

ARCADE-BOT

QUICK-BUILD INSTRUCTIONS

Rev. 1.00

MATERIALS CHECKLIST

Before getting started, gather all of the materials needed for your project:

1 x four-AA battery holder (with sockets)
4 x AA battery
1 x servo motor
1 x servo horn
1 x $\frac{1}{8}$ " screw
1 x 3mm screwdriver
1 x servo tester
1 x cardboard box (any size)

1 x stick or chopstick or straw
1 x disposable spoon
2 x double-stick foam
1 x small ball (e.g. ping pong ball or small ball of aluminum foil)
1 x cup or bucket or box
Masking Tape
Construction Paper
Pens/Markers

BUILDING YOUR ARCADE-BOT'S ARM

STEP 1: Insert 4 AA batteries into the battery holder. Push the negative side (flat end) of 1 battery against the spring of the battery holder and slide the battery into place. Repeat for the other 3 batteries.



This can be tricky and small fingers can get pinched, so an adult should be on hand to help.



STEP 2: Insert the socket of the battery holder wires into the "IN" prongs on the right side of the servo tester. Match up the black wire of the battery holder with the negative (bottom) prong of the servo tester. A blue light at the top of the servo tester should light up.



If the servo tester doesn't light up, check your batteries to see if each one was properly inserted into the battery holder.



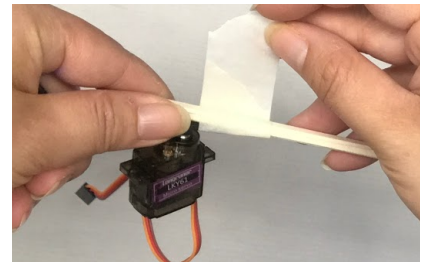
****ENERGY-SAVING TIP**** To avoid draining the batteries, unplug the battery holder when not in use. If steps 1 and 2 have been properly completed but the blue light doesn't light up, your batteries may need to be replaced.

STEP 3: Take 1 servo horn (any), and fit it on top of the motor shaft. It should fit snugly. Insert a screw (any) into the largest hole of the servo horn. Use the mini screwdriver to tighten the screw.



STEP 4: Take a stick (or chopstick or straw) and line up one end with the servo horn.

STEP 5: Attach the stick to the servo horn with masking tape. Carefully wrap the tape around the stick and servo horn without taping any part of the motor. (This is to make sure the servo horn & stick can both rotate around the motor.)



TESTING YOUR ARCADE-BOT'S ARM

STEP 6: Insert the socket of the servo motor wires to the “OUT” prongs (any row) on the servo tester’s left side. Match up the brown wire of the motor with the negative (bottom) prong of the servo tester.



STEP 7: Twist the yellow dial on the servo tester back and forth. The stick attached to your motor should move back and forth. (The range of motion for servo motors is about 180 degrees (half-circle)). Adjust the stick or servo horn if either are loose. Unplug the battery holder from your servo tester to conserve energy.



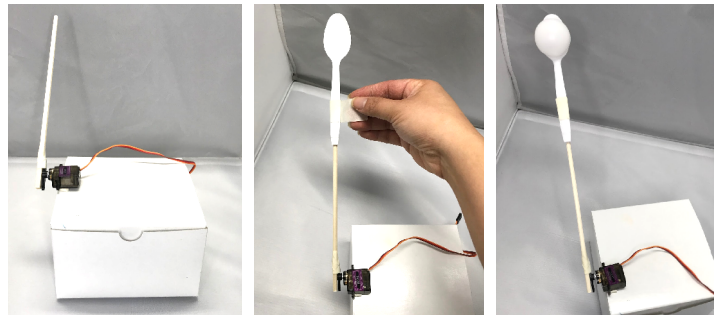
TROUBLESHOOTING

If the servo motor doesn't move back and forth, check to make sure the blue light on the servo tester is over “Man” (manual mode). If not, push the “Select” button in the lower left corner until the blue light for “Man” is lit.

DESIGNING YOUR ARCADE-BOT

STEP 8: Position the motor on top of a box so that the stick can move back and forth over the box. Use a piece of double-stick foam to attach the side of the servo motor to the top of a cardboard box.

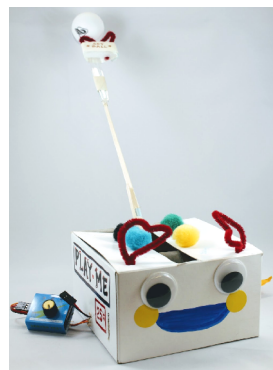
STEP 9: Tape the handle of a spoon onto the stick. Make sure the spoon is positioned so that it can cup a ball when the servo motor is positioned at a 170-degree angle. Next, place a ball inside the spoon.



STEP 10: When you're ready to launch the ball, twist the yellow dial of your servo tester so that the spoon moves forward. If the ball doesn't launch, adjust your Arcade-Bot's arm as needed.

STEP 11: Use markers, paper, and other craft materials to decorate the box attached to the servo motor to look like an arcade game. (Optional ideas: Cut a vertical slit in the box to accept coins or game tokens. Cut a horizontal slit to pull out game tickets.)

STEP 12: Make some game goals for your Arcade-Bot. You can assign different point values if using more than one goal or basket. Place your game goals/baskets at least 6-12 inches away from your Arcade-Bot.



STEP 13: When you're ready to play, place the ball in the spoon and call out “3-2-1 Launch!” Give each player two attempts to see if they can launch the ball into a basket. Tally up any points earned from landing a ball in a goal.