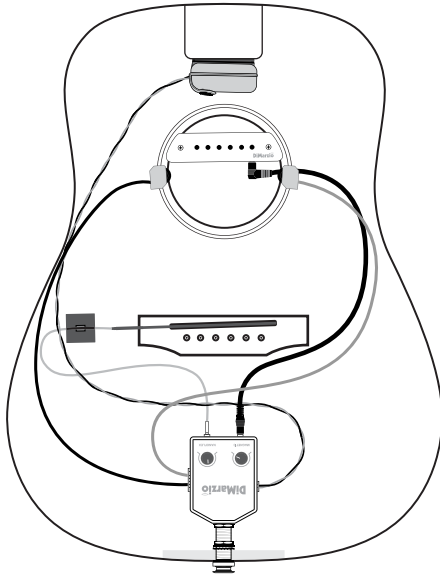


# THE ANGEL™ SYSTEM DP232 INSTALLATION INSTRUCTIONS

**FIG. 1**



The Angel™ System combines the Angel™ magnetic soundhole pickup and the Shadow Nanoflex undersaddle pickup with a specially designed preamp. It includes two volume controls mounted within the soundhole for easy access. The preamp is powered by a 9-volt battery (not included), which is mounted in the guitar on or near the neck block in a battery pouch. The Angel™ System works with standard bronze strings, but nickel-wound and compound strings can also be used. It will not work with nylon strings. **[FIG. 1]**

The soundhole must have a minimum diameter of 3½ inches (89 mm).

**IMPORTANT:** Installation of The Angel™ System is complex. We strongly recommend that installation be done by a qualified guitar technician.

## INCLUDED IN THIS PACKAGE

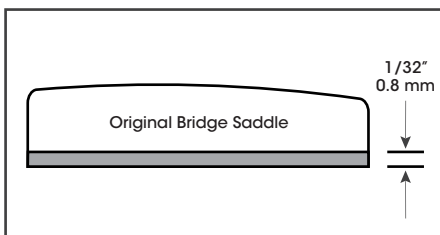
- (1) The Angel™ soundhole pickup
- (1) Nanoflex undersaddle pickup
- (1) The Angel™ dual preamp module and endpin jack
- (1) Self-stick dual volume control assembly
- (1) Self-stick battery pouch
- (1) 20-inch (51 cm) pickup-to-preamp cable
- (1) 12-foot (3.5 meter) cable for no battery operation
- (1) 3/32-inch Allen wrench
- (6) Self-adhesive cable retainer clips
- (1) Self-adhesive piezo cable retainer clip
- (1) Spare set of pickup mounting cushions
- (2) Alcohol wipes
- (1) Instruction sheet
- (1) Warranty card

**FIG. 2A**



Please read the installation instructions carefully. Installation of The Angel™ System requires the use of the included preamp/endpin jack.

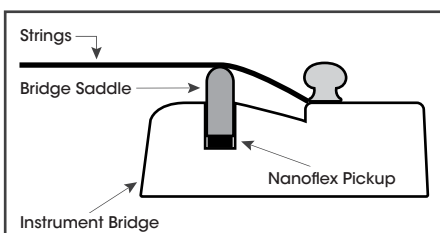
**FIG. 3**



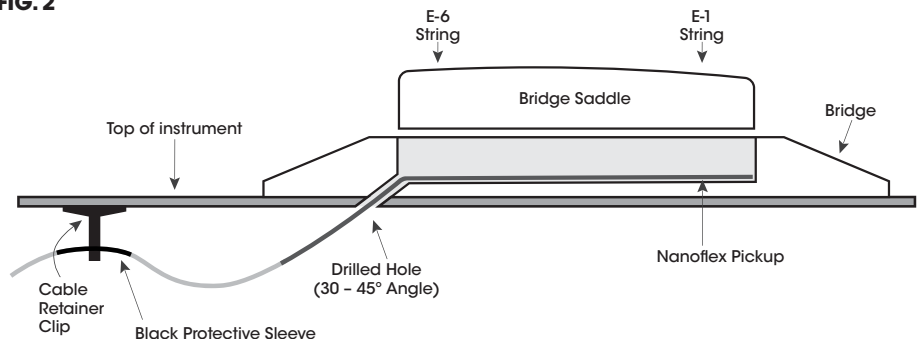
## INSTALLING THE NANOFLEX UNDERSADDLE PICKUP

Measure the string height of the first and sixth strings before removing the strings and record the measurements. Carefully remove the original saddle and drill a hole with a #42 drill bit (0.093-inch or 2.40mm) in the corner of the saddle slot at the bass string side of the bridge. **[SEE FIG. 2.]** The hole must be drilled at an angle of 30°-45°. Check the top bracing before drilling the hole to avoid damage. Clean up the saddle slot and remove all wood dust and chips. Push the pickup cable through the hole in the bridge and place the pickup into the saddle slot with "NFX top" showing. **[FIG. 2A]** To restore the overall height of the bridge, reduce the

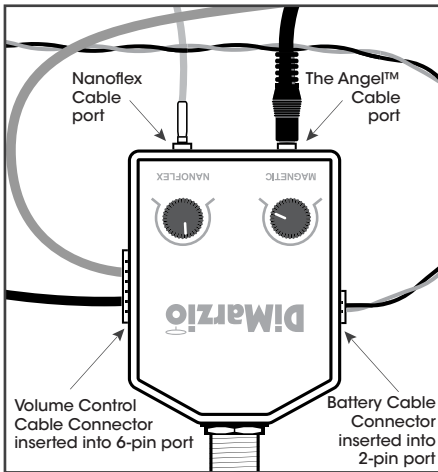
**FIG. 4**



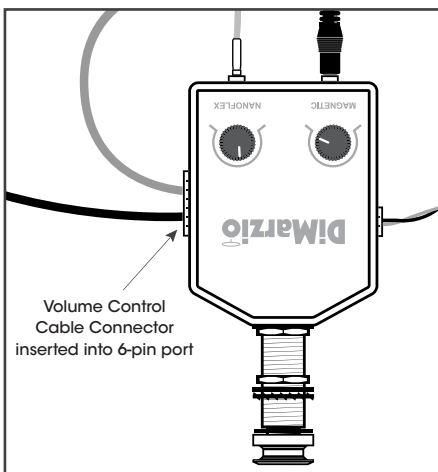
**FIG. 2**



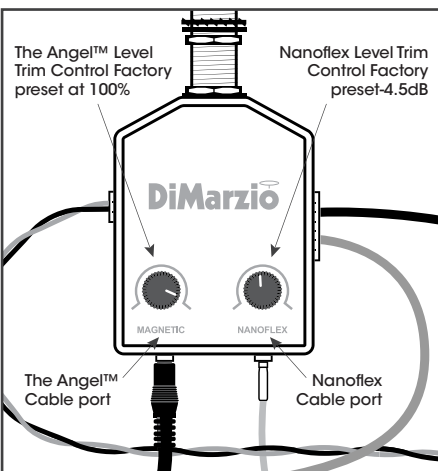
**FIG. 5**



**FIG. 6**



**FIG. 7**



height of the saddle by  $\frac{1}{32}$  inch (0.8 mm) [FIG. 3] by sanding the bottom surface of the saddle. It is important that the bottom of the saddle be absolutely flat.

Insert the saddle back into the slot and secure it temporarily with a piece of tape. Later, when you restring the guitar, make sure the strings do not tilt the bridge saddle forward toward the neck. [FIG. 4]

Use the black cable retainer clip to guide the wire from the pickup to the underside of the top and secure the cable into it. [FIG. 2] Failing to secure the cable will cause excess noise. The clip should secure the cable where the cable is insulated with the black protective sleeve. Do not attach the clip on the exposed braided metal section of the cable.

**PREPARING THE ANGEL™ SYSTEM PREAMP**

The Angel™ System preamp has an output jack for a standard guitar cable and four inputs to connect the cables from the volume controls, the battery, and the pickups. All four cables must be plugged into the preamp before the preamp is installed in the guitar. [SEE FIG. 5]

**VOLUME CONTROL:** Look carefully at the volume control connector before plugging it into the preamp so that you insert it in the correct direction. Attempting to force the connector into the preamp jack upside down will damage the preamp. The volume control cable connector must be inserted firmly into the 6-pin port on the side of the preamp. [SEE FIG. 6]

**LEVEL TRIM CONTROLS:** There are independent piezo and magnetic trim controls on the preamp which have an adjustment range of approximately 9dB [FIG. 7]. These controls have been preset at the DiMarzio factory, but they can be readjusted if you need to alter the balance between the Nanoflex and The Angel™ pickups. The Angel™ trim control is preset for maximum output, and the Nanoflex trim control is preset approximately 4.5dB below maximum.

**BATTERY:** Look carefully at the battery connector before plugging it in so that you insert it in the correct direction. Attempting to force the connector upside down will damage the preamp. The battery cable connector must be inserted firmly into the 2-pin port on the side of the preamp opposite the volume control cable.

**PICKUP CABLE:** The pickup cables must be inserted firmly into the mini jacks on the end of the preamp. [SEE FIG. 7]. Note the mini jacks are labeled MAGNETIC and NANOFLEX.

When the pickup cable, volume controls and battery cable have been connected to the preamp, install the preamp in the guitar.

**PREAMP INSTALLATION**

With the strings removed, place your guitar on a flat surface.

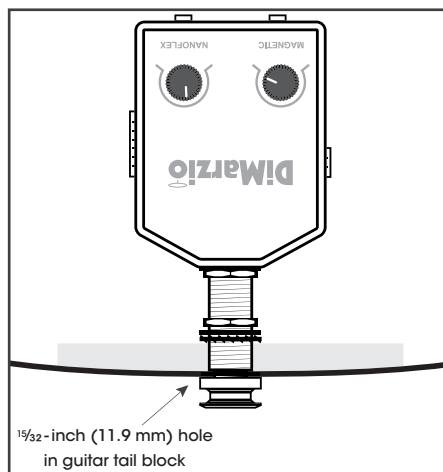
The preamp [SEE FIG. 8] requires a clean  $\frac{15}{32}$ -inch (11.9 mm) hole in the tail block of the instrument.

**IMPORTANT NOTE:** If your guitar already has a hole of the correct diameter for an endpin jack in the tail block, proceed to the paragraph below to complete the installation of the preamp. If your guitar does not already have a hole of the correct diameter, we strongly recommend that a qualified guitar technician install the preamp as follows:

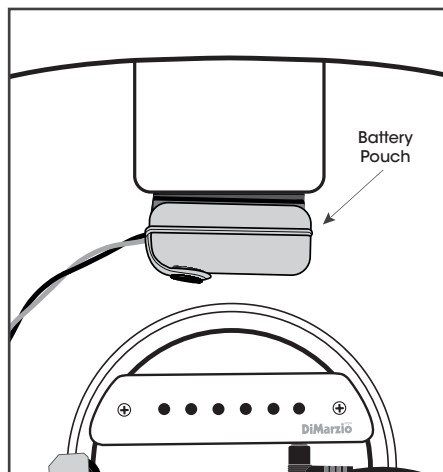
- Remove the existing endpin and place a piece of masking tape on the outside of the instrument over the endpin area to prevent chipping of the guitar finish.
- Enlarge the hole with a  $\frac{15}{32}$ -inch (11.9 mm) tapered reamer, available from Stewart-MacDonald (www.stewmac.com), part number 4323.
- Remove the masking tape and proceed with the installation.

Remove the strap nut, hex nut, and one flat washer from the end of the preamp assembly.

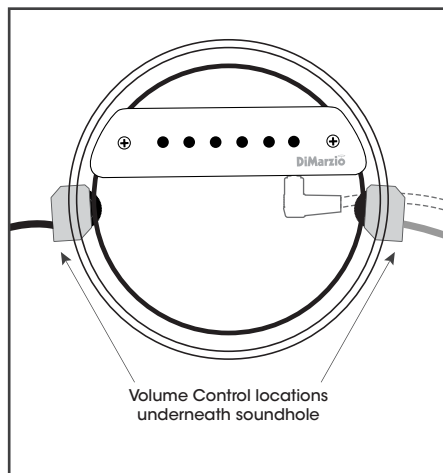
**FIG. 8**



**FIG. 9**



**FIG. 10**



There should still be one locking washer, one flat washer, and two hex nuts remaining on the jack.

Using care to keep the washers on the jack, bring the preamp down through the soundhole into the body and insert it into the hole in the tail block.

Adjust the internal nut so that the larger threaded section of the jack remains recessed  $\frac{1}{32}$  inch (0.8 mm) below the outside surface of the instrument and most of the smaller threaded section protrudes from the guitar. **The nut on the jack closest to the preamp is factory installed and must not be adjusted. Adjusting this nut can damage the preamp.**

With the preamp in place, lay the remaining flat washer over the threads outside the instrument and install the external hex nut hand tight.

Insert the included  $\frac{3}{32}$ -inch Allen wrench through the cross hole in the jack and hold firmly while tightening the nut with a wrench. To avoid damage, do not hold the preamp itself while tightening the nut. Use of a proper wrench instead of pliers will help prevent damage to the guitar. To avoid cracking the guitar finish, do not over-tighten the nut.

**NOTE:** If the jack will not tighten firmly, remove the external hex nut and re-adjust the internal hex nut until the larger threaded section is recessed at least  $\frac{1}{32}$ -inch (0.8 mm) below the outer surface of the instrument.

Finish by installing the strap nut hand tight. It should cover the retaining nut and washer. For best results, the end of the jack should be recessed ever so slightly from the end of the strap nut.

Once the preamp is installed, install two of the self-adhesive cable retainer clips on the inner back surface of the guitar to hold down the pickup cable and prevent it from vibrating against the guitar.

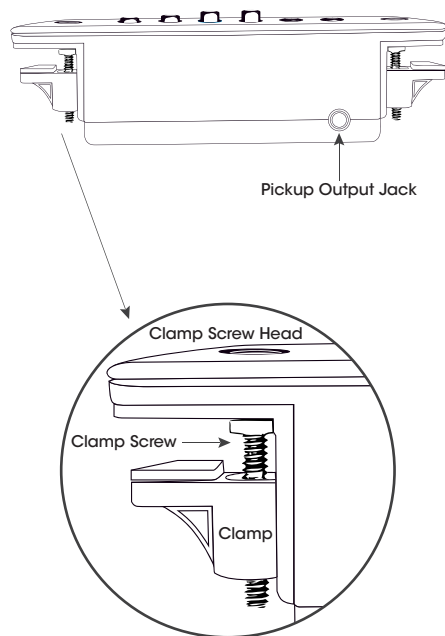
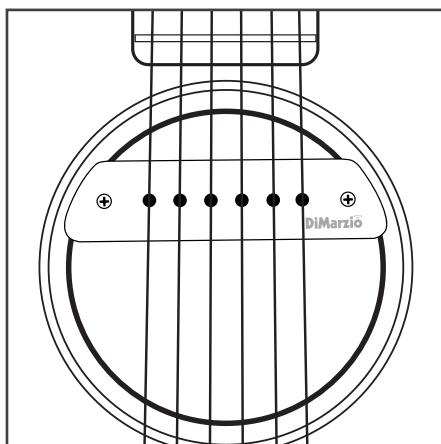
**BATTERY POUCH INSTALLATION**

The battery pouch will be installed on the flat surface of the neck block or the side of the guitar adjacent to the neck block as shown in **FIG. 9**. Clean the area where you will mount the pouch using the included alcohol wipe or a cotton swab moistened with rubbing alcohol. Let dry. Separate the battery pouch from the Velcro patch. Peel off the paper liner from the Velcro patch and attach the patch to the chosen location. To set the adhesive, press firmly on the entire area of the patch with your fingertip, especially around the edges. Attach the battery clip to a 9V alkaline or lithium battery, install the battery into the pouch, and re-attach it to the Velcro patch. Install one of the self-adhesive cable retainer clips on the inner back surface of the guitar to hold down the battery cable and prevent it from vibrating against the guitar.

**NOTE:** The adhesive under the Velcro patch requires 24 hours to achieve a full bond, so take care not to stress the adhesive if you remove the battery pouch less than one day after the initial installation.

**VOLUME CONTROL INSTALLATION**

Locate two flat areas on the underside of the soundhole where the volume controls will fit. Clean the area where you will mount the controls using the included alcohol wipe or a cotton swab moistened with rubbing alcohol. Let dry. Install each volume control by peeling off the paper liner on the smooth side of the circuit board and pressing it firmly inside the soundhole as shown in **FIGURE 10**. The Nanoflex volume control cable is red, and The Angel™ volume control cable is black. The volume controls should protrude from the sound hole just far enough to be easily adjusted, as shown. Install one of the self-adhesive cable retainer clips on the inner back surface of the guitar to hold down each volume control cable and prevent it from vibrating against the guitar.

**FIG. 11****FIG. 12****INSTALLING THE ANGEL™ PICKUP**

Loosen the clamp screws on both ends of the pickup top plate using a small Phillips screwdriver until the clamps are open wide enough to mount the pickup on the top of the guitar. **[SEE FIG. 11]** Then slide the pickup into the soundhole.

For small soundholes, it may be necessary to remove one or both clamps, slide the pickup into place, and then reassemble the clamp(s) once the pickup is correctly positioned. When reassembling the clamps, be sure they slide into the slots molded into the pickup housing.

We recommend installing the pickup as close to the bottom edge of the fingerboard (towards the neck) as possible.

Adjust the pickup so that it is centered in the soundhole and the pole pieces are aligned with the strings. **[SEE FIG. 12]** A slight mismatch between your guitar's string spacing and the spacing of the pole pieces will not affect performance.

Tighten the clamp screws firmly, but do not over-tighten. Over-tightening can damage the pickup or guitar finish.

Once the pickup is securely installed, plug the cable from the preamp into the pickup output jack. Restring your guitar and you're ready to play.

**PLAYING THE ANGEL™ SYSTEM**

Plug your guitar cable into the endpin jack to power up the preamp. Before plugging The Angel™ System into the amplifier, turn the amplifier volume all the way down. Adjust The Angel™ volume controls in the soundhole all the way up, then adjust your amp volume to the maximum level you want. The blend of the Nanoflex and The Angel™ can be adjusted by reducing either of the volume controls. It is possible to solo either of the pickups by turning the volume control of the other pickup all the way down.

You can expect about 600 hours of playing and standby time from a fresh alkaline battery, or as much as 1000 hours from a lithium battery. To extend battery life, unplug the guitar cable from your guitar when you're finished playing. Remember, the preamp continues to operate and uses battery power whenever a guitar cable is plugged into your guitar, even if you turn down the soundhole volume control, unplug the cable from your amp or put your guitar amp on standby. A weak or distorted sound from The Angel™ System means it's time to replace your battery.

If you ever experience unexpected battery failure and can't replace the battery before you have to play, you can play The Angel™ magnetic pickup without a battery by disconnecting the preamp cable from the pickup and plugging the included 12-foot (3.5 meter) guitar cable into the pickup. This backup cable connects The Angel™ directly to your amp without a volume control.

**POLE PIECE ADJUSTMENT**

The pole pieces of The Angel™ are preset for standard bronze acoustic strings (four wound strings and two plain), but this setting is only a basic reference point. The pole pieces are adjustable with the included  $\frac{3}{32}$ -inch Allen wrench to provide the best balance for your specific guitar and string set. Raising a pole piece will increase the output from its string, while lowering it will decrease it.

**IMPORTANT:** The pole pieces have a maximum downward adjustment range. When you encounter additional resistance at the bottom of the adjustment range, do not force the pole piece further. This could result in permanent damage.