



Heart Sound

Perlucens AURUM

INSTALLATION HANDBOOK

Perlucens Aurum is the new pickup of **Heart Sound** developed to meet the needs of the most demanding guitarists, in search of a personal sound, with unique timbre and dynamic characteristics.

The system owes its performance to the pair of sensors (accelerometer + piezoelectric), designed to obtain the best performances in terms of frequency response, noise signal ratio and dynamic range, essential ingredients to obtain the desired result.

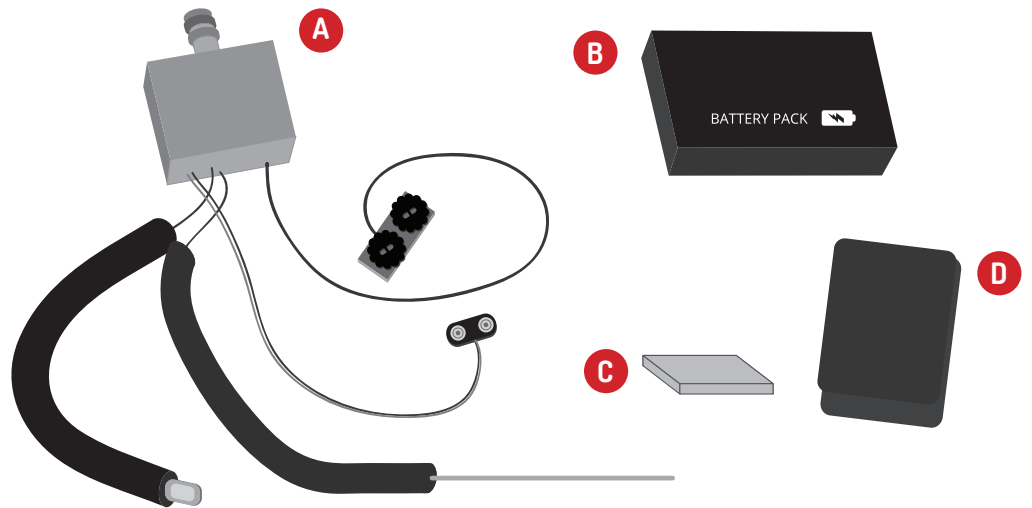
Perlucens Aurum is not in any way invasive or destructive to the instrument.

Assembly takes place using Velcro and a minimum amount of butyl resin completely harmless in respect of wood and finishes.

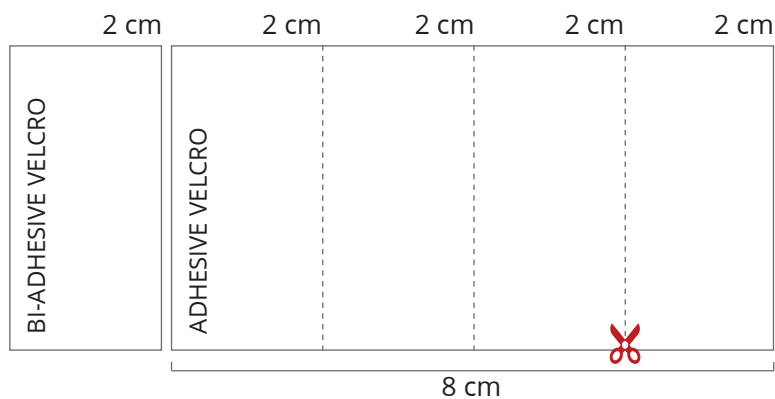
Heart Sound recommends, if not experts, to make the installation with the assistance of your trusted violin-maker.

CONTENTS:

- A** Pickup Perlucens Aurum
- B** Battery Pack + 9V battery
- C** Butyl resin
- D** Velcro adhesive for fixing



HOW TO USE VELCRO



Do not remove the protections of the adhesive side of Velcro before reading the installation instructions. The package will be provided with a strip of bi-adhesive Velcro and a strip of adhesive Velcro on the size of 8x5cm which must be appropriately divided into four strips with a width of 2cm to be used for the attachment of:

- › Piezo Sensor (1 adhesive strip)
- › Accelerometer Sensor (1 adhesive strip)
- › Volumes Management Panel (2 adhesive strips, 1 bi-adhesive strip)

See the installation instructions of the three components to understand how to use the Velcro strips cut.

USEFUL INFORMATION ON THE SERIAL NUMBER

The serial number (PXXXXXX) is present in two points:

- 1) On the front of the box;
- 2) On the shielding (metal part) of the pickup.

The identification and communication of the serial number are essential for the proper management of traceability and warranty.

REQUIREMENTS

Slot for bone-bridge.
Maximum length of the slot: 100mm.
Minimum length of the slot: negligible.

The piezoelectric sensor can be used according to the need on bridges of different sizes and it is therefore possible to use its proper length and leave the remainder length covered by the protective tube on the cable of the sensor itself.

PIEZOELECTRIC SENSOR INSTALLATION

PLEASE REVIEW THE FOLLOWING SAFETY PRECAUTIONS BEFORE YOU BEGIN TO INSTALL!

HANDLE THE SENSOR WITH CARE!

Do not cut, bend or force the piezofilm to try to fit the slot of the bridge.
This type of operation could compromise its functionality.

DO NOT SHORTEN SENSORS WIRES!

This operation, although electrically allowed, should be performed only having considerable attention to the quality of the welds. Any self made changing of the pickup or part of it will invalidate the warranty.

BONE AND BRIDGE

Both the bone that the slot in which it is contained, must be flat and of the proper shape to ensure the correct compression of the piezoelectric sensor.

MECHANICAL FACTORS THAT CAN AFFECT THE PERFORMANCE OF THE PIEZOELECTRIC SENSOR

TILT ANGLE BETWEEN THE STRINGS AND THE BRIDGE

To get the best performance, this angle of inclination should be about 20-25° (fig.1).

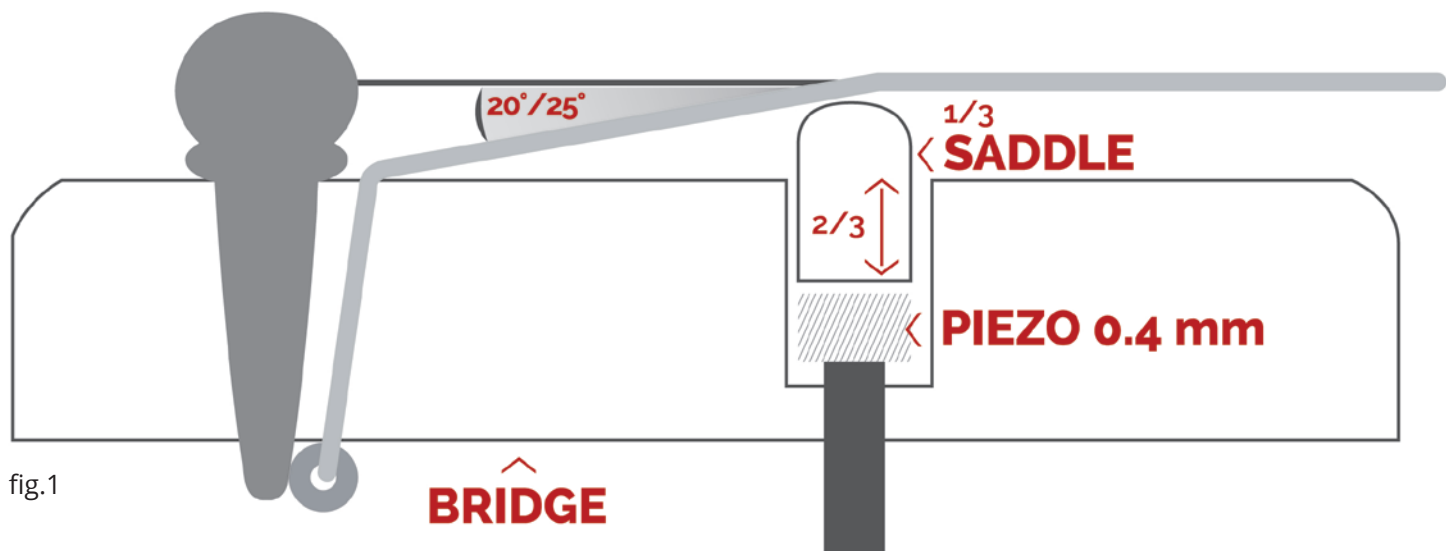


fig.1

RULE OF 2/3

This is an important relationship that must be maintained between the total height of the bone and the depth of the slot that is located on the bridge.

The bone (with the piezoelectric sensor installed) must remain inside the slot for at least 2/3 of its size in height (fig.1).

HOW TO INSTALL

1. Identify the position of the hole in the slot of the bridge to allow passage of the piezoelectric sensor cable. The hole of 2.5 mm diameter must be drilled at the end of the slot at about a 45° (to the slot outer) to facilitate the insertion of the sensor and to avoid excessive curvature that could compromise its functionality.
2. Eliminate wood chips and other foreign materials from the slot of the bridge.
3. Carefully insert from the inside to the outside of the instrument the piezoelectric sensor.
4. Pulling it with care, pass along the hole the piezoelectric sensor and lay it completely inside the slot.

CAUTION

The corners of the piezoelectric sensor should be slightly detached from the ends of the slot. Otherwise you could create a curl of the sensor resulting in penalization of the characteristics.

BONE PREPARATION

1. The base of the bone must be completely flat.
2. Remove (in width) sufficient material so as to provide easy insertion within the slot of the bridge. The bone should slide easily into the slot.

FIXING THE CABLE CONNECTION BETWEEN THE PIEZOELECTRIC SENSOR AND ELECTRONICS

The connection cable to the electronics, suitably covered by a protective sponge, must be secured to the guitar body through the use of a Velcro strip 2cm wide previously cropped and positioned in the proximity of the sensor. Insert the cable between the two strips of Velcro and use the adhesive side for fixing.

In this way you will avoid, during the performance, unwanted noises produced by the movement of the same inside the case.

ACCELEROMETER SENSOR INSTALLATION

The installation of the accelerometer sensor is very simple as it requires only the use of butyl resin present in the package. The use of this method of attachment allows the sensor repositioning multiple times without damaging or soiling the instrument. We recommend using all the resin butyl included in the package.

Per l'installazione modellare con le dita la resina butilica fino a formare una sorta di pallina da premere su un lato del sensore accelerometrico in modo da inglobarne la schermatura (parte metallica) così da renderlo pronto al fissaggio.

To install, model with fingers the butyl resin to form a sort of ball and press it on one side of the accelerometer sensor, so incorporate the shielding (metal part) so as to make it ready for fixing.

FIXING THE CABLE CONNECTION BETWEEN THE ACCELEROMETER SENSOR AND ELECTRONICS

The connection cable to the electronics, suitably covered by a protective sponge, must be secured to the guitar body through the use of a Velcro strip 2cm wide previously cropped and positioned in the vicinity of the sensor. Insert the cable between the two strips of Velcro and use the adhesive side for fixing.

In this way you will avoid, during the performance, unwanted noise produced by the movement of the same inside the guitar case. If necessary it is possible to invert sensor phase simply changing the side used for fixing it.

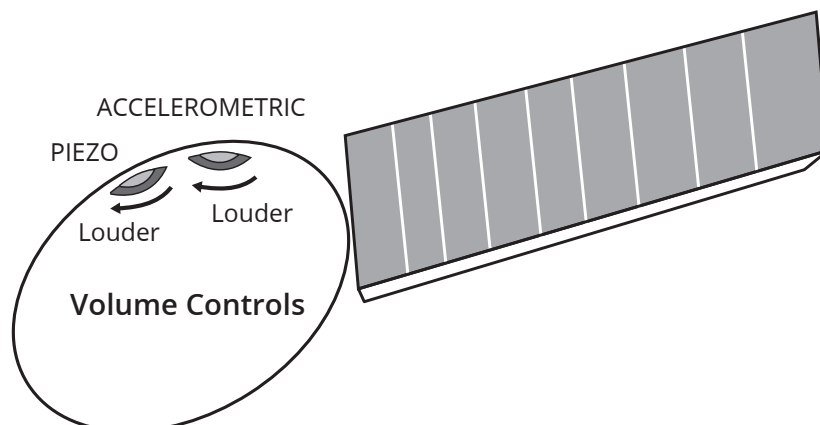
INSTALLING AND REPLACING THE BATTERY

The fixing of the battery pack takes place thanks to the Velcro already present in its rear part. It is recommended that you install on the wings or on the bottom of the instrument in the proximity of the hole. In doing so it will be easier to reach the battery for its replacement

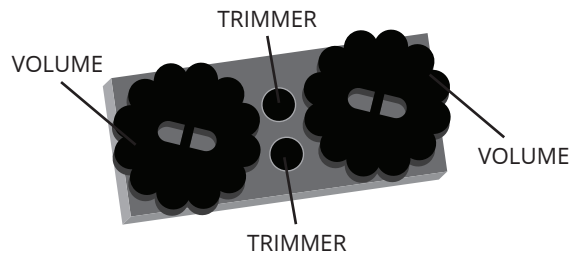
If you send the guitar, you may want to remove the battery as a precaution. Although unlikely, it is possible that the battery may loose and moving inside the instrument during shipping.

MIXING OF SENSORS

The mixing between the signals from the two sensors allows combining the **extreme definition** of the piezoelectric sensor to the **naturalness** coming from the accelerometric sensor.

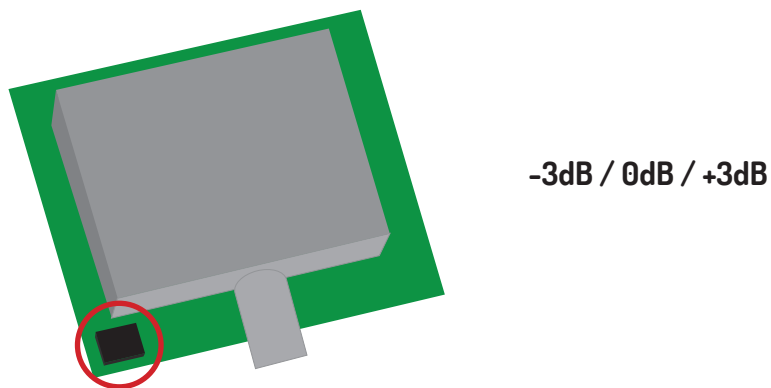


The sound is in the hands of the guitarist who can handle it by mixing the signals from the two sensors as desired. For a more refined adjustment there are two small trimmers on the volume control panel for varying the input gain, which allow adding or removing 3dB as required.

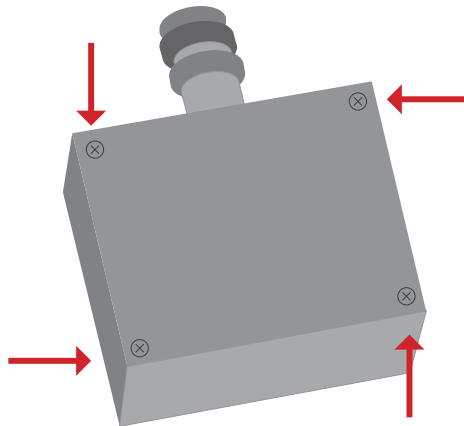


CHANGING THE OUTPUT VOLUME

You can vary the output signal volume by changing the position of the JP1 jumper, according to the following three possibilities:



The JP1 jumper is inside the body and can be accessed by removing the 4 screws on the outer shielding.



STRONG POINTS



Great resistance to feedback



Wide dynamic range



Excellent signal noise ratio



Excellent frequency response



Does not damage the instrument



Does not alter the instrument structure

CALIBRATION

The calibration is done to ensure that there isn't too much difference in volume between the two sensors. The goal is to have a same starting point on the volume knobs for a more accurate and balanced blending.

To calibrate the sensors, just follow a few simple steps.

- 1) Maximize the volume of the piezoelectric sensor and put it to a minimum the volume of the accelerometer.
- 2) Maximize the volume of the acceleration sensor and put it to a minimum the volume of the piezoelectric sensor.
- 3) If you have found large differences in volume between the two can proceed by raising the lower or lowering the highest in order to balance the level of volume perception using the trimmers in the central part of the panel volume management (see section " volume and Jumper ").

Note: it is important to play the same part with a similar dynamic to avoid compromising the calibration.

TECHNICAL SPECIFICATIONS

PARAMETERS	PERLUCENS AURUM
Frequency Response	32 Hz - 100 kHz (+ 0 dB - 3 dB)
Vout Max (16 Hz - 50 kHz)	- 6 dBV (500 mVeff)
Harmonic Distorsion (Vout = 430 mV)	200 Hz - 1 kHz \leq 0,016% @ 4 kHz \leq 0,03% @ 10 kHz \leq 0,03%
Intermodulation Distorsion (Vout = 430 mV)	400 Hz & 600 Hz \leq 0,02% 4 kHz & 6 kHz \leq 0,03%
Signal to noise ratio (S/N)	(Linear Measurement) \geq 78,4 dB (A-Weighting Measurement) \geq 81,9 dB
Slew Rate	\geq 8 V / μ s
Transients Time Response @100kHz	\leq 2 μ s
Power Supply	9V Battery
Dimensions	65 x 55 x 30 mm

FURTHER INFORMATION IS AVAILABLE ON OUR SOCIAL NETWORKS:

www.facebook.com/heartssoundcom | www.twitter.com/heartssoundcom | www.youtube.com/heartssoundcom