

Installation Guide

AG-Series

Passive Acoustic Guitar Pickup

Includes Installation Instructions for Models

AG-125

.125" (3.2 mm) Width • 2.125" String Spacing

AGX-125

.125" (3.2 mm) Width • 2.3125" String Spacing

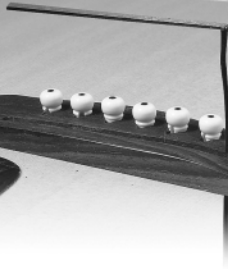
AG-094

.094" (2.3 mm) Width • 2.125" String Spacing

AGX-094

.094" (2.3 mm) Width • 2.3125" String Spacing

**Surftek Jack™
EQUIPPED!**



FISHMAN
Acoustic Power

AG Series - Passive Guitar Pickup

Thank you for choosing the classic AG Series undersaddle pickup. Please read these instructions carefully. For technical assistance, contact Fishman Customer Support at **978-988-9665** or **tech@fishman.com**

The AG-Series is our original string-sensitive, piezo-ceramic undersaddle pickup. It provides natural acoustic reproduction of your guitar with an explosive attack well-suited for percussive playing styles. The pickup senses individual string vibrations with six fully shielded piezo elements. Installation is straight forward and you can plug the AG-Series pickup directly into an instrument amplifier with great results. For improved performance we recommend one of our dedicated outboard preamps.

Included with each AG pickup is our versatile Switchjack stereo endpin jack, which enables you to wire up the AG pickup with another pickup or a microphone for outboard stereo blending applications.

CHOOSING THE RIGHT MODEL TRANSDUCER

Before installation, be sure to select the right pickup for your instrument.

AG-125

E to E string spacing = 2.125" (54.0 mm)

Wire hole location = .234" (5.9mm) from closest outside string

The AG-125 is suitable for most instruments with string spacings from 2.075" (52.7 mm) to 2.175" (55.3 mm)

AGX-125

E to E string spacing = 2.3125" (58.7 mm)

Wire hole location is .234" (5.9mm) from closest outside string

The AGX-125 is suitable for most 6 and 12-string instruments with E to E string spacings from 2.262" (57.4 mm) to 2.362" (59.9 mm)

NOTE: Custom string spacings are available upon request.

WIDTH: .125" (3.2 mm)

HEIGHT: .048" (1.22 mm)

LENGTH: AG-125: 2.625" (66.67 mm)
AGX-125: 2.725" (69.22 mm)

AG-094

E to E string spacing = 2.125" (54.0 mm)

Wire hole location = .234" (5.9mm) from closest outside string

The AG-094 is suitable for most instruments with string spacings from 2.075" (52.7 mm) to 2.175" (55.3 mm)

AGX-094

E to E string spacing = 2.3125" (58.7 mm)

Wire hole location is .234" (5.9mm) from closest outside string

The AGX-094 is suitable for most 6 and 12-string instruments with E to E string spacings from 2.262" (57.4 mm) to 2.362" (59.9 mm)

NOTE: Custom string spacings are available upon request.

WIDTH: .094" (2.3 mm)

HEIGHT: .048" (1.22 mm)

LENGTH: AG-094: 2.625" (66.67 mm) /
AGX-094: 2.725" (69.22 mm)

IMPORTANT

Installation of the AG Series Acoustic Guitar Pickup requires fine woodworking & soldering skills and should be performed only by a qualified repairman. Fishman Transducers will not be responsible for any damages that may result from improper installation.

Please read these instructions carefully. For technical assistance, contact Fishman Customer Support at **978-988-9665** or **tech@fishman.com**.

If you are new to under saddle piezo installations, a comprehensive guide, *The Finer Points of Piezo Installation* by Ken Parker, is available at www.fishman.com.

Handle the pickup carefully! Mishandling may result in ground hum or intermittent signal. Fishman Transducers will not be responsible for any damages to the pickup that may occur due to misuse or poor installation.

PREPARATION

Tools

- Caliper
- 400 Grit Sandpaper or Scraper
- Rosin Core Solder
- Masking Tape
- Variable Speed Drill
- 1/8" Twist Drill
- 1/2" Open End Wrench
- Router with 1/8" (3mm) Straight Bit (single flute)
- Soldering Iron (30 watt max)
- Wire Strippers
- X-Acto Saw
- Center Punch
- 15/32" Spade Bit Drill
- 3/32" Allen Wrench

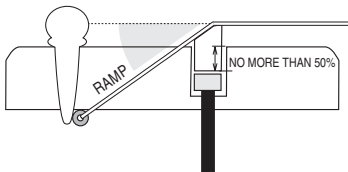
MECHANICAL FACTORS AFFECTING PICKUP PERFORMANCE

Break Angle

For the pickup to perform optimally, there should be a 20° (minimum) string break angle across the back of the saddle. An adequate break angle can be realized by "ramping" the string slots. In extreme cases, where the break angle is less than 20° and the saddle is so low that it is nearly flush with the top of the bridge, the instrument probably requires a neck re-set. In these cases, re-setting the neck to a higher angle will restore the saddle height and the string break angle required for good pickup performance.

The 50/50 Rule

We have found that there is a critical relationship between the overall saddle height and the bridge slot depth. For adequate mechanical coupling and pickup balance, we recommend that the saddle slot depth (with pickup installed) measures no more than 50% of the total height of the saddle. If the slot measures more than 50% of the total height of the saddle, balance and/or output level may suffer. In these cases, add a hardwood shim under the pickup. To determine the shim's thickness, subtract $\frac{1}{2}$ the total saddle height from the slot depth, then remove an equal amount of material from the bottom of the saddle.



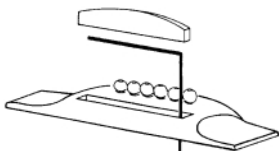
Exception to the 50/50 Rule: Pickups in bridges (especially Martin style 3/32" width) with exceptionally steep string break angle will generally perform well, even if the saddle slot depth measures more than 50% of the total saddle height.

PREPARATION

I • Prepare the Saddle Slot

A large percentage of string balance problems with undersaddle pickups can be traced to an unevenly cut or warped saddle slot. Irregularities on the bottom or sides of the slot can often prevent the saddle from uniformly pressurizing the pickup. For this reason, we strongly recommend that before you install any undersaddle pickup, re-mill an existing slot with a plunge router, jigged up in an appropriate slot cutting fixture.

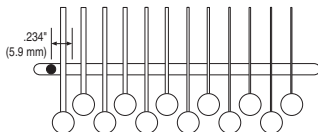
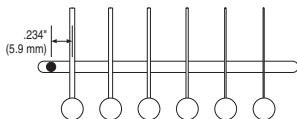
1. Rout a .125" (3.2 mm) or .094" (2.3 mm) wide saddle slot.
2. Be certain that the bottom of the slot is **FLAT**. Deepen an existing slot just enough to obtain a clean, flat surface.



II • Locate the Wire Hole

The location of the wire hole is critical to the performance to the AG-125 / AG-094 as it determines the correct position of the piezo elements relative the strings.

1. Locate the center of the wire hole .234" (5.9 mm) from the closest outside string. (Or center of the closest pair of outside strings for 12-string models.)
2. Mark the location where the wire will enter the saddle slot. Center the mark between the walls (width) of the slot. Drill a .09375" (2.4mm) hole.
3. Clear wood chips and foreign materials from the saddle slot
4. Carefully insert the pickup. The wire must slip easily into the wire hole. The pickup must fit into the slot without friction or binding.



III • Prepare the Saddle

We highly recommend the Fishman Cleartone™ saddle for enhancing the performance of the AG-Series pickup. We also suggest synthetic materials such as Micarta or Corian as adequate substitutes. Organic materials such as bone or ivory can not be recommended since these are not structurally as consistent as synthetics and can produce poor string to string balance through the pickup.

1. Prepare a .125" or .094" wide saddle. Make sure the bottom of the saddle is FLAT.
2. Remove only enough material from the width of the saddle to provide a sliding fit in the slot. To test the fit, the saddle should slide easily in the slot, but should not fall out when overturned. To maintain your current action, the new saddle must be .048" shorter in height than your current saddle.

IV • Prepare the Endblock

There are two ways to widen the endpin hole to accept the endpin jack:

Slow and Safe

If you have the time, this is the preferred way to enlarge the endpin hole. Remove the endpin and widen the hole to size with a 15/32" (11.9mm) reamer, available in the US & Canada through Stewart Macdonald, 800-848-2273, part #4323.

OR

Quick & Clean

The objective here is to drill out the hole with the endpin or other suitable plug in place. You may remove a loose endpin and refasten it in the endblock with cyanoacrylate glue before starting the procedure.

Note: We do not recommend this method for instruments with brittle ornamental veneers (ex: abalone) around the endblock.

1. Apply masking tape around the endblock area to protect the instrument.
2. Locate an X-Acto saw blade 1/16" (1.6mm) away from the body and saw off the endpin.
3. Centerpunch a guide hole in the center of the trimmed endpin.
4. Drill a 1/8" (3.2mm) pilot hole through the endblock.
5. Line up a 15/32" (11.9mm) Spade bit in the pilot hole and begin drilling. Maintain a perpendicular plunge in relation to the instrument. Use steady (but not heavy) pressure, especially as the drill exits inside the guitar.
6. To avoid damage to the instrument, let the drill come to a complete stop before removing it from the hole.

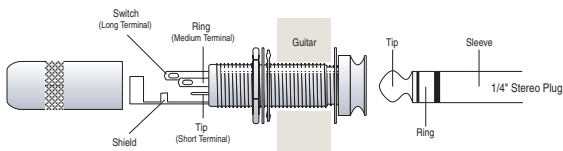
V - Install the Pickup

1. Insert the pickup in the slot and then strip and tin the wire ends.
2. Unscrew the shielding cap on the jack to expose the solder terminals. Thread the pickup wire through the shielding cap.
Gently bend back the strain relief/sleeve tab to gain better access to the Tip terminal.
3. Solder the pickup "hot" wire to the Tip terminal, which is the shortest of the three tabs.
Solder the pickup shield to the ground tab on the jack. Gently tighten the strain relief.
4. Refasten the shielding cap to the jack.

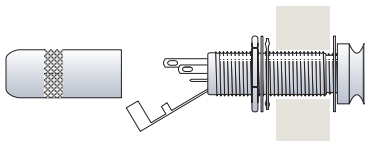
Switchjack™

Wiring Options with the Fishman Switchjack

The Switchjack T-R-S-S (Tip/Ring/Sleeve/Switch) stereo switching endpin jack allows simultaneous stereo operation and battery switching for active pickups. This new configuration simplifies stereo wiring with many pickup combinations that were once incompatible.

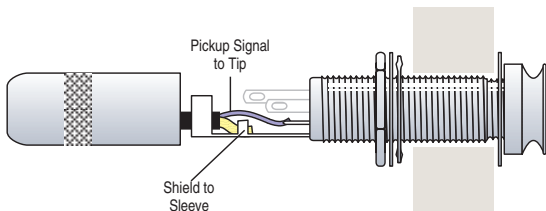


To gain better access to the Tip, Ring and Switch terminals, gently bend back the Strain Relief/Sleeve tab, before you begin to solder.

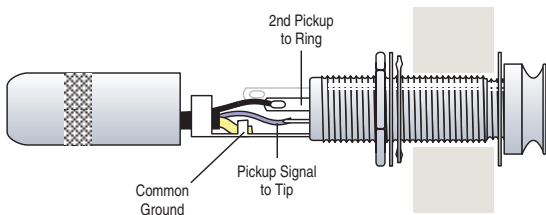


Pages 9 & 10 illustrate the various wiring options made possible by the Switchjack.

Mono Wiring an AG Series Pickup

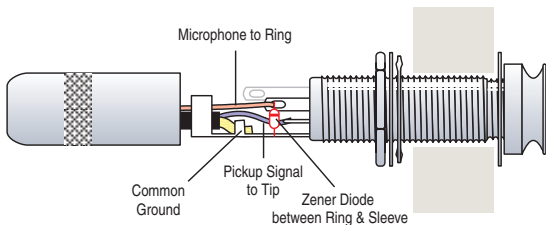


Stereo Wiring a Second Pickup to an AG Series Pickup

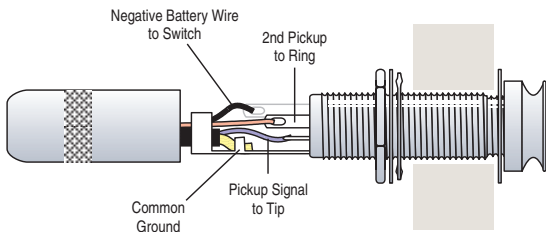


AG Series - Passive Guitar Pickup

Adding a Microphone to an AG Series Pickup



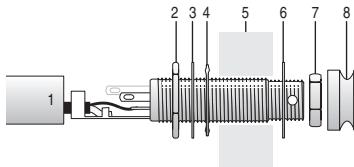
Stereo Wiring with an Active Pickup



VI - Fasten the Jack in the Endpin Hole

Follow this sequence when installing the endpin jack:

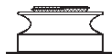
- 1 - Shielding Cap
- 2 - First Large Hex Nut
- 3 - Large Dress Washer
- 4 - Star Washer
- 5 - Guitar Endblock
- 6 - Small Dress Washer
- 7 - Small Dress Nut
- 8 - Strap Button



The jack should protrude at least $\frac{5}{16}$ " and no more than $\frac{11}{32}$ " outside of the guitar body for proper fit.

After fitting the small dress washer and nut over the end of the jack, insert the $\frac{3}{32}$ " allen wrench through the small hole on the end of the jack. Tighten the nut with the $\frac{1}{2}$ " open end wrench while holding the jack in place with the allen wrench. Thread and hand tighten the the strap button.

Note: With the strap button in place, the end of the jack should protrude slightly to allow proper plug fit.



PLUGGING IN

Due to the nature of passive pickups, the type of cable you use and the input you plug into will affect the quality of your sound.

Instrument Cable

Cable lengths over 10 feet (before preamp) will cause audible high frequency loss. Use a high quality, low capacitance shielded cable. This will ensure minimal tone coloration and hum. Using fully shielded metal plugs will also help eliminate hum.

Kinds of Audio Inputs

Because of the lack of standardization for high impedance audio inputs, special attention should be paid to what you are plugging into:

The AG-125 / AG-094 will sound best when plugged directly into an input with a 10 MOhm impedance; the full frequency response of the instrument is reproduced.

The AG-125 / AG-094 can also be plugged into inputs as low as 1 MOhm with adequate results; the bass frequencies will be slightly rolled off.

Preamps

We strongly recommend using a 10 MOhm, impedance matching, buffered preamp in conjunction with the pickup.

A matching preamp will:

1. Realize the full frequency response potential of the pickup.
2. Permit long cable runs (after the preamp) without signal deterioration.
3. Allow precise volume and tone shaping with dedicated EQ.
4. Ensure compatibility with virtually any instrument level audio input available.

Fishman Transducers manufactures a complete line of compatible preamps, all with 10 MOhm inputs:

POWERJACK - Miniature Endpin Preamp

MODEL GII & BII - Outboard Acoustic Instrument Preamp

AGP-2 - Onboard Instrument Preamp

PRO-EQ II - 4 Band Acoustic Instrument Preamp

PRO-EQ PLATINUM - Outboard Acoustic Instrument Preamp / EQ / D.I.

DUAL PARAMETRIC D.I. - Fully Parametric Two Band Preamp / D.I.

ACOUSTIC / BASS BLENDER - 2 Channel Pickup / Mic Preamp

POCKET BLENDER - 2 Channel Pickup/Mic Preamp

Musical Instrument Amplifiers

Most musical instrument amplifiers (at least 1 M Ω input impedance) will yield useable results. Acoustic instrument amplifiers have a 10 M Ω Piezo input, ideally matching the pickup.

Direct Boxes

You can plug the AG-125 / AG-094 into an "active" direct box (1 - 10 M Ω input) with very good results. Using a passive direct box will sound weak and thin.

PA / Recording Consoles

Professional PA and recording consoles have a much lower input impedance than what is acceptable for the AG-125 / AG-094 ; you will need an impedance matching preamp. Plugging a passive piezo pickup into a mixer without an impedance matching preamp will sound harsh and thin.

SYMPTOM	CAUSE	SOLUTION
WEAK STRING OR STRINGS	Saddle is not completely seated.	Push the saddle down over the weak strings.
	Bottom of saddle is uneven or out of square with its sides.	Check bottom of saddle for flatness and squareness.
	Debris in the saddle slot.	Remove debris from the saddle slot.
	Improper saddle fit (too tight or loose).	Make sure that the saddle has a sliding fit in the slot.
	Saddle material.	Do not use bone, ivory or other organic materials for the saddle material. We recommend synthetic materials such as Corian, Micarta, and Tusc.
	Not enough downbearing pressure on saddle.	Follow the 50/50 rule.
	Uneven or belly up saddle slot.	Sculpt the bottom of the saddle to compensate for depth differences in the saddle slot or re-rout the saddle slot.*
	Wire hole too tight.	The wire hole must be .093" diameter.
	Pickup binding in saddle slot.	The saddle slot must be .125" wide. Rout the slot to the correct width.

* See Ken Parker's *The Finer Points of Piezo Installation*.

SYMPTOM	CAUSE	SOLUTION
HUM	Improper saddle fit (too tight, resulting in poor s/n ratio).	Check saddle for sliding fit in the slot.
	Torn pickup shield.	Examine the pickup. Replace pickup if the material is torn.
	Unshielded jack.	Fasten the Shielding Cap to the jack.
	Poorly shielded instrument cable.	Use only fully shielded instrument cables.
THIN OR WEAK SIGNAL	Weak downbearing pressure due to low string break angle.	Observe the 50/50 rule. Ramp the string slots if necessary.
	Impedance mismatch (see PLUGGING IN section).	Match the pickup to the audio input with a buffer-preamp.
HIGH FREQUENCY LOSS	Instrument cable too long.	Use 10' or shorter instrument cable before your amplifier
PICKUP INTERMITTENT OR DEAD	Pickup binding in wire hole (wire hole too small or misaligned).	Align or widen pickup wire hole.
	Pickup binding in saddle slot.	Widen or lengthen pickup saddle slot to accommodate the pickup.

Limited Warranty

The FISHMAN Switchjack™ Equipped AG Series Acoustic Guitar Pickup is warranted to function for a period of One (1) Year from the date of purchase. If the unit fails to function properly within the warranty period, free repair and the option of replacement or refund in the event that FISHMAN is unable to make repair are FISHMAN's only obligations. This warranty does not cover any consequential damages or damage to the unit due to misuse, accident, or neglect. FISHMAN retains the right to make such determination on the basis of factory inspection. Products returned to FISHMAN for repair or replacement must be shipped in accordance with the Return Policy, as follows. This warranty remains valid only if repairs are performed by FISHMAN. This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

Return Policy

To return products to FISHMAN TRANSDUCERS, you must follow these steps...

1. Call FISHMAN TRANSDUCERS at 978-988-9199 for a Return Authorization Number ("RAN").
2. Enclose a copy of the original Bill of Sale as evidence of the date of purchase, with the product in its original packaging and a protective carton or mailer.
3. FISHMAN TRANSDUCERS' technicians will determine whether the item is covered by warranty or if it instead has been damaged by improper customer installation or other causes not related to defects in material or workmanship.
4. Warranty repairs or replacements will be sent automatically free of charge.
5. If FISHMAN TRANSDUCERS determines the item is not covered by warranty, we will notify you of the repair or replacement cost and wait for your authorization to proceed.

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