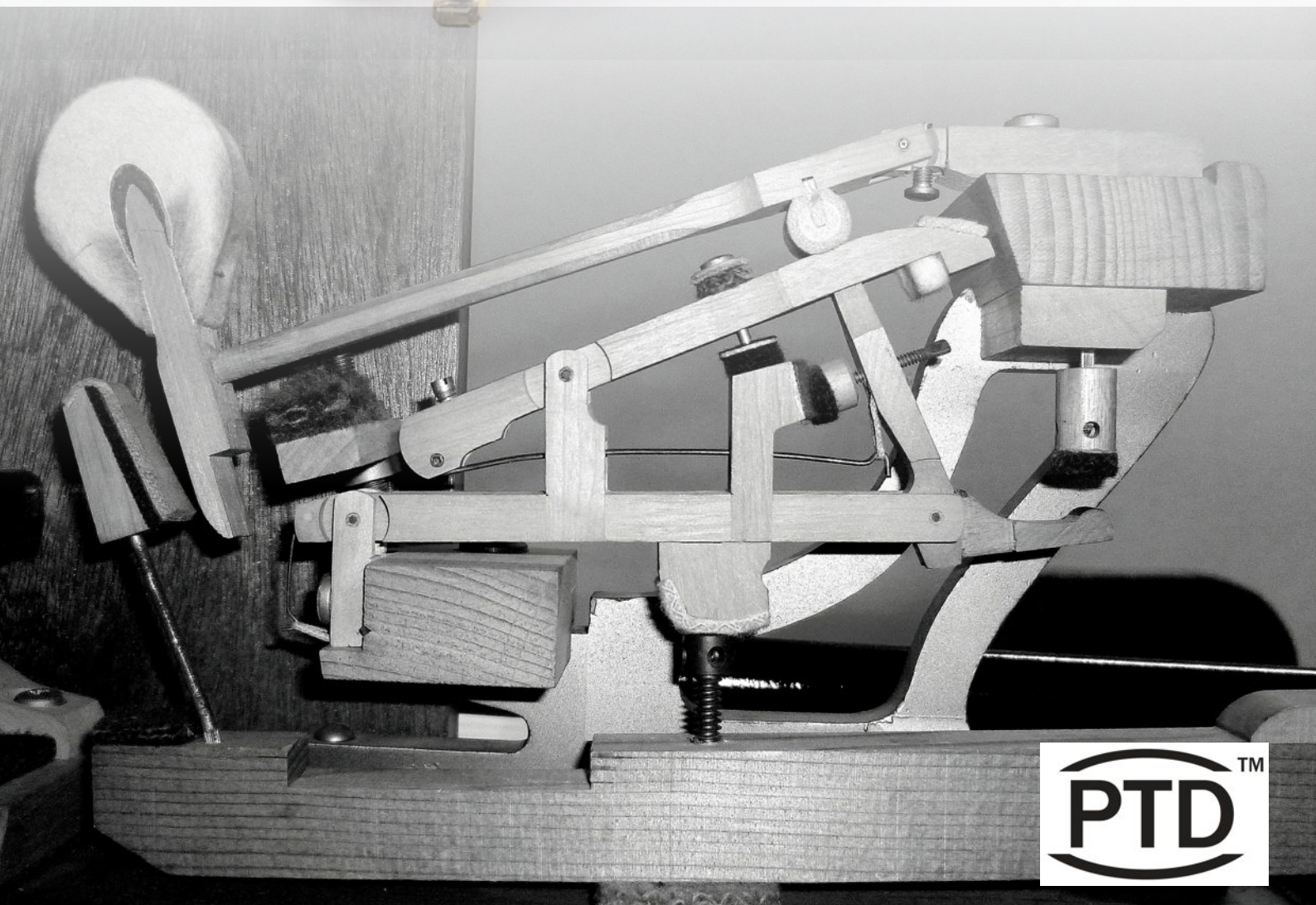
Sussex Pianos

PTD

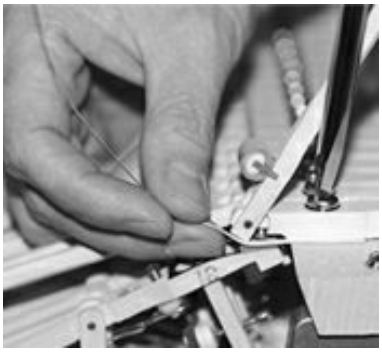
Precision Touch Design

Unlocking the potential

Improving touch and tone to new or old pianos using newly found scientific techniques. Providing grand pianos with an even touch which improves control & better repetition.
A custom dynamic range to get the best out of your piano.



PTDAE



Have the touch and tone of your grand piano optimised

Precision Touch Design (PTD) is an innovative technique to improve the touch and tone of your grand piano. It can offer a solution for a touch which is too heavy, too light or very irregular.

When, for instance, hammers have to be replaced, the touch can be maintained or improved with the use of PTD techniques. It offers a solution for those piano players who are hampered due to physical impediments. PTD is an invention of David Stanwood of the USA, who, since the nineties, has been researching the grand action, its geometry & design, and providing answers to previously unanswerable questions which both pianists and technicians have long been demanding. David Stanwood's designs are well known among concert players world wide and implemented in to many concert pianos. PTD can only be installed if the action and hammers are in good condition. Having PTD installed at the same time of a major rebuild will result in the best outcome for the piano and owner.

Why Are Pianos So Different?

Every piano player, professional or amateur, is familiar with the phenomenon that each sounds and plays differently. There is an extensive range of grand piano makers on offer and yet you may find it difficult to find one that has everything you are looking for. Most of the time you reach a compromise, dictated by your financial capabilities or finding the right tone and touch is too difficult. Every grand piano has an action consisting of wooden, metal and felted parts. Parts that between them differ in weight when weighed on a scale.
TONE Graphically mapped, the weight differences gain significance, for one sees exactly why a grand piano sounds differently in certain areas than in other areas. The graph on the right shows the strike weight (shank and hammer) of all 88 notes in a particular grand piano. The small squares represent the weight of the 88 hammers and shanks. It is immediately noticeable that the weight from note 1 to 88 does not decline evenly. This gives an uneven tone of the instrument and an uneven touch for the pianist playing the instrument. Certain areas and tones are to be struck harder than others, making the pianist work harder.

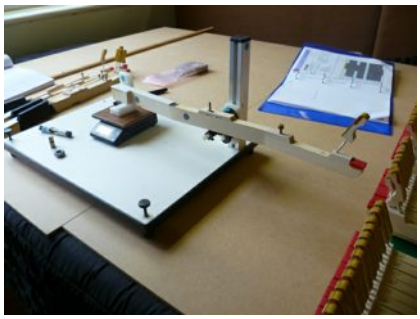
PTD™

Grand hammer and shank

<u>Touch</u>

David Stanwood has mapped out everything concerning the performance of grand piano actions in relation to weight & ratio. Traditionally, technicians adjust key weight by placing weights on the keys and measuring how much weight is needed before the key starts to move. Once this is achieved, lead weights are then added to the key. However, we must realise that "Down weight does not indicate the play weight". But while one piano with a 50 gram down weight may feel normal when played, another piano with a 50 gram down weight may feel heavy or even light by comparison. In fact, down weight has very little to do with how the piano feels to the pianist when it is played. When the key is moved at higher speeds during playing, much higher forces are needed to overcome the inertia of leveraged weight components. These forces are into hundreds of grams for medium volume playing and into thousands of grams in fortissimo playing.

<u>Using PTD</u>, we can adjust the action to give a balanced feel by adjusting a combination of weights in hammers and keys, and the ratio of the key. The tone also improves and we can customize the piano to its surroundings. A large room or concert hall will benefit from a heavy hammer to increase dynamic range but a small room will benefit from lighter hammers so not to over power the room.
Think of playing the piano as artfully dancing up and down a staircase. With PTD the steps are very even and the staircase is just the right steepness. Without it the steps are uneven and the stair may be too steep or too shallow, requiring more difficult technique to negotiate.
Similarly, in a piano with PTD, the multiple weight components such as hammer weight and lead weights in the keys are made to a highly accurate standard thereby guaranteeing smooth transitions from note to note with an ideal voicing of the tone. The action leveraging is designed to be not too heavy or too light but matched to the physique of the player. Pianists with hand strength difficulty will hugly benfit from PTD as we can make the piano light and even, and not go to the expense of having new lighter hammers installed.

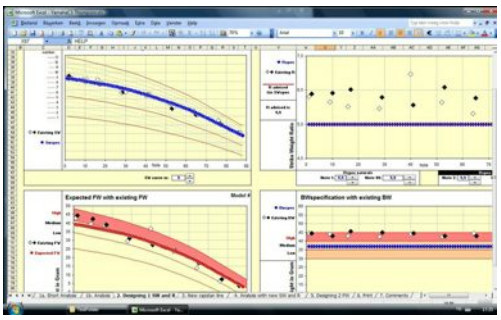
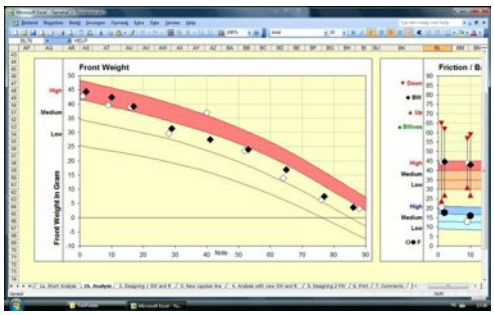


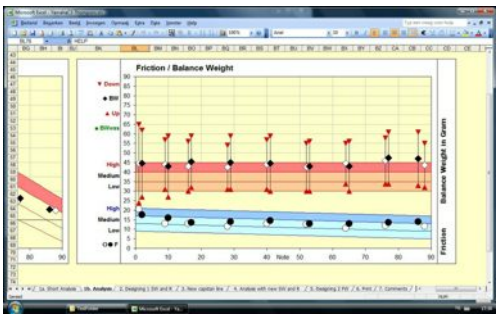
The Process

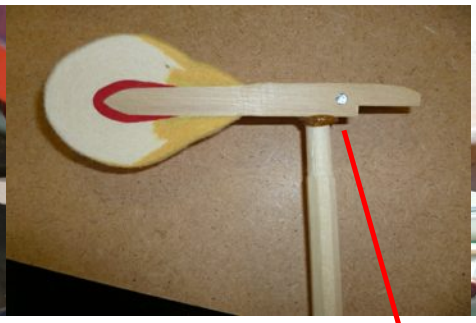
The PTD approach starts with a weight analysis of single action component of several notes across the piano. At first, only 18 notes are used for the data. We can also test the piano to see if by adding or removing weight to the hammers, we can improve tone to the customers wishes. This provides enough information for us to understand how that action is performing, and using the PTD software, we can make changes and immediately see how this will affect the feel of the action. We will show our findings and present a quotation of the work required. This will include a registration fee to PTDAE, who will assign a number to the piano if the work goes ahead. This will ensure that the design is Authenticated and all data saved for future work like hammer replacement which will require PTD data. The value of the piano will also increase as a future buyers will recognise the value of a PTD installed piano.

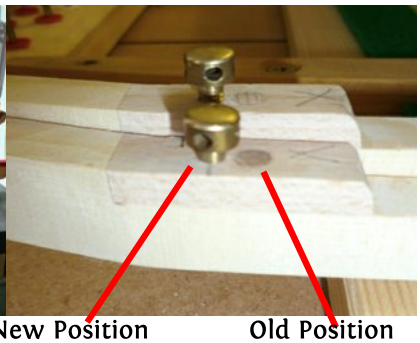
Using The PTDAE Software

In different graphs we are able to see precisely the current state of the following:-
The action ratio. The irregularity of strike weight. The irregularity of balance weight. The irregularity of keyboard-lead weighting of the keys .
Subsequently, the data is processed to a better balanced whole and the weights of single components can be adjusted. Actions provide leverages to propel the hammer to the strings. The ratios sometimes need to be changed as well as changing weights of keys and hammers. This will involve moving capstans and changing the balance point of keys.



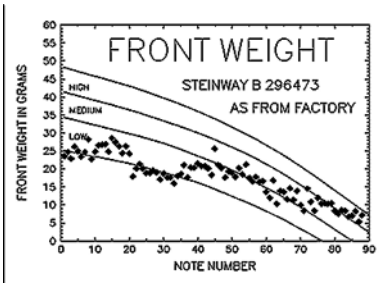



Once we have smoothed the strike weights of the hammers and changed the ratio by moving the capstans, we finally adjust the key weights by either adding or removing lead weights to the keys, to conform to the new action design. If the original lead weights are poorly placed or in bad condition, we would remove all original lead weights and use the PTD key leading protocol which is designed to fit leads in the front half of the key in a set pattern.

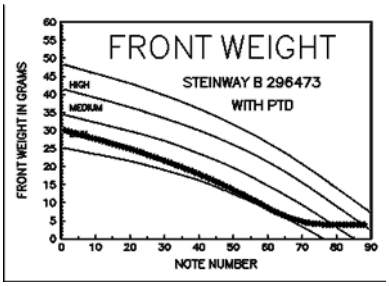
Example case on a Steinway Grand Piano

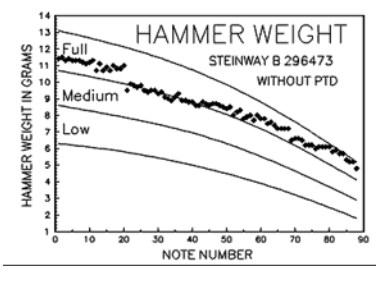
How PTD changed a Steinway model B to provide a better fuller, even tone by adding weight to the hammer. And by improving front key weight, reducing the amount of weight in the keys which reduces the truck light touch of heavy keys and making this more gradual and even. Improved repetition of keys.



PTD

Front weight was erratic, un evenness between notes and no smooth graduation. PTD has smoothed the front weight and reduced the amount of lead in the keys to aid repetition.





PTD

Hammers weights were very uneven with sudden jumps. Tests showed that adding weight to the hammers improved the tone. PTD has increased weight and smoothed this transition between notes.