

# Create a scale stick from a Brass Tubular rail

To create a new action for your old piano WNG needs certain information about the old rails. WNG needs to know the length of the rails and the spacing down the rail for the bracket and flange screw holes. This information is called a scale stick.

There are a number of ways to create a scale stick. The method in this procedure covers the creation of a scale stick from a Steinway type brass tubular rail. This scale stick can be used to replace an action, a keyboard or, with additional work, a damper action.

Each line on a scale stick represents the centerline of a note or bracket. Thus, a scale stick provides the information required for WNG to drill any action rail.

## Minimum Spacing Between Notes

WNG requires a minimum of 12.2mm between notes (**Space Between Notes**). Before you invest a lot of time and effort, you should determine if your action meets this criterion.

1. Count the number of notes (**No. of Notes**) in each section of the piano.
2. Calculate the number of note spaces (**No. of Spaces**) by subtracting 1 from the number of notes in each section of the piano.
3. Measure the distance between the centers of the first and last notes in each section of the piano (**Section Length**).
4. In each section divide the section length by the number of note spaces. (**Space Between Notes**) = **(Section Length) / (No. of Spaces)**.
5. If the (**Space Between Notes**) falls below 12.2mm then WNG parts will not work for your piano.

## Tools

You will need the following tools.

Screwdriver – Slot or Phillips for action screws

WNG Scale Stick Kit

25mm wide Mylar strips (Comes in WNG Scale Stick Kit)

Small square (Comes in WNG Scale Stick Kit)

Mechanical pencil for Mylar (Comes in WNG Scale Stick Kit)

5' Long straight edge

Flat table

6" wide Drafting Film

## Set up Table for Scale Stick

Make sure the table you use is flat and of sufficient size to support the action.

Use masking tape to attach a 6" piece of drafting film to the table with the frosted side up.



## Draw a Straight Line On the Mylar

Use your long straight edge to draw a straight line down the middle of the Mylar taped to the table.



## Remove Repetitions from the Repetition Rail

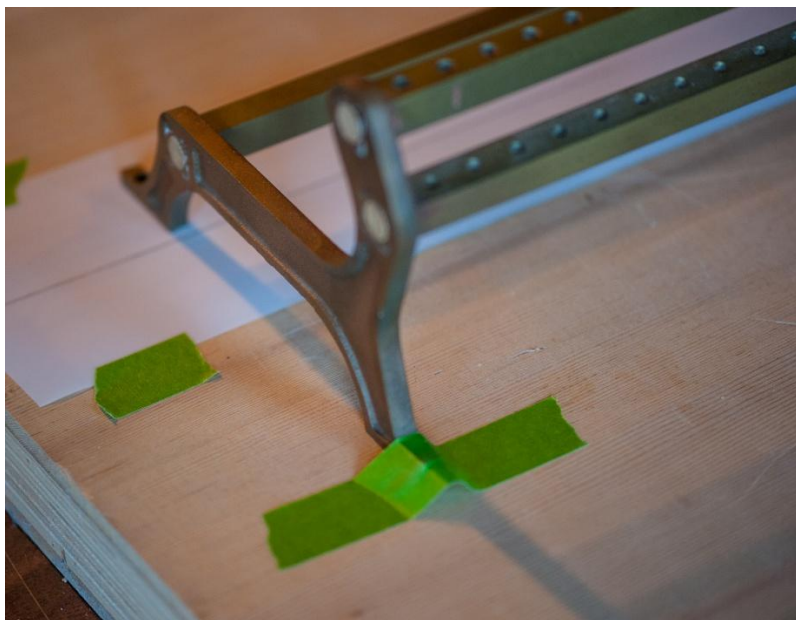
Since we are going to create a scale stick from repetition rail, our first task is to remove the repetitions from the rail so we can get to the screw holes.

## Position the Action Over the Mylar

Position the action over the Mylar so that the repetition rail is directly over and aligned with the line on the Mylar. Use a square at each end perpendicular to the line so as to align the repetition rail to the line on the Mylar.



Tape the action down to the table so that it cannot move during the process of taking the scale stick.



## Mark the Outside of the Bracket Feet

On each side of the bracket at the repetition rail place a mark on the Mylar. You cannot mark at the end of the foot of the bracket because often the action installer would bend the feet for clearance to the keys.

Place a letter “B” between the bracket marks. It is easy to confuse these marks later.

After the action is removed from the Mylar we will find the bracket center line.

## Mark the Note Centers

Use the square provided in the Scale Stick Kit to transfer the note centers down onto the line previously marked on the Mylar.



These marks will, at some point, be turned into screw holes in the action rails. These marks are locating the action parts side to side for your new action.

This operation, while not difficult, must be performed with care and precision.

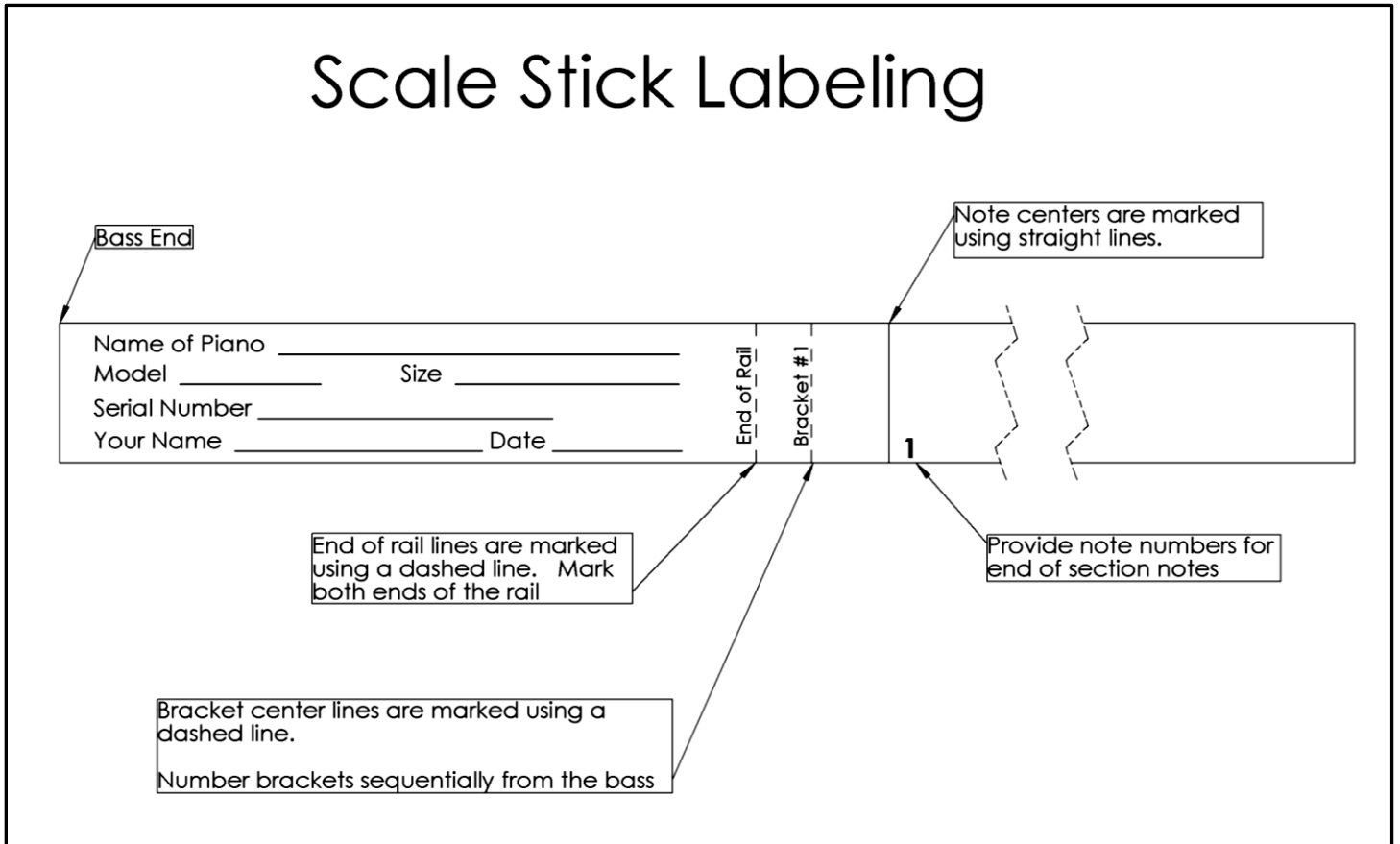
## Remove the Action from the Table

After all notes and brackets are marked remove the action from the table.

# Create Scale Stick from Marks on Mylar

At this point we have the raw data for a scale stick. It is not yet, however, suitable for sending to WNG. We have a standardized way of creating and labeling a Scale Stick so that when WNG gets a scale stick we are able to understand the intent of the designer and create a rail without making mistakes.

These are the standards we expect from a scale stick. If you fail to comply likely WNG will return the scale stick to you for correction.



The process of creating a scale stick is quite simple.

Place a straight edge 1" away and parallel to the line on the Mylar. This allows you to use the square to make the various lines on the scale stick.

Place a 1" strip of Mylar provided in the WNG Scale Stick Kit against the straight edge with the frosted face up.

Use masking tape to secure both the straight edge and the 1" strip of Mylar so they are not able to move during the scale stick creation process.

WNG has established a scale stick protocol that ensures we understand your information.

- Note centers are marked with straight lines.
- Bracket centers are marked with dashed lines.

- Brackets should be numbered sequentially from the bass.
- Each end of the rail is marked with a dashed line.
- At the bass end of the scale stick mark the following information as shown above.
  - Name of Piano.
  - Model and size of piano.
  - Serial number of piano.
  - Your name and the date this scale stick was taken.

The purpose of the WNG scale stick protocol is to reduce confusion. It helps us to avoid mistakes when we are looking at your scale stick. Avoiding mistakes helps us both.

Mark all the note centers with the square using a solid continuous line from one side of the Mylar strip to the other.

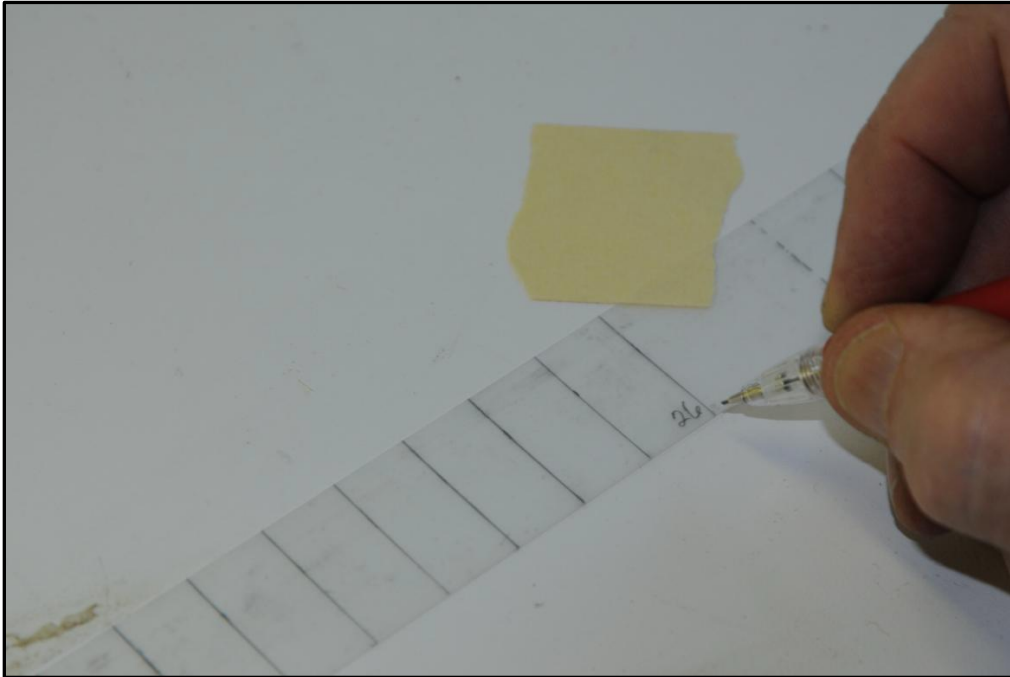


Mark the bracket center lines with a dashed line from one side of the Mylar strip to the other.

1. At each end, no matter where the previous action placed brackets WNG minimum distances apply.
  - a. The brackets at notes 1 and 88 must be at least 14mm from the note. The bracket centerline can be more than 14mm from the note center but it cannot be less.
  - b. The end of the rail at notes 1 and 88 must be at least 10mm from the bracket centerline. The end of the rail can be more than 10mm from bracket centerline but it cannot be less.
2. At the tenor break bracket the most sensible choice is to use the position of the old bracket.
3. At the low and high treble breaks place the bracket 14mm from the bass side of the break. Later, when you are ordering an action you will need to select the proper bracket to deal with the angle in the keys.

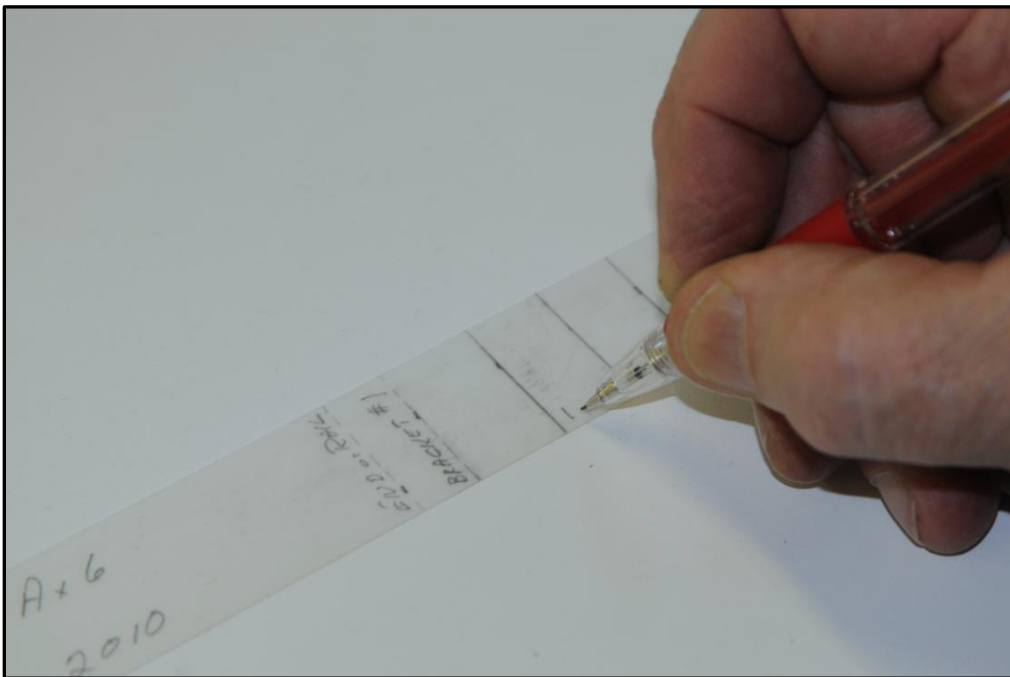
If you are making a Damper action see the procedure for Damper Action Scale Sticks on the WNG web site.

Mark the note numbers for the ends of sections just inside the line for that note.



Write the bracket numbers on the bracket lines on the Mylar scale stick. Number brackets sequentially from the bass.

The WNG scale stick protocol is that the bass, or bracket 1, or note 1, is on your left and numbers are written so you can read them in this orientation



Label the scale stick as shown above so we are able to identify you and your order for the action. WNG will not start work on your scale stick and the drilling of action rails until the order process is complete.

## **Send this Scale Stick to WNG**

Send the scale stick to WNG so we can drill the action rails for your new top action. The best way to do this is to roll the scale stick up with a rubber band around it. You will also need to fill out the WNG Action Build Sheet. This build sheet specifies the feature set you wish for the WNG top action.

Send the scale stick to:

Wessell, Nickel & Gross  
Suite #1  
Attn: Mark Burgett  
4111 North Freeway Blvd.  
Sacramento, CA 95834