Servos with the AEV Project

The Tower Pro micro servo is a tiny servo (small compared to standard servos) that has a range of rotation from approximately 0-180 degrees (Servos do not reach exactly 0 or 180 degrees but are close to these values). Each servo package comes with three different servo arms, two mounting screws and a single, smaller screw for securing the servo arm to the servo. See Figure 1.

Connecting the Servo to the AEV Controller

There is a special port for the servo to connect to on the AEV Controller board (This port connects to pin 9 on the Arduino Nano). Attached to the micro servo are three wires. The yellow wire is the wire that connects to pin 9, the red wire is power in, and the brown wire is ground. Simply connect the servo wire into the pin 9 port on the Arduino Controller as shown in Figure 2.

Attaching a Servo Arm

1) Connect the AEV to a computer using the mini USB cable.
2) If there is no program on the AEV Controller, upload a program to the AEV Controller. It does not matter what code is under the myCode tab. (Note: If there is a program on the AEV
Controller you will hear the servo rotate when the AEV Controller is connected to the computer).

3) On startup, (when the power is turned on or the AEV is connected to a computer) the servo defaults to 0 degrees. This is the best time to attach a servo arm since the servo position is known. See Figure 3.

4) From this position, the servo will rotate counterclockwise up to approximately 180 degrees. Let’s test it!
   a. Open the Sweep program in sketchbook
      i. (File -> Sketchbook -> libraries -> PWMServo -> Sweep)
   b. Upload this program.
   c. Once it is uploaded the servo should constantly rotate between 0-180 degrees. If this works you’re good to go!

![Figure 3: Servo Arm Attachment and Rotation](image)

5) Finally secure the support arm using the smallest of the three screws provided in the servo pack.

**Attaching the Servo to your AEV**

Servos can be attached to AEVs using hot glue, zip ties and/or electrical tape. NOTE: Your group will be responsible for removing any adhesive material from any and all AEV components.

**Using the Servo in the AEV Controller Program**

In the AEV_Controller program, select the _00_AEV_key_words tab. Function (h) “rotateServo” is the function used to controller the servo in your code. There is only one input required and that is the position between 0-180 degrees. See the description in the _00_AEV_key_words tab for further details and an example.

*For more information on the AEV controller board, check out the controller manual provided on the EEIC website.*