

# Voicing the Renner Hammer

By Rick L. Baldassin

## The Renner Premium Blue Hammer



The Renner Company in Stuttgart, Germany, is world renowned for their quality as the largest independent manufacturer of piano action parts and hammers. Renner manufactures 400 basic styles of hammers, not including the various types of moldings and special executions.

The German Steinway, Bösendorfer, Falcone, Mason & Hamlin, Fazioli, Bechstein, and Blüthner are among the world's premium pianos, which use Renner hammers, which are produced to each manufacturer's specifications.

The Premium Blue hammers are a special execution, designed and produced for North America, and are ideal for every high quality piano, European or American, particularly the great vintage American pianos produced in the past.

Renner's felt buyers are still able to obtain the finest, longest fiber felt available from the few remaining quality felt producers around the world. This felt does not require artificial impregnation or lacquers of any kind, and is used exclusively in hand crafting the Premium Blue hammer. The hammers are medium density, high tension, and use mahogany moldings, which represent a careful recreation of the great hammers, originally used by American piano makers early in this century.

The grand hammers are made in 3 basic weights, and 2 boring sizes, which will fit 80 % of the pianos you are likely to encounter. A universal size is also available, which can be custom bored, shaped, and tailed, for the remaining 20% of the grand pianos. The upright hammers are available in two basic sizes, which will fit nearly every upright piano.



### Introduction

The purpose of this brochure is to acquaint you with the Renner philosophy of hammer design, as well as give you a basic voicing procedure, which will produce consistent, predictable results. A lot of care and work have gone into the design of the Premium Blue hammers to produce a hammer that is lightweight, made without and chemical hardening agents, and that will fit and produce desirable results on the pianos American technicians work on

### Tools Required

The tools required to perform the pre-voicing and voicing are as follows:

A clamp that will hold 1/3 of the hammer for "gang style" filing.

Sandpaper strips (80 and 120 grit).

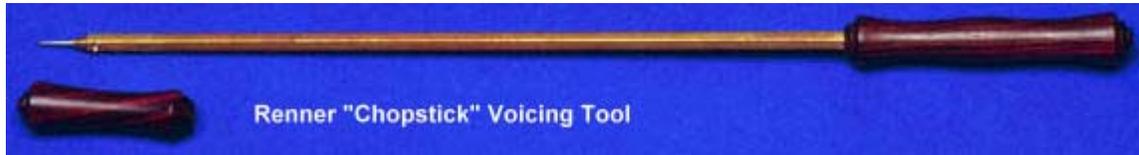
A 3 - needle voicing tool for deep needling.

A "chopstick" voicing tool.



To perform the string preparation, you will need:

- A stick hook
- Sandpaper strips (80 and 120 grit.
- A piece of 3/16" brass rod (or hammer shank).
- A small hammer.



### Precautions

While we realize that there are many voicing methods currently being taught by various suppliers and manufacturers, many of these techniques do not work well on the Renner hammers. We, therefore, do not recommend the use of chemical hardeners (such as lacquer, sanding sealer, keytops in acetone, etc.), squeezing with pliers, needling in the sides of the hammers, or changing the shape of the hammers.

### Pre-Filing

It is Renner's philosophy that to have a good sounding hammer, the shape of the hammer must be determined by the grinding of the felt on the inside of the hammer before it is glued. Once the hammer is pressed, the original shape must be maintained to preserve the continuous layers of felt around the outside of the hammer. Before the hammers are hung, they must first be filed in order to remove the "cupped" shape in the top of the hammer, which results when the hammers are cut apart.



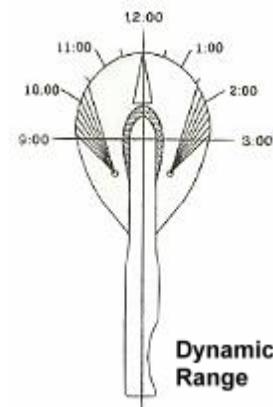
The easiest way to do this is to "gang file" the hammers before they are hung. Place one-third of the hammers at a time into the hammer clamp, and secure this clamp in a vise.

With 80 grit paper, remove a few layers of felt from around the hammer, starting low on the shoulder, and moving toward the top, stopping just short of the crown. Once this has been performed on both sides, the crown can be gently filed, joining the two sides together, and lessening the chance that too much material will be removed from the crown.

It is important to remember that the more material is removed, the brighter the tone will be. This procedure should then be repeated, using 120 grit paper. When you are done, the hammer should have exactly the same shape as when you started, except that the "cupped shape" in the top has been removed.

### Pre-Voicing

At this point, the deep needling pre-voicing can be done. If this is your first set of Premium Blue hammers, we would suggest you skip this section for now. Experience will tell you how much pre-voicing to do, but generally six stitches with three needles which are 10 mm (3/8") long, between 9:00 and 10:30, 1:30 and 3:00 in the bass, graduating to two or three stitches in the treble. We recommend a "pushing" technique rather than a "stabbing" technique as you will break far fewer needles, and the accuracy of where the needles enter the hammer will be much greater. Start needling low on the shoulder and work up toward the crown.

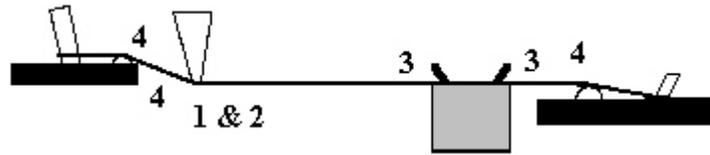


### Ironing

After filing and needling (if performed at this time), the hammers can now be ironed. Use a flat iron with the temperature on the "wool" setting. Ironing will remove the needle marks in the shoulders, and lay the fibers down from filing. Try to avoid ironing too much on the crown, as this will tend to make a "pinging" sound.

## Piano Preparations

Since even the best set of hammers can only bring out the sound, which is already in the piano, the bulk of the voicing job is actually done on the piano. No amount of needling or filing can compensate if this work is not done. While all regulation is important to tonal production, spacing the hammers to the strings and let-off are particularly important. The string terminations are also a major concern. We recommend the following procedures in this order:

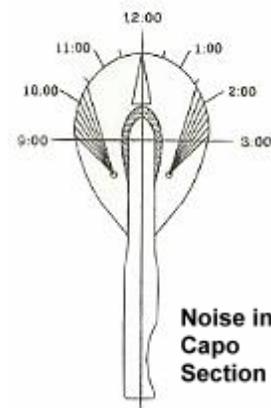


1. **Lift all of the strings.** This is done to remove the natural curvature of the wire as the string leaves the agraffe or capo bar. (This must be done with the piano at pitch).
2. **Level the strings.** With the hammers pre-filed, the tops should be perfectly square. Level the strings by blocking the hammers against the strings and plucking, noting any strings that are "open" and ring. Lift the strings that are not ringing, until all strings are evenly damped when plucked. Renner hammers are particularly sensitive to this.
3. **Seat the strings on the bridges.** Tapping with a brass rod or hammer shank does this, both at the front and rear pins. The rod should be held at the angle of the pins when tapping.
4. **Seat the front and rear duplex segments.** This is done by tapping lightly on the speaking length side of the termination, to remove the curvature in the wire.
5. **Do a fine-tuning**

## Hammer Voicing

With the pre-filing, pre-voicing (if you chose to do it), and piano preparation completed, you are now ready to do the hammer voicing. It is important in this process to take one aspect of the tone at a time and correctly regulate it. It is, therefore, important to ignore other aspects of the tone as much as is possible during this process. We would suggest you check for the following in this order.

1. **Dynamic Range** - Play sample notes from pianissimo to fortissimo (very soft to very loud). Are you able to play through the entire dynamic range without the sound distorting or breaking up? Deep needling in the shoulders from the 9:00 to 10:30 and 1:30 to 3:00 position will facilitate this. If you skipped the pre-needling previously, then the procedure described in that section should be performed now. If the pre-needling was not enough, then a few more stitches in the same area should help. When finished, you should be able to play with very loud blows, and the sound should remain clean, and undistorted. Do not be concerned with the attack of the sound at this point. The attack may be too bright from soft to loud, or too mellow from soft to loud. The important thing to this point is can the note be played loud without the sound breaking up? If the answer is yes, then move on to the next step.
2. **Noise in Capo Section** - This is most noticeable in the first capo section. Play a note in this section, and then mute out the front duplex segment while playing. If there is an objectionable tone, which goes away when this front duplex segment is muted, then deep needling higher in the shoulder is required. Do not



permanently mute this front duplex section, as this will cause a substantial loss of power. Deep needle from 10:30 to no higher than 11:30, and from 1:30 to no higher than 12:30, to the full extent of the needles. Be sure that the needles are aimed toward the two points to the side of the molding, thus preserving the triangle-shaped area under the crown in which we do not needle. We would suggest you proceed very carefully here, one stitch at a time, and do as little as possible, as too much needling in this area will reduce the power.

3. **Sustain** - This is also most noticeable in the first capo section. Does the note ring, like if you plucked the string, or does it die quickly? If



it dies too quickly, the first thing to test is hammer fit to the strings. Block the hammer and pluck. Listen even more carefully than before to be sure not only that each string is damped, but that the sound, when each string is plucked, is exactly the same.

Do any additional string leveling

which is necessary now. If the tone still dies too quickly, shallow needling on the keyboard side of the hammer along the edges will help. This is easily performed with the action in the piano by using the "chopsticks voicing tool. To voice along the edges, play the note such that the hammer tail is in contact with the backcheck. While holding your finger on the key, place the chopstick voicing tool in contact with hammer low in the shoulder, where an additional poke will have no effect, and push the hammer down into the backcheck. With the hammer held in place, you can now needle along the left and right edges of the hammer, from 9:00 to 12:00. Listen to see if the sustain has improved. If the tone still dies too quickly, shallow needling from 10:30 to 11:30 may help.

Check to make sure the string rings when plucked. If not, then you may have a problem with soundboard crown or down bearing. You may also want to shift the action position fore and aft to see if the strike point is in the correct position.

4. **Metallic Sound** - Play each note. If a metallic sound is heard, check to see which string(s) the sound is coming from. Once these strings are isolated, use the chopstick voicing tool to do shallow needling at the crown right under the offending string(s). These metallic sounds can also be the cause of the offensive sound in the front duplex segments.

5. **Attack** - The attack is controlled by the very striking surface of the hammer. If the attack is too bright, then very light needling at or just under the crown will soften the striking surface and reduce the attack. This can be easily performed in the piano with the chopstick voicing tool. If the attack is too dull, then the striking surface must be made harder. You can first try ironing with the flat iron over the crown to see if this made the surface hard enough, and the attack bright enough. If not, then on a few sample hammers, try filing a few more layers away, maintaining the original shape, thus getting down to where the felt is more compact and hard. After filing, you must again test to be sure that the hammer fit to strings is perfect. This time if it is not, it is because the individually filed hammer is not perfectly square. Use a sandpaper file to fit the



Sustain



Metallic Sound

hammer to the strings. You may want to iron again, after filing, for cosmetics as well as sound. It is important to remember that the sound will get brighter in the first 50 to 100 hours of playing, and try to anticipate this.

6. **Evenness** - When the piano is played chromatically in sixteenth notes, our ears naturally want to hear the first of each group of four notes as the loudest. If when you play, you hear a note other than the first of the group as loudest, or you hear the first note as if it were accented, then the attack of this note must be brought back to match its neighbors. This is accomplished by using the chopstick voicing tool with the action in the piano. Begin with shallow needling at or just under the crown, a little at a time. This is easily overdone, so proceed slowly. Play up and down the keyboard and make the attack as even as possible, playing with medium pressure.



7. **Balance** - When the piano is played, it is important that the chord combinations have the proper balance of each note in the chord. Any note, which sticks out, will detract from the beauty of the music. Voicing chords in this way will create the proper balance from section to section. We recommend using a four-note chord to test this. For example, in the Key of C, the notes would be C3, G3, E4, and C5. This chord is then transposed chromatically up and down the keyboard. If any note seems to stick out, stop immediately, fix it with the chopstick voicing tool, then immediately re-test. This is the only way you can really know if you have solved the problem. As you can see from the previous example, note C5 has to fit as the fourth note of the series in this case. A few notes later, it will have to fit as the third note of the series, then as the second note of the series, and finally the bottom note. When every note can fit in any position in the chord, the proper balance has been achieved. In testing the bass, I use just three notes for clarity. In the key of C, these would be C3, G2, and C2. Each note must fit as the top note, middle note, and bottom note. When you have completed this step, repeat step 6, to refine the evenness from note to note.

8. **Shift Position** - The next step is to check for evenness with the left pedal engaged, and the action in the shift position. The procedure is the same as in step 6. It is even more crucial here to isolate the offending string(s), and work with the chopstick voicing tool directly under these strings, at or just under the strike point. It is important to be certain that the action shifts far enough to completely clear the left string. If the hammer still fully or partly contacts this left string, it will create an objectionable sound that can only be eliminated by correcting this problem. Care must be taken when voicing in the shift position that correcting problems in this position does not create problems in the rest position. This is why it is so crucial to work carefully only under the offending strings. When finished, repeat step 6 again in the rest position.



9. **Final Test** - As the final test, play octaves up and down the keyboard, listening to see if any stand out. If so, it is usually one of the two notes, which is louder than its neighbors. Correct the problem as in step 6. When you have finished, the piano should play evenly from note to note, and be balanced from section to section. This is your assurance that when music is played on the instrument, the sound will be pleasant.

## Conclusion

Your abilities to work comfortably with these hammers will increase with the number of Renner Premium Blue hammer you install, as you will notice the consistent quality from one set to another. Mr. Baldassin is currently teaching a demonstration of the above procedures, along with a complete slide tour of the Renner factories and hammer making processes at piano technicians conventions around the country. We highly recommend this program. If you have questions about which Renner Premium Blue hammer you should use, please feel free to call.

## Grand Hammers

Non-Reinforced / With Underfelt / Custom American Shaped Tail

Model	Molding Material	Size (lbs.)	# Hammers		Overall Length		Hammer Bore Range		Width	
			Bass	Treble	Bass	Treble	Bass	Treble	Bass	Treble
G3M	Mahogany	Gr.3 14 lb.	32	64	3 1/8"	2 13/16"	2 - 2 1/4	1 11/16 - 1 15/16	27/64" 10,9 mm	
G4M	Mahogany	Gr.4 16 lb.	26	70	79.5mm	71.5mm	51-57mm	43-49mm		
G3M-L	Mahogany	Gr.3 14 lb.	32	64	3 1/4"	2 15/16"	2 1/8 - 2 3/8"	1 13/16 - 2 1/16"	27/64"	
G4M-L	Mahogany	Gr.4 16 lb.	26	70	83.0mm	75.0mm	54-60mm	46-52mm	10.9mm	
G5M	Mahogany	Gr.5 18 lb.	26	70						
G4M-U	Mahogany	Gr.4 16 lb.	96		3 5/8"		1 11/16 - 2 5/8"		27/64" 10.9mm	
Premium Blue "Lites"					92 mm		43 - 67mm			

We recommend grand hammers that are without reinforcing, with underfled with Mahogany moldings, and with Custom American shaped tails. The above models represent our Standard Grand Hammers. However, hammers with reinforcing, without underfelt, with Hornbeam moldings, or with European shaped tails are available by special order.

## Upright Hammers

Non-Reinforced / With Underfelt

Model	Molding Material	Size (lbs.)	# Hammers		Overall Length		Hammer Bore Range		Width	
			Bass	Treble	Bass	Treble	Bass	Treble	Bass	Treble
U3H	Hornbeam	Gr.3 14 lb.	32	64	2 11/16"	2 15/16"	2 1/8 - 2 3/8"	2 3/8 - 2 5/8"	3/8"	13/32"
U4H	Hornbeam	Gr.4 16 lb.			68.0mm	74.0mm	54-60mm	60-66mm	9.5mm	10.4mm
									13/32"	13/32"
									10.4mm	10.4mm

We recommend upright hammers that are without reinforcing, with underfelt, with Hornbeam moldings. The above models represent our Standard Upright Hammers. However, hammers with reinforcing, without underfelt or with Mahogany moldings are available by special order.

Premium Blue Hammers are made with the world's finest, all natural felt, and do not contain any chemicals, lacquers or other artificial hardeners or reinforcing agents. The moldings are chosen for the optimum-weight ratio.

