



Highland Bagpipe Tutor Student Manual



4th Edition

Developed by Dr. Peter L. Heineman

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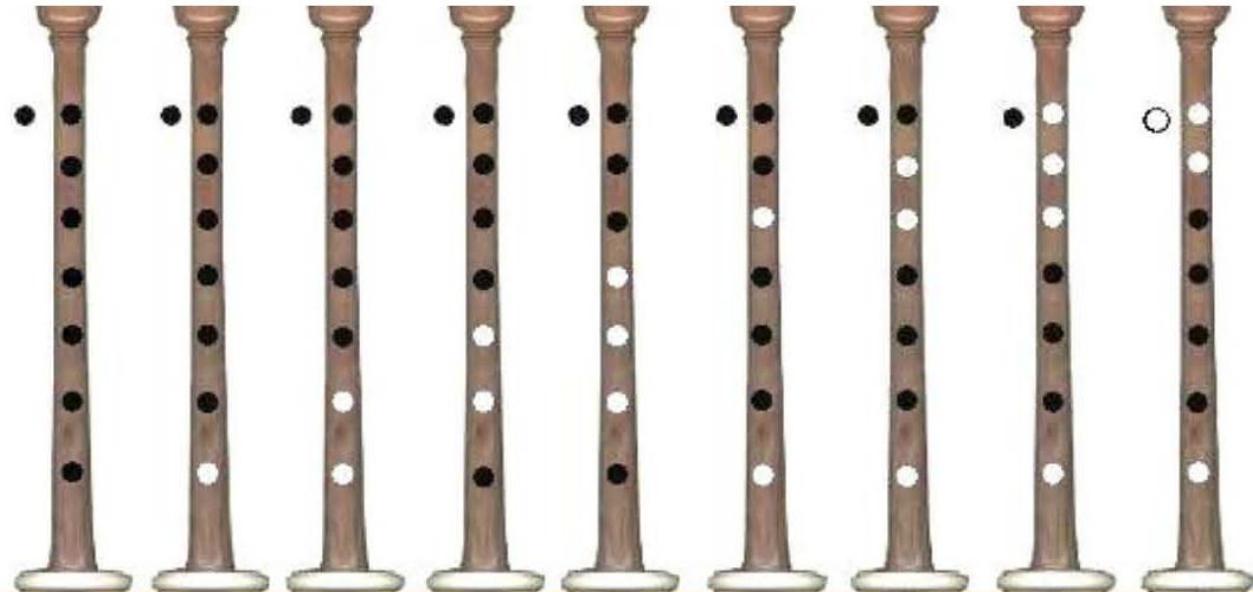
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Fingering Chart for the Great Highland Bagpipe

○ = Open Hole
● = Closed Hole



Note	Low-G	Low-A	B	C	D	E	F	High-G	High-A
Bagpipe Scale									



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CHAPTER 1

An Abbreviated History of the Bagpipes

How Bagpipes Work

Getting Started

Introduction to Music Notation

Time Signatures

Types of Notes

Basic Counting

Practicing

Stretching

An Abbreviated History of the Great Highland Bagpipes

Scotland's national instrument, the Bagpipe or in Gaelic "piob-mhor" (the great pipe) is not, contrary to popular belief, an instrument which has its origins in and has diffused from Scotland. The bagpipe is an instrument of great antiquity, an instrument which has its origins in the Middle East and traveled through and evolved in Europe alongside the diffusion of early civilization.

The "Oxford History of Music" makes mention of the first documented bagpipe being found on a Hittite slab at Eyuk. This sculptured bagpipe has been dated to 1,000 B.C. Biblical mention is made of the bagpipe in Genesis and in the third Chapter of Daniel where the "symphonia" in Nebuchadnezzar's band is believed to have been a bagpipe. These early pipes or "Pan" pipes, without the bag or reservoir, were probably the second musical instrument to evolve. Musical history dictates that pipers have to take a back seat to percussion instruments in this case. These early pipes used materials with a natural bore (hollow reeds, corn stalks, bamboos, etc.)

The Roman bagpipes or "tibia utricularis" represented a major innovation, the addition of the reservoir. Historians have noted that Roman coins depict Nero playing the bagpipe, not the fiddle.

The early "Dudel-Sack" gave rise to a number of European, Asian and African folk bagpipes, namely, the Volynka (U.S.S.R.), the Bock (German), the Zukra (North Africa), the Gaita (Portugal and Spain), the Zampogna (Italy), the Cornemuse (France), the Moshug (India), the Zumarah (Egypt), and Flemish, Polish, Greek and Hungarian examples. An extensive and thoroughly documented collection of these instruments can be found in the Musical Instrument section of the Metropolitan Museum of Art in New York City. In addition, examples of early folk bagpipes can be found in the paintings of Breughel, Teniers, Jordaens and Durer.

The French Musette can be seen as a logical explanation for the evolution or refinement of the instrument into a number of examples of chamber pipes (i.e. those that operate via the use of bellows rather than the tradition bags as a reservoir).

Examples of different forms of such chamber pipes can be found throughout Ireland, France and England. The Northumbrian region of England has been a "hotbed" for bagpipe evolution. It has not only witnessed the emergence of its indigenous shuttle pipes, but also its own small pipes, half longs and great war-gathering pipes.

Northumbrian Pipes



Uilleann Pipes

Likewise, Ireland has experienced the evolution of its own Uilleann (chamber/bellows pipe) and war pipe (Brian Boru). The evidence exists to substantiate the belief that pipes may have been common throughout the remainder of Britain prior to their emergence upon the Scottish landscape.

Nevertheless, there is no question that the Bagpipe was very popular throughout England. Middle Ages Pre-Reformation churches reveal carvings of bagpipes. Chaucer refers to the Miller playing pipes in "The Miller's Tale," "*A bagpipe well couthe he blowe and sown.*"

Documents from the Lord High Treasurer of Scotland (1498 and 1506) refer to payments to the English piper. Shakespeare's "Henry IV" refers to the "Drone of a Lincolnshire Bagpipe". The Irish are believed to have played pipes for Edward I at Calais in 1297 and at the Battle of Falkirk in 1298. In fact, both Henry VII and Henry VIII are believed to have enjoyed pipers.

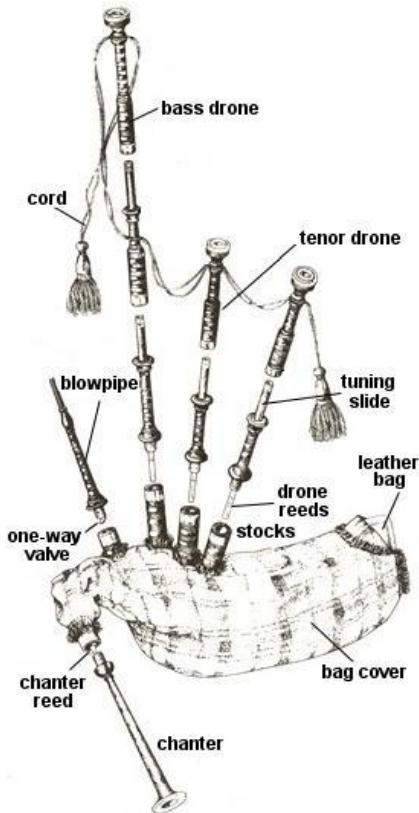
Questions remain as to when and where the first, second and third drones were added to the "piob-mhor" along with the questions as to when and where the bagpipe entered Scotland. However, the fact remains that this is an instrument whose growth and movement parallel civilizations and early history. It is a musical instrument which not only reflects Scotland's early history, but also the evolution of culture through history.

When they arrived to Scotland, they quickly became a part of Scottish life. Every town would hire a bagpiper, usually out of special taxes from the wealthy families in the area, who would pipe for townspeople on all occasions. In some places the piper would play in churches in place of an organ. As time went on, the bagpipes in the British Isles evolved and various types of pipes and piping were developed. Marches, strathspeys, hornpipes, and reels were perfected and played on the Highland Bagpipes, the Lowland Bagpipes, the Northumbrian pipes, and the Irish Union pipes.

The Scottish people have made the bagpipes one of the outstanding parts of their culture. In some many songs, stories, and poems, the Scots have celebrated their pipes, and unlike many other cultures they have kept the pipes alive as part of their musical tradition. But still, if you don't have a great Uncle Fergus from Ayr who played the Lowland pipes, you might have an Uncle Garcia from Madrid who played the Gaita.

How Bagpipes Work

Bagpipes are a class of musical instrument, *aerophones*, using enclosed reeds fed from a constant reservoir of air in the form of a bag. The Great Highland Bagpipes (GHB) consists of a bag, three drones, a blowpipe, and a chanter.



In essence, a piper blows through the blowpipe into the bag. The blowpipe is fitted with a one-way valve that prevents the air from coming back out the blowpipe when the piper takes a breath. From the bag, the air passes out through the drones and the chanter, each making a sound.

The three drones are composed of two (shorter) tenor drones which are one octave (eight notes) lower than the fundamental pitch of the chanter (called "Low A") and one (long) bass drone, one additional octave lower than the tenors. The drones each have a single reed which sounds a pitch (like humming a single note) hence the term "drones."

Drone reeds can be made of natural cane, synthetic materials, or a combination of both.



Moving the bridle on the drone reeds allow the piper to adjust the pitch. Additional tuning of the drones is accomplished by sliding the drones up and down on their tuning slide/pin (down for sharper, up for flatter). The air pressure moving across the blade of the drone causes the reed to vibrate and produce sound.

The chanter has a double reed; two matched pieces of (almost universally) Spanish Cane wrapped around a metal tube called a "staple".



The reeds come in various strengths requiring different amounts of pressure for the blades to vibrate and produce sound. The pitch of the chanter is changed by pushing the reed further in or out of the top of the chanter – in for sharper, out for flatter.

The note sounded by the chanter is determined by which of its holes are covered (or not) by the piper's fingers.



Individual notes of the chanter are tuned by taping the top of the finger hole to flatten the pitch. A chanter reed requires precise positioning into the chanter and the chanter holes usually require precise positioning of tape to sound musical. To complicate the tuning process, the pitch of the chanter reed will shift as the instrument warms up, requiring the piper to retune frequently until the instrument has been stabilized. Moisture (or lack thereof) also affects the tuning.

When a piper takes a breath, the piper's arm applies more pressure to the bag to maintain a steady pressure and even tone. A bagpipe played by an inexperienced or "unsteady blower" will waver in pitch and sound out of tune.

Bagpipes require a lot of stamina to play for any length of time. Pipers spend their careers learning to maintain steady pressure and mastering tuning, but the results are a truly wonderful experience.

Getting Started

Learning bagpipes is an extremely broad topic. Most of what is learned is done so by rote without fully understanding what the finished product is supposed to be. Most of the attention is focused on specific tasks. Once mastered, specific skills are linked together and woven into complex musical melodies. It has been said that the Great Highland Bagpipe is the most difficult musical instrument to learn. No other musical instrument, its music is a total and complete expression of the musician; physically, mentally, and emotionally.

As is the case with all musical instruments, learning to play the bagpipes is both a rewarding and a challenging endeavor. It requires a great deal of time, patience, practice, and working with a qualified instructor.

The Practice Chanter

A practice chanter is used by beginning students and advanced players alike. It does not have the volume of the chanter on the great pipes and is used, as the name implies, for practice.

This narrow, mouth-blown instrument resembles a recorder and is made of wood or plastic. Practice Chanters have two main parts. The top section has a mouthpiece where air is blown into the instrument. The bottom portion has a bored hole where a double-bladed plastic reed fits and has nine holes used to finger the notes.

The two sections fit together using either hemp or rubber o-rings to create an air-tight seal. Some practice chanters also have a "sole" on the bottom, which is a round piece of imitation ivory or metal. The sole is for looks only, and has no practical purpose.



Practice chanters are used by beginners to learn techniques for fingering and blowing. Because pipers need to know their tunes from memory, practice chanters are also used when learning any new tune. Pipe band members practice together using practice chanters, both for practicing old tunes and for learning the tempo and notes to new music. Whether just beginning or an old pro, the practice chanter is essential in the musical progression on the bagpipes.

For older kids and adults, a long practice chanter is generally recommended, because the finger hole spacing is more similar to that of on the pipe chanter on the bagpipes.

This is helpful because when the student does get on the bagpipes, the fingers will already be used to the wider hole spacing.

Regular length practice chanters may be more comfortable for kids with smaller hands, and are less expensive. We often suggest practice chanters that are countersunk or counter bored for improved 'note-to-hole' feel.



Practice chanters are available in Polypenco plastic or African blackwood; there are advantages and disadvantages to both materials. Polypenco plastic is very durable and easy to clean, as well as considerably less expensive. Some folks feel that blackwood practice chanters, in addition to being nicer looking, sound better, but to others, the difference is barely discernable.

A blackwood practice chanter, like any wind instrument made from wood, can crack due to changes in temperature and humidity. For this reason, blackwood practice chanters are made with a Polypenco plastic top piece, as this is the piece most likely to crack.

Your practice chanter will come with a plastic reed. There is a wide variety of available reeds; some work better in some chanters than others. We'll help you find the right fit of reed for your chanter.



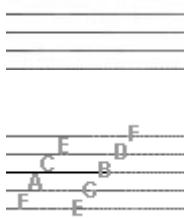
Introduction to Music Notation

Some people think trying to read music is hard and difficult. The following set of pages will try to introduce the most important topics in reading music in a very easy to understand way. Don't expect to fly through all the lessons and understand. As with anything new, it will appear complicated and complex but as you look at the examples and read the explanations it will make sense.

With that said, let's go on and introduce the first lesson.

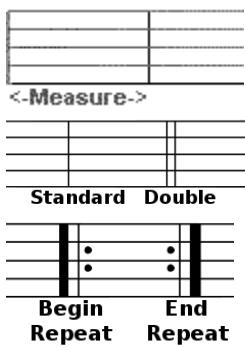
Music notation or **musical notation** is any system that represents aurally perceived music, through the use of written symbols. Modern music notation originated in European classical music and is now used by musicians of many different genres throughout the world.

Staff



The **staff** or **stave**, is a set of five horizontal lines and four spaces, each of which represents a different musical pitch. A musical staff represents the time line of musical sound events.

The vertical position of the notes on the staff indicates which note is to be played: notes that are higher in pitch are marked higher up on the staff. Notes can be placed on a line or in between the lines (*in a space*). The Lines designate the following notes, in order from the bottom, up : E, G, B, D, F. This is easily remembered by using the mnemonic "**E**very **G**ood **B**oy **D**oes **F**ine" The spaces are for the notes F, A, C, E, in order from the bottom up.



Bar and Measure

A **measure** is a segment of time defined by a given number of beats of a given duration. Typically, a piece consists of several bars of the same length. Although the words *bar* and *measure* are often used interchangeably the correct use of the word 'bar' refers only to the vertical line itself, while the word 'measure' refers to the music contained between bars.

A *standard* bar line is a single line separating the measures. A *double* bar line marks the beginning and ending of a piece. An *end* bar line indicates the end of a section or part. A *repeat* bar line (or repeat sign) looks like an end bar line with the addition of two dots, one above the other, indicating the section between the repeats is played twice.

Clef

A **clef** is a musical symbol used to indicate the pitch of written notes. Placed on one of the lines at the beginning of the staff, it indicates the name and pitch of the notes on that line. This line serves as a reference point by which the names of the notes on any other line or space of the staff may be determined. Bagpipe music is written in "G" clef. When the G-clef is placed on the second line of the staff, it is called the **treble clef**.



Treble

Key Signature

In musical notation, a **key signature** is a series of sharp symbols (#) or flat symbols (b) placed on the staff, designating notes that are to be consistently played one half-note higher or lower than the other notes. Bagpipe music has two sharps (C and F). Instead of putting "#" signs in front of every C and F:



the Key signature tells the musician that every C and F will be one half-step sharper than normal:



Key

A **key** is not the same as a key signature. The key identifies the chord, major or minor, which represents the final point of rest for a piece, or the focal point of a section. Bagpipe music, written with two sharps, is in the **key** of B minor (or D major).

Time Signature

Following the key signature is the time signature. Measures divide the piece into groups of beats, and the time signatures specify those groupings.

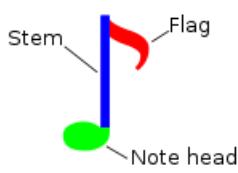
Time is perceived in music when a sequence of sounds is held for specific durations. The various note durations combined in harmonic and melodic form is called rhythm. More specific, rhythm is the combination of various measurements of time that shape melody, harmony, phrases and the whole composition.

For most music, the two ingredients that affect rhythm are **tempo** and **metre**. Tempo means “*time*” in Italian. Tempo tells you how fast the music is to be played. Metre is a measurement of music in time where time is divided into groups of pulses as designated by the top number of a time signature.



The **time signature** appears at the beginning of the piece, as a time symbol or stacked numerals. The time signature defines the metre in music. In a time signature, the top number gives you the number of beats per measure and the bottom number gives you the type of note that takes the beat. In this case, there are four (4) pulses/beats to each measure. The bottom number tells the musician what value of note gets one pulse. In this example the quarter (4) note value gets one pulse. There are various types of time signatures, depending on whether the music follows simple rhythms or involves unusual shifting tempos.

Note Value



Music is written as a series of notes. A note is a symbol that represents pitch and rhythm. As for pitch, it is placed on either a line or space of the musical staff. As for rhythm, it is placed proportionately within a measure according to the time value of the note.

In music notation, a **note value** indicates the relative duration of a note, using the color or shape of the *note head*, the presence or absence of a *stem*, and the presence or absence of *flags*.



The **whole note** looks like an egg on its side.



The **half note** looks like the whole note with a stem.



The **quarter note** looks like the half note but filled in.



The **eighth note** looks like the quarter note with a flag.
They can also be in groups of notes tied together with a single bar.



The **sixteenth note** looks like the eighth note with two flags.



The **thirty-second note** looks like the eighth note with three flags.

Basic Counting

Music is organized into regularly recurring measures of stressed and unstressed "beats", indicated in music notation by a time signature, measures, and note value where:

1 whole note = 2 half notes
2 half notes = 4 quarter notes
4 quarter notes = 8 eighth notes
8 eighth notes = 16 sixteenth notes

In this example:

The *time signature* (4/4) indicates that there are 4 pulses (or beats) to each measure and the quarter note value gets one pulse.

In the first measure, the *whole note* gets all the beats (1, 2, 3 and 4) because 1 whole note = 4 quarter notes, and there are a total of 4 quarter notes per measure. In the second measure, each *half note* gets 2 beats because 2 quarter notes = 1 half note. In the third measure, each *quarter note* gets its own beat because there are 4 quarter notes per measure (time signature) and so forth.

Combining 2 quarter notes and a half note:

The half note gets the first 2 beats, and each quarter its own beat. This makes sense because the 4/4 time signature means there is **4 quarter notes per measure**. 2 quarter notes + 1 half note (which is really 2 quarters) = 4 quarter notes, the total number of quarter notes for that measure (time signature).

The half note gets the first 2 beats, and each quarter its own beat. This makes sense because the 4/4 time signature means there is **4 quarter notes per measure**. 2 quarter notes + 1 half note (which is really 2 quarters) = 4 quarter notes, the total number of quarter notes for that measure (time signature).

Adding eighth notes:

In this example there is something new. The “&” sign. It just means “and”. If you said 1 & 2 & ... out loud it would sound like this:

1 and 2 and 3 and 4 and

Each eighth note is 1/2 of a quarter note, therefore it takes **2 eighth notes** to equal **1 quarter note**. Think of it like this: the **1** and the **"and"** are both half of one quarter note and together they form 1 quarter note and from the time signature we know there are 4 quarters per measure.

How to Practice Properly

prac·tice [[praktiss](#)] *transitive and intransitive verb repeat something to get better:* to do something repeatedly in order to improve performance in a sport, art, or hobby

A music teacher is very important to anyone who is trying to become a better musician, but a teacher cannot make you a better musician; a teacher can only tell you how to improve. The actual improvement has to be done by you, and on your own time.

A private or band lesson is a time to show the teacher what you are doing at the moment, the teacher will then tell you what to work on, and how to work on it. You don't have time to practice during a lesson; you are there to get the insight needed in order to improve. Individual practice is absolutely necessary if you want to improve and become a better musician.

It is important not just to practice, but to practice properly. To make the most progress in your individual practice time make sure to include the following:

Individual Practice Should Include:

- Setting goals
- Setting practice times
- Warming up
- Working at it
- Sight-reading
- Cool down
- Evaluation

Set Goals

Your practice should have long-term, medium-term, and short-term goals.

What are your long-term goals as a Piper? Do you want to compete as a soloist? Do you want to compete with the Band? Are there particular pieces of music you'd like to be able to play? You need to know where you would eventually like to end up setting medium- and short-term goals. Your medium goals may be to find less difficult pieces to play in order to prepare you to play the pieces you can't play yet. You may need to improve your tonal quality, your tuning, or finger technique. Your short-term goal may be to work slowly through one line of a piece of music with correct finger technique. Your short-term goals should be very specific and something you can achieve. Whatever goals you choose, we're here to help you achieve them.

Set Practice Times

How often and how long should I practice? Practicing often is much more important than having lengthy practice sessions. How long and how frequently you practice is a matter of preference, though the greater your commitment, the greater the benefit. It's not the quantity of practice time it's the quality of the practice session which will make the difference. Some pipers play 10-15 minutes every day. Others like to set aside longer blocks of time – perhaps 30-45 minutes three or four times a week. Even three weekly sessions of 15 minutes each will make a noticeable difference in your playing ability. As Lou Holtz used to say, "*Practice doesn't make perfect. Perfect practice makes perfect.*"

The better Piper or you become the more you have to practice in order to continue to improve. Practicing every day is ideal. Skipping a day occasionally won't hurt, and may even rest your muscles. But after skipping a day, you will start the next practice session further behind than you were on the day before you skipped; skipping a day more than once a week will make progress difficult. If you don't have time one day for a full practice session doing warm-ups or cool-downs is better than skipping a day. Whatever schedule you devise, either rigorous or more relaxed, choose one you can maintain comfortably for an extended period of time without being bored. Initial progress will be slow as you learn the notes and decide which exercises suit you. With time and proper instruction, you will develop a routine and your preferred exercises will become committed to memory. Small improvements are significant.

Warm Up

Playing an instrument is the same as being an athlete. Don't play the hard stuff cold; you won't be playing to the best of your ability, it's a waste of time, energy and can be very frustrating. Warm ups may seem like they have no value but they can be some of the most productive minutes of your practice time. What are warm ups - If you are having problems playing a particular movement in a tune remove it from the tune and play it slowly and precisely from every note of the scale. If your long-term goal is to play the big tunes or get into the top bands; you have to have your scales down cold. Warm ups should be easy – you're getting your mind and body into the playing groove – in order to have a great practice start with the easy stuff. Sure it's only scales but playing them with the best technique and best musicality you have will lead to big payoffs later. So take a few minutes and play some exercises slowly and precisely.

Work On It

Once you have warmed up get out the stuff you want to work on. Some tips for improving as fast as possible:

- ALWAYS play to a metronome! A metronome will help instill your piping with rhythm and tempo and help keep you on the beat.
- Keep it simple. Complex exercises and tunes are not necessarily the best. The simplest exercises are often the most useful.
- You can't practice everything in one session...don't even try. Focusing on one exercise or one movement and one tune is more effective than a shotgun approach.
- Play with focus. If your mind is wandering as you play the exercises, take a break. You'll make the most progress when you play with concentration.
- Don't practice it wrong! Don't play wrong notes, leave notes out, or play wrong rhythms. This just teaches you to play incorrectly.
- If you can't play it right, slow it down enough that you can play all the notes correctly and in rhythm no matter how slow you have to go.
- Once you can play it slowly, speed it up a little, but never to a speed that you can't handle.
- Play through your music then skip the easy parts; they're easy! Concentrate on playing the hard parts, slow them down and practice them until you can play them with the correct technique and the right tempo.
- If there is a note or a movement you are having trouble with make it part of your warm up exercises and practice it every day.
- Easy does it. Exercises work the hands hard. When played too much, they can strain muscles. If your hands feel sore after practicing, take some time off and ease into the practice sessions.

Sight Reading

The ability to play music that is put in front of you, with few errors, the first time you see it is one of the most useful skills a musician can have. Like any other skill, practicing it specifically develops the ability to sight-read well. Each practice session should have time spent reading through and trying to play a section of unfamiliar music. If large portions are too difficult for you to sight-read, begin with something easy and over a period of months, try to work up to reading more complex passages. Talk to your instructor for recommended tunes or download them from the Band website.

Cool Down

While practicing the difficult parts of your music, you may have become tense, frustrated or slipped into bad technique or lost your musicality or tone. Always end your practice session by playing tunes you like and are easy for you. Relax and perform it for "yourself", play it with the very best technique and musicianship. This part of your practice helps develop a "repertoire" of music that you will always have ready for a performance.

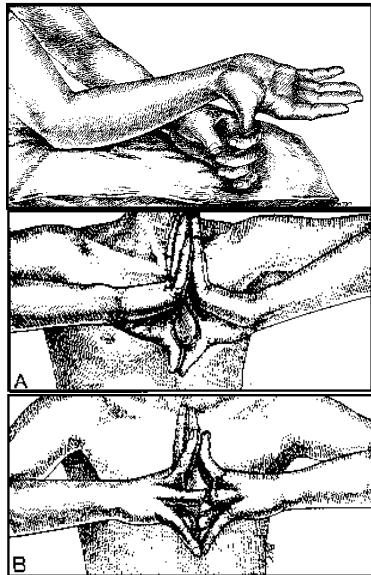
Evaluate

To help set goals for future practice sessions, evaluate each session. Don't be hypercritical but be objective.

- What progress did I make today on the difficult stuff?
- What is still giving me trouble, can I address this in warm ups?
- What should I work on in my next practice session?
- Am I trying to play something too difficult?

Stretching

Bagpiping is an athletic event. Before you begin playing, it is a good idea to stretch your fingers and wrists. Otherwise you will be just like an athlete who rushes onto the field without any warm ups. Our daily routines usually involved gripping which is the constant enemy of piping – the fingers need to be relaxed. *NEVER never never* stretch to the point of pain. Stretch only to the point required to feel the muscle, and then just relax, and hold your position until the muscle is less tight



Here are just a few exercises to try.

Pull the fingers back individually with the opposite hand towards the top of your forearm. Also push them in towards your palm.

Flex your fingers, palms together – first one direction and then the next. The goal is to extend the amount of flexibility without pain.



Highland Bagpipe Tutor Student Manual



CHAPTER 2

*Fingering Positions
The Standard Notes
Common Notes – The Right Hand
Exercises for the Right Hand
Common Notes – The Left Hand
Exercises for the Left Hand
Using Both Hands
Arpeggios
Practice Tunes*

Fingering Positions

Good fingering positioning allows you to play your bagpipe music with more clarity and improves your ability to play the melody and technique at a faster speed. As a beginner, you must learn the correct method of fingering a chanter from the outset, so that you will not develop bad habits that may be difficult to correct later. You must always be aware of your finger position and correct any errors.

Here are a few basic rules to achieve good fingering technique. These will make more sense when you view the pictures and talk to your instructor.

1. **Keep your fingers straight but not rigid or stiff.** If your fingers are too rigid they will lose some of their flexibility. When looking down at your hands, all of your fingers should be parallel to the other fingers on the same hand.
2. **Keep your elbows away from the body.** Both wrists should be bent slightly outwards. You do not want any unnecessary pressure or tension on your hands.
3. **The first pad of the fingers and thumb of the left hand must cover the four holes on the top of the chanter.** As your left hand is angled slightly downward, this will enable you to center the pad of each finger over the hole. The fingers should lay as flat as possible so that the entire pad covers the hole. You may have to bend your middle finger slightly at the second joint to achieve this. *Do not use your fingertips.* This method will limit the speed of your fingers and restrict technical movements.
4. **The four holes on the bottom of the chanter are covered differently than the top.** The pinkie of the right hand must be placed down first ensuring the hole is covered with the center of the finger pad. Next, lay your other three fingers down flat on the chanter, keeping your fingers as straight as possible. Do not try to cover the hole with any part of the finger that is near the first or second joint.
5. **Your two thumbs must contact the chanter using the first pad of each thumb.** The left thumb covers the top hole. Try to keep your thumb flat so that it covers the entire hole. The right thumb (which does not cover a hole) sits loosely on the backside of the chanter.
6. **Your left pinkie (which is not used to cover a hole) should be held loosely so that it can move freely with the ring finger of the left hand.** Do not hold the pinkie below (under) the chanter or elevated above the other fingers.
7. **Grip the chanter firmly but never too tightly.** Holding the chanter too tightly will lose the flexibility of your fingering.
8. **When you lift your fingers off the holes, keep them straight up and down.** Try to lift them approximately two (2) inches off the holes. This is the optimum height to lift your fingers, as it is a natural movement.

There are nine notes most commonly played on the Great Highland Bagpipe.

The Standard Notes

Note	Low-G	Low-A	B	C	D	E	F	High-G	High-A
Bagpipe Scale									

These nine basic notes are sounded using the eight finger holes found on the chanter. The holes are named for the note that is sounded when that hole is open. Located on the front of the chanter are seven holes. Located from the bottom up are Low-A through High-G. Located on the back near the top is High-A. (Piper's typically don't refer to a "Low-G hole" as Low-G is sounded when all the finger holes are closed. If anything, such a term would apply to the opening the base of the chanter or, if present, the twin vents located to either side below the Low-A hole.)

A fingering chart is provided at the beginning of this chapter for future reference.

Common Notes – The Right Hand

The following are the very commonly played notes learned by every beginning piper

Low-G



Finger Position/Note	Hole
Left Thumb (A)	Closed
Left Index (G)	Closed
Left Middle (F)	Closed
Left Ring (E)	Closed
Right Index (D)	Closed
Right Middle (C)	Closed
Right Ring (B)	Closed
Right Pinky (A)	Closed



Low-A

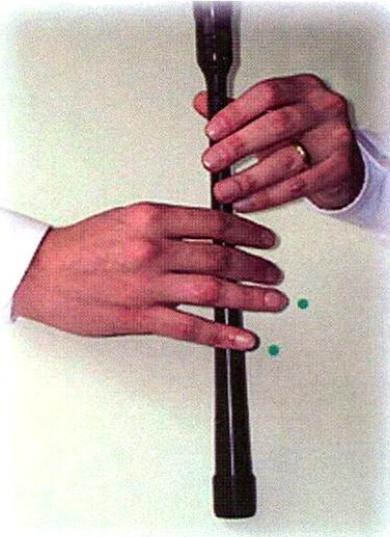


Finger Position/Note	Hole
Left Thumb (A)	Closed
Left Index (G)	Closed
Left Middle (F)	Closed
Left Ring (E)	Closed
Right Index (D)	Closed
Right Middle (C)	Closed
Right Ring (B)	Closed
Right Pinky (A)	—Open—



B

Finger Position/Note	Hole
Left Thumb (A)	Closed
Left Index (G)	Closed
Left Middle (F)	Closed
Left Ring (E)	Closed
Right Index (D)	Closed
Right Middle (C)	Closed
Right Ring (B)	—Open—
Right Pinky (A)	—Open—



C

Finger Position/Note	Hole
Left Thumb (A)	Closed
Left Index (G)	Closed
Left Middle (F)	Closed
Left Ring (E)	Closed
Right Index (D)	Closed
Right Middle (C)	—Open—
Right Ring (B)	—Open—
Right Pinky (A)	Closed

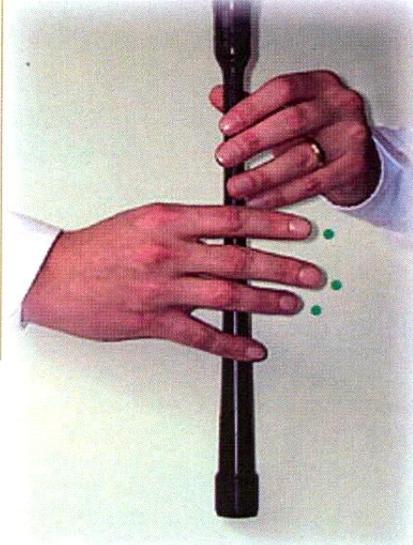


Once very common, an "open C" has fallen into misuse—and in competition is marked down by most judges. This "open" fingering is the same the "closed" C above, except the Low-A finger is also raised.

D



Finger Position/Note	Hole
Left Thumb (A)	Closed
Left Index (G)	Closed
Left Middle (F)	Closed
Left Ring (E)	Closed
Right Index (D)	—Open—
Right Middle (C)	—Open—
Right Ring (B)	—Open—
Right Pinky (A)	Closed



Exercises for the Right Hand

Notes: Low-G Low-A LG LA

Count: 1,2,3,4 1,2,3,4 1,2,3,4 1,2,3,4

1

LG LA LG LA

1,2 3,4 1,2 3,4 1,2 3,4 1,2 3,4

2

LGLALG

1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4

3

Timing: _____ - _____ bmp

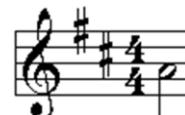
Time Signature

These exercises are written in **4/4** time – four beats to each measure and the quarter note



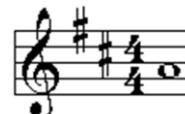
gets one beat.

A half note



gets two beats.

A whole note



get four beats.

More Right Hand Exercises

Notes: LG LAB LG LAB B LA LG B LA LG



Count: 1 2 3,4 1 2 3,4 1 2 3,4 1 2 3,4

B C B C B C B C B C B C



1,2 3,4 1 2 3 4 1,2 3,4 1 2 3 4

LG LA B C B LA LG LG LA B C B LA LG



1 2 3 4 1 2 3,4 1 2 3 4 1 2 3,4

C D C D C B LA C D C D L A C D



1 2 3 4 1 2 3,4 1 2 3 4 1 2 3,4

LG A B C D C B LA LG A B C D C D



1 2 3 4 1 2 3 4 1 2 3 4 1 2 3,4

Timing: _____ - _____ bmp

Remember the following when you practice:

1. Always practice to a metronome.
2. ALWAYS play SLOWLY in the beginning.
3. Check your finger positioning and correct any errors.
4. Lift the fingers straight up and down no higher than two (2) inches.

More Right Hand Exercises

1

LG A B C D C B L A LG A B C D C D

1 & 2 & 1 & 2 & 1 & 2 & 1 & 2

2

LA D C D B L G L A L A D B D L A C D

1 & 2 & 1 & 2 1 & 2 & 1 & 2

Timing: _____ - _____ bmp

Time Signature

The next two exercises are in a different time signature: **2/4** – two beats to each measure and the quarter note



gets one beat.

That also means the eighth notes



get one half of one beat.

Pairs of eighth notes



equal one beat.

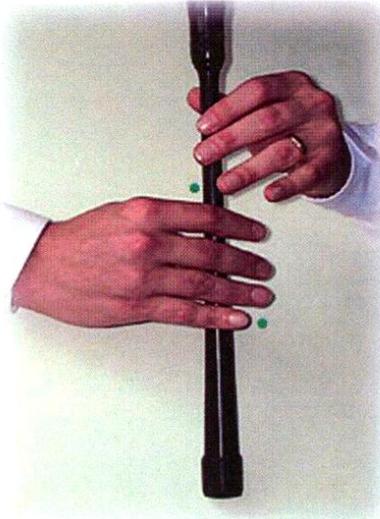
To count this we say, 1 and 2 (1&2).

Common Notes – The Left Hand

E

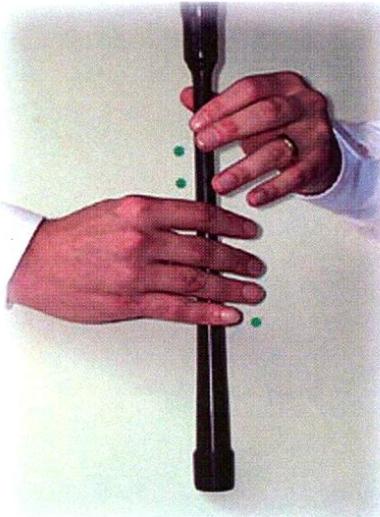


Finger Position/Note	Hole
Left Thumb (A)	Closed
Left Index (G)	Closed
Left Middle (F)	Closed
Left Ring (E)	—Open—
Right Index (D)	Closed
Right Middle (C)	Closed
Right Ring (B)	Closed
Right Pinky (A)	—Open—



F

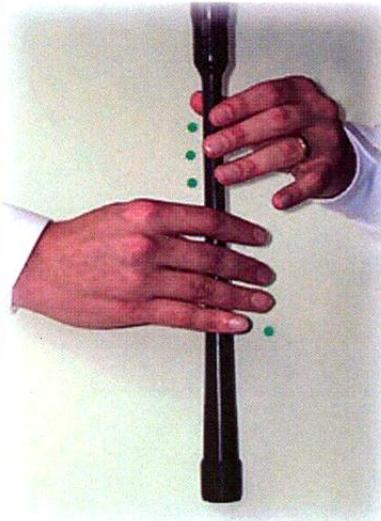
Finger Position/Note	Hole
Left Thumb (A)	Closed
Left Index (G)	Closed
Left Middle (F)	—Open—
Left Ring (E)	—Open—
Right Index (D)	Closed
Right Middle (C)	Closed
Right Ring (B)	Closed
Right Pinky (A)	—Open—



High-G (common)

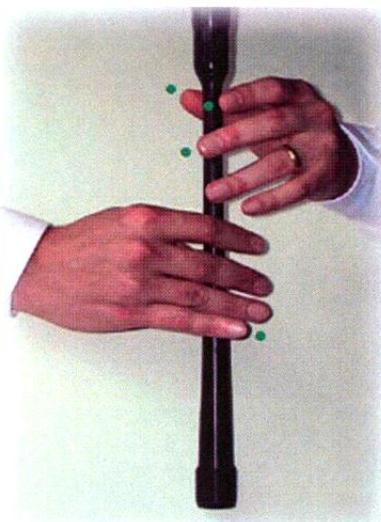


Finger Position/Note	Hole
Left Thumb (A)	Closed
Left Index (G)	—Open—
Left Middle (F)	—Open—
Left Ring (E)	—Open—
Right Index (D)	Closed
Right Middle (C)	Closed
Right Ring (B)	Closed
Right Pinky (A)	—Open—



High-A (common)

Finger Position/Note	Hole
Left Thumb (A)	—Open—
Left Index (G)	—Open—
Left Middle (F)	—Open—
Left Ring (E)	Closed
Right Index (D)	Closed
Right Middle (C)	Closed
Right Ring (B)	Closed
Right Pinky (A)	—Open—



Exercises for the Left Hand

Notes: E F E F E F

Count: 1,2 3,4 1 2 3 4

F High-G F HG F HG

1,2 3,4 1 2 3 4

High-G High-A HG HA HG HA

1,2 3,4 1 2 3 4

E High-A F HA E HA F HA E HG HA

1,2 3,4 1,2 3,4 1 2 3 4 1 2 3,4

E F HG F E F HG E F HG E F HG HA

1 & 2 & 1 & 2 1 & 2 & 1 & 2

HA HG F E F HG E F HG HA F HG E HA

1 & 2 & 1 & 2 1 & 2 & 1 & 2

Timing: _____ - _____ bmp

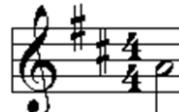
Time Signatures

The first four exercises are written in 4/4 time – four beats to each measure and the quarter note



gets one beat.

A half note



gets two beats.

The last two exercises are in a different time signature: 2/4 – two beats to each measure and the quarter note



gets one beat.

That also means the eighth notes



get one half of one beat.

Pairs of eighth notes



equal one beat.

Remember, to count this we say, 1 and 2 (1&2)

Using Both Hands

It is important that both hands are coordinated and the fingers all move together so the notes are played cleanly. When the fingers do not move together, either a Low G or Low A will be heard in between the notes written. These are known as *Crossing Noises* and should be eliminated.

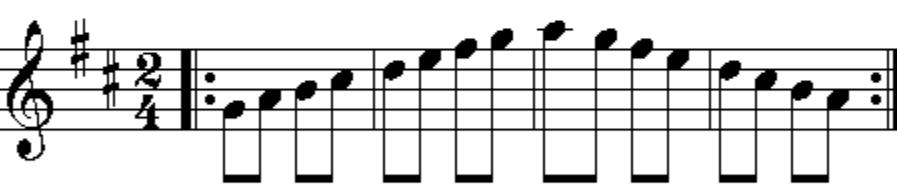
The following set of exercises incorporates the use of both hands. While practicing, remember:

1. Play to a metronome.
2. Play SLOWLY in the beginning.
3. Listen for Crossing Noises and eliminate them.
4. Check the time signature and give each measure the correct number of beats.
5. Check your finger positioning.

Notes: D E D E D E

1 
Count: 1,2 3,4 1 2 3 4

2 
LGLA B C D E F HG HA HG F E D C B LA
1 2 3 4

3 
LGLA B C D E F HG HA HG F E D C B LA
1 & 2 &

4 
LGLA B C D E F HG HA HG F E D C B LA
1 e & a 2 e & a

Timing: _____ - _____ bmp

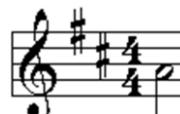
Time Signatures

The first two exercises are written in **4/4** time – four beats to each measure and the quarter note



gets one beat.

A half note



gets two beats.

The last two exercises are in a different time signature: **2/4** – two beats to each measure and the quarter note



gets one beat.

That also means the eighth notes



get one half of one beat.

Pairs of eighth notes



equal one beat.

A sixteenth note



gets one fourth of one beat and four 16th notes together



equal one beat.

We count this as one-e-and-a or 1e&a

Arpeggios

An arpeggio is a “broken chord” whose notes are played in succession. These are the most common arpeggios in bagpiping.

Notes: LG B D B

Count: 1 & 2 & 3 & 4 &

Timing: _____ - _____ bpm

Time Signature

These exercises are written in 4/4 time.

The eighth notes



get one half of one beat.

Pairs of eighth notes



equal one beat.

A C E C

1 & 2 & 3 & 4 &

B D F D

1 & 2 & 3 & 4 &

Another Arpeggio Exercise

Here is another arpeggio exercise, this time in a 6/8 time signature.

_____ - _____ bpm

Notes: LG B D LACE B D F C E HG DF HA EH G HA

Count: 1 2 3 4 5 6

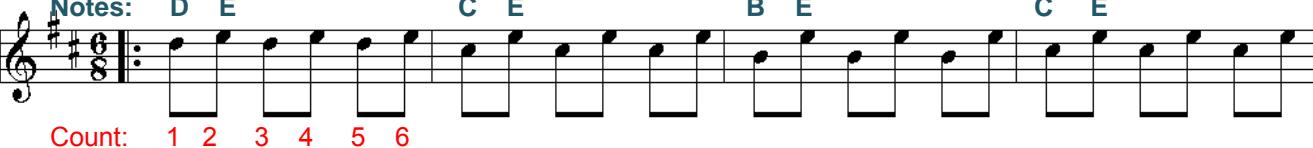
HA FD HG EC F DB E CLA DB LG CL ALG

CL ALG

Exercise for Control

The following exercise for two hands will test your skill of control. Play each note evenly, avoiding crossing noises. The time signature for the first exercise is **6/8** – six beats to each measure and the eighth note gets one beat.

Notes: D E C E B E C E

1 

Count: 1 2 3 4 5 6

2 

3 

4 

Accuracy, Speed and Control

Here is an exercise to build your accuracy and control. Again, play each note evenly to a metronome. Start slowly and build in speed. The key is **ACCURACY** and **CONTROL**.

1 Notes: LG A B LAB C B C D C D E

Count: 1 & 2 & 3 &

2 D E F F E D E D C D C B

3 C B LA L G B D B L G B L A C E C L A C B D F D B D

4 F E C E F E F E D C B LA

Timing: ____ - ____ bmp

QUIZ:

What is the time signature?

How many beats per measure?

What note gets one beat?

Practice Tune

Your first application of fingering to music is the traditional reel, *The Devil's Dream*. The **reel** is a folk dance type as well as the accompanying dance tune type. It is one of the four dances which comprise Scottish country dancing, the others being the jig, the strathspey and the waltz. It is very rhythmic and very quick tempo.

It is believed that the reel was originated from an old Irish dance called the *Hey* in the mid 1500's. Today many Irish reels are supplemented with new compositions and by tunes from other traditions which are easily adapted as reels. It is the most popular tune-type within the Irish dance music tradition.

Reels are written in a 4/4 or 2/4 time – can you tell what the time signature is for the tune below? All reels have the same structure, consisting largely of quaver movement with an accent on the first and third beats of the bar. Most reels have two parts (AABB) which are repeated. Each part (A or B) has eight bars, which again are divided into four and then into two. These are called phrases. The structure obeys to a scheme of question-answer where A is the "question" and B is the "answer" to A. The group of thirty-two bars (AABB) is repeated three or four times before a second reel is introduced. The grouping of two tunes or more in this manner is typical in all dance tunes.

Remember:

1. Play to a metronome.
2. Play SLOWLY in the beginning.
3. Play each note evenly and with control.
4. Listen for crossing noises and eliminate them.
5. Give each measure the correct number of beats.
6. Check your finger positioning.
7. HAVE FUN!

The Devil's Dream

Reel

_____ - _____ bpm

The music consists of four staves of bagpipe notation. Each staff begins with a treble clef, a key signature of one sharp (F#), and a common time (4/4). The music is divided into measures by vertical bar lines. The notes are primarily eighth notes, with some sixteenth-note patterns. The first staff (measures 1-8) shows a repeating pattern of two measures. The second staff (measures 9-16) shows a similar pattern. The third staff (measures 17-24) shows a different pattern. The fourth staff (measures 25-32) shows another variation. The music concludes with a repeat sign and a section of sixteenth-note patterns.

Two More Practice Tunes

The next two tunes are hornpipes. The term **hornpipe** refers to any of several dance forms played and danced in Britain and elsewhere from the late 17th century until the present day. It is said that hornpipe as a dance began around the 16th century on English sailing vessels. Movements were those familiar to sailors of that time: "looking out to sea" with the right hand to the forehead, then the left, lurching as in heavy weather, and giving the occasional rhythmic tug to their breeches both fore and aft.

It is said that the English Royal Navy Captain James Cook (1728-1779) thought dancing was most useful to keep his men in good health during a voyage. When it was calm and the sailors had consequently nothing to do, he made them dance -- usually the hornpipe -- to the sound of a fiddle; and to this he attributed much freedom from illness on his ship.

Blanchard's Hornpipe, also known as Roxburgh Castle, is an old tune from the Scottish Borders. It appears in a violin player's manuscript collection dated 1818.

Blanchard's Hornpipe

Hornpipe

_____ - _____ bpm

1

Sheet music for the first measure of Blanchard's Hornpipe. The key signature is A major (two sharps). The time signature changes from common time (indicated by a 'C') to 2/4. The melody starts with a eighth note followed by a sixteenth note, then a eighth note followed by a sixteenth note, and so on. The bass line consists of eighth notes.

2

Sheet music for the second measure of Blanchard's Hornpipe. The key signature remains A major (two sharps). The time signature is 2/4. The melody continues with eighth and sixteenth note patterns. The bass line consists of eighth notes.

3

Sheet music for the third measure of Blanchard's Hornpipe. The key signature remains A major (two sharps). The time signature is 2/4. The melody continues with eighth and sixteenth note patterns. The bass line consists of eighth notes.

4

Sheet music for the fourth measure of Blanchard's Hornpipe. The key signature remains A major (two sharps). The time signature is 2/4. The melody continues with eighth and sixteenth note patterns. The bass line consists of eighth notes.

The next tune is also a hornpipe in 2/4 time. Lamplighter's Hornpipe is not only the name of the tune but also the name of a dance.

Lamplighter's Hornpipe

Hornpipe

_____ - _____ bpm

1

2

3

4

More Exercises

The exercises below focus on fingers leaving and hitting the chanter at the same time. Play the exercise with each note the same length and with an even tempo.

1

Sheet music for Exercise 1. Treble clef, key signature of two sharps, common time. The music consists of a series of eighth-note pairs on a single staff.

2

Sheet music for Exercise 2. Treble clef, key signature of two sharps, common time. The music consists of a series of eighth-note pairs on a single staff.

3

Sheet music for Exercise 3. Treble clef, key signature of two sharps, common time. The music consists of a series of eighth-note pairs on a single staff.

4

Sheet music for Exercise 4. Treble clef, key signature of two sharps, common time. The music consists of a series of eighth-note pairs on a single staff.

5

Sheet music for Exercise 5. Treble clef, key signature of two sharps, common time. The music consists of a series of eighth-note pairs on a single staff.

6

Sheet music for Exercise 6. Treble clef, key signature of two sharps, common time. The music consists of a series of eighth-note pairs on a single staff, ending with a repeat sign and two endings.



Highland Bagpipe Tutor Student Manual



CHAPTER 3

*Single Grace Notes
G-D-E Combinations
Practice Tunes
Pointing – Syncopation
Tachum*

Single Grace Notes

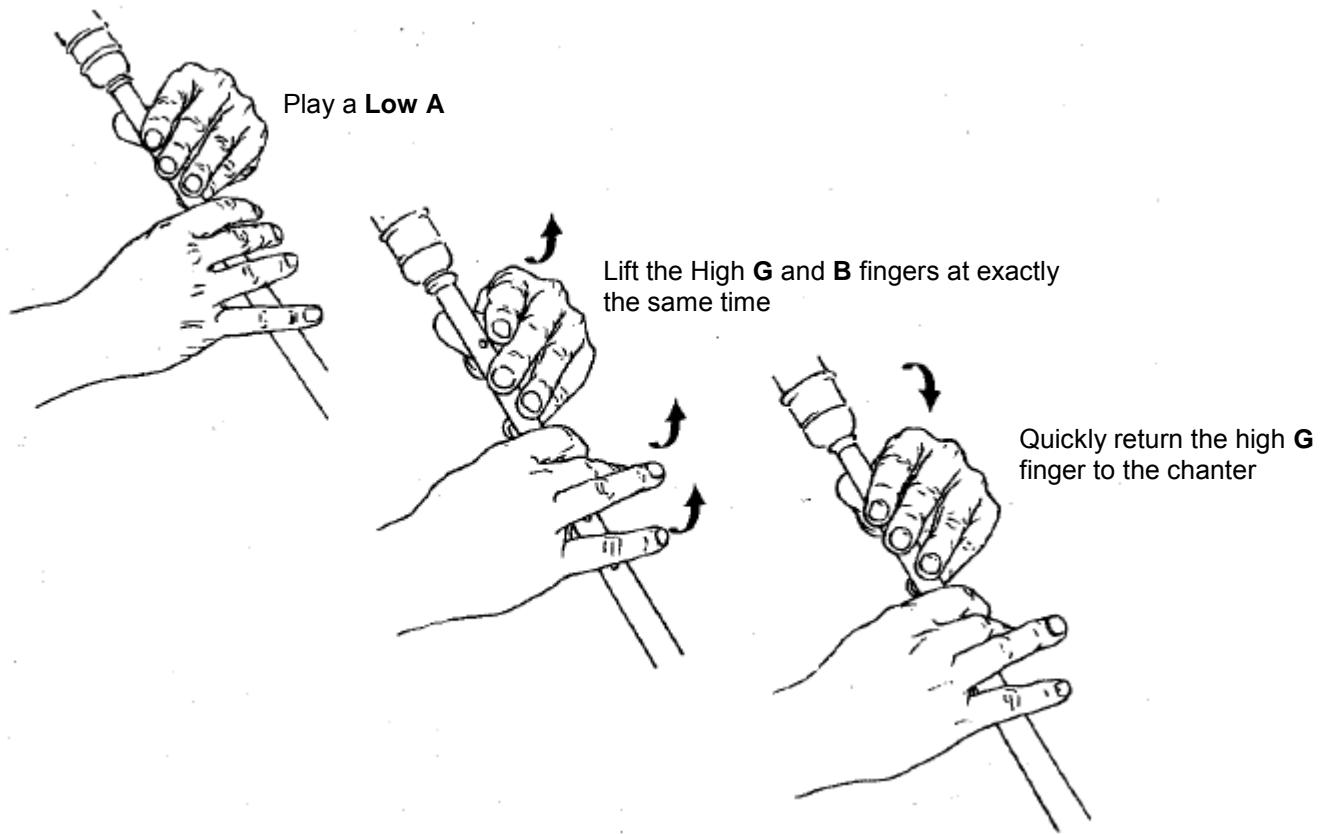
Grace notes are embellishments or ornamental notes. They are used to separate notes similar to "tonguing" effects used on other wind instruments. Grace notes appear on the staff with the stem of the note in an upward position and are written as 32nd notes. There are three grace notes (G, D, E) that make up the majority of embellishments in Highland piping either by themselves or in combination.

Playing a grace note *form one note up to another* is different than playing a grace note *down to another note*. For this reason, the G, D, and E grace notes will be examined going up and down separately.

"G" grace note – up

The goal in executing a "G" grace note is accuracy – playing the grace note on the beat.

For example, starting on a **Low A** and playing a **G** grace note up to a **B**:



Don't lift the G finger too high off the chanter or let it remain up for very long. The movement is quick and crisp.

Here's the movement written as an exercise. Remember to play the grace note ON THE BEAT.

_____ bpm

A musical score for a bagpipe chanter. The score is in 2/4 time and G major. It features two measures of grace notes (32nd notes) and one measure of main notes (quarter notes). The grace notes are grouped by vertical bar lines and have stems pointing upwards, indicating they are grace notes. The main notes are grouped by vertical bar lines and have stems pointing downwards, indicating they are main notes. The tempo is indicated as 'bpm' at the end of the score.

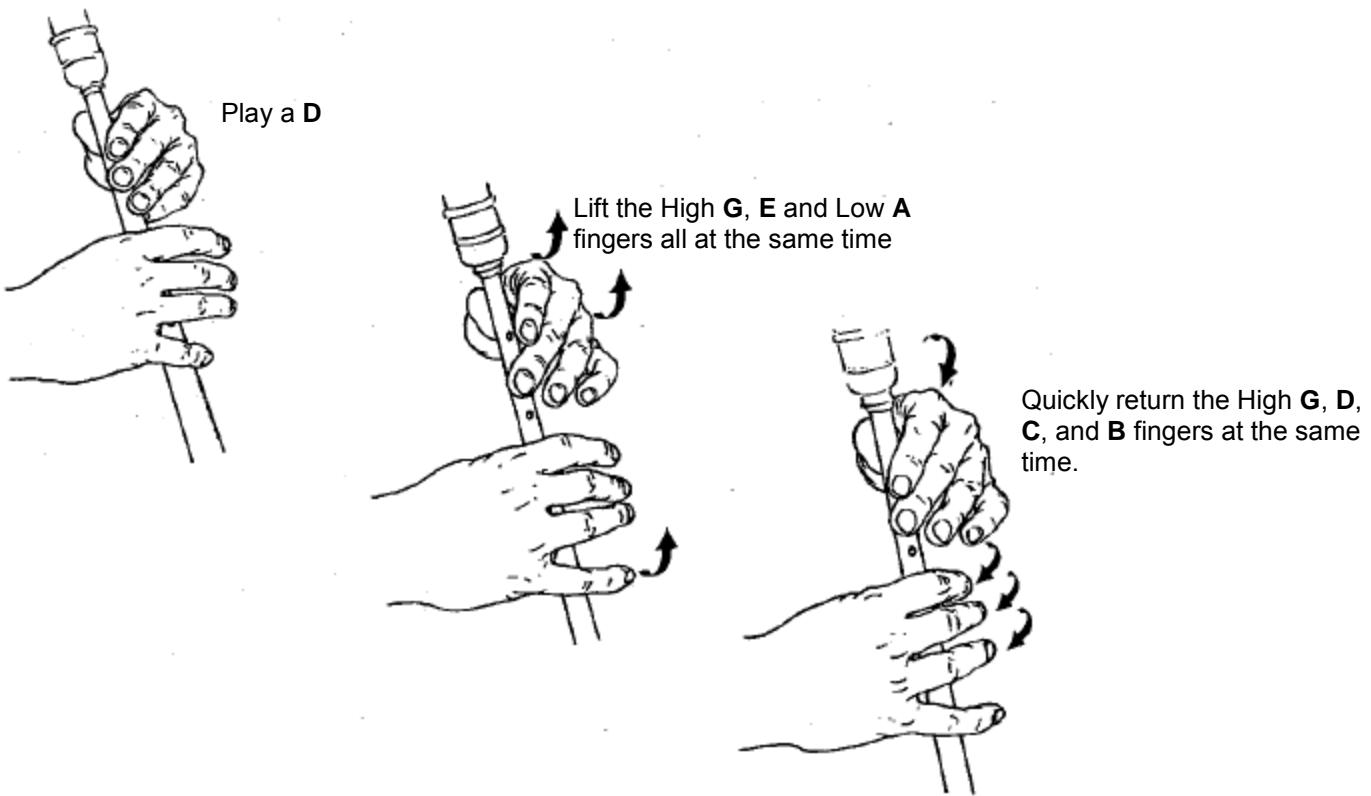
The same technique is used to move from **B** to **C** and from **C** to **D** with the “**G**” grace note.

_ bpm

1

2

To move from **D** to **E** with a “**G**” grace note involves switching hands.



Be careful. If the three bottom-hand fingers hit the chanter too early, you will make a crossing noise.

_____ - _____ bpm

A musical score for a single melodic line. The key signature is A major (two sharps). The time signature starts at 2/4. The melody consists of eighth-note pairs followed by sixteenth-note pairs, primarily using notes B and C. The score includes a repeat sign with a first ending bracket and a second ending bracket.

Here is a set of "G" grace note *up* exercises. Remember to practice to a metronome, play slowly in the beginning, check your fingering position, play the notes evenly, and play the grace note crisply and ON THE BEAT.

'G' Grace Note Up

Exercise

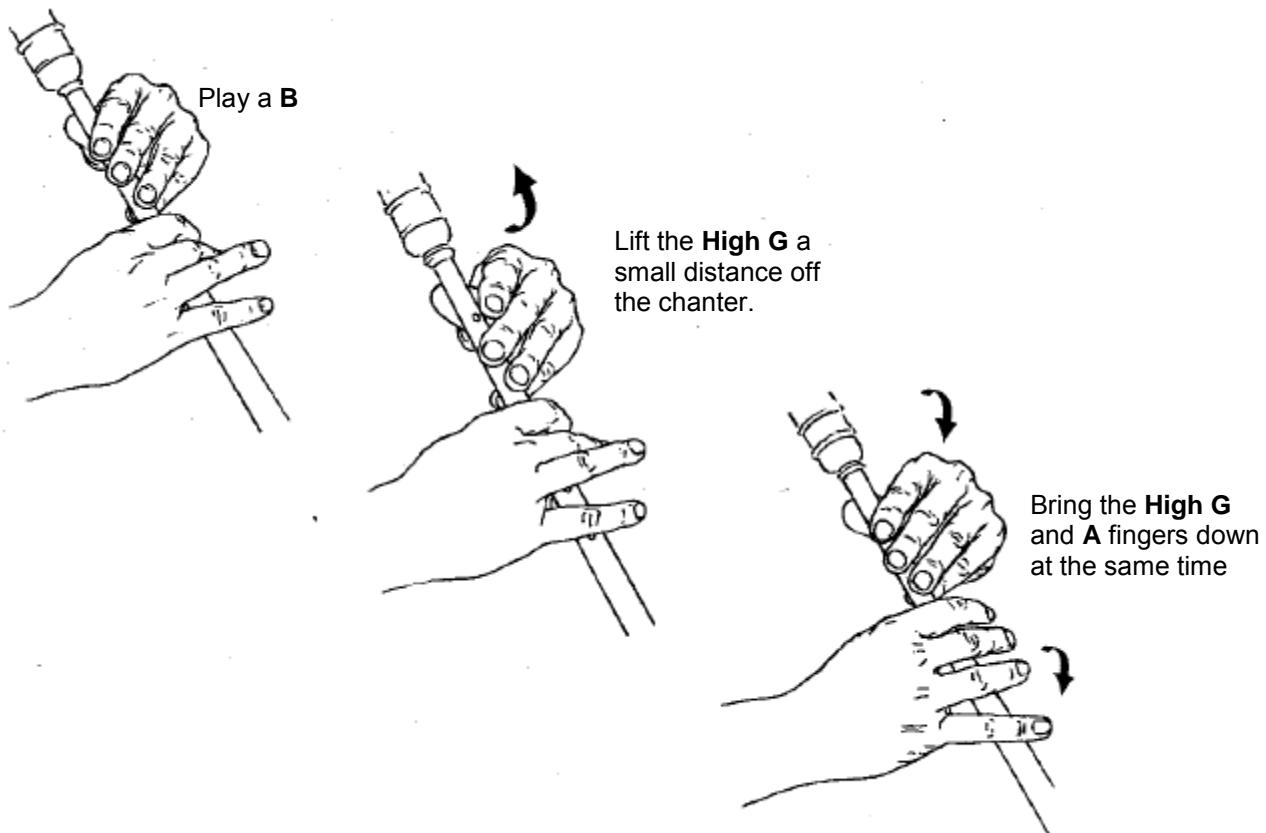
_____ - _____ bpm

The image shows seven staves of musical notation for bagpipes, arranged vertically. Each staff begins with a treble clef, a key signature of two sharps, and a common time signature. A repeat sign is present at the start of each staff. The music consists of eighth-note patterns. In staff 1, there is one grace note before the first eighth note. As you move down the staves, the number of grace notes before each eighth note increases. By staff 7, there are two grace notes before the first eighth note, followed by another grace note before the second eighth note.

“G” grace note – down

To play the “G” grace note accurately when going from one note *down* to another, you must make the fingers hit the chanter at the same time.

For example, to play a “G” grace note from **B** down to Low **A**:



— — bpm

Musical notation: A scale in G major, 2/4 time. The scale consists of 16 eighth notes. The first half of the scale goes up (D-E-F-G-A-B-C-D), and the second half goes down (D-C-B-A-G-F-E-D). Grace notes are indicated by small vertical strokes above certain notes. The tempo is marked as 120 bpm.

Here is a scale played both up and down with the “G” grace note. Play each note smoothly and evenly.

— — bpm

Musical notation: A scale in G major, 2/4 time. The scale consists of 16 eighth notes. The first half of the scale goes up (D-E-F-G-A-B-C-D), and the second half goes down (D-C-B-A-G-F-E-D). Grace notes are indicated by small vertical strokes above certain notes. The tempo is marked as 120 bpm.

Notice that you cannot play a “G” grace note on a High G or High A. You also cannot play a “G” grace note from a High G down to an F.

Here is a set of "G" grace note *down* exercises.

Remember the following when you practice:

1. Always practice to a metronome.
2. ALWAYS play SLOWLY in the beginning.
3. Check your finger positioning and correct any errors.
4. Play the notes evenly.
5. Play the grace notes crisply and ON THE BEAT

'G' Grace Note Down

Exercise

_____ - _____ bpm

The image shows six staves of musical notation for bagpipes, each consisting of five lines and four spaces. The notation is in G major (one sharp) and common time (indicated by 'C'). The music is divided into measures by vertical bar lines. Each measure contains two notes: a grace note and a main note. In staff 1, the grace note is on the first line and the main note is on the second line. In staff 2, the grace note is on the second line and the main note is on the first line. This pattern repeats for each staff, alternating the position of the grace note relative to the main note.

Now you are ready to play the earlier exercise for *Accuracy, Speed and Control* using the "G" grace note:

Accuracy, Speed and Control

Exercise

bpm

Sheet music for 'Accuracy, Speed and Control' exercise, 4 staves. The music is in 3/4 time, treble clef, and key signature of A major (two sharps). The first three staves consist of eighth-note patterns with grace notes. The fourth staff begins with a grace note followed by eighth notes.

Practice Tune

Here once again is *Blanchard's Hornpipe* now written with the "G" grace note. Remember to play with control.

Blanchard's Hornpipe

Hornpipe

bpm

Sheet music for 'Blanchard's Hornpipe' practice tune, 4 staves. The music is in 2/4 time, treble clef, and key signature of A major (two sharps). The staves feature eighth-note patterns with grace notes, typical of a hornpipe style.

"E" grace note – up

By now you've probably noticed that your **E** finger does not respond as quickly as your other fingers. The ring finger is one of the weaker fingers of the hand. Because the finger is weaker, there will be a tendency to play the grace note early.

The rules of grace notes described in the "G" grace note section also applies to the "E". Remember that as you change notes with a grace note, the fingers leave or hit the chanter together. The "E" grace note can only be played on the lower-hand notes.

Here is an exercise to develop your "E" grace note *up* skills.

_____ - _____ bpm

"E" grace note – down

Now we're back to the fingers hitting the chanter at the same time. This is where the inherent weakness of the **E** finger becomes most evident. This next exercise will tax this finger.

_____ - _____ bpm

This next exercise combines the "E" grace note up and down.

_____ - _____ bpm

“D” grace note – up

The “D” grace note can be challenging. The index finger is strong, but the positioning of the bottom hand can make playing the D grace note feel awkward.

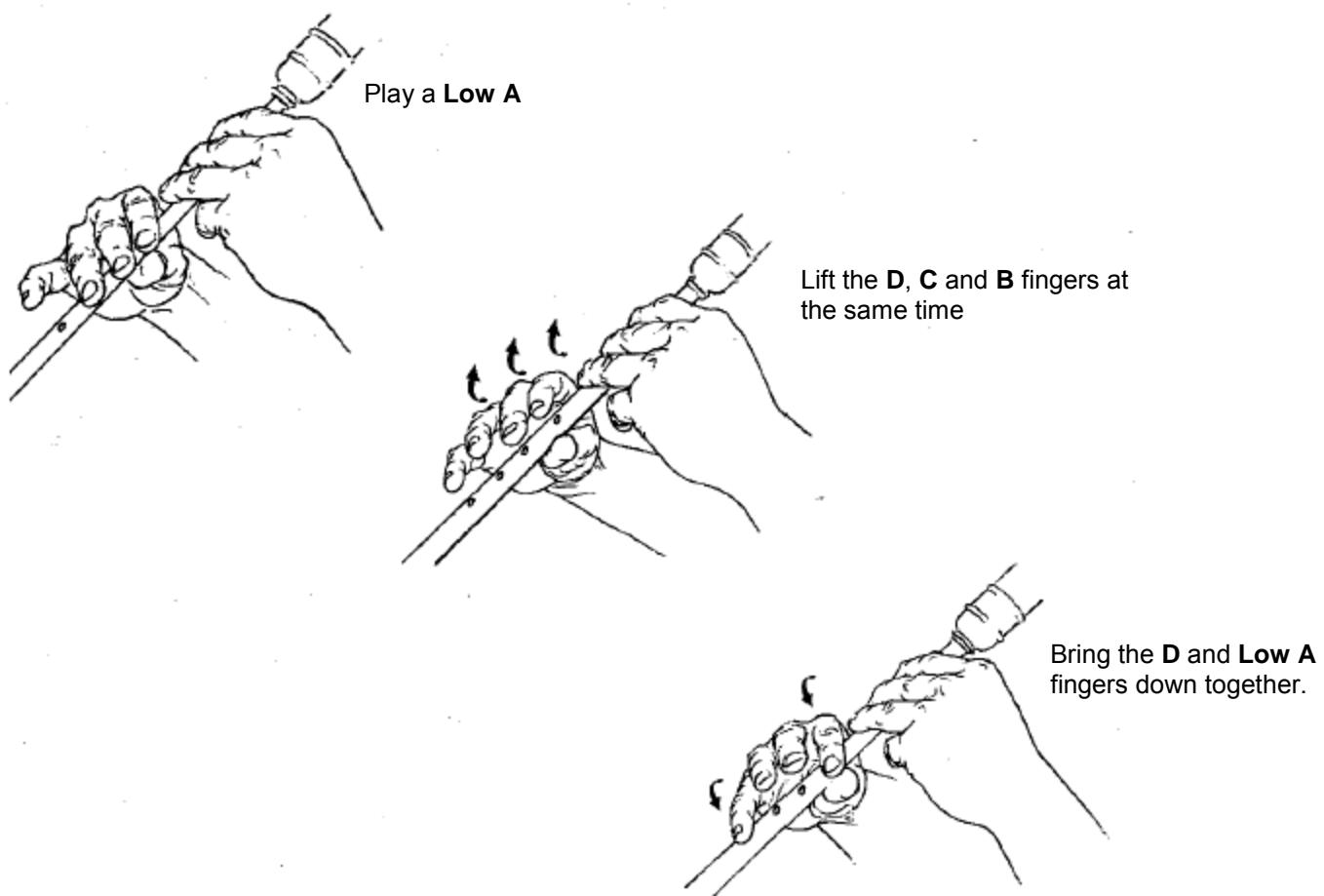
To play a “D” grace note on a **Low A** moving up to a **B**:

- Play a **Low A**.
- Lift the **D** finger slightly off the chanter.
- Lower the **D** finger and lift the **Low A** finger simultaneously.

_____ - _____ bpm



To play a “D” grace note from **Low A** to **C**:



_____ - _____ bpm



Here are a few "D" grace note *up* exercises for you to work on.

Remember the following when you practice:

1. Always practice to a metronome.
2. ALWAYS play SLOWLY in the beginning.
3. Check your finger positioning and correct any errors.
4. Play the notes evenly.
5. Play the grace notes crisply and ON THE BEAT

'D' Grace Note Up

Exercise

_____ - _____ bpm

1

2

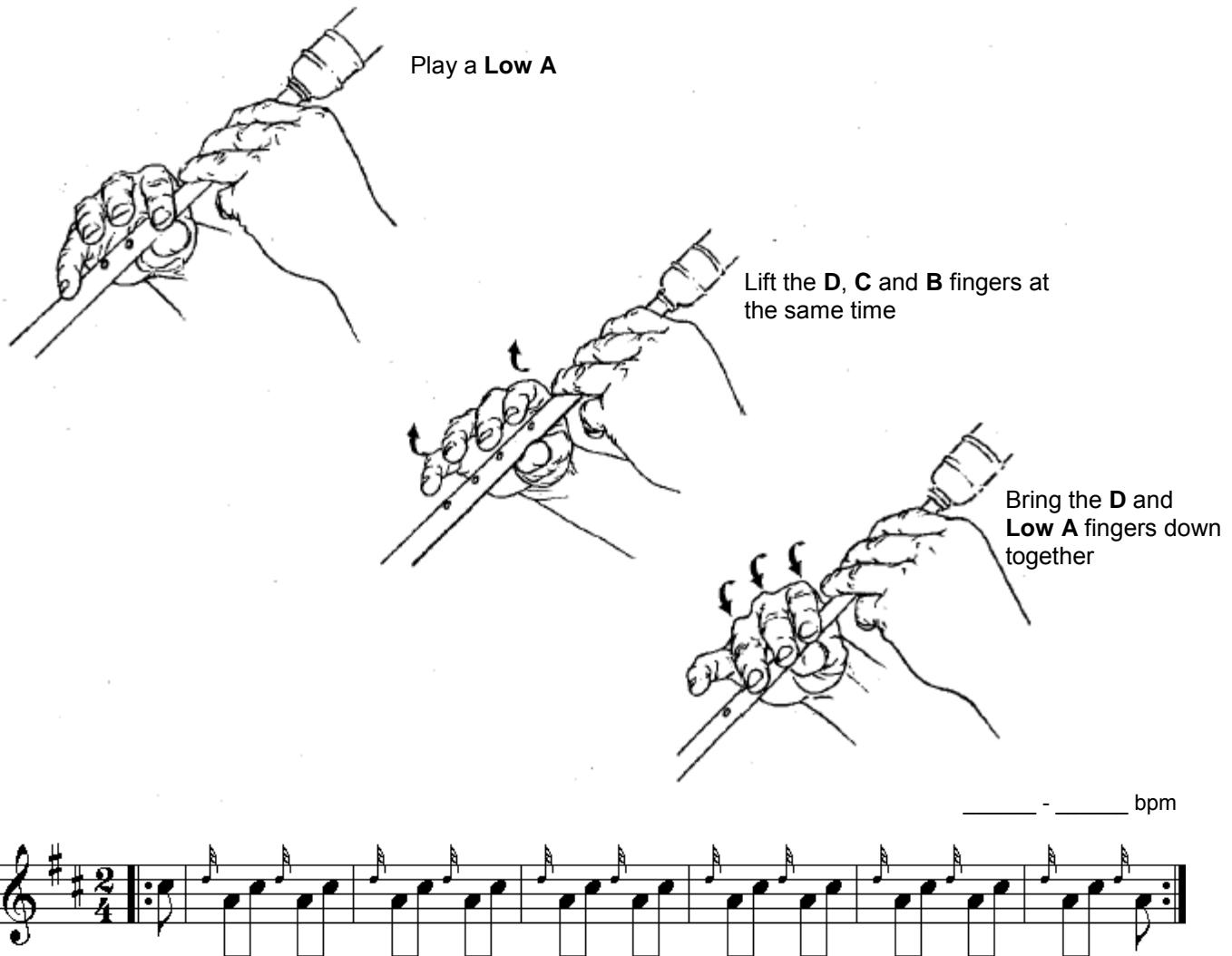
3

4

“D” grace note – down

The “D” grace note *down* is given its own name – *tachum*. We will discuss the tachum in more detail later, but for now the tachum is nothing more than a “D” grace note played from one note *down* to another.

For example, to play the “D” grace note from **C** down to **Low A**:



It is important that the “D” grace note finger does not rise off the chanter as high as the **C** and **B** fingers. The **C** and **B** may in fact be coming down as the **D** goes up. They meet along the way and hit the chanter at the same time.

Here are a few "D" grace note down exercises for you to practice.

'D' Grace Note Down

Exercise

_____ - _____ bpm

G-D-E combinations

G-D-E grace note combinations are everywhere in Highland piping. It can be used to articulate a melody, as in a jog or reel, or it can be disguised in other movements such as the *taorluath*.

Here are a few things to keep in mind:

- Don't run the grace notes together – play each one separately, cleanly, crisply, and distinctively
- Make each grace note sound the same differing only in pitch – make them the same length
- Change notes on the "G" grace note.
- Play the exercises rhythmically with the "G" grace note ON THE BEAT

Begin with this simple G-D-E exercise up the scale. Play each note evenly.

G-D-E Combination

Exercise

_____ - _____ bpm

Here is a full set of G-D-E exercises for you to practice.

GDE Exercise

_____ - _____ bpm

1

2

3

4

5

6

7

8

Practice Tune

Your next practice tune is the traditional Irish tune, *The Kesh Jig*. The **jig** (sometimes seen in its French language or Italian language forms **gigue** or **giga**) is a folk dance type as well as the accompanying dance tune type, popular in Ireland and Scotland.

It is a popular tune-type within the traditions of Irish dance music and Scottish country dance music, second only to the reel. It is transcribed compound meter. *Double jigs* are always transcribed in 6/8; *slip jigs* are always written in 9/8. *Single jigs* are most commonly transcribed in 6/8, but sometimes also in 12/8. *Slides* are transcribed in both 12/8 and 6/8.

There are a number of tunes with three or more parts, and some in which the length of one or more parts varies from eight bars. As with most other types of dance tunes in Irish music, at a session or a dance it is common for two or more jigs to be strung together, flowing on without interruption.

The piece has one movement you haven't learned yet – a **Low A shake**.



It's played by quickly tapping the **E** finger down and back up. This closes down the scale so it actually plays a **Low A**.

Remember:

- Play SLOWLY at first
- Play to a metronome
- Play each note evenly
- Play the "G" grace notes ON THE BEAT

The Kesh Jig

Jig

_____ - _____ bpm

High "A" grace note

The **High A** grace note is played from a **High G** *down* to a lower note or from a lower note *up* to a **High G**. The grace note is played in the same manner as the **G**, **D** or **E** grace notes.



- Play a **High G**
- Lift the thumb (**High A** finger) and lower it at the same time you play the **F**

Here is a set of High A grace note up and *down* exercises. Remember to:

- Play SLOWLY at first
- Play to a metronome
- Play each note evenly
- Play the **High A** grace notes ON THE BEAT

High 'A' Grace Note

Exercise

_____ - _____ bpm

1

2

Pointing – Syncopation

In music, syncopation is the stressing of a normally unstressed beat in a bar or the failure to sound a tone on an accented beat. This is known in piping as *Pointing*.

For example, in the previous G-D-E exercise, each note was played equally and evenly. The same exercise can be pointed (given syncopation) by using a dotted eighth note followed by a 16th note, called a *dot-cut* combination. This pattern is commonly used in jigs and gives the tune its “jiggidy” beat. Think, **JIG – iddy**. The emphasis (beat) is on the **JIG** which is held slightly longer than the **ddy**.

G-D-E Combination

Exercise

_____ - _____ bpm

The sheet music consists of two staves, numbered 1 and 2. Both staves are in treble clef and 6/8 time. Measure 1 starts with a dotted eighth note followed by a sixteenth note. Measures 2 through 6 follow the same pattern. Measure 7 starts with a dotted eighth note followed by a sixteenth note, then a quarter note, another dotted eighth note, and a sixteenth note.

Let's take this same pointing and apply it to *The Kesh Jig*:

The Kesh Jig

Jig

_____ - _____ bpm

The sheet music consists of four staves, numbered 1 through 4. All staves are in treble clef and 3/4 time. Each staff contains eight measures of music. The notation uses a mix of eighth and sixteenth notes, with the characteristic dot-cut combination (dotted eighth note followed by a sixteenth note) used to create syncopation and emphasize the 'JIG' beat.

Tachum

As mentioned earlier, the “D” grace note down has its own name – the *tachum* (pronounced tá-kum). There are two common tachums, **C** down to **Low A** and **B** down to **Low G**.

In this first exercise, each note is played evenly. The beat is on the first note in each pair. It is not on the “D” grace note.

Play the exercise slowly and rhythmically.

_____ - _____ bpm



Now add the “G” grace note. Remember to play the grace note ON THE BEAT.

_____ - _____ bpm



Here is an exercise combining the G-D-E with the tachum movement.

_____ - _____ bpm

Finally, here is a variation of the earlier exercise with pointing – *dot-cut* and *cut-dot*.

Practice each exercise slowly and rhythmically.

_____ - _____ bpm

The image shows four staves of bagpipe music notation. Each staff begins with a treble clef, a key signature of one sharp (F#), and an 8/8 time signature. The notation consists of vertical stems with diagonal dashes indicating pointing. The first three staves (1, 2, and 3) show a repeating pattern of two measures: a measure starting with a vertical stem and ending with a diagonal dash, followed by a measure starting with a diagonal dash and ending with a vertical stem. The fourth staff (4) shows a similar pattern but with a different starting measure. The music is intended to be practiced slowly and rhythmically, as indicated by the tempo marking above the staves.



Highland Bagpipe Tutor Student Manual



CHAPTER 4

Shakes

Grace Note Shakes

Practice Tune

“D” Throw

Half Doublings

Shakes

Shakes are also referred to as *strikes*, *slurs* or *echo beats*. They are generally used to separate two like notes (notes of the same pitch). Strikes on the low hand notes are all to a **Low G**.



Step1: Play **Low A**

Step 2: Play a **Low G** and quickly back to a **Low A**. Use this same method for the **B**, **C** and **D** notes.

For shakes on **E**, **F**, **High G**, and **High A**



Step 1: Play an **E**
Step2: Tap the **A**



Step 1: Play an **F**
Step 2: Tap the **E**



Step 1: Play a **High G**
Step 2: Tap the **F**



Step 1: Play a **High A**
Step 2: Tap the **High G**

In this first exercise, play each set of notes evenly.

_____ - _____ bpm

1

2

Now try the same exercise with an added "G" grace note. Remember to play the G grace note ON THE BEAT.

_____ - _____ bpm

1

2

And finally, play this pointed exercise.

_____ bpm

The sheet music consists of two staves, labeled 1 and 2, for a bagpipe. Staff 1 is in 2/4 time with a treble clef and two sharps. Staff 2 is in 2/4 time with a treble clef and three sharps. Both staves feature eighth-note patterns with vertical stems and diagonal strokes indicating the direction of the point. The music is divided by a double bar line with repeat dots.

Let's try another Shake exercise. Remember to play to a metronome and play each eighth note on the beat.

_____ bpm

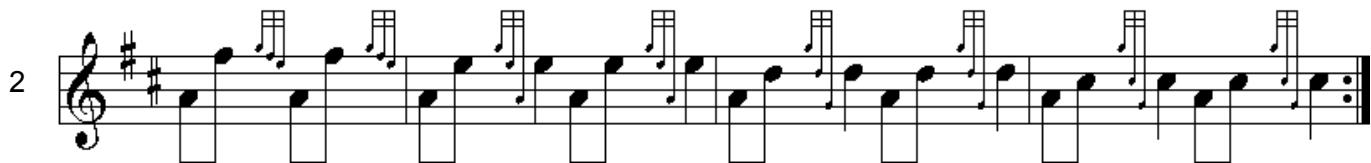
The sheet music consists of four staves, labeled 1, 2, 3, and 4, for a bagpipe. All staves are in 6/8 time with a treble clef and three sharps. Each staff contains a continuous eighth-note pattern with vertical stems and diagonal strokes. The music is divided by double bar lines with repeat dots.

Grace Note Shakes

The next set of exercises is similar to the previous with the exception of the addition of a grace note at the beginning of the shake.

Practice each set SLOWLY at first. The first note of the shake falls ON THE BEAT.

_____ - _____ bpm



Try your hand at the following practice tune, *Honey in the Bag* by Charlie Glendinning.

Honey In The Bag

Jig

_____ - _____ bpm

The sheet music consists of eight staves of music for a single instrument. Each staff begins with a treble clef and a key signature of two sharps. The first staff starts with a double bar line and a repeat sign, indicating a return to the beginning. The subsequent staves are connected by a single bar line. The music is in 8/8 time and is labeled as a Jig. The notes are primarily eighth notes, with some sixteenth-note patterns. The tempo is indicated as 'bpm' (beats per minute) without a specific number.

The “D” Throw

There are two types of D throws – heavy and light. What will be covered here is the “heavy” throw and is the more typically used in piping.



Step 1: Play **Low A**

Step 2: Play **Low G**

Step 3: Play a **D – C – D** combination ending on the **D**

It is important to play each of the grace notes in the throw equally. It is also important to play the **Low G** cleanly and distinctly. The **Low G** is the loudest note on the bagpipe and it will be obvious if the note is missed.

Practice the following exercise SLOWLY at first. Concentrate on playing each note clearly.

Light 'D' Throw

Exercise

_____ - _____ bpm

The image contains two staves of musical notation. Staff 1 starts with a single note, followed by a measure of four eighth notes. Staff 2 starts with a single note, followed by a measure of four eighth notes. Both staves are in G major (one sharp) and common time. The notation includes vertical stems and small circles for the notes.

Half Doublings

Half doublings are usually used after playing a **High G** or **High A**. They are easy to learn and will prepare you for the next lesson - Doublings. Half doublings on the **C**, **B**, **Low A**, and **Low G** all use a "D" grace note.



Step 1: Play **High G**

Step 2: Play an F

Step 3: Lift the F finger up and back down

Step 1: Play **High A**

Step 2: Play an F

Step 3: Lift the F finger up and back down

Practice these exercises. Remember to keep the first note of the half doubling ON THE BEAT.

Half Doublings

Exercise

_____ - _____ bpm

1

2



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CHAPTER 5

High "A" Doubling

High "G" Doubling

"F" Doubling

"E" Doubling

"D" Doubling

"C" Doubling

"B" Doubling

Low "A" Doubling

Low "G" Doubling

The Birl

Doublings

The next embellishment we will discuss is the *doubling*. Each note has a doubling. We will begin at the top of the scale and work our way down. The name of the doubling indicates what note you will *begin* and *end* on.

For example, the **High A** doubling movement begins and ends on the **High A**.

High “A” doubling – up

Step 1: Play a **Low A**

Step 2: Play a **High A**

Step 3: Strike the **High A** with the thumb
and back again to **High A**

High “A” doubling – down

Step 1: Play **High A**

Step 2: Strike the **High A** with the thumb
and back again to **High A**

Step 3: Play a **Low A**

Play the following exercises slowly at first. The first **High A** of the doubling is played ON THE BEAT.

— - — bpm

High “G” doubling – up

Written

Played

Step 1: Play a **Low A**

Step 2: Play a **High G**

Step 3: Strike the **F** finger down and back up again to a **High G**

High “G” doubling - down

Written

Played

Step 1: Play a **High G**

Step 2: Strike the **F** finger down and back up again to a **High G**

Step 3: Play a **Low A**

Here are two sets of exercises, one breaking the movement down into its components and the second as written with a **High G** doubling.

_____ - _____ bpm

1

2

3

4

5

6

The **F** doubling is a set of two “**G**” grace notes played on an **F** one after the other.

“F” doubling – up



Written



Played

“F” doubling – down



Written



Played

Step 1: Play a **Low A**

Step 2: Play a “**G**” grace note on an **F**

Step 3: Play another “**G**” grace note on an **F**

Step 1: Play a “**G**” grace note on an **F**

Step 2: Play another “**G**” grace note on an **F**

Step 3: Play a **Low A**

Here are the exercises for the **F** doubling up and down. Remember to play each set evenly and rhythmically.

Play to a metronome for consistency.

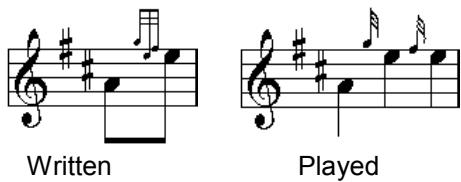
_____ - _____ bpm



1 2 3 4

The E doubling movement is a series of **G** and **F** grace notes on an **E** played one after the other.

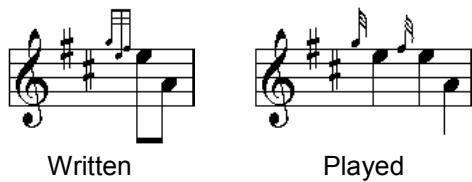
“E” doubling – up



Written

Played

“E” doubling – down



Written

Played

Step 1: Play a **Low A**

Step 2: Play a “**G**” grace note on an **E**

Step 3: Play an “**F**” grace note on an **E**

Step 1: Play a “**G**” grace note on an **E**

Step 2: Play an “**F**” grace note on an **E**

Step 3: Play a **Low A**

Practice these exercises slowly and with control.

— - bpm



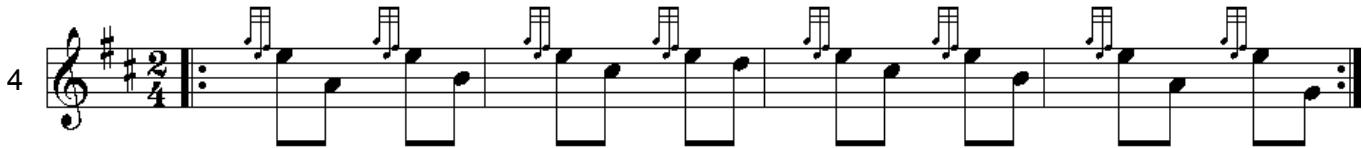
1



2



3



4

The **D** doubling is a series of “**G**” and “**E**” grace notes on the **D** played on after the other. Notice that when you get to the doubling on a **High G**, you have to use a **High A** grace note instead of a “**G**” grace note.

“D” doubling – up

Written Played

Step 1: Play a **Low A**

Step 2: Play a “**G**” grace note on a **D**

Step 3: Play an “**E**” grace note on a **D**

“D” doubling – down

Written Played

Step 1: Play a “**G**” grace note on a **D**

Step 2: Play an “**E**” grace note on a **D**

Step 3: Play a **Low A**

Try these exercises. Play each set evenly with attention to playing the **G** of the doubling ON THE BEAT.

— - bpm

1

2

3

4

5

6

The **C** doubling is a combination of **G** and **D** grace notes played on a **C**. As with the previous exercises, play each set evenly and rhythmically keeping the “**G**” grace note ON THE BEAT. Notice that when playing a **C** doubling from a **High G**, you have to use a **High A** grace note. Also, you cannot play a **C** doubling from a **High A** – you can only play a *half-doubling*.

“C” doubling – up

Written Played

Step 1: Play a **Low A**

Step 2: Play a “**G**” grace note on a **C**

Step 3: Play a “**D**” grace note on a **C**

Play the following exercises with control.

“C” doubling – down

Written Played

Step 1: Play a “**G**” grace note on a **C**

Step 2: Play a “**D**” grace note on a **C**

Step 3: Play a **Low A**

_____ - _____ bpm

1

2

3

4

5

6

The **B** doubling is a combination of **G** and **D** grace notes on the **B**. As with the **C** doubling, you use a **High A** grace note for a doubling from the **High G** and a half doubling from the **High A**.

“B” doubling – up

Written Played

“B” doubling – down

Written Played

Step 1: Play **Low A**

Step 2: Play a “**G**” grace note on a **B**

Step 3: Play a “**D**” grace note on a **B**

Step 1: Play a “**G**” grace note on a **B**

Step 2: Play a “**D**” grace note on a **B**

Step 3: Play **Low A**

Play these exercises slowly with control. Play each set evenly. Play the “**G**” grace note ON THE BEAT.

_____ - _____ bpm

1 2 3 4 5 6

Similar to the two previous doublings, the **Low A** doubling is a combination of **G** and **D** grace notes on the **Low A**. And, similarly, you use a **High A** grace note for a doubling from the **High G** and a half doubling from the **High A**.

Low “A” doubling – up

Written Played

- Step 1: Play a **B**
- Step 2: Play a **G** grace note on a **Low A**
- Step 3: Play a **D** grace note on a **Low A**

Low “A” doubling – down

Written Played

- Step 1: Play a **G** grace note on a **Low A**
- Step 2: Play a **D** grace note on a **Low A**
- Step 3: Play a **B**

Try these exercises. Remember to always play with control – slowly at first and increase the speed.

_____ - _____ bpm

1

2

3

4

5

6

The **Low G** doubling is played similarly to the **Low A, B and C** doublings and the same rules apply as previously mentioned.

Low “G” doubling – up

Written Played

Step 1: Play a **Low A**

Step 2: Play a **G** grace note on a **Low G**

Step 3: Play a **D** grace note on a **Low G**

Low “G” doubling – down

Written Played

Step 1: Play a **G** grace note on a **Low G**

Step 2: Play a **D** grace note on a **Low G**

Step 3: Play a **Low A**

Exercises – by now you know the routine.

_____ - _____ bpm

1

2

3

4

5

6

Additional Exercise

The following exercise emphasizes doublings from all notes.

Doubling Drill from All Notes **Exercise** _____ - _____ bpm

1

2

3

4

5

6

7

8

Remember the following when you practice:

1. Always practice to a metronome.
2. ALWAYS play SLOWLY in the beginning.
3. Check your finger positioning and correct any errors.
4. Play the notes evenly.
5. Play the grace notes crisply and ON THE BEAT

The Birl

There are numerous methods for playing a birl. Each piper has their preference. Work with your instructor to find a method that works best for you.

METHODS:

Tap – tap the chanter twice with the little finger on the **Low G**

Down-up – slide the little finger downward over the **Low G** hole and back up again

Tap-and-pull – tap the **Low G** with the little finger and pull the finger back towards the palm

Tap-and-push – tap the **Low G** with the little finger and push the finger away

Try several methods before finding what works best for you. Whichever method you choose, make certain that you can hear each of the notes clearly.



Written



Played

Step 1: Play **Low A**

Step 2: Play **Low G** and back to **Low A** – twice

Play the following exercise SLOWLY at first.

_____ - _____ bpm

1

2

The Great Birl

When a “G” grace note is added, the movement is known as a *great birl*. Notice that a great birl is played differently on a **High G** and **High A**.



Written



Played

bpm

A musical score for measure 1. The first measure is in common time (indicated by a ‘C’), followed by a repeat sign, then 6/8 time (indicated by a ‘6’ over an ‘8’). The music consists of a series of eighth-note strokes. Two grace notes, each consisting of three vertical strokes, are circled in red. The first circled grace note is at the beginning of the measure, and the second is later in the measure.

A musical score for measure 2. The music continues in 6/8 time. A single grace note, consisting of three vertical strokes, is circled in red at the beginning of the measure.



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CHAPTER 6

Music Structure

Practice Tunes

The Leumluath (Grip)

The Taorluath

Music Structure

Bagpipe music is typically written in a question-answer format which makes memorization easier. In the example below, the **questions** are shown in red and the **answers** in blue. The phrases are numbered 1 through 5 so you can see which are repeated.

Practice Tune

High Road to Gareloch is a standard band setting and one of the first pieces a student learns on the pipes. It incorporates everything you have learned up to this point – music notation, pointing, grace notes, shakes, doublings, and D throw. Gairloch (*Gearrloch* in Gaelic) is a small village on the shores of Loch Gairloch on the northwest coast of Scotland. Every first Saturday in the month of July, the community and visitors come together to meet old friends and new at the Gairloch Highland Gathering, which is organized and run by members of the local community.

High Road To Gairloch March _____ - _____ bpm

1

2

3

4

Question 1 Answer 1

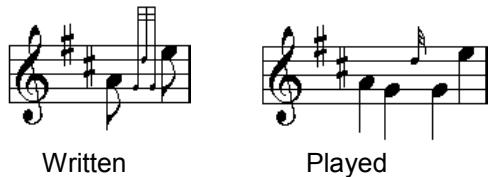
Question 1 Answer 2

Question 2 Answer 3

Question 2 Answer 2

The Leumluath (Grip)

The grip or leumluath (*lem-loo-ah*) is a movement from **Low G**, “D” grace note, **Low G**, back to the melody note. Like the **D** throw, it is important to play the first **Low G** clearly. Notice that the grip on a **D** uses a **B** instead of a **D** grace note.



Step 1: Play a **Low A**

Step 2: Play a **Low G**

Step 3: Play a “D” grace note on a **Low G**

Step 4: Play an **E**

The following set of exercises break the grip movement down into its basic components. Practice each exercise SLOWLY.

_____ - _____ bpm

Musical staff 1: Treble clef, key signature of two sharps, 2/4 time. The staff consists of a series of eighth notes. The third note from the beginning is circled in red, representing the "Low G" note of the grip movement.

Musical staff 2: Treble clef, key signature of two sharps, 2/4 time. Similar to staff 1, it features a series of eighth notes. The third note is circled in red, indicating the "Low G" note.

Musical staff 3: Treble clef, key signature of two sharps, 2/4 time. It includes grace notes (vertical lines with diagonal strokes) and regular notes. The second grace note from the beginning is circled in red, marking the "D" grace note on the "Low G".

Musical staff 4: Treble clef, key signature of two sharps, 2/4 time. It features grace notes and regular notes. The second grace note from the beginning is circled in red, marking the "D" grace note on the "Low G".

Musical staff 5: Treble clef, key signature of two sharps, 6/8 time. It consists of a series of eighth notes. The third note is circled in red, representing the "Low G" note of the grip movement.

Practice Tune

The next practice tune, *When the Battle's O'er*, is another standard band setting students learn early in their piping studies. Here, the grip is the predominant movement.

As with all the practice tunes:

- Practice SLOWLY at first
- Play to a metronome to keep the beat
- Play the grace notes ON THE BEAT
- Play with expression
- Pay attention to finger placement
- Listen for crossing noise
- Have fun

The first line of words to the music is included to give you a sense of the music and the rhythm of the tune. The lyrics are by Andy Stewart.

When The Battle Is Over

Retreat March

_____ - _____ bpm

1 I return to the fields of glory where the green grass and flowers grow.

2 And the wind softly sings the story of the brave lads of long ago.

3 March no more my soldier laddie there is peace where there once was war.

4 March no more my soldier laddie sleep in peace now the battle's o'er.

The Taorluath

The tarluath is a leumluath (grip) with an additional “E” grace note on **Low A**. As with the leumluath (grip) each note needs to be distinctive and played cleanly.

Written Played

The image shows two musical staves. The first staff, labeled 'Written', shows a treble clef, a key signature of one sharp (F#), and a time signature of common time (indicated by a 'C'). It features a sequence of notes: a grace note (E), a long note (A), another grace note (E), a long note (A), and a short note (D). The second staff, labeled 'Played', shows the same sequence but with a different performance: a short note (D), a long note (A), a short note (D), another grace note (E), and a long note (A).

- Step 1: Play a **leumluath** (grip)
Step 2: Play an “E” grace note on **Low A**

Play the following set of exercises slowly emphasizing each note in the taorluath movement. Remember, the “**G**” and “**E**” grace notes are played ON THE BEAT.

_____ - _____ bpm

A musical staff in treble clef, one sharp key signature, and 2/4 time. It consists of a series of eighth-note patterns: a grace note (E), a long note (A), another grace note (E), a long note (A), and a short note (D). This pattern repeats across the staff.

The next set of taorluath movements are common in piping. Make certain that you can hear each note distinctly.

_____ - _____ bpm

A musical staff in treble clef, one sharp key signature, and 6/8 time. It consists of a series of eighth-note patterns: a grace note (E), a long note (A), another grace note (E), a long note (A), and a short note (D). This pattern repeats across the staff.

Putting it all together

The following exercise is a compilation of skills you have learned up to this point.

Exercise for Control

_____ - _____ bpm

1

2

3

4

5

6

Practice Tune

Scotland the Brave is, along with *Flower of Scotland* and *Scots Wha Hae*, the unofficial national anthem of Scotland.

Scotland The Brave - High-hand Version

March

_____ - _____ bpm

The sheet music for 'Scotland the Brave' is arranged in four staves. Each staff begins with a treble clef, followed by a key signature of three sharps, and a 4/4 time signature. The music consists of a series of eighth and sixteenth note patterns, typical of a march or bagpipe tune. The staves are numbered 1 through 4 from top to bottom.

The lyrics were written in the 1950s by Cliff Hanley (October 28, 1922 - 1999) a journalist, novelist, playwright and broadcaster from Glasgow, but he wrote them to a piping tune which goes back much further.

Hark, when the night is falling
Hear, hear the pipes are calling
Loudly and proudly calling
Down through the Glen.
There where the hills are sleeping
Now feel the blood a-leaping
High as the spirits
Of the old highland men.

Chorus:
*Towering in gallant fame
Scotland my mountain hame
High may your proud standards
Gloriously wave!*
*Land of my high endeavor
Land of the shining river
Land of my heart forever
Scotland the brave!*

High in the misty highlands
Out by the purple islands
Brave are the hearts that beat
Beneath Scottish skies
Wild are the winds to meet you
Staunch are the friends that greet you
Kind as the light that shines
From fair maiden's eyes.

Chorus
Far off in sunlit places
Sad are the Scottish faces
Yearning to feel the kiss
Of sweet Scottish rain.
Where tropic skies are beaming,
Love sets the heart a-dreaming,
Longing and dreaming
for the homeland again.

Chorus



Highland Bagpipe Tutor Student Manual

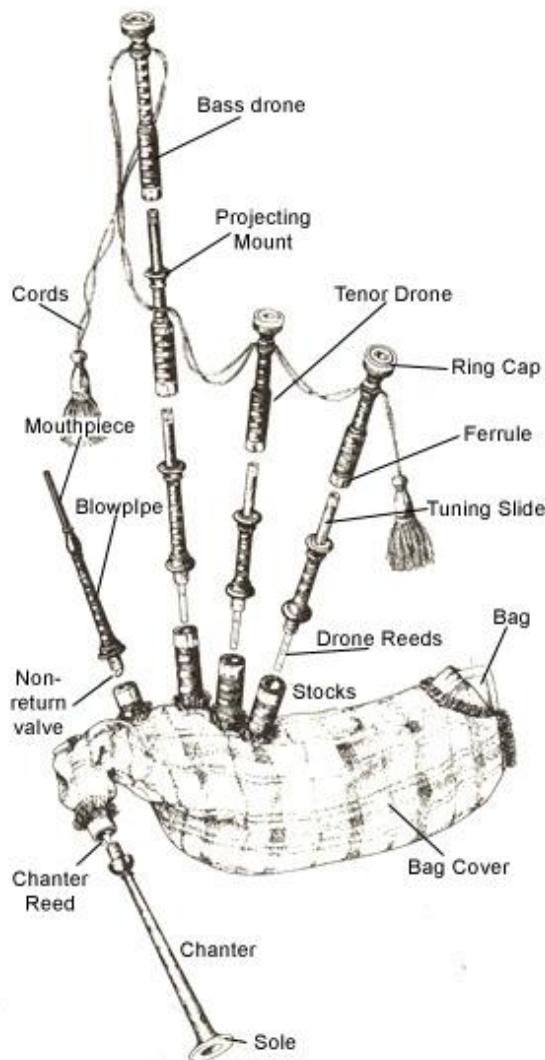


CHAPTER 7

*Purchasing Pipes
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Purchasing Pipes

Purchasing a set of bagpipes **is a major investment**. Like any instrument, a quality set of bagpipes are not inexpensive. And, like quality instrument, if taken care of, your first set of bagpipes can last several lifetimes. If properly maintained, bagpipes do not lose their value. Take your time and look at different styles and manufacturers of bagpipes. Talk to other pipers and see what they are playing, what they like about their pipes and what they would change if they were to do it all over.



Terminology

There is a lot of terminology used when ordering pipes. Let's begin with the basics.

You have several choices when selecting bagpipes: manufacturer, appearance (style), type of bag, drone reeds, chanter, etc.

There are a number of terms used to describe the pattern of carving used on the drones, blowstick and stocks of the bagpipe:

Combed = a woodworking term meaning a series of tightly spaced "V" shaped groove cut into the wood.

Beaded = a woodworking term meaning a rounded "O" cut.



Antique/Chalice = indicates a smooth style without beading or combing.



Bagpipe Materials

You also have several choices in materials. Here are some of the most common.

Ebony

Ebony (*Diospyros ebenum*), also known as **India Ebony** or **Ceylon Ebony** depending on its origin, is a tree in the genus *Diospyros*, native to southern India and Sri Lanka. It is noted for its heavy black, fine-grained heartwood. Ebony has a long history of use, with carved pieces having been found in Ancient Egyptian tombs. The word "ebony" derives from the Ancient Egyptian *hbny*, via the Greek *ebenos*, by way of Latin and Middle English. There are some older pipes made from ebony, however modern uses are largely restricted to small sizes, particularly in musical instrument making.

African Blackwood

Ebony has been largely replaced by **African Blackwood** or **Mpingo** (*Dalbergia melanoxylon*). Blackwood is a flowering plant in the family Fabaceae, native to seasonally dry regions of Africa from Senegal east to Eritrea and south to the Transvaal in South Africa. It is a small tree, reaching 4-15 m tall, with grey bark and spiny shoots. The dense, lustrous wood ranges from reddish to pure black. It is generally cut into small billets or logs with its sharply demarcated bright yellow white sapwood left on to assist in the slow drying so as to prevent cracks developing. Good quality "A" grade African Blackwood commands high prices on the commercial timber market.

The tonal qualities of African Blackwood are particularly valued when used in woodwind instruments, principally Highland pipes, clarinets, oboes and Northumbrian pipes. Furniture makers from the time of the Egyptians have valued this timber. A story states that it has even been used as ballast in trading ships and that some enterprising Northumbrian pipe makers used old discarded Blackwood ballast to great effect.

Due to overuse, the blackwood tree is severely threatened in Kenya and needing attention in Tanzania and Mozambique. The trees are being harvested at an unsustainable rate, partly because of illegal smuggling of the wood into Kenya, but also because the tree takes upwards of 60 years to mature.

Cocobolo

Some bagpipes are available in **Cocobolo**. Cocobolo is a hardwood from Central America yielded by two to four closely related species of the genus *Dalbergia*. The best known and probably the species contributing most of the wood in the trade is *Dalbergia retusa*, a fair-sized tree, reported to reach 20-25 m in height. Because of its great beauty and high value, this species has been heavily exploited and the tree is now in danger of extinction outside of national parks, reserves and plantations.

Cocobolo is a very beautiful wood, known to change color after being cut. It usually is orange in hue, with a figuring of darker irregular traces weaving through the wood. It is fine textured and oily in look and feel, and stands up well to repeated handling and exposure to water. Cocobolo is also extraordinarily dense, and even a large block of the cut wood will produce a clear musical tone if struck. Only relatively small amounts of this prized wood reach the world market and it is expensive. Care must be used when working this wood, as its sawdust is dangerous; many people develop an allergy when exposed to it.

Rosewood

Because of the expense, some pipes are being made from **Rosewood**. Rosewood belongs to the family papilionaceae. The pre-eminent rosewood appreciated in the western world is *Dalbergia nigra*, Brazilian Rosewood. It is also known as Rio rosewood or Bahia rosewood. This wood has a strong sweet smell, which persists over the years, explaining the name "rosewood". Because of its density and strong resonance, Honduras rosewood, *Dalbergia stevensonii* is a favourite choice for makers of marimba and xylophone keys, although many such instruments are not made of this wood for reasons of cost or durability in outdoor playing environments. Brazilian rosewood is (was) a popular wood for musical instruments however, due to its protected status and spiraling prices, Indian and Madagascar rosewood are being used extensively in its place.

Lochaber Oak

Cameron Bagpipe Company uses Lochaber Oak (oak from Lochaber, Scotland) in the construction of their bagpipes. The term **oak** can be used as part of the common name of any of several hundred species of trees and shrubs in the genus *Quercus* (from Latin "oak tree"), and some related genera, notably

Cyclobalanopsis and *Lithocarpus*. Oak is not a “traditional” or widely used wood for instrument making.

Mopane

The **mopane** or **mopani** (*Colophospermum mopane*) tree grows in hot, dry, low-lying areas, 200-1,150 m, in the far northern parts of southern Africa, into South Africa, Zimbabwe, Mozambique, Botswana, Zambia, Namibia, Angola and Malawi. Mopane wood is one of southern Africa's heaviest timbers and is difficult to work because of its hardness. However this also makes it termite resistant. For this reason it has long been used used for building houses and fences, as railway sleepers and as pit props. The termite-resistance and rich, reddish colouring also make it popular for flooring. Outside Africa, mopane is gaining popularity as a heavy, decorative wood, its uses including aquarium ornaments and bases for lamps or sculptures.

It is also increasingly being used in the construction of musical instruments, particularly woodwind. Suitable quality African blackwood (*Dalbergia melanoxylon*), traditionally used for bagpipes, is becoming harder to find. Mopane is fairly oily, seasons very well with few splits or shakes, and produces instruments of a warm, rich tone.

Delrin

A modern synthetic material used in pipe construction is **Delrin**. Delrin is the brand name for an acetal resin engineering plastic invented and sold by DuPont. Delrin was first synthesized by DuPont's research chemists around 1952. Often marketed and used as a metal substitute, Delrin is a lightweight, low-friction, and wear-resistant plastic capable of operating in temperatures in excess of 90 degrees celsius (approx 200 degrees Fahrenheit). According to the material safety data sheet from DuPont, the material has a slight odor of formaldehyde.

Delrin has found use in the manufacturing of Irish flutes (traditionally made of wood), tin whistles (traditionally made of metal) and bagpipes (traditionally made of wood). Delrin flutes and bagpipes sound similar or identical to wooden version, but have none of the shrinkage or cracking issues usually associated with wooden instruments in hot, cold, or dry environments.

Types of Mounts



Bagpipes can be decorated with metal, natural materials - such as wood, ivory or horn - and other materials as accents. “Mountings” refers to what is decorated. Ferrules, caps, projecting mounts, and tuning slides serve both to protect and adorn the bagpipe.

Regardless of what style you choose, the mountings will not alter the sound of the pipes.

Quarter Mounting

- 4 tuning slides

Half Mounting

- 4 slides
- 9 ferrules
- 3 ring caps

Full Mounting

- 4 slides
- 9 ferrules
- 3 ring caps
- 8 projecting mounts
- chanter sole
- mouth piece

Engraving and Other Options

Chased, engraved, repoussé - similar but different terms when it comes to metal work.

Hand chasing. With this method, metal is moved with a small pointed tool and a small mallet. It is much like what you'd do if you used a stick to draw in the sand.

Hand engraving. With this method a very sharp tool is used to actually remove metal in order to produce the design. It can produce deeper definition to accent the higher points of the design.

Repoussé. This is a method of using a very small mallet to tap a tool against the metal to lower areas in background and thereby to effect an apparent raising of the foreground design.

Pipe Bags

Once you have decided on the "look" of the pipes you want and the "brand", you will need to decide on a pipe bag. The purpose of the bag is to serve as an alternate source of air pressure for when you are not blowing. This lets the piper breath naturally while maintaining the necessary pressure to keep the chanter and drones playing. Five stocks are tied or fastened directly to the bag. Air enters the bag through the blowpipe stock and exits the bag through reeds contained within the drones and chanter.

As with the pipes themselves, you have a number of options with pipe bags and bag covers. Again, look around and talk to other pipers to see what works.

Bagpipe bags fall into three primary categories; natural (cowhide and sheepskin), synthetic, or a "hybrid" combination of natural and synthetic materials.

Cowhide Pipe Bag



The Standard cowhide bag is still a viable option for pipers. Hide was the only type of bag for hundreds of years. The proliferation of synthetic bags, zippers and a host of add-on accessories for the bagpipes have made using a hide bag a real matter of choice. There are still very valid reasons for choosing a hide bag. They are excellent bags under most circumstances. When playing for extended periods or if used in extremely moist climates, a blowpipe stock watertrap or tube type watertrap is recommended. The hide bags are stiff, comfortable and available in a variety of sizes. Since the holes for the stocks are generally cut in, the bags can be custom fit for any individual. Pipers come in all shapes and sizes, so the ability to position the drone stocks and blowpipe stock outside of the normal positions can be extremely valuable. Comfort is a key factor when playing the pipes, so a hide bag may be the right choice for you. A hide bag is more difficult to

install, and requires some practice to get the stocks tied in correctly. If you have never tied a bag on, you may want to send your stocks to a dealer to have this one for you. We suggest visiting a bagpipe dealer if any special requirements are needed or the bag can be properly "fitted". Easier "strike ins" and "cut offs". Hide bags also need to be periodically "seasoned". This is done to keep the bag supple and airtight. Hide bags are also available with and without a zipper access and grommets for easy mounting of stocks



Sheepskin



Often called the "Cadillac" of bags, sheepskin is the choice of many top solo players and pipe bands. It has all the characteristics of a cowhide bag - but it is suppler and allows moisture to pass through more quickly. It dries out so quickly it requires frequent playing to keep the system at the proper moisture level. Sheepskin bags are really geared to the professional player or anyone who devotes a great deal of time to playing. Like the cowhide bag they come in different sizes and can be fitted and tied in to suit ones size and needs. They are comfortable and responsive. In addition, many players feel sheepskin bags provide the best tone. The drawbacks to the sheepskin bag are they are costly, difficult to tie in and have a relatively short lifespan.

Synthetic



Synthetic bags use a man-made material and are available with and without a side zipper.

There are several "bag systems" that can be purchased as a set. The sets have a moisture control system and they vary by manufacturer.

Combination / Hybrids



"Hybrids" have a hide exterior and a synthetic interior. This gives a bag the heavier feel of natural material and the low maintenance of a synthetic. Again, there are several "bag systems" that can be purchased as a set. The sets have a moisture control system and they vary by manufacturer.

Selecting a Bag Size

Probably the most common mistake pipers make is getting a bag that is too large for them. Things that affect appropriate bag size are overall arm length, chest shape, and blowing technique. If you are having trouble comfortably reaching the chanter (assuming your stocks are correctly positioned on the bag), or have a lot of pressure from the bag on the inside of your forearm, then your bag is too large. Sometimes a custom *longer* bag to compensate for a smaller circumference works best for a short, large chested person.

Small bags mean less air, less air means more reliable cut-offs. But bag size will also slightly affect the tone of your pipes, which may or may not be an issue for you. Some pipers swear that they get noticeably better resonance and tone with a larger bag. Others say they have to blow less often with a larger bag.

The bag should fit under your arm with almost no visible space between your underarm and the top of the bag. If this is not the case, you will not have a secure grip on the instrument, the bag will slide down, and your left arm may go numb.

While many people say that a 'slippery bag cover' is the major reason for their bag sliding down, the real culprits are generally either a bag

that is too big, a blowpipe that is too long, or both. These are common problems, and many manufacturers and dealers don't address them.

Playing a bagpipe that is perfectly sized for you and set up in great playing condition pays dividends for the rest of your piping career.

Below are recommended bag sizes and blowpipe lengths according to height. Blowpipe length is measured from where the projecting mount on the blowpipe meets the stock (the top of the hemp) to the tip of the mouthpiece. Note that Ross bags tend to run a bit large. This chart is just a guide.

BAG	Blowpipe
5' 2" or shorter	
Ross extra-small bag	8" or less
5' 3" to 5' 6"	
Ross extra-small bag	8" – 9"
All other makes - small	
5' 7" to 5' 8"	
Ross small or extra-small	9" – 9.5"
All other makes: small	
5' 9" to 5' 10"	
Ross small	10"
All other makes: small or medium	
5' 10" to 6'	
Ross small or medium	10" – 11"
All other makes: medium	
6' to 6' 4"	
Ross medium or large	11"
All other makes: medium or large	
6' 4" or taller	
Ross medium or large	12"
All other makes: large	

Pipe Bag Maintenance

Natural

Cowhide bags perform better when they are played regularly. It is frequent playing of the pipes that keeps the bag supple, not seasoning. Of course, these bags should also be seasoned, as needed, to keep seams airtight and to improve moisture control. Make sure to use the type of seasoning and sealing products recommended by the maker of your bag.

It is important to season regularly, but it is equally important not to over-season. It is necessary to do a long and thorough seasoning on a new bag. After that, maintain the bag with seasonings targeted at the main seam. For cow hide bags, the purpose of seasoning is to keep the stitching airtight. Seasoning will not improve moisture control in these bags, and too

much of it may make a mess of the inside of your bag. Sheepskin bags require more attentive seasoning, not only to keep the stitching tight but to treat the skin also. The pores are not as close together as hide, so seasoning is required to keep the skin air tight and to improve moisture control.

Bag Lifespan: For hygiene reasons it is recommend that you keep a sheepskin bag for a maximum of three years and a hide bag for no longer than five years.

Synthetic and Hybrid

Synthetic bags and hybrid bags (bags with a hide exterior and a synthetic interior) are very easy to care for. If your bag has a zipper, make sure it is kept lubricated per the manufacturer's instructions. Leave the zipper open when you are not playing, to help the bag dry out. A damp bag can become unpleasant and unhealthy quickly. Check the stocks often to make sure that they are all secure. If you're using a Ross Canister system or other system with loose desiccant, vacuum the interior periodically to avoid dust accumulation in the bag and on your reeds.

Moisture Control Systems

The single most important aspect of bagpipe maintenance is the issue to moisture control. An instrument that varies with respect to moisture can never be stable or reliable.

Water traps, desiccant systems and pipe bags must be chosen to be suitable for the climate in which you live and the proper considerations for maintaining an appropriate moisture level.

Moisture absorbed into a reed makes it both heavier and more flexible, so the native pitch of a wetter reed is different (generally lower) than that of a dryer one. If the pitch changes as you play, you'll have a problem. If the level of moisture in the bag is too high, the reeds will become wet in the short term and will mildew in the long term. (Mildew is evidenced by a black color on the reeds.) For this same reason, the pipe chanter should never be left inside the bag when not in use. It should be kept outside the bag with a reed protector in place. We also recommend swabbing out the chanter stock after each day's playing to remove water or saliva that may be absorbed into the wood. Swab out the drones and chanter stock on cold days.

Condensed moisture in the drones results in funny noises, instability and eventually drone "shut-down". It can swell hemp leading to frozen joints. If it soaks into the wood, it can cause cracks. This moisture comes from the passage of your humid breath into the drones where it hits cooler ambient air. When the extra moisture content coming from your breath is more than the ambient air can hold, you'll get condensation. A "little" condensation can be tolerated, but at some point, you're in trouble.

The amount of condensation depends upon the air flow through your drones (lots of moist air flow = lots of condensation), the relative humidity of that air (desiccated air contains less moisture than non-desiccated = less condensation) and the ability of outside air to accept the extra humidity going up the drones (lower relative humidity in the outside air and/or warmer temperature = less condensation).

This is a good place to bring up the fine point that, on a given day, plastic pipes may have more condensate than non-plastic pipes. The thermal conductivity of plastic is higher than that of wood, so when you are playing on a cool day, the bore of a plastic pipe will be losing heat faster than a wooden pipe and will be colder than that of a wooden pipe. A colder bore represents a surface for more or earlier condensation.

OK, so where does that leave us? We know that the air leaving our pipes has some amount of moisture in it. That moisture needs to be absorbed into the ambient air. If it cannot be absorbed at the temperature in the bores, the moisture will condense in our drones. The water runs down the drones and into the drone reeds shutting them off.

There are two major forms of moisture control systems, 1) water traps and 2) desiccants/absorbents.

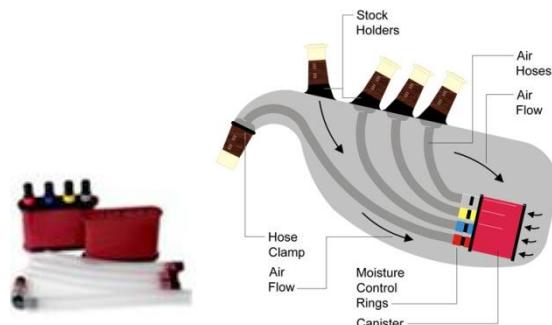
Moisture traps



Moisture traps deal mostly with spit (yes spit!). The first thing they do is divert the spit away from the chanter reed toward the back of the instrument. This is usually done with an elbow tube. If the trap has an elbow, then the

larger water/spit particles will be knocked out because they aren't carried along in the flowing stream of air. The medium sized "bits o' spit" will fall out of the air stream and collect in the tube. This is an aerodynamic issue in which particles obey "stoke's law". This law says that big particles fall faster in a viscous fluid and that small particles will remain suspended longer. The slower the fluid is moving, the more efficiently the particles are removed. This is best done in a large diameter, long tube so that the air is moving slowly and you catch most of the particles that fall out. There are obvious practical there are practical limitations. In particular, very small particles of water will remain suspended for a long time and will go through the trap.

Desiccants and absorbents



Desiccants are materials which have the ability to attract moisture from the air. If desiccant is dry, has a high surface area and the flow rate is slow, the relative humidity of the air can be significantly reduced before it reaches the reeds. Desiccants do have limitations in that the humidity of the air passing over the desiccant will increase as the desiccant becomes more and more laden with moisture. Hence, you should use "dried" desiccant on those cold damp days when you know you need it. The ability of a desiccant to absorb moisture is also a function of temperature.

Whichever system you choose, controlling moisture is part of pipe maintenance and will dramatically affect how your pipes play.

Bag Cover

Like everything else, bagpipe covers come in a variety of styles, materials and options. The non-slip patch is a nice addition if available. The Band will supply you with a bag cover when we outfit you as a performing member, but to begin with the choice of color and style is yours.

Drone Reeds

OK...you've selected the pipes, the brand, the bag, moisture control system, now you need to decide on drone reeds.

The three drones are composed of two (shorter) tenor drones which are one octave (eight notes) lower than the fundamental pitch of the chanter (called "Low A") and one (long) bass drone, one additional octave lower than the tenors. The drones each have a single reed which sounds a pitch (like humming a single note) hence the term "drones."

Drone reeds can be made of natural cane, synthetic materials, or a combination of both.



Moving the bridle on the drone reeds allow the piper to adjust the pitch. Additional tuning of the drones is accomplished by sliding the drones up and down on their tuning slide/pin (down for sharper, up for flatter). The air pressure moving across the blade of the drone causes the reed to vibrate and produce sound.

The manufacturer of your bagpipes will have recommendations for what works best in their pipes. Stick to what we call "plug-and-play" reeds for now. Here are a couple examples; there are many others.



Ezeedrone Reeds are a top-seller and are compatible with a wide range of pipes. They're great for beginner and experienced pipers alike. Ezeedrones are designed to produce a rich tone and wonderful harmonics. The reeds are pre-adjusted.



Shepherd SM90s provide great tone, while allowing for easy strike in. Blade and bridle position are preset for quick and simple installment. Final quality testing is carried out on each and every reed before dispatch from Shepherd with air forced at just over 1lb psi, the air pressure produced by pipers.

You can always change drone reeds if you want a different sound. Talk to us before purchasing. We have several samples in inventory you can try before buying.

Pipe Cords



When ordering your pipes, you will have the option of selecting the color. If given the option, choose silk cords – they hold their color longer and have a richer look. You may want to match the color the Band is using at the time, but the choice is yours.

Pipe Cases

Next, you'll need a case to protect your investment. Here again you have several choices. There are soft cases, hard cases, and "backpacks." Talk to other pipers to see what they like and dislike about their case. Each design has its own merits.



Maintenance Supplies

There are a few maintenance supplies you will need in your case:



Stock corks(5). You can also purchase these at a hardware store. One for each drone (3), blowpipe (1) and chanter (1).



Reed protector. You will want to order one of these with your pipes to protect your chanter reed.



Yellow Hemp comes in 1 and 2 oz. pre-waxed and un-waxed versions. Keep a spool of both pre-waxed and un-waxed yellow hemp in your case.



Black Hemp also comes in 1 and 2 oz. and is dyed black. It is saturated with a sticky wax. Keep one spool of black hemp in your case.



Teflon Tape is easily available at most hardware stores and is used to provide a snug but easily moveable fit. Keep a full roll of tape in your case at all times.



Ear Plugs. We recommend that you wear earplugs to protect your hearing. You can purchase inexpensive earplugs at the hardware store or more expensive "sonic" plugs (shown) at a music store.

Getting Started: Blowing and Pressure

Everyone who purchases a set of pipes wants to immediately put them together and give them a blow...who wouldn't? But don't be in too big of a rush. The most important area to concentrate on for the beginning piper is blowing the bagpipe steadily. Many pipers never master this, even after years of playing. The reason for this is that they did not take time in the beginning to practice it. You must master steady blowing in order to get good tone from your instrument. Even the best Bagpipe in the world will not produce good tone unless it is blown steadily.

Drones Only

When beginning on the bagpipe it is a good idea to play the chanter and drones alternately. First remove the chanter and cork the stock. Also, cork two of your drones, the middle tenor and the bass. Now practice blowing the bagpipe. Listen to the drone and try to keep a steady tone. Keep in mind not to blow too hard as you are only playing one reed. It should not be hard to blow. The key is the rhythm of your blowing and controlling the pressure on the bag.

When you blow, relax your arm slightly, feel it being blown off the bag. When you need to take a breath, increase the pressure on the bag. It is the transition between blowing/relaxing the arm and breathing/increasing pressure that you must work on making perfectly smooth. Apply the pressure to the bag with your elbow, not your forearm. If your bag is the correct size and your blowpipe the correct length, this should be comfortable. Remember to keep your arm working. Don't forget about it. As you get more comfortable with the bagpipe and your blowing becomes steadier you can add the other drones one at a time.

When you have more than one drone going you will have to tune them together. The sooner you start tuning your drones the better. The key here is to listen. Do not expect to be an expert at tuning right away and to not use a tuner as a substitute for your ear. It will take a lot of practice. However, tuning your drones without the chanter will be easier. Make sure you can blow one drone steadily before trying two drones. Try bringing on the middle tenor next. Move the middle tenor up or down on the tuning pin until your two tenors sound the same. This should not be too difficult. Turn the drone on the pin as you move it. Choose one direction for

down and the opposite for up. Stick to this method for all the drones. Blowing the drones without the chanter is a good exercise for steady blowing and is practiced even by professional players.

Chanter Only

Cork all the drones and blow the bagpipe with the chanter only. Forget about playing tunes at this point. Play long notes (at least 10 seconds each), listen to the notes and try to maintain a steady tone. You will probably find that the higher notes (F, High G & High A) are more difficult to keep steady so spend more time on these. Also, be careful not to over-blow the High G and the High A. This is a very common habit. Listen for a good octave between the Low A and the High A.

BE PATIENT. The bagpipes are not something you just pick up and play.

Piping Posture



The bagpipe might be considered ungainly, unsymmetrical and, certainly to the learner, an awkward collection of bits and pieces. It is capable of being (and often is) played in all kinds of strange postures and positions. Perhaps the best advice we can give to anyone is to be as natural as possible when playing the pipes. Don't adjust yourself to fit the pipes – adjust the pipes to fit you.

It's a balance between posture, pipe bag size, blowstick length, diaphragm control, etc., etc., etc.

Here are a few things to keep in mind:

- **Don't blow out your cheeks** (face cheeks that is) – This is a bad habit some pipers get into. Blow with the cheek muscles tensed so that your face does not blow up like a balloon. Your neck will swell regardless of how you blow.
- **Don't blow pipes that are too strong for you** – It's easy to spot an expert piper and a beginning student. The expert makes piping look effortless while the novice makes it look like a struggle. Pipes are a physical instrument; there is no doubt about it. Don't make it more difficult by playing reeds that are too strong. Talk to one of us if you are having problems.
- **Don't hold the mouthpiece at the corner of your mouth** – apart from encouraging head-twisting, the mouthpiece at the corner of your mouth leads to the escape of air when your lips get tired.
- **The pipes are not an elbow instrument** – your right elbow (assuming you are right-handed) should be held away from the body in a natural position. Don't squeeeeeeeeze the bag to maintain pressure; maintain pressure using your diaphragm.
- **Don't squeezeeee the chanter** – you should be able to feel the vibrations above each hole of the chanter.
- **Look straight ahead** – with the blowstick in the middle of your mouth.
- **Keep your eyes on the Pipe Major** – when in the circle.
- **Keep your head erect** – not thrown back or twisted to the side.
- **Keep your body erect** – but not stiff. Don't turn towards the PM in the circle; this affects the overall tone of the circle.
- **Your left shoulder will be higher than your right** – again assuming you are right-handed. Don't overcompensate.
- **Make sure your chanter is in a comfortable position** – so that your fingers can rest on it in a relaxed posture. If you cannot, check the length of your blowstick, pipe size, and general setup.

Tuning

Yes, bagpipes are tuned but for now don't worry too much about tuning. Your instructor will help you set up your pipes and tune them.

Tuning is a mechanical and rational procedure. The guidelines for tuning are straightforward and sensible. It's a skill every piper needs to know and every piper can learn.

To understand the process, we have to first understand sound. **Sound** is generally known as vibrational transmission of mechanical energy that propagates through matter as a wave and is perceived as hearing. Hearing is performed primarily by the auditory system: vibrations are detected by the ear and transduced into nerve impulses that are perceived by the brain. Sound is further characterized by the generic properties of waves, which are frequency, wavelength, period, amplitude, speed, and direction.

So, sound is a wave. It is defined as the number of cycles, or periods, per unit time (frequency). The unit of frequency is hertz (Hz), named after the German physicist Heinrich Hertz. For example, 1 Hz means that an event repeats once per second, 2 Hz is twice per second, and so on. Each note produces a frequency measured in Hz. For example, the concert "A" is measured at 440 Hz. That means that a concert "A" produces 440 cycles per second. What you "hear" is the brain's interpretation of the hertz.

The highland bagpipe scale, however, doesn't match a concert scale. The "A" isn't "set" to 440. The "A" on a bagpipe can range from 470 to 480 Hz depending on the reed, the weather, and the musician. As a band, we set our pipes so they all match as closely as possible. That's why we use a tuner and one person is primarily responsible for tuning the band. What they are listening for is whether or not you are sharp or flat as compared to the designated "tuned" pipe – usually the person doing the tuning. Eventually, you will be assigned a "band chanter." Do not adjust the reed in the band chanter; consider it band property. For now, if you only have the one chanter, do not adjust the reed; doing so makes tuning the band take more time during practice.

How to tune your drones to the chanter? What you hear when you tune the drones is often described as a "Wa-Wa." It is produced by sound waves opposing one another. The closer the sound waves come to one another the

slower the Wa-Wa. It disappears entirely when the drones are in tune with one another and the chanter.

To begin, strike in and tap off your bass and middle tenor drone. Remember to blow steady. Play a low "A." Listen for the Wa-Wa of the drone. SLOWLY move the top of the outside tenor drone up or down listening to hear if the speed of the Wa-Wa increases or decreases. If it increases, slowly adjust in the opposite direction. Continue to adjust the drone until the Wa-Wa stops. Play a scale to see if the drone is still in tune. If not, the chanter may be out of tune.

Once you feel you have the outside tenor in tune with the chanter, the rest is easy. Most instructors will recommend you tune the bass drone to the outer tenor first and then bring in the middle tenor using the same technique previously described; listening for the Wa-Wa and adjusting the bass to match the outside tenor drone and then bringing in the middle tenor to match the outside tenor and bass. The goal is for the three tenors to sound as one – no Wa-Wa.

Tuning is a continuous learning process. It is one of the characteristics judges listen for in solo and band competition. It is skill that anyone can learn and constantly refine. Work with your instructor to check your tuning to make regular progress and ask for help tuning for competitions.



Highland Bagpipe Tutor Student Manual



CHAPTER 8

*Caring for Your Pipes
Hemping
Chanter Reed Basics
Matching a Reed to the Chanter
Modifying the Chanter Reed
Chanter Basics
Drone Reed Adjustments
Drone Valves
Oiling the Drones*

Caring for Your Pipes

You're finished playing your bagpipes and aren't quite sure what to do with them when you are done. What steps are necessary to properly stow your pipes after playing will depend on a number of factors, primarily having to do with moisture control. The following advice pertains to the care of wood bagpipes. Poly pipes also have maintenance issues and moisture is a primary concern.

Chanter

Most pipers remove the chanter from its stock and place the chanter in a chanter cap which covers the end of the chanter and protects the reed. In most locales, a chanter reed will develop mold more quickly if the chanter is left attached to the bag when not in use. And sometimes the chanter may become stuck in its stock—not exactly the most desirable situation! Remove any beaded moisture on your reed by gently pressing it with a tissue for a few seconds, though some pipers go so far as checking the reed against their lip for any wet feeling. Some recommend leaving the reed exposed to air for 5 minutes before stowing it in a cap. If you do air out your reed, be extremely protective of it, you don't want it getting whacked or rolling off of a table or chair!

If you are in a dry climate such as Denver, Colorado (high altitude) you could just leave the chanter in its stock on the bag to help the reed retain moisture. In cold temperatures or after lots of playing, moisture may condense on the inside of your chanter. Ideally, this condensation should be wiped out after playing.

Drones

Most pipers can get away without doing much to their drones after playing. But again, you don't want moisture sitting inside the bores of your drones. If this is an issue for you, a "pull through"—a string with a rag strips at one end—may be used to wipe out the larger bores of your drones.

Now, if you do happen to own a set of poly pipes, you'll find that condensation beads up more easily on plastic than wood and that moisture may run down and clog your reeds. It wouldn't hurt to check your bores and wipe them out when necessary.

Drone reeds

Condensation on the tongues of synthetic drone reeds is very common, even with dry blowers. It's good practice to dry the body of the reeds after playing and wipe out under the tongue using a thin durable paper—paper currency (i.e., a dollar bill) works well since it's designed to not tear easily. Nose tissue and toilet paper is not recommended (too fragile)—nor is a business card which may have the unintended consequence of springing the tongue, affecting both efficiency and tone.

Bag

If you have a synthetic or hybrid bag with a zipper, then you will probably want unzip your bag to allow it dry out. With a hide bag, you want to avoid having it dry out, but you also don't want it super moist either. You can help retain moisture by plugging any open stocks with a cork. A hide bag will gradually dry out even with all the stocks plugged—particularly if it's a sheepskin bag. If it's necessary to dry an overly-wet bag then leave one or more of the stocks open.

Into the Case

A pipe case serves a number of purposes. It allows you to carry quite a number of items easily; it protects your pipes from impacts, and can also somewhat serve to prevent rapid changes in temperature and humidity. When you place your pipes in their case, you don't want so much leeway that the pipes knock around and chip, scratch or dent. You also don't want to force the pipes into the case so that they are on the verge of cracking—while drones and stocks are reasonably solid overall, the tuning pins are particularly vulnerable as is the chanter. And remember, if you employ a hose system, make sure these lie flat as you don't want any kinks.

If your case is overly stuffed you might consider weeding out nonessential items (particularly items that could scratch or otherwise damage your pipes) or if they are all things you need readily available, investigate a larger case.

Storing/Moving your Pipes

A good piece of advice is to think of your bagpipes as your baby. Don't leave it in a car unattended. Play with it often. Don't drop it or throw it. Don't leave it wet (empty/dry your moisture traps). Don't force things to move if they are really stuck. If it screeches, it probably

needs some attention. And singing tunes to it (canntaireachd) won't hurt! Bottom line; treat your pipes to a mild environment that would be very comfortable for you personally. So if your car is a very mild environment and will stay that way while you are gone, then, yes, you can leave your pipes on the seat—but it better be a very overcast and not too hot or too cold of a day!

If you take good care of your bagpipes, they will take care of you. Yes, some pipers are lucky and can get away with not taking proper of their pipes, but sooner or later, it's going to come back and haunt them!

Hemping

There is some maintenance to Bagpiping and ensuring a proper fit of all the joints is one of the basic maintenance issues. As with most aspects of bagpiping, there are a lot of varying opinions as to how to best hemp your bagpipes; this is one.

The term "hemping" comes from the time of when the string material used to wrap the tenon of a tuning pin was, in fact, made from hemp.

Hemp (from Old English *hænep*, see cannabis (etymology)) is the common name for plants of the genus *Cannabis*, although the term is often used to refer only to *Cannabis* strains cultivated for industrial (non-drug) use. Hemp is cultivated virtually everywhere in the world except for the United States, and its cultivation in western countries is growing steadily.



The fiber is one of the most valuable parts of the hemp plant. It is commonly called bast, which refers to the fibers that grow on the outside of the woody interior of the plants stalk, and under the most outer part (the bark). Bast fibers give the plants more strength, which is especially true with the hemp plant. Hemp fibers can be 3 to 15

feet long, running the length of the plant. Depending on the processing used to remove the fiber from the stem, the hemp naturally may be creamy white, brown, gray, black or green. These days it's made of linen and is usually found in one of two colors: yellow and black.

In order to tune your drones, the upper section of the drone must slide up and down (usually twisting at the same time) on the tuning pins using one hand—but not so loose that they move unintentionally. Also, for sake of tonal quality, you'd like the tuning pins to be as airtight as possible; again this means you don't want them to be too loose such as rocking side to side.

There are NUMEROUS opinions on what combination of materials to use. Like everything else in piping, the final decision is yours. Some options require more maintenance than others. Talk to others and find out what they do. Attend workshops to learn what the professionals recommend.

In general, lay a base of black waxed hemp on all joints and finish them off differently depending on the joint. Remember, un-waxed hemp can draw and retain moisture.

Blowstick: Waxed hemp covered with a layer of Teflon tape.

Drone Stocks: Waxed hemp of various diameters. That's it. When laying down layers of waxed hemp be careful to lay them down evenly and then roll the joint on a hard surface to seat the threads together. The drone should set snug so that they do not move when tuned but yet can be removed when necessary.

Tuning Pins: Heavier black waxed hemp for the bottom, covered by a top layer of waxed yellow hemp (although many people use a layer of un-waxed yellow), and covered by a layer of Teflon tape. The Teflon tape serves as a moisture barrier and helps the pin to slide easily. The temptation is to overuse Teflon. If you have NUMEROUS layers of Teflon tape on your pins, consider removing some of the layers and adding additional hemp.

If your hemping is too loose, the drone top will shift or rock back and forth or your stock will move in the base. If this is the case, it should be tightened up in some manner.

Chanter Reed Basics

The chanter has a double reed; two matched pieces of (almost universally) Spanish Cane wrapped around a metal tube called a "staple".



Mouth. The mouth of the reed is the opening located at the top of the reed and is formed by the two opposing pieces of cane, the "blades," sometimes also called "tongues." The very top of the cane portion of the reed is called the "lips" or "tip" of the reed.

Shoulder. This is the area across the central portion of the exposed cane. On a ridge cut reed, the shoulder is fairly pronounced.

Binding. To hold the two pieces of cane to the staple, they are wrapped with black hemp. This is called the binding. *If the binding starts coming loose, clear finger nail polish will provide for a good repair.*

Hemp. The hemp is not technically part of the reed itself, but facilitates positioning the reed correctly and snugly in the "reed seat" which is the hole located at the very top of the chanter. The hemp should not even partially block the hole at the base of the staple as this will affect the reed's performance. Always use a waxed hemp.

Staple. At the base of the reed is a cylindrical/conical piece of metal, typically copper or brass that provides a support for the rest of the reed. (If you are lucky, might get to see an old reed with a staple made of silver.) The staple opening is round at the bottom and elliptical at the top. The staple is a soft metal

because sometimes it is desirable to alter its shape and, consequently, also the reed's sound. This alteration is accomplished with a tool known as a mandrel.

There are two basic reed shapes or cuts:



A "Molded" Reed

This is an example of a "molded" reed. Notice the gradual taper from the binding to the top of the reed. Due to their shape, a molded reed's blades get most of their support from the staple.



A "Ridge Cut" Reed

This is an example of a "ridge cut" reed, rarely also referred to as "french cut" reed. Notice the distinct step at the shoulder, though not all ridge cut reeds are quite this obvious. The blades of ridge cut reeds get the most of their support from their thick base.

The reeds come in various strengths requiring different amounts of pressure for the blades to vibrate and produce sound. The pitch of the chanter is changed by pushing the reed further in or out of the top of the chanter – in for sharper, out for flatter.

Effects of Moisture on Reeds

As a chanter reed is played, it will absorb moisture. This moisture will soften the cane, which normally would lower the pitch, however there's a second effect on the reed. When played, a reed experiences air pressure upon it forcing it to close up which raises the pitch. This

means that if a piper picks up a set of bagpipes and tunes the drones to a relatively dry/unused chanter reed, the drones will be out of tune after a brief time (5-10 minutes usually) as the chanter reed pitch rises.

One might think that it would be advantageous to keep the reed very moist—eliminate one variable, so to speak—perhaps by leaving the chanter attached to the bagpipe bag. However, as mentioned moisture is a catalyst for mold growth. Mold breaks down a reed and will greatly reduce its life span. Consequently, most pipers remove their chanters from the bag and use a "reed cap" (sometimes called a "chanter cap" or "dry stock") to protect the reed while it is seated in the chanter. On the other hand, if your reed is still developing mold while in the reed cap, more air circulation would be wise. Drill a few holes in your reed cap. Later if your reed is drying out, some or all of these holes can be sealed with tape.



Setting up a Reed

In short: "*In/up, out/down.*" Lowering the chanter reed into the chanter shortens the distance between it and the holes in the chanter and raises the pitch. Raising the reed lowers the pitch. Changing the quantity and position of the hemp on the binding will affect where the reed seats. If the bottom of the staple is in direct contact with the reed seat—with no hemp acting as a cushion—the pitch of the reed will be raised even more than you may expect. Whatever you do, you want the reed seated very firmly as a loose reed will be flat and erratic.

The top hand notes' pitches are more greatly affected by raising or lowering the reed. This means that if the lower notes are in tune and the top hand is flat, it may very well be corrected by pushing the reed slightly deeper into the chanter. This also means that the scale is stretched as the reed is seated deeper.

Matching a Reed to the Chanter

Matching the right reed to the chanter is essential in creating a unified "band sound." Take the same chanter reed and stick it in another chanter and it may not sound the same. Similarly, take a chanter and stick in various chanter reeds and the sound will change. This is why we all use the same brand of chanter (and usually reed) when competing.

Chanter reeds vary from brand to brand and perform differently under different conditions. Some reeds do well in dry conditions – while that same reed goes limp in humidity. For the most part, we will supply you with a chanter reed for band performances. But you will also want to have a supply of reeds for personal/solo use. There are many excellent pipe chanters and reeds on the market.

Henderson's Bagpipe Supply suggests the following pipe chanter/reed combinations. This is not the last word in pipe chanters and reeds but it is a good place for beginners and less experienced players to start.

Reed	Strength	Works well in
Shepherd	Hard	Shepherd Gibson Naill
Warnock	Easy Medium Hard	Warnock Gibson Shepherd Dunbar
Apps	Easy Medium	Naill MacCallum
Abedour	Easy Medium	Gibson Shepherd Dunbar
McCann	Easy Medium	Gibson Shepherd
McAllister	Hard	Naill Gibson Hardie
EZEE PC	Easy Medium Hard	Naill St. Kilda
Ross	Medium Hard	Naill St. Kilda Kintail Shepherd Gibson

Modifying the Chanter Reed

Altering reeds is a controversial subject. Some pipers swear by barely touching their reeds at all. Others have scraped so much that they could do it in their sleep. The reeds you get will sometimes require more pressure than you can muster and are not always going to match the characteristics of your chanter; that's where sanding, scraping, pinching, poking, squeezing comes in.



A chanter reed's "red zones."

Reed is too hard

If a new reed is a "gut buster" here are a few things you can do:

- **Play it until it softens up.** This can take weeks, but is the safest method and leaves you with the strongest reed. Just plug up the drones and play it as long as you can, it may only be five or ten minutes. Over a week or two, when comfortable, add a drone until you have your full set going. If after a few weeks it's stopped getting easier to play and it's still too hard, then think about taking a more proactive step.
- **Hydrate the reed.** Dip it in water for a second or two, then shake it out and dry it off, then play it. New reeds are usually pretty dry and need moisture. (Unless you get a "Piper's Pal" humidity control product for storage of new reeds.) Avoid using saliva as it may contain microbes that will begin to eat the reed—there are no enzymes in human saliva that digest cellulose, it's only the microbes we'd worry about. Don't soak a reed, it can warp. You can repeat this, but less dramatic hydration is better. Store the reed in a reed cap to keep it from drying

out too much, or ideally, use a Piper's Pal cap to help regulate humidity.

- **Pinch it with your fingers.** This will temporarily ease a reed (and raise its pitch). Try to keep pinching to the top third of the reed. If you squeeze too low and too hard you will collapse the sound box and destroy the reed. You can repeat pinching, but again less is better. If you overdo it, a mandrel may help open the reed back up.
- **Install a rubber band bridle.** Slide an orthodontics rubber band wrapped a few times over the staple up past the hemping to a point about 1/5 of the way up the exposed cane of the reed. If this makes it too easy, slide it down a bit. If it's still too hard, scraping may be in order or move the bridle up a bit—too high though, and the top hand will sound a little thin. After a few weeks to months and the reed eases, this bridle may be removed or gradually worked down the reed as time goes on. If you wrap the rubber band very tight or the reed is weak or you just want to be safe, it'll be best to only slide the bridle up during playing sessions, and to lower it back to the supported staple area after.
- **Pinch the staple with pliers.** This is more drastic and usually unnecessary. Needle-nose pliers either well wrapped in tape or covered with leather works well. If you squeeze too hard, but haven't damaged the blades, you can open the staple back up with a mandrel. I've also "bitten" the staple with my teeth, but a pair of pliers is easier to control.
- **Sand/Scrape it.** This is irreversible. Removing part of the cane from the reed cannot only reduce required pressure, but can also have the unintended side-effect of changing the sound of a reed. Dangerous "red zone" areas that typically affect sound also are: the top strip of the reed, the sound box, and the area down the center of the blades. (See *image above*.) Where you scrape depends some on the type and make of reed. A very drastic step is to carve notches at both edges of the reed a bit above the hemp line—only if you really have to, such as "the parade is tomorrow!" On a ridge cut reed, you can scrape/sand down a bit on the pronounced ridge itself. Don't take a brand new reed and scrape it down to

your usual comfortable blowing pressure. Always leave "room" for the reed to weaken. If you start at soft, it'll turn to mush later.

Reed is too soft

If the reed shuts down easily with normal blowing pressure, it probably won't last long and you should consider discarding it. (Unless you are a hard blower, in which case you can pass it along to another piper.) However, there are a few options if for some reason you wish to chance it.

- **Pinch the edges of the reed to open its mouth.** You might have to do this repeatedly.
- **Moisten then pinch the edges of the reed to open its mouth.** You might have to do this repeatedly.
- **Use a mandrel to open up the staple and force the mouth open.** Just be careful to keep the blade symmetrical—that is, the blades should be an equal distance from an imaginary center line across the length of the mouth.
- **Cut off the tip of the reed.** We're talking about a reed that's on its deathbed anyway (even if it's a new reed), so amputation may not out of line as extreme as it is. This will also increase the pitch and will most likely alter the relation of the high notes to the low notes. Use a very sharp blade and cut precisely even. Cut off small (0.5mm) amounts—as long as you can keep it even—since you can't put it back!



Mandrel. While a mandrel looks like a small screwdriver, it differs in that the end of the blade is a quite rounded on the two sides. A cross section of the end would reveal a stubby rectangle with rounded corners though mandrels vary in shape somewhat.

Reed doesn't sound right

Customizing chanter reeds for sound can be a bit of a mystical art, sometimes shrouded in secrecy. Reeds are by nature organic and therefore somewhat variable. To further complicate the issue, reeds are made differently

by different makers as you would expect. What works for some reeds can be a disaster for others. Adjusting the high notes produced by a reed is the best understood, but it's problematic trying to change the reed to affect just a single note on the scale.

Here's a few situations you might run into:

If the top hand is too sharp, you can sand/scrape off some off the top fifth (or so) blades. Careful, you don't want to sand all the way through the lips of the reed. *An alternative to modifying the reed is to tape the top of the chanter holes to flatten notes that are too sharp.*

If the top hand is too flat, the reed is too soft, see the remedies given above. *An alternative to modifying the reed is to sink the reed farther into the chanter to sharpen notes that are too flat.*

If the High-A is too sharp, you can sand at the very tip of the reed. Again, you don't want to sand all the way through the lips of the reed. *An alternative to modifying the reed is to tape the top of the chanter hole to flatten the note that is too sharp.*

If the High-A has too much "crow", aside from just blowing through it (blowing harder) or giving a new reed some time to break-in, you can sand at the very tip of the reed as you would to flatten High-A. Again, don't sand all the way through the lips of the reed as this will actually make the blades shorter.

If the High-G is too sharp, gently sand about 1/16" down from the top of the reed.

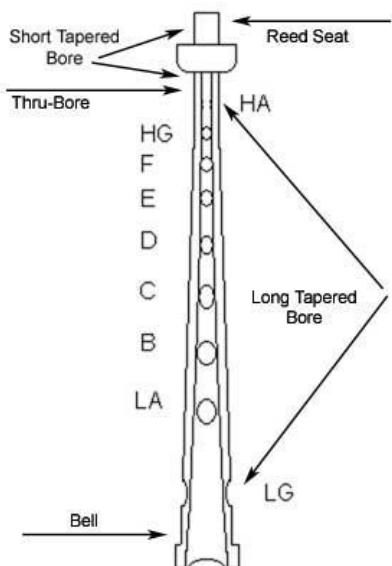
F is inconsistent or flat relative to other notes. An inconsistent F is known as a "collapsing F" or as a "double-toning F." The note varies wildly with small changes in pressure. It is usually caused by three things: the sound box being too open, the blades being a little too long, or the reed being positioned incorrectly in the chanter's reed seat.

- For some very odd reason, sometimes the F note can become flat when the reed is pushed too far *into* the chanter. I have yet to hear a good explanation for this counter-intuitive phenomenon. If you are in a non-band situation, try moving the reed out (or in) to correct a problematic F.

- Try gently pinching the sound box, repeat as necessary.
- The easily reversible procedure to try is to tie hemp around the sound box creating a bridle to apply a little pressure. You can also try a small rubber band (such as used in orthodontics) as a bridle around the sound box, but since this applies more pressure, it would be wise to roll this type of bridle down onto the binding when you are done playing the reed, otherwise you may gradually collapse the sound box.
- The drastic option is to cut a bit off the end of the reed, which will also make the reed harder to blow. On the other hand, you don't have to worry about bridles shifting.

Unfortunately, there's no great substitute for experience. The road to true mastery of reed scraping and sanding will be littered with destroyed reeds. Just go easy, start timid.

Chanter Basics



The typical chanter has a number of bores. Specific chanters may have more or less. Regardless, we're dealing with multiple bores and complicated specifications. Starting at the top, we have the reed seat, a short tapered bore, and a parallel thru-bore. These three bores are critical to creating the necessary back-pressure that enables the reed to behave as it should. If you want to, think of the thru-bore as the vortex that receives sound waves from the

reed and sends it out to the rest of the chanter. Beyond the thru-bore there is a long tapered bore and a bell at the bottom of the chanter.

The note sounded by the chanter is determined by which of its holes are covered (or not) by the piper's fingers. Taping a note hole (we recommend pin striping tape) or carving that note hole will adjust the pitch of the note however the frequency (harmonics) is of internal origin and little can be done to alter this. Some chanters have notes that do not harmonize with the drone sound. These chanters will be very problematic and should be avoided. Other chanters produce excellent harmonics throughout and should be sought out. The pitch of individual notes can be adjusted to suit the overall pitch you wish to play at and note-to-note trueness.

As with the pipes themselves, the pipe chanter is available in both natural (wood) and synthetic (Delrin) materials and can be accessorized with a sole made from a variety of materials.

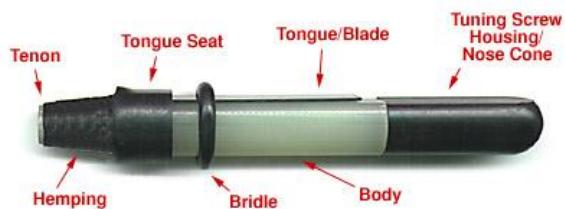


Drone Reeds

How do I set up synthetic drone reeds?

The simplest answer is...don't try, let one of us help you. But you should know how drone reeds are adjusted.

Let us preface by saying that not all drone reeds are "ideal" with all drones. Some drones tune way too high with some brands of reeds. Some drones sound "rough" with some brands of reeds. Talk to your instructor and other band members if you are considering a change in drone reeds.



First off, you need to first adjust your new reeds to the air needs of your pipes. For most modern brands, you'll only need to adjust the bridle to set the air consumption. You should just be able to "blow out" a drone reed by blowing really hard - don't give yourself a hernia! - but it should "shut down" at very high pressure. If not, it's too open and you're wasting energy that you could put into playing.

Remember that most reeds will become more pliable with temperature, so play for a minute or two to warm up the reed. Then set the reed so that it will just barely shut off when you blow really hard by adjusting the bridle up or down in millimeter increments. If you get tired in this process, you may have to tweak it again tomorrow, but make very small adjustments.

Once the air flow is right for your drone/reed combination, then move the screw/plug to get the drone to tune to the right spot on the hemp for your chanter.

At this point, you are done.

Why do my drone reeds squeal?

If you are, first and foremost, sure that your reeds are properly adjusted, it's a matter of learning how to deliver what is needed by your combination of pipes/reeds. The bottom line is that you'll need to adjust your strike-in technique to meet the needs of your drone/reed combinations - so that they don't squeal.

Squealing is the drone reed vibrating at the wrong harmonic - usually two or four times the intended frequency. Depending on the air flow characteristics of the pipes, your reeds may start vibrating at the wrong harmonic if the air pressure comes up too quickly or too slowly - or if it goes back down and back up again!

Some drones squeal if struck in a given way with some kinds of reeds. A very common brand of reed in a certain highly regarded brand of bass drone will commonly squeal upon a normal strike in, but a very gentle strike will do just fine. Some reed/drone combinations "like" a strike-in right under the bass drone - or not! - or with a certain strength. This sounds odd, but it's all true. Experiment and you'll find the right way for YOUR pipes.

The most common cause of squealing is that piper who actually hits the bag, bounces off a little and then pushes again. This causes the pressure to spike up, fall off and then come back

up. This most commonly occurs amongst inexperienced pipers that are trying to strike in and get both hands to the chanter in two beats.

A controlled squeeze - faster or slower - from the right initial pressure - not too high or low - is what you want. Once you start the pressure going up, keep it going up - never allow it to back off - and you'll do very well.

Experiment by starting out without striking in at all, blow up your pipes by mouth bringing up the pressure slowly from a low initial point and see what happens. From here you can add in a gentle strike. Learn what your pipes need and learn to deliver it.

Drone Valves

We do not recommend students just starting on the pipes install drone valves. You first need to learn to strike in and cut cleanly without the valves. They can be added at any time. Check with your instructor before installing. Drone valves may seem like an easy solution to achieving a clean cutoff. Like anything on the bagpipes...there is no easy solution.

Drone valves serve a variety of purposes and as you will read they have been around since at least the mid 1800s.

Drone valves are placed at the base of the drone stock to help regulate air through the drones. Or if the piper is using a hose moisture trap, the drone valves can be in-line. The intent is to stabilize changes in bag pressure with regard to the drone reeds, so the piper has steadier sound, easier starts and crisper stops. Volume is reduced slightly.

Most valves are certainly most practical with a zipper or clamp-back bag however, some allow insertion through the drone stock.

Contrary to the assumptions of many, drone valves are not a new invention, having been employed by the early 19th century and perhaps even earlier.



McDonald-made Pressure Regulators

The image to the left shows a drone regulator made by Donald McDonald (a bagpipe maker) who died in 1840. The regulator was made from the same billet of wood as the accompanying stock so was turned at the same time and was not added at some later point in time.

Some of the more common drone valves include:



Shepherd Tone Enhancers

Made of black plastic. These devices contain desiccant beads to absorb moisture.



McCallum Drone Valves

These devices also contain a desiccant to absorb moisture. These are most practical with a zipper or clamp bag.



Ash Plugs

These are modeled after the McCallum valves, but have some design differences and retail at a much lower price than the McCallums.

They also manufacture drone valves to work with the Ross Canister System:



Hylands In-Line Drone Valves

These valves fit in-line on most hose moisture control systems. Strength of the valve is adjustable via a hex screw located on the side of the valve collar (clockwise tightens).

Oiling the drones...

Or not

Oiling is one of those issues that causes heated arguments. Obviously for those of you playing pipes made from Polyplenco material...this discussion is irrelevant.

As a maintenance issue - on a well conditioned, frequently played, well cared for pipe, not exposed to extremes of heat or humidity- you probably don't "need" to oil it. However, if you occasionally leave your pipe in the car, near a radiator, play in high humidity/rain or leave your pipes unplayed for a few weeks or more - you might want to oil them.

If we consider "oiling" to be an "answer", the underlying "question" is, "how do I prevent my pipes from ever cracking?"

Let's understand the issue...

When you play, you put very humid air into the inside of your instrument. That's why most pipers play with a moisture control system. If the moisture is absorbed by the wood, the wood will swell to accommodate the molecules of water. Only the wood near the bore will swell, not the rest. This creates a stress in the wood which can result in a crack or split.

Although it is sometimes presented that oil creates a layer on the surface of the wood so that moisture can't get to the wood - more correctly, moisture can only get through the oil and into the wood "slowly". This lets the wood swell slowly. As long as the rate of swelling is slow, moisture can migrate through the wood and allow the entire piece to swell slowly. In this way there is minimal stress built up in the wood and minimal internal forces to cause a crack.



Let's understand that we want a layer that moisture cannot easily/rapidly penetrate. Commercial woodwind bore oil is often simply a particular viscosity of mineral oil. This is a simple hydrocarbon (paraffin) mixture like common motor oil. It is rather incompatible with wood and only coats the very surface. It basically never dries and seems to lose its effect after several weeks.

Oils which are biologically derived from natural sources (i.e., almond, tung or linseed) may be slightly more "soluble" in wood, but when spread out in a thin layer, will cross-link and "dry". These oils tend to last longer after application. Paraffin waxes or biological waxes are just higher molecular weight versions of petroleum and biological oils, respectively.

Our advice would be that commercial bore oil won't hurt and can be applied once or twice a year.

Another reason for oiling the bores is to help smooth the surface of the bore. A rough bore acts like a filter to remove some of the harmonics of the sound. In general, smoother bores have more high frequency content in their harmonics. Polishing or oiling results in a smoother bore and increases the fraction of high frequencies coming out of the drone. Depending upon your point of view, this may or may not be a good thing! Some pipes have the reputation

for having gun-barrel-smooth bores and do not require oiling.

A rough bore also presents more surface area for absorption of moisture from your breath into the wood. Rough surfaces have more surface area and, therefore, take up moisture faster and potentially result in a more rapid build-up of stress. If the rate of moisture uptake is slowed sufficiently to allow equilibration of the moisture level between the wood on the inside and outside of the drone, the wood will not build up stress and will not crack. Once the wood is equilibrated to a humidified level and the drone is played regularly, the moisture level in the wood will not change and the drone will not split.

The roughness of the bore can be treated by either oiling or polishing. Oil or wax creates a water-resistant layer that slows the uptake of water into the wood, it also fills in the imperfections in the wood surface making the surface smoother. Polishing reduces the surface area available for absorption of moisture and thus keeps the rate low. Both techniques will reduce moisture uptake. Both approaches will alter the sound of the drones.

The decision to oil or not is ultimately yours to make.

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