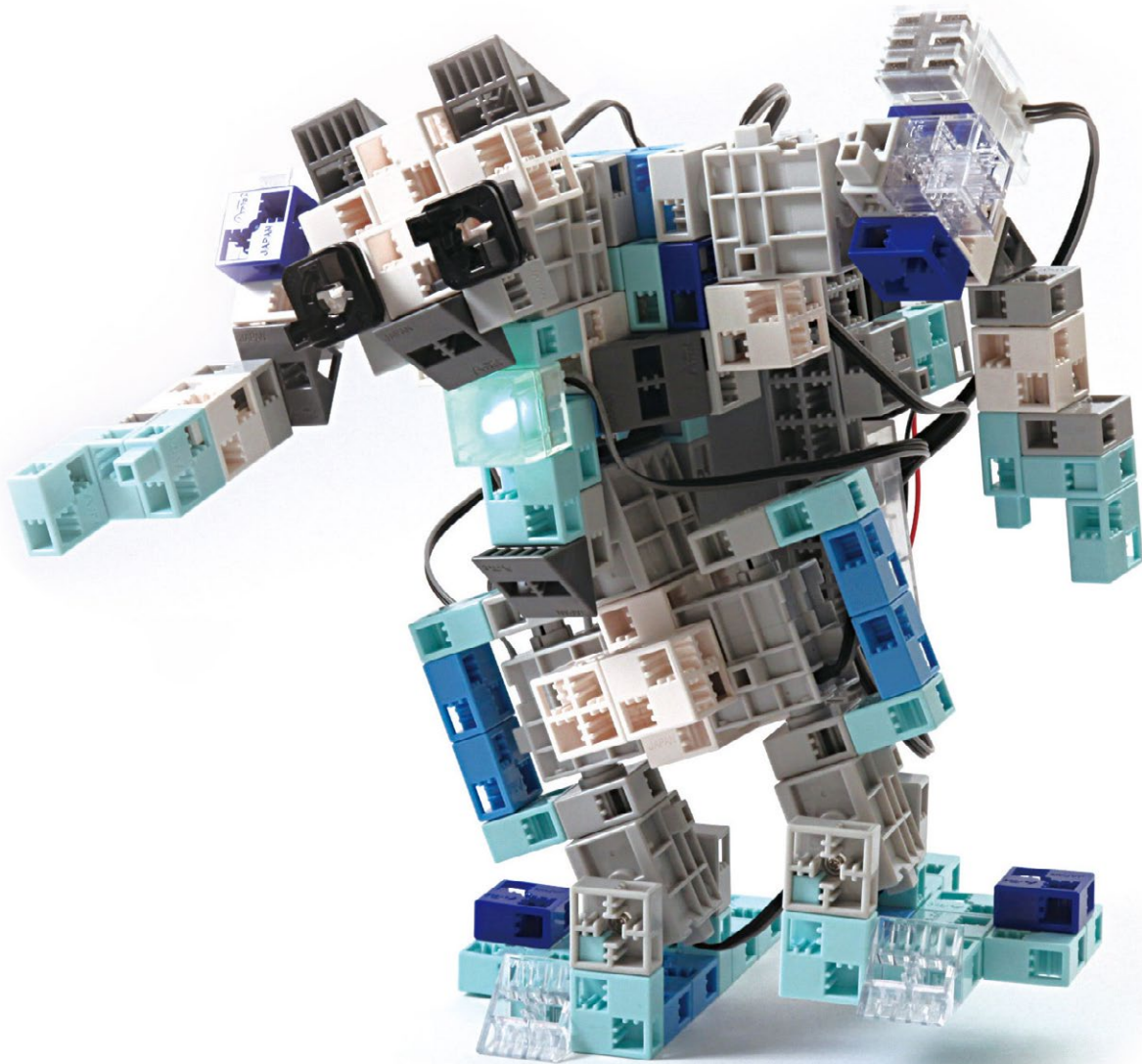


Biped Walking Robot

Assembly Instructions



Artec Co., Ltd.

Address: 3-2-21 Kitakamei-cho, Yao-shi, Osaka
581-0066 Japan

E-mail: export@artec-kk.co.jp

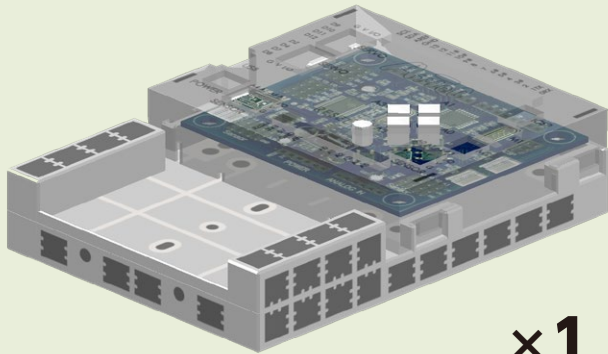
Website: www.artec-kk.co.jp/en

Artec® is a registered trademark of Artec Co., Ltd.
in multiple countries including Japan, South Korea,
Canada, and the USA.

Biped Walking Robot

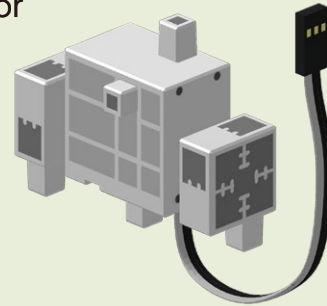
Components

Studuino Unit



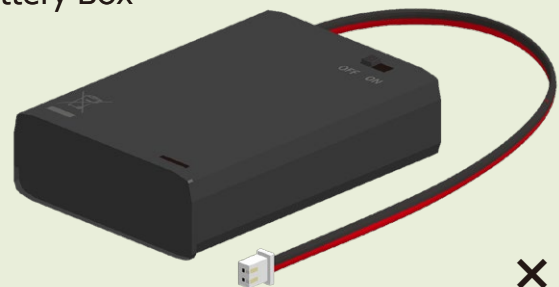
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Servomotor



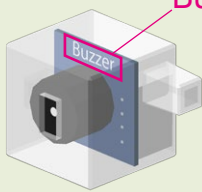
×8

Battery Box



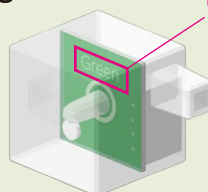
×1

Buzzer



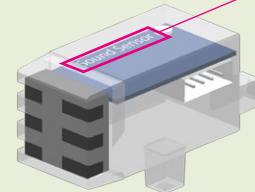
×1

LED (green)



×1

Sound Sensor



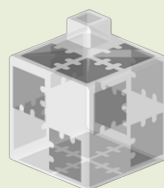
×1

Basic Cube (white)



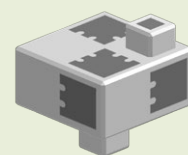
×19

Basic Cube (clear)



×2

Half A (light gray)



×11

Half B (blue)



×11

Half C (light aqua)



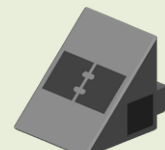
×38

Half D (aqua)



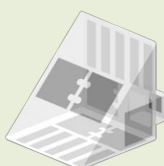
×14

Triangle A (gray)



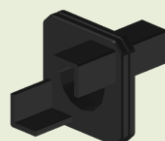
×8

Triangle A (clear)



×2

Rotor Axis C



×2

USB Cable



×1

Sensor Connecting Cable
(three-wire 15 cm)



×3

Biped Walking Robot

Assembly Instruction Labels

D11

Shows the sticker number used for each servomotor.
Use the motor with the correct sticker number.



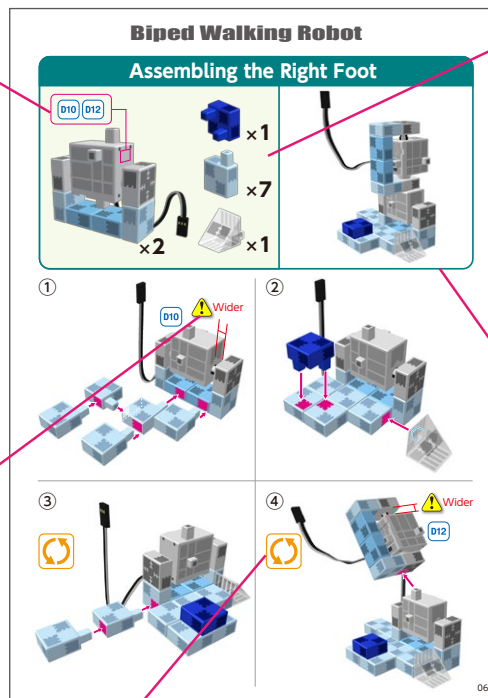
Indicates tips or warnings when building a specific item.



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

x1

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



Shows an image of the completely assembled item.

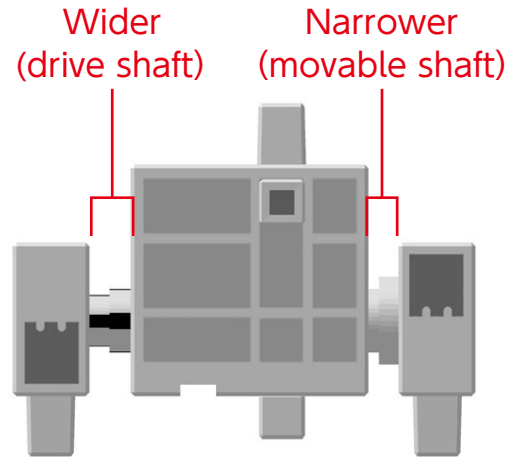
Biped Walking Robot

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

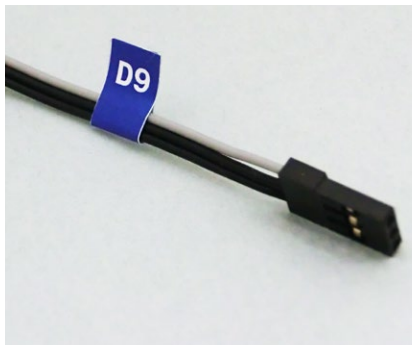
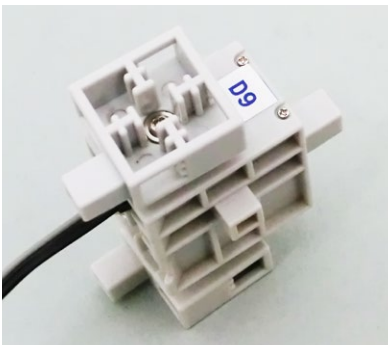
Before building your robot, read **6. Using Servomotors** in the **Studuino Icon Programming Environment Guide** (download from <http://www.artec-kk.co.jp/artecrobo/>) for instructions on how to calibrate your servomotor.

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

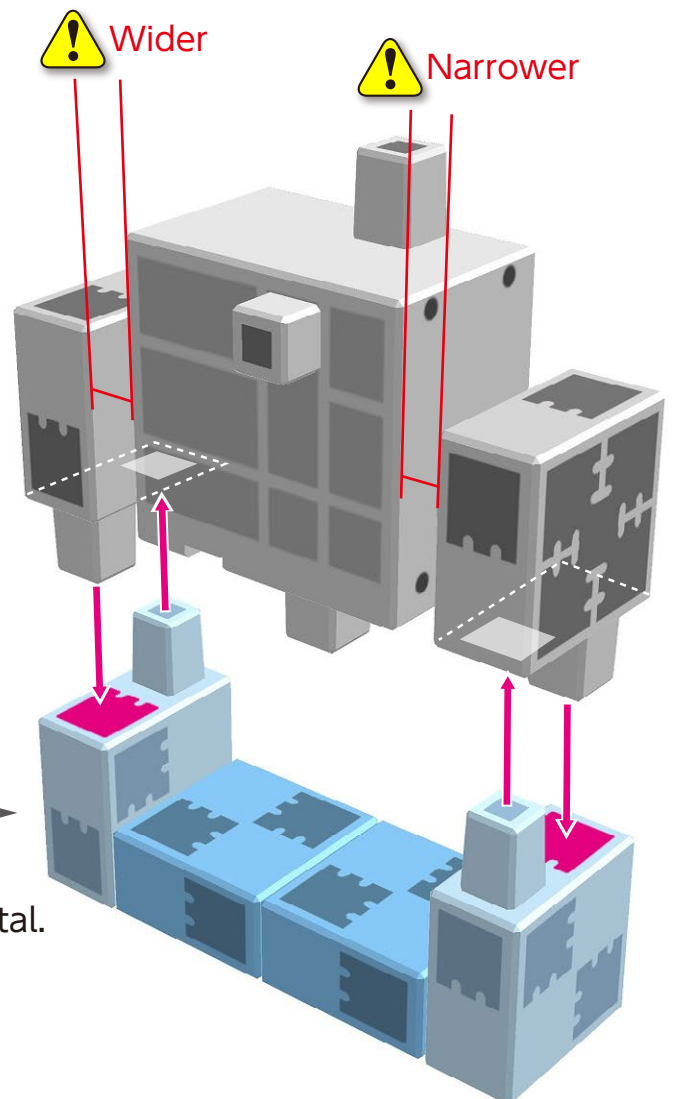
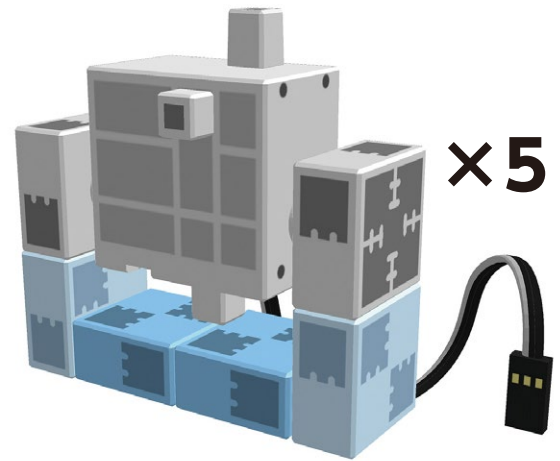
★ Do not change the connector or the servomotor after calibration. Servomotor calibrations are unique to each servomotor.

Attaching Number Stickers

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



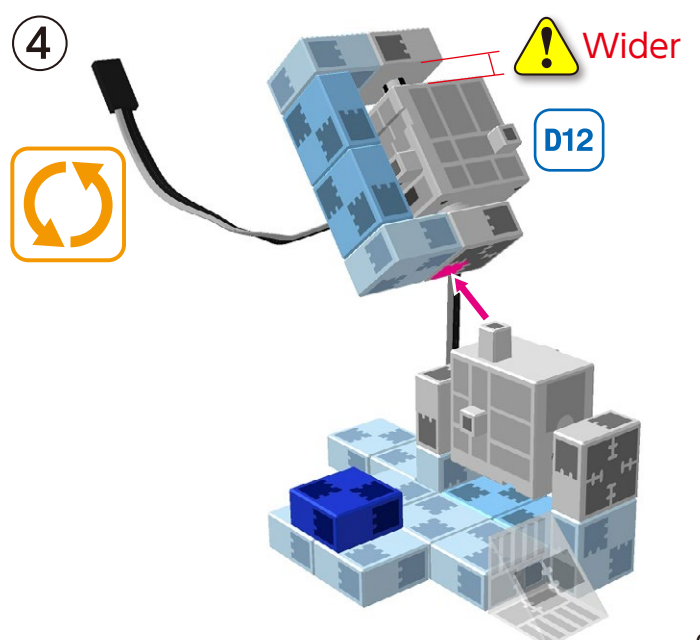
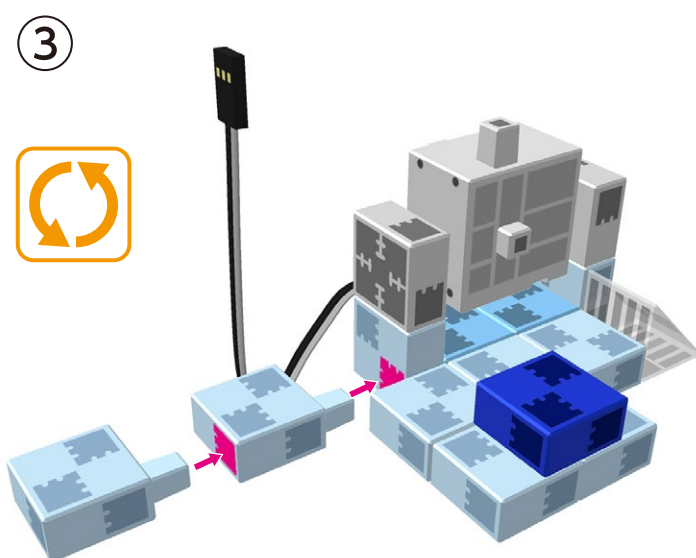
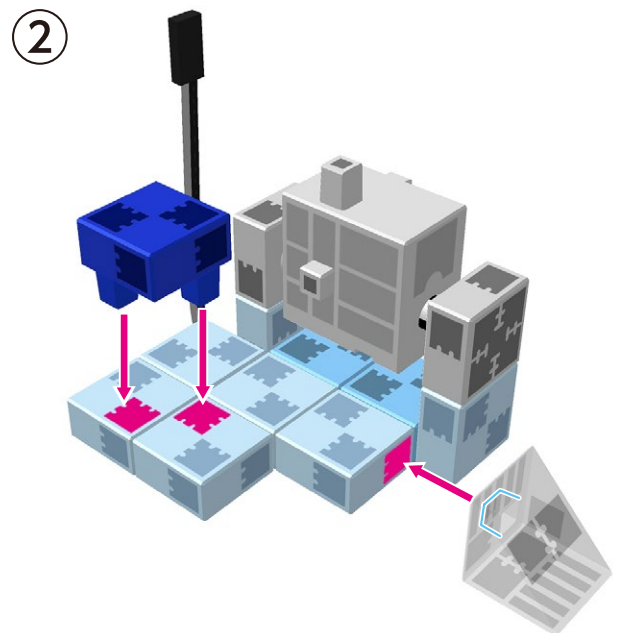
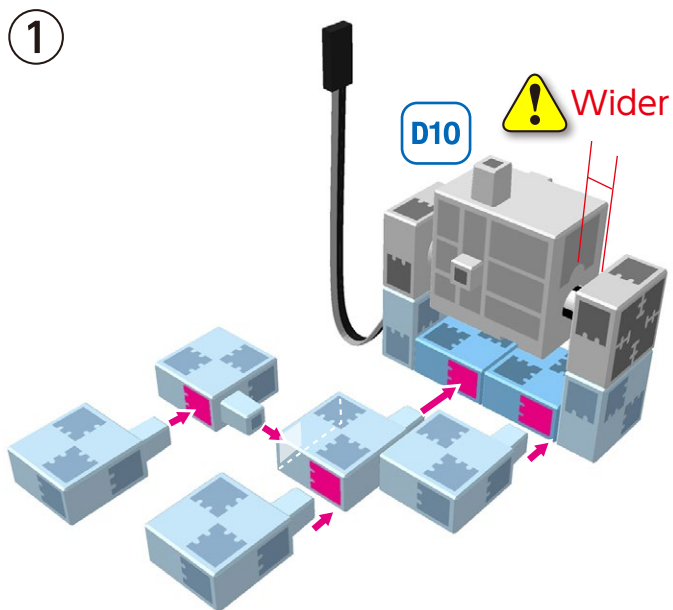
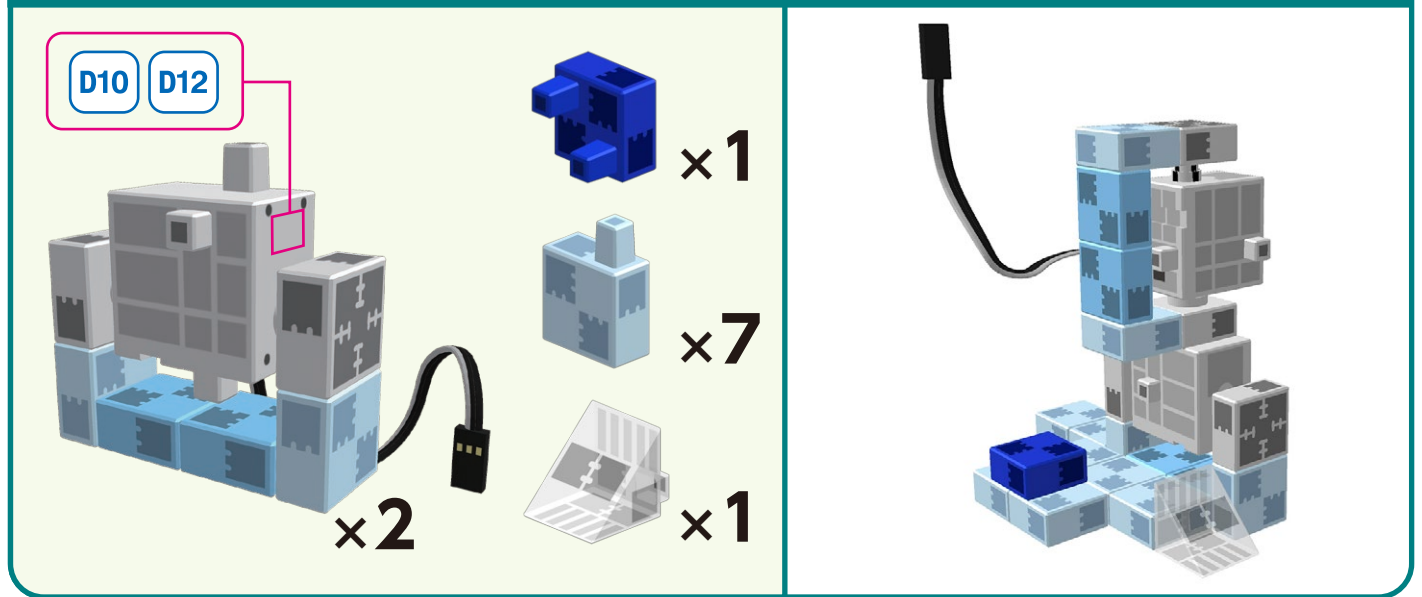
Assembling the Servomotor



05

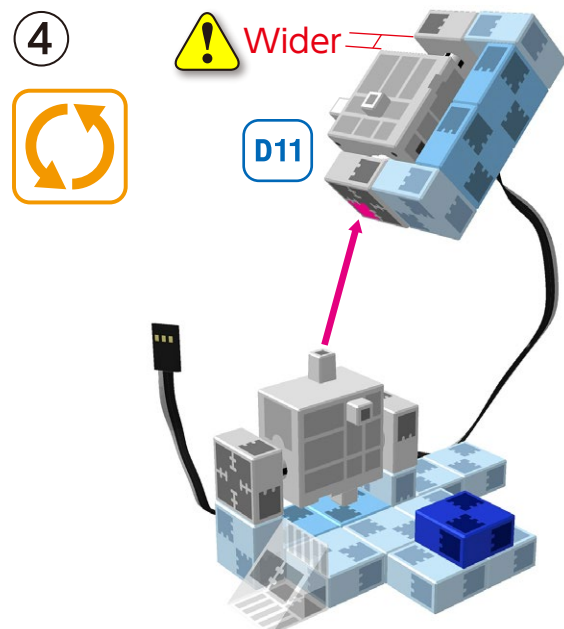
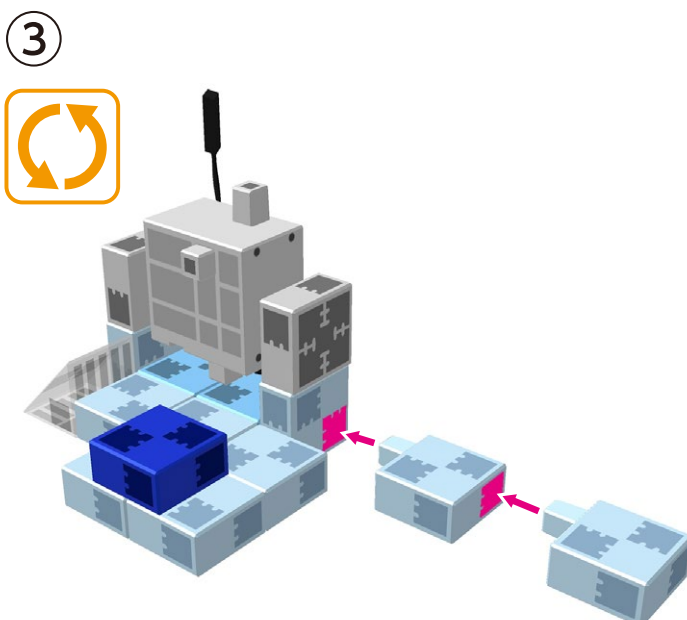
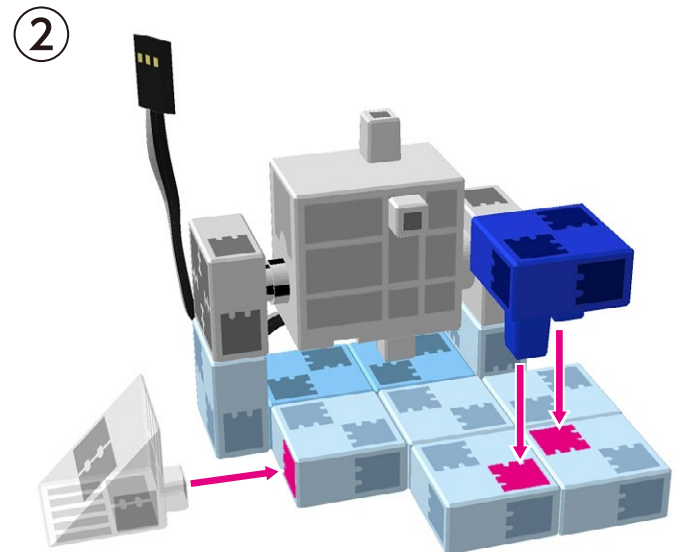
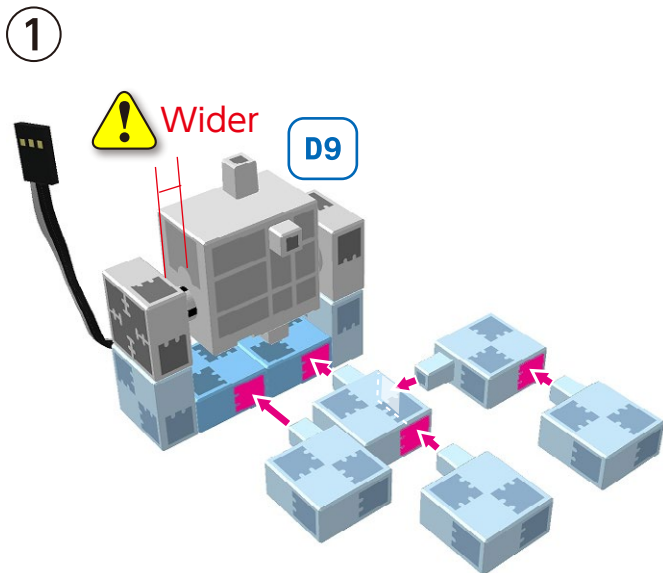
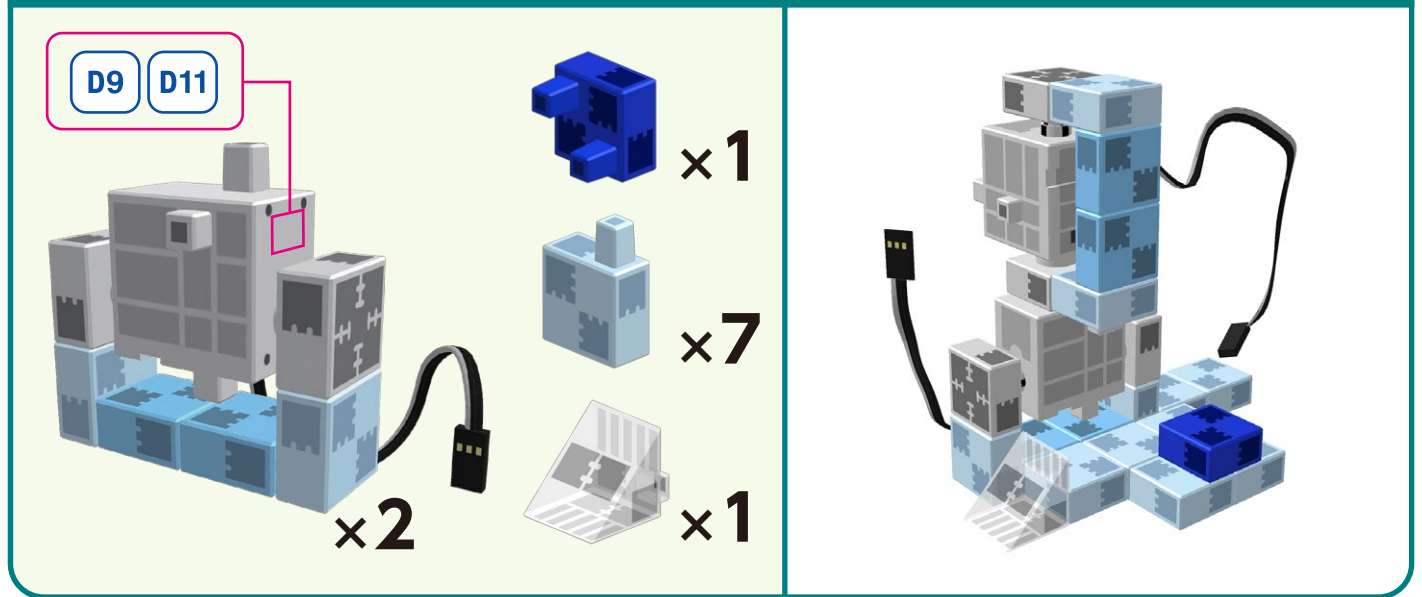
Biped Walking Robot

Assembling the Right Foot



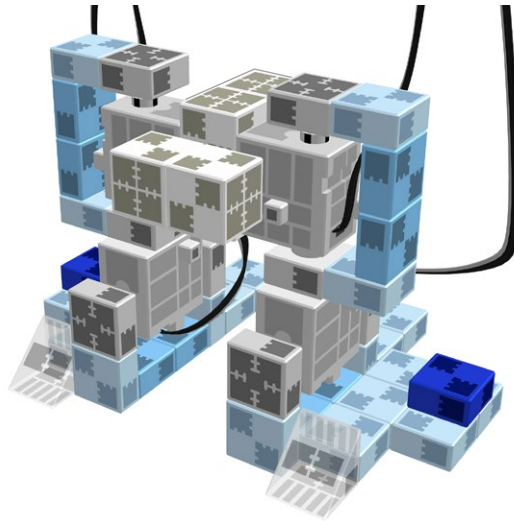
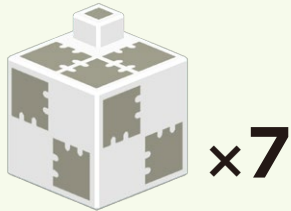
Biped Walking Robot

Assembling the Left Foot

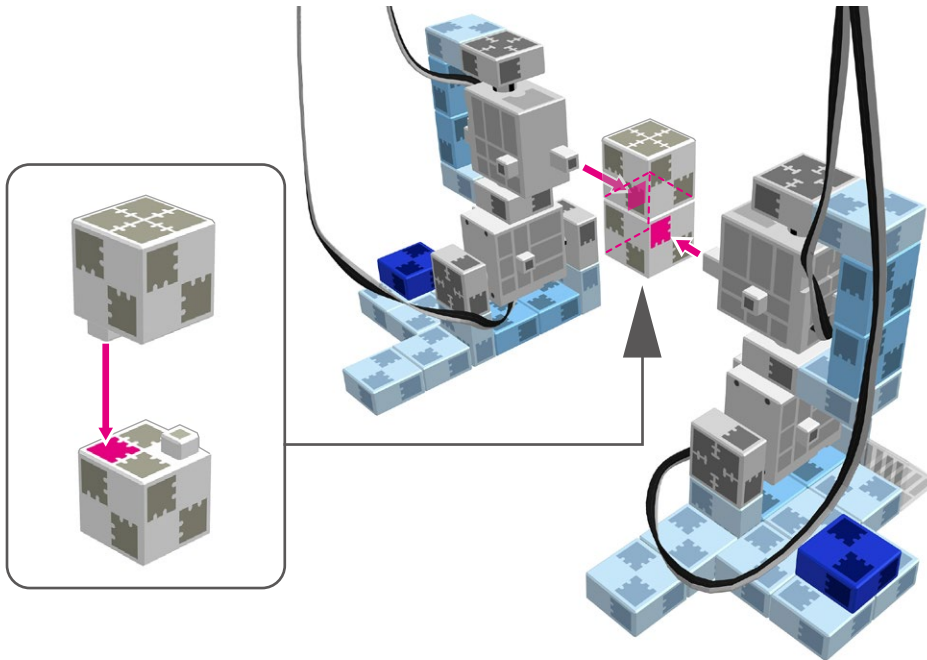


Biped Walking Robot

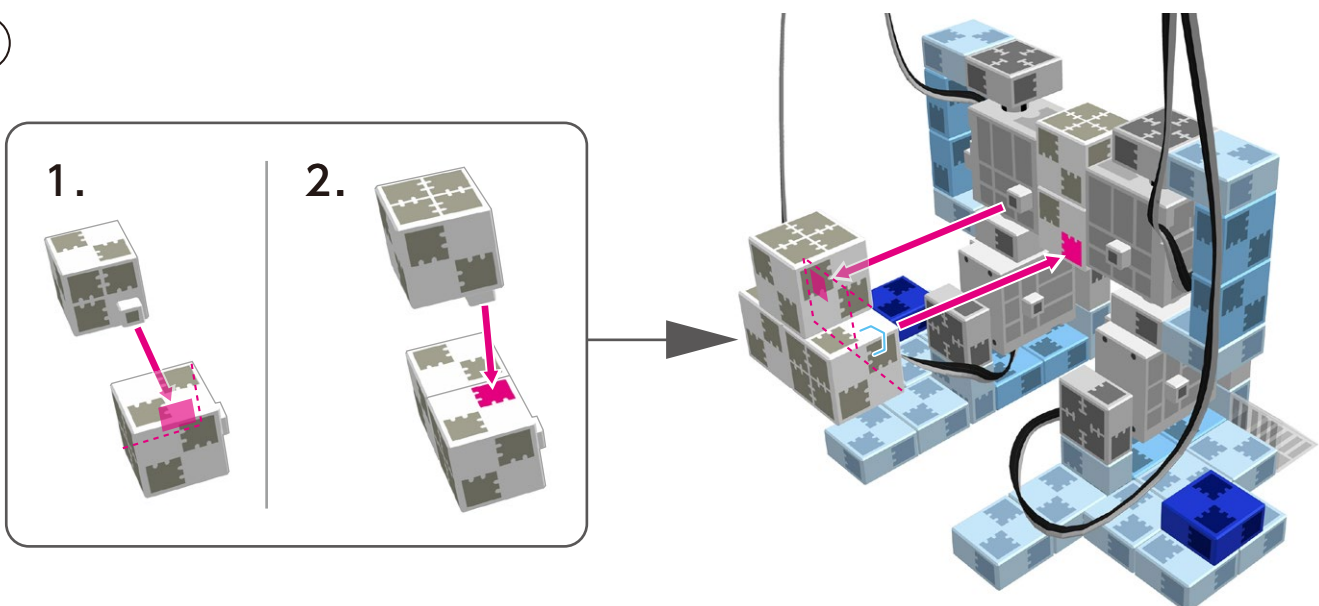
Assembling the Lower Half



①

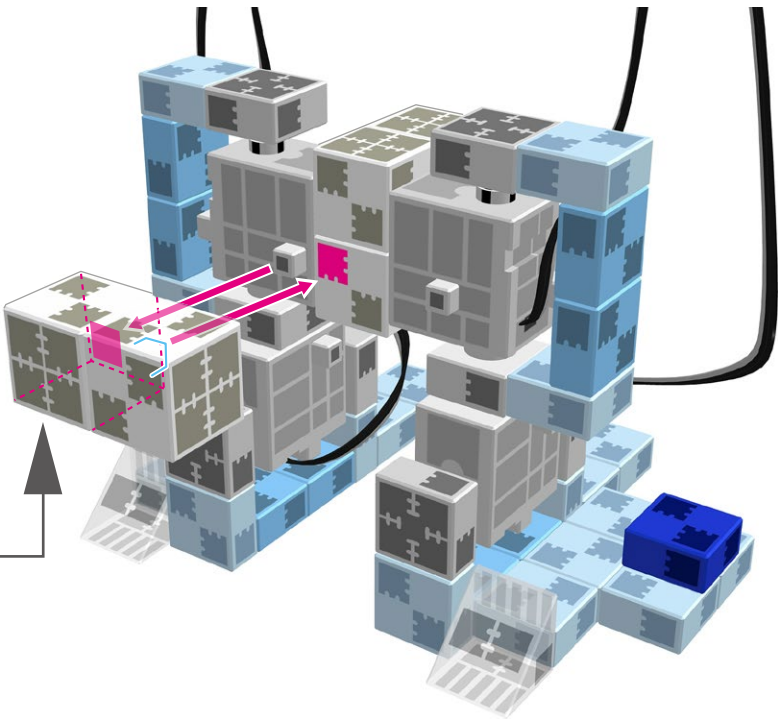
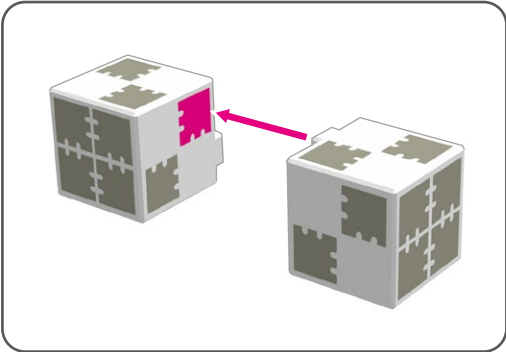


②

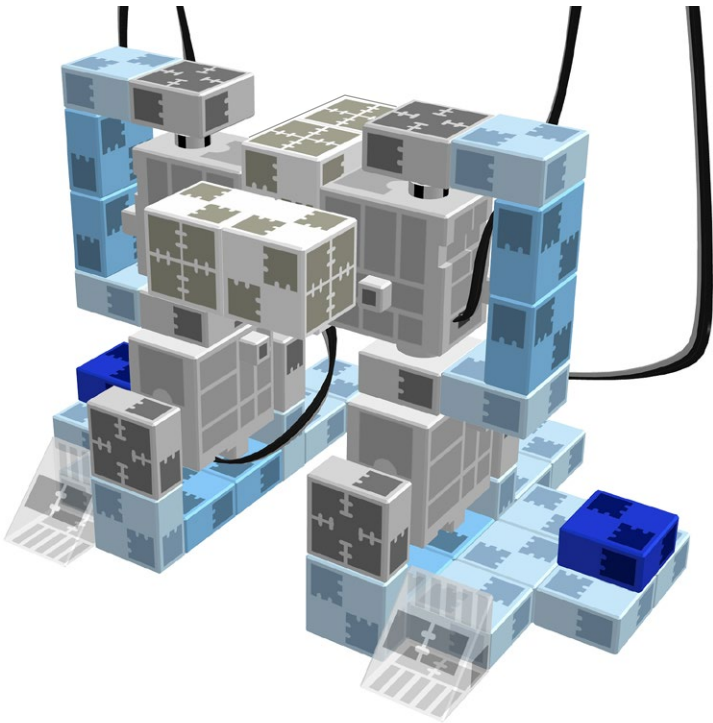


Biped Walking Robot

3

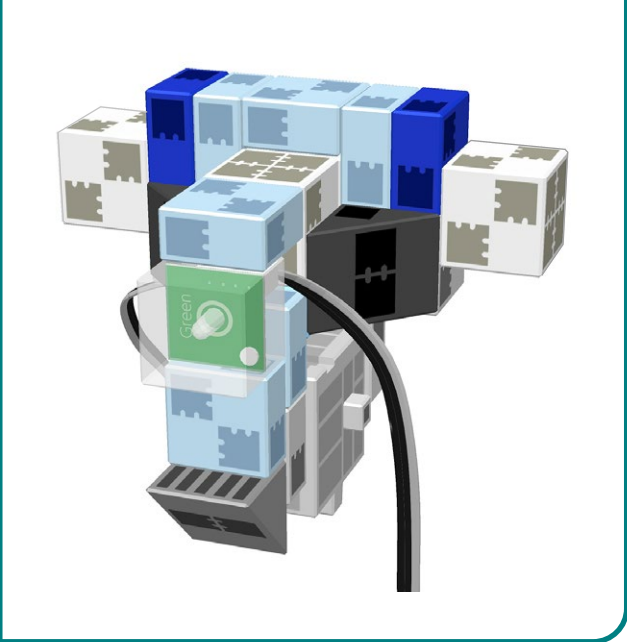
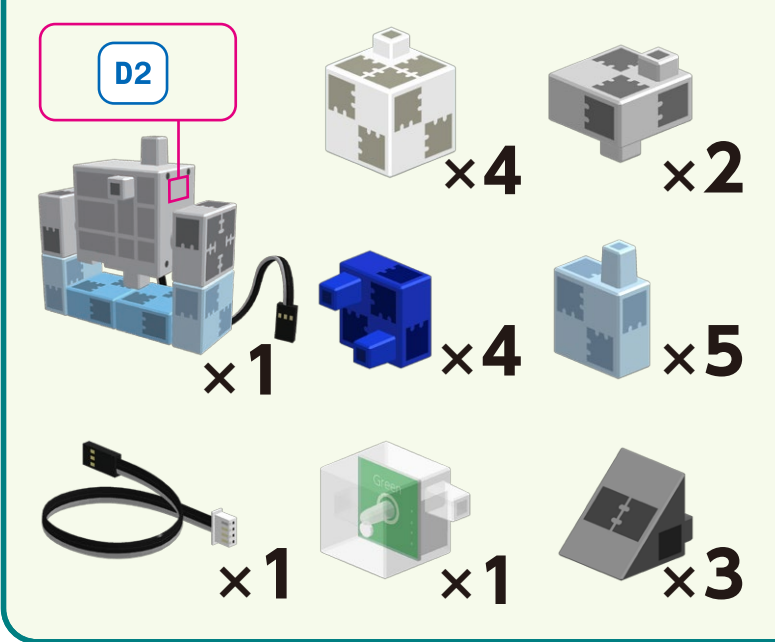


Completed Lower Half

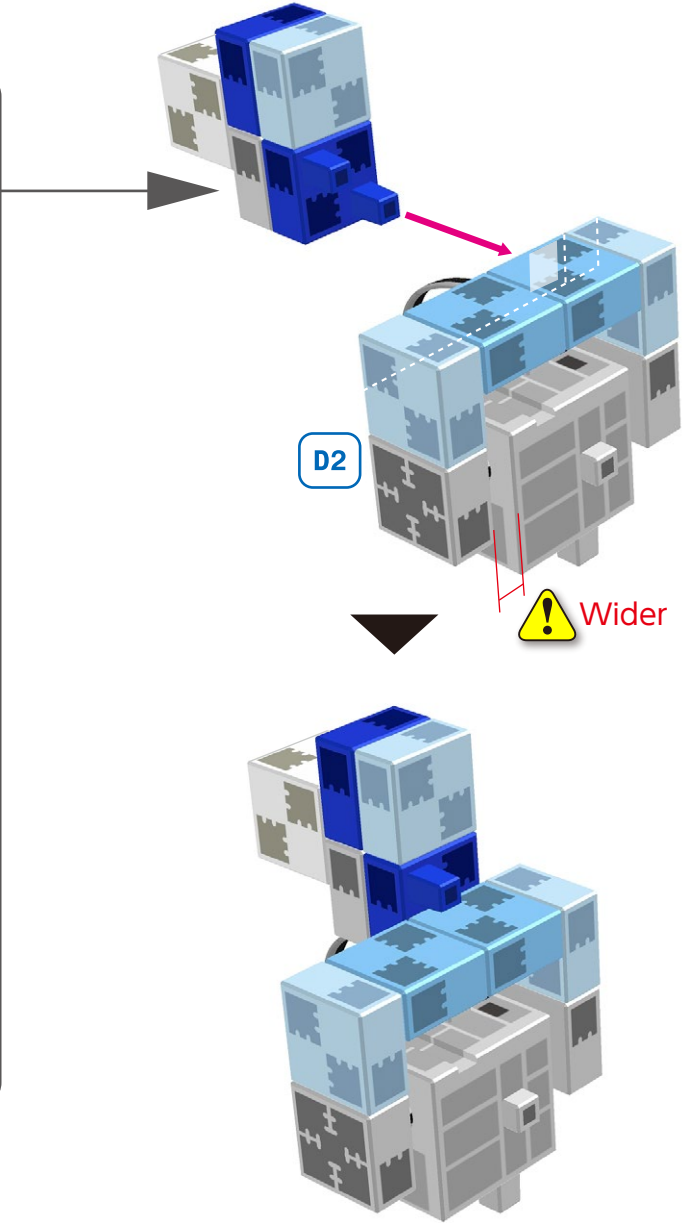
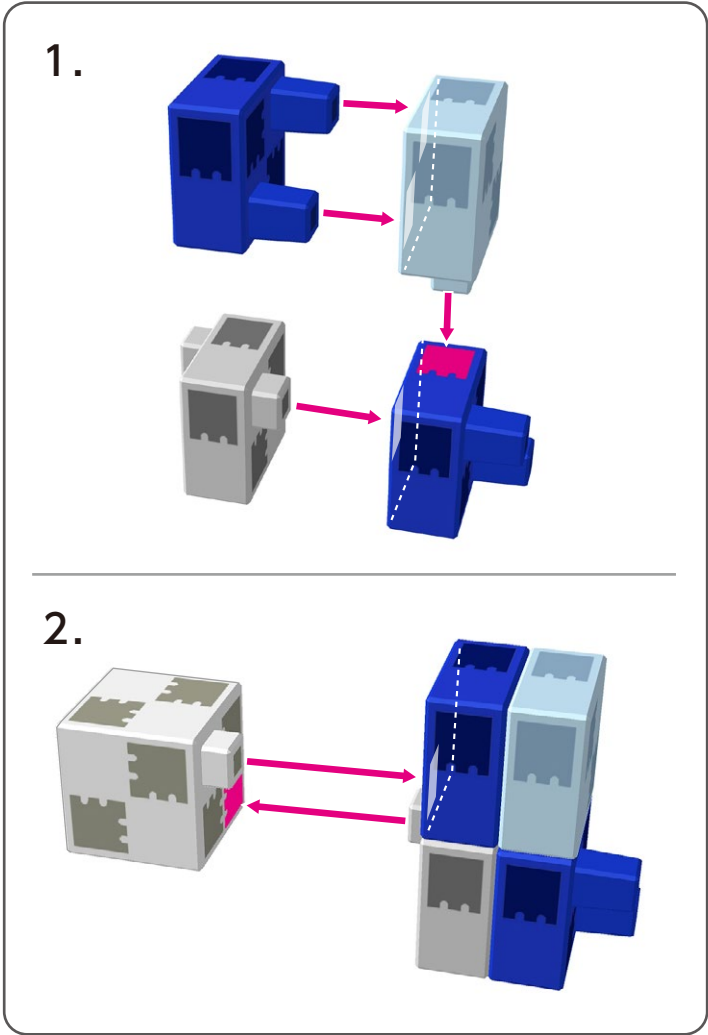


Biped Walking Robot

Assembling the Torso

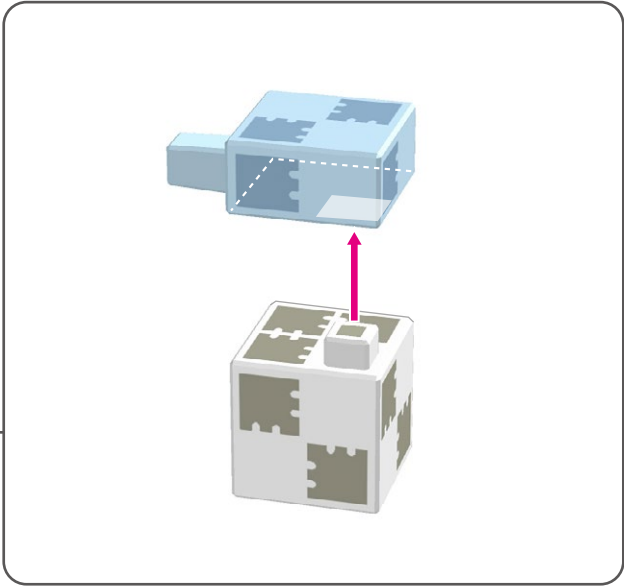
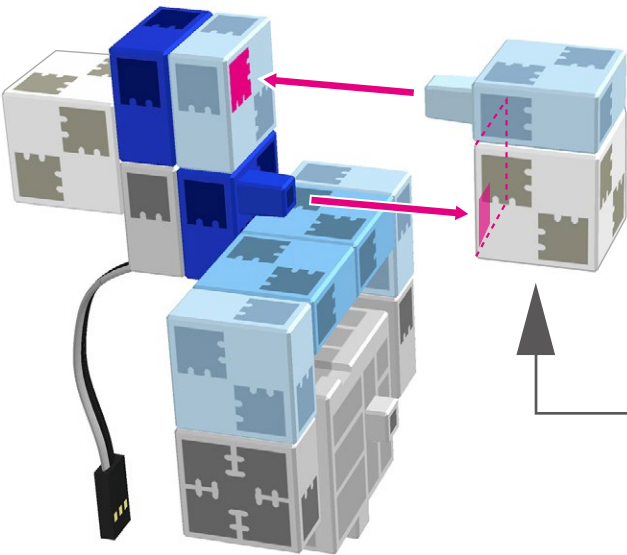


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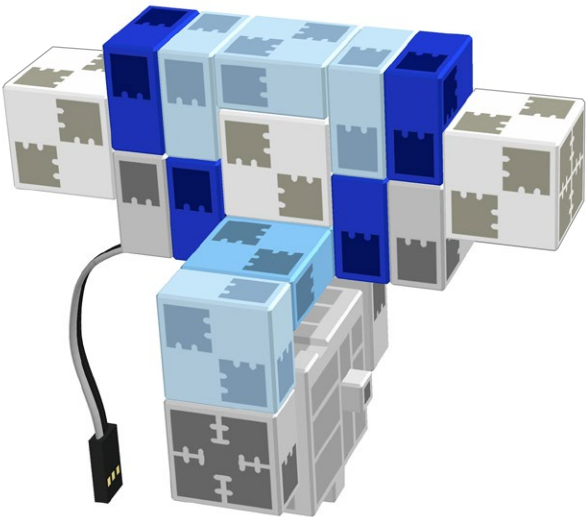
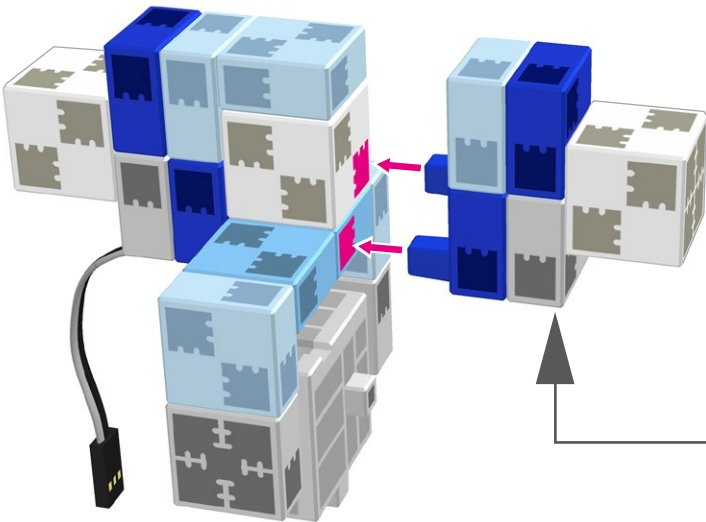


Biped Walking Robot

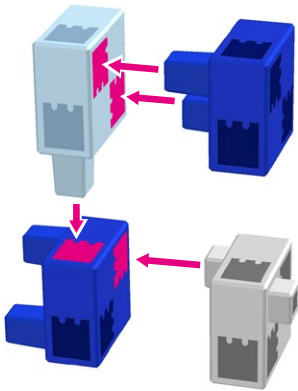
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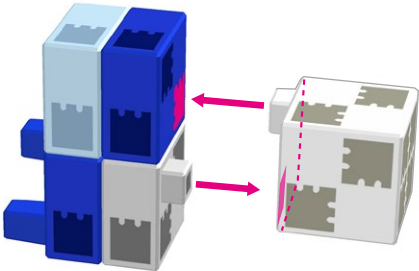
3



1.

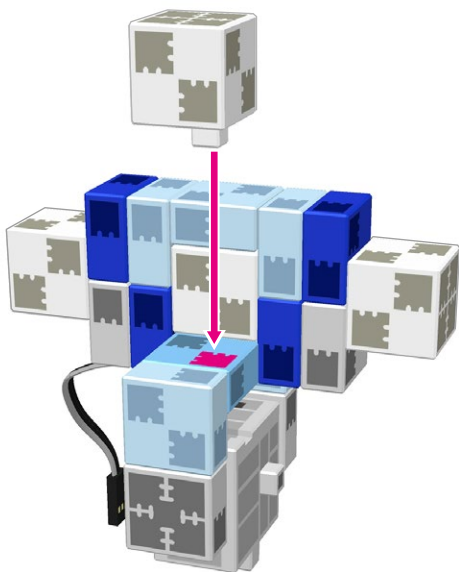


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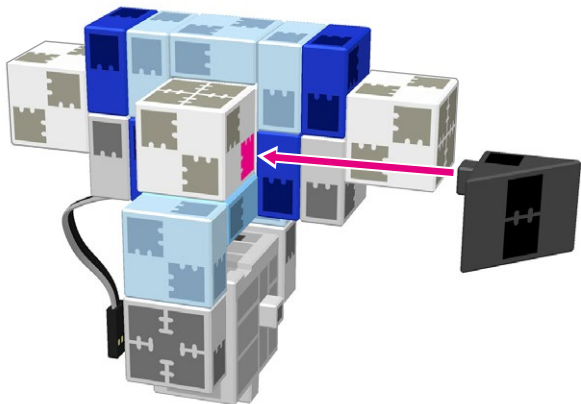


Biped Walking Robot

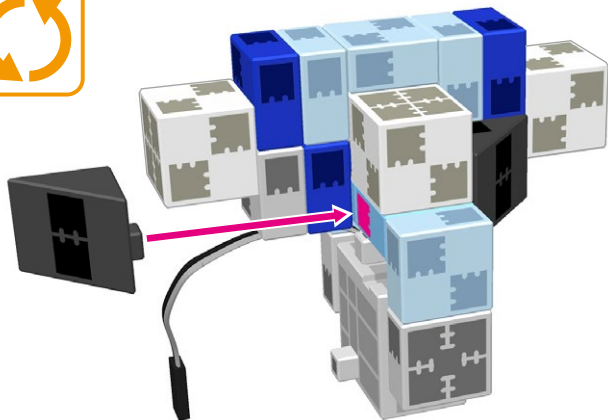
④



⑤



⑥



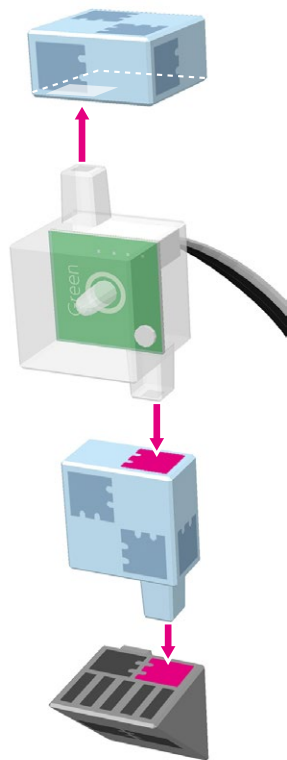
⑦

Sensor Connecting Cable

Sensor side Circuit board side

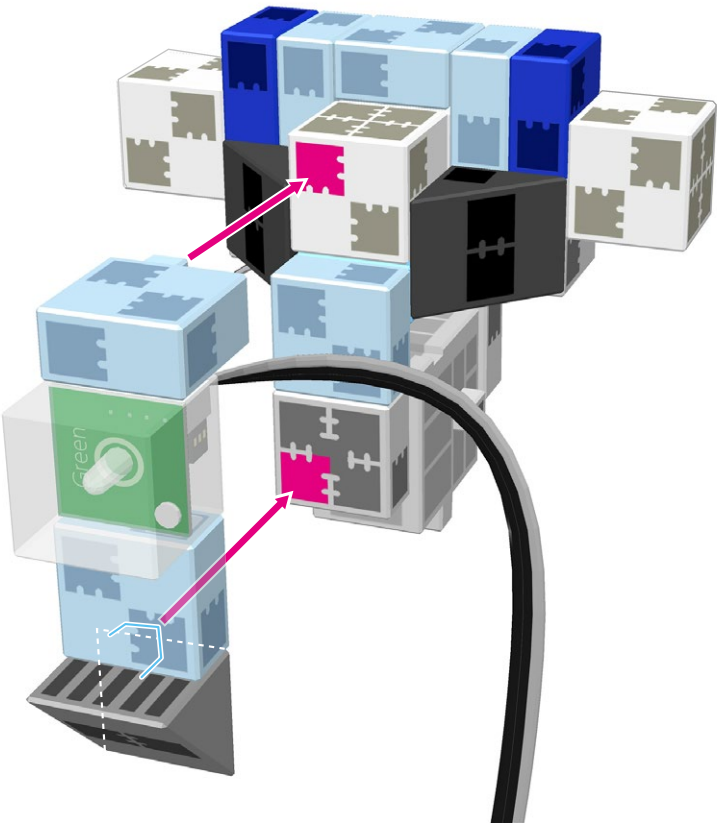
Gray Black Green

Make sure the cables are inserted correctly!

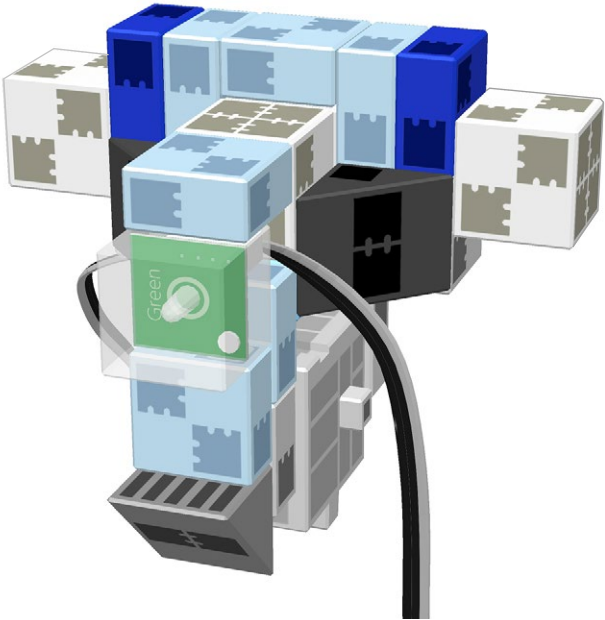


Biped Walking Robot

8

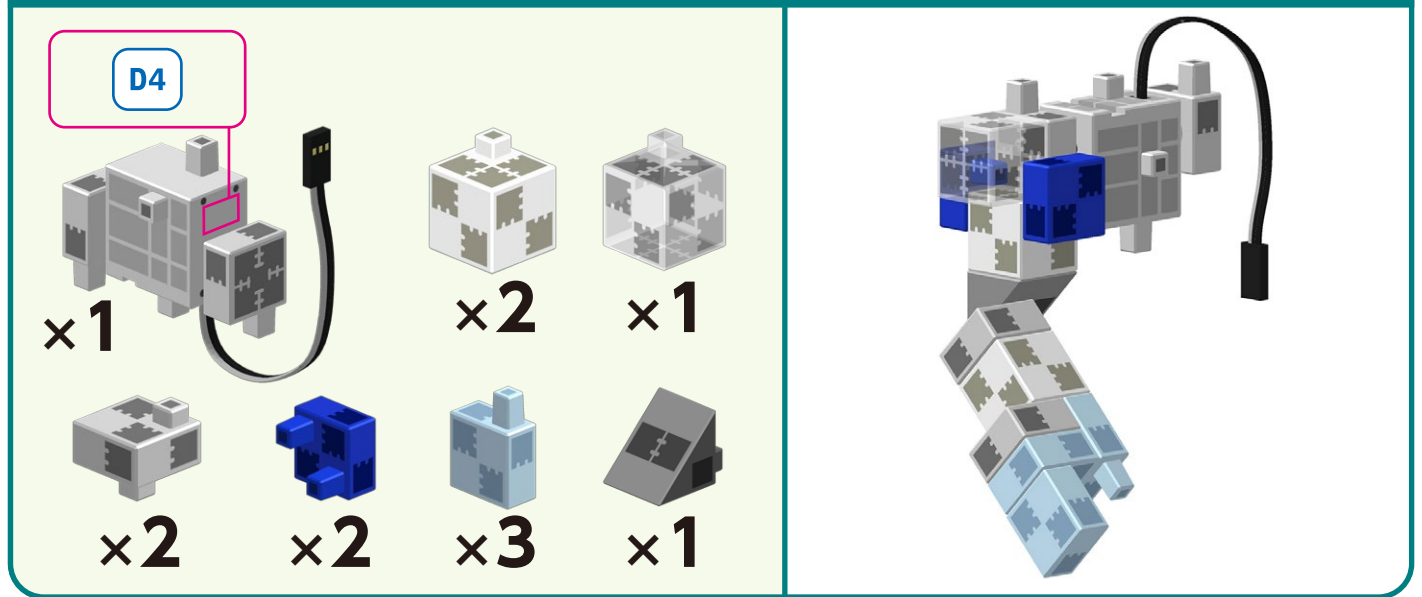


Completed Torso

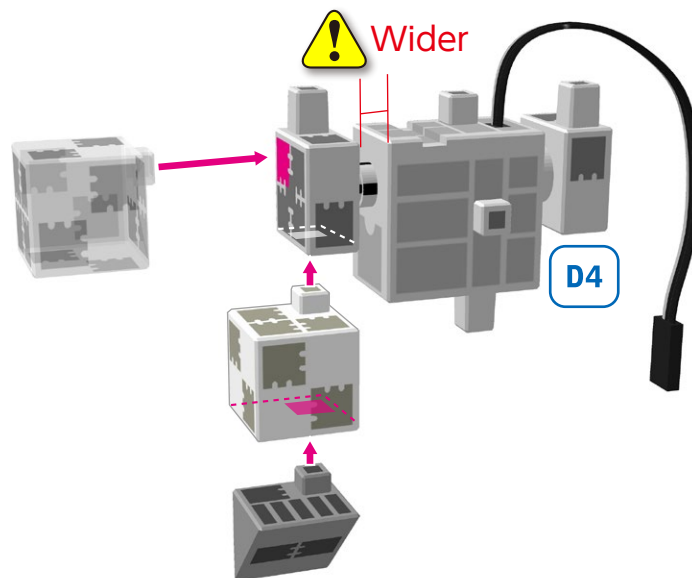


Biped Walking Robot

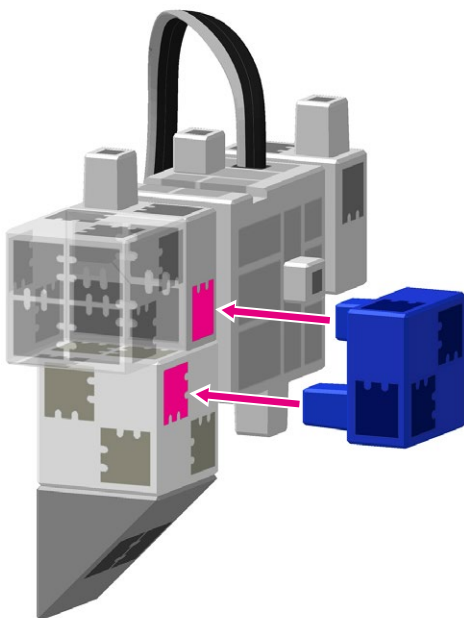
Assembling the Right Arm



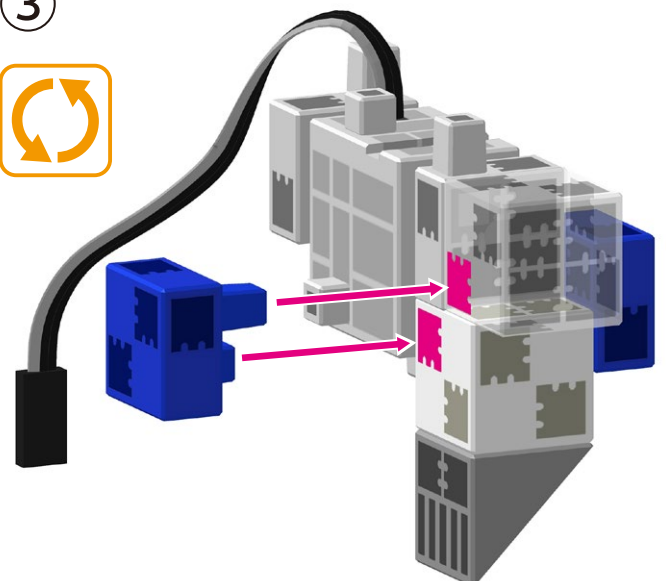
①



②

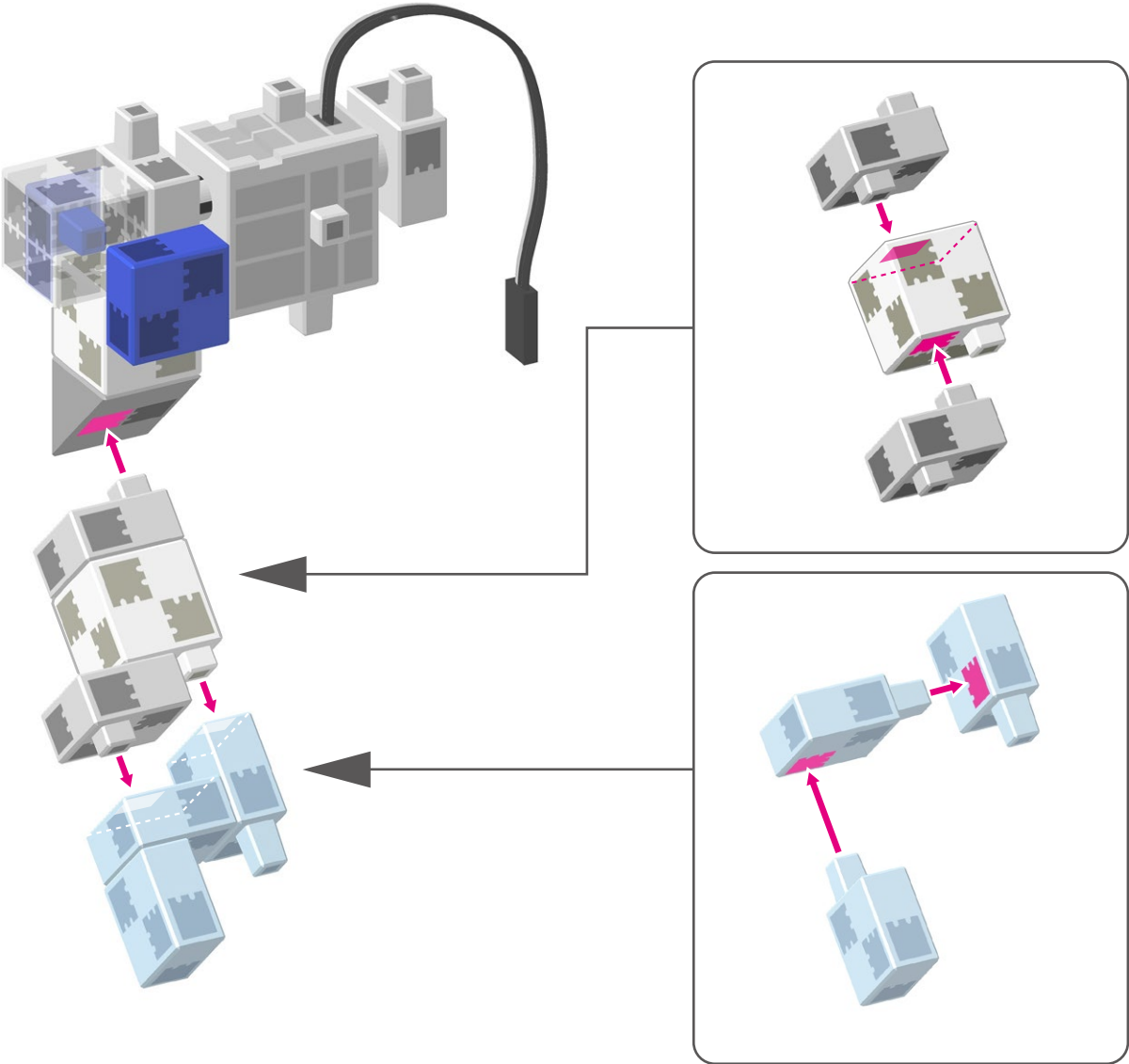


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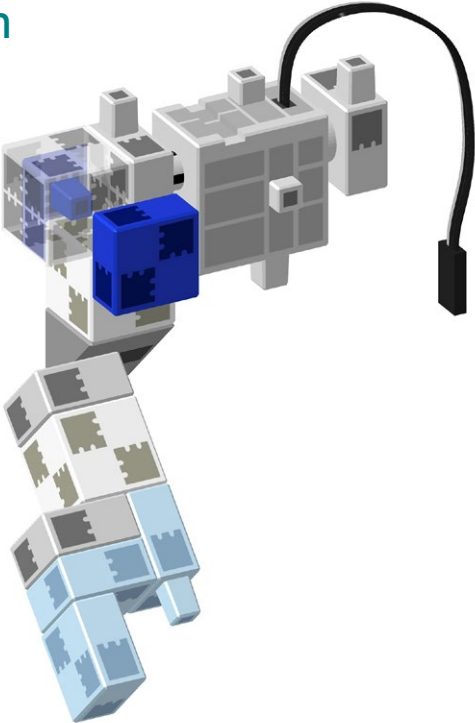


Biped Walking Robot

4

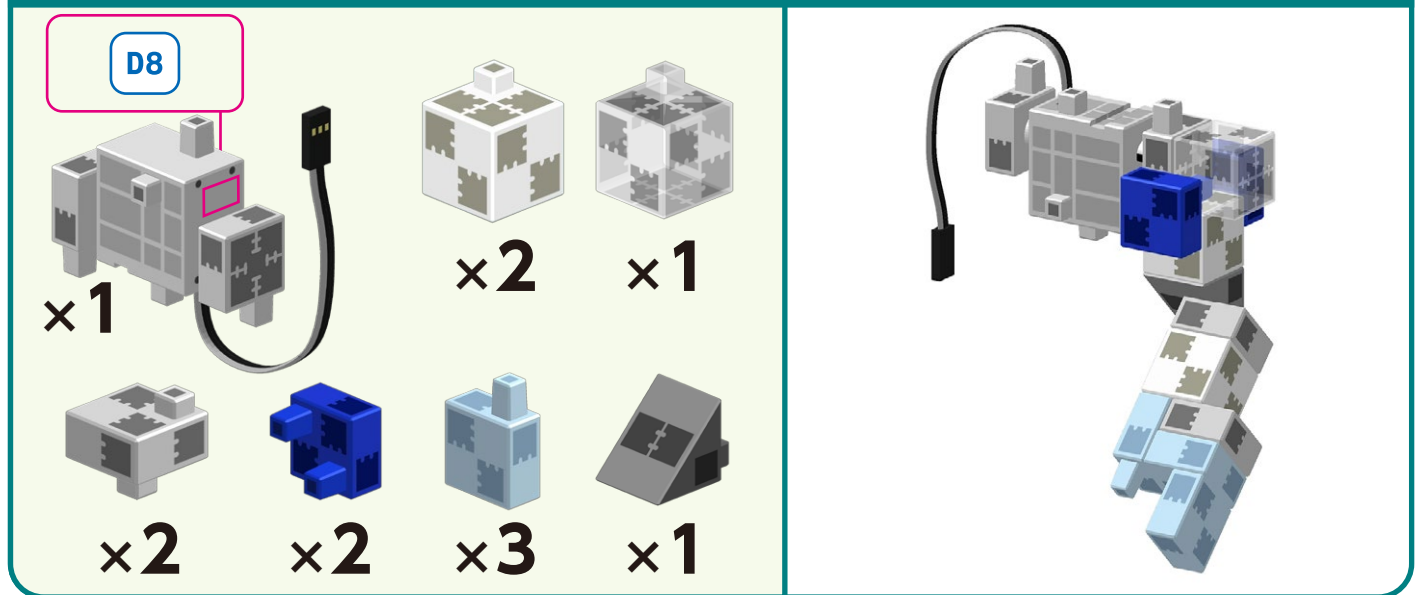


Completed Right Arm

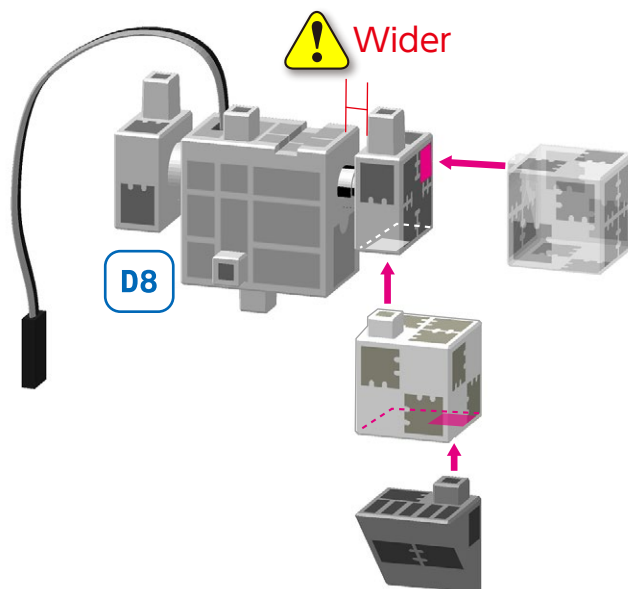


Biped Walking Robot

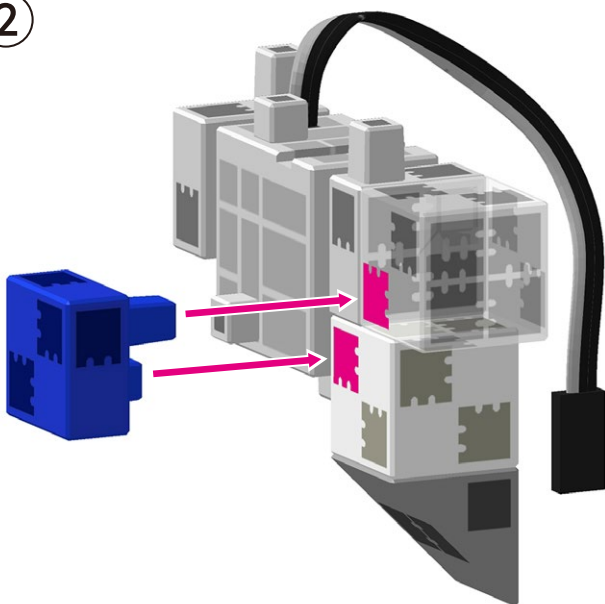
Assembling the Left Arm



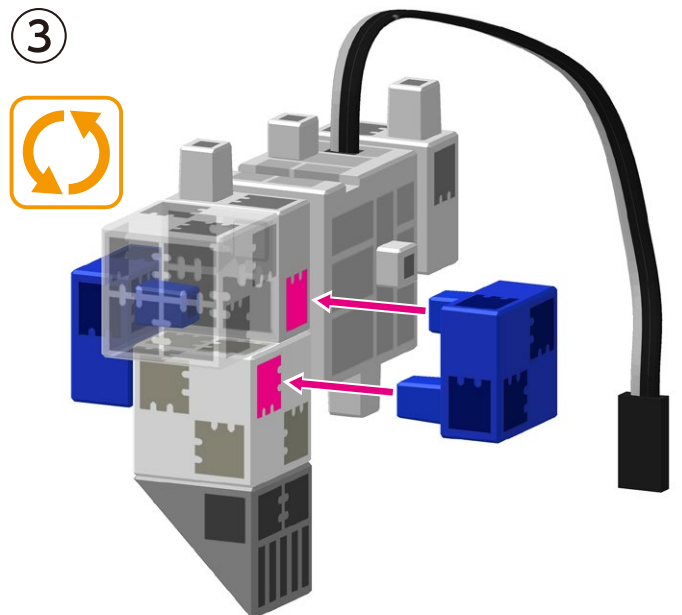
①



②

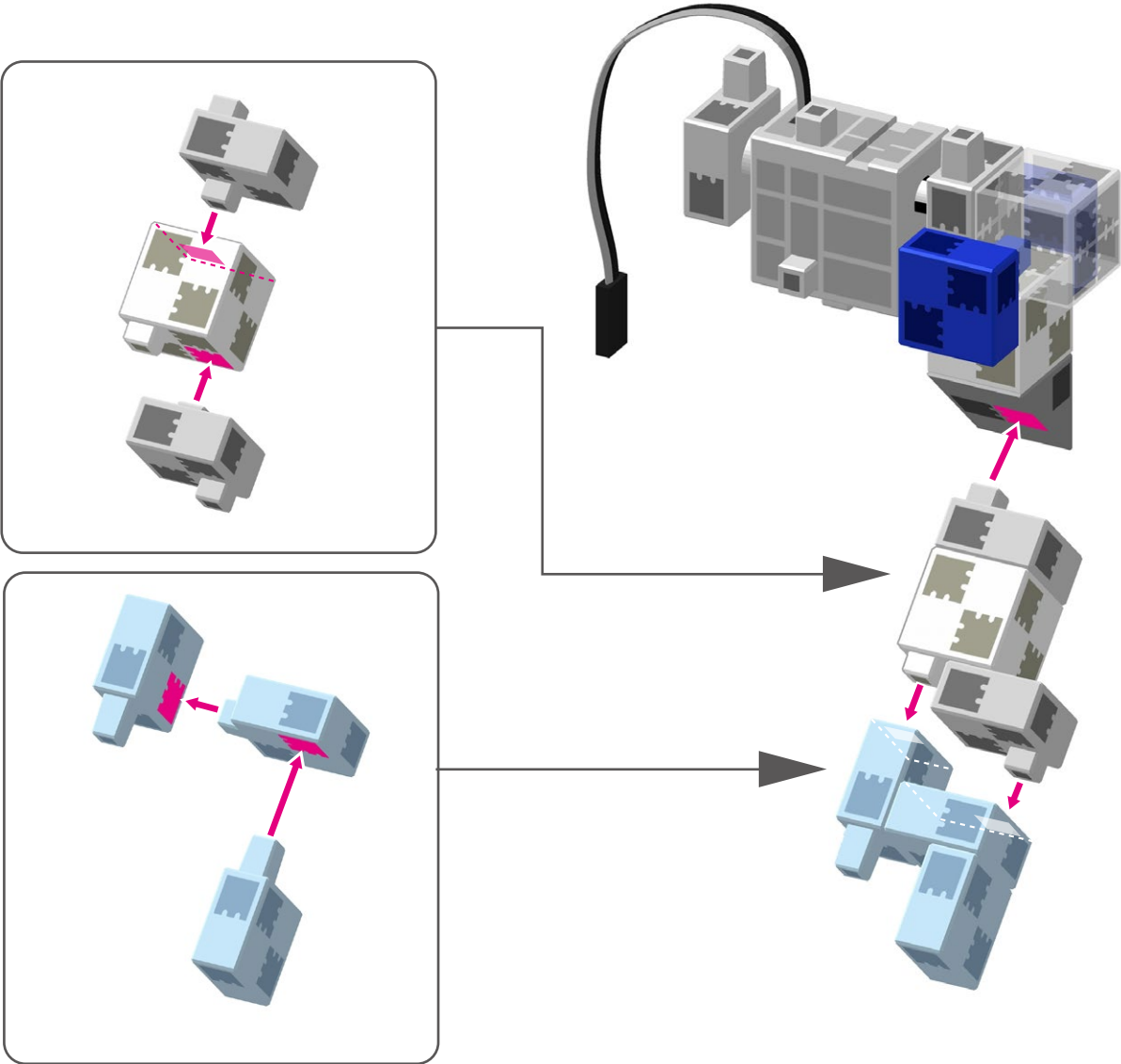


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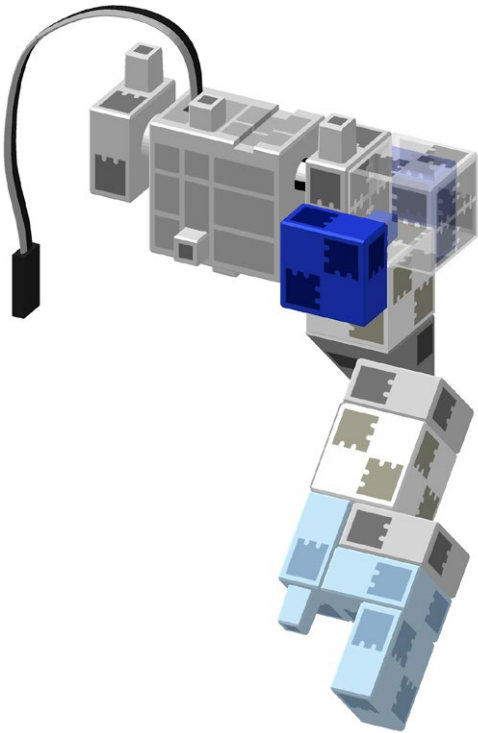


Biped Walking Robot

4

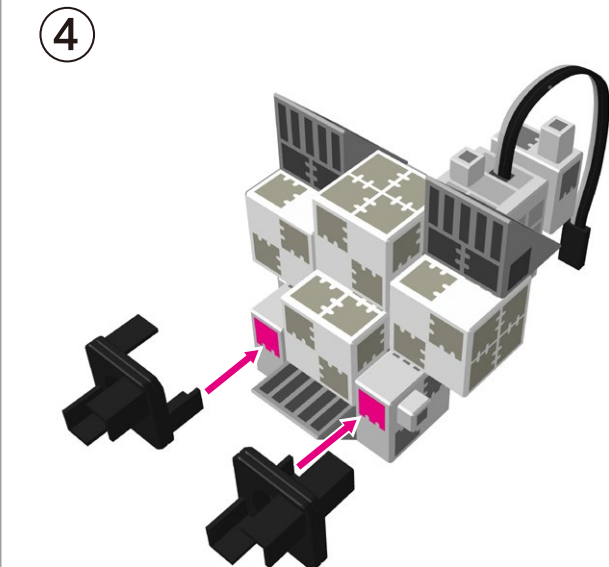
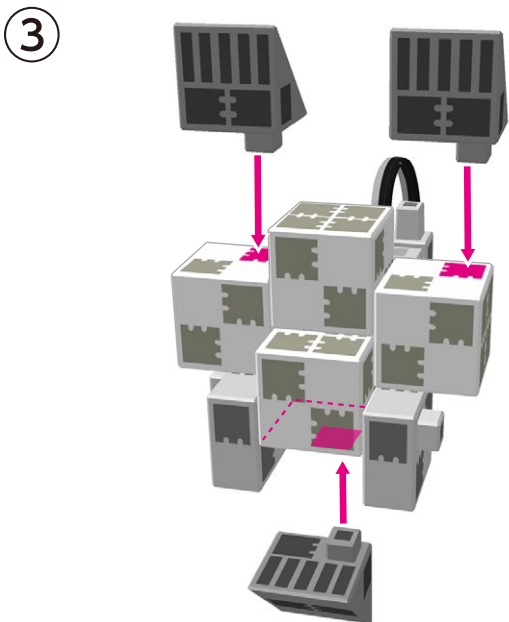
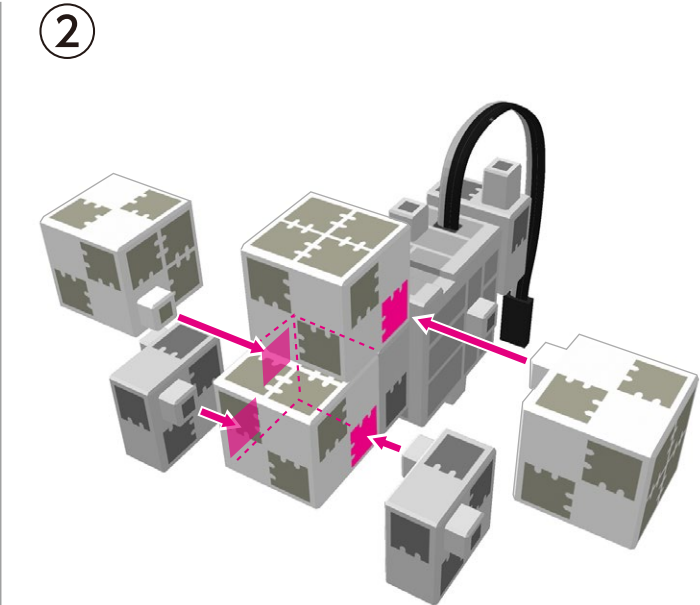
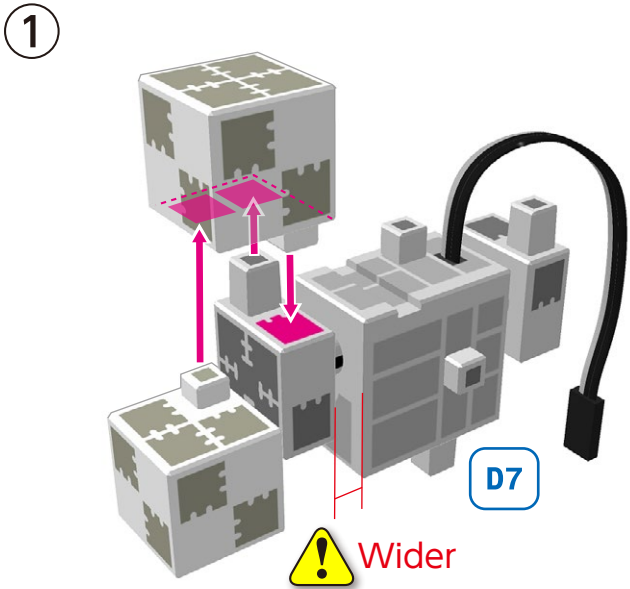
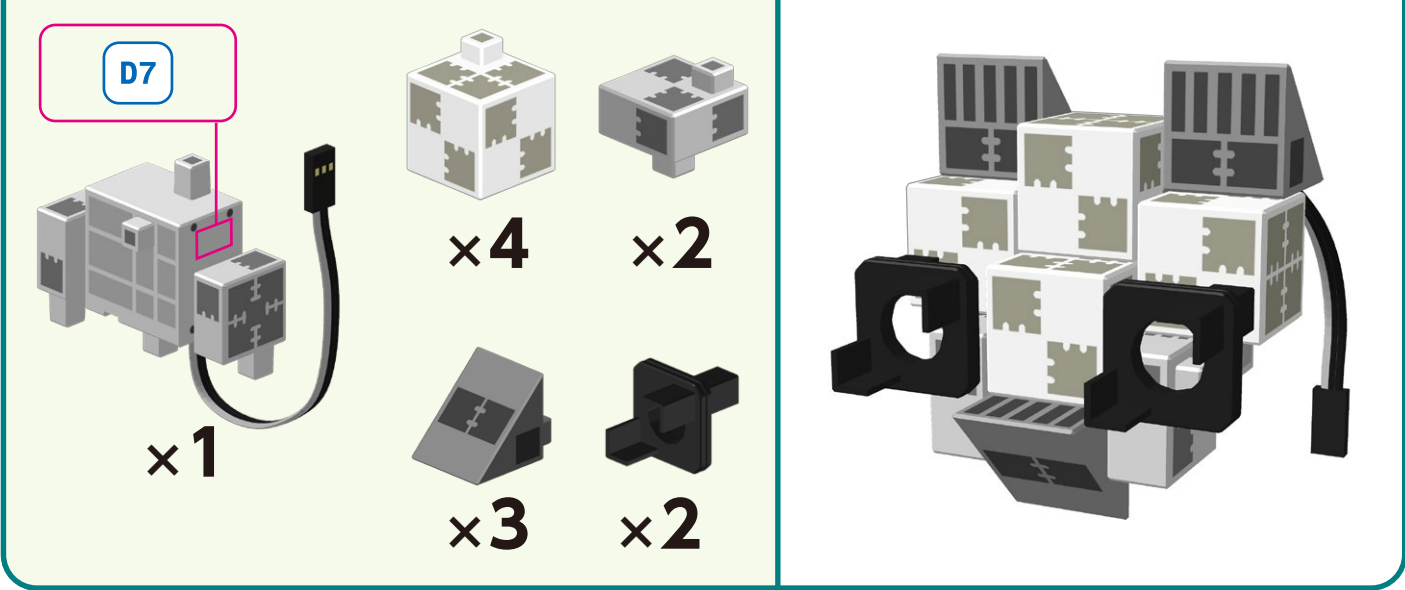


Completed Left Arm



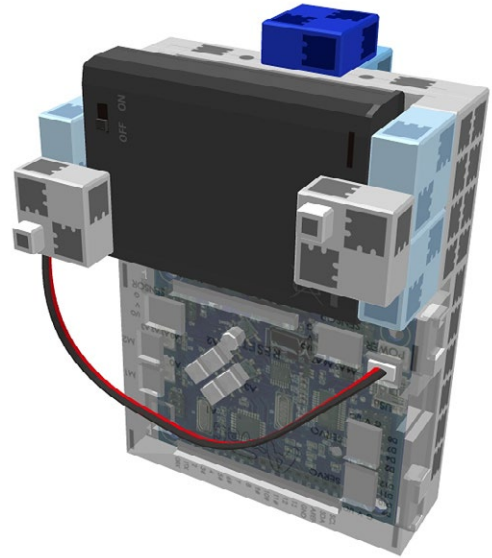
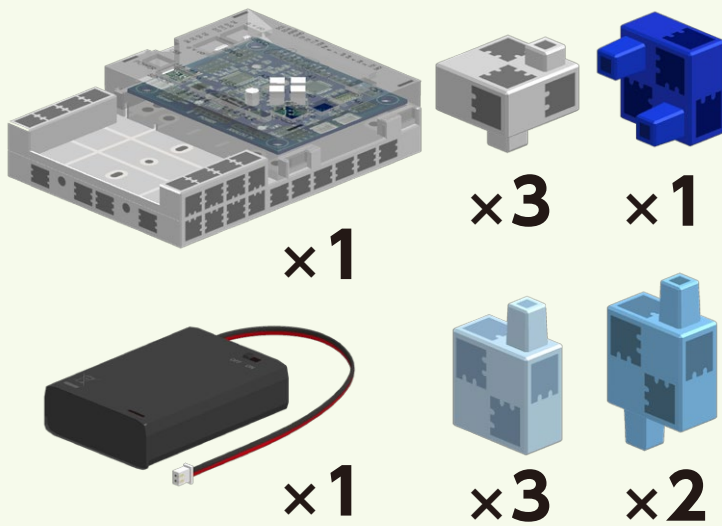
Biped Walking Robot

Assembling the Head

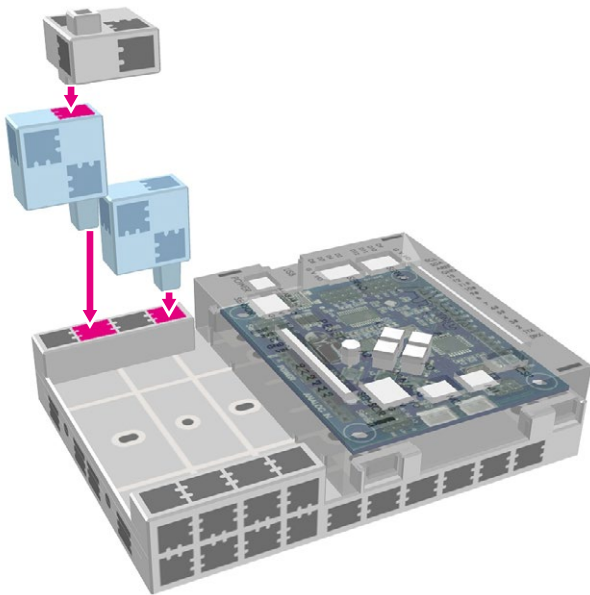


Biped Walking Robot

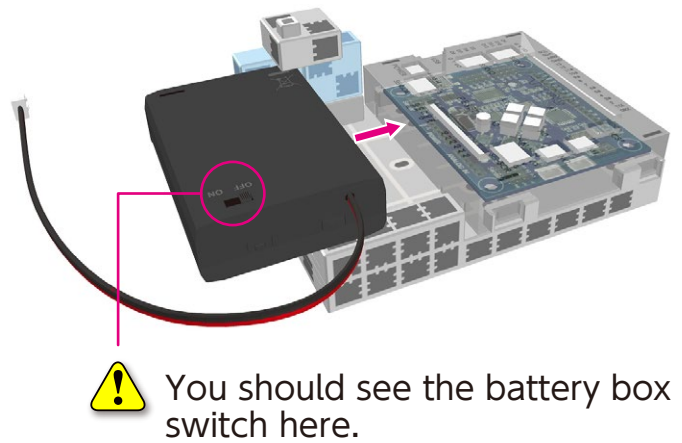
Assembling the Back



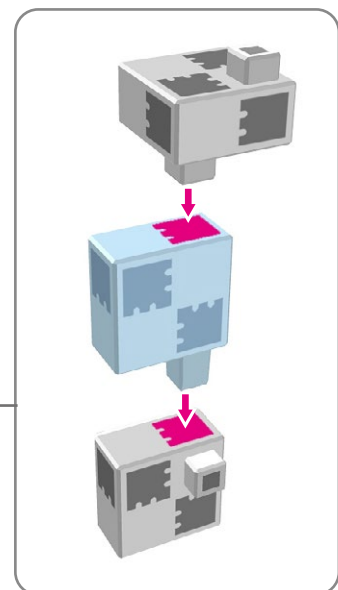
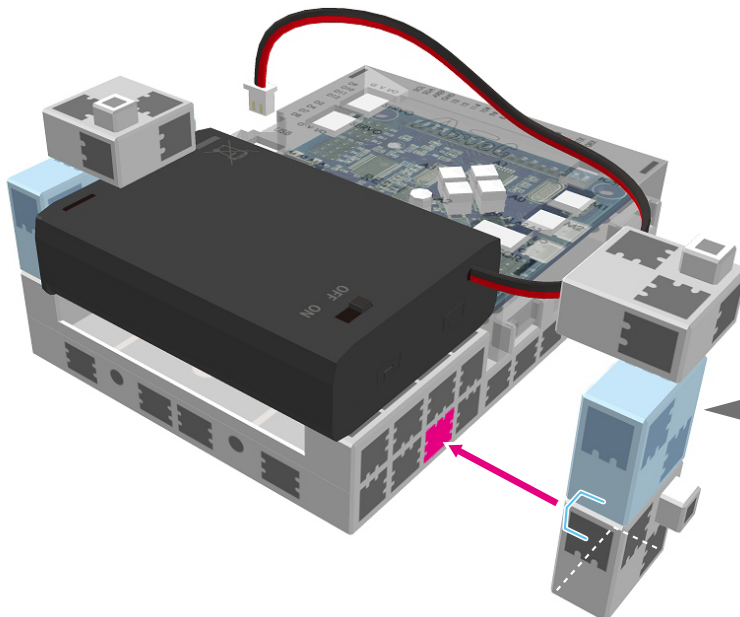
①



②

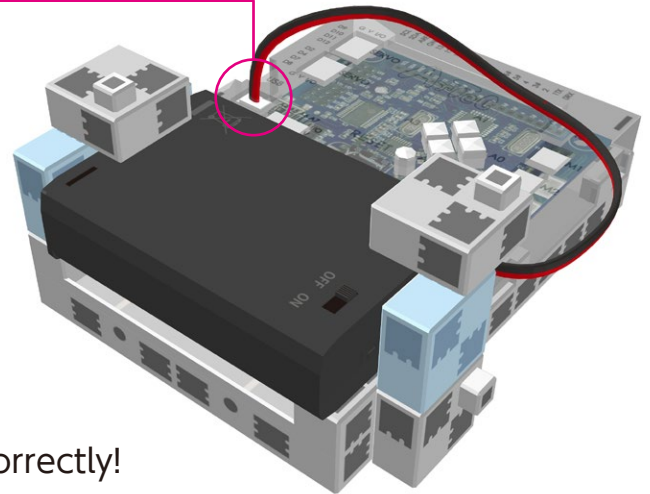
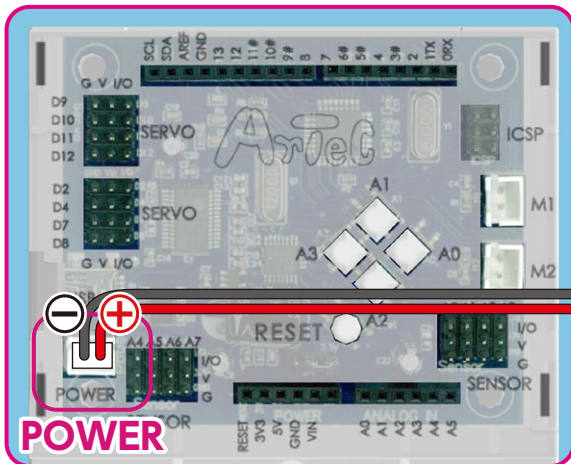


③



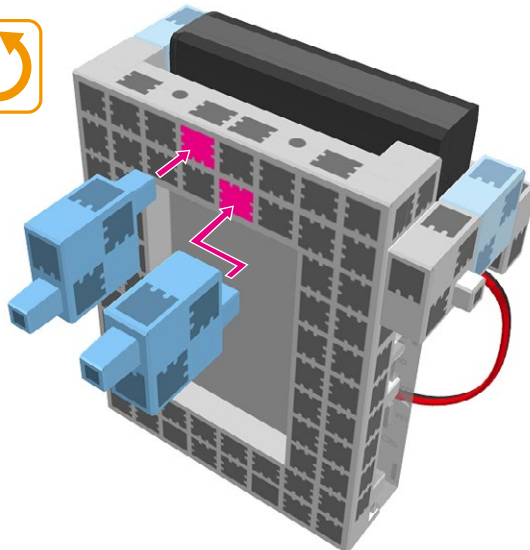
Biped Walking Robot

- ④ Connect the cable from the battery box to the **POWER** pins on the board.

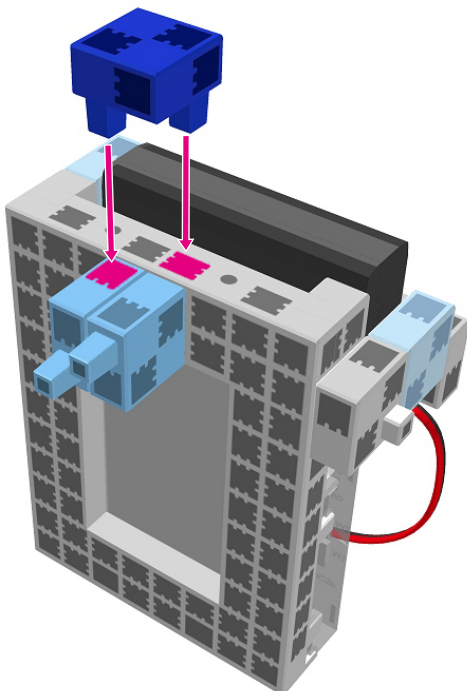


⚠ Make sure the cables are inserted correctly!

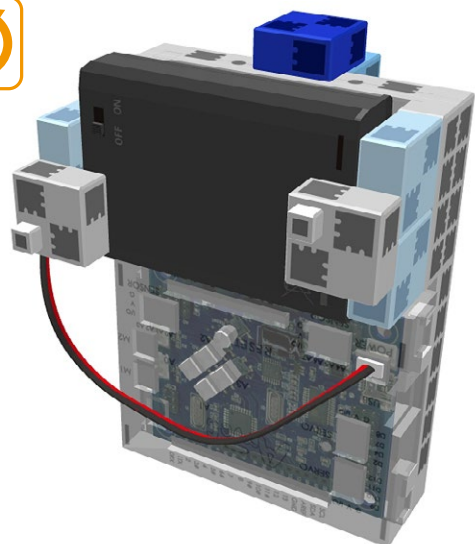
⑤



⑥

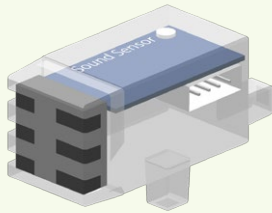


Completed Back



Biped Walking Robot

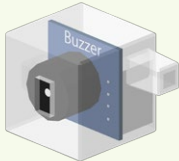
Completed Body



×1



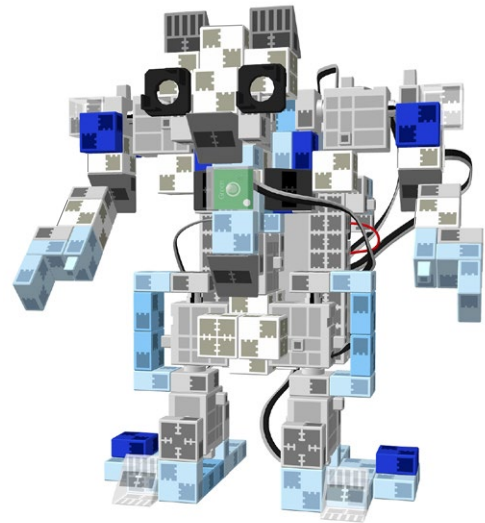
×2



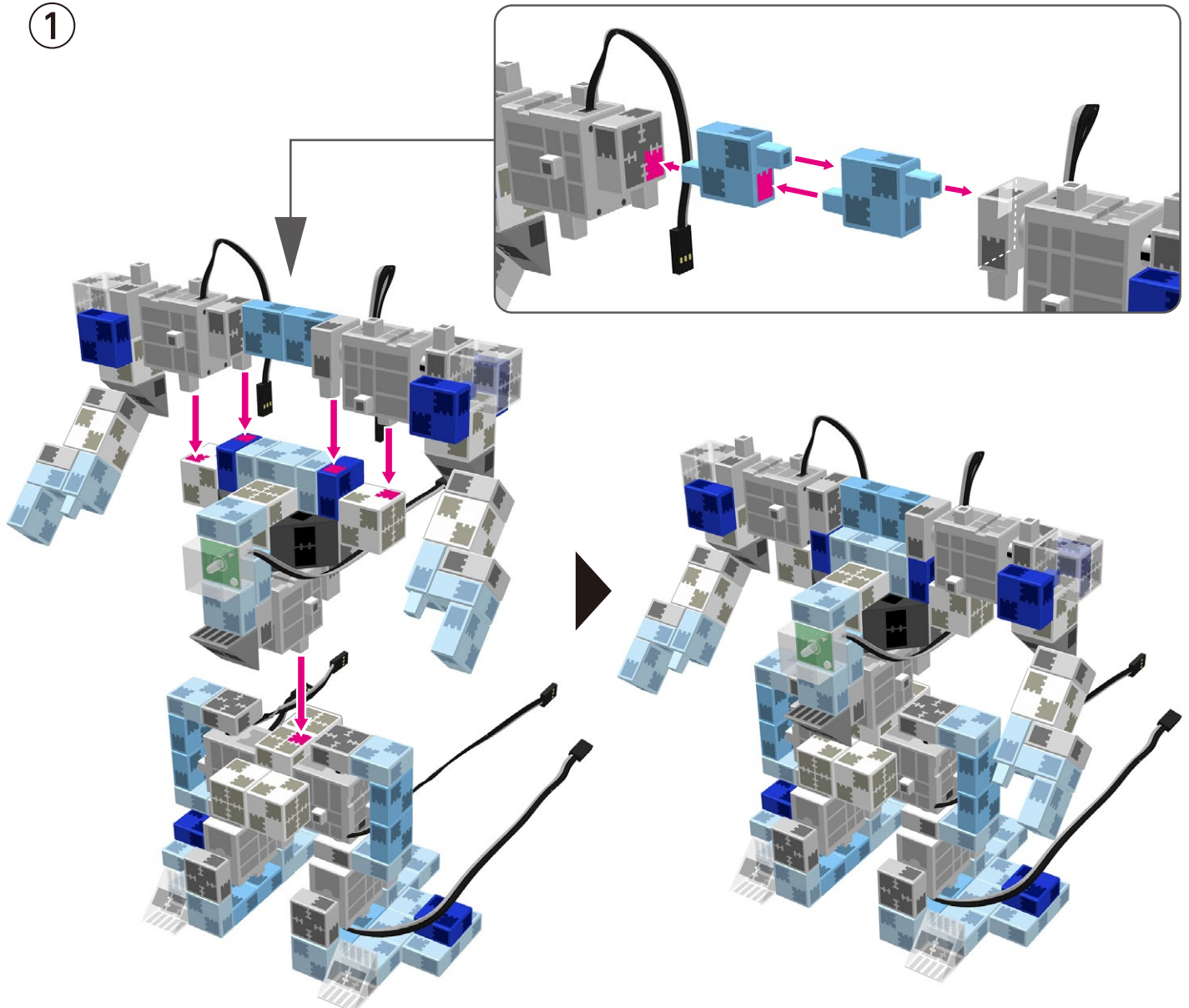
×1



×2

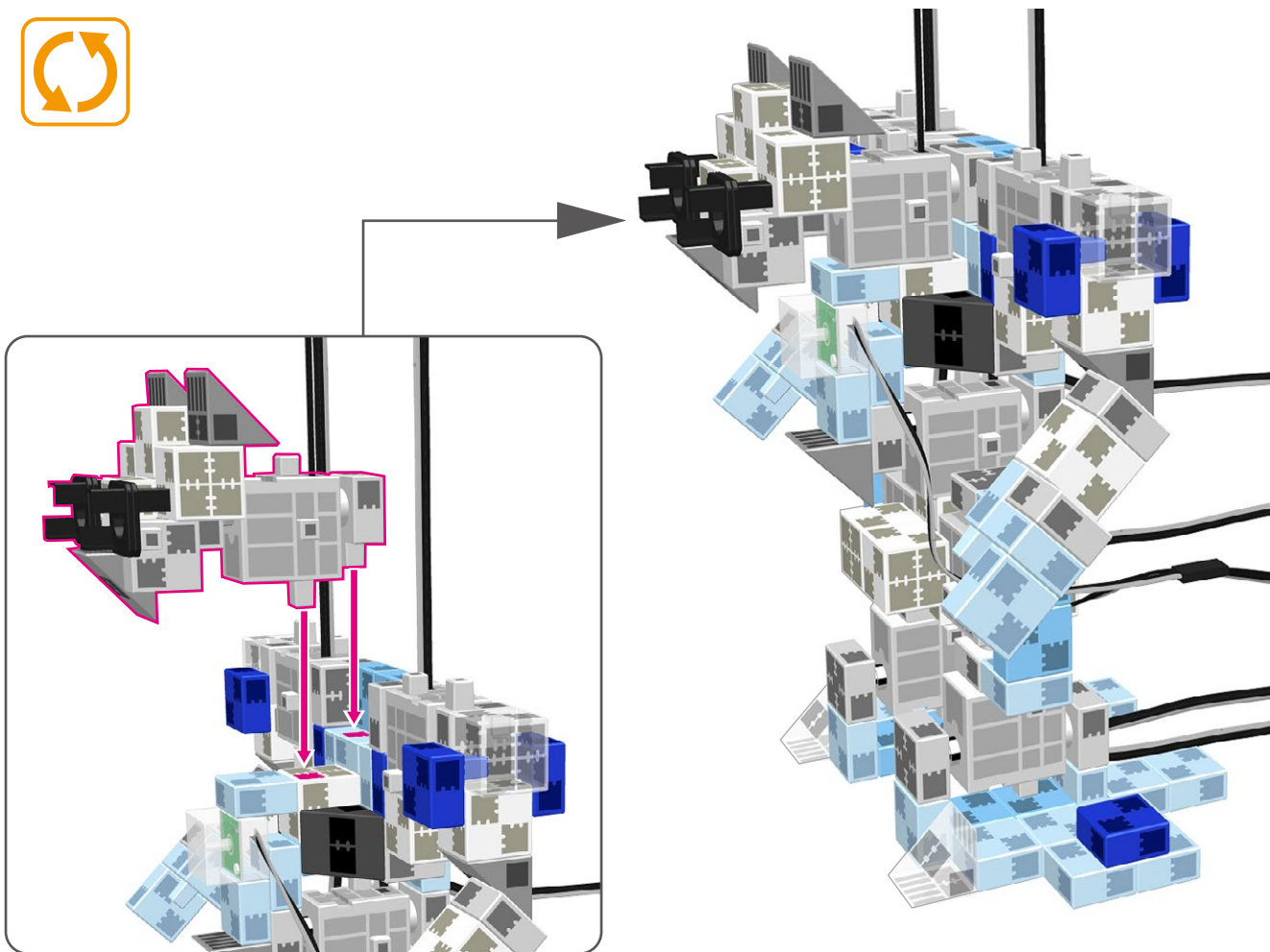


①

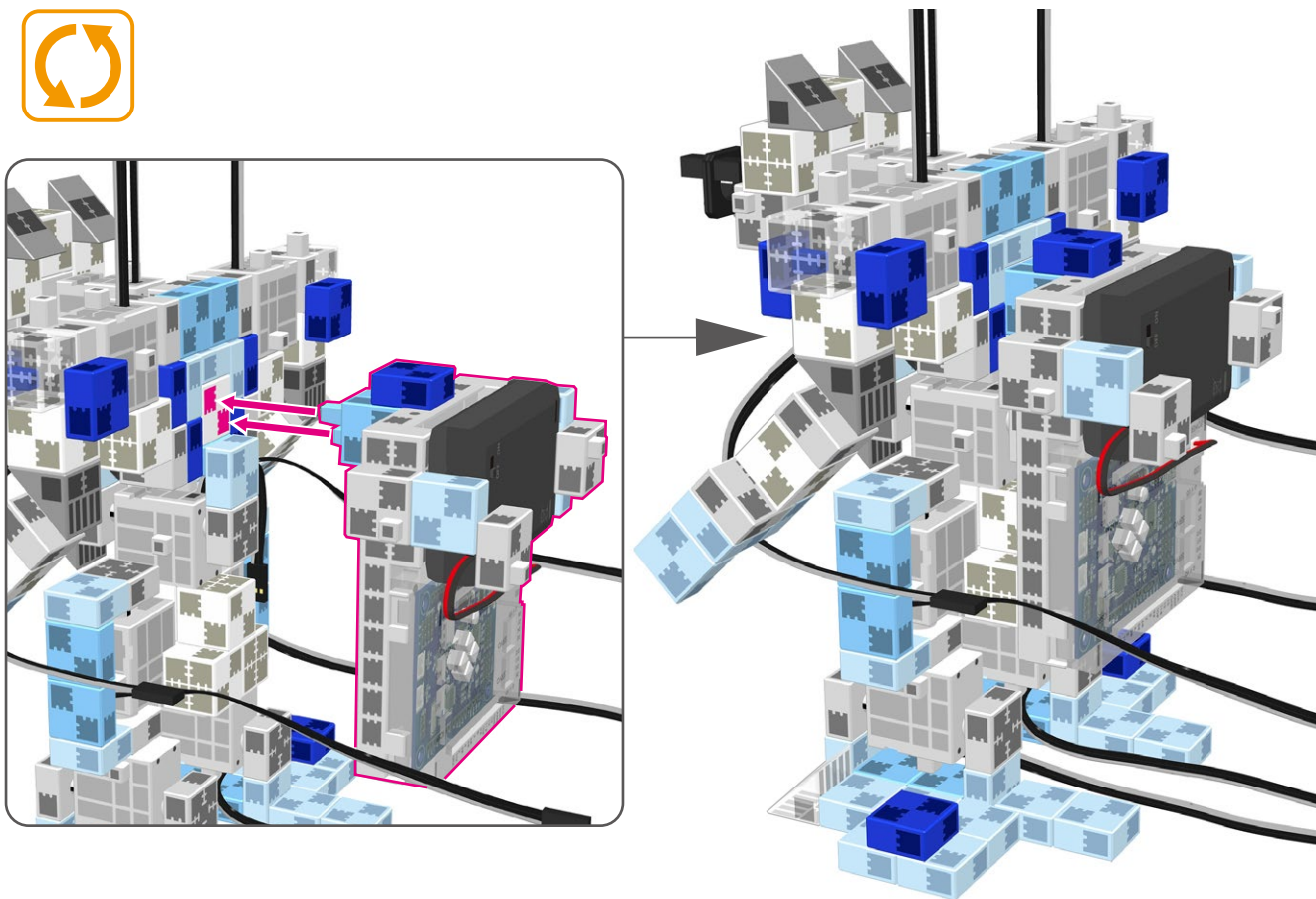


Biped Walking Robot

2



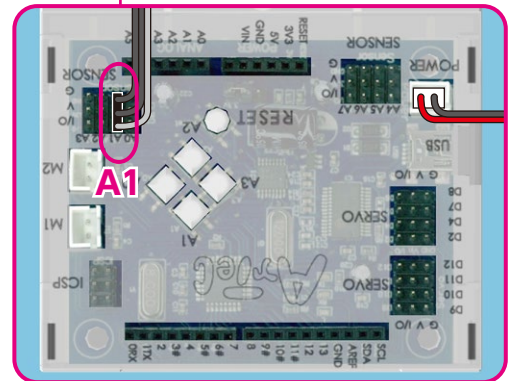
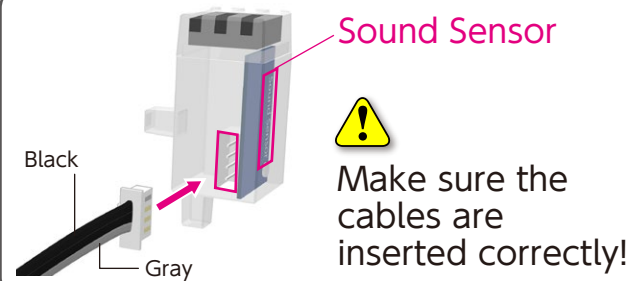
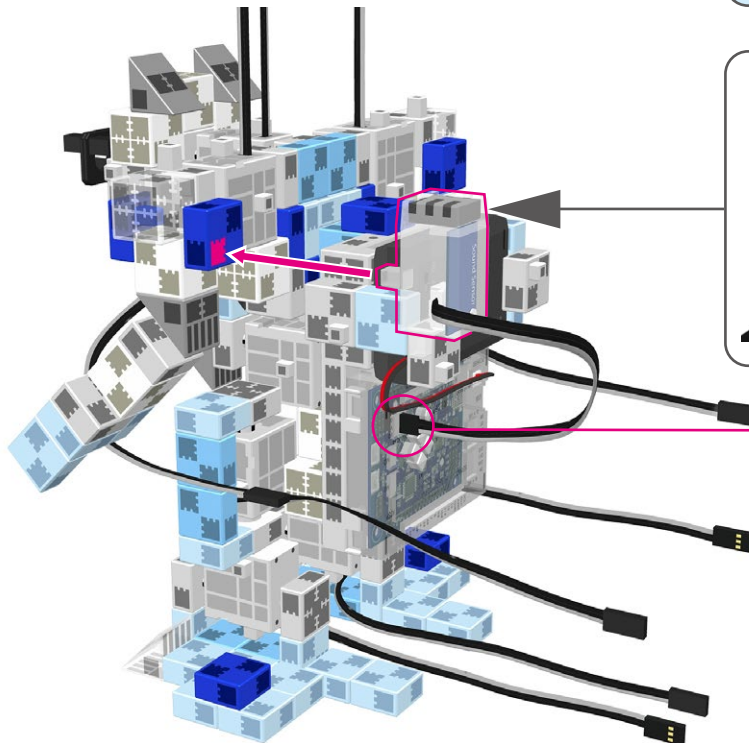
3



Biped Walking Robot

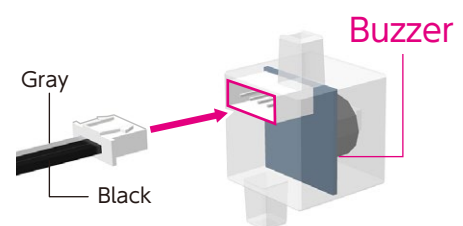
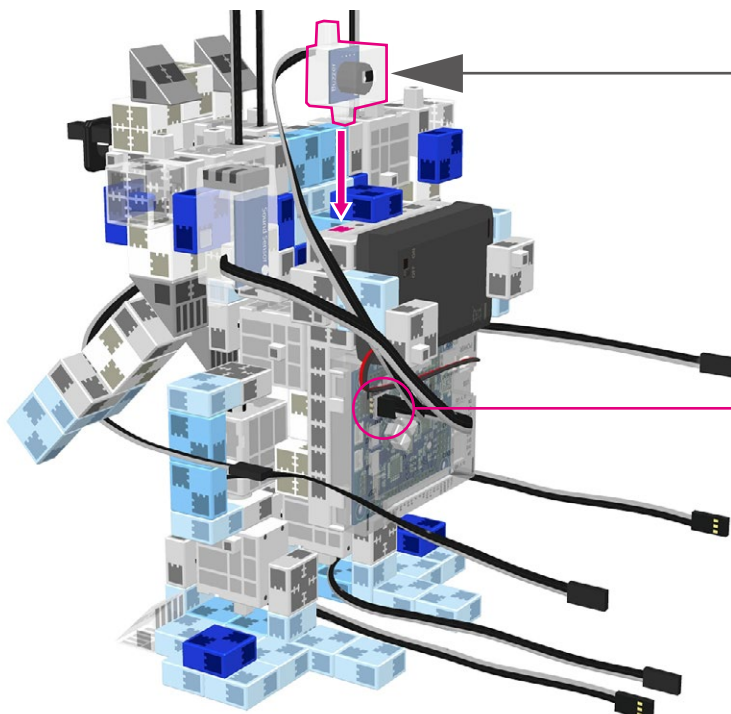
- ④ Connect the sound sensor to **A1**.

Sensor Connecting Cable

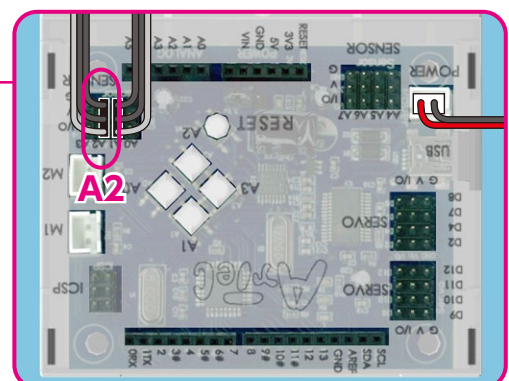


⚠ Make sure the cables are inserted correctly!

- ⑤ Connect the buzzer to **A2**.



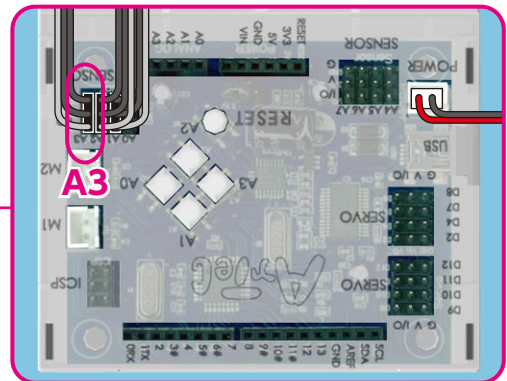
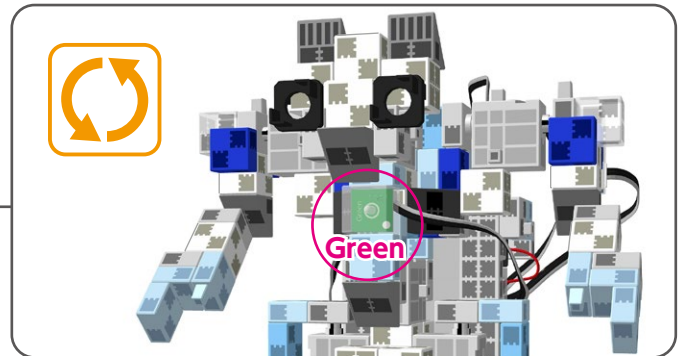
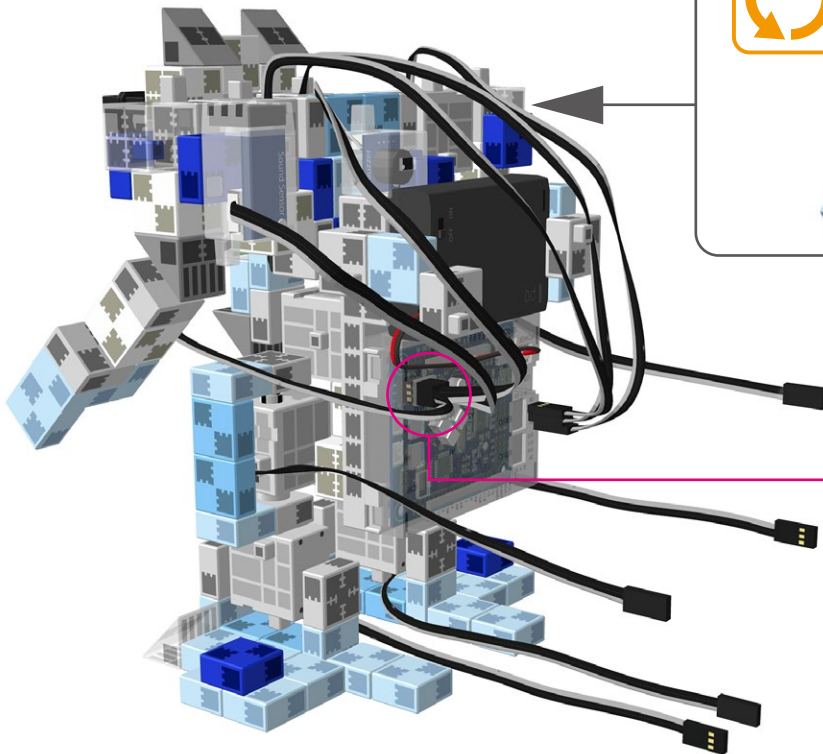
⚠ Make sure the cables are inserted correctly!



⚠ Make sure the cables are inserted correctly!

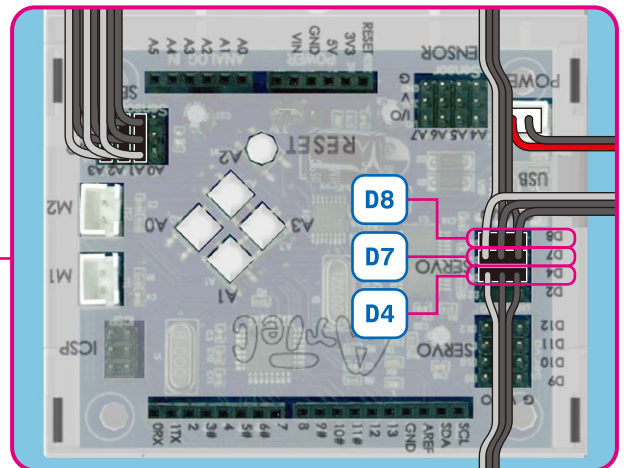
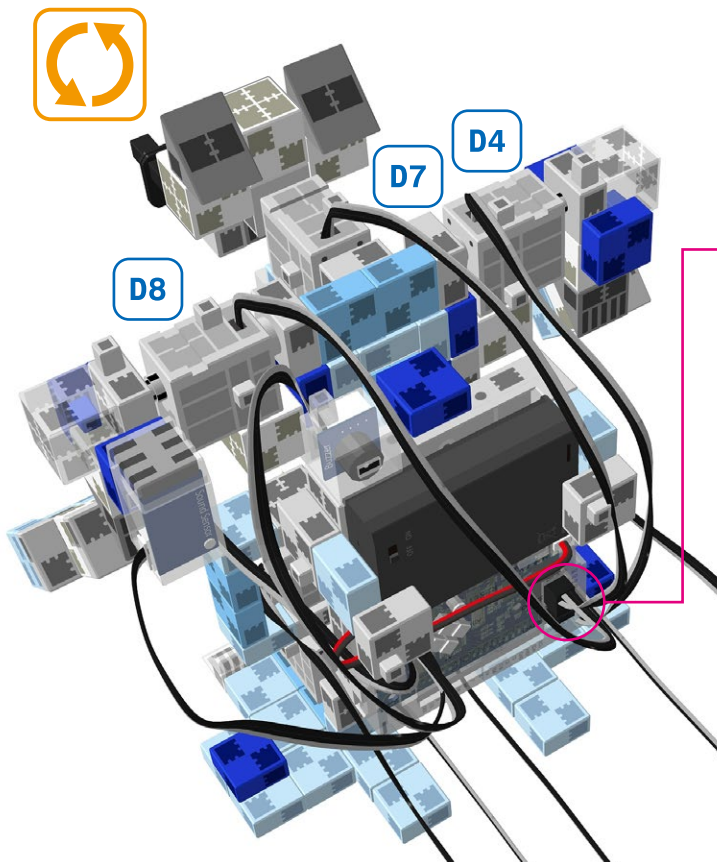
Biped Walking Robot

- ⑥ Connect the LED (green) cable to **A3**.



⚠ Make sure the cables are inserted correctly!

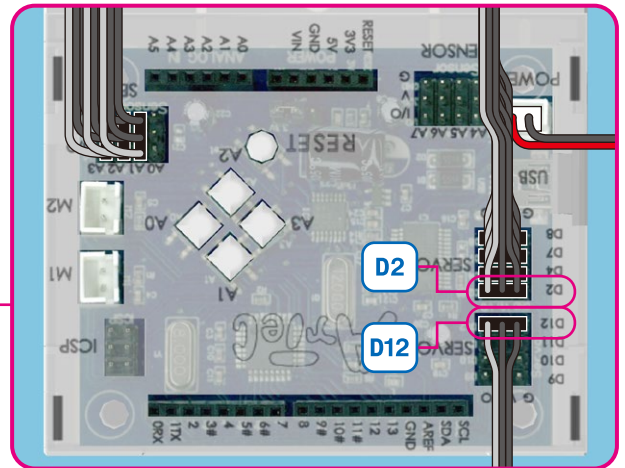
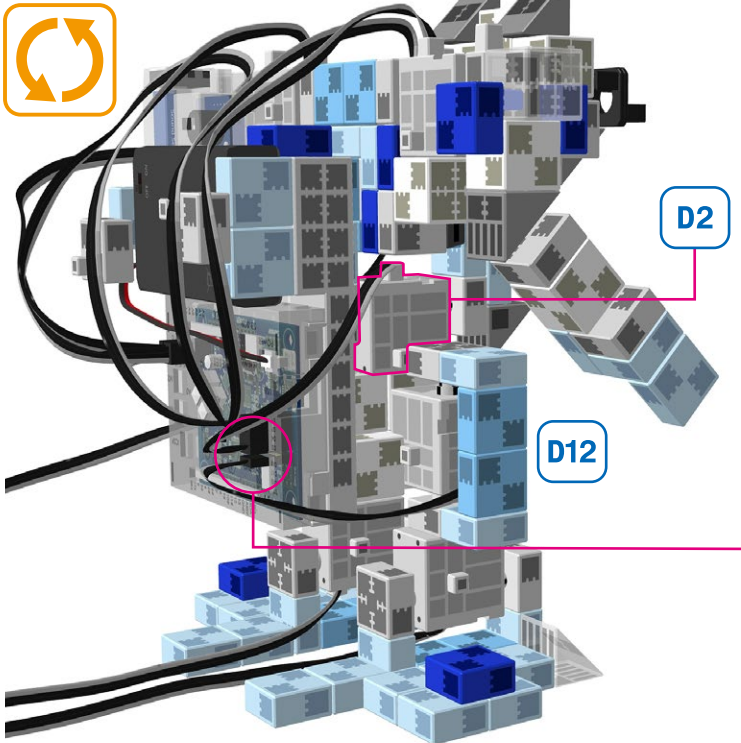
- ⑦ Connect the three cables from the servomotor to their corresponding places on your Studuino unit.



⚠ Make sure the cables are inserted correctly!

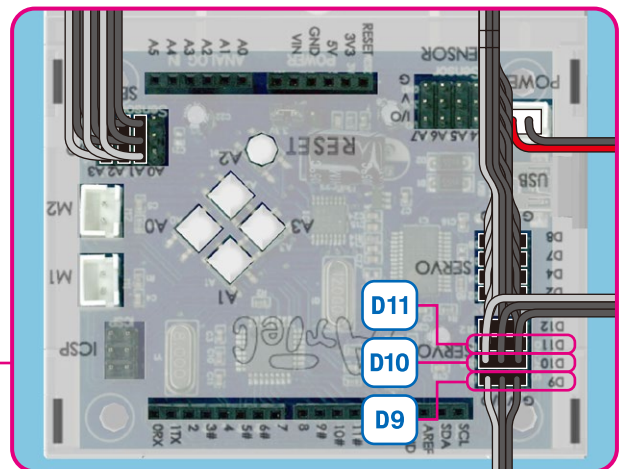
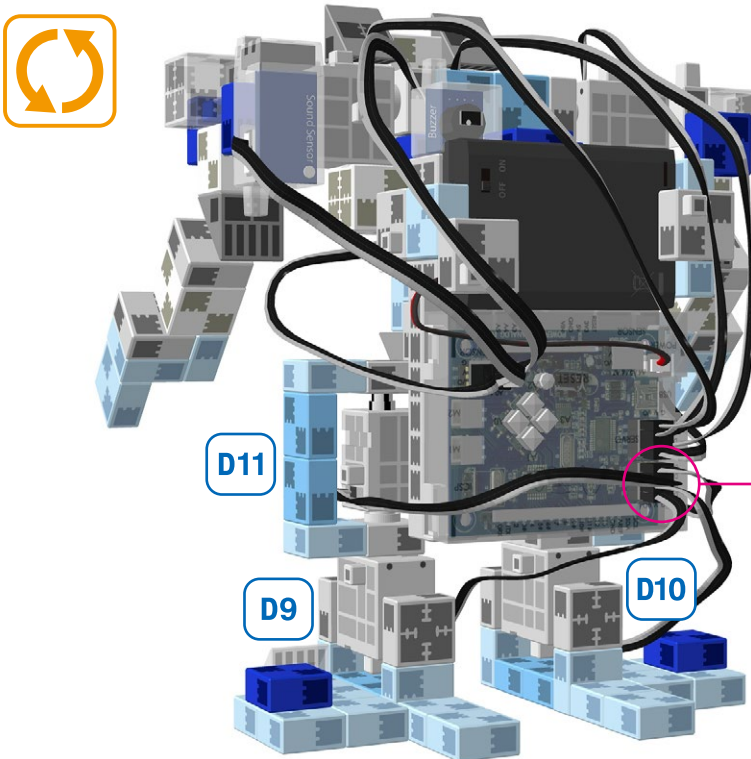
Biped Walking Robot

- 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.

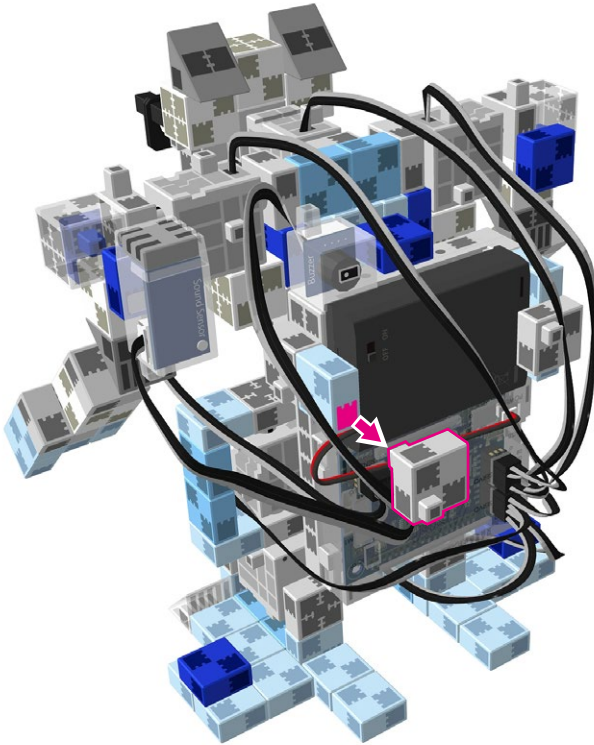


⚠ Make sure the cables are inserted correctly!

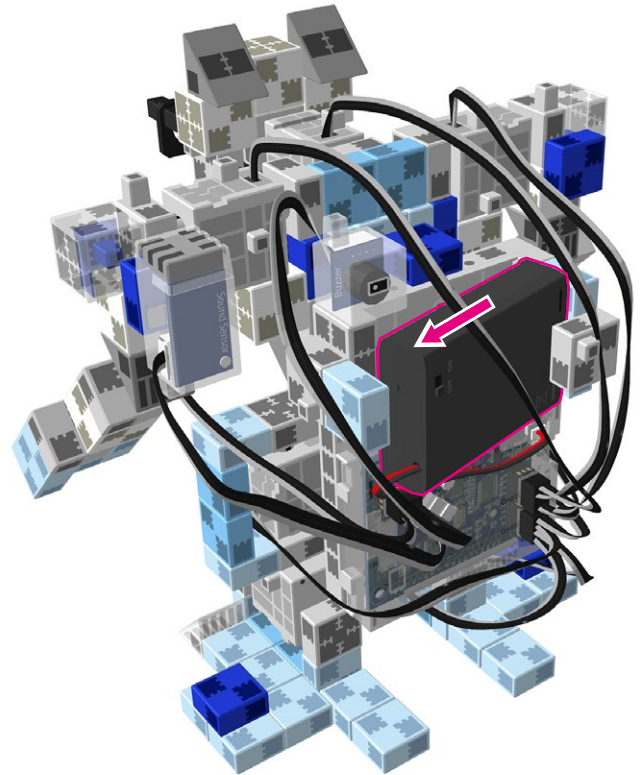
Biped Walking Robot

Replacing the Batteries

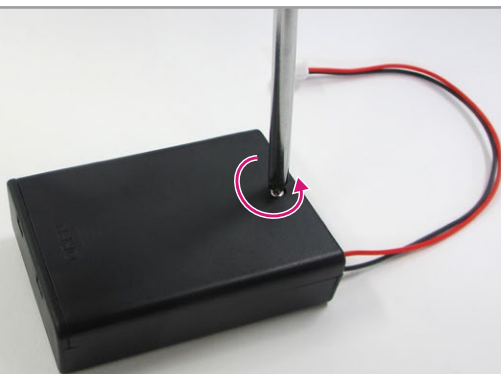
①



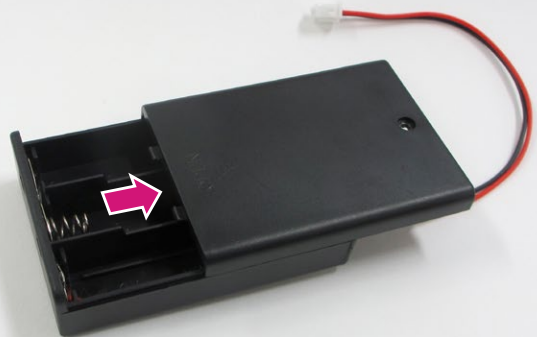
②



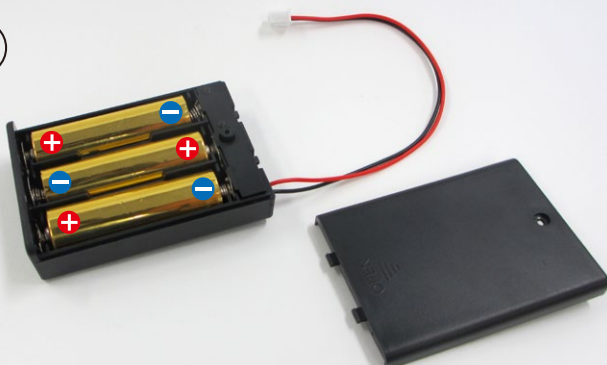
③



④



⑤



Use a screwdriver
(Phillips #1) to open.



Insert batteries in the
correct polarity.

Put the lid of the battery
box back in place.

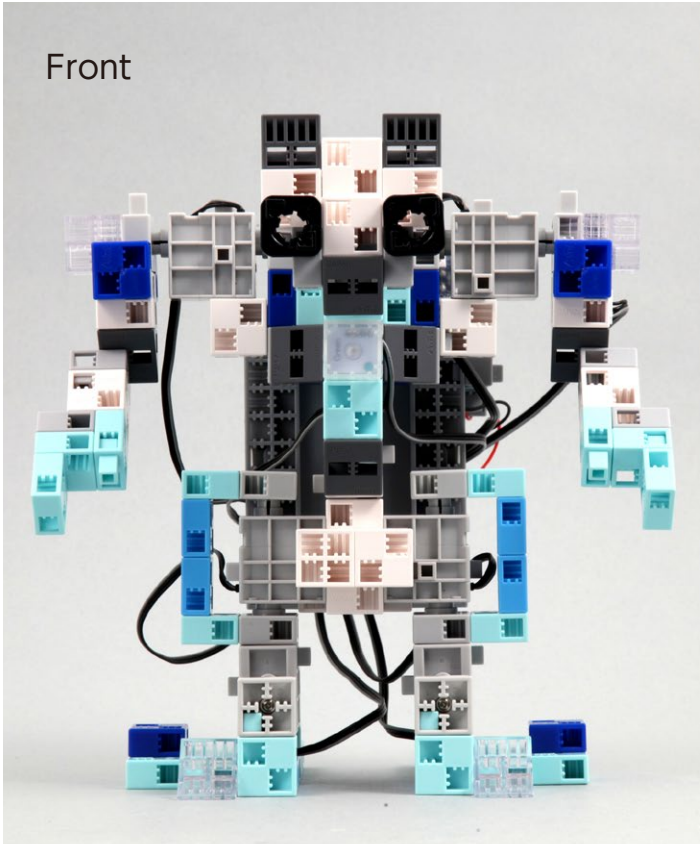
Biped Walking Robot

Completed Biped Walking Robot

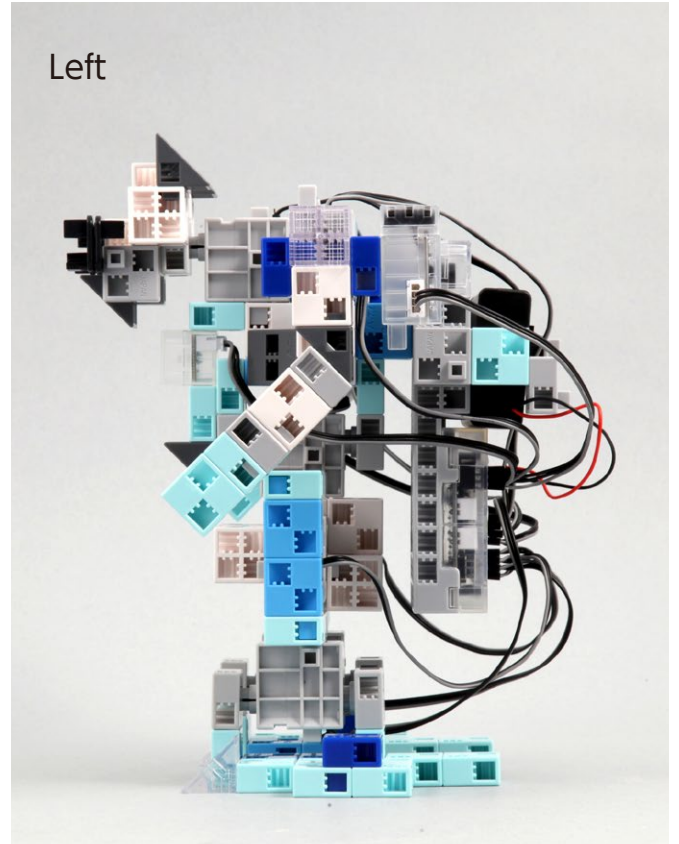


Before operating your robot, check the Assembly Instructions again to confirm your robot has been assembled correctly.

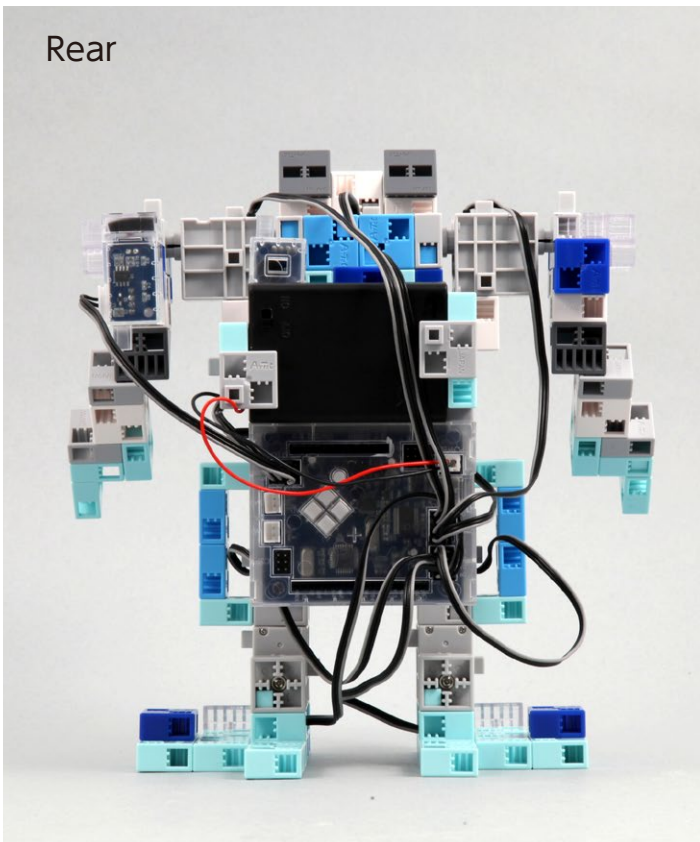
Front



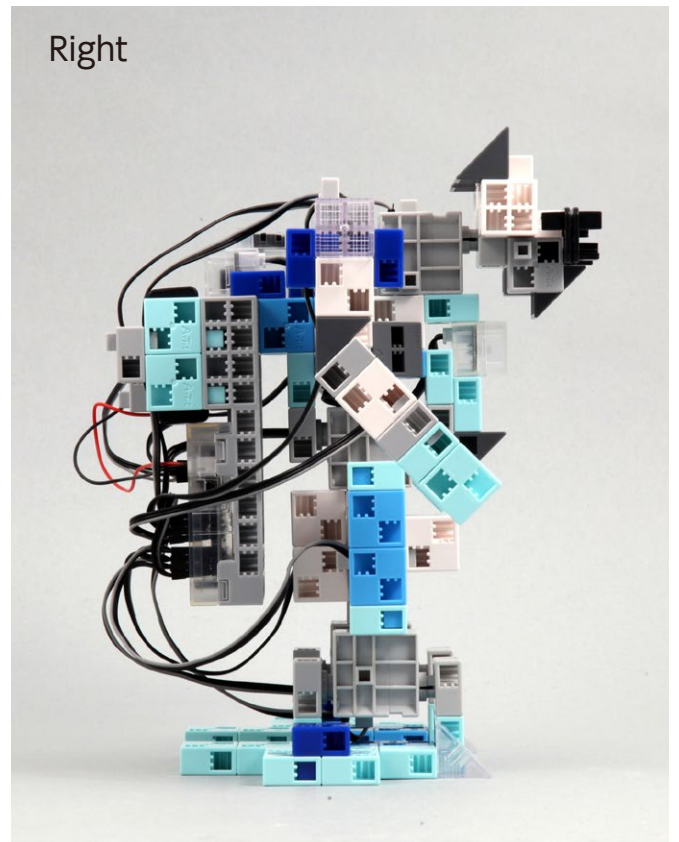
Left



Rear



Right



Biped Walking Robot

Operating Your Biped Walking Robot

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.

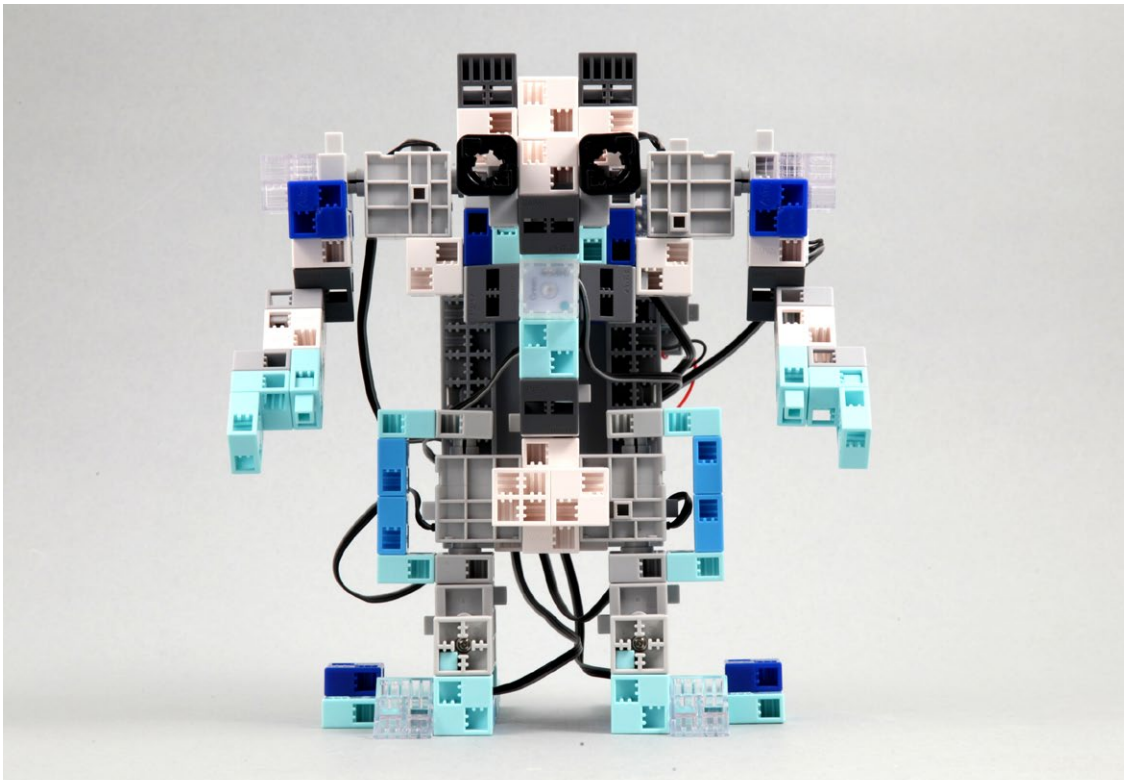


Immediately turn the switch to off if your robot does not begin walking as shown in the picture below.

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.

Biped Walking Robot

Sensor Calibration

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.