HARMONY DIRECTOR 101

A Resource for Everyday Use

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YAMAHA

FANNIN MUSICAL PRODUCTIONS

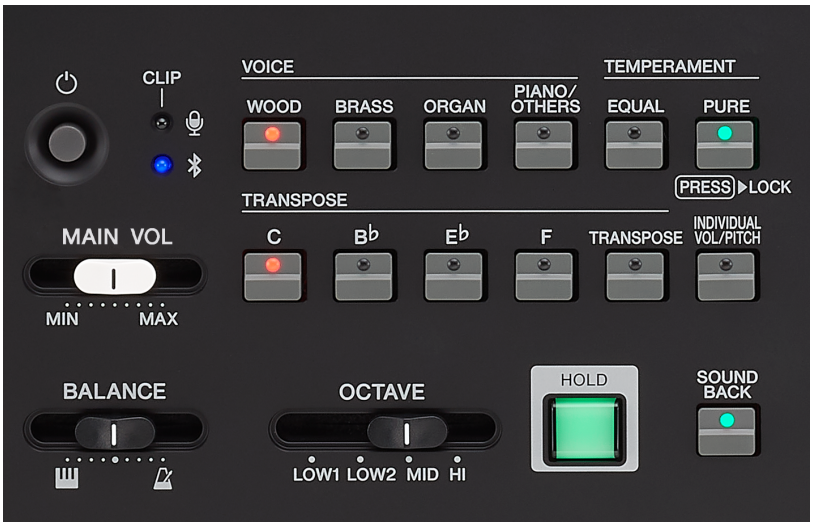
Yamaha Harmony Director 101

I. FUNCTION AND FEATURES

This resource is designed to provide music educators with practical strategies for effectively integrating the Yamaha Harmony Director into daily rehearsal routines. When used consistently and with purpose, the Harmony Director can significantly improve ensemble sound quality, balance, and tuning across a wide range of wind and string ensemble settings. Educators will gain the confidence and technical skills needed to apply this technology in various rehearsal scenarios to support musical growth and precision.

Let's start by dividing the keyboard into manageable zones with a few tips for each zone:

ZONE 1:



VOICE BUTTONS

Here you can choose which voice you prefer for creating drones or demonstrating excerpts. There are several voices under each preset (i.e. **WOOD:** Flute, Oboe, Clarinet, Saxophone.) You can scroll through the options under each voice button using the dial to the right of the LED display (pictured in Zone 2).

TRANSPOSE BUTTONS

These buttons allow you to shift the transposition of the entire keyboard to the key center of specific instruments. This is a wonderful tool for sectionals, allowing the teacher to read directly from the score without having to transpose. You can create your own custom transposition using the TRANSPOSE button.

TEMPERAMENT BUTTONS

Here is where you can switch between equal and pure temperaments. If you hold the **PURE** button down until it turns green it will lock the keyboard at the tonal center chosen.

INDIVIDUAL VOL/PITCH BUTTON

Selecting this button will allow you to create one user preset temperament and adjust the volume of specific pitches within that temperament.

BALANCE SLIDER

This slider allows you to quickly change the balance of metronome to harmony. (Author's note: this is one of my favorite new controls of the HD-300.)

OCTAVE SLIDER

This slider allows you to adjust the octave of the keyboard. In general, **LOW 2** setting is best for creating standard drone voicing.

HOLD BUTTON

Press this button to sustain sound on the HD-300. You may also set the pedal function to start and stop sustains. (Use the **SETTINGS** button on the right side of the keyboard - Zone 2.)

SOUND BACK BUTTON

This is a great way to help performers really understand their individual pitch tendencies. Press this button and have individual students play pitches to be tuned towards the internal microphone. The HD will play the pitch back at them at the correct pitch level for instant feedback. (Important: if the HD is set to a pure temperament it will play the pitch back at the tempered pitch!)

ZONE 2:

The majority of the right side of the keyboard is dedicated to the metronome settings which function as a standard metronome.

TEMPO/TAP BUTTON

Press this once to allow you to set the rehearsal tempo with the dial or the **+** or **-** buttons. Continuously tap it to set a tempo manually or to check the timing of a tempo.

START/STOP BUTTON

Use to start or stop the metronome. You may also set the pedal function to start and stop the metronome. (Use the **SETTINGS** button on the right side of the keyboard.)

BEAT BUTTON

Use this button to set the meter that the metronome will use. Use the dial or the **+** or **-** buttons to change aspects of the meter and the **CURSOR** buttons to switch from the top and bottom number of the time signature.

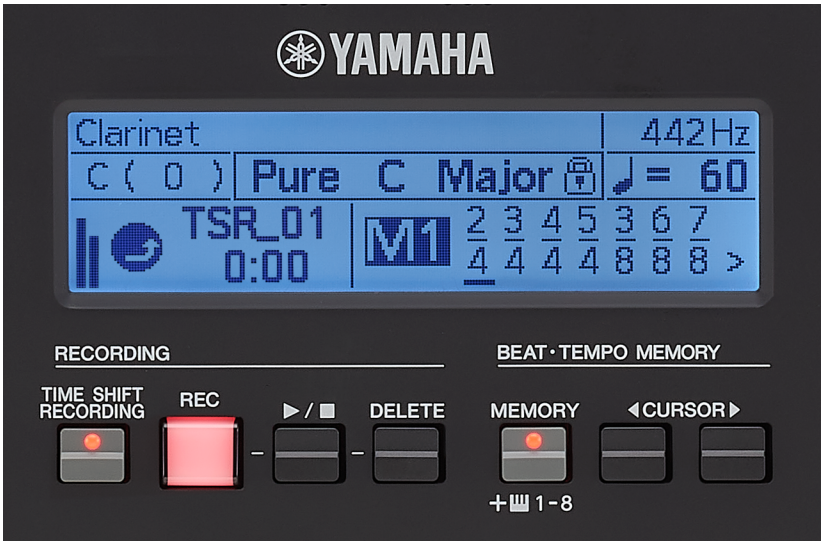
RHYTHM STYLES

New to the HD-300 is the addition of several style patterns to use along with the metronome. Press the **RHYTHM STYLE** button and use the dial to select a specific style.

TRAINING/USB/EXIT/SETTING BUTTONS

These buttons allow you to create specific user settings and to update firmware through the **USB** port. Yamaha periodically makes improvements to the overall function of the keyboard with firmware updates. You can find the latest updates at: https://usa.yamaha.com/products/musical_instruments/winds/harmony_directors/hd-300/downloads.html#product-tabs

ZONE 3:



The center of the keyboard is predominately the LED display letting you know what the temperament is set to, as well as details about metronome settings. When demonstrating drones, melodies, or harmonic content from the keyboard, it is very important to be sure the tonal center of the temperament is correct. As shown, the keyboard will play all pitches based on **C Major Pure** temperament. It is also showing the keyboard in **LOCK** setting. This means that all pitches besides the Concert C are being adjusted based in pure temperament.

RECORDING BUTTONS

New to the HD-300 is a built in recording system. Recordings are saved to a USB flash drive inserted into the port on the rear panel of the HD. This is a great way to give immediate feedback to performers during a rehearsal.

BEAT - TEMPO MEMORY

You can save up to 8 different beat patterns for use in rehearsing works with changing time signatures. After creating a rhythmic pattern you can move between different memory settings by pressing the **MEMORY** button and turning the dial to the chosen setting.

REAR PANEL:

This is where you can find ports for pedal functions, USB flash drive, audio connections, device connections, etc.

For more information on all the keyboard functions you can reference the online HD-300 owner's manual:

https://usa.yamaha.com/products/musical_instruments/winds/harmony_directors/hd-300/downloads.html#product-tabs

This chapter introduced the essential functions and features of the Yamaha Harmony Director, focusing on its role and capabilities in the rehearsal setting. The chapters that follow will delve into the practical application ("how") and pedagogical rationale ("why") behind integrating the HD-300 into daily ensemble instruction. Regular and intentional use of the Harmony Director—across all phases of rehearsal, from fundamental exercises to repertoire—can significantly strengthen ensemble sound, balance, and intonation.

II. TEMPERAMENT BASICS

Anyone who has made a custard knows the peril of adding hot liquid to cold eggs. Add the liquid too quickly and the eggs will scramble! The technique of slowly adding warm liquid to uncooked eggs is called “tempering”; gradually equalling the temperature by adding small amounts of the liquid slowly. Musical temperaments are adjusted much in the same way!

In instrumental performance the two most common tuning systems, or temperaments, used are equal and pure (just). Temperaments have been a part of music history and performance since the time of Pythagoras. As music became more complex, the flaws in Pythagoras’ tuning system became apparent. Tempering in music is the process of making slight adjustments to pitches, one way or another, to create scales that could be performed in different key centers. Throughout time, musicians, scientists, and mathematicians strove to create the perfect temperament.

For a more detailed overview of the history of of musical temperaments, check out:

Temperament: How Music Became a Battleground for the Great Minds of Western Civilization by Stuart Isacoff

Below is a commonly used chart of the adjustments from equal temperament to pure temperament:

Interval Name & Quality	Pitch Adjustment in Cents	Reference to C
Octave	0 Cents	C 8va
Major Seventh	-12 Cents	B
Minor Seventh	+18 Cents	Bb/A#
Major Sixth	-16 Cents	A
Minor Sixth	+14 Cents	Ab/G#
Perfect 5th	+2 Cents	G
Augmented 4th	+17 Cents	Gb/F#
Perfect 4th	-2 Cents	F
Major Third	-14 Cents	E
Minor Third	+16 Cents	Eb/D#
Major Second	+ 4 Cents	D
Minor Second	+12 Cents	Db/C#
Unison	0 Cents	C

(Note: adjustments have been rounded up or down for clarity)

Charts like this are a good starting point to understanding the concept of pure temperament. It is important to understand that these interval adjustment charts do not always apply in the harmonic context of a chord or chord progression. Pure temperament was not a perfect tuning system, so it is imperative that you look at context in relation to all adjustments made.

Because pure temperament's main goal is to create pure ratio fifths (3:2), major thirds (5:4) and minor thirds (6:5), many of the chromatic intervals or extensions of triads do not always work in that system.

Here is an example:

Looking at the chart above, notice that Concert F is lowered 2 cents to create the pure ratio fifth with the Concert C. In order to create a subdominant chord that has a pure ratio 3rd the Concert A has also been lowered 16 cents. The lowered A works perfectly fine as a third to the F, but is not at all usable as the fifth of the supertonic D minor. This is why the Harmony Director is most applicable when used in Pure Temperament **UNLOCKED** setting. The adjustments of triads should shift to the tonal center of the triad, not be locked in the key of the work itself. Think of it as a harmonic center of gravity!

Tuning For Wind Instruments - A Roadmap to Successful Intonation by Dr. Shelley Jagow is a must have for any study of how tuning is developed in relation to wind ensembles.

In most circumstances, when tuning wind and string ensembles on chosen literature or exercises, you will use a combination of equal and pure temperament.

Some important concepts when teaching temperament in the classroom:

- Use scale exercises, interval exercises and tuning sheets to teach students where the equal tempered center of each note is. This will allow them to better understand how to adjust one direction or the other when necessary. These exercises are best taught with the HD set to **EQUAL** temperament.

- When describing adjustments to performers, use terms such as "slight adjustment up" or "significant adjustment down", etc. Avoid "sharp" and "flat" when discussing tempering.

- Start simple! Concentrating on roots, thirds and fifths first. Then expand as you and your students become more comfortable.

- Hum and sing with the Harmony Director. When set to **PURE**, the HD will describe the proper placement of the third and fifth. Singing is the best way to connect that sound to the performer's ears and then their instruments. Percussion should sing as well!

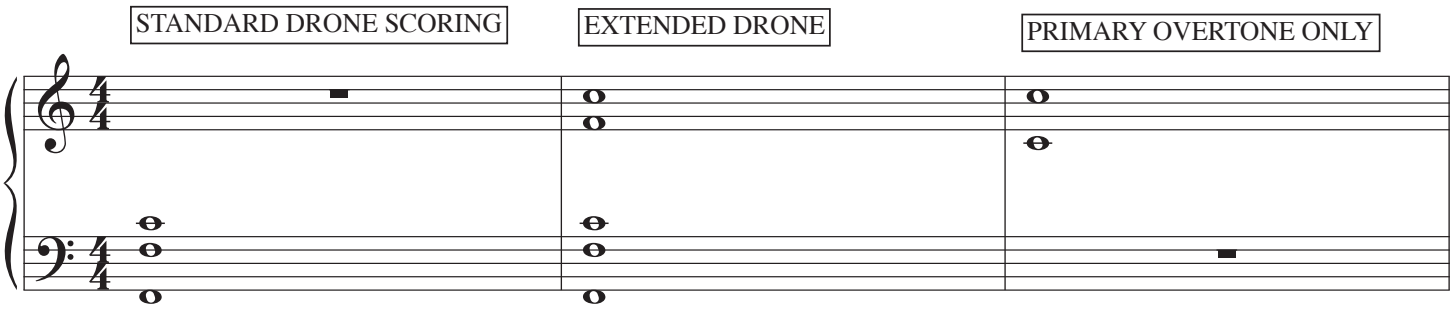
- Isolate individual melodic patterns or chords that occur in literature or exercises and utilize the HD while working to perfect tuning. Taking segments out of context to work on sound, balance and tuning can create reflexes for the students to recall in other excerpts.

- The more you utilize the HD beyond the basic ensemble technique exercises the more valuable the technology will become. Work each day to gradually expand its use.

III. BASIC DRONE SCORING

It is very important that the performers hear the fundamental pitch and primary overtone clearly when working to tune with a drone. The range and scoring of drones can have a significant impact on the performers' abilities to hear how their specific part of the chord relates to that information.

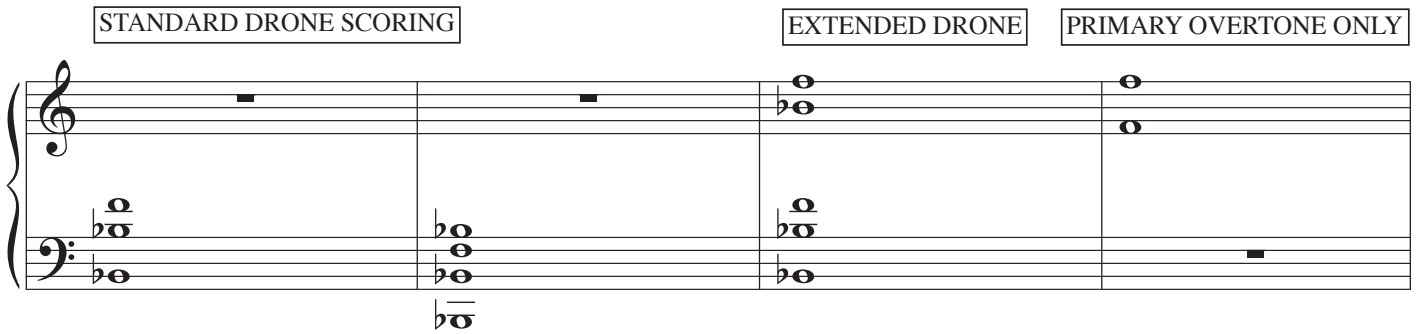
Below are examples of basic scoring concepts with Concert F as the fundamental pitch:



The following details are important to notice:

- When performing with a drone, it is often best to leave the 3rd, 7th, 9th, etc. out of the drone. This allows the performer's ears to not be "cluttered" with too much information.
- In the first two examples, C3 is not used in the drone. If the lowest pitch in the chord scoring is F2, then C3 will not appear as the primary overtone. C4 (middle C) is the first concert C that will be heard in the overtone series so avoiding C3 eliminates unnecessary information.
- A basic drone should start with the **lowest root** in the chord scoring (in most cases), then add a Perfect Octave above that pitch and then a Perfect 5th above that. Although this formula may be adjusted based on compositional details, it is a good starting point for clear drone production.

Here are some similar examples with Concert Bb as the fundamental pitch:

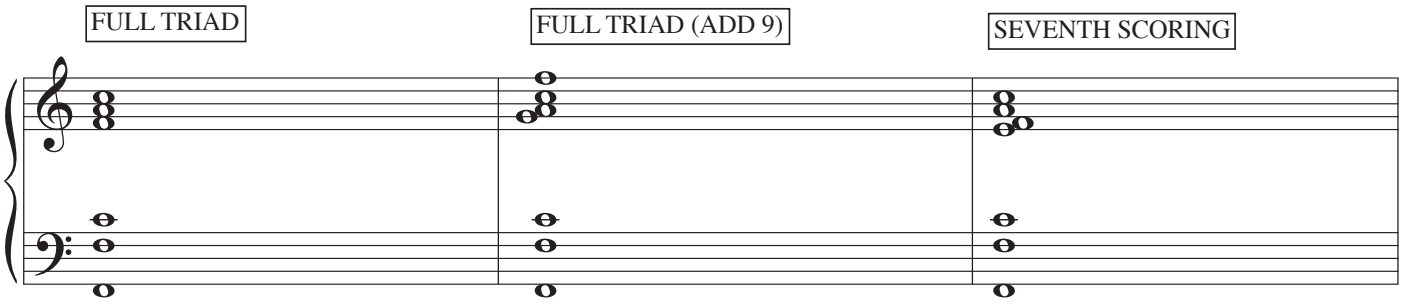


- The octave displacement of the Concert Bb is based on which Concert Bb is lowest in the chord scoring. Sometimes pitches in that octave (or lower) when played as a drone can be unclear to the performer's ears. In general, Bb2 is a much clearer octave to use.

IV. FULL CHORD SCORING

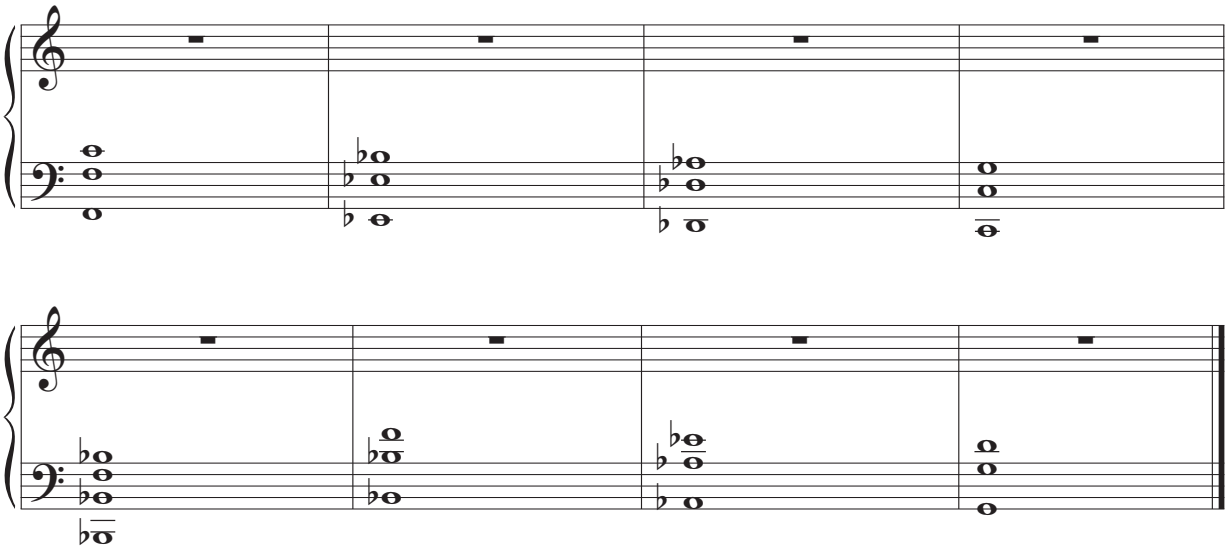
When creating drones with the full triad and extensions it is also important to keep the scoring clear and simple. The more complex the chord the more information that is coming at the performer. This complexity can sometimes be overwhelming to the performer's ears. However, full chord drones are especially helpful when singing in rehearsal.

Below are a few examples of simple chord scoring for drones in F major:



- The left hand is still scored as an open octave and fifth to give clarity to the harmonic "center of gravity."
- The position of the triad in the right hand can be adjusted based on the actual chord being tuned, but a basic root position triad regardless of what is written gives clear information to the performer.
- In chords with extensions, placing the extended pitches(s) inside the outer voices will create a sonorous drone that allows the performer to hear how the extension relates to the root and fifth of the chord.
- Singing is a vital part of the tuning process. Do not skip this step. Full chord scoring in pure temperament will assist performers in developing adjustment skills.

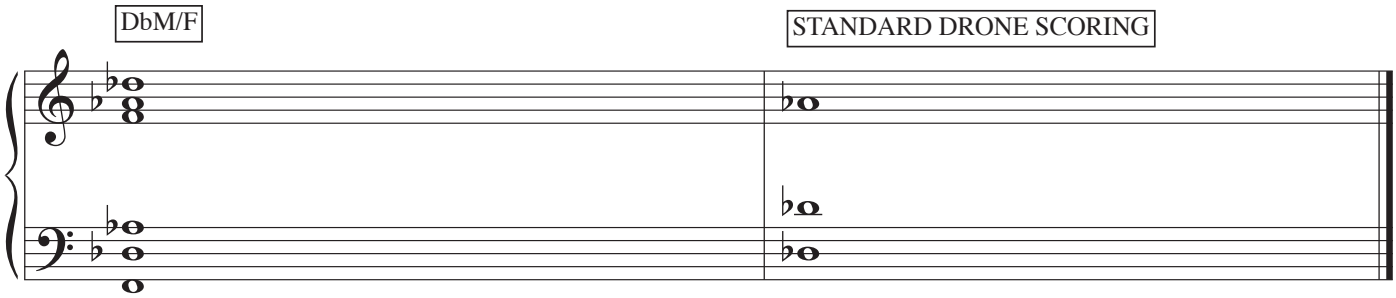
STANDARD DRONE SCORING - ALL TUNING CENTERS



V. ADVANCED DRONE SCORING

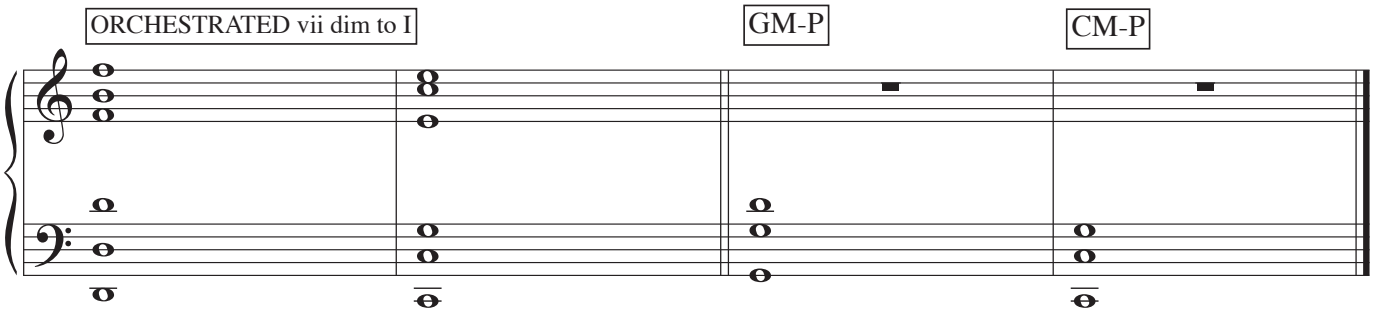
Drones and chords in inversion

- In tertian harmony, always use the ROOT of the chord as the fundamental of the drone.
- In most cases, the lowest **root** in the orchestration should be the lowest note in the drone.
- In first and second inversion, the bass voices need to adjust both pitch and volume.



Drones and diminished triads

- Diminished triads are adjusted based on their harmonic function. There are multiple answers to this harmonic equation.
- Diminished triads in a vacuum (on their own with no harmonic relationship to chords around them) are tuned to equal temperament.
- The most common use of the diminished triad would be as a vii diminished. In this case, you want to use the dominant pitch of the key center as the drone center.



- The Concert F in the diminished triad above functions as a dominant 7th in the key (See note about dominant 7ths below.) The Concert B functions as the 3rd of a G major triad and the D concert is the 5th in relation to adjustments.

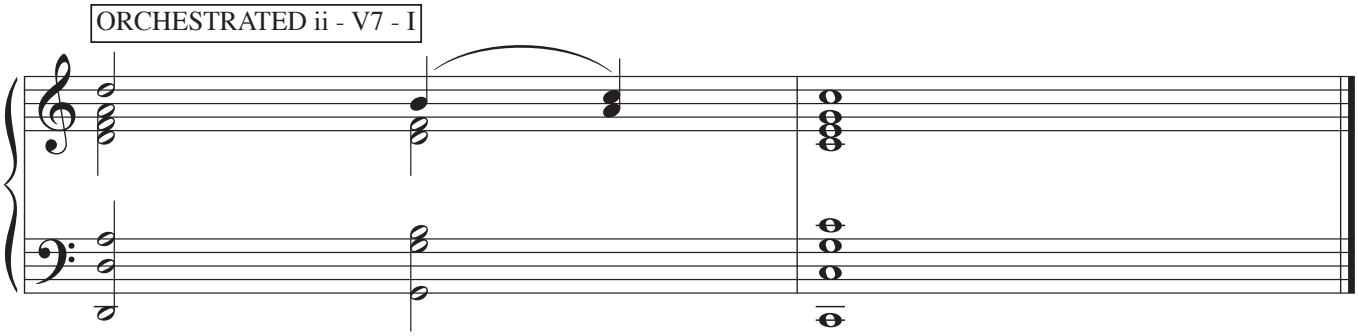
Dominant Sevenths

The standard adjustment of a dominant 7th in a tempered system is -31 cents. In many key centers this is a very challenging adjustment. It is important to note that the HD is incapable of demonstrating a dominant seventh correctly without creating a specific user setting purely for the significant adjustment necessary. **Here's a short explanation why:**

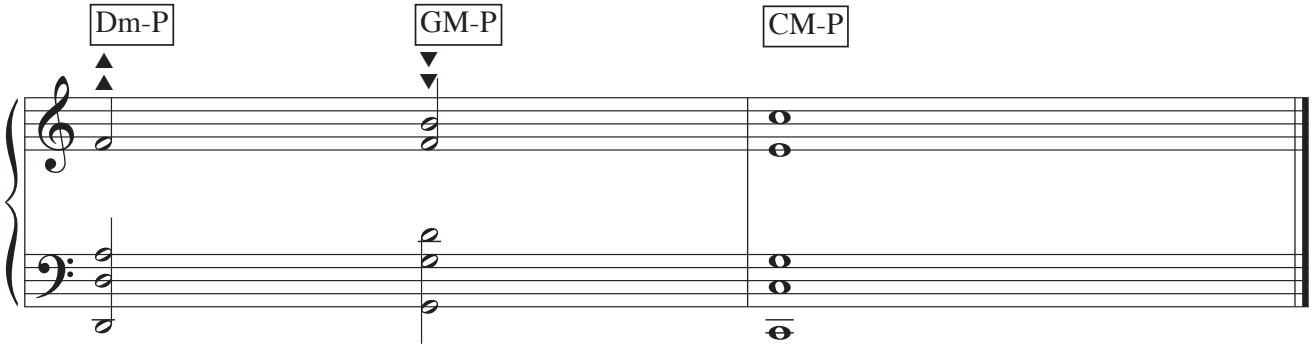
The Yamaha HD-200 and HD-300 are calibrated to the historical "pure temperament" tuning system, which, while not an ideal tuning solution, served as a practical compromise for composers and performers of its era. The main goal of pure temperament is to create as many of the “pure ratio” 5ths and 3rds as possible within a tuning system. So, in pure temperament (assuming C pure) the minor seventh of the key (Bb) is tuned to be a 3:2 ratio 5th above the minor third. In C pure the minor third (Eb) is raised 15.6 cents to make it pure with the tonic chord, thus the pure ratio 5th to that Eb is raised 17.6 cents. Pure temperament wasn’t a perfect tuning system. It served the purpose at that moment and for the compositional needs of the time. The “wolf” interval in C pure (Ab - Eb) is an unusable 5th that is hidden in the place it would be used the least.

What this means for us is that dominant sevenths aren’t demonstrable on the HD without creating a separate setting.

Here is a possible rehearsal strategy when working to tune a dominant function chord:



DroneMap for excerpt: (use only the left hand as drone - do not play right hand notation)



When working to create balance and tuning on the G7 chord in this excerpt:

1. Set HD to G Major Pure and play the drone as shown.
2. Add students singing, then playing, in this order: Root, Fifth, Seventh, Third
3. After creating the full chord, isolate the 7th on its own against the drone. Performers should listen for their relationship to the root primarily (making a dissonant interval consonant) but also keep in mind their distance from the Fifth. They will move away from the concert G and towards the Concert D. At no point should you play the Concert F on the keyboard.
4. Repeat step 2… many times.

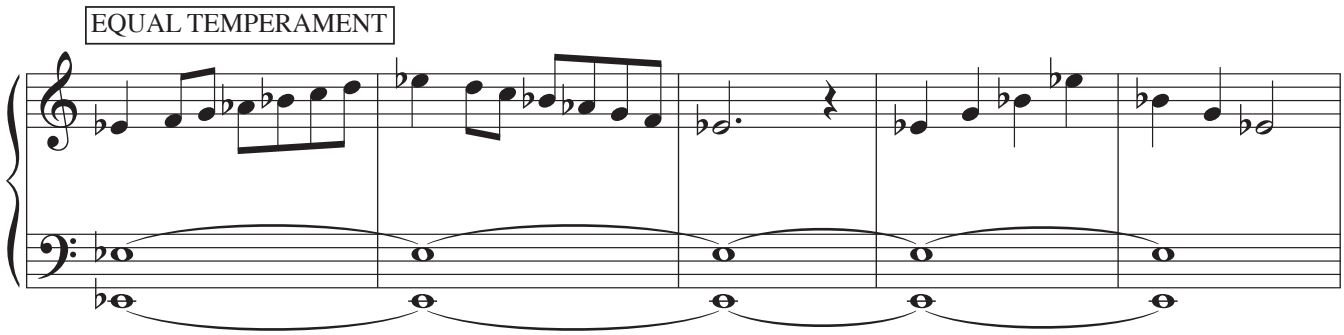
VI. DRONES IN EQUAL TEMPERAMENT

There are several musical circumstances that would call for equal tempered drone use. Here are a few basic uses:

Scales

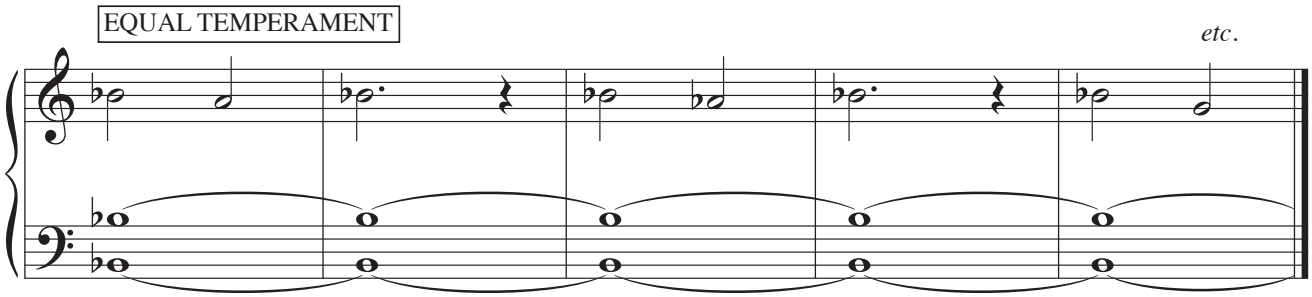
In general, scales should be taught in **EQUAL** temperament. Creating a centered, in tune sound on each scale degree is important to develop. This allows the performer to understand where “center” is before they are asked to adjust from that center in a **PURE** temperament.

It is best to use unison octaves of the key center when working on scales. Avoid using the equal tempered 5th as this will confuse performers ears when it comes to creating overtones.



Interval Exercises

These types of exercises (Remington, etc) are similar to scales where the goal is to develop the center of each pitch in an **EQUAL** tempered format. Again, it is usually best to use only the unison or octave of the starting pitch.



Non-tertian tonal systems

There are several situations where the tonal systems used in a work would require the use of **EQUAL** tempered drones. These can include, but not limited to: quartal and quintal harmony, atonality and polytonality, scales of limited transpositions, etc.

VII. APPLICATIONS: ENSEMBLE BASICS

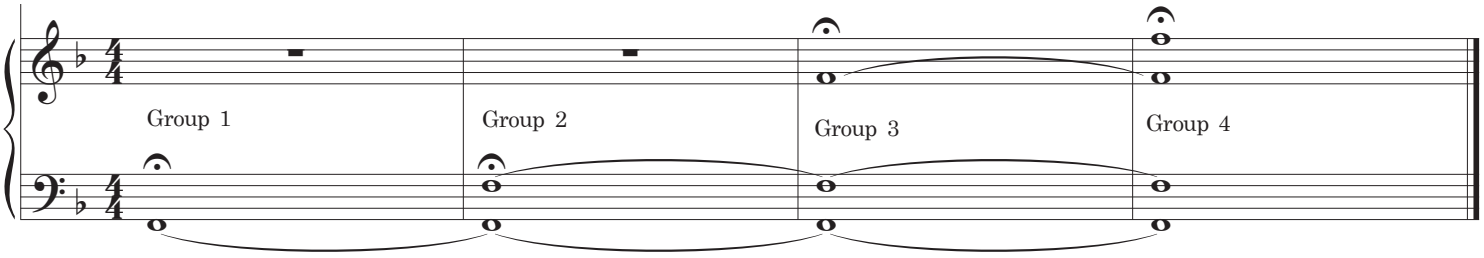
Everyone has different philosophies on what is the best way to incorporate basic exercises into the overall curriculum of wind and string ensembles. Any system of exercises will benefit from the addition of the Harmony Director as a rehearsal tool. Every method book can become even more powerful in the development of your ensemble with the introduction of correctly pitched and orchestrated drones.

Here are a few examples of implementation of the HD in simple exercises:

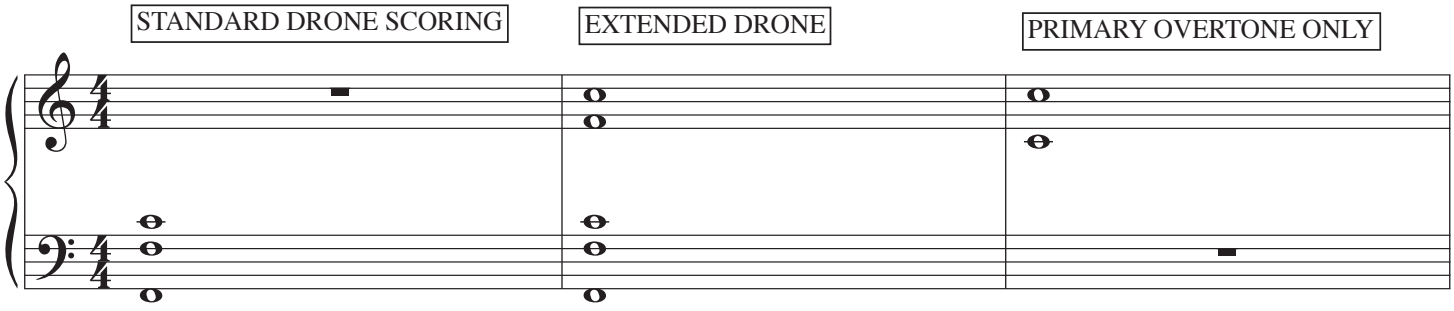
UNISON EXERCISES

All ability levels work on simple long tone pitches as a major part of the ensemble development.

The excerpt below is a common way of developing the “pyramid of balance” within the ensemble. Adding groups gradually in relation to range is a great way to build the concept of listening throughout the ensemble.



This particular excerpt is centered around Concert F. The following drones are applicable to this exercise:



In the examples above the HD should be set to **PURE F MAJOR**. With younger ensembles it can be beneficial to begin these exercises with unison drones in the key center. If a different pitch center is being used similar drones in those key centers can be implemented. (i.e. Bb unisons: **PURE Bb MAJOR**)

All unison exercises of this nature will benefit from humming/singing along with drones prior to playing them. If a group is uncomfortable singing, humming is a very good option to start with.

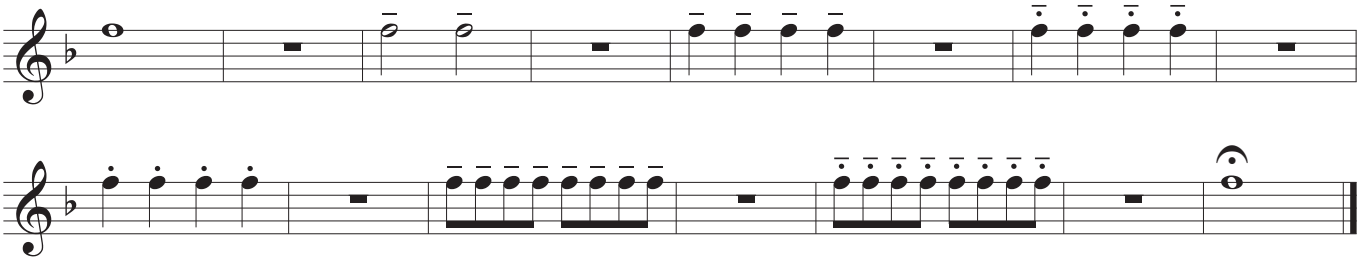
LESSON PLAN FOR UNISON EXERCISES:

1. Set the HD to **PURE UNLOCKED**
2. Play a major triad on the HD of the key center (i.e. **PURE Bb MAJOR**). The temperament center will automatically change to the new key center.
3. Use a unison pitch or an orchestrated drone along with the **HOLD** button.
4. Have students hum the unison pitch while focusing on the HD. After the students center the pitch ask them to open to singing on “ah”. When the students have fully centered the pitch singing, have them return to humming, then have them gradually diminuendo to nothing. Have them focus on audiating the pitch.
5. At this point add performing on the instrument.
6. Repeat the humming/singing/audiating/playing sequence multiple times.

ARTICULATION EXERCISES

Simple rhythmic exercises to help define tempo and note length are a valuable tool in a basics exercise plan.

A3: Pure Articulation Exercise



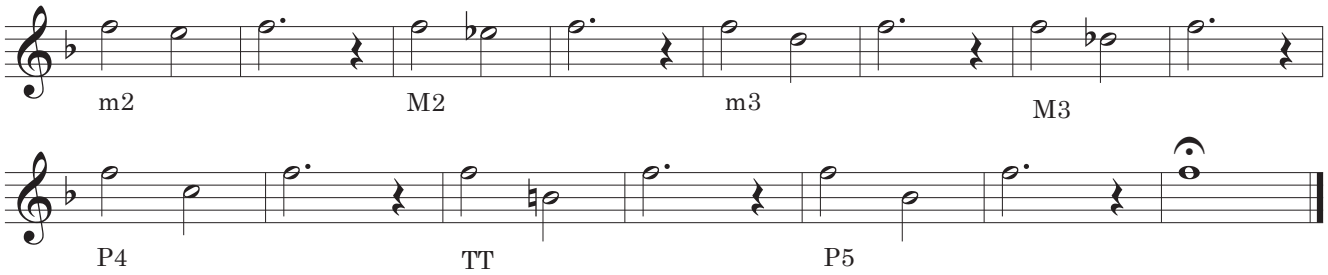
The lesson plan for the above exercise would be very similar to the previous long tone exercise. Even when articulating performers should continue to concentrate on pitch center and overtones. Drones should be used in conjunction with the metronome function of the HD on exercises that focus on articulation.

SIMPLE INTERVAL EXERCISES

When working to develop the ability to make temperament adjustments, it is important to first establish the center of individual pitches for students. Set the HD to **EQUAL** when working on this type of exercise. Like the exercises above, singing is possibly the most important aspect of teaching interval exercises.

Because of the nature of the overtone series, it is generally best to use only unisons when working in equal temperament. This is especially important with scale study. This is because the use of pure tempered fifths is designed to develop the overtone of individual pitches. The equal tempered fifth will disrupt the production of overtones.

B3: Equal Decending Interval Exercise



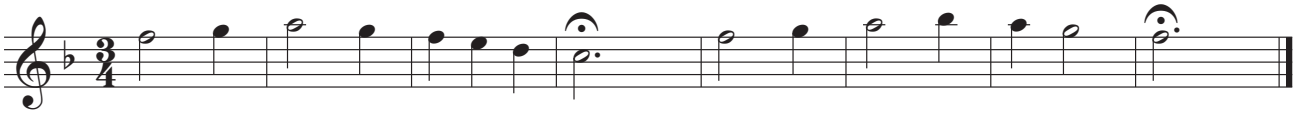
LESSON PLAN FOR INTERVAL EXERCISES:

1. Set the HD to **EQUAL** temperament.
2. Play through the exercise in **EQUAL** temperament on the HD while students hum or sing. Repeat intervals as needed in context. Alternatively, you can sustain the first note of the exercise while students sing the intervals. They will move pitch to pitch in relation to the key center. Either strategy works very well and alternating strategies before playing on instruments can be very effective.
3. Play through the exercise with either version of the HD drone.
4. It is very effective to isolate only one or two intervals to work toward perfection. Spend time on just the minor second interval to talk about making the “middle note sound just as beautiful as the outer notes”.
5. If using individual tuners, have the performers check in on their tuner often as they move pitch to pitch.

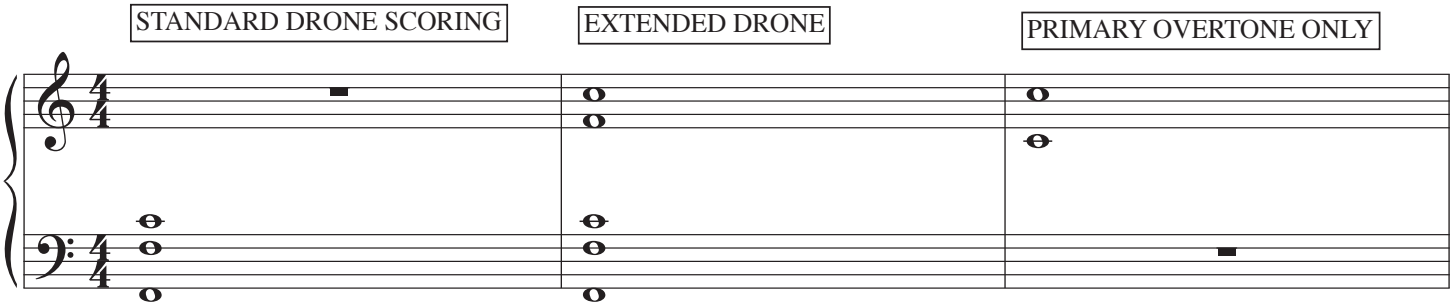
CHORALES

Chorales, such as orchestrations of Bach chorales, can be used as an ensemble exercise to develop tuning, balance, and phrasing skills. With the Harmony Director, you can reinforce horizontal-melodic concepts as well as vertical-harmonic concepts of chorale performance with key center related drones as well as chord progression DroneMaps.

IV. Freu' dich sehr, o meine Seele (BWV 70.7)

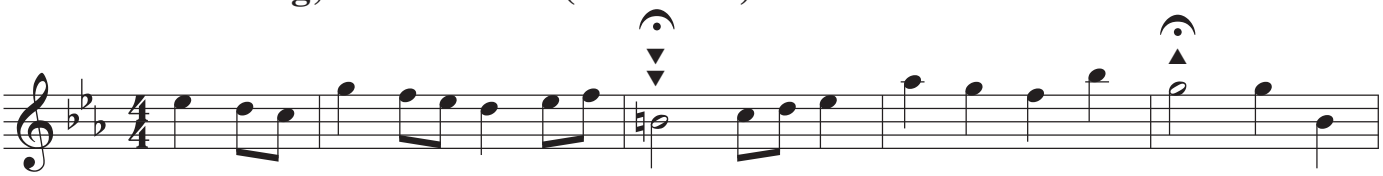


Selecting short excerpts from a longer chorale allows you to concentrate on a shorter phrase and spend more time detailing temperament adjustments. The excerpt above can be performed with a **PURE F MAJOR** drone to work on melodic temperament against a stationary drone like below:



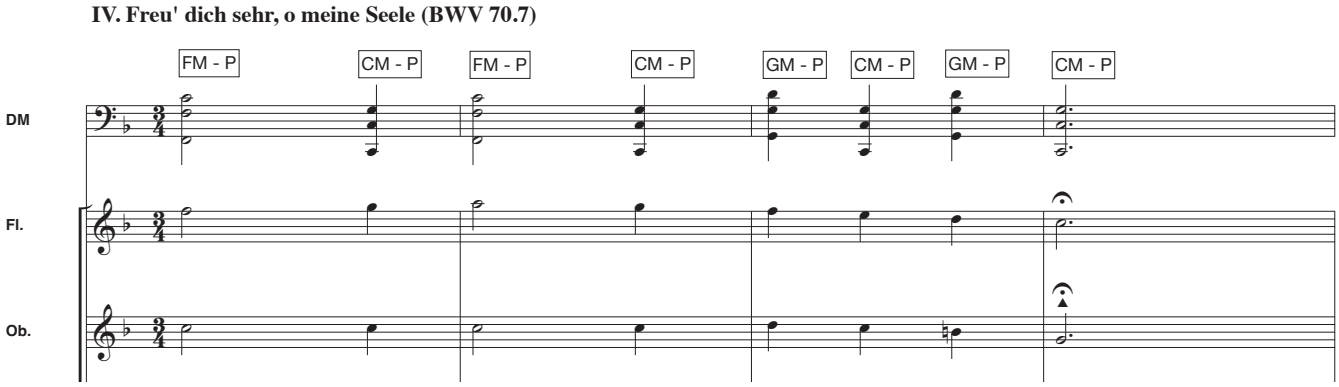
When isolating melodic fragments choose a drone that reinforces the tonal center of the excerpt.

I. Nicht so traurig, nicht so sehr. (BWV 384)



The excerpt above is based in **PURE C MINOR**. Set the HD to that tonal center and choose a version of a Pure C - G drone.

DroneMaps are a great way to detail the vertical chord structure of a chorale. Published DroneMaps detail the proper HD setting, they notate drones to use on any given chord, and give suggestions for tuning adjustments.

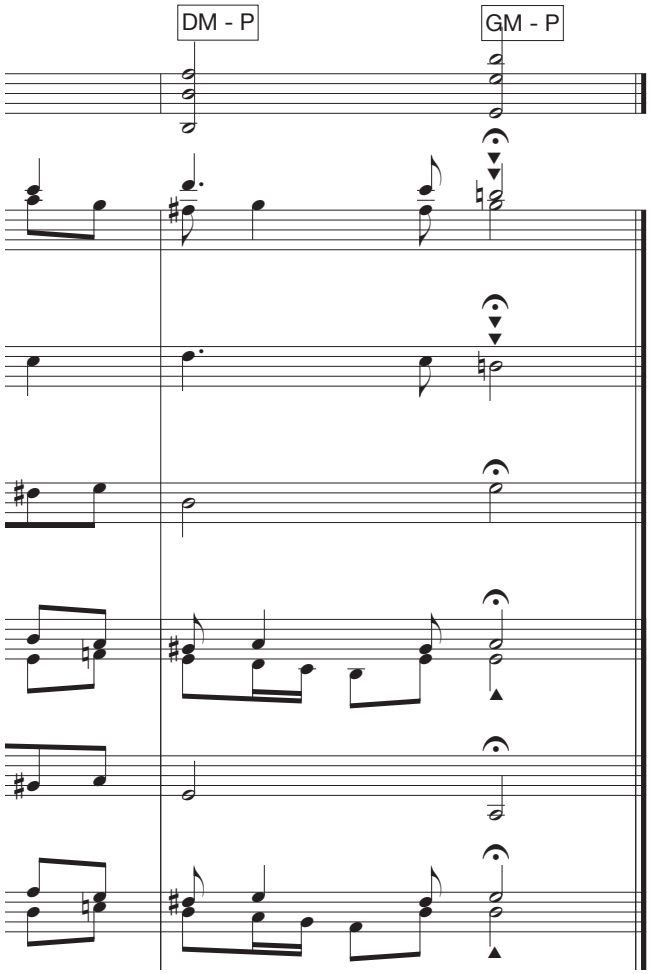


Although “real time” drones are helpful, it I can be very beneficial to choose one chord within the progression to isolate with a drone. In the above excerpt the second chord, the C Major V chord in the key, would be an excellent moment to isolate.

LESSON PLAN FOR ISOLATING CHORDS WITHIN A PROGRESSION:

1. Set the HD to the proper temperament. In this case **PURE C MAJOR**.
2. Create the proper drone for the chord chosen. Notice above in the published DroneMap that a suggested drone is notated.
3. Humming/singing first, add the chord voices in the following order: root, fifth and third. If the chord has extensions passed the fifth, add the chord members in order. (I.e. seventh, ninth, etc.)
4. After repeating step 3 several times times, follow the same steps while playing on instruments. Students should strive to balance and adjust their chord member with the previous ones.
5. This is an opportunity to discuss temperament and chord balance as well. In a major triad the root accounts for the largest amount of volume, the fifth next, and the third the least. As a general rule of thumb, each progressive extension will be slightly less volume than the previously added note.

Another strategy would be to isolate cadence points and have individual voices move from one chord to the next with root based drones. In the example below each individual line can sing and play along with the suggested drones. It is important that the HD is set to **PURE UNLOCKED** for this exercise.



One of the most important aspects of working on chorales is singing them often. The Harmony Director adds the most value to the ensemble basics process when exercises are sung while rehearsing them.

LESSON PLAN:

1. Set HD to **PURE UNLOCKED**
2. Identify the Bass, Tenor, Alto and Soprano lines of the 4-part chorale.
3. Isolate individual lines with the HD and then gradually add them in combinations until you build the chorale back to its full orchestration. Remember to sing each line and combination before being played.

Chorales are also a great opportunity to discuss music theory concepts that have real connections to what the students are performing. In this example subjects could include:

Authentic Cadence

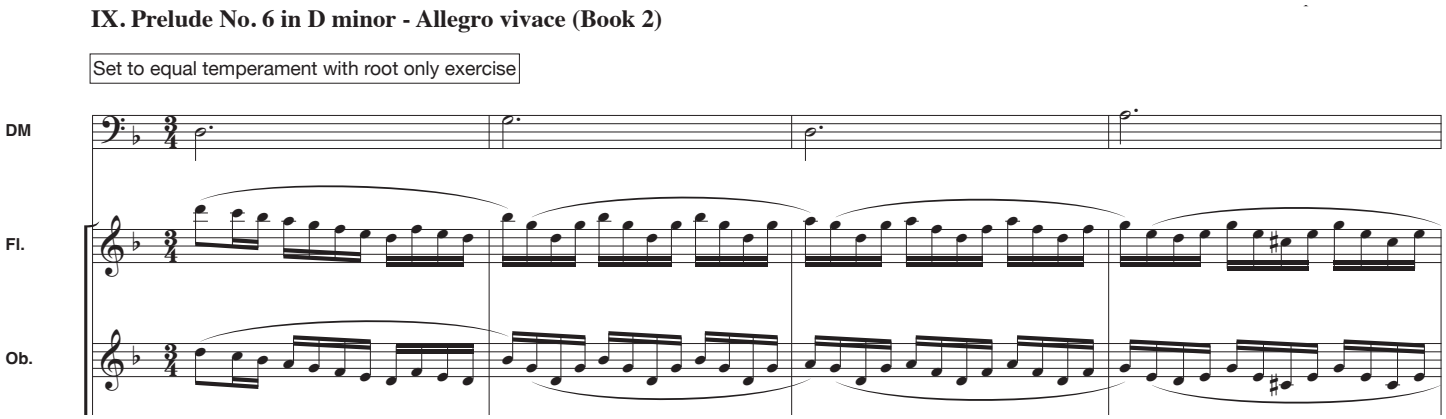
Voice Leading Concepts

Chord Tones/Non-chord Tones

TECHNIQUE EXERCISES

“All fast music is just slow music played fast!”

The primary goal of technical based exercises is to develop flexibility, articulation technique, and finger dexterity. But as the quote above reminds us, these exercises also need to sound beautiful and effortless. Drones can be used in conjunction with most technical exercises.



Rehearse these type of exercises slowly encouraging the performers to relate each pitch to the drone.

Technique related tips for the Harmony Director

Lip Slurs - For brass exercises of this type use **EQUAL** temperament. This will help the performers learn where the center of pitch is on each partial. Equal temperament will also help French Horn and Mellophone performers when playing exercises a perfect fourth lower than the rest of the brass ensemble.

Scale work - Use **EQUAL** temperament when working chromatic and diatonic scales. This is an opportunity to teach center of pitch accurately.

Metronome - Work slow to fast gradually. More importantly, be aware of the balance of volume between the metronome and harmony functions of the HD. Err on the side of metronome softer than harmony. Use the balance slider on the left side of the keyboard for easy adjustment.

Articulation Exercises - Use overtone drones to encourage performers to still concentrate on creating the acoustic overtone even when working on faster articulation patterns.

Excerpts included from:
Ensemble: an integrated approach to the Yamaha Harmony Director
The Pure Tempered Bach
Both available at **fanninmusic.com**

VIII. APPLICATIONS: LITERATURE

Now that you've become comfortable using the Yamaha Harmony Director during your ensemble development exercises - keep going!

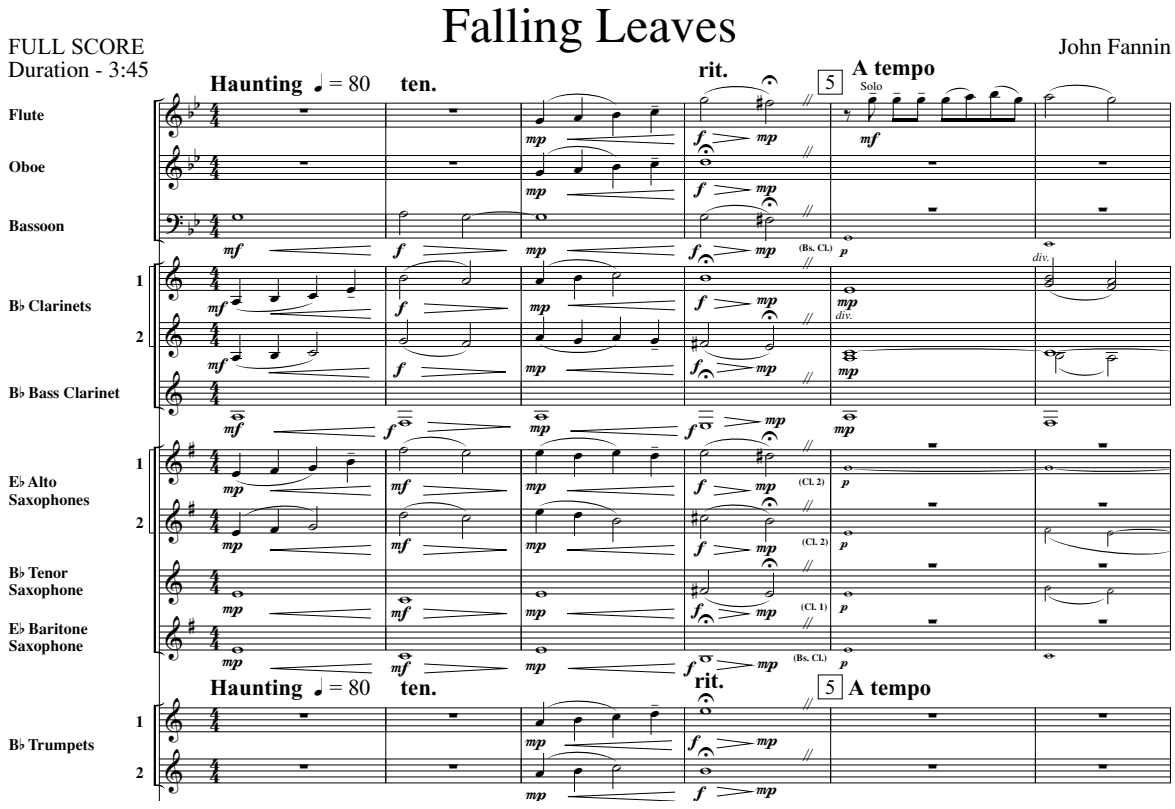
It's quite common for educators to rely on the HD during the "warm-up" portion of a rehearsal, only to let it sit idle - or function solely as a metronome - once they transition to literature. However, the techniques outlined in ***Applications: Ensemble Basics*** are just as valuable when applied directly to your repertoire.

As you begin working on a new piece, elements like meter and tempo offer clear guidance on how to set the metronome. But other aspects, such as temperament, pitch center, and harmonic structure, are often less immediately apparent. These too deserve thoughtful consideration and can significantly enhance the effectiveness of your rehearsals when supported by the HD.

ISOLATING INDIVIDUAL CHORDS

One of the first steps to connecting your HD to the literature is to choose a single chord in the overall harmonic structure of the piece and isolate it with your students. A great place to start can be the very first tutti chord or the final chord of a section or work.

Let's look at an example in context of the **John Fannin's *"Falling Leaves"*:**



The initial key signature is G minor and the first note of the work is a unison Concert G. This is a great opportunity to relate the long tone exercise from your basics program to the literature.

LESSON PLAN FOR UNISON EXERCISES:

1. Set the HD to **PURE G MINOR** by playing a G minor triad on the HD.
2. Use a unison Concert G or an orchestrated drone in **PURE** G minor along with the **HOLD** button.
3. Have students hum the unison pitch while focusing on the HD. After the students center the pitch, ask them to open to singing on "ah". When the students have fully centered the pitch singing have them return to humming, then have them gradually diminuendo to nothing. Have them focus on audiating the pitch.
4. At this point, add performing on the instrument.
5. Repeat the humming/singing/audiating/playing sequence multiple times.

Having the entire group working on this type of exercise prior to beginning work each day will create a better sense of tonal center in the ensemble.

REHEARSAL TIPS FOR STEP 4 ABOVE:

Modeling is one of the most powerful rehearsal tools we can use as instrumental conductors. When adding the playing component of the lesson plan above try some of these strategies:

- Add "low to high". This is commonly referred to as the pyramid of balance. It is helpful to split the ensemble into 4 groups: Low voices, tenor voices, mid voices and high voices. It is important to note that the pyramid of balance concept is primarily for unison pitches. Once you add chord structure and melody the priority of balance can shift.

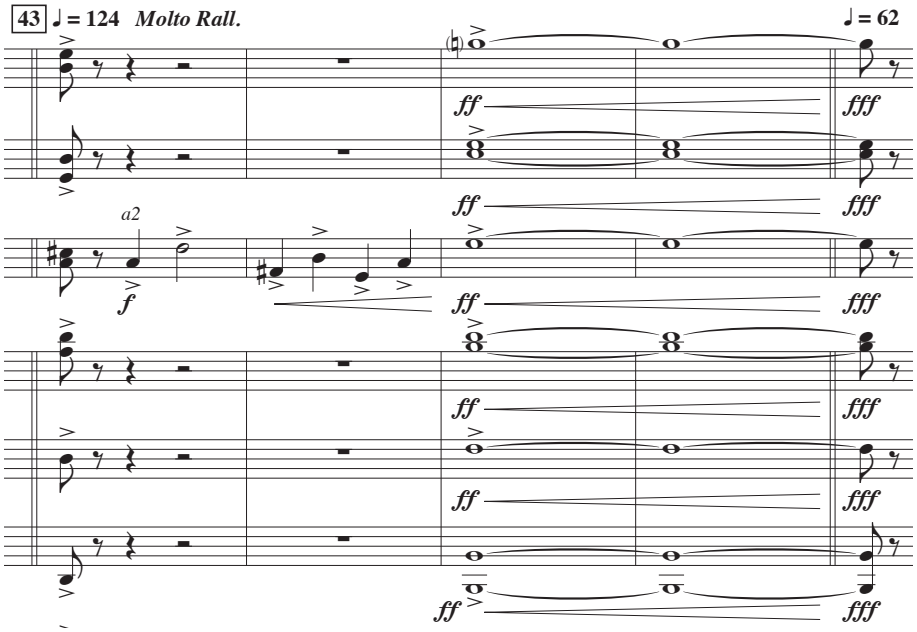
- Add the "principal player" of each section first. Then add 1st parts through 3rd/4th parts gradually. This type of modeling allows the performers to hear the color of the entire ensemble with one player for each voice. Then as voices are added the performers should concentrate on fitting inside the sound that already exists. Working to match tone, pitch and volume of the people around them.

- Solo performance! Choose one individual to demonstrate the proper tone, tuning and volume of the excerpt; even when it is just one note! After the performer has completed the exercise ask the students to give feedback. The rule for student feedback should be in this order: "What did you like about the performance" and "Describe a solution to something in the performance that can be improved upon".

Below is an excerpt from **Richard Saucedo's, "*To Gently Serenade"*.** The Bb Major seventh chord at measures 45 and 46 is another great opportunity to isolate a single chord and to work on concepts that will apply in many other situations.

When the HD is set to **PURE Bb MAJOR** the keyboard will automatically make the following adjustments to chord tones:

ROOT:	0.0 cents adjustment
THIRD:	-13.7 cents adjustment
FIFTH:	+2.0 cents adjustment
SEVENTH:	-11.7 cents adjustment



Use terms such as “significant adjustment down” for the third and seventh, and “slight adjustment up” for the fifth. These phrases can often be more helpful and descriptive than discussing the numerical adjustments.

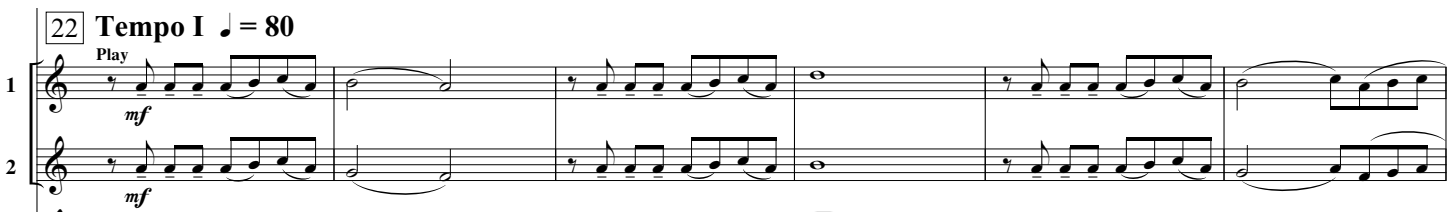
Chords like this offer an opportunity to discuss a number of different musical concepts:

- Temperament Concepts
- Chord Balance Concepts
- Chord Construction

LESSON PLAN FOR ISOLATED CHORD DEVELOPMENT:

1. Set the HD to **PURE Bb MAJOR** by playing a Bb major triad on the HD.
2. Play entire chord on keyboard for students to hear all parts of chord.
3. Students hum, sing, hum, audiate their part of the chord structure.
4. Create a pure Bb major drone on the HD. See ***Basic Drone Scoring*** for options.
5. Add the chord parts in this order: Bb, F, A, D. Encourage performers to adjust based on what they hear in the room. Remind them to “let their ears guide them”.
6. Repeat the chord several times on a whole note followed by a whole rest. (Similar to the most basic Concert F exercise.)

Below is a melodic excerpt from “***Falling Leaves”.*** A quick glance will determine that the excerpt is based in G minor. Use this type of excerpt to work on melodic tempering by having performers play slowly through the pitch changes with a **PURE G MINOR** drone.

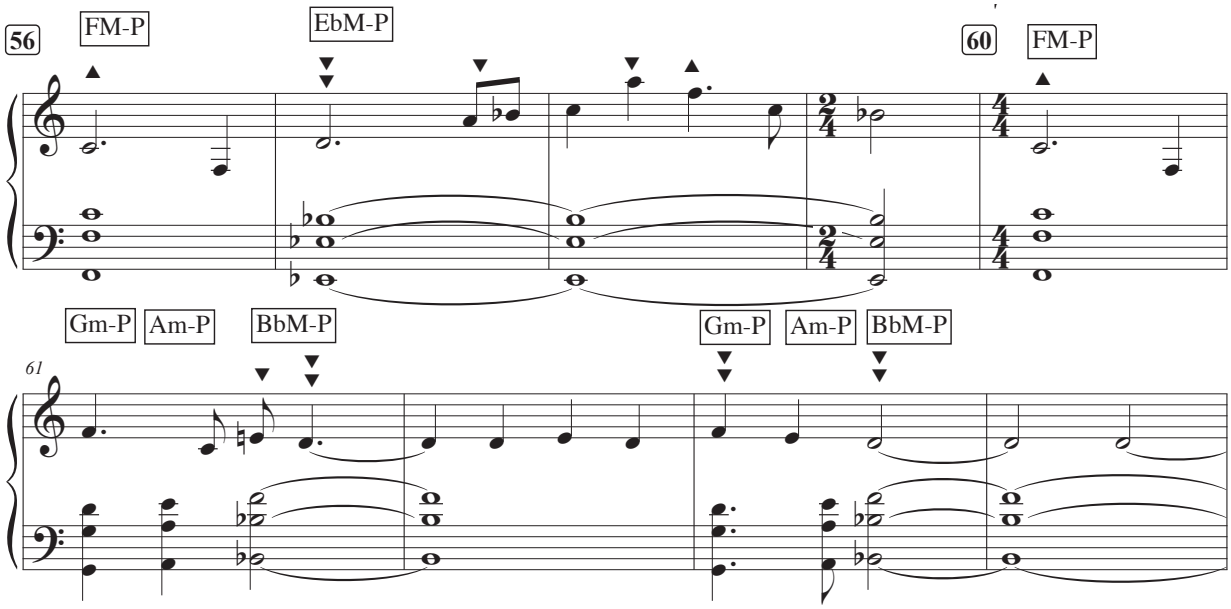


DRONEMAPS

While a full harmonic analysis of every piece may not be necessary, or even practical, it can be highly beneficial to identify important chords and develop a strategy for using drones during those moments. **DroneMaps** offer a comprehensive guide to which drones should be used at any given point in a piece, ensuring that tuning concepts are applied with precision.

DroneMap excerpt: **"*With Each Sunset*" by Richard Saucedo**

In this DroneMap, the treble clef shows the temperament setting and an important musical line and its pitch tendencies. The bass clef notates the standard drone to use when isolating that particular chord or moment in the work. Single and double arrows show the amount and direction of adjustments on specific pitches in the melody.



The Hal Leonard Corporation has recently begun publishing concert works with fully notated DroneMaps to assist in the rehearsal process:

https://www.halleonard.com/product/4008793/to-gently-serenade

https://www.halleonard.com/product/4008765/no-step-go-step-half-step-whole-step

https://www.halleonard.com/product/4008750/fanfare-and-homage

https://www.halleonard.com/product/4002355/with-each-sunset-comes-the-promise-of-a-new-day

DroneMaps and pure and equal-tempered drones provide essential reference points for refining the **Y-Axis** of musical performance—pitch and intonation—while written tempos, meters, and the metronome define the **X-Axis**, guiding rhythm and timing.

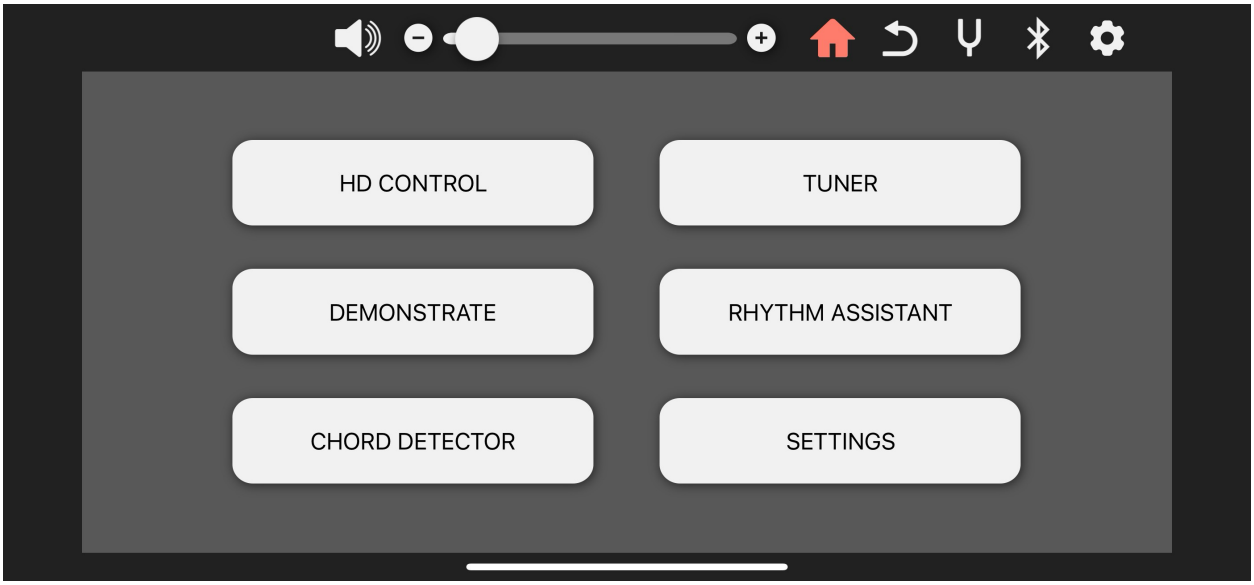
USING THE *HD ASSISTANT* APP

With the addition of bluetooth connectivity in the HD-300 you may now use the *HD Assistant* app in conjunction with your device.

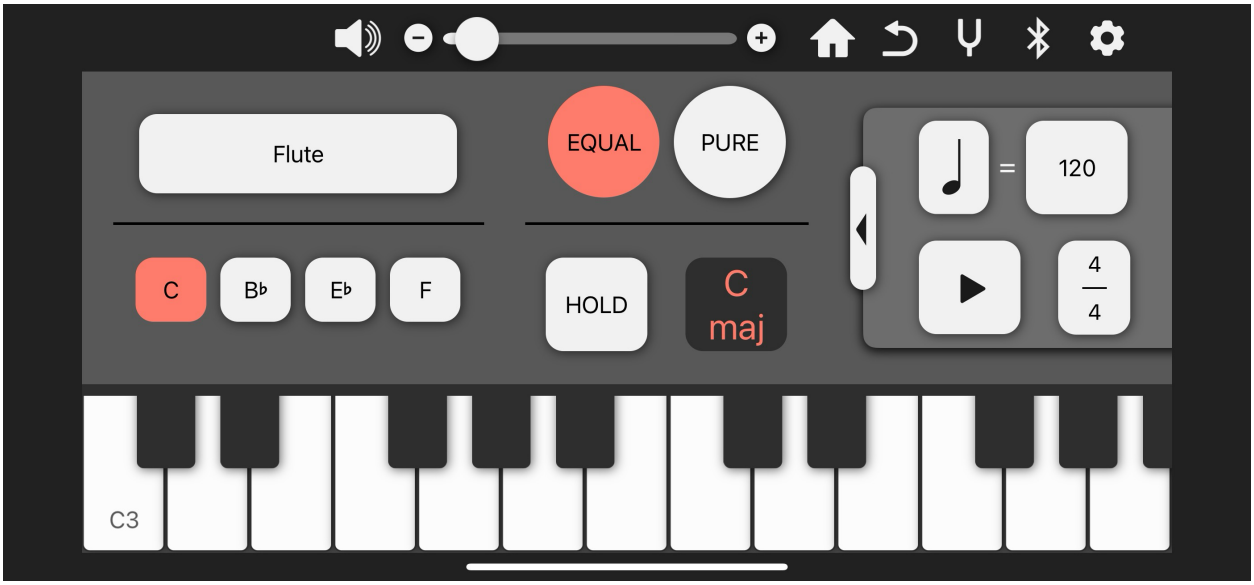
https://usa.yamaha.com/products/musical_instruments/winds/harmony_directors/hd-300/downloads.html#product-tabs

Here are a few of the functions usable with iPhone/iPad and Android:

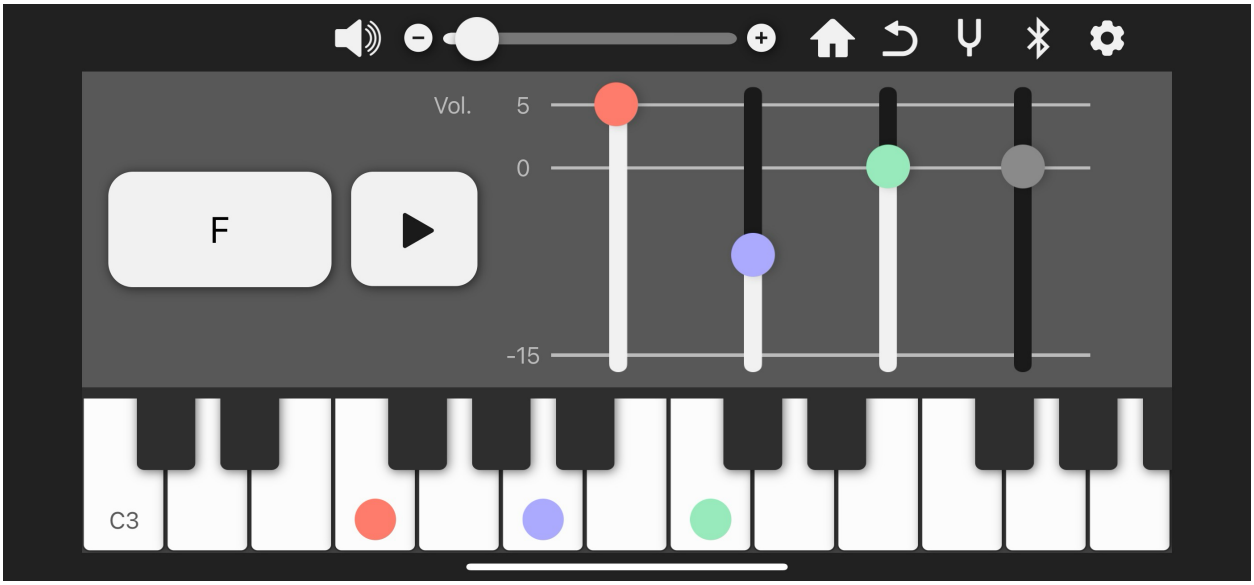
HOME SCREEN



HD CONTROL



DEMONSTRATE - CHORD BALANCE



DEMONSTRATE - INTERFERENCE BEATS

The demonstration functions of the app are great ways to aurally demonstrate for students how a properly balanced and tempered triad sounds.

TUNER

RHYTHM ASSISTANT

The Rhythm Assistant allows you to create rhythm patterns and metronome settings that will play through the HD unit and sound system that you may have it connected through. There are many other functions to discover as you experiment with the HD Assistant.

MORE ON DRONEMAPS

Using a DroneMap

DroneMaps are designed to assist the conductor in creating ensemble tuning clarity. The DroneMap defines what the temperament settings should be on your HD and notates suggested pitches to use as you discuss and rehearse tuning with your ensemble. Although the DroneMap is not a complete harmonic analysis, it gives the conductor and students a foundation for melodic and chord tuning. The DroneMap is designed to be a rehearsal aid not an additional voice for performance.

SYMBOLS USED IN A DRONE MAP

Above each chord in the DroneMap are a series of symbols used to define the temperament settings.

The first letter, or letter and accidental, defines the key center. (e.g. "**Eb**" or "**G**")

The following symbols define the temperament settings:

M - P Major/Pure Temperament

m - P Minor/Pure Temperament

M - E Major/Equal Temperament

m - E minor/Equal Temperament

TUNING STRATEGIES

- Although "real-time drones" (drones played in tempo with the ensemble) are helpful, it can be more beneficial to take individual chords out of context and isolate them.
- Take time to identify for students their role in the chord structure. This information will allow the students to make decisions in relation to balance and pitch adjustment.
- The best way to connect the drone to the individual musician is to sing excerpts. Do not skip this step!
- It is often customary to discuss adjustments of pitch in relation to "cents" within a chord. It can be equally as helpful to use phrases such as "significant adjustment up" or "slight adjustment down" and allowing the performers to trust their ears.
- Important pitches in the melodic content are often marked with one or two arrows pointing up or down. One arrow indicates a slight adjustment in that direction. Two arrows indicate a significant adjustment.
- Although the DroneMap includes suggested scorings for each drone, feel comfortable adjusting those for different instrument needs.

BASIC CHORD ADJUSTMENTS IN PURE TEMPERAMENT

The basics of chord tuning within pure temperament begin with the examples below. As you become more comfortable with discussing these concepts in your classroom, your knowledge and awareness of pure temperament will expand.

Major triad:

Root: 0.0 (no adjustment)
M3: -13.7 cents (significant adjustment down)
P5 +2.0 cents (slight adjustment up)

Minor triad:

Root: +/-0.0 (no adjustment)
m3: +15.6 cents (significant adjustment up)
P5 +2.0 cents (slight adjustment up)

Suspended triad (sus4):

Root: +/-0.0 (no adjustment)
P4: -2.0 cents (slight adjustment down)
P5 +2.0 cents (slight adjustment up)

Simple Extensions:

M9: +3.9 cents (slight adjustment up)
M7: -11.7 cents (significant adjustment down)

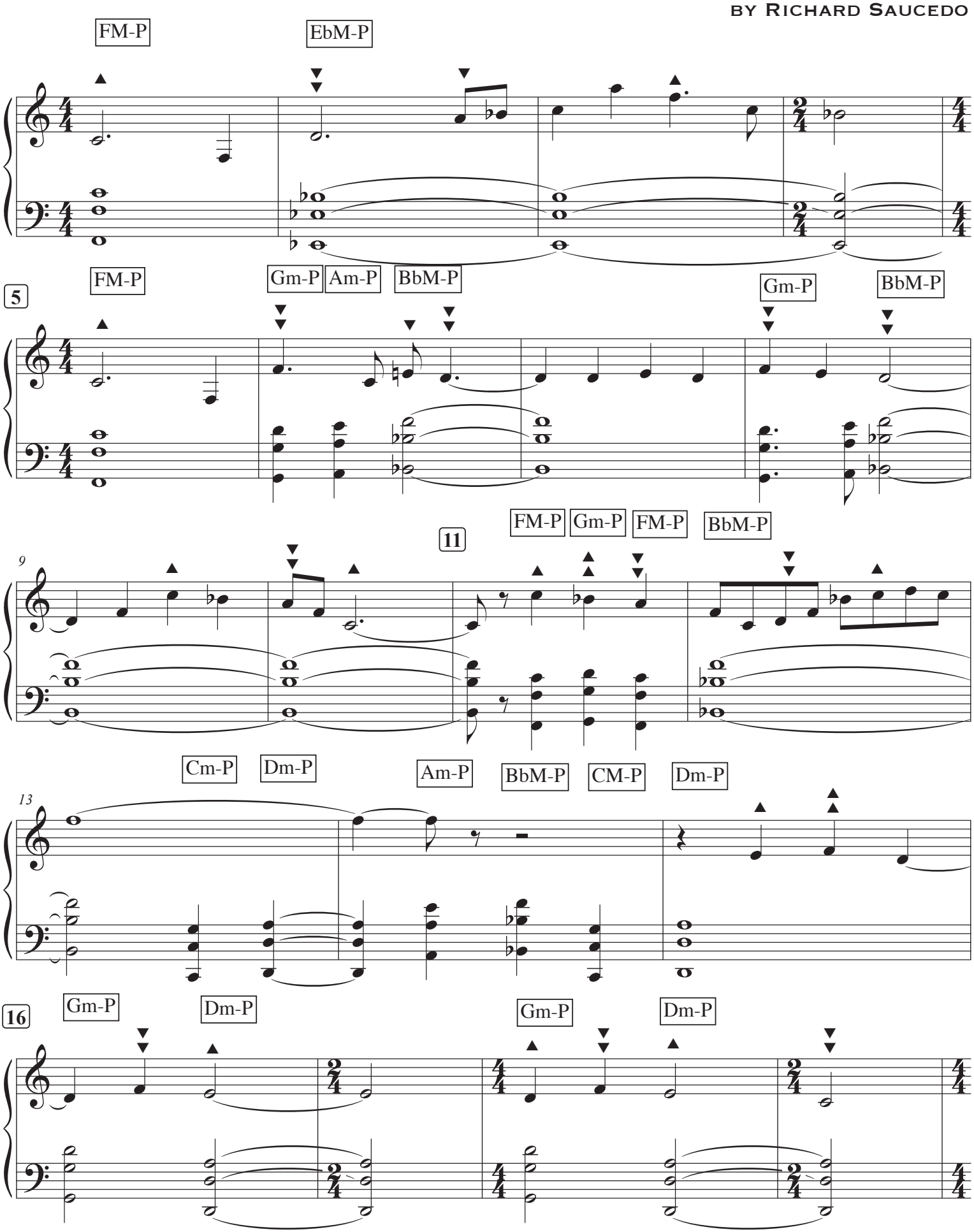
Included on the following pages are a few examples of complete DroneMaps for study.

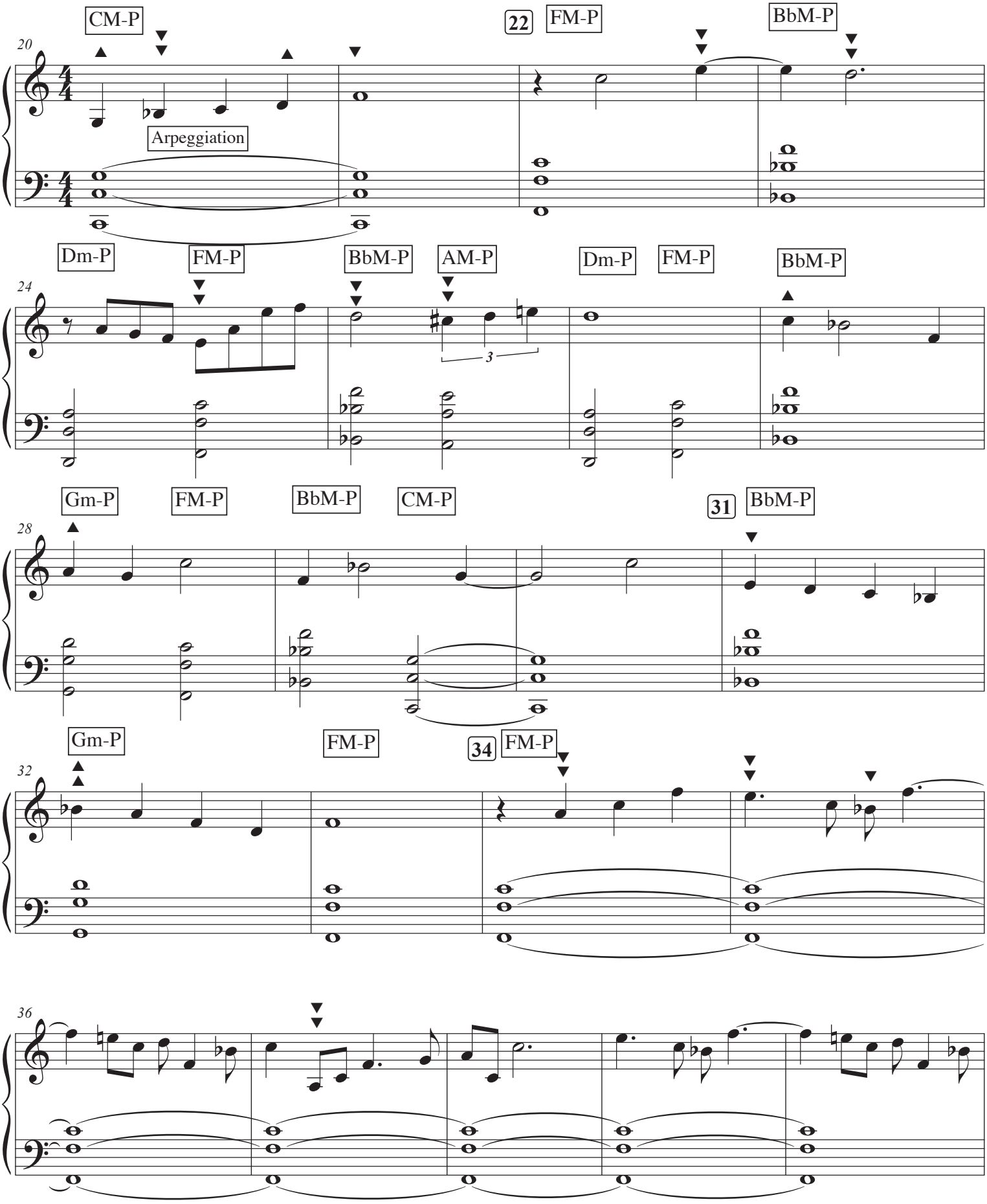
KEEP GOING!

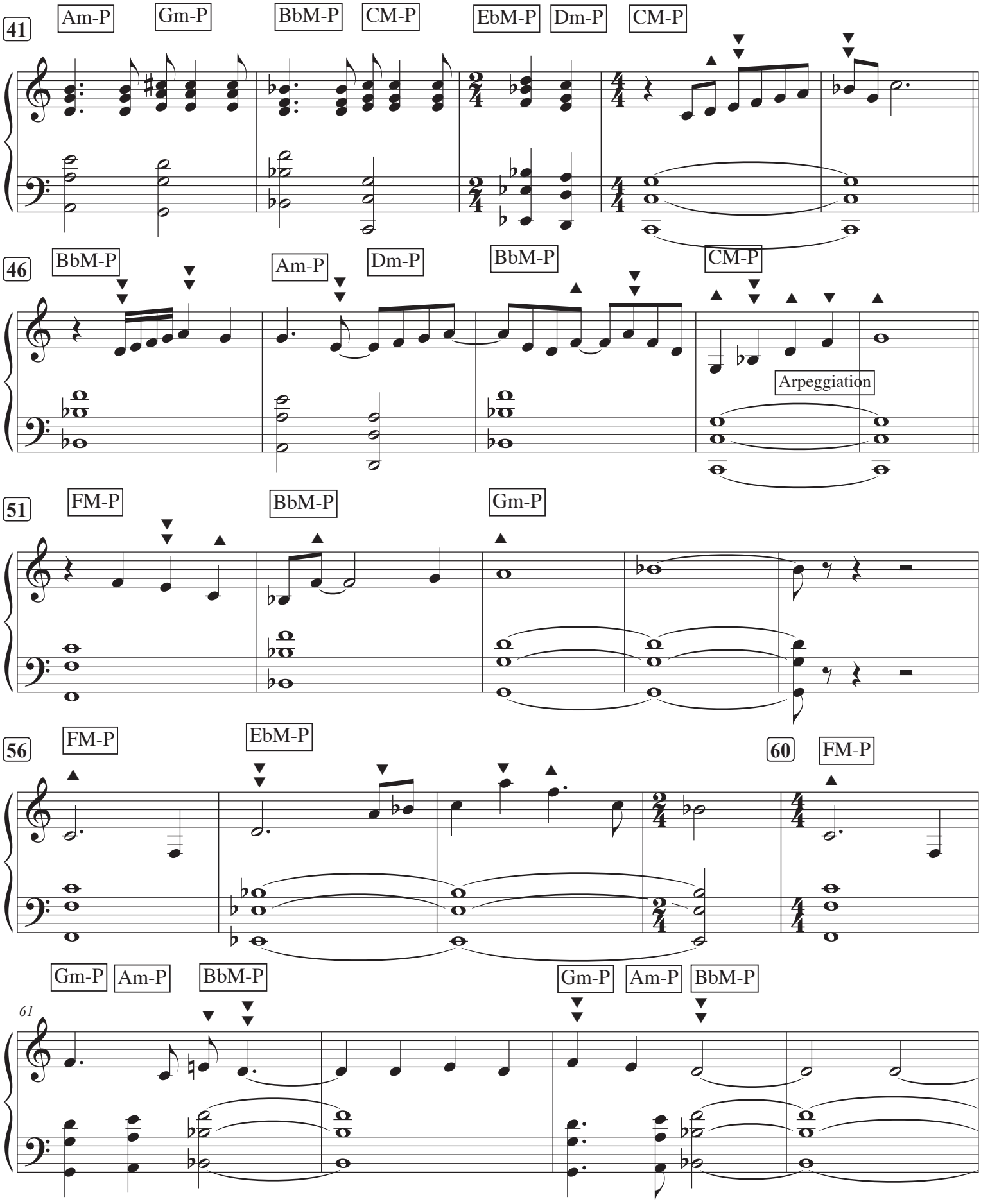
The consistent use of the Yamaha Harmony Director will improve the overall tone, tuning and balance of ensembles of any experience level. As you become comfortable and experiment with the technology, you will find yourself using it more and more in each rehearsal. It will soon become an invaluable part of your rehearsal process.

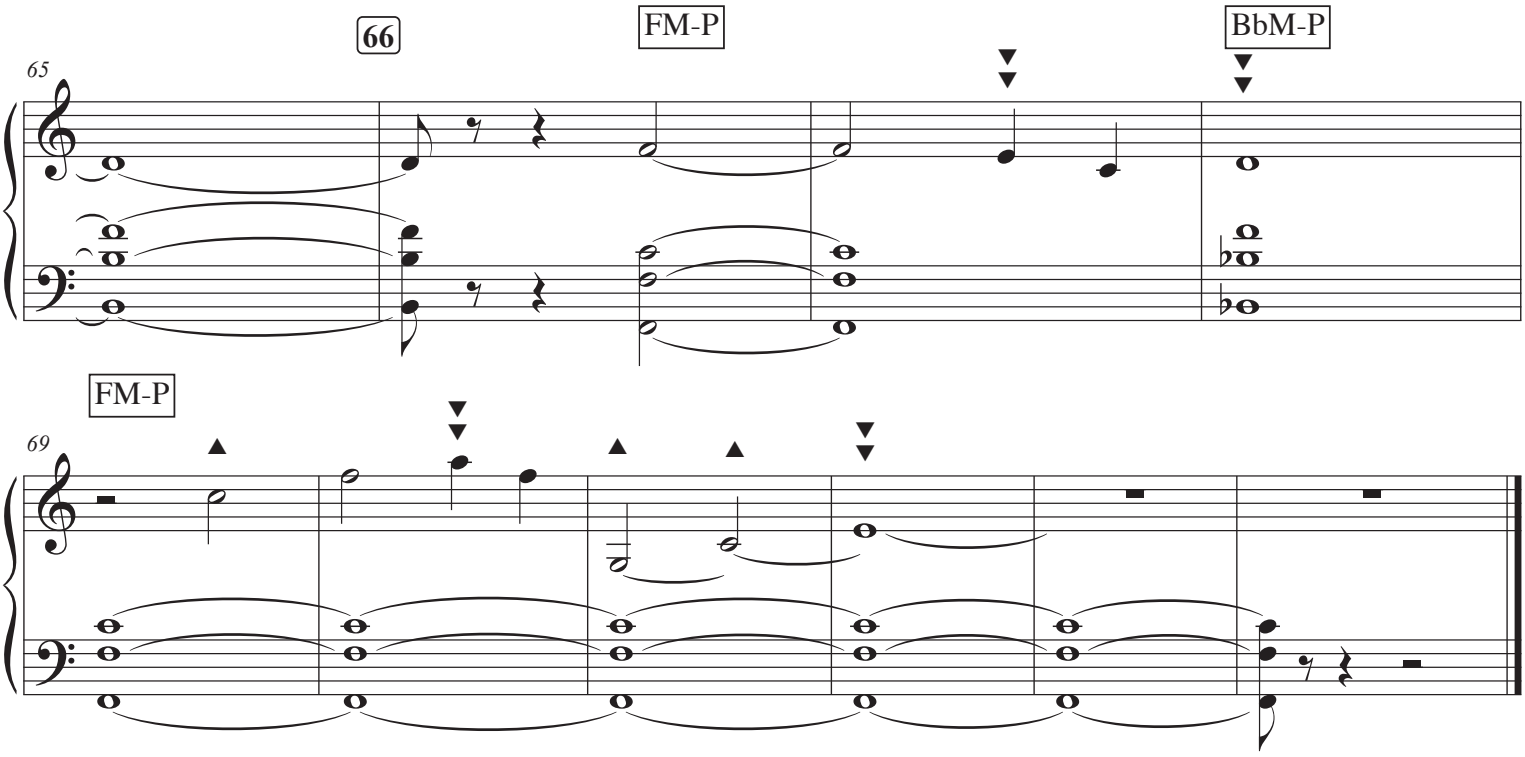
With Each Sunset

BY RICHARD SAUCEDO




CM-P
22
FM-P
BbM-P
20
Arpeggiation
Dm-P
FM-P
BbM-P
AM-P
Dm-P
FM-P
BbM-P
24
3
Gm-P
FM-P
BbM-P
CM-P
31
BbM-P
28
Gm-P
FM-P
34
FM-P
32
36

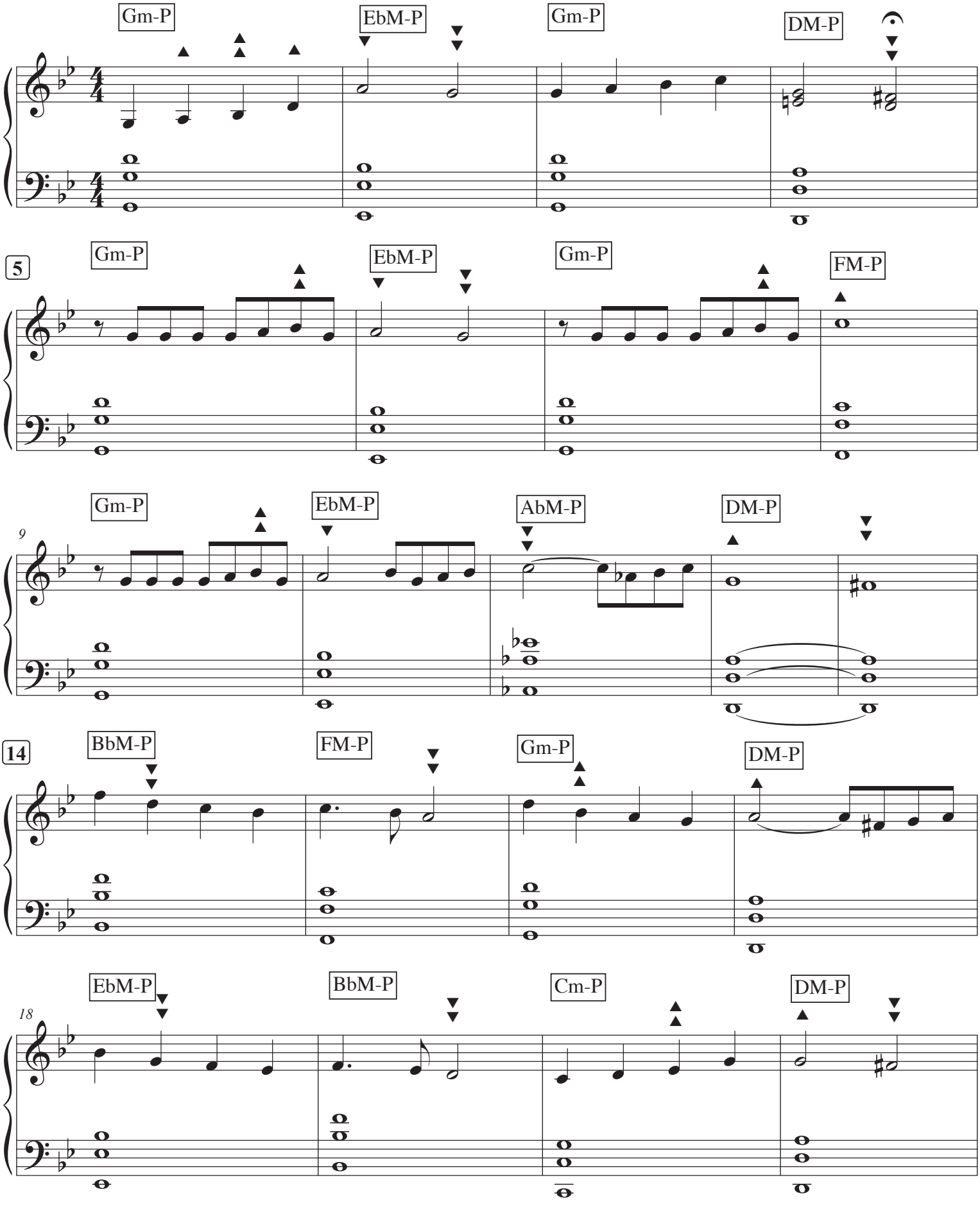

41
Am-P
Gm-P
BbM-P
CM-P
EbM-P
Dm-P
CM-P
46
BbM-P
Am-P
Dm-P
BbM-P
CM-P
Arpeggiation
51
FM-P
BbM-P
Gm-P
56
FM-P
EbM-P
60
FM-P
Gm-P
Am-P
BbM-P
61
Gm-P
Am-P
BbM-P

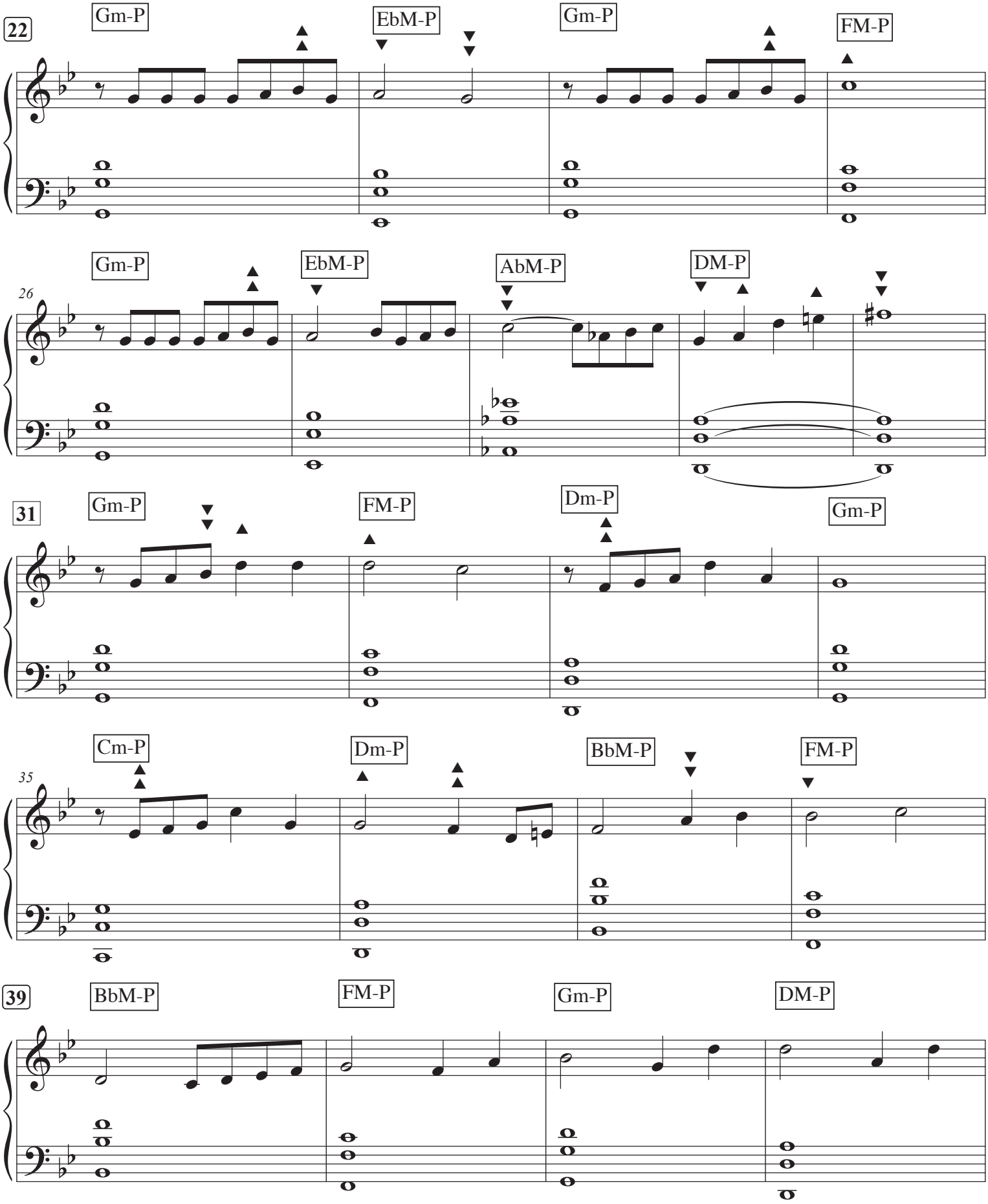

66
FM-P
BbM-P
65
FM-P
69

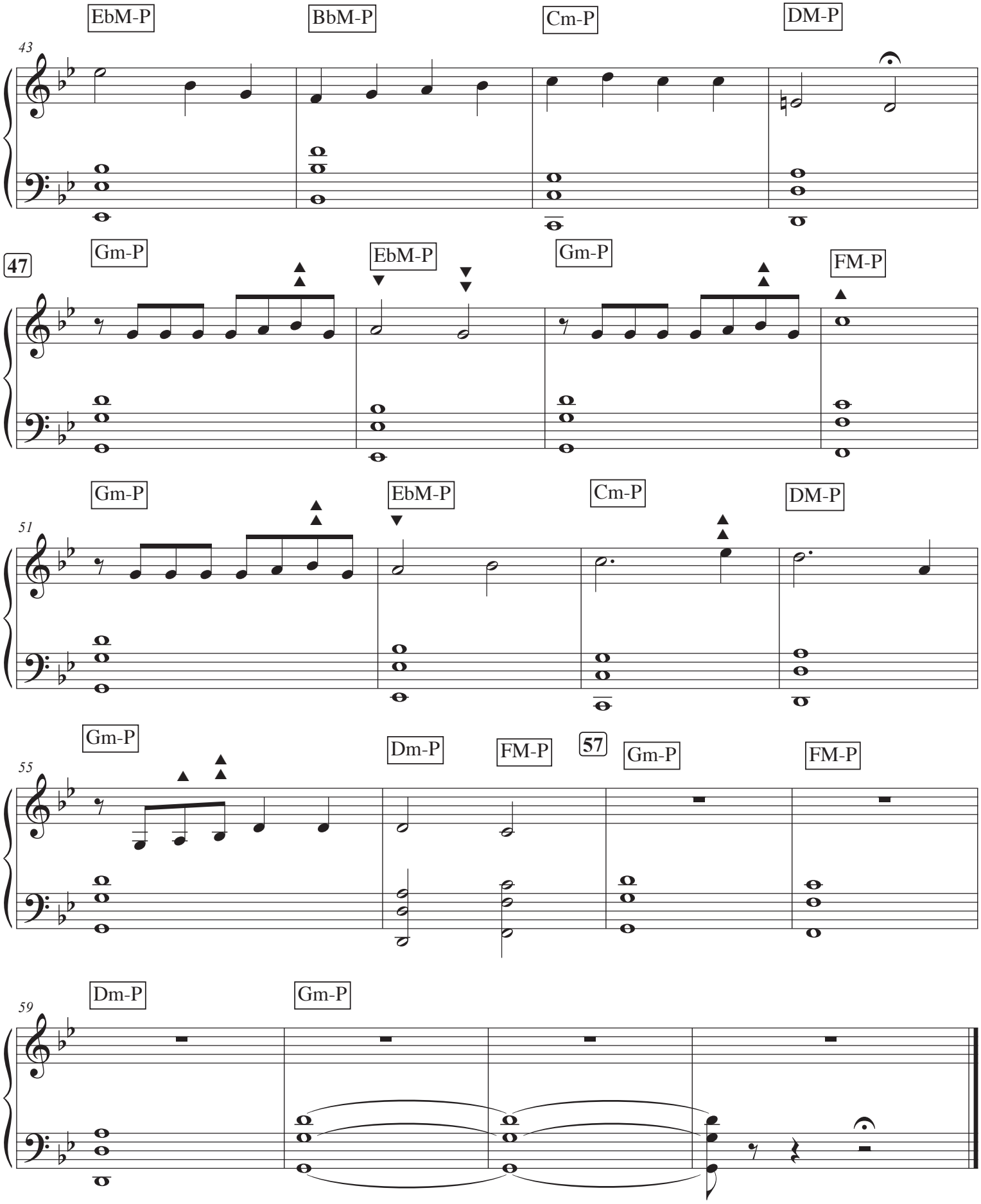
FULL DRONEMAP EXAMPLE

Falling Leaves

By John Fannin




22
Gm-P
EbM-P
Gm-P
FM-P
26
Gm-P
EbM-P
AbM-P
DM-P
31
Gm-P
FM-P
Dm-P
Gm-P
35
Cm-P
Dm-P
BbM-P
FM-P
39
BbM-P
FM-P
Gm-P
DM-P


EbM-P
BbM-P
Cm-P
DM-P
43
47
Gm-P
EbM-P
Gm-P
FM-P
Gm-P
EbM-P
Cm-P
DM-P
51
Gm-P
Dm-P
FM-P
57
Gm-P
FM-P
55
Dm-P
Gm-P
59

Michael Pote

Michael Pote retired as Director of Bands at Carmel High School (Carmel, IN) in 2025 after spending 35 years in music education. The band program at Carmel High School serves nearly 600 students with 6 concert bands, 5 jazz ensembles, marching band, chamber ensembles, private lesson program, percussion ensembles and 3 winter color guards.

Carmel High School's Wind Symphony 1 performed at the 2005 Midwest Band and Orchestra clinic, the 2020 North Central Division CBDNA Conference, numerous state conference performances and clinics and has been a 4-time participant in the Music For All National Concert Band Festival. Wind Symphony 1 is a 10-time ISSMA Concert Band State Champion including the last 7 consecutive years.

The marching band at Carmel High School has been a Bands of America National Finalist 27 consecutive years dating back to 1996 and were the ISSMA State Champions in 1990, 2001, 2002, 2012, 2018 and 2022. CHS is a 28-time Bands of America Regional Champion and were named the Bands of America Grand National Champions in 2005, 2012, 2016, 2017, 2018 and 2022.

The Carmel band program has received the National Band Association Program of Excellence Blue Ribbon Award as well as being a two-time recipient of the prestigious Sudler Shield.

Michael was a music ensemble consultant for the Cadets Drum and Bugle Corps during the 2022 and 2023 seasons and is currently on the brass staff of the Cavaliers Drum and Bugle Corps. A clinician for the Yamaha Master Educator Collective, Michael has presented clinics across the country including the Midwest Band and Orchestra Clinic, the Texas Music Educators Association Convention, the South Carolina Music Educators Conference, the Boston Brass Summer Winds Seminar, the North Carolina Music Educators Conference, Florida Music Educators Association and the Arizona Music Educators Association.

Michael was elected to membership in the American Band Masters Association in 2021 and in 2019 was awarded the Phi Beta Mu Indiana Chapter Outstanding Bandmaster. Michael's three wind ensemble method books, "Process","Ensemble: an integrated approach to the Yamaha Harmony Director" and "The Pure-Tempered Bach" are published through Fannin Music Productions.

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mpotemusicllc@gmail.com

Yamaha Master Educator Collective
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Fannin Musical Productions
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https://fanninmusic.com/the-pure-tempered-bach/
https://fanninmusic.com/process/

Alfred Music
https://www.alfred.com/falling-leaves/p/00-36694S/