Toolkit Touch Design EU

Instructions

1. Introduction

The Toolkit Touch Design EU is a tool that can be used to optimize the action of grand pianos and upright pianos. With the collected data the playing nature and sound of the instrument can be improved with, for example, the use of the Precision Touch Design method.

You can find more information about this at: https://www.ptdae.nl/en/ or send an email to: info@PTDAE.com

Contents of the Toolkit Touch Design EU

1. Table
2. Adjustable feet
3. Column with slide block (3a).
4. Tool for weighing keys and action parts
5. Tool for pressing lead into the hammer molding + 3,2mm drill
6. Spirit level
7. 10 gram weight
8. OBW No. 0-5
9. Custom Balance Pins 3.4 – 3.6 – 3,9mm.



2. Preparation

2.1 Column (3) and Slide Block (3a)



Install the slide block to the column by sliding the sliding nut (A) into the slot in the column. Secure the slide block in a desired position using the knurled knob (K)

2.2 Column (3) , Table (1) and fixed foot (V)



Fix the column (3) to the table (1) using the fixed foot (V)

2.3 Table (1) and adjustable feet (2)

Tighten the knurled bolts of the 2 adjustable feet into the appropriate nuts in the table. Then tighten the nut and the rubber foot onto the screw thread. Tighten the rubber foot with the nut as shown in the pictures.





2.4 Leveling the scale (accessory 6)

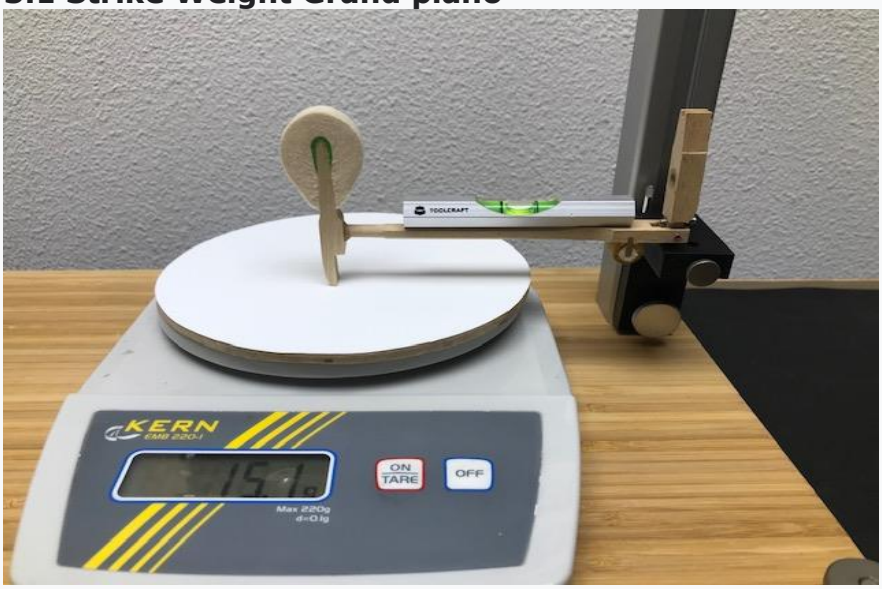


Place the scale on the table (1).

Level the scale with the adjustable feet (2). To do this, place the spirit level in the 2 directions as shown on the photos above.

3. Weighing

3.1 Strike Weight Grand piano

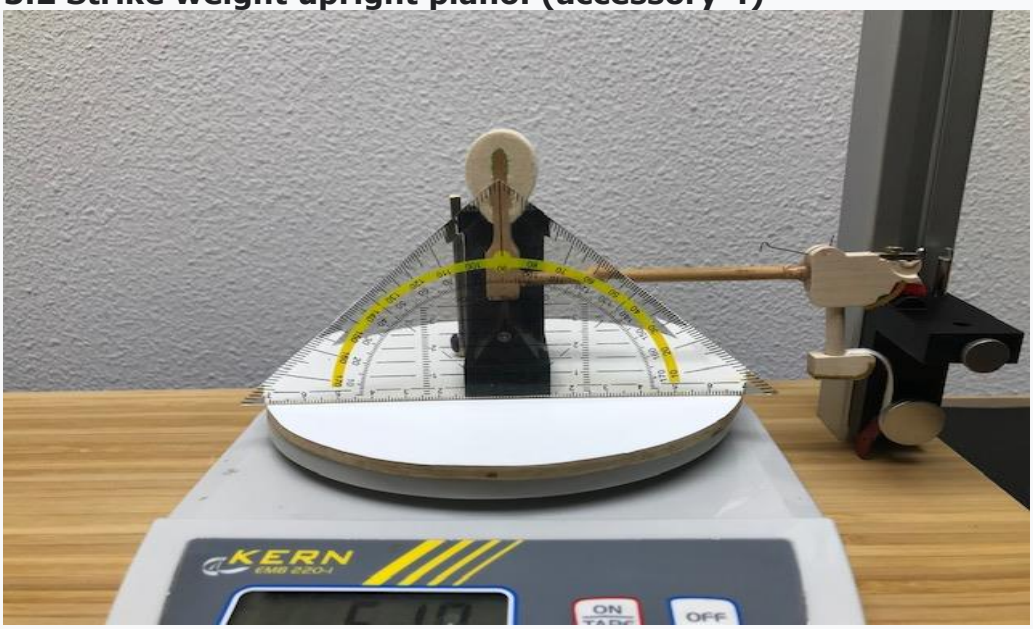


Place the hammer on the scale and the flange on the flat part of the slide block as shown on the picture.

Adjust the height of the slide block using the spirit level until the hammer shank is horizontal. The flange should be placed vertically.

Remove the spirit level from the shank before reading the weight!

3.2 Strike weight upright piano. (accessory 4)



If possible, remove the flange from the hammer butt.

Place accessory 4 on the scale and tare it. (Set to zero)

Place the hammer head on accessory 4 and the hammer butt with the felt pad on the semicircular part of the slide block. Adjust the slide block so that the hammer molding is perpendicular to accessory 4.

Remove the square before reading the weight!

3.3 Hammer shank weight (accessory 4)



Place accessory 4 on the scale and tare it.

Place the tip of the shank where the center of the hammer molding normally sits, on accessory 4. Place the flange on the slide block as shown on the photo.

Adjust the height of the slide block using the spirit level so that the shank is horizontal, the flange should be placed vertically.

Remove the spirit level before reading the weight!

3.4 Whippen Weight (accessory 4)

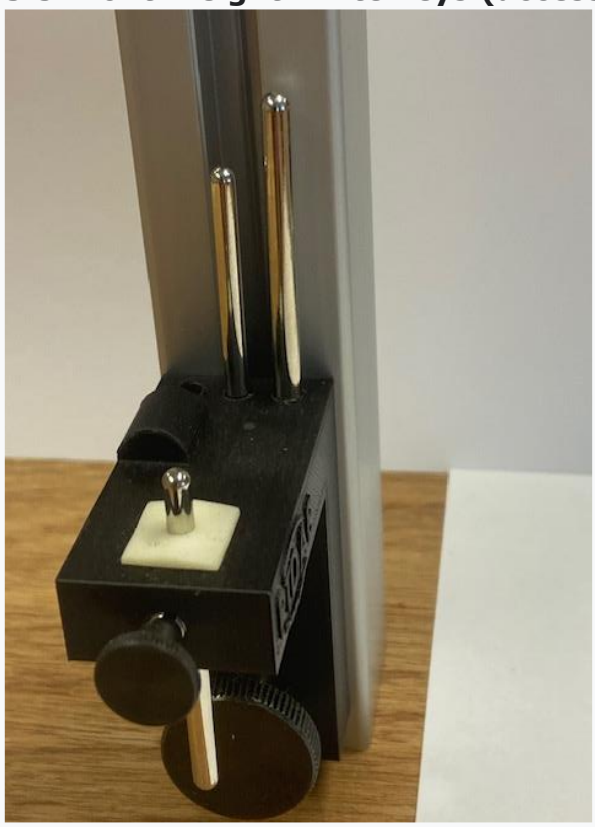


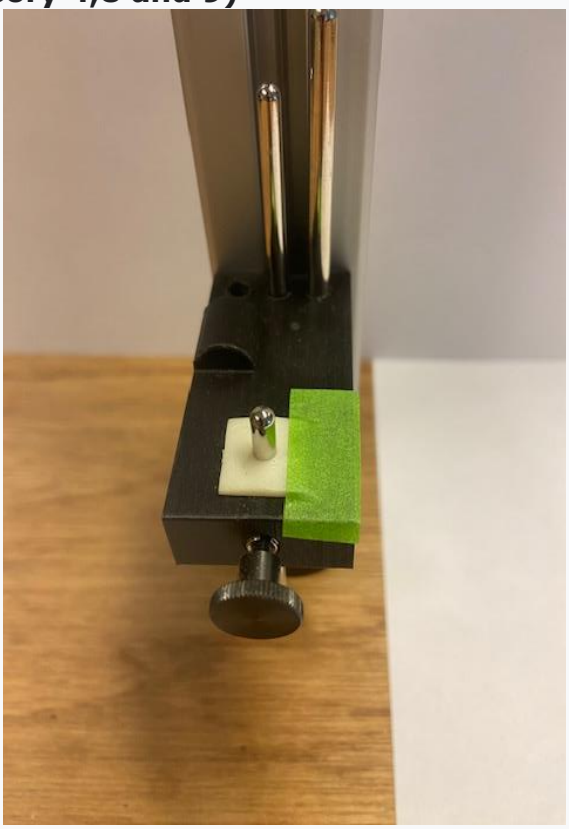
Place accessory 4 on the scale and tare it.

Place the heel on accessory 4 on the capstan/heel center contact point.

Place the flange vertically on the slide block and adjust the height of the slide block until the base of the whippen is parallel (level) to the top of the scale.

3.5 Front Weight white keys (accessory 4,8 and 9)





Choose from the included custom balance pins one which is 0,1mm thinner than the balance pins in the action where you are working on. This is very important! By this choice there is no friction around the balance pin hole. The play on the balance pin hole doesn’t affect the measurement negatively.

* If the diameter of the included balance pins does not match with the balance pins in the action, you can also use an iron drill with the desired diameter.

Slide the desired OBW around the chosen balance pin, put it in the slide block and secure it with the knurled bolt.

With a pin <3,5mm the OBW clamps insufficiently. In that case fix the OBW with a piece of tape as shown on the photo.

N.B. The Toolkit is only suitable for OBW, not for felt punchings!

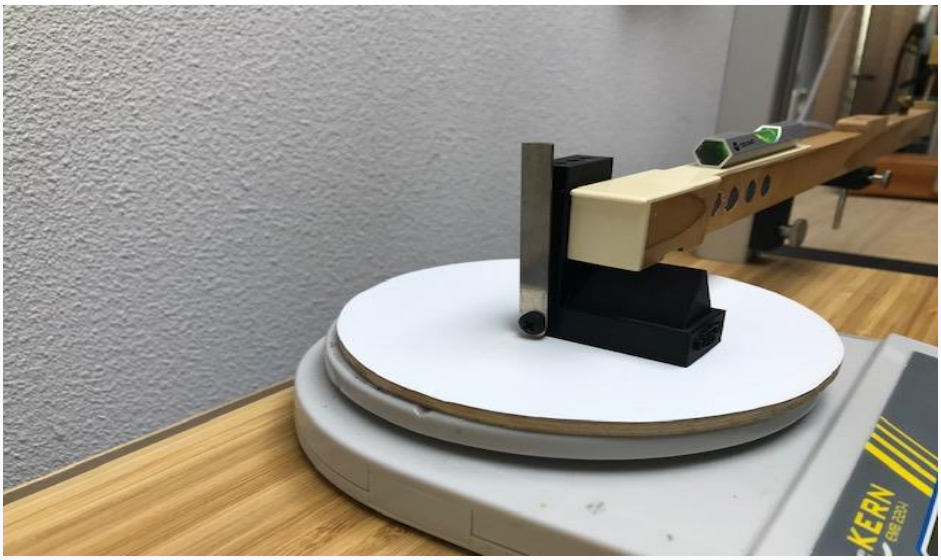




Place accessory 4 on the scale and tare it.

Place the front of the key on accessory 4 against the metal bumper.

Place the spirit level on the key and adjust the height of the slide block until the key-top is level. This only needs to be done once to weigh all the white and black keys.



Rotate the metal bumper and remove the spirit level before reading the weight!

3.6 Front Weight black keys (accessory 4.8, and 9)

Place the extreme front of the black key against the bumper of accessory 4.

Further identical to the white keys.

3.7 Measuring Negative Front Weight (FW).



In the event that the key does not remain on accessory 4, but tilts “backwards”:

place accessory 4 and a weight (eg the supplied 10 gr. weight) on the scale and

tare it. Place the key as in 3.5. Place the 10 gram weight on the key over the point where accessory 4 touches the key, this prevents the key being released from accessory 4 by the negative FW.

3.8 Key Ratio (accessory 4,7,8, and 9)



Place the key as in 3.5 and 3.6. Place the 10 gram weight on the capstan and tare the scale. Remove the 10 gram weight from the capstan and read the measured value. Divide the value by 10 to calculate the Key Ratio. Eg: Value 5.3 Key Ratio 0.53

3.9 Weighing damper action parts.

3.9.a. Damper weight (DHW).



Place the damper on the scale. Read the weight.

3.9.b. Damper lever weight (DLW).



Place accessory 4 on the scale and tare it.

Set the damper lever flange vertically on the slide block and place the point where the lever normally contacts the key, on accessory 4.

Make sure the bottom of the damper lever is parallel to the top of the scale.

Read the weight.

3.9.c. Damper Lever Ratio (DLR).

Identical arrangement as 3.9.b.

Set the damper wire flange vertically and place the 10 gr. weight on it. Tare the scale. Remove the 10 gr. weight. Read the value. Divide the value by 10 to calculate the Damper Lever Ratio.

Example: Value 8.0 Damper Lever Ratio 0.80

4. Inserting lead wire into the hammer molding (5)

4.1 Fully pierced hammer molding.



Fix accessory 5 in the central hole of the platform of a drill press using the washer and wing nut.

Clamp the loose pin into the chuck and center accessory 5 pin with the pin in the chuck.



A piece of lead wire with a diameter of 3 mm can now be inserted in a pre-drilled hole (with the supplied 3,2mm drill) in the hammer molding by lightly pressing the lead wire with the drill press.

4.2.Partly pierced hammer molding.

If only a very small piece of lead wire is to be inserted, the hammer molding can be pre-drilled to slightly over half. Place a metal plate on the lower pressure pin (not included). Place the hammer molding on the plate and lightly press the lead into the molding with the drill press.

5. Measurement accuracy.

-For Strike Weight, Hammer Shank Weight and Whippen Weight + 0.1 gram

-For Front Weight + 0.3 grams

-For Key Ratio + 0.01 gram

The included spirit level may be a little too long for some users. You can remove the red parts on the ends quite easily, so that the spirit level is shorter.