Installation Guide

Installation of the Acoustic Matrix™ requires 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

Prep the Bridge
1. Cut FISHMAN TRANSDUCER at 978-988-9199 for a Return Authorization Number ("RA").
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 TRANSDUCER 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 TRANSDUCER 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.

Limited Warranty

The FISHMAN ACOUSTIC MATRIX™ is warranted to function for a period of One (1) Year from the date of purchase. The unit must be returned to Fishman along with a copy of the original Bill of Sale. The warranty covers normal usage and defects in material or workmanship. This warranty does not cover any consequential damages or to the user due to accidents or negligence. 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 TRANSDUCER, you must follow these steps:

1. Call FISHMAN TRANSDUCER at 978-988-9199 for a Return Authorization Number ("RA").
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 protective carton or mailer.
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Prep the Saddle Slot

1. Rout a .125" (3.17mm) wide slot for the Wide Format pickup.
2. Rout a .094" (2.38mm) wide slot for the Narrow Format pickup.
3. Be certain that the bottom of the slot is flat. Deepen an existing slot only enough to obtain a clean, flat surface.

Mechanical Factors Affecting Pickup Performance

Before you install the pickup, make sure the bridge and saddle are within our recommended “safe zone” of usable parameters.

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 often be realized by “ramping” the string slots. In extreme cases, where the break angle is much less than 20° and the saddle is so low that it is nearly flush to the top of the bridge, the instrument probably requires a neck reset. In these cases, resetting the neck to a higher angle will restore the saddle height and the string break angle required for good pickup performance.

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 of the pickup may suffer. In these cases, add a hardwood shim under the pickup. To determine the shim’s thickness, subtract 1/2 of the total saddle height from the slot depth. Then, add 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 very well, even if the saddle slot depth measures more than 50% of the total saddle height.

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 pressing the pickup.

For this reason, we strongly recommend that before you install any undersaddle pickup, re-mill an existing string slot using a 3/32" cutter. Jigged up in an appropriate slot cutting fixture.

1. Rout a .125" (.32mm) wide slot for the Wide Format pickup.
2. Rout a .094" (.24mm) wide slot for the Narrow Format pickup.
3. Be certain that the bottom of the slot is flat. Deepen an existing slot only enough to obtain a clean, flat surface.

Locate the Wire Hole

1. Locate the center of the wire hole no less than 100" (.24mm) from the closest string.
2. Mark the location where the wire will enter the saddle slot. Center the mark between the rails (width) of the slot.

Fishman Acoustic Matrix

Acoustic Matrix Active Acoustic Guitar Pickup
Includes Installation Instructions for Models
Acoustic Matrix Natural I
Wide Format: 125° (3.2mm) Width
Narrow Format: 90° (2.3mm) Width
Length: 2.125" (53.3mm)
Sensing Area: 2.620" (66.5mm)
Maximum recommended string spacing for both formats: 2.500" (63.5mm)

Acoustic Matrix Natural II
Wide Format: 125° (3.2mm) Width
Narrow Format: 90° (2.3mm) Width
Length: 2.125" (53.3mm)
Sensing Area: 2.620" (66.5mm)
Maximum recommended string spacing for both formats: 2.500" (63.5mm)

Part List

Acoustic Matrix™ Pickup
1/4" endpin-mounted miniaturized preamp
3 adhesive-backed plastic wire guides
Battery clip & screws

Tools

• Plunge Router with 1/8" (3.17mm) cutter for Wide Format OR 3/32" (2.4mm) cutter for Narrow Format
• 400 Grit Sandpaper or Scaper
• Soldering Iron (60 watt max)
• Wire Strippers
• 3/32" (2.4mm) Allen Wrench
• 15/32" (11.9mm) Tapered Reamer OR Variable Speed Drill
• X-Acto® Saw
• Center Punch
• 1/8" (3.15mm) Twist Drill

Pickup Dimensions

<table>
<thead>
<tr>
<th>Width</th>
<th>Height</th>
<th>Length</th>
<th>Sensing Area</th>
<th>Maximum String Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrow Format</td>
<td>0.094&quot; (2.3mm)</td>
<td>2.125&quot; (53.3mm)</td>
<td>2.620&quot; (66.5mm)</td>
<td>2.500&quot; (63.5mm)</td>
</tr>
<tr>
<td>Wide Format</td>
<td>0.125&quot; (3.2mm)</td>
<td>2.125&quot; (53.3mm)</td>
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FISHMANACOUSTICMATRIX™ ACOUSTICGUITARPICKUP
The Acoustic Matrix is a multi-layer arrangement of co-polymer strips that run the length of the pickup. Co-polymer strips are synthetic materials and can exhibit a sensitivity and dynamic range that far surpasses all other known materials. The fully shielded Acoustic Matrix pickup is a perfect choice for musicians who want accurate pickup performance of the Acoustic Matrix. The pickup may be plugged into any recording console or direct box with excellent state-of-the-art surface-mount technology in its integral Switchjack.
Prepare the Endpin Hole for the Jack

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

**Slow and Safe**
If you have the time, this is the preferred method. Remove the endpin and widen the hole to size with a 15/32” (1.6mm) reamer (available in the US & Canada through Steepletone MacDonald, 800-848-2573 part #4323).

**OR ...**
Quick & Clean

The objective here is to quickly drill out the endpin jack hole, with the endpin or 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 trimmed endpin.
4. Drill a 1/8” (3.2mm) pilot hole through the endpin.
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 drilling moves inside the guitar.
6. To avoid damage to the instrument, let the drill come to a complete stop before removing it from the hole.

Solder the Wire Connections

1. Unwire the shielding cap to access the preamp circuit board.
2. Strip 1/4” off the outside jacket of the pickup wire. Tin both the inner conductor and the ground wire.
3. Thread the pickup wire through the shielding cap.
4. Thread the pickup wire through the center strain relief hole, then solder the wire from the pickup (hot wire) to the pad marked “G” on the preamp circuit board. (See Fig 1) Do not over heat the solder pads! Doing so may lift the pads from the circuit board.
5. Fasten the shielding cap to the jack. Be careful not to allow the shielding cap to come in contact with the end of the circuit board.
6. Lock the shielding cap to the final hex nut.

Figure 1

Optional Stereo Wiring

A variety of stereo wiring options are available for pickup+microphone or pickup+pickup:

Two Pickups

1. Preamp / Shielding Cap
2. 1st Large Hex nut
3. 2nd Large Hex Nut
4. Large Dress Washer
5. Star Washer
6. Guitar End Block
7. Small Dress Washer
8. Small Dress Nut
9. Strap Button

Fishman Switchjack™ switching endpin jack is integrated into the Acoustic Matrix™. A variety of stereo wiring options are available for pickup+microphone or pickup+pickup:

Pickup & Electret Microphone

(Use with the Fishman Blender System)

Microphone Shield to Ground ("G")
Microphone Signal to IN Pad
Zener Diode
Microphone Shield to Ring ("R")
Pickup Shield to Ground ("G")
Pickup Signal to IN pad
Pickup Signal to to IN Pad
Front View
Rear View
Pickup Shield to Ground ("G")
Pickup Signal to to IN Pad
Pickup Signal to Ground ("G")
Pickup Signal to Ring ("R")
Microphone Shield to Ground ("G")
Microphone Signal to IN Pad
Zener Diode
Microphone Shield to Ring ("R")

Additional Volume & Tone Controls

- 1.8K Resistor
- .068 mF Capacitor
- .094

Specifications

- **Power Supply:** 9 Volt Alkaline battery
- **Life:** Natural 1 - 6,000 hours
- **Maximum Output Voltage:** 4V peak to peak
- **Output Impedance:** Less than 5kOhm
- **Signal-to-Noise Ratio:** 94 dB
- **Discrete Component Design:** FET low noise class A
- **Signal-to-Noise Ratio:** 94 dB
- **Input Stage:** Bipolar class AB
- **Output Stage:** 20K Audio

**Important!** Although the supplied battery holder should provide adequate stability to grip the battery at all times, we strongly recommend that you remove the battery when shipping your instrument. Failure to remove battery could result in damage to your instrument. Fishman will not be held responsible for any damage incurred to instruments from a loose battery.

Fishman Acoustic Matrix™

Fishman Cleartone

Figure 1

Attach the Battery Clip

We recommend that you attach the battery clip to a small piece of hardwood approximately 1 1/2” x 1 1/2” x 1/4” (4cm x 4cm x 1.1cm) thick. Mark the screw hole locations on the block using the battery holder as a template. Drill the screw holes using the 5/32” (4mm) drill. Attach the battery holder using the two supplied 1/4” screws. Attach this assembly to the inside front block (neck block) using either wood glue or a gap filling cyanoacrylate such as Loctite Black Max™.

Important! Although the supplied battery holder should provide adequate stability to grip the battery at all times, we strongly recommend that you remove the battery when shipping your instrument. Failure to remove battery could result in damage to your instrument. Fishman will not be held responsible for any damage incurred to instruments from a loose battery.

Troubleshooting

Symptom

- **Weak string or strings**
- **Hum**
- **Thin or weak signal**
- **Pickup intermittent or dead**

Cause

- Bottom of saddle is uneven or out of square with its sides.
- Improper saddle fit (too tight or loose).
- Saddle material.
- Not enough downbearing pressure on saddle.
- Uneven or bumpy saddle slot.
- Wire hole too tight.
- Pickup binding in saddle slot.
- Pickup binding in wire hole.
- Improper saddle fit (too tight, resulting in poor s/n ratio).
- Tone pickup shield.
- Unshielded jack.
- Weak downbearing pressure due to low string break angle.

Solution

- Check bottom of saddle for flatness and squareness.
- Make sure that the saddle has a sliding fit in the slot.
- Do not use bone, ivory or other organic materials for the saddle material. We recommend the Fishman Cleartone high-performance saddle.
- Follow the 50/50 rule.
- Sculpt the bottom of the saddle to compensate for depth differences in the saddle slot or re-rout the saddle slot.
- The wire hole must be .094” diameter.
- The saddle slot must be .125” wide for Wide Format and .094” for Narrow Format. Rout the slot to the correct width.
- Check saddle for sliding fit in the slot.
- Examine the pickup. Replace pickup if the material is torn.
- Fasten the Shreding Cap to the jack.
- Observe the 50/50 rule. Ramp the string slots if necessary.

Audio: FET low noise class A

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REV. 4.0