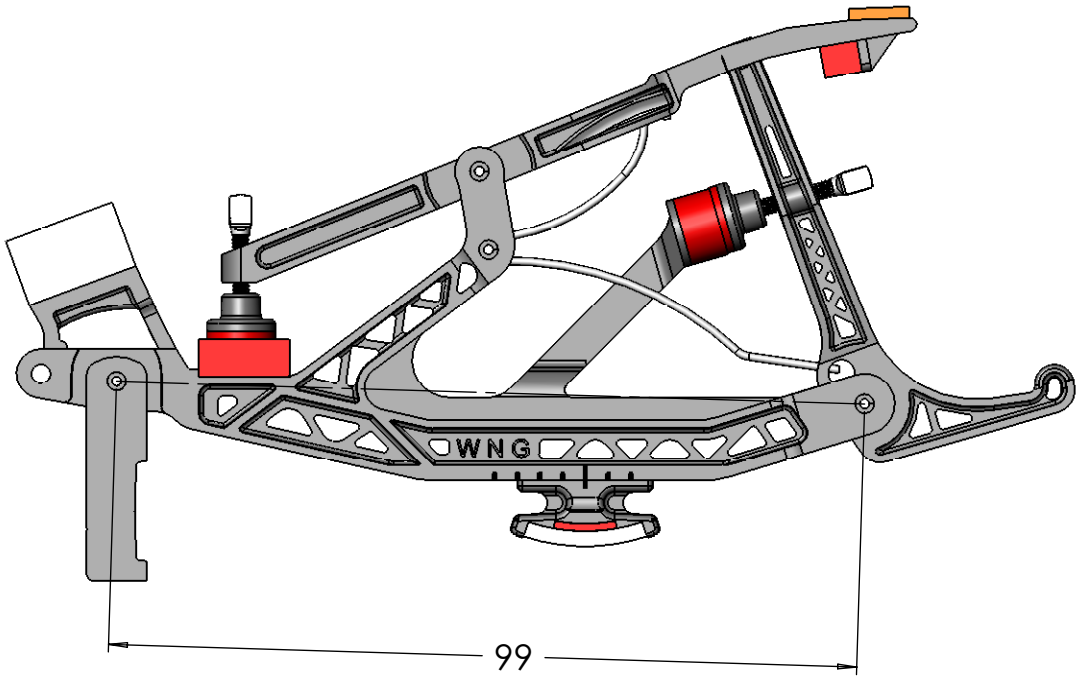
The 99mm Standard

Wessell, Nickel & Gross repetitions can replace any repetition that conforms to the 99mm standard.

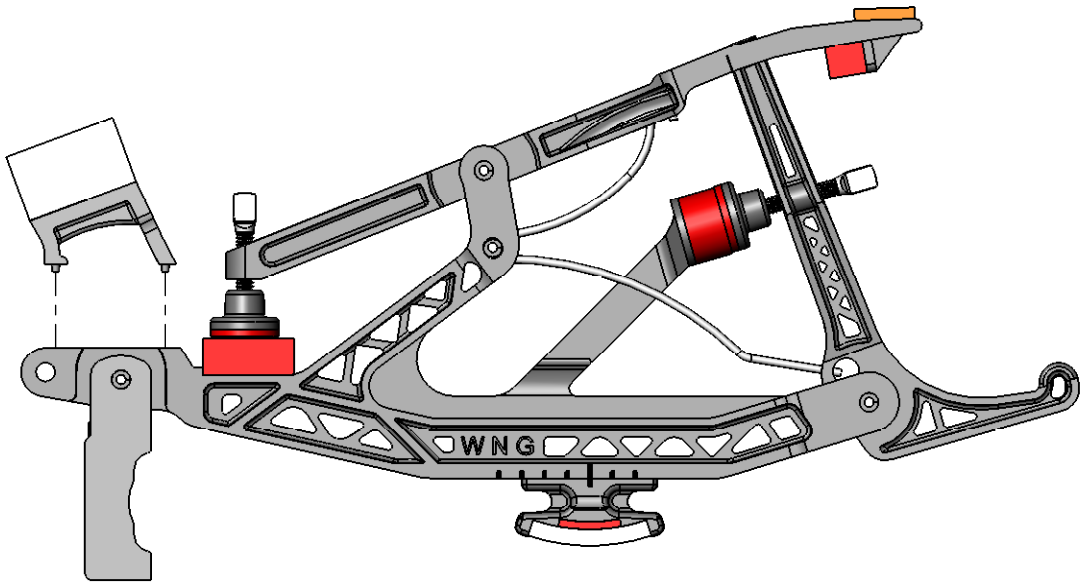
This means that the distance from the repetition flange center to the jack center is 99mm +/- 1mm.



Optional Rest Cushion

On most repetition systems the rest cushion is either on or off depending on the design of the molding upon which the repetition is based.

WNG has designed an easy choice into the system. You decide if the rest cushion is included or not. Its your choice.

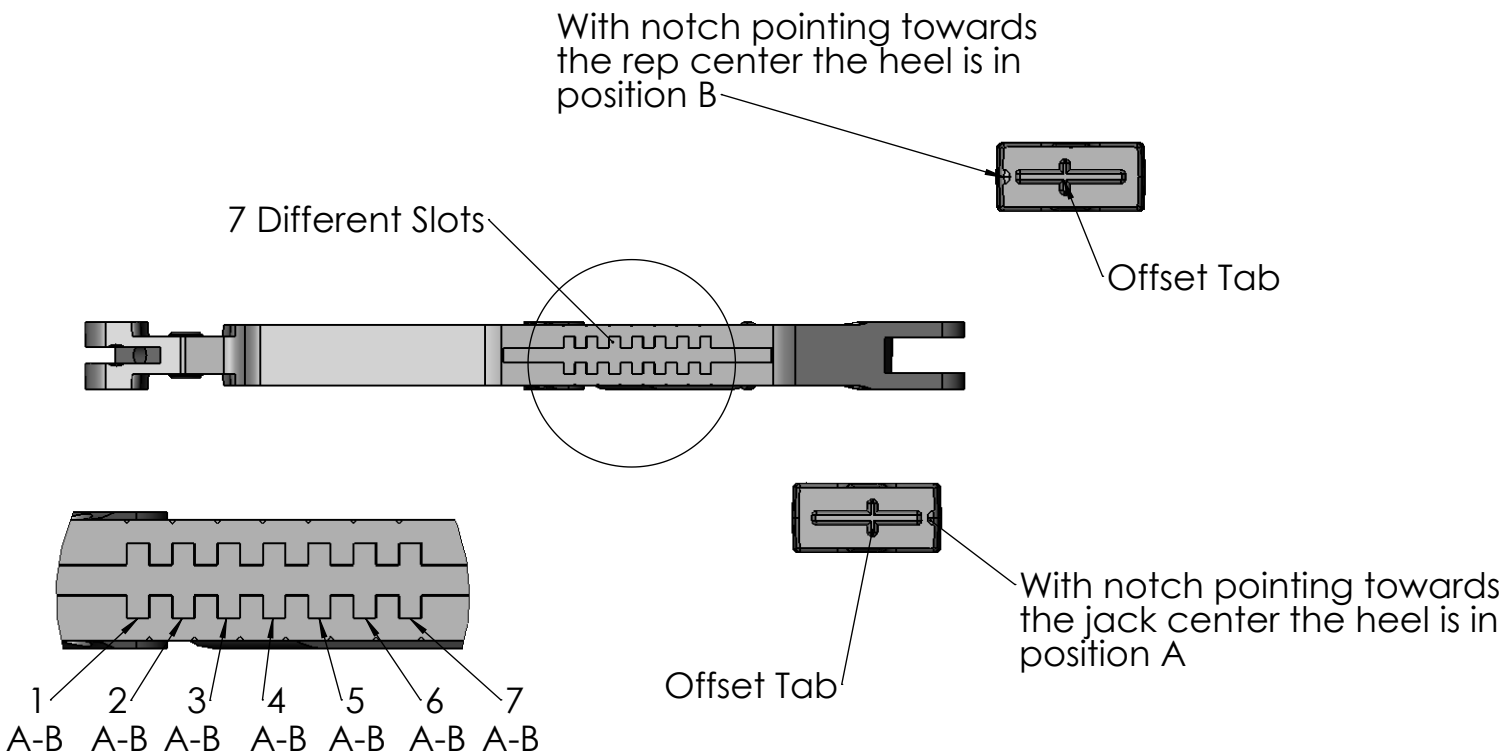


Precision Heel Locating System

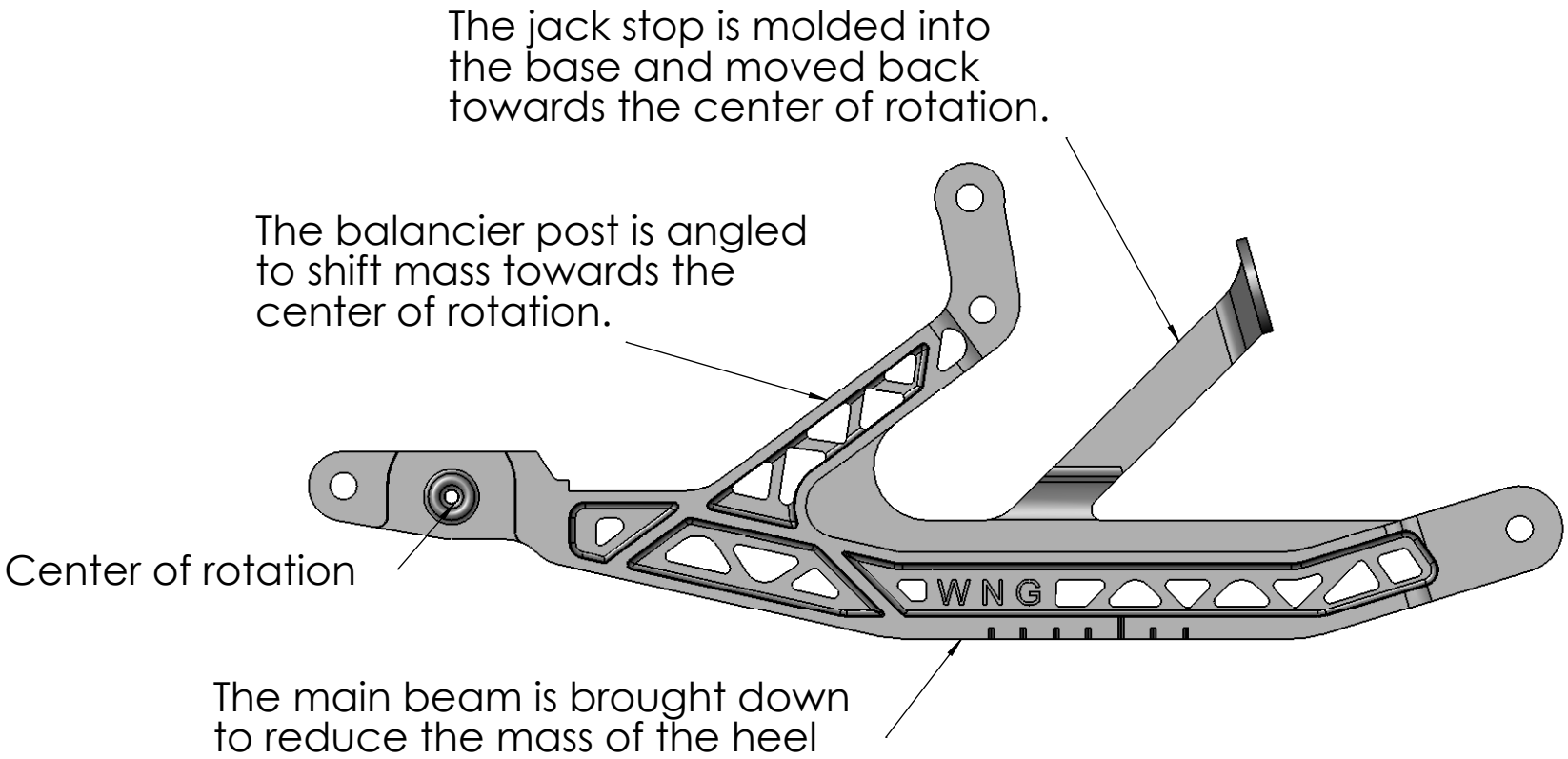
On the WNG repetition, there are 7 slots in the bottom of the repetition base.

On the heel, there is a corresponding tab that is offset thus allowing two different heel locations for each slot. These locations are referred to as A and B.

Therefore, there are 14 different heel locations available to the sophisticated rebuilder. These are referred to as positions 1A through 7B.



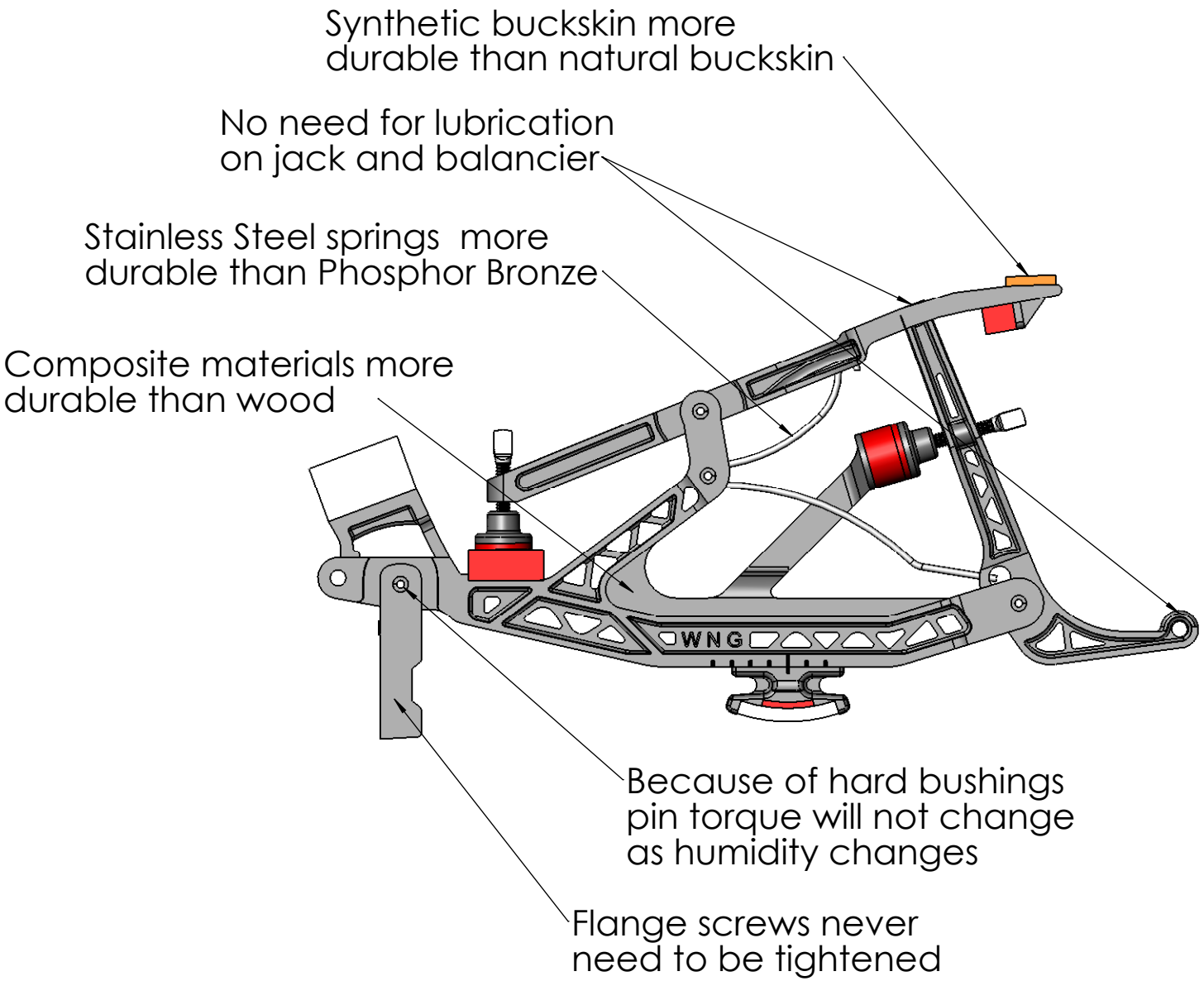
Reduced rotating mass in the repetation base



The unusual shape of the WNG repetition results from the design effort to reduce rotating mass.

- The main beam is lowered to reduce the size and mass of the heel.
- The balancier post is angled back to move the mass towards the center of rotation.
- The jack stop is molded into the base and angled back to move the mass towards the center of rotation.

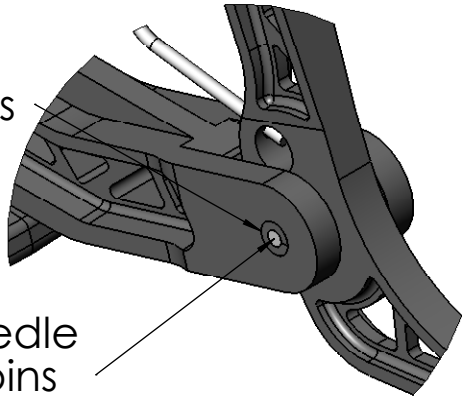
Low Maintenance Repetition

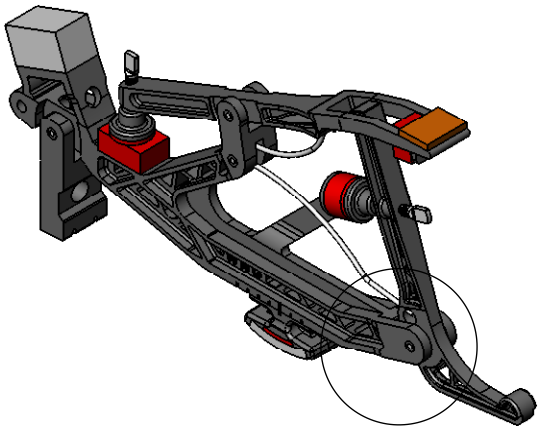


Hard Bushings

Dimensionally stable hard bushings

Super precise stainless steel needle bearings are used for center pins





Cloth bushings have problems

- Cloth bushings are unstable in a changing humidity environment
- As cloth bushings change, center pin torque changes
- As pin torque changes so does the touch of the piano

In comparison, hard bushings are quite advantageous

- Hard bushings are dimensionally stable as humidity changes
- When exposed to changing humidity, pin torque change is negligible
- Thus, the change in the touch of a piano is negligible

Test Results

After 18 million blows, pin torque exhibited virtually no change.

In extreme evironments, from 10% to 90% Equilibrium MoistureContent , pin torque was stable.

Give credit to Steinway

Steinway was very progressive and forward looking when they brought out teflon bushings in 1963.

For over a century piano people have understood the problems of cloth bushings. While cloth bushings are durable they are also troublesome. The fight to maintain a reasonable pin torque is constant battle, year after year.

Innovation, at it's best, sees a problem, and brings forth a solution. While often criticized, Steinway engineers saw the problems with cloth bushings and did their best to solve them.

For this they should be lauded. While often accused of cheapening the piano, Steinway tried only to make their pianos better.

Unfortunately, Teflon Bushings failed.

Teflon Bushings failed for 3 basic reasons

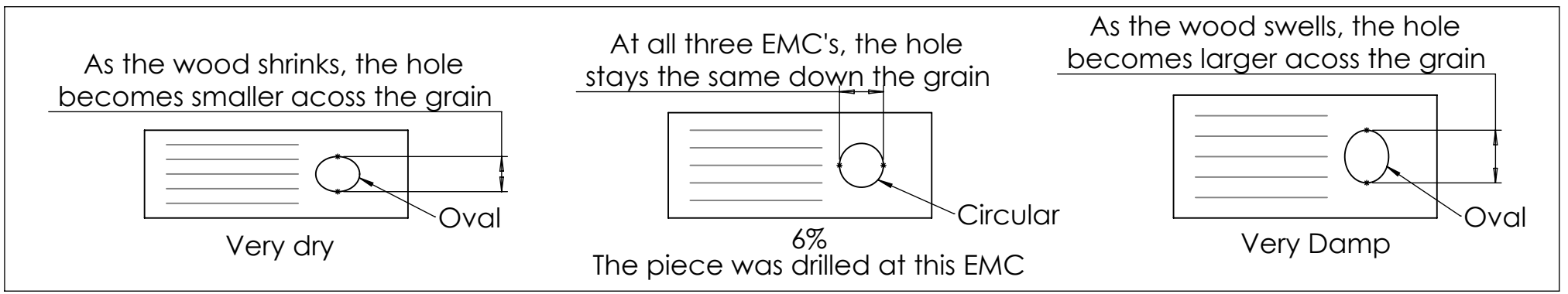
1. **Teflon was too soft, easily deforming under load.**
2. **Teflon bushings became loose or pinched by the wood depending upon EMC.**

   A hole in wood is circular only at the EMC at which it is drilled. As humidity changes, wood changes across the grain but not down the grain . Thus, a hole becomes oval when the EMC is above or below the level at which it was drilled.

   In dry weather, when the wood shrinks, the teflon becomes pinched by the oval hole in the wood. The pin torque becomes very high and piano becomes very hard to play.

   Because the teflon is soft enough to deform, the pressure is able to change the shape of the hole in the bushing.

   Later, during the damp season, the hole becomes larger across the grain than it was drilled. The pin tension in the teflon is no longer correct and furthermore, the bushing itself is now free to move in the hole. This resulted in clicking sounds.



3. **Teflon bushings were not executed with precision sufficient to the task.**

   Because a hard bushing hasn't the give of cloth, much more precision is required during the pinning process.

None of these problems apply to WNG hard bushings

1. **WNG bushing material does not deform under load**.

   Teflon was too soft and easily deformed. The WNG bushing material is substantially more dense and is thus able to carry the load.

2. **Composite action parts are stable during humidity changes and do not alter the cylindrical shape of the bushing.**

   The problems of wood moving around the teflon bushing while the bushing did not are not a problem with WNG composite actions.

   WNG action parts are not made of wood.

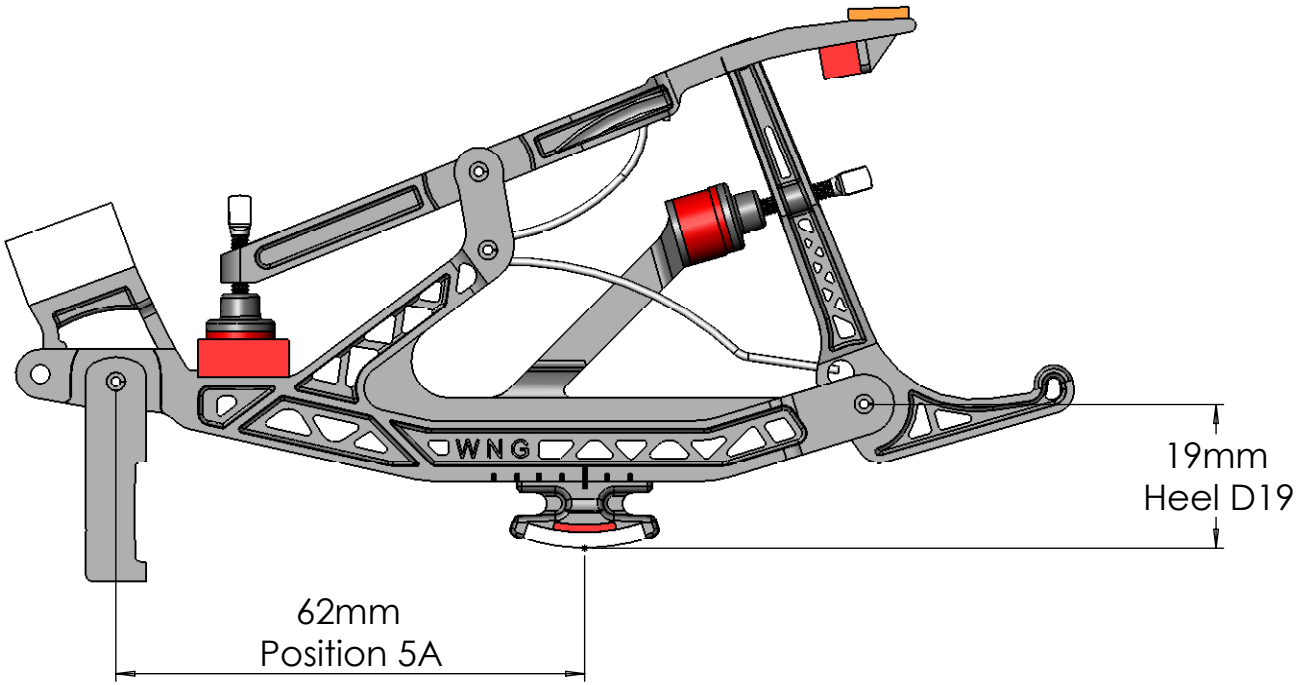
3. **WNG uses an extremely accurate process to achieve the necessary accuracy**.

   Any bushing, without give, requires precision. It was true of teflon and it is true with the WNG bushing system as well. Tolerances need to be tight so no motion of the shaft (center pin) in relation to the bearing is possible. It is this motion that causes clicking.

   WNG uses extremely precise stainless steel needle bearings and extremely accurate processes during the pinning process.

Mason & Hamlin Current (S/N 90000 and above)

Replaces current Mason & Hamlin repetitions

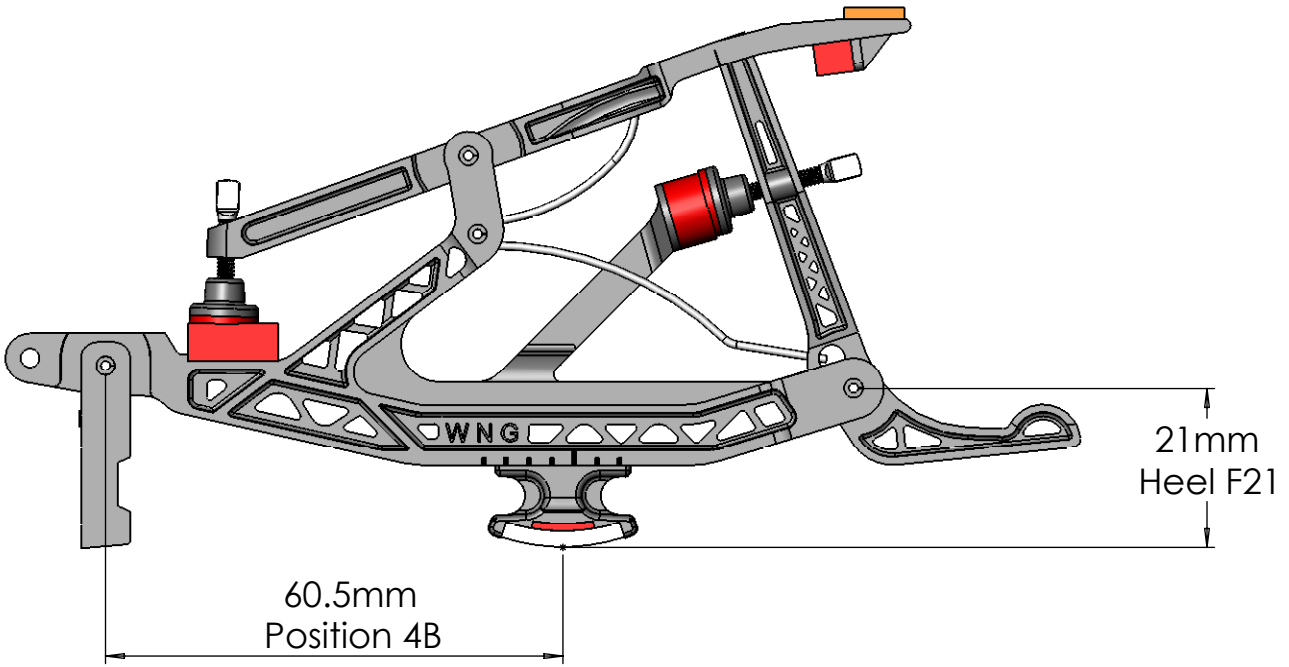


With Heels Attached - Set of 90
Part No. 06-5002

Without Heels Attached - Set of 90
Part No. 06-5011

Mason & Hamlin - Aeolian Vintage

Replaces Aeolian Mason & Hamlin repetitions

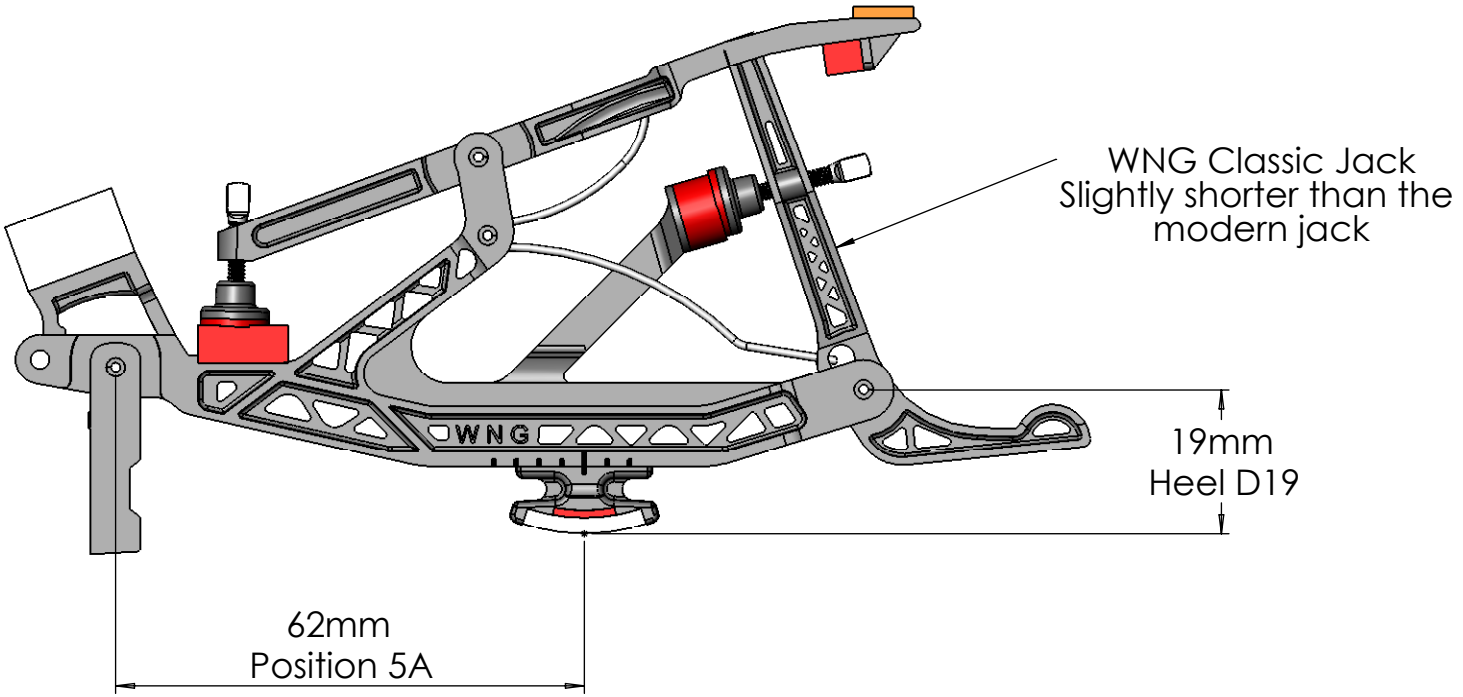


With Heels Attached - Set of 90
Part No. 06-5003

Without Heels Attached - Set of 90
Part No. 06-5012

Wessell, Nickel & Gross Classic T1 (Pre Aeolian Mason & Hamlin and more)

Replaces Classic Wessell, Nickel & Gross T1 repetitions
that use the Classic WNG Jack

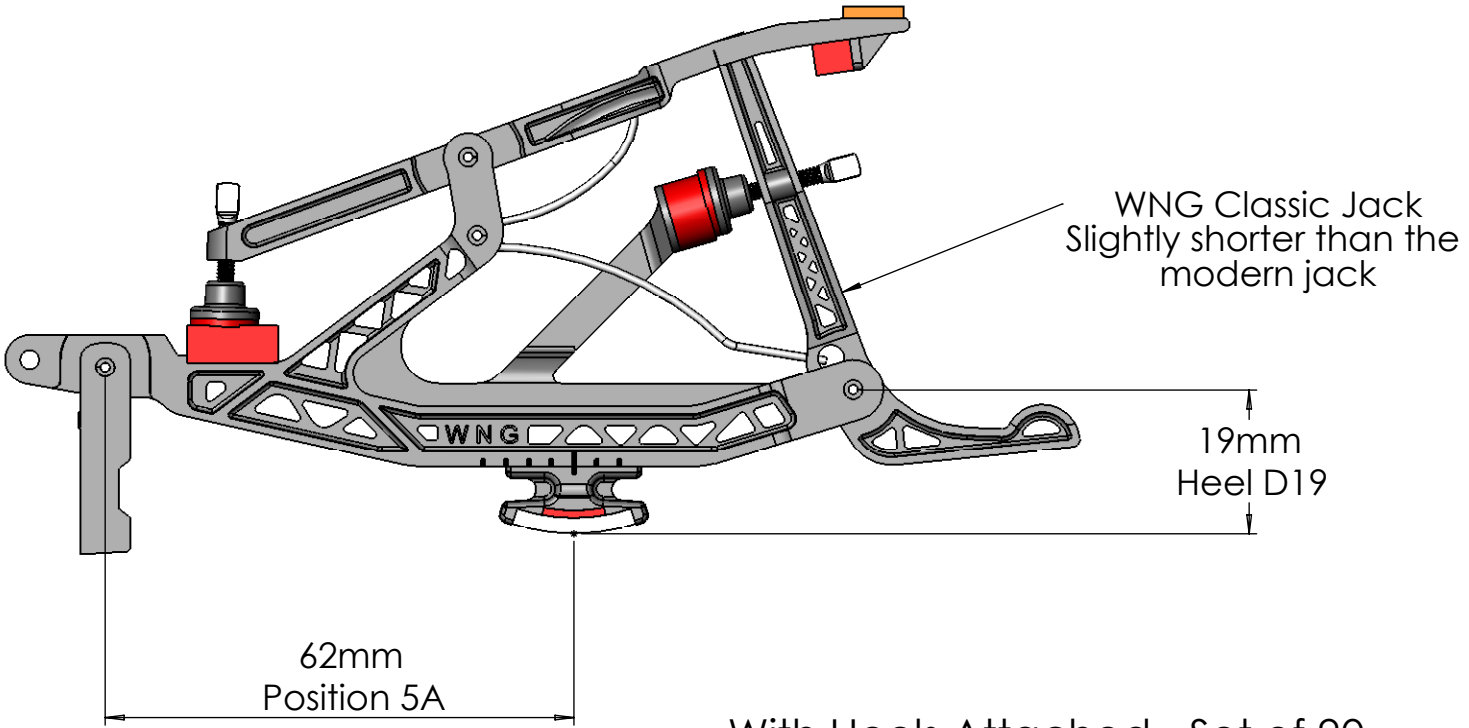


With Heels Attached - Set of 90
Part No. 06-5001

Without Heels Attached - Set of 90
Part No. 06-5010

Wessell, Nickel & Gross Classic T1 With No Cushion

Replaces Classic Wessell, Nickel & Gross T1 repetitions
that have no cushion and use the Classic WNG Jack

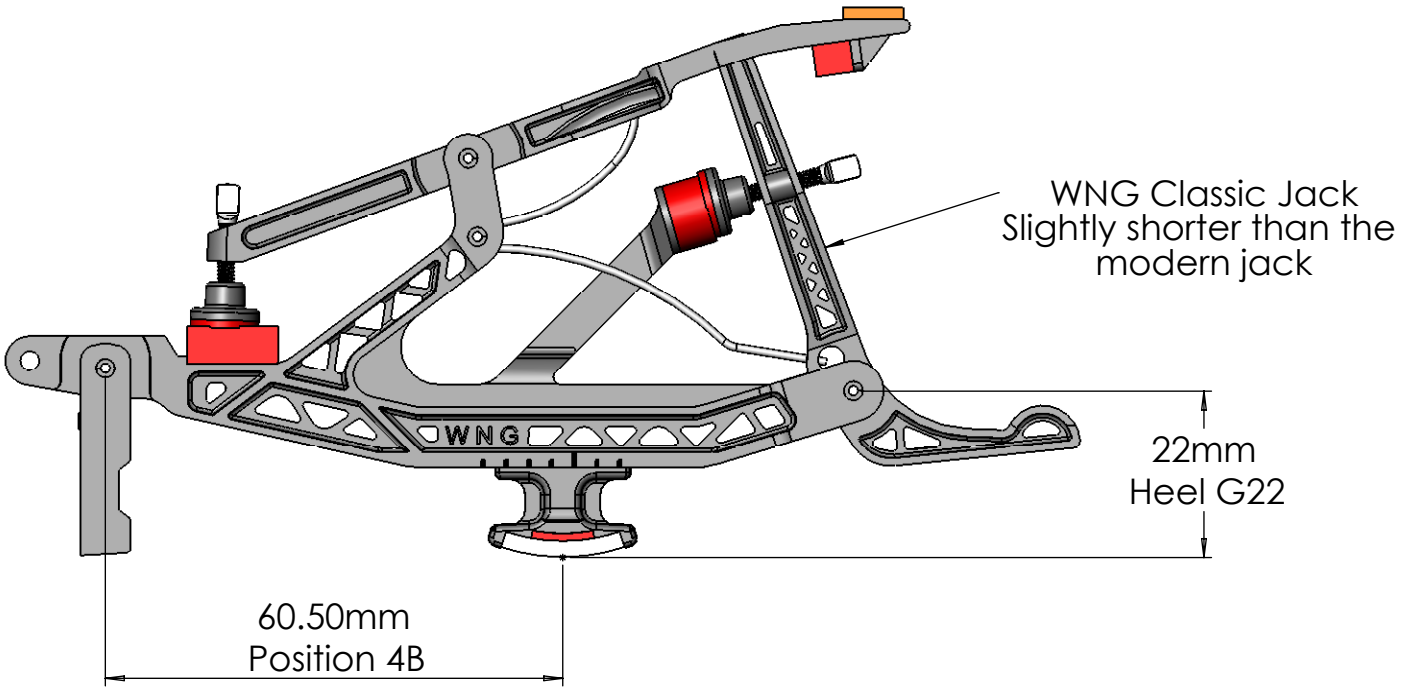


With Heels Attached - Set of 90
Part No. 06-5027

Without Heels Attached - Set of 90
Part No. 06-5027

Wessell, Nickel & Gross Classic T2 (Many small grands)

Replaces Classic Wessell, Nickel & Gross T2 repetitions
that use the Classic WNG Jack

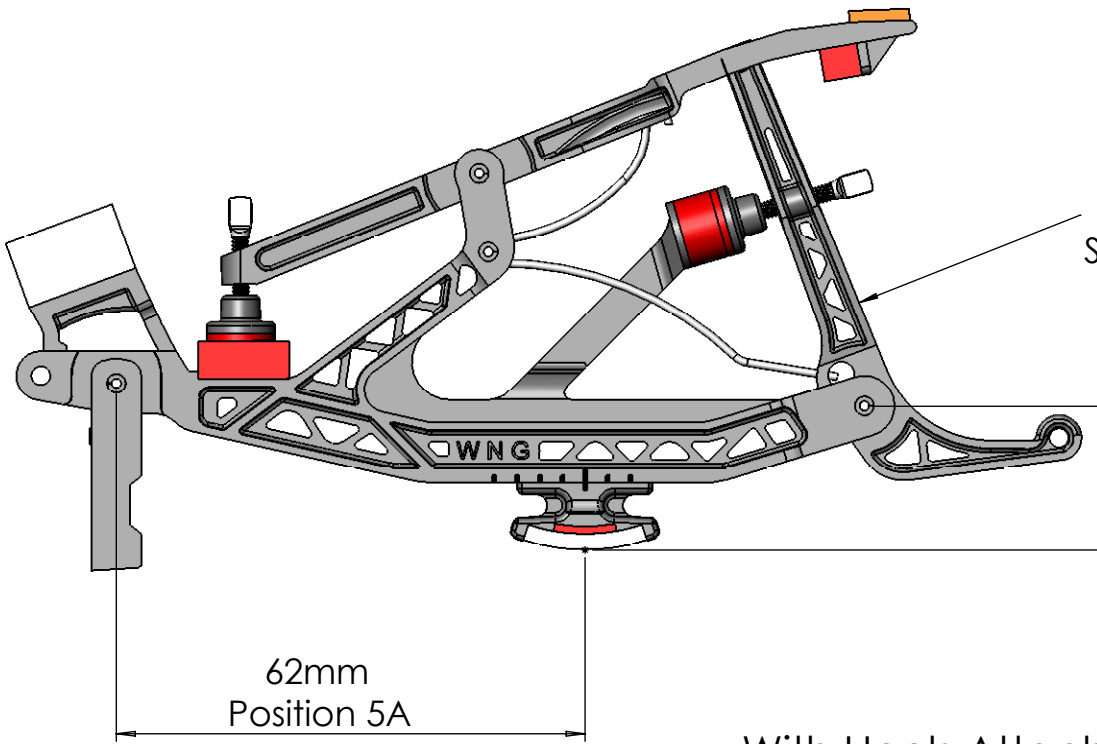


With Heels Attached - Set of 90
Part No. 06-5033

Without Heels Attached - Set of 90
Part No. 06-5034

WNG Modern With Cushion (Compatible with Renner Geometry)

When mounted on WNG Rails will replace a Standard
Renner action with no modification to the keyboard

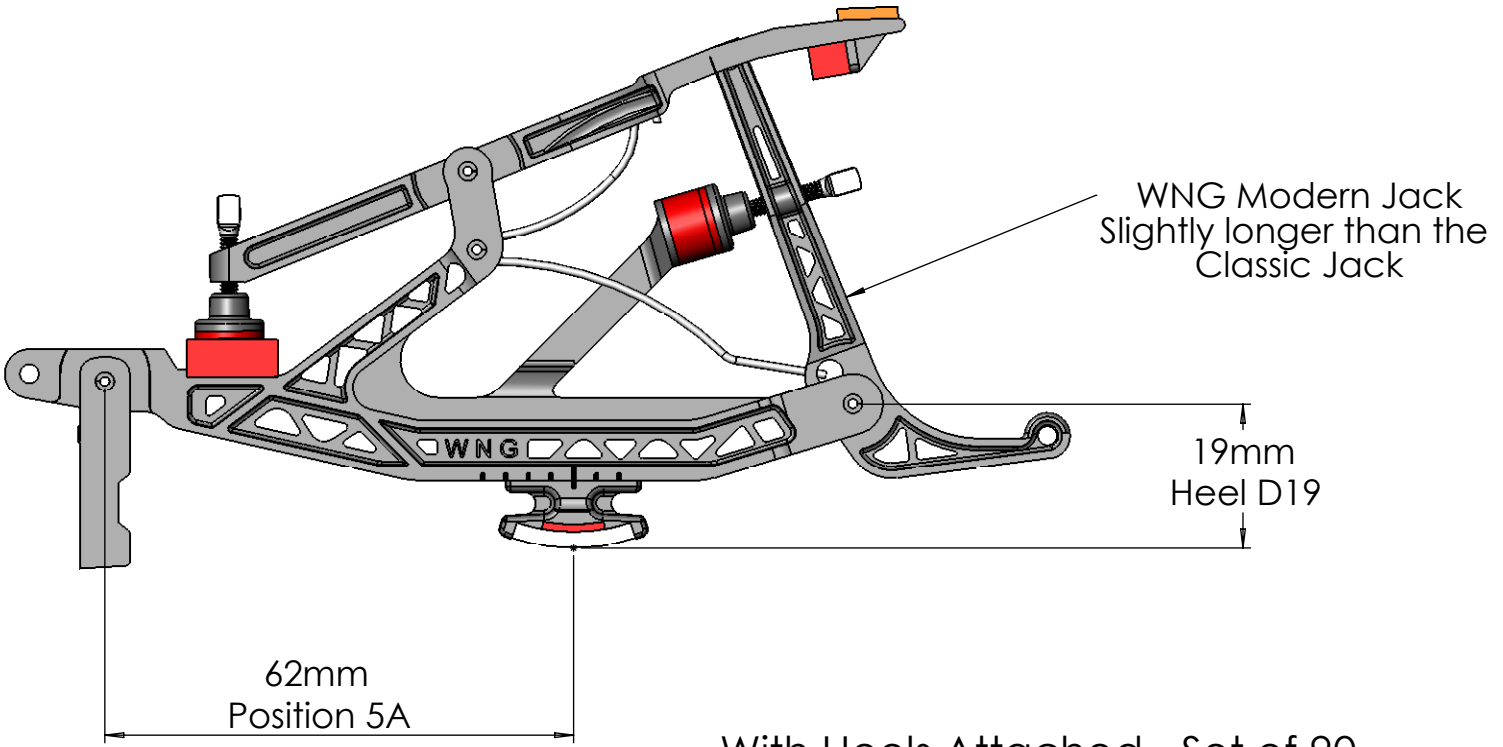


With Heels Attached - Set of 90
Part No. 06-5029

Without Heels Attached - Set of 90
Part No. 06-5030

WNG Modern With Out Cushion (Compatible with Renner Geometry)

When mounted on WNG Rails will replace a Standard
Renner action with no modification to the keyboard

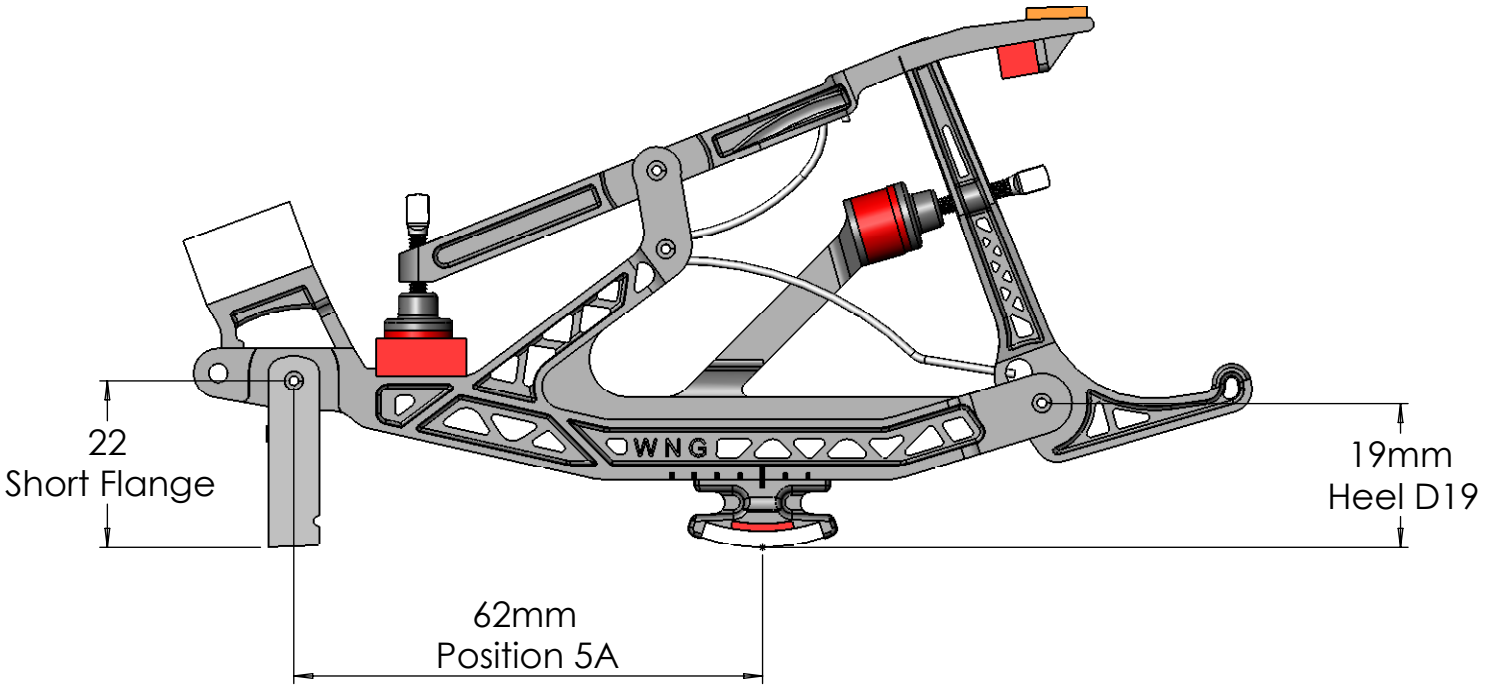


With Heels Attached - Set of 90
Part No. 06-5031

Without Heels Attached - Set of 90
Part No. 06-5032

Renner Standard W Rest Cushion

Replaces Renner Standard repetitions that use an integrated rest cushion
and a Short Flange

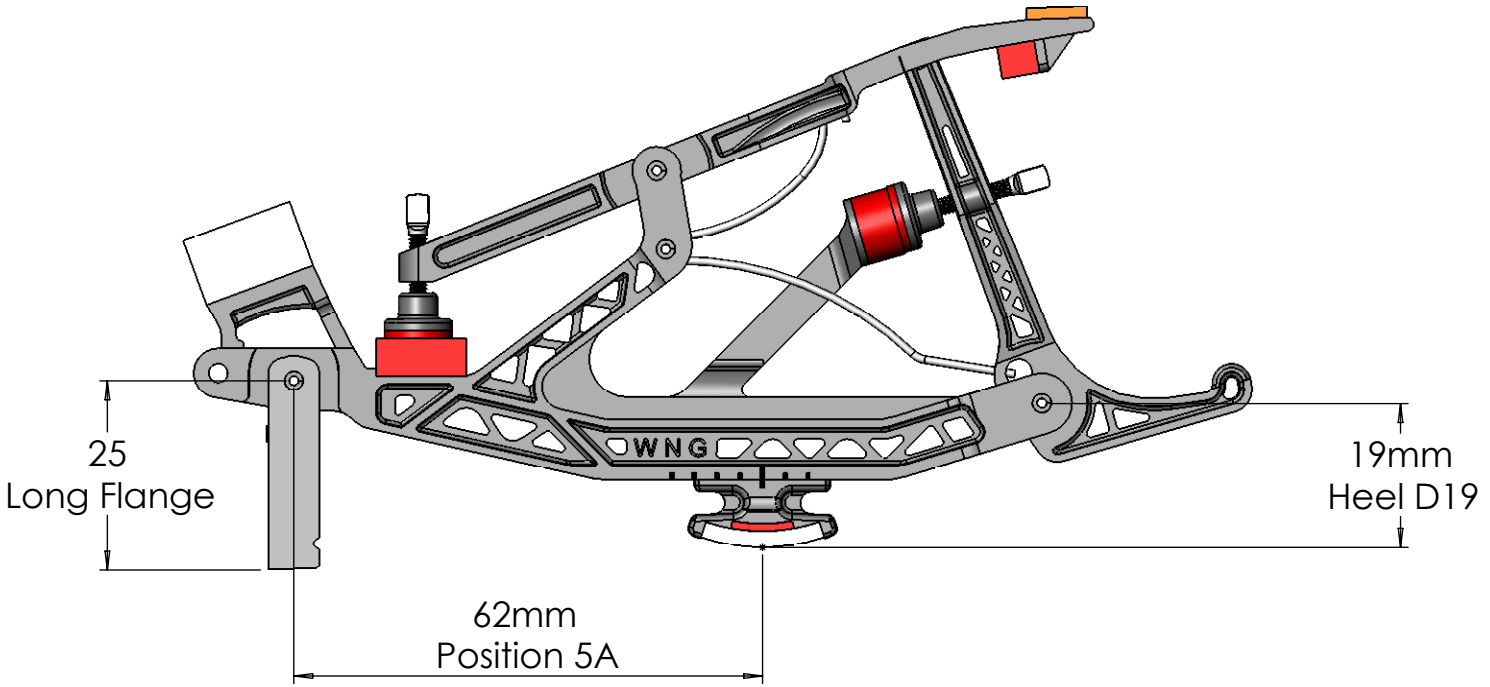


With Heels Attached - Set of 90
Part No. 06-5005

Without Heels Attached - Set of 90
Part No. 06-5014

Renner Standard W Rest Cushion

Replaces Renner Standard repetitions that use an integrated rest cushion
And a Long Flange

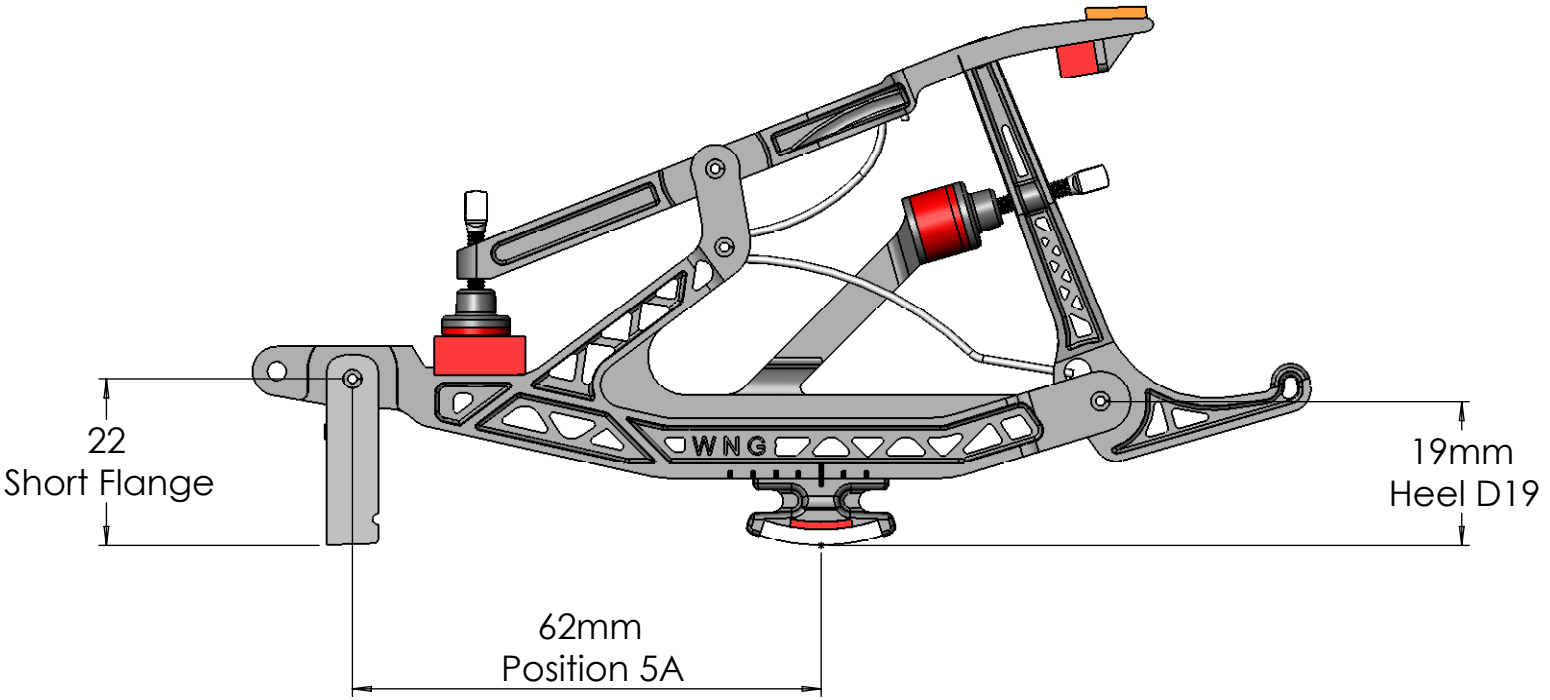


With Heels Attached - Set of 90
Part No. 06-5025

Without Heels Attached - Set of 90
Part No. 06-5026

Renner Standard W/O Rest Cushion

Replaces Renner Standard repetitions for use with a rest rail
and a Short Flange

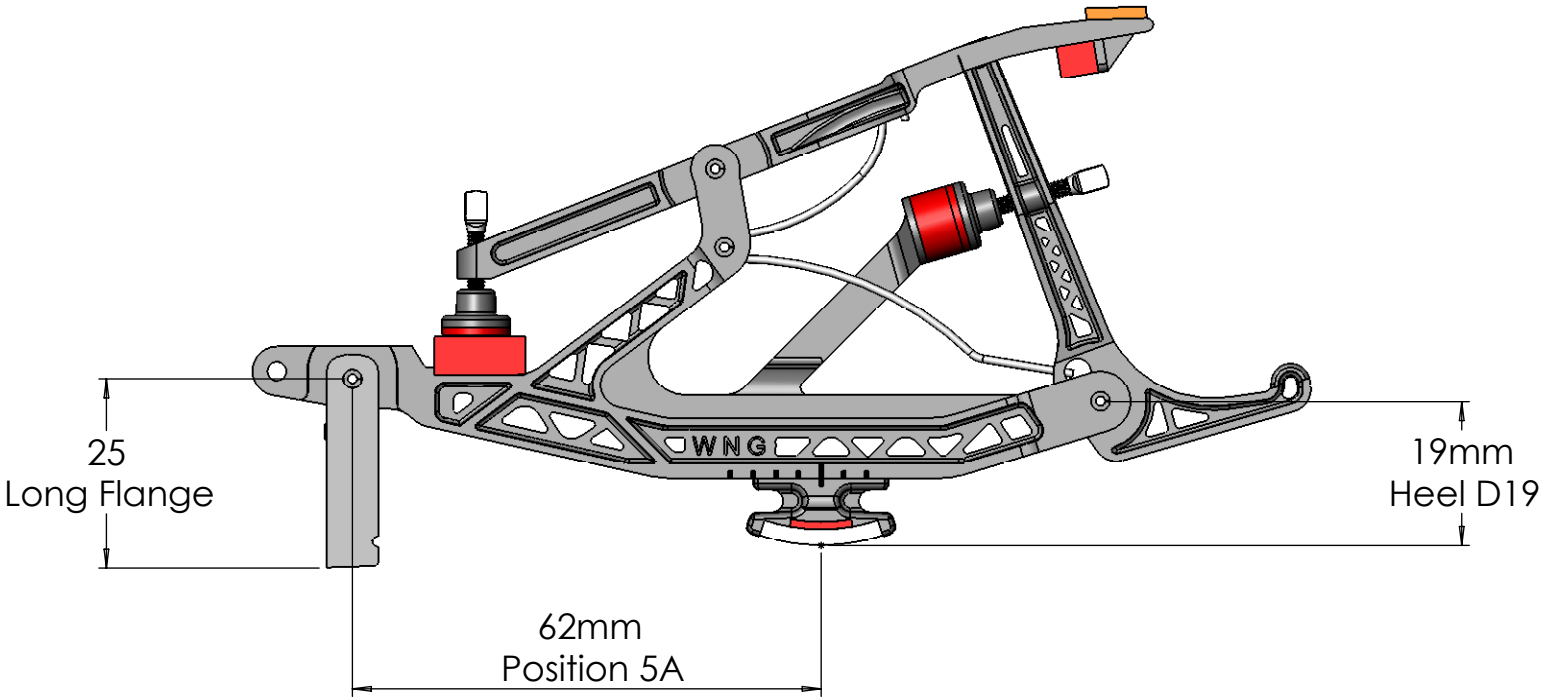


With Heels Attached - Set of 90
Part No. 06-5004

Without Heels Attached - Set of 90
Part No. 06-5013

Renner Standard W/O Rest Cushion

Replaces Renner Standard repetitions for use with a rest rail
and a Long Flange

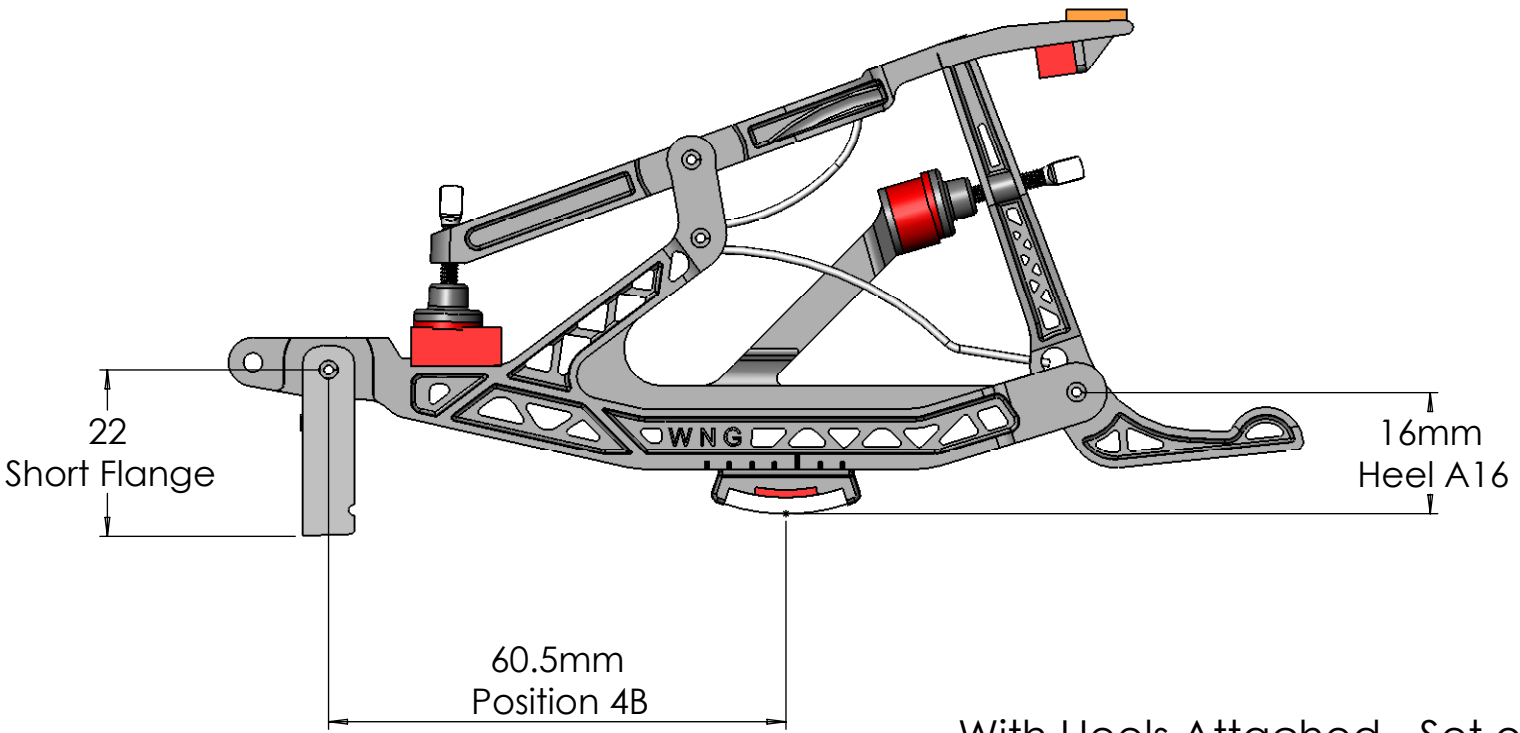


With Heels Attached - Set of 90
Part No. 06-5023

Without Heels Attached - Set of 90
Part No. 06-5024

Renner Schwander W/O Rest Cushion

Replaces Renner Schwander repetitions for use with a rest rail
and a Short Flange

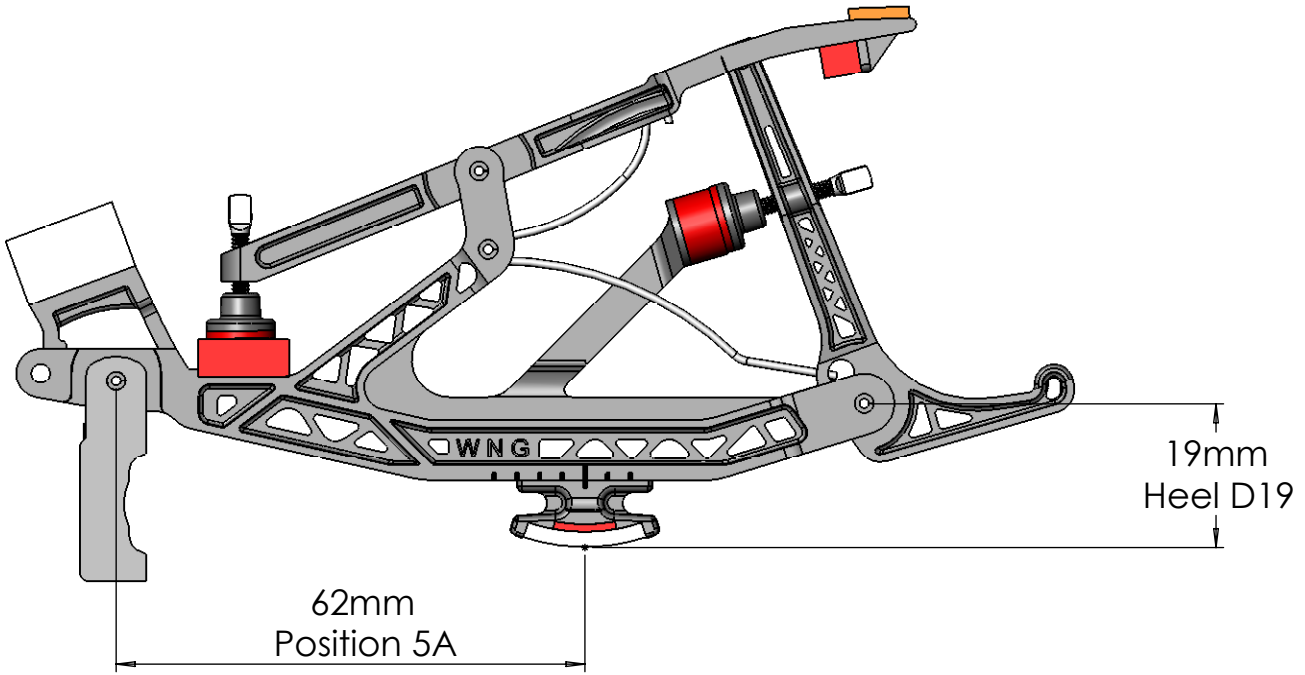


With Heels Attached - Set of 90
Part No. 06-5006

Without Heels Attached - Set of 90
Part No. 06-5015

Steinway

Replaces Steinway repetitions

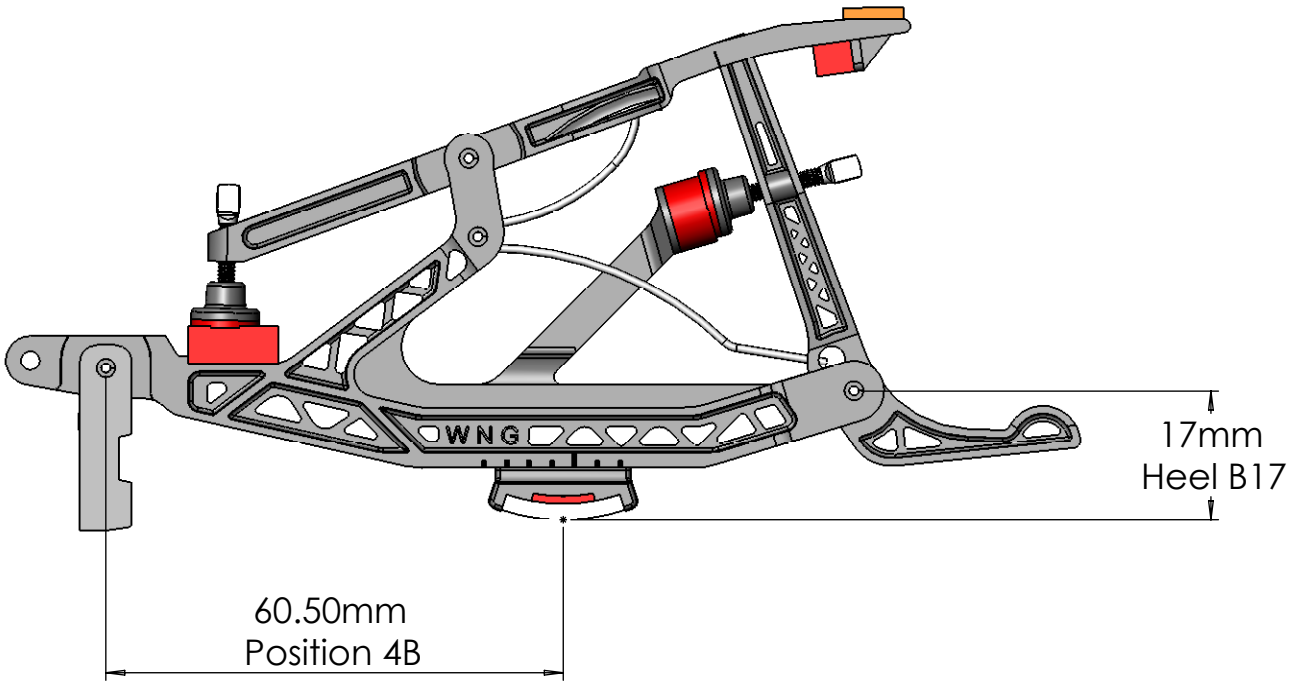


With Heels Attached - Set of 90
Part No. 06-5000

Without Heels Attached - Set of 90
Part No. 06-5009

Baldwin Clemson

Replaces Baldwin Clemson style repetitions

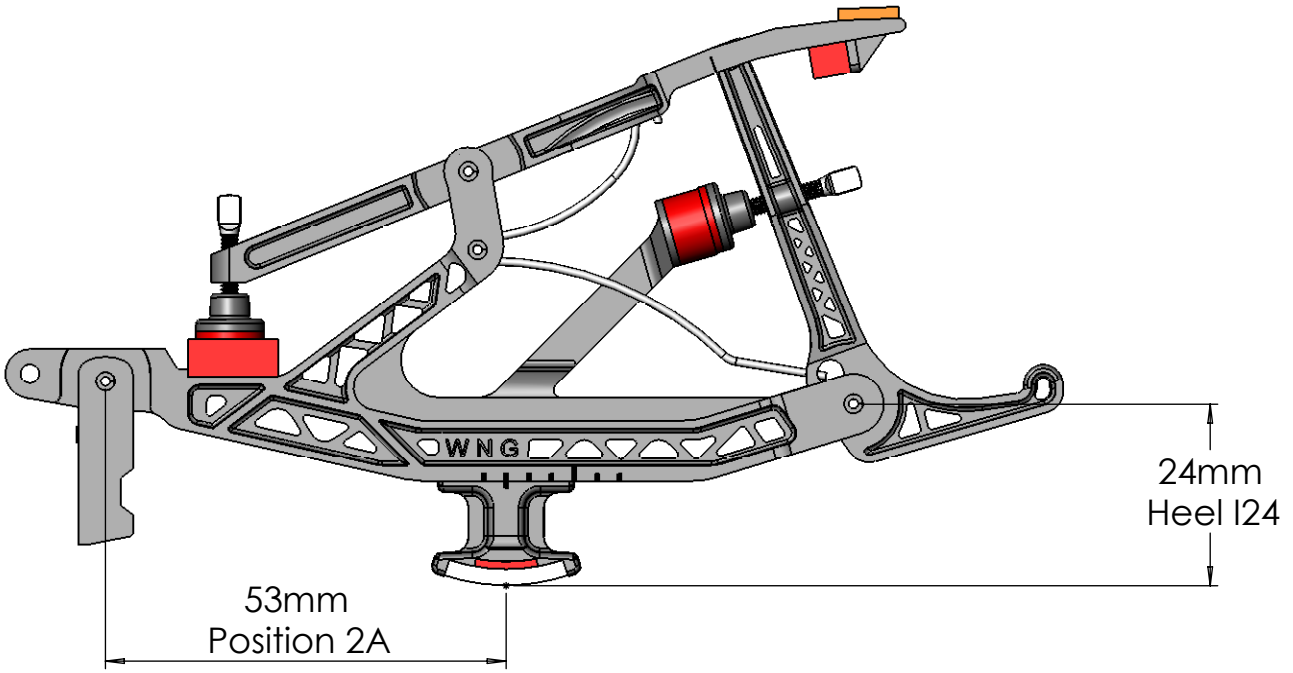


With Heels Attached - Set of 90
Part No. 06-5007

Without Heels Attached - Set of 90
Part No. 06-5016

Knabe T1

Replaces Knabe T1 style repetitions

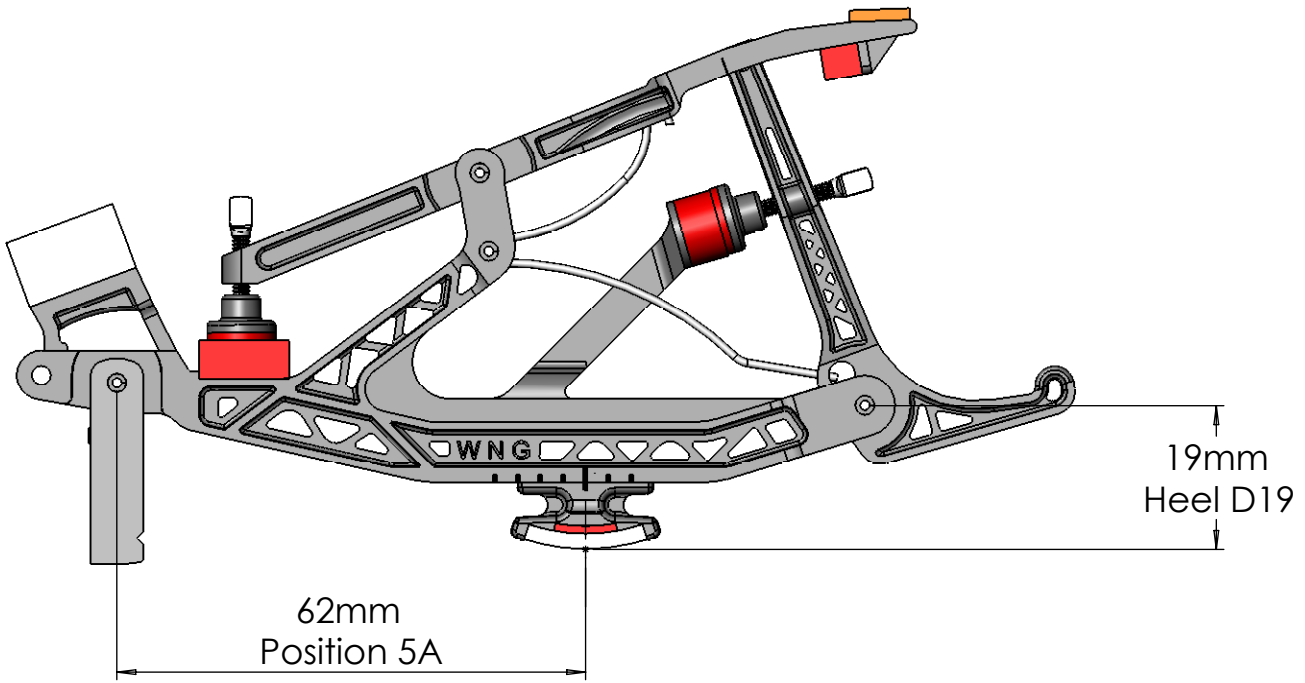


With Heels Attached - Set of 90
Part No. 06-5017

Without Heels Attached - Set of 90
Part No. 06-5018

Yamaha

Replaces Yamaha repetitions

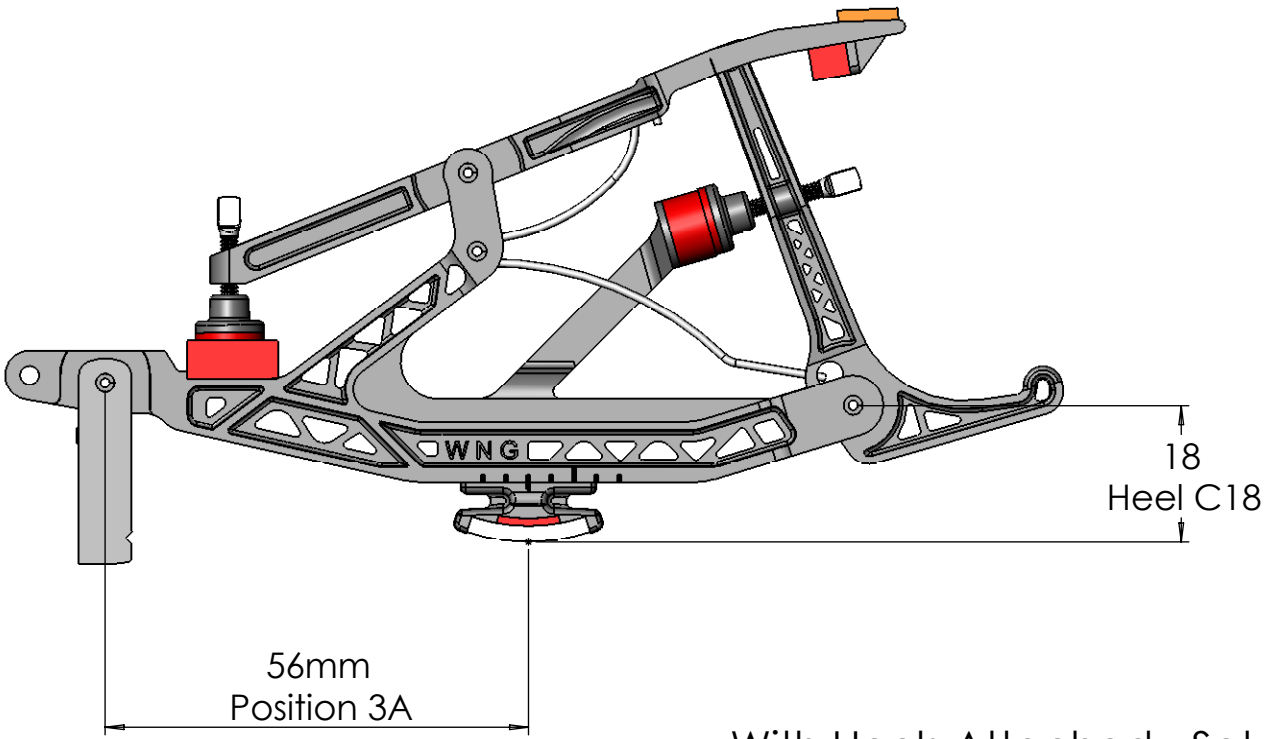


With Heels Attached - Set of 90
Part No. 06-5019

Without Heels Attached - Set of 90
Part No. 06-5020

Young Chang

Replaces Young Chang repetitions

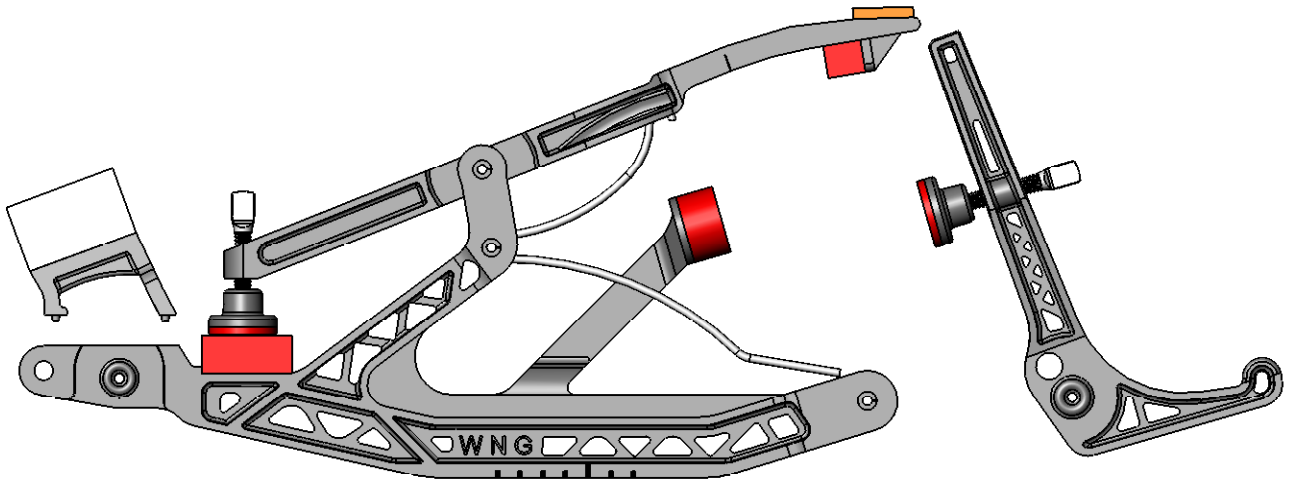


With Heels Attached - Set of 90
Part No. 06-5021

Without Heels Attached - Set of 90
Part No. 06-5022

Custom Repetition

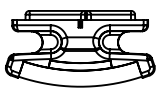
Create your own custom repetitions



The custom repetition is built upon a standard base assembly.

You can order this base assembly with or without a rest cushion attached.

The flange and jack of your choosing will be pinned onto the base assembly by WNG.



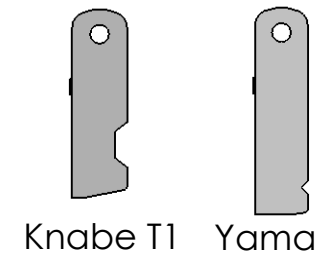
To the standard base you will need to select a heel or heel combination.

1. It is possible to have a one size heel for the sharps and another heel size for the naturals to control the half stroke line for each.
2. It is your choice as whether or not the heels ship attached.
3. The Custom Repetition is assembled to your order so allow at least 2 weeks for assembly and shipping.

Follow the steps to define a custom repetition

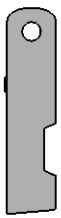
Custom Repetition

Create your own custom repetitions by selecting the desired components

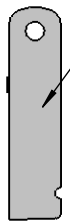


Knabe T1

Yamaha

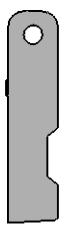


Aeolian MH

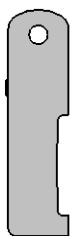


Renner
Short & Long

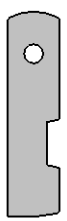
Steinway



WNG Classic



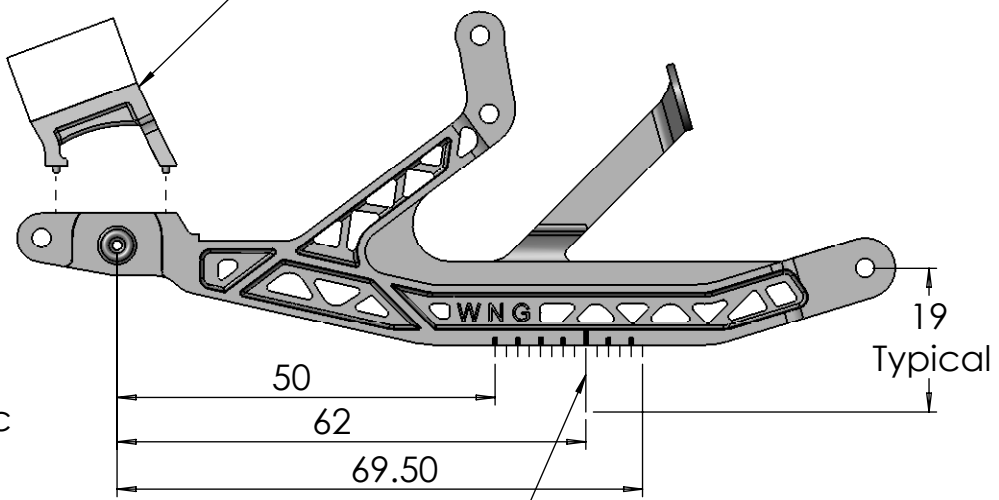
Current MH



Baldwin

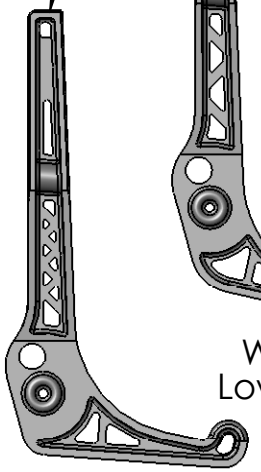
① Select the correct flange

② Decide whether the rest cushion is needed

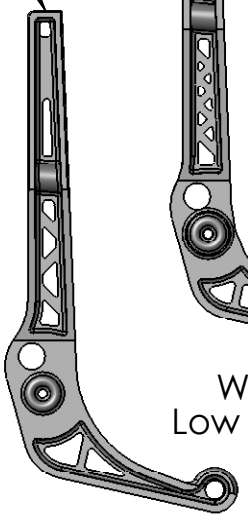


④ Select the correct heel location

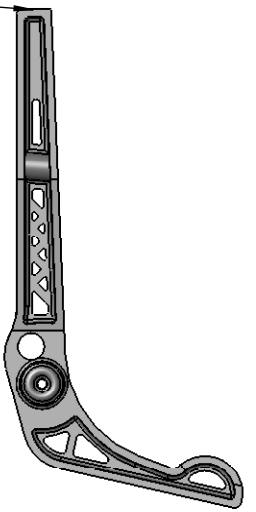
③ Pick the appropriate jack



WNG Standard
High Angle Tender

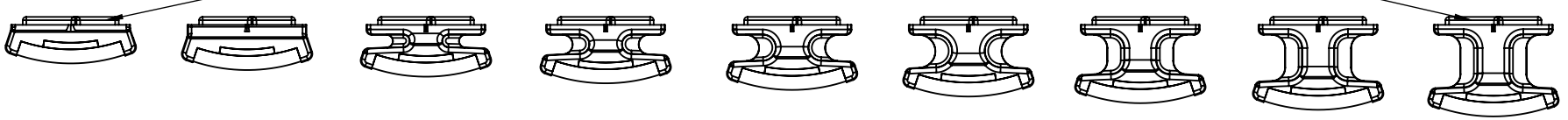


WNG Standard
Low Angle Tender



WNG Classic
Low Angle Tender

⑤ Select the correct heel height



16 mm Heel

17 mm Heel

18 mm Heel

19 mm Heel

20 mm Heel

21 mm Heel

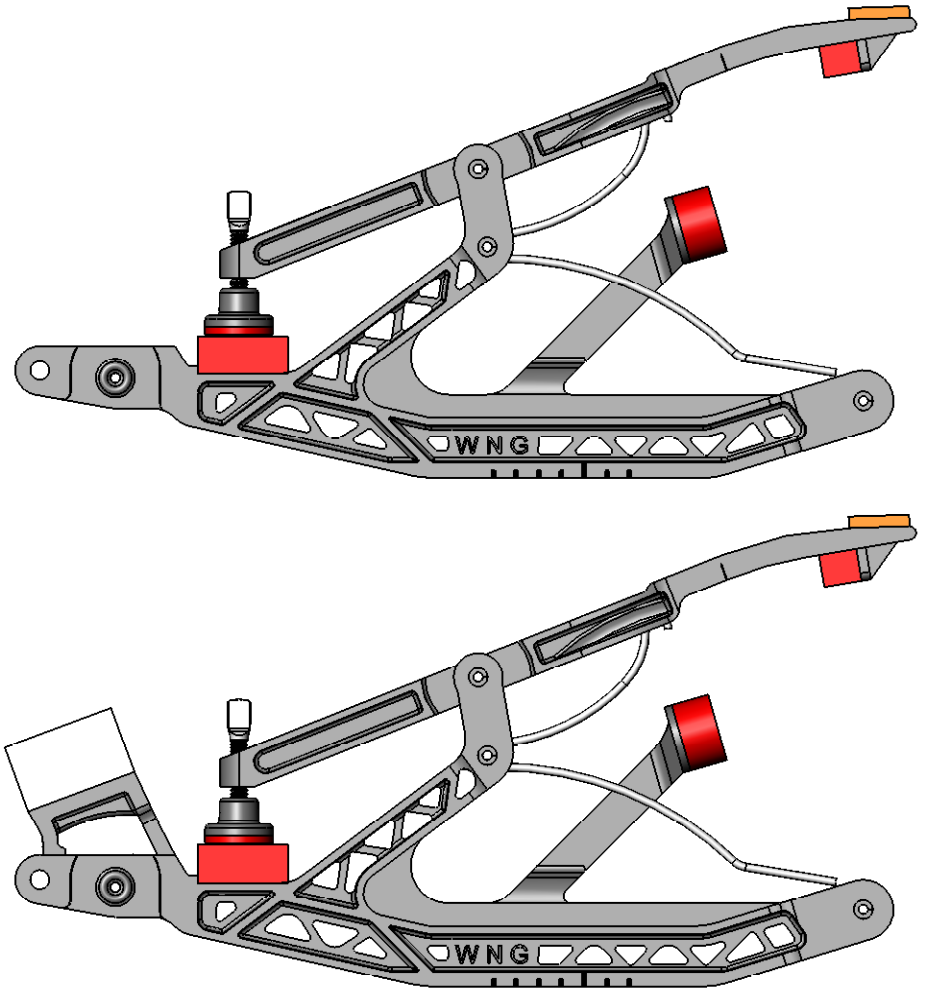
22 mm Heel

23 mm Heel

24 mm Heel

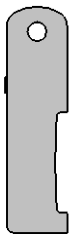
Custom Repetition Step #1

Decide whether the rest cushion is needed



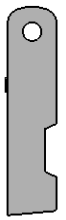
Custom Repetition Step #2

Select the correct flange

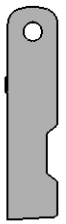


Current MH

Steinway

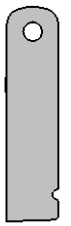


Aeolian MH



WNG Classic

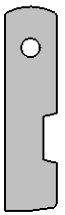
Renner Short



Renner Long

Knabe T1

Yamaha



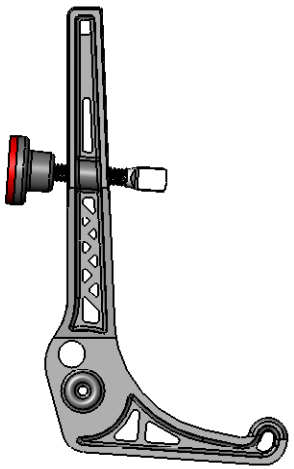
Baldwin

Custom Repetition Step #3

Pick the appropriate jack

WNG Standard Jack

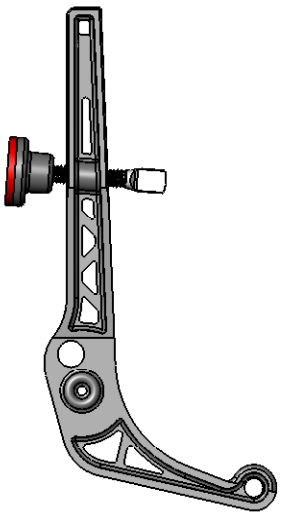
Most commonly used jack in the world



High Angle Tender

WNG Modern Jack

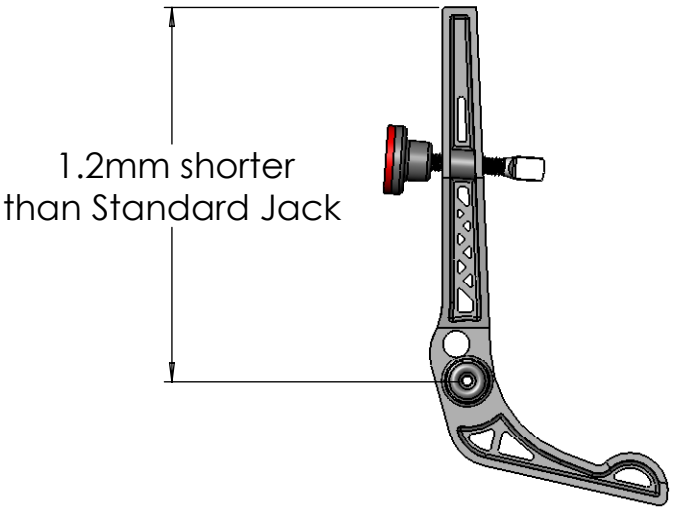
Same as Standard Jack except with a low angle tender



Low Angle Tender

WNG Classic Jack

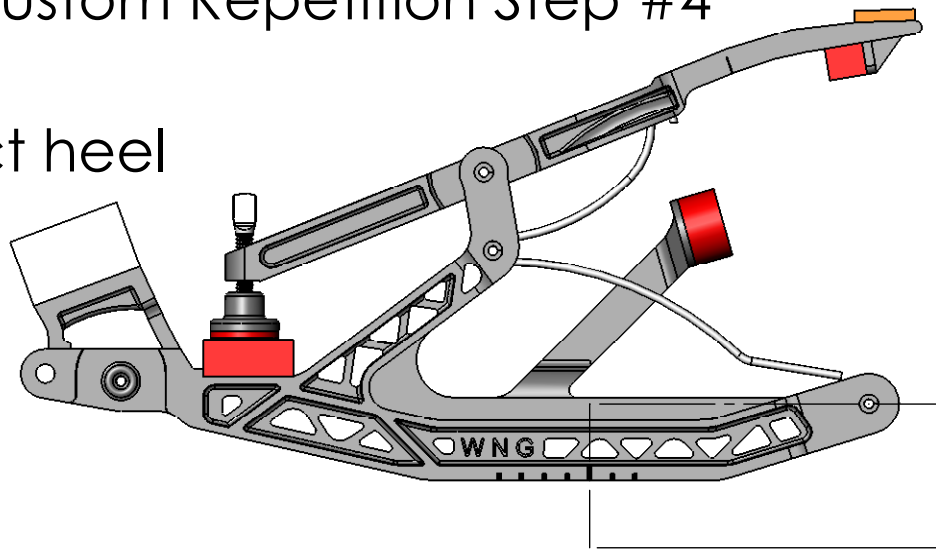
Same shape, length and tender as found on WNG Classic actions



WNG Classic Jack shape
Low Angle Tender

Custom Repetition Step #4

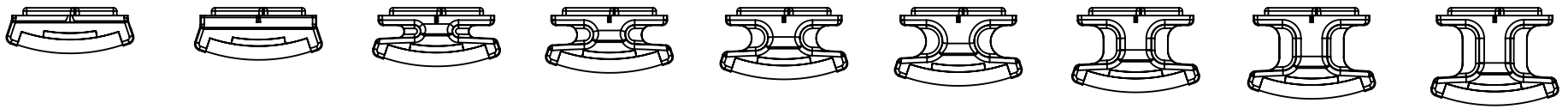
Select the correct heel



19mm
Heel D19
Typical heel height

WNG provides 9 different vertical heel sizes in 1mm increments.

It is possible to select different heights for the naturals and the sharps.



16 mm Heel A16	17 mm Heel B17	18 mm Heel C18	19 mm Heel D19	20 mm Heel E20	21 mm Heel F21	22 mm Heel G22	23 mm Heel H23	24 mm Heel I24
88	88	88	88	88	88	88	88	88
52	52	52	52	52	52	52	52	52
36	36	36	36	36	36	36	36	36

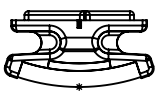
To select the same size heel for all 88 notes simply select 88 under the correct size.

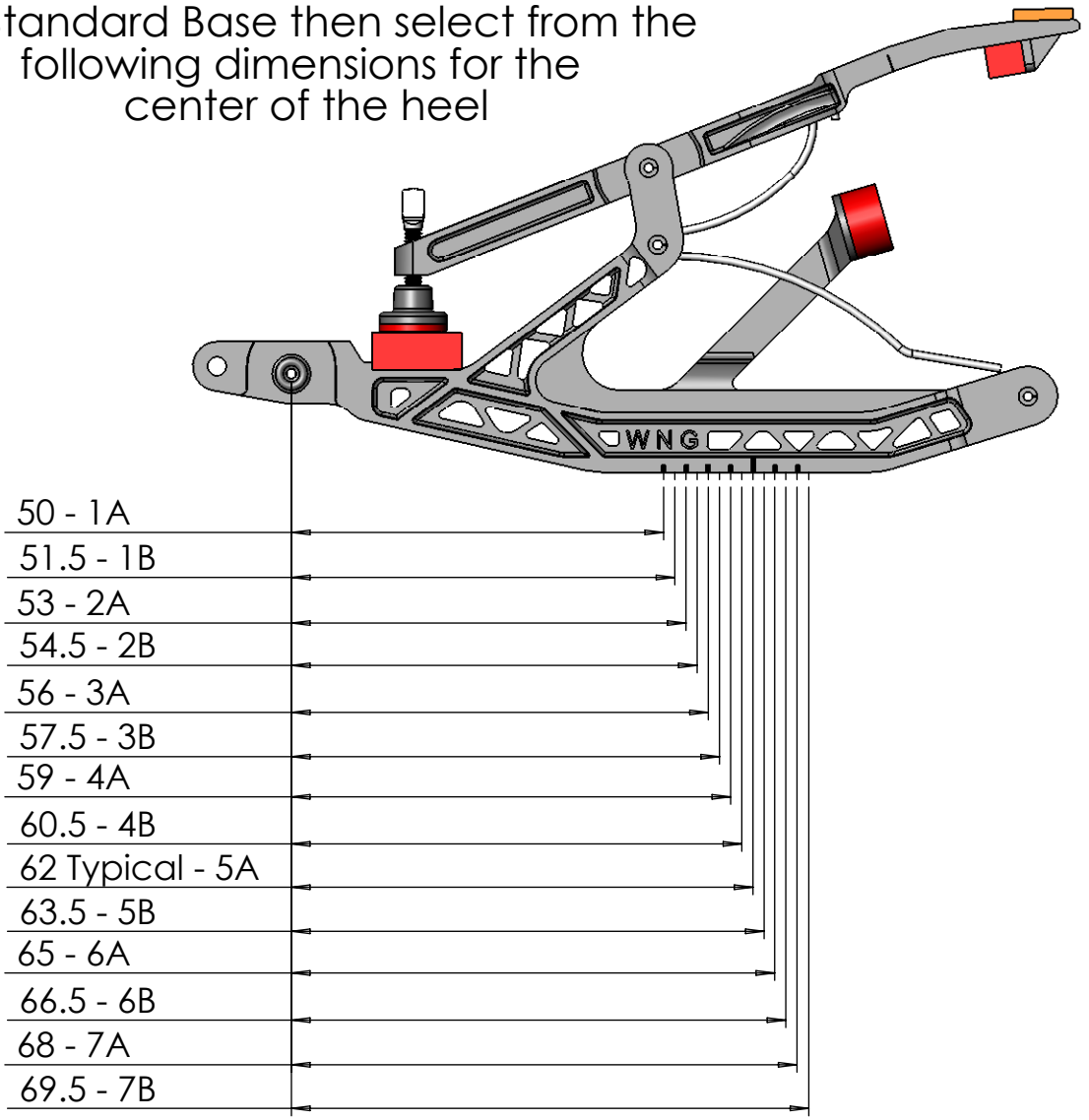
If you wish to have a different size for the sharps than for the naturals
Select 36 under the sharp size and 52 under the natural size.

Custom Repetition Step #5

WNG provides 14 horizontal locations for the heel

If you wish WNG to assemble the heel to the Standard Base then select from the following dimensions for the center of the heel





Custom Repetition Summary

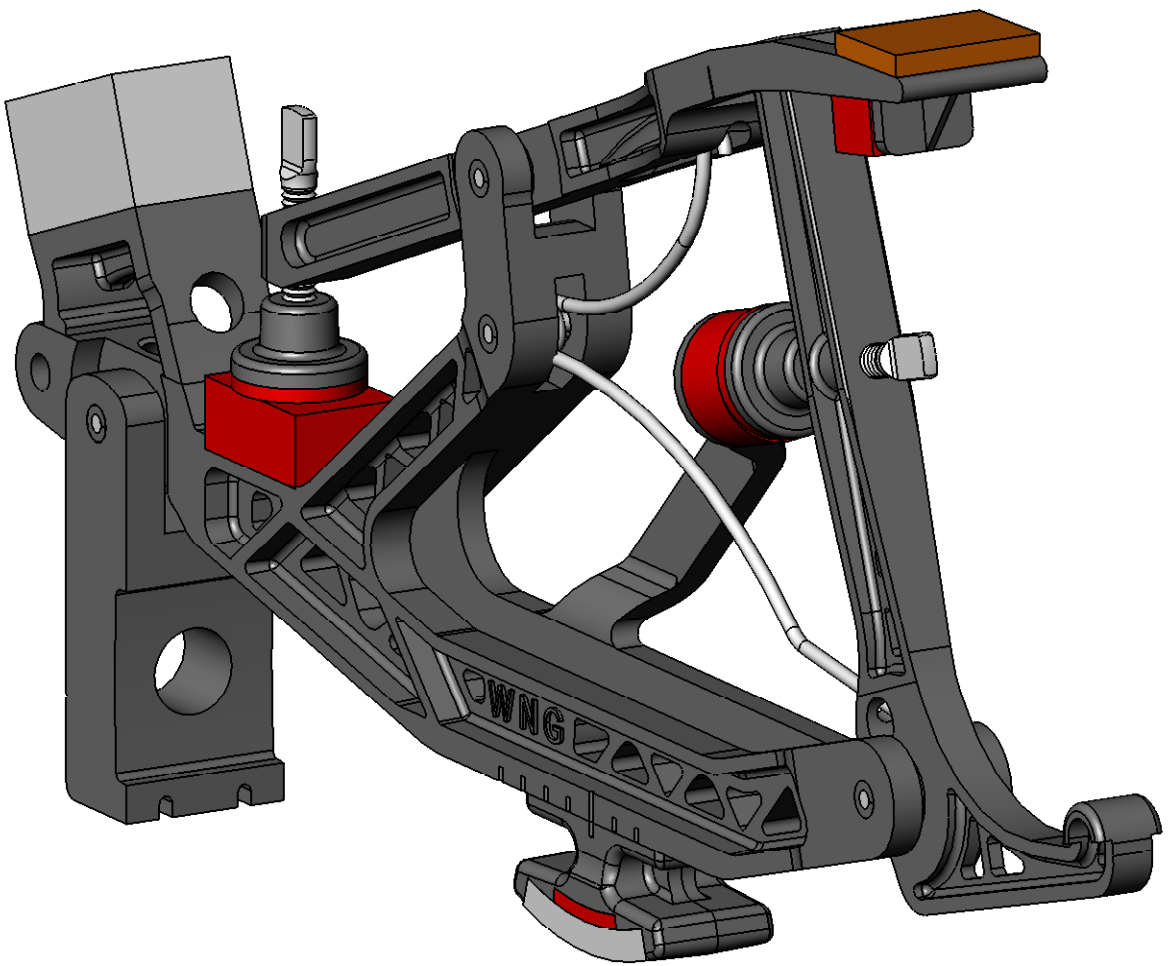
Make sure that this repetition has the features you want.

You have ordered:

1. A standard base with a rest cushion.
2. A Steinway flange.
3. A Standard High Angle jack.
4. 19mm Heels - Qty 52
5. 21mm Heels - Qty 36
6. Heels installed in location 5A by Customer

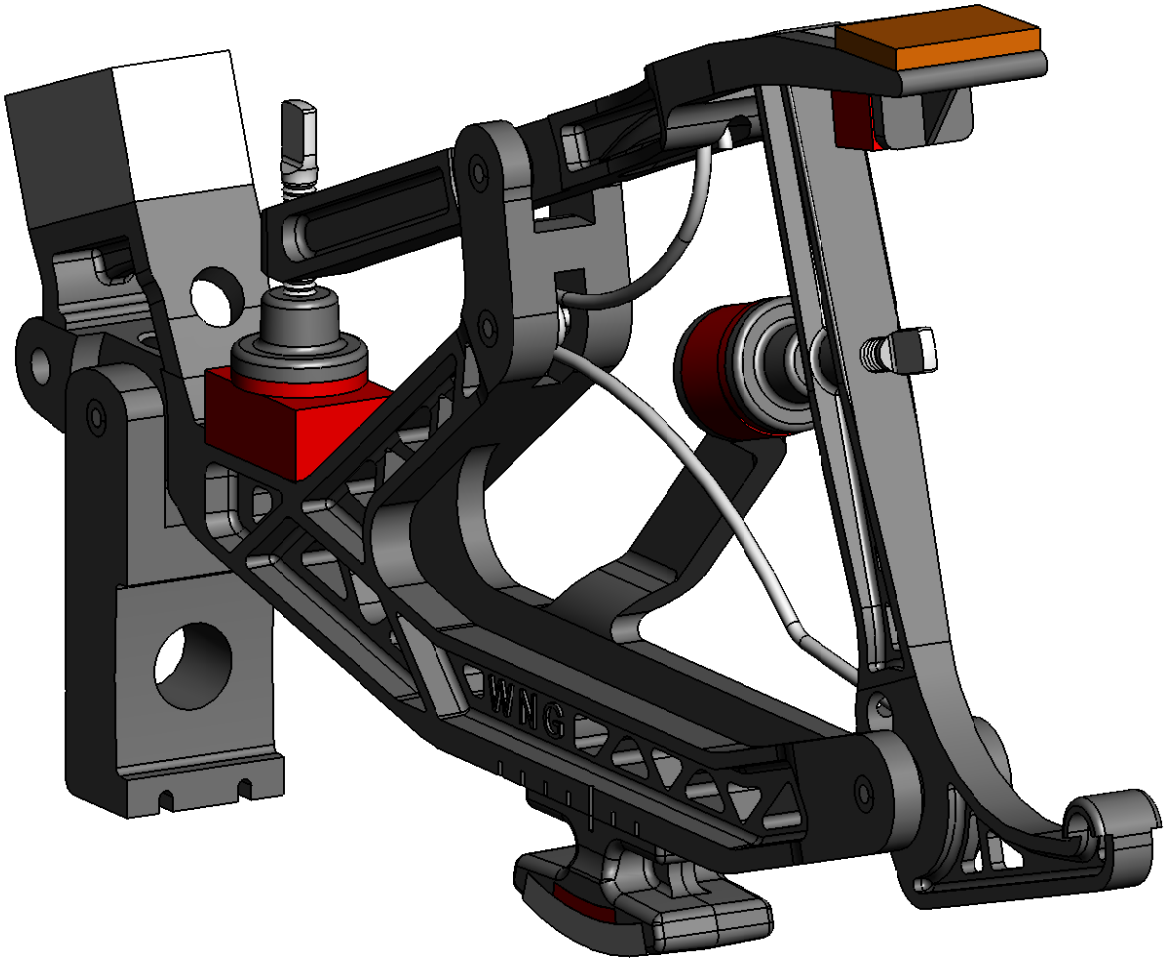
To modify the features selected

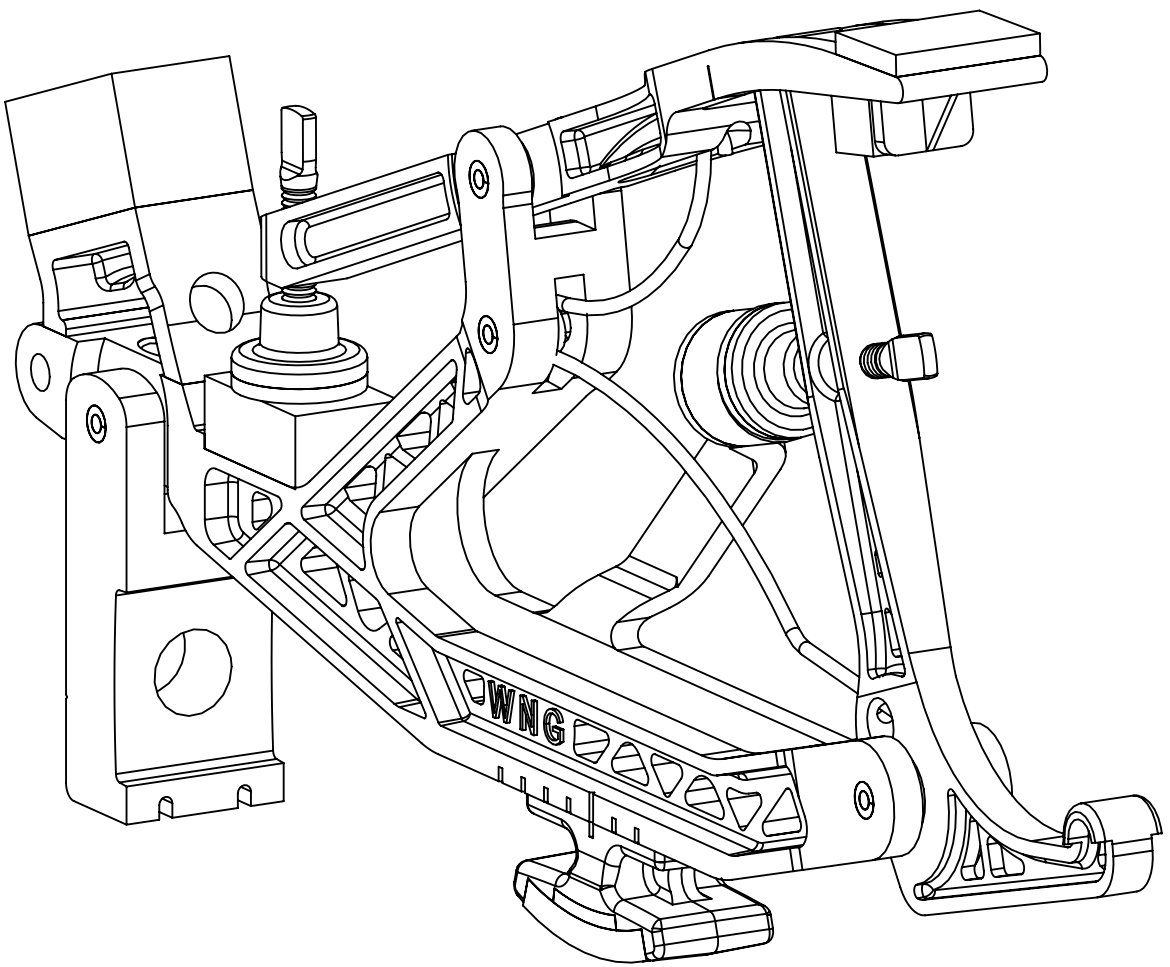
To complete the order


WNG

Wessell, Nickel & Gross

High Performance Action Parts




WNG