

# Bioloid Premium Kit Excavator 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.

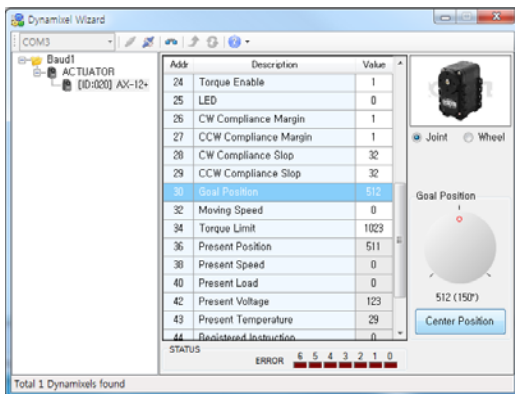
If not, perform one of the following actions:

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

B. Use Dynamixel Wizard.

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.

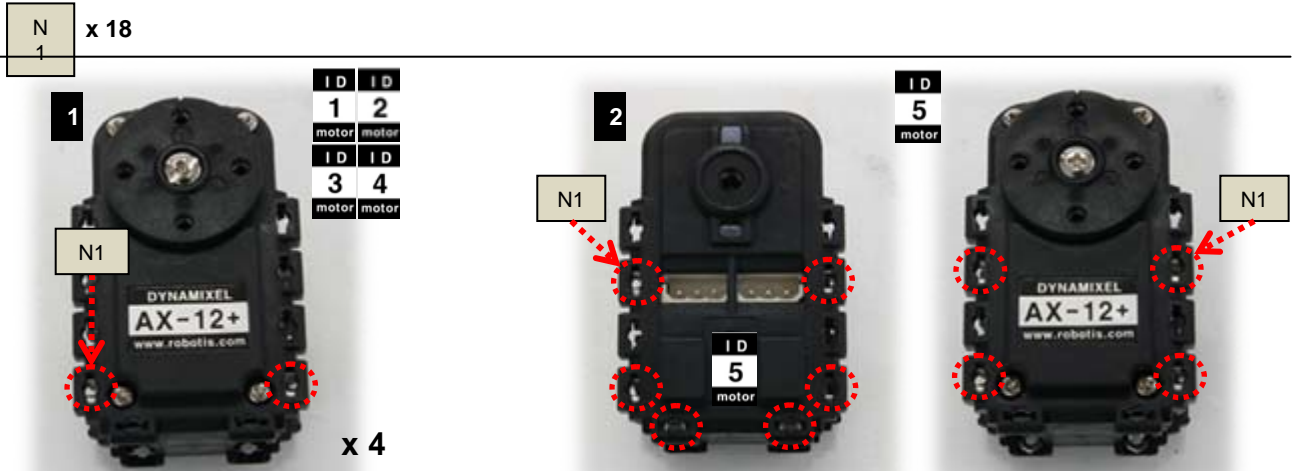
## Tips!

- I. Always assign ID numbers to the actuators before assembly. Robotis recommends you assign ID's 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 Excavator – Getting Started

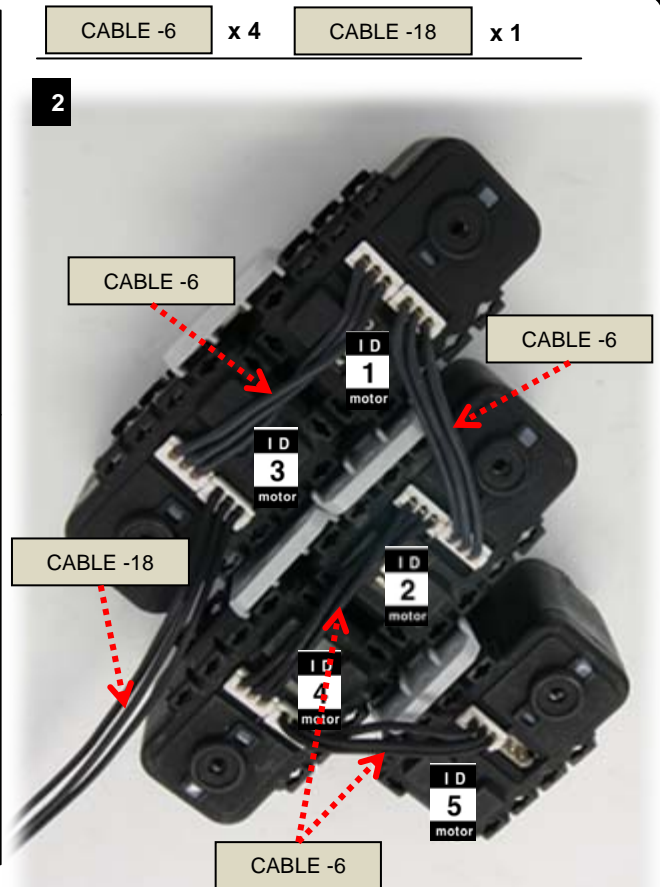
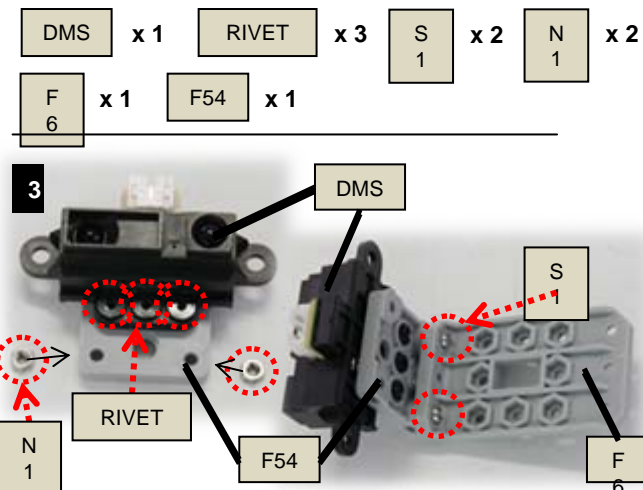
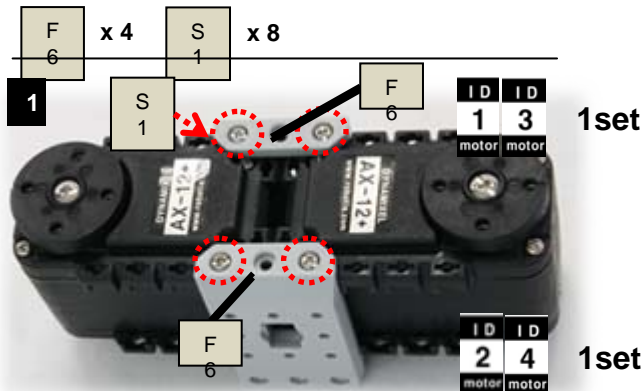
## STEP 1

Insert N1 into ID1; ID2; ID3; ID4; ID5.



## STEP 2

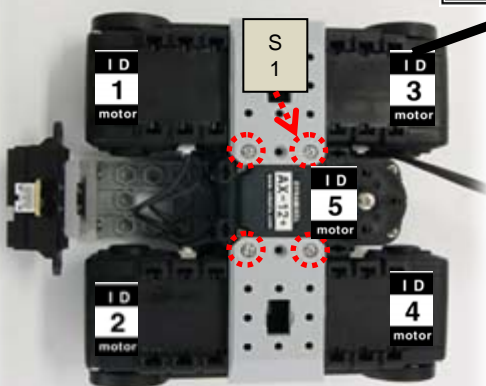
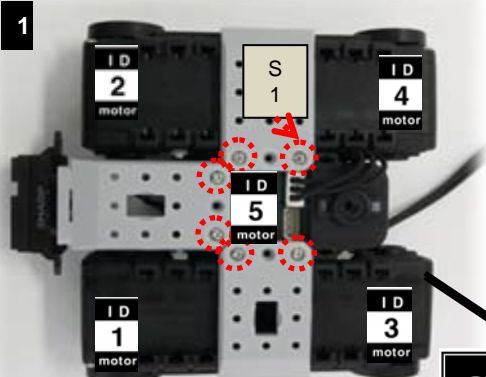
Attach STEP①, F6, F54, and DMS together.  
With 4 CABLE-6 connect ID4 to ID5; ID2 to ID4; ID1 to ID2; ID1 to ID3.  
Connect ID 3 with CABLE-18.



## STEP 3

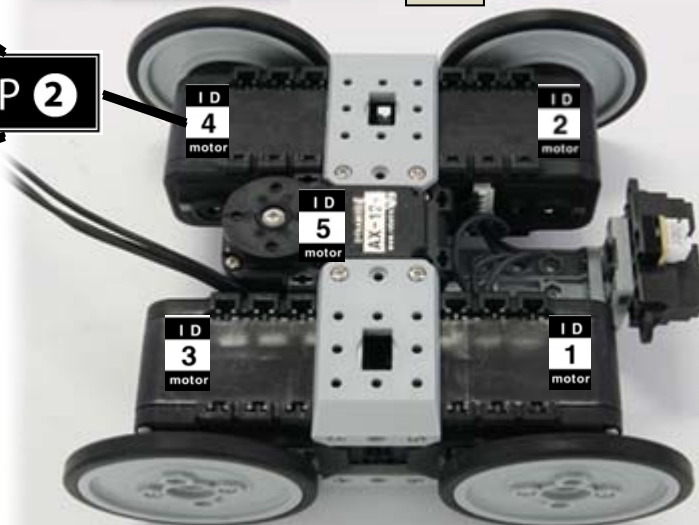
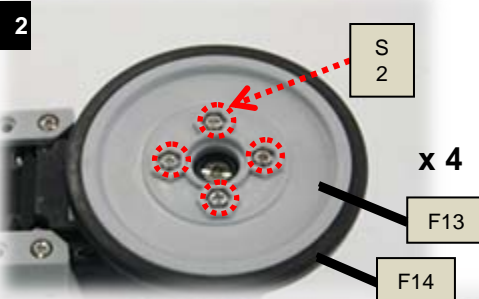
Attach STEP②, F13, and F14 together.

S 1 x 10



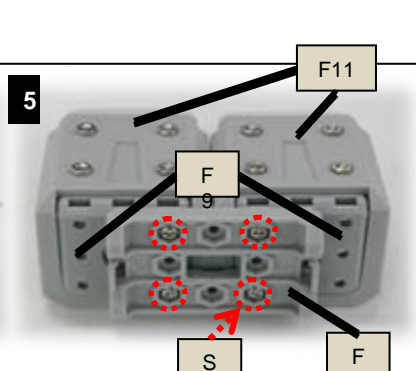
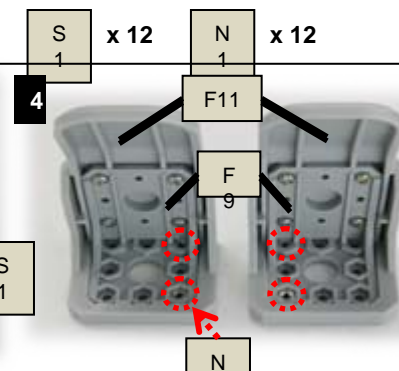
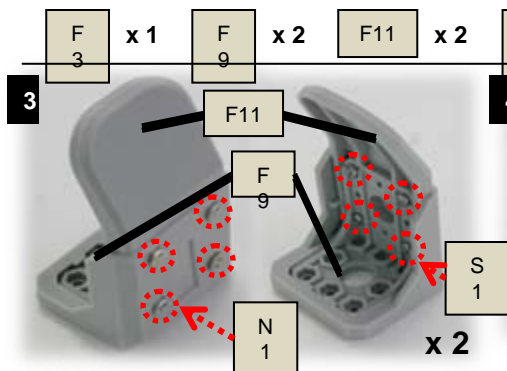
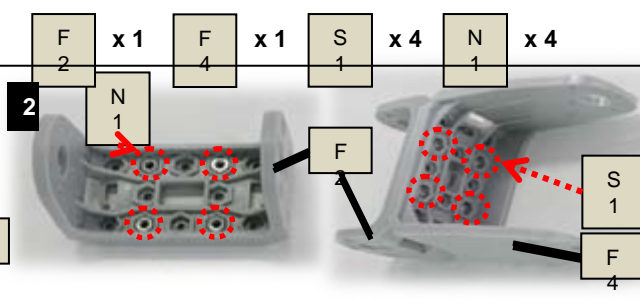
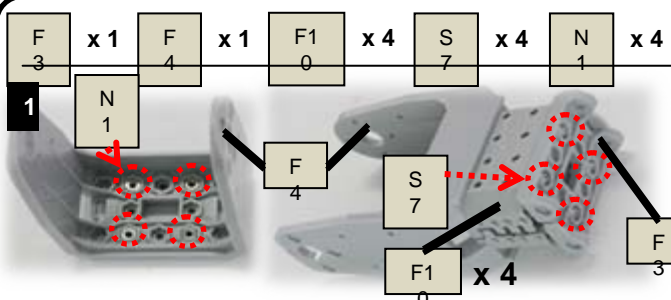
## STEP 2

S 2 x 16 F13 x 4 F14 x 4



## STEP 4

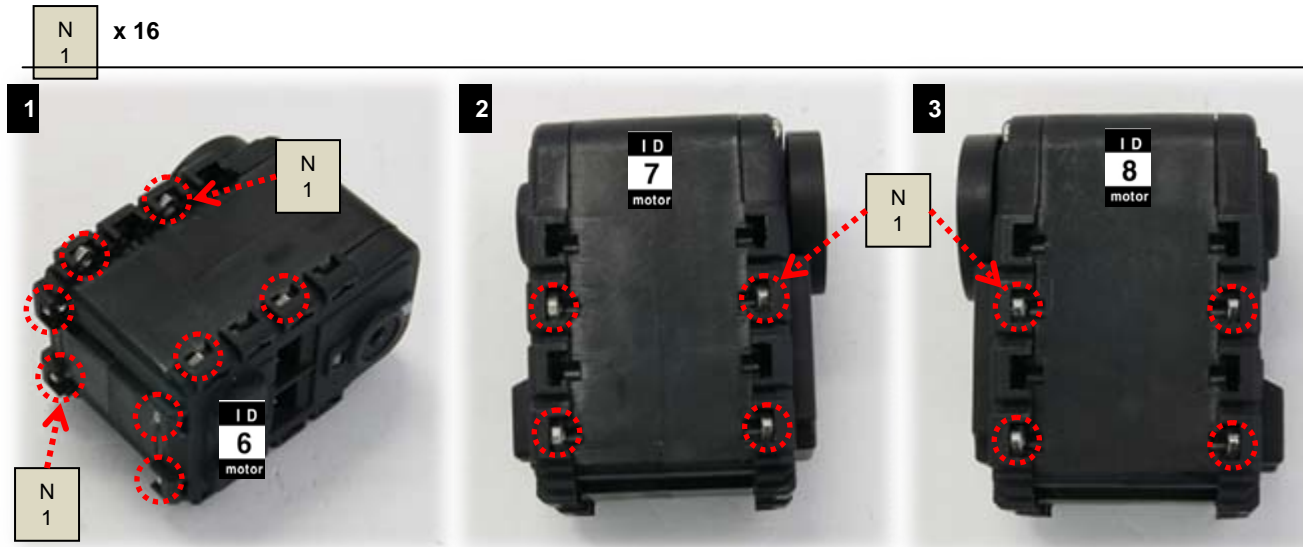
Attach F3, F4, and F10 together. Attach F2 to F4.  
Attach F3, F9, and F11 together.





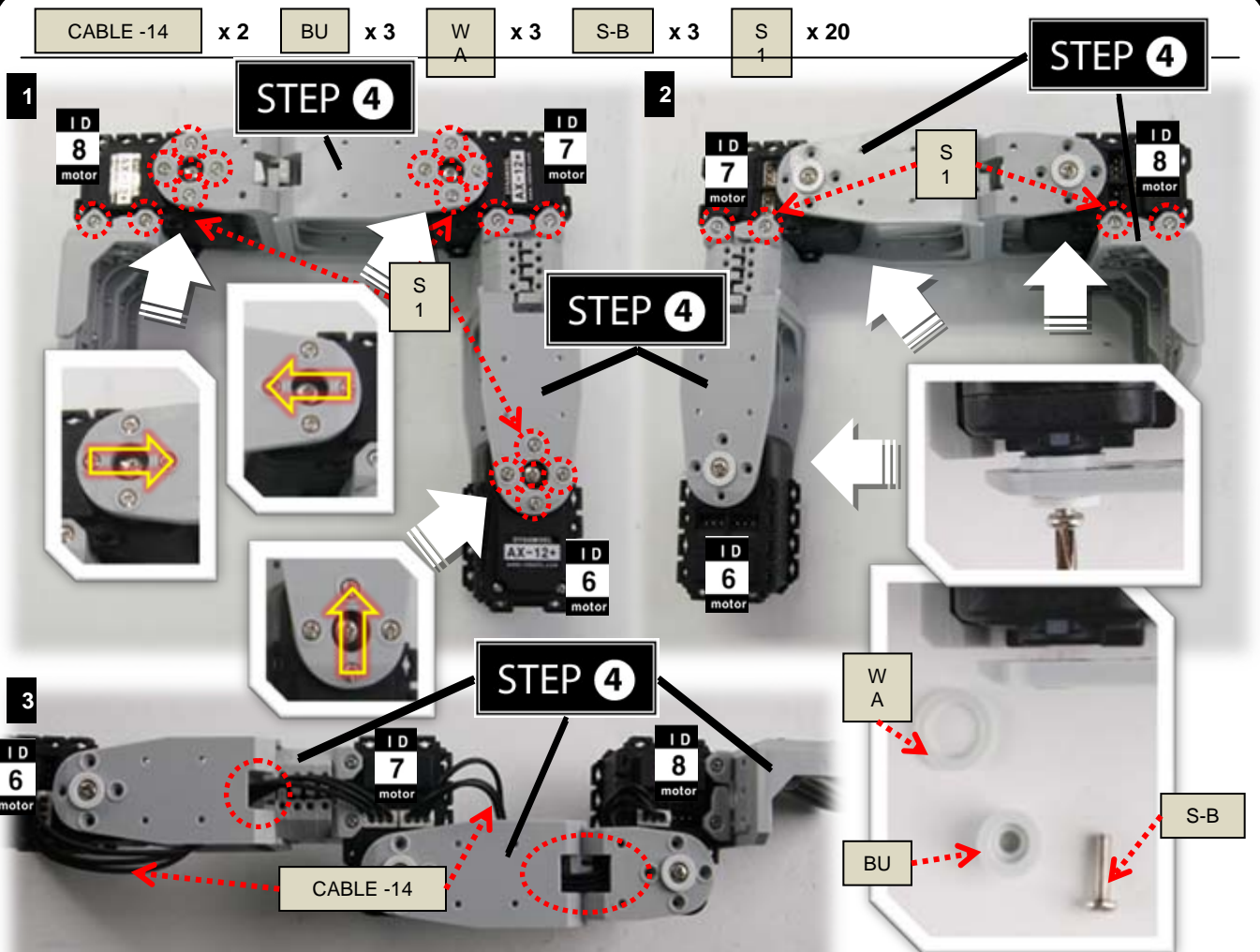
## STEP 5

Insert N1 into ID6; ID7; ID8.



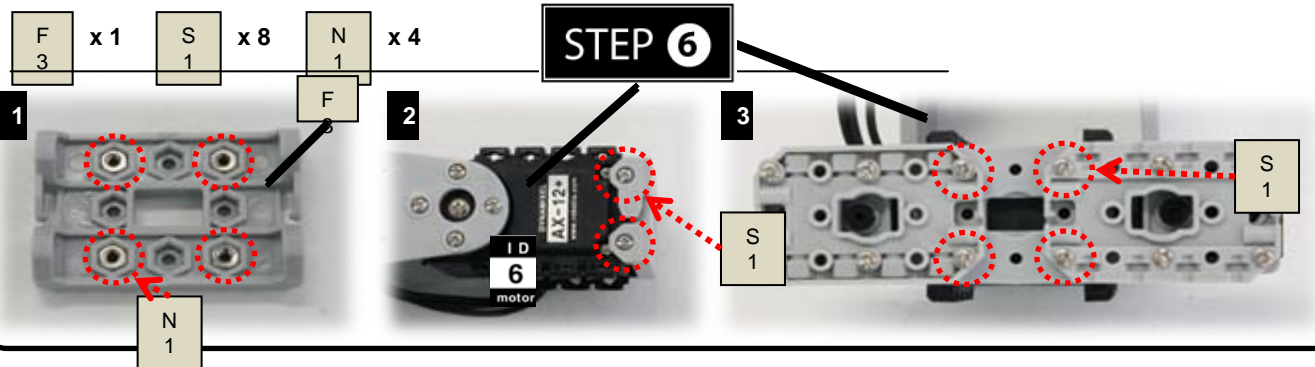
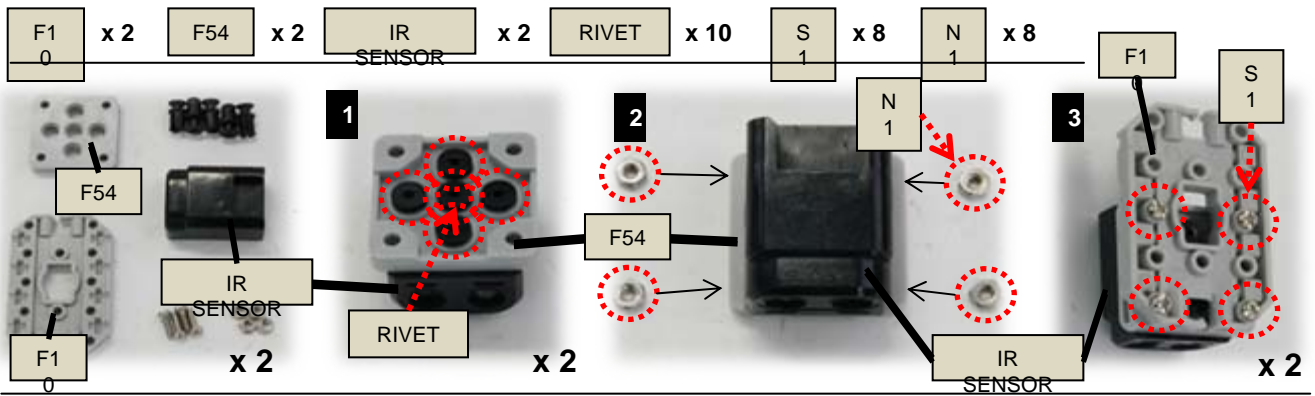
## STEP 6

Attach STEP④ to STEP⑤. (Do not misalign horn position.)  
With CABLE-14 connect ID6 to ID7; ID7 to ID8.



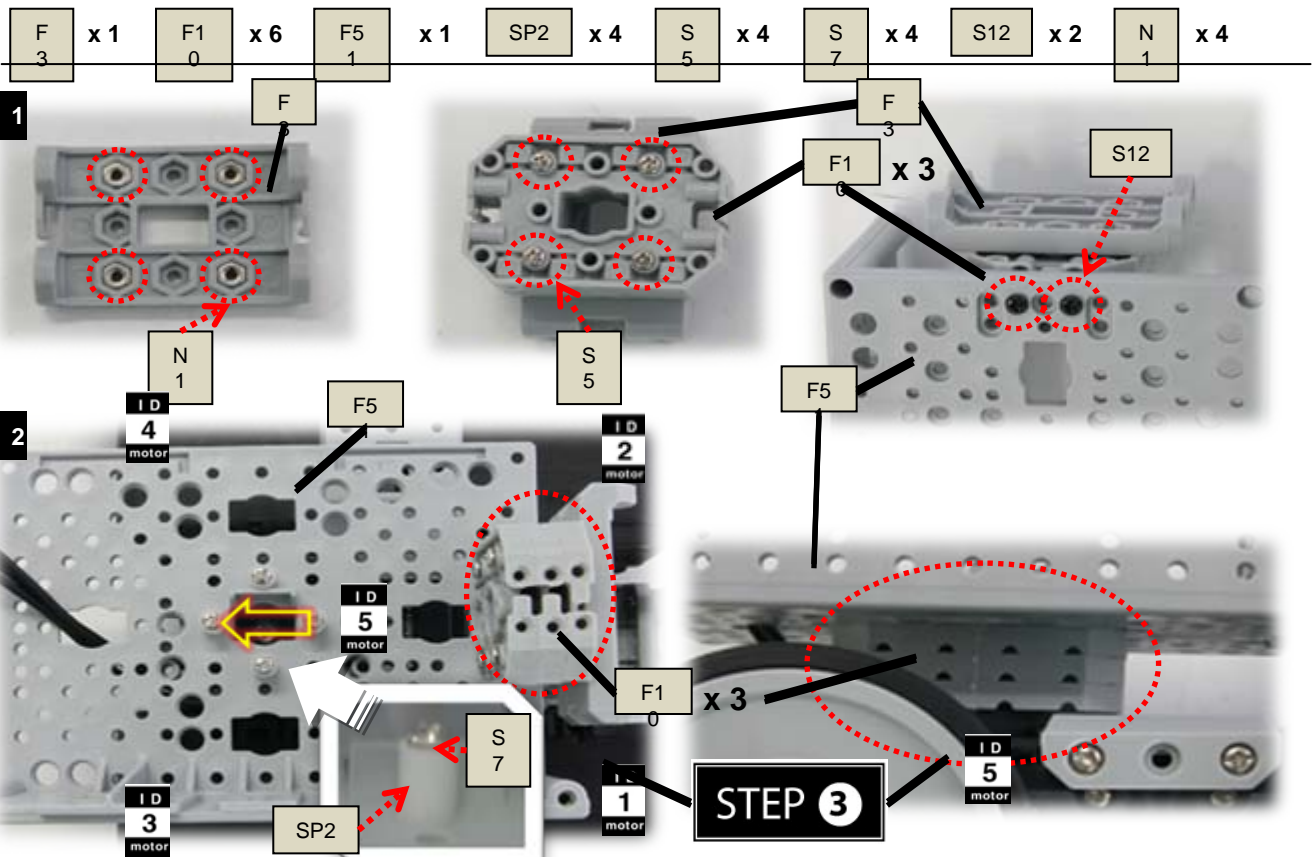
## STEP 7

Attach STEP⑥, F10, F54, and IR SENSOR together.



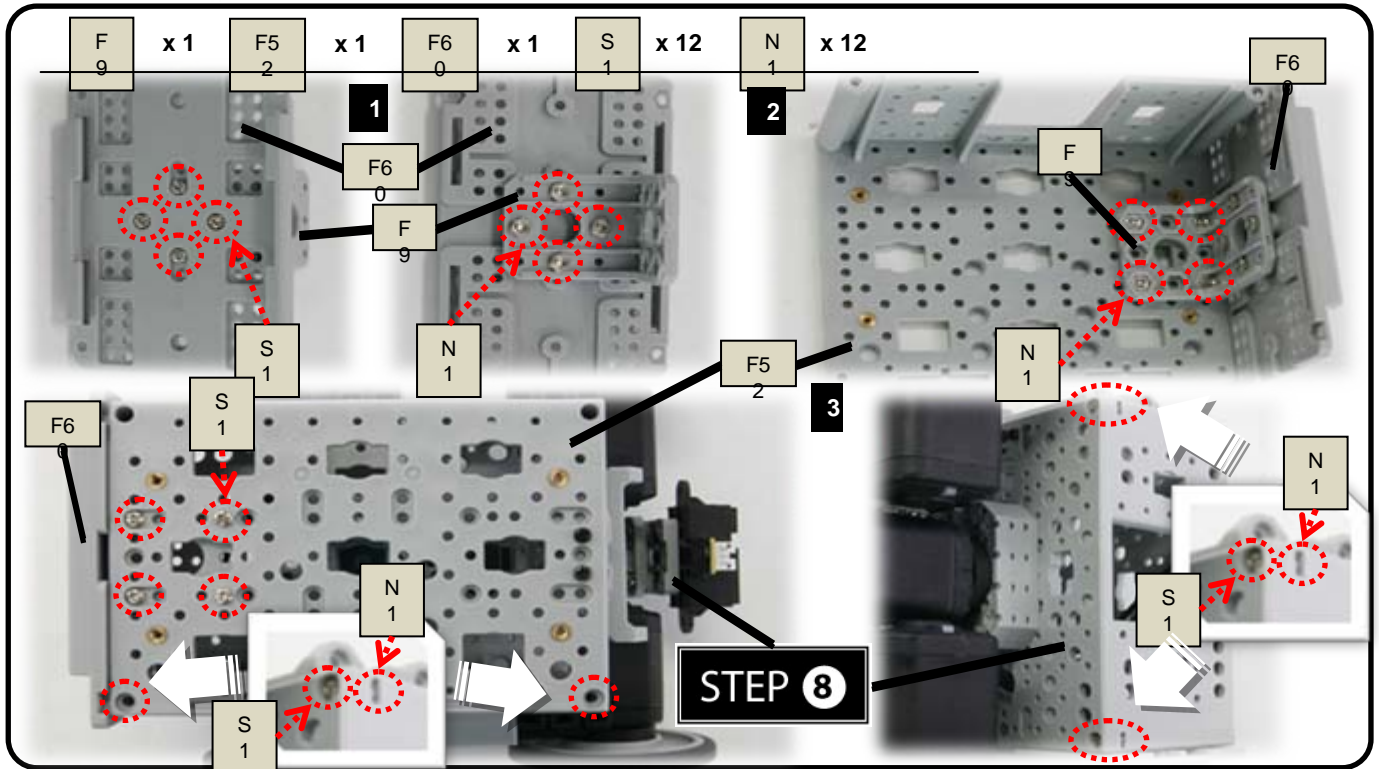
## STEP 8

Attach STEP③, F3, F10, and F51 together. (Do not misalign horn position.)



## STEP 9

Attach STEP⑧, F9, F52, and F60 together.



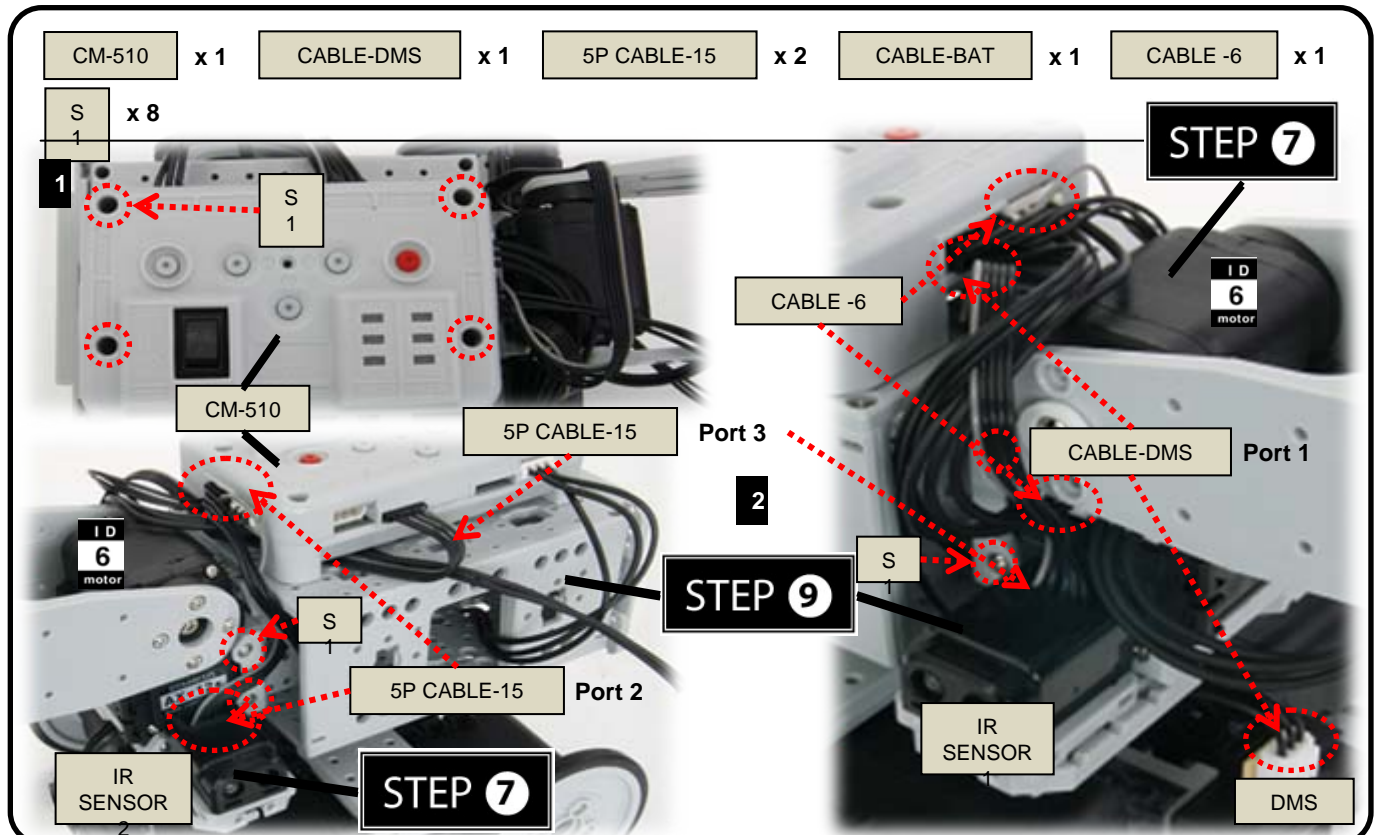
## STEP 10

Attach STEP⑦, STEP⑨, and CM-510 together.

With 2 5P CABLE-15:

Connect IR SENSOR1 to Port 3 of CM-510; IR SENSOR2 to Port 2 of CM-510.

Connect DMS to Port 1 of CM-510 with CABLE-DMS.





## STEP 11

Connect the battery through the battery cable.

BATTERY

x 1

1

BATTERY

2

3





# 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.

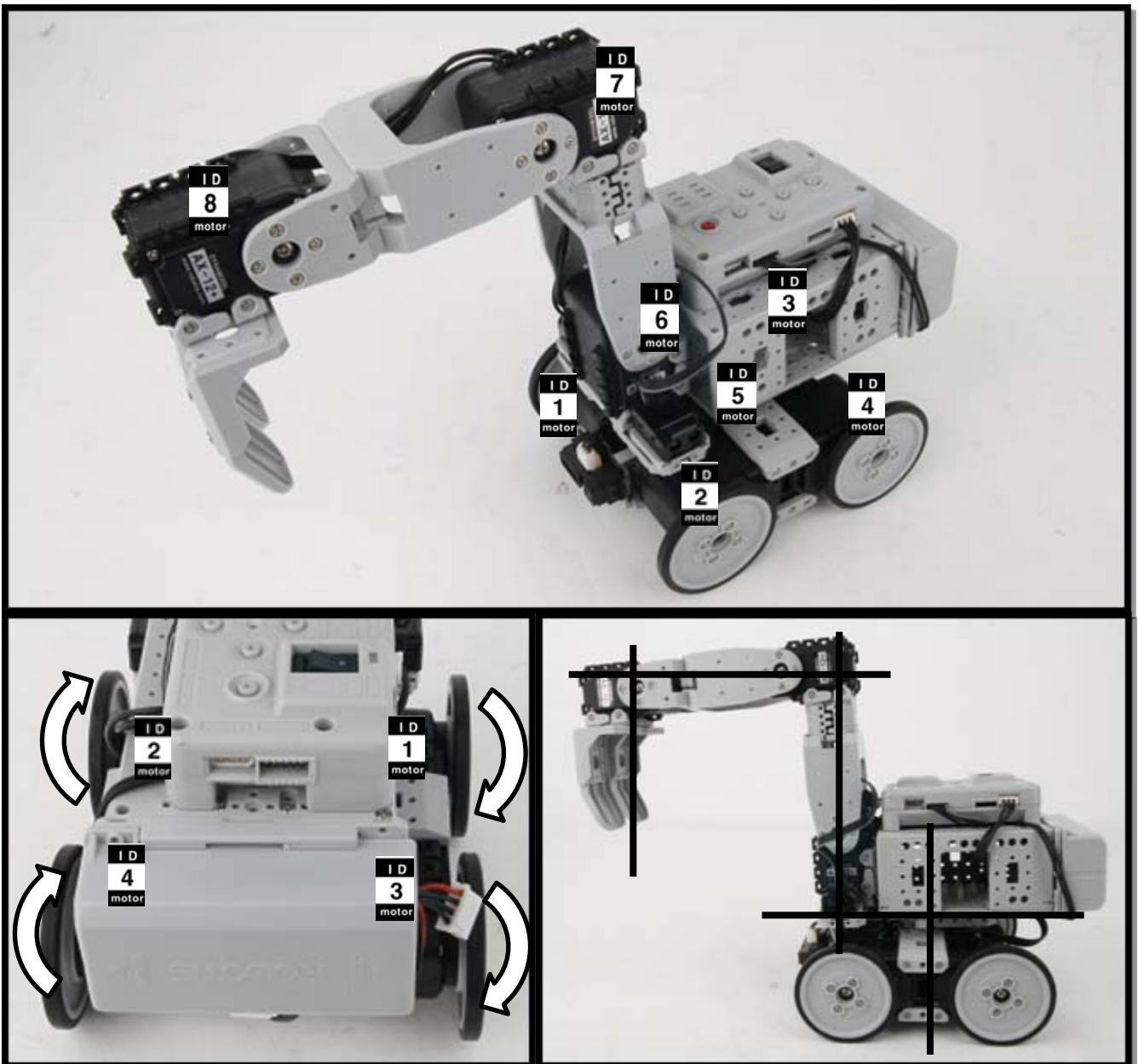
The selected actuator's LED lights up and goes to its initial position.

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.

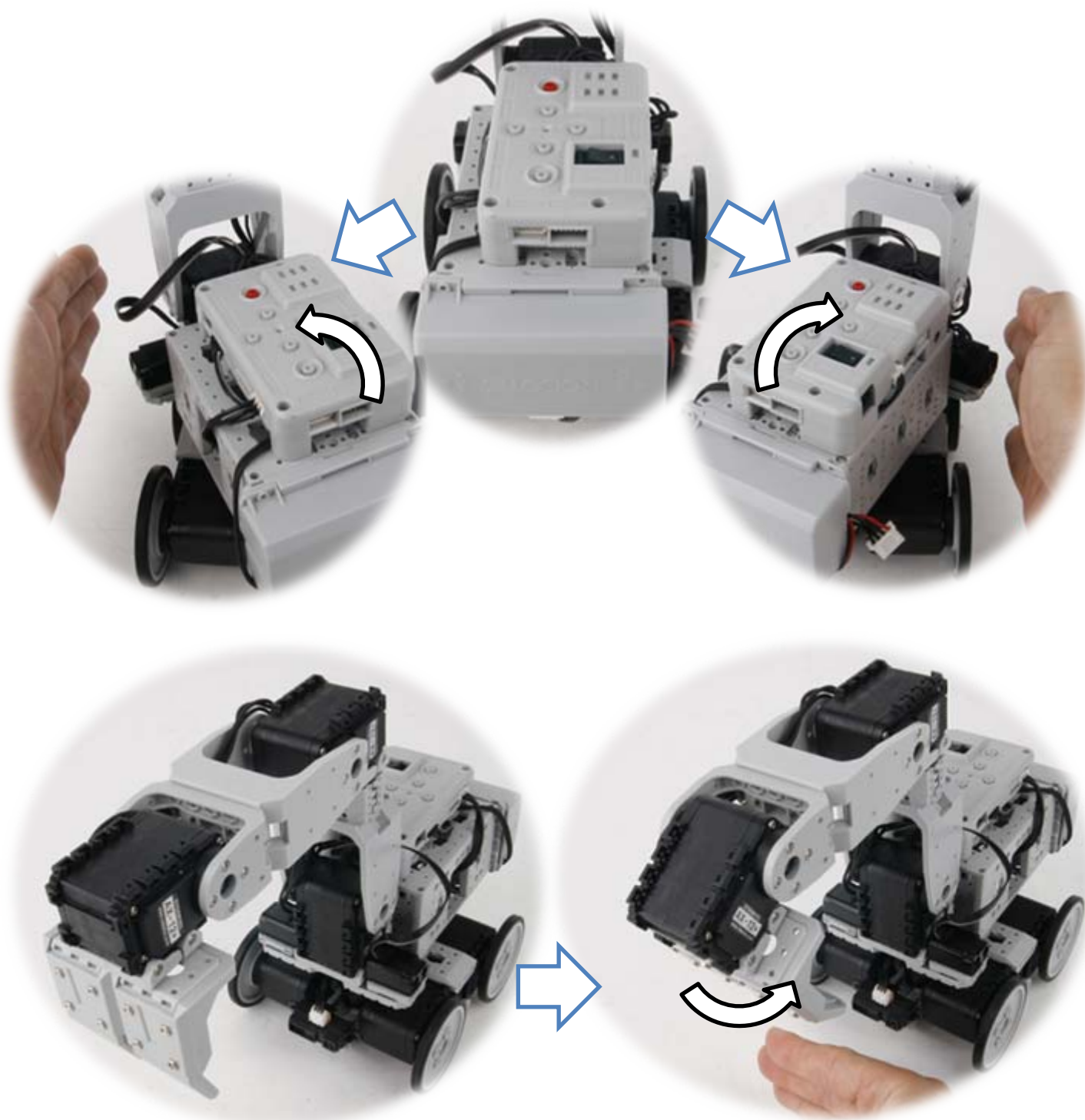
Although the LED may lit, if there is no power then check the wiring on the actuator.



## 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 and press **START**. The robot will play.