

# Sports Humanoid LINE - Core m

User Manual



Robot Hardware Based Platform

LS868 Series  
1<sup>st</sup> Model LSM-micro



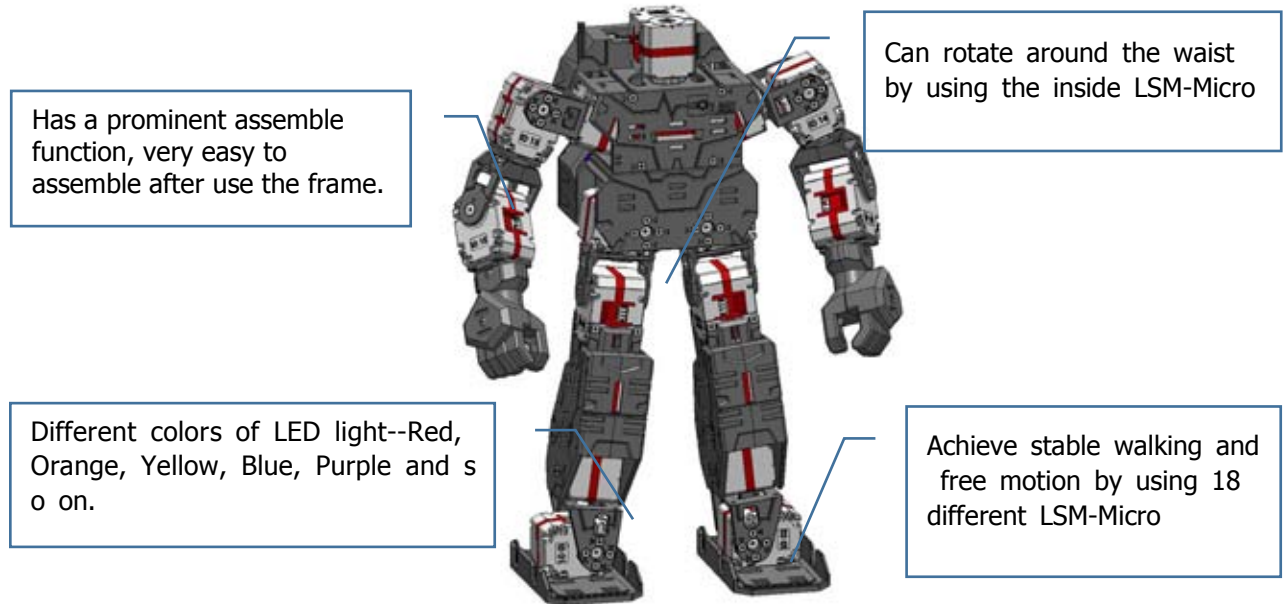
Digital Servo Motor for Robot

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# 1. What is LINE-Core M?

LINE-Core M is the humanoid robot that made of 18 LSM-Micros and have different functions. It contain Soccer mode, Fighting Mode, Dance Mode, Mission Mode and many other different modes. This humanoid robot can be used for different robot competitions, develop creative products, robot education and activities.



► You can use LINE Maker APP to remote control the robot and can program the motion according to your requirement



LINE-Core M basic motion

User can compile their own program by using LINE-Maker APP.



Can control the robot like the remote controller



Can program robot motion



Can adjust robot zero degree and check robot

► Can assemble different roles and suits on robots.



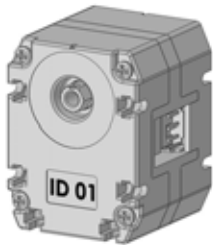
Please show your creation to us. Creative suit and program file can share to the below website. <http://www.myrobottime.co.kr>

<http://www.humanoidline.com>



## 2. What is LINE-Core M made of

### LSM-micro



- Combined with RGB color to show the LED color of LSM-Micro
- Both side have the axis of rotation, drive on both side can be realized
- Can control the location value and rotating force value of LSM-Micro
- Can control the speed of rotate in rotating mode.
- Have connect port on both side, more easy and convenient to finishing the line.
- Torque : 5.3kgf@5V1000mA, stall / - Power : 6.5~9V

### LSC-m



- Use as the special controller of LINE-Core M and other robot, Like robot brain
- 6 LSM-Micro connect port, can control several LSM-Micro at the same time.
- Special PC port, can long-range control and download program file
- Can connect smart phone via bluetooth to control robot, program motion and download program file
- Inside buzzer can indicate the status of robot.

### FRAME



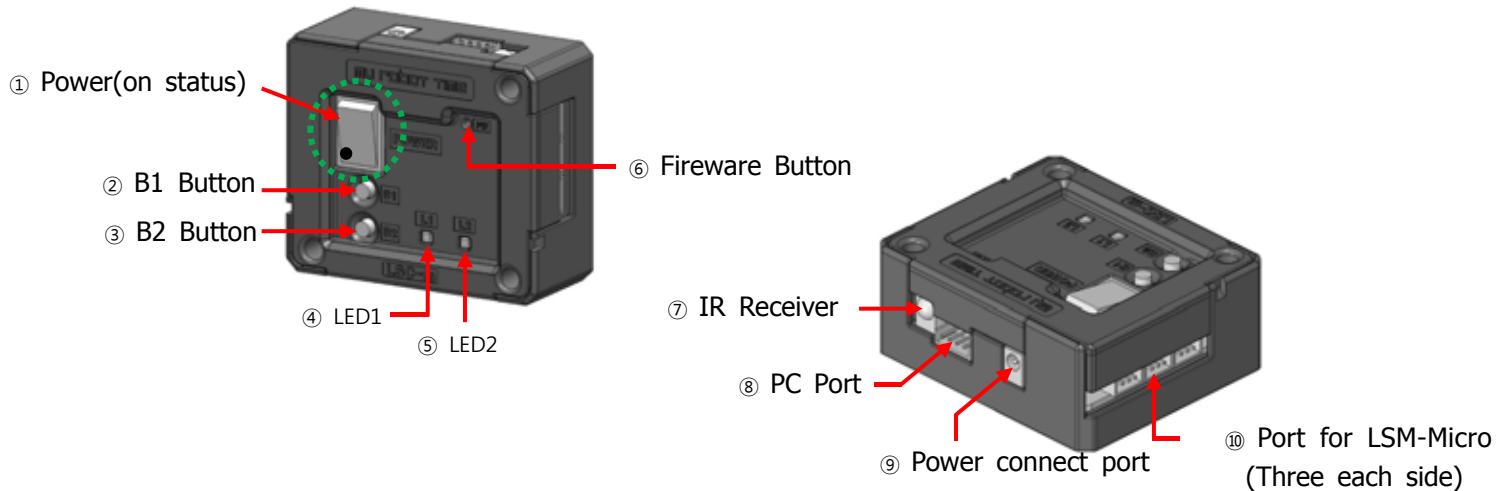
- By using the frame which is very good for connection, It is very easy to assemble several LSM-Micro together  
(Please use the provided screws and nuts to assemble)

### BATTERY



- 7.4V Li-Po Battery
- Supply battery cover and battery case

### 3. The construction and parts function of LSC-m



#### What is the function of each part in LSC-M

##### ① Power Button

Open/close the robot(when turn down, It is on statues, and turn up, it is off status)

##### ② B1 Button

Supply power for LSC-Micro or run the program or adjust zero for LSM-Micro

##### ③ B2 Button

Cut the power of LSC-Micro or stop the current program

##### ④ LED1

Used to check whether supplied power for LSM-Micro or program started or not

| LED1 Light    | whether supply power to LSM-Micro or not/ Run program or not |
|---------------|--------------------------------------------------------------|
| ■ Closed      | no power supply/no program run                               |
| ■ Blue light  | power supply/no program run                                  |
| ■ Green Light | Power supply/Program run                                     |

## ⑤ LED2

Used to check whether LINE-Core m work normally or not and check the balance of battery

| LED2           | Whether LINE-Core M work or not and the balance of battery |
|----------------|------------------------------------------------------------|
| ■ Blue Light   | over 60% power remain, LINE-Core M work normally           |
| ■ Green Light  | over 15% Power remain, LINE-Core M work normally           |
| ■ Yellow Light | around 5% Power remain, Can not do LINE-Core M motion      |
| ■ Red Light    | almost 0% Power remain, LSC-Mirco will close               |

Every 5 second will remind when the light turn yellow, every 2 second will remind when the light turn red

## ⑥ Firmware Button

Used to update the LSC-M Firmware

## ⑦ IR Receiver

The place to receiver IR signal

## ⑧ PC port

Used to connect computer and smart phone, for download/run the program or update the firmware

## ⑨ Power connect port

Can charge through adapter, power bank and so on for LSC-M

## ⑩ Port to connect LSM-Mirco

Work as the port to connect LSM-Micro to LSM-Micro, there is 3 each side(right and left). This six ports are parallel connection construction, The LSM-Micro can connect to any port in the two side(except the port for PC)

## ⑪ Other function of LSC-M

- Buzzer inform

After changed the main setting of LINE-Core M, finished download the program and the balance of batter not enough, the buzzer will inform this status.

- Bluetooth insert

Used to connect smart phone, Download program and control robot.

- Store and run program file

Can storage and run the program file in LINE-Maker APP

## 4. How to charge battery

When the motion become slowly or the power become weak, we should charge the battery. It will be red LED when charging and Green LED when full.

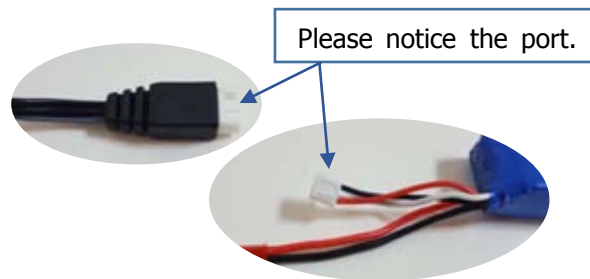
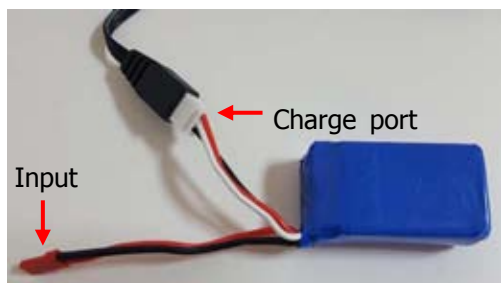


<charging>



<charging completed>

- The is port for input and output in battery. Please connect the port according to below picture.



- Time for charging is around 2-2.5 hours, it may difference due to different battery status.

### Notice when charging

- The led light will keep on when the connect and charger apart, the power will reduce in this situation

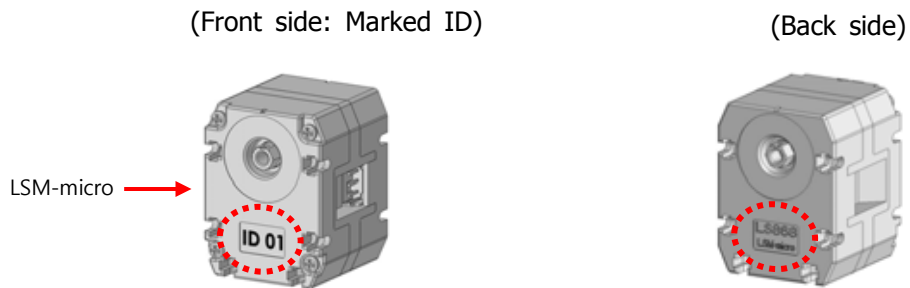


- It will reduce the life of battery if no charge when the battery no power or forgot to ap art the connector and charge port of the battery.

## 5. Notice when assemble LINE-Core M

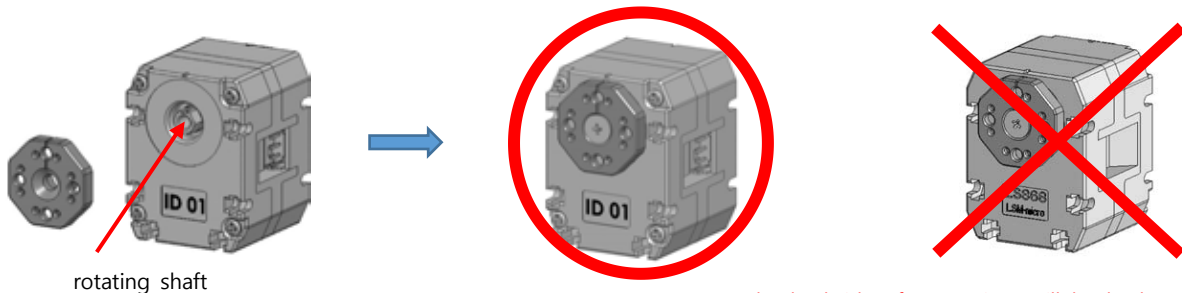
LINE-Core M made by 18 LSM-Micros many different strong bindingforce frames and other electronic parts. We need know the following issues before we start to assemble LINE-Core M.

- The front and back side of LSM is different, the front side marked ID.

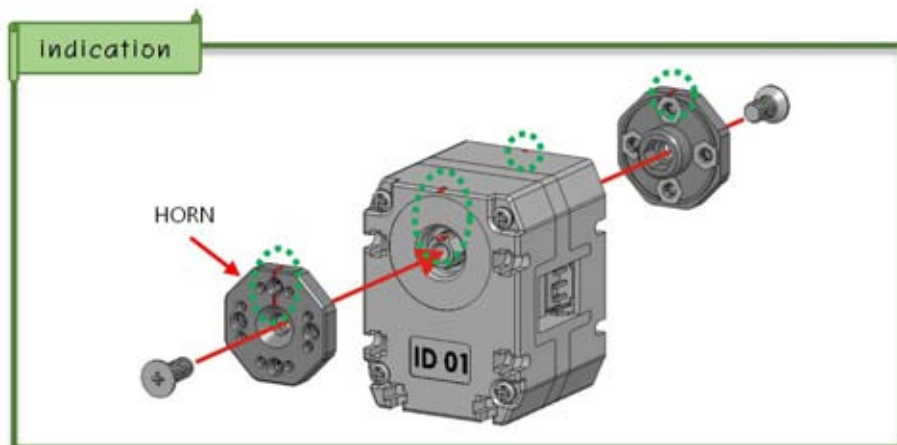


please check the manual when assemble LINE-Core, please pay attention to the ID of LSM-Micro and the direction of each LSM-Micro(Front side and back side)

- There is rotation axis in both front and back side. Please use the front side one when only use one rotation axis.

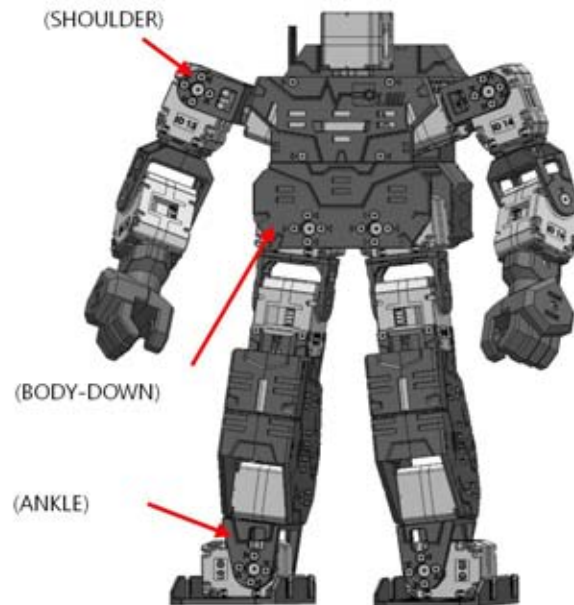


- There is a direction marked on LSM-Mirco and Horn. Please confirm the direction location when assemble the LSM-Micro and horn.



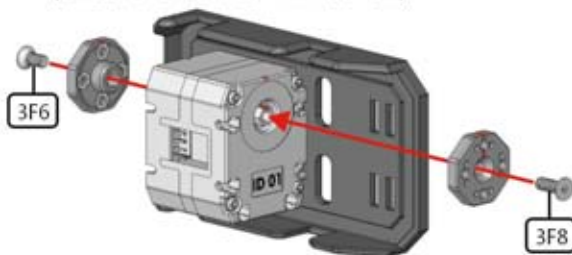
- Please use No. 3F6 and No.3F8 nuts when making LSM-Micro and horn. Because it maybe difficult due to the Horn will rotate.

Under this situation, We just put No. 3F6 and 3F8 nuts into LSM-Micro and finish the assmeble of other parts(such as shoulder,body and ankle) first, then finish the assemble of No.3F6 and 3F8, It would be easy to assemble if use this method.

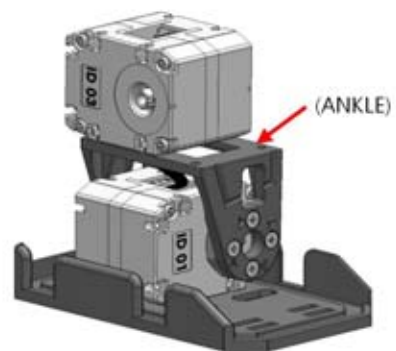


#### Indication

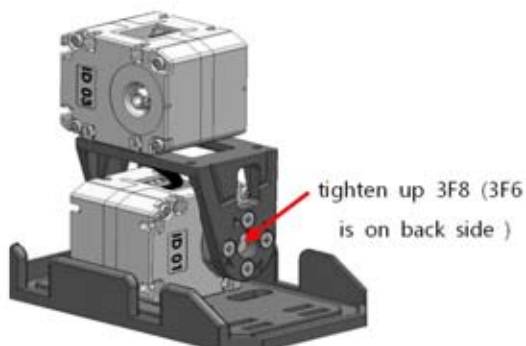
- ① After assemble horning into LSC-Micro ID01, slightly twist 3F6, 3F8 nuts (twist two circles will be ok)



- ② Assemble ankle frame into LSM-Micro ID

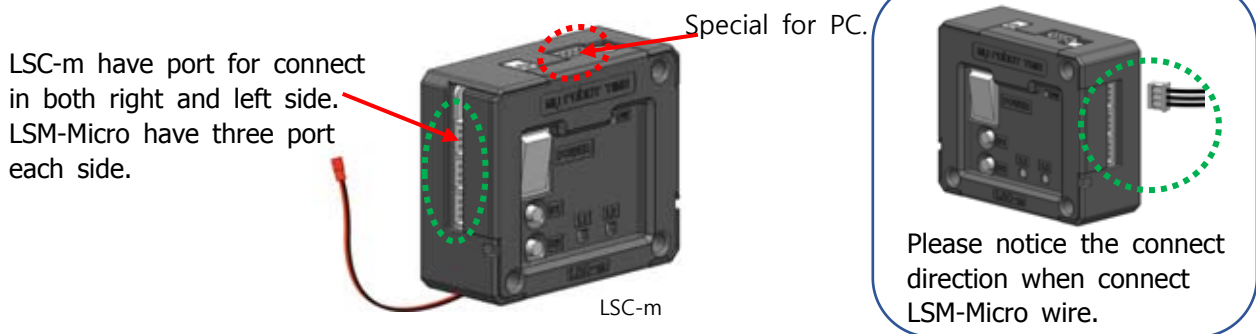


- ③ Fix the nuts in LSC-Micro ID01

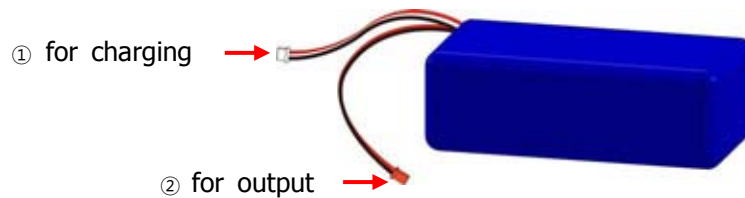


※ Detail building steps please refer to the manual

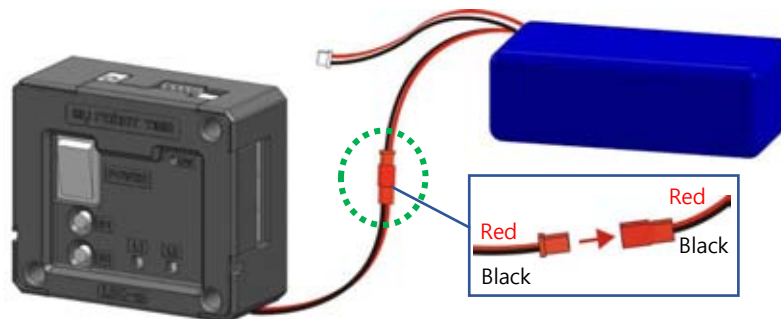
- There is 6 port in LSM-Micro to control LINE-Core M motion, the wire can connect into any port in LSC-M, but can not connect to the port which special for computer.



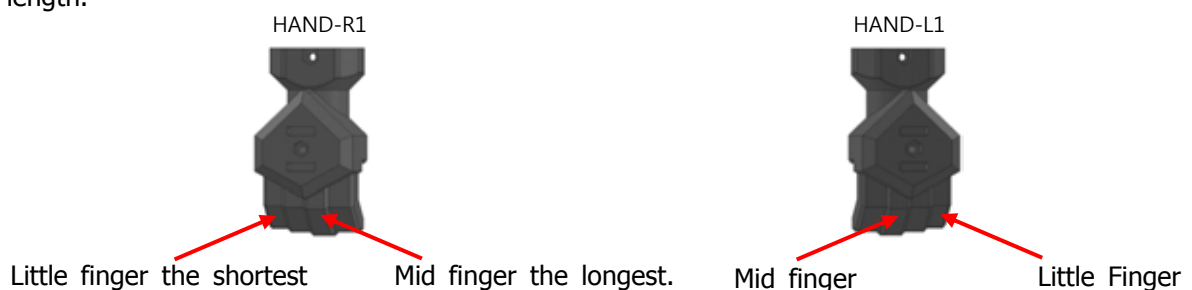
- There is two wire listed below in battery, please choose the right wire for different purpose.



- ① Charging wire: used for charging and connect to charger.
- ② Connect with LSC-M wire together , used when control the robot and output wire color should be connected with the same color wire in LSC-m.



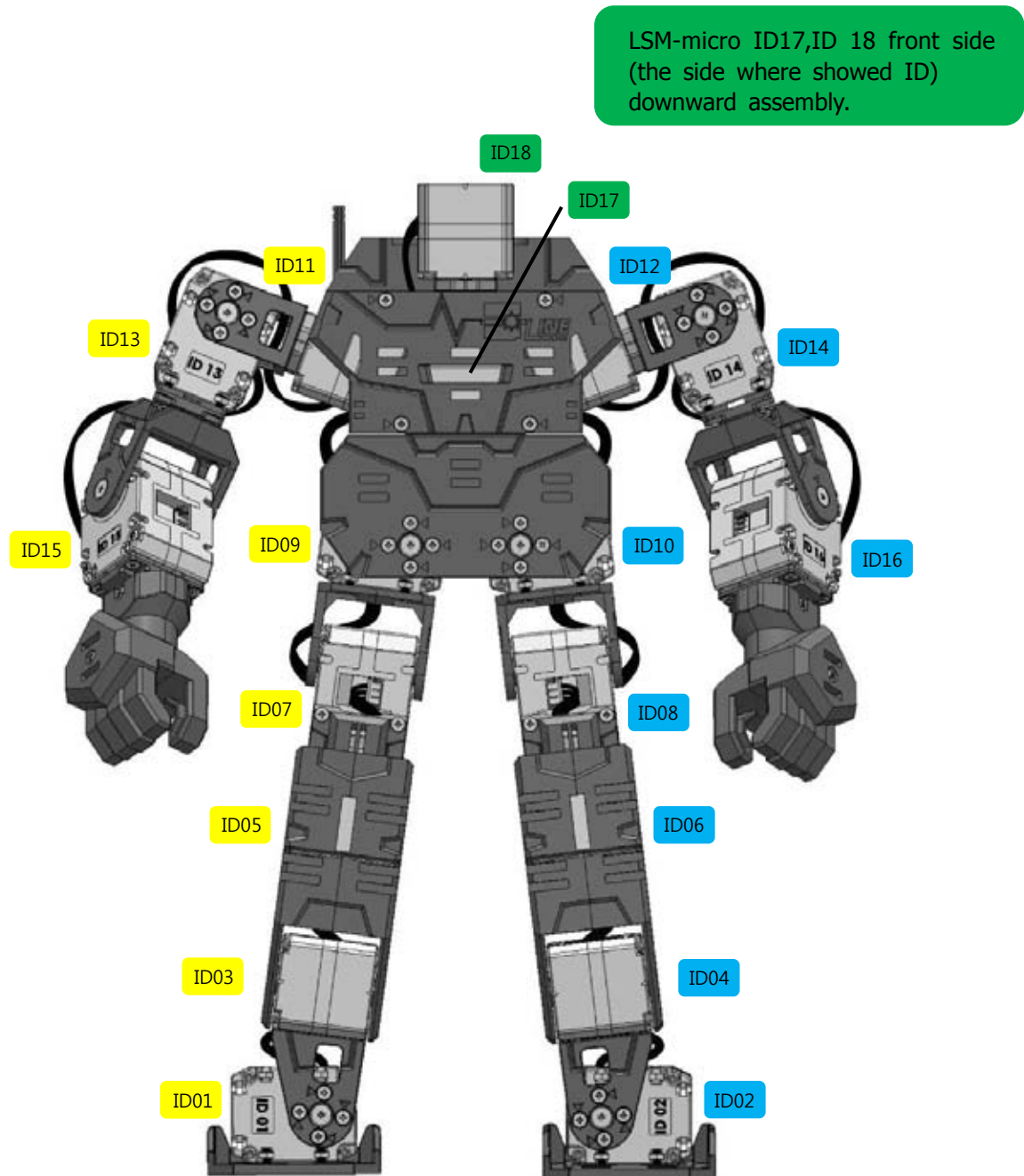
- Hand-R1 and HAND-L1 looks like the same, but we can see the differences from the finger and length.



## Notice for assembly and Stock

- ▶ Please use official parts and tools when assembling the robot, please do not use the changed wire, motor, knife and other dangerous tools.
- ▶ Please do not over forced when assembling the robot.
- ▶ Please make sure the robot stay in flat ground when programming or motion to avoid drop from high place.
- ▶ If the robot can not work normally, please notice the building steps, the balance of battery and the wire connection of the motors.
- ▶ Please turn off the robot if there is anything wrong with the robot joint.
- ▶ Please note that do not let the fingers to touch the robot joints.
- ▶ Please do not lose the parts and robot, do not use wet hand to touch the robot.
- ▶ Please do not place the robot under the environment where too hot or too wet.
- ▶ Please keep your face far away from the robot.
- ▶ Please note that there is many small parts in the robot kit, Please take care of your kid and avoid choking.
- ▶ Robot should make by the user and Please be careful when assembling the robot, user should be responsible for the wrong handle and uncorrected assembly.

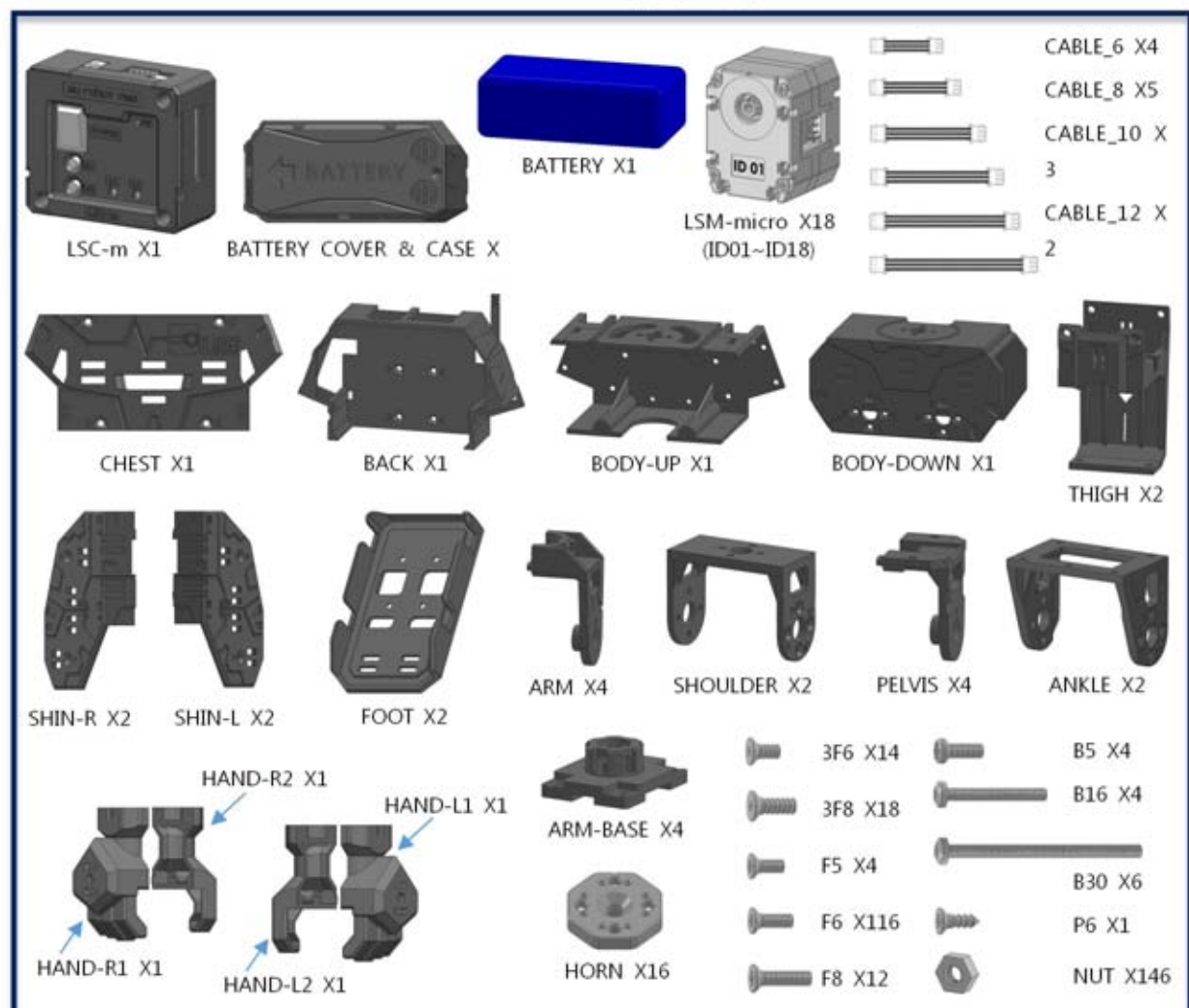
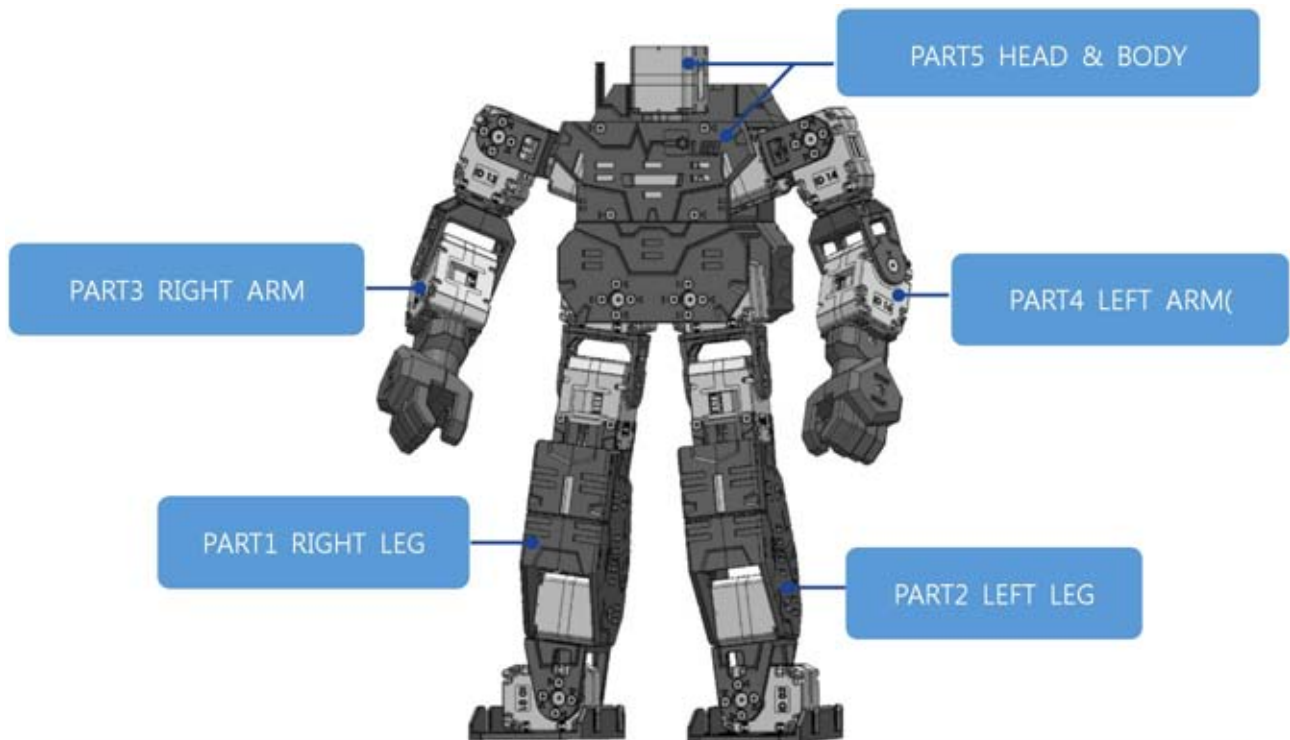
## 6. What should we confirm before to make LINE-Core M?



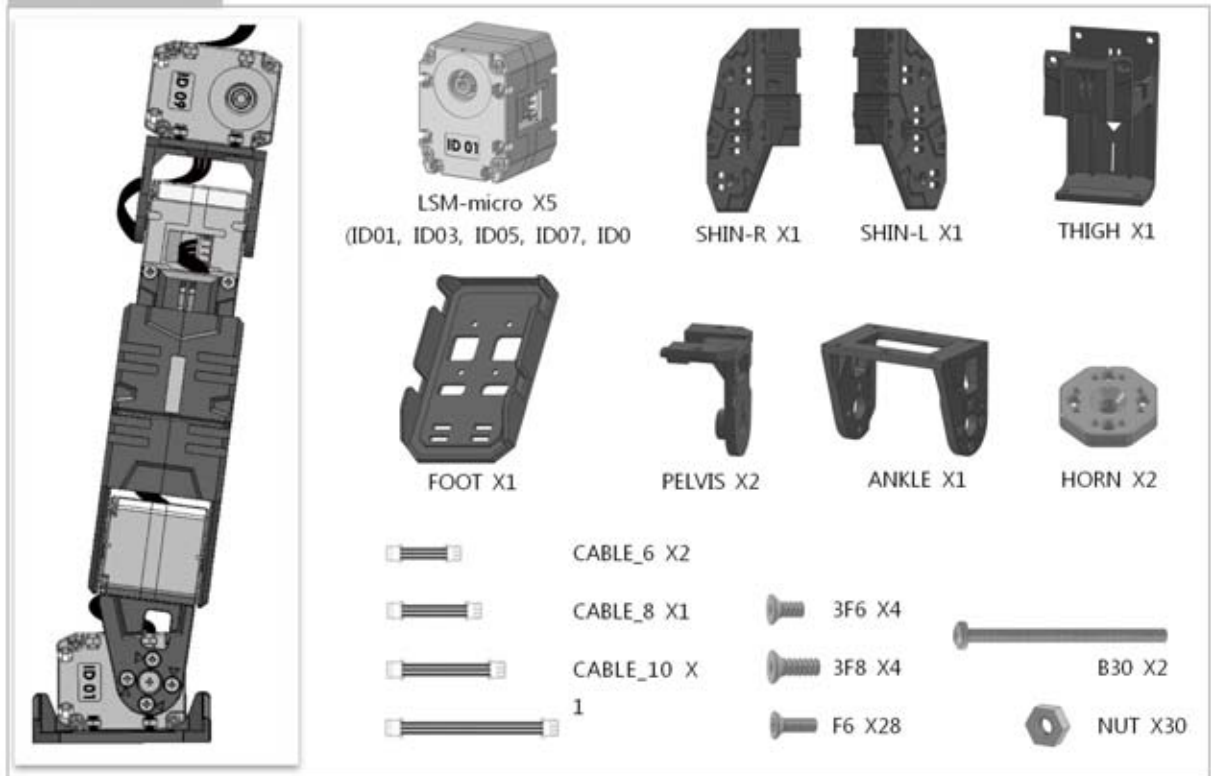
Right leg and arm should be assembled in front side or outward side(the side where should ID), please refer to the manual.

Left leg and arm should be assembled in front side or outward side(the side where should ID), please refer to the manual.

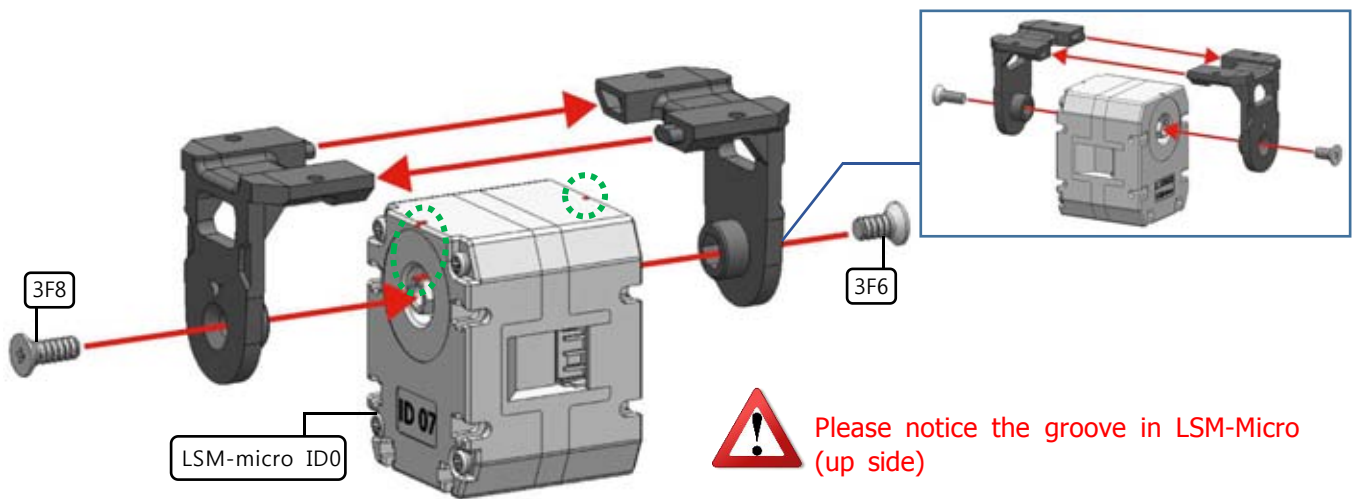
## 7. The part list of LINE- Core M and how to assemble it.



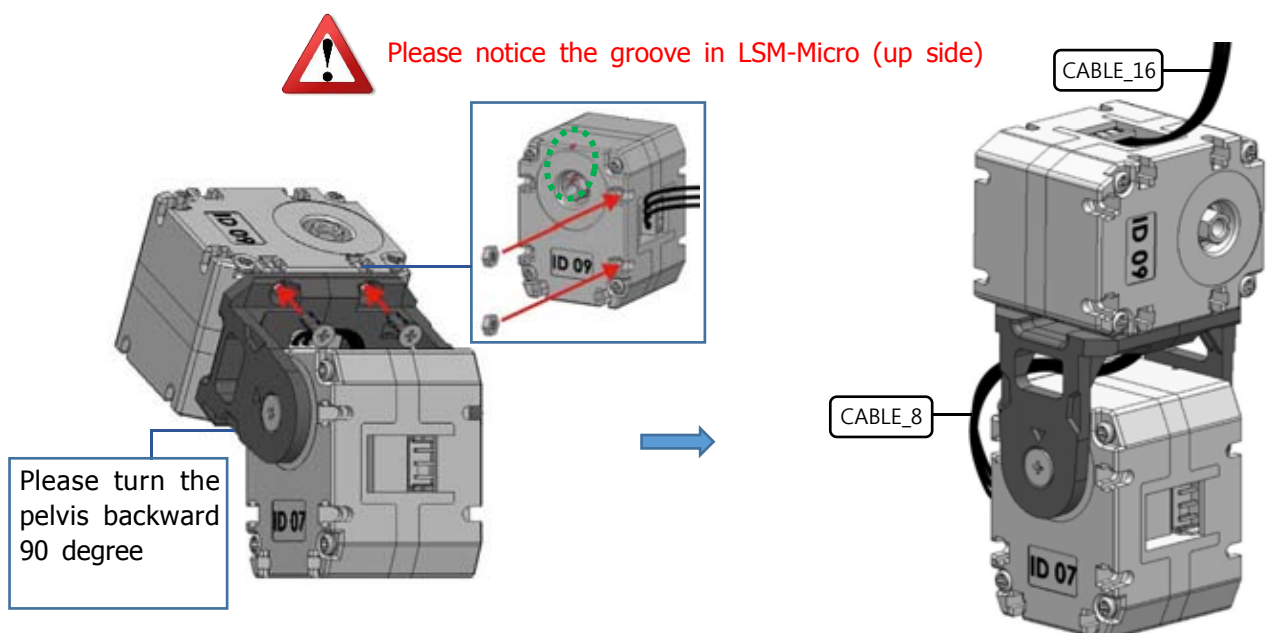
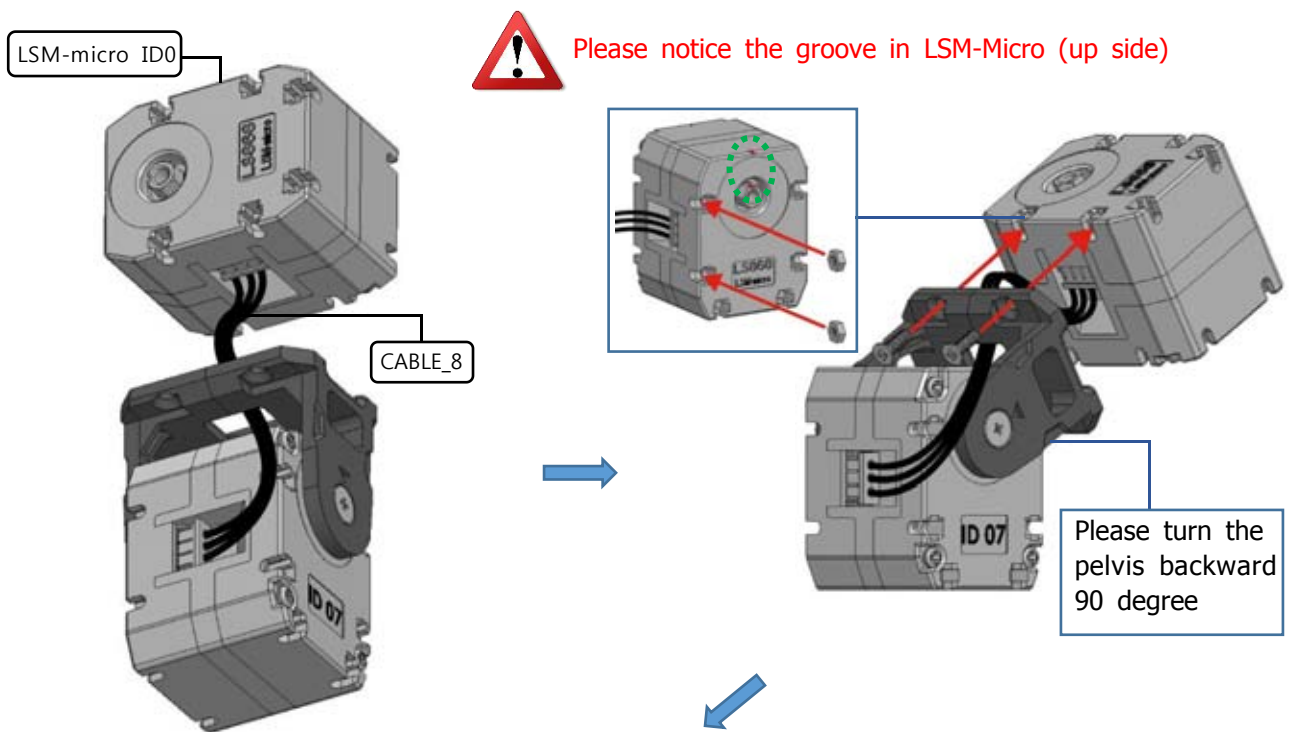
PART1 RIGHT LEG



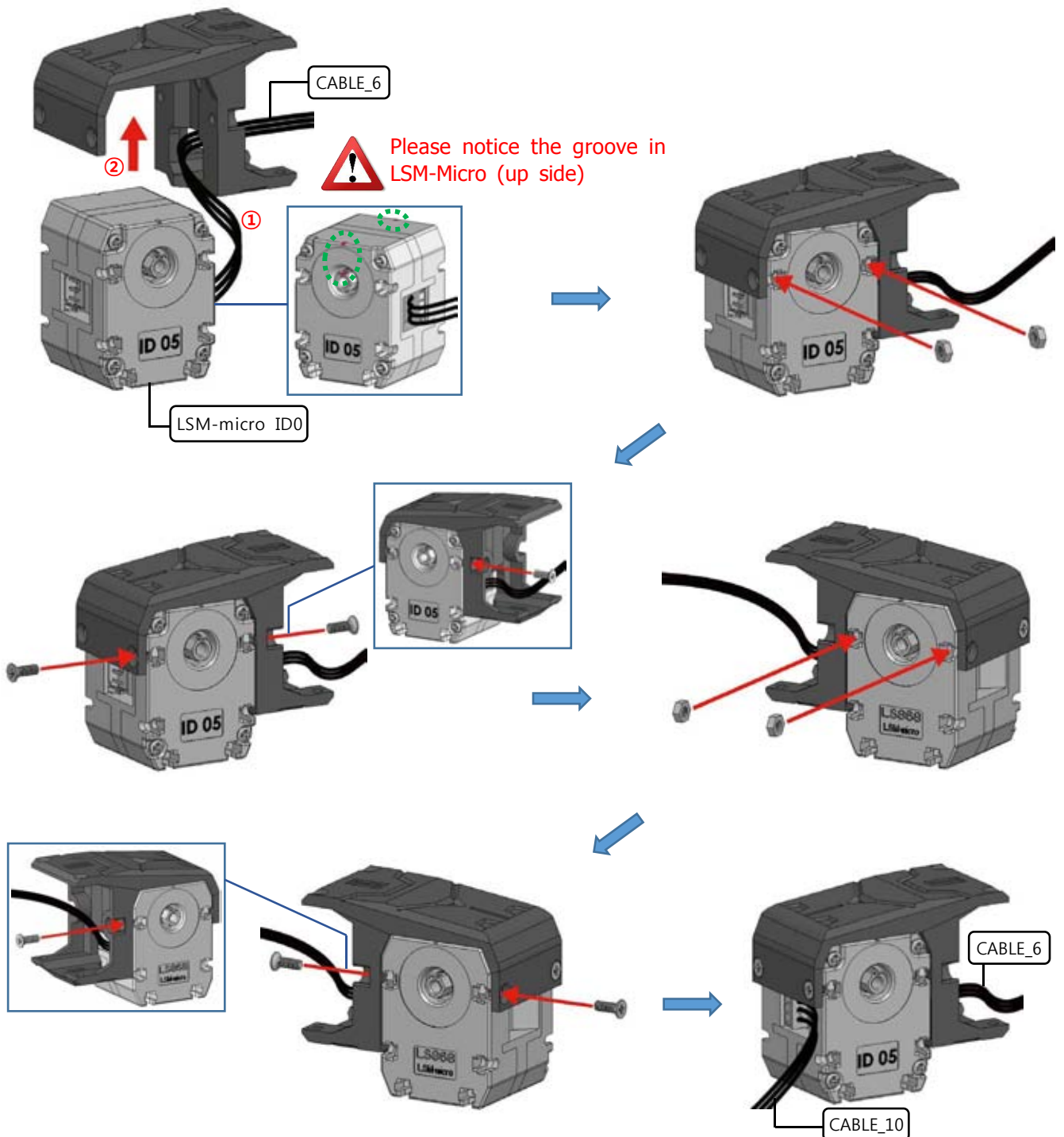
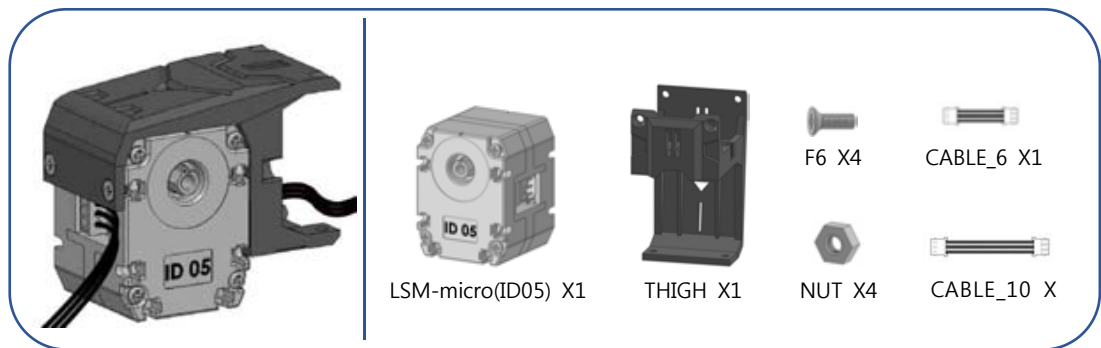
PART1-1



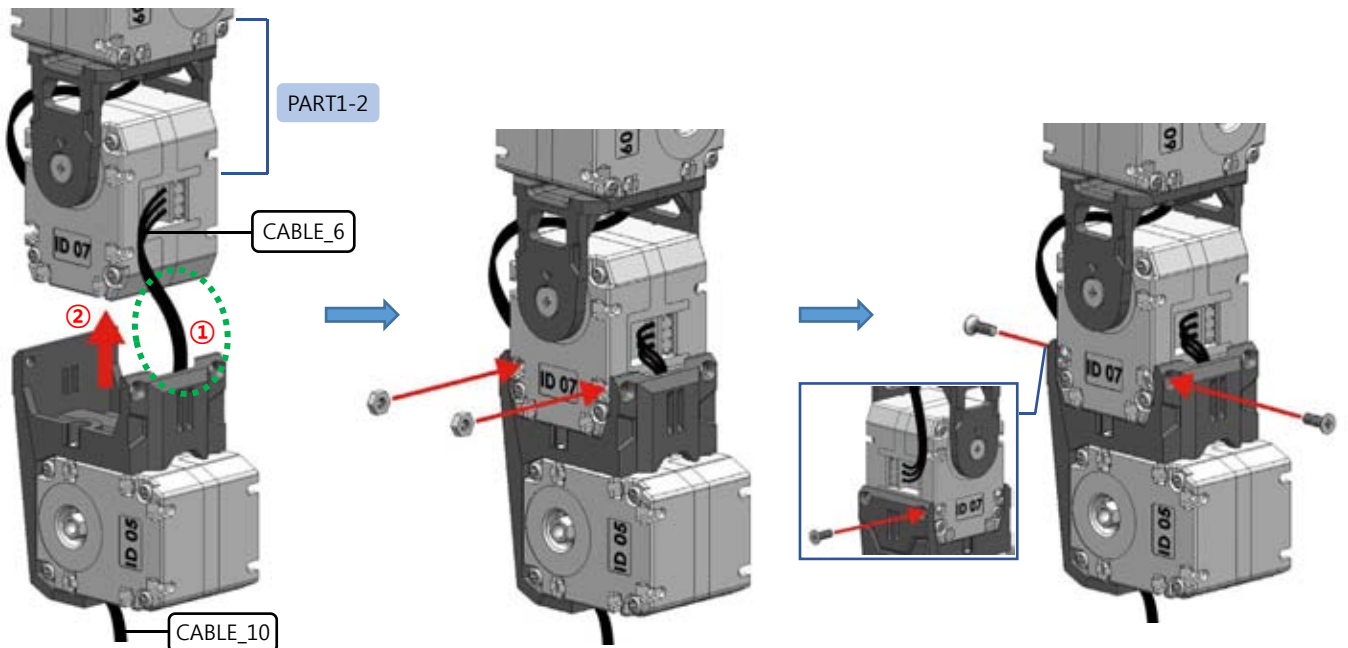
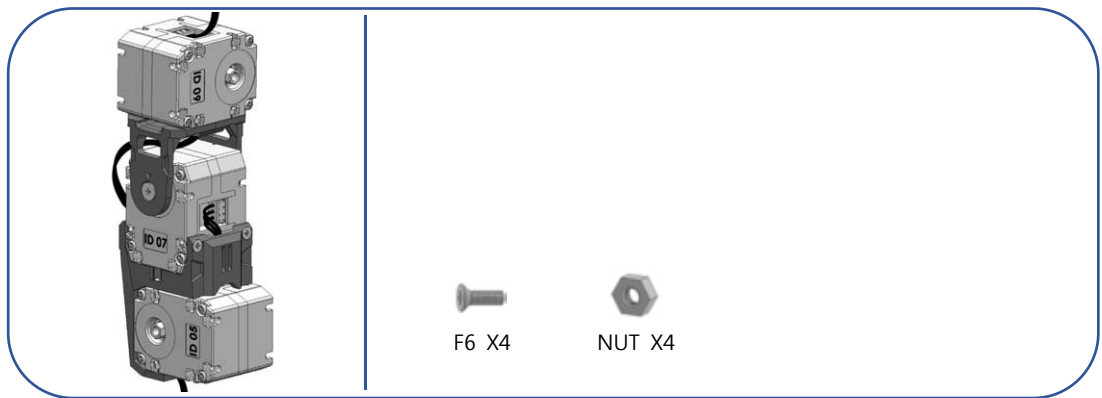
PART1-2



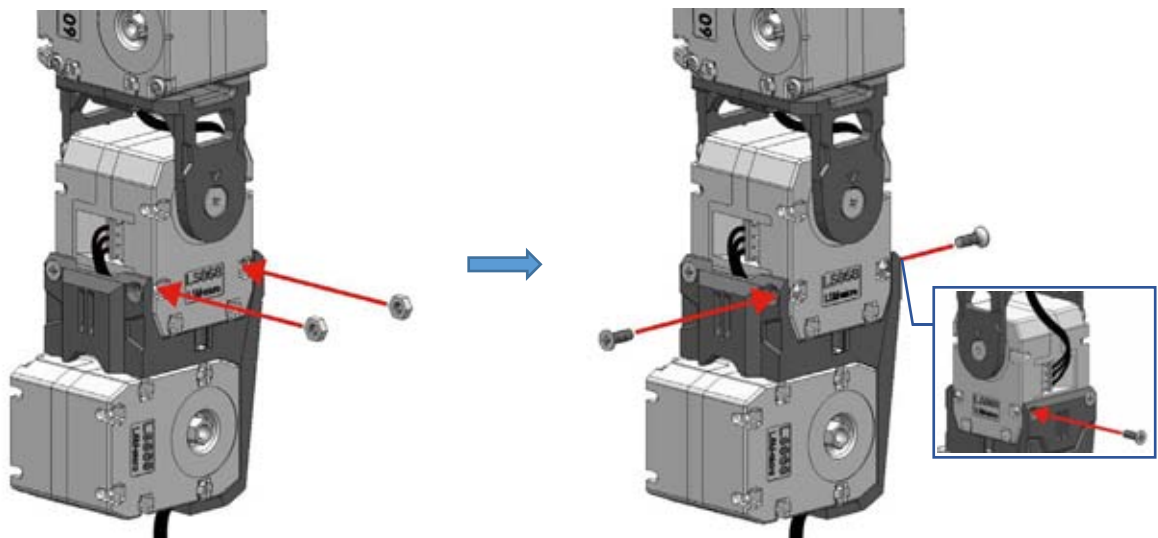
PART1-3



PART1-4



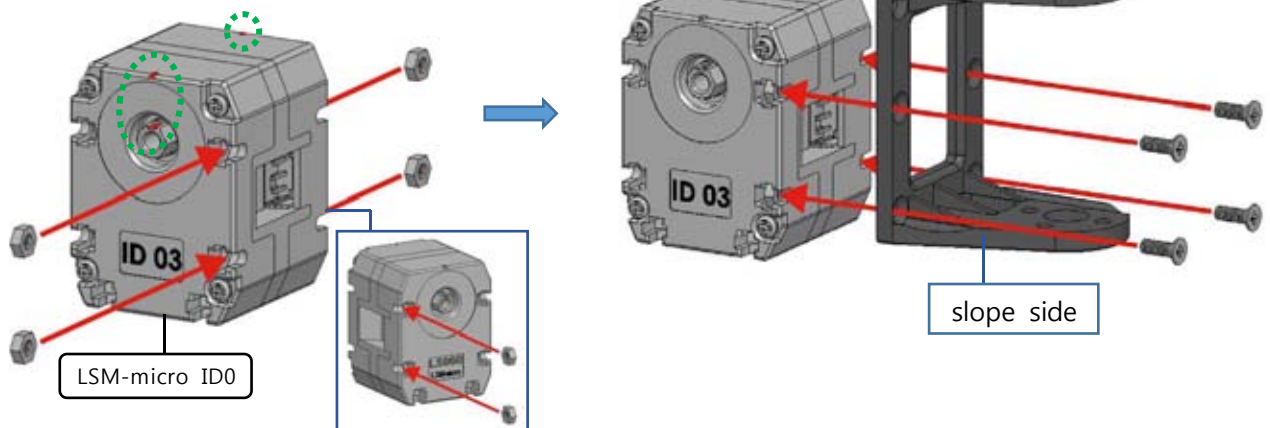
Please refer to No. 1 picture,  
neaten cable\_6 first.



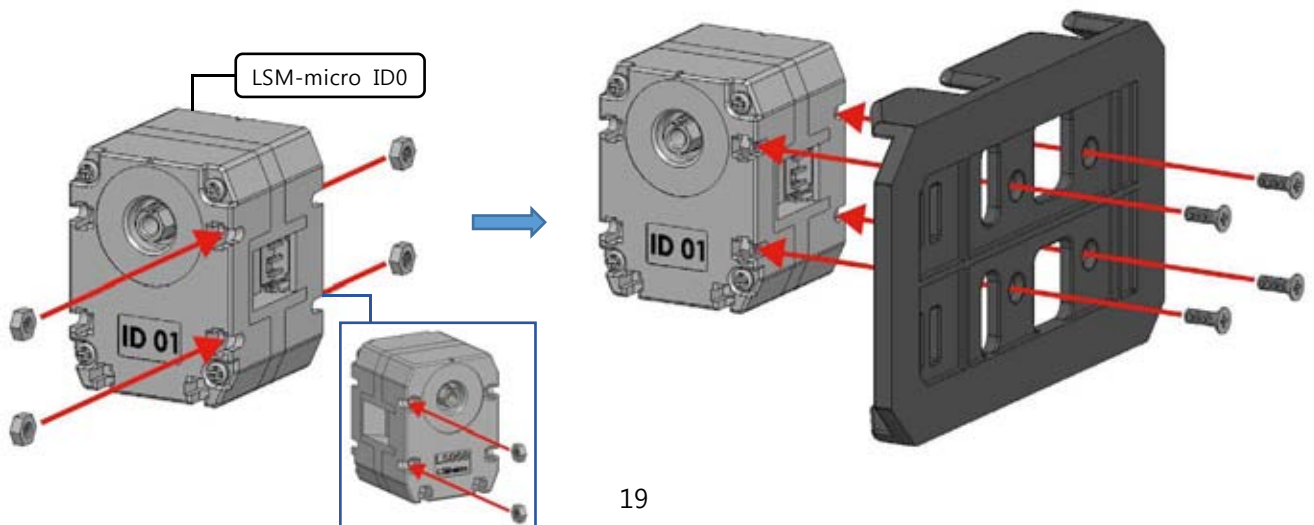
PART1-5



Please notice the groove in LSM-Micro (up side)



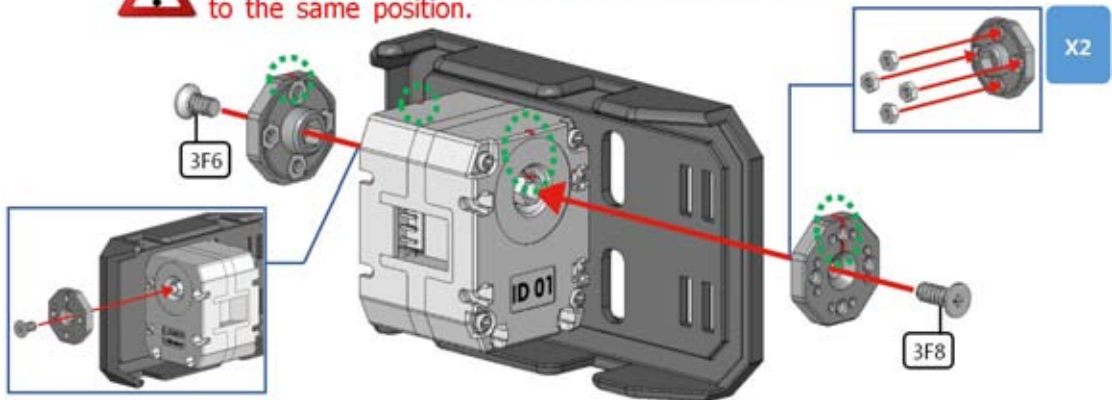
PART1-6



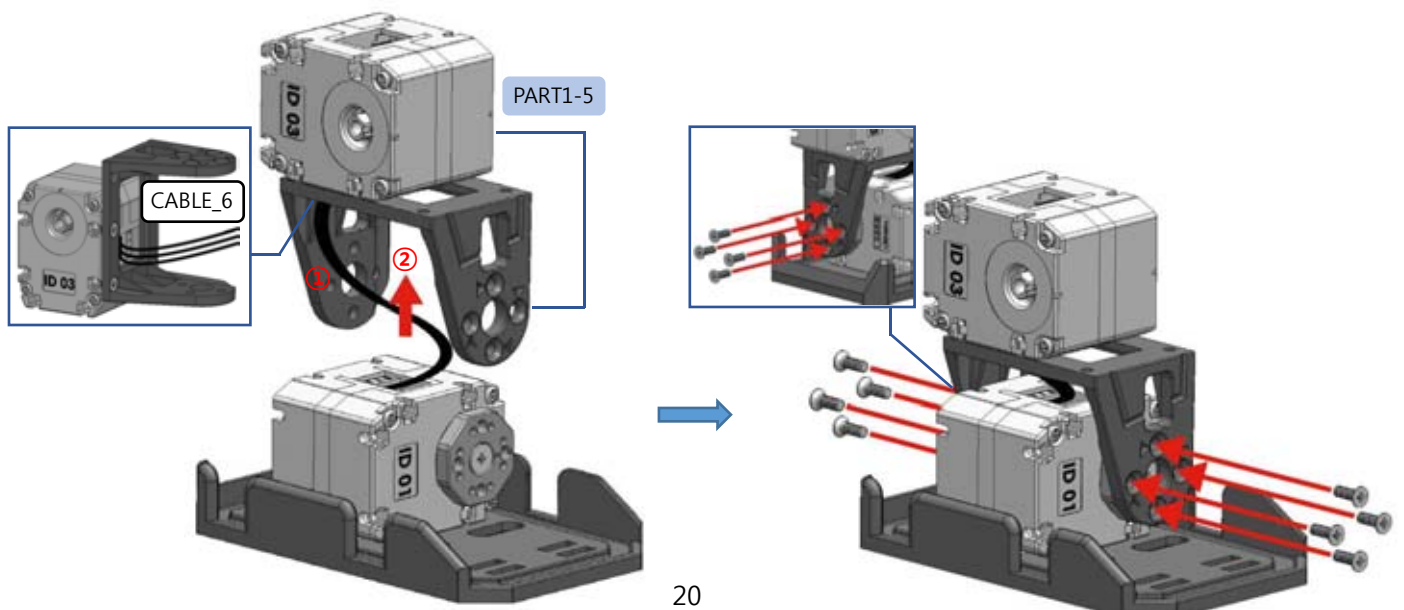
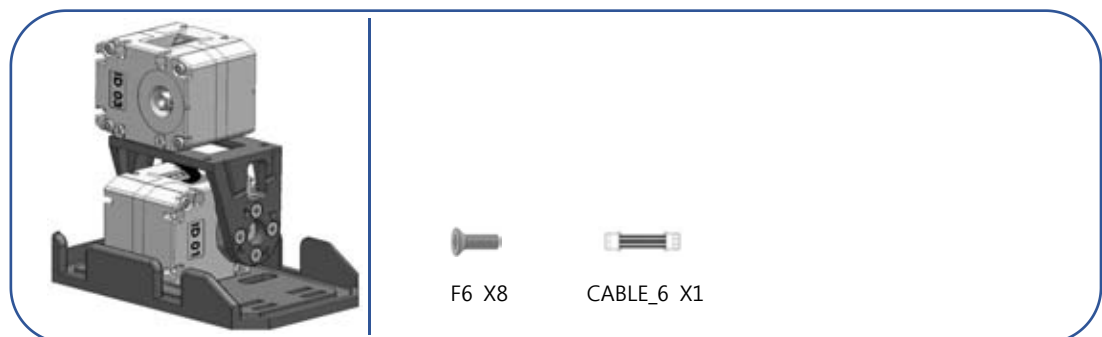
PART1-7



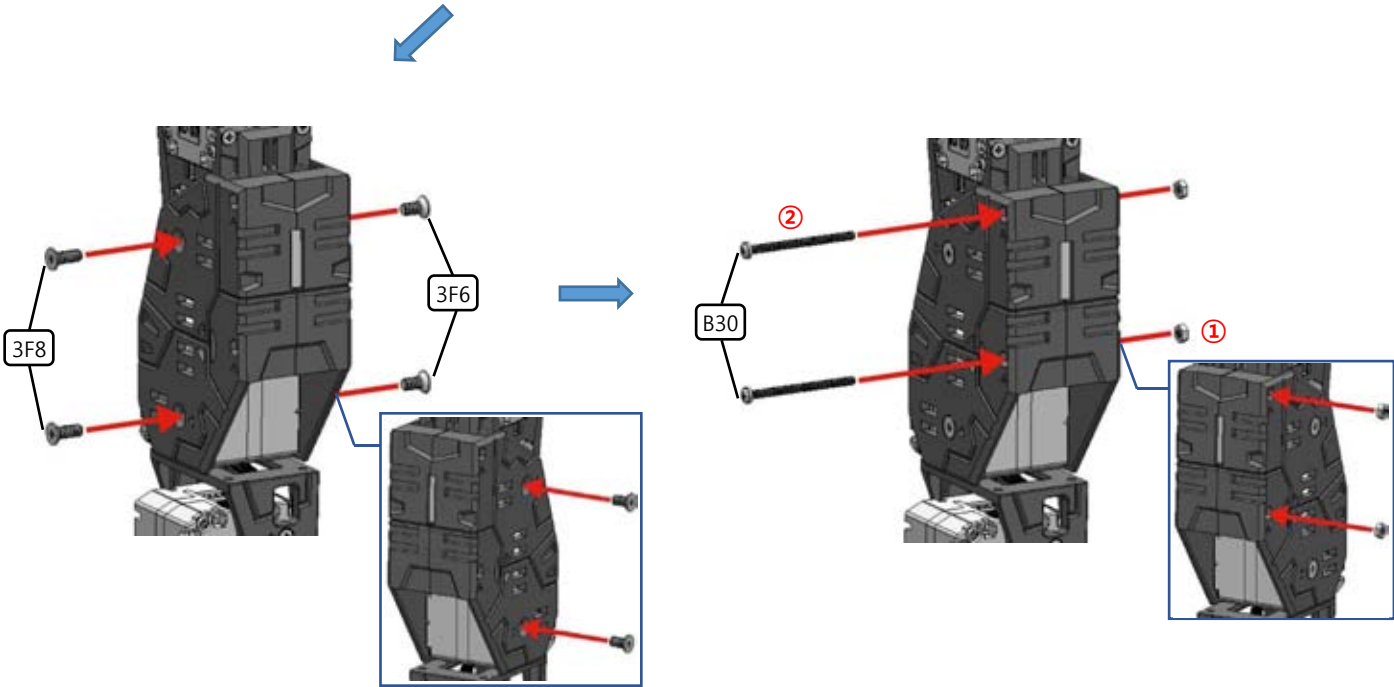
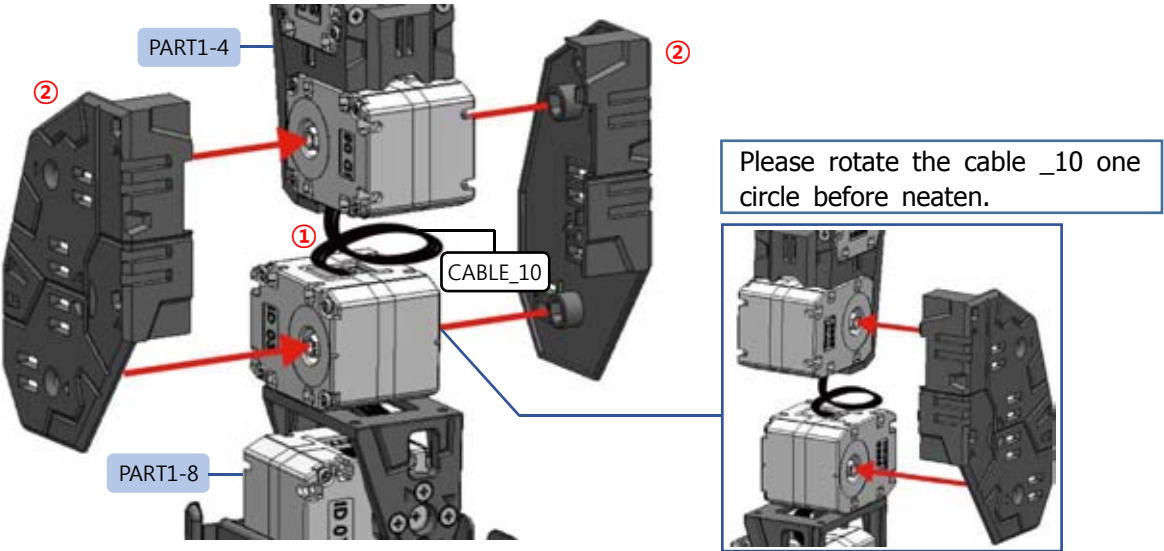
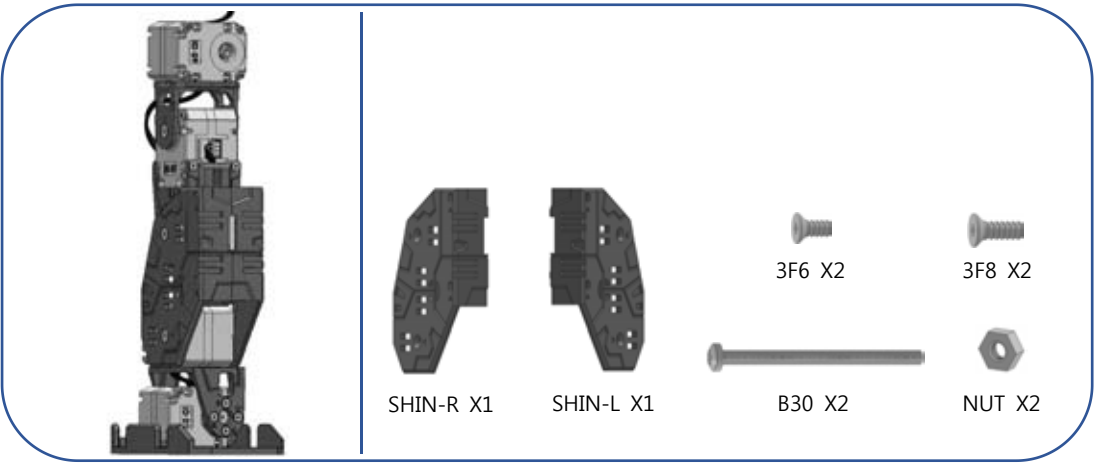
 Please adjust the groove in LSM-Micro and horn to the same position.



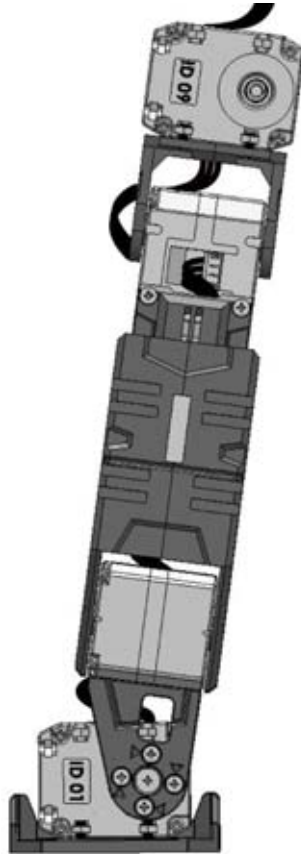
PART1-8



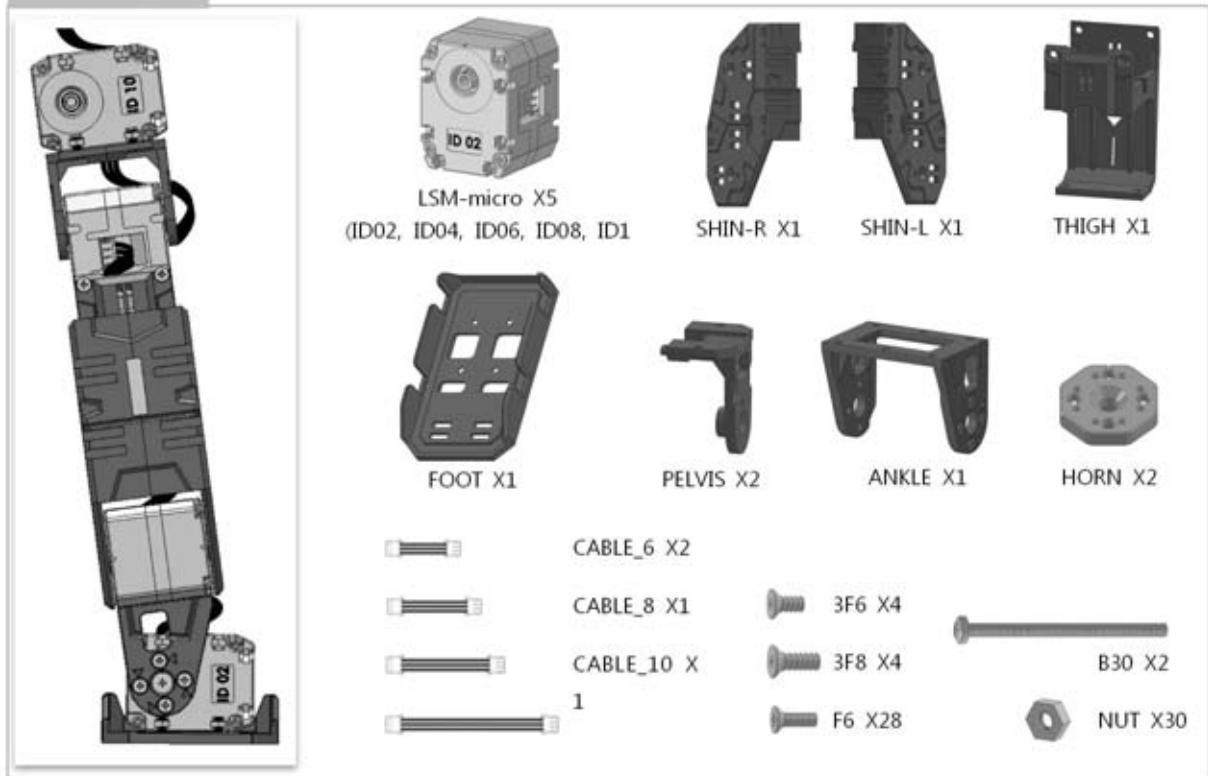
PART1-9



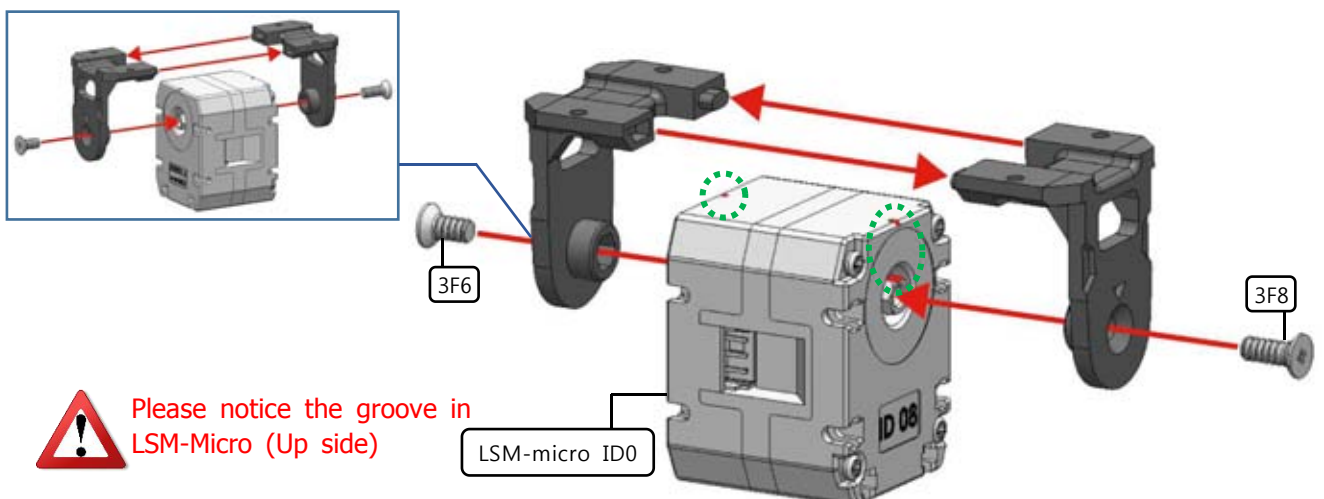
PART1 RIGHT LEG completed



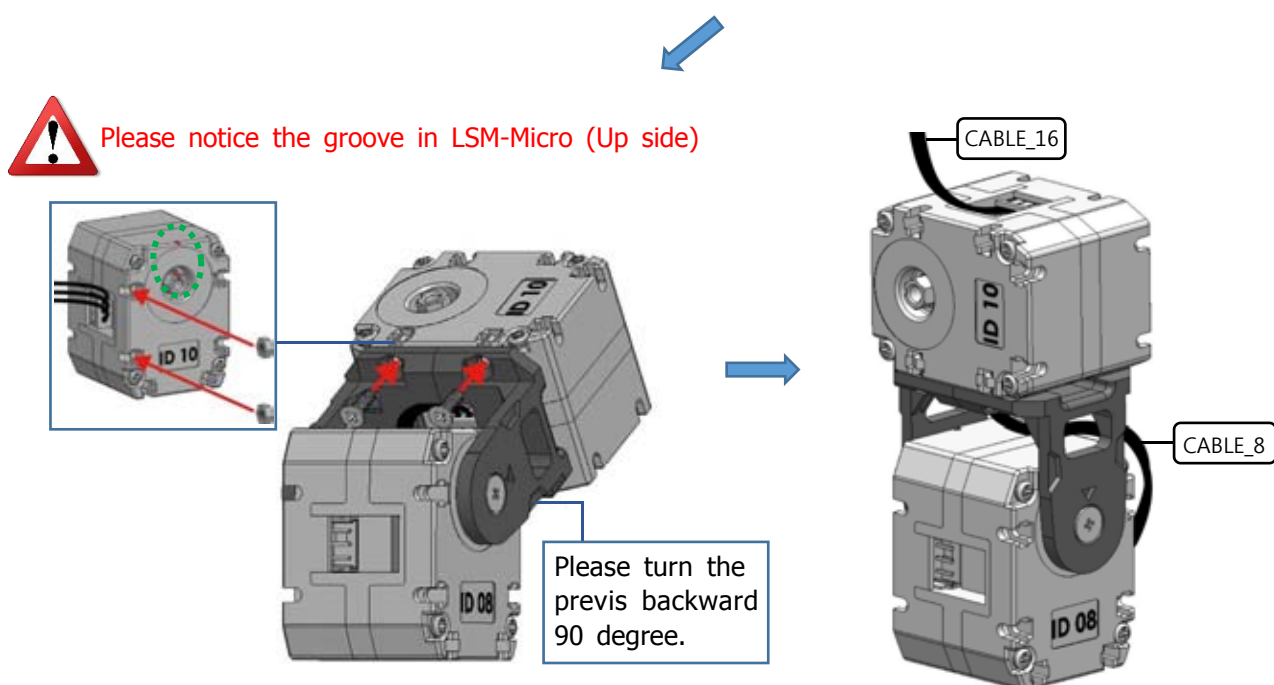
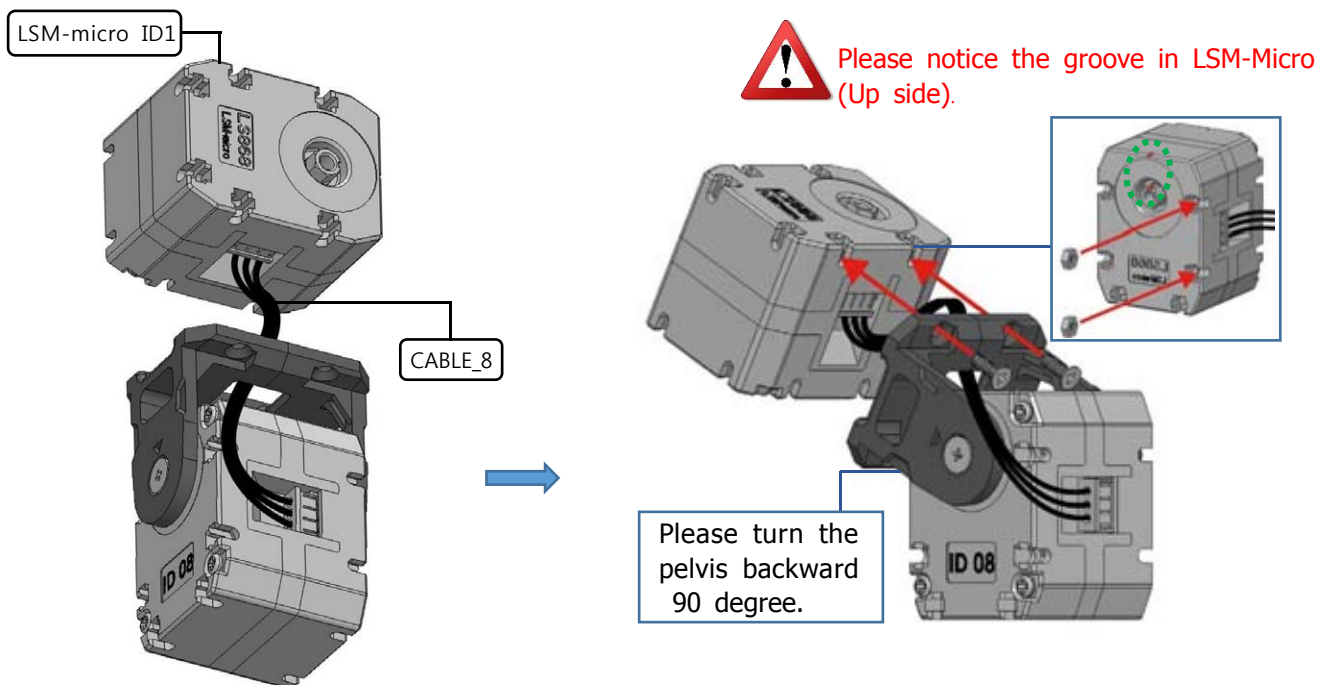
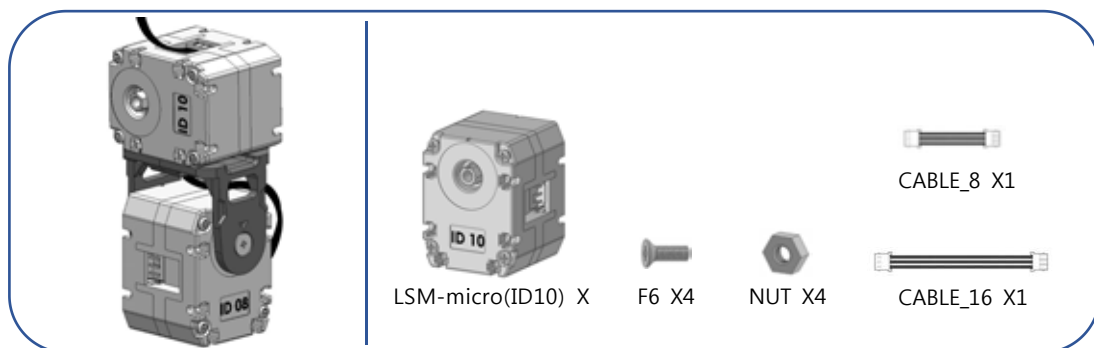
PART2 LEFT LEG



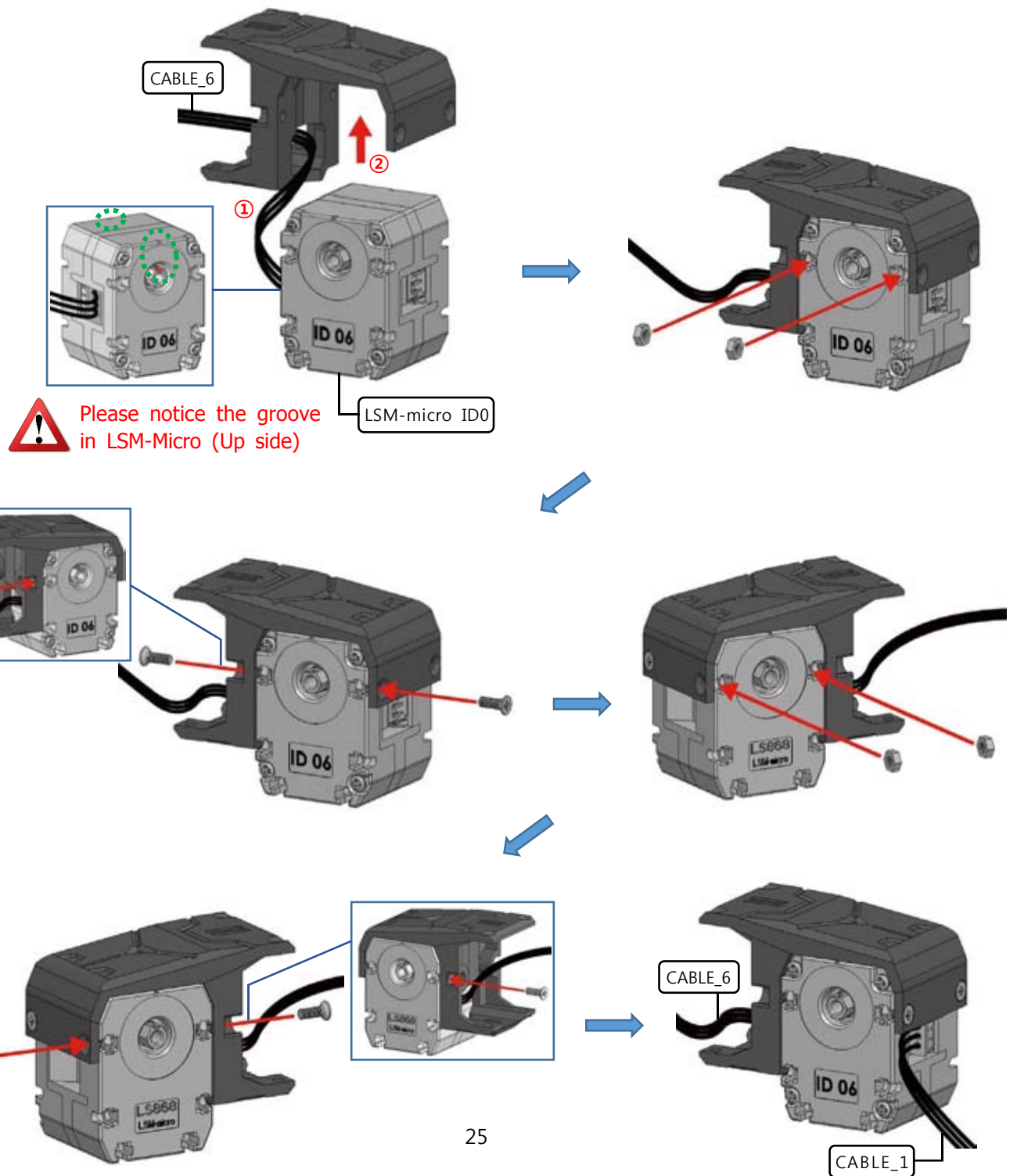
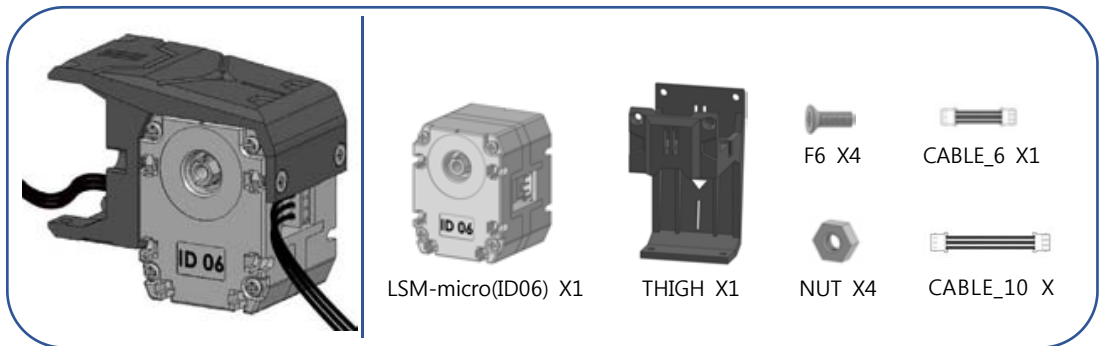
PART2-1



PART2-2



PART2-3



PART2-4

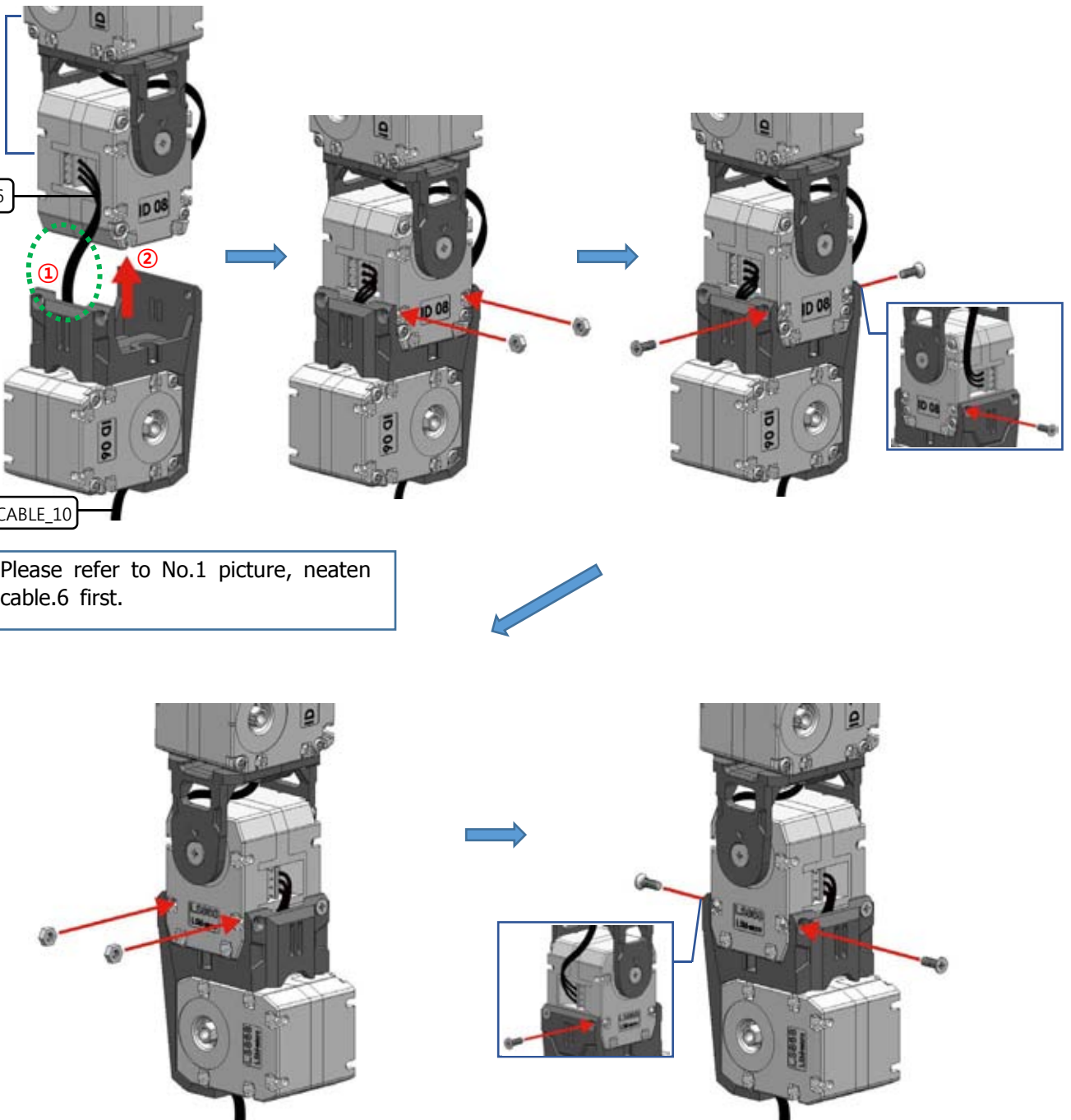


PART2-2

CABLE\_6

CABLE\_10

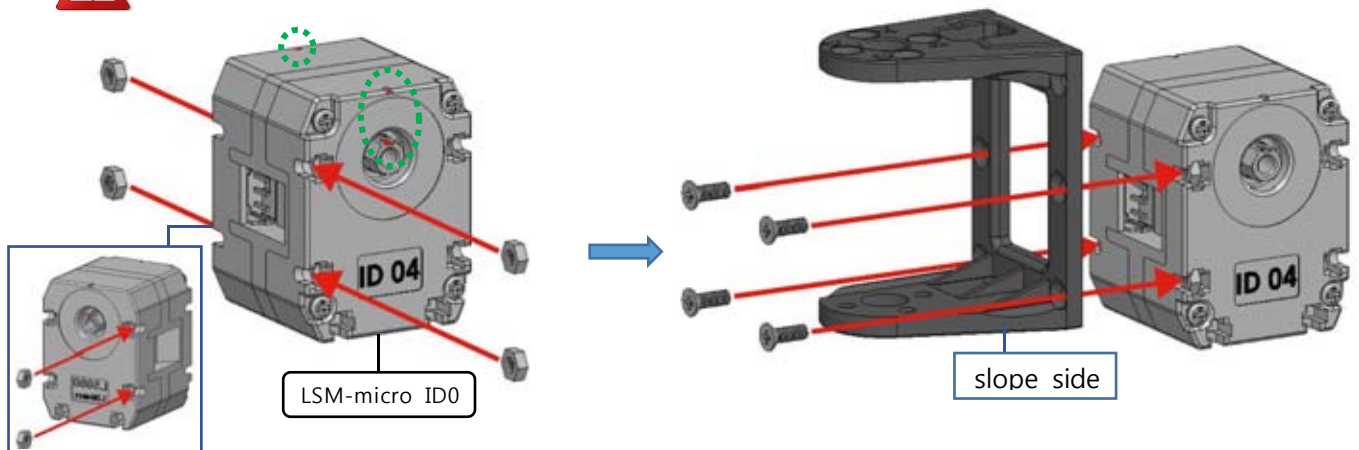
Please refer to No.1 picture, neaten cable.6 first.



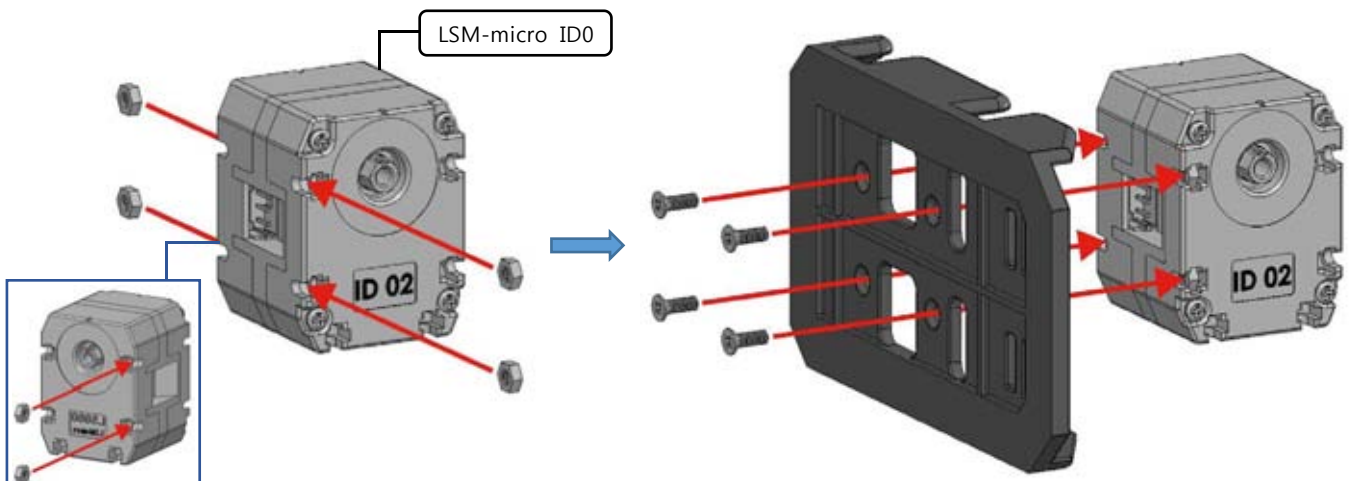
PART2-5



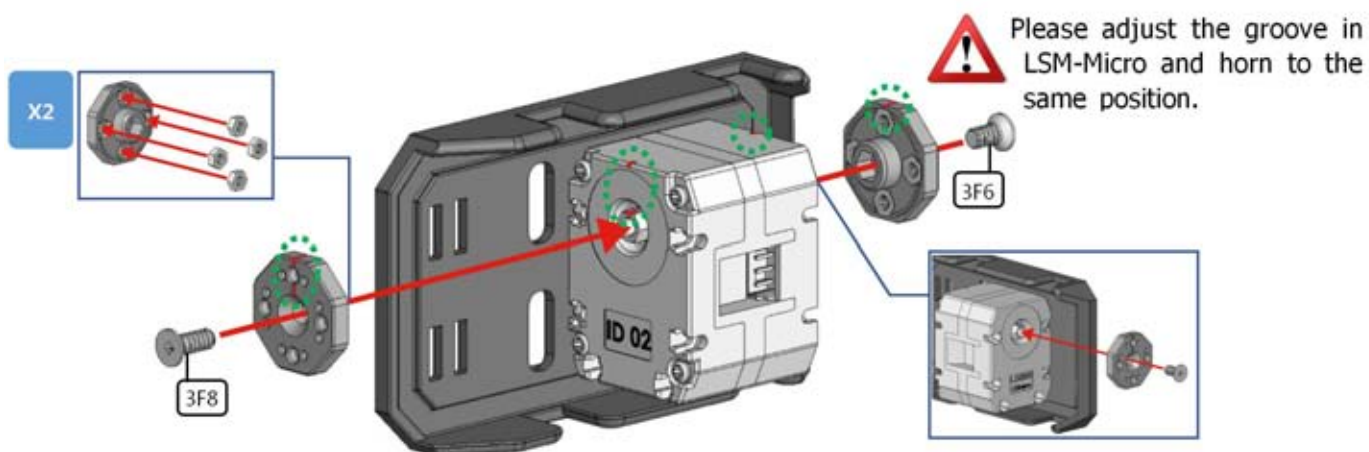
Please notice the groove in LSM-Micro (Up side)



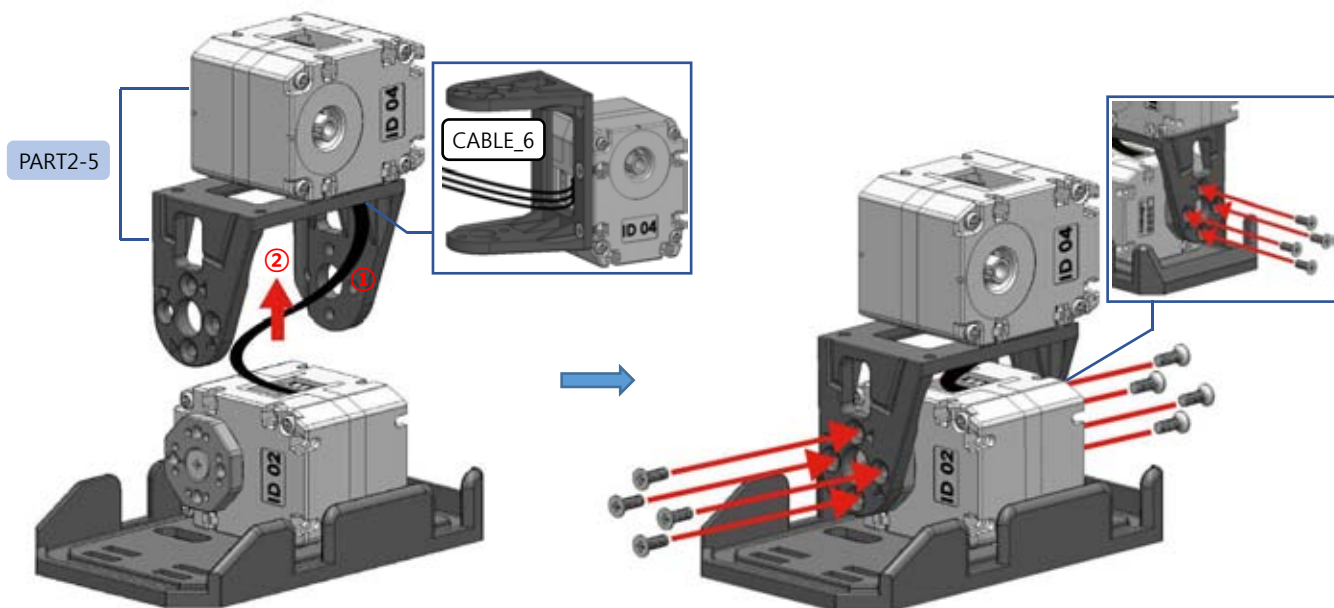
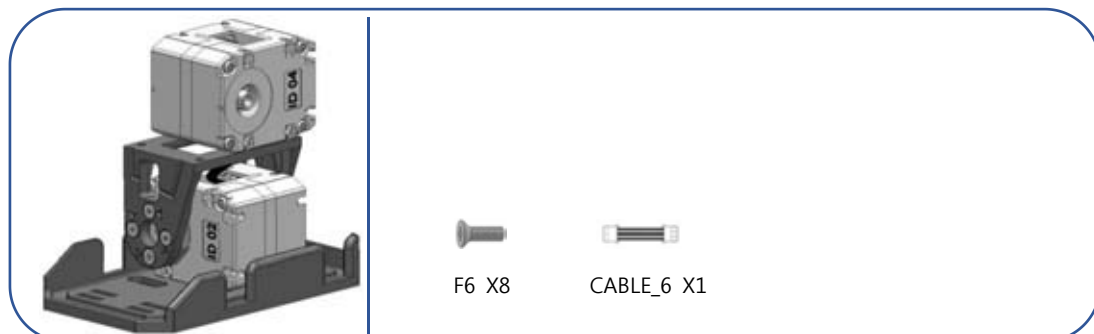
PART2-6



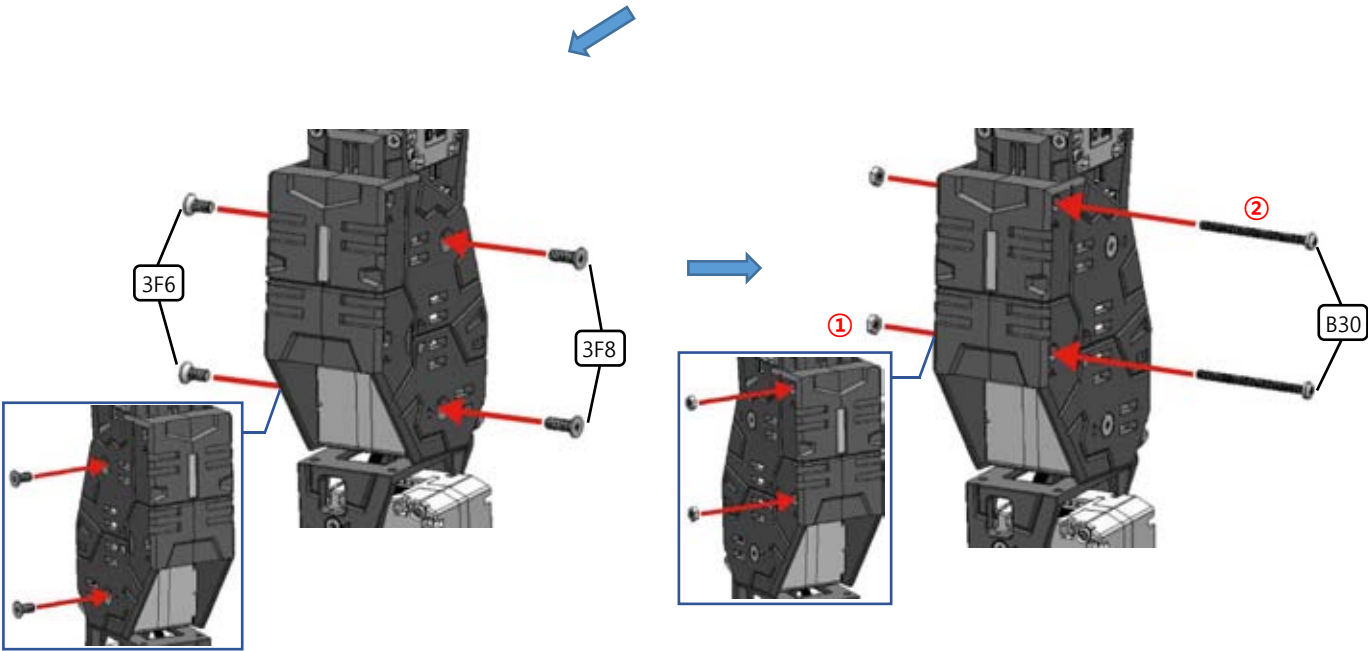
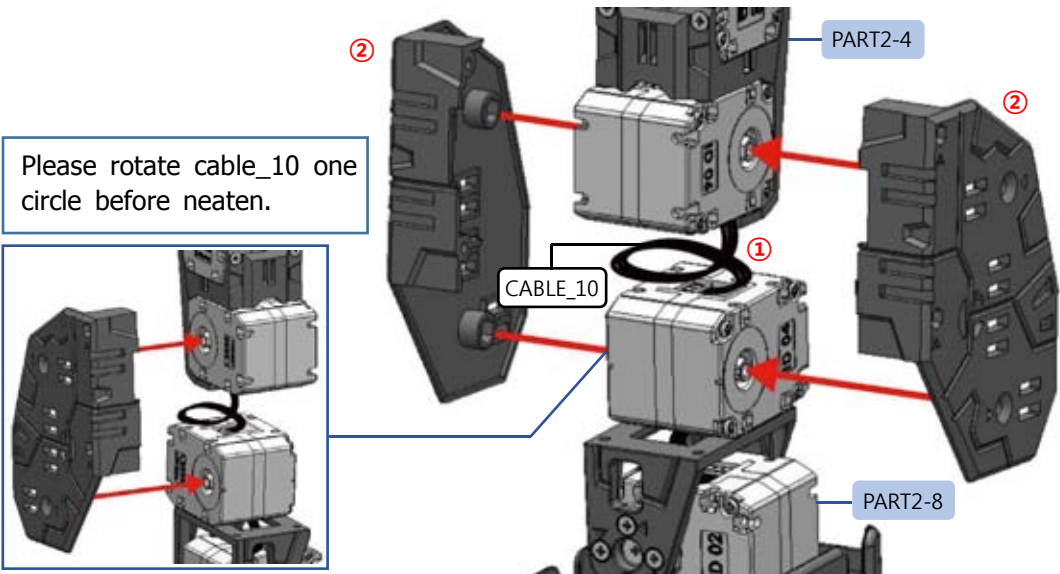
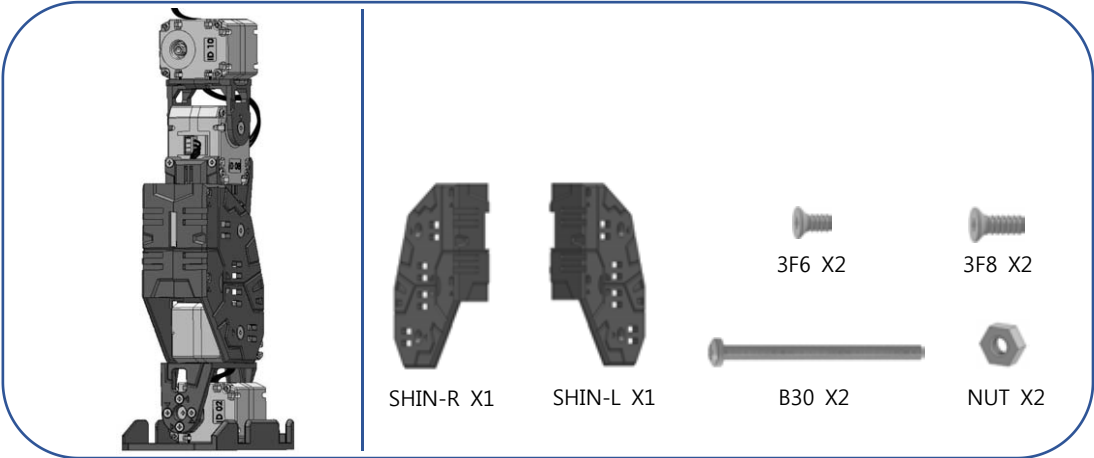
PART2-7



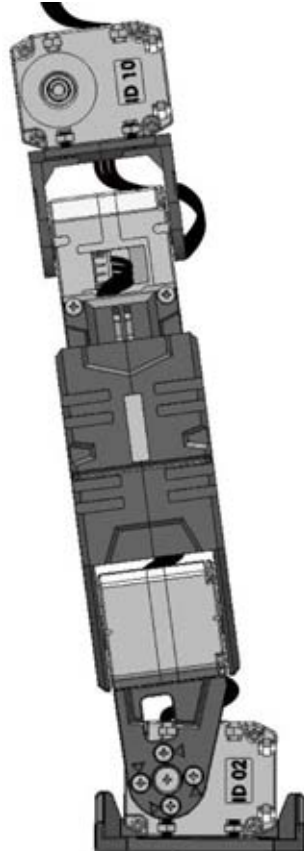
PART2-8



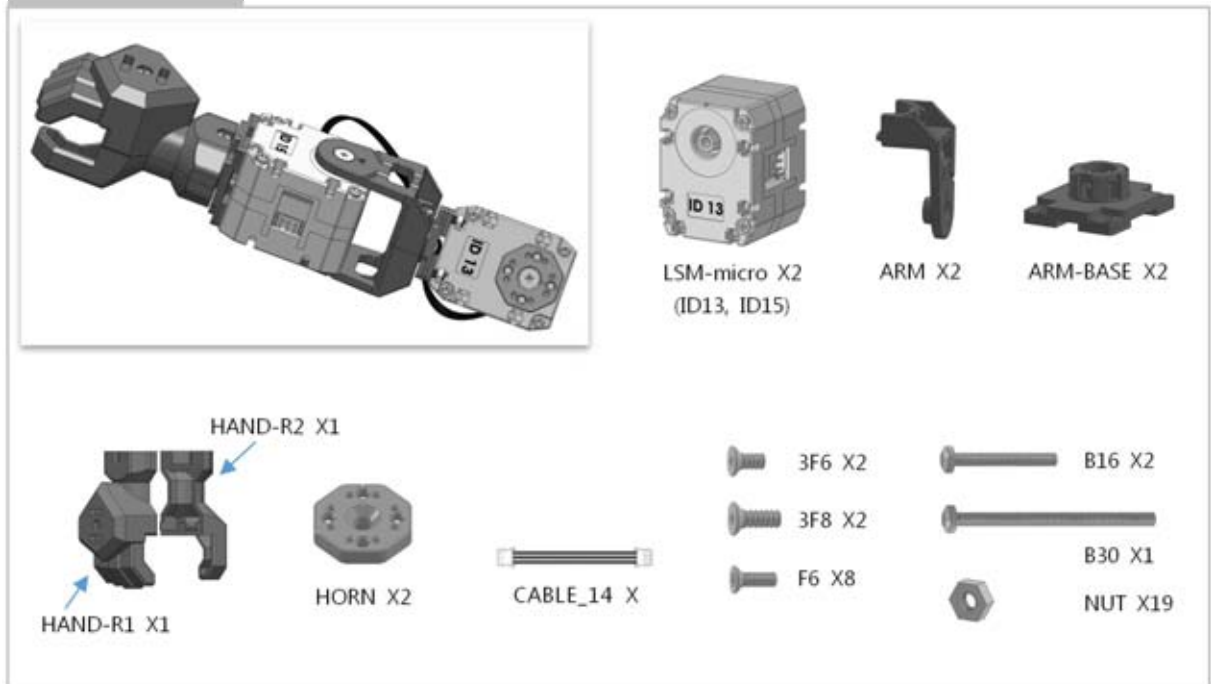
PART2-9



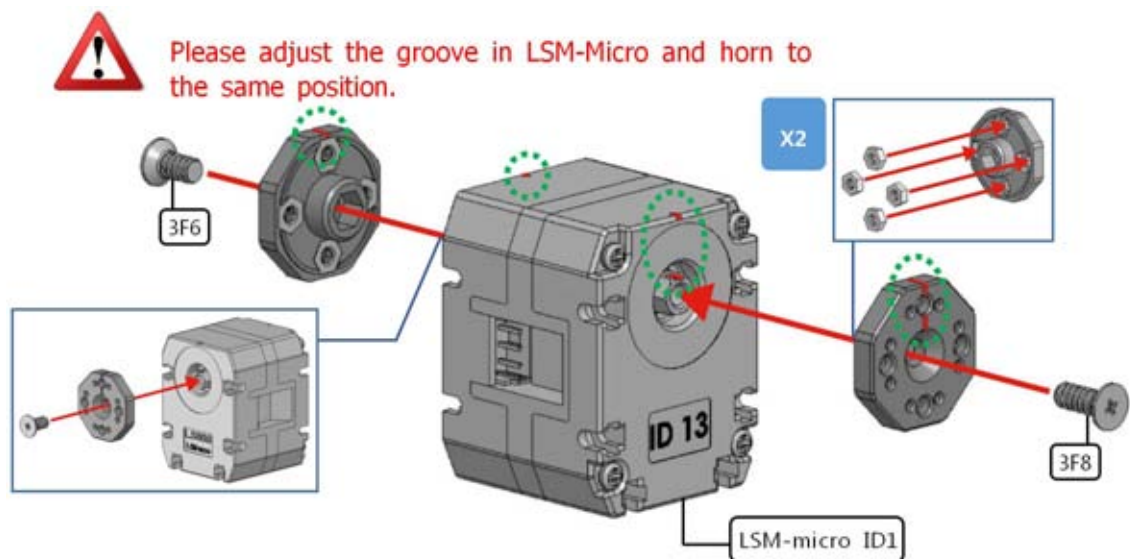
PART2 LEFT LEG Completed



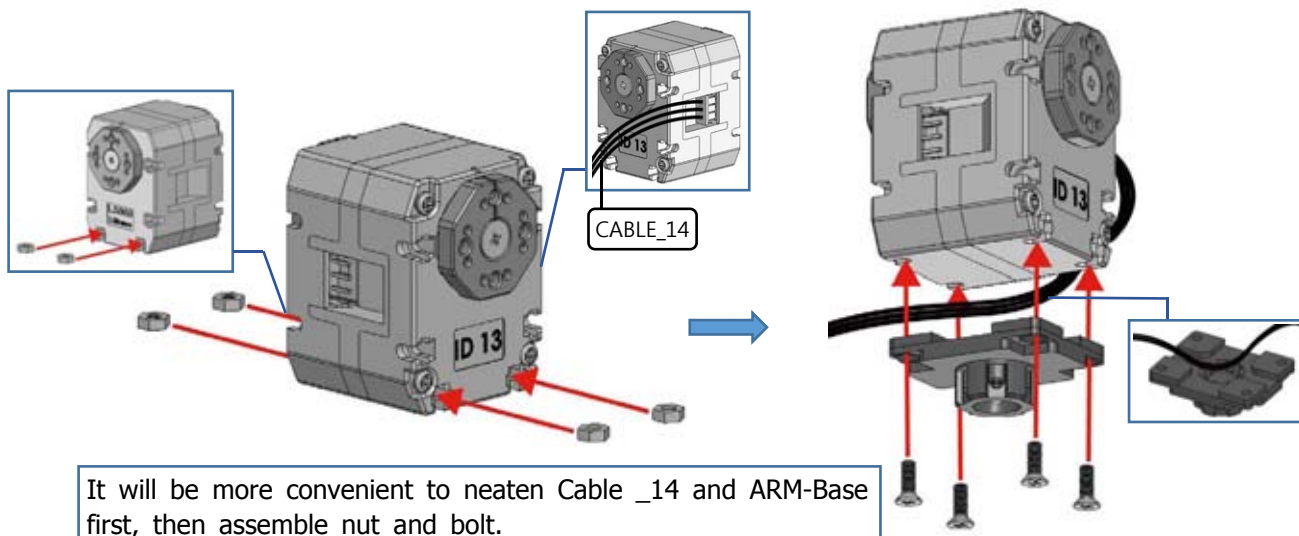
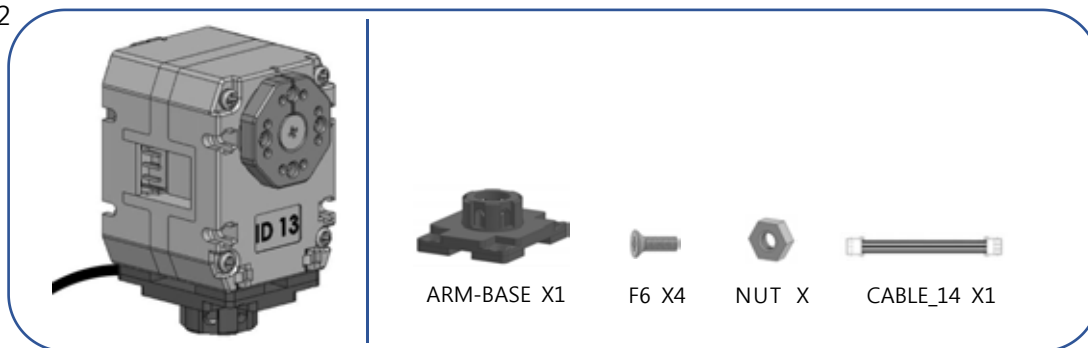
PART3 RIGHT ARM



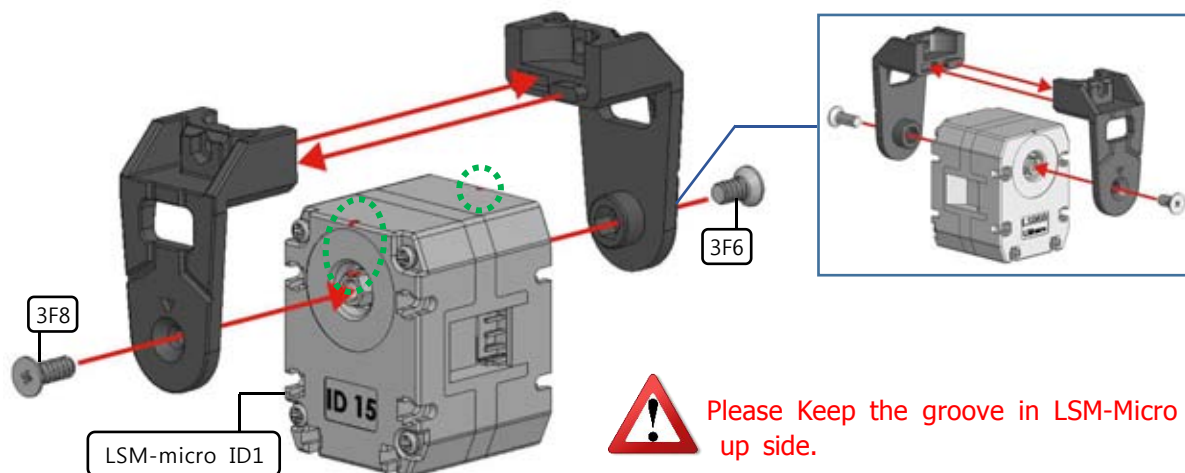
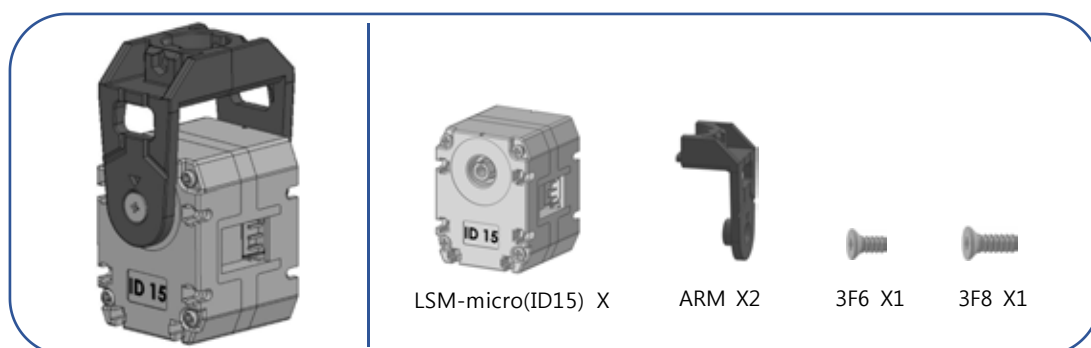
PART3-1



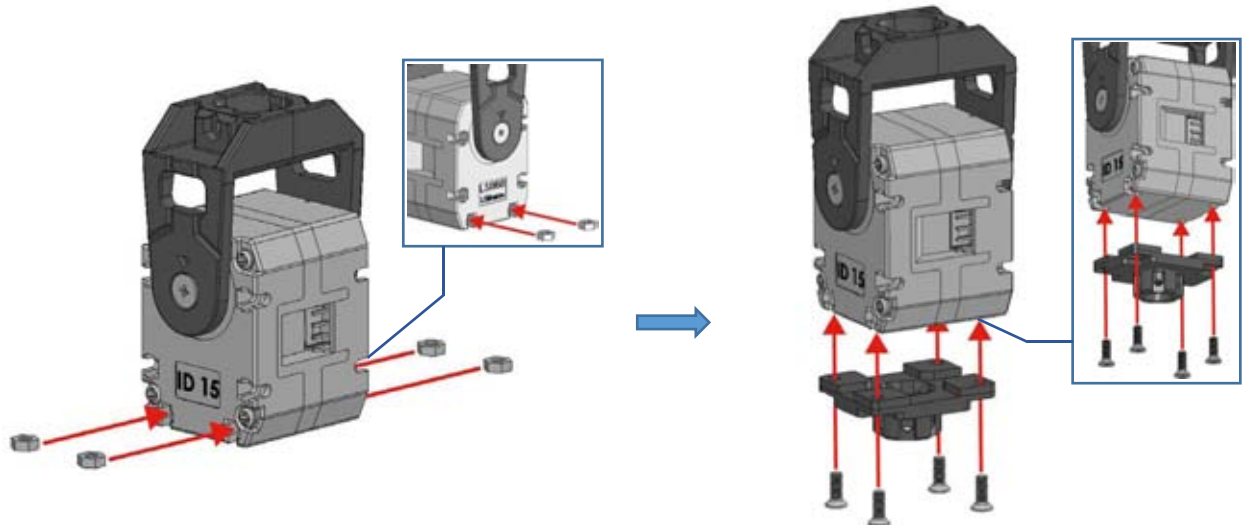
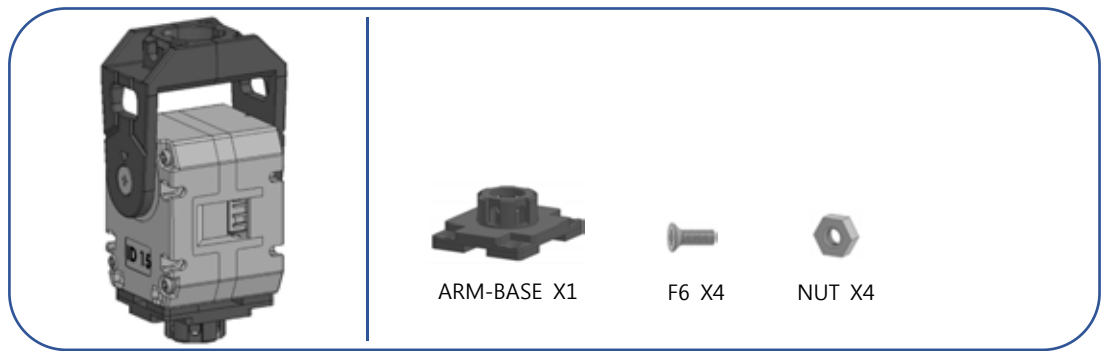
PART3-2



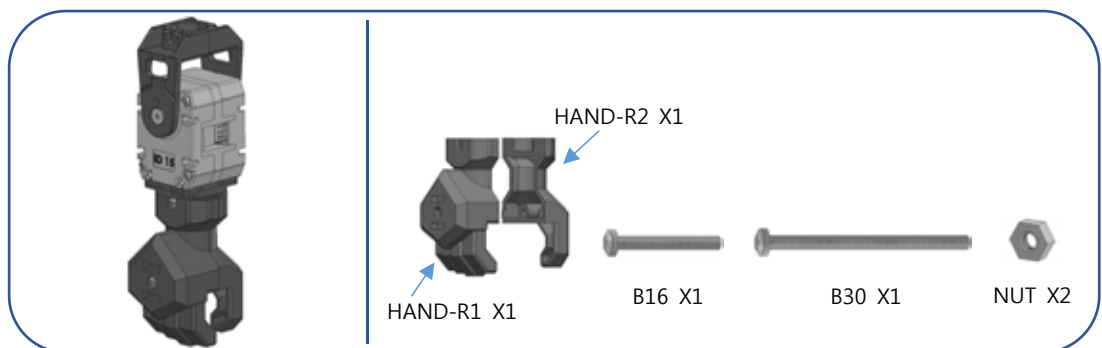
PART3-3



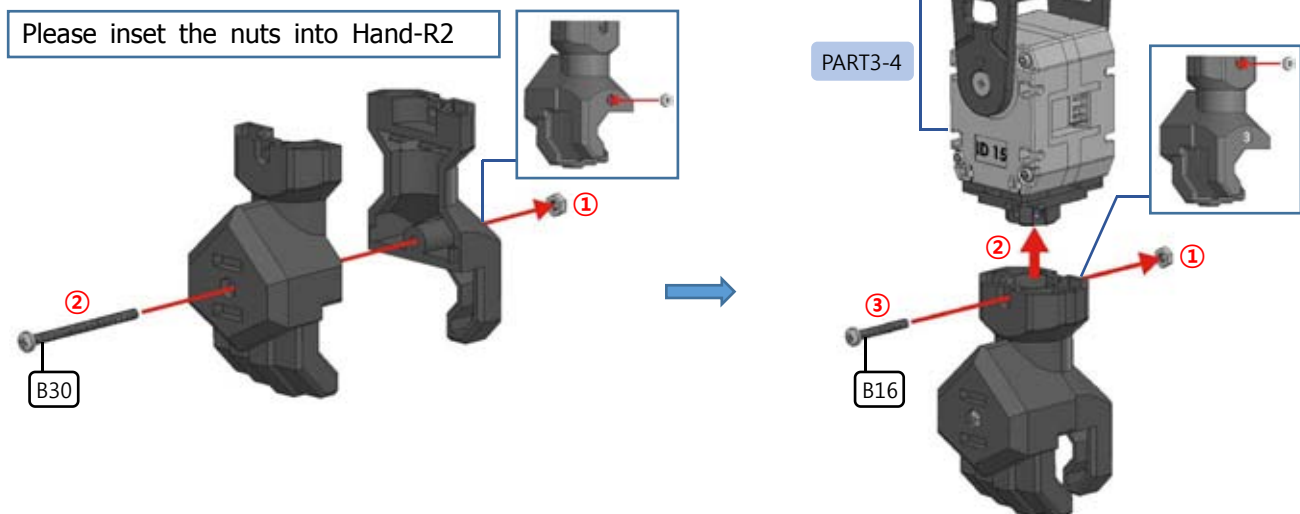
PART3-4



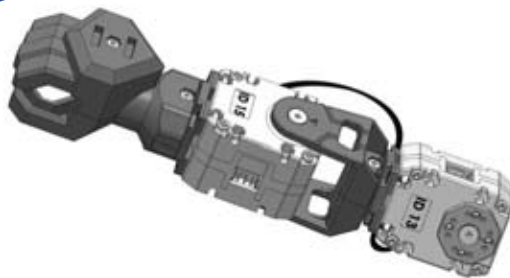
PART3-5



Please inset the nuts into Hand-R2



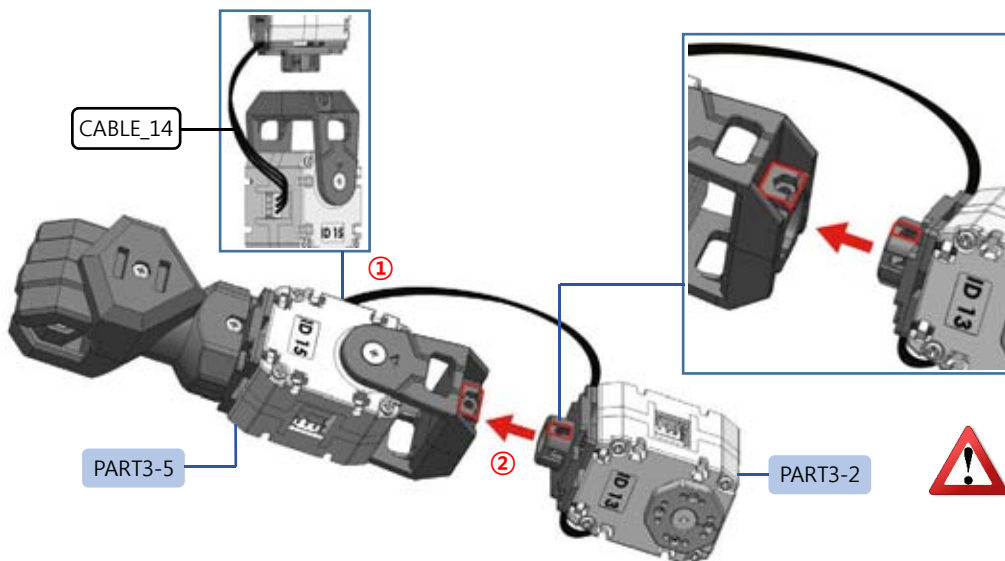
PART3-6



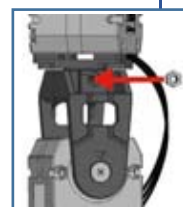
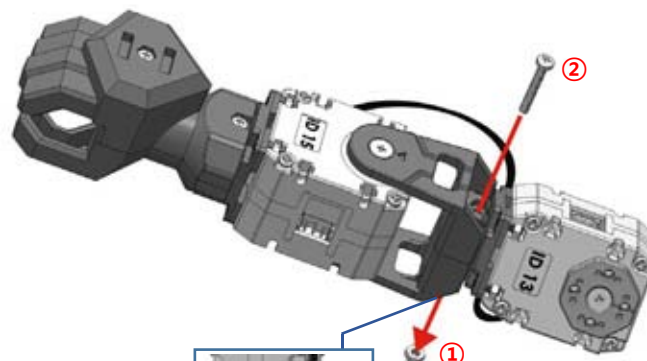
B16 X1



NUT X1



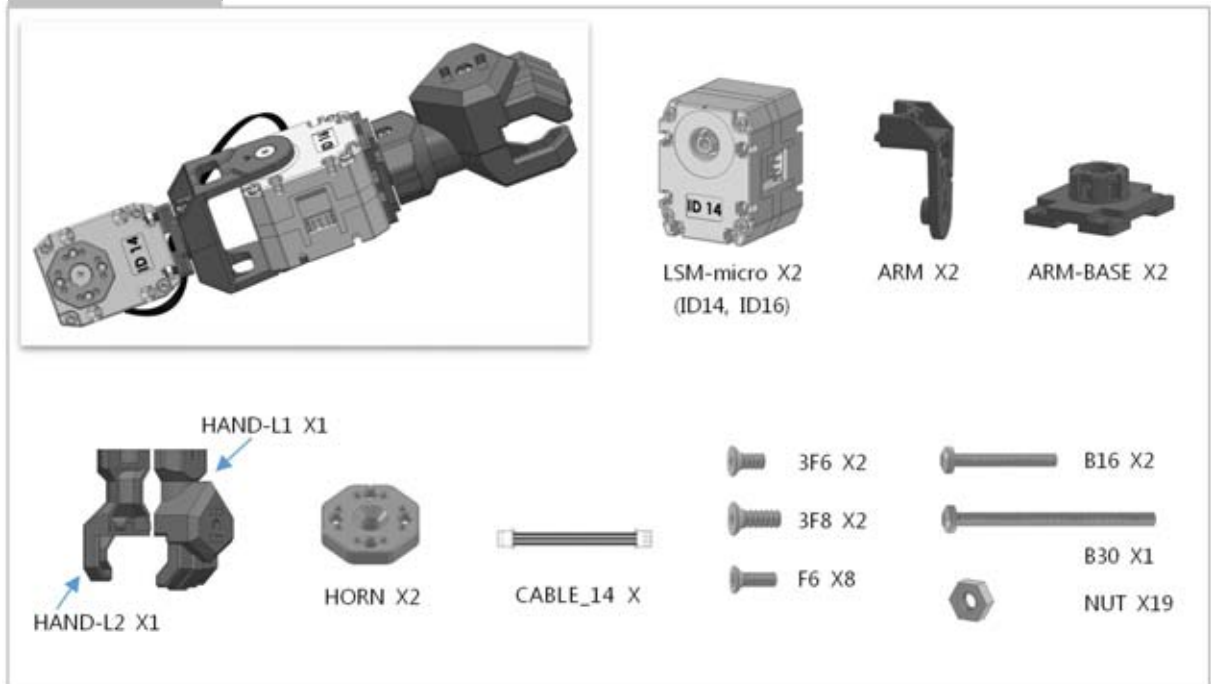
Please notice the direction when assemble PART3-2 and PART3-5.



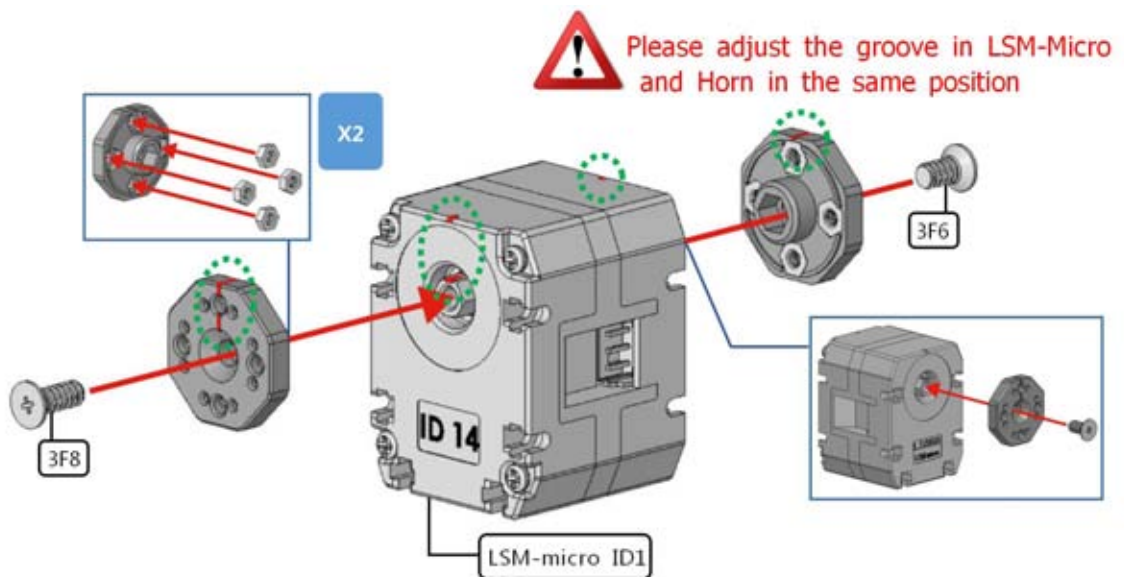
PART3 RIGHT ARM Completed



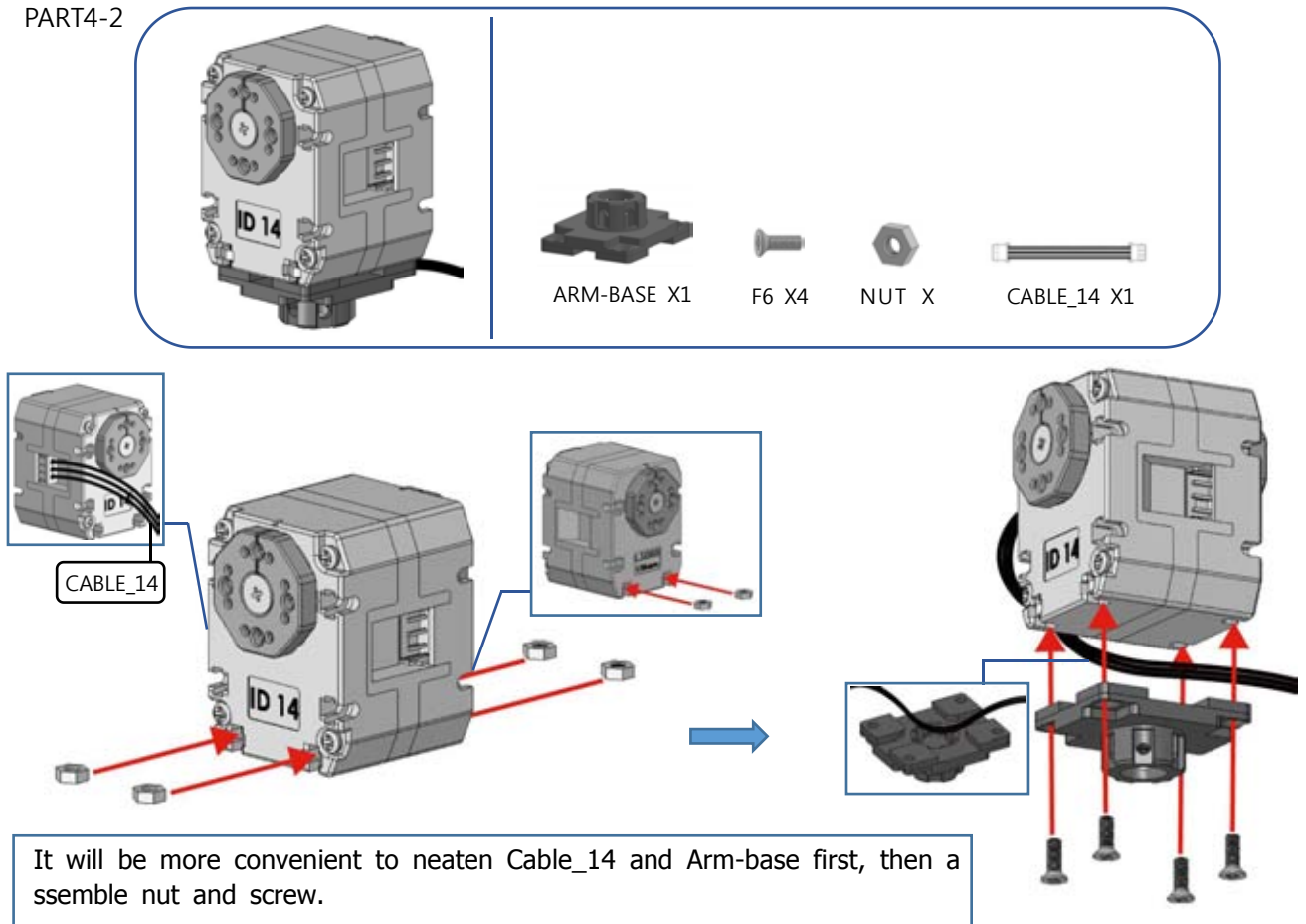
PART4 LEFT ARM



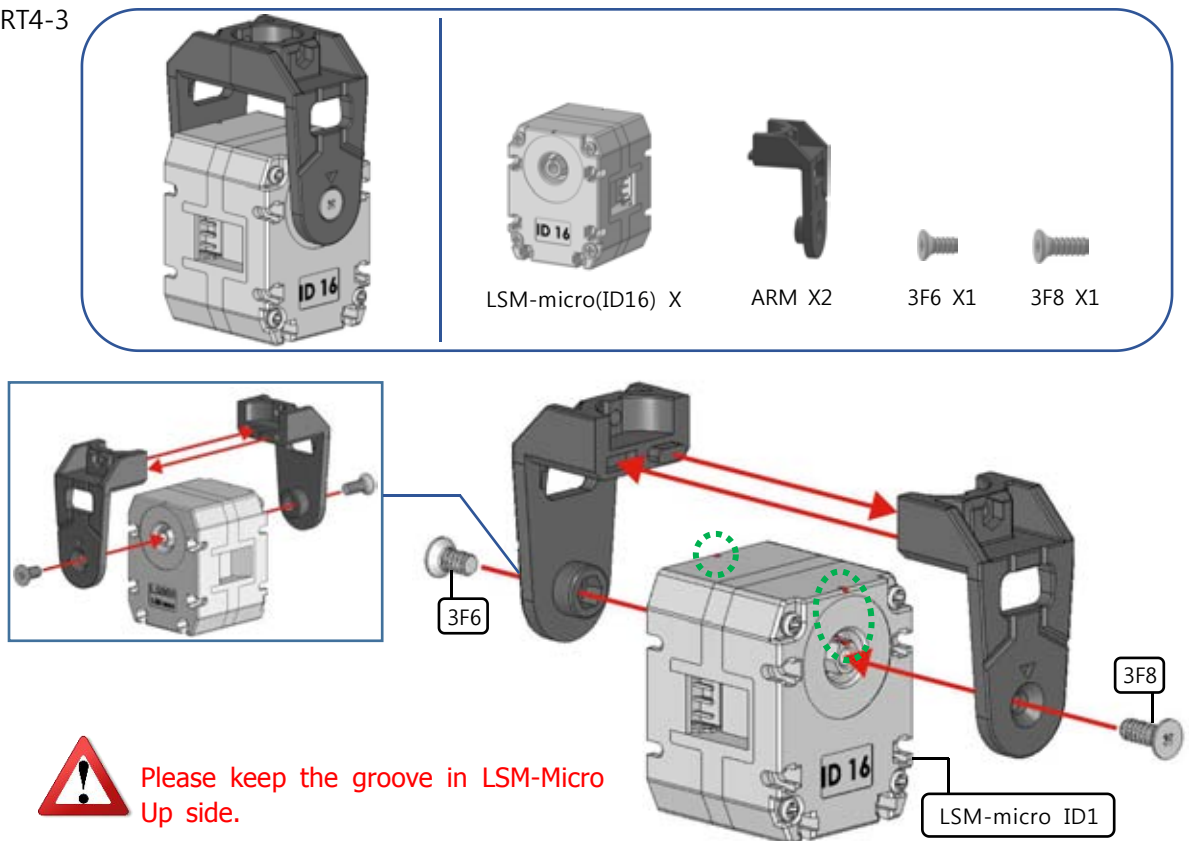
PART4-1



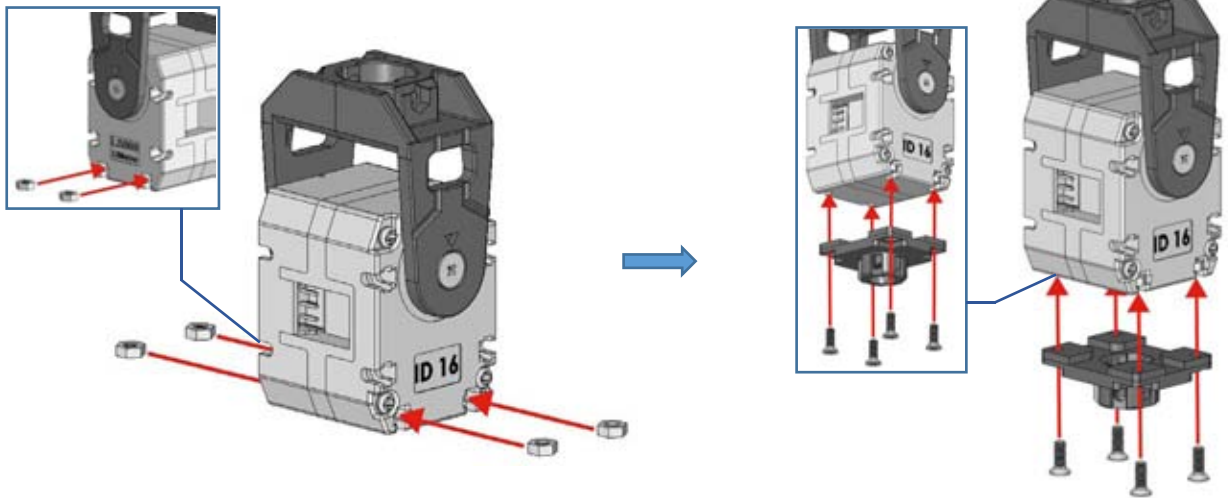
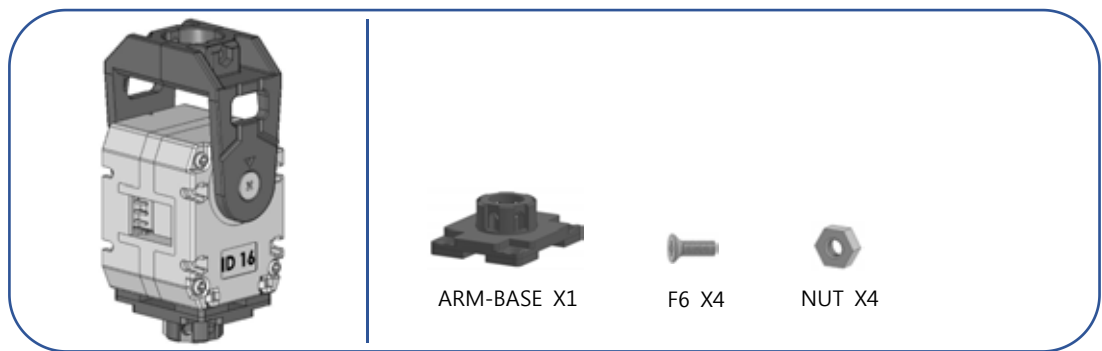
PART4-2



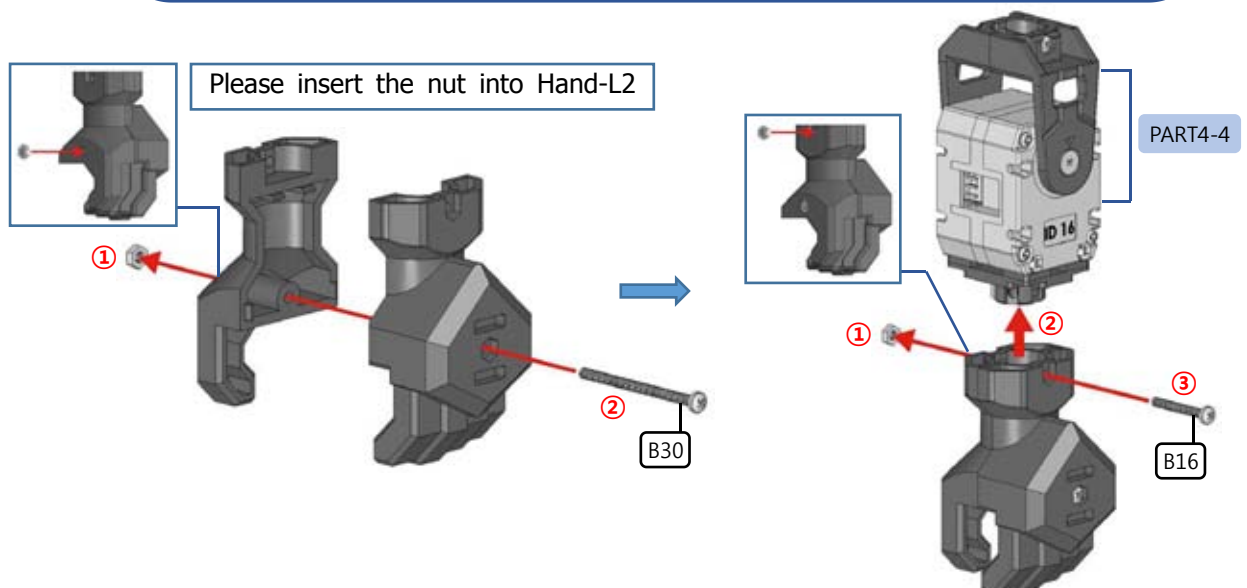
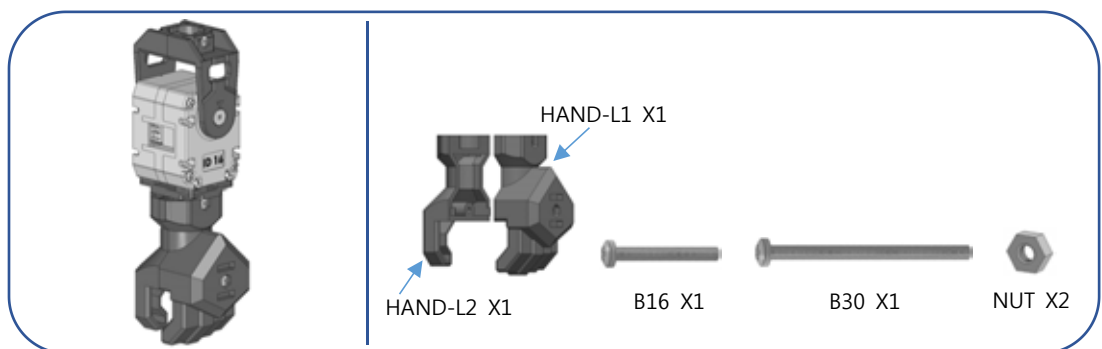
PART4-3



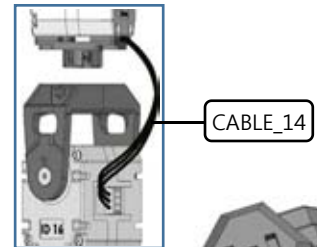
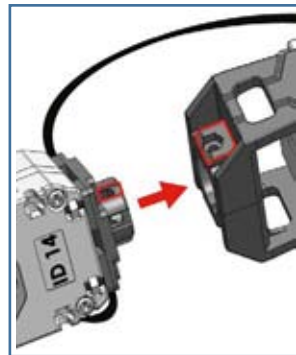
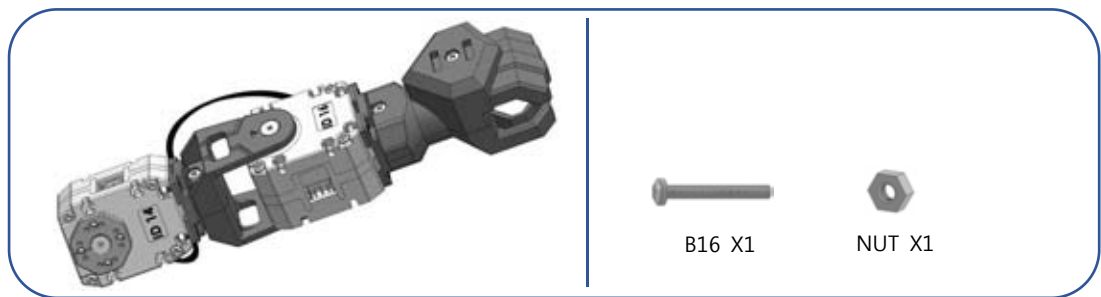
PART4-4



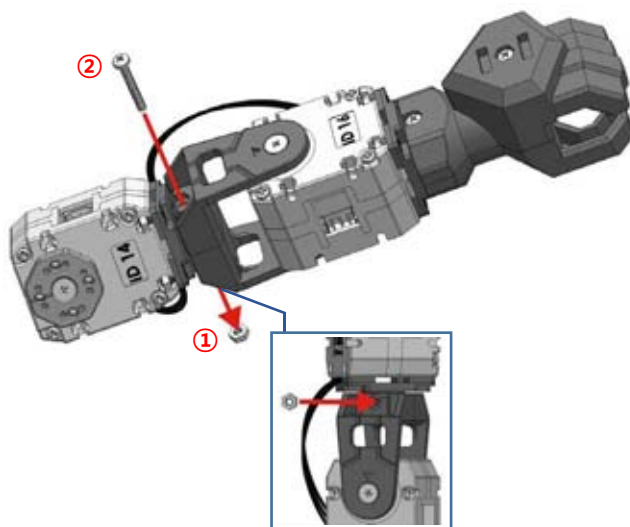
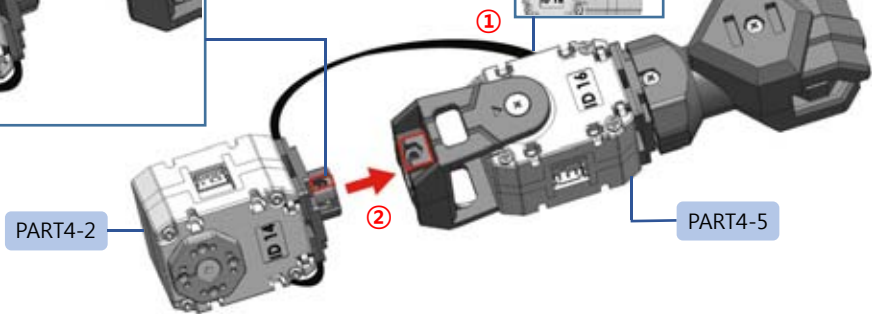
PART4-5



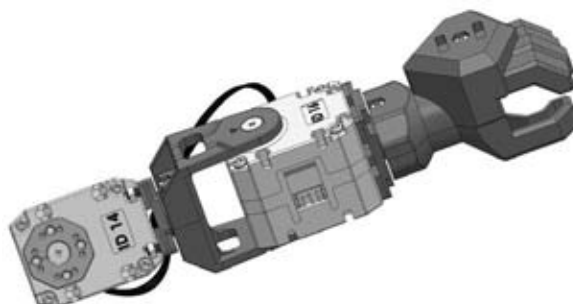
PART4-6



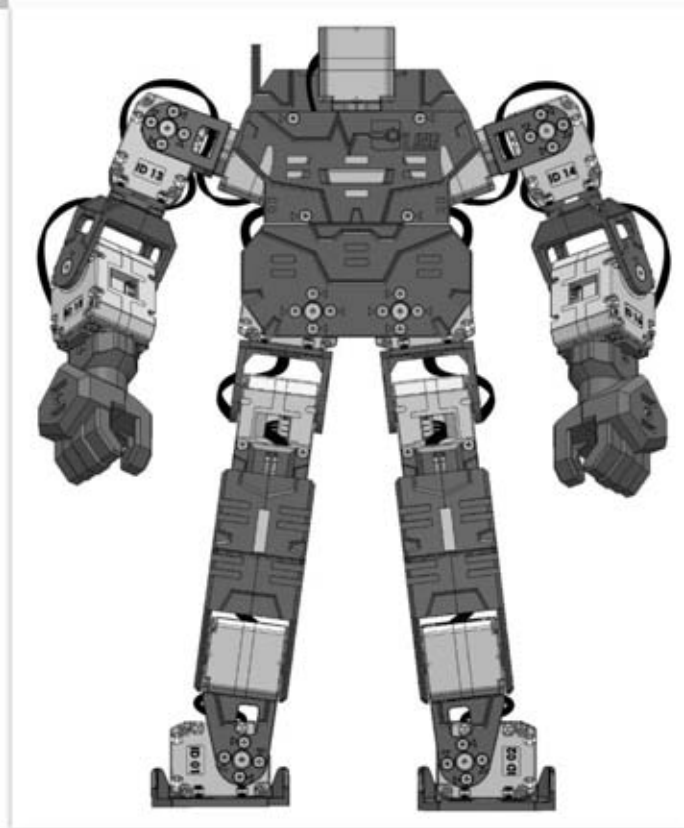
 Please notice the direction of Part4-2 and Part4-5 when assembling.



PART4 LEFT ARM Completed



PARTS HEAD & BODY



LSM-micro X4  
(ID11, ID12, ID17, ID1)



LSC-m X



BATTERY COVER & CASE



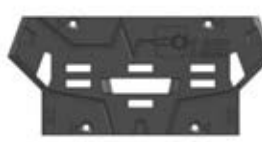
BATTERY X



BODY-UP X1



BODY-DOWN X1



CHEST X1



BACK X1



SHOULDER X2



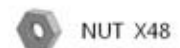
HORN X8



3F6 X2



B5 X4



NUT X48



3F8 X6



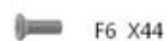
P6 X1



F5 X4



CABLE\_8 X3



F6 X44



CABLE\_10 X1

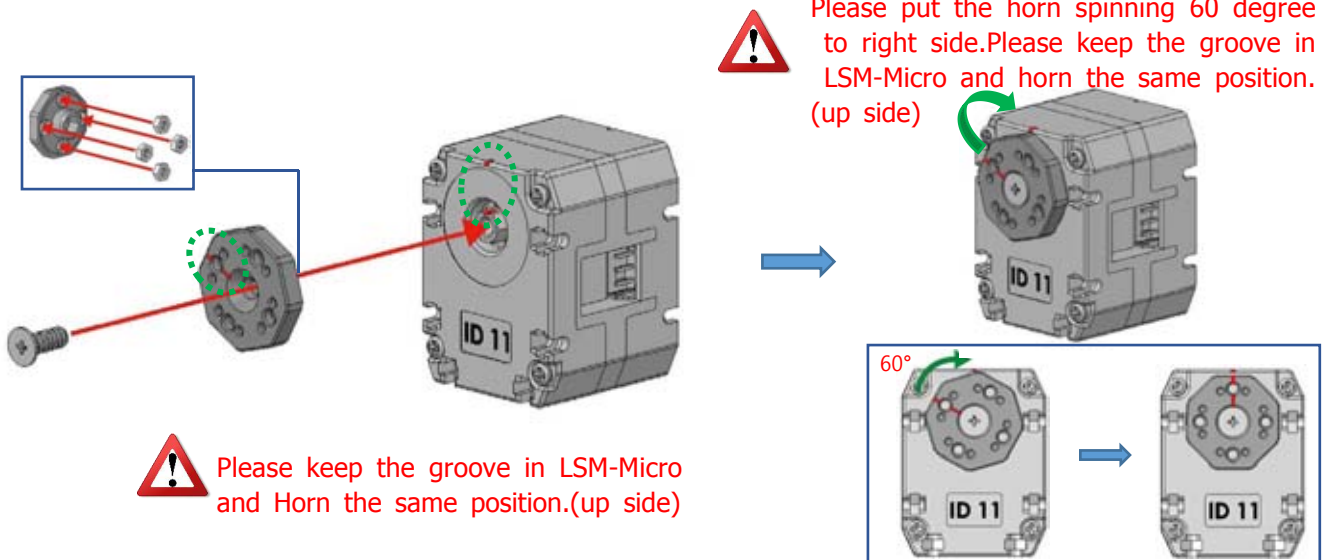
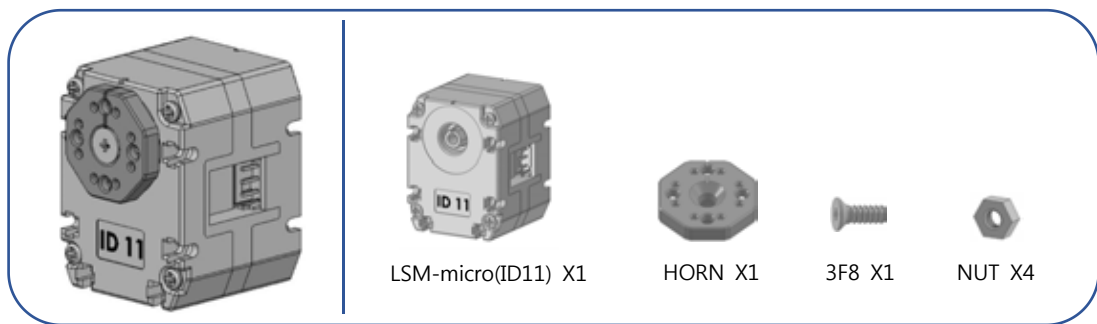


F8 X12

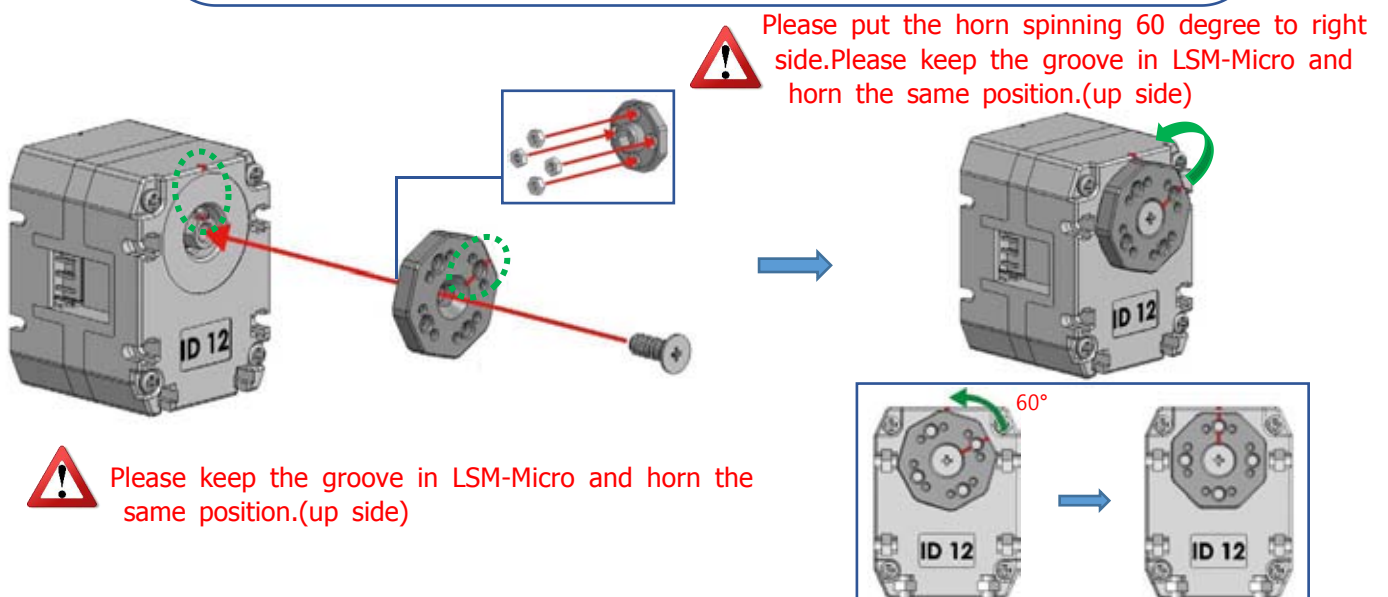
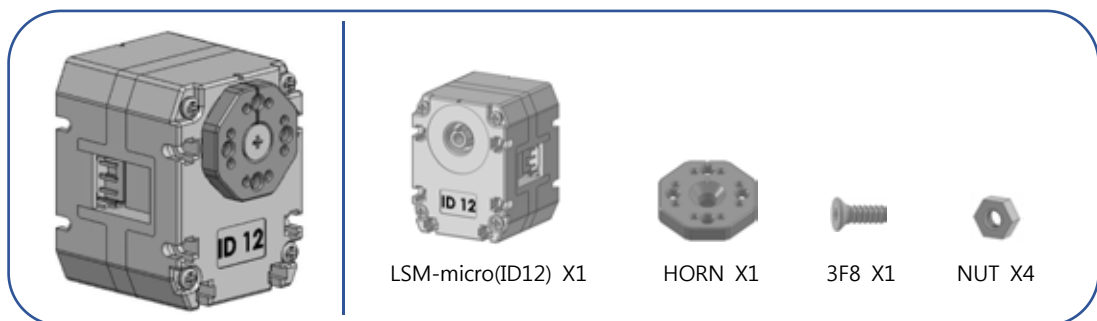


1

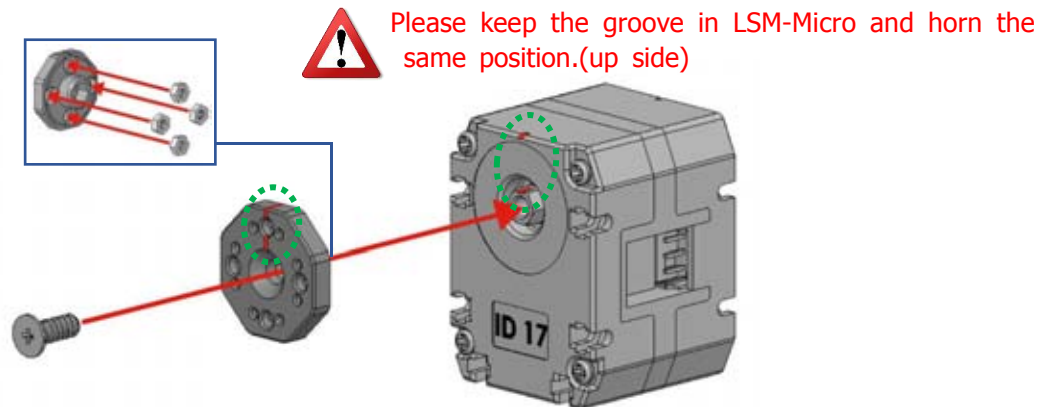
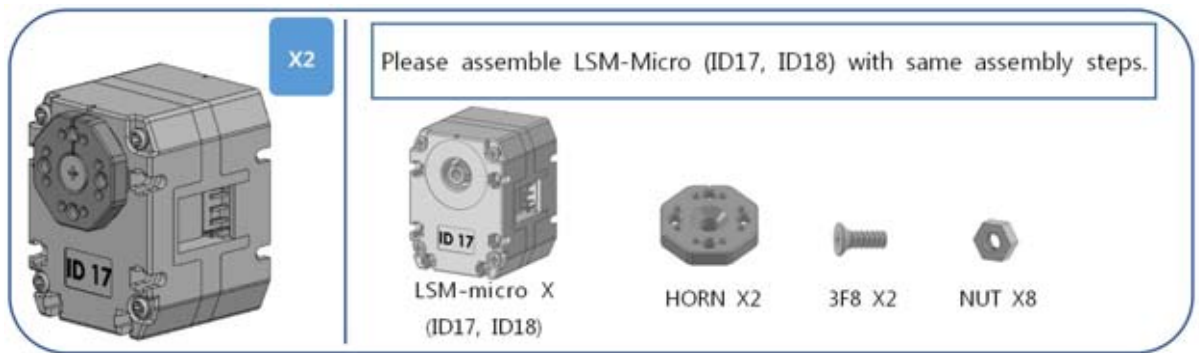
PART5-1



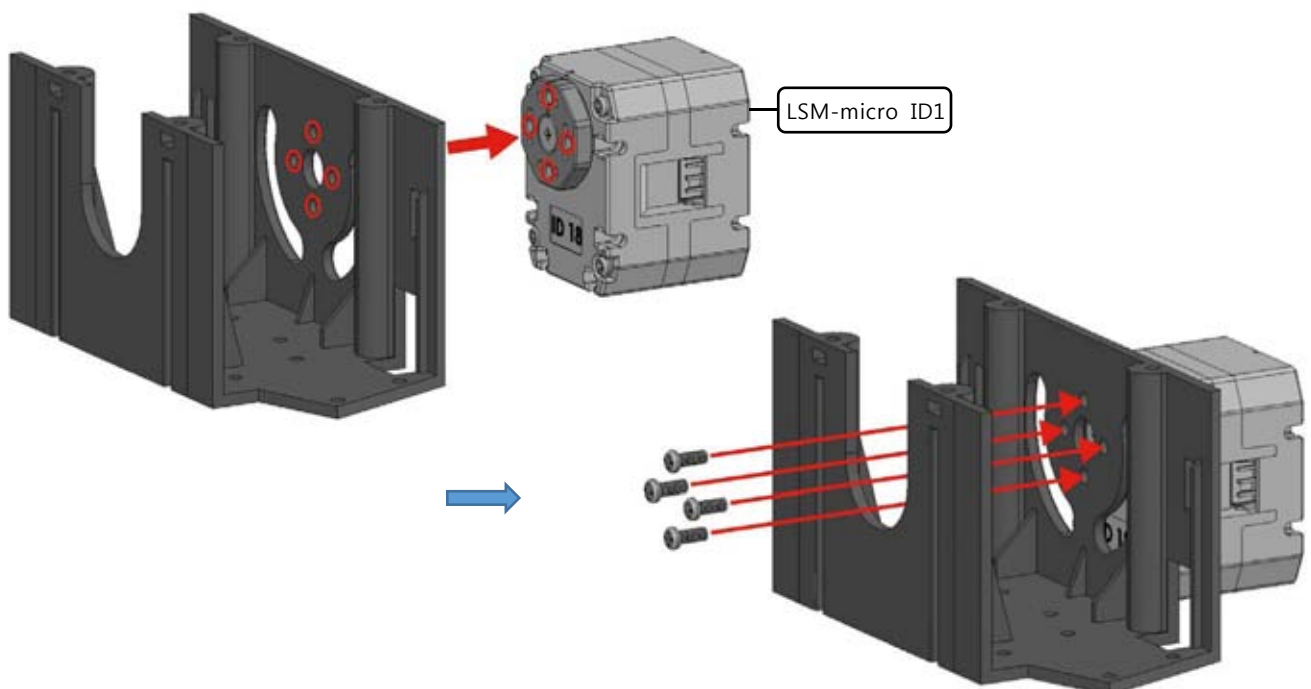
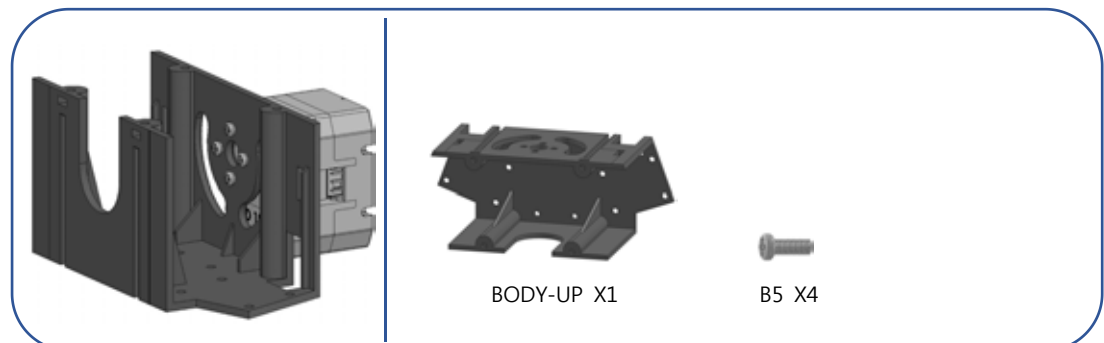
PART5-2



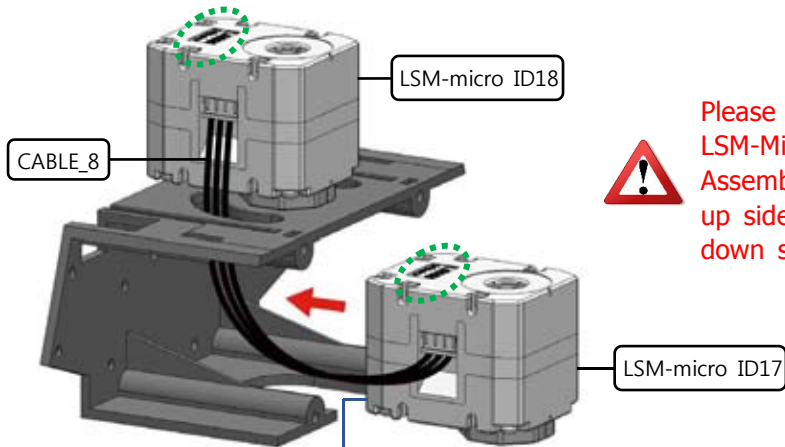
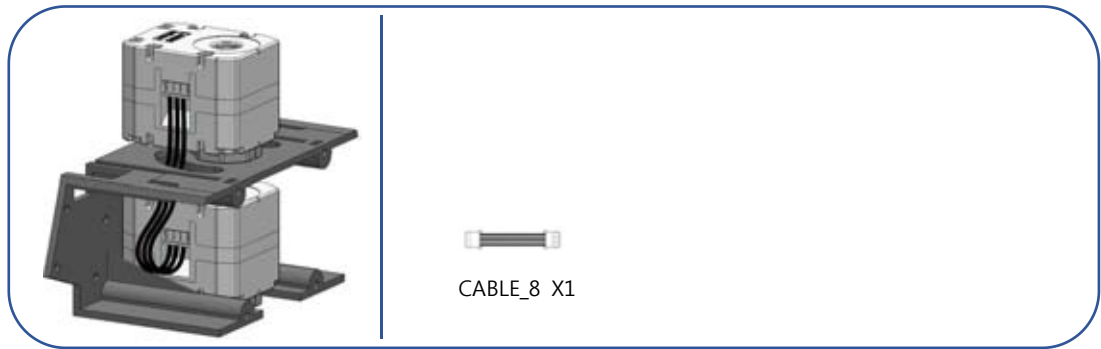
PART5-3



PART5-4



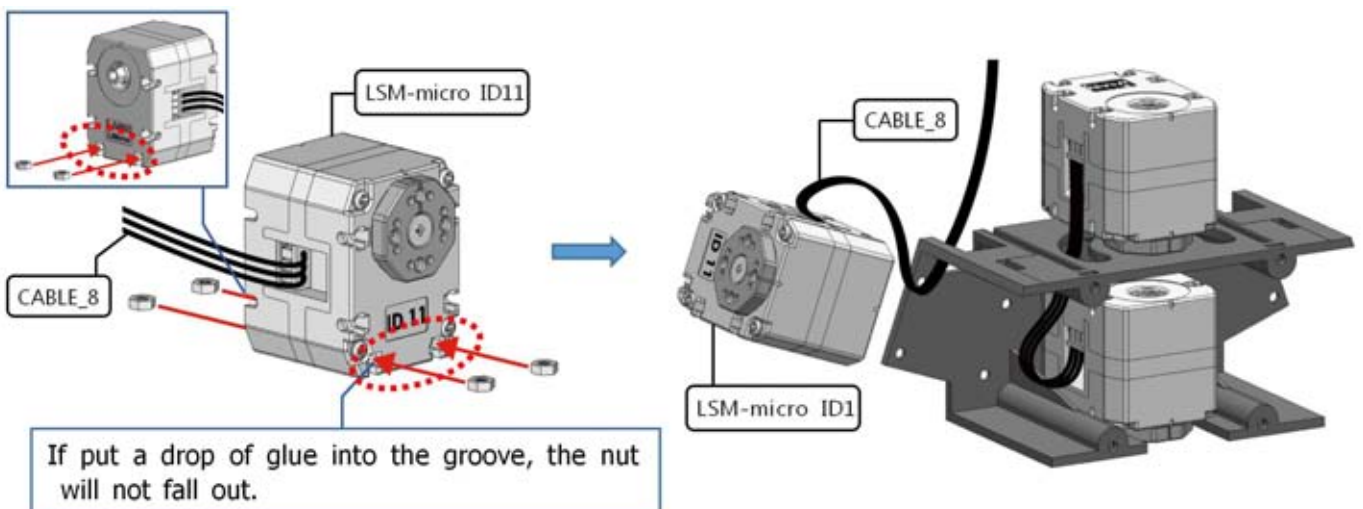
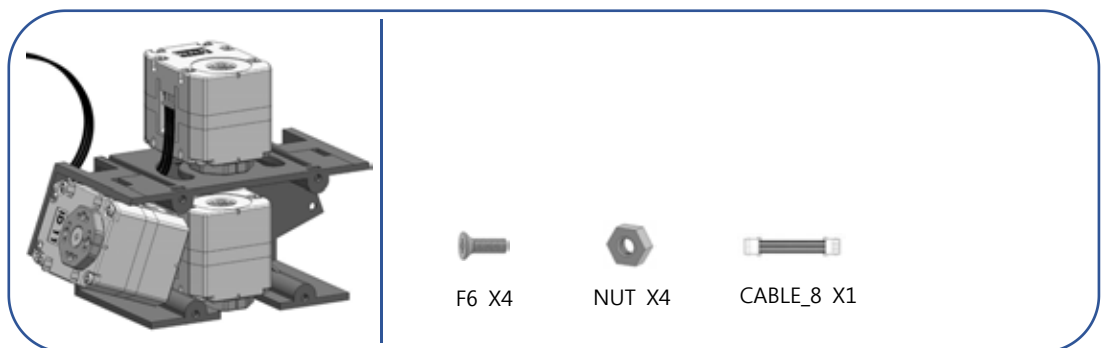
PART5-5

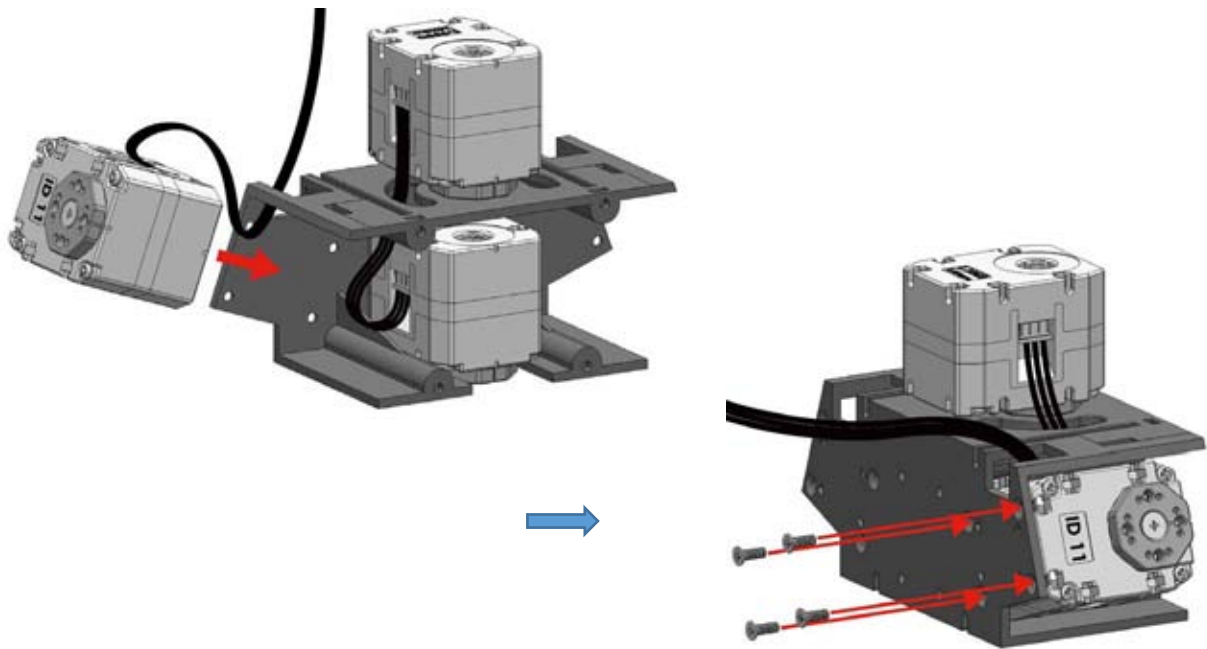


Please notice the direction when assemble LSM-Micro(ID17) and LSM-Micro(ID 18). Assemble the back port of LSM-Micro to up side and the ID port of LSM-Micro to down side

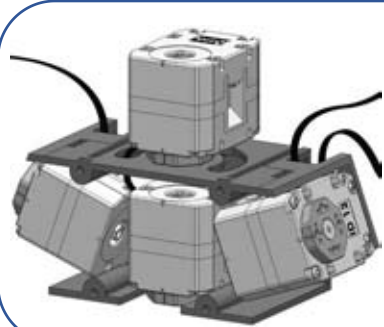
The screw in LSM-Micro(ID17) and body up will finish in **Part5-8**

PART5-6





PART5-7

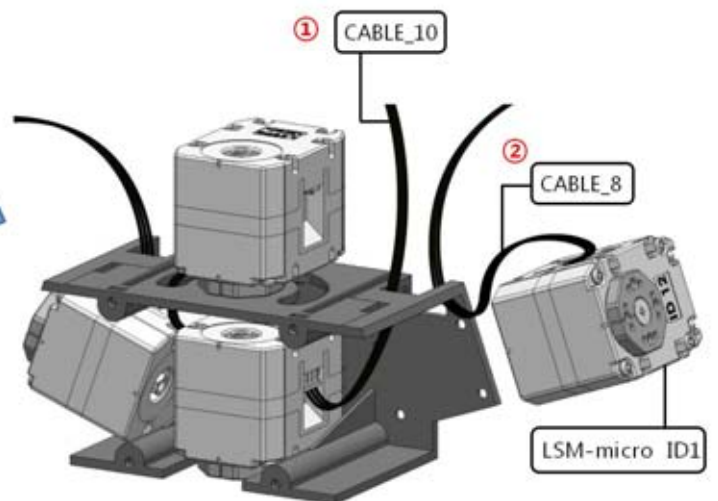
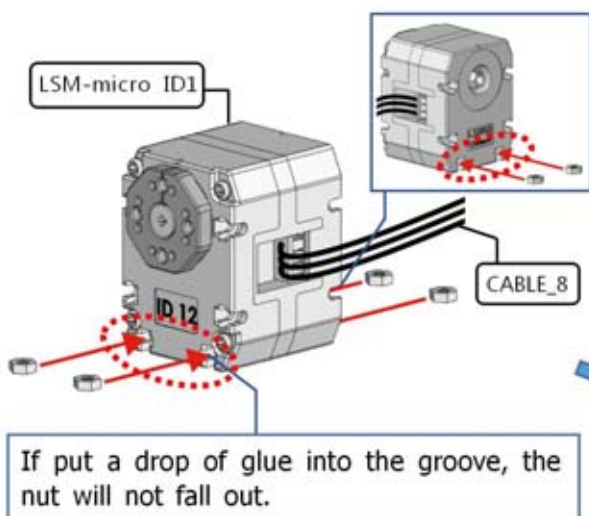


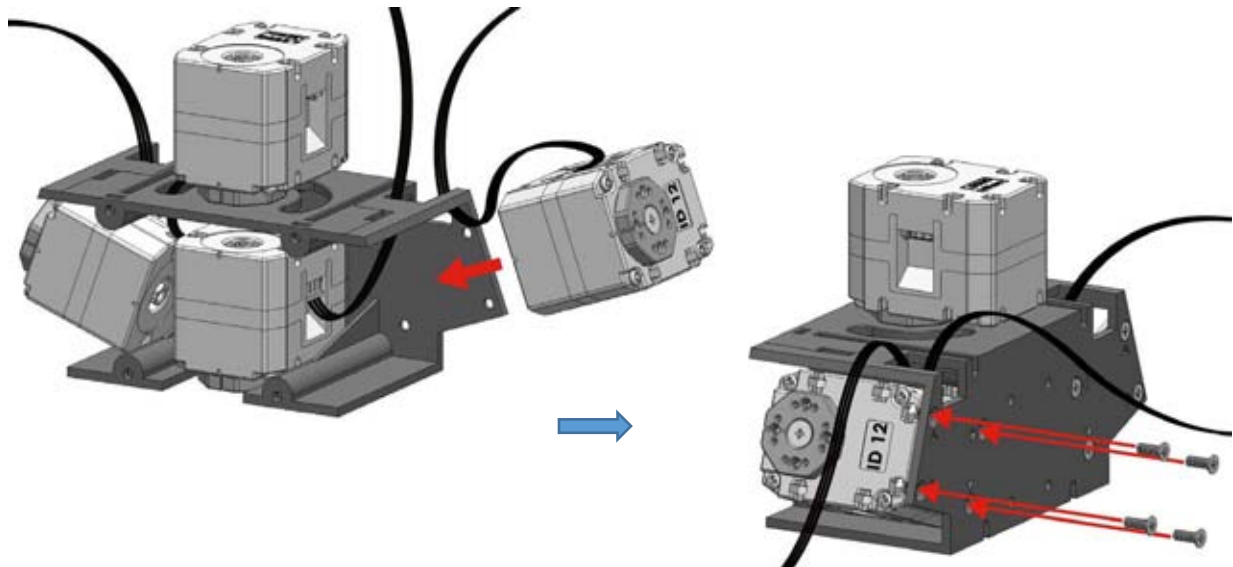
F6 X4

NUT X4

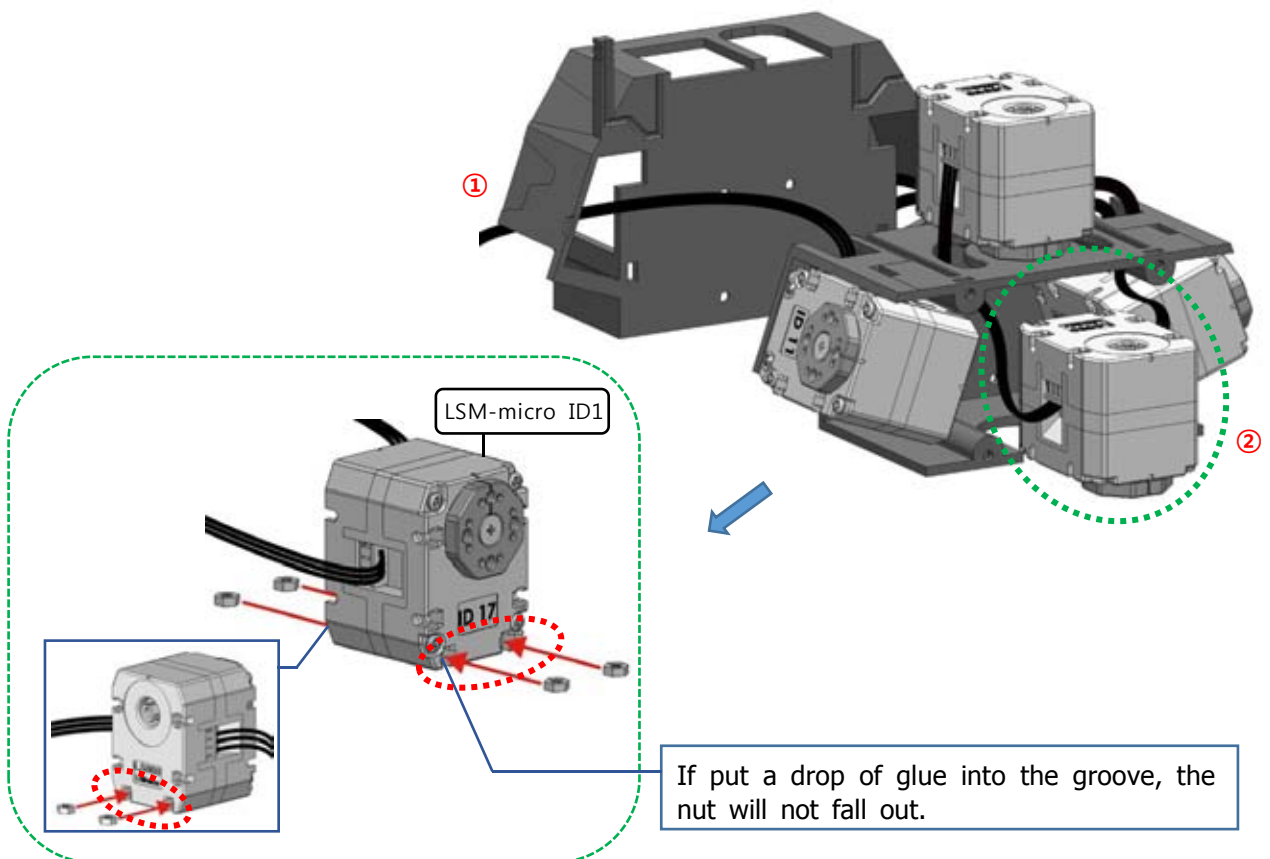
CABLE\_8 X1

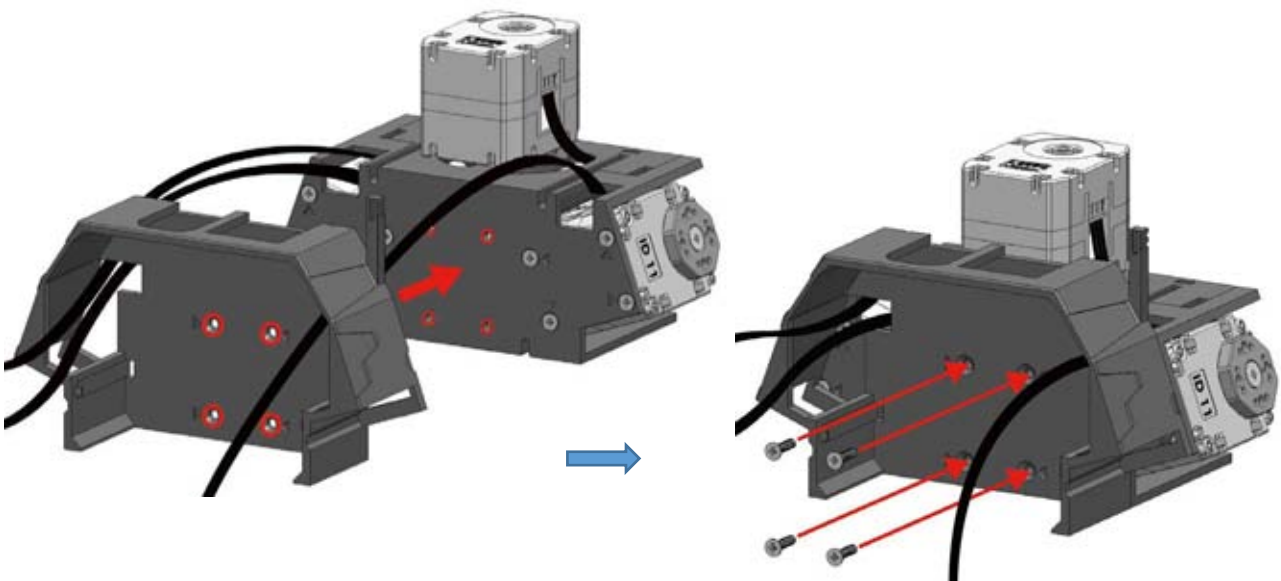
CABLE\_10 X





PART5-8

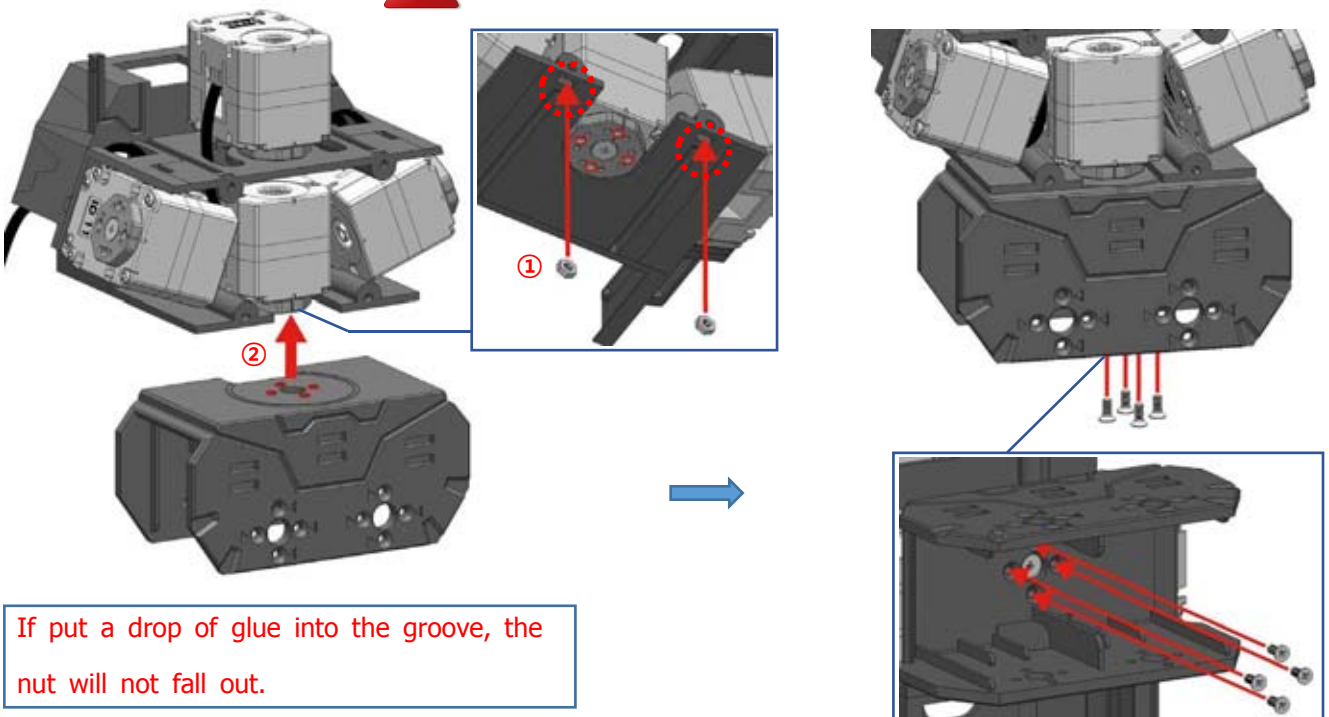




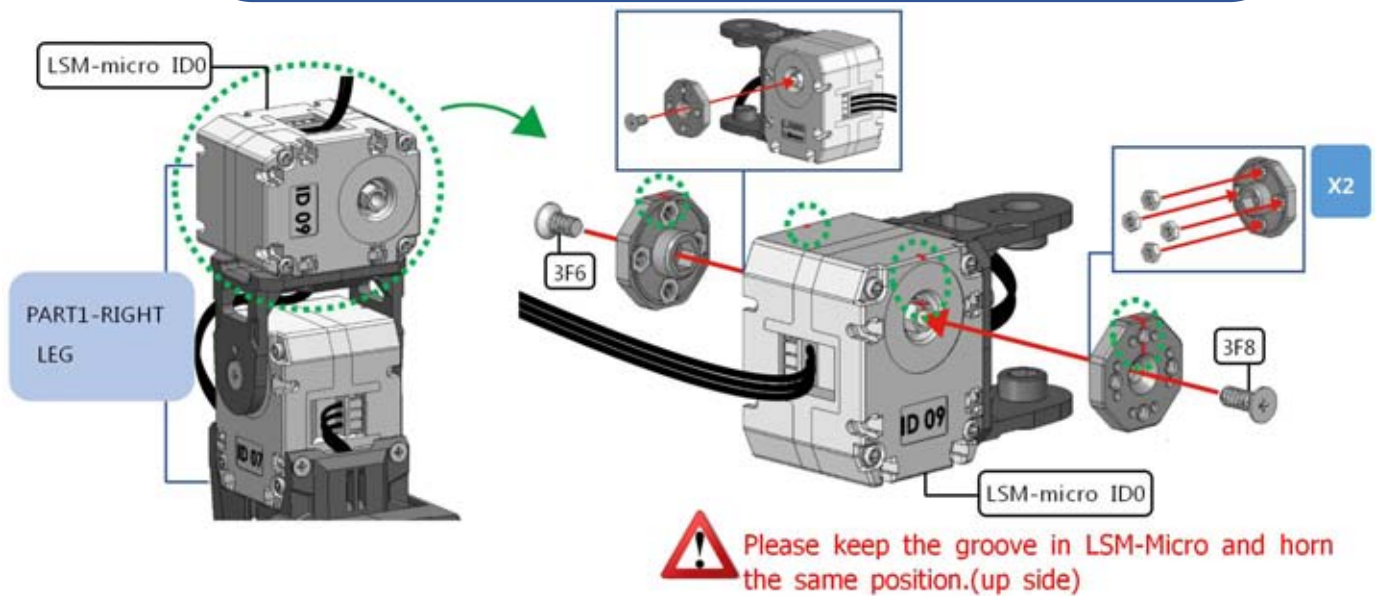
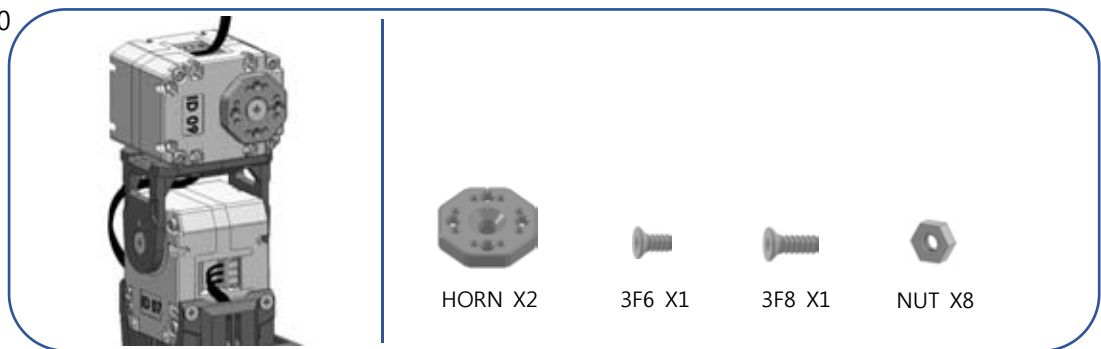
PART5-9



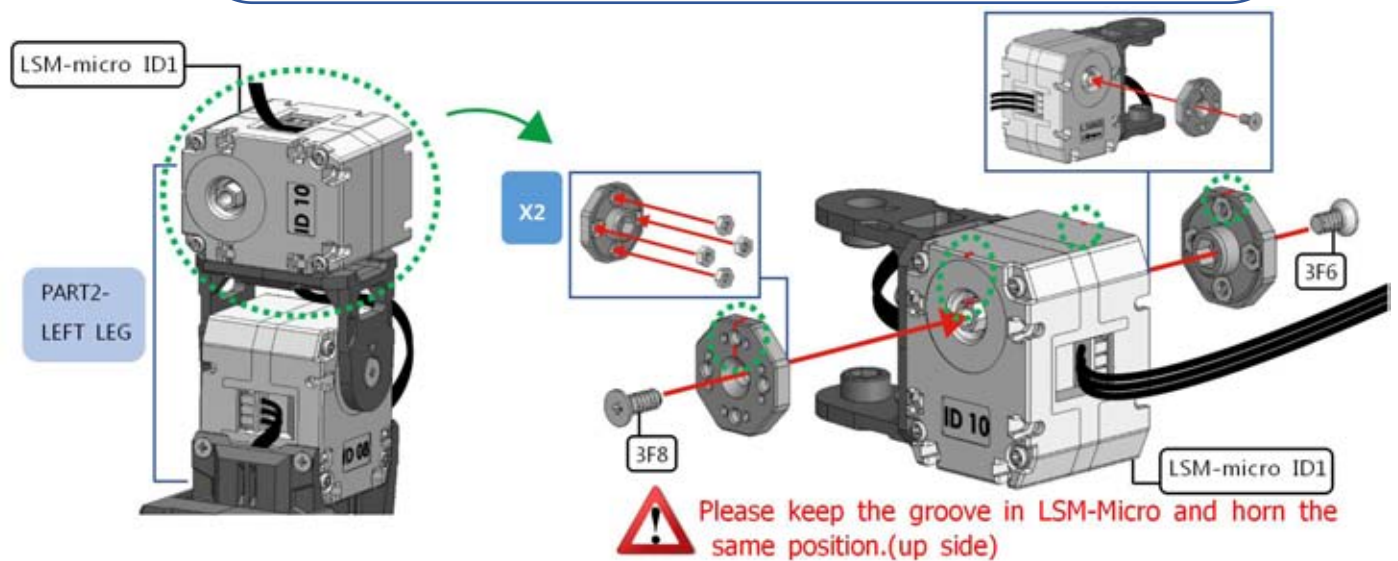
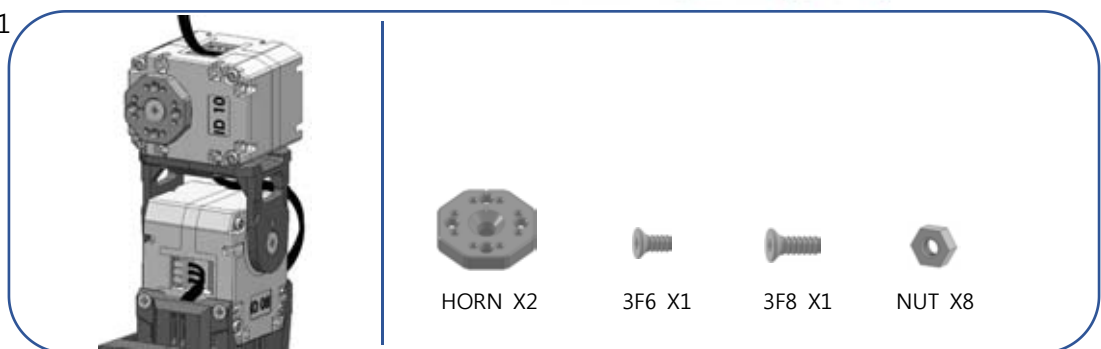
Please insert the nut into Body-up first.



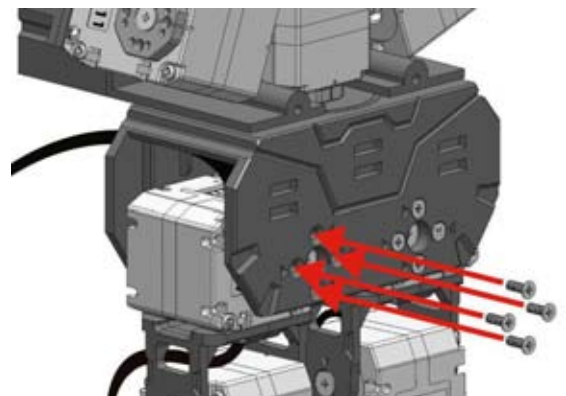
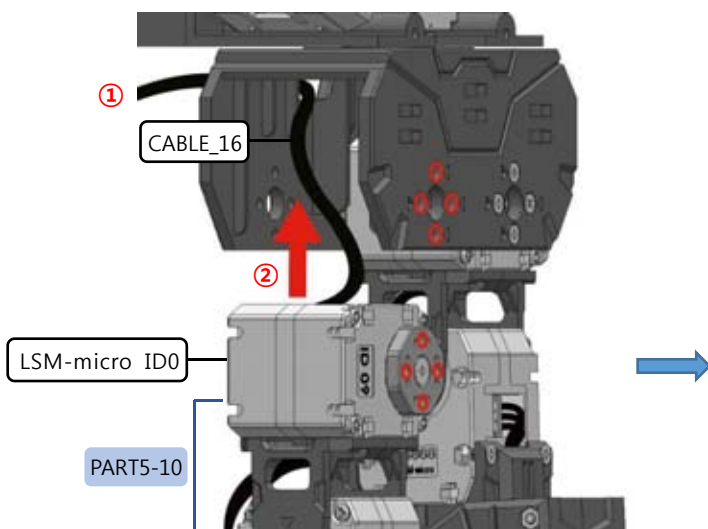
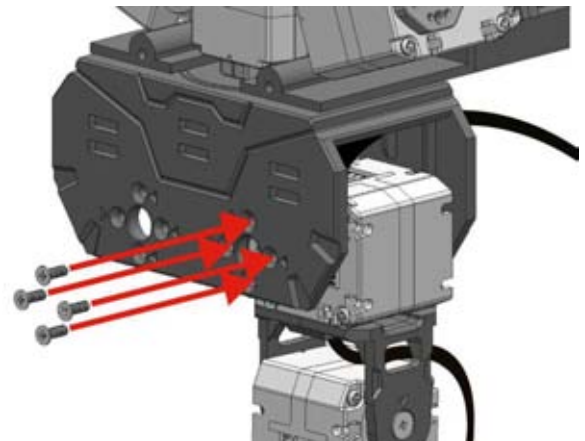
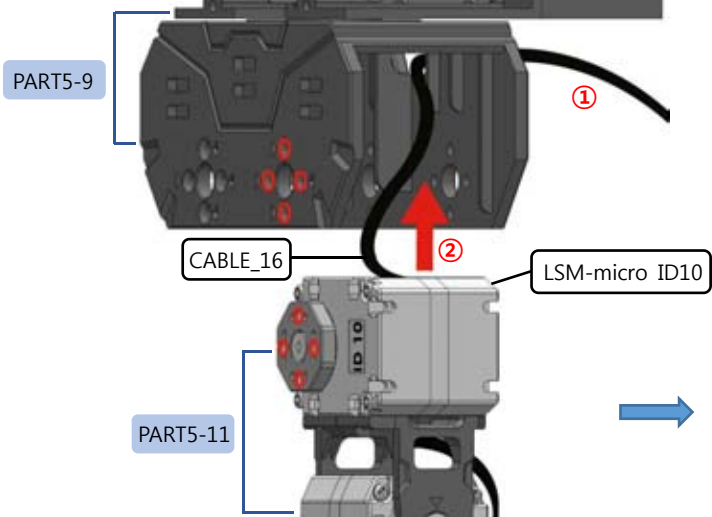
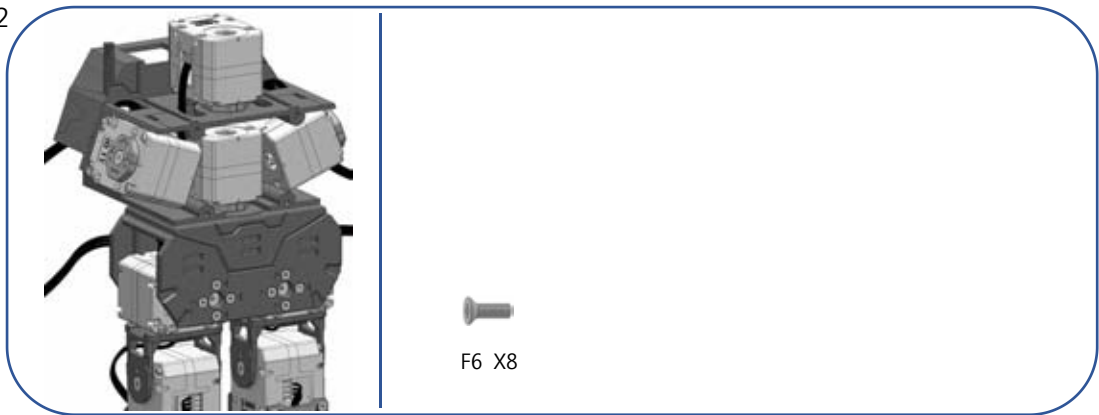
PART5-10



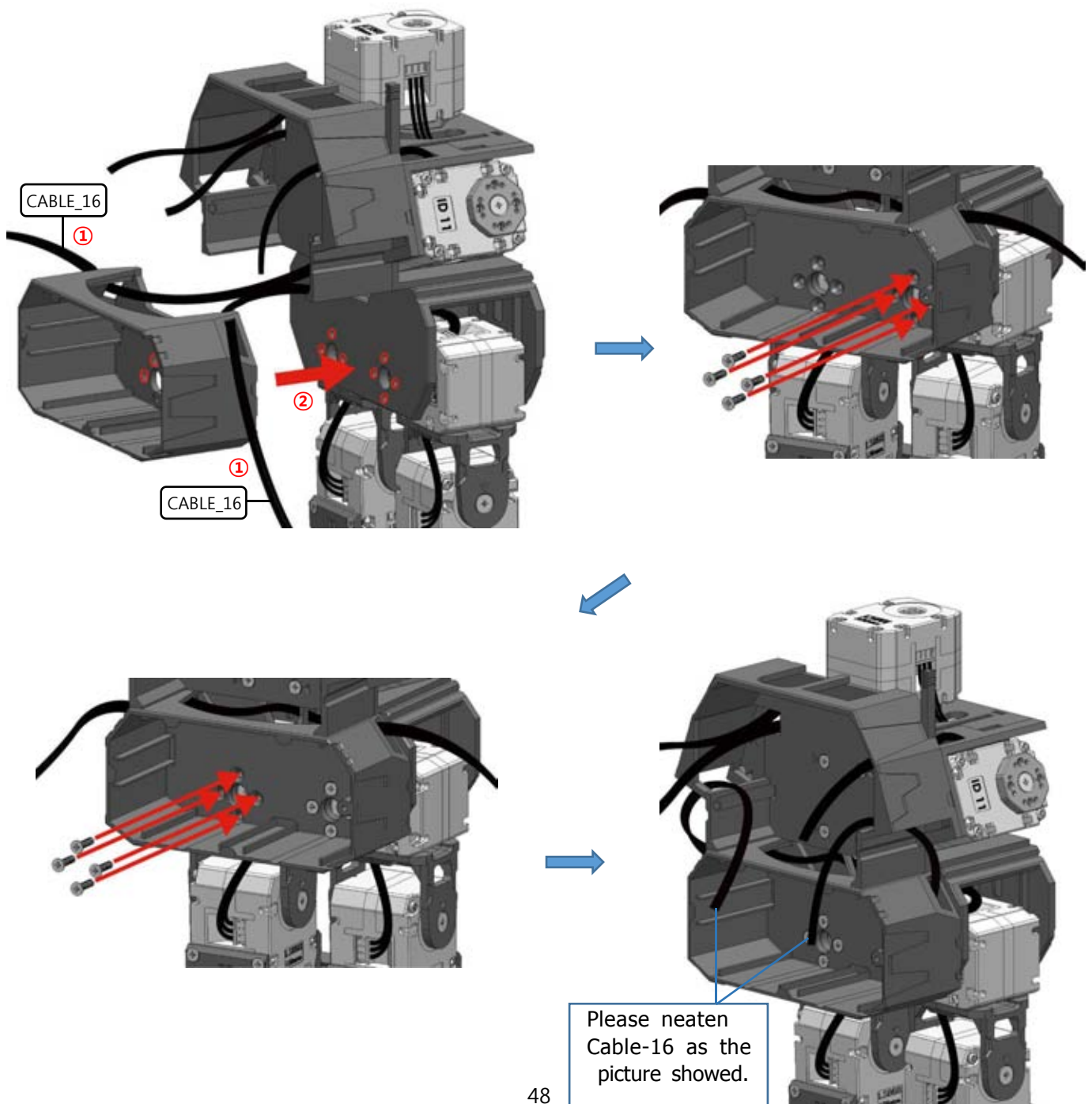
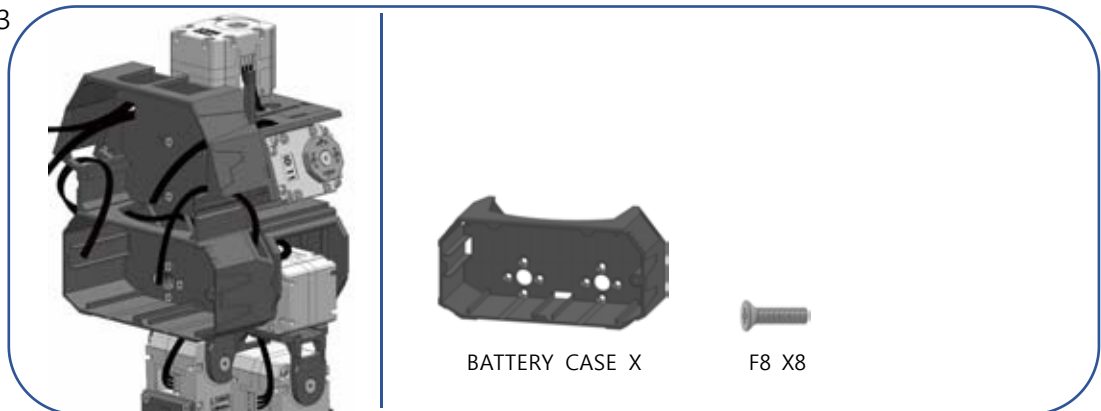
PART5-11



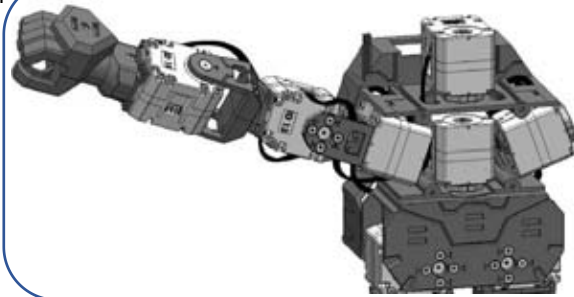
PART5-12



PART5-13



PART5-14

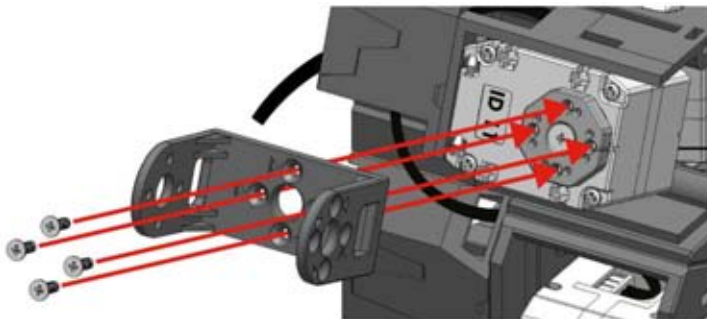


SHOULDER X1

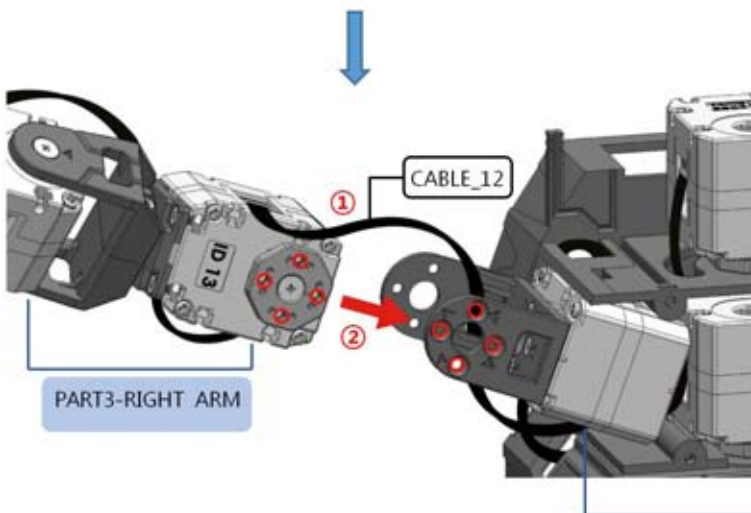
F6 X12



CABLE\_12 X

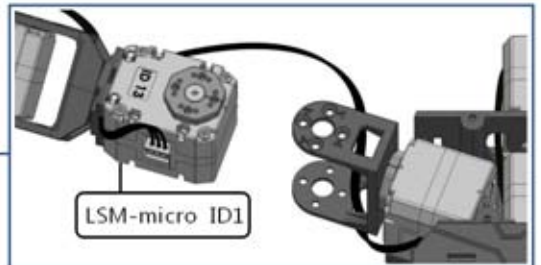


LSM-micro ID1

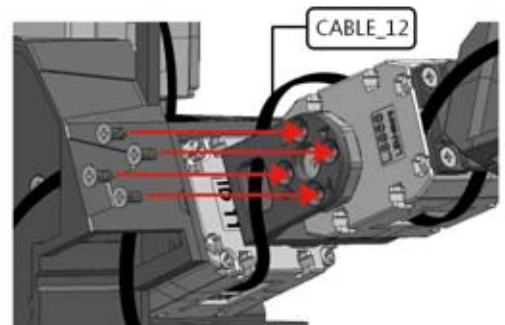
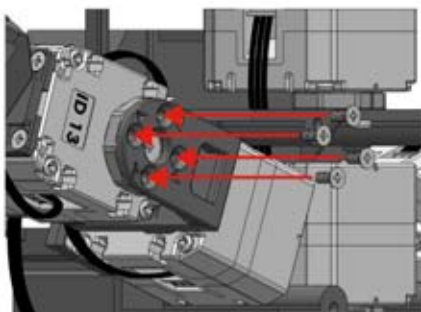


PART3-RIGHT ARM

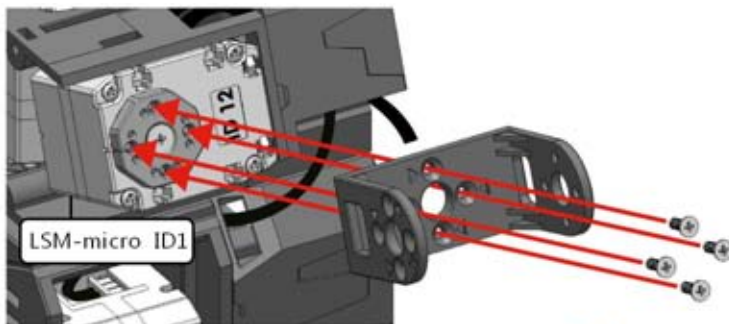
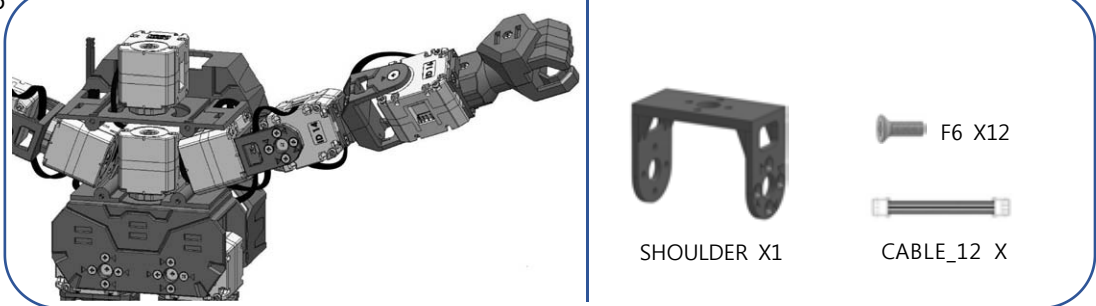
Please neaten Cable\_12 as the picture showed



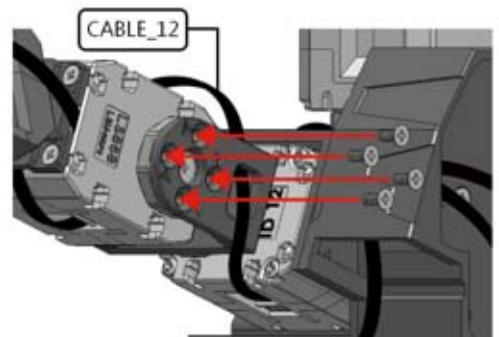
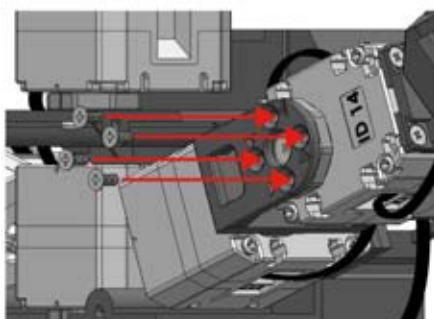
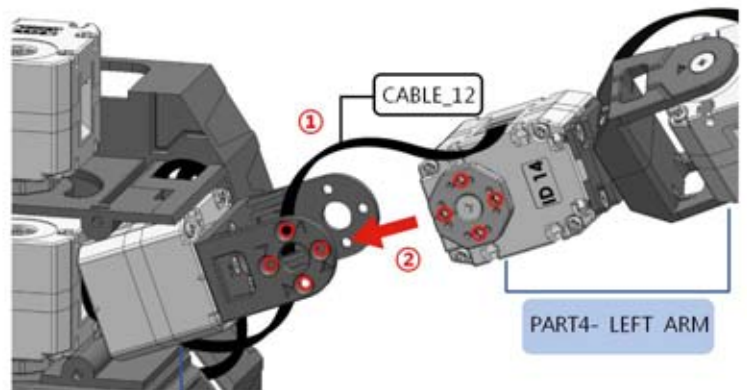
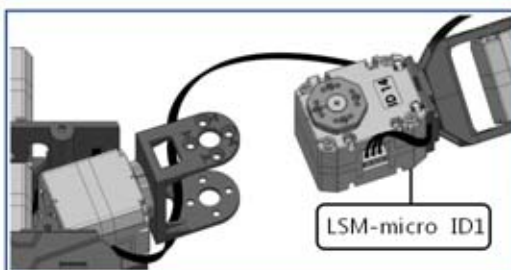
LSM-micro ID1



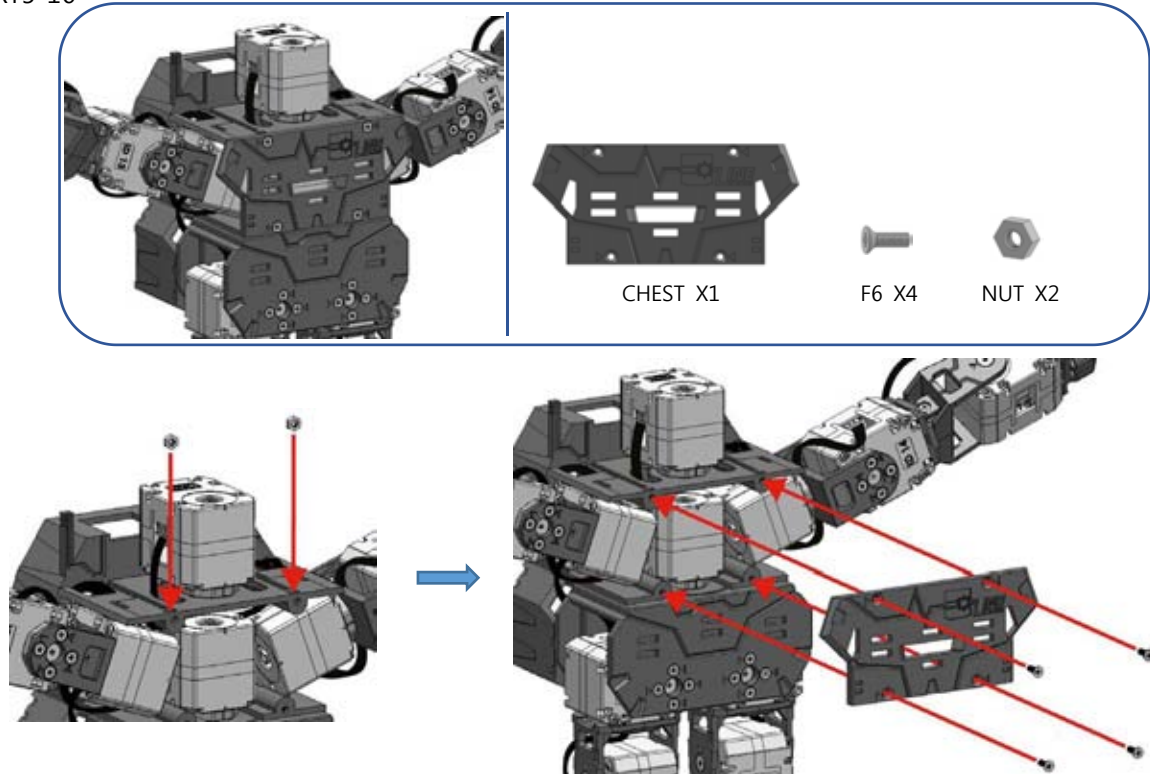
PART5-15



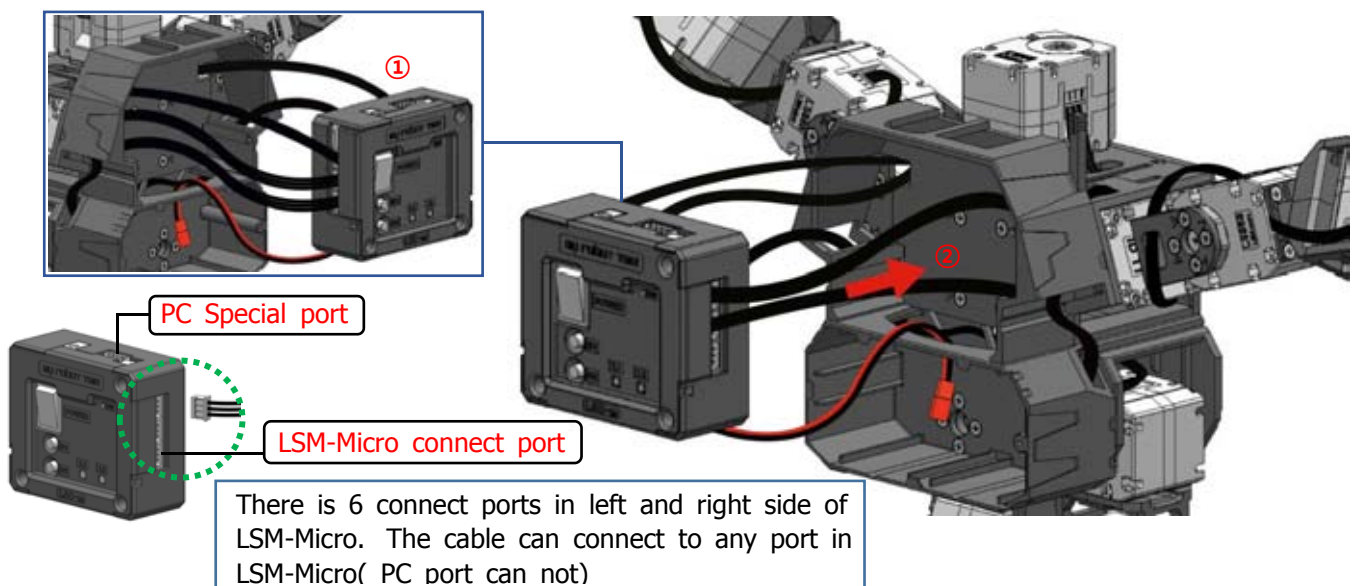
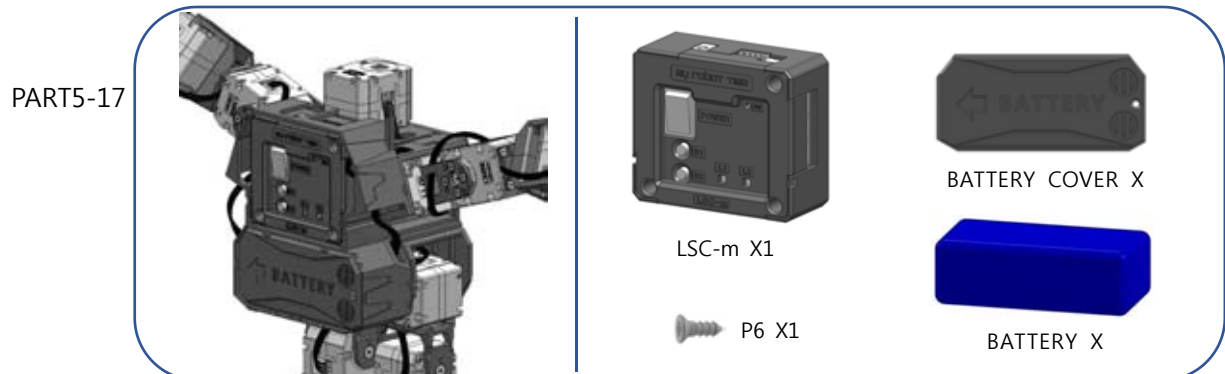
Please neaten the Cable\_12 as below picture showed

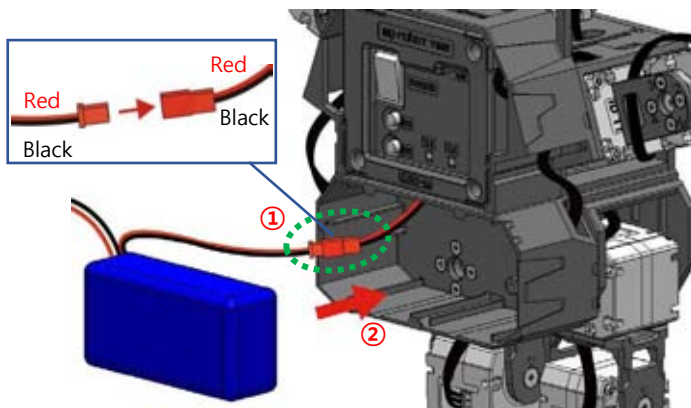


PART5-16

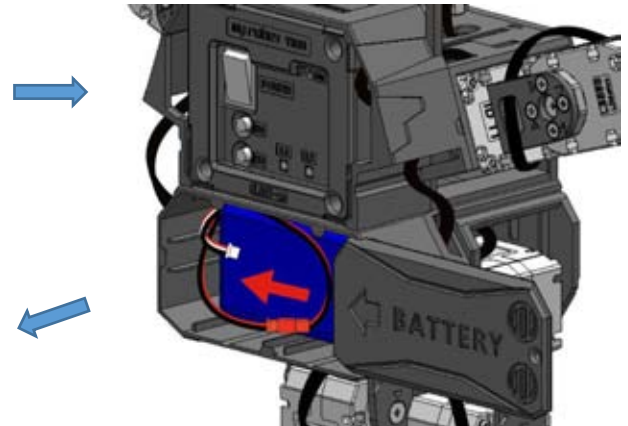
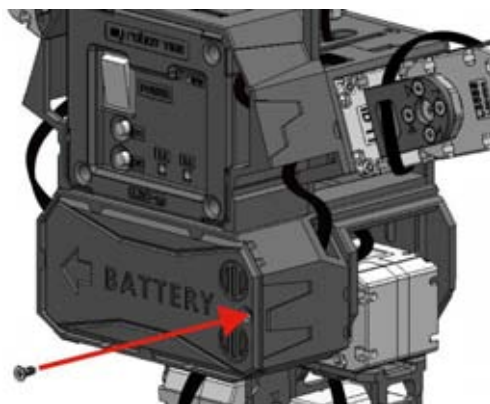


PART5-17

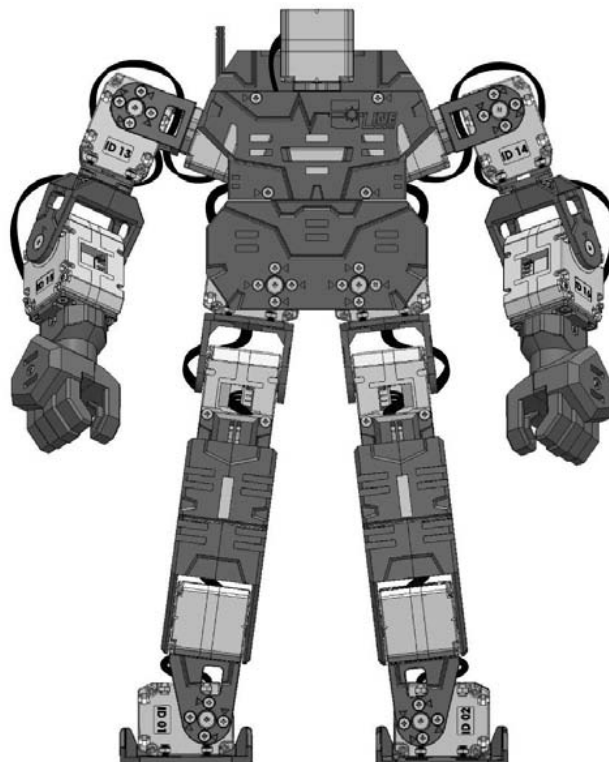




Please connect the wire of LSM-M and battery first. Please connect the wire as left side picture showed



#### PART5 HEAD & BODY Completed



## 8. The introduction of LINE Maker App

User can use LINE Maker App to control and program the robot.



|            |                                              |
|------------|----------------------------------------------|
| Controller | Can control the robot as a remote controller |
| Process    | Can program the robot motion                 |
| RobotSet   | Can adjust zero degree and check the robot   |

※ LINE-Core M already included basic motions, can compile other favorite motions to humanoid on LINE Maker APP.

- you can scan the barcode which in the last page of book to download LINE Maker App.



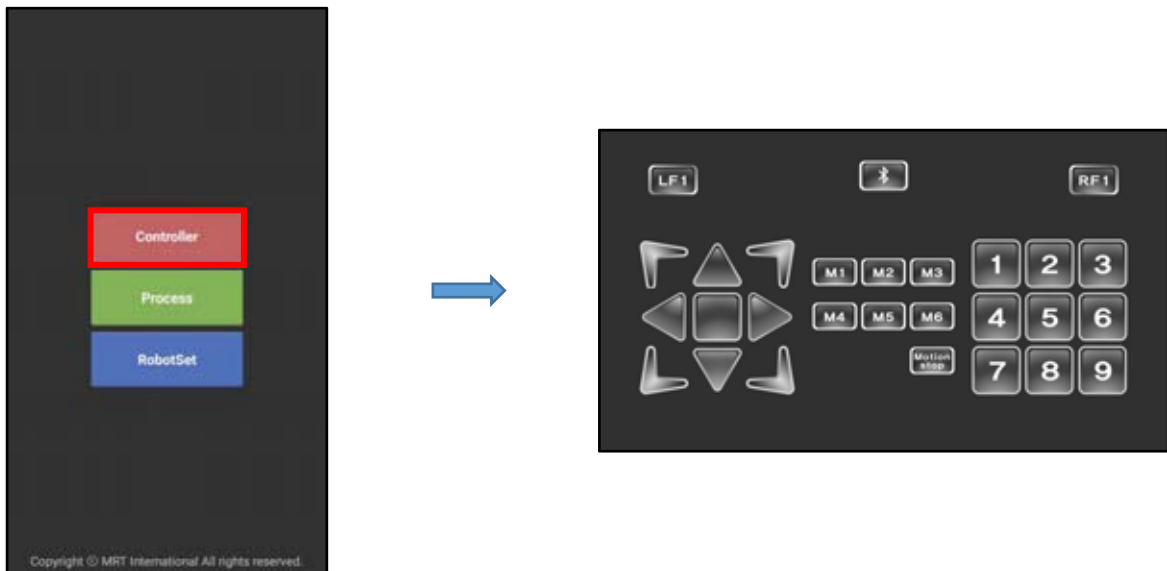
### Notes when use LINE Maker App

- Please flatten the robot to avoid falling down from high place if the robot just in connected tstatus
- Please check the below steps when humanoid in an Error:
  - ① Please check the connection between phone and robot.
  - ② Please check the balance of battery.
  - ③ Please check the connect wire between LSM-Micro and LSC-M.
  - ④ Please restart and reconnect the connection with phone.

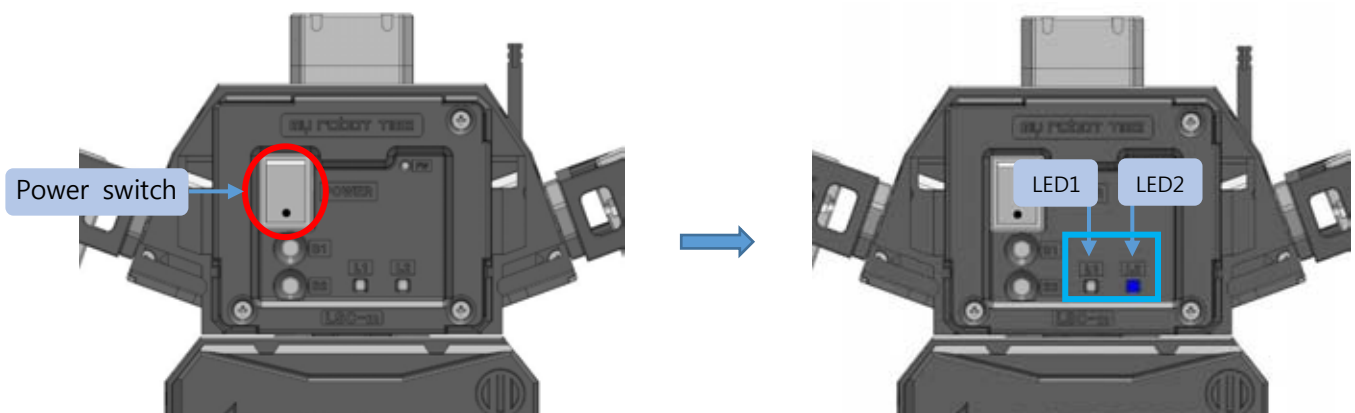
## 9. How to confirm the basic motion of LINE-Core M?

Except the basic motion, Line-Core M also offer Boxing, Soccer,Dance and Mission modes. In order to let LINE-Core m finish the mission more better, We need confirm the basic motion and adjust zero degree.

1. Run LINE Maker App, choose controller. It will enter control interface.

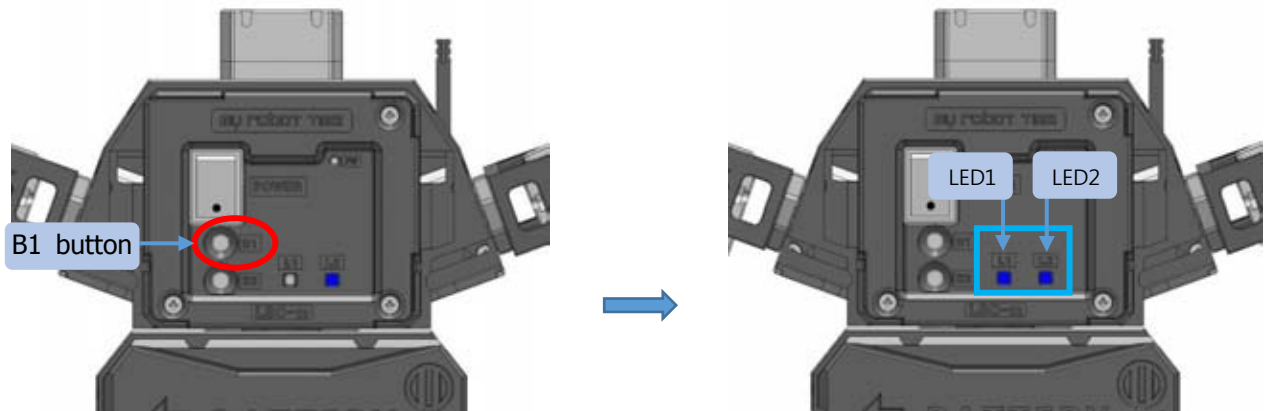


2. Please turn on the power before we connect the robot with phone. -The buzzer and LED2 blue light will flash when opened.



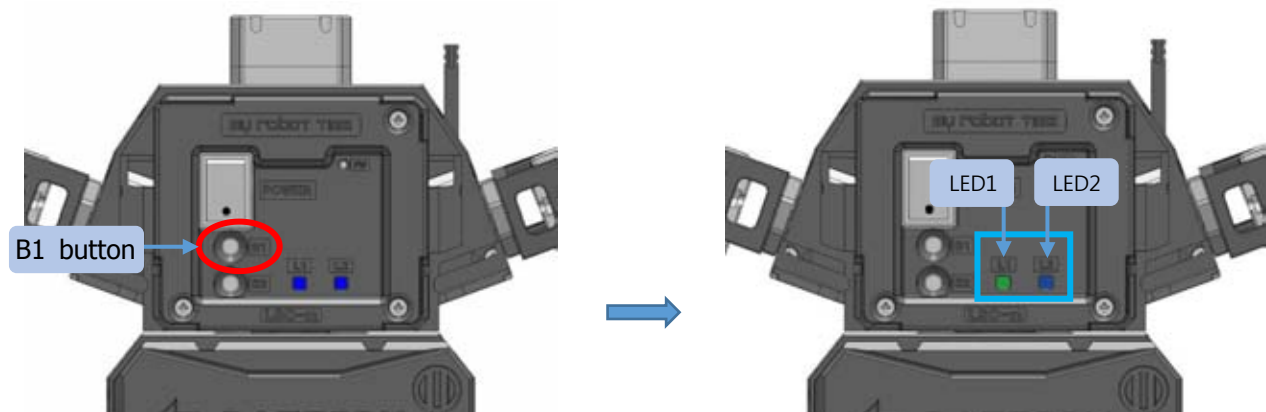
LED 2 will flash blue light with buzzer sensor

3. Please press B1 button. -- when power on, LSM-Micro LED1 blue light will on, LED2 blue light will flash.



LED 1 blue light on , LED 2 blue light flash

4. Please press B1 button again, -LED1 will become green light and LED2 will become blue light and flash.



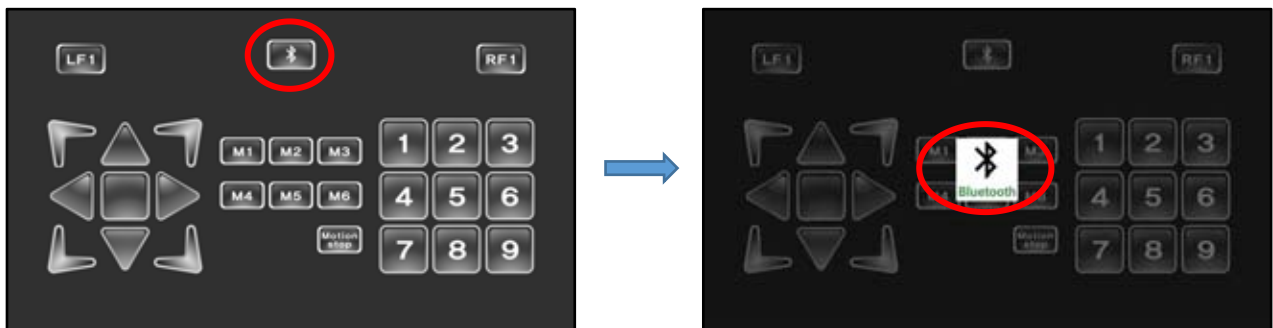
LED1 green light on, LED2 blue light flash

**TIP.**

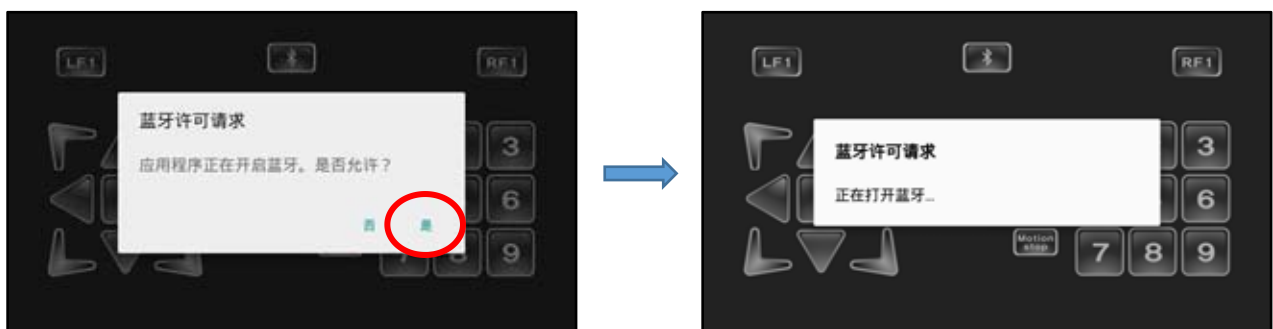
| Button             | LED  |         | Function                                                                                   |
|--------------------|------|---------|--------------------------------------------------------------------------------------------|
|                    | LED1 | LED2    |                                                                                            |
| Power              | ■    | ■ Flash | Robot power on status --- can connect phone via bluetooth and download program             |
| Press B1 one time  | ■    | ■ Flash | Power on, but can not run program. ---program motion, change ID, slight change zero degree |
| Press B1 two times | ■    | ■ Flash | Power on and can run program. --Can use phone to check basic motion                        |

- When power on and downloading the program, LED1 will become Green and can check the basic motion after downloaded success.
- Please charge the battery when LED in other color such as Green, Yellow and Red

5. After press  button, then press  button.

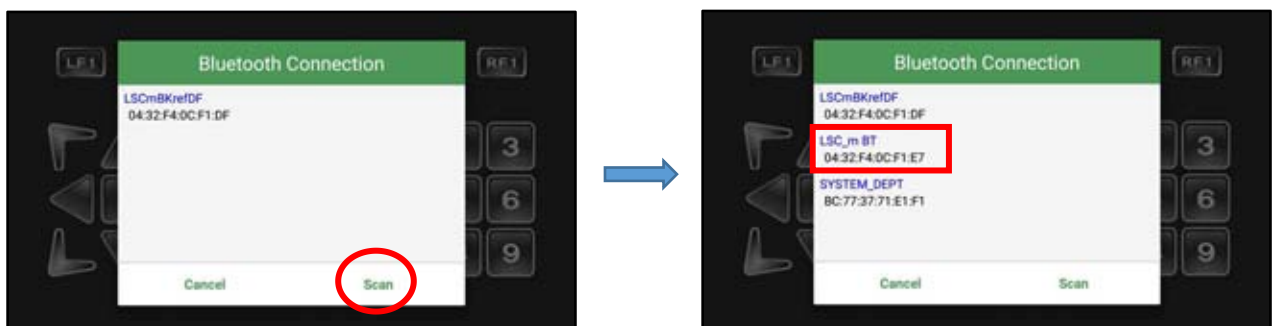


6. Please choose yes after the bluetooth interface appear in your phone.

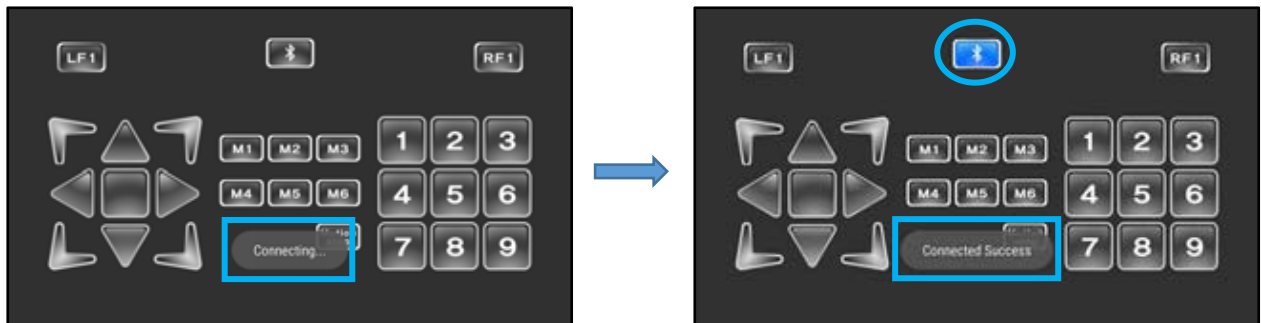


※ If the bluetooth in your phone is open. Then it will enter this interface as No7

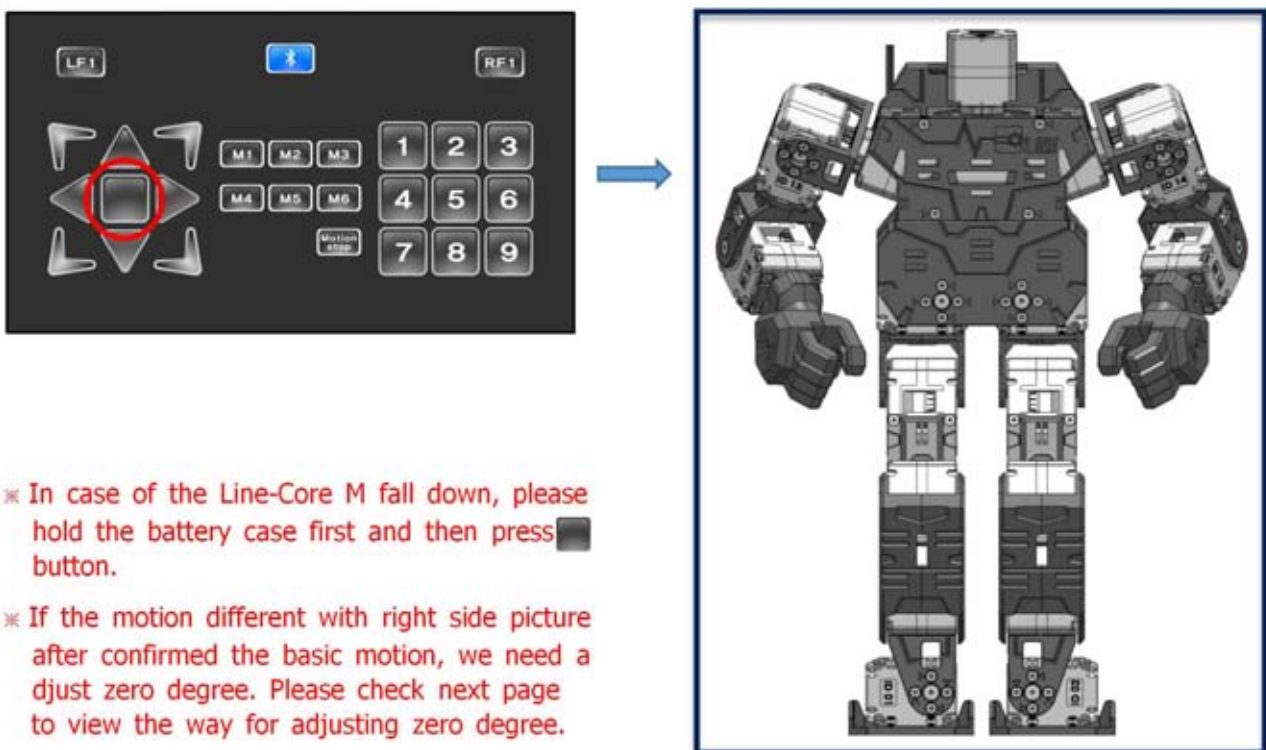
7. Please click Scan, and choose robot ID.



8. After connected. The bluetooth button will change color. 



9. You can press  to confirm LINE-Core M basic motion.



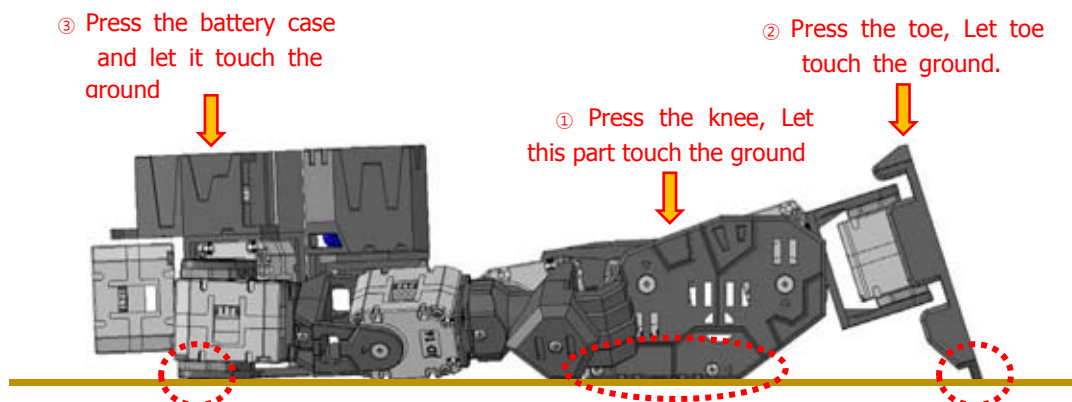
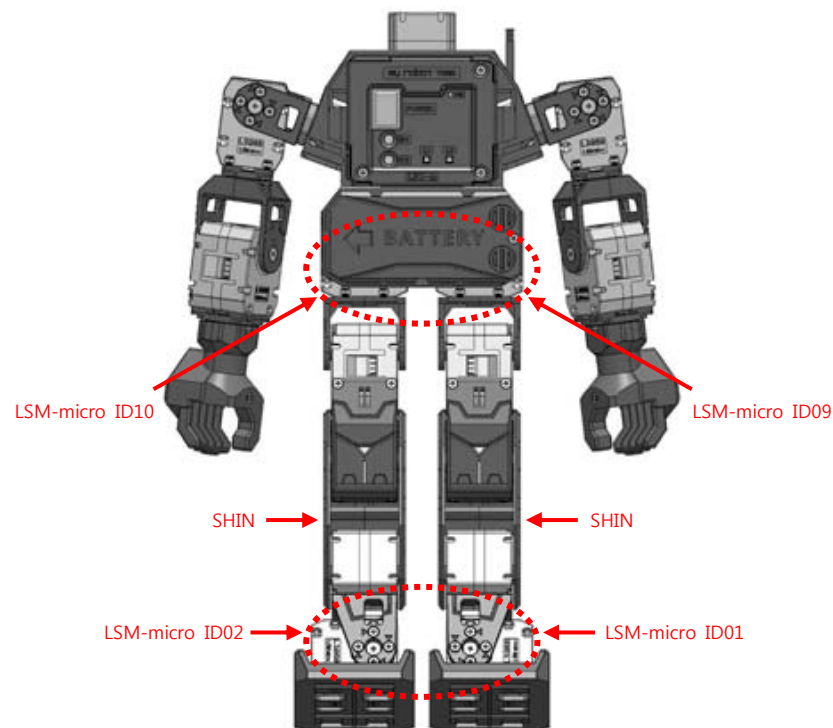
- ※ In case of the Line-Core M fall down, please hold the battery case first and then press  button.
- ※ If the motion different with right side picture after confirmed the basic motion, we need a djust zero degree. Please check next page to view the way for adjusting zero degree.

## 10. Adjust Zero degree

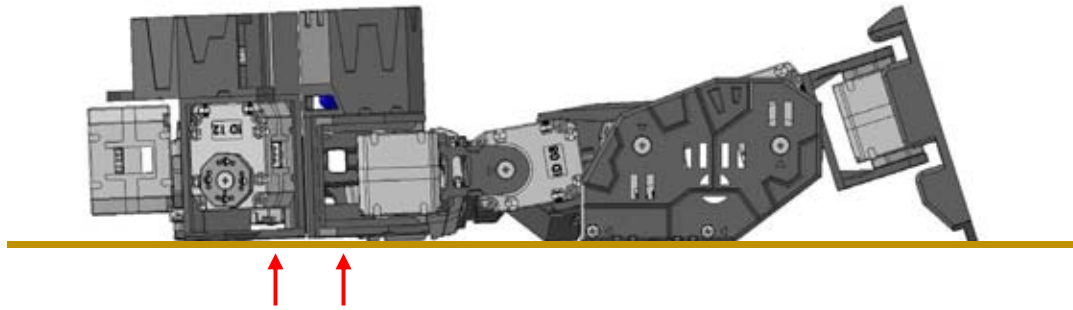
The motion our company provided is based on our humanoid robot, if the user changed the default in LSM-Micro or assemble in different way, the robot may fall down or not stable when run the basic motion, in this case, we need adjust zero degree.

### 10-1. Adjust zero degree and basic motion

1. Close the power of LINE-Core M, please flatten the LINE-Core M and put on ground
2. ID01 and ID02, ID 09 and ID 10 is the axis which can move in LSM-Micro. We put the robot knee and toe touch the ground. Please be gentle to put these part touch the ground.

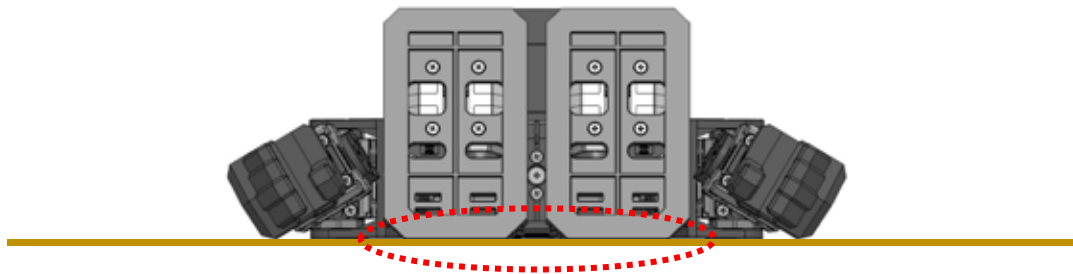


The following picture of Humanoid without arms is better to understand.

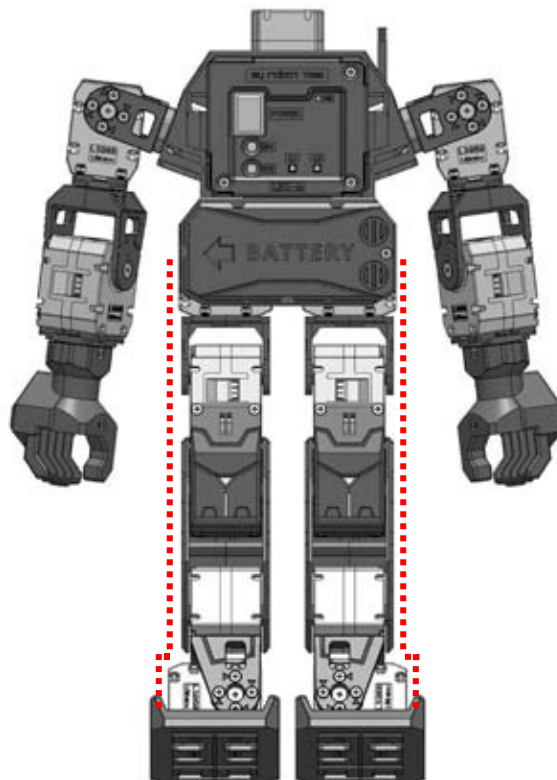


The chest and belly is not fully touched the ground.

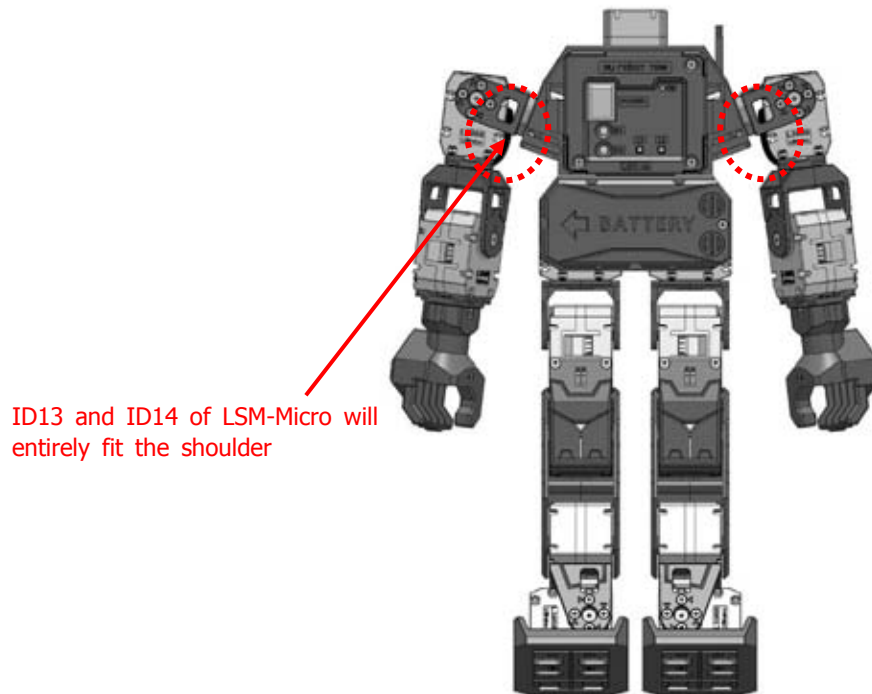
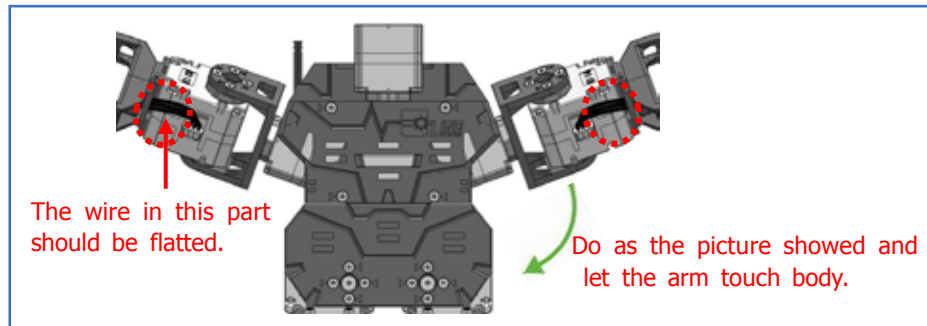
Please place the toes in horizontal line.



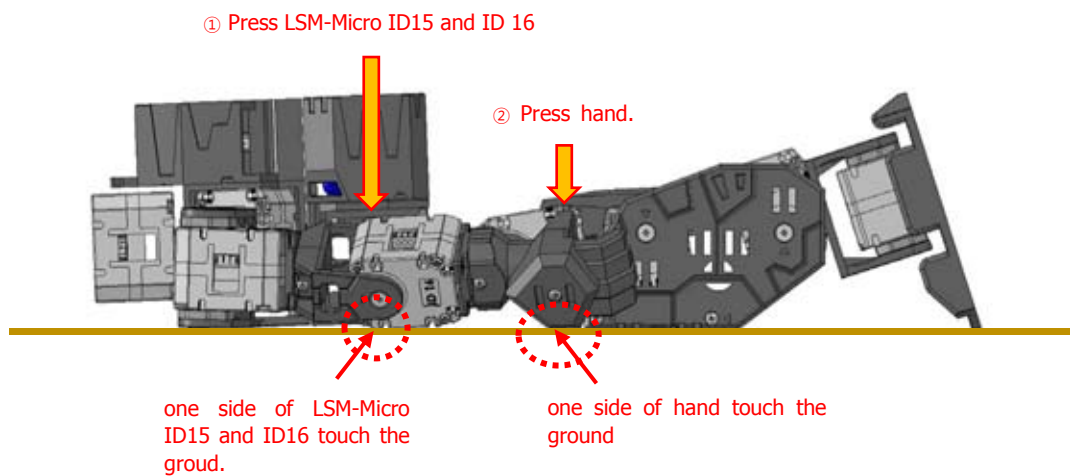
The legs should unbend as below showed.



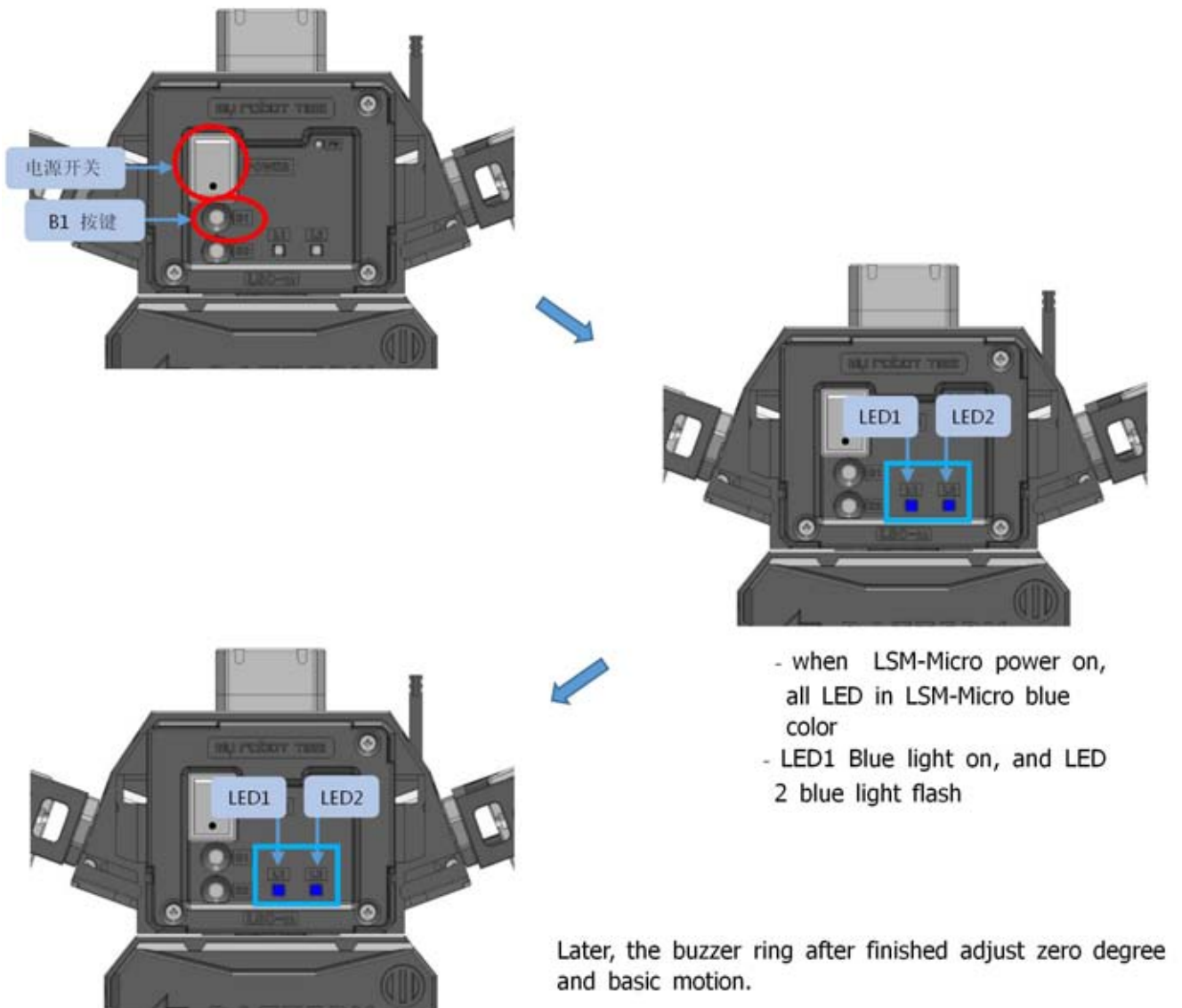
3. Please neaten the wire of LSM-Micro ID13 and ID14, then put the arms touch robot body.



4. Put LSD-Micro ID15 and ID16 and two hands touch the groud.



5. Press B1 first, then turn on the power, after power open, keep press B1 around 2 second.

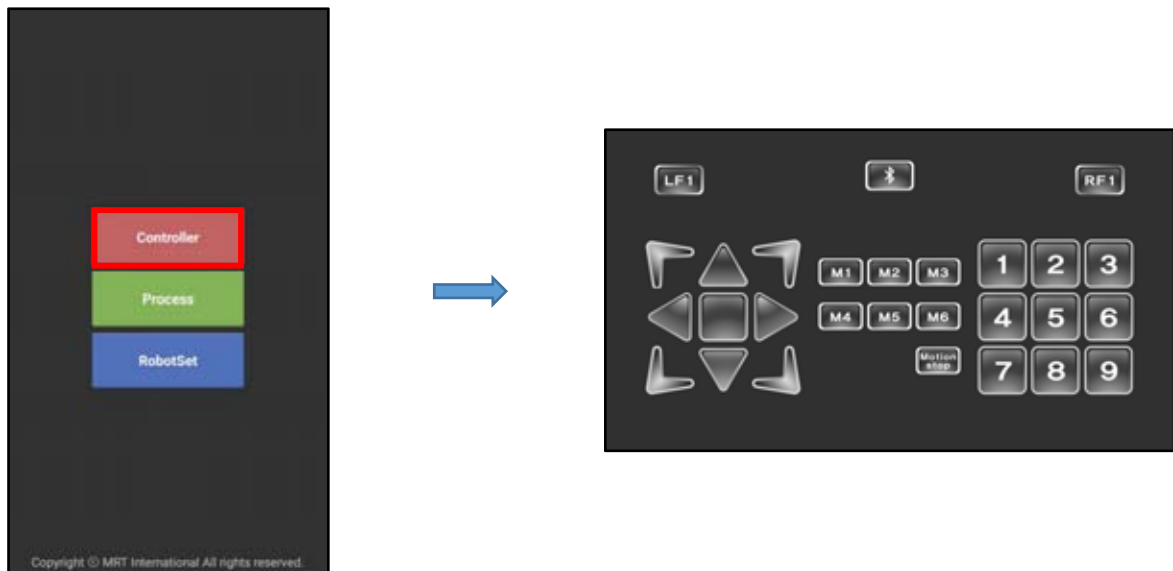


## 10-2. Slight change on LSM-Micro Zero degree

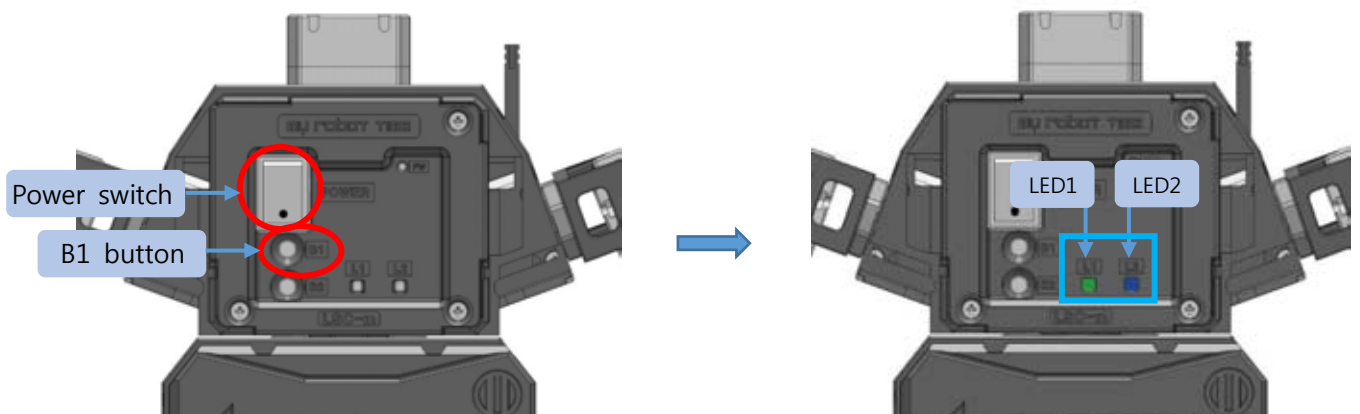
You can do slight change on LSM-Micro in the following situation

- ▶ The robot still not stable after adjusted zero degree and basic motion.
- ▶ The robot can dance with suit, after equipped with suit, the center of gravity will change, at this time, we just need adjust the part of LSM-Micro to find the center of gravity.

1. Run LINE Maker App, choose Controller, enter control interface.

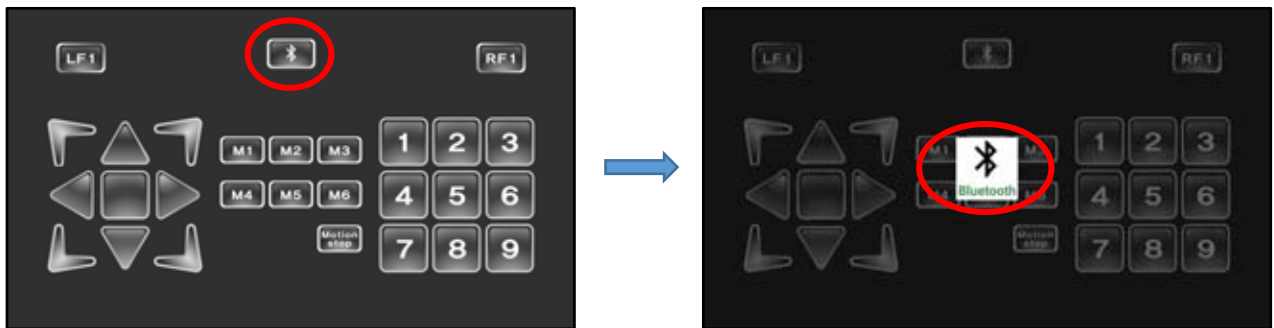


2. Open robot power, press B1 two times.

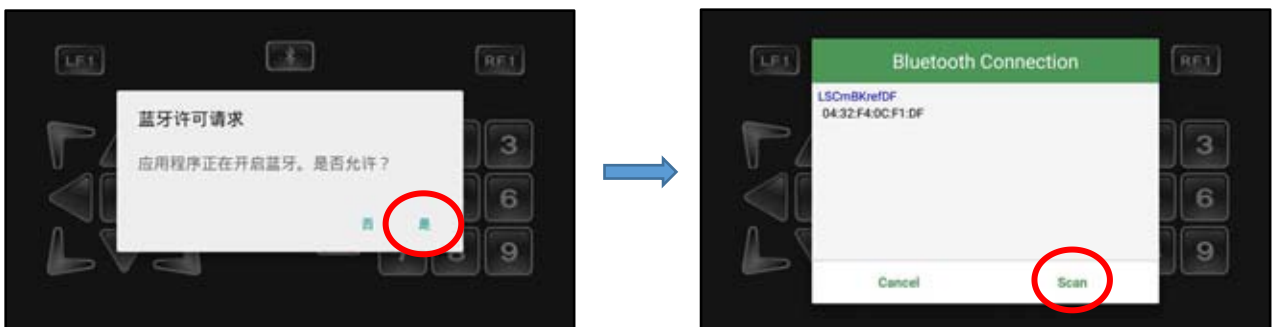


LED 1 green light on, LED 2 blue light flash

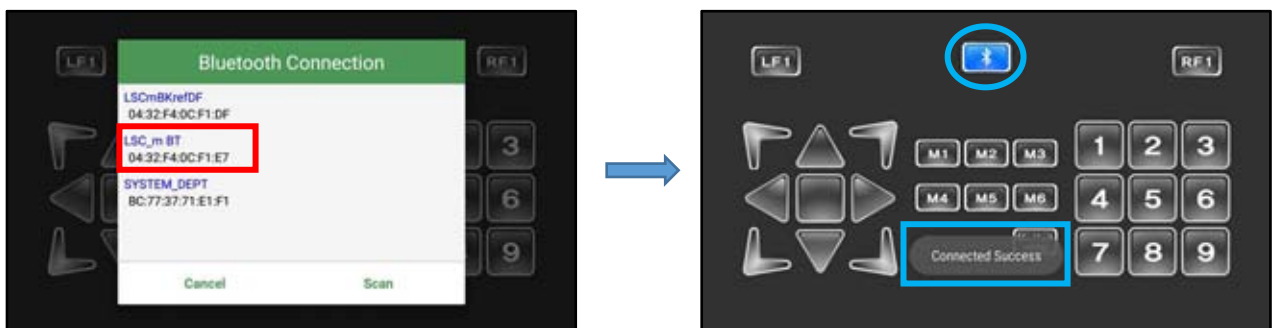
3. Press bluetooth button, please bluetooth



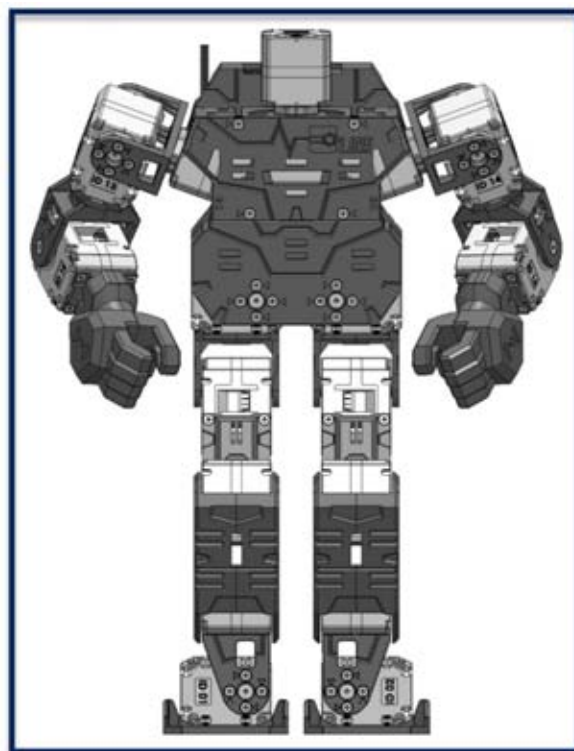
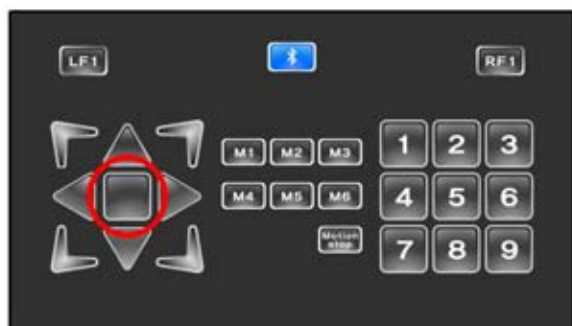
4.If your phone opened bluetooth, please choose yes and choose scan if your phone enter bluetooth connection window.



5. Choose robot ID, then the bluetooth button will change color after connected success.

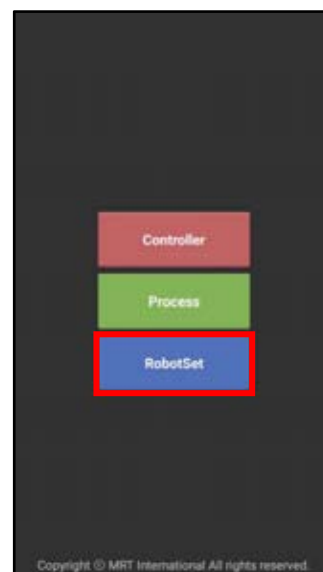


6. Please press  button to let the robot enter basic motion

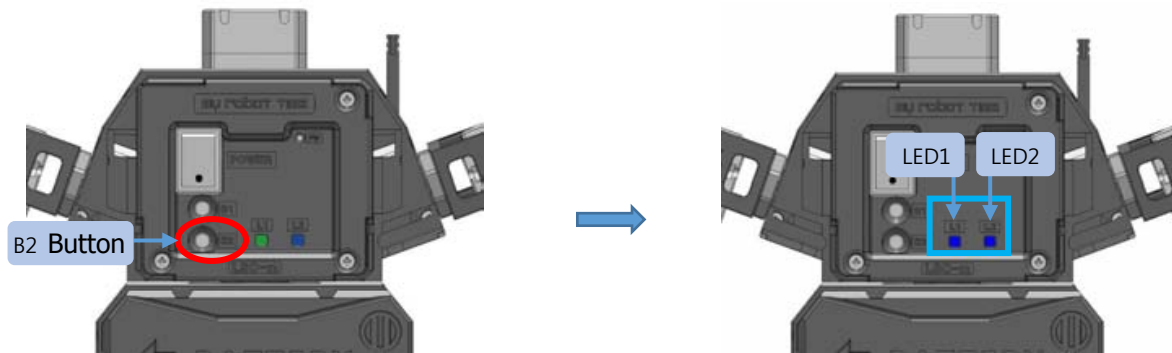


※ In case the robot fall down or not stable, please hold the battery case first and then press  button

7. Back to the home and choose robotset



8. Press B2 button one time



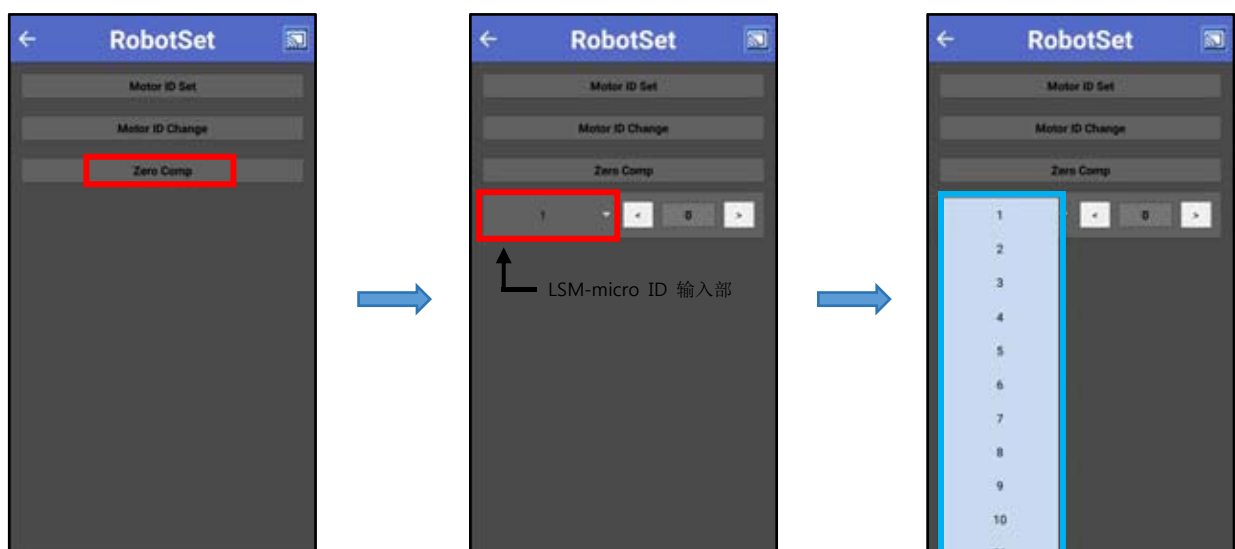
LED 1 blue light on, LED 2 blue light flash

TIP,

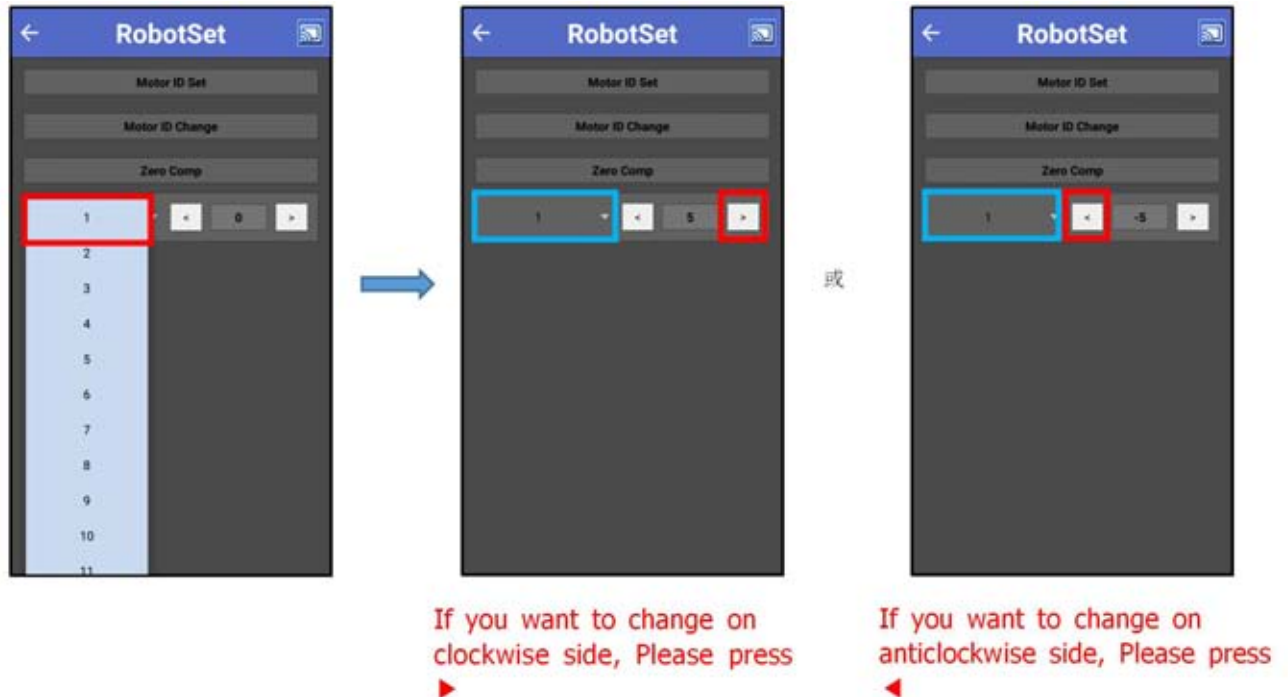
| Button              | LED  |         | Function                                                                                   |
|---------------------|------|---------|--------------------------------------------------------------------------------------------|
|                     | LED1 | LED2    |                                                                                            |
| ①Power              | ■    | ■ Flash | Robot power on status --- can connect phone via bluetooth and download program             |
| ②Press B1 one time  | ■    | ■ Flash | Power on, But can not run program. ---program motion, change ID, Slight change zero degree |
| ③Press B1 two times | ■    | ■ Flash | Power on and can run program. --can use phone to check basic motion                        |
| ④Press B2 one time  | ■    | ■ Flash | End current program-- the same status as No.2                                              |
| ⑤Press B2 Two times | ■    | ■ Flash | Cut LSM-Micro Power, --the same status as No.1                                             |

- When power on and downloading the program, LED1 will become Green and can check the basic motion after downloaded success.
- B1 as on function button, Press one time to supply power, Press two times to run program
- B2 as off fuction button, Press one time to end current program, Press two times to cut off press
- Please charge the battery when LED in other color such as Green, Yellow and Red

9. Press Zero comp button, choose LSM-Micro ID as below picture showed

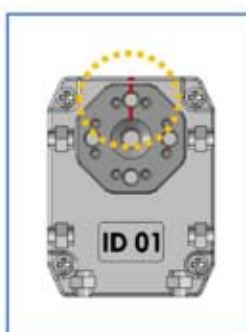


10. Please choose the LSM-Micro ID which need adjust zero degree. Press ◀ and ▶ button to adjust zero degree. The range for adjust zero degree is -12 to 12 degree.

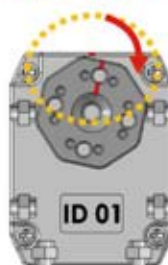


#### Tips

As the No.10 showed, please adjust the standard groove in LSM-Micro ID 01 everytime you want to clockwise or anticlockwise change zero degree.

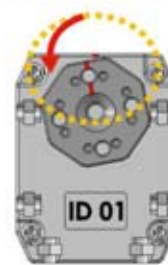


Everytime Press ▶ button



The groove will change a little in Clockwise side.

Everytime Press ◀ button



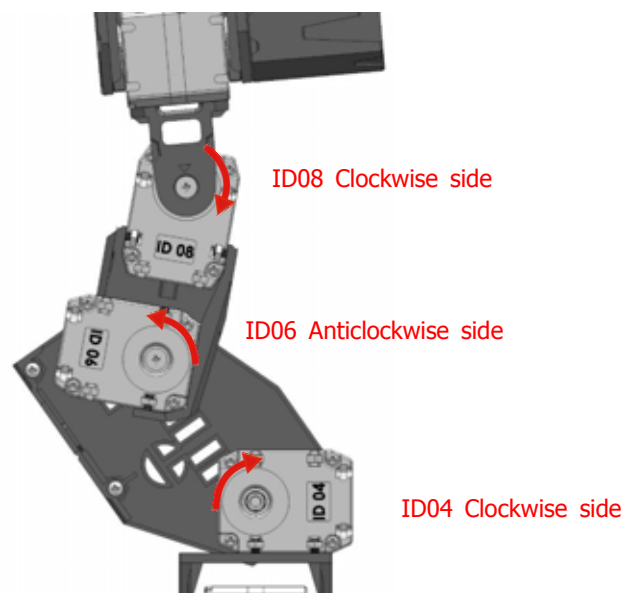
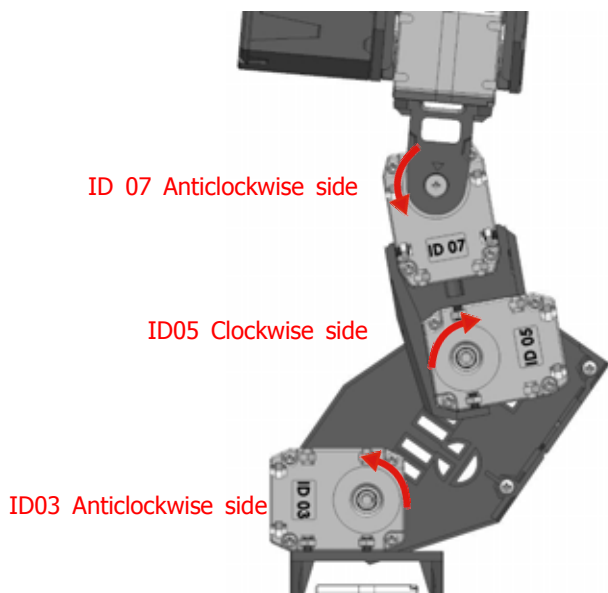
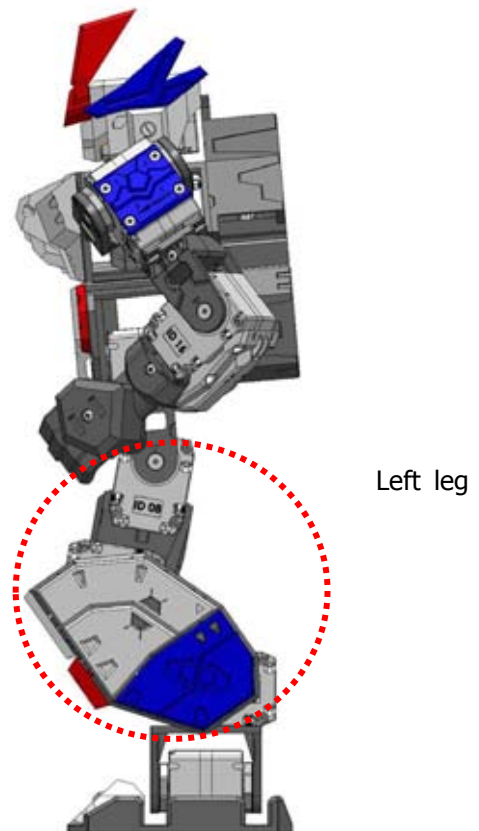
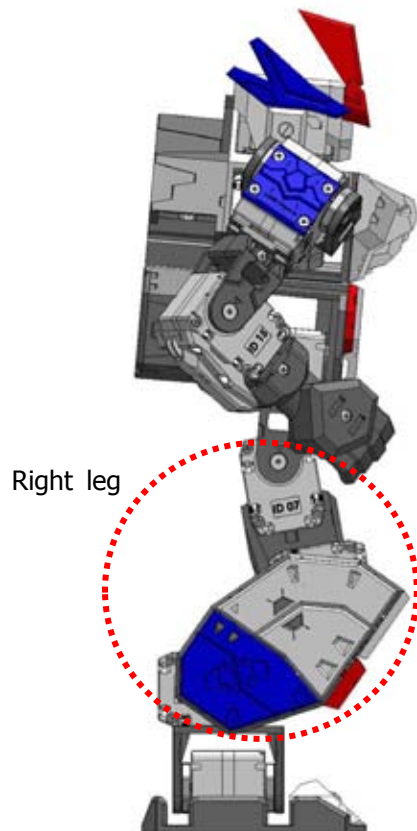
The groove in LSM-Micro ID01 will change a little in anticlockwise side

11. As the above picture showed, Press ◀ and ▶ button can adjust zero degree in LSM-Micro, and save the degree after changed every time.

### 10-3. change the gravity center after equipped with suit.

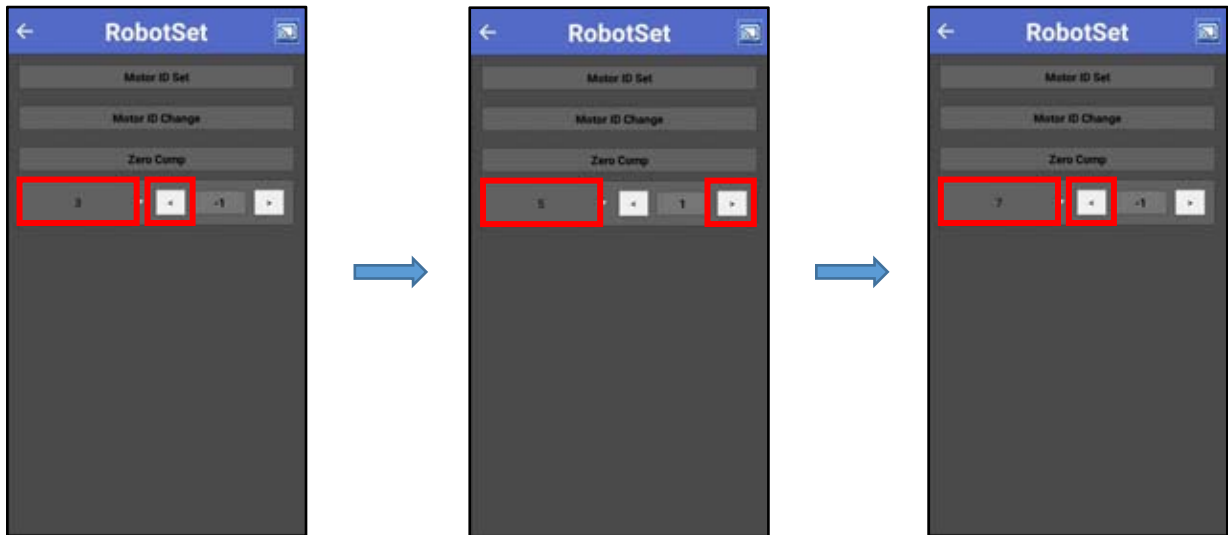
If equipped with suit, the center of gravity will change, in this case, we need change the center of gravity in the robot.

Please check below steps to change the gravity center back



1.~9. Please refer to No1-No9 steps, it is the same way to slight change.

10. Please check below steps to change right leg zero degree( LSM-Micro ID03, ID05, ID07)

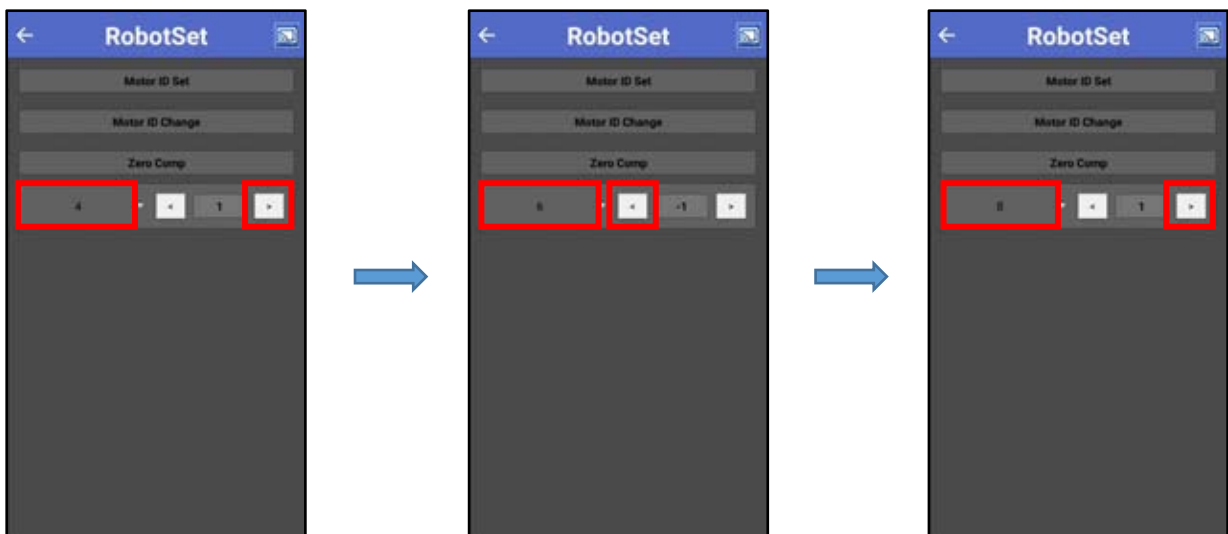


Please press ◀ to anticlockwise rotate ID03 motor

Please press ▶ to clockwise rotate ID 05 motor

Please press ◀ to anticlockwise rotate ID07 motor

11. Please check below steps to change Left leg zero degree( LSM-Micro ID04, ID06, ID08)



Please press ▶ to clockwise rotate ID 04

Please press ◀ to anticlockwise rotate ID06 motor

Please press ▶ to anticlockwise rotate ID08 motor

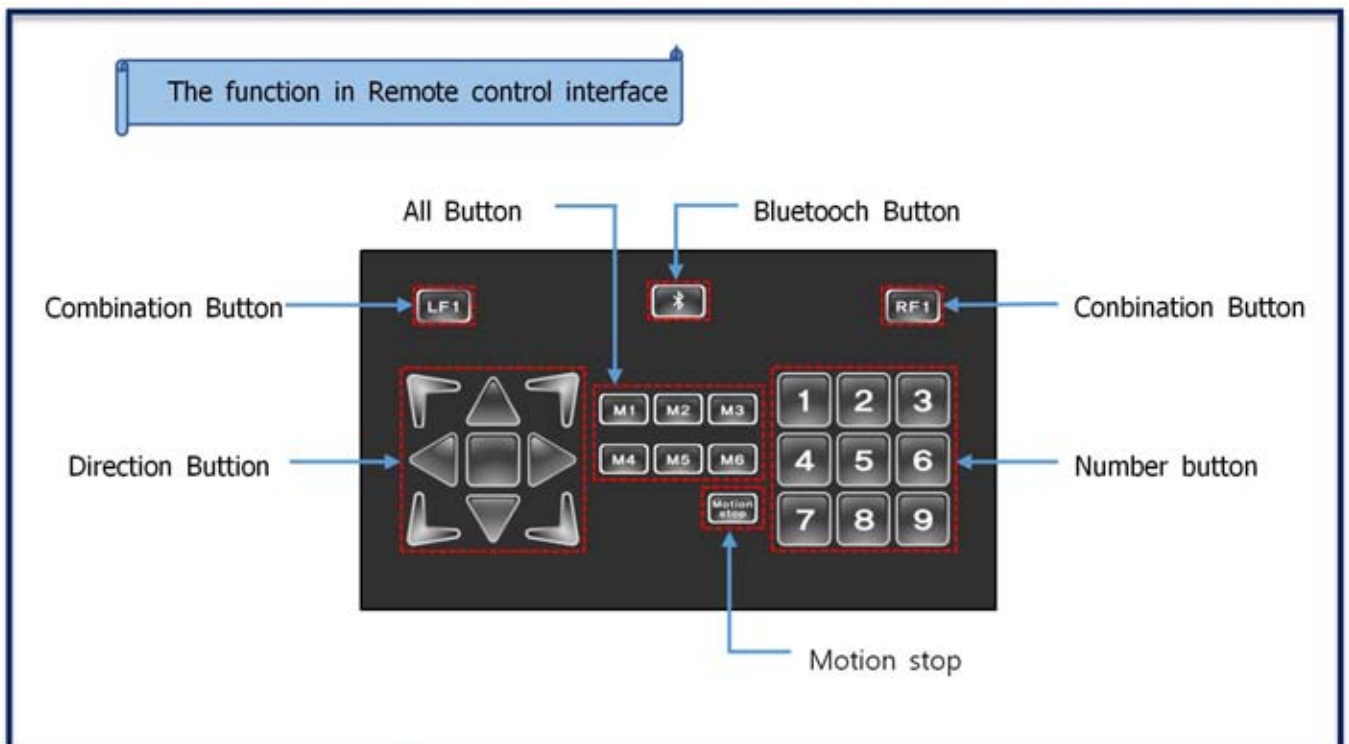
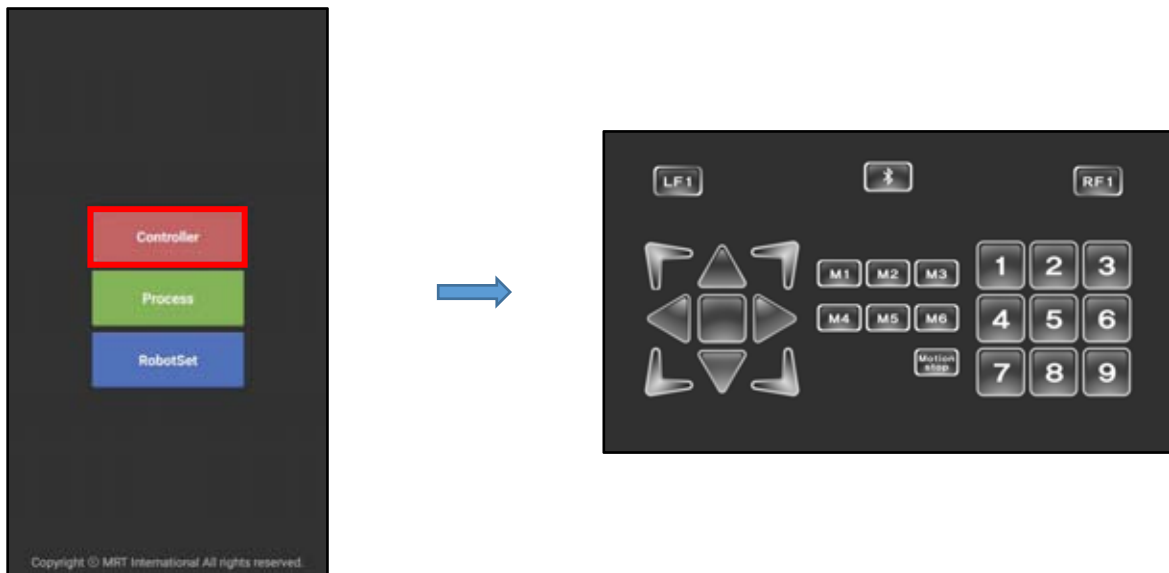
12. As the above picture showed, Press ◀ and ▶ button can adjust zero degree in LSM-Micro, and save the degree after changed everytime

## 11. How to run Line Maker App

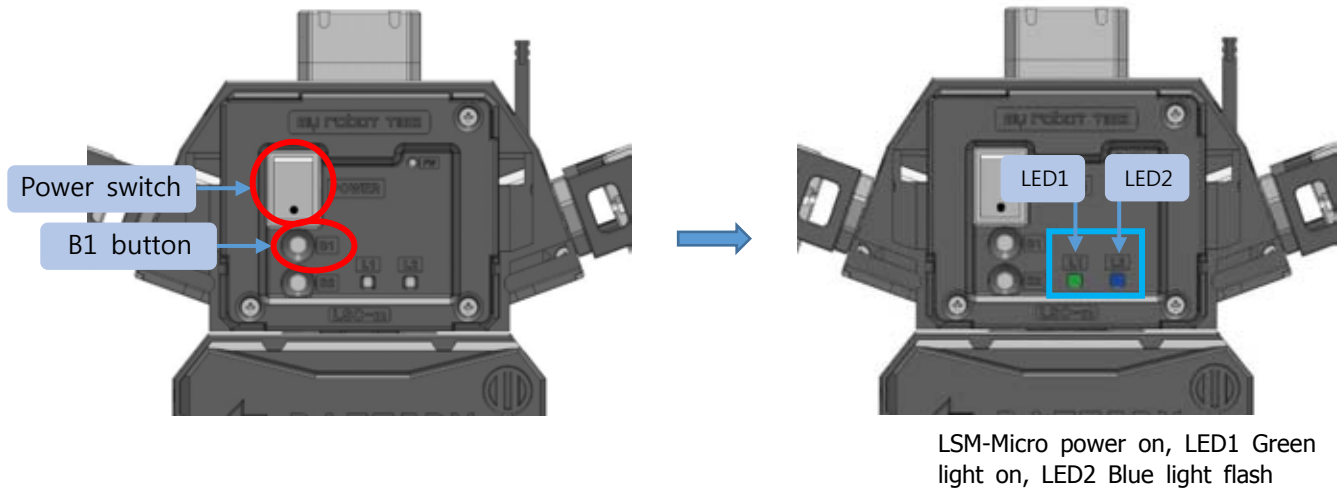
### 11-1. CONTROLLER

We can use the smart phone as a remote controller to control the robot.

1. Run Line Maker App, choose Controller, enter control interface.

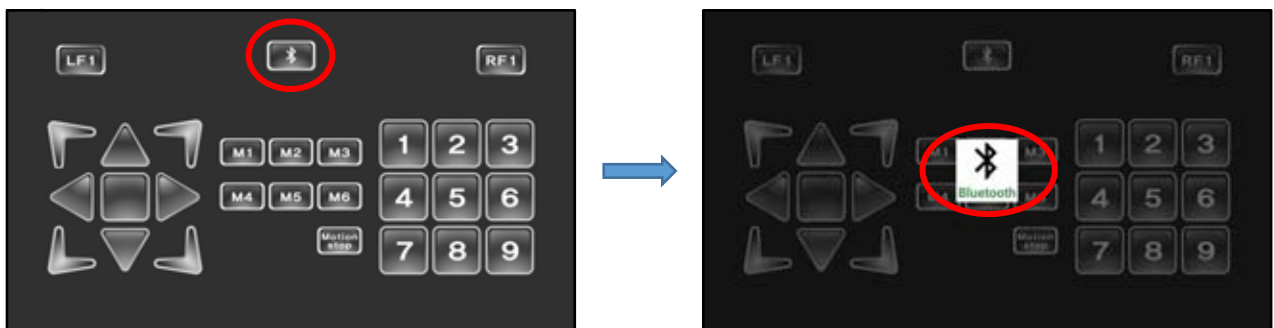


2. Please press B1 two times after power on.

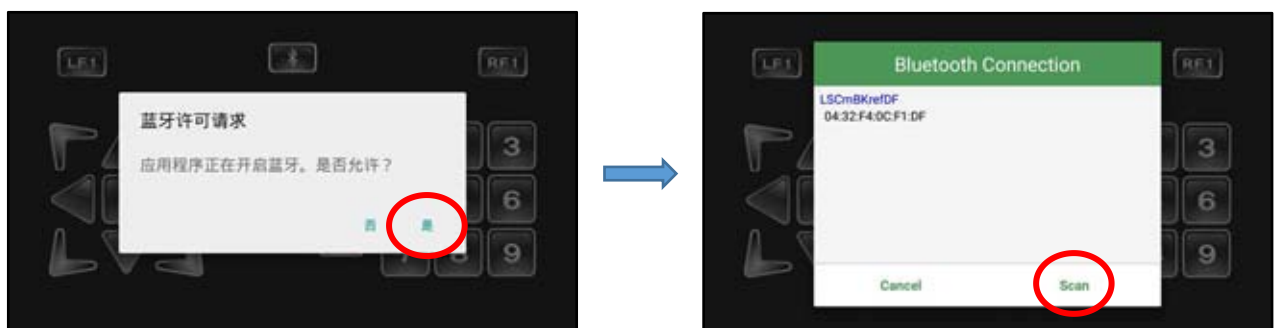


※The LED setting different, the program will different, please refer to page 65 tip.

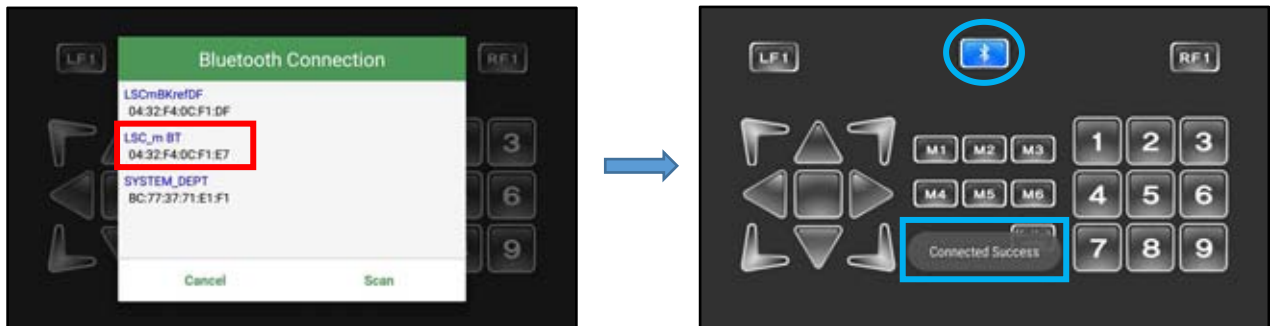
3. After press bluetooth button, please press bluetooth.



4. Please choose yes after bluetooth interface appear in your phone, please choose scan if your phone showed bluetooth connection.



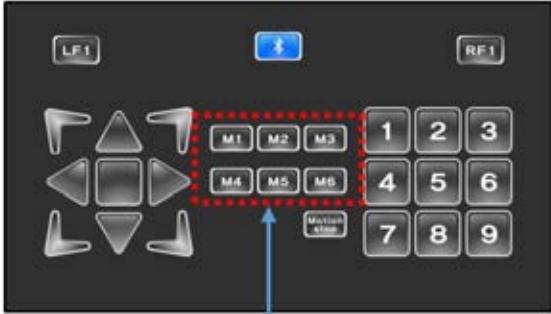
5. Please choose robot ID, the bluetooth will change color if connected success.



### 11-1-1. How to control robot

LINE-Core M include basic motion, Boxing, Soccer, Dance, Mission and many other modes, please check below steps to confirm every mode.

Confirm Remote controller structure



All Button

- ① As left picture showed, when M1-M6 all closed, It is Basic motion
- ② Press M1 one time, M1 will change color, robot enter front boxing mode.
- ③ Press M1 again, the color of M1 change, robot back to basic motion

|                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <span style="background-color: black; color: white; padding: 2px 5px;">M1</span> <span style="background-color: black; color: white; padding: 2px 5px;">M6</span> : basic motion  |
| <span style="background-color: #90ee90; padding: 2px 5px;">M1</span> : Front boxing mode <span style="background-color: #90ee90; padding: 2px 5px;">M2</span> : flank boxing mode |
| <span style="background-color: #90ee90; padding: 2px 5px;">M3</span> : Soccer mode <span style="background-color: #90ee90; padding: 2px 5px;">M4</span> : Mission mode 1          |
| <span style="background-color: #90ee90; padding: 2px 5px;">M5</span> : Mission mode 2                                                                                             |

| Serial No | Motion                                  | Button                                                                            |
|-----------|-----------------------------------------|-----------------------------------------------------------------------------------|
| 1         | Basic Ready motion(bend knee and stand) |  |
| 2         | Move forward                            |  |
| 3         | Move Backward                           |  |
| 4         | Move left side                          |  |
| 5         | Move right Side                         |  |
| 6         | Turn Left                               |  |
| 7         | Turn right                              |  |
| 8         | Stand up when fall down(backside)       |  |

### Basic Motion

Front Boxing Mode   

| Serial No | Motion         | Button                                                                                                                                                                  |
|-----------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | Ready          |                                                                                        |
| 2         | Defense        |                                                                                      |
| 3         | Move Forward   |                                                                                      |
| 4         | Move Backward  |                                                                                      |
| 5         | Move left      |   |
| 6         | Move Right     |                                                                                      |
| 7         | Turn Left      |                                                                                      |
| 8         | Turn Right     |                                                                                      |
| 9         | Left hand stab |                                                                                      |

### Flank Boxing Mode

| Serial No | Motion                                         | Button                                                                                                                                                                  |
|-----------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | Ready( parting legs, head and waist turn left) |                                                                                      |
| 2         | Defense                                        |                                                                                      |
| 3         | Move Forward                                   |                                                                                      |
| 4         | Move Backward                                  |                                                                                      |
| 5         | Move left                                      |   |
| 6         | Move Right                                     |                                                                                      |
| 7         | Turn Left                                      |                                                                                      |
| 8         | Turn right                                     |                                                                                      |

| Serial No | Motion                             | Button                                                                              |
|-----------|------------------------------------|-------------------------------------------------------------------------------------|
| 9         | Stand up when fall down(frontside) |  |
| 10        | Front flip                         |  |
| 11        | Back flip                          |  |
| 12        | Bend and Salute                    |  |
| 13        | Wave and Salute                    |  |
| 14        | Victor                             |  |
| 15        | Fail                               |  |

| Serial No | Motion                                                     | Button                                                                                                                                                                      |
|-----------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10        | left wrist shot                                            |                                                                                          |
| 11        | Left Uppercut                                              |                                                                                        |
| 12        | Right Straight Punch                                       |                                                                                        |
| 13        | Right wrist shot                                           |                                                                                        |
| 14        | Right Uppercut                                             |   |
| 15        | Two hand Straight punch( right hand first, then left hand) |                                                                                        |
| 16        | stand up when fall down(Back side)                         |                                                                                        |
| 17        | Stand up when fall down(Front                              |                                                                                        |

| Serial No | Motion                                     | Button                                                                                                                                                                      |
|-----------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9         | Shoulder attack(left shoulder)             |                                                                                        |
| 10        | Wrist attack(left wrist)                   |                                                                                        |
| 11        | Stab(left shoulder)                        |                                                                                        |
| 12        | Rotate attack                              |                                                                                        |
| 13        | Right hand stab                            |   |
| 14        | Right hand stab, left hand straight attack |                                                                                        |
| 15        | Stand up when fall down(back side)         |                                                                                        |
| 16        | Stand up when fall down(from side)         |                                                                                        |

Soccer Mode   

| Serial No | Motion                            | Button                                                                            |                                                                                                                                                                                                                                                       |
|-----------|-----------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | Ready                             |                                                                                   |                                                                                                                                                                      |
| 2         | Move forward(fast)                |                                                                                   |                                                                                                                                                                      |
| 3         | Move Backward(fast)               |                                                                                   |                                                                                                                                                                      |
| 4         | Move left(fast)                   |                                                                                   |                                                                                                                                                                      |
| 5         | Move right(fast)                  |  |                                                                                                                                                                      |
| 6         | Turn left(fast)                   |                                                                                   |                                                                                                                                                                      |
| 7         | Turn right(fast)                  |                                                                                   |                                                                                                                                                                      |
| 8         | Move forward and turn left(fast)  |                                                                                   |    |
| 9         | Move forward and turn right(fast) |                                                                                   |    |

| Serial No | Motion                                           | Button                                                                              |                                                                                                                                                                                                                                                             |
|-----------|--------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10        | left foot Shoot slightly                         |                                                                                     |                                                                                                                                                                          |
| 11        | right foot shoot slightly                        |                                                                                     |                                                                                                                                                                          |
| 12        | left foot shoot heavily                          |                                                                                     |                                                                                                                                                                          |
| 13        | right foot shoot heavily                         |                                                                                     |                                                                                                                                                                          |
| 14        | goalie cover the shot(left hand)                 |  |                                                                                                                                                                          |
| 15        | Goalie cover the shot(parting legs and sit down) |                                                                                     |                                                                                                                                                                          |
| 16        | Goalie cover the shot(right hand)                |                                                                                     |                                                                                                                                                                          |
| 17        | Stand up when fall down(back side)               |                                                                                     |    |
| 18        | Stand up when fall down(front side)              |                                                                                     |    |

Mission Mode   

| Serial No | Motion                                                  | Button                                                                              |                                                                                                                                                                                                                                                             |
|-----------|---------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1         | Ready                                                   |                                                                                     |                                                                                                                                                                          |
| 2         | Move forward in quick short steps                       |                                                                                     |                                                                                                                                                                          |
| 3         | Move backward in quick short steps                      |                                                                                     |                                                                                                                                                                          |
| 4         | Move Left in quick short steps                          |                                                                                     |                                                                                                                                                                          |
| 5         | Move Right in quick short steps                         |  |                                                                                                                                                                          |
| 6         | Turn left in quick short steps                          |                                                                                     |                                                                                                                                                                          |
| 7         | Turn right in quick short steps                         |                                                                                     |                                                                                                                                                                          |
| 8         | Sit down and use two hands grab 5CM object and stand up |                                                                                     |                                                                                                                                                                          |
| 9         | Hold the object move forward.                           |                                                                                     |    |

| Serial No | Motion                                 | Button                                                                                |                                                                                                                                                                                                                                                                   |
|-----------|----------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10        | Hold the object move backward          |                                                                                       |    |
| 11        | Hold the object move left              |                                                                                       |    |
| 12        | Hold the object move right             |                                                                                       |    |
| 13        | Hold the object turn left              |                                                                                       |    |
| 14        | Hold the object turn right             |  |    |
| 15        | Put down the object in stand status.   |                                                                                       |                                                                                                                                                                              |
| 16        | Put down the object in sit down status |                                                                                       |                                                                                                                                                                              |
| 17        | Stand up when fall down(back side)     |                                                                                       |    |
| 18        | Stand up when fall down(front side)    |                                                                                       |    |

Mission Two mode   

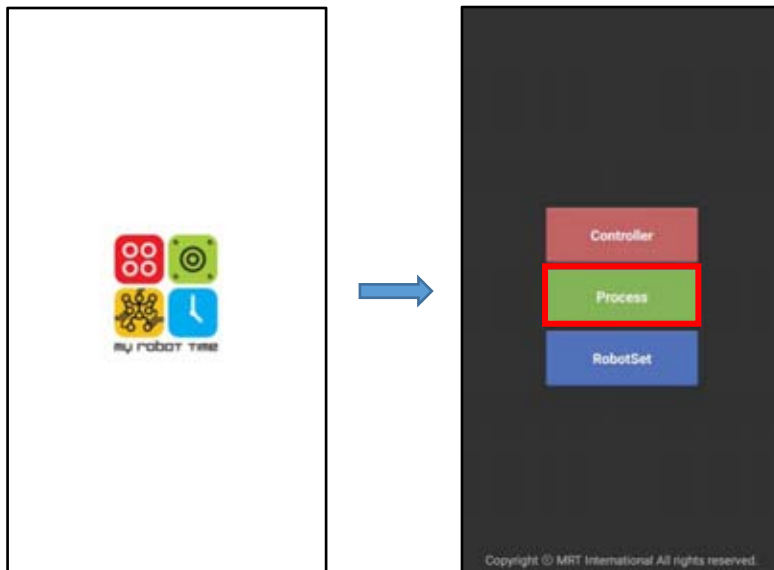
| Serial No | Motion                    | Button                                                                              |                                                                                     |
|-----------|---------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1         | Go prone in front side    |                                                                                     |  |
| 2         | Go Prone and move forward |  |  |
| 3         | Go prone and turn left    |                                                                                     |  |

| Serial No | Motion                  | Button                                                                                |                                                                                       |
|-----------|-------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 4         | Go prone and turn right |                                                                                       |  |
| 5         | Go prone and stand up   |  |  |
|           |                         |                                                                                       |                                                                                       |

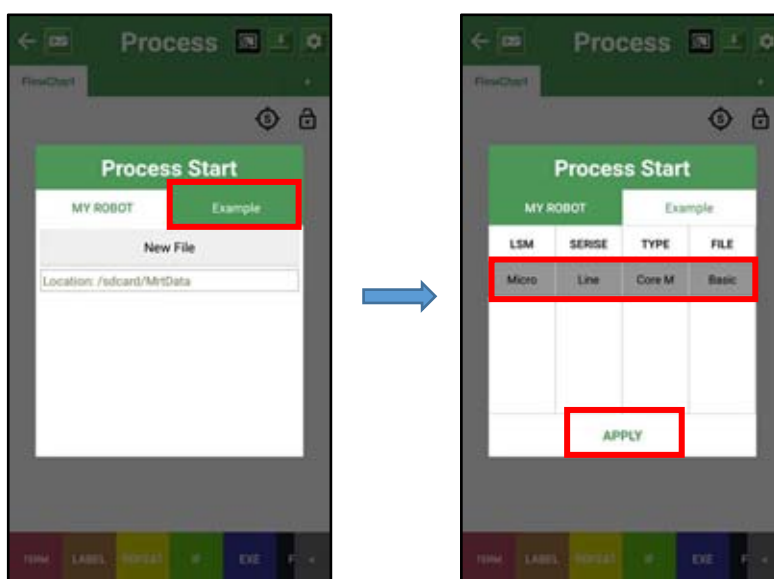
## 11-1-2. Download Process file

Provide LINE-CORE M Basic motion, Boxing, Soccer, Dance, Mission and other mode program file. User can download from here if deleted basic motion or other files by mistake,

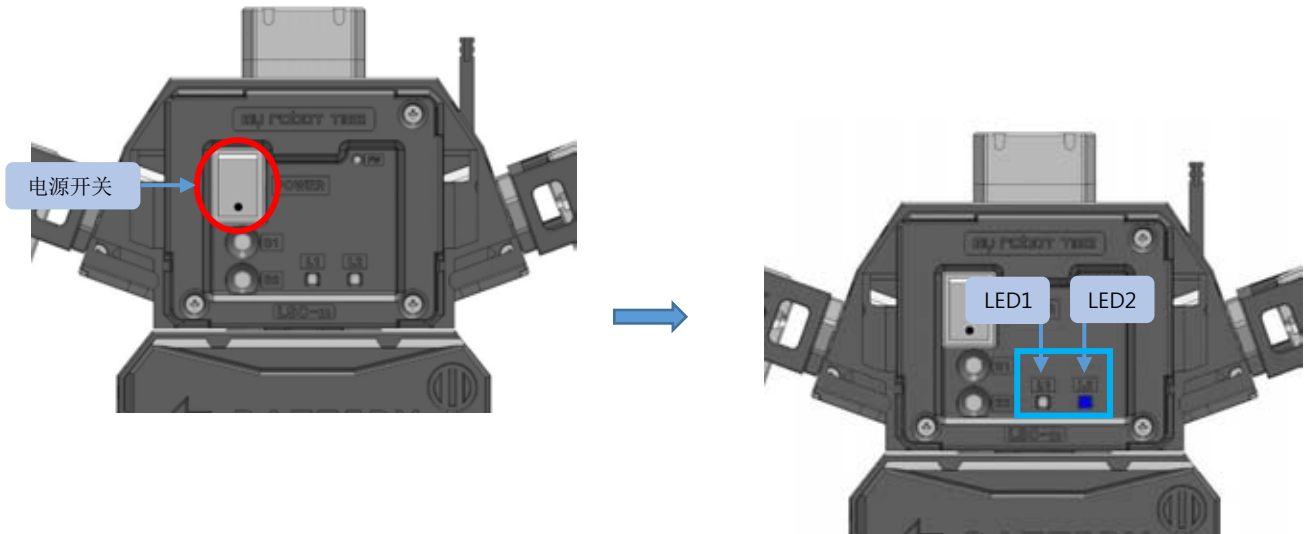
1. Run Line Maker App, and choose process



2. Open Process Start window, choose Example, and choose the program you need and press Apply button



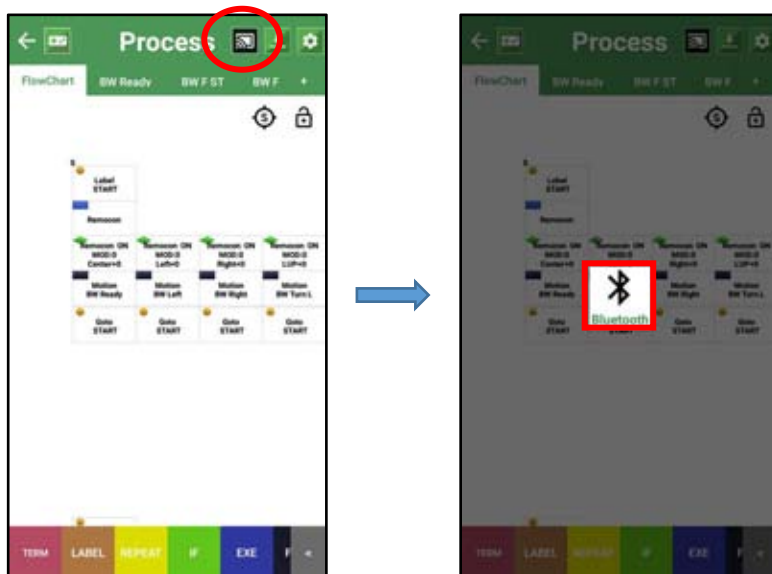
3. Please turn on LINE-Core M first.



LED 2 blue light flash with Buzzer sensor

※ Different LED light will run different program, please refer page 65.

4. Please press  button in Process window, and then press Bluetooth

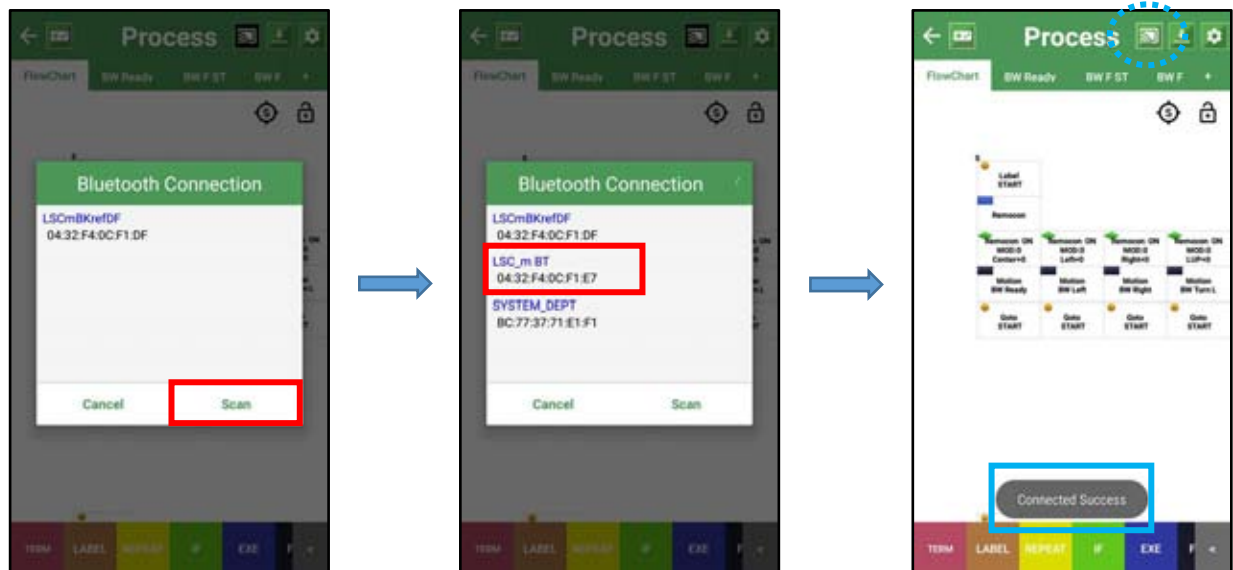


5. Please choose yes if the bluetooth interface open in your phone

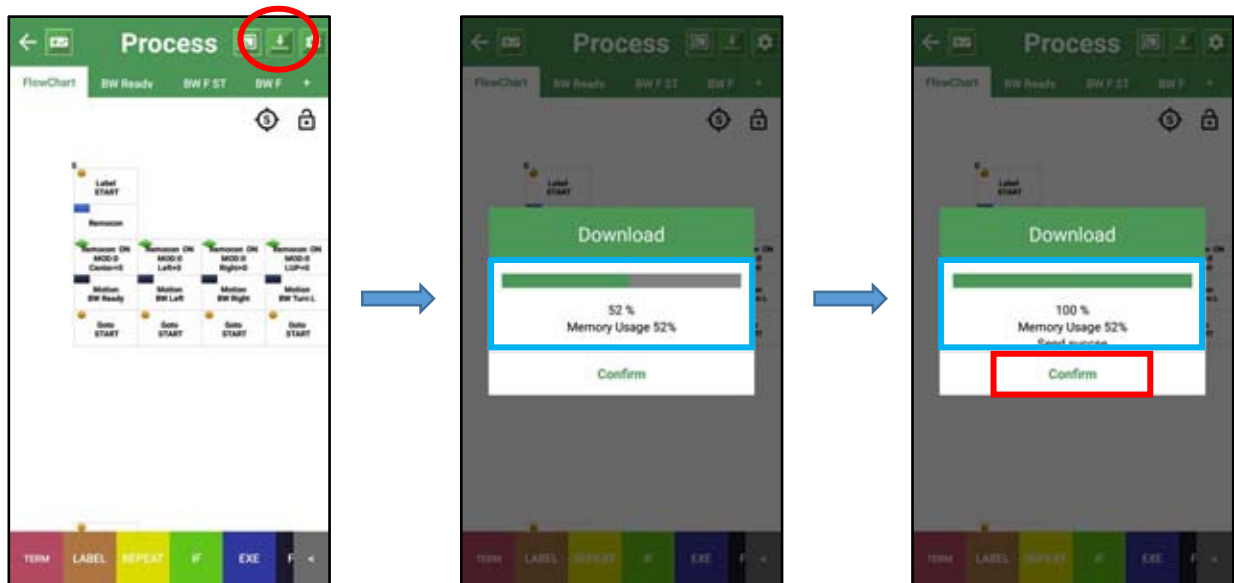


※ if bluetooth open in your phone, Please refer to No.6

6. Please press Scan, and choose robot ID, the bluetooth will change color after connected success.

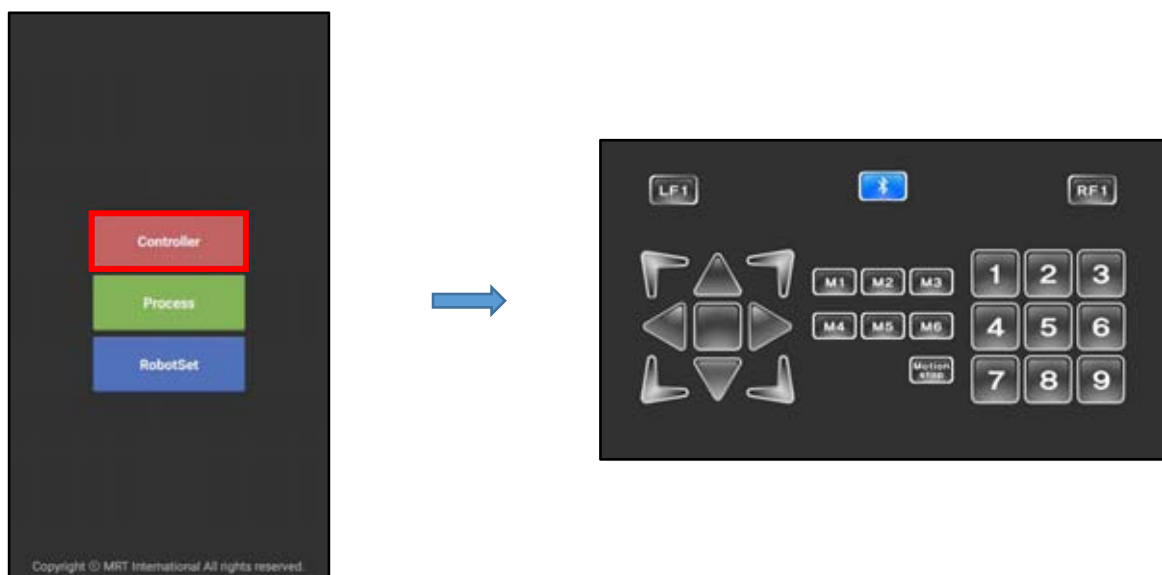


7. Download the file you need. Please press  button to confirm download, after completed, please press confirm.



if download failed, Please restart from 1.

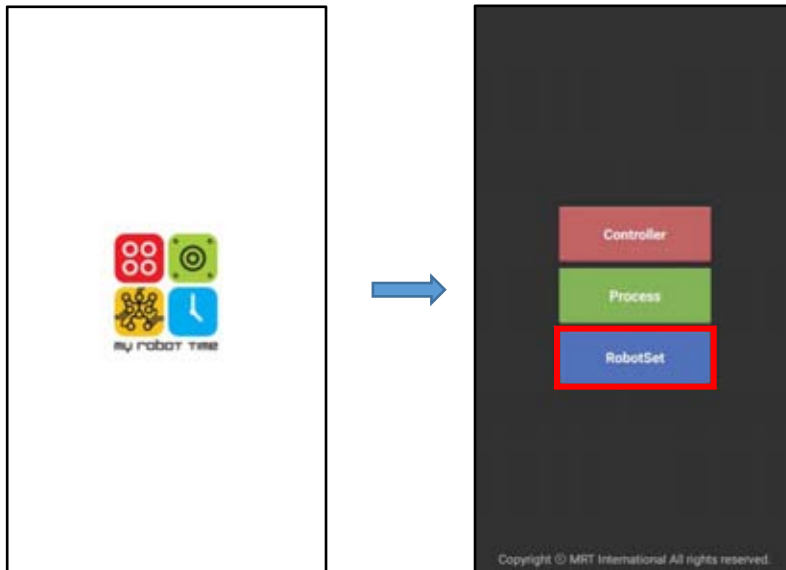
8. The LED 1 will become green after download success, user can confirm basic motion from controller now.



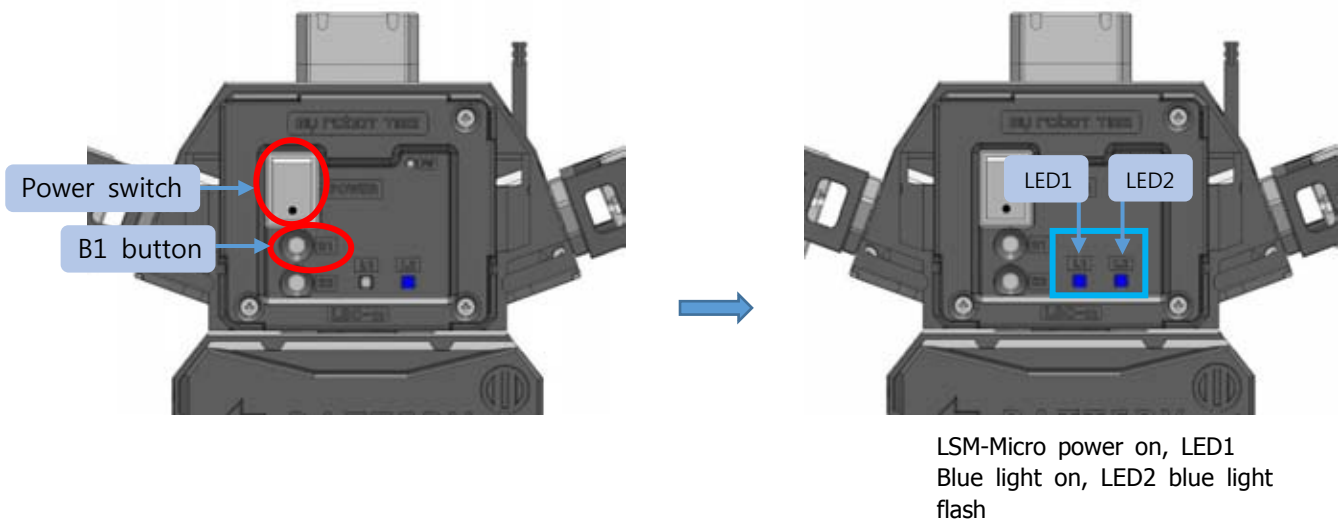
## 12. Change LSM-Micro ID

Line-Core M made by 18 LSM-Micro(ID01-ID18). We need change LSM-Micro id in case the ID repeat if you want to buy new motor or change motor in the future

1. Run LINE Maker App, choose RobotSet

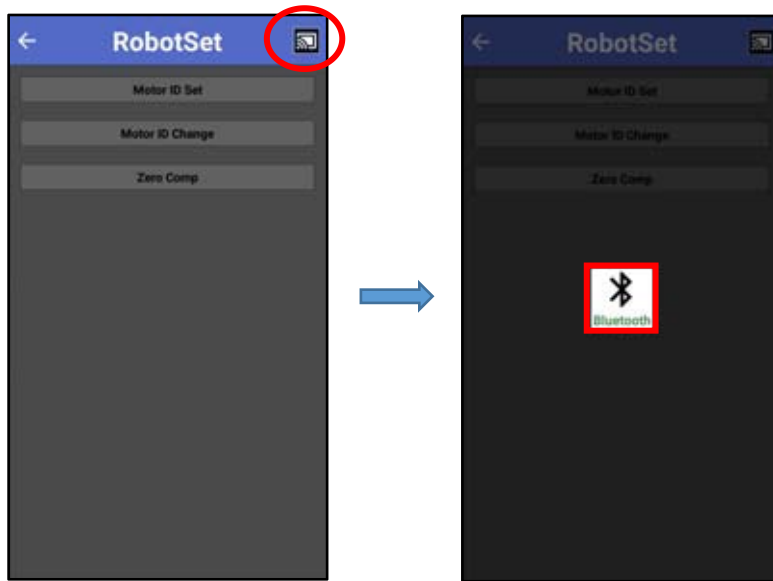


2. Turn on the power and press B1 button



※ Different LED will run different program, please refer to page 65

3. press  button in Robotset window and then press bluetooth button

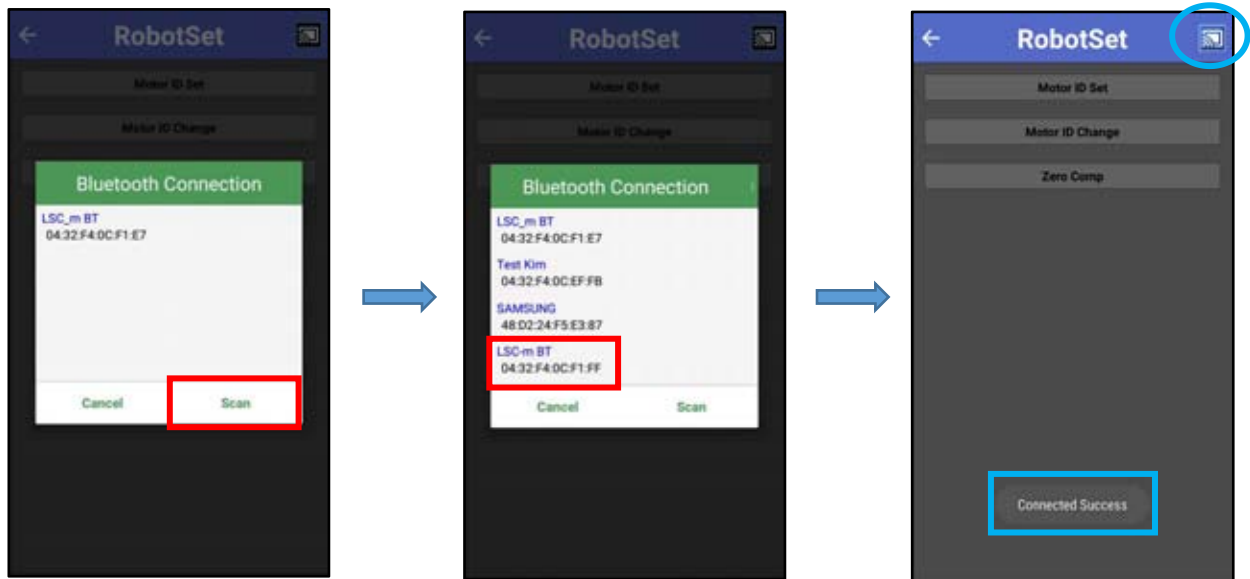


4. Please choose yes if your phone remind you open bluetooth

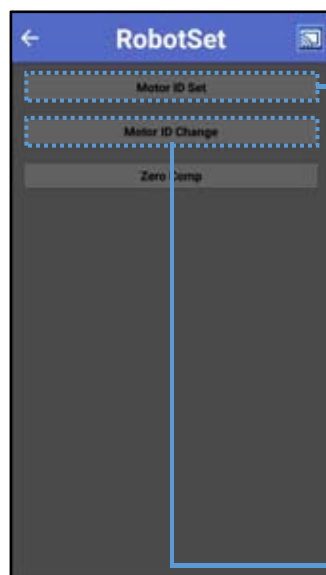


※ If bluetooth already open in your phone, please refer to No5.

5. Please press Scan, and choose robot ID, the  button will change color after connected success



6. There is two ways for change the ID of LSM-Micro



#### Motor ID S



If the robot finished assembly, please do not use Motor ID set change ID.

- Change all LSM-Micro which connected with LSC-M into the same ID.
- If only need change one motor ID, Please connect the motor which need change ID with LSC-M, Then change ID
- If you want to change the ID of the motor that you do not know the ID, Just need connect this motor with LSC-M and change ID.

#### Motor ID Chang

- If Connect one or many LSM-Micro to LSC-M, it can only change one LSM-Micro ID.

- The id of LSM-Micro which buy as spare parts is No.00, if you want to change the ID of spare LSM-Micro, please use Motor ID Set, it will only need connect one LSM-Micro that need change ID to LSC-M
- The range for ID change is 1-253.

7. Press Motor ID Set Button. As below picture showed, after you pressed ID input button, it will show the number of ID.



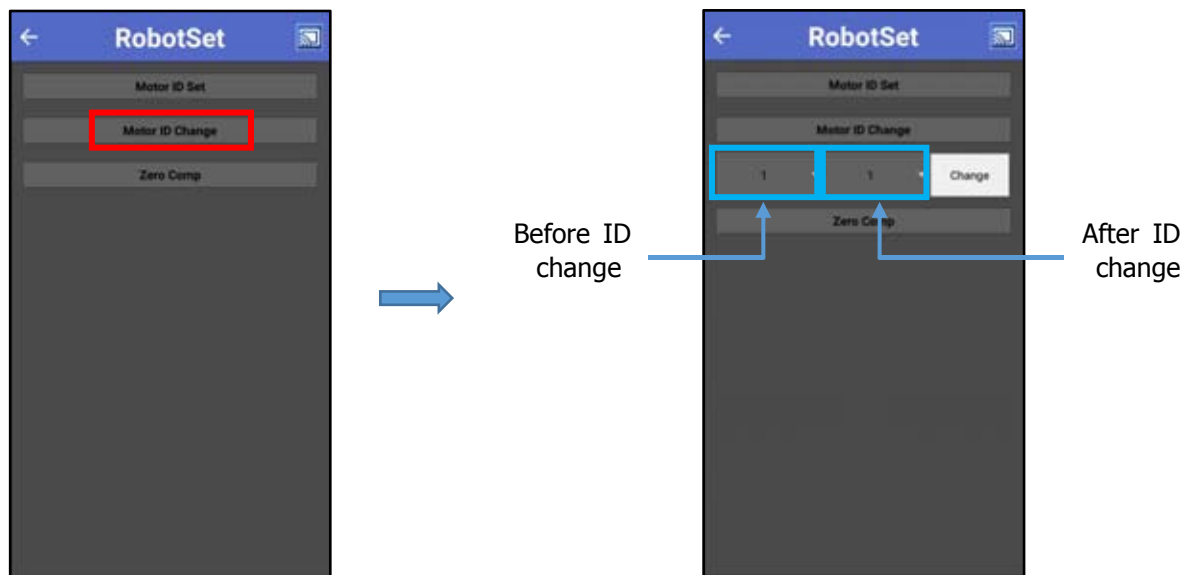
8. Choose the ID that need change, then press Set button.



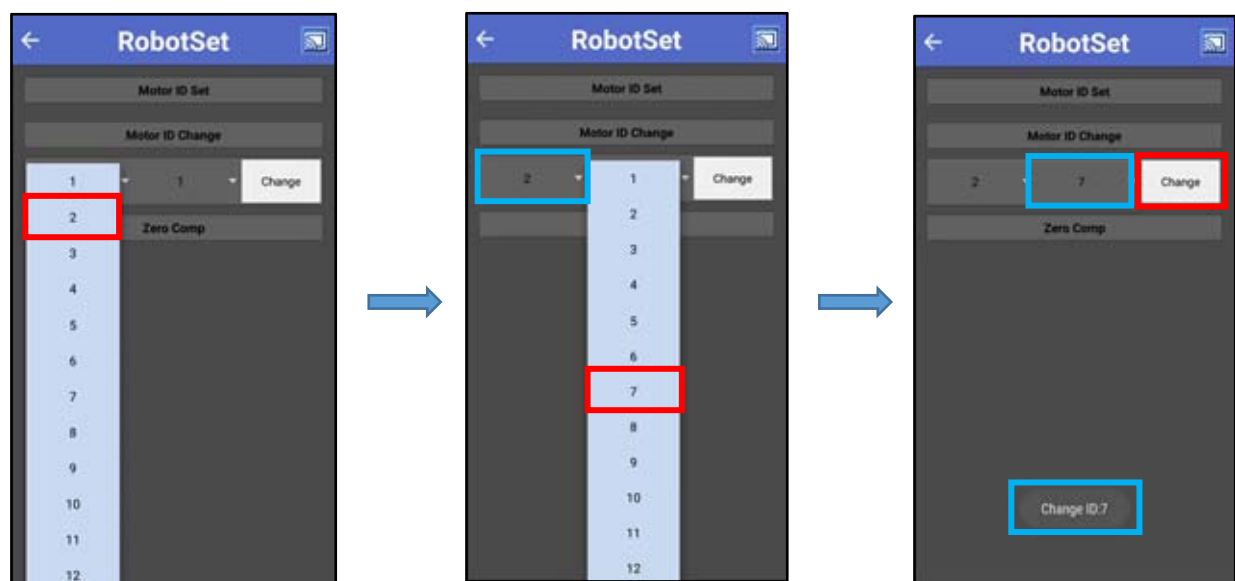
- After changed ID, It will show the changed ID information.
- If change ID failed, please restart from No.1
- All the LSM-Micro which connected with LSC-M in Motor ID Set will become to the same ID, so please do not use Motor ID set under the situation that robot finished set.
- If only need change one ID of LSC-Micro, we just connect the LSC-Micro which need change ID to LSC-M.

## 9. How to change the ID of LSM-Micro by using Motor ID Change

Press Motor ID Change button, it will enter the interface as below showed



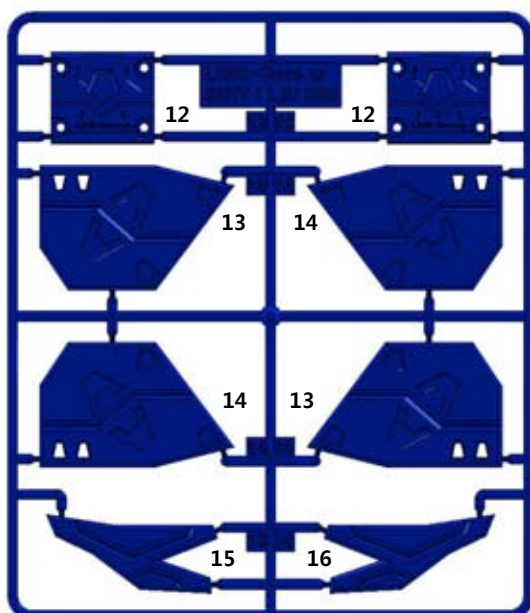
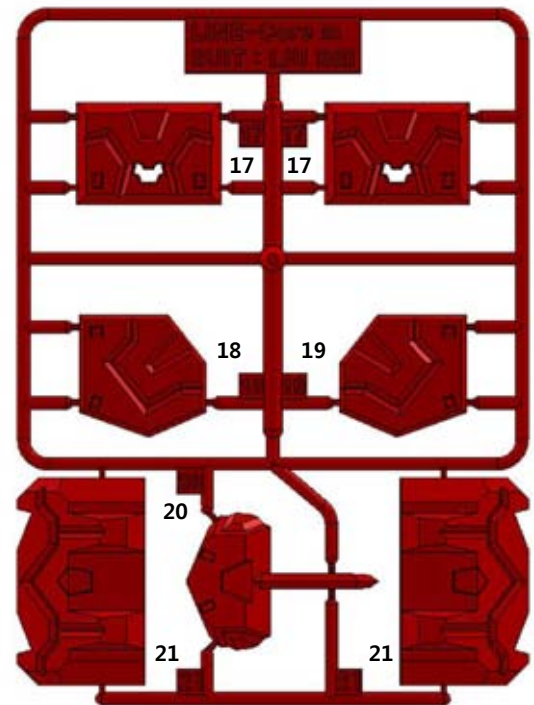
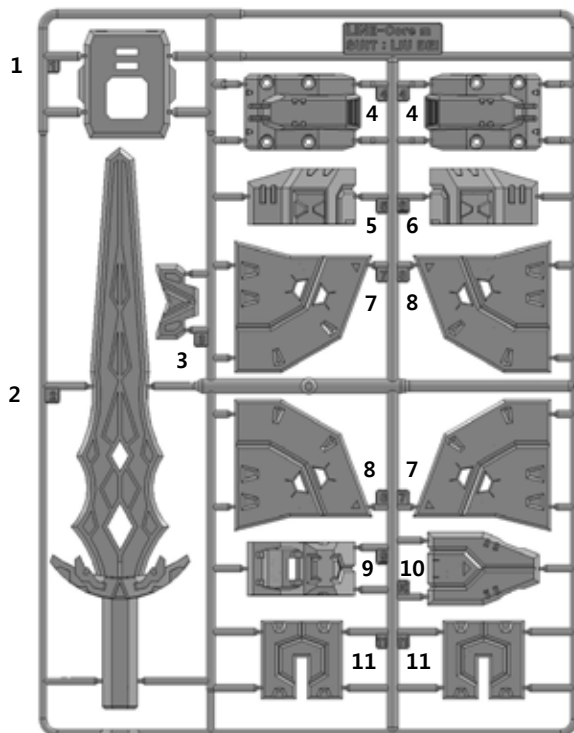
## 10. When you want to change ID 02 to ID 07, please press change as below picture showed.



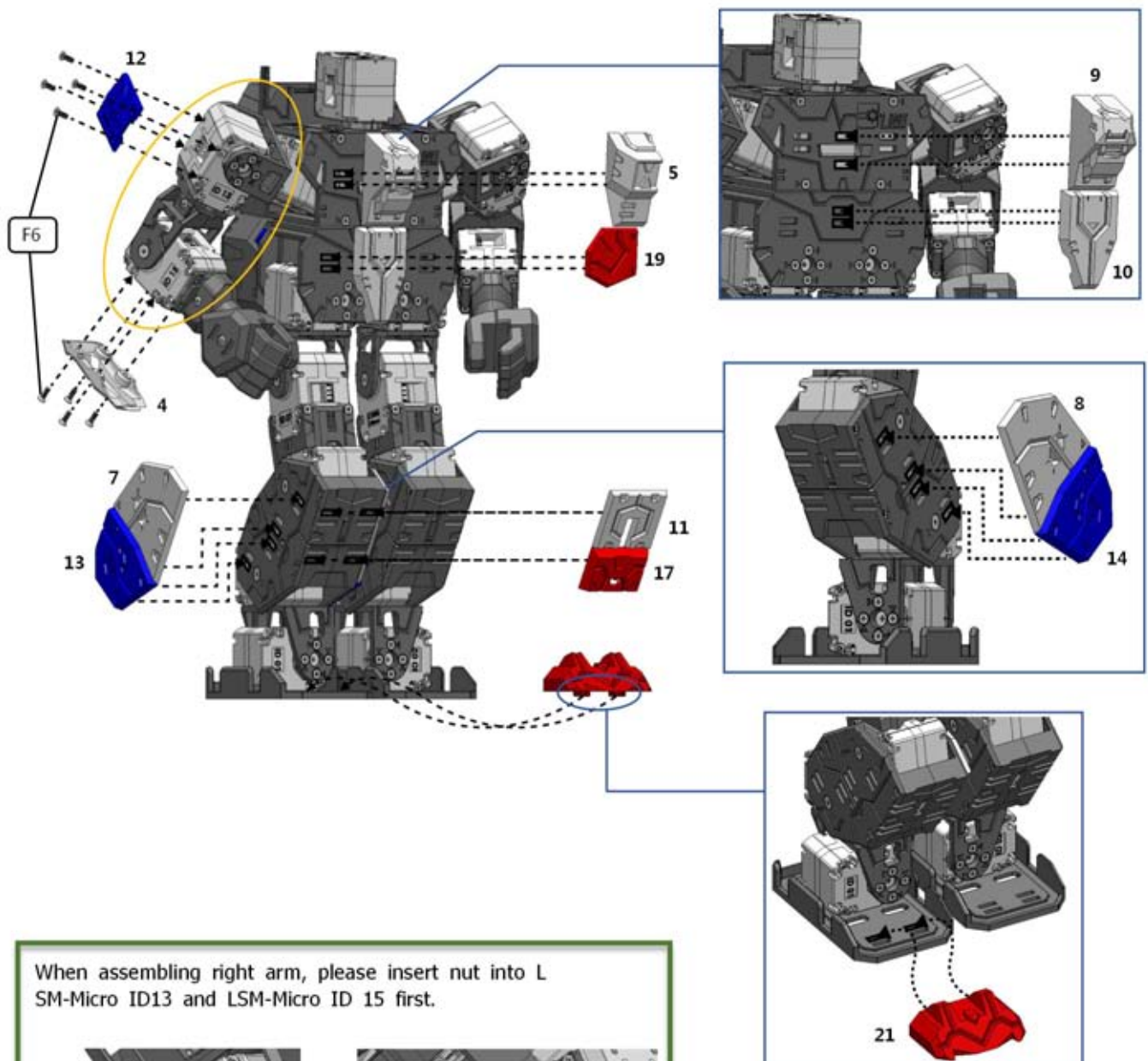
- After changed the ID, it will show the changed ID information
- If change ID failed, please restart from No.1.
- It can only change in LSM-Micro ID by using Motor ID change, no matter how many LSM-Micro connected to LSC-m

### 13. How to assembly LINE-Core M suit?

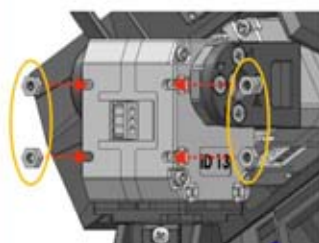
LINE-Core M can do a performance after equipped with different suit. The way for equip the suit is insert the suit into LINE-Core M frame. It is more faster and convenient to change robot role.



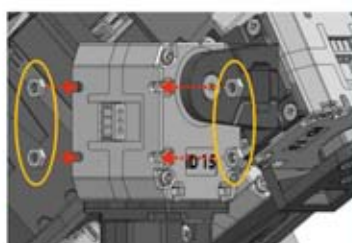
※ We will need F6 bolt and nut to equip right hard suit(LSM-Micro ID13, ID15)



When assembling right arm, please insert nut into L SM-Micro ID13 and LSM-Micro ID 15 first.

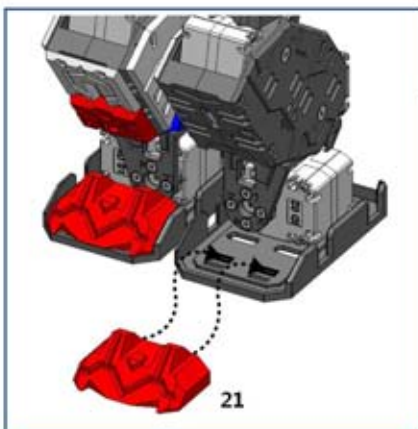
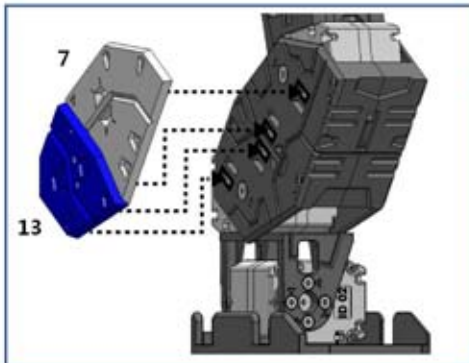
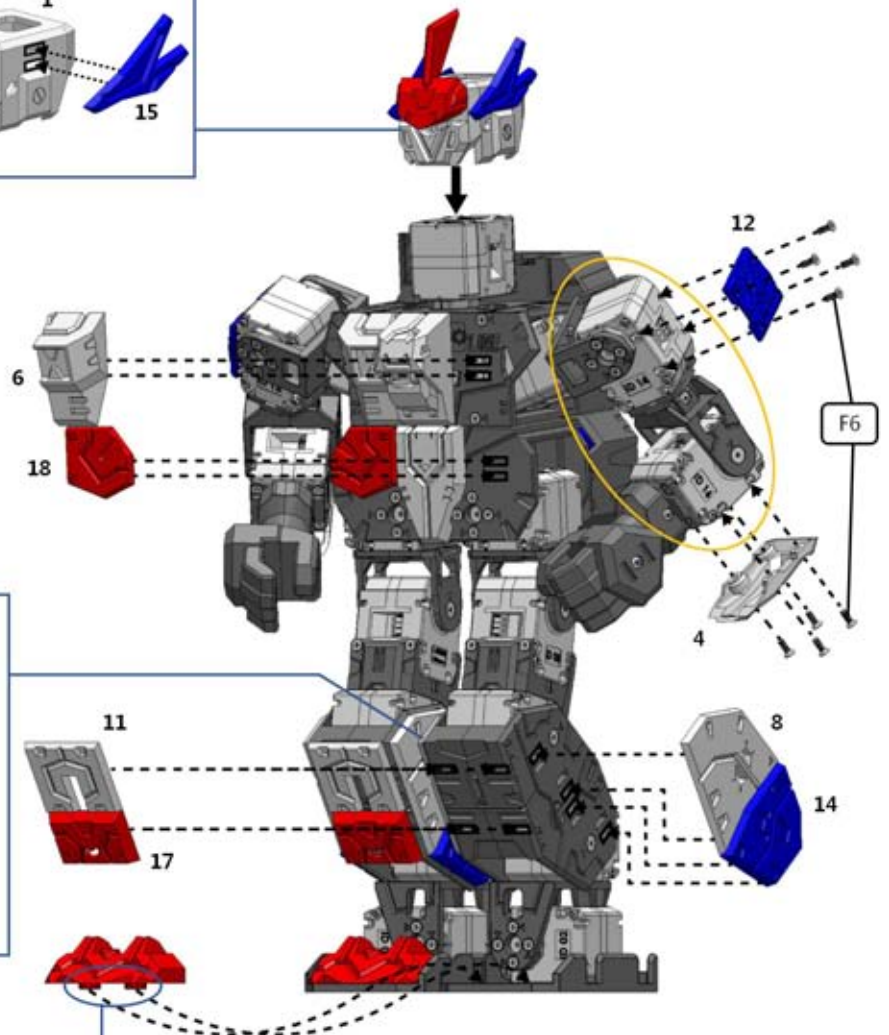
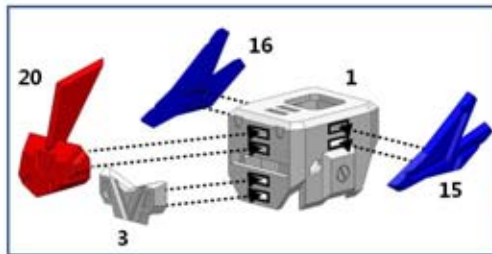


LSM-micro ID1

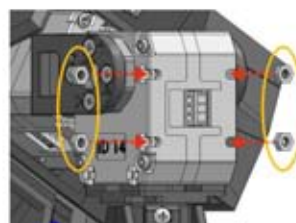


LSM-micro ID1

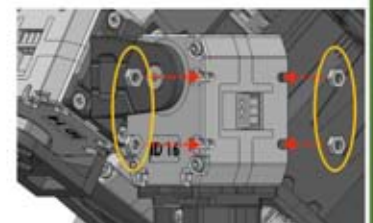
※ We will need F6 bolt and nut to assemble left arm(LSM-Micro I D14, ID 16)



Please insert nut into LSM-Micro ID14 and LSM-Micro ID 16 when assembling left arm.

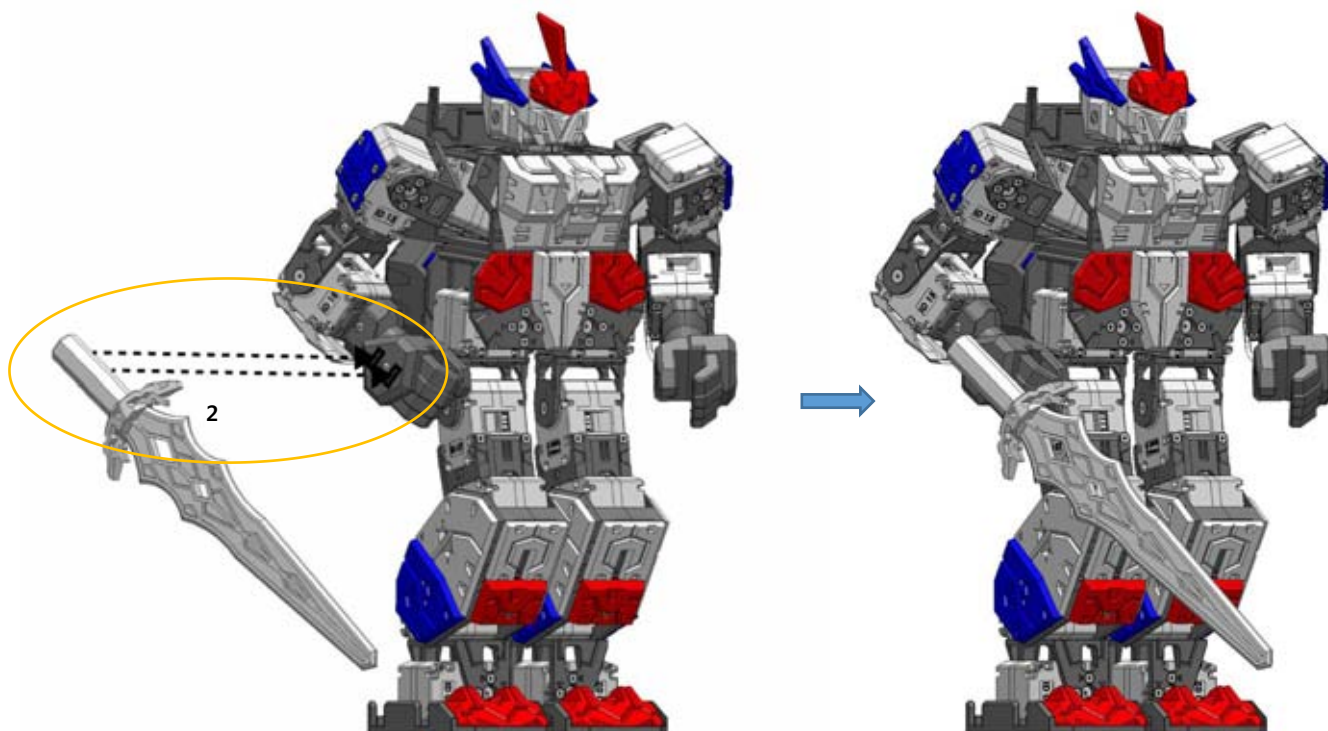


LSM-micro ID1

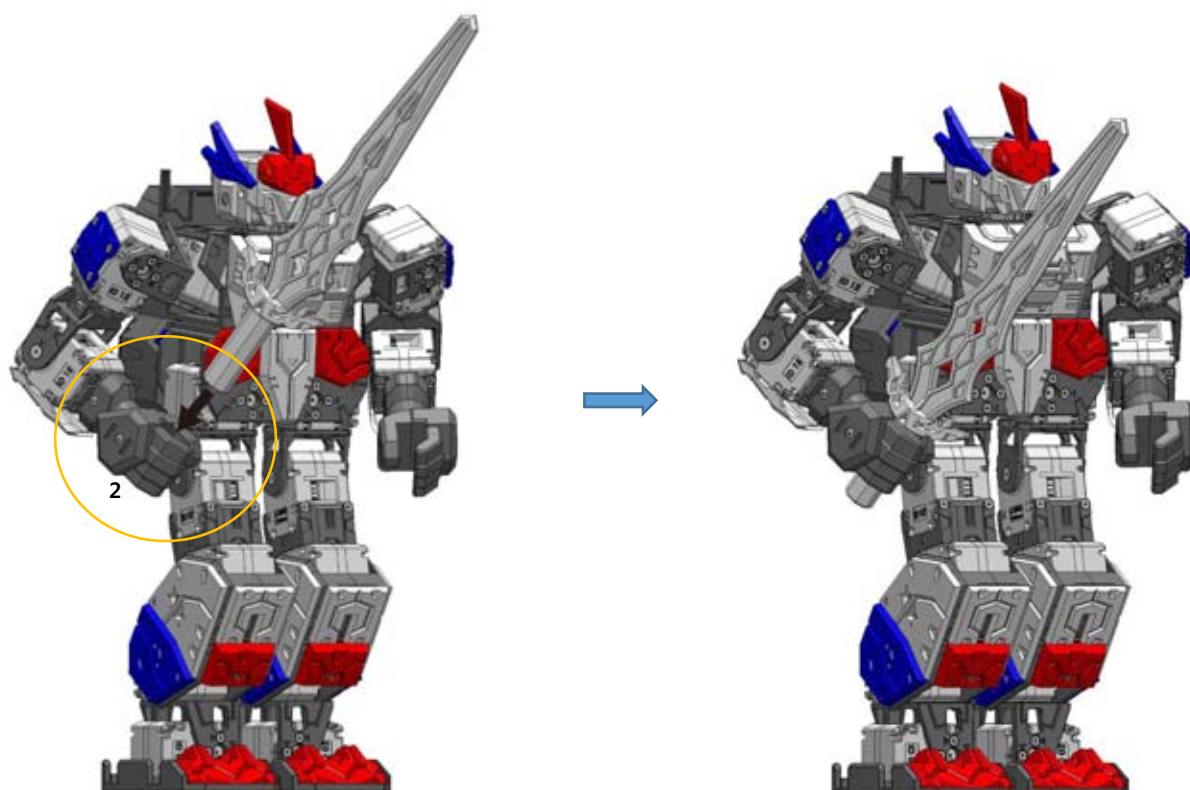


LSM-micro ID1

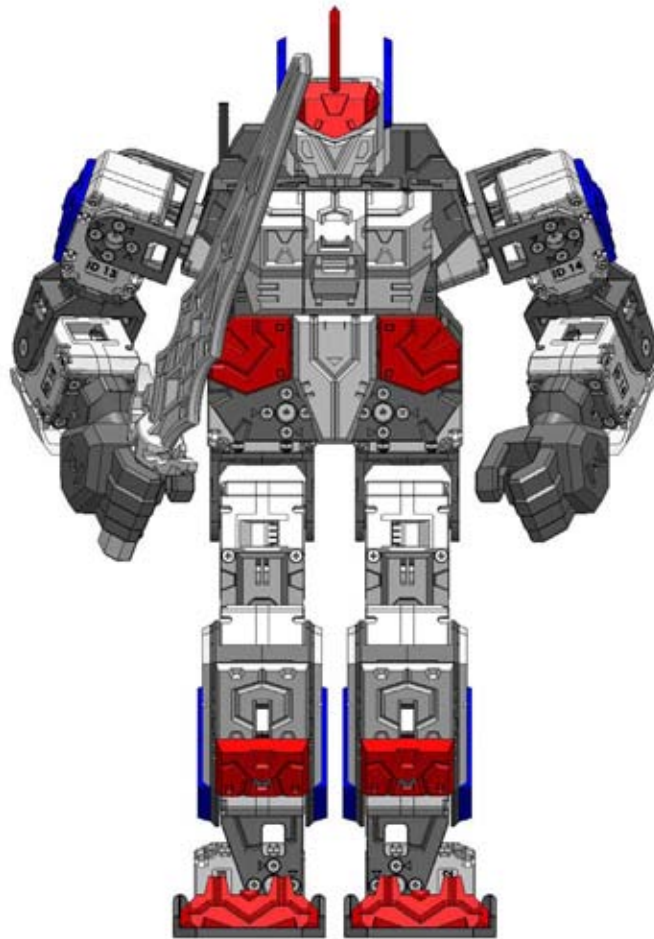
Insert Sword 1--Insert the sword into the back of hand.



Insert Sword 2-- Insert the sword into hand



Completed!



## Notes

- After equipped with suit, the gravity center of LSM-Core M will change, we need use slight change to find the right gravity center.(please refer to page 62-68)
- There is some bluge part in the helmet, please be careful when do some motions such as front flip or back flip.

## FCC Information to User

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## Caution

Modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**FCC Compliance Information :** This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

## IMPORTANT NOTE:

### FCC RF Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 0.5cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

## LINE-Core M

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