

Sharks Circling Kayaker

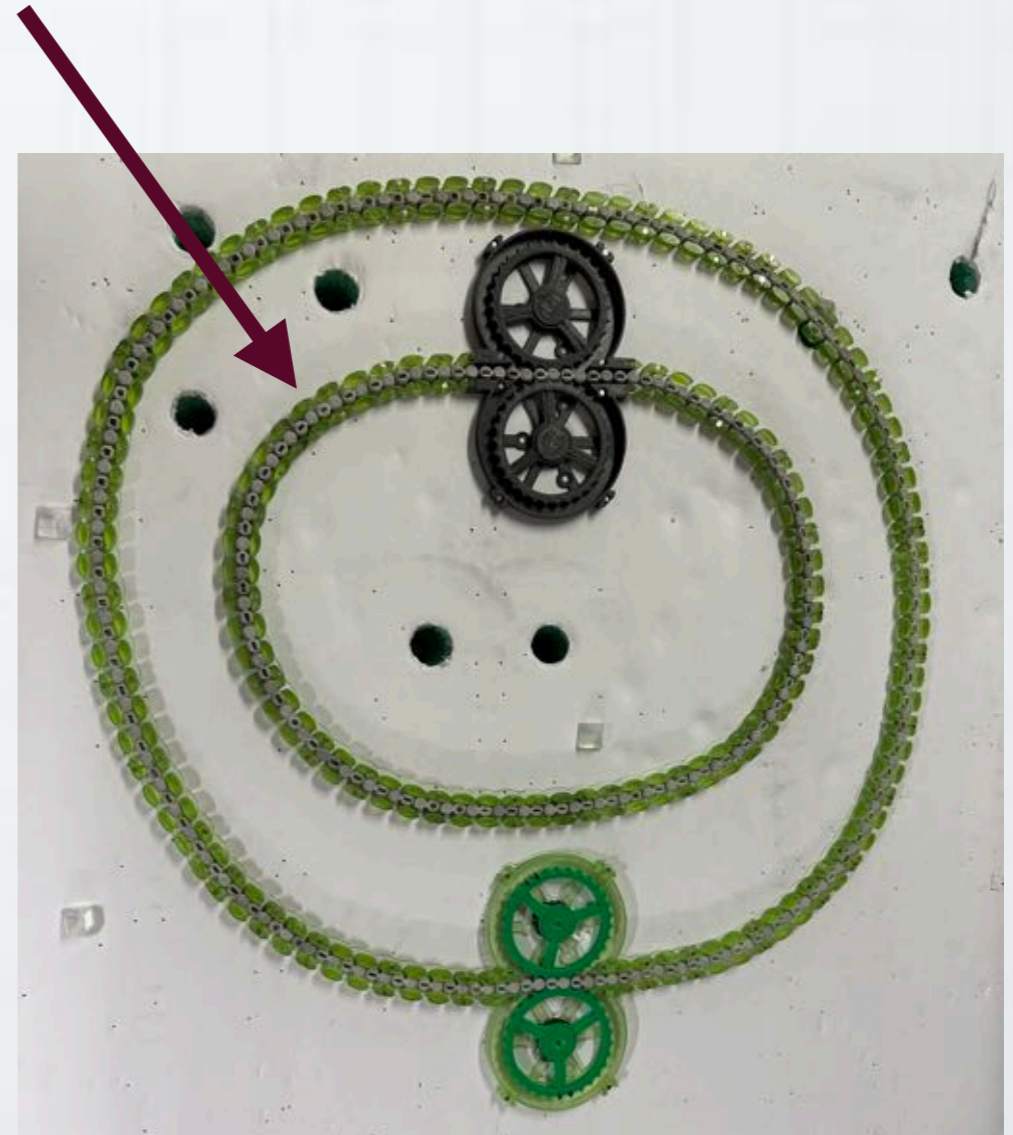
InvisaTrax™ Transport System



InvisaTrax™ Components List

Inner Loop

| <u>Quantity</u> | <u>Component Name</u> |
|-----------------|--|
| 1 | Straight Drive Motor Section w / motors mounted ¹ <i>(Two (2) 60 RPM N20 motors)</i> |
| 2 | Motor Turn Gears |
| 2 | 14 Unit Track Piece |
| 2 | 8 Unit Track Piece |
| 2 | 4 Unit Track Piece |
| 2 | 2 Unit Track Piece |
| 62 | Chain Links (2 - 3mm RND) |
| 2 | 3mm Round Magnets - Chain |
| 2 | 2mm x 2mm Magnets - Kayak |
| 1 | DC Motor Controller |
| 1 | Power Supply (battery or 6V DC Adapter) |



*Track Components shown are early test prints,
printed in-house using 3D Resin Solutions Studio Green Resin*

*1 - This assumes that the wires have already been soldered to the motor.
See the InvisaTrax™ Transport System Instructions for details.*

InvisaTrax™ Components List

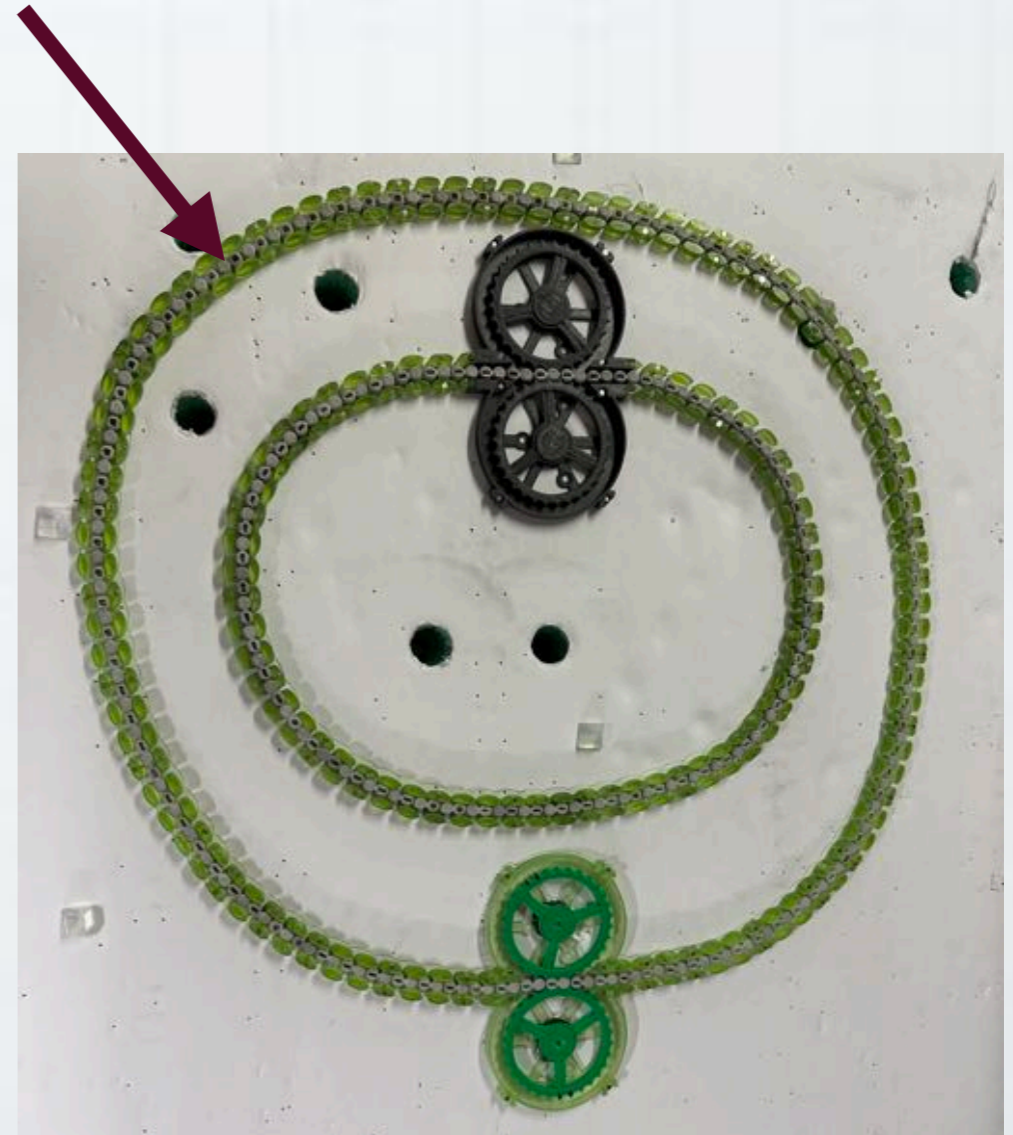
Outer Loop

Quantity Component Name

- 1 Straight Drive Motor Section w / motors mounted¹
(Two (2) 30 RPM N20 motors)
- 2 Motor Turn Gears
- 5 14 Unit Track Piece
- 2 8 Unit Track Piece
- 1 4 Unit Track Piece
- 1 2 Unit Track Piece
- 98 Chain Links (6 - 2mm RND)
- 12 2mm x 2mm Round Magnets - Chain
- 12 2mm x 0.5mm Magnets - Sharks

The outer loop uses the same dc motor driver and power supply as the inner loop.

*1 - This assumes that the wires have already been soldered to the motor.
See the InvisaTrax™ Transport System Instructions for details.*



Track Components shown are early test prints, printed in-house using 3D Resin Solutions Studio Green Resin

Additional Materials Used

Material Name & Description

1 in. x 2 ft. x 2 ft. Rigid Foam Board Insulation

20 x 30 x 3/16 in. Foam Board

Caribbean Water Scrapbook Paper

Polycarbonate Sheet (0.010" thick)

#18 x 5/8" Wire Nails

Double-Sided Tape

ZeroPad Adhesive Mouse Pad (optional)



CatzPaw Kayak Long, S-Scale (1:64)

(https://catzpawstore.myshopify.com/products/kayak-long?_pos=2&_sid=338c1f17c&_ss=r)

CatzPaw Kurt w/Single Oar, S-Scale (1:64)

(https://catzpawstore.myshopify.com/products/kurt-with-a-single-oar?_pos=2&_sid=ce67eed44&_ss=r)

CatzPaw Shark Fins, S-Scale (1:64)

(https://catzpawstore.myshopify.com/products/shark-fin?_pos=1&_sid=b87c43320&_ss=r)



Tools Used

Tool Name & Description

Box Cutter (to cut foam board)

3/4" Forstner Bit (to drill hole for motor)

Double-ended Screw Driver: Flat & Philips Head

Tack Hammer

Dremel® Rotary Tool with Router Attachment

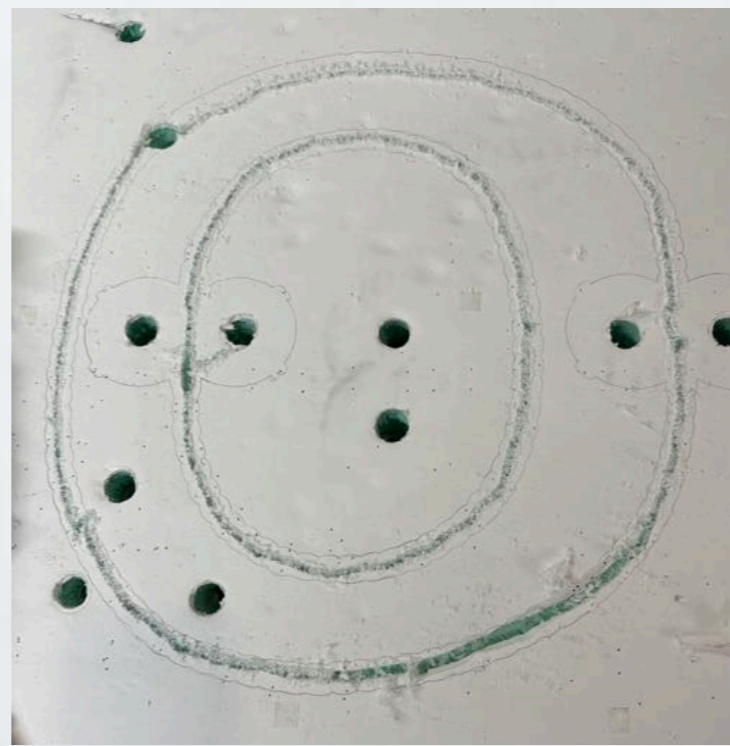
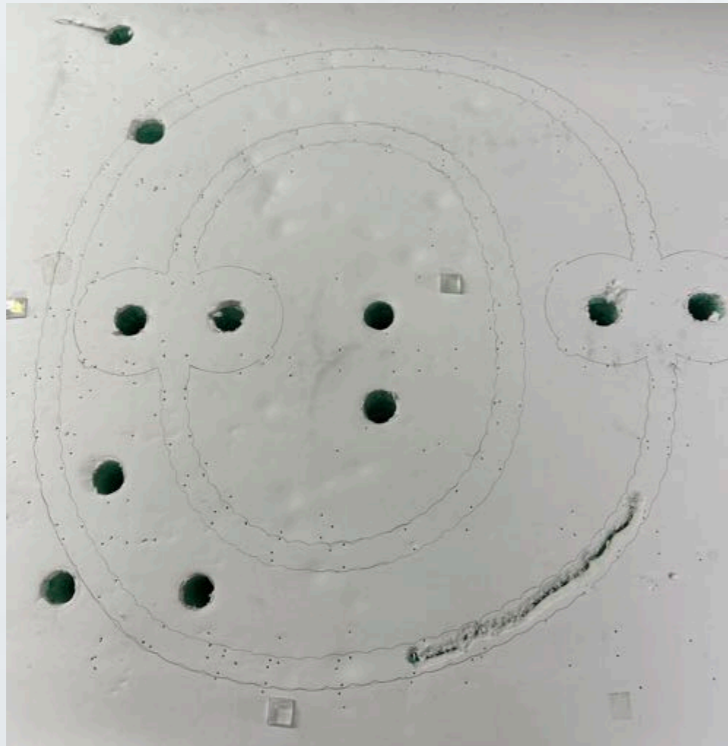
1/4" Dremel® Router Bit

2mm Drill Bit



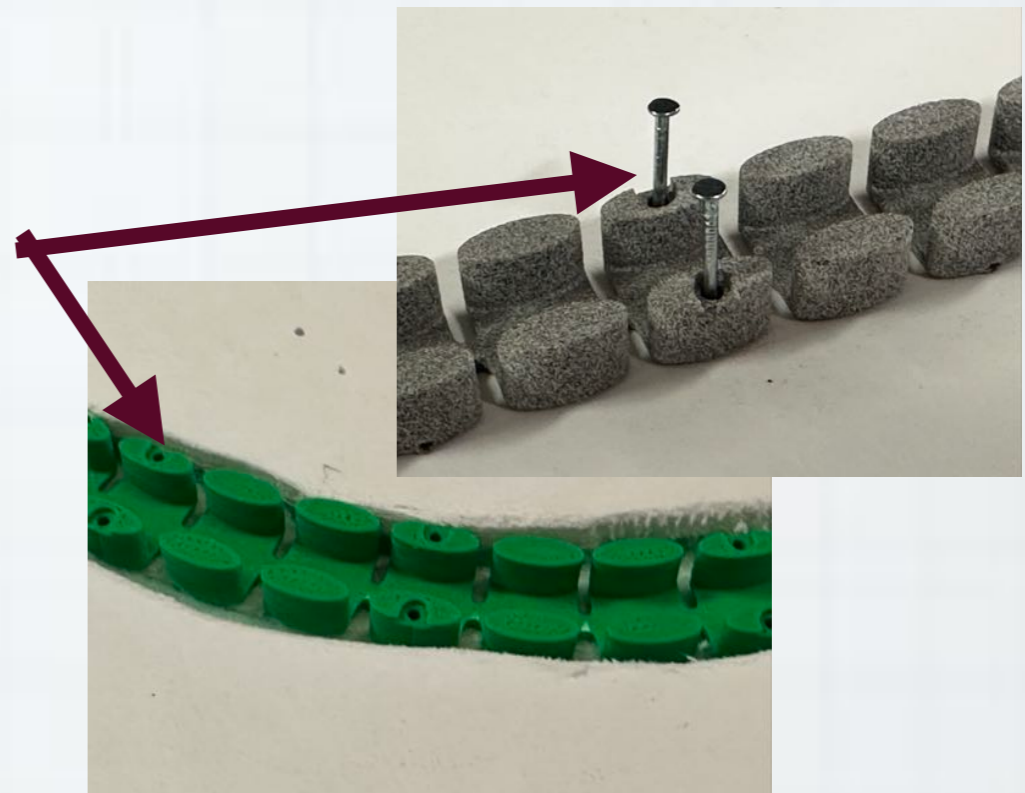
The Process

- ▶ Cut and glue the Foam Board to the Foam Board Insulation.
- ▶ Trace the desired path onto the Foam Board.
- ▶ Lay the InvisaTrax™ track segments to match the traced path. Trace around the outside of the track segments to use as a guide for routing a channel for the track.
- ▶ Mark where the motor turn will be placed and drill a hole to house the motor.
- ▶ Use the Dremel® Rotary Tool to route the channel where the track will be placed. Set the router height to match the track height (7.5mm).



▶ Mount the track to the foam boards by placing the track pieces in the routed channel. Line the channel with double-sided tape for extra hold. Add a few wire nails to the track; place in the openings located in the sides of the track sections. Tap with a hammer or push with the flat blade of a screwdriver.

Leave some mounting holes open which will be used later to attach the Polycarbonate sheet to the base.

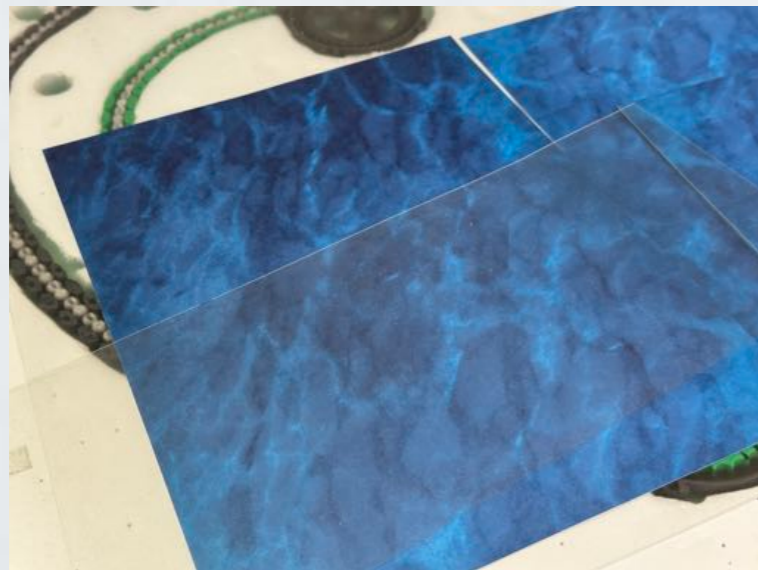


▶ Assemble the chain links and drop into the track. Be sure to have installed two (2) 3mm round magnets into two (2) consecutive chain links for the inner loop and six (6) 2mm round magnet chain links spaced evenly apart for the outer loop.



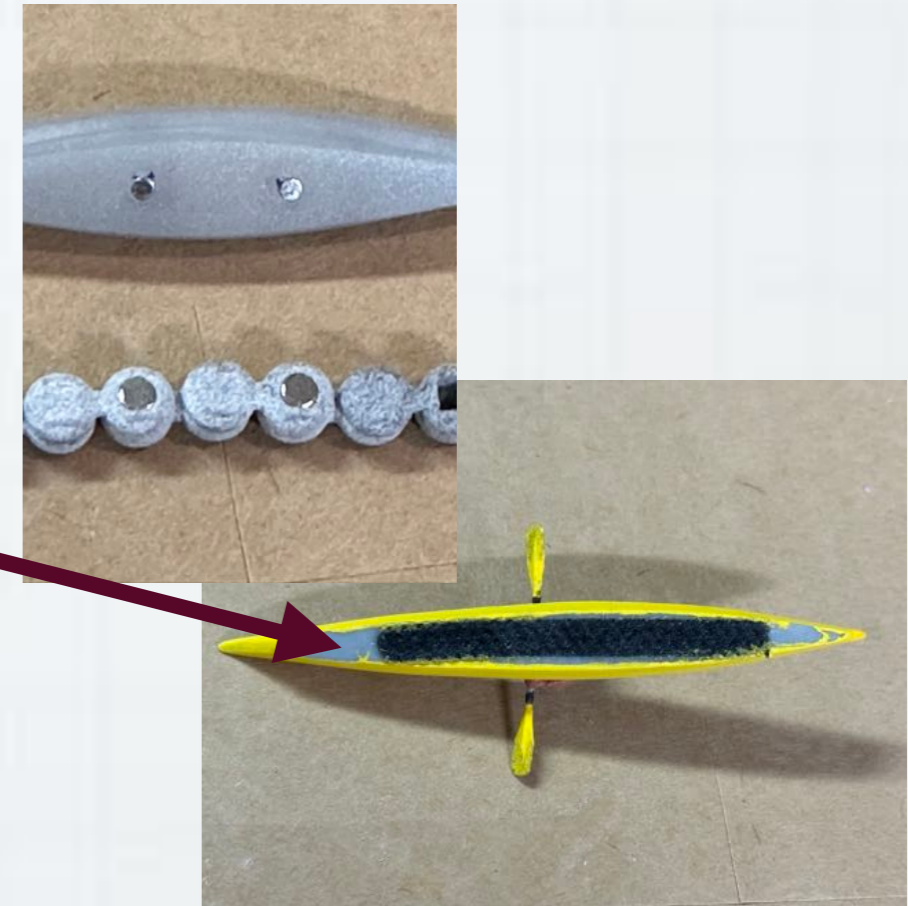
See the InvisaTrax™ Transport System Instructions for details on mounting the magnets.

- ▶ Attach the motors and power to the motor controller. Reverse the polarity of the outer loop motors when attaching to the controller; this way the sharks will move in the opposite direction of the kayak.
- ▶ Test the setup. Run the system at all speeds and both directions.
- ▶ Cover the layout with the Polycarbonate sheet and attach using double-sided tape and a few tack nails in the remaining track mounting points.
- ▶ Test the system again. Be sure the chain is moving freely and not hung-up on the Polycarbonate covering.



- ▶ Cover the Polycarbonate sheet with the Caribbean Water scrapbook paper. Use double-sided tape or spray adhesive. Make sure the edges where the sheets meet are lined up and security attached to provide for a smooth transition between the sheets.
- ▶ Test the system again!

- ▶ Drill two (2) 2mm holes, 2mm deep in the kayak. Space the holes so they match the magnets in the chain links.
- ▶ Insert two (2) 2mm x 2mm round magnets, one in each hole in the kayak. Superglue them if necessary.
- ▶ Cut a thin strip of the ZeroPad and attach it to the bottom of the kayak. This is optional, but it reduces friction and allows the kayak to move more freely. Other materials, such as fabrics, can be used.



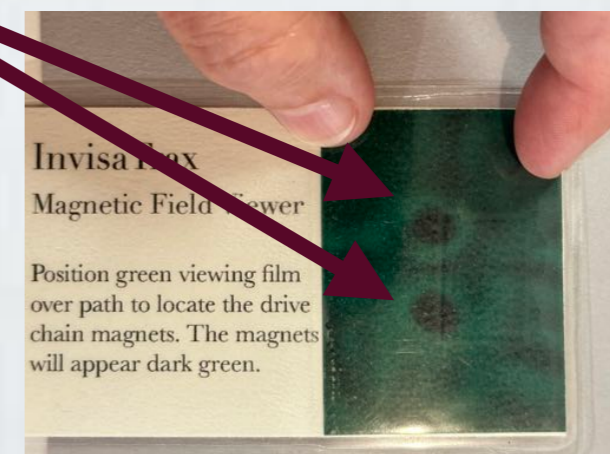
- ▶ Superglue two (2) 2mm x 0.5mm round magnets, one in each hole in the bottom of the shark fin.

- ▶ Inner Loop: place the kayak on the track section containing the 3mm magnet chain links.
- ▶ Outer Loop: place the shark fins on the track over the chain links containing the 2mm magnets.



- ▶ Use the Magnetic Field Viewer to locate the chain links with magnets. Either move the viewer over the area where the track is located or place the viewer over the track and run the system until the magnetic fields appear.

- ▶ Test the system again. Make sure the kayak and the sharks run smoothly over the areas where the paper edges are aligned.



Proudly Display the Results



<https://youtu.be/i31X6L9duc0?si=Xvk938SuMIY6T69z>