



SD-1 Software Version 4.1 Update

The following revisions have been made to the SD-1 software as of version 4.1, which change or supplement what is written in the SD-1 Musician's Manual.

QUANTIZATION FEATURES

The 4.1 software update allows you to define how you want to quantize your track. In other words, when you select the quantize options, you can select several different variables in quantizing your track. Using these variables can create a very live sounding sequence. The following information should be inserted at page 12 of the Sequencer Edit Functions Section:

QUANTIZE

The Quantize (or auto-correct) function can take a less than perfect track and put it right on the beat. The SD-1 uses post-quantization — that is, you first record a track, then apply the quantization later as a track editing option. You can select any note value up to 1/64 note triplets and move all notes in the track directly onto the nearest beat of that value.

- Make sure the track you want to quantize is selected.
- Press *Edit Track*, then select QUANTIZE. The display shows:

[] [] []

QUANTIZE TRACK 01 TO 1/4 NOTES *YES*

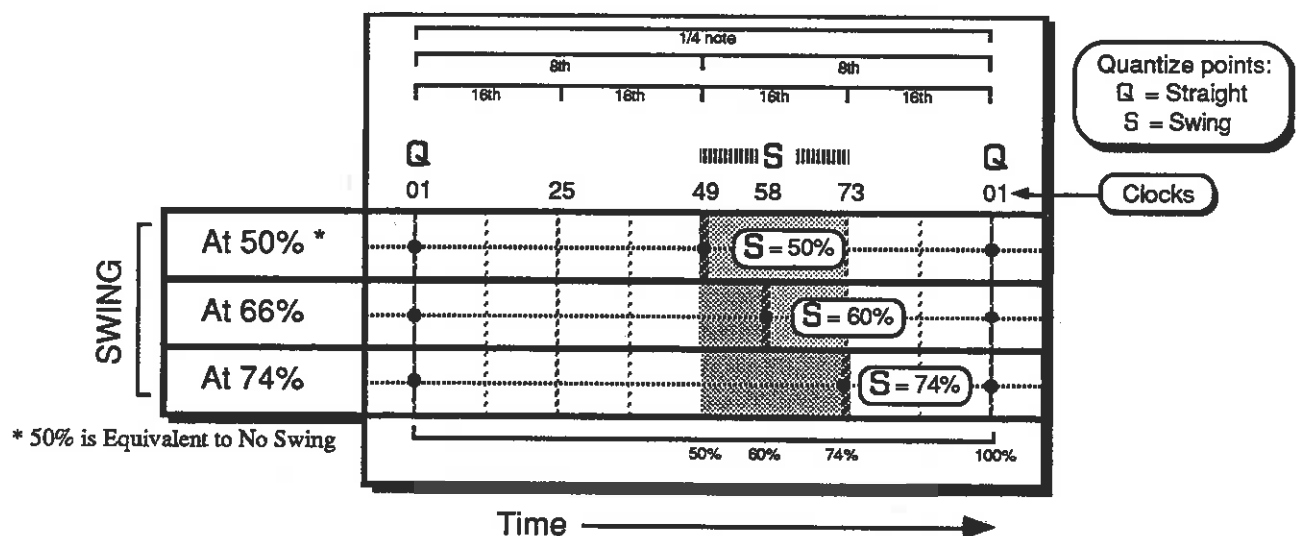
RANGE=ALL OPTIONS=OFF *NO *

[] [] []

- Use the data entry controls to specify the note value to which the track is to be quantized. Available values are:
 - 1/4 — quarter notes
 - 1/4T — quarter note triplets
 - 1/8 — eighth notes
 - 1/8T — eighth note triplets
 - 1/16 — sixteenth notes
 - 1/16T — sixteenth note triplets
 - 1/32 — thirty-second notes
 - 1/32T — thirty-second note triplets
 - 1/64 — sixty-fourth notes
 - 1/64T — sixty-fourth note triplets
- If you wish to quantize a specific range rather than the entire track, press RANGE and set the time and/or key range on the Edit Track Range page, as shown earlier in this section. If not, leave it set to RANGE=ALL.
- Press *YES* to execute the QUANTIZE command (or press *NO * to cancel). After editing, the SD-1 returns with the Play/Keep page where you can audition the results of the edit before deciding whether to keep it or not.

SWING

When you specify a SWING percentage value, you are defining the offset amount that every second quantize point (known as the swing note) will be delayed. In keeping with the swing implementation in most MIDI sequencers, the SWING range is from 50% (the same as straight quantization) to 74% (a tick before the next higher note value). A setting of 66 is equivalent to setting the quantization to triplets. The following examples show what happens when the user quantizes to 1/8 notes with various settings of SWING. Q denotes every straight 1/8 note quantize point, while S denotes the swing eighth quantize point.



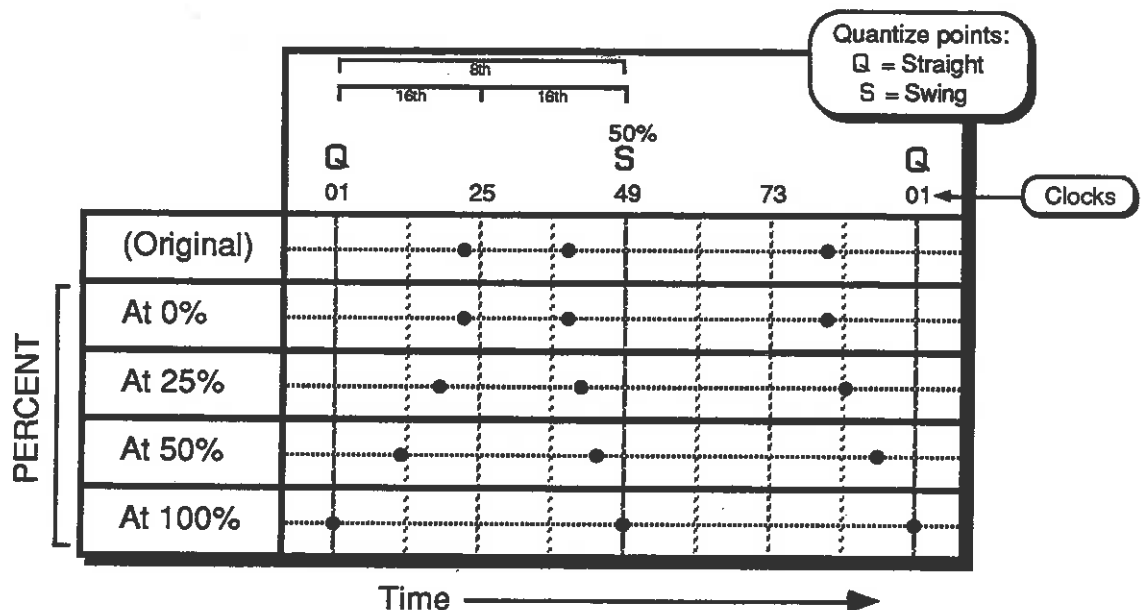
The SWING setting is the percentage of the time difference between the two Straight quantize points, and it is used to position the Swing quantize point. As the Swing setting increases from 50%, the Swing quantize point is moved closer to the *following* Straight quantize point. The Swing setting range is from 50% to 74%.

The SWING percentage actually defines the point between the two straight quantize points. In other words, at 96 ppq, 60% swing means that between two quarter notes, the swing eighth will occur at the 60% mark, or at clock 58 (0.60×96). The default value for this parameter is 50% when the sequencer is initialized. Once it is changed, the last value is always remembered.

PERCENTAGE

While the Quantize Note Value and SWING parameters determine the position of the quantize points, the PERCENT and RANDOM parameters determine where the key events will be placed in relation to the quantize points. The PERCENT parameter specifies how much the key event will move toward the calculated quantize point. A PERCENT value of zero would mean that the key events would not move any distance toward the quantize point. A PERCENT value of 100 would mean that the key event would be placed exactly on the quantize point. A PERCENT value of 50 will move the event half way to the quantize point.

The following diagram illustrates this. Again, Q and S represent the straight quantize and swing quantize points respectively. The original source track is shown, followed by the quantized versions at 0, 25, 50, and 100% quantization.



In this example, QUANTIZE is set to 1/8th notes and SWING is set to 50%. Increasing the PERCENT setting moves the events closer to the quantize points.

Notice how increasing the quantize percentage tightens up the track timing. The default value for this parameter is 100% when the sequencer is initialized. Once it is changed, the last value is always remembered.

RANDOM

After the PERCENT parameter calculates the placement of the key event relative to the quantization points, the RANDOM parameter determines if, and how much, randomization should be applied to the key placement. The RANDOM parameter defines a "window of looseness" that the key event can fall into.

A RANDOM factor of 0 indicates that NO randomization will occur. A RANDOM factor of 3 indicates that the key event will be shifted anywhere from 0 to 3 clocks in either direction from the calculated key placement. Again, an example will illustrate this more clearly. This time we'll use an event list. For our example, we'll assume 1/4 note quantization with NO (i.e. 50%) swing, and a PERCENT factor of 50. The first column shows the original source track. The second column shows where the events will be placed if quantized with no randomization. The third and fourth columns show the range that the event will fall in with various degrees of randomization. Note that the placement of the key event is calculated first with NO randomization, then the random factor is applied.

ORIGINAL	with RANDOM=0	with RANDOM=1	with RANDOM=2
1.1.08	1.1.04	1.1.03 to 1.1.05	1.1.02 to 1.1.06
1.2.12	1.2.06	1.2.05 to 1.1.07	1.2.04 to 1.2.08
1.2.95	1.2.96	1.2.95 to 1.3.01	1.2.94 to 1.3.02
1.4.01	1.4.01	1.3.96 to 1.4.02	1.3.95 to 1.4.03

The RANDOM parameter defaults to zero when the sequencer is initialized. After that, the last value is remembered.

Using the Quantize Options

Percentage quantization can be used to “tighten up” a track without placing everything exactly on a quantize point. This can make loose tracks sound tighter without sounding mechanical. It’s especially useful on passages where you want to play constantly ahead of or behind the beat. You can quantize the track to tighten up the looseness, yet still retain the rushed or laid back feel.

Keep in mind that percentage quantization can be done in stages. For example, quantize a track to 25% and keep it. Then later, if you decide you want it tighter still, quantize it again by 25%. Each time you perform a quantization, you will move the key events slightly closer to the quantize point.

Random quantization is useful for taking old tracks that have been quantized 100% and giving them a more human feel. This can be done by quantizing with the desired randomization factor. The higher the RANDOM factor, the looser the track will become (since the tracks have previously been quantized to the 100% quantize points, the PERCENT parameter will have no effect). Tracks that have not been quantized can be randomized as well. If your desired effect is simply to loosen a current track, select a quantize PERCENT of zero, and quantize with the desired randomization. This will shift each event in the track within a few clocks of its original place, but will not necessarily move it towards the quantize point.

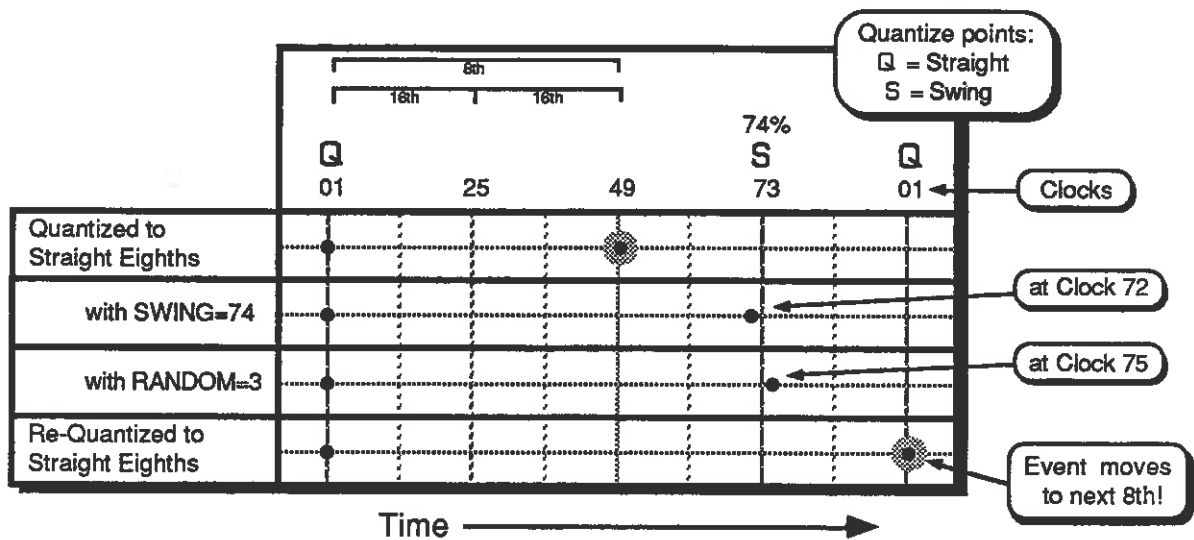
In addition, the RANDOM parameter inside the SD-1 “reseeds” itself. This means that if you quantize two identical tracks with randomization, you will get different results. Also, if you set the PERCENT parameter to zero, you can randomize a track, keep the new track, and randomize it again to get things progressively looser.

Although PERCENT, RANDOM, and SWING are interrelated, you do not have to use all of them when selecting options. By setting these parameters to their default values (PERCENT=100 - RANDOM=0 - SWING=50), you can use any one or combination of these options to quantize your tracks.

Important:

An event can be randomized and end up closer to a different quantize point. This could be a problem if you later decided to go back to a straight, no-frills quantization. This is not a fault of the quantization feature, but simply what can happen with randomization. The random factor is purposely kept low to prevent this from happening, however, there are cases where this can occur. One example would be successive randomization with the PERCENT parameter set to zero. Another instance involves using combinations of a high SWING parameter with a high RANDOM factor.

For example, let's say you have a hi-hat track that's already been quantized to straight eighths. Now you decide to give it a large swing feel, so you set SWING to 74. Any event that was at clock number 49 (a straight eighth note) would move to clock 72. But if you also specified a RANDOM of 3, the event may move as far as clock 75. Now let's suppose you keep this track, but then later on decide that you don't want a swing feel. So you setup a straight 1/8 note quantize. Only this time, the event that originally was at clock 49 is now at clock 75, so it would be moved to the next quantize point at clock 1 in the next beat (since that's the closest quantize point to that event). If you audition the track and hear that the swing event has moved up to the next quantize point, then you should keep the old track, shift the track by -3 clocks (to put the swing note closer to the original straight eighth point) then requantize with no swing to get all events back on the straight eighth points.



In this example, QUANTIZE is set to 1/8th notes, SWING is set to 74% and RANDOM set to 3, the event can be moved beyond the Swing Quantize point. In this case a subsequent straight eighth quantize will move the event to the eighth note after the one it was initially on.

