Bandworld
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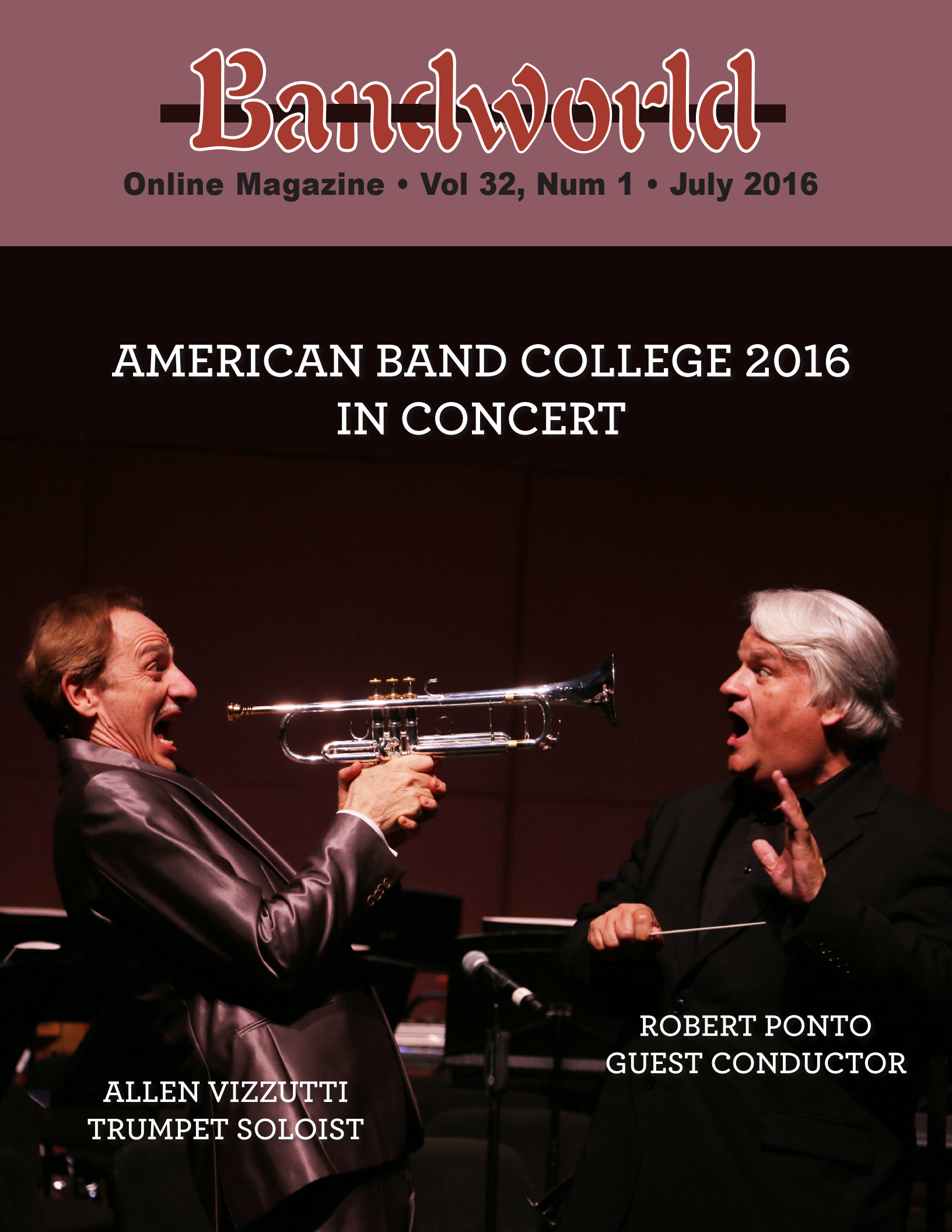
# AMERICAN BAND COLLEGE 2016 IN CONCERT



BW 2016

The Future of the Bandworld

# MusiClips

by Ira Novoselsky Bio

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## Blue

by Robert W. Smith

**Album Title: Promising Skies: The Music of Robert W. Smith; Volume One**
**Recording: University of Texas El Paso Symphonic Winds**
**Conductor: Ron Hufstader**
**Tuba Soloist: Mike Roylance**
**Publisher: Mark Masters 52131-MCD**

**I am happy to see the fine combination of Robert W. Smith's music and the UTEP Symphonic Winds. Smith is a very prolific composer continuously producing solid band works for all levels. No musical detail escapes this composer's imaginative writing. Mike Roylance is absolutely tubatastic in Smith's challenging Teutonic Tales. Hope is simply what the title implies; a brief melodic essay with a musical aura of positivity and promise. Blue is a short portrait about a young girl with a love for art and colors playing a significant part in her life. Aces was commissioned for the USAF Academy Band and is resplendent with aerial energy and drive. Twelve Seconds to the Moon refers to the length of the Wright Brothers first flight and the Apollo landing. This is one of Smith's most descriptive compositions. The final piece is Promising Skies which is a most vivid tone painting of New Orleans before, during and after Hurricane Katrina. The jazz laden sounds of the city are most evident as is the terror of the storm. I eagerly await future Robert W. Smith recordings and so will you.**


## Un Mitternacht (excerpts)

by Gustav Mahler

**Album Title: NETWORK**
**Recording: Ohio State University Wind Symphony**
**Conductor: Russel C. Mikkelson**
**Mezzo-Soprano: Katherine Rohrer**
**Publisher: Naxos 8.573446**

**It's nice to hear from the Ohio State University Wind Symphony; their recordings with Naxos rate as some of the best. The title work (Kevin Puts/Ryan Kelly) is a dynamic opening work based on an eight note canon that continuously grows throughout its seven minutes length. Scott A. Jones is the guest conductor for this composition. The Sword in the Stone by Benjamin Britten (adapted & arranged by Oliver Knussen and Colin Matthews) is taken from the suite of incidental music written for BBC radio's "Children's Hour". Gustav Mahler's Un Mitternacht (from Ruckert-Lieder) was actually scored for mezzo-soprano and wind ensemble; it is NOT a transcription. The text is by German Romantic poet Friedrich Ruckert. The final piece on Network is the five movement Concerto for Wind Ensemble by Steven Bryant. This thirty-five minute work is probably the most mature composition from this gifted composer and the musical challenges in this Concerto are most rewarding for the instrumentalists and the listener.**

continued

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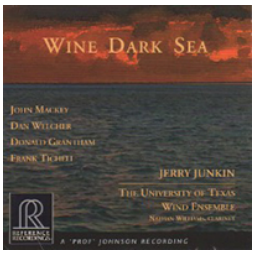


## Spumante

by Dan Welcher/PaulBissell

**Album Title: Wine Dark Sea**
**Recording: University of Texas Wind Ensemble**
**Conductor: Jerry Junkin**
**Clarinet Soloist: Nathan Williams**
**Publisher: Reference Recordings RR-137**

**Wine Dark Sea is a symphony for band by John Mackey; a composer with several works frequently performed by bands and wind ensembles. The source of this symphony is taken from Homer's Odyssey and the three descriptive movements are entitled *Hubris*, *Immortal thread so weak* and *The attention of souls*. Nathan Williams is the soloist for Frank Ticheli's Concerto for Clarinet. The three movements are *Rhapsody for George* (Gershwin), *Song for Aaron* (Copland) and *Riffs for Lenny* (Leonard Bernstein). Spumante (Dan Welcher/Paul Bissell) is like the Italian sparkling wine the title depicts; a musical celebration with a nod to neoclassic American composition. The remaining work is probably the most popular piece by Donald Grantham: J'ai ete au bal. The bountiful Cajun/New Orleans brass band influences absolutely glisten. As one would expect from Jerry Junkin and the University of Texas Wind Ensemble the entire recording is one the listener will treasure.**


## House Plants in Terracotta Pots

By Roy David Magnuson

**Album Title: Monuments**
**Recording: Illinois State University Wind Symphony**
**Conductor: Martin H. Seggelke**
**Soprano Soloist: Allyss Haecker**
**Publisher: NAXOS 8.573453**

**Monuments contains the premiere recordings of four unique & daring works for wind ensemble. The program begins with House Plants in Terracotta Pots by Roy David Magnuson. The subtitle of this piece is Music for Everyday Life and is a simple musical idea over an eight note ostinato in the piano part. Duae Cantatae Breves by Sydney Hodkinson is a two movement essay in slow and meditative sonorities with "thunder like" rebuttals. The musical influence is a 21st century juxtaposition on a 16th century madrigal by Carlo Gesualdo. Evening Music for Soprano & Wind Ensemble (Jayce John Ogren) is a very expressive, emotional song; its text comes from a cycle of poems by German poet Rainer Maria Rilke (English translation by Stephen Mitchell). The final work is F.J. Martinez Gallego's Sinfonia No.1 "Kaprekar". This is a most interesting one movement symphony and while it is based on a mathematical concept in number theory the work can be easily appreciated for its solid and creative music. Monuments is a very fine recording you will enjoy.**

continued

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## Lament for Wind Orchestra

by Chang Su Kon

**Album Title: THE SUN WILL RISE AGAIN**
**Recording: Messiah College Wind Ensemble**
**Conductor: Bradley Genevro**
**Publisher:Klavier K-11208**

**The Messiah College Wind Ensemble recordings will never disappoint listeners with their consistently fine program. The Sun Will Rise Again (title work by Philip Sparke) is no exception and half of this collection spotlights several soloists with the ensemble. Master cornetist William Stowman displays his artistry in Rose Variations (Robert Russell Bennett) while a threesome of marimba players (Mark Ford, Erik Forst and George Clements) sparkle in Mark Ford's Stubernic Fantasy. Jack Stamp's Psalm 150 features a prominent part for organist/composer Bruce Yurko and tubist Eric Henry romps through Brian Sadler's Action Sonata. Camille Saint-Saens' famous Introduction & Rondo Capriccioso (originally scored for violin and orchestra) is performed in a most satisfying arrangement for flute & chamber wind ensemble by Judy Nishimura; Jocelyn Goranson is the soloist.**


## Mass: Agnus Dei

By Igor Stravinsky

**Album Title: LIKE A MOTH TO A FLAME**
**Recording: West Chester University Wind Ensemble and Concert Choir**
**Conductors: Andrew Yozviak & David P. DeVenney**
**Publisher: MARK 51904-MCD**

**Andrew Yozviak and the West Chester University Wind Ensemble have produced some of the most professional programs for band music lovers and this latest addition is another treasure. The title work is from the tale most everyone is familiar with. The composer Viet Cuong portrays this story of the great quest even the simplest living creature seeks as the ultimate journey. Riff Raff by Ryan George calls upon the forces of postwar big band jazz and the essence of pulp novel/film noir personage. One can easily imagine the stories this music can tell. The remaining three works are hallmarks of original wind ensemble music by noted orchestral composers. Huntingtower (Ottorino Respighi) and Suite Francaise (Darius Milhaud) have certainly found their rightful places in the libraries of worldwide bands. Igor Stravinsky's Mass is not quite as familiar but this Neo-classic masterwork for choir and wind decet is a truly fascinating composition more people should be acquainted with. A superb program in variety and performance from West Chester.**

The following is adapted from Dr. Kenneth Singleton's Keynote Address to the 2000 ASBDA National Convention.

One of the highlights of the 2000 American School Band Directors Association National Convention in Snowmass, Colorado, was Dr. Singleton's Keynote Address. I've known Ken for fourteen years, and find that he is an inspiration to everyone he meets. Dr. Singleton's passion for teaching music is second to none, and it's totally contagious. When he works with my bands, the students and myself in particular, learn so much. Ken always enjoys visiting secondary schools throughout Colorado, assisting band directors and their band students. Each year he conducts several dozen clinics, honor bands, and workshops.

It was a great pleasure for all of us in attendance at the ASBDA convention to hear Dr. Singleton speak. The following is a summary of Ken's outstanding presentation. This was his inaugural keynote address in 24 years of teaching. Dr. Singleton wanted to share with the membership a few subjects which he felt are of the greatest importance to us and our profession. Here's what he had to say:

"I believe that we band directors are both musicians and teachers and that our teaching is either enhanced by our musicianship or limited by the same. For most of us, the majority of our musicality is established by the time we finish undergraduate school."

"Hopefully, by that time we have learned to play our instrument musically, and we have developed a true love for music. We are then expected to spend the rest of our professional lives giving of ourselves—and our musical love—to our students. The problem is, many of us simply wear out by constantly giving and never replenishing ourselves. We need to be excited by music before our students can become excited."

Dr. Singleton compared this to the emergency demonstration given on each plane before taking off. You are told, in case of emergency, to use the oxygen mask first, and then assist your child. The same is true here. Ken reminded us to be sure we are nourished and excited by good music, so we can pass that on to our students.

"We need to love music before we can teach our students to love it. And when I say music, I mean the greatest music ever written, as well as the best music our students are capable of performing. If we personally don't love great music, how can we hope to inspire our students? At that, it sometimes takes quite a while for students to embrace our enthusiasm and make it their own."

Ken shared a story related to an experience he had while teaching at a university where he was previously employed. He always would play good classical music on his office stereo and would leave his door open. He hoped that his students would listen and enjoy this music. After a period of time doing this, he entered the band room one day and to his delight, his students had taken the initiative to put some beautiful Bruckner music on the stereo. He felt this was a wonderful success story for those students and their musical growth potential.

"In my experiences observing and working with band directors in Colorado and elsewhere, the finest directors are those who are excited by music and by the prospect of making music. They are energized by a strong desire to share this music and excitement with others."

“It is SO EASY to get into a musical rut, where all we think about is our band’s immediate problems. Why don’t the flutes play in tune? Why do some of the kids have bad attitudes? Why don’t the trombones practice? Why don’t the percussionists ever watch me? After a festival performance, you’ll hear the director say: My kids didn’t respond today; the kids just didn’t pull through; etc.’ In my experience—and I think a lot of adjudicators will agree with me—the most common problem at contest is lack of leadership, judgement, musicianship and passion from the podium. I cannot overemphasize the importance of you possessing a high degree of musicianship and a genuine passion for music.”

“It is too easy to think of ourselves as craftsmen instead of artists. Maybe that’s why school music is not supported all that well in many communities. If we do not teach music as an art, why is it essential at all?”

“Please don’t interpret this as an attack on the directors who love marching band. I want to praise many of them for the time and care they spend in selecting their music book. Many marching band directors want their students to enjoy an aesthetic musical experience on the field, and they do everything they can to assure that their band achieves this success. Also, for many of us, the field shows, pep bands, parades and pep rallies are facts of life. But must the musical content of your program be centered around these peripheral activities? The main thing is, you as a director must seek out, and be able to recognize, great music.”

Dr. Singleton then had us look at a multi-page handout on superior band literature. He broke down the listing into four areas: Music which emphasizes tone and musicality, transcriptions, original band music in which the percussion is used sparingly, and original band music in which percussion plays a prominent role. “However you select music, the music must move you and get you excited. Then you can get your kids excited.

“The most successful band directors have always understood the importance of recharging and supercharging their own musical batteries (remember oxygen mask usage on an airplane: You first, then the kids).

**“Try these suggestions on for size:**

1. Stay in shape and continue to grow musically on your own instrument; playing in a community band or orchestra can really help!

2. Play & perform regularly in a chamber music group (preferably one without a conductor).

3. Sing regularly in a fine church choir or other vocal group.

4. Continue to develop the art of your conducting, both by videotaping (and watching) your rehearsals & performances, and by attending conducting workshops.

5. Attend symphony concerts regularly and subscribe to chamber music series. Write the concert dates on your calendar before the season begins and don’t schedule over them!

6. In the summer, plan trips to Aspen, Ravinia, Wolftrap, Tanglewood, Marlboro, etc. to hear the biggies play!

7. Listen to aesthetically grounded music for at least a few minutes each day. Car CD players are great for this.

8. If you can, schedule a 5-minute great music break during the school day. The purpose is not to escape, but to embrace our art, and to be reenergized by it (It can be like using a compass to get un-lost!).

9. Let your own curiosity lead you to find out more about music which means a lot to you. Then feel free to share that with your students.

10. Invite clinicians and other experts to visit you and your band on a regular basis. You will almost always learn more than your students from these visits.

**"No one can follow all these suggestions, but everyone can find time for some of them!"**

Finally, Ken referred the creation of lists that provides Musical Nourishment for the Band Director's Soul.

1. "This list should include music and performances which mean a lot to you.

2. All selections should be aesthetically grounded, western art music, with a minimum of bombastic or orchestral effects.

3. The list should include a lot of important chamber music, music for voice or piano, some of it is orchestral, but not band music in this case. The music and performances should be ones that encourage me to enjoy the beauty and greatness of our art without making judgements or without trying to solve problems, select music for concerts, etc.

4. This should be music which inspires you in daily life and teaching.

Here a just a few examples:

Beethoven - 3rd Cello Sonata in A, 1st mvt. (Mstislav Rostropovich, Sviatislav Richter)
Brahms - Violin Concerto, 2nd mvt. (Anna-Sophie Mutter, Kurt Masur, NYPA)
Mozart - 1st Horn Concerto, 1st mvt. (Dennis Brain, Herbert Von Karajan, Philharmonia Orch)"

I have had the fortune of learning from some of the best teachers around: Band students. I have volunteered my time to work at various honor band clinics, putting together programs to give the alternates something to do. These students normally attend these clinics for the medal, to help their band pick up some kind of service points, and of course, to get out of school for a Friday. During the weekend clinic, a master class is offered, and, of course, alternates can observe the rehearsals of the various honor bands, but primarily I have noticed most of their time is being put to little use. When I presented my program for consideration, the mission was clear, to improve the students rhythm reading ability. I started out with a game, to make it fun, called "Quest For the Rhythm Master." I placed the students in teams, which later evolved into individual competition, basically, it was a like a "drill down" using rhythms. This gave me a general idea of the participant's present counting levels. Next, before we could proceed on our mission, we first had to get to the heart of the matter, and find out WHY rhythm errors were being committed.

I have written two books (that someday I hope to publish) that were used as source material for our research. The Books are titled *Rhythm Masters I & II,* and they are a series of comprehensive, 3 to 5 minute studies, that act as a curriculum guide for teaching the counting of all rhythms. We started from the beginning and rapidly progressed through the books, only playing the last section in each chapter. That is, of course, until members of the group started to make mistakes. We then slammed on the brakes, and, as a group, tried to figure out why the error occurred. We then made a list on the board, categorizing the reasons we felt errors were occurring. In many cases these errors occurred at levels we all felt had been mastered in our earlier playing experiences. The students were quite open in internalizing their "inner thoughts," such as: Counting systems used, concentration methods, judging their own focus levels, etc. The net result, over the several clinics I have done, were nine reasons for counting mistakes. I'm sure you could probably add to this list, but these are the nine reasons, or solutions categories, we collectively came up with so far.

•Pulse
•Subdivision
•It Can't Be That Easy
•Phonics Implementation
•Whole Language Drills
•Looks Different, Sounds Same
•Over Processing
•Drop In Tolerance Level (ties & rests)
•Brain Lock

Our next project was to experiment with strategies on how to fix these problems. They shared strategies their band directors and private teachers had taught them, even different counting systems , and other "tricks." In many cases, just being aware of the potential "pitfalls" was all it took to avoid the problem. Some students, I noticed, seem to have a "sixth sense" and could instinctively get inside of the head of another performer and focus right in on the root of the error. This was kind of scary, but a lot of it was simply applying their own experiences, and being able to internalize their own mistakes. Finally in our clinic, we came up with a plan, what we felt would be an effective strategy when confronted with that most terrifying band student experience of all: Honor Band Sight-reading Auditions.

Below is a more detailed break down of our nine categories:

**Pulse** — There is a lot of discussion today about "the foot" and how much or little (if at all) it should be used by musicians, young and old. Personally, I am a big "foot" man myself, but it really does not matter, as long as some pulse method is used to avoid slowing down or speeding up when the music gets more challenging. I have found, that if a student cannot verbalize his or her method of pulse conceptualization, the student rarely can perform beyond a rudimentary level. Use whatever method works for you, but bottom the line is "You Gotta Have It."

**Subdivision** — The most efficient and effective method I have found, is using the down and up stroke of the foot. Peter Potosky turned me on to a way of reinforcing subdivision, using a tactile approach he refers to as "Down Touch Up Touch." Drummers are notorious for what I call "click subdivision" like that used in marching band warm-ups (which is very effective for them). Here again, it really does not matter what you use, but use it as often, and reinforce the concept, as much as possible. Use the verbalization test with your students. If they can explain to you in words how to do it, they are half way there. The rest is just practicing its application.

**Phonics Implementation** — The basic idea is teaching our beginning students counting the same way a kindergarten or first grade teacher introduces reading to classes. The thought process is the same. You establish simple and basic rules for "sounding out" rhythms, and practice the verbalization of rhythms, first at a very slow speed and then gradually speeding it up. The key here is to develop an effective and efficient "phonics" system that builds upon itself, where you do not contradict some of the "basic" rules further on down the line of instruction.

**Whole Language Drills** — After your "phonics system" is in place, you want to drill on a series of similar rhythms, at the same basic level, until these newly introduced or challenging rhythms become like "sight words" to a first grader. If you plan ahead, this can be done very efficiently and methodically, with very little rehearsal time used in the effort. The steps are as follows:

A. Analyze the rhythm
B. Verbalize it (phonics)
C. Drill a series of rhythms at a similar level (for comparison purposes)
D. Then evaluate, to be sure you have effectively gone through the transition from "phonics" to the assimilation into each student's "Whole Language Vocabulary."

I have organized all these steps in my Rhythm Masters Books I & II. Each series of exercises, at the various levels of difficulty, takes only 3 to 5 minutes. It establishes a solid counting foundation and then builds from there. With proper reinforcement of pulse and subdivision, it really is an unbeatable approach to the mastering of counting and rhythms.

**Over Processing** — When every minor individual aspect of the rhythm is broken down we expect a student to process into reading music, it is not hard to understand why they sometimes just hit the point of "overload." Analysis, pulse, subdivision, numbers, letters, foot or no foot, not to mention markings above and below the staff, it can be overwhelming at times. we all have limits as to what we can handle, and I have found, in my clinics, that if you can eliminate maybe one or two of those factor , the task then becomes manageable. For example, try not using numbers. Eliminating the process of not having to figure out if you are on count two or three or whatever, might help. Rework the section limiting the processes used, and as the student gets comfortable, add the other aspects required. Hopefully, this will aid when

those occasional “meltdowns” do occur.

**Drop In Tolerance Level** — Writing music for honor band sight reading auditions can be interesting. I have found that music does not have to be difficult to trip up students. Sometimes just a little “tricky” is all it takes. A well-placed tie, or a few consecutive rests are often especially troublesome. If the student is not concentrating, or lets the tolerance level drop, that student can be caught off guard with one of these. Be sure not to overlook these areas in your practice and audition preparation.

**It Can’t Be That Easy** — If a piece is moving along at a relatively fast velocity (i.e. “A lot of black”) challenging the students counting skills, then changes to basic eighth notes (or even quarters or halves), mistakes will frequently occur. The brain wants to anticipates the worst, and because it is “sight reading,” the brain assumes the music must be difficult all the time. A few simple rhythmic patterns, “out of the blue,” can throw even the most seasoned veteran off-guard on occasion. So remember gang: “Yes, it can be that easy.”

**Looks Different, Sounds Same** — This is another one of those mind games that fit into the, “tricky” but not difficult category. As an example: Simple down beats and up beats can be written in a variety of different ways, using both combinations of eighth and sixteenth notes and rests. If a simple pattern is written, and then a few counts later a more complex looking pattern is inserted that sounds basically the same, the brain will normally refuse to accept those two rhythms being so similar. Consequently, it will interpret the second rhythm in a different fashion than the first. Watch out for these pitfalls. Your best defense is to implement a solid pulse and subdivision system. This is the only thing that can override the brains “if it looks different, it must sound different” mentality.

**Brain Lock** — This is a tough one. Ironically enough, it tends normally to occur mostly among your more intelligent students. As a rule, if the student plays a rhythm incorrectly, have the student analyze it or break it down phonetically. But, let’s say you want to save time, so you go back and try it again. Of course you could sing it for the student, but you want to avoid rote teaching and also want to work with your student(s) on reading skills. Realize though, the brain has interpreted what it thinks that rhythm sounds like. If an effort is not made to re-direct this interpretation, even with the director’s warning, the student may very likely play it incorrectly the same way a second time. Now you have unwittingly reinforced an incorrect rhythm, and are in the process of reinforcing the mistake as a “sight word.” Now, if you dare go back and have the student play it again, and it is played incorrectly the same way a third time, That’s It !!! Sell Off The Farm!!! It’s All Over!!! The Fat Lady Has Just Sang!!! Your student has just come down with the most dreaded disease known to the Rhythm Doctor, “BRAIN LOCK.”

Sometimes you can spend 20 minutes trying to change it. But with some students, once “Brain Lock” sets in, “that’s all she wrote.” As I put it, you have to wipe out the hard drive and re-install the software. Put it down and approach it later, maybe when the brain has forgotten its original interpretation. Then go back, start with the rhythm’s analysis, verbalize it phonetically, etc. and reprogram the brain with the correct interpretation. Until the original memory of the error is wiped clean, you have no chance of re-teaching the problem section correctly.

## Strategies for Honor Band Sight-reading

In several states, a student has 30 seconds to look over an 8 to 16 bar etude or excerpt. Most students do a quick glance, and then start from the beginning and finger, sing, or “tissel” to the end. In our clinics, the students discussed and debated this approach, and agreed that tacitly fingering through the sight reading is very helpful. We also discussed the importance of doing everything in the context of a specific pulse, using subdivision. Many times students forget that aspect, mostly due to nervousness. We all feel it is important, as well as confidence building, to have a plan of attack or strategy when you prepare sight reading for your audition. This is the plan we came up with:

A. Glance over the time and key signatures quickly. If the key is a familiar one, move on, if not, finger up and down the appropriate scale one octave. Especially note the last flat or sharp in the given key.
B. Next, glance through the full piece in about a second or two, and make a quick judgement on the most challenging one or two measures either technically, or rhythmically..
C. You control the tempo — Most tempos are relative, or have a certain “range of acceptance” to them. The speed you perform at will have a direct impact on the number of errors you make, many or few. It is better to play clean at a slightly slower tempo, than play fast with a lot of errors.
D. Say or “tissel” (or whatever you do) the target measures at a moderate tempo. Be sure to use your foot, or implement whatever “pulse” system you use as you do this. If you do not get it right, go back and hit the target measures again. Analyze them if you need to. However, the second time you must take the tempo slower, otherwise you are just wasting valuable time. If the target measure(s) falls into place easily, you might want to try going after it a second time, to see if you can handle a faster tempo.
E. Once you have mastered the target measure(s), use the remaining time and go back to the beginning. Run through it until your preparation time is up, but be sure you use the same tempo throughout that you mastered the target measure at. No slower, no faster. Now that you have found a comfortable tempo, you should be able to add dynamics, articulations, and other above and below the staff nuances. The most important thing is to lock in on the tempo that gives you your best chance for success.

I hope these little hints and suggestions will help some of your students better prepare for honor band auditions. I would love for you to share your thoughts and experiences with me as well. Until then, Happy Counting, and good luck at your next audition.

**Conducting is decision-making first and communication second.** The absolute essence of conducting is the making of decisions affecting all aspects of the score in front of you, and, only then, communicating them to other musicians (and audiences). This should be self-evident, but apparently is not to many students, teachers and professional practitioners. When I work with intermediate and advanced students at the university level, or observe band directors at festivals and contests, it seems to me that many of them, in their conducting, tend to run to one end or the other of the musical spectrum. By this, I mean that either they display no control over the musical ideas of the group (they probably needed or wanted someone else to tell and show them everything), or they have such idiosyncratic musical ideas that it looks as if they just want to be different.

For conductors with the first problem, it can mean a decided lack of basic musical knowledge (history, theory, understanding of styles, etc.). The second category of conductor either has a monumental ego that is unable to take instruction, or is totally self-indulgent in musical matters. Naturally, all of us have gone through these phases to some extent, especially the second, since the time that we first became possessed with the urge to become a conductor (it has been said that conducting is like playing a gigantic cathedral organ; no one person should have all that power).

Some years ago, I had my own bout with "self-indulgence." This happened when I first got in front of a band whose members had the technical prowess to do almost anything I wanted. I listen now to some of my old records and tapes with the continuing question in my mind, "Where did I get those super-fast tempos, and why was I not aware at the time that they were 'too fast' for the music?" After analyzing my rehearsal and score study habits I came to the conclusion that tempos which later seemed too fast to me were self-indulgent "fun," without any real decision-making beforehand. Yes, the gestures and basic musical ideas were under my control before the first rehearsal, but I had not solidified my interpretation enough to be able to "resist temptation."

The foregoing preface brings me to the "meat" of this article. **How is one to know that correct, i.e., "musical" decisions really have been made during score study?** Let us liken our discipline to that of the sculptor. The artist must look at a raw piece of stone and visualize the sculpture inside. Famous sculptors have said that they "see the idealized form" and then simply cut away the excess stone, revealing their original artistic idea.

Carry this analogy over into music. You, the conductor, should have an ideal version of the score (complete in every detail) in your head, so that you can compare it to what is happening in front of you. An "ideal" performance is achieved when the sound you hear at the podium, in the acoustical environment to which you are accustomed, matches your inner vision of the music. How do you affix an "ideal version" in your head? How do you master a score so that you can "hear" each and every part in your brain? Score study is the subject of many books and articles; read them and use the suggestions that work for you. Some are listed below.

Many conductors listen, score in hand, to a recording of the music to be learned. This is fine (especially with transcriptions of well-known music) if you don't take the recorded interpretation as "gospel," and if you don't skip all the other learning steps. With a new score this is not possible, of course.

Some conductors play individual parts with their own single-line instruments. This is not too satisfactory because range is a problem with many of the musical lines, no harmonic implications can be realized, and problems of blend and balance cannot be projected.

Others (those who can) play all parts of the score at the piano. This helps immensely to give the sound of the harmony and voice leadings, but does not help with instrumental balance and tone color.

**Those of us who are not too proficient at the keyboard are forced to fall back on the best method of all (my opinion), singing and inner realization (hearing) of the score.** I cannot explain it, but when I know a work well, I can hear it inside of my head. It is as if I am listening to my own inner recording of the music, complete with all nuances, instrumental colors, and other details. When I conduct that work, I take this inner version to the podium and try to duplicate it with the group in front of me.

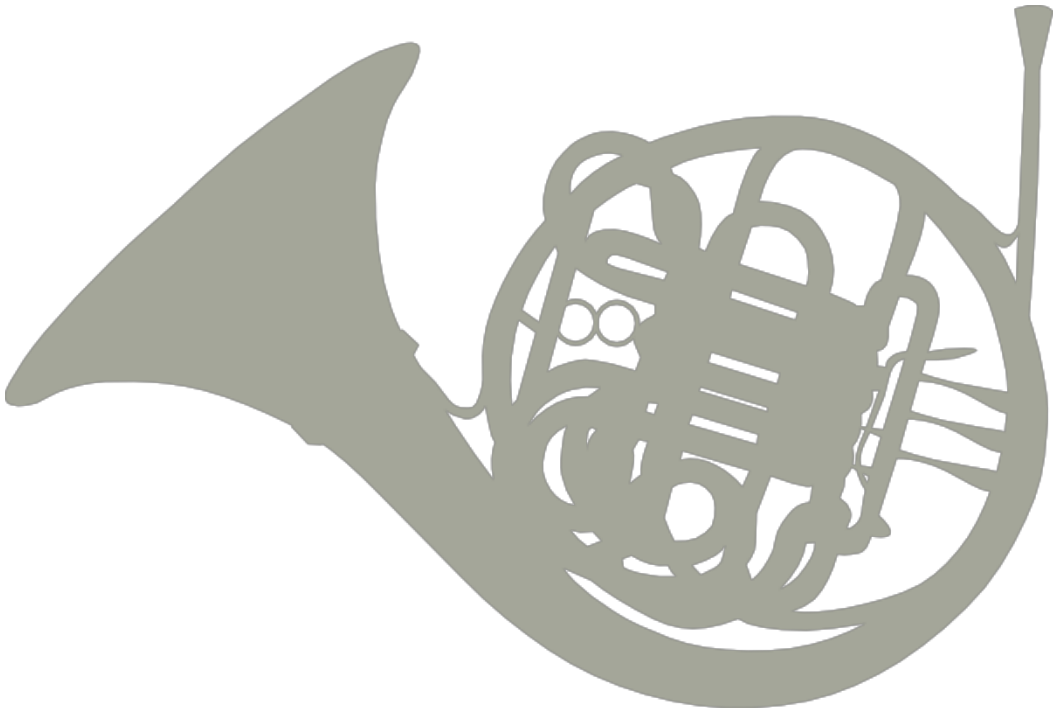
To "pound" the music into my head, I start by simply staring at the score. I play a game with myself by seeing how many "things" I can recognize and "pull out" of the score that are valuable pieces of information. In no particular order, I note the beginning key, the meter, the basic instrumentation, stylistic clues, solos, basic harmonic content of the first few measures, etc. When doing this exercise, nothing should be too small or too large to escape notice. Then I go back to the beginning and mark the score carefully (I gave my marking system in a past issue). This is a crucial part of my score study because it is now that I try to get a "feel" for the music. As I mark in the suggested tempos, I sound the beat with my metronome, and try out selected phrases in my head to see if they make musical sense at this precise tempo. If I am not satisfied immediately, I start shading the suggested tempo faster or slower to see if a change of marking will make the music more understandable to me. Watch out for your own tempo ideas, however, if they are much faster than the tempo called for by the composer or arranger. Fast tempos tend to "drive out" slower tempos. By this I mean that when one uses a fast tempo several times, it tends to make any slower tempo for the same phrase sound sluggish. Even when the slower tempo proves to be more appropriate, you will find yourself pushing back to the "too fast" tempo just for the excitement of it.

Finally, after completing all the usual phases of score preparation, I try to "hear" the music, as a whole, inside my head. This is the most difficult part of independent score study (without the aid of recordings), and the most crucial. It takes an immense amount of time. For most of us, **there are no shortcuts, just hard work.** However, if you want to be a fine conductor, you must arrive at a reasonably clear, logical set of musical expectations before the first rehearsal.

To sum up: decision-making must precede communication. Don't go in front of a group with no idea of the content of the music before you. Solid, justifiable musical ideas translate into accurate, exciting performances. No one can communicate what they don't know; this is the essence of poor teaching, and poor conducting. Take time to understand your scores before the first rehearsal. Then you will have earned the respect of your players, and will have helped them to achieve a fine, stylistically correct understanding of the music they are performing.

# Fluent in French

A Band Director's Guide to Understanding and Teaching the French Horn



**Practical Application Project #1**

MUSI 6285

Jonathan Bletscher

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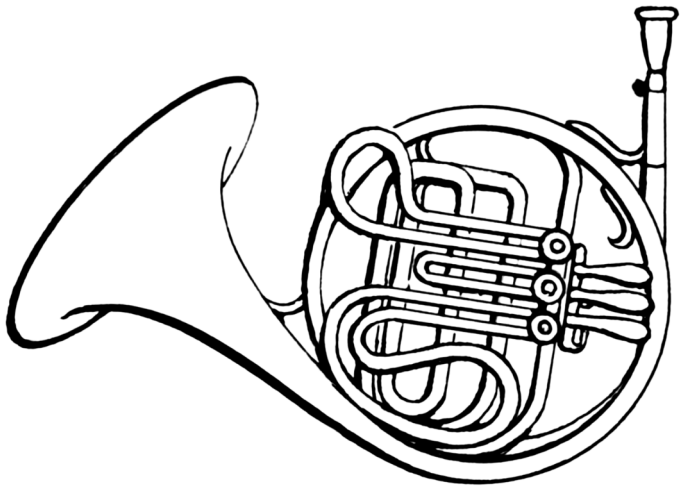
# Introduction

Consider a student who is about to begin the very first day of learning a foreign language. The student is presented with very basic vocabulary, is led to dabble in speaking and writing, and very slowly begins absorbing the sound, feel, and structure of the language. This is not unlike the experience of a student learning his or her first instrument. This slow and steady approach is designed to be the first step in a years-long sequence of instruction and study for a student who is brand new to the subject.

Now consider the teacher who provided the student's activities. A successful first lesson as described above must be planned and executed by a teacher who is already an expert on the topic at hand. The teacher is able to show the student where to start, what to do next, and which difficulties are likely to arise because the teacher already has a thorough understanding of the language. The vocabulary, grammar rules, and intricacies of the language's structure are no mystery to the teacher. His or her expertise is what generates high quality, accurate, and effective teaching to take place.

This prerequisite is just as true for teachers of band instruments. We know as band directors that we must strive for expertise on each band instrument, a process of demystifying the vocabulary, fingerings, embouchures, and intricacies of how each instrument functions. While there are no easy shortcuts to becoming an expert on the French horn, this manual aims to accelerate the learning process by teaching to teachers, not beginners. Rather than beginning with "How to Play the Horn," the goal is to jump right in to what makes the horn a challenging instrument to understand and teach. Please feel free to navigate and read this manual in the sequence that best fits your curiosities and previous knowledge. My hope is that readers of this book will find the curtain of confusion often surrounding this instrument pulled back as rapidly and as easily as possible and walk away feeling much better equipped to teach students of any level about the horn. Becoming an expert in every instrument is a never-ending journey, but I believe you will find this manual to be a waystation worth your while.



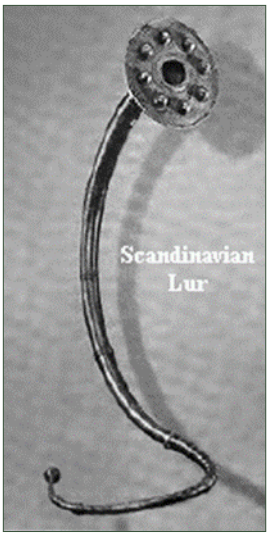
-Jonathan Bletscher

# Part One: Understanding the Horn

## Horn History

It is helpful to understand the origin of the modern French horn because it provides insight into why the instrument works the way it does today. As one of the longest brass instruments with an average 12 feet of tubing, it is fitting that the history of the horn reaches far into the distant past. Long, long ago, when the horns of animals began to be hollowed out to create instruments playable by human lips, the "horn" was born. In one form or another, the horn has been played continuously for 6,000 years[1]. For many of those years, the horn was used as a communication device especially helpful for hunting. In truth, the use of the horn as a melodic musical instrument has only been taking place for a few hundred years.

By the late 15th century, the widespread use of the horn as a signaling instrument led to increasingly musical "horn calls". At that time, during the reign of French King Louis the XI, composers began to incorporate these musical horn calls into orchestral scores, elevating the status of the ancient instrument[2]. The hunting horn began appearing on stage in scenes depicting hunting, but it still had a harsh timbre that did not blend well with other orchestral pit instruments. In fact, the Scandinavian Lur, a bronze, horn-like instrument, had already been put to use as a war-horn designed to generate loud, obnoxious, and frightening noise[3]. As hunting caught on as an aristocratic trend in western Europe, German and Austrian aristocrats began to desire higher quality "French horns" and skilled horn players to bring back to their courts. This motivated new developments in design and construction materials. Fashioning horns from metal allowed inventors to innovate and experiment, generating a variety of shapes, timbres, and new features for the instrument. In 1636, French musical scholar Marin Mersenne described 4 types of horns[3]:



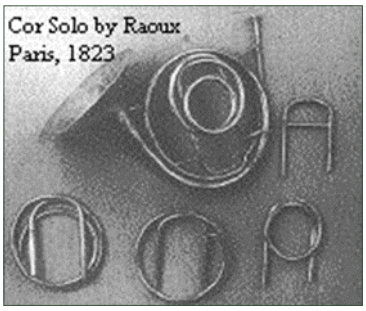
A

- *Le grand cor* (the big horn)
- *Cor à plusiers tours* (the horn of several turns)
- *Le cor qui n'a qu'un seul tour* (the horn which has only one turn)
- *Le huchet* (the horn with which one calls from afar)
    - ◊ The *cor de chasse* (hunting horn) is in this last category

Despite these innovations, the horn remained a fixed-length instrument and limited horn players to the natural overtone series (discussed later in this manual). Because of the close succession of overtones high in the overtone series, the high range of the instrument was the most useful for melodic playing. However, new designs were needed before the historic *cor de chasse* could become flexible enough to find a home with the orchestra. The earliest work-around to the overtone series limitation was to play multiple horns of varying lengths. The result was the combination of two or more overtone series, providing the musician (or group of musicians on different-length horns) some flexibility with a more complete set of notes. This allowed composers the option to write more complex melodic lines and parts for the horn in more than one key.

*This instrument is from the Paris workshop of the famous Raoux family of brass instrument makers. They were especially noted for their hand-horns, which they raised to the highest standard of design and workmanship [D].*

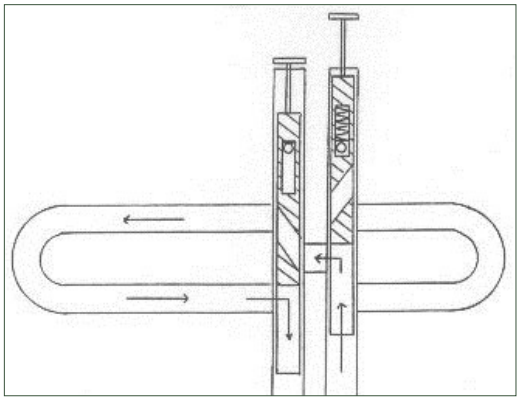
However, using multiple instruments was cumbersome and inefficient. The invention of the horn "crook", an interchangeable piece of tubing available in varying lengths similar in construction to modern-day tuning slides, provided a way for musicians to change the length of the horn as needed[3]. Keep in mind that while this new control of the length of the horn allowed many more notes and keys to be played, it was still the close, upper overtones in the high range of the instrument that had to be used to play step-wise melodic passages. Remember this point as it will help us understand why the most-used overtones (or partials) on the modern horn don't seem to "match up" with the overtone system shared by the trumpet, trombone, euphonium, and tuba.




C


B

Following the development of the "crook" system, another notable innovation in pitch manipulation called "hand horn technique" was either discovered or perfected by Dresden hornist Anton Joseph Hampel sometime after 1750[4]. Hand horn technique (the predecessor of today's "stopped" horn technique) raised the pitch of the instrument by a half-step and made available a new set of chromatic notes. Due to these developments, the horn could finally be established as a regular, reliable orchestral instrument. This valve-less horn design, often referred to as the natural horn, played with crooks and hand horn technique remained in regular use until nearly the 20th century. Big names such as Haydn and Mozart took notice of the horn, which had finally matured, and wrote well known horn concertos[3].



*Stölzel Valves* [G]

As the horn grew in popularity as an orchestral instrument, German horn player Heinrich Stölzel was preparing a revolutionary design that would become a cornerstone of brass technology for years to come. The "Stölzel valve" was first applied to the horn in 1814, and immediately following its patent there was a flurry of activity from instrument manufacturers looking to utilize this new technology[5]. Though most of the chromatic range had been possible on the natural horn for some time, the "in-between" notes achieved via hand horn technique had a distinctly different timbre due to the required blockage inside the bell of the instrument. Shortly after the introduction of Stölzel's valved horn, a writing appeared in the Leipzig periodical *Allgemeine Musikalische Zeitung* (General Music Newspaper) remarking upon the improved consistency in tone and timbre Stölzel's valve brought to the Waldhorn (German term for the French horn):

> *"Heinrich Stölzel, the chamber musician from Pless in Upper Silesia, in order to perfect the Waldhorn, has succeeded in attaching a simple mechanism to the instrument, thanks to which he has obtained all the notes of the chromatic scale in a range of almost three octaves, with a good, strong and pure tone. All the artificial notes - which, as is well known, were previously produced by stopping the bell with the right hand - are identical in sound to the natural notes and thus preserve the character of the Waldhorn. Any Waldhorn player will, with practice, be able to play on it."*
>
> *-Gottlob Benedict Bierey*

Due to this superior quality of sound, not to mention the convenience of doing away with manual swapping of crooks, it was only a matter of time until the valved version of the horn exceeded the natural horn in popularity. Stölzel's piston-style valves are recognizable as the predecessor to the piston valves used in trumpets, euphoniums, and many tubas today. However, they are *not* the valves most commonly used today in the construction of the modern French horn. Rotary valves had been invented shortly after the debut of the Stölzel valve. Joseph Riedl of Vienna is credited with introducing a rotary valve design in 1832 which would lead to the modern form used today. Riedl's rotary valve overtook the piston design by the end of the 19th century and the rotary valve has remained the standard in French horn manufacturing ever since.

Valves overcame most of the original limitations of the natural horn, but there was still a matter of the key in which the instrument would be built. Manufacturers settled primarily on the horn in F because of its frequent usage in the orchestra, although the horn in Bb remained in production as an alternative. Once the inclusion of three rotary valves became the norm, the single horn in F was finally established more or less in the form we see it today.

Today, modern horn players typically prefer a horn one step further down the path of innovation: the double horn, which emerged in the late 19th century. Fritz Kruspe, a German horn maker, was the first to manufacture both single and double horns with rotary valves[3]. In a manner reminiscent of the old crook system, an additional fourth valve on the double horn re-routes the air through shorter tubing, thereby transposing the entire instrument from horn in F to horn in Bb. This allows performers to swap at will between the F horn's characteristic tone, "fatness" of sound, and accurate intonation and the Bb horn's ease of playing, accuracy in the high range, and rapid response[6]. While the double horn is the standard for most horn players, the single horn is still commonly used for its lightness, simplicity for beginners, and specialized use-cases in performance.

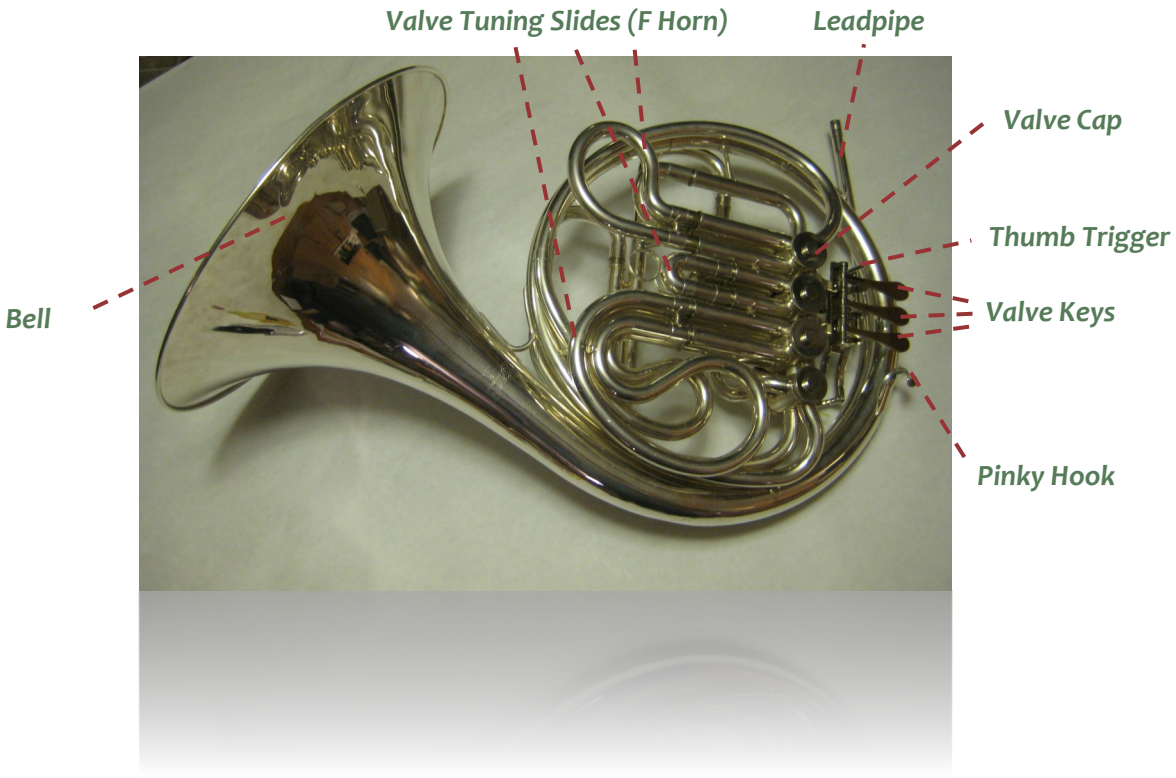
# **Rotary Valves:** Become a Spin Doctor

The piston valves used by most brass instruments can be complicated at times, but they have a maintenance advantage over the rotary valves of the horn. Piston valves are easily removed from their casings and can be opened up, examined, and put back in place in a matter of seconds. When piston valves have problems, it is relatively easy to inspect the valves, the valve casings, the valve guides, and the springs to start narrowing down the possible problems. The rotary valve offers no such convenience. The valve itself must be firmly seated within the valve casing in order to function properly, and the whole assembly is secured by a sizeable screw.

However, the assumption that rotary valves are "too confusing" or "hard to understand" is really a reflection of the fact that few take the little bit of extra time required to actually sit down and learn about them. In reality, rotary valves are still made up of just a few pieces, which we will examine. Rotary valves need oil, just like piston valves, and both types of valves slow down when they get dry or dirty. The most truly specialized part of the rotary valve is probably the string which transfers the player's finger motion into rotation of the valve, and with practice anyone can tie or replace these strings with ease.

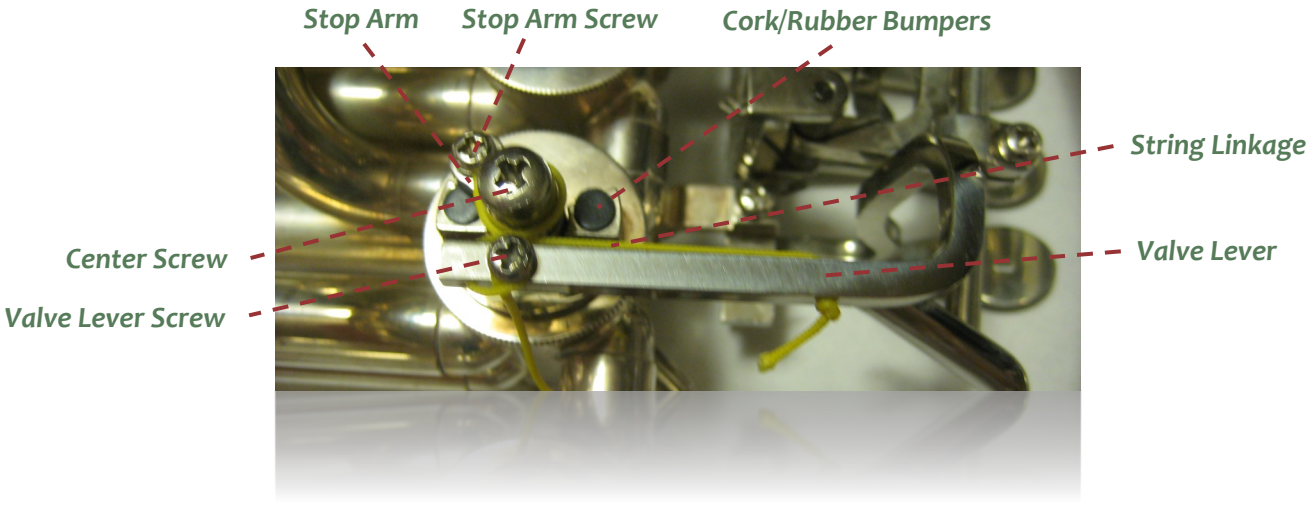
Let's begin by looking at the pieces and parts of the horn and the rotary valve. Then we will move on to some common problems with rotary valves and figure out which ones you can learn to fix yourself.

## Anatomy of the Horn



# Anatomy of the Horn (continued)


# Anatomy of the Rotary Valve



# Anatomy of the Rotary Valve

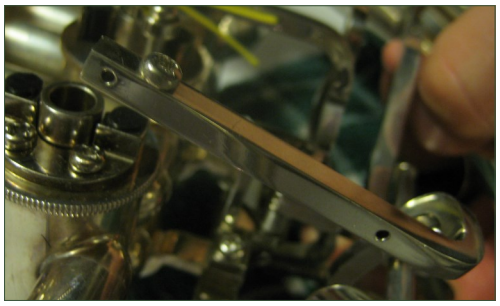
*(Valve diagram on previous page)*

There are multiple variations on rotary valve design, but one of the first things you may notice when looking at different horn valves is whether they use string linkage or mechanical/metal linkage. "Linkage" is just the term for what links the movement of the valve key to the actual valve so that it rotates. You can tell right away when looking at a horn whether there is string tied on the valves or not. If not, you're looking at metal linkage. String linkage is more common in general, but several quality models of single F horns are frequently produced with metal linkages. While the metal adds a little weight, the primary advantages are durability, simplicity, and generally low maintenance. No strings to break means no string-tying expertise necessary to replace those strings. Metal linkages do, however, generate a slight clicking sound of metal-against-metal as they operate, even when properly lubricated.

Because valves with string linkage are more common and require a bit more knowledge to maintain, this section will focus on that design. However, most of the information to come about lubrication, maintenance, and the components of the actual valves will be consistent no matter the type of linkage.

## Pieces and Parts

- **Valve keys** – Operated by the player's fingers to rotate the valves
- **Springs** – Lift the valve keys which are not in use
- **Valve lever** – Moves when a valve key is depressed. Must be linked to the valve by either string or metal linkage
- **Valve lever screw** – Secures a part of the string linkage



- **Stop arm** –  Controls how far the valve is allowed to rotate
- **Stop arm screw** – Secures a part of the string linkage

- **Cork/Rubber bumpers** – Receives the stop arm quietly and prevents the valve from rotating too far.

- **Center screw** – Secures the stop arm to the rotor shaft

- **Rotor** – A single piece that rotates inside the valve. The two stems of the rotor are referred to as the short shaft and the long shaft. The long shaft on this rotor is shaped so that the stop arm will only fit one way. This aligns the rotation of the valve when fully assembled.

- **Bearing plate** – Sits on the short shaft, bears the rotation of the valve, and has a notch for aligning the valve within the valve casing

- **Valve casing** – Contains the rotor and bearing plate.

- **Valve cap** – Covers the bearing plate to prevent dryness and keep it clean.

# Common Rotary Valve Problems

Now that we have a shared vocabulary about rotary valves, let's look at a few things that frequently go wrong or need regular upkeep.

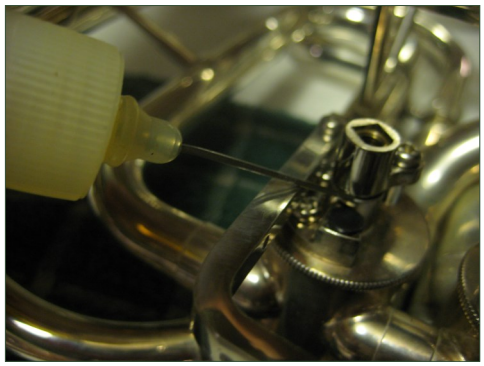
## Valves Get Sticky or Slow

**Lubrication** is typically the go-to solution for improving the action of slow rotary valves. While lubricating rotary valves is not as simple as piston valves, it's also not rocket science. There are three main surfaces to lubricate, not including any metal joints in the linkage. You will need regular light **valve oil** (e.g. Al Cass Fast, like a trumpet might use) and a heavier **bearing oil** (e.g. Ultra-Pure Light Bearing Oil). Be aware that there are valve oils and bearing oils both labeled "Rotor oil". Ask a technician or music store to help you if needed.

*Metal-against-metal joints, especially ball joints common in metal linkage, should be lubricated with a small amount of lanolin based cream (e.g. Schilke Tuning Slide Grease) or a heavy weight oil (e.g. Hetman 15 Synthetic Ball joint Lubricant)*

### *Where to Lubricate: 3 Surfaces, 2 Oils*

1. The bearing on the linkage side or "string" side (using **bearing** oil)
    - A few drops on the surface just below the stop arm
    - Work the valves to spread the oil
    - *(Photo on the right shows a valve currently without string, but string does not need to be removed to apply oil)*



2. The bearing plate under the valve cap (using **bearing** oil)
    - Remove the valve cap and place a few drops of oil onto the rotor surface that spins
    - Work the valves to spread the oil

3. The rotor itself (using **valve** oil)
    - Pull out the valve tuning slide and put a few drops of fine trumpet valve oil into the tubes of the tuning slide you just removed. Do not drop the oil into the tubes that lead down to the rotor. The oil can wash the tuning slide grease (which is exposed while the tuning slide is removed) into the rotor, causing sticky valves[16].
    - Reinsert the tuning slide with oil in it and tip the instrument to run the oil down to the rotor
    - Work the valve to distribute the oil

Dust and dirt accumulation is the other top cause for sticky or slow valves on any instrument. If the instrument has been in regular use but has not been thoroughly cleaned in over a year, it may just need a bath. Flushing the horn with water about once a month should be a part of regular maintenance, but a full bath with the valves removed should be done about every six months. See the tutorial below to learn about how to remove rotary valves properly. Following a complete bath, remember to reapply all lubrications, including grease for each tuning slide.

If lubrication doesn't solve the slow-valves problem and removing the valves on your own seems too scary or doesn't work, repair technicians will do full chemical or ultrasonic cleanings that remove dirt, oil, and even corrosion from inside the instrument.

# "Clanking" sound when working or releasing a valve

A hard metal-against-metal clicking or clanking usually means that something is loose in the valve assembly. The stop arm should sit snugly on the rotor shaft and be secured with a tightened center screw. It is possible for the plate that holds the rubber/cork bumpers to come a bit loose, so ensure it is tightly in place. Try listening closely to see if the sound is coming from any metal joints, especially if the horn uses a completely metal linkage system. If none of these pieces or parts seem loose, there may be some "play" in the rotor's fit inside the valve casing[20]. This is not a problem you'll want to try fixing yourself, so take the instrument to a qualified repair technician.

# Need to disassemble and reassemble the valves for bathing, cleaning, or other maintenance on the horn[18]

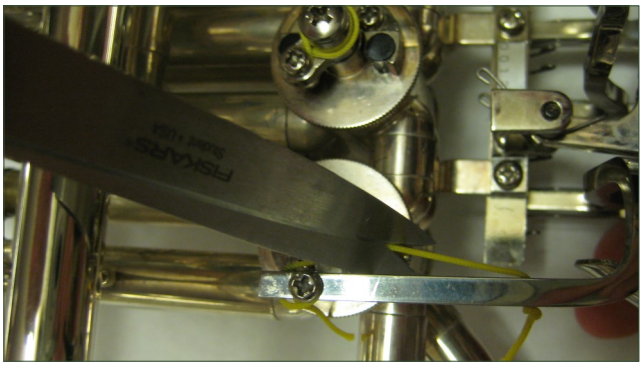
The horn needs a complete cleaning about once every six months to avoid corrosion and build-up inside the instrument. A thorough cleaning and bathing of the horn should include removal of the rotary valves. There is no reason to be afraid of doing this, though it can be intimidating at first. If possible, it is always helpful to learn from a qualified repair technician the first time you try something like this.

Tools required

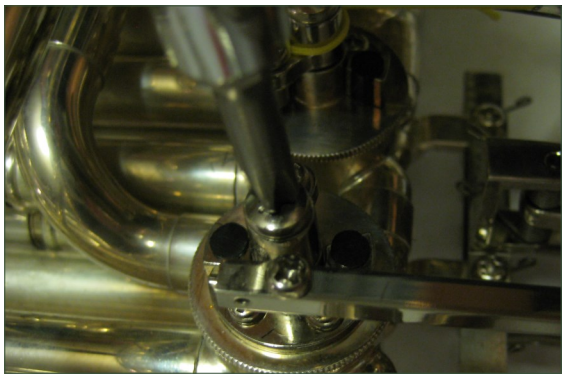
- Small hammer or rawhide mallet
- The end of a roughly ¾" diameter dowel with a roughly ½" hole drilled in the middle *or* the end of a similar diameter piece of PVC pipe (2-3" long)
  - — This is for tapping the valve back into place after it has been removed.
- Flathead or Phillips screwdriver that fits your screws, multiple sizes
- Make sure a small flathead is handy no matter what kind of screws you have.
- Small metal punch (optional)
- Valve oil (like basic trumpet valve oil)
- Bearing oil (heavier oil usually dispensed through a needle-like tip on the bottle)
- Horn string (Recommendation: Cortland Greenspot Dacron Trolling Line – 50 lb. test)
- Old towel or some sort of cushion

## ***Disassembling a Rotary Valve***

1. Cut the string and remove it from the valve . Loosen the valve lever screw and the stop arm screw, but don't remove them. To be sure they don't come out, snug the screws back in place while working on the valve.



2. Remove the center screw from the rotor shaft. Use a slightly bigger screwdriver than you used for the valve lever screw and the stop arm screw. If *working on multiple valves at once, make small piles of any removed pieces to be sure they are returned to the correct valves. You can use small labeled containers for keeping the pieces separate.*



3. Remove the valve cap, then lay the horn valve-side down, string-side up.

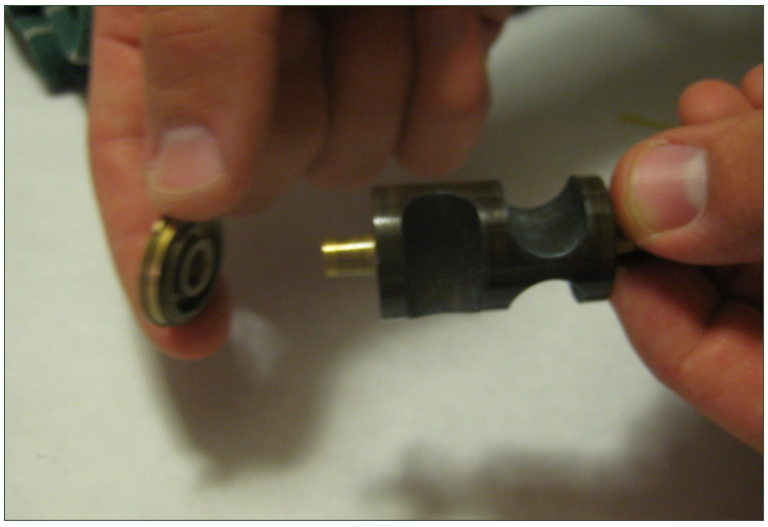
4. Remove the stop arm. Take note of which way the stop arm is currently positioned to ensure you put it back the same way when you reassemble the valve. Use a thin screwdriver head to lift the stop arm off of the rotor shaft. Do this by pushing a small flathead underneath the stop arm and twisting to separate the stop arm.

*<u>Note:</u> The stop arm can sometimes get stuck and become difficult to remove from the rotor shaft. First, try to find a thinner flathead screwdriver to fit underneath the stop arm.*

- A less ideal solution for rare occasions is to tap out the rotor piece from the top *through* the stop arm. If using this method, be sure to place the old towel or cushion beneath the instrument before tapping. Simply take the instrument to a repair shop if you are not comfortable with this option.
- Place the metal punch in the center hole of the rotor shaft and lightly tap the punch with your hammer to remove the rotor from the stop arm and valve casing.

5. Remove the rotor. Be sure to place the old towel or cushion beneath the instrument before tapping out the rotor. This with catch it when it drops out. Tap lightly but directly down on the rotor shaft until it comes out.

6. Separate the bearing plate from the rotor if necessary. The bearing plate is on the short shaft of the rotor opposite the long shaft which you tapped on to remove the valve. It comes right apart from the rotor.

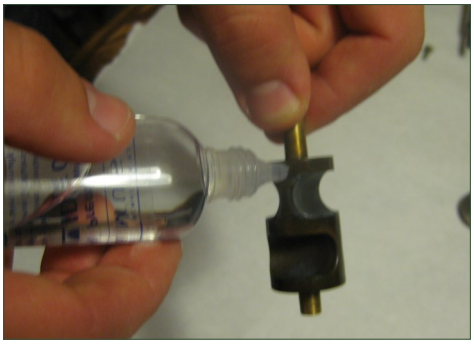


## ***Reassembling a Rotary Valve***

If the instrument has been bathed, brushed, and the valves wiped down and cleaned, lubrication will need to be reapplied during the reassembly process. If the valve was removed for a reason other than cleaning, re-lubricate as needed during reassembly.

1. Lay the horn down valve-side up, string-side down.

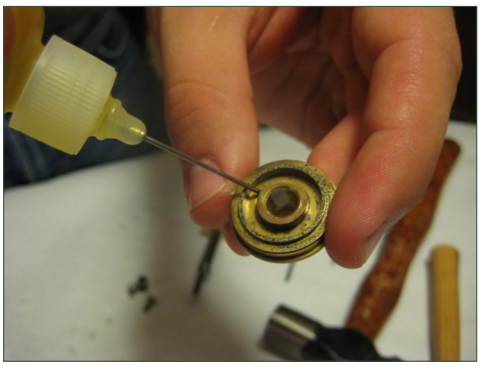
2. Separate the bearing plate from the rotor.



3. Apply a thin layer of valve oil directly onto the surface of the rotor

4. Put some oil down the sides of the valve casing.

5. Holding the shorter end of the rotor shaft, place the rotor back into the valve casing with the long shaft toward the string side. Twist back and forth once the rotor is in the casing to ensure it rotates freely. Add a little more oil if the rotation is not smooth—this is by far the easiest time to apply oil to this surface of the rotor.



6. Similar to valve guides on other brass instruments, the bearing plate needs to be lined up correctly when put back in place. First, put a small amount of oil into the underside of the bearing plate (the side which will face the ground when this piece is placed back on the rotor).

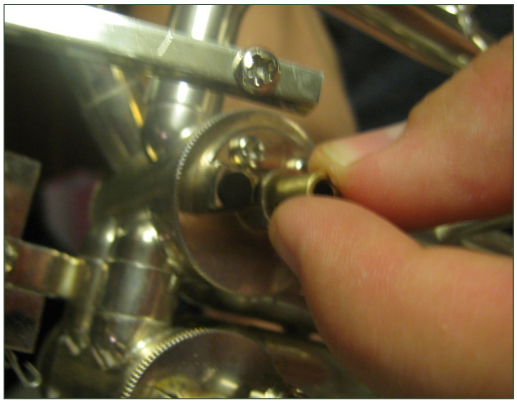
7. Most horns have a little notch in the valve and a little notch in the bearing plate. Line up the two notches as evenly as you possibly can.

8. Remove the bell (if removable) or find a surface that allows the bell to hang off the edge.

9. Tap the rotor and bearing plate back into place.
    1. Place the dowel with a hole in it or the piece of PVC pipe over the bearing plate
    2. *Check again that the notches on the bearing plate are lined up and have not been bumped out of place by the dowel/PVC.*
    3. Tap 3-4 times firmly but not too hard on top of the dowel/PVC. (This piece applies even pressure as you tap everything back into place)
    4. The goal is to get the bearing plate "evenly seated" inside the valve casing. Look at the bearing plate from the side after tapping to check visually whether the plate is evenly seated (not sticking up higher or sitting down lower on any side). Be advised, there is a bit of an optical illusion when inspecting this because of the sloping threads for the valve cap.
    5. If done correctly, the rotor will be able to spin freely when twisted from the long end of the rotor shaft (currently on the underside of the instrument)
    6. If the rotor does not spin easily, the valve has not been seated correctly. Tap the rotor out again as you did in the last step of the disassembly process and try again.
    7. If you are unable to get the rotor and bearing plate seated correctly in three or four tries or can't figure why the valve doesn't spin freely when seated, it's time to take the instrument to a repair technician.

*Bearing plate evenly seated.*

*Rotor spins/twists freely.*



10. Flip the horn over to string-side up, valve-side down.

11. Replace the stop arm on the rotor shaft. Most stop arms will only go back on one way. If not, hopefully you took note of how the stop arm was positioned during disassembly.

12. Put the center screw back into the rotor shaft.

13. Flip the horn over to string-side down, valve-side up.

14. Oil the center of the bearing plate that rotates (if needed).

15. Screw the valve cap back on.

16. Re-string the valve (See *page* 21 about replacing strings on the horn)

# Common Rotary Valve Problems (Continued)

## String comes untied or breaks

Restringing the valves on the horn is worth doing at least once a year, if not every six months or so, to prevent old strings from breaking. Before you walk through the steps of tying or replacing a string, let's get clear on the following terms and understand some basics of the string system:

### *Parts of the Rotary Valve String System (Review from pages 9-11)*

**The string:** A durable piece of horn string or braided dacron trolling line. Monofilament line will not work. When replacing a string, cut a piece about 8 inches long so you have plenty of room to work.

**Valve lever:** The thin metal arm with two holes and a screw in it that is moved when depressing a valve key. Without the string, the valve lever is not attached to the rotary valve at all.

**Valve lever screw**: The small screw at the end of the valve lever.

**Stop arm:** The piece which visibly moves/pivots when the valve is rotated and allows only the proper amount of rotation to occur.

**Stop arm screw**: The small screw inside the stop arm.

[**Center screw**: The larger screw in the center of the valve. This screw is not involved in retying, replacing, or adjusting the string. It holds the stop arm firmly on the rotor shaft and is only removed when disassembling the entire valve (see page 14).]

### *Basics when replacing or adjusting rotary valve strings*

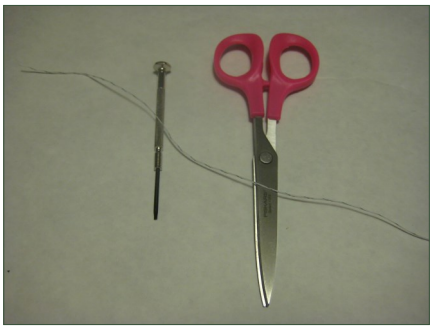
1. Loosen both the **stop arm screw** and **valve lever screw** when completely replacing, removing, or retying the string.
2. Loosen the **stop arm screw** when you want to adjust the height of the valve key so that it lines up with the other valve keys.
3. Loosen the **valve lever screw** when you want to adjust the tension of the wrapped string. Too much tension can cause abnormal wear on the valve. Too little tension and the string may slip out of place.
4. Notice the term loosen is used and not remove. Not only are these two stringing screws small and easy to lose, but also the string must be wrapped around each of them during the stringing process. Try not to remove these screws or leave them loose any longer than is necessary.

### *Buying horn string in bulk*

You can buy horn string at your local music store, or buy string in bulk by purchasing braided dacron trolling line (at least 50 lb. test). Dacron line is sold at most sporting goods stores. Monofilament line will not work.

The thicker the string, the slower the valve action. The thinner the string, the faster the valve action. Thinner string is more likely to fray and break, so look for the middle ground.

## ***Replacing rotary valve string***[19]



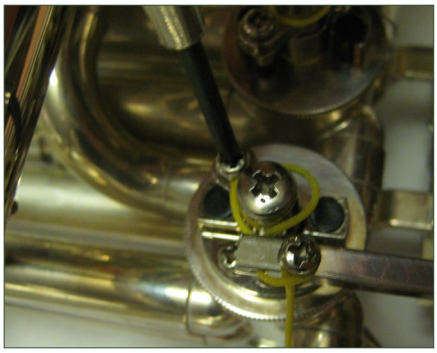
*What you'll need...*

- A flathead or Phillips screwdriver that fits the smaller stop arm and valve lever screws
- Something to cut the string (scissors should work just fine)
- String

If restringing multiple valves, it is highly recommended to work on one valve at a time instead of removing multiple strings at once. It helps to have another valve left properly strung to provide a model in case you run into trouble.

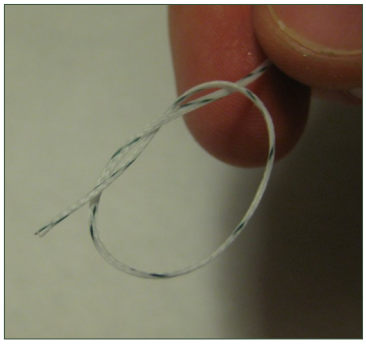
Some find it helpful to have a simple tool to hold all of the valve keys in line. By taping two semi-flexible flat objects together (popsicle sticks work great!), you can create a tool which will slip down onto the valve keys and keep them straight as you work on the strings.

1. Before you begin, cut the appropriate number of new strings from your supply. Each new string should be about 8" long.



2. Loosen the stop arm screw and the valve lever screw.

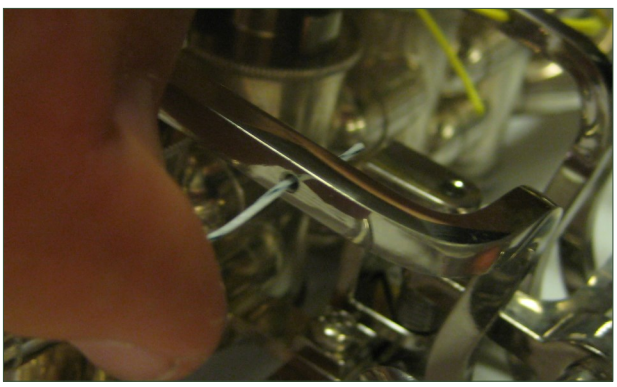
3. Remove the old string by simply cutting it and pulling the scraps through the valve lever holes.

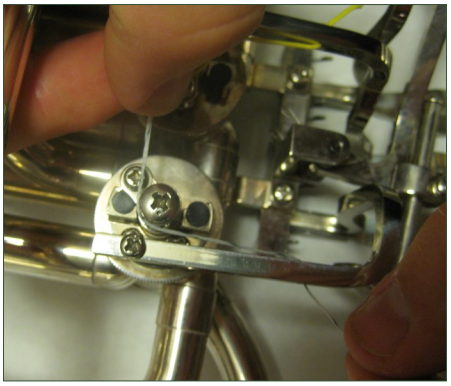


4. Tie a knot a couple of inches from the end of the string. You will probably need to tie one or two more additional knots on top of the first knot in order to make a knot large enough to avoid slipping through the hole in the valve lever. Thinner string may require even more additional knots.

5. Thread the string through the valve lever hole closest near the middle of the valve lever (not at the bottom). The string should be pulled through *toward* the valve leaving the knot *away* from the valve.

   If the string became frayed in the cutting process, you can singe the end with a lighter or match and create a point by squeezing the singed end with a paper towel. Give the string a pull to be sure the knot doesn't slip through the hole.

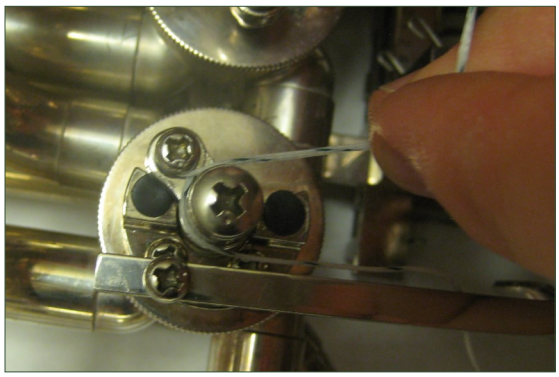




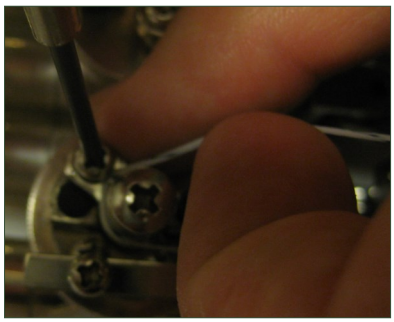
6. Pull the string down so that it is parallel with the valve lever and wrap the string under the center of the valve (where you see the center screw).

7. Now, looking down from the top, wrap the string in the first loop (of what will eventually be a figure-eight) that goes *left* around the stop arm screw (you may need to use both hands to help the string stay down as you wrap), and up between the stop arm screw and the center of the valve.

   Clarification: After the string wraps around the stop arm screw, the string can't go back the way it first came in under the center of the valve. Go the other way (up toward the valve keys).



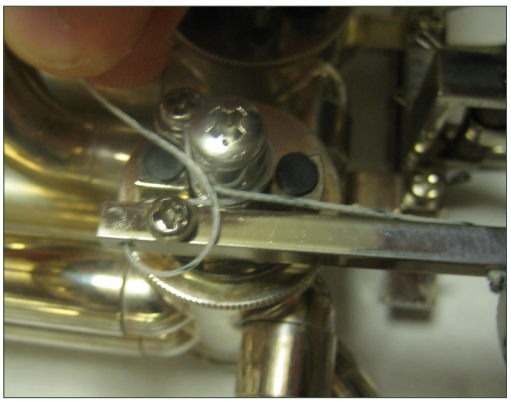
8. Before going further, use your thumb to hold the stop arm in its down position (away from the direction of the valve keys), lightly pull the string which is wrapped around the stop arm screw to remove excess slack, and snug the stop arm screw down to hold the string in place.

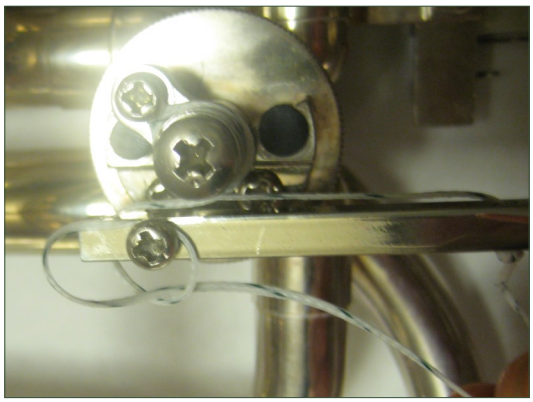


9. From here, wrap part-way around the center so that the string is headed down toward the remaining hole in the valve lever. As you start to thread the string through the empty hole in the end of the valve lever, be sure that your loose end was fed *under* the piece of string which first travelled down parallel to the valve lever.

   Note: The figure-eight you're working toward consists of one small loop around the stop arm screw and one big "loop" around the center of the valve. This bigger "loop" is actually two segments of string on their way to the valve lever from either side of the center of the valve, unlike the continuous piece looped around the stop arm screw).

10. Take the loose end of the string after threading it through the hole and loop to the *left* around the valve lever screw. Feed the loose end of the string *down through* the loop you're making (similar to a basic knot) before pulling the loop tight around the screw.

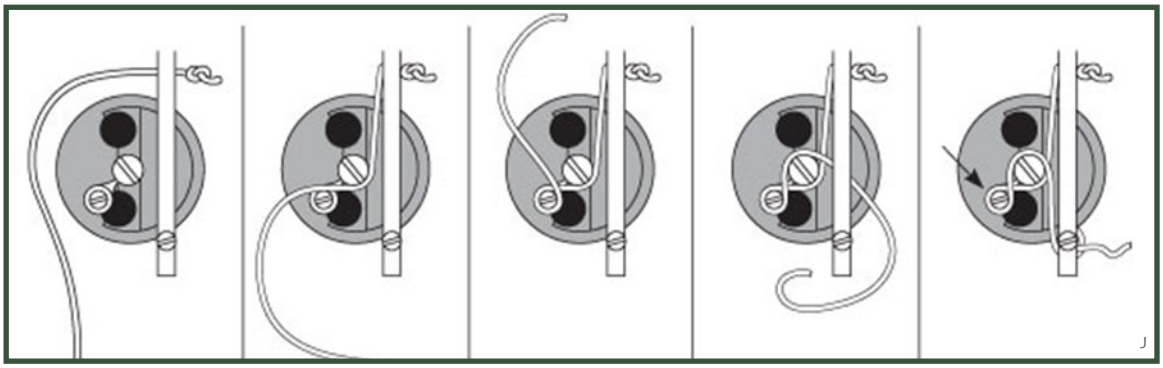




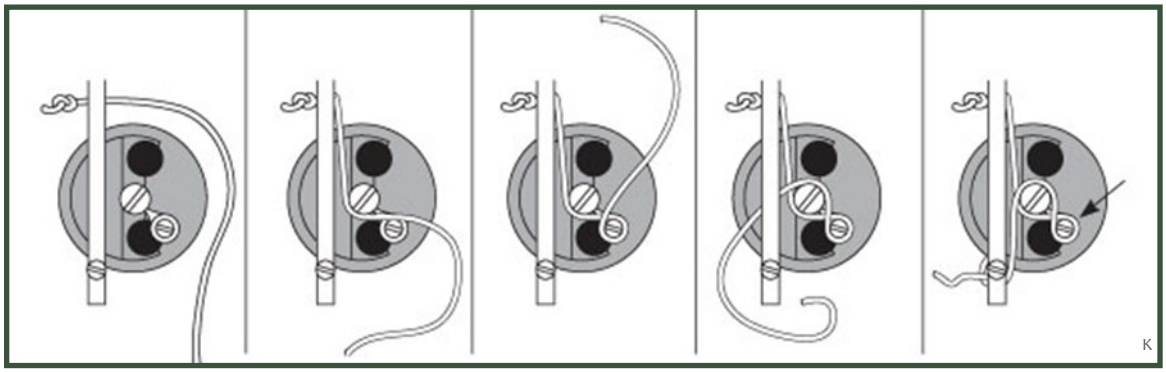
11. Snug the valve lever screw down to hold the string in place.
12. Cut off excess string. Singing or melting the end of the string at this point can help prevent fraying of the string in the future.
13. Check the tension of the string wrapped around the center of the valve. It should be able to move, but not be so loose that there's a lot of slack in it. If the tension needs adjustment, loosen the valve lever screw and either let a little slack in or pull a little slack through depending on the adjustment needed.
    If the tension is good, the height of the valve key can be adjusted by simply loosening the stop arm screw, moving the valve to the desired height, and snugging the stop arm screw back into place.

Here's an additional pair of diagrams for reference from the Paxman horns website. There are two sets of diagrams because there are two possible (mirrored) layouts when working with rotary valves. The instructions laid out above are described based on the layout in diagram A.

**A**



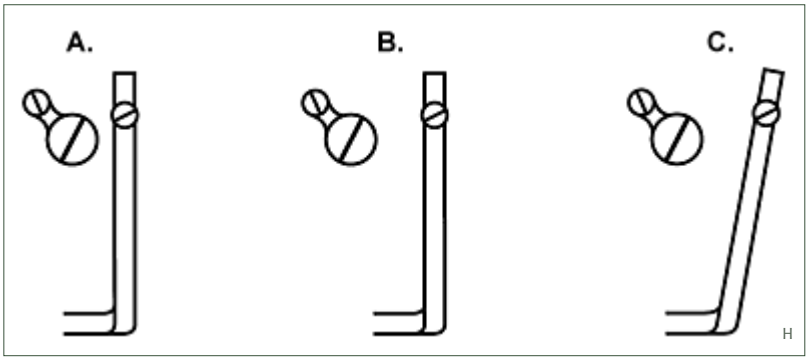

**B**



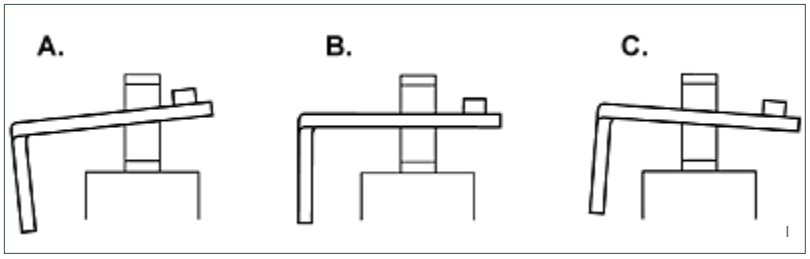
# Common Rotary Valve Problems (Continued)

## Valve lever out of place

Just because a rotary valve rotates does not mean the stringing job is completely trustworthy. In order to keep rotary valves working as quickly and smoothly as possible and to minimize wear on the string, check that the valve lever (or lever arm) is not far from its proper position:




**A** is the correct position with the valve lever very close to the stop arm. **B** and **C** will force the string to rub on itself and wear down more quickly.




**A**, **B**, and **C** are the three horizontal positions in proper valve lever action. **A** represents the valve before being pressed, **B** is half-way down, and **C** is fully pressed[21].

The positioning of the valve lever is primarily a result of the way the string is tied. Adjust or replace the strings to reposition the valve lever. The valve lever in a metal linkage is anchored in place and should not become misaligned unless bent.

## **Stuffy sound or air does not flow through the horn**
## (How to check for misaligned rotary valves)

Normal wear and tear on rotary valves can eventually result in **misalignment of the rotor**. If a horn has been playing well until just recently, check to see if any of the rubber or cork bumpers for the stop arm have gone missing. In an emergency situation, a small wad of paper can serve as a temporary bumper. Have the bumper replaced at a music store, or purchase a length of rubber cord that can be cut to replace missing bumpers. Friction is usually sufficient to hold these in place, but you can use a very small drop of super glue if desired[17].

Votaw Tool Company (votawtool.com) sells six inches of "rotary valve rubber stop cord" for about $2 (3/16" or 4.76mm diameter). If making your own replacement, be sure to consider the sponginess of the rubber. A bumper that is too soft may not hold the valve in the correct position while a bumper that is too hard will probably be noisy.

If no bumpers are missing, check the alignment of the valve by removing the valve cap. Check first that the notch in the valve casing lines up with the notch on the bearing plate. If not, the valve needs to be reseated. You can do this using the steps for disassembling rotary valves (on page 14) or take the instrument to the repair shop.

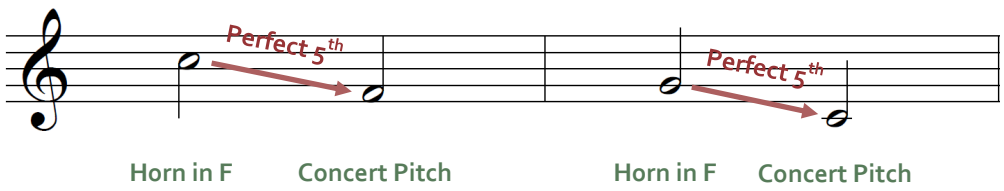
If the notches on the valve casing and bearing plate *do* line up, look for the grooves/notches that rotate in the center of the bearing plate. There should be one notch that does not move and two grooves/notches set at a 90 degree angle that rotate when the valve is engaged. One of the 90-degree grooves should line up with the stationary notch when the valve is open, and the other should line up when the valve is engaged. If one or both of these grooves are misaligned, you may have worn out or dried out bumpers that need to be replaced[17].

Though there is no replacement for a trusted repair technician, knowing the horn inside and out can save you money and headaches in the long run, especially when it comes to diagnosing or solving problems in an emergency before a performance or during class. The key to confident repair work should be very familiar to us as musicians—practice! Try out basic repairs on your own time so that you are equipped when the time comes to use these skills.

# Horn in F and Horn in Bb:
# Transposing Instruments

## Horn in F

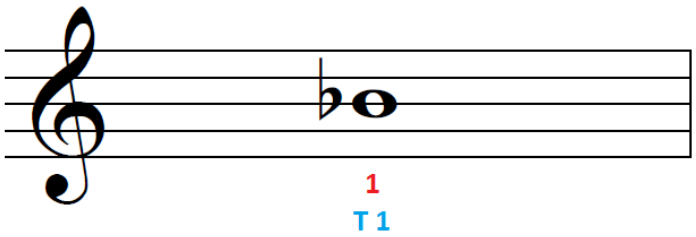
Let us take just a moment to be sure we understand that the horn is a transposing instrument. A vast majority of music written for the horn is in F horn music which is transposed up a Perfect 5th from concert pitch.




The handiest trick I know for helping teach students to deal with this transposition is to use the built in five fingers of the hand. Looking at my palm and pointing my fingers sideways, I assign the written note for the horn to the thumb and the concert pitch to the pinky. Each finger represents a letter name, and I can quickly "count" the letters up or down the hand to make the transposition needed. Counting pinky up to thumb transposes a concert pitch to the F horn note. Counting thumb down to pinky transposes an F horn note to concert pitch. Obviously this doesn't account for accidentals necessary to transpose a true Perfect 5th, but it gets students in the ballpark and it's enough to remind me which way I need to transpose.

## Double Horn

On a double horn, when a player uses the Bb side of the instrument by pressing the thumb trigger, the player continues to read the F horn part. You will notice that the "thumb" fingerings in most method books and fingering charts are matched up next to their F horn counterparts:




The goal is to allow double horn players to use the Bb side of the horn as needed to play their regular F horn music (the Bb side provides better responsiveness and ease in the higher register). The "trick" for figuring out fingerings on the Bb side of the horn presented later in this manual follows this standard practice.

## Single Bb Horn

If you or a student ends up with a single horn in Bb, remember the following declaration about the world of horn playing from professional horn player and Arizona State University brass professor John Ericson:

> *"Although pitched in B-flat, [fingerings on a single B-flat horn] are not thought of by the player as being in "B-flat" like a trumpet or baritone. For horn players, the world is always conceived to be in F. We would think of the fingerings as being the fingerings that we would use on the B-flat side ("thumb down") on a double horn when notated in F."*
>
> *-John Ericson* [15]

# Interlude: Before we go on...

I'm guessing you've already seen a French horn fingering chart, but the fact that you're reading this guide leads me to believe you could use some more help internalizing all those fingerings. I won't discount the value of rote memorization, but there is much to discover and learn by delving into the mechanics *behind* brass fingerings. The knowledge in the next few sections of this book covers far more than how to remember horn fingerings, although that's where this portion of the manual is eventually headed. If the information is new to you, this *in-depth* approach to understanding brass fingerings will be valuable, exciting, and possibly somewhat overwhelming. Take your time, look over the diagrams to let each topic soak in, and you will eventually master the beautiful patterns that allow brass valves to do what they do.

E

# The Seven Chromatic Brass Fingerings:
## How Valves Work

As you probably know, the purpose of a valve on a brass instrument is to change the length of the instrument's tubing. Each valve is built with a specific length of tubing attached, and depressing a valve adds that valve's tubing to the length of the whole instrument. The genius of the three-valve system is in the amount of tubing assigned to each valve. The 2nd valve has the shortest length of tubing attached and is long enough to lower the sound of the instrument by 1 half step. The 1st valve's tubing is long enough to lower the sound by 2 half steps (1 whole step). The 3rd valve has the longest length of tubing and lowers the sound by 3 half steps (1 and ½ whole steps). With these three lengths, we are able to achieve 7 different lengths of tubing by using the valves both individually and in combination with each other.

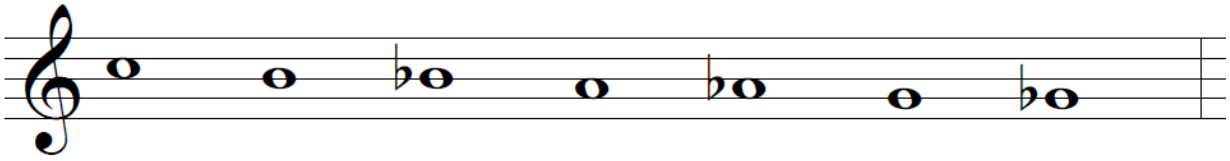
| Valve(s) pressed | Sound lowered… |
|---|---|
| 0 (open) | None |
| 2nd | 1 half step |
| 1st | 2 half steps |
| 1st + 2nd | 3 half steps |
| 2nd + 3rd | 4 half steps |
| 1st + 3rd (*) | 5 half steps |
| 1st + 2nd + 3rd (**) | 6 half steps |

Some brass instruments include a 4th valve which, when pressed down, adds enough tubing to lower the sound by 5 half steps. This valve is designed to replace the 1st and 3rd valve combination which is, for a number of reasons, notoriously sharp. When the 4th valve is available, the last two valve combinations in the table above would be replaced by 4th (*), then 2nd + 4th (**). This type of 4th valve is typically found on tubas and euphoniums and is *not* the same as the thumb valve/trigger on a double horn.

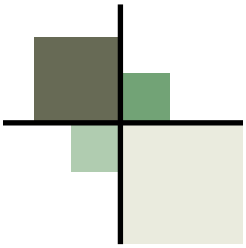
These combinations create the **seven chromatic brass fingerings**. Notice that by using these fingerings in order, a musician can play a short descending chromatic scale of 7 notes. Take a moment to be sure you understand the table above. The reason there is no "3rd valve alone" fingering in this sequence is because the combination of 1st and 2nd valve also lowers the sound by 3 *half steps* but tends to be more in tune. For now, accept that 1st and 2nd valve is almost always the preferred fingering between the two options. This is due to manufacturing compromises and some physics of sound you will understand soon. It is critical that you memorize this sequence of fingerings and be able to recall them in ascending or descending order:

| | | | | | | |
|---|---|---|---|---|---|---|
| 123 | 13 | 23 | 12 | 1 | 2 | 0 |
| 0 | 2 | 1 | 12 | 23 | 13 | 123 |

To demonstrate these fingerings in action, let's look at an example of a brass instrument playing a 3rd space C in treble clef with *no valves* pressed down. By adding valves according to our seven chromatic brass fingerings, the following descending chromatic scale will result.



This concept is a very important reason for brass players to learn their chromatic scales. However, a full chromatic scale on any brass instrument is not as simple as repeating the entire set of seven chromatic fingerings over and over. Come to think of it, how exactly do brass instruments use just 7 fingerings to generate so many different notes? If you know something about **partials**, you're on the right track. The key to unlocking the fingering system for any brass instrument lies within a fascinating natural miracle we call **The Overtone Series**.

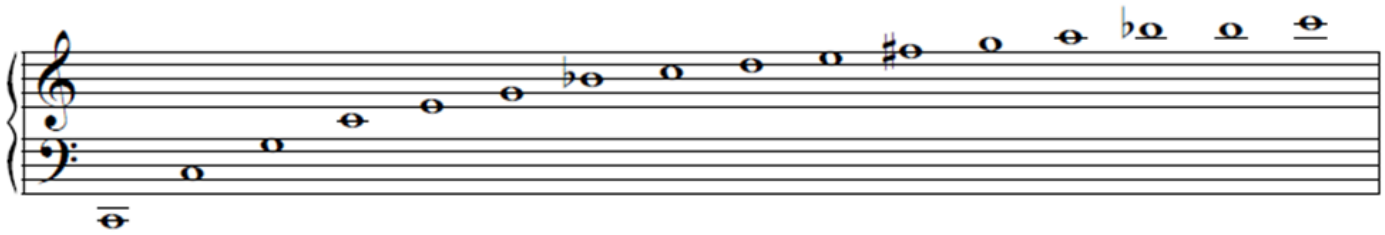


# The Overtone Series:
# The Music Theory of Nature

## Introduction

To grasp how brass instruments achieve so many notes and to really understand how horn fingerings relate to fingerings on other brass instruments, you have to know the overtone series. If you haven't learned about this before, you're missing out on a deeper understanding of what's going on when we create or hear the vibrations of sound. The pitch and tone color (or **timbre**) of a sound is due to not just one vibration, but a whole series of vibrations at different frequencies taking place simultaneously. The overtone series is a beautiful marriage between the natural physics of sound and the bedrock foundations of music theory. This powerful tool will help you teach your students about pitch tendencies and alternate fingerings, and it will help *you* learn and remember the fingerings for brass instruments by understanding the pattern that makes them work.

## The C Overtone Series



What you see above is a very elegant way of looking at the basic physics of sound. The low C on the far left determines the whole pattern, and we call that first note of the series the **fundamental**. We can choose any note to be the fundamental, but for the following examples we'll stick with C. Because we're using C as the fundamental, we call the diagram above a "C Overtone Series". What's fascinating is that this pattern was not made up by a teacher or composer somewhere along the way. The C overtone series is a natural phenomenon that occurs any time a C is produced by a voice or instrument of any kind. By "occurs," I mean that most or all of the notes you see in the series are produced *simultaneously* by that voice or instrument, even though what we *hear* is mostly the fundamental. We call the individual notes in the series which are above the fundamental **overtones**.

### *Timbre*

Depending on the source of the sound, certain overtones will vibrate louder or softer than the others in the series. Even though we hear a C played by a tuba and a C played by an upright bass as the same pitch, each sound is like a different recipe with overtones as ingredients. One sound may include a lot more of the low overtones and just a touch of the higher overtones. Another sound might have a more even mix of high and low overtones. Each combination results in a distinct **timbre** (or tone color) that helps us tell the difference between different sounds, like a human voice versus the sound of a bass clarinet. Even though there is a lot of math and science behind the overtone series, music notation allows us to illustrate this concept in an approachable way.

# Overtones, Harmonics, and Partials

The term "fundamental" is specific and always refers to the lowest note in an overtone series above which all the other notes are built (think *foundational*). But there are a few different terms that get thrown around when referring to the other notes in a series. Here's a clarification of the three most common:

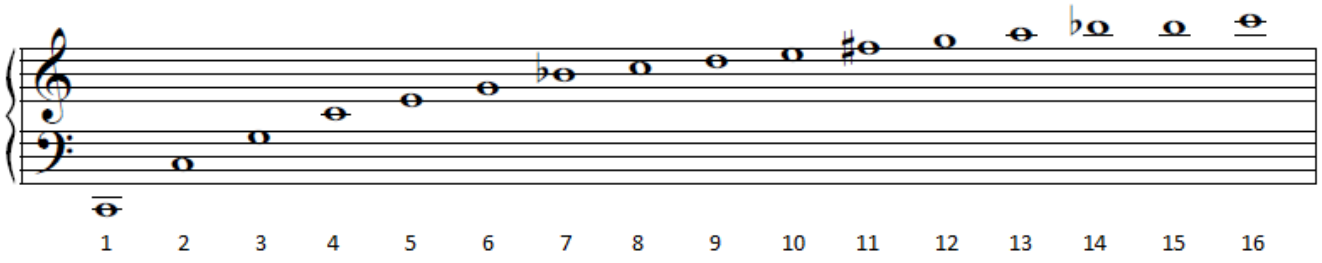
**Overtones** – The additional notes/vibrations *above* the fundamental in an overtone series that combine to create the timbre of a sound. (The first overtone in an overtone series is the first note *after* the fundamental. The fundamental is not an overtone.)

**Harmonics** – A general term used to refer to each of the notes/vibrations in an overtone series. (The first harmonic in an overtone series is the fundamental.)

**Partials** – A term used commonly by brass musicians to refer to each of the pitches in an overtone series which can be played with a single fingering by adjusting embouchure and airspeed. (The first partial in an overtone series is the fundamental.)

## *Partials*

In the first part of this section about the overtone series, I discussed the fact that overtones combine all at once to create the timbre of a particular sound. Now it is time to focus on how these overtones are like a ladder that brass instruments can climb one at a time. As we move on from here, I will stick to the term **partial** to refer to the different notes in the overtone series which brass players move between as they play. Below is the overtone series with numbers which label each partial. 1 is the 1st partial, 2 is the 2nd partial, 3 is the 3rd partial and so on.




The length of a brass instrument is what determines which fundamental, and therefore which overtone series, it is able to play. Recall the history of the natural horn which was played for *years* but had no valves. The natural horn took advantage of the higher partials in the overtone series because they are close enough together to be combined into step-wise melodic lines. Fortunately for natural horn players, there are many more partials beyond the 16th partial which the horn is capable of playing. In fact, the horn can generate well-defined resonances up to the 22nd partial or beyond[7]! For now, though, let's stick to just 16 partials. After all, it's time learn (and memorize) how exactly the overtone series is constructed.

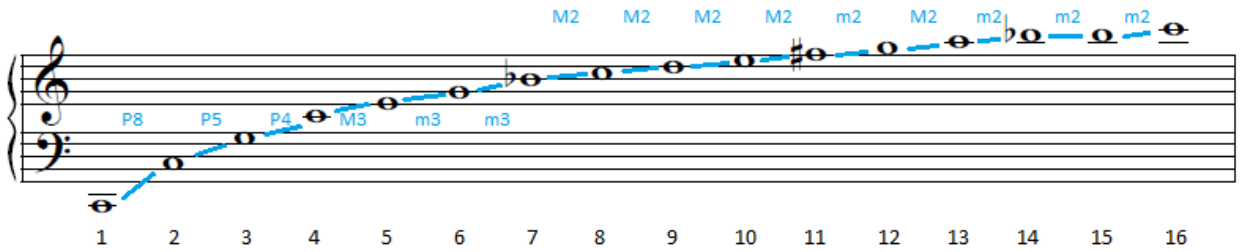
*If you would like continue studying how the overtone series specifically applies to brass fingerings, you can come back to this section about "Building the Overtone Series" later. It is my goal to provide enough information for you to become comfortable with the overtone series . I hope you will eventually use it as an everyday tool in your teaching, but it is not necessary to have the overtone series memorized before reading the rest of this manual!*

# Building the Overtone Series

The ability to visualize the overtone series quickly and easily is an asset for any band director working with brass. Once learned, it aids in diagnosing pitch problems, fixing partial errors, and, of course, remembering brass fingerings. Find a strategy below that helps you remember how to build the overtone series, or study and develop your own!

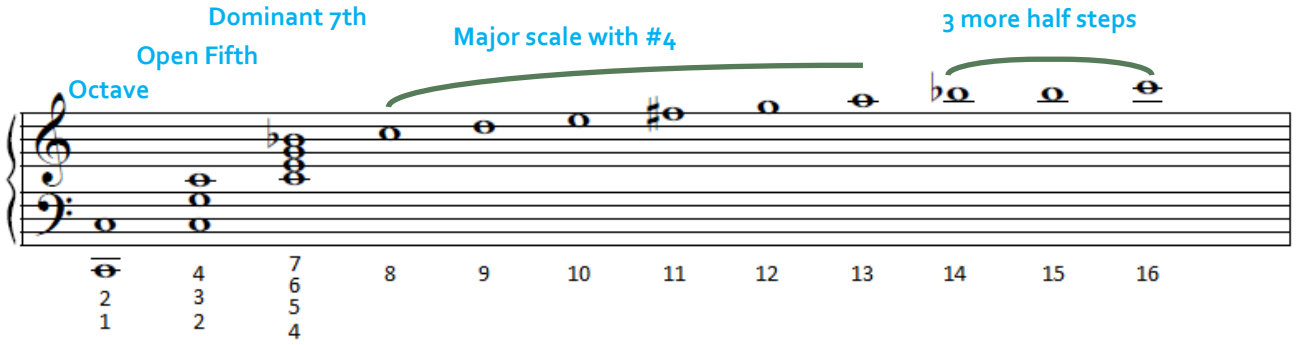
## *Strategy #1: Intervals*

Though there are imperfections in tuning which will be discussed later on, we are lucky that the overtone series is built out of the intervals we already use in everyday music theory. OK, to be fair, luck has nothing to do with it. It is music theory that has been modeled after the physics of sound! You will see how the spacing between partials as they naturally occur in nature can be nicely described by intervals.




I find intervals to be the easiest way to remember how to build the first part of the overtone series because the partials are so far apart near the beginning. How fascinating that our three *perfect* intervals appear in order from biggest to smallest as the intervals between the first three partials. The list of intervals above may "click" for you as the best way to remember how to build the overtone series. However, if you find the whole list of intervals hard to remember, there is another way to think about the structure of the overtone series which unveils an even clearer link between the science of sound and the origins of harmony.

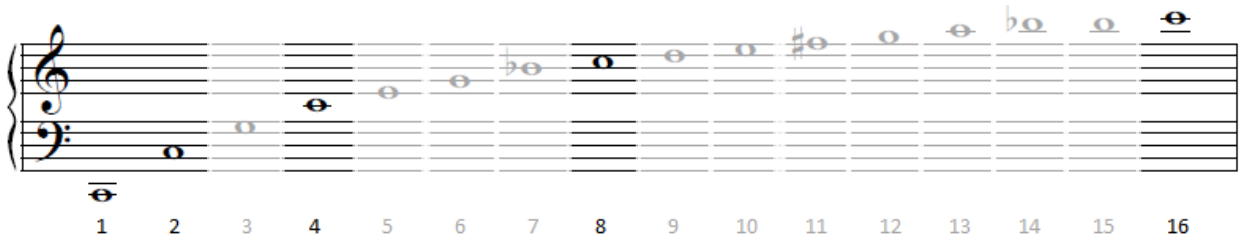
## *Strategy #2: Groupings*



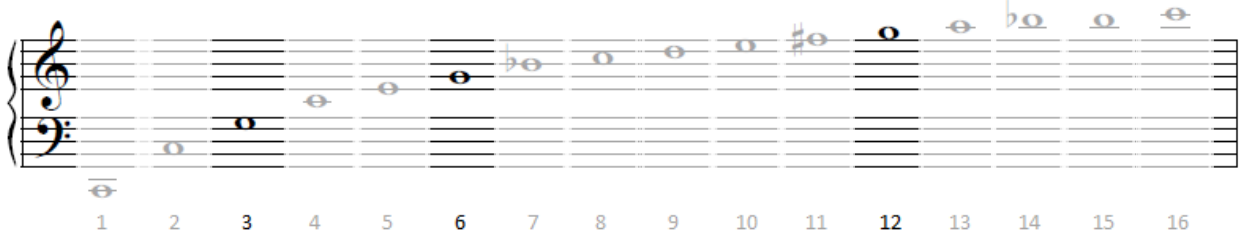

Forgiving for some overlap, we can see that the overtone series forms a few well known musical structures. The first two partials obviously form a Perfect Octave as we just saw above. Next, the 2nd, 3rd, and 4th partials form an open-fifth chord. The next grouping of the 4th, 5th, 6th, and 7th partials forms a dominant 7th chord. Possibly *the most important* harmonic structure in Western Music is actually *built into* the natural overtone series. Mind blowing! Next we see the 8th, 9th, 10th, 11th, 12th, and 13th partials form six notes of a major scale with a sharp fourth scale degree (#4).

## *Strategy #3: Related Partials*

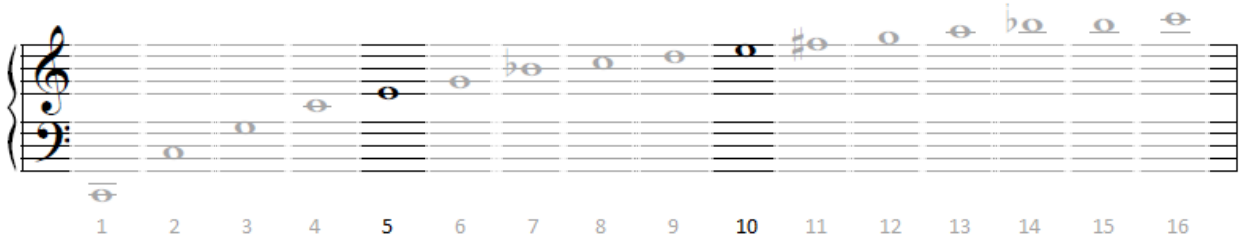
Due to the math behind the frequencies of each partial in the series, there are groups of partials which are related to one another. Related partials are actually just different octaves of the same note in the overtone series. If you can remember these four groups of related partials, you can construct most of the overtone series, although the 9th, 11th, 13th, and 15th partials will be missing. It turns out that these groups of related partials each share the same pitch tendency (sharp, flat, or in tune). I will discuss the usefulness of this further in the section about horn fingering pitch tendencies. Note that each group is formed by repeatedly doubling the original partial number.



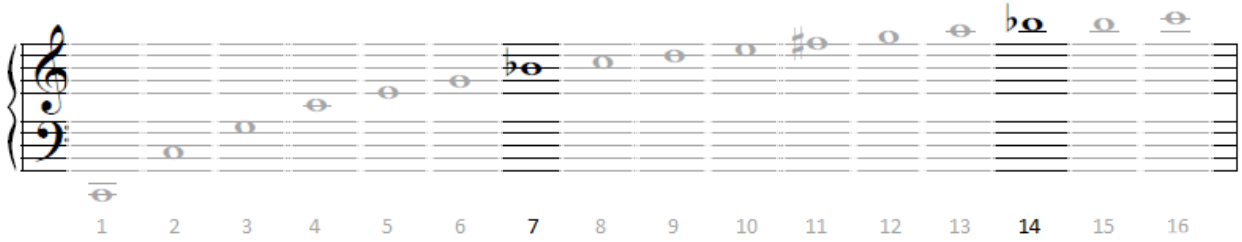

Partials **1, 2, 4, 8, and 16** are all octaves of the fundamental. In this case, C. These partials are generally in tune.




Partials **3, 6, and 12** are all octaves of the 3rd partial. The 3rd partial is always the "fifth" of the fundamental, in this case, G. These partials sound **sharp**.




Partials **5 and 10** are both octaves of the 5th partial. The 5th partial is always the "third" of the fundamental, in this case, E. These partials sound **flat**.




Partials **7 and 14** are both octaves of the 7th partial. The 7th partial is always the "flat seven" of the fundamental, in this case, B flat. These partials sound ***very* flat**.

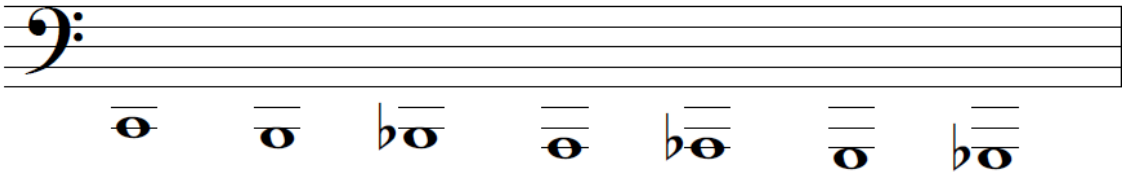
## Conclusion: Fundamentals

It is critical to remember that the length of a brass instrument is what determines which fundamental, and therefore which overtone series, it is able to play. In all the examples of the overtone series so far, we used C as the fundamental and built the overtone series on top of that note. You may have noticed how low the fundamental C must be to keep the rest of the overtone series within or reasonably close to the grand staff. Oddly enough, even though the fundamental is hugely important in determining which notes a brass instrument can play, players rarely need to actually play the fundamental! Brass players tend to refer to really low notes like the fundamentals as "pedal tones", a name derived from the foot pedals on the pipe organ.

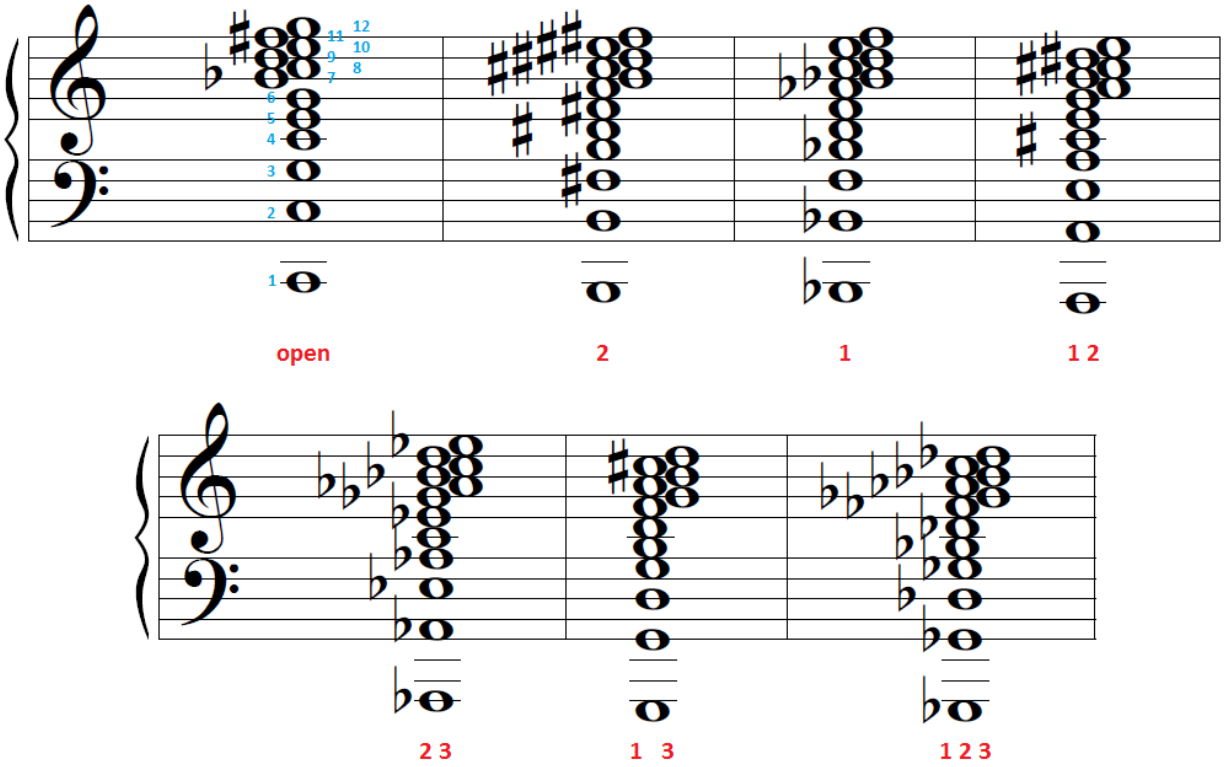
For more detailed information about the overtone series and brass pitch tendencies, check out "Partial To the Winds" (www.bandworld.org/pdfs/partialToTheWinds.pdf) and the video series that goes with it (www.bandworld.org/html/OvertoneIntro.html).

# 7 Fingerings, 7 Fundamentals, and 7 Series:
## Filling in the Gaps

Armed with an understanding of the overtone series, the partials it creates, and the fact that an instrument's length determines its fundamental, we can now do much more with our earlier discussion about the 7 chromatic brass fingerings. When all valves are open, the horn in F is constructed with C (F Concert) as its fundamental note (C written two ledger lines below the bass clef as in our overtone series examples earlier). Adding valves *lowers* this fundamental note a certain number of half steps depending on which valve combination is used. Refer to the chart on page 28 to review the effect of each of the 7 chromatic brass fingerings. Starting on C and using our 7 chromatic brass fingerings, we can see all seven fundamentals used by the horn in F:



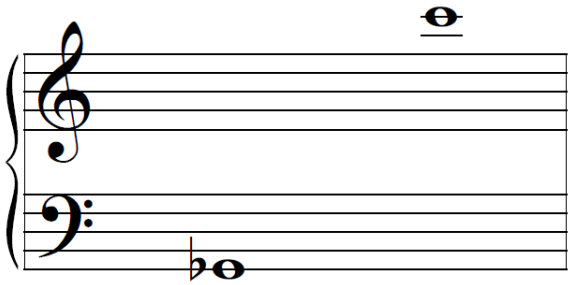
When the fundamental is lowered, the entire overtone series moves with it. 7 fundamentals means 7 different overtone series, each with its own complete set of partials that can be played without ever moving the fingers! Did someone say lip slurs? Fair warning, the diagrams in the next section can be overwhelming at first glance. As a comparison, remember that musicians often write chords both horizontally (like an arpeggio) and vertically (stacked in thirds). So far we have seen the overtone series written out horizontally, but below we see all 7 overtone series for the horn in F notated vertically. Only the first 12 partials in each series are shown for the sake of clarity. Notice the fundamentals at the bottom of each series match the set of 7 fundamentals shown in the diagram above:



What we are looking at is the complete spectrum of playable notes (up to the 12th partial) provided by the seven chromatic brass fingerings on the horn in F. It doesn't take too much imagination to see that as we smash all of these series together, they fill in each other's gaps and provide all the necessary notes to form three octaves of a continuous chromatic scale from Gb (bottom line of bass clef) up to G (on top of the treble clef).

There are even duplicate notes which appear in more than one of the 7 series. These duplicates are the basis of alternate fingerings. A note with alternate fingerings is a note which fits into more than one of the 7 overtone series, and therefore can be played with more than one fingering.

If we include notes up to the 16th partial, we gain an additional 5 notes for our chromatic scale that bring us up to C. Altogether, these 7 overtone series establish the primary playable range of the horn in F:



# Conclusion: Finding Fingerings

Once you understand how to construct the overtone series and know where the 7 fundamentals are on each brass instrument, you have enough information to determine the fingering for any note. It's simply a matter of figuring out which of the 7 series the given note is a part of and using the associated fingering(s) from those series. However, due to the frequent occurrence of alternate fingering options when using this system, especially with notes found in the higher partials, you also need three rules to determine which fingering is the best.

Choosing *preferred* brass fingerings[8]:

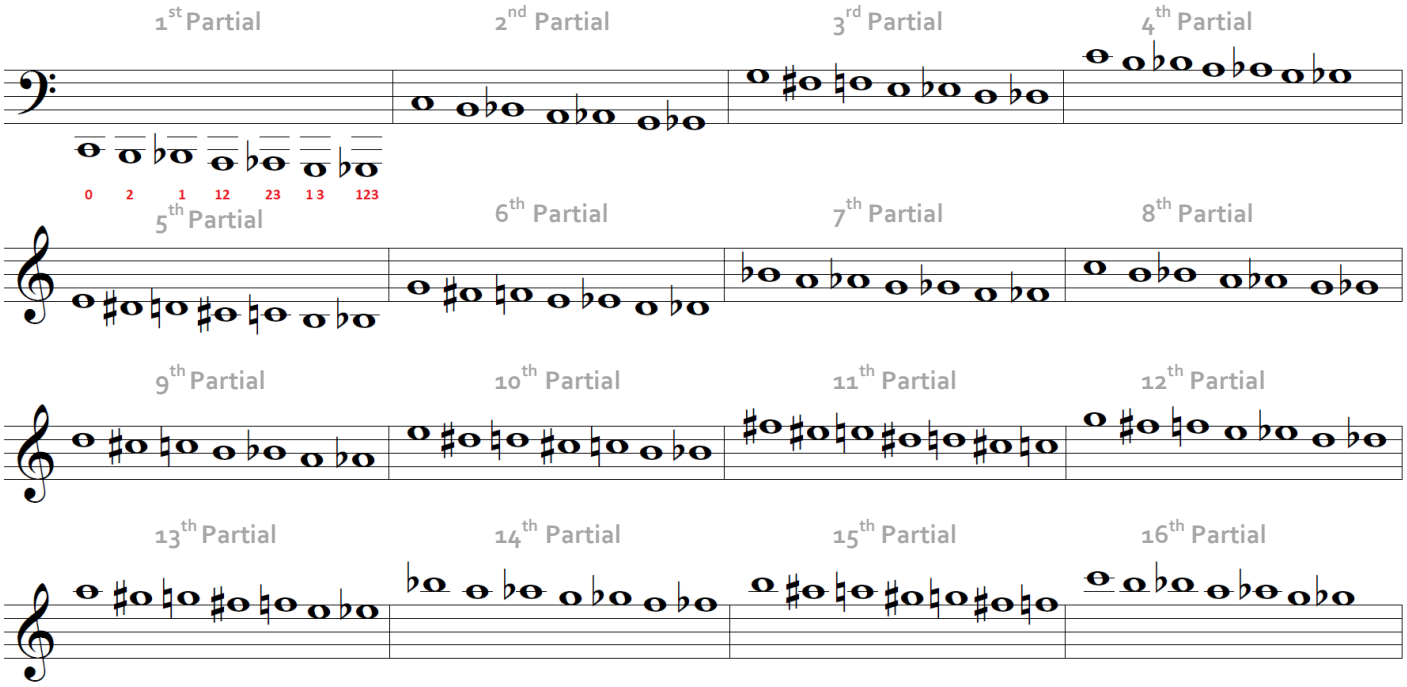
1. The fingering with the fewest valves possible,
2. but not if it involves 3rd valve
3. or is the 7th partial of a series

I believe that this technique is a complete and powerful method for determining fingerings on any brass instrument. However, in the interest of full disclosure, I also feel that using the overtone series in the way I have described is *initially* a very cumbersome way to determine brass fingerings. Until you memorize the construction of the series and practice enough to become an expert, finding fingerings this way can be too slow. In order to help you with horn fingerings in the meantime, I intend to provide you with alternate method that I find very helpful.

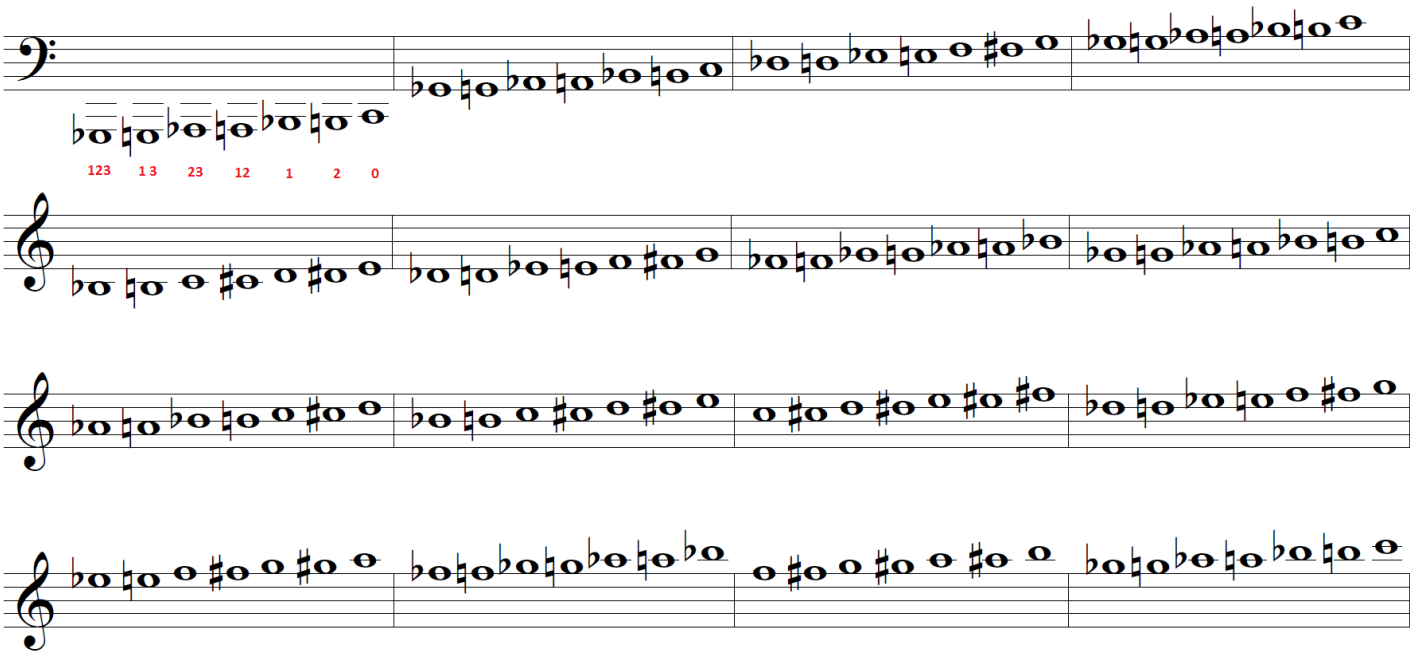
# The Partial Grouping Method:
## A Different Perspective

### Notes Per Partial

This method of learning and memorizing brass fingerings focuses on individual partials one at a time rather than considering the entire series of partials generated by each fingering. The overtone series connects directly to the experience of playing lip slurs on a brass instrument. The partial grouping method connects directly to the experience of playing a chromatic scale which, as we well know, is incredibly useful for learning fingerings. Because there are seven chromatic brass fingerings, we can lay out all seven notes playable in the 1st partial, the 2nd partial, the 3rd partial, and so on. Take a look at how each of the first 16 partials of the horn in F contains seven possible notes:



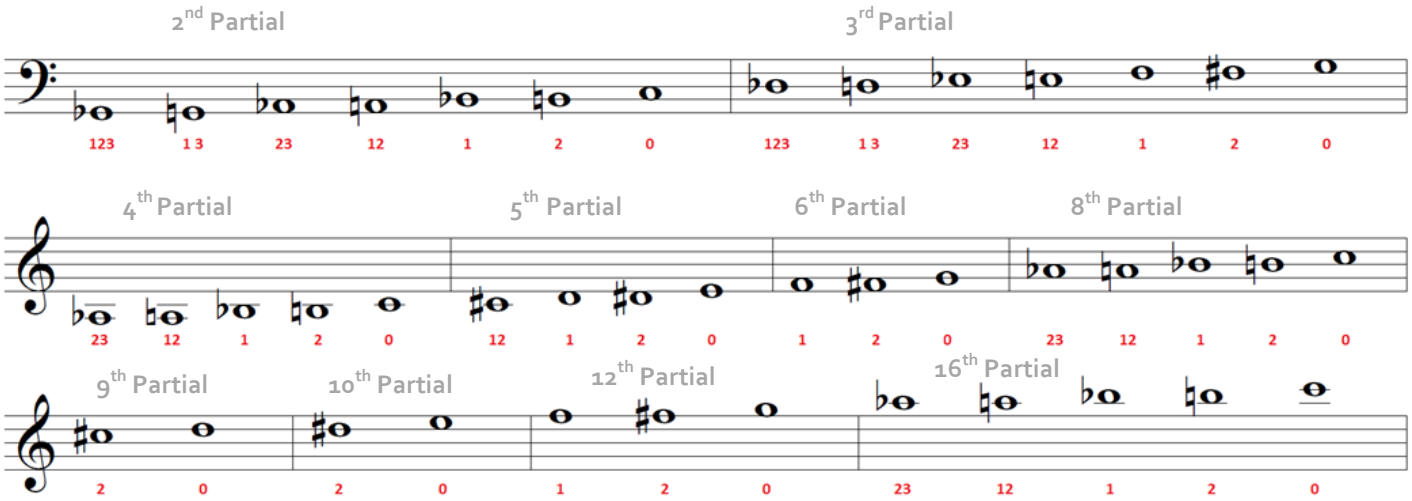

These descending chromatic scales are an excellent way to visualize each individual partial throughout the range of the horn in F. However, we're looking at far more notes than are actually used when playing. To make this diagram more useful, let's switch from the descending pattern of the seven chromatic fingerings to the *ascending* pattern.




Now that each partial is laid out in ascending order, we start to see more clearly how brass instruments are able to piece together their chromatic scales. Take a moment to consider how each partial connects to the following one. Some share *many* overlapping notes, while others share only a few. These overlapping notes are the origins of alternate fingerings. Notice that the 2nd and 3rd partials link perfectly together without any overlap!

## Building the Chromatic Scale with Partial Groups

As I said earlier, playing a chromatic scale with valves is not accomplished by repeating the *entire* sequence of seven chromatic brass fingerings over and over. That would generate something like the diagram we see above—not a proper, smooth scale of half steps. By selecting groups from each partial determined by the rules for *preferred* brass fingerings and the partials which are most in tune, we are able to piece together the standard chromatic scale one partial at a time.



Some of the more obvious differences are the omissions of the entire 1st partial (the fundamentals which are rarely played), the entire 7th partial (in which, due to the mathematics of the overtone series, every note is extremely flat), and the entire 11th, 13th, 14th, and 15th partials

Notice that each time the scale passes an *open* fingering, we are moving into the next partial. We then jump *back* in the ascending sequence of chromatic fingerings far enough to account for the number of notes in the next partial. The set fingerings in each partial group uses at least the 2nd valve alone and open fingerings. The open and single-valve fingerings are the most in tune. The other fingerings are all combinations of valves which cause an adverse effect on tuning (See page 28).

# Fingerings from Partial Groups

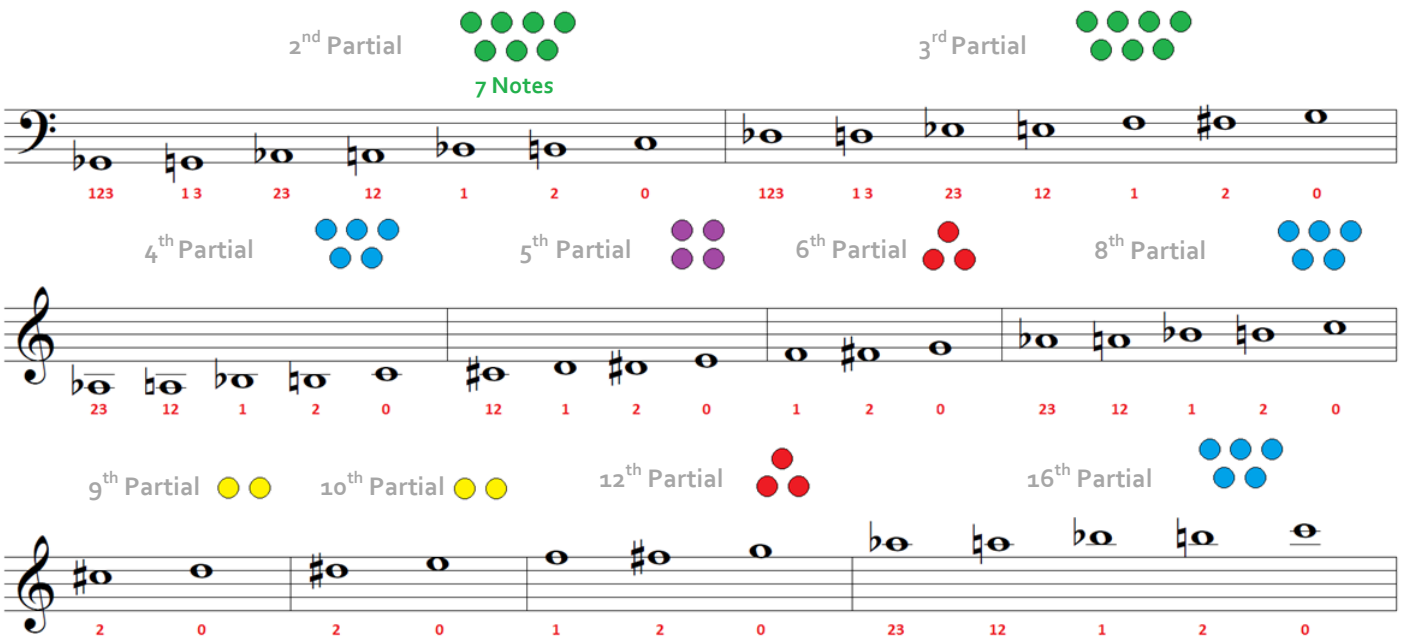
Now that we see how every partial grouping uses a predictable fingering pattern, we can memorize *chunks* of fingerings by simply knowing how many notes are in each partial group.

For example,

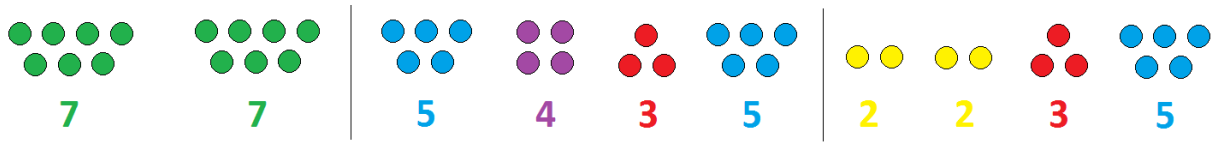
- A partial group with 7 notes uses the following fingerings: *123, 1 3, 23, 12, 1, 2, 0*
- A partial group with 5 notes uses the following fingerings: *23, 12, 1, 2, 0.*
- A partial group with 3 notes uses the following fingerings: *1, 2, 0.*

It helps immensely to be able to quickly recognize which notes are generated by the open fingering when using this system to remember fingerings (which should be no problem if you've mastered the overtone series!). In this way you can find the "top" of any group and work *down* the chromatic fingering sequence to figure out the fingering of any note you see on the page.

For some, the chromatic scale diagram on the previous page is enough to absorb and remember this partial grouping method. However, I have provided colored dots in the diagram below as an aid for visualizing and memorizing the number of notes in each partial group:



Here are those dots laid out in sequence on their own.




The dividing lines in the sequence indicate which parts of this pattern I think makes sense together. The two 7's are the lowest range of the horn from Gb to G. The 5, 4, 3, 5 in the middle bring us through the middle range of the instrument up to third space C. In my experience, the most useful part of this entire pattern is the last part on the right for the upper range of the horn beyond C. In a moment, I will explain that there is a quick trick for horn fingerings if you are already confident with trumpet fingerings. However, this trick is not nearly as helpful in the upper range. If you can remember that the last four partial groups have 2, 2, 3, then 5 notes respectively, the fingerings above third space C will always be right at your fingertips.

Following third space C, we move up chromatically:

- Partial group with 2 notes: *2, 0*
- Partial group with 2 notes: *2, 0*
- Partial group with 3 notes: *1, 2, 0*
- Partial group with 5 notes: *23, 12, 1, 2, 0*

Voila! The chromatic scale from third space C to C above the staff in a neat little pattern. I won't claim that the patterns in the partial grouping method are totally obvious or that seeing them once should be enough to remember them. Some study is required. However, I have experienced firsthand the usefulness of the partial grouping method for F horn fingerings, especially when remembering that last octave of fingerings from C to C.

Given enough time with the three diagrams in the last few pages, I expect you will be able to come up with the way of thinking about this pattern that works best for you. Remember, the partial grouping method and the overtone series are resources to make your life easier. They're fantastic shortcuts, but they aren't free! Spend some time dabbling in this material daily for a week or two and see if you can start to use these tricks to help both you and your students. Speaking of tricks, there are some even simpler systems for of working out horn fingerings *if* you have at least some brass fingering knowledge already.

# Convenient Relationships:
# Two Horn Fingering Tricks

## Bb Horn Fingerings

Up until now there has been a glaring absence of any information regarding Bb horn fingerings. As you may know, or may have read at the beginning of this manual, most horn players use a double horn. The double horn is a horn in F, but it includes extra tubing and a special thumb trigger. When the trigger is depressed, the air is re-routed through a shorter section of tubing that changes the instrument to a horn in Bb. When playing on the "Bb side", there are also three additional pieces of valve tubing to account for the new, shorter length of the instrument . Consider the 2nd valve which is designed to add enough tubing to lower the fundamental of the instrument by 1 half step. A *shorter* amount of tubing is needed on the 2nd valve to lower the Bb side 1 half step because the horn in Bb is a shorter instrument to begin with.

All minutia aside, there is nothing too complicated about learning the fingerings for the horn in Bb. Because we know the horn in Bb is *shorter* than the horn in F, we know that the pitch relationship when moving from F horn to Bb horn is a movement *upward* when we add the thumb trigger. The distance from F *up* to Bb is a Perfect 4th, and that interval defines the relationship between the two sides of the horn. If all of the diagrams and information about the horn in F presented in this document were transposed up a Perfect 4th, it would all be accurate for the Bb horn—the 7 fundamentals, the 7 overtone series, the 16 partials, and *all of the fingerings (except two)*.

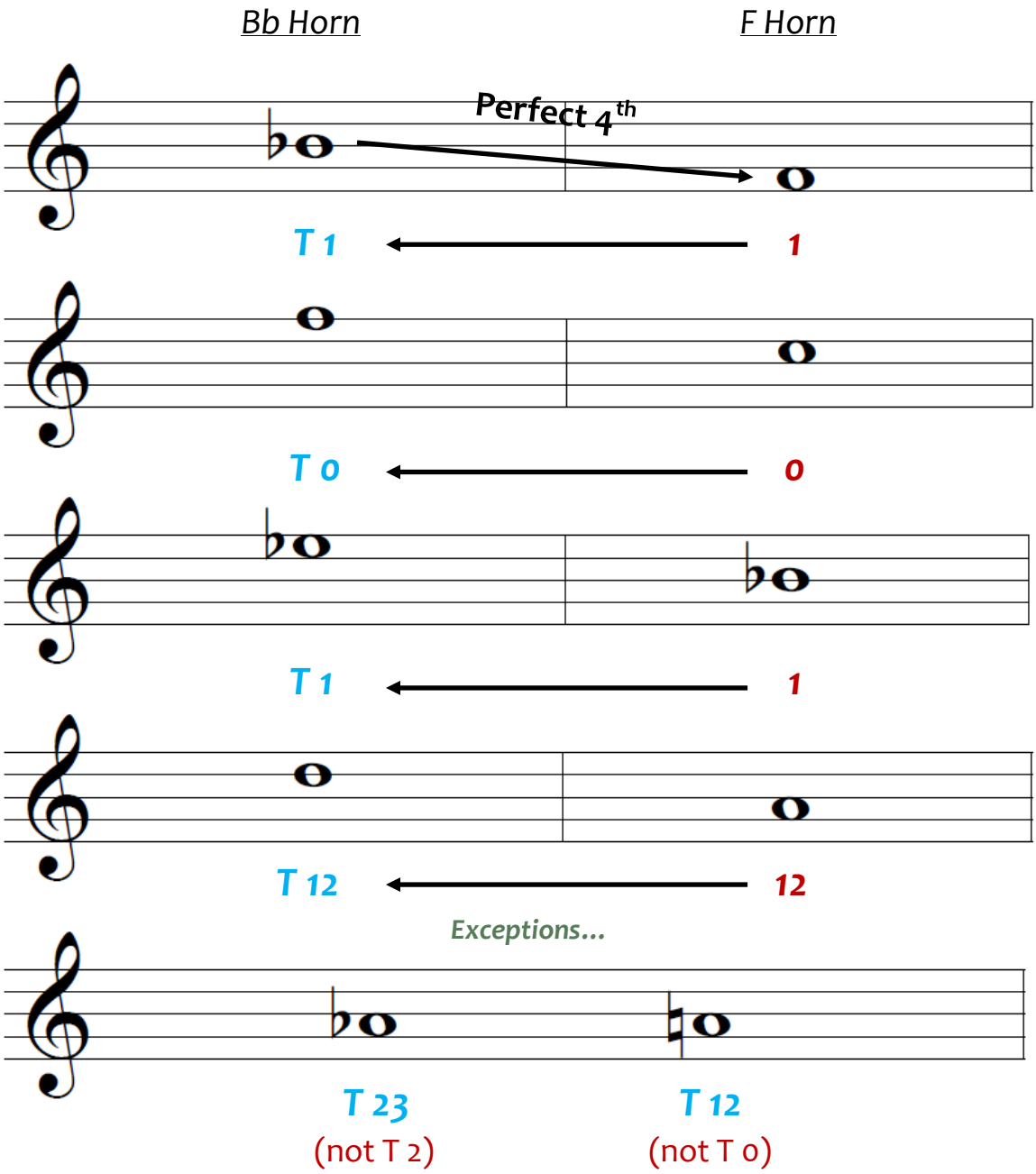
Because of this Perfect 4th relationship, we can use a simple trick to find the fingering for any note on a single horn in Bb or when using the thumb trigger on a double horn:

**To find a fingering for the horn in Bb, transpose the written note you wish to play down a Perfect 4th and use the F horn fingering for that note.**

*Exception: The only exception to this rule is second space Ab and A natural. Using this Perfect 4th trick results in T 2 for Ab **(T = thumb, for double horn)** and T 0 for A natural. Standard practice is to play these notes with T 2 3 for Ab and T 1 2 for A natural.*

*Examples on the next page...*

# Bb Horn Fingering Trick Examples



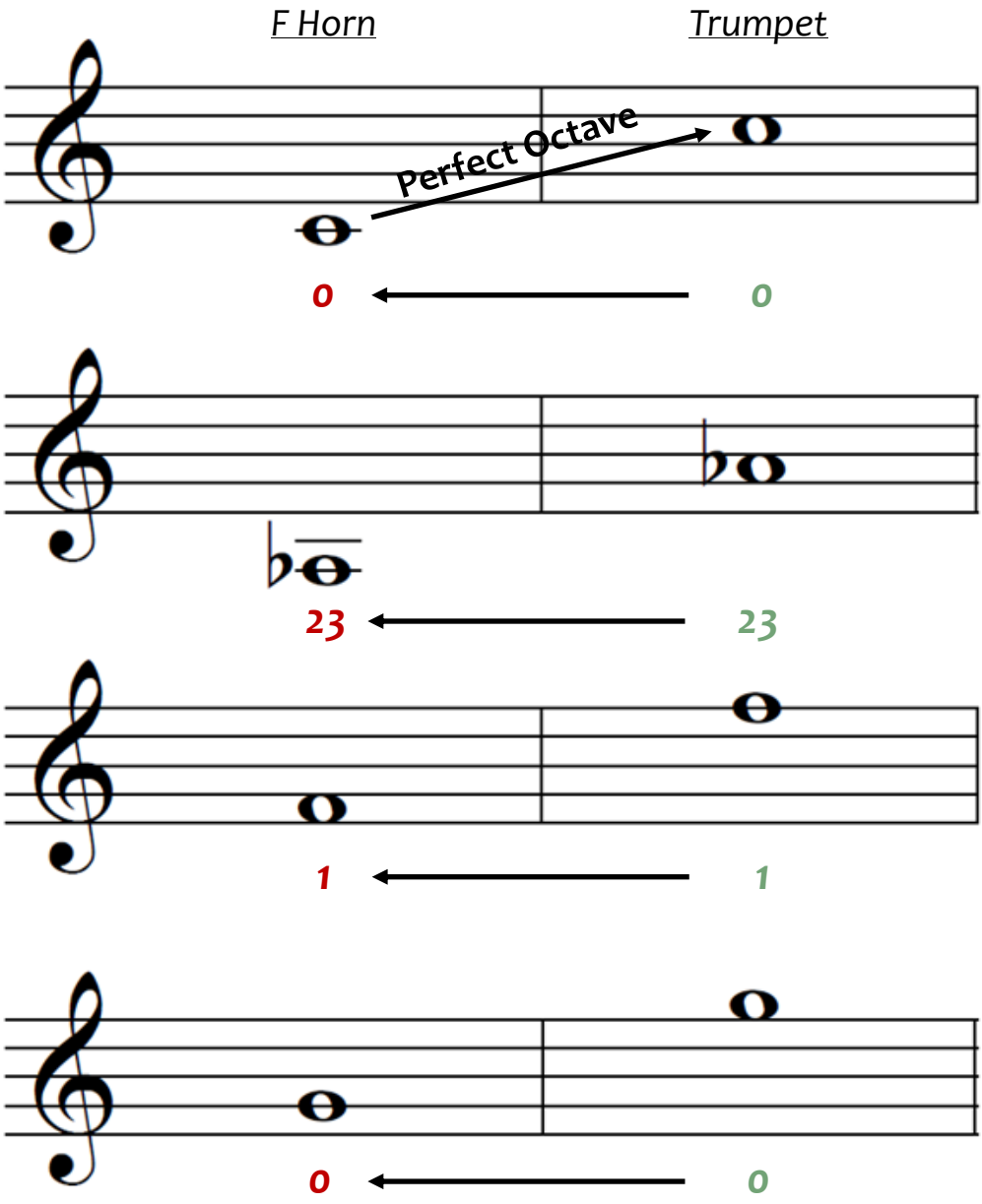

You now know the trick for finding any fingering on the Bb horn (or the Bb side of a double horn). This trick does require that you already know the fingerings of the F horn. What if you're still trying to learn your F horn fingerings? If you know trumpet fingerings, you're in luck!

# Relationship Between Horn and Trumpet Fingerings

Every brass instrument uses the overtone series in order to build a full chromatic range of notes. This means that there are set relationships to be found between every set of brass instrument fingerings. Horn in F and horn in Bb relate to the trumpet according to the following rules:

**To find an F horn fingering, transpose the written note up one octave and use the trumpet fingering for that note.**

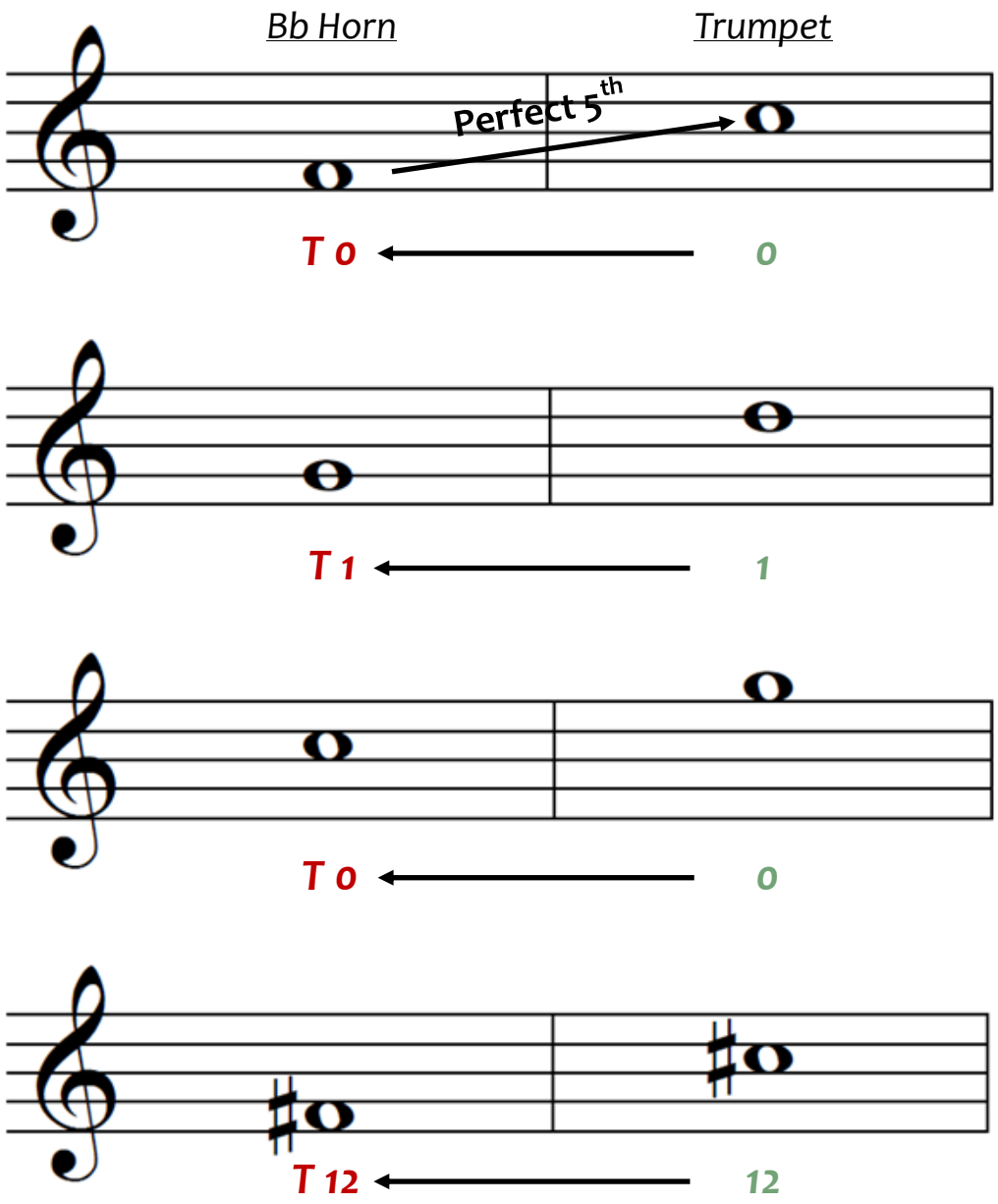
## F Horn/Trumpet Fingering Trick Examples



**To find a Bb horn fingering, transpose the written note up a Perfect 5th and use the trumpet fingering for that note.**

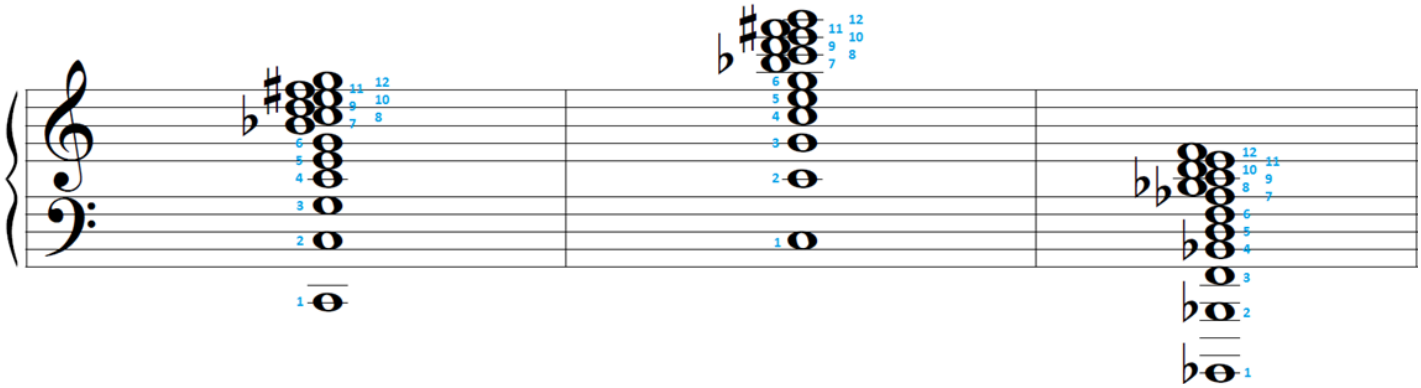
*Exception: The same exception to second space Ab and A natural is true for this trick too. Using this Perfect 5th/ Trumpet fingering trick results in T 2 for Ab (T = thumb, for double horn) and T 0 for A natural. Standard practice on Bb horn is to play these notes with T 2 3 for Ab and T 1 2 for A natural.*

## Bb Horn/Trumpet Fingering Trick Examples

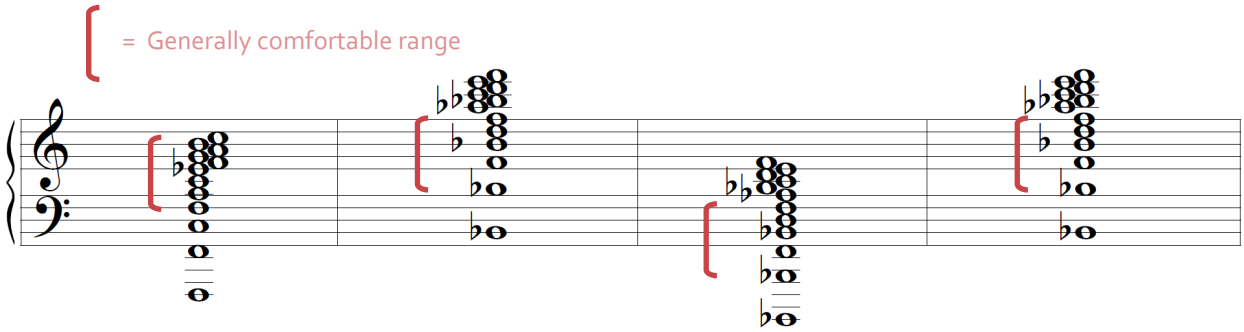


# **Trouble Fitting In:** Why Horns Aren't Like Everyone Else (in the Brass Family)

Before leaving this extensive portion of the manual on fingerings, partials, and the overtone series, I want to be sure I address a unique aspect of the horn's fingering system that caused me much confusion and frustration as a new band director. Coming to teaching as both a trombone and euphonium player, I found learning tuba and trumpet fingerings a snap. All the same partials lined up on all the same places on each instrument. But the horn just didn't cooperate. I couldn't figure out how the horn related to the other brass instruments and their fingerings. I didn't know any of the information you now know (assuming you've read the previous sections!). Fortunately, now that I understand the overtone series and have learned my horn fingerings, explaining why the horn doesn't seem to "match up" with other brass instruments is relatively simple. Take a look at the overtone series on horn, trumpet, and tuba for the open fingering:



At first glance, each looks to be quite different. It may not be immediately apparent why the trumpet series and the tuba series relate to each other so easily. You may also be rightly suspicious about the effect of transpositions in this visual comparison. Take a look at what happens when we transpose to concert pitch. The additional measure on the far right is the tuba series transposed up two octaves.

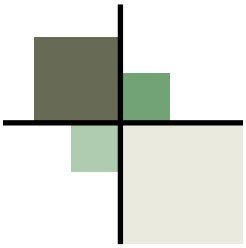



Suddenly the mismatch becomes clear. Though trumpet and tuba (and trombone and euphonium for that matter) sound in different octaves, they share a fundamental pitch (Bb Concert). Because of this, these instruments feel more or less the same to play, at least as far as partials are concerned. This is also a big reason why Bb Concert gets so much use in band. It's a solid note on an open fingering for all the brass—except the F horn.

The brackets on the diagram indicate a roughly 1 and ½ octave *comfortable* range on each instrument. Notice that the comfortable range for the horn lines up about a Perfect 4th away from the trumpet while the comfortable range of the transposed tuba series lines up exactly with the trumpet. A Perfect 4th is about as far away from "lining up" with the tuba and trumpet as one could possibly get, barring a frightening and awkward tritone separation (being an octave apart in this type of comparison is essentially the same as no distance apart).

The bottom line is that most brass instruments are designed to use just the first 9 partials to cover the majority of their playing ranges. The horn makes infrequent use of the 2nd and 3rd partials compared to how often those partials are used by the other brass instruments. This means the 4th partial on the horn feels similarly comfortable to the 2nd partial on other brass instruments (this point is, of course, a subjective one).

A most important take-away from these diagrams is not just understanding *why* this mismatch exists between the horn and other brass instruments, but also understanding the effect this built-in preference for higher partials has on the beginning horn student. When first learning the horn in F, most students begin with the 4th, 5th, and 6th partials (C, E, and G) because they fall in the comfortable range of the horn. These partials are only a Major 3rd and Minor 3rd apart, far more closely spaced than the Perfect 5th and Perfect 4th between the 2nd, 3rd, and 4th partials learned by other brass beginners. This presents one of the many unique challenges we must learn to overcome when trying to teach the French horn. From this point forward, this manual will attempt to identify many more of these educational challenges and provide knowledge, practical solutions, and tools to help you continue your journey toward becoming the kind of expert instructor we all wish to be.



# Part Two: Teaching the Horn

## Picking Your Horn Players

It has been well established that playing the horn is no small feat. It has inherent difficulties that require a special kind of student who will go the extra mile to learn this wonderful instrument. A basic buzzing aptitude test is insufficient to really identify who qualifies as a horn player, whether they are brand new to playing an instrument or considering a conversion from something else.

### Physical Considerations

The horn is a very long instrument, which means a lot of tubing weight. Beginners need to be large enough that they can handle the weight of the horn without propping up the instrument on their leg. Consider both strength and height. Physical size is a major determining factor when selecting an instrument for the beginner (single F or Bb horn, or a double horn). Supporting the horn on the leg will lead to posture problems and severely impede proper alignment of the embouchure and mouthpiece. Ideally, students should have hands large enough to wrap their whole hand around the main left-hand tubing area. The mouthpiece of the horn is small, which means smaller lips are preferable. Check students' teeth by having them smile and consider whether the teeth will be able to support the embouchure where the rim of the mouthpiece meets the lips.

### Intellectual / Aural Skills

A major challenge of horn playing, especially for the beginner, is the close spacing of the partials. Feeling out the right partial is not as easy as it is on other brass instruments. The ideal horn student is self-motivated, a problem solver, curious about the horn, and able to listen to and replicate pitches. Sing about four different pitches moving in skips and steps to see how quickly or easily your potential horn player can sing them back to you. If they are consistently unsure or unable to repeat any pitches accurately, they will find the horn very difficult and frustrating to play[6].

### Conversions from other instruments

Due to the similarities in shape and size between trumpet and horn mouthpieces, many directors choose to pull from the trumpet section when converting current students to horn players. This is not necessarily a *bad* choice, but it is far less ideal than many teachers think. The problem here lies in the differences between trumpet and horn embouchure, and the difficulty involved with making subtle embouchure changes. The trumpet embouchure is ½ top lip, ½ bottom lip while the horn requires about 2/3 top lip and 1/3 bottom lip. The trumpet embouchure also tends to be tighter in beginners, and horns need to be able to play lower notes with a more relaxed embouchure focused on firm corners and the eye teeth (aka the canines) [6]. While all these adjustments are possible for trumpet players to make, in practice it is difficult for beginners to get away from the original trumpet embouchure that was "working" and train themselves consistently to build a close-but-not-the-same horn embouchure. Recommendations for better instrument conversions include moving flutes to horn (due to similar embouchure formation) or starting aspiring horn players on percussion and moving to the horn later[9].

# Equipping for Success

## Selecting an Instrument

For the beginning student, it is common to begin with a single F horn. Why horn in F rather than horn in Bb? First of all, the F horn is the primary instrument for which parts are written these days. The F horn also possesses the most characteristic tone and demands the formation and development of a proper embouchure[6].

Consider the fact that a full size double horn is about 8 pounds! That's a whole lot of instrument for a high school or adult player, let alone smaller beginners. A single horn has significantly less tubing and is far easier to hold in proper playing position out and away from the body.

An additional advantage of the single horn is simpler fingerings. If you've read through or even looked at the first part of this manual, or ever been confused by horn fingerings in your own study, you know that horn fingerings can be hard to master. Trying to use both sides of the double horn right off the bat can be too confusing. If the school can only provide double horns, simply have beginners ignore the thumb trigger for a year or so and learn single F horn fingerings. As with any instrument search, look for instruments built by trusted brands in good condition.

## Selecting a Mouthpiece

Recommendations: Farkas MC (Medium cup), Conn #2, Bach #7

Keep in mind that a mouthpiece that works for one student will not necessarily work for any student. Once a mouthpiece is found to fit for a student, *stick with it!* Be sure your horn players have appropriate mouthpieces that are not dinged, dented, and especially not damaged on the playing surface. What you should know about horn mouthpieces[6]:

- Wider rims allow for better endurance but also make the mouthpiece somewhat less responsive.
- Narrower rims are not as good for endurance but provide better accuracy.
- The inside diameter of the rim (size of the opening) affects the playing of different ranges. A wider diameter makes lower notes easier while a smaller diameter helps with high notes.
- Deeper cups lead to darker, "fatter" sounding low notes while a more shallow cup makes high notes easier and generates a brighter tone.
- A "bowl" shaped cup creates a euphonium-like sound while straighter sides provide a more horn-like sound.

> *"Lots of horn players, way too many, seem to not know what each slide on their horn does, some to such an extent that they don't even know which slide is the main slide. There is an easy way to figure it out; just take the slides out and see which notes they impact. Removing the main slide will make it so you can't play any notes; removing an F horn tuning slide will make it so only the B-flat horn works, etc. Put some of your problem solving skills into it and learn what each slide does, don't just guess at something this important."10*
>
> *—John Ericson*

# Posture and Holding the Horn

## Posture

A critical factor in establishing proper horn posture is to be clear about whether the horn should be played **on-leg** (with the bell resting on the leg) or **off-leg** (with the instrument suspended away from the body). For the purposes of discussing basic posture, and for beginners in almost all cases, off-leg playing is the best choice.

It can be very helpful to have a beginner stand when first learning to hold the instrument. This promotes good upper body alignment and teaches them to support the instrument off-leg.

In the sitting position, the upper body should remain aligned as it would be while standing. Encourage sitting toward the front of the chair ("hard on the bones") and avoid leaning forward (sitting on the underside of the thighs) or leaning back (sitting on the glutes). With an upright sitting posture, a student should "allow" his bones to hold him upright rather than tensing muscles to "hold" his body up straight. Feet flat on the floor may work fine, but the knees must be at a downward angle from the hips. Taller students, or students sitting in very short chairs, may need to kick their feet back or cross their ankles to achieve this. The knees-below-hips requirement is essential for proper breathing.

## Right Hand Position

Ensuring proper right hand position is not only a playing-quality issue, but also a health and safety issue. Improper hand position can lead to injuries in either hand when it leads to bearing the weight of the horn in the wrong places on the body.

- Create a flat blade with the right hand, closing the thumb naturally against the index finger (not curled under, and no gap between finger and thumb).

- Keeping the fingers straight, allow the first knuckles of the hand to relax, creating a natural angle between the palm and the fingers. Do not create a "claw" shape with the hand or allow the fingers to curl. The thumb should be in contact with the index finger.

- Now turn the hand slightly clock-wise so that the pinky is closest to the floor and the thumb and index finger are on top.

- Without changing this hand position, insert the right hand into the bell of the horn so that the back of the fingers hug the right in-side of the bell. The top of the thumb should contact the metal of the bell without coming away from the hand.

- The horn will rest along the index finger and partially on the thumb when the right hand is positioned properly.

- The first knuckles should be visible and placed at the point where the bell steeply inclines toward the inside of the instrument. Horn teacher and professional player Roxanne Haskill calls this spot the "ring of fire"[9]. Never hurts to be memorable!

- The hand should be positioned so that the palm could swing closed like a gate over the opening, which it actually does in proper stopped horn technique.

- Remember, teaching right hand position is not a one-and-done process. Check the right hands of your horn players often and look for these common problems:

    1. The hand is too far into the bell (knuckles disappear). Back out so the knuckles are on the "ring of fire". Students with smaller hands are prone to this problem.
    2. The fingers have curled into a "claw" hand.
    3. The palm is accidentally covering too much of the opening (sagging, lazy wrist and fingers, often due to tiredness). Rebuild the hand shape before putting the hand back into the bell.
    4. The whole hand has rotated so that the palm is up. Get the index finger and thumb back into a flat surface at the top of the hand. (Some advanced players use a palm-up position when playing on-leg, but I would not recommend it for students.)




# Left Hand Position

The horn is both heavy and large and can be difficult to grip, especially for younger players. Help your horn students succeed by ensuring their left hands are in the correct position and that they are not regularly struggling to hold up the instrument.

- The left hand, arm, and shoulder should bear much of the weight of the horn.

- Place the pinky in the hook, not on top as a player would on a trumpet. The pinky needs to help hold up the horn and keep it in place.

- The thumb goes under the main tubing, bringing the horn to rest in the webbing between the thumb and first finger. Be sure the student grips the horn in the soft, fleshy part of the hand.

- On a double horn, the thumb should rest on the thumb trigger.

- However, if the player is ignoring the Bb side of the double horn (as I recommend beginners do for at least their first year of playing), the thumb can be placed in front of the trigger and simply wrapped around the tubing. This is very similar to the thumb position for a single horn when there is no trigger or thumb rest built in.

- To test the security of the left hand grip, the student should be able to hold the horn with both the thumb and the pinky extended away from the instrument (the thumb still under the tubing). Be careful not to drop the instrument when testing this, and remind the student not to try holding the instrument this way while playing!

- The remaining three fingers lay naturally onto the valves maintaining a curved hand shape. Flat fingers impede finger facility and promote tension in the left hand.

***In the event that holding the horn with the left hand is too difficult, there are support devices available to help. One is a left hand holding strap (Osmun music makes a good one). A more extreme solution is the Hornstick (hornstick.nl/en/) which attaches to the instrument and completely props its weight on the player's right leg.***

# Direction of the Leadpipe

The angle and direction of the leadpipe is critically important for proper embouchure development. Players should never have to *move to the mouthpiece* in order to play. Proper posture and hand position must bring the mouthpiece to the embouchure and angle the leadpipe slightly downward. A horn player who appears to be leaning back or craning his/her neck to play the instrument will have all kinds of problems that can be fixed by simply holding the instrument correctly. The chair a student plays in, whether it's in the band room or at home during practice, either helps or harms proper posture and horn position. Be sure students have enough room to their right for the bell of the horn and are not being forced to lower it or prop it on their legs due to space constraints.

- The leadpipe should always run along the center of the player's body, pointing directly toward the shaft of the music stand at a downward angle (assuming the stand is directly centered in front of the student).

- The chin of the horn player should tip slightly down when playing. The combination of this facial tip and the angle of the horn should be at least 30 degrees downward.

- The horn is a heavy instrument, and as students get tired their upper body posture is likely to crumble.

- Check that the student does not lean to one side or the other.

- Check that the horn has not "pivoted" to one side or the other pointing the leadpipe in the wrong direction.

- Move the right arm in order to reposition the instrument. The direction of the leadpipe is a dead giveaway.

The ultimate goal when it comes to posture can be summed up as helping a player look good. If a student looks uncomfortable or awkward, they won't tend to sound very good either.

# Making a Sound on the Horn

## Breathing

If sitting, ensure that the knees line up below the hips before working on breathing. Emphasize that while the breaths taken to play the horn are much larger than normal breaths, the focus should still be on relaxed, natural inhalation and exhalation in order to avoid excess tension in the body and throat. It's like normal breathing, but *much* more air is involved.

Practice breathing some with and some without the instrument. Breath should flow in and out through the mouth without much noise to ensure the throat is relaxed. Draw the student's attention to the "inflating" or "stretching" sensation in the lower body during a deep, relaxed inhale. When playing the horn, always breathe in as much air as possible. There is no holding of the breath after a big breath is taken. Always proceed directly from the inhale to the exhale. Practice this flowing breath with a steady beat (8 beats in, 8 beats out for instance) to increase focus on breath control.

Students should know that the horn is 12-16 feet long (depending on construction and which valves are pressed). They are responsible for getting all that air moving by blowing *all the way through* the instrument when they play. If a student is preparing to play the horn for the first time, have them take a deep breath and exhale into the leadpipe (without a mouthpiece) while imagining the air spinning through the instrument and out of the bell.

Proper breathing should be reinforced regularly in full rehearsals. Practice relaxed, full inhaling and exhaling with your whole band, but be sure to check on individual players. Help solve breathing problems, reduce tension in the body, and discover misconceptions students may have about breathing.

## Embouchure

Without the development of a good embouchure, students will be unable to advance to intermediate or advanced levels of playing which demand the higher and lower ranges of the horn more often. The basic horn embouchure is just one of three or four embouchure variations horn players must learn to achieve accuracy and characteristic tone in every register.

Just as proper posture is a prerequisite to any lesson or practice session focused on breathing techniques, the proper positioning of the instrument, and especially the leadpipe, are prerequisites to developing proper horn embouchure. Insist on the correct positioning of the instrument and never let a student "go *to* the mouthpiece". Always bring the mouthpiece to *you*.

# Teaching the Horn Embouchure

The placement or "setting" of the lips can be achieved in a number of ways. Often, the syllable "EM" is employed to bring the lips together and set them in the proper way. The speaking of the "EM" sound must be physical enough to engage the lip muscles, but not so exaggerated that the lips are clamped shut. Try having the student say "EM" three or four times in a row with a little more vigor each time[11]. Another approach is to have the student recite the alphabet and "freeze" when they get to the letter M[9]. This should also result in teeth which are separated and set correctly inside the mouth.

Another description of proper horn embouchure is 50 percent smile and 50 percent pucker with the player focusing on the eye teeth (canines) and firm corners[9] . Varying the language used to describe embouchure can especially help a student re-learning the embouchure or trying to overcome deeply ingrained bad habits.

Practice taking a proper, full, relaxed breath and exhaling the air through the set lips. A buzz may or may not occur. Some recommend spending enough time on this step to achieve a buzz of the lips before using a mouthpiece. This helps students understand that horn playing depends on vibrations of the lips[11]. In order to achieve this, the students should moisten the lips, breathe, set the lips, then let a sudden puff of air out. Do this multiple times with more vigorous air each time, demonstrating for the student as needed to help provide a goal. It may help to place fingers over the lips in a V shape or simply use the mouthpiece to get the buzz going[11].

The initial placement of the mouthpiece is critical for a beginner. Once a spot is chosen, the student will find that same "groove" over and over. Have the student set his or her lips, then place the mouthpiece in the center of their lips so that it covers 2/3 top lip and 1/3 bottom lip. Place the mouthpiece for the student a few times, then allow them to try placing it correctly. The angle of the mouthpiece should be just slightly downward. Ask the student to dip the chin slightly below level to establish what will eventually be the correct angle of the leadpipe. Breathing through the corners of the mouth, have the student set the lips with the mouthpiece in place and let the air out quickly to find a buzz. Try this multiple times if necessary while checking the embouchure. Remove and then replace the mouthpiece repeatedly so that you can see the formation of the lips.

At this point it is typical to have a student firm up the lips and speed up the air to produce a "siren" on the mouthpiece. This is an excellent activity with the horn mouthpiece and the perfect time to go a little further to introduce a horn-specific embouchure skill.

## *Jaw Flexibility*

Because the horn covers such a large range, there are variations of the embouchure that help a player achieve the lower and higher registers. A key component to these variations is a flexible jaw that pivots down and out or up and in (for lower or higher notes respectively). Establishing a flexible jaw is important for any horn player, and doing this right off the bat will help the student remain flexible in the future. Try some or all of the following techniques[11]:

- Use a chewing motion while buzzing to experiment with the effect of the jaw on the buzz. This generates a sound similar to the mouthpiece siren.
- Say or imagine (while playing) vocal syllables: "ee" for the high register, "oh" for the middle register as the jaw moves downward, and "ah" for the low register moving the jaw further down and out.
- If the student can whistle, try whistling high and low using these different vocal syllables and jaw positions.

Jaw flexibility is the only way to achieve the complete range on the horn with the proper embouchure. Otherwise, students are forced to "stretch and pucker" or apply excessive pressure to the lips when trying to play upper or lower register notes[11].

***Roxanne Haskill, horn teacher and professional player, compares the changing of the horn embouchure required to play in each register to "shifting gears" in a car[9]. Have your intermediate and advanced horn students label in their fingering charts where they need to "shift gears" with their embouchure.***

- **Pedal Embouchure**: Jaw low, lips back and held apart with much slack. For lowest notes. [First octave starting from 1st line bass clef Gb]

- **Middle Embouchure**: The standard embouchure described in this section of the manual formed with the "EM" syllable. [G below middle C to 4th line D]

- **High Embouchure**: A much firmer, tighter control of the aperture allowing a concentrated air stream. Imagine the head of a pin as the aperture. [Notes above 4th line D]

## *Next Steps*

- Introduce articulation by having the student say "too, too, too" or "doo, doo, doo" and direct their attention to the tip of the tongue touching up behind the front teeth. Make the "too"/"doo" sound with air only and be sure the student blows a continuous airstream rather than "puffing" (breathing or stopping the air between each articulation).

- I remind my students not to "tongue with the embouchure." The lips remain set without any sudden tensing when the tongue articulates.

- Continue to check that the mouthpiece is being placed on 2/3 top lip and 1/3 bottom lip.

- Plug the mouthpiece into the instrument, establish proper posture and hand position, ensure the leadpipe and head are at the appropriate downward angle, and try a loud buzz to play. Recall the necessity of blowing *all the way through* the very long tubing of the horn for proper air support.

# Common Problems with Horn Embouchure[11]

## *No tone, rushing air*

In this case, there may be too much space in the aperture or too much pucker in the lips. Dry lips or a lack of air can also cause this problem. Re-form the embouchure, have the student lick his or her lips, and review breathing exercises.

## *Airy tone*

Usually the result of lips which are not firmly set, lips puckering too much, or an aperture that is much too large. Have the student say "EM" again and watch to see if the embouchure deforms when the student goes to play on the instrument.

## *Tight, thin tone*

The tension you hear in the sound is a reflection of the excess tension in the lips (or sometimes the entire body). The lips may be pinched together, formed in a hard "oo", or the throat may be tense and constricted. Take a moment to help the student relax, then re-form the embouchure while avoiding any unnecessary tension. Check for a "smiling" embouchure that is too spread.

## *Completely stopped sound*

This can result when the lips are extremely tight or pinched together or the throat is closed/blocked. Also occurs when excessive mouthpiece pressure is applied by pulling on the pinky hook. Go back to natural breathing techniques to help the throat relax and re-form the embouchure with a goal of firmness rather than tightness.

## *Puffed cheeks or inflated upper/lower lip*

Indicates weakness in the embouchure. The student may not be holding the lips set after forming the embouchure. In other words, the muscles in the face are all going slack when the student begins to play. Try re-forming the "EM" with the lips and blowing air out through the embouchure without the instrument or mouthpiece. Encourage firmly holding the corners in place while forming a 50 percent smile, 50 percent pucker embouchure focused on the eye teeth (canines).

Once playing on the full instrument, a beginner should use 2nd line G as a starting note. Middle C is a bit too low and unstable to serve as a good embouchure-training pitch right away[9].

# Common Problems with Horn Embouchure (Examples)

Correct embouchure

Embouchure too tight

Smiling embouchure

Lips rolling over teeth

Embouchure too loose

Too much pucker

Mouthpiece too high

Mouthpiece too low

Mouthpiece off-center

Upper/lower lips inflated

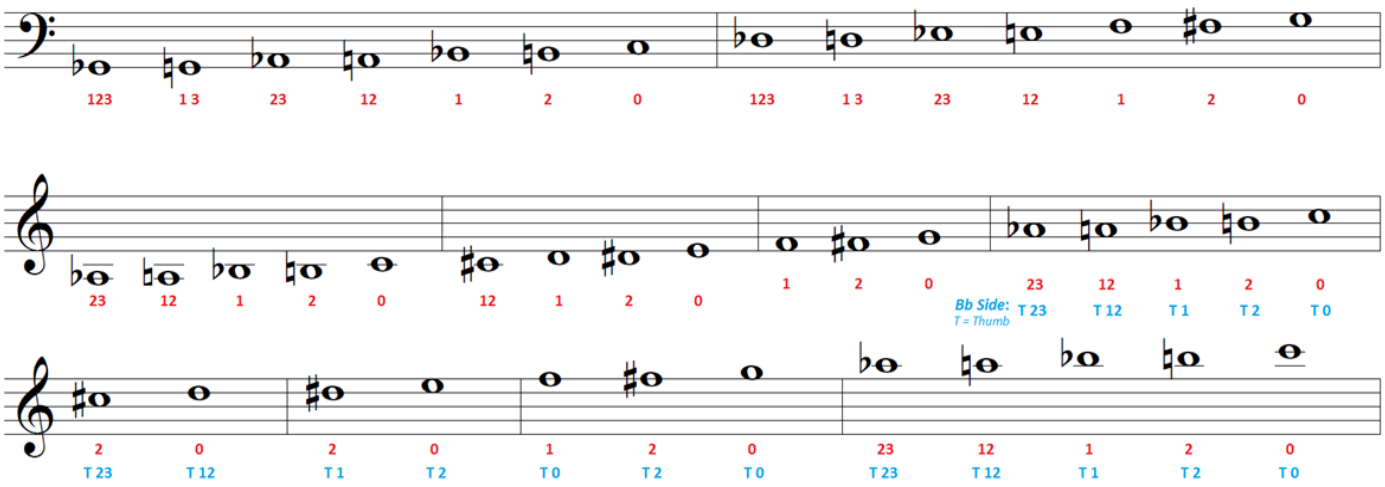
Cheeks puffed

# Horn Fingerings

Because of the exhaustive discussion of fingerings in the first part of this manual, I will simply provide a few tips. Also, below is a simple fingering chart that includes the fingerings from the Bb side of the double horn commonly used in place of F horn fingerings.

- Use a single F horn for total beginners, or avoid the thumb key on a double horn (see page 51). Students can pick up Bb horn fingerings later once they already know how to play.

- Educating your horn players about the overtone series at the right time is very beneficial for their understanding of partials. Early on, consider sharing some of the basics like the size of the intervals between the 4th, 5th, 6th, and 8th partials (even if you don't use those labels or proper interval terms). For students who have been playing two or three years, seeing the partials "stacked up" all at once can unlock not only a better understanding of the theory behind partials, but also a greater confidence in finding the correct partial by feel.




## Pitch Tendencies

Assuming you have read about and basically understood the overtone series (pages 30 and 31), we now have two sets of information we can use to predict the pitch tendency of any note on the horn. There are four fingering combinations which affect pitch, and there are four sets of related partials which are predictably sharp, flat, or in tune.

# Predicting Brass Pitch Tendencies

## *Valve Combination Tendencies*

Due to unavoidable imperfections in the three-valve system, the following fingerings *always* impact pitch in the following ways:

- 1st + 2nd valve combination is slightly ***sharp***
- 2nd + 3rd valve combination is slightly ***flat***
- 1st + 3rd valve combination is ***sharp***
- 1st + 2nd + 3rd valve combination is ***very sharp***

} *These fingerings are very infrequently used on the horn except in the lowest register.*

## *Overtone Series Tendencies*

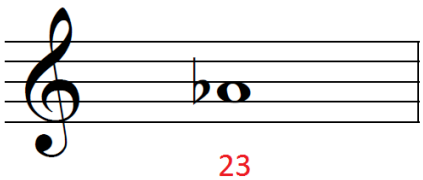
The following sets of partials are related to one another in the overtone series. Because of the way the overtone series occurs in nature, each related group has a predictable pitch tendency (see pages 33 and 34 illustrations of these related groups):

- Partials **1, 2, 4, 8, and 16** are all octaves of the fundamental. These partials are **in tune**.
- Partials **3, 6, and 12** are all octaves of the 3rd partial. The 3rd partial is always the "fifth" of the fundamental. These partials sound **sharp**.
- Partials **5 and 10** are both octaves of the 5th partial. The 5th partial is always the "third" of the fundamental. These partials sound **flat**.
- Partials **7 and 14** are both octaves of the 7th partial. The 7th partial is always the "flat seven" of the fundamental. These partials sound ***very* flat**.

## *Putting it Together*

By combining our knowledge of valve-combination pitch tendencies and related-partial pitch tendencies, we can predict the pitch of any note on the horn fairly quickly. For most, the more challenging piece of this puzzle is determining which partial a given note is from. For help memorizing which notes are from which partial on the horn, see "The Partial Grouping Method" on pages 38-40.

## *Examples:*



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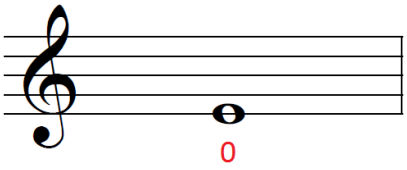
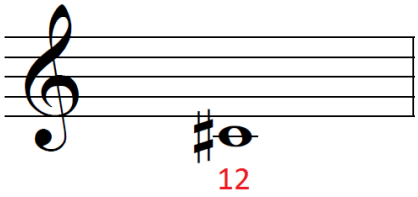
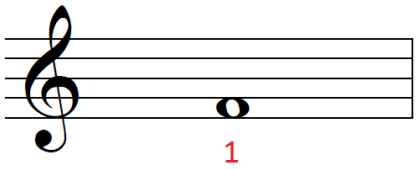
This A flat is a part of the 8th partial, which is generally in tune, and uses the 2nd and 3rd valve combination, which is flat. The resulting pitch tendency is **flat**.




This E is a part of the 5th partial, which is flat, and uses the open fingering, which is in tune. The resulting pitch tendency is **in tune.**




This C# is a part of the 5th partial, which is flat, and uses the 1st and 2nd valve combination, which is sharp. The resulting pitch tendency is **in tune**. (The opposing tendencies of the valve combination and the partial mostly compensate for one another)



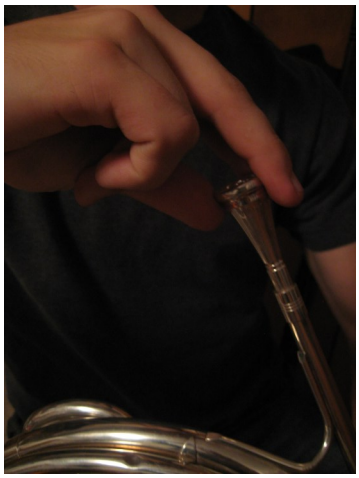

This F is a part of the 6th partial, which is sharp, and uses the 1st valve fingering, which is generally in tune. The resulting pitch tendency is **sharp.**

For more detailed information about the overtone series and brass pitch tendencies, check out "Partial To the Winds" (www.bandworld.org/pdfs/partialToTheWinds.pdf) and the video series that goes with it (www.bandworld.org/html/OvertoneIntro.html).

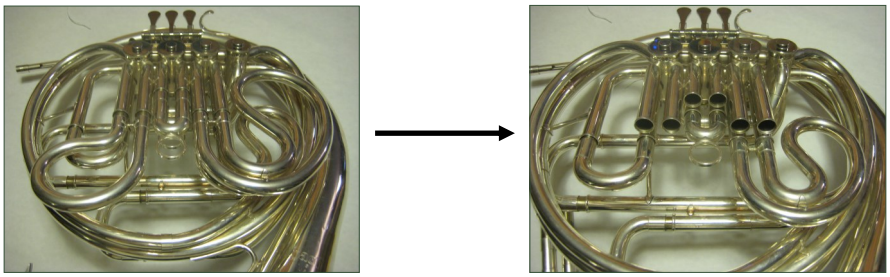
# Instrument Maintenance

## Assembly and Disassembly

Students must be informed about proper maintenance practices from the first time they take a horn from its case. Start by teaching appropriate assembly and disassembly steps.



- Firmly grasp the instrument when taking it out of its case.
- Use only finger pressure and a quarter-twist to secure the mouthpiece into the leadpipe.
- Keep the horn free of fingerprints and residue when putting the instrument away. Be sure you have a soft polishing cloth and use it daily.
- If the mouthpiece gets stuck, do not try to force it out by using arm strength! Have a band director or instrument technician look at it and use a mouthpiece puller if necessary.
- Always empty the main tuning slides and the valve tuning slides both <u>before</u> and after playing. To remove water which doesn't seem to be inside a tuning slide, hold the instrument out with the valves away and "turn the car to the right" imagining the horn as the steering wheel. Some water may exit the bell, and more may collect in the main tuning slides[9]. Remember there are two sets of valve tuning slides on a double horn—one set for the F horn and one set for the Bb horn. Remove the F horn valve tuning slides to access the Bb horn set.

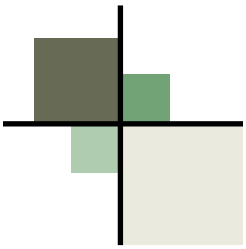


F

- Students with "screw bells" (detachable bells) should take their time both when assembling and disassembling the instrument. Jamming or otherwise damaging the screw bell threads can lead to very costly repair work. Also, it is recommended that the threads remain dry and clean of any oil or cream product[10]. While these lubricants can help for a while, they also inevitably collect dust, dirt, and sometimes fuzz from the inside of the case. This gunk must later be cleaned out and can cause the bell to stick in place. If lubricant is needed, clean and dry the threads and run a graphite pencil over them (graphite is also sometimes used to lubricate saxophone necks).

# Keep up With Regular Maintenance

- The French horn requires frequent lubrication in a number of areas. Refer to page 12 for full instructions.
- Address broken solder joints as soon as possible to prevent further broken joints and additional damage or bending of the tubing.
- Avoid leaving the horn in a hot car or in the trunk of a vehicle. Extreme hot and cold can wear down or damage brass instruments.
- Use a mouthpiece brush and warm, soapy water to clean the mouthpiece at least once a month.
- Flush the horn with water at least once a month. Dust, dirt, and even pieces of food which make their way into the horn are what cause corrosion. Use a snake brush to clean the leadpipe and tuning slides before your last flush with water.
- Give the horn a full bath at least once every six months, preferably every three. If you (the teacher) are the one bathing the horn, consider disassembling the rotary valves so that they can be removed for better cleaning access (see pages 13-16). Consider showing trustworthy advanced students how to remove rotary valves themselves.
    - ◊ Use mild soap in the bath water. Many technicians and musicians swear by Dawn dish soap. Harsh cleaners can and will strip the lacquer off the instrument. Let the horn dry out inside before putting it back together.



# Developing as a Horn Player

Due to the importance of partial control when playing the horn, it is very important for horn players to develop good flexibility and confident tone. To make matters more challenging, composers tend to task the horns with playing harmony parts which do not always sound melodic or intuitive.

There is a vicious cycle when horn players feel afraid of wrong notes. I have found that when some students worry that they will miss a partial, they back off the air support to avoid playing a loud mistake, which in turn makes it harder to hit the correct partials and play with good tone, which leads to further "hiding" that doesn't contribute to the sound of the band *or* help that student improve. Providing horn players with the tools and attention needed to become confident sight readers, ensemble musicians, and even soloists is the sure-fire method to developing productive French horn players. Help your horns make the most out of their practice time by providing them with some or all of the following suggestions or by using these techniques during class time:

## What to Work On

### Breathing

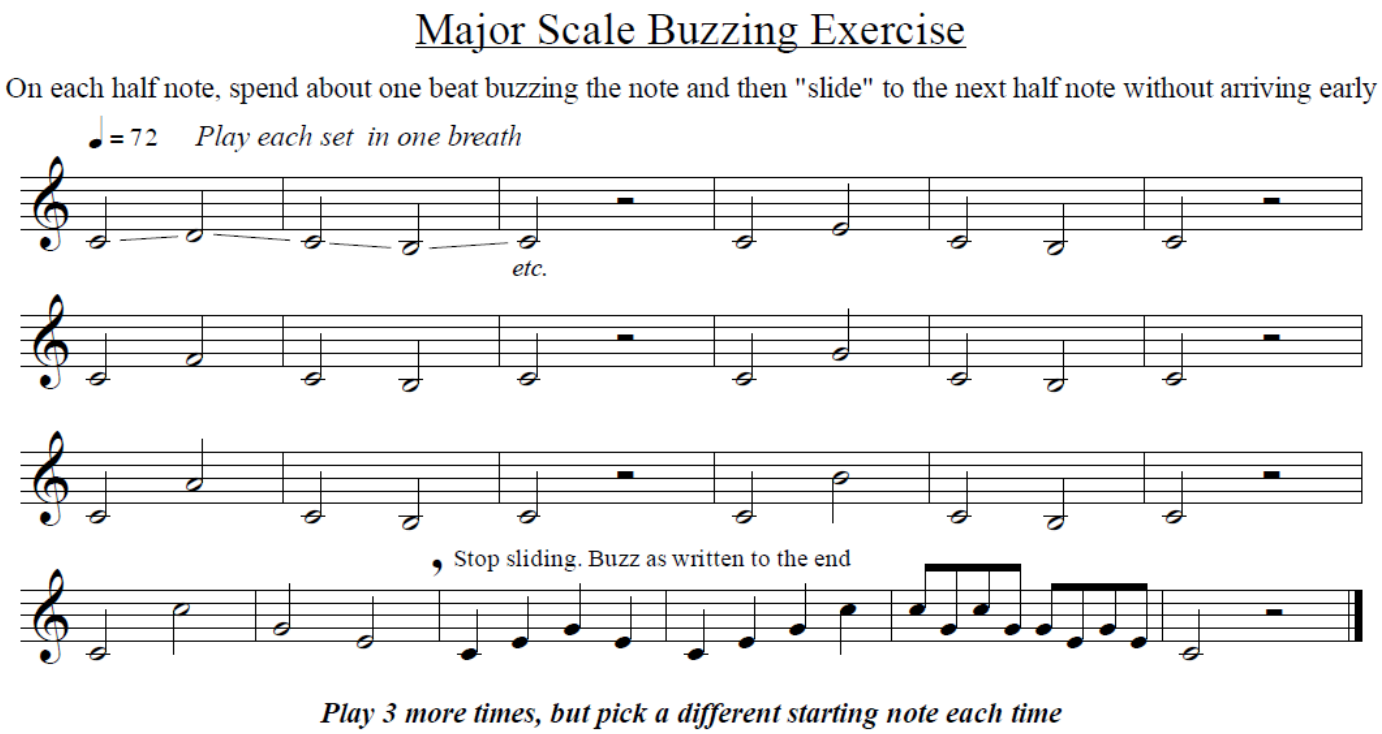
Any good practice session should begin with some **physical warm up and breathing**. Do some comfortable standing stretches to get the blood flowing and prepare to breathe by sitting or standing with proper relaxed posture. Turn on a metronome to about 60 beats per minute. Focusing on steady movement of the air, exhale completely and begin by inhaling through the mouth for 4 counts followed by a controlled exhale in the next 4 counts. Do this 3 or more times focusing on a smooth intake of air followed by a very steady exhale that empties the lungs in exactly the right number of beats. After using the 4-in 4-out pattern, try the same exercise inhaling and exhaling for 6 beats each, continuing to focus on breath control. Finally, do the same exercise with 8-in 8-out. Daily exercise of the breathing system strengthens the muscles involved. Focusing on steady, continuous exhalation will improve air support.

### Buzzing

Do some **buzzing on the mouthpiece**! Buzzing accurately often takes more mental focus and fine embouchure control than playing the same notes on the horn. Think of buzzing like going running with weights strapped to your arms and legs. It's hard work, but when those weights come off (going back to playing with the mouthpiece on the horn), often flexibility, accuracy, and/or tone have become stronger and easier. Another upside is that almost all buzzing requires use of the ear in order to play the correct notes, and horn players must always be working to develop a good ear[14].

Work to extend and smooth out the "siren" sound on the mouthpiece with careful adjustments to air speed and embouchure, especially in the early days of brass playing. This is a good way to exercise the embouchure. Use lots of air and try for a very "buzzy" mouthpiece buzz. That means a fairly loud sound that is focused and stable on the desired pitch (or sliding steadily in the case of a siren exercise) without "blips" in the sound[13].

When buzzing a melody or a written exercise, play the desired starting note on the horn or another nearby reference to be sure the buzzing begins on the intended pitch. Any passage of music or scale can serve as a buzzing exercise. Here is a written exercise designed to improve flexibility and tone. In many ways it serves as a long tone exercise even though it changes notes frequently.

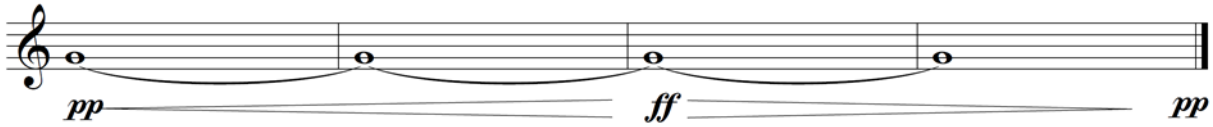



***Play 3 more times, but pick a different starting note each time***

## Long Tones

Long tones are essential for not only breath control, but also embouchure strength and the development of a strong characteristic tone quality. The focus should be on producing the clearest, steadiest, best tone possible. There are many long tone exercises which benefit horn players. One basic example is a 16-count long tone that crescendos from *pp* to *ff* in the first 8 counts followed by a decrescendo back to *pp* for the last 8 counts.

Repeat 5 times using the following fingerings on F horn: 0 (for the written note), 2, 1, 12, and 23



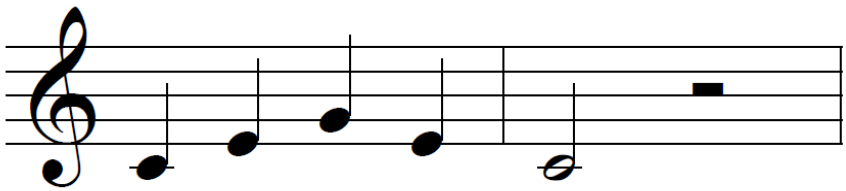

It is essential to work on crescendos and diminuendos on long tones. They may be boring, but if horn players don't have great control of these they simply have no hope of playing great phrases[10]. There are endless variations if we consider all the possible dynamic shapes we could incorporate on long tone exercises.

Playing long tones daily helps horn players get used to the amount of air required to make confident sound on their instruments. Listen for timid playing and encourage students who may feel intimidated to breathe big and play loud. Getting the air moving will never be more straight forward than during long tone exercises, so it's a "now or never" moment!

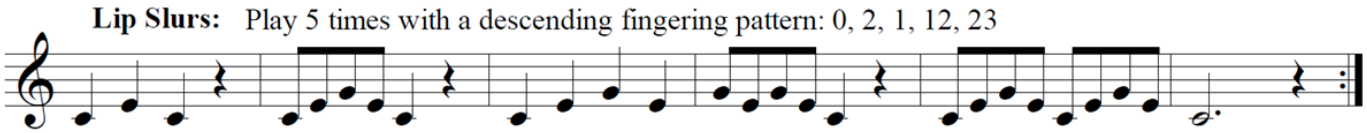
# Lip Slurs

**Lip slurs** should be the horn player's bread and butter when it comes to building a warmup routine. It is lip flexibility which provides partial control and improves note accuracy. Accuracy is one of those never-ending goals horn players should always work toward. While buzzing provides similar benefits to accuracy, lip slurs focus specifically on flexibility between partials in the overtone series and are more akin to long tones due to the long, full airstream required to play them.

When first picking up the horn, beginners benefit from learning what I call "The Three Note Song". It sounds like this:



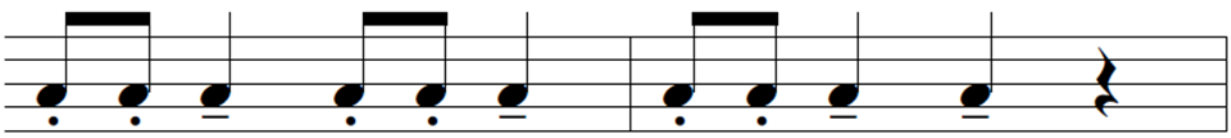
The C E G triad uses all open fingerings and is the "traditional" way for horn players to get their bearings on the instrument when they are unsure about partials. After hearing these notes demonstrated and then playing them successfully a few times, the sound of the major triad becomes memorable enough for horn players to "check" if they're playing the correct partials for C, E, and G. From there, they are able to more confidently navigate to other notes they see on the page. These three notes are a great way to start horn players on lip slurs so that they can start to earn all the associated benefits of lip slur exercises:




Teach lip slurs away from notated music before using any written exercises. The key is to focus on the feeling of moving smoothly from partial to partial without using the tongue. Lip slurs require the horn student to determine which muscle movements in both the embouchure and the air support system control partial changes. When students are clearly and repeatedly presented with the goal of slurring with *only the embouchure*, the resulting focus builds muscle memory, strength, and flexibility over time.

# Articulation

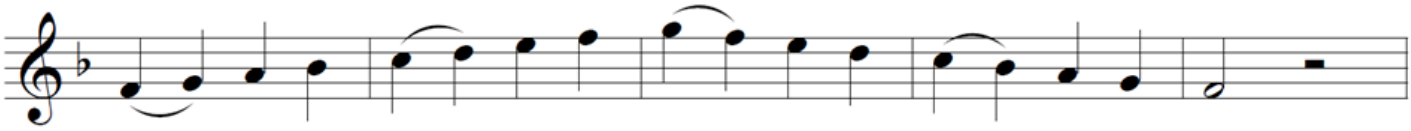
Articulating on the horn most often resembles a "da" or "duh". The "t" consonant can work, but often results in a harsh articulation not appropriate for lyrical playing[14]. Articulation exercises should be played often and in great variety. Adding simple rhythms and articulation patterns like the one below to major and minor scales provides ample exercise material to explore and drill all kinds of articulation challenges. Teach students to create their own articulation patterns or assign patterns that specifically address challenges from their horn parts.



## Articulation (Continued)

Because the horn plays both very low and quite high, it is important to develop the ability to tongue clearly in any register. Practicing articulations on scales or in different octaves exposes horn players to the challenges of tonguing both up high and down low. Playing something like the articulation pattern (on the last page) in the low register, for example, requires a careful balance of setting the lips and jaw in a relaxed embouchure while releasing energetic air with the tongue that helps the staccato notes respond on time. Also, while "da" is an appropriate articulation syllable for the middle range, articulation down low needs to be closer to "doe" in order to open up the inner oral cavity appropriately for the low range. Conversely, the tongue position changes in the high range, leading to articulations more like "dee"[14].

Another great articulation exercise to apply to scales is the "Slur 2 Tongue 2" exercise:



The articulation pattern can be altered (Tongue 2 Slur 2 for instance) to keep this exercise interesting. Don't forget to make dynamic choices to make this exercise more musical.

Practicing articulation away from the instrument and mouthpiece altogether is also productive. Try *speaking* tough passages on an articulation syllable like "da" and then *tonguing* the same passage using only air and the tongue.

Take care to avoid tonguing between the lower and upper teeth. The resulting "Th" at the front of the attack is too thick and does not help initiate the air through the aperture nearly as efficiently as a clearer "T" or "D" attack.

## Scales

Due to their versatility and widespread use, **scales** have come up quite a bit already. The positive benefits of both learning and memorizing major, minor, and chromatic scales have been thoroughly established by teachers and performers alike for many years. One of the most direct advantages gleaned from scale study is comfort in multiple key signatures.

For horn players specifically, there is probably no better way to learn how to negotiate the wide range of the instrument than the regular drilling of scales and scale exercises. Horn players who regularly practice scales will gain facility in the fingers, confidence in their knowledge of fingerings, and an increased understanding of how to overcome the difficulties of various key signatures and registers of the horn. Be sure to guide students in their approach to learning new scales. Asking a student who has only played for one or two years to learn multiple scales at a time is a recipe for frustration and disappointment. Encourage students to master one scale at a time, paying attention to not only fingerings, but also tone quality, note accuracy, breath management, and dynamic control.

# **Teaching Strategies:** Supporting Your Horn Section In and Out of Class

## Outside of Regular Rehearsal

Horn players need time to learn how their parts should sound so that their ears will help them move to the correct partials. If a player consistently struggles to find the right partial, they will benefit greatly from isolated help, whether that consists of a brief moment during rehearsal or a meeting after school. It is OK to help horn players "learn by ear" some of the time because the ear is so critical to horn playing. Play along and provide examples on piano or horn. If you play along with them simultaneously, they can compare their notes to a reference and detect errors more easily. If you play first and they echo you, they get to work on recalling pitches from memory.

In a lesson-type instructional scenario, it is very worthwhile to sight read for 5-10 minutes at the beginning or end of the session. There is no substitute for practice when developing the muscle memory for seeing a note on the page and finding the correct partial on the horn. Try simple melodies from a method book. Pull passages from easier horn parts or copy sight-reading exercises for intermediate and advanced students.

Because of the difficulties created by closely spaced partials and a partial system that does not line up nicely with all the other brass instruments, dedicating additional time outside regular rehearsal for horn students, especially beginners, is a must. Have a "Horn Day" or hold weekly sectionals to be sure horn players are not floundering or hiding their confusion.

Of course, finding "extra" time is always a challenge, and the majority of instructional time will always be during full band rehearsal. Consider some of these strategies for helping your horns during class.

## During Regular Rehearsal

- Make a sticky note that says "LOOK AT THE HORNS" to remember to check on them. Don't let them get lost.
- Demonstrate pitch as needed or provide a reference from the piano or another student so horn players can match and develop their ears.
- Monitor the angle and direction of the leadpipes in the horn section!
- Horn bells face the wrong way as far as the audience is concerned. Horns need to play out loud to be heard in the balance of the band. Instruct horn players to play twice as loud as what is written on the page, or *at least* a full dynamic level higher than written. They will also hear themselves better.
- Be careful of criticisms, even more so than usual. Expect some partial mistakes from your horn players and give them a chance to fix their mistakes before you stop to try fixing them yourself. Provide reference pitches to help them find notes they are struggling with.
- It's OK to send a horn player or horn section to the practice room to work out difficult passages. At intermediate or advanced levels, individual players will benefit from bringing a tuner with them (as a horn player, they should own a tuner, but provide one if they need it). Younger students may be much more successful if the struggling horn player is sent to work under the guidance of either a more confident member of the horn section or a strong alto saxophone player who shares the same part.
- Encourage the horns about their important role in the band. They serve as a bridge when blending their mellow brass tone with the woodwinds, especially alto saxophones. They provide a neat "distant" tone which is somewhat unique among the brass instruments.

# Horn Participation in Warmups and Exercises

## *Lip Slurs*

Many brass lip slurs are not designed to work with the F horn overtone series. The F horn uses the Concert F overtone series while the rest of your brass players are almost certainly playing instruments which use the Concert Bb overtone series.

If your horn players are using double horns, there is a fairly simple solution. By depressing the thumb trigger and playing on the Bb side of the horn, the horn players will be able to match the partial patterns being played by the other brass (depending on the range).

If there is a horn player on a single horn in F, try to provide a written horn part for lip slur exercises that either plays parallel partials in harmony or provides the fingerings necessary to match the notes the rest of the brass are playing.

## *Scales*

As a consequence of the mismatch between the overtone series on the F horn and the rest of the brass family, horns can have difficulty finding the appropriate octave for basic scales, especially beginners with limited range. Once the beginning band triumphantly arrives to the one octave Concert Bb Scale, F horns have to decide whether to attempt a high F major scale running all the way to the top of the staff or a low F major scale which dips into the lowest partial. The "split" style scale that plays one tetra-chord high and one low or some variation of that can be an alternative. Overall, keep a close eye on the horns during warmup and any exercises the band is working through. If they look lost, they definitely are.

# Placement Within the Band

Avoid seating the horns directly in front of any percussion instruments or with bell-front brass directly behind them. The vibrations produced by these instruments travel through the air right into the open bell of the horn and interfere with the horn player's ability to steadily control the sound of the instrument (both partials and tone in general). The horns are often placed in front of the tubas and euphoniums, bell-up brass instruments, to spare them from this frustration. Be sure to protect your horn section!

# "For Horns Only"

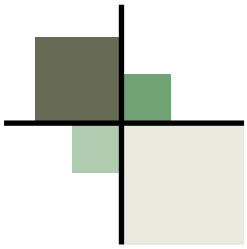
Some beginning method books include additional pages in the horn book. The purpose of "For Horns Only" pages is to provide exercises transposed to the middle register of the instrument, or whichever register is most appropriate for *them* for the exercise. Remember that the horn is the "odd man out" when it comes to matching up overtone series from each of the brass instruments. Due to the traditional use of Concert Bb Major as the first key for beginning bands, playing in unison with the full band frequently requires the beginning horn player to play higher or lower than is comfortable. This may be a contributing factor to why horn players are often converted rather than started on the horn initially.

In any case, there is no reason to ignore this great tool when it is available in the method book. Be sure beginning horn students understand why the "For Horns Only" pages exist and how to use them. I find them most helpful when assigning exercises for home practice and working with horns on their own (1-on-1 or in sectionals). These transposed pages in beginning band books are particularly helpful for reinforcing the use of "The Three Note Song" for partial orientation (see page 65).

# Extra Practice Challenges

Improvement in both lip flexibility and well-developed articulation makes possible the performance of more technical passages and lyrical etudes. Finding etudes or playable solos for developing horn players to practice can really accelerate their progress. Sometimes, all it takes to help a student grow by leaps and bounds is a teacher who provides them with a special challenge or opportunity they can dig into.

Look in any horn method books stocked in your band room for usable material, or search the internet to find excerpts or melodies that either fit or just slightly exceed the current level of your horn players. Transcriptions of pop melodies can be extremely motivating "extras" for students and often require fairly robust technique and flexibility to be played well. Never for a moment allow a horn players to believe there is "nothing to practice."



# More to Learn

There are a few special horn topics which you may or may not need to look into over your years as a band director. However, it's good to be well versed in advanced techniques since at some level or at some point (whether we know it or not), our job is to prepare students to become advanced or professional level players.

## Lip Trills

Because of the close spacing of horn partials, horns are capable of trilling using only the embouchure. This requires focused practice most students won't want or won't need to do, but I'm sure many horn students would be interested to at least hear about this technique. Basically, horns have so many alternate fingerings in the higher register that using the fingers to trill relies on the embouchure anyway[14]. Lip trills are trills which can be accomplished with just one fingering and a special working of the air and embouchure.

## Stopped Horn

Stopped horn is both a special effect and a remnant of the days of hand horn technique on natural horns. The most important thing to know is that when a player properly "stops" the horn and continues to play with good air support, the *desired* result is a sound which is a full half-step higher than written. In order to compensate, horn players have to transpose down one half-step while playing any passage marked "stopped". Also, stopped horn is only played on the F horn. Stopping on the Bb horn causes three-quarter-tone tuning problems that players are not able to compensate for.

## Mutes

Playing the horn with a mute is *not* the same as playing stopped horn. Mutes will not cause the pitch of the horn to rise a half step, so students can carry on playing normally. Horn players sometimes hold on to the mute which is inside the bell to compensate for some of the support lost by removing the right hand.

## On-Leg Horn Playing

Some advanced players play on-leg (playing with the bell resting on the knee) either in special cases or regularly as a tone-adjusting technique. The dampening of the bell can provide a somewhat darker tone. As far as students are concerned, playing stopped horn or playing with a mute is a convenient time to switch to on-leg playing, even if just temporarily. We are right as teachers to insist on off-leg playing from our students, not because on-leg playing is wrong or bad, but because off-leg playing generates fewer posture and embouchure problems due to the pivoting mobility of the horn[6].

## Books and Resources

I came across two incredibly valuable sources of horn information in my research. The first is "The Art of Horn Playing" by Philip Farkas which is literally a treatise on horn playing. The other resource was the website www.hornmatters.com run by John Ericson, a professor at Arizona State University. Both resources I'm sure will serve me for years to come as I have questions or curiosities about the French horn.

# **About the Author:** Jonathan Bletscher

Jonathan Bletscher is currently the band and choir director at Port Susan Middle School in Stanwood, WA. He has directed middle school band for the past four years and served as the lead visual instructor for the Stanwood High School marching band for three years. Jonathan has also served as a rehearsal conductor for the Mount Pilchuck Music Educators' Association Middle-Level Honor Band. He graduated from West Salem High School in Salem, OR and is a graduate of Seattle Pacific University. He is married and living near Stanwood where he enjoys spending time with his wife, playing ultimate Frisbee, and keeping up his skills as a classical pianist. He accompanies the choir at his church and regularly serves as an accompanist for students participating in local Solo/Ensemble festivals. Jonathan recently started the process of earning his master's degree through the American Band College of Sam Houston State University.

## Why I wanted to write this manual

It seems to me that there are many resources being created for student use in the band world these days—even remarkable ones leveraging new technology. How to play the horn, how to switch to horn from trumpet, how to develop specific horn techniques, etc. It feels to me that there's an assumption that band directors already "have it figured out" and know what they need to know about the French horn (and all the other band instruments).

I know from personal experience that this assumption about all band directors doesn't reflect reality. I spent more of my first year than I'd like to remember fearing the moments in class I would be unable to provide good instruction when a student clearly needed it, and frequently those students were my French horn players. Just the process of trying to transition students to French horn was frustrating for both me and those students brave enough to try the horn. I simply had inadequate information as a result of, quite honestly, a huge deficiency in study hours on this instrument. My ineptitude for French horn was not completely due to lack of trying. I had practiced the instrument on my own, watched videos online, and studied fingering charts. But I made very little progress toward becoming an expert. I really did want to know the horn inside and out. So finally, with the added motivation of a project due for the American Band College, I was able to really dig in to what the French horn is all about. I hope that the results will serve as a resource for band directors in need of good information about this unique and wonderful instrument.

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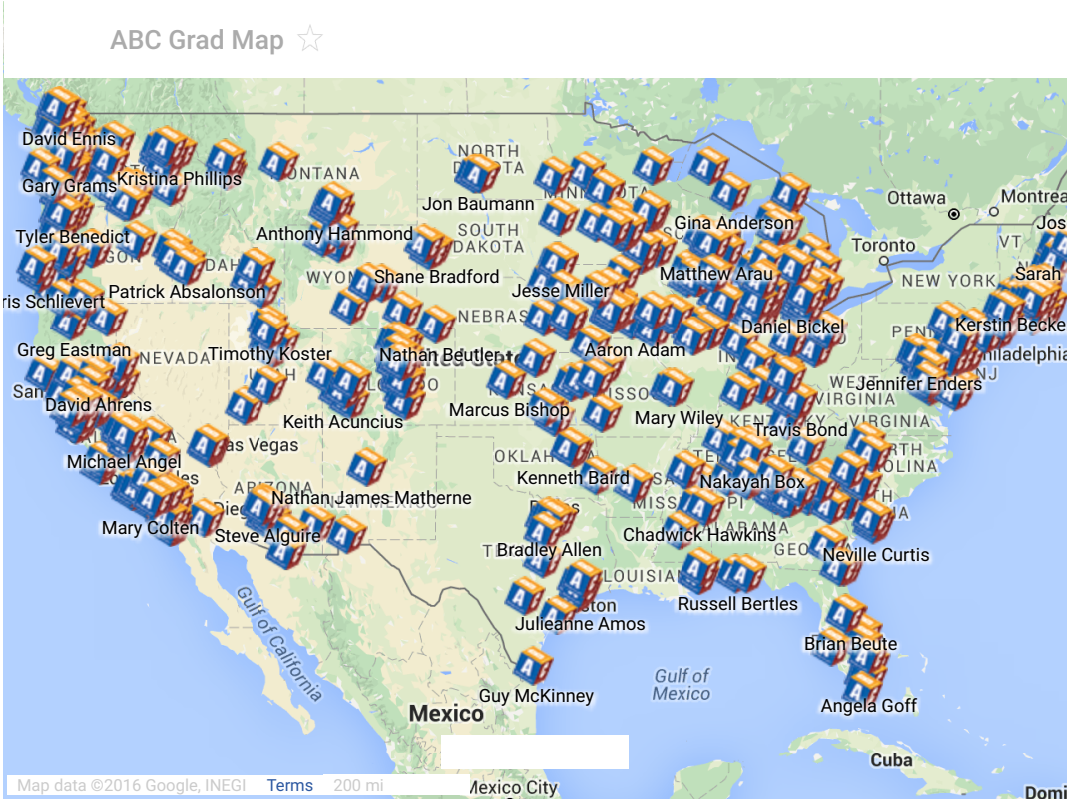
BW 2016

# The American Band College

## Where Are They Now?




If map doesn't appear, **click here.**

**As a fun way to keep up with some of the new and exciting things that the American Band College Graduates have been up to, we have added a new section to the magazine. It is our goal to interview a couple of graduates each issue as a way of staying in touch and sharing their successes.**

**This month, we feature another two outstanding American College Graduates. Kevin Kessler is the new Director of Athletic Bands at South Dakota State University and Mitchell Bahr is the California Teacher of the Year, teaching at Foothill High School in Palo Cedro.**

**If you would like to be included in an upcoming issue, or nominate someone for this honor, please contact Ted at tedburton@bandworld.org. Please don't be shy.**

continued

BW 2016

The American Band College

# Where Are They Now?

## Mitchell Bahr

**Year of Graduation** - 2002
**Current Position** - Foothill High School in Palo Cedro, CA Band and Orchestra
**Time in current position** - 14 Years

***What was your background before ABC?***

After graduating from Biola University in La Mirada, CA, I began teaching at Rancho-Starbuck Intermediate School in Whittier, CA in 1997

***Name some other accomplishments or awards since graduation.***

CA Teacher of the Year, 2016 PBS Outstanding Teacher, 2014 13 Years in a row – Superior Ratings at CMEA Regional Festival Command Performance 2014, 2015 – Cruz Jazz Festival None of that matters next to the accomplishment I'm most proud of at Foothill: The direction our music program is heading, based upon where it was when I arrived. In our rural town of Palo Cedro, where the population of the school is twice the size of town (and the only stop light in town exists because it represents the entrance to the high school!), as kids get bused in from 45-60 miles away…music is alive and well! In 2002, two small concert bands (22 and 8) with a jazz band that had the poorest instrumentation conceivable to two large, thriving concert bands (of 75 and 65), two full jazz bands with ideal instrumentation, and a 22-piece string orchestra (5 violas this year!!). Alumni that are graduating every year with Bachelor's (5 this year) and Master's Degrees (2 this year) in Music Education and Performance…the web is growing, and Foothill alumni are out there paying the gift of music forward!

***How did ABC help prepare you for these?***

While my undergrad experience at Biola was outstanding, my ABC Master's Degree tightly focused in on the actual role of being a band director. The hoops to jump through made more sense, because they were directly tied into my job. For example, my studying, focus and successes in "boo-boo-band" test and my exit exam are put into practice every single time I lift a baton. The practical knowledge and subsequent confidence to do my job well that I gained from ABC is immeasurable. Thank you, ABC!

***What was your most memorable ABC experience?***

My friendship with Mike Britcher and Matthew Arau. Our many sessions, where we were the only ones in the dorms going over nomenclature flash cards, listening to music and talking shop. Valuable, valuable time for my growth as a band director. We were all there to work, and were all there for the same reason: to become better band directors. Who are your biggest influences/mentors? Bob Feller at Biola University – I try to model his instruction every day. Dr. Peter Boonshaft – At ABC, honor bands, workshops and private clinics with my band, I have learned so much more about how to listen on a completely different plane.

***Who are your biggest influences/mentors?***

Bob Feller at Biola University – I try to model his instruction every day. Dr. Peter Boonshaft – At ABC, honor bands, workshops and private clinics with my band, I have learned so much more about how to listen on a completely different plane.

***What advice do you have for young directors?***

1. Teach kids to respect the podium. If you don't have classroom discipline, you don't have anything. Respecting the music begins with respecting the podium, and being ready to receive instruction about the artform.

2. Know your music. Respecting the podium will end when all the students see is the top of your head - as you are looking down. You are showing the kids that YOU don't respect the podium (or them) enough to bring your "A" game.

3. Find a way to still have a life outside of being a band director. Yes, keep your students busy ... but, no pursuit of a competition or performance is so important that it requires you to pull yourself away from family or necessary outlets.

***Where do you see yourself in 10-20 years?***

Right here in River City! I love my job. I love the community and the unique struggles that come with a rural high school. No internet? No transportation? Can't afford an instrument? Never heard jazz before? Oh, you've never played an instrument before? Hmmm… Sounds great…let's do this!

Previous Grad | Next Grad

BW 2016

The American Band College

# Where Are They Now?

## Kevin Kessler

**Year of Graduation** - 2004
**Current Position** - Director of Athletic Bands, South Dakota State University
**Time in current position** - I just completed my first year.

***What was your background before ABC?***

I grew up in Woodhaven, Michigan, and earned my Bachelor of Music Education degree from Indiana University (Bloomington) in 2001. After one year as a graduate assistant for the Purdue University Bands, I took the position as Director of Bands for the West Lafayette Community School Corporation (West Lafayette, IN), where I taught for ten years in grades 5-12.

***Name some other accomplishments or awards since graduation.***

I'm very proud of the program that I was a part of at Brandon Valley. I started as an assistant in an established, highly-respected program. I eventually became the Director of Bands and would like to think that I helped to continue the tradition of excellence. In 2012 I was awarded a Graduate Teaching Assistantship at the University of Iowa. I spent three years there under the tutelage of Director of Bands Mark Heidel, who is an incredible musician, conductor, and human being. I also served as an assistant for the Hawkeye Marching Band, directed by the wonderful Mr. Kevin Kastens. I also directed the Pep Band. During that time I had the opportunity to direct the Iowa Symphony Band, and write arrangements and drill for the marching band. It was a very exciting experience - I got to conduct the Pep Band in Madison Square Garden, and my drill and arrangements were used by the marching band at the 2015 Taxslayer Bowl. One of the things I'm most proud of is having the opportunity to play euphonium on the premier of "Only Light" by Aaron Perrine with the Iowa Symphony Band at the CBDNA North Central Regional in 2014. The piece would go on to win the Ostwald Award. It's an absolutely gorgeous work that I'm proud to be associated with in that way.

***How did ABC help prepare you for these?***

There are so many things about ABC that helped grow as a teacher. Every element was important - the leadership seminars, the conducting experiences, the sense of family and collaboration. However, there were two elements that were especially important. The first was the opportunity to work with musicians who are the very best at what they do. It opened my eyes how carefully I needed to hone my rehearsal technique. They were supremely prepared, had a tremendous "aural image" of what they wanted from an ensemble before they stepped on the podium, and knew just what to say to make that image a reality. The other was how much better I became at understanding and teaching instruments other than my own. This was due to the gifted pedagogues that ABC introduced us to every year. This also strengthened my score study skills (more on that later).

***What was your most memorable ABC experience?***

Just one? Hmmm....besides choir practice at Omar's? (some of my 2002-04 friends will understand that.) We played under so many terrific conductor/composers - Francis MacBeth, Robert W. Smith, Johan de Meij, etc. But for me, I think the experience of playing in a band conducted by Colonel John Bourgeois was my most memorable.

***Who are your biggest influences/mentors?***

My high school band director, Dale Nelson, is the reason I am a band director. He was a tremendous teacher, but more importantly, he knew how to reach kids and get more out of them than even they thought they could do. John Colson, my college trumpet and conducting teacher, and James McKinney, my college director of bands, were amazing musicians and great mentors. Mr. Colson has written a couple of books on rehearsal technique that are marvelous resources. Mr. McKinney could do it all - he is the rare soul that seemed equally at home in front of a concert band, a marching band, or a jazz band. I am so blessed that I have the opportunity to stay in touch with all three of these gentlemen to this day.

***What advice do you have for young directors?***

Become an outstanding pedagogue. Learn the ins and outs of every instrument. Seek out lessons or do some self-teaching on instruments that you are not comfortable with. Your ensemble will not sound good until its individuals can play with a quality, characteristic sound. Teach from the podium. Learn ways to quickly improve embouchure, deal with pitch tendencies, etc during the course of rehearsal.

The better you are as a pedagogue, the better your score study will become. You'll be able to look at a score and quickly anticipate difficulties for each instrument. Maybe the trumpet part hangs around the fifth partial, or the clarinet part keeps jumping above and below the break, or the flutes have a technical part that could be facilitated with a trill fingering.

As you become more familiar with the instruments, these types of things will jump off the page of the score. As you become better at diagnosing and fixing these technical issues, your ensemble will be technically stronger, thus making it easier to draw musicality and emotion from a performance. That's when the real fun begins!

***Where do you see yourself in 10-20 years?***

South Dakota State University is home. I met my wife here and we both have degrees from here. Our families both live relatively close to Brookings. We are breaking ground on a new music facility this fall. It is my sincere hope that in twenty years I'll still be singing the ABC partial song to my SDSU Conducting 1 class!

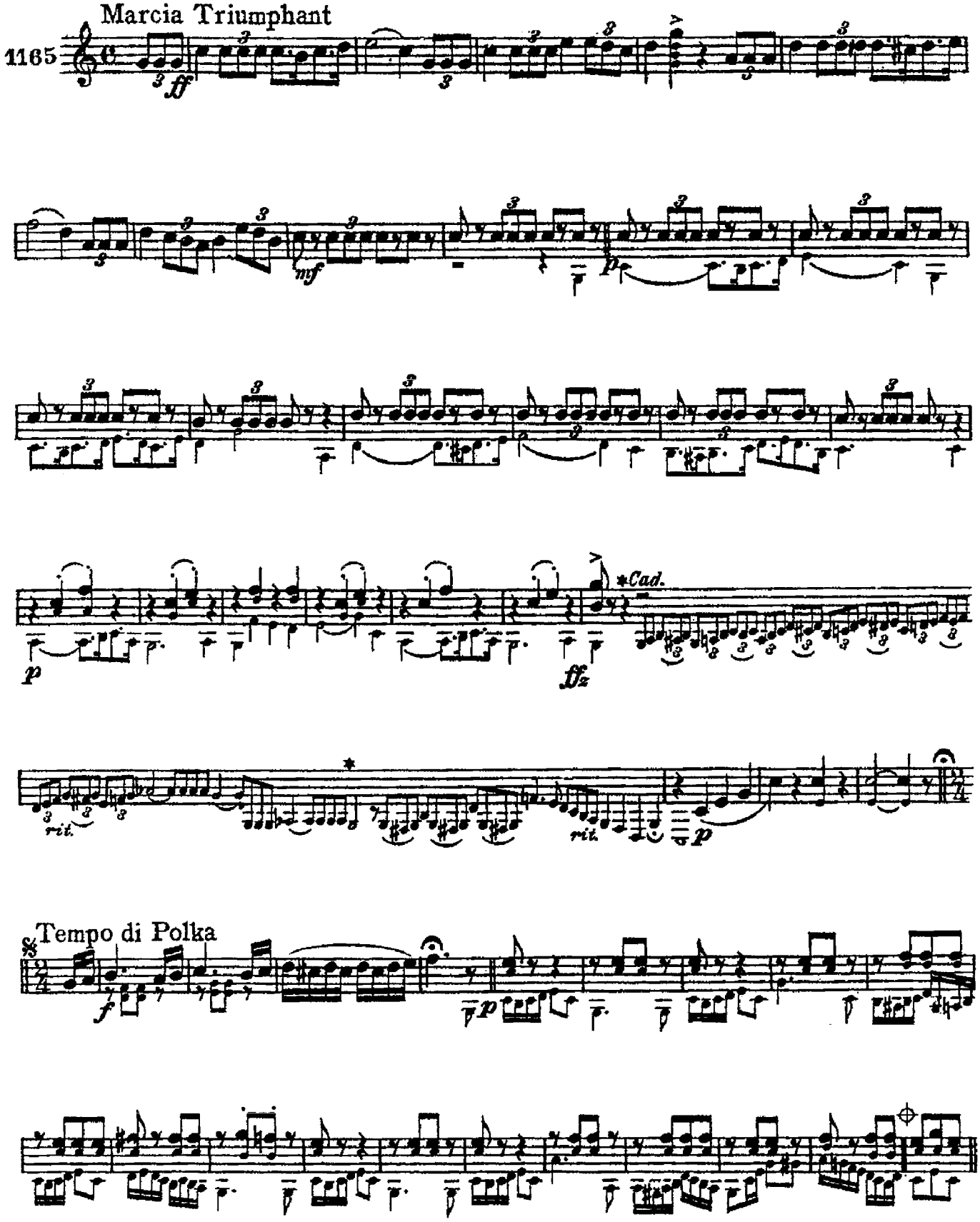
Previous Grad | Next Grad

Solo B♭ Cornet

# Solo Pomposo

TUBA SOLO

AL HAYES



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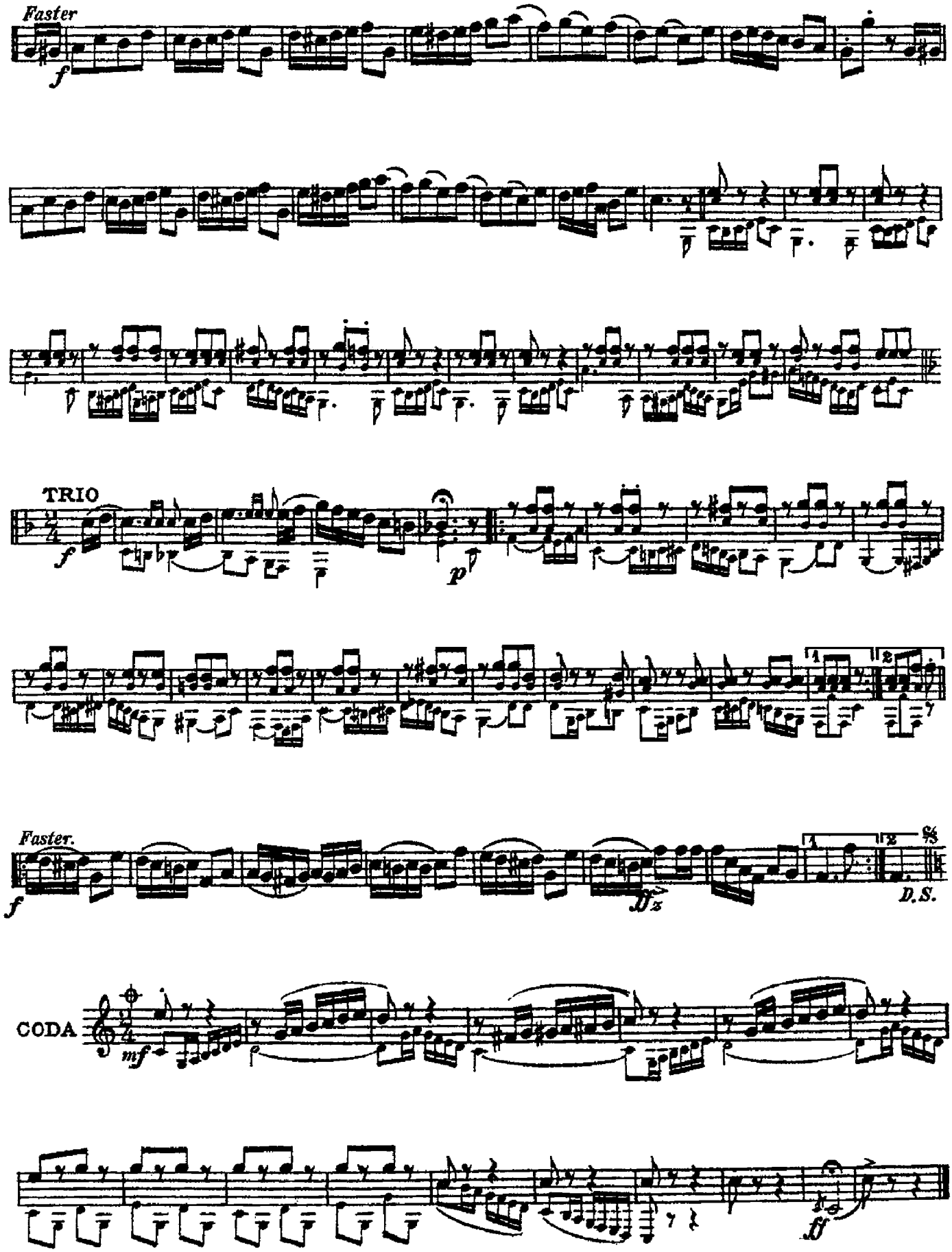

Faster
f
TRIO
f
p
Faster.
f
D.S.
CODA
mf
ff

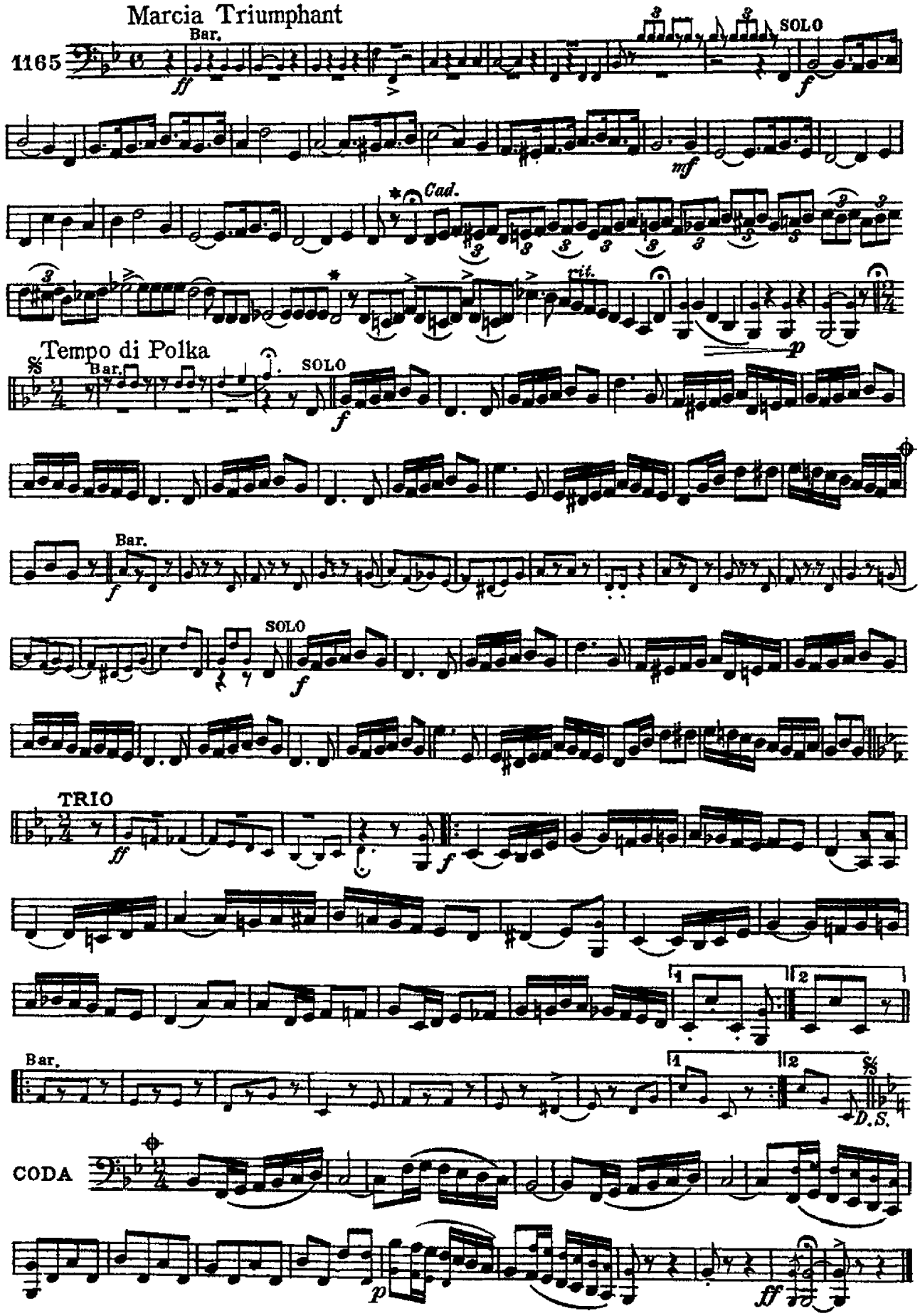
# Solo Pompososo

Solo Tuba

**TUBA SOLO**

**Pub. with Brass acc. - also with Piano acc.**

**AL HAYES**




Fillmore Music House, Cin. O.

From * to * may be omitted

# Solo Pomposo

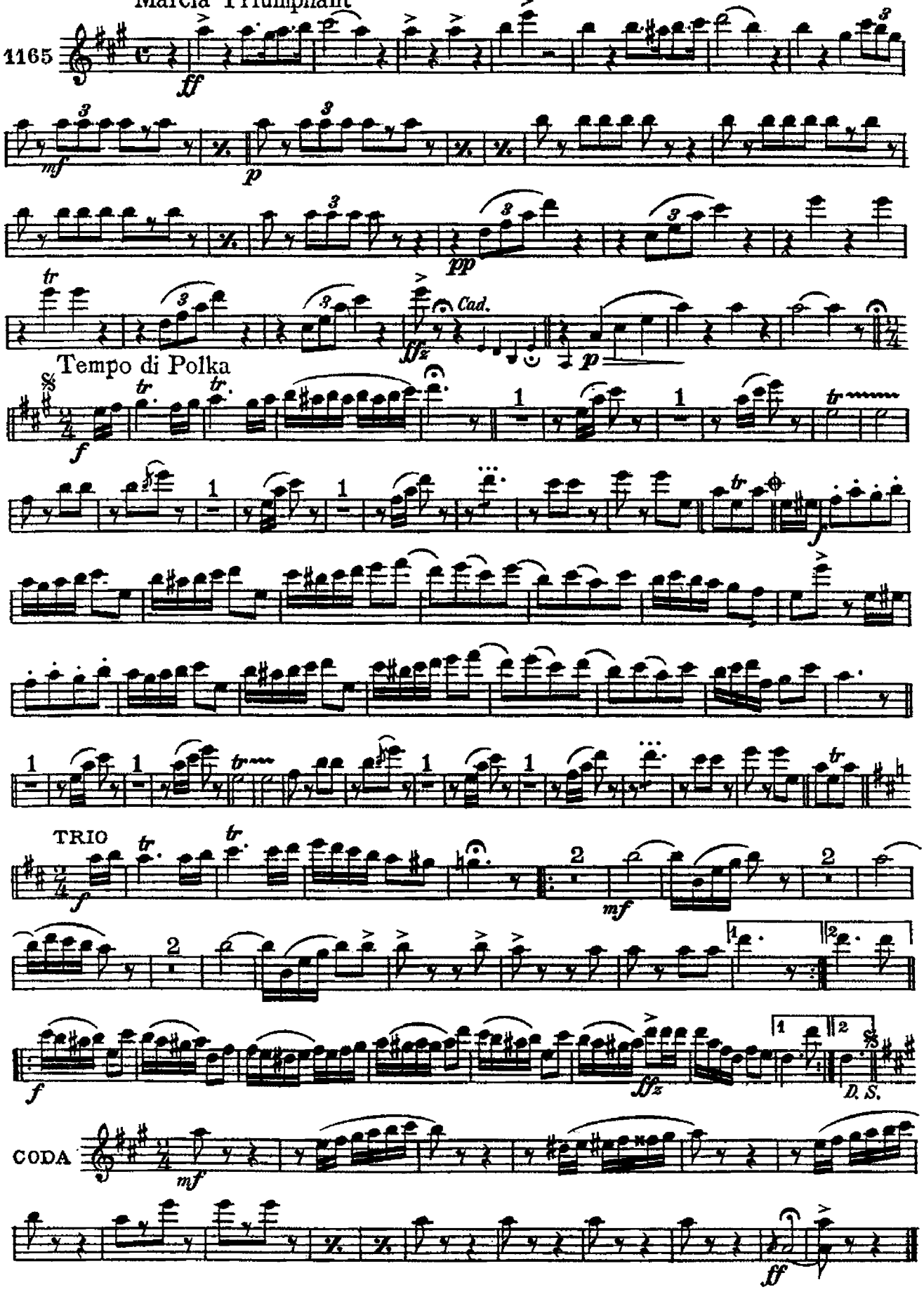
Piccolo

TUBA SOLO

AL HAYES

Marcia Triumphant

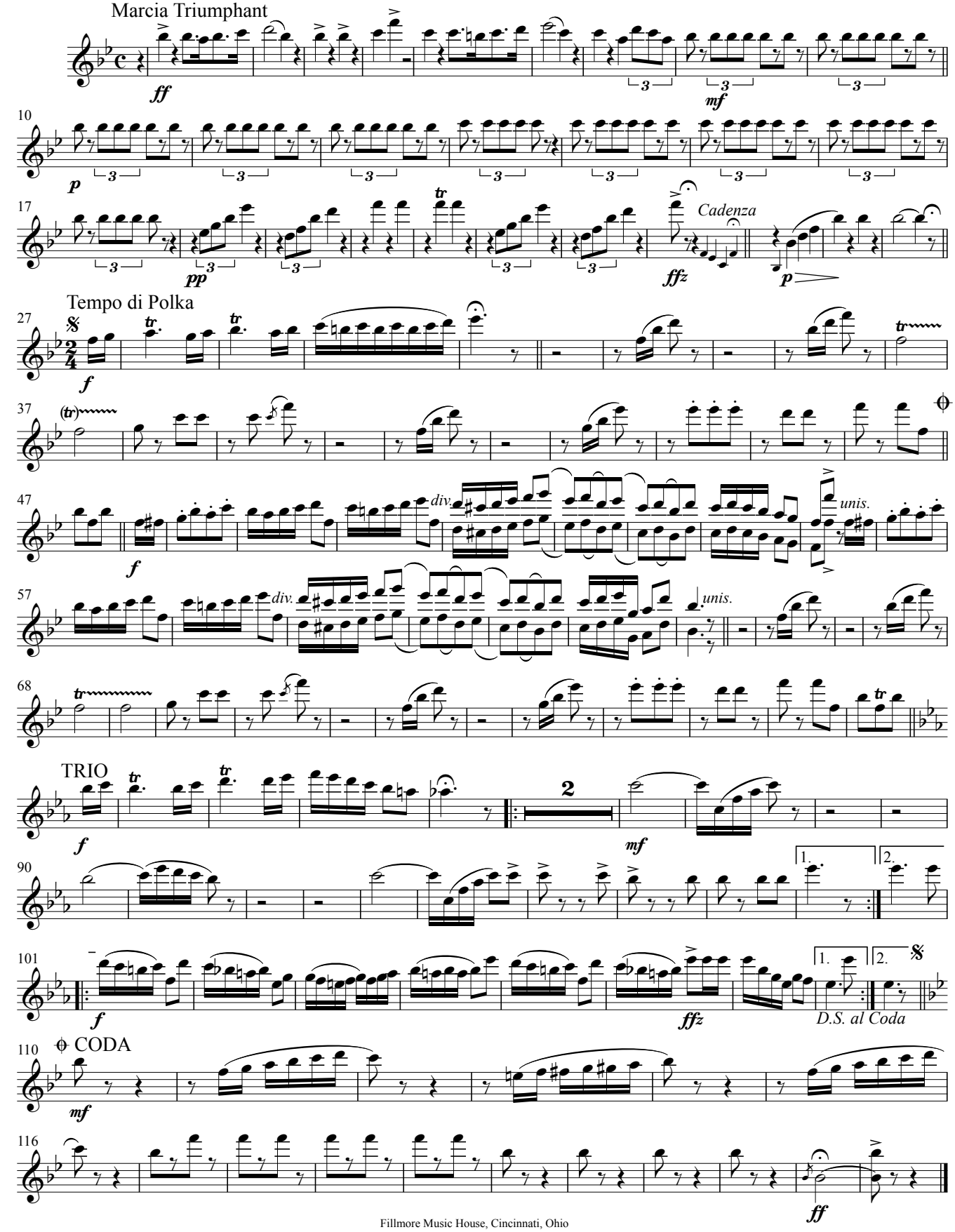
1165




Fillmore Music House, Cin. O.

# Solo Pomposo

**Piccolo/Flute** **Al Hayes**

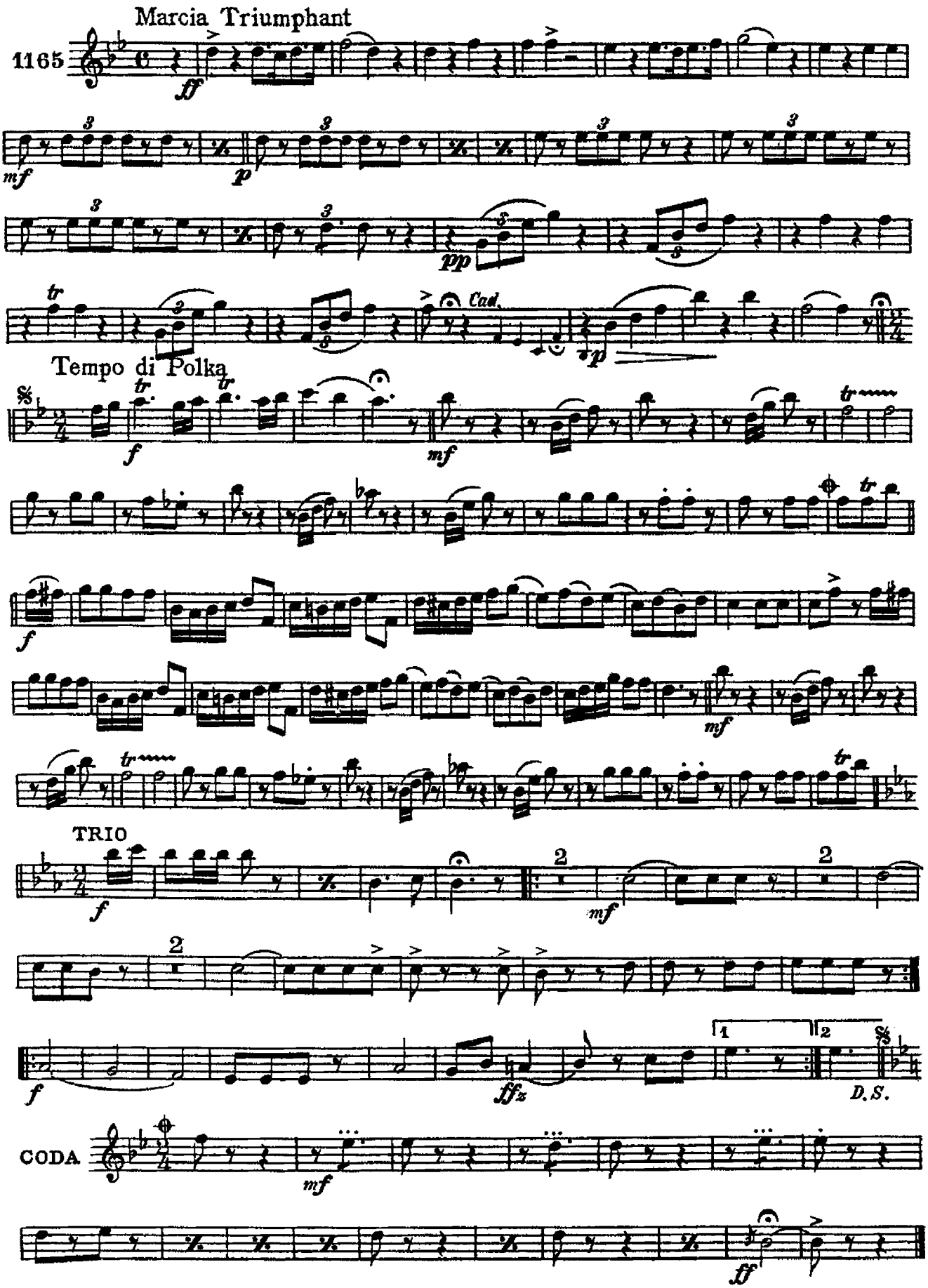


# Solo Pomposo

Oboe

TUBA SOLO

AL HAYES




Fillmore Music House, Cin.O.

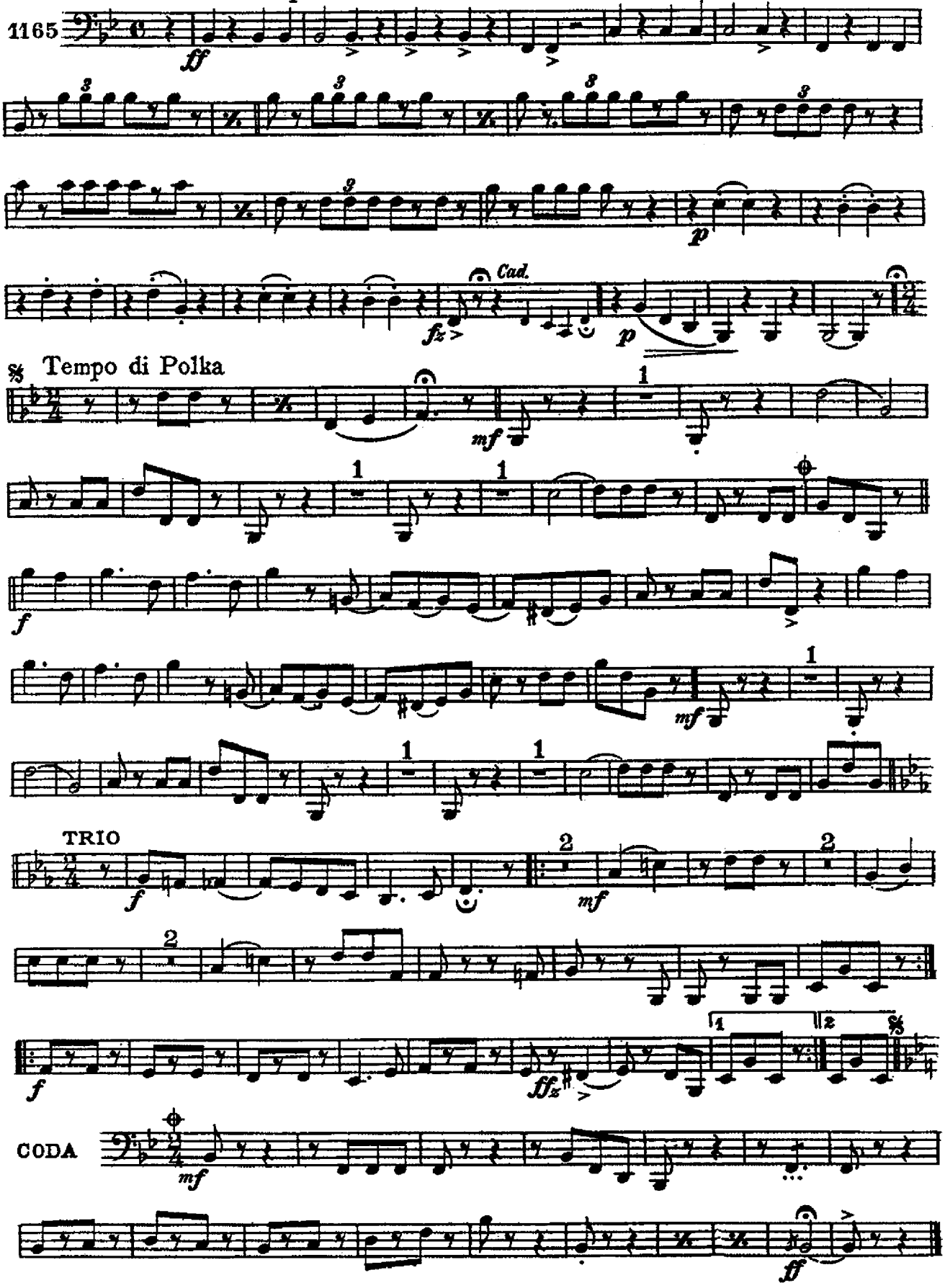
# Solo Pomposo

Bassoon

**TUBA SOLO**

**AL HAYES**

Marcia Triumphant



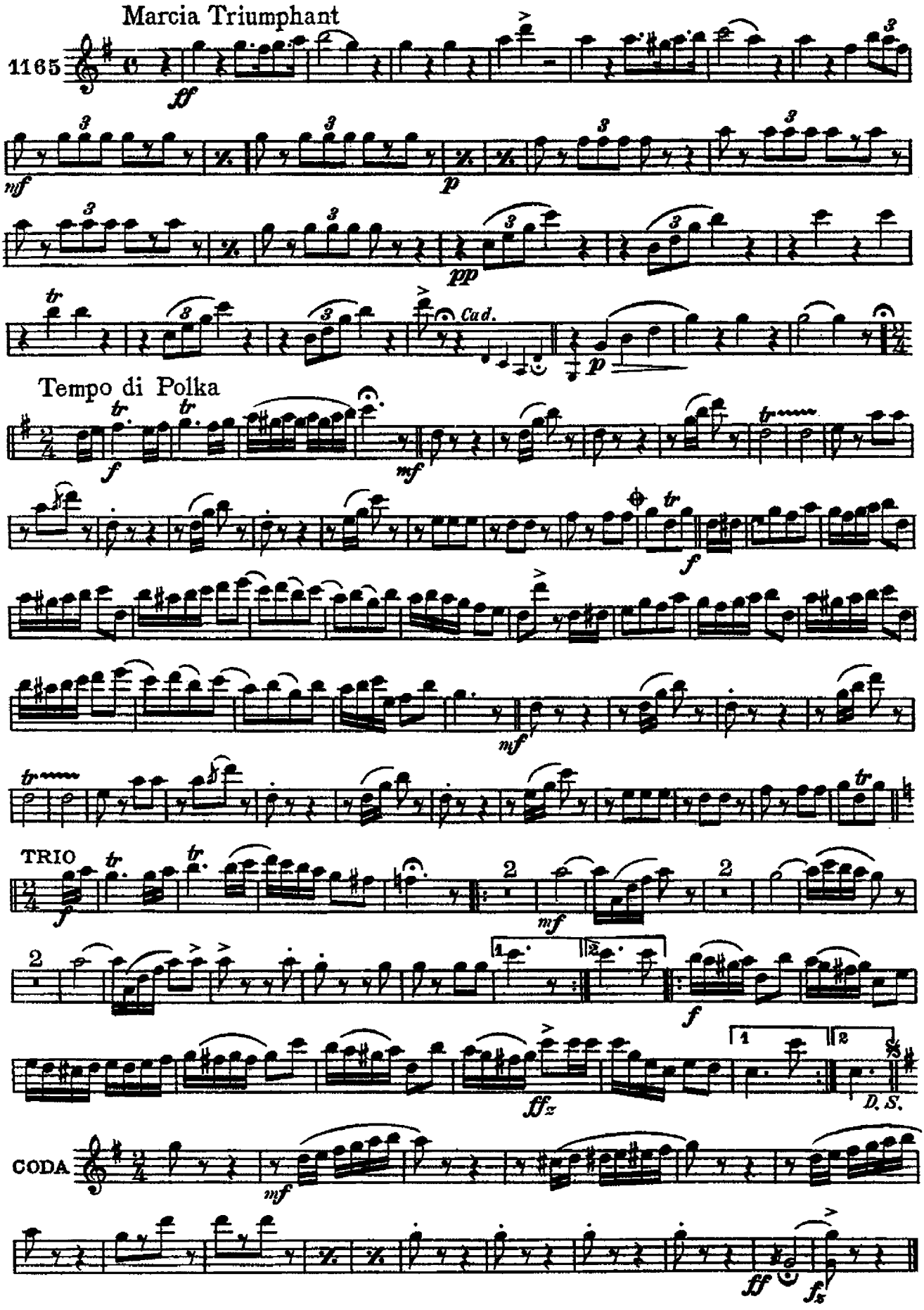

Fillmore Music House, Cin. O.

# Solo Pomposo

E♭ Clarinet

TUBA SOLO

AL HAYES




Fillmore Music House, Cin. O.

# Solo Pomposo

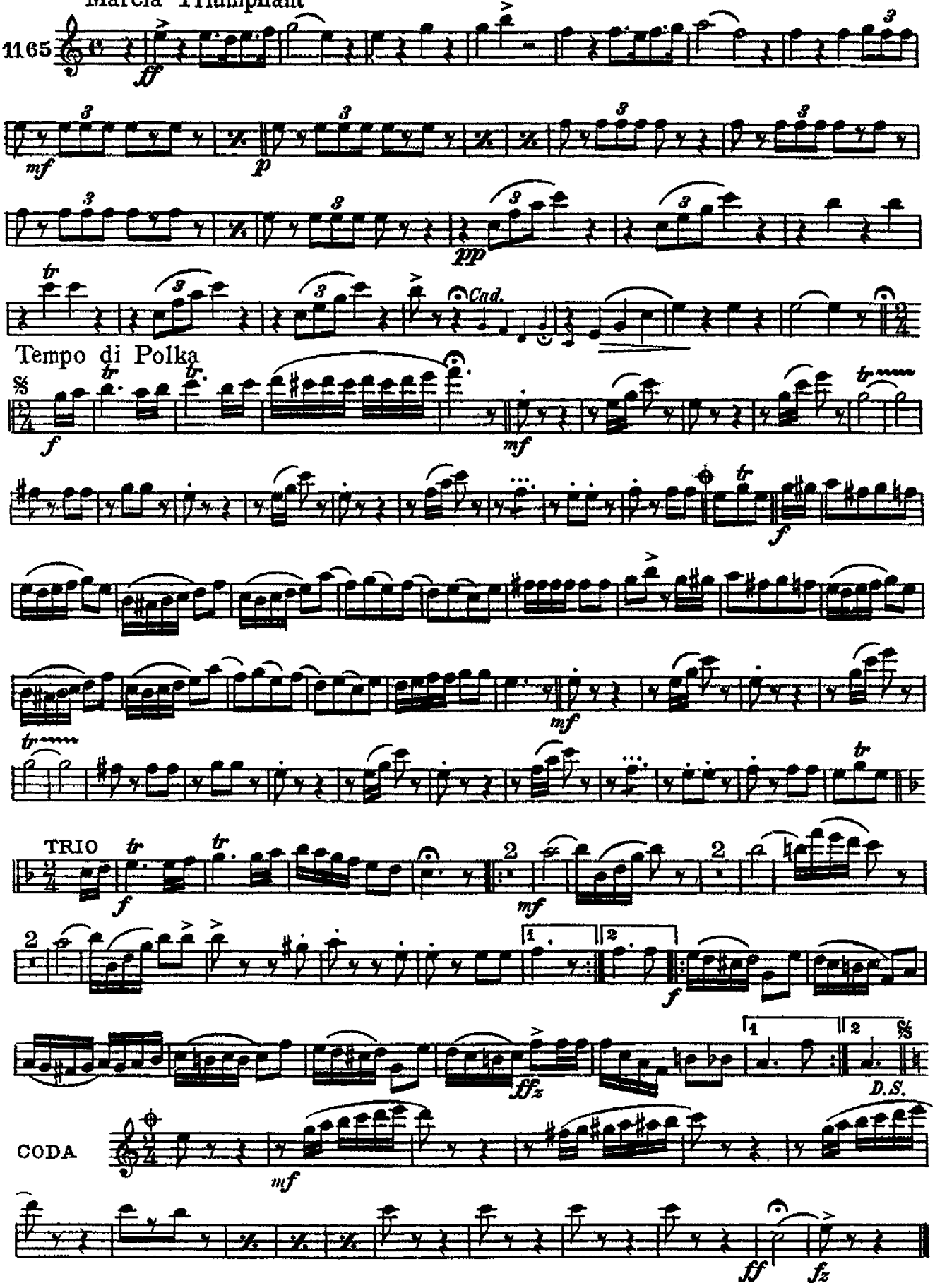
1st B♭ Clarinet

TUBA SOLO

AL HAYES

Marcia Triumphant

1165



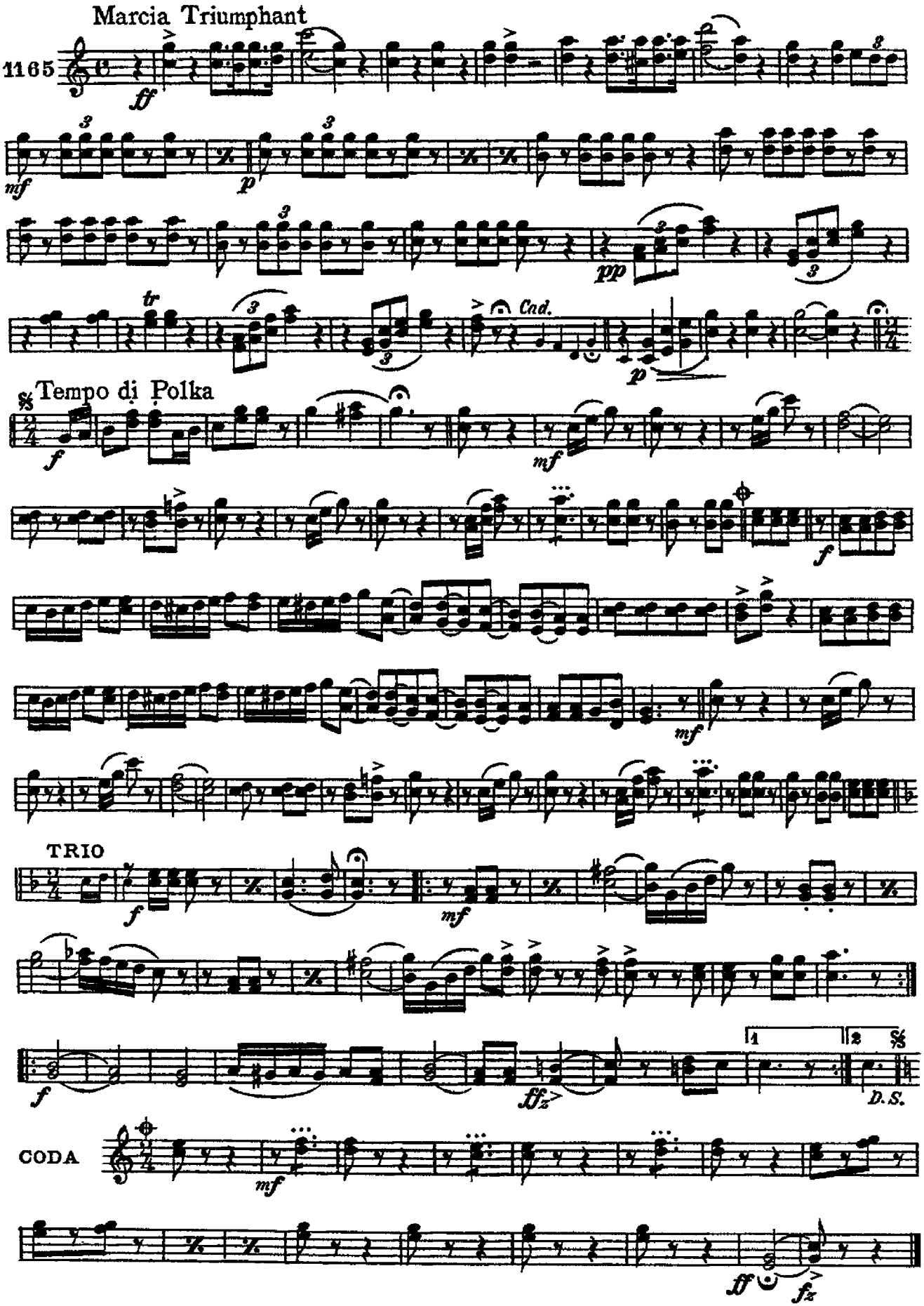

Fillmore Music House, Cin. O.

# Solo Pomposo

2d & 3d B♭ Clarinets

TUBA SOLO

AL HAYES



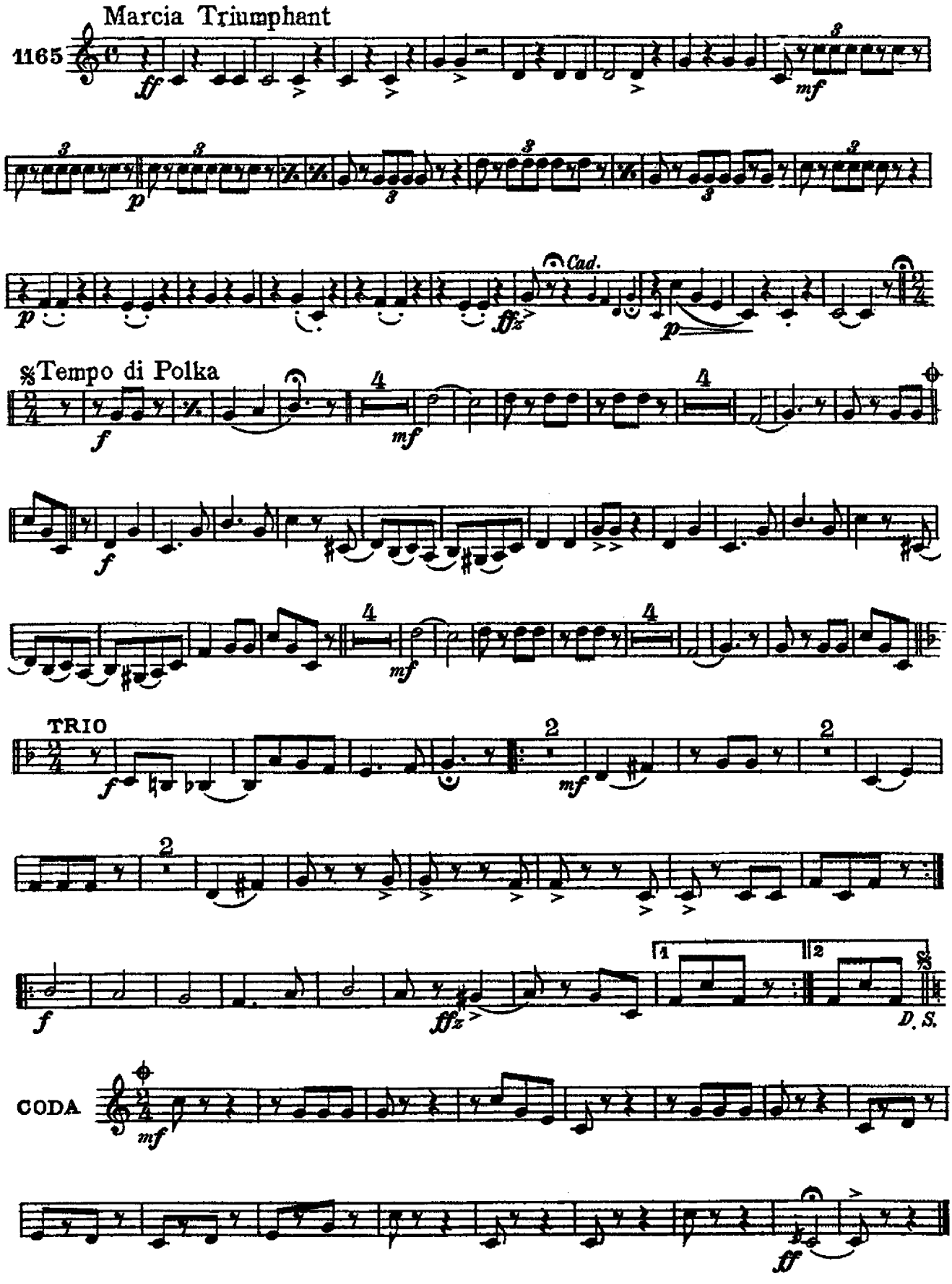

Fillmore Music House, Cin. O.

# Solo Pomposo

TUBA SOLO

BASS CLARINET
(From Trombone 3)

AL HAYES




Fillmore Music House, Cin. O.

# Solo Pomposo

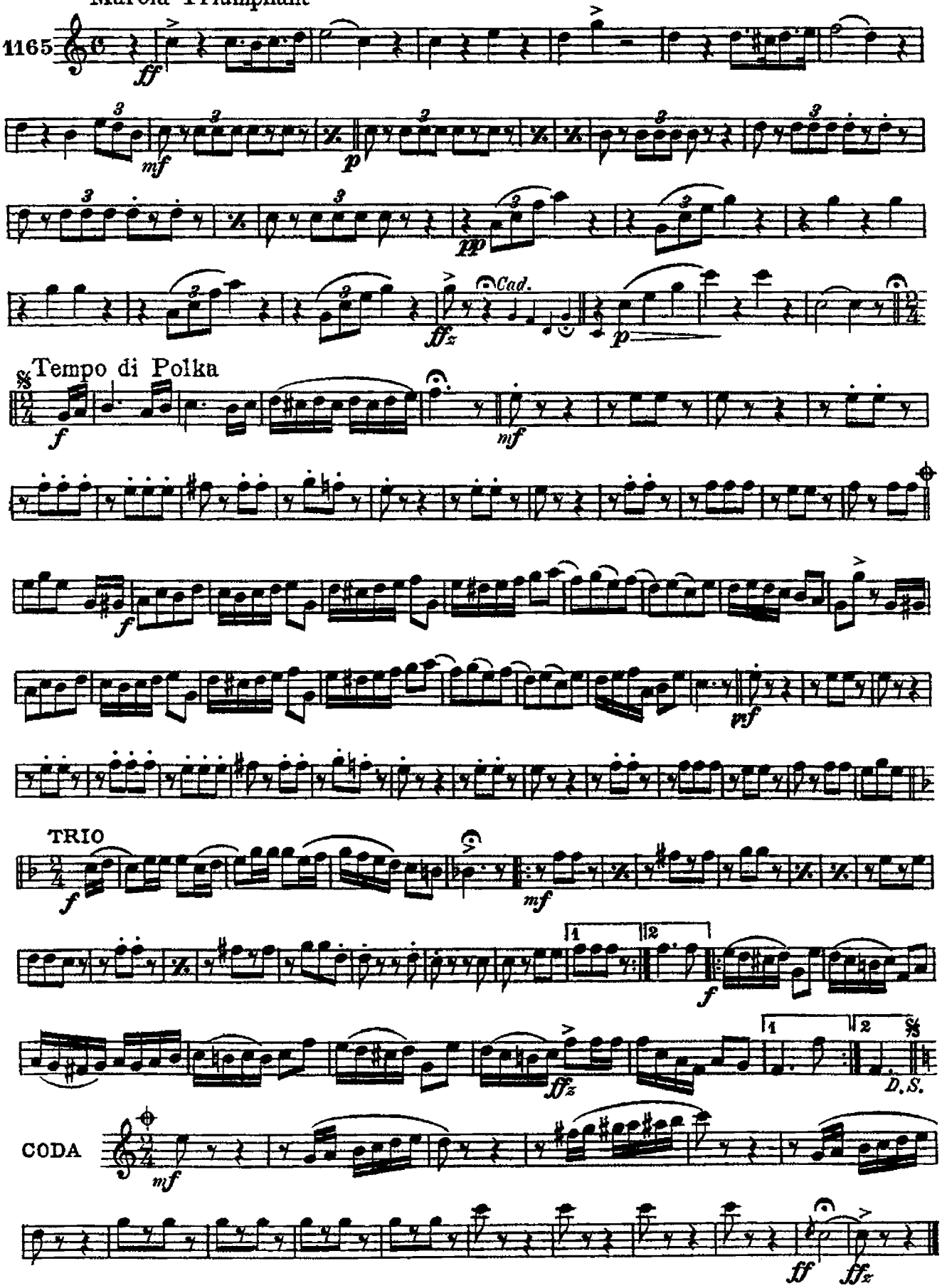
Soprano Saxophone

TUBA SOLO

AL HAYES

Marcia Triumphant

1165



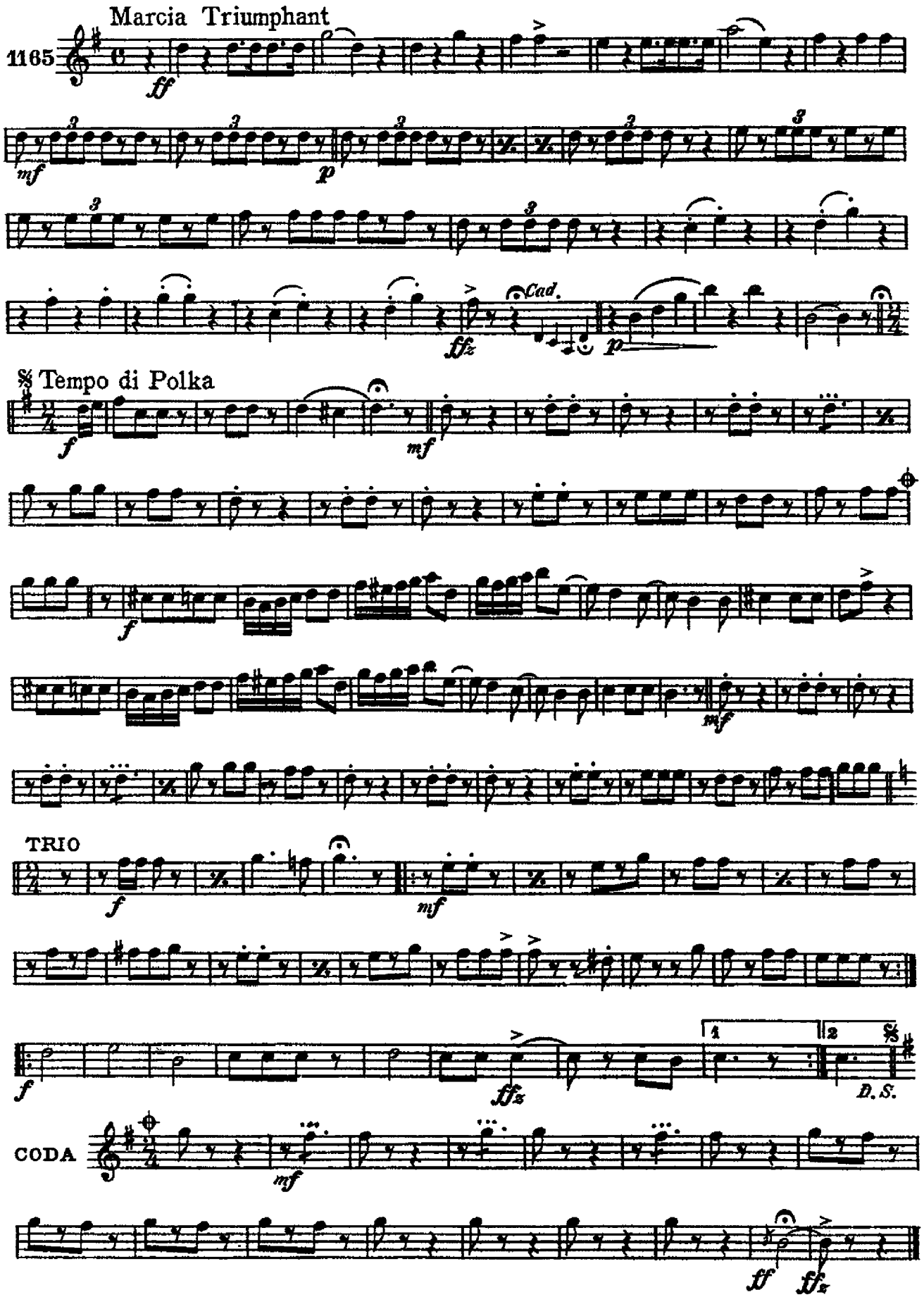

Fillmore Music House, Cin. O.

# Solo Pomposo

Alto Saxophone

TUBA SOLO

AL HAYES



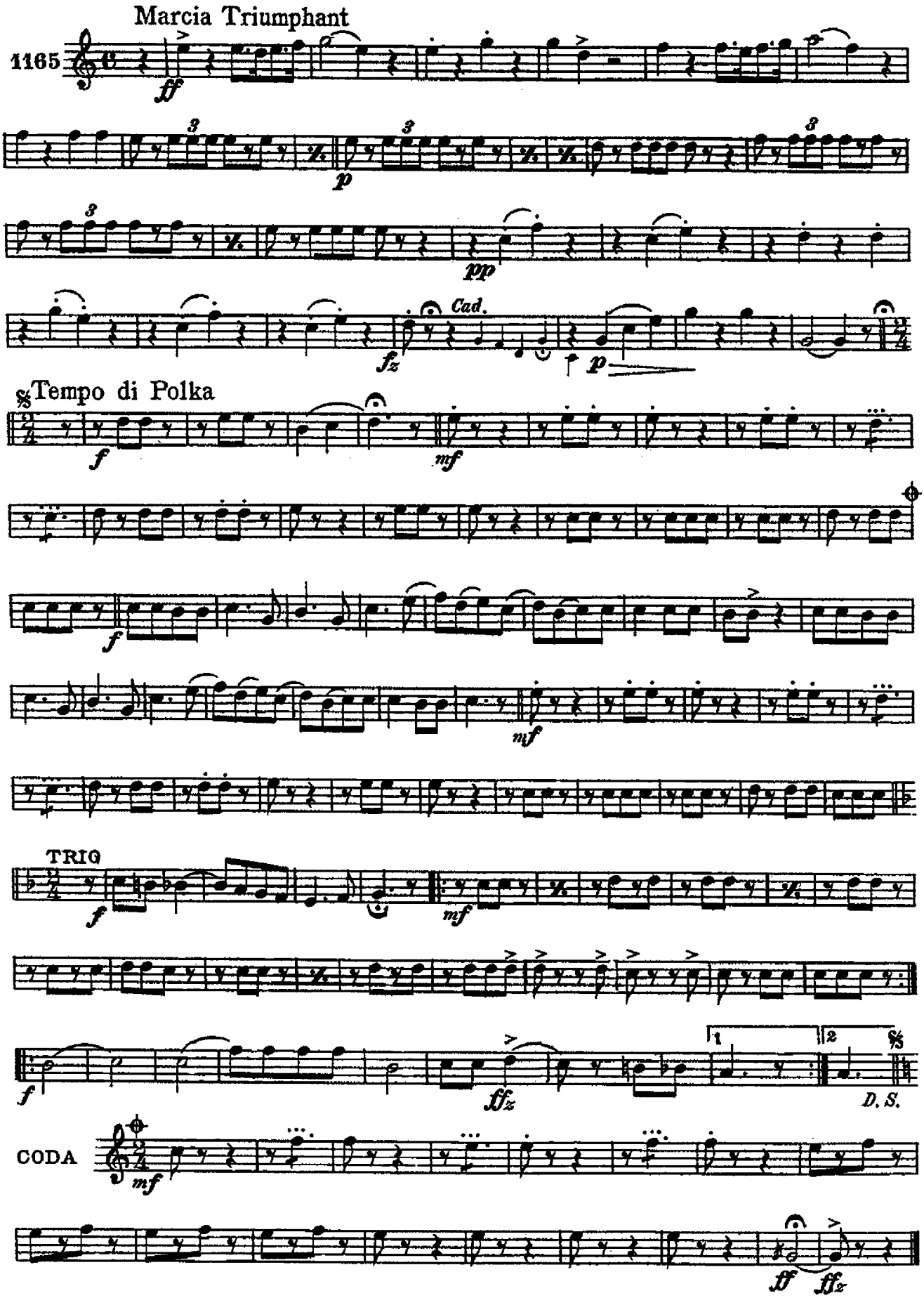

Fillmore Music House, Cin, O.

# Solo Pomposo

Tenor Saxophone

**TUBA SOLO**

**AL HAYES**



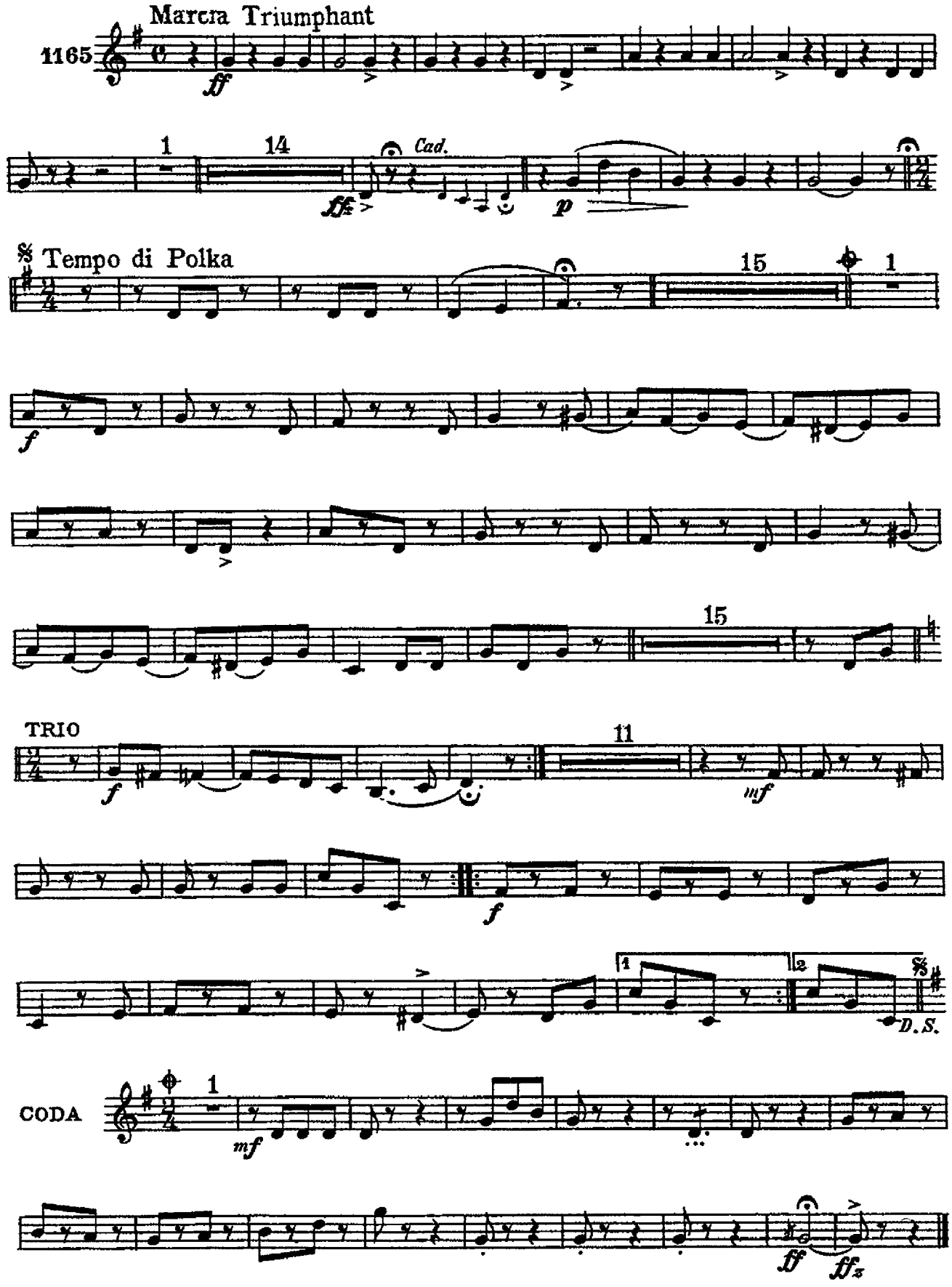

Fillmore Music House, Cin. O.

# Solo Pomposo

Baritone Saxophone

TUBA SOLO

AL HAYES




Fillmore Music House, Cin. O.

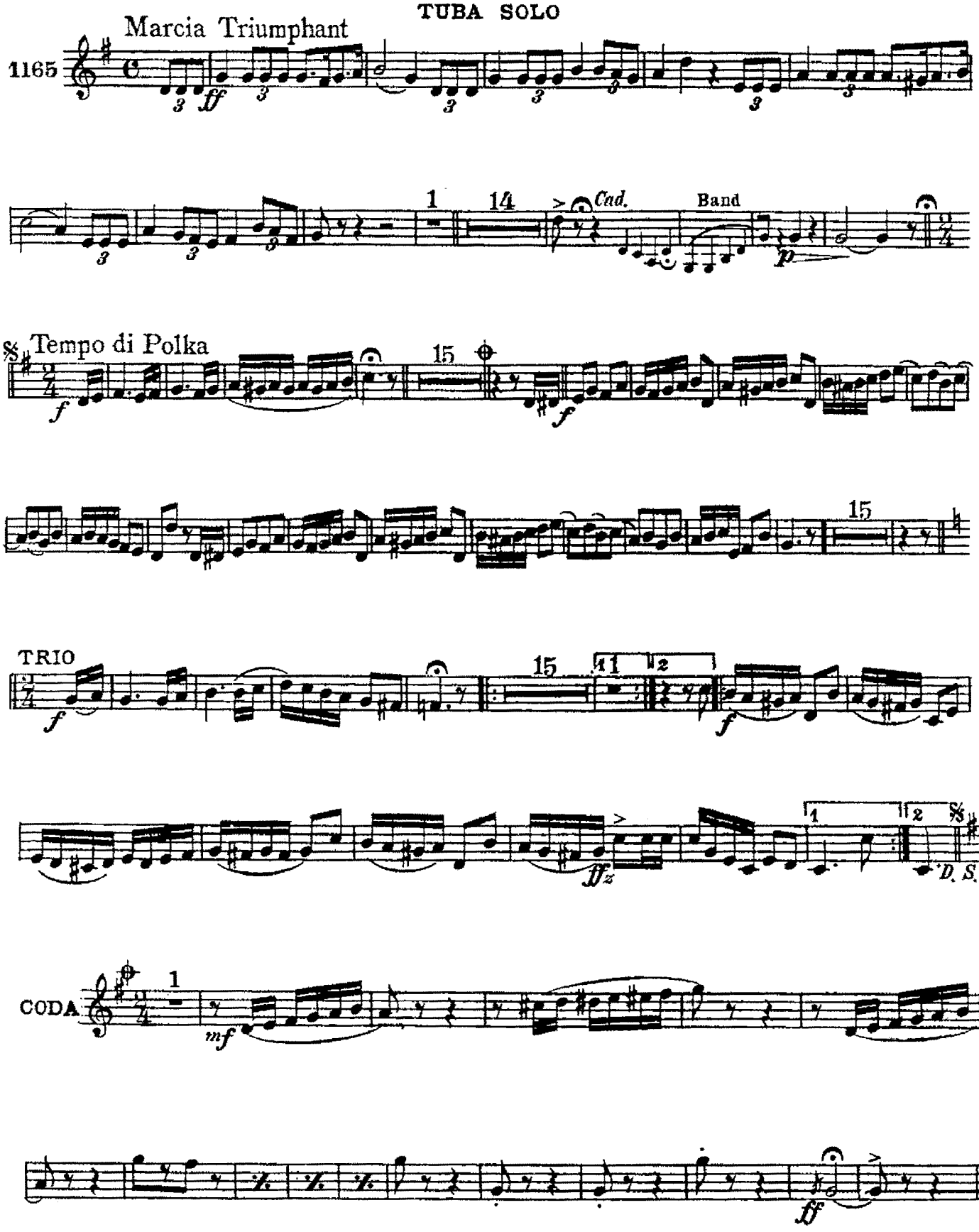
E♭ Cornet

# Solo Pomposo

AL HAYES

TUBA SOLO

Marcia Triumphant




Fillmore Music House, Cin., O.

# Solo Pomposo

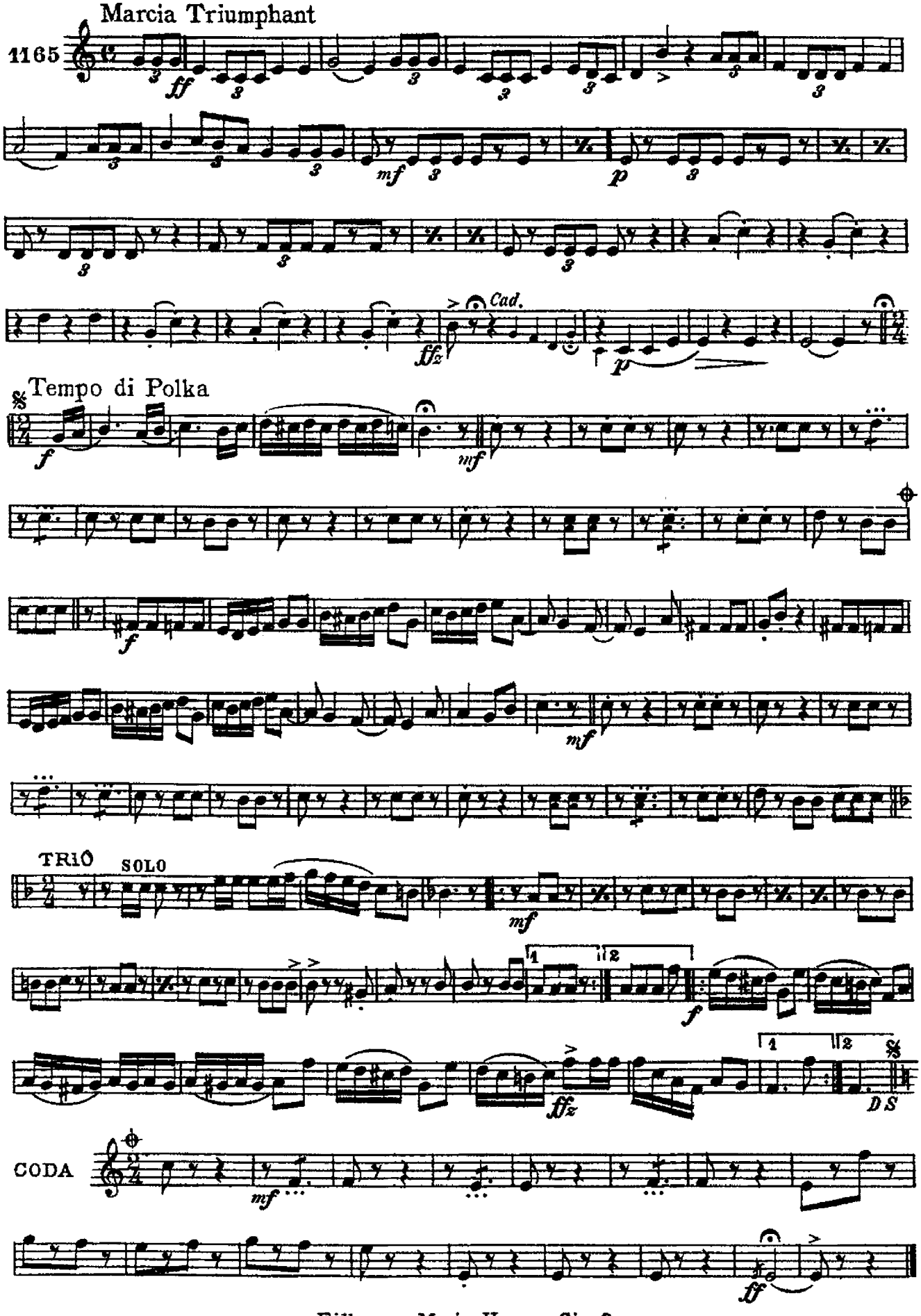
1st B♭ Cornet

TUBA SOLO

AL HAYES

Marcia Triumphant

1165




Fillmore Music House, Cin.O.

# Solo Pomposo

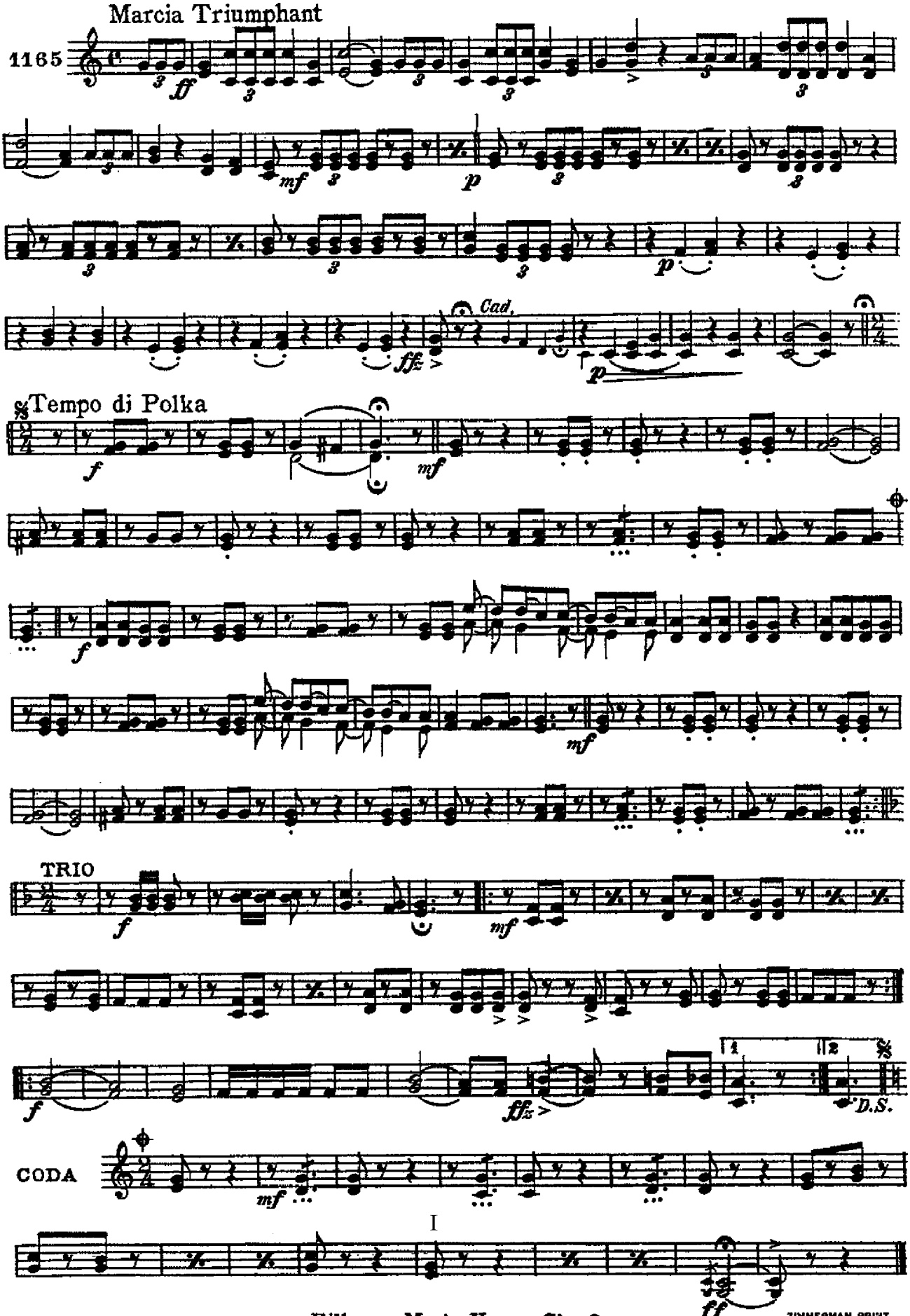
2d & 3d B♭ Cornets

TUBA SOLO

AL HAYES

Marcia Triumphant

1165

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Fillmore Music House, Cin. O.

ZIMMERMAN PRINT, CINCINNATI

# Solo Pomposo

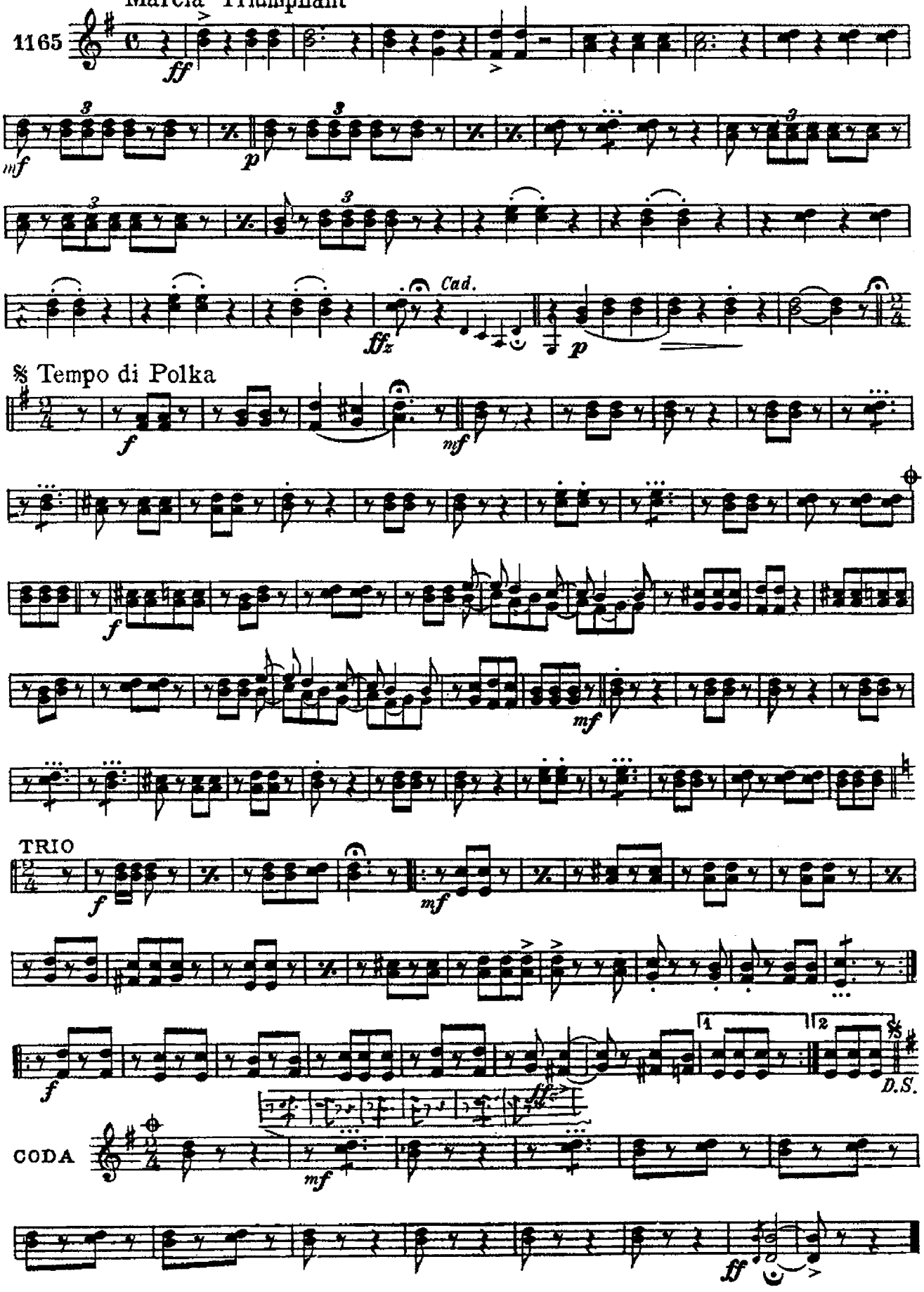
1st & 2d Altos

TUBA SOLO

AL HAYES

Marcia Triumphant

1165



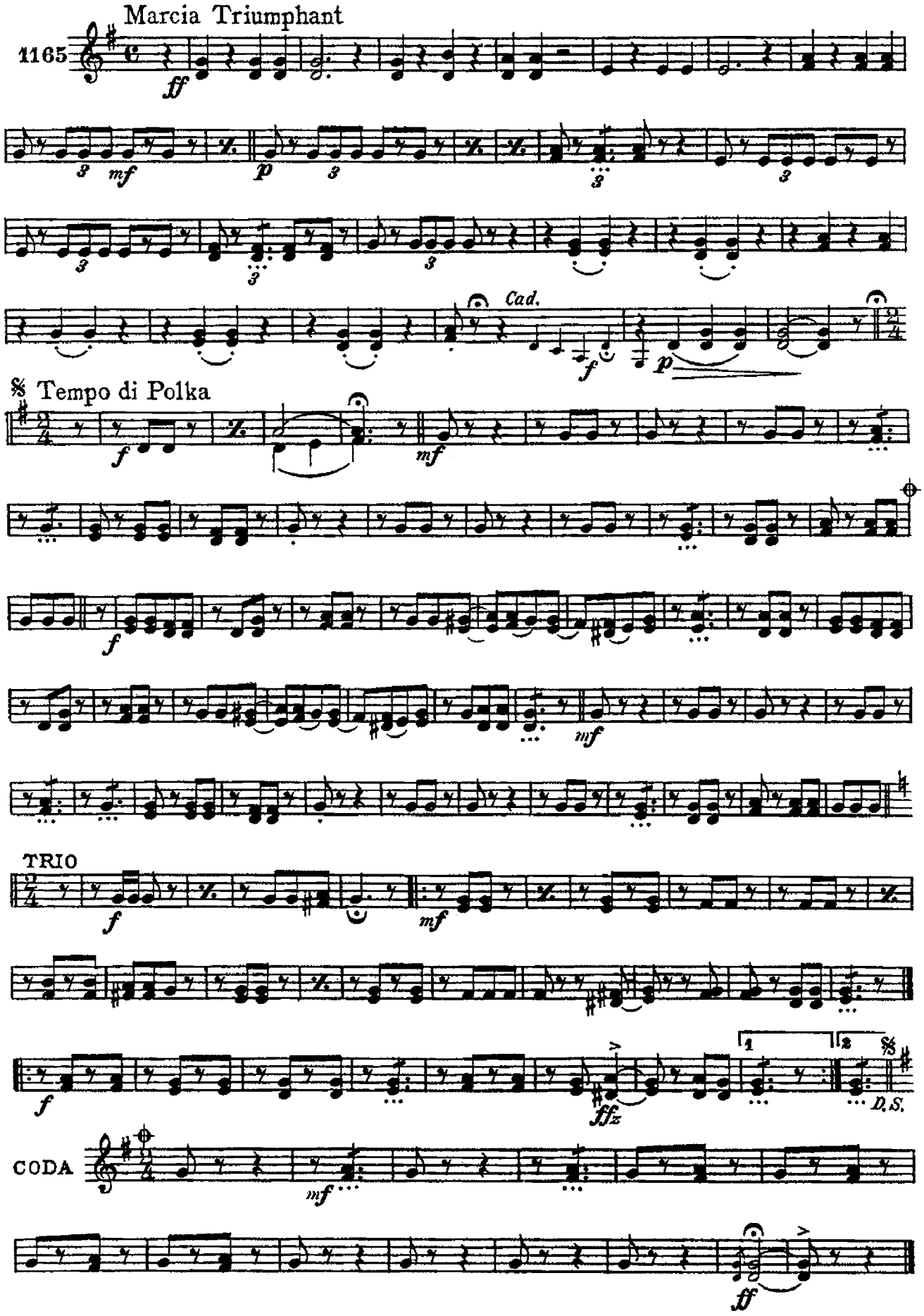

Fillmore Music House, Cin. O.

# Solo Pomposo

3d & 4th Altos

TUBA SOLO

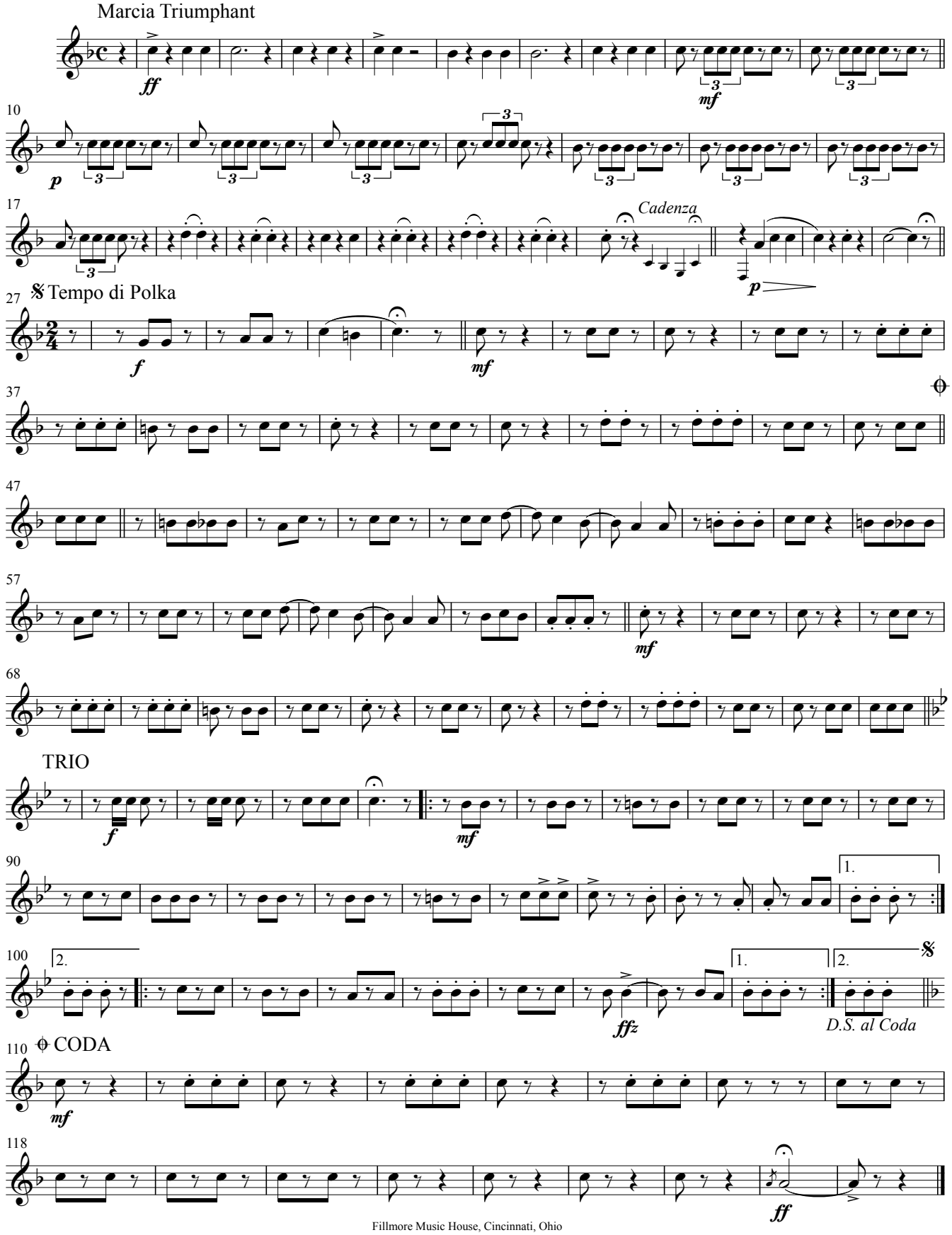
AL HAYES




Fillmore Music House, Cin. O.

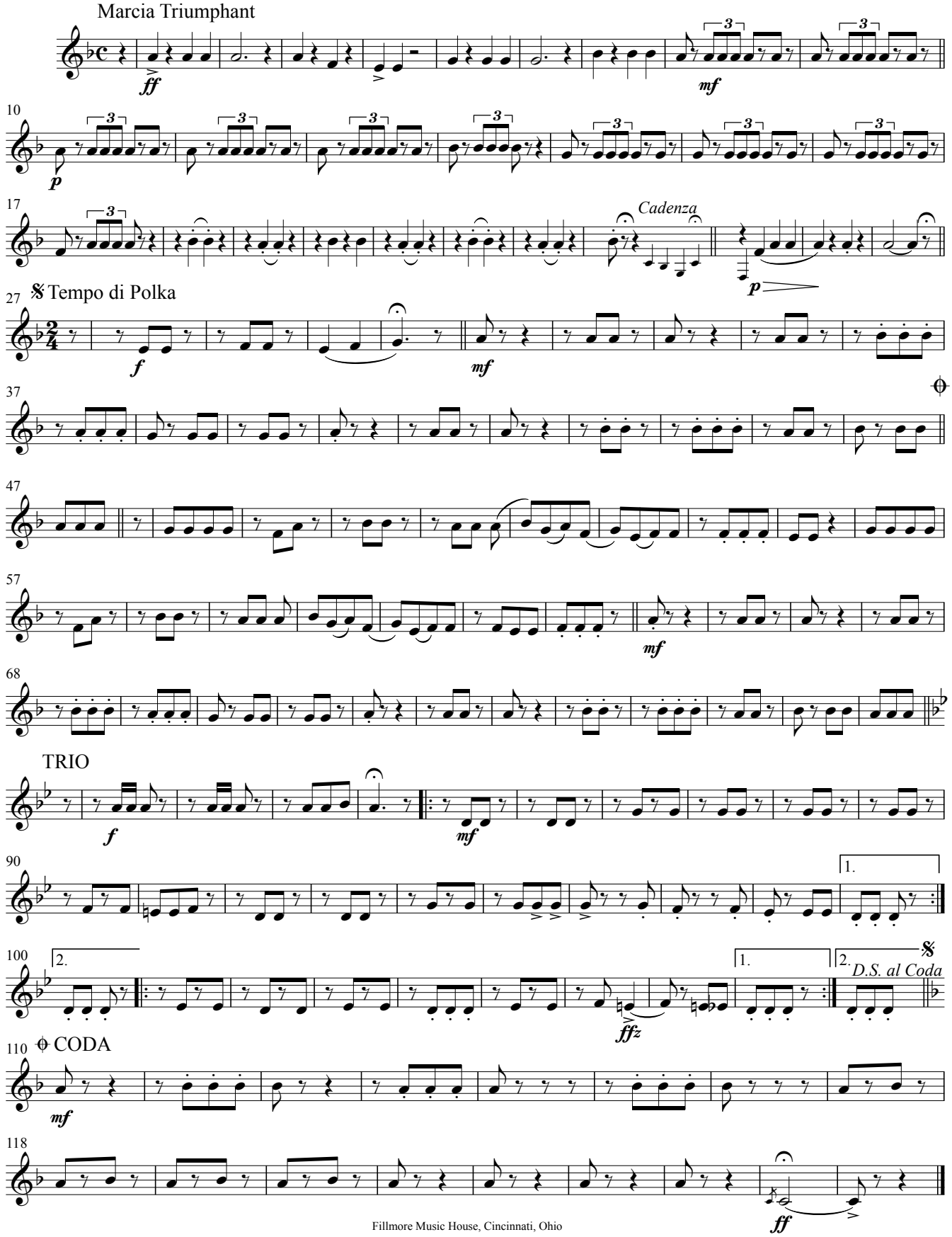
# Solo Pomposo

**Horn 1 in F** **Al Hayes**



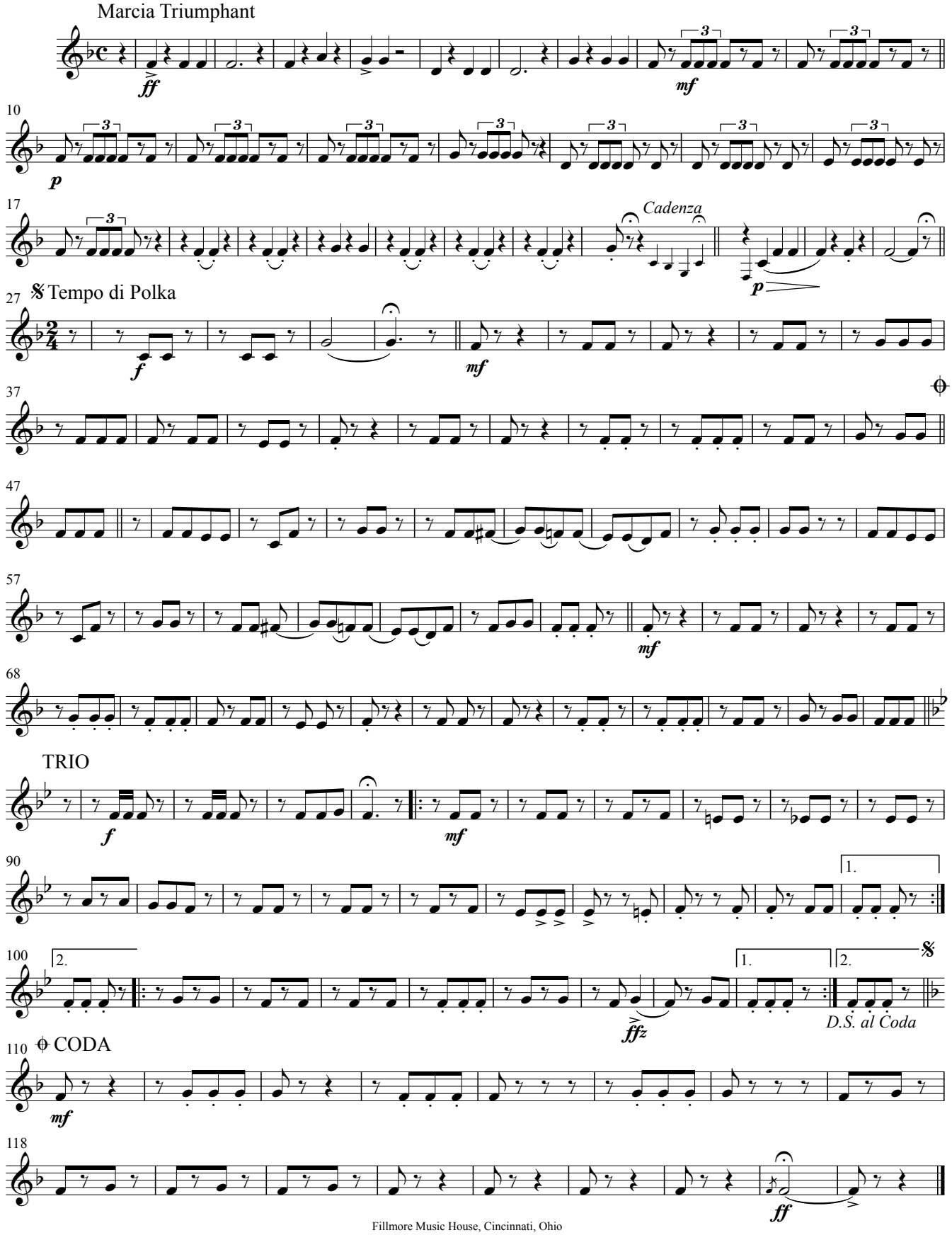
# Solo Pomposo

**Horn 2 in F** **Al Hayes**



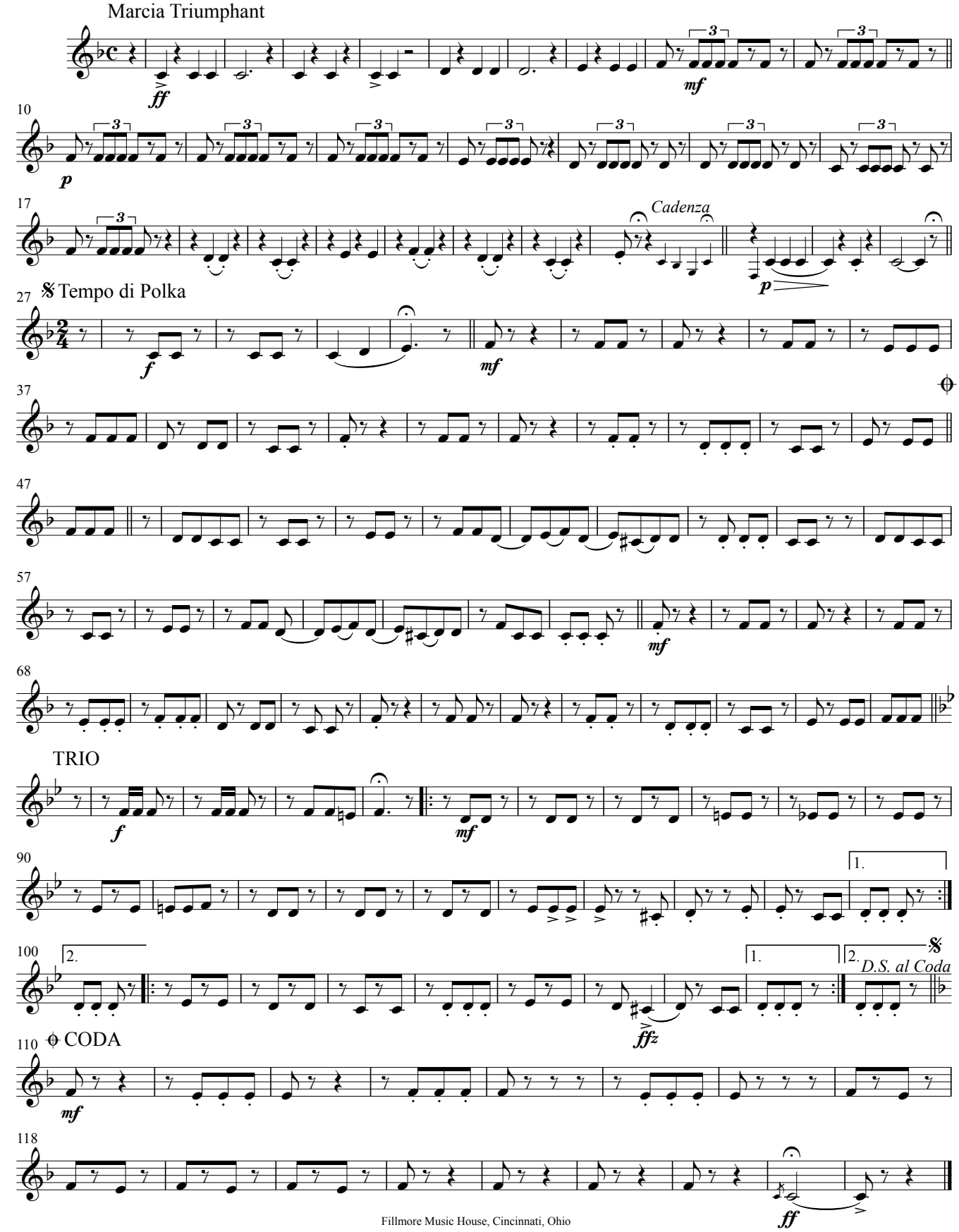
# Solo Pomposo

**Horn 3 in F** **Al Hayes**



# Solo Pomposo

**Horn 4 in F** **Al Hayes**



# Solo Pomposo

1st & 2d Trombones

**TUBA SOLO**

**AL HAYES**

Marcia Triumphant

1165

*ff* *mf* *p* *ffz* *Cad.* *p*

Tempo di Polka

*mf* *f* *f* *mf*

TRIO

*f* *mf*

*f* *ffz* 1 2 *D.S.*

CODA

*mf* *ff*

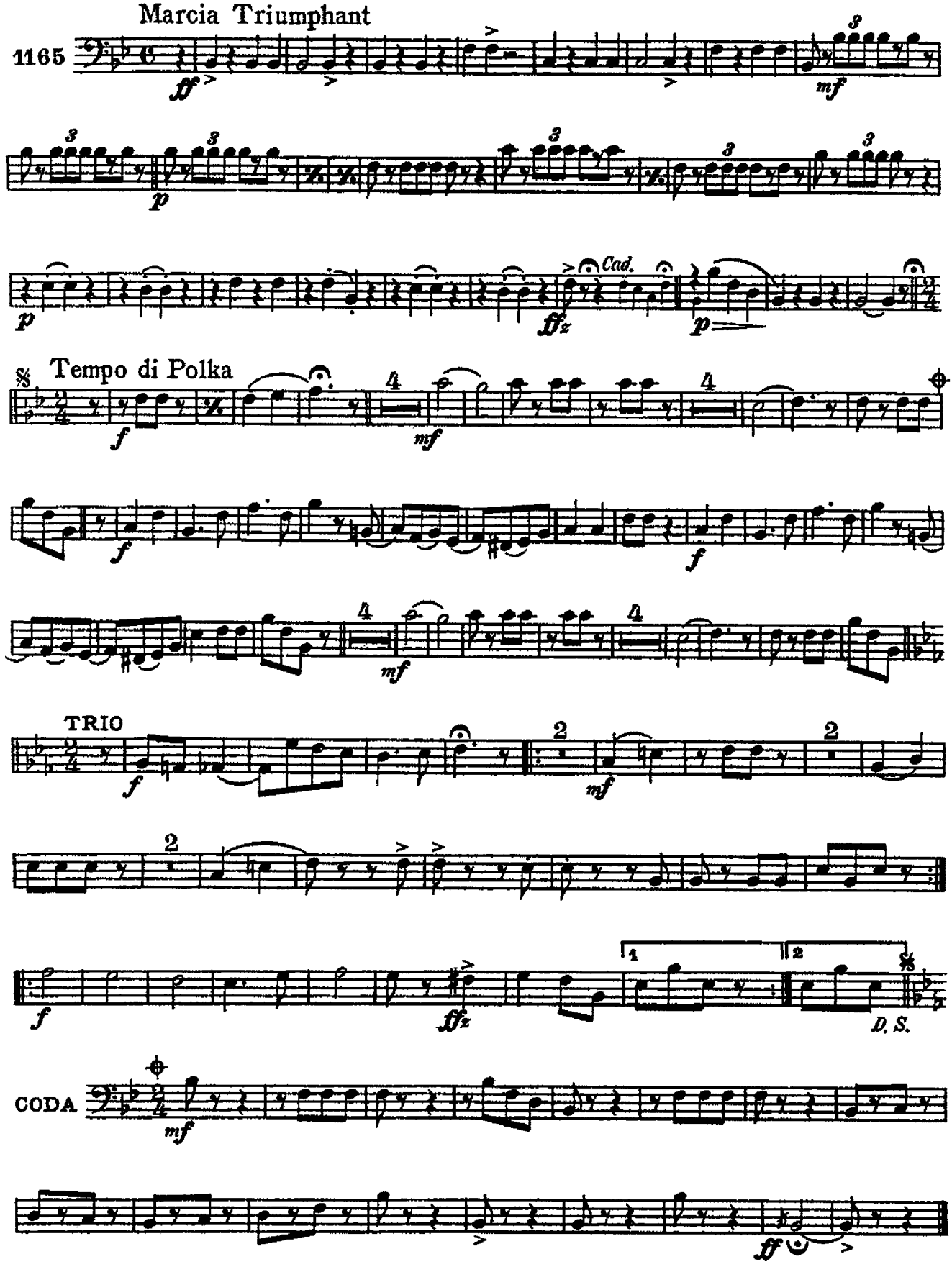
Fillmore Music House, Cin. O.

# Solo Pomposo

**TUBA SOLO**

3d Trombone

**AL HAYES**



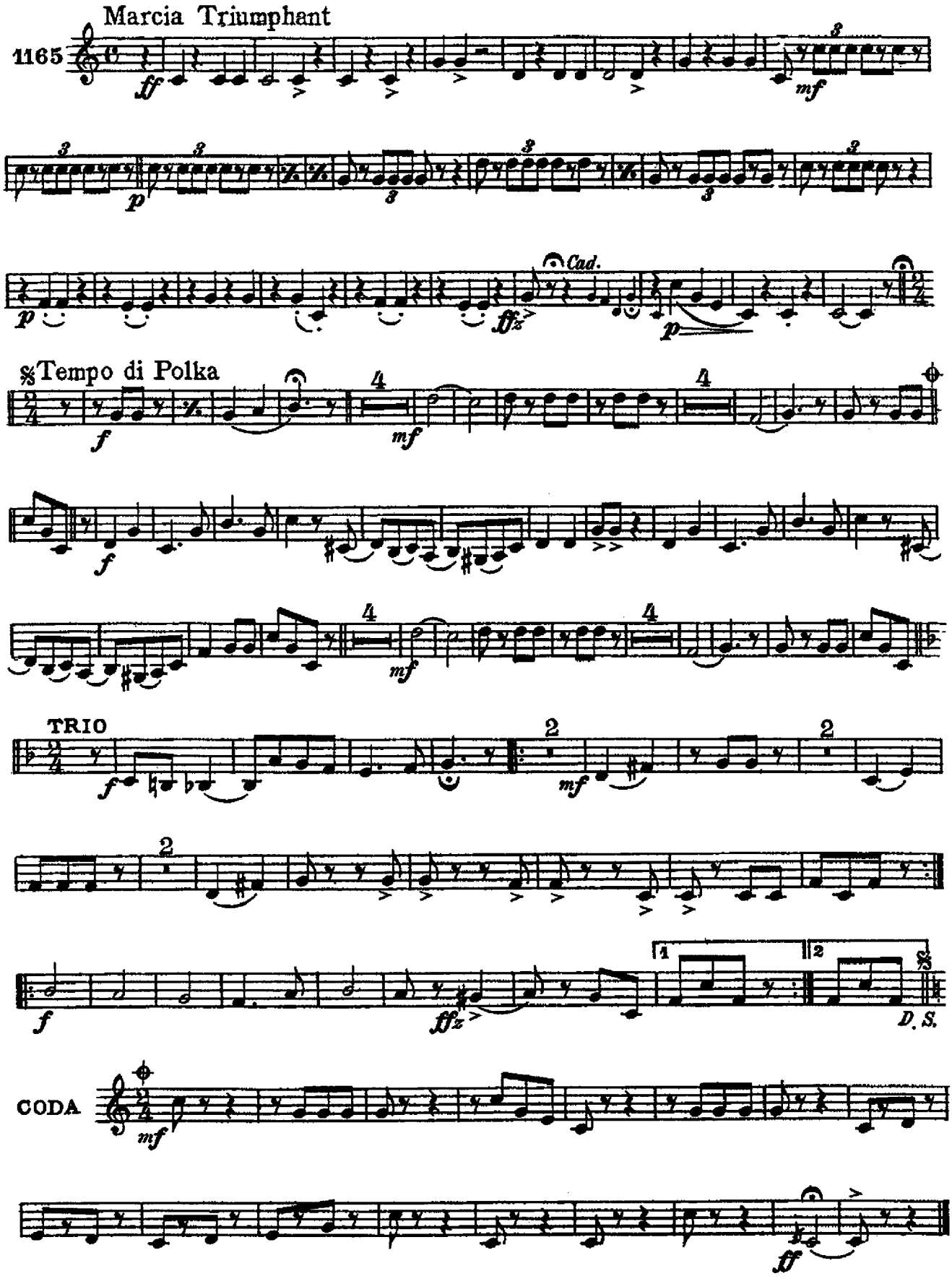

**Fillmore Music House, Cin. O.**

# Solo Pomposo

## TUBA SOLO

3d Trombone

AL HAYES




Fillmore Music House, Cin. O.

# Solo Pomposo

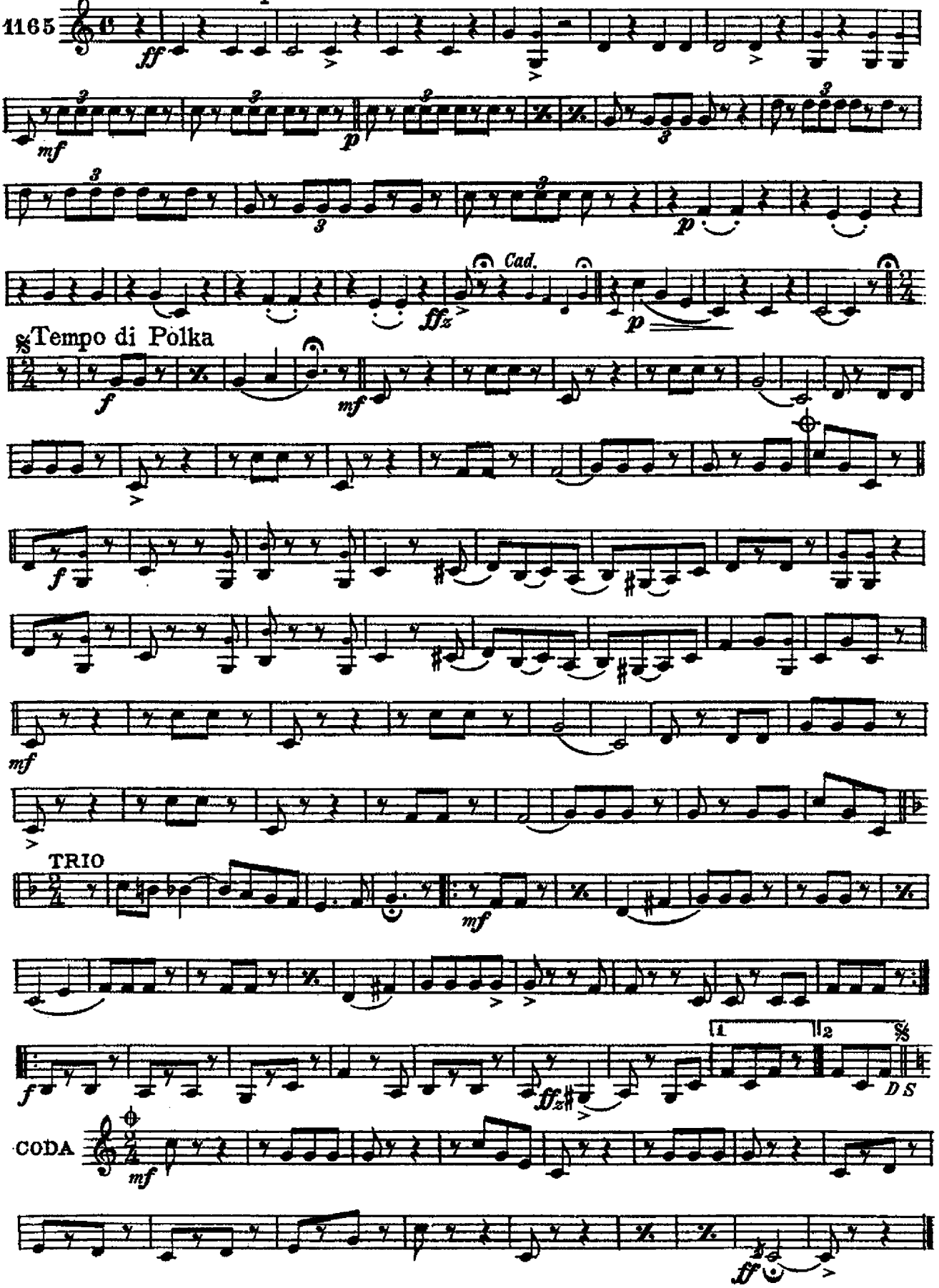
Baritone

TUBA SOLO

AL HAYES

Marcia Triumphant

1165




Fillmore Music House, Cin. O.

# Solo Pomposo

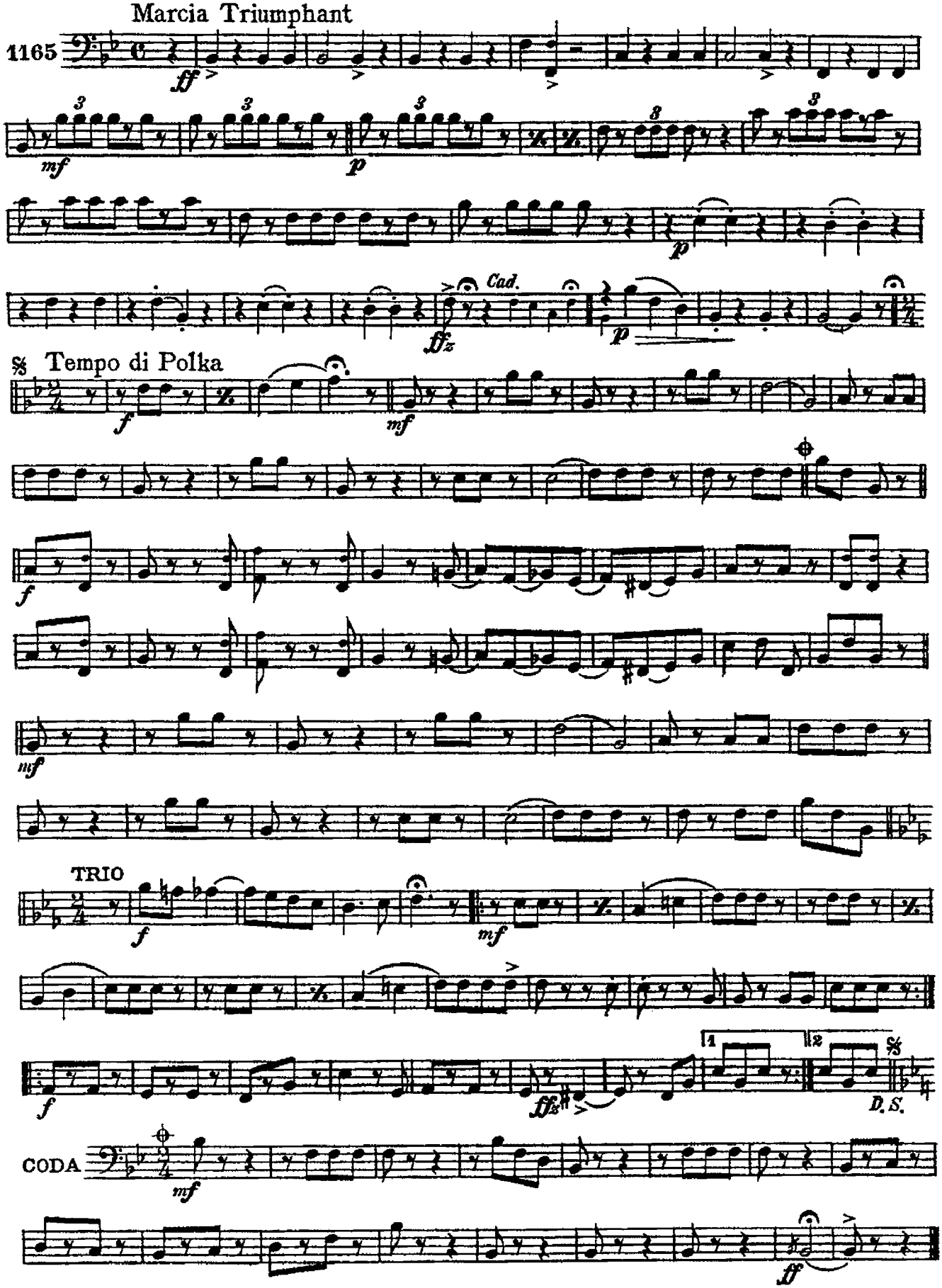
Baritone 𝄢

TUBA SOLO

AL HAYES

Marcia Triumphant

1165



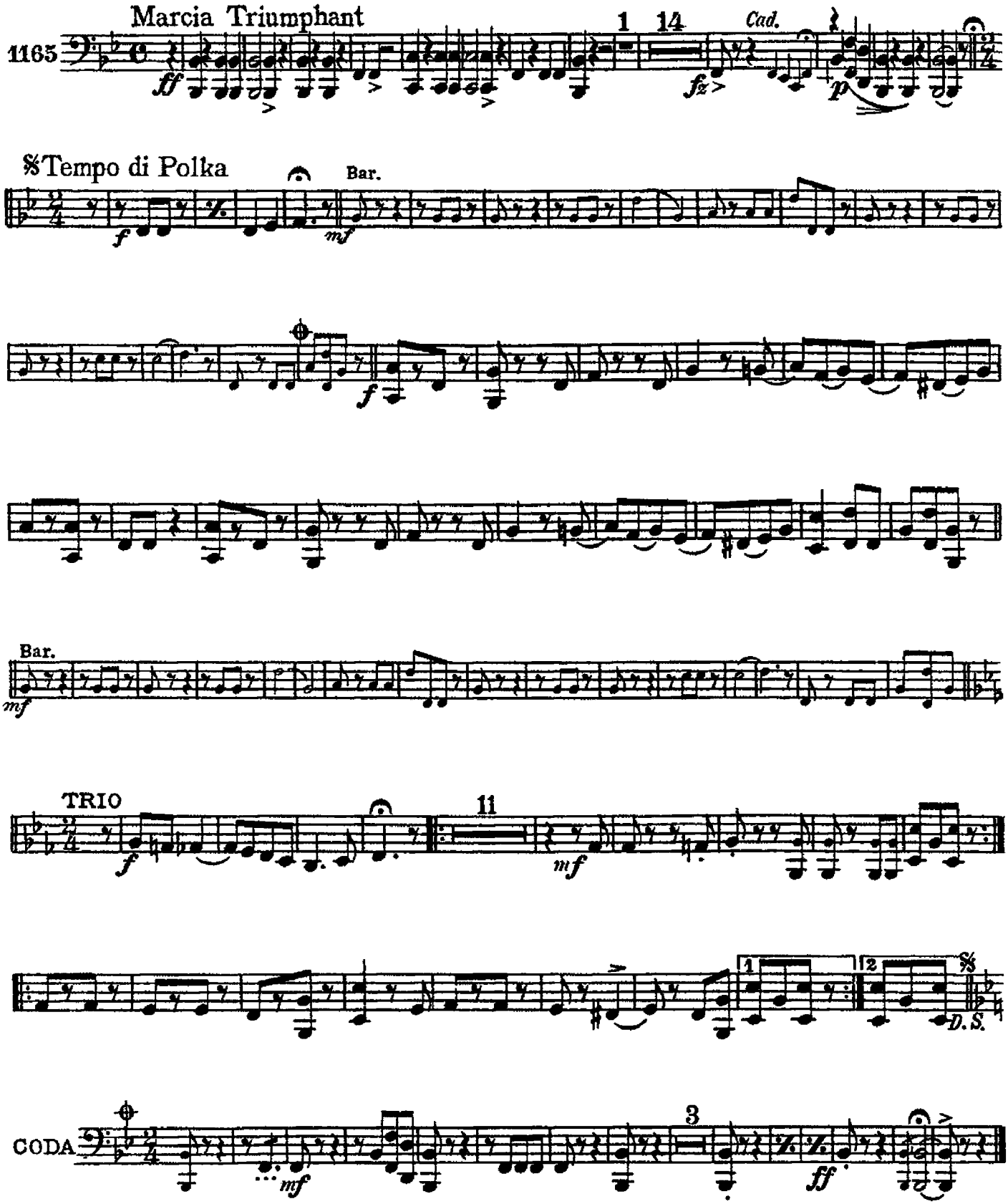

Fillmore Music House, Cin. O.

# Solo Pomposo

**TUBA SOLO**

Basses

AL HAYES



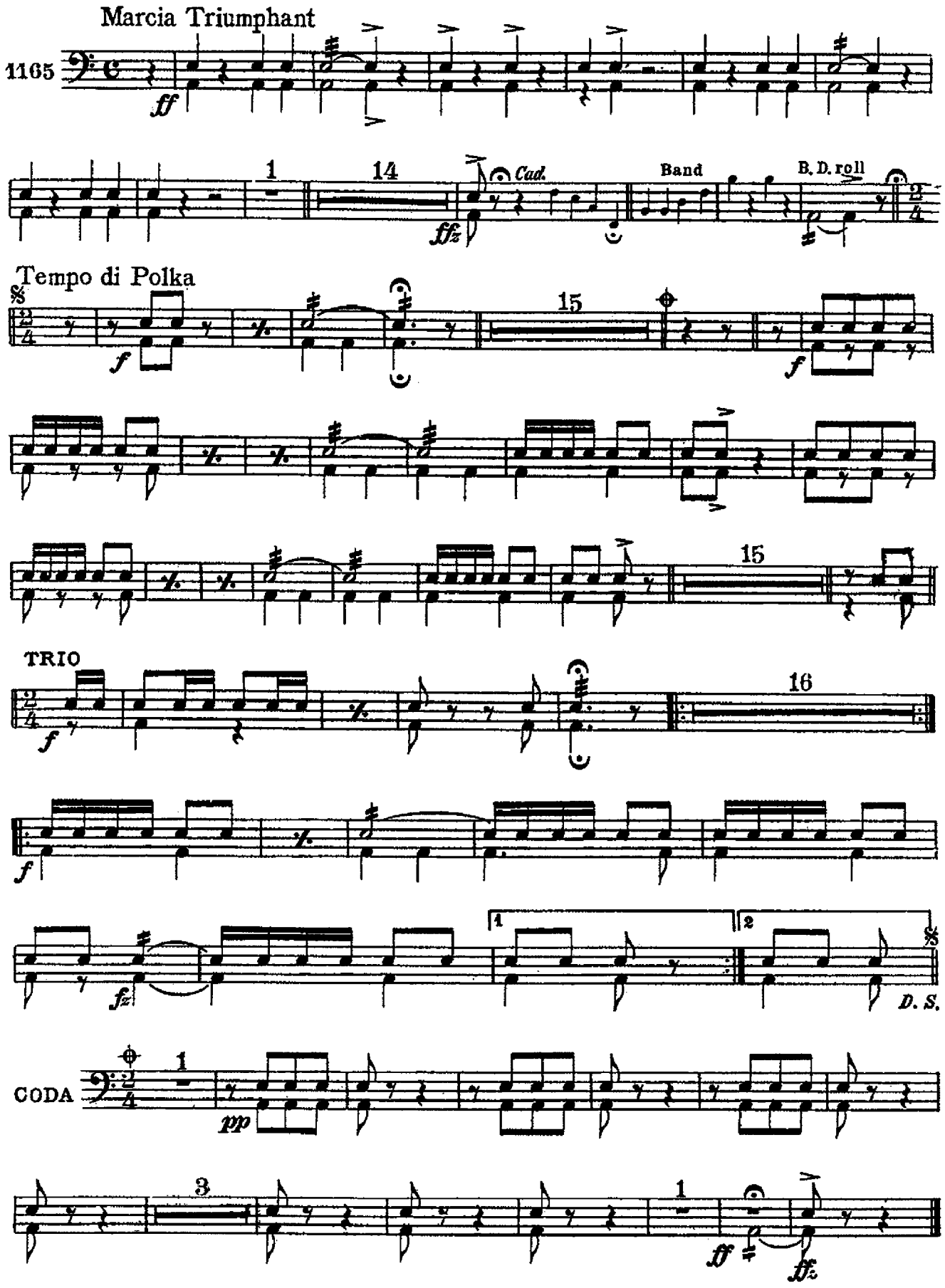

Fillmore Music House, Cin. O.

# Solo Pomposo

**TUBA SOLO**

Drums

**AL HAYES**




Fillmore Music House, Cin. O.

BW 2015

# The Bandworld Legion of Honor

Previous LEGION | Next LEGION

## A special award of

## The John Philip Sousa Foundation

### Daniel Wooten

Daniel Wooten is the Director of Bands at Niceville Senior High School in Niceville, Florida. He began at this current position in 2003. Daniel has held a variety of music positions since graduating from Louisiana State University with his BME.

Wooten has served at a variety of high schools in Florida with a ten year stint in Ohio. He also held the position of Assistant Director of Bands at the University of Louisville and was the Music Outreach Coordinator for the same school.

Wooten is a three-time recipient of the National Band Association's Citation of Excellence.He was named the Florida Bandmasters Association Oliver Hobbs Award for recognition of consistent and superior performances and commitment and service to band students. He was also a Grammy Nominated Music Educator Semifinalist in 2013-14. Wooten topped that off by being named Niceville High School Teacher of the Year for 2015-16.

When asked about things that shaped his life he says, "The unique sum total of my experiences have been a blessing and I believe

they allowed me to transmit a love of music and the arts to my students in such a way that I have over a dozen former students who are now music educators." He also considers these experiences to have helped him get many students placed into prestigious universities and conservatories.

Because of his philosophy he tries "to provide a compelling experience in a safe environment that allows every student to bloom, develop life skills, and become educated consumers of music as well as lifelong patrons of the arts."

The Bandworld Legion of Honor was established in 1989 to honor, over the course of a year, eight of the finest band directors in our business.

Recipients have taught for at least fifteen years, have maintained a very high quality concert band program, and have contributed significantly to the profession through dedication to bands and band music.

Each is honored at the annual Sousa Foundation awards ceremony during the Midwest Band Clinic in Chicago, Illinois.

Chairman of the Legion of Honor Committee is Terry Austin,Virginia Commonwealth University.

Legion Laureates List Link

### Michael Fiske

Michael Fiske is the Director of Bands at Joliet Central High School in Joliet, Illinois, a position he has held for the last fourteen years. He has spent his entire carreer of nearly forty years in the high schools of Indiana and Illinois.

Fiske earned his BME from Bradley university and his MME from the Indiana University School of Music.

Fiske has been named the Chicagoland Outstanding Music Educator in 2003. In 2011 he was named Steelman of the Year. The Joliet HIstorical Museum named him their Dream Maker Awardin 2013 and he topped that off with the Joliet Area Great Teacher Award in 2015.

He has given back to the profession by serving as the Indiana Bandmasters Association's Vice-president.

His groups many achievements were topped off with a perfect score at the Illinois State University Concert Band Festival in 2015.

After naming off hismany mentors Fiske says, " perhaps most important factor in shaping my career has been the constant love and support of my wife, Nancy,

throughout all my 39 years of teaching. She has been my greatest ally and most honest critic. There really is a special place in heaven for band directors' wives."

His philosophy is this,"Teaching music as the most noble of all art forms involves understanding of the musical process and conveying that process to my students. Music is the language of the human spirit. Understanding music as such enables the musician to convey the true beauty in expression and nuance on a "heart level". Helping students to accomplish this level of performance fosters a lifelong love of performing and listening to great music. Every student will not become a music teacher or professional musician. But they can acquire a musical life as a result of sensitive study of this noble art. If we can help them accomplish that, we have done a fine job!"

Terry Austin Bio
Legion of Honor Chairman

# DON'T I JUST PUSH THE BUTTONS AND BLOW?

## (A Band Director's Guide to Woodwind Pitch)

Jessica Tippett
Practical Application 2
MUSI 5398
American Band College at Sam Houston State University

# Table of Contents

## Have you ever been in this situation?

A portion of band rehearsal has just been spent tuning each and every member of the woodwind section on a concert B-flat. Now that each instrument has been properly adjusted, the band is ready to make the first sounds. The students bring their instruments up to playing position, take a deep breath, and play the first few notes of the piece and...

...the most horrendous sound is heard from the woodwind section!

"How can this be?!" the director and students ask themselves. "We just spent twenty minutes making sure each instrument was in tune!"

The director stops in frustration and proceeds to tune each and every woodwind instrument again, but this time not using a concert B-flat as the tuning note. Instead, the director asks each student to play the first note of the piece individually as he glances at the electronic tuner to see if students are still in tune. Sadly, none of them are. As the director turns to Sally, the first chair flute player, to have her play her first note of the piece, she looks up angelically at the director.

"But my concert B-flat is already in tune," Sally states, innocently. "Once that's in tune, don't I just push the buttons and blow?"

* * *

Unfortunately for Sally, playing a woodwind instrument in tune is not as easy as pushing buttons and blowing. Bad intonation problems are the result of not understanding the tendencies of an instrument and have a negative effect on the band's sound. *Don't I Just Push the Buttons and Blow? (A Band Directors Guide to Woodwind Pitch)* provides directors with the necessary information to teach their woodwind players how to fix their intonation problems. Most intonation problems for woodwinds are caused by things the players are doing.

This book provides in-depth information about the pitch tendencies for each instrument and ways to improve intonation in the woodwind section. Each instrument is discussed and information is provided in three sections:

- The first section provides basic information about each instrument including what causes bad intonation. Solutions to intonation problems controlled by the student are also discussed.
- The next section contains a reproducible alternate fingering chart created to help make out of tune notes sound more in tune.
- Finally, a reproducible student-friendly Pitch Tendency Packet provides information about intonation.

This book is not designed to be read cover-to-cover but instead used as an as-needed reference for the band room.

## Alternate Fingering Section

Each instrument has alternate fingerings that will help improve intonation. The selection for each note is based off of the pitch tendencies specific to that instrument. Not every note considered out of tune will be included because sometimes the best adjustment to pitch is done by the student. These alternate fingerings should not be taught until they understand how to make adjustments using the standard fingerings. These fingerings will not be helpful to every student, but they provide another option for solving pitch problems.

## Pitch Tendency Packet

Intonation is a very individual process and probably is the most frustrating thing about playing a woodwind instrument. The purpose of the Pitch Tendency Packets is to get students to discover what their individual intonation problems are and what they can

do to play more in tune. Each Pitch Tendency Packet includes information explaining the science of intonation, how it is heard, what determines flat and sharp, and suggestions for memorizing pitch tendencies. A how-to guide for an electronic tuner is included as well.

The Pitch Tendency Chart included in each packet covers the range of the instrument. Depending on the level of the student, certain notes may need to be left out. Students will need an electronic tuner and somebody to help them fill out the chart, whether it is the director, a parent, or another student. This chart should be filled out at least twice a year because students' pitch tendencies may change as they advance.

Once the student has completed the Pitch Tendency Chart, the student should consult the Quick Fixes page to learn ways to improve intonation. They should experiment with each suggestion to find what makes them sound the most in tune.

## The Results...

It is well worth the time and effort to engage students in the tuning process. They will feel a sense of ownership with their playing and will feel obligated to play in tune with their best tone all the time. Students will start to actively listen to what they are playing and make adjustments to their intonation without even thinking about it. Not only will the efforts of individual players improve, but the overall intonation of the band will get better!

# Flute

## Sound Production

Many believe that sound on the flute is created by blowing air into the head joint. The initial noise of the flute is actually produced at the edge of the aperture hole while the body of the flute turns air vibrating at the aperture hole into musical sound. The head joint carries the air from the edge of the aperture hole to the body of the flute. The sound that vibrates at the edge of the aperture hole, called the edge tone, is similar to lips buzzing on a brass instrument. As air is blown at the edge of the aperture hole, it does not flow smoothly around or past the edge. Rather, it becomes quite turbulent. The air moves side to side, creating small whirlpools of air above and below the edge of the tone hole. The effect heard without the body of the flute is a high-pitched whistle, much like what happens when wind whistles through a crack in a door.[1]

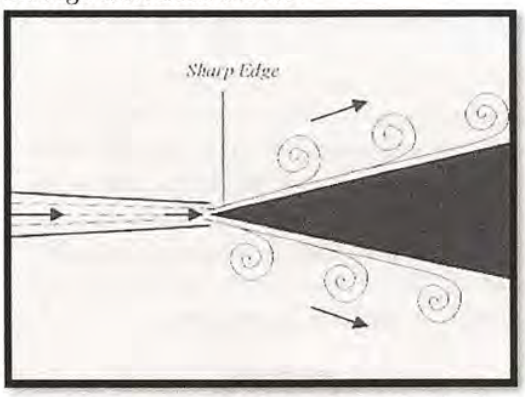



**Figure 1: A demonstration of what air is doing when it reacts with the edge of the aperture hole.**

When the edge tone separates, the downward air travels down the body of the flute. As the air reaches the end of the flute, it reacts with low-pressure air that is already in the flute from the atmosphere. The low-pressure wave combines with the air from the player to make high-pressure air. This air is forced back up the instrument to react with the air coming from the player. The entire process takes a very short amount of time.

[1] (Jakeways, 2011)

Every time the air moves up and down the flute, they increase in power forcing the air to oscillate in and out of the first open hole, or tone hole.[2] The oscillating air creates a powerful sound wave heard to the human ear as a flute sound.

How far the air travels back and forth through the flute depends on the location of the first open tone hole. Air exits the flute through the opening whether it is located at the top or bottom of the flute. The player opens and closes tone holes by pushing and releasing keys to control how far air travels up and down the flute. A tone hole that opens near the head joint will create a smaller area for the air to vibrate, forcing faster vibrations. Those faster vibrations will be heard by the ear as high pitches. Conversely, the first open tone hole near the foot joint will release air that is vibrating slower because of the large space it has to move through. In this case, a lower pitch will be heard.[3]

**Figure 2: A flute with some tone holes open.**

## Natural Tendencies

The flute's natural overtone series break the octaves down in the following way:

- The first octave occupies the fundamental.
- The second octave occupies the second partial.
- The third octave occupies a combination of the second and third partials.

When a flute player over-blows a note or lifts the first finger, the fundamental frequency of a note is eliminated and the second partial is heard. Air is forced to vibrate at the second partial's frequency creating a sound eight

[2] (Jakeways, 2011)
[3] (Shepard)

notes higher, called an octave. The same reaction happens to create the third octave, however the second partial is still the primary partial heard for the first few notes.[4]

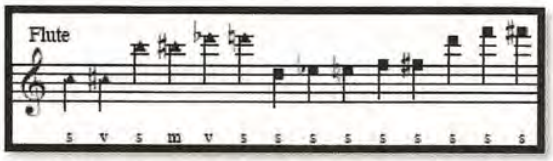


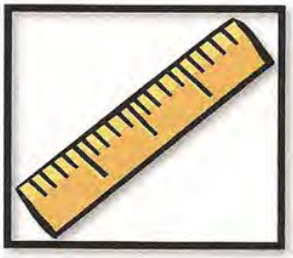

**Figure 3: Pitch tendencies for the flute. The notes with triangle note heads are sharp notes. Notes with square note heads are flat notes. S stands for slightly, M stands for moderately, and V stands for very. The first note would be slightly sharp. Notes that are left off are considered in tune.**

There are compromises in the design of the flute that allow it to play all octaves with a good embouchure. However, the natural overtone series causes the first and second octaves to be generally flat while the third octave is generally sharp. (Westphal, 1990) Figure 3 displays the typical tendencies for each note of the flute. Unlike brass instruments that follow a specific pattern to find pitch tendencies, the flute tendencies are seemingly random. Each note on the chart should be played using the standard fingering with slight adjustments controlled by the player. Alternate fingerings can be used, but as a last resort.[5]

It is important to mention that the natural tendencies for the flute shown in Figure 3 are *typical* and are not experienced by all flute players. A very sharp note on flute could be perfectly in tune on another. Students playing on the same instrument will not play the same notes in tune, either. Because of this, flute players need to be made aware of natural pitch tendencies and monitor them regularly so they understand what affects them individually.[6] The band director should also know what the natural tendencies are so players are provided with ways to improve out of tune sounds. This will help improve intonation and tone for the entire flute section.

## General Tuning Procedure

The flute is an instrument that must be in tune with itself before it can tune its natural tendencies. The tendencies will get worse if a flute is not tuned properly.[7] Students should follow this procedure:



1. **Adjust the head joint so that it is pulled out an eighth of an inch.**

Flutes are not made to be played with the head joint pushed all the way in. Pulling the head joint out an eighth of an inch will allow the player to push in if the tuning note is flat.[8] If the head joint is pushed in all the way and the student plays flat, they cannot push the head joint in any further and will not be able to make the proper adjustments.

2. **Warm up for at least ten minutes.**

A cold instrument is an extremely flat instrument.[9] By warming up for at least ten minutes the flute will adjust to the player's body temperature. Avoid tuning if players

[4] (Westphal, 1990)
[5] Alternate fingerings are presented on page 11.
[6] See page 16 for the Flute Pitch Tendency Packet.
[7] (Westphal, 1990)
[8] (Cluff, 2004)
[9] (Allen, 2002-2007)

have been sitting in rehearsal for a short amount of time because the instrument will adapt to the temperature of the room.

3. **Using a good tone, play fourth-space D at mezzo forte with no vibrato.**

Dynamics greatly affect the flute's intonation. A mezzo forte dynamic affects intonation the least and requires very little manipulation by the player.[10] Students should always focus on using their best tone because a poor tone quality results in poor intonation. Fourth-line D is a great note for students to start tuning with even though it typically tends to be slightly flat. Students should start tuning within the first few months of playing. Hands are still small at this point and they may have trouble holding the flute with only their left hand. The fingering for D uses both hands, which in turn balances the flute.[11] Vibrato should be avoided when tuning since the player is moving the pitch from flat to sharp to create the pulses.

4. **Adjust the head joint by pulling out if the D is sharp and pushing in if the D is flat.**

The flute is an instrument that can adjust its general tuning by pulling out or pushing in the head joint. Doing so will put the flute at a different length which can affect the frequency of the D. It is recommended to adjust the head joint *only* for the purpose of getting the flute in tune with itself. If every out of tune note was adjusted with the head joint, intonation of the natural tendencies would get worse.[12]

## Causes and Solutions for Intonation Problems[13]

### Embouchure and Air Direction

Bad embouchure and air support lead to poor intonation and tone. Emphasizing good embouchure and air support continually and consistently throughout a player's career is important when dealing with intonation. Most solutions to individual pitch problems on flute use corrections made to the air direction and embouchure. The direction of air entering the flute can be altered by making changes with the embouchure using the corners of the mouth. Air directed at the aperture hole in a more downward direction results in a flat pitch. Moving the corners of the mouth back towards the ears will bring the pitch up. If the air is moving across the aperture hole, the pitch will be sharp and the corners of the mouth should move forward to lower the pitch. The jaw can be used to make adjustments but only when adjusting large pitch discrepancies.

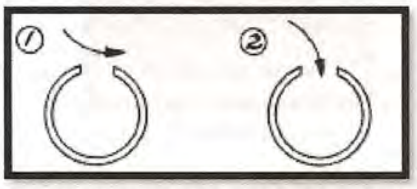



**Figure 4: 1. Air direction when pitch is sharp. 2. Air direction when pitch is flat.**

[10] (Westphal, 1990)
[11] (Cluff, 2004)
[12] (Westphal, 1990)
[13] (Westphal, 1990)

### Dynamics

The speed of air striking the aperture hole controls dynamics. Faster air creates a louder tone but also a sharper pitch. As a flute gets louder, the direction of the air goes more across the aperture hole than in it also making the pitch sharper. To adjust, the air will need to be directed downward by moving the corners of the lips back towards the ears. When the flute gets softer, the pitch gets flatter because air is directed more into the aperture hole than across it. Pushing the corners of the lip forward will help raise the pitch. As a note gets louder or softer, the pitch will gradually change and so should the direction of air. Students should get used to making these adjustments by practicing long tones that crescendo and decrescendo while checking pitch with an electronic tuner.

### Playing Position

If a player slouches while playing, breath support is reduced and air speed entering the flute cannot be controlled making intonation flat. Also, playing the flute at an angle that does not follow the line of the lips will force the air to hit the aperture hole at an angle and bring out the natural tendencies of the flute. Both problems can be prevented by always encouraging students to sit with the correct posture so the flute can be held at the correct angle.

Figure 5: Flute lip plate.

### Lip Plate Placement

Overall pitch, intonation, and tone quality can be affected by the placement of the lip plate. When checking intonation, the first thing to look at is the location of the lip plate. If it is placed too low on the lip, the pitch will be flat; if the plate is too high, the pitch will be sharp. The lip plate should always be placed just above the edge of the lower lip.

### Mechanical Factors

Teaching students to regularly monitor the condition of keys, pads, and rods on their flute will not only keep the instrument in good playing condition, but also will help intonation. All keys should open and close at the same height. Unadjusted keys will affect intonation the most if they are the first open key of a fingering. A key that is too close to the tone hole will flatten the pitch, but a key that is too open will raise the pitch. Keys that do not seal completely around the tone hole will interfere with response and also cause notes to sound sharp. Make sure adjustments screws on each finger key are allowing keys to seal properly.

The plug in the end of the head joint can affect intonation even though it should never be regularly adjusted for tuning. The sole purpose of the plug is to close the head joint, which is done so by a cork shaped much like the cork from a wine bottle. The cork must be exactly 17.3 millimeters from the center of the aperture hole and it needs to be checked daily. If it is not at 17.3 millimeters, the player will be consistently out of tune regardless of the adjustments made.[14]

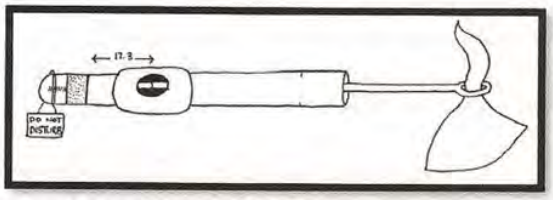
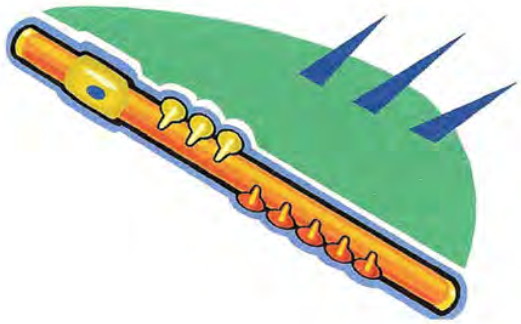



Figure 6: A cork that is set at 17.3 mm.

To access the cork, a cap is attached to the head joint. To verify the distance, insert the bottom of the cleaning rod into the head joint until it touches the cork. The etched line found at the bottom of the

[14] (Cluff, 2004)

cleaning rod should be in the exact center of the aperture hole. Unscrew the cap and push the plug into place by applying pressure to the cap if the line is closer to the top of the head joint. The player will be flat on the general tuning note even after multiple adjustments to the head joint are made. If the line is closer to the body of the flute making the player sharp, unscrew the cap and gently tap the cleaning rod with a rawhide mallet until the line returns to the center. The cap should always be tightened by the fingers to the point that it securely stays in place. Students should be warned that the plug should be kept in place at all times and not unscrew the cap.



# Alternate Fingering Chart (Flute)

## Purpose of Alternate Fingerings

Alternate fingerings are used primarily for technical ease on the flute. However, there are fingerings that can be used to improve intonation for some notes. Using alternate fingerings to adjust the pitch of a note should be used as a "last resort" method. Students should be taught how to make intonation adjustments with the embouchure and direction of air using standard fingerings before alternate fingerings are taught. Not all of the fingerings included in this chart include every note on the Pitch Tendency Chart[15] nor will they be useful to every player. Some of the fingerings will be out of tune to a greater or lesser degree for some player.

## How to Read the Alternate Fingering Chart

- The first column shows the note the alternate fingering affects.
- The second column shows the typical tendency of the note.
- The third column shows the alternate fingering.
- The fourth column explains how the alternate fingering will improve the intonation of that note.

The pitch tendency symbols used in this fingering chart will explain the typical tendency of a note.


shows that a note is slightly flat.


shows that the note is slightly sharp.


shows that the note is moderately sharp.


shows that the note is very sharp.

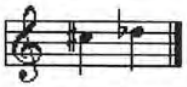
Most fingerings in this chart are actually slight deviations from the standard fingering. If a key is used in the standard fingering, it will be colored in black.

When a key is not typically used in the standard fingering, it will be colored in yellow.

There are instances where eliminating one key from the standard fingering will improve intonation. The eliminated key will have a red X placed over it.

## Examples of Alternate Fingerings

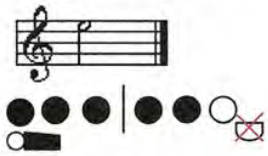
Flute players typically will make fingering adjustments by closing one or more tone holes to adjust pitch. An example of this is with third-space C-sharp, normally played as:



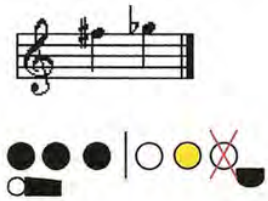
[15] See page 23 for the Flute Pitch Tendency Chart.

This note tends to be very sharp. By adding fingers four, five, and six, this very sharp note will lower in pitch:[16]

Flute players can also eliminate the use of a key. An example of this is the alternate fingering for E:

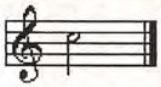
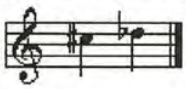
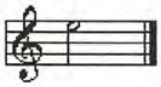
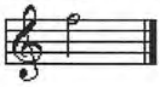
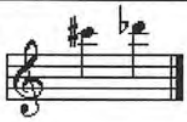


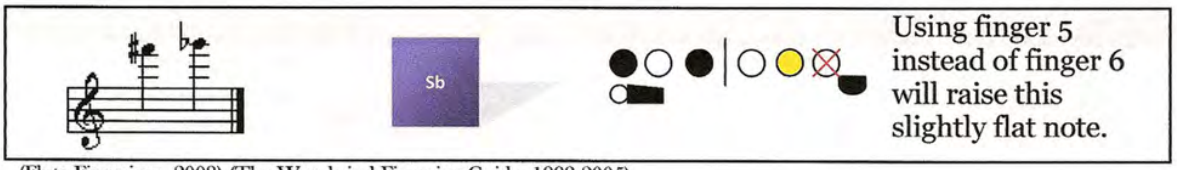
Using a different key altogether can also help improve pitch. An example of this is the alternate fingering for F-sharp:



Whether or not this fingering chart will be distributed to students is at the discretion of the director because students may mistake alternate fingerings for the standard ones. Also, this chart would not be appropriate for students who are in the first couple years of their playing career. These students need to learn the basics of flute playing and how to make intonation adjustments with their embouchure and air direction. As stated earlier, this chart is to be used as a last resort.

[16] (Flute Fingerings, 2008)

| Note | Tendency | Fingering | How It Helps |
|---|---|---|---|
|  |  |  | Adding fingers 5 and 6 will help to lower this slightly sharp note. |
|  |  |  | Adding 4, 5, and 6 will help to lower this very sharp note. |
|  |  |  | Eliminating the use of the Eb key will raise the pitch of this slightly flat note. |
|  |  |  | Adding finger 6 will raise this slightly flat note. |
|  |  |  | Using finger 5 instead of finger 6 will raise this slightly flat note. |
|  |  |  | Adding finger 6 will help to lower this slightly sharp note. |
|  |  |  | Adding fingers 4, 5, and 6 will help lower this moderately sharp note. |
|  |  |  | To lower this very sharp note, use the 4th-space Eb fingering and over blow. |
|  |  |  | Eliminating the Eb key will lower this slightly sharp note. |
|  |  |  | Adding finger 6 will raise this slightly flat note. |




(Flute Fingerings, 2008) (The Woodwind Fingering Guide, 1998-2005)

# Pitch Tendency Packet (Flute)

Name_____
Date_____

**Materials needed:**

1. Instrument
2. Pencil
3. Electronic Tuner
4. Someone to help you (either a friend, parent, or band director)

**Knowing the tendency of each note is important!**

Playing the general tuning note and making a physical adjustment is not enough to play in tune. Each note on your instrument will play flat, sharp, or in tune. The purpose of the Pitch Tendency Packet is to teach you what notes are in tune and out of tune on your instrument. Once you discover what the out of tune notes are, you can manipulate the notes to play in tune by making small adjustments when you are playing.

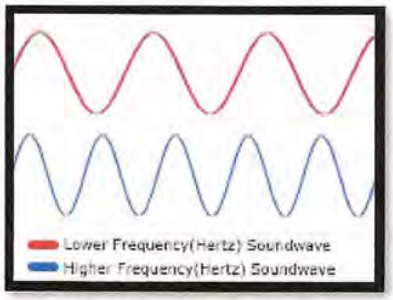
This packet will help you develop an individualized plan for tuning. As you discover which notes need special attention, it is your responsibility as a musician to figure out how **you** can play the note in tune. The tricky thing about this process is what gets you to play in tune may not work for your stand partner! Things like dynamics, reeds, embouchure, and even the brand of instrument can cause one person to play a note in tune while another plays the same note out of tune.

The last page of this packet will provide you with some tricks of the trade that you can experiment with those tricks to improve those out of tune notes. You will notice that once you start focusing on making those out of tune notes sound in tune, your tone will improve and your musician's instincts will start to anticipate intonation problems before they happen.

## What is intonation?[17]

A musical pitch you hear is actually a sound wave going through your instrument. The sound wave can travel at different speeds, or frequencies, depending on what finger combinations you are using. More fingers usually means a lower pitch and a slower sound wave, but adding playing the note at a higher octave will make the sound wave move faster.

Frequency is measured in cycles per second, or Hertz (hz). One cycle per second is equal to one Hertz. Musicians have a standard frequency that we agree will make us sound the most in tune. That frequency is measured at 440 hz. Anything higher or lower than that will not agree with the musicians' or the audience's ears.




An example of sounds at different frequencies.

## A Case of the "Wah's"[18]

If two musicians are playing the same note at exactly the same time, they're playing in tune, right? Not really. Have you ever heard two musicians play the same note at the exact same time, but instead it sounds like "wah-wah-wah"? This means the musicians have a case of the "wah's", a disease that cause musicians to play out of tune!

You are actually hearing the musicians play out of tune with each other. Each note's sound wave is moving at a slightly different frequency, making the sound waves clash. Both notes are fighting so much to be the main note heard that they are cancelling each other out!

One of the musicians should make an effort to get rid of the "wah's" by making adjustments to the way they are playing their instrument or by physically adjusting something on their instrument. If the musician makes the right adjustment, the "wah's" will start to disappear and the note will be in tune. However if the wrong adjustment is made, the "wah's" will move faster.

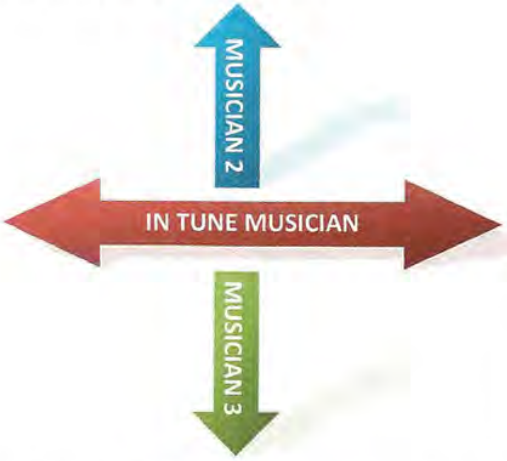
## Flat vs. Sharp[19]

Musicians think of intonation as a vertical concept. The straight line below represents In Tune Musician, a musician who always plays in tune.


[17] (Pitch (music))
[18] (Hein, 1981)
[19] (Pitch (music))

Now, another musician will play the same note along with In Tune Musician.


Finally, a third musician will play the same note with the other musicians.




Even though all three musicians were playing the same note, Musicians 2 and 3 were playing their notes at different frequencies.

Musician 2's note was played at a slightly higher frequency than In Tune Musician. Even though the both musicians were playing the same note, Musician 2's note sounds a little higher than In Tune Musician's. When notes vibrate at a slightly higher frequency than 440 hz, they are considered sharp. Musician 2 will have to lower his frequency so he can play at the same frequency as In Tune Musician.


What about Musician 3? Well, his note was played at a slower frequency than In Tune Musician's. He sounds a little lower because his note vibrates slightly slower than 440 hz. When notes vibrate at slightly slower frequencies, they are considered flat. Musician 3 will have to raise his frequency so he can play in tune with the others.


## How to Improve Intonation

Intonation will not get better by itself; it is something that will constantly need to adjust no matter your musical experience. Professional musicians struggle with intonation issues even with all the experience they have. Constant practice and reinforcement will help you understand intonation. Here are some suggestions to help you improve your intonation:

**Fill out the Pitch Tendency Chart.** The chart will tell you what notes are the notes you need to focus on. As you advance in your playing, your pitch tendencies may change. Continue to fill the chart out every four to six months to see if there are any changes.

**Practice making the adjustments!** Remember, it is your responsibility as a member of the ensemble to play in tune. If you do nothing to improve intonation, nothing will get better. Your brain will train itself to make the adjustment automatically once you've found what works and practice making those adjustments every time you see the note. If you focus on improving only five

notes a week in your practice time, you will see huge improvements in your playing.

**Use a friend, an electronic tuner, or a tuning CD to help train your ear.** If your ear doesn't know what bad intonation sounds like, then you will always play out of tune. Here are some ways to help train your ear:

- Have a friend help you by having them play each note as the In Tune Musician. If you have the "wah's", then you need to adjust to cure yourself. Have them play again and see if you adjusted correctly. Remember, if the "wah's" get better, you made the correct adjustment!
- An electronic tuner will give you a visual measurement of how flat or sharp you are. Play a note you're your eyes closed and guess if it's flat or sharp. Electronic tuners are usually around $25 and can be purchased at any music store or website. Korg brand tuners are the most common.
- Some electronic tuners also have a function where they can produce pitches so you can check for the "wah's". This is a great function to use if you are by practicing by yourself.
- "The Tuning CD" is available for download on iTunes and can be purchased online. It is a CD containing all the notes of the chromatic scale that you can play along with to check the "wah's".

**Memorize your pitch tendencies.** You can do this by creating flashcards or writing the tendencies in your music.

## The Results...

Poor intonation doesn't fix itself and is not pleasant to listen to. If you focus and stay consistent in your efforts to improve your intonation, you will also hear improvement in your tone quality. It will start to become second nature to you and you will begin to adjust your pitch without even thinking about it.

# Electronic Tuner How-to Guide


1. Turn your tuner on by pushing the on/off button.
2. Check the upper left-hand corner to see if your tuner is calibrated to 440 hz. If it is not, push either the calibration up button or the calibration down button until you see 440 on the screen.
3. Set the tuner on your stand so the screen is facing you. Make sure the microphone (indicated by the word "mic") is not covered up.
4. Play a note to move the needle. The concert pitch letter name of the note you are playing will be shown in the upper right-hand corner of the screen.
5. If you are...
   ...flat, the needle will move to the left and the light next to the flat sign will light up.
   ...in tune, the needle will stand straight up and the green light will light up.
   ...sharp, the needle will move to the right and the light next to the sharp sign will light up.
6. If your tuner has the option and wish to have the tuner produce a sound while you are playing, hit the sound button on the tuner. Hitting the sound button again will turn off the sound.
7. Turn your tuner off by pushing the on/off button when you are finished using it.

The meter on a tuner measures pitches in cents. In tune notes are measured at zero cents, which makes the needle stand straight up. As a note gets progressively flatter, the needle will move to the left measuring the note in negative cents. When a note gets increasingly sharper, the needle will move to the right measuring the note in positive cents.

# Completing Your Pitch Tendency Chart

## *Make sure you have someone to help you complete this!*

1. Fill out the top portion of the guide as completely as you can. Ask your band director for help if you have questions about the brand of your instrument or reed.
2. Warm up for at least ten minutes to allow your instrument to adjust to your body temperature.
3. Turn the electronic tuner on and get your instrument in tune with itself using the following procedure:

> 1. Adjust the head joint so it is pulled out an eighth of an inch.
> 2. Using a good tone, play D at a mezzo forte volume with no vibrato.
> 3. Adjust the head joint by pulling out if the note was sharp or pushing in if the note was flat.
> 4. Continue this process if your first attempt was not in tune.

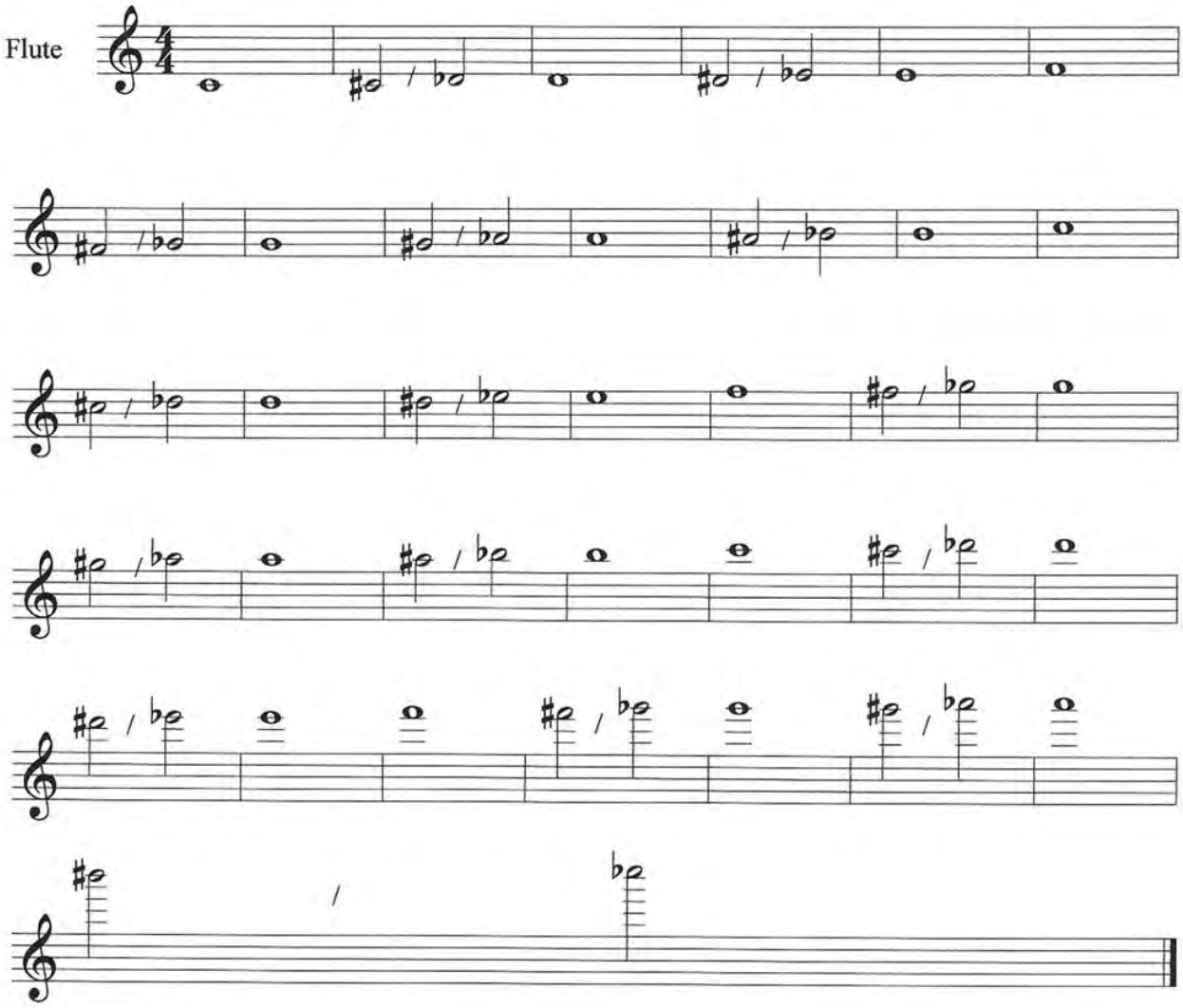
4. Give the tuner and your Pitch Tendency Chart to your partner so they can fill it out while you play.
5. It is best to start at concert B-flat and work your way down and then start again at concert B-flat and work your way to the top to get the most accurate reading. Have your partner tell you what note to play. Play the note and have your partner write down what your pitch tendency is based on the chart below.

| Pitch Tendency Category | Cents |
|---|---|
| Slightly flat (Sb) | -1 to -10 cents |
| Moderately flat (Mb) | -11 to -25 cents |
| Very flat | -25 cents to -50 cents |
| Slightly sharp (S#) | +1 to +10 cents |
| Moderately sharp (M#) | +11 to +25 cents |
| Very sharp (V#) | +25 cents to +50 cents |

6. Once you have completed the chart, return it to your director. A copy will be made for their files and your completed chart will be returned to you.
7. Using the *Quick Fixes for Flute* chart and an electronic tuner, find the tricks for each note that will make them in tune. Make a note of what works and use those tricks each and every time you play.

# Flute Pitch Tendency Chart

Name_____ Make of Instrument_____



# Flute Quick Fixes

## If the note sounds sharp....

- ☑ Use a mirror to see if the lip plate is placed too high. It should be placed right above the edge of your lip.
- ☑ Move the corners of your mouth towards your ears to direct the air stream into the aperture hole.
- ☑ If the music is written at forte or louder, you will need to move the corners of your mouth towards your ears to direct the air stream into the aperture hole.
- ☑ Check to see if any of keys on your flute are too open. Let your band director fix any keys that are out of line.

## If the note sounds flat....

- ☑ Use a mirror to see if the lip plate is placed too low. It should be placed right above the edge of your lip.
- ☑ Make sure you are sitting up nice and tall, holding the flute in the proper playing position
- ☑ Move the corners of your mouth forward to direct the air steam across the aperture hole.
- ☑ If the music is written at piano or softer, you will need to move the corners of your mouth forward to direct the air stream across the aperture hole.
- ☑ Check to see if any keys on your flute are too close to the tone hole. Let your band director fix any keys that are out of line.