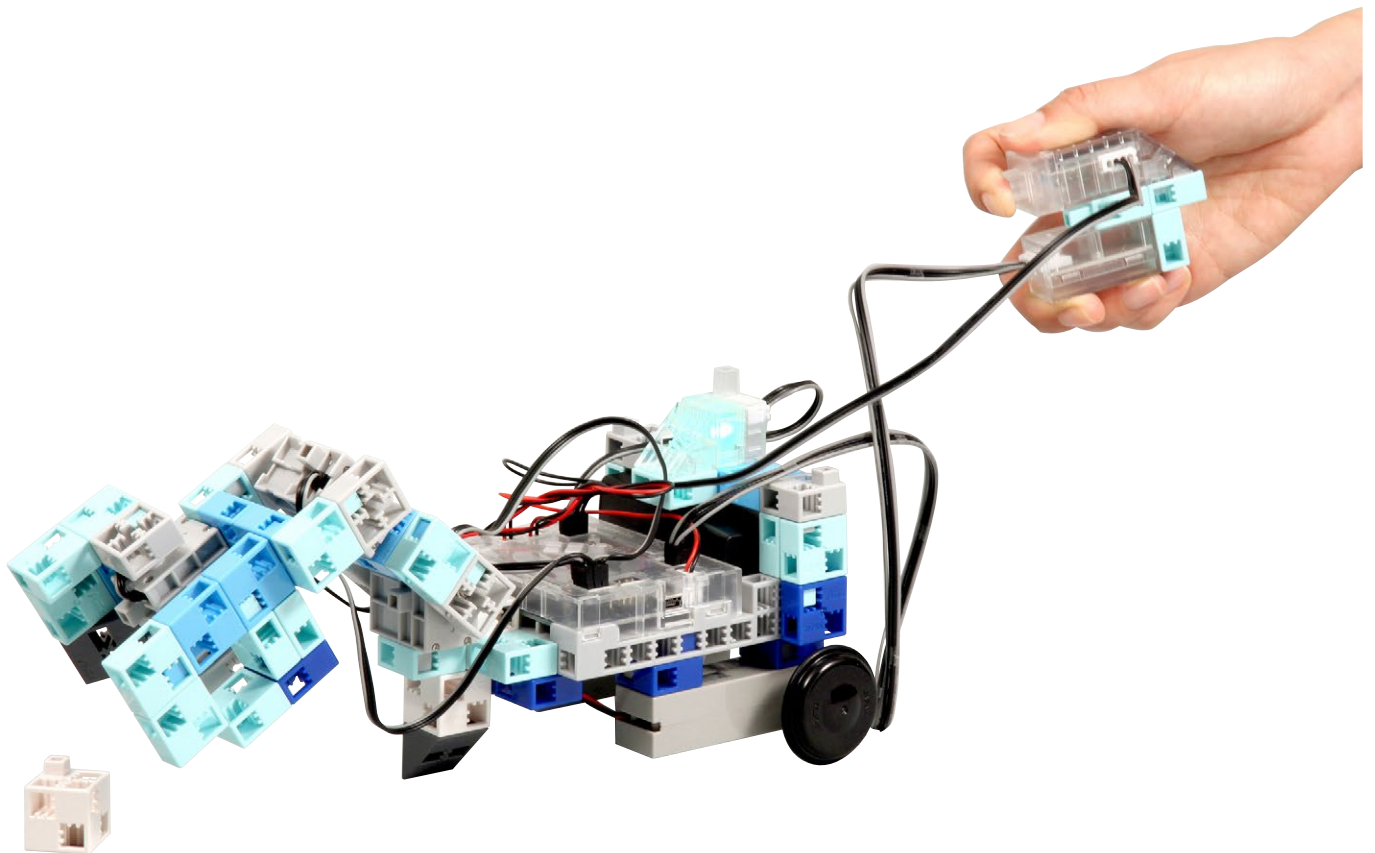


Arm Robot Car

Assembly Instructions

**Artec Co., Ltd.**

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

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

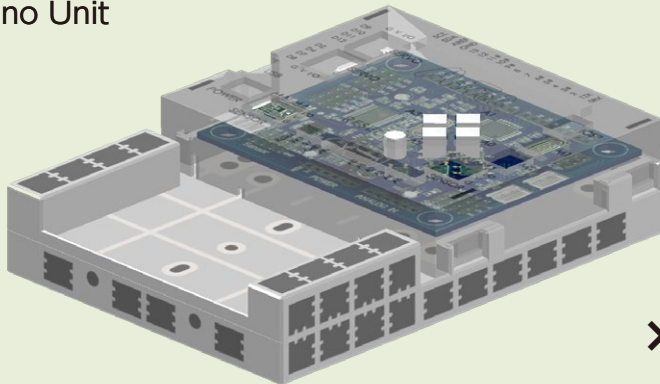
Website: www.artec-kk.co.jp/en

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

Arm Robot Car

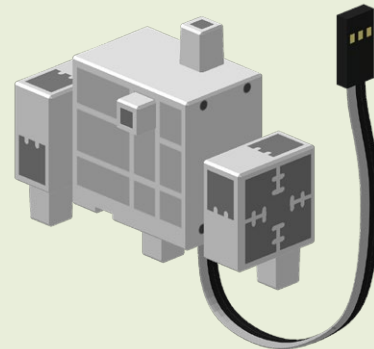
Components

Studuino Unit



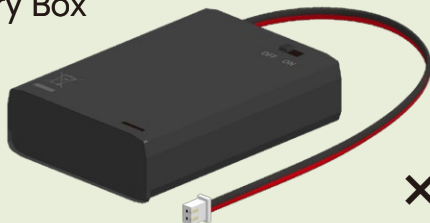
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Servomotor



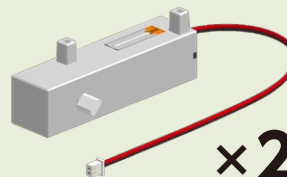
×3

Battery Box



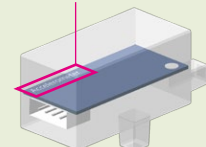
×1

DC Motor



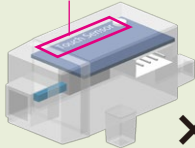
×2

Accelerometer
Accelerometer



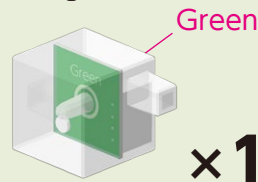
×1

Touch Sensor
Touch Sensor



×1

LED (green)



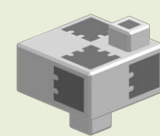
×1

Basic Cube (white)



×3

Half A (light gray)



×2

Half B (blue)



×10

Half C (light aqua)



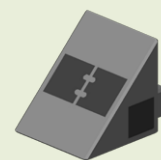
×25

Half D (aqua)



×11

Triangle A (gray)



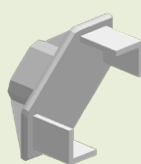
×2

Triangle A (clear)



×2

Hub



×2

Wheel



×2

O-ring



×2

USB Cable



×1

Sensor Connecting
Cable
(three-wire 15 cm)



×1

Sensor Connecting
Cable
(three-wire 30 cm)



×1

Sensor Connecting
Cable
(four-wire 50 cm)



×1

Arm Robot Car

Assembly Instruction Labels

D11

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



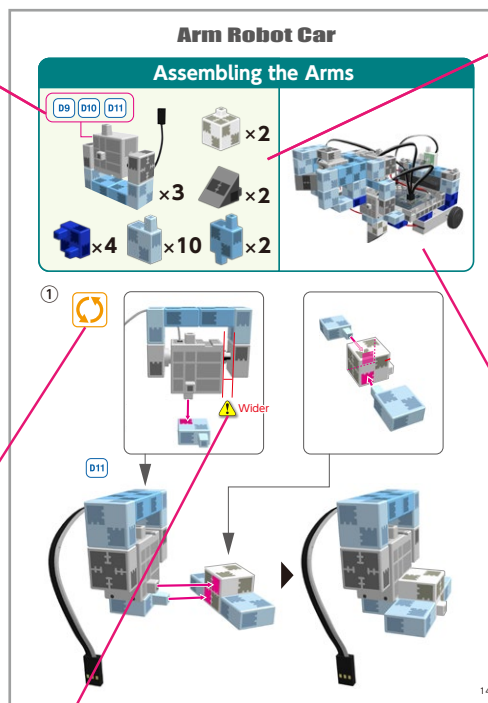
Indicates when the direction of a component must be changed for assembly.



Indicates tips or warnings when building a specific item.

×1

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



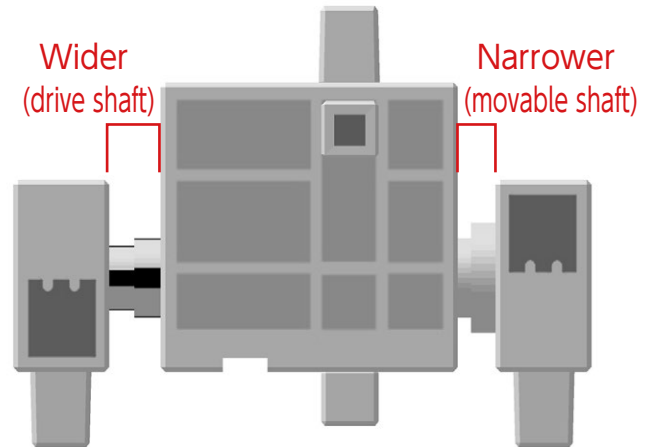
Shows an image of the completely assembled item.

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

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

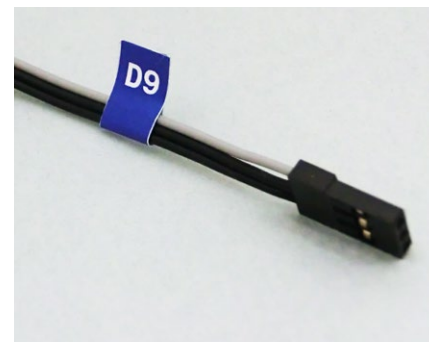
Building your robot without calibrating your servomotor may cause damage or improper functionality.

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

Attaching Number Stickers

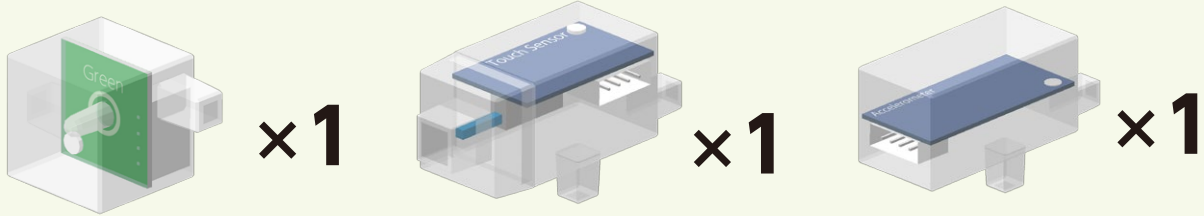
After calibration, we recommend putting a sticker on the connector used for the servomotor so it can be easily identified.

User stickers **D9**, **D10**, and **D11** when building your Arm Robot Car.



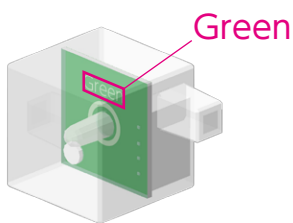
Arm Robot Car

Preparation



Connect the sensor connecting cable to each sensor.

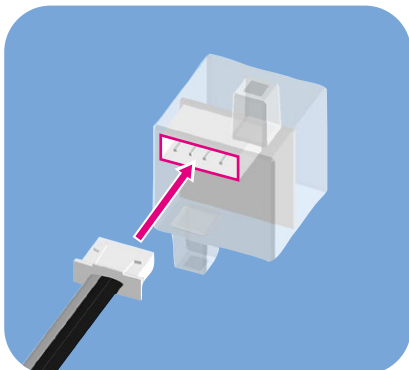
①



Sensor Connecting Cable
(three-wire 15 cm)

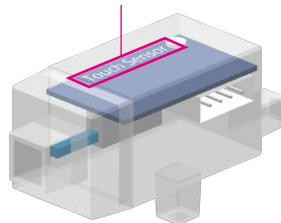


Sensor side Circuit board side

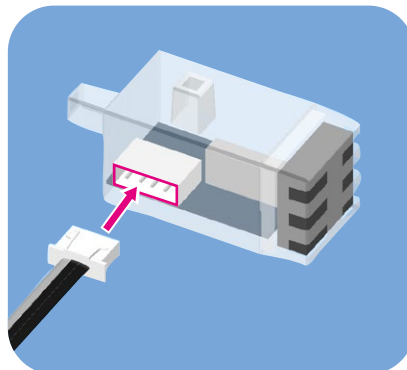


②

Touch Sensor

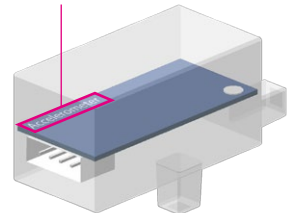


Sensor Connecting Cable
(three-wire 30 cm)

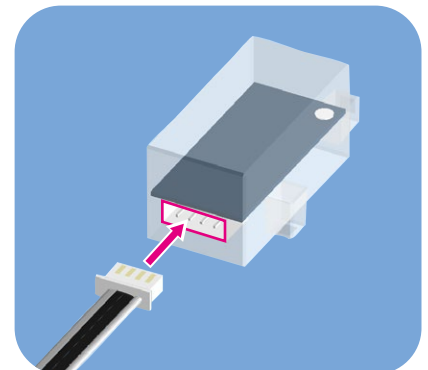


③

Accelerometer



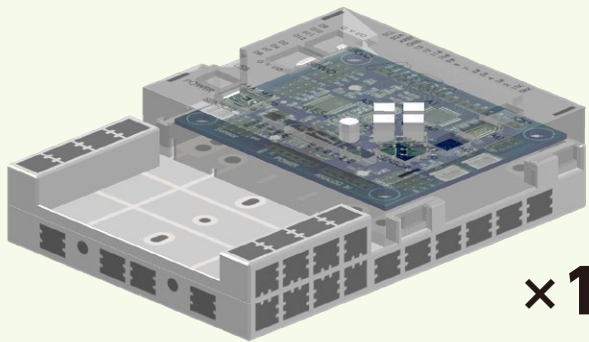
Sensor Connecting Cable
(four-wire 50 cm)



Make sure the cables are inserted correctly!

Arm Robot Car

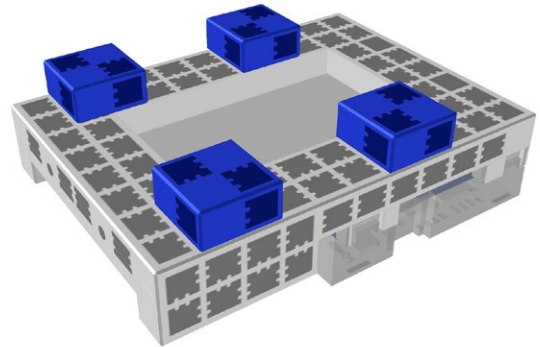
Body Assembly (bottom)



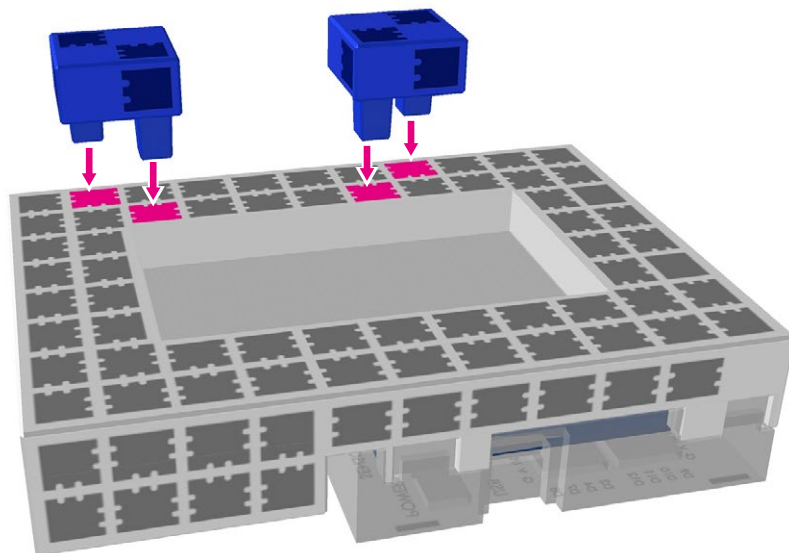
×1



×4

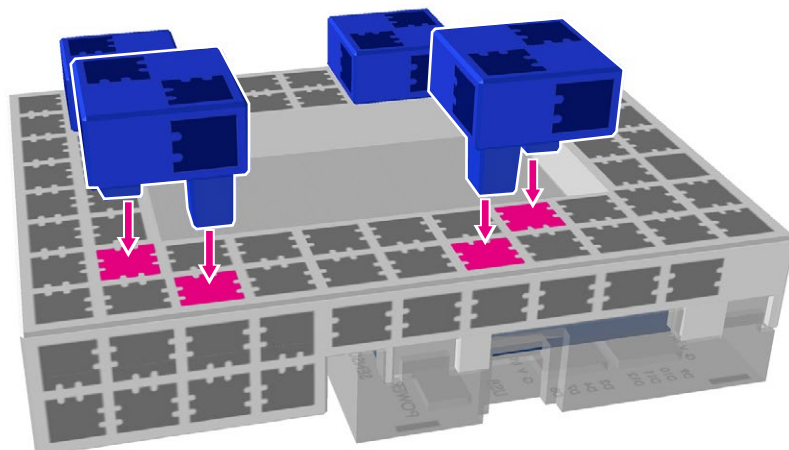


①



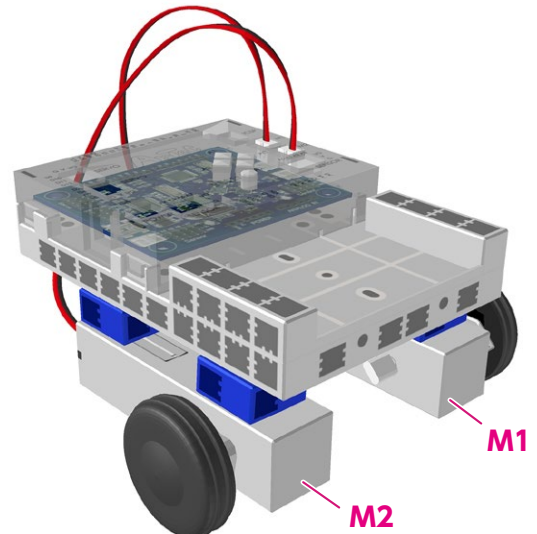
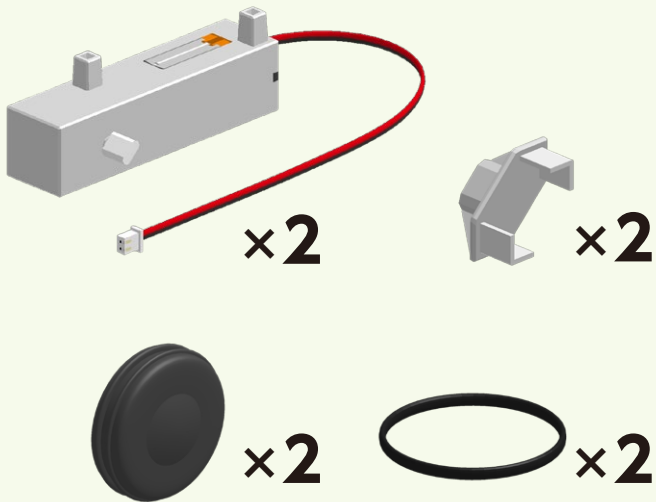
Make sure the Studuino unit is in the correct orientation!

②



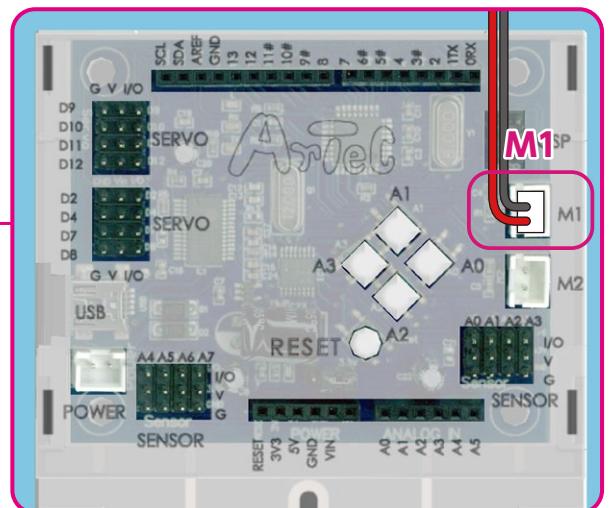
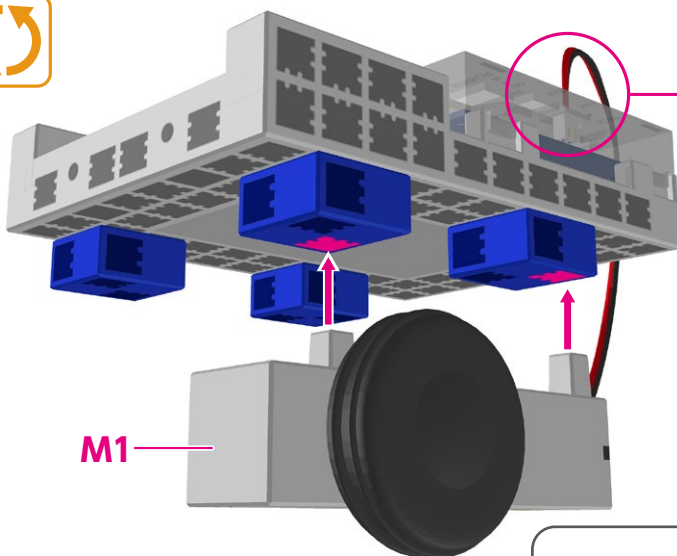
Arm Robot Car

Assembling the Motor

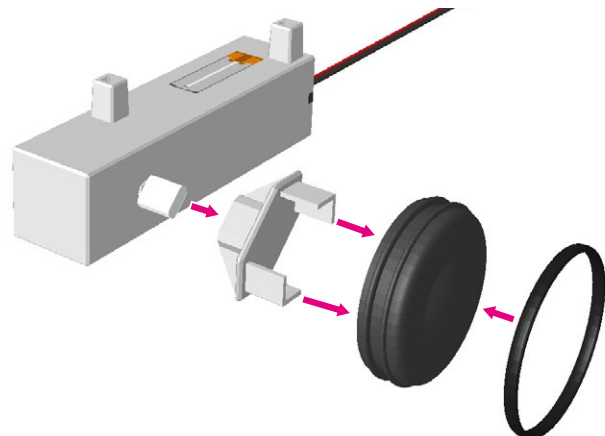


① Connect the assembled DC Motor to **M1**.

⚠ Make sure the Studuino unit is in the correct orientation!

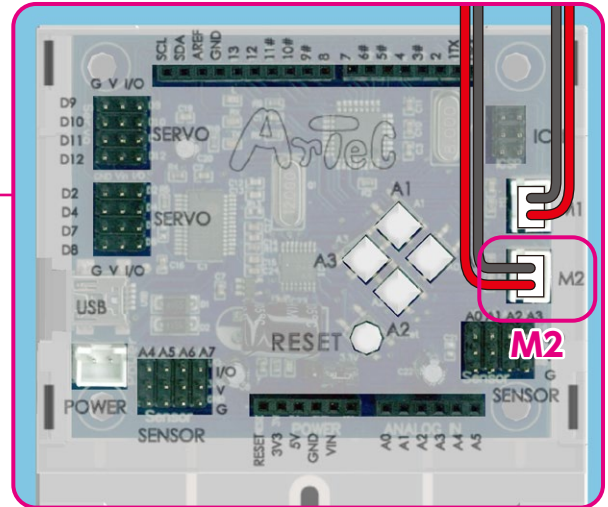
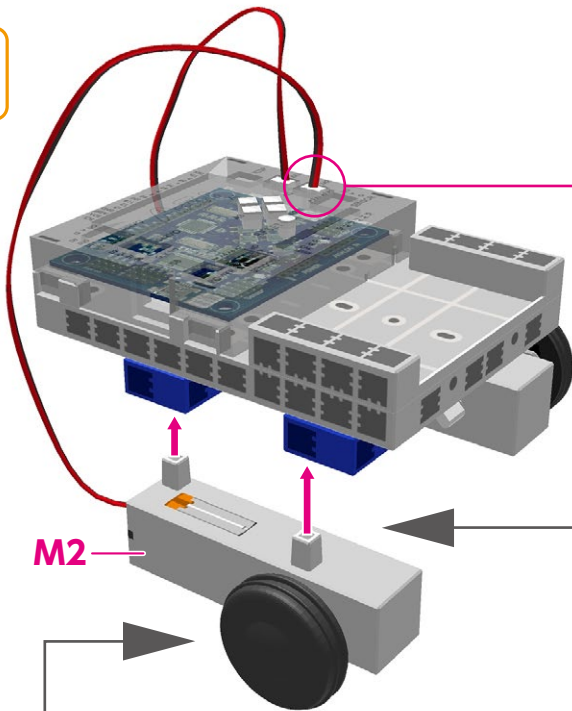


⚠ Make sure the cables are inserted correctly!

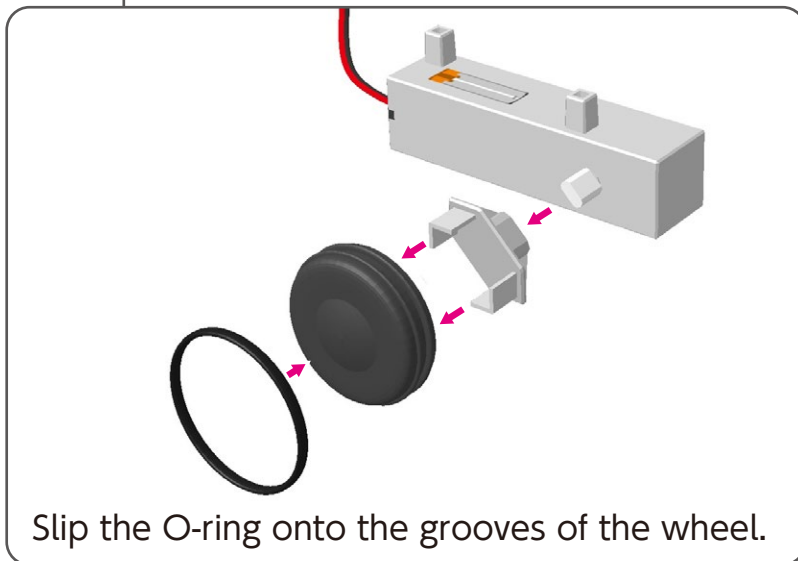


Arm Robot Car

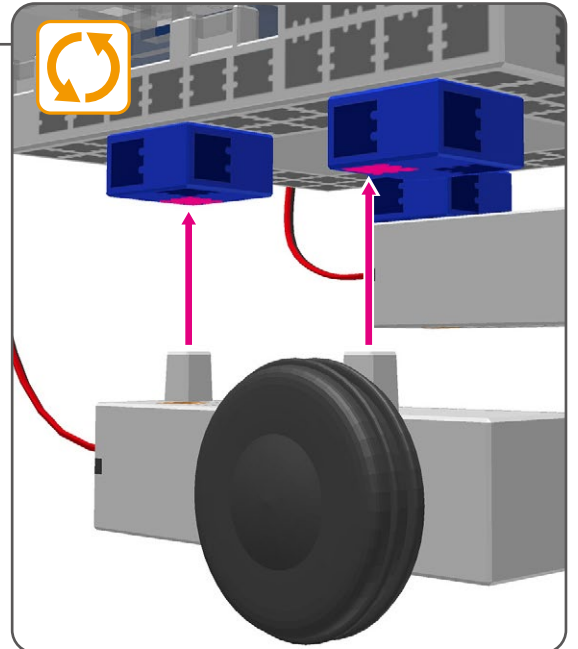
- ② Connect the assembled DC motor to **M2**.



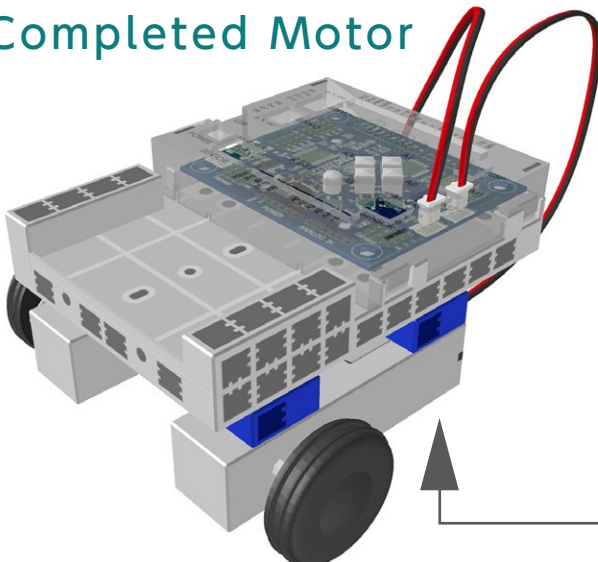
Make sure the cables are inserted correctly!



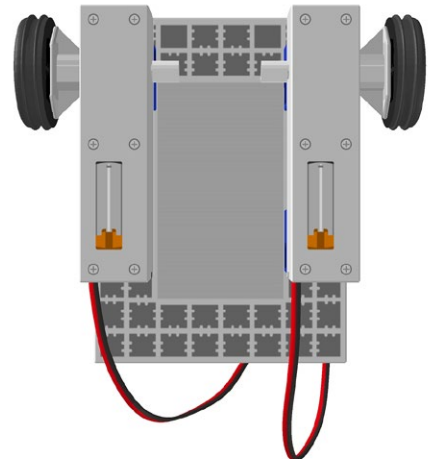
Slip the O-ring onto the grooves of the wheel.



Completed Motor

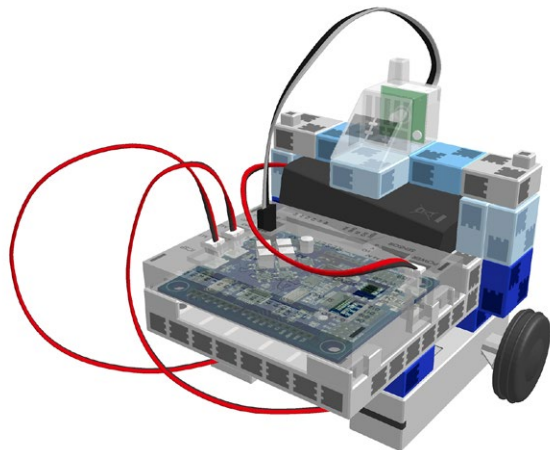
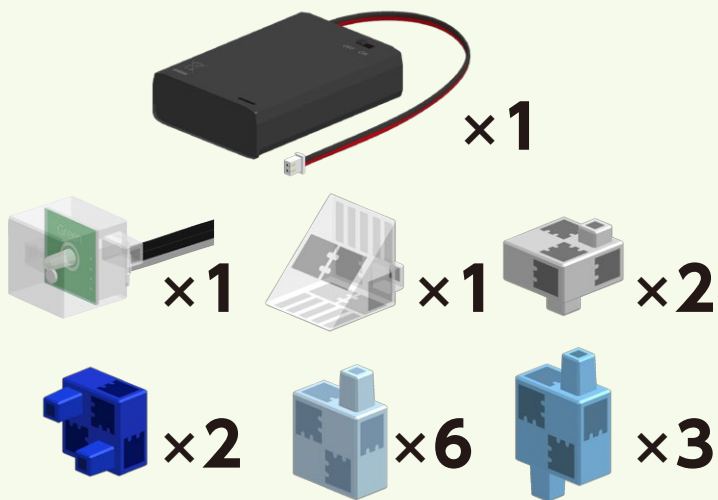


Bottom

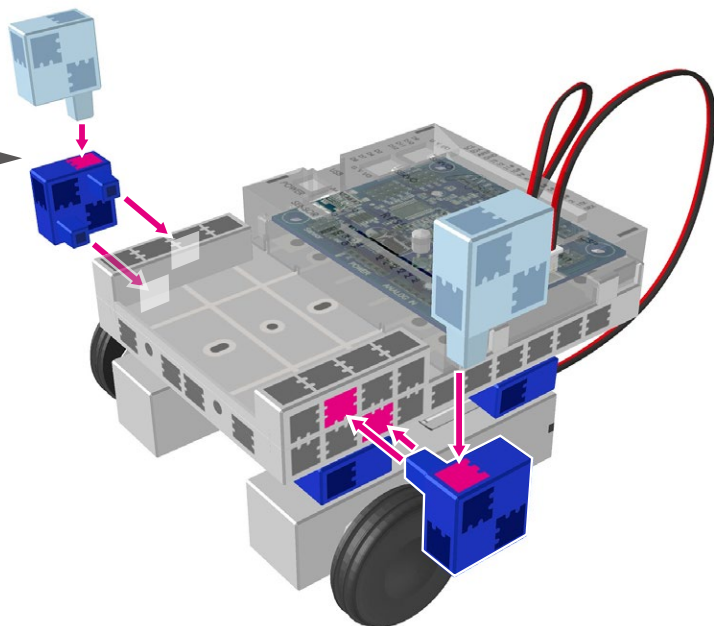
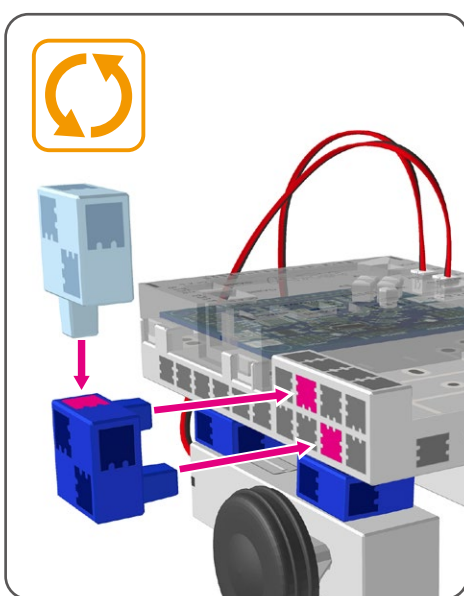


Arm Robot Car

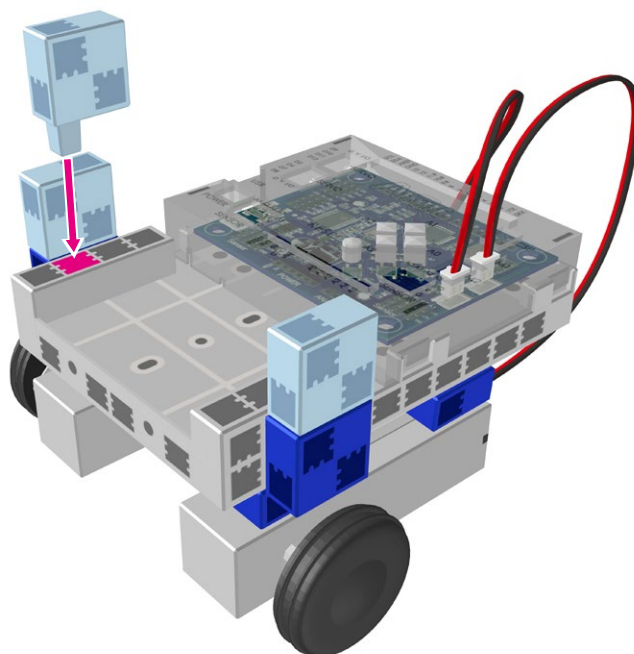
Body Assembly (top)



①

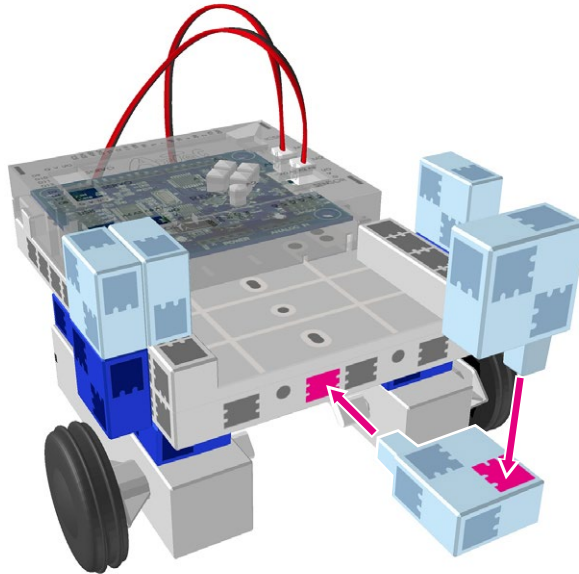


②

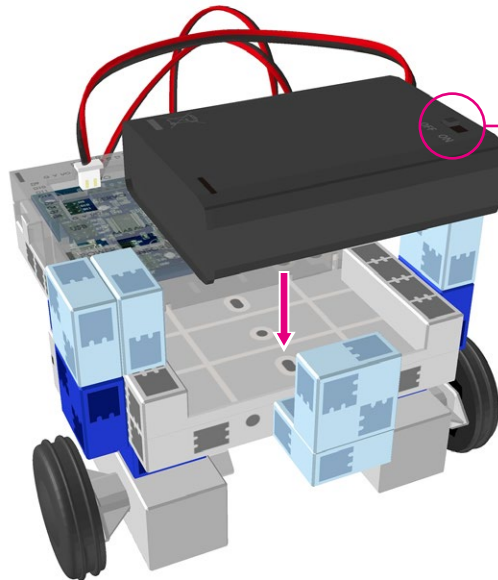


Arm Robot Car

3

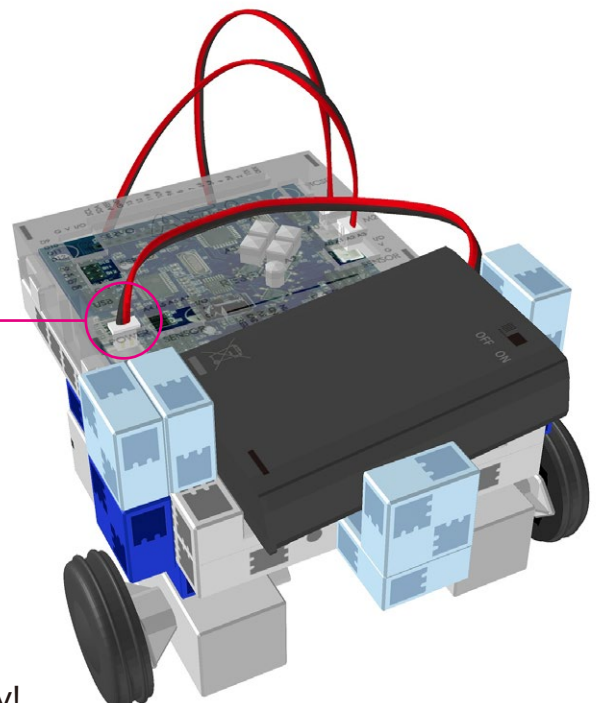
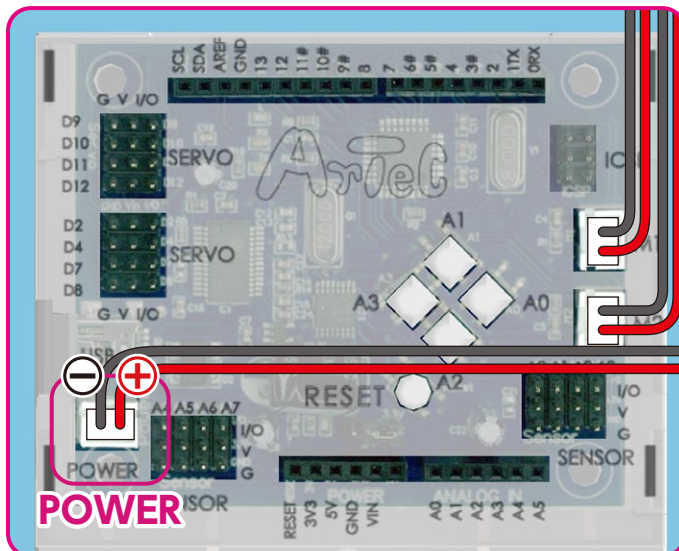


4



You should see the battery box switch here.

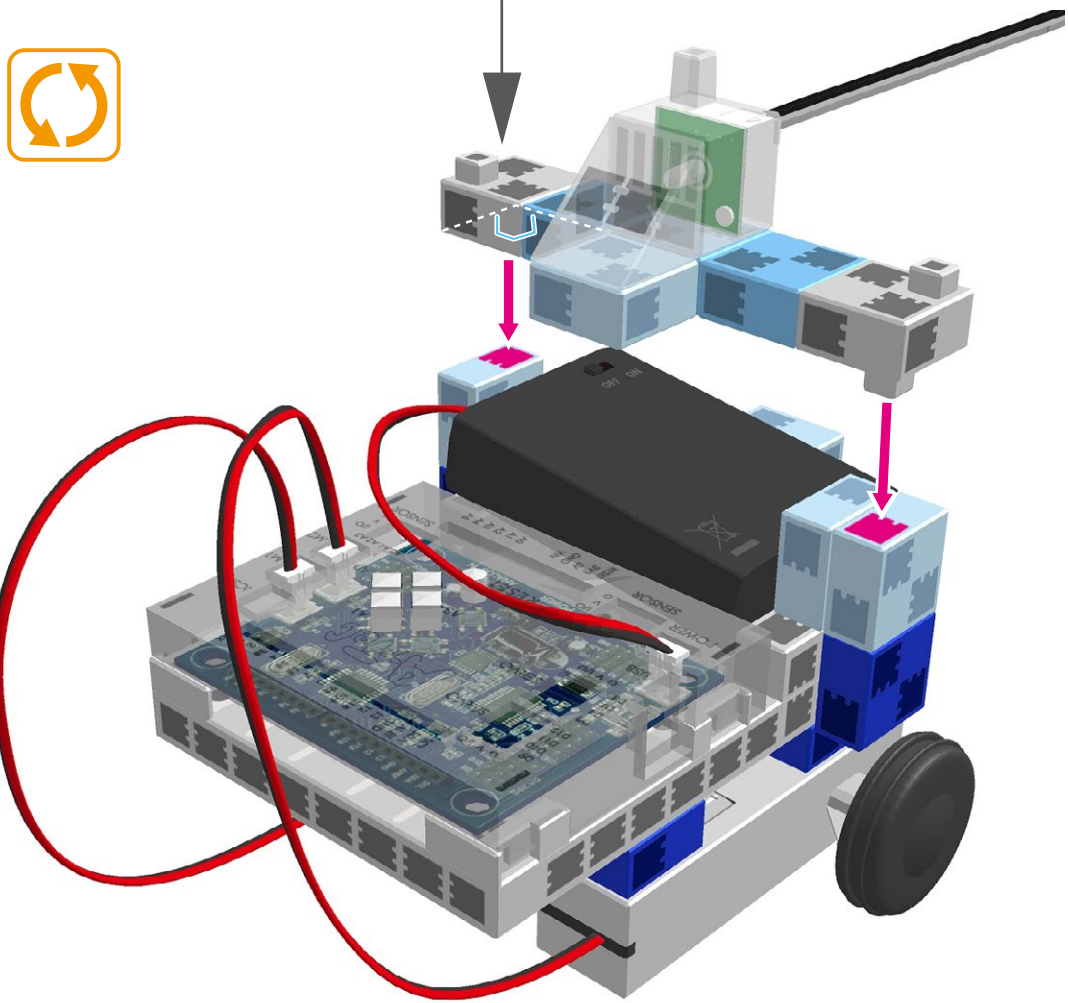
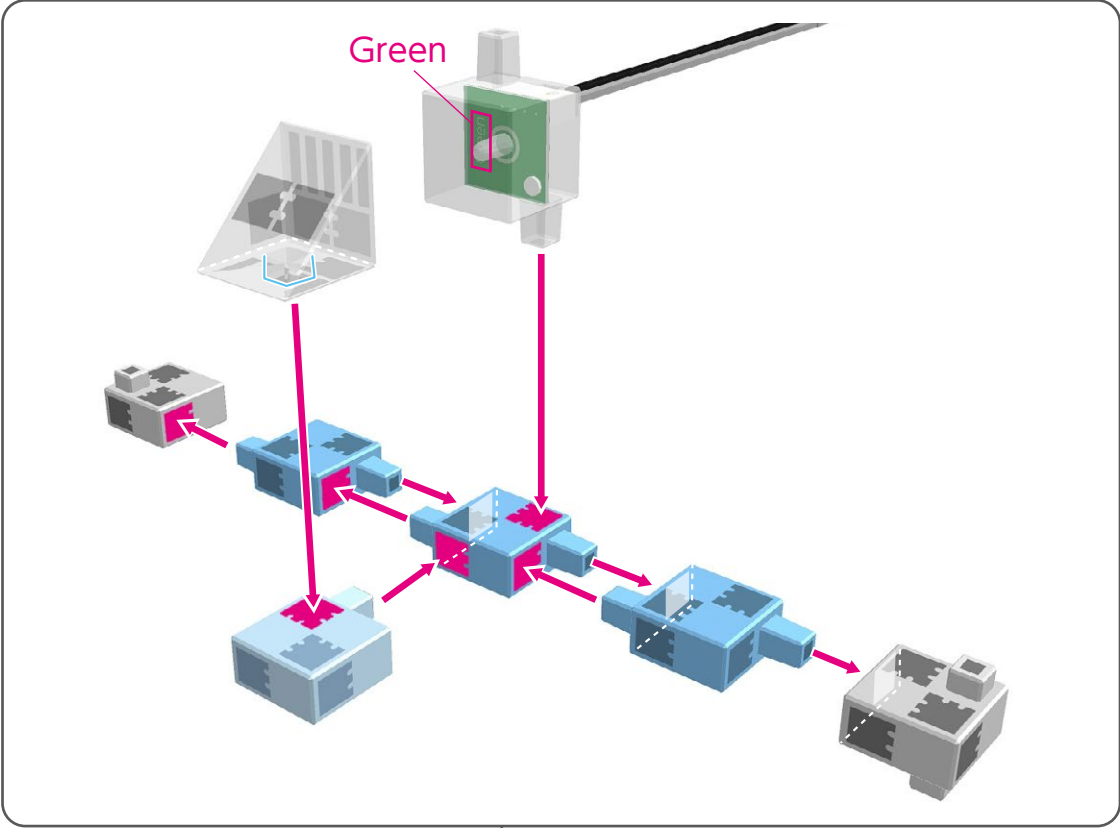
5 Connect the cables from the battery box to the **POWER** section.



Make sure the cables are inserted correctly!

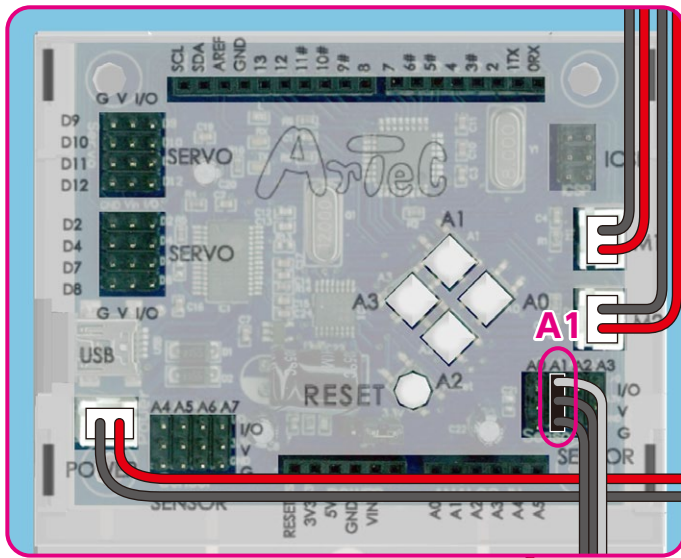
Arm Robot Car

6

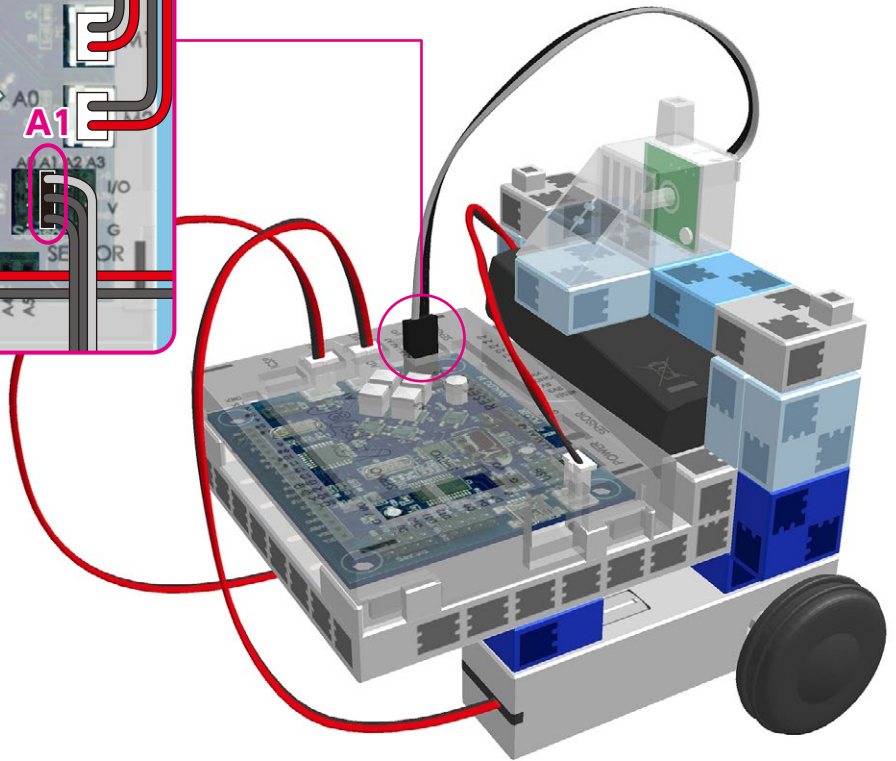


Arm Robot Car

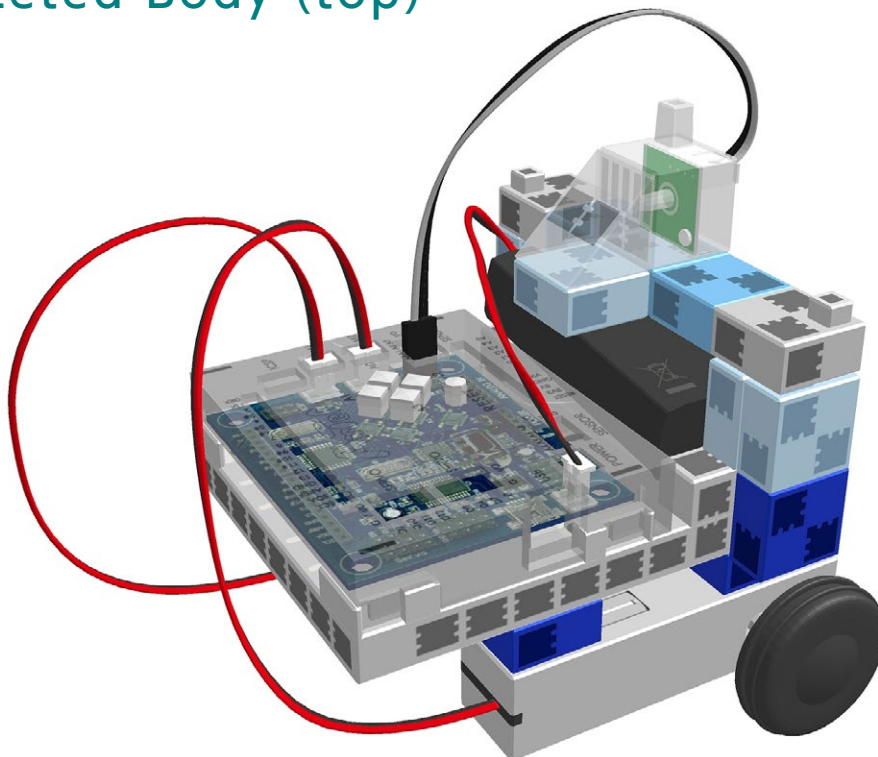
- ⑦ Connect the cable from the LED (green) to **A1**.



Make sure the cables are inserted correctly!

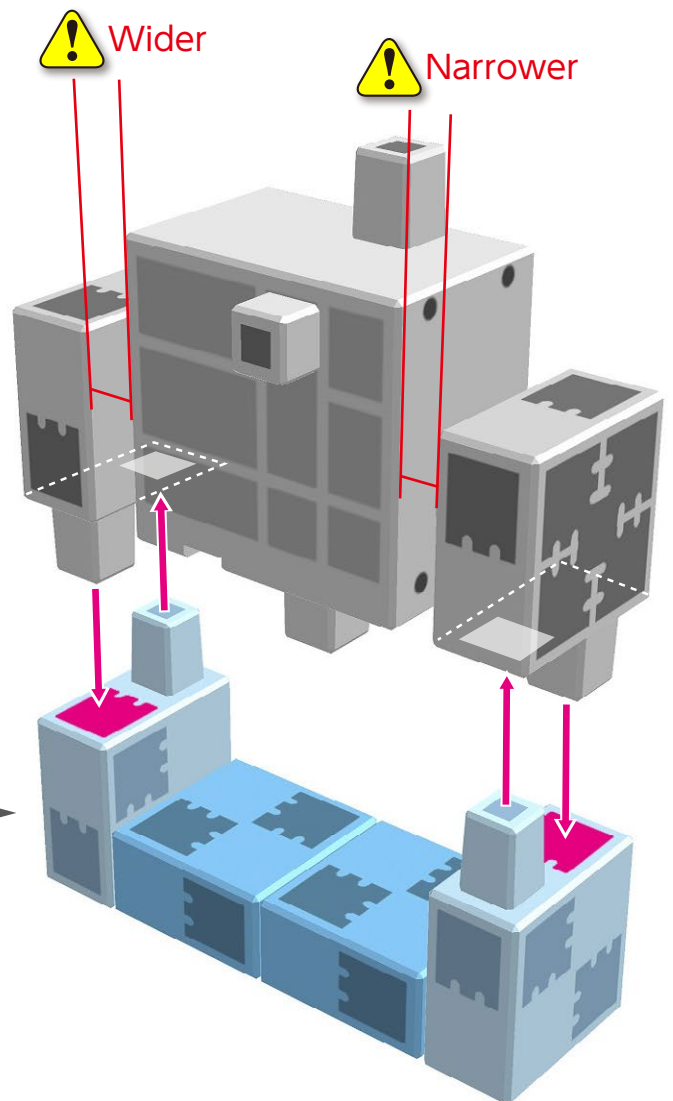
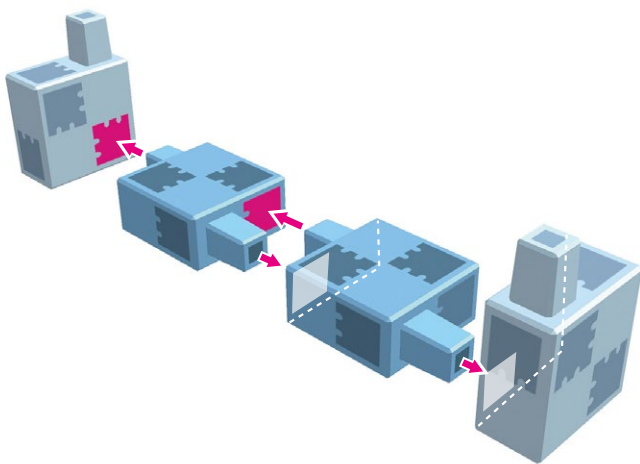
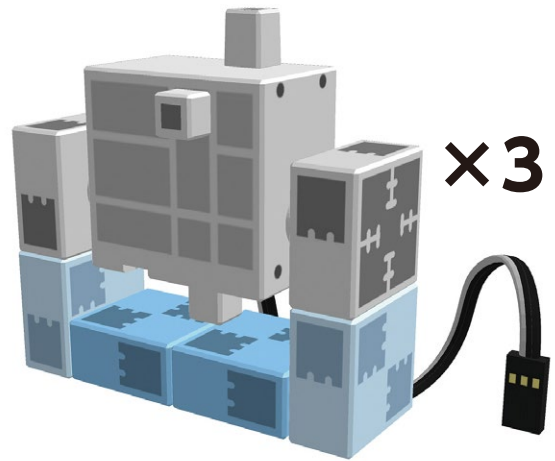
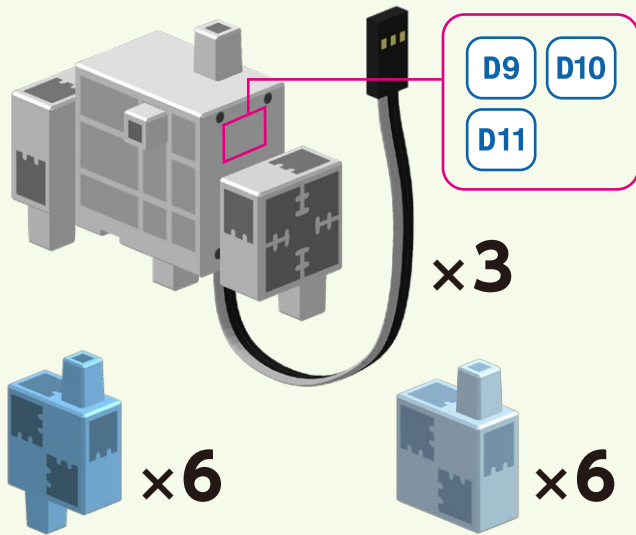


Completed Body (top)



Arm Robot Car

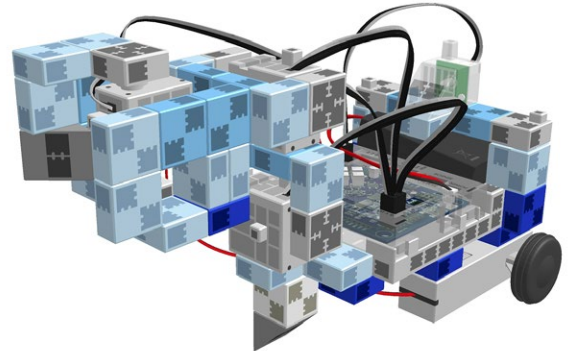
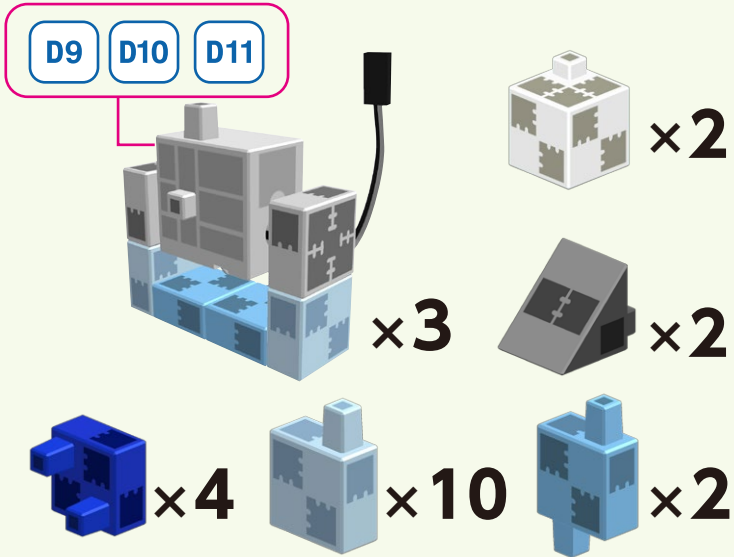
Assembling the Servomotor



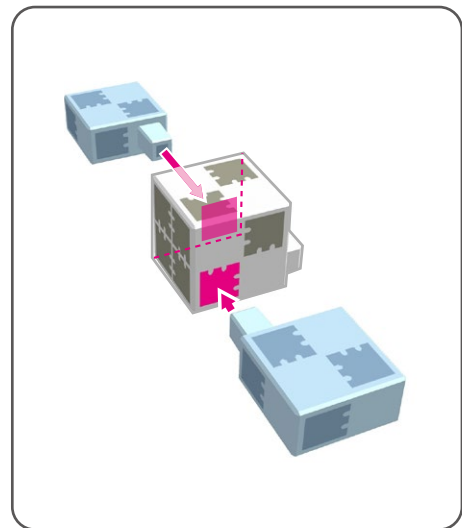
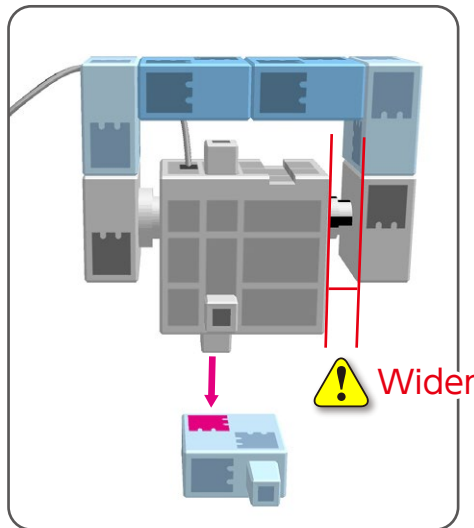
⚠ Make three in total.

Arm Robot Car

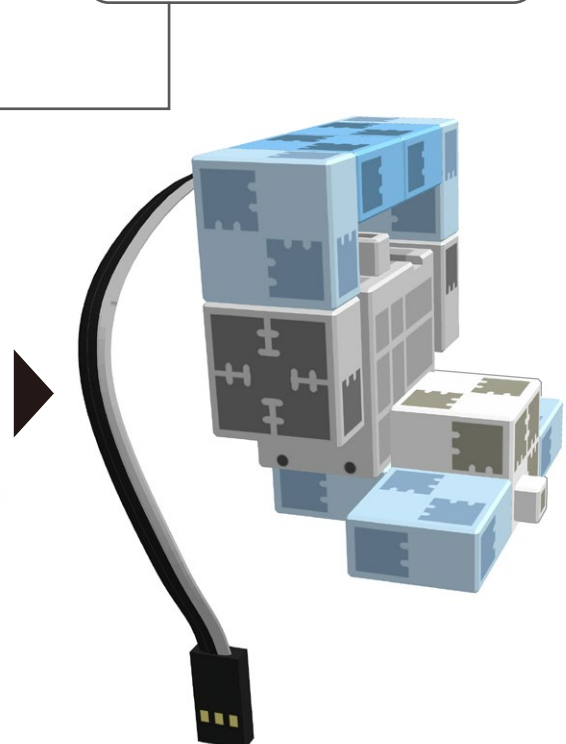
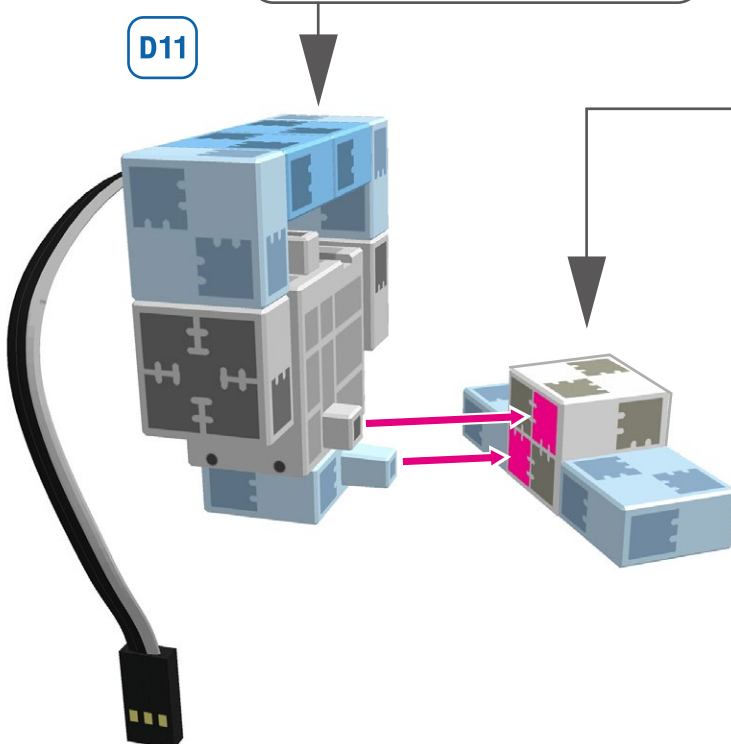
Assembling the Arms



①

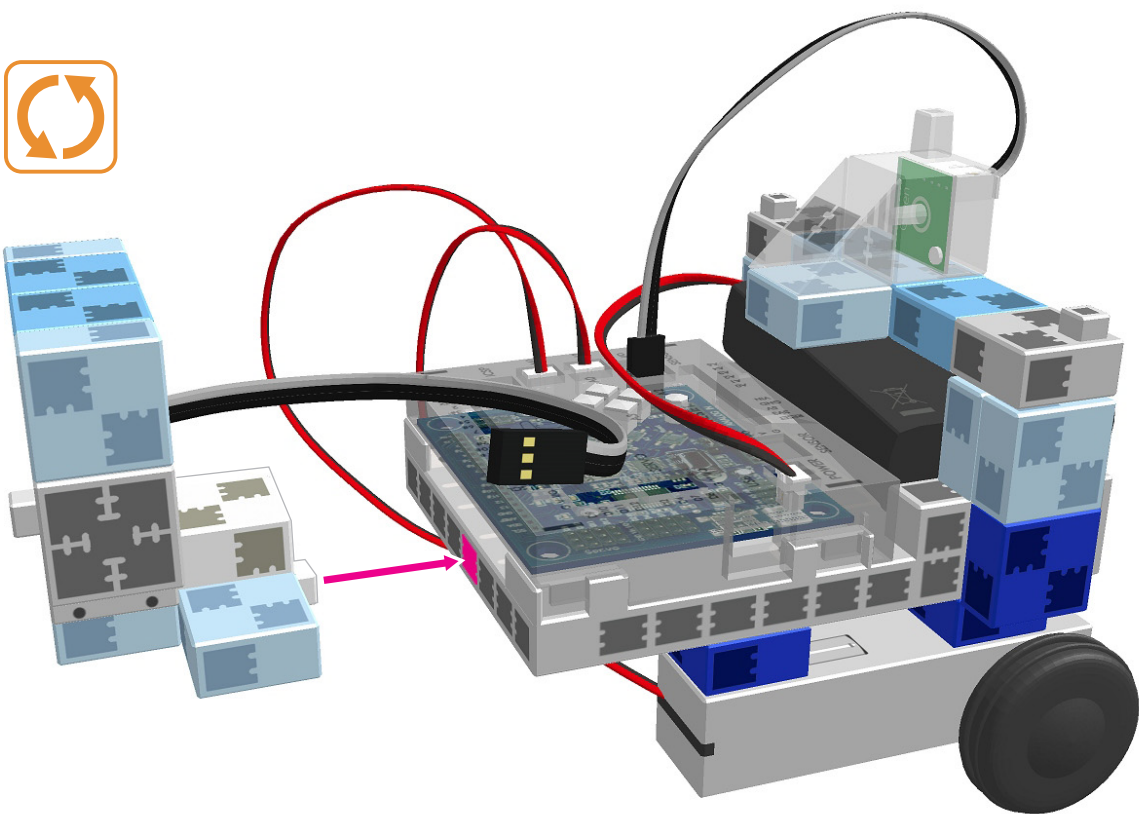


D11

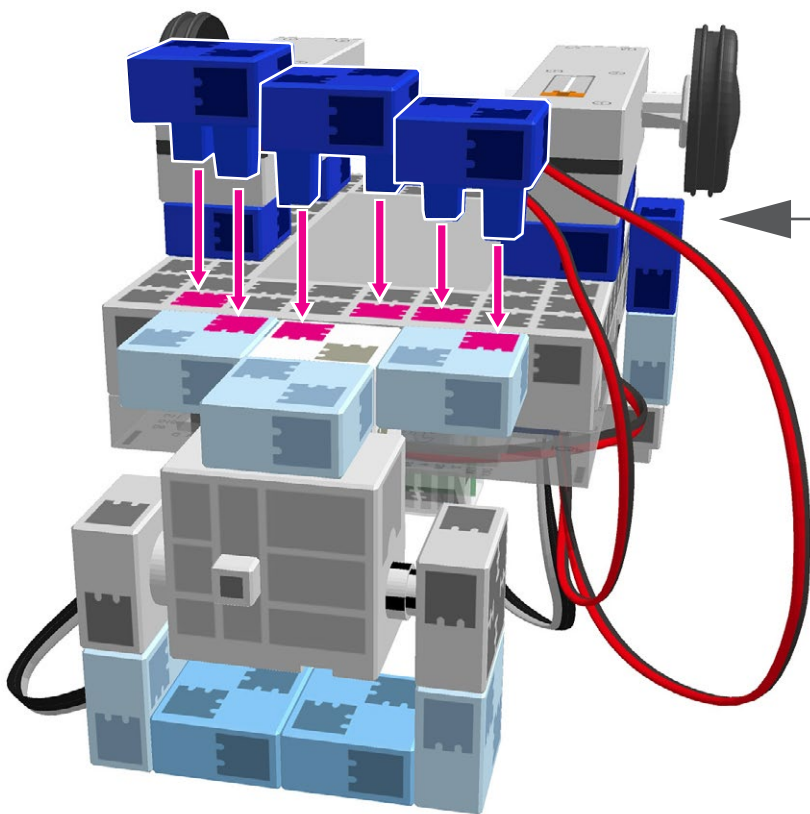


Arm Robot Car

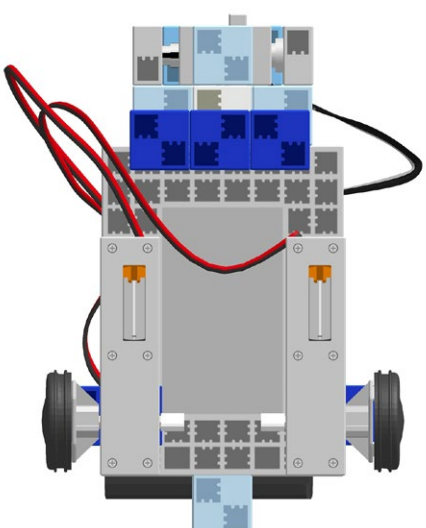
2



3

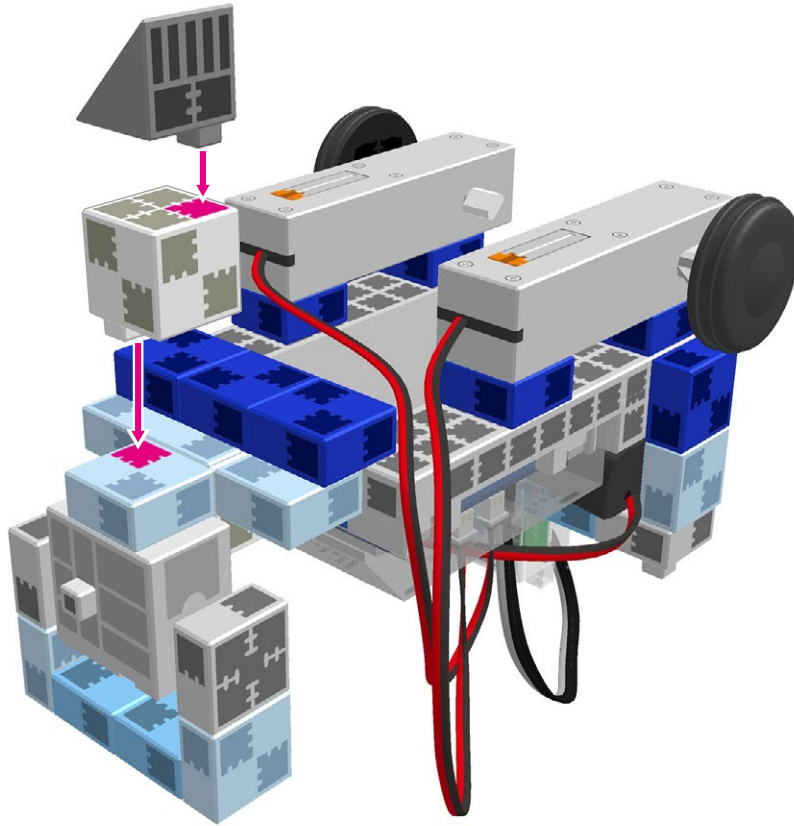


Bottom

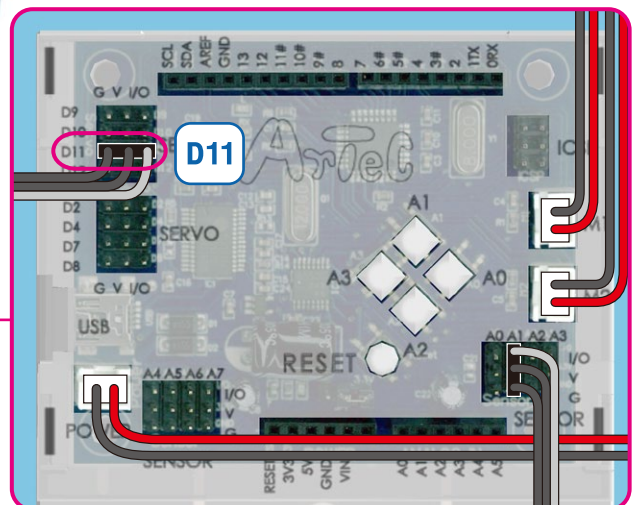
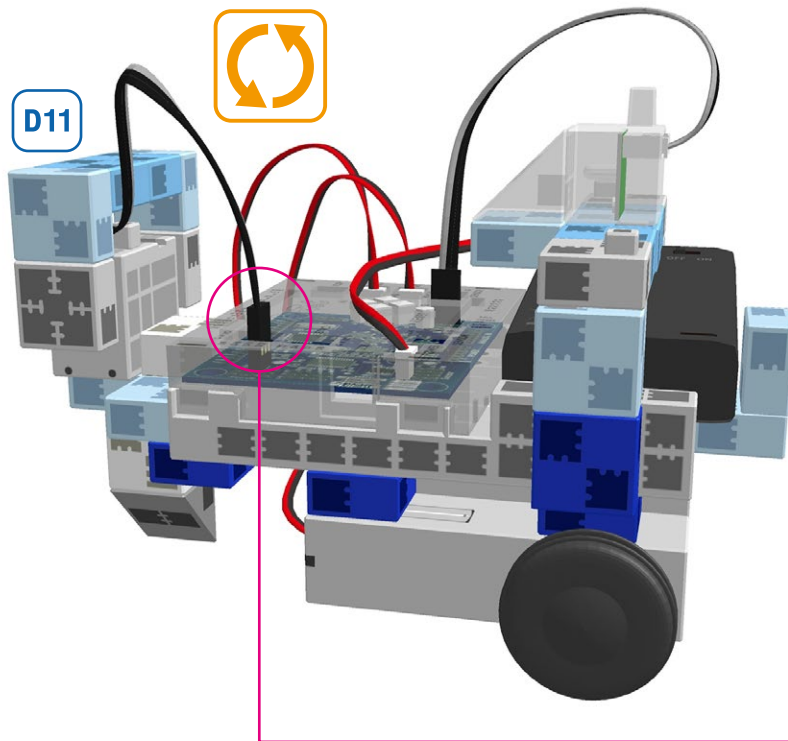


Arm Robot Car

4



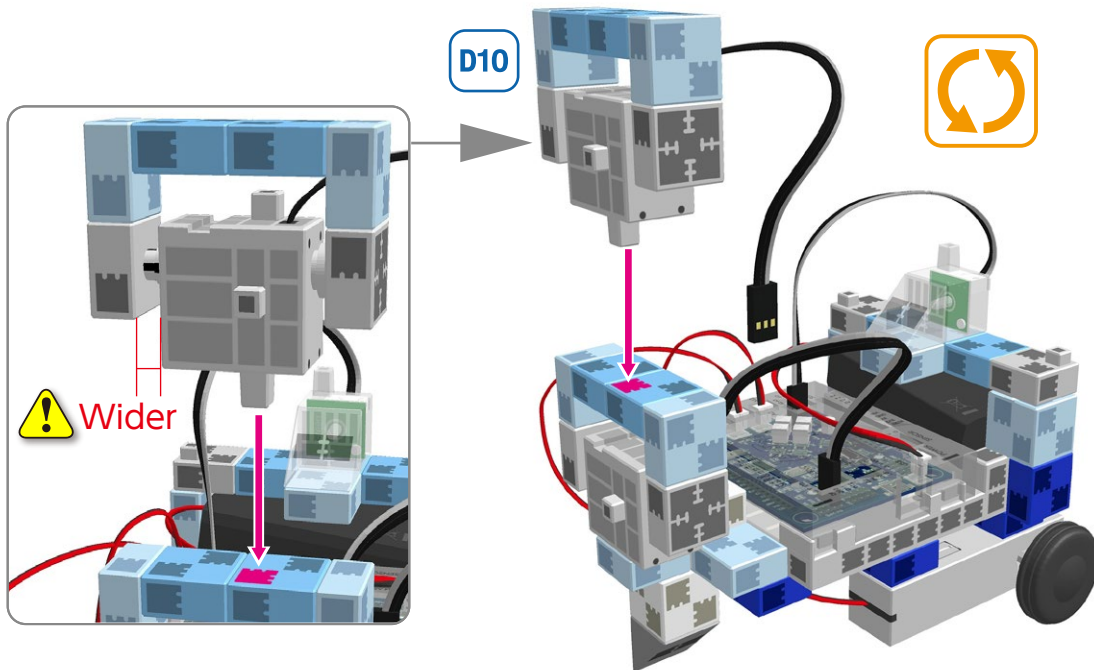
5 Connect the cables from servomotor **D11** to their corresponding place on your Studuino unit.



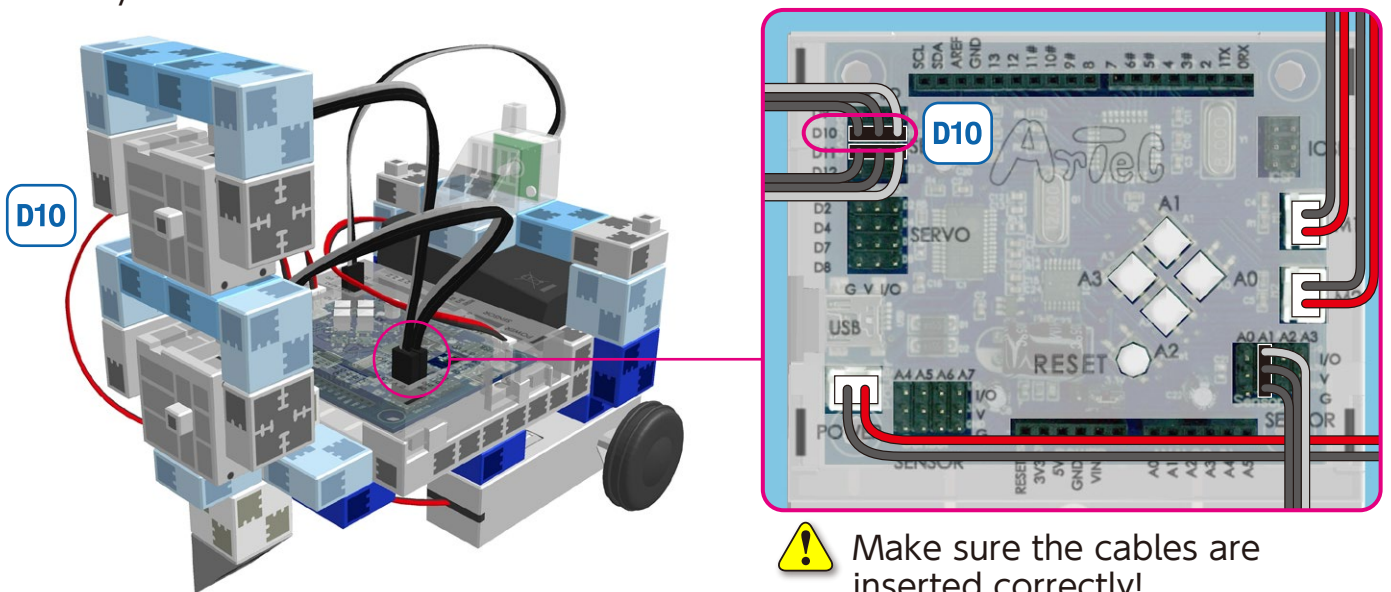
Make sure the cables are inserted correctly!

Arm Robot Car

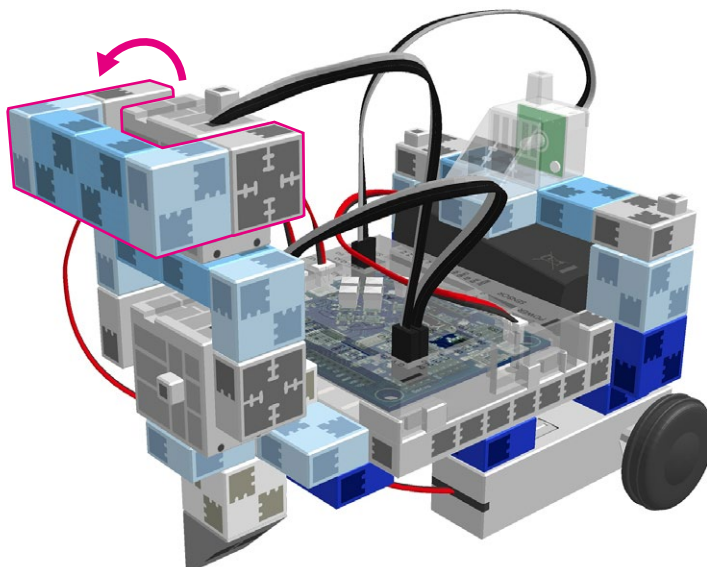
⑥



⑦ Connect the cables from servomotor **D10** to their corresponding place on your Studuino unit.



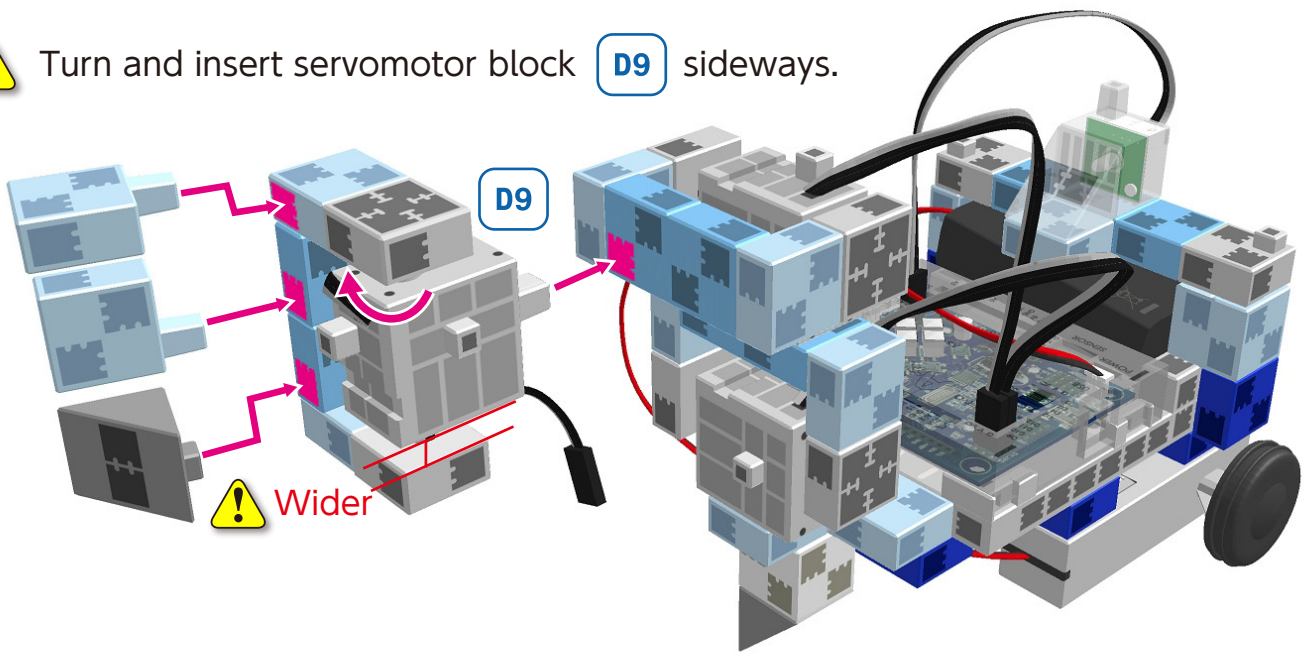
⑧ Turn the outlined piece down.



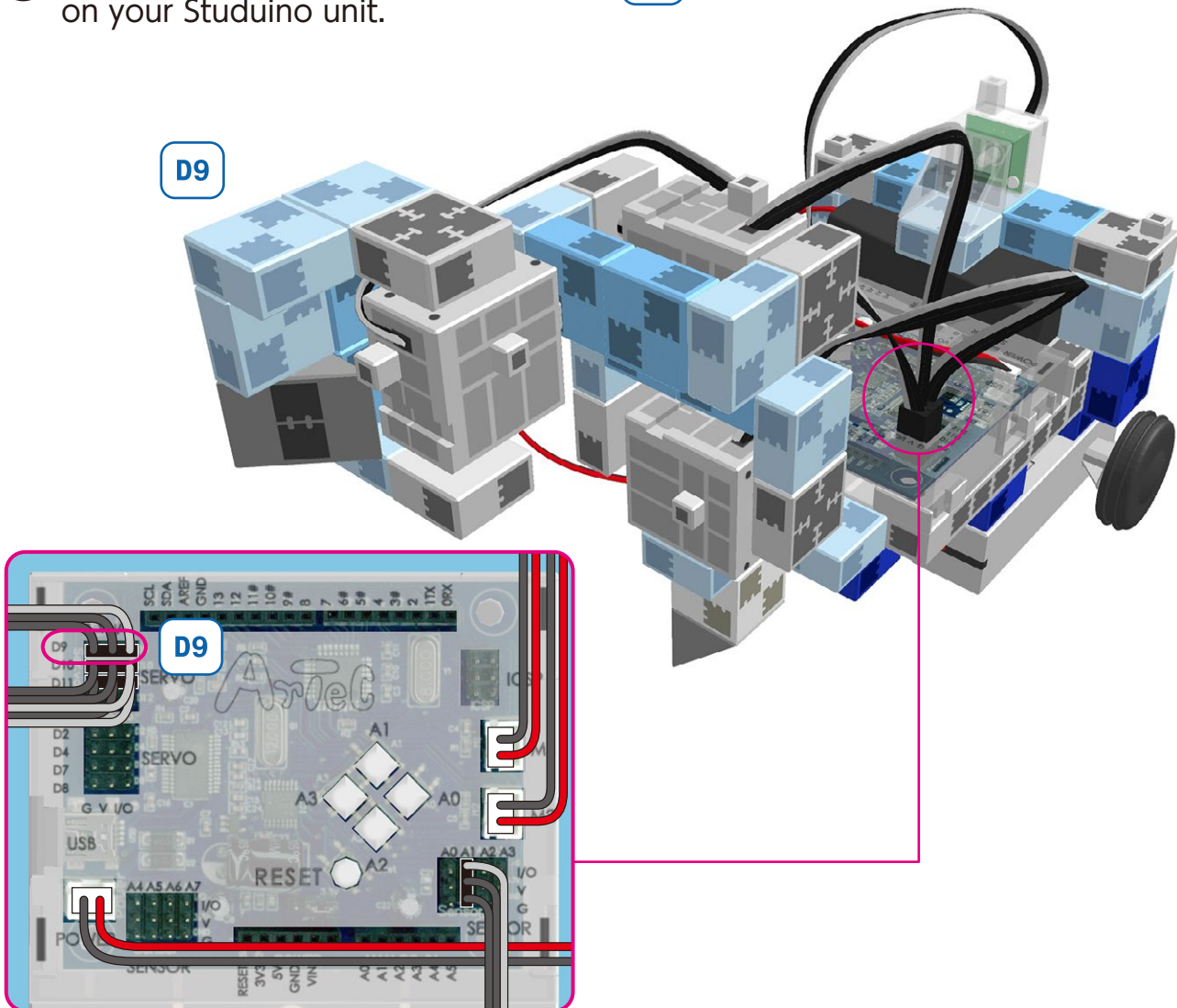
Arm Robot Car

9

⚠ Turn and insert servomotor block **D9** sideways.



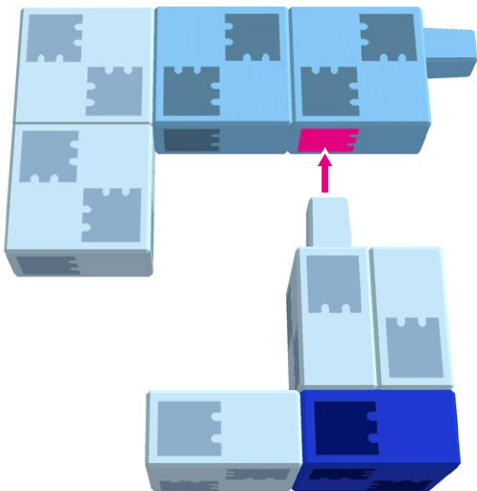
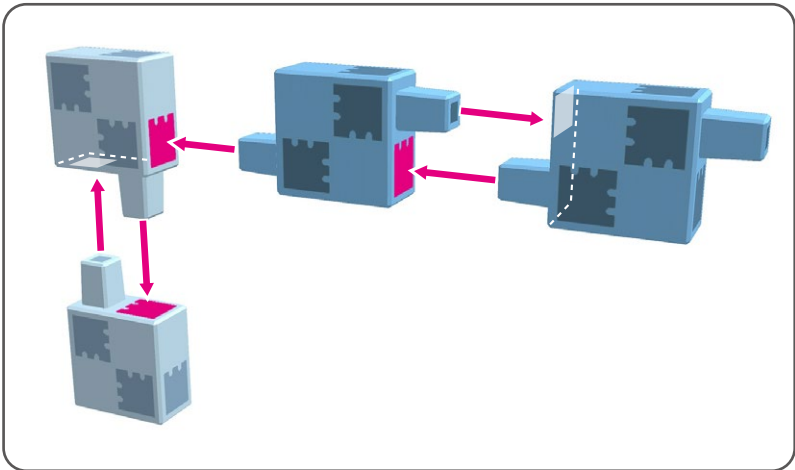
10 Connect the cables from servomotor **D9** to their corresponding place on your Studuino unit.



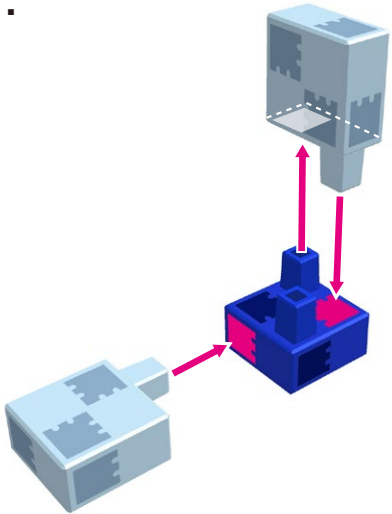
⚠ Make sure the cables are inserted correctly!

Arm Robot Car

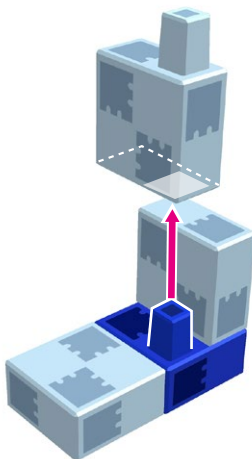
11



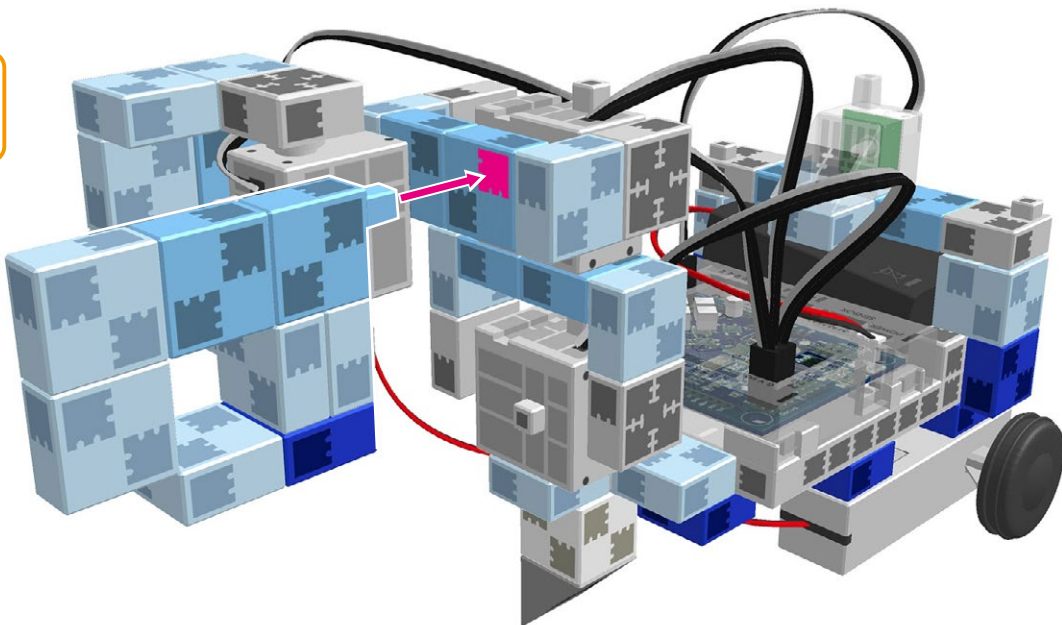
1.



2.

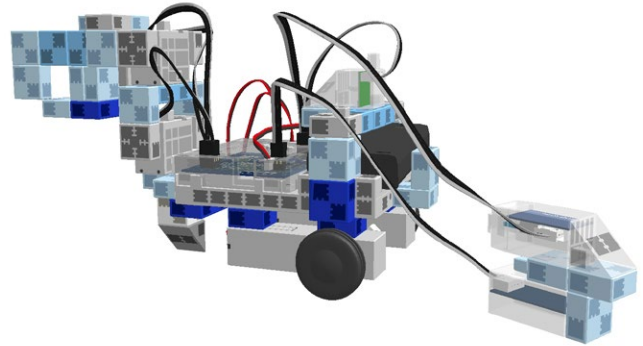
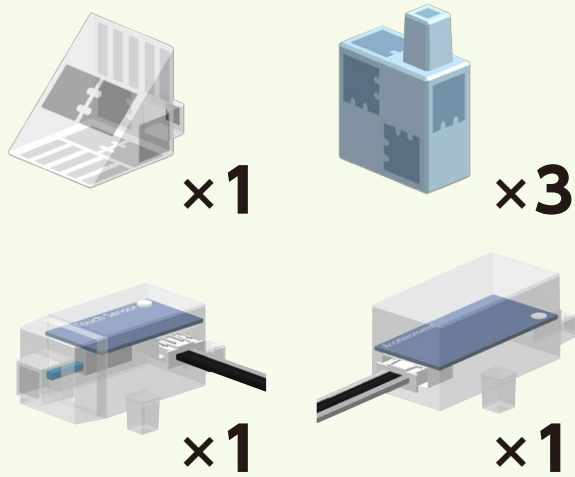


12

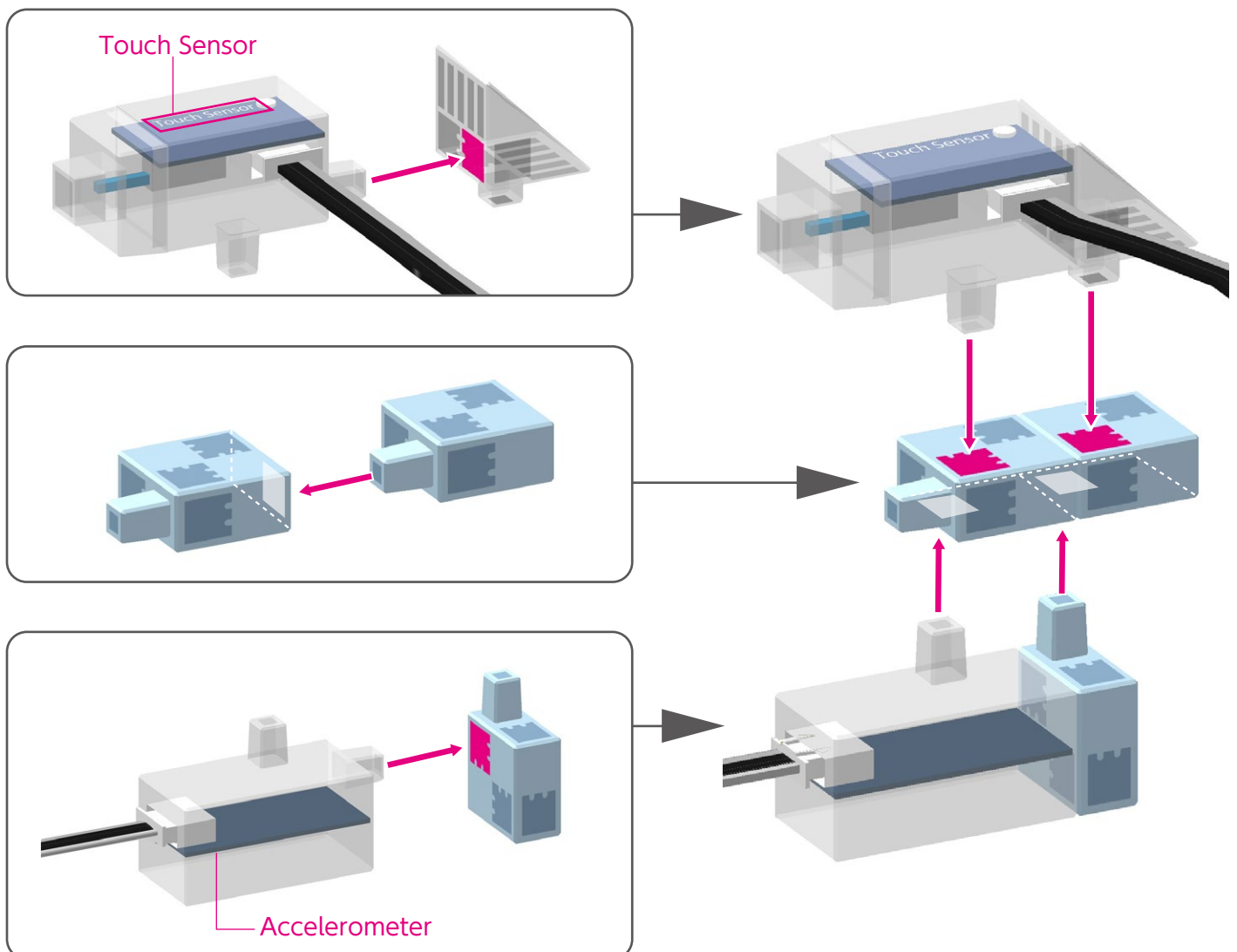


Arm Robot Car

Assembling the Controller

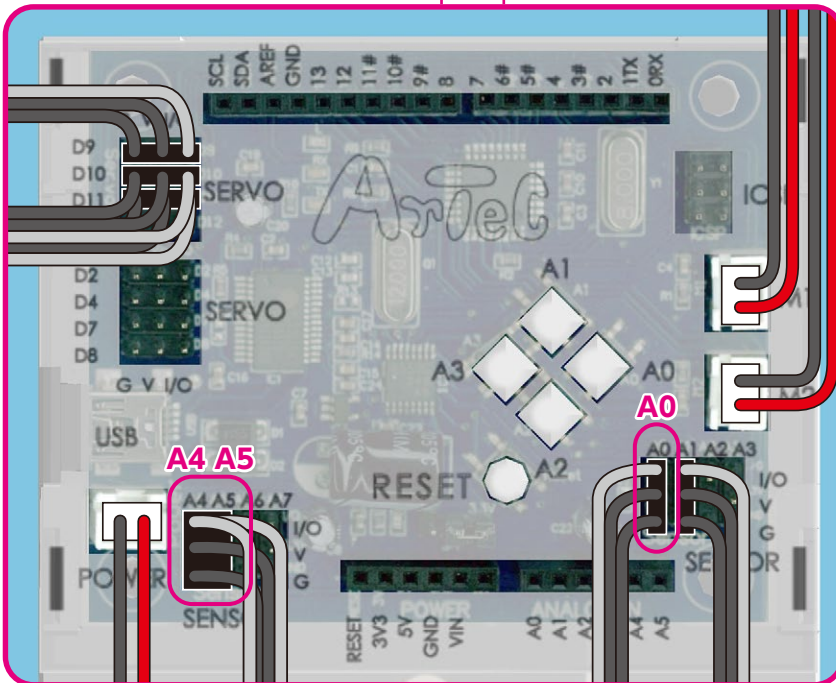
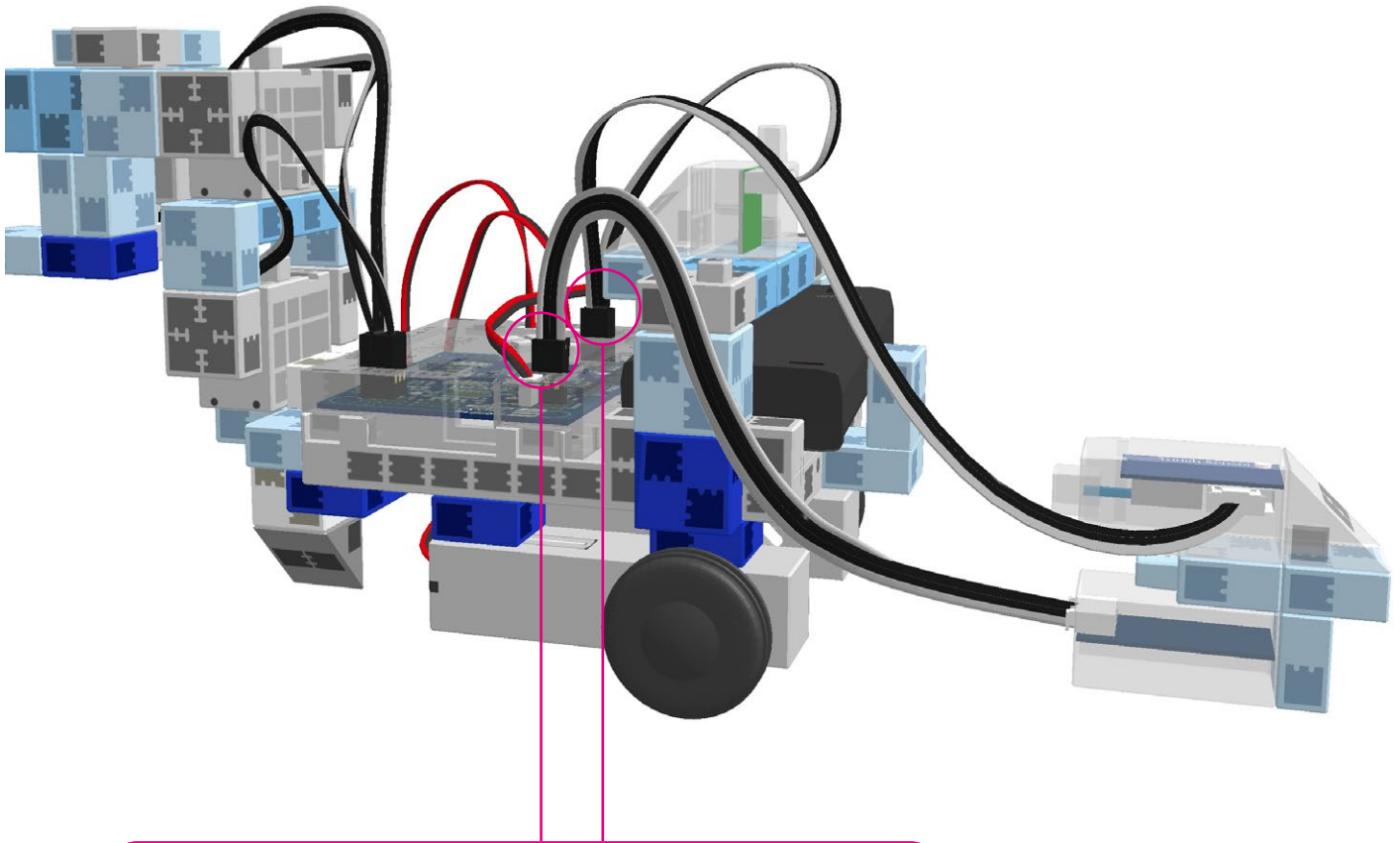


①



Arm Robot Car

- ② Connect the cable from the touch sensor to **A0** and the cable from the accelerometer to **A4/A5**.

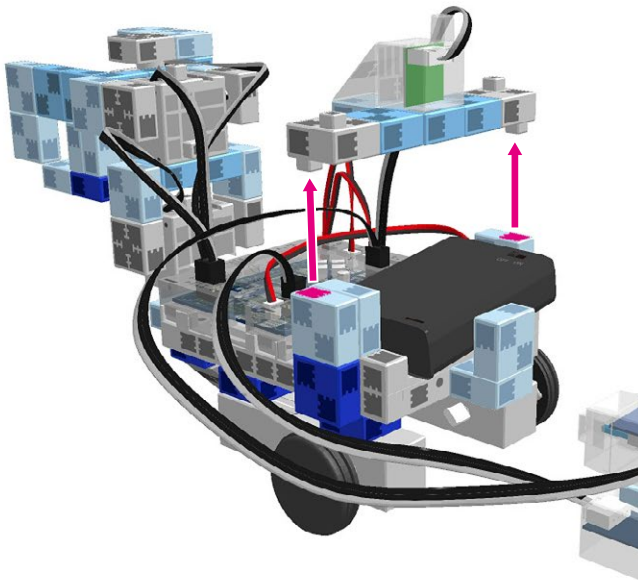


- ⚠ Connect to the accelerometer to both A4 and A5.
- ⚠ Make sure the cables are inserted correctly!

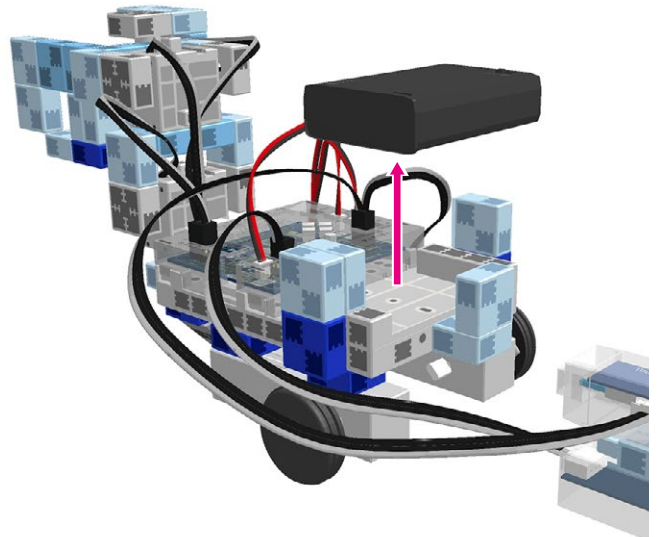
Arm Robot Car

Replacing the Batteries

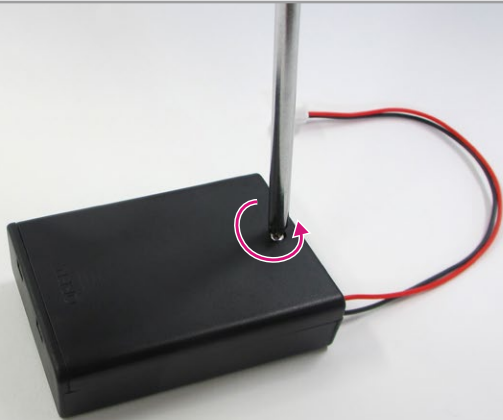
①



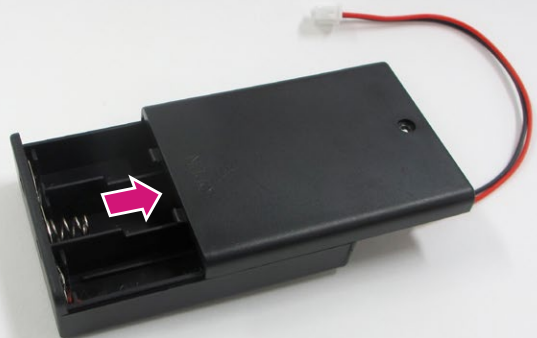
②



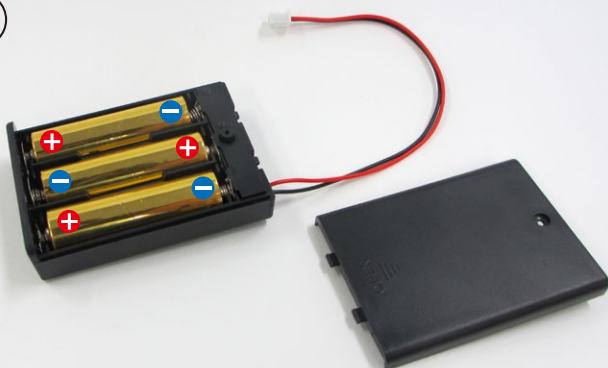
③



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.

Arm Robot Car

Completed Arm Robot Car



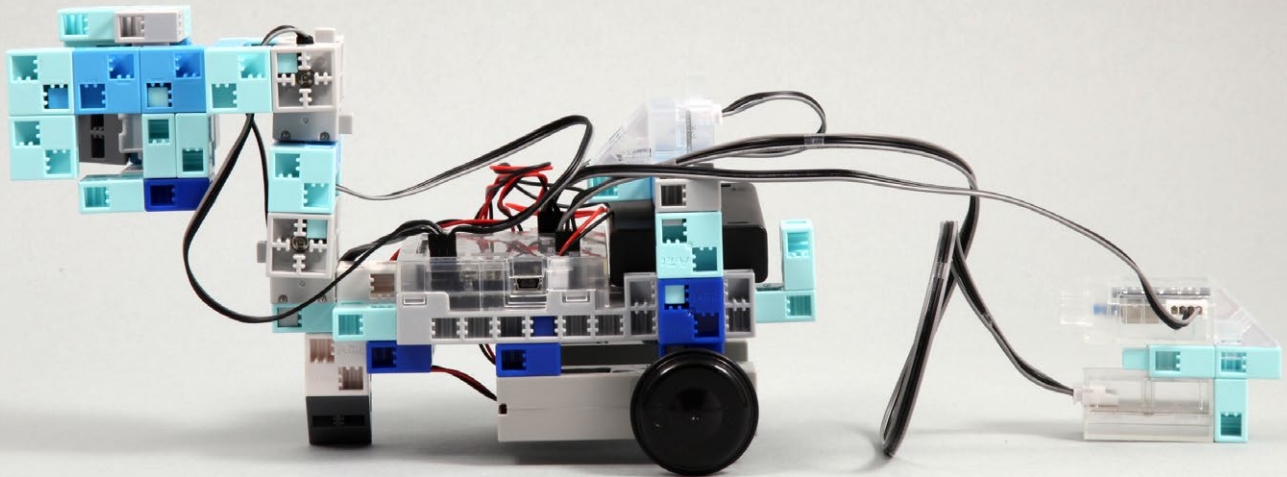
Be cautious of cables that could become entangled in the moving parts of the motor and cause the robot to disconnect.

Take care when arranging cables.

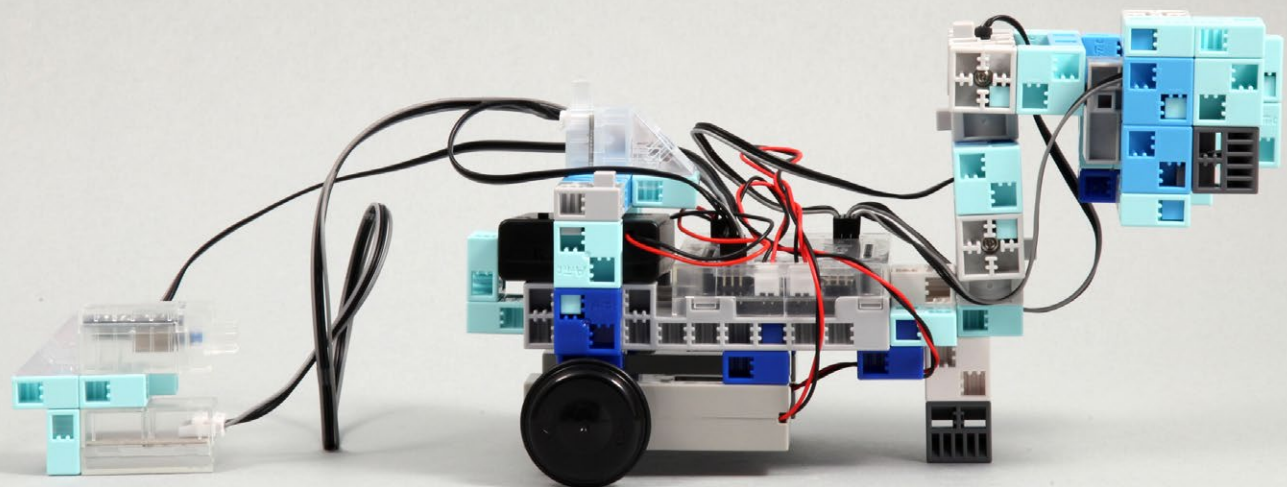


Before operating your robot, check the Assembly Instructions again to confirm your robot has been assembled correctly.

Left



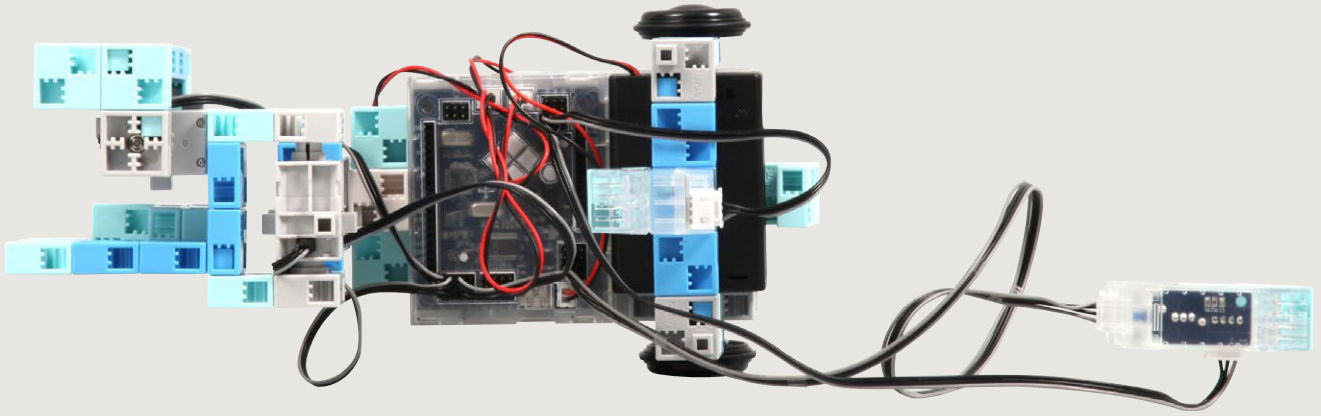
Right



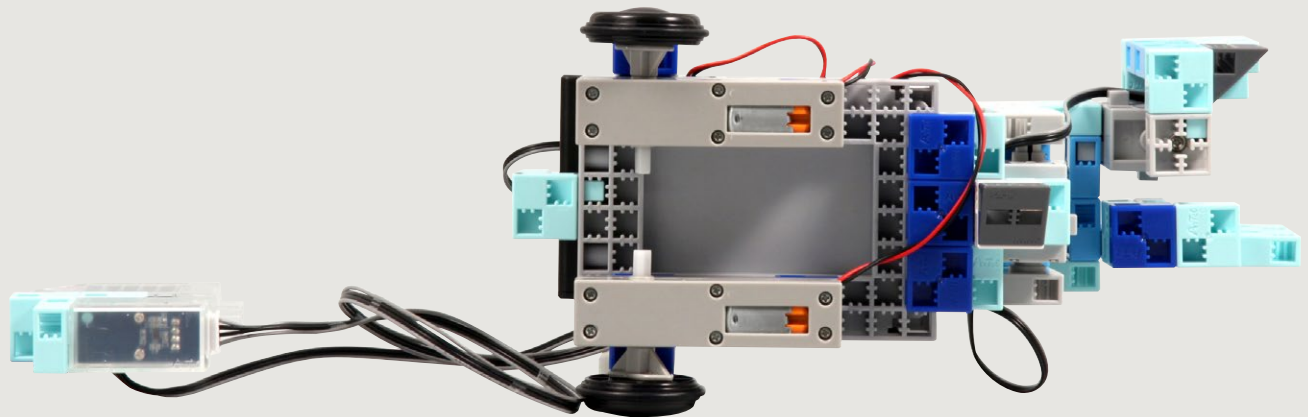
Arm Robot Car

Completed Arm Robot Car

Top



Bottom



Arm Robot Car

Operating Your Arm Robot Car

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 **Studuino Programming Environment Manual** for more details.
- ② Download the program file **ArmRobotCar.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  Program/Transfer button.



- ⑤ Remove the USB cable from the Studuino unit.

Arm Robot Car

- ⑥ Turn the switch of the battery box on.



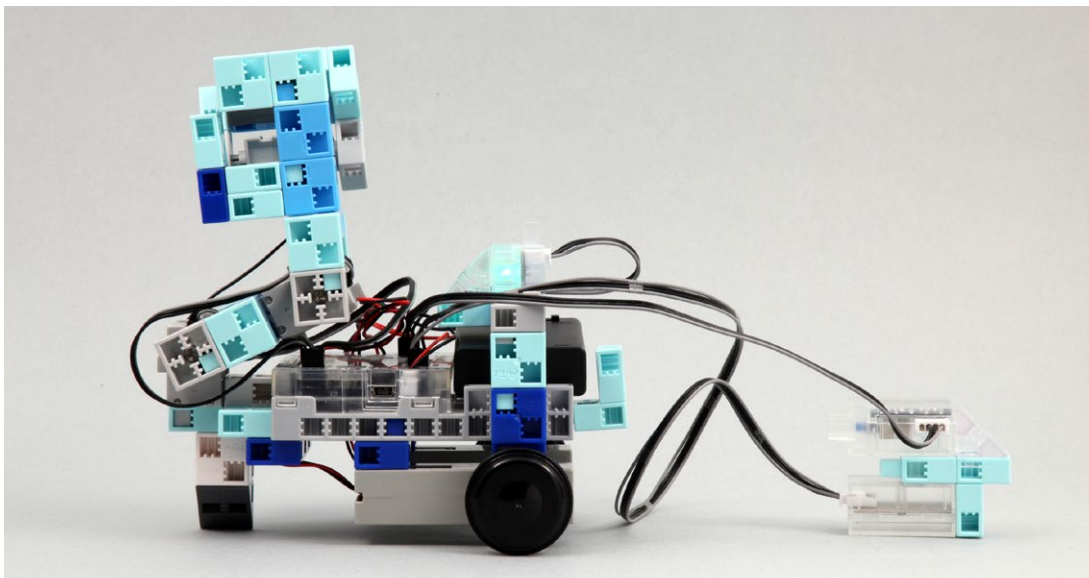
Immediately turn the switch to off if your robot does not begin moving as shown in the picture below.

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.

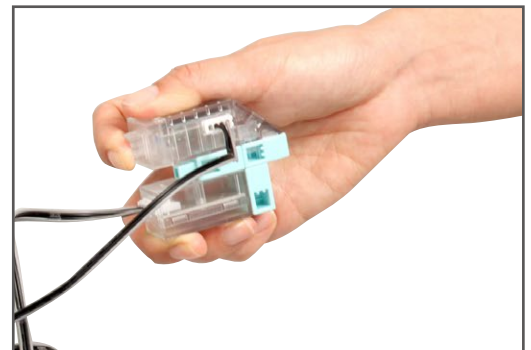
Re-read the Assembly Instructions to make sure that your robot has been assembled correctly.



- ⑦ Hold the controller parallel to the ground and tilt it to make your Arm Robot Car move.

<Controls>

Tilt Forward	▶	Go forward
Tilt Backward	▶	Reverse
Tilt Right	▶	Turn right
Tilt Left	▶	Turn left
Push Button	▶	Move arms



- ⑧ Use your robot's arm to grab and move the white cubes.

