

10 Secrets to Successful Horn Playing

1. **PERFORMANCE IS 90% MENTAL!** Learn how to think! If you can hear it, you can play it. Expose yourself to great music and music making. Listen to great horn players. Experience live professional music making. Listen to recordings of worldclass ensembles. Experience various mediums and styles of music. Become a musical sponge and take everything in. Every musical experience goes into your memory bank and this is the source from which you draw.

2. **MAKE GOALS FOR YOURSELF!** Make three types of goals, long-term, medium term, short term. Where do you see yourself 10 years from now? What do you need to do to get there? What intermediate goal will help you achieve your long-term goal? What do you need to accomplish in your collegiate career to help you toward your ideal? What can you do today or tomorrow to help you toward your future? What habits can you establish that will help your long-term improvement?

3. **PRACTICE CONSISTENTLY!** Get regular time in EVERY DAY! Small regular doses are better than 1 or 2 longer sessions per week. You need to get chop-time in every day. If you only have 15-20 minutes per day, then stick to basic fundamentals to help build your chops and open your windway.

4. **LEARN SOMETHING NEW EVERY DAY!** This can be an etude, scale, solo piece, or excerpt. If you can't practice, then make it a point to listen to a recording, even a movement of a particular piece. Get music in your head as often and as much as possible.

5. **BE PERSISTENT! WORK HARD AND DON'T BE DISCOURAGED!**

We don't have a 100% success rate every day. Sometimes we have a bad day, that's life. Suck it up and move on. Remember every player was at one time where you are today. Learning is filled with plateaus. At times these seem insurmountable. However, keep at it because this barrier will eventually be passed. Remember that the Horn is a tough instrument. Expect failures and take them in stride.

6. **LEARN TO HEAR DETAILS IN YOUR PLAYING!** Don't succumb to the trap of falling in love with your playing. Develop a critical ear. When you think something is polished, record yourself. You will be amazed at what you hear. Keep stock of what you can do well and what you need to accomplish. Don't waste time doing things that are not a problem. Great players work out and solve their playing deficiencies. Eliminate weaknesses in your playing. While this may prove to be mentally painful, this is a sure-fire method of gaining success in your performance.

7. **FOCUS YOUR PHYSICAL AND MENTAL ENERGY WHEN YOU PLAY!**

Concentrate and be aware of all aspects in your performance. Hear the 'perfect' performance in your head before you play. Do not practice when you are not in top physical condition and top mental sharpness. This will cause careless playing habits.

8. **PREPARE FOR EACH PERFORMANCE TO THE BEST OF YOUR**

ABILITY! Know your stuff cold. Be able to play every note accurately in the tempo with good rhythmic precision and style. Have the ability to hear the performance in your head as you play. You will mimic this ideal performance with every subtle nuance and phrase shape. Knowing your material cold will help alleviate stage nerves.

9. **BE HONEST, DEPENDABLE AND DEAL WITH YOUR COLLEAGUES IN A**

KIND AND SUPPORTIVE WAY! No one likes a jerk. Having an egotistical person in their group is counter-productive for good music making and creates undue friction in the ensemble with inhibits good music making. If you are a section leader, learn to be supportive and be willing to help. Even if you are not at the top of the section, learn to set a fine example. Set high standards for yourself so as to not only motivate yourself but your fellow musicians.

10. **TANK UP AND BREATHE OUT!** Air is fuel for your tone. Use copious amounts of air. Develop the ability to take a full-relaxed breath and let the tone you generate ride on the wind. Practice the basics to achieve this: Long Tones, Overtone Slurs, Scales, and Arpeggios. Develop your middle range first, and then start expanding the low range. Learn to live in the low register for 1/2 of your practice time. Only by doing this will you gain enough chop strength and air supply to control the upper register. Blow, Blow, Blow! Get a gorgeous, big, fat sound and fall in love with the sound of the instrument!

Good Luck and Happy Horn Playing!

Recommended Literature for French Horn

Etude/ Technique Books

The following is a list of some books for study on the Horn. They are listed according to skill level base on factors such as range/tesitura, leaps, rhythms utilized, keys/accidentals, and incorporation of special techniques (trills, stopping, etc.). It should be noted that these classifications are merely a guide for finding appropriate literature. Many of the books listed could be classified in more than one category and contain exercises which can be useful to players at any level. Also listed are some books for developing special techniques on the Horn.

Beginning (novice – 1 year training):

*Pottag-Hovey – Method for French Horn, book 1
Robert Getchell – First Book of Practical Studies for Horn
Rubank Elementary Method by J.E. Skornicka/Hal Leonard

Intermediate (Jr. high – early High School):

Erwin Miersch - Melodious Studies for French Horn
Maxime-Alphonse – 200 Melodic and Gradual Studies volume 1
Rubank Supplementary Studies by R.M. Endresen/Hal Leonard
*Rubank Advanced Method, French Horn volume 1 by Voxman & Gower

Advanced (mid High School, College and beyond):

Bach, J.S. – Cello Suites
Bitsch – 12 Etudes
*Bordogni/Rochut – Melodious Etudes, volumes 1, 2 & 3
Concone/Sawyer – Lyrical Studies for Trumpet or Horn
*Gallay – 12 Second Horn Etudes, Op. 57
Gallay – 22 Studies for Horn
Gallay – 24 Studies for Horn
*Gallay – 40 Preludes opus 27 (including unmeasured preludes)
Gallay – 12 Grands Caprices, Op. 32
Gallay – 12 Grands Etudes Brillantes, op. 43
*Kling – 40 Characteristic Etudes for French Horn, edited Sansone
*Kopprasch – 60 Selected Studies for Horn
Kopprasch/Yancich – 90 Etudes (complete Kopprasch)
Maxime-Alphonse – 200 Melodic and Gradual Studies, volumes 2 - 6
Müller – 12 Etudes
Müller – 34 Studies, opus 64
*Pottag – Preparatory Melodies to Solo Work for French Horn
Reynolds – 48 Etudes
Schantl – Grand Theoretical and Practical Method for the Valved Horn

Technique Studies:

William Brophy – Technical Studies for Solving Special Problems on the Horn
H.L. Clarke – Technical Studies for the Cornet
Gallay – Daily Exercises for Horn
Victor Salva – 240 Double and Triple Tonguing Exercises
Fred Teuber – Progressive Studies in Flexibility and Range Development

For Natural Horn (hand-horn):

F. Duvernoy – Method for Horn
Gabler – 140 Naturhorn Etüden
Freidberg – Naturhorn Schule
H. Kling – Horn Schule - Methode Pour le Cor
Schantl – Grand Theoretical and Practical Method for the Natural Horn

Books on the Horn and Horn Playing

- “The Art of French Horn Playing” by Philip Farkas
- “The Art of Brass Playing” by Philip Farkas
- “The Art of Musicianship” by Philip Farkas
- “Photographic Study of 40 Virtuoso Horn Players’ Embouchures” by Philip Farkas
- “The Horn Handbook” by Verne Reynolds
- “Horn Technique” by Gunther Schuller
- “Horn” by Barry Tuckwell
- “The Horn” by Kurt Janetzsky and Bernard Bröchle
- “The Early Horn” by John Humphries
- “Mastering the Horn’s Low Register” by Randy Gardner
- “Collected Thoughts on Teaching & Learning, Creativity & Horn Performance” by Douglas Hill
- “Extended Techniques for the Horn” by Douglas Hill
- “Living Dangerously with the Horn” by David M. Kaslow
- “Philip Farkas: Legacy of a Master” by M. Dee Stewart

Solo Literature for Horn

Essential Solos:

Listed here is the solo literature most requested for University/ Professional Auditions.

- Beethoven -Sonata, Op. 17
- Dukas -Villanelle
- Glazunov -Reveries, Op. 24
- Hindemith -Sonata for Horn and Piano
- W.A. Mozart -Concerto No. 1 in D Major, K.412
-Concerto No. 2 in Eb Major, K.417
-Concerto No. 3 in Eb Major, K.447
-Concerto No. 4 in Eb Major, K.495
- Saint-Saens -Morceau de Concert
-Romance, Op. 36
- F. Strauss -Concerto, Op. 8
- R. Strauss -Concerto No. 1, Op. 11

Selected Solo literature organized by Historical Period:

BAROQUE

- Corelli: Sonata in F Major; Sonata in g minor
- Handel, arr. Reynolds: Third Sonate
- Senaille-Eger: Allegro Spiritoso
- Telemann: Concerto in D;
Adagio and Presto

CLASSICAL

- Beethoven: Sonata, Op. 17
- Danzi: Sonata in F; Sonata in E-flat
- Haydn, Joseph: Concerto No. 1 in D
Concerto No. 2 in D
- Haydn, J. Michael: Concertino
- Krufft: Sonate in E Major
- Mozart, WA: Concerto No. 1 K. 412; Concerto No. 2 K. 417;
Concerto No. 3 K. 447; Concerto No. 4 K. 495;
Concert Rondo K. 371
- Rossetti: Concerto in Eb Major
- Stamitz, K: Concerto in E-flat

ROMANTIC

Chabrier: Larghetto
Cherubini: Sonata No. 1 (F major) and Sonata No. 2 (D minor)
Glazunov, A: Reveries, op. 24
Gliere: Concerto in Bb Major, op. 91; Intermezzo, op. 35; Romance, Op. 36
Lorenz: Fantasie for French Horn
Mercadante: Concerto
Nielsen, Carl: Canto Serioso
Rossini, G: Prelude, Theme et Variation; Introduction, Andante et Allegro
Saint-Saens: Morceau de Concert; Romance, op. 36; Romance, op. 67
Schumann: Adagio and Allegro
Strauss, F: Concerto, Op. 8; Nocturne, Op. 7;
Theme and Variations; Seaside Impressions
Strauss, R: Concerto no. 1, Op. 11; Andante;
Concerto no. 2 in Eb
Weber: Concertino

20th CENTURY/ CONTEMPORARY

Abbott, Alan: Alla Caccia
Adler, Samuel: Sonata for Horn & Piano
Arnold: Fantasy for Horn
Atterberg: Konzert
Bakaleinikoff: Canzona;
Cavatina
Bernstein, L: Elegy for Mippy I
Bozza, Eugene: En Foret;
En Irlande
Dukas, P: Villanelle

Hamilton: Aria
Heiden: Sonata
Hindemith: Concerto;
Sonate;
Alto Horn Sonate;
Jacob, Gordon: Concerto
Larsson: Romanza
Musgrave: Music for Horn and Piano
The Golden Echo
Nelhybel, V: Scherzo Concertante
Persichetti: Parable for Solo Horn
Planel: Legende
Schickele, P: What Did You Do Today at Jeffreys House
Tomasi, H: Chant Corse
Vinter, Gilbert: Hunter's Moon
Wilder: Sonata No. 1, 2, and 3;
Suite No. 1 and 2

Horn Orchestra Literature Short-List

Bach, Johann Sebastian	Brandenburg Concerto no. 1	(1, 2)
Beethoven, Ludwig von	Fidelio - overture	(2)
	Symphony no. 3 "eroica"	(1, 2)
	Symphony no. 7	(1, 2)
	Symphony no. 8	(1, 2)
	Symphony no. 9 "choral"	(1, 4)
Brahms, Johannes	Symphony no. 1	(1, 2, 3, 4)
	Symphony no. 3	(1)
	Variations on a Theme of Haydn	(2)
Dvorák, Antonin	Concerto for Cello	(1)
	Symphony no. 9, op.95 "From the New World"	(1, 2, 3, 4)
Franck, Cesar	Symphony in D minor	(1, (2))
Haydn, Franz Joseph	Symphony no. 31 "mit dem Honrsignal"	(1, 2, 3)
Liszt, Franz	Les Preludes	(4)
Mahler, Gustav	Symphony no. 1	(1, 2, 4)
	Symphony no. 3	(1, 2, 3, 4)
	Symphony no. 5	(corno obbligato)
Mendelssohn, Felix	A Midsummer Night's Dream- nocturne	(1, 2)
	Symphony no. 3 "scottish"	(3, 4)
Mozart, Wolfgang Amadeus	Symphony no. 40 in G minor, k.550	(1, 2)
Mussorgsky/Ravel	Pictures at an Exhibition	(1)
Prokofiev, Sergei	Romeo and Juliet Suite no. 2	(1, 2, 3, 4)
Ravel, Maurice	Bolero	
	Concerto pour piano et orchestre in G	(1)
	Pavan for a Dead Princess	(1)
Rossini, Gioacchino	"Semiramide" overture	(1, 2, 3, 4)
Schumann, Robert	Symphony no. 3 "Rhenish"	(1, 3)
Shostakovich, Dmitri	Symphony no. 5	(1, 2, 3, 4)
Strauss, Richard	Don Juan	(1, 2, 3, 4)
	Don Quixote	(2, 4)
	Till Eulenspiegels Lustige Streiche	(1, 3)
	Ein Heldenleben	(1, 2, 3, 4)
Tchaikovsky, Peter Ilyich	Symphony no. 4	(1, 2, 3, 4)
	Symphony no. 5	(1)
Wagner, Richard	"Götterdämmerung" - Rhine Journey (short call)	(1)
	"Das Rheingold", introduction (prelude)	(2, 4, 8)
Weber, Carl Maria von	"Der Freischütz" - Overture	(1, 2, 3, 4)
	"Oberon", Overture	(1)

Orchestra Literature Extended

Adams	The Chairman Dances	(1, 4)
Bach, Johann Sebastian	Brandenburg Concerto no. 1 Mass in B Minor	(1, 2) (1)
Beethoven, Ludwig von	*Fidelio - overture **Symphony no. 3 "eroica" *Symphony no. 6 "pastoral" **Symphony no. 7 *Symphony no. 8 **Symphony no. 9 "choral"	(2) (1, 2) (1) (1, 2) (1, 2) (1, 4)
Bellini	"I Capuleti ed I Montechi," Act I ("oh, quante volte...")	
Berg, Alban	"Wozzeck"	
Berlioz, Hector	*Romeo and Juliet, "Queen Mab Scherzo" Symphonie Fantastique, Op. 14 Roman Carnival overture	(3) (4)
Bernstein, Leonard	On the Waterfront Suite	
Bizet, G.	"Carmen," Act III (Michael's aria)	
Borodin, Alexander	Polovetsian Dances	
Brahms, Johannes	*Concerto for Piano no.1 *Concerto for Piano no.2 **Symphony no. 1 *Symphony no. 2 *Symphony no. 3 *Symphony no. 4 *Variations on a Theme of Haydn	(1, 3) (1, 3) (1, 2, 3, 4) (1) (1) (1) (1, 2, 3, 4) (2)
Bruckner, Anton	*Symphony no. 4 "romantic" Symphony no. 7 Symphony no. 9	(1) (1) (1)
Debussy, Claude	La Mer Prelude to the Afternoon of a Faun	(1, (2)) (1, (2))
Donizetti	"Lucia di Lammermoor," Act II & III	
Dukas	The Sorcerer's Apprentice	
Dvorák, Antonin	Concerto for Cello Symphony no. 9, op.95 "From the New World"	(1) (1, 2, 3, 4)
Franck, Cesar	Symphony in D minor	(1, (2))
Handel, G.	Oratorio "Judas Maccabaeus" "Guilio Cesare" - Act I ("va, tacito...") - Act III ("sinfonia...")	
Haydn, Franz Joseph	*Symphony no. 31 "mit dem Honrsignal"	(1, 2, 3)
Holst, Gustav	The Planets	(1, (2))

Humperdink, E.	“Hänsel und Gretel” Prelude	
Liszt, Franz	Les Preludes	(4)
Mahler, Gustav	*Symphony no. 1	(1, 2, 4)
	Symphony no. 3	(1, 2, 3, 4)
	Symphony no. 4	(1)
	*Symphony no. 5	(corno obbligato)
	Symphony no. 7	(1)
	Symphony no. 9	(1, 2)
Mendelssohn, Felix	*A Midsummer Night’s Dream- nocturne	(1, 2)
	*Symphony no. 3 “scottish”	(3, 4)
	Symphony no. 4 “italian”	
Mozart, Wolfgang Amadeus	Symphony no. 25	(2)
	Symphony no. 29, k.201	(1, 2)
	Symphony no. 40 in G minor, k.550	(1, 2)
	“Cosi Fan Tutte” Act II, aria no. 25 (“per pieta...”)	
	“Le Nozze di Figaro” Act I & IV	
Mussorgsky/Ravel	Pictures at an Exhibition	(1)
Prokofiev, Sergei	Romeo and Juliet Suite no. 2	(1, 2, 3, 4)
Puccini	“Tosca” Act III, introduction	
Ravel, Maurice	Bolero	
	*Concerto pour piano et orchestre in G	(1)
	Pavan for a Dead Princess	(1)
	Daphnis and Chloé	(1, 2, 4)
Respighi	Pines of Rome	
	Roman Festivals	
Rimsky-Korsakoff	Scheherazade	(1)
	Capriccio Espagnole	
Rossini, Gioacchino	“Semiramide” overture	(1, 2, 3, 4)
Saint-Saens, Camille	Symphony no. 3	(3)
Schoenberg, Arnold	Chamber Symphony no. 1, op. 9	(1, 2)
Schubert, Franz	Symphony no. 9 (“Great” C major)	(1, 2)
Schumann, Robert	Symphony no. 3 “Rhenish”	(1, 3)
Shostakovich, Dmitri	**Symphony no. 5	(1, 2, 3, 4)
Strauss, Richard	**Don Juan	(1, 2, 3, 4)
	*Don Quixote	(2, 4)
	Symphonia Domestica	(1, 4)
	**Till Eulenspiegels Lustige Streiche	(1, 3)
	**Ein Heldenleben	(1, 2, 3, 4)
	“Salomé”	(4)
	Le Bourgeois Gentilhomme	(2)
“Der Rosenkavalier”	(1, 2)	

Stravinsky, Igor	L'Oiseau de Feu (the Firebird) Suite, 1919 version	(1)
	Le Sacre du Printemps (Rite of Spring), 1913 version	(1, 2, 3, 4)
	Fairy's Kiss	(1)
Tchaikovsky, Peter Ilyich	Capriccio Italien	(1, 2)
	**Symphony no. 4	(1, 2, 3, 4)
	*Symphony no. 5	(1)
	Symphony no. 6	(4)
Thomas, A.	"Mignon" overture	
Verdi	"Don Carlo" Act I & II	
	"Simon Boccanegra" Act III ("eviva il doge...")	
Wagner, Richard	**"Götterdämmerung" - Rhine Journey (short call)	(1)
	"Lohengrin" - prelude to Act 1	
	- prelude to Act 2	(2)
	- prelude to Act 3	(1, 2, 3, 4)
	*"Das Rheingold", introduction (prelude)	(2, 4, 8)
	"Siegfried" - act 2 scene 2 (long call)	(1)
	- Idyll	(1)
	"Die Walküre", Ride of the Valkyries	(1, 2, 8)
	"Die Meistersinger" - Overture	(1, 2, 3, 4)
"Parsifal"	(2, 4)	
Weber, Carl Maria von	*"Der Freischütz" - Overture	(1, 2, 3, 4)
	- Hunting Chorus	
	"Oberon", Overture	(1)

** Excerpts most asked for in professional orchestra auditions, based on survey data from "Auditioning for a Horn Position in the United States" by Brian Thomas & Seth Orgel, published in The Horn Call Volume XIII No. 2 and "A New ICSOM Audition List Survey." by Dr. John Ericson, published in The Horn Call 33, no. 1 (October, 2002), 53-55 and from the International Conference of Symphony and Opera Musicians.*

*** Excerpts asked for in more than half of all professional auditions surveyed by the above sources.*

-Warmups and Technical Exercises for Horn-

compiled by Evan Chancellor

Longtones & Flexibilities

*Use suggested fingerings wherever available.

Each "flexibility" should be played slurred on only one valve combination

Longtone #1

Longtone #2

Flexibility #1

all open-----

2 only-----

1 only-----

12-----

23-----

Flexibility #4 - 4ths and 5ths

Thumb only-----

Thumb 2-----

T 1-----

T 12-----

T 23-----

open-----

2-----

1-----

12-----

23-----

1 3-----

Flexibility #5

This musical score, titled "Flexibility #5", consists of ten staves of music. Each staff begins with a treble clef and a key signature of one flat (B-flat). The music is characterized by long, sweeping melodic lines that span across multiple staves, often indicated by a single slur. The notes are primarily quarter and eighth notes, with some half notes. The first staff starts on a G4 and descends to a G3. The second staff starts on an A4 and descends to an A3. The third staff starts on a B-flat4 and descends to a B-flat3. The fourth staff starts on a C5 and descends to a C4. The fifth staff starts on a D-flat5 and descends to a D-flat4. The sixth staff starts on an E5 and descends to an E4. The seventh staff starts on an F-sharp5 and descends to an F-sharp4. The eighth staff starts on a G-flat5 and descends to a G-flat4. The ninth staff starts on an A5 and descends to an A4. The tenth staff starts on a B5 and descends to a B4. Each staff concludes with a whole rest, indicating the end of the phrase for that line.

Flexibility #6

The image displays ten staves of musical notation, each consisting of a treble clef staff and a bass clef staff. A long, continuous slur spans across both staves of each system, indicating a single melodic line. The notation includes various note values (quarter, eighth, and sixteenth notes) and rests. The key signature varies across the staves, with some using one flat (B-flat) and others using two flats (B-flat and E-flat). The melodic lines generally move from higher notes in the treble clef to lower notes in the bass clef, with some staves featuring chromatic or diatonic runs. The bass lines are mostly whole notes or half notes, providing a harmonic foundation for the melodic lines.

Flexibility #7 - Trills moving upward

Use the suggested fingerings. Aim for the written pitches...some are actually between partials. Practicing this low where intervals are wider can make high-range response seem much easier.



Flexibility #8 - Trills moving downward

Use the suggested fingerings. Each is the fingering for the top note of the trill.



Flexibility #9 - Trills prep

1 3 ----

2 3 ----

1 2 ----

1 ----

2 ----

0 ----

T23 ----

T12 ----

T1 ----

T2 ----

T0 ----

ANCHOR NOTE EXERCISE

The musical score consists of eight staves, each containing a sequence of notes. The first four staves are in treble clef, and the last four are in bass clef. Each staff begins with a common time signature (C) and a key signature of one flat (Bb). The notes are connected by slurs, and many have accents (^) above them. The exercise is designed to be played over a single anchor note, with the notes moving up and down the scale to return to the starting pitch.

listen that you are returning to same opening pitch
listen that the lowest + highest notes are five octaves
(shoot for high side of lower + lower side of upper notes)

Anchor Note/Interval Exercises

Exercise #1

Exercise #1 consists of three staves of music. The first staff starts with a treble clef and a common time signature. It features a sequence of eighth notes: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. The second staff continues with eighth notes: C4, B3, A3, G3, F3, E3, D3, C3, B2, A2, G2, F2, E2, D2, C2. The third staff continues with eighth notes: C2, B1, A1, G1, F1, E1, D1, C1, B0, A0, G0, F0, E0, D0, C0. The exercise concludes with a whole note C4 on the final staff.

Exercise #2

Exercise #2 consists of three staves of music. The first staff starts with a treble clef and a common time signature. It features a sequence of eighth notes: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. The second staff continues with eighth notes: C4, B3, A3, G3, F3, E3, D3, C3, B2, A2, G2, F2, E2, D2, C2. The third staff continues with eighth notes: C2, B1, A1, G1, F1, E1, D1, C1, B0, A0, G0, F0, E0, D0, C0. The exercise concludes with a whole note C4 on the final staff.

Exercise #3

Exercise #3 consists of five staves of music. The first staff starts with a treble clef and a common time signature. It features a sequence of eighth notes: C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4. The second staff continues with eighth notes: C4, B3, A3, G3, F3, E3, D3, C3, B2, A2, G2, F2, E2, D2, C2. The third staff continues with eighth notes: C2, B1, A1, G1, F1, E1, D1, C1, B0, A0, G0, F0, E0, D0, C0. The fourth staff continues with eighth notes: C0, B0, A0, G0, F0, E0, D0, C0, B0, A0, G0, F0, E0, D0, C0. The fifth staff continues with eighth notes: C0, B0, A0, G0, F0, E0, D0, C0, B0, A0, G0, F0, E0, D0, C0. The exercise concludes with a whole note C4 on the final staff.

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RANGE EXTENSION & AIR FLOW STUDY

The image displays a handwritten musical score for a range extension and air flow study. It consists of nine staves of music, each beginning with a measure number: 1, 5, 9, 13, 17, 21, 25, 29, and 33. The music is written in bass clef with a common time signature (C). Each staff features a melodic line with slurs and a final note with a fermata. The key signature changes across the staves: Staff 1 (B-flat), Staff 2 (B-flat), Staff 3 (D major), Staff 4 (D major), Staff 5 (B-flat), Staff 6 (B-flat), Staff 7 (D major), Staff 8 (D major), and Staff 9 (B-flat). The notation includes eighth and sixteenth notes, often beamed together, and rests. The overall structure is a series of short, focused exercises designed to explore vocal range and breath control.

RANGE EXTENSION (Cont.)

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This page contains ten staves of musical notation, each representing a different key signature. The exercises are designed to extend the vocal range by moving from a comfortable middle range to a higher one. Each staff begins with a melodic line in a specific key signature, followed by a comma indicating a breath or a pause, and then a second melodic line that ascends to a higher register. The key signatures, from top to bottom, are: G major, E-flat major, D-flat major, C major, A major, F major, E-flat major, D major, C major, and B-flat major. The notation includes treble clefs, a common time signature (C), and various note values such as quarter, eighth, and sixteenth notes, often beamed together. Slurs and accents are used to guide the performer through the phrases.

2.

Flow Studies (continued)

Met. Markings Approx.

V.C. I

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The page contains ten staves of musical notation, each representing a different tempo and dynamic marking. The staves are numbered as follows:

- Staff 1: $\text{♩} = 50$, *mp*. Includes the instruction "Descend Chrom. by 1/2 steps to: etc." with a downward-pointing arrow.
- Staff 2: $\text{♩} = 50$, *mp*.
- Staff 3: $\text{♩} = 56$, *mp*.
- Staff 4: $\text{♩} = 56$, *mp*.
- Staff 5: $\text{♩} = 60$, *mp*.
- Staff 6: $\text{♩} = 60$, *mp*.
- Staff 7: $\text{♩} = 72$, *mp*, *cresc*, *dim. poco a poco*.
- Staff 8: $\text{♩} = 72$, *mp*, *cresc*, *poco a poco*, *dim. poco a poco*.
- Staff 9: $\text{♩} = 80$, *mp*, *cresc*, *poco a poco*, *dim. poco a poco*.
- Staff 10: $\text{♩} = 80$, *mp*.

150

V.C. II

The musical score consists of ten staves of music, each beginning with a dynamic marking: mf , mf , mf , mf , mf , mf , mf , mf , mf , and mf . The notation includes treble clefs, a common time signature, and a series of notes with a long slur over the first nine staves. The notes are primarily eighth and sixteenth notes, with some quarter notes. The final staff concludes with a double bar line and a final note.

Clarke Technical Studies

FIRST STUDY

Do not exceed the dynamic markings indicated in these exercises to avoid fatigue and strain to the lip muscles. Permanent injury to the embouchure may occur if the tone is forced.

Practice each exercise eight to sixteen times in one breath, keeping the lips and fingers flexible. Tighten the lips slightly in the ascending lines, loosen them in descending lines.

ERSTE ÜBUNG

Um Ermüdung und unnötige Strapazierung der Lippenmuskeln zu vermeiden, dürfen die für diese Übungen angegebenen dynamischen Markierungen nicht überschritten werden. Durch Forcierung der Töne können die Körperorgane spermanent verletzt werden.

Jede einzelne Übung auf einem Atëmzug acht bis sechzehn Mal praktizieren und dabei darauf achten, daß die Lippen und Finger geschmeidig bleiben. Die Lippen bei den ansteigenden Zeilen etwas spannen und bei den absteigenden Zeilen lockern.

PREMIERE ETUDE

Ne dépassez pas les marques dynamiques indiquées dans ces exercices pour éviter la fatigue et la tension aux muscles des lèvres. Des dommages permanents peuvent être causés à l'embouchure si le ton est forcé.

Faites chaque exercice de huit à seize fois d'un seul souffle, pour conserver la souplesse des lèvres et des doigts. Pincez légèrement les lèvres dans les lignes ascendantes et déliez-les dans les lignes descendantes.

(♩ = 160 to ♩ = 112)

The musical score contains nine numbered staves, each representing a technical exercise. Each exercise is written in treble clef with a 3/4 time signature and begins with a piano (pp) dynamic marking. The exercises consist of melodic lines that ascend and then descend, often with slurs and repeat signs. A tempo indication at the top left specifies a quarter note equals 160 to 112 beats per minute.

10 *pp*

11 *pp*

12 *pp*

13 *pp*

14 *pp*

15 *pp*

16 *pp*

17 *pp*

18 *pp*

19 *pp*

20 *pp*

21 *pp*

- legato
- staccato semplice

SECOND STUDY

Play these exercises legato at first, then very lightly single tongue them. Finally, to further develop your articulation, try double tonguing. Accent where indicated to maintain a steady rhythm.

Concertrate your practice on those exercises that are more difficult for you — don't waste time on those that are easy.

ZWEITE ÜBUNG

Diese Übungen zunächst gebunden (legato) spielen und dann nur sehr leicht mit der Zunge artikulieren. Für die weitere Entwicklung Ihrer Artikulation dann versuchen, diese Übungen mit Doppelzunge szu spielen. Die Übungen wie angegeben akzentuieren, um den Rhythmus ununterbrochen aufrechtzuer halten.

Konzentrieren Sie sich auf die Übungen, die für Sie schwieriger sind. Verlieren Sie keine Zeit mit Übungen, die Ihnen leicht fallen.

DEUXIEME ETUDE

Jouez d'abord ces exercices legato, puis en détachant les notes très légèrement. Finalement, pour développer encore plus votre articulation, essayez le double coup de langue. Accentuez là où ceci est indiqué pour conserver un rythme soutenu.

Concentrez-vous sur ces exercices qui sont plus difficiles pour vous — ne perdez pas votre temps sur ceux qui sont faciles.

(♩ = 80-120)

The musical score contains ten exercises, numbered 27 through 36. Each exercise is written on a single staff in treble clef. Exercise 27 is in G major (one sharp) and 2/4 time. Exercises 28, 30, 32, 34, and 36 are in C major (no sharps or flats). Exercises 29, 31, 33, and 35 are in D minor (two flats). Exercise 31 has a key signature of three sharps (F# major/C# minor). Each exercise consists of a single melodic line with a slur over the entire phrase and a 'p' (piano) dynamic marking at the beginning. Accents are placed on specific notes throughout the exercises. The tempo is indicated as quarter note = 80-120.

37 *p* 

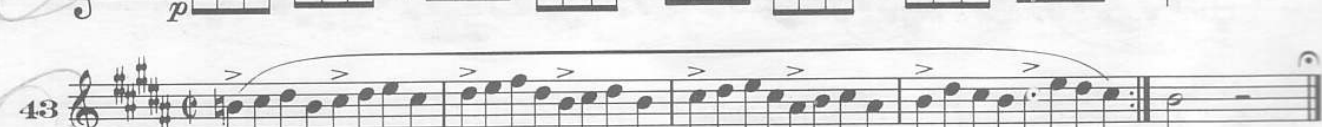
38 *p* 

39 *p* 

40 *p* 

41 *p* 

42 *p* 

43 *p* 

44 *p* 

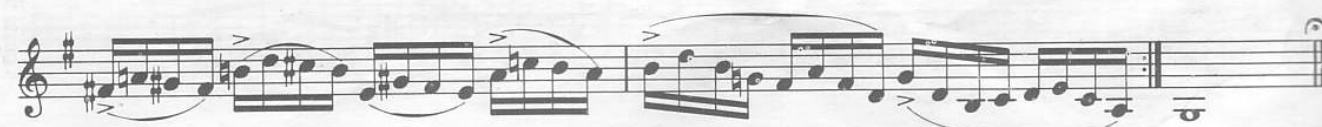
Etude II

o=50
24177

45 *p* $\text{♩} = 144$ 







THIRD STUDY

Practice without observing the repeat signs until you have thoroughly mastered the fingering. Remember to keep the lips soft and relaxed throughout.

When you have mastered your legato technique, try single, and then double tonguing.

Practice Etude III until you can play it in a single breath.

DRITTE ÜBUNG

Praktizieren Sie, ohne auf die Wiederholungszeichen zu achten, bis Sie den Fingersatz gründlich beherrschen. Dabei darauf achten, daß die Lippen immer weich und entspannt sind.

Wenn Sie Ihre Legato-Technik beherrschen, versuchen Sie, die Übungen mit Einzelzunge und dann mit Doppelzunge zu spielen.

Die Übung III praktizieren, bis Sie sie auf einem Atemzug spielen können.

TROISIEME ETUDE

Exercez-vous sans observer les signes de répétition jusqu'à ce que vous ayez maîtrisé le doigté. Souvenez-vous de conserver les lèvres douces et détendues pendant toute la durée.

Lorsque vous vous serez familiarisé avec la technique du legato, essayez le coup de langue simple et ensuite le double.

Faites les exercices de l'étude III jusqu'à ce que vous puissiez jouer d'un seul souffle.

(♩ = 60-120)

46

47

48

49

50

This page contains six musical exercises, numbered 51 through 56, arranged in pairs. Each exercise consists of two staves of music. The exercises are written in treble clef with a common time signature (C). Exercise 51 is in the key of D major (two sharps). Exercise 52 is in the key of C major (no sharps or flats). Exercise 53 is in the key of B-flat major (two flats). Exercise 54 is in the key of D major (two sharps). Exercise 55 is in the key of B-flat major (two flats). Exercise 56 is in the key of D major (two sharps). All exercises begin with a piano (*p*) dynamic marking. The notation includes slurs over groups of notes, and various performance markings such as accents (>), breath marks (v), and fingering numbers (1, 2, 3). Exercise 51 includes a handwritten fingering '123' above the fourth measure. Exercise 53 includes handwritten fingering '123' above the fifth measure and '123' above the eighth measure. Exercise 54 includes a handwritten fingering '13' above the fifth measure. Exercise 55 includes a handwritten fingering '23' above the fifth measure. Each exercise concludes with a double bar line and a repeat sign, followed by a final cadence.

57 *p*

58 *p*

59 *p*

60 *p*

61 *p*

62 *p*

Major Scales & Arpeggios (from the bottom)

C Major

The C Major scale is shown in two staves. The first staff uses a bass clef and contains the ascending scale (C2 to C3) and the descending scale (C3 to C2). The second staff uses a treble clef and contains the ascending arpeggio (C4-E4-G4) and the descending arpeggio (G4-E4-C4).

F Major

The F Major scale is shown in two staves. The first staff uses a treble clef and contains the ascending scale (F4 to F5) and the descending scale (F5 to F4). The second staff uses a treble clef and contains the ascending arpeggio (F4-A4-C5) and the descending arpeggio (C5-A4-F4).

G Major

The G Major scale is shown in two staves. The first staff uses a treble clef and contains the ascending scale (G4 to G5) and the descending scale (G5 to G4). The second staff uses a treble clef and contains the ascending arpeggio (G4-B4-D5) and the descending arpeggio (D5-B4-G4).

Bb Major

The Bb Major scale is shown in two staves. The first staff uses a treble clef and contains the ascending scale (Bb4 to Bb5) and the descending scale (Bb5 to Bb4). The second staff uses a treble clef and contains the ascending arpeggio (Bb4-Db5-F5) and the descending arpeggio (F5-Db5-Bb4).

D Major

The D Major scale is shown in two staves. The first staff uses a bass clef and contains the ascending scale (D2 to D3) and the descending scale (D3 to D2). The second staff uses a bass clef and contains the ascending arpeggio (D3-F3-A3) and the descending arpeggio (A3-F3-D3).

Eb Major

The Eb Major scale is shown in two staves. The first staff uses a treble clef and contains the ascending scale (Eb4 to Eb5) and the descending scale (Eb5 to Eb4). The second staff uses a treble clef and contains the ascending arpeggio (Eb4-Ab5-C6) and the descending arpeggio (C6-Ab5-Eb4).

A Major

The A Major scale is shown in two staves. The first staff uses a treble clef and contains the ascending scale (A4 to A5) and the descending scale (A5 to A4). The second staff uses a treble clef and contains the ascending arpeggio (A4-C#5-E5) and the descending arpeggio (E5-C#5-A4).

Ab Major

The Ab Major scale is shown in two staves. The first staff uses a treble clef and contains the ascending scale (Ab4 to Ab5) and the descending scale (Ab5 to Ab4). The second staff uses a treble clef and contains the ascending arpeggio (Ab4-Cb5-Eb5) and the descending arpeggio (Eb5-Cb5-Ab4).

E Major

The E Major scale is shown in two staves. The first staff uses a treble clef and contains the ascending scale (E4 to E5) and the descending scale (E5 to E4). The second staff uses a treble clef and contains the ascending arpeggio (E4-G#4-B5) and the descending arpeggio (B5-G#4-E4).

Db Major

The Db Major scale is shown in two staves. The first staff uses a bass clef and contains the ascending scale (Db2 to Db3) and the descending scale (Db3 to Db2). The second staff uses a bass clef and contains the ascending arpeggio (Db3-Fb3-Ab3) and the descending arpeggio (Ab3-Fb3-Db3).

B Major

The B Major scale is shown in two staves. The first staff uses a treble clef and contains the ascending scale (B4 to B5) and the descending scale (B5 to B4). The second staff uses a treble clef and contains the ascending arpeggio (B4-D#5-F#5) and the descending arpeggio (F#5-D#5-B4).

Gb Major

The Gb Major scale is shown in two staves. The first staff uses a treble clef and contains the ascending scale (Gb4 to Gb5) and the descending scale (Gb5 to Gb4). The second staff uses a treble clef and contains the ascending arpeggio (Gb4-Bb5-Db5) and the descending arpeggio (Db5-Bb5-Gb4).

F# Major

The F# Major scale is shown in two staves. The first staff uses a treble clef and contains the ascending scale (F#4 to F#5) and the descending scale (F#5 to F#4). The second staff uses a treble clef and contains the ascending arpeggio (F#4-A#5-C#5) and the descending arpeggio (C#5-A#5-F#4).

Major Scales & Arpeggios (from the middle)


This musical score consists of 12 staves, each representing a different major scale. The scales are arranged in ascending order of key signature, starting with C major and ending with C# major. Each staff begins with a treble clef and a key signature signature. The notation includes a sequence of eighth notes for the scale, followed by a sequence of eighth notes for the arpeggio. The arpeggios are marked with a '3' above them, indicating a triplet. The scales are: C major, G major, D major, A major, E major, B major, F# major, C# major, G# major, D# major, A# major, and C# major. The page number '-2-' is located at the bottom center.

Minor Scales & Arpeggios 2-Octave


A minor



D minor



E minor



G minor



B minor



C minor



F# minor



F minor




C# minor



Bb minor



G# minor



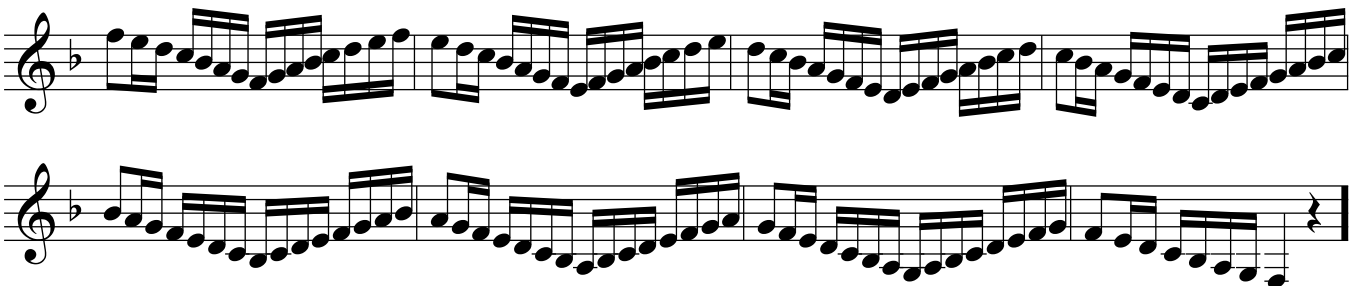
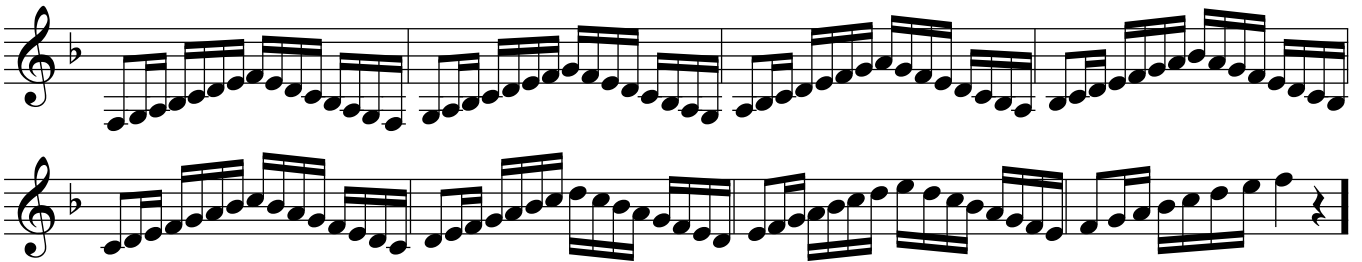
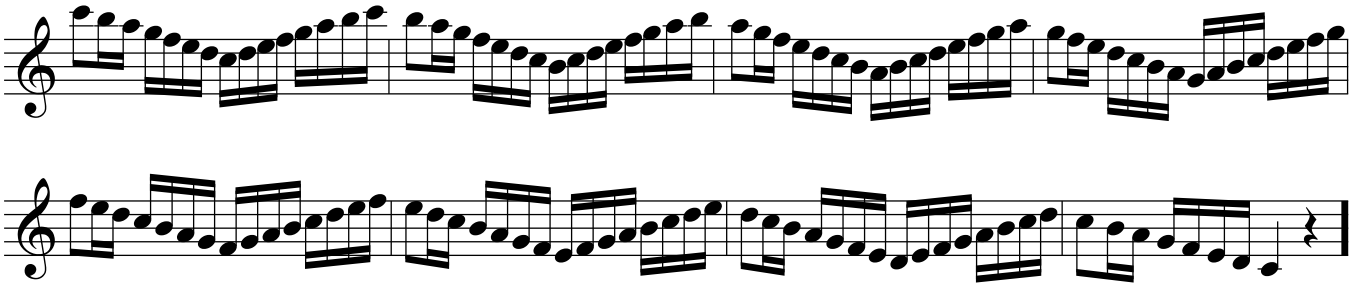
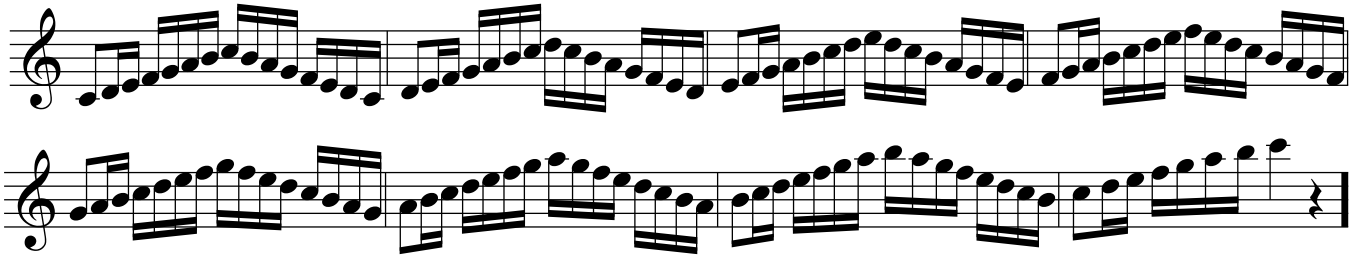
Eb minor



D# minor



Scale Modes



SCALE SYLLABUS

LEGEND: H = Half Step, W = Whole Step.; Δ = Major 7th; + or # = raise H; b or - = lower H; ∅ = Half-diminished; -3 = 3H (Minor Third)

<u>CHORD/SCALE SYMBOL</u>	<u>SCALE NAME</u>	<u>WHOLE & HALF STEP CONSTRUCTION</u>	<u>SCALE IN KEY OF C</u>	<u>BASIC CHORD IN KEY OF C</u>
C	Major	WWHWWWH	CDEFGABC	CEGBD
C7	Dominant 7th (Mixolydian)	WWHWWHW	CDEFGAbBc	CEGBbD
C7	Minor (Dorian)	WHWWWHW	CDEbFGAbBc	CEbGBbD
C∅	Half Diminished (Locrian)	HWWHWWW	CDbEbFGbAbBbC	CEbGbBb
C°	Diminished (8tone scale)	WHWHWHWH	CDEbFGbAbABC	CEbGbA(Bbb)
FIVE BASIC CATEGORIES				
1. MAJOR SCALE CHOICES	SCALE NAME	W & H CONSTRUCTION	SCALE IN KEY OF C	BASIC CHORD IN KEY OF C
CΔ (Can be written C)	Major (don't emphasize the 4th)	WWHWWWH	CDEFGABC	CEGBD
C	Major Pentatonic	WW-3W-3	CDEGAC	CEGB
CΔ+4	Lydian (major scale with +4)	WWWHWWH	CDEF#GABC	CEGBD
CΔ	Bebop (Major)	WWHWHHWH	CDEFGG#ABC	CEGBD
CΔb6	Harmonic Major	WWHWH-3H	CDEFGAbBC	CEGBD
CΔ+5, +4	Lydian Augmented	WWWWHWH	CDEF#G#ABC	CEG#BD
C	Augmented	-3H-3H-3H	CD#EGAbBC	CEGBD
C	6th Mode of Harmonic Minor	-3HWHWWH	CD#EF#GABC	CEGBD
C	Diminished (begin with H step)	HWHWHWHW	CDbD#EF#GAbBc	CEGBD
C	Blues Scale	-3WHH-3W	CEbFF#GBbC	CEGBD
2. DOMINANT 7th SCALE CHOICES	SCALE NAME	W & H CONSTRUCTION	SCALE IN KEY OF C	BASIC CHORD IN KEY OF C
C7	Dominant 7th	WWHWHWH	CDEFGAbBc	CEGBbD
C7	Major Pentatonic	WW-3W-3	CDEGAC	CEGBbD
C7	Bebop (Dominant)	WWHWHHHH	CDEFGAbBc	CEGBbD
C7b9	Spanish or Jewish scale	H-3HWHWW	CDbEFGAbBbC	CEGBb(Db)
C7+4	Lydian Dominant	WWHWHWH	CDEF#GAbBc	CEGBbD
C7b6	Hindu	WWHWHWW	CDEFGAbBbC	CEGBbD
C7+ (has #4 & #5)	Whole Tone (6tone scale)	WWWWWWW	CDEF#G#BbC	CEG#BbD
C7b9 (also has #9 & #4)	Diminished (begin with H step)	HWHWHWHW	CDbD#EF#GAbBc	CEGBbD#(D#)
C7+9 (also has b9, #4, #5)	Diminished Whole Tone	HWHWWWW	CDbD#EF#G#BbC	CEG#BbD#(Db)
C7	Blues Scale	-3WHH-3W	CEbFF#GBbC	CEGBbD(D#)
DOMINANT 7th SUSPENDED 4th				
C7 sus4	Dom. 7th scale but don't emphasize the third	WWHWHWH	CDEFGAbBc	CFGBbD
C7 sus4	Major Pentatonic built on b7	WW-3W-3	BbCDEFGBb	CFGBbD
C7 sus4	Bebop Scale	WWHWHHHH	CDEFGAbBc	CFGBbD
MAY BE WRITTEN G-/C				
3. MINOR SCALE CHOICES*	SCALE NAME	W & H CONSTRUCTION	SCALE IN KEY OF C	BASIC CHORD IN KEY OF C
C-or-C-7	Minor (Dorian)	WHWWWHW	CDEbFGAbBc	CEbGBbD
C-or-C-7	Pentatonic (Minor Pentatonic)	-3WW-3W	CEbFGBbC	CEbGBbD
C-or-C-7	Bebop (Minor)	WHHHWWHW	CDEbEFGAbBc	CEbGBbD
C-Δ (maj. 7th)	Melodic Minor (ascending)	WHWWWHW	CDEbFGABC	CEbGBD
C-or-C-6 or C-	Bebop Minor No. 2	WHWHHWH	CDEbFGG#ABC	CEbGBD
C-or-C-7	Blues Scale	-3WHH-3W	CEbFF#GBbC	CEbGBbD
C-Δ (b6 & maj. 7th)	Harmonic Minor	WHWH-3H	CDEbFGAbBC	CEbGBD
C-or-C-7	Diminished (begin with W step)	WHWHWHWH	CDEbFF#G#ABC	CEbGBD
C-or-C-b9b6	Phrygian	HWWWHWW	CDbEbFGAbBbC	CEbGBb
C-or-C-b6	Pure or Natural Minor, Aeolian	WHWWHWW	CDEbFGAbBbC	CEbGBbD
4. HALF DIMINISHED SCALE CHOICES	SCALE NAME	W & H CONSTRUCTION	SCALE IN KEY OF C	BASIC CHORD IN KEY OF C
C∅	Half Diminished (Locrian)	HWWHWWW	CDbEbFGbAbBbC	CEbGbBb
C∅#2 (C∅9)	Half Diminished #2 (Locrian #2)	WHWHWWW	CDEbFGbAbBbC	CEbGbBbD
C∅ (with or without #2)	Bebop Scale	HWHHHWW	CDbEbFGbGAbBbC	CEbGbBb
5. DIMINISHED SCALE CHOICES	SCALE NAME	W & H CONSTRUCTION	SCALE IN KEY OF C	BASIC CHORD IN KEY OF C
C°	Diminished (8tone scale)	WHWHWHWH	CDEbFGbAbABC	CEbGbA

NOTES: 1) The above chord symbol guide is my system of notation. I feel it best represents the sounds I hear in jazz. The player should be aware that each chord symbol represents a series of tones called a scale. 2) Even though a C7+9 would appear to have only a raised 9th, it also has a b9, +4 and +5. So the entire C7+9 scale would look like: Root, b9, +9, 3rd, +4, +5, b7 & root (C, Db, D#, E, F#, G#, Bb, C). My chord symbol C7+9 is therefore an abbreviation, while the complete name of this scale is Diminished Whole Tone (sometimes called Super Locrian or Altered Scale). Similarly, C7b9 also appears to have only one altered tone (b9) but it actually has three: b9, +9 and +4. The entire scale looks like this: Root, b9, +9, 3rd, +4, 5th, 6th, b7 & root (C, Db, D#, E, F#, G, A, Bb, C). This is called a Diminished scale and my chord symbol abbreviation is C7b9. 3) All scales under the Dominant 7th category are scales that embellish the basic Dominant 7th sound. Some scales provide much more tension than the basic dominant 7th sound and require practice and patience to grasp the essence of their meaning. I encourage you to work with the first side of Volume 3 "The 11-V7-1 Progression" since it emphasizes Diminished and Diminished Whole Tone scales and chords. 4) * - In category #3, MINOR SCALE CHOICES, the PURE MINOR scale choice is not used very often. I have found the order of preference to be Dorian, Bebop, Melodic, Blues, Pentatonic, and then any of the remaining Minor scale choices.

Lips-Mouthpiece - Play

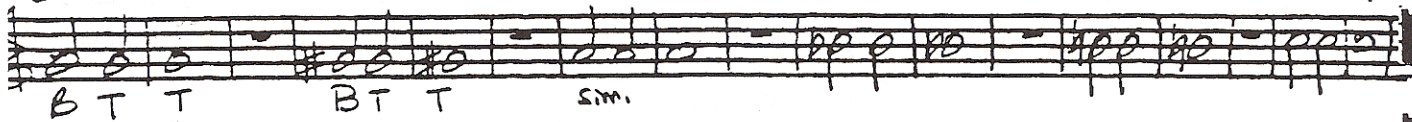
Cont. to middle C



Musical staff with notes and fingerings: L, M, P, #L, #M, #P, L, L, ...

6 MAGIC NOTES

mpa!



Musical staff with notes and fingerings: BT T, #BT T, sim.

14 NOTES = Play #2 once, then continue:



Musical staff with notes and fingerings: BT T, #BT T, ...



Musical staff with notes and fingerings: BT T, ...

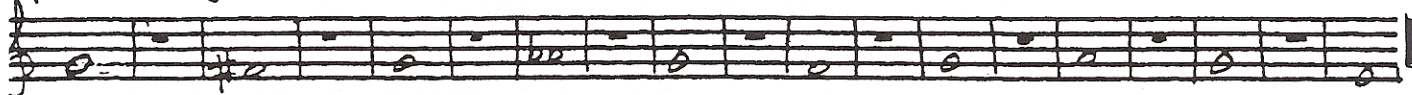
Unom. Oct.

etc.

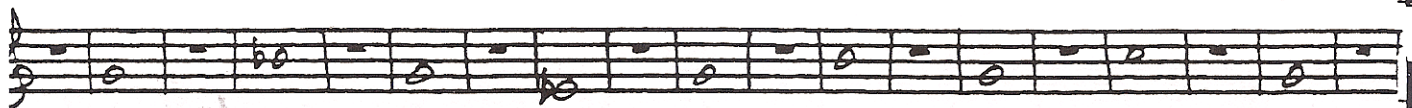


Musical staff with notes and fingerings: BT T, #BT T, ...

Spider web (breath attacks) * Also as 0 0 | 0 |



Musical staff with notes and fingerings: BT T, ...



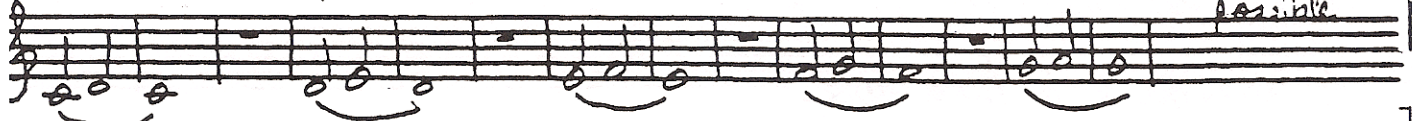
Musical staff with notes and fingerings: BT T, ...



Musical staff with notes and fingerings: BT T, ...

Seconds (also may be articulated as #2)

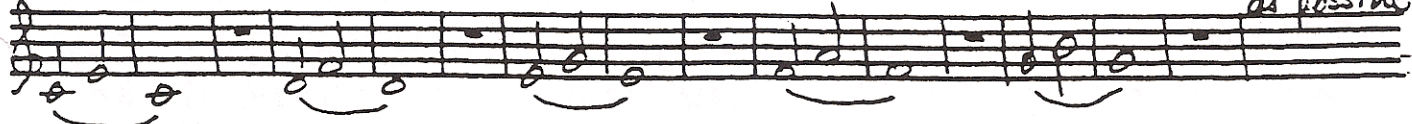
etc. as high as possible



Musical staff with notes and fingerings: BT T, ...

Thirds

etc. as high as possible



Musical staff with notes and fingerings: BT T, ...

CANUSO (CONT.)

LOW RANGE WORK

12^A

etc. as low as poss.
- Stop + 1/2 staff

EXTRA CONTROL:

2-8 may be done w/ p Stopped & articulated as #2

POWER/VOLUME

up set

Practice w/ breath attacks as well as normal artic.

RANGE EXTENSION

etc. go down chromatic p 1230m

etc. like above

- do not move mouthpiece or lips - don't relax lips.
- keep lip configuration & pressure constant
- jaw motion - minimal
- breathe thru nose

Rules for Canuso Studies

1. Steady tempo ($\text{♩} = 60$) tap foot/use metronome; subdivide last beat into ($\text{♩} \text{ ♩} \text{ ♩}$) before changing notes or rearticulating.
2. Keep mouthpiece in contact w/ lips through entire study. Mouthpiece pressure to consistent as well as your muscular embouchure set during the duration of the exercise.
3. Keep the elbow steady. Solid tubes of air.
4. Breathe only thru nose.

* Do not be concerned with pitch, control, or tone. These are specialty strengthening exercises. The benefits will automatically seep into your playing. Benefits: 1. more power 2. increased depth of tone 3. more endurance 4. increased endurance 5. improved articulation.

Tuning: Natural Intonation vs. Equal Temperament

Younger students notice that tuning in ensembles is distinctly different than when performing with a fixed pitched keyboard instrument. This because equal temperament is a stop-gap measure that allows keyboards to play in any key. However, this adjustment bends the natural intonation found in physics.

It was not until the system of equal temperament could keyboards perform in all 24 keys. In equal temperament, the octave is divided into 12 equal semitones. Each semitone is divided into pitch increments of 100 called cents. Thus, there are 100 cents between successive half steps. One 'cent' is one degree of sharpness/flatness away from a reference pitch. Within the octave, some chromatic tuners will identify pitch tendencies by displaying the cents flat or sharp. Pitch variance of plus or minus five cents (5%) from a central pitch is indistinguishable by the ear. This dichotomy between equal temperament and pure intonation, hereafter called natural intonation, explains the difficulty a wind or string player has in playing with a keyboard instrument. As performers, we naturally want to hear natural intonation.

Natural (or 'just') intonation is governed by intervals being lined up according to pure fifths and thirds as found in the natural laws of physics. Our ears hear such tuning as proper, allowing for summation and difference tones to be produced in performance.

In natural intonation, fifths need to be stretch and fourths need to be slightly lowered. In addition, major thirds and major sixths need to be placed lower. Conversely minor thirds and minor sixths need to be raised. The leading tone of the scale creates controversy. Performers may perceive that this leading tone needs to be significantly raised, but in fact it is best if this is lowered. More problematic is the interval of the minor seventh. When used as the seventh of a dominant chord, this note needs to be lowered more than a quarter-tone even though this same note is only slightly sharp when occurring as the fourth scale degree from the tonic within a given scale is as follows. Notice the deviation in the "cents."

Major Scale Step Intonation

Equal Temperament Natural Intonation Deviation from ET I

I 000

II 200 cents 204 cents 4% higher

III 400 cents 386 cents 14% lower

IV 500 cents 498 cents 2% lower

V 700 cents 702 cents 2% higher

VI 900 cents 884 cents 16% lower

vii (7th of V7) 1000 cents 971 cents 29% lower

VII (leading tone) 1100 cents 1088 cents 12% lower

VIII 1200 cents 1200 cents 0

Minor Scale Step Intonation

Equal Temperament Natural Intonation Deviation from ET

I 0 0 0

II 200 cents 204 cents 4% higher

iii 300 cents 316 cents 16% higher

IV 500 cents 498 cents 2% lower
 V 700 cents 702 cents 2% higher
 vi 800 cents 814 cents 14% higher
 VII (leading tone) 1100 cents 1088 cents 12% lower
 VIII 1200 cents 1200 cents 0

How to make chords 'ring':

1. Perfect 5ths need to be slightly raised
2. Major 3rds and 6ths need to be lowered
3. Perfect 4ths need to be slightly narrowed
4. Minor 3rds and 6ths need to be raised
5. Minor 7ths need to be lowered significantly
6. Leading tones need to be raised to pull towards the tonic

Below is a chart showing natural tuning of chord tones in some common harmonies...

Chords of "JUST" intonation

The chart displays chord tunings for various chords, with cents adjustments indicated below the notes. The chords are arranged in four rows of five chords each.

Chord	3rd	4th	5th	6th	7th
Major	+2	-14			
minor	+2	+16			
diminished	-17	+16			
Augmented	-4	-14			
Maj. 6th	-16	+2			
min. 6th	+19	+2	+16		
dim. (b6)	+14	-17	+16		
7th	-31	+2	-14		
Major 7th	-12	+2	-14		
Minor 7th	+18	+2	+16		
7th (#5)	-31	+2	-14		
Full dim. 7th	+19	-17	+16		
Half dim. 7th	+18	+2	+16		
7th (b5)	-31	+3	-14		
min/Maj. 7th	+11	+2	+16		
Maj 7 (#5)	+26	-4	-14		
dim/Maj 7	+16	-17	+16		
9th	+4	-31	+2	-14	
7th (b9)	+5	-31	+2	-14	
Maj. 9	+4	-12	+2	-14	

BRASS INTONATION ISSUES

Though the subtleties of just intonation are a lot to take in, as brass players, we have more issues to deal with. While we are concerned with natural intonation problems, there are issues inherent with valved brass instruments that create intonation problems.

Understanding the Valve System and Its Inherent Problems

Valve Functions:

1st valve – lowers open instrument a full step

2nd valve – lowers open instrument one-half step

3rd valve – lowers open instrument by one and one-half steps (equal to 1st & 2nd valve combined)

4th valve – lowers the open horn by two and one-half steps (equal to 1st & 3rd valve combination (Tuba and Euphonium))

While individual valves may be adjusted so that the loops are in tune, there are problems once valves are used in combination.

Example:

Open Horn	Valve Loop	Length	Pitch Produced
100"		0	C
100"	+ 4"	(2nd valve)	B
100"	+ 8"	(1st valve)	Bb
100"	+ 12"	(1&2 combo)	A (sharp)

Why this is:

1. 4 inches added to 100 inches lowers the open horn a semitone

2. 4 inches added to 108 inches is not great enough to lower this length a true half-step. It is a smaller ratio than the former (eg. 4:100 vs. 4:108). Thus, as we add more tubing (e.g. longer valve combination/more valves) our instrument becomes **increasingly sharp!***Because of this, we play our low D and low C# on the Bb side of the instrument

3. 1&2 slightly sharp; 2&3 is noticeably sharp; 1&3 very sharp; 1,2,&3 excruciatingly sharp

Tuning the Double Horn

To make the horn work correctly, we must make sure that it is in tune with itself and across the double horn so that accuracy and fatigue will not become a hindrance for us. Follow the steps and you should have an instrument that will not fight you on intonation. However, if you have an instrument that cannot be adjusted (faulty tubing lengths, frozen slides, etc.), then you must take immediate action to correct these defects by visiting a competent repairperson.

Before starting, you must understand how your horn works. The first moveable slide you come to on the leadpipe is the main tuning slide. This tunes both the F and Bb side of the instrument. You will use this slide to first tune the open C (concert F) to a piano or tuner. The other large slide on the back side of the instrument is the auxiliary F tuning slide. Once the open horn on the Bb side is tuned, you then tune the F open horn to the Bb horn. A caveat on the tuning procedure:

1. Make sure that you always start with the note that is in tune, and then go to the slide that needs to be adjusted.

2. Double check your adjustments. Not only go across the instrument slurring, but also with a decidedly detached, crisp attack. Many times you will find the instrument will behave differently.

Follow the numbers on the tuning procedure below for most standard double horns:

1. C (3rd space)-adjust main tuning slide

2. C – adjust aux F tuning slide to match-----→ 3. C (1st finger) adjust 1st finger slide
*F side of the horn

5. Bb – adjust 1st valve slide ←----- 4. Bb – this is in-tune reference note
* Bb side *play with F side, 1st valve

6. D – play 4th line open (F side) then with 1&2 (Bb side)-----→ 7. D –adjust with 2nd slide only
*check 2nd slide (Bb horn) with open E on F horn, 1st line and 4th space

8. B – play reference note on Bb side, 2nd valve -----→ 9. B – adjust F-side 2nd valve loop
*cross check 2nd space A. play with 1&2 on F-side, then add trigger for Bb side

11. D – adjust 3rd valve on Bb-side ←----- 10. D – play reference with F-side 1st valve

12. A – reference pitch with 3rd valve, Bb-side -----→ 13. A – adjust F-side 3rd valve slide
*Note: the 3rd valve tuned in this way should sit slightly lower than the 1 & 2 combination

MUTED AND STOPPED HORN

The use of a non-transposing mute is indicated by the following expressions: mit Dampher (German), avec sourdine (French), con sordino (Italian), or simply "muted" in most band music.

Hand stopping or the use of a metal transposing mute is indicated by the use of a + above the note or the terms gestopft (German), bouche (French), chiuso (Italian), or simply "stopped".

The player is required to transpose when playing "stopped" horn or when using metal transposing mutes. To play stopped horn the player must use approximately the same hand position as for normal playing except that the hand is closed completely against the side of the bell. Be sure that the fatty part of the hand helps to make a good seal and that the thumb knuckle is out and not turned under. Because of increased resistance the student may feel a need to "blow" more to get the characteristic "stopped" horn sound.

Intonation problems are caused by differences in hand sizes and bell sizes. Many young students have problems with "stopped" horn because a small hand fits too far into the bell causing the resulting pitch to be quite sharp.

The following rule should be used when transposing a part marked "stopped" horn:

Play the tone 1/2 step lower on the F horn. Most often this will achieve the best results.

If any of the players have severe pitch problems, but are producing the correctly characteristic sound, I suggest the following:

Play the tone 1/2 step higher on the F horn, or play the tone with any fingering on either horn that achieves the correct pitch.

A make-shift stopped horn mute can also be made quite easily. A small 10 oz. styrofoam drinking cup can work quite well if a small pencil size hole is made in the bottom of the cup.

HORN TRANSPOSITIONS

- Horn in E (Horn in Mi) common**
down a m2 (1/2 step) **add 5 # to the key signature**
it is easiest to simply think down a 1/2 step and not really worry about the key signature, in other words, add a flat to every note
- Horn in E flat (Horn in Mi flat) very common**
down a M2 (whole step) **add 2 flats to the key signature**
 if the note is on a line, it is now on the space below (D becomes C)
 if the note is on a space, it is now on the line below (A becomes G)
it is easiest to simply think down a step, remembering that you will add 2 flats (C becomes B flat; F becomes E flat)
- Horn in D (Horn in Re) common**
down a m3 (1 1/2 steps) **add 3 # to the key signature**
 if the note is on a line, then it is now on the line below that (D becomes B)
 if the note is on a space, it is now on the space below that (A becomes F#)
it is easiest to use the line and space visual aid and add 3# to the key, rather than figure a m3 for each note
- Horn in C (Horn in Ut) common**
down a P4 (2 1/2 steps) **add 1 # to the key signature**
 if the note is on a line, then it is now 2 spaces below that (G becomes D)
 if the note is on a space, then it is now 2 lines below that (A becomes E)
it is helpful to learn all the P4 intervals (C>G; C#>G#; D>A, D#>A#; E>B; F>C; F#>C#; G>D; G#>D#; A>E; A#>E# or F, B>F#)
**can use Bb horn fingering on F horn (same intervallic relationship)*
- Horn in B flat (Horn in B or Horn in Si flat or Si bemol) fairly common**
Down a P5 (3 1/2 steps) **add 1 flat to the key signature**
 if the note is on a line, it is now two lines below (D becomes G)
 if the note is on a space, it is now 2 spaces below (C becomes F)
it is easiest to use this line and space visual aid and add 1 flat to the key (F becomes B flat)
BEWARE: In German, B means B flat, H means B natural
**can also be read as Bass clef, up a 1/2 step (for treble part)*
- Horn in B (Horn in H basso or Horn in Si) less common**
down a dim.5 (3 whole steps) **add 6 # to the key signature**
it is easiest to think down a 5th visually and sharp everything but B (C becomes F#; B becomes E#, really F natural; C# becomes Fx, really G; F# becomes B)
**or think Horn in C with everything flat*
- Horn in A (Horn in La) less common**
up a M3 (2 whole steps) **add 4 # to the key signature**
Most A transposition is A alto, meaning that you transpose up, BUT Rossini

and a few other Italian composers sometimes write A basso parts, meaning that you transpose down a m6 (4 whole steps). These parts are not always marked basso or alto, so you will need to double-check any Italian composer with your Horn teacher or conductor.

If the note is on a line, then it is now on the line above (D becomes F#; B becomes D)

If the note is on a space, then it is now on the space above (A becomes C#; F becomes A)

it is easiest to use the line and space visual aid and add 4 # to your key

*A Horn can also be read by treating a treble part as if it is in Bass clef

- **Horn in G (Horn in Sol) less common**
 up a M2 (a whole step) add 2 # to the key signature
 if the note is on a line, then it is now on the next space up (D becomes E)
 if the note is on a space, then it is now on the next line up (C becomes D)
it is usually easiest to think up a step, and add 2 # or take away 2 flats
- **Horn in A flat rare**
 up a m3 (1½ steps) add 3 flats to the key signature
it is easiest to use the visual aid of up a third and add 3 flats
- **Horn in F# (Horn in Fis or Horn in Fa sharp or Fa diese) rare**
 up a m2 (½ step) add 7 # to the key signature
it is easiest to think up ½ step, or sharp everything
- **Horn in D flat (Horn in Des or Horn in Re flat or Re bemol) rare**
 down a M3 add 4 flats to the key signature
it is easiest to use the line to next line down, space to next space down, visual aid and add 4 flats

If you need to calculate a transposition on your own, here are the guidelines:

1. Calculate the new key by taking the name of the key and adding 1 # to it (A flat Horn- Key of A flat has 4 flats, so add a sharp to that and you get 3 flats). You always add this sharp because your Horn is in the key of F, which is 1 flat, and you must counteract this "built-in flat".
2. *Alto* means GO UP
Basso means GO DOWN
 MOST transpositions are *basso*, G and A horn are the main *alto* transpositions.
3. To determine how far to go up or down, compare the F your horn is in to the key of the transposition. A flat is a m3 away from F, so go up a m3.
4. Remember the fixed order of accidentals added to a key signature:
SHARPS: Ford Cars Go Dead At Every Bump **SHARP KEYS:** G D A E B F# C#
FLATS: B E A D Greatest Common Factor **FLAT KEYS:** F B^b E^b A^b D^b G^b C^b

F (Bb) Horn Fingerings

* Fingerings are shown for most of the Horn's practical range, F Horn fingerings on top and Bb Horn fingerings (where applicable) are shown below the F fingering with the "t" for trigger. There is debate among Hornists as to the use of the different fingerings, but a good guideline is to use the F side for G (treble clef, 2nd line) and below & the Bb side Ab (treble clef, 2nd space) and above. However, Bb horn fingerings may be useful for certain low notes to help them speak more easily.

The image displays two systems of musical notation for F (Bb) Horn Fingerings. Each system consists of two staves: a bass clef staff on top and a treble clef staff on the bottom. The notes are quarter notes, and the fingerings are indicated by numbers 1, 2, 3, and 't' (trigger). Some notes have 'or' written above them, indicating alternative fingerings. The first system covers notes from G2 to G3, and the second system covers notes from G3 to G4. The fingerings are as follows:

System 1 (Bass Clef):

- G2: t
- A2: 123
- B2: 1 3
- C3: 23
- D3: 12
- E3: 1

System 2 (Bass Clef):

- F3: 2
- G3: open
- A3: 123 (t 23)
- B3: 1 3 (t 12)
- C4: 23 (t 1)
- D4: 12 (t 2)

System 1 (Treble Clef):

- G3: 1 (t open)
- A3: 2 (t 123)
- B3: open (t 1 3)
- C4: 23 (t 23)
- D4: 12 (t 12)
- E4: 1 (t 1)

System 2 (Treble Clef):

- F4: 2 (t 2)
- G4: open (t open)
- A4: 12 (t 23)
- B4: 1 (t 12)
- C5: 2 (t 1)
- D5: open (t 2)

System 3 (Treble Clef):

- E4: 1 (t open)
- F4: 2 (t 123)
- G4: open (t 1 3)
- A4: 23 (t 23)
- B4: 12 (t 12)
- C5: 1 (t 1)

System 4 (Treble Clef):

- D5: 2 (t 2)
- E5: open (t open)
- F5: 12 (t 23)
- G5: 1 (t 12)
- A5: 2 (t 1)
- B5: open (t 2)

System 5 (Treble Clef):

- C6: 1 (t open)
- D6: 2 (t 2)
- E6: open (t 1 OR t open)
- F6: 23 (t 23)

System 6 (Treble Clef):

- G6: 12 (t 12)
- A6: 1 (t 1)
- B6: 2 (t 2)
- C7: open (t open)