



KINNAIRD  
BAGPIPES  
& REEDS

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## Setting Up Synthetic Drone Reeds – The Kinnaird Way

By Rob Kinnaird

Proper set up of synthetic drone reeds is key to ensuring that they perform and sound their best in your bagpipe. Improper set-up can prevent you from getting the best sound from your drones, and create difficulty with strike-ins and double toning. I follow a fixed routine whenever I set up drone reeds in a bagpipe. What follows is my method for setting up synthetic drone reeds.

### 1. Check Condition of the Instrument

It is futile to try and set up drone reeds in a poor quality instrument or one that is poorly maintained. I always check to ensure that the bagpipe is airtight and not leaking air. I also have a quick look at the stocks and bores to ensure that they are clean and smooth with no obstructions. The joints should be properly hemped and airtight. There shouldn't be any cracks in any of the sections that are leaking air. For more detailed information on checking your instrument see "Getting the Most Out of Your Bagpipe – A Maintenance Checklist".

### 2. Install Drone Reeds in Reed Seats

Remove the drones from the instrument and lay them out on a table in front of you. Take each drone reed and seat it securely in the tapered reed seat in the bottom of each drone. Ensure that the reeds are seated straight and in line with the bore of the drone. A proper, airtight fit is critical here. If any air leaks past the reeds through the reed seat, the drones will have a tendency to shut off with minimal pressure. If the reed seats are small, remove some hemp from the drone reed until the reeds seat securely. If they reed seats are large, add some hemp until the reeds are seated securely. After you have all three reeds in the drones, remove the top section(s) from each drone. Place a finger over the bore at the top of the tuning pin and place the drone reed in your mouth so that your lips are on top of the bridle. Blow into the reed. You shouldn't be able to get any air through the reed. If air is leaking it is likely that it is leaking through the reed seats. Try adding or removing hemp until you get the reed to seat airtight. You may also try adding some soft wax to the taper on the reed to assist with sealing the reed.

Some older pipes have reed seats that are extremely small. They were designed for cane reeds that typically had smaller tapers than today's

synthetic reeds. If you have trouble seating the drone reeds in these instruments, have the reed seat tapers enlarged with a tapered reamer. If you are uncomfortable doing this yourself, have a competent bagpipe maker/repairer do the work for you. Some bagpipes (particularly plastic pipes) have very slippery reed seats or a very wide taper which makes seating the reeds very difficult. Reeds in these instruments have a tendency to fall out and into the bag on a regular basis. Again, you may be able to have the reed seats re-tapered if possible, or have them threaded. This will help with seating the reeds and prevent them from falling into the pipe bag.

### **3. Preliminary Strength Adjustment**

Once the reeds are properly seated, the first step in setting up the reeds is to adjust the strength of the reeds so that they are taking a manageable amount of air. If the reeds are taking too much air, you will struggle with keeping the instrument steady, and the reeds will have a tendency to drop into double-tone with any fluctuations in blowing pressure. If the reeds are set up too easy, they will shut off once the chanter is introduced, or cut out with small increases in blowing pressure.

To check the strength, take each drone reed in your mouth up to the bridle and blow into the drone. Start off blowing gently and gradually increase your blowing pressure until you are blowing your strongest. The reeds should shut off just before you reach your strongest blowing pressure. If they don't, they are too strong. If they shut off early, they are too easy. To make the reeds easier, move the bridle towards the vibrating end of the reed tongue. To make them stronger, move the bridle towards to fixed end of the reed tongue. Make small adjustments when moving the bridles and continue to check the strength as you go. When you have all 3 reeds shutting off at the correct pressure, then you are ready to move onto the next step.

### **4. Preliminary Tuning Adjustment**

Once the preliminary reed strengths have been adjusted, install the drones back into the instrument. Blow the pipes up with the chanter and tune the drones to the chanter. Play the pipes for a while until the chanter settles in and tune the drones again. Once you have the drones tuned, stop playing and look at where each of the drones is tuning. To start with, we want the top sections of the tenor drones to be tuning up around the hemp line or slightly higher. The top section of the bass drone should be up around the hemp line, and the bottom section should be 3/4" to 1-1/2" above the top projecting mount of the bottom section. If the drones are not tuning in these positions, you will need to adjust the reed tuning screws to change the tuning position. To do this, remove the nose cone from the end of the reed. If you want the drone to tune higher on the tuning pin, turn the tuning screw counter-clockwise. If you want the drone to tune lower on the tuning pin, turn the tuning screw clockwise. Once you have made your adjustments, replace the nose cones on the reeds and install the drones back into the instrument. Blow up the pipes again and tune the drones to the chanter. Play for a while to get the chanter settled in again, and tune the drones again. If the drones

are not tuning in the proper positions, repeat the above procedure until you get all three drones tuning at an acceptable position.

If you have run out of adjustment on the tuning screws and the drones still aren't tuning where you would like, you will need to adjust the position of the reeds in the reed seats. If the drone is tuning too low, you need to seat the reed deeper into the reed seat. Remove the reed from the reed seat, remove some hemp, and re-seat the reed. If the drone is tuning too high, you need to seat the reed further out of the reed seat. To do this, remove the reed, and add some waxed hemp to the reed. Install the reed back in the drone and ensure that it is secure and airtight.

Hopefully, these adjustments will get the reeds tuning in a good position. If not, about the only adjustment left is to move the bridle. This will affect tuning position of the drone as well as the strength of the reed. This may be an option if the adjustments to the bridle are not extreme, and once adjusted the strength of the reeds is still acceptable. If you move the bridle toward the vibrating end of the reed tongue, the drone will tune higher on the tuning pin. If you move the bridle toward the fixed end of the reed tongue, the drone will tune lower on the tuning pin.

## **5. Reed Strength Revisited**

Once the tuning heights of all three drones are adjusted correctly, remove the drones from the instrument again. Re-check the strength of the reeds again by blowing each reed by mouth. You will find that the strengths have probably changed a bit if you needed to change the tuning positions by very much. There is a general tendency with most bagpipes that the reed will shut off easier as the tuning position of the drone gets higher. If the strength of any of the reeds is no longer acceptable, make adjustments as outlined in Section 3.

## **6. Tuning Position Revisited**

Install the drone back in the instrument and blow it up again. Tune the drones and play for a while until the chanter settles in. Tune the drones again and check the tuning position of all the drones. Hopefully, it won't have changed much, but if you needed to alter the strength of any of the reeds, you will probably have to do some fine-tuning to the tuning heights. If you need to make any adjustments, follow the adjustments outlines in Section 4.

## **7. The Iterative Set-Up Procedure**

As you can see from the above, any adjustment made to the tuning height of the drone, will also affect the strength and visa versa. If you need to make an adjustment to either the strength or tuning position, you will need to check the other as well. What will happen is that these adjustments will keep getting smaller; until you reach a point that the tuning positions and strengths will both be acceptable. At this point you have finished with the preliminary set-up of the reeds and should have a nice drone sound. You can stop at this point if

you are happy with the sound, or you can continue with the following procedures to try and refine the sound even further.

## **8. Refining the Sound**

This section deals with further refinement of the drone reed set-up process. It requires that you have a good understanding and ear for the sound you are looking for. Most players in the lower grades will get very acceptable results if they follow the process outlined above, and do not need to attempt the following adjustments unless they want to.

### **Balance**

The bass drone and two tenor drones should be balanced in volume to ensure that neither the bass sound nor the tenor sound dominates the overall drone sound. This balance is quite subjective and depends upon your personal preference. I like to have someone else play my instrument while I listen to the drones from different angles. I find you get a better appreciation for what the instrument sounds like to your listener than you do when you listen to it on your shoulder. You may also be somewhat limited to how much adjustment you can make depending on the instrument you play. The bore of the instrument dominates the volume of the drone, but adjustments to the reed can influence the volume also.

To increase the volume of a drone, you will need to make the drone reed stronger. To do this, move the bridle towards the fixed end of the tongue. To decrease the volume of a drone, move the bridle towards the vibrating end of the tongue. You may also have to adjust the tuning screws to compensate for changes in tuning height.

### **Tuning Heights**

The tuning height can also affect the sound of the drone. Although the guidelines given in the previous sections for tuning height typically will give you a good drone sound, some instruments tend to sound better when they are set up a little higher or lower than these "ideal" positions. What is really important to the sound is the internal shape of the bore. By changing the tuning height you change the shape of the bore by changing the length of the tuning chamber. Some pipes have very long tuning chamber and tend to perform and sound better, when they tune a little below the hemp line. Others have short chambers and tend to sound better when they tune higher. You will need to experiment with your instrument to see where it sounds best. Use the tuning screws to make the adjustments and your ears to find the best tuning spot for your instrument.

## **9. Troubleshooting Drone Reed Problems**

Following the set-up procedure outlined above should minimize any problems you may experience with synthetic drone reeds, but sometimes problems

happen. Below is some of the most common problems and how to troubleshoot them.

The first thing to determine when a reed isn't working properly is whether the problem is with the reed or the drone. If it is a tenor reed that isn't working, a quick check is to switch the two tenor reeds between drones. If the problem moves from one drone to the other, the problem is with the reed. If the problem stays with the drone, the problem is with the drone.

### **Double Toning**

Double toning occurs when the drone reed is not getting enough air pressure to keep it in its playing mode of vibration. Instead of staying in the stable playing region, any slight drop in air pressure causes the reed to drop into a very coarse sounding low-pressure mode. As the pressure fluctuates, the reed switches between vibration modes creating what piper's call a double tone.

There are a number of reasons why a drone reed may double tone. The most likely is that the reed is set-up too strong. To correct this, move the bridle towards the vibrating end of the reed to make the reed easier (see Section 3). You may need to get an easier set of tongues for the reed if the required bridle adjustment is extreme.

Another reason for reed double toning is air restriction into the stock. This can be caused by a build-up of seasoning in the bottom of the stock, or more commonly by a drone valve or enhancer that is too restrictive. Try removing the valve or enhancer and see if that solves the problem. If so, the valve/enhancer is too restrictive. Check the instructions that came with your valves and adjust them so they take less pressure to open. Problems with canister systems can also create restrictions. Check all hoses to make sure they are not collapsed, kinked, or leaking, and that the canister is not too close to the pipe bag restricting airflow into it.

Some bagpipe bore designs are prone to double toning if the drones are tuned too high on the tuning pins. Try lowering the tuning heights and see if that solves the problem (see Section 4).

### **Squealing**

Squealing is generally caused by a reed tongue that is too short. Lengthen the tongue and this should fix the problem. If not, then there is probably some grit or debris underneath the tongue preventing it from vibrating properly. You can try and clean under the tongue by inserting a dollar bill or business card under the tongue and then dragging it out the side while gently applying pressure to the top of the tongue. If this doesn't work, you will need to remove the tongue and clean both the tongue and bed of the reed thoroughly and then reassemble.

## **Strike – Ins**

Squealing drones during strike-in are typically a result of poor strike-in technique. Try striking the bag in different locations, or try striking the bag more gently. If this doesn't solve the problem, move the bridle away from the vibrating end of the tongue on the offending reed(s) to make the tongue longer.

## **Shutting Down**

Drones reeds that shut off are either set-up too easy or shutting down due to excess moisture. If the reeds are too easy, move the bridle away from the vibrating end of the tongue to make them stronger (see Section 3). If the reeds work fine when you first start playing, but shut down after playing for a while, then it is most likely a moisture problem. Moisture that condenses underneath the reed tongue acts like a glue that makes the reed tongue stick to the body of the reed shutting it off. If the reeds get wet and shut off, you can get them going again by inserting a dollar bill or business card underneath the tongues to absorb the moisture. You can also remove the nose cones and run a pipe cleaner up the bore of the reed and in the end of the nose cone to dry it out. You should also dry out the bores of the bagpipe with cotton brushes. This will buy you some playing time, but the reeds will shut off again when the moisture returns. A better solution is to install a moisture control system in your pipe bag to prevent the moisture from reaching the reeds in the first place. This can be as simple as a tube or stock spit trap, to an elaborate canister system that dries the air before it reaches the reeds. How much moisture control you need will depend on how long you want to be able to play your pipes in one session, and how wet of a blower you are. The longer you want to play, or the wetter the blower, the more moisture control you will need.