

Proper Care of Upright Pianos and Grand Pianos

Or else

**How to Take Care of the Instrument to Ensure Its Perfect
Condition Even for Future Generations**

Workshop Materials

Radek Charvát in cooperation with PETROF, spol. s r.o.

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1. Introduction

The company PETROF spol. s r.o., Hradec Králové, in cooperation with its external service engineer, Mr. Radek Charvát, has prepared this workshop on how to purchase, maintain, adjust the action, scale, and treat upright and grand pianos.

The workshop is intended for teachers of elementary schools, elementary schools of arts, secondary vocational schools with teaching of piano playing, for academies of music, music faculties, for pupils and students of such schools and faculties, for parents of the pupils and students, as well as for the general public of music.

2. Little Bit of History

The first piano was manufactured in 1690 when the maker of cembalos, Bartolomeo Cristofori, made a remarkable instrument which has remained favourite until the present times.

In the course of more than 300 years of development, this new type of the instrument has gone through plenty modifications until its almost perfect form of today, both as far as the technical as well as appearance aspects are concerned. Broad use of the piano as an accompanying instrument, as a solo or orchestra leading instrument or simply as a beautiful piece of furniture, means an unmatched position among other musical instruments. This is moreover supported also by the assertion that everyone can play “something” at least on the grand or upright piano.

The Czech company PETROF was founded in 1864 when Antonín Petrof, upon returning from Vienna where he had completed his training as piano builder, built his first concert piano in Hradec Králové. At the beginning of the past century, PETROF became one of the greatest upright and grand piano manufacturers in Europe. The renown of this trademark shows evidence also of the fact that Petrof instruments could be found perhaps in every rather significant music hall at that time. Upon nationalization in 1948, the Petrof family lost its influence on the factory management. In 1991, the 4th generation of the Petrof family (Ing. Jan Petrof) was finally able to return to its proprietorship, and this generation took over the entire company again.

Today, it is the company's president, representative of the 5th generation of the Petrof family, Mgr. Zuzana Ceralová Petrofová who continues the company's renown. Using state-of-the-art development technologies, the company strives to achieve the best result possible in building of instruments. And by opening a new modern research centre with its own, large-scale, anechoic measurement chamber, with the largest size of its kind in the Czech Republic, Petrof proves that it is not indifferent to the family company tradition.

Innovation and high quality of instruments of European origin represent key elements of the company's strategy. Recently, for example, the company registered its own patent, an action with magnetic acceleration; the instruments have met the conditions of European certification and they are now allowed to bear the mark EUROPEAN EXCELLENCE; the company is also engaged in an ever growing extent in international cooperation and structures. All this makes PETROF instruments as well as the company different from cheap Eastern production.

3. Upright or Grand?

When choosing an instrument, the first thing to consider is the purpose, spatial and acoustic capacities we have at our disposal. Petrof offers the option of drawing the layout of the instrument placement in the room where the instrument is to be installed and used.

Upright piano:

The first two upright pianos were made independently of each other in Vienna and in Philadelphia in 1800.

This instrument is characteristic by the fact that its strings are fitted vertically from the bottom part of the instrument upward, and the action is installed vertically, as well. Development of this structure was asked for in the 18th century not only by those times but especially by the requirement of the French court to save space. The upright piano, even of a greater size (a taller model), does not occupy as much space as a grand piano and is used especially for practising, in smaller apartments, and due to its lower price it is also an ideal instrument for beginning players.

Remember!

☛ An average upright piano occupies the space of ca. 150 x 60 cm.

In the majority of upright pianos, the apparatus (the bar with fine felt inserted between the strings and the hammers, the so called moderator) is controlled by the central pedal or using a small lever in the side filler of the keyboard or from below under the keyboard. It also has the function of strong quietening of the entire instrument. When this function of the moderator is active, the tone timbre changes, as well. This system is suitable especially for customers who do not want to disturb the other occupants of the house and neighbours by playing in the evening. Electronic systems exist today which can be specially mounted in the instruments, thus forming the so called silent piano from a classical acoustic instrument. Upon playing a tone, the instrument does not “make” the sound but the sound is generated electronically and this electronic sound is reproduced into the headphones or external loudspeakers. The function and feel of playing of the action remain unchanged.

Taller upright piano models of the height of 120 cm and more have longer bass strings and larger surface of the resonance board than most grand pianos of smaller models up to 160 cm. Therefore they make fuller and longer lasting bass tones.

Grand piano:

Grand piano denotes an instrument in which the strings are fitted horizontally, in parallel with the ground. This structure is characterized especially by a stronger sound, especially in larger models used for concert purposes. Compared to the upright piano, the feel of the action is slightly different, given by its horizontal placement.

Remember!

☛ Medium-sized model of the grand piano occupies the space of ca. 150 x 180 cm.

Grand pianos longer than 160 cm have longer strings and a larger surface of the resonance board, they thus provide a stronger sound than most upright pianos.

The grand piano action (English) allows faster repeating of the tone (repetition) thanks to its structure and using small springs, even if the key half returns to its position only.

Upon proper adjustment, the action is much more sensitive and allows greater “dynamics” of playing.

The upper board – the piano cover – provides various sound levels pursuant to the degree of its opening, without blocking the pianist’s view.

4. Common Parts – The Pedals

Every instrument, upright as well as grand pianos, have 2 pedals at the minimum:

- The right pedal is used to prolong the tones of the whole range of the instrument;
- The left pedal is used in upright pianos to bring the hammers nearer the strings in order to weaken the tone; if pressed in grand pianos, the entire keyboard shifts, together with the action, to the side, the hammers thus hit 2 strings only instead of 3 in medium and high tones, and only 1 instead of 2 strings in the bass section. This causes an overall quietening of the instrument, just like in upright pianos.

If the central pedal is installed:

- In upright pianos, it functions as the moderator mentioned above;
- In some grand pianos, the central pedal provides the so called “system prolongement” function, serving to prolong the tones played immediately before pressing this pedal.

It is of interest that in some older PETROF instruments, 4 and even more pedals can be seen. The fourth pedal, placed on the very left, serves to prolong bass tones only; the function of other pedals differs and is of minor importance (e.g. moderator with metal elements to modify the tone timbre).

5. How to Purchase a New Instrument?

Upright or grand pianos from European manufacturers such as, e.g., Petrof, have the minimum lifetime of 100 years when handled “well” and taken solicitous care of. This means roughly 3 – 4 human generations. Therefore it is necessary to observe certain principles when buying an instrument:

☞ When buying a new instrument from European manufacturers (from 2007, guarantee is provided by marking of the instrument with a certificate and with the hologram **EEX – European Excellence**), the customer faces essentially no risk that material of low quality has been used in the production. It is good to choose the instrument pursuant to subjective sound feelings and according to the requirement for spatial capacities and needs. Another perspective is represented by the style and surface treatment, and thus possibilities of harmonizing the instrument with the apartment interior

☞ The warranty period of new Petrof instruments is **5 years** provided that all principles of proper handling are observed.

☞ Petrof offers the system **silent piano** as well as **piano disc**.

Piano disc is a state-of-the-art system which is mounted into the instruments, and upon its connecting to the computer it offers incredible possibilities of using a classical instrument. For example, when composing music, this system writes down the music by itself or the instrument itself can play the accompanying music for various compositions, without the pianist.

☞ Petrof is also the holder of a unique patent of the **magnetically accelerated action** (MAA) which helps to achieve a more pleasant and balanced feel of playing. The main philosophy of the company consists in emphasis on the highest possible quality of its instruments, on preserving the European tradition and European origin. The company wants to be distinguished in this manner from cheap instruments manufactured in Eastern countries or from their semi-finished products.

6. How to Proceed if Purchasing an Older, Used Instrument

It is necessary to be very cautious when purchasing a “second hand” instrument, without a guarantee.

☞ Do not ever buy an instrument without its prior assessment by a true expert piano engineer!

There are cases when the customer buys an instrument and upon its installation in the apartment, the piano engineer called in finds out that the technical condition of the instrument is so bad that the price of its repair may very well reach the price of a new instrument. Having the instrument assessed by your piano teacher is often very subjective, too. The teacher can

certainly evaluate the sound of the instrument but not in what environment the instrument has been, or the condition of the action, the resonance board, the cast-iron frame etc.

☞ The most essential elements to determine the quality and long-term usage of the instrument are as follows:

- Resonance board
- Cast-iron frame
- Level of wear of the action and keyboard
- Whether there are no moths and woodworms in the instrument
- Whether the instrument stays tuned etc.

☞ An expert piano engineer can also give you the age of the instrument pursuant to the so called opus (serial) number, and thus you can save yourself many problems and disappointment from a bad purchase, and last but not least, loss of money.

7. What to Avoid, which Instruments to Avoid, what to Seek?

Do not buy!

☞ Upright pianos: “With the top damper”. These instruments can no more be repaired in good quality today due to impossibility to find original spare parts.

☞ Grand pianos: “With the Vienna action”; this action has not been manufactured for about 100 years, and its technical design is obsolete. This action system has hammers which are flung up directly by the key. This is a very simple, slow system, and it does not meet the today’s requirements for playing. Professional pedagogues do not recommend this action system for beginning pianists either due to slow and uneven movement of the keys.

☞ Upright as well as grand pianos: With the cast-iron frame structure of the equi-stringed system where all strings are fitted in parallel next to each other. This structure system is obsolete and compared to the cross-stringed system, the possibility of usage of longer strings in the instrument is not utilized.

☞ In upright as well as grand pianos, it is necessary to pay attention to the fact whether the instrument has not been in an environment too humid. Even a several days long stay of the instrument in an open passage way of the house in humid weather can absolutely destroy the instrument.

Request!

☞ In upright pianos: The “bottom damper” action system.

☞ In grand pianos: The “English action” system where the hammer forms part of the action configuration which can be adjusted.

☞ In upright as well as grand pianos: The cross-stringed system of the cast-iron frame structure, i.e. bass strings are fitted cross-wise over the smooth strings.

8. What the Instrument Requires?

By proper placement, regular maintenance, cleaning, adjustment of the action and tuning, the instrument can be preserved in perfect condition even by the next generation which shall play the instrument.

By regular maintenance and cleaning, you can prevent occurrence of moths, woodworms, and in some cases even of rodents in the instrument. Materials used in the instruments, such as cashmere, felt, paper, but even wood, literally call for this.

By regular tuning and intonation, the instrument shall preserve its peculiar sound, and the players will not damage their perception of music by false tones. This is very important especially for children learning to play an instrument, in order not to deform their perception of the entire instrument.

Remember!

☞ If the instrument has not been tuned for a long time, upon subsequent tuning when a great difference in strain of the instrument occurs in a short time, damage of the entire structure may even occur.

The instrument, if tuned to the pitch of a^1 - 440 Hz, has tension of the strings equal to ca. 15 – 20 tons. When the action does not function in the way it should and the instrument is out of tune, the enthusiasm for practising tends to be very low, too. Too much of play in the action causes inaccurate running of the action, an altered feel when playing, altered dynamics of the hammer stroke, and modified tone timbre. The hammer stroke is uncertain and the feel of playing is instable. Especially children practising their instrument as well as experienced pianists recognize the difference before adjustment and tuning of the instrument and afterwards very well.

☞ The most suitable maintenance intervals are as follows:

- | | |
|---|--|
| - Tuning, intonation, checking and cleaning | 1 - 2x yearly (pursuant to the playing load of the instrument) |
| - Action adjustment | Upon 3 – 5 years
(Or even once per year pursuant to the playing load and frequency and extent of changes of the environment temperature and humidity) |
| - Regrinding of the hammer felt | Upon 8 – 10 years (or even sooner pursuant to the playing load) |

☞ Proper placement of the instrument affects markedly the lifetime and acoustic expression. Although materials of top quality are used in the manufacture of upright and grand pianos, such as, for example, resonant spruce for resonance (sounding) boards, hard massive wooden materials, wood (wooden skeleton – barrage), noble and coloured metals (the strings, agraphs), special felts and cashmeres (the action and the keyboard), it is not possible to protect them sufficiently against drastic changes of temperature and humidity.

☞ When installing the instrument, pay attention especially to the fact that the upright or grand piano:

- Is not near the window as sudden temperature changes can occur when airing the room, especially in the winter period when steep changes of temperature and sun radiation occur, damaging the surface finish of instruments
- Stands as far from the window as possible, along an internal wall of the apartment if possible, due to stable temperature of the wall
- Is not exposed to steep changes of temperature due to irregular heating (wetting and subsequent corrosion of metal parts of the instrument)
- Is not situated near the entrance door, bathrooms or other sources of direct moisture
- Is not situated at the place where small rodents, insects, and wood-decaying fungi occur
- Is treated and cleaned regularly by an expert engineer to prevent incidence of moths

☞ If you want or have to install the instrument in an apartment with floor heating, consult an expert engineer, the seller in the case of new instruments or directly the manufacturer what measures to take.

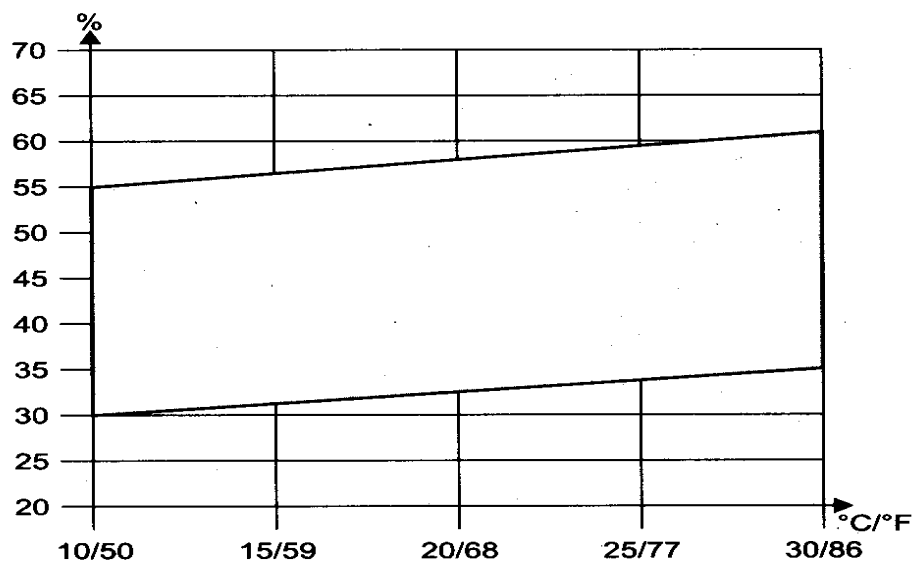
It is usual that the floor temperature is about 22° - 24°C. The instrument is thus "washed" with air of relatively favourable parameters. However, if the floor temperature is too high, for example, when the temperature starts up upon interrupted heating of a house that has cooled down, it is suitable to apply some insulation material underneath the instrument. It is good to use insulation materials or a reflection foil which shall prevent action of direct radiant heat from the floor so that the instrument does not suffer.

☞ The absolute value of temperature or relative air humidity are not decisive. What decides is the equilibrium moisture of the wood. Upon considering the common variation of temperatures in the house with unsuitable interrupted heating and the common temperature difference in winter and in summer, fluctuation of the temperature in the range of 15° - 28°C must be admitted. Then the admissible range of relative air humidity may be ca. 35% - 56% in such a range of temperatures, and 32% - 60% in suitable combination of the temperature and air humidity. It could happen that after the first heating period, the instrument shall be totally leaky. Therefore it is necessary to observe the humidity carefully and possibly use air humidifiers.

Outside of the heating seasons, problems of opposite nature can be seen sometimes, when air humidity exceeds the allowed limit. Materials used in the instruments, especially wood, felt, and glues, receive moisture from the air and change their volume in the case of high humidity. This causes worsening or disabling of proper function of the instrument, especially of the keyboard and the action, and your possible complaints cannot be accepted.

☞ Today, there are devices and systems which can maintain your instrument in an optimum environment, especially before the beginning and after the heating season when such humidity changes are most drastic. Every good expert engineer, seller or directly the manufacturer will be certainly happy to help you to solve this problem.

- Air-conditioning unit: Maintains the recommended climate in the whole room
- Special equipment (e.g. climatec): A device to be installed directly in the instrument; maintains the recommended microclimate inside directly



☞ Take into account the acoustic capacities of the area where you intend to place the instrument. This will have a great impact on your satisfaction with the acoustic expression of the instrument. In upright pianos, if placed at the wall, it is a good idea to have them placed 10 cm away from the wall at the minimum in order to allow better sound transmission from the resonance board. Also, proper wedging of the instrument in the case of uneven floor when rocking occurs has an impact on the instrument structure and tuning.

☞ Avoid using the instrument as a flower table or storage place of various things, vessels, and glasses with liquids. Damage by liquids can cause serious damage not only on the surface treatment of the instrument but also inside. Subsequent repair of such a damage is very laborious as well as costly, of course.

☞ Wipe the surface of the instrument using a slightly moistened piece of rag only. In the event of rather gross soiling, alcohol based or ammonia based cleaning preparations can be used (with great caution) in polished instruments, as well. In satin surface treatments, a weak solution of fine toilet soap can be used for cleaning.

Do not use any greasy polishes! (Diava etc.). You can order a package for treatment of surface finishes of instruments from Petrof, as well as a protective textile or imitation leather coating to protect the instrument against dust.

☞ Always make sure whether you have sufficient information on the mechanic whom you let make interventions in the instrument. Unfortunately, there are also such “individuals” who only describe themselves as specialized engineers, however, their knowledge is infinitely small. From my own experience, I know what huge damage can be done to instruments by their incompetent interventions, unfortunately, always at expense of the customer.

9. Conclusion

Even the best upright or grand piano is only a substandard instrument without regular maintenance!