

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/66269> holds various files of this Leiden University dissertation.

Author: Bok, H.J.

Title: The deep-rooted microtonality of the bass clarinet

Issue Date: 2018-10-17

Appendix A1 – Review of quartertone fingering patterns

Red has been used to denote keys which are only half-closed

Blue shows the fingering patterns which cannot be played on the instrument used for this research

Green has been used to denote keys bracketed in the original sources when the meaning of this indication is not known

Yellow has been used to highlight other miscellaneous information regarding the fingering patterns

The following abbreviations have been used for the different sources:

JA – Jason Alder

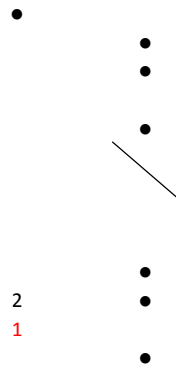
PR – Phillip Rehfeldt

EMR – E. Michael Richards

HS – Harry Sparnaay

Appendix A1 – Review of quartertone fingering patterns

C#1



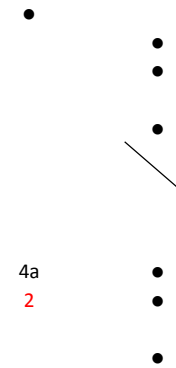
Source: JA

Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

D#1



Source: JA

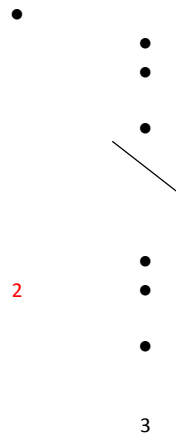
Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: This fingering pattern could not be tested as key 4a has a different function on Buffet-Crampon instruments

Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 1



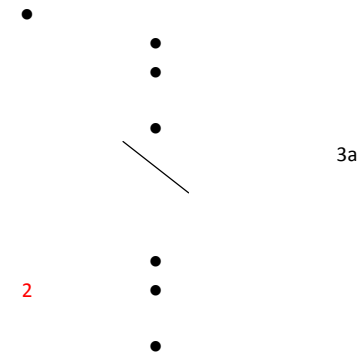
Source: JA

Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

D $\flat$ 1



Source: JA

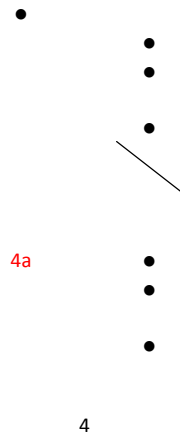
Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

Appendix A1 – Review of quartertone fingering patterns

D#1



Source: JA

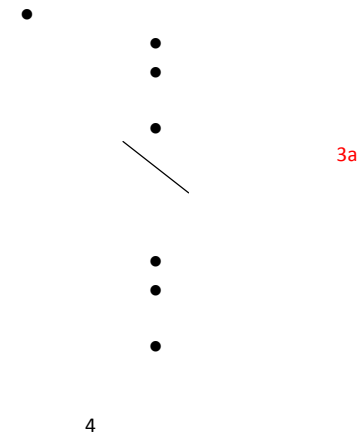
Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

This fingering pattern could not be tested as key 4a has a different function on Buffet-Crampon instruments.

D#1



Source: JA

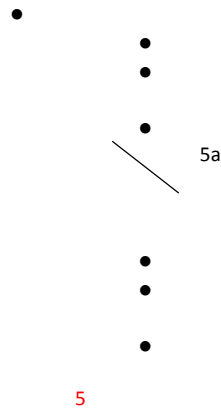
Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 1



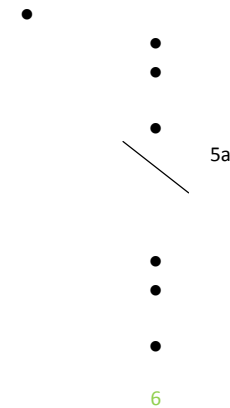
Source: JA

Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Keys 5 and 5a both close the same pad. Therefore this fingering pattern is not possible.

E $\flat$ 1



Source: PR

Source comments: Control the low “e” opening by pressing at a point just above the left calf

Pitch: -

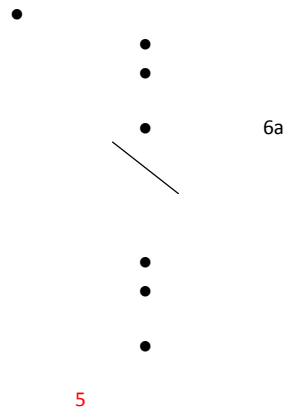
HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

Key 6 is bracketed in PR charts. Key 6 changes nothing as the keywork mechanism is closed for pitches E1 to G1

Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 1



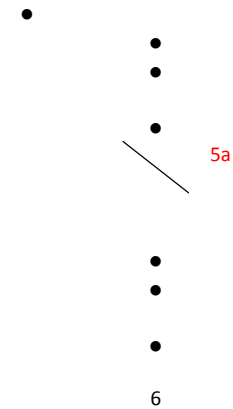
Source: JA

Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

E $\sharp$ 1



Source: JA

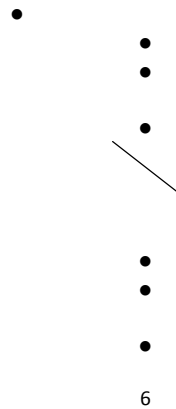
Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 1



Source: PR

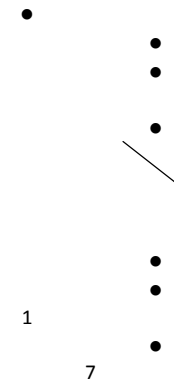
Source comments: Control the “f” opening with right calf

Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

F $\sharp$ 1



Source: JA

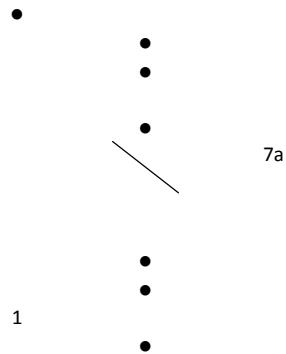
Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: F $\sharp$ 1 -10 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

F#1



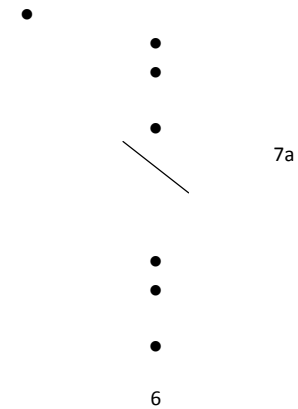
Source: JA

Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: F#1 -10 cents

HB comments:

F#1



Source: PR

Source comments: Control the “f#” opening with left calf

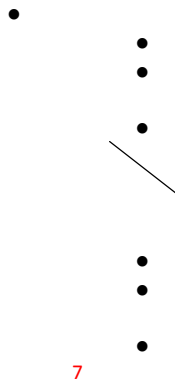
Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 1



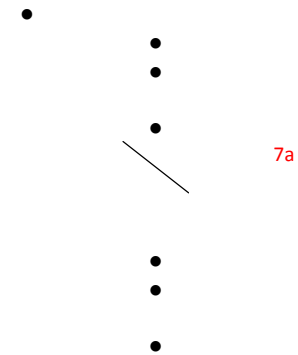
Source: JA

Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

G $\flat$ 1



Source: JA

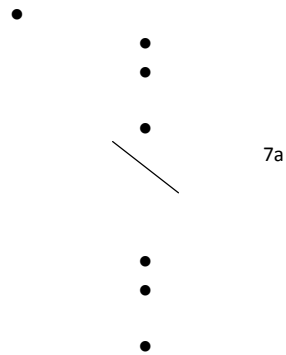
Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 1



Source: PR

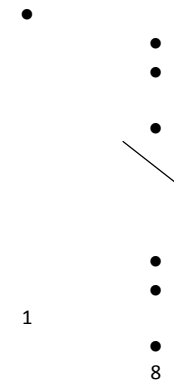
Source comments: Control the “f $\sharp$ ” opening with left calf

Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

G $\sharp$ 1



Source: JA

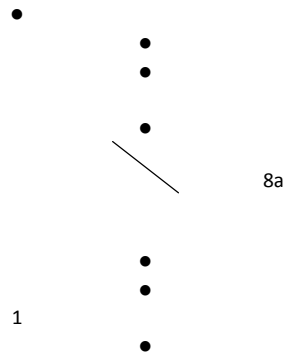
Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: G $\sharp$ 1 -9 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

G#1



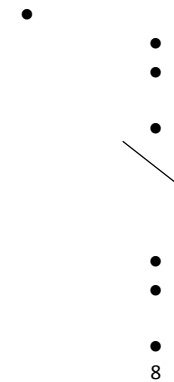
Source: JA

Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: G#1 -9 cents

HB comments:

G#1



Source: PR

Source comments: Control the “g#” opening with left knee

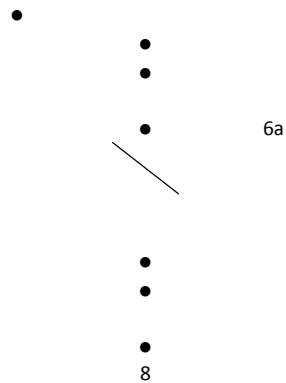
Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

Appendix A1 – Review of quartertone fingering patterns

G $\sharp$ 1



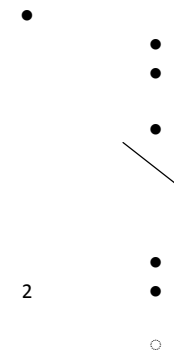
Source: HS

Source comments: No quarter tones
Bisbigliando

Pitch: G $\sharp$ 1 -7 cents

HB comments:

A $\flat$ 1



Source: JA

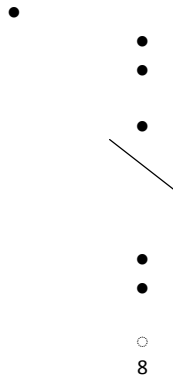
Source comments: May require extra manipulation with embouchure
and/or tongue to lower pitch

Pitch: A1 -9 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

A $\flat$ 1



Source: PR

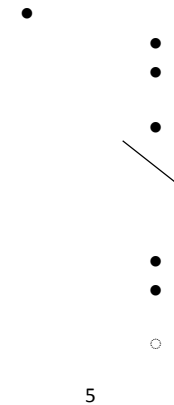
Source comments: Control the “a” opening with right knee

Pitch: -

HB comments: PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

This fingering pattern does not work as key 8 raises the pitch of the fingering pattern for A1 rather than lowers it

A $\flat$ 1



Source: HS

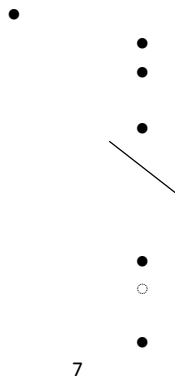
Source comments: No quarter tones
Bisbigliando

Pitch: A1 -6 cents

HB comments:

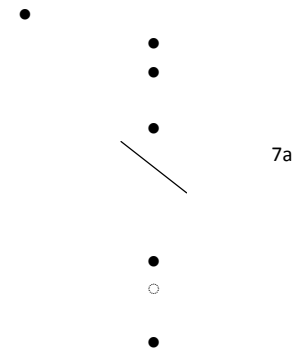
Appendix A1 – Review of quartertone fingering patterns

A $\sharp$ 1



Source: JA
Source comments:
Pitch: A $\sharp$ 1 -12 cents
HB comments:

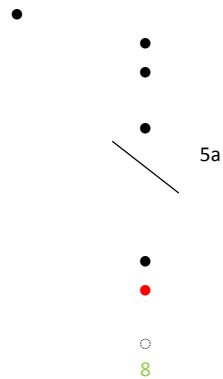
A $\sharp$ 1



Source: JA
Source comments:
Pitch: A $\sharp$ 1 -12 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

A $\sharp$ 1



Source: PR

Source comments: Control “a” opening with R.H. [right hand] second [middle] finger

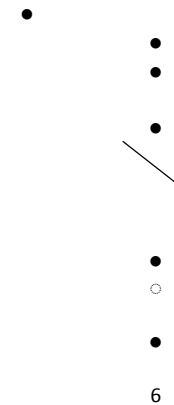
Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

RHK2 does not directly operate a pad: the key moves a pad on the side of the instrument

A $\sharp$ 1



Source: PR

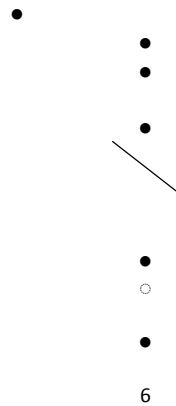
Source comments:

Pitch: A $\sharp$ 1 -13 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

A#1



Source: EMR

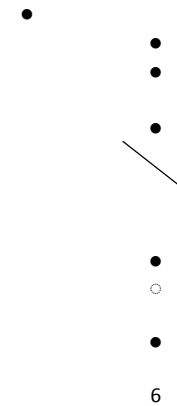
Source comments: Slightly low [in pitch]

Dark timbre

Pitch: A#1 -13 cents

HB comments:

A#1



Source: HS

Source comments: No quarter tones

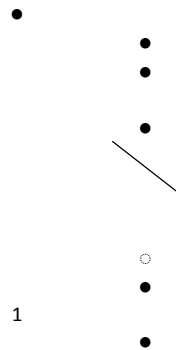
Bisbigliando

Pitch: A#1 -13 cents

HB comments:

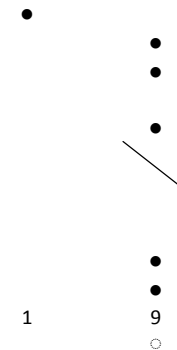
Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 1



Source: JA
Source comments:
Pitch: B1 -5 cents
HB comments:

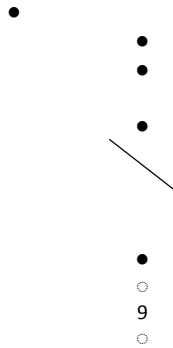
B $\flat$ 1



Source: JA
Source comments:
Pitch: B1 -3 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 1



Source: PR

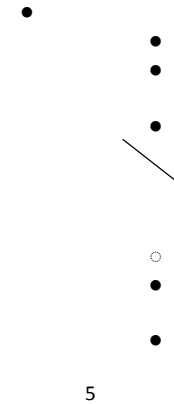
Source comments: Control the “b $\flat$ ” opening by placing R.H. [right hand] thumb on b $\flat$ lever, obtaining leverage between thumb and R.H. third [ring] finger

Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

B $\flat$ 1



Source: EMR

Source comments: Slightly high [in pitch]

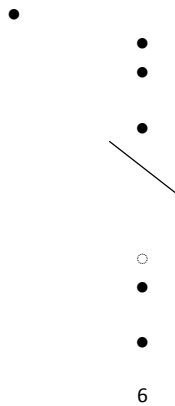
Slightly dark timbre

Pitch: B1 -3 cents

HB comments:

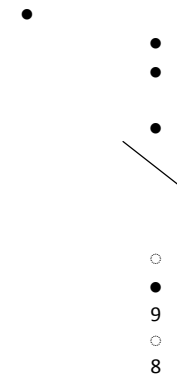
Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 1



Source: HS
Source comments: No quarter tones
 Bisbigliando
Pitch: B1 -1 cent
HB comments:

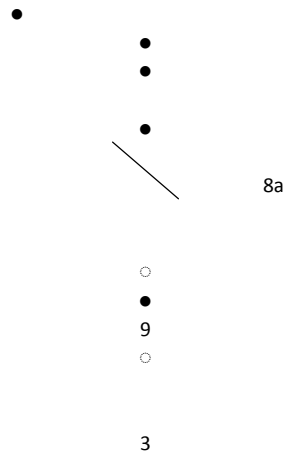
B $\sharp$ 1



Source: JA
Source comments:
Pitch: B1 +37 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 1



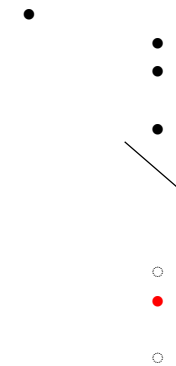
Source: JA

Source comments:

Pitch: B1 +37 cents

HB comments: Good sound, open

B $\sharp$ 1



Source: PR

Source comments: Control the air space below the R.H. [right hand] second [middle] finger

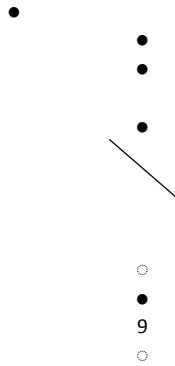
Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 1



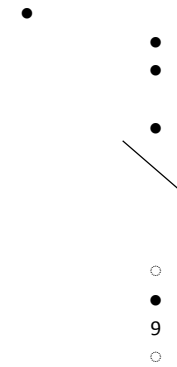
Source: PR

Source comments:

Pitch: B1 +39 cents

HB comments:

B $\sharp$ 1



Source: EMR

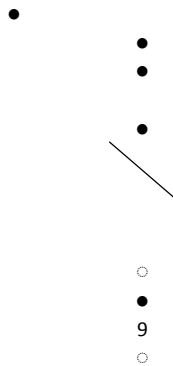
Source comments: Slightly bright timbre

Pitch: B1 +39 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 1



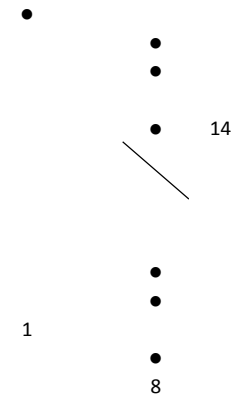
Source: HS

Source comments:

Pitch: B1 +39 cents

HB comments:

C $\sharp$ 2



Source: JA

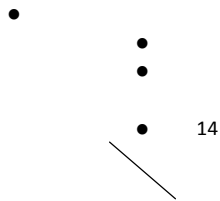
Source comments:

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

Appendix A1 – Review of quartertone fingering patterns

C#2



Source: PR

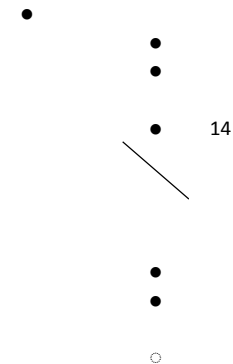
Source comments: Control the “c#” opening with the L.H. [left hand] little finger

Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

C#2



Source: EMR

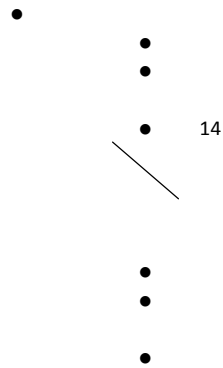
Source comments: Dark timbre

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

Appendix A1 – Review of quartertone fingering patterns

C $\sharp$ 2



Source: HS

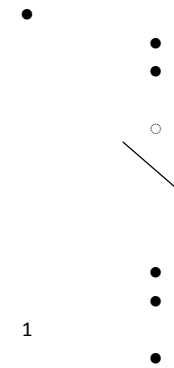
Source comments: Very poor tone quality. With the aid of the embouchure

Not possible on the Selmer bass clarinet.

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

D $\flat$ 2



Source: JA

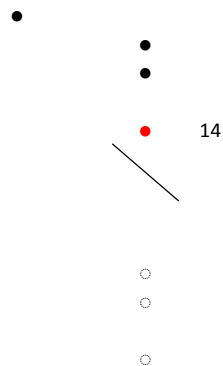
Source comments:

Pitch: D2 -8 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 2



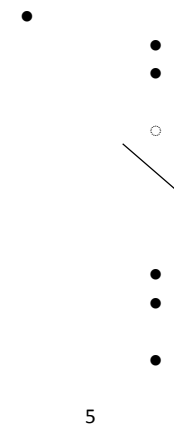
Source: PR

Source comments: Control air space with L.H. third [ring] finger

Pitch: -

HB comments: Imprecise

D $\flat$ 2



Source: EMR

Source comments: Slightly high [in pitch]

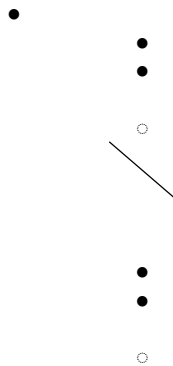
Dark timbre

Pitch: D2 -4 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 2



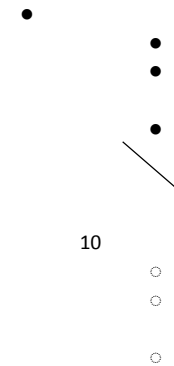
Source: HS

Source comments: Very poor tone quality
With the aid of the embouchure

Pitch: D2 +2 cents

HB comments:

D $\sharp$ 2



Source: JA

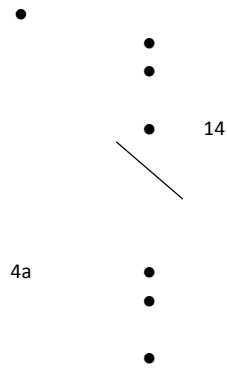
Source comments:

Pitch: D $\sharp$ 2 -27 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

D#2



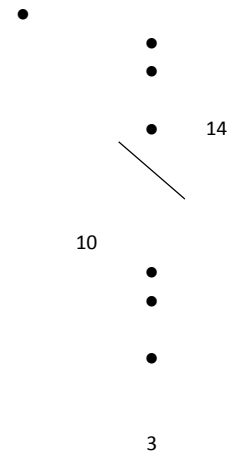
Source: JA

Source comments:

Pitch: -

HB comments: This fingering pattern could not be tested as key 4a and key 14 have different functions on Buffet-Crampon instruments

D#2



Source: JA

Source comments:

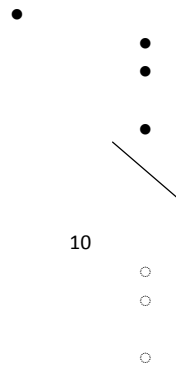
Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

Without key 14 the pitch was measured as D2 +23 cents

Appendix A1 – Review of quartertone fingering patterns

D#2



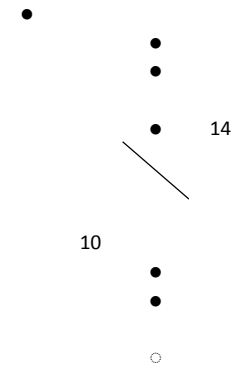
Source: PR

Source comments:

Pitch: D#2 -27 cents

HB comments:

D#2



Source: EMR

Source comments: Slightly high [in pitch]

Slightly dark timbre

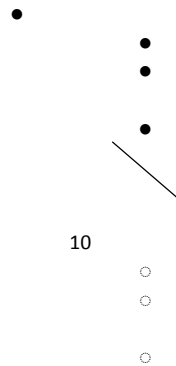
Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

Without key 14 the pitch was measured as D#2 -43 cents

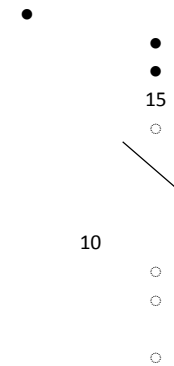
Appendix A1 – Review of quartertone fingering patterns

D $\sharp$ 2



Source: HS
Source comments:
Pitch: D $\sharp$ 2 -27 cents
HB comments:

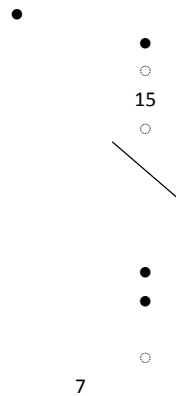
E $\flat$ 2



Source: JA
Source comments:
Pitch: E $\flat$ 2 -51 cents
HB comments:

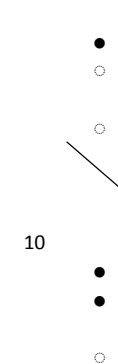
Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 2



Source: JA
Source comments:
Pitch: E $\flat$ 2 +44 cents
HB comments:

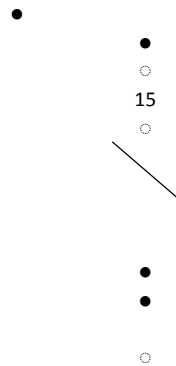
E $\flat$ 2



Source: JA
Source comments:
Pitch: E2 -49 cents
HB comments:

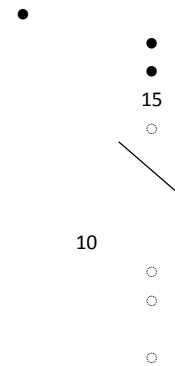
Appendix A1 – Review of quartertone fingering patterns

E_♭2



Source: PR
Source comments:
Pitch: E2 -49 cents
HB comments:

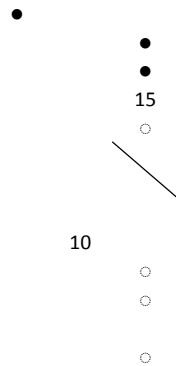
E_♭2



Source: PR
Source comments:
Pitch: E2 -51 cents
HB comments:

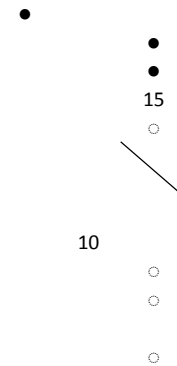
Appendix A1 – Review of quartertone fingering patterns

E_♭2



Source: EMR
Source comments:
Pitch: E_♭2 -51 cents
HB comments:

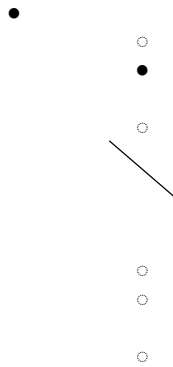
E_♭2



Source: HS
Source comments:
Pitch: E_♭2 -51 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 2



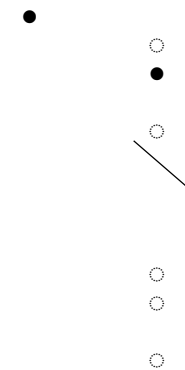
Source: JA

Source comments:

Pitch: E2 +31 cents

HB comments:

E $\sharp$ 2



Source: PR

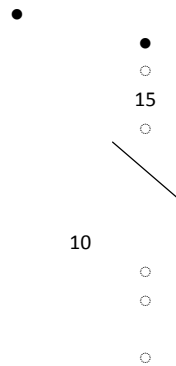
Source comments:

Pitch: E2 +31 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 2



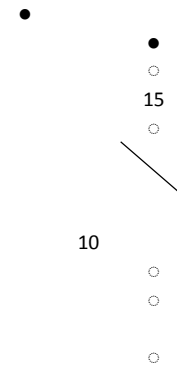
Source: PR

Source comments:

Pitch: E2 +23 cents

HB comments:

E $\sharp$ 2



Source: EMR

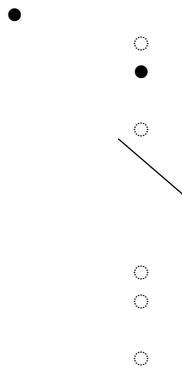
Source comments: Slightly bright timbre

Pitch: E2 +23 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 2



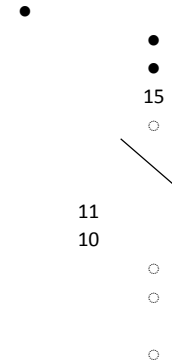
Source: HS

Source comments:

Pitch: E2 +31 cents

HB comments:

F $\sharp$ 2



Source: JA

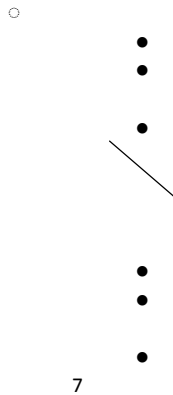
Source comments:

Pitch: F2 +47 cents

HB comments:

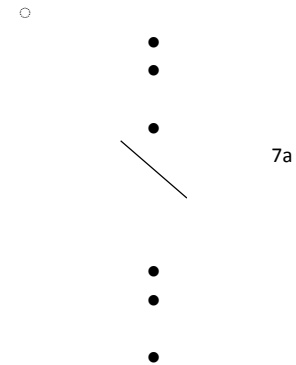
Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 2



Source: JA
Source comments:
Pitch: F $\sharp$ 2 -40 cents
HB comments:

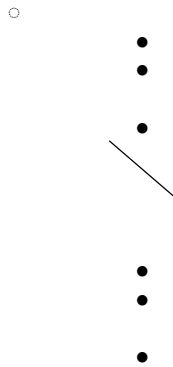
F $\sharp$ 2



Source: JA
Source comments:
Pitch: F $\sharp$ 2 -40 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 2



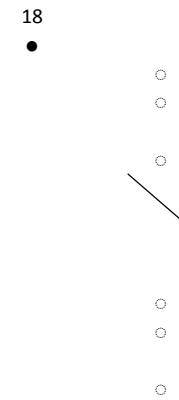
Source: PR

Source comments:

Pitch: F $\sharp$ 2 -34 cents

HB comments:

F $\sharp$ 2



Source: PR

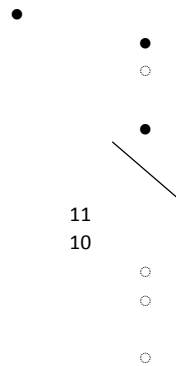
Source comments:

Pitch: -

HB comments: The given fingering pattern is for C4 and must be underblown. This is not stated in Rehfeldt. It has a very different sound (subtone)

Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 2



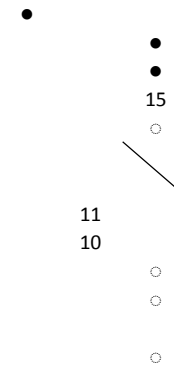
Source: EMR

Source comments: Slightly dark timbre

Pitch: F2 +38 cents

HB comments: LHK2 automatically closes when LHK3 is closed

F $\sharp$ 2



Source: HS

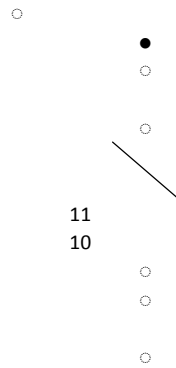
Source comments:

Pitch: F2 +47 cents

HB comments:

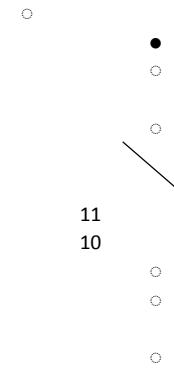
Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 2



Source: JA
Source comments:
Pitch: G $\flat$ 2 +38 cents
HB comments:

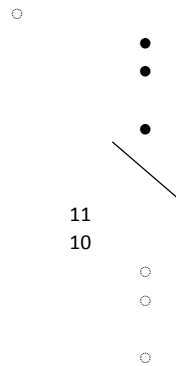
G $\flat$ 2



Source: PR
Source comments:
Pitch: G $\flat$ 2 +38 cents
HB comments:

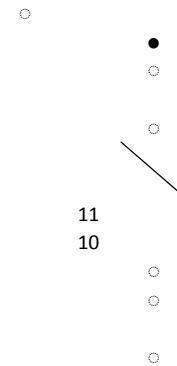
Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 2



Source: PR
Source comments:
Pitch: G $\flat$ 2 +30 cents
HB comments:

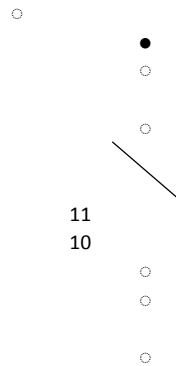
G $\flat$ 2



Source: EMR
Source comments:
Pitch: G $\flat$ 2 +38 cents
HB comments:

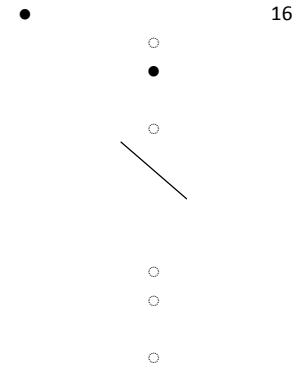
Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 2



Source: HS
Source comments:
Pitch: G $\flat$ 2 +38 cents
HB comments:

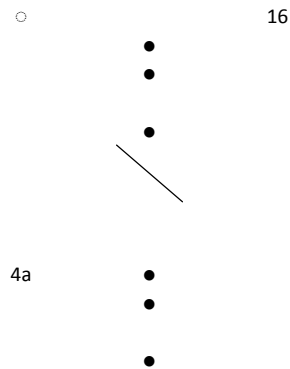
G $\sharp$ 2



Source: JA
Source comments:
Pitch: G $\sharp$ 2 -44 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

G#2



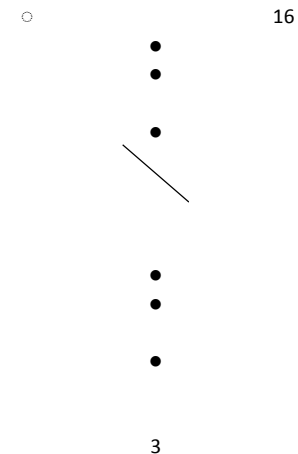
Source: JA

Source comments:

Pitch: -

HB comments: This fingering pattern could not be tested as key 4a has a different function on Buffet-Crampon instruments

G#2



Source: JA

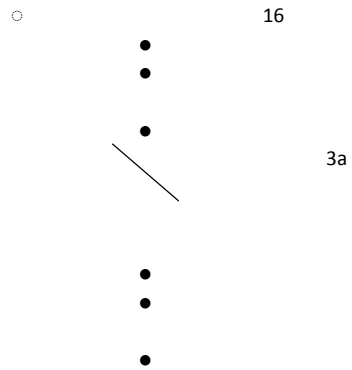
Source comments:

Pitch: G#2 -37 cents

HB comments:

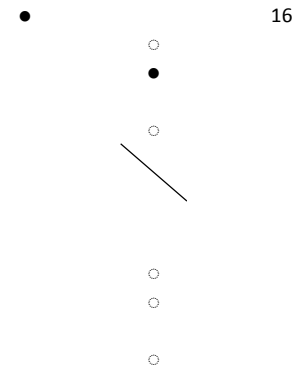
Appendix A1 – Review of quartertone fingering patterns

G#2



Source: JA
Source comments:
Pitch: G#2 -37 cents
HB comments:

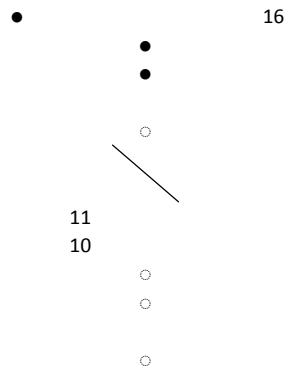
G#2



Source: PR
Source comments:
Pitch: G#2 -44 cents
HB comments:

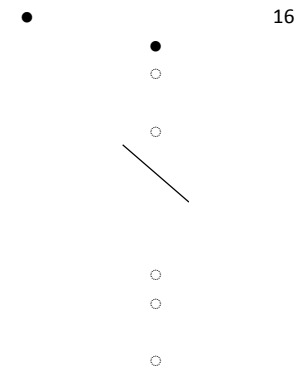
Appendix A1 – Review of quartertone fingering patterns

G#2



Source: EMR
Source comments:
Pitch: G#2 -33 cents
HB comments:

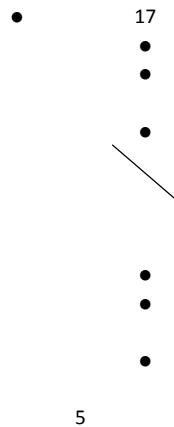
G#2



Source: HS
Source comments:
Pitch: G#2 -47 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

A $\flat$ 2



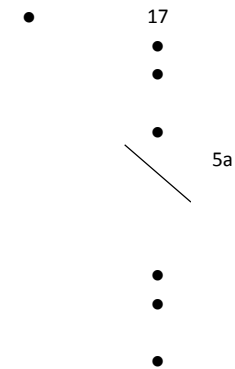
Source: JA

Source comments:

Pitch: A2 -35 cents

HB comments: Difficult to open key 17

A $\flat$ 2



Source: JA

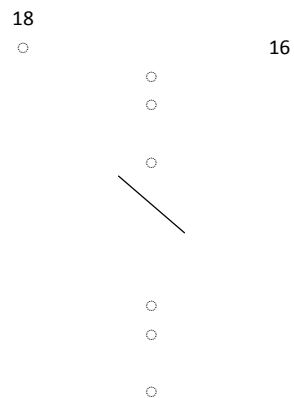
Source comments:

Pitch: A2 -35 cents

HB comments: Difficult to open key 17

Appendix A1 – Review of quartertone fingering patterns

A $\flat$ 2



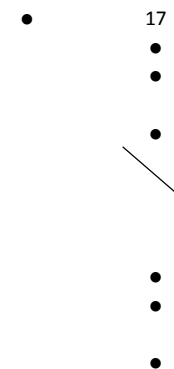
Source: PR

Source comments:

Pitch: A2 +13 cents

HB comments: Very bad sound quality

A $\flat$ 2



Source: EMR

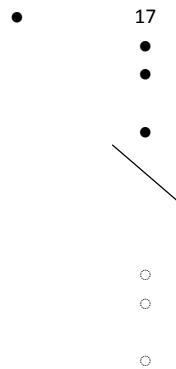
Source comments: Slightly dark timbre

Pitch: A2 -27 cents

HB comments: Difficult to open key 17

Appendix A1 – Review of quartertone fingering patterns

A $\flat$ 2



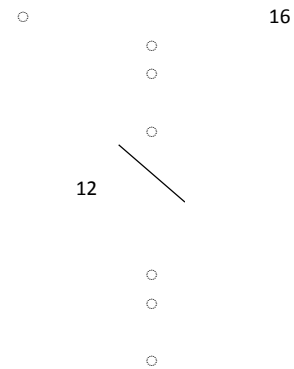
Source: HS

Source comments: With the aid of the embouchure

Pitch: A2 -14 cents

HB comments: Difficult to open key 17

A $\sharp$ 2



Source: JA

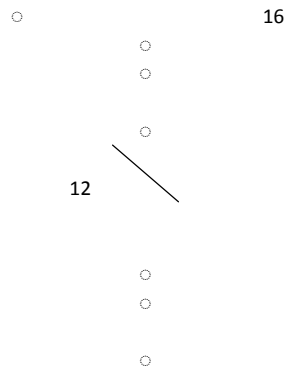
Source comments:

Pitch: A $\sharp$ 2 -30 cents

HB comments:

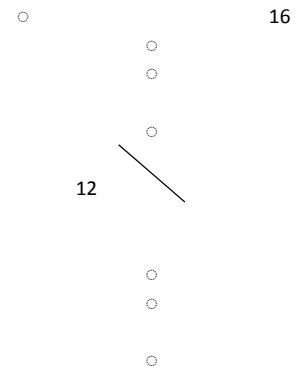
Appendix A1 – Review of quartertone fingering patterns

A#2



Source: PR
Source comments:
Pitch: A#2 -30 cents
HB comments:

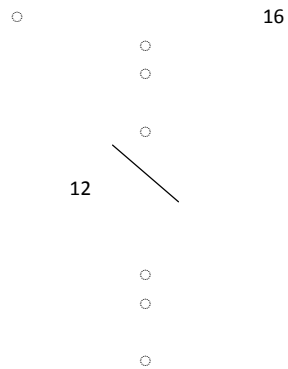
A#2



Source: EMR
Source comments:
Pitch: A#2 -30 cents
HB comments:

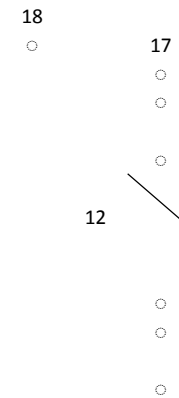
Appendix A1 – Review of quartertone fingering patterns

A $\sharp$ 2



Source: HS
Source comments:
Pitch: A $\sharp$ 2 -30 cents
HB comments:

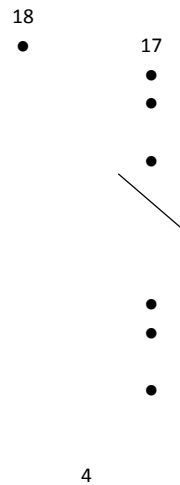
B $\flat$ 2



Source: JA
Source comments:
Pitch: B $\flat$ 2 -26 cents
HB comments:

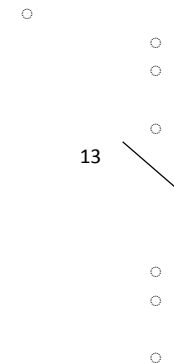
Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 2



Source: JA
Source comments:
Pitch: B2 -47 cents
HB comments:

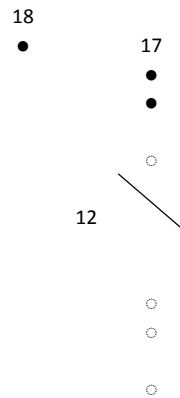
B $\flat$ 2



Source: PR
Source comments:
Pitch: B2 -36 cents
HB comments:

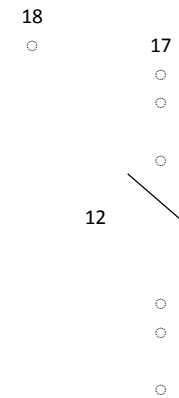
Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 2



Source: EMR
Source comments: Slightly high
Pitch: B2 -24 cents
HB comments:

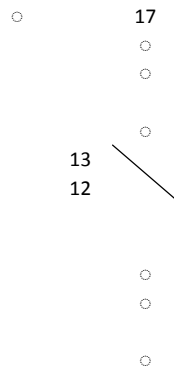
B $\flat$ 2



Source: HS
Source comments:
Pitch: B2 -26 cents
HB comments:

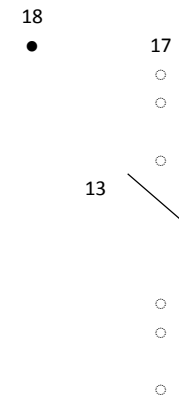
Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 2



Source: JA
Source comments:
Pitch: B2 +46 cents
HB comments:

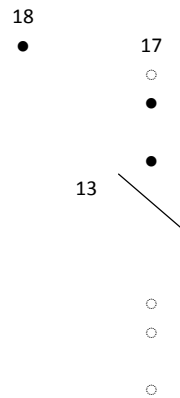
B $\sharp$ 2



Source: JA
Source comments:
Pitch: C3 -45 cents
HB comments:

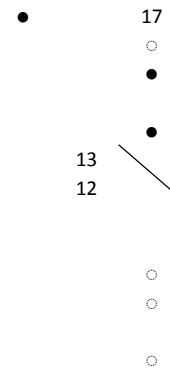
Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 2



Source: PR
Source comments:
Pitch: C3 -49 cents
HB comments:

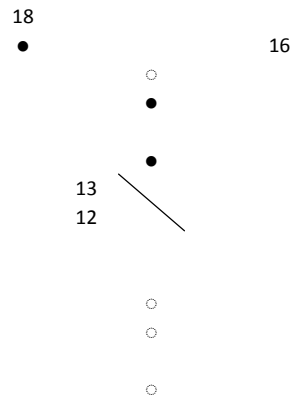
B $\sharp$ 2



Source: PR
Source comments:
Pitch: B2 +37 cents
HB comments:

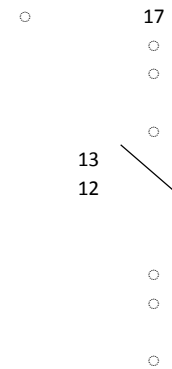
Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 2



Source: PR
Source comments:
Pitch: C3 -15 cents
HB comments:

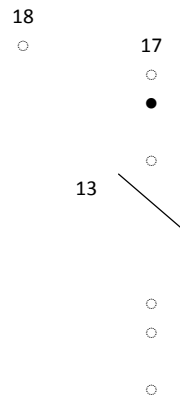
B $\sharp$ 2



Source: PR
Source comments:
Pitch: B2 +46 cents
HB comments:

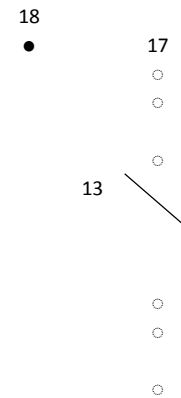
Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 2



Source: PR
Source comments:
Pitch: C3 -48 cents
HB comments:

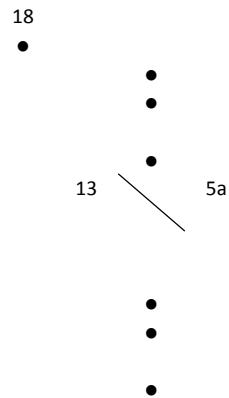
B $\sharp$ 2



Source: EMR
Source comments:
Pitch: C3 -45 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 2



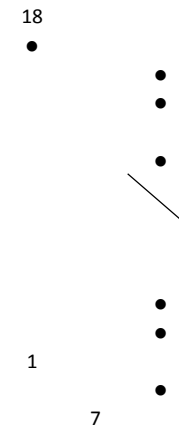
Source: HS

Source comments: Key 13 must be played with the right hand thumb (away from under the thumb support)

Pitch: C3 -36 cents

HB comments:

C $\sharp$ 3



Source: JA

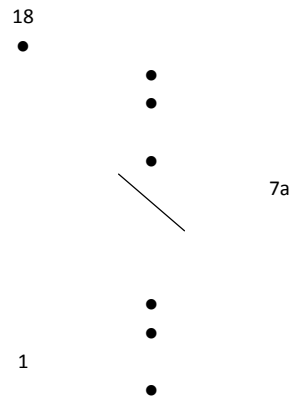
Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: C $\sharp$ 3 -13 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

C#3



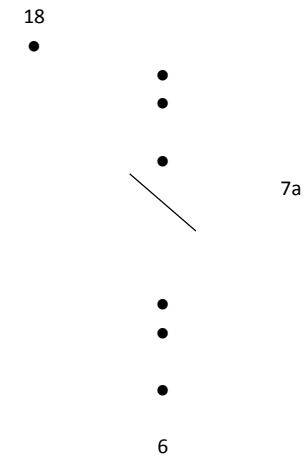
Source: JA

Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: C#3 -13 cents

HB comments:

C#3



Source: PR

Source comments: Control the “c#” opening by obtaining leverage against the left calf

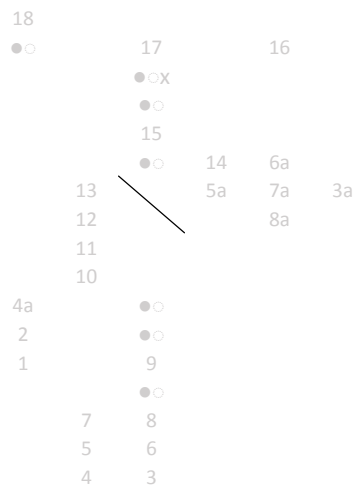
Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

Appendix A1 – Review of quartertone fingering patterns

C#3



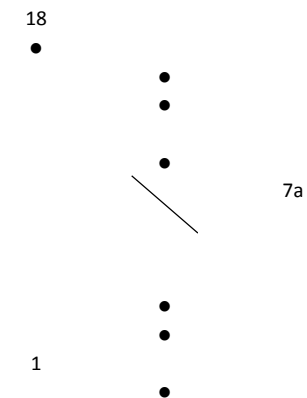
Source: EMR

Source comments:

Pitch: -

HB comments: No fingering pattern is given for this pitch

C#3



Source: HS

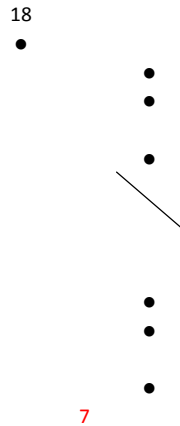
Source comments: Very poor tone quality
With the aid of the embouchure

Pitch: C#3 -13 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 3



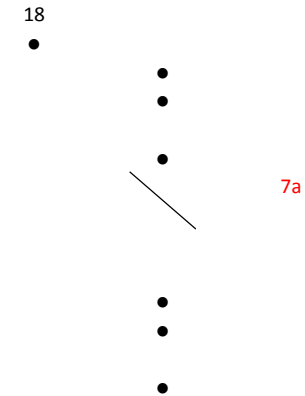
Source: JA

Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

D $\flat$ 3



Source: JA

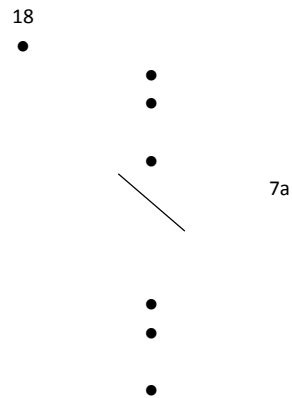
Source comments: May require extra manipulation with embouchure and/or tongue to lower pitch

Pitch: -

HB comments: Imprecise

Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 3



Source: PR

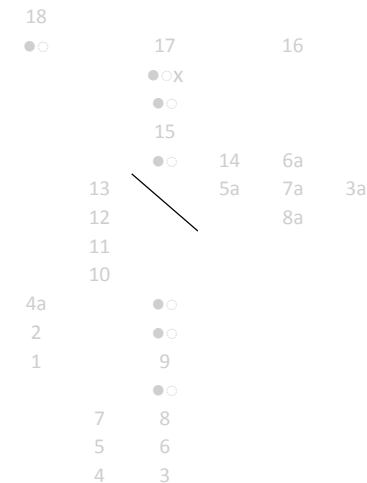
Source comments: Control the “c#” opening by obtaining leverage against the left calf

Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

D $\flat$ 3



Source: EMR

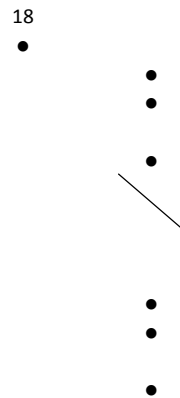
Source comments:

Pitch: -

HB comments: No fingering pattern is given for this pitch

Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 3



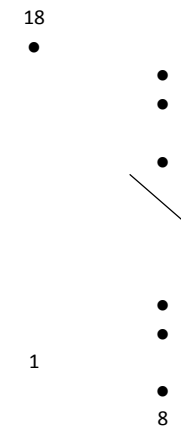
Source: HS

Source comments: Very poor tone quality
Only possible with embouchure

Pitch: -

HB comments: D3 fingering pattern manipulated by the embouchure

D $\sharp$ 3



Source: JA

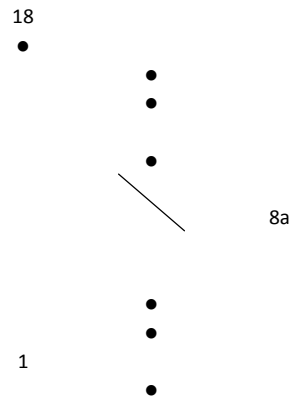
Source comments:

Pitch: D3 +36 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

D $\sharp$ 3



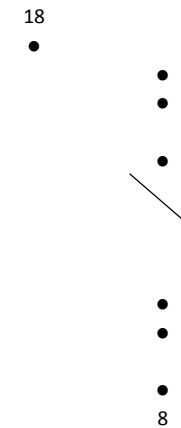
Source: JA

Source comments:

Pitch: D3 +36 cents

HB comments:

D $\sharp$ 3



Source: PR

Source comments: Control the “d $\sharp$ ” opening by obtaining leverage against the left knee

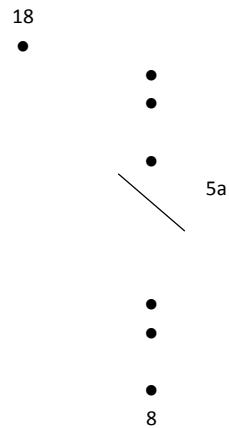
Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

Appendix A1 – Review of quartertone fingering patterns

D#3



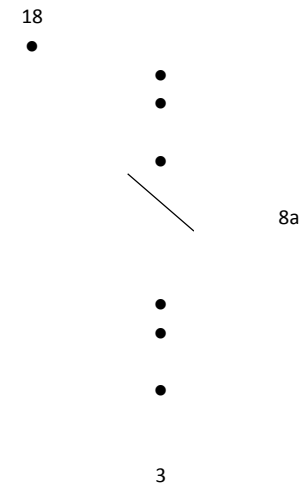
Source: EMR

Source comments: Slightly high

Pitch: D#3 -18 cents

HB comments:

D#3



Source: HS

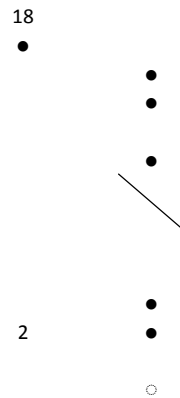
Source comments: With the aid of the embouchure

Pitch: D#3 -31 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

E₄3



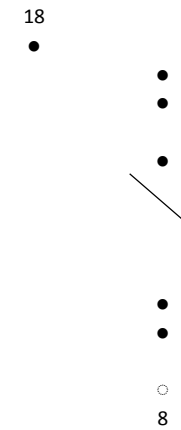
Source: JA

Source comments:

Pitch: E3 -44 cents

HB comments:

E₄3



Source: PR

Source comments: Control “e” opening by pressing against right knee, or with R.H. third finger

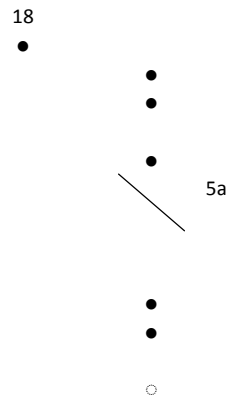
Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 3



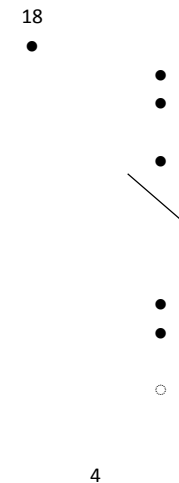
Source: EMR

Source comments: Slightly high

Pitch: E3 -15 cents

HB comments:

E $\flat$ 3



Source: HS

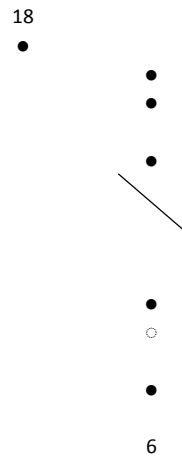
Source comments: With the aid of the embouchure

Pitch: E3 -18 cents

HB comments:

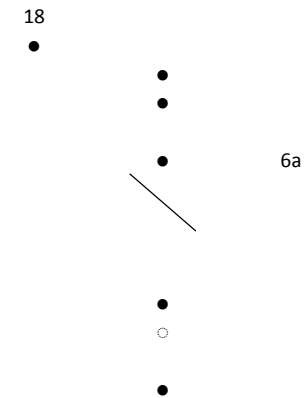
Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 3



Source: JA
Source comments:
Pitch: F3 -44 cents
HB comments:

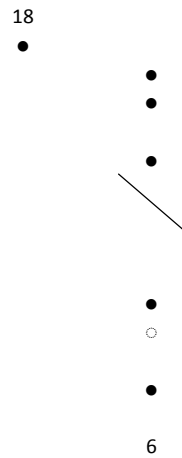
E $\sharp$ 3



Source: JA
Source comments:
Pitch: F3 -44 cents
HB comments:

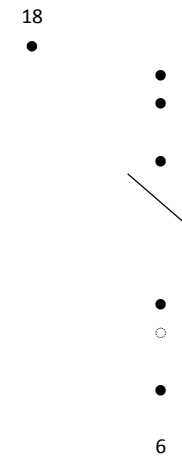
Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 3



Source: PR
Source comments: (lip up)
Pitch: F3 -44 cents
HB comments:

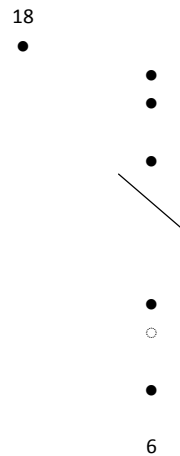
E $\sharp$ 3



Source: EMR
Source comments: Dark timbre
Pitch: F3 -44 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 3



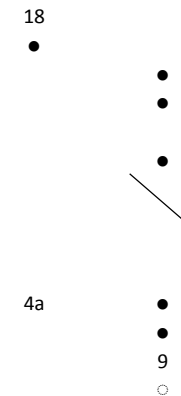
Source: HS

Source comments:

Pitch: F3 -44 cents

HB comments:

F $\sharp$ 3



Source: JA

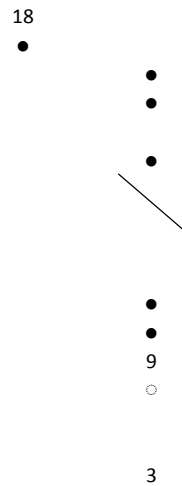
Source comments:

Pitch: -

HB comments: This fingering pattern could not be tested as key 4a has a different function on Buffet-Crampon instruments

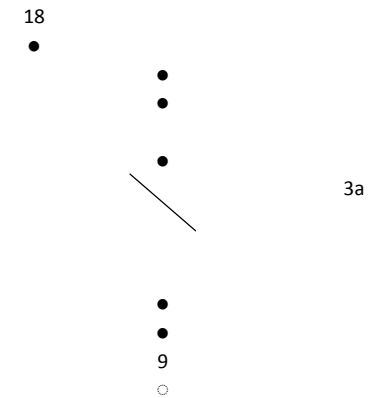
Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 3



Source: JA
Source comments:
Pitch: F $\sharp$ 3 -17 cents
HB comments:

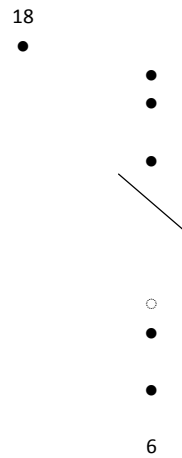
F $\sharp$ 3



Source: JA
Source comments:
Pitch: F $\sharp$ 3 -17 cents
HB comments:

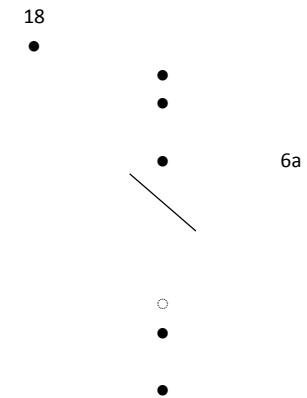
Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 3



Source: JA
Source comments:
Pitch: F $\sharp$ 3 -21 cents
HB comments:

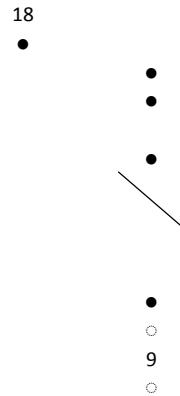
F $\sharp$ 3



Source: JA
Source comments:
Pitch: F $\sharp$ 3 -21 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 3



Source: PR

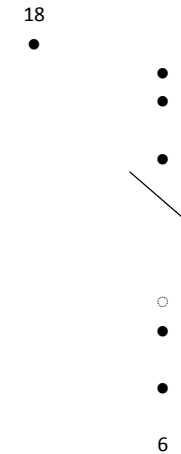
Source comments: Control the “b $\sharp$ ” lever with R.H. third finger. Additional accuracy may be obtained by placing the R.H. thumb on the “b $\sharp$ ” pad

Pitch: -

HB comments: Imprecise. F $\sharp$ 3 fingering pattern

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

F $\sharp$ 3



Source: EMR

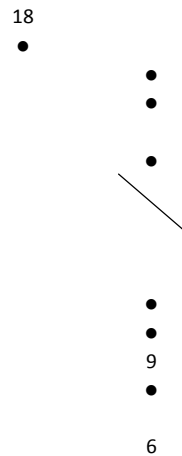
Source comments: Dark timbre

Pitch: F $\sharp$ 3 -21 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 3



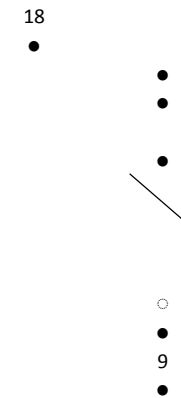
Source: HS

Source comments: Very poor tone quality. Key 9 played with the 4th finger [ring finger] of the right hand

Pitch: F $\sharp$ 3 -40 cents

HB comments: Key 6 has to be played by key 6a. The ring finger operates key 9 and the little finger operates the right hand 3 key

G $\flat$ 3



Source: JA

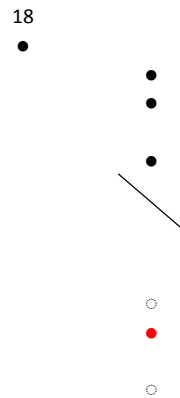
Source comments:

Pitch: G $\flat$ 3 +40 cents

HB comments: Two RH fingers will have to change position in order to play this fingering pattern

Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 3



Source: PR

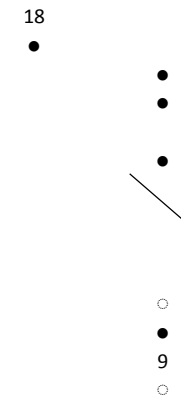
Source comments: Control the air space below the R.H. second finger

Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

G $\flat$ 3



Source: PR

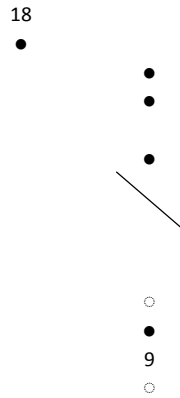
Source comments:

Pitch: G $\flat$ 3 +24 cents

HB comments:

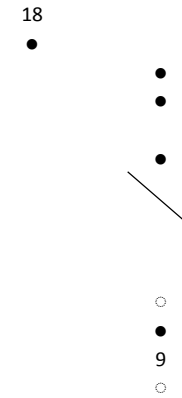
Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 3



Source: EMR
Source comments:
Pitch: G $\flat$ 3 +24 cents
HB comments:

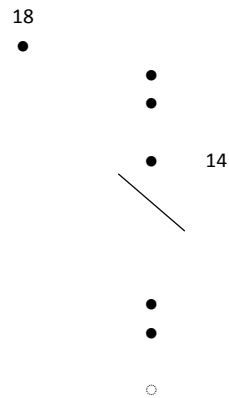
G $\flat$ 3



Source: HS
Source comments:
Pitch: G $\flat$ 3 +24 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

G $\sharp$ 3



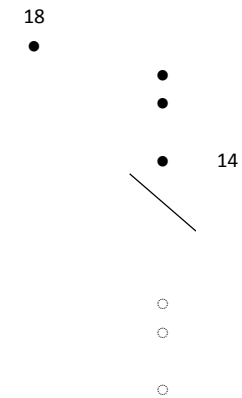
Source: JA

Source comments:

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

G $\sharp$ 3



Source: PR

Source comments: Control the air space above the “g $\sharp$ ” opening with one of the R.H. fingers, or with the L.H. “g $\sharp$ ” lever

Pitch: -

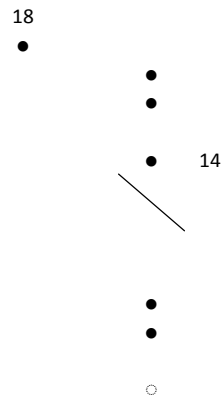
HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

G $\sharp$ 3 standard fingering pattern

Appendix A1 – Review of quartertone fingering patterns

G#3



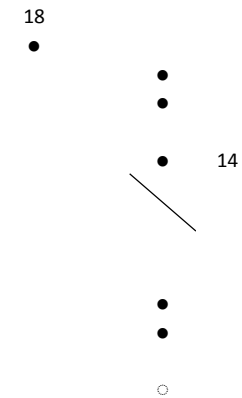
Source: EMR

Source comments: Slightly dark timbre

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

G#3



Source: HS

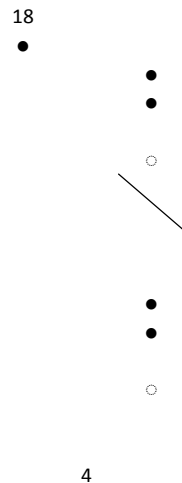
Source comments: Not possible on the Selmer bass clarinet

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

Appendix A1 – Review of quartertone fingering patterns

A $\flat$ 3



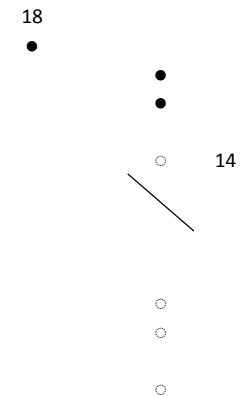
Source: JA

Source comments:

Pitch: A3 -33 cents

HB comments:

A $\flat$ 3



Source: PR

Source comments: Control air space with L.H. [left hand] third [ring] finger

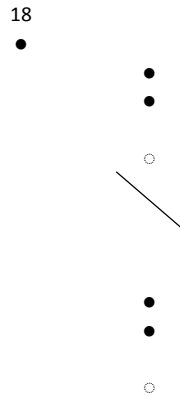
Pitch: -

HB comments: Imprecise

PR also suggests this fingering pattern for the pitches an 1/8 higher and lower than this note

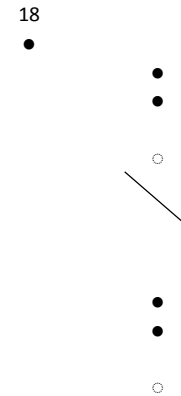
Appendix A1 – Review of quartertone fingering patterns

A $\flat$ 3



Source: EMR
Source comments:
Pitch: A3 -26 cents
HB comments:

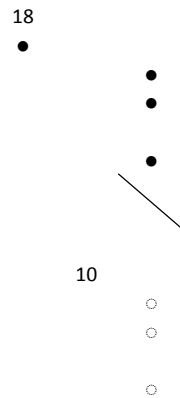
A $\flat$ 3



Source: HS
Source comments: With the aid of the embouchure
Pitch: A3 -26 cents
HB comments:

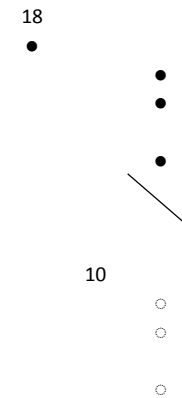
Appendix A1 – Review of quartertone fingering patterns

A $\sharp$ 3



Source: JA
Source comments:
Pitch: A3 +44 cents
HB comments:

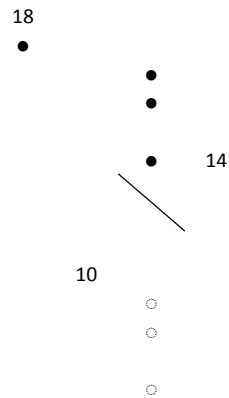
A $\sharp$ 3



Source: PR
Source comments:
Pitch: A3 +44 cents
HB comments:

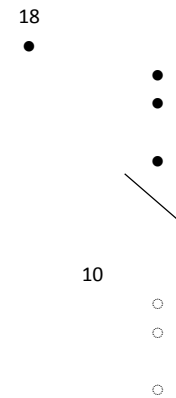
Appendix A1 – Review of quartertone fingering patterns

A $\sharp$ 3



Source: EMR
Source comments:
Pitch: A $\sharp$ 3 -29 cents
HB comments:

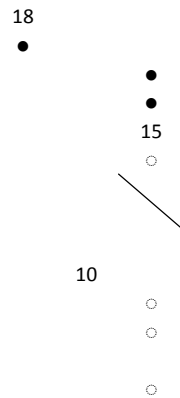
A $\sharp$ 3



Source: HS
Source comments:
Pitch: A3 +44 cents
HB comments:

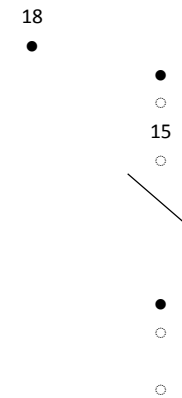
Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 3



Source: JA
Source comments:
Pitch: B $\flat$ 3 +40 cents
HB comments:

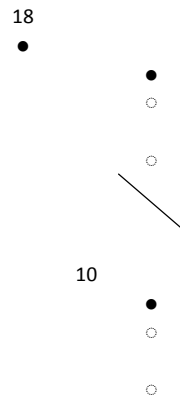
B $\flat$ 3



Source: JA
Source comments:
Pitch: B $\flat$ 3 +37 cents
HB comments:

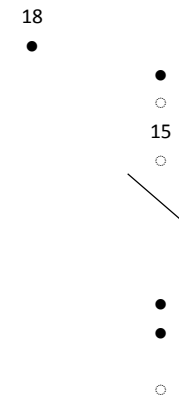
Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 3



Source: JA
Source comments:
Pitch: B $\flat$ 3 +34 cents
HB comments:

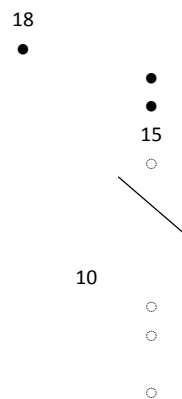
B $\flat$ 3



Source: PR
Source comments:
Pitch: B $\flat$ 3 +33 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 3



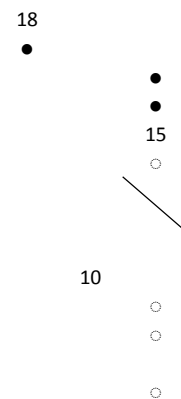
Source: PR

Source comments:

Pitch: B $\flat$ 3 +40 cents

HB comments:

B $\flat$ 3



Source: EMR

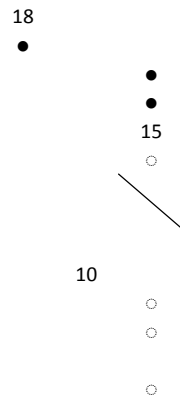
Source comments: Slightly bright timbre

Pitch: B $\flat$ 3 +40 cents

HB comments:

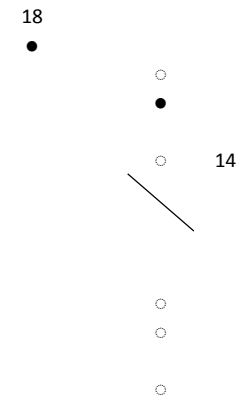
Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 3



Source: HS
 Source comments:
 Pitch: B $\flat$ 3 +40 cents
 HB comments:

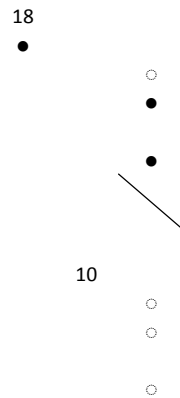
B $\sharp$ 3



Source: JA
 Source comments:
 Pitch: B3 +8 cents
 HB comments:

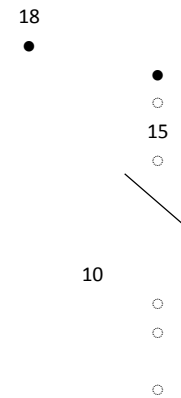
Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 3



Source: JA
Source comments:
Pitch: B3 +23 cents
HB comments:

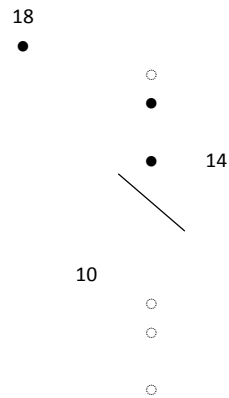
B $\sharp$ 3



Source: PR
Source comments:
Pitch: B3 +22 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 3



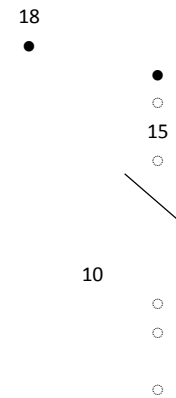
Source: PR

Source comments:

Pitch: B3 +34 cents

HB comments:

B $\sharp$ 3



Source: EMR

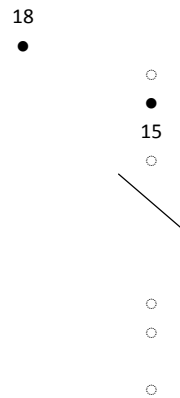
Source comments: Slightly bright timbre

Pitch: B3 +22 cents

HB comments:

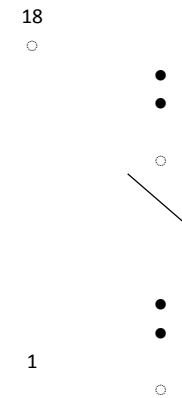
Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 3



Source: HS
Source comments:
Pitch: B3 +49 cents
HB comments:

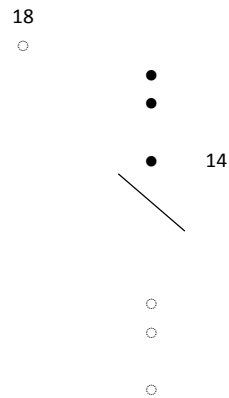
C $\sharp$ 4



Source: JA
Source comments:
Pitch: C4 +49 cents
HB comments:

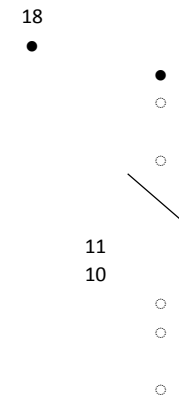
Appendix A1 – Review of quartertone fingering patterns

C#4



Source: JA
Source comments:
Pitch: C4 +43 cents
HB comments:

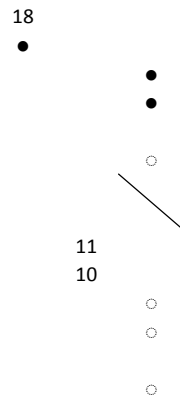
C#4



Source: JA
Source comments:
Pitch: C#4 -31 cents
HB comments:

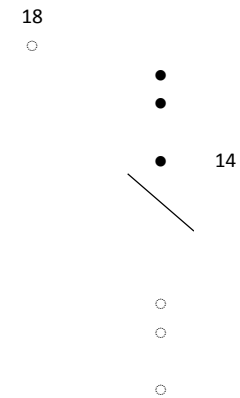
Appendix A1 – Review of quartertone fingering patterns

C#4



Source: PR
Source comments:
Pitch: C4 +29 cents
HB comments:

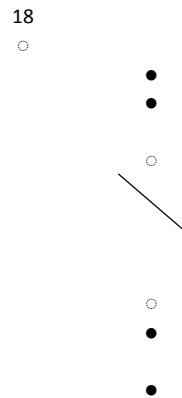
C#4



Source: PR
Source comments:
Pitch: C4 +43 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

C#4



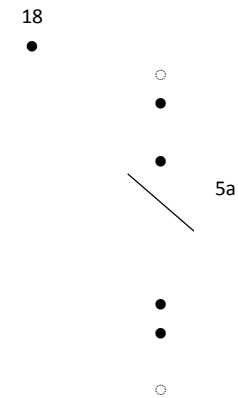
Source: PR

Source comments:

Pitch: D4 -45 cents

HB comments: Roughly a semitone too high in pitch

C#4



Source: EMR

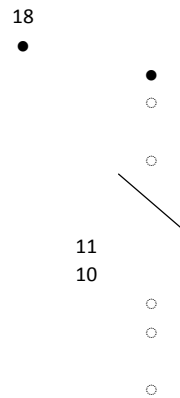
Source comments: Slightly dark timbre

Pitch: C4 +34 cents

HB comments: Bad/closed sound

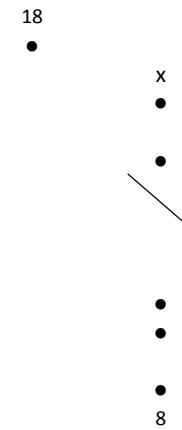
Appendix A1 – Review of quartertone fingering patterns

C#4



Source: HS
Source comments:
Pitch: C#4 -31 cents
HB comments:

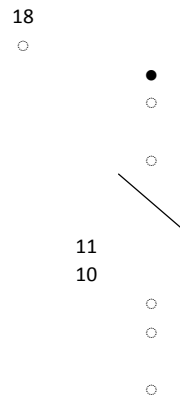
C#4



Source: HS
Source comments:
Pitch: C#4 -46 cents
HB comments:

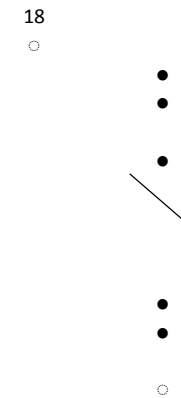
Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 4



Source: JA
Source comments:
Pitch: D $\flat$ 4 +46 cents
HB comments:

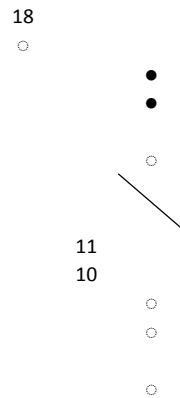
D $\flat$ 4



Source: JA
Source comments:
Pitch: D $\flat$ 4 +31 cents
HB comments:

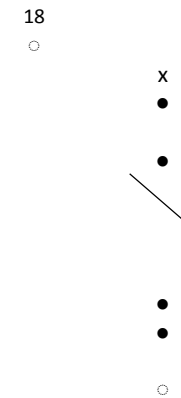
Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 4



Source: PR
Source comments:
Pitch: D $\flat$ 4 +27 cents
HB comments:

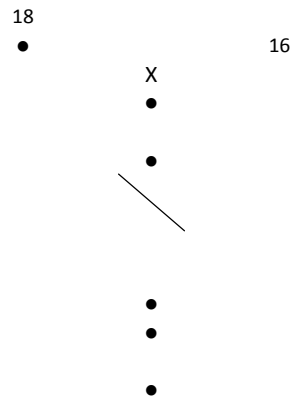
D $\flat$ 4



Source: PR
Source comments:
Pitch: D $\flat$ 4 +35 cents
HB comments:

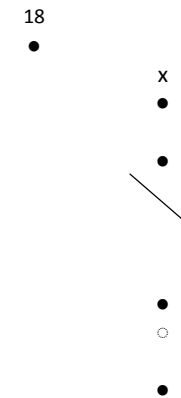
Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 4



Source: PR
Source comments:
Pitch: D4 -5 cents
HB comments:

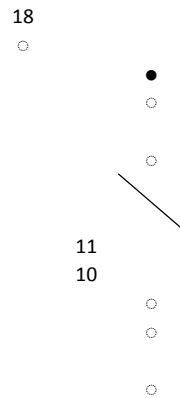
D $\flat$ 4



Source: PR
Source comments:
Pitch: D4 +16 cents
HB comments:

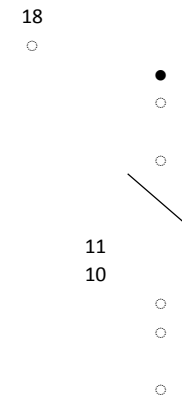
Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 4



Source: EMR
Source comments:
Pitch: D $\flat$ 4 +46 cents
HB comments:

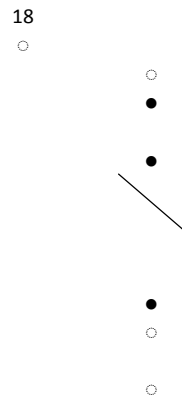
D $\flat$ 4



Source: HS
Source comments:
Pitch: D $\flat$ 4 +46 cents
HB comments:

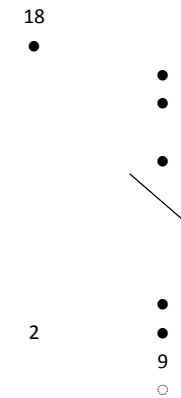
Appendix A1 – Review of quartertone fingering patterns

D $\sharp$ 4



Source: JA
Source comments:
Pitch: D4 +35 cents
HB comments:

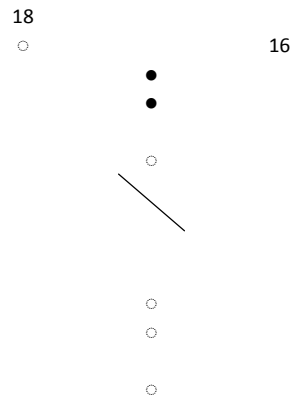
D $\sharp$ 4



Source: JA
Source comments:
Pitch: D $\sharp$ 4 -14 cents
HB comments:

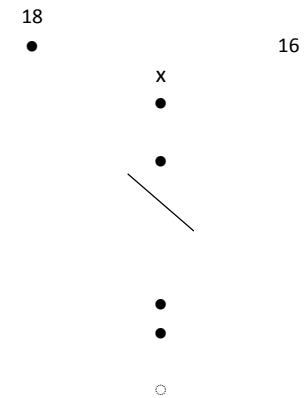
Appendix A1 – Review of quartertone fingering patterns

D $\sharp$ 4



Source: JA
Source comments:
Pitch: D $\sharp$ 4 -32 cents
HB comments:

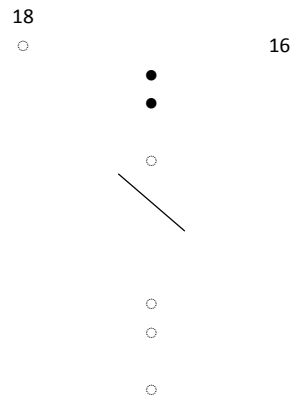
D $\sharp$ 4



Source: JA
Source comments:
Pitch: D $\sharp$ 4 -46 cents
HB comments:

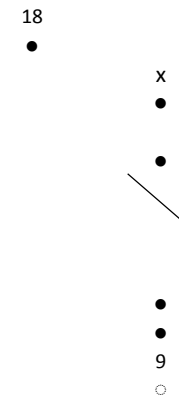
Appendix A1 – Review of quartertone fingering patterns

D#4



Source: PR
Source comments:
Pitch: D#4 -32 cents
HB comments:

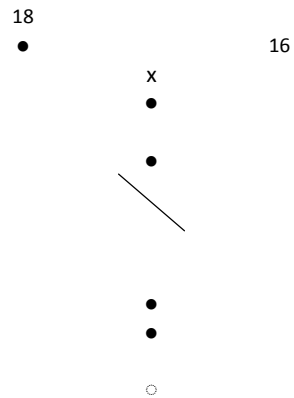
D#4



Source: PR
Source comments:
Pitch: D#4 -10 cents
HB comments:

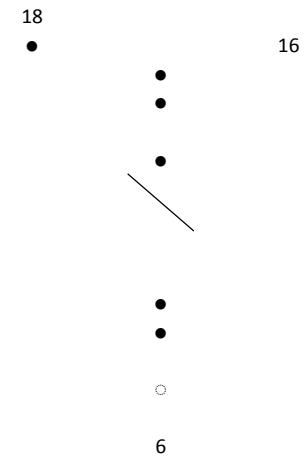
Appendix A1 – Review of quartertone fingering patterns

D $\sharp$ 4



Source: PR
Source comments:
Pitch: D $\sharp$ 4 -46 cents
HB comments:

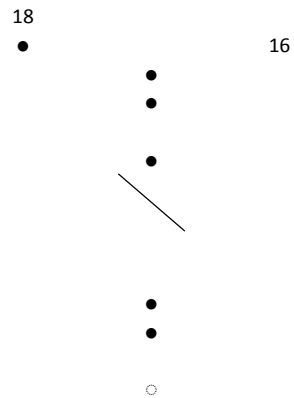
D $\sharp$ 4



Source: EMR
Source comments:
Pitch: D4 +44 cents
HB comments:

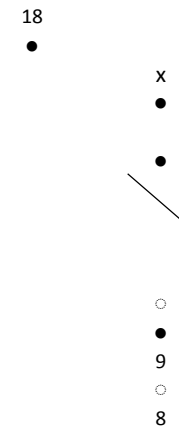
Appendix A1 – Review of quartertone fingering patterns

D $\sharp$ 4



Source: HS
Source comments:
Pitch: D $\sharp$ 4 -43 cents
HB comments:

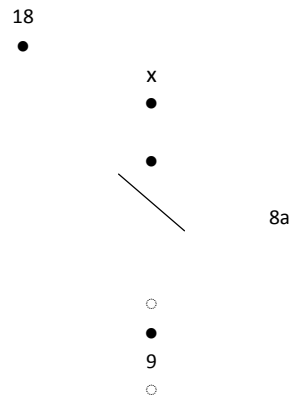
E $\flat$ 4



Source: JA
Source comments:
Pitch: E $\flat$ 4 +37 cents
HB comments:

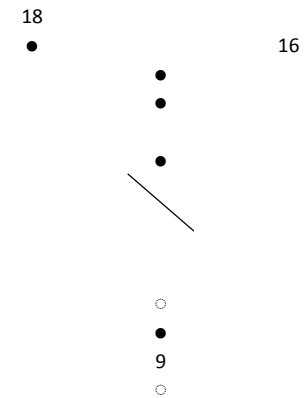
Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 4



Source: JA
 Source comments:
 Pitch: E $\flat$ 4 +37 cents
 HB comments:

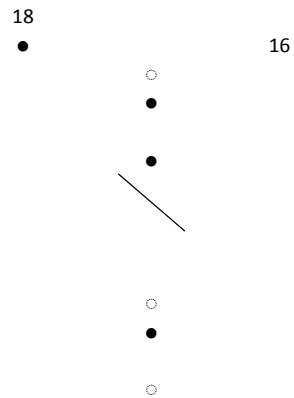
E $\flat$ 4



Source: JA
 Source comments:
 Pitch: E4 -32 cents
 HB comments:

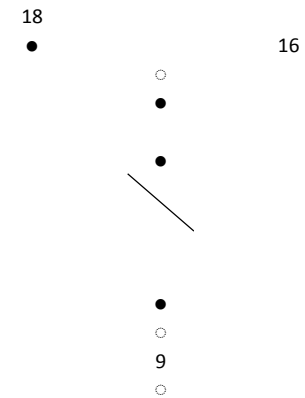
Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 4



Source: JA
Source comments:
Pitch: E4 -46 cents
HB comments:

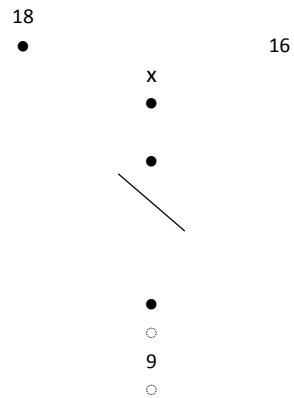
E $\flat$ 4



Source: JA
Source comments:
Pitch: E4 -42 cents
HB comments:

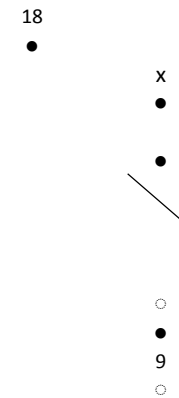
Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 4



Source: PR
Source comments:
Pitch: E $\flat$ 4 +42 cents
HB comments:

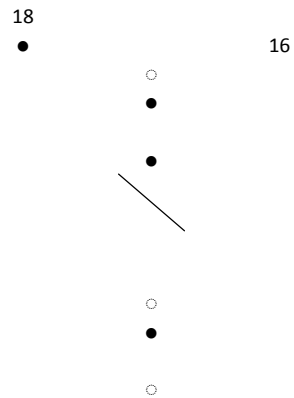
E $\flat$ 4



Source: PR
Source comments:
Pitch: E $\flat$ 4 +40 cents
HB comments:

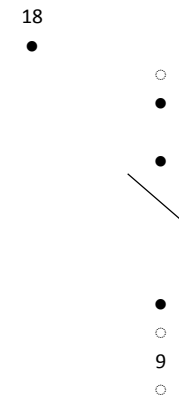
Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 4



Source: PR
Source comments:
Pitch: E4 -46 cents
HB comments:

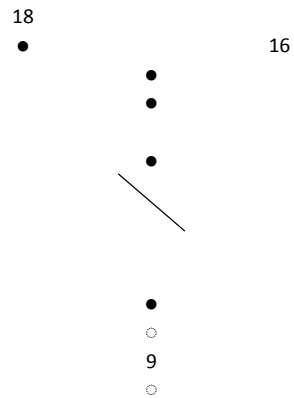
E $\flat$ 4



Source: PR
Source comments:
Pitch: E $\flat$ 4 +28 cents
HB comments:

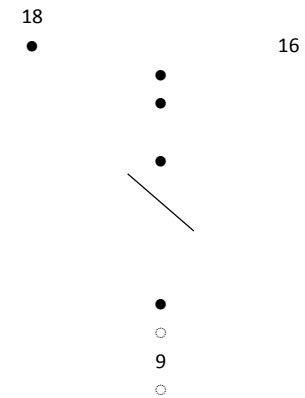
Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 4



Source: EMR
Source comments:
Pitch: E4 -47 cents
HB comments:

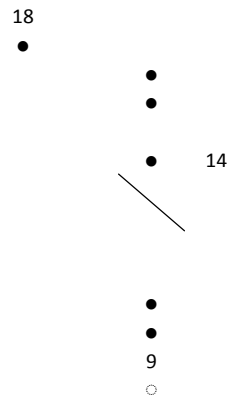
E $\flat$ 4



Source: HS
Source comments:
Pitch: E4 -47 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 4



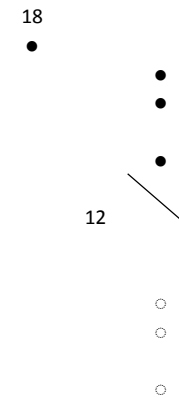
Source: JA

Source comments:

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

E $\sharp$ 4



Source: JA

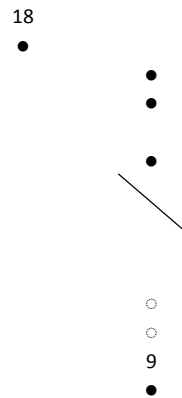
Source comments:

Pitch: F4 -21 cents

HB comments:

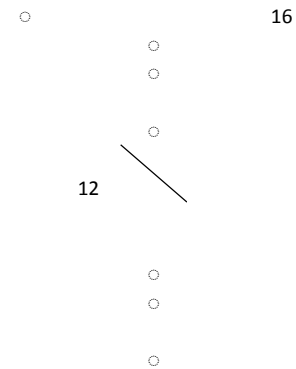
Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 4



Source: JA
Source comments:
Pitch: E4 +43 cents
HB comments:

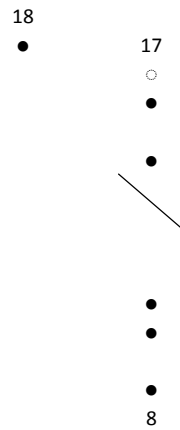
E $\sharp$ 4



Source: PR
Source comments:
Pitch: E4 +34 cents
HB comments:

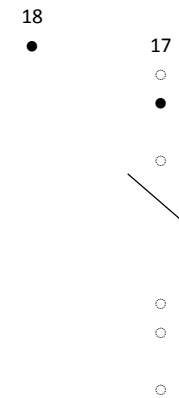
Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 4



Source: PR
Source comments:
Pitch: E4 +41 cents
HB comments:

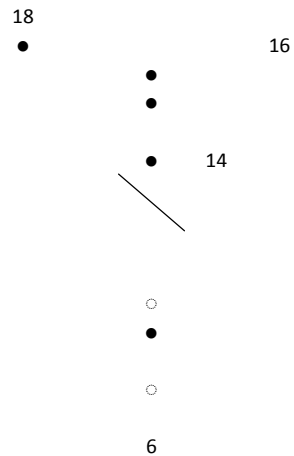
E $\sharp$ 4



Source: PR
Source comments:
Pitch: E4 +29 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 4



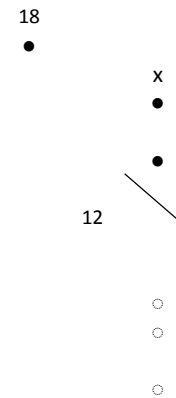
Source: EMR

Source comments:

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

E $\sharp$ 4



Source: HS

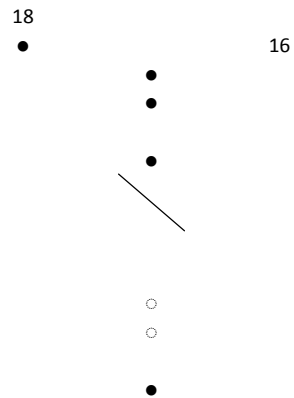
Source comments:

Pitch: F4 -21 cents

HB comments:

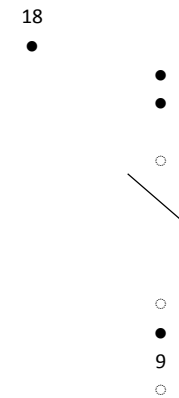
Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 4



Source: HS
Source comments:
Pitch: E4 +44 cents
HB comments:

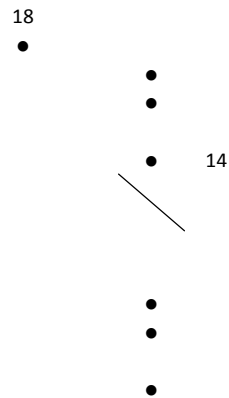
F $\sharp$ 4



Source: JA
Source comments:
Pitch: F $\sharp$ 4 -24 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 4



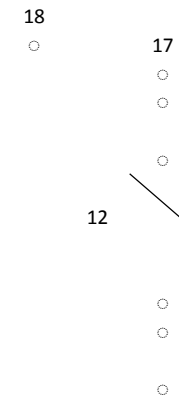
Source: JA

Source comments:

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

F $\sharp$ 4



Source: PR

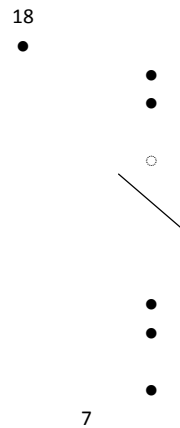
Source comments:

Pitch: F $\sharp$ 4 -44 cents

HB comments:

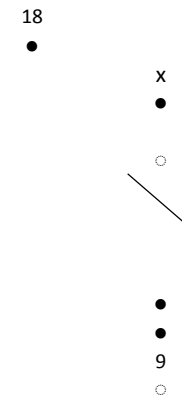
Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 4



Source: PR
Source comments:
Pitch: F $\sharp$ 4 -18 cents
HB comments:

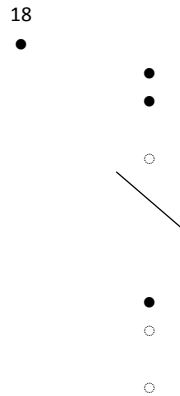
F $\sharp$ 4



Source: PR
Source comments:
Pitch: F $\sharp$ 4 -22 cents
HB comments:

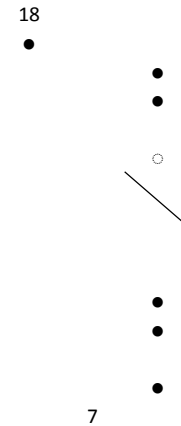
Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 4



Source: EMR
Source comments:
Pitch: F4 +24 cents
HB comments:

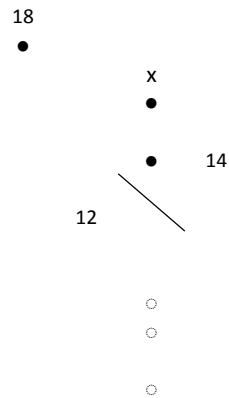
F $\sharp$ 4



Source: HS
Source comments:
Pitch: F $\sharp$ 4 -18 cents
HB comments:

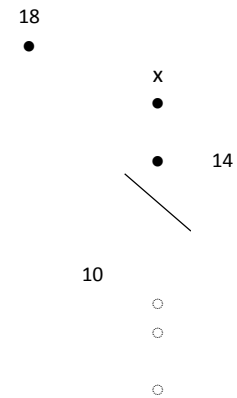
Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 4



Source: HS
Source comments:
Pitch: F4 +34 cents
HB comments:

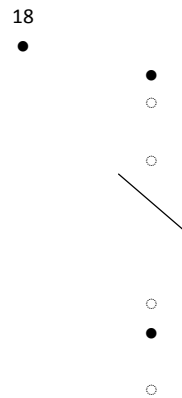
G $\flat$ 4



Source: JA
Source comments:
Pitch: G $\flat$ 4 +19 cents
HB comments:

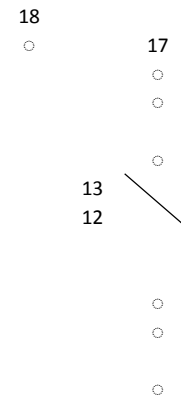
Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 4



Source: JA
 Source comments:
 Pitch: G4 -33 cents
 HB comments:

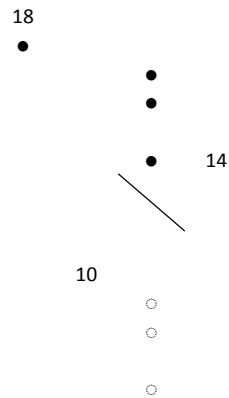
G $\flat$ 4



Source: PR
 Source comments:
 Pitch: G $\flat$ 4 +32 cents
 HB comments:

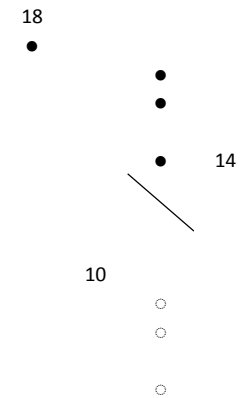
Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 4



Source: PR
Source comments:
Pitch: G $\flat$ 4 +9 cents
HB comments:

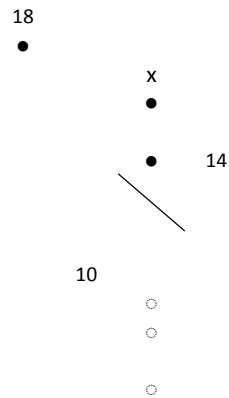
G $\flat$ 4



Source: EMR
Source comments:
Pitch: G $\flat$ 4 +9 cents
HB comments:

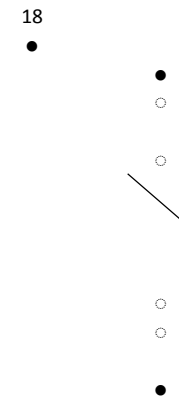
Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 4



Source: HS
 Source comments:
 Pitch: G $\flat$ 4 +19 cents
 HB comments:

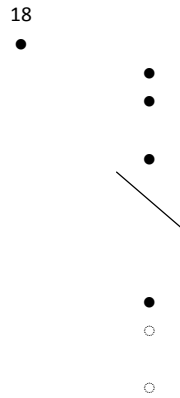
G $\sharp$ 4



Source: JA
 Source comments:
 Pitch: G $\sharp$ 4 -48 cents
 HB comments:

Appendix A1 – Review of quartertone fingering patterns

G#4



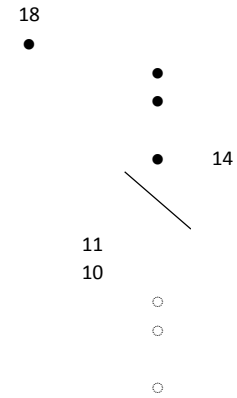
Source: JA

Source comments:

Pitch: G#4 -32 cents

HB comments: Lip position important
Lower lip has to move forward

G#4



Source: PR

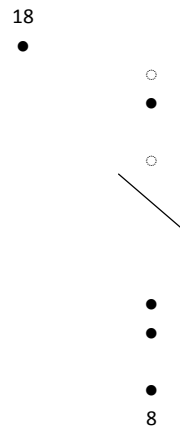
Source comments:

Pitch: G#4 -16 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

G#4



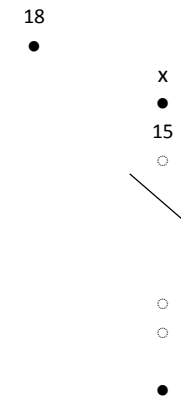
Source: EMR

Source comments: Slightly bright timbre

Pitch: G4 +31 cents

HB comments:

G#4



Source: HS

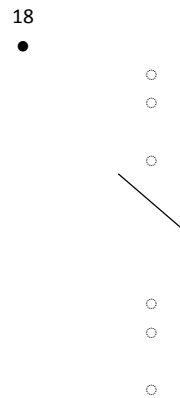
Source comments:

Pitch: G4 -6 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

A $\flat$ 4



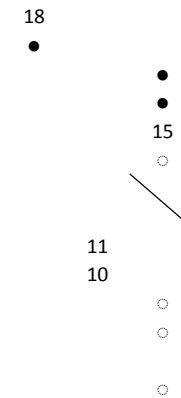
Source: JA

Source comments:

Pitch: A $\flat$ 4 +38 cents

HB comments: Lower lip has to be moved forward

A $\flat$ 4



Source: JA

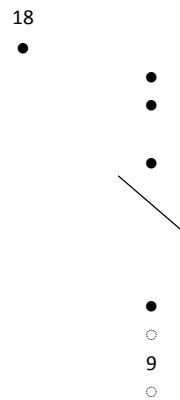
Source comments:

Pitch: A $\flat$ 4 +46 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

A $\flat$ 4



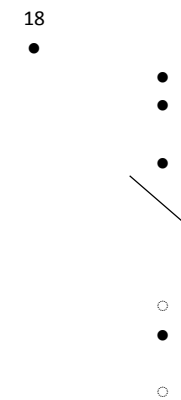
Source: JA

Source comments:

Pitch: A4 -42 cents

HB comments: Lower lip has to be moved forward

A $\flat$ 4



Source: JA

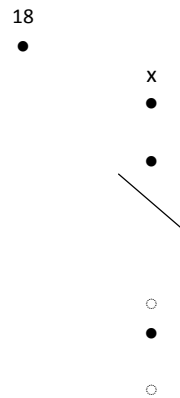
Source comments:

Pitch: A $\flat$ 4 +45 cents

HB comments:

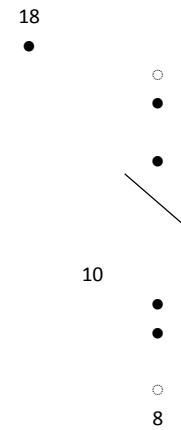
Appendix A1 – Review of quartertone fingering patterns

Ad4



Source: PR
Source comments:
Pitch: A4 -45 cents
HB comments:

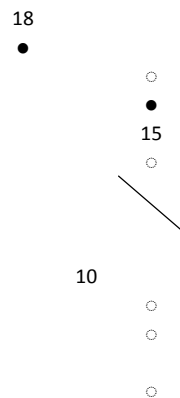
Ad4



Source: EMR
Source comments:
Pitch: A $\flat$ 4 +14 cents
HB comments:

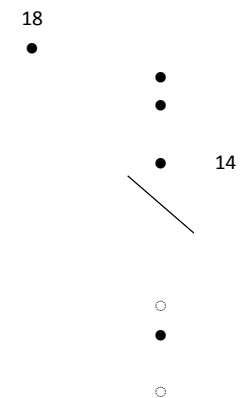
Appendix A1 – Review of quartertone fingering patterns

A $\flat$ 4



Source: HS
 Source comments:
 Pitch: A $\flat$ 4 +27 cents
 HB comments:

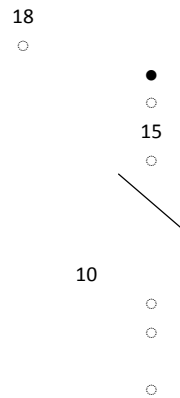
A $\sharp$ 4



Source: JA
 Source comments:
 Pitch: -
 HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

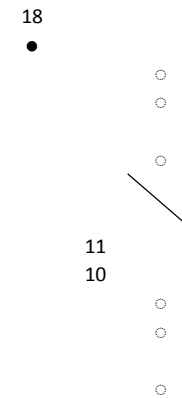
Appendix A1 – Review of quartertone fingering patterns

A $\sharp$ 4



Source: JA
Source comments:
Pitch: A4 +43 cents
HB comments:

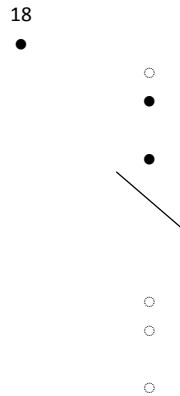
A $\sharp$ 4



Source: JA
Source comments:
Pitch: A $\sharp$ 4 -43 cents
HB comments:

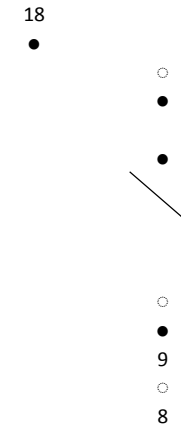
Appendix A1 – Review of quartertone fingering patterns

A $\sharp$ 4



Source: PR
Source comments:
Pitch: A $\sharp$ 4 -34 cents
HB comments:

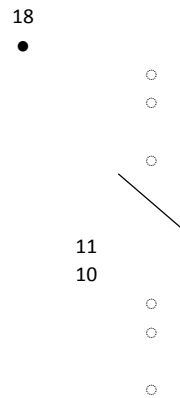
A $\sharp$ 4



Source: EMR
Source comments: Slightly low [in pitch]
DAT [a note which is difficult to attack strongly]
Pitch: A4 +13 cents
HB comments: No issues found with strong attack

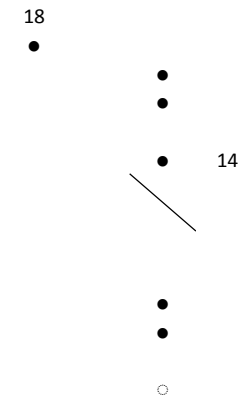
Appendix A1 – Review of quartertone fingering patterns

A $\sharp$ 4



Source: HS
 Source comments:
 Pitch: A $\sharp$ 4 -43 cents
 HB comments:

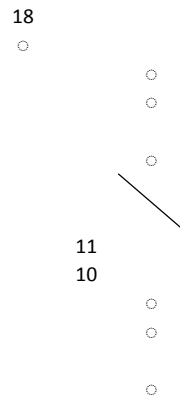
B $\flat$ 4



Source: JA
 Source comments:
 Pitch: -
 HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments
 Without key 14 the pitch was measured as B4 -30 cents

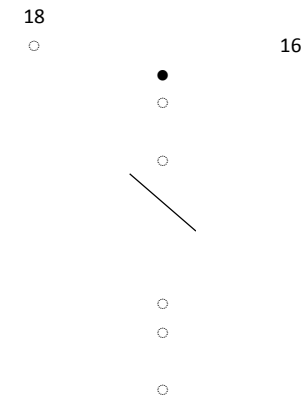
Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 4



Source: JA
 Source comments:
 Pitch: B $\flat$ 4 +42 cents
 HB comments:

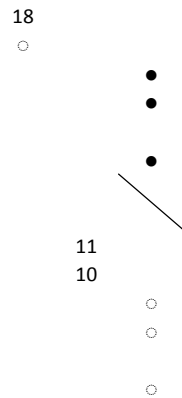
B $\flat$ 4



Source: JA
 Source comments:
 Pitch: B $\flat$ 4 +38 cents
 HB comments:

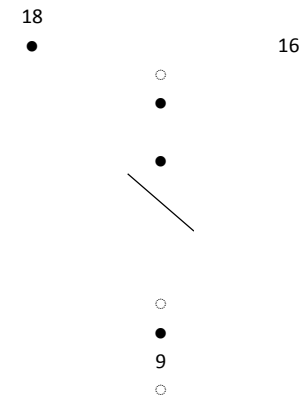
Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 4



Source: JA
Source comments:
Pitch: B $\flat$ 4 +31 cents
HB comments:

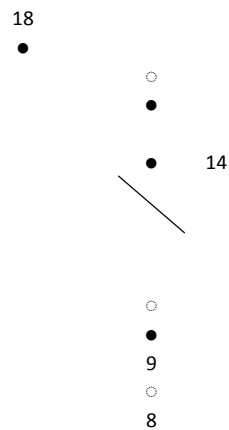
B $\flat$ 4



Source: PR
Source comments:
Pitch: B $\flat$ 4 +27 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

B $\flat$ 4



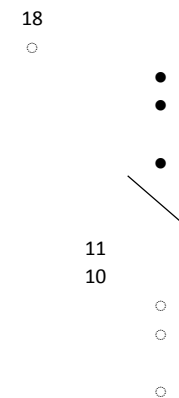
Source: EMR

Source comments:

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

B $\flat$ 4



Source: HS

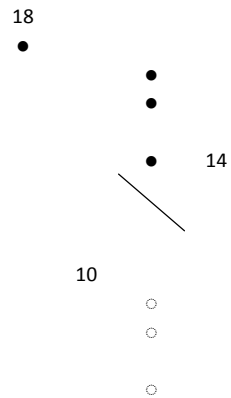
Source comments:

Pitch: B $\flat$ 4 +31 cents

HB comments:

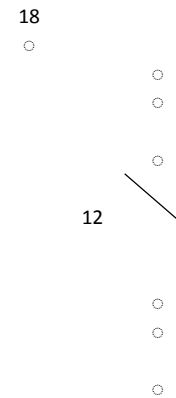
Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 4



Source: JA
Source comments:
Pitch: B4 +44 cents
HB comments:

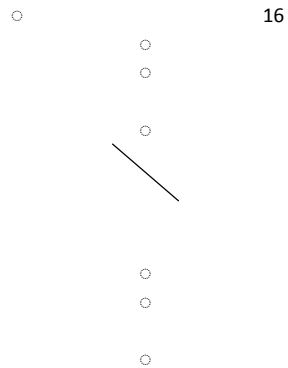
B $\sharp$ 4



Source: JA
Source comments:
Pitch: B4 +28 cents
HB comments:

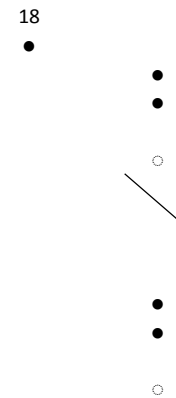
Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 4



Source: PR
Source comments:
Pitch: B4 +30 cents
HB comments:

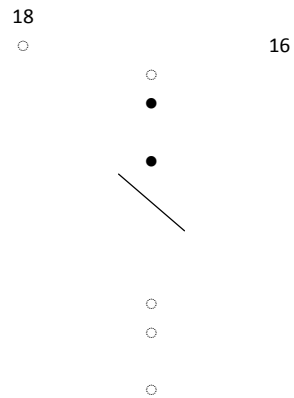
B $\sharp$ 4



Source: PR
Source comments:
Pitch: B4 +11 cents
HB comments:

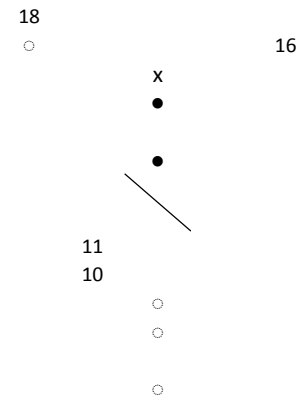
Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 4



Source: PR
Source comments:
Pitch: B4 +41 cents
HB comments:

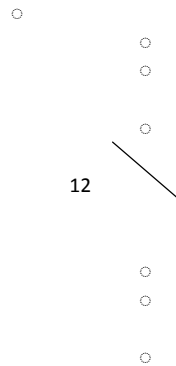
B $\sharp$ 4



Source: PR
Source comments:
Pitch: B4 +33 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 4



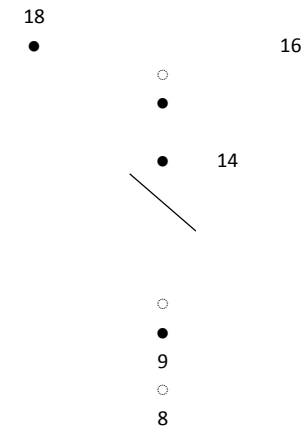
Source: PR

Source comments:

Pitch: B4 +39 cents

HB comments:

B $\sharp$ 4



Source: EMR

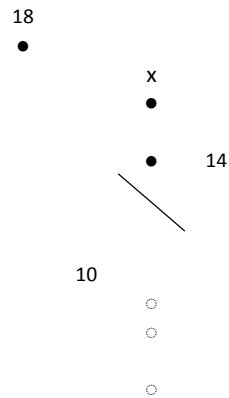
Source comments: Slightly low [in pitch]

Pitch: -

HB comments: This fingering pattern could not be tested as key 14 has a different function on Buffet-Crampon instruments

Appendix A1 – Review of quartertone fingering patterns

B $\sharp$ 4



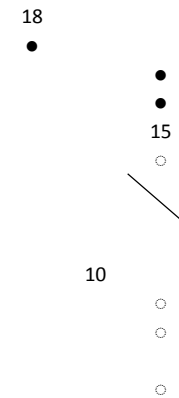
Source: HS

Source comments: Overblowing the cuarter (sic, HB) tone f sharp 3

Pitch: B4 +29 cents

HB comments:

C $\sharp$ 5



Source: JA

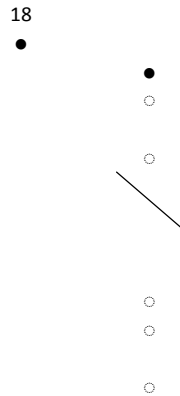
Source comments:

Pitch: C $\sharp$ 5 -34 cents

HB comments:

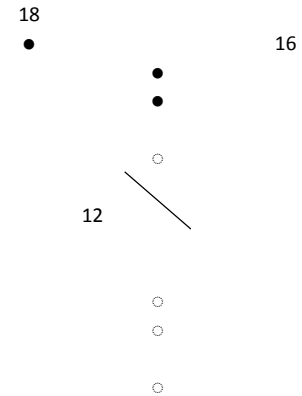
Appendix A1 – Review of quartertone fingering patterns

C#5



Source: JA
Source comments:
Pitch: C5 +18 cents
HB comments:

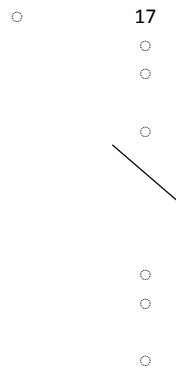
C#5



Source: PR
Source comments:
Pitch: C#5 -41 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

C $\sharp$ 5



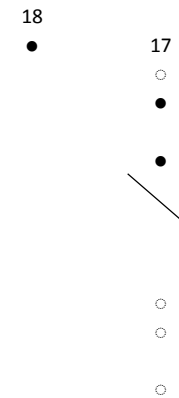
Source: PR

Source comments:

Pitch: C5 -17 cents

HB comments: Standard fingering pattern for C $\sharp$ 5

C $\sharp$ 5



Source: PR

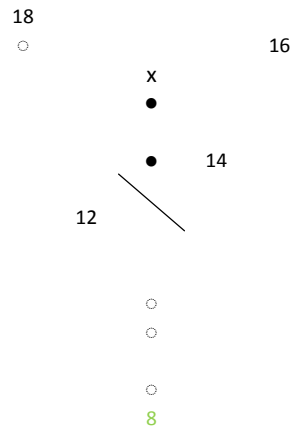
Source comments:

Pitch: C5 -39 cents

HB comments: This fingering pattern causes the pitch of C $\sharp$ 5 to be lowered, not raised

Appendix A1 – Review of quartertone fingering patterns

C $\sharp$ 5



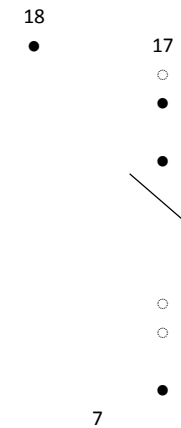
Source: PR

Source comments:

Pitch: B5 +25 cents

HB comments: This fingering pattern causes the pitch of C $\sharp$ 5 to be lowered, not raised

C $\sharp$ 5



Source: EMR

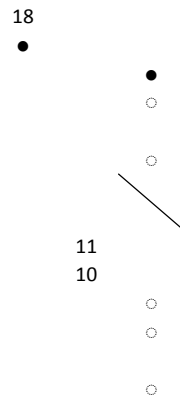
Source comments:

Pitch: C5 -28 cents

HB comments: This fingering pattern causes the pitch of C $\sharp$ 5 to be lowered, not raised

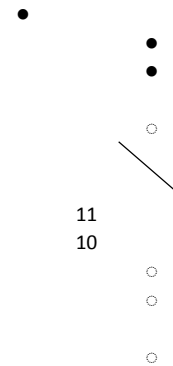
Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 5



Source: JA
Source comments:
Pitch: D5 -26 cents
HB comments:

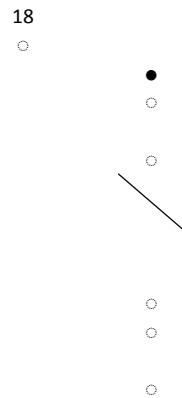
D $\flat$ 5



Source: JA
Source comments:
Pitch: D5 -21 cents
HB comments: Lower lip position crucial

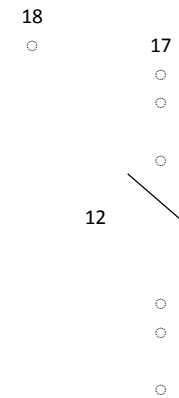
Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 5



Source: JA
Source comments:
Pitch: D5 -20 cents
HB comments:

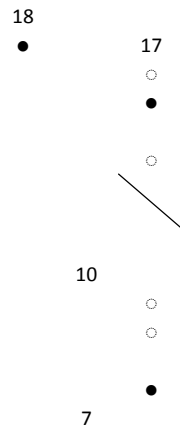
D $\flat$ 5



Source: PR
Source comments:
Pitch: C $\sharp$ 5 +30 cents
HB comments:

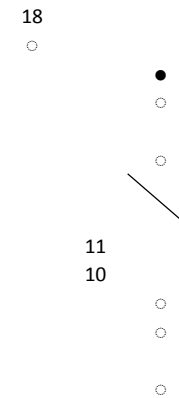
Appendix A1 – Review of quartertone fingering patterns

D $\flat$ 5



Source: EMR
 Source comments:
 Pitch: D $\flat$ 5 +13 cents
 HB comments:

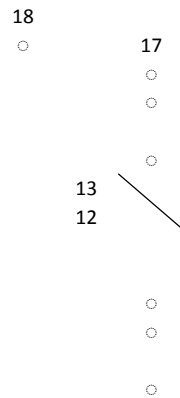
D $\sharp$ 5



Source: JA
 Source comments:
 Pitch: D5 +42 cents
 HB comments:

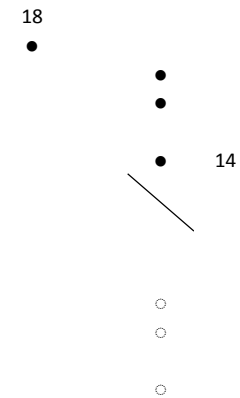
Appendix A1 – Review of quartertone fingering patterns

D $\sharp$ 5



Source: PR
Source comments:
Pitch: D5 +19 cents
HB comments:

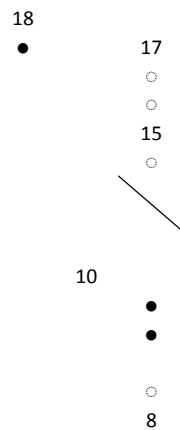
D $\sharp$ 5



Source: PR
Source comments:
Pitch: D5 +17 cents
HB comments: Standard fingering pattern for D $\sharp$ 5

Appendix A1 – Review of quartertone fingering patterns

D $\sharp$ 5



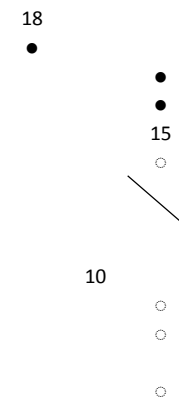
Source: EMR

Source comments: Slightly low [in pitch]

Pitch: D5 -11 cents

HB comments: This fingering pattern causes the pitch to be lowered, not raised

E $\flat$ 5



Source: JA

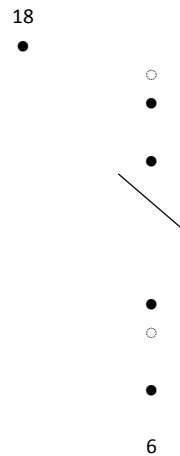
Source comments:

Pitch: E5 -25 cents

HB comments:

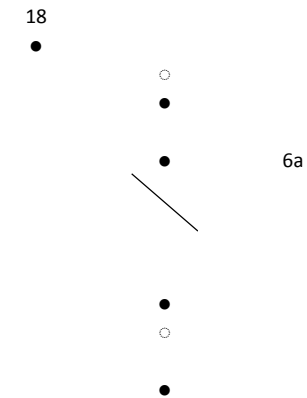
Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 5



Source: JA
Source comments:
Pitch: E $\flat$ 5 +11 cents
HB comments:

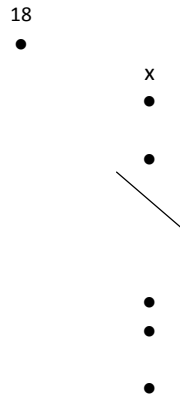
E $\flat$ 5



Source: JA
Source comments:
Pitch: E $\flat$ 5 +11 cents
HB comments:

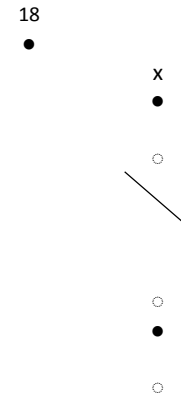
Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 5



Source: PR
Source comments:
Pitch: E $\flat$ 5 +6 cents
HB comments:

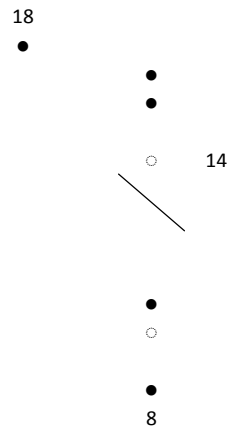
E $\flat$ 5



Source: PR
Source comments:
Pitch: E5 -25 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

E $\flat$ 5



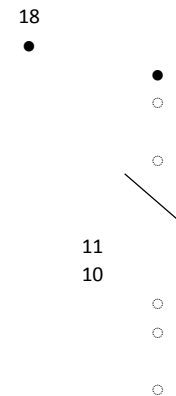
Source: EMR

Source comments:

Pitch: E $\flat$ 5 +14 cents

HB comments:

E $\sharp$ 5



Source: JA

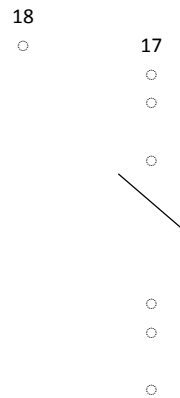
Source comments:

Pitch: F5 +44 cents

HB comments: This fingering pattern is far closer to producing a F $\sharp$ 5 than an E $\sharp$ 5

Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 5



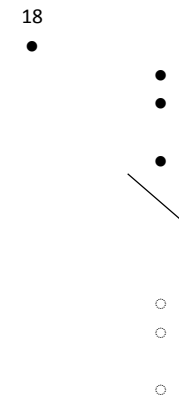
Source: JA

Source comments:

Pitch: F5 +10 cents

HB comments: Standard fingering pattern for F $\sharp$ 5

E $\sharp$ 5



Source: JA

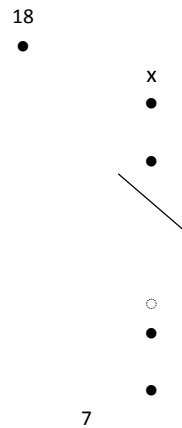
Source comments:

Pitch: F5 -1 cent

HB comments:

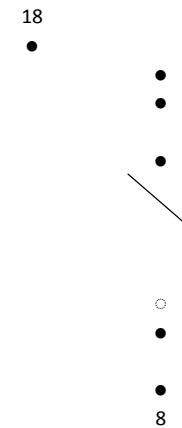
Appendix A1 – Review of quartertone fingering patterns

E $\sharp$ 5



Source: PR
Source comments:
Pitch: E5 +16 cents
HB comments:

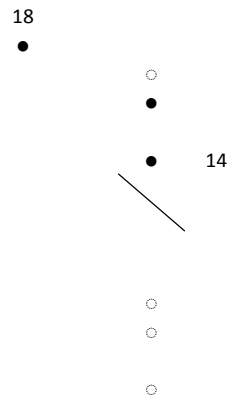
E $\sharp$ 5



Source: EMR
Source comments:
Pitch: E5 +21 cents
HB comments:

Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 5



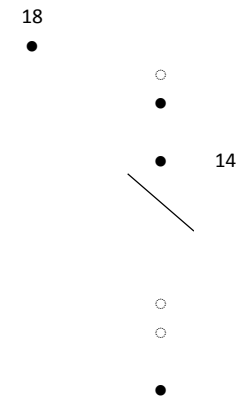
Source: JA

Source comments:

Pitch: F $\sharp$ 5 -43 cents

HB comments:

F $\sharp$ 5



Source: PR

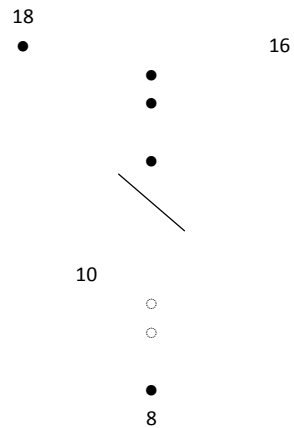
Source comments:

Pitch: F5 +30 cents

HB comments: RHK3, played using the RH ring finger, does not have an influence on key 14 [on a Selmer bass clarinet]

Appendix A1 – Review of quartertone fingering patterns

F $\sharp$ 5



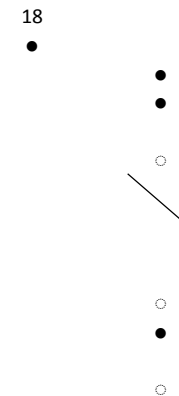
Source: EMR

Source comments: Slightly high [in pitch]

Pitch: F5 +49 cents

HB comments:

G $\flat$ 5



Source: JA

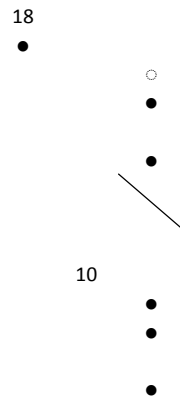
Source comments:

Pitch: G5 -6 cents

HB comments:

Appendix A1 – Review of quartertone fingering patterns

G $\flat$ 5



Source: EMR

Source comments: DAT [a note which is difficult to attack strongly]

Pitch: G5 - cents

HB comment

Appendix A2 – Overview of pitch deviations per note

D $\sharp$ 2

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
							▪		⋮				

E $\flat$ 2

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
					⋮		⋮						

E $\sharp$ 2

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
			⋮	⋮									

F $\sharp$ 2

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
				▪	⋮		⋮	▪					

G $\flat$ 2

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
				⋮									

Appendix A2 – Overview of pitch deviations per note

G $\sharp$ 2

cents flatter (-)						$\flat/\sharp$		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
							•	•					

A $\flat$ 2

cents flatter (-)						$\flat/\sharp$		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
								•	•	•			•

A $\sharp$ 2

cents flatter (-)						$\flat/\sharp$		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
								•					

B $\flat$ 2

cents flatter (-)						$\flat/\sharp$		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
							•	•	•				

B $\sharp$ 2

cents flatter (-)						$\flat/\sharp$		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
				•	•		•	•		•			

C $\sharp$ 3

cents flatter (-)						$\flat/\sharp$		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
										•			

Appendix A2 – Overview of pitch deviations per note

D $\sharp$ 3

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
				▪				▪		▪			

E $\flat$ 3

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
							▪			▪			

E $\sharp$ 3

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
							▪						

F $\sharp$ 3

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
								▪	▪	▪			

G $\flat$ 3

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
			▪		▪								

A $\flat$ 3

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
								▪	▪				

Appendix A2 – Overview of pitch deviations per note

A $\sharp$ 3

cents flatter (-)						$\flat/\sharp$	cents sharper (+)						
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
					• • •				•				

B $\flat$ 3

cents flatter (-)						$\flat/\sharp$	cents sharper (+)						
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
				• • •	• • •								

B $\sharp$ 3

cents flatter (-)						$\flat/\sharp$	cents sharper (+)						
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
	•	•	• •	•	•								

C $\sharp$ 4

cents flatter (-)						$\flat/\sharp$	cents sharper (+)						
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
			•	•	• • •		•	• •					•

D $\flat$ 4

cents flatter (-)						$\flat/\sharp$	cents sharper (+)						
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
			•	• •	• • •		•						•

D $\sharp$ 4

cents flatter (-)						$\flat/\sharp$	cents sharper (+)						
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
					•		• • •	• •	•	• •			

Appendix A2 – Overview of pitch deviations per note

E $\flat$ 4

cents flatter (-)						♭/♯		cents sharper (+)				
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<
				• •	• •		• • • •	•				•

E $\sharp$ 4

cents flatter (-)						♭/♯	cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<
			▪ ▪	▪	▪ ▪ ▪				▪			

F $\sharp$ 4

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
			▪	▪			▪		▪	▪			

G $\flat$ 4

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
	•	•		•									

G $\sharp$ 4

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
■				■	■			■		■			

A $\flat$ 4

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
		▪		▪	▪		▪						

Appendix A2 – Overview of pitch deviations per note

A $\sharp$ 4

cents flatter (-)						$\flat/\sharp$	cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<
		▪		▪	▪			▪				

B $\flat$ 4

cents flatter (-)						$\flat/\sharp$	cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<
			▪	▪	▪			▪				

B $\sharp$ 4

cents flatter (-)						$\flat/\sharp$	cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<
		▪	▪	▪	▪							

C $\sharp$ 5

cents flatter (-)						$\flat/\sharp$	cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<
▪		▪		▪			▪	▪				

D $\flat$ 5

cents flatter (-)						$\flat/\sharp$	cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<
		▪					▪		▪			

D $\sharp$ 5

cents flatter (-)						$\flat/\sharp$	cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<
		▪			▪							

Appendix A2 – Overview of pitch deviations per note

E $\flat$ 5

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
	▪	⋮							⋮				

E $\sharp$ 5

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
		▪	▪								▪	⋮	

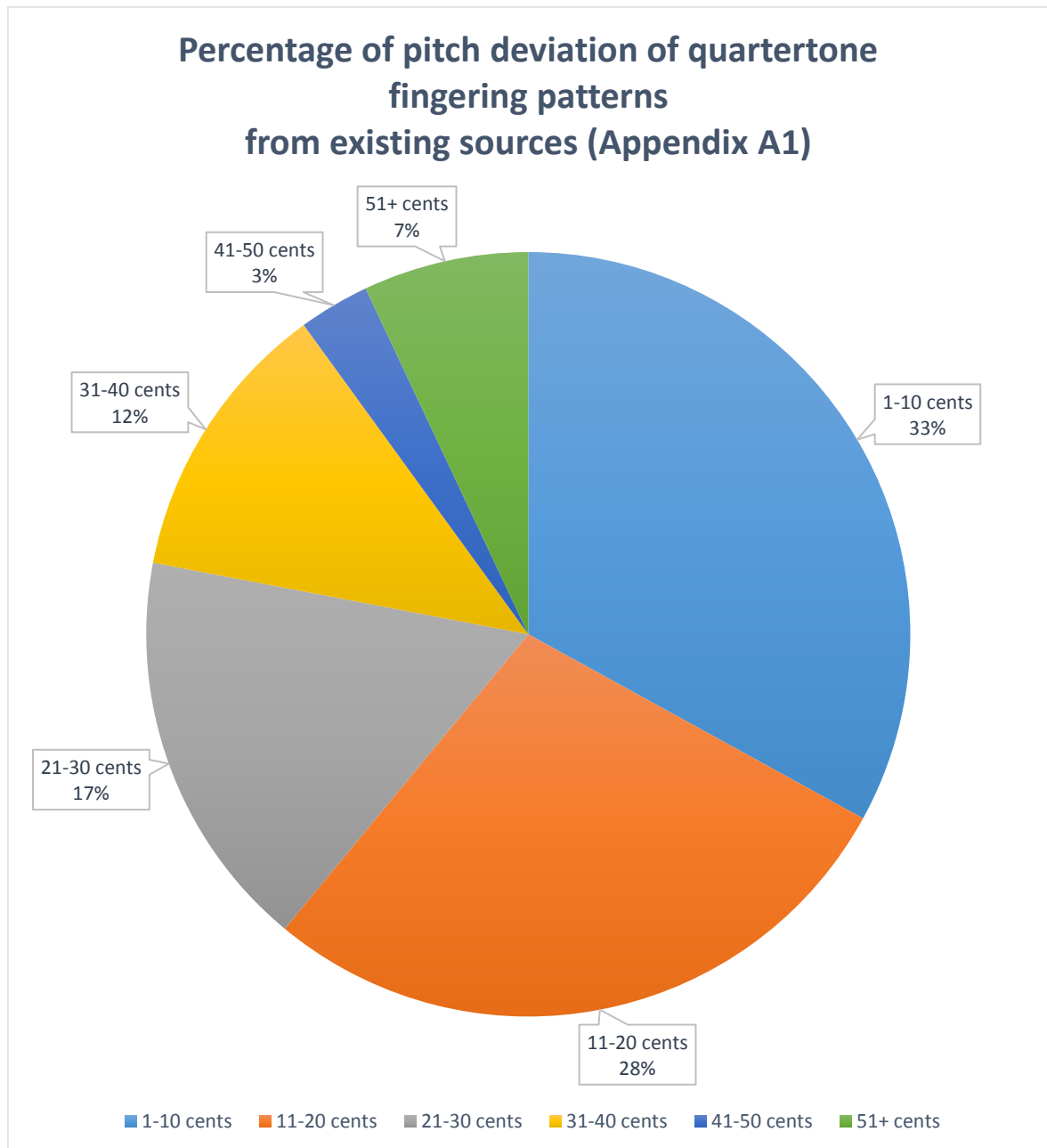
F $\sharp$ 5

cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
				▪	▪		▪						

G $\flat$ 5

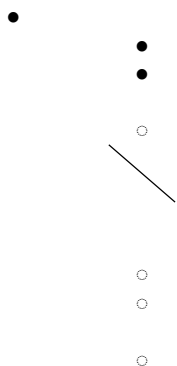
cents flatter (-)						♭/♯		cents sharper (+)					
51<	41-50	31-40	21-30	11-20	1-10	0	1-10	11-20	21-30	31-40	41-50	51<	
											▪		

Appendix A3 – Pitch deviation

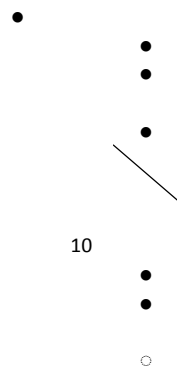


Appendix B – Quartertone scale

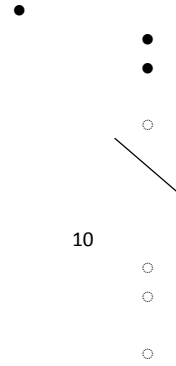
D $\flat$ 2 No.1



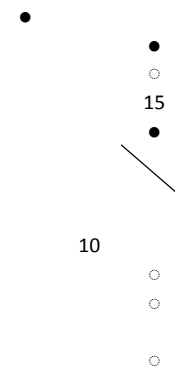
D $\sharp$ 2 No.2



D $\sharp$ 2 No.3



E $\flat$ 2 No.4



Key 10 is operated by the RH thumb

Tendency to squeak if the embouchure is overly tight

Appendix B – Quartertone scale

E2

No.5

•

•
○
○
/

○
○
○

E $\sharp$ 2

No.6

•

○
•
○
/

10

○
○
○

F2

No.7

•

○
○
○
/

○
○
○

F $\sharp$ 2

No.8

•

•
•
15
○
/

11
10

○
○
○

Appendix B – Quartertone scale

F $\sharp$ 2 alt. No.8a

○

●

●

●



●

●

●

7

F $\sharp$ 2 No.9

○

●

○

○



○

○

○

G $\flat$ 2 No.10

○

●

○

○



11
10

○

○

○

G2 No.11

○

○

○

○



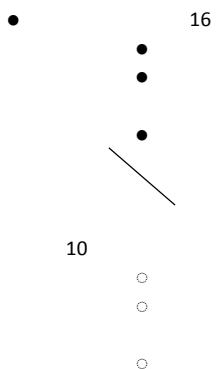
○

○

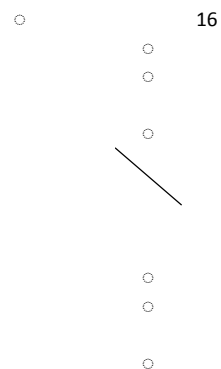
○

Appendix B – Quartertone scale

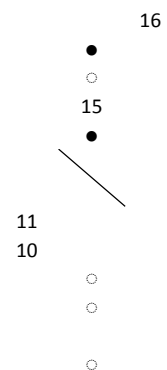
G $\sharp$ 2 No.12



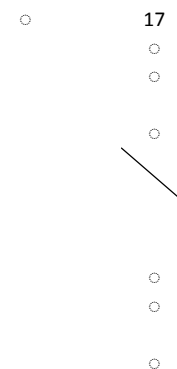
G $\sharp$ 2 No.13



A $\flat$ 2 No.14



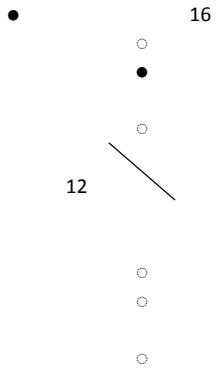
A2 No.15



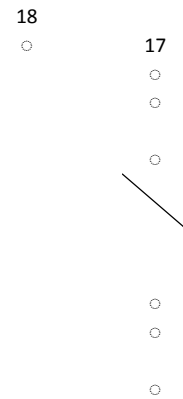
Fingering pattern should be underblown in order to play this pitch

Appendix B – Quartertone scale

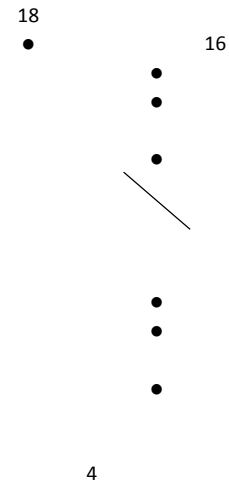
A $\sharp$ 2 No.16



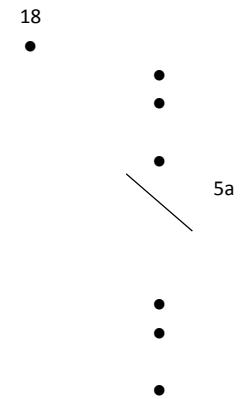
A $\sharp$ 2 No.17



B $\flat$ 2 No.18

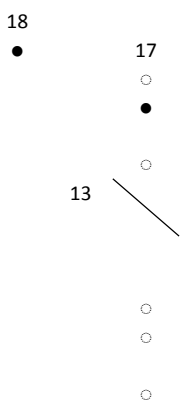


B2 No.19



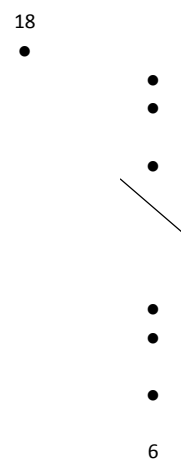
Appendix B – Quartertone scale

B#2 No.20



Key 13 is operated by the RH thumb

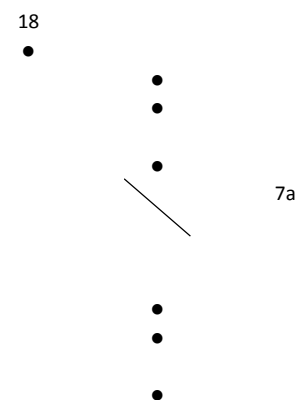
C3 No.21



C#3 No.22

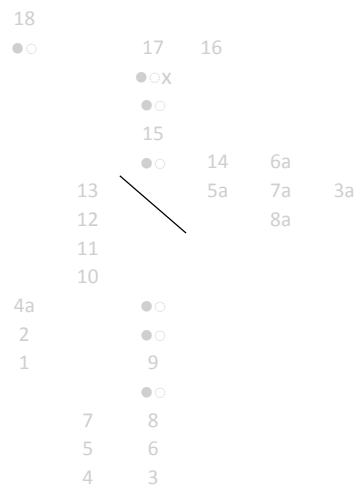
No fingering pattern fulfilled the research criteria

C#3 No.23



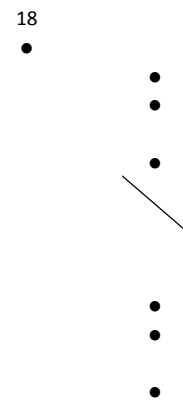
Appendix B – Quartertone scale

D $\flat$ 3 No.24

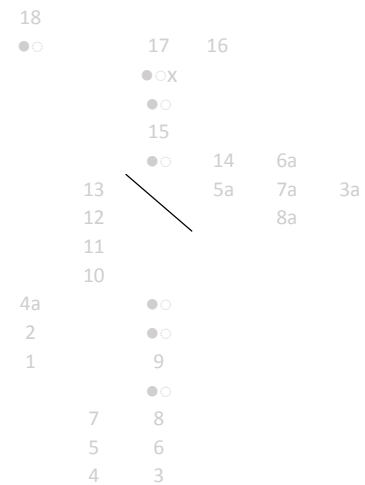


No fingering pattern fulfilled the research criteria

D3 No.25

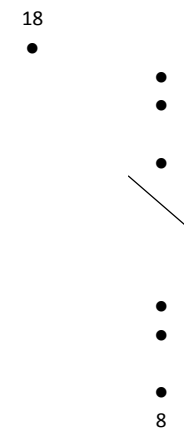


D $\sharp$ 3 No.26



No fingering pattern fulfilled the research criteria

D $\sharp$ 3 No.27



Appendix B – Quartertone scale

E $\flat$ 3 No.28

18



2

E3 No.29

18



E $\sharp$ 3 No.30

18



5

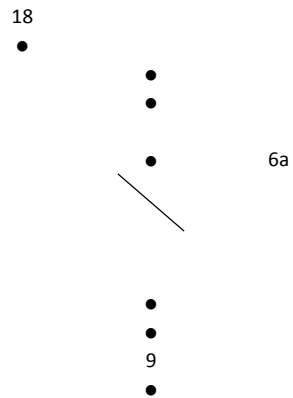
F3 No.31

18



Appendix B – Quartertone scale

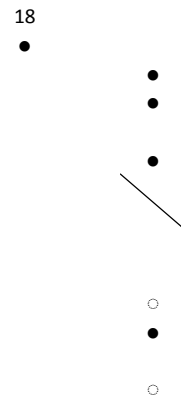
F#3 No.32



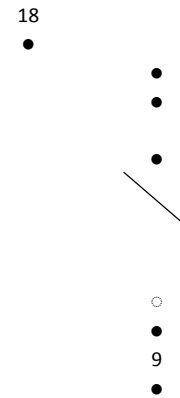
Key 9 is operated by the RH ring finger

RHK3 is operated by the RH little finger

F#3 No.33



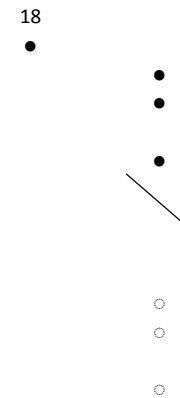
G#3 No.34



Key 9 is operated by the RH ring finger

RHK3 is operated by the RH little finger

G3 No.35



Appendix B – Quartertone scale

G $\sharp$ 3 No.36

18



9



8

Key 9 is operated by the RH middle finger

G $\sharp$ 3 alt. No.36a

18



x



3a



9



8

Key 9 is operated by the RH middle finger

G $\sharp$ 3 No.37

18



14



A $\flat$ 3 No.38

18



14



4

Appendix B – Quartertone scale

A $\flat$ 3 No.39

18



A $\sharp$ 3 No.40

18



10



A $\sharp$ 3 No.41

18



10



B $\flat$ 3 No.42

18



x



15



10

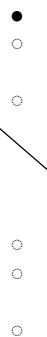


Appendix B – Quartertone scale

B3

No.43

18



B $\sharp$ 3

No.44

18



C4

No.45

18



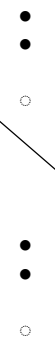
C $\sharp$ 4

No.46

18



1

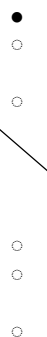


Appendix B – Quartertone scale

C#4

No.47

18



D $\flat$ 4

No.48

18



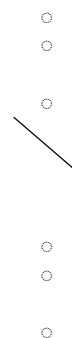
11
10



D4

No.49

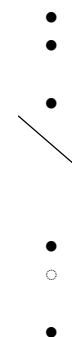
18



D#4

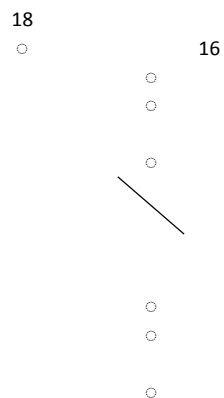
No.50

18



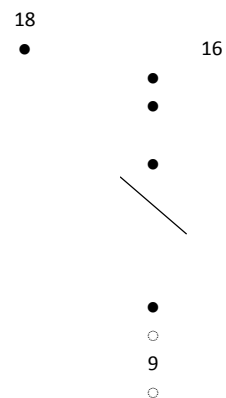
Appendix B – Quartertone scale

D $\sharp$ 4 No.51

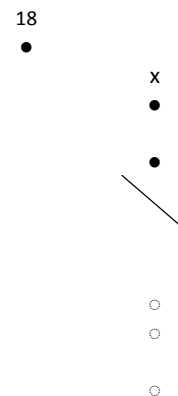


This fingering pattern can be played either with or without key 18

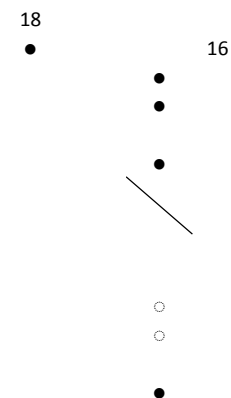
E $\flat$ 4 No.52



E4 No.53

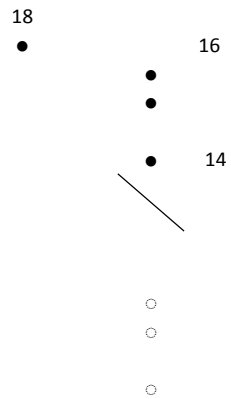


E $\sharp$ 4 No.54

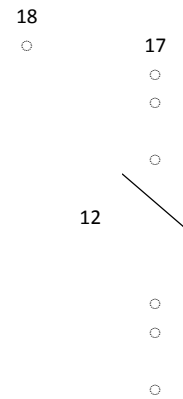


Appendix B – Quartertone scale

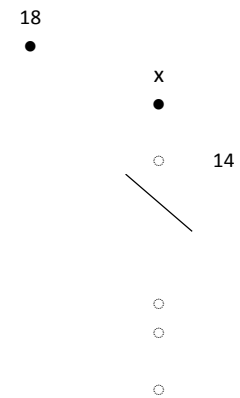
F4 No.55



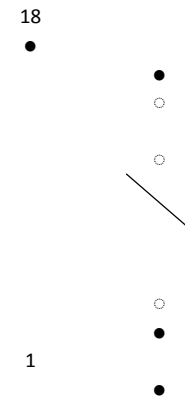
F $\sharp$ 4 No.56



F $\sharp$ 4 No.57



G $\flat$ 4 No.58



Appendix B – Quartertone scale

G4

No.59

18



G $\sharp$ 4

No.60

18



G $\sharp$ 4

No.61

18



A $\flat$ 4

No.62

18



x



9



Appendix B – Quartertone scale

A4

No.63

18

•

x

•

•



○

•

9

○

A $\sharp$ 4

No.64

18

•

○

○

○



11

10

○

○

○

○

A $\sharp$ 4

No.65

○

○

○

○



○

○

○

B $\flat$ 4

No.66

18

○

○

○

•



○

○

○

○

Appendix B – Quartertone scale

B4

No.67

18



x



B $\sharp$ 4

No.68

18



16



C5

No.69



17



C $\sharp$ 5

No.70

18



16

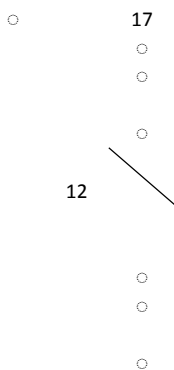


12

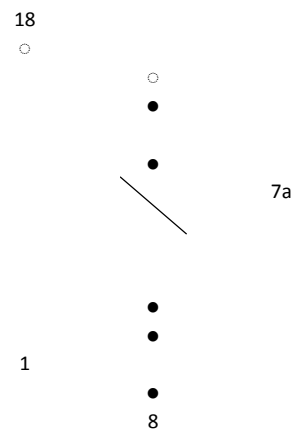


Appendix B – Quartertone scale

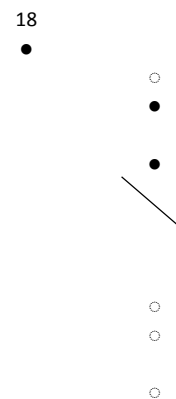
C#5 No.71



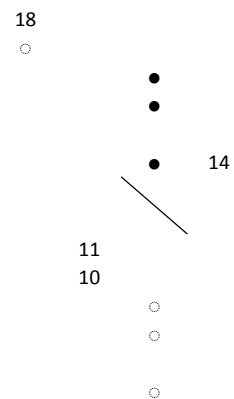
D $\flat$ 5 No.72



D5 No.73



D#5 No.74



Appendix B – Quartertone scale

D $\sharp$ 5

No.75

○

○

○

○



○

○

○

E $\flat$ 5

No.76

18
○

○

●

●



●

●

●

E5

No.77

○

○

●

●



○

○

○

E $\sharp$ 5

No.78

18
○

○

○

○



●

●

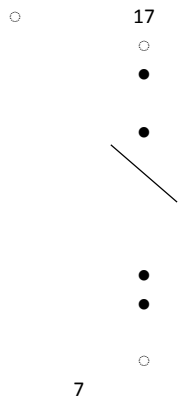
●

16

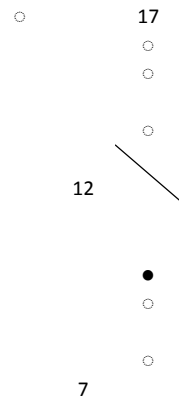
16

Appendix B – Quartertone scale

F5 No.79

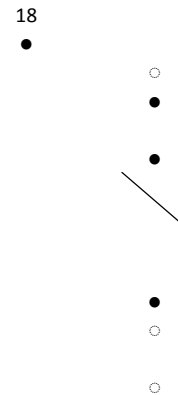


F#5 No.80

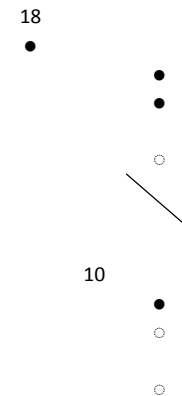


Key 12 is operated by the RH thumb

F#5 No.81



G#5 No.82



Key 10 is operated by the RH thumb

Appendix B – Quartertone scale

G5 No.83

18

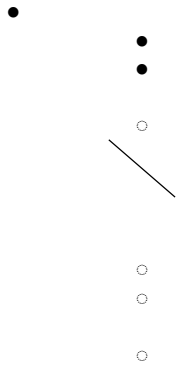


10

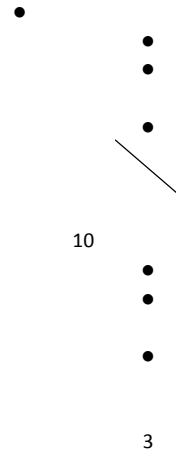


Appendix C – Eighth-tone scale

D2 No.1

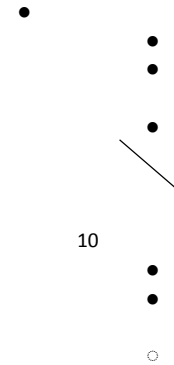


D $\sharp$ 2 No.2



Key 10 is operated by the RH thumb

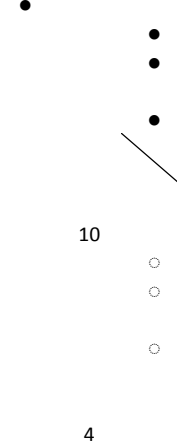
D $\sharp$ 2 No.3



Key 10 is operated by the RH thumb

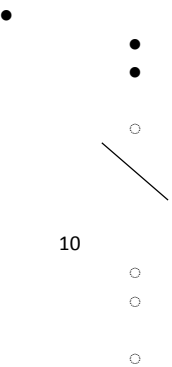
Tendency to squeak if the embouchure is overly tight

D $\sharp$ 2 No.4

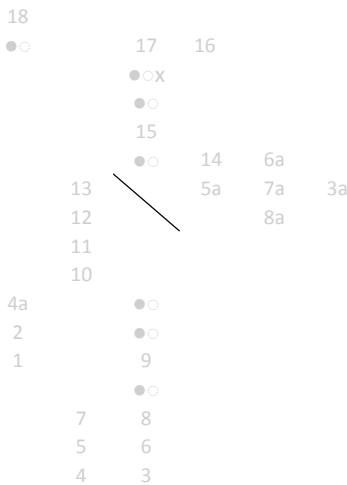


Appendix C – Eighth-tone scale

D#2 No.5

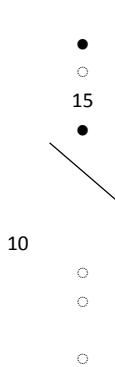


D#2 No.6

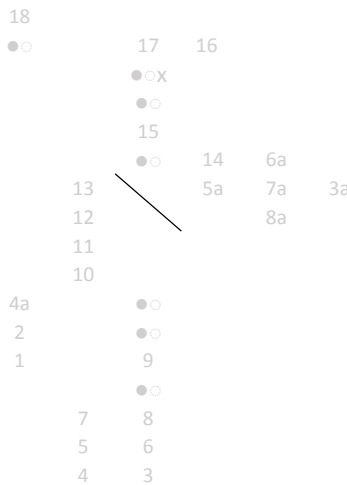


No fingering pattern fulfilled the research criteria

E♭2 No.7



E♭2 No.8

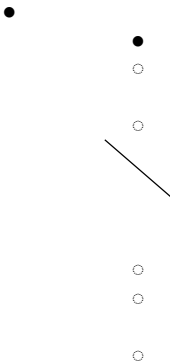


No fingering pattern fulfilled the research criteria

Appendix C – Eighth-tone scale

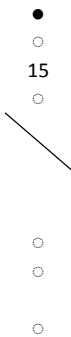
E2

No.9



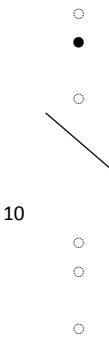
E¹2

No.10



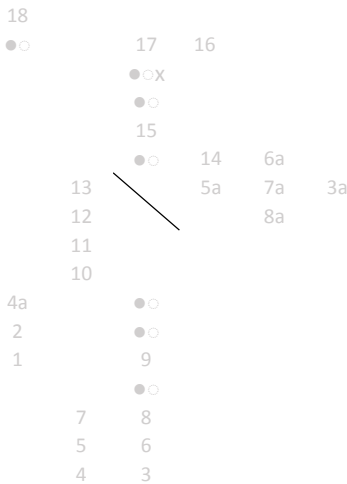
E¹2

No.11



F¹2

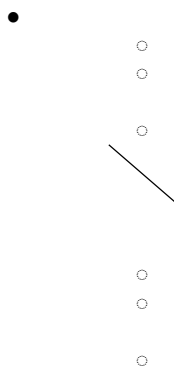
No.12



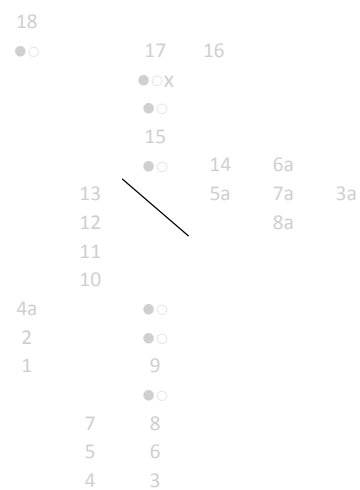
No fingering pattern fulfilled the research criteria

Appendix C – Eighth-tone scale

F2 No.13

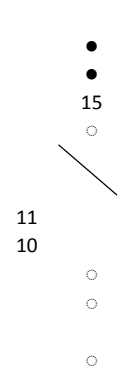


F $\sharp$ 2 No.14

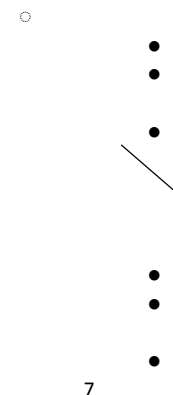


No fingering pattern fulfilled the research criteria

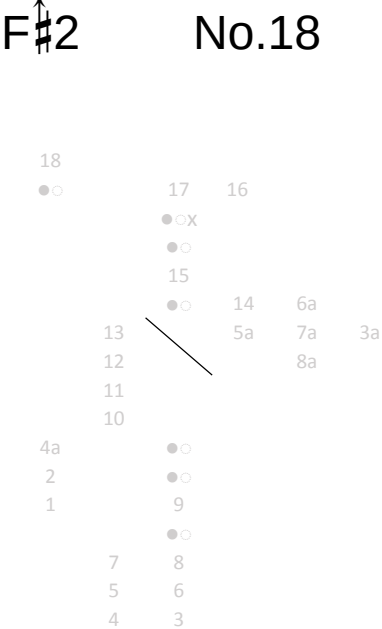
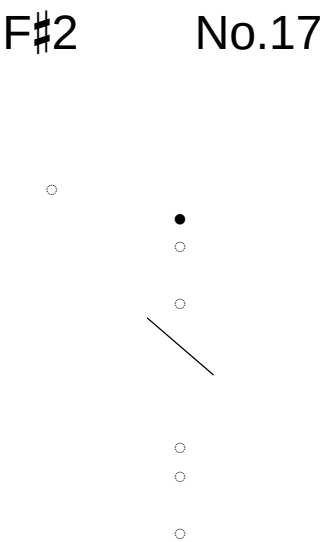
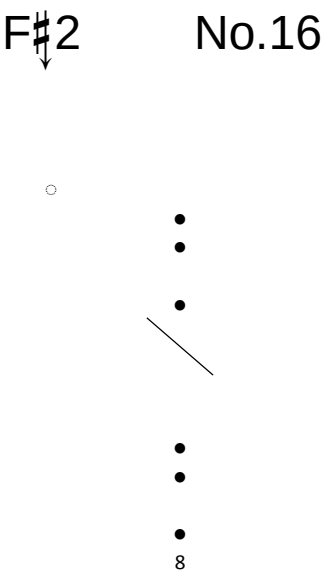
F $\sharp$ 2 No.15



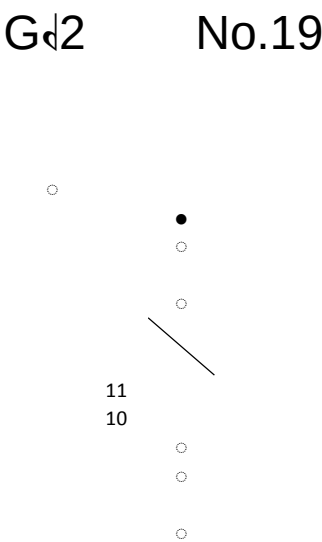
F $\sharp$ 2 alt. No.15a



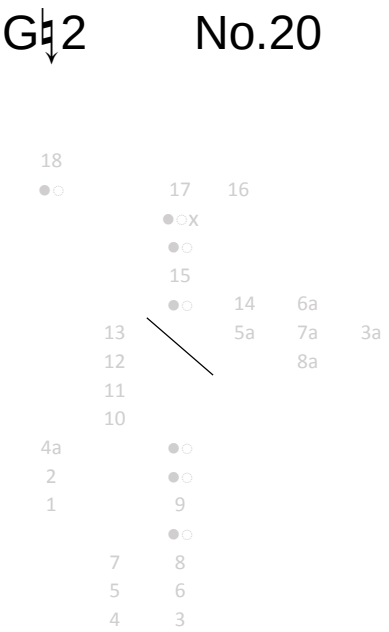
Appendix C – Eighth-tone scale



No fingering pattern fulfilled the research criteria

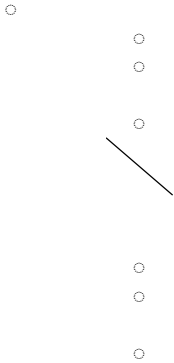


Appendix C – Eighth-tone scale

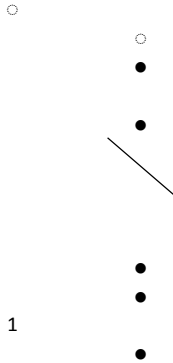


No fingering pattern fulfilled the research criteria

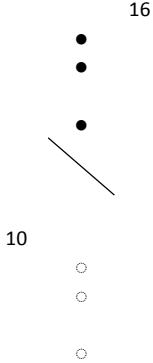
G2 No.21



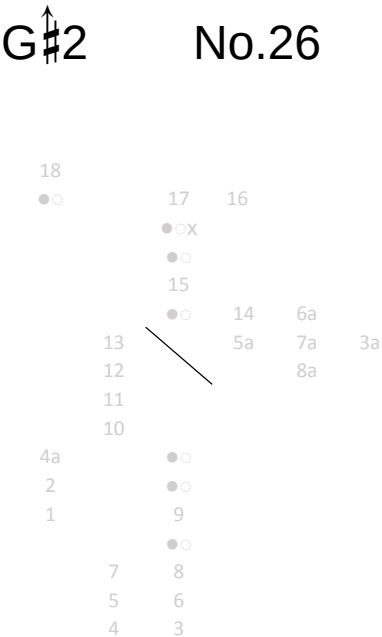
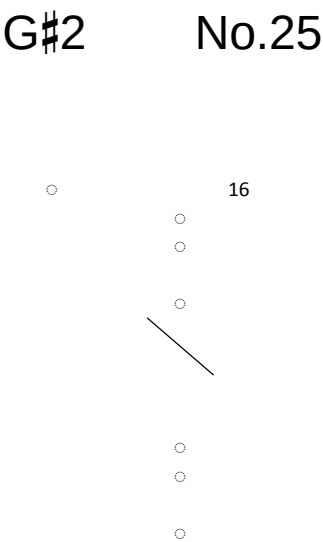
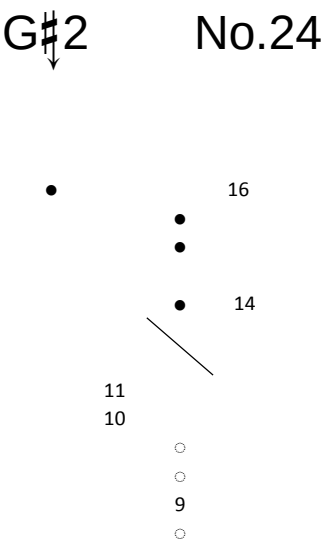
G $\sharp$ 2 No.22



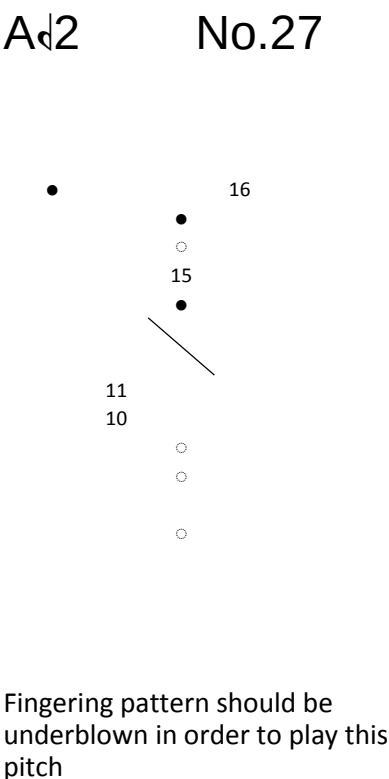
G $\sharp$ 2 No.23



Appendix C – Eighth-tone scale



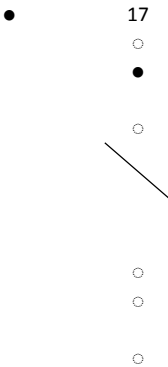
No fingering pattern fulfilled the research criteria



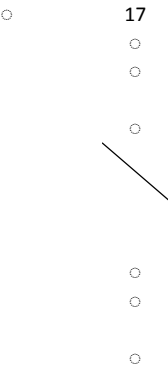
Fingering pattern should be underblown in order to play this pitch

Appendix C – Eighth-tone scale

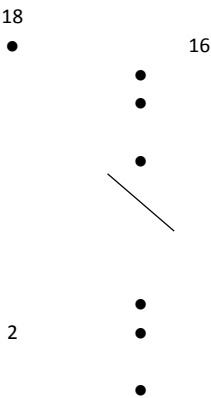
A $\sharp$ 2 No.28



A2 No.29

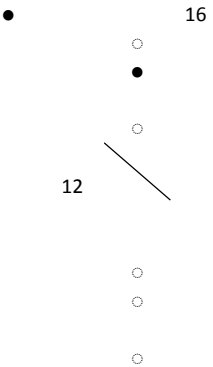


A $\sharp$ 2 No.30



A legato sequence to A $\sharp$ 2 is not possible

A $\sharp$ 2 No.31



A legato sequence to A $\sharp$ 2 is not possible

Appendix C – Eighth-tone scale

A $\sharp$ 2 No.32

18



3

A $\sharp$ 2 No.33

18



17



A $\sharp$ 2 No.34

18



16



12



For a legato sequence to B $\flat$ 2 key
12 has to be operated by the RH
thumb

B $\flat$ 2 No.35

18



16



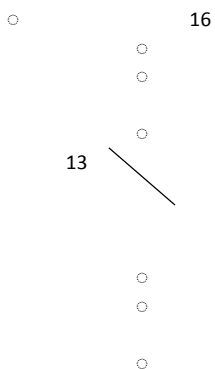
4

For a legato sequence to A $\sharp$ 2 key
12 has to be operated by the RH
thumb

For a legato sequence to B $\flat$ 2 key
13 has to be operated by the RH
thumb

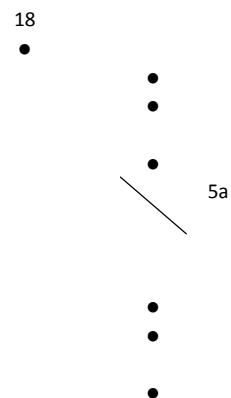
Appendix C – Eighth-tone scale

B $\sharp$ 2 No.36



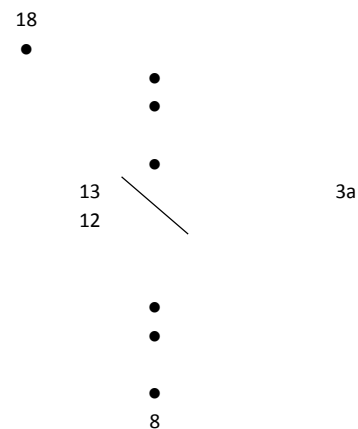
For a legato sequence to B $\flat$ 2 or B2 key 13 has to be operated by the RH thumb

B2 No.37



A legato sequence to B $\sharp$ 2 is not possible. Non-legato movement between these pitches is only possible slowly

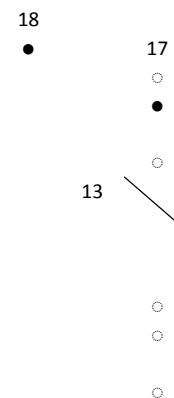
B $\sharp$ 2 No.38



Keys 12 and 13 are operated by the RH thumb

A legato sequence to B2 is not possible. Non-legato movement between these pitches is only possible slowly

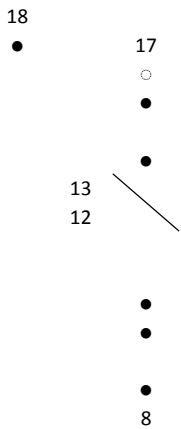
B $\sharp$ 2 No.39



Key 13 is operated by the RH thumb

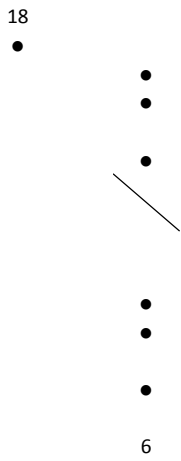
Appendix C – Eighth-tone scale

C $\sharp$ 3 No.40

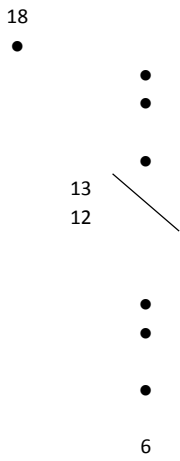


Keys 12 and 13 are operated using the RH thumb

C3 No.41

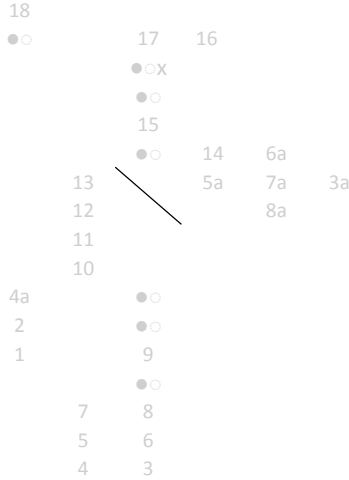


C $\sharp$ 3 No.42



Keys 12 and 13 are operated using the RH thumb

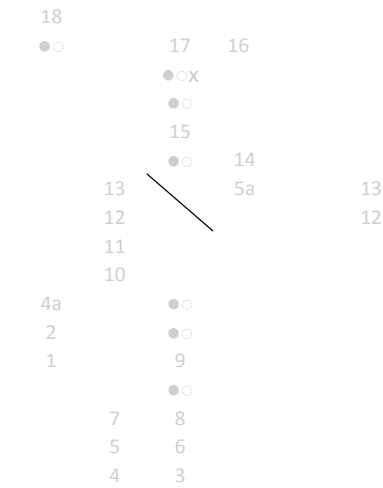
C $\sharp$ 3 No.43



No fingering pattern fulfilled the research criteria

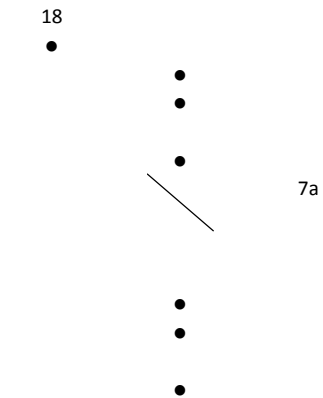
Appendix C – Eighth-tone scale

C#3 No.44

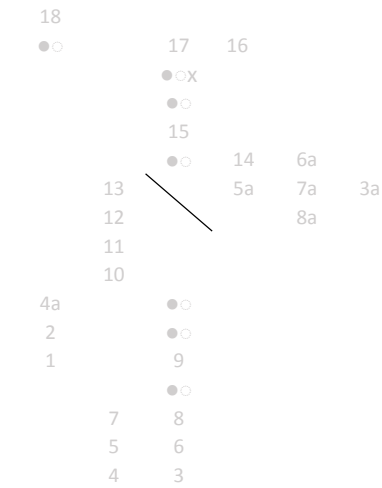


No fingering pattern fulfilled the research criteria

C#3 No.45

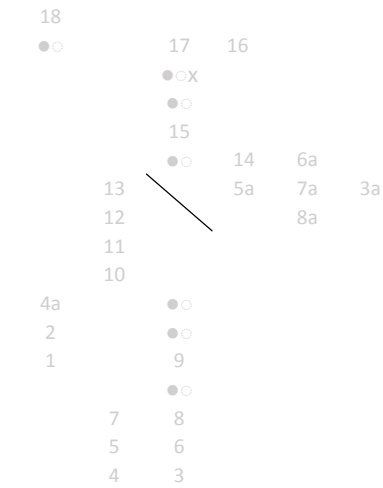


C#3 No.46



No fingering pattern fulfilled the research criteria

D#3 No.47



No fingering pattern fulfilled the research criteria

Appendix C – Eighth-tone scale

D $\sharp$ 3

No.48

18

●○

17

●○X

16

15

●○

14

●○

6a

13

●○

5a

7a

●○

3a

12

●○

11

●○

10

4a

●○

2

9

●○

1

8

●○

7

●○

6

●○

5

●○

4

●○

3

●○

No fingering pattern fulfilled the research criteria

D3

No.49

18

●

17

●

16

●

15

●

14

●

13

●

12

●

11

●

10

●

9

●

8

●

7

●

6

●

5

●

4

●

3

●

D $\sharp$ 3

No.50

18

●○

17

●○X

16

15

●○

14

●○

6a

13

●○

5a

7a

●○

3a

12

●○

11

●○

10

4a

●○

2

9

●○

1

8

●○

7

●○

6

●○

5

●○

4

●○

3

●○

No fingering pattern fulfilled the research criteria

D $\sharp$ 3

No.51

18

●○

17

●○X

16

15

●○

14

●○

6a

13

●○

5a

7a

●○

3a

12

●○

11

●○

10

4a

●○

2

9

●○

1

8

●○

7

●○

6

●○

5

●○

4

●○

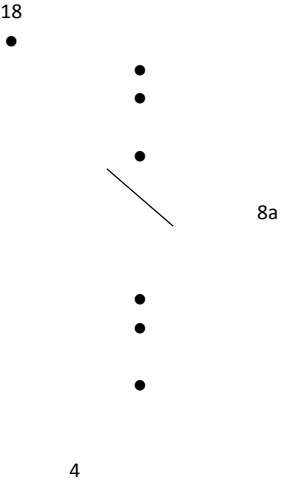
3

●○

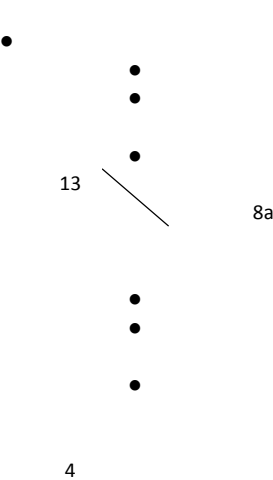
No fingering pattern fulfilled the research criteria

Appendix C – Eighth-tone scale

D#3 No.52

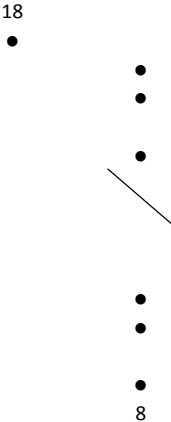


D#3 alt. No.52a

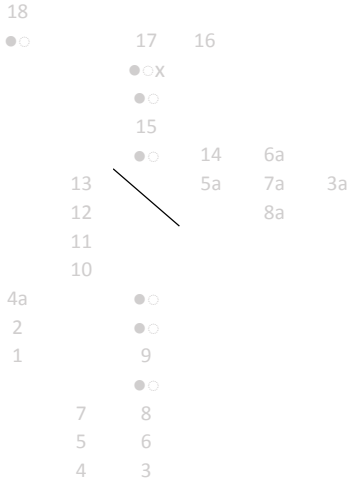


Key 13 is operated by the RH thumb

D#3 No.53



D#3 No.54



No fingering pattern fulfilled the research criteria

Appendix C – Eighth-tone scale

E₃ No.55

18



2



E₃ No.56

18



4

E₃ No.57

18



E₃ No.58

18



4

Appendix C – Eighth-tone scale

E~~1~~3 No.59

18



5

F~~1~~3 No.60

18



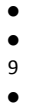
F3 No.61

18



F~~1~~3 No.62

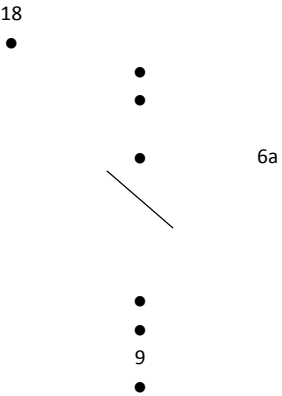
18



Key 9 is operated by the RH ring finger
RHK3 is operated by the RH little finger

Appendix C – Eighth-tone scale

F#3 No.63

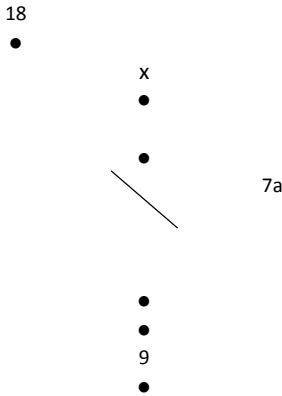


Key 9 is operated by the RH ring finger

RHK3 is operated by the RH little finger

Poor sound quality

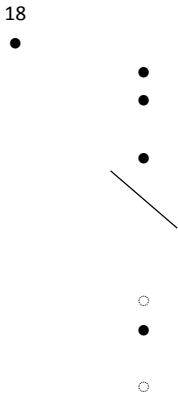
F#3 No.64



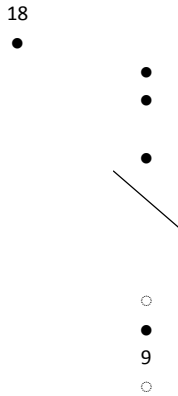
Key 9 is operated by the RH ring finger

RHK3 is operated by the RH little finger

F#3 No.65

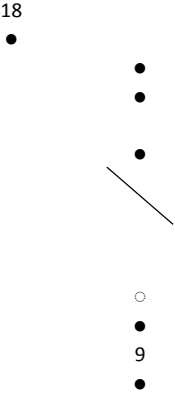


F#3 No.66



Appendix C – Eighth-tone scale

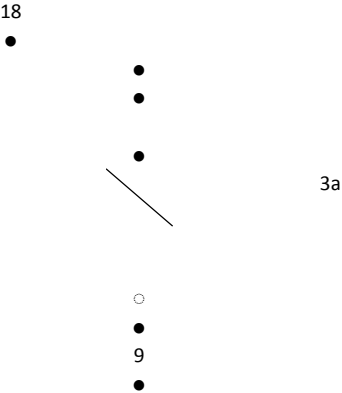
G~~3~~3 No.67



Key 9 is operated by the RH ring finger

RHK3 is operated by the RH little finger

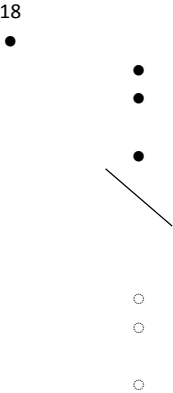
G~~3~~3 No.68



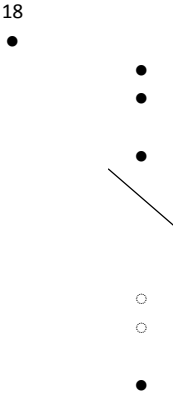
Key 9 is operated by the RH ring finger

RHK3 is operated by the RH little finger

G3 No.69

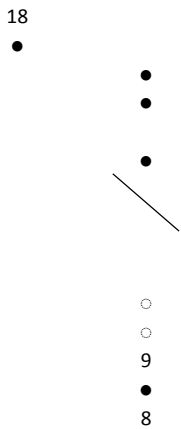


G~~3~~3 No.70



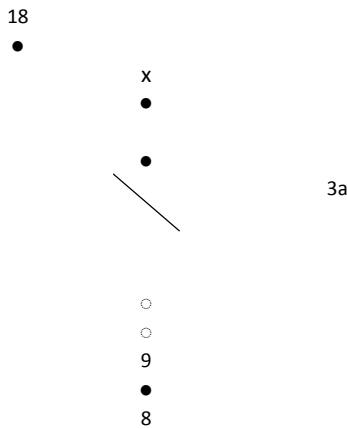
Appendix C – Eighth-tone scale

G#3 No.71



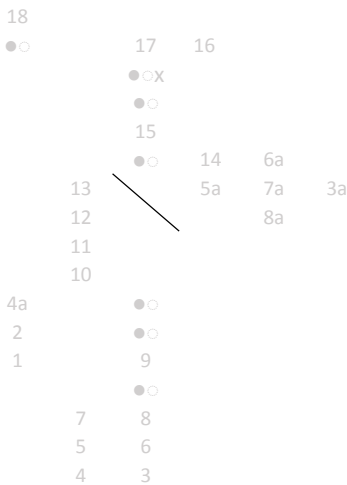
Key 9 is operated by the RH middle finger

G#3 alt. No.71a



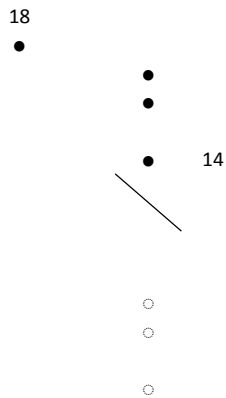
Key 9 is operated by the RH middle finger

G#3 No.72

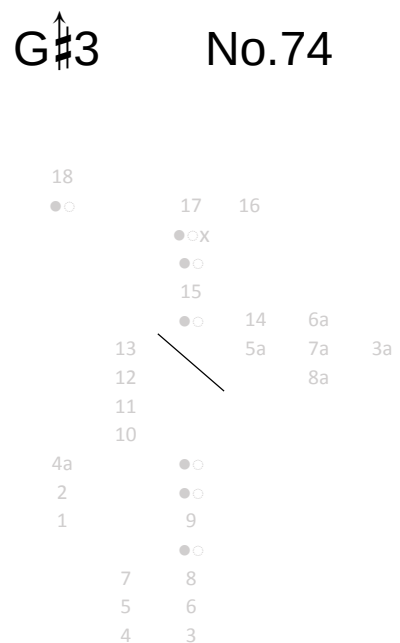


No fingering pattern fulfilled the research criteria

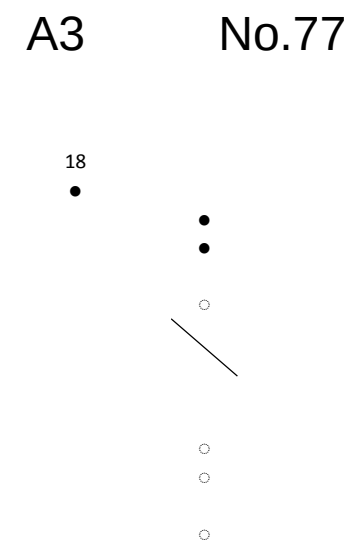
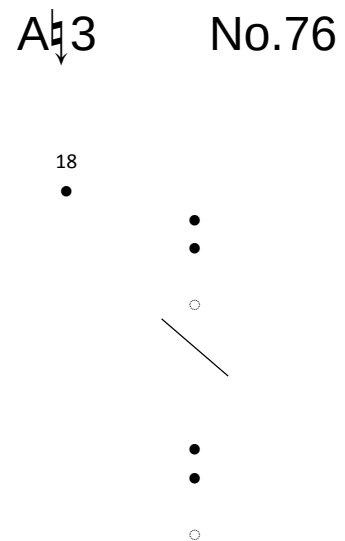
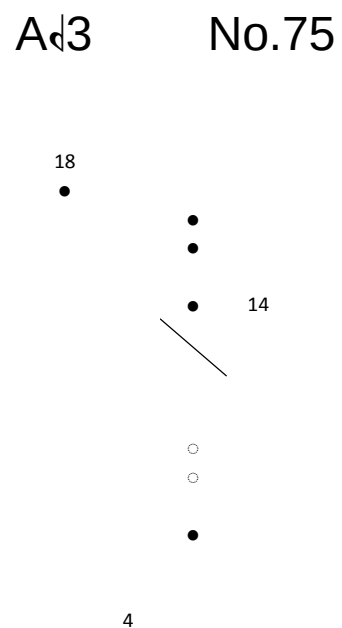
G#3 No.73



Appendix C – Eighth-tone scale

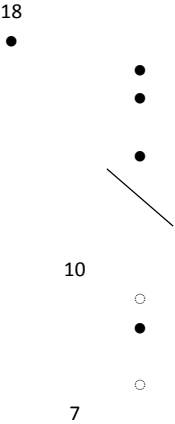


No fingering pattern fulfilled the research criteria

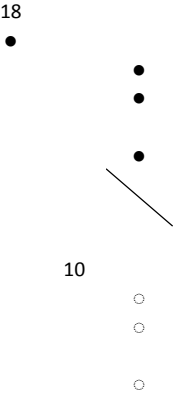


Appendix C – Eighth-tone scale

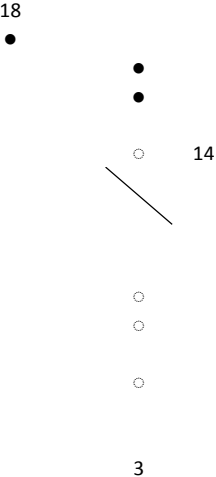
A $\sharp$ 3 No.78



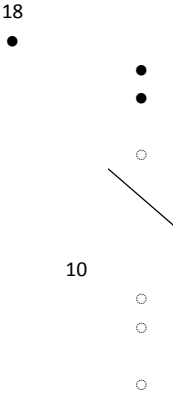
A $\sharp$ 3 No.79



A $\sharp$ 3 No.80

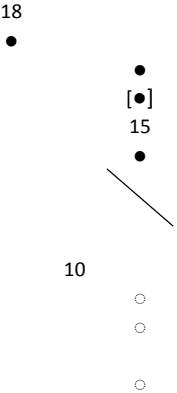


A $\sharp$ 3 No.81

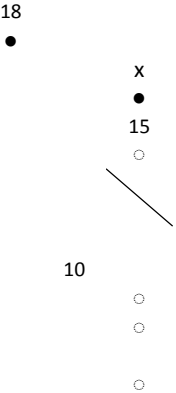


Appendix C – Eighth-tone scale

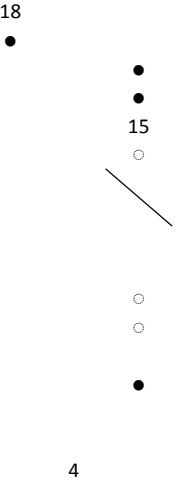
A[↑]3 No.82



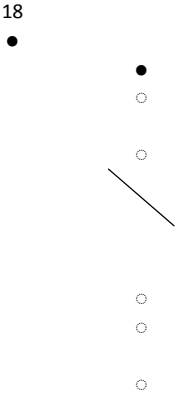
B[↓]3 No.83



B[↓]3 No.84



B3 No.85



Appendix C – Eighth-tone scale

B $\sharp$ 3 No.86

18



10



B $\sharp$ 3 No.87

18



C $\flat$ 4 No.88

18



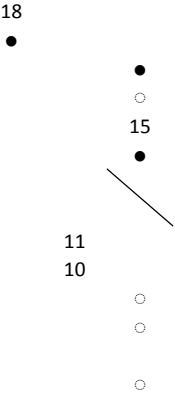
C4 No.89

18

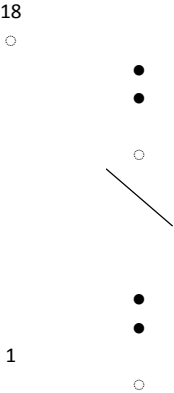


Appendix C – Eighth-tone scale

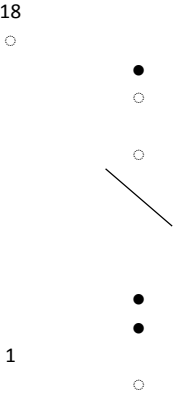
C[↑]4 No.90



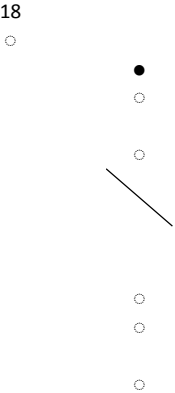
C[↑]4 No.91



C[↓]4 No.92



C[↓]4 No.93



Appendix C – Eighth-tone scale

C[↑]₄ No.94

18



11

10



D[↓]₄ No.95

18



11

10



D[↓]₄ No.96

18



D₄ No.97

18



Appendix C – Eighth-tone scale

D¹⁸4 No.98

18



x



8

D¹⁸4 No.99

18



D¹⁶4 No.100



4

D¹⁶4 No.101

18



16



This fingering pattern can be played either with or without key 18

Appendix C – Eighth-tone scale

$D\sharp_4$ No.102

18



9



$E\flat_4$ No.103

18



16



9



$E\flat_4$ No.104

18



8

E_4 No.105

18

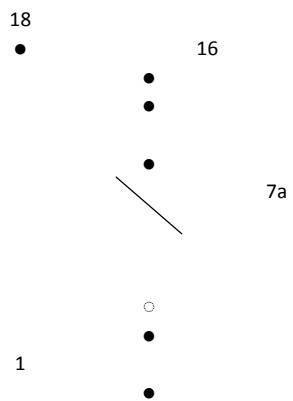


x

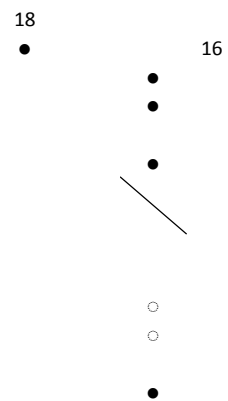


Appendix C – Eighth-tone scale

E $\sharp$ 4 No.106



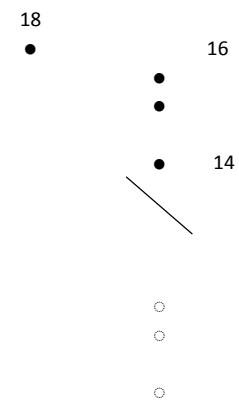
E $\sharp$ 4 No.107



F $\flat$ 4 No.108

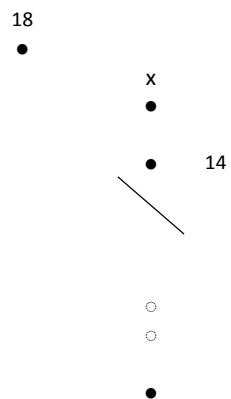


F4 No.109

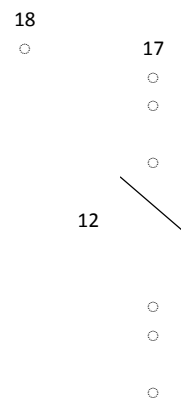


Appendix C – Eighth-tone scale

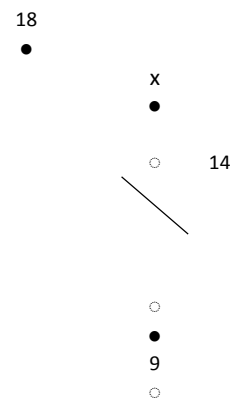
F $\sharp$ 4 No.110



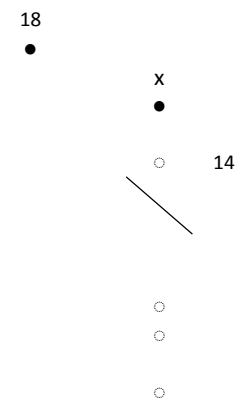
F $\sharp$ 4 No.111



F $\sharp$ 4 No.112



F $\sharp$ 4 No.113



Appendix C – Eighth-tone scale

F[♯]4 No.114

18



x



14

2



G[♭]4 No.115

18



1



G[♭]4 No.116

18



9



G[♭]4 alt. No.116a

18



10



Appendix C – Eighth-tone scale

G4

No.117

18



G[↑]4

No.118

18



x



15



10



Key 10 is operated by the RH thumb

G[↓]4

No.119

18



G[↓]4

No.120

18



15



8

Appendix C – Eighth-tone scale

G[#]4 No.121

18



G[#]4 No.122

18



10



A_b4 No.123

18



x



9



A_b4 No.124

18



x



1



Appendix C – Eighth-tone scale

A4 No.125

18



x



9



A $\sharp$ 4 No.126

18



x



10



9



Key 10 should be operated by the RH thumb when a legato sequence to A $\sharp$ 4 is required

A $\sharp$ 4 No.127

18



11

10



Keys 10 and 11 should be operated by the RH thumb when a legato sequence from A $\sharp$ 4 is required

A $\sharp$ 4 No.128

18



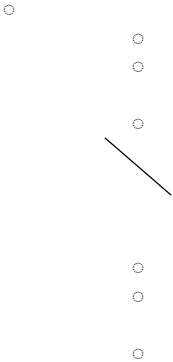
11

10

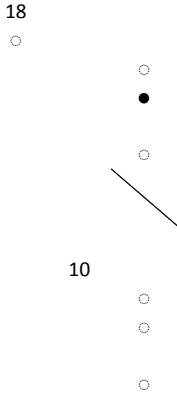


Appendix C – Eighth-tone scale

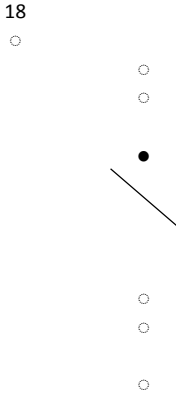
A#4 No.129



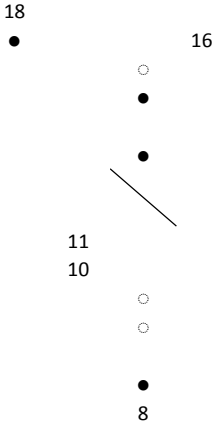
A#4 No.130



Bb4 No.131



Bb4 No.132



Appendix C – Eighth-tone scale

B4 No.133

18



x



B[↑]4 No.134

18



16



1

B[↓]4 No.135

18



16



C[↓]5 No.136

18



x



14

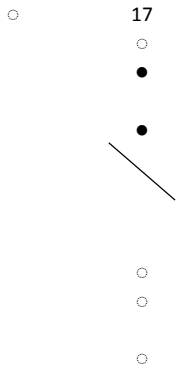


10

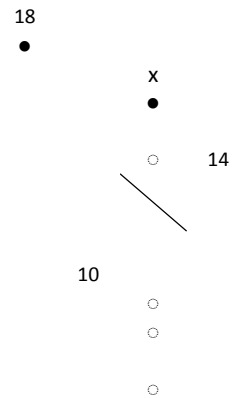


Appendix C – Eighth-tone scale

C5 No.137

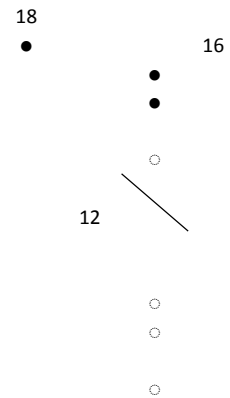


C $\sharp$ 5 No.138



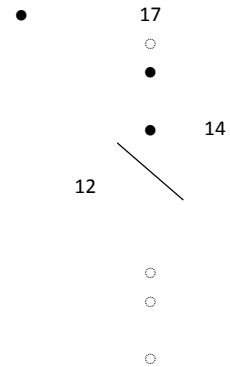
Key 10 should be operated by the RH thumb when a legato sequence to C $\sharp$ 5 is required

C $\sharp$ 5 No.139



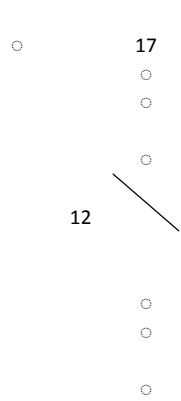
Key 12 should be operated by the RH thumb when a legato sequence from C $\sharp$ 5 is required

C $\sharp$ 5 No.140

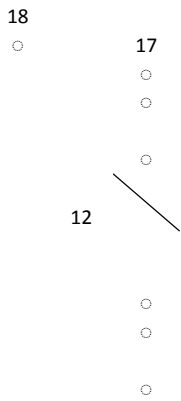


Appendix C – Eighth-tone scale

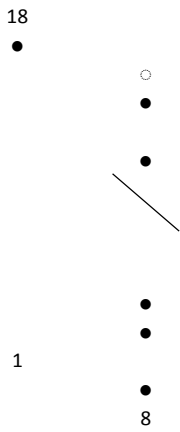
C#5 No.141



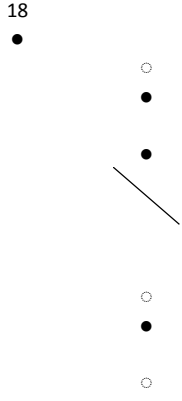
C#5 No.142



D#5 No.143



D#5 No.144



Appendix C – Eighth-tone scale

D5 No.145

18



A legato sequence to D $\sharp$ 5 is not possible

D $\sharp$ 5 No.146

18



x



15



13



A legato sequence from D5 is not possible

D $\sharp$ 5 No.147

18



14

11
10



D $\sharp$ 5 No.148

18



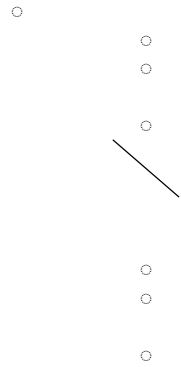
14

11
10

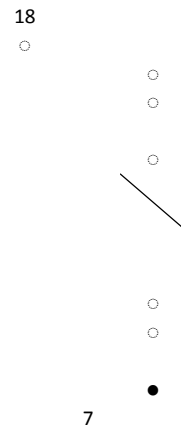


Appendix C – Eighth-tone scale

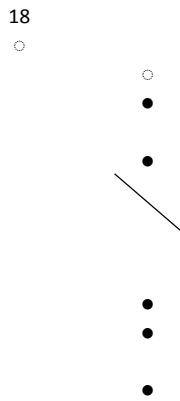
D[#]5 No.149



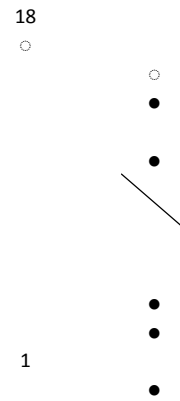
D[#]5 No.150



E^b5 No.151

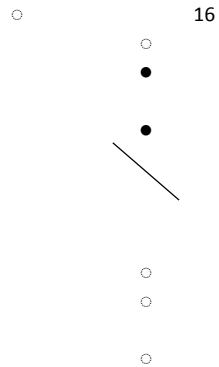


E^b5 No.152

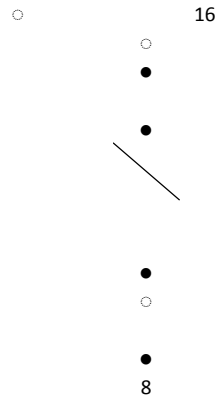


Appendix C – Eighth-tone scale

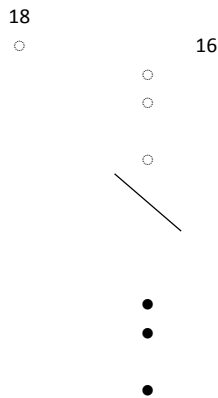
E5 No.153



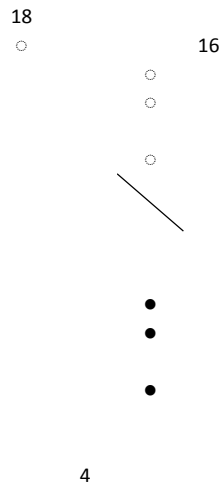
E[↑]5 No.154



E[↓]5 No.155

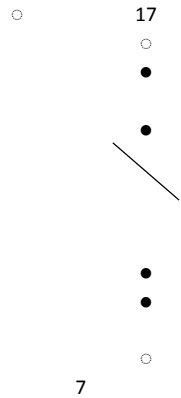


F[↓]5 No.156

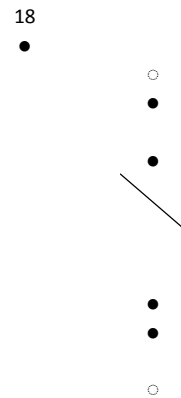


Appendix C – Eighth-tone scale

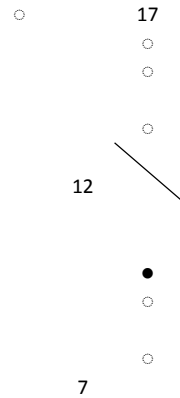
F5 No.157



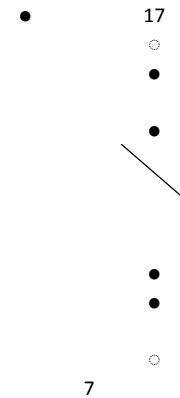
F[↑]5 No.158



F[↓]5 No.159



F[↓]5 No.160



Key 12 is operated by the RH thumb

Appendix C – Eighth-tone scale

F#5 No.161

18



F#5 No.162

18



9



G#5 No.163

18



10



G#5 No.164

18



3

Key 10 is operated by the RH thumb

Appendix C – Eighth-tone scale

G5 No.165

18

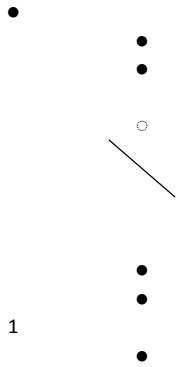


10

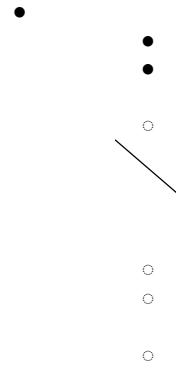


Appendix D – 31-tone scale version 1

D2 No.1

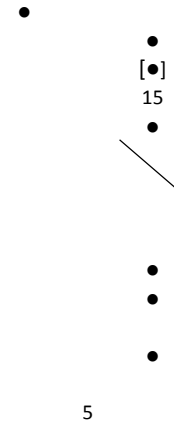


D $\sharp$ 2 No.2



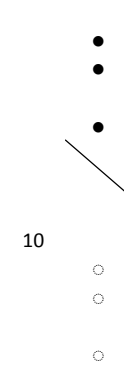
Standard fingering pattern for D2

D $\sharp$ 2 No.3



Restrictions to the dynamic level: only playable at dynamics quieter than *piano*

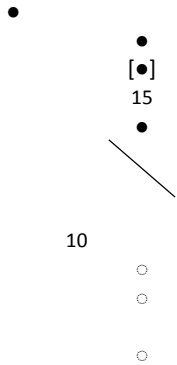
E $\flat$ 2 No.4



Appendix D – 31-tone scale version 1

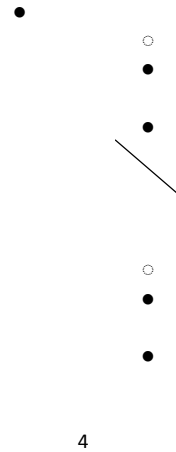
E $\flat$ 2

No.5



E2

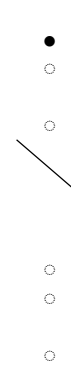
No.6



Poor sound quality

E $\sharp$ 2

No.7



Standard fingering pattern for
E2

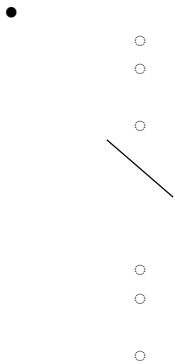
F $\flat$ 2

No.8



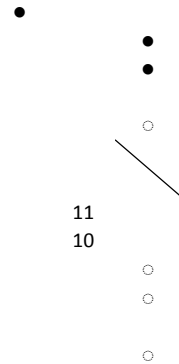
Appendix D – 31-tone scale version 1

F2 No.9

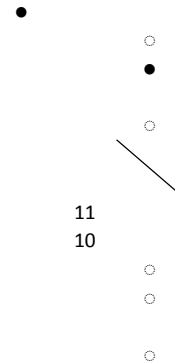


Standard fingering pattern

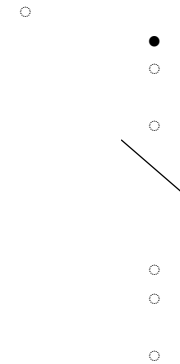
F $\sharp$ 2 No.10



F $\sharp$ 2 No.11



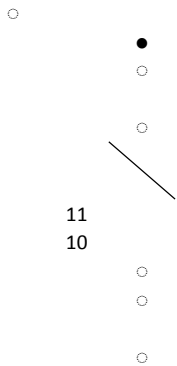
G $\flat$ 2 No.12



Standard fingering pattern

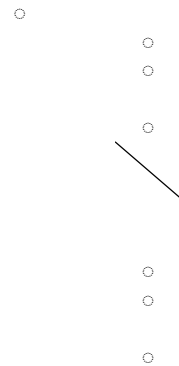
Appendix D – 31-tone scale version 1

G $\flat$ 2 No.13



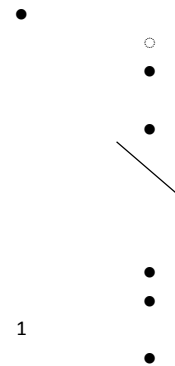
11
10

G2 No.14



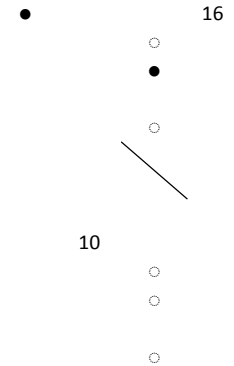
Standard fingering pattern

G $\sharp$ 2 No.15



1

G $\sharp$ 2 No.16

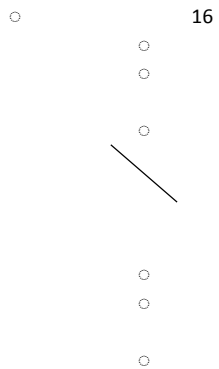


10

16

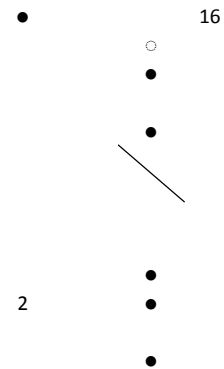
Appendix D – 31-tone scale version 1

A $\flat$ 2 No.17

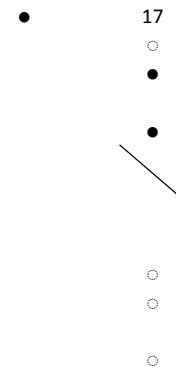


Standard fingering pattern

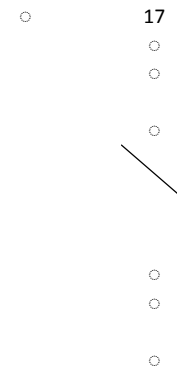
A $\flat$ 2 No.18



A2 No.19



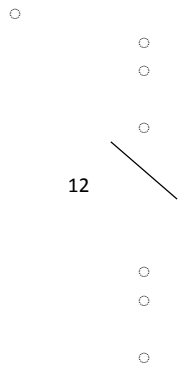
A $\sharp$ 2 No.20



Standard fingering pattern for
A2

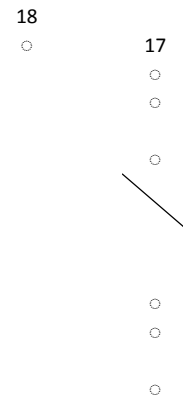
Appendix D – 31-tone scale version 1

A#2 No.21



12

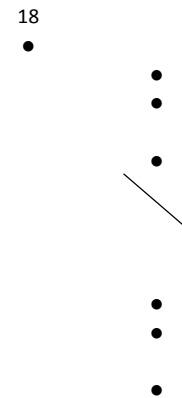
B $\flat$ 2 No.22



18

17

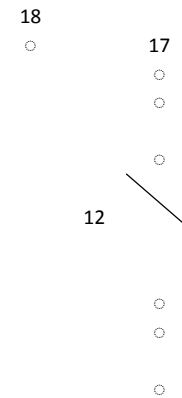
B $\flat$ 2 No.23



18

4

B2 No.24



18

17

12

Standard fingering pattern

Appendix D – 31-tone scale version 1

B $\sharp$ 2 No.25

18



5

Standard fingering pattern for
B $\sharp$ 2

C $\flat$ 3 No.26



13

12



C3 No.27

18



13

12



5

Keys 12 and 13 are operated by
the RH thumb

C $\sharp$ 3 No.28

18



13

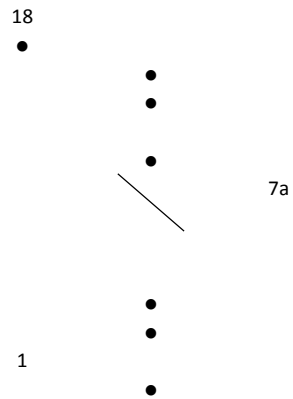


6

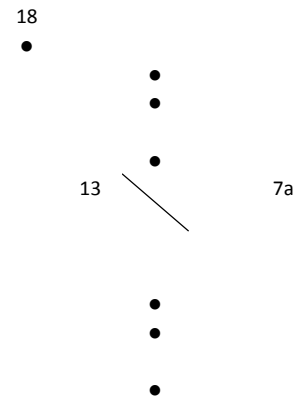
Key 13 is operated by the RH
thumb

Appendix D – 31-tone scale version 1

C#3 No.29

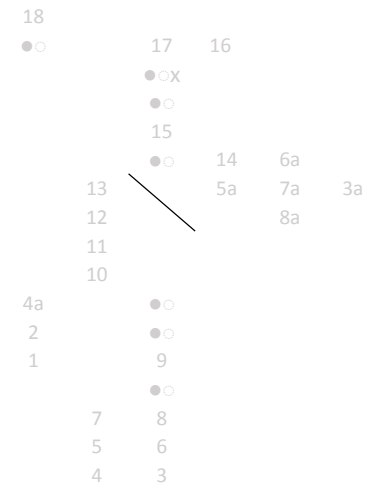


D $\flat$ 3 No.30



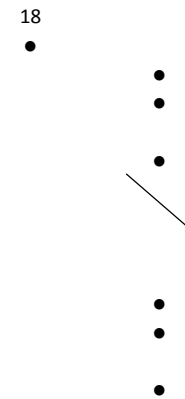
Key 13 is operated by the RH thumb

D $\flat$ 3 No.31



No suitable fingering pattern could be found for this pitch

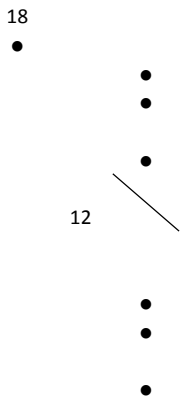
D3 No.32



Standard fingering pattern

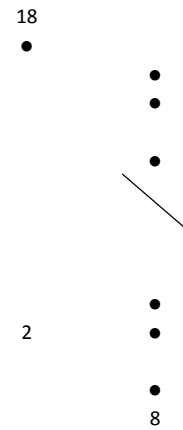
Appendix D – 31-tone scale version 1

D $\sharp$ 3 No.33



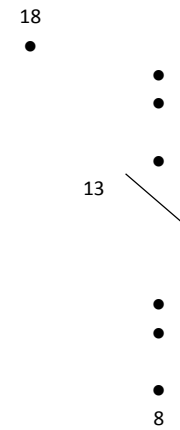
Key 12 is operated by the RH thumb

D $\sharp$ 3 No.34



A legato sequence from D $\sharp$ 3 is not possible

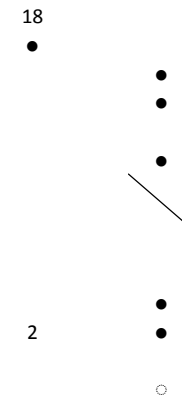
E $\flat$ 3 No.35



Key 13 is operated by the RH thumb

A legato sequence from D $\sharp$ 3 or to E $\flat$ 3 is not possible

E $\flat$ 3 No.36



A legato sequence from E $\flat$ 3 is not possible

Appendix D – 31-tone scale version 1

E3 No.37

18
•

•
•
•



•
•

○

5

E~~3~~ No.38

18
•

•
•
•



•
•

○

1

F~~3~~ No.39

18
•

•
•
•



•
○

•

6

F3 No.40

18
•

•
•
•



•
○

•

1

Appendix D – 31-tone scale version 1

F $\sharp$ 3

No.41

18

•

•
•
•



2

•
○
•

F $\sharp$ 3

No.42

18

•

•
•
•



○
•
•

6

G $\flat$ 3

No.43

18

•

•
•
•



2

○
•
•

G $\flat$ 3

No.44

18

•

•
•
•

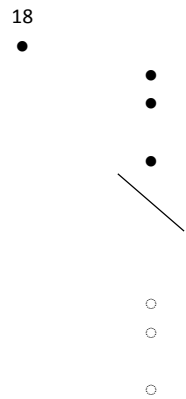


○
•
•

3

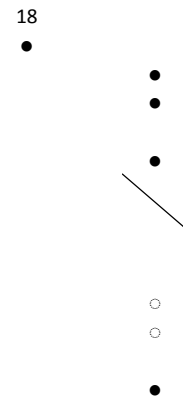
Appendix D – 31-tone scale version 1

G3 No.45



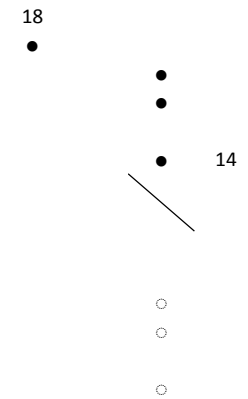
Standard fingering pattern

G#3 No.46



G#3 No.47

No suitable fingering pattern
could be found for this pitch

A $\flat$ 3 No.48

Standard fingering pattern

Appendix D – 31-tone scale version 1

A $\flat$ 3

No.49

18



14



A3

No.50

18



A $\sharp$ 3

No.51

18



10



A $\sharp$ 3

No.52

18



Appendix D – 31-tone scale version 1

B $\flat$ 3 No.53

18
●

●
●
●

10

—

○
○
●

B $\flat$ 3 No.54

18
●

●
●
15
○

10

—

○
○
○

B3 No.55

18
●

●
●
○

10

—

○
○
●

B $\sharp$ 3 No.56

18
●

○
●
●

10

—

○
○
○

Appendix D – 31-tone scale version 1

C $\flat$ 4 No.57

18
●

○

●

○

10

○

○

○

C4 No.58

18
●

○

○

○

10

○

○

○

C $\sharp$ 4 No.59

18
●

●

●

○

11

10

○

○

○

C $\sharp$ 4 No.60

18
○

●

●

○

○

○

○

Appendix D – 31-tone scale version 1

D $\flat$ 4

No.61

18



11
10



D $\flat$ 4

No.62

18



11
10



D4

No.63

18



D $\sharp$ 4

No.64

18



Appendix D – 31-tone scale version 1

D $\sharp$ 4 No.65

18



4

E $\flat$ 4 No.66

18



E $\flat$ 4 No.67

18



9



E4 No.68

18



x



Standard fingering pattern

Appendix D – 31-tone scale version 1

E $\sharp$ 4 No.69

18
●

x
●
●
/
○
○
●

F $\flat$ 4 No.70

18
●

16
●
●
●
/
○
○
●

F4 No.71

18
●

x
●
● 14
/
○
○
○

F $\sharp$ 4 No.72

18
●

x
●
○
/
●
○
○

Appendix D – 31-tone scale version 1

F#4

No.73

18



x



G $\flat$ 4

No.74

18



x



G $\sharp$ 4

No.75

18



14

13

12



G4

No.76

18



[•]

15

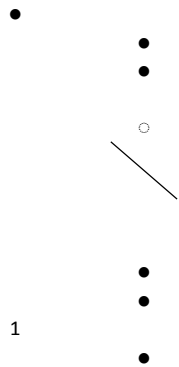


10

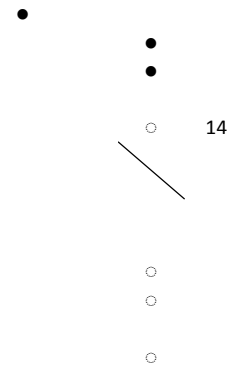


Appendix E – 31-tone scale version 2

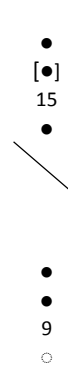
D₂ No.1



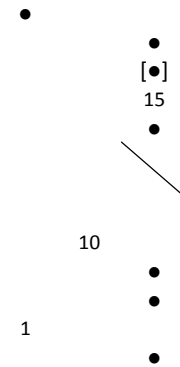
D₂ No.2



D₂ No.3



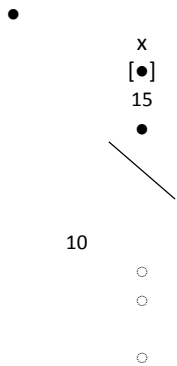
E_{b2} No.4



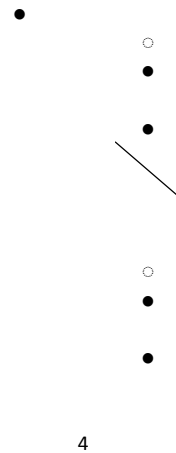
Key 10 is operated by the RH thumb

Appendix E – 31-tone scale version 2

E $\flat$ 2 No.5

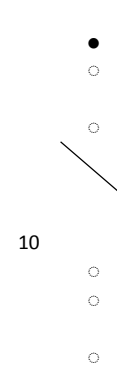


E2 No.6

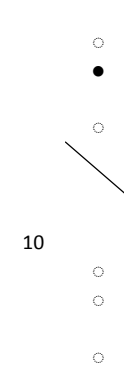


Poor sound quality

E $\sharp$ 2 No.7



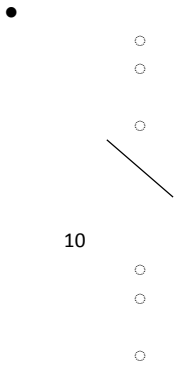
F $\flat$ 2 No.8



Appendix E – 31-tone scale version 2

F2

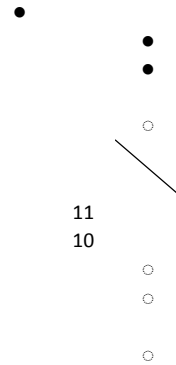
No.9



10

F $\sharp$ 2

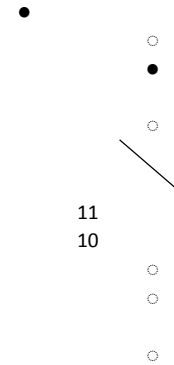
No.10



11
10

F $\sharp$ 2

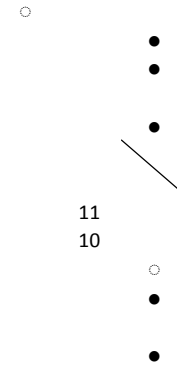
No.11



11
10

G $\flat$ 2

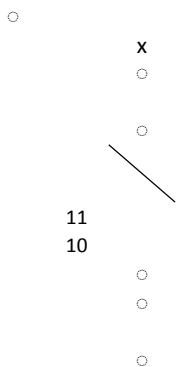
No.12



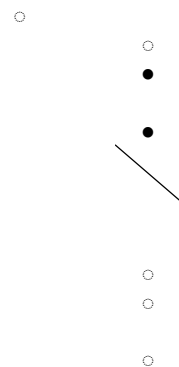
11
10

Appendix E – 31-tone scale version 2

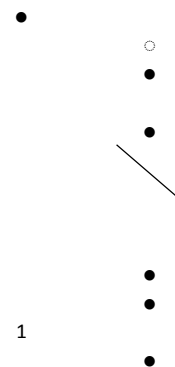
G $\flat$ 2 No.13



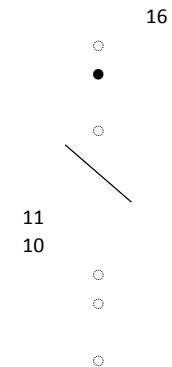
G2 No.14



G $\sharp$ 2 No.15

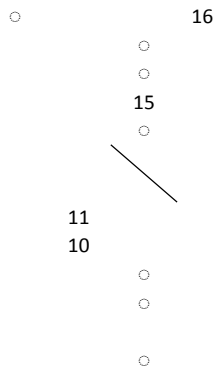


G $\sharp$ 2 No.16

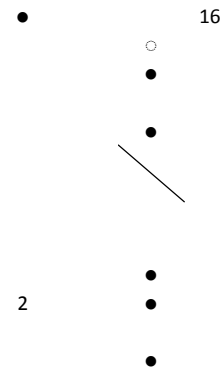


Appendix E – 31-tone scale version 2

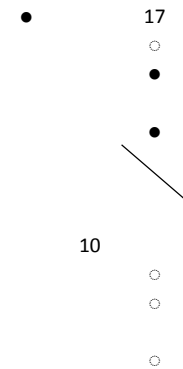
A $\flat$ 2 No.17



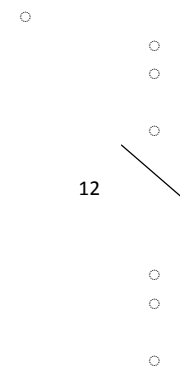
A $\flat$ 2 No.18



A2 No.19

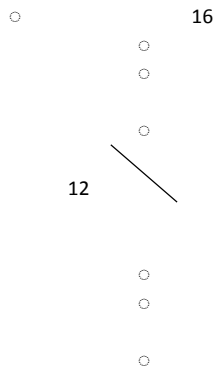


A $\sharp$ 2 No.20

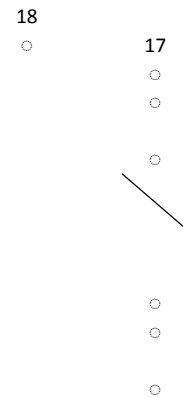


Appendix E – 31-tone scale version 2

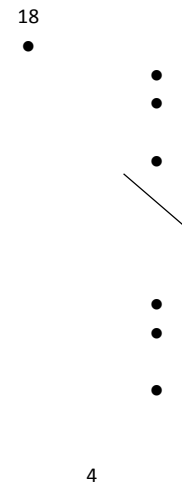
A#2 No.21



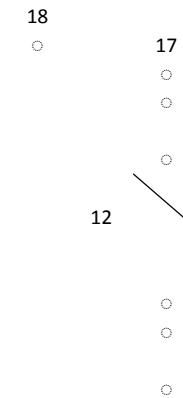
Bb2 No.22



Bb2 No.23



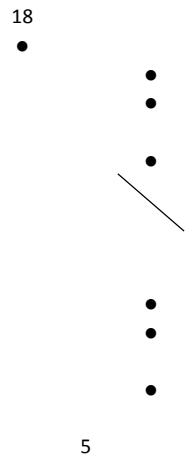
B2 No.24



Standard fingering pattern

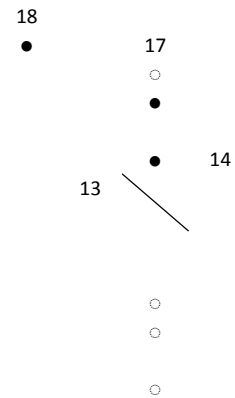
Appendix E – 31-tone scale version 2

B $\sharp$ 2 No.25



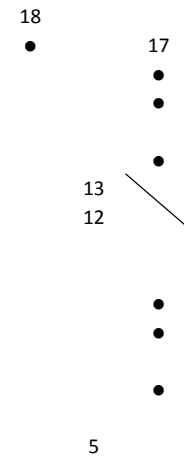
Standard fingering pattern for B $\sharp$ 2: B $\sharp$ 2 is sharp on most bass clarinets

C $\flat$ 3 No.26



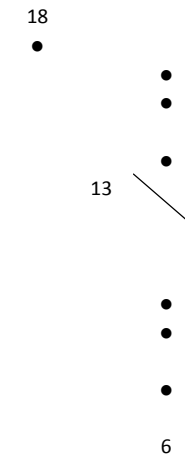
A legato sequence to C3 is not possible

C3 No.27



A legato sequence to C $\sharp$ 3 is not possible

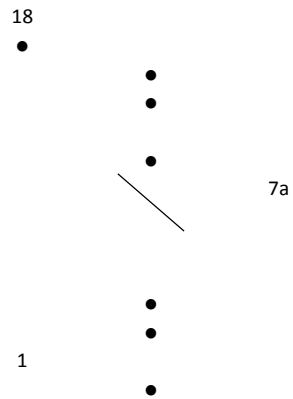
C $\sharp$ 3 No.28



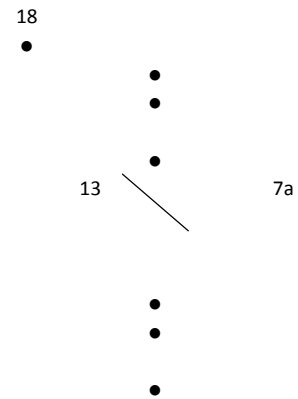
A legato sequence from C3 is not possible

Appendix E – 31-tone scale version 2

C#3 No.29

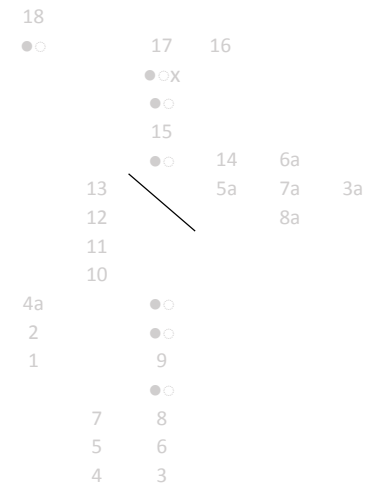


D $\flat$ 3 No.30



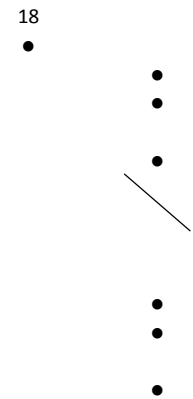
Key 13 is operated by the RH thumb

D $\flat$ 3 No.31



No fingering pattern fulfilled the research criteria

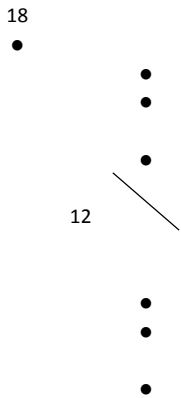
D3 No.32



Standard fingering pattern

Appendix E – 31-tone scale version 2

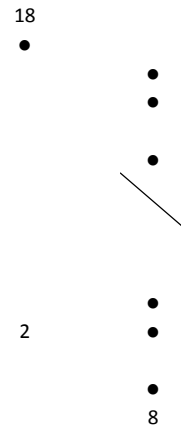
D $\sharp$ 3 No.33



Key 12 is operated by the RH thumb

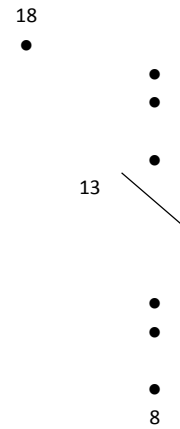
A legato sequence to D $\sharp$ 3 is not possible

D $\sharp$ 3 No.34



A legato sequence from D $\sharp$ 3 is not possible

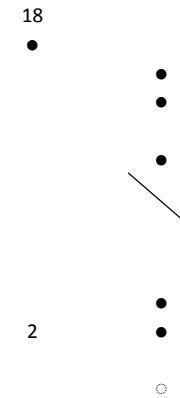
E $\flat$ 3 No.35



Key 13 is operated by the RH thumb

A legato sequence from D $\sharp$ 3 or to E $\flat$ 3 is not possible

E $\flat$ 3 No.36



A legato sequence from E $\flat$ 3 is not possible

Appendix E – 31-tone scale version 2

E3 No.37

18
•

•
•
•



•
•

○

5

E~~3~~ No.38

18
•

•
•
•



•
•

○

1

F~~3~~ No.39

18
•

•
•
•



•
○

•

6

F3 No.40

18
•

•
•
•



•
○

•

1

Appendix E – 31-tone scale version 2

F $\sharp$ 3 No.41

18
•

•
•
•



2

•
○
•

F $\sharp$ 3 No.42

18
•

•
•
•



○
•
•
6

G $\flat$ 3 No.43

18
•

•
•
•



2

○
•
•

G $\flat$ 3 No.44

18
•

•
•
•



○
•
•
3

Appendix E – 31-tone scale version 2

G3 No.45

18



Standard fingering pattern

G#3 No.46

18



4

G#3 No.47

18



16



15



13

12

11

10

4a

2

1



7

5

4



No fingering pattern fulfilled the research criteria

A#3 No.48

18



x



14



Appendix E – 31-tone scale version 2

A $\flat$ 3

No.49

18



14



A3

No.50

18



A $\sharp$ 3

No.51

18



10



A $\sharp$ 3

No.52

18



Appendix E – 31-tone scale version 2

B $\flat$ 3 No.53

18



10



5

B $\flat$ 3 No.54

18



15



10



B3 No.55

18



10



B $\sharp$ 3 No.56

18



10



Appendix E – 31-tone scale version 2

C $\flat$ 4 No.57

18
●

○
●
15
○

10



○
○
○

C4 No.58

18
●

○
○
15
○

10



○
○
○

C $\sharp$ 4 No.59

18
●

●
●
15
○

11
10



○
○
○

C $\sharp$ 4 No.60

18
○

●
●
○

10



○
○
○

Appendix E – 31-tone scale version 2

D $\flat$ 4

No.61

18



11

10

2



D $\flat$ 4

No.62

18



11

10



D4

No.63

18



D $\sharp$ 4

No.64

18



Appendix E – 31-tone scale version 2

D#4

No.65

18



1

E $\flat$ 4

No.66

18



E $\flat$ 4

No.67

18



x



1

9

E4

No.68

18



16



Appendix E – 31-tone scale version 2

E $\sharp$ 4 No.69

18
●

x
●
●
/
○
○
●

F $\flat$ 4 No.70

18
●

x 16
●
●
/
○
○
●

F4 No.71

18
●

x
●
● 14
/
○
○
○

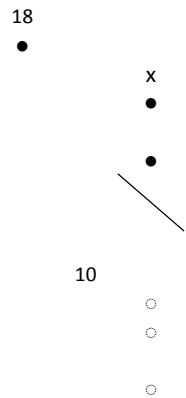
F $\sharp$ 4 No.72

18
●

x
●
○
/
●
○
○

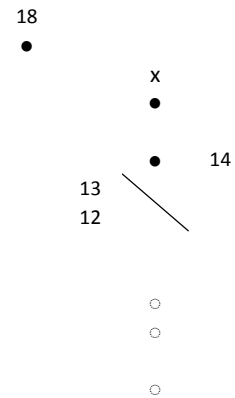
Appendix E – 31-tone scale version 2

F#4 No.73



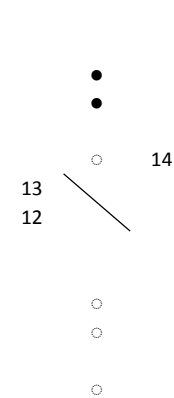
For a legato sequence to Gb4
keys 12 and 13 have to be
operated by the RH thumb

Gb4 No.74



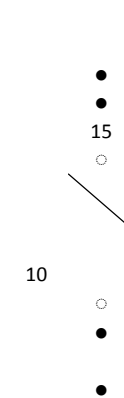
For a legato sequence to F#4
keys 12 and 13 have to be
operated by the RH thumb

G#4 No.75



For a legato sequence to G4 keys
12 and 13 have to be operated
by the RH thumb

G4 No.76



For a legato sequence to G#4
keys 12 and 13 have to be
operated by the RH thumb

Appendix E – 31-tone scale version 2

G#4 No.77

18



15



10



G#4 No.78

18



10



A $\flat$ 4 No.79

18



15



10



A $\flat$ 4 No.80

18



10



Key 10 can be operated by the
RH thumb

Appendix E – 31-tone scale version 2

A4 No.81

18
○

●
●
15
○

10



○
○
●

A~~4~~ No.82

18
○

●
○
15
○

10



○
○
●

A~~4~~ No.83

18
○

●
●
○

11
10



○
○
○

B~~b~~4 No.84

18
○

○
●
15
○

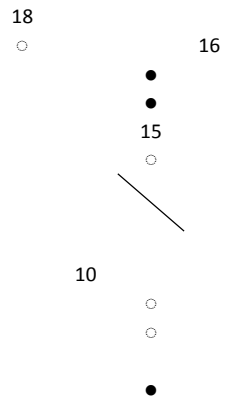
10



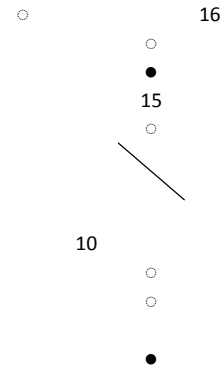
○
○
●

Appendix E – 31-tone scale version 2

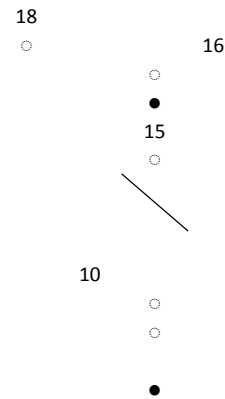
B $\flat$ 4 No.85



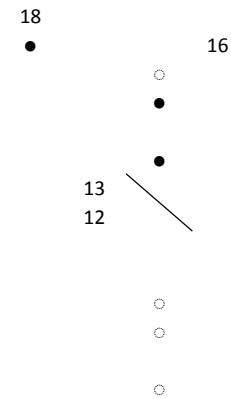
B4 No.86



B $\sharp$ 4 No.87

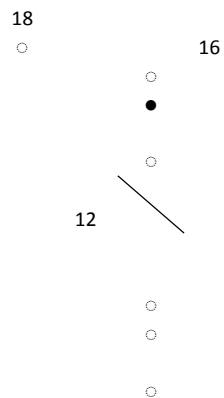


C $\flat$ 5 No.88

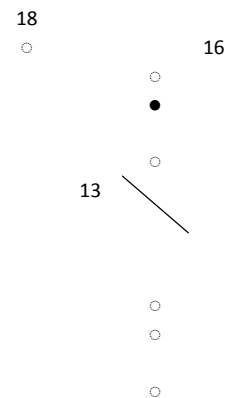


Appendix E – 31-tone scale version 2

C5 No.89

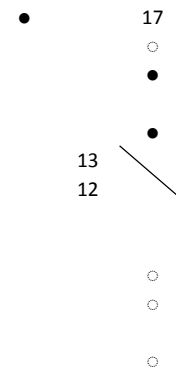


C#5 No.90

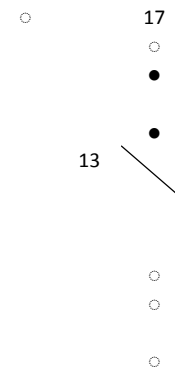


Key 13 should be operated by the RH thumb when a legato sequence from C5 is required

C#5 No.91



Db5 No.92



Appendix E – 31-tone scale version 2

D $\flat$ 5 No.93

18



17



13

12



9



D5 No.94

18



17



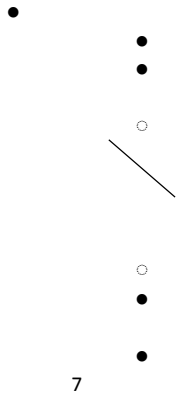
13

12

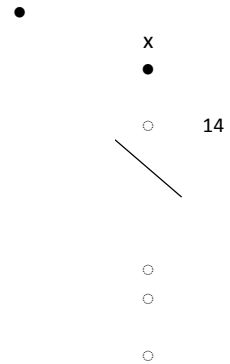


Appendix F – 31-tone scale definitive version

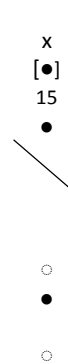
D2 No.1



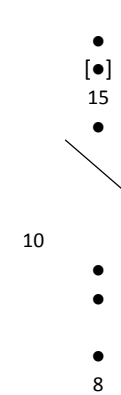
D $\sharp$ 2 No.2



D $\sharp$ 2 No.3



E $\flat$ 2 No.4



Key 10 can be operated by the
RH thumb

Appendix F – 31-tone scale definitive version

E $\flat$ 2

No.5

•

x
[•]
15
•

10

○
○
○

E2

No.6

•

○
•
•
○
•
•

4

Poor sound quality

E $\sharp$ 2

No.7

•

•
○
○
○
○
○

10

F $\flat$ 2

No.8

•

○
•
○
○
○
○

Appendix F – 31-tone scale definitive version

F2

No.9

•

○

○

○



10

○

○

○

F $\sharp$ 2

No.10

•

•

•

○



11
10

○

○

○

F $\sharp$ 2

No.11

•

○

•

○



11
10

○

○

○

G $\flat$ 2

No.12

○

•

•

•



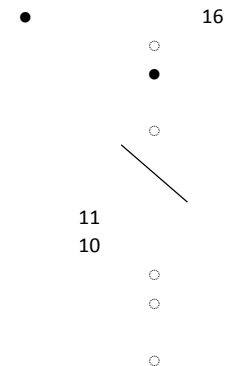
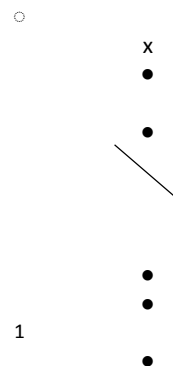
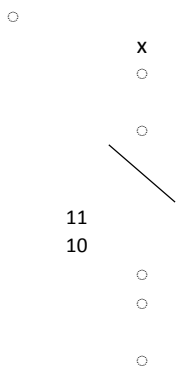
11
10

○

•

•

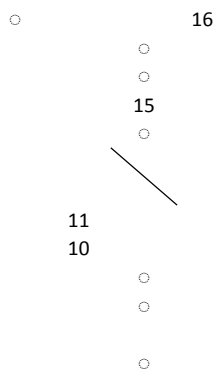
Appendix F – 31-tone scale definitive version



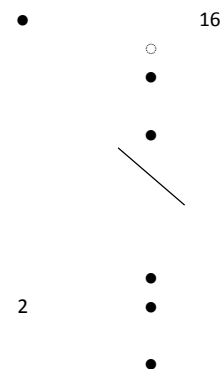
LHK1 can be either half-open (x) or closed

Appendix F – 31-tone scale definitive version

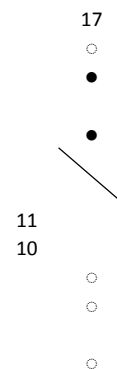
A $\flat$ 2 No.17



A $\flat$ 2 No.18

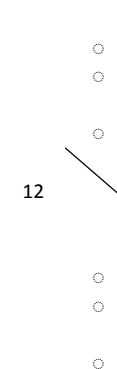


A2 No.19



For a legato sequence to A $\sharp$ 2 key
12 has to be operated by the RH
thumb

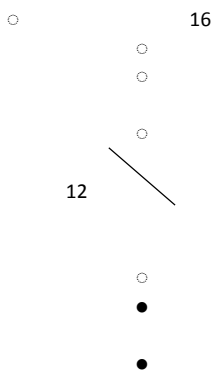
A $\sharp$ 2 No.20



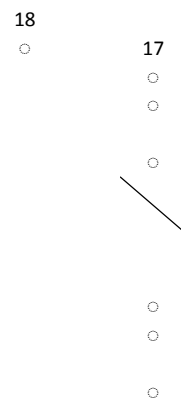
For a legato sequence to A2 key
12 has to be operated by the RH
thumb

Appendix F – 31-tone scale definitive version

A#2 No.21

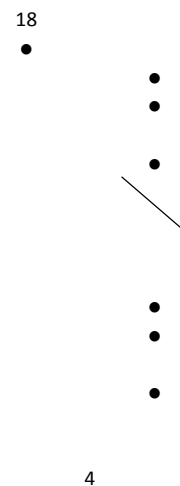


Bb2 No.22



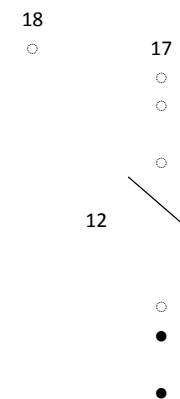
Standard fingering pattern

Bb2 No.23



For a legato sequence to B2 key
12 has to be operated by the RH
thumb

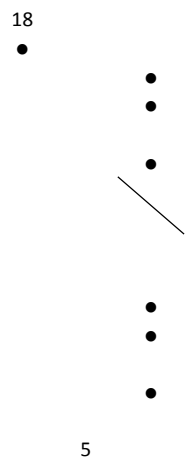
B2 No.24



For a legato sequence to Bb2 key
12 has to be operated by the RH
thumb

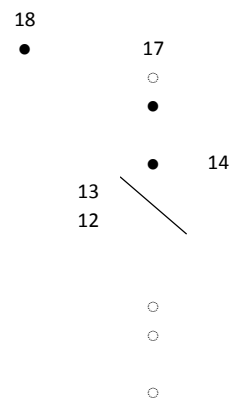
Appendix F – 31-tone scale definitive version

B $\sharp$ 2 No.25



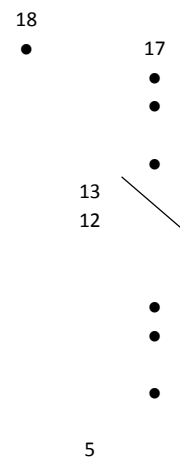
Standard fingering pattern for B $\sharp$ 2

C $\flat$ 3 No.26



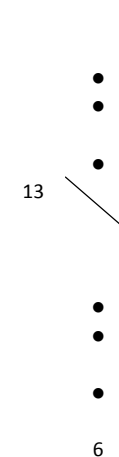
A legato sequence to C3 is only possible when keys 12 and 13 are operated by the RH thumb

C3 No.27



A legato sequence to C $\sharp$ 3 is not possible

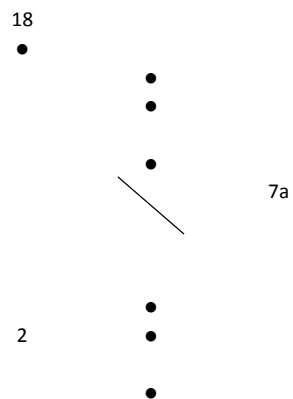
C $\sharp$ 3 No.28



A legato sequence from C3 is not possible

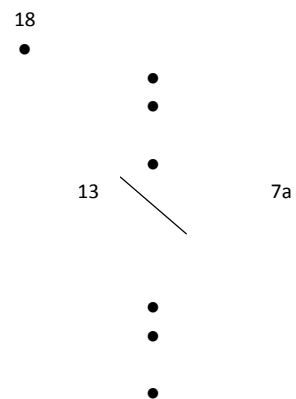
Appendix F – 31-tone scale definitive version

C#3 No.29



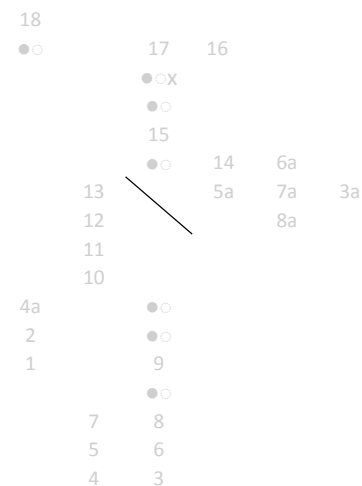
A legato sequence to D $\flat$ 3 is not possible

D $\flat$ 3 No.30



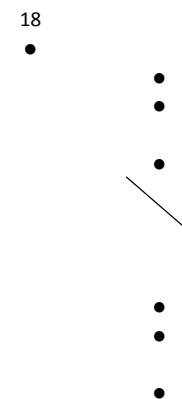
Key 13 is operated by the RH thumb
A legato sequence to C#3 is not possible

D $\flat$ 3 No.31



No fingering pattern fulfilled the research criteria

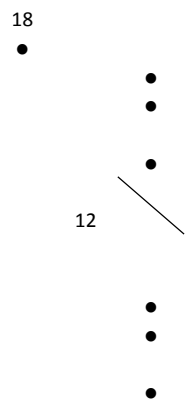
D3 No.32



Standard fingering pattern

Appendix F – 31-tone scale definitive version

D $\sharp$ 3 No.33

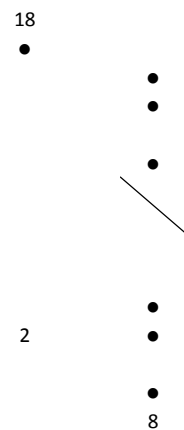


Key 12 is operated by the RH thumb

A legato sequence to D $\sharp$ 3 is not possible

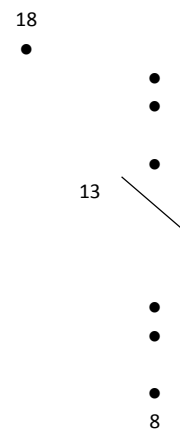
Very unstable

D $\sharp$ 3 No.34



A legato sequence from D $\sharp$ 3 is not possible

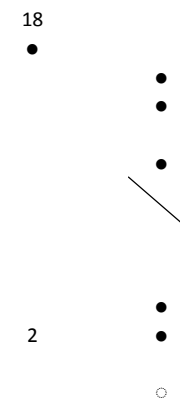
E $\flat$ 3 No.35



Key 13 is operated by the RH thumb

A legato sequence from D $\sharp$ 3 or to E $\flat$ 3 is not possible

E $\flat$ 3 No.36



A legato sequence from E $\flat$ 3 is not possible

Appendix F – 31-tone scale definitive version

E3

No.37

18



6

E~~3~~

No.38

18



1



F~~3~~

No.39

18



1

7



F3

No.40

18



1



Appendix F – 31-tone scale definitive version

F $\sharp$ 3

No.41

18



2



F $\sharp$ 3

No.42

18



7



G $\flat$ 3

No.43

18



2



G $\flat$ 3

No.44

18



3



Appendix F – 31-tone scale definitive version

G3 No.45

18



Standard fingering pattern

G#3 No.46

18



4

G#3 No.47

18



17



16



15



13

12

11

10

4a

2

1

9

8

7

5

4

8

6

3

No fingering pattern fulfilled the research criteria

A#3 No.48

18



x



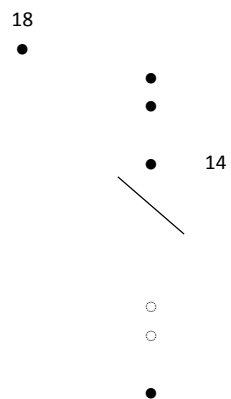
14



4

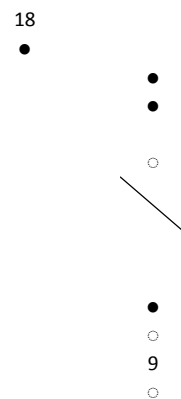
Appendix F – 31-tone scale definitive version

A $\flat$ 3 No.49

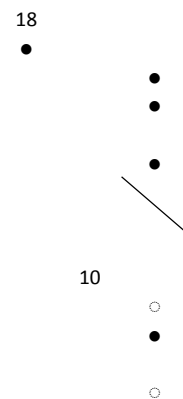


For a legato sequence to A3
RHK3 has to be operated by the
RH little finger

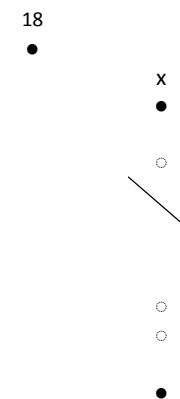
A3 No.50



A $\sharp$ 3 No.51



A $\sharp$ 3 No.52



Appendix F – 31-tone scale definitive version

B $\flat$ 3 No.53

18



10



5

B $\flat$ 3 No.54

18



15



10



B3 No.55

18



Standard fingering pattern

B $\sharp$ 3 No.56

18



14



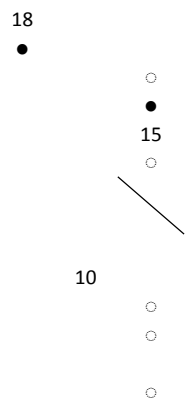
10



For a legato sequence to C $\flat$ 4
LHK2 has to be operated by the
LH index finger

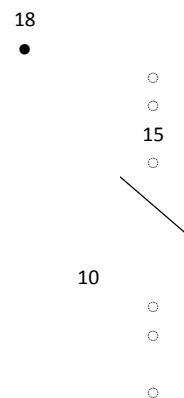
Appendix F – 31-tone scale definitive version

C $\flat$ 4 No.57



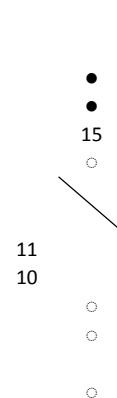
For a legato sequence to B $\sharp$ 3
LHK2 has to be operated by the
LH index finger

C4 No.58



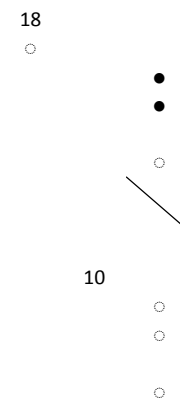
For a legato sequence to C $\sharp$ 4 key
11 has to be operated by the RH
thumb

C $\sharp$ 4 No.59



For a legato sequence to C4 key
11 has to be operated by the RH
thumb

C $\sharp$ 4 No.60



A legato sequence to D $\flat$ 4 is not
possible

Appendix F – 31-tone scale definitive version

D $\flat$ 4 No.61

18



11

10

2



A legato sequence to C $\sharp$ 4 or to D $\flat$ 4 is not possible

D $\flat$ 4 No.62

18



4

A legato sequence to D $\flat$ 4 is not possible

D4 No.63

18



8

D $\sharp$ 4 No.64

18



8

Appendix F – 31-tone scale definitive version

D~~#~~4

No.65

18



1



E~~b~~4

No.66

18



E~~b~~4

No.67

18



9



E4

No.68

18



16



Appendix F – 31-tone scale definitive version

E $\sharp$ 4 No.69

18



F $\flat$ 4 No.70

18



16



2

7

F4 No.71

18



x



14



F $\sharp$ 4 No.72

18



x

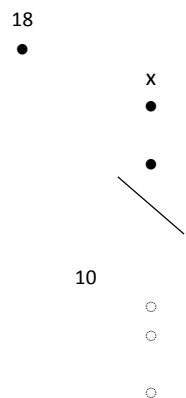


9



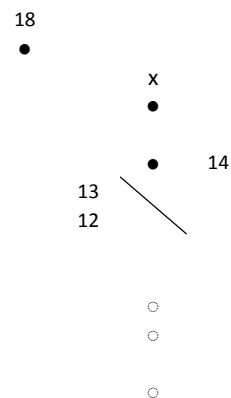
Appendix F – 31-tone scale definitive version

F#4 No.73



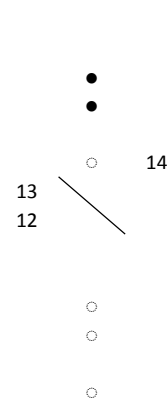
For a legato sequence to Gb4
keys 12 and 13 have to be
operated by the RH thumb

Gb4 No.74



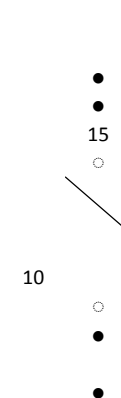
For a legato sequence to F#4
keys 12 and 13 have to be
operated by the RH thumb

G#4 No.75



For a legato sequence to G4 keys
12 and 13 have to be operated
by the RH thumb

G4 No.76



For a legato sequence to G#4
keys 12 and 13 have to be
operated by the RH thumb

Appendix F – 31-tone scale definitive version

G $\sharp$ 4

No.77

18



x



15



10



G $\sharp$ 4

No.78

18



15



10



A $\flat$ 4

No.79

18



15



10



A $\flat$ 4

No.80

18

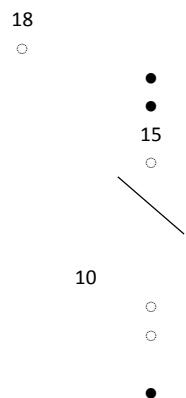


15

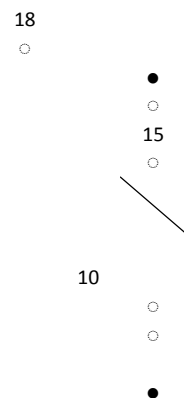


Appendix F – 31-tone scale definitive version

A4 No.81

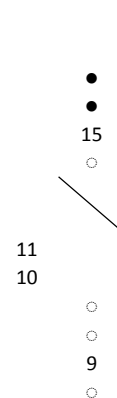


A $\sharp$ 4 No.82



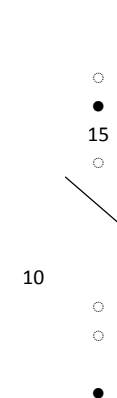
For a legato sequence to A $\sharp$ 4 key
11 has to be operated by the RH
thumb and key 9 by the RH
middle finger

A $\sharp$ 4 No.83



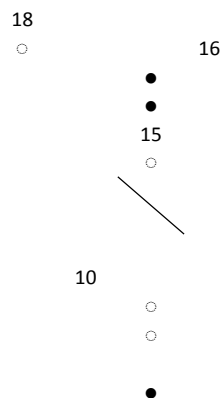
For a legato sequence to A $\sharp$ 4 key
11 has to be operated by the RH
thumb and key 9 by the RH
middle finger

B $\flat$ 4 No.84

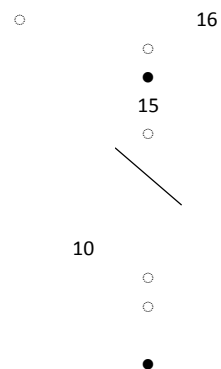


Appendix F – 31-tone scale definitive version

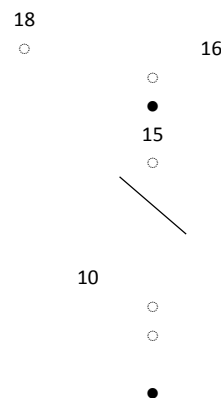
B $\flat$ 4 No.85



B4 No.86

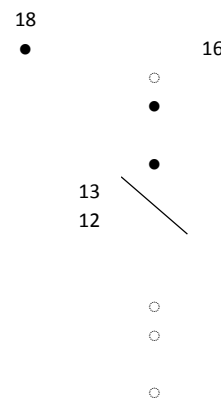


B $\sharp$ 4 No.87



A legato sequence to C $\flat$ 5 is not possible

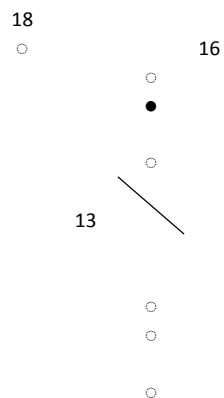
C $\flat$ 5 No.88



A legato sequence to B $\sharp$ 4 is not possible

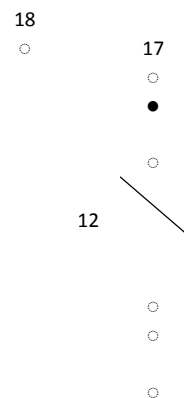
Appendix F – 31-tone scale definitive version

C5 No.89



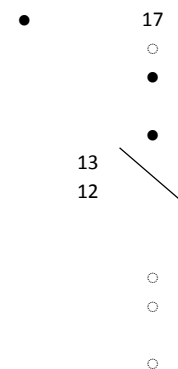
For a legato sequence to C#5 or C#5, key 12 has to be operated by the RH index finger and key 13 by the RH thumb

C#5 No.90



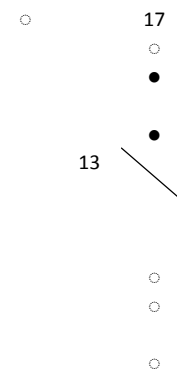
For a legato sequence to C5, C#5, or D#5, key 12 has to be operated by the RH index finger and key 13 by the RH thumb

C#5 No.91



For a legato sequence to C5, C#5, or D#5, key 12 has to be operated by the RH index finger and key 13 by the RH thumb

D#5 No.92



For a legato sequence to C#5, C#5, key 12 has to be operated by the RH index finger and key 13 by the RH thumb

Appendix F – 31-tone scale definitive version

D $\flat$ 5

No.93

18



17



13

12



9



D5

No.94

18



17



13

12



Appendix G1 – Overtone series pitch measurements

Overtone					
G $\sharp$ 5		-		-	
F $\sharp$ 5	+3		-	-34	+9
F $\flat$ 5		+28	+14		-47
E $\flat$ 5	+47			-39	
E $\flat$ 5		+46	-43		
D $\flat$ 5	+21			-49	+45
C $\sharp$ 5	-42	+17	-47		
C $\flat$ 5					-17
B $\flat$ 4	-49	-6		+37	
B $\flat$ 4			+36		
A $\flat$ 4	-47	+20			+10
G $\sharp$ 4				+49	
G $\flat$ 4			+48		
F $\sharp$ 4		-9			-11
F $\flat$ 4	+28			+12	
E $\flat$ 4			+20		
E $\flat$ 4		+4			
D $\flat$ 4	+15				-31
C $\sharp$ 4				-9	
C $\flat$ 4			-12		
B $\flat$ 3		-23			
B $\flat$ 3	-7				
A $\flat$ 3					
G $\sharp$ 3					-13
G $\flat$ 3				+12	
F $\sharp$ 3			+24		
F $\flat$ 3		-16			
E $\flat$ 3	+4				
E $\flat$ 3					
D $\flat$ 3					
C $\sharp$ 3					
C $\flat$ 3					
B $\flat$ 2					-3
B $\flat$ 2				+23	
A $\flat$ 2			+36		
G $\sharp$ 2		0			
G $\flat$ 2	+16				
Root	C $\flat$ 1	C $\sharp$ 1	D $\flat$ 1	E $\flat$ 1	E $\flat$ 1

Appendix G1 – Overtone series pitch measurements

Overtone					
G♭5	-		-		-
F♯5		+39		+8	
F♭5	-16		+3		
E♭5		-4		-26	+40
E♭5	+10		-9		
D♭5		-12			-38
C♯5	+1			+13	
C♭5			+5		
B♭4		-10			-40
B♭4	+12			-17	
A♭4			-3		
G♯4		-7			
G♭4	-28				-49
F♯4				-24	
F♭4			-26		
E♭4		-21			
E♭4	-17				
D♭4					
C♯4					-6
C♭4				+2	
B♭3			+1		
B♭3		0			
A♭3	-11				
G♯3					
G♭3					
F♯3					
F♭3					
E♭3					-7
E♭3				-1	
D♭3			+6		
C♯3		+7			
C♭3	+4				
B♭2					
B♭2					
A♭2					
G♯2					
G♭2					
Root	F♭1	F♯1	G♭1	G♯1	A♭1

Appendix G1 – Overtone series pitch measurements

Overtone					
G $\sharp$ 5					
F $\sharp$ 5	-31	-18			
F $\flat$ 5			-41	-19	
E $\flat$ 5					
E $\flat$ 5	-37	+43			-27
D $\flat$ 5				+17	
C $\sharp$ 5			+18		
C $\flat$ 5		+6			
B $\flat$ 4	+47				+26
B $\flat$ 4				+42	
A $\flat$ 4			+47		
G $\sharp$ 4	-45	+38			
G $\flat$ 4					
F $\sharp$ 4					-33
F $\flat$ 4				-18	
E $\flat$ 4			-14		
E $\flat$ 4		-8			
D $\flat$ 4	-11				
C $\sharp$ 4					
C $\flat$ 4					
B $\flat$ 3					
B $\flat$ 3					
A $\flat$ 3					-7
G $\sharp$ 3				0	
G $\flat$ 3			+1		
F $\sharp$ 3		+2			
F $\flat$ 3	-4				
E $\flat$ 3					
E $\flat$ 3					
D $\flat$ 3					
C $\sharp$ 3					
C $\flat$ 3					
B $\flat$ 2					
B $\flat$ 2					
A $\flat$ 2					
G $\sharp$ 2					
G $\flat$ 2					
Root	B $\flat$ 1	B $\flat$ 1	C $\flat$ 2	C $\sharp$ 2	D $\flat$ 2

Appendix G1 – Overtone series pitch measurements

Overtone					
G♭5					
F♯5					
F♭5	-10	-27			
E♭5					
E♭5					+24
D♭5				-44	
C♯5			-43		
C♭5	-34	+38			
B♭4					
B♭4					+22
A♭4				+10	
G♯4			+21		
G♭4	-47	+33			
F♯4					
F♭4					
E♭4					
E♭4					
D♭4					-3
C♯4				-14	
C♭4			-21		
B♭3		-7			
B♭3	+1				
A♭3					
G♯3					
G♭3					
F♯3					
F♭3					
E♭3					
E♭3					
D♭3					
C♯3					
C♭3					
B♭2					
B♭2					
A♭2					
G♯2					
G♭2					
Root	E♭2	E♭2	F♭2	F♯2	G♭2

Appendix G1 – Overtone series pitch measurements

Overtone			
G♭5			
F♯5			
F♭5		-27	
E♭5	+27		
E♭5			
D♭5			
C♯5			-48
C♭5		-5	
B♭4	+30		
B♭4			
A♭4			
G♯4			
G♭4			
F♯4			
F♭4			-35
E♭4		-9	
E♭4	-4		
D♭4			
C♯4			
C♭4			
B♭3			
B♭3			
A♭3			
G♯3			
G♭3			
F♯3			
F♭3			
E♭3			
E♭3			
D♭3			
C♯3			
C♭3			
B♭2			
B♭2			
A♭2			
G♯2			
G♭2			
Root	G♯2	A♭2	B♭2

Appendix G2 – Comparison of harmonic series frequencies

This table is a comparison between the expected frequencies of the harmonic series for the **root fingering pattern for E1** and the obtained results taken on three readings, all in hertz.

Tuning to A=442 Hz, the note E1 on the bass clarinet gave a reading of 73 Hz. The supposed pitches of the harmonic series have been calculated and then three readings of the actual pitch produced have been taken.

Harmonic	Note name	Harmonic series pitch	Equal temperament pitch	Reading 1	Reading 2	Reading 3	Average reading
18	F#5	1314	1324	1331	1336	1337	1335
16	E5	1168	1180	1219	1217	1207	1214
14	D5	1022	1051	1079	1073	1062	1071
13	C5	949	936	925	943	942	937
11	A#4	803	834	792	800	799	797
9	F#4	657	662	659	660	660	660
7	D4	511	525	516	515	517	516
5	G#3	365	371	368	368	369	368
3	B2	219	221	220	220	220	220
1	E1	73	73	73	73	73	73

Appendix G3 – Overtone manoeuvrability

The table is a comparison of the manoeuvrability between the different overtones for the **root fingering pattern E1**.

Tuning to A=442 Hz, the lowest and the highest possible manipulation of each overtone has been measured on three readings. The pitch deviation reading for each harmonic has been given (in cents) from the nearest pitch. The range of pitch deviation has been ascertained for each overtone, on each reading, and from that the average manoeuvrability has been determined (in cents).

Harmonic	Overtone pitch	Reading 1			Reading 2			Reading 3			Average manoeuvrability
		Lowest	Highest	Range	Lowest	Highest	Range	Lowest	Highest	Range	
18	F#5	F# +9	G5 +23	96	F# -19	F# +31	50	F# -9	F# +28	37	61
16	E5	E -5	F5 -29	76	E -14	F -14	100	E -37	F -15	122	99
14	D5	D -23	D#5 -47	76	D -41	D# -47	103	D -42	D# -31	111	97
13	C5	B4 -43	C5 +37	130	B +8	C +38	130	B +3	C +35	132	131
11	A#4	G#4 +7	A# +46	239	G# +10	A# -47	143	A -49	A# +49	198	193
9	F#4	E4 +16	F# +8	192	F# -36	F# +11	147	F -47	F# +8	155	165
7	D4	C4 +16	D -18	166	C# -47	D -22	125	C +31	D -19	150	147
5	G#3	G# -41	G# -6	35	G# -32	G# -1	31	G# -33	G# +4	37	34
3	B2	B -13	B +9	22	B -39	B +4	43	B -41	B +9	50	38