



SADDUCERä

SADDLE TRANSDUCER

INSTALLATION AND OWNER'S MANUAL

Steel String Mono & Stereo
Nylon String Mono & Stereo



Introduction

Congratulations on your purchase of a D-TAR Sadducer™! These pickups have been crafted especially to fill the needs of the acoustic guitarist. You do not need to use a preamplifier with these products to get a good sound. Every feature has been carefully chosen to give you a warm natural sound of unusual quality for a piezo-based transducer.

There are four members of the Sadducer family, mono and stereo Steel String and mono and stereo Nylon strings. The stereo Sadducers have separate transducers for the top three and bottom three strings. The 3/32" width allows use in guitars with saddle widths from 3/32" to 1/8". String spacing and the correct location for the lead wire are given in the table below.

Description	String Spacing (E to E)	Lead Wire Location
Steel, mono	2" to 2 5/16"	Low E or high E
Steel, stereo	2" to 2 5/16"	Low E and high E
Nylon, mono	2 3/16" to 2 1/2"	Low E ONLY
Nylon, stereo	2 3/16" to 2 1/2"	Low E and high E

Caution!! Remove the Sadducer from the packaging with care!!

Once the Sadducer is installed in a guitar it is virtually indestructible. During the installation and when handling the Sadducer extreme care must be given to protecting the lead wire connection from undue stress. Also be careful not to fold or bend the Sadducer ...it is very flexible. (That's one of the reasons it sounds so good!)

A Discussion on Feedback

Our Sadducer was specifically designed to be acoustically open to the guitar's top. This is good from a tone standpoint since the top produces such a large part of the acoustic guitar's natural timbre. This enhanced warmth can sometimes make the guitar susceptible to feedback when played at high volumes. An understanding of the dominant feedback modes and ways to deal with them can help you quickly deal with feedback should it ever become a problem.

An acoustic guitar, which sounds warm, rich and responsive when, played without amplification can feedback annoyingly when amplified. The sound from the speakers interacts with the guitar's natural resonance to cause feedback. There are two dominant resonant sources, the air cavity and the soundboard. The air cavity is the lower of the two, generally falling around 100 Hz. The soundboard, which produces 90% of the guitar's acoustic output, resonates around 200Hz.

Changing the phase of the output signal can effectively control the low frequency air cavity resonance, although in very loud settings you may actually need to block the sound hole. A notch filter or parametric equalizer, such as the D-TAR Equinox, is very useful in controlling soundboard feedback. Once the notch filter is “tuned” to your guitar’s soundboard, the depth control can be used to cut more or less depending on how loud you are playing. You only want to notch out “just enough” to control feedback so that the guitar retains as much of its acoustic characteristics as possible. Proper use of the phase and notch controls will allow you to play at high volume levels without feedback and without unduly compromising the natural timbre of your instrument. For more information about the Equinox, check out the D-TAR website (www.d-tar.com).

Installation

Our pickup system has two main elements: the endpin jack and the transducer. We will cover the installation of each in some detail.

We strongly recommend that a qualified luthier perform the installation. They have the proper tools and experience to get the job done right the first time. Your dealer is the place to start for advice and installation. If you want to perform the installation yourself, please read the following instructions carefully. Its not hard, but good mechanical skills and reasonable care are required.

INSTALLATION STEPS

- 1) MARK BOTH E STRING LOCATIONS ON THE BRIDGE
- 2) REMOVE STRINGS
- 3) REMOVE THE SADDLE AND CHECK FIT IN THE SLOT
- 4) INSTALL THE TRANSDUCER
- 5) SHAPE THE SADDLE
- 6) SOLDER CONNECTIONS
- 7) MOUNT THE END-PIN JACK
- 8) INSTALL STRINGS AND CHECK THE SOUND

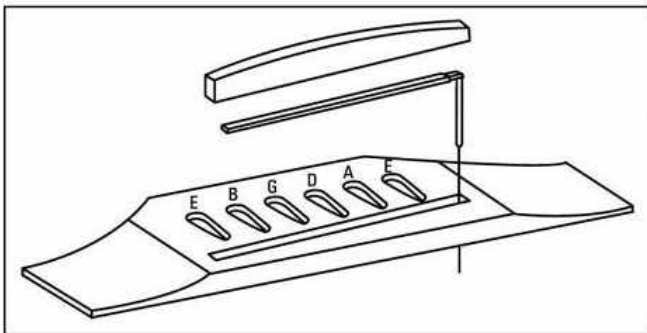


Figure 1

The Transducers

1) Before removing your strings, mark the E string locations on your bridge with a pencil. You will need to drill a hole in the bottom of the saddle slot which is precisely measured from the E string in step 7, so make sure this first step is done carefully.

2) Remove the strings and remove the saddle from the saddle slot. Measure the depth of the slot. It must be at least 1/8" deep. If the slot is less than 1/8" deep you will need to have it routed out. Let a professional repairman do this step if it's necessary. 3/16" is a good depth if the saddle can be routed to this depth without damage.

3) Insure that the saddle fits properly in the slot. It should slide in and out of the saddle slot easily, but should not be so loose that it falls out when the guitar is turned over. If it's too tight, sand it down with 600 grit wet/dry sandpaper until it fits properly. If it's too loose, you will need to shape a new saddle. This work is best performed by a professional.

4) Make sure that the bottom of the saddle slot is flat and free of debris. If the bottom of the slot is not flat, you should take your guitar to a qualified repairman for the installation. The slot will need to be dressed or routed flat for the best sounding installation.

5) If you have not cut your saddle slot deeper, shave 0.06" (1.5 millimeters) from the bottom of the saddle. This will return your action to the same height that it was before the Sadducer was installed. Make sure that the bottom of the saddle is flat and free of burrs after you're finished. If you had to cut a deeper slot in step 2, you will have to calculate a new saddle height. The combined material removed from the bottom of the saddle and the slot should equal .06.

6) If your saddle width is 3/32" (0.093"), skip this step. If your saddle width is 1/8" you'll need to shim the transducer to center it in the saddle slot. Two 3/64" wide, 1" long strips of cardstock cut from a business card or manila file folder will work great. Tack the strips to both sides of the Sadducer with Crazy Glue™. Make sure that the strips are below the top of the transducer. (The saddle needs to make perfect contact with the top of the transducer.)

7) Carefully measure, mark and drill a .093 (3/32") hole for the transducer lead wire in the bottom of the saddle slot, referring to Figure 2. If you are installing a Sadducer in a twelve-string, refer to Figure 3. In a first time installation this hole should be referenced to the low E string, although the Steel String Sadducer can be installed with the lead wire on the high E string side if desired. **The Nylon String Sadducer has a special crystal under the high E string so it MUST be**

installed with the lead wire on the low E string side. The Stereo Nylon Sadducer and Stereo Steel String require holes on both ends of the saddle slot.

The Nylon Stereo Sadducer also has a special crystal under the high E string; so make sure the transducer with the **WHITE** lead wire is installed under the 3 high strings (E-B-G)

8) Drop the Sadducer in the slot, referring to Figure 1. **Take care not to bend the Sadducer or stress the solder joint!**

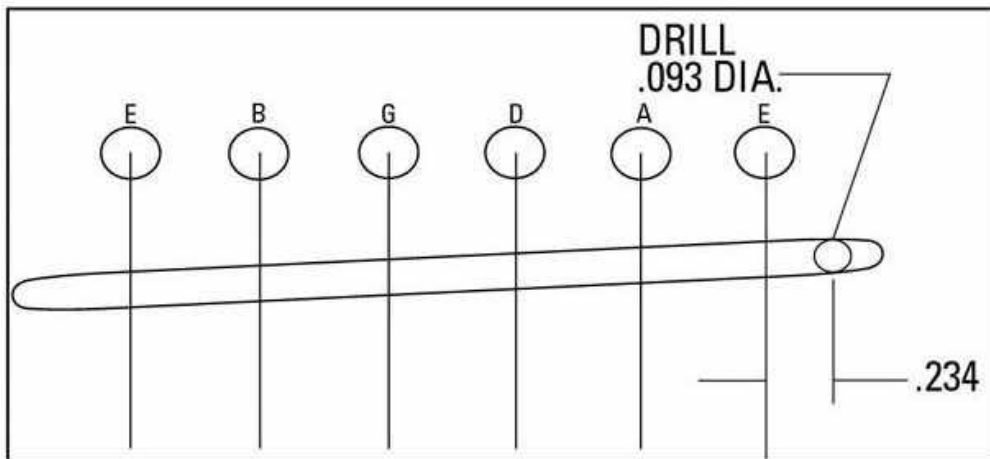


Figure 2

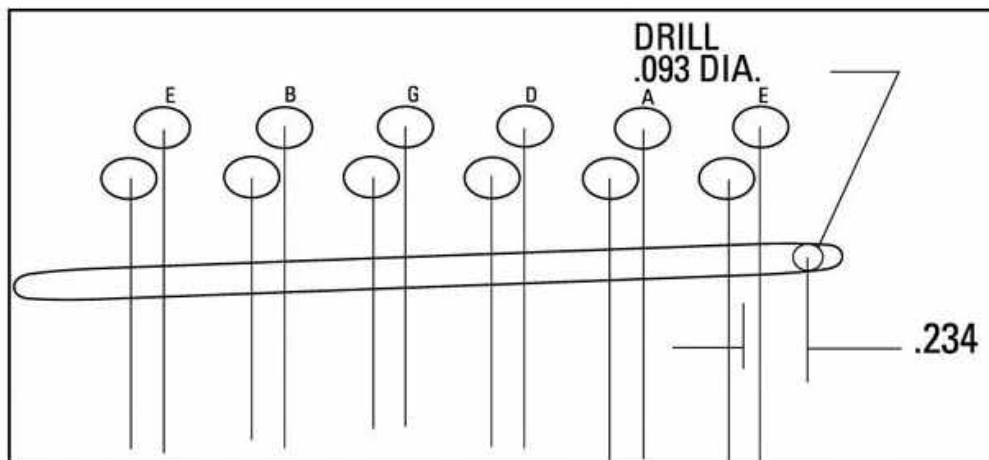


Figure 3

The End-Pin Jack

We have included a high quality shielded endpin jack with our pickup system because it's the very best available and its installation is familiar to most repairmen and luthiers.

1) Remove the existing endpin **CAREFULLY** drill out or ream the hole to 15/32". Proper equipment and know-how will keep the finish intact, but this step is best done by a qualified repairman.

2) Draw the cable from the transducer out through the sound hole. Next thread the shield cap, large hex nut, thick washer and the star washer over the wire (refer to Fig. 4). **Cover your guitar with a piece of cardboard to protect the finish!**

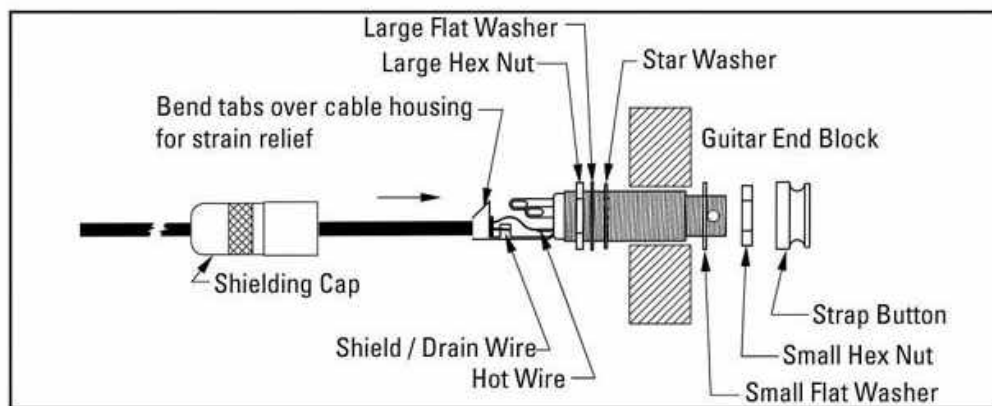


Figure 4

3) Carefully solder the wires to the jack. Solder the hot wire to the shortest terminal. If you are installing a Stereo Sadducer, solder the hot lead from the second transducer to the medium length terminal. Shield wires are soldered to the ground lug (refer to Fig. 4). The longest terminal remains unused.

4) Unscrew the threaded strap attachment and the small hex nut. Remove the thin washer.

5) Slide the star lock washer and the flat washer onto the body of the jack. Thread the large hex nut on the shaft 4 or 5 turns. Then poke the jack through the hole in the rear block. The large part of the jack should be just below the surface of the guitar. Adjust the position of the large hex nut as necessary to achieve the alignment.

6) Screw the knurled shield cap over the connections, poke the jack through the end-pin hole for the final time, place the thin washer over the protruding shaft and thread the small hex nut over the shaft until it's finger tight. Tighten the nut

securely. You can put an Allen wrench through the small cross-hole to keep the jack from spinning.

7) When the jack is secured, install the threaded strap attachment and tighten it firmly.

Final Steps

1) Install the saddle, then string and tune your guitar. Try to tighten the strings evenly so that the saddle is loaded equally across its length.

2) Check the string-to-string balance. In most cases, any imbalance between strings can be solved by placing a small piece of 600 grit wet/dry sandpaper under the Sadducer in the area of the weak string. Severe problems will need the expertise of a good guitar repairman.

Troubleshooting

1) *The string-to-string balance was great until you changed your strings or there's a crackling sound when you press on the saddle or bridge.*

The saddle is probably cocked in the slot, causing uneven pressure on the transducer. Loosen the strings, rock the saddle, and then tighten the strings evenly. That should correct the problem. If it doesn't, double check the saddle fit as outlined in step three. The saddle MUST be free in the slot. If you changed the gauge of strings radically downward you may need to use the wet/dry sandpaper trick or split the saddle in one or more places to get things balanced again.

2) *You seem to get a lot of 60Hz hum or no output.*

Check your wiring for a lifted ground connection or broken signal lead. If 60Hz hum is barely audible you can sometimes eliminate it entirely by insuring that you have a solid AC earth (third wire) ground connected to you amplifier or equipment. Check your cables and use good ones. The impedance of the Sadducer is so high that a cheap or poorly shielded cable is immediately obvious.

3) *You need to play very loud, but your guitar feeds back.*

You need a graphic equalizer, or better yet, a parametric equalizer, such as the D-TAR Equinox. The natural wholesome things that make an acoustic instrument sound warm, rich and mellow react violently to amplification. Although our pickup will play louder than a microphone, at some point you'll need to notch out the soundboard and air cavity resonances in order to play painfully loud. The

dominant resonance of an acoustic guitar falls roughly around 200Hz and has a narrow bandwidth (high Q). A good equalizer The Equinox will allow you to notch out this narrow band, greatly cutting down on feedback.

4) *You move around a lot when you play. Feedback seems to come and go as you move.*

When your guitar is a certain distance from the speaker the sound waves from the speaker are “in phase” with the motion of the soundboard or with the vibrating air in the guitar’s body. When there is enough of this additional reinforcement at the soundboard or air cavity’s natural resonance, feedback occurs. Conversely, there is a certain distance at which the sound waves from the speaker are “out of phase” with the sound waves of the guitar and “cancellation” occurs. In order to absolutely eliminate the feedback no matter where you stand, you’ll have to notch the natural resonances (sound board and body) very carefully (or find a sweet spot and stop moving around.)

A helpful hint:

At a resonant frequency of 200Hz, there will be a feedback canceling “node” every 5.6 feet. Half way between the nodes, your guitar may feedback like crazy if you’re not careful.

Conclusion

We hope that you enjoy your new Sadducer. The natural sound of an acoustic guitar is an enjoyable and thriving part of the music tradition. Thank you for selecting our product to compliment your instrument. Let us know if you have any questions, suggestions or just want more information on our other acoustic and electric products. We’d like to hear from you.

Limited Warranty

D-TAR offers the original purchaser a one-year limited warranty on both labor and materials starting from the day this product is purchased from an Authorized D-TAR Dealer or as original equipment in an instrument, provided that a qualified, professional repairperson or luthier performed the installation. D-TAR will repair or replace this product, at its option, if it fails due to faulty workmanship or materials during this period. Defective products should be returned to your USA dealer, international distributor, or sent direct to our factory postage prepaid along with dated proof of purchase (e.g., original store receipt) and a RMA number clearly written on the outside of the box. Please call our factory for issuance of an RMA number.

This warranty does not apply to damage to this product or an instrument caused by misuse, mishandling, accident, abuse, alteration, faulty installation or installation by a non-qualified repairperson. Product appearance and normal wear and tear (worn paint, scratches, etc.) are not covered by this warranty. D-TAR reserves the right to be the sole arbiter as to the misuse or abuse of this product. D-TAR assumes no liability for any incidental or consequential damages, which may result from the failure of this product. Any warranties implied in fact or by law are limited to the duration of this express limited warranty.

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