

Introduction

Renner USA supplies both high quality bushing cloth and leather for rebushing keys. The cloth is available in four different thicknesses, either pre-stripped or bulk, to fit most applications. The leather is available in two thicknesses, which can be easily adjusted to the exact thickness needed as described in this manual.

This article will present the basic principles of proper key bushing replacement in the field repair situation, such as when only one or two keys need rebushing. The principles and desired end result are the same whether you are bushing a single key or an entire set. However, special methods can be used in the shop situation for rebushing entire sets of keys more efficiently. For full details on these methods, see the publication, "Efficient Key Rebushing" available from: <http://www.spurlocktools.com/>.

Principles of Proper Key Rebushing

A properly rebushed key will have quality, dense bushing cloth securely glued in place, extending 5mm- 6mm into the key mortises. The glue must be water soluble to allow for future removal. While hot hide glue is preferred for complete rebushing in the shop situation, yellow wood glue (water soluble type) is easier to work with in the field repair situation. The bushing should be sized to closely match the keypin, and this sizing should occur as a result of the gluing and clamping process rather than by extensive use of key easing pliers afterwards. This method gives a more accurate and stable result and also avoids unnecessary damage to the keys from excessive key easing.

Tools Required:

- Micrometer for measuring the key pins
- Water with a small amount of wallpaper remover or other surfactant, for soaking out old bushings.
- Key bushing cauls that match the key pin size at hand
- Key bushing cloth in a range of thicknesses
- Yellow wood glue - non-waterproof type
- Key easing pliers

Procedure:

1. Apply water/wallpaper remover solution to the old bushings, and allow soaking until they remove easily. Check for any loose wood splinters or cloth fibers in the mortises, and then allow the keys to dry in a warm place for 10 minutes or so.
2. Measure both the front and balance rail key pins with a micrometer. Obviously, you must rotate one of the oval front pins in order to get the micrometer on its narrow dimension for measurement. Choose bushing cauls that match the pin sizes.

KEY BUSHING CLOTH & LEATHER

3. Select the correct thickness of cloth by looping it into the mortise and testing the dry fit of the bushing caul (photo #1). The caul should fit snug but not too tight; you should be able to pick the key up by lifting on the caul, but two or three shakes should cause the caul to pull out (photo #2).



Photo #1: Looping cloth into mortise

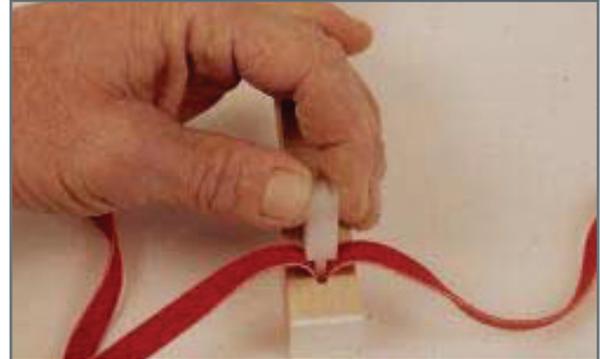


Photo #2: Testing dry fit

4. Line up both ends of a piece of cloth evenly. Holding them in one hand, apply a thin coat of glue to about 3/8" of each piece (photo #3). A stick is best for glue application, since it can be used to spread an even layer. While hot hide glue is best in the shop, it is impractical to use in the spot repair situation. Instead, use carpenter's yellow wood glue (non-water proof type), which can still be removed by soaking in the future if necessary. Cold liquid hide glue is not suitable, since it sets too slowly for felt work.

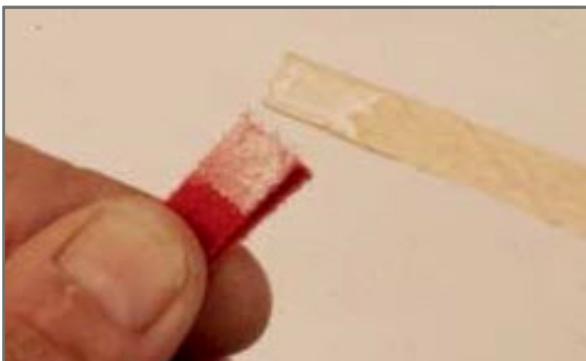


Photo #3: Applying glue

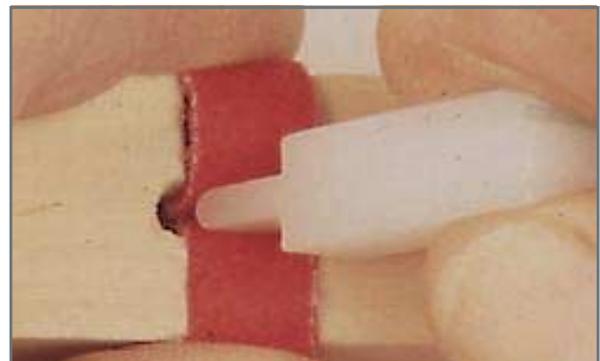


Photo #4: Inserting caul

5. Position both pieces of cloth in the mortise, estimating 5mm depth. Holding the cloth against the top of the key, insert a bushing caul. Immediately remove the caul to check for proper cloth depth. Adjust as necessary, and then reinsert the caul (photo #4).

- Using a sharp knife or razor, trim the cloth flush with the key button (balance rail), or flush to the shoulders of the bushing caul (front rail). Place the key in a warm place for at least 20 minutes (longer is better) for the glue to dry. The bushings will be sized to fit the keypin by this process of clamping with a caul that matches the pin size. (photo #5)



Photo #5: Trimming the cloth



Photo #6: Sanding leather thickness

- After drying, fit the keys to the key frame pins. First check the fit of the key balance holes; easing just enough that the key will slide down the pin from its own weight. Then check the balance and front rail bushings and ease as necessary for slight clearance. If the proper sized cauls and cloth thickness were used, little if any easing should be necessary.

Bushing with leather:

When extreme wear is a problem, leather is the preferred bushing material. Although it has more friction against the key pins than does cloth, its much longer life is worth this slight disadvantage.

Replacing an entire set of key bushings with leather is most efficiently done using special in-shop methods described in the publication, "Efficient Key Rebushing" referred to above. There are a couple of differences in technique required when bushing with leather that are worthy of mention here.

First, you must sand the leather to the desired uniform thickness for a given job (photo #6). This is easily done using a simple drum sander in a drill press. Simply clamp a fence close to the sanding drum, leaving a small gap between. With the drill press running, lower a strip of leather into the gap and pull it through against the direction of rotation. The leather will come out perfectly uniform in thickness. Adjust the fence as needed.

Second, you must aim for a slightly looser fit when selecting leather thickness using the dry fit test explained previously. Since leather is denser and less porous than cloth, the glue does not penetrate it as far, and thus it will not size down as much when clamped with the cauls. To compensate, you must use thinner leather for a looser dry fit than you would with cloth