

# INSTALLATION MANUAL

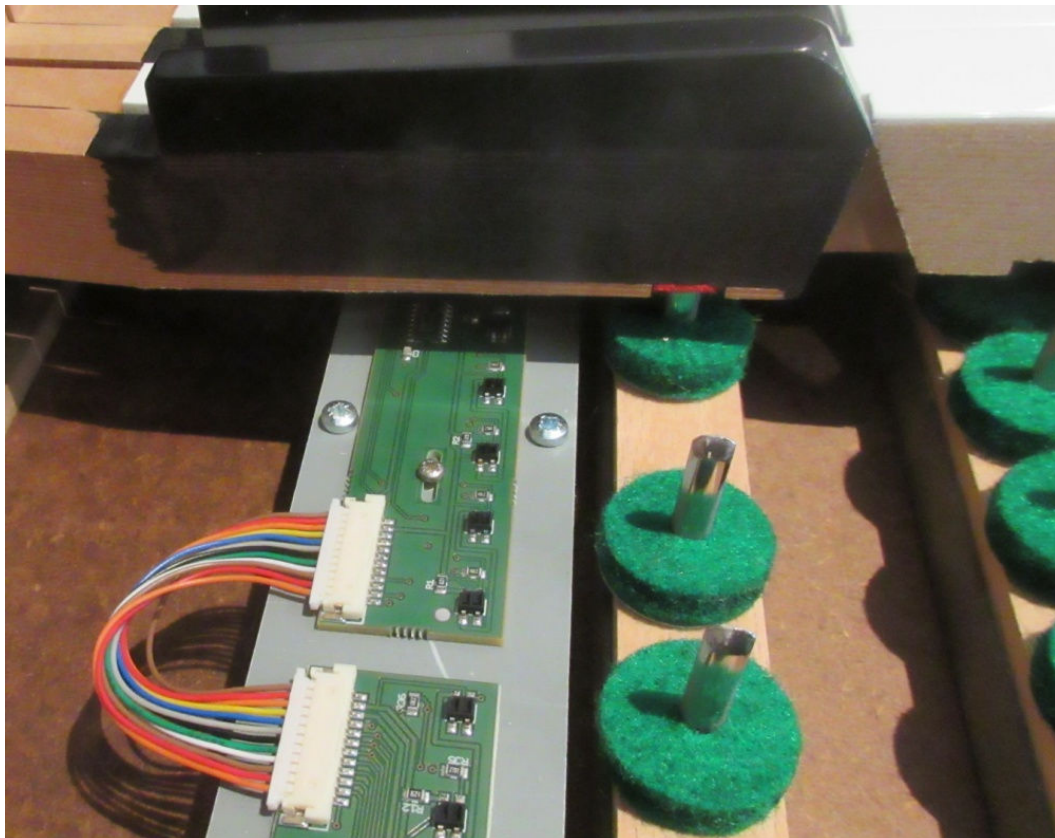
## Silent retrofit system MOTUS

(Version 10/10/2016)

### *-Upright piano-*

#### **-Keyboard sensors installation.**

Inserting the springs on the rear side of the two supports in the black chamberings provided for this purpose, the insertion is made easy by a counterclockwise rotation. The rail is fixed to the plate with wood screws between 3x20 and 3x50 following the chassis heights, these screws go through the springs to adjust the height. For chassis having very little keyboard height like Kawai or Schimmel, make a chambering of 8 mm depth on the plate using an 8 mm drill bit with stop ring, wherein the spring will reside. When the space under the keyboard is too high, add on the set of wood shims to the location of the screws. Fit the four sensor circuits in order, P1 in the low and then following P2 and P3 and P4 finally the small circuit in the treble.



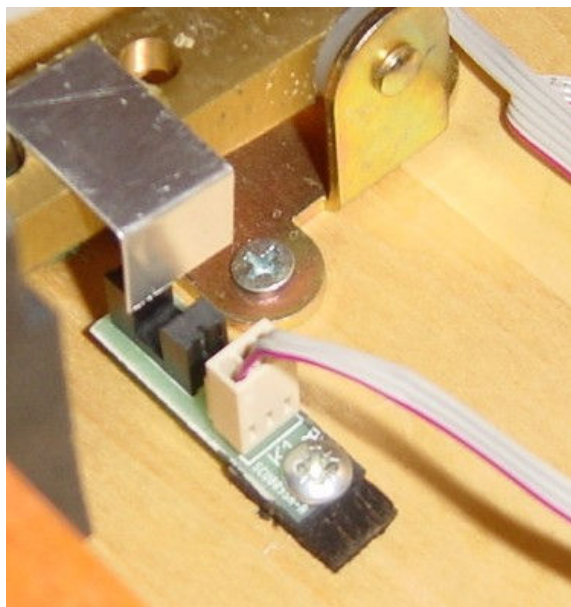
The edge of sensors rail must be at around 5mm from key pins board as photo above. Use 2 sharps near the ends of each circuit to ensure the best lateral centering, placing you at the vertical of keyboard to have the best global centering place under all black keys. Oblong holes are used for lateral precise adjustment.

Certain keyboard is not perfectly standard, good centering of 2 sharps end of each circuit is not possible, in this case, try to adopt the best lateral centering compromise without favoring a touch against another.

Then slightly tighten the circuits of fixing screws to immobilize temporarily adjust the height so that the above sensors to be about 2mm below the black keys in the depressed position without compressing the front rail washer. This corresponds to 4mm distance approximately relative to the printed circuit. Place the connectors 12 lines connecting the circuits, metal pellets up. (See above photo) Keep on keyboard only sharps the nearest of height adjustment screw, the white keys will be put in place later.

Place the control unit under the keyboard on the right, connect the gray cable and the Midi IN connector to the small interface card to place into the piano, connect the output of P4 sensor circuit to the card with the cable 7 multicolored lines. Do not pull the cables to disconnect, switch the nails on the side recesses provided for this purpose.

### **-Pedals sensors.**

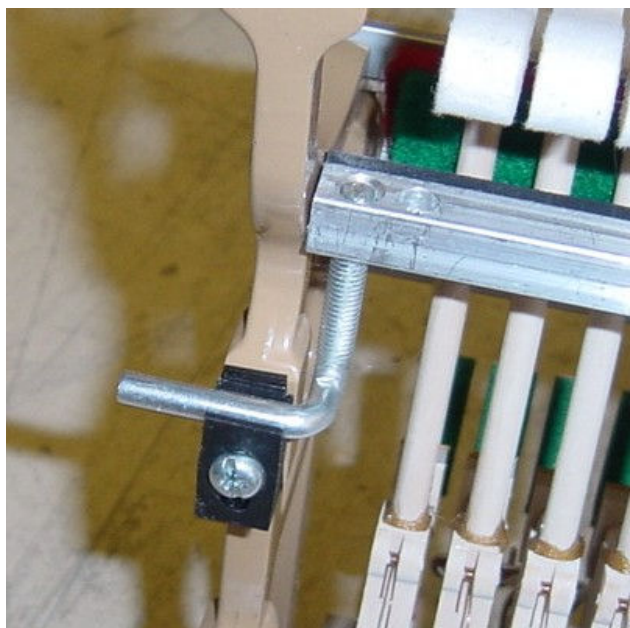


Place the sensor as shown on photo, use the aluminum part provided, cut and ply, glue with neoprene glue on top of the pedal, the vertical part has to go exactly in the center of optical fork. In the up position the sensor must be free opened. Connect the cable 1x6 table for two pedals, the pink wire indicating the damper pedal. The two slides on connector must be toward the optical fork sensor, if the connection is inverted, the pedal does not function.

### **-Hammers shanks stopper.**

A system with aluminum square 10mm x 10mm was adopted rather than an aluminum profile, the downside of the profile is to curb the bass dampers on some pianos, and cutting the notch in the lower medium passage is not very easy, our square brackets mounted on aluminum avoid these two problems.

Remove the damper bar. Place the 4 hinge screws at the locations of the damper bar with their respective brackets clipped, (photo 6), medium adjustable using the supplied bracket, bass medium passage U (photo 7) and basses with its return spring (photo 8).



6



7

8



Check that the bracket does not touch the first hammer, if necessary adjust laterally as close to the hammer to prevent excessive lateral flexion of the spring. Insert the square aluminum bass in the U-bracket of the passage (pre-drilled hole) drilling point on the caliper bass and drill 6mm. Same for the aluminum square of medium treble, pointing initially the bracket, drill 6mm, insert the aluminum square, then point the bracket of treble and mediums. Use the nuts to secure the aluminum square and adjust its height.

Glue the rubber strip with neoprene glue. With slotted hinge holes, place the clamp as close hammers.

Place the action into the piano. In most cases, the best solution is to flick the blocker by the center pedal, simply shorten the hanging rod mute, adjusting the height of the by reworking the hook. If it is a sheathed cable muted, simply replace the duct blocker at the right height. Finally, if the mute is not present, use the optional lever controls.

Adjust the hammers blocking point at 4 mm of strings, verify that this distance is constant over all notes, if it is not the case, placing wedges under the hinges to equalize the blocking point. Disable the blocker to return to acoustic mode, bringing the first medium hammer on the strings, in this position, the blocker must be at around **1 mm of the hammer shank** to allow the maximum space to dampers stroke at the passage. If this distance is greater, reduce the stroke by adding a felt thickness above the center pedal.

On some pianos, the first damper mediums may abut the blocker, in this case shorten the damper button screw, if this is not enough, you have to shorten the damper button itself.

Place the non-return lock washer on the axis of treble bracket to prevent lateral movement of the blocker. Enable hammers blocker. Then adjust the let-off point just on the blocker without any cracking. For proper operation silencer rapid repetition, it is necessary to minimize the strap space, top of jack must be almost in contact with the hammer butt-notch pad with around 0.2mm space only. Also checks adjustment should be closer to the strings with a distance of around 10mm.

### - Step 1: Setting of the sensors height.

Switch to parameter display mode for this, keep the last hash key No. 86 while you power up the unit, the following screen appears. If the sensors are too far and that the system does not fall within the function, remove the key 86 and placing a finger on the sensor 86 while turning on the power. Use the sharps near the screw to adjust the height or the keys 2,14,26,38,46,50,77,65,86.



N: 74 R: 34 P: 42  
FC: 192 H: 16

The system detects and displays a pressed key parameters, N is the note number, R is the reflection level of the optical sensor hundredth of Volt, P is the position (the origin is not the rest position but is situated above), FC is the end of stroke that will be stored in a subsequent step, and finally H is the distance between the underside of the key and the top of the sensor, in tenth of mm. Hold the sharp key near the down position adjusting screw medium pressure, adjust the height for H = 16 is 1.6 mm distance is the distance required for the sharps. If the sensors are too close or below 13 or 1.3 mm XX sign appears. White will automatically be a little higher, on the order of 22 is 2.2 mm, it will depend on the type of keyboard. The height adjustment screws will not have exactly the adjustment value of 1.6 mm, this is due to the irregularity of the keyboard and does not matter in the final operation. Insofar as this is done disassembled keyboard, too much ambient light as a sunny room or direct radiation from a projector can inadvertently trigger the sensors, it will not reflect a flicker of the screen, this step should be carried out in a medium light. Also, do not replace keys while the screen displays the settings for the sensors interpret new keys placed as played and the display is unstable. You must turn off the system to reset once all the keys in place. After adjusting the height, turn off the system, wait five seconds before turning it on again.

### Step 2: Storing ends of stroke.

Place all keys. Turn off the system, wait five seconds, keep octave F # (notes 70- 82) pressed during power-on, "COURSE" should appear, then release the octave F #. Slowly lower the first low No1 key, the system detects motion and displays the note number N and position C in real time screen below.



N 1. C158

Bring slowly into contact with no pressure on the front rail washer, release the key, the system stores the maximum measured value and FC displays this end of stroke position and the words MEMO as screen below.



N 1. MEMO  
FC 203

Repeat this process on all the keys, it is not possible to store 2 times following the same key, if you want to re-store the same note, the nearby store before returning the key in question. This setting is crucial and must be done with great precision because the speed detection thresholds are calculated according to the limit position of each key, so an incorrect setting will result in an uneven dynamics and a bad repetition. Check that MEMO is displayed when the return key, because a single crack in the jack may be misinterpreted and incorrectly recorded value, if any, change to the key setting. Once all the keyboard is stored, turn off the system, wait five seconds before turning it on. You can return to display mode settings (step 1) to control the limit value FC of each key that appears at the bottom left, and check that it is approximately equal to P when the key comes into contact without pressing on the front rail washer. It is of course possible to repeat this step 2 for a single note, without deleting the others.

### Step 3: Global dynamic adjustment.

Turn off the system, wait five seconds, keep the octave G # (72-84 keys) during powering ON, "DYNAMIQUE" should appear, then release octave G #.  
Play "Forte" the first note bass, its number displays as well as its dynamic coefficient that is stored in stride, display below.




N 1  
1256

Repeat on the entire keyboard, use the middle finger in the same way you tune the piano, do not take any momentum above the keyboard, move the finger in touch with the key without pressing it, then play "Strong" vigorously, recorded coefficient corresponds to a MIDI velocity value 120, the maximum being 127. This means that when the pianist will play this note with the velocity you applied, MIDI level will be 120. The dynamic coefficients vary widely from one note to another, and also between white and black, this is due to changes in the mechanical behavior. This should be achieved with maximum equal force, playing slowly around one note per second. This step allows the storage of dynamic parameters by the microprocessor keyboard P4 sensors located on the circuit, the next step 4 will allow finer adjustment dynamics by an additional coefficient stored by the microprocessor of the soundcard present in the control box. Once all the stored keyboard, turn off the system, wait five seconds before turning it on again.

### Step 4: Individual adjustment .

Press the "Menu" followed by the "+" key until you see "REGLAGES" on screen, confirm again by pressing "Menu," "Clavier ..." should appear. Playing a key, the following screen appears.



N:52 V:72 M:56  
Vol:100 %

**N** is the number of the note played, **V** is the velocity of depression of the key, **M** is the sound level Midi audible through headphones, calculated by the software based on the speed **V**, **Vol** is finally setting the individual volume of the note to reduce or increase, this is the value of **M**. The volume is set by default to 100%.

Individually regulated compensates for any irregularities in step 3. Perform a slow chromatic scale "strong Mezzo" If a note seems stronger or weaker, stop on it, its number is displayed, use + or - (auto scroll) to change the volume If a note is too high is that you must drop below 70% of the volume, return the 100% volume and return to Step 3 for this note only, this for to keep a good dynamic resolution of the relevant note.

This type of control is expected to play a single note at a time, or arpeggios to facilitate equalization, the fact of playing chords may cause notes "strong" unannounced.

Press "STOP" to exit the settings mode.

## -Using the control box.

**Connections.** Plug the adapter into the 220 V socket, 9 V output plug on the back on the DC 9V connector. Connect the headset on the left lateral side of the case. It is possible to connect 2 headphones using a splitter. You can connect powered speakers using the audio output behind the headphone jack.

**Use.** Ensure there are no objects placed on the keyboard (helmet etc ...) in order not to disrupt the initialization phase. Press the ON key, wait for "Piano" is displayed. When you turn off the system, always wait 5 seconds before turn on again. Remember to close the keyboard cover so that dust does not infiltrate under the keyboard, which can disrupt the optical sensors. The digital volume is adjusted by the + and - keys, but it is preferable for better audio quality to let this volume to its maximum value of 127 and use the analog adjustment knob placed on the connection wire that comes with the headphone. The sounds are changed by the << and >> keys, a long press will move more or less in the 10 numbers of the instruments. STOP returns to the grand piano.

**Recording.** Insert an SD memory card into the connector located on the right side of the case, press the Record key O, the name "SEQ" Midi Windows compatible file that you will save on the SD card is displayed, followed by its number . Possibly use the << or >> keys to rerecord a SEQ file that already exists on the card. Press the Record key O to start recording and STOP to finish, the system then reboots. **Warning :** **The insertion and removal of the SD card should always be control box turned off.**

**Midi File Import.** Download conversion software notes on site, select "File" then "Open song" to open a MIDI file, it is possible at this stage to change the channels and instruments in the interface "Channels" and "Instruments". Then click "File" then "Export Format 0", select the SD card reader placed in your computer and name the **file with 8 uppercase letters or digits maximum.**

**Playing Midi files.** Press the play key>, the first MIDI file appears, use << and >> to select another file, followed by > to start playback and STOP to reset.

**No folders should be present** on the SD card, all files should be placed in the root directory. In case of problems playing or recording, you can reformat the SD card to FAT16 **exclusively**, choose XP FAT (for FAT16) in the format option and never FAT32.

The following functions are available from the **Menu** followed by + and - keys to select the function, press **Menu** again to launch it or STOP to exit.

**Metronome.** Adjust the tempo with the << and >> keys to vary by 10 or + and - to vary 1. Increase volume with playing key > and decrease with the STOP key. Press Menu to exit once the tempo and volume are adjusted. Button STOP stops the metronome.

**Reverb.** Select the reverb level using the + or - key, press **Menu** again to confirm.

**Programming sounds.** See on our web [www.chavanne.com](http://www.chavanne.com) indications.

**Note:** The headset provides standard is first price for a demonstration model or to take full advantage of audio realism, we recommend to use the headphone **Seinheiser HD25**, it perfectly isolates the mechanical noise blocker and sound quality is amazing.

## *-Grand piano-*

### **-Installation Keyboard sensors.**

The principle is identical to the upright piano, however, as the place for the springs is insufficient, adjusting height will be done using paper wedges and cardboard.

**We are developing a new rotary hammers shanks blocker staying inside the piano. Thank you contact us.**