

## SECTION I – THE TECHNICAL FOUNDATION

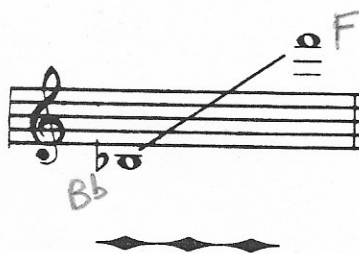
## Chapter 1: Ranges, Transpositions, Characteristics and Restrictions of Instrument Families

- 1) This chapter will define the ranges, transpositions, general characteristics and restrictions of the more available instruments comprising today's big bands and jazz/rock ensembles.  
Each instrument family will be detailed. Although this information can always be used as a reference source, it is the arranger's obligation to become familiar with and relate to the specifications of *all* the instruments as soon as possible.
- 2) It is suggested you ask musicians playing instruments that you are not familiar with, specific questions regarding inherent weaknesses of their instruments. Make it your business to gain a realistic knowledge of them all.
- 3) I should add that I have not attempted to go into the characteristics of some of the newer synthesized and electronic instruments such as the Moog Synthesizer and any number of other rather more extreme electronic devices. I am still in the process of studying the devices in this category, which seem to me worthwhile, and they are quite rare in the overall big band and average jazz/rock or pop group even today.

## THE SAXOPHONE FAMILY

- 4) Saxophones, as a family, function as a flexible section of the band. The blending character of the saxophone helps to give our jazz and jazz/rock ensembles their unique sound.
- 5) Many stylistic effects can be produced on the various saxes, such as slurs, degrees of vibrato, no vibrato, fall offs, bending of notes, staccato and sforzando attacks. Saxes have a distinct ability to articulate and blend with the brass section.
- 6) Saxes are capable of very fast arpeggios, scale runs, skips and leaps.
- 7) The saxophone family consists of:
  - Bb Soprano Sax
  - Eb Alto Sax
  - Bb Tenor Sax
  - Eb Baritone Sax
  - Bb Bass Sax (very rare)
- 8) You will be shown each instrument's CONCERT RANGE (where it actually sounds) and its TRANSPOSED or WRITTEN RANGE. \*Each instrument in the saxophone family has the same written range.

Ex. #1

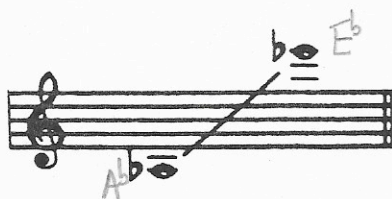


except alto and tenor,  
which have the high F#  
on modern instruments,  
and baritone often has  
low A

### THE B $\flat$ SOPRANO SAXOPHONE

- 9) The soprano sax is finding an increasing acceptance as a jazz-oriented color in recent years as a solo instrument, lead over the sax sections, and as an alternate for the clarinet in the woodwind section.
- 10) The soprano sax is a transposing instrument with a CONCERT or SOUNDING RANGE of:

Ex. #2



written up 1 tone.  
(A $\flat$  = B $\flat$  written)

and a WRITTEN RANGE of:

Ex. #3



This means that any concert pitch on piano is written a WHOLE STEP HIGHER. The key signature is also a whole step higher than the concert key.

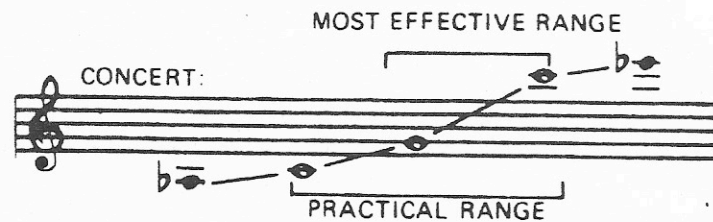
Ex. #4

WRITTEN:

SOUNDS:

11) TONE QUALITY RANGE:

Ex. #5



- 12) CHARACTERISTICS: The soprano sax has a definite jazz quality. The tone can vary from a soft, sweet sound, to a very edgy, shrill effect. It is also very much in character in dixieland, music of the 20's and 30's, and in the jazz/rock idiom.

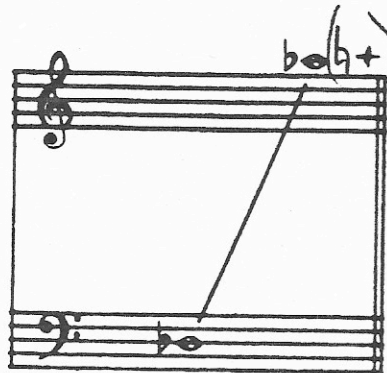
- 13) RESTRICTIONS: The less experienced the player, the more intonation will be a problem. The lowest four notes on the instrument are quite dense, however, the next two octaves are quite practical. The top five notes require an experienced player to play them in tune.

Having a lighter tone and timbre than the other saxes, a good balance is dependent on the other saxes playing softer, especially when the soprano has lead over the section.

THE Eb ALTO SAXOPHONE

- 14) The alto sax is a transposing instrument with a CONCERT OR SOUNDING RANGE of:

Ex. #6



and a WRITTEN RANGE of:

Ex. #7





- 15) The alto sax is written a Major 6th interval ABOVE its concert pitch.

Ex. #8

WRITTEN:

SOUNDS:

- 16) TONE QUALITY RANGE:

Ex. #9

CONCERT:

MOST EFFECTIVE RANGE

PRACTICAL RANGE

- 17) CHARACTERISTICS: The alto sax is an accepted jazz solo instrument, having a brilliance and fire that is very exciting. Its value in the sax section and its ability to blend with the trumpets make it one of the more vital instruments in the band.
- 18) RESTRICTIONS AND CONSIDERATIONS: The alto is an extremely flexible instrument that can handle fast scale and arpeggio passages with ease. As Example 9 shows, the lower four notes on the alto are not orchestrally practical, having a muddy, dense quality. The next 5th interval is effective in unison and as inner harmony voices. The fullest and most effective range is the next octave and a 4th.
- 19) When choosing a key for a sax section soli, this span should be the determining factor. The top third is quite piercing and brilliant. The extreme top has to be carefully considered for intonation reasons. *but is quite usable.*



### THE B $\flat$ TENOR SAXOPHONE

- 20) The tenor sax is a transposing instrument with a CONCERT OR SOUNDING RANGE of:

Ex. #10

and a WRITTEN RANGE of:

Ex. #11



- 21) The tenor sax is written a Major 9th interval (an octave and a whole step) above its concert pitch.

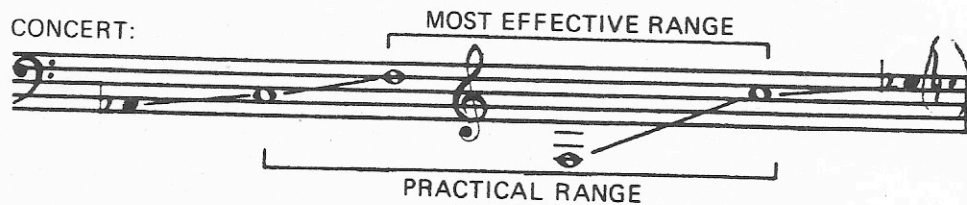
Ex. #12

WRITTEN:



- 22) TONE QUALITY RANGE:

Ex. #13



- 23) CHARACTERISTICS: The tenor is also a basic jazz and jazz/rock solo instrument. It also provides the body of the sax section. It is used as tenor lead and blends nicely with low brass. It is pitched a 4th lower than the alto sax and an octave lower than the soprano sax.
- 24) RESTRICTIONS AND CONSIDERATIONS: Like the soprano and alto, the tenor is quite agile and flexible. The bottom four notes (see Example 13) of its range are quite dense but are sometimes used in certain solo styles with a "honking" gutty effect (the low Ab). The next 4th interval in its range is practical for unison passages and as an inner harmony voice. The next octave and a half is the most effective. Any tenor lead should be kept within this span. The top third interval requires a mature player to play in tune.

or can be played "subtone" by an experienced player

# THE Eb BARITONE SAXOPHONE

- 25) The baritone sax is a transposing instrument with a **CONCERT** or **SOUNDING RANGE** of:

Ex. #14



and a **WRITTEN RANGE** of:

Ex. #15



- 26) The baritone is written a Major 13th interval (a major 6th plus an octave) **ABOVE** its concert pitch. This is the same as the alto sax, plus an octave.

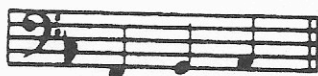
Ex. #16

**WRITTEN:**

**SOUNDS:**

- 27) Because the concert pitch is always written in the bass clef, the diatonic transposition of the baritone is **AUTOMATIC IF THE CLEF IS SIMPLY CHANGED TO THE TREBLE CLEF:**

Ex. #17



becomes:

Ex. #18



The key signature would also change from the concert key to the baritone key, a minor third lower (i.e., F to D).

Always check accidentals to be sure you have the *Major* 13th interval.



28) TONE QUALITY RANGE:

Ex. #19



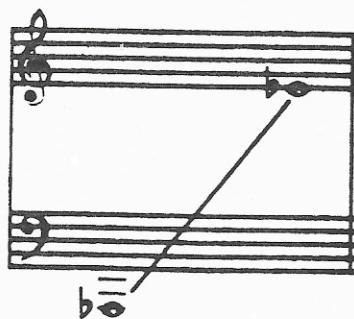
- 29) CHARACTERISTICS: The baritone is now accepted as a conventional and exciting solo jazz instrument. It functions as the bottom voice of the sax section and is often used with the trombone section against the remaining saxes or trumpets on low rhythmic patterns, bass lines and pedals. It can function as an independent instrument on fills and glisses as the bottom voice of the sax section. Being pitched an octave lower than the alto and fifth lower than tenor, it speaks somewhat slower, but can be considered a consistent part of the section rhythmically.
- 30) RESTRICTIONS AND CONSIDERATIONS: The low concert "C" (shown in parentheses in Ex. 19) is possible only on baritones fitted with a special low "A" key. You cannot assume it to be available. The next four notes in its range are very strong and full due to the extreme end of its register. However, use of these notes often will not blend and this possibility should be taken into consideration. The next octave and a half is the most effective and blending span. The next four notes begin to lose their body and they should be used with considerable caution. The top three notes should be avoided orchestrally.

and are commonly used

### THE Bb BASS SAXOPHONE

- 31) The bass sax is a transposing instrument with a CONCERT or SOUNDING RANGE of:

Ex. #20

and a WRITTEN RANGE of:

Ex. #21



- 32) The bass sax is written two octaves and a Major 2nd interval above its CONCERT PITCH.  
(This is the same as the tenor sax plus an octave.)

Ex. #22

WRITTEN:

SOUNDS:

- 33) TONE QUALITY RANGE:

Ex. #23

CONCERT: MOST EFFECTIVE RANGE

PRACTICAL RANGE

- 34) CHARACTERISTICS: The bass sax is a slow speaking instrument that should not be thought of as equal to the other saxes in terms of agility, endurance and flexibility. The bass sax is used for such effects as pedal points, reinforcing the bass notes (staccato) or bass lines (legato).
- 35) RESTRICTIONS AND CONSIDERATIONS: The bottom five notes of its range have a tremendous sound. The next octave and a half is its most effective range. The top five notes thin out and their effectiveness lessens. There should be a real orchestral reason for using the bass sax, as its misuse can produce a very muddy effect.

## SUMMARY

- 36) You should relate each instrument in the entire saxophone family to its representative range relationships.

Ex. #24

OCTAVE

OCTAVE

OCTAVE

CONCERT:

BASS

BARY

TENOR

ALTO

SOP

4TH

5TH

4TH

5TH



SAX SECTION COMBINATIONS

- 37) Instruments from the saxophone family can be voiced or combined in a variety of ways. Below are listed the voicings that are acceptable combinations:  
(The bass saxophone would be an optional double on any of the baritone chairs shown below.)

a) alto (sop.)	b) alto (sop.)	c) alto (sop.)	d) alto (sop.)	e) alto (sop.)
alto	tenor	alto	tenor	tenor
tenor	tenor	tenor	tenor	tenor
tenor	tenor	tenor (bary)	tenor	bary
bary	bary	bary	bary	bary
bary	bary			
f) tenor (sop.)	g) alto (sop.)	h) alto (sop.)	i) alto (sop.)	j) alto (sop.)
tenor	alto	tenor	alto	tenor
tenor	tenor	tenor	tenor	bary
bary	bary	bary	tenor	
k) tenor (sop.)	l) tenor (sop.)	m) alto	n) tenor	o) tenor
tenor	tenor	tenor	tenor	bary
tenor	bary			

THE WOODWIND FAMILY

- 38) Woodwinds provide the color and variety to an orchestration. Intonation is always a consideration, since many proficient saxophone players have not developed a fully similar facility on one or more of their particular woodwind doubles.
- 39) The standard doubling breakdown applies to the sax section in this fashion:
- 1st Alto: doubles piccolo, "c" flute and clarinet
  - 2nd Alto: doubles "c" flute and clarinet (possibly piccolo)
  - 1st Tenor: doubles clarinet (possibly oboe and English horn)
  - 2nd Tenor: doubles clarinet
  - Baritone: doubles bass clarinet, clarinet (possibly bassoon)
- 40) Doubles such as the alto flute and bass flute are possible on any chair, obviously dependent on the individual players. The soprano sax is typically doubled on the 1st alto or one of the tenor chairs. The bass sax is usually on the baritone chair.

SPECIAL NOTATION

- 41) It is typical of woodwind instruments to employ special DOUBLE and TRIPLE TONGUING effects when notes become too rapid for normal single tonguing. The most typical situation always involves REPEATED NOTES.

## DOUBLE TONGUING:

Ex. #25

WRITTEN:



Ex. #26

SOUNDS:

