


KHR-3HW





KHR-3HV
5pcs Servos
for KHR-3HV
Conversion set
Assembly Manual





Safety Precautions


Due to the nature of this product as an assembly kit, consequences, damage, or injury resulting from the use of this product are the user's responsibility. Please use this product with that in mind. In order to prevent danger to the user and others, as well as property damages, the safety precautions listed below must be followed.


 The following signs are used with each description to indicate the level of potential harm that may be caused by ignoring the precautions.


 **DANGER** : This sign indicates that "there is imminent danger of death or severe injury".

 **WARNING** : This sign indicates that "there is a possibility of death or severe injury".


 **CAUTION** : This sign indicates that "there is a possibility of injury or material damage".

 The following graphics are used with corresponding descriptions according to the type of precaution. (The following are only part of the graphics used in this manual.)

 : This pictorial indication signifies that the action is "prohibited".


 : This pictorial indication signifies that the action is "mandatory".


DANGER

 **Work with sufficient space in a physically and emotionally alert and observant state.**
There is danger of death or serious injury by unexpected accidents.

WARNING

 **Keep all parts away from small children.**
Parts such as aluminum frame brackets can cause injury.

 **Disconnect the HV battery connector immediately if any thing abnormal occurs.**
*Damage in the robots body. *Foreign objects in the robots body. *Smoke. *Odd smell. *Abnormal heat or warmth. Continued use under such conditions can result in fire or electric shock.
*Should any abnormalities be observed, immediately stop using the product and contact our service section.

 **Do not break the charger and cable.**
Do not damage, modify, bring in close contact with thermal appliances, or use under forced pressure. Continuous use under such conditions can result in fire or electric shock.
*For repair of cords and cables, please contact our service section. *If the product becomes wet, please consult our service section.



Disconnect the power plug from electrical outlets when the charger is not being used.

When plugged to an outlet, a small amount of electricity flows into.



Do not disassemble or modify the servo or board of the finished product.

Disassembly and repair, other than those stated in this Instruction, is prohibited. Incorrect disassembly or assembly can cause malfunctions, fire and/or electric shock.

*In case of any malfunction, please contact our service section.



Do not allow the product to become wet or use under high humidity and conditions where dew condensation occurs.

Such conditions may result in malfunction since this product is composed of electronic parts. Such conditions can also result in electric shock and fire by electrical shorting.



During operation, always exercise caution and be prepared for unforeseen accidents.

Please always remember that due to the nature of this product as an assembly kit, safety is not guaranteed for the movements resulting from the operation of the product. Please take extra precautions since an injury of the fingertips and fracture of bones may result when movements of the product greatly differ from what you expect.



Recognize the possibility that components can short circuit.

Short circuit can easily occur since control board terminals are bare. Short circuits can cause the battery, components, and wiring materials to ignite. Incorrect wiring can also result in similar danger.



CAUTION



For overseas use, local approval or license may be needed. Please check.

In certain areas or countries, legal procedures may be necessary prior to using the product.

*Our support does not apply to the use of this product outside of Japan.



When detaching the charger and battery, firmly hold the connectors.

Detachment by holding the cord may cause breaking of wires and a possible short circuit, which can result in electric shock or fire.



Do not operate on an unstable work surface.

The product can lose balance and collapse or fall off causing injury.



The HV battery included with this product is a Lithium-Ferrite battery. To protect valuable environmental resources, used batteries should be recycled, not disposed of as trash.

Thank you for purchasing the "5pcs Servos for KHR-3HV Conversion set".

This product is the set of servo, cable and other parts for extending the KHR-3 HV from standard 17 axis to 22 axis. Please refer to this assembly manual and assembly manual of the KHR-3HV for conversion method.

Also, please visit our website "kondo-robot.com".

After Sales Services

- Inquiries regarding this product and accessories should be directed to our service section.

Kondo Kagaku co., LTD. Service Section

4-17-7, Higashi Nippori, Arakawa, Tokyo

116-0014

Tel : +81-3-3807-7648 (Direct line to Service Section)

9:00-12:00 13:00-17:00 excluding Saturdays, Sundays and national holidays

- Inquiry by email is welcomed at the following email address; however, please take note that replies may require some time.

support@kondo-robot.com

- Notices and updates regarding this product are posted on our website.

<http://www.kondo-robot.com>

Caution

1 :

Please keep in mind that due to the nature of this product as an assembly kit, the motion of the assembled product cannot be guaranteed. Further, due to the fact that the movements of the assembled product depend in large part on the method by which it was assembled, we may not be able to provide precise answers to your questions regarding operations.

2 :

This product is constructed for people of all ages to enjoy a bipedal robot. However, this product is not a toy, and contains parts and tasks that would be difficult for young children to understand or perform. For those parts and tasks, parents or teachers should provide assistance.

3 :

The assembly and operation of this product requires the use of a personal computer (Windows XP(SP2) or Vista) with a USB port. It is assumed that the user has basic computer skills. Please note that we cannot provide answers to general questions or inquiries regarding computers or Windows.

- All company names, trade names, and logo marks that appear in this Instruction are trade marks or registered trade marks of each respective company.
- The contents of this Instruction and product are subject to change without notice for improvement or other reasons.

Preparation

The following items are required for the assembly and operation of this product:

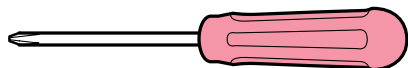
● Personal computer

OS: Windows Vista, 7, 8, 8.1, 10
CD-ROM drive (for installation) 1 or more USB 2.0 port(s)
※ Microsoft. NET Frame work 2.0 is required

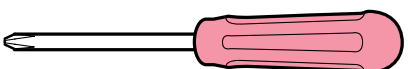
● Tools

● #0 and #1 screwdriver

#0



#1



● Small blade

● Nippers

for cutting parts and board cover

● Tape

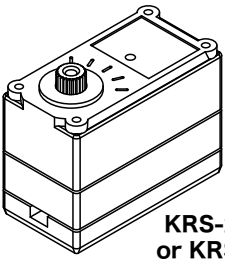
● Screw locking adhesive

(moderate strength)
convenient for preventing screws and nuts from loosening.

Component List

Please check the contents of the set before starting assembly. In addition, since unused parts attached to the KHR-3HV are used for assembly, please confirm in advance about this part as well.

Servo Motor



**KRS-2552RHV
or KRS-2552HV
(5)**

ID=0(Blue)/3(Blue)/3(Red)/
5(Yellow)/ 5(Green)

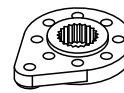
Screw



M2-4 Low Head Screw (10)

* Use screws removed from
the KHR-3HV.

Parts included with KHR-3HV



**YHR-A1-4
Small horn
(PCDφ12-M2-offset0) (5)**



**M3-8
Low Head Horn Screw (5)**

* It is a part not used in the assembly of
the KHR-3HV.

Connection Cable (Total 11pcs)

**ZH Connection Cable A (ZH/ZH Connector) 50mm
(2)**



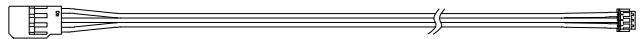
**ZH Connection Cable A (ZH/ZH Connector) 200mm
(4)**



**ZH Connection Cable A (ZH/ZH Connector) 300mm
(1)**



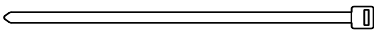
**ZH Connection Cable B (ZH/ZH Connector) 350mm
(2)**



**ZH Connection Cable B (ZH/ZH Connector) 550mm
(2)**



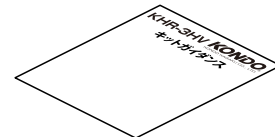
* Please use in conjunction with the cables
already used for assembly of the KHR-3HV.



Nylon Strap (20)



CD-ROM (1)



Kit guidance (1)

Before starting work, please read through this instruction manual and grasp the whole work content. Also, check the parts to be used before working. Since this product is an expansion kit, please understand about beforehand because you may use parts included in the main robot kit or change the use place of parts already in use.

Follow the steps below.

[1] Disassembly of the robot

1. Separation of the body: Separate the body into upper body and lower body.
2. Disassemble the waist unit: Remove the three dummy servos at the waist.
3. Disassemble the arm: Remove the dummy servo of the arm.

[2] Assembly

1. Setting Servo Origin: Set the axis of the servos to the neutral point.
 2. Assembly the waist unit: Combine the servos for expansion to assemble the waist unit.
 3. Assembly the upper body: Add extension servo to both arms and reassemble the arms.
 4. Assembly the lower body: Attach the legs to the waist unit already assembled.
 5. Connect the body: After connecting the upper body and lower body, attach the backpack.
- * Use the battery when setting the neutral of the servo. Charge the battery in advance.

[3] Wiring: Wire the cable to the robot.

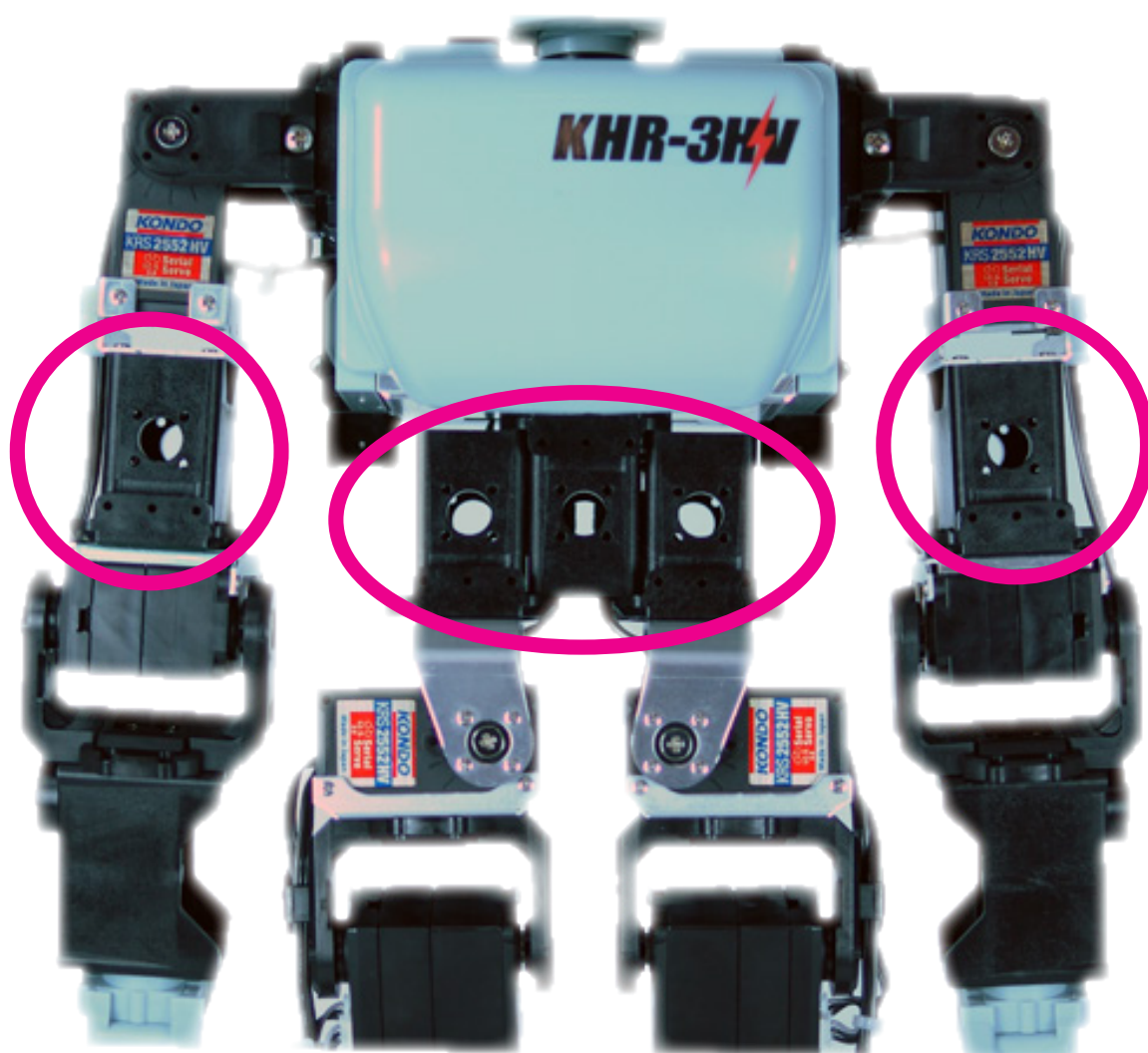
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Where to add the servo

Using this expansion set, replace the dummy servo of 5 positions with the servos.



Disassembly of the robot

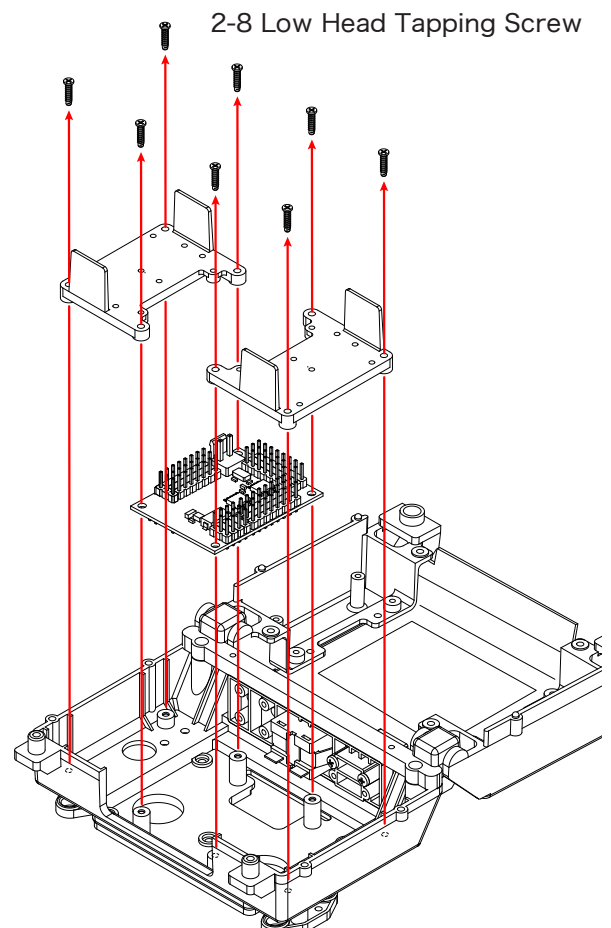
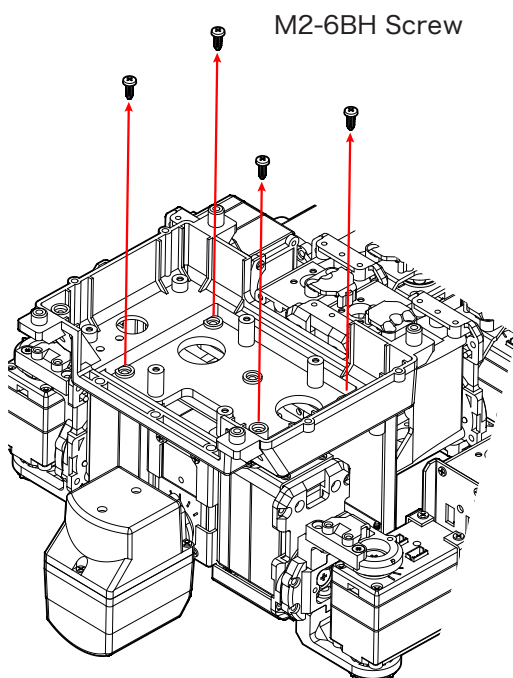
Remove the dummy servos attached to the part of the KHR-3HV expansion. Since the screws and parts removed are used when installing the extended servos. Please keep it.

Disassemble the waist unit

In order to disassemble the waist unit, it is necessary to separate the connection between the body and the waist. First, remove the backpack and remove the screws at the connection.

1 Remove the backpack

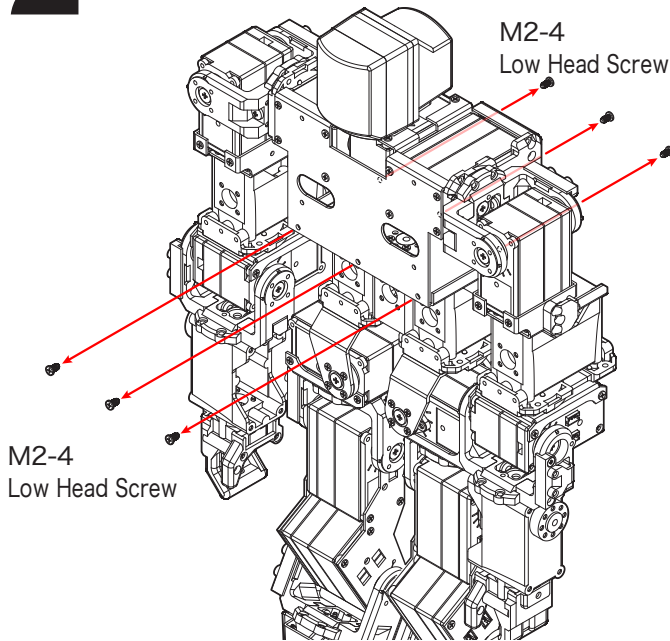
Unplug all wiring of the control board, remove the 2-8 Low Head Tapping Screws and remove the board and the parts mount A.



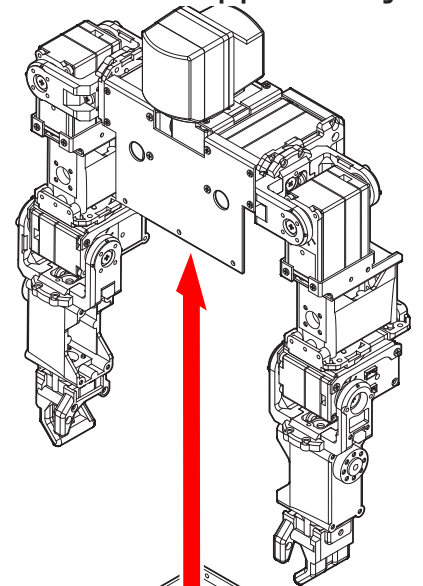
Remove the M2-6BH Screw securing the backpack and remove the backpack.

Disassembly of the robot

2 Separate the body into upper body and lower body

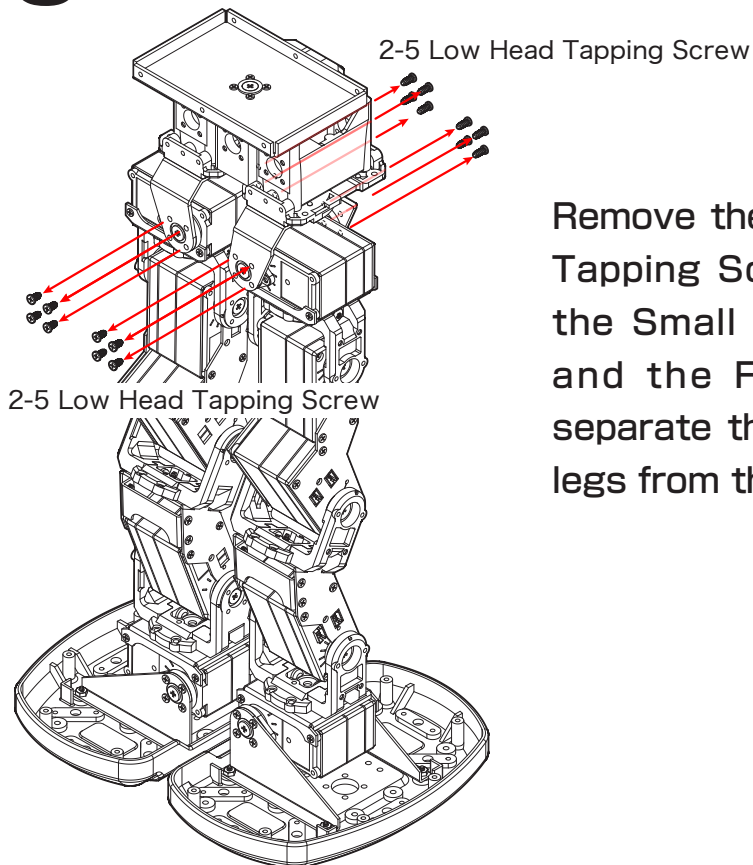


Remove the M2-4 Low Head Screws fixing the connecting part between upper body and lower body.

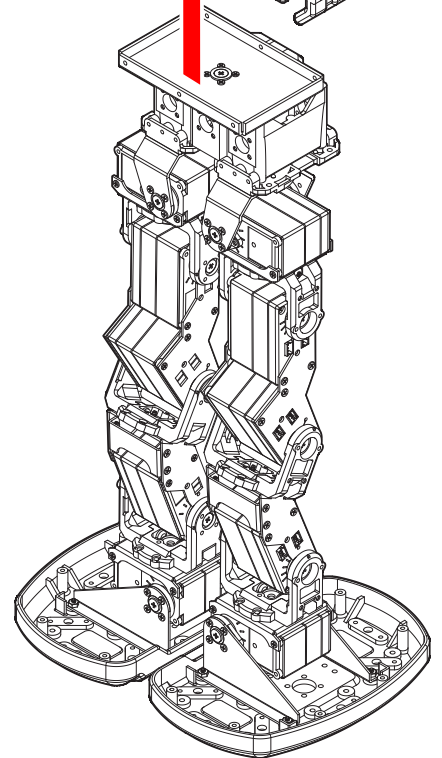


Remove the screw, you can separate the upper body and lower body. Please take care of wiring and separate them. (In the illustration on the right, wirings are omitted for notation.)

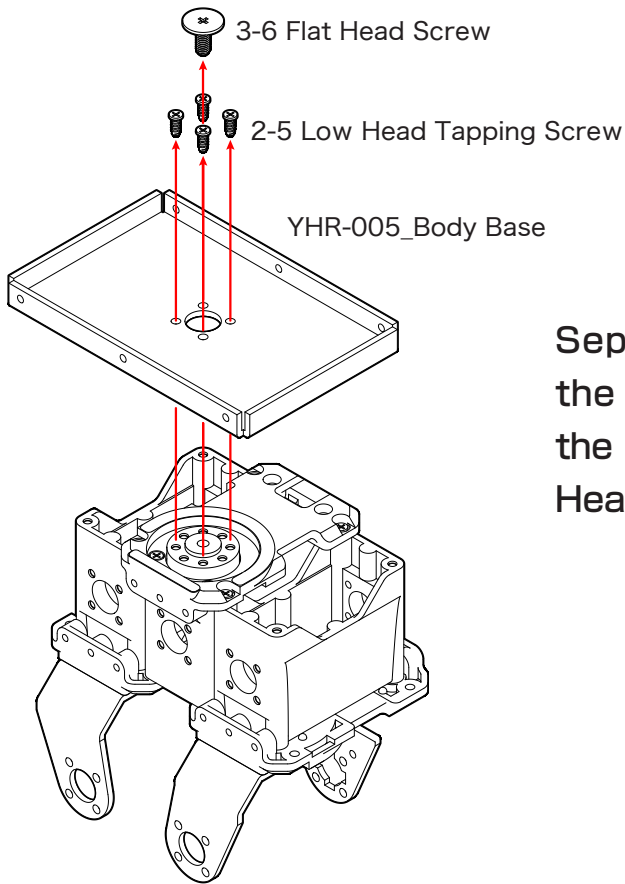
3 Separation of the waist unit and the leg



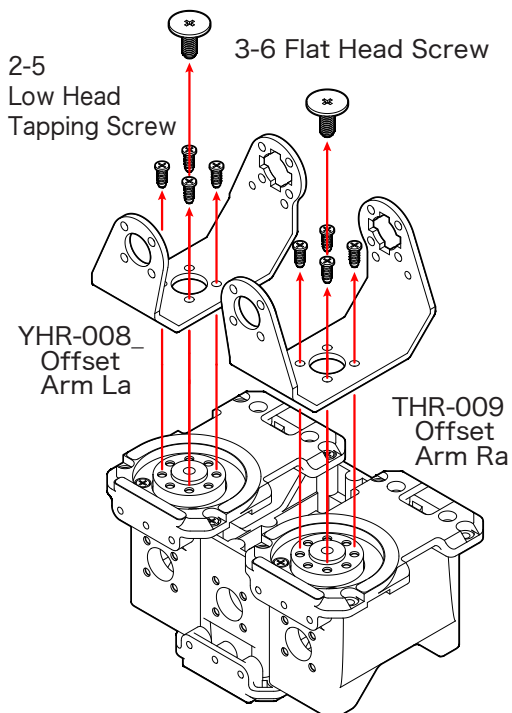
Remove the 2-5 Low Head Tapping Screws securing the Small Diameter Horn and the Free Horn and separate the left and right legs from the waist unit.



4 Disassemble the waist unit



Separate the YHR-005 Body Base from the waist unit. Disassemble by removing the 3-6 Flat Head Screws and the 2-5 Low Head Tapping Screws.



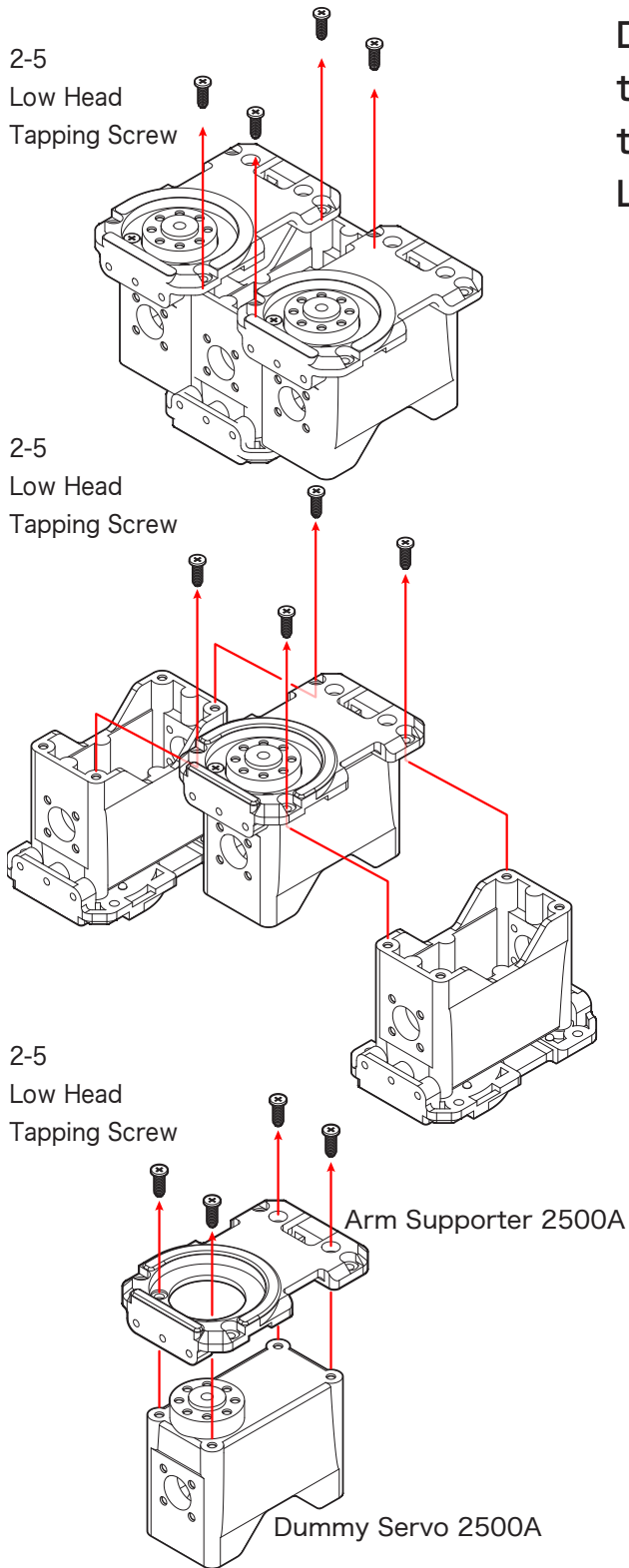
Remove the Offset Arms La and Ra. Disassemble by removing the 3-6 Flat Head Screws and the 2-5 Low Head Tapping Screws, respectively.

* The left and right Offset Arms are very similar. Please keep it separated so as not to make a mistake.

Disassembly of the robot

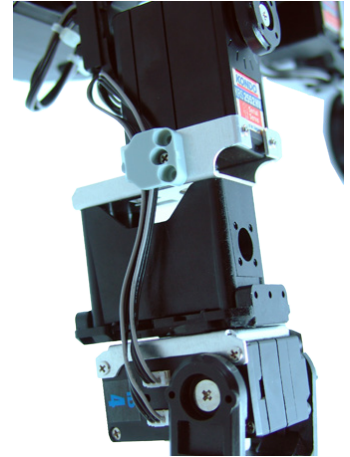
5 Remove the Dummy Servos

Disassemble the Arm Supporter 2500A and the Dummy Servos. As shown in the figure on the left, Disassemble by removing the all 2-5 Low Head Tapping Screws.



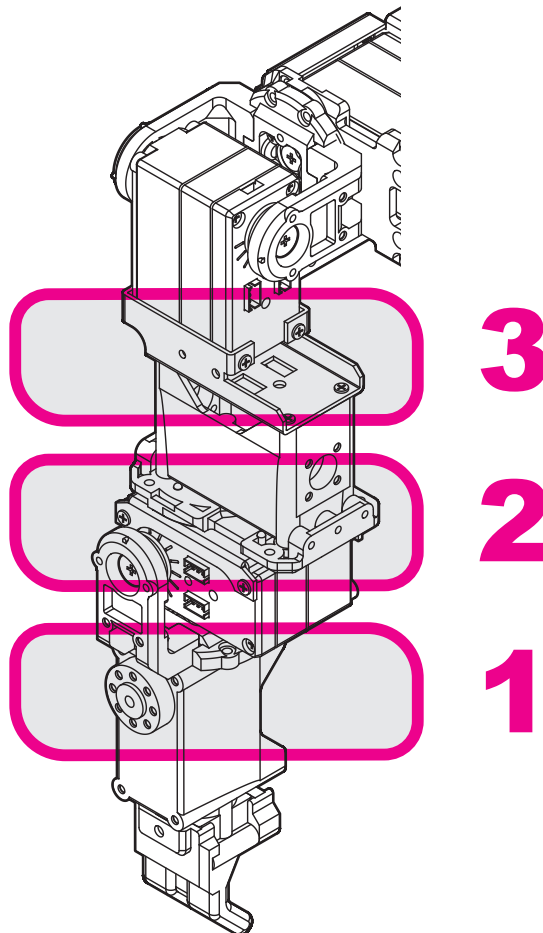
Disassemble the arm

The picture on the right is the enlargement of the elbow unit R. Remove the dummy servo of center. Disassemble in the following order.



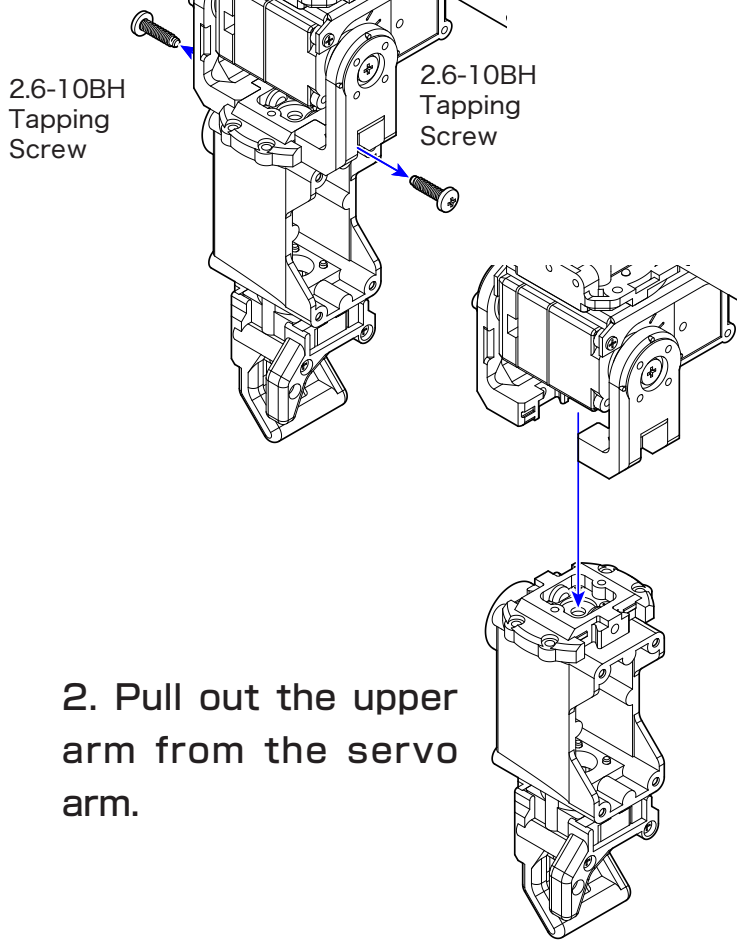
1 Arm removal

As shown in the image below, remove them in order from the elbow. Please also remove the cable.

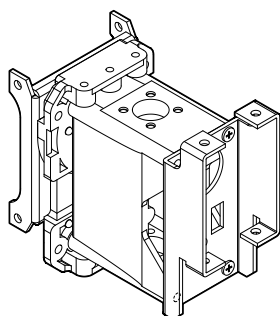
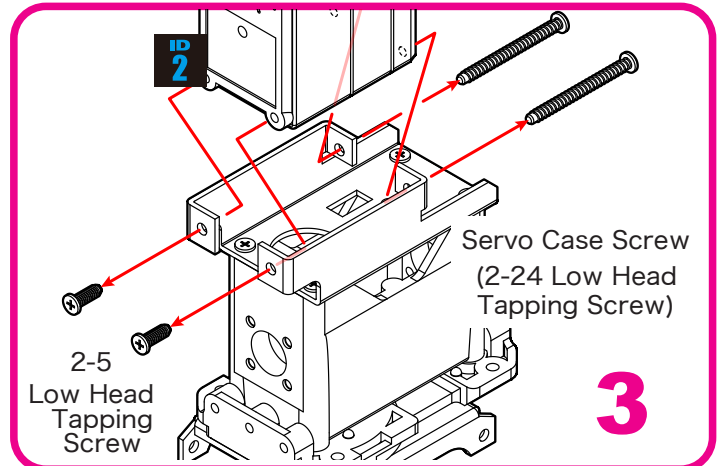
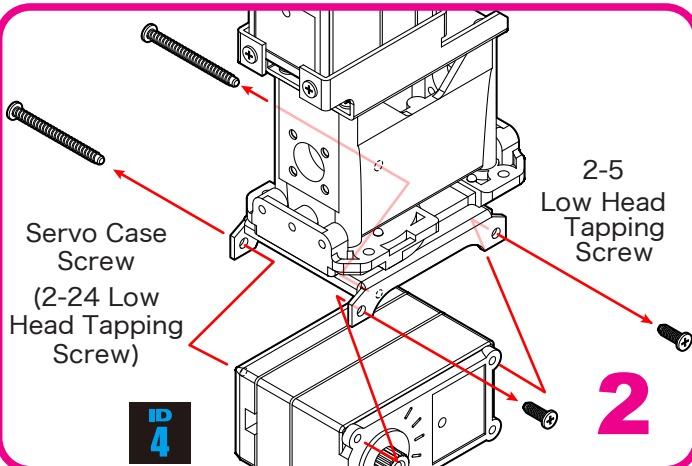
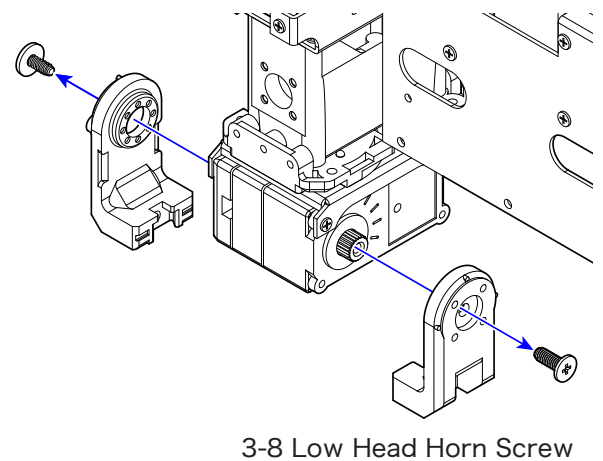


Disassembly of the robot

1. Remove the 2.6-10BH Tapping Screws of the servo arm.



2.6-6 Flat Head Screw



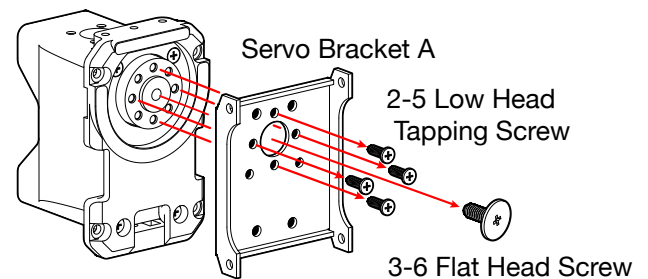
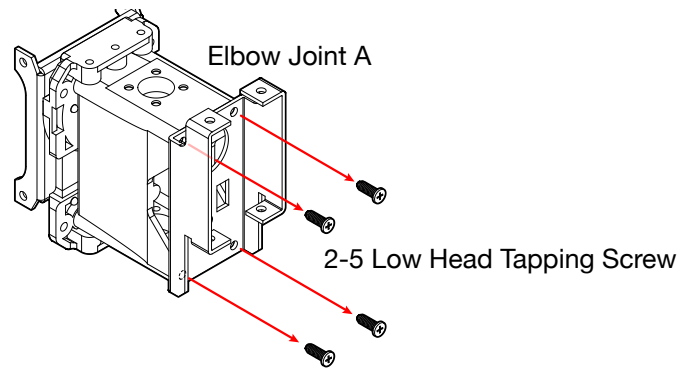
When disassembling, the dummy servo unit shown in the left figure remains. On the next page, disassemble further from here.

2 Disassemble the unit

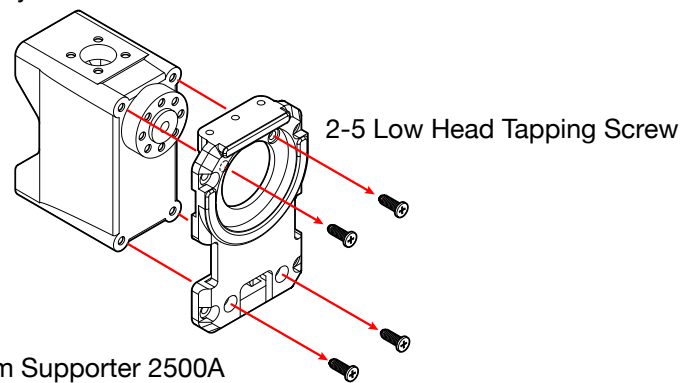
Disassemble the dummy servo unit according to the procedure on the right figure.

When the elbow unit R is disassembled, the following parts remain. Please check the type and quantity.

YHR-006_Servo Bracket A	1pc
YHR-007_Elbow Joint A	1pc
YHR-C2 Dummy Servo 2500A	1pc
Arm Supporter 2500A	1pc
2-5 Low Head Tapping Screw	16pcs
Servo Case Screw	4pcs
(2-24 Low Head Tapping Screw)	
3-6 Flat Head Screw	1pc



Dummy Servo 2500A



Disassemble the elbow Unit L on the other side in the same way.

Even after disassembling the elbow unit L, the same parts as above remain. Please keep this part so that it will not be lost as it is used for servo installation.

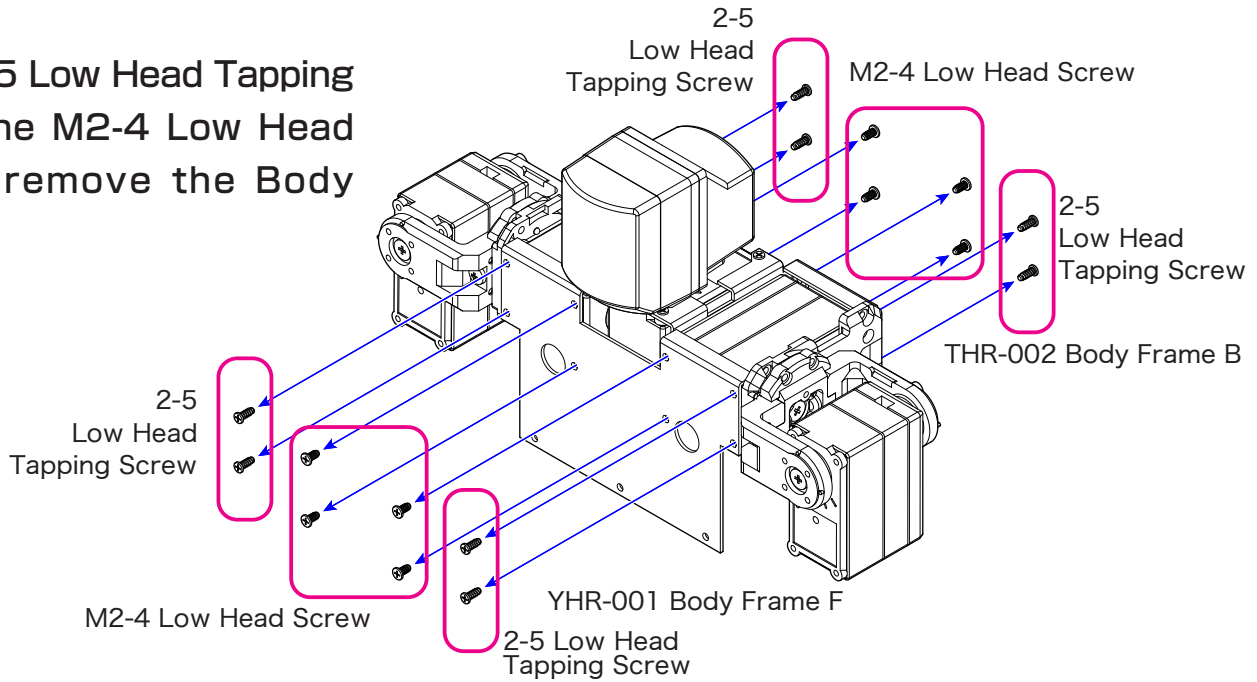
Disassembly of the robot

Disassemble the chest

In order to add the servo (ID0(Blue)) of the yaw axis of the waist, it is necessary to change the wiring of the shoulder servo (ID1 (Blue)). Therefore disassemble chest once.

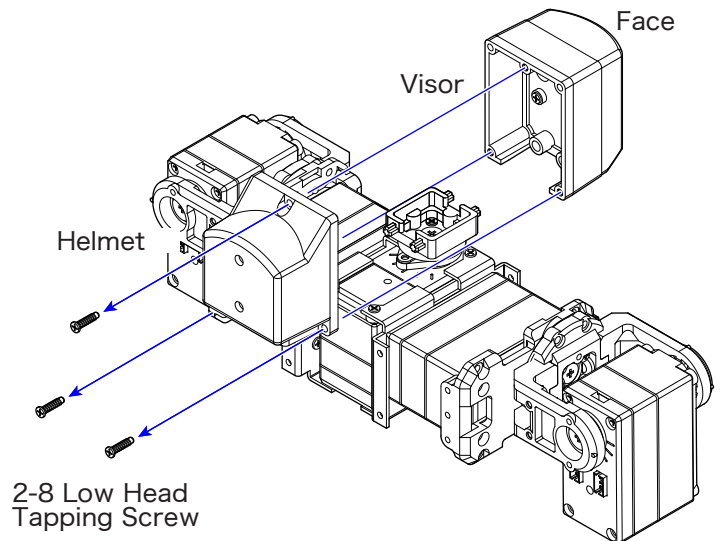
1 Remove the Body Frame F and B

Remove the 2-5 Low Head Tapping Screws and the M2-4 Low Head Screws, and remove the Body Frame F and B.



2 Remove the head

Remove the 2-8 Low Head Tapping Screws securing the helmet and visor and remove the head.

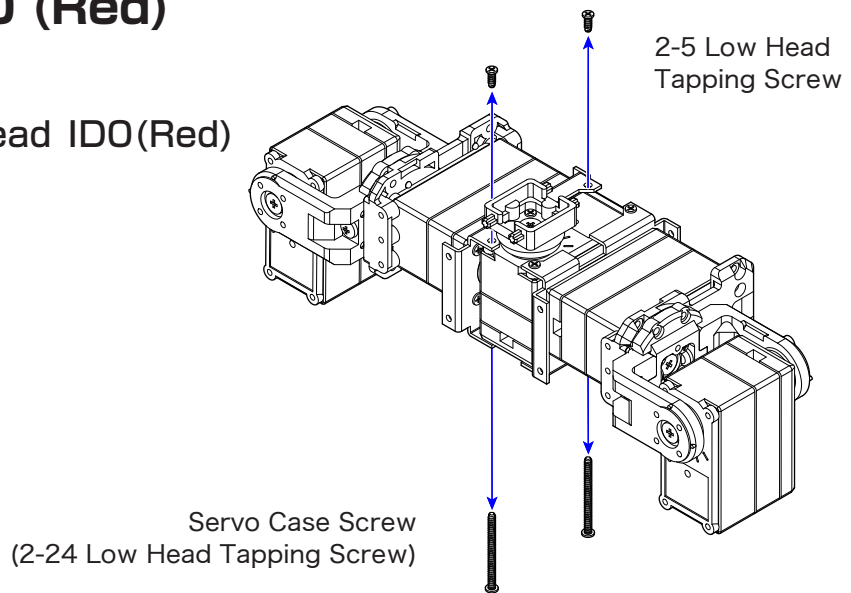


Note.

"22DOF_KHR3 (V2.0)" is set at the ICS baudrate of 1250000bps. Since the initial values of KRS-2552HV and KRS-2552RHV are 115200bps, when using the sample project change all servos to 1250000bps. Please be aware that ID0 (Red), ID 1 (Red), ID 1 (Blue) can not be changed after assembly. For how to change the ICS baudrate, refer to page 23.

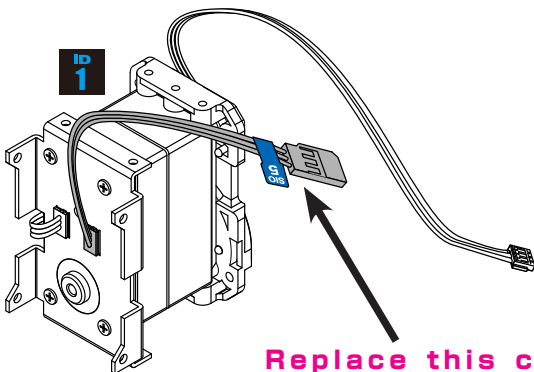
3 Remove the ID0 (Red)

Remove the servo for the head ID0(Red) by removing the screws.



4 Replace cable for ID1 (Blue)

Replace the ZH Connection Cable B (ZH/Servo) 100mm attached to the ID1(Blue) with the ZH Connection Cable A (ZH/ZH) 300mm included in this Conversion set.



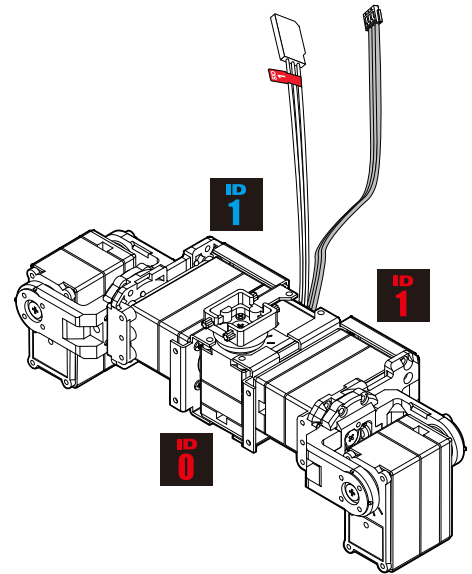
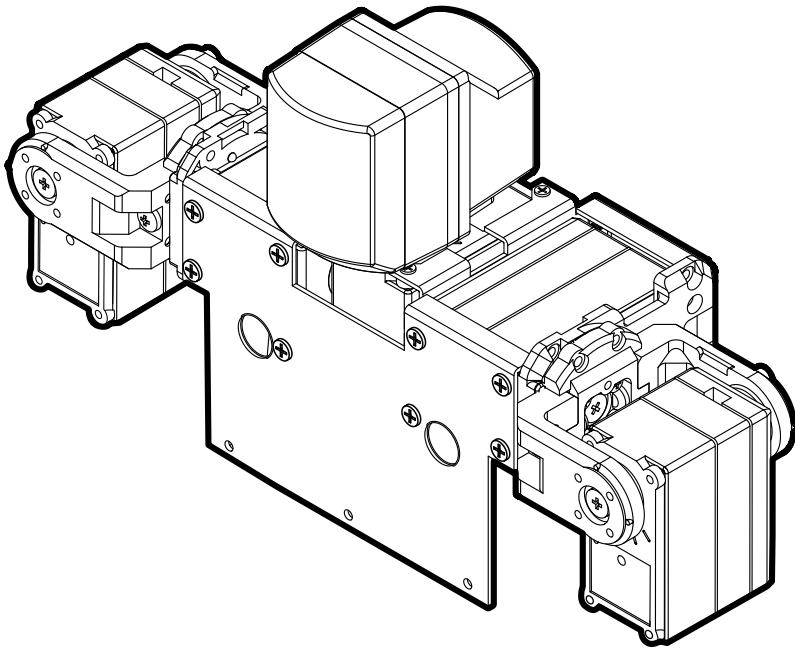
Replace this cable with the ZH Connection Cable A (ZH/ZH) 300mm.

Disassembly of the robot

5 Reassemble the chest

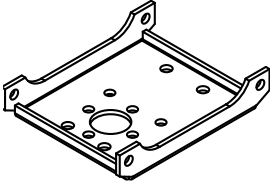
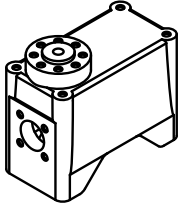
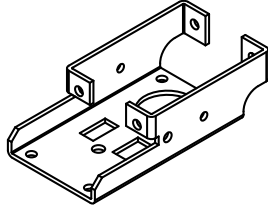
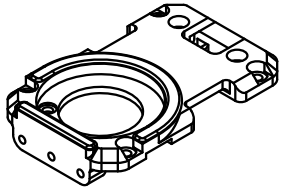
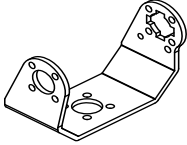
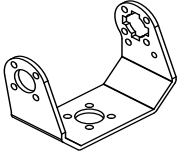
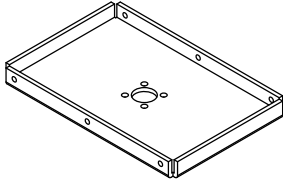
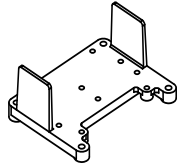

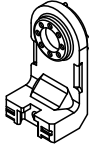

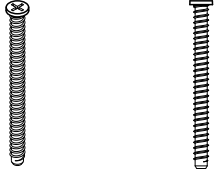







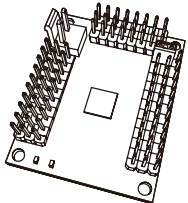
After replacing the cable and changing the baudrate, reassemble the chest in the reverse order.

In doing so, please make sure that the replaced ZH Connection Cable goes out from the hole on the same back as the original cable.



Check parts

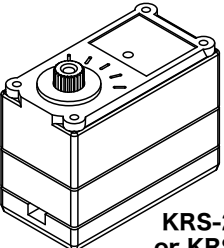
After completing the work so far, refer to the table below to check the parts removed from the robot. Some parts are not used for assembly, but please do not throw it away and keep it as repair parts.

<p>YHR-006 Servo Bracket A</p>  <p>2pcs</p>	<p>YHR - C2 Dummy Servo 2500A</p>  <p>5pcs</p>	<p>YHR-007 Elbow Joint A</p>  <p>2pcs</p>	<p>YHR-C1 Arm Supporter 2500A</p>  <p>5pcs</p>
<p>YHR-008 Offset Arm La</p>  <p>1pc</p>	<p>YHR-009 Offset Arm Ra</p>  <p>1pc</p>	<p>YHR-005 Body Base</p>  <p>1pc</p>	<p>YHR-G1-3 Parts Mount A</p>  <p>2pcs</p>
<p>Servo Arm 2500A Upper Arm</p>  <p>2pcs</p>	<p>Servo Arm 2500A Bottom Arm</p>  <p>2pcs</p>	<p>2-5 Low Head Tapping Screw</p>  <p>80pcs</p>	<p>Servo Case Screw</p>  <p>8pcs</p>
<p>3-6 Flat Head Screw</p>  <p>5pcs</p>	<p>M2-4 Low Head Screw</p>  <p>6pcs</p>	<p>M2-6BH Screw</p>  <p>4pcs</p>	<p>2-8 Low Head Tapping Screw</p>  <p>8pcs</p>
<p>2.6-10BH Screw</p>  <p>4pcs</p>	<p>2.6-6 Flat Head Screw</p>  <p>2pcs</p>	<p>M3-8 Low Head Horn Screw</p>  <p>2pcs</p>	<p>RCB-4HV</p>  <p>1pc</p>

Check parts

Please also check the parts included in this set and the parts to be used from the set of the KHR-3HV.


Servo Motor



**KRS-2552RHV
or KRS-2552HV**
(5)

ID=0(Blue)/3(Blue)/3(Red)/
5(Yellow)/ 5(Green)


Screw



M2-4 Low Head Screw (10)

* Use screws removed from
the KHR-3HV.

Parts included with KHR-3HV

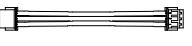


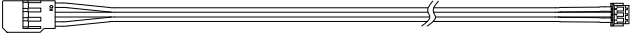
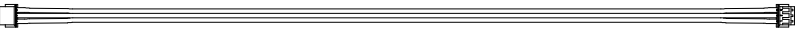


**YHR-A1-4
Small horn
(PCDφ12-M2-offset0) (5)**

**M3-8
Low Head Horn Screw (5)**

* It is a part not used in the assembly of
the KHR-3HV.

Connection Cable (Total 11pcs)

<p>ZH Connection Cable A (ZH/ZH Connector) 50mm (2)</p> 	<p>ZH Connection Cable B (ZH/ZH Connector) 350mm (2)</p> 
<p>ZH Connection Cable A (ZH/ZH Connector) 200mm (4)</p> 	<p>ZH Connection Cable B (ZH/ZH Connector) 550mm (2)</p> 
<p>ZH Connection Cable A (ZH/ZH Connector) 300mm (1)</p> 	<p>* Please use in conjunction with the cables already used for assembly of the KHR-3HV.</p>



Nylon Strap (20)

Setting Servo Origin

The servo-motor, KRS-2552RHV or KRS-2552HV, used in this product has a maximum angular operating range of approximately 270 degrees. Like human joints, it does not turn limitlessly and its rotational movement is restricted. For the robot to operate properly, it must be assembled taking into consideration its mechanical restrictions and actual operation. **Because of this, setting the Servo origin is very important.**

If the origin setting is not correct, problems may occur when performing sample motions. Therefore, please understand the origin setting method correctly and proceed carefully.

Refer to the KHR-3 HV Assembly manual for the origin setting method.

The servo that sets the origin setting is five servos for expansion.

In addition, since the servo arm is installed again, please set the servo (ID 4 (red)) and servo (ID 4 (blue)) to the origin setting.

* The corresponding servo manager software differs depending on the servo being used.

KRS-2552HV : Serial Manager for ICS3.0

KRS-2552RHV : ICS3.5/3.6 Manager softwar

Change servo's baud rate

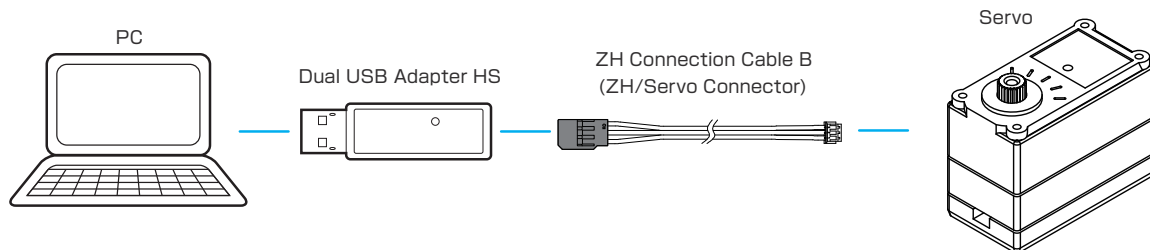
The sample project for the robot of 22 axis "22DOF_KHR3 (V2.0)" is set at the ICS baudrate of 1250000bps. Since the initial values of KRS-2552HV and KRS-2552RHV are 115200bps, when using the sample project change all servos to 1250000bps.

* If you are using the KRI-3 for the wireless controller, please also change this to 1250000 bps. Please use "KRI-3 Manager" for the baud rate of KRI-3.

Also, when using the KRR-5FH as a receiver, please change it to 1250000 bps. Please use "KRR 5 Maneger" to change the KRR-5FH.

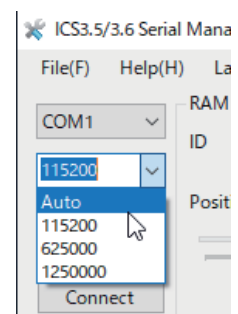
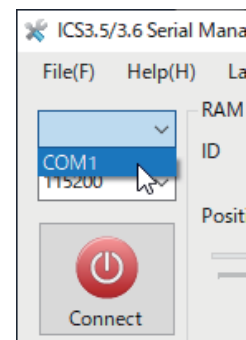
● Connection

Connect to servo with the Dual USB Adapter HS and the ZH Connection Cable B (ZH ⇔ servo connector). Any length of the ZH Connection Cable B is OK.



● Setting method

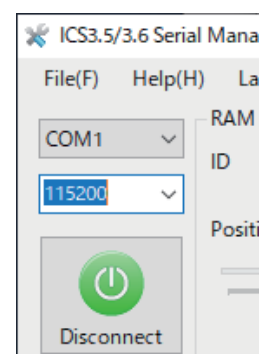
1. Start the ICS 3.5 Serial Manager and select the COM number. In the image, COM 1 is selected, but since the COM number will change depending on your computer, please be sure to select the number you confirmed.
2. Set the communication speed with the servo. When "Auto" is selected, the software automatically connects to the communication speed.



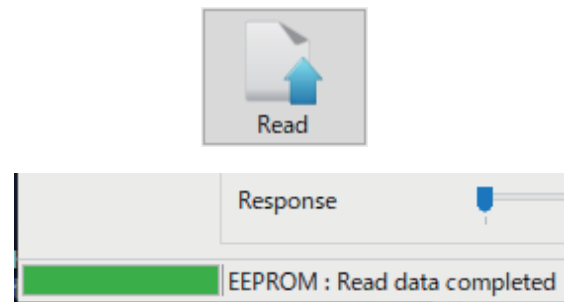
The communication speed is selected (initial value of KRS-2552HV / 2552RHV is 115200).

It is completed when the "connection" button is changed to "disconnected".

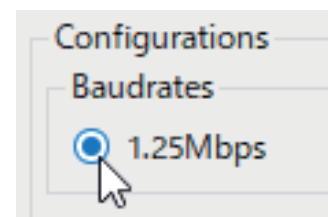
When the connection is completed, the ID also automatically switches according to the servo.



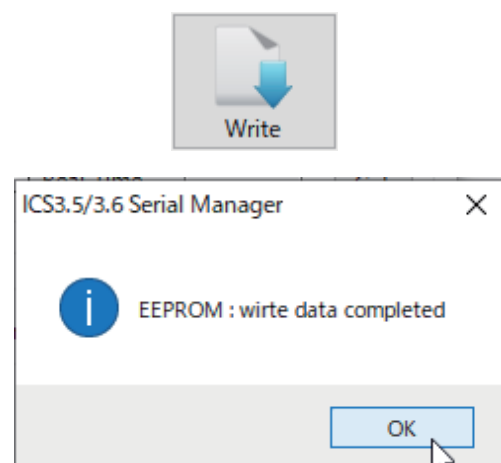
- Pressing the "Read" button reflects the setting values in the servo to the manager. If it succeeds "Read completed" is displayed in the lower left column. If it fails, "Failed to acquire" is displayed, please check the procedure and press the "Read" button again. Please be especially careful that the Dual USB adapter HS is not "Serial mode (Green LED)".



- Select "1.25 Mbps".



- Please press "Write" button. It will be completed if "dialogue success" is displayed. Please close the dialog with OK button.



This is how to change the baud rate setting.

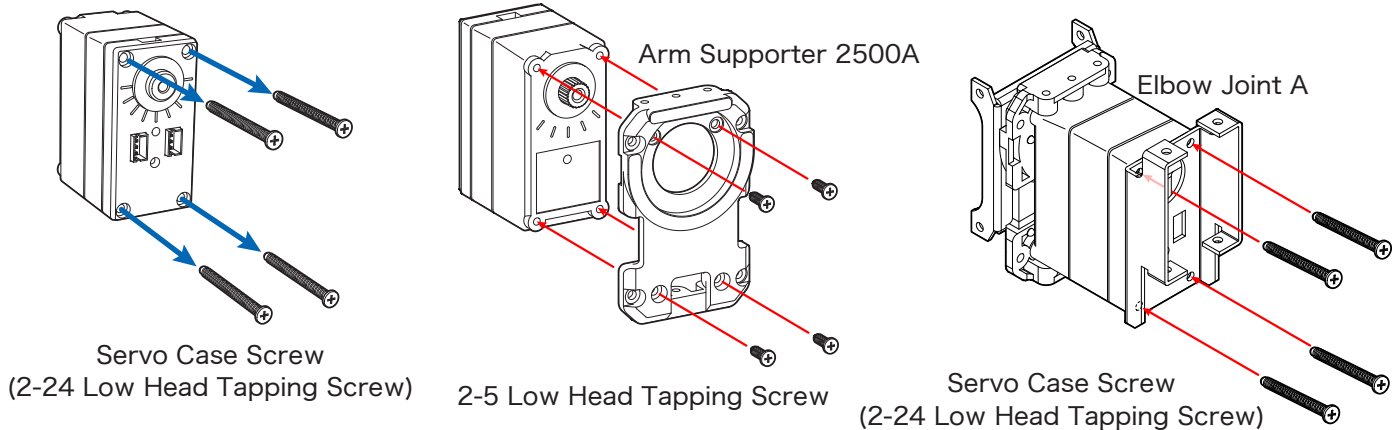
Repeat the procedure to change the baud rate of all servos. When all the work is done, be sure to quit the software and remove the Dual USB Adapter HS from the PC.

*Since these changes are only for setting changes, it communicates with the bus power of the PC, but please connect a battery when checking the operation of the servo. For the connection method and cables required, refer to the manual attached to the servo manager.

Attach the Arm Supporter 2500A

Attach the Arm Supporter 2500A to each of the five servos used for expansion.

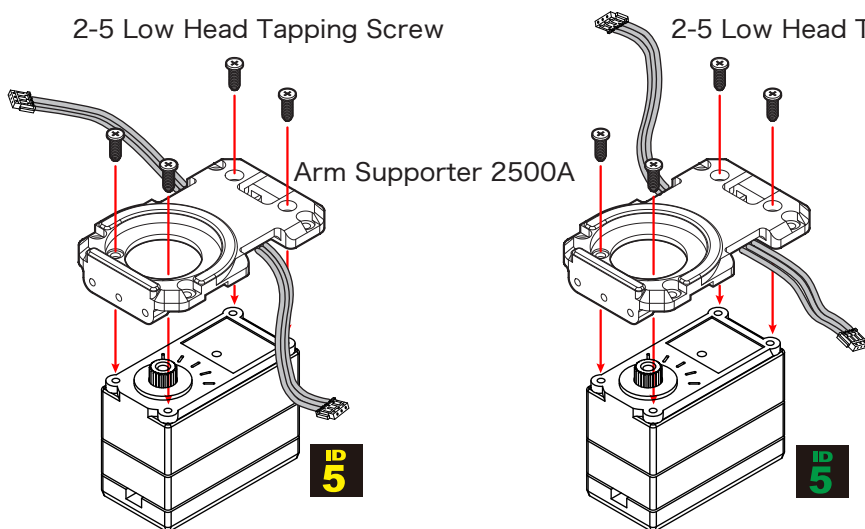
Attachment to ID3(Red) and ID3(Blue)



Assemble ID3(Red) and ID3(Blue) in the same way.

Attach the Arm Supporter 2500A with the 2-5 Low Head Tapping Screw. Then remove the Servo Case Screws from the servo and attach the Elbow Joint A using the same screws.

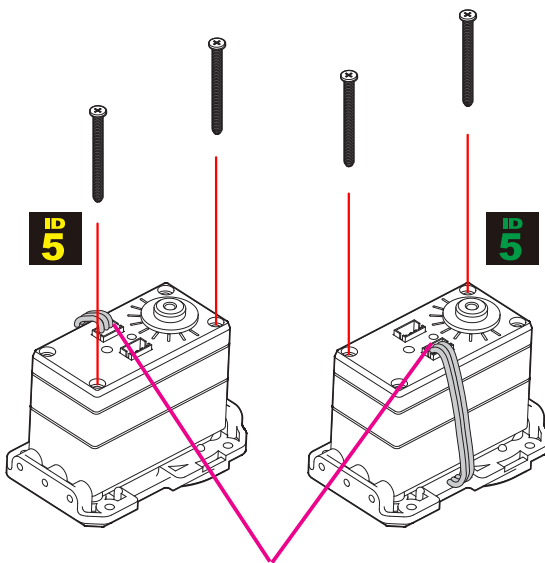
Attachment to ID5(Yellow) and ID5(Green)



With the ZH Connection Cable A (ZH / ZH) (200 mm) passed through the Arm Supporter 2500 A, install the ID5(Yellow) and ID5(Green) servos.

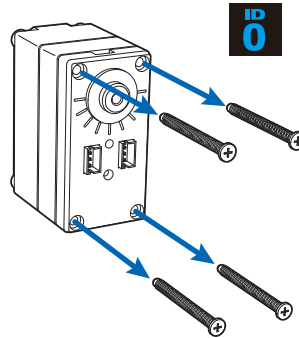
* The ZH Connection Cable A (ZH / ZH) (200 mm) is included in the Conversion set.

Assemble the waist unit

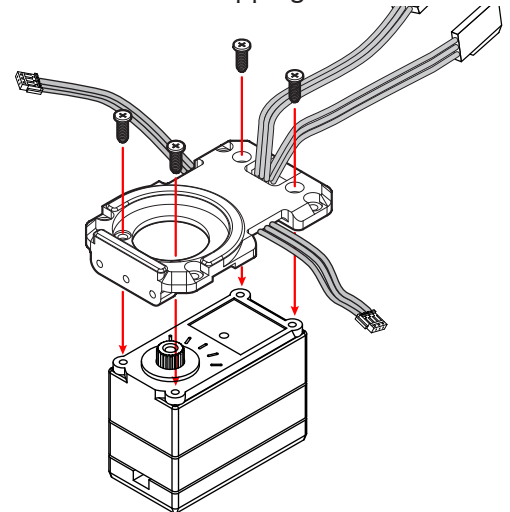


Connect the connectors as shown.

1 Remove the Servo Case Screws of ID5(Yellow) and ID5(Green) as shown in the figure. Also, remove the all Servo Case Screws for ID0(Blue). This Servo Case Screw will be used in a later procedure.



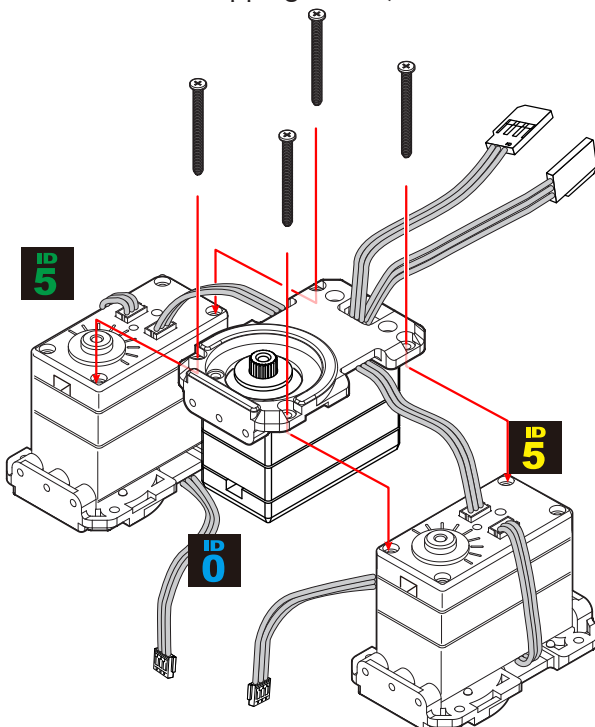
2-5 Low Head Tapping Screw



2 Attach the two ZH Connection Cables B (ZH/Servo) 200mm through the Arm Supporter 2500A as shown in the figure to the ID0(Blue) servo.

* For ZH Connection Cable B 200mm, use the cables for connecting ID6(Yellow) and ID6(Green) mounted on the KHR-3HV to the RCB-4HV.

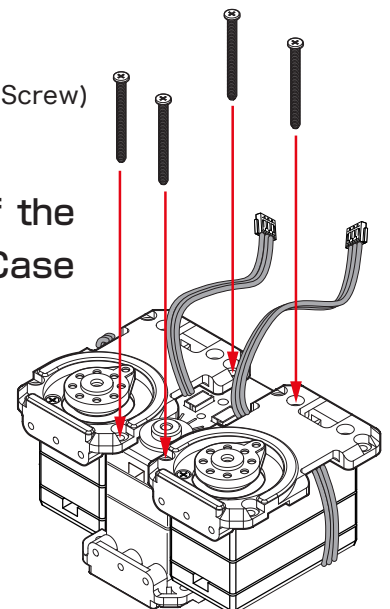
Servo Case Screw
(2-24 Low Head Tapping Screw)



3 Connect the ID0(Blue) cable to ID5(Green) and ID5(Yellow). After that, link the three servos using the Servo Case Screws removed from these servos.

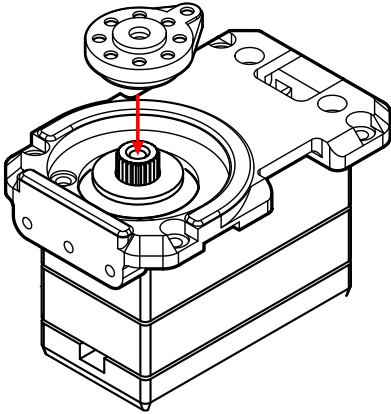
Servo Case Screw
(2-24 Low Head Tapping Screw)

Secure both sides of the unit with the Servo Case Screws.

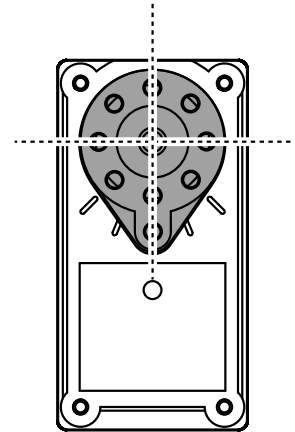


Attach the Small horn

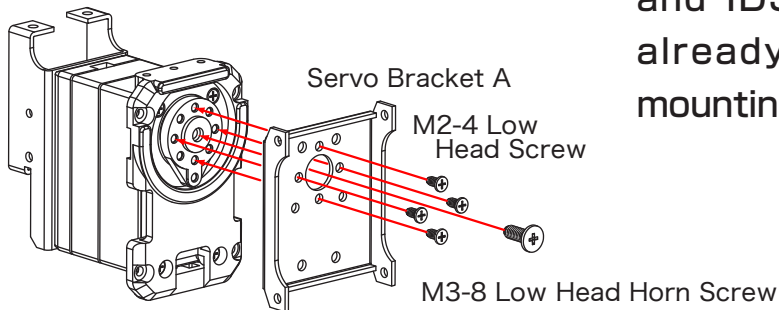
Small horn



Attach a small horn to each of the five expansion servos. Since the origin is already set, make sure that the position of the output shaft does not shift when installing.



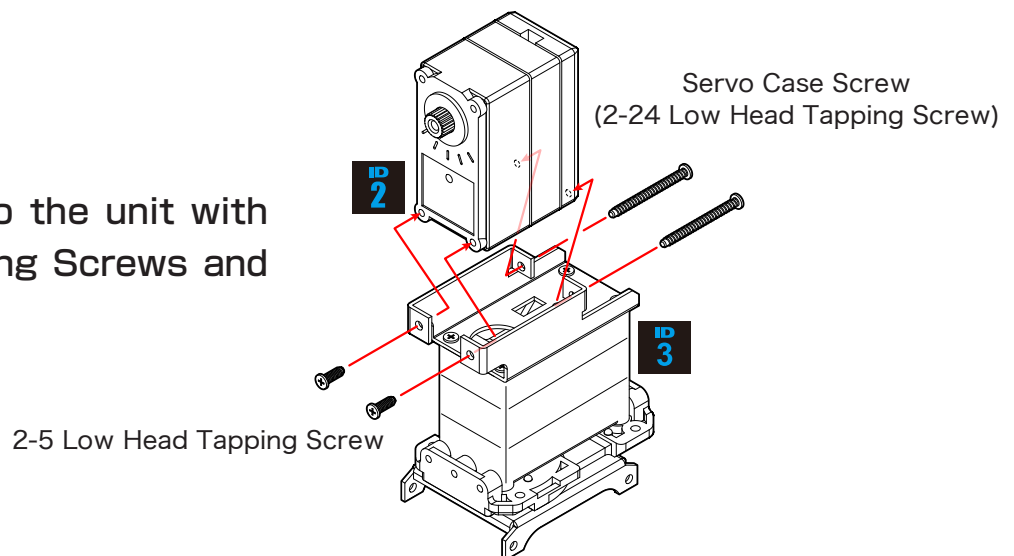
Assemble the arms



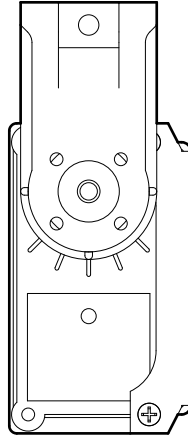
Attach the servo bracket A to the ID3(Red) and ID3(Blue) servos. Since the origin is already set, please pay attention to the mounting position.

* Before expansion, the 2-5 Low Head Tapping Screws was used for this part, but this time use M2-4 Low Head Screws.

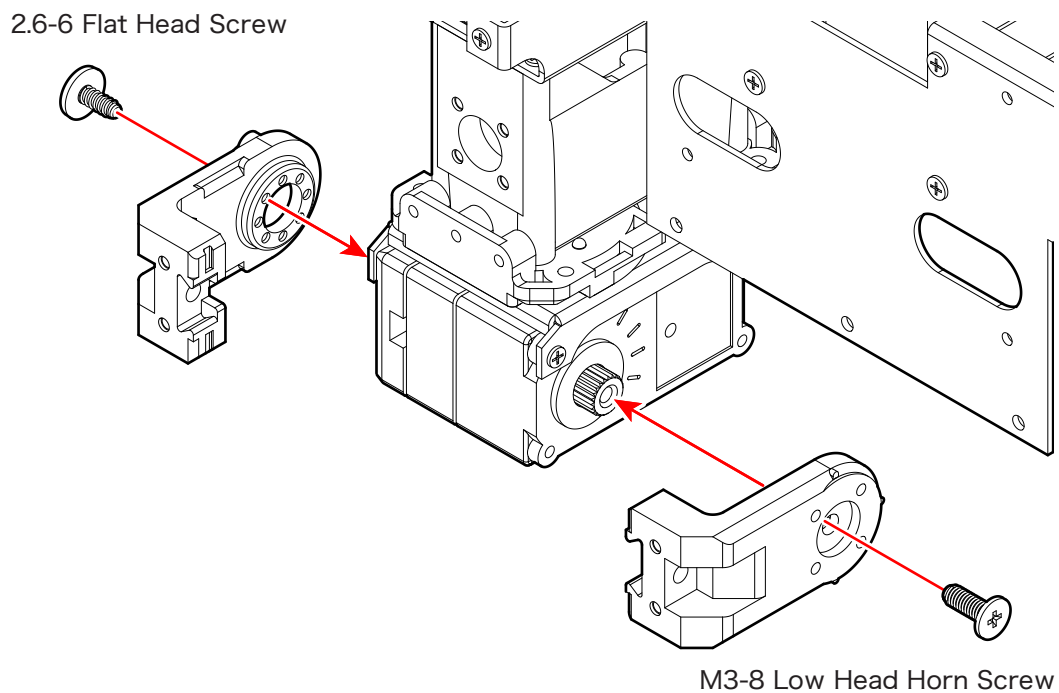
Secure the ID2 servo to the unit with the 2-5 Low Head Tapping Screws and the Servo Case Screws.

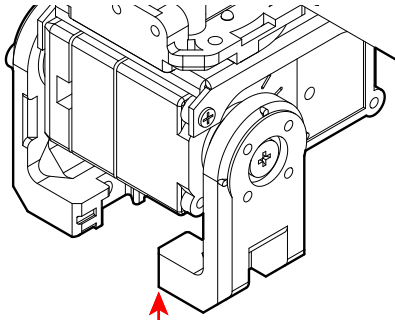


Attach the Upper Arm to the ID4 servo according to the origin. Please attach it like the image.

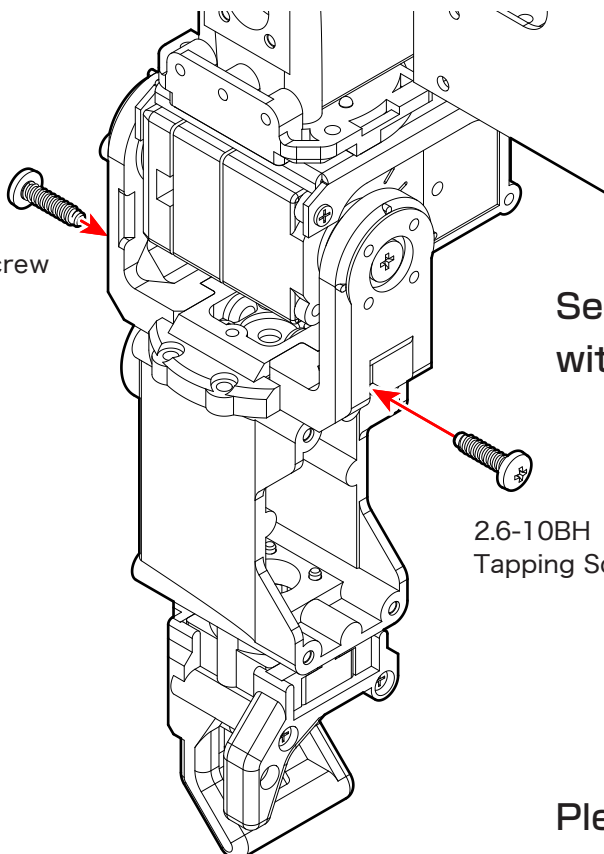
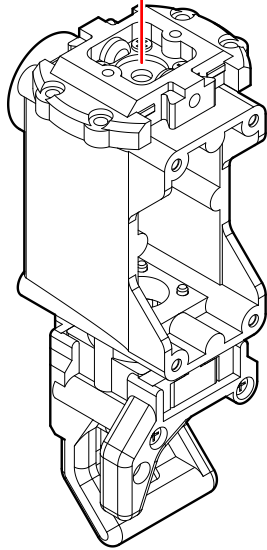


Attach the bottom arm to the ID 4 servo. Fix the upper side with the M3-8 Low Head Horn Screw and the bottom side with the 2.6-6 Flat Head Screw.





Insert the Joint Base of the forearm into the Servo Arm.



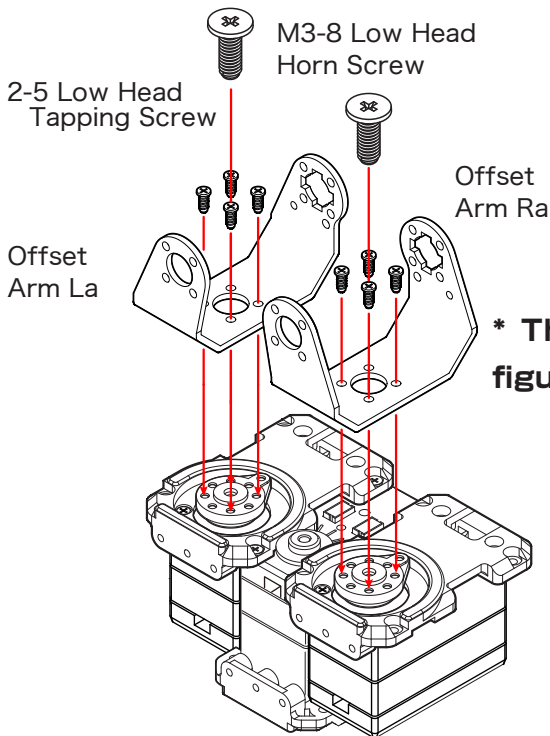
2.6-10BH
Tapping Screw

Secure both sides of the Servo Arm with the 2.6-10BH Tapping Screws.

2.6-10BH
Tapping Screw

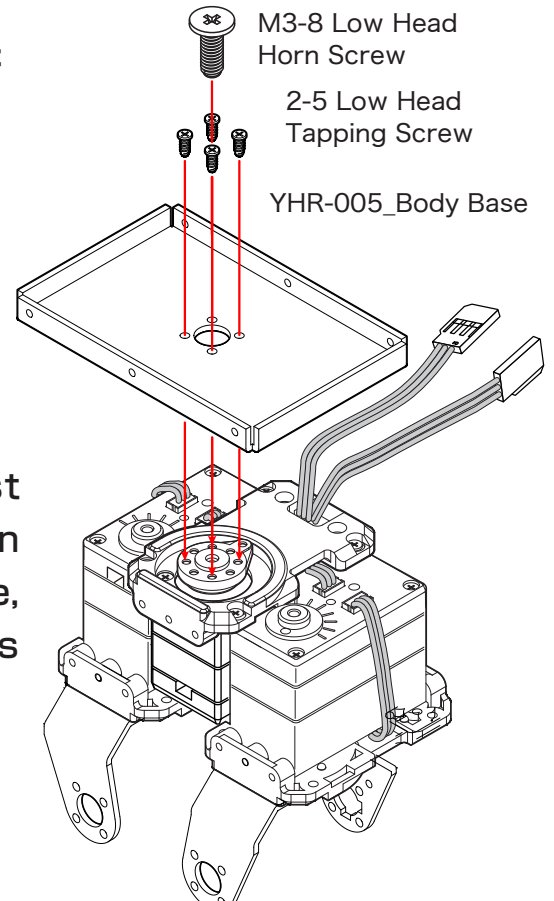
Please assemble the left arm with the same procedure.

Assemble the lower body

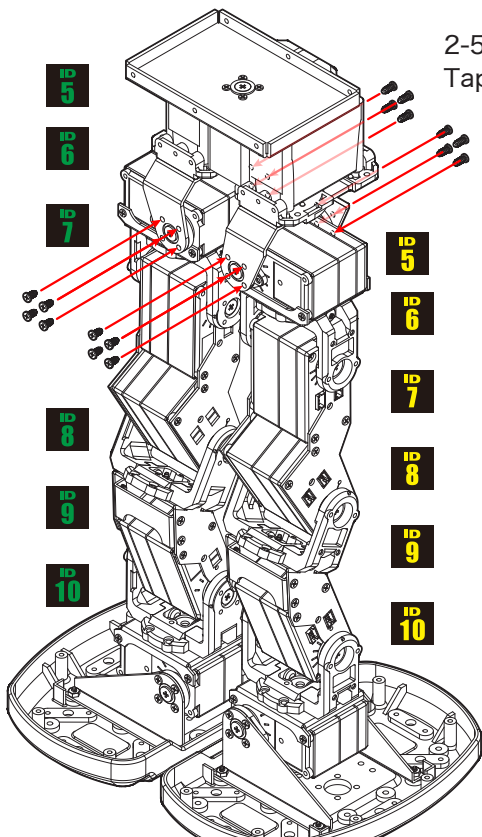


Attach the Offset Arms. Please do not change the installation position of the La and Ra. Be careful not to shift the origin at the time of installation.

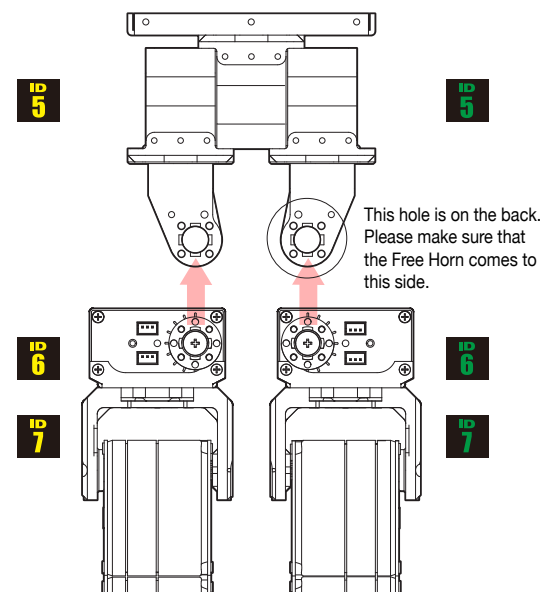
* The wiring on the left figure is omitted.



Attach the body base to the assembled waist unit. ID5(Yellow) and ID5(Blue) connectors can not be accessed after installing the Body Base, so please check the insertion of the connectors and the handling of the cables before installing.

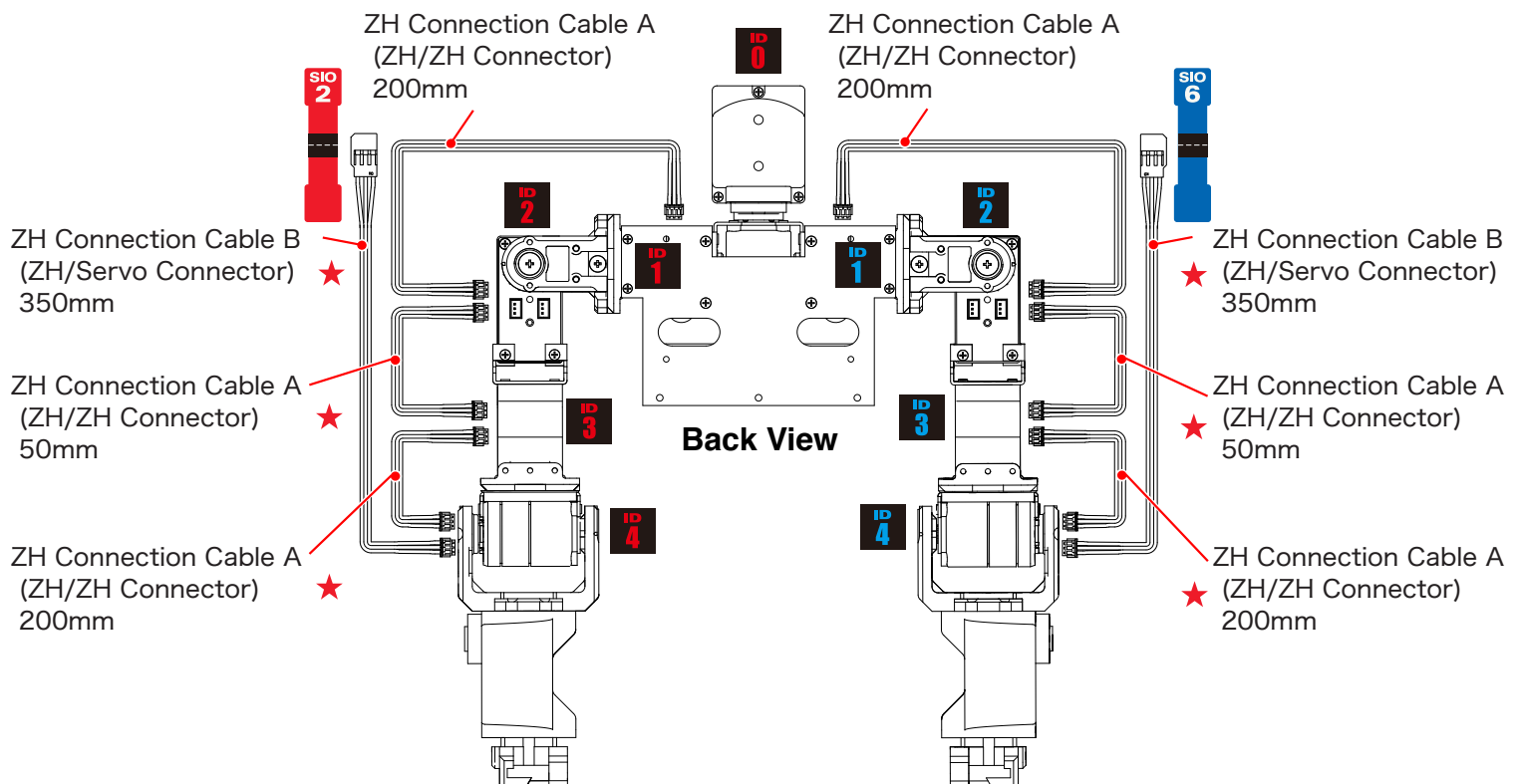


Attach the left and right legs to the waist unit. When installing, pay attention to the orientation of the Small Horn attached to the servo of ID 6(Yellow) and ID6(Green).



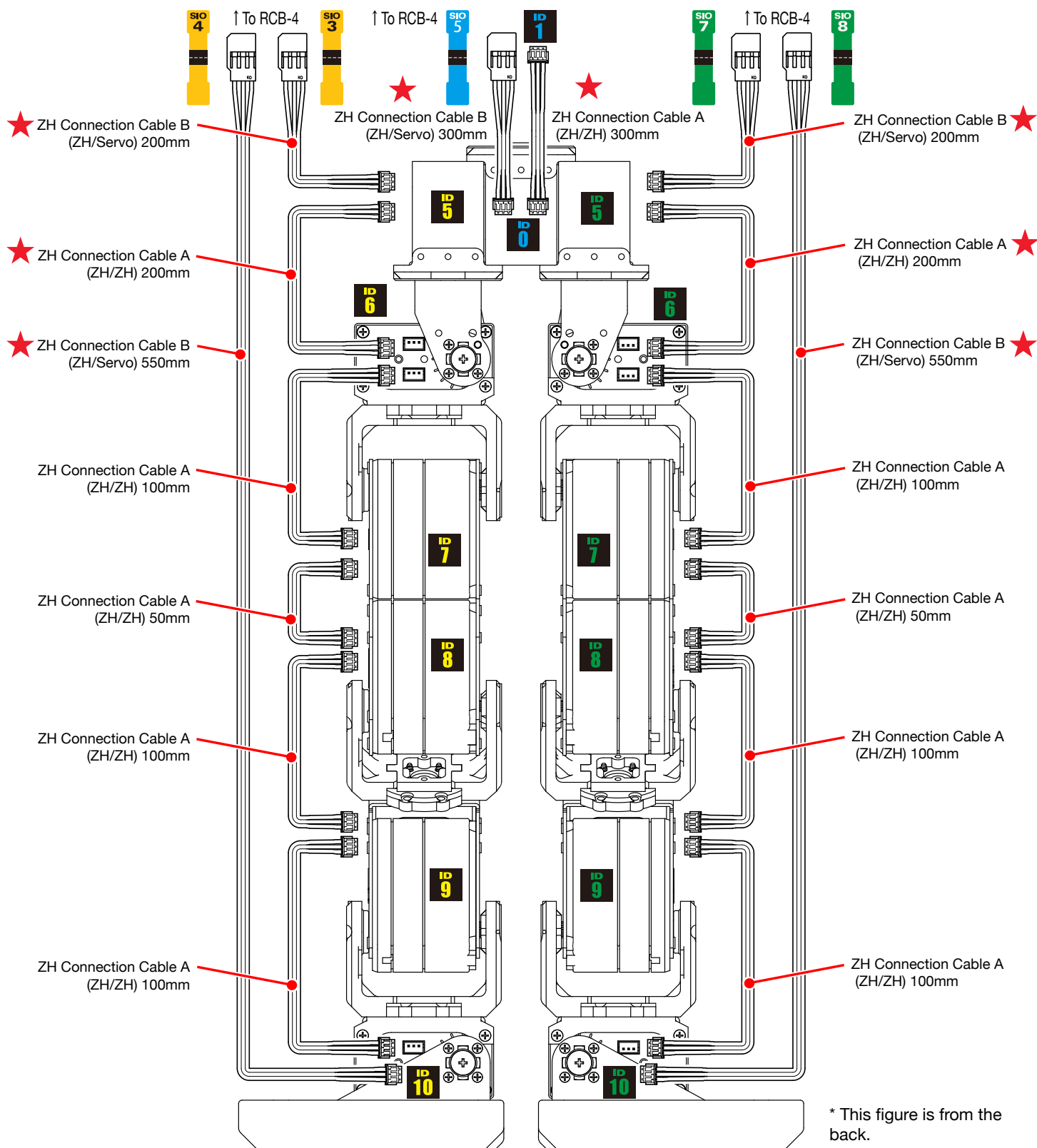
Wiring

Wiring the upper body



Wire the upper body. The place with the star ★ mark is a cable changed or added from the kit standard.

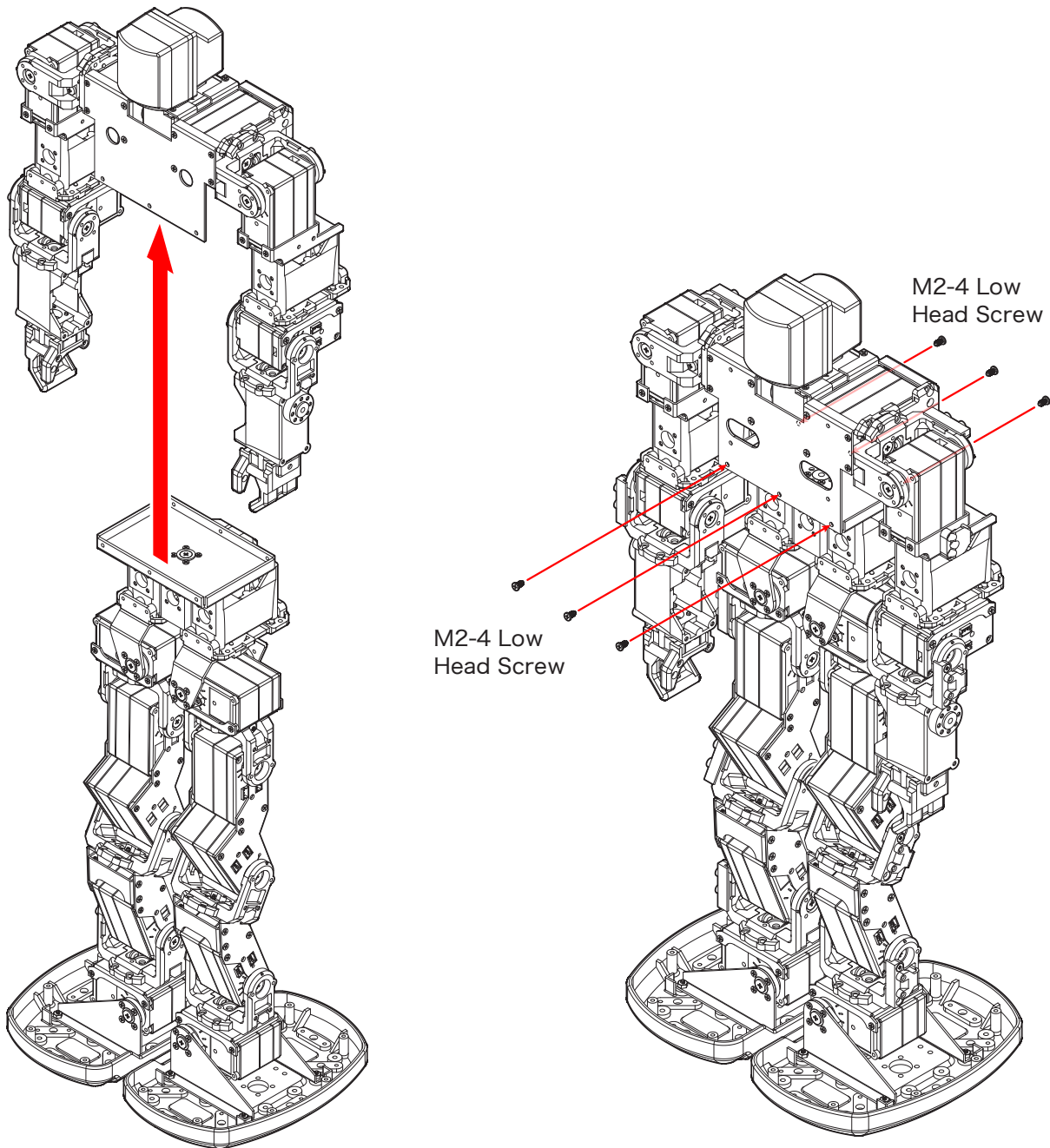
Wiring the lower body



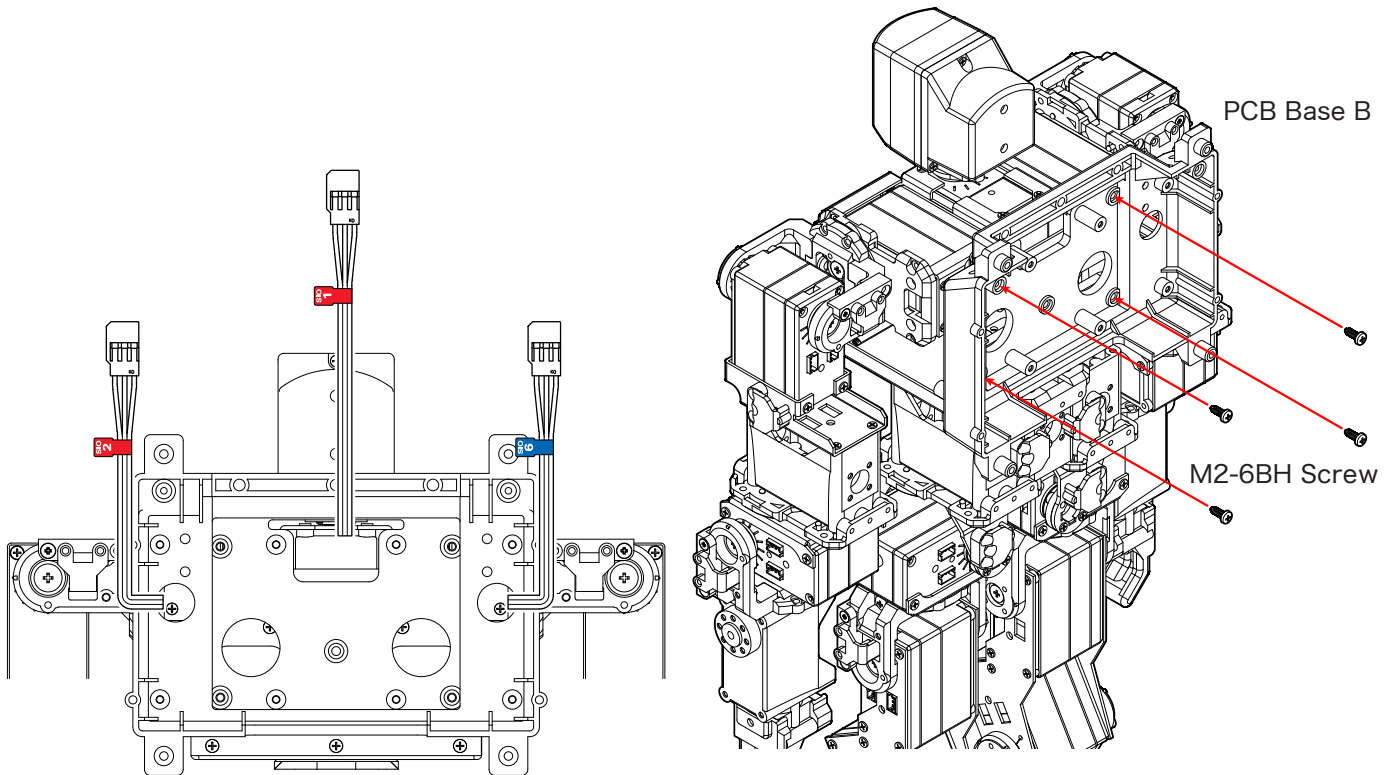
Wire the lower body. The place with the star ★ mark is a cable changed or added from the kit standard.

Connect the fuselage and legs

Insert the lower body into the fuselage.
Install with the M2-6 Low Head Screws.



Attach the Backpack

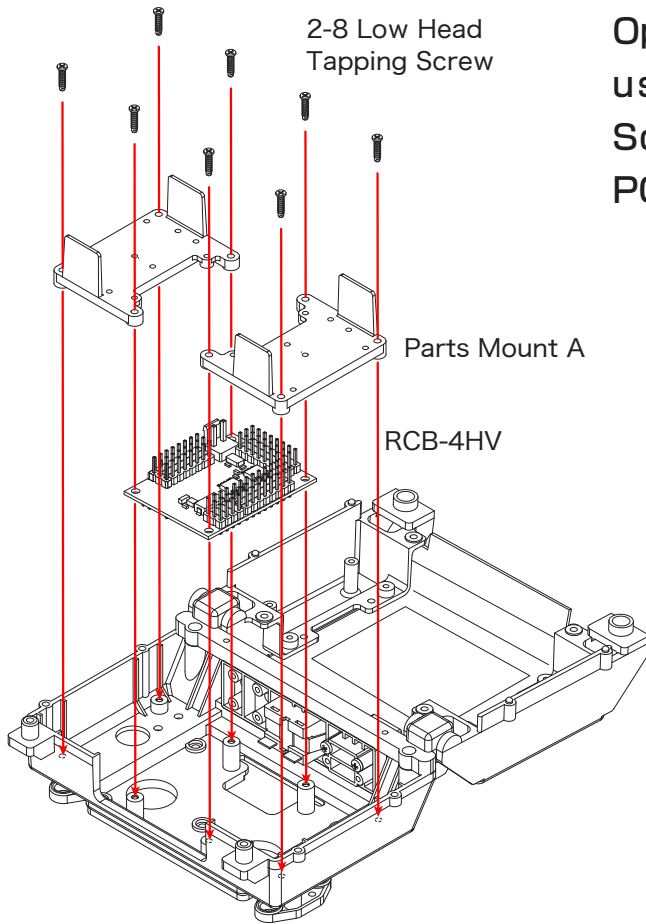


1 Route the cables as shown in the figure and mount the PCB Base B to the back of the body using four M2-6BH screws.



Put the HV Connector inside the body as shown in the picture.

4



Open the Wing and mount the RCB-4HV using eight 2-8 Low Head Tapping Screws so that it comes between the PCB Base B and the Parts Mount A.

5

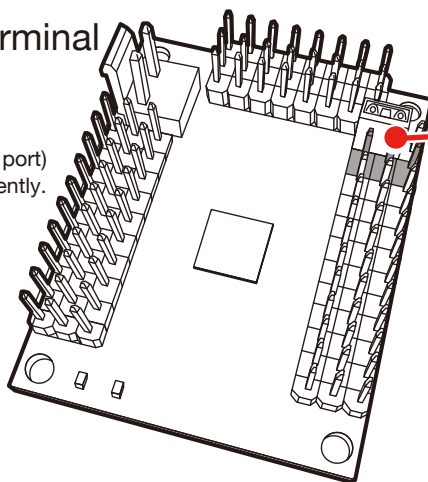
*Plug so that the signal cable (grey) faces inward.



Plug in the Servo Connector, Power Connector and Extension Cord to each port according to the wiring diagram.

Power Terminal

(Analog Input Port AD port)
* Not Used presently.

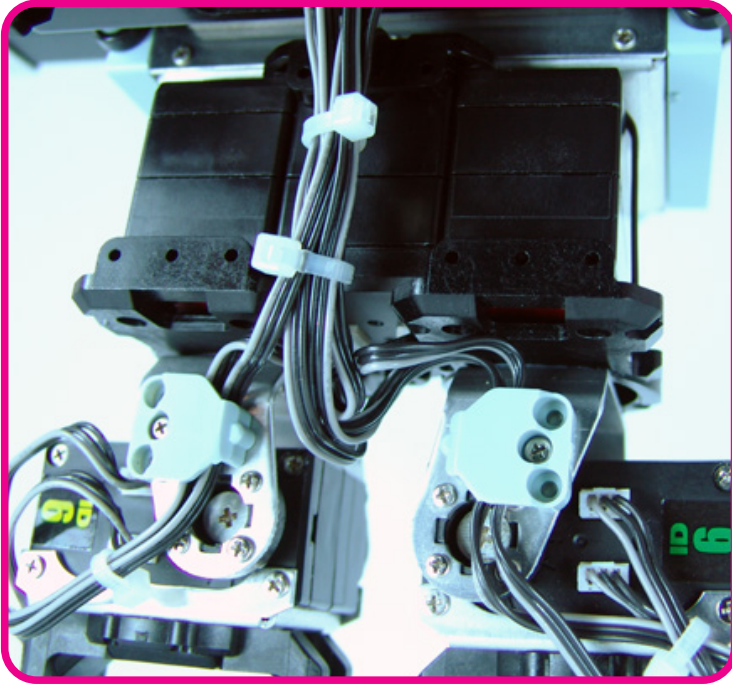


COM Port
second pin from top

* Make sure the signal cable (white) faces inwardly.

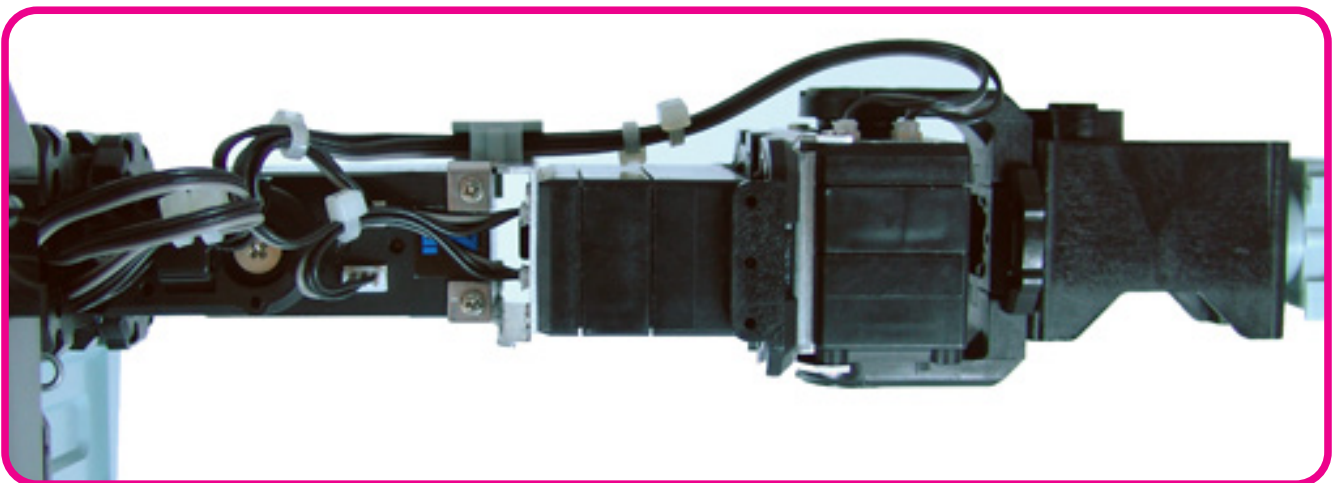
(PIO Port)
* Not Used presently

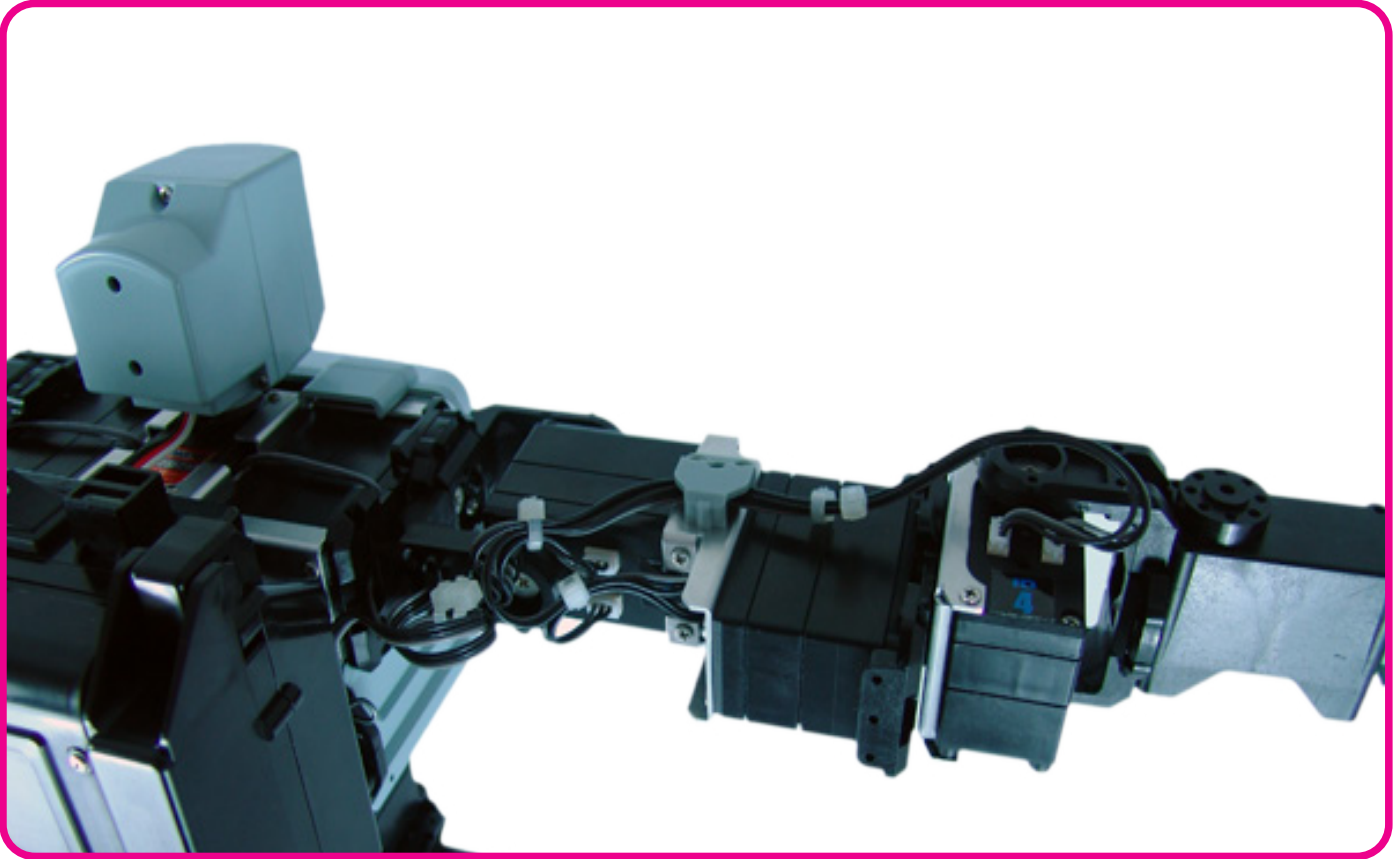
Bundle cables



The photo on the left shows the waist from the back. Wiring will increase, so please be careful not to pull the cable during operation to bundle the cables.

Please bundle the cable of the arm so that the cable is not pulled against the movable range of the servo.





On the photo, it is a part of the arm seen from another angle.

Please refer to it for bundling cables.

The setup method of HTH 4 is the same as the KHR-3HV (17 axes). For details, please refer to "KHR-3HV Assembly manual". Please use "22DOF_KHR3HV (2.x)" of the sample project.

