

How to Properly Cut Out an IBC Tote for Aquaponics by John Musser

(Illustrated with pictures and a video)



My story



- I have spent many hours cutting out IBC totes and have trained many others to do the same.
- I have learned that it's best to take the time necessary to cut them out right the first time.
- Once you have placed gravel, fish and crops in your system, its really too late for any retrofitting.
- Since much of our work is around children and orphans, we want the edges to be smooth and safe for all concerned.
- Our units are smooth to the touch when done.

This Presentation Gets Straight to the Point, focusing ONLY on Cutting an IBC Tote the Right Way

First of all, what is an “IBC TOTE?”

An IBC (which stands for “International Bulk Container”) Tote is a 275-330 gallon steel-framed plastic container used worldwide for storage and transport of liquids and building materials from one country to another.

You want a 275 gallon-sized “**food-grade**” tote that has **no** cracks and a valve spout that is in good working condition.

The finished IBC tote Aquaponics system utilizes part of the container for the fish tank and the other part for the grow bed.



Not All IBC Totes are the Same

There are different sizes and shapes of IBC totes *and* most are very similar in shape and appearance. Please observe the pictures provided in this presentation and look for a tote that is as close to them as possible.

- Some will have more ribs than others. Make sure you use our examples as a guide and find two totes with the same amount of metal ribs.
- Some IBC totes are larger than others. We use the 275 gallon [1041 liter] tote. You will need at least one or two extra totes in case of mistakes or bad valves.
- Some parts of the tote are more temporary than others, such as the valve spout. We want a good solid ball valve to provide many years of use.
- They may have wooden or aluminum frame beds. The aluminum ones work best because they last indefinitely.
- Use food grade totes only. **No exceptions.** (Totes that have been used for tomato sauce, pickles, etc.)
- They must be washed out before cutting. This can be done with a pressure hose, or hand wash with a mild soap, like Dawn dish soap. It's important that there is no residue in the container to foul up the injector or mess up the eco-system of the Aquaponics system later.
- Make sure the tank is without cracks and the valve is in excellent working condition. You don't want to do all this work and have a bad tote.



BE SAFE

Always take appropriate safety precautions.
Wear safety goggles and gloves when modifying IBC totes.



Assemble the Proper Tools for Tote Modification:

Assemble all the materials, supplies and tools before beginning your project:

- Permanent marker
- Drill with 5/16", 7/8" and 1" drill bits
- Torx bit #40
- Hand grinder
- Metal cutting wheel
- Brush wheel
- Vice
- Sanding block
- Knife / blade for scraping



You will need to purchase:

- one or two IBC - 275 gallon (1041 liter) food grade totes.
- Four 8 foot 2x4 pieces of wood (You need four boards cut at 4'6" for each tote.)
- olive oil for lubrication of valves



PREPARATION OF THE TOTE

Step 1

Mark out the 2 cutting areas, on the inside of the bars as shown, all the way around the food grade IBC tote with a marker. Make the marks straight.



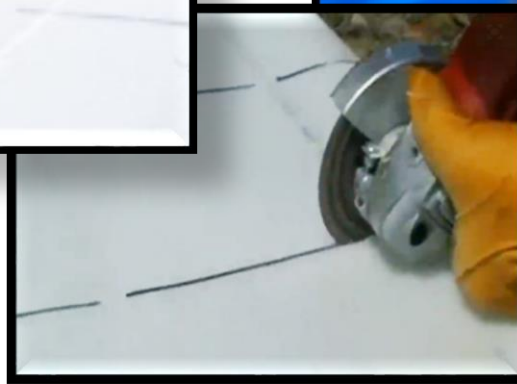
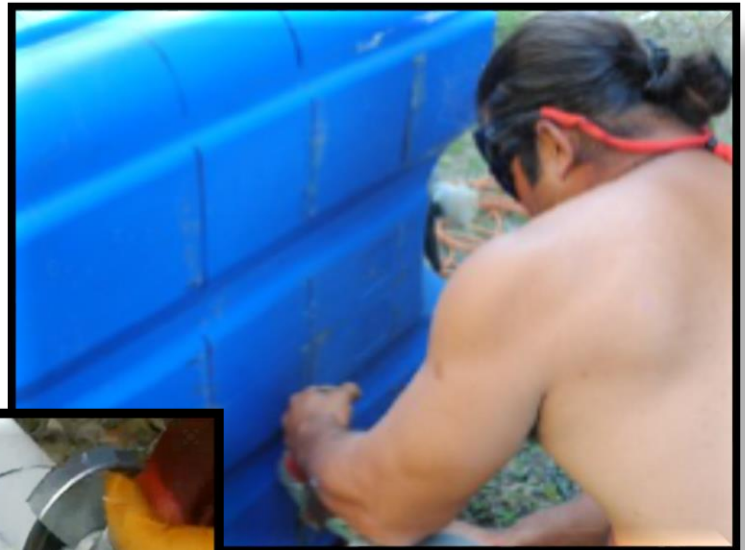
Step 2

Remove bars from the top of the tote and remove the tote from the cage.



Step 3

Cut tote along marked lines using hand grinder



Step 4

Sand the cut edges of both the top and bottom pieces with a medium sanding block.



Take your time and do a good job.
Later, rough edges can and will rip your nets.

Step 5

Cutting Metal Frame

Cut out the metal framing. Cut off the excess metal pieces as seen below between the 2nd and 3rd horizontal ribs that you marked earlier in step 1.



Bottom and Top After Cutting

Bottom After Cutting



Top After Cutting



Check that your pieces look similar to the pieces pictured here.

Step 6

Smoothing Rough Edges

Use a file or a wire wheel with a drill for smoothing the rough metal edges.



A chainsaw file works well to clean inside of any cut metal pieces (inside the ribs).

Step 7

Our Little Secret for a Really Nice Look

On the top metal frame, locate the rods (4) with pre-manufactured holes. Place the opposite end of these rods into a vice and flatten.



Step 8

In each flattened rod, using a 5/16" drill bit [.8cm], drill a new hole directly above the rail and in line with the old hole of the **top metal frame**.



Step 9

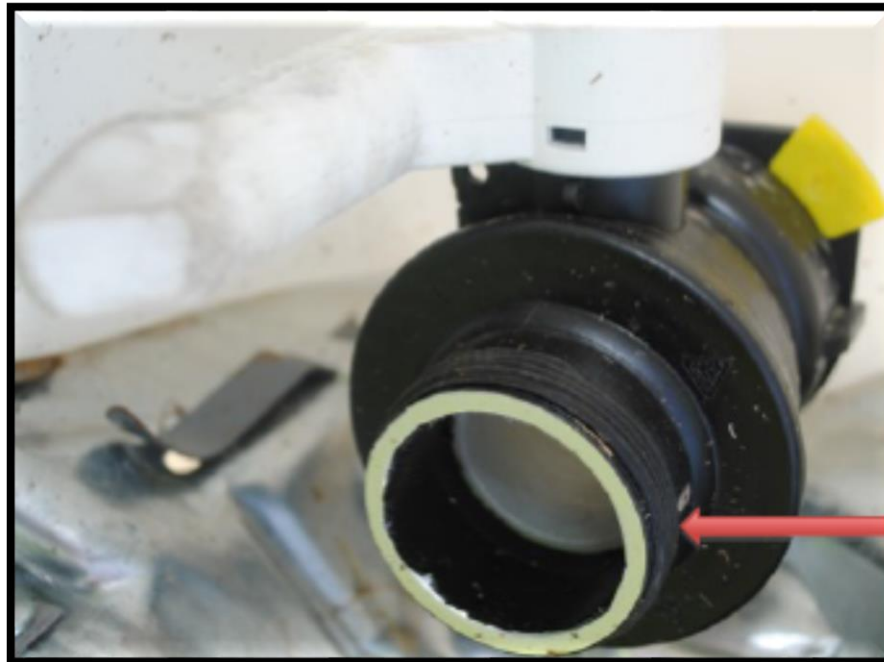
Reattach the rods back onto the top frame using the new holes.



Step 10

Clean the Valves

- This is very important, so take your time. You can use Q-tips also.
- This will pay off for years to come.
- A frozen valve is no good; and if it breaks, you will have trouble on your hands.



Step 11

Wash your tote several times

Make sure you have NO plastic particles hanging; they will plug up your pumps.



Place the plastic top and bottom of the tote back into their respective frames.

Top



Bottom

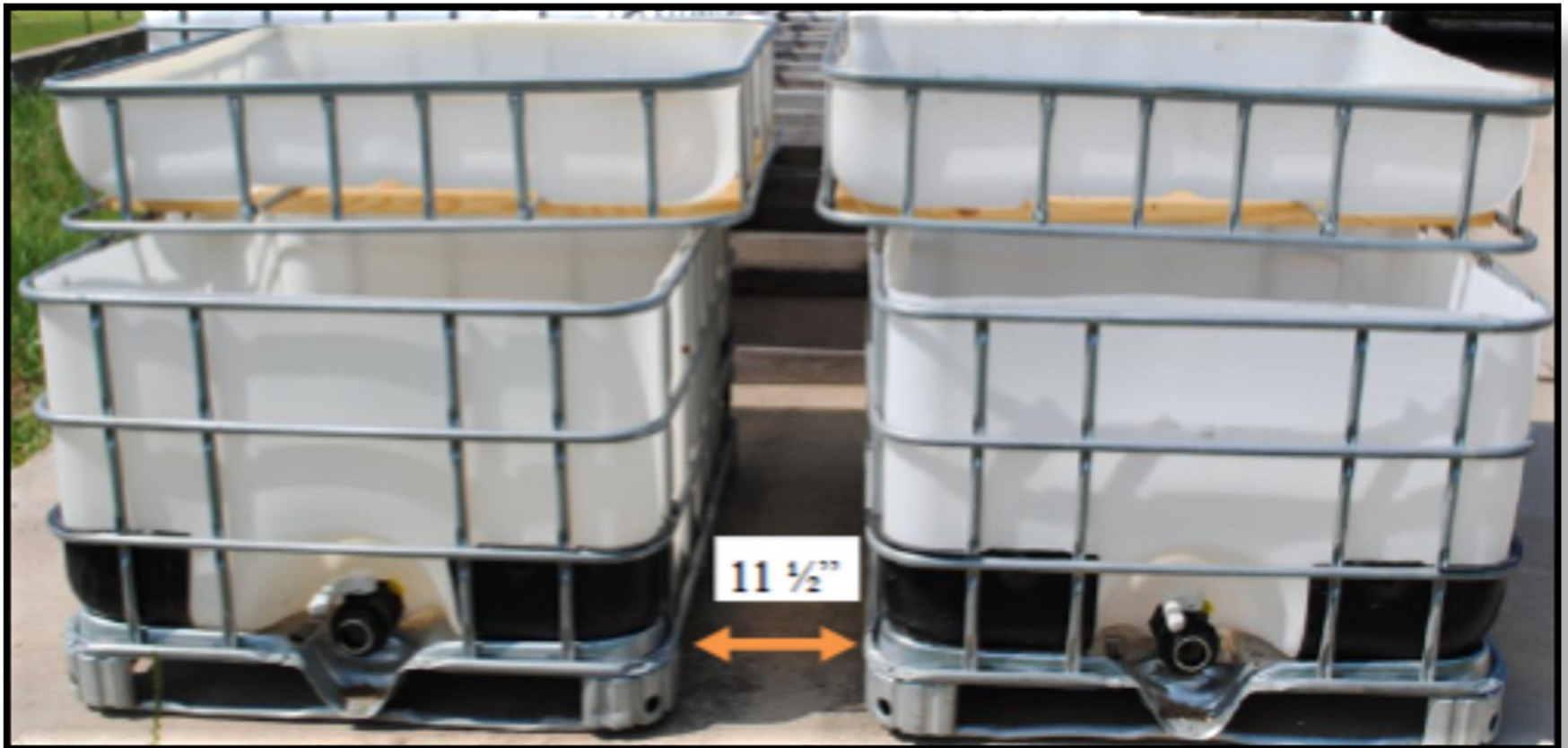


Cut 2x4's to 4'5" (134.6 cm) in length. Four boards will be needed for each tote. (They must fit inside the underside of the grow bed frame).



Place 2 boards 3" (7.6 cm) from the back of the tote.
Place 2 boards 8" (20.3 cm) from the back boards towards the front.

- Place tanks on a level surface.
- Place tanks $11\frac{1}{2}$ " (29.2 cm) apart as shown below.
- Place grow beds back 12" (30.5 cm) from the front of the tanks with the drain holes on the outside front corners.



Bonus Tip: Tank Drain Assembly

Attach rubber boots to ball valves. Do not glue so that it can be easily cleaned later.

Tighten clamps with a standard screwdriver or socket.



**Make sure you watch the Video.
Every step is clearly demonstrated.**

For more information contact: customers@aquaponicsandearth.org