## Biped Walking Robot Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studuino Unit</td>
<td>1 x</td>
</tr>
<tr>
<td>Servomotor</td>
<td>8 x</td>
</tr>
<tr>
<td>Battery Box</td>
<td>1 x</td>
</tr>
<tr>
<td>Buzzer</td>
<td>1 x</td>
</tr>
<tr>
<td>LED (green)</td>
<td>1 x</td>
</tr>
<tr>
<td>Sound Sensor</td>
<td>1 x</td>
</tr>
<tr>
<td>Basic Cube (white)</td>
<td>19 x</td>
</tr>
<tr>
<td>Basic Cube (clear)</td>
<td>2 x</td>
</tr>
<tr>
<td>Half A (light gray)</td>
<td>11 x</td>
</tr>
<tr>
<td>Half B (blue)</td>
<td>11 x</td>
</tr>
<tr>
<td>Half C (light aqua)</td>
<td>38 x</td>
</tr>
<tr>
<td>Half D (aqua)</td>
<td>14 x</td>
</tr>
<tr>
<td>Triangle A (gray)</td>
<td>8 x</td>
</tr>
<tr>
<td>Triangle A (clear)</td>
<td>2 x</td>
</tr>
<tr>
<td>Rotor Axis C</td>
<td>2 x</td>
</tr>
<tr>
<td>USB Cable</td>
<td>1 x</td>
</tr>
<tr>
<td>Sensor Connecting Cable (three-wire 15 cm)</td>
<td>3 x</td>
</tr>
</tbody>
</table>
Biped Walking Robot

Assembly Instruction Labels

**D11**
Show the sticker number used for each servomotor. Use the motor with the correct sticker number.

⚠️
Indicates tips or warnings when building a specific item.

🔄
Indicates when the direction of a component must be changed for assembly.

×1
Shows the parts needed for assembly. Indicates the number of parts needed for assembly.

Shows an image of the completely assembled item.
Handling the Servomotor

1 Orientation

The photo to the right shows the servomotor facing you. There are two shafts, the one with the wider space is the drive shaft and the one with the narrower space is the movable shaft.

★ When turning the drive shaft by hand, do so very slowly and gently. Excessive pressure when turning may cause damage to the servomotor.

2 Calibration and Setting Connector Numbers


Building your robot without calibrating your servomotor may cause damage or improper functionality.

★ Do not change the connector or the servomotor after calibration. Servomotor calibrations are unique to each servomotor.

Attaching Number Stickers

After calibration, we recommend putting a sticker on the connector used for the servomotor so it can be easily identified.
Assembling the Servomotor

Biped Walking Robot

Make five in total.
Biped Walking Robot

Assembling the Right Foot

1.①
2.②
3.③
4.④

D10  D12

×2
×1
×7
×1

Wider

Wider

D10

D12
Biped Walking Robot

Assembling the Left Foot

1. Wider

2. Wider

3. Wider

4. Wider
Biped Walking Robot

Assembling the Lower Half

1. 2.2.

①

×7

②

1. 2.
Biped Walking Robot

Completed Lower Half
Biped Walking Robot

Assembling the Torso

1. [Diagram showing assembly process]

2. [Diagram showing assembly process]

---

1. D2

---

Wider
Biped Walking Robot

Make sure the cables are inserted correctly!
Biped Walking Robot

Completed Torso
Assembling the Right Arm

1. Wider

2. Assemble the components...

3. Connect the parts together...
Biped Walking Robot

Completed Right Arm
Biped Walking Robot

Assembling the Left Arm

1. Wider

2.

3.
**Biped Walking Robot**

**Assembling the Head**

1. 

2. 

3. 

4. 

**Wider**
Biped Walking Robot

Assembling the Back

1. [Diagram showing assembly process]

2. ![Battery box](image)
   - You should see the battery box switch here.

3. [Diagram showing final assembly]

   ![Assembly Diagram](image)
4. Connect the cable from the battery box to the **POWER** pins on the board.

⚠️ Make sure the cables are inserted correctly!

5.

6. **Completed Back**
Biped Walking Robot

Completed Body

1

[Diagram of the completed body with parts labeled ×1, ×2, ×1, ×2]
Biped Walking Robot

2

3
4. Connect the sound sensor to A1.

Make sure the cables are inserted correctly!

5. Connect the buzzer to A2.

Make sure the cables are inserted correctly!
6. Connect the LED (green) cable to **A3**.

Make sure the cables are inserted correctly!

7. Connect the three cables from the servomotor to their corresponding places on your Studuino unit.

Make sure the cables are inserted correctly!
Biped Walking Robot

8. Connect the two cables from the servomotor to their corresponding places on your Studuino unit.

Make sure the cables are inserted correctly!

9. Connect the three cables from the servomotor to their corresponding places on your Studuino unit.

Make sure the cables are inserted correctly!
Replacing the Batteries

1. Put the lid of the battery box back in place.
2. Use a screwdriver (Phillips #1) to open.
3. Insert batteries in the correct polarity.
4. Use a screwdriver (Phillips #1) to open.
5. Put the lid of the battery box back in place.

Biped Walking Robot
Before operating your robot, check the Assembly Instructions again to confirm your robot has been assembled correctly.
Install the software from the URL below to setup the Studuino Programming Environment.
★ Proceed to Step 1 when software installation is complete.

http://www.artec-kk.co.jp/studuino/

1. Connect the USB cable to the PC and the Studuino unit. Refer to 1.3. About Studuino in the Studuino Programming Environment Manual for more details.

2. Download the program file BipedWalkingRobot.ipd from the URL below in the ArtecRobo section.

http://www.artec-kk.co.jp/artecrobo/

3. Open the downloaded file.

4. Transfer the program to the Studuino unit by clicking the Transfer button.

5. Remove the USB cable from the Studuino unit.
![Biped Walking Robot]

Operating Your Biped Walking Robot

6. Turn the switch of the battery box on and your robot will start walking.

⚠️ Immediately turn the switch to off if your robot does not begin walking as shown in the picture below. Not doing so may damage the servomotor.

⚠️ If your robot does not move, the servomotor may be in the wrong position or the blocks may be improperly connected. Re-read the Assembly Instructions to make sure that your robot has been assembled correctly.

7. After the last movement of your robot (raises right hand), your robot will start walking when it detects a sound.
Some sensors may not function properly after you run the program for the first time. If the sensors are malfunctioning, calibrate the sensor settings.

Click the sensor icon in the box and you can adjust the range settings in the condition box below.

Drag the mouse left or right to adjust the range settings.

Refer to the Condition Icon sections in 4.4. The Attribute Field of the Studuino Programming Environment Manual for more details.