

HOVIS Lite

Assembly Manual





X16 DRS-0101
HerkuleX Servo



X4 DRB-0006
Dummy Servo



X4 DRB-0001
Front / Back



X4 DRB-0002
Hand



X4 DRB-0003
Foot



X40 DRB-0004
Universal Plate



X8 DRB-0005
Ankle Plate



X6 DRB-0008
U1-type Bracket



X8 DRB-0009
U2-type Bracket



X6 DRB-0010
U3-type Bracket



X8 DRB-0011
U4-type Bracket



X1 DRB-0007
Battery Case & Holder



X1 DRC-005T
Controller



X1 DRL-0728
7.4V Li-Po Battery
(3,000mA)



X20 DRH-1001
Horn (Plastic)



X70 DRJ-0001
L-type Joint
(Single Nut)



X10 DRJ-0002
L-type Joint
(Double Nut)



X40 DRJ-0003
L-type Joint
(Hole only)



X10 DRJ-0004
I-type Joint
(10.9mm, Hole only)



X60 DRJ-0006
I-type Joint
(12.5mm, Double Nut)



X20 DRJ-0007
I-type Joint
(16.0mm, Hole only)



X20 DRJ-0008
V-type Joint
(12.0mm, Single Nut)



X20 DRJ-0009
V-type Joint
(12.0mm, Double Nut)

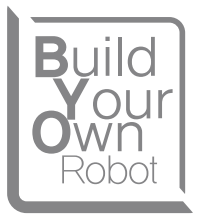


X20 DRJ-0010
Harness Clamp



X20 DRJ-0011
Bushing Set

HOVIS Lite Assembly Manual "Parts List"



x4 DCW-0001
Wheel (White, Ø60)



x1 DRQ-0001
AC Adaptor



x1 DRI-0002
Serial Cable
(DSUB 9Pin - 3P Audio Jack)



x1 DRI-0003
USB to Serial Gender



x1 DRI-0004
IR Receiver



x1 DRI-0005
Remote Control



x1 DRI-0008
PSD Sensor



x1 DRI-0007
ZigBee (Option)



x1 DRI-0009
Gyro Sensor (Option)

1:1 SCALE



x40 DRA-0051
Nut (M2)



x10 DRA-0052
Nut (M3)



x25 DRA-0054
Bolt (PH/M 2.0X13)



x50 DRA-0056
Bolt (PH/M 2.0X4)



x20 DRA-0057
Bolt (PH/M 2.0X5)



x150 DRA-0058
Bolt (PH/M 2.0X6)



x30 DRA-0059
Bolt (PH/M 2.0X8)



x10 DRA-0061
Bolt (PH/M 3.0X6)



x20 DRA-0062
Bolt (PH/M 3.0X8)



x60 DRA-0063
Bolt (CH/T 2.0X4)



x80 DRA-0064
Bolt (PH/T 2.0X5)



x20 DRA-0067
Horn Bolt
(BH/T 2.6X8)



x16 DRA-0069
Hand Bolt (CH/T 1.7X4)



x4 DRA-0002
Harness (75mm)



x4 DRA-0003
Harness (100mm)



x6 DRA-0006
Harness (200mm)



x2 DRA-0007
Harness (300mm)



x1 DRA-0021
PSD Harness 3pin (200mm)



x1 DRA-0027
IR Receiver Harness 3pin (150mm)

HOVIS Lite Assembly Manual “ID Placement Diagram”

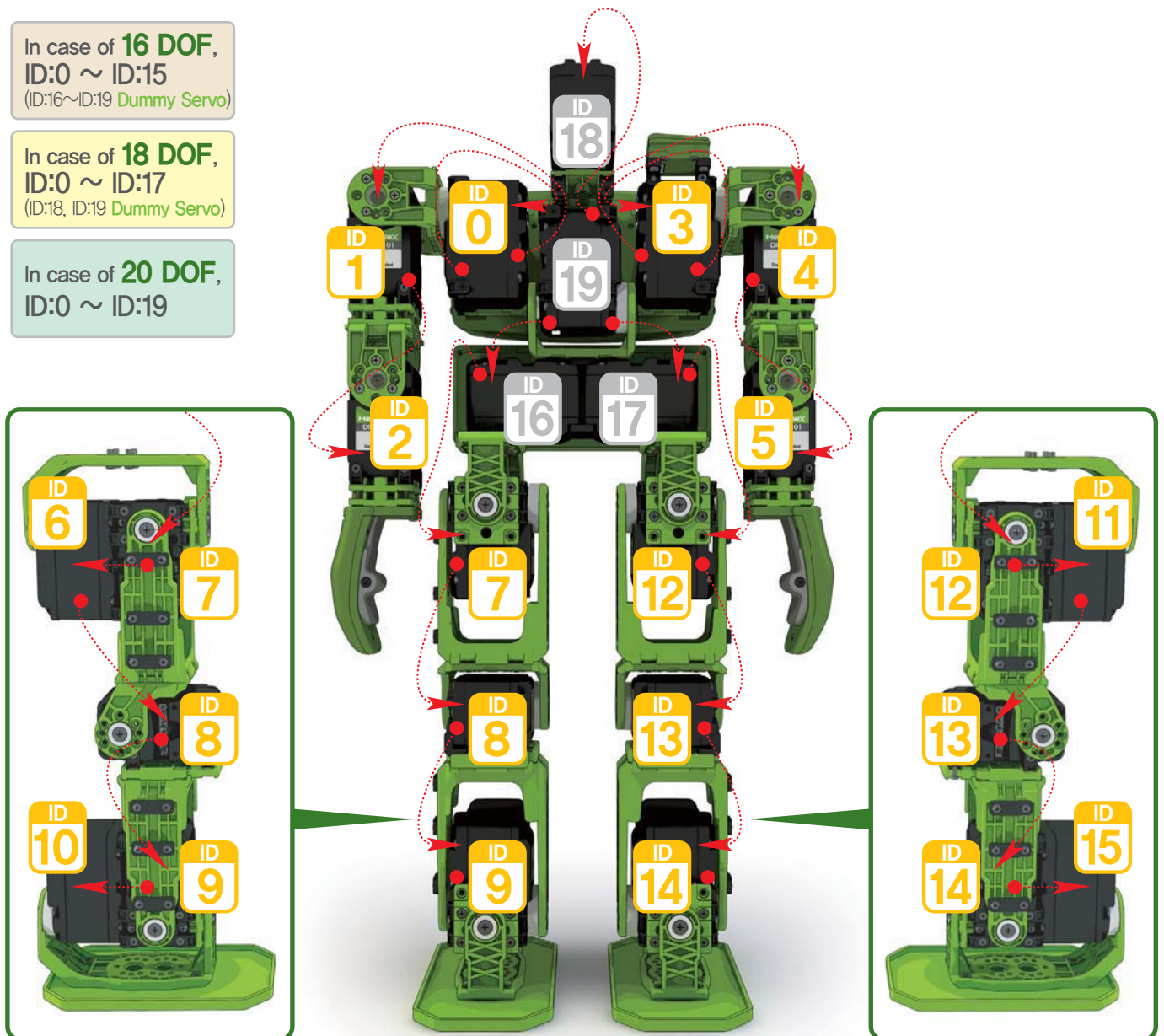
Servo motors in our humanoid robot are released with an ID number on each motor. When assembling the robot, make sure the servos are assembled at the right location by referring to the ID placement diagram. Robot will not operate properly when servo motors are placed incorrectly.

HOVIS Lite is basically released with 16DOF(16 servo motors + 4 dummy servos) and 4 dummy servos can be replaced to real servo motors for upgrade to 20DOF. Below diagram shows ID allocation considering the robot can be upgraded to 20DOF (ID0~19). Motor ID numbers are based on 20 DOF robot. Motors numbered 16~19 have the last ID numbers as they dummy motors and replacements. Wiring is the most difficult part in assembling the robot. Please read the manual carefully grasp the wiring concept and try assembling one at a time. Refer to the humanoid robot assembly diagram for wiring details.

In case of **16 DOF**,
ID:0 ~ ID:15
(ID:16~ID:19 Dummy Servo)

In case of **18 DOF**,
ID:0 ~ ID:17
(ID:18, ID:19 Dummy Servo)

In case of **20 DOF**,
ID:0 ~ ID:19

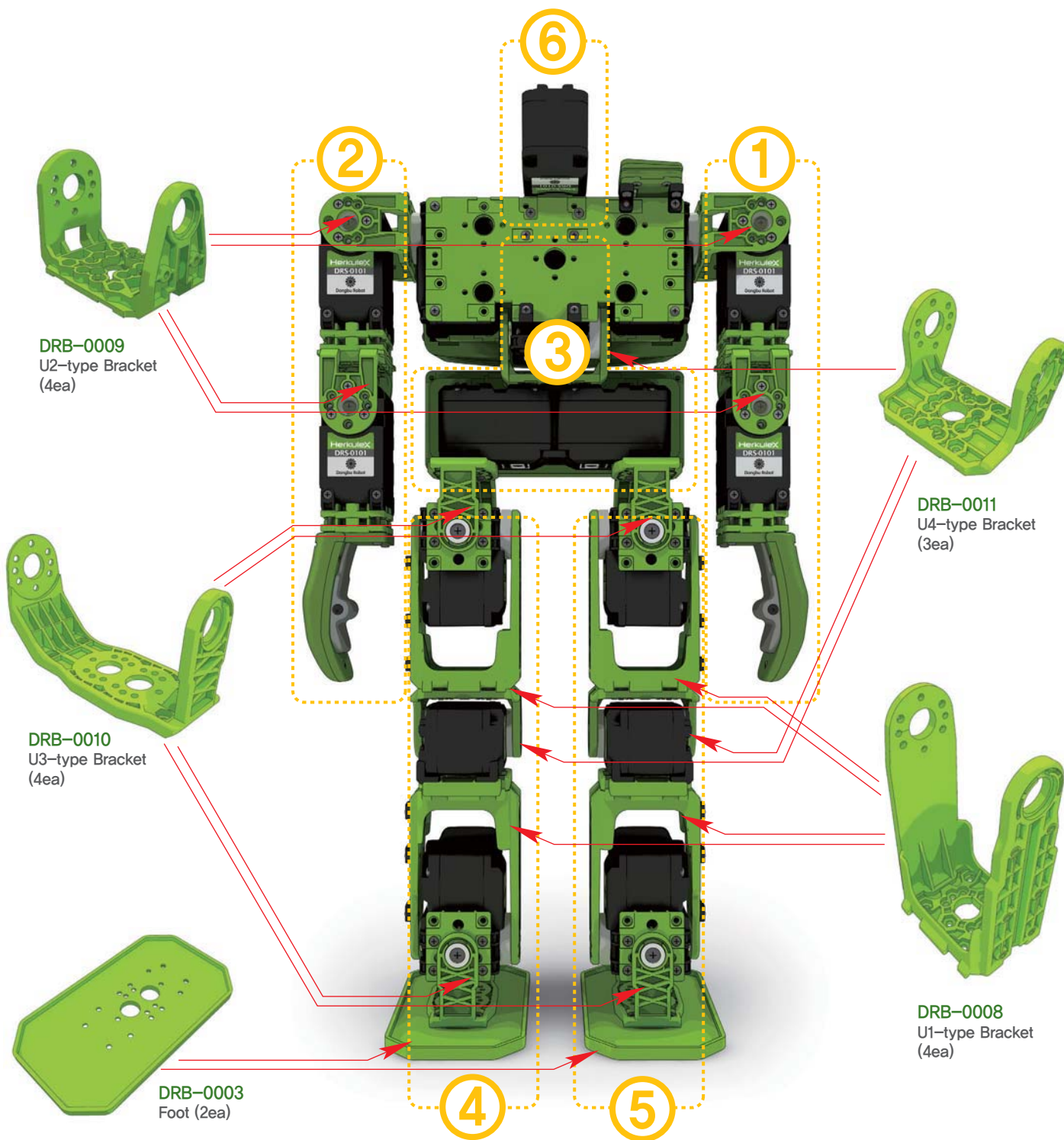


HOVIS Lite Assembly Manual “Bracket Placement Diagram”

Brackets act as joints and as connection between the servos.

Brackets make up the shoulder, waist, hips, knees, and feet. Study the bracket assembly diagram before assembly.

Assembly sequence is as follows ①Left Arm, ②Right Arm, ③Waist, ④Right Leg, ⑤Left Leg, ⑥Head, ⑦Controller, ⑧Battery



- 1 Place **DRJ-0001**(L-type Joint Single Nut) on top of 4 holes located at each corner, Use 4 **DRA-0058**(Bolt PH/M 2.0X6) to attach.
- 2 Use the **DRA-0067**(BH/T 2.6X8) to attach **Horn** to the Servo.
- 3 The zero points between **Horn** and servo should be coincided all the time. Please make sure if both zero points are coincided after assembling **Horn** onto the servo and before assembling brackets onto the horns. Otherwise, there might be some problems during zero point adjustment by software.

Required Parts



DRS-0101
HerkuleX Servo 1ea



DRJ-0001
L-type Joint (Single Nut) 4ea



DRA-0058
Bolt (PH/M 2.0X6) 4ea



DRA-0067
Bolt (BH/T 2.6X8) 1ea

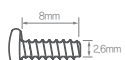


DRH-1001
Horn (Plastic) 1ea

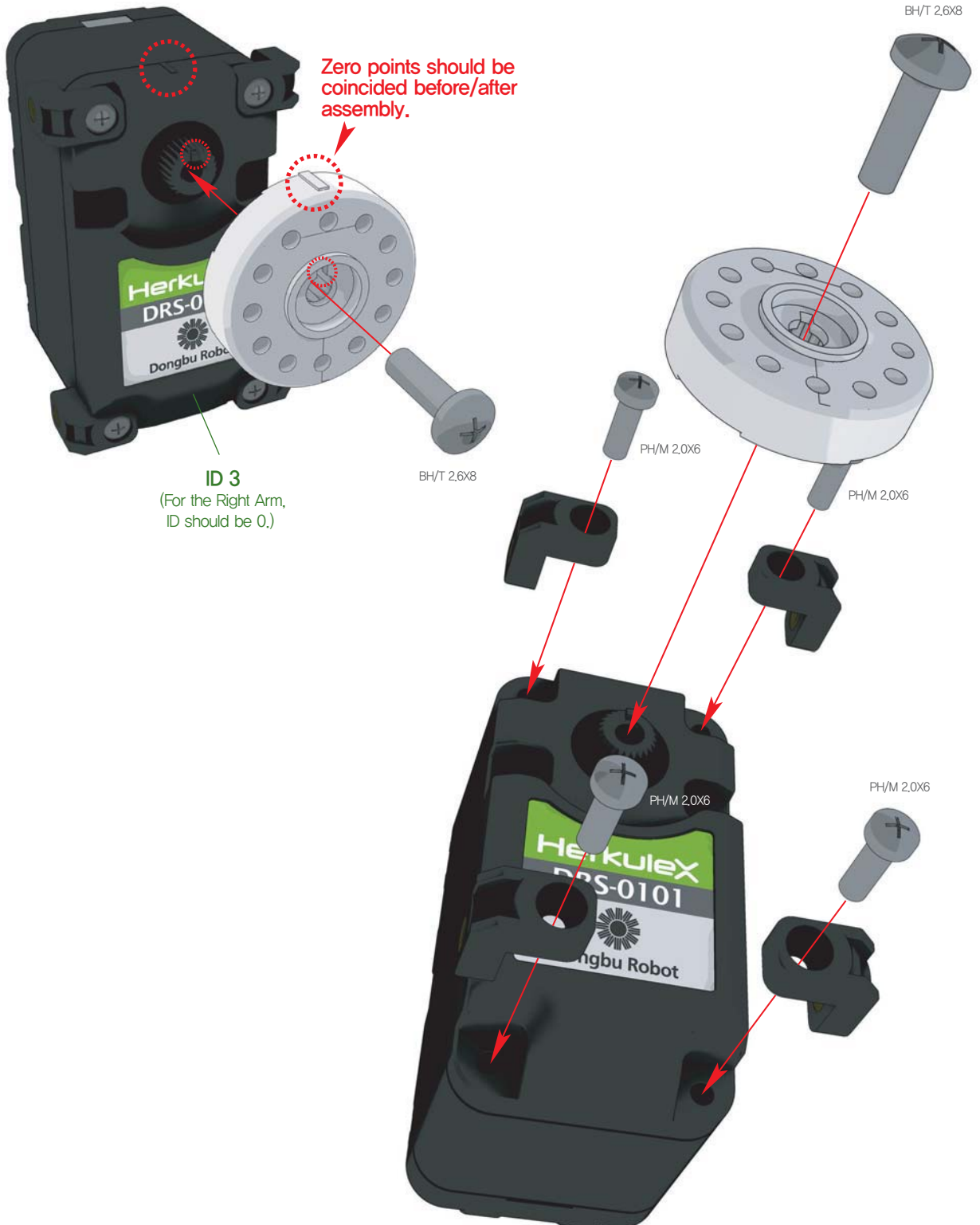
1:1 SCALE



PH/M 2.0X6



BH/T 2.6X8



- 1 Attach the DRB-0009(U2-type Bracket) to the servo using 4 DRA-0064(Bolt PH/T 2.0X5).

Required Parts



DRB-0009
U2-type Bracket 1ea

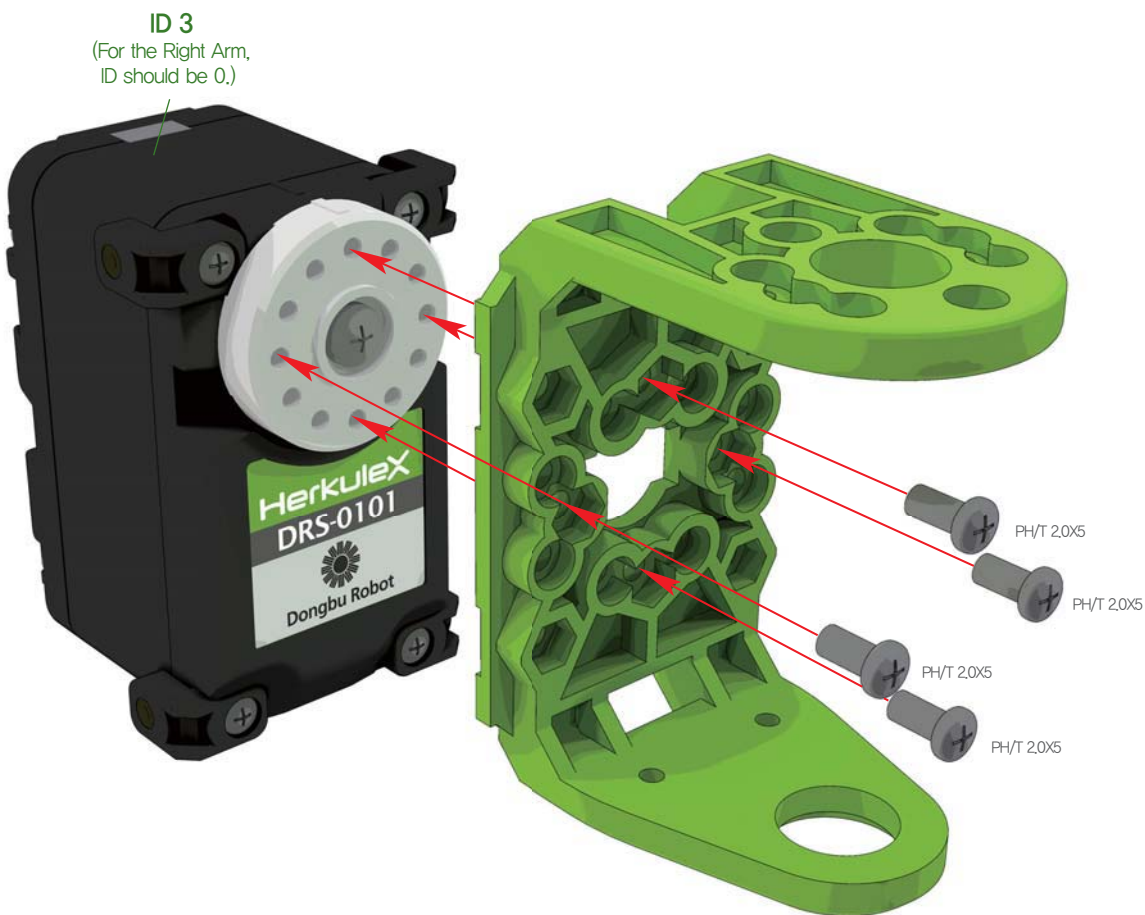


DRA-0064
Bolt (PH/T 2.0X5) 4ea

1:1 SCALE



PH/T 2.0X5



- 1 Use the **DRA-0067**(BH/T 2.6X8) to attach **Horn** to the Servo. Align both zero points before/after assembling. (See **3** on Pg.4 for more detailed info.)
- 2 Place **DRJ-0001**(L-type Joint Single Nut) on top of 4 holes in the Servo as shown in the diagram below. Use 4 **DRA-0058**(Bolt PH/M 2.0X6) to attach.
- 3 Use 3 **DRA-0064**(Bolt PH/T 2.0X5) to attach **ID 3** to **ID4**.

Required Parts



DRS-0101
HerkuleX Servo **1ea**



DRJ-0001
L-type Joint
(Single Nut) **4ea**



DRA-0058
Bolt (PH/M 2.0X6) **4ea**



DRA-0064
Bolt (PH/T 2.0X5) **3ea**



DRA-0067
Bolt (BH/T 2.6X8) **1ea**



DRH-1001
Horn (Plastic) **1ea**



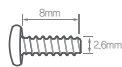
1:1 SCALE



PH/M 2.0X6



PH/T 2.0X5



BH/T 2.6X8

- 1 Place 2 DRB-0004(Universal Plate) as shown in the diagram below, use 4 DRA-0054(Bolt PH/M 2.0X13) to attach DRB-0009(U2-type Bracket) to ID 4.



Required Parts



DRB-0009
U2-type Bracket 1ea

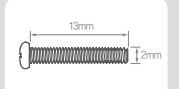


DRB-0004
Universal Plate 2ea



DRA-0054
Bolt (PH/M 2.0X13) 4ea

1:1 SCALE



PH/M 2.0X13

- 1 Use the **DRA-0067**(BH/T 2.6X8) to attach **Horn** to the Servo. Align both zero points before/after assembling. (See **3** on Pg.4 for more detailed info.)
- 2 Place **DRJ-0001**(L-type Joint Single Nut) on top of 4 holes in the Servo **ID 5**. Use 4 **DRA-0058**(Bolt PH/M 2.0X6) to attach.
- 3 Use 3 **DRA-0064**(Bolt PH/T 2.0X5) to attach ID 5 to the assembled unit.

Required Parts



DRS-0101
HerkuleX Servo **1ea**



DRJ-0001
L-type Joint
(Single Nut) **4ea**



DRA-0058
Bolt (PH/M 2.0X6) **4ea**



DRA-0064
Bolt (PH/T 2.0X5) **3ea**



DRA-0067
Bolt (BH/T 2.6X8) **1ea**



DRH-1001
Horn (Plastic) **1ea**

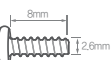
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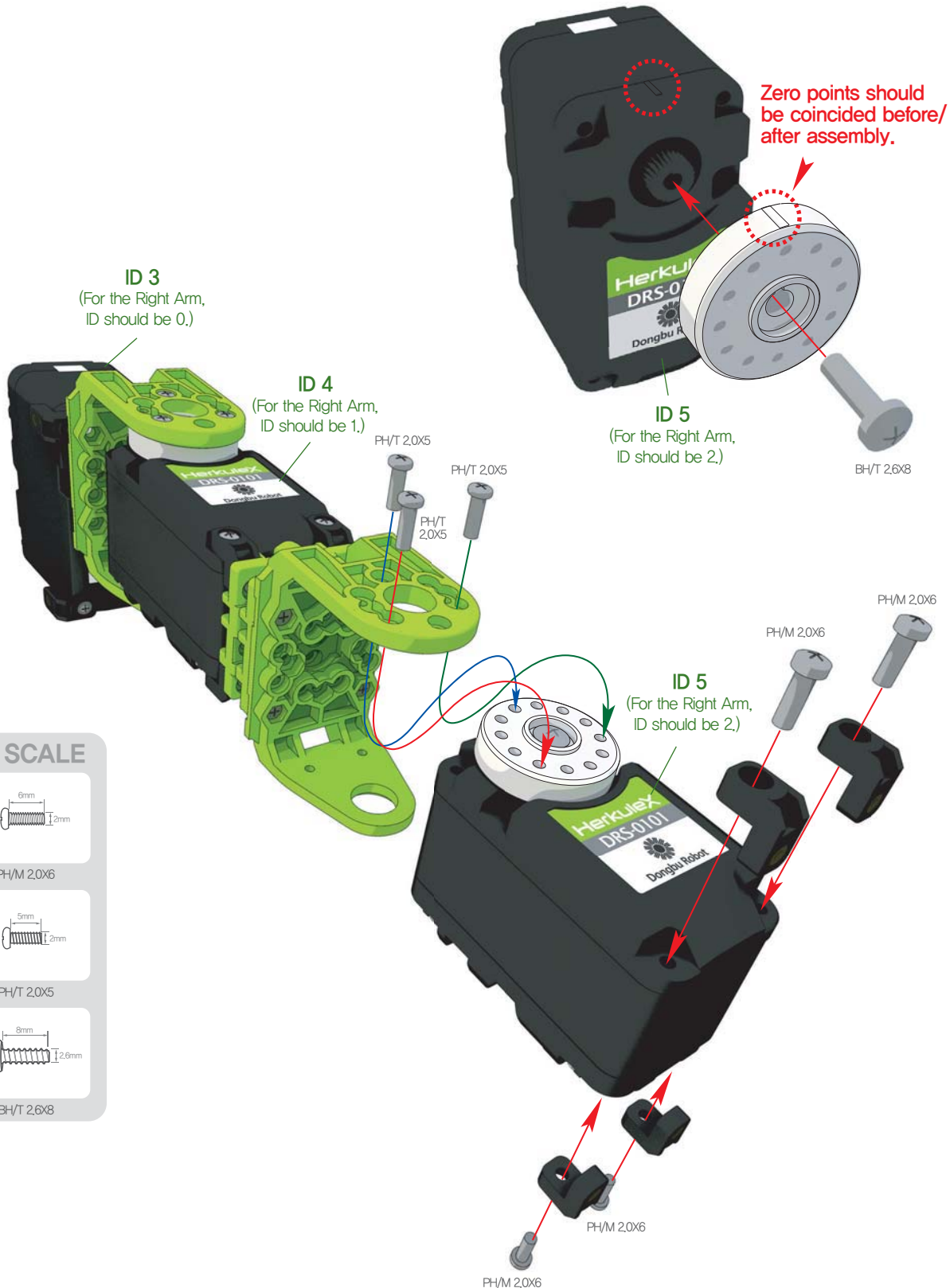
PH/M 2.0X6



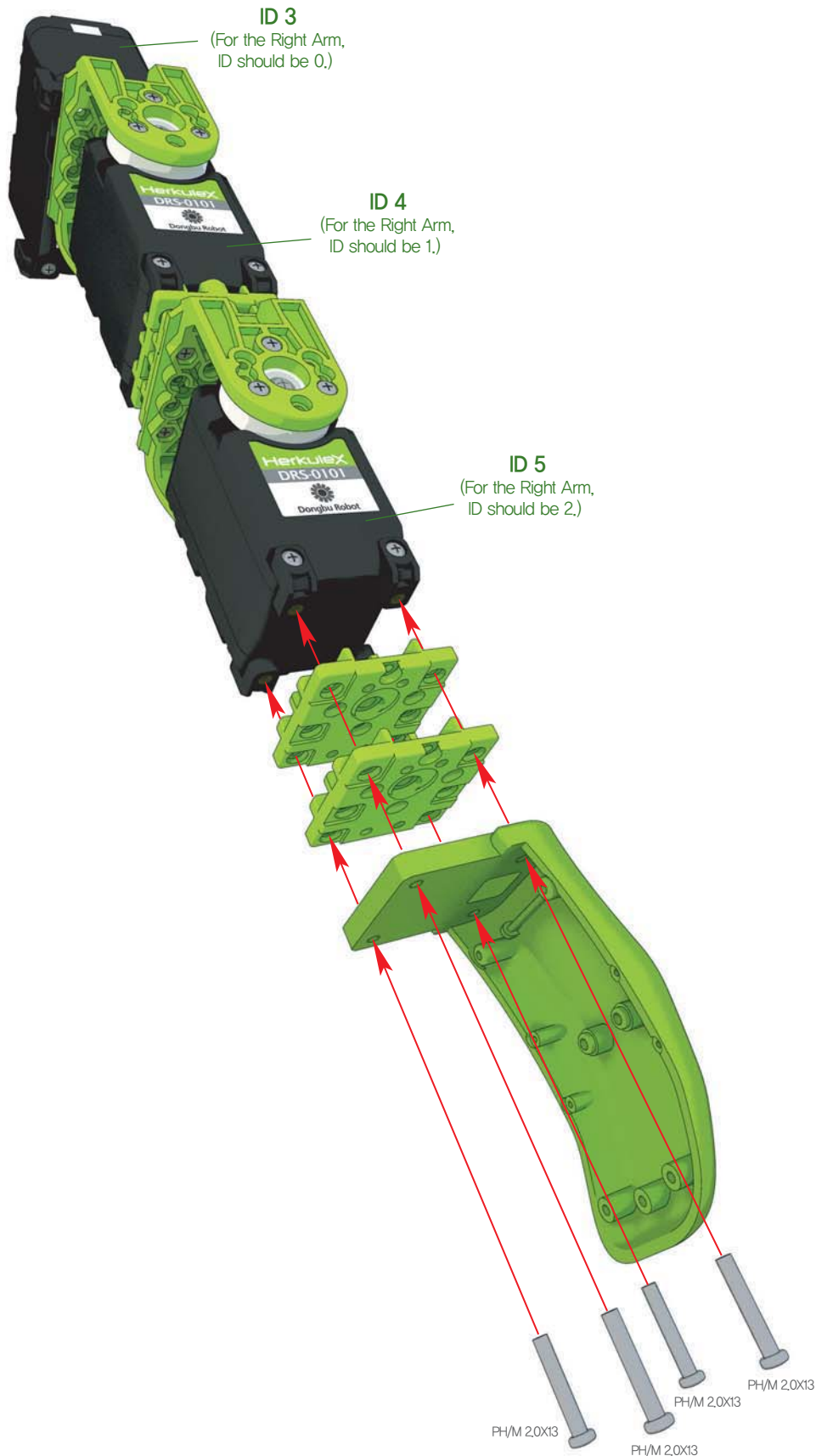
PH/T 2.0X5



BH/T 2.6X8



- 1 Use 4 **DRA-0054**(Bolt PH/M 2.0X13) to attach **DRB-0002**(Hand) and 2 **DRB-0004**(Universal Plate) to the assembled unit.
- 2 For the right arm assembly, assemble the right hand symmetrically comparing to the left arm.



Required Parts



DRB-0002
Hand **1ea**

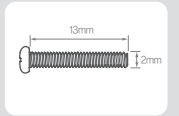


DRB-0004
Universal Plate **2ea**



DRA-0054
Bolt (PH/M 2.0X13) **4ea**

1:1 SCALE



PH/M 2.0X13

- 1 Use 3 **DRA-0069**(CH/T 1.7X4) to assemble the hand **DRB-0002**(Hand) as shown in diagram below.
- 2 For the right arm assembly, assemble the right hand symmetrically comparing to the left arm.

Required Parts

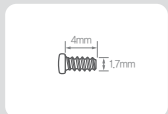


DRB-0002
Hand **1ea**

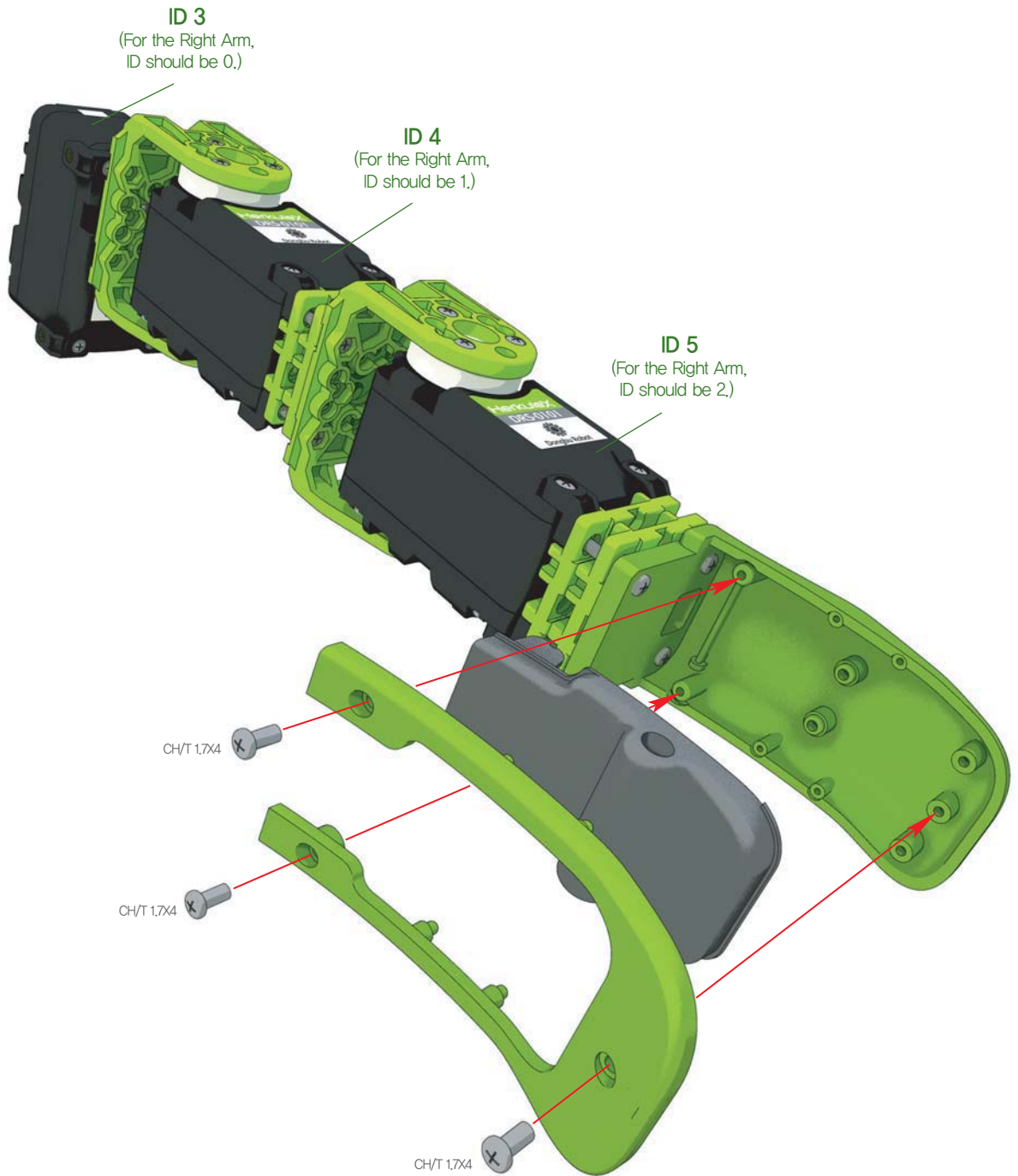


DRA-0069
Bolt (CH/T 1.7X4) **3ea**

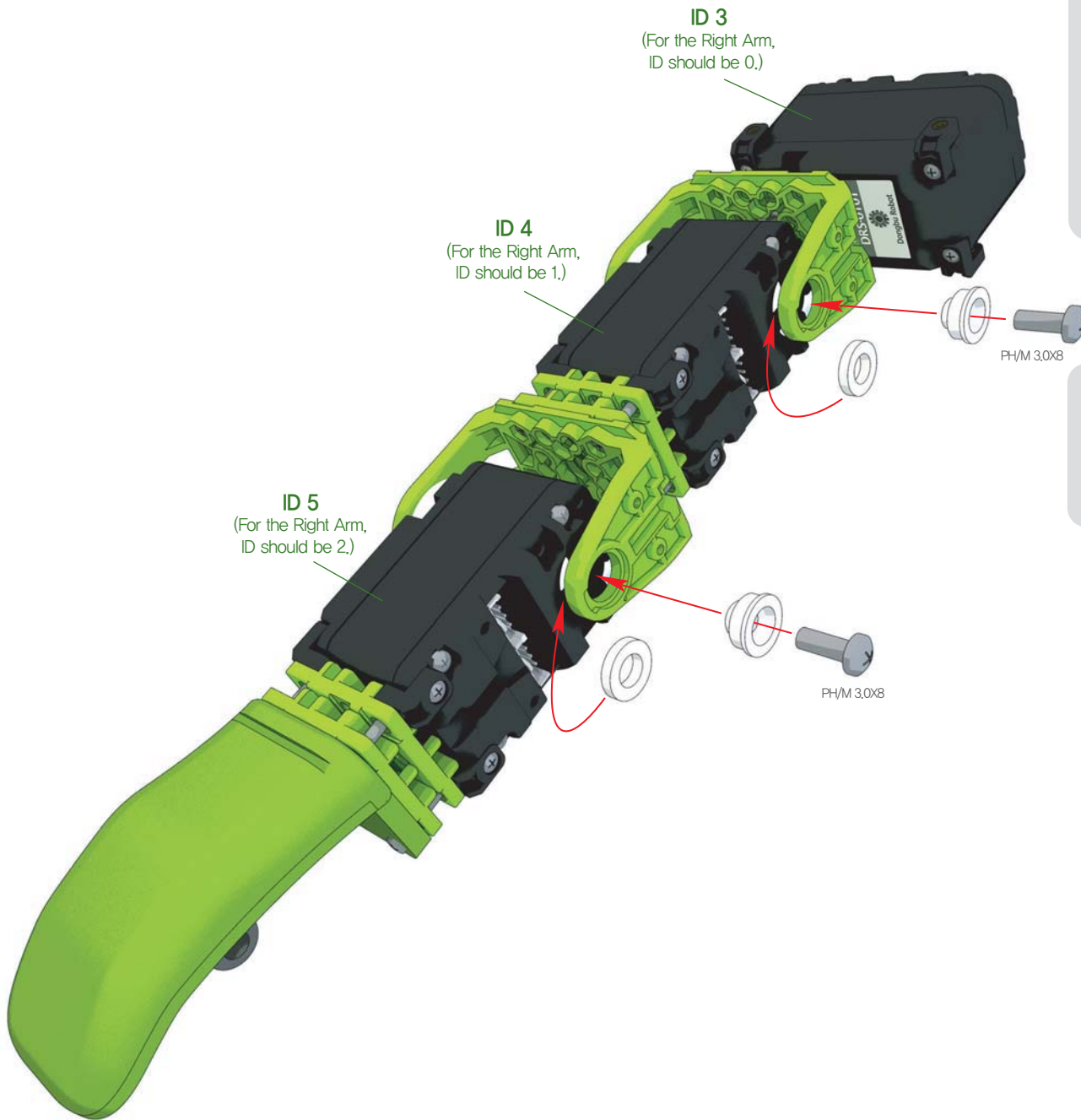
1:1 SCALE



CH/T 1.7X4



- 1 Insert Bushing Female of DRJ-0011(Bushing Set) into each DRB-0009(U2-type Bracket) and assemble using Bushing Male and DRA-0062(Bolt PH/T 3.0X8).



Required Parts

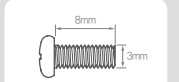


DRJ-0011
Bushing Set 2ea



DRA-0062
Bolt (PH/M 3.0X8) 2ea

1:1 SCALE



PH/M 3.0X8

- 1 Attach DRA-0002(Harness 75mm), DRA-0003(Harness 100mm), DRA-0006(Harness 200mm) to both arms. Refer to the diagram below.
- 2 Use DRA-0063(Bolt CH/T 2.0X4) and DRJ-0007(I-type Joint 16.0mm Hole only) to fix the attached harness to the arms.

Required Parts



DRA-0002
Harness (75mm) 1ea



DRA-0003
Harness (100mm) 3ea



DRA-0006
Harness (200mm) 2ea

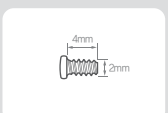


DRJ-0007
I-type Joint
(16.0mm, Hole only) 4ea

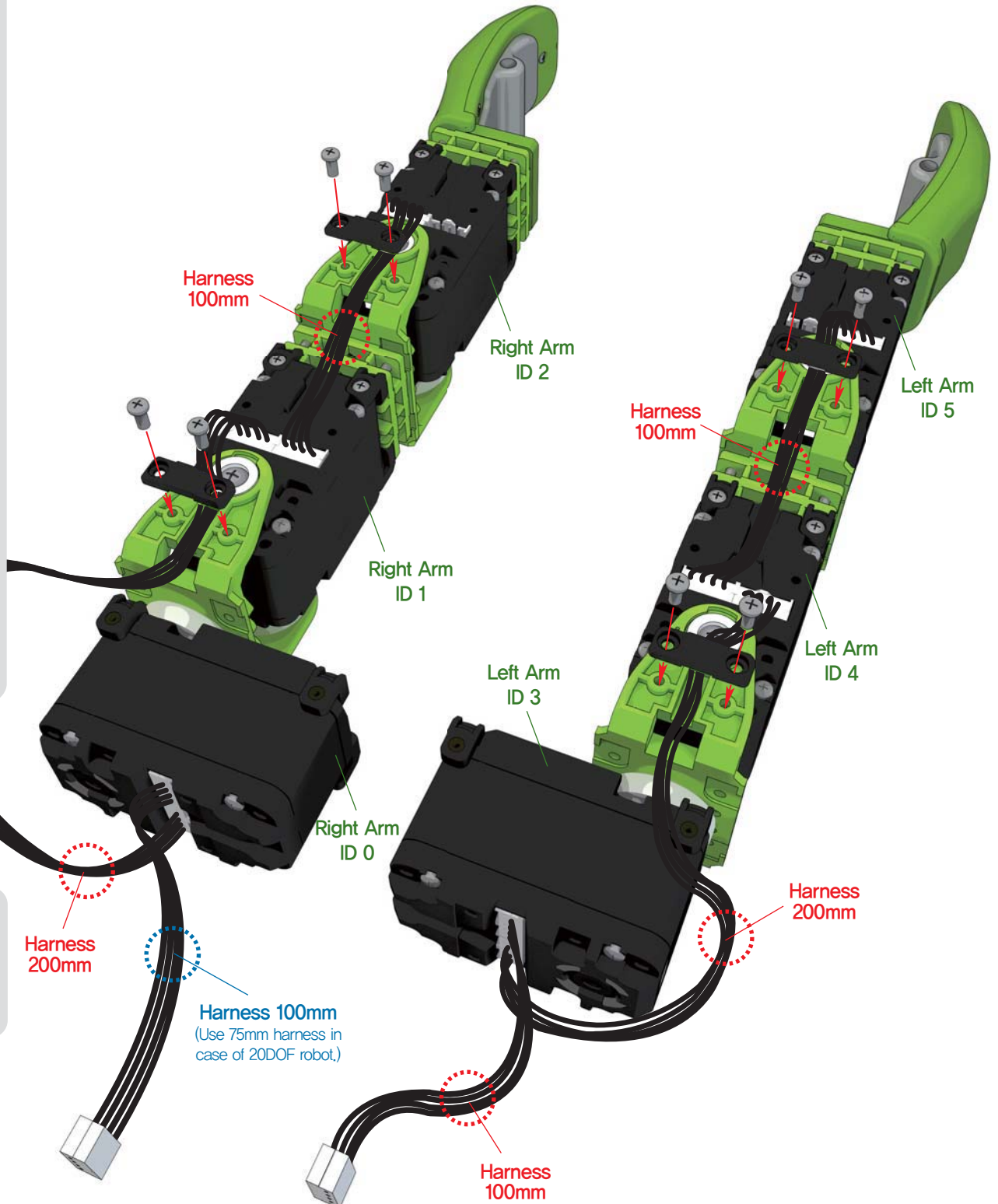


DRA-0063
Bolt (CH/T 2.0X4) 8ea

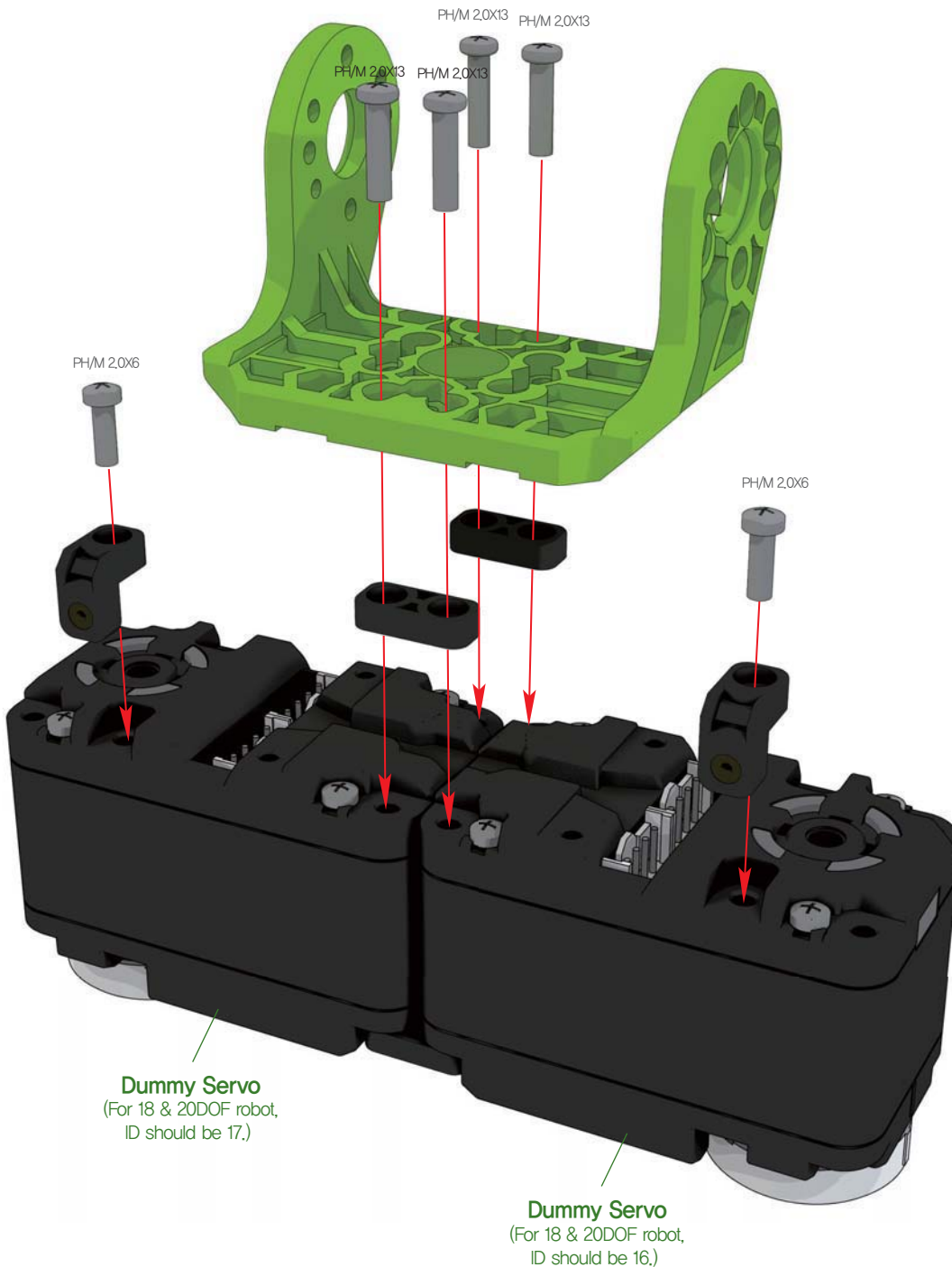
1:1 SCALE



CH/T 2.0X4



- 1 Fix 2 DRJ-0001(L-type Joint Single Nut) shown on the top front holes of dummy servos using 2 DRA-0058(Bolt PH/M 2.0X6) screws as shown in diagram.
- 2 Place 2 DRJ-0004(I-type Joint 10.9mm Hole only) on top corner holes of dummy servo as shown in diagram below and attach together with DRB-0011(U4-type Bracket) using 4 DRA-0054(Bolt PH/M 2.0X13).



Required Parts



DRB-0006
Dummy Servo **2ea**



DRA-0054
Bolt (PH/M 2.0X13) **4ea**



DRB-0011
U4-type Bracket **1ea**



DRA-0058
Bolt (PH/M 2.0X6) **2ea**

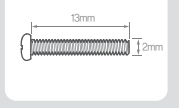


DRJ-0001
L-type Joint (Single Nut) **2ea**

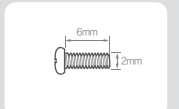


DRJ-0004
I-type Joint (10.9mm, Hole only) **2ea**

1:1 SCALE



PH/M 2.0X13



PH/M 2.0X6

- 1 Disassemble the horn from dummy servos, then fix DRJ-0001(L-type Joint Single Nut) using DRA-0058(Bolt PH/M 2.0X6) screws as shown in diagram.
- 2 Assemble the horn again. Align both zero points after assembling.
(See 3 on Pg.4 for more detailed info.)
- 3 Fix 2 of DRJ-0004(I-type Joint 10.9mm, Hole only) using 4 of DRA-0058(Bolt PH/M 2.0X6) screws as shown in diagram.

Required Parts



DRA-0058
Bolt (PH/M 2.0X6) **6ea**

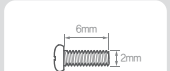


DRJ-0001
L-type Joint
(Single Nut) **2ea**

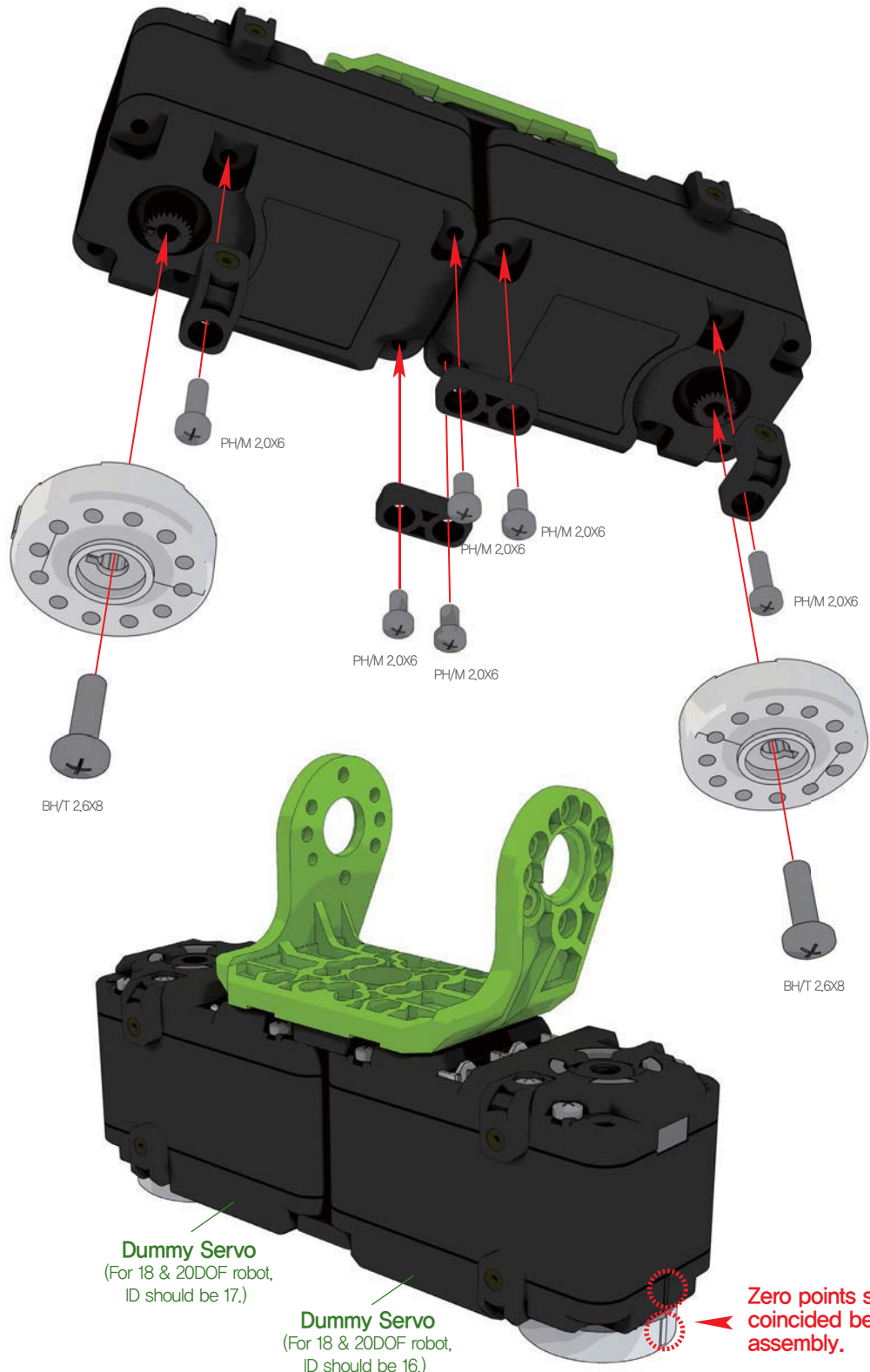


DRJ-0004
I-type Joint
(10.9mm, Hole Only) **2ea**

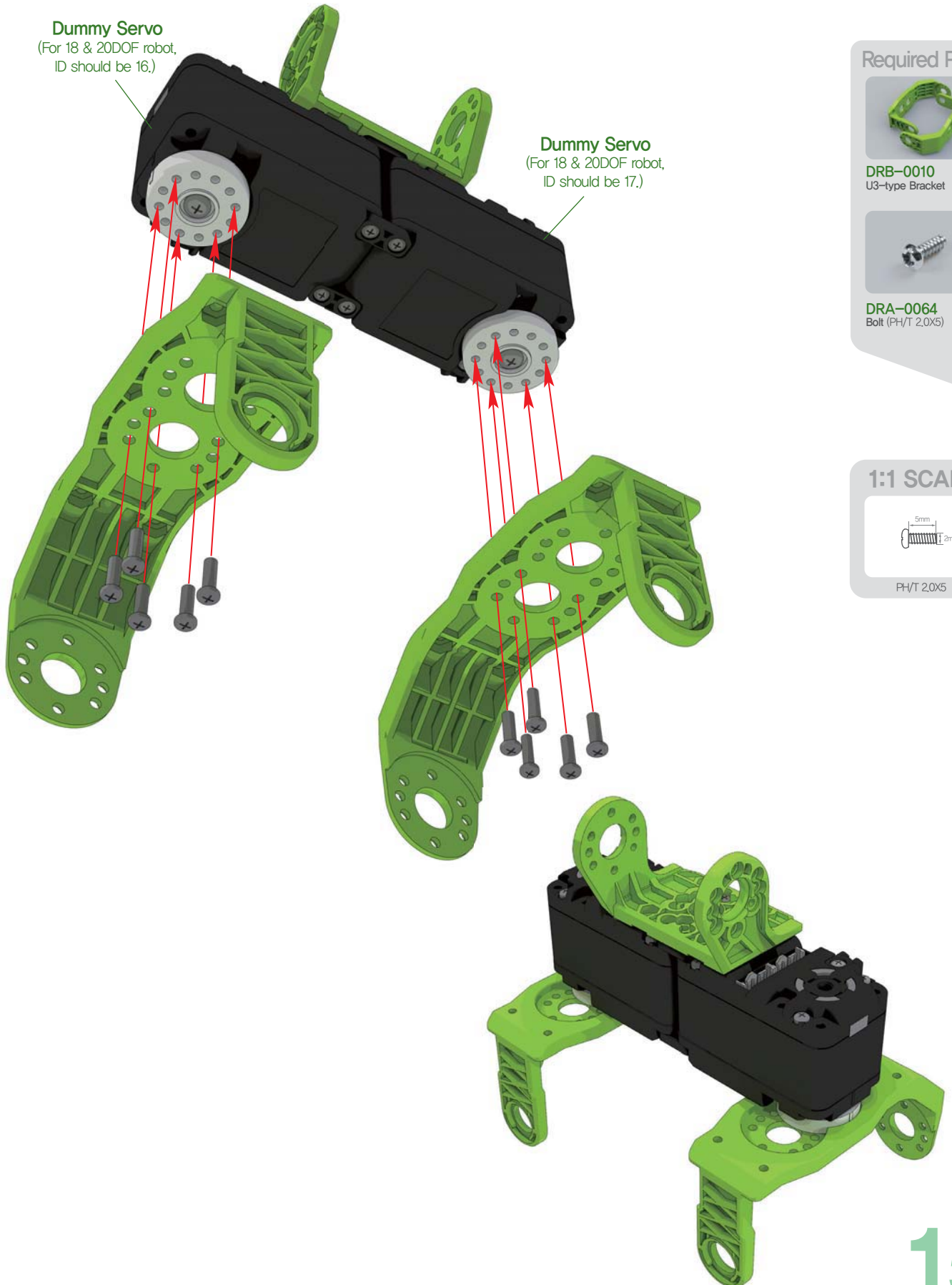
1:1 SCALE



PH/M 2.0X6



1 Attach 2 DRB-0010(U3-type Bracket) using 10 DRA-0064(Bolt PH/T 2.0X5).



Required Parts



DRB-0006
Dummy Servo **1ea**



DRA-0058
Bolt (PH/M 2.0x6) **8ea**



DRA-0064
Bolt (PH/T 2.0x5) **4ea**



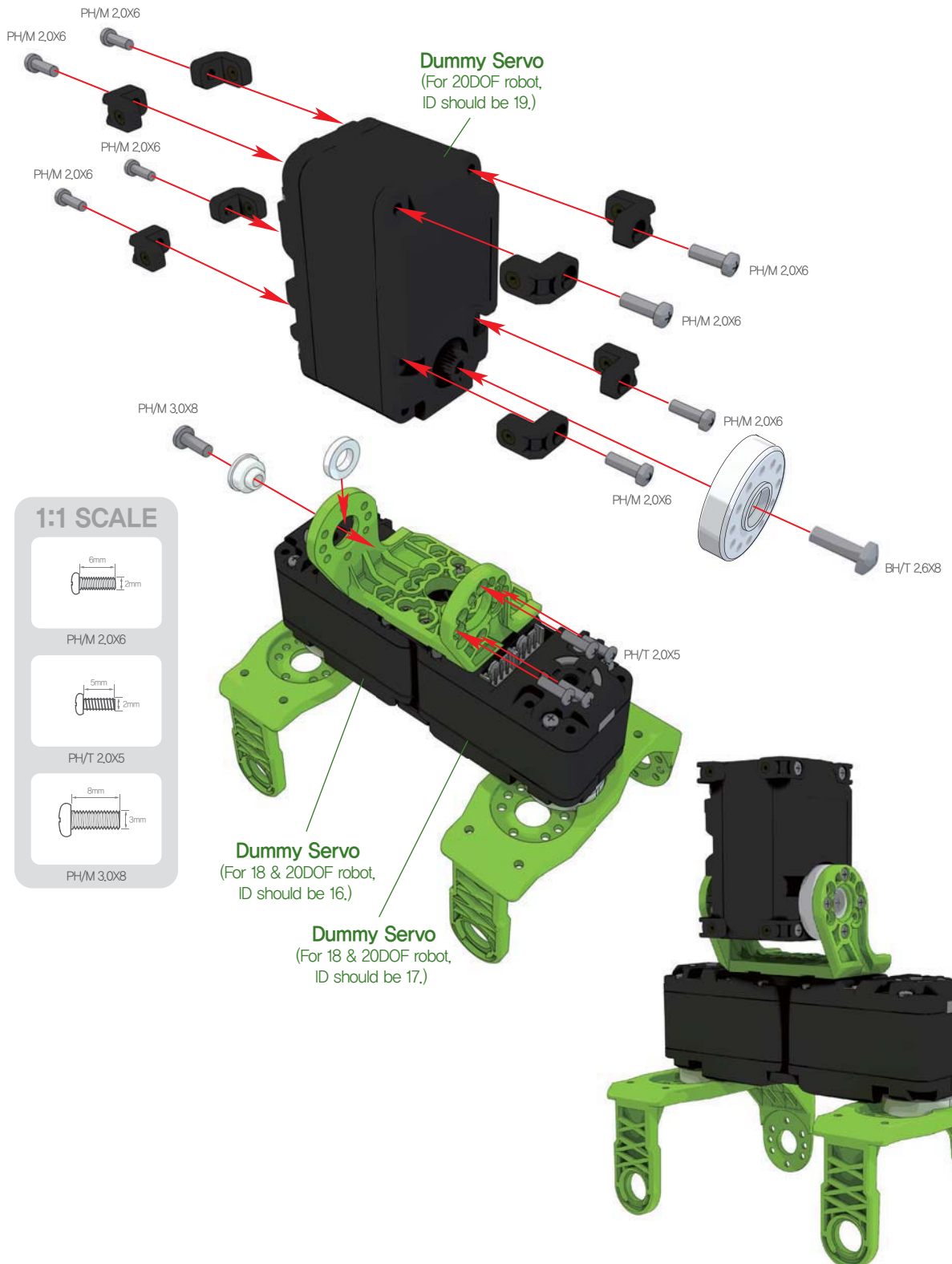
DRA-0062
Bolt (PH/M 3.0x8) **1ea**



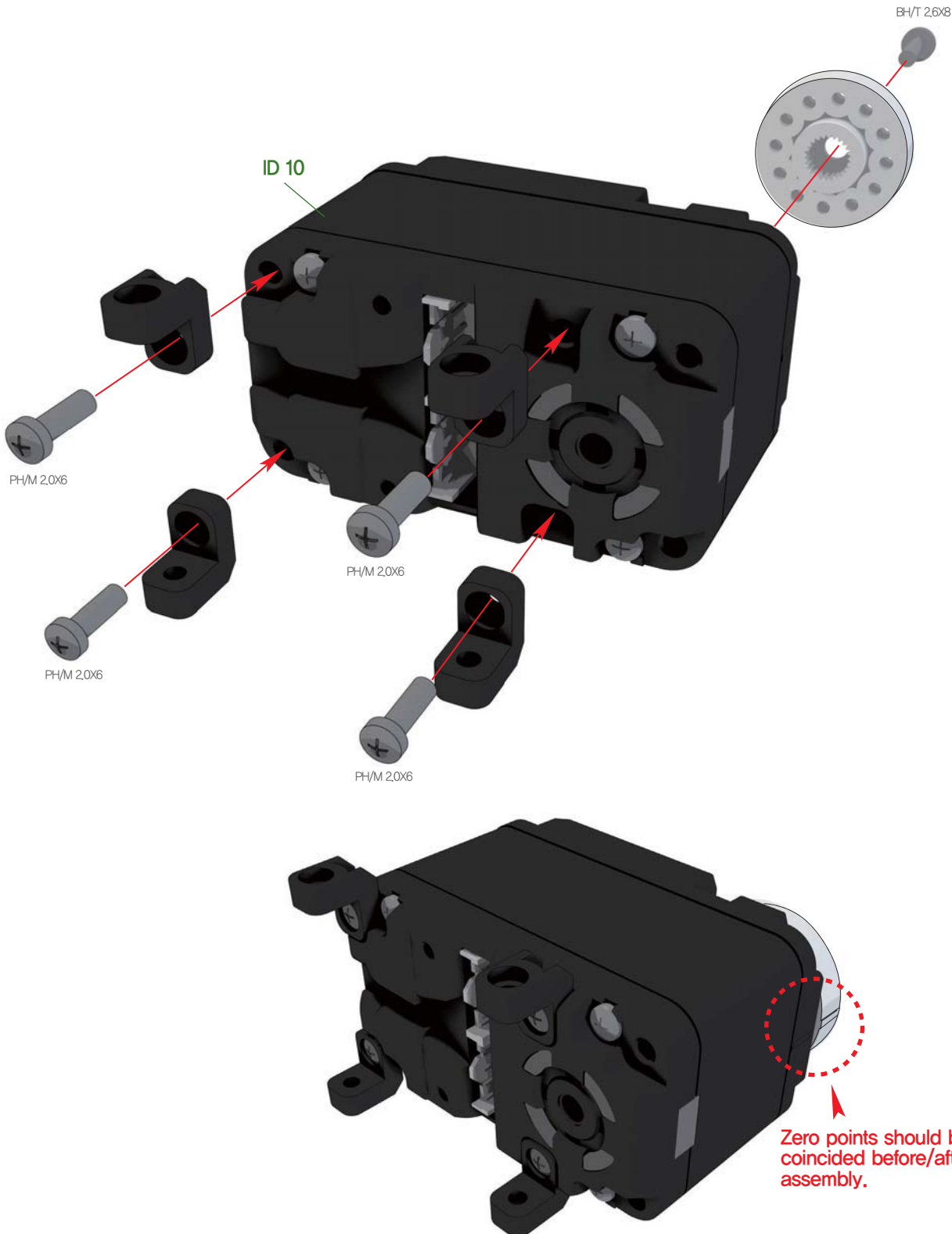
DRJ-0001
L-type Joint
(Single Nut) **8ea**



DRJ-0011
Bushing Set **1ea**



- 1 Attach the Horn to the Servo using **DRA-0067**(BH/T 2.6X8).
Align both zero points before/after assembling. (See **3** on Pg.4 for more detailed info.)
- 2 Attach 4 **DRJ-0003**(L-type Joint Hole only) to the servo using 4 **DRA-0058**(Bolt PH/M 2.0X6).
Refer to the diagram below.



Required Parts



DRS-0101
HerkuleX Servo **1ea**



DRA-0058
Bolt (PH/M 2.0X6) **4ea**



DRA-0067
Bolt (BH/T 2.6X8) **1ea**

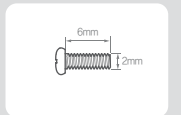


DRH-1001
Horn (Plastic) **1ea**

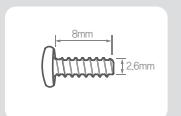


DRJ-0003
L-type Joint
(Hole only) **4ea**

1:1 SCALE



PH/M 2.0X6



BH/T 2.6X8

Zero points should be coincided before/after assembly.

- 1 Attach **DRA-0002**(Harness 75mm) to the Servo **ID 10** as shown in the diagram below. Insert the harness wires in to the groove, pull to tighten and hold using your finger.
- 2 Assemble Servo **ID 9** using 4 **DRA-0058**(Bolt PH/M 2.0X6). Insert **DRA-0002**(Harness 75mm) in to the groove and use the **DRJ-0010**(Harness Clamp) and 2 **DRA-0063**(Bolt CH/T 2.0X4) to fix the harness to the servo.

Required Parts



DRS-0101
HerkuleX Servo 1ea



DRA-0058
Bolt (PH/M 2.0X6) 4ea



DRJ-0010
Harness Clamp 1ea



DRA-0063
Bolt (CH/T 2.0X4) 2ea



DRA-0002
Harness (75mm) 1ea

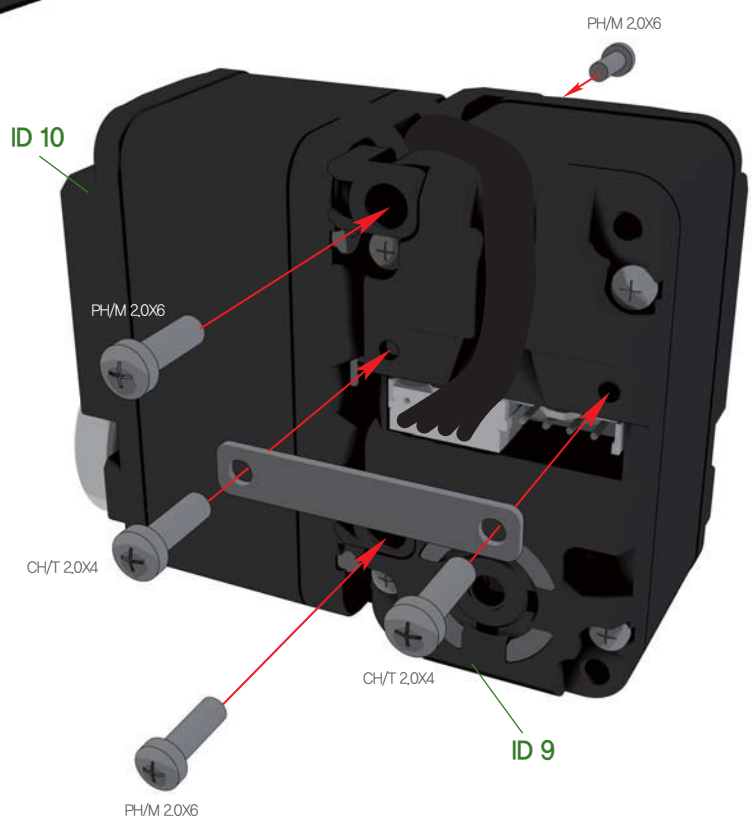
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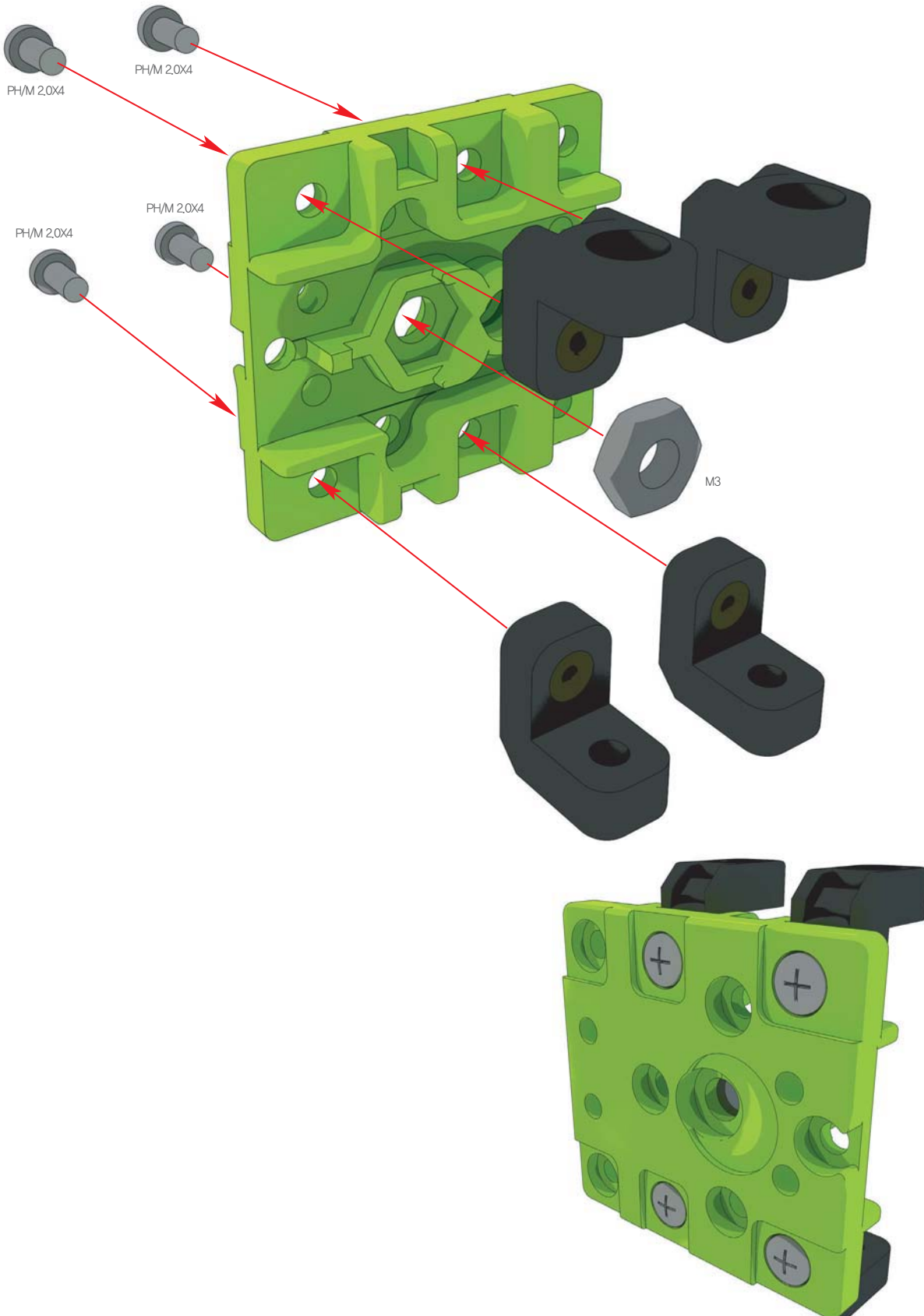
PH/M 2.0X6



CH/T 2.0X4



- 1 Attach 4 **DRJ-0001**(L-type Joint Single Nut) to the **DRB-0004**(Universal Plate) using 4 **DRA-0056**(Bolt PH/M 2.0X4). Insert **DRA-0052**(M3 Nut) in to the groove.



Required Parts



DRA-0052
Nut (M3) **1ea**



DRA-0056
Bolt (PH/M 2.0X4) **4ea**



DRJ-0001
L-type Joint
(Single Nut) **4ea**

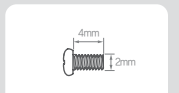


DRB-0004
Universal Plate **1ea**

1:1 SCALE



M3



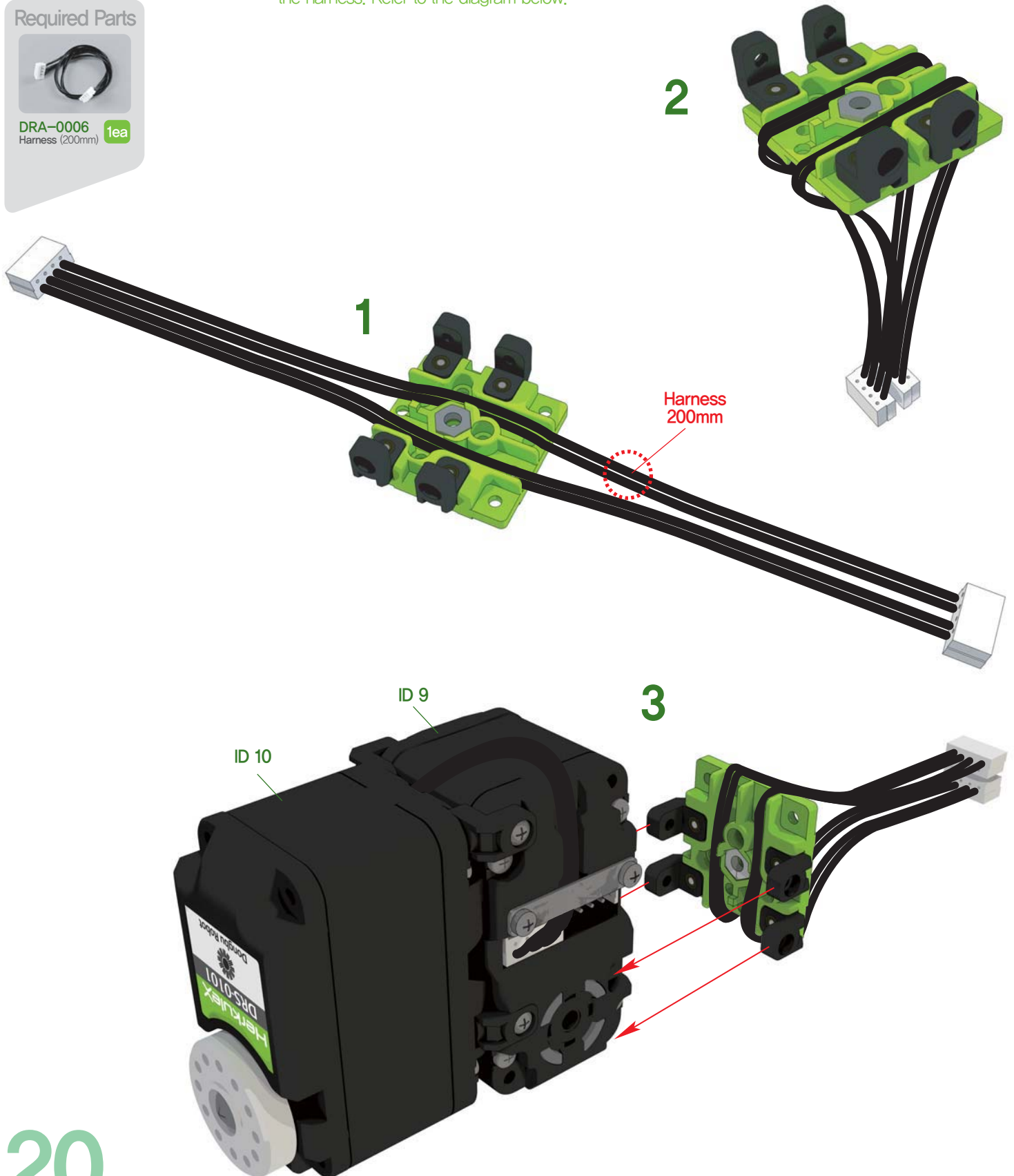
PH/M 2.0X4

- 1 Insert the **DRA-0006**(Harness 200mm) wires into the **DRB-0004**(Universal Plate) grooves and pull to tighten. Refer to the diagram below.
- 2 Attach the **DRB-0004**(Universal Plate) to the servo assembly while maintaining tight pull on the harness. Refer to the diagram below.

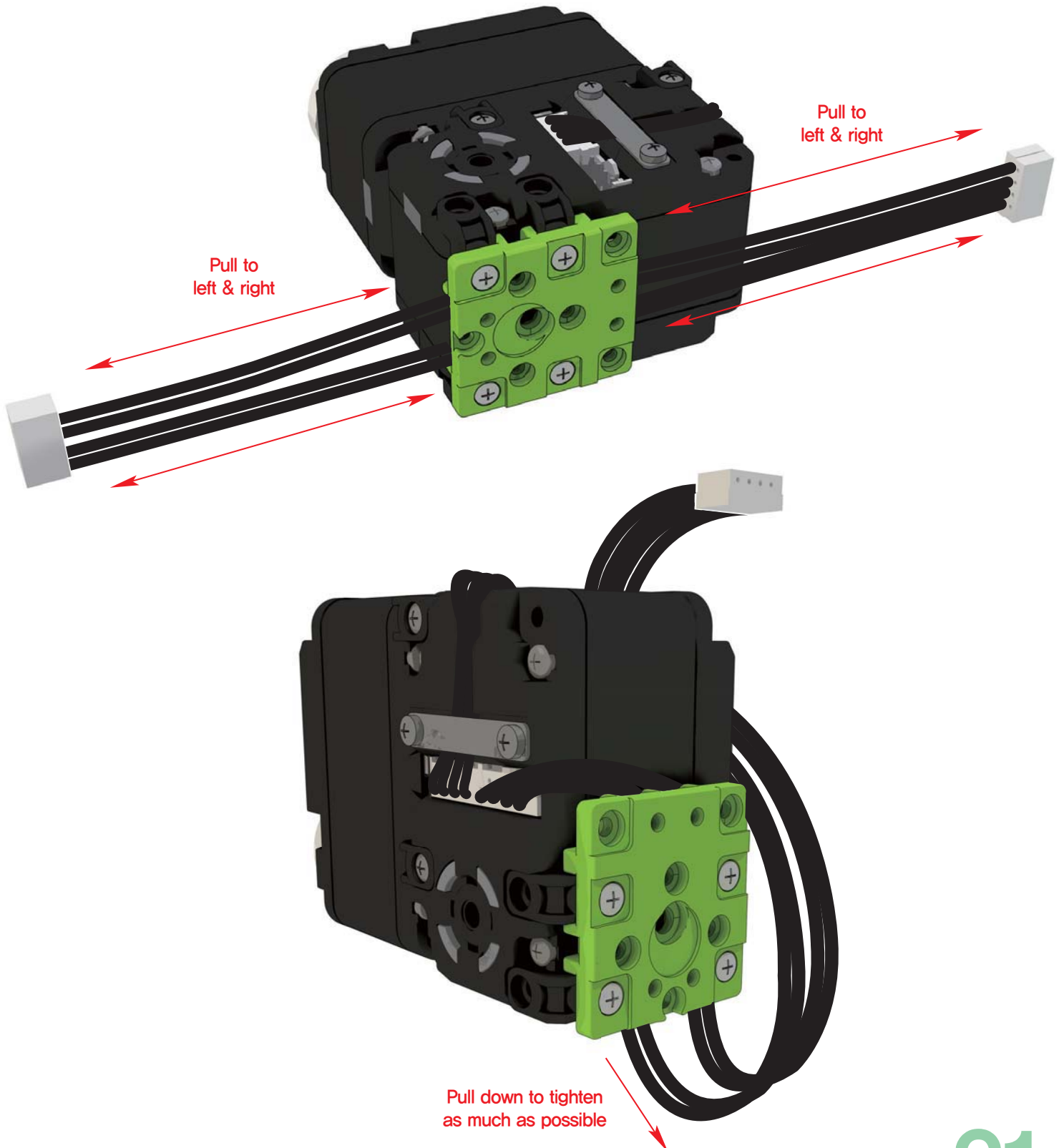
Required Parts



DRA-0006
Harness (200mm) 1ea



- 1 Pull **DRA-0006**(Harness 200mm) wires to the left & right, Harness was installed correctly if the wires slide easily.
- 2 Connect one end of **DRA-0006**(Harness 200mm) to the servo and pull the other in the direction of the arrow shown in diagram below as much as possible.



- 1 Fix the already attached DRB-0004(Universal Plate) to the servo using 4 DRA-0058(Bolt PH/M 2.0X6).
- 2 Attach the Horn to the Servo using DRA-0067(BH/T 2.6X8).
Align both zero points before/after assembling. (See 3 on Pg.4 for more detailed info.)

Required Parts



DRA-0058
Bolt (PH/M 2.0X6) **4ea**

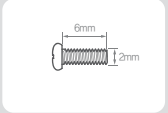


DRA-0067
Bolt (BH/T 2.6X8) **1ea**

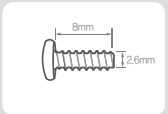


DRH-1001
Horn (Plastic) **1ea**

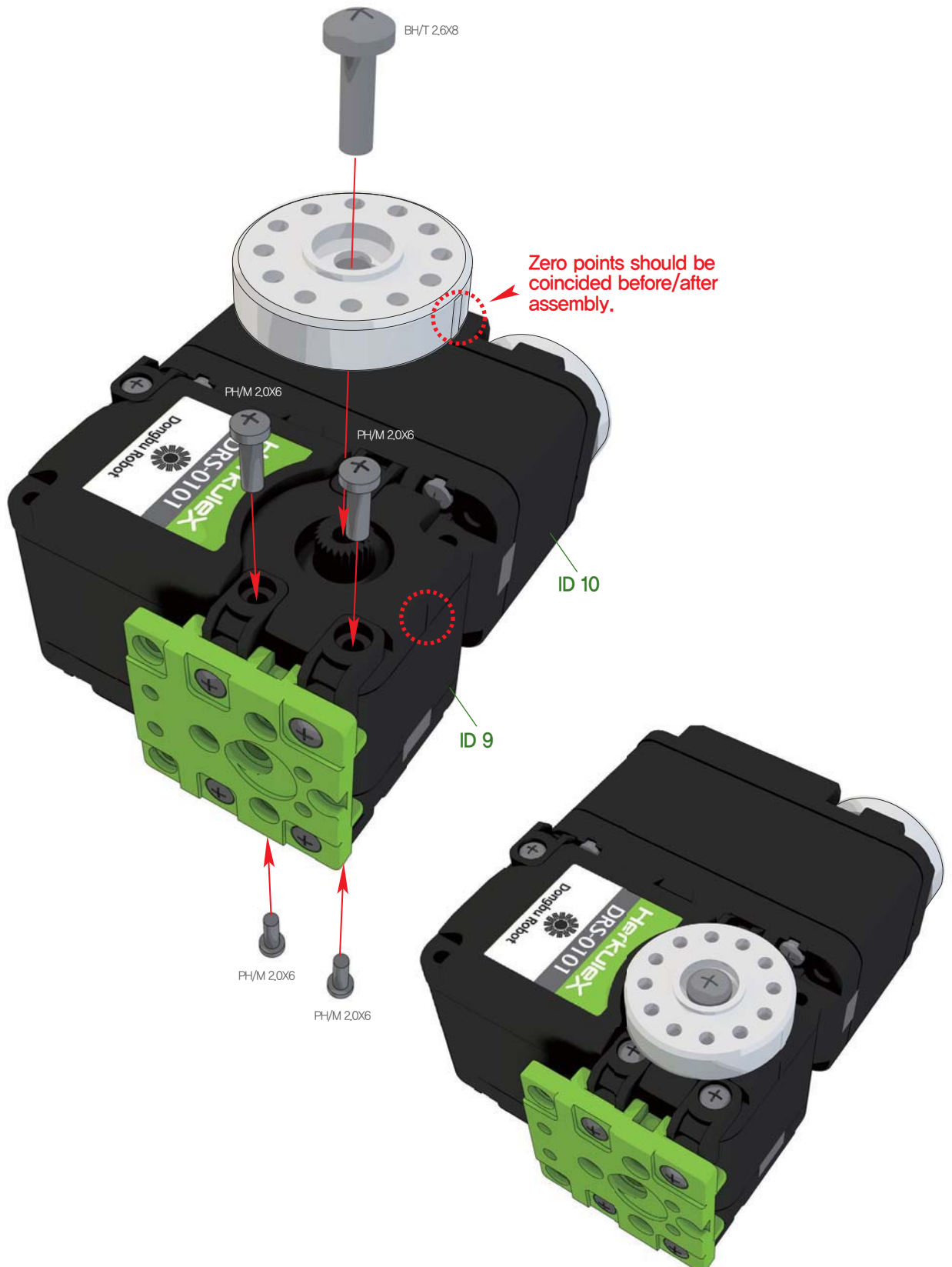
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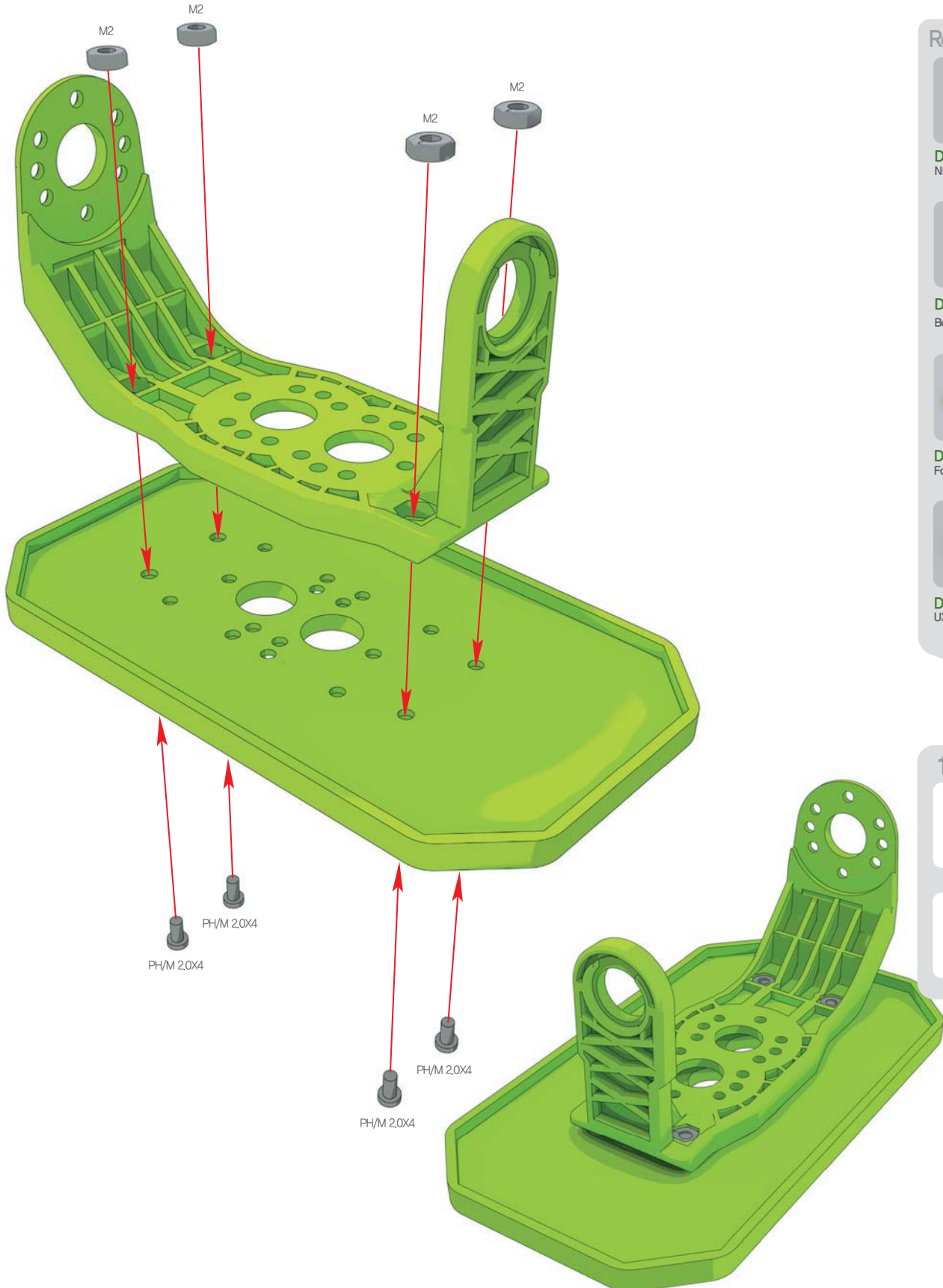
PH/M 2.0X6



BH/T 2.6X8





- 1** Attach the DRB-0010(U3-type Bracket) to the DRB-0003(Foot) using 4 DRA-0051(M2 Nut) and 4 DRA-0056(Bolt PH/M 2.0X4).



Required Parts

-  DRA-0051 Nut (M2) **4ea**
-  DRA-0056 Bolt (PH/M 2.0X4) **4ea**
-  DRB-0003 Foot **1ea**
-  DRB-0010 U3-type Bracket **1ea**

1:1 SCALE

-  M2
-  PH/M 2.0X4

1 Attach the assembled servo to the assembled foot as shown in the diagram below.

Required Parts



DRA-0061 1ea
Bolt (PH/M 3.0x6)

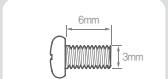


DRA-0064 3ea
Bolt (PH/T 2.0x5)



DRJ-0011 1ea
Bushing Set

1:1 SCALE

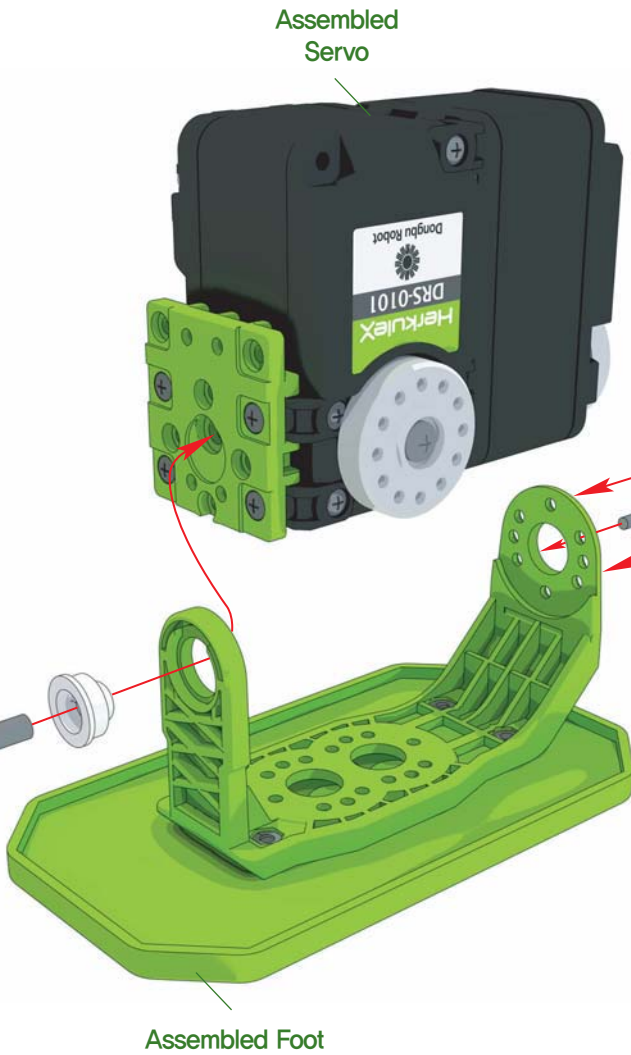


PH/M 3.0x6

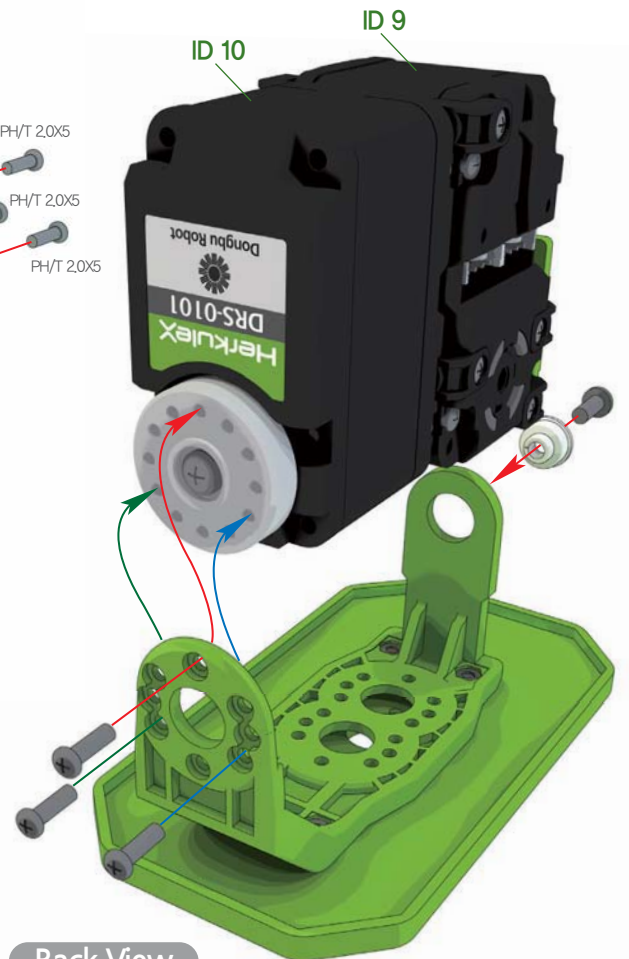


PH/T 2.0x5

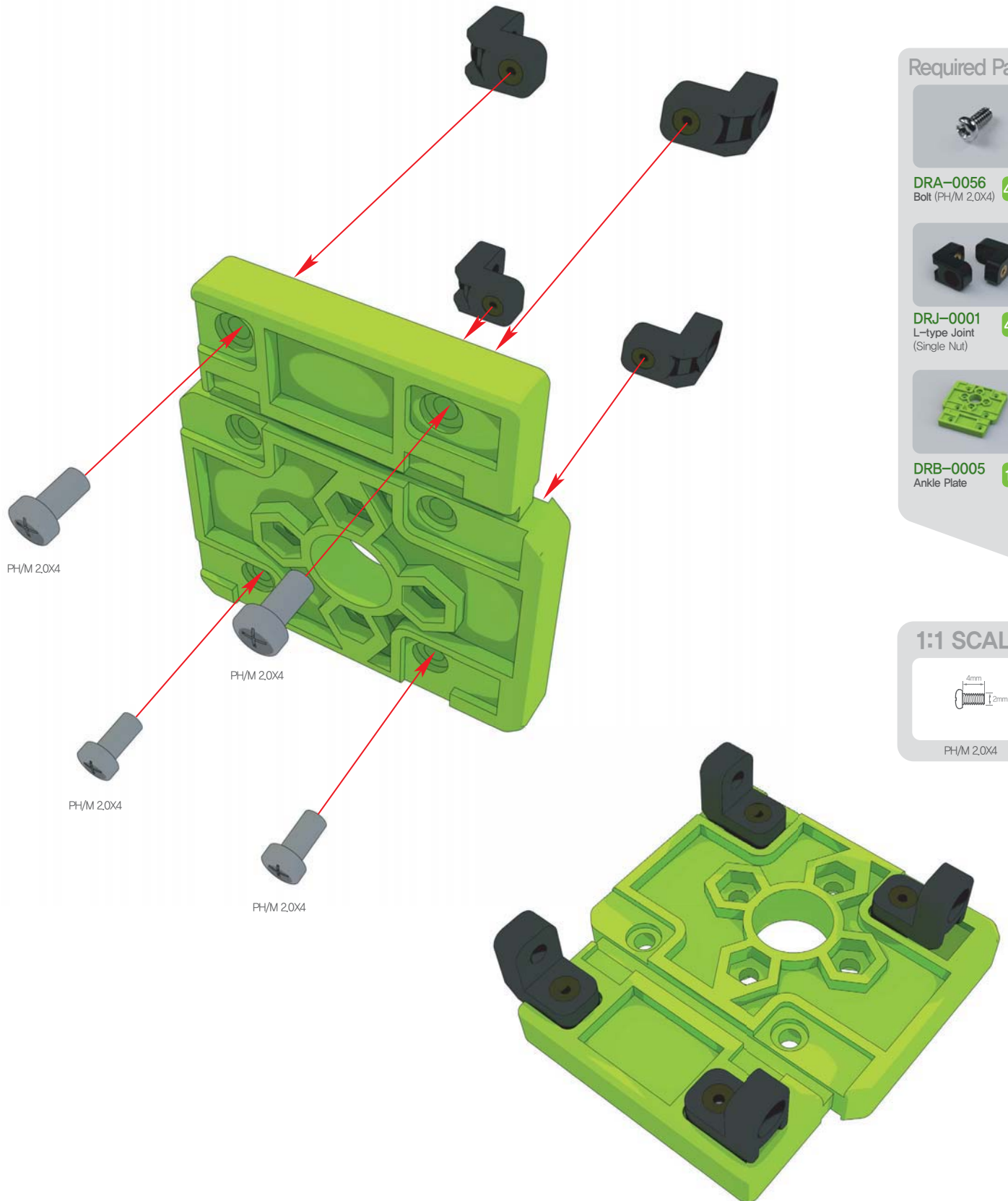
PH/M 3.0x6



Front View



Back View



Required Parts



DRA-0056
Bolt (PH/M 2.0X4) **4ea**



DRJ-0001
L-type Joint
(Single Nut) **4ea**



DRB-0005
Ankle Plate **1ea**

1:1 SCALE

PH/M 2.0X4

Required Parts



DRA-0051
Nut (M2) **4ea**



DRA-0058
Bolt (PH/M 2.0x6) **4ea**

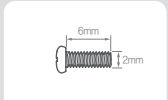


DRB-0008
U1-type Bracket **1ea**

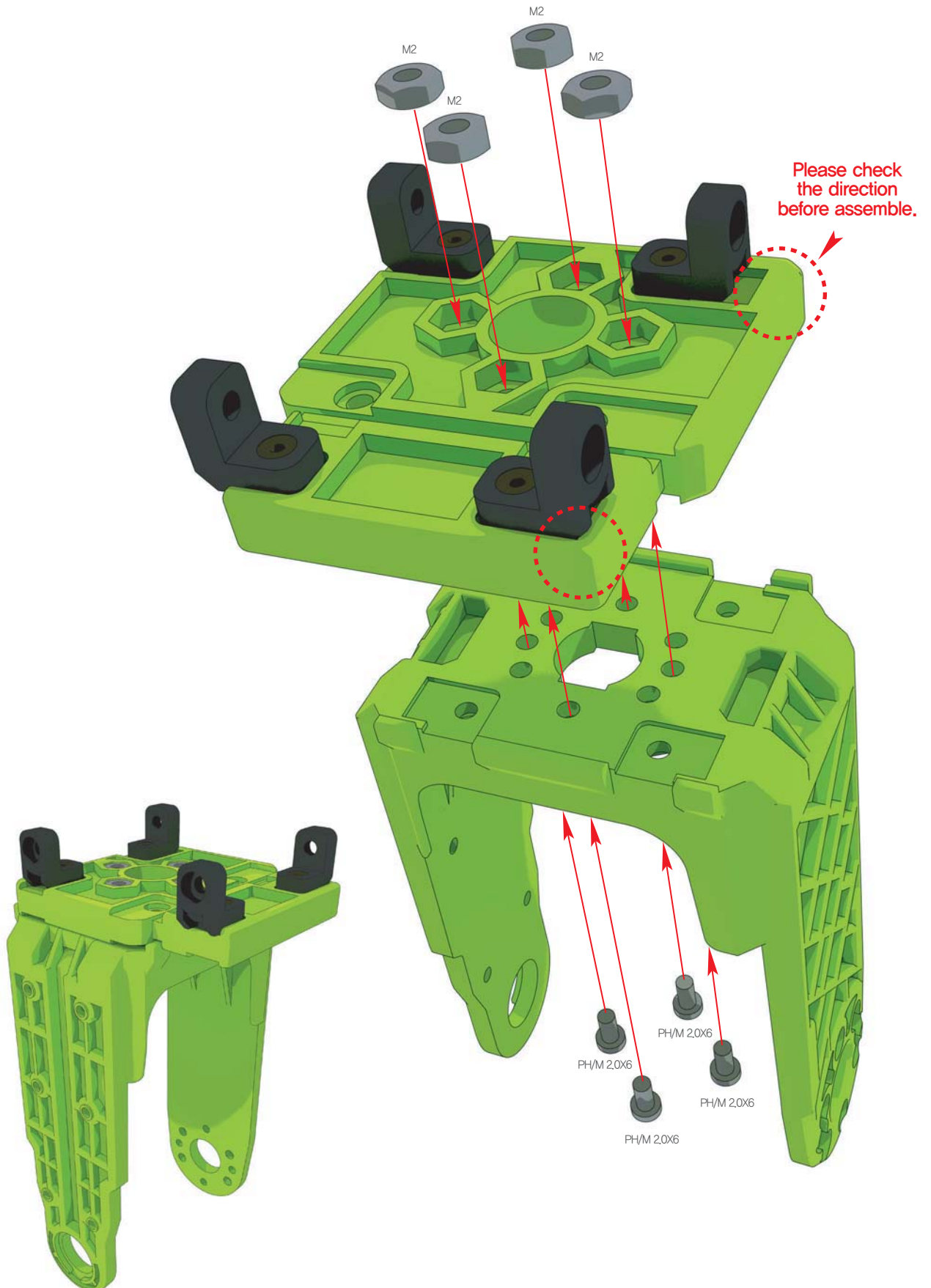
1:1 SCALE



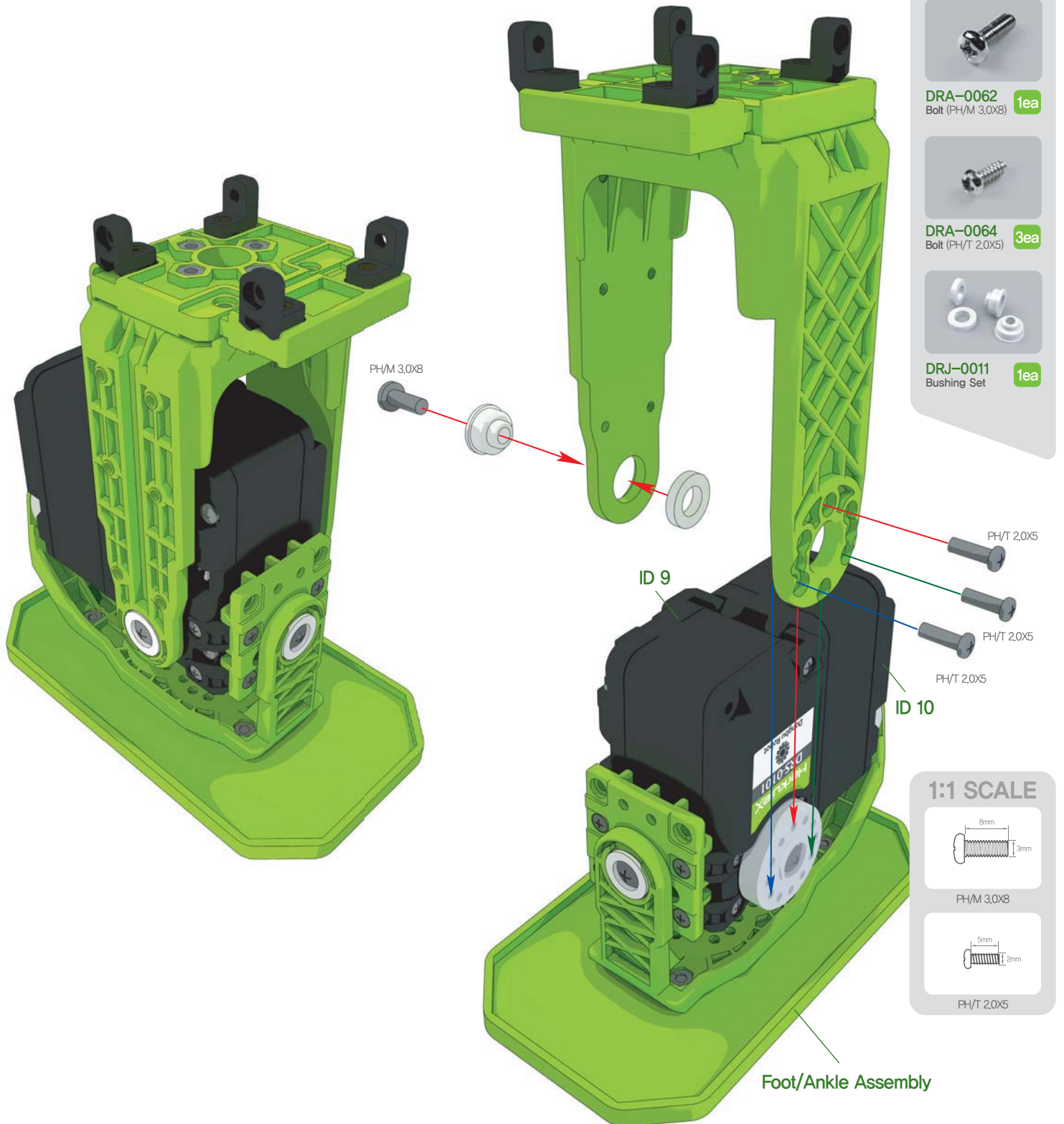
M2



PH/M 2.0x6



- 1 Attach DRB-0008(U1-type Bracket) to the Foot/Ankle assembly using DRJ-0011(Bushing Set) and 1 DRA-0062(Bolt PH/M 3.0X8).
- 2 Use 3 DRA-0064(Bolt PH/T 2.0X5) to complete the attachment.



Required Parts

- DRA-0062 Bolt (PH/M 3.0X8) 1ea
- DRA-0064 Bolt (PH/T 2.0X5) 3ea
- DRJ-0011 Bushing Set 1ea

- PH/T 2.0X5
- PH/T 2.0X5
- PH/T 2.0X5

1:1 SCALE

PH/M 3.0X8

PH/T 2.0X5

Foot/Ankle Assembly

- 1 Attach the servo ID 8 to the lower leg assembly.
- 2 Attach the horn to the servo using DRA-0067(BH/T 2.6X8). Align both zero points before/after assembling. (See 3 on Pg.4 for more detailed info.)

Required Parts



DRS-0101
HerkuleX Servo 1ea



DRA-0058
Bolt (PH/M 2.0X6) 4ea



DRA-0067
Bolt (BH/T 2.6X8) 1ea

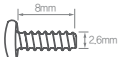


DRH-1001
Horn (Plastic) 1ea

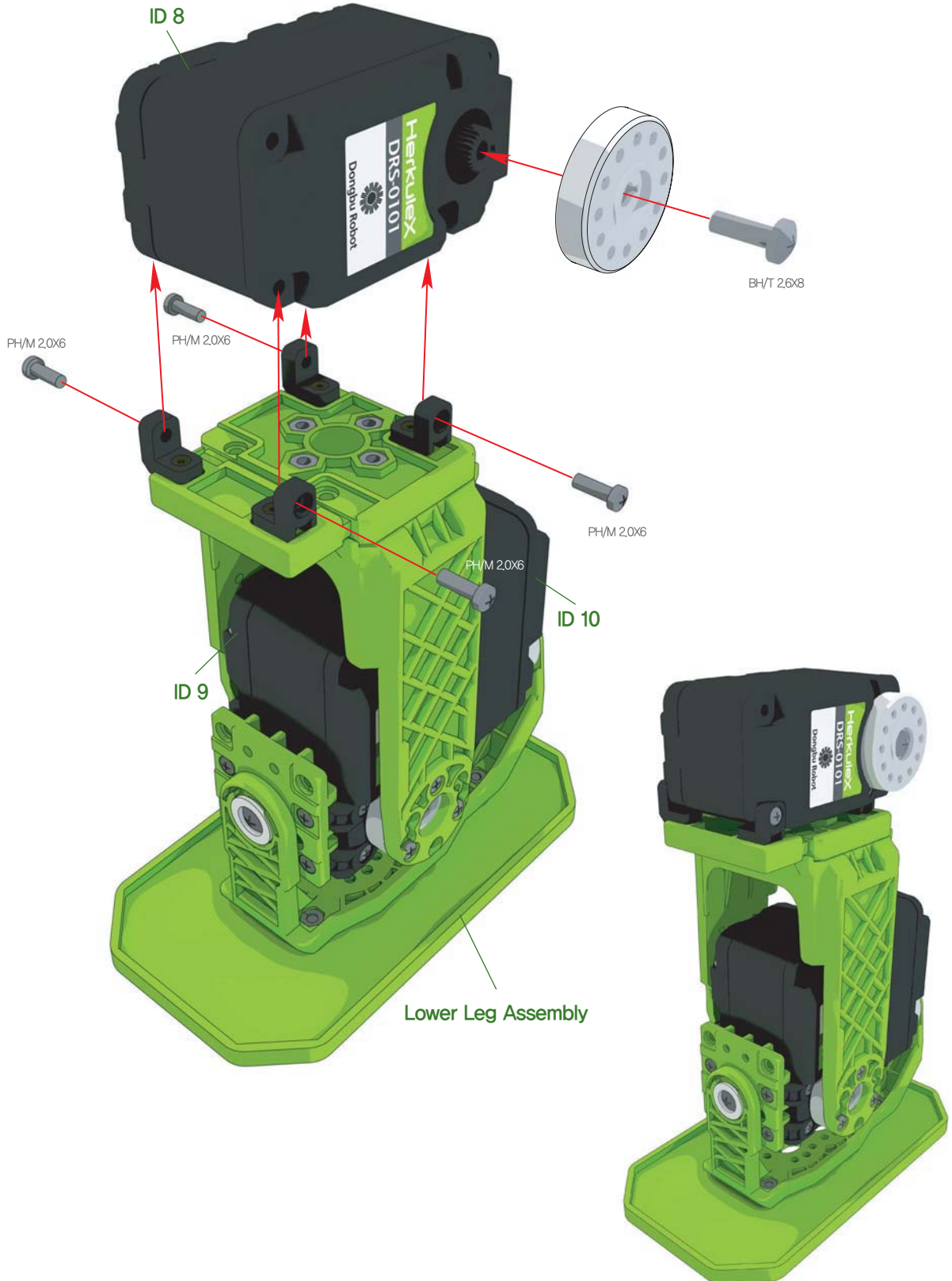
1:1 SCALE



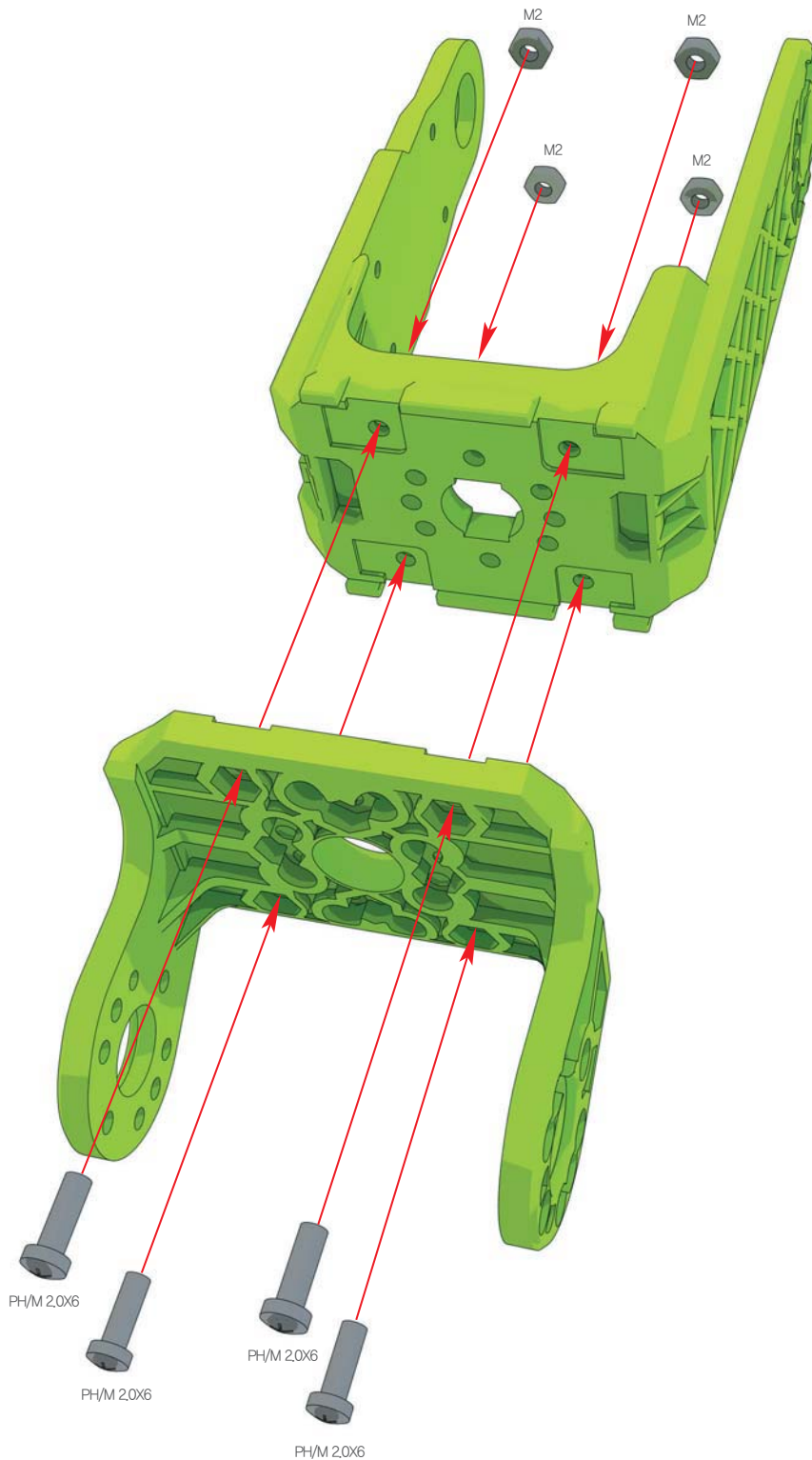
PH/M 2.0X6



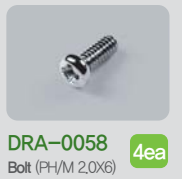
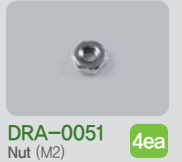
BH/T 2.6X8



- 1 Insert 4 DRA-0051(M2 Nut) into the DRB-0008(U1-type Bracket).
- 2 Attach DRB-0008(U1-type Bracket) to the DRB-0011(U4-type Bracket) using 4 DRA-0058(Bolt PH/M 2.0X6).



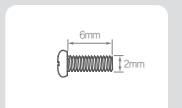
Required Parts



1:1 SCALE



M2



PH/M 2.0X6

- 1 Attach the assembled DRB-0008(U1-type Bracket) & DRB-0011(U4-type Bracket) to the servo using 1 DRA-0062(Bolt PH/M 3.0X8), DRJ-0011(Bushing Set) and 3 DRA-0064(Bolt PH/T 2.0X5).

Required Parts



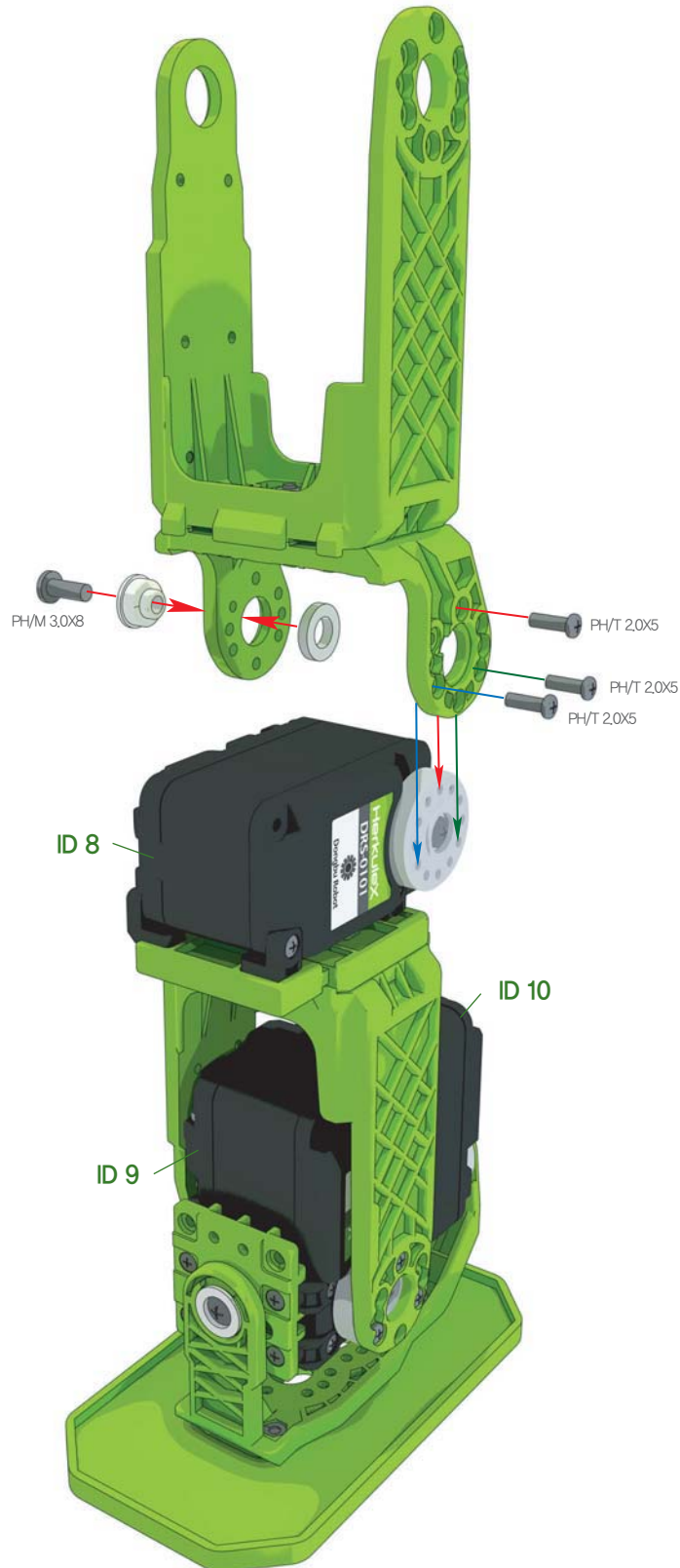
DRA-0064 3ea
Bolt (PH/T 2.0X5)



DRA-0062 1ea
Bolt (PH/M 3.0X8)



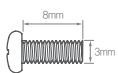
DRJ-0011 1ea
Bushing Set



1:1 SCALE

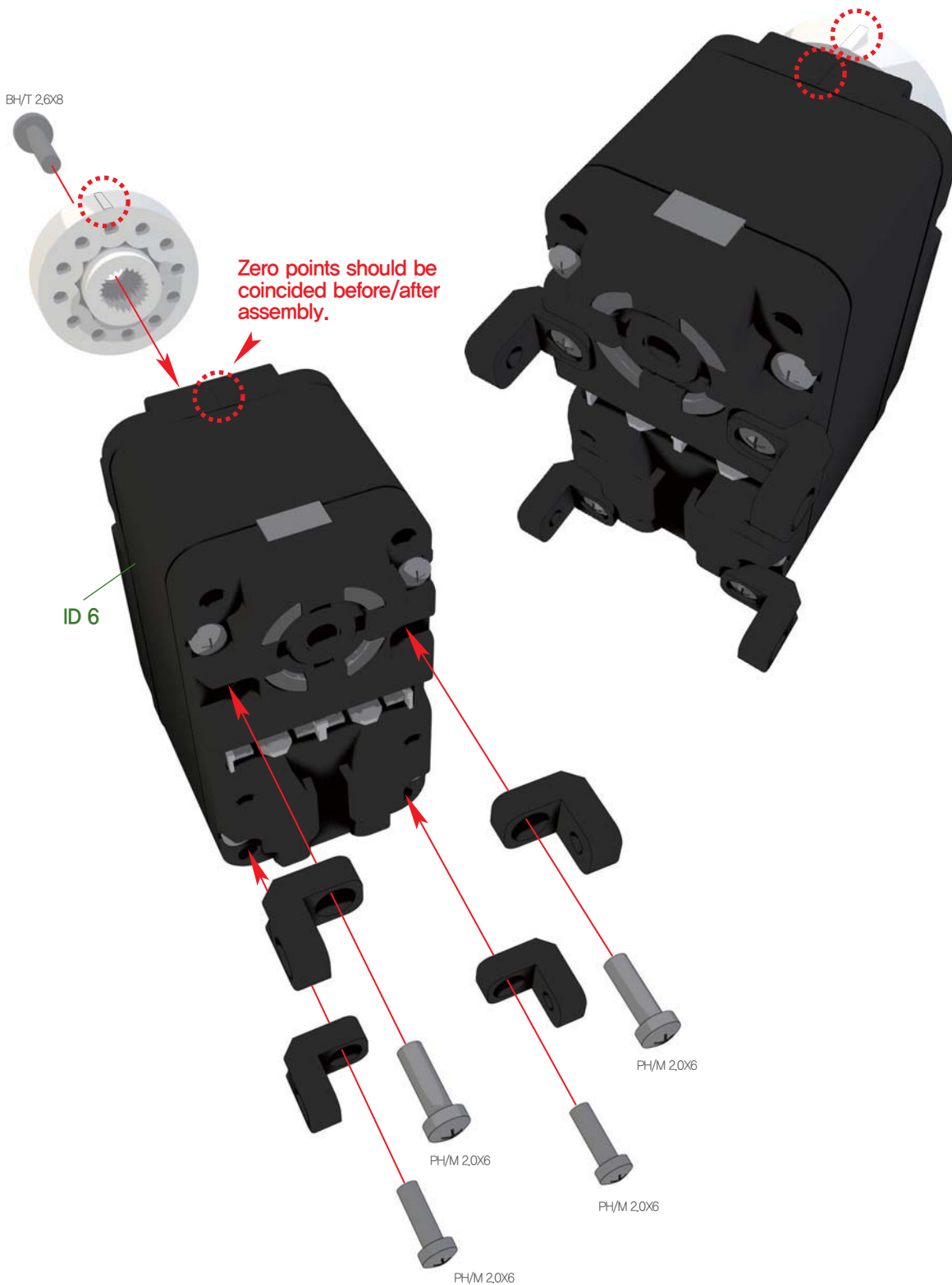


PH/T 2.0X5



PH/M 3.0X8

- 1 Attach the horn to the servo using **DRA-0067**(BH/T 2.6X8). Align both zero points before/after assembling. (See **3** on Pg.4 for more detailed info.)
- 2 Attach 4 **DRJ-0003**(L-type Joint Hole only) to the servo using 4 **DRA-0058**(Bolt PH/M 2.0X6).



Required Parts

	DRS-0101 HerkuleX Servo	17H
	DRA-0058 Bolt (PH/M 2.0X6)	47H
	DRA-0067 Bolt (BH/T 2.6X8)	17H
	DRH-1001 Horn (Plastic)	17H
	DRJ-0003 L-type Joint (Hole only)	47H

1:1 SCALE

	PH/M 2.0X6
	BH/T 2.6X8

Required Parts



DRS-0101
HerkuleX Servo **1ea**



DRA-0058
Bolt (PH/M 2.0X6) **4ea**



DRJ-0010
Harness Clamp **1ea**



DRA-0063
Bolt (CH/T 2.0X4) **2ea**



DRA-0002
Harness (75mm) **1ea**



DRA-0007
Harness (300mm) **1ea**

1:1 SCALE



PH/M 2.0X6



CH/T 2.0X4

- 1 Connect **DRA-0002**(Harness 75mm) to the left connector of the servo **ID 6**, insert the harness wires into the groove and pull to tighten. Connect the **DRA-0006**(Harness 200mm) to the right connector and pull to tighten.
- 2 Attach **ID 7** to **ID 6** using 4 **DRA-0058**(Bolt PH/M 2.0X6). Insert **DRA-0002**(Harness 75mm) wires into the servo groove and fix to the servo using 1 **DRJ-0010**(Harness Clamp) and 2 **DRA-0063**(Bolt CH/T 2.0X4).

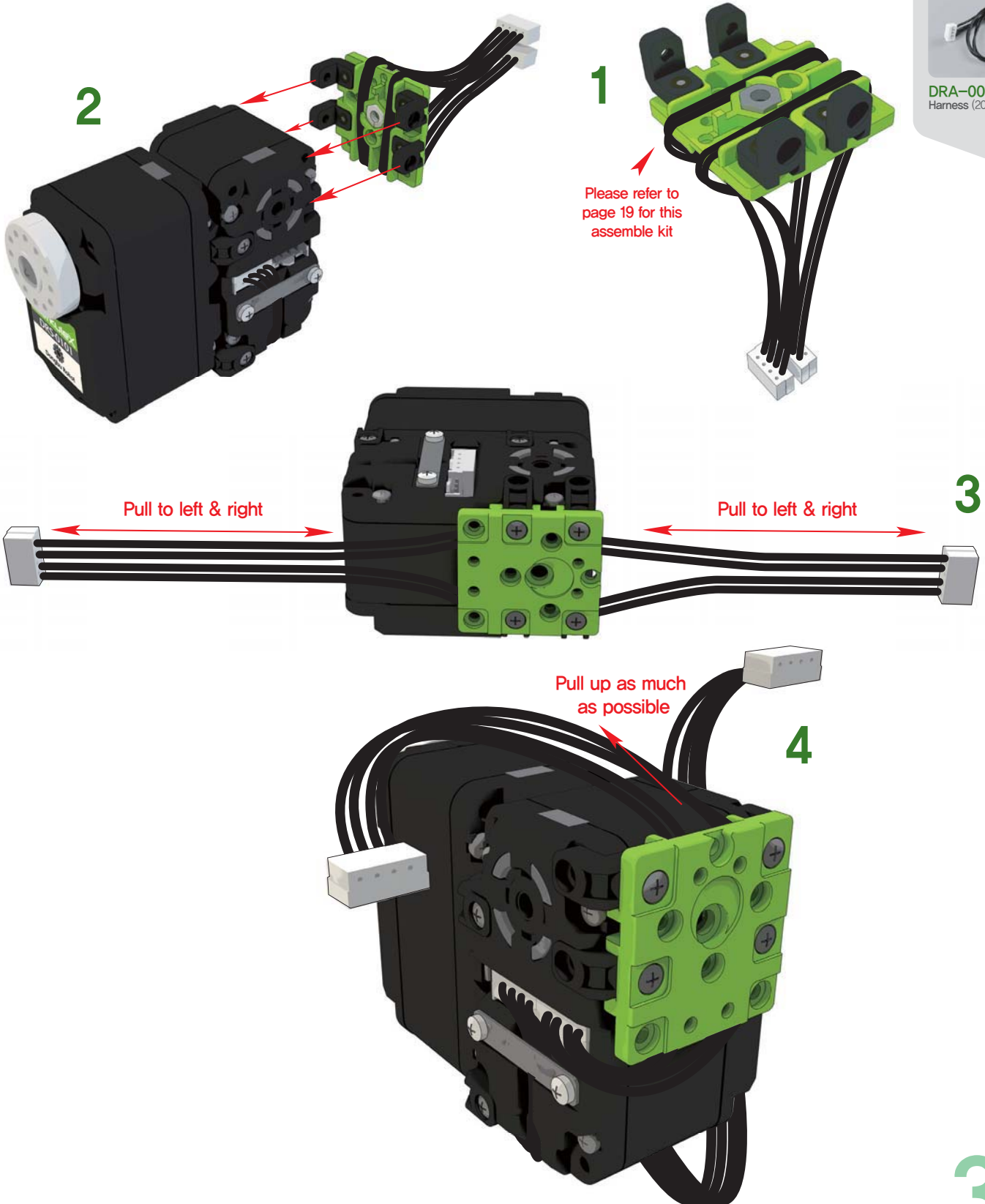


- 1 Insert DRA-0006(Harness 200mm) wires into the DRB-0004(Universal Plate) grooves and pull to tighten. Attach the DRB-0004(Universal Plate) to the servo assembly while maintaining tight pull on the harness. Refer to the diagram below.
- 2 Pull DRA-0006(Harness 200mm) wires to the left & right, Harness was installed correctly if the wires slid easily.
- 3 Connect one end of DRA-0006(Harness 200mm) to the servo and pull the other end in the direction of the arrow shown in diagram below as much as possible.

Required Parts



DRA-0006
Harness (200mm) 1ea



- 1 Attach the assembled DRB-0004(Universal Plate) to the ID 7 using 4 DRA-0058(Bolt PH/M 2.0X6).
- 2 Attach the hong to the servo using DRA-0067(BH/T 2.6X8). Align both zero points before/after assembling. (See 3 on Pg.4 for more detailed info.)

Required Parts



DRA-0058 4ea
Bolt (PH/M 2.0X6)

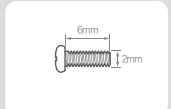


DRA-0067 1ea
Bolt (BH/T 2.6X8)

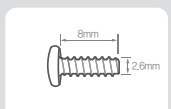


DRH-1001 1ea
Horn (Plastic)

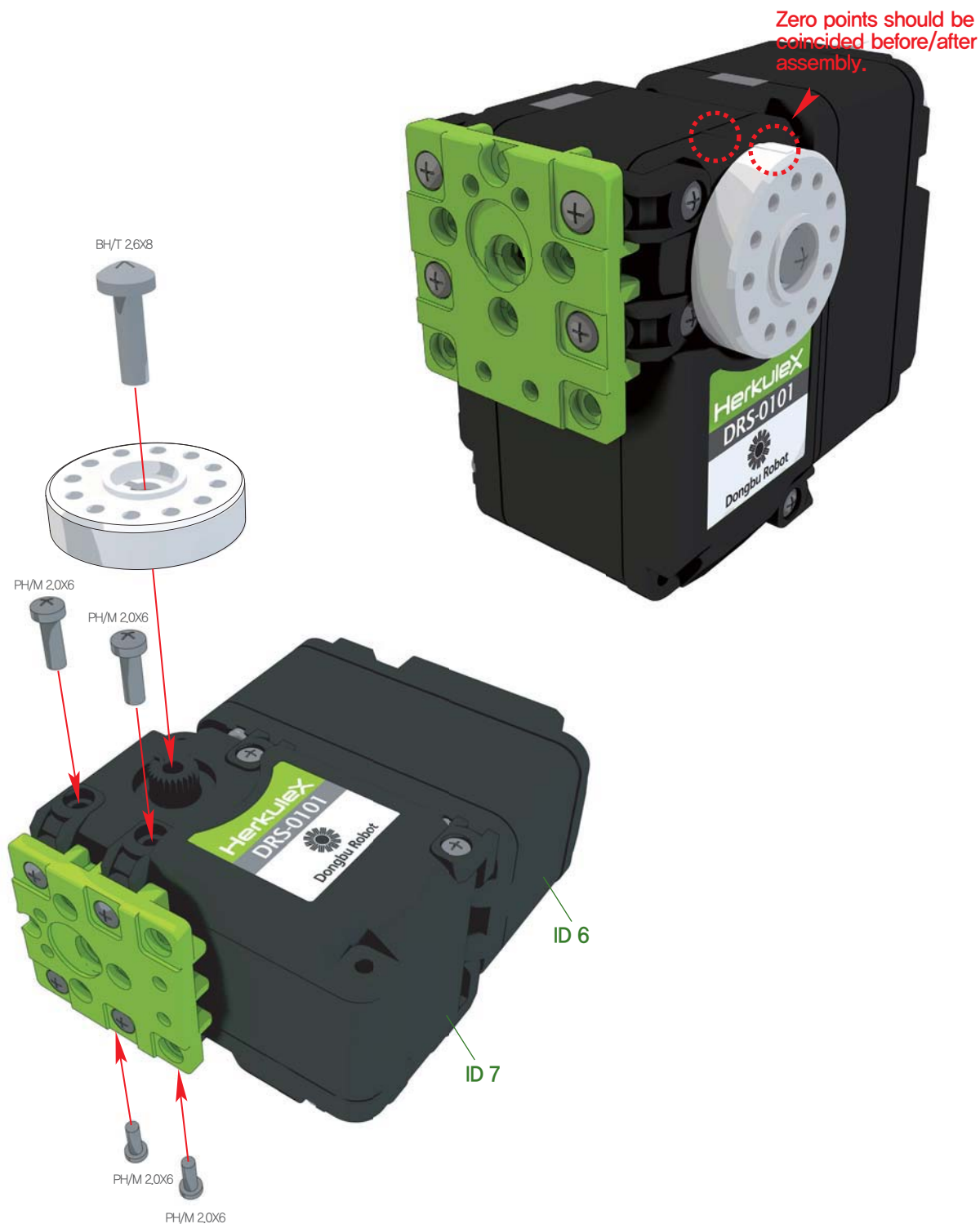
1:1 SCALE



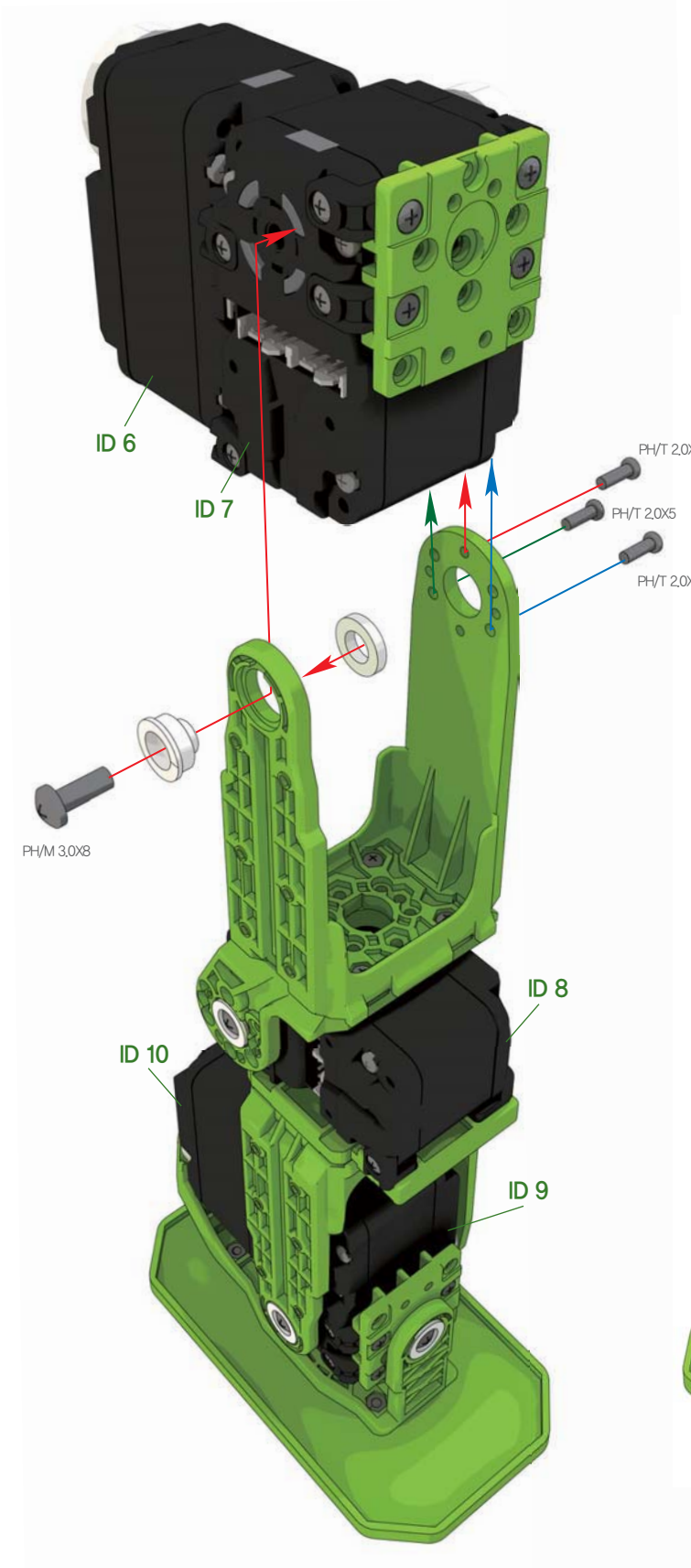
PH/M 2.0X6



BH/T 2.6X8



1 Make sure to assemble the upper and lower leg facing proper direction.



Required Parts



DRA-0062
Bolt (PH/M 3.0X8) **1ea**

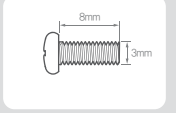


DRA-0064
Bolt (PH/T 2.0X5) **3ea**



DRJ-0011
Bushing Set **1ea**

1:1 SCALE



PH/M 3.0X8



PH/T 2.0X5

- 1 Fix the harness to the leg using 6 DRJ-0007(I-type Joint 16.0mm Hole only) and 12 DRA-0063(Bolt CH/T 2.0X4).

Required Parts

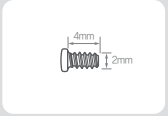


DRJ-0007 6ea
I-type Joint
(16.0mm, Hole only)

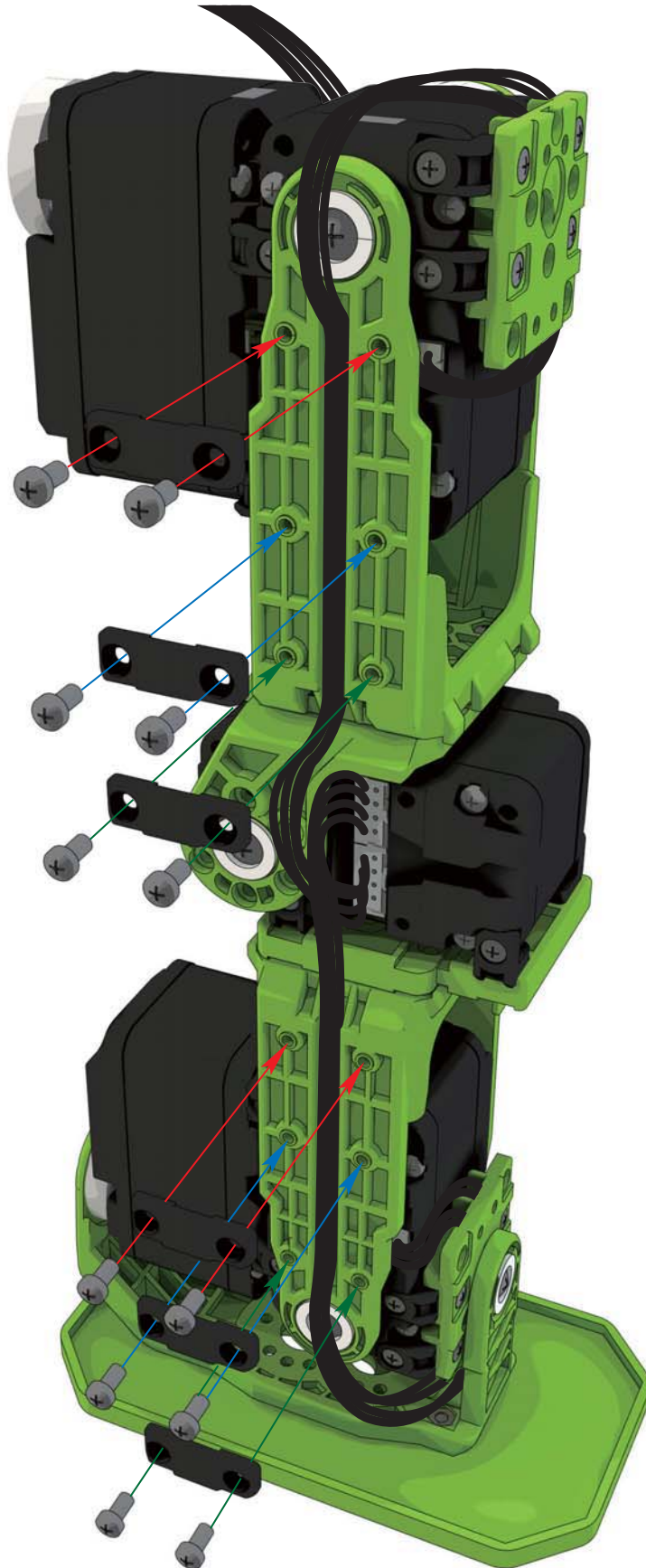


DRA-0063 12ea
Bolt (CH/T 2.0X4)

1:1 SCALE



CH/T 2.0X4





- 1 Attach horn to the servo using 4 **DRA-0067**(BH/T 2.6X8). Align both zero points before/after assembling. (See **3** on Pg.4 for more detailed info.)
- 2 Attach 4 **DRJ-0003**(L-type Joint Hole only) to the servo using 4 **DRA-0058**(Bolt PH/M 2.0X6).

Required Parts



DRS-0101
HerkuleX Servo **1ea**



DRA-0058
Bolt (PH/M 2.0X6) **4ea**



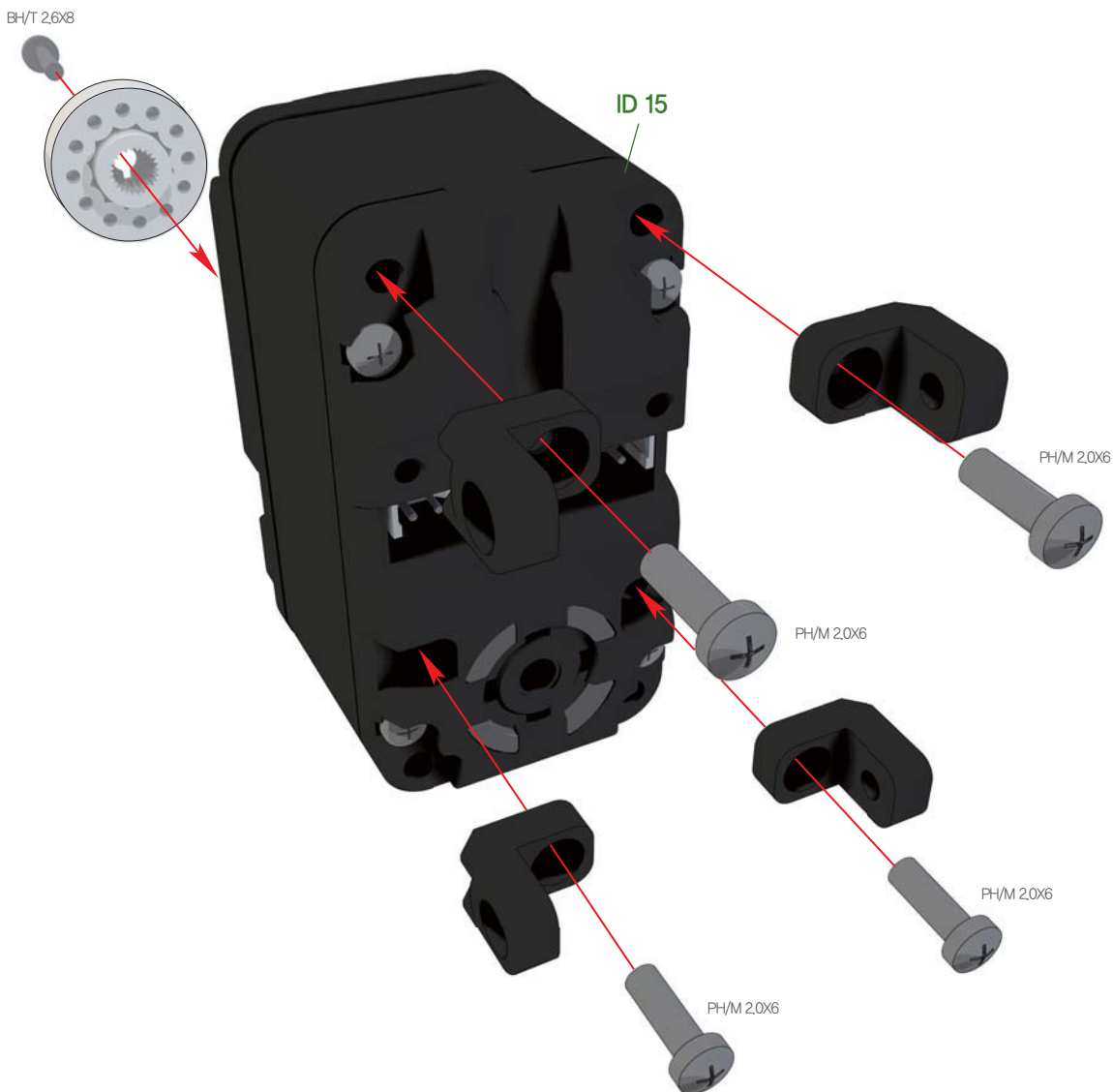
DRA-0067
Bolt (BH/T 2.6X8) **1ea**



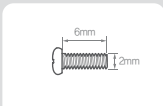
DRH-1001
Horn (Plastic) **1ea**



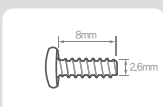
DRJ-0003
L-type Joint
(Hole only) **4ea**



1:1 SCALE

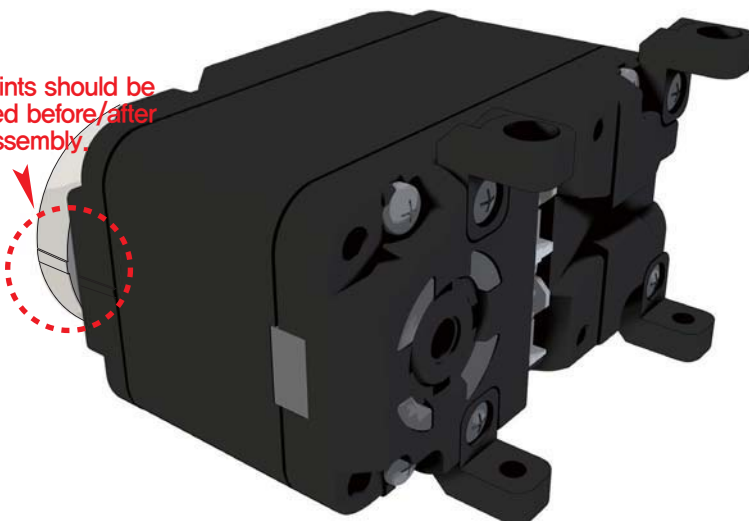


PH/M 2.0X6

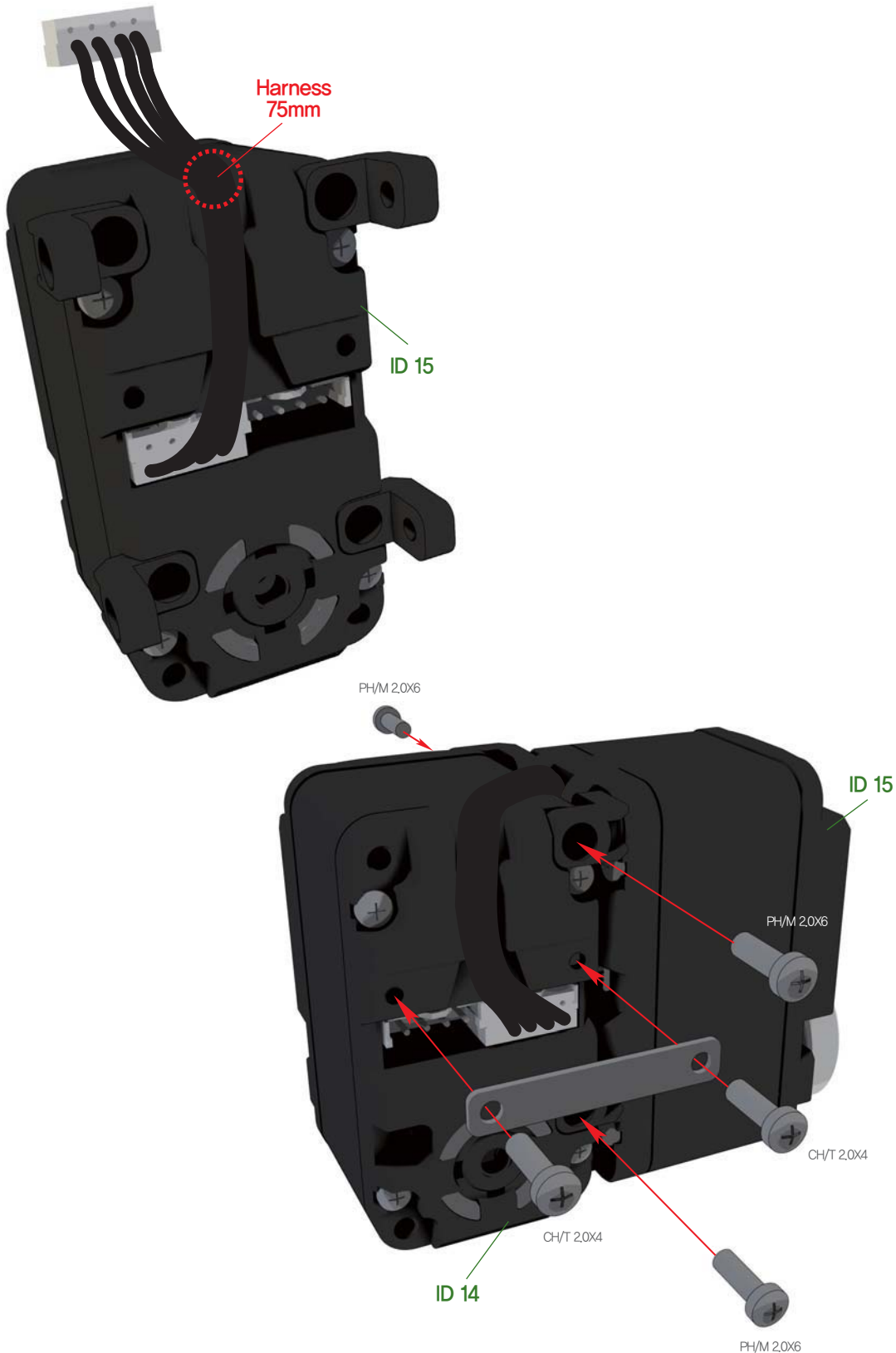


BH/T 2.6X8






Zero points should be coincided before/after assembly.





- 1 Attach **DRA-0002**(Harness 75mm) to the servo **ID 15** as shown in the diagram below. Insert the harness wires into the groove, pull to tighten and hold using your finger.
- 2 Assemble servo **ID 14** using 4 **DRA-0058**(Bolt PH/M 2.0X6). Insert **DRA-0002**(Harness 75mm) into the groove and use the **DRJ-0010**(Harness Clamp) and 2 **DRA-0063**(Bolt CH/T 2.0X4) to fix the harness to the servo.



Required Parts

-  **DRS-0101**
HerkuleX Servo **1ea**
-  **DRA-0058**
Bolt (PH/M 2.0X6) **4ea**
-  **DRJ-0010**
Harness Clamp **1ea**
-  **DRA-0063**
Bolt (CH/T 2.0X4) **2ea**
-  **DRA-0002**
Harness (75mm) **1ea**

1:1 SCALE

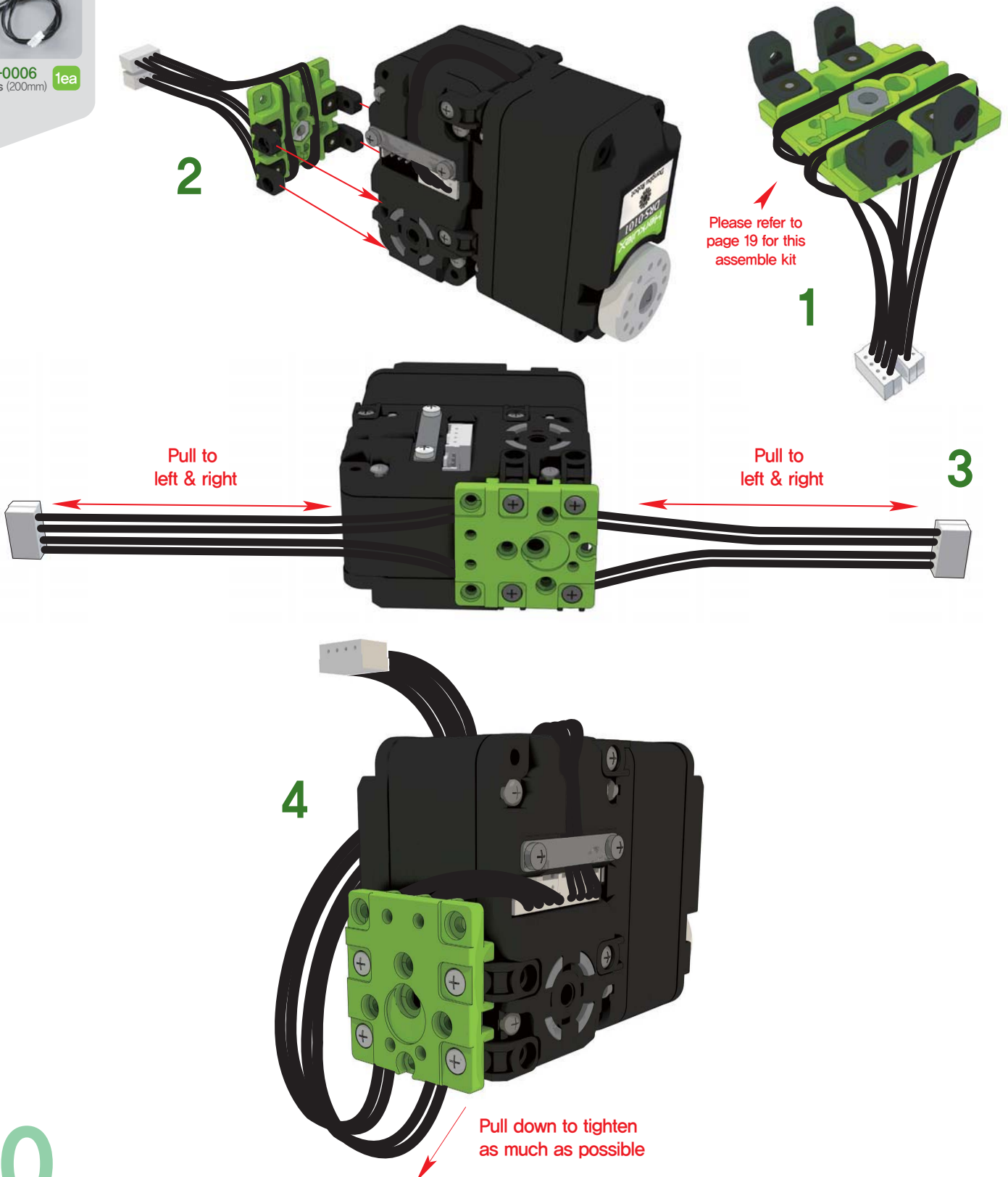
-  **PH/M 2.0X6**
-  **CH/T 2.0X4**

- 1 Insert the **DRA-0006**(Harness 200mm) wires into the **DRB-0004**(Universal Plate) grooves and pull to tighten, Attach **DRB-0004**(Universal Plate) to the servo assembly. Refer to diagram.
- 2 Pull **DRA-0006**(Harness 200mm) wires to the left and right. Harness was installed correctly if the wires slide easily
- 3 Connect one end of **DRA-0006**(Harness 200mm) to the servo and pull the other end in the direction of the arrow.

Required Parts

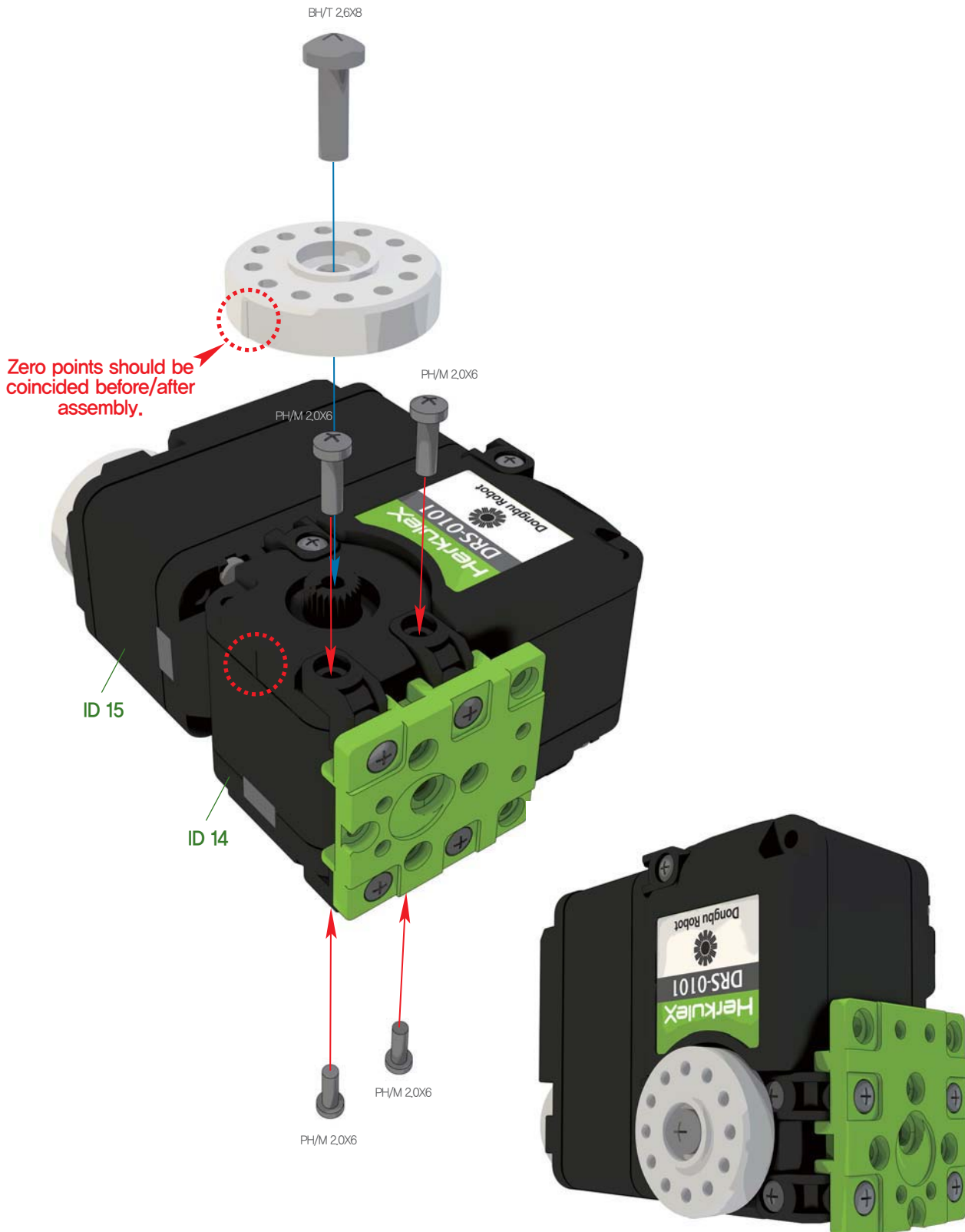


DRA-0006
Harness (200mm) **1ea**



- 1 Fix the already attached DRB-0004 (Universal Plate) to the servo using 4 DRA-0058 (Bolt PH/M 2.0X6).
- 2 Attach the horn to the servo using DRA-0067 (BH/T 2.6X8).

Align both zero points before/after assembling. (See 3 on Pg.4 for more detailed info.)



Required Parts



DRA-0058 4ea
Bolt (PH/M 2.0X6)

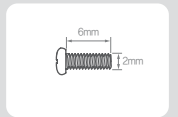


DRA-0067 1ea
Bolt (BH/T 2.6X8)

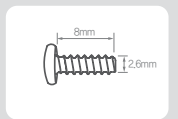


DRH-1001 1ea
Horn (Plastic)

1:1 SCALE



PH/M 2.0X6



BH/T 2.6X8

Required Parts



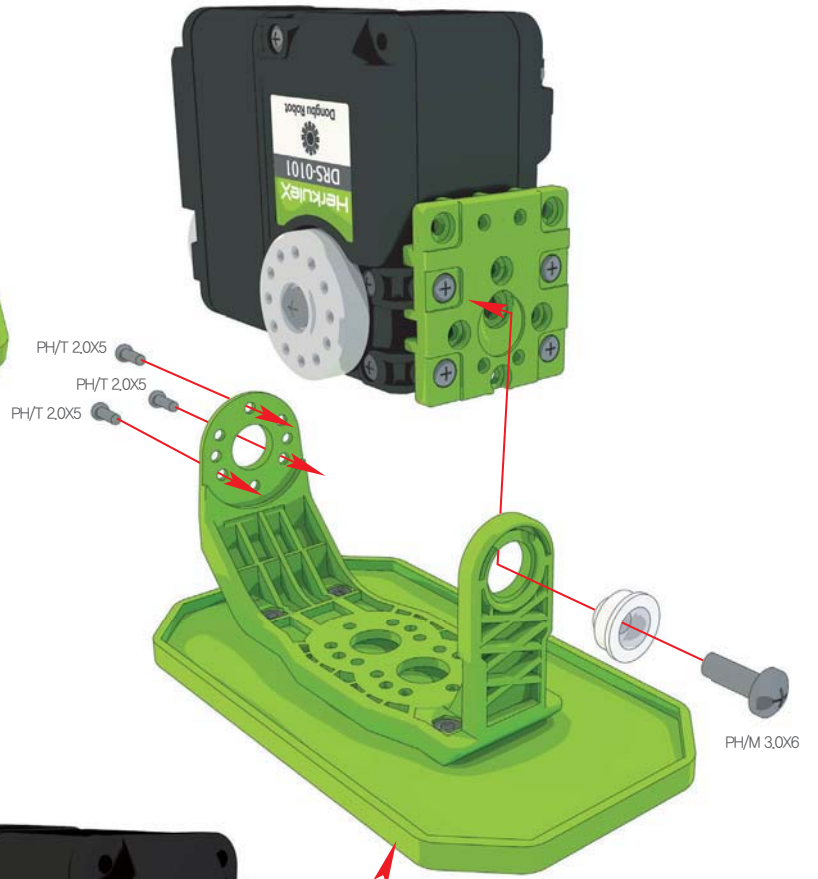
DRA-0061
Bolt (PH/M 3.0x6) **1ea**



DRA-0064
Bolt (PH/T 2.0x5) **3ea**



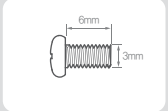
DRJ-0011
Bushing Set **1ea**



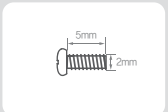
Please refer to page 23 for this assemble kit

Front View

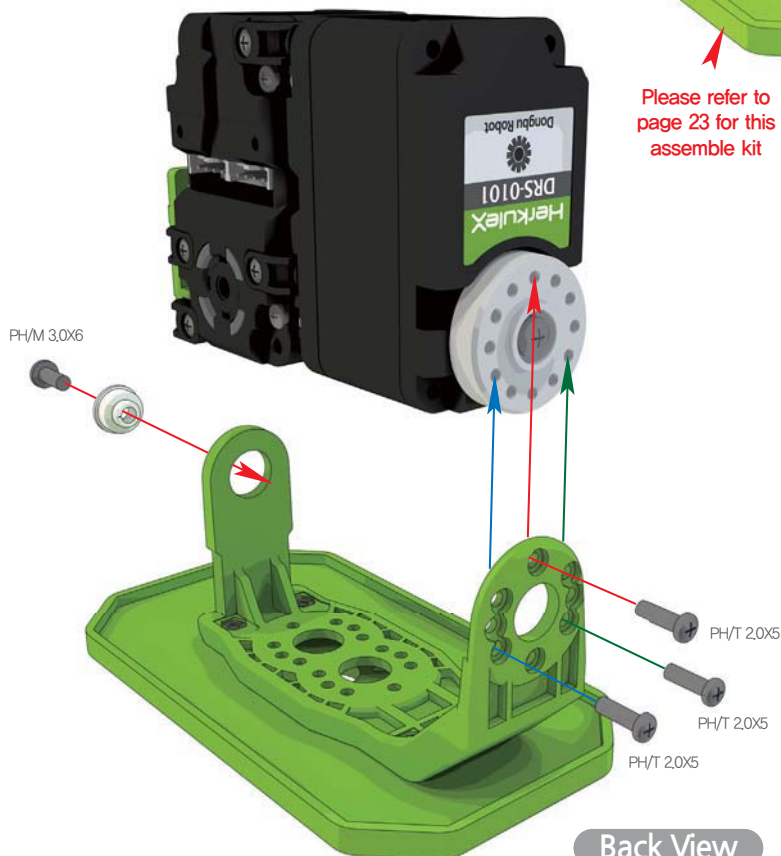
1:1 SCALE



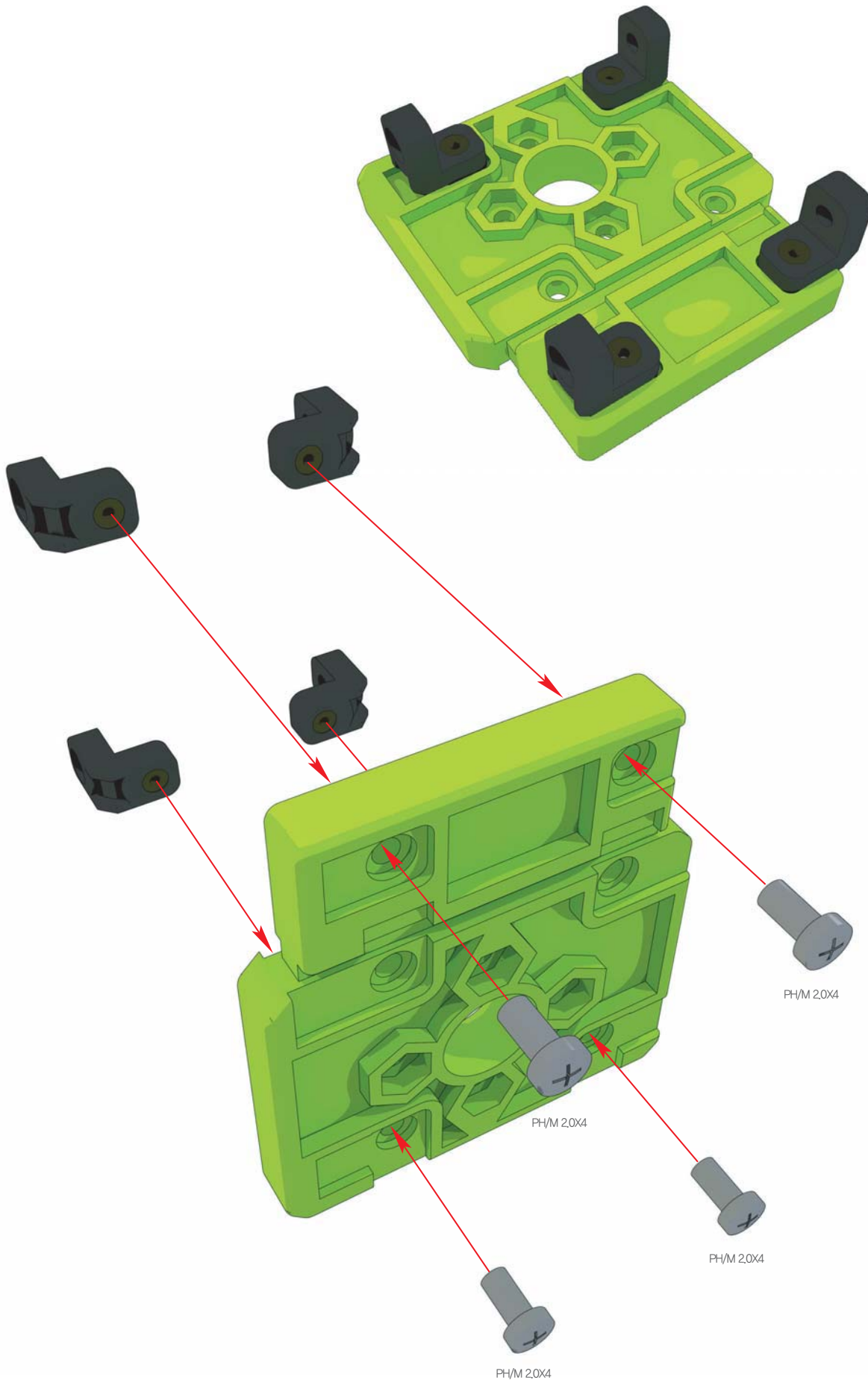
PH/M 3.0x6



PH/T 2.0x5



Back View



Required Parts



DRA-0056
Bolt (PH/M 2.0x4) **4ea**

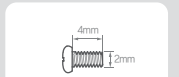


DRJ-0001
L-type Joint
(Single Nut) **4ea**



DRB-0005
Ankle Plate **1ea**

1:1 SCALE



PH/M 2.0x4

PH/M 2.0x4

PH/M 2.0x4

PH/M 2.0x4

PH/M 2.0x4

Required Parts



DRA-0051
Nut (M2) **4ea**



DRA-0058
Bolt (PH/M 2.0X6) **4ea**

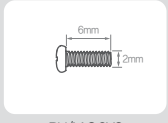


DRB-0008
U1-type Bracket **1ea**

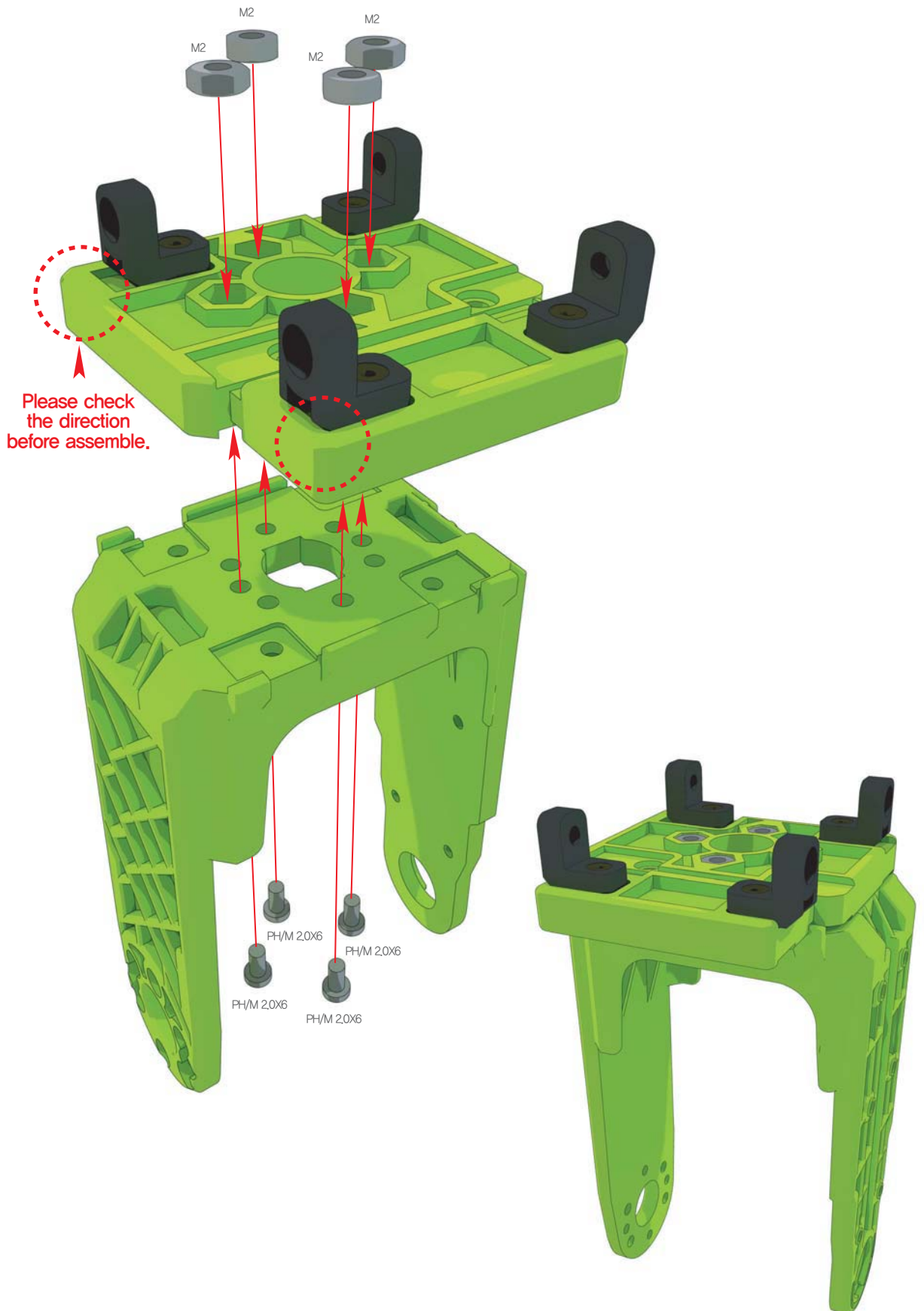
1:1 SCALE



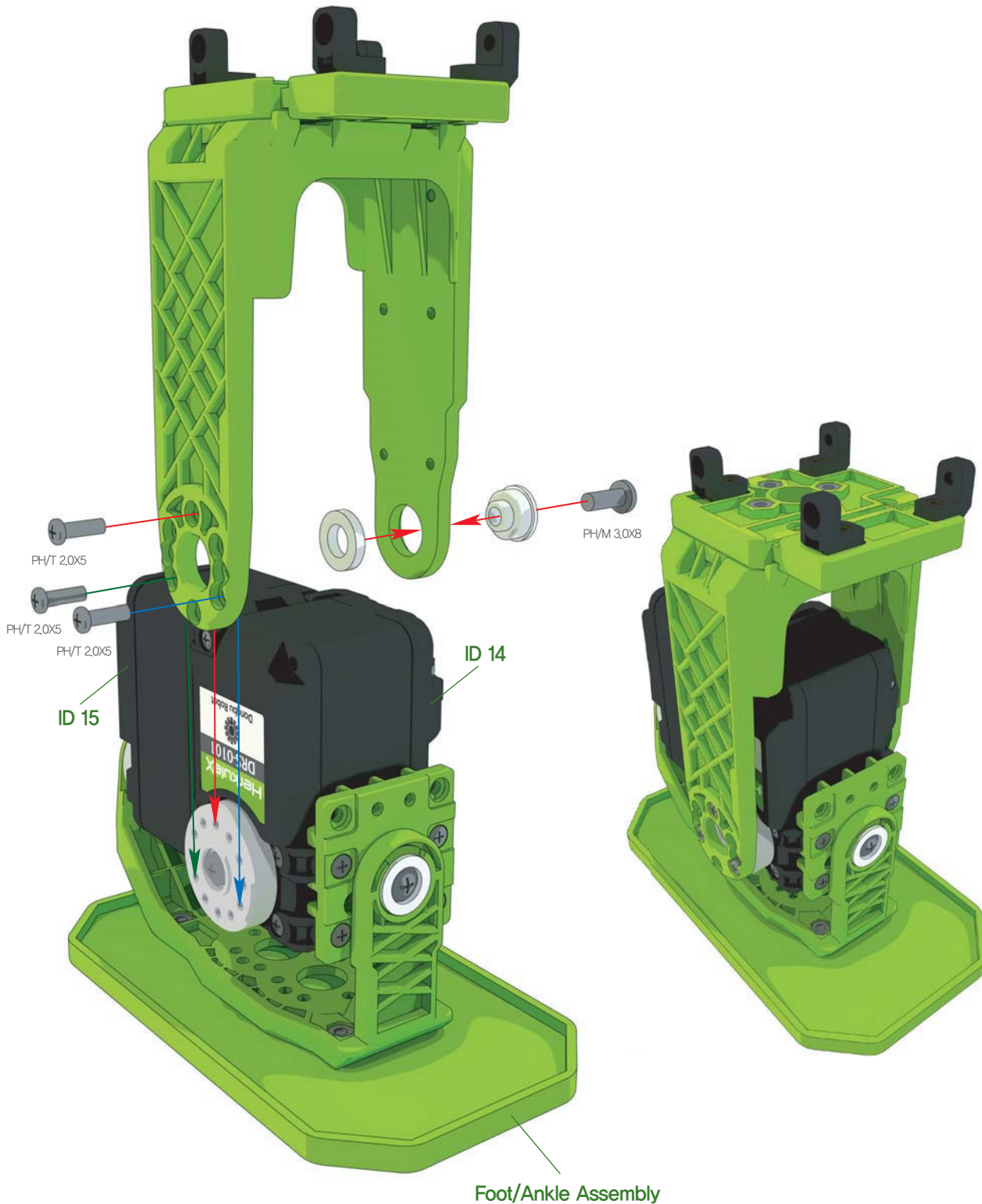
M2



PH/M 2.0X6



- 1 Attach DRB-0008(U1-type Bracket) to the Foot/Ankle assembly using DRJ-0011(Bushing Set) and 1 DRA-0062(Bolt PH/M 3.0X8).
- 2 Use 3 DRA-0064(Bolt PH/T 2.0X5) to complete the attachment.



Required Parts



DRA-0062
Bolt (PH/M 3.0X8) 1ea

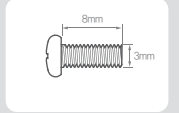


DRA-0064
Bolt (PH/T 2.0X5) 3ea

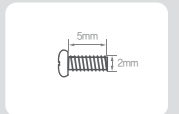


DRJ-0011
Bushing Set 1ea

1:1 SCALE



PH/M 3.0X8



PH/T 2.0X5

- 1 Attach the servo ID 13 to the lower leg assembly.
- 2 Attach the horn to the servo using DRA-0067(BH/T 2.6X8). Align both zero points before/after assembling. (See 3 on Pg.4 for more detailed info.)

Required Parts



DRS-0101
HerkuleX Servo 1ea



DRA-0058
Bolt (PH/M 2.0X6) 4ea

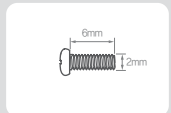


DRA-0067
Bolt (BH/T 2.6X8) 1ea

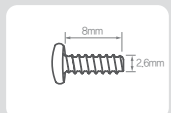


DRH-1001
Horn (Plastic) 1ea

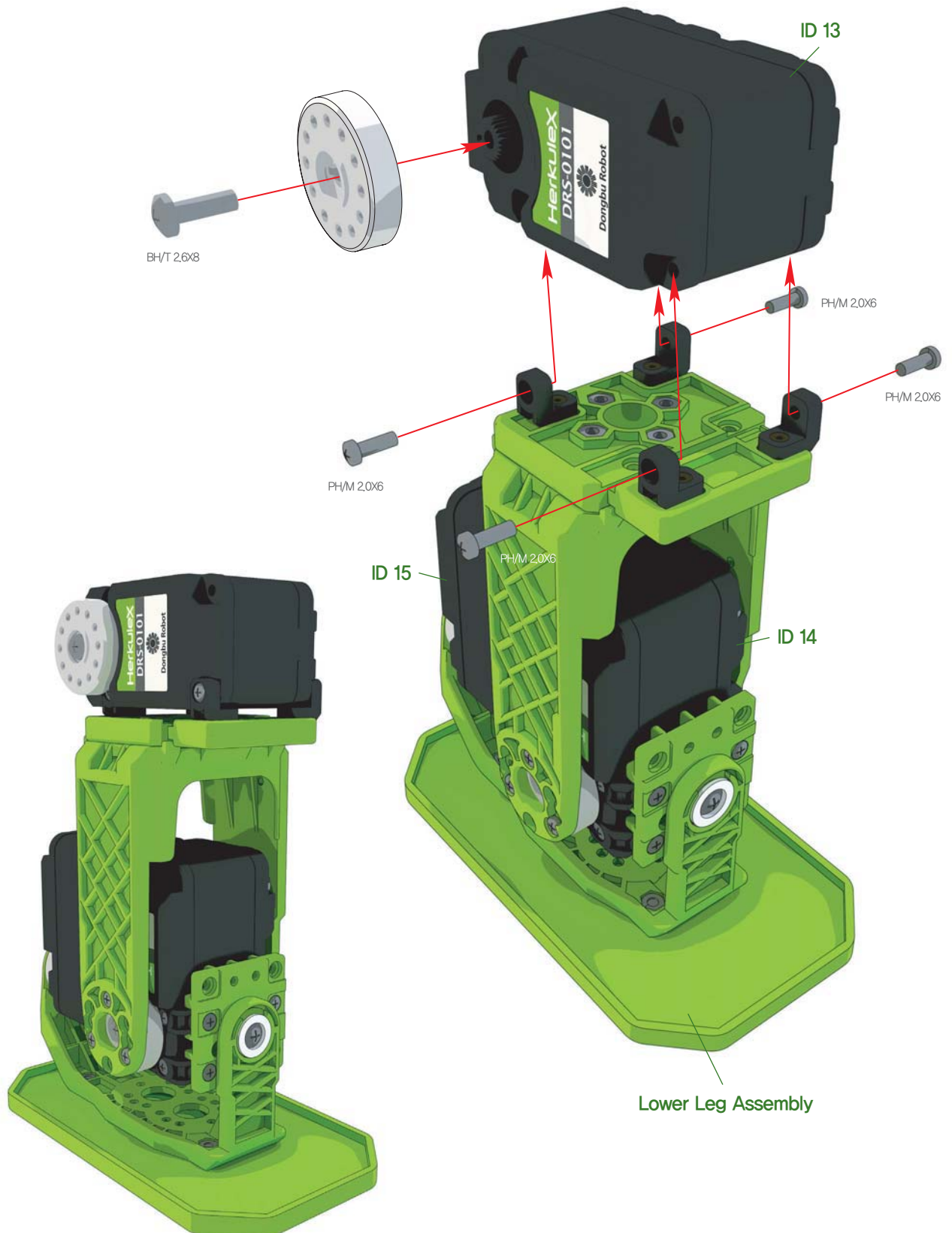
1:1 SCALE



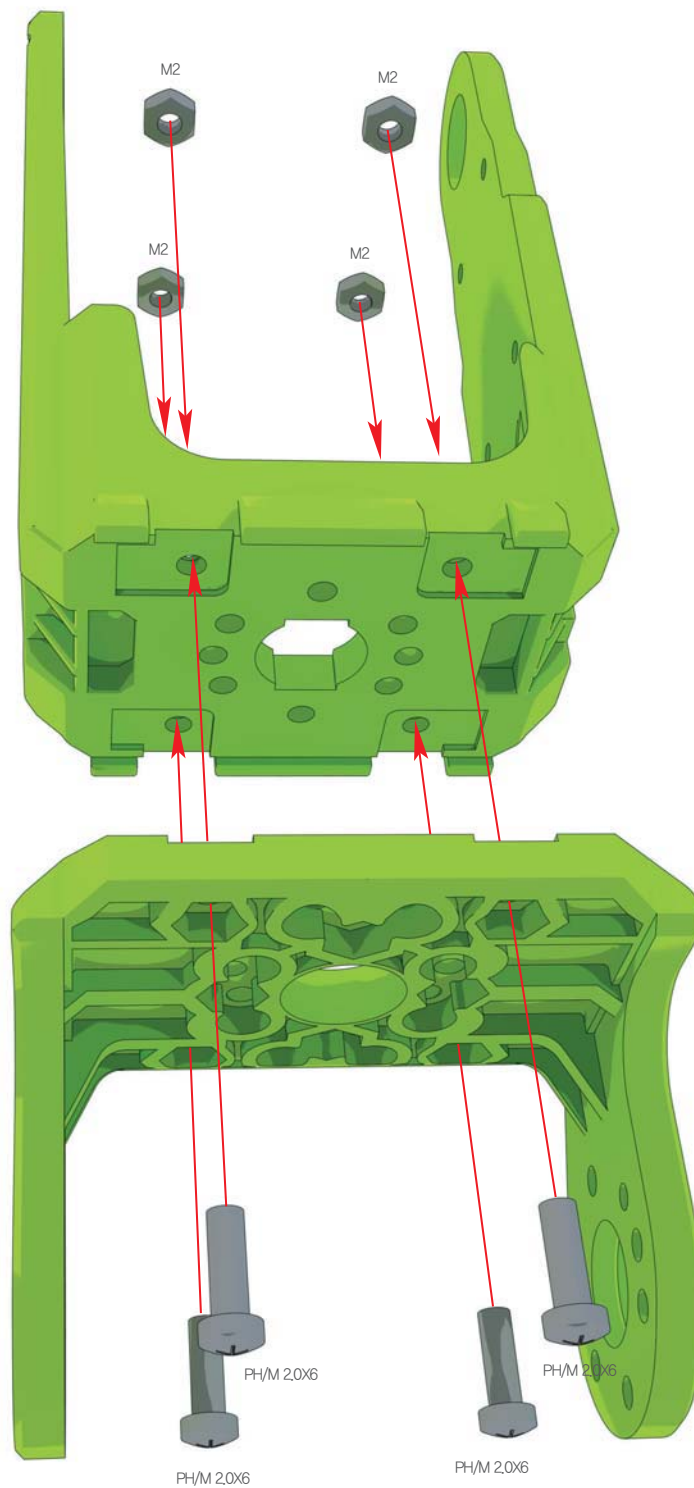
PH/M 2.0X6



BH/T 2.6X8



- 1 Insert 4 **DRA-0051**(M2 Nut) into the **DRB-0008**(U1-type Bracket).
- 2 Attach **DRB-0008**(U1-type Bracket) to the **DRB-0011**(U4-type Bracket) using 4 **DRA-0058**(Bolt PH/M 2.0X6).



Required Parts



DRA-0051
Nut (M2) **4ea**



DRA-0058
Bolt (PH/M 2.0X6) **4ea**



DRB-0008
U1-type Bracket **1ea**

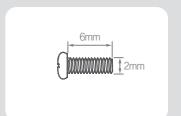


DRB-0011
U4-type Bracket **1ea**

1:1 SCALE



M2



PH/M 2.0X6

- 1 Attach the assembled DRB-0008(U1-type Bracket) & DRB-0011(U4-type Bracket) to the servo using 1 DRA-0062(Bolt PH/M 3.0X8), DRJ-0011(Bushing Set) and 3 DRA-0064(Bolt PH/T 2.0X5).

Required Parts



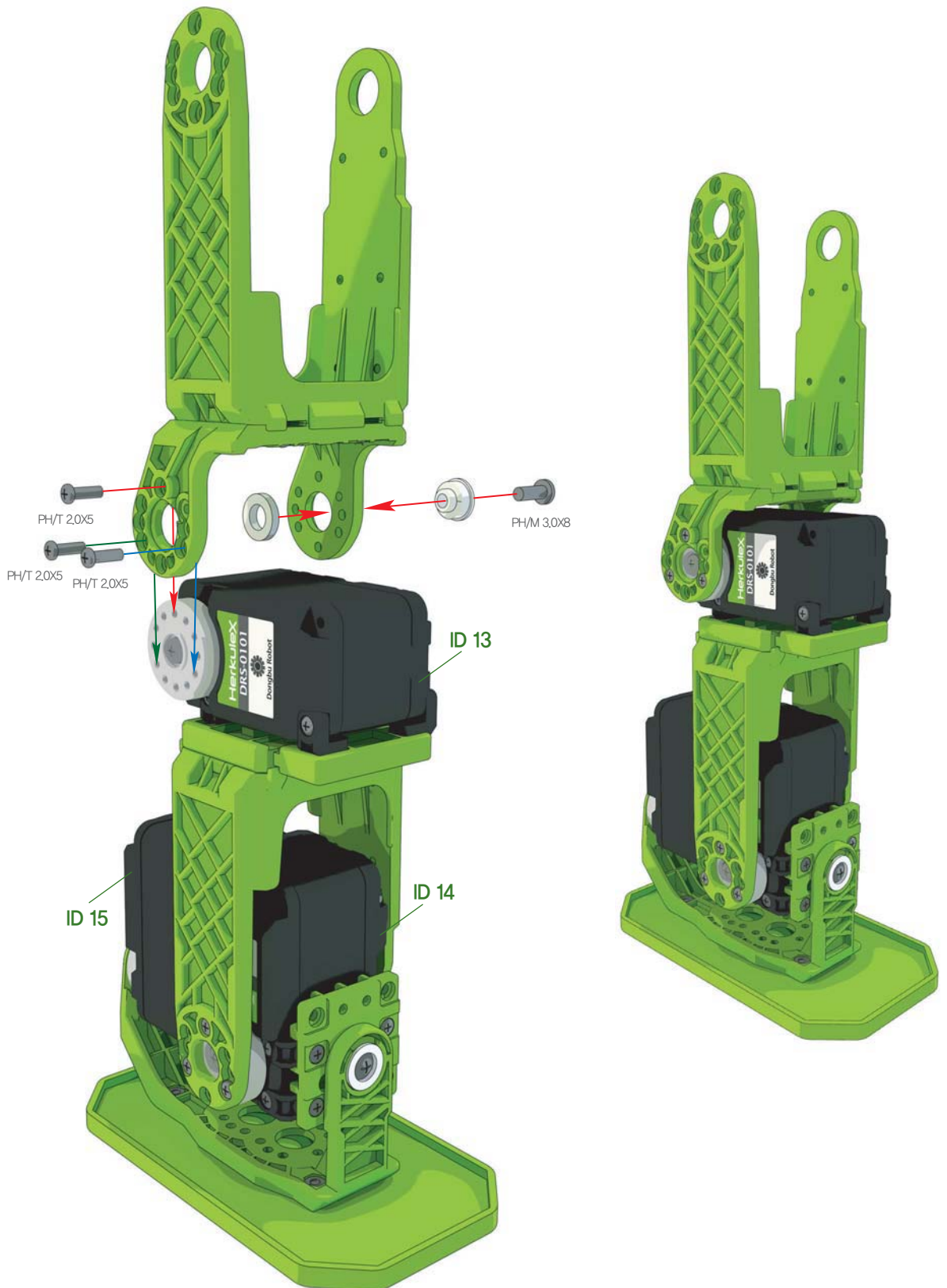
DRA-0064
Bolt (PH/T 2.0X5) 3ea



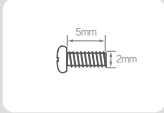
DRA-0062
Bolt (PH/M 3.0X8) 1ea



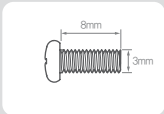
DRJ-0011
Bushing Set 1ea



1:1 SCALE

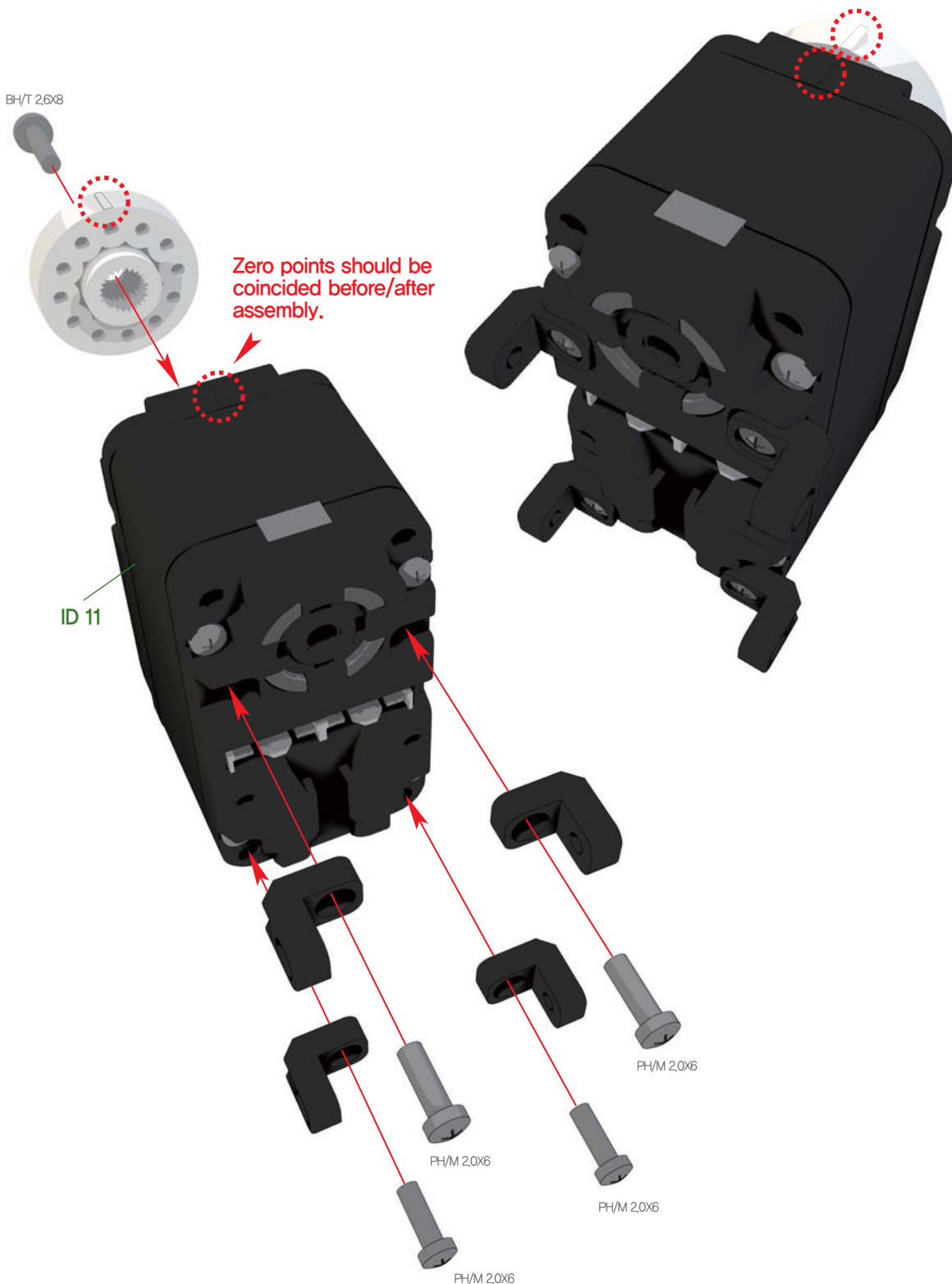


PH/T 2.0X5



PH/M 3.0X8

- 1 Attach the horn to the servo using **DRA-0067**(BH/T 2.6X8). Align both zero points before/after assembling. (See **3** on Pg.4 for more detailed info.)
- 2 Attach 4 **DRJ-0003**(L-type Joint Hole only) to the servo using 4 **DRA-0058**(Bolt PH/M 2.0X6).



Required Parts



DRS-0101
HerkuleX Servo **1ea**



DRA-0058
Bolt (PH/M 2.0X6) **4ea**



DRA-0067
Bolt (BH/T 2.6X8) **1ea**

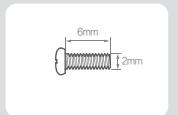


DRH-1001
Horn (Plastic) **1ea**

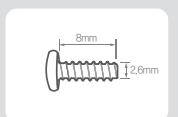


DRJ-0003
L-type Joint
(Hole only) **4ea**

1:1 SCALE

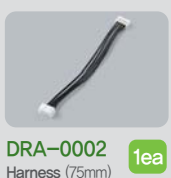
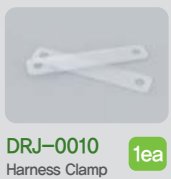


PH/M 2.0X6



BH/T 2.6X8

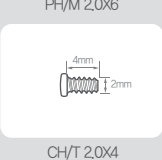
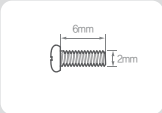
Required Parts



- 1 Connect **DRA-0002**(Harness 75mm) to the right connector of the servo **ID 6**, insert the harness wire into the groove and pull to tighten. Connect the **DRA-0006**(Harness 200mm) to the left connector and pull to tighten.
- 2 **ID 12** to **ID 11** using 4 **DRA-0058**(Bolt PH/M 2.0X6). Insert **DRA-0002**(Harness 75mm) wires into the servo groove and fix to the servo using 1 **DRJ-0010**(Harness Clamp) and **DRA-0063**(Bolt CH/T 2.0X4).



1:1 SCALE



- 1 Insert the **DRA-0006**(Harness 200mm) wires into the **DRB-0004**(Universal Plate) grooves and pull to tighten.
- 2 Attach the **DRB-004**(Universal Plate) to the servo assembly while maintaining tight pull on harness. Refer to the diagram below.

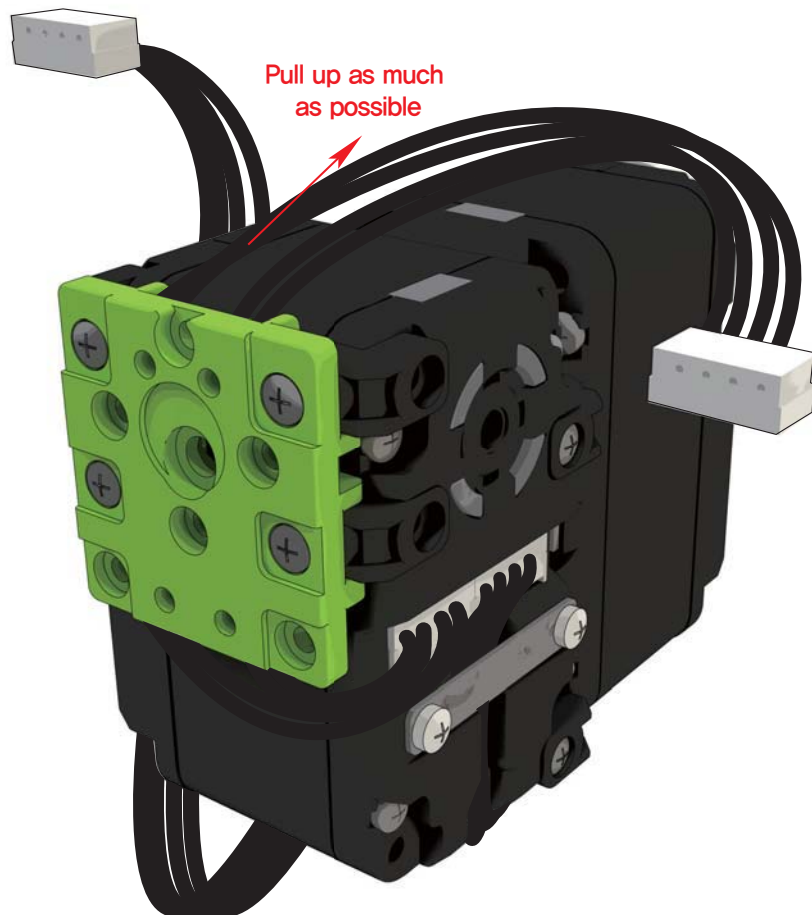
Required Parts



DRA-0006
Harness (200mm) 1ea



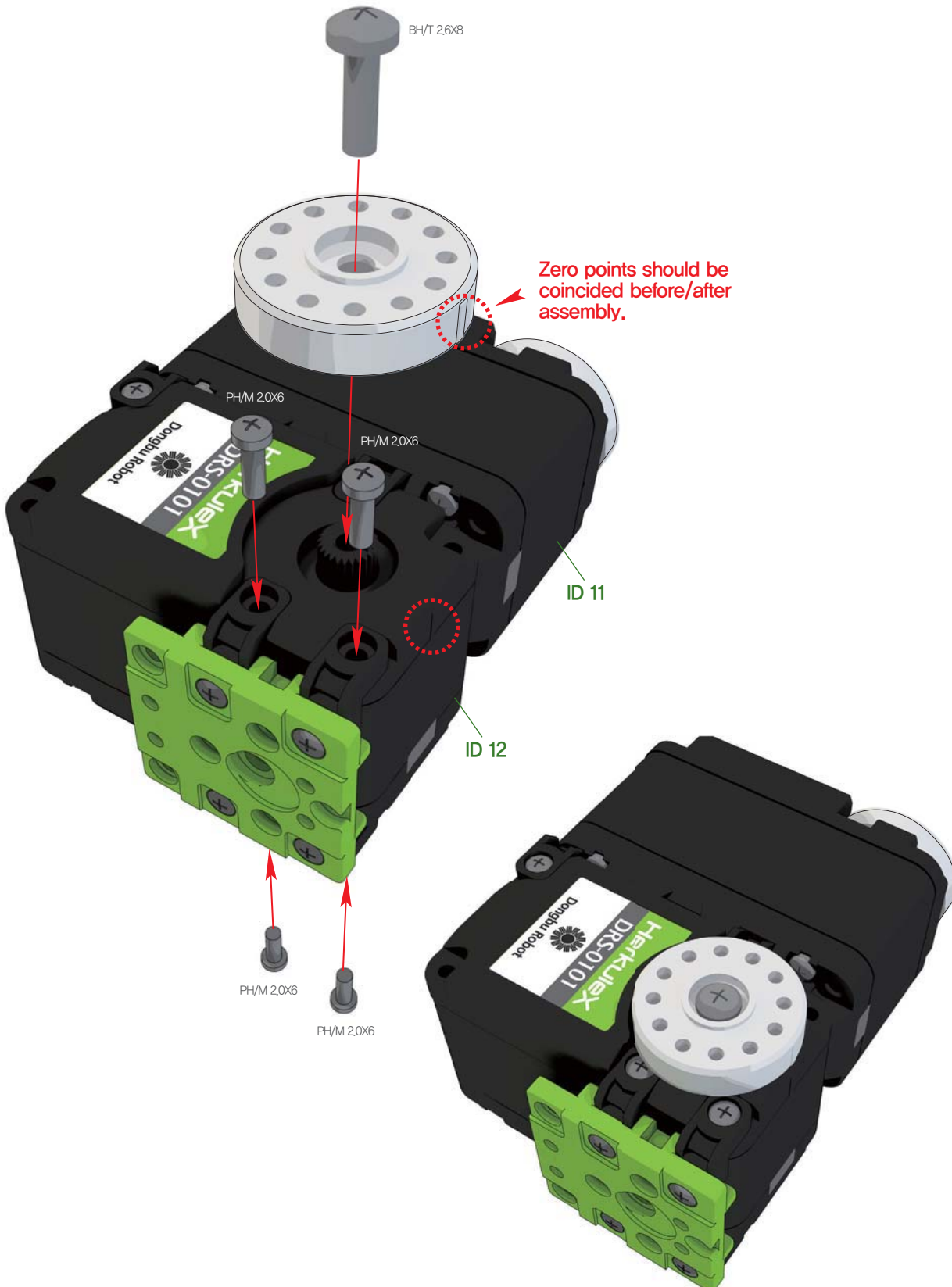
- 1 Pull DRA-0006(Harness 200mm) wires to the left & right, Harness was installed correctly if the wires slide well.
- 2 Connect one end of DRA-0006(Harness 200mm) to the servo and pull the other end in the direction of the arrow shown in the diagram as much as possible.



1 Attach the assembled DRB-0004(Universal Plate) to the ID 12 using 4 DRA-0058(Bolt PH/M 2.0X6).

2 Attach the horn to the servo using DRA-0067(BH/T 2.6X8).

Align both zero points before/after assembling. (See **3** on Pg.4 for more detailed info.)



Required Parts



DRA-0058 47#
Bolt (PH/M 2.0X6)

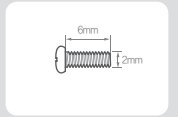


DRA-0067 17#
Bolt (BH/T 2.6X8)

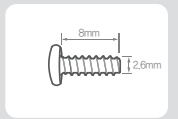


DRH-1001 17#
Horn (Plastic)

1:1 SCALE



PH/M 2.0X6



BH/T 2.6X8

1 Make sure to assemble the upper and the lower leg facing proper direction.

Required Parts



DRA-0062
Bolt (PH/M 3.0x8) **1ea**

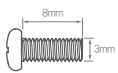


DRA-0064
Bolt (PH/T 2.0x5) **3ea**



DRJ-0011
Bushing Set **1ea**

1:1 SCALE



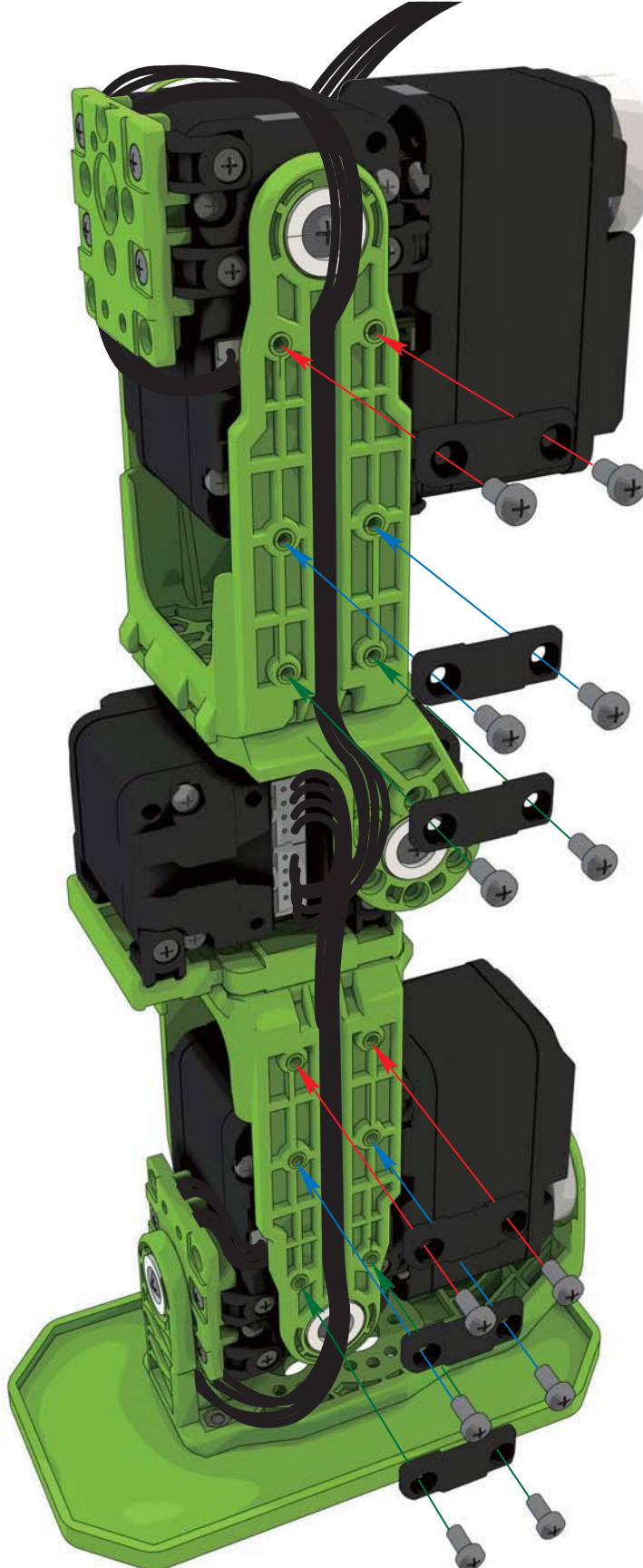
PH/M 3.0x8



PH/T 2.0x5



- 1 Fix the harness to the leg using 6 DRJ-0007(I-type Joint 16.0mm Hole only) and 12 DRA-0063(Bolt CH/T 2.0X4).



Required Parts

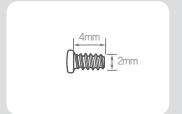


DRJ-0007 6ea
I-type Joint
(16.0mm, Hole only)



DRA-0063 12ea
Bolt (CH/T 2.0X4)

1:1 SCALE



CH/T 2.0X4



1 Attach the assembled left/right legs to the assembled waist.



Required Parts



DRA-0061 2ea
Bolt (PH/M 3.0X6)

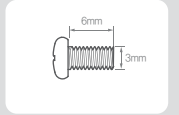


DRA-0064 6ea
Bolt (PH/T 2.0X5)

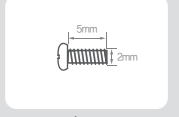


DRJ-0011 2ea
Bushing Set

1:1 SCALE



PH/M 3.0X6

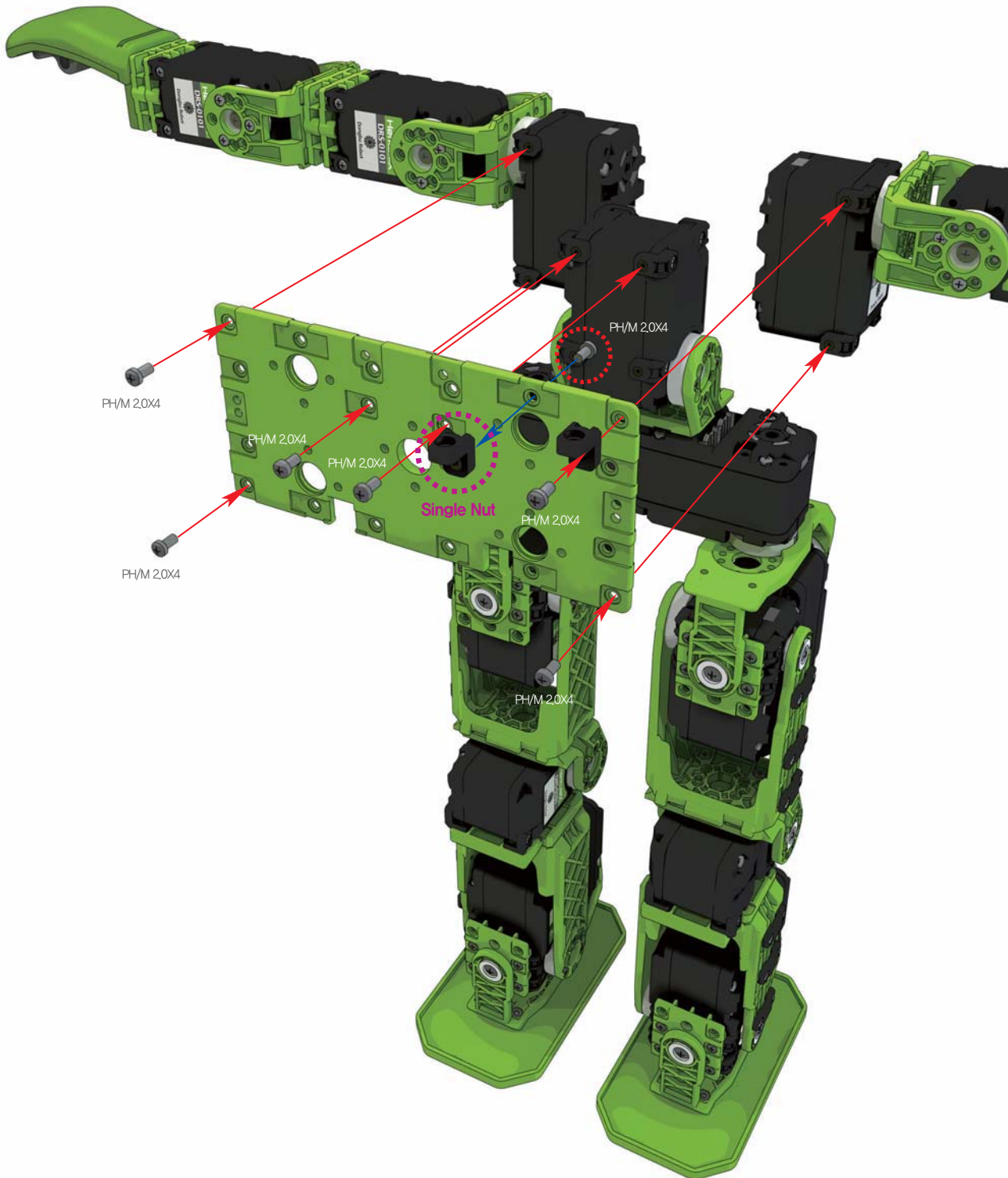


PH/T 2.0X5



HOVIS Lite Assembly Manual “Body Assembly”

- 1 Use **DRA-0056**(PH/M 2.0X4) to attach the waist/leg assembly to the left/right arm assembly together with **DRB-0001**(Front) and 1 **DRJ-0003**(L-type Joint Hole only).
- 2 Attach **DRJ-0001**(L-type Joint Single Nut) to the **DRB-0001**(Front).
Make sure to attach the parts in correct orientation.



Required Parts



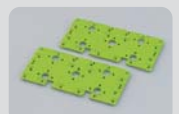
DRA-0056 7ea
Bolt (PH/M 2.0X4)



DRJ-0003 1ea
L-type Joint (Hole only)

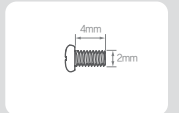


DRJ-0001 1ea
L-type Joint (Single Nut)



DRB-0001 1ea
Front

1:1 SCALE



PH/M 2.0X4

- 1 Use 2 DRJ-0007(I-type Joint 16.0mm Hole only) and 4 DRA-0064(Bolt PH/T 2.0X5) to attach leg harness to the hip area.

Required Parts



DRJ-0007
I-type Joint
(16.0mm, Hole only) **2ea**

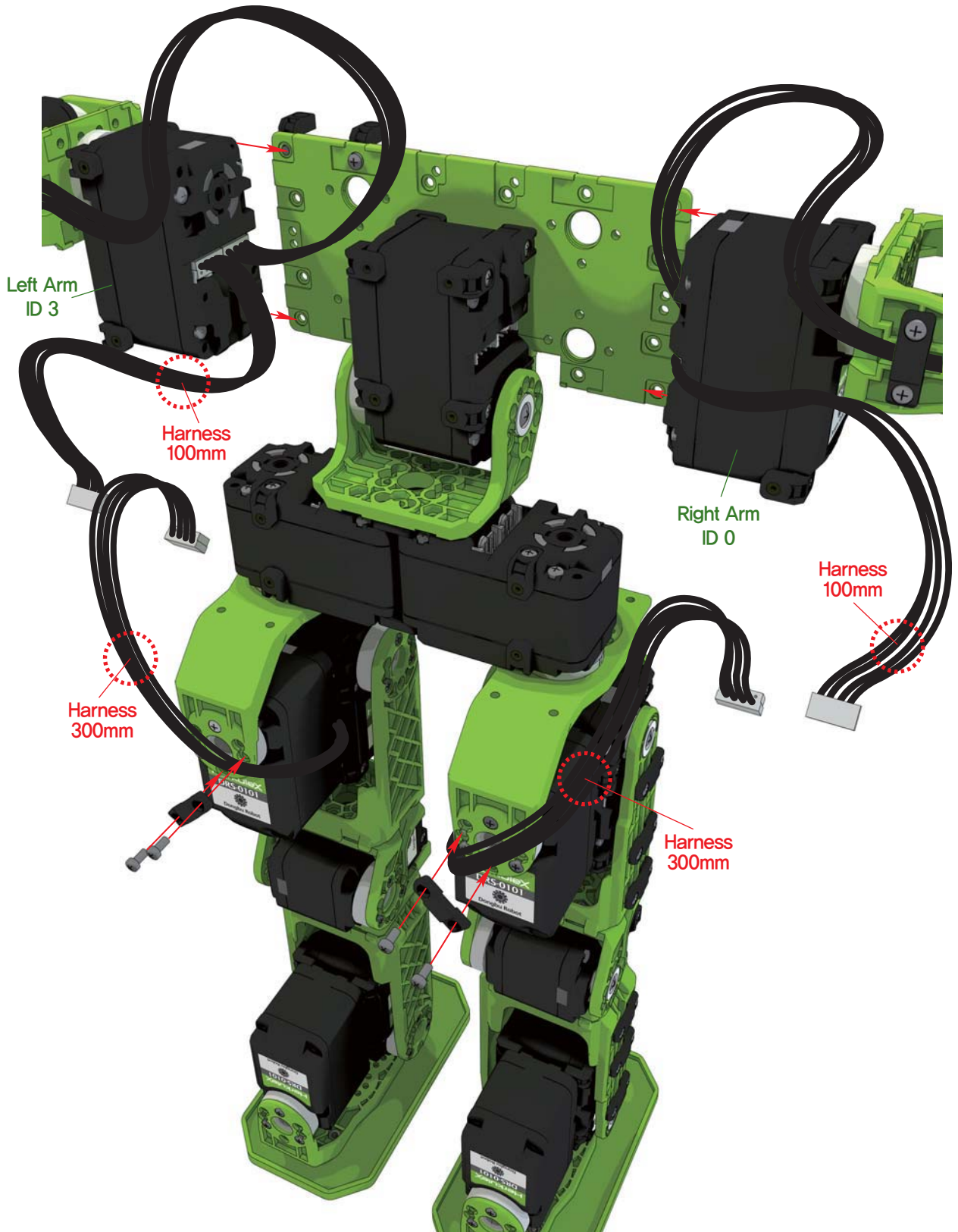


DRA-0064
Bolt (PH/T 2.0X5) **4ea**

1:1 SCALE

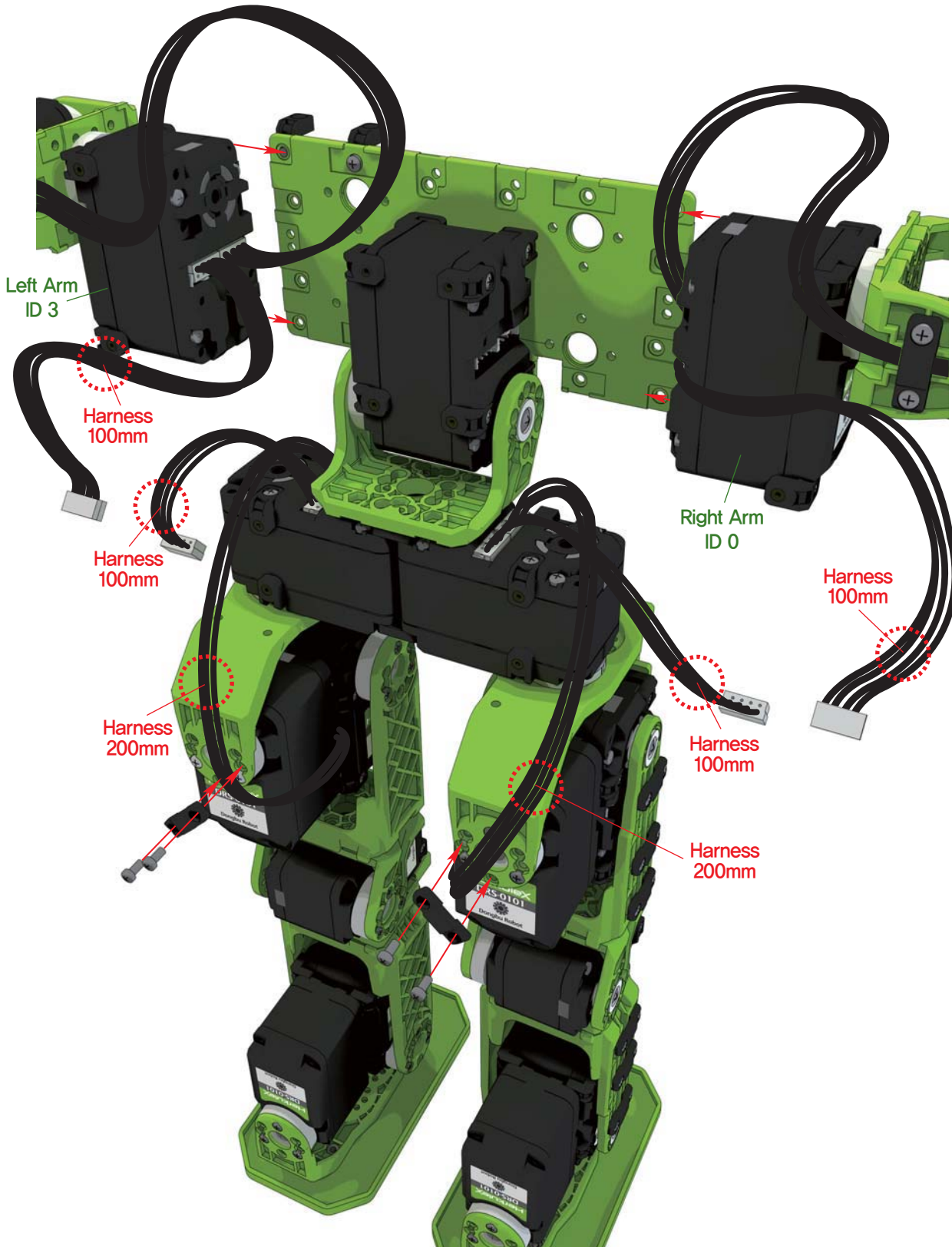


PH/T 2.0X5



HOVIS Lite Assembly Manual "Body Assembly (18DOF)"

- 1 Use 2 DRJ-0007(I-type Joint 16.0mm Hole only) and 4 DRA-0064(Bolt PH/T 2.0X5) to attach leg harness to the hip area.
- 2 Please use 200mm harness cable which included in DRS-0101/0201 when needed.



Required Parts



DRJ-0007
I-type Joint (16.0mm, Hole only) 2ea



DRA-0064
Bolt (PH/T 2.0X5) 4ea

1:1 SCALE



PH/T 2.0X5

- 1 Use 2 DRJ-0007(I-type Joint 16.0mm Hole only) and 4 DRA-0064(Bolt PH/T 2.0X5) to attach leg harness to the hip area.
- 2 Please use 200mm harness cable which included in DRS-0101/0201 when needed. Please use 75mm harness cable by purchasing DRA-0002.

Required Parts

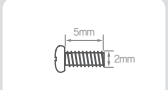


DRJ-0007
I-type Joint
(16.0mm, Hole only) 2ea

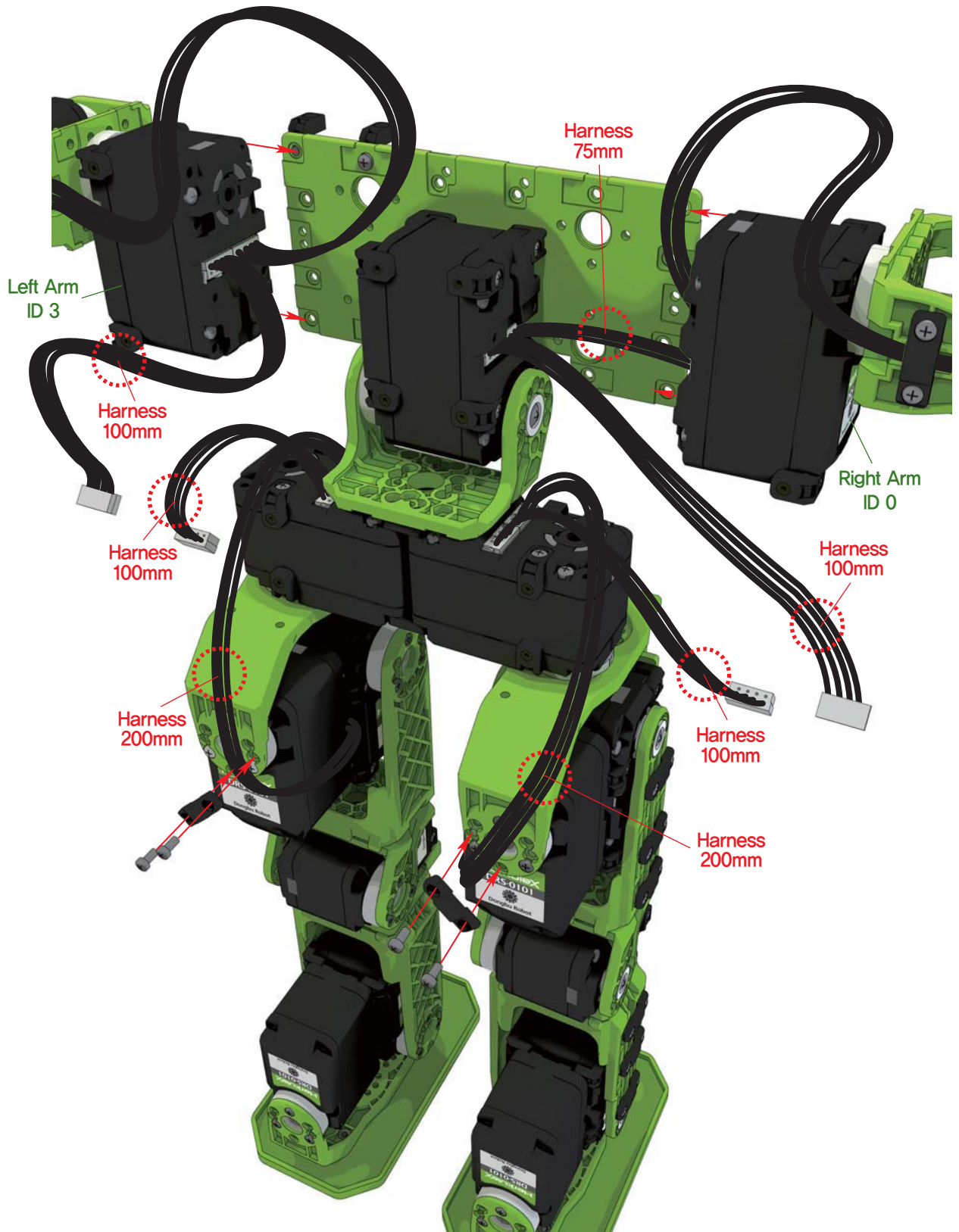


DRA-0064
Bolt (PH/T 2.0X5) 4ea

1:1 SCALE



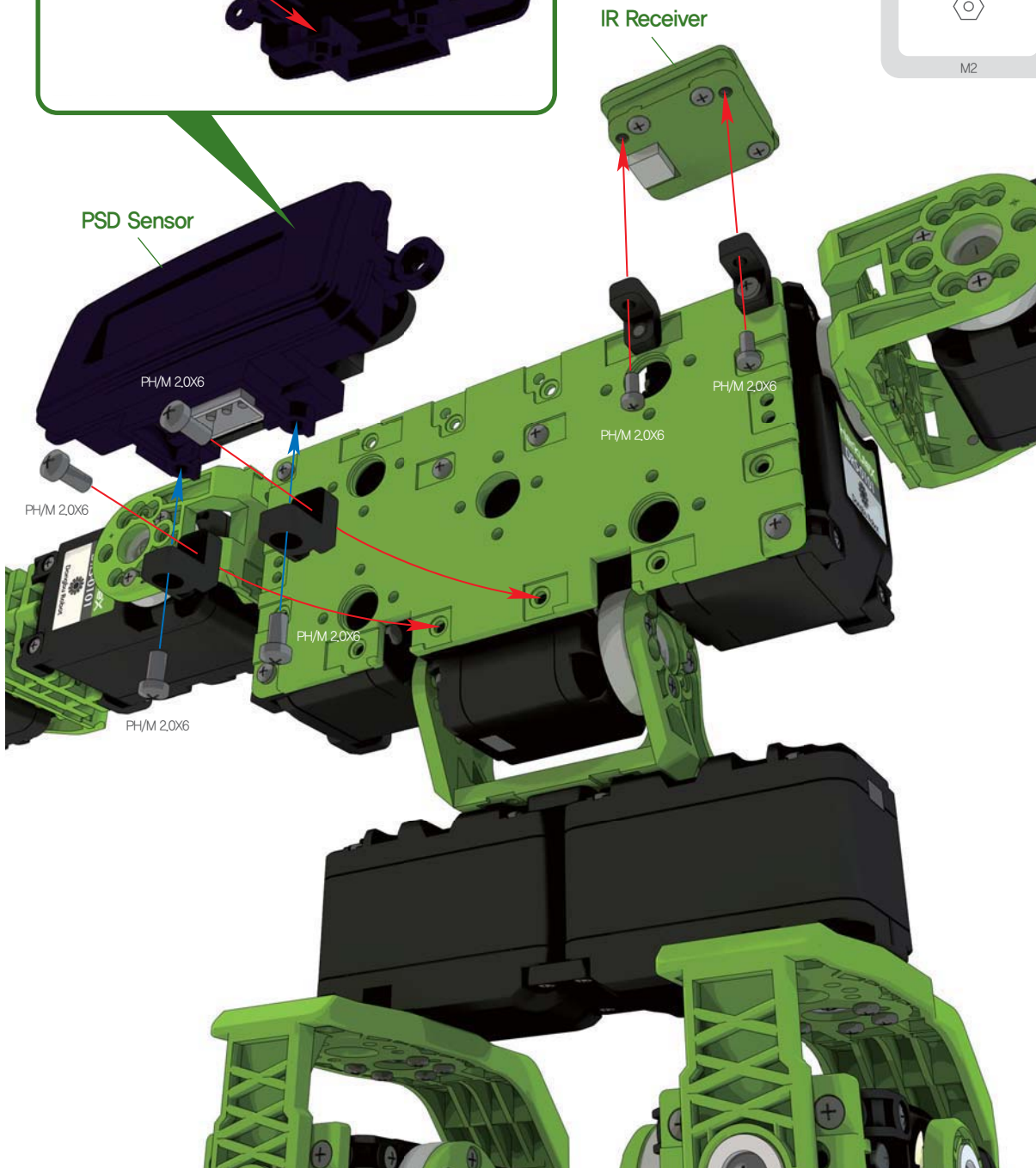
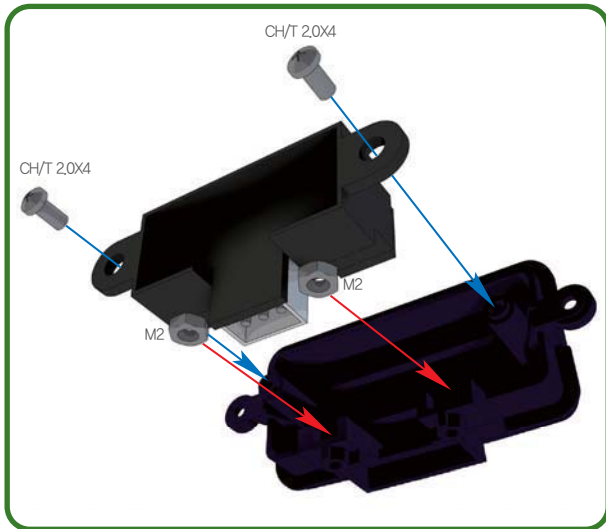
PH/T 2.0X5



1 Use 2 DRA-0063(Bolt CH/T 2,0X4) and 2 DRA-0051(Nut M2) to assemble the PSD sensor.

2 Attach the PSD sensor and IR receiver as shown in the diagram below.

※ Referring Pg.64, it is also fine if you connect the cable first before attaching PSD sensor.



1:1 SCALE



PH/M 2,0X6



CH/T 2,0X4



M2

Required Parts



DRA-0058
Bolt (PH/M 2,0X6) **6ea**



DRJ-0003
L-type Joint (Hole only) **2ea**



PSD Sensor **1ea**



IR Receiver **1ea**

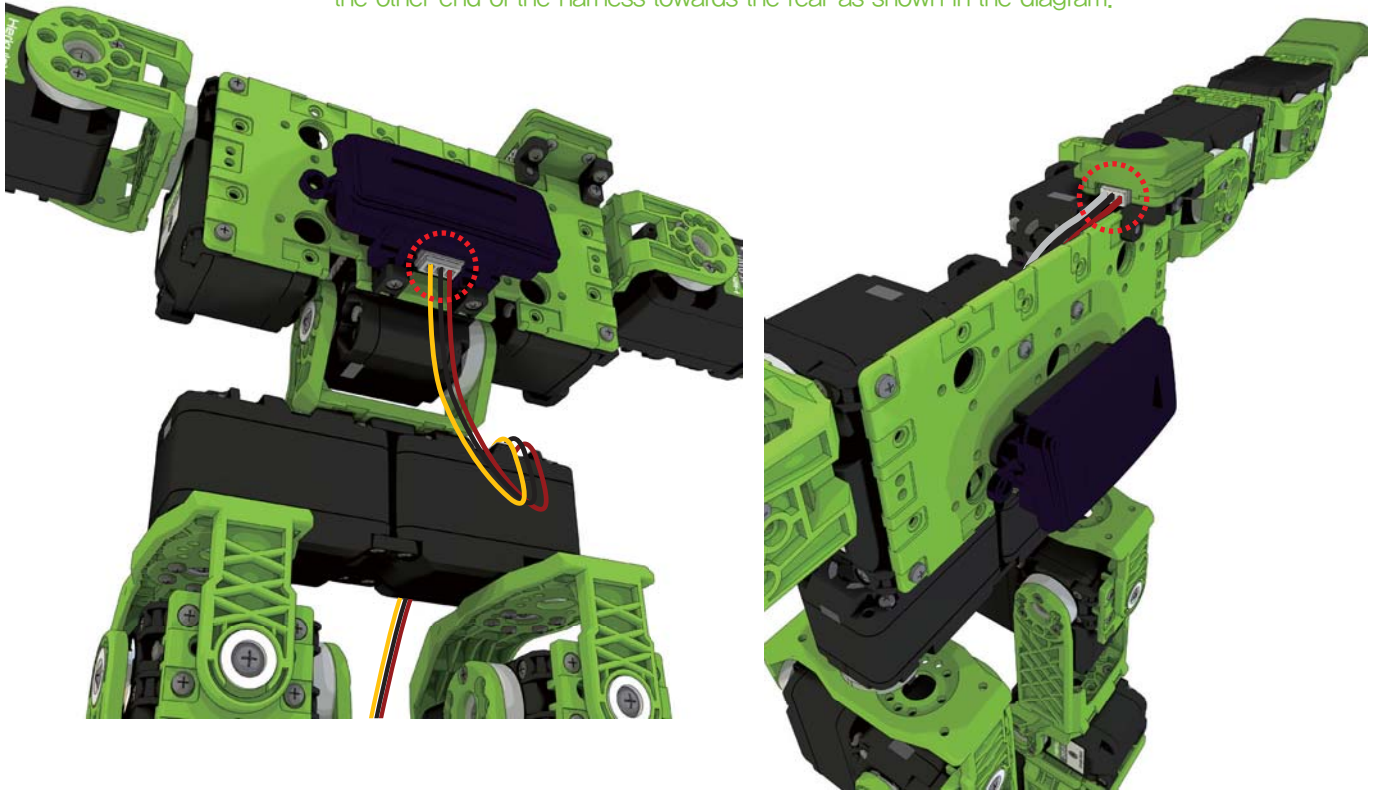


DRA-0063
Bolt (CH/T 2,0X4) **2ea**



DRA-0051
Nut (M2) **2ea**

- 1 Connect DRA-0021(PSD Harness 200mm 3pin) to the DRI-0008(PSD Sensor) and position the other end of the harness towards the rear as shown in the diagram.
- 2 Connect DRA-0027(IR Receiver Harness 150mm 3pin) to the DRI-0004(IR Receiver) and position the other end of the harness towards the rear as shown in the diagram.



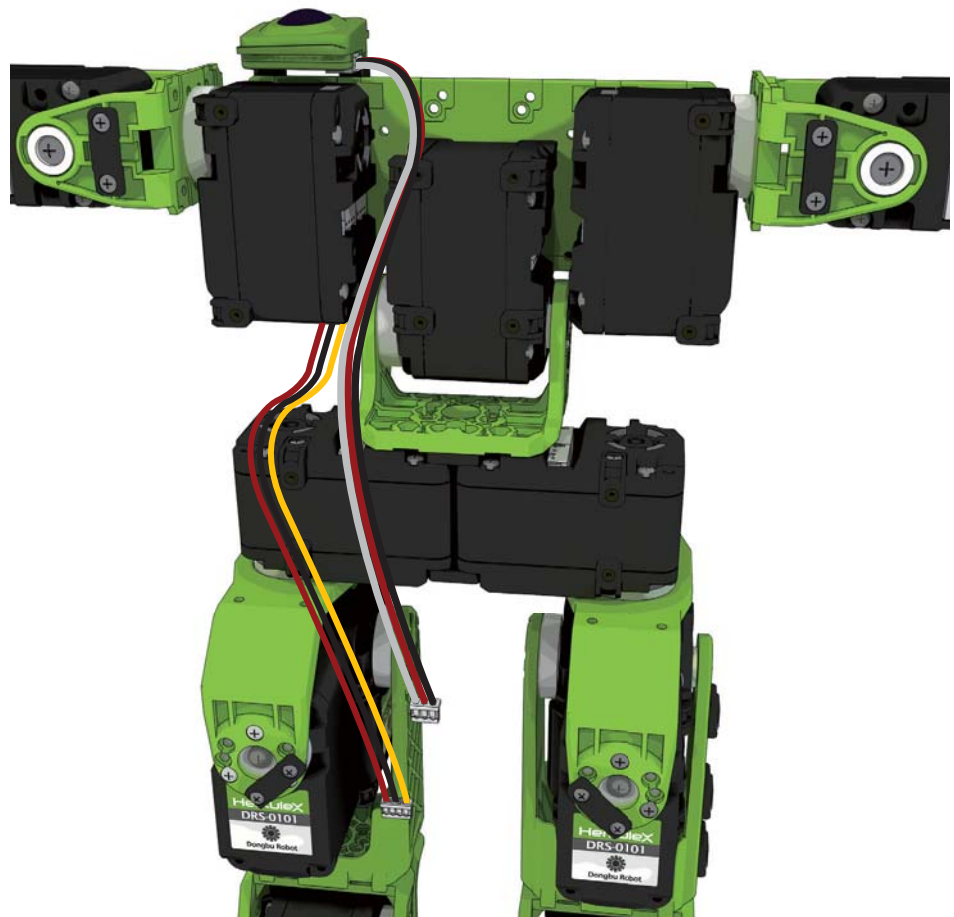
Required Parts



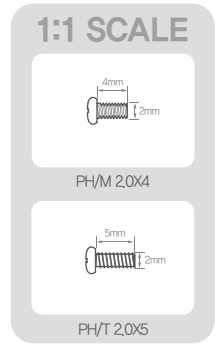
DRA-0021
PSD Harness
3pin (200mm) **1ea**



DRA-0027
IR Receiver
Harness 3pin (150mm) **1ea**

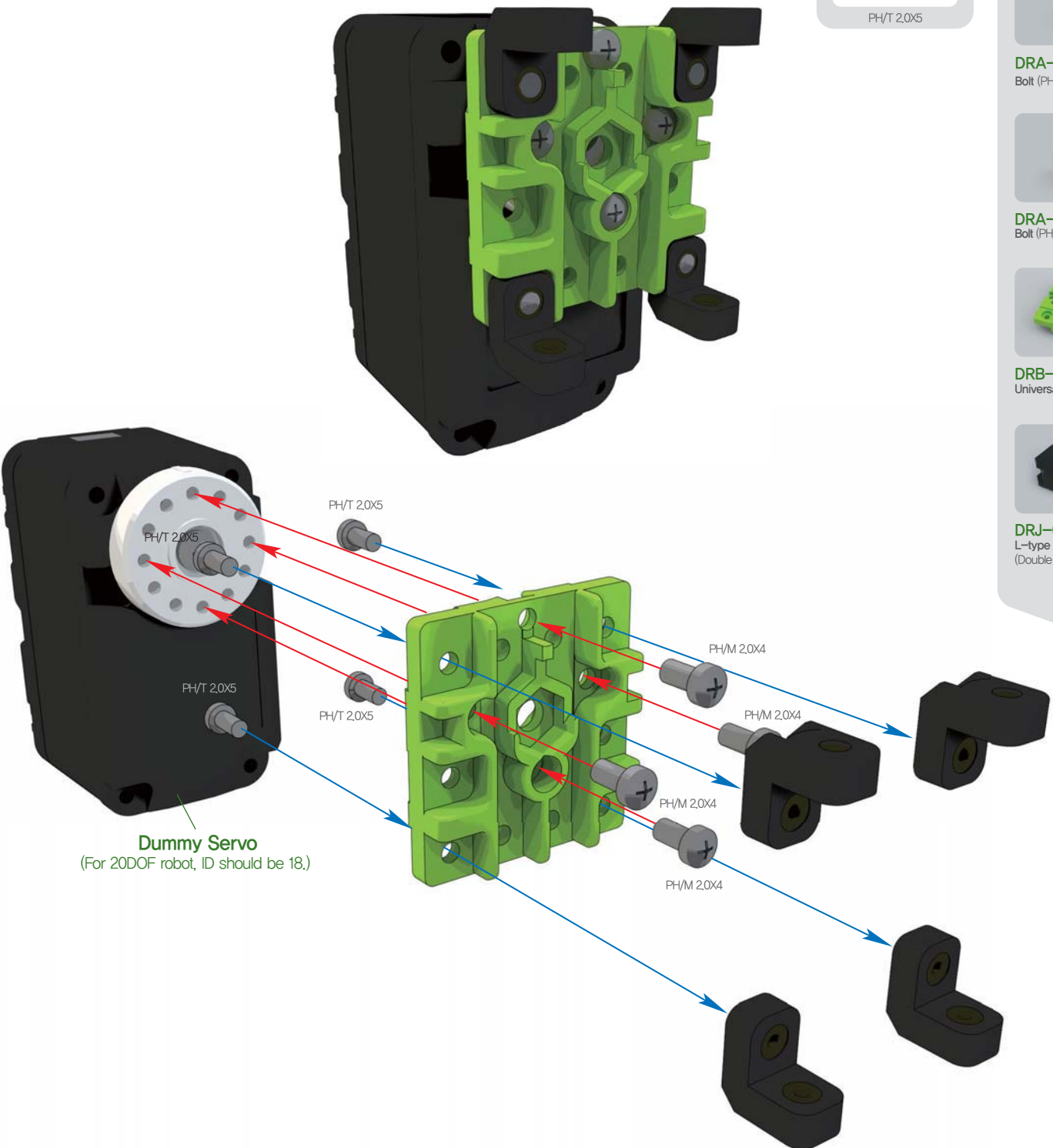


- 1 Place 4 **DRJ-0002** (L-type Joint Double Nut) on the **DRB-0004** (Universal Plate) and attach using 4 **DRA-0064**(Bolt PH/T 2.0X5).
- 2 Attach **DRB-0004**(Universal Plate) to the dummy servo using 4 **DRA-0056**(Bolt PH/M 2.0X4).



Required Parts

- DRB-0006** Dummy Servo **1ea**
- DRA-0056** Bolt (PH/M 2.0X4) **4ea**
- DRA-0064** Bolt (PH/T 2.0X5) **4ea**
- DRB-0004** Universal Plate **1ea**
- DRJ-0002** L-type Joint (Double Nut) **4ea**



- 1 Place DRB-0001(Back) beside the assembled head & body.
- 2 Place 4 DRJ-0001(L-type Joint Single Nut) at each corner of DRB-0001(Back) and attach using 4 DRA-0058(Bolt PH/M 2.0X6).
- 3 Use 8 DRA-0056(Bolt PH/M 2.0X4) to complete assembly as shown below.

Required Parts



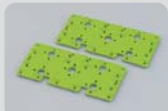
DRA-0056
Bolt (PH/M 2.0X4) **8ea**



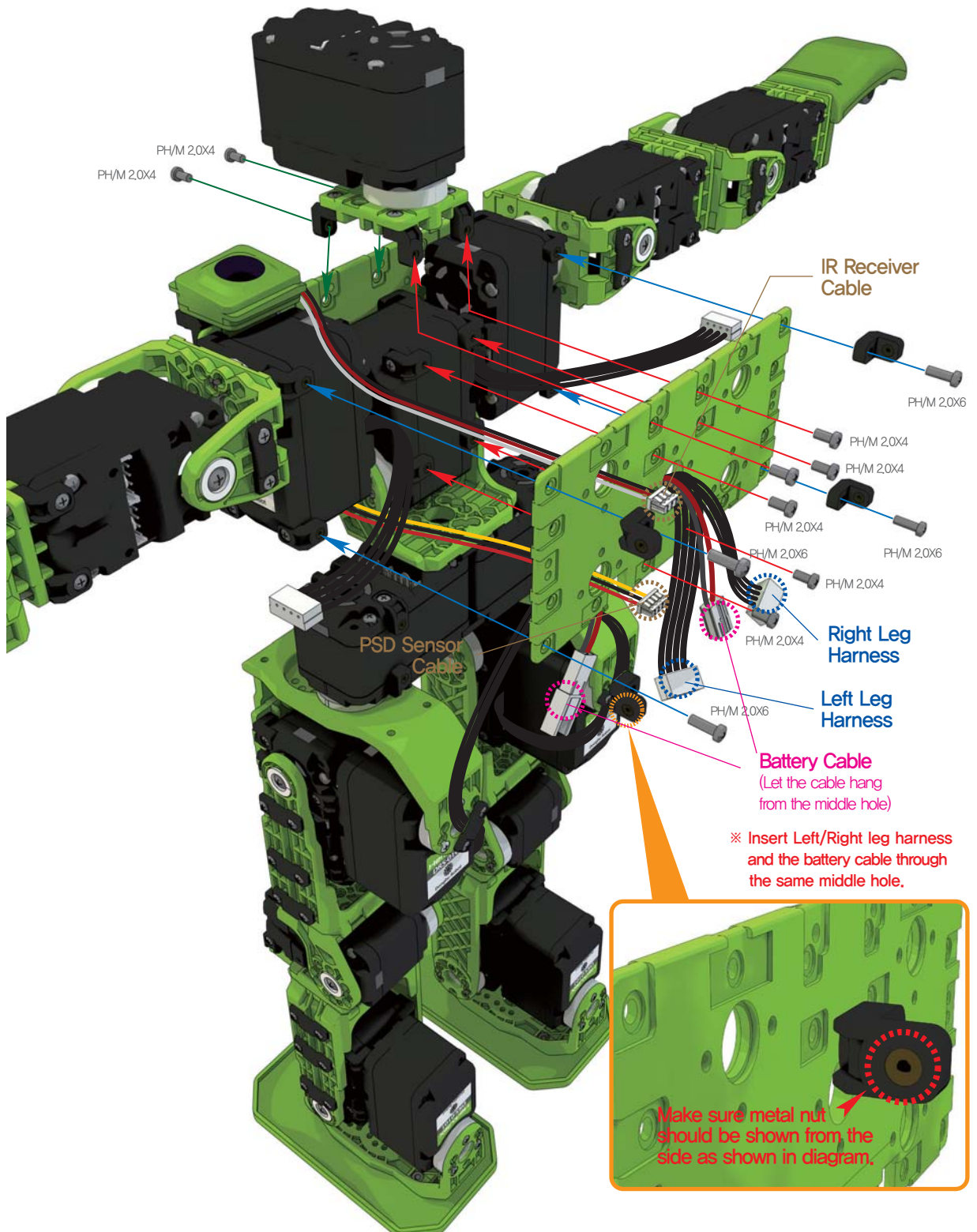
DRA-0058
Bolt (PH/M 2.0X6) **4ea**



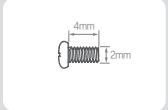
DRJ-0001
L-type Joint
(Single Nut) **4ea**



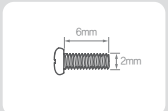
DRB-0001
Back **1ea**



1:1 SCALE



PH/M 2.0X4



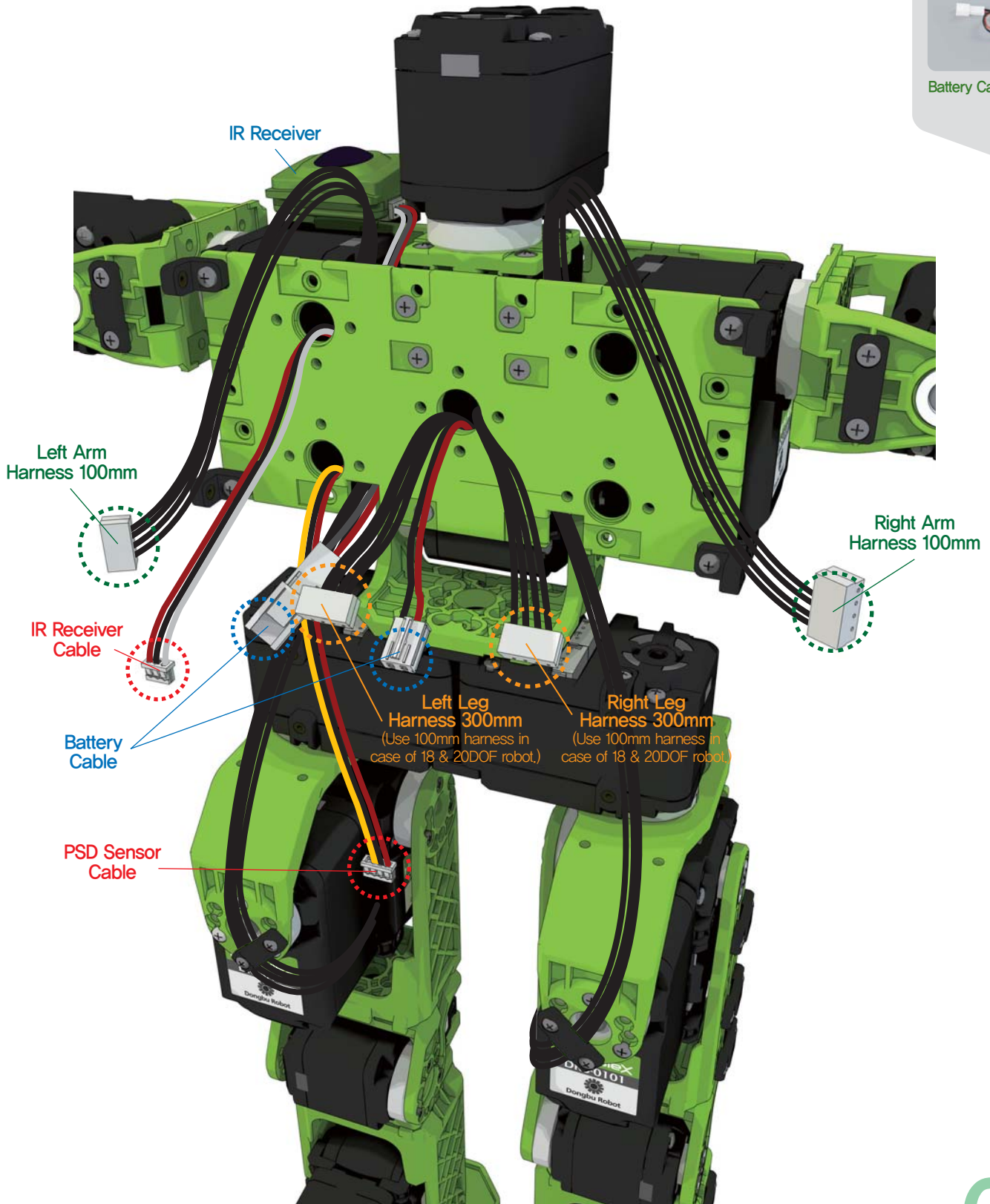
PH/M 2.0X6

- 1 Pull the harness cables through the holes in the DRB-0001(Back).
Battery cable uses the same hole as the leg harness cables.
- 2 Pull the DRA-0003(Harness 100mm) cables from the arms out to the back instead of using the hole.

Required Parts



Battery Cable 1ea



1 Attach the battery holder to the waist area using 4 DRA-0056(Bolt PH/M 2.0X4).

Required Parts

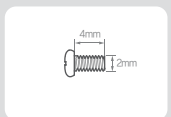


DRA-0056
Bolt (PH/M 2.0X4) **4ea**

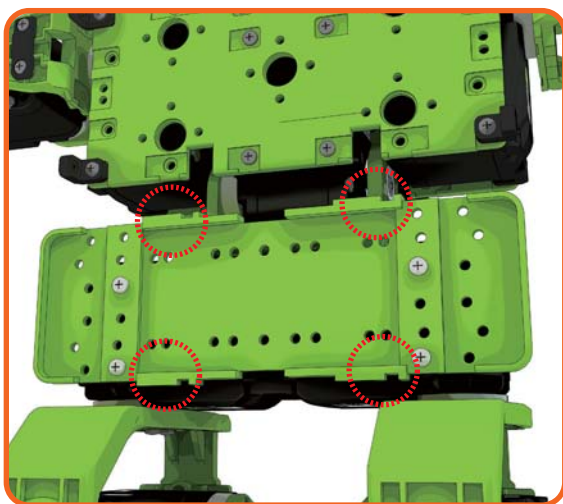
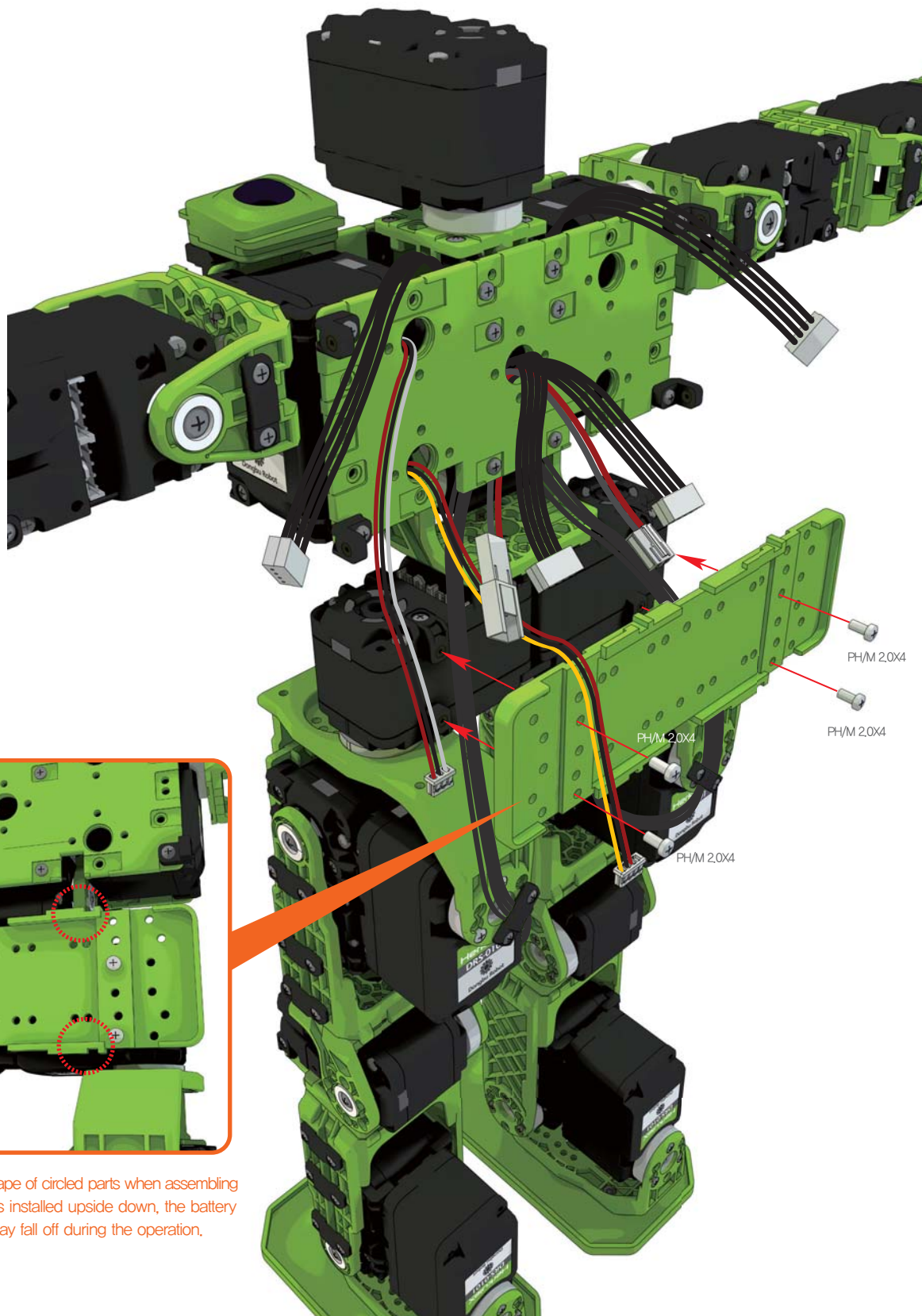


DRB-0007
Battery Holder **1ea**

1:1 SCALE

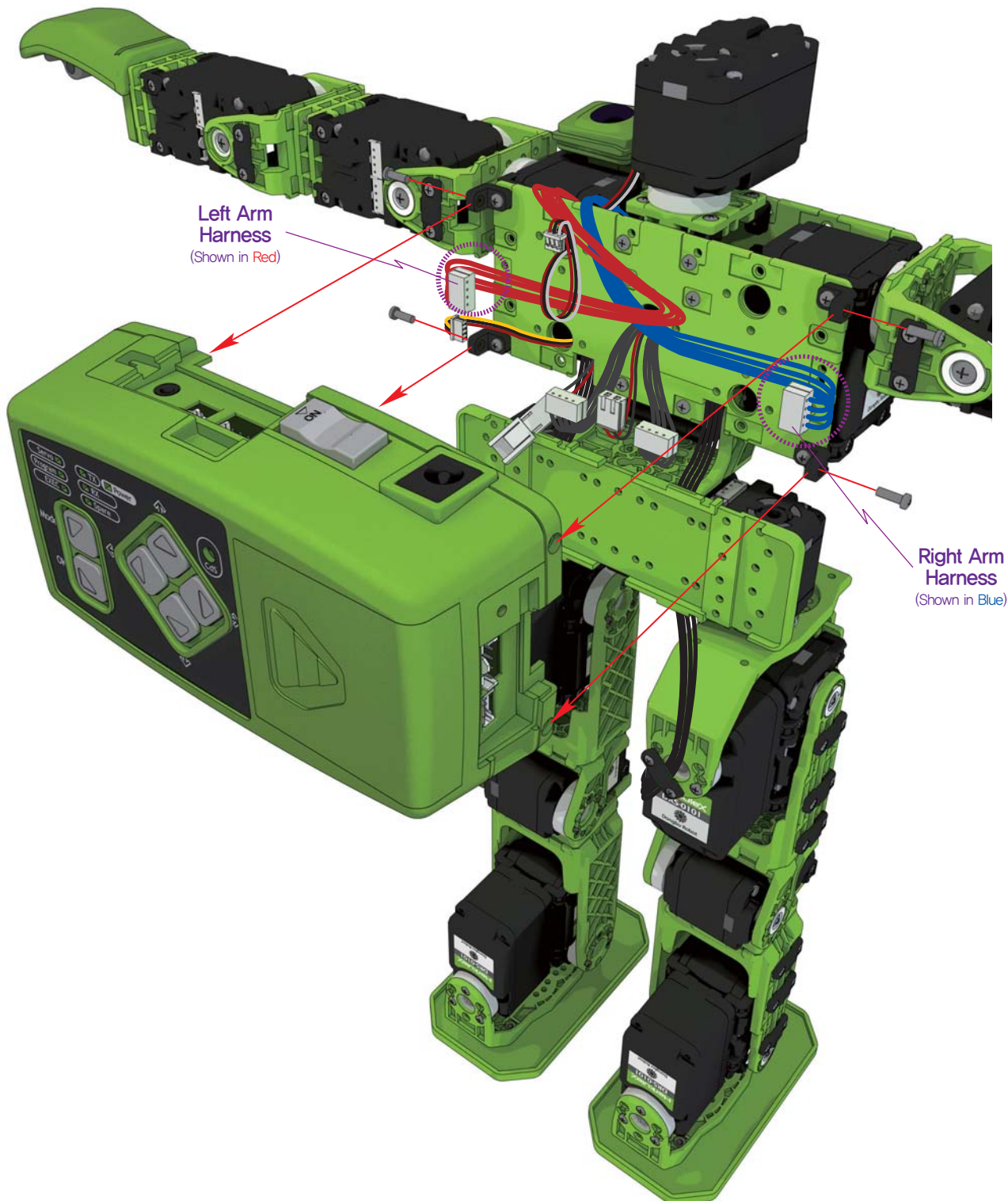


PH/M 2.0X4



※ Please pay attention to the shape of circled parts when assembling battery holder. If the holder is installed upside down, the battery cannot be fixed firmly and may fall off during the operation.

- 1 Attach the controller to the back using 4 DRA-0056(Bolt PH/M 2.0X4).
To arrange the cables neatly, pull the harness cables towards the back of the controller as much as possible.



Left Arm
Harness
(Shown in Red)

Right Arm
Harness
(Shown in Blue)

Required Parts

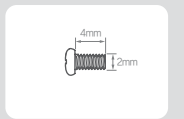


DRA-0056 4ea
Bolt (PH/M 2.0X4)



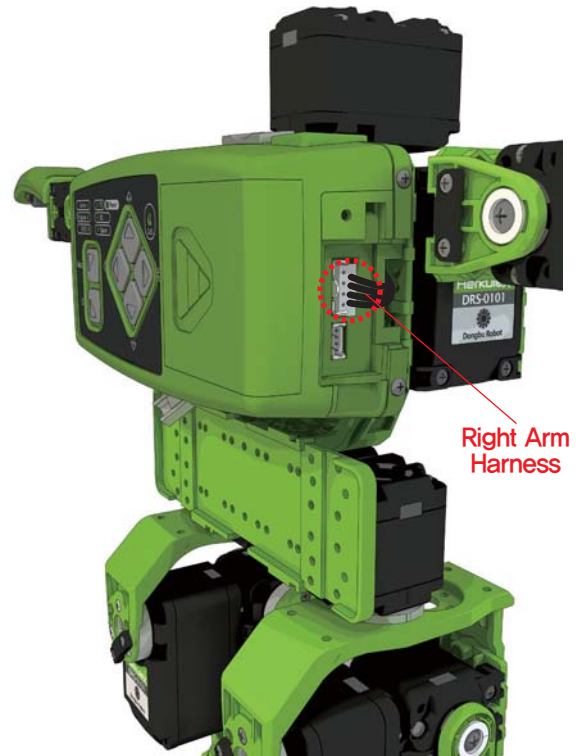
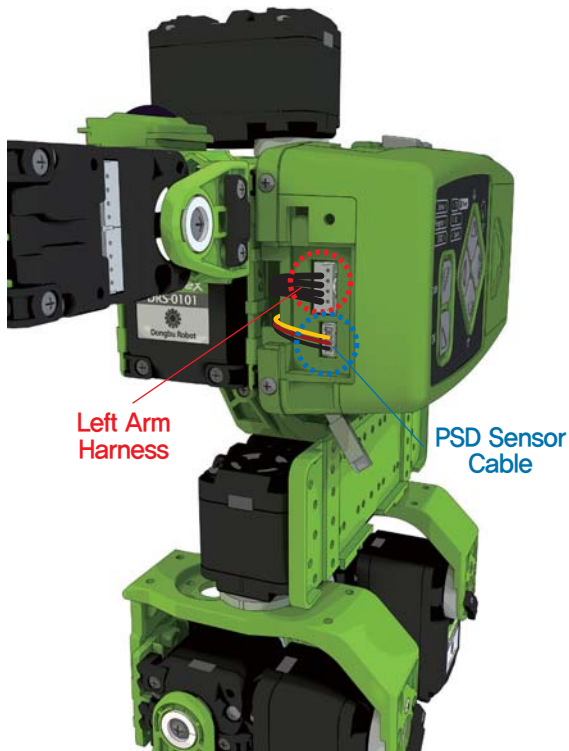
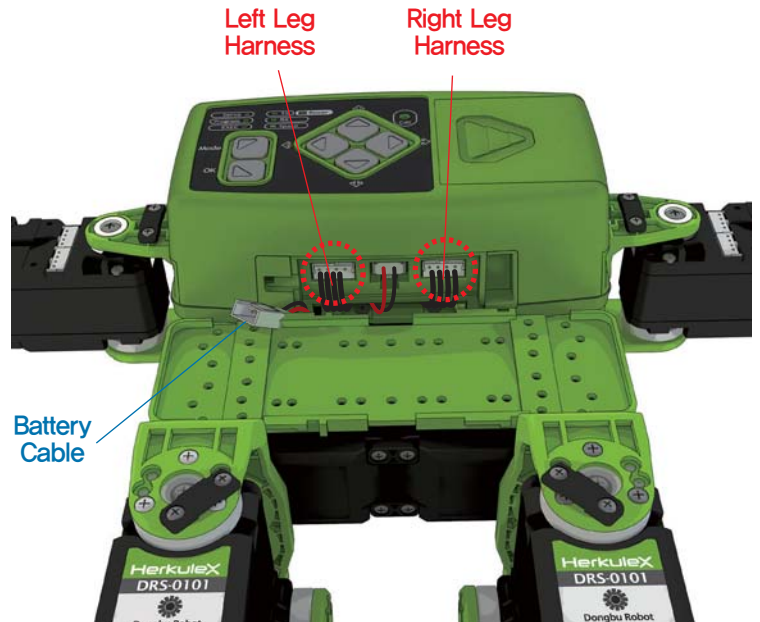
DRC-005T 1ea
Controller

1:1 SCALE



PH/M 2.0X4

1 Connect the cables to the controller as shown in the diagram.



- 1 Slide and attach the battery pack to the battery holder as shown in the diagram below.
- 2 Connect the battery cable to the controller.

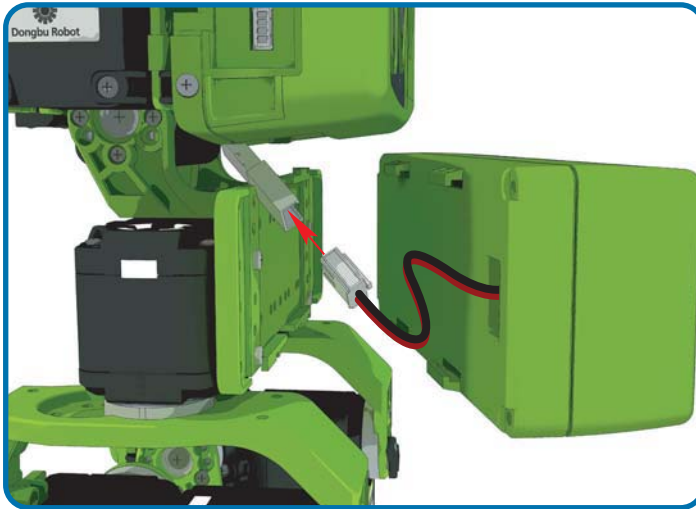
Required Parts



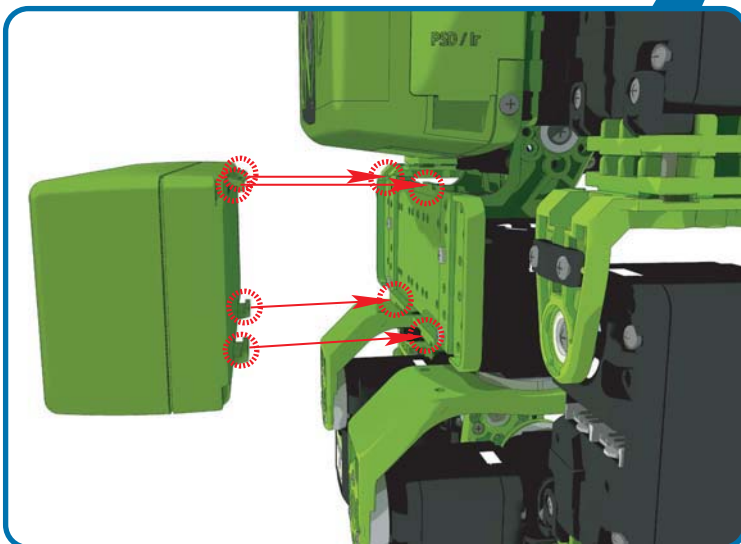
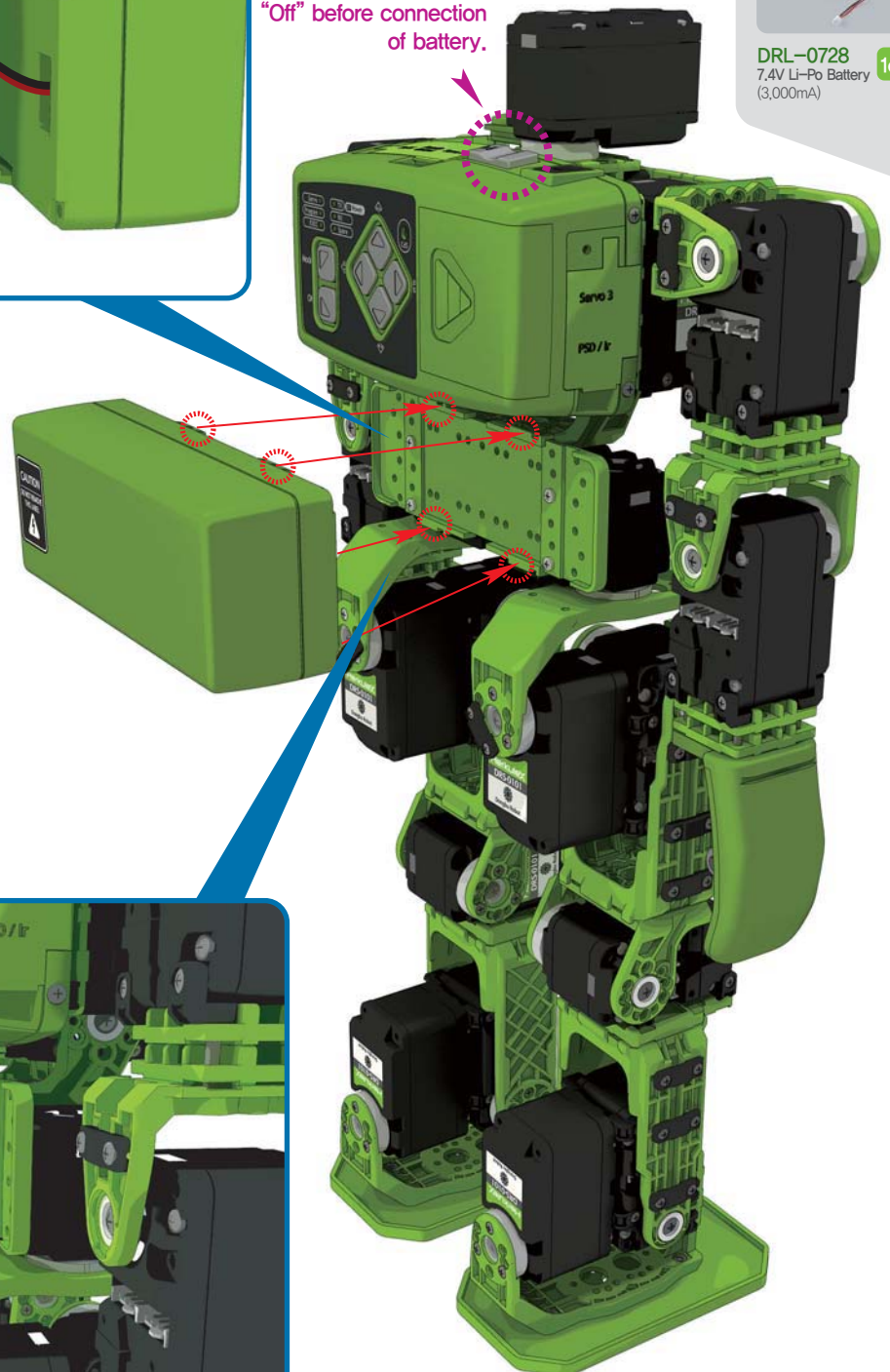
DRB-0007
Battery Case 1ea



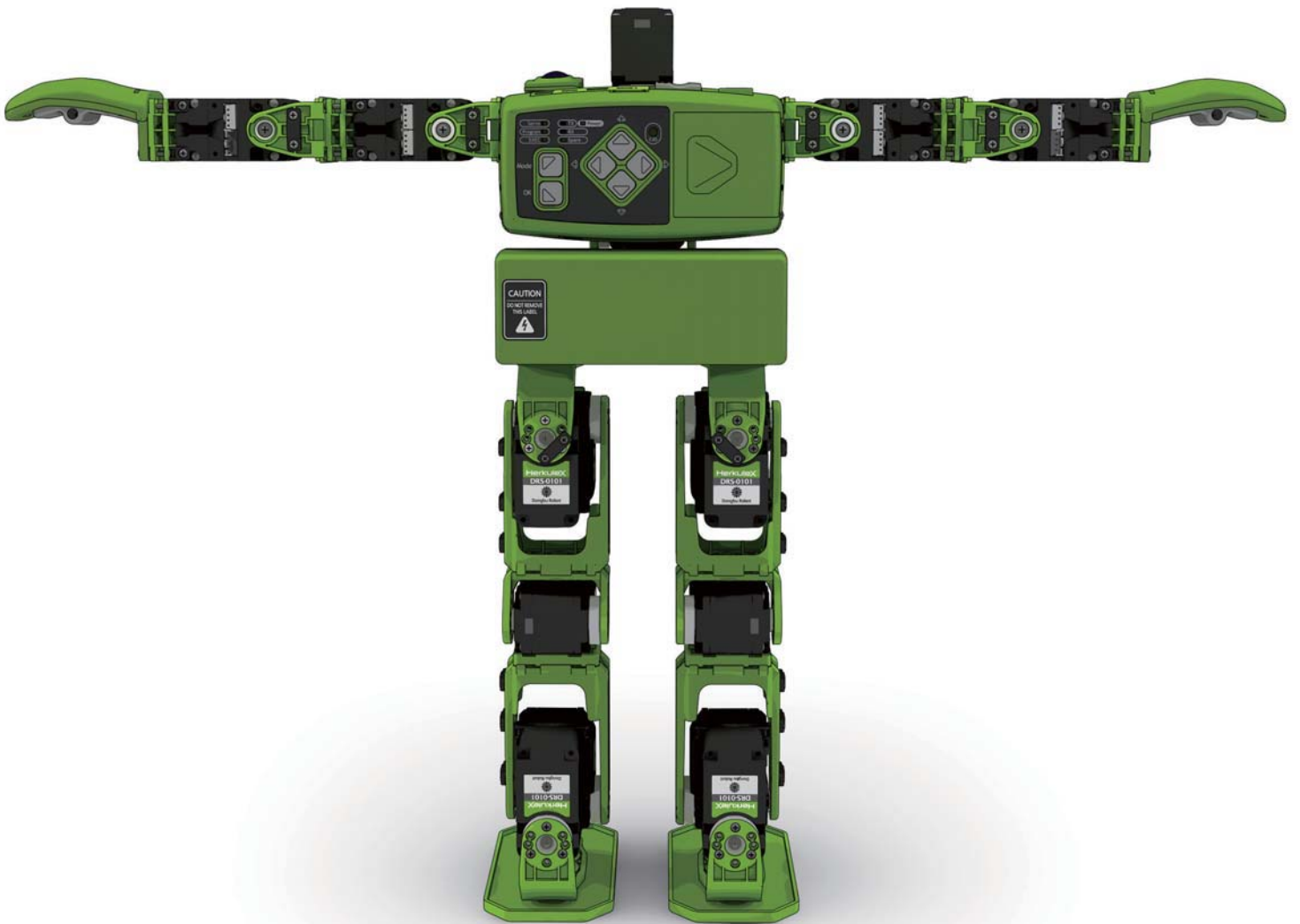
DRL-0728
7.4V Li-Po Battery
(3,000mAh) 1ea



Please make sure the
Power On controller is
"Off" before connection
of battery.







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Quick Manual

1. Software & Manual Download

Download "Task Editor Program / Motion Editor Program / User Guide Manual / Assembly Manual / Register Manual" from the link below.

- www.hovis.co.kr/guide
- www.dongburobot.com > Customer Support > For Service > Archives
- www.dongburobot.com > Quick Menu > For Service > Archives

2. Assemble the robot following instructions in the assembly manual.

3. Refer to the article "Troubleshooting"->"Calibration(Zero Point Setting)" on user guide manual to adjust the robot posture.

4. Install DR-SIM (Motion Editor), DR-Visual Logic (Task Editor) in the PC.



HOVIS Lite

The HOVIS Lite is a 16DOF basic robot kit. PSD sensor, sound sensor and light sensor are basically fitted in HOVIS Lite and as optional accessories, 3 axis Gyro-accelerometer sensor, and Zigbee modules with PS2 type controller are available.

Based on HOVIS Lite, robot can be upgraded to HOVIS Eco and even HOVIS Genie using HOVIS upgrade pack. Experience robotics world with HOVIS Lite today!



Dongbu Robot

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