

Extensions on Diatonic Chords

These chords fall in the category of **extended tertian harmonies**, and contain five or more pitches, which requires a selection of notes for four parts. Chords with extensions appear primarily in **root position**. An extension may be analyzed as an essential harmonic tone or as an unessential non-harmonic tone (appoggiatura or accented passing tone).

Beethoven, Piano Sonata in B-flat Major, Op. 22, III

A musical score in 3/4 time, B-flat major, showing a sequence of chords in the bass line. The chords are I, V⁹, I, I, V⁹, I, I⁷, V⁹, and vi. The V⁹ chord is specifically labeled with a '9' below it.

The Dominant Ninth (V⁹), Eleventh (V¹¹) and Thirteenth (V¹³)

The Dominant 9th (V⁹) chord constitutes of scale degree 5, scale degree 7, scale degree 4, and scale degree 6. The V⁹ adds a M9 to the V⁷. When writing for four voices, omit the fifth of the chord (scale degree 2). The ninth (scale degree 6) is usually in the highest voice. Any alterations to the 9th are added next to it (lowered: ^b9/-9, raised: [#]9/+9).

A musical score in G major showing chord progressions in root position. The chords are I, V⁹, I, I, V⁹, I, I⁷, V⁹, and vi. The V⁹ chord is specifically labeled with a '9' below it.

The Dominant Eleventh chord adds the tonic in the highest voice to form a perfect 11th over the bass. Always omit the third of the chord so that it doesn't clash with the 11th. But continue to support the 11th with the 7th and (if possible) the 9th. You may raise the 11th with [#]11. This chord does not appear until the 20th century; most 11ths before that time can be analyzed as non-chord tones.

A musical score in B-flat major showing chord progressions in root position. The chords are I, V¹¹, I, I, V^{#11}, I. The V¹¹ and V^{#11} chords are specifically labeled with '11' and '#11' below them.

Extensions on Diatonic Chords

The Dominant 13th (V^{13}) chord adds scale degree 3 in the highest voice, to form a major 13th over the root. You may omit the fifth and 11th in this chord, but you will always retain the 7th (scale degree 4). The 13th may be lowered with a $b13/-13$. This chord also rarely appears before the 20th century.

Musical notation showing dominant 13th chords in G major. The first measure contains I, V^{13} , and I^9 . The second measure contains I, V^{13} , and i .

There are two dominant 9th chords in the following example. The first functions as a secondary dominant of the supertonic, with a 9th (m9). The lowered 9 may be indicated by $-$ or b , but the 7th remains minor unless it is indicated as otherwise in the chord symbol. When using Roman numerals the 7th without alteration reflects the key signature (here the m7 of the first V^9 —G—represents the m7 in the key of the supertonic as well).

Musical notation showing dominant 9th chords in G major. The first four measures show $C^{\Delta 7}$, $F^{\Delta 9}$, f^9 , and e^7 . The next two measures show $A^{(b9)}$ and d^{11} . The final two measures show $G^{(b9)}$ and $I^{-7(\#9)}$. Roman numerals below the notes are I^7 , IV^9 , iv^9 , iii^7 , V^9/ii , ii^{11} , V^9 , and $I^{-7(\#9)}$.

Non-dominant Ninth Chords

Non-dominant Ninth Chords comprise two categories: those build on a minor 7th chord (c^9 or Cm^9 in pop chord terminology), and those built on a major 7th chord ($C^{\Delta 9}$, C^{M7^9} or C^{Maj7^9}). In jazz theory they are taken as representatives of an extended chord built on ii or I, even if they fall on other scale degrees. Hence the pop chord symbol will always assume a minor 7th and major 9th for a minor 9th chord, and a major 7th and major 9th for a Major-major 7th chord.

The minor extended harmony

As with the dominant extended harmony, the minor 9th includes a major 9, the 11th includes a P11, and the 13th includes a major 13th.

Musical notation showing non-dominant ninth chords in G minor. The first measure contains ii^9 , V^{13} , and I^9 .

Extensions on Diatonic Chords

There are two minor 9th or 11th chords in the following example. The first functions as a **modal mixture** in the tonic, with the lowered 7th and major 9th expected of the model (strictly speaking we should indicate the lowered 7th in the Roman numeral as we would in the figured bass, but most analysts will understand it as a modal mixture chord that includes the E^b from C minor).

The second example is a **minor 11th chord**, which includes the minor 7th and perfect 11th. (Usually you would omit the third as in the dominant 11th, but it is less crucial here, as the 11th is a whole-step away from the 10th—the third of the chord—rather than the half-step represented by the major third of the dominant.)

The musical score shows a sequence of chords in a piano setting. The chords are: C Δ 7, F Δ 9, f⁹, e⁷, A(b⁹), d¹¹, G(b⁹). The figured bass below the notes identifies the chords as I⁷, IV⁹, iv⁹, iii⁷, V^{-7/ii}, ii¹¹, V⁻⁹, and I^{-7(#9)}. Dashed boxes highlight the f⁹ and d¹¹ chords.

In this excerpt from the *Sonatine* by Ravel, we find a work in minor that includes minor 9th chords on i and iv. Both chords contain a minor 7th and a major 9th, and would be represented by pop chord symbols with Fm⁹ and B^bm⁹. Note that the major 9th on i⁹ requires an accidental. It thus represents the ii⁹ “model” of a minor 9, rather than a diatonic version built on I, and would be represented as such in the figured bass. Both 9^{ths} resolve downward, although they may be retained in the following harmony (for instance, if iv⁹ moved to V).

The musical score shows a sequence of chords in a piano setting. The chords are: i⁹, iv⁹, V^{9/III}, III⁷, VI⁷, ii \emptyset ⁷, v, i. The figured bass below the notes identifies the chords as i⁹, iv⁹, V^{9/III}, III⁷, VI⁷, ii \emptyset ⁷, v, and i.

Extensions on Diatonic Chords

The major-major 7th extended harmony

It is possible, if rare, to add extensions to a major-major 7th chord, but anything beyond the 9th will clash with the raised 7th. It is much more common to find added-note harmony on the major tonic (see below).

There is one major 9th chord in the following example, which adds the major 9th to a subdominant 7th chord. Notice that we don't need to indicate the diatonic major 7th in the Roman numeral, but we DO have to indicate it in the chord symbol (which does not reference a key). The chord symbol may use either the triangle to indicate both the major 7 and major 9, or M79, that is F^{Δ9} or F^{M79}.

The second example represents modal mixture: a tonic minor 7th/augmented 9th chord, which includes the minor 7th and perfect 11th. Notice that you should indicate both alterations in the Roman numeral, as they deviate from the key signature. How would you indicate this chord with pop chord symbols? C^{#9} or C⁺⁹, as it appears to substitute a dominant type chord for the tonic. If this were not the end of the phrase, it might function as a V^{#9}/IV. Of course you've noticed that we re-spelled the augmented 9th as a minor 10th, so that it looks like we have built a non-diatonic major-minor chord over the tonic. Why do we analyze the E_b as a #9? Because it acts as an augmented 9th over the tonic, and not as the third of the chord.

A musical score for piano in C major, showing a sequence of chords. The chords are: C^{Δ7} (I⁷), F^{Δ9} (IV⁹), f⁹ (iv⁹), e⁷ (iii⁷), A(♭9) (V⁹/ii), d¹¹ (ii¹¹), G(♭9) (V⁹), and I^{7(#9)} (I^{7(#9)}). The F^{Δ9} and I^{7(#9)} chords are enclosed in dashed boxes. The Roman numerals are written below the bass line.

Added Notes: 6ths and 9ths

Quite often you will find a 6th above the root, and/or a 9th simply added to a major tonic triad, especially at the final cadence of a jazz standard. In classical music the 6th will often appear as a 6-5 or 5-6 motion over the root, but will be sustained long enough to be considered part of the chord. The added 9th does not require a 7th; it can be used alone or with the added 6th.

A musical score for piano showing three chords: I add⁶, I add⁹, and I add^{6/9}. The chords are shown in a grand staff with treble and bass clefs. The I add⁶ chord has notes C, E, G, A. The I add⁹ chord has notes C, E, G, B. The I add^{6/9} chord has notes C, E, G, A, B.