# How to Build TOGA Floats
# 2021

# Four  Foot Wire Bender for Making the Taylor Float

The 2x6  inch boards are 50 in. long with 48 inches between the end screws. A 42 inch bender is made the same, only shorter,  with 40 inches between the end screws. It is made for the flip float, but can still be used for larger floats , but a little  less convenient.

First a ~3/8 in. chamfer is cut along each 2x6. This is to make room later for the hinge barrels.

# Wire Bender

Screw holes are drilled for the #8 2 in. deck screws at intervals of 4 inches, at a ~30 degree angle (from vertical), right along the top of the chamfer. The metal jig for spacing and aligning the screw holes is shown here but it was actually used where the screws are. A wooden jig can be made as well.

Here a 5/8 in. router bit set ¾ in. deep was used to cut grooves about 1.25 inches down, exactly opposite the screw hole. This makes space for the screws to rotate when bending. The grooves can also be made with a large drill bit and a jig saw. Does not have to be pretty.

Place 3 inch door hinges between the screws as shown. I like to use 1.25 deck screws rather that the screws that come with the hinges.

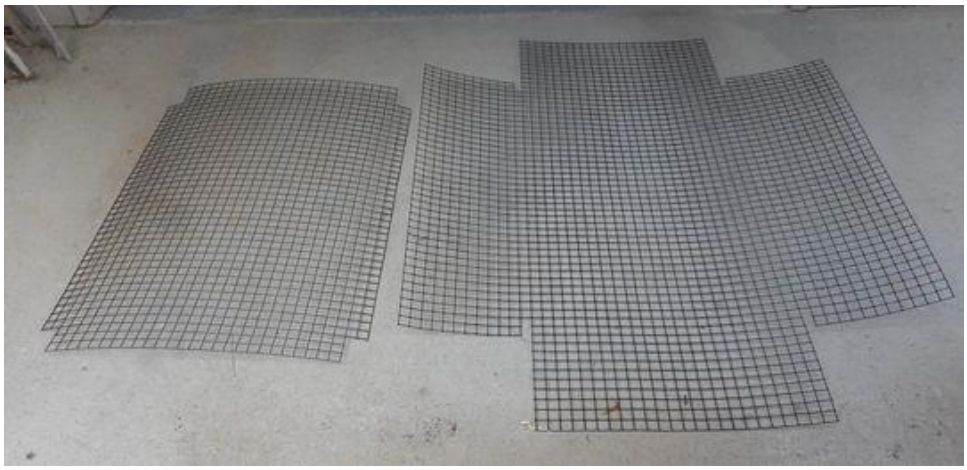
The handles are the cheap 1x4s cut in 2 foot lengths and assembled with 1.25 in. deck screws.

# Wire Bender

Last, drill in the 2 inch deck screws leaving about 5/8 inch exposed. There should be about ¼ inch between the top of the hinge barrels and the screw heads.  Rotate the bender until completely closed to make sure the screws are completely clear of the grooves. Then test the bender on a real piece of I inch mesh 16 gage oyster float wire. For long term durability, the bender should be painted.

# Taylor Float

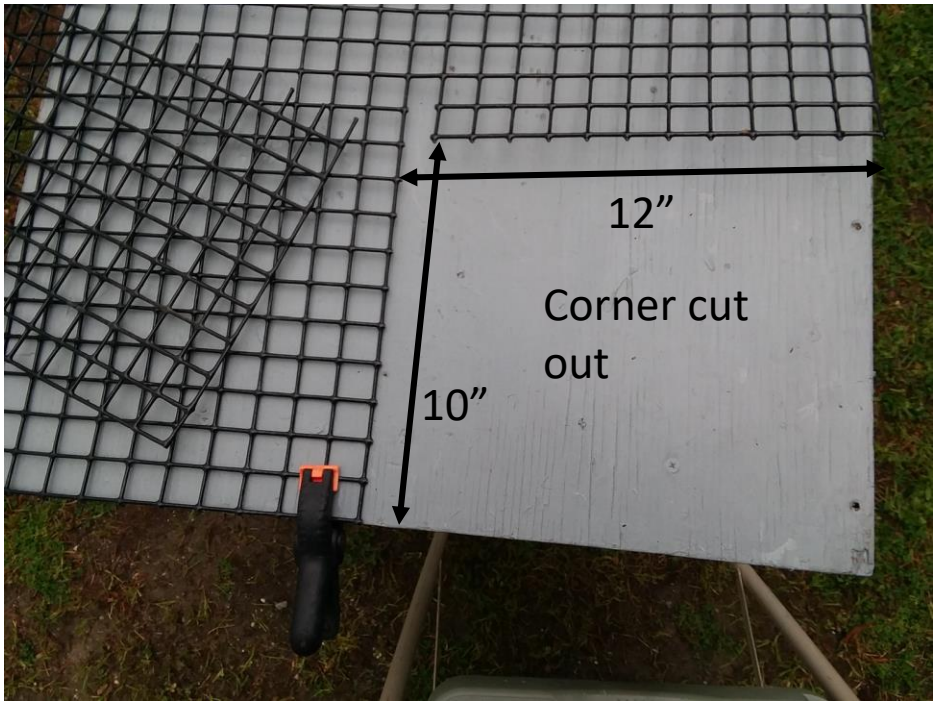
Start by cutting the main wire panel 4’ wide by 5’ long. The lid wire panel is 30” wide by 42” long. Then cut out the corners.



# Taylor Float

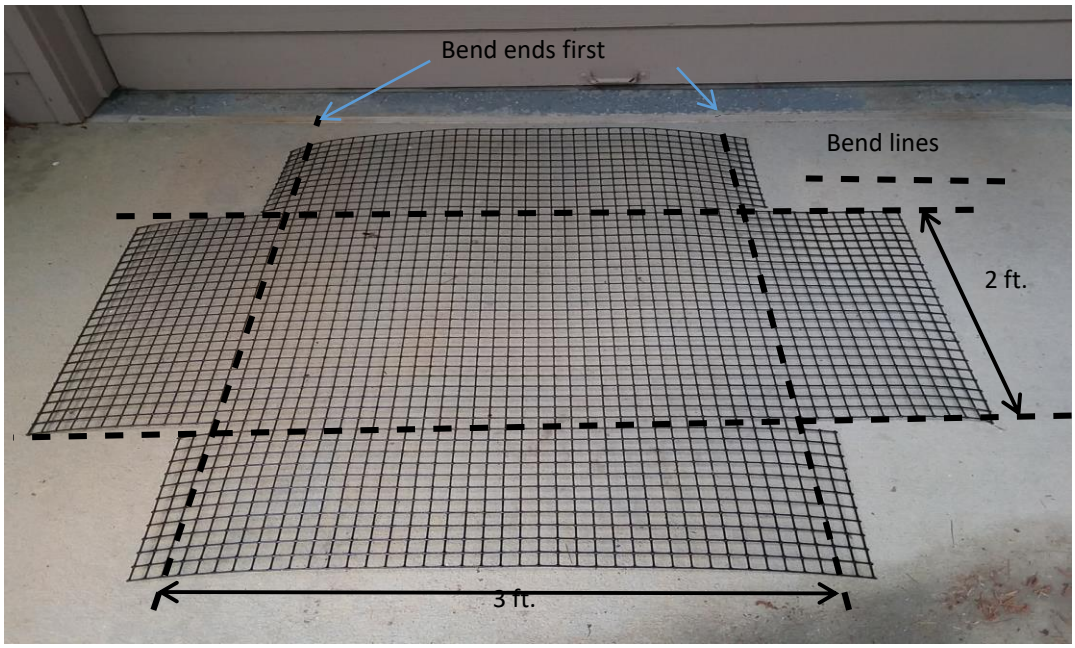
## Template for Taylor Float available at float workdays


## Cut Out the Corners



# Taylor Float

## Bend lines




## Clamp Bender to Table

# Taylor Float

First bend, repeat at both ends,
then bend the long edges. This method creates reinforced corners.

Pig ring the reinforced corners.

# Taylor Float

Pig ring all 4 corners, 2 inch overlaps on the outside of the basket.

Assemble the thin wall 4” drain pipe PVC donut. Long pipes cut to 36.5”, short pipes 24.5”.  Use the compact short drain pipe elbows.

# Taylor Float

Apply primer to elbows and pipe. Add heavy-duty cement one corner at a time. Work fast while the cement is wet.

After adding second elbow on the short pipes, press hard on a table to align the elbows so the long pipes will be parallel.

# Taylor Float

After priming and adding glue, insert the long tubes as shown.

Complete the donut with the other assembled short end.

Insert the basket and apply large cable ties (18” or 24”) to secure the donut to the basket.

# Taylor Float

Trim cable ties.

Attach hinge along one long edge with pig rings.

# Taylor Float

Completed Taylor Float with Top

# How to Build a Flip Float with Reinforced Seams

In 2013, TOGA started to build flip floats with reinforced (or overlapped) seams. This results in a stronger device with a longer life. The end product is a wire-mesh box that is 39” long, 23” wide, and 6” deep. It will hold up to 300 3” oysters. When sitting vertical, the cage should not be more than 1/3 full of oysters. Flip every few weeks to minimize fouling. Occasional spraying down may also be required.

# Flip Float

| Tools and Supplies Required | Source |
|---|---|
| 5' by 4' piece of 16 gauge vinyl-coated wire mesh. | OPR* |
| ½ lb. stainless pig rings, ½ or ¾ in. | OPR or hardware store |
| Pig ring tool | same |
| 4 24” or 18” cable ties | same or home store |
| 2 ft. length of 1/4” bungee cord or similar | same |
| Crab pot hook or similar | same |
| Wire bender** | TOGA |
| Wire cutter | hardware, home store or similar |
| 10' length of thin-wall sewer pipe, 4” dia. *** | same |
| 4 4” sewer pipe caps | same |
| Purple primer for PVC | same |
| Heavy duty PVC cement | same |
| Saw to cut 4” PVC sewer pipe | same |

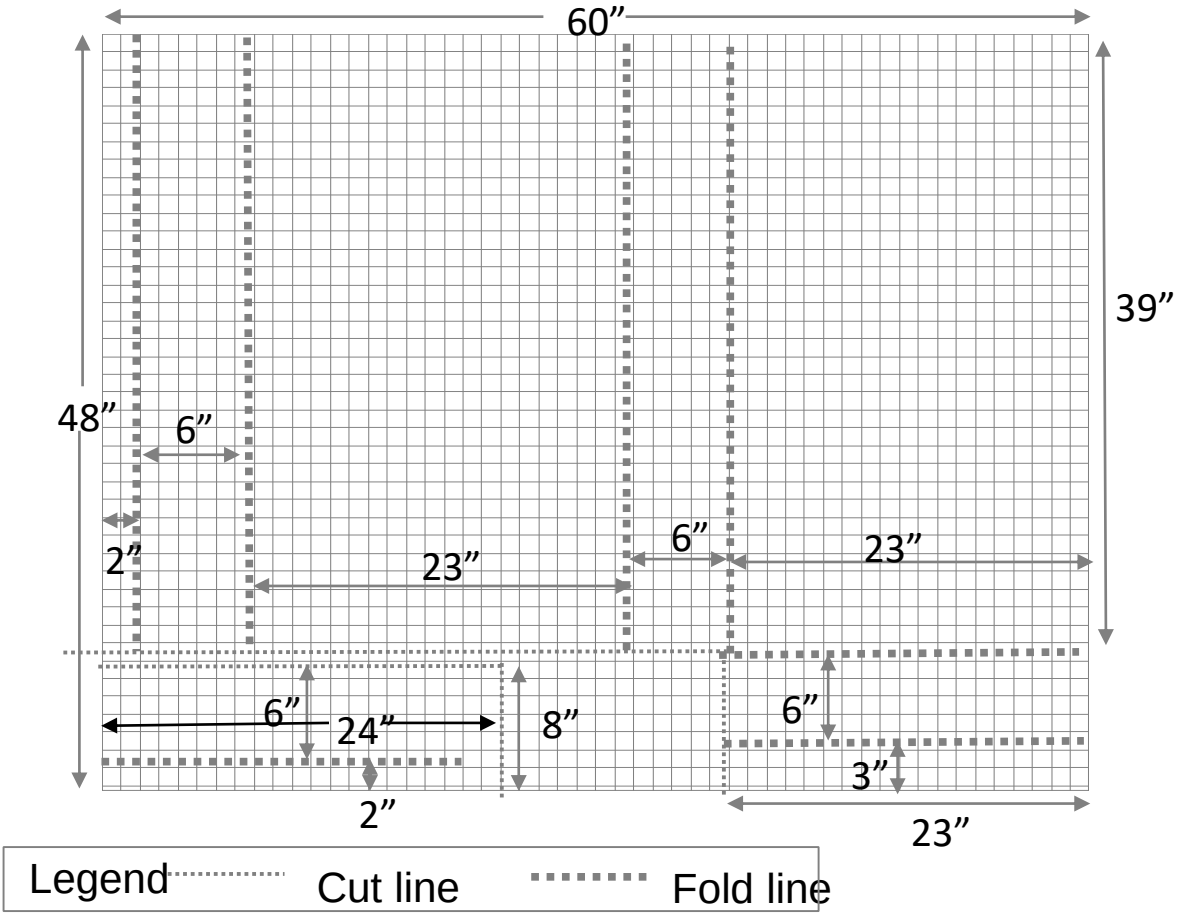
* Ocean Products Research, Diggs (Mathews County), VA

** Wire can also be bent on a table edge with a board and rubber hammer.

*** Pipe comes in 10' pieces. Hardware store may cut it into 38” lengths if requested. 2 38” pieces are required for each float.

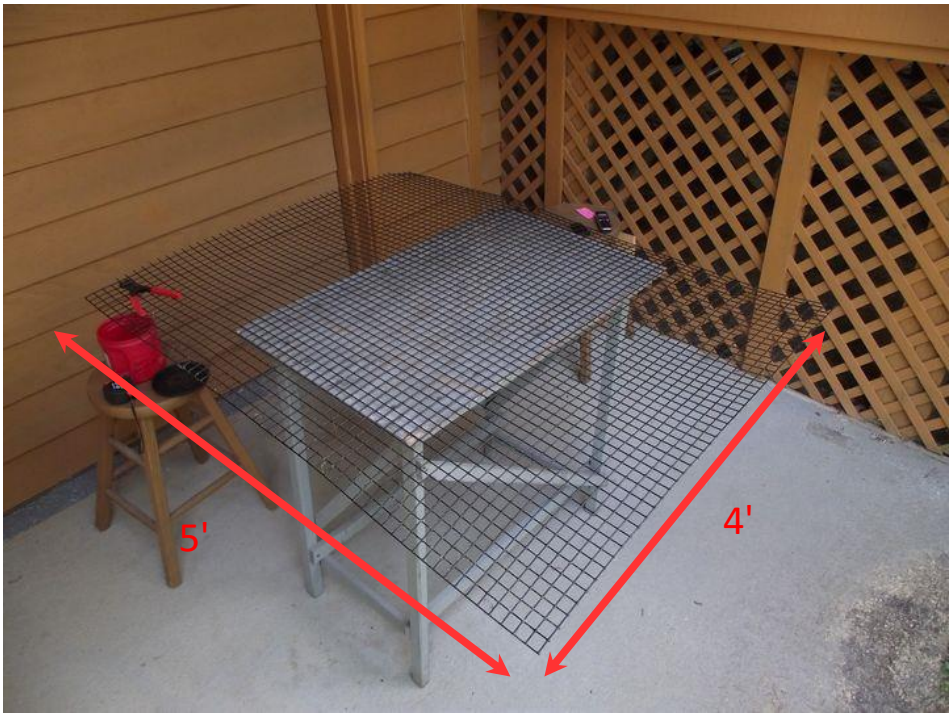
# Flip Float

Layout of Flip Float Wire Mesh



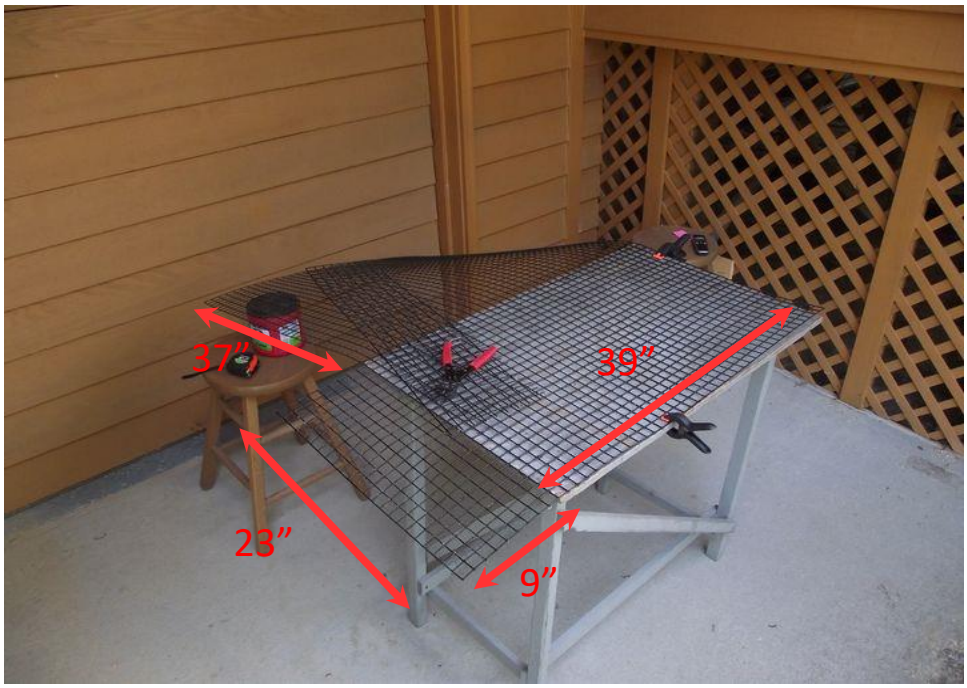

The diagram shows the cut lines and fold (or bend) lines for the 5 ft. by 4 ft. piece of wire mesh.

# Flip Float




Start with a 5' length of wire mesh that is cut from a 4' wide roll. TOGA buys 16 gage vinyl-coated wire from Ocean Products Research in Diggs (Mathews), VA.

# Flip Float




Cut out lower left panel leaving the dimensions shown. Be sure to remove all nubs in the finish pieces (They can cut skin if not trimmed closely). The 23” by 9” panel left attached will become the bottom of the box. The 37” by 9” panel cut out will be further cut to become the lid.

From the panel removed above, cut out the lid (24” by 8”). Note that the lid is 1” wider than the box.

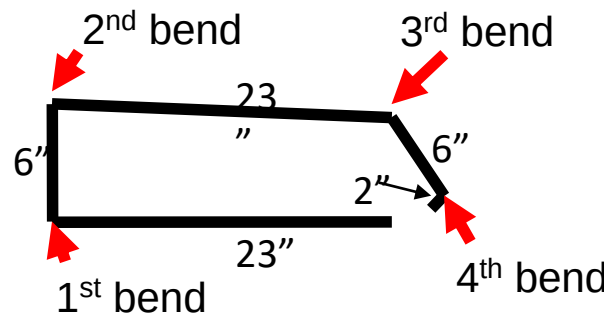
# Flip Float

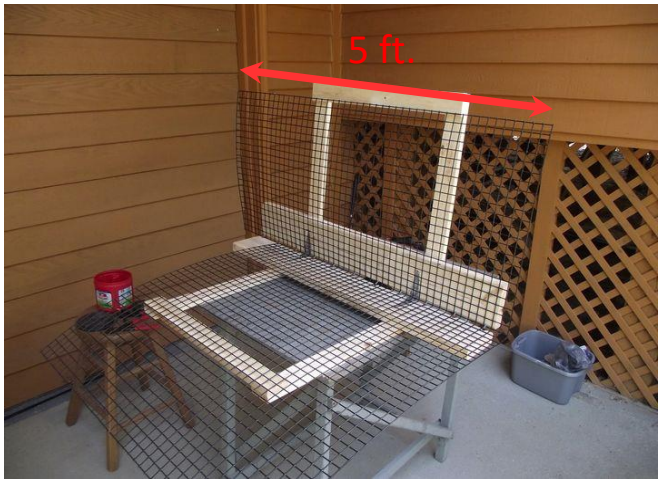
Bend a 2” lip along the leading edge of the lid.

# Flip Float

## How to Build a Flip Float with Reinforced Seams

Start bending the wire into a box, starting with the long edges as shown in the photos. Save the bottom for last. The diagram shows the sequence of bends. Imagine looking at the plane of the wire from the bottom edge.




First bend.

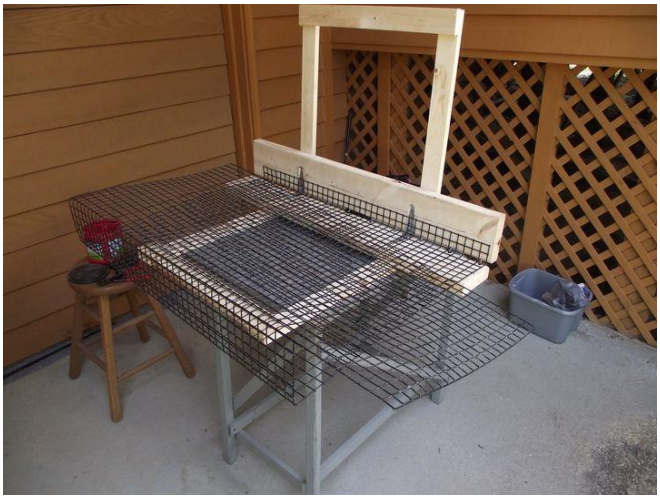
Second bend.

# Flip Float

## How to Build a Flip Float with Reinforced Seams

Third bend.

Continue with the the bending. The fourth bend creates the 2 in. overlap.



Fourth bend.

# Flip Float

## How to Build a Flip Float with Reinforced Seams

Fifth bend

Now bend the attached 23” by 9” panel to create the bottom. The 5th bend creates the overlap lip on the bottom, the 6th bend closes the bottom.

Sixth bend

Finish sixth bend

# Flip Float

## How to Build a Flip Float with Reinforced Seams

Pig ring all seams, roughly 5 to 6 in. apart.  Note that the bottom seam and side seam are overlapped, and therefore reinforced.

The pig rings along the back edge of the lid create a hinge.

# Flip Float

Cut a 23” length of bungee cord.  Attach one end as shown with 2 pig rings.

# Flip Float

Thread the bungee cord through the hook and attach the other end.
This is the basic box that can be made into a flip float or bottom cage.

# Flip Float

PVC drain or sewer pipe comes in 10 ft. lengths. Cut 2 38” pieces. You will have an extra piece for your next flip float. You can cut with a chop saw, jigsaw, circular saw or hand saw.

Note that this is 4” diameter thin-wall drain pipe. It is cheaper and lighter than schedule 40. The 4” caps shown are sold in the same section of most building product stores.

# Flip Float

Prime the pipe ends and cap walls with purple primer. Then Coat the pipe ends and cap walls with heavy-duty PVC cement. Push the caps all the way on the pipe with a ¼ turn. When placing the cap on the opposite end, hold down for 15 seconds so the air pressure will not push the cap out.

# Flip Float

Attach the floats to the sides of the box using 24” or 18” cable ties.  The cable ties should be near the ends to keep the PVC floats from sliding back and forth.

***Voila, you're done!  Happy oyster gardening.***

# Bottom Cage

The cage is the same as for the flip float

Use a bender and pig rings to make feet. Wire pieces are 21” by 19”:. Bend the wire along the 21” edge for each foot, then add the 3” by 6” panels at each end for stiffness. Attach feet to cage with pig rings.

# How to Build a TOGA Tidal Tumbler 2021

The main wire panel is 39” long (wrap direction) and 36” wide. When wrapping, there is a 2” overlap which results in a 37” circumference.

**What you need**

*Main wire panel, 39” long, 36” wide
Hatch cover wire panel, 20” long, 11” wide
PVC cement and primer
Thin wall 4” PVC pipe, 33.5” long
2 each 4” PVC caps
2 each 24” cable ties
2 each 5 gallon paint can lids (Home Depot)
Small ½” stainless pig rings
Large 3/4 “ pig rings for attaching lid at one end
Bungee cord, 12”
Crabpot line, 5 ‘ (ends burned)
Clamps, 2
Wire cutter
Pig ring pliers
Wire bender

**Not shown in photo**

Plastic hook
Drill with small bit
Rubber hammer
Screwdriver

# Tidal Tumbler

Prime and glue the pipe caps. Be sure to hold the second cap on for 15 seconds (because of the air pressure).


Complete PVC float.

Clamp one end of the wire panel with 3” hanging out beyond the table edge. Create the wire cylinder by pig ringing the other end 2” inside the clamped end. Use ½” pig rings and connect them loosely (that is, don’t clamp down hard).

Pig ring it loosely on each end and in the middle.

# Tidal Tumbler

Repeat the pig ringing on the end of the wire, also loosely. This will create a the wire cylinder.

Pig ring (3/4” rings) through the 6 holes around the lid. Flip the cage over and make sure the rings are around the wire.

Place and seat the lid on the wire cylinder. Avoiding the overlap section, drill small holes at 12, 2, 4, 6, 8 and 10 o’clock to allow the large pig rings to slip under the end wire.

The attached lids at one end should look like this. Attach the other end with 8” cable ties for easy removal.

# Tidal Tumbler

Now tighten the seam by firmly clamping 1/2 " pig rings every 4 inches along the outside edge of the overlap.

Starting 5 inches below the overlapped seam, Cut an opening 18 inches long by 6 inches deep. The edges of the opening will "puff" out a little, so bend the edges gently with a screw driver.

The hatch cover panel is 11" by 20". Bend the long edges 120$^{o}$ twice to form a triangle.

The hatch cover with edges bent

# Tidal Tumbler

Use a rubber hammer to curve the hatch cover to conform to the cylindrical shape of the cage.

Attach the hatch cover with pig rings along the bottom edge, and use bungee cord and a hook to hold the cover closed.

Close up of bungee and hook arrangement

Attach the PVC float along the overlapped seam with 24” cable ties. Cut off excess ends on the cable ties.

# Tidal Tumbler

Use a 5 foot piece of crabpot line to create a harness which is attached opposite from the PVC float. Use 2 large pig rings for the loop at the apex and to attach the ends. **This is the complete Tidal Tumbler.**

This photo shows how to attach a lid at one end (left), and a different type of lid that is acceptable (right). One end of the tumbler should be removable so a spat tube can be inserted as shown below.

# TOGA Spat Tube

This photo shows a spat tube being inserted into a Tidal Tumbler. Special training and equipment are required for the spat tubes.