Bioloid

Premium Kit

Biped Walking Robot

Assembly Manual
Attention!

Before proceeding with assembly, you must ensure each actuator’s horn is properly aligned. To visually verify proper alignment, the notch from the horn should be in line with the notch from the actuator’s body.

If not, perform one of the following actions:
A. Turn the horn manually until it is properly aligned.
B. Use Dynamixel Wizard.
   2. Connect the actuator to the computer through USB2Dynamixel. Don’t forget to supply power to the actuator separately.
   3. Select the correct port, click on the Open Port icon, and click on Start Search.
   4. On address 30, Goal Position, click on Center Position. Dynamixel Wizard will then align the horn; you can visually verify horn alignment afterwards.

(For more information, please refer to Dynamixel Management.)

Dynamixel Wizard

properly aligned horn

*Some robots may require a specific horn alignment before assembly. Please follow assembly instructions closely if such horn alignment is necessary.

Tips!

I. Always assign ID numbers to the actuators before assembly. Robotis recommends you assign ID’s by one actuator at a time.
II. You may need apply gentle pressure to fit nuts into the actuator’s body. The tight fit is necessary to facilitate assembly.
   A. Insert only one nut at a time.
   B. Use your screwdriver to apply pressure on the nut.
   C. Point the screwdriver away from your body and away from other people.
**Bioloid Biped Walking Robot – Getting Started**

**STEP 1**
Attach one F7 to ID15; another F7 to ID16. (Attention to direction.)

**STEP 2**
Attach ID17, ID18, and F6 together.
STEP 3
With CABLE-6, connect ID15 to ID17; ID16 to ID18. Connect ID17 to ID18 with CABLE-20. Attach STEP ① to STEP ②.

STEP ①

STEP ②

STEP 4
Attach F5 to F12. (Make 2 sets.)
**STEP 5**  Attach STEP③ to STEP④. (Do not misalign horn position.)

- BU x 2
- S x 8
- S-B x 2

**STEP 6**  Attach F3, F4, and F10 together. (Make 2 sets.)

- F3 x 2
- F4 x 2
- S3 x 8
- N x 8

**STEP 7**  Attach STEP⑥, ID13 and ID14 together.

- S x 8
- N x 8
**STEP 8**
Attach ID11, ID12, F3, and F55 together. (Attention to screw position.)

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F 3</td>
<td>x 2</td>
<td>F5 5</td>
<td>x 4</td>
<td>S 1</td>
</tr>
</tbody>
</table>

1. ![Diagram of assembly](image1)
2. ![Diagram of assembly](image2)
3. ![Diagram of assembly](image3)

**STEP 9**
Attach F1 to F4. (Make 2 sets.)

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F 1</td>
<td>x 2</td>
<td>F4</td>
<td>x 2</td>
<td>S 1</td>
</tr>
</tbody>
</table>

1. ![Diagram of assembly](image4)
2. ![Diagram of assembly](image5)
Attach STEP⑤, STEP⑦, STEP⑧, and STEP⑨ together. (Do not misalign horn position.)
**STEP 11**
Attach F3, F10, F51, and F60 together.

**STEP 12**
Attach IR SENSOR, DMS, and F54 together.
Attach STEP 12, F10, F52, and CM-510 together.
With 2 5P CABLE-15, connect IR SENSOR1 to Port 2 of CM-510;
IR SENSOR2 to Port 3 of CM-510;
DMS to Port 1 of CM-510 with CABLE-DMS.

Attach STEP 10, STEP 11, and STEP 13 together.
With 2 CABLE-10, connect ID11 to CM-510; ID12 to CM-510.
With 2 CABLE-18, connect ID11 to ID13; ID12 to ID14.
With 2 CABLE-20, connect ID13 to ID17; ID14 to ID18.
Connect the battery through the battery cable.
Assembly Check
After assembly please check the following procedure to ensure correctness.

**Run the assembly check program**
Set the robot in PLAY mode; hold the D button then press START.
Once the START button is pressed, the assembly check program begins.

**AX12+ initial position and ID check**
Select each actuator separately and compare it to the picture below.
Ensure the actuators’ horns are properly aligned (the horn’s notch should be aligned with the actuator’s).
Pressing the U or D button selects one actuator at a time.
The selected actuator’s LED lights up and goes to its initial position.
Check starts from ID1.
U moves to the next ID in ascending numerical order; D, in descending numerical order.
If the actuator’s ID does not exist then the robot beeps.
Although the LED may lit if there is no power, then check the wiring on the actuator.
**Sensor and behavior check**

From STEP ② press R. The robot returns to its initial position as pictured above. Place your hand close to the sensors as pictured below. Robot behavior begins. If the robot does not behave as pictured below, then check the sensor wiring and its port. Pressing L will return the robot back to STEP ②.

If everything works fine, play the robot.

Set the robot in PLAY mode and press START. The robot will play.