

QuietTime[®]

GT-2 mini 2 & Magic Star V6

Installation Guide

Grand & Upright pianos

English

Version 1

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I. Guide to the mechanical parts and their adjustment

1. Before you start the installation

We recommend that you take note of the present state of the piano in which QuietTime will be installed. Note down information such as: Manufacturer, model, serial number, working check results, key dip, even key sensitivity, pitch, etc. This information will also be helpful for other service work on this piano or an installation in a similar piano.

Note: The QuietTime system is set to $A49 = 440$ Hz. Therefore we urgently recommend that you use the same pitch for the acoustic piano and any other electronic music instruments that you will be using with QuietTime. The piano pitch can be set up without having to alter our system. Please take into consideration all of the installation and adjustment instructions given in this guide.

2. Check to see if all of the parts have been delivered.

Consult the hardware kit contents lists in this case

3. Tools needed for the installation

Normal piano maintenance tools and a metal saw

4. Aligning the mute rail

There are two types of mute rails. One with cut-outs in the mute rail for known piano models (unavailable at the moment). And a **standard mute rail** that fits in various or virtually all action models.

A. Aligning the standard mute rail

- Remove all of the covers before measuring and aligning the mute rail.
- A1. Now mark out the area that has to be cut out for the mute rail so that the mute rail can be moved forwards and backwards without being obstructed by the action brackets. In this case you must hold the mute rail inside the piano's action. Alternatively you can also measure the piano action and then mark out the size on the mute rail.
(see: Illustration on page 6).
- A2. The mute rail should be able to move without being obstructed after it has been aligned. The section marked out in the illustration (C) and any other section that you have marked must then be cut out.
- Cut the material along the line that you have drawn and towards the axis
 - Use long-nosed pliers or a similar tool to bend the cut out forwards and backwards until it breaks away from the rest of the mute rail.
 - Use a large file to file down the resulting edge until it is once again smooth and straight.
- A3. The full length of the mute rail should be measured up to the mechanical support marked as (D).
- The cut outs at the end of the mute rail should be removed as described above
- A4. It is not necessary to cut out the section marked as (B) for certain types of piano actions.
- A5. Cut the unwanted felt and self-adhesive felt away from the mute rail.

5. Installing the mute rail

• Preparing to start the installation

- Remove all of the covers that might prevent you from removing the piano action
- Find a safe place to work
- You must ensure that you do not inadvertently displace any of the finely adjusted action parts
- Repair any action parts that are obviously defective.

A. In the event that the damper impact rail is screwed onto the action brackets:

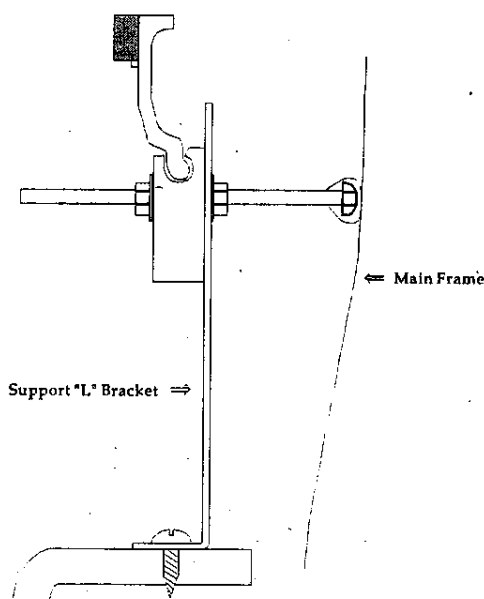
In this case the mute rail must be fitted in the same position as the damper rail was mounted in and using the same screws.

A1. Unscrew the damper impact rail from the action brackets.

A2. Undo and remove the securing screws from the damper impact rail. The original screws have to be used to screw the mute rail onto the piano action, as all of the piano manufacturers have their own screw sizes.

A3. Screw the three normal hinges onto the mute rail so that it can be correctly positioned for mounting. Use the bracket marked as “L” that was supplied by us to secure the mute rail in place as shown below in the event that there is no action bracket fitted in the position marked as (C).

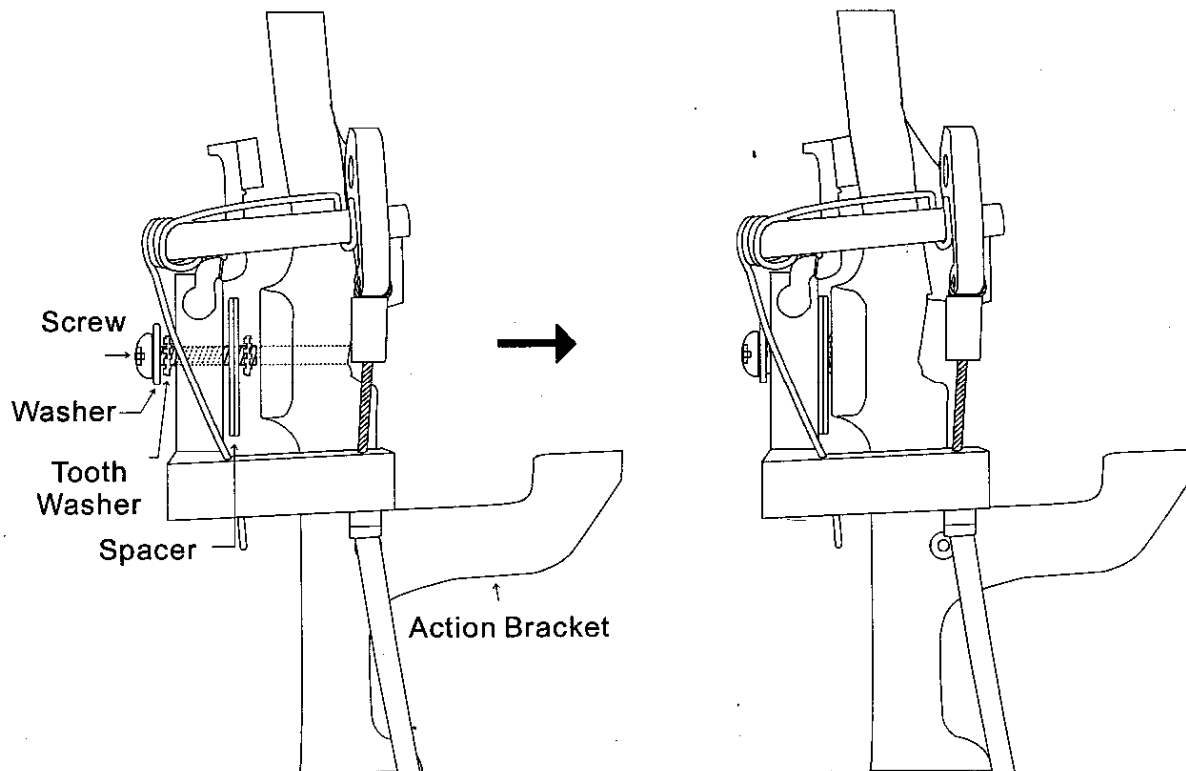
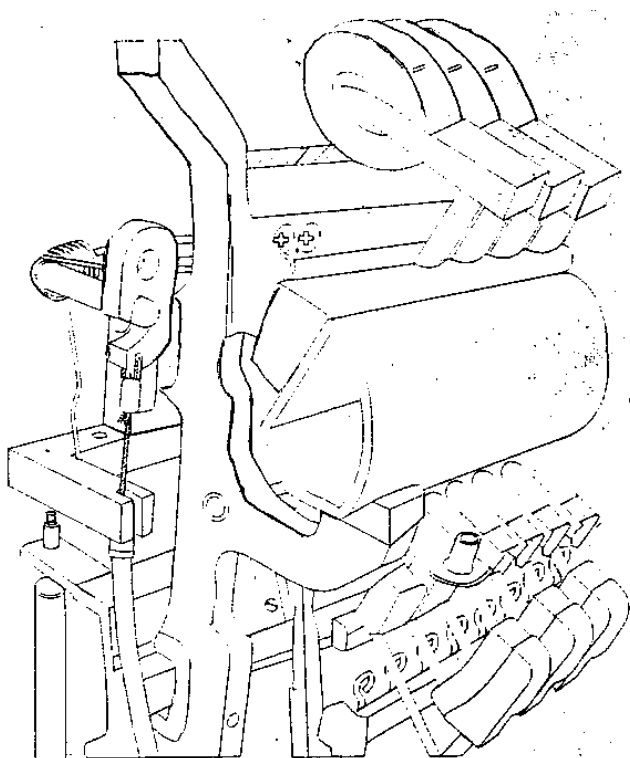
See illustration: page 6 Fig I-5-A-3: how to affix the “L” bracket)



Legend:

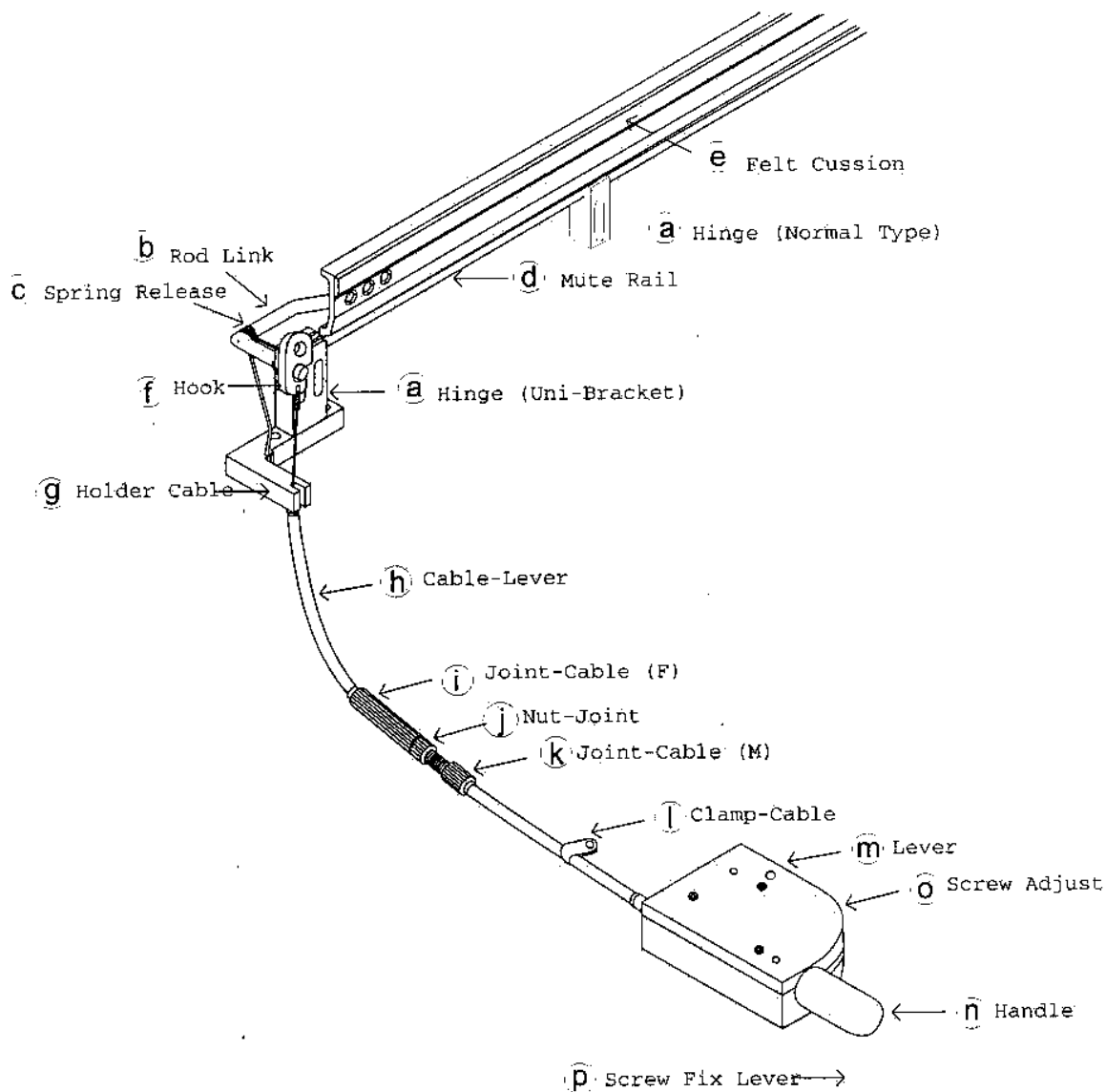
“L” bracket support = “L” bracket / Main frame = Iron frame

Fig I-5-A-3: how to affix the “L” bracket



Legend:
 Screw / Washer / Toothed washer = Locking washer
 Spacer / Action bracket

Fig I-5-A-4: Uni-bracket)



Legend:

- | | |
|-------------------------|--|
| (a) Hinge (normal type) | |
| (a) Hinge (uni-bracket) | |
| (b) Rod link | = Bowden cable / mute rail connecting piece |
| (c) Spring Release | = Mute rail spring for release |
| (d) Mute Rail | |
| (e) Felt cushion | |
| (f) Hook | |
| (g) Cable holder | = Holds the end of the Bowden cable sleeving |
| (h) Cable lever | = Bowden cable lever |
| (i) Cable joint (F) | |
| (j) Nut-joint | = Cable joint locking nut |
| (k) Cable joint (M) | |
| (l) Cable clamp | = Bowden cable clamp |
| (m) Lever | = Mute rail operating lever |
| (n) Handle | |
| (o) Screw Adjust | = Mute rail position adjustment screw (when in off-position) |
| (p) Screw Fix Lever | = Screw / screw slot for securing the operating lever |

Mute rail, Uni-bracket & Lever Assembly

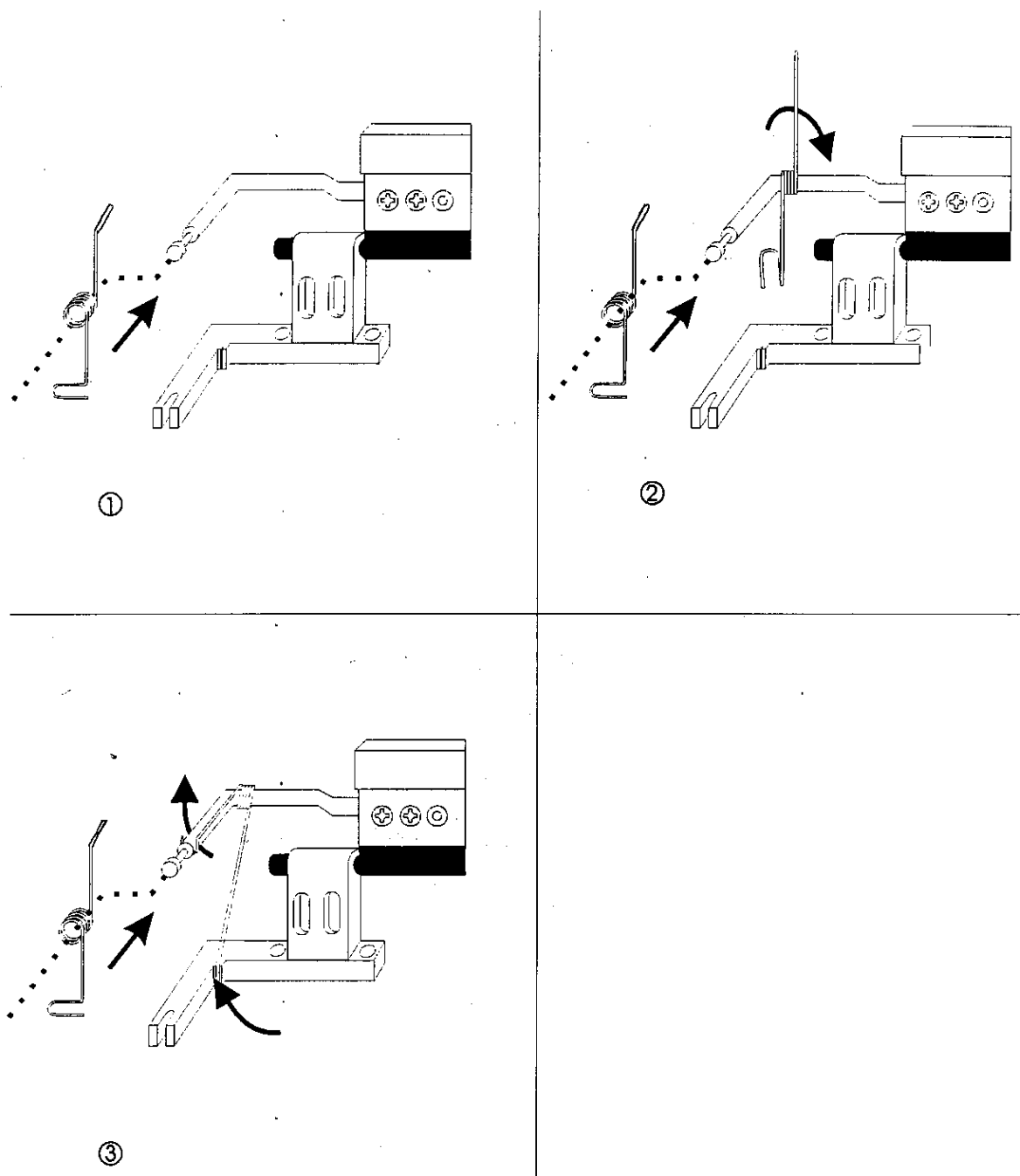


Fig I-5-A-4: Uni-bracket

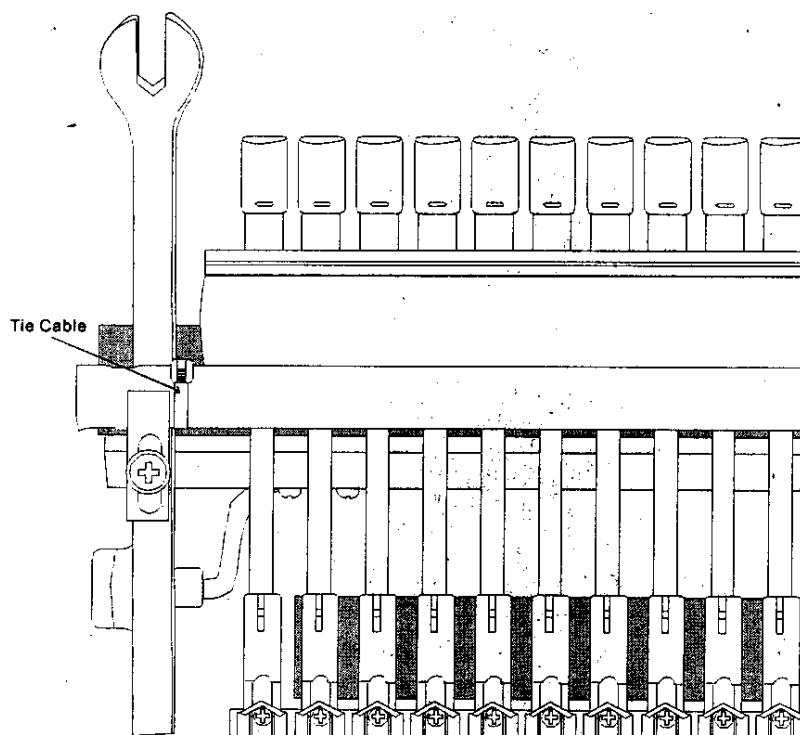
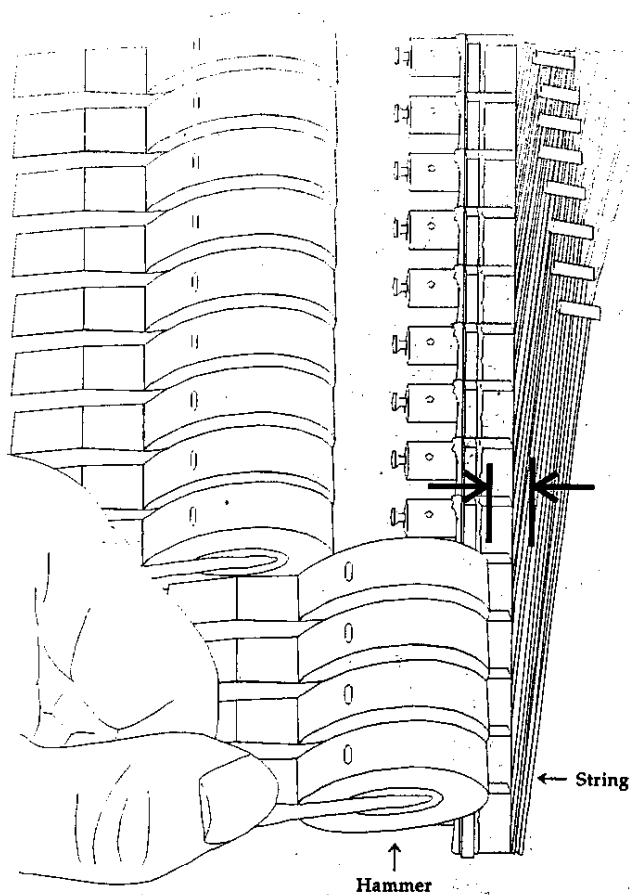
B. In the event that the damper rail is screwed onto the action bars

B1. Unscrew the damper impact rail from the action bars.

B2. Drill the mute rail securing holes

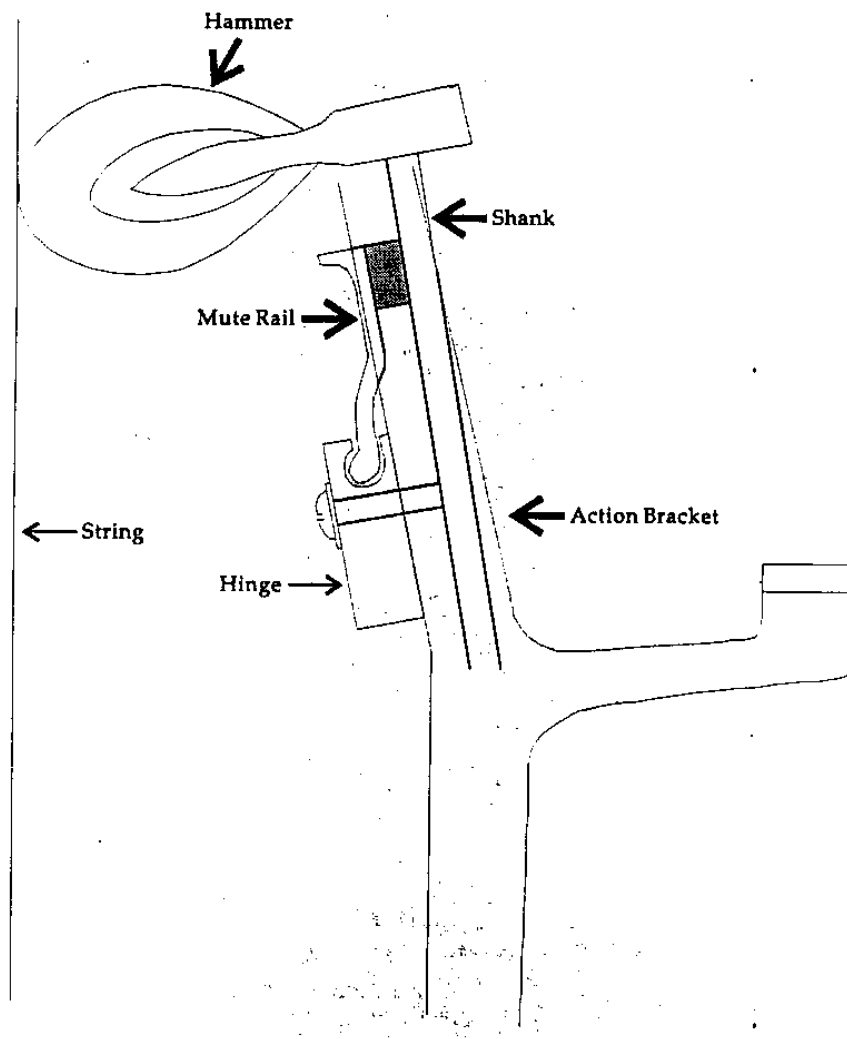
- Use a drill-bit that is 0.5 mm bigger than the screws that you will be using in order to secure the hinges in existing holes.
- Use a drill-bit that is 0.5 mm smaller than the screws that you will be using in order to secure the hinges in threaded holes. Use a tap to cut a thread in the new hole that is the correct size for the screws that you will be using.

B3. Otherwise you can proceed as described above in Section A3.

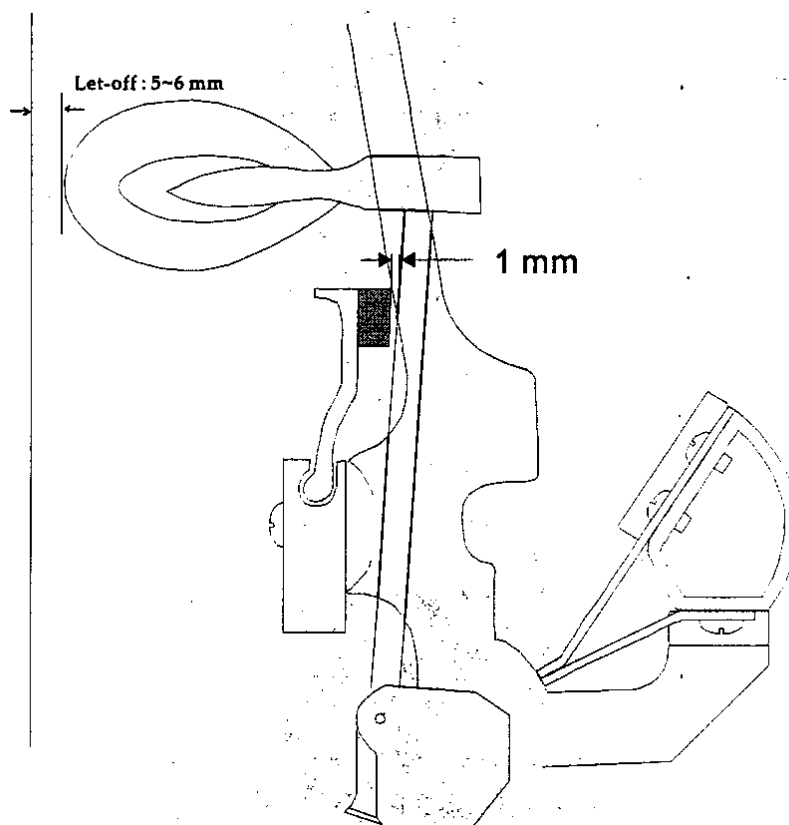
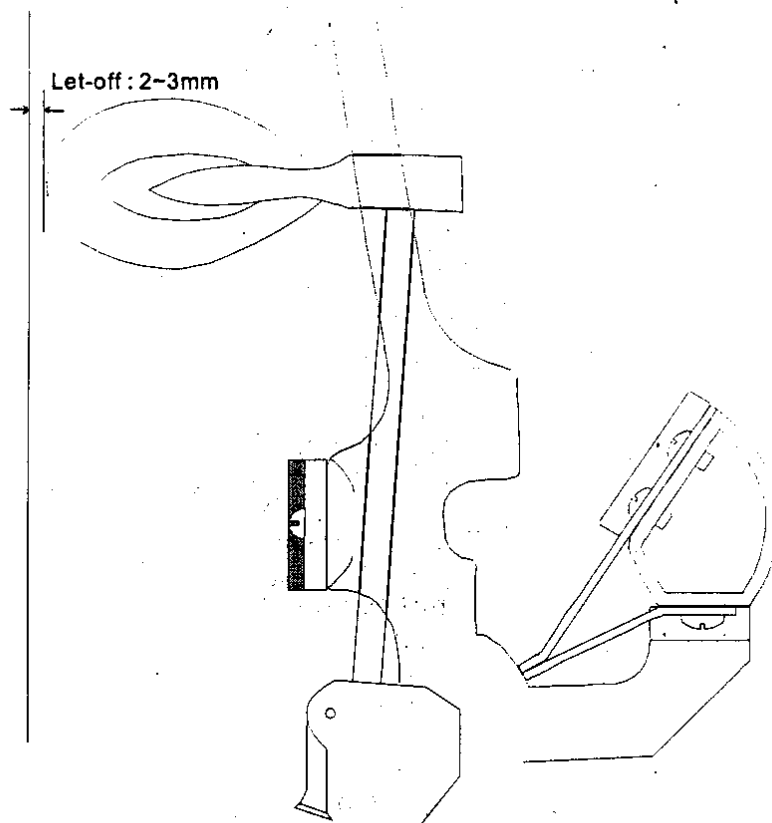


Legend:
String / Hammer / Tie Cable = Tie wrap

I-H, Rear View of (D) -part



Legend:
Hammer / Shank / Action bracket
Mute rail / Hinge / String



Legend:
Let-Off

6. Installing the mute rail operating lever

A. The correct position for the operating lever

- A1. Screw the operating lever on underneath the piano.
- A2. Mark the position and ensure that none of the operating lever's components touch the piano leg.
- A3. Use the associated clamp to fix the Bowden cable in place so that it cannot move.
- A4. Feed the end of the Bowden cable sleeve up to the "Cable holder" on the "Hinge (uni-bracket)" and then attach the hook to the rod link.
(See page 7, Fig I-5-A-4: Uni-bracket and Fig page 9)

B. Adjusting the mute rail movement

B1. Setting up the mute position

The mute rail's mute position depends on the clearance between the cable joints (F) and (M). The mute position can be adjusted by screwing the cable joints together or apart.

- Undo the locking nut
- Turn the cable joint to the correct length
- Retighten the locking nut when the correct position has been realised.

(See: Page 17 Fig I-K: Adjusting the mute rail's mute position)

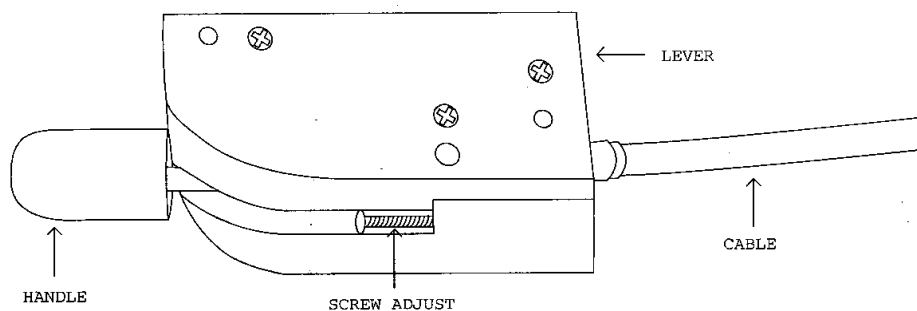
B2. Setting up the normal position

It might be necessary to reset the mute rail in the normal position (acoustic piano plays normally) if the damper screws touch the mute rail when it is moved.

It is not necessary to reset this position in the majority of cases.

- Use the adjust screw on the operating lever to alter the position of the mute rail when it is in the normal position as necessary.

(Page 17: Fig I-J: Adjusting the mute rail's moving range)

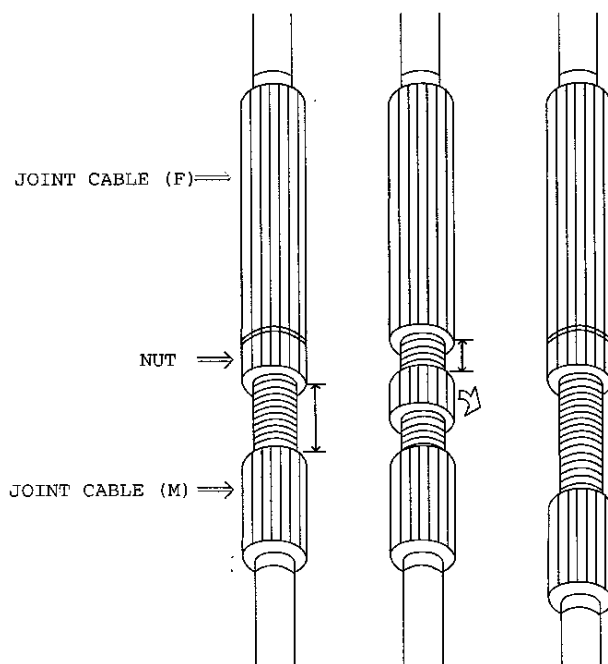


Legend:

Lever = Mute rail operating lever / Cable = Bowden cable / Handle

Adjust screw = Adjustment screw for positioning the mute rail in the normal position

I – J. Adjusting the mute rail's moving range



Legend:

Cable joint (F) & (M) / Nut = Locking nut

I – K. Adjusting mute rail's mute position

B. Piano with mute rail and let-offs

- The let-offs should be set at 2 - 3 mm for the best acoustic piano touch. A piano fitted with a mute rail cannot maintain this ideal setting as the mute rail curves when the hammer strikes it. Therefore the let-offs must be set somewhat further away than the ideal setting, e.g. 5 – 6 mm.

Requirement	Possible adjustment
The clearance between the hammer and the string at the let-off point should be reduced.	Fit a spacer between the hinge and the mechanical support. This must be checked regularly afterwards.
The piano should not be played when the mute rail is in the mute position.	Adjust the clearance between the cable joints. The let-off must be rechecked after this adjustment has been made.
The screws in the dampers should not touch the mute rail.	Use the adjustment screw on the operating lever to position the mute rail.
The mute rail should not be able to move sideways.	Fit a tie clamp in Section (D) (See: Page 11 Fig I-H, Rear View of (D)-Part)
Play the piano for a while in order to immediately pinpoint any minor defects or deformations and then readjust them.	

II. Guide to the electronics and their adjustment

1. Brief functional description

The electronics consist of: Tone generator, key sensors rail, pedal sensors and cables as shown in the connection summary. All of the electronics are connected to the tone generator, which also includes the tone source.

The key sensors rail works with optical sensors, which measure the distance between the sensor and the bottom of the key.

The key sensors rail generates data according to the measurements taken from the keys. The data includes the following information: which key was played, how forcefully it was played and how long the key was kept pressed down. This information is then used to simulate the tone of a real musical instrument. In addition to this the QuietTime system also uses an error correction circuit to reduce the tolerances of each individual sensor. The installation must be carried out very precisely and the calibration needs to be run immediately after the installation has been completed.

2. Installing the key sensors rail

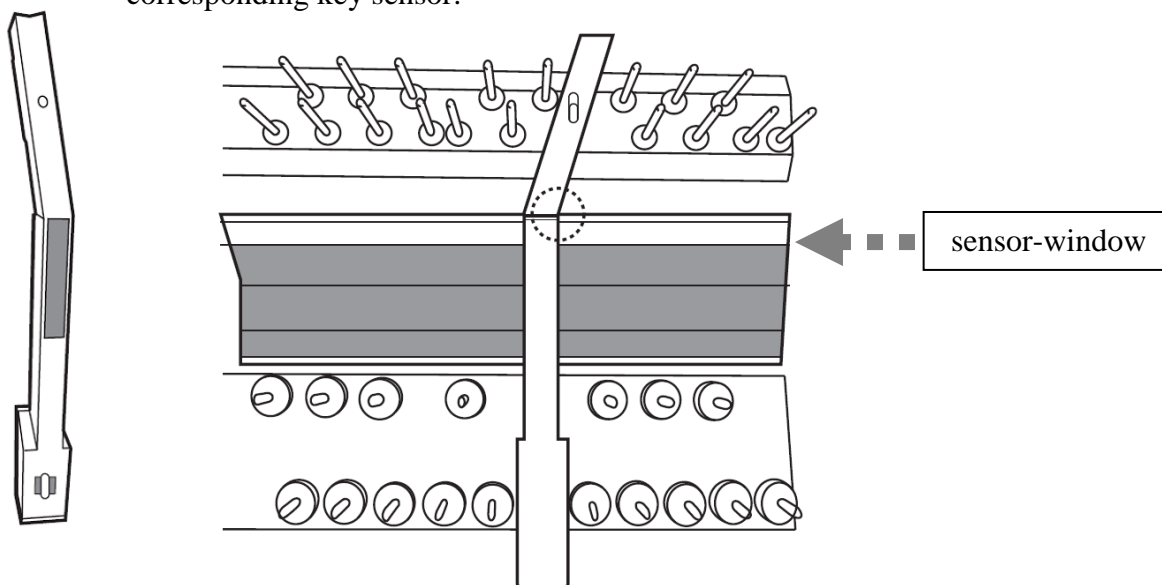
Info: Overall height



Required space under the key in played position.
12mm Sensor height
Height incl. base parts and 2mm distance to the key

- a. Remove all 88 keys and place them in a clean and safe place
 - a1. Glue the reflector strips to the underside of the keys. See illustration below.

The reflector is attached in the middle of the key, except for the keys 1 and 88. For these keys please pay special attention that the reflector strip is placed above the corresponding key sensor.



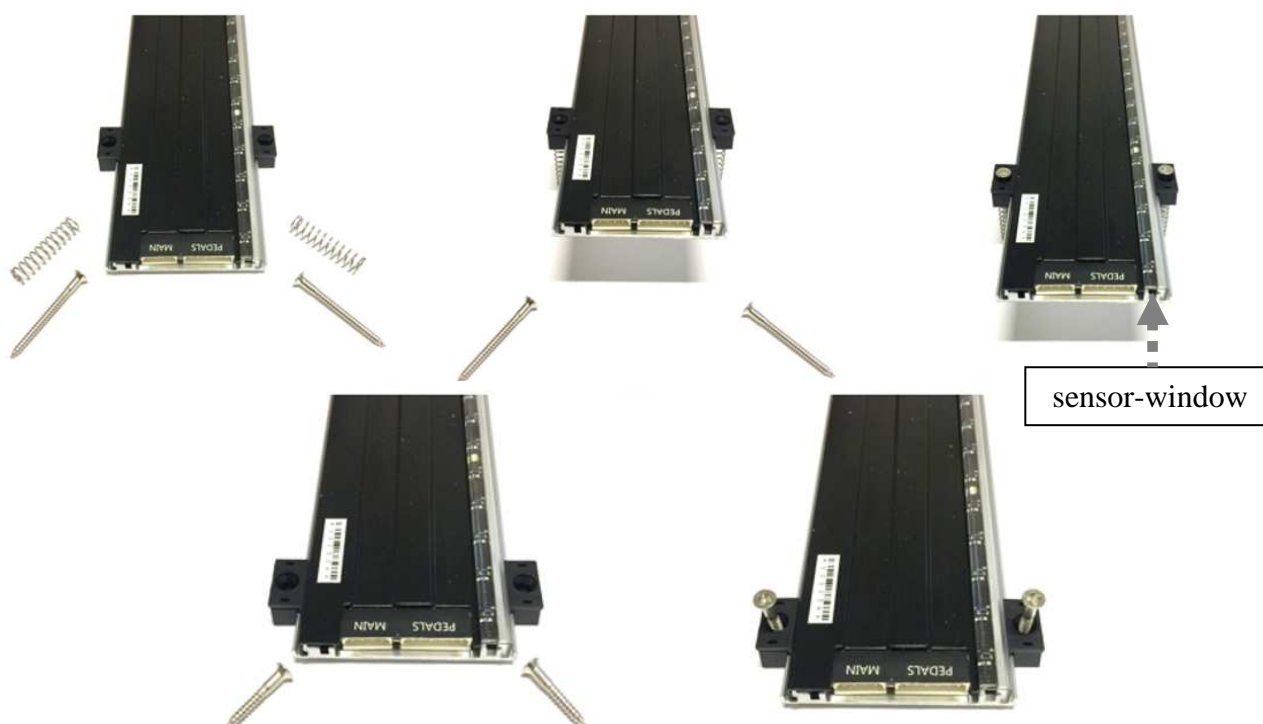


- b. Clean the area between the center rail and front rail
- c. Carefully remove the plastic foil from the sensor rail
- d. Push the mounting brackets gently on the aluminum rail. The brackets can be positioned at the location of your choice. Nevertheless, please spread the brackets as evenly as possible across the full length of the key sensor rail.

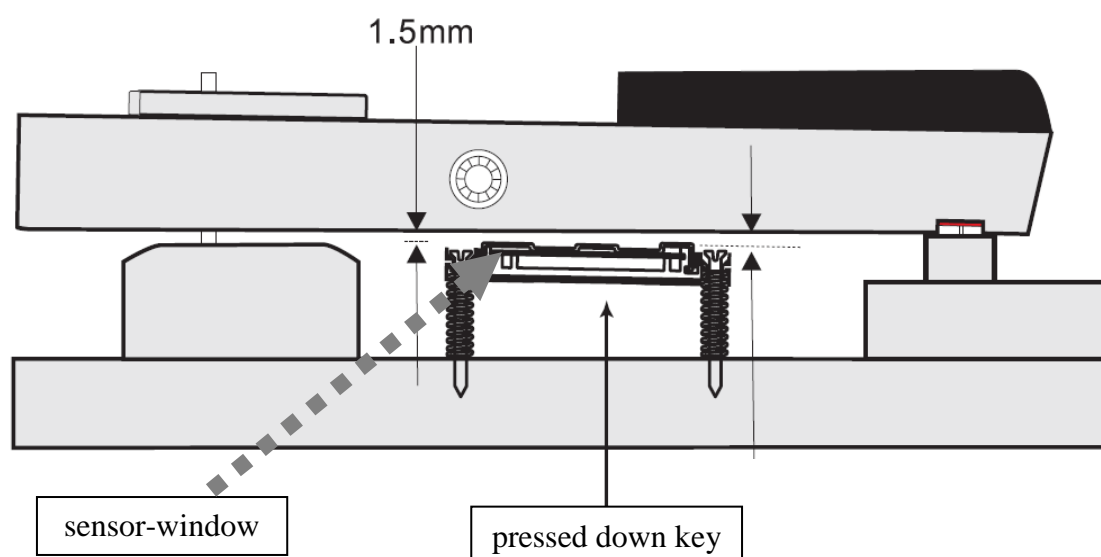


- e. Locate keys #2 and #86 (both are black keys) and have them ready for installing. They will be needed for checking the alignment of the key sensor rail.
- f. Fit the key sensors rail in-between the center rail and the front rail.
- g. Install the black keys #2 and #86 so that the correct position and height of the sensor rail can be determined. The sensor-window needs to be placed underneath the reflector strips.

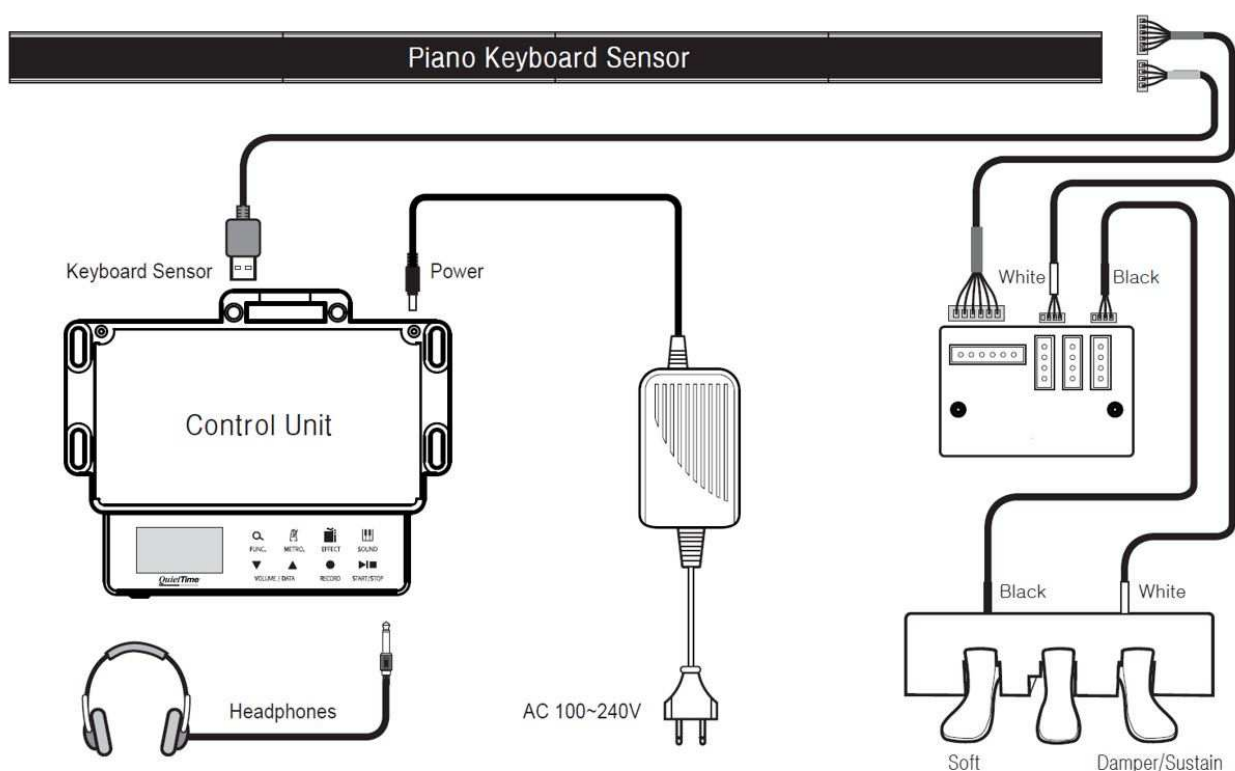
- h. Once you have found the correct key sensor rail position you can fit the screws and springs for securing and adjusting the height of the key sensors rail.



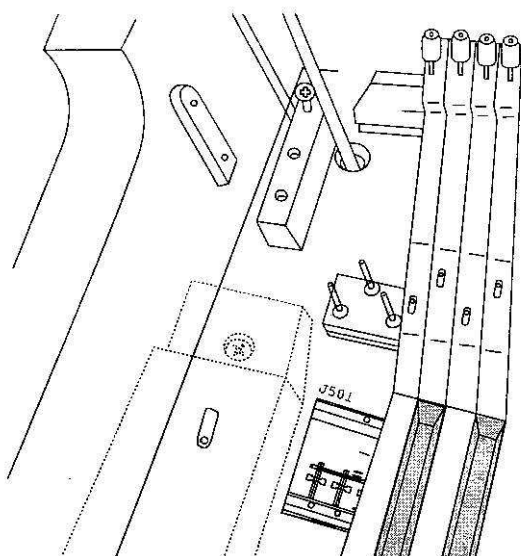
- i. Tighten up the screws until the correct height is attained (approximate).
- j. Now put other black keys in the piano, around the screw positions. Then adjust the height as precisely as possible. The clearance between the bottom edge of the black keys when pressed down and the upper edge of the sensors should be $1,5 \text{ mm} \pm 0.5 \text{ mm}$.
- k. Then move the aluminum bar in the brackets till the key sensors are well aligned with the keys. Each sensor should be under the corresponding key. It can be at the edge of the key, but NOT outside of the key.



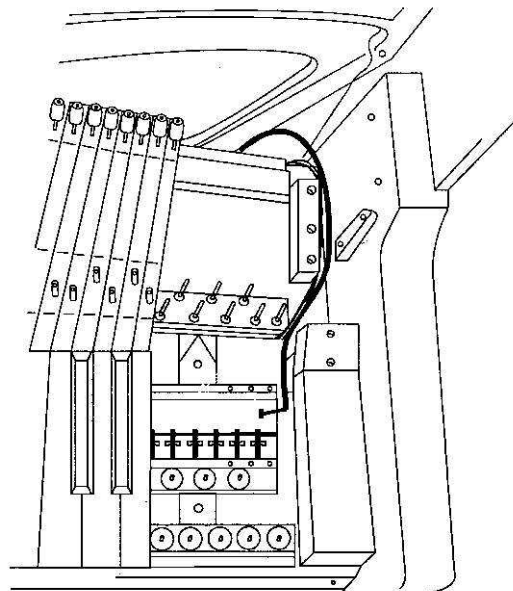
QuietTime GT-2 mini 2 / Magic Star V6 connection summary



- Legend:**
- Piano Keyboard Sensor = Keyboard Sensor Rail
 - Control Unit = GT-2 mini 2 and/or Magic Star V6 tone generator
 - Headphones = Headphones
 - Power Supply = Power Supply
 - Soft (Black = 3) = Left Pedal (Schwarz =3)
 - Center Pedal (Yellow = 2) = Middle Pedal (yellow = 2) - optional
 - Sustain (White =1) = Right Pedal (white = 1)



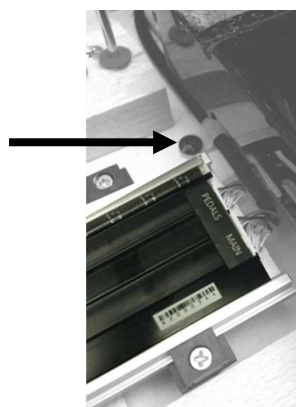
A. J 501 6P cable



B. J503 8P cable

1. Cable to the Control Unit

- Lay the cable to a position that is easy to reach, that allows maintenance work on the piano (e.g. taking the action out etc.) and that allows using the piano without damaging the cables (e.g. fall board open/close etc.).



3. Fitting the pedal sensors in the piano (please refer to the notes in the Appendix if you have to fit them in a grand piano)

There are two pedal sensors. One is for the right pedal (sustain) and the other is for the left pedal (soft). Each sensor is marked. Each pedal sensor consists of two parts: one part is the securing base and the other part is the sensor module.

The QuietTime systems from the S-Series onwards offers the option of having a sensor at the middle pedal.

A. The sensors should be installed next to the pedals

(The pedal moves downwards when the pedal is depressed.)

- Position the pedal sensor next to the pedal that will operate the sensor. 12 mm is the normal clearance between the pedal and the sensor.

- Use the screws supplied by us to secure the base in place.
- Loosen the sensor module screws and readjust the angle and height of the sensor module. Retighten the screws when the correct position has been realized.

See: Page 23 Fig “II-F: Overview of Pedal Switch Assembly”)

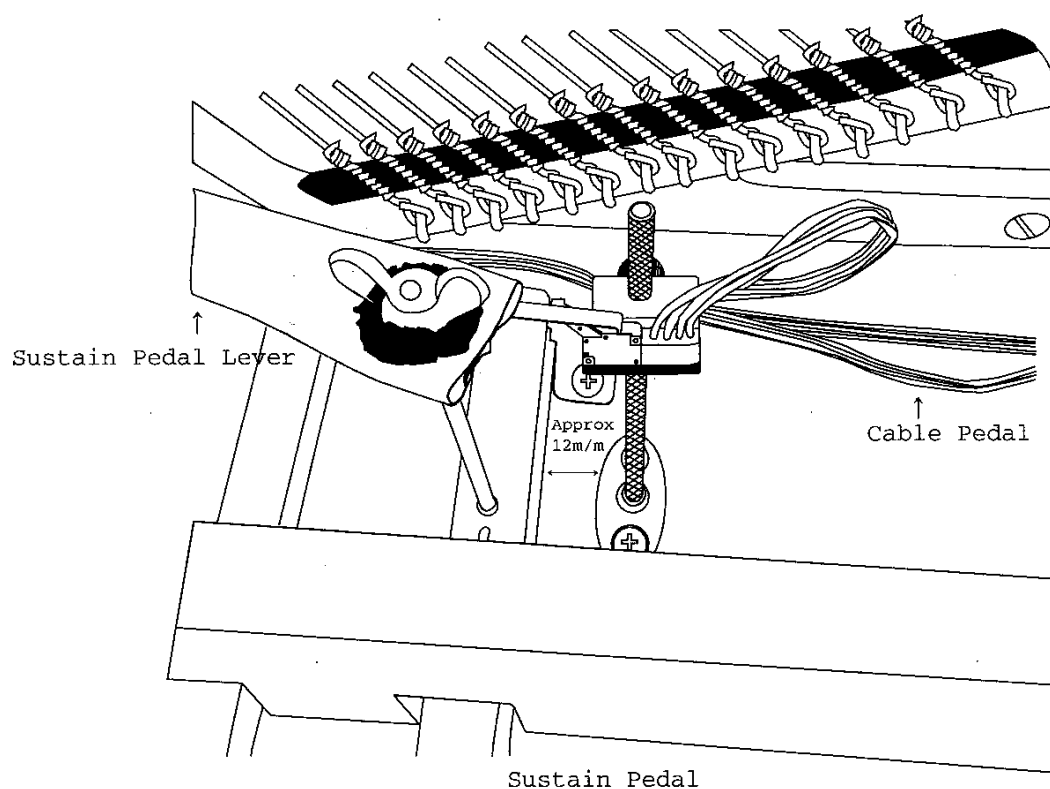
B. Fitting the pedal sensors on the sides of the pedal rod

Loosen the sensor module screw and pull the sensor module away from the base.

Reposition the sensor module upside down on the base.

Install the other one in the same way so that the sensors are mounted alongside the pedals.

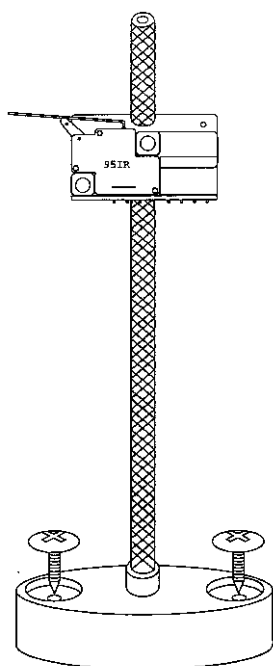
(See: Page 24 Fig “II-E: Assembly Pedal Switch at Rod Side”)



Legend:

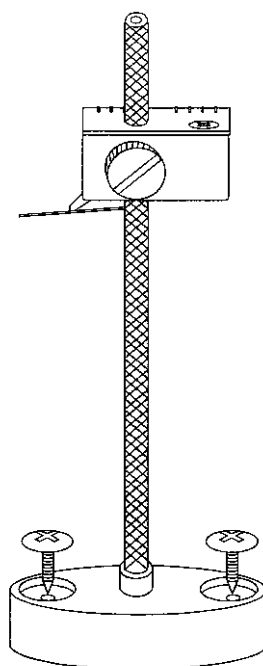
Sustain Pedal Lever = Right pedal lever
 Sustain Pedal = Right pedal
 Cable Pedal = Pedal data cable

II-F. Overview of Pedal Switch Assembly



A. Press Down Type

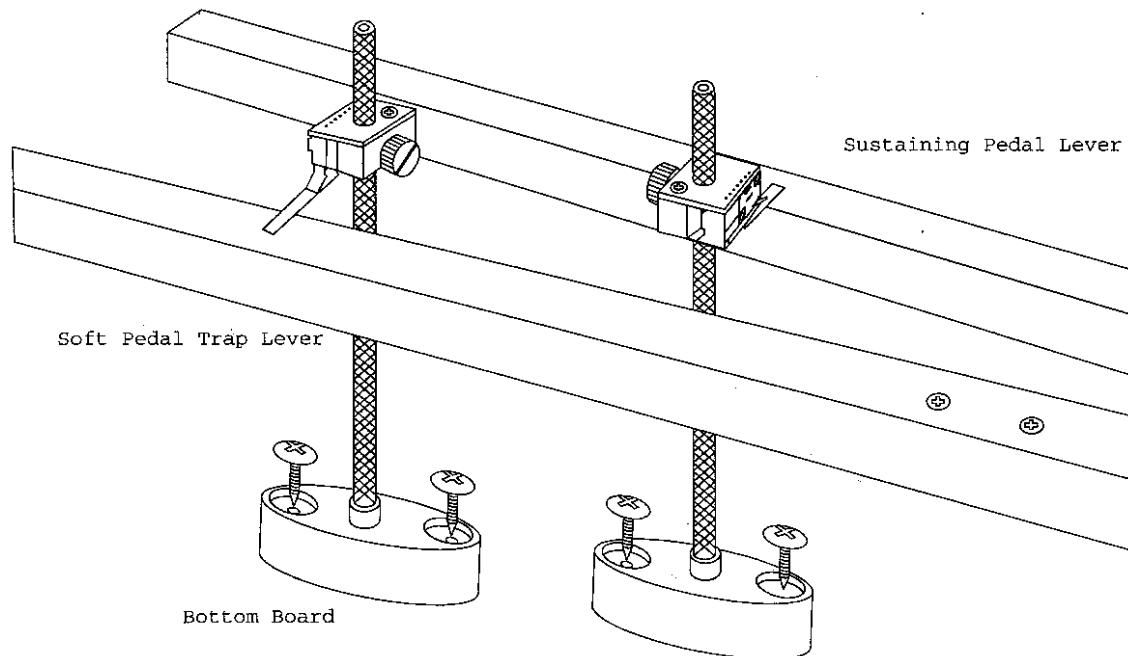
- Sensor switches when the pedal lever is moved downwards.



B. Press Up Type

- Sensor switches when the pedal lever is moved upwards

II-D. Assembly of Pedal Switch



Legend:

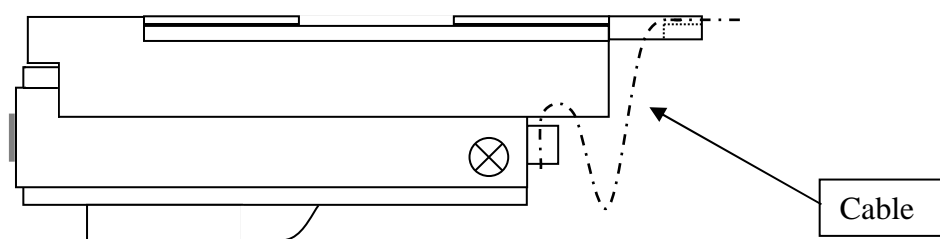
Sustaining pedal lever = Lever that comes from the right pedal
 Soft pedal trap lever = Lever that comes from the left pedal
 Bottom board = Piano's bottom board

II- E. Assembly Pedal Switch at Rod Side

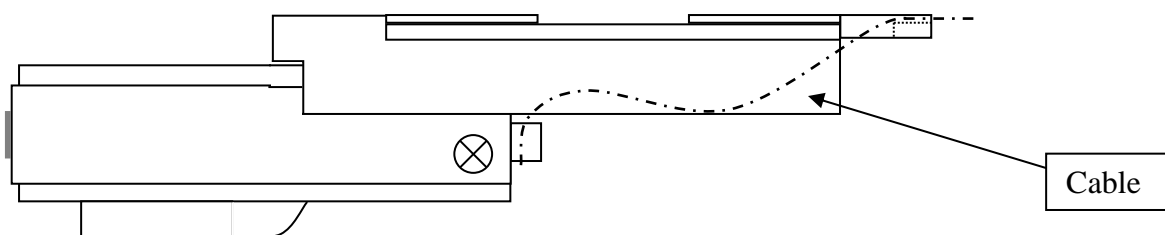
4. Fitting the Control Unit

- Fit the control unit under the piano, on the right side.
- Install the cables so, that when the drawer is closed they fold into a U-shape and straighten out only when the drawer is opened. This way of installation makes sure that the opening and closing mechanism of the control unit is functioning correctly.

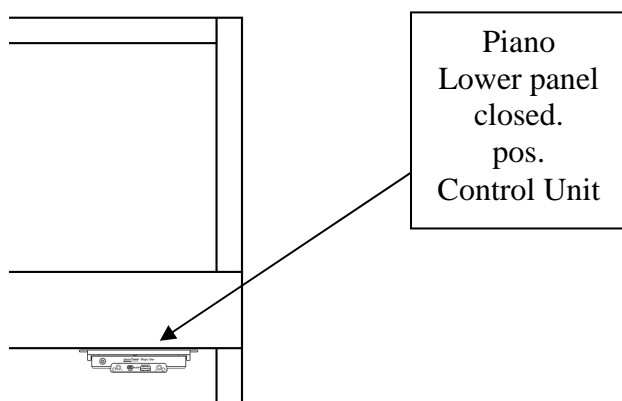
INFO: The control unit support plate is screwed on, so that it lies flat under the piano. The front edge of the support plate should be fitted so that it lies flush to the front edge of the piano.



Control Unit, side view, retracted



Control Unit, side view, extended



Example, positioning Control Unit at piano

5. Trouble shooting

Problem	Countermeasure
1. Uneven key volume	The QuietTime System must be calibrated after being installed in order to ensure that it works correctly.
2. The light is on but no sound	Check the volume setting. Check that the headphones are OK. IF the demo melody and the metronome work OK, you should check to see if the cable coming from the key sensor rail has been damaged and that it is plugged in correctly.
3. No power	Check to see if the mains plug has been plugged into the socket and that the tone generator is also plugged in. Check that the socket voltage is correct.
4. The tones are mixed up.	Press the pedals down once to see if the tone generator software is jumbled up. Switch the system off and back on.
5. Defective Key Sensor	Contact your dealer.
6. Poor sensitivity	Contact your dealer.

6. Calibrating

The keyboard has to be calibrated after the **QuietTime** System has been installed in your piano.

The reason for this is that the tone generator requires information about each key's movement path.

ATTENTION!

Only a few or even non of the keys will function correctly if you do not run a calibration. It might be necessary to run the calibration once again if over time the position or the form of the keys has altered.

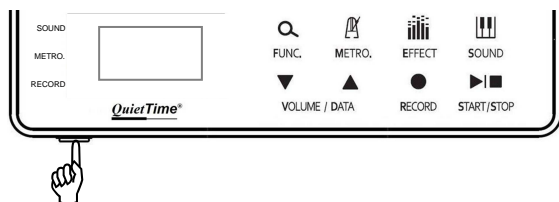
How to calibrate the keys

Conditions:

- The keyboard sensor cable and the power supply must be connected up to the QuietTime tone generator. The tone generator must be switched off.
- The stop rail lever must be in the position "Normal" (piano can be played normal).
- You must ensure that there is nothing on the piano that can press a key down.

Bei QuietTime GT-2 mini 2

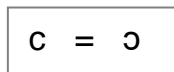
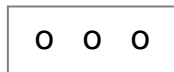
- Make sure the GT-2 system is turned off.



- Turn the GT-2 on.
- Shortly after the switch-on (approx. 1-2 sec) press and hold the **button METRO**. After 3 seconds let go of the button METRO.

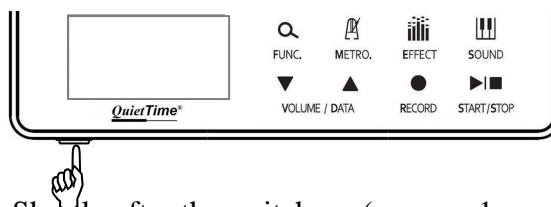


- You will see the following sequence shown on the display:



Bei QuietTime Magic Star V6

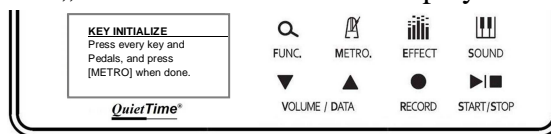
- Turn the system Magic Star on.



- Shortly after the switch-on (approx. 1-2sec) press and hold the **button METRO**.



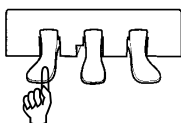
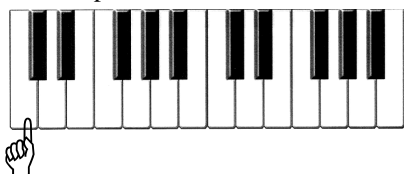
- Let go of the button METRO when you see „KEY INITIALIZE“ on Display.



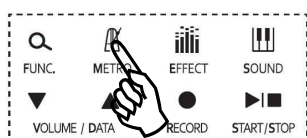
QuietTime GT-2 mini 2 continued

- Press each of the 88 keys and the pedals fully down, one after the other, using your normal force and speed. **Hold each key down until you hear a corresponding sound in your headphones.** Only after hearing the sound, you can release the key and begin with the next one. continue until you played every key. After that push the pedals down, one after the other: the left (, the middle*) and the right pedal. Release only when you hear a confirmation sound then begin with the next one.

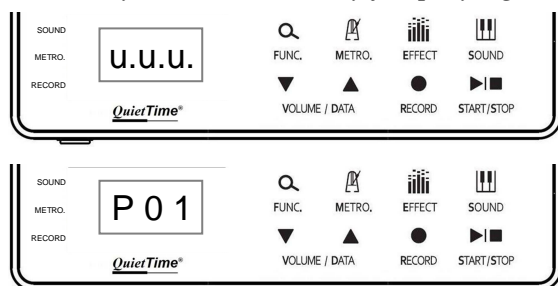
*It's possible, that you will not hear a confirmation sound! The support of the middle pedal is optional.



- Afterwards to terminate the calibration process press the METRO button once again.



INFO: It will take a few seconds for the data to be saved in the permanent memory. The system returns to the HOME menu afterwards and your QuietTime System is now ready for playing.

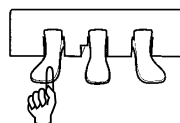
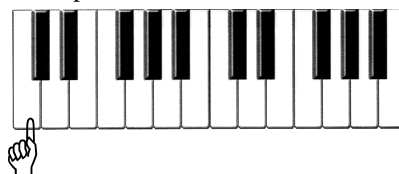


Display of the Home menu

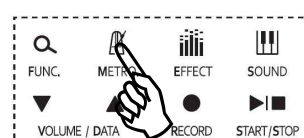
QuietTime Magic Star V6 continued

- Press each of the 88 keys and the pedals fully down, one after the other, using your normal force and speed. **Hold each key down until you hear a corresponding sound in your headphones.** Only after hearing the sound, you can release the key and begin with the next one. continue until you played every key. After that push the pedals down, one after the other: the left (, the middle*) and the right pedal. Release only when you hear a confirmation sound then begin with the next one.

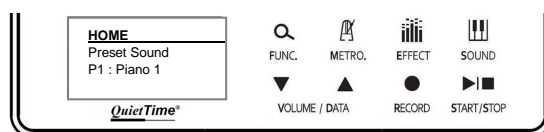
*It's possible, that you will not hear a confirmation sound! The support of the middle pedal is optional.



- Afterwards to terminate the calibration process press the METRO button once again.



INFO: It will take a few seconds for the data to be saved in the permanent memory. The system returns to the HOME menu afterwards and your QuietTime System is now ready for playing.



Display of the Home menu

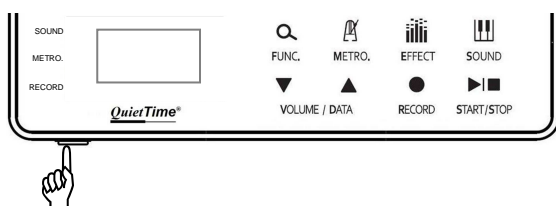
7. How to readjust single keys

The calibration on the previous page should ensure that all of the keys are set to the same sensitivity.

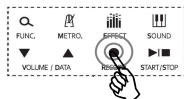
However, if you are of the opinion that certain keys play too loudly or too softly, please use the following procedure to readjust the sensitivity of the keys separately.

QuietTime GT-2 mini 2

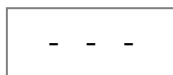
- Make sure the GT-2 system is turned off.



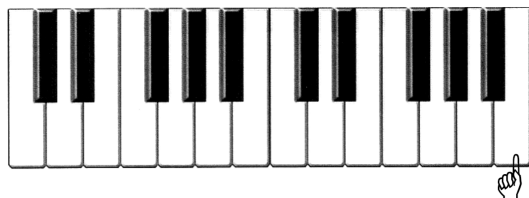
- Turn the GT-2 on.
- Shortly after the switch-on (approx. 1-2 sec) press and hold the button **RECORD**. After 3 seconds let go of the button RECORD.



- Three dashes should now be displayed as shown in the following illustration.



- Put your headphones on and then press each key to check its tone and note the volume of each key.

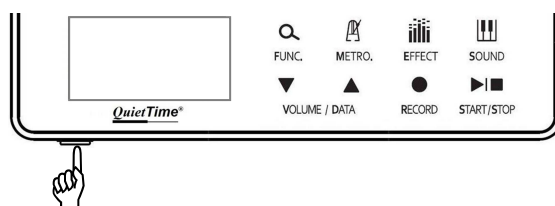


- If a key's sensitivity has to be readjusted use the arrows to increase or decrease the volume of the last key that you pressed so that the key matches the sensitivity of the adjacent keys.



QuietTime Magic Star V6

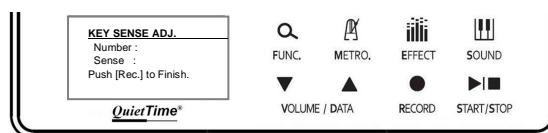
- You must ensure that the Magic Star System is switched off.



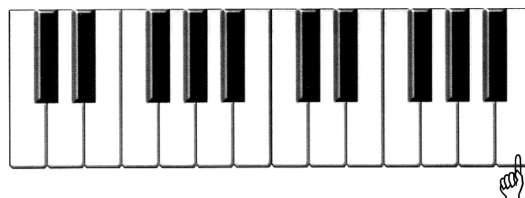
- Turn the Magic Star system on
- Shortly after the switch-on (approx. 1-2 sec) press and hold the button **RECORD**. After 3 seconds let go of the button RECORD.



- The display will now show this:



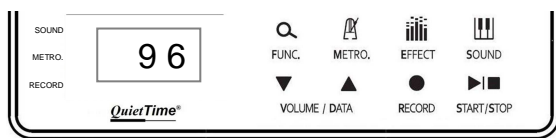
- Put your headphones on and then press each key to check its tone and note the volume of each key.



- If a key's sensitivity has to be readjusted use the arrows to increase or decrease the volume of the last key that you pressed so that the key matches the sensitivity of the adjacent keys.



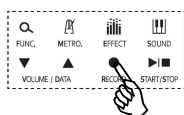
QuietTime GT-2 mini 2 continued



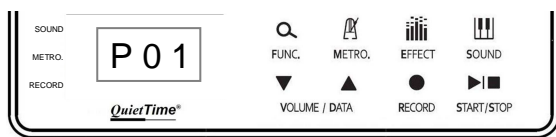
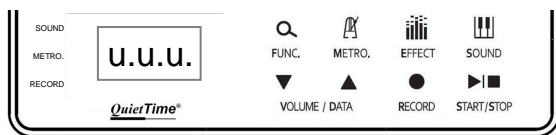
The sensitivity for the current key is shown on the display as a value ranging between on 000 - 255.

INFO: The last value that was displayed for the previous key will be saved automatically when you change to another key.

- Press the RECORD button once again when you have finished readjusting the keys that you wanted to readjust to terminate the readjustment process.

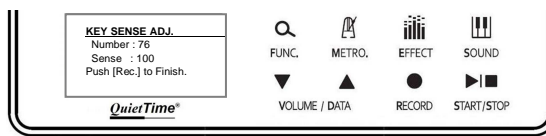


INFO: It will take a few seconds for the data to be saved in the permanent memory. The system returns to the HOME menu automatically afterwards and your QuietTime System is now ready for playing.



Display of the Home menu

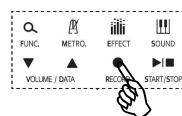
QuietTime Magic Star V6 continued



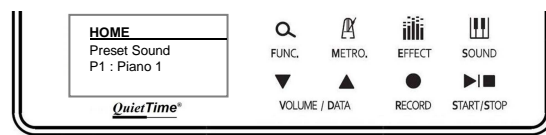
The sensitivity for the current key is shown on the display as a value ranging between on 000 - 255.

INFO: The last value that was displayed for the previous key will be saved automatically when you change to another key.

- Press the RECORD button once again when you have finished readjusting the keys that you wanted to readjust to terminate the readjustment process.



INFO: It will take a few seconds for the data to be saved in the permanent memory. The system returns to the HOME menu automatically afterwards and your QuietTime System is now ready for playing.



Display of the Home menu

III. Appendix: Information regarding installation in a grand piano

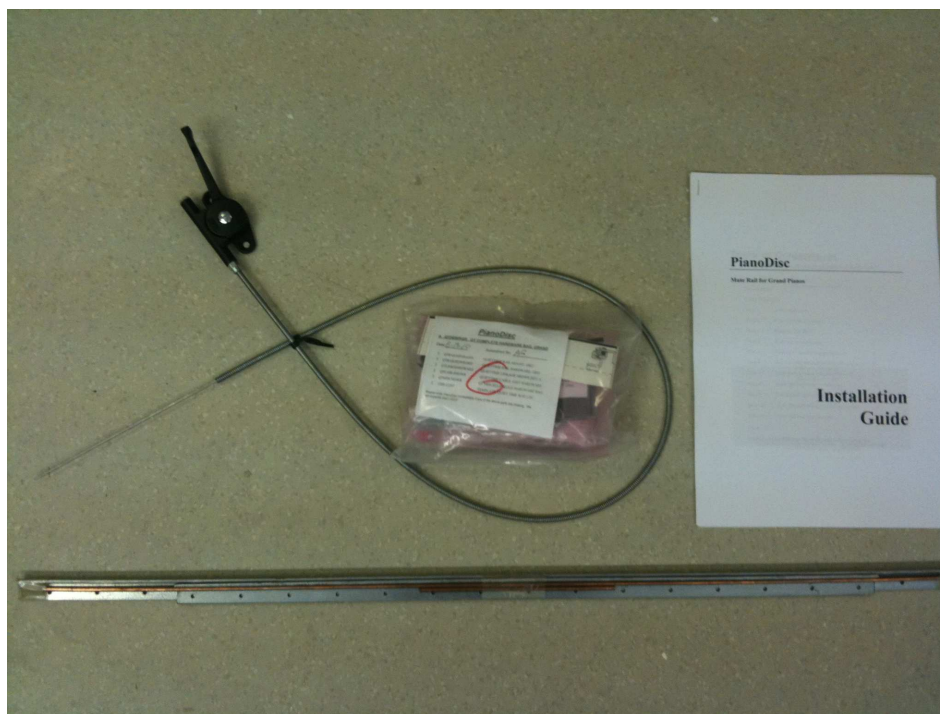
1. QuietTime Magic Star supplementary piano installation instructions

This is a supplement to the piano installation guide. Additional grand piano installation working steps are described here. The piano installation guide must be used for the installation and calibration with the exception of the sections described in the following.

NOTE: The mute rail that is normally supplied with the Magic Star system is NOT suitable for use in a grand piano. Therefore PianoDisc grand piano mute rails that have their own special installation guides must be supplied for systems that will be installed in grand pianos.

The following parts have been added to this kit if you have ordered it for installation in a grand piano:

1. PianoDisc grand piano mute rail with its own special installation guide



SUPPLEMENTARY INSTRUCTIONS REGARDING THE INSTALLATION IN A GRAND PIANO:

- A. The key sensor rail installation height is the same as the height used in an upright piano. It might be necessary to remove wood from the keyframe in order to create the clearance needed between the lower edge of the keys and the key sensor rail. **Always use the black keys to check the clearance.**
- B. An extension cable for the connection to the Control Unit will be included in the delivery for a grand piano. The cable at the sensor rail must be attached to the action in a way that it can be disconnected when the action needs to be removed from the piano.

- C.** To lay the cable from the inside of the grand piano to the outside. A hole with a diameter of 35mm can be drilled through the belly rail at the treble side. Lay the cable from the key sensors and the cable from the pedal sensors through this hole.
- D.** The left and right pedal (and optional middle pedal) sensors are secured to a fluted rod with bottom plate for installation. The sensors should be mounted by the lever mechanism at the bottom of the grand piano. The fluted rods should be cut off 13 mm above the sensors and filed smooth.

TIP: The right pedal sensor can also be mounted inside the instrument in order to protect it against damage. There are photos taken of this installation position shown on the following page.

Example for the installation of the sensor for the right pedal

