

## **D-TAR**

Duncan-Turner Acoustic Research  
"With Respect to Acoustic Tone"

### **Simplified Installation Instructions for Timberline Under Saddle Transducer Pickup**

We strongly suggest professional installation as there are steps that involve drilling, routing, and soldering that are not for unsupervised, first time guitar hobbyists. If you are not perfectly confident in your use of power tools around guitars, please call us for a reference to an authorized installer. Please read these instructions in their entirety before beginning an installation.

#### **Tools Required for Simplified Aftermarket Installation**

- 1) 1/2" chuck electric drill.
- 2) 1/8" drill bit for drilling the hole for the pickup cable.
- 3) 15/32" drill bit with flutes ground for zero rake...this keeps the drill bit under control and prevents the bit from grabbing as you drill through the end block of the guitar. An alternative to this is a 2-step Endpin Jack Reamer from Stewart MacDonald, part #: 4323
- 4) Sharp end nippers.
- 5) Soldering iron and fine rosin core solder. Use a eutectic SN 63 electronic grade solder.
- 6) Small Crescent wrench for tightening the nut on the output jack.
- 7) Small Phillips head screw driver, Allen wrench, or finish nail to prevent jack from turning as you tighten the nut.
- 8) A modified 1/4" plug with either a length of solid core 16 ga copper electrical wire soldered to it or a length of thin dowel glued to it. This will help guide the end pin jack through the hole in the end block from the outside and make it unnecessary for you to reach all the way through the sound hole to install the end pin preamp.

## Simplified Installation Steps

- 1) Set up a clean and well-lit work area padded to avoid scratching the guitar.
- 2) Remove strings from bridge. (Luthier's tip: coil the strings in pairs to get them out of the way and make it easy to put them back on. This avoids tangling and subsequent frustration).
- 3) If the guitar already has an end pin jack, remove it and move on to the next step. If not, remove the end pin and drill or ream the hole out to 15/16" to accommodate the Timberline end pin preamp. Test fit and adjust the 15/16" nut with lock washer so the larger diameter of the jack body is completely within the hole.
- 4) Measure the height of the top of the bridge saddle relative to the top of the bridge at the 1<sup>st</sup> and 6<sup>th</sup> string and write down the measurements here for future reference:  
6<sup>th</sup> string saddle height \_\_\_\_\_  
1<sup>st</sup> string saddle height \_\_\_\_\_  
Unless you plan to change the action of the guitar, these are the measurements you want to end up with when the job is complete. You can also make a pencil line on the saddle right where it emerges from the slot in the bridge for future reference.
- 5) Remove the bridge saddle. In order to keep your action at the same height, you will need to compensate for the added thickness of the pickup by one of two methods:
  - a. The fast and easy method is to cut material off the bottom of the bridge saddle.
  - b. For the absolute perfectionist desiring that extra 5% in performance, you can route the saddle slot deeper using a round-ended bit. Refer to the detailed instructions in the owner's manual.
- 6) Cut the bridge saddle down. The material removed should be slightly less than the thickness of the pickup. About .095" to .100" should be fine. Here again, there are two methods:
  - a. The best method is to use a vertical mill and a sharp end mill around 3/8" to 1/2" dia. Spindle speed should be 600 to 1000 RPM. If you want a small improvement in performance, you can use a 1/8" ball end mill set up to run down the centerline of the bridge saddle. Remove the material in 4 or 5 successive small cuts with the final cut being about .010". Be sure you set up the bridge saddle level in the mill vise.
  - b. If you do not have a vertical mill available, you can sand the material off using a belt sander. This must be done carefully, with

emphasis on removing material evenly and keeping the bottom surface flat and perpendicular to the sides. It is recommended to leave a small amount of material to be finished up by hand sanding. This is best accomplished by taping a piece of 400 grit sandpaper to a very flat surface (plate glass is preferred) and sanding the bottom surface of the bridge saddle with a light, even pressure. The surface should end up smooth and even, without any faceting.

- 7) Slightly bevel the bottom edges of the saddle so they won't hang up on the saddle slot, and test fit the saddle.
- 8) Drill a 1/8" hole through the bottom of the saddle slot for the pickup. Drill at one end at a 30 to 45 degree angle. Try to avoid drilling through any guitar braces, but if it can't be avoided, you are better off with the hole going through close to the guitar top, not at the top of the brace. Also drill a shallow hole at a flatter angle at the other end of the saddle slot, but only into the bridge, not through into the guitar body. This is where you will tuck the end of the pickup to prevent it from popping up when you put the saddle in.
- 9) When you are satisfied that the saddle fit and height are correct, install the end pin jack. We use a tool made from the 1/4" diameter section of a guitar cord phone plug with the body of the plug removed. It is soldered to a 18" section of solid core 12 gauge electrical wire. You can insert the plug end through the end pin jack hole, reach it up to the sound hole of the guitar, slip on the end pin jack/preamp, and then guide the endpin jack through the hole in the end block without having to reach inside the guitar. We advise setting the bass trim pot on the preamp to about 1/4 turn up as a starting point for tonal balance.
- 10) Adjust the 15/16" internal nut so the larger portion of the jack bushing is completely within the hole. Slip on the 3/8" washer and tighten up the 3/8" nut using a small screwdriver, Allen wrench, or nail to prevent the jack bushing from turning while you tighten the nut.
- 11) Determine where you will want the twin battery holders inside the guitar. Cut the battery leads to an appropriate length, and resolder the leads taking care that the red wire goes to the "+" terminal of the battery pack, and the black wire goes to the "-" terminal. Clean the area where you will stick the batteries with a rag and a little denatured alcohol. Peel off the backing on the Velcro on the bottom of the battery clips, and firmly press in place. Insert batteries. These battery holders only allow you to put the batteries in the correct way. We find the easiest way to put in the batteries is to first put the bottom of the

battery into the clip and then press down. You should not have to force the battery if it is in the right way.

- 12) Reach inside the guitar and insert the pickup upward through the 1/8" diameter drilled previously in the saddle slot (step 8). Tuck the end of the pickup into the shallow hole drilled in the far end of the saddle slot.
- 13) Install the modified saddle by pressing it slowly and evenly into the slot. Press down firmly enough to seat the saddle against the pickup and the pickup against the bottom of the saddle slot.
- 14) You are now ready for a test run on the action. Put on the 1<sup>st</sup> and 6<sup>th</sup> strings, and tune up to pitch. Now is the time to double check action measurements and make any adjustments necessary. When you're satisfied with the action, finish stringing up the guitar and bring it up to pitch.
- 15) You can now plug in the guitar and start testing for string balance and bass trim level. Push back and down on the saddle with a dowel or flat blade screwdriver to allow it to completely seat on the pickup and carefully pick each string. If there is a weak string, push back and down right on either side of that string. This should even out the voicing balance of the strings.

You can now make final adjustments to the bass boost trim pot by using the end pin jack insertion tool to move the preamp up to the soundhole to tweak the trim pot, then slide it back into the end block and retighten it in place. When you are satisfied with the overall response of the pickup, put the strap holder nut on, and the job is done.

#### CAUTIONS:

This pickup is designed for professional installation, not "do-it-yourself" hobbyists. Please do not attempt to put this pickup in a guitar unless you are well qualified to work around fine guitars with power tools. We can bear no responsibility for damage to your guitar due to incorrect installation.

If you or your customer has any doubts about installing this or any other pickup in a guitar, just don't do it. A proper pickup installation is somewhat invasive, and it does involve permanent modifications to the instrument. We do not recommend installing pickups in vintage instruments or in instruments that have high collectible value unless you are very sure that what you want is the best electro-acoustic you can get. Some of the finest luthiers in America have installed our pickups in extremely valuable instruments, and they report little if any alterations in acoustic tone, but if a guitar owner is expecting the worst, they will get it. Go back to the first sentence in this paragraph!

## 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 pain, 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.