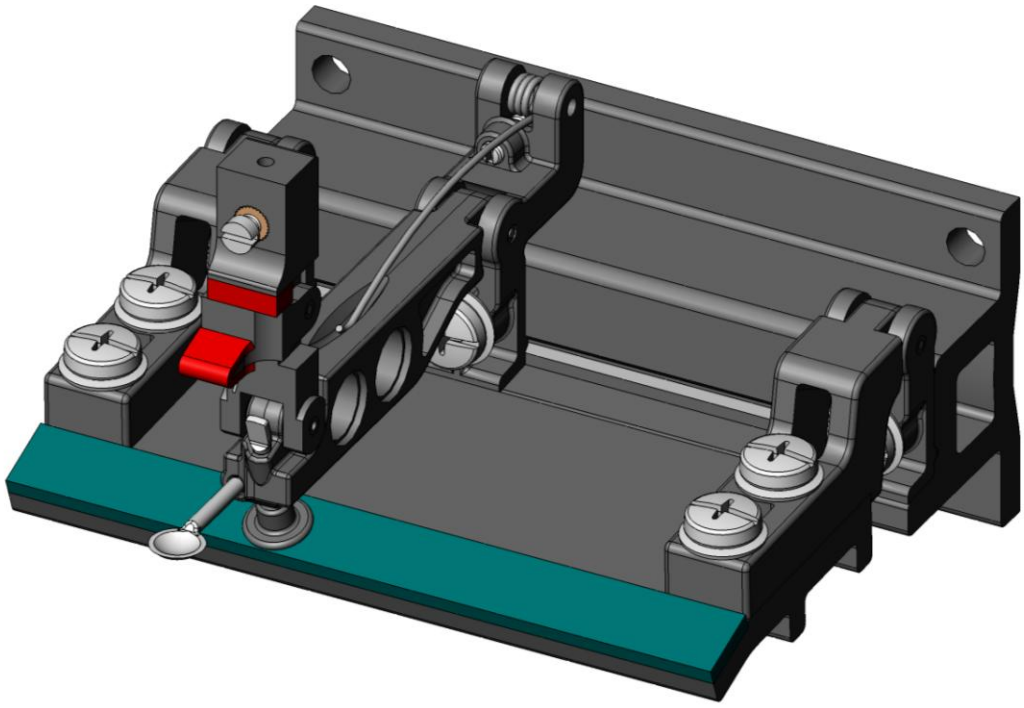
Selecting the correct WNG Damper Action



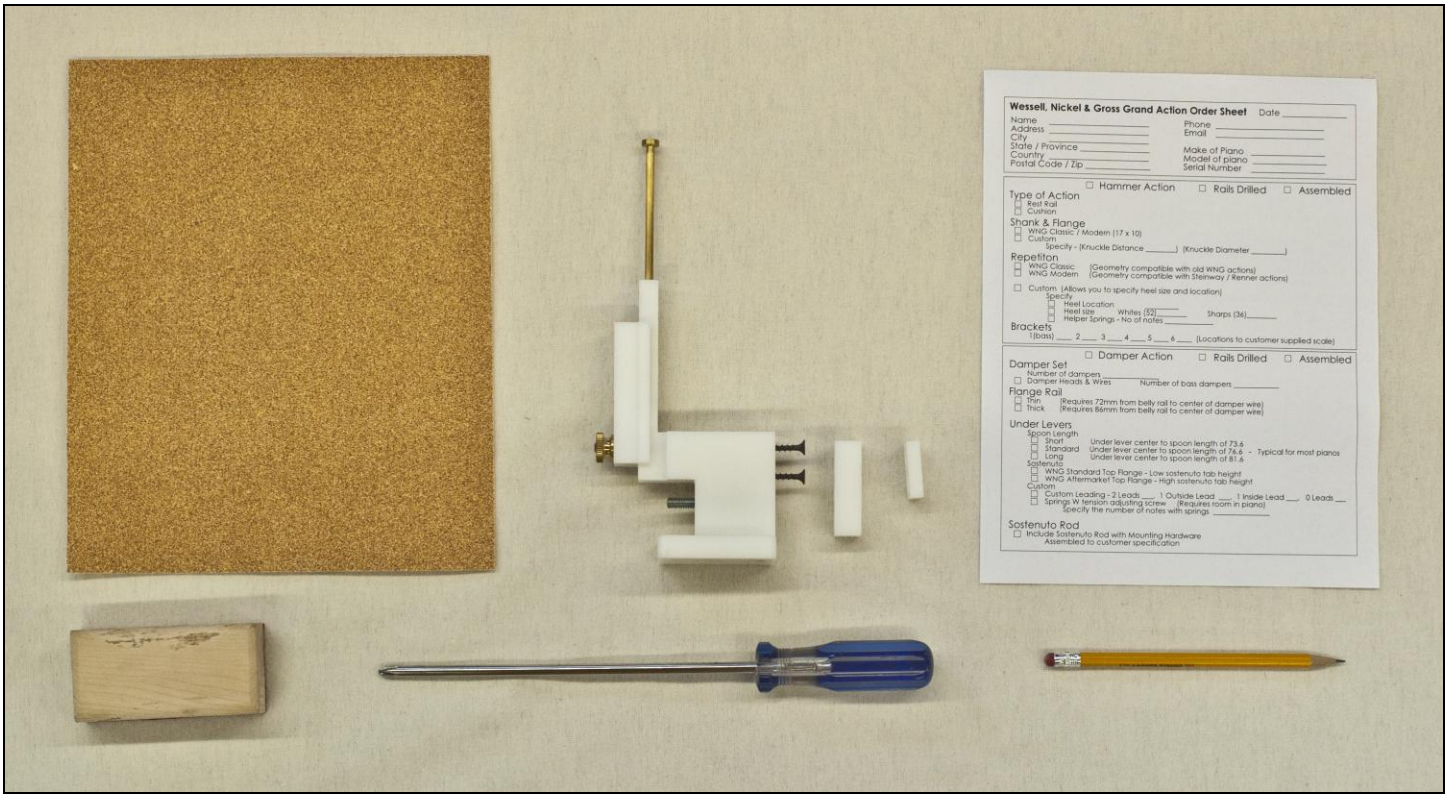
In January of 2009 Wessell, Nickel & Gross brought to market revolutionary composite action parts.

For a piano to work well, the damper action is every bit as important. Only one year later, Wessell, Nickel & Gross brings to the market an equally innovative composite damper action.

The traditional damper action, while it does make the dampers go up and down, is difficult to install and maintain.

The WNG damper action has many features aimed at making installation easier, adjustment more straight forward and maintenance less frequent.

Let us start by going over the features of the WNG Damper Action.



You will need the following items to select the proper damper action for your piano.

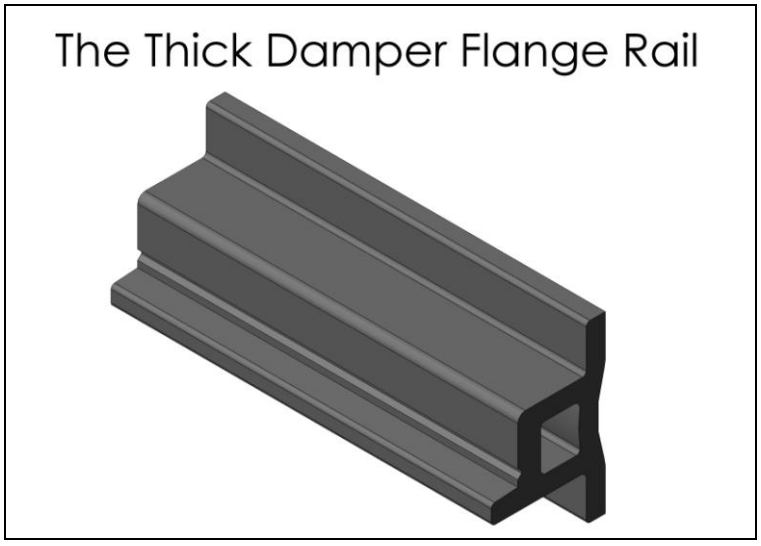
Damper Action Measuring Tool
    Shim for thick rail
    Shim for thin rail with spring flanges

Medium Phillips (#2) screw driver
6” rule – preferable in millimeters.

80 grit sandpaper
Sanding block

Pencil
Action order sheet (available at www.wessellnickelandgross.com)

Overview of the WNG Damper Action

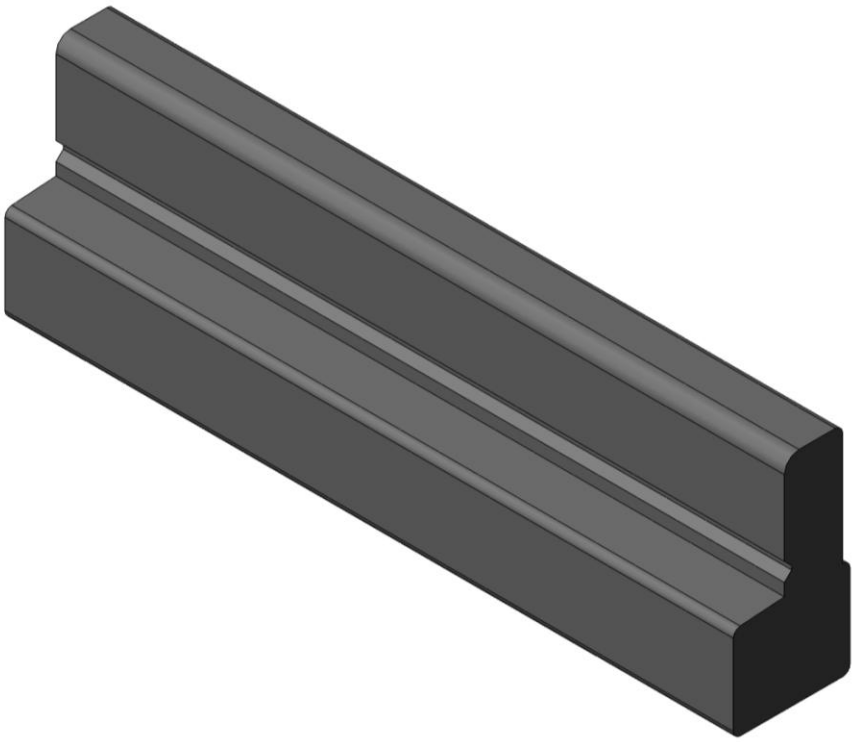


The WNG damper action starts with an unusually strong damper flange rail. Unlike the traditional rotating tray, this rail mounts directly to the belly rail.

A mounting point at each end is all that is required.

Made from black anodized aluminum, this rail is much stronger than a traditional wooden rail. Unlike wood, humidity has no effect on an aluminum rail. The material does not rot or degrade. Dimensions remain stable.

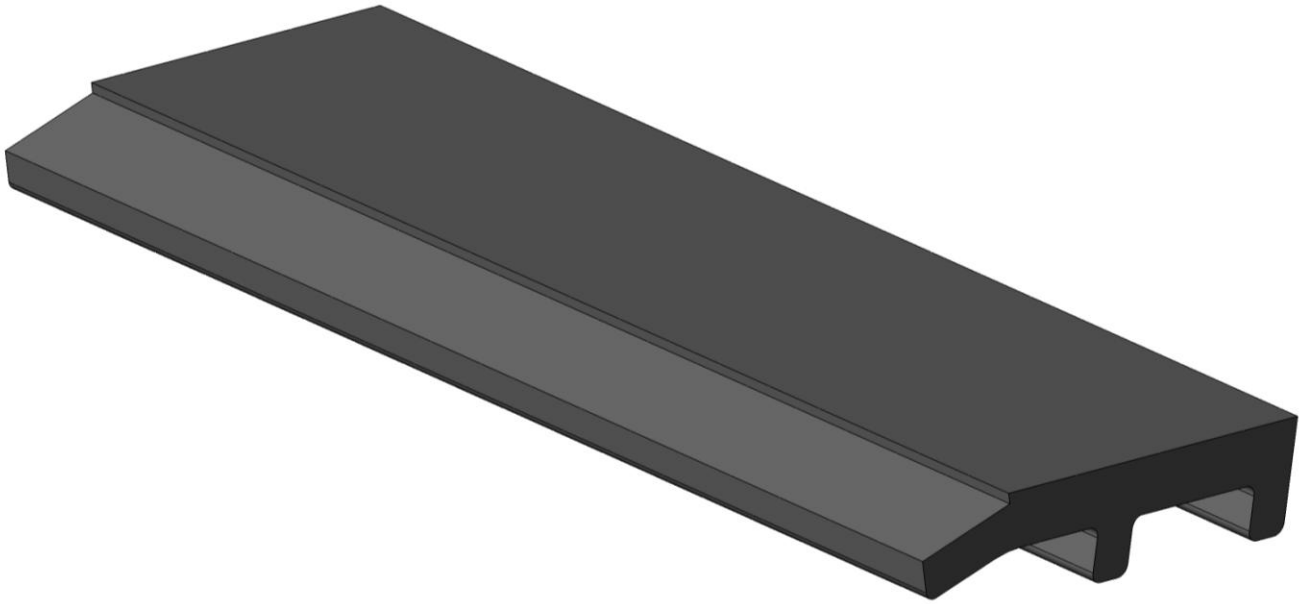
The Thin Damper Flange Rail



For pianos with less room in the damper cavity, WNG offers a thinner flange rail designed to fit into the tightest of spaces.

This flange rail requires more mounting points along the rail than the thick rail. Because it is made from aluminum, humidity has no effect on dimensional stability and this rail will not rot or degrade with age. For appearance, the thin flange rail is black anodized.

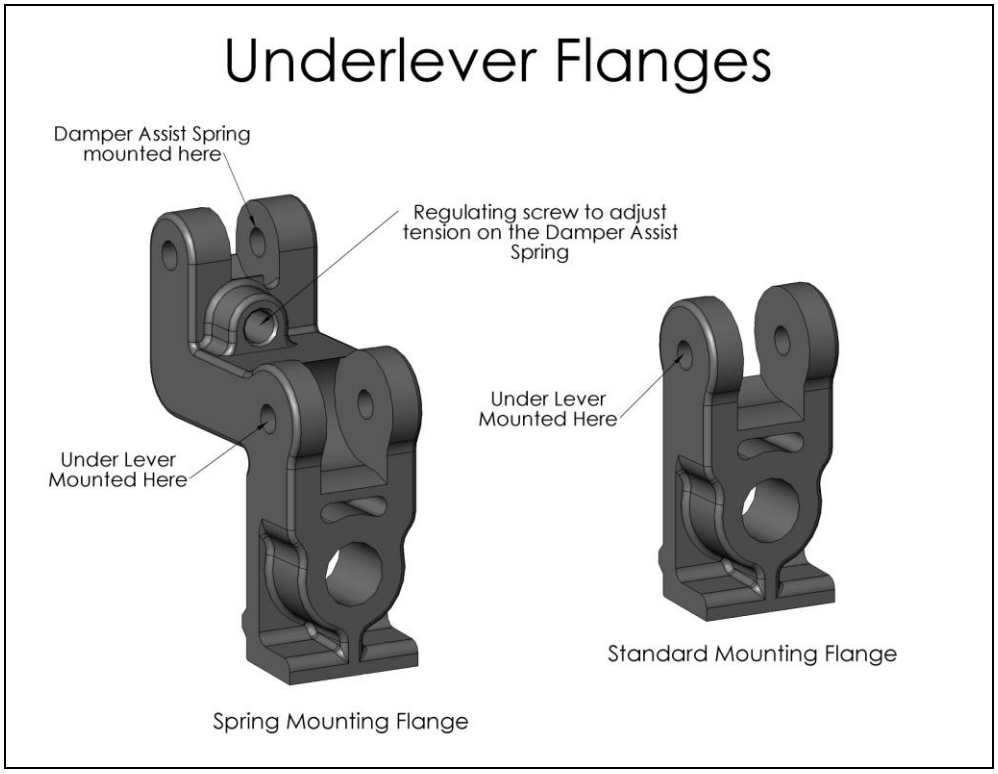
The Sustain Pickup Rail



Sustain pickup trays are notorious for sagging, twisting or warping over their service life. This is true even of the traditional L shaped rotating tray. When this happens, damper pickup to the sustain pedal is thrown out of adjustment necessitating a service call.

The WNG Sustain Pickup Tray is extruded from heavy gauge aluminum. For this reason, the tray is strong enough to resist the sagging typical of a wooden tray.

For appearance, the tray has been brushed and decoratively anodized black.



WNG supplies two different flanges to mount the underlevers on the damper flange rails.

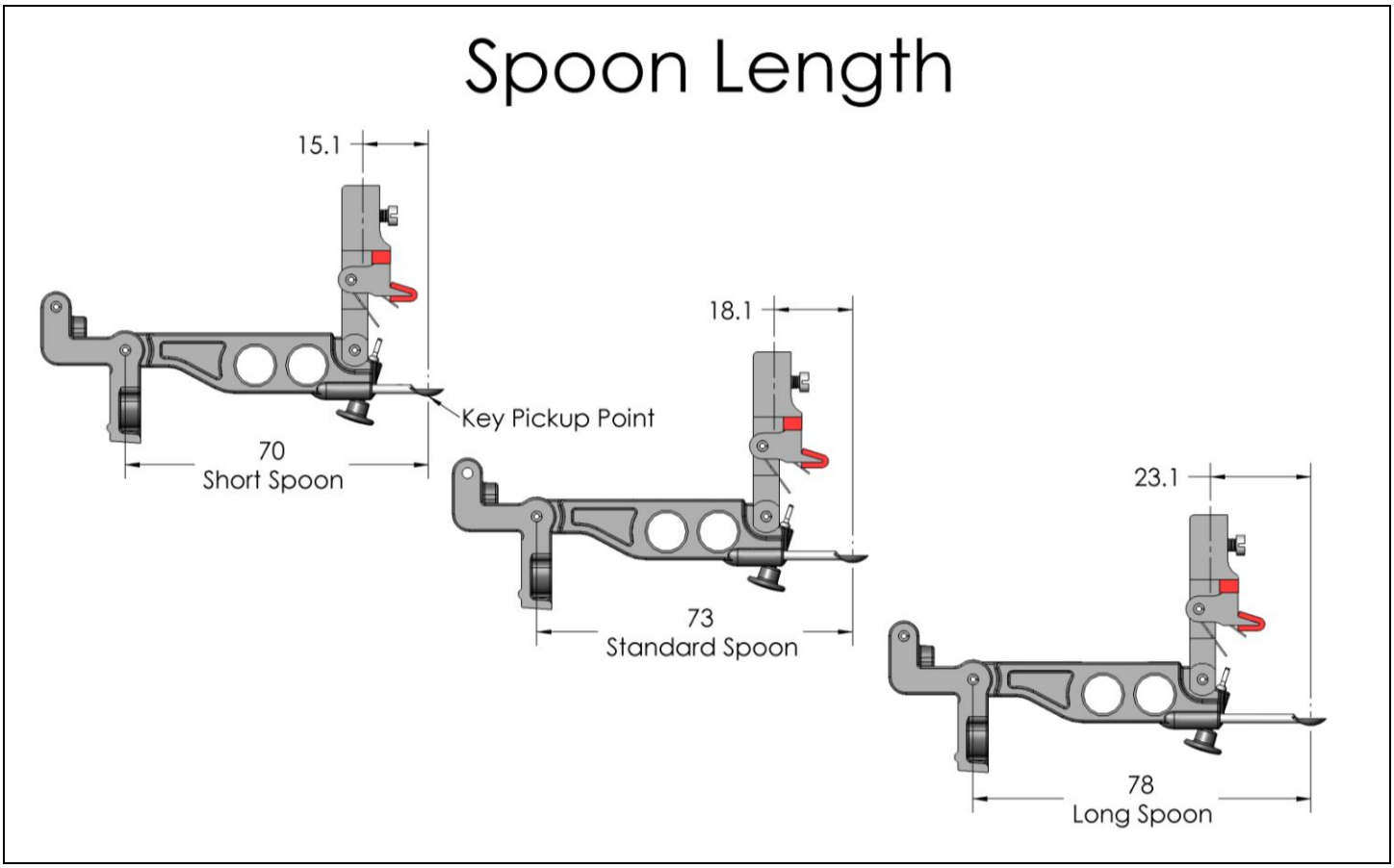
The spring mounting flange allows the use of adjustable damper assist springs. The heavy flange rail will always allow the use of the spring flanges. The spring flanges can be used with the thin rail if there is sufficient room in the damper cavity.

The standard mounting flange should be used when there is no need for springs or insufficient room in the damper cavity.

The same flange, with a larger hole for a larger pin, is used to mount the tray. Because of this, the tray pivots on the same axis as the underlevers.

With the traditional rotating tray found on many American pianos, the axis of rotation for the tray is different than that of the underlevers. Consequently, the dampers tilt fore and aft as the sustain pedal is operated. Some, though not all, view this as a problem.

On the WNG damper action, with the flange rail attached to the belly rail, the sustain pickup tray and the underlevers rotate on the same axis. The tilting of the dampers is no longer an issue.



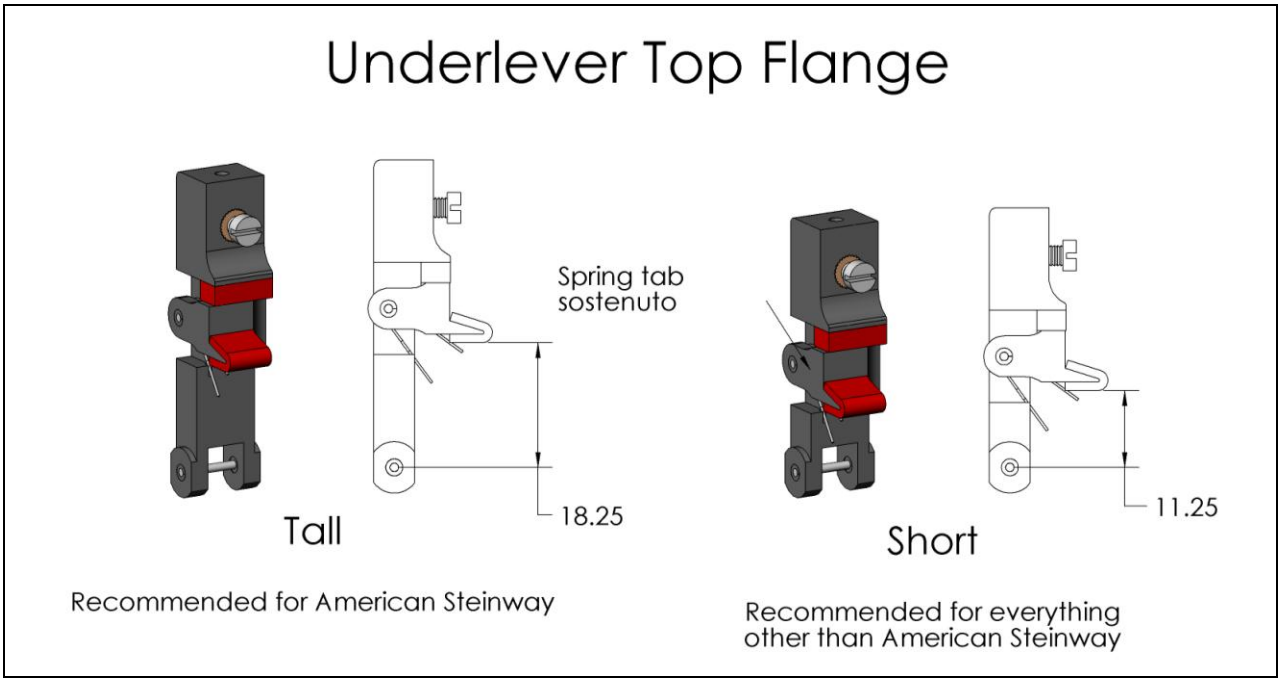
Bendable spoons are quite useful.

The traditional wooden damper action is difficult to regulate. The pickup to the key is set by moving the top flange up and down on the damper wire. Unfortunately, this also changes the pickup to the sustain pedal and the location of the sostenuto tab. When you tighten the clamping screw, it causes the damper wire to twist requiring a significant amount of damper straightening and wire bending to make the dampers operate correctly again.

The regulations of a damper action should be independent of one another. That is, changing the pickup to the key should not change the regulation of the sustain pedal.

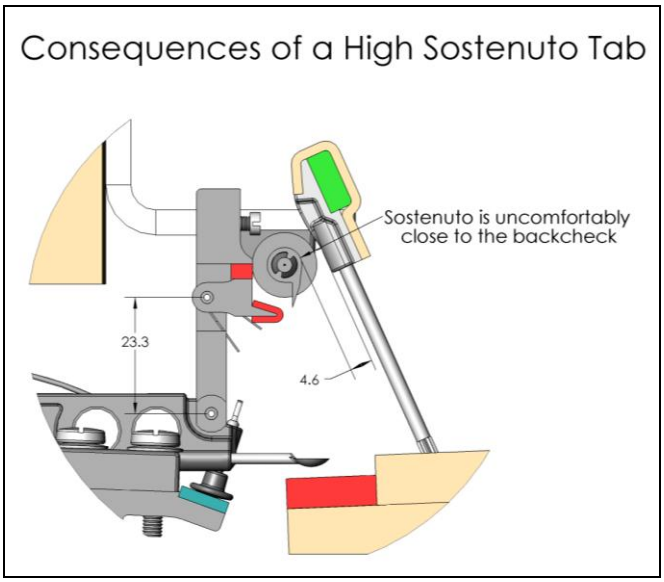
The bendable spoon allows pickup to the key to be regulated while changing nothing else.

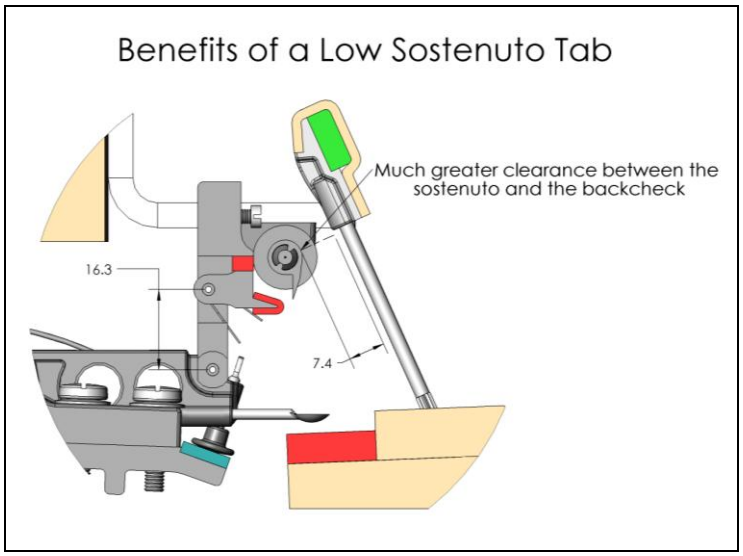
Of course, a wide variety of key to damper relationships have been provided to the public over the years. For this reason, WNG provides three different spoon lengths. Short, standard and long spoon lengths provide a solution to the vast majority of keyboards.



Fundamentally there are two different types of underlever top flanges in the world.

The tall underlever top flange positions the sostenuto tab correctly for sostenuto systems mounted on the action frame. Typically, this is found only on American Steinway pianos.





The problem with a tall underlever top flange is that it raises the height of the sostenuto rod. As the sostenuto rod moves up, clearance to the

back check becomes less. If, you regulate a piano and discover that back checks are hitting the sostenuto rod, the solution is not easy.

For this reason, every other maker in the world uses a shorter underlever top flange. The WNG short top flange is functionally the same as the tall, however the sostenuto tab is 7mm lower. This provides considerably more clearance to the back check.

Clearance between the sostenuto and the back check is exceedingly important. For this reason, WNG recommends the use of the short underlever top flange for all situations except where the sostenuto is mounted on the action frame.

In fact, WNG suggests that, in pianos where the sostenuto is mounted on the action frame, you consider modifying the piano. That is, mount the sostenuto on the belly rail making possible the use of the shorter underlever top flange. WNG considers this so important that we have designed a sostenuto system for this very purpose.

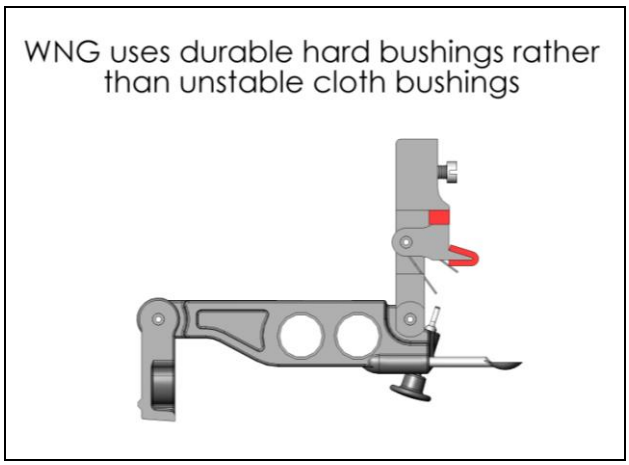
A number of the pre 1900 models of this particular maker were originally equipped with rigid sostenuto tabs. The temptation to modernize rigid tabs by converting to spring tabs is strong. Spring tabs are a very desirable feature. The down side is spring tabs take more space than rigid tabs. As many have learned, conversion to spring tabs will push the sostenuto rod forward in the piano. That is, closer to the back checks. Caution is advised on such conversions.

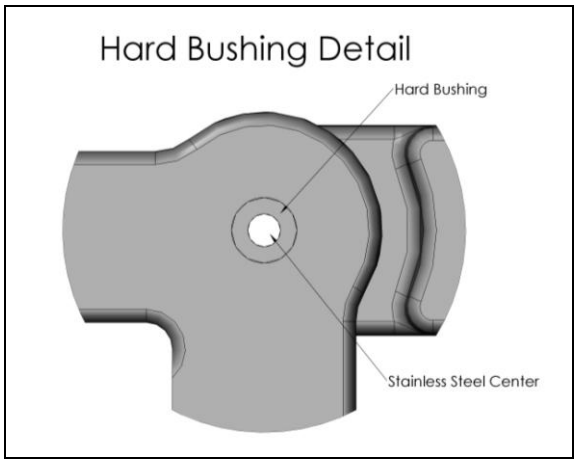
The best way to do this conversion would be the following.

- Mount the sostenuto rod on the belly rail using the WNG sostenuto rod conversion kit.
- With the sostenuto rod on the belly rail, it is possible to use an underlever top flange with a lower sostenuto tab.
    - This creates room between the sostenuto and the back checks.
    - The WNG top flange and spring tab is thinner than the traditional wooden parts.
- Use WNG backchecks as their thin design also helps.

WNG can provide both tall and short underlever top flanges.

Again, our strong recommendation is; if at all possible, *use the short underlever top flange with the lower sostenuto tab*.





All WNG action parts including the damper system use hard bushings.

The reason for this is simple, cloth bushings have problems.

As the humidity environment changes, so do cloth bushings. As cloth bushings change so does center pin torque. As center pin torque changes, the touch of the piano changes.

A re-pinning kit is a required tool for any piano technician so that he or she can correct these problems. The customer, of course, pays, sometimes dearly.

Hard bushings have none of these difficulties. Hard bushings are stable even in environments ranging from 10% relative humidity to 90% relative humidity.

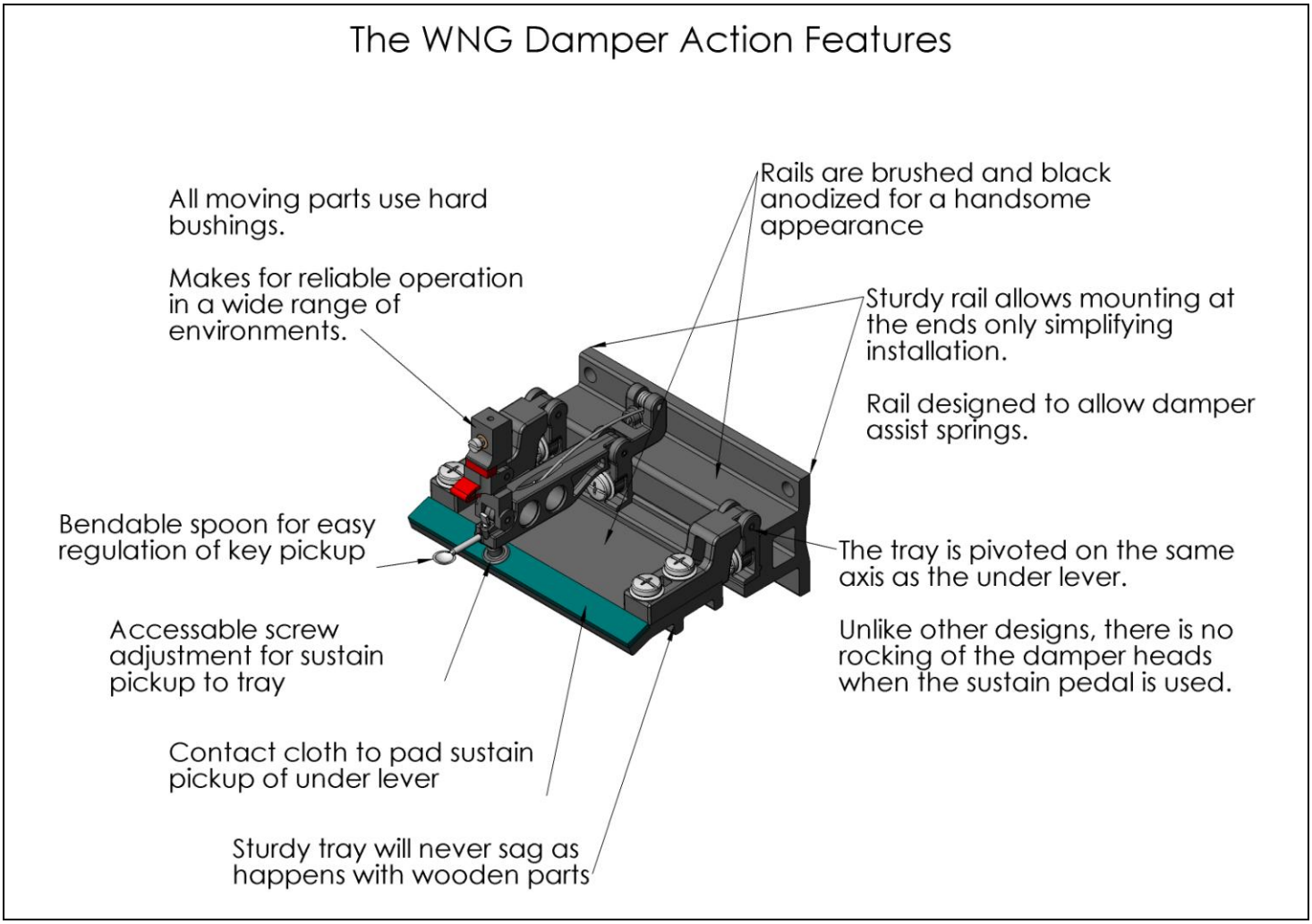
The principles that govern bushings in a piano are no different than for any other bearing in any other product. Fundamentally, the axle, or shaft, or center pin cannot be allowed to move under load.

As long as tolerances are tight and friction low and no movement of the center pin is allowed under load, there will be no problems. True of your car. True of your piano.

The WNG bushing material is sufficiently dense so it does not deform under load as the old Teflon bushings were prone to do.

WNG uses high precision stainless steel needle bearings and a very precise process to produce the tight tolerances required of hard bushings.

As a result, WNG hard bushings are durable and quiet. After 18 million blows, any change in pin torque was negligible.

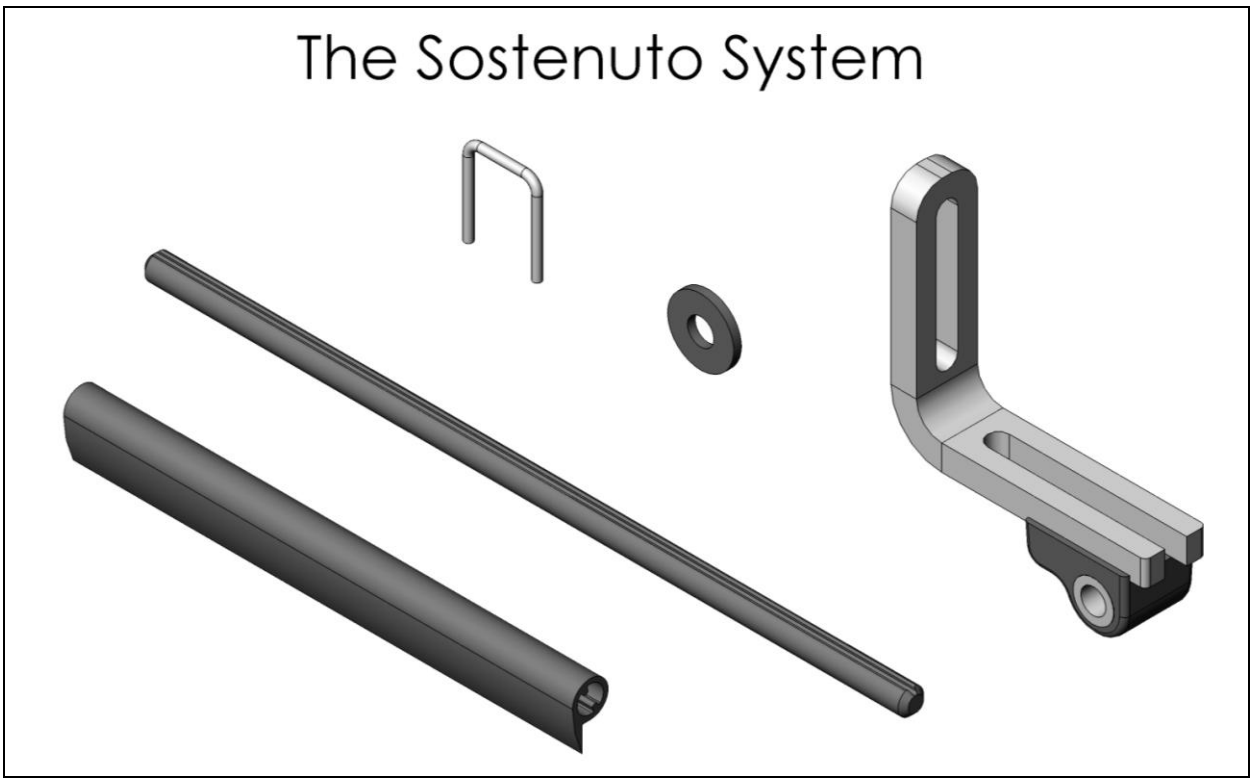


- All moving parts use hard bushings.
- Rails are brushed and black anodized for appearance.
- The heavy rail is strong and allows two point mounting on the ends.
- The heavy rail allows use of the spring flange for damper assist springs.
- Spring flanges provide for a screw adjustment of spring tension.
- The tray is pivoted on the same axis as the underlever.
- The sostenuto tab can be high or low depending on need.
- Accessible screw adjustment for sustain tray pickup.

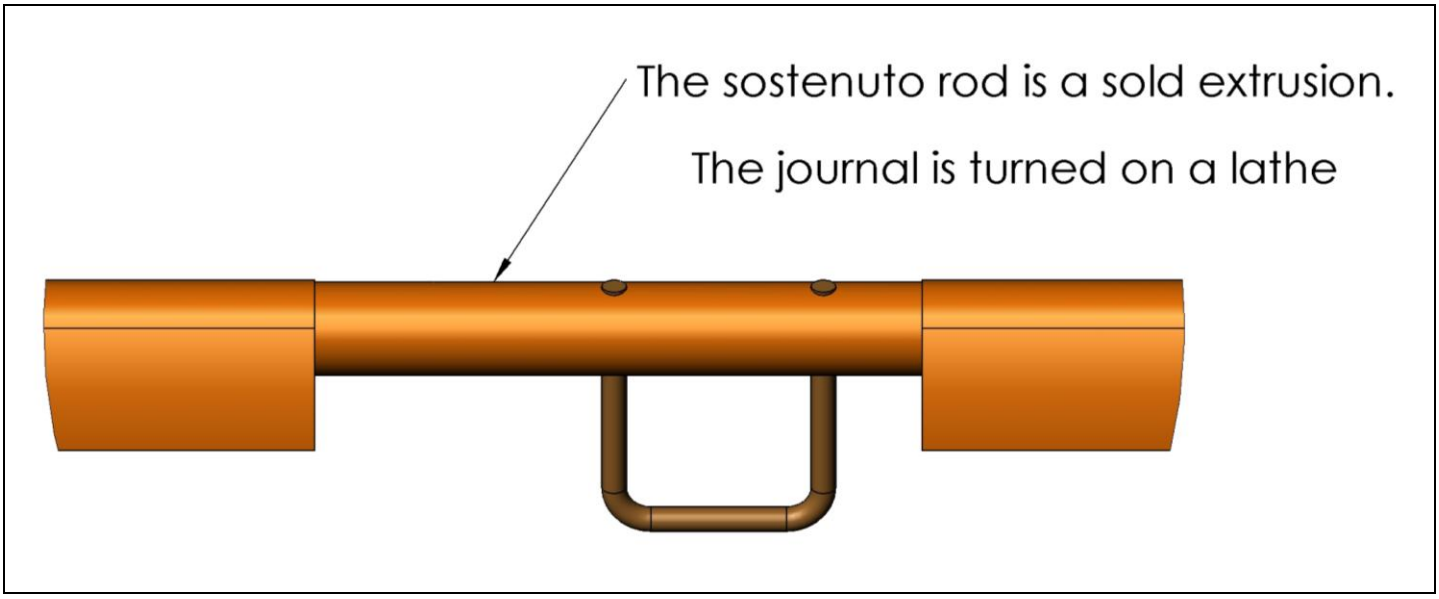
- Bendable spoon for easy key pickup regulation. Three spoon lengths available.

- Mounting flange can be obtained with or without the spring attachment.

- Underlever can be configured with 2 leads, 1 front lead, 1 back lead, or no leads.



On some pianos, for instance those with the sostenuto mounted on the top action, you might wish to convert the sostenuto rod to a belly rail mount. Or you might wish to add a sostenuto to a piano that did not have one originally.



In the past, sostenuto rods were extrusions with the sostenuto shape the entire length. The rod for a particular piano was created by machining journals on the extrusion. This typically required some sort of lathe. Since this level of equipment is not usually found in piano shops replacement sostenuto rods were usually not an option.

WNG is now able to supply a sostenuto kit that is easily fitted to any piano. In the new system, the sostenuto rod is extruded hollow. Round journal rod is included in the kit. All you need do is cut the sostenuto extrusion to the correct length for each section in the piano. Then, epoxy journal rods between the section.

No machining required. The whole thing is simple and easy.

Take Action Cavity Measurements

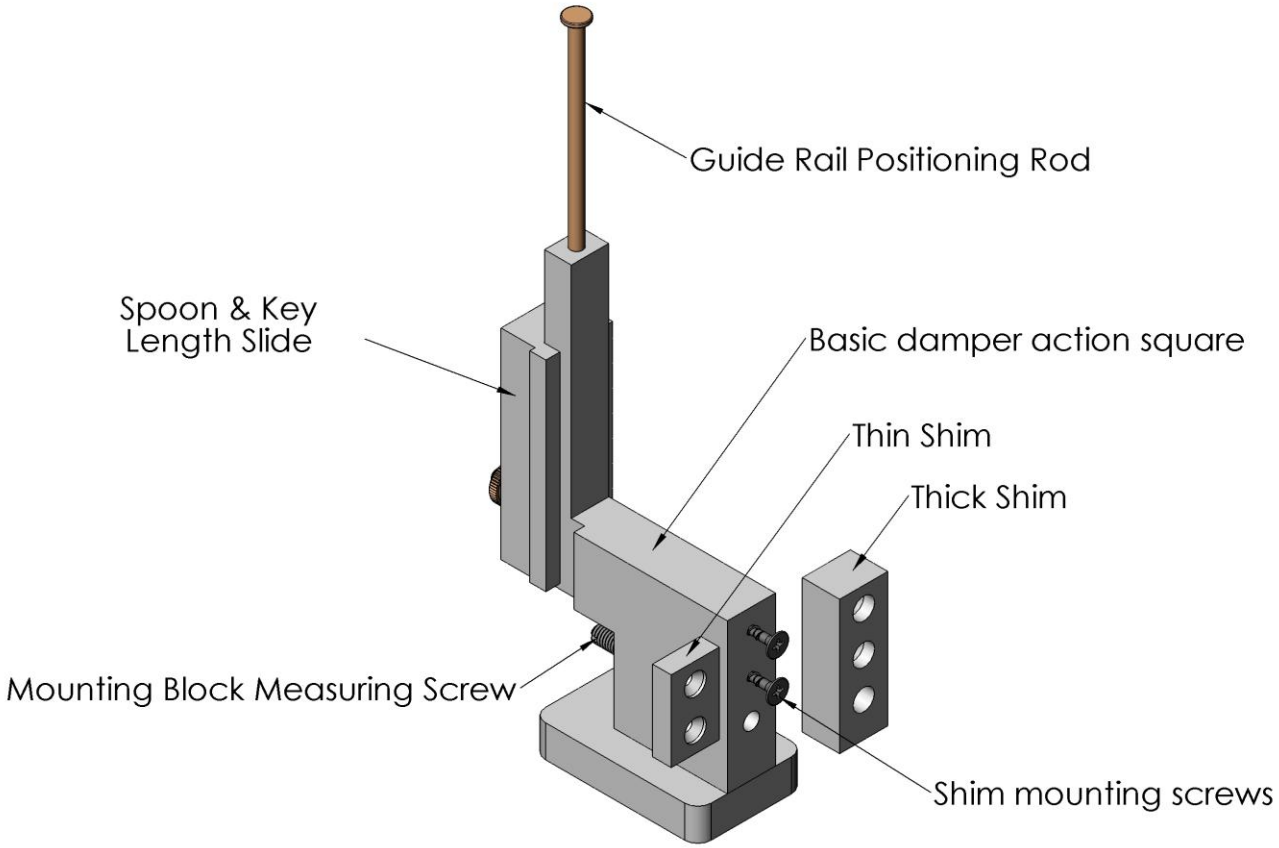
Every effort has been exerted to allow the damper action from WNG to fit in a wide range of situations. However, in pianos, available space varies widely.

Before anything else, make sure a damper action from WNG can be fit into your piano.

Remove the back action and dampers from the piano. Leave the damper guide rails in place because they are used during the measuring process. Push the guide rail bushing out for the lowest and highest dampers in the piano.

Make sure that the hole in the damper guide rail is larger than 4.5mm or about 3/16” in diameter.

The Damper Action Measuring Tool



WNG has created the Damper Action Measuring Tool to help you with the process of measuring and fitting a damper action into a piano.

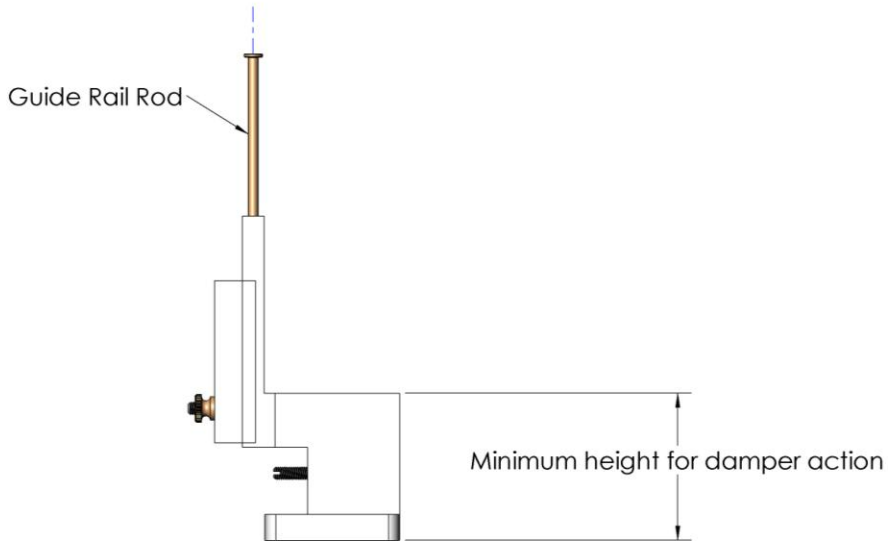
The Guide Rail Positioning Rod helps you position the damper action so that the damper wires are vertical.

With the Guide Rail Positioning Rod in place, this tool allows you to determine a number of things.

1. Is there sufficient vertical room in the damper cavity?
2. Is there sufficient front to back room in the damper cavity for a thin damper flange rail?
3. Is there sufficient front to back room in the damper cavity for a thin damper flange rail with spring flanges?
4. Is there sufficient front to back room in the damper cavity for a thick damper flange rail?
5. Will the long spoon work?
6. Will you need to lengthen the key so it will work with the longest spoon offered by WNG?
7. Will the standard (medium) spoon work?
8. Will the short spoon work?
9. Will you need to shorten the keys to create room between the end of the keys and the sustain tray?
10. What is the dimension of the mounting block between the damper flange rail and the belly rail?

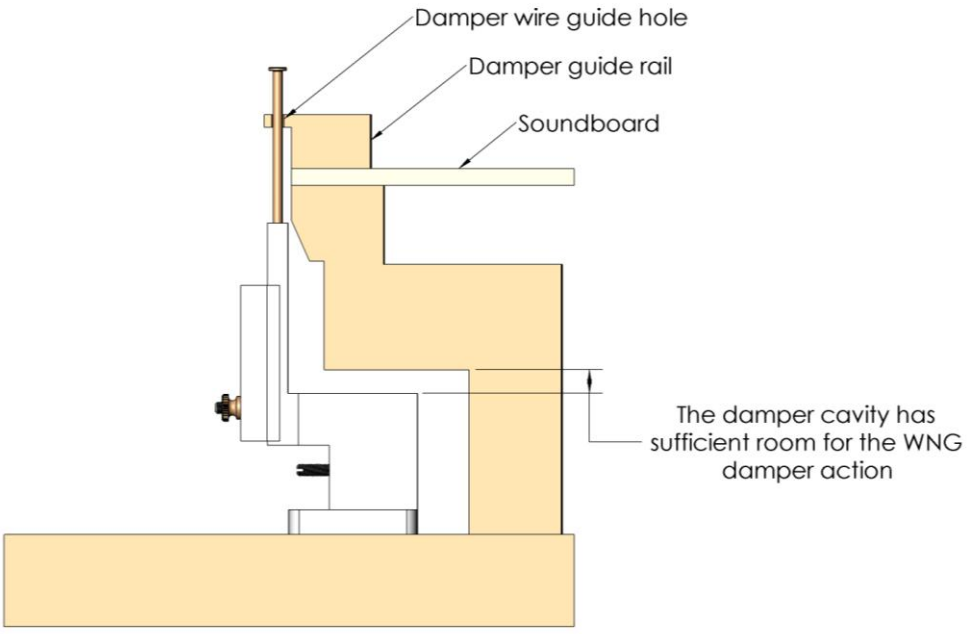
The Damper Action Measuring Tool

Minimum height in cavity for damper action



The Damper Action Measuring Tool

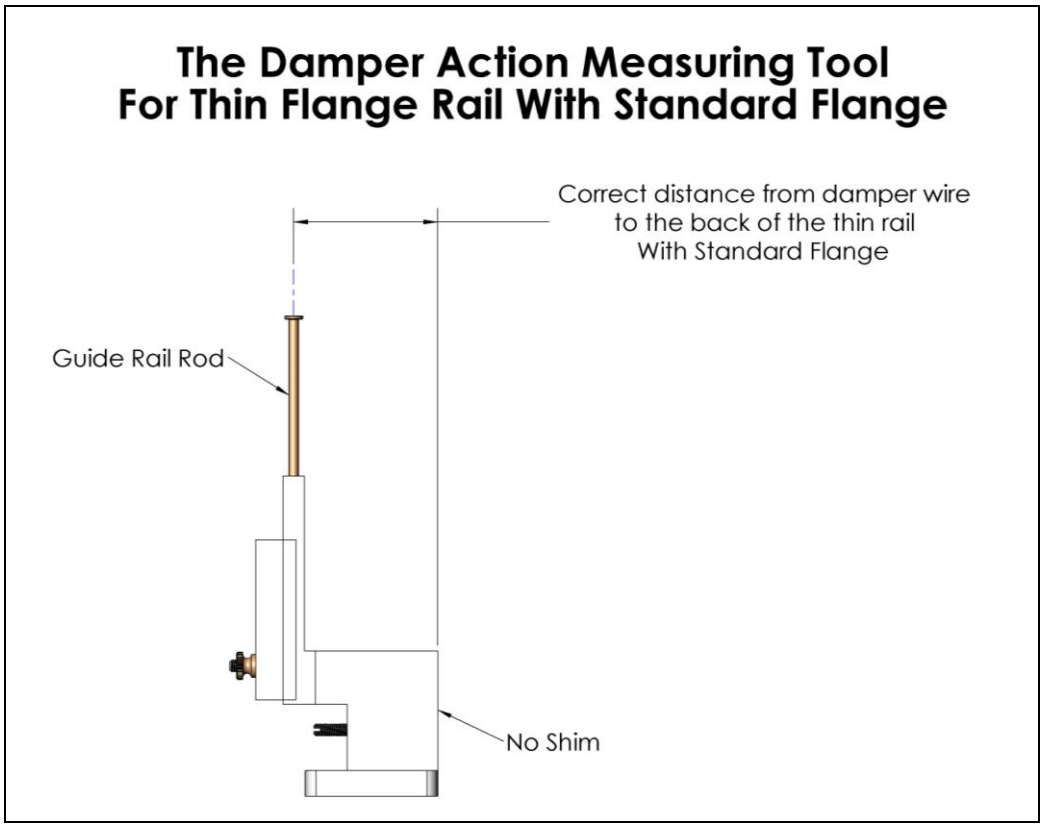
Checking for minimum height in damper cavity



Slide the Damper Action Measuring Tool back into the damper cavity. If you can slide the back part of the tool into the cavity you have enough vertical room to install a damper action in this piano.

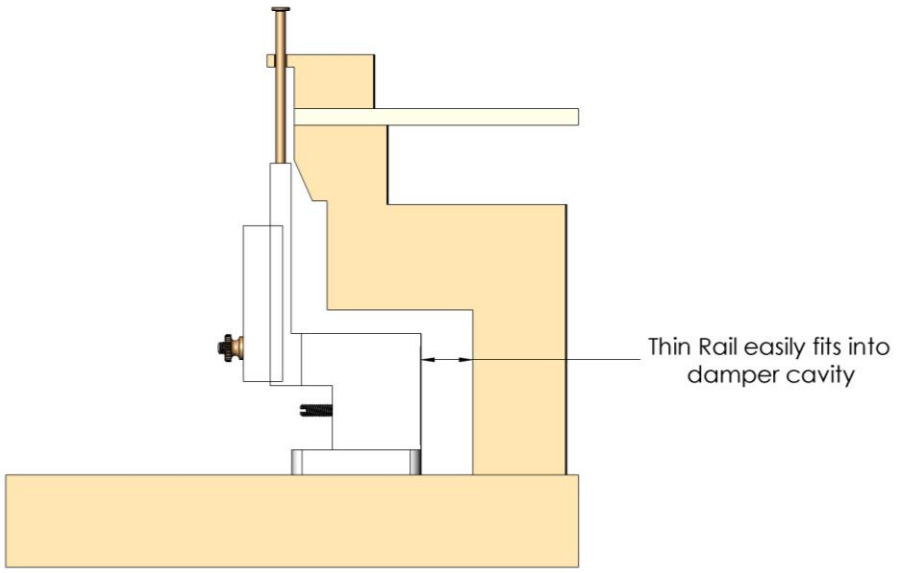
If the Damper Action Measuring Tool cannot be fit into the damper cavity, without modification, there is not vertical room for the WNG damper action. You will need to investigate another vendor.

It is not out of the question that you will be able to modify the damper cavity however, that is beyond the scope of this procedure.



The Damper Action Measuring Tool

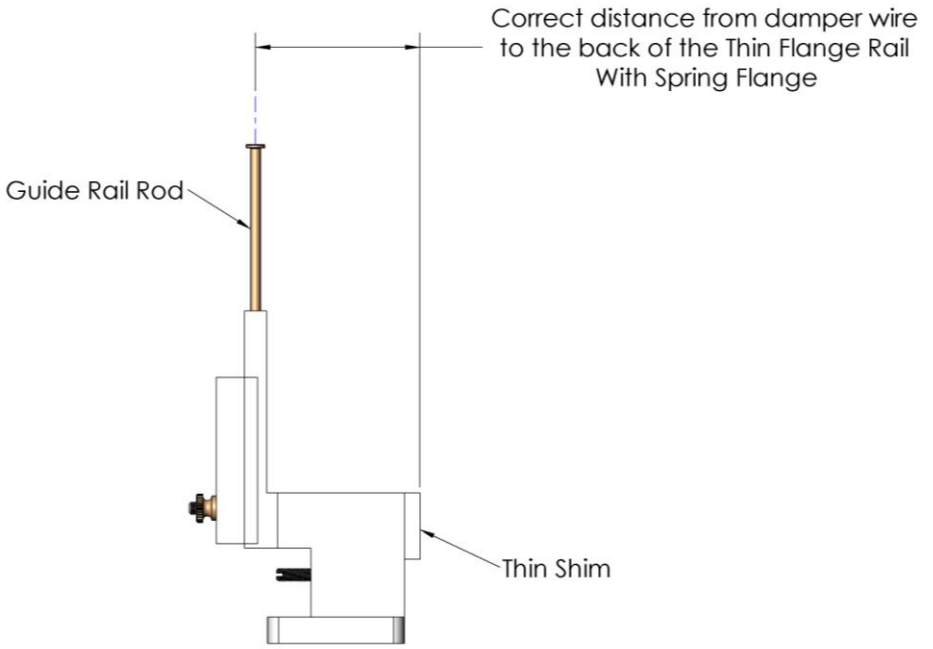
Checking for enough space in the damper cavity to use the thin rail and a standard flange



When used without shims, the distance from the center of the rod to the back of the tool is the distance required for the thin rail using the standard mounting block.

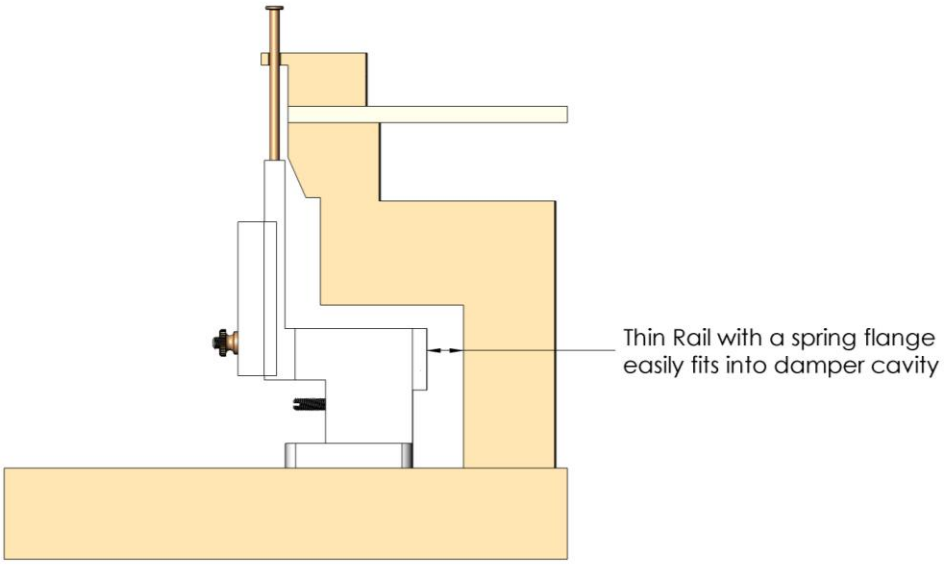
If you haven't enough room for the thin rail you will not be able to use the WNG damper action. Make sure that a small space behind the tool, 3mm or 1/8", is available for the mounting block.

The Damper Action Measuring Tool For Thin Flange Rail With Spring Flanges



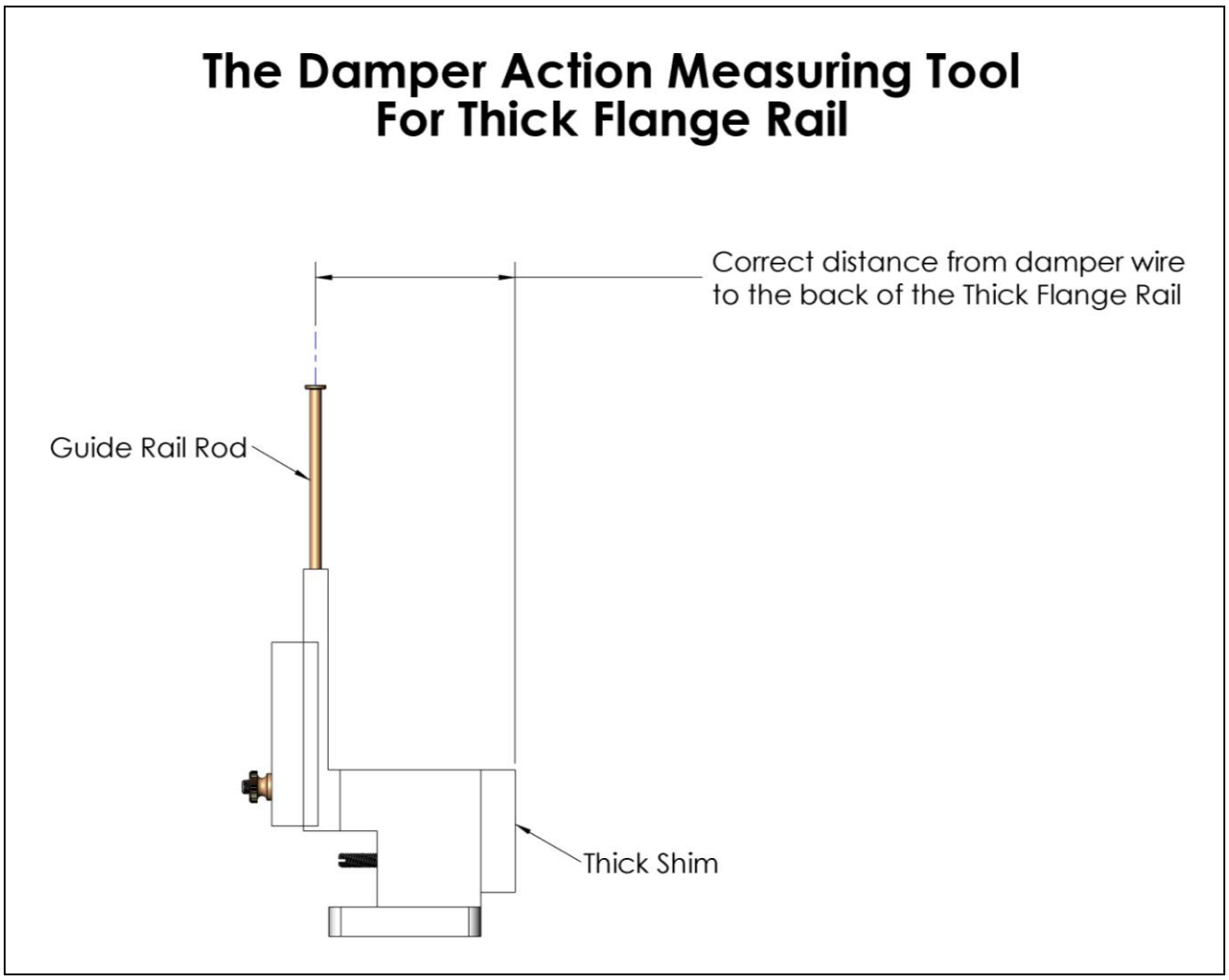
The Damper Action Measuring Tool

Checking for enough space in the damper cavity to use the thin rail and a spring flange



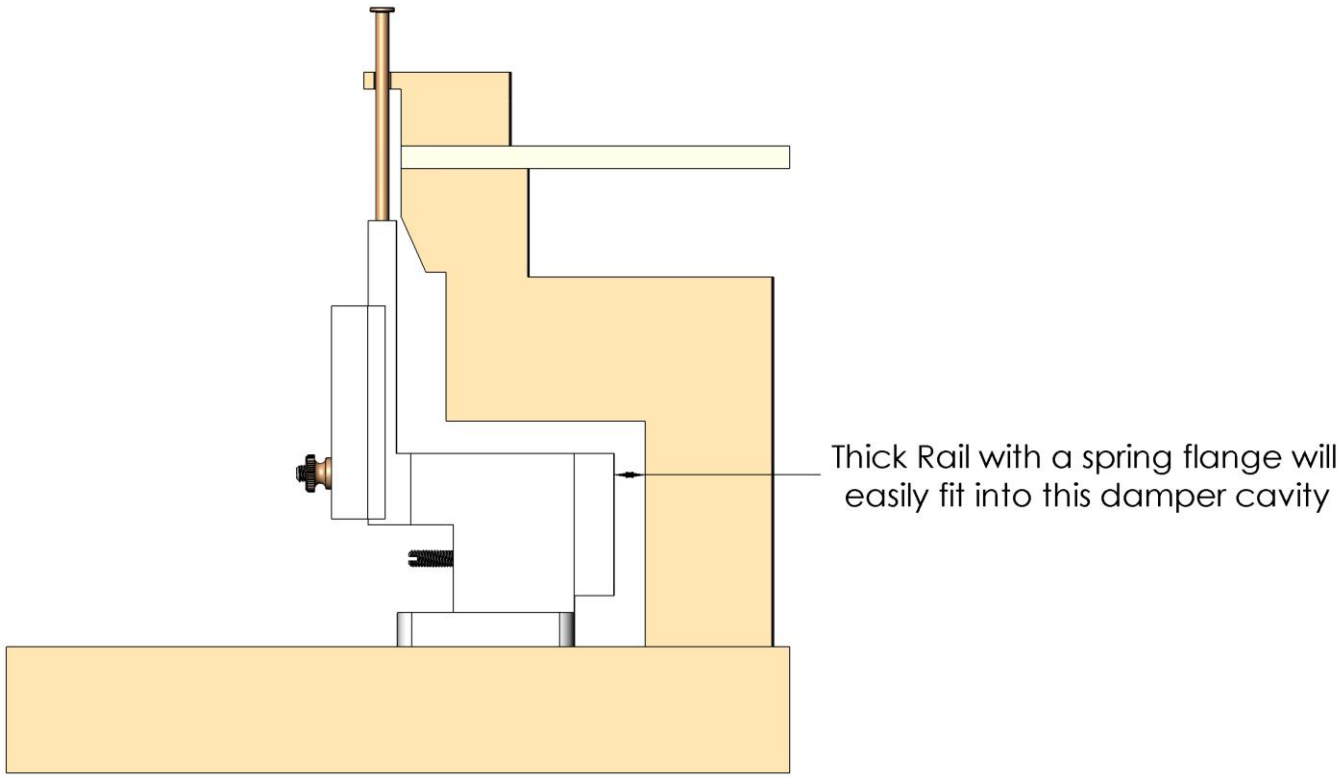
Because of its design, the spring flange extends back beyond the thin rail. Typically the thin damper flange rail is used when there is not sufficient space in the damper cavity for the thick rail. However, some of the time there will be enough room to allow the use of spring flanges with the thin rail. The small shim mounted on the back of the Damper Action Measuring Tool will tell you if the spring flange can be used in your damper cavity.

The distance from the center of the rod to the back of the small shim is the distance required to use the thin rail with spring flanges. The spring flanges hang over the back of the thin rail but still require less room than the thick rail. Again, make sure that a small space behind the tool, 3mm or 1/8”, is available for the mounting block.



The Damper Action Measuring Tool

Checking for enough space in the damper cavity to use the thick rail and a spring flange



The thick damper flange rail is the most advantageous flange rail to use on the WNG Damper Action. If sufficient space exists in the damper cavity, use the thick rail.

The distance from the center of the rod to the back shim is the distance required to use our thick damper flange rail. Make sure that a small space behind the tool, 3mm or 1/8”, is available for the mounting block.

Measure Key Length to Select the Correct Spoons

Our next task is to determine the length of the spoons on the underlevers.

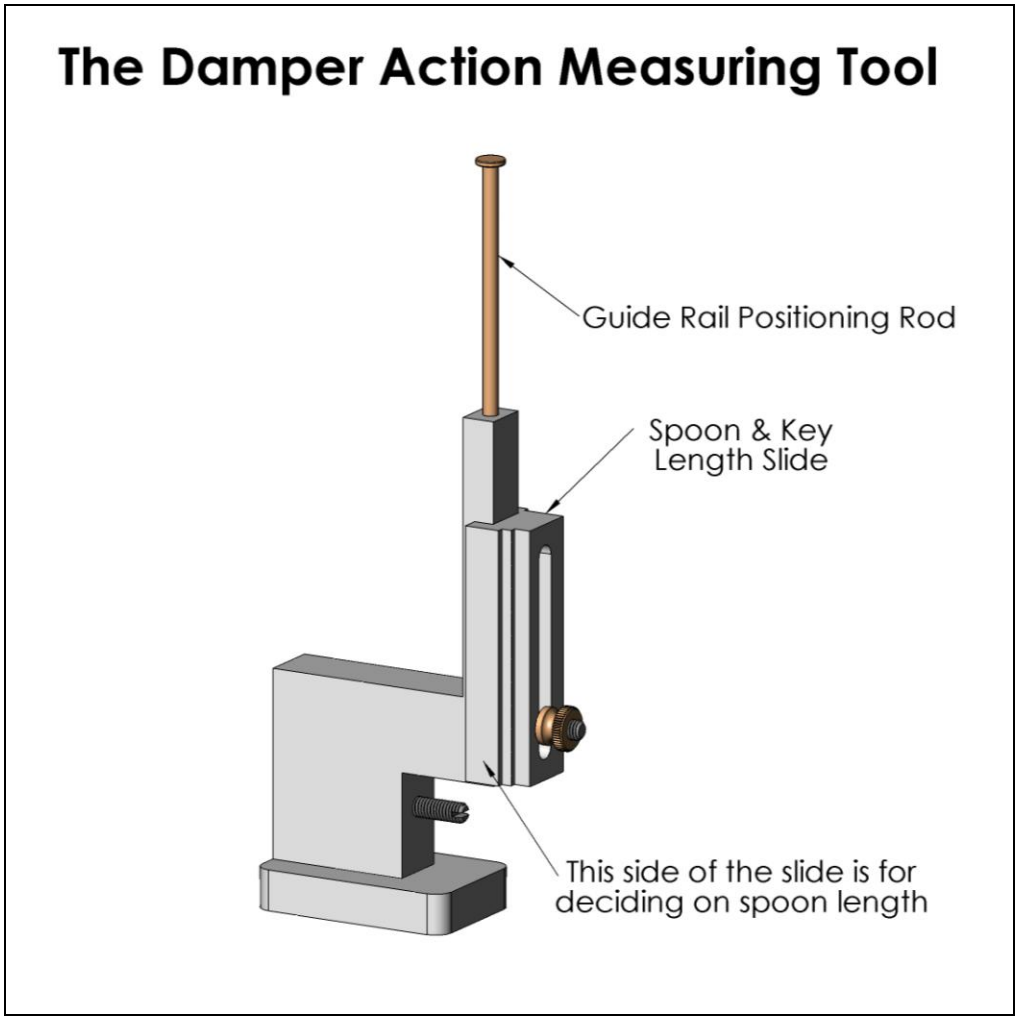
We need to remove the felts from the back of the keys and we need to have the wood sanded clean so we can make marks on the keyboard concerning the relationship of the key to the underlever.

Locate the Damper Action Measuring Tool with the Guide Rail Positioning Rod. Orient correctly. Move the Spoon & Key Length Slide to its highest position.

Place the keyboard in the piano. If this is a full action job and you have determined that key and action assemble needs to be moved for some reason, do it now. Because we are measuring the ends of the keys, before proceeding, make sure the keyboard is correctly positioned.

Spoon and key length work together. WNG provides three different length spoons to make your job easier. As a damper action installer, you must decide, on the basis of key length, which spoon to use.

If the keys are either too short or too long you will need to decide upon modifications to the keyboard.



On the Damper Action Measuring Tool there is a slide mounted on the front of the tool. This is the Spoon and Key Length Slide.

The bass side of the Spoon and Key Length Slide has notches that help you decide which spoon to order on your underlevers.

The treble side of the Spoon and Key Length Slide has a single notch that tells you if the keys are too long.

The end of the slide tells you how far the end of the key must come to work with the longest spoon.

You will be able to see where the key comes with respect to the spoons and the overall key length.

In most cases you will be able to use more than one spoon. Use the following criteria to decide on a spoon length.

If possible use the standard (medium length) spoon.

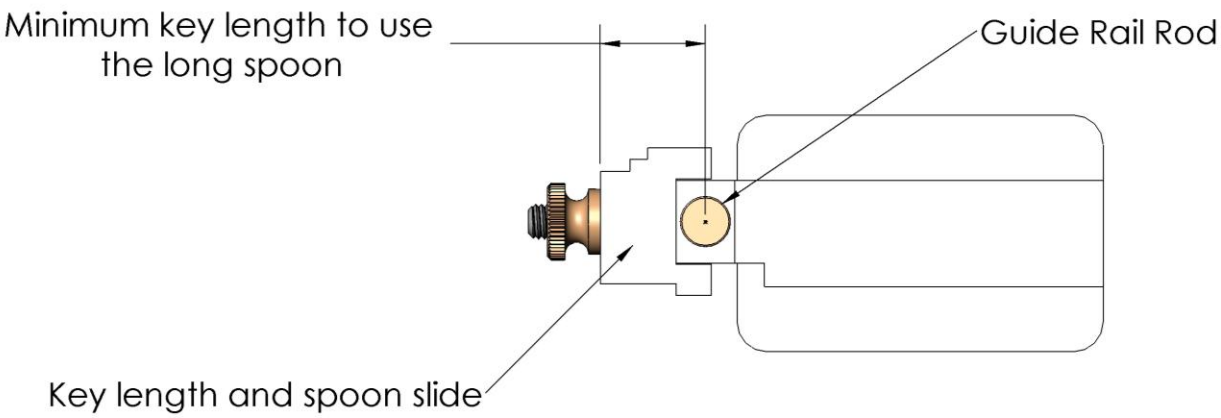
The long spoon is useful to avoid modifying the length of the keys. Adding to the length of the key can be done but the long spoon is much easier. If the long spoon is still too short then you will need to add to the length of the key

The short spoon is useful to avoid modifying the backcheck block on the key to create space for damper pickup on the end of the key.

At the end you need to decide which spoon to use.

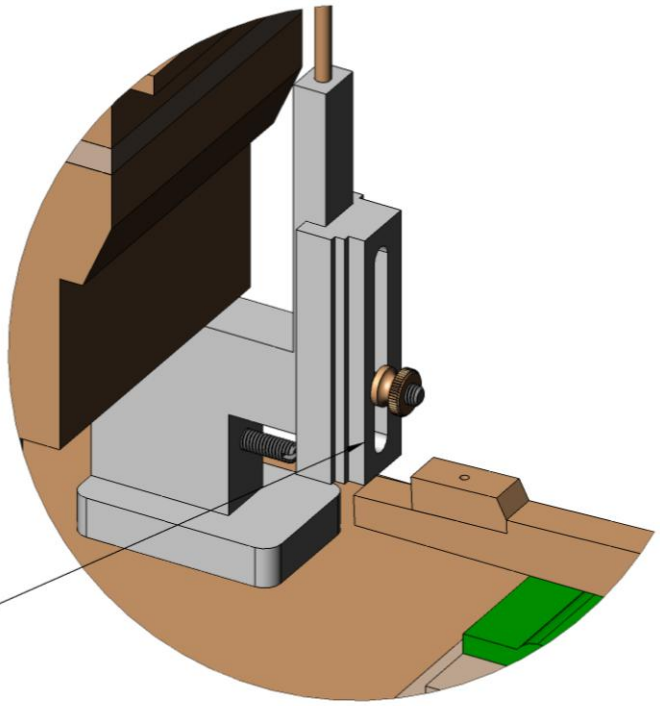
The Damper Action Measuring Tool

Key length for long spoon



The Damper Action Measuring Tool
Long Spoon

To get an accurate reading, the keyboard must be positioned in the action cavity correctly.



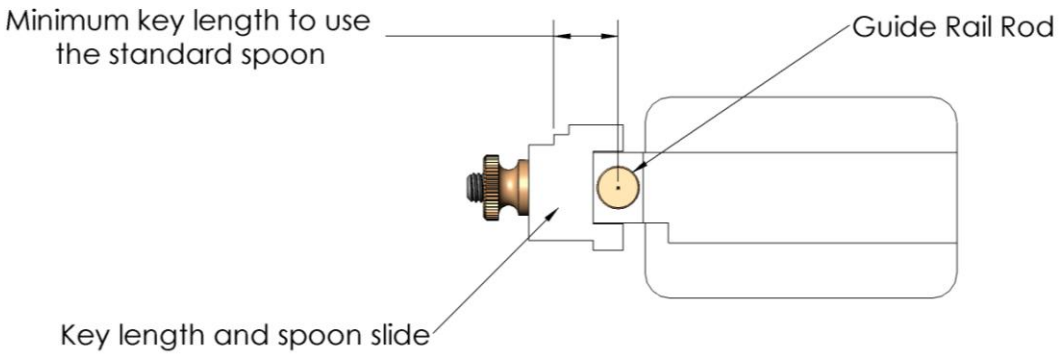
To use the long spoon, the key must come to the front surface of the spoon slide.

Lower the Spoon and Key Length Slide onto the key and tighten the knurled clamping nut.

If the key comes to the front surface of the slide it is long enough to use the long spoon.

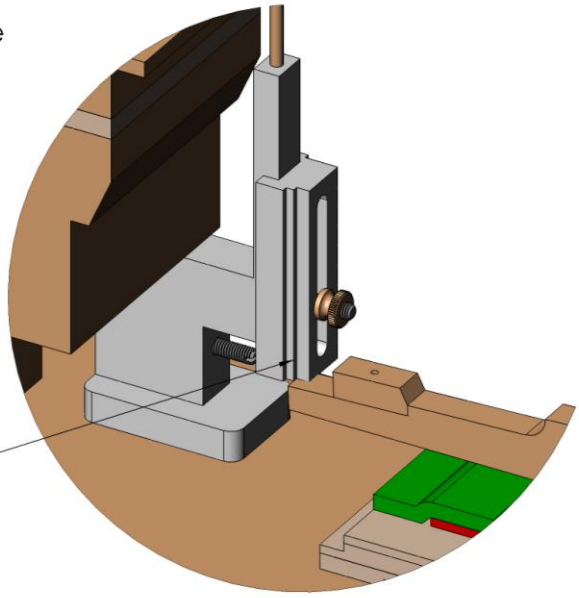
The Damper Action Measuring Tool

Key length for standard spoon



The Damper Action Measuring Tool
Standard Spoon

To get an accurate reading, the keyboard must be positioned in the action cavity correctly.



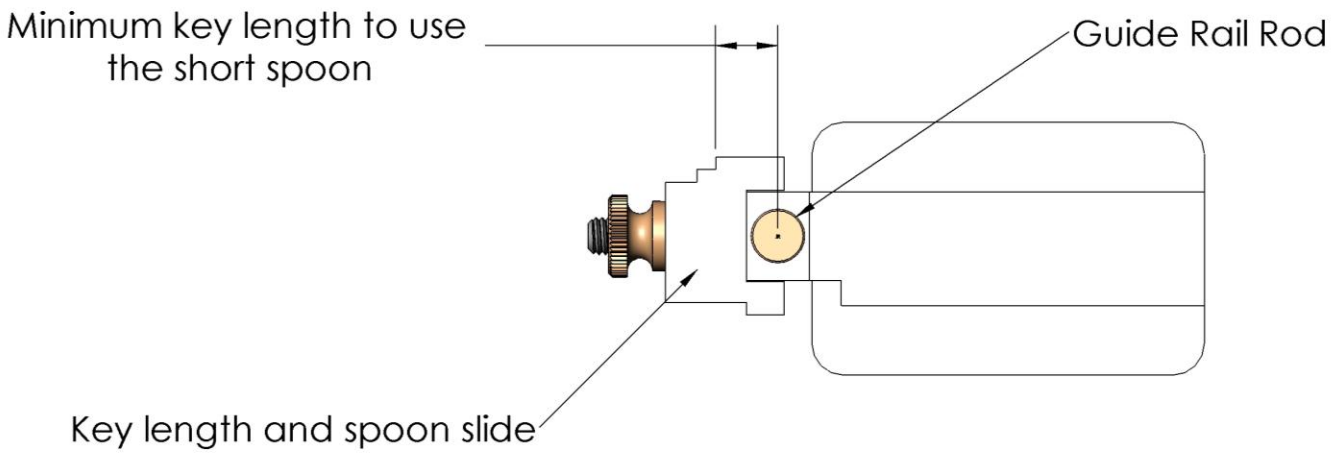
To use the Standard spoon, the key must come to the first notch on the spoon side of the slide.

Lower the Spoon and Key Length Slide onto the key and tighten the knurled clamping nut.

If the key comes to the back of the first notch on the slide it is long enough to use the standard spoon.

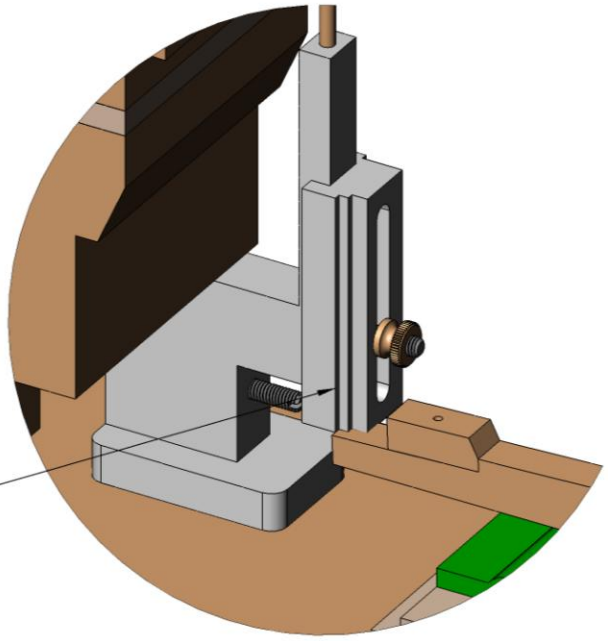
The Damper Action Measuring Tool

Key length for short spoon



The Damper Action Measuring Tool
Standard Spoon

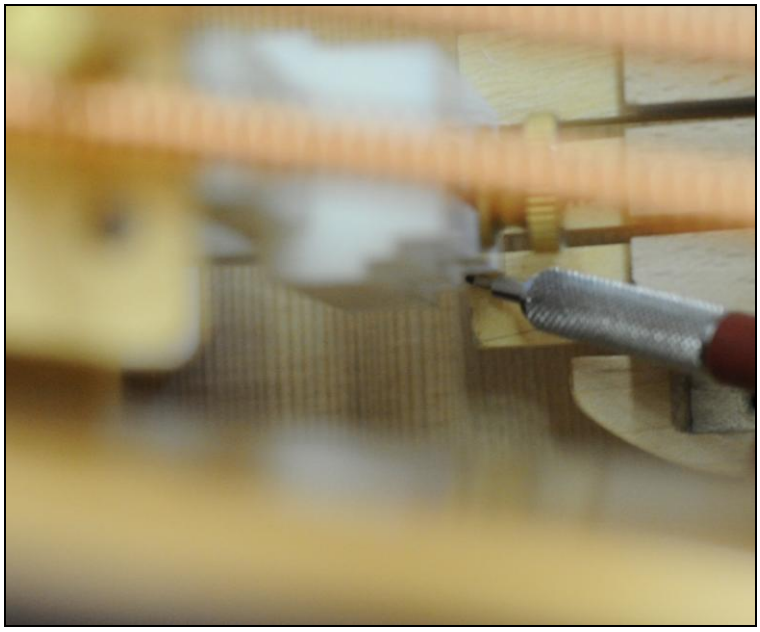
To get an accurate reading, the keyboard must be positioned in the action cavity correctly.



To use the Short spoon, the key must come to the second notch on the spoon side of the slide.

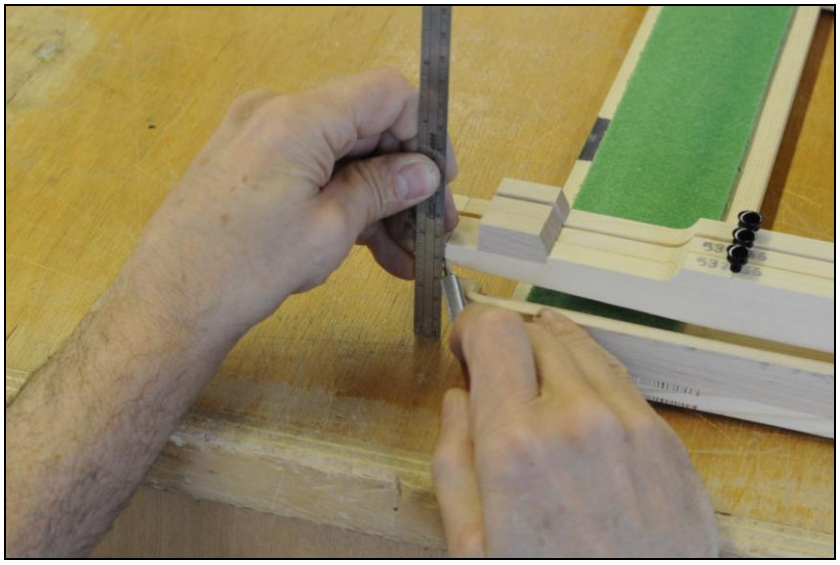
Lower the Spoon and Key Length Slide onto the key and tighten the knurled clamping nut.

If the key comes to the back of the second notch on the slide it is long enough to use the short spoon.

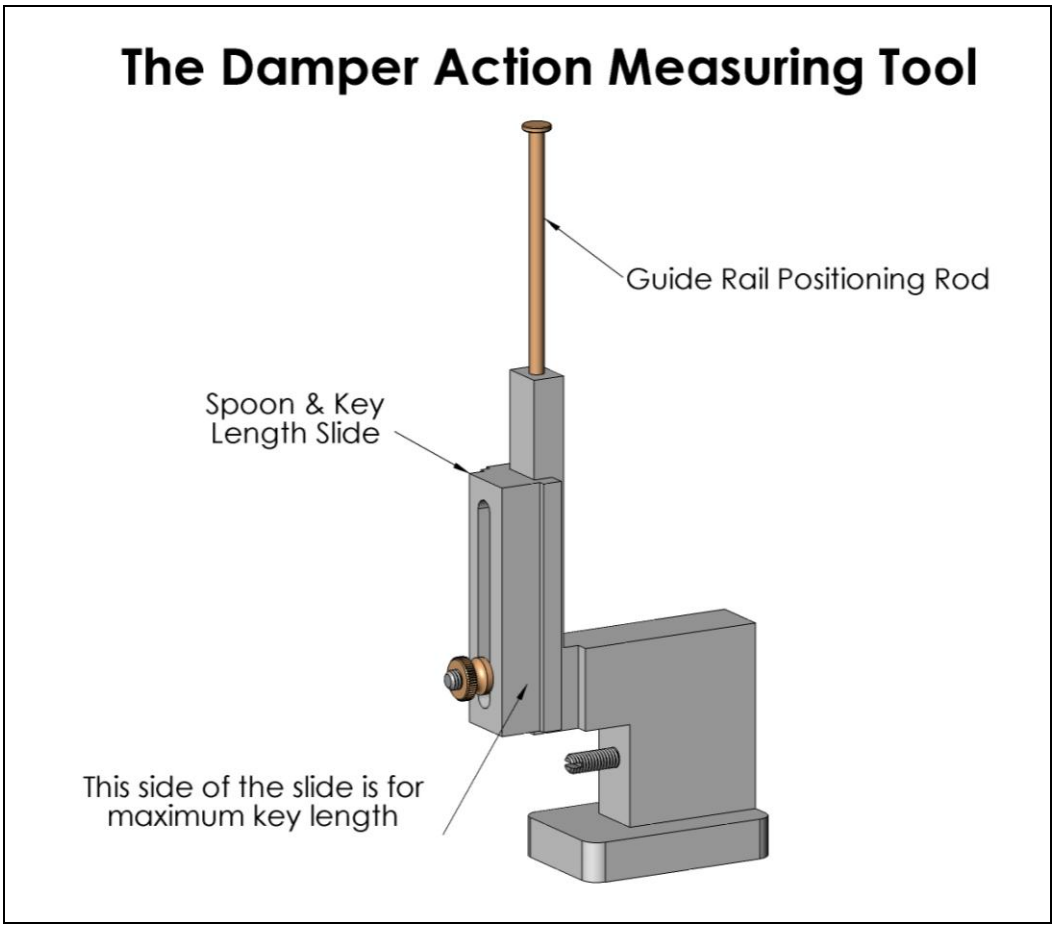


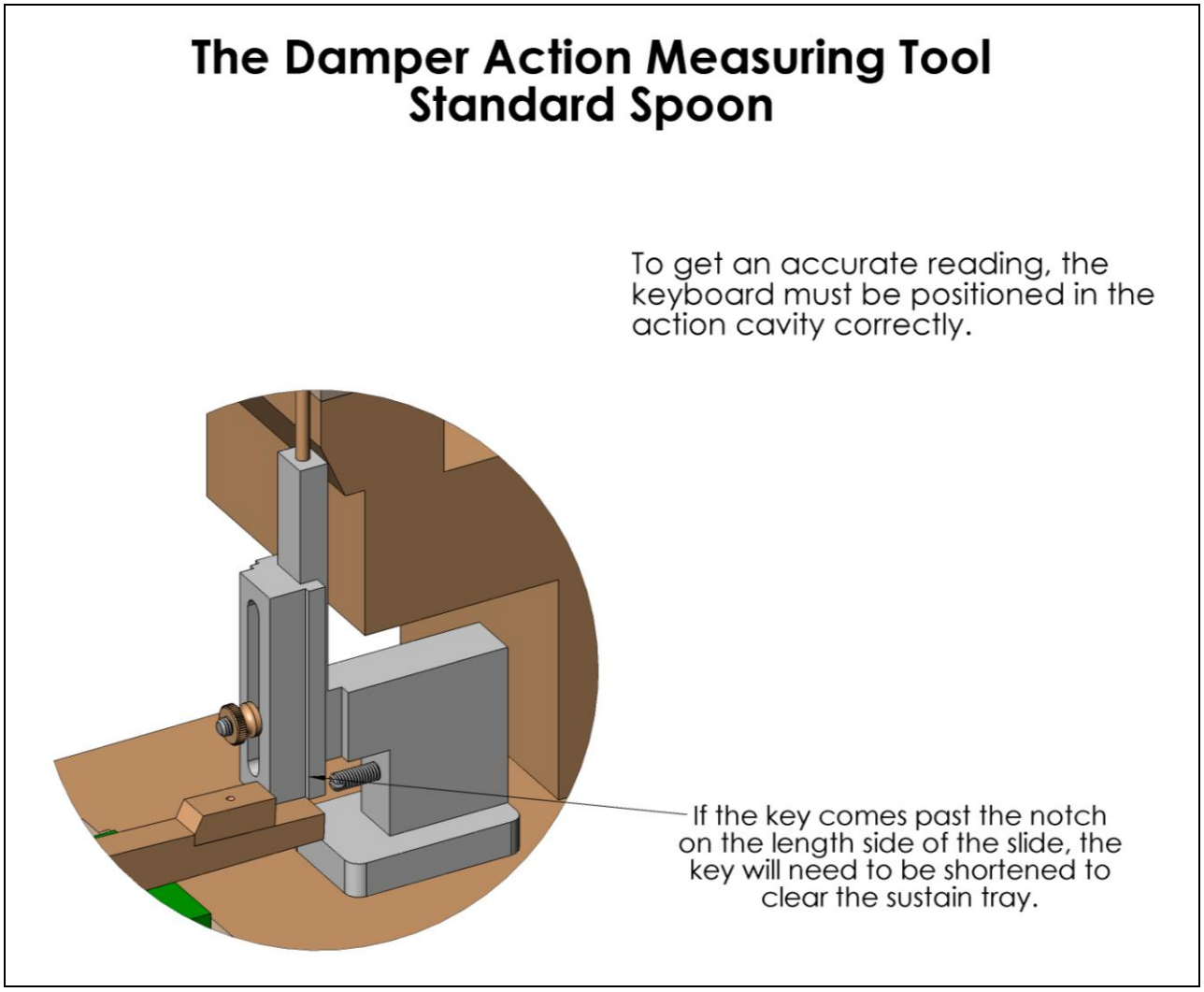
Make a mark on the key for the ideal length of the key for the spoon you wish to use. Do this measurement at both ends of the damper guide rail.

Measure 6mm forward from the ideal key length mark and make a mark on the key. This mark signifies where the spoon will pick up on the key. Do this measurement at both ends of the damper guide rail.



Mark the first and last damper key on the outside vertical edges so that after the key end felt is installed you will still be able to find the spoon pickup line and the ideal key length.





On the treble side of the slide you will see a single notch. The keys cannot come any further back in the piano than this notch. Longer keys will hit the sustain tray when played when either is operated.

Mark the key on the lowest and highest damper with this measurement if the key goes further back than this notch.

Later, if the keys go past the treble side notch, you will need to shorten the keys to make them work with the new WNG back action.

Wessell, Nickel & Gross Grand Action Order Sheet Date _____

Name _____ Phone _____
Address _____ Email _____
City _____
State / Province _____ Make of Piano _____
Country _____ Model of piano _____
Postal Code / Zip _____ Serial Number _____

☐ Hammer Action ☐ Rails Drilled ☐ Assembled

Type of Action
- ☐ Rest Rail
- ☐ Cushion

Shank & Flange
- ☐ WNG Classic / Modern (17 x 10)
- ☐ Custom
  Specify - (Knuckle Distance _____) (Knuckle Diameter _____)

Repetiton
- ☐ WNG Classic (Geometry compatible with old WNG actions)
- ☐ WNG Modern (Geometry compatible with Steinway / Renner actions)

☐ Custom (Allows you to specify heel size and location)
Specify
- ☐ Heel Location _____
- ☐ Heel size Whites (52)_____ Sharps (36)_____
- ☐ Helper Springs - No of notes _____

Brackets
1(bass) ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____ (Locations to customer supplied scale)

☐ Damper Action ☐ Rails Drilled ☐ Assembled

Damper Set
Number of dampers _____
- ☐ Damper Heads & Wires Number of bass dampers _____

Flange Rail
- ☐ Thin (Requires 72mm from belly rail to center of damper wire)
- ☐ Thick (Requires 86mm from belly rail to center of damper wire)

Under Levers
Spoon Length
- ☐ Short Under lever center to spoon length of 73.6
- ☐ Standard Under lever center to spoon length of 76.6 - Typical for most pianos
- ☐ Long Under lever center to spoon length of 81.6

Sostenuto
- ☐ WNG Standard Top Flange - Low sostenuto tab height
- ☐ WNG Aftermarket Top Flange - High sostenuto tab height

Custom
- ☐ Custom Leading - 2 Leads ___, 1 Outside Lead ___, 1 Inside Lead ___, 0 Leads ___
- ☐ Springs W tension adjusting screw (Requires room in piano)
  Specify the number of notes with springs _____

Sostenuto Rod
- ☐ Include Sostenuto Rod with Mounting Hardware
  Assembled to customer specification

Now you must define a damper action to order. The order sheet you are seeing will let WNG know the features you want in your damper action. So, let us fill out the order sheet.

Wessell, Nickel & Gross Grand Action Order Sheet Date _____

Name _____ Phone _____
Address _____ Email _____
City _____
State / Province _____ Make of Piano _____
Country _____ Model of piano _____
Postal Code / Zip _____ Serial Number _____

WNG needs to know who you are and how to contact you. It is essential you fill out this section of the order form.

☐ Damper Action ☐ Rails Drilled ☐ Assembled

Damper Set

Number of dampers _____
☐ Damper Heads & Wires Number of bass dampers _____

Flange Rail

☐ Thin (Requires 72mm from belly rail to center of damper wire)
☐ Thick (Requires 86mm from belly rail to center of damper wire)

Under Levers

Spoon Length
☐ Short Under lever center to spoon length of 73.6
☐ Standard Under lever center to spoon length of 76.6 - Typical for most pianos
☐ Long Under lever center to spoon length of 81.6

Sostenuto
☐ WNG Standard Top Flange - Low sostenuto tab height
☐ WNG Aftermarket Top Flange - High sostenuto tab height

Custom
☐ Custom Leading - 2 Leads ___, 1 Outside Lead ___, 1 Inside Lead ___, 0 Leads ___
☐ Springs W tension adjusting screw (Requires room in piano)
Specify the number of notes with springs _____

Sostenuto Rod

☐ Include Sostenuto Rod with Mounting Hardware
Assembled to customer specification

Check the box next to "Damper Action". This tells us that you are ordering a damper action.

If you want WNG to drill the flange rail and the tray and cut to length, check the box next to "Rails Drilled".

If you want to drill the rails yourself and save some money just do not check the box next to "Rails Drilled". One way or another it needs to get done.

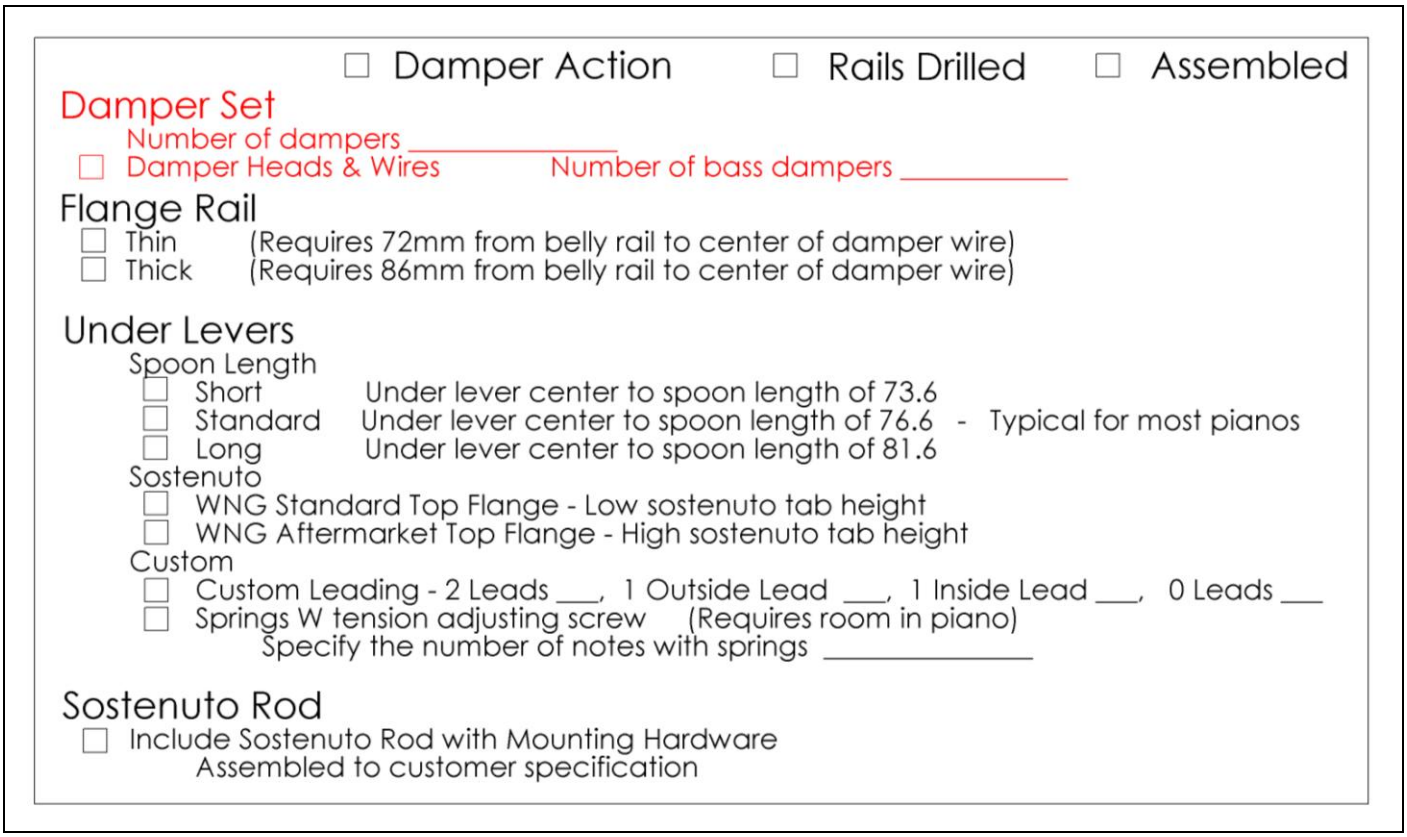
If you want WNG to assemble the damper action for you check the box next to "Assembled". Obviously, it doesn't work for you to drill the rails and have us assemble the damper action. If you check "Assembled", we will drill the rails and cut them to length.

Either way you go, a scale stick will need to be extracted from the piano or action so that the drilling can be done.

If you are not sure how to create a scale stick:

- WNG has an article "Understanding Scale Sticks" that provides a general understanding about scale sticks.
- WNG has a kit that provides the tools and materials you will need to create a scale stick.
- WNG has created procedures for several different kinds of scale sticks from which to choose.

Just understand, in all cases you will need a scale stick.



Under the heading "Damper Set" WNG needs to know the number of dampers in this piano.

If you want damper heads and damper wires supplied check the box next to "Damper Heads & Wires". You will also need to supply the number of bass dampers in this piano.

☐ Damper Action ☐ Rails Drilled ☐ Assembled

Damper Set

Number of dampers _____

☐ Damper Heads & Wires Number of bass dampers _____

Flange Rail

☐ Thin (Requires 72mm from belly rail to center of damper wire)

☐ Thick (Requires 86mm from belly rail to center of damper wire)

Under Levers

Spoon Length

☐ Short Under lever center to spoon length of 73.6

☐ Standard Under lever center to spoon length of 76.6 - Typical for most pianos

☐ Long Under lever center to spoon length of 81.6

Sostenuto

☐ WNG Standard Top Flange - Low sostenuto tab height

☐ WNG Aftermarket Top Flange - High sostenuto tab height

Custom

☐ Custom Leading - 2 Leads ___, 1 Outside Lead ___, 1 Inside Lead ___, 0 Leads ___

☐ Springs W tension adjusting screw (Requires room in piano)

Specify the number of notes with springs _____

Sostenuto Rod

☐ Include Sostenuto Rod with Mounting Hardware Assembled to customer specification

Which flange rail do you wish to use? Check the box next to either "Thin" or "Thick" as determined above.

☐ Damper Action ☐ Rails Drilled ☐ Assembled

Damper Set

Number of dampers _____

☐ Damper Heads & Wires Number of bass dampers _____

Flange Rail

☐ Thin (Requires 72mm from belly rail to center of damper wire)

☐ Thick (Requires 86mm from belly rail to center of damper wire)

Under Levers

Spoon Length

☐ Short Under lever center to spoon length of 73.6

☐ Standard Under lever center to spoon length of 76.6 - Typical for most pianos

☐ Long Under lever center to spoon length of 81.6

Sostenuto

☐ WNG Standard Top Flange - Low sostenuto tab height

☐ WNG Aftermarket Top Flange - High sostenuto tab height

Custom

☐ Custom Leading - 2 Leads ___, 1 Outside Lead ___, 1 Inside Lead ___, 0 Leads ___

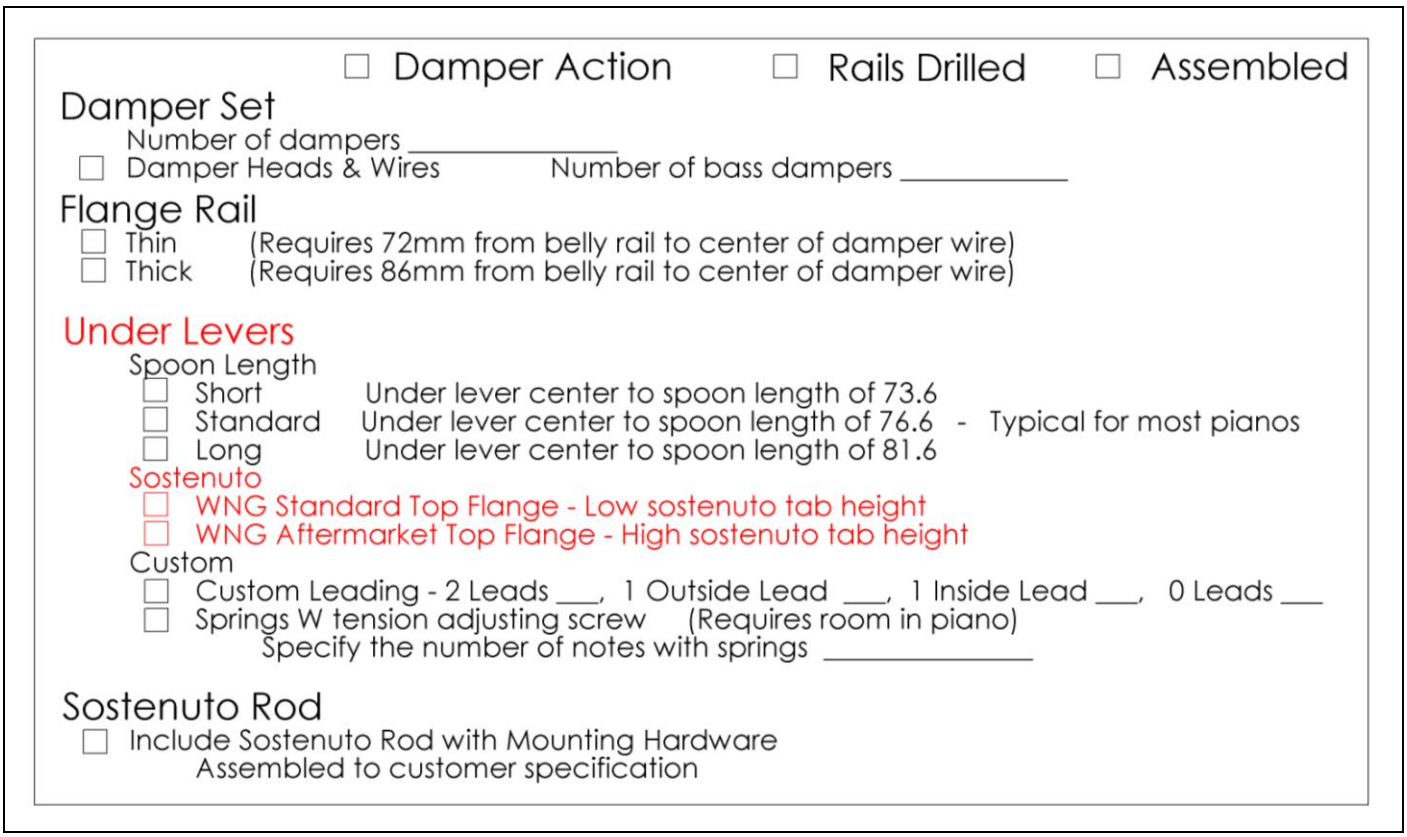
☐ Springs W tension adjusting screw (Requires room in piano)

Specify the number of notes with springs _____

Sostenuto Rod

☐ Include Sostenuto Rod with Mounting Hardware Assembled to customer specification

Which spoon length do you wish to use? Check the box next to either "Short", "Standard" or "Long" as determined above.



Which underlever top flange do wish to use? Check the box next to either "WNG Standard Top Flange" or "WNG Aftermarket Top Flange" as determined above.

☐ Damper Action ☐ Rails Drilled ☐ Assembled

Damper Set

Number of dampers _____

☐ Damper Heads & Wires Number of bass dampers _____

Flange Rail

☐ Thin (Requires 72mm from belly rail to center of damper wire)

☐ Thick (Requires 86mm from belly rail to center of damper wire)

Under Levers

Spoon Length

☐ Short Under lever center to spoon length of 73.6

☐ Standard Under lever center to spoon length of 76.6 - Typical for most pianos

☐ Long Under lever center to spoon length of 81.6

Sostenuto

☐ WNG Standard Top Flange - Low sostenuto tab height

☐ WNG Aftermarket Top Flange - High sostenuto tab height

Custom

☐ Custom Leading - 2 Leads ___, 1 Outside Lead ___, 1 Inside Lead ___, 0 Leads ___

☐ Springs W tension adjusting screw (Requires room in piano)

Specify the number of notes with springs _____

Sostenuto Rod

☐ Include Sostenuto Rod with Mounting Hardware Assembled to customer specification

Unless otherwise specified, WNG will supply our standard leading pattern for the underlevers.

- 32 notes with two leads.
- 12 notes with one outside lead.
- 12 notes with one inside lead.
- All remaining notes with no lead

If you wish a custom leading pattern, WNG can provide this at extra cost.

For a custom leading pattern fill in the blanks for:

- The number of notes with 2 leads
- The number of notes with 1 outside lead
- The number of notes with 1 inside lead
- The number of notes with no leads

☐ Damper Action ☐ Rails Drilled ☐ Assembled

Damper Set

Number of dampers _____

☐ Damper Heads & Wires Number of bass dampers _____

Flange Rail

☐ Thin (Requires 72mm from belly rail to center of damper wire)

☐ Thick (Requires 86mm from belly rail to center of damper wire)

Under Levers

Spoon Length

☐ Short Under lever center to spoon length of 73.6

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Sostenuto

☐ WNG Standard Top Flange - Low sostenuto tab height

☐ WNG Aftermarket Top Flange - High sostenuto tab height

Custom

☐ Custom Leading - 2 Leads ___, 1 Outside Lead ___, 1 Inside Lead ___, 0 Leads ___

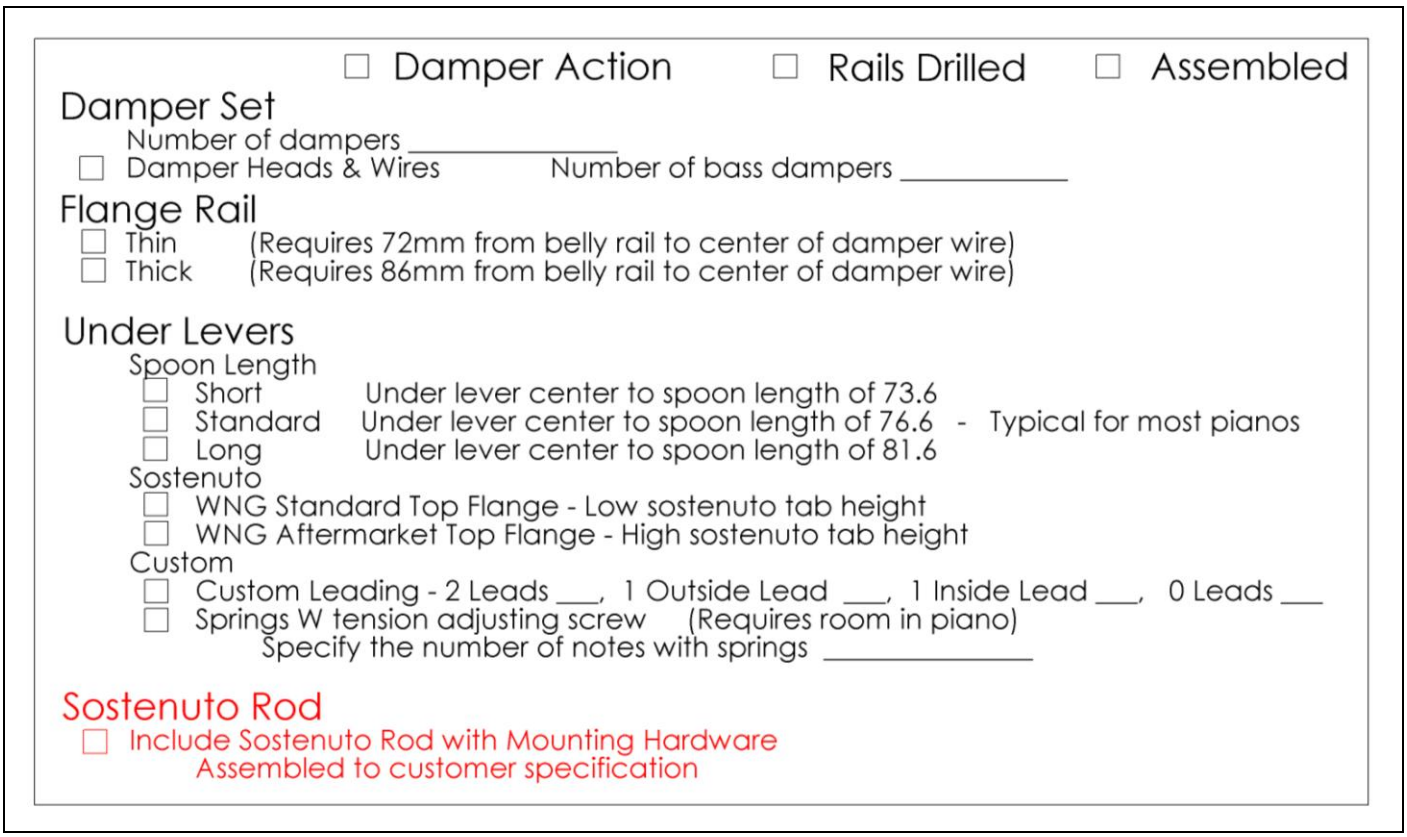
☐ Springs W tension adjusting screw (Requires room in piano)

Specify the number of notes with springs _____

Sostenuto Rod

☐ Include Sostenuto Rod with Mounting Hardware Assembled to customer specification

If you have determined that you can use damper assist springs and wish to do so then specify the number of notes with springs.



Last, to order a sostenuto rod, check the box next to "Include Sostenuto Rod with Mounting Hardware". We will assemble the rod for you if we are drilling and assembling the damper action.