



Push & Pull Puzzle Pipe Instructions

Adapted from instructions submitted for the Hose2Habitat Enrichment Contest 2016.
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Above: Northern fur seal, Ursula, pushing the top tube and the fish starting to fall out on the right side of the Puzzle Pipe.

General Description: This device can be used in a variety of positions on land or in water. Fill the white pipes with food items by placing them in the open slots. Close or open the compartments by sliding the pipes left or right. Attach carwash strips or rope for easy pulling, remove the strips to encourage the animal to move around the device and push instead. All of the white pipes unscrew easily for simple and efficient cleaning.

Species and variations: Many aquatic species, such as Atlantic harbor seals, northern fur seals, and California sea lions and many terrestrial foraging animals, such as primates, canines, anteaters, and felines.

Uses: Encouraging problem solving, natural foraging strategies (both visual and olfactory), increasing physical activity. It can be altered to increase the level of puzzle solving and physical difficulty.

Safety Concerns: In is best to secure the Push & Pull Pipe Puzzle in a vertical or horizontal position to the floor, a pole, a wall, or other stable surface. You may also put weights onto the bottom base if the animals like push the tower over.

Items Needed for Design Shown:

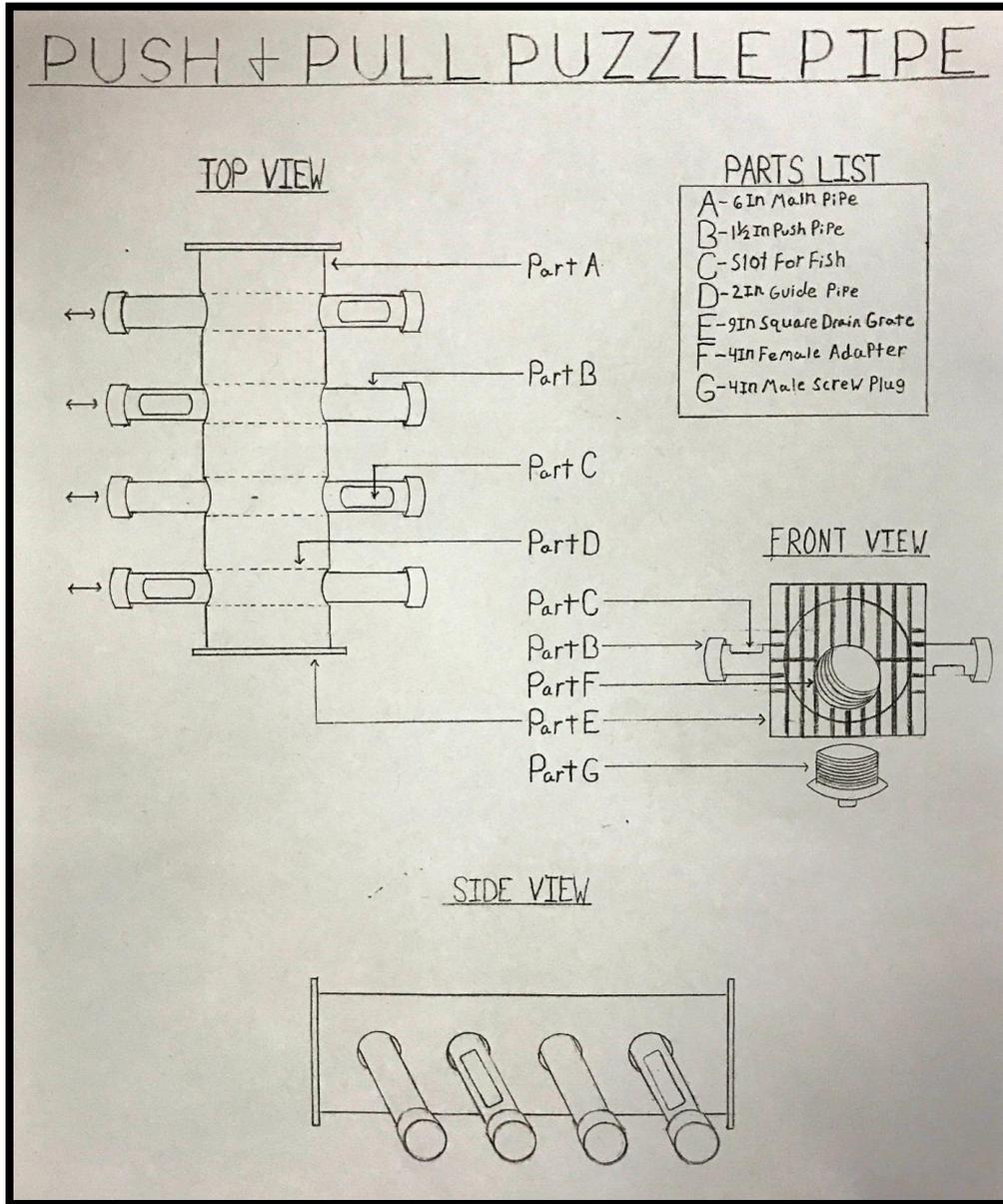
A	Main PVC Pipe	6 Inches in diameter, 2 feet long
B	Push PVC Pipes	1.5 Inches in diameter, 14 inches long
C	Slots Cut For Fish	1 Inch wide, 3 inches long
D	Guide PVC Pipes	2 Inches in diameter, 6 inches long
E	Square Drain Grates	9 Inch square, Fits into 6 inch Main Pipe
F	Female Adapter	4 Inches in diameter
G	Male Screw Plug	4 Inches in diameter



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Instructions



STEP 1. Cut 4 holes cut down both sides of the main pipe (part A). Into these holes 4 smaller guide pipes (part D) run across and are connected to the main pipe. Once in place, each of the 4 guide pipes (part D) will be a tract for the 4 push pipes (part B).

STEP 2. These push pipes (part B) have caps on each end, allowing them to slid in and out of the guide pipes (part D) without pushing all the way through. On each end of the push pipes (part B) cut a slot cut for fish (part C) on the top of one end and on the bottom of the other end of each pipe (Part B).

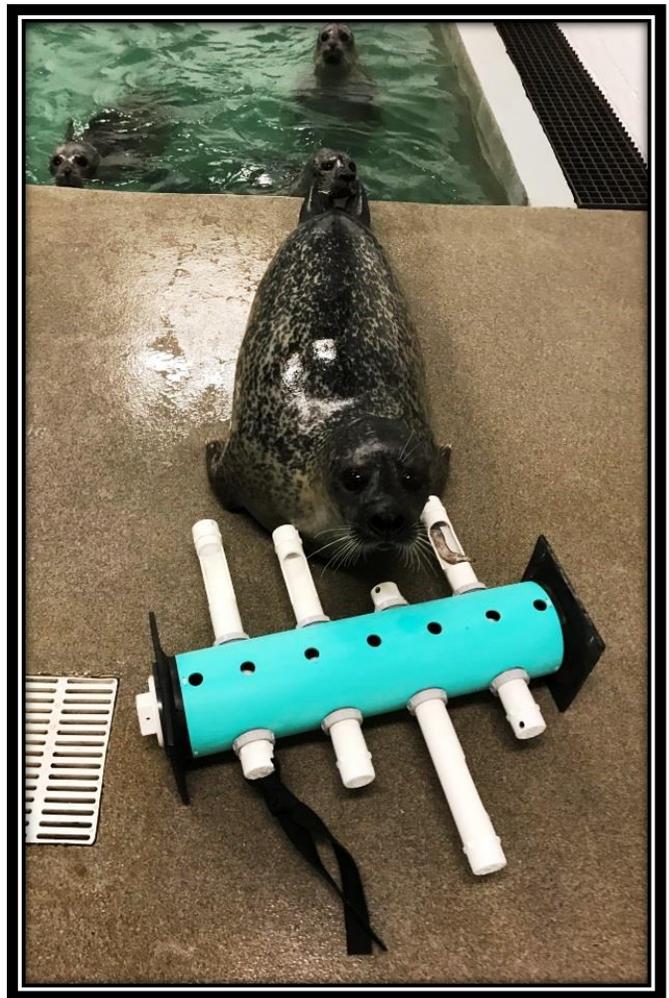
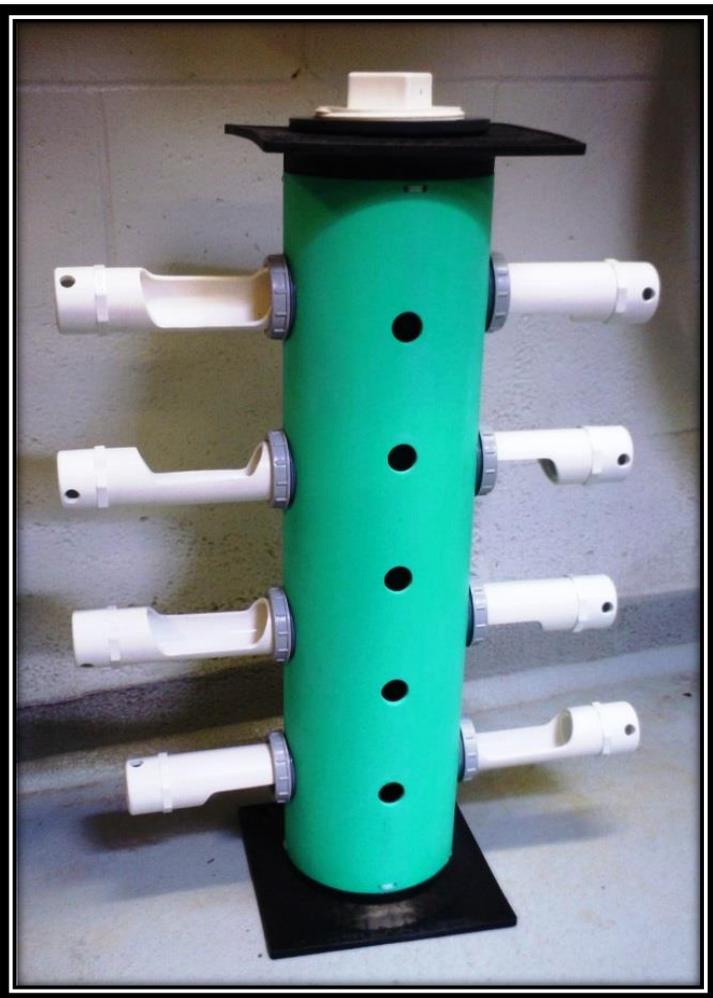


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STEP 3. Close both ends of the main pipe (Part A) with a 9 inch square drain grate (part E). This square drain grate doubles as a stand for the device, supporting it about 1.5 inches above the ground. On one square drain grate (part E) cut a hole to insert a female screw adapter (part F). This will allow for a dive weight or float to be inserted into the device to keep it weighed down to a deck surface or float in the water. These weights or floats can be closed into the main pipe (part A) by inserting a male screw plug (part G) into the female screw adapter (part F).

STEP 4. Once fully assembled, fish can be placed into the fish slots (part C) located on the push pipes (part B). Then the push pipes (part B) can be slid on the guide pipes (part D) into the main pipe (part A) concealing the fish. When presented to the animals, they will have to slide the push pipes (part B) to the opposite side of the main pipe (part A), in order to uncover the fish slots (part C) and gain access to the fish. The device can be used in and out of the water. It's designed to function primarily on land, but floating the device should allow for some interesting variations.



Left: Puzzle Pipe standing upright.

Right: Atlantic harbor seal, Reggae, investigating the open pipe tubes, with fish inside. Car wash strips have been added for optional pulling.