
Adjusting Wygent Drone Reeds

- A series of articles on Wygent Drone Reed Manipulation

By Mark Wygent © 1982-2002

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October, 1999 : Setting the Pitch

Getting SYNTHÉ-DRONE™ drone reeds to pitch where you want is largely a matter of physical adjustment(s), although the current design parameters do place certain constraints or limitations on pitch manipulation. For example: because most pipers today set up their instruments to play at about 472-474cps, our drone reeds out of the box are designed to play quickly in that range, with minimal adjustments, and in a wide variety of pipes.

If you want to pitch higher, you must make the reed shorter. If you want to pitch lower, you must make the reed longer. On our reeds, there are three adjustment points provided in order to accomplish this:

- 1) Vary the hemp at the reed's seat: either less for a higher pitch, or more for a lower one.
- 2) Reposition the screw: in for a sharper pitch, out for a lower one.
- 3) Alter the position of the bridle judiciously: just a hair's breadth toward the threaded end of the reed for a sharper pitch, or just a hair's breadth toward the hemped end of the reed for a lower pitch. The bridle adjustment is extremely sensitive, and allows only a narrow range of movement within which the reed will function flawlessly, and without which the reed will perform miserably. Bridle movements should be exceedingly small, uniform (i.e., positioned evenly about the circumference of the body of the reed and not cockeyed or canted in any way), and infrequent.

If the options above do not address your requirements, you are playing at an unconventional pitch, and/or your instrument is unconventional. The following may help...

- 1) Physically shortening the reed by cutting some portion of it away is not recommended, although the brass reed seat (or tube) could be shortened a bit with no deleterious effects. But removing a portion of the threaded end of the body of the reed will cause the reed to malfunction severely; or indeed, not to work at all.
- 2) Physically lengthening the reed is easily accomplished by the addition of a short length of thin-gauge brass tubing (of 1/4" I.D. for tenors, or 5/16" I.D. for the bass) to the hemped end of the reed. (Of course, you will have to remove the hemp first in order to attach it.) This provides an excellent way to lower the pitch of the reed without altering the original configuration, as the extension tube can

be fitted easily, and set-up to be either a permanent or a temporary modification, depending on your requirements. Inexpensive lengths of brass tubing can generally be found at most hobby or craft stores.

- 3) Have the reedmaker (that would be me) make you a custom set of reeds to suit your playing preferences.

All the best. Cheers! -Mark

November, 1999 : Preventing the Plummet

In the future, in order to prevent your drone reeds from taking a precipitous and undignified journey to the bowels of your bag, you may want to employ the following precautionary steps:

- 1) Make three short lengths of waxed yellow hemp; about 3-4 inches should suffice.
- 2) Attach the hemp to the reed seat (overlying the hemp that's already there) by means of one or two half-hitches.
- 3) Reposition the drone reeds in their respective seats at the bottom of each drone, allowing the excess "tails" of hemp to hang unceremoniously off to the side.
- 4) Now replace the drones in their stocks, being careful to position the tails so that they are wedged between the bottom of the drones and the wall of the stocks upon reinsertion.
- 5) Carefully trim away any excess, glaringly obtrusive hemp that reveals its inappropriate presence between the ferrule and the projecting mount.

Having accomplished this, the next time the reeds decide to take a sudden vacation southward, they will be prevented from travelling to the forbidding and dangerous land-of-no-light without your permission. Of course it goes without saying that we NEVER apply teflon tape to the seat of a reed. The simple fact that it is one of the most slippery substances that humankind has thus far devised to invent, should be reason enough to avoid its application in the foregoing instance.

December, 1999 : Double-Toning Drone Reeds

Our reeds were designed to double-tone, like any good cane reed. Lessening the severity of the double-tone can be accomplished through various means, either individually or in combination with each other.

STRIKE-IN

The most effective way to control double-toning is through accomplished and coordinated strike-in, which is a combination of sudden (not violent) and controlled pressure ON the bag from both hand and arm, and simultaneous pressure directed INTO

the bag through blowing. The exact amount of pressure and blowing will, of course, vary from bagpipe to bagpipe and player to player, and is dependent (among other factors) on the relative strength of the reeds, the make or design of the instrument, and the relative position of the tuning sections of the pipe. Practice makes perfect.

TUNING PIN PLACEMENT

As a general rule, the shorter the tuning pin (i.e., fewer threads showing), the more severe will be the double-tone, with the inverse, obviously, being generally true. Try lengthening the pin.

BRIDLE ADJUSTMENT/TONGUE ELEVATION

If the tongue is allowed to float too far from the bed of the reed, it will naturally be more resistant to the airflow, and double-toning will be more severe; and, if seriously out of whack, coarse. Try coaxing the bridle a HAIR'S WIDTH in the direction of the threaded end of the reed, your intent being to allow the bridle to exert slightly more pressure on the tongue, lowering it a wee bit closer to the bed of the reed, thus making it less resistant to the airflow, and easier to pass through the initial tone to the second and final tone. Bridle movements should be infrequent and exceedingly small.

WATER-LOGGED REEDS

Yes, it is possible, for synthetic and composite materials to be adversely affected by moisture over prolonged periods of time. Our reeds, if never allowed to air dry, can become recalcitrant, and may begin to misbehave. The symptoms are a noticeable lowering of pitch, and a more pronounced double-toning. Do what comes naturally, and allow your reeds to breathe free from the confines of your bag on a regular basis. Or rotate between two sets: while one is being played, the other is on your dresser drying out.

The following is a test that you can easily perform...

If you remove the drone from its stock, leave the reed in its seat, and blow the reed with your mouth with no howl or screech, the ONLY adjustment you need to make is with your strike-in technique. The reed is not at fault. You can easily test this assertion for yourself:

- 1) Try blowing the reed at almost no pressure (in the drone) and slowly increase the pressure. You are bound to reproduce the howl. This is caused by insufficient air pressure on start-up.
- 2) Try blowing the reed initially harder, but not overmuch, and the double-tone will emerge. (This is the right pressure to MAINTAIN while going from strike-in to under your playing arm.)
- 3) Try blowing harder still, and the double-tone will be non-existent (or nearly so.) This is the pressure that Pipeys the world round just love to hear, cause they know everyone's paws are going to be on the chanter before "E" is sounded.

All the best! -Mark

January, 2000 : Bass Drone Blues

If your bass drone is double-toning severely on strike-in, it:

1. Could be that the bridle is misadjusted. Try applying just the smallest amount of pressure to the middle of the bridle (tongue side) and away from the fixed locus of the tongue. Your intention here is an almost imperceptible shift so that the tongue lowers a bit closer the reed bed.
2. Could be that you need to add a wee bit more hemp to the seat, in a neat, concentric fashion, so that you fill up the bottom of the drone more completely.
3. Could be that the screw needs to be pulled out (more threads showing) a little farther. This will tend to lessen the severity of the double-tone, and make the reed more immediately responsive.
4. Could be that you are playing a water-logged reed. Rotate between two sets: while one is playing, the other is drying on your dresser overnight.
5. Could be that the top section of your bass drone is too far down. Push it up higher so that you have more hemp showing. The center section will then tune lower (less hemp showing) which is fine.
6. Could be that your striking-in technique needs to be perfected, as a badly double-toning bass drone reed is often the result of too little pressure on starting. Try putting your index and middle fingers of your right hand underneath the opening of the bass drone stock, occluding the hole by about 1/3 to 1/2 of its total volume, when striking-in. This can straighten out even the most recalcitrant cane bass drone reed, not to mention our most cooperative synthetic variety of same.
7. Could be that the tuning slides are hemped improperly or inadequately, allowing air to escape from around the pins. Make sure that all joints are wrapped in an extremely uniform, evenly distributed fashion. Tuning joints should allow easy, secure movement, and should never be so loose as to admit the possibility of a change merely by walking or marching.

It has been our experience that the most likely cause of the above is that the bridle is misadjusted. This would be followed very closely by poor technique on strike-in.

Good luck to you. -Mark

March, 2000 : Flattened or Relaxed Tongues

(Please note that the following procedure should never be applied to Glass Fibre Tongues.)

This topic is an important one, and it is vital to observe that should you decide to implement the following procedures in order to reinvigorate, and, yes, to repair a balky

drone reed that suffers from nearly terminal laxity, perform the outlined steps carefully and slowly, and your efforts will most likely meet with great success. Although the condition of a flattened or relaxed tongue is unusual, it is by no means unprecedented. Many factors may contribute, but the most common are:

- 1) That the reeds were stored (i.e., unplayed) for an extended period of time, without either moving the bridles up toward the hemped end of the reed to allow the tongues to spring upward, or without placing anything under the tongues (small strip of doubled paper, or small latex or dental band, for example); or
- 2) They were left in an extremely hot environment (i.e., the boot or backseat of a car on a hot summer's day); or
- 3) Simply the pressure from the bridle on the tongue over a long period of time. This can, although not always, cause the tongue(s) to relax. This effect is, of course, mitigated by playing the reeds regularly, since the pressure from the bridles is offset by the vibration of the tongues during practice or performance. This is why the reeds should be left as they were when they first arrived, until you are able to begin to "seed" them in, by regular alternation of vibration and rest. This is the break-in process, which is quite painless, really, and which will insure that the tongues will settle to a point of equilibrium and dependable condition. Since they are a mechanical device, the closer the tongues float to the body of the reed during playing, the greater the likelihood of a shutdown or stoppage.

If the reeds shut down quickly, even though they are brand new, and only recently acquired, with the rubber bands and/or paper strips still in place under the tongues, there can be two possibilities, both with the same solution. Either the chanter reed is too hard (maybe not), or the tongues are simply positioned too close to the bodies of the reeds (probably so). When the reeds are adjusted in a drone at the workbench, just prior to packaging, they are compelled to conform to a moderate to easy strength bagpipe. Our best guess as to the "Universal Strength." In either case, a small, nearly imperceptible shift of the bridle in the direction of the fixed locus of the tongue (its attachment point) will allow the tongues to spring upward slightly, and thus prevent them from shutting off. You have been forewarned: the movement of the bridle will be very subtle, many times virtually imperceptible (see above, as the redundant use of this word is intentional.)

If, on the other hand, the reeds were acquired a while ago, but the pack-strips and/or rubber bands were removed, though the reeds were never played, the tongues may have relaxed more than designed to do, as a direct result of not breaking the reeds in as suggested in the manual accompanying the set.

If you have the bridle of the bass drone set so that the overall free length of it is more than 18mm or so, it is misadjusted. If the tenor tongues are set to a greater length than approximately 13.5mm, they are misadjusted. They will probably also be tuning very flat, which means that you are tuning down quite far (i.e., close to the projecting mount on the bass, and below the hemp line on the tenor tuning pins). The tongue(s) may have relaxed a bit, in which case, let me offer the following, which addresses both the tenor reeds (first), and the bass reeds (second).

You may perform a very effective fix for this condition in a tenor reed by the application of the following remedy:

- 1) You will need a pocket scale (rule), or some similar flat, thin, stiff object.
- 2) Move the bridle up toward the hemped end of the reed, until you can see the original crease line in the tongue. (This will usually appear as a whitish mark running horizontally across the narrow surface of the reed.)
- 3) Then, having aligned the leading edge of the bridle exactly with that original crease line: pinch down on the bridle with the thumb and forefinger of one hand, place the pocket scale carefully underneath the tongue with the other, and lift upwards at an approximate angle of 30-35 degrees, supporting the tongue along its entire length as you do so.
- 4) Push the bridle back to playing position, (to the mark around the body of the reed; or alternatively so that the tongues are approximately 13mm in length) and do your fine-tuning from there.

This can also happen to the bass tongue, but is more unlikely owing to its longer length. If the bass reed malfunctions in such a manner, the same remedy can be applied, only lifting the tongue upward at a slightly more acute angle, approximately 35-40 degrees; and then repositioning the bridle. It is important, as well, that the bridles be positioned in a uniform, concentric fashion about the body of the reeds, and not pushed up in front and down in back, or vice versa, or cockeyed in any way. This can affect performance greatly.

One final note: the utilization of the above technique can be very effective, resulting in the flawless resumption of that lovely tone and excellent steadiness that most pipers have come to expect. However, all plastic does suffer from a condition known as "plasticizer migration." This is a slightly technical term that can be reduced to "All plastic eventually loses its elasticity." In extreme cases, the re-bending of the tongues may only be a short-term solution, with tongue or reed replacement as the only viable, long-term remedy.

How long can you expect that your reeds will play without trouble, provided that they have been treated properly? My own current set of reeds has been in continuous operation and performing without a hitch since September, 1996. We do see local sets of our reeds on a regular basis, that were manufactured in 1995, and are still in service today. Your mileage may vary, due to many circumstances beyond both our and your control. But it would not be unreasonable to assume that 2-3 years (and in countless instances, many more) of solid service can be expected. Tongue replacement is a quick-turnaround service that we provide at a nominal charge, when this becomes necessary.

Cheers! -Mark

April, 2000 : Sprung Tongues

This month's tip provides a counterpoint to last month's diatribe, although the condition of a "sprung" tongue is (hopefully) an equally infrequently-encountered condition. So that we may better operationalize our terms, sprung may be understood to mean a tongue whose angle, in relation to the bed or body of the reed, is too acute or severe, resulting

in all manner of trouble (e.g., severe double-tone, roaring, extremely flat pitch, consuming inordinate amounts of air, etc.)

This condition can most likely be traced to two causes:

- 1) The tongue just didn't relax as much as the others did after a suitable length of time spent breaking (playing) them in; or
- 2) 2) You inadvertently caught the tongue on the lip of the stock upon reinsertion, due to carelessness or haste, or because the pipe major was yelling at you to hurry up. (He can't begin without you, as two or three band members failed to show; so why on earth did you hasten to comply with his bellowing anyway?!)

The former explanation is more common than the latter, (not to say that roaring P/M's aren't fully as ubiquitous as roaring bass drone reeds) as even a variation of 1/1000 of an inch in tongue thickness can make a noticeable difference in its action and playability. But you should never be in such a rush as to render damage to the drone reed likely or inevitable. As there is probably not more than 10 seconds worth of difference between a careful reinsertion and a clumsy, hasty one, ALWAYS take your time.

You may have gotten lucky, and only bent the tongue up at its original crease, in which case the following fix will be applicable. If, however, you have managed to put a second bend in the tongue, there is nothing else for it but to return it for a replacement. Now on to the fix...

Push the bridle up toward the fixed locus of the tongue until it abuts the permanent or tied bridle. You will notice a whitish mark running across the width and surface of the tongue. This is the original crease line. (It will be a simple thing indeed, at this point, to ascertain whether there is a second crease line in the tongue. If there is, don't even bother to proceed, except to your local post office with the non-recoverable reed.) Now, using a large straightened safety pin, (which will be sacrificed in the cause of recovering the dulcet tones which used to emanate gloriously and predictably from your instrument) position the safety pin directly underneath this crease line and carefully bend the tongue down once across it, until you just touch the end of the tongue to the body of the reed. This will produce a less acute angle, and will make the tongue float closer to the bed of the reed. You may find that you will need to position the bridle at a different location, effectively making the free length of the tongue a wee bit longer overall. This will result in a slightly flatter pitch, which will require other compensatory activities, such as shortening the tuning pin (or screw), removing some hemp from the reed's seat, etc., if you wish to tune on the drone's slide in the same location as previously.

If this does not produce the desired effect, (i.e., the tongue is not floating closer to the body of the reed) you may repeat the foregoing procedure, but only once again, as a third or fourth attempt in all likelihood will culminate with last month's condition. The more you bend the tongue at this critical point, the less flexible it becomes, and therefore, less dependable. Use common sense and take your time. This can be a very effective way of accomplishing the objective of reducing the angle of the tongue.

Best of luck! -Mark

May, 2000 : The Paper Trick

During the course of the last several years, we have had the opportunity of seeing a few reeds sent in for repair. Not all reeds require the same attention or adjustment, of course, but one condition has been nearly universally present and (regrettably) ubiquitous: namely dirt.

It would not be possible to render exact figures with regard to how many reeds, once cleaned, have performed perfectly and as intended, but a rough percentage would have to fall within the range of 75-80%. We live in a dirty world, where some of the oldest extant microorganisms (fungi) are also the most numerous. The inside of a pipe bag, whether constructed of cured animal skin or the most modern synthetic material, provides a nearly perfect environment for the cultivation of molds and fungi. Anything existing within that dark world, such as your drone reeds and flapper valve, provide additional (and welcome) surface area for their wildly successful propagation.

Our drone reeds are constructed from materials that will not be degraded by these wee beasties, so their structural integrity will remain intact. However, our drone reeds are mechanical devices, which incorporate movement within their design and function; and because the tongues of our reeds float quite close to the body of the reed during operation, any foreign glop of indeterminate origin can and will cause them to malfunction.

There is, thankfully, a simple solution to the merciless onslaught of adverse (and inescapable) environmental hazards. It is called cleaning, which falls under the wider rubric of instrument maintenance. You are not a musician if your instrument is a mess, and it probably doesn't smell good, either. In this area of the world, it is a common assumption that our bodies require regular cleaning. We should assume no differently with reference to our musical instrument. The Great Highland Bagpipe is nearly a closed system, into which we blow on a regular basis our humid breath, our saliva, and dirt. It is no small wonder that in very short order, it will begin to cause us all manner of inconvenient malfunction, if we fail to do simple, and regular cleaning of its constituent parts, lending special attention to the internal components (i.e., anything which exists within the bag.) We shall offer some simple cleaning procedures which are applicable to drone reeds in this month's tip, followed in succeeding months with maintenance advice on other parts of the bagpipe.

No matter how "dry" or "wet" a blower you are, the inside of your bag is a damp, dark, dank and dirty place. The drone reeds will tend to collect this moisture and dirt on every exposed surface, which includes the entire reed (e.g., on top of and underneath the tongues; within and without the surface of the body of the reed or tube upon which the tongues and bridles have been affixed; etc.) If you are playing regularly 3-4 times or more a week, it is a good idea after each practice session to remove the drones carefully from their stocks, thence remove the reeds from the lower drone sections, and allow all the pieces to air-dry for an hour or two. This will help to prevent the build-up of mold.

But the accumulation of dirt or mold under the tongue requires active, rather than passive attention. Fortunately, there is a very effective and easily implemented procedure for cleaning the lower surface of the tongues and the adjacent surface of the reed body. Cut a strip of typing or copy paper ½" by 4", position it under a tongue, press down lightly pinching the paper to the reed body, and pull the strip through. Repeat this

two or three times, and then again for the two remaining reeds. Do not reuse this strip of paper, but rather cut a new one whenever your maintenance schedule allows for this cleaning. This simple palliative, applied once a week, and coupled with the suggestion in the foregoing paragraph, will almost guarantee your drone reeds nearly flawless performance.

If you notice that any part of the outside surface of the reeds is turning dark or discolored, or is obviously in need of attention, get a small, soft, lint-free cloth (a handkerchief, or an old sheet would be perfect, once trimmed down to a manageable size of approximately 4" X 4"), dampen it with warm water, and gently clean the surface of the reed. Always move your cloth in only one direction, namely from the fixed or attachment point of the tongue toward its open or free end, being especially careful that each stroke carries the cloth beyond the end of the reed. This is very important, as catching the end of the tongue with your cloth will ruin the reed, and necessitate a tongue replacement. (Of course, you could always move the bridle onto the tongue, until it is closed tightly against the bed of the reed. If you are facile at readjusting the bridles, this is the safest way to clean, as you will no longer be able to mangle the tongue. For most of us, however, it may be better to simply exercise caution whilst removing dreck.)

Happy housecleaning! -Mark

June, 2000 : Removable/Repositionable Drone Reed Seats

Inverted drone reeds have been a notable feature of the bagpiping world for many years. They have been utilized most often in an attempt to remedy balky bass drones with unusual or troublesome playing characteristics, such as extreme double-toning, or shutting-off. The dynamics of airflow are altered by the repositioning of the tongue in relation to that flow, often resulting in improved performance, from both an operational and intonational standpoint. But until recently, playing an inverted drone reed necessitated the use of a separate reed. Now, with the introduction of SYNTHEDRONE2™ and DUATONE™ drone reeds (U.S. Pat. No. 5,959,226 - New Zealand Patent No. 337411 Foreign Patents Pending), one reed can quickly be transformed into another, as inversion becomes as simple as removing and reinserting a screw.

There is some small risk associated with the procedure, and it will be prudent to observe the proceeding advice.

- 1) Always grasp the reed firmly, taking care that your hand does not slip whilst removing and reinserting the tuning pin and/or removable seat. The tongues are quite thin, and catching them with your hand or a finger can damage them. (Pushing the bridles in such a manner as to cause the tongues to lay flat against the bed of the reed, and then continuing with the removal and reinsertion, provides the safest approach, but will necessitate the repositioning and readjustment of the bridles.)
- 2) Never use excessive force when reinserting the reed seat into the reed body. They need only be snug, not overly tight.

- 3) Be sure to remove or reinsert the reed from the bottom drone section not by holding it at its furthest exposed length, but by grasping it up where the reed body meets the bottom of the drone. This will eliminate the possibility of breakage. The further from the point of attachment you hold the reed, the greater is the leverage which you apply to the reed's seat, and the more likely you are to damage it by forcing it from side to side during removal or reinsertion.

The reed seats are molded from a glass-reinforced polycarbonate, and are extremely strong, although not unbreakable. Should you (unhappily) find that you have snapped a reed seat, and an extremely discomfiting emotion begins to wend its ugly way into your temperament, do not panic. The reed can be rebuilt; and the really good news is that it can be rebuilt by you! The original package included a strange-looking square and hex-shaped piece of plastic, on the end of which was attached a spare reed seat (a conical-shaped piece with a threaded and a tapered end.) Your repair is a three-step process:

- 1) Locate the above-mentioned pieces. If they are still attached to each other, separate them. This may require a little effort.
- 2) Insert the hextool into the broken end of your drone reed, and turning counter-clockwise, remove the broken end of the reed seat, just like you would remove a conventional screw. (Hold the reed tightly, and not at the tongues, being careful not to allow your hand to slip whilst turning the hextool in the end of the reed.) Now insert the hextool into the bottom of the drone, and carefully wiggle, turn, and coax the other broken piece out.
- 3) Grab the spare, pristine reed seat, and screw it into the reed body. (You can use the hextool to tighten it up a bit, but DON'T OVERDO IT! Just snug, not tight, is fine.) Add hemp to finish, being careful to wrap enough of it on to make a good, uniform fit in the bottom of your drone.

Voila! A new reed, and a new reedmaker is born; self-important, omnipotent, and nearly incoherent with the joy of his newly-found skill.

Good luck. -Mark