

TUNING TABLE

AKKO
modular **tune**

Instruction Manual

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AKKOfune modular Version 1.0

Tuning Table for Squeeze Boxes



Operation Manual

The spirit and purpose of the system

Many accordion or squeezebox workshops replace reed plates or want to change the sound character of an instrument. You always need a tuning table for this purpose and of course to check the tuning of the instrument and eventually correct some reeds.

With all options the AKKOfune modular tuning table offers possibilities for testing and tuning complete treble or bass „halves“ of an accordion; also complete reed blocks taken out of the instrument and single reed plates.

Using a tuning device (as e.g. the Accordion-Tuner from Dirk's Projects) you may easily tune the instrument. This description of works is limited to the accordion – other squeeze boxes may be handled accordingly.

Advantages: simple usage and reproducibility of measurements.

The AKKOfune modular system enables you to build your own tuning work space or to upgrade your existing tuning table with state-of-the-art equipment. You can replace bellows with the BlowBox and control it electronically with easy play wind pressure adjustment as well as start and reverse the wind by pushing a button. Together with the optional AKKOfune Desk or Desk+ you have a complete system with swappable different blow holes and built-in microphones and USB output (Desk+).




The needed air stream is generated by a special radial blower and may be switched instantly from PUSH to PULL and vice versa and STOP. The blower speed is electronically controlled and the pre-set air pressure can be checked on *Control's* colour display as well as the wind status.

The pressure ranges from approx. 0.2 mbar to nearly 10 mbar.

10 mbar = 1000 Pascal are equivalent to the max normal playing pressure for an accordion.

Because of the air pressure's influence on the tone pitch it is very important to keep the pressure at a constant level.

When the system is switched ON, first actions happening is checking the blower function and taring the pressure sensor.

After that the system is waiting for you to set the desired pressure and select a wind direction: either upwards  with the yellow button or downwards  with the blue button. To stop the wind  you push the red button. The wind stops immediately.

If the wind is blowing, you may increase or decrease the pressure with the rotary knob. If you want to go back to 0 mbar, push and hold the rotary knob for more than 3 seconds.

MENU

A momentary push on the rotary knob opens a little menu. You can select the operating mode (normal start or remote start) or taring the pressure sensor or exiting the menu.

System Overview

1. AKKOtune *CONTROL V1.0*

The system control unit

- 12V DC LED for indication of the external power supply activity
- Switch SYSTEM ON
- Rotary knob and pushbutton
- Colour Display
- Pushbuttons: Yellow for start wind upwards
Blue for start wind downwards
Red for STOP
- At the bottom you find:
 - 12V DC input connector (external PSU supplied)
 - Connector for BlowBox cable
 - Connector for flexible silicone pressure pipe
 - Connector for remote start (in combination with AKKOblock)
 - Connector for foot switch
 - 2x 3 pluggable terminals for external switches (single NO pushbuttons or external pushbutton panel or flat desktop rocker switch)
- At the side is a slot for an SD card with your language version.
An appropriate SD card needs to be inserted for operation.



2. AKKOtune *BlowBox*

The play wind generator

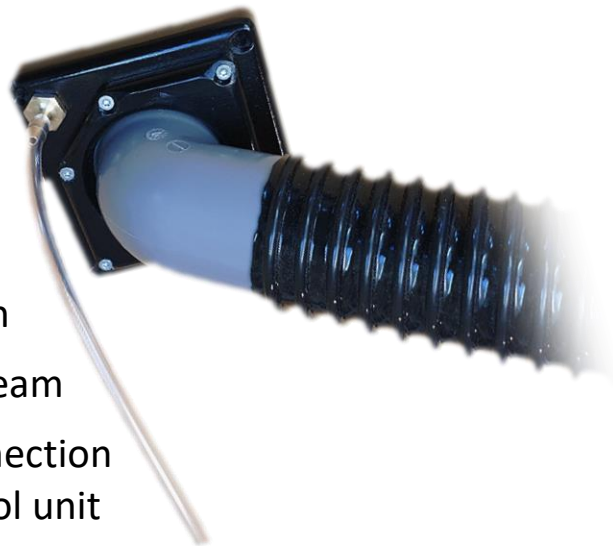
- Blower housing with integrated servo-driven valves
- Indicator-LEDs for blower and electronic power supply
- 50mm flange for air hose can be turned to required direction.
- Connector for control cable
- Noise reduction enclosure for muffling sound generated in the blower housing.
- 4 rubber feet for safe and silent stand
- Handgrip for easy transport



Under-table air hose flange

The wind connection to the work bench and blow hole

- 50mm flange for air hose can be turned to required direction
- Pressure probe in middle of air stream
- 4mm flexible silicone pipe for connection of the pressure probe to the control unit
- Flange plate for mounting below existing work bench or under the optional AKKOtune Desk plate.



4. 50mm air hose (optional supply)

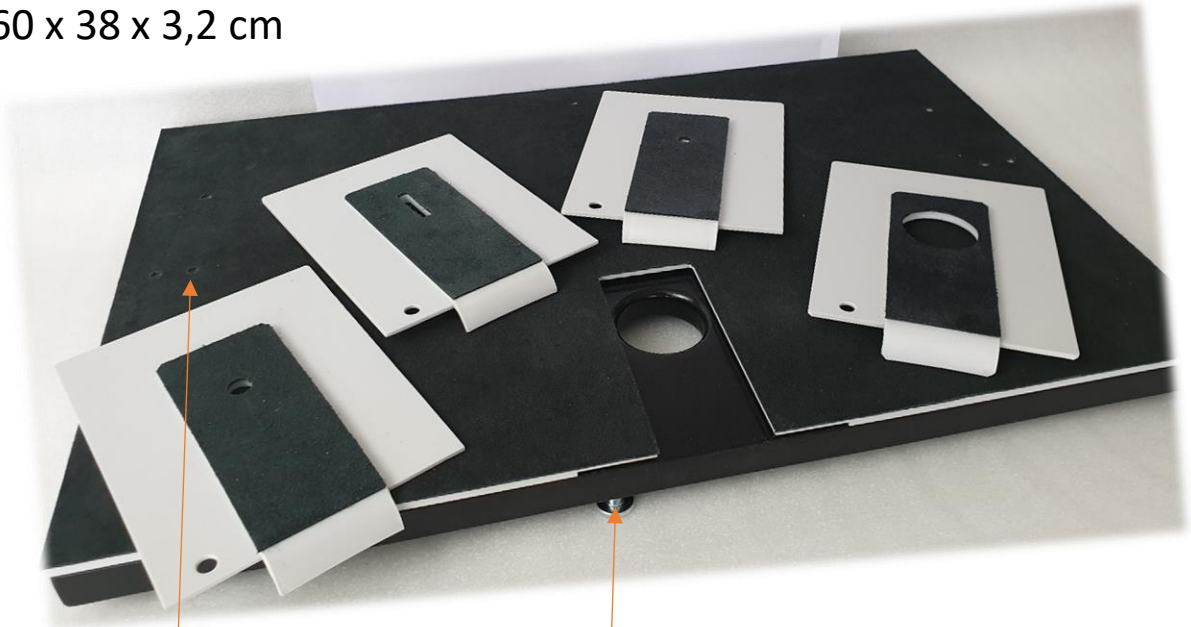
The flange pipes have 50 mm outer diameter. You can use any hose that is applicable for pressure and suction, and has an inner diameter of 50 mm. If it fits tight you will not need a hose clip.

Pos. 1-3 represent the offered complete system. The air hose may be sourced by the customer on site or can be ordered as an option.

ACCESSORIES

❖ AKKOfune Desk

Workplate with swappable blow hole inserts and leather cover, 60 x 38 x 3,2 cm



- 7 threaded sleeves M6 for fixation (2x fixation screws included)
- 4 blow hole inserts: 1x 8mm, 1x 14mm, 1x 45mm, 1x slot 8x35mm
- Locking pin for blowhole inserts
- Plain reed block guide, adjustable for sliding a reed block along over the blow hole or slot



- 2x fixation screws M6 with start grip (for reed block guide and side hold downs)
- 2x hold-down device and bracket for clamping instrument (halves)



- Foam mat for alignment of bellow's rim

Picture right side:

AKKOfune Desk with mounted flange and silicone pressure pipe



❖ AKKOfune Desk+

Workplate with integrated microphones

- One microphone in blow hole
- Additional gooseneck microphone, to be mounted at the rear edge of the desk plate
- Microphones selectable on switch panel and USB output.



- All standard accessories as included with AKKOfune Desk.

❖ **Foot Switch**

Two pedals
for starting wind
upwards and downwards

- Robust device
- Contactless switching
- Momentary action
- 1,8m connection cable with connector



❖ **Pushbutton panel**

Pushbuttons as repetition
of *CONTROL*'s front panel

- Complete with 1.5 m cable and connector.
- Dimensions on request or as agreed



❖ **Flat desktop rocker switch panel**

For flexible placing on your workspace

- With pushbuttons for UP, DOWN and STOP
- Complete with 1.5 m cable and connector.

❖ Desktop enclosure for **CONTROL**

robust and heavy housing for the control unit to be placed on the workplace

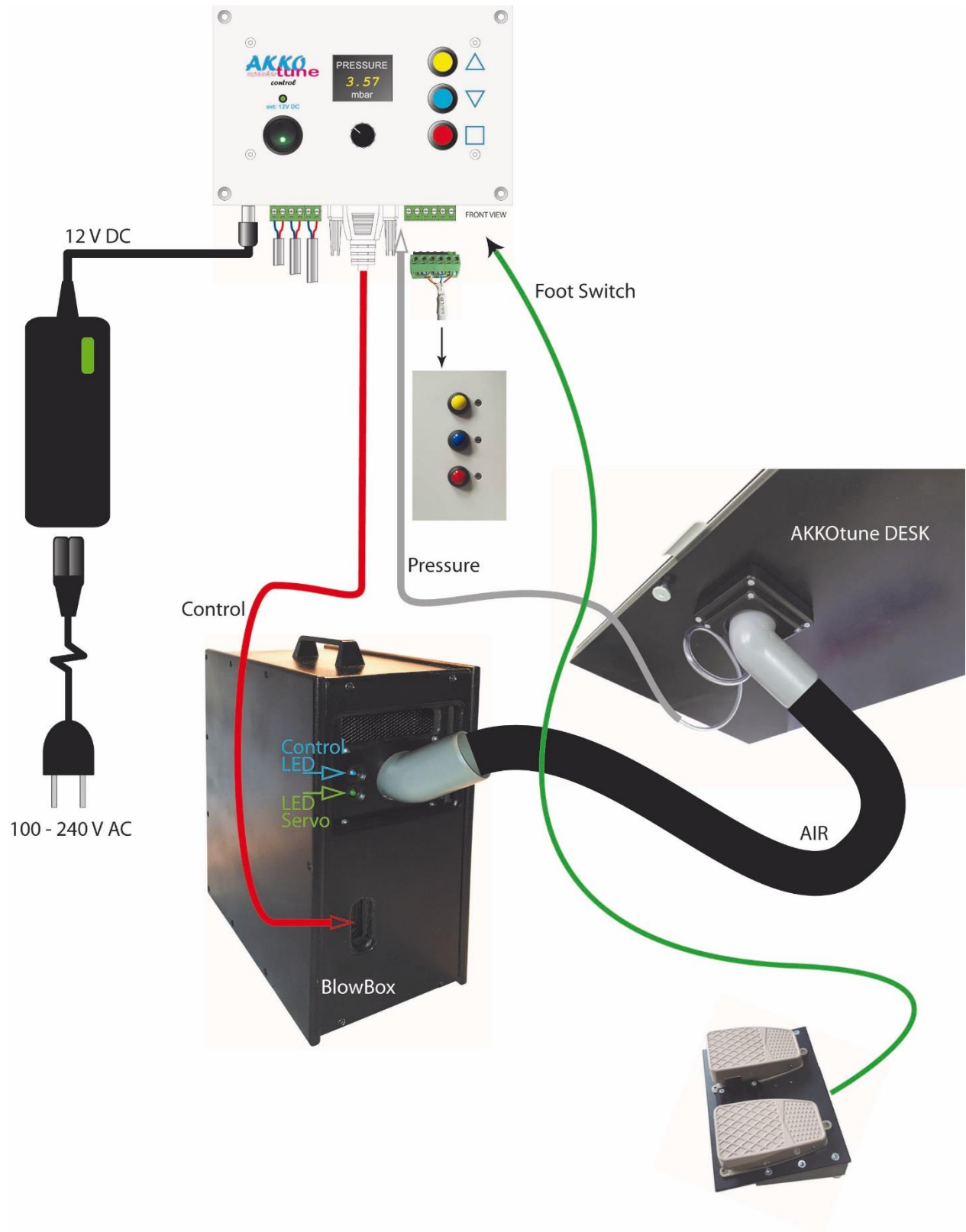
- Additional set of pushbuttons on the left side
- Tray on top for quick tool access
- Cable and pressure pipe feeding from the bottom and all directions



Furthermore there are some accessories that will not be looked at in this user guide:

- Blowhole insert acc. to customer's specification.
- Blowhole insert with holder for **single reed plates** from 15-25 mm width and up to 95 mm length.
- Blowhole inserts with holders for reed plates from bandoneon, bayan and mouth harp

❖ Connections



Scope of Work

- For testing a „complete instrument“ the air stream has to go through a large vent into the instrument’s belly.
- For testing a reed block you will need a small hole of 8-14 mm only (or a square shaped hole).
- For testing two rows of parallel aligned tone chambers or complete reed blocks you will need a slotted hole with 8 mm width and about 35 mm length: this would make the measurement of beat frequencies feasible. You can blow the base reed and the corresponding beat reed, which are mounted on two different reed blocks together.
- For testing a single reed plate one would use a special holder providing also a tone chamber to make the reed swinging correctly.

The AKKOfune Desk and Desk+ makes it possible to use different inserts providing various blow holes and e.g. a single reed plate holder.

For better illustration please also visit [YouTube.com](https://www.youtube.com) and view the video: **AKKOfune – operating the tuning table.**

1. Preparation and Power ON

AKKOfune modular gets power from a standard 12VDC notebook power supply with wide range mains input.

The 12V DC LED on the front panel indicates that the external 12V supply is present.

The switch on the left side switches the System ON, the LED lights up and the display shows the AKKOtune modular logo.


The blower in the BlowBox runs high for a function test and afterwards the pressure measurement is tared and the display shows 0.0 mbar.


The display then will show **Normal Start** and **0.0 mbar**.

Before starting PUSH or PULL connect the flexible air pressure pipe to the nipple on the bottom of CONTROL and the chamber that contain the air for testing. That can be the under-table flange for the air hose or the box that replaced your previous bellow.

2. Start/Stop

Before pushing a start button turn the rotary knob to select the pressure you want to work with. Pushing the rotary knob will enter a little menu where you can select the operating mode, or taring the pressure sensor.

 Starting the wind upwards means that air blows out of the hole in the desk. If you placed a “halved” instrument over the hole this will be equivalent to pushing the bellows of the instrument. If you placed a reed block over the blow hole it will be equivalent to pulling the bellows.

 Starting the wind downwards means that the wind will be sucked into the blow hole which is equivalent to pulling bellows for a “halved” instrument on the desk and pushing for a reed block.

With the stop button the play wind will be stopped immediately. You may hear a sound still coming from the blower running out, but the *BlowBox* closes the air valves and disables any wind.

Same start and stop functions can be initiated by external push buttons which are connected to the pluggable terminals in the bottom of the control unit.

***AKKOfune* foot switch**

This function is different. The wind will be started upwards as long as you push the right pedal and downwards with the left pedal. If you release the pedal the wind stops. The foot switch has its own connector at the bottom of *CONTROL* and does not need special settings.

Operating Modes

We generally differentiate between operating mode with PID control (PID) and operating mode without control.

Normal Start PID



The PID control adjusts the blower speed until the measured pressure reaches the pre-set value. As described before. You can directly switch from PUSH to PULL by hitting the pushbuttons. For stopping you must push STOP.

Normal Start

You can directly switch from PUSH to PULL by hitting the pushbuttons. For stopping you must push STOP. First, nothing will happen until you increase the blower speed with the speed knob. Then slowly the measured pressure will increase. The max blower speed is limited to approx. 50% of the maximum. When turning the speed knob left the blower will decrease faster than the increase happens.

Remote Start PID

If using the **AKKOblock** direct tuning device the large rocker switch on top of the blow module switches the wind on and off. In the blow module is an air valve that closes when pushing the rocker switch backwards (the blower stops) and opens when pushing it forwards (the blower starts again). For this functionality the system needs to be set in operation mode “remote start PID”. The blower speed is controlled via PID control.

The wind direction needs to be selected with  and .

The socket for a remote start cable is also on the bottom of *CONTROL*. You can make a remote start by using a 3,5mm stereo jack/cable and connect tip and ring.

General hints

Language

On the side of *CONTROL* is a slot for an SD card. With a flat piece of something (e.g. another SD card) you push the SD card fully in to release it. It does not come out of the enclosure, so you have to use a pair of tweezers to pull it out. For inserting it again, gently slide it into the slot and push it once fully in until you feel/hear a click.

This memory contains all texts for different languages in directories. You can change the language if you insert the SD card in your computer. If you want e.g. French as the language for the display, please copy all content of the directory “français” and paste it in the main route of the SD card. All files already exist in the main route, but contain the language you had on the display before. Override them with the files of the directory “français”. Then insert the SD card back in *CONTROL*.

Starting

sd card error

With system power ON some test will be performed. If you get a reading **sd card error** on the display, there is no SD card present in the slot on the left side of *CONTROL*.

Please switch the system OFF

If you get an error message and the prompt to switch the system OFF, it may be possible that the control cable to the *BlowBox* is not correctly connected. The power ON procedure checks whether the blower sends enough pulses back. If it is stuck or has no power, the system will show this error message.

Fall back to STOP

If after starting the blower the pressure measurement gives no result within a certain time period it stops the blower and shows a green screen with the message “mbar timeout”, means that no pressure was generated within time. This happens if the blower does not run, or if the pressure probe is not correctly connected, or if the blower cannot reach the pressure because there is not load on the blow hole (e.g. open large blow hole). Place a load (a reed block or a “halved” instrument) over the blow hole and start again.

Sounds from the BlowBox

The BlowBox uses four digital servos to move the air valves inside. In the end positions of OPEN and CLOSED the servos hold these positions. They make a fine humming noise which can be heard when the room is quiet.



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