

AER The Acoustic People[®]



AK 15 plus

Installation manual 11/2020

1. Introduction

Thank you for choosing the **AK15 plus** pickup system. We have done our outmost best to be able to deliver a dual source pickup system that matches the highest standard of dynamics and natural sound.

We hope that you will enjoy the **AK15 plus**.

The **AK15 plus** is a two source system, the undersaddle piezo crystal pickup is combined with an electret condenser microphone integrated in the endpin pre-amp.

It has been a developing goal to come up with an easy to use, versatile pickup system that captures the true sound of the instrument with a maximum of dynamic range – even if it exceeds the dynamic range of the instrument.

The **AK15 plus** provides high volumes and impressive punch combined with low noise components for best possible signal to noise ratio.

The **AK15 plus** system can be used with all guitars (steelstring and classic) which allow under saddle pick-up installation with string spacings from 10 to 12.5 mm.

The installation is similar to all under-saddle pickup systems. The instrument does not suffer mechanical stress in use or during installation. There is no soldering necessary.

Read on and have fun using your **AK15 plus!**

Checklist

Check the contents of the package to make sure everything is complete:

- a) 1 x **AK15 plus** piezo pick-up with 2.5 mm jack
- b) 1 x **AK15 plus** endpin preamp with integrated microphone, soundhole control (SHC) and battery with pouch
- c) 1 x 9V battery
- d) 1 x Dual-lock™ (tape) for battery pouch
- e) 1 x adhesive tape for SHC
- f) 3 x Cable clamps
- g) battery pouch with tape

2. Check and inspect the guitar

2.1 General Requirements

- Make sure that the bridge is not lifting or tilted and that the top is not sunken in.
- Check the string spacing, centre to centre of the string, or middle between a pair, to make sure it matches the AER pickup.
- Make sure that the saddle has a minimum width of 2,3 mm. The undersaddle pickup is 2,3 mm wide.
- Check the string pressure on the pickup crystal by assuring a minimum 20° break angle, if more all the better. If your instrument does not provide this, the string slots will need ramping (done by a luthier).

2.2 Regarding the AK15 plus, SHC and battery holder

- Check the inside of the guitar to identify the ideal position for the **AK15 plus** SHC (soundhole control) on the bass side of the soundhole for easy operation while performing. Bracing around the soundhole differs between makers and can conflict with the control unit. Some guitar constructions require an underlay to glue the SHC on properly. In any case should the gluing surface be flat and free of dust or grease.
- Identify the ideal position for the battery holder according to Battery Holder Installation

2.3 Regarding the Pickup

- Check that the top bracing does not conflict with the projected pickup cable hole through the saddle slot.
- Verify that the slot depth (including pickup) always remains more than half of the total saddle height. Not enough space for the saddle can cause bridge cracks. Check with your qualified luthier.
- Make sure that the pickup fits the slot and does not tilt within.
- Check the saddle. The materials, bone, Delrin® and Micarta® require different attention. You may consider getting a replacement saddle to work on, keeping the original untouched.

The saddle-slot needs to be completely flat and the saddle rectangular and flat. Even if both are flat, some adjustments towards pickup signal balance may be necessary. In many cases the balance between the strings of the acoustic instruments is not even – the pickup just reflects this and needs compensation to increase the string-pressure. Loosen the strings and clamp them with e.g. a capo to prevent them hindering you at your task. Remove the string-pins, the saddle and the endpin. Depending on what work needs to be done, use paper masking tape to protect the surface of your instruments around bridge and endpin. Always check the tape for possible residue on your guitar first at a 'safe' spot ... you never know!

3. Woodwork

1. Drill or ream a 12 mm hole to fit the endpin pre-amp. Make sure that it is centred properly and in a 90° angle to the end block.
2. Drill a 2.5 mm hole (for a wider slot use a wider drill) with a 90° angle through the saddle slot and the top of the guitar at the edge of the slot. It is immaterial which side is drilled, bass or treble side. Avoid hitting the braces!

For installing the piezo pickup there should be no routing required if the slot has a regular length and depth! The width and depth should be sufficient. Should your guitar require routing, have it done by a qualified luthier.

Take the piezo pickup and lead the mini-jack through the hole in the top of the guitar. The piezo will fit most saddle slots easily, the slot will not require filling. The top is labelled, make sure that there are no twists in the cable.

The 6 piezoelectric crystals sit underneath the strings, they don't have to be centred, but do need to touch the individual crystal. You can use the cable as a spring to keep the pickup in place.

Make sure the saddle slides easily into the slot, however it should not tilt. Fixate the saddle with masking tape to protect the piezo pickup during installation, and use a strip of masking tape to stick the piezo pickup cable inside the guitar to a near top brace, as strain relief.

The saddle will sit higher now that the piezo is installed. For proper playing action, remove some material from the saddle. Use

double side tape to fixate sanding paper to a completely flat surface and sand off enough material from the bottom of the saddle to match your playing requirement. Always check that the bottom of the saddle stays flat!

4. Endpin Mounting

After drilling the 12 mm hole in the guitar's end block, start from inside the guitar, slip the pre-amp's endpin through the endpin hole and preselect the correct position with the hex counter nut inside the guitar.

Then fix the endpin finally with the second hex nut from the outside, pushing an allen key through the hole in the thread for use as lock against twisting. When the endpin is safely fixed, screw on the strap-button.

Now plug the piezo pickup connector into the piezo socket of the endpin, there should be an audible „click“, to make sure it sits firmly. The internal microphone is best pointed towards the back of the guitar. Experimentation may yield better results with your specific instrument though.

5. Test Run

Before fixing the battery pouch, it is best to do a test run. Connect the battery pins to the connector of the **AK15 plus** system.

Now connect the soundhole control unit with the small connector.

You can then connect the output jack to an amplifier. Plugging the jack into the endpin socket closes the circuit and switches on the **AK15 plus** system, without jack there is no battery power consumption. Even when not playing, the system will lose battery power

when a jack plug is connected. Only plug in when you want to use the pickup system.

The factory setting of the internal microphone trim pot will be suitable for the vast majority of guitars, so in most cases, there is no correction necessary.

Factory settings:

Piezo: +10dB

Microphone: +10dB

Check the sound of the piezo pickup first and listen if all strings sound equally loud. Imbalance in string volumes should be addressed by a luthier, or follow the tips in the trouble shooting section. Now add microphone signal by turning the Mic control. Tapping the top will let you hear the microphone signal very easily. Sounds good? Go to the next step.

5. Battery Pouch Installation

The battery pouch has a Velcro strip on the backside.

Peel the masking tape off the Dual-lock™ (tape) and glue it to the neck block or the upper bout of the guitar. Make sure the gluing surface is flat and clean. Many tone woods contain natural oils, and the gluing surface needs to be made grease free before gluing the Dual Lock™. Then attach firmly the battery bag to the Dual-lock™. Connect the battery contacts from the endpin preamp with a fresh battery and put it in the pouch.

Please consider:

You have several options regarding the position of the battery pouch, each of them may be a compromise, but the aim must be to combine easy access with a firm position of battery and battery-pouch. The cross braces

of the upper bout inside the guitar may be used as additional support against gravitational force.

Whatever position you choose: You will have to loosen or even remove the strings, when a battery change is necessary.

Note:

The **AK15 plus** system is not made for ,microphone-only' performance! You will find a surprisingly warm yet strong and clear tone from the piezo due to a suitable electronic environment. The microphone will add definition, and authenticity as well as an acoustic ambience, which makes the sound more natural. Too much microphone signal however will make the tone ,hollow' and can cause feedback. The piezo at full volume may make microphone use impractical. All this has been experienced without using a feedback buster. If you can hear both signals loud and clear you can fix the cable with the cable clamps.

7. Soundhole Control and Final Assembly

Depending upon the construction of the guitar, you may find it necessary to use different materials to underlay or pad the soundhole control. First dry-fit the control unit to determine the position.

If adhesive tape is used, make sure to degrease both surfaces. Position the SHC where you can reach it easily and fix the cable in a safe position.

With the guitar in playing position, the right pot (in the direction of the bridge) should be the master volume, the left pot (in the direction of the neck) adds the microphone signal.

Now, after degreasing the position of the cable clamps, fix these to the side of the guitar and secure the cables to avoid unwanted rattling noises. String up your guitar and bring the instrument up to pitch.

That should be it!

8. Operation

The **AK15 plus** is a very powerful system, which combines a strong piezo signal with an additional microphone signal. It is designed to blend the microphone to the pickup for overtones and more liveliness. The mic does not work alone!

You can make use of the whole range of the SHC microphone control to almost maximum, depending on your personal sound preferences.

The volume control adjusts your overall output signal. Starting in zero position (no output signal, over to far left), turn it clockwise to boost the output level, but please regard: the optimal range of this control is between 30 and 60% rotation! Full volume is neither necessary nor recommended. Adding the microphone volume will yield a more natural and lively sound. Too much microphone signal can cause feedback, lower the microphone volume if this occurs.

Plugging the jack into the endpin-socket closes the circuit and switches the system on. Without jackplug the system is switched off and there is no active battery consumption, just the usual self-discharge of unused batteries.

10. Troubleshooting

No piezo signal

Make sure you have connected the jack connector properly. There should be an audible „click“ when the ball-ended jack safely sits in the 2.5 mm plug. It may take a little effort.

No mic signal

Too much or too little mic signal

The microphone master level is pre-adjustable independently at the preamp and controlled with the soundhole control (master volume+ added microphone level). If you have trouble dialing in the right amount of microphone signal, if you feel there is too much microphone signal, or not nearly enough, we have a solution for that. Inside the preamp we have a small potentiometer with which you can increase or decrease the mastervolume for the mic signal. This is a very delicate invasion, hence the placement inside the pre-amp, please use this very carefully. If you have so much mic signal that you can't use the soundhole control to get the right amount in the mix, or if the soundhole control is fully open and you still could use more mic signal is the only time to use this internal control.

No output signal

Ensure that the battery still has enough charge to operate the system. The indicator light on the soundhole control unit will light if the battery has low power. If the battery has no power at all, this light will eventually dim.

Ensure that the strap holder on the endpin is screwed on tightly. Strap movements

sometimes loosen the strap holder which may lead to a contact fault in the endpin socket. There are aftermarket solutions with straplocks for acoustic guitars that may prevent this.

Uneven balance

Attention to proper string balance is a normal issue with all pickup systems – more or less obvious – depending e.g. on the dynamic range of the systems.

Just listen to your instrument as it is without pickup and play each individual string one after the other with the same impulse. You may find that the natural reproduction of the strings is already uneven. Just one example of many reasons for uneven reproduction.

How to react:

If you don't have a luthier at hand, go through the following steps.

Assuming the installation of the saddle is correct, all surfaces even and straight and the pickup is working properly, you can add layers of scotch tape to the saddle at weak positions to increase the pressure on relevant crystals. Sounds simple, but needs a little experience as all piezos are connected and a change of one factor may have effect on others too. To find the proper balance may require a little extra time

and work which is annoying for everyone – especially the installer – but it has to be done – no way around it!

In general

We have designed the **AK15 plus** system to produce the clearest and most dynamic sound possible. This high dynamic output means that your battery life will be less long than with other mainstream systems. The rewards however outweigh the use of an extra battery.

The **AK15 plus** system can be used without any batteries when using the 9 Volt phantom power of the AER **Compact 60/4** or **Domino 3** amplifier. Most of our other amplifiers can be easily modified to provide 9 Volt phantom power on the jack input. Check your manual for this. Phantom power needs a standard stereo jack cable connection. Our high output volume is suited for all amplification systems.

Good sound is an inspiration for life.

We hope we can contribute to this with the **AK15 plus**.

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