

Changing a Piano String

Ben Frostad, CPT

A piano string can break under a variety of circumstances. If the strings are old and brittle, they may be prone to breaking, especially while the piano is being tuned. Occasionally a string will break due to excessive or abusive playing. But sometimes piano strings break for no apparent reason at all. It can happen whether a piano is new or old, and whether it is cared for or not. It can occur while it is being played, while it is being tuned, or very rarely while the piano is not in use. Just like with every other string instrument, sometimes strings just break.

Piano strings are made of high-tensile steel called “music wire.” Piano strings in the mid to upper sections normally range from about 30 to 40 thousandths of an inch in diameter, and average about 160 lbs. of tension per string when tuned. In the bass section, however, more mass is needed to achieve the low frequencies without either making the strings unrealistically long or lowering the tension and compromising the tone. To obtain more mass, these strings are wound with copper to make them thicker and heavier. The thicker the string, the deeper the tone.

Replacing a broken string involves several steps: removing the old wire, cutting the new wire to length, coiling the new wire to attach to the tuning pin, and finally bringing the string up to tension and seating it properly. The string must be measured carefully to ensure that the replacement matches the existing strings.

When a treble string breaks, the repair can usually be done fairly quickly using new music wire. With a bass string, however, the procedure is more complicated. As was said above, bass strings are wound with copper in order to produce the lower frequencies required for that section. The windings will differ from note to note and from piano to piano in both thickness and length. For this reason, a new bass string has to be custom ordered from a company that specializes in bass string winding. Normally the technician will have to take precise measurements and submit an order, and then wait for the new string to arrive by mail.

As an alternative to custom-ordered strings, some piano tuners use a product known as “universal bass strings.” These are specially-made strings of various sizes with hexagonal cores and copper windings that can be adjusted to correct length. Unfortunately these strings are never a perfect fit, and they tend to come with rattling, false beats, and poor tonal quality. While universals may work in some situations as a quick fix, they should be treated kind of like the dummy tire for your vehicle: they are not meant to be a long-term replacement. Because of the bad reputation they have, many high-end piano technicians refuse to even carry them in stock.

Once a new string is installed, it will begin the long, gradual process of stretching. While it is stretching, it will fall gradually in pitch. This means that a new string will begin going out of tune immediately after it is installed. The majority of the stretching process takes place during the first few weeks, although it can take up to a year or more before a new string holds its tune like the rest of the piano. The more the piano is played during the stretching period, the better. In some cases it is possible to mute off the new string so that it doesn't adversely affect the sound

of the piano as much while it stretches. Many technicians will book a follow-up visit to retune the new string a few weeks after installation.

Occasionally, depending on where the string is broken, it is possible to reuse the old string by splicing it with a length of new wire. This is usually not considered to be a permanent fix. Splicing is used most often in emergency concert situations where stretching needs to be kept to a minimum, or on bass strings as a means to get by until a new string can be ordered.

Replacing a piano string requires technical skill, strength, and consistency. It is much more difficult to change a piano string than changing a violin or guitar string. But a piano string will also last much longer. While broken strings are at some point unavoidable, maintaining your piano by having it tuned regularly can help avoid unnecessary string breakage. And regular maintenance also means that if a string does break, a skilled technician is there to rectify the situation as quickly as possible.