Pickup Dimensions

WIDE FORMAT		NARROW FORMAT	
Width:	.125" (3.17mm)	Width:	.094" (2.39mm)
Height:	.053" (1.35mm)	Height:	.043" (1.09mm)
Length:	2.650" (67.3mm)	Length:	2.650" (67.3mm)
Sensing Area:	2.620" (66.55mm)	Sensing Area:	2.620" (66.55mm)

Maximum recommended string spacing for both formats : 2.500" (63.5mm)

NOTE: The overall length of the Acoustic Matrix™ pickup is 2.650" (67.3mm). We recommend a saddle slot length of at least 2.875" (73mm).

The actual sensing area of the pickup is 2.620" (63.5mm) long and can accommodate string spacings of up to 2.500" (63.5 mm). Poor string balance may result with string spacings greater than this. ***DO NOT*** trim the end of the pickup's length as ground hum will be introduced. Custom pickup lengths are available from Fishman.

Tools

- Plunge Router with 1/8" (3.15mm) cutter for Wide Format **OR** 3/32" (2.4mm) cutter for Narrow Format
- 400 Grit Sandpaper or Scraper
- Rosin Core Solder
- 1/2" Open End Wrench
- 15/32" (11.9mm) Tapered Reamer or .....
- Caliper
- Soldering Iron (30 watt max)
- Wire Strippers
- 3/32" (2mm) Allen Wrench
- Variable Speed Drill
  X-Acto® Saw
  Center Punch
  1/8" (3.15mm)Twist Drill
  15/32" (11.9mm)Spade Bit Drill

Parts List

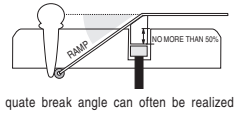
- Acoustic Matrix™ Pickup
- 1/4" endpin-mounted miniaturized preamp
- 3 adhesive-backed plastic wire guides
- Battery clip & screws

Important

1. Both the pickup and preamp are integral components of the Acoustic Matrix™ system. Neither the pickup nor the preamp is meant to be used separately or in conjunction with other pickups or endpin preamps. Degraded performance will result from using the pickup or preamp with other systems.
2. Particular attention must be paid to the flatness and squareness of both the saddle and the saddle slot. Pickup performance and balance will be greatly enhanced by a properly fit pickup. If you are new to undersaddle pickup installation, *The Finer Points of Piezo Installation* by Ken Parker is available at www.fishman.com.
3. Handle the pickup carefully! Mishandling may result in ground hum or intermittent signal. Fishman Transducers will be in no way responsible for any damages to the pickup that occur due to misuse or poor installation.

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

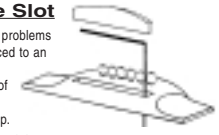
For the pickup to perform optimally, there should be a 20° (minimum) string break angle across the back of the saddle. An adequate break angle can often be realized by "ramping" the string slots. In extreme cases, where the break angle is much less than 20° and the saddle is so low that it is nearly flush to the top of the bridge, the instrument probably requires a neck re-set. 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 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 very well, even if the saddle slot depth measures more than 50% of the total saddle height.

Prepare the Saddle Slot



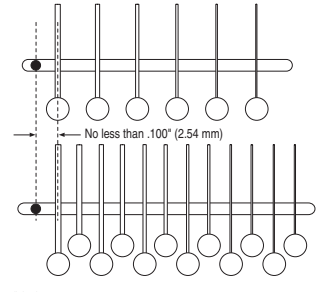
A large percentage of string balance problems with undersaddle pickups can be traced to an unevenly cut or warped saddle slot. Irregularities on the bottom or sides of the slot can often prevent the saddle from uniformly pressurizing the pickup.

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" (3.17 mm) wide saddle slot for the Wide Format pickup.
   OR
   Rout a .094" (2.38 mm) wide slot for the Narrow Format pickup.
2. 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" (2.54 mm) from the closest string.
2. Mark the location where the wire will enter the saddle slot. Center the mark between the walls (width) of the slot.



3. Drill a .094" hole.
4. Clear wood chips and foreign materials from the saddle slot.
5. Carefully insert (do not bend) the pickup. The fit must be loose in the slot, without binding on the sides or the ends of the pickup. If the ends of the pickup come in contact with the saddle slot, pickup failure could result.

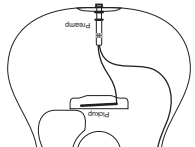
Prepare the Saddle

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

1. Prepare a .125" or 3.17mm wide saddle (.094" or 2.38mm for Narrow Format). For adequate pickup performance, the bottom and sides of the saddle must be absolutely 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 .053" shorter in height (.043" for Narrow Format pickups) than your current saddle.

Thank you for choosing the Fishman Acoustic Matrix™. We are confident that you will find it to be the finest acoustic guitar pickup available.

The active Acoustic Matrix™ system employs state-of-the-art surface-mount technology in its exclusive endpin-mounted, miniaturized preamp. The versatility and ease of installation are unparalleled. The pickup may be plugged into any acoustic or electric guitar amplifier, sound system, recording console or direct box with excellent results.



Important !

Installation of the Acoustic Matrix™ 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

The Pickup

The Acoustic Matrix™ under-saddle pickup is made with a unique co-polymer sensing material available exclusively from Fishman. This material exhibits a sensitivity and dynamic range that far surpasses all other known materials. The fully shielded Acoustic Matrix™ transducer is a multi-layer arrangement of co-polymer strips that run the length of the pickup. This design allows the pickup to sense the motion of an entire guitar saddle's length, providing superb string to string balance, as well as sensitivity to both the strings and top of the instrument.

The Preamp

The Acoustic Matrix™ preamp is a fully-buffered, miniaturized circuit, housed in an elongated shielding cap. The design features discrete transistors for low noise and incredibly long battery life. The preamp's extremely low current consumption allows years of use between battery changes. An onboard microphone or a second active pickup may be wired (stereo) directly to the Acoustic Matrix™ preamp, thanks to our integral Switchjack™ switching endpin jack (for use with the Fishman Blender® System).

Natural I

The Acoustic Matrix™ Natural I is the perfect choice for musicians who want accurate reproduction of their guitar's acoustic tone. The Natural I was designed for instruments with well balanced, evenly voiced top to bottom response. It complements all small bodied instruments such as concert/auditorium guitars. This pickup is frequently the choice of finger-pickers and solo performers. When played at low to medium volumes, the Acoustic Matrix™ Natural I also works well with most full-sized instruments.

Natural II

The Acoustic Matrix™ Natural II is designed for instruments that are amplified at high volumes on stage, especially full-size guitars with big bottom. It is voiced to control boominess and to provide extra brightness. The Natural II is recommended for musicians in situations where the guitar needs to stand out and sound natural, without feeding back.

INSTALLATION BY A QUALIFIED PROFESSIONAL REPAIRMAN IS STRONGLY RECOMMENDED. FISHMAN TRANSDUCERS WILL NOT BE RESPONSIBLE FOR ANY DAMAGES THAT MAY RESULT FROM IMPROPER INSTALLATION.

The FISHMAN ACOUSTIC MATRIX™ 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.

FISHMAN® Acoustic Power
FISHMAN TRANSDUCERS, INC.
340-D Fordham Road Wilmington MA 01887 USA
Phone 978-988-9199 • Fax 978-988-0770
www.fishman.com
009-066-004 • Rev 4 • 5-00

Installation Guide

Acoustic Matrix

Active Acoustic Guitar Pickup

Includes Installation Instructions for Models
Acoustic Matrix Natural I
Acoustic Matrix Natural II

Wide Format .125" (3.2 mm) Width
Narrow Format .094" (2.3 mm) Width

2.125" String Spacing

FISHMAN® Acoustic Power

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" (11.9 mm) reamer (available in the US & Canada through Stewart MacDonald, 800-848-2273 part #4323).

OR ...

Quick & Clean

The objective here is to quickly drill out the endpin jack 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.

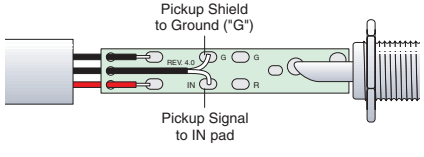
Note: *We do not recommend this method for instruments with brittle ornamental veneers (ex: abalone) around the endblock.*

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 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 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.

Solder the Wire Connections

1. Unscrew 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 signal wire from the pickup (hot wire) to the pad marked "IN" on the preamp circuit board. Solder the ground wire from the pickup (shield) to the adjacent 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 first large hex nut.

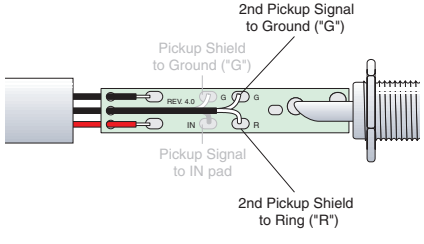
Figure 1



Optional Stereo Wiring

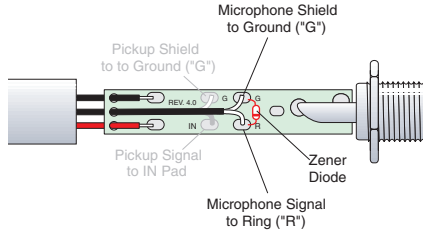
The Fishman Switchjack™ switching endpin jack is integrated into the Acoustic Matrix™. A variety of stereo wiring options are available for pickup+microphone or pickup+pickup:

Two Pickups



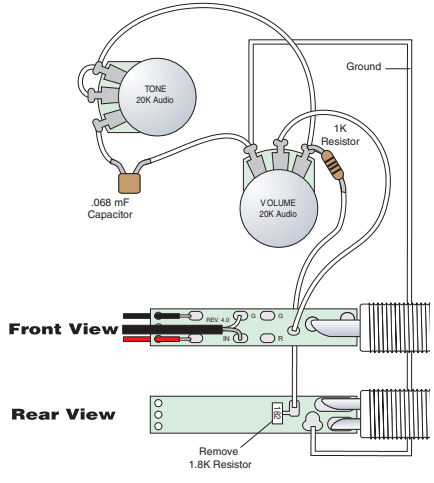
Pickup & Electret Microphone

(use with the Fishman Blender System)



Note: *Before you install a microphone, check the manufacturer's specific wiring instructions (color coding).*

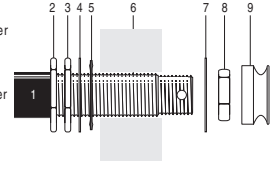
Additional Volume & Tone Controls



Fasten the Jack in the Endpin Hole

Follow this sequence when installing the endpin jack:

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



The jack should protrude at least 5/16" (7.9 mm) and no more than 11/32" (8.7mm) outside the guitar's body for proper fit.

Fit the small dress washer and nut over the end of the jack, then insert a 3/32" Allen wrench through the small hole on the end of the jack. Tighten the nut with a 1/2" open-end wrench while holding the jack in place with the Allen wrench. Thread and hand tighten the strap button.

Note: *With the strap button in place, the end of the jack should protrude slightly, so that when a plug is inserted, it will snap securely in place.*

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 1/2" (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 5/64" (2mm) 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 capacity 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.

A set of adhesive backed clips has been provided to secure the pickup cable and battery leads inside the guitar once the endpin jack has been installed. Remove the plastic film from the back of each clip to expose the adhesive. Secure the cable/clips to the kerfed lining of the guitar.

Specifications

Power Supply:	9 Volt Alkaline battery
Battery Life:	Natural I - 6,000 hours Natural II - 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 input stage, bipolar class AB output stage

All specifications subject to change without notice.

Troubleshooting

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 the Fishman Cleartone™ high-performance saddle.
	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 .094" diameter.
	Pickup binding in saddle slot.	The saddle slot must be .125" wide for Wide Format and .094" for Narrow Format. Rout the slot to the correct width.
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.
Thin or weak signal	Weak downbearing pressure due to low string break angle.	Observe the 50/50 rule. Ramp the string slots if necessary.
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.

FISHMAN® Acoustic Power
FISHMAN TRANSDUCERS®
340-D Fordham Road Wilmington MA 01887 USA
Phone 978-988-9199 • Fax 978-988-0770
www.fishman.com

009-066-004 • Rev 4 • 5-00