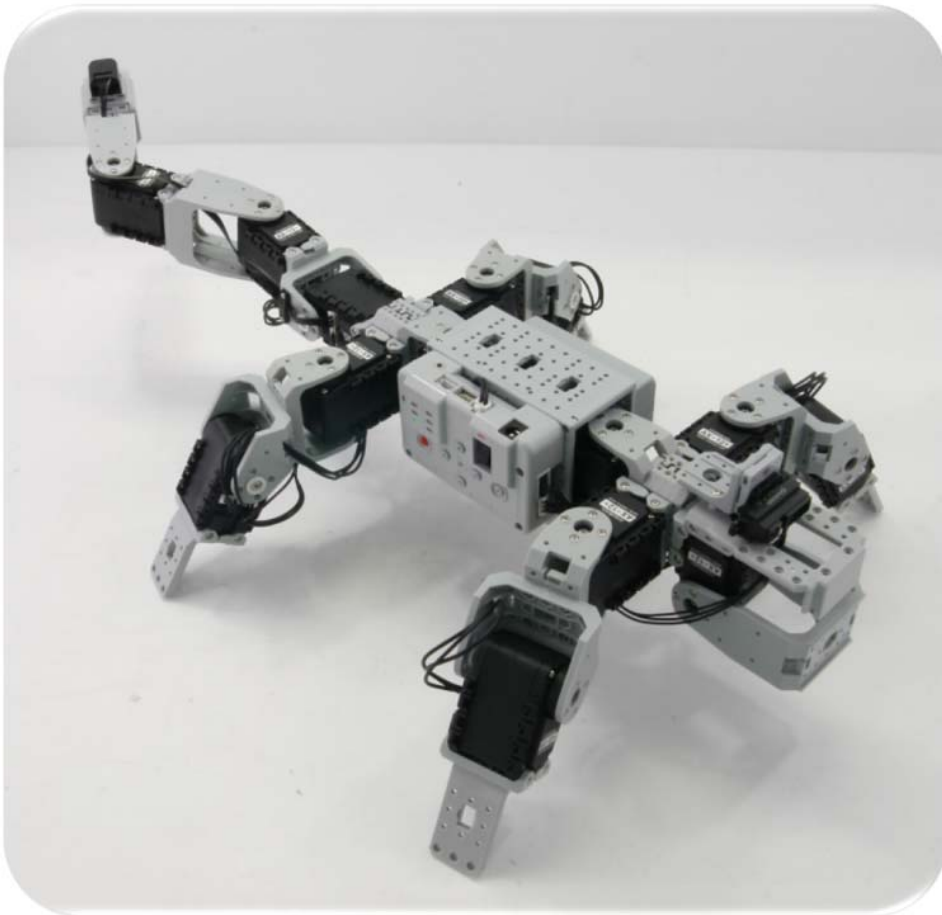


# Bioloid

## Premium Kit

### Lizard

# Assembly Manual



# Attention!

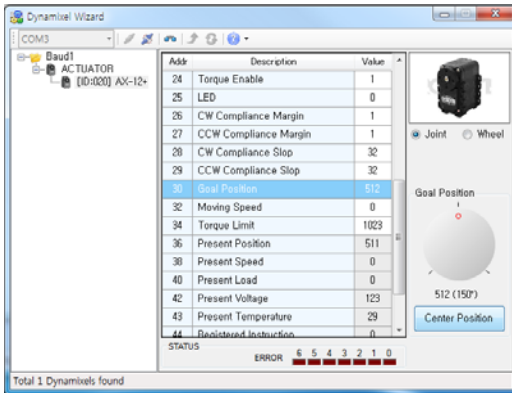
Before proceeding with assembly you must ensure each actuator's horn is properly aligned. To visually verify proper alignment, the notch from the horn is in line with the notch from the actuator's body. If not, perform one of the following actions:

A. Turn the horn manually until it is properly aligned.

B. Use Dynamixel Wizard.

1. Start RoboPlus and run 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!

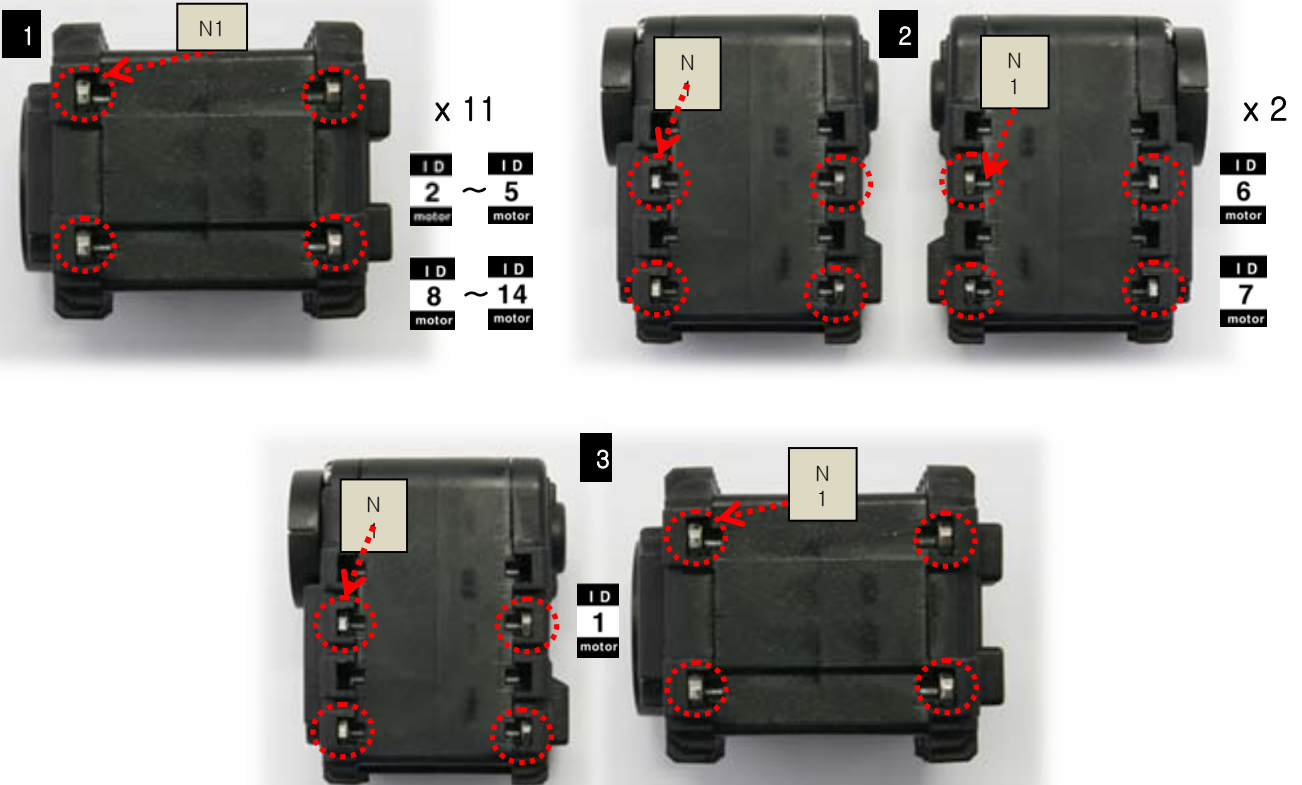
- I. Always assign ID numbers to the actuators before assembly. Robotis recommends you assign ID's by one actuator at a time.
- II. You may need apply gentle pressure to fit nuts into the actuator's body. The tight fit is necessary to facilitate assembly.
  - A. Insert only one nut at a time.
  - B.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

# Bioloid Lizard – Getting Started

## STEP 1

Insert N1's into ID1 through ID14.

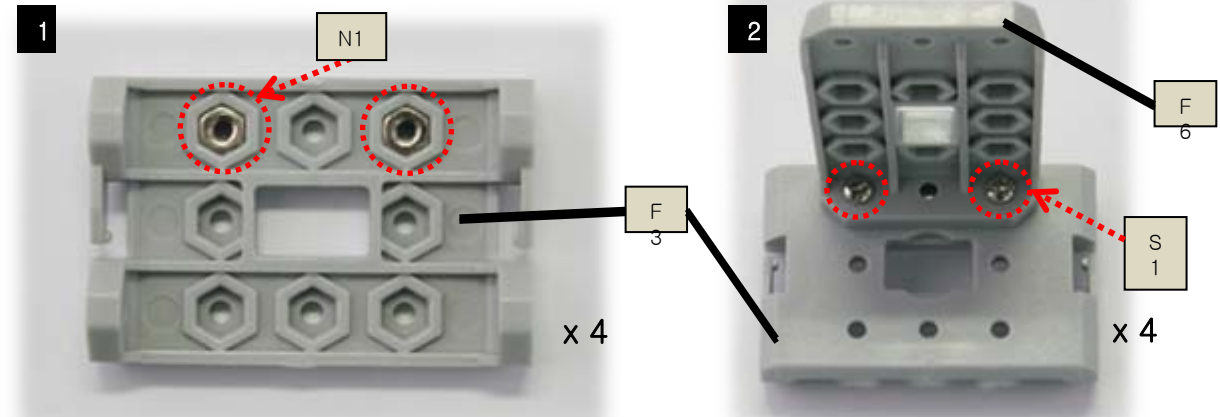
N1 x 68



## STEP 2

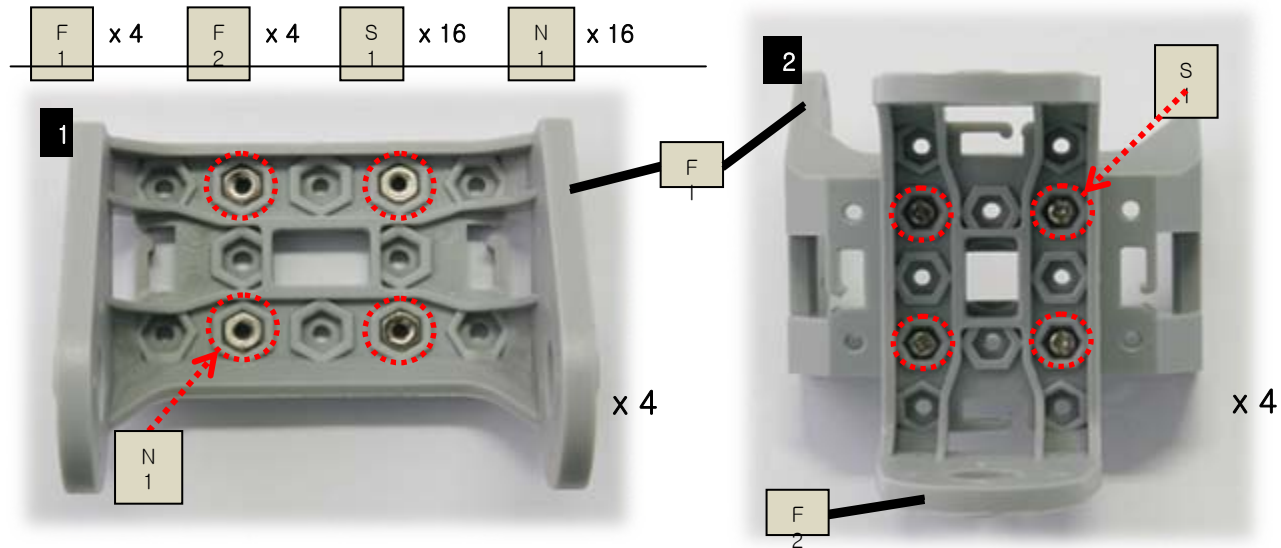
Attach F3 to F6. (Make 4 sets.)

F3 x 4   F6 x 4   S1 x 8   N1 x 8



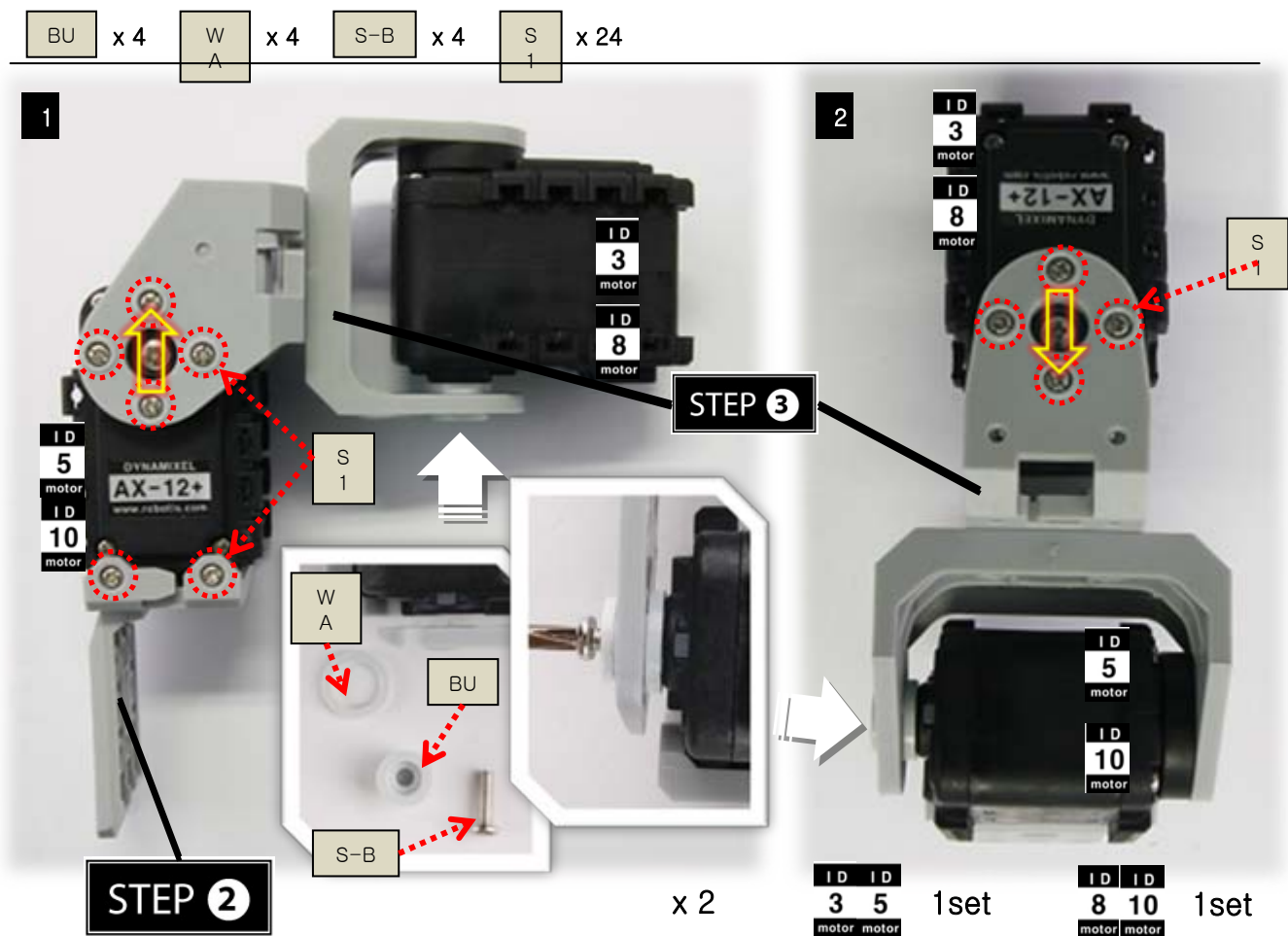
## STEP 3

Attach F1 to F2. (Make 4 sets.)



## STEP 4

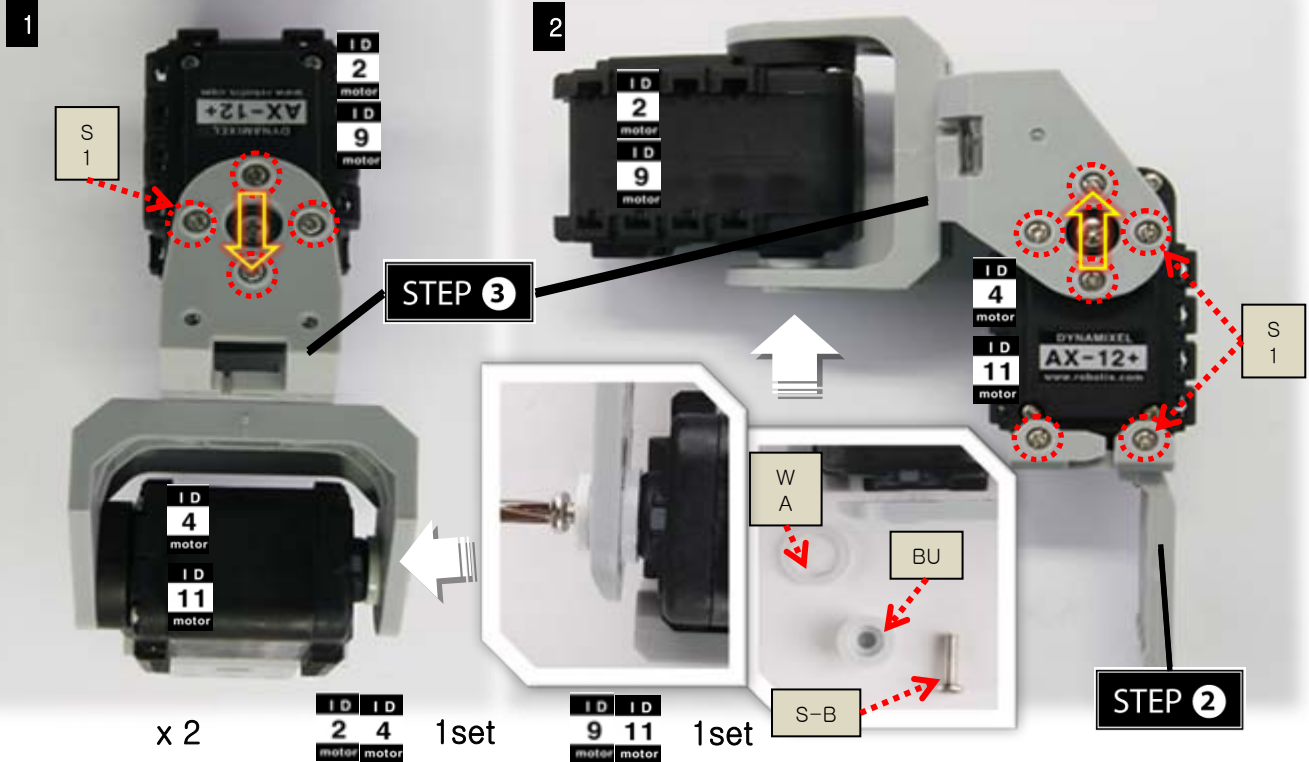
Attach STEP②, STEP③, ID3, ID5, ID8, and ID10 together.  
(Do not misalign horn position. Align the opposite side too.)



## STEP 5

Attach STEP②, STEP③. ID2, ID4, ID9, and ID11 together.  
(Do not misalign horn position. Align the opposite side, too.)

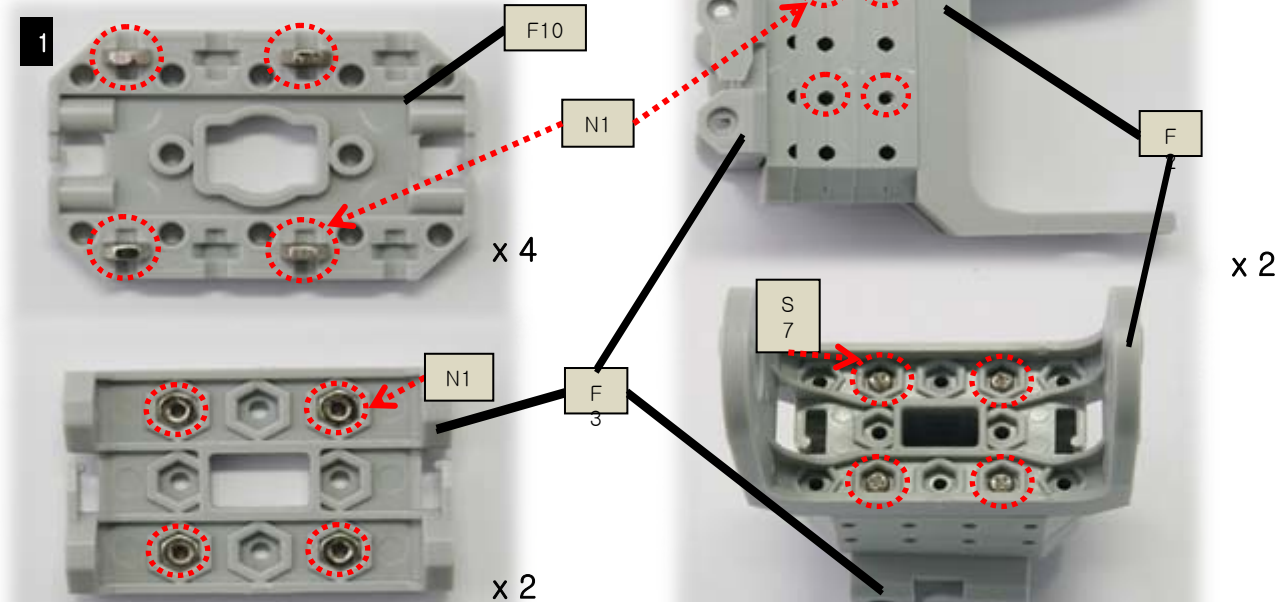
BU x 4    W A x 4    S-B x 4    S 1 x 24



## STEP 6

Attach F2, F3, and F10 together.

F 2 x 2    F 3 x 2    F10 x 10  
S 7 x 8    N1 x 24

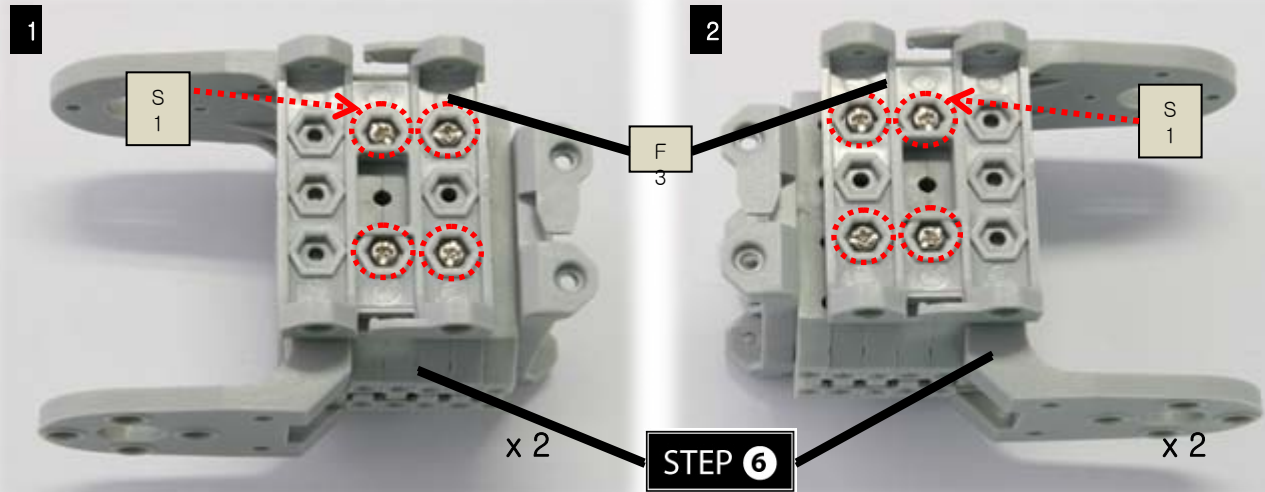




STEP 7

Attach STEP⑥ to F3.

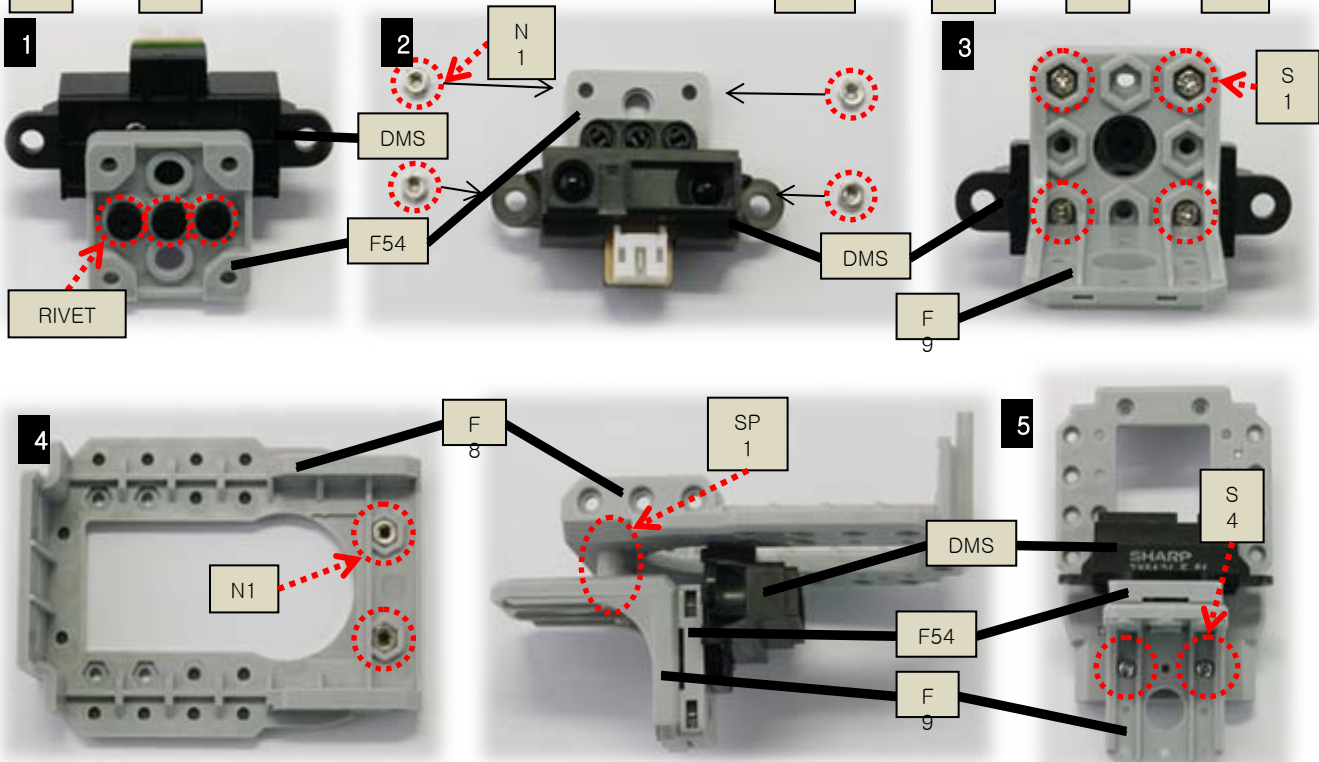
F3 x 4    S1 x 16



STEP 8

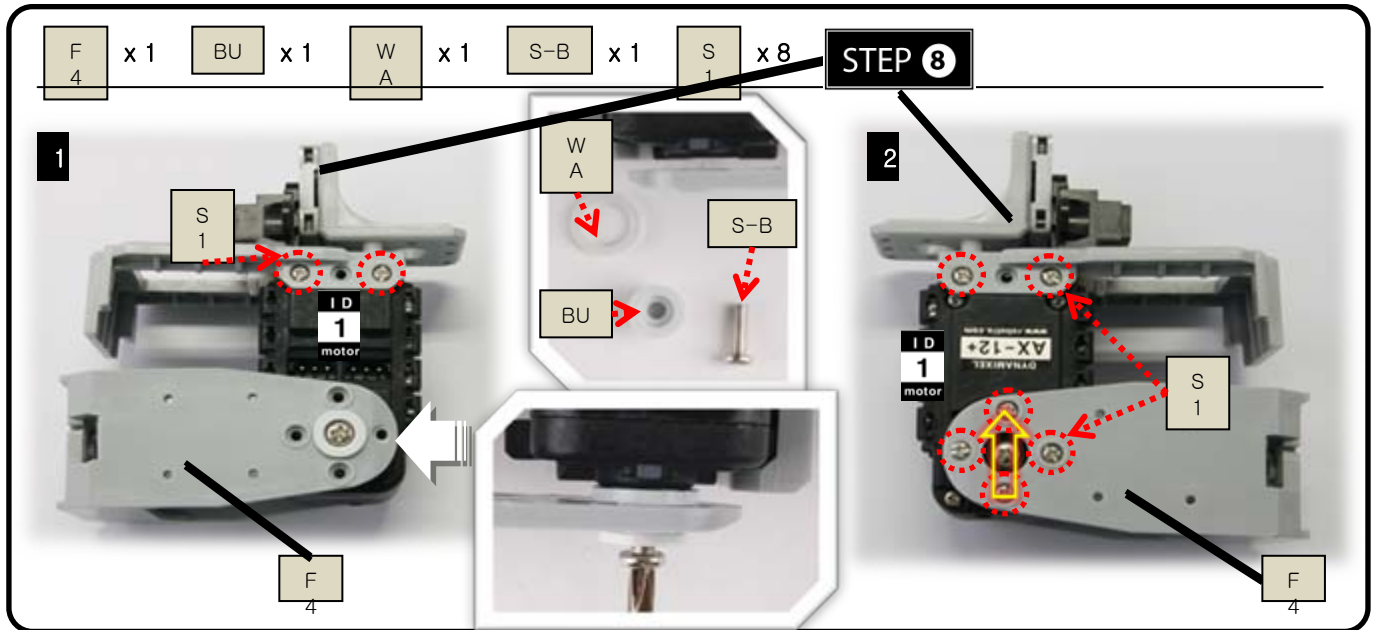
Attach F8, F9, F54, and DMS together.

F8 x 1    F9 x 1    F54 x 1    DMS x 1    RIVET x 3    SP1 x 2    S1 x 4    S4 x 2    N1 x 6



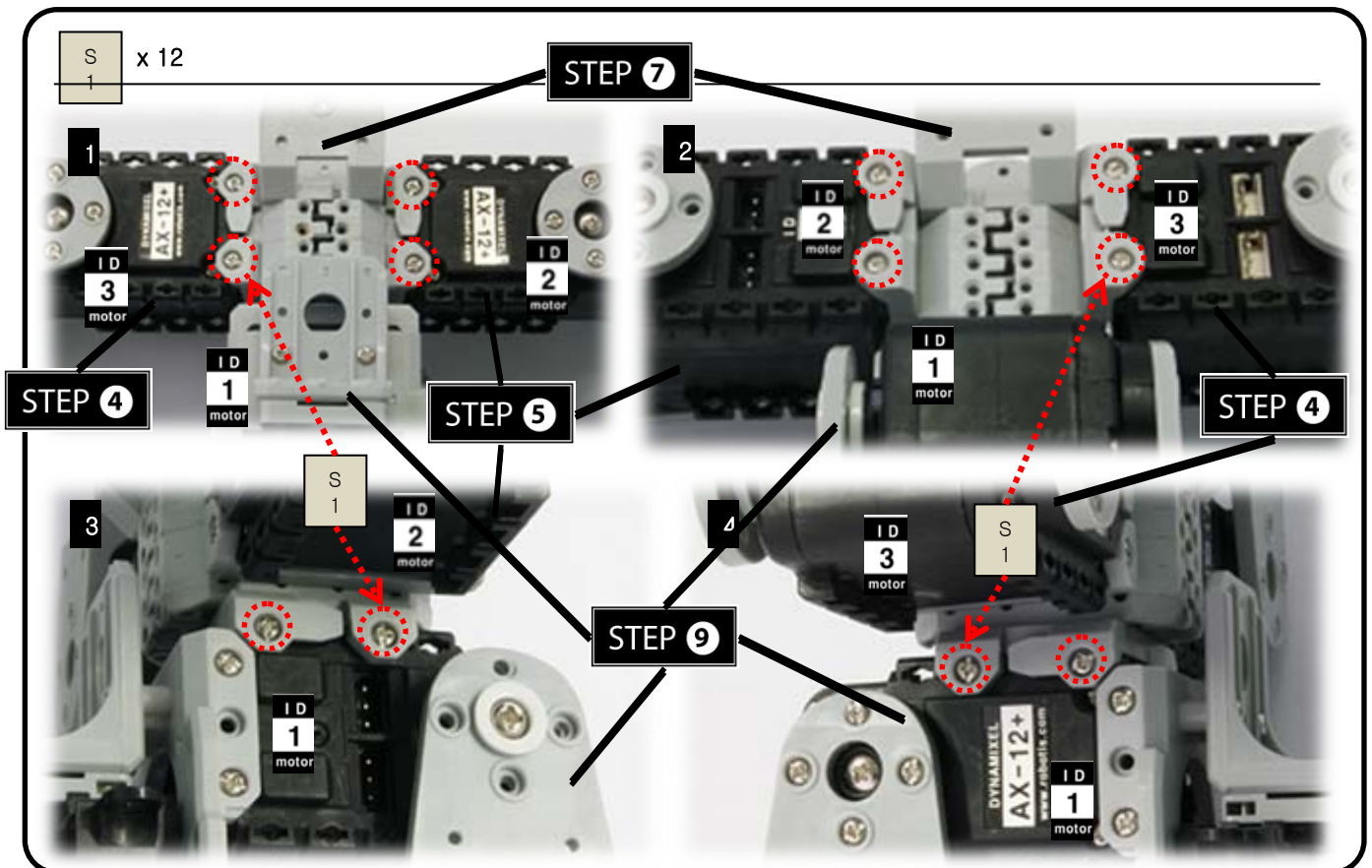
## STEP 9

Attach STEP⑧, ID1, and F4 together. (Do not misalign horn position.)



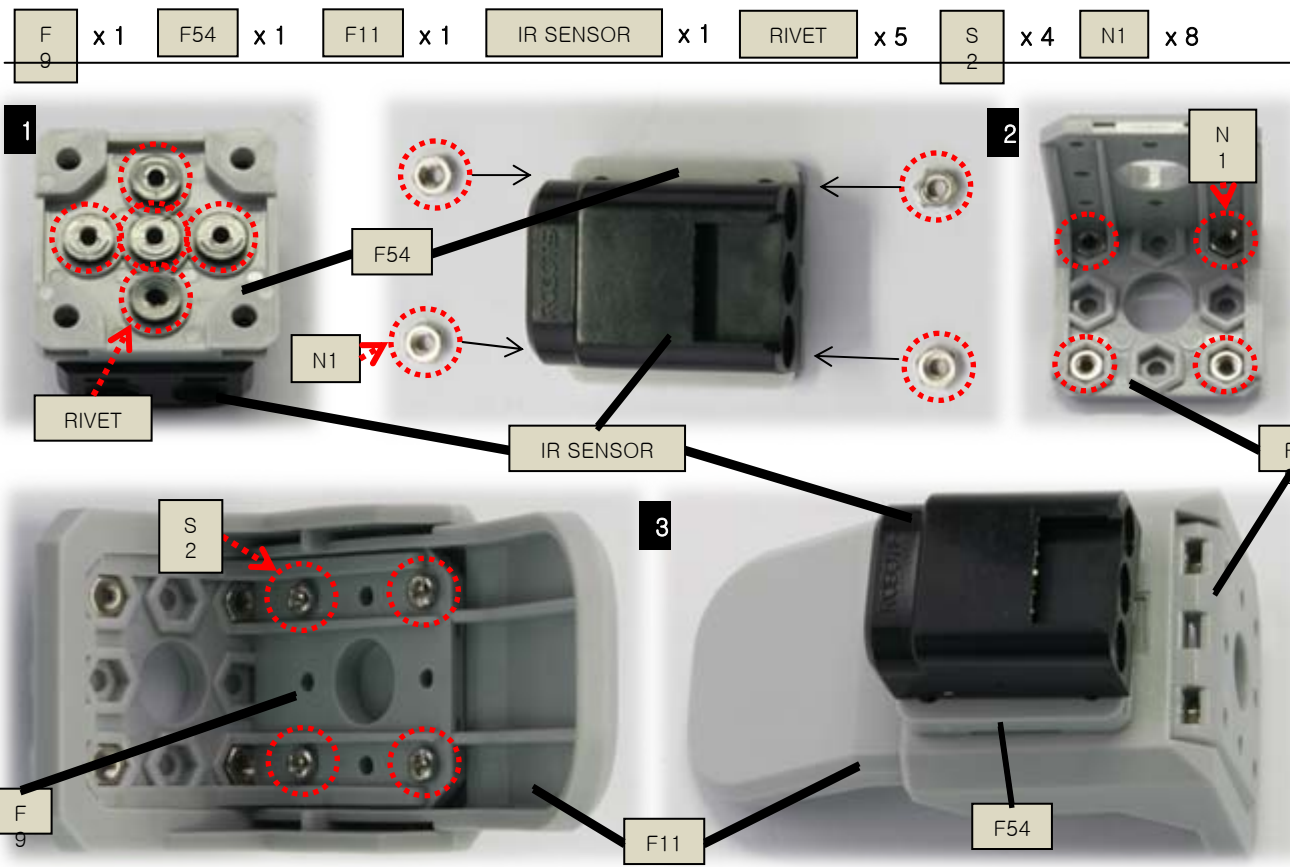
## STEP 10

Attach STEP④, STEP⑤, STEP⑦, and STEP⑨ together. (Attention to the Dynamixel ID#.)



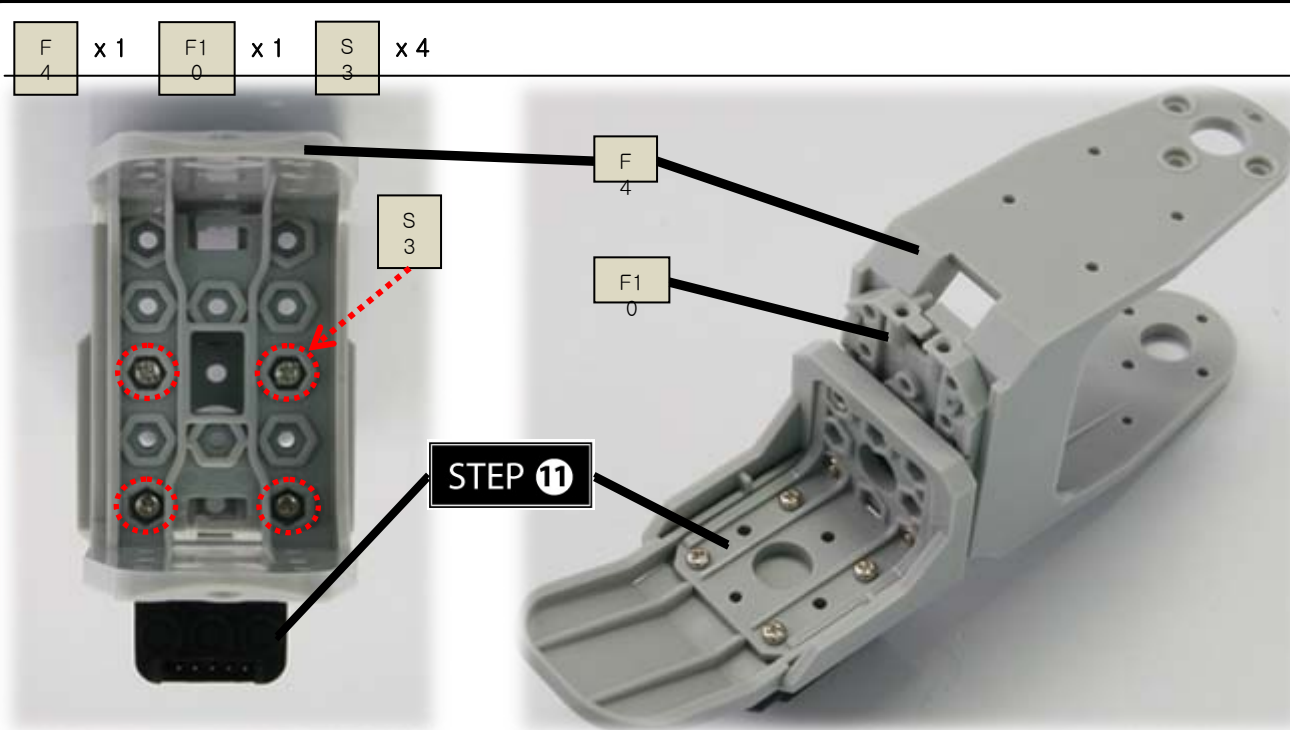
STEP 11

Attach F9, F54, and IR SENSOR together.



STEP 12

Attach STEP 11, F4, and F10 together.

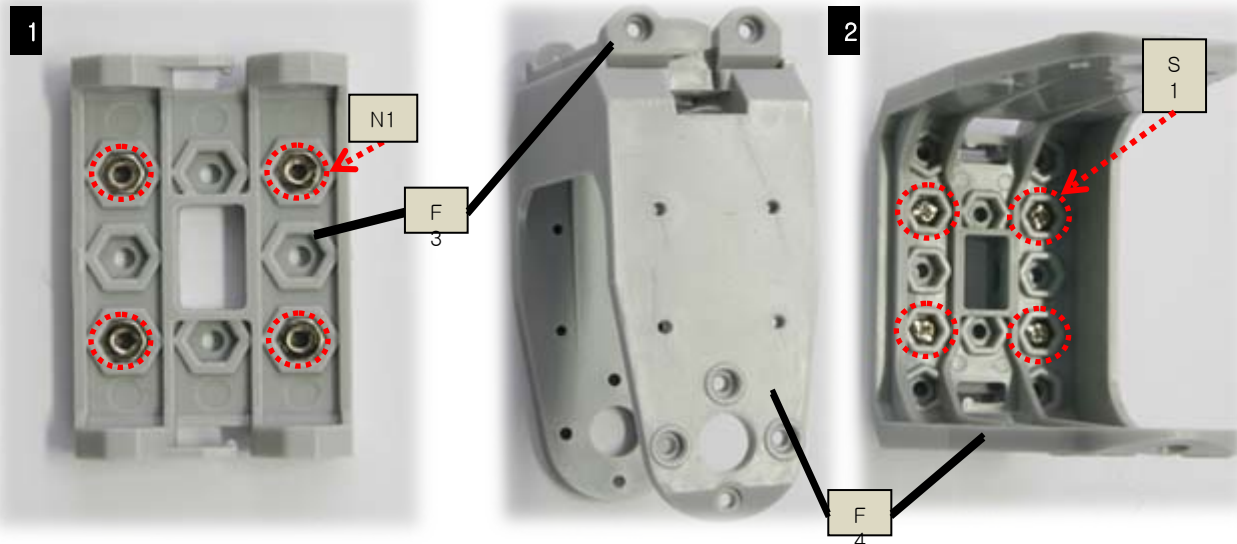




## STEP 13

Attach F3 to F4.

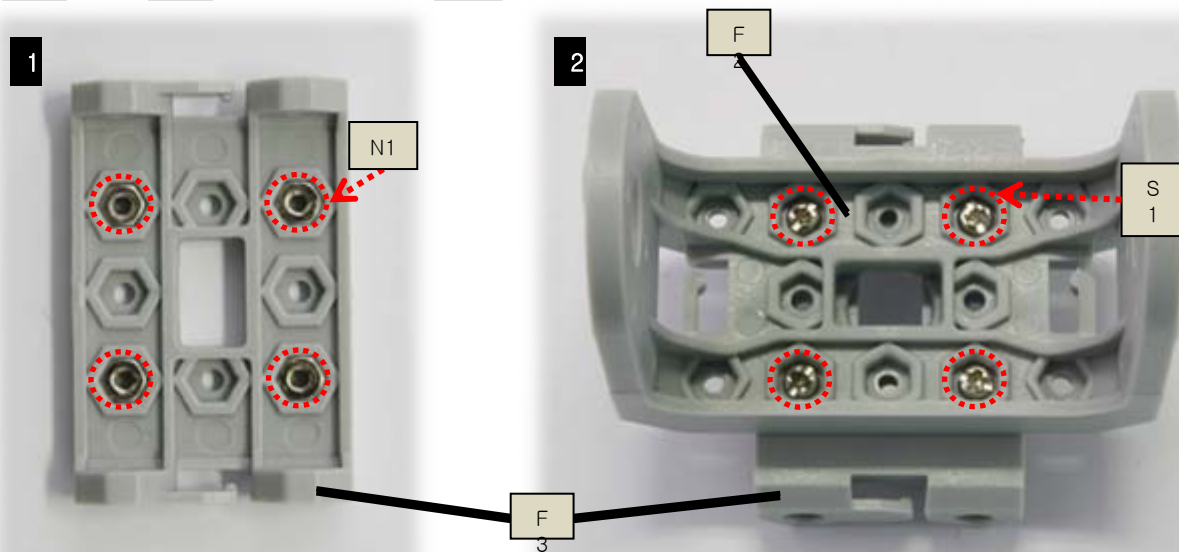
F<sub>3</sub> x 1   F<sub>4</sub> x 1   S<sub>1</sub> x 4   N<sub>1</sub> x 4



## STEP 14

Attach F2 to F3.

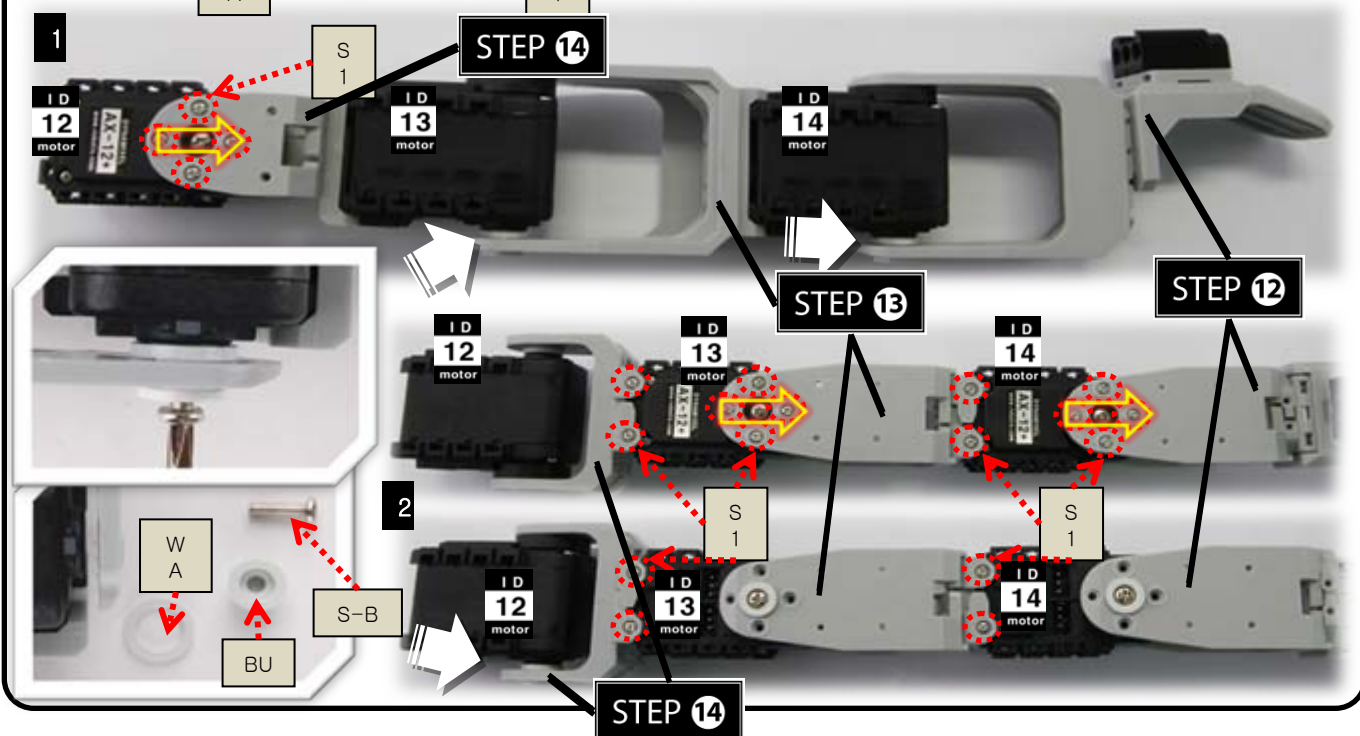
F<sub>2</sub> x 1   F<sub>3</sub> x 1   S<sub>1</sub> x 4   N<sub>1</sub> x 4



## STEP 15

Attach STEP⑫, STEP⑬, STEP⑭, ID12, ID13, ID14 together.  
(Do not misalign horn position.)

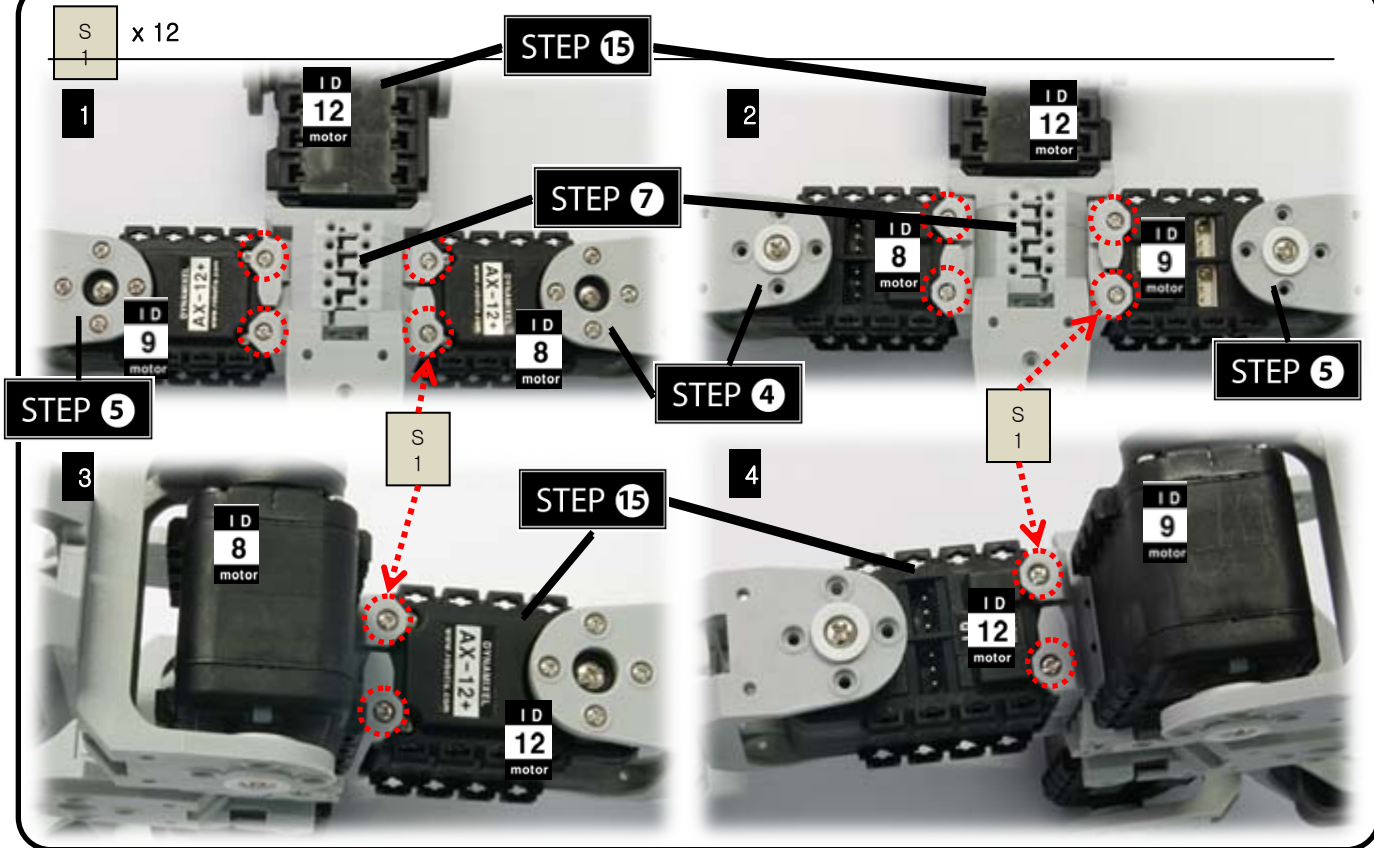
BU x 3    W A x 3    S-B x 3    S 1 x 20



## STEP 16

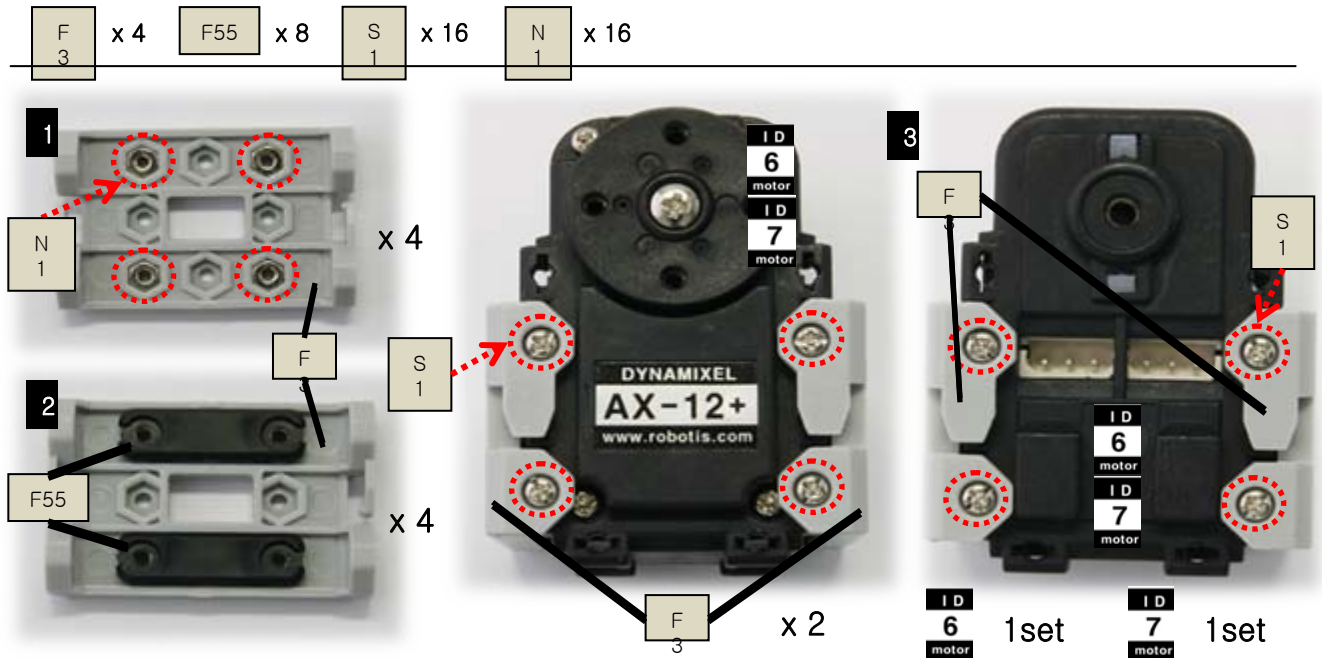
Attach STEP④, STEP⑤, STEP⑦, and STEP⑮ together.  
(Attention to Dynamixel ID#.)

S 1 x 12



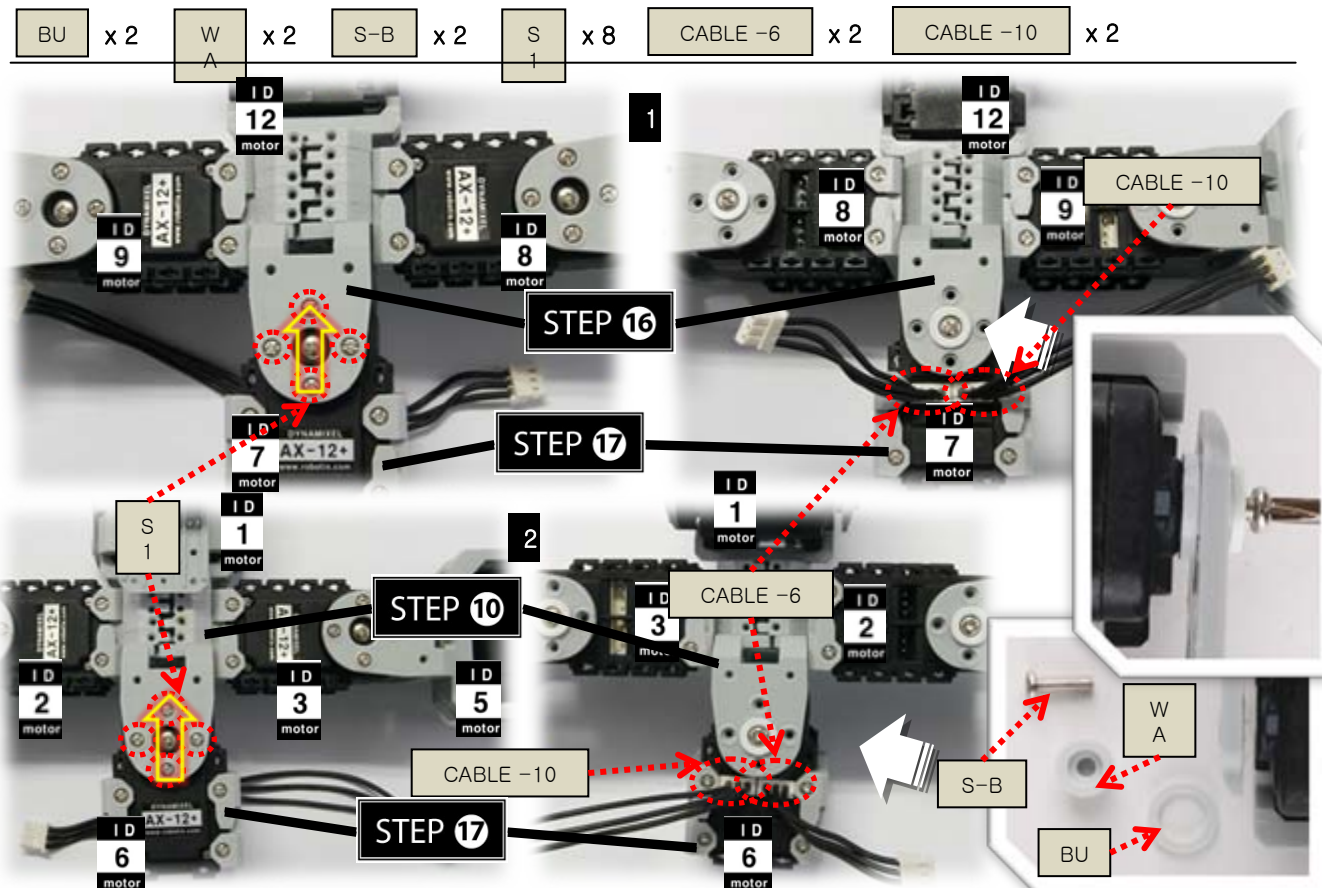
## STEP 17

Attach ID6, ID7, F3, and F55 together.



## STEP 18

Attach STEP⑩,STEP⑯, and STEP⑰ together.  
(Do not misalign horn position and attention to Dynamixel ID#.)

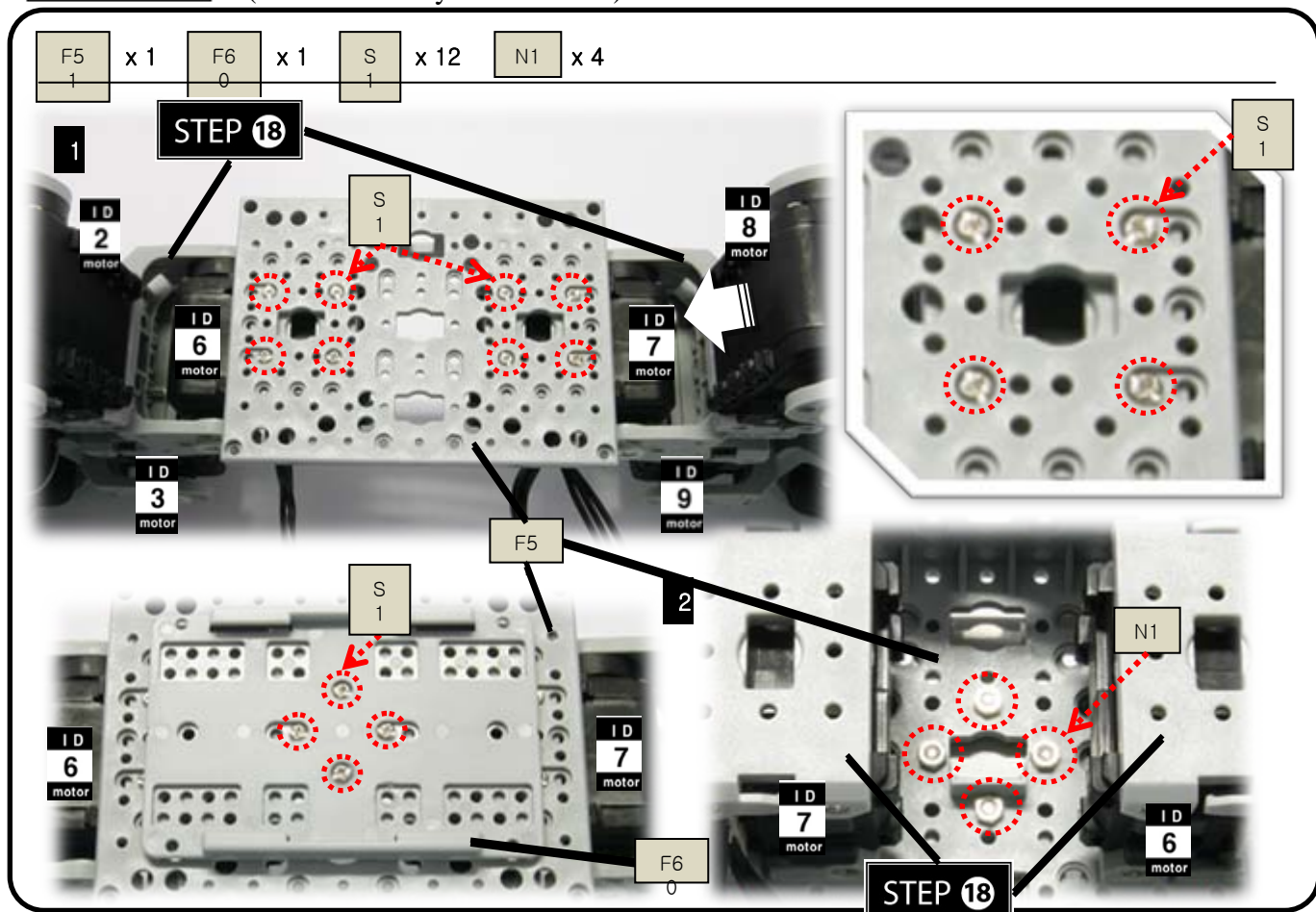




## STEP 19

Attach STEP<sup>®</sup>18, F51, and F60 together.  
(Attention to Dynamixel ID#.)

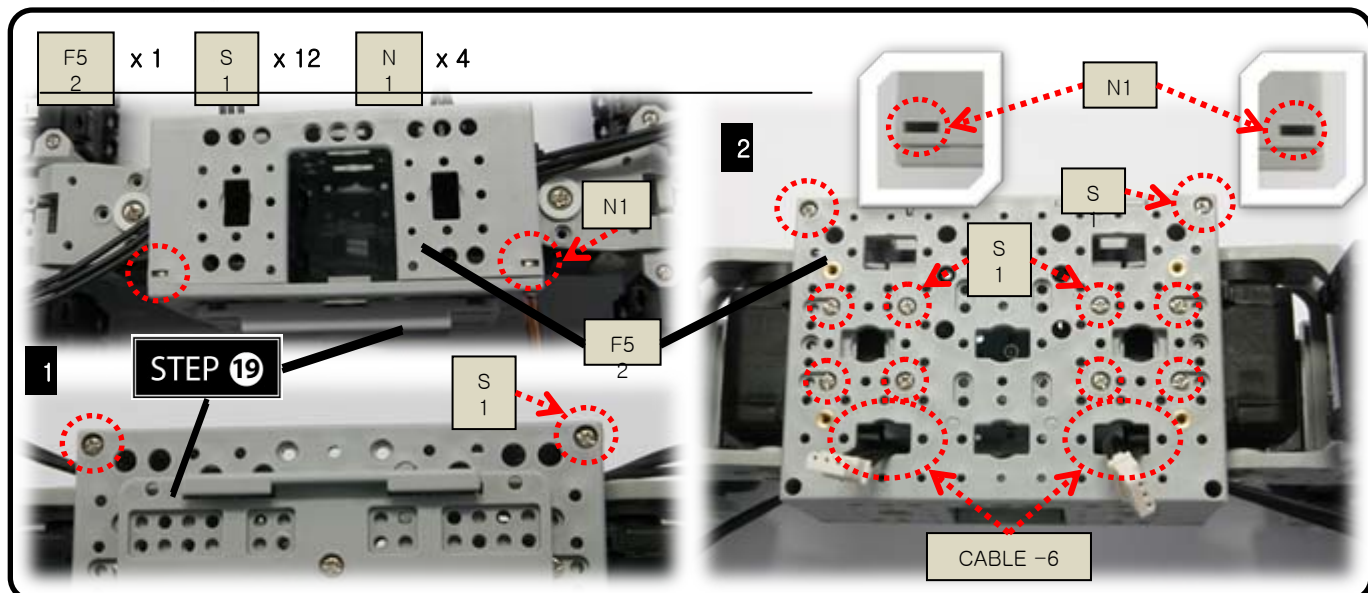
F5 1 x 1 F6 0 x 1 S 1 x 12 N1 x 4



## STEP 20

Attach STEP<sup>®</sup>19 to F52.

F5 2 x 1 S 1 x 12 N1 x 4

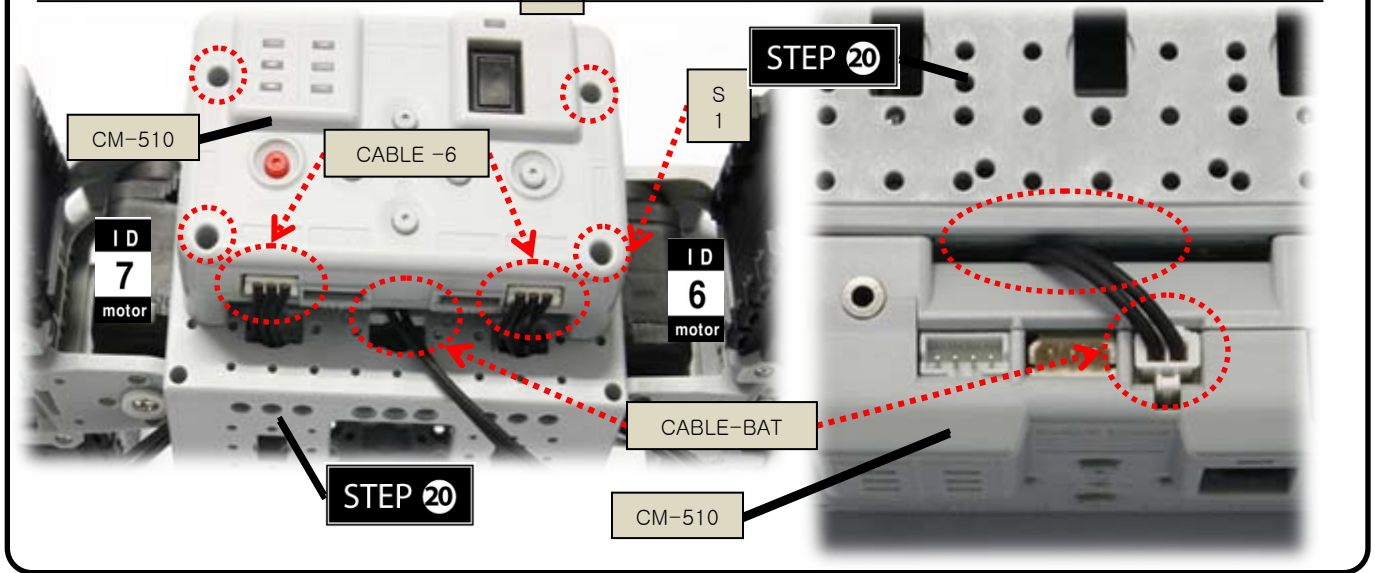




## STEP 21

Attach STEP<sup>20</sup> to CM-510. (Align CABLE-BAT during the process.)

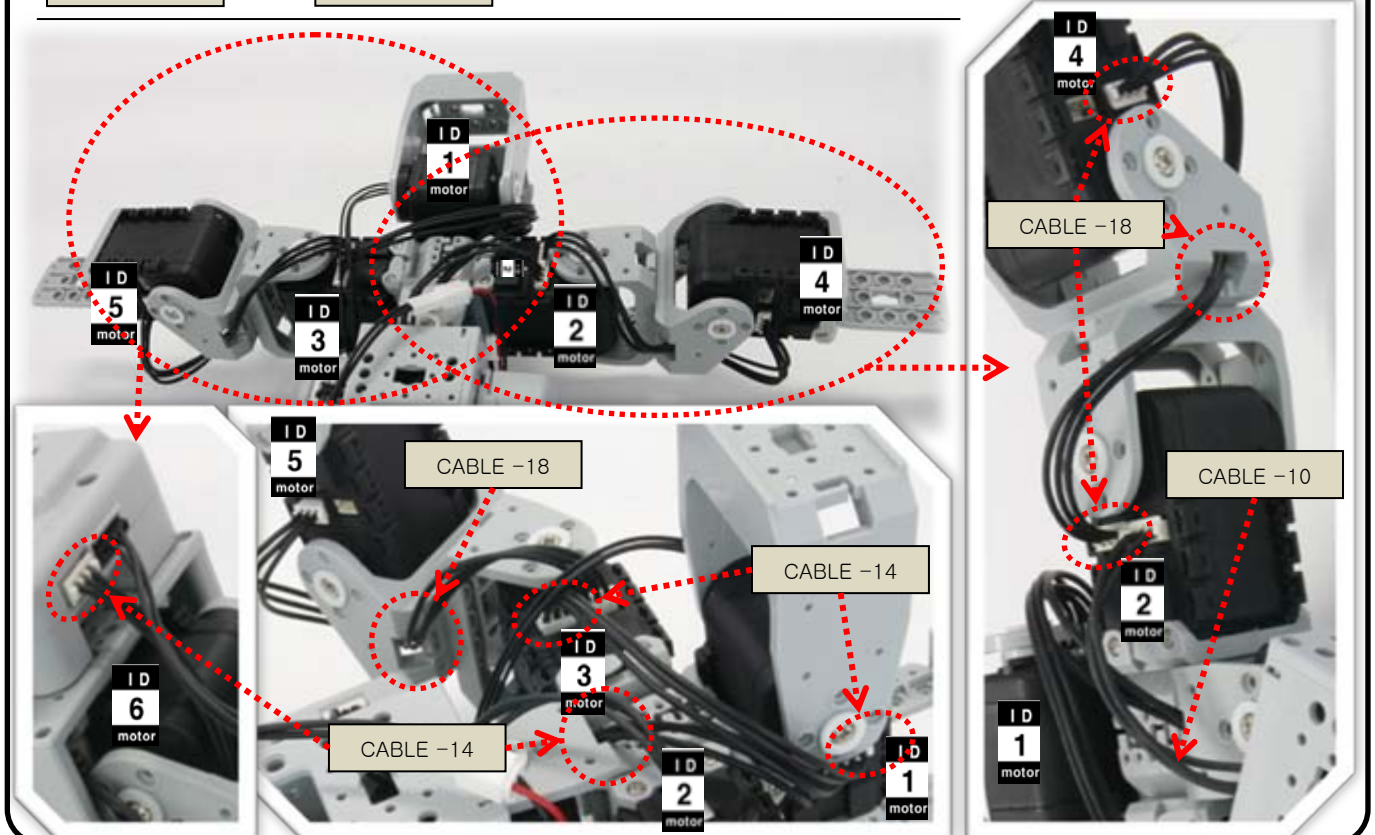
CM-510 x 1 CABLE-BAT x 1 S 1 x 4

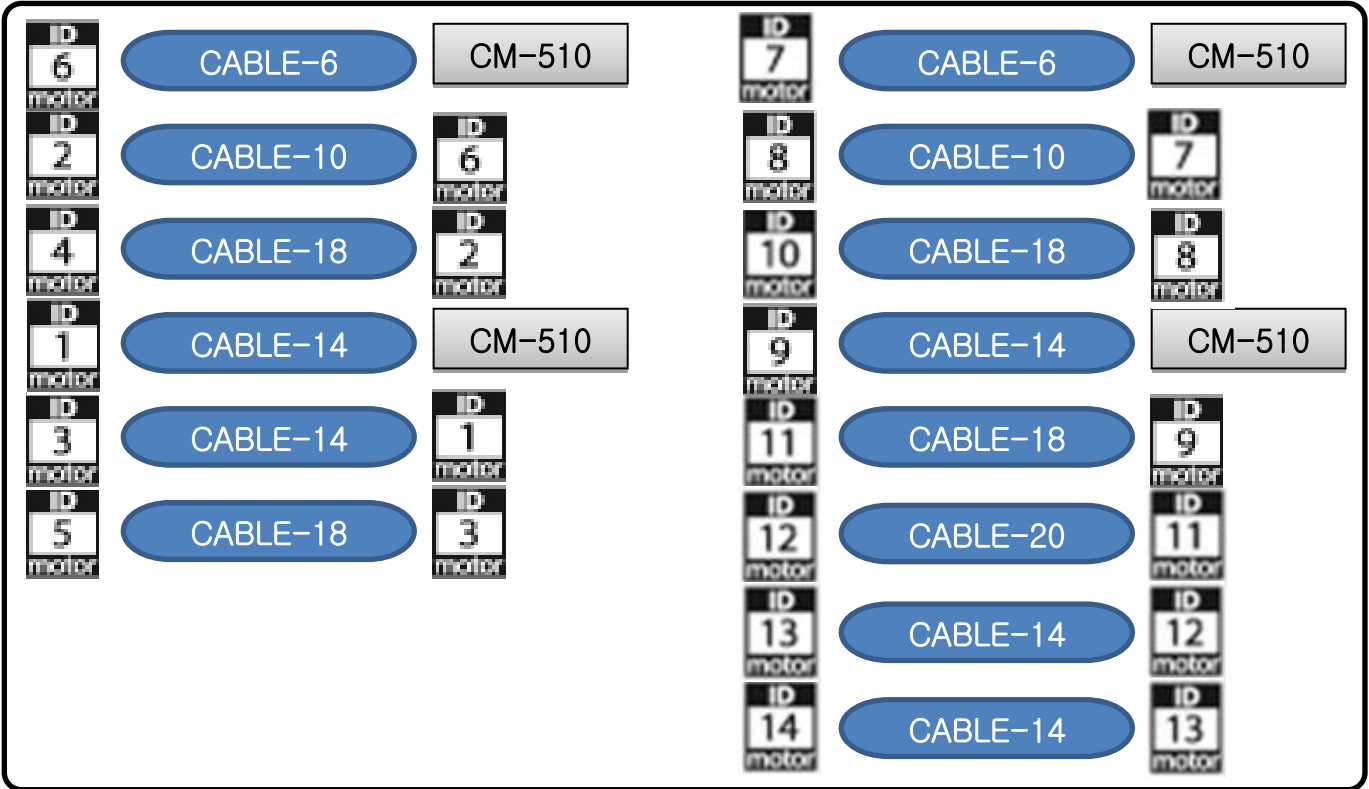
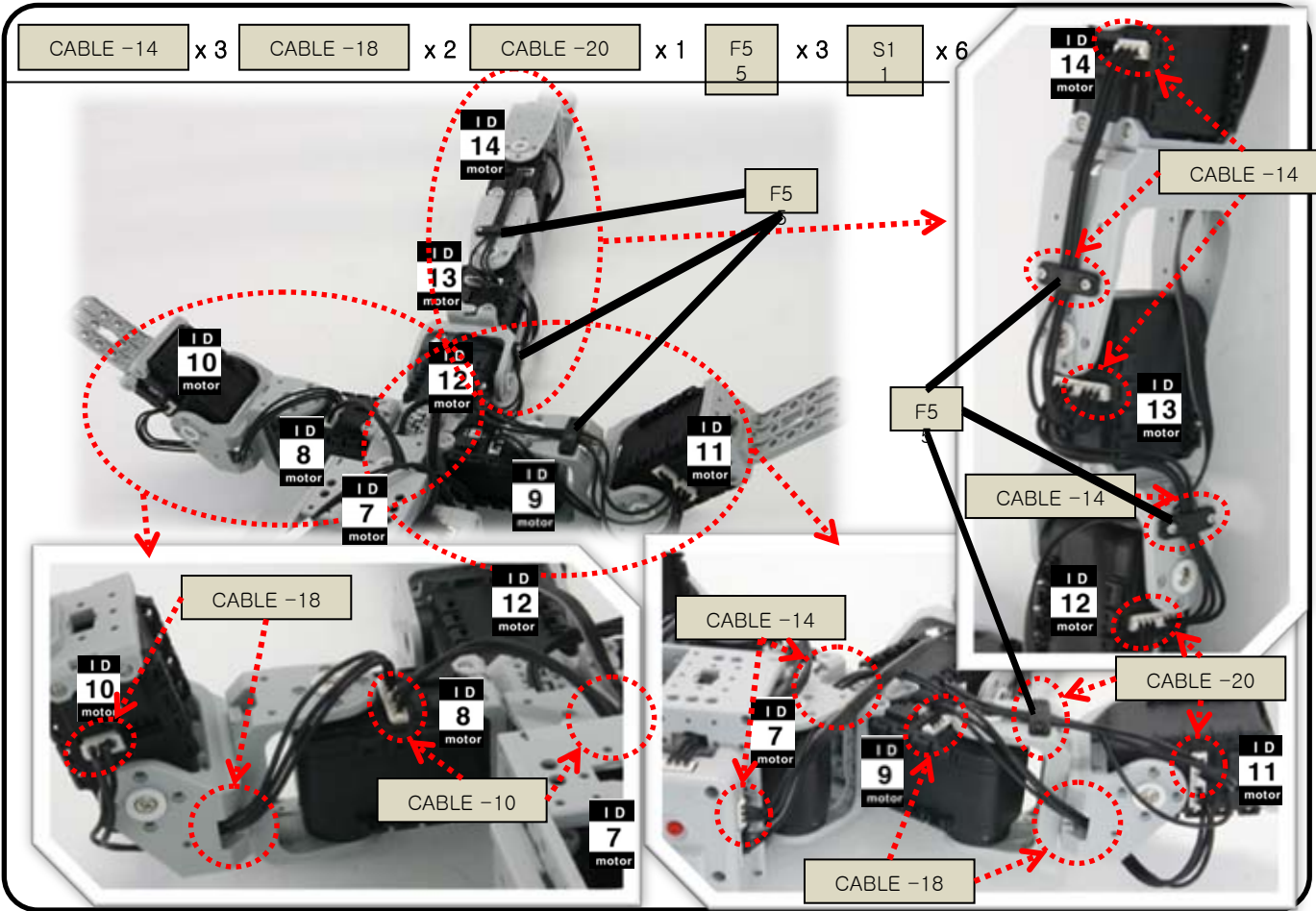


## STEP 22

Perform wiring by following the diagrams below.

CABLE -14 x 2 CABLE -18 x 2





## STEP 23

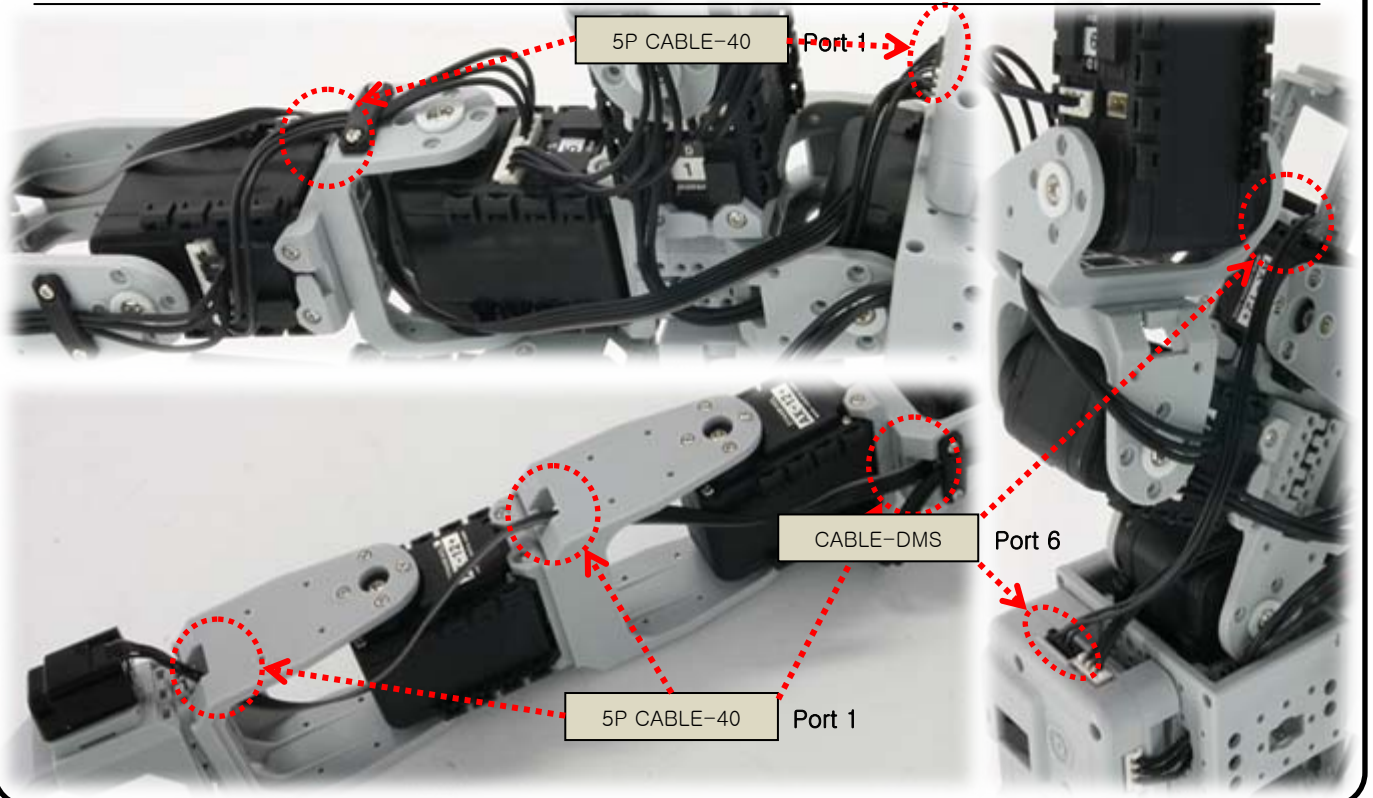
Connect SENSOR to Port 1 of CM-510 with 5P CABLE-40.  
Connect DMS to Port 6 of CM-510 with CABLE-DMS.  
Connect the battery through the battery cable.

CABLE-DMS

x 1

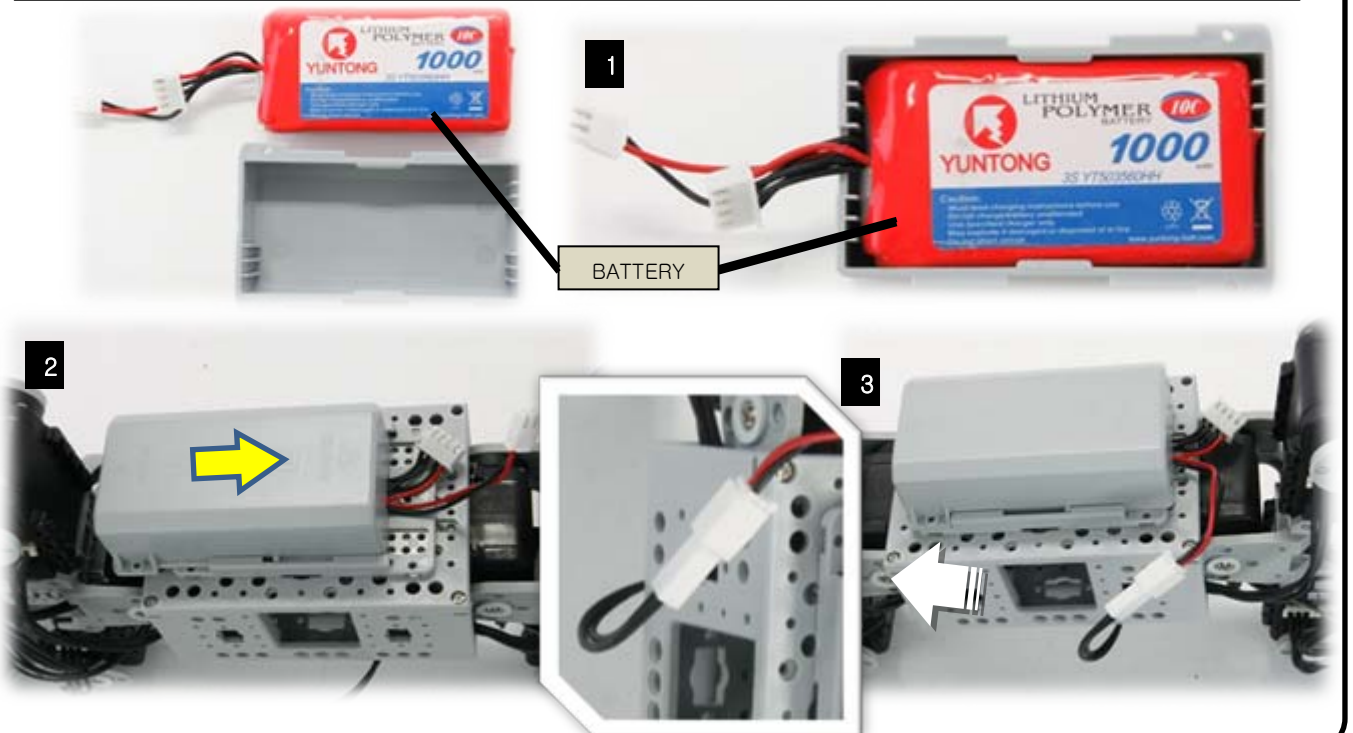
5P CABLE-40

x 1



BATTERY

x 1





## Assembly Check

After assembly please check the following procedure to ensure correctness.

### STEP 1

#### 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.

### STEP 2

#### 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.

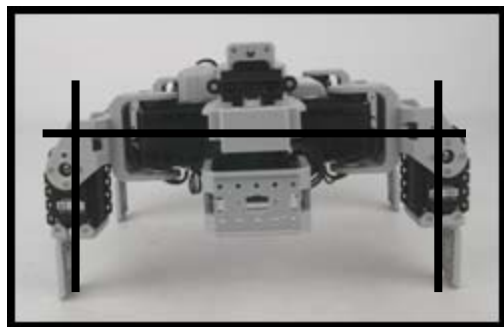
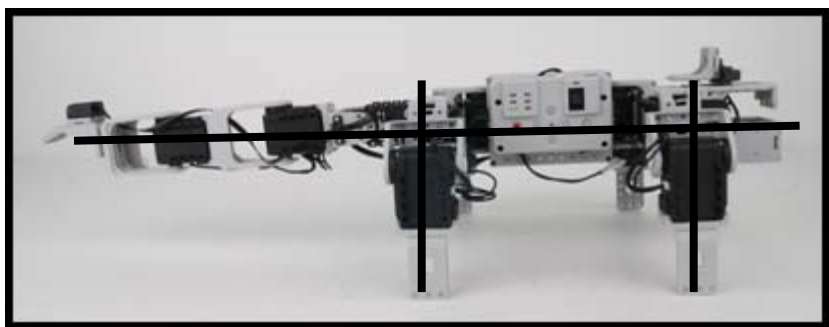
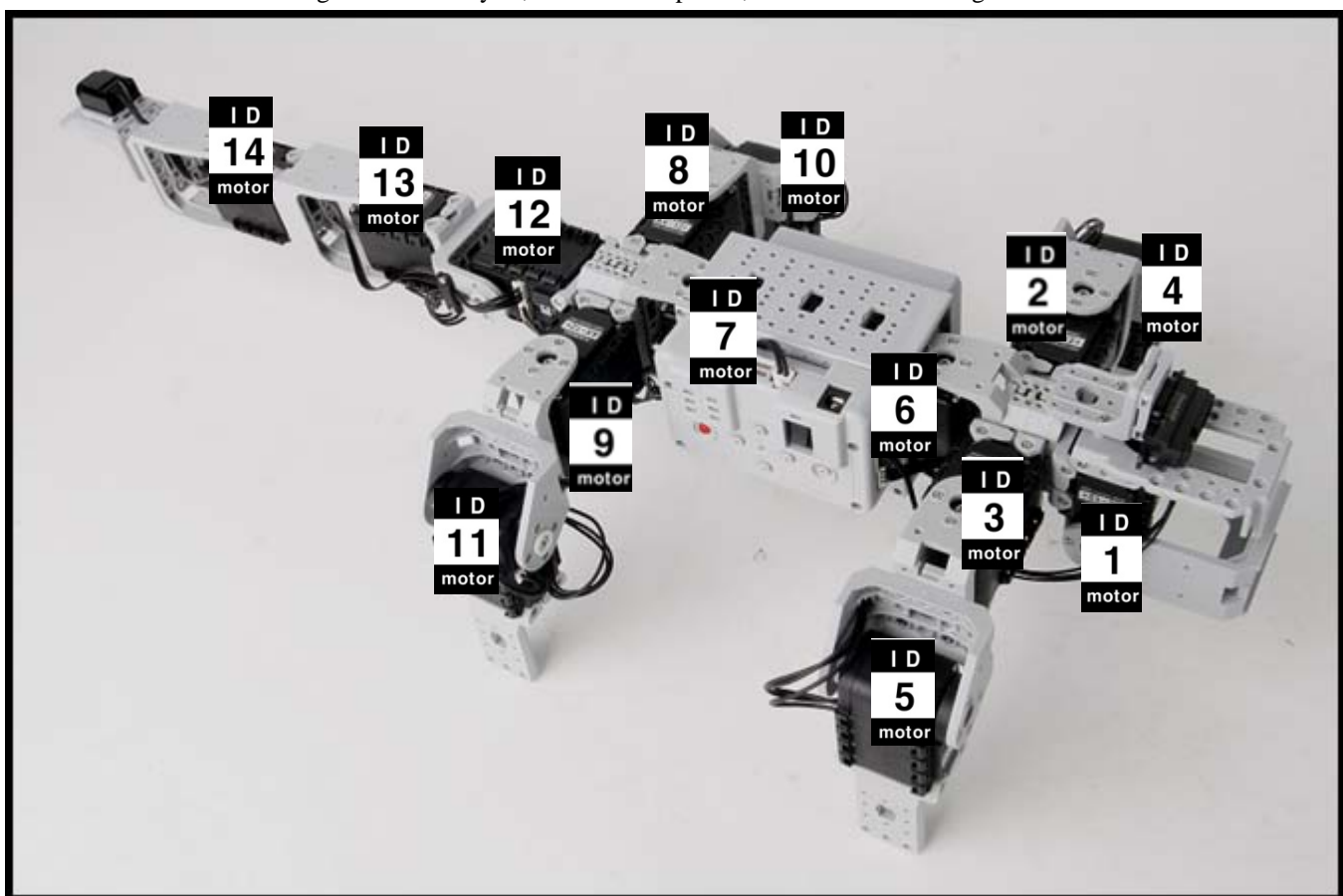
The selected actuator's LED lights up and goes to its initial position.

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.

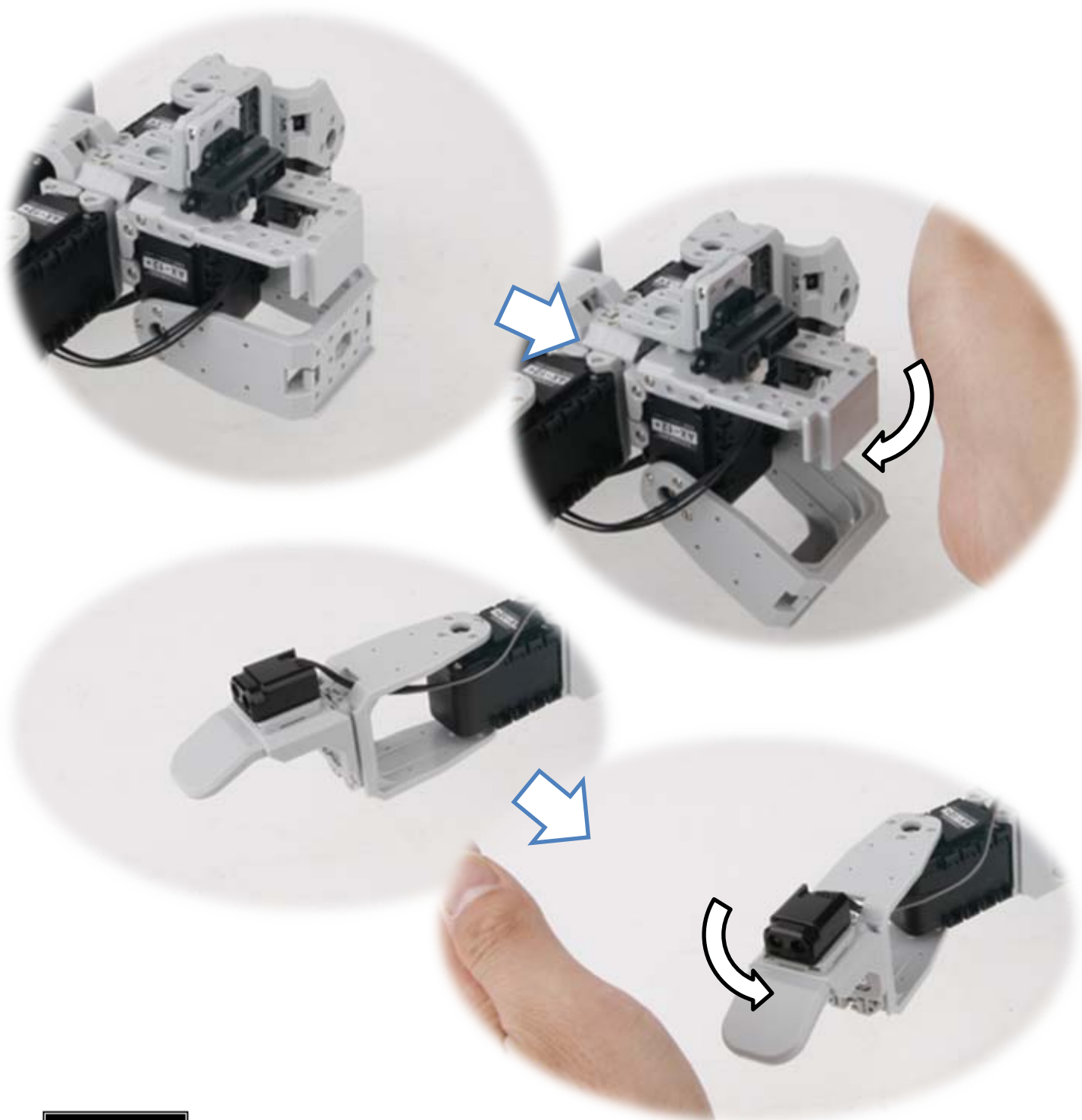




## STEP 3

### Sensor and behavior check

From STEP② 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 STEP②.



## STEP 4

### If everything works fine, play the robot.

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

