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Of the 600 existing carillons in the world, no two are identical: they differ in timbre, weight, number of bells, console, resonance, mounting, connections, etc. Also the towers that house them have an influence on the sound.

The following guide does not pretend to be complete but attempts to give direction and stimulus to composers and arrangers.

The instrument

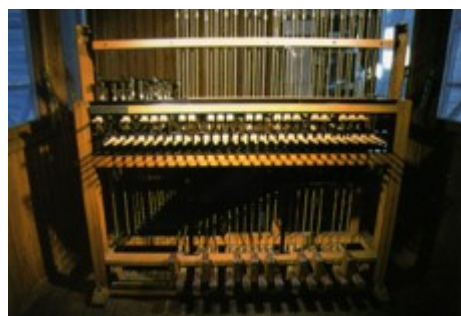
We speak of a carillon when an instrument has at least 23 (two octaves) bronze bells, tuned in a series, playable manually from a baton-type console capable of expression. Most carillons have four octaves, sometimes with a deviation in the pedal, depending on the country and/or tradition.

The following scheme summarizes the most common compasses:

- 2 octaves: 23 bells - c2, d2, e2, chromatic through c4
- 3 octaves: 37 bells - c1, d1, e1, chromatic through d4
- 4 octaves: 47 bells - c, d, e, chromatic through c4
- 4 octaves: 49 bells - B-flat, c, d, chromatic through c4
- 5 octaves: 61 bells - G, chromatic through g4 ("grand carillon")

European instruments begin in the bass with a diatonic third; American "grand carillons" are completely chromatic.

Although modern consoles have a manual keyboard that covers the entire compass of the bells, the lowest octave is rarely played by hand as it is usually too heavy. The pedals are used for this purpose, as they are coupled to the manual: 1 1/2 octaves in Europe, 2 - 2 1/2 in America.



European standard playing console

Transposition

Most carillons are transposing instruments. With reference to c (in the pedal) one speaks of heavy, medium-weight, and light carillons. The notation remains in c. Any given composition can give a different effect depending on the instrument. Virtuosoic passagework is very effective on every instrument.

A short summary:

HEAVY CARILLONS

- transpose down
- especially impressive, very expressive, sharply contrasting registers
- heavy bass bells that resonate for a long time
- to avoid: a pedal part that is too active, except for a short-lived effect

MEDIUM-WEIGHT CARILLONS

- from non-transposing up to a third higher
- expressive and contrasting ranges
- relatively resonant, yet a thinner sound in the bass range
- possibilities: both moving and static passages

LIGHT CARILLONS

- transpose up a fourth or higher
- very thin sounding, the highest octave is suggestive of an orchestral celesta
- less resonant, less contrast in timbre between ranges
- preferable: moving rather than static passages

Tuning

The 20th-century carillon is tuned in equal temperament, and historical instruments in meantone tuning in which certain intervals and tonalities can best be avoided.

Equal temperament

- pitches: enharmonic equivalents can be used interchangeably (i.e. A-sharp or B-flat)
- best tonalities: all, in principle, although five or more sharps or flats don't fall well under the hands
- considering that European carillons begin with a diatonic third in the pedal, the keys of B, B minor, C-sharp, and C-sharp minor are not recommended for these instruments.
- Examples:
 - . . . Mechelen, St. Rombout's Tower
 - . . . Louvain, University Carillon
 - . . . Peer, St. Trudo Church

Meantone tuning

- pitches: C, C-sharp, D, E-flat, E, F, F-sharp, G, G-sharp, A, B-flat, B, C
- best keys: C, D, D minor, F, G, G minor, A, A minor, B-flat
- modal compositions and some octotonic series
- contemporary music can be played on meantone instruments as long as the above series of pitches is respected
- Examples:
 - . . . Antwerp, Cathedral of Our Lady (1655)
 - . . . Turnhout, St. Pieters Church (1767)
 - . . . Tienen, St. Germanus Church (1713)

Overtones

The overtone series of bells differs considerably from those of other instruments. The most obvious is on one hand the minor third, on the other hand the structure of the series. The most important overtones are the hum tone, the fundamental, the minor third, the fifth, and the octave. What the ear experiences as the real pitch is actually the strike tone which is at the same level as the first overtone and, in comparison to the hum tone, sounds much stronger. Therefore the strike tone is notated, NOT the hum tone.

Notation

Carillon music is notated like piano music. However, the upper stave is for the manual, the lower for the pedal.

Example: Wilfried Westerlinck, "Twee kleine feestelijke stukken"

Carillon bells are not damped. Strictly speaking therefore, rests don't need to be written. Nevertheless, they can help to clarify the intentions of the composer, just as in some piano music such as that of Debussy or Messiaen where with the right pedal depressed, rests and even staccato, etc. are notated. Playing is mostly done with the fist, one key per hand. The more the hands can be alternated, the easier and more virtuosic the playing becomes.



It is possible to play multiple notes with one hand.



Much more difficult to play: multiple notes in the left hand in the midrange.



Playing with a flat hand enables a double grip (two notes per hand), notes, chords, and even clusters. Intervals are limited in each hand to an augmented fourth. The easiest are combinations of diatonic keys or combinations of chromatic keys. The smaller the distance, the faster one can play.

Example: Jo Van Eetvelde, "Preludium"



Thirds:

Example: Willem Pijper, "Passepie"

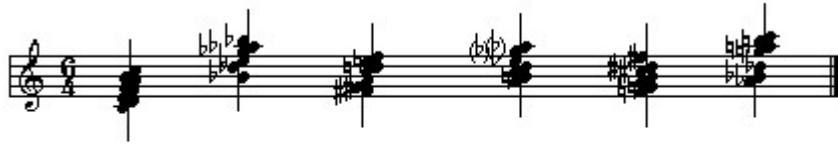


Fourths:

Example: Sjef van Balkom, "Sonatine II"



Clusters:



Note: the combination of diatonic and chromatic clusters in one hand is not possible. A double grip between a diatonic and a chromatic note is possible but is a bit awkward. A succession of double grips limits the tempo.

difficult to play:



alternative solutions:



Broken chords or solid chords

Very typical of the carillon, and often necessary, is the arpeggiation of chords. These can be interpreted in a variety of ways: from a subtle piano to an imposing forte. The indication of precisely how the chord is to be broken, the chosen pitch, the tempo, and the number of notes all determine the final effect.

Example: Werner van Cleemput, "3 Sonneries en 1 Bis"



Tremoleren

Originating in late romantic carillon music, and perhaps more characteristic of the instrument than the tradition of breaking chords, is tremolo. Originally only used for the "legato singing style," this repetition technique can even be used in contemporary works to create special effects. The principle is simple: two notes (or more, with double grips) are played rapidly in alternation.

Example: Kurt Bikkembergs, "Katelijne"

Sua ad libitum

A quick tremolo in the highest range can indeed produce a sort of "endless" effect. The effect is much more aggressive when played forte in the midrange. Tremolo in the treble range helps to sustain the resonance. The lower registers are naturally more resonant.

Example: Gaston Feremans, "Fantasia op thema's van de Byzantijnse Ritus"

Versieringen

Nearly all the classic ornaments and trills are playable on the carillon since both hands can be used.

Also possible, but more difficult, is the trill with one hand. This is only written for the right hand in the highest range.

Example

Ped

Pedal playingaalspel

The technical possibilities of the carillon pedalboard are in a certain sense comparable to those of the organ pedalboard (if one limits organ pedal technique to the toes). As mentioned earlier, it is important to be aware of the balance between manual and pedal which, especially on heavy and medium-weight carillons, can be easily out of balance.

Nearly impossible, or extremely awkward to play:

- diatonic runs
- intervals in the extremities in succession
- rapid passages with the same foot
- double pedal if not written idiomatically

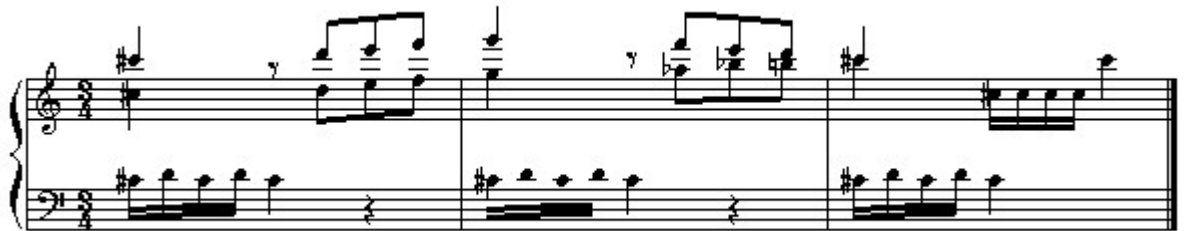
Easy to play:

- alternating feet
- repeated notes

Example: Frans Geysen, "Media Vita"Effect van de schrijfwijze

Active, cumbersome pedal parts (for example, alberti bass) are best avoided: not only are they difficult to play, they tend not to balance well with the manual part.

Short runs are possible:

Example: Kristiaan Van Ingelghem, "Beiaardsuite"

A single bass bell (such as C) played forte sounds just as full and strong as the same note "con 8va bassa" on the piano. Compositions that on piano sound harmonically rich in the middle and bass ranges will often sound too thick on the carillon. The opposite is also true: much well-written carillon music often sounds surprisingly thin and/or simple on the piano.

Example: Piet van den Broek, "Ite Missa Est"

The bass bells can be played pianissimo as long as enough time is allowed for preparation. That is to say that the carillonneur depresses the key halfway before playing it in order to have more control.

Example: Jan Hadermann, "Sonate voor beiaard"MidrangeMiddenregister

The most attractive for a round, clear, warm tone is the midrange, more or less from middle C to G2. Due to the increasing weight of the bells, a diminuendo in this range during a rapid descent is difficult to attain.

Soft playing is also possible in the midrange with the same conditions as the bass range: time for preparation. The bass and midrange are well suited for melodies, especially when complemented

with a higher voice.

Example: Jos Lerinckx, "Passacaglia"

A musical score for piano in 3/4 time, featuring a treble and bass clef. The treble clef part consists of a series of eighth-note chords and single notes, while the bass clef part provides a simple harmonic accompaniment with chords and single notes.

The higher the register, the thinner the tone becomes. This implies that a crescendo to the highest notes will miss the effect. The best solution is to use more notes in the bass and midrange.

Example: Kurt Bikkembergs, "Katelijne"

A musical score for piano in 3/4 time, featuring a treble and bass clef. The treble clef part has a melodic line with some chromaticism, while the bass clef part provides a steady accompaniment with chords and single notes.

De discant

Treble range and playing passages M en passagespel

Virtually anything is playable in the two highest octaves. Light and virtuosic passages, in which the transparent character of the upper range can be emphasized, sound wonderful.

Example: Benoit J. Franssen, "Sonate"

A musical score for piano in 3/4 time, featuring a treble and bass clef. The treble clef part has a melodic line with some chromaticism, while the bass clef part provides a steady accompaniment with chords and single notes. A blue dashed line is drawn above the treble clef staff, indicating the upper range.

BESLUIT

Anyone who is interested in composing or arranging music for the carillon is encouraged to contact the music committee of the Flemish Carillon Guild (Geert D'hollander, president Music Committee). info@beiaard.org

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