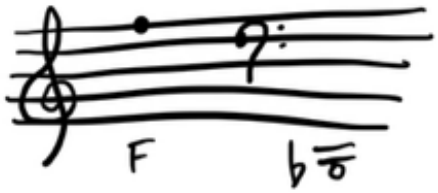
Natural Horn by Marcel-Auguste Raoux, Paris, c. 1820

Pitch: 430 Hz to 440 Hz. Possible to play at different pitches by transposing, for instance, Horn in E at 440 Hz becomes Horn in F at 415 Hz, and so on.

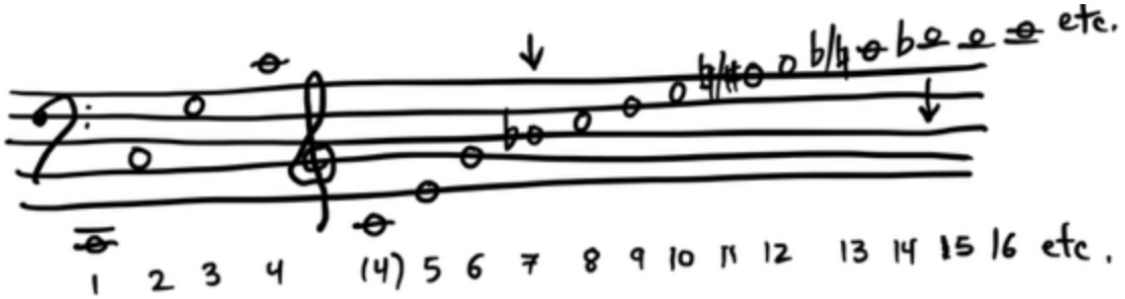
Ambitus

Highest and lowest pitches (in concert pitch). 3 and half octaves, but it's possible for some players to go higher (in theory, there is no limit), also a bit lower in some cases (here there is a limit).



Natural harmonics

A natural instrument, like the baroque trumpet and natural horn, can only play, in theory, natural harmonics which are the following notes.



Intonation

Intonation on a natural brass instrument is non-tempered, meaning the thirds are low (written E's), the fifths are about 2 commas high (written G's), the 9th harmonic is 4 commas high (5th of G: written D), the 2 written B-flats are pretty low since they are the major seventh of the C major chord. The 12th harmonic is right between F natural and F sharp, the same with the 13th which is between A flat and A natural. Of course, those peculiarities of the instrument can be, if wanted by the composer or the instrumentalist, be attenuated by the use of the right hand in the bell or with the aid of the player's embouchure.

Crooks as a transposing device

A natural horn usually comes with crooks to make the instrument longer or shorter, from B-flat basso (which is 5,6-meter long) to C alto (which is a mere 2,5-meter tube), which

transposes the harmonic series seen above to any desired tonalities. The sound of the instrument changes very much when changing crooks, and this is something baroque, classical and romantic composers knew very well about. The low crooks (B-flat basso to D) are darker, melancholic, even religious in feeling, while the high crooks (G to C alto) are louder, piercing and brilliant. The middle crooks (E-flat to F) are more mellow, singing, and versatile. Not everything can be written for any crooks. The lower crooks are difficult to control, not always very loud or reactive, while the high crooks are tiring to play and loud. The extreme crooks don't allow for very virtuosic passages, in that case it is always better to use the middle crooks.

The natural horn parts are always written in C (without alterations at the key signature):

Horn in C alto: non transposing instrument, it sounds exactly like written

Horn in B-flat alto: it sounds a tone lower than written

Horn in A alto: a minor third lower than written

Horn in A flat: a major third lower than written

Horn in G: a fourth lower than written

Horn in F: a fifth lower than written

Horn in E: a minor sixth lower than written

Horn in E-flat: a major sixth lower than written

Horn in D: a minor seventh lower than written

Horn in C: an octave lower than written

Horn in B natural: a minor 9th lower than written

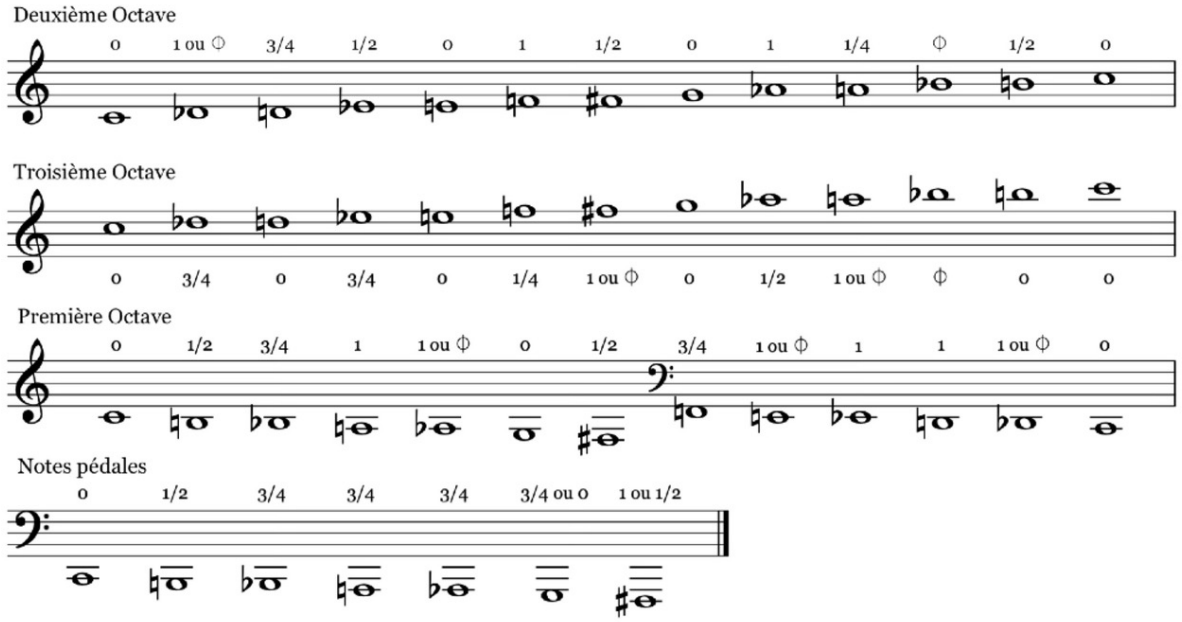
Horn in B-flat basso: a major 9th lower than written

Some tonalities are very seldomly used, e.g. B natural alto, F-sharp, D-flat, but they are possible.

Chromaticism and stopped notes

In the first half of the 18th century, some horn players figured out that by inserting the right hand in the bell of the instrument it was possible to play the notes missing in the harmonic series (diatonic and chromatic tones). The natural horn thus became a chromatic instrument capable of playing more complex soloistic music (see Beethoven Horn Sonata, Mozart Concertos and Quintets, Brahms Trio, etc.). Some notes need only a small altering of the opening of the bell of the horn, their sound is thus slightly muffled, coloured, but it can blend easily with the normal open notes. Some notes require heavy stopping of the bell, which has as consequence that the whole harmonic series is transposed a semitone higher. It is thus

possible to play every open sound a semitone higher by fully stopping the bell. The sound generally becomes softer, or very brassy if the player forces the air through the instrument, while it can only difficultly blend with the open notes. It was often used for special effects by classical composers, while the best players were able to play them elegantly. This heterogeneity quality of the instrument was valued by composers, instrumentalists and public alike, and the natural horn persisted for more than 80 years, in France notably, after the invention of the piston and a fully chromatic instrument in a more modern sense. Here are all the notes available on a natural horn with the “fingering” or hand position needed for every note:



The preceding notes available with the hand are, in theory, possible on every crook, though it does work better on the middle crooks for more complex passages. It is important to keep in mind the physical limits of the players (see the note at the beginning regarding the highest and lowest pitches available).

Extended techniques

The horn can do quite easily perfect *portamenti*, as a singer or a trombone player, if the slide stays on the same natural harmonic, e.g. from D-flat to E in the 2nd octave. This applies to almost all semi-tones from an open note to a stopped note, or vice versa. It can also gliss quite easily over the harmonics in big leaps.

Most of the extended techniques possible on the modern horn are, in theory, possible on the natural horn too, except for those involving the usage of valves. Trills are possible from G (6th harmonic) up to high C, both on a semitone or a tone, but they are sometimes difficult to achieve.