Prof. Sound's Drum Tuning Bible

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Motivation behind the Drum Tuning Bible

The musical ability of someone playing drums is not synonymous with an ability to technically understand it. You don't have to play at all to know how to tune a drum. Because you are musically proficient, does not mean you can or know how to explain how to make a drum sound the way you want it. I felt I could explain it in a way, which was understandable, and with the detail missing from other articles and the typical responses on the subject. I don't know everything, but having been in the market for a new set and experiencing misinformation at all levels, I felt I could help transmit accurate knowledge on the art and science of the technical side of the drum, head selection and tuning issues. The DT Bible is my attempt to make it readily available, all in one place to everyone for the price it should be, FREE!

Forward

Admittedly, the guide that follows is geared more toward the player who is professional or inspires to be professional and wants to know how to achieve control over the drum and drum set sound generated. I feel

whether you're a beginner or have played 20 years or more, you'll gain something from it. This is not the type of guide, which states, "Put 2 turns on one side and then a few more on the other side". This goes into great detail in an attempt to teach those who really want to understand what their entire drum set can do and may have been lost for years wondering why or how certain things work. It requires time, patience, thinking and work.

If you're looking for a shortcut to great sound, you just may find it in the knowledge you gain from this article, once you apply it. Finally, if you read the entire "bible", it should also aid you in choosing a drum set to fulfill your dreams.

These are some of the issues covered within various sections of the bible:

- Difference between heads, when to use what.
- How to make drums resonant, fat, punchy, open, less/more ring.
- How microphones affect the choice of heads.
- The fundamental note of a drum versus pitch and timbre.
- The difference material and construction make in the tuning and overall drum sound.
- Example head setups and results.
- Snare buzz or sympathetic vibration issues.
- Snare replacement, tension and choice issues.
- How to get more articulation, volume, crack, sensitivity and warmth from a snare drum.
- Example of tuning sequences and tuning to notes.
- Kick drum muffling and choice of heads.
- Hoops or Rims.
- Bearing Edges.

Truths of Drums

1. The interval between drums is more important than many realize and size is the key to get even resonance and the incremental notes between drums. Diameter has a greater impact on tuning that does depth. See "Shell Depth versus Diameter"

2. The tiniest of movements on the tuning lug "can" make huge differences and raise pitch drastically, more so with a rigid hoop, such as cast. Moreover, tweaks of the lugs on the resonant side are more prone to raising pitch than are ones on the batter side.

3. A sound or tuning, which works for a small venue will not work as well for a large venue. You have to consider what component of your sound will carry through to the audience. For example head selection for microphones will likely be different than without. A highly resonant kit may be your sound tech's worst nightmare. While the drummer can be inspired by this tone, a large venue or recording may result in a very muddy sound due to the overtones and lingering decay of the drum mixed with all the other instruments or acoustics. In large venues under close miking techniques, it’s typical for drummers to use 2-ply heads because the sound is more muffled or controlled. You get a shorter burst of energy, which by virtue of the hall or venue, reverberates or becomes delayed to the audience. Much the same as large venues require a more selective or simplistic placement of notes and fills because the audience does not hear the detail.

4. Get to know the utilization of microphones well if you're going to use them, even slight alterations in placement make a huge difference. For example, placing a mic near the outside edge of a drum can bring out the high-pitched overtones. But move it in just a ½" and those diminish dramatically.

5. All drums sound different at 0, 15, 50, 150 foot or differing distances. So what sounds good to the drummer while playing may be terrible to the audience, in whatever forms the audience takes. Its important to go out and listen to what your kit sounds like while the other instruments are playing. Move around and make head selections and tunings accordingly. A higher pitch enables the drum to carry more, lower pitches less so.

6. The sound heard from a CD at home is not what a drum really sounds like but on few occasions. What you hear is usually an altered version recorded according to what the producer and the artist wants it to sound like through alterations and to fit the recording at hand. Sometimes you just cannot duplicate your drum gods sound without the electronics.

7. This tuning method works for ALL DRUMS.

8. Less expensive does not mean inferior, in some cases, it may be far superior to achieve the desired end-result. For example a birch shell or beech shell with flanged hoops, while less expensive than a maple shell with cast hoops, may provide the feel and penetrating sound you need on a snare drum.

9. The air hole or vent in the shell is to allow the shell to breath when two heads are used and atmospheric changes occur, thereby helping to eliminate moisture build-up. This is a typical problem moving from cold to hot environments much the same as glass windows can sweat in your house. The vents have little effect on tone.

10. Yes, you should stretch heads (within reason) on all drums; it's called "seating" and is the most important and often most overlooked step in getting quality sound and consistency out of a drum.

Fundamentals of Tuning

1. The batter head controls attack and ring while the resonant head produces "resonance" and aids in sustain, it has a major effect in the overtones and enhances the timbre of the drum. While the drummer focuses on the sound coming from the batter side, an audience hears something completely different and many times, something inferior to what the drummer hears. If using microphones, this problem is lessened to some extent because the microphone is usually placed on the top. But without mic's, the audience hears a reflection of what the resonant head produces, more so if you are sitting above the audience, such as on stage.

2. When the drum is hit, the ear hears mostly the attack and the fundamental pitch of the drum, overtones are washed out at a distance. Overtones are also an essential component to making the drum sound carry through other instruments and to the audience. The drummer should focus on the sound they create, as the audience would hear it rather than how they hear it in an otherwise quiet and stale environment. High-pitched overtones are essential to making a dull drum come to life in the audience.

3. A drum placed upon a soft surface, such as carpet, and tapped very lightly allows you to hear the point of clarity in a drum and isolate the overtones and point of resonance.

4. The most inherent sound created from any given head will be heard by placing a head of identical specifications on the resonance side. This is due to the ability for polymers of equal thickness (specification) to vibrate reasonably equal to each other, thus eliminating phase cancellations, which can cause a tight head to sound dead or lifeless.

5. As you tune the drum with one side either higher or lower, you go through "zones" producing one of either clear pitch, phase cancellation, no sound or a Doppler effect. "Doppler" is where the drum when hit, descends in pitch from the point of initial attack to a lower pitch. This also becomes more pronounced when the head is of a different specification (weight/thickness) and the batter head is higher/lower in pitch than the bottom head.

6. If the drum is tuned wrong or "seated" incorrectly the first time a head is mounted, you will likely ruin the head beyond its use or it will never sound its best. Seating wrong does not always mean uneven tuning, such as one side tighter than the other. It can also mean the utilization of bent or distorted hoops and/or poor bearing edges. Even though the drum has been equally tensioned (such as that of using tension devises, which measure lug torque or head tension), inferior hardware and shells problems cause unequal stretch of the head polymer and/or force the head out of round.

7. Generally, you do not use anything other than single ply on the resonant side, but there are exceptions.

8. Coated heads are considered "warm" or "mellow" sounding meaning generally void of the real bright overtone associated with the "clear" version of equal brand and specification. Clear heads are considered "bright" or "clear" sounding meaning they bring out as much of the high-pitched tones of the stick attack and resonance of the drum. In between these two coated and clear heads in tone quality is the "ebony" series of heads and is often described as being a "thicker" or "darker" sound than that of a clear head of equal specification. Ebony colored heads, while usually chosen due to aesthetics, has the virtue of being both warm in the overtone area, yet bright in the stick attack. Coated is probably required if doing brushwork.

9. Even if you know how to tune, you may not be able to achieve the pitch and/or resonance desired due to drum sizing and shell weight. Any given shell has a fundamental pitch and timbre associated with it and you cannot change that without major alterations. Head selection can only make the most of the natural character in the drum. Your job when tuning, is to find that "fundamental" shell pitch and enhance or detract all the inherent sounds of that particular drum, it's character.

10. Timbre and note/pitch are not the same. Timbre refers to the overall character of the drum vs. the fundamental note, which is the point at which the drum is likely to be most "open" or "resonant" in tone quality. Know that pitch can be raised or lowered in reference to say a note on the piano, but the shell resonance doesn't really change. So a 12" drum of a given material and depth may produce a note of G up to say a D-sharp ("pitch"), but it may really stand out around an A-flat ("fundamental" note of shell). The fact that one drum is "brighter" vs. "warm" is the Timbre.

11. Most Important step in tuning is seating the head. When the head is first mounted, the objective is to get the head to seat itself in the hoop and form that all-important bond between the bearing edge of the drum and the head itself; this is called seating the head (explained in great detail below). If the head is pulled tighter on side or is forced out of round, it is no longer centered and will not vibrate correctly, meaning evenly in tune at all points around the shell ("in-tune with itself").

12. Bearing edges are hidden from view, little understood by most drummers and are, without a doubt, the single most important aspect of the ability (or lack thereof) for the drum to produce a clear, resonant tone. Even cheaper drums can produce acceptable tone, provided the bearing edge is true, flat and properly formed. The most expensive, high-tech set available will produce poor tone is a bearing edge has been damaged or poorly tooled.

Construction Guidelines, All Drums

To pick the right head to achieve desired sound, you should consider the inherent character of your drum. All of what I consider the important aspects of construction is covered in greater detail as you read through the bible. Here are some simple rules to know:

1. The rougher the interior, the less resonant the drum. Just like putting carpet on a wall, rough interiors break-up and absorb reflections.

2. Thinner shells are more resonant. Because there is less mass, they are easier to excite, much the same as bending thin wood is easier than thick lumber.

3. Sharp bearing edges means more overtone and resonance.

4. If the drum is void of obstructions inside, that is, no reinforcing hoop adhered to the inside; the drum will be more open and vibrate more freely. Conversely, if the drum has reinforcing hoops inside, it will have a shorter decay/sustain and a more mid-ranged presence or attack than unobstructed shells. The reinforcing or counter-hoop stifles the ability for the drum to resonate, thus decreasing the low-end along with the very high-end response to a small degree. Therefore, the unobstructed shell is usually brighter or with more high frequencies, while the thin unobstructed shell increases low-end resonance as well.

5. A "better" sound is what you want the drum to sound like and despite the marketing propaganda; less expensive does not mean an inferior sound. Low cost drums are usually a "punchy" type sound due to wood grades used. If recording, this may be exactly what you want in a drum.

6. Mainstream Material, Wood Sound Explained: First, these are general guidelines, which are greatly enhanced by the thickness of the wood used. So if you apply the rules given above, and some common sense, the following will hold true or aid in choosing a drum. Maple compared to African Mahogany: Mahogany will have an approximate 20% increase in low frequency resonance over the Maple drum, mid and high frequencies will be the same from a reproduction point of view. Maple compared to Birch: Birch will have about a 10% loss in reproduction of low end compared to Maple and about a 20% increase in the high end, with the mid range remaining about the same. So the Birch kit will definitely be a "harder" and "brighter" sounding kit. Beech is in between Maple and Birch. All other Maple colored woods used in laminated shells are basically there for either structural integrity or looks and do not have the desired qualities (meaning density and grain structure) of the above. Mahogany has earned an undeserved bad reputation due to the use of inferior grades such as Luann on low cost drums for appearance reasons.

Bearing Edges

For many reasons, this is a very misunderstood area of the drum. The bearing edge is the part of the drum that the head should be in contact with at all times and is the essential element to gaining resonance, or the lack thereof. The problem is, they are hidden from view most of the time.

If you are using a "vintage" set of drums, or any set of drums for that matter, first take into account the era or how they were manufactured and realize that the set was designed to produce a sound that reflects the designer or that, which may have been popular with the times.

Anyone can very quickly determine whether his or her set will be able to be tuned to a point where it can be very resonant, excluding the abilities of the tuner and head used. If upon further investigation you determine that your set has been constructed so that a built-in problem or construction technique exists, rethink your desire to put new heads on your drums in hopes it will sound like something in your head because it simply may not be able to be achieved by changing heads, in other cases certainly changing heads may work.

By simply removing the drumhead on any given drum, the answer will be visually right there, staring you in the face. Many older sets were manufactured with a bearing edge that has anywhere between a 35 to 60 degree chamfer cut on the interior side of the shell. On the outer side of the shell, in many cases the bearing edge is rounded over on the outside and crown area as opposed to that of the newer manufacturing techniques. Now add a bent or deformed hoop to this and I don't care what head you pick, it will always have a "thud" element to the sound. The closer you move to flatter bearing edge or a bearing edge of 35 degrees on the outside or inside, or rounded as the case may be, the drum will exhibit more of the "thud/cardboard" sound. With newer drums, which usually are a 45 with a very small radius of less than 1/16 of an inch (some kicks very as do snares), resonance is easy to achieve and the head selections I have given will hold true. It is the designers tool to get the drum to produce it's signature sound.

The key is not the shape of the cut as much as it is what interacts with the head under tension. It's that fine line of an area right after the head breaks towards the inside of the shell and what remains in contact or can contact the head underneath and interfere with the tone around the circumference.

If you take your finger and lay it lightly on the surface it has an impact on muffling the sound. If the bearing edge has a contact patch of say .03125" or 1/32nd of an inch, the contact area on a 12" drum head is 1.17 square inches, or the same thing as taking the tip of your first index finger to the first joint and laying it on the drumhead. Now if you double that to what seems to be an insignificant 1/16" (twice my 1/32nd example) can imagine how little a change in the contact of the bearing edge surface has on the impact of the sound. In our example, it would be like laying two fingers on the drum. These kinds of differences can make big changes in the tone of the head. So again, its not so much the angle or being double cut (although this can determine where the bearing edge falls on the head), its what contacts the surface at tension and the treatment of the crown of the edge. A 35-degree cut

allows greater contact thus a drier sound vs. a 45, which can be a more resonant sound. Many snares purposefully use a 35-degree cut. Sharper or steep is not always better; it depends upon what you want.

Then you have the limitations of what the wood and how it will tool to consider, which ply it falls on, etc. I leave any tooling of a bearing edge up to a professional because it's easy to get flat spots or inconsistent angles without proper tools or fixtures.

So my advice is that before you spend, spend, spend on new heads, take 10 minutes and really observe what you have in the bearing edge department. It will not be enough to see 2-45's degree angles on the drum. They must be even, very even. The drum must be round, very round. They must be consistent in that the profile is the same all around. For example, a round over of 1/16 in one area and a round over of 1/8th in another is a sure sign of trouble. If one of the chamfer cuts looks wavy, the round over will not be consistent nor will it be truly round. The drum must also sit flat on a hard surface. Lay black paper on a flat hard surface and shine a light from the inside to check. If everything is consistent, this is the mark of a good candidate to get tone from the shell. If not, before you spend money on heads, consider spending the $30 to $60 per drum to have the edges re-cut. It's money well worth it..

Shell Depth versus Diameter

Note this Correction: The recent version of the Drum Tuning Bible that appeared here prior to January 23rd, 2000, under this section, inadvertently stated the value for square inch of shell area as a value equal to cubic inches. I apologize for the error and this section is now correct. (Prof.Sound)

The shell depth while having an impact on the warmth or resonance of the drum has a greater impact on volume and articulation. The diameter has a far greater impact on creating lower pitch. Greater depth increases volume or power by having an impact on resonance of the fundamental note of the shell. A shallower shell creates a shorter burst of tone and makes a drum more articulate by virtue of the fact that the quantity of surface area of the parent material (i.e. the shell) is lessened and therefore cannot resonate as much as large surface area. Less distance between heads means the opposite head (i.e. Resonant head) reacts quicker, or gets excited faster when striking the batter head, it responds better to softer playing. For instance, a 22" diameter kick drum of 16" in depth has a shell area of approximately 1,106 square inches. A 22" diameter kick drum of 18" in depth has a shell area of approximately 1,244 square inches, or a 12.5% increase in area to resonate. Take that same thought to a 10" tom with a 9" depth. This results in a shell area of approximately 282 square inches versus one with an 11" depth, which results in a shell area of 346 sq. in. That 2" increase in depth is now a 22% gain. The deeper the shell, the more likely they are to produce a deeper or warmer sound because of resonance ability, but this should not be confused with a low tuning.

As for diameter, you have to think about your approach to tuning and overall sound desired. This further explained in the sections "Musical Notes for Tuning, Suggested" and "Interval and Drum Sizing".

Hoops/Rims

1. Die Cast Hoops: Thicker and stronger then triple flanged stamped hoops with an ability to allow more even tuning of the head and as a result, the head is usually more responsive throughout the tuning range with less varied overtones. As such, may create a slightly drier sound on thin shell, small sized drums due the weight of the rim causing the drum to vibrate less freely. They can also be made out of differing materials such as nickel or aluminum and all aid in changing the sound of the drum.

2. Triple Flanged or "stamped" hoops come in a variety of metals, which affect the tone of the drum. The thinner they are the more difficult they'll be to tune with. Many drummers prefer these on toms because of the ability to tune "fatter" or "warmer" than with cast. Aluminum makes for a higher pitched tone than does steel and as a result is used on snares quite a bit for a great "crack". Brass makes the drum more musical and aids in the presence or high-pitched overtones.

3. Wood Hoops have the virtue of being either rigid or flexible, depending upon the manufacturer's thickness of the hoop. As a result, they can take on the tuning characteristics of a cast hoop if rigid or flanged hoops if thin in construction. However, the rim shot sound is considerably different and acts like an extension of the shell so the drum is usually both more resonant and brighter.

4. Less lugs means fatter tuning and more complex overtones. The longer the interval between lugs the less likely you are to get the head tuned evenly between lugs.

5. A hoop of "rigid" nature results in a head, which can be tuned more evenly between lugs and will accentuate the imperfection in your drum if out of round or bad bearing edges. Sometimes, this causes a drier or more muffled sound as a result of inferior bearing edges.

Drum Gauges/Dials as opposed to keys

These are essentially tension or torque measuring devices that do have their place in the scheme of things. But the best gauge on the market comes packaged on each side of your head, which are your ears (god forbid your missing one).

Some of the best drums on the market are being intentionally manufactured with lugs that cause resistance. The resistance induced by the lug itself can fool a gauge that measures torque. Further, devices that measure tension can and are fooled by thicker versus thinner heads. Especially when you consider the film used is not always exact in thickness from edge to edge, due to manufacturing issues. And, finally, if you've spent much time tuning by ear, you know that it's not uncommon to have a few lugs feel loose compared to others, it's the pitch at each lug, NOT THE TENSION OR TORQUE that counts. So where do the gauges fit in?

Gauges can cut several minutes to hours off of tuning time, and here's how. The seating of the head cannot be effectively accomplished by the use of a gauge; it must be done manually, and then detuned. At this point you should find the tuning of the desired drum without a gauge and use you ears. Place the gauge on the drum and record the settings created at tension and pitch. When replacing heads, you can seat by had, detune, place the gauge of your choice on the drum and very quickly get the drum reasonably in tune. Tweak by hand and even the head out to itself so that pitch is the same lug to lug.

Know that anytime you change brand of head, drum, thickness of head, or the manufacturer changes it's manufacturing technique, you should start over by hand and record the settings. And remember, the bigger the venue, play less and tune higher, so you might have several gauge settings.

When to Replace Drumheads

There are several indicators that determine when a drumhead should be replaced. Now keep in mind, I'm talking a "purist" and "practical" point of view here. Outside of the obvious, when there's a hole in the head, most heads will always produce a sound. The question is, what sound? So in some cases, you'll have to be the judge of when, enough-is-enough. But here are some simple guidelines:

1. When the coating begins to wear off. If you have used the head to the point the coating wears, it's very likely that you are tuning to a very high-pitch, are a very heavy hitter or the head has just been on the drum a long time. As a result, point 2 (below) now comes into play.

2. When the head is removed from the drum, it exhibits a dished-out or dented appearance. This is the indicator that the head has been stretched beyond its limits, tuned to the point where not much elasticity is left, or it's just been abused. Without a doubt, it's time to replace that head.

3. When attempting a low-pitched tuning (assuming you have properly seated the heads as described in the section "Learning How, Resonant Side Tuning – The Beginning") the drum will not give the desired pitch due to a distorted sound or buzz. This is an indicator that the head has begun to stretch and as such, is no longer capable

of remaining in constant contact with the shell. On 2-ply heads, this can occur sooner due to the upper ply stretching at a different rate than the bottom ply. The head may not be completely spent, but you may have to use a higher tuning from this point forward or as an alternative, you might try reseating the head while using the hair dryer as explained in the procedures.

4. When you have changed venues such as now playing either a smaller, larger, less or more reverberant venue. A sound or tuning, which works for a small venue will not work as well for a large venue. You have to consider what component of your sound will carry through to the audience. For example head selection for microphones will likely be different than without. A highly resonant kit may be your sound tech's worst nightmare. While the drummer can be inspired by this tone, a large venue or recording may result in a very muddy sound due to the overtones and lingering decay of the drum mixed with all the other instruments or acoustics. In large venues under close miking techniques, its typical for drummers to use 2-ply heads because the sound is more muffled or controlled. You get a shorter burst of energy, which by virtue of the hall or venue, reverberates or becomes delayed to the audience. Much the same as large venues require a more selective or simplistic placement of notes and fills because the audience does not hear the detail.

5. When you just want to experiment.

Tuning and Seating the Heads, All Drums

This tuning procedure works on all drums, toms, snare and kick. Below, after this Tuning and Seating the Heads section, are specifics related to each drum. That is, a section for toms, kick and snare that gives specifics about the tuning tricks and head selection.

To get to know how this procedure works, I recommend you typically start with a 12" drum. Do not get learning how to tune confused with the tuning of the set. When tuning a whole set, you may want to begin differently and that is covered below under "Tuning Sequences, Suggested", but first you need to understand how to get the most out of your drum. That is the focus.

Learning How, Resonant Side Tuning - The beginning

Assuming you have inspected your bearing edges as described under of all things the section entitled "Bearing Edges", you can begin as follows:

1. Pick the heads you wish to use from the section related to Toms, Kick or Snare Drum.

2. Read that section completely, then return to this section and apply any specifics you wish from the respective Tom, Kick or Snare Drum section.

3. Remove both old heads completely, it's important for this procedure to work. Once you know the relative tuning capability of the drum, you will not always have to remove both reads. Remember, the objective is to find the true capability and tuning range of each drum.

4. With heads off, thump on the shell with your hand or butt end of a stick and trace down any abnormal vibrations. If the lugs buzz, you can remove them and see if stuffing cotton (backed by some felt if the spring or lug threads are exposed) into the lug retainer will help stop the buzz. You can also look at putting some thin sheet rubber or felt and placing it between the lug casing and the shell.

5. Set the drum on a carpeted surface, batter side down and either put the bottom head on or proceed as follows.

6. It's important to tighten all rods just to the point where contact is made with the washer or rim. If your lugs move freely, you can use your fingers here or in the case where the lug is manufactured where there is resistance

in the turning of the lug beyond a few turns, you'll have to use a key. In any event, once contact is made with the washer/rim, back-off 1/4 turns.

7. Next, take two keys 180 degrees apart and tighten in half turn increments together until you've put 3 complete turns on all rods of the drum. We are now "Seating" the head, the musical note is not important.

8. Lift the drum up a few inches and hit the head once and see if it is a distortion free sound. If not give each lug another 1/2 turn and repeat until the drum is distortion free. Do not be afraid to really tighten the head above a normal playing pitch, it is essential that the head produce a clear undistorted tone before proceeding.

9. Next, with the drum back down on the carpet, tap with the drum key, lightly, about 1 to 1-1/2" from the edge, in the same place at each lug. LISTEN to the resonance of the tap and even out the lugs so the head will be "in tune with itself", the order is not very important here. DO NOT EVER TUNE DOWN TO A NOTE, TUNE UP. By this I mean, if a lug is too high detune below what you are trying to achieve and then bring it back up to pitch.

10. If your heads are not made by REMO, go to the next step. If you are using glued heads such as the REMO heads, remember the current pitch the head is currently at. Now push down with light force directly in the center of the head to crack the glue joint. You aren't trying to push the head through the drum, so ease up. We're talking about maybe a ¼" depression here. Then tune back up to that pitch you so willingly remembered and even out the head so it's in tune with itself again.

11. Next, either let the drum sit 12 hours or take a hair dryer and warm (not real hot) the perimeter of the skin. Go around 2 to 3 revolutions with the dryer on high with the dryer about 2-3" off the surface. It should take maybe 8 seconds to go around a 12" drum one time with an average hair dryer. This sets the skin/hoop/collar and finishes the "seating" process. Note this makes a difference, especially on 2-ply or thicker heads, try one with and one without and I think you will agree.

12. Once set and cool, with the drum still on the floor, loosen as you tightened with 2 keys in ¼ turn increments just to the point of no resonance.

13. Place the drum up in/on its stand or hold by the rim. Begin tightening evenly and successively on each lug in 1/4 turn increments. Go around once, even out by tapping and then strike once in the center. Don't be afraid to use 1/8 or 1/16 turns either. We're looking for the point where you tune just until you get a low and clear tone. STOP AT THIS POINT. For the head you selected, this is the lowest pitch this drum will ever go. If you haven't got a clear tone, go back to step 5 and tighten it up higher and reseat the head. If you've gone around several times and the head is moving up in pitch but the tone is distorted, something is wrong. Either it's a bad head, bearing edges or the head didn't seat. I'd leave the head under tension for 24 hours and try again. I have found that the problem goes away many times overnight, I don't know why. If you can't wait, try another head or try taking the pitch way up and use the heat again before you tune it back down. In any event, if you achieved to lowest clear note, STOP! I suggest you not tune any higher than this lowest note at this time.

Batter Side Tuning

Assuming you have inspected your bearing edges as described under of all things the section entitled "Bearing Edges", you can begin as follows:

1. Pick the heads you wish to use from the section for the Toms, Kick or Snare Drum.

2. Read that section completely, then return to this section and apply any specifics you wish from the respective Tom, Kick or Snare Drum section. Remove the drum from its stand and set it (now the resonant head) down against a carpet to void the drum of the newly installed resonant head from what else, resonating.

3. Seat the Head: Install the top head in the same fashion as you did the resonant head and seat the head. Remember to push on glued heads.

4. Detuning procedure: Loosen as you tightened with 2 keys just to the point of no resonance.

5. Set the drum on a carpeted surface, batter side down and either put the bottom head on or proceed as follows.

6. Hold the drum by the rim and hit it, ideally, it should sound the same once back on the holder. If it doesn't, try extending the position of the tom out a little more on the holder. If this doesn't help, you might be a good candidate for something like the aftermarket R.I.M.M.'s mounting system if it sounded better by holding in your hand.

Time to Zone

It's time to proceed up through the tuning zones to get the most out of the drum. Focusing on the batter or top head, proceed and tune, never go in larger increments than 1/4 turn on the way up, 1/8 turn per lug preferred. Always stop and hit between a full round of lug tightening and make sure the heads in tune with itself. You will go through phases where the drum sounds good then sounds bad for a couple of turns and then suddenly the sound opens up again. You can usually do this for 2 zones and then the top head will go dead and have a high overtone/ring. While pitch may continue to change, the drum continues to have no real life to it. At this point you've gone too far with the top head, back off 1/4 to 1/2 turn (again make sure you tune up to the pitch not down).

1. If you want a pitch higher than this "high" pitch you achieved, go to the bottom head and tighten each lug 1/8 to 1/4 turn each lug. After this you can increase the pitch of the top head again for another 1-2 steps. When tuning in this manner, you'll experience the "Doppler" effect at certain phases in the tuning meaning the drum when struck will have a descending pitch. This tells the drummer/tuner that the effective pitch for that drum has yet to be achieved, but some like this sound and stop here. As you move up out of that phase of the zone, you'll reach a point where the drum evens out, the Doppler is gone and the drum becomes open and even in sound. This is the point where both heads are or are close to being identical in pitch.

2. Beyond this point, the drum will go dead again and you have to repeat with the 1/16, 1/8 or 1/4 turns on the bottom or resonant head to effectively raise the pitch of the drum and move up again to another zone and repeat the procedure.

Results – What They Mean

1. Somewhere in the tuning there is a point where each drum will sound most resonant – when everything is related. At this point, that's the fundamental frequency of the shell, the sweet spot. Each drum will have one of these. If two different sized drums are close in this fundamental pitch, you'll likely better understand the importance of the increment sizing from one drum to another. You'll likely have to compromise and change the tuning of both drums +/- in pitch as a result to make them the same in character.

2. Learn to tune to intentionally make the most resonant drum less resonant thereby eliminating muffling devices such as "moon gel". That is, detune or raise pitch slightly on both heads. For example you might lower the batter and raise the resonant (or visa versus) by equal amounts causing a phase shift and the drum may go either deader or more open depending upon where you are in the zone. People often refer to this procedure as "loosen one lug". Although I find it is better to move all the lugs by a certain amount. This way you don't run the risk of destroying the head.

3. Taking the resonant head and tuning to the lowest note, and then detuning a slight amount (1/16 to 1/8 of a turn) creates a "fat, loose or dark" drum sound. The batter head is then used to alter the pitch. Note that the pitch for a "fat" tuning can be somewhat limited.

4. For more "punch or attack", the resonant head is raised in pitch by a small degree (1-3 notes) over the pitch the batter head is at.

5. To create an "open, resonant" sound, both heads should be of equal pitch. Use of a clear head will result in a more "open" tone.

Toms, Drumheads - Batter side

I have, for simplicity, categorized the drumheads into 5 different categories. Certainly within each category there are differences in the timbre of the head used. Most are subtle to very subtle tonal differences within each category, and usually can be used interchangeably. For example, a REMO Ambassador coated will sound very similar to an Evan's G1 or Aquarian Satin Texture coated. However, there are differences in the wear factor of the coatings. It is widely accepted that the coating on the Aquarian heads does last longer than those of the others, but keep an open mind because manufacturers are improving their lines all the time.

Coated heads are considered "warm" or "mellow" sounding meaning generally void of the real bright overtone associated with the "clear" version of equal brand and specification. Clear heads are considered "bright" or "clear" sounding meaning they bring out as much of the high-pitched tones of the stick attack and resonance of the drum. In between these two coated and clear heads in tone quality is the "ebony" series of heads and is often described as being a "thicker" or "darker" sound than that of a clear head of equal specification. Ebony colored heads, while usually chosen due to aesthetics, has the virtue of being both warm in the overtone area, yet bright in the stick attack. Coated is probably required if doing brushwork. Hazy heads are generally both "bright" and have a stronger "midrange presence" to the sound. In all cases thicker heads will be mellower and more sensitive than that of the exact same thinner counterpart. For example, a REMO Diplomat Clear will be brighter and more sensitive than a REMO Ambassador Clear, the Ambassador being thicker than the Diplomat and both being single ply.

Category 1. Single ply, unmuffled medium weight such as REMO Ambassador, Renaissance and FiberSkyn FA, Aquarian Satin Texture Coated, Classic Clear and the Evans G1 series, to name a few.

Category 2. Single ply muffled or Heavy Weight such as the REMO Emperor, PowerStroke, FiberSkyn F1 and the Aquarian Studio-X series. The sound here goes more mellow compared to single ply with overtones becoming less prevalent on the initial attack and less or minimal sustain.

Category 3. This category is sort of a mixed bag, which I was tempted to separate. But everyone has his or her idea of what "muffled" means, and these are all muffled to some degree. Two-ply muffled or wear resistant heads like REMO Pinstripe, Aquarian Response or Performance II or Double Thins and the classic Evans G2, or anything with a "Power dot" on it, these produce a very short initial attack coupled with a very short sustain. Characteristics can be quite different in this category due to the application of control rings or the lack thereof around the outer circumference. For example a REMO "CS" or Control Sound head can have a thick sounding attack and be wear resistant, but still contain high-pitched overtones due to the applied dot but no other control rings. Whereas an Aquarian Signature series Carmine Appice Tom Tom and Bass Drumheads feature an extremely thin Power Dot on top and a Studio-X muffling ring underneath, which have both a thick sound and stifle high-pitched overtones. Both are suitable for heavy hitters who need wear resistance but the resulting sound is quite different. Another example would be the Aquarian line. In order of most resonant to least would be the Double Thins, Response 2 followed by the Performance II's, all are muffled, all can be had with a wear dot. The difference in weight alters the muffling characteristics.

Category 4. Heavily muffled with an oil barrier such as the Evans hydraulic. These heads are the most inherently "boxy" or "dull" of any. Almost void of much inherent sustain on their own. However, with higher tuning, can exhibit some form of sustain and resonance, depending upon the type of bearing edge you may have on the drum?

Category 5. Single ply, unmuffled and thin in weight. The REMO Diplomat pretty much locks up this category for tom batter heads. These are usually only suitable for a light touch or Jazz type situation where feel and sensitivity are of the utmost importance.

See the section "Toms, Some selections and characteristic sounds".

Toms, Drumheads - Resonant side

Note, you can obviously use any head but it is usually preferred to use a single ply head.

1. Thin resonant heads: Heads like REMO Diplomat batter, FiberSkyn 3 FT/FD, Aquarian High Frequency and Evan's Genera Resonant or Glass Resonant heads.

2. Medium weigh heads: Heads such as REMO Ambassador, Ambassador Ebony and FiberSkyn FA, Aquarian Classic Clear or Satin Texture Coated and the Evans G1 series. These will have less sustain than the thinner counterparts such as the REMO Diplomat or Evans Glass or Genera Resonant. Knowing the inherent sound of each head and how to combine the heads and tune makes the batter head all that much more adequate when trying to achieve a sound.

See the section "Toms, Some selections and characteristic sounds".

Toms, General Head Guidelines

1. To get the volume and as much sustain back as possible when using muffled, two-ply or hydraulic heads, use thin heads on the resonant side.

2. For a warmer sound use texture coated versions of the above and warmer still, move into the single ply medium weight heads such as the Ambassador, Evan's or Aquarian Coated heads.

3. Use a muffled head on the resonant side to kill sustain and overtones yet retain the stick response and attack of a single ply head on the batter.

4. The sound of the ebony series of heads is between clear and coated. It is usually described as "darker", which to my ear means not quite as prevalent in high pitched overtones as a clear head, but more prevalent in overtones than texture coated.

5. The more coating without muffling the warmer the sound will get.

See the section "Toms, Some selections and characteristic sounds".

Toms, Some selections and characteristic sounds

1. Medium weight, single ply such as REMO Ambassador, Aquarian or EVANS G1 coated top/same on bottom. Very resonant, high ring can be very prominent, very good sustain, excellent stick response. Clear on top even more open. This is what a large portion of jazz, country and light rock guy's use. Tuning can control ring easily. Popular recording choice. Coated provides a nice sibilance to the stick attack while clear provides predominate midrange attack.

2. REMO PowerStroke 3, FiberSkyn FA or Emperor, Aquarian Studio X; Coated or Clear on top with REMO Diplomat Batter Clear or EVANS Genera Resonant Clear bottom. Very resonant, almost void of high ring but very good sustain excellent stick response. A classic light jazz studio sound without mics. For a little warmer sound, use a medium weight coated head on the bottom or Ebony series. Used with some lower end bass heavy mic's in close mic situations, the sound can be almost too round due to "proximity effect (see "Microphone Use, In Brief – How they can effect the sound:" below).

3. Emperor, FiberSkyn F1 or Aquarian Double Thin on top with a medium weight single ply on the bottom. Good combination that sort of bridges the gap between medium hitters and hard hitters without much of a sacrifice in sound and stick response. Warm sound yet can be resonant with some high pitch character.

4. Pinstripe, Aquarian Performance II or EVANS G2 top and a thin single ply like REMO Diplomat or EVANS Genera Resonant Clear bottom. Less resonant than above, much more stick attack sound, some light to no high ring but very good sustain and attack with good stick response. For a fatter/wetter sound, try keeping the bottom head at or slightly below it's lowest fundamental note. This combination or the one below is a very good selection for fat sounding drums. Again, for a little warmer sound, use a medium weight coated head on the bottom such as an Ambassador or equivalent. Another good recording choice for a more isolated sound.

5. REMO Ambassador, Aquarian or EVANS G1 coated top and a 2-ply head on the bottom such as EVANS G2. Longer fundamental note than the above combination and almost completely void of high ring with short sustain and excellent stick response.

6. Evan's G2 or any other 2-ply muffled head on top and bottom, close to the dead sound of late 60's early 70's, a very short tone and not real great stick response. Tuned high in pitch, overtones can come back with a vengeance.

7. Hydraulic heads top/bottom, like throwing a towel over the drum, "boxy" sounding, thud. Using a highly resonant head such as the Evan's Glass or Genera Resonant adds back some life. Some report this works good in high pitched tuning situations although I have no personal experience with drums tuned this way. I have however, used them in the low tuning ranges and the sound is as I have described.

Toms, Tuning Procedure

Follow that listed above under "Tuning and Seating the Heads, All Drums". Specifically you should proceed in this order:

1. Learning How, Resonant Side Tuning - The beginning:

2. Batter Side Tuning:

3. Time to Zone:

4. Then follow-up with Results – What They Mean:

Kick Drum, Drumheads - Batter side

Coatings and material type are as described in the section "Tom, Drumheads - Batter side". There are some similarities here to that which is used for a tom. But there are also some real differences such as the Evan's EQ and Aquarian Regulator series.

1. Single Ply – No muffling: Any head on par with the likes of REMO Ambassador, Ebony series, FiberSkyn 3 FA, Aquarian Classic, Aquarian Signature Series Jack DeJohnette, Evans EQ1, EQ4, etc.

2. Muffled head, 1-ply: Any head on par with the likes of REMO Ambassador, Ebony series, FiberSkyn 3 FA, Aquarian Classic, Aquarian Signature Series Carmine or Vinny Appice, Studio X, Impact I, SuperKick I, Evans EQ1, EQ4, etc.

3. Muffled head, 2-ply: Any head on par with the likes of REMO Pinstripe, Evan's EQ2, EQ3 or hydraulic, Aquarian SuperKick II

See the section "Sounds, Kick Drum Characteristic Pairing".

Kick Drum, Drumheads - Resonant side

1. Single Ply – No muffling: Any head on par with the likes of REMO Ambassador, Ebony series, FiberSkyn 3 FA, Aquarian Classic, Ported Bass Drum Head, Evans EQ1, UNO 58 1000, etc.

2. Single Ply – With muffling: Any head on par with the likes of REMO PowerStroke 3, Aquarian Regulator, Evans EQ2, EQ3, etc. Note that most of these come with a choice of a 4-1/2", 5", 7" or no hole.

See the section "Sounds, Kick Drum Characteristic Pairing".

Kick Drum, Holes in Your Head or Not

1. Any hole larger than 7" is like having no head at all on the drum.

2. A 7" hole creates the feel of a one-headed kick drum, feeds more beater attack direct to an audience and provides some of the tone of the resonant head. Further, it's easy to position a mic and change internal muffling devices, if used.

3. A 4-1/2" or 5" hole, or even 2 such holes, offset, allows some relief for rebound control of the kick beater, contains more of the drums resonance so that the resonant head is more pronounced in the tuning of the drum. A 4-1/2" hole is difficult to get large mic's positioned within (but can be done) and/or internal muffling altered.

4. No hole, very resonant, creates more bounce or rebound from the kick beater. It can become difficult to get the "slap" of the beater and resonance of the drum both when miked with one microphone. The muffling remains inside. The resonant head is very predominant in the overall sound.

Kick Drum, Pads and/or Pillows

1. One pad or pillow, or anything that cover a calculated 15-20% coverage against Batter head only: Beater attack accentuated, tone and sustain linger.

2. One pad or pillow, 15-20% coverage against resonant head only: Beater attack will be lessened, tone and sustain develop as a short burst of energy followed by some bright overtones.

3. One pad or pillow, 15-20% coverage against Batter head and Resonant: Beater attack accentuated, overall volume diminished a bit, tone and sustain become focused, overtones diminished.

4. One pad or pillow, 25-30% coverage against Batter head and 15-20% coverage of Resonant: Beater attack becomes much sharper and accentuated, overall volume does not diminished much more than the above, tone and sustain become even more focused, overtones all but gone. When used with a single ply muffled batter head, easy to get very sharp sound. Good choice for mic use.

5. One pad or pillow, 25-30% coverage against Batter and Resonant: A very focused sound, which becomes ideal for close miking of a kick drum. Beater attack becomes as sharp as it gets, overall volume does not diminished much more than the above, tone and sustain become short bursts of energy that when listened to without a mic, seem lifeless. A distinct "punch" sound.

Kick Drum, Sound of Characteristic Pairing of Drumheads

Note all tone and muffling characteristics from the following heads can be altered by the use of pillows/pads described in the section "Pads and/or Pillows" or the use of a hole in the drum head described under the section "Holes in Your Head or Not". Coatings and material type are as described in

the section "Tom, Drumheads - Batter side". There are some similarities here to that which is used for a tom. But there are also some real differences such as the Evan's EQ and Aquarian Regulator series.

1. Single ply unmuffled Batter and Resonant: Open tone, bouncy feeling, highly resonant, ringy,

2. Single ply muffled Batter, Single ply unmuffled Resonant: Attack of the beater pops out, open tone, highly resonant, overtones diminished a bit on the initial attack but linger on the sustain

3. Single ply muffled Batter and Resonant: Attack of the beater is heard more, a dense but not quite a focused sound, overtones controlled but still there. Typical combination is the REMO PowerStroke 3 batter and resonant, or for a bit more low end try Evans EQ4 Batter paired with REMO PowerStroke 3, Evans EQ2 or Aquarian Regulator Resonant.

4. Single ply muffled Batter and 2-ply muffled Resonant: Attack of the beater pops out, wide focused sound, overtones controlled. Typical combination is the REMO PowerStroke 3 batter with Pinstripe, Evans EQ3 or Aquarian SuperKick II Resonant.

5. 2-ply muffled Batter and 2-ply muffled Resonant: Very focused and punchy attack, narrow focused sound, overtones very controlled (may need no pillows/pads). Typical combination on both the batter and resonant would be REMO Pinstripe, or Evans EQ3 or Aquarian SuperKick II.

Kick Drum, Tuning Procedure and Tricks

1. The same tuning procedure works on the kick drum as well. Simply follow the procedure listed above under "Tuning and Seating the Heads, All Drums" and take into account the following points as well.

2. A Typical tuning method is to have the batter head control the attack portion of the sound and the resonant head to control the "sustain" portion of the sound.

3. For more punch, tune the resonant side up in pitch 1-2 notes from the batter. Tune entire drum up in pitch.

4. For a "plastic" sound, use single ply batter heads tuned just to a point of the lowest note and detune ½ turn on each lug. A hard felt beater without a patch works well. If you go to wood or plastic beaters, use the patch.

5. A fat kick drum is achieved the same way a "fat" tom sound is achieved. Taking the resonant head and tuning to the lowest note, and then detuning a slight amount (1/16 to 1/8 of a turn) creates a "fat, loose or dark" drum sound. The batter head is then used to alter the pitch. Note that the pitch for a "fat" tuning can be somewhat limited.

6. For a short "open" burst of resonant tone, followed by a muted overtone, try using one of the EQ pads placed loosely against either head so that when the beater strikes the head, the upper portion of the pad (the "hinged" section) floats away from the head yet returns quickly. You can effect the duration of the sound by the positioning of the pad. This also works when using 2 pads where one remains firm against the head while the other on top or against the other head provided the "hinged" sound.

7. Don't have a pillow or pad? Try using strips of felt or cotton sheet material of varying inches in width placed near the center of the drumhead, these get held on by the head, stretch them tight. As a guide try 4.5" on a 20"; 5" on a 22"; 5.5" on a 24". Used on 1 head, this is the equivalent of 25-30% coverage or like two EQ pads per head. Also, a towel rolled up and taped to the inside bottom of one or both heads works. An old feather pillow or folded blanket works equally well. Be creative! Anything that "lightly" touches the head will work, if done in the same percentage of cover given above in "Pads and/or Pillows". For that "hinged" sound, try a towel or cloth taped to the head on just the upper edge so that it floats on and off the head with the beater strike.

8. Get the drum up off the floor as much as your pedal and spurs will allow for more resonance.

Snare Drum

Tuning the snare is not different than with any drum, it's just complicated or enhanced by the shell choice and snare wires. Lets start with what the shell tone is because from this you better understand the enhancements and limitations inherent in the drum shell tone prior to head choice.

Snare, Construction Brief

1. Brass: A very sharp edge to the sound and very rich with mellow overtones.

2. Steel: A step more towards bright with a very pronounced ring, allot of body and longer decay than brass.

3. Aluminum: Clear, open sounds with bright, crisp overtones and is capable of incredibly loud rim shots.

4. Bronze: A close cousin to brass with the overall character of woods, can be loud, a good all around drum.

5. Copper: A close cousin to the Aluminum drum only slightly warmer.

6. Anything Hammered: Same overall characteristics as the parent material, only slightly less resonance to varying degrees.

7. Metal Thickness: The 1mm shells are not as low to mid range resonant as thicker shells such as 3mm plus.

8. Metal Cast Drums: Very Loud and Resonant due to special cymbal alloys used in the casting process.

9. Wood drums, see "Construction Guidelines" above in the "Tom" section, they apply here too.

10. Small diameter means higher pitch.

11. Longer shell length means more power and shell resonance, longer decay.

12. Shallow depth means more articulate, less power due to decreased shell area.

13. Snare bed: A slight depression in the resonant side bearing edge to allow the snare to ride closer to the head.

14. Bearing edges of less than 45 degrees are not inferior, they simply make for a different sound, usually less resonant and darker in character the less the angle, 35 degree is popular on Birch Drums. Drums get brighter if the crown of the bearing edge is a tighter radius (sharper) than if the radius is flatter (may be desired on the toms and kick).

Snare, Drumheads - Batter side

Coatings and material type are as described in the section "Tom, Drumheads - Batter side". There are some similarities here to that which is used for a tom. But there are also some real differences such as the Evan's Genera Snare and Genera Dry vented series.

1. Single ply Thin Weight such as REMO Diplomat, Renaissance, FiberSkyn FD (FD extra thin), Evan's Genera Concert Snare, all are coated and are great for very articulate, extremely sensitive, bright, open overtones (FiberSkyn warmer), not very durable. Special mention - Evan's Genera Concert Staccato Snare, a drier very articulate version of the "thin" group.

2. Single ply unmuffled/unvented medium weight such as REMO Ambassador, Renaissance and FiberSkyn FA, Aquarian Satin Texture Coated and the Evans G1 series, UNO 58 1000. Uno 58 is brightest, FiberSkyn warmest. All-purpose head, accentuated overtones, articulate, takes punishment from all but very heavy hitters. Aquarian coating most durable. Special mention – Evan's PowerCenter, all the virtues of a single ply head but has a perforated 5" coated thin dot that will withstand high tunings and severe abuse without the dot coming off (only 14").

3. Single ply muffled or Heavy Weight such as the REMO Emperor, Renaissance, PowerStroke, FiberSkyn F1 and the Aquarian Studio X series, Evan's Genera Batter. The sound here goes more mellow compared to single ply with overtones becoming less prevalent on the initial attack and less or minimal sustain. There is still an element of ring to the drum.

4. Single ply muffled and very "Dry" or "Vented". Evan's has the most in the market for this category with the Genera Dry, Uno 58 1000 Dry, The sound has a sharper, quicker attack and is almost void of overtones. This head requires careful attention to tuning and generally will make the midrange tone of the shell material standout while limiting the low frequencies of the drum.

5. 2 ply muffled or wear resistant heads like REMO Pinstripe, Aquarian Performance II or Double Thins and the classic Evans G2, or anything with a "Power dot" on it, these produce a very short initial attack coupled with a very short sustain.

6. Heavily muffled with an oil barrier such as the Evans hydraulic. These heads are the most inherently "boxy" or "dull" of any. Almost void of any inherent sustain on their own.

Snare, Drumheads - Resonant side

Note: Obviously you can use any head, but it is correct to use a "Snare Side" head. If you use any head other than a "Snare Side" Head, it will be the equivalent of using a "Heavy" weight or thicker head and the result will be the lack of or absence of snare sound, buzzing, no sensitivity or all of the above.

1. Thin resonant heads: Heads like REMO Diplomat Snare Side and Evan's Genera Hazy 200. These heads are great to increase snare response, sensitivity and crack while allowing ghost notes and rolls to become more articulate.

2. Medium weight heads: Heads such as REMO Ambassador, Renaissance, Aquarian Classic Clear Snare Side or Evan's Hazy 300. These will have less sustain than the thinner counterparts such as the REMO Diplomat or Evans 200, the sound becomes more focused and not as bright and articulate. The Evan's Genera 300 and Genera Glass 300 go drier in tone yet retain very good snare response while the Renaissance goes warmer.

3. Heavy Weight resonant heads: REMO Emperor, Evan's 500 Hazy are both very dry heads and not real articulate. Clear/glass versions of these heads are a bit drier yet. Aquarian Hi-Performance Snare Side is built to counteract wear yet give response characteristics of the medium weight heads.

Snare Unit, General Guidelines

1. It is important to have the actual snare bed itself ride flat against the resonant head. If a drummer has used an inferior brand or replacement snare in the past, the place where the wires are held or soldered to the clip can be uneven or have sharp protrusions. This may have left the drummer feeling the thinner heads are not satisfactory because the poor condition of the snare itself actually caused the premature failure of the head. This is where the so called "Heavy Weight heads are usually employed. However, you might want to try the Aquarian Hi-Performance series here due to it's unique construction, it gives protection where you "need" it yet retains some response of a medium weight Snare Side head.

2. Snare count, length and material have to be considered. While you can retrofit another snare to change the drum, be sure it really is the correct length and attaches to the strainer throw-off correctly.

3. Carbon steel is going to be brighter than stainless steel with cable, gut or a synthetic being much less bright.

4. Less curl to the wire equals less volume and more articulate (i.e. Cable snare units).

5. Wider snare units will be louder and potentially so sensitive that you won't be able to control the sympathetic vibration buzz. So if you bought the wide one and tighten the heck out of it to eliminate the buzz, you just as well stay with the original one.

6. Snare units with a wider surface coupled with a second smaller set inside will provide a "fatter/wetter" sound.

7. If you hit a drum hard, there is a point at which you do not increase the overall snare drum volume and in fact the drum will sound as though it has less "crack" than at moderate volumes. This is because you now hear more of the "tom" or "timbales" sound of the drum by virtue of the fact that you're hitting only the batter side.

8. The snare side is the excited side and it will only move so much when hit. So changing snares may or may not get you more volume or crack from the snare wire its self, depending upon how you hit.

9. To keep the tone of the drum yet get a warmer less powering snare sound, reduce the snare count to 10 strands, carbon steel. For less metallic, stainless, etc.

Snare Drum, Inspection and How to Issues

1. Drum has an intermittent buzz during play: Remove heads and thump on the shell with your hand or butt end of a stick. If the lugs buzz, isolate the offending lug and first try to remove it or them and see if stuffing cotton into the lug retainer helps stop the buzz. You can also look at taking some thin sheet rubber and placing it between the lug casing and the shell, be careful you do not move the lug too far away from the shell, the lugs must align freely with the hoop. If you put the rubber in do it on all the lugs, not just the trouble lugs. If nothing buzzes without the heads, it is possible that the head itself is spent or seated wrong and this too can cause a buzz or distortion during play. The solution is to either replace the head or apply higher tension and try reseating the head. Look for loose bolts, etc. as well.

2. How to check snares wire units: Lay the snares, unrestrained on a flat surface. See if all the wires look very uniform, make sure 1 or 2 of the strands are not over stretched or curving out (this can happen on new units as well). If they are in doubt, go buy or choose another snare wire unit, otherwise control over the "buzz" and "crack" of the drum may be very difficult. Check that portion of the unit where the wire of the snare couples with the clip and look for less than uniform joints. No sharp protrusions, lumps, etc. should be present. If you observe protrusions or unevenness, sometimes filing them off works, but don't remove too much or your likely to cause the wires to pull off the clip.

3. How to determine if a head is too old to use? Outside of an obvious split, make sure they're not overly worn where the snare bed rides on the head (sometimes there's a tiny hole or a milky color). Make sure the head is not warped or dished out from age or being over tensioned. If either of these conditions exists, replace the heads.

4. How to check hoops? Place them on a kitchen counter or other very flat surface (not glass or plastic, these are inherently unleveled) and see if they sit flat. If the hoop is stamped or a triple flanged hoop, push down on them to straighten, fix or replace. If the hoop is cast or wood, you run the risk of breaking the hoop if you push hard enough to actually cause a movement. Your only solution other than live with it will be to replace it. Check for round by measuring in a "+" pattern with a simple ruler at 90 degrees apart across the hoop. If the measurement is not the same, they are out of round.

Snare Drum, Tuning - Method 1 (Fat and Wet)

The following suggests any choice of head from the single ply medium weight muffled category such as the Evan's Genera Batter, REMO PowerStroke or Aquarian Studio X, all Texture Coated coupled with the Genera Hazy 200 Snare or REMO Diplomat Clear resonant side. Objective, a controlled ring, focused sound, very good resonance with excellent articulation and stick response. For more "open", resonant big band type sound, go with either a REMO Ambassador coated, EVANS G1 coated or Aquarian Satin Texture Coated.

Note: We are working for the drum sound without the snare wires installed.

1. Start by placing the bottom or resonant head on the drum, we want to tune the bottom without the top to the lowest clear tone exactly the same as described above under "Learning How, Resonant Side Tuning - The beginning" in the section "Tuning and Seating the Heads, All Drums".

2. Once you have achieved the lowest pitch for this drum on the resonant head, now the procedure changes just a bit. On the resonant head, bring each lug up one half of one turn to one full turn on each lug and even out again. This is a good starting point.

3. On the batter head, continue to follow the tuning directions under "Batter Side Tuning" under the tom section, including installing and tuning the batter side as described under "Batter Side Tuning".

4. Once you have achieved the lowest pitch for this drum on the batter head, now listen for the pitch and feel of the drum. I suggest you tune this head fairly high or 3 to 5 notes higher than your highest tom.

5. This gives excellent stick and brush response and even though the batter is now much higher in pitch than the resonant, it will still have that complex resonance produced by the resonant head being low. This overall feel or resonance of the pitch can be controlled by snare tension (discussed below).

6. If it's too low in resonance after tuning the batter and applying the snares, you then crank the snare side up 1/4 to ½ turn per lug. Again, I suggest you do this after applying the snares. Once you get the desired resonance, stick response, etc. without the snare wires installed, its time to replace the snare bed.

7. Jump to "General Snare Tuning Guidelines" and then to "Installing The Snares" section.

Snare Drum, Tuning - Method 2 (Suitable for Pop top 40 drumming, Not Choked, Preferred by many studio Drummers):

Note: Proceed without snares installed

1. Replace the heads exactly as described in Method 1.

2. Rather than tuning the batter/top head higher in pitch, tune it identically in pitch to the resonant/snare side head.

3. Now move just the bottom snare side head up in pitch about 3 notes higher than the batter head.

4. Jump to "General Snare Tuning Guidelines" and then to "Installing The Snares" section.

Snare Drum, Tuning - Method 3 (Highly Resonant, brings the most out of the shell)

Note: Proceed without snares installed

1. Replace the heads exactly as described in Method 1 and use single ply medium weight unmuffled texture coated heads on the batter and either Diplomat Clear or Evans Hazy 200 snare side. For warmer but more focused and a bit softer while resonant, use the Ambassador, Aquarian Classic, or Evan's Hazy 300.

2. Rather than tuning the batter/top head higher in pitch, tune it identically in pitch to the resonant/snare side head.

3. Now move just the bottom snare side head up in pitch just ever so slightly and listen carefully to the tone of the zone you are in. Move tiny amounts and listen for that point of most resonance.

4. Jump to "General Snare Tuning Guidelines" and then to "Installing The Snares" section.

Snare Drum, Extra Tuning Guidelines

1. Work your way up through the tuning zones as you would a tom but rather than tuning the top head up in pitch, your tuning the bottom head up in pitch.

2. Work in a typical "X" fashion as best you can or better yet, use 2 keys 180 degrees apart. The thin snare side heads are easy to knock out of whack if you pull one side tighter than the other, so move up in small ¼ turn increments for best results.

3. Once you get the differential relationship be it for a "fat" or "pop" tuning, then you can move the entire drum up in pitch for a higher overall pitch. By this I mean that both heads must maintain the 2-3-note differential in tuning at all times. Minute changes in this relationship cause phase cancellations (or should) and as a result, usually by moving one head or the other minuscule amounts, you can cause the drum to kill allot of the overtones or accentuate them making the need for muffled heads less desirable.

4. If you want a fat wet sound, keep the resonant head low pitched regardless of the pitch of the batter.

5. If you want a more articulated, cutting sound, tune the bottom head up in pitch and keep the batter head lower in pitch than the resonant head.

6. The tension of the snare bed also controls that punch you can feel in your stomach. If the head is too tight, the snare can't seat itself as well into the snare beds.

Snare Unit, Installation of

1. Place the snares a little off center towards the opposite side of the release side.

2. Tighten down the strings or strap paying close attention to the snare making sure its square to the hoop, not askew.

3. With the retainer in the on position but with the tension control screwed down (as if loosening the snares), pull the strings or straps again square to the hoop to moderate tension.

4. With the strainer now on, start to tighten while hitting the head, you'll get to a sweet spot where the buzz of the snare and feel of the drum come together. If you tighten more, the drum becomes more articulate. The

slightest adjustment here can make huge differences. I'm talking 1/16 of a turn or less on the tension adjustment for the strainer. If you are blessed with an adjustment on both side of the drum, move up equally, very important!

5. Experiment; at some point in the process you'll hear the bottom or that feeling in your stomach suddenly jump out at you if that's what you want. Don't over tighten; it really doesn't add much other than choking off the tone of the drum and killing stick response.

6. Even the slightest adjustments will make the tone/overtones come alive or die. See "The 5 Stages of Snare Sound" section.

Snare Unit, Sound and The 5 Stages of

Working from loose to tighter:

1. Contact with buzz and sounding a little sloppy,

2. Fewer buzzes and a little dry sounding. Almost like over tightening.

3. Warmth starts to come out with a nice sort of "slap" of the snares,

4. Becomes more articulate and the warmth goes away, and

5. The garbage stage, extremely tight, choked, void of character, little to no response on the outside 3 inches of the batter head at low volumes, you've gone too far.

Snare Drum, Tips and Tricks

1. The stand affects the sound. With the drum sitting in your stand, don't have the stand basket tight against the hoop of the drum, this restrains the inherent sound of the drum, it keeps the hoop and shell from vibrating freely.

2. As a drummer hits harder, the crack of the drum or volume of the snare does not rise but the pitch can change or the perception exists because more of the inherent tone of the batter head is now coming out. Therefore you might want to resort to miking the bottom if you cannot get that high-end crack you otherwise hear in the room.

3. If using a mic on both top and bottom you should be conscious of phase problems associated with the bottom mic, you might have to wire the resonant mic "out of phase". Remember the heads ideally are moving in phase with each other, therefore when the batter is moving away from the upper mic, its moving towards the lower mic causing a phase change making a electrical phase reversal needed.

Snare Unit, Buzz Issues or Sympathetic Vibrations

There are many instances where the sympathetic resonances of the snare drum snares are problematic. Usually the tuning of nearby drums or the bass guitar, etc causes these. The cause of the problem is that the tuning of the snare is at or close to the frequency of the sympathetic vibration, that is, they're too close in pitch. Retuning the snare may be the last thing you want to do now that you've found this incredible sound. But as is everything in sound, there may have to be compromises. It can be quite complex to solve this problem because of the inherent overtones found in the snare. In doing some background research on this issue I found a site which I have linked below which explores this issue. But I will attempt to summarize what others have offered for solutions. I have found the first two tips work very well, but many have become overly concerned by this and really shouldn't be. The buzz in many cases is the essential ingredient to getting the drum sound, such as a "fat" tuning and does not appear in the recording or the audience, as a buzz.

1. On the snare side of a ten-lug snare, detune both lugs on either side of the snare where it attaches to the shell until the head ripples. Then tune it back up until the ripple just disappears. This means you will have detuned 4 lugs. Now, compensate by over- tightening the remaining 6 lugs (3 on either side of the snares).

2. Find the offending instruments and retune it. Usually it's one of the toms and the tuning of the tom is usually not as critical in the mix. Others report that if the toms are tuned a 5th away from the snare and then from each other, this can eliminate the problem. But this is only partly a solution, as the snare drum itself is very rich in overtones (independent of tuning) and removing one overtone (by retuning) is likely to introduce a new one!

3. A completely different approach put some very thin piece of paper or duct tape between the snare and the bottom head near the place where the snares attach to the retaining clip. You have to experiment a bit with thickness and placement, but it is possible to reduce the problem a lot.

4. Different heads. Calfskin heads were rather insensitive to this phenomenon. It is thinkable that the use of calfskin-like heads (e.g. REMO Renaissance or FiberSkyn 3) may reduce the effect.

5. Drape a towel or other heavy cloth from the bottom of the snare drum between the drum and the offending source if it is a nearby drum.

6. Wire snares are the most problematic. Try using cable snares such as those made by Grover, Patterson or Hinger. Traditional gut snares are also less likely to buzz. However, the sound may likely change to the drier as a result.

Tuning Sequences, Suggested

You have to know the center of your universe for playing and/or which drum is most important in the way of sound.

1. Lowest, fattest sound: Start with your biggest, meanest floor tom and do a fat tuning as described above under "Results – What They Mean". No point in starting with the smallest drum because when you get to the low end of the range on the larger drums, the incremental tuning ability of the drums involved may make tuning the large drums impossible for the required interval. In other words, the floor tom won't go that low and you'll end up with a mismatched interval, so start low and work up in pitch to the small drum(s).

2. Punchy, top 40, rock, etc., your rack toms are what usually drives the sound. If you play 2 or 3 rack toms, pick the 2nd or 1st tom and get it where you want it, these are the center of your work. From here everything else will fall into place. Keep it melodic, play pairs of drums. If you move in 5 note intervals you'll find all drums sound bigger, fuller, sympathetic tones are complementary. Move in 3 note increments, they'll sound a little thinner and drier; you might want this especially for a close mic situation. Tip: Don't make the kick drum too low in pitch, keep it in the same 5-note relationship to the lowest floor tom.

3. Funk, the kick drives the groove: Start with the kick, snare and move on down from the snare sound again doing some grooves and a few top fills.

Interval and Drum Sizing

Here's my thought's on this subject, there are no rules other than the first 2.

1. Diameter means more for pitch change than does shell depth.

2. Shell depth equates to resonance and volume, it gives the drum its character. A 12" x 10" (as in Diameter x Depth) gives you a shell surface area of 370 sq. in. as opposed to the 12" x 9" which has 333 sq. in. So depending upon how you look at it, the 10" depth has 11% increase in the ability to produce resonance (hence "power"), or the 9" has 10% less. The tone of the 10" depth is ever so slightly deeper, but it's the volume that's the

drum can create is the real difference. Regardless of diameter, a one-inch change in shell length, for a drum of identical diameter, generally translates into the same increase of 11% or decrease of 10%. So a 12" x 8" will be 20% less in surface area than a 12" x 10". Simply put, the depth of the "punch" will be more evident on the 12" x 10" than that of a 12" x 8" drum.

3. I find if you have a 12" drum, its wise not to pair it with a 13" unless you have a 14" and really desire something in-between for pitch. Likewise, a 11" drum is better paired with a 13" with a 12" as the in-between size. The common belief is that even sized drums produce better tuning qualities. I don't know why this belief is out there, I find they can all be tuned if tuned as the shell/diameter allows. If you try to make a 13" sound like a 14" while pairing it with a 12", you're setting yourself up for trouble unless you want a small incremental note difference.

4. It's more melodic to skip 1 or 2 sizes in diameter in between drums (see the section "Musical Notes for Tuning, Suggested"). For example the use of a 13" or 14" with a 16" will likely be more satisfying than will be the use of a 15" with a 16". That is unless you have 14" and want something in-between again.

5. Use a "Power Tom" as rack/mounted toms if the mounted toms are central to the sound you're creating (i.e. Top 40), if you're a "light" hitter or like big floor toms.

6. Use Fundamentally Accurate Sized Toms ("FAST") if playing small venues, when size is a concern or when you just want less "power".

7. Small drums tune "low" fairly well, large diameter drums don't always tune "high" well.

8. I find any combination of drums in the following sizes tune well and allow room to add: (Expressed in Diameter x Depth) 8x8, 10x9, 12x10, 14x12, 16x14, 18x16, 20x16, 20x18, 22x16, 22x18, 24x18.

Musical Notes for Tuning, Suggested

I'm going to make an attempt to describe this in very elementary terms to make it easy. If you do not know what middle "C" is on a piano, take any keyboard (61 note, 76 note or 88 note) and walk up to it (or you can always take the short cut and ask the keyboard player). Right in the middle there are always 2 black keys surrounded by 3 black keys on either side of the 2 black keys. Pick the left black key of the black 2 key pair. Slide your finger just to the left on to the white key sitting just to the left of the left black key. That's it, middle "C"! Here's why we found that key. Whether you know it or not, your typical 10" or 12" drum is usually tuned within 3 to 4 notes either side of that middle "C". Your job is to find the note of your prized drum and tune the others around it in 3 or 5 note sequences. Why? Because if you go to the trouble of finding that note, you'll also see that from a musical standpoint, playing 2 notes together directly next to each other on a keyboard sounds pretty bad, for the most part. But play any combination of notes by counting 3 or 5 notes apart and it becomes very melodic. Hence your drums will sound better and can also sound bigger due to complementary vibration from drums, which are sympathetic to the one being struck. This is not an absolute rule. But in general, you should try playing your drums in combinations of 2 and try to make them melodic so they produce kind of a 2 or 3 finger cord when struck. Make notes of these types of things when tuning for different venues.

I need to stress that the idea here is not to try and match cords used for songs so much as keeping the whole of the drum set from clashing. Although, if you have the time when recording, try tuning for the song and you may find that the result is far superior. Somewhere along the way, you'll find a sequence that fits your style and model of drum.

For example, I know my drums will sound best tuned as follows:

10"x 9" tom: D sharp

12" x 10" tom: A sharp

14" x 12" floor: F

16" x 14" floor: C

22" x 16" kick: Batter F (octave lower than floor); Resonant E

Main snare 14" x 6" YAMAHA Anton Fig: G above the 10" x 9" D#, both heads the same

How I know this is by working through all the same steps I've outlined in this "Bible".

How to Tune – Once You Know the Basics

The procedures learned in the various sections should teach you what to expect in the tuning process. Knowing this on your particular drum, the condition of the bearing edges, etc., is a very key component to now re-tuning a drum or tweaking it night-after-night, day-to-day.

Most drums drift down in pitch. Moving them from cold to hot or visa versa causes expansion and contraction, stiffness or more flexibility on the playing surface. Common sense should come into play here. The environment matters. So if the drum is cold, don't expect great things and try to refrain from attempting to tune until the temperature of the hardware adjusts and the heads, hoops, etc., match the temperature of your environment.

Because drums drift down in pitch, the need is to bring them back up in pitch, uniformly. For some unknown reason, most drummers assume the drift down only occurred on the upper or batter head, not so! So here's a method to re-gain control of the drum and bring it back to pitch once the heads are on. Note it does not matter if the drum is on the stands or not, but it cannot be laying on the floor or a carpeted surface.

Method 1 – Drum On Stand, Not On Floor

1. Tap at each lug of each head and only raise pitch on the lowest pitched lugs until the head is in tune with itself. For the set I own, it's easy to completely rotate the tom to gain access to the resonant head, and you cannot ignore this head for long. Over time, the head will just keep drifting until the tuning becomes very difficult and the batter head has become disproportionately tuned to the resonant side. So whatever you do, do not ignore the resonant head.

2. Strike the drum and see if the pitch is now correct, if so just stop. If not, proceed.

3. Tweak each head, at each lug a very small amount, maybe 1/16th to 1/8th of a turn on each lug. Strike the drum and see if the pitch is now correct, if so just stop. If not, proceed.

4. On the resonant head, take one lug and while striking the batter head, slowly turn that one lug no more then one complete turn. If while doing this the drum comes to pitch, you now know it's the resonant head and should back the lug down to its original pitch and tweak all lugs up in pitch small amounts until you get the pitch you want. If it does not make any difference, return the lug to original pitch and repeat this procedure on the batter head.

5. If this method does not work on a given drum(s), proceed to Method 2. If you simply want to raise pitch, see below.

Method 2 – Drum Off Stand, Sitting on Carpeted Surface.

1. With the drum on the carpet, batter side down, tap at each lug of each head and lower the pitch on the highest pitched lugs until the head is in tune with itself. Remember to go down past the pitch and then back up to it.

2. If the drum does not have the clear high pitched tone as learned in the procedures, raise pitch until it you achieve the clear note. Repeat on the batter head.

3. Strike the drum and see if a clear pitch has been obtained. If so, just walk the drum up through the zones. If not, proceed.

4. On the resonant head, take one lug and while striking the batter head, slowly turn that one lug no more then one complete turn. If while doing this the drum comes to pitch, you now know it's the resonant head and should back the lug down to its original pitch and tweak all lugs up in pitch small amounts until you get the pitch you want. If it does not make any difference, return the lug to original pitch and repeat this procedure on the batter head.

5. If this has failed, then something has happened to the seat of the head, temperature has become a factor, the environment has drastically changed or simply gone out of whack and you should either try running a hair dryer around to warm it up and begin again, or re-seat the heads and retune.

To Simply Raise or Lower Pitch: To simply raise or lower the pitch on an otherwise good sounding drum, I find it far more effective to tweak the lower head up/down rather than the batter head up/down. One major benefit from doing it this way is that it helps retain the same feel on the batter surface. If you use common sense and work with small turn/tweaks of the lugs, you'll immediately know when you've gone outside the zone and can respond by adjusting the opposite side.

Microphone Use, In Brief – How they can affect the sound

Playing without a microphone versus with one is very different. This is not a tutorial on Mic use, simply an elementary understanding of one key factor. When "close miking" a drum, the type of microphone can and usually creates proximity effect. If you look at typical mic's associated with use on toms, you'll see a drop-off on the frequency curve associated with most dynamic mic's. This drop-off can be compensated for through proximity effect. This is less pronounced on an electret condenser microphone. "Proximity effect" is a condition, which, when the mic is in close proximity to the head, a bump in the low frequency range is created, and therefore, accentuates the lower fundamental note of the drum. The opposite is also true, pull the mic away and low end response drops-off. When close, the pronounced increase of the low end offsets for the otherwise dead sound of 2-ply/muffled heads or the lack of free field low-end frequency response. Hence, never buy a microphone based upon a stated frequency curve or specifications alone. The microphone hears and accentuates what the ear cannot. Experiment because the proximity effect diminishes the further from the head you get (out of proximity). Check out the following in the *"Links of Interest"* section entitled *"Audio Technica's Guide to Microphones Definitions"* and *"Shure Brothers Technical Publications on Recording Studio and Sound Reinforcement Techniques"*.

Kick Drum Microphone Tricks

1. Movement of the Mic as little as ½" can make big changes. Movement closer to the resonant head results in less definition and more "boom" from the drum.

2. Place a mic closer to the pad/pillow to cut resonance and increase presence.

3. Place a mic closer to the batter and mid range attack comes out, warmth disappears but deep low end remains. Careful not to get too close or clipping of electronics' or destruction of mic can occur.

4. Two heads no hole – 1 Mic: Place the microphone on the outside of the batter side, but not in an upward facing direction. Try reversing the phase of the Mic, it will sometimes give more punch.

5. Too much snare bleed, try taping a cardboard funnel around the mic face to trim unwanted high frequencies or aim the mic down at the point of impact at 35 degrees.

6. Two Heads no Hole – 2 Mic's: A phase reversal of one or the other head is almost a must if using a mic aimed at both heads. Your sound is at the hands of engineer now because it's like retuning the drum to blend the Mic sounds.

7. When doing recording, take a large floor tom and place it out in front of the kick drum. Tune the floor tom very low in pitch and place a large diaphragm mic on it to capture sympathetic vibrations and low-end resonance.

Snare Mic Tricks

1. Controlling leakage from Hi-Hat: Use a Mic with a Hypercardioid pattern. As a result, you may have to Mic either from overhead of the kit or the hat itself, could be a plus depending upon philosophy.

2. To capture the "snap/crack" of the drum, especially for "hard hitters", Mic from the bottom and use in reverse polarity under the snare.

3. Too many overtones: Don't place a Mic aiming at the outer 2 inches of the head unless you really want to overtones to come through or use a head such as an Evan's Genera Snare Batter, Aquarian Studio-X or REMO PowerStroke3, all coated.

4. Avoid having the mic too close in general, 2-3 inches up and out aimed at the center of the head allows the mic to capture a more natural sound.

5. Not enough snare sound when using a Mic. When Mic's are placed too close to the head, the Mic doesn't hear as much of the "crack", it hear more of a timbale sound. Hitting harder equals less crack when placed too close. You can also place the Mic directly centered over the rim of the drum up about 1 inch and aimed at the center of the head. This keeps the Mic from hearing the warmth of the head and picks up more shell resonance.

6. If you do not have a brighter sounding snare, place just one mic in reverse polarity underneath in about 3" from the rim and centered on the snare unit itself.

Conclusion

I have not mentioned anything in here I have not tried myself. This is why you see no mention of ATTACK or Bear Percussion drumheads anywhere. As of this date, they are not being carried as a mainstream head or in large supply by most retail stores. While I have heard the ATTACK brand, I haven't had time to place them on a drum set and tune them or use them for any length of time, record, etc. As a result, I feel it would be inappropriate to comment on them. This is not to imply they are inferior or superior, I just don't know. However, if interested you can view the "Links of Interest" section and read the marketing associated with them.

Links of Interest:

Bear Percussion

ATTACK Drumhead PDF catalog page

Snare Buzz Problems

Audio Technica Microphone terms

Aquarian Drumheads

REMO

Evan's Drumheads

Mix Books – Almost anything to do with recording

Suggested Download, good visual for Kick drums Muffling

DrumSet.com Message Board

Drumweb Message Board

DrumTalk Message Board

Funkster's Groove Theory

Shure Brothers Technical Publications on Recording Studio and Sound Reinforcement Techniques (among others) at

For those interested in how to construct a studio

Drum Video Links

Equipment Used by The Author

I play Yamaha Maple Custom drums by choice; I am not sponsored by anyone. I find that with Yamaha, the quality is superb. The drum is not the most resonant drum on the market, I prefer to think of it as "controlled". You'll find many pro's using the YAMAHA Maple Custom, as you will that which play other brands. The set and sound just reflects what I feel is right for me. I like the brightness and the warmth projected by maple. Bright is a good way of explaining the characteristic of this kit if you subscribe to the notion that the audio spectrum has 3 basic bands; Bass (warmth); midrange (presence or harshness); and treble (bright). Top quality sets, regardless of manufacturer are all great. There's only one really great drum set, and that's the one that inspires you to play your best given the budget you have and reflects your personality.

Yamaha Maple Custom, Sizes 10x9, 12x10, 14x12, 16x14, 22x16.
Finish: Black Maple, Gold lug casings, YESS mounts on all toms.
Hoops: Aluminum on toms, Solid Maple on kick, Snare by model.

Head Choice:

Kick: Mostly Evan's EQ4 Clear Batter paired with the REMO Ambassador Resonant Coated w/5" offset hole or for a tighter sound Evan's EQ3 clear batter paired with EQ3 ebony w/4-1/2" offset hole. In all cases I use the DW pillow covering 15% of each head.

Toms (Rack): varies but mostly Evan's G2 Clear Batter w/Genera or Diplomat Clear Resonant. For a warmer sound Aquarian Studio-X Coated Batter with Genera or Diplomat Clear Resonant.

Toms (Floor): Either Aquarian Classic, Evan's G1 or Ambassador Batter and Resonant side (all Clear, again depends upon which I can get).

Snare Drums:

14 x 5 1/2 Brass Snare Drum; Manu Katche Signature Model; Hoops cast; Heads: Ambassador Coated or Genera Snare, Diplomat Snare Side; Tuning Method 1 in the bible, batter tighter than resonant.

14 x 6 Maple Snare Drum; Anton Fig Signature Model; Hoops wood maple 19 ply; Heads: Ambassador or Evans Coated batter and Ambassador Clear Snare side; Tuning Method 2 which is Batter looser than Resonant, Resonant about 3 notes higher.

14 x 5 1/2 Steel Snare Drum; Phonic 400 60's era; Heads: Ambassador Coated batter and Diplomat Snare Side; Hoops are steel triple flanged; Heads equal in pitch, medium tuning Method 3.

14 x 5 1/2 Steel Snare Drum; Rodgers Dynasonic 60's era; Heads: Evan's Genera Snare Coated and 200 Hazy Snare Side; Hoops steel triple flanged things; Heads equal in pitch, medium tuning Method 3.

14 x 3 Brass Snare Drum; Pearl FreeFloat Model; Hoops Cast; Heads: REMO Ambassador Coated batter and Ambassador Clear Snare side; Tuning so the resonant side is typically 2 notes higher than the batter side

On all the Snare drums I'll use various width "O" rings with a ½ width being the most common.

Hardware: YAMAHA 800 series

Cymbals: Paiste Signature Series
- Sound Edge Hi-Hat (14")
- Fast Crash (15")
- Fast Crash (16")
- Fast Crash (18")
- Dry Heavy Ride (20")
- Flat Ride (18")
- Splash (10")

Microphones typically used:
- Snare- Batter Side: Shure Brothers SM57-LC;
- Snare-Resonant Side:Audio Technica ATM3528, Shure SM98 or Beyer M101
- Kick: AKG D112 or RE20
- Toms, Rack: AKG C418
- Toms, Floor: Sennheiser 421 – 70's series
- Overheads: Shure SM81-LC's
- Hi-Hat: Audio Technica ATM3528

Headphones: Beyer 550

Any questions, write to me in care of Prof.Sound@butlermacdonald.com.