# Specs for PVC Pipe "boomwhackers"

V. "PVC Bass Bars"
2" PVC drain pipe
End Caps for PVC pipe

Procedure:

Saw PVC pipe into the following lengths*:
C(low) - 51"
D - 45"
E - 41"
F - 38"
G - 34"
A - 31"
B - 27"
C(high) - 25" Tuning is approximate, you will need to play with these measurements if you wish to be more accurate. Higher octave may be obtained by dividing lengths by 2 and lower octave is created by doubling lengths.

Place one end cap on each piece of tubing.
Drop each tube on the ground to play.
(Carpet scrap placed on a hard surface, such as slab floor, works best)

# Recipe for homemade boomwhackers

by Denise Arthurs

1. Get golf club tubes. (They're black plastic tubes about 36 inches long with a diameter of about 1-1/8 inches.) You can get them at Wal-Mart for about 64 cents each.
2. It is important to have a different color for each note to make It easier to recognize each length. Hardware stores often sell packages of varied colored tapes. I have also used colored duck tape that works well and is very durable.
3. Cut the golf tubes with a paper cutter. You may also use a radial arm saw, very sharp scissors (I never had much luck with scissors), or a hacksaw. I found a good small saw at Home Depot. It was about $10.00. The paper cutter works the best. Wrap wide colored tape on ends - a different color for each note. On the C's, I had a wide strip (4") for the low C and a narrow red (1 or 2") for the high C. I wrote the name of the note on the tape in permanent pen. Here are the lengths:

C (narrow red) 11 7/8"
A (purple) 14 1/4"
G (dark green) 16 1/2" or 16 1/8"
E (yellow) 19 1/2"
D (orange) 21 7/8"
C (wide red) 24 5/8" or 24 3/4"
F (light green) 18 1/4"
B (fuchsia) 12 3/4"

Two G's can be cut from one tube (with at the most, 1 inch of waste)
D and high C can be cut from one tube (exactly)
E and A can be cut from the same tube (exactly)
F and B can be cut from the same tube
Low C takes one tube and the other part is waste.

It is important to use the exact colors if you use the Boomwhackers Games CD and some of the other Boomwhackers books. They tell what color Boomwhackers to use when.

I have found purple duck tape at Wal-Mart, a variety pack at Lowes, and pink fuscia flamingo tape at Ace Hardware. Recently I saw orange, lime green and yellow at Walmart. Ive also seen colored duck tape at Big Lots.

# Pork Rind Jar drum


A guitar player friend of mine thought of me one day as his associates at work were tossing out the trash, and rescued this superlight pork rind jar for my collection. **Good eye, Guy Minervini!** Way to watch..

it sounded pretty good as an ideophone, but what the heck, we decided to slap a head on it. The bottom thread came out ewnough to make a good lip to work with.

We took a 10" goatskin and soaked it for about 15 minutes. Holding it over the rim, we fashioned a slip knot, like you would use on the end of a yoyo string for a finger loop. We put it around the lip on the mouth of the jar, pulled it tight, making sure to pull the skin evenly and remove all the wrinkles from beneath the twine.

Normally a drop of superglue would have secured the line, but we had none on hand. We had only Elmers wood glue, which would not be enough to hold the twine. hmm..

Len thought a minute, then tied a piece of thin leather that had been laying around onto the end of the twine. Two more times around the rim, then the Elmer's, which soaked into the leather a little better than it would have done with the twine. it worked like a charm.

It dried, and sounded good, but needed to breathe more. We began to experiment with the idea of a sound hole. With a hot punch, heated on a gas stove, we made, then enlarged a hole in the side. This helped a lot, although the plastic was so thin that it became hard to keep the hole in round as we enlarged it. It retrospect, we might have decided beforehand on the size of the hole and heated some other metal item that would have made the hole more cleanly at the desired size.

# Making Windchimes

**by Eric Reiswig**

There are two basic questions about making wind chimes.

Q. Where do you hang the bars?
A. Simple. A uniform bar (or tube) will have a "node" at about 22.5% in from each end. The nodes are where there is no vibration of the material making up the bar. Since there's no vibration at these node points, it's safe to suspend the bar at 22.5% down from the top end without damping the vibrations. Depending on the material you're working with, and the particular application, you can drill a hole straight through the bar, or tie a cord at the right spot, &c. A nice idea, when tuning the bars, is to suspend a bar between, say, two nails using a wound-up elastic band. The elastic can hold the bar (without slipping, if you wind it tight enough) at the node, allowing you to strike it and listen to the pitch, search for the note on a piano, &c. Of course, an electronic chromatic tuner is the best tool for this.

Q. How long do you make the bars?
A. First, it's usually not practical to exactly predict what note a given length of a given material will produce. You have to take into account all sorts of physical properties of the material, which aren't easy to determine. The good news is, once you make one bar, and find out what note it plays, you can accurately predict any other length/pitch **for the same material**. It's simple:

L2 = L1 * SquareRoot(F1/F2), Where:

L1 is the length of your "reference" bar;
F1 is the note it plays (in Hz);
F2 is the note you want the next bar to play;
L2 is the length to which you'll have to cut the next bar.

For example: say you've got an aluminum bar 12" long, and it plays "D" at 587 Hz (You might have to trim a little off this first bar to get it to play a "real" note. Remember that a short bar gives a higher pitch than a longer bar.) You want to make another bar which sounds the "A" at 880 Hz. Provided you use **the same kind** of bar (that means the same material, same width), you'll get your "A" from a bar 9.8" long.

Q. OK, so how do i find out frequencies for notes? (Alright, so there are three questions :-)
A. Here's three octaves' worth, from an even-tempered scale based on A=440. (If you're looking to use a different temperament, you're on your own.) If you need to go to the next octave up, multiply the frequency by 2. Similarly, to go down an octave, divide the frequency by 2.

| | | |
|---|---|---|
| C : 261.63 | C : 523.25 | C : 1046.50 |
| C#: 277.18 | C#: 554.36 | C#: 1108.73 |
| D : 293.66 | D : 587.33 | D : 1174.66 |
| Eb: 311.13 | Eb: 622.25 | Eb: 1244.51 |
| E : 329.63 | E : 659.26 | E : 1318.51 |
| F : 349.23 | F : 698.46 | F : 1396.91 |
| F#: 369.99 | F#: 739.99 | F#: 1479.98 |
| G : 392.00 | G : 783.99 | G : 1567.98 |
| G#: 415.30 | G#: 830.61 | G#: 1661.22 |
| A : 440.00 | A : 880.00 | A : 1760.00 |
| Bb: 466.16 | Bb: 932.93 | Bb: 1864.66 |
| B : 493.88 | B : 987.77 | B : 1975.53 |

## Stu's DjunBasket

Do you need a nice loud drum circle drum, but don't want to invest in(and lug around) a big heavy djun djun? Or perhaps you need a nice inexpensive drum to practice freehand on? The DjunBasket is for you. It's easy to make, very light in weight, and *versatile* enough to find a range of uses. One can play it with sticks or with hands, depending upon the situation and the tuning..

**LISTEN to stu's DjunBasket**
(played with sticks, as above right. Hand drumming examples to be posted soon.)

The djunbasket is one of a ***family*** of homemade drums, which we will eventually present in it's entirety, with whole sets of rhythms and practice exercises to help teachers using homemade percussion with their students.

### *Ingredients*

1. One aluminum bushel basket - Of course, any kind of metal pail will make a drum, but for several reasons, we urge you to consider this particular type of aluminum bushel basket..

2. Approximately three radiator hose clamps, enough to encircle the basket in a connected chain.

3. One goat or calf skin, 20 to 22 inches in diameter. If you choose calf, try to get one that's not too thick. (If it is thicker than the lip around the edge of the basket, you may have some problems getting the ring to hold.)

4. A razor or X-acto knife, needle nosed pliers, screwdriver

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Are you set to go? Okay, let's make the drum..

1. take the skin, and soak it in lukewarm water in the tub, until it is quite pliable, but not so long as to make it thick and flabby; about two or three hours for goat, perhaps a bit longer for calf.

2. while the head is soaking, get the rest of it ready, Join the radiator hose clamps into a circle, end to end, and tighten them down, just enough to make the ring of hose clamps about two or three inches bigger than the diameter of the basket.

3. Place the wet head on the basket and center it.

4. Place the chain of hose clamps down upon the head, and pull down around the skin and basket. Tighten slowly and carefully most of the way, allowing a bit of play for pulling on the skin. At this stage, if you have a friend to help you pull the head down on all sides as you continue to tighten, that will help. It's a little tricky, because tighening anywhere on the ring of clamps will tighten all the way around. Finally tighten it all the way down; you don't want it slipping later, when you are playing it hard with a stick. Put it up and let it dry overnight.

5. Your drum is now playable. You'll want to play it a bit before trimmming off the excess skin, test it out; when you are satisfied that you won't need to resoak and remount the head, take the razor knife and CAREFULLY trim off the excess skin.

Chris Bittner of **www.drumworksbychris.com** made this wise suggestion: "The skin will shrink under the clamp when it dries, so make sure and tighten it one last time when it's dry, to take up any slack." You want to make sure it doesn't loosen up under the stickwork.

6. To make this drum better next time we intend to do the following:

The hose clamp is a tiny bit wider than the space between the lip around the top edge and the handle mounting; it diidn't quite fit in there perfectly. Next time, we'll take a dremmel tool and take off just a tiny bit of the width of the hose clamp chain where it meets the handles.

Since I am planning to use it for a djun djun substitute, we'll do the next one in heavier calf. For hand use, we'd make it goat, and pull it tighter when applying the head. We may do a double headed one in goat, but I need to buy a grinder first.

We haven't mentioned decorating it, but that would help to personalize it a lot. We purposely left this one plain.

# Coffee Can Drums

The coffee can drum is a portable, versatile, inexpensive drum, an ideal "first Drum project. It responds well to a thin stick, with techniques that vary from scrapng and striking the side of the can to one hand/one stick techniques not unlike those used on sabar, Mandinka drums, or certain Brazilian instruments..

**The coffee can drum** is one of a ***family*** of homemade drums, including its big sister the Djun Basket. We will eventually present many related drums, with whole sets of rhythms and practice exercises to help teachers using homemade percussion with their students.

The drum can be one or two headed. One can use a smaller can, put some beads or beans in, use two heads, and have a combination shaker/can drum. These instructions are for a simple, single headed drum. The two drums at right are specifically designed to be Spartan in appearance, but one can apply a great many beautiful decorating concepts for a truly personalized spirit drum. This is beyond the scope of this article.:-)

### *Ingredients*

1. One coffee can -

2. One radiator hose clamp, big enough to encircle the can and skin.

3. One goat or fish skin, 8-10 inches in diameter.

4. A razor or X-acto knife, needle nosed pliers, screwdriver

5. Paint or fabric and glue to decorate the can, if desired.

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**Are you set to go? Okay, let's make the drum..**

1. Use an old fashioned can opener; the new kind takes the lip off the can, and you want it ON there, to stop slippage. Decorate the can ahead of time; if painting, give it time to dry. We leave the area with the grooves unpainted, because the stick will be hitting there a lot..

2. take the skin, and soak it in lukewarm water in the tub, until it is pliable, but not so long as to make it thick and flabby; maybe an hour for goat, a shorter time for fish. Check it frequently and use the skin as soon as it becomes pliable. Do NOT use hot water.

3. while the head is soaking, get the rest of it ready, Tighten the hose clamp down, just enough to make it a bit ;larger than the diameter of the can.

3. Place the wet head on the can and center it.

4. Place the hose clamp down upon the head, and pull down around the skin and basket. Tighten slowly and carefully most of the way, allowing a bit of play for pulling on the skin. At this stage, if you have a friend to help you pull the head down on all sides as you continue to tighten, that will help. It's a little tricky, because tighening anywhere on the ring of clamps will tighten all the way around. Finally tighten it all the way down; you don't want it slipping later, when you are playing it hard with a stick. Put it up and let it dry overnight.

5. Your drum is now playable. You'll want to play it a bit before trimmming off the excess skin, test it out; when you are satisfied that you won't need to resoak and remount the head, take the razor knife and CAREFULLY trim off the excess skin.

Chris Bittner of **www.drumworksbychris.com** made this wise suggestion: "The skin will shrink under the clamp when it dries, so make sure and tighten it one last time when it's dry, to take up any slack." You want to make sure it doesn't loosen up under the stickwork.

# Our Bass Marimba - an Introduction

Being an music teacher who uses Orff-Schulwerk principles and activities quite a bit, I have always longed for some bass bars to fill out the low end of our classroom ensembles. But I couldn't quite bring myself to buy a set at $290 *per note*.

So when I attended the 1997 National Orff Conference in Seattle, I heard two things that blew me away: Jon Madin's workshops, in which he used his own homemade marimbas; and Walt Hampton's school group, the Rugare Marimba Ensemble, an amazing group of 5th and 6th graders playing Hampton's own compositions, which are great. But in both groups, there was this wonderful low end to the sound, coming from a beautiful, clean-sounding, comparatively compact bass marimba! I had to have one; I knew it right then and there. So I bought Jon Madin's book, ***Make Your Own Marimbas***, and the rest is history!

(This website will present an *overview* of Jon Madin's design, as well as some of our modifications. Since it is his design, with only slight modifications by us, I did not feel right about including specific measurements and other things that might make his book obsolete. So if you want to construct a marimba using this design, it will still be necessary to purchase his book.)

I could never have anticipated the full impact that this instrument has had in my classroom. Its cost, size and the space that it takes up are made up for a thousand times by: the lovely, dark, deep sound that it makes; the way the kids jump for joy when they get to play it; the way that parents come up after performances and ask about it; the fact that newspapers want to interview me about it; the times that my principal brings visiting administrators down to my room to see it; I could go on and on! And all this for the mere sum of around $350, plus a *lot* of time and labor. If I had tried to buy a set of contrabass bars, I would have spent a minimum of $2000, which is many times my yearly budget.

(A side note: another thing that could have been done would be to get a grant for the funds to purchase contrabass bars - but I decided I would rather build one and own it myself.) I've also been told by percussion supply dealers that there are so few bass marimbas around (mainly at music schools), that if I had tried to purchase a professionally built one, it might cost as much as $40,000; And now we have one in our classroom!

Now, I realize that my marimba is not professionally made, and a real percussionist might turn up his/her nose at its lack of refinement, or at the slight buzz or rattle here and there; but the kids are thrilled about it. Now they have had an aural experience that they would not have had, if I had waited years for an opportunity to buy one. They now have a real, tangible example in front of them of the massiveness of a truly low instrument.

The instrument is physics in action, neatly integrating the science of acoustics with the art of music. The sound waves vibrating from the low C are so slow (about 65-70 hz/second) that you can *feel them with your bare hand.* The kids think this is COOL! Sound waves are suddenly something real to them, not just a mysterious phenomenon the teacher tells them about.

Another recent use was for our new mallet ensemble to accompany the first graders in their concert, giving the older kids opportunities to work with the younger kids (and vice-versa) and to develop their musical leadership by taking an active role on the supporting end of a performance. It was fun to see the older kids getting a kick out of the "younger" songs that they were accompanying. The bass marimba made our mallet ensemble possible. Even if we could have created an ensemble without it, the sound would have been nowhere near as exciting.

So now we're off and running with our new bass marimba. This has been a great experience that I hope we can share with more schools out there. It's a long project and takes a lot of commitment to see through to the end; but if you do, you will never regret it. Good luck!

**Click here to hear a sound clip of the bass marimba**

Please explore more! Click on the links below or at the top of the page to learn more about the different parts of the bass marimba.

**Frame** | **Resonators** | **Bars** | **Mallets** | **Cover** | **Accessory Bags**

**Crafty Music Teachers** | **Bass Marimba** | **Other Instruments** | **Resources** | **Sound Clips** | **Feedback** | **Bonny's Home Page**

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*Bonny Lundin-Scheer (bonnysu@outback.chi.il.us)*

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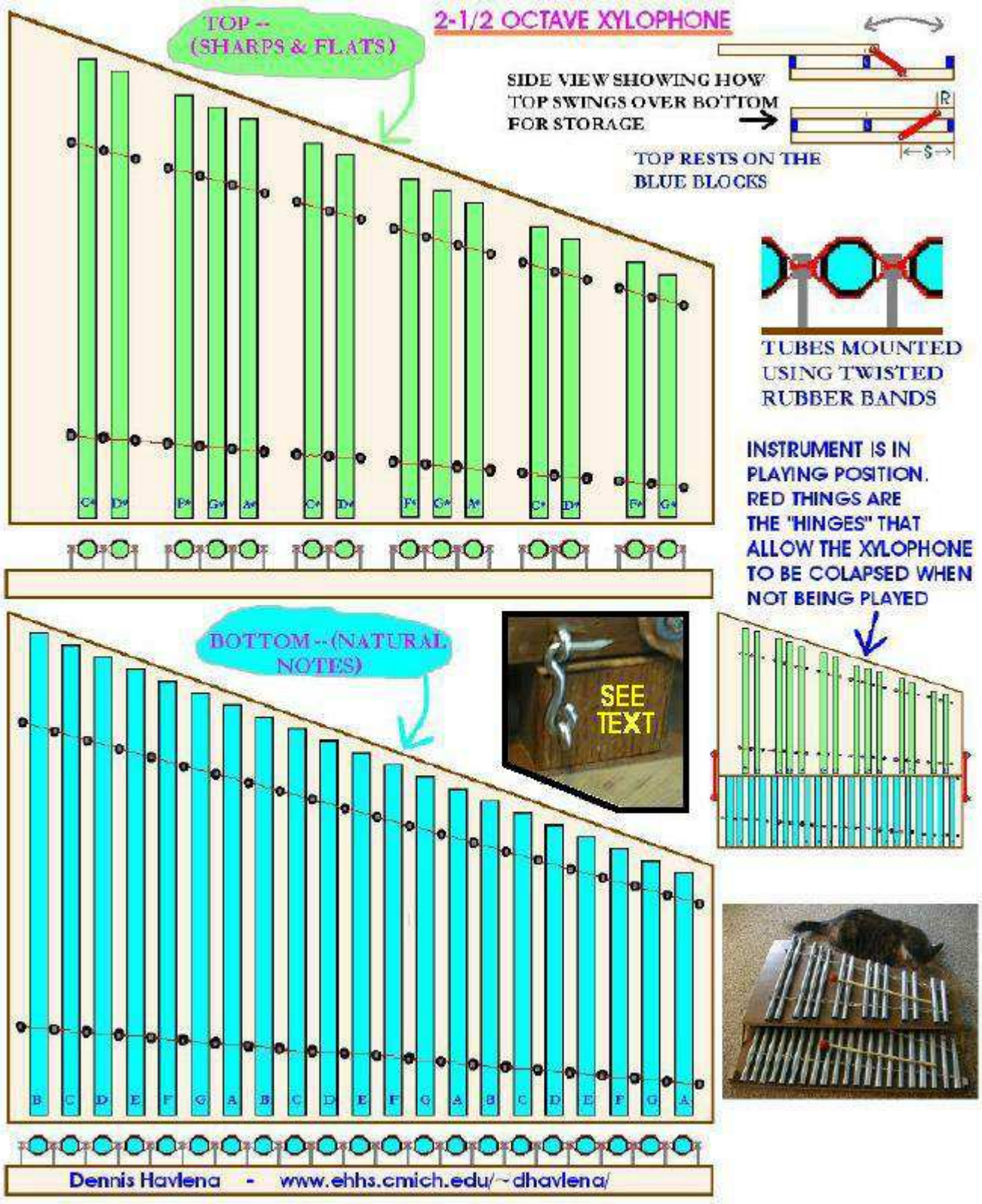
# 2-1/2 OCTAVE CHROMATIC CONDUIT-TUBING XYLOPHONE

My daughter having gotten interested in marimba playing at school, I came up with a two and a half octave xylophone fashioned most inexpensively and easily from lengths of electrical conduit tubing suspended and held in place by rubber bands fastened between double-headed cement (aka "duplex") nails, driven into 3/4" plywood basses (I used an old bed headboard).

I realize this is not a marimba, but I've set it up like one so my daughter can practice and it is quite serviceable for this purpose.

The thing sounds very nice -- the only objection might be the extended sustain, which can be much lessened by using softer whappers instead of the more normal wooden ones.




Two plywood bases are needed -- one for the naturals (corresponding to a piano's "white keys") and the other for the sharps & flats (corresponding to a piano's "black keys") (the thing is set up just like a piano keyboard). The "black key" base is positioned above and to the rear of the "white" keys and "hinges" forward (and rests squarely atop the natural notes base) to conserve space when not being played.

A note about metric measurements -- for someone who much dislikes the metric system of measurements, I must admit that in certain cases metric measurements make more sense than otherwise. Such is the case here where most measurements are in millimeters. The metric system of itself makes fine sense, what I find objectionalbe is that, because of the push to metrics, we've now got a totally confusing and silly hodgepodge of two dissimilar measuring systems in this country -- necessitating things such as the purchasing twice as many tools -- not to mention that the metric system was, for all practical purposes, essentially shoved down our throats! Gee -- you'd think I was a grump to read that.  I'm not.

CUTTING AND TUNING THE TUBES:
Standard galvanized steel 1/2" electrical conduit tubing in used throughout & produces a very nice musical note. Here are the dimensions that mine worked out to. Please note that different brands and batches of this conduit may produce slightly different musical pitches. I offer the dimensions here as a guide. It's far best to use a chromatic tuner to assure right-on pitch. Also, when cutting and tuning the tubes, always start with the lowest pitched note -- that way, if you goof up and cut off too much (you will!), you can still use the tube for a higher pitched note. I rough-cut with a hack-saw and grind to pitch with a grinding wheel. Don't allow the tubing to become too hot while grinding lest it affect the pitch -- I had this happen noticeably.

LOWER HALF (NATURALS) DIMENSIONS IN MILLIMETERS (from low to high):
B - 469.5
C - 458.5
D - 432.5
E - 408.5
F - 397
G - 374
A - 351.5
B - 332
C - 323
D - 301
E - 286.5
F - 275
G - 259.5
A - 244
B - 230
C - 224
D - 210.5
E - 199
F - 193.5
G - 180.5
A - 169.5

TOP HALF (SHARPS & FLATS) DIMENSIONS - IN MILLIMETERS (from low to high):
C# - 444
D# - 418
F# - 384
G# - 359
A# - 338.5
C# - 313.5
D# - 292.5
F# - 267.5

G# - 251.5
A# - 237
C# - 217
D# - 205.5
F# - 188
G# - 176

BASE-BOARD DIMENSIONS (both halves are the same dimension):
Left edge - 490
Right edge - 146
Bottom edge - 710
Top (slanted) edge - 784
Material used - 3/4" plywood of any sort

NAIL PLACEMENT:
This type of vibrating pipe has nodes 2/9 of the way from either end. This is important because, there being little or no vibration at these nodes, they are the places where the mounting rubber-bands should go. By the way, when cutting the tubes to proper length, grab them at these nodes or else your fingers will muffle the tone. These dimensions take this into account. On the left side of each half mark a point 105 mm up from the front edge and another point 367 mm up from the bottom edge. On the right side of each half mark a point 32.5 mm up from the front edge and another point 118 mm up from the front edge. Connect the four sets of dots - left to right. The nails are installed on these four lines. #8 (2-1/4 inch) "Duplex" nails (aka double-headed nails) are used throughout. They work perfectly because they also keep the rubber bands from migrating downward. The bottom part of each nail has to be hack-sawed off so that only 27 mm of the nail sticks above the board. Be sure to file off any sawn rough edge. I predrill holes for each nails using a 7/64 inch drill-bit. Try to keep the nail-heads more or less level with each other.

As for location of the nail-holes along each of the four lines -- here are my measurements:

BOTTOM half (naturals) holes (by number - measured from left edge (& in line with the angle of the nail holes)

Upper line:
Hole #:
1 - 30.5
2 - 63
3 - 94.5
4 - 127.5
5 - 157.5
6 - 187.5
7 - 220
8 - 253
9 - 284.5
10 - 317
11 - 349
12 - 382
13 - 413
14 - 446.5
15 - 477

16 - 403.5
17 - 541
18 - 572.5
19 - 604
20 - 637
21 - 670
22 - 702.5

Lower line:
Hole #:
1  - 28.5
2  - 65
3  - 100
4  - 133.5
5  - 168
6  - 200.5
7  - 236
8  - 270
9  - 305.5
10 - 338.5
11 - 371
12 - 404
13 - 439
14 - 472.5
15 - 507.5
16 - 540
17 - 574
18 - 608
19 - 642.5
20 - 675.5
21 - 710.5
22 - 743.5

TOP half (sharps & flats) holes (by number - measured from left edge (& in line with the angle of the nail holes)

Upper line:
Hole #:
1  - 84.5
2  - 117.5
3  - 151
4  - 185
5  - 219
6  - 253.5
7  - 287
8  - 320
9  - 354
10 - 387.5
11 - 422
12 - 455
13 - 489
14 - 523
15 - 556
16 - 590.5
17 - 624
18 - 657.5
19 - 692
20 - 727

Lower line:
Hole #:

1  - 77.5
2  - 111
3  - 142
4  - 174
5  - 205.5
6  - 237.5
7  - 269
8  - 300.5
9  - 332
10 - 364.5
11 - 395.5
12 - 427
13 - 459
14 - 491.5
15 - 523
16 - 554
17 - 588
18 - 619
19 - 649.5
20 - 681

In general, tubes are positioned 1.25 inched apart.
This ass isn't super critical.

RUBBER BAND PLACEMENT:
I use 3 inch by 1/8 inch rubber bands & span every 5 nails. When inserting the tubes into the bands, I found it best to grab the bottom part of the band, stretch it horizontally towards the rear of the instrument, then upwards to make a loop through which the tube passes. The twist in the rubber bands nicely keeps the tubes from rattling against the nails.

JOINING THE TWO HALVES:
A simple "hinge" affair enables the two halves of the instrument to not only be positioned correctly for playing, but also to enable the top part to be folded forward to lign up vertically with the bottom half - for storage. Note - With this hinged affair, the left side of the top half tends to tip backwards due to balance (when opened)-- I completely solved this problem by installing a small (1") hook & eye (screen-door type catch). See photo.

FINAL NOTES:
Of course, if you prefer not to have sharps & flats, you can simply build the bottom half - but you'd be limited to playing only in the key of C.

This thing is fun to build (despite the seemingly endless hack-sawing/grinding!) and surprisingly nice sounding. It's a whale of a lot cheaper than anything you can buy and gives you a much better understanding of music, acoustics and the like than you'd get by buying a similar instrument.

Click here to access
my webpage

Dennis Havlena - Cheboygan, Michigan

# The more detailed version: Lorraine Achey's Tube Drum Construction for Drummies

While I did not come up with the original process for making these wonderful little drums, I did write down these guidelines for my friend Heather. I hope that you find them of use and build many beautiful and wondrous drums. Please visit my website http://acheybodybiz.com for pictures (coming soon!).

Above all, enjoy!
Lorraine (aka "Mama MetraGnome")

## Materials:

- Cardboard tubes used for creating concrete piers
  (Available at most home improvement stores; comes in 12, 10 or 8 sizes. Depending on brand, some will have thicker walls than others)
- Wooden embroidery hoop in corresponding size(s)
- Pack cloth (about 1/2 yard)
- Material to cover drum (1 yd or so)
- 1/4" cord for handle (about a foot; can use cotton clothesline)
- Craft Glue
- Gorilla Glue or Tite-Bond or similiar type glue
- Electrical tape
- 3/8" or 1/4" staples
- Waterproof sealant

## Tools:

- Pencil or other marker
- Yardstick
- Saw (I like the small Sharptooth saw by Stanley. Not only does it zip right through the cardboard, it sings while it does it!)
- Heavy duty kitchen shears
- Clamps (WalMart has a bag of assorted for $4.50 that work great!)
- Staple gun
- Hammer (for reluctant staples)
- Foam brush
- Damp cloth
- Scissors

## General Instructions:

Wipe down inner and outer surfaces of tubes to remove dust. Wear a mask if needed.

Using yardstick, measure 2' from one end and mark tube all around. This will give you two 2' drum bodies--perfect for most adults and children.

Saw the tube in half along line. Don't worry about sawing the feet yet, as they can get crushed during the head stretching process.

Using kitchen shears, cut the metal parts off of the embroidery hoop, then trim to fit inside the factory cut rim of the drum. Make as snug a fit as possible.

Apply your Gorilla Glue or Tite-Bond to the inside rim of the drum. (Wear gloves to protect your hands!) Fit the embroidery hoop inside the rim, making sure it is even with the top of the tube.

Clamp to hold in place and let dry. If you are using Gorilla Glue, use sparingly as it does expand. Use your damp cloth to wipe up any excess. If you miss some, don't worry, it 'shaves' right off.

Let dry thoroughly and remove clamps.

**OPTIONAL:** For a sturdier rim, cut the second hoop of the embroidery hoop to fit inside the first and follow the above procedure to glue it in place after the first ring has dried.

Cut a square of pack cloth to fit over the top of drum. Be generous so you have material to hang onto when as you pull and staple the head in place.

Start by centering the cloth on the top of drum and tacking with 2 staples on one side of the rim. You can staple into the rim hoop if you wish using 3/8□ staples or just below the rim hoop using 1/4" staples.

Turn the drum so the first staples are directly opposite you. Now the fun begins! Stretch the cloth as tightly as you can--don't worry if it looks puckery as this will stretch out as you work your way around the head. Tack in place with a staple.

Rotate drum so that you are now midway between the first and second set of staples. Stretch and staple, then turn drum so that this set of staples is directly opposite you. Stretch and staple here.

Repeat around the rim of drum, rotating the drum as you go until the head is secure all around.

Trim pack cloth close to staple lines with the kitchen shears or scissors.

Mark and cut feet from bottom of the drum. You can cut curves, but I just take the kitchen shears and make a 2 cut 'V'.

Depending on your drum size, you can use larger or smaller 'V's . Also, you might want to consider tripods (3 legs) will be more stable than their 4 legged sisters, especially if you plan on using these drums outside much.

Take a well deserved rest and soak your tired fingers! Play your drum--and take pride in its unique tones.

**Gluing on Fabric:**
Measure your drum from just below the staple line to the feet. Add a couple of inches to fold under the feet.

Then, measure around your drum, adding a couple of inches to overlap. This overlap area will provide extra stability for the handle. Mark one edge so you will know this is the starting edge.

Use craft glue, slightly thinned with water, to apply your fabric to your drum. Start by painting a strip about 2" wide the length of your drum, and glue down the (appropriate) edge of the fabric.

**TIP:** If you work with the fabric to be applied coming toward you, you can glue it in place, fold the fabric back over the drum shell, apply more glue, then bring fabric back toward you. This allows you to easily pull out any wrinkles. Wipe up excess glue as you go.

Let the fabric dry. (About 30 minutes.)

While you're waiting, cut a 3 1/2" wide strip 2" longer than the circumference of the head. Fold one of the long edges in about 3/4" and press.

Then fold the other long edge over about 3/4" and press. Make sure your raw edge doesn't overlap the other first folded edge. Unfold this top edge and apply glue to hold in place. (makes strip easier to apply).

Cover the staples with electrical tape.

Apply prepared strip over electrical tape. It's a nice touch to line seams up on the rim and body. To do so, figure out where the edges will meet, but do not start gluing the strip there. there. Start about 2" away. Glue thestrip all the way around. Tuck the end under the beginning of the strip and glue down.

**TIP:** for a less bulky seam, trim the 'under' end to a 45 degree angle that will fit under the beginning of the strip.

Trim fabric at feet, turn under and glue in place. Be patient! Using craft glue full strength helps, or try using steel wool to knock down the slickness of the inside of the tube. (It was made to easily release concrete, after all!)

Let dry thoroughly. Apply waterproof sealant if needed or desired.

**Self-Storing Handle:**
HANDLE can be made by drilling 1/4"holes in drum shell in the fabric overlap area. I drill my first one about 8" from the rim, the second one 5-6" below that, then one more 1" from the second one.

Cut a 12-15" length of 1/4"cord. Poke one end though the top hole into the inside of the drum. Reach inside, tie a knot, and apply glue to keep knot from coming undone.

Poke the other end down into the 2nd hole and back up through the 3rd hole.

Leave enough cord between the first 2 holes to slip a hand underneath. Tie a knot just below the 3rd hole, again applying glue to secure knot.

This makes a self-storing handle: when you are done carrying your drum, pull the knot below the 3rd hole until the handle disappears between the first two holes.

**Mallets:**
If you like, make mallets from large wooden beads glued to lengths of dowel. For a softer sound, cover beads with felt or fleece.

# Tube drums

homemade percussion home

These are the homemade drums that are causing such a stir in the drumming for wellness scene this year.

Tube drums, made from heavy cardboard cylinders are currently **THE RAGE,** thanks to facilitator and founder of the Eldermusic group at Yahoo, **Annie O'Shea.**

The idea of using heavy cardboard concrete forms, used for pouring concrete, for drums is not entirely new. Banek and Scoville described such tube drums in their book Sound Designs years ago, but they used goatskin and were a little different, hanging in different lengths, different pitches from a rope or cable.

Annie has added several crucial modifications that are great, such as a viable synthetic head material (pack cloth) and the use of an embroidery hoop as a reinforcing ring. (!)She also added the cutouts at the bottom that let the sound out, like the REMO brand TUBANOS®.

The Eldermusic group has been alive with ideas for these instruments, with participants coming up with new ideas and adaptations, including Beverly Nadelman (she has posted a jillion good ideas), Randy Brody, and others. To really get the entire lowdown, and see all the images, you should join the eldermusic group at Yahoo and read the archives..

The eldermusic list was established to facilitate communication between people currently working with elders in any setting and using music. There is sharing about instrument making, sources of instruments/supplies , facilitation ideas, and encouragement and support of each other.

Annie has given us permission to post her very basic instructions and a photo or two here, and Massage Therapist Lorraine Achey has offered her more detailed instructions, complete with list of tools, materials, and procedures from beginning to end.. If you want the detailed version it is pasted in below Annie's..Thanks to both ladies for their generosity in making this stuff available to Rhythmweb readers..

**Annie: "Here are the absolute BASICS…"**

1. Cut an 8, 10 or 12 inch diameter tube in whatever length you want. (They usually come in 4 ft lengths). Cut scallops or rectangles in the bottom to let the sound out. (Lorraine Achey has wisely suggested that you postpone this step until after the head is stretched, to avoid damage to the bottom during the stretching process.)
2. Cut 2 wooden embroidery hoops to size and glue onto the inside of the head, one inside the other placing the areas of the cuts across from each other. I also glue a short piece of hoop over the area of the inside hoop where it was cut to fit together. One may be enough depending on how tight you want to pull the heading fabric. I use Titebond II Wood Glue. Be sure to clamp for a couple of hours. I also add Gorilla Glue in any places where there is a gap between the glue and the tube wall.
   ALTERNATIVE: You can also buy plastic embroidery hoops and use these instead of the wooden ones. I only use one of these instead of two They cut very easily with a hacksaw and DON'T NEED ANY GLUE!! You have to be a little more careful when you pull the heading material taut.....if you don't pull evenly they can end up egg shaped. (they still work, though!)

3. Using a white craft glue like ModPodge or Elmer's or Aleene's original tacky glue, apply a cotton or cotton blend fabric.....or any other fabric that will glue...to the drum...or you could paint them also. My drums are all somewhere between 18- 27 inches high so I buy 3/4 yard of a fabric that is 44-45 inches wide. Leave at least an inch down on the top without fabric....the heading material glues better to the cardboard tube surface than fabric. Leave at least an inch down on the top without fabric....the heading material glues better to the cardboard tube surface than fabric. Trim the top edges and turn under the bottom edges , gluing securly to the underside..
4. Cut out an appropriate size circle or square of "pack cloth" material. This is a coated nylon available at many fabric stores and on the web.
5. Soak the pack cloth in water for at least one hour. This is important. It takes awhile for the water to soak in.
6. With another person helping, staple the pack cloth onto the top, pulling as tightly as possible. Staple all the way around,(I use 1/4 inch staples,some use 3/8 inch) alternating sides to get a good tight pull. Trim away the excess pack cloth. Wrap black electricians tape around the staple area to flatten and cover. Note: There is an alternative to stapling. See the update below.
7. Apply either ribbon or a strip of the same material (or whatever you like!) around the drum to cover up the staples and electrician's tape.
8. I buy plastic tubing at the local True Value hardware store, cut it in the same length as the "feet", split it open lengthwise and slip onto the leg to protect the fabric from fraying out and tearing. I have also used sticky backed felt to finish off the legs. I had one person discover she could get a cool sound by banging the entire drum against the floor.....and so I came up with some protection for that particular creative act!

For mallets we use 12 inches of 1/2 inch dowel with a 1 inch wooden dowel ball that has a 1/2 inch hole already drilled into it. We just glue these on and sometimes cover in matching material. I have covered most of my mallets with colorful fleece to dampen the sound depending on where I will be and what group I will be working with.

These drums elicit wild ideas and creativity and are very fun to make especially with a group. Enjoy and please let me know how it's going and what new ideas you came up with!


# THE PIPE XYLOPHONE

*By Ros Dickinson*

Many children first experience musicmaking while banging on the tinny, offkey bars of a toy xylophone . . . and— *though it's* wonderfully stimulating for the youngsters-such activity is often a real headache-producer for their parents. However, you can inspire your young musician's creativity, and soothe your own nerves, with the down-home musicmaker pictured here.

After a shopping trip for materials (during which you'll lay out a lot less cash than you'd need to purchase most manufactured toys nowadays) and an hour or so of assembly time, you'll have a permanent instrument on *which your* child can enjoy learning the elements of musical theory. Furthermore, I think you'll be amazed by this xylophone's pleasing tone . . . and if you have a good ear, you can even adapt the design to vary the number or pitch of the instrument's "keys".

## HOW IT'S PUT TOGETHER

The simple xylophone is made from common, readily obtainable materials . . . some of which you may already have around the house. The pipes are nothing more than sections of electrical metallic tubing (E.M.T.), usually sold in hardware or building supply stores. You'll need one standard 10-foot length, *which* should cost between $2.00 and $3.00. The 1/2" *sizewhich has* an outside diameter of almost 3/4" will make a xylophone consisting

of 13 pipes, like the one shown in the photo . . . with three notes *below* the standard eight-tone octave and two *above* it.

The instrument's base is a wide piece of 3/4" shelf board (about 11" X 24"). Rather than resting upon the wood, *though, the* pipes are supported and cradled by an assembly of long strips and small blocks of polyurethane foam . . . *which is* secured with ordinary white household glue.

**PIPES**

To begin, use either a pipe cutter or a hacksaw to divide the conduit according to the measurements indicated on the chart that accompanies this article. Start with the longest one. The length of each pipe determines its pitch, so try to match the measurements as precisely as possible . . . but allow a *little* extra when you cut, to permit fine-tuning adjustments. Check each notemaker against the preceding one: The new note should be the next tone *higher in the scale.* (Remember that the changes from *ti* to *do* and mi to *fa* are halftones . . . while the other intervals are whole tones.) If the pitch is *flat* (too low), you can saw off a little more to correct it . . . and *very* small discrepancies can be fixed later by extra filing.

It's a good idea to err on the side of *too long,* since it's impossible to *add* length to a pipe. If you do find that the pitch is sharp (too *high), cut* a new piece of pipe for that tone, and shorten the "mistake" for use as the next *highest note* in the scale.

Most simple xylophones—such as this one, which is approximately in the key of G-have pipes representing only the notes of a major scale, but you *can* estimate and "whittle" more half notes (or even additional octaves) to expand the instrument's versatility. (If you want to be able to play your xylophone along with a piano that's tuned to concert pitch, however, you'll likely have to shorten all the tubes a tad.)

After the pipes have been sawed to the specified lengths and tuned, their cut ends should be ground smooth. Use a round metal file inside the mouth, and a flat file for the outside surface. You'll probably also want to finish those areas with fine black (silicone carbide) sandpaper. When you're done, check the edges with your finger to be sure there'll be no danger to young musicians.

**FOAM**

If they're to resonate clearly, the pipes must rest on an absorbent yet resilient foundation . . . and polyurethane foam is an ideal material for that purpose. When I made my xylophone, I merely cut strips of foam from an old mattress, but—if you don't have any such scraps around the house—you can often pick up bundles of odd pieces of polyurethane, at fabric outlet stores and the like, for under $1.00.

First, take a sharp knife (or use an electric carving knife or a band saw if you have one) and cut two 1-1/4" X 17-1/2" strips. These supports should be at least 3/4" thick so that the pipes won't hit the board when struck. (You can, of course, cut the strips from 3/8" foam, as in the diagram, and make each support from a double layer of the material.)

Lay the foundation strips in a V-shaped formation on the wooden base and adjust the angle so the space between the inner edges of the cushions measures 1-5/16" at the small end and opens up to 8-3/4" at the wide end of the "V". (The pipes will then be supported at the points that create the least interference with the music.) Attach the pieces of foam to the wood with *plenty* of white glue . . . the spongy material tends to absorb the adhesive readily.

Next, cut 28 small blocks of foam, each about 5/8" X 1-1/4" (you may want to slice them into parallelograms so they'll align with the slanted supports), and glue the first pair flush with the ends of the strips, just to the left of the spot where the longest pipe will be. Lay the tube in place—barely touching the blocks—then glue on the

next pair . . . and so forth. It's a good idea at this point to arrange *all* the pipes across the supports and pencil in the spots where the rest of the foam pieces must be attached, so that you'll come out even at the other end.

When the glue has set, nestle each section of conduit in its own cradle . . . making certain that it protrudes an equal distance at each end. This will assure that it rings with the clearest possible sound when it's struck.

**MALLETS**

Now, all you need is a pair of mallets to make your xylophone sing! The possibilities here are virtually unlimited, and each kind of striker will give the instrument a slightly different tone. To achieve a sweet muted sound, simply use rubber vibraphone mallets purchased from a music store. Wooden drawer knobs attached to foot-long pieces of 3/8" dowel, or even tinkertoy wheels and sticks, will produce louder tones ... but if the youngsters get too boisterous, you can always muffle the noise by stretching a wide rubber band around the head of each mallet. The idea is to unleash your imagination, and experiment with whatever happens to be readily available. (The model shown here uses chopsticks, inserted—and glued—into large wooden macrame beads! )

Once you and your young ones give it a try, I'm sure you'll find that playing the pipe xylophone is easy and enjoyable. Thanks to its simplicity, this homegrown instrument is perfect for improvisation and creative harmonizing. You don't need an instruction book or a teacher, either . . . just pick up the mallets—or hand them to an eager young tunesmith—and sound out some ear-pleasing melodies!

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## How To Pitch Your Pipes

The portion in bold is the basic octave, G major scale

| Note | Inches |
|---|---|
| sol 5 | 11 ¾ |
| la 6 | 11 3/32 |
| ti 7 | 10 7/16 |
| **do 1** | **10 1/8** |
| **re 2** | **9 9/16** |
| **mi 3** | **9 1/16** |
| **fa 4** | **8 ¾** |
| **sol 5** | **8 7/32** |
| **la 6** | **7 13/16** |
| **ti 7** | **7 ¼** |
| **do 1** | **7 1/16** |

| | |
|---|---|
| re 2 | 6 5/8 |
| mi 3 | 6 7/32 |

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*EDITOR'S NOTE: Now that your musical muse has been awakened, you may want to try your hand at some other homemade instruments. You can find out how to add to your family orchestra in* Simple Folk Instruments to Make and to Play *by Ilene Hunter and Marilyn Judson.*

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