder bridge on the circuit board. This is easily done with a soldering iron and a little tin.

This solder bridge «SJ5» can be found on the top right near the switches. They can also be easily soldered from the side when installed, if the circuit board has already been installed.



3 Operating instructions

Basically, everything on your A77 can be operated exactly as before. You do not need to learn anything new for normal operation. If you want to use the new functions, here are some useful tips and the necessary “new” steps to use these functions.

3.1 Drive functions

Basically, you operate your A77 in exactly the same way as before. Every button has the same effect as before. However, there are a few new functions that we hope you will enjoy.

You can now press PLAY or RECORD at any time during rewinding (FF, REW). The machine stops the rewinding process and switches to the desired PLAY or RECORD mode as soon as the bobbins are stopped. As before, you can press STOP first and then PLAY or RECORD. You can also press PLAY or RECORD during the braking process. This is new and used to lead to tape tangle with your A77. This is no longer a problem.

There is no pause button on the A77. This is also not necessary with PLAY, because PAUSE means exactly the same as STOP in PLAY 100%. Therefore, there is no pause function in PLAY mode. With RECORD, however, this may be desired. If your machine is in RECORD mode, you can switch to pause mode by pressing the PLAY button or return to RECORD mode by pressing PLAY again. A direct start from STOP to RECORD-PAUSE is not possible due to the lack of a PAUSE button.

Make sure that you always press and hold the RECORD button first, then briefly press the PLAY button and only then release the RECORD button again, both directly on the device and on the cable remote control, if you want to make recordings.

3.2 Dummy plug

The dummy plug required with the original control unit or a connected cable remote control is no longer necessary with this control unit. But the dummy plug does not interfere either. This means that the control unit automatically recognizes whether the dummy plug/remote control has been plugged in or unplugged. As soon as a change has been made, the machine immediately switches to a special setting mode, which is signaled like the normal setting mode with clicking noises [● ●●]. You must now confirm this change by pressing the REW “<<” button. The machine is immediately ready for use again. Purely automatic detection without confirmation is not possible.

3.3 Wired remote control

Your wired remote control works in exactly the same way with the new control unit as the buttons directly on the appliance. Only the latching function must be deactivated. This is a completely reversible small operation and is described in the chapter 2.13

3.4 Settings menu

Various settings can be made on your A77-NEO without having to open the device. All these settings are made using the 5 operating buttons (REW, FF, STOP, PAUSE, REC). The A77 gives you a certain amount of feedback so that you don't have to do everything blindly and without feedback. As there is no display on the A77, the feedback is limited to clicking noises. The magnet that releases the brake can be used to produce clicking noises that serve as feedback.

You can access the settings menu by pressing the STOP button for about 3 seconds while the machine is in STOP. As soon as you hear a clicking sound, release the button again.

Entry into the settings menu is signaled with 3 clicks. There is a single and a double click sound [● ●●]. This indicates that you are now in the settings menu. After about one and a half seconds, the orientation click

occurs. This is a single click [●], which indicates that you are now at menu position 1. The number of these orientation clicks always indicates the menu position.

From now on, you can move through the menu positions by pressing the REW or FF button to move to the next position [●●]. Each menu position has a number, and this number is signaled with the number of clicks. If you are at position 1 and press REW, you will move to the last position, and if you are at the last position and press FF, you will move to the first position. If you are then at the desired menu position where you want to make a setting, you can do this with the PLAY button. The meaning of the clicking noises at each menu position is explained individually in the following chapters. If you want to exit the settings menu, you can do so at any time by pressing the STOP button.

Exiting the settings menu is confirmed with the clicking sound [● ●●], as when entering. Only now, when leaving the menu, are the settings made permanently saved in the non-volatile memory and will be available again the next time the machine is started. (Except for the Wi-Fi channel and the Wi-Fi setting, which are saved immediately)

If you switch off the machine while you are in the settings, the settings that have not yet been saved will be lost. However, it is otherwise no problem to exit the menu by switching off the machine.

3.4.1 Tape Tension at start of PLAY/REC

Basically, all tape machines have the challenge when starting PLAY or RECORD that the right-hand reel has to be accelerated first and therefore requires more force than afterwards, once it is winding up the tape transported by the pressure roller. However, as the tape comes from the pressure roller as soon as it makes the power connection, a large loop must be prevented from forming. This has already been solved electronically and normally works for all belts, sizes and weights. The strap size selector switch (power switch) already provides a basic setting here. However, if for any reason this initial acceleration (tape tension) is not set optimally for you, it can be readjusted here.

The default setting is level 6, which you can set from level 2 to 20.

The values can be increased with PLAY and decreased with RECORD (first hold down RECORD, then tap PLAY). The number of clicks indicates the current value.

The value is only saved when the main menu is exited correctly with STOP.

3.4.2 Switch between digital or dynamic light barrier

Here you can switch between the digital light barrier or the dynamic light barrier. The digital photocell is as usual from the original A77 control unit. The value can be 0 or 1 and therefore means that the light barrier is open or closed. Different pretension bands can lead to difficult adjustment of the light barrier or to false detections. The dynamic light barrier forms an analog value of the light and can therefore detect an increase in the luminous flux. This enables it to detect light fluctuations, regardless of the range in which they occur. This is particularly advantageous if the bias strips have very different densities. This light barrier also constantly levels itself in order to detect whether the luminous flux is increasing. An automatic belt switch-off is only triggered if the luminous flux increases.

Pressing the PLAY button selects between digital or dynamic and a clicking sound indicates which is currently set.

- 1 click sound = digital light barrier
- 2 click sounds = dynamic light barrier

The value is only saved when the main menu is exited correctly with STOP.

3.4.3 Switch on and off the electrical brake

The machine always has a mechanical brake, which brakes both belt plates after rewinding (FF, REW). In this menu, you can add the electronic brake to the mechanical brake. If the electronic brake is active, the left-hand winding motor is braked during FF prewinding and the right-hand winding motor is braked during REW rewinding. This shortens the braking time and reduces the load on the mechanical brake. Pure electronic braking without the mechanical brake is not intended. Only mechanical braking brings the belt to a complete standstill.

You can now use the PLAY button to activate or deactivate this electronic brake.

- 1 click sound = electronic brake NOT active
- 2 click sounds = electronic brake active

The value is only saved when the main menu is exited correctly with STOP.

3.4.4 Autostart PLAY or REC at switch on (timerstart)

With this setting, you can determine what the machine does when you switch it on. This is particularly useful if you control the machine with an external timer. The machine can go into STOP mode as normal, but also PLAY or RECORD. Use the PLAY button to switch between these 3 modes.

- 1 Click sound = STOP
- 2 Click sound = PLAY
- 3 Click sound = RECORD

The value is only saved when the main menu is exited correctly with STOP.

3.4.5 Sensitivity of digital light barrier

The digital light only recognizes 0 or 1, i.e. light or no light. Sometimes it can happen that the tape transport is switched off even though the tape does not reach the end or the leader or trailer tape. This can be caused by subtle errors or defects in the tape. In this menu, you can make the light barrier slightly slower if you have tapes that cause the light barrier to trigger incorrectly.

The default value is 2, which you can set between 1 and 10. The clicking noises inform you of the newly set value. The values can be increased with PLAY and decreased with RECORD (first hold down RECORD, then tap PLAY).

The value is only saved when you exit the main menu correctly with STOP.

Tip: Errors on tapes that cause the light barrier to be triggered can be corrected with a waterproof felt-tip pen on the back (the side that does not touch the sound head).

3.4.6 Setting threshold voltage for digital light barrier

The digital light barrier recognizes 2 states, which are detected by the light barrier. Depending on the digital component, logic 1 is recognized at 1.8V or 2.0V. Depending on the light bulb or the 220/240 voltage selector, this may be unsuitable for this light barrier. For this reason, the digital threshold voltage for detecting logic 1 can be changed. The default voltage is approximately 2.9V. This corresponds to a 12 (12 clicks). The values can be increased with PLAY and decreased with RECORD (first hold down RECORD, then tap PLAY). Values between 4 and 16 can be set. 4 corresponds to about 1V and 16 corresponds to about 3.9V. You can measure the current voltage of the light barrier at test point TP3 between the legs of the potentiometer.

In this way, you can adapt the light barrier to your light bulb, your machine and also to the leader tape. You can change the value at any time if you have different tensioning straps that cause problems with detection. You can easily adjust this without opening the machine. However, only do this if you know what you are doing. If you have problems, set the value back to 12 and adjust the light barrier according to the instructions.

3.4.7 Wi-Fi channel

The integrated Wi-Fi adapter is on a specific channel for the initial configuration and sets up its own Wi-Fi there so that you can connect to it to make further configurations or generally take control of the machine. If this channel is now transmitting on a channel that is also in operation on your premises, the two devices will interfere with each other. It is then usually very difficult or impossible to connect to the Wi-Fi of the A77 and take over control. You will then have to change the channel. As you do not “yet” have access to the Settings menu because the Wi-Fi is not yet working, you can change the channel directly on the A77.

So press the PLAY button. The clicking noises start immediately with a pause in between. Count the clicks to select the channel number. For example, if you want to change to channel 5, wait for 5 clicks and then immediately press the PLAY button again. The clicking stops and the Wi-Fi is immediately switched to channel 5.

You can set channels 1 to 13 in this way.

This setting is immediately saved in the Wi-Fi module.

3.4.8 Wi-Fi settings

Here you can change the mode on the Wi-Fi module or generally switch it on or off. If it is no longer accessible or you have forgotten the password for the Wi-Fi module, you can set the module to open access point mode here, then log in with a cell phone and redefine everything.

As soon as you press PLAY, you will hear clicking noises. Count these. As soon as the desired point is reached, press PLAY immediately and the module is immediately set to this desired mode.

- 1 Clicking sound = Connect Wi-Fi (to the saved network)
- 2 Clicking sounds = Set Wi-Fi to open access point mode
- 3 Clicking sounds = Set Wi-Fi to password-protected access point mode
- 4 Clicking sounds = Switch off Wi-Fi module

This setting is saved immediately in the Wi-Fi module.

3.4.9 Help for setting the light barrier (potentiometer)

This menu item provides help with which you can adjust the light barrier without any measuring devices. Start this help function by pressing the PLAY button. As soon as the pre-tensioning strap is recognized as such, the brake is applied. If a normal belt is detected, the brake is released.

Make the setting as described in the chapter 2.6

3.4.10 Test the ball bearings and brake

If you start this function with PLAY, the machine will start a program with which you can roughly estimate how good the condition of your winding motor bearings and mechanical brakes is. I can't give you any target figures, but you will certainly quickly recognize whether a bearing or the brake is still good or not.

The brake is released and the motors are accelerated to their maximum speed for about 7 seconds. The motors are then switched off and the brake is applied. The motors should now be stopped as quickly as possible, as the mechanical brake slows down.

As soon as the motors stop, the motors are accelerated to their maximum speed for another 7 seconds. The pressure roller then clicks and the motors are switched off, but this time the brake is not applied. The motors should run out comfortably until they come to a standstill. Good bearings rotate longer than bad bearings. The motor is only slowed down by the friction of the bearings and of course a little by the air resistance.

As the two motors are operated with slightly different voltages, they do not rotate at exactly the same speed and are therefore not quite identical when coasting.

At the end, the brake is applied again and the program is finished, but can always be restarted with PLAY.

3.4.11 Test of the two winding motors light barriers

In this menu, which you start with PLAY, the brake is always applied. As soon as you move the winding motors slightly by hand and one of the white markings passes the light barrier, the brake is briefly released and then applied again. This means that the white marker has been detected by the light barrier. You can do this with both motors and all markings to check whether the marking is good.

Attention: As soon as the white marker passes the light barrier, it is recognized and the brake is released. If the white marker remains in the light barrier, the brake is still applied again, as only the change from black to white triggers the impulse, but not the permanent white part in the light barrier.

3.4.12 Querying the software version

You can query the software version in this menu. Initially, there is only one version. But over time, further functions can be added or errors corrected. If you press the PLAY button here, the version is displayed with clicking noises. The version always consists of 3 numbers. For example, "1.0.0". The first digit (here 1) is the major number, the second digit (here 0) is the middle number and the third digit (here also 0) is the lower number. As a 0 cannot be output, 1 is always added for each number. This results in the following click sounds for the examples as shown here:

- 1.0.0 = [●●] [●] [●]
- 1.0.3 = [●●] [●] [●●●]
- 2.0.1 = [●●●] [●] [●●]

There is always a one-second pause between the 3 numbers

In this position, and only in this position, the control unit can be reset to the factory setting using RECORD (first hold down RECORD, then tap PLAY). All values are set to the default value and saved immediately.

3.5 Connecting the device to Wi-Fi

3.5.1 Note

If you are not very familiar with Wi-Fi, please read the appendix first: 4 Wi-Fi Connect

3.5.2 Connect

Without any action on your part, the WiFi module is in normal mode and attempts to connect to a network. If this is not successful, it automatically switches to access point mode. This happens automatically the first time because no network has been programmed yet.

Switch on the A77 and wait 30 seconds. Now connect your device of choice (cell phone, tablet, laptop or PC) to the Wifi with the name "ReVox-ReelToReel". Cell phones work better if you switch off the "mobile data" beforehand. When the device is connected, wait 1 minute, because during this time the devices first check whether there is Internet access and search. This usually calms down after 1 minute. Check whether the cell phone is still in this Wi-Fi (cell phones sometimes leave Wi-Fi when there is no Internet). If everything is fine, enter "http://192.168.1.1" in the browser and wait until the page is displayed correctly. Sometimes you have to refresh the page 4-5 times before the page is displayed. The page should look like the picture below. In Accesspoint mode, NO picture of the A77 is displayed on the start page. If it is not possible to establish the connection, it is possible that another device is already transmitting on the same channel as this Wi-Fi module. In this case, change the channel of this Wi-Fi module as described here in the chapter 3.4.7

This module also supports mDNS. This means that you can also give the module a name, which can then be used to access the module in the browser. This name remains the same even if the IP address changes (DHCP). If your module is called "reel2reel", for example, you access the module in the browser with http://reel2reel.local. The ".local" must be appended to the name.

ATTENTION: Android phones only support mDNS from Android version 10 or 11 (~ Nov 2021).

The start page should then look something like this:



ATTENTION: For safety reasons, the RECORD button only appears after a brief tap on the title "ReVox A77".

3.5.3 Change Wifi network

If you want to change the Wifi, you can simply click on Settings below and reconfigure it. If, for whatever reason, you can no longer access the device via the connected Wi-Fi, switch the device to open access point mode in the A77 settings menu and connect the device of your choice directly to the A77 and reconfigure the Wi-Fi.

3.5.4 No connection possible

Whenever the device is supposed to connect to a configured Wi-Fi network and fails to do so, it automatically switches to access point mode. In access point mode, you can connect your mobile device directly to the A77 and configure it again. If your Wi-Fi was simply switched off when you switched on the A77, simply switch the A77 off again and then on again after a few seconds.

3.5.5 Wi-Fi, IP and NTP configuration

Click on "Settings" at the bottom of the main menu in the browser.

You can now set all IP settings here. The module can function in DHCP or with a static IP. Please note that with DHCP you must look up the IP address on your router if you want to know it.

If you accidentally forget the IP, set the device to access point mode and connect to the Wi-Fi "ReVox-ReelToReel" offered and reconfigure it.

The settings shown are a suggestion, but it depends on your network at home what exactly you need to set.

ReVox A77 Settings:

WiFi:

SSID:

Password:

IP:

Type:

IP:

Subnet:

Default Gateway:

DNS Server:

mDNS Name: .local

MAC Address: E8:DB:84:DF:6B:90

A77:

Autostart:

Machine type:

If everything is correct and your A77 and the controlling device are in the same network, you can then access your device with the browser. Simply enter "<http://<your-IP>>" or the mDNS address "<http://reeltoreel.local>".

If the control page is accessed via your Wi-Fi, a picture of the A77 will be displayed under the title.

In access point mode and thus in direct access, no picture of the A77 is displayed in the web interface.



ATTENTION: For safety reasons, the RECORD button only appears after a brief tap on the title “ReVox A77”.

3.5.6 Wifi as accesspoint open (without password)

You can also activate the access point mode here by selecting and saving the network “ReVox-ReelToReel no password”. The module restarts and opens its own network, to which you can connect without a password. The password can, but does not have to be deleted because it has no influence.

WiFi:

SSID:

Password:

3.5.7 Wifi as accesspoint encrypted (with password)

If you want to operate the Wifi in this way for longer, you should activate it with a password. To do this, simply enter the password in the password line and select "ReVox-ReelToReel with password". After saving, the module restarts and opens its own network, which you can only connect to with a password.

If you have forgotten the password, you can use the keyboard in the Settings menu on the A77 to reactivate the WiFi network without a password at any time and then configure it again.

WiFi:

SSID:

Password:

3.5.8 Integration into other control systems

You can easily control your A77 remotely from another system. The Wi-Fi module can be remote-controlled with simple http GET commands. All 5 drive functions can be triggered in this way.

`http://192.168.1.120/PLAY`

`http://192.168.1.120/STOP`

`http://192.168.1.120/RECORD`

`http://192.168.1.120/FF`

`http://192.168.1.120/REW`

To query the status of the drive, use the following URL:

`http://192.168.1.120/STATUS`

LFWSTOP

LFWPLAY

LFWFF

LFWREW

etc.

4 Appendix: Wi-Fi Connect

Connecting to a Wi-Fi is not always as easy as you might think. Don't be discouraged if it doesn't work at the first attempt, this is completely normal.

I will try to explain a few details here and help you step by step to success.

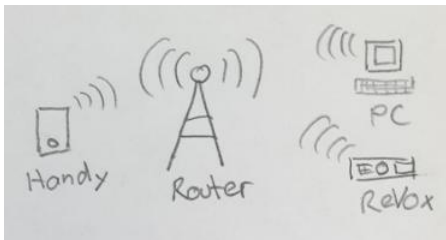
This Wi-Fi module is intentionally based only on long-life technologies and does not use any services that allow the module to "phone home". The module therefore has NO connection to any server from me or other providers. The module has no backdoors or hidden accesses. For these reasons, it is not always completely trivial, but it is based on standard network technology.

An installable app would be helpful here, but is very maintenance-intensive. This means that every few months when Apple or Google Android and other providers update their systems, the apps also have to be updated. This is very maintenance-intensive and therefore cost-intensive. Many apps are neglected or discontinued after a few years. This should not happen here, which is why we have deliberately avoided this and only used long-lasting standard network technology.

4.1 How Wi-Fi works

A Wi-Fi network always needs a boss. This is the router that sets up the Wi-Fi network. It is responsible for determining who is allowed to communicate with whom, who is admitted to the network (password) and who is not allowed to listen in (encryption). This router assigns an address to each device that wants to connect (DHCP IP mode) or accepts devices that want to define their own address (static IP).

A Wi-Fi can therefore be set up by a router and the Wi-Fi module can connect to this network. This is how it should be in the end, but first you have to configure the Wi-Fi module. And this can only be done as described in the next section.



The ReVox Wi-Fi module can also act as the "boss" and set up a Wi-Fi network itself and thus allow or block other participants. This mode, when the ReVox module itself sets up a Wi-Fi, is only used once at the beginning so that you can connect to the module with your PC or cell phone. Then you configure the module with the cell phone or PC and tell it which network it should connect to. You must therefore tell it the network name and password. You also have to tell the module whether it should obtain the address from the router or whether it should specify its own IP address. Once this has been set, the module restarts itself and connects to the network that already exists in your home.



4.2 Step by step to configuration

First make sure you know the name of your existing Wi-Fi and what the password is. Keep these two pieces

of data to hand. Make sure that SSID broadcasting is switched on at your router, otherwise the Wi-Fi network will not be visible.

It is best if you assign a static IP address to the ReVox module, because if you use dynamic IP address assignment (DHCP), the address potentially changes every day. However, you have to access it via the address in the browser line, and this would be cumbersome if you had to find out this address every day. If you use mDNS, however, this is not a problem. If you know or have defined an IP address, the subnet address, the default gateway and the address of the DNS server, skip the next block and the example.

This controller also supports mDNS. This means that you can also give the module a name, which can then be used to access the module in the browser. This name remains the same even if the IP address changes. For example, if your module is called "reel2reel", you can access the module in the browser with `http://reel2reel.local`. The ".local" must be appended to the name.

ATTENTION: Android phones only support mDNS from Android version 10 or 11 (~ Nov 2021).

Define the IP address, subnet address, default gateway and DNS server

Your ReVox module first needs an address, but this must fit into your existing network. To do this, take your cell phone, connect it to your existing Wi-Fi and then go to the Wi-Fi settings and then to the configuration of the currently active network. Now look for your IP address, which will probably be 192.168.1.??? or 192.168.0.?????. If you are using a Fritz!Box, it is usually 192.168.178.?????. If this is the case, now select the IP address for your device. It is best to choose an address between 230 and 240, as there are usually no addresses reserved for DHCP. Your address would then be 192.168.1.235 or 192.168.0.235 or 192.168.178.235, for example. You must adhere to the existing scheme of your Wi-Fi. The subnet address is usually 255.255.255.0 and the default gateway is usually the same as your IP address with only a 1 at the end, i.e. 192.168.1.1 or 192.168.0.1 or 192.168.178.1. This does not always have to be the case, if you can check this, please do so, otherwise simply take the 1 at the end. Make a note of these 3 addresses. The DNS server is normally the same as the default gateway for these routers.

It depends a little on the usual settings in your environment. In Switzerland, a 192.168.1.??? network is usually used, in Germany with Fritz!Boxes usually a 192.168.178.??? network

example (Switzerland):

IP address 192.168.1.235
Subnet address: 255.255.255.0
Default gateway: 192.168.1.1
DNS server: 192.168.1.1

Example (Germany):

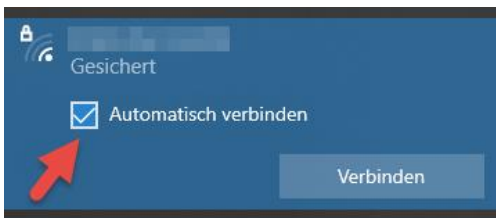
IP address 192.168.178.235
Subnet address: 255.255.255.0
Default gateway: 192.168.178.1
DNS server: 192.168.178.1

ATTENTION: A static IP address must never be in the DHCP address range. A router always has a range that is reserved for DHCP. This can be seen in the router configuration.

Configure and connect

If you now want to connect the ReVox module to your network, it must first set up a Wi-Fi itself so that you can connect to it with your cell phone or PC. The module does this automatically when it is switched on because it cannot connect to an existing network. So switch on the ReVox device. (If this is not the case, refer to the instructions on how to set the module to access point mode without a password)

The network should be opened after about 30 seconds. The network has a name, which you can see in the specific description of the module. This can be "ReVox-ReelToReel" or something else. The ReVox module is now the boss of this Wi-Fi. Now connect your cell phone to this network. The cell phone will connect without a password and after a short time will notice that there is no Internet in this Wi-Fi. If you are asked by the cell phone, make sure that you remain in this Wi-Fi. After about 30 seconds, open the browser and enter exactly the following in the address bar (you are now in the Wi-Fi of the ReVox device and must enter exactly this address) and then press ENTER: "http://192.168.1.1" or "http://reel2reel.local" for mDNS. If you do everything from the PC, also make sure that the PC remains in this Wi-Fi and does not leave it again immediately. Otherwise, reconnect until the connection is maintained. In an emergency, if the PC keeps leaving the Wi-Fi, deactivate the automatic connection to your usual network and then reactivate it at the end. (See red arrow)



Sometimes you have to refresh the website several times with the round arrow in the browser or on the PC with F5. The start page of the module is displayed, NO picture of the device is visible on this page.

If you cannot connect the cell phone to the Wi-Fi or it simply does not work afterwards, it is possible that the Wi-Fi module is now transmitting on exactly the same frequency/channel as your Wi-Fi at home. The two devices will then interfere with each other and communication will be difficult or impossible. In this case, change the channel of the Wi-Fi module, which means that the frequency is changed. You have to do this differently depending on the device, please refer to the instructions for the respective module.

Once you are connected to the module and the start page is visible, click on "Settings" at the bottom.

Another page opens and you should now fill in the details written at the beginning. First select your home network at the top under SSID. If this is not visible, refresh the page again with the round arrow or on the PC with F5. Then enter the password for your Wi-Fi.

You must now enter the address data for the Wi-Fi. First, the module should be set to "Static". This means that the IP address you have entered should be used. Then enter the IP address, the subnet address, the default gateway and the DNS server address.

If you prefer to use DHCP, i.e. a dynamic IP defined by your router at home, select DHCP. In this case, it is important that you remember the mDNS name with which you can access it later.

WiFi:

SSID:

Password:

IP:

Type:

IP:

Subnet:

Default Gateway:

DNS Server:

mDNS Name: .local

MAC Address: E8:DB:84:DF:6B:90

Configuration with mDNS

WiFi:

SSID:

Password:

IP:

Type:

IP:

Subnet:

Default Gateway:

DNS Server:

mDNS Name: .local

MAC Address: E8:DB:84:DF:6B:90

Configuration using static IP

Once everything has been entered and no field is red, press Save.

The module will now restart. After about 1 second, a blue LED on the Wi-Fi module lights up. As soon as it has successfully connected to your Wi-Fi at home, this blue LED goes out again and only flashes briefly when there is activity. If the LED does not go out, the connection to your Wi-Fi at home was not successful. Please reconnect your cell phone or PC to the ReVox Wi-Fi module and correct any errors in the password.

This small blue LED is usually visible through the housing slots.

Hopefully the module is now connected to your Wi-Fi at home, the blue LED has gone out and the module no longer requires its own frequency (channel).

Now reconnect your cell phone or PC to your usual Wi-Fi at home. Now open the browser and enter the address of the ReVox Wi-Fi module. You have made a note of the address, e.g. "http://192.168.1.235" or "http://192.168.178.235" for Fritz!Boxes and press ENTER. Alternatively, open the address "http://reel2reel.local". Sometimes it takes a while for the page to open.

The start page of the module opens slowly, it takes about 10 seconds and the image of the machine is now also visible. Now control your ReVox machine in the browser. Remember that the RECORD button is hidden and only appears when you click on the title.

Set a bookmark in your browser so that you don't always have to type in the address. This way you can always simply open the control unit later using the bookmark.