

# Instructions for filling in the WNG action order sheet

The Wessell, Nickel & Gross Grand Action Order Sheet is for the express purpose of ordering a complete action. If you only need parts to mount on a set of rails then you do not need to fill out this sheet.

Manufacturers and advanced rebuilders all install complete actions and damper actions into pianos. This order sheet is intended to help this customer select the proper action and back action along with a feature set appropriate to your problem at hand.

## Contact Information

Contact information is crucial. For obvious reasons, if we are to do business we need to be able to contact you. We also ask for the make, model and serial number of the piano. This can be helpful as it is entirely possible that we have done this model in the past. Our previous experience could well save you trouble and aggravation on this project.

## To order a hammer action

For WNG to supply the hammer action you want, certain information is required.

### *Hammer Action*

To order, check Hammer Action. If you do not check this, you are not ordering a hammer action. If you do not order a hammer action there is no need for further information concerning the hammer action.

### *Rails Drilled*

To have WNG drill the rails check Rails Drilled. This implies that you will supply us with drilling specifications.

Commonly, note spacing and bracket location information is referred to as a "Scale Stick". In the old days it was actually marked on a piece of quartersawn maple. However, without a scale stick we cannot drill rails.

### *Assembled*

To receive the entire action assembled, check Assembled.

We can either assemble the action or provide it as a kit for you to assemble. Of course, for WNG to assemble the action the rails must be drilled. Thus, for you to get an assembled action you will need to supply a scale stick.

## *Type of Action*

Some actions have a rest rail. Others have a rest cushion on the repetition. WNG can do either.

Check *Rest Rail* to receive an action with a rest rail

Check *Cushion* to receive an action with cushions on the repetitions.

## *Shank & flange*

The standard shank & flange for WNG actions is a shank with the knuckle center 17mm from the shank center using a 10mm diameter knuckle.

Other possibilities exist. With our latest parts we can position the knuckle from 15mm to 19mm from the shank center and we have 8, 9 and 10mm diameter knuckles available.

To select the standard shank and flange check *WNG Classic / Modern*.

To specify a custom shank and flange check *Custom*.

With a custom shank and flange you will need to supply the knuckle location and diameter. Just enter this info into the spaces provided.

## *Repetition*

WNG repetitions can have a cushion or not, two different jack lengths, nine heel sizes and 14 heel locations.

When you chose the “Type of Action”, you have already chosen whether or not the repetition will use a cushion. In so choosing, you have also decided as to whether the action will have a rest rail.

There are two different length jacks. Both use a low angle tender that matches up with the location of the WNG regulating rail.

The “Classic” repetition has a shorter jack length by 1.2mm than the “Modern” repetition. The shorter jack corresponds with the old WNG actions thus the name “Classic”. If you are replacing an old WNG action then this is the repetition you should use.

Modern refers to the longer jack length which is compatible with Renner Standard Butterfly actions or Steinway. This is the most common jack geometry in the world.

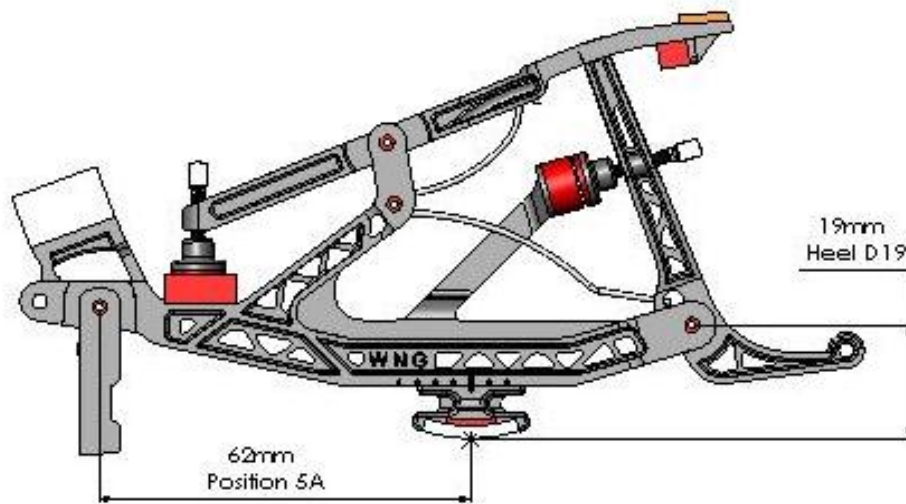
The heel size and location on both the Classic and the Modern is identical. The heel will be a D-19 heel positioned 62mm from the repetition center. This configuration is typical of most repetitions in the world today. Because our system has a great deal of flexibility here, you are able to specify a Custom heel location and size.

Check WNG Classic if you are replacing an old Wessell, Nickel & Gross action or at least wish to have the shorter jack.

Check WNG Modern if you wish to be compatible with the vast majority of actions made in the world today.

Check Custom if you wish to enter a non standard heel location or size.

If you have chosen to enter custom heel configuration you will need to enter the distance from the repetition center to the center of the heel and the heel size. The drawing below should help you understand where dimensions are taken from.



Below are charts that will give you the exact heel positions and sizes that WNG can provide.

The locations available are as follows.

<u>Position Code</u>	<u>Dimension</u>
1A	50.0 mm

1B	51.5 mm
2A	53.0 mm
2B	54.5 mm
3A	56.0 mm
3B	57.5 mm
4A	59.0 mm
4B	60.5 mm
5A	62.0 mm
5B	63.5 mm
6A	65.0 mm
6 B	66.5 mm
7A	68.0 mm
7B	69.5 mm

Pick the location where you want the heel positioned and write it in the space provided.

WNG makes 9 different heels in 1mm increments starting from 16mm and running to 24mm. It is important that you understand that the heel itself is not 16mm. Rather, the contact surface of the heel will be 16mm below the jack center. See the above drawing for further information.

WNG provides the following heel sizes.

<u>Heel Code</u>	<u>Dimension</u>
A16	16mm
B17	17mm
C18	18mm
D19	19mm
E20	20mm
F21	21mm
G22	22mm
H23	23mm
I24	24mm

When designing a keyboard it is important that the balance point of the key, the contact point between the capstan and the heel of the repetition and the repetition center lie on a straight line when the key is at half stroke. This is often referred to as “The half stroke line”.

The key designer can work with all three elements to achieve a good design. When working with an existing keyboard usually one can only work with the height of the heel. With nine different heel sizes in 1mm increments it is easy to solve this problem by varying the heel size to achieve a good half stroke line.

An interesting problem emerges. Because the balance points of the key are different, it is not possible that the same half stroke line can be precisely correct for both the white and the sharp.

Some will solve this by setting the half stroke line half way between the white and the sharp balance points. This solution has the advantage of simplicity and works by getting both the white and sharp more or less in the ball park.

A more precise way is to have a different height heel for the sharp as well as for the white. In this fashion the half stroke line can be precisely correct for both the white and the sharp. To do this, typically the height of the sharp heel is increased by 2mm. This way there are two half stroke lines in the action.

If you want all 88 notes with the same size heel, enter the same heel size for both white (52) and sharp (36) and all 88 heels will be the same.

If you prefer different height heels for the sharp and the white enter the heel size you prefer for the white on the White (52) line and the heel you prefer for the sharp on the Sharp (36) line.

## *Brackets*

WNG provides a number of brackets. The brackets vary in two basic ways.

WNG provides two different heights. Different heights are, at times, desirable because at the ends of the keyframe, a shorter bracket leaves a higher action cleat (the block of wood glued to the keyframe to which the action is mounted). This taller cleat more nearly matches the height of the shift spring or the stop block.

Also, in the tall brackets only, WNG provides five different brackets that feature an angled front foot. These come in 2 degree increments from 2° to 10°. The angled brackets are used to deal with the angle of the keys at the lower and upper treble breaks.

In end brackets WNG provides an extra hole. The purpose of this hole is to allow the piano builder to create a physical location for the action using a pin rather than the screws that anchor the action to the action cleat.

In the terminology of WNG, brackets are numbered from the bass. So the bracket at note 1 is bracket #1. The brackets are numbered sequentially so if

the piano has 4 sections, there will be 5 brackets. Thus, in this example, the bracket at note 88 will be bracket #5.

WNG provides the following brackets.

<u>Code</u>	<u>Bracket Name</u>
TS/LH	Tall Straight bracket with locating hole
SS/LH	Short Straight bracket with locating hole
TS	Tall Straight bracket - no locating hole
SS	Short Straight bracket - no locating hole
T2	Tall Angled (2°) Center bracket
T4	Tall Angled (4°) Center bracket
T6	Tall Angled (6°) Center bracket
T8	Tall Angled (8°) Center bracket
T10	Tall Angled (10°) Center bracket

To select brackets do the following;

At the bass and treble ends select either a tall or short straight bracket. If you wish to use the locating hole in the bracket pin select a bracket, either tall or short, that features a locating hole. Otherwise select a bracket without the hole.

Under the brackets label, for brackets #1 to #6 there are spaces to enter the bracket code for the bracket you wish to use. To select brackets all you need do is enter the bracket code in the appropriate space.

In the lower and upper treble, select the angled bracket that best matches the angle of the lower key in the break.

Enter a code for each of the brackets you wish to use.

## To order a damper action

For WNG to supply the damper action you want, certain information is required.

### *Damper Action*

To order a damper action check *Damper Action*. If you do not check this, you are not ordering a damper action. If you do not order a damper action there is no need for further information concerning the damper action.

### *Rails Drilled*

To have WNG drill the rails check *Rails Drilled*. This implies that you will supply us with drilling specifications.

In the United States the hammer action and the damper action commonly have the same scale stick. In Europe, often designers introduce compensations into the scale stick for the damper action to reduce damper wire bends.

One way or another you will need to supply us this information. Without a scale stick we cannot drill rails.

### *Assembled*

To receive the entire action assembled, check *Assembled*.

We can either assemble the action or provide it as a kit for you to assemble. Of course, for WNG to assemble the action the rails must be drilled. Thus, for you to get an assembled action you will need to supply a scale stick.

### *Damper Set*

Enter the number of dampers in the piano in the space provided.

If WNG is to supply damper heads and wires check *Damper Heads & Wires*.

Also, we will need to know the number of bass dampers so please enter the number of bass dampers in the provided space.

### *Flange Rail*

WNG provides two different flange rails.

In pianos where front to back space is limited WNG makes a thin flange rail. This rail can be used if the distance from the damper wire to the back of the belly rail is at least 72mm. Assuming limited space, use of this rail will prevent you from using the flanges that hold the damper helper springs that are often necessary on very large pianos. Because the rail is thin, it needs more support when mounted. 5 equally spaced screw holes are provided that require 5 carefully sized shims to position the rail to the belly rail.

In pianos where the distance from the damper wire to the back of the belly rail is at least 86mm, you can use the thick flange rail. If you have space, this rail is preferable. You will be able to use the flanges that hold helper springs which could well be desirable. In addition, because the rail is very strong, it is only necessary to mount the rail on each end, that is, two mounting locations and shims saving you time and money.

To select the thin damper flange rail check *Thin*.

To select the thick damper flange rail check Thick.

## *Under Levers*

There are a number of options when considering the WNG under levers.

WNG can provide under levers with three spoon lengths. Measuring from the under lever center of rotation to the tip of the spoon, WNG provides a short spoon of 73.6, a standard length of 76.6 and a long length of 81.6. Unless you specifically need either the short or long lengths, the standard length is usually best.

Two different sostenuto tab heights are also provided. The tall sostenuto top flange is really meant for Steinway replacement. In the United States, Steinway mounts the sostenuto on the action frame so in this circumstance, the tall sostenuto height is required.

For all other circumstances, the short sostenuto top flange is the better choice. Among other things, the short sostenuto tab height moves the sostenuto rod further away from the back checks making a number of tasks easier.

The WNG under lever comes with two holes into which we can insert lead. You can have two leads, one lead in the far position, one lead in the near position and no leads. Typically, across a damper action, the leading will vary from 2 leads in the bass to none in the treble.

If you wish to take advantage of the feature, damper assist springs are available. WNG mounts the spring and a screw to adjust the tension on a special flange. For this to work, you need sufficient room in the damper action cavity to use the thick damper flange rail.

To select spoon length check the length you prefer.

Short for a length of 73.6

Standard for a length of 76.6

Long for a length of 81.6

To select the sostenuto tab height you prefer check the box next to the under lever top flange with its associated tab height that you prefer

WNG Standard Top Flange – Low sostenuto tab height.

WNG Aftermarket Top Flange – High (Steinway) sostenuto tab height.

Enter the number of notes you wish for each option concerning leading.

2 Leads \_\_\_\_\_

1 Outside Leads \_\_\_\_\_  
1 Inside Leads \_\_\_\_\_  
0 Leads \_\_\_\_\_

To have damper assist springs check *Springs W Tension Adjusting Screw.*

You can have any number of springs up to the number of dampers. Enter the number of notes with damper assist springs in the space provided.

### *Sostenuto Rod*

WNG can include a sostenuto rod and its associated mounting hardware with your damper action.

To include a sostenuto rod and mounting hardware with your damper action, check *Sostenuto Rod with Mounting Hardware.*

This option is only possible if you have supplied a scale stick.