BIOLOID

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 its 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.)
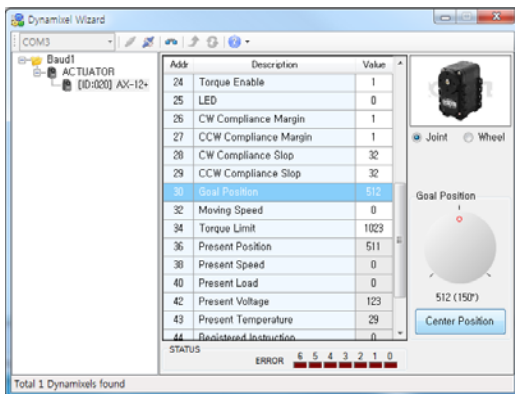
Dynamixel Wizard

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.
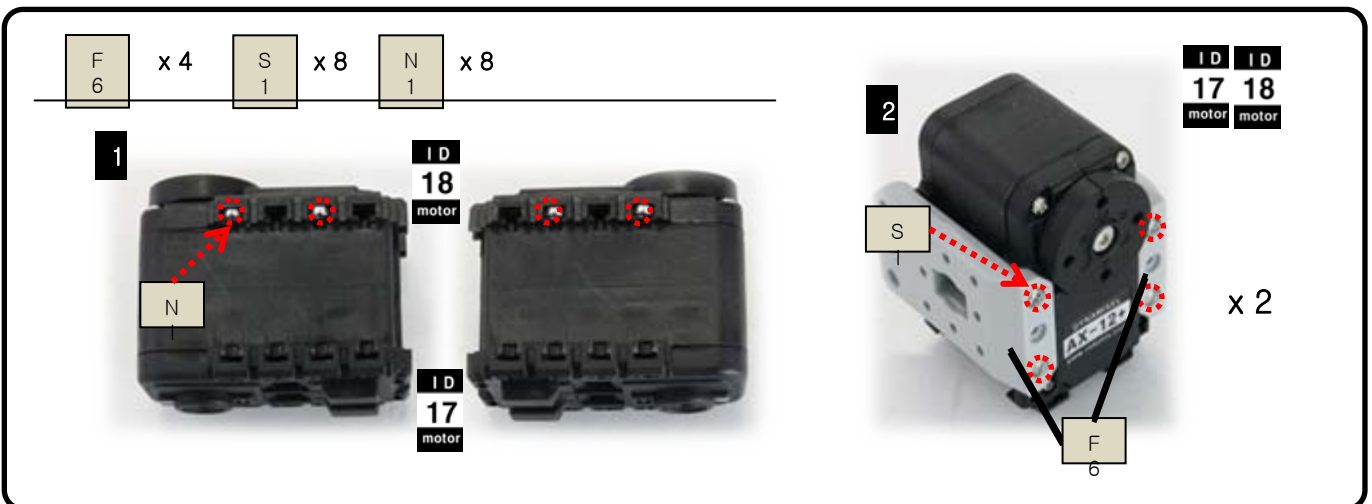
Bioloid Biped Walking Robot – Getting Started

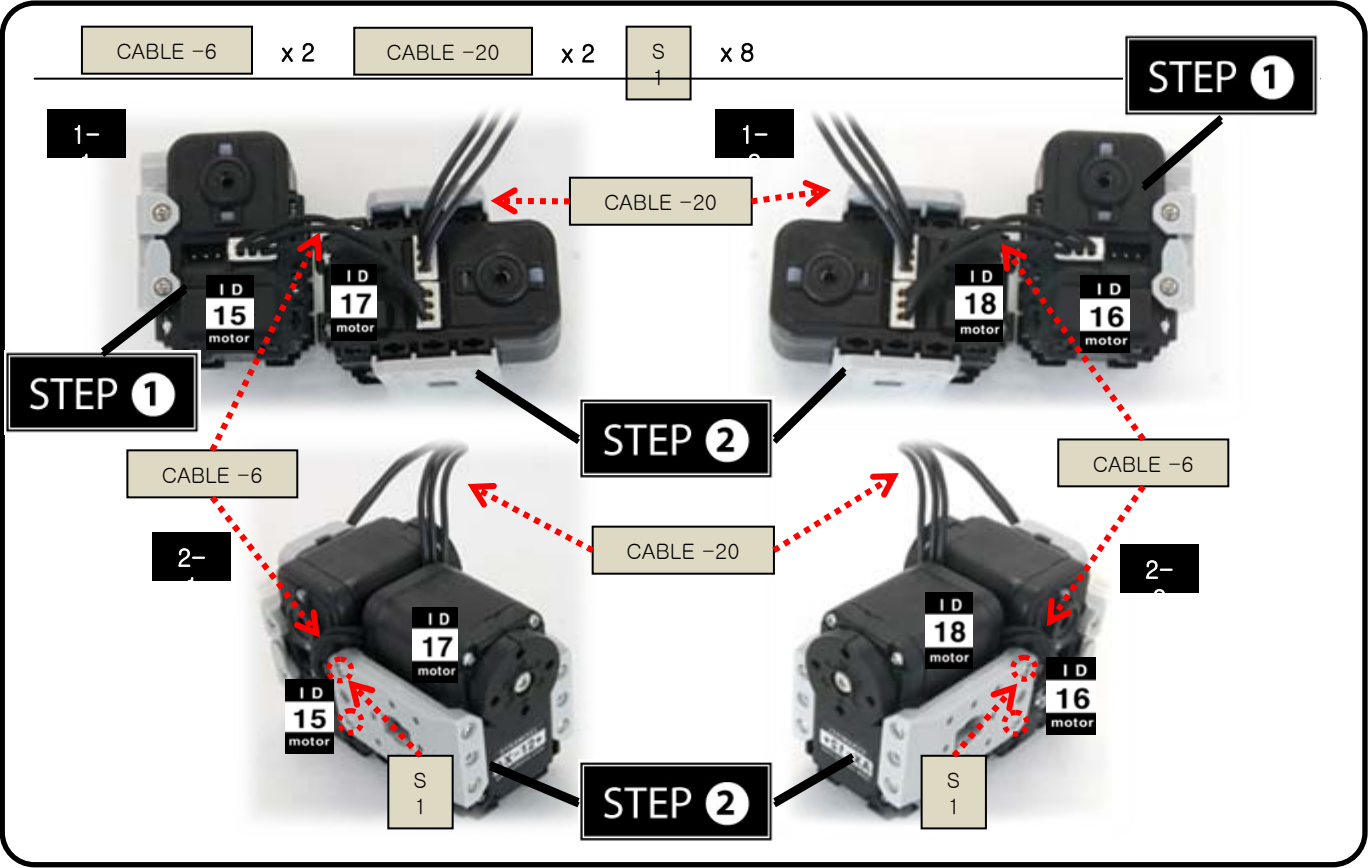Attach one F7 to ID15; another F7 to ID16. (Attention to direction.)

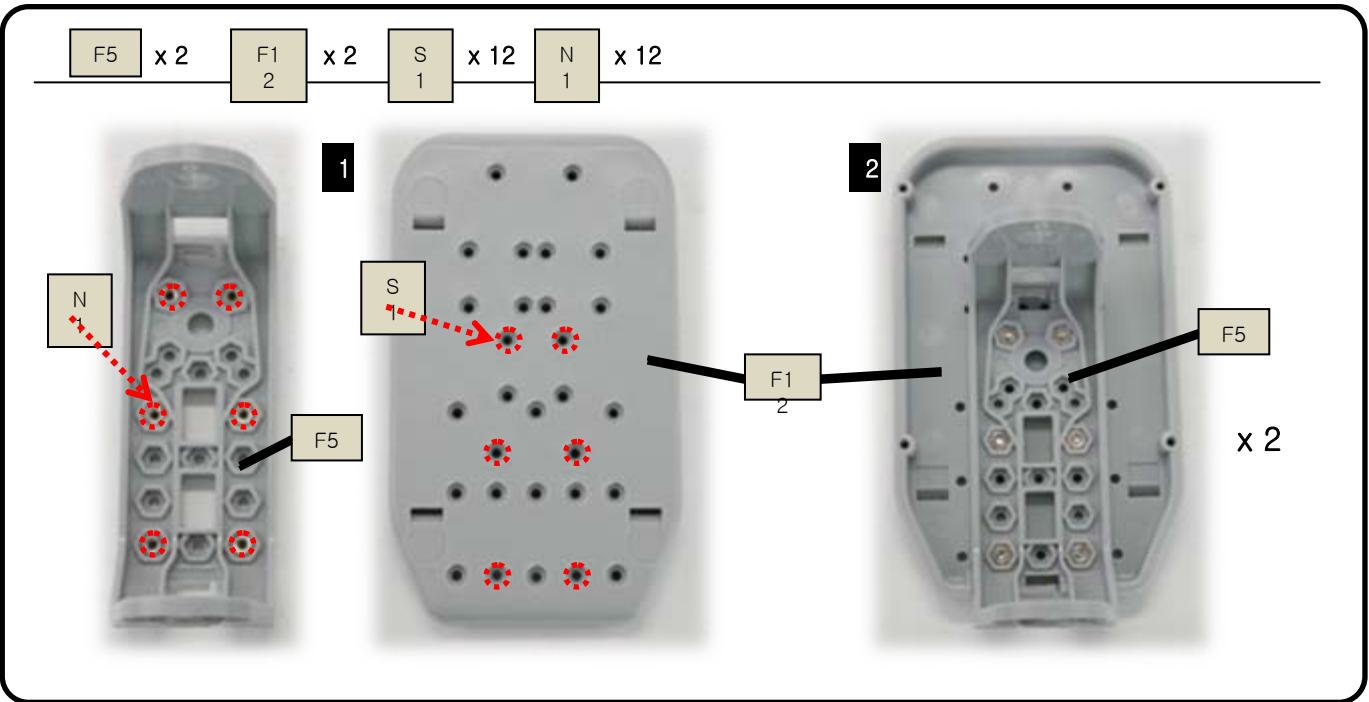| F7 | x 2 | N2 | x 2 | N1 | x 16 | S1 | x 8 |
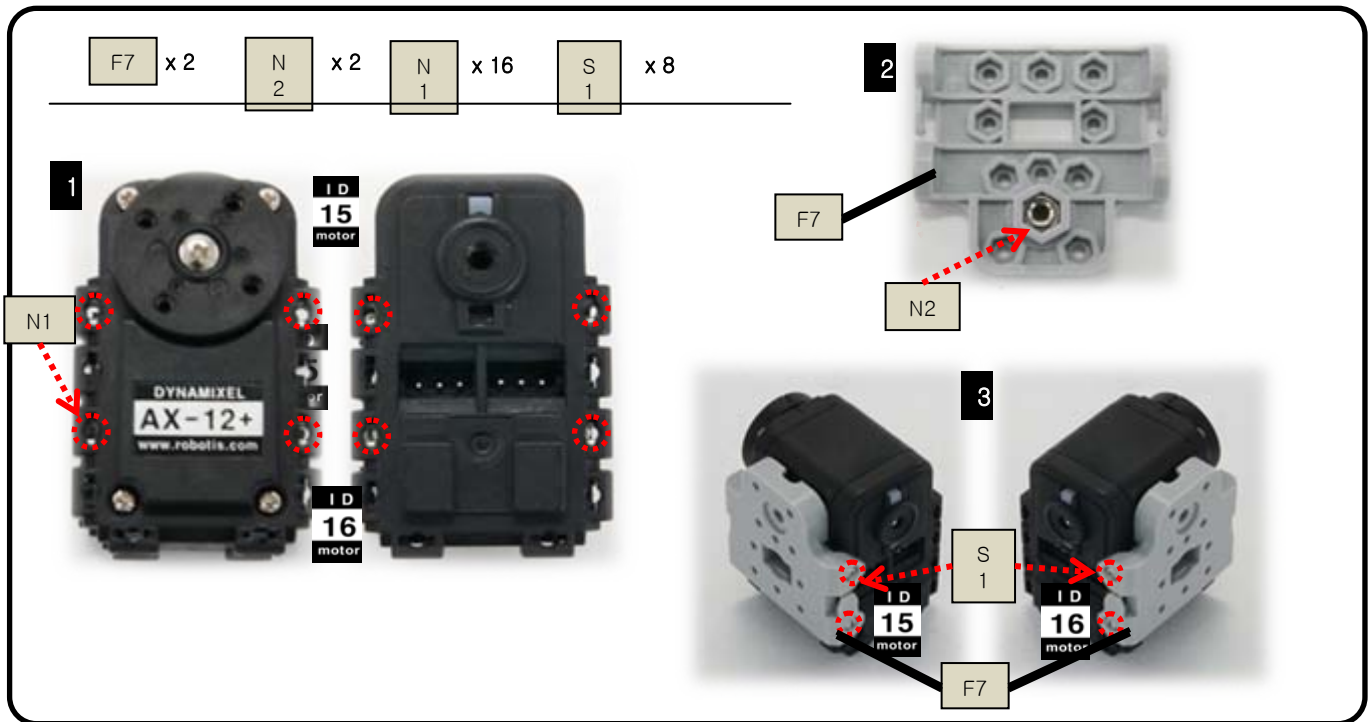
Attach ID17, ID18, and F6 together.

| F6 | x 4 | S1 | x 8 | N1 | x 8 |

STEP ③

With CABLE-6, connect ID15 to ID17; ID16 to ID18.
Connect ID17 to ID18 with CABLE-20.
Attach STEP① to STEP②.

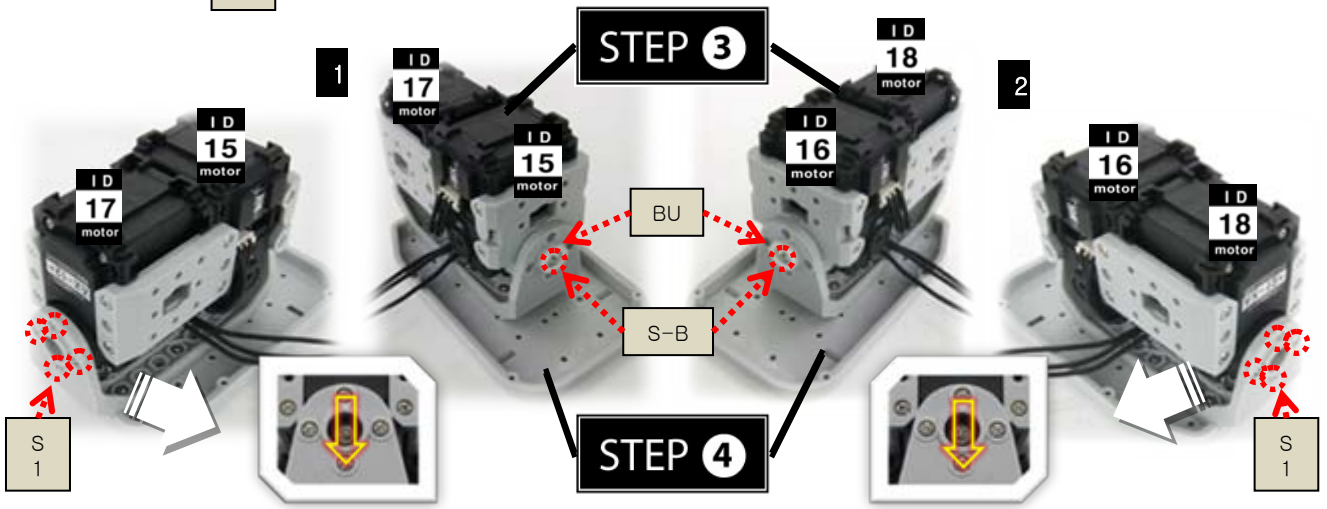| CABLE -6 | x 2 | CABLE -20 | x 2 | S 1 | x 8 |

STEP ①

1-1

1-2

CABLE -20

I D **15** motor

I D **17** motor

I D **18** motor

I D **16** motor

STEP ①

STEP ②

CABLE -6

CABLE -6

2-1

2-2

CABLE -20

I D **17** motor

I D **18** motor

I D **15** motor

I D **16** motor

S 1

S 1

STEP ②

STEP ④

Attach F5 to F12. (Make 2 sets.)

| F5 | x 2 | F1 2 | x 2 | S 1 | x 12 | N 1 | x 12 |

1

2

N 1

S 1

F1 2

F5

F5

x 2

STEP **5**   Attach STEP③ to STEP④. (Do not misalign horn position.)

| BU | x 2 | S 1 | x 8 | S–B | x 2 |

1

STEP **3**

ID 17 motor

ID 15 motor

ID 15 motor

ID 16 motor

ID 18 motor

2

ID 16 motor

ID 18 motor

ID 17 motor

BU

S–B

S 1

STEP **4**

S 1

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

| F 3 | x 2 | F4 | x 2 | F1 0 | x 2 | S 3 | x 8 | N 1 | x 8 |

1

2

S 3

F 3

F4

F 3

N 1

F1 0

x 2
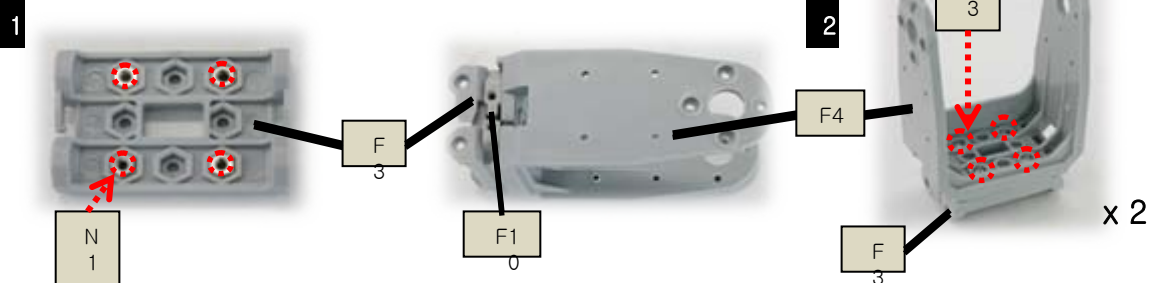
STEP **7**   Attach STEP⑥, ID13 and ID14 together.

| S 1 | x 8 | N 1 | x 8 |

STEP **6**

1–1

N 1

1–2

2–1

N 1

2–2

S 1

S 1

ID 13 motor

ID 14 motor

AX-12+

AX-12+

5
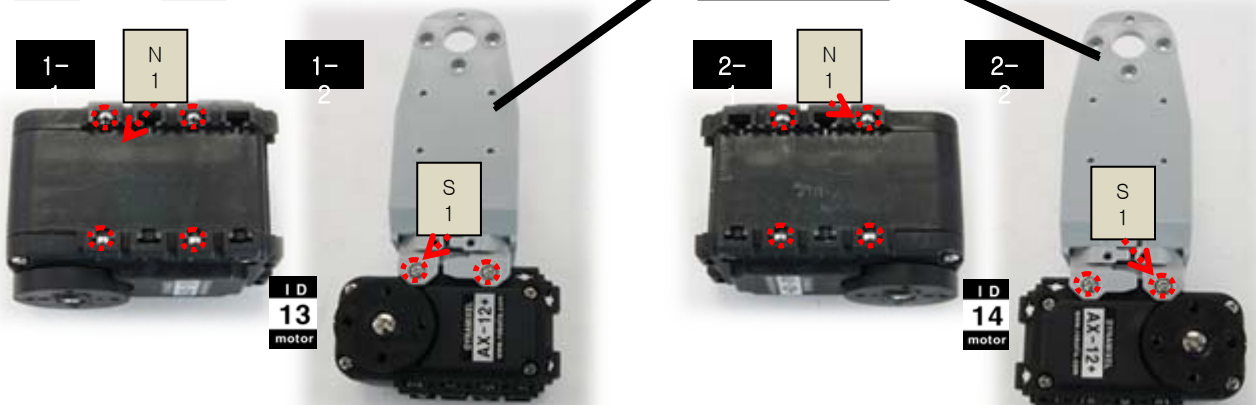
STEP 8

Attach ID11, ID12, F3, and F55 together. (Attention to screw position.)

F3	x 2	F55	x 4	S1	x 8	N1	x 16

1

F5
5

F3

x 2

S1

ID 11 motor

2

N1

N1

ID 11 motor

ID 12 motor

3

F3

ID 12 motor

S1
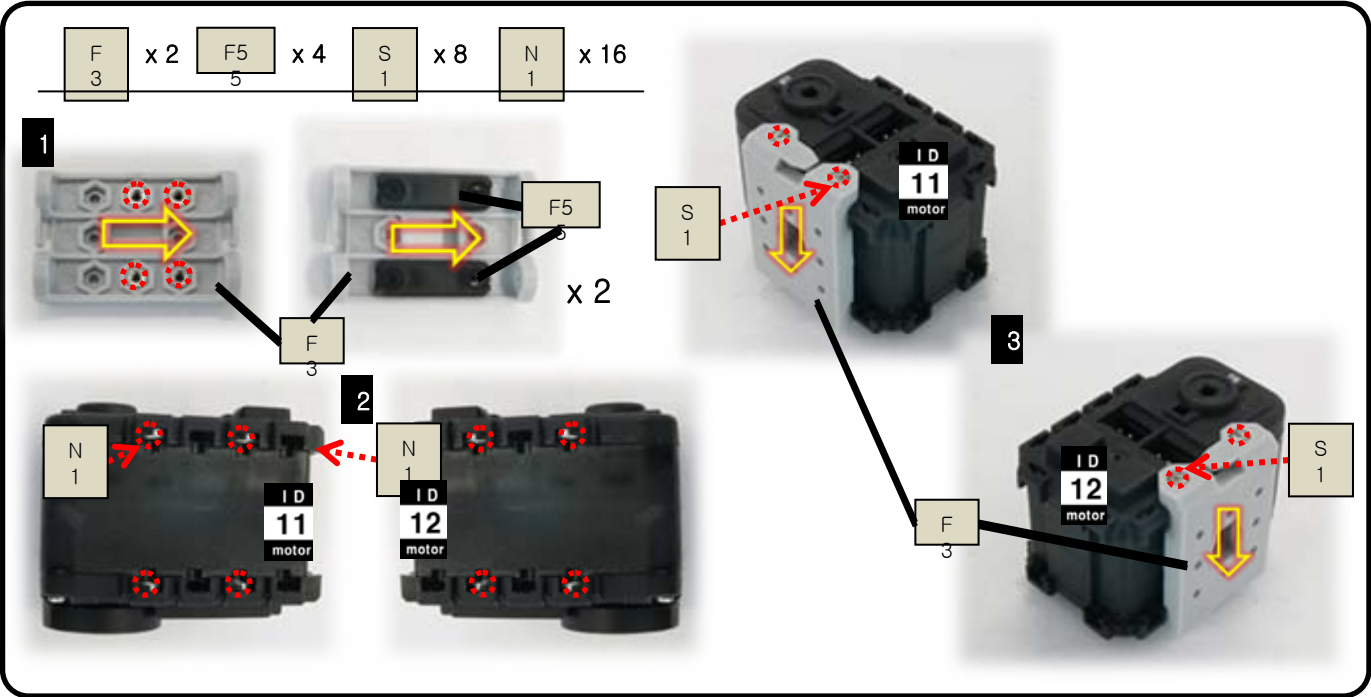
STEP 9

Attach F1 to F4. (Make 2 sets.)

F1	x 2	F4	x 2	S1	x 8	N1	x 8

1

N1

2

F1

F4

S1

x 2

STEP ❿
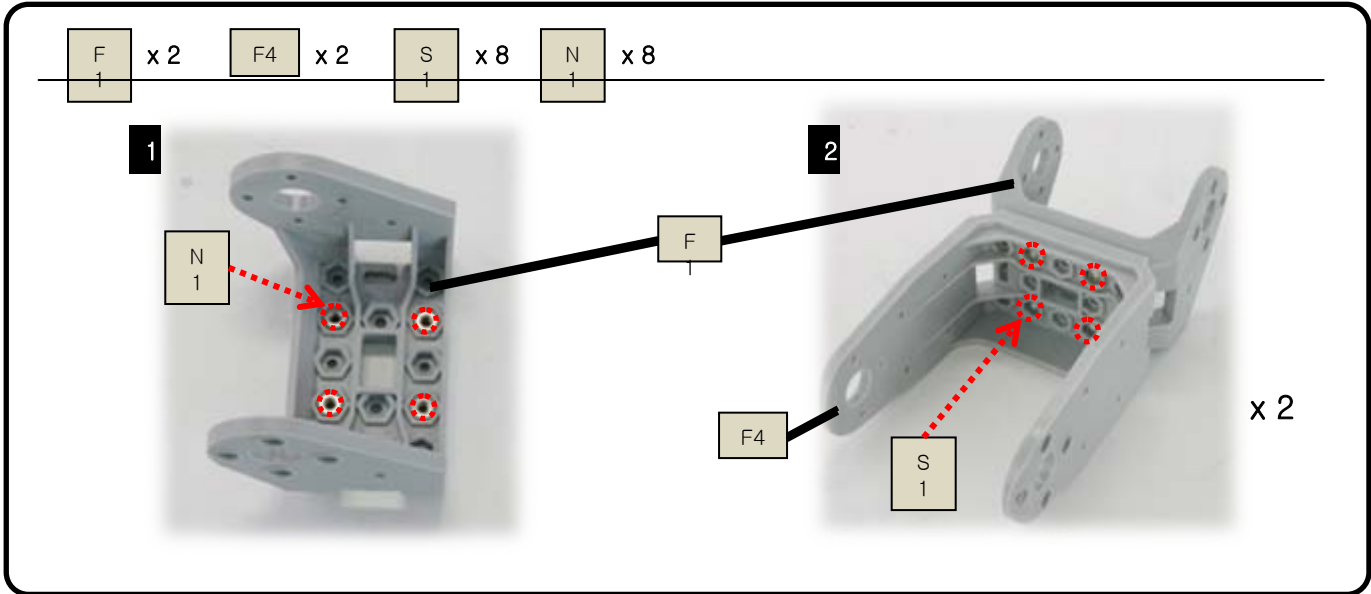
Attach STEP⑤, STEP⑦, STEP⑧, and STEP⑨ together.
(Do not misalign horn position.)

BU x 3   W A x 3   S-B x 3   S 1 x 12

STEP ❽
STEP ❾

ID 11 motor
ID 11 motor
ID 13 motor
ID 17 motor
ID 13 motor
ID 17 motor
ID 15 motor
ID 15 motor

S 1

W A
BU
S-B

STEP ❼
STEP ❺

BU x 3   W A x 3   S-B x 3   S 1 x 12

STEP ❽

ID 12 motor
ID 12 motor
ID 18 motor
ID 14 motor
ID 14 motor
ID 18 motor
ID 16 motor
ID 16 motor

S 1

W A
BU
S-B

STEP ❾
STEP ❼
STEP ❺

7
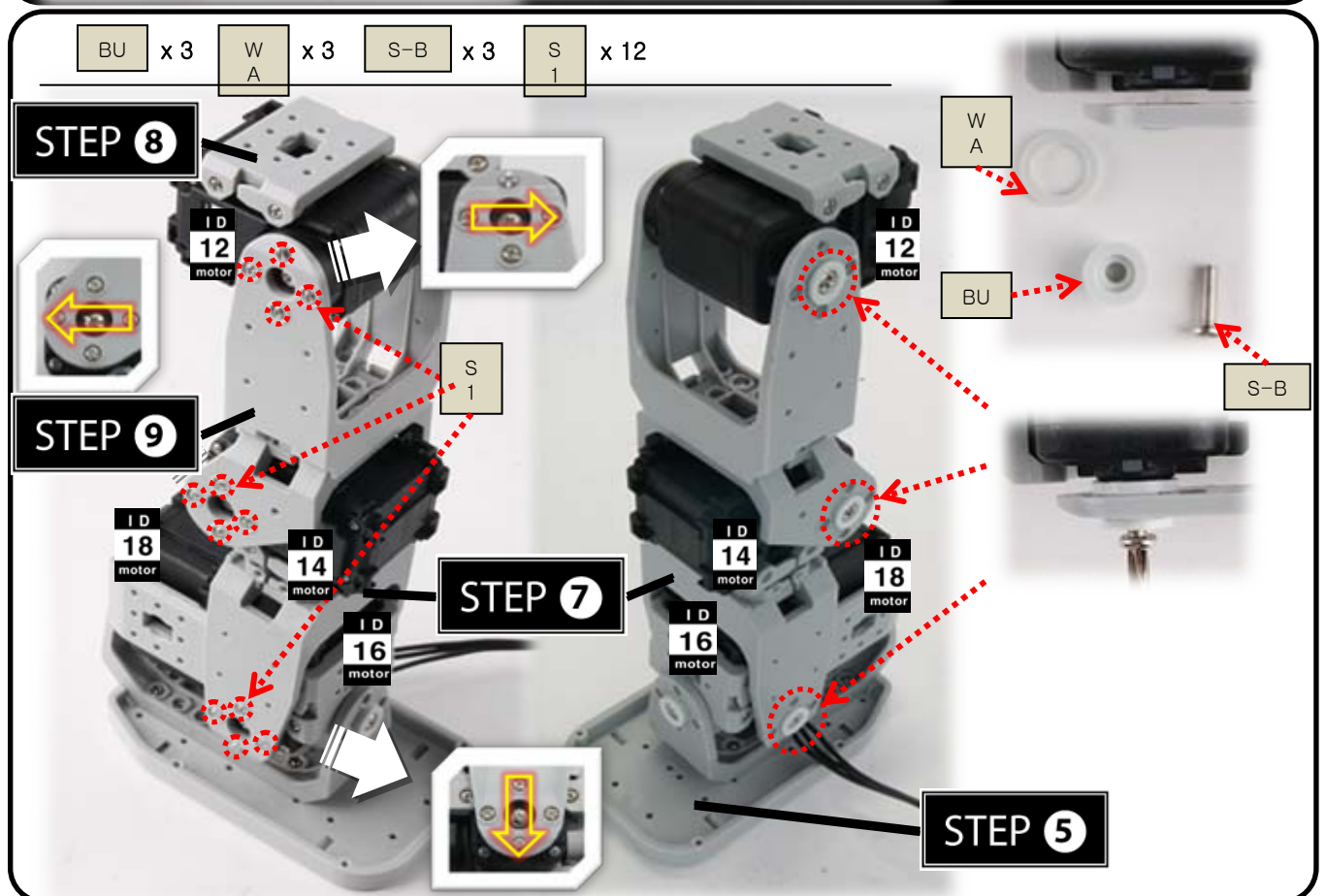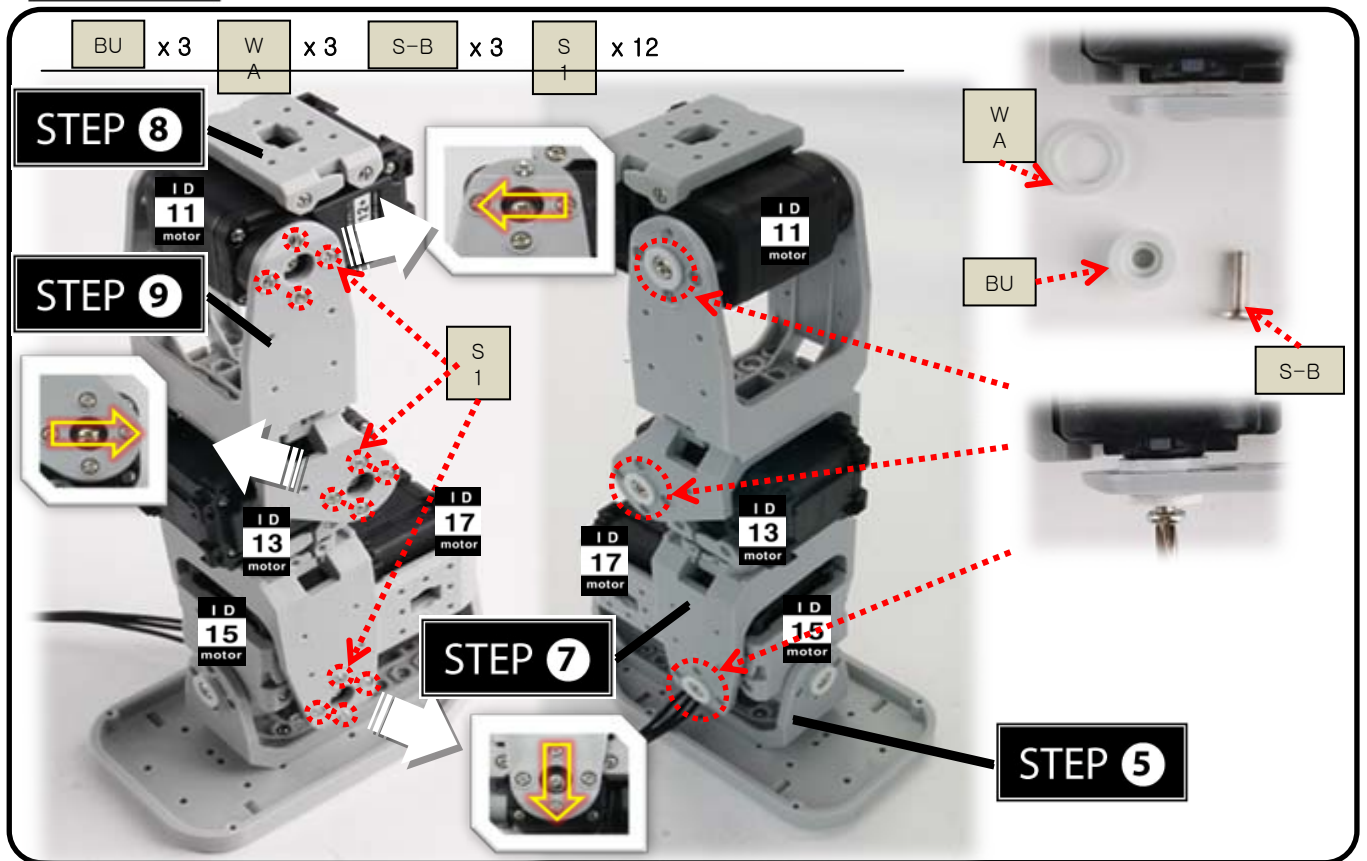
STEP 11 Attach F3, F10, F51, and F60 together.

F3	x 1	F10	x 2	F51	x 1	F60	x 1	S1	x 4	S2	x 4	N1	x 6

F1
0

F3

F6
0

S1

F5
1

N1

F3

F5
1

1

F1
0

F5

S1

F6
0

2

F1
0

S2

F1
0

F5
1
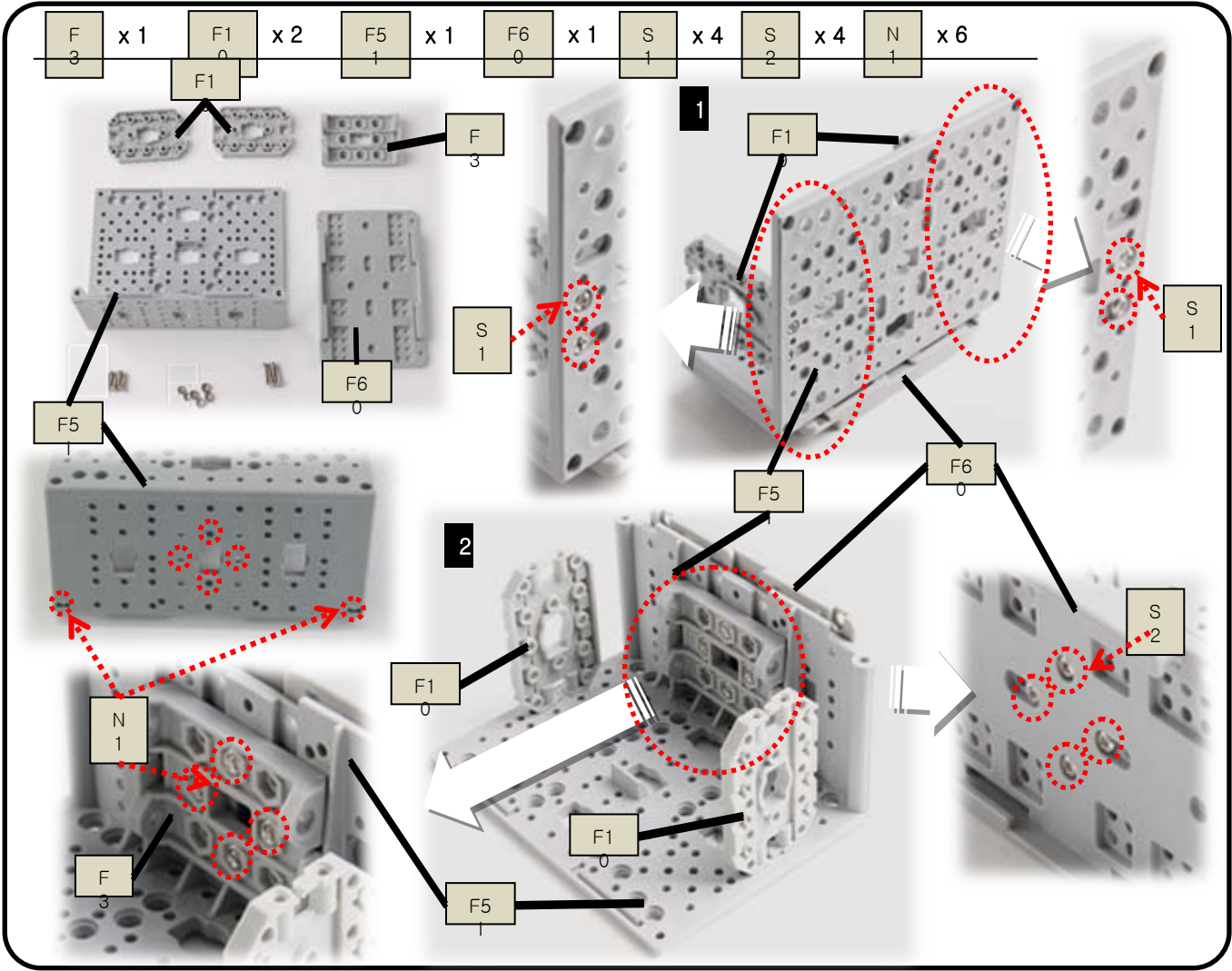
STEP 12 Attach IR SENSOR, DMS, and F54 together.

DMS	x 1	IR SENSOR	x 2	F54	x 3	RIVET	x 11

IR SENSOR

1

RIVET
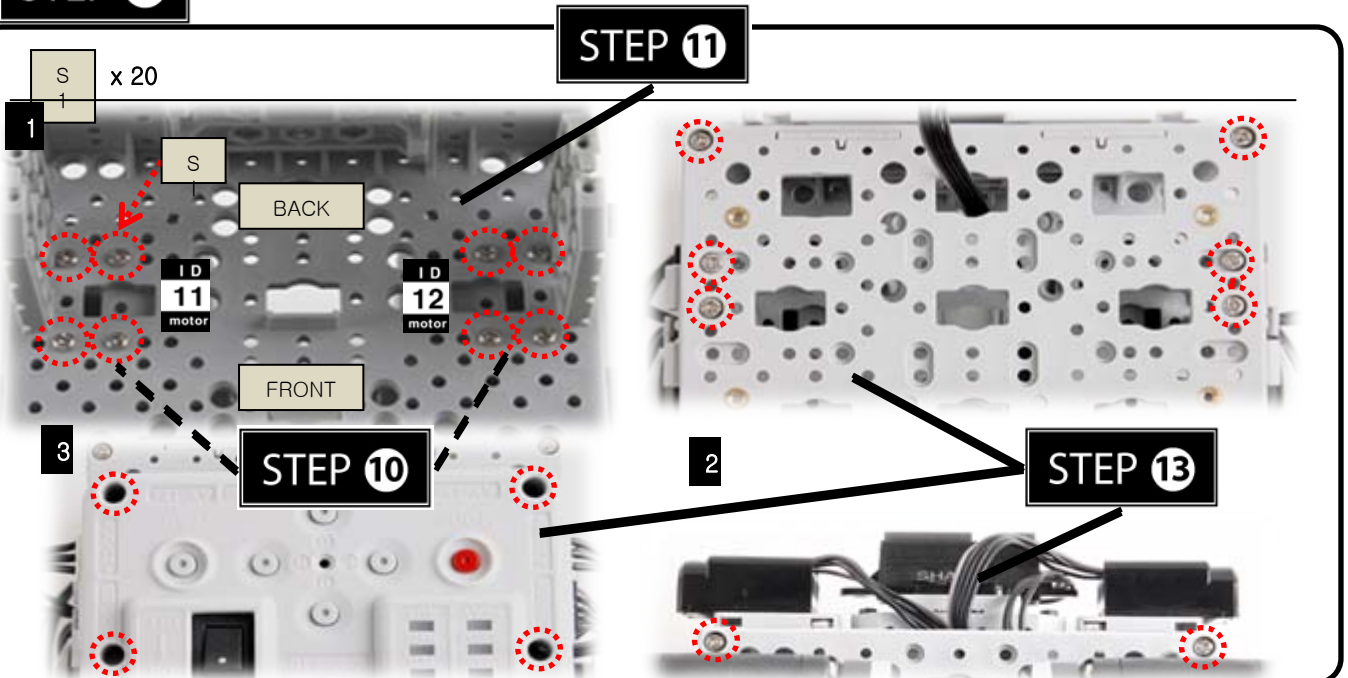
IR SENSOR

2

DMS

RIVET

x 2

F54

F54

F54

F54
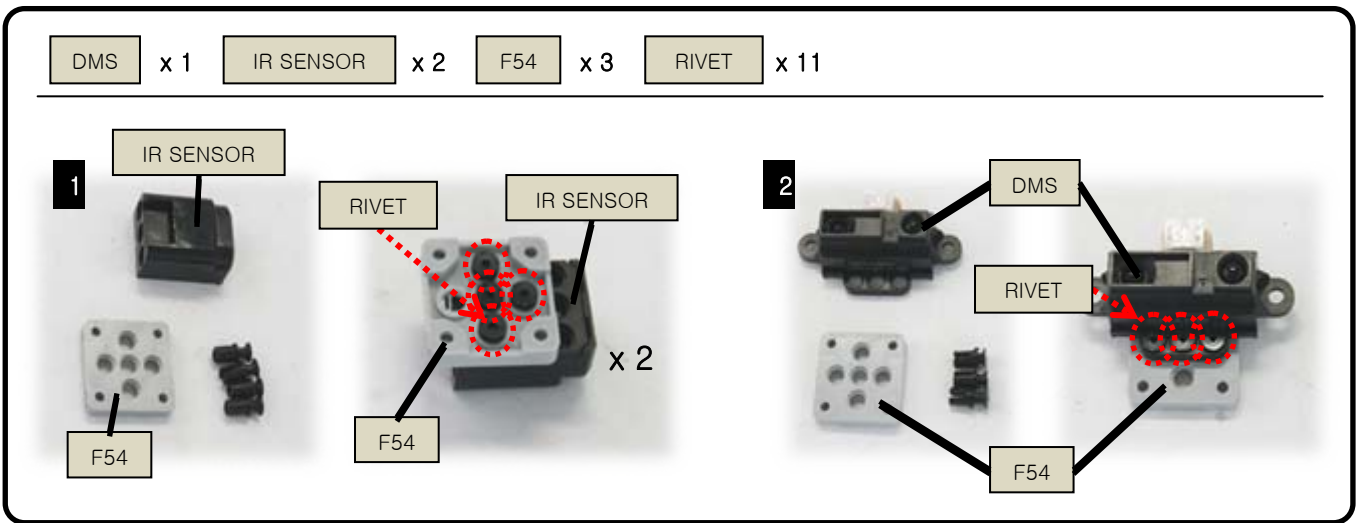
STEP ⑬

Attach STEP⑫, 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
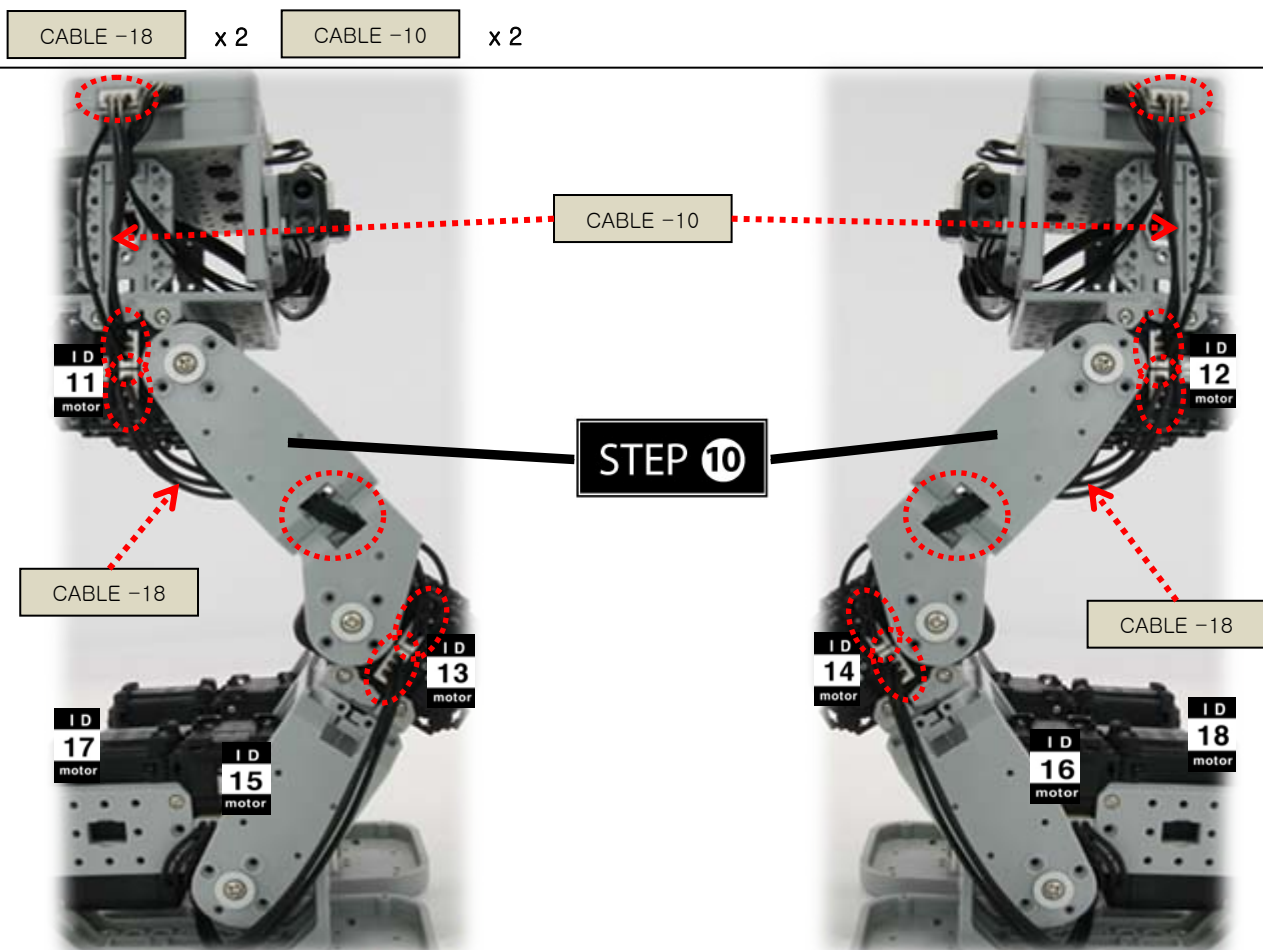DMS to Port 1 of CM-510 with CABLE-DMS.

| CM-510 | x 2 | CABLE-DMS | x 1 | 5P CABLE-15 | x 2 | CABLE-BAT | x 2 | S12 | x 4 |

| F10 | x 1 | F52 | x 1 | S1 | x 4 | S2 | x 4 | N1 | x 10 |

F10

F52

F1

S12

1

2

S1

N1

S2

F5

5P CABLE-15   Port 3

3   5P CABLE-15   Port 3

IR SENSOR1

CM-510

DMS

5P CABLE-15   Port 2

IR SENSOR2

CABLE-DMS   Port 1
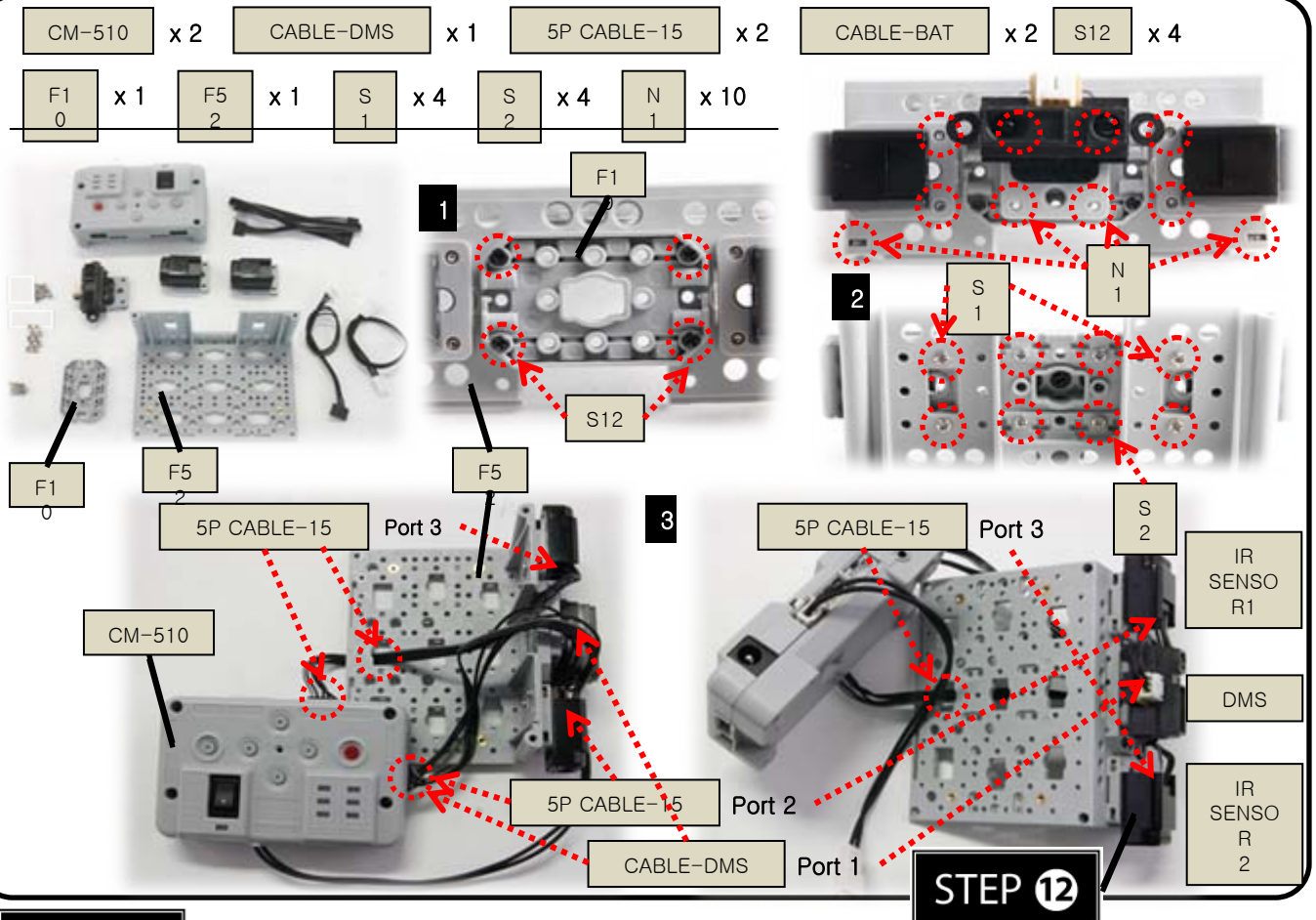
STEP ⑫

STEP ⑭

Attach STEP⑩, STEP⑪, and STEP⑬ together.

STEP ⑪

S1   x 20

1

S

BACK

ID 11 motor

ID 12 motor

FRONT

3   STEP ⑩

2   STEP ⑬

STEP **15**

With 2 CABLE-10, connect ID11 to CM-510; ID12 to CM-510.
With 2 CABLE-18, connect ID11 to ID13; ID12 to ID14.
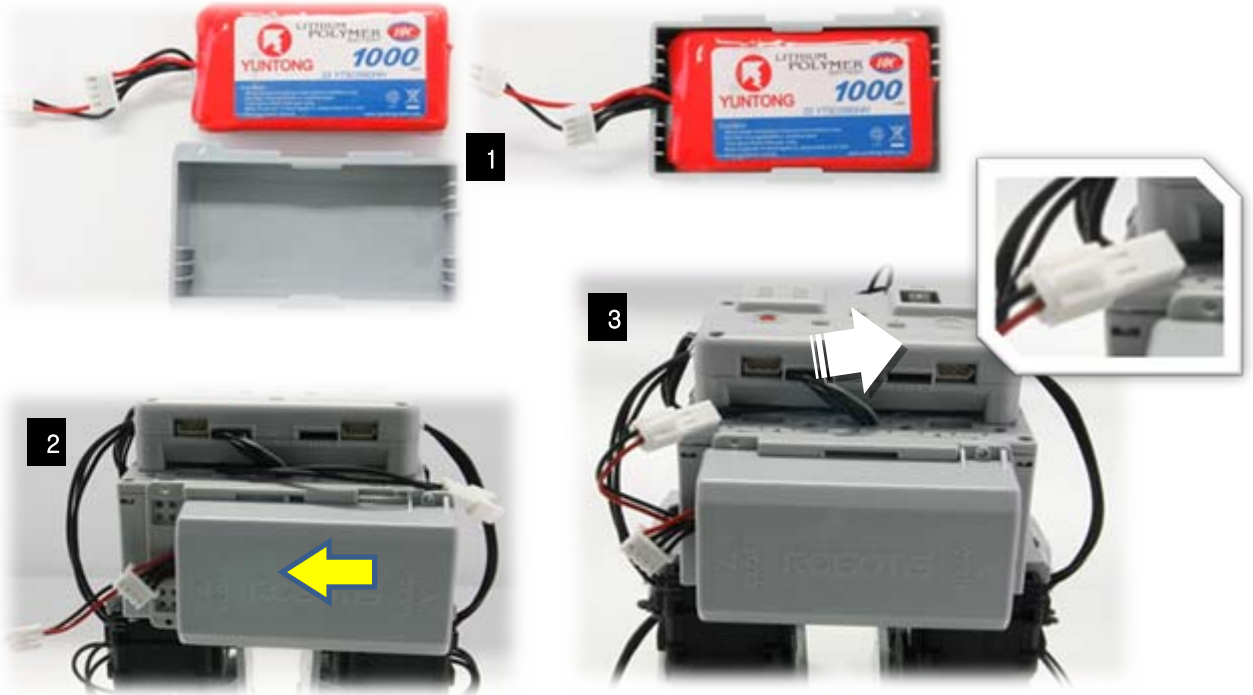With 2 CABLE-20, connect ID13 to ID17; ID14 to ID18.

CABLE -18   x 2   CABLE -10   x 2

CABLE -10

I D **11** motor

I D **12** motor

STEP **10**

CABLE -18

CABLE -18

I D **13** motor

I D **14** motor

I D **17** motor

I D **15** motor

I D **16** motor

I D **18** motor

STEP 16

Connect the battery through the battery cable.

BATTERY   x 1

Assembly Check

After assembly please check the following procedure to ensure correctness.

STEP ❶

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 ❷

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.
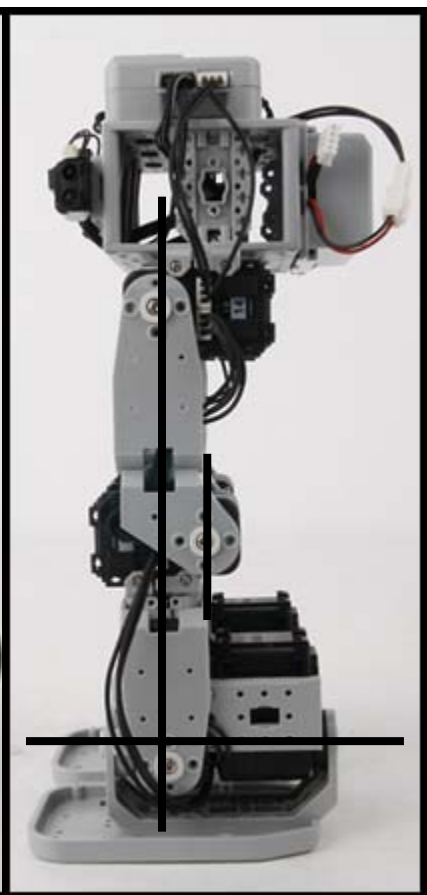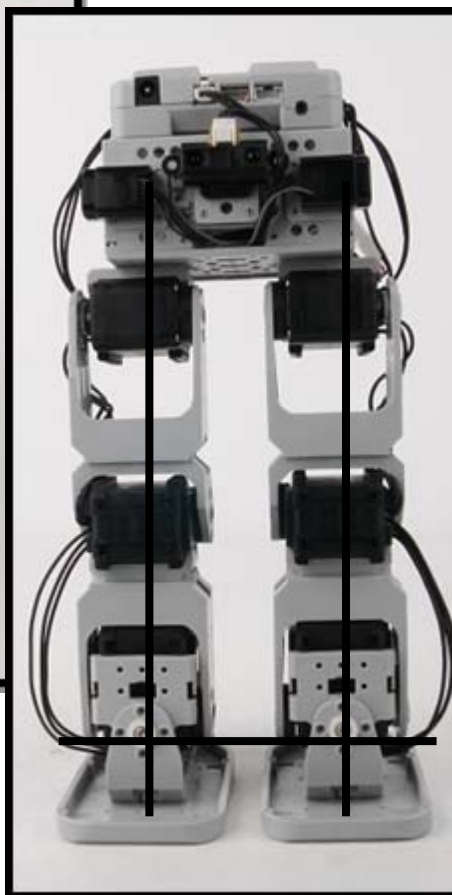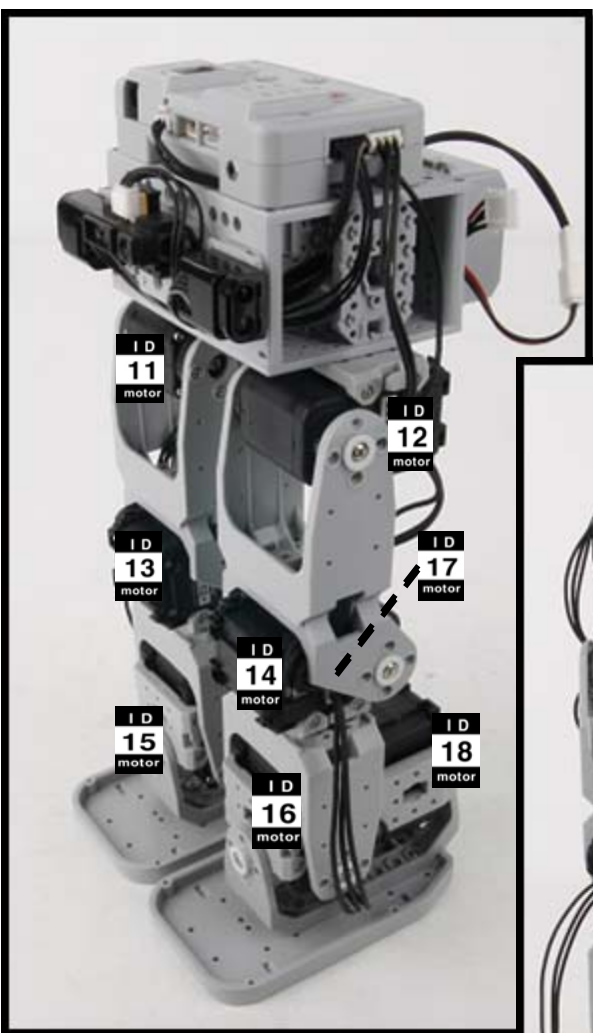
STEP 3

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.
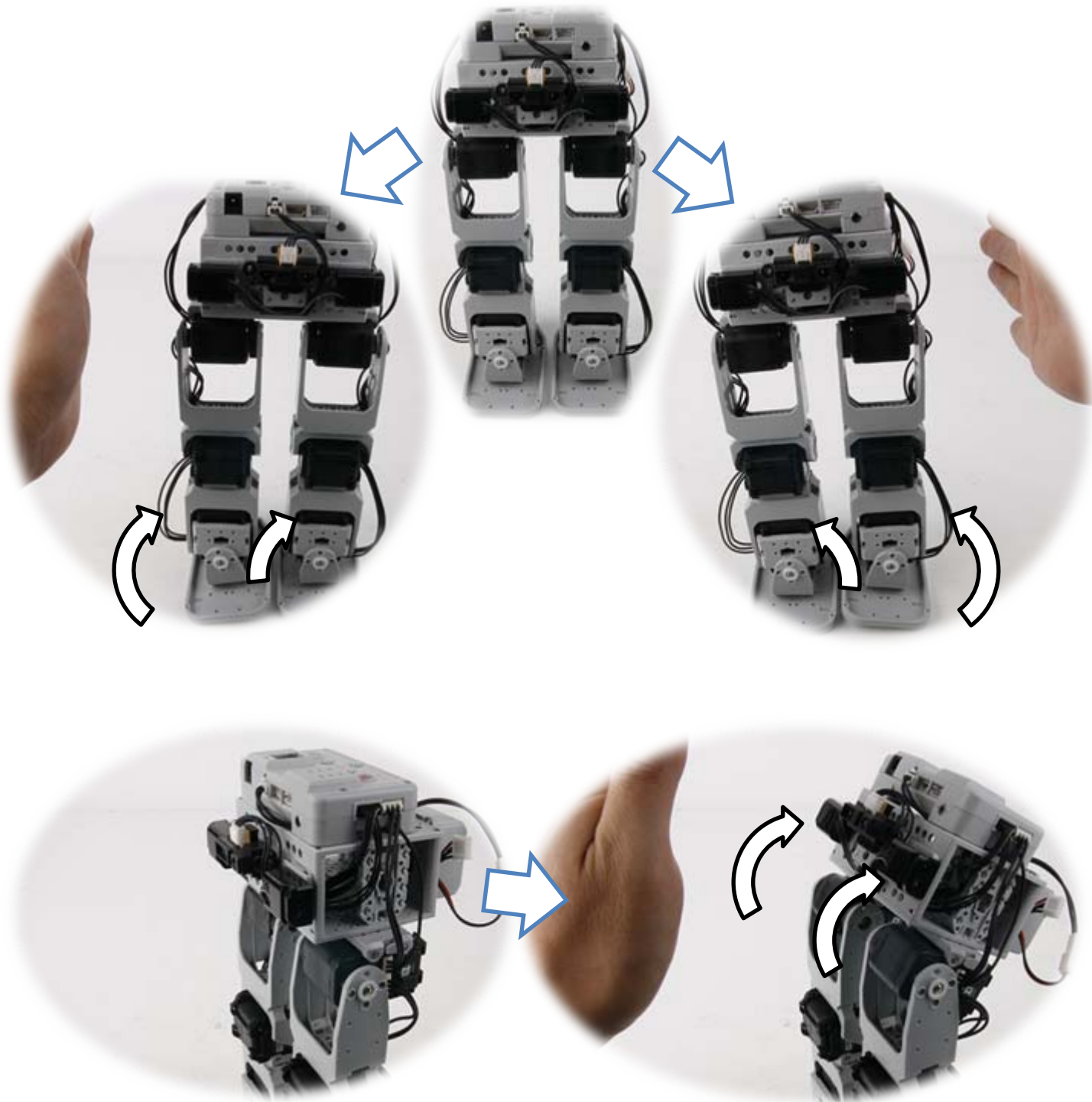
STEP 4

If everything works fine, play the robot.

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