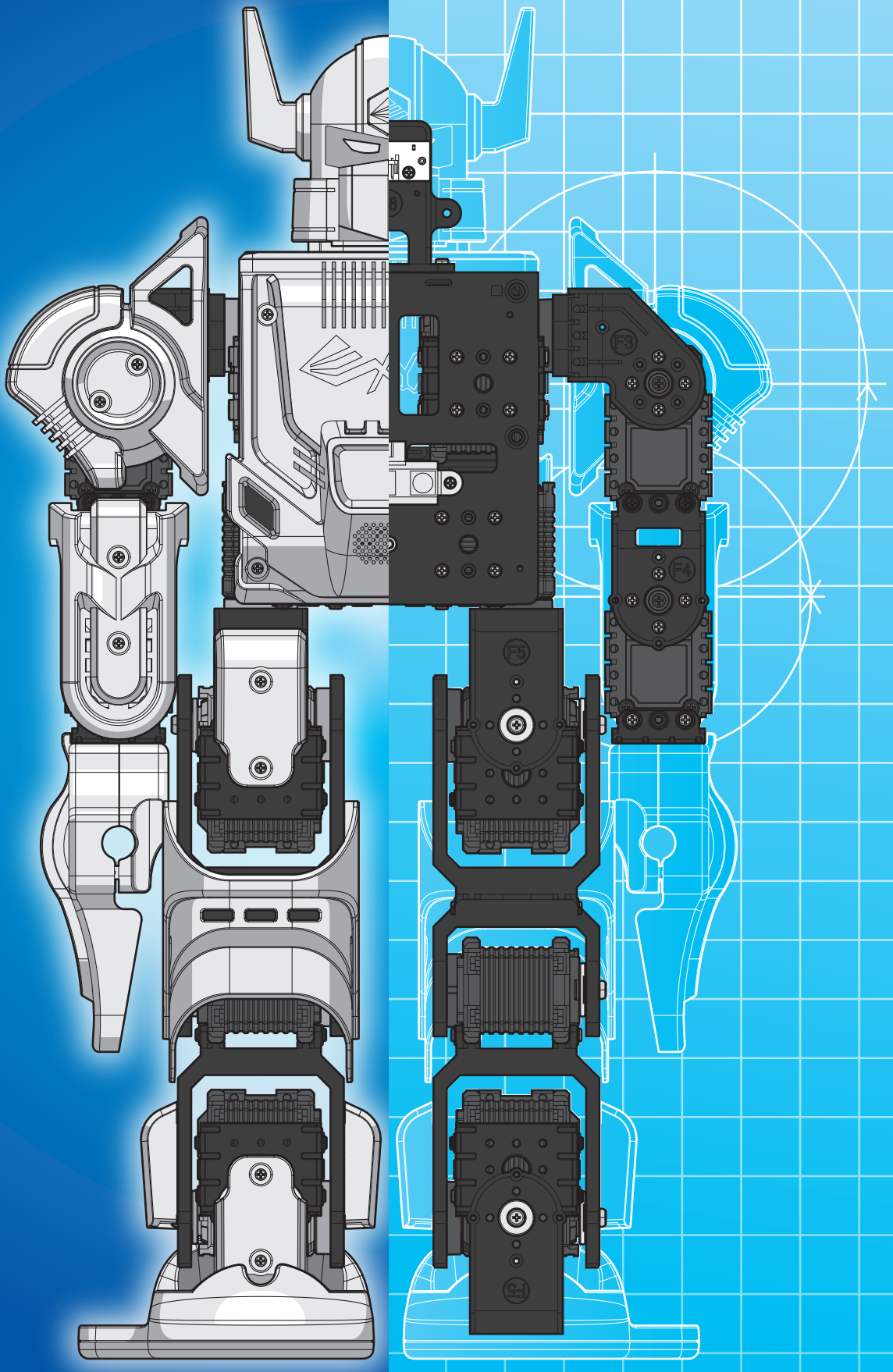
BOLIDE

IMAGINE YOUR POSSIBILITIES



CONSTRUCT OF YOUR IMAGINATION

Safety

Please read the following information: failure to comply with provided information may lead to voiding the warranty.

This document covers safety, proper handling, and regulatory information for use of your Bolide.

General Precautions

Caution: To avoid injury, damage to the robot or equipment, please follow the provided guidelines.

- Please read through the directions before starting.
- The robot is not intended for use by children under 15 years old, or any person with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless:
  - Supervised by a person responsible for the child's safety and who has read and understood these instructions.
- Keep the robot away from children under 3 years old at all times to prevent injury or damage.
- Keep components or small parts away from children.
- Keep away from pets and animals of any kind, animals may behave erratically in the presence of the robot.
- First time users should take extra care when handling the robot to minimize injury or damage.
- If the robot is operating abnormally, there is an unusual sound, smell or smoke is detected:
  - Turn the robot OFF immediately.
  - Unplug the robot.
  - Ensure the robot does not tip over or fall down.
  - Remove the battery (remove 1 screw on the back of the battery casing).
- To prevent the spread of fire, keep candles or other open flames away from the robot at all times.
- At all times, keep in mind safety first to prevent injury to individuals using or around the robot.
- Always follow installation and service instructions closely. Keep manuals for future reference.
- Review and follow all safety information provided throughout this manual.
- This guide does not cover all possible safety issues or conditions. Always use common sense and good judgment.
- Warning: Conversion or modifications to this product not expressly approved by the party responsible for compliance could void the user's authority to operate the product.
- The battery will become hot a little during charging, which is normal phenomenon.
- Please take care of this unit and its accessories, keep them clean. Please do not let this unit or accessories exposed to fire/burning cigarette, etc... Try to keep the robot and its accessories dry; please do not let this unit exposed to water or moisture.
- Please do not break, throw or trample the robot.
- Avoid installation in extremely hot, rainy or water splashing, or being placed in high temperature or moist environment.
- Please use the accessories we match for this robot.
- Never disassemble or modify the motor in any way, otherwise, warranty of the product will be lost. For non-human faults or breakdown, please contact authorized distributors.

Safety

- Please unplug the charging cord from the charger after charging completed to avoid over-charging.
- Keep robot away from face and body when moving.
- Do not use any tools other than those provided in the kit.
- Gears must be replaced after long excessive use.

RF exposure warning (For Bluetooth)

The equipment complies with FCC RF exposure limits set forth for an uncontrolled environment.

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

Battery safety warning:

DO NOT throw the battery in fire.

DO NOT short circuit the contacts.

DO NOT disassemble the battery.

DO NOT throw the battery in municipal waste.

The symbol of the crossed out wheeled bin indicates that the battery should not be placed in municipal waste.

Important Notice for Use in Healthcare Environments:

XYZprinting Inc. products are not medical devices and are not listed under UL or IEC 60601 (or equivalent).

You can find the User Guide, the Technical Guide and these Safety Instructions (“Documentation”) at:

http://www.xyzrobot.com

You can contact XYZprinting Inc. support at:

http://www.xyzrobot.com

Handling and Personal Safety

Buttons

- Before using, take a moment to locate the Power On/Off and directional buttons and familiarize yourself with the functions.

Handling

- Handle the robot with care at all times.
- Pick up the robot by the bar in the event of the following situations:
  - If the robot comes close to danger, exposure to water, or falling off a surface.
  - Before the robot knocks over objects.
  - If the robot's operation seems erratic.
- Procedure for handling in a potentially hazardous event:
  1. Pick up the robot by bar even if it is still moving.
  2. Press the Power On/Off button to turn off.
  3. Put the robot in the starting default posture.

Refer to the User Guide for powering on instructions.

- In case of a power emergency, do not touch the robot.

CAUTION:

Pinching Hazard

- Avoid carrying and touching the robot when it is moving, walking or getting up to avoid getting pinched.
- Keep hand and fingers out of the joint areas to avoid getting caught in between.
- To avoid injury, do not place your hands in any joint to prevent damage or personal injury.

Safety

General

IMPORTANT:

- The robot requires a clean work space to move around and perform activities.
- Do not insert any foreign objects into any of the component or internal cavities.
- Generally, do not allow or cause the robot to fall down.
- Do not exert strong force against the joints or actuators (motors).
- Do not grab and pull by the head or arms/legs to prevent exerting force on the joints.

Powering

Please read the user manual that came with the Bolide. It contains important installation and safety instructions.

CAUTION:

The AC adapter may become hot.

- Do not use the robot when the cables are plugged in to avoid damage.
- Do not use the AC adapter to charge the battery if room temperature is above 45°C (113°F).
- For the maximum battery lifespan, fully charge the battery at least once every 3 months.
- Protect the AC adapter terminals from dirt or other foreign objects.

CAUTION:

To avoid electric shock:

- Do not plug the power cables into an electrical outlet if the power cable is damaged.
- During a storm, unplug the AC adapter from the socket to protect it from damage.
- Never use an AC adapter that shows signs of damage or excessive wear.

CAUTION:

Risk of fire or electric shock:

- Use only the provided AC power cable with the AC adapter. Use of any other power cable may damage the robot or AC adapter or affect your safety.
- There is no switch on the AC adapter; to disconnect it, pull the plug. Keep the plug easily accessible at all times to allow easy disconnection.
- Unplug the power adapter if:
  - The adapter is exposed to rain, liquid, or excessive moisture.
  - The adapter case has become damaged.
  - You suspect the adapter needs service or repair.
  - You want to clean the adapter.

Extension Cables

CAUTION:

To avoid electric shock:

- Do not use multiple socket adapters or power extension cables that bypass the ground wire or disable grounding.
- When using a power extension cable or a multiple socket adapter, make sure it is grounded and has sufficient current rating. No more than one extension device at a time is recommended for use.
- If using a multiple socket adapter, take care when plugging the power cable, as some types allow incorrect plugging which could result in permanent damage to the robot, as well as cause possible electric shock and/or fire damage.
- Do not plug the robot power cables into an electrical outlet if the power cable is damaged.
- Do not connect or disconnect the power adapter with wet hands.
- Plug the robot power cables only into properly grounded electrical outlets.
- Do not use adapter plugs that bypass the grounding feature, or remove the grounding feature from the plug or adapter.
- If using an extension cable, make sure that the total ampere rating of the products plugged in to the extension power cable does not exceed the ampere rating of the extension cable.
- Use an extension cable or power board designed for grounded plugs and plugged into a grounded wall outlet.

Working Area

- Start from the default posture before turning on the robot.
- When turned off, it is best to keep the robot in the default posture without the cable plugged unless charging.
- Ensure adequate free space around the robot at start-up.
- Before starting, make sure there is enough free space for operation. This requires a radius of at least 60 cm (24 inches) around the robot to avoid obstacles.
- Generally, leave at least 60 cm (24 inches) all around the robot to avoid damage. In particular, ensure that all cabling is removed from the usable area.
- The working surface must be dry and level; thick carpets or rugs are not recommended for operational stability.
- The robot is designed for indoor use only.
- Keep the robot away from radiators, heat sources and direct sunlight.
- Operating temperatures: between 0°C and 40°C (32°F to 104°F).
- Operating humidity range: between 20% and 80%.
- Do not leave the robot unattended on the floor.

Safety

Storing

- Use the shipping packaging and foam to keep the robot protected.
- For long storage periods, remove the battery and store the robot in a dry place, between 0°C and 45°C (32°F to 113°F), free from dust or humidity.
- For maximum battery lifespan, fully charge the battery at least once every three months.
- Storage removal recommendations:
  1. Remove the robot or components from packaging.
  2. Fully charge the battery.
  3. Turn on the robot.

Cleaning

Before cleaning see the following guidelines:

1. Unplug all cabling from the robot.
2. Disconnect the AC adapter from the socket.
3. Put the robot in the default posture.
4. Switch off the robot.
5. Do not use abrasives, aerosols or other fluids, as they may contain flammable substances or may damage my plastic finish. Never spray or submerge the robot or its components in water or any other liquid.
6. Clean the robot and its components with a soft damp cloth.
7. Allow all components to dry thoroughly before turning the robot on again.

Special Procedures

General

- Never oil the joints with any kind of lubricant.
- Do not modify or open any of the actuators.
- Do not drop, crush, bend, deform, puncture, shred, microwave, incinerate any of the components. Doing so can cause fire, electric shock, damage or personal injury.
- When handling sensitive components (e.g., printed circuit board), only hold the board by the edges to prevent damage due to electrostatic discharge (ESD).
- Do not forcibly twist the robot when the power is to prevent damaging the motors (acuators).
- Place the robot on a flat surface prior to the use of the remote control.

Liquid Spills

CAUTION:

Use extreme caution when removing wet power cables from a power socket (or extension cable) and only attempt this if it is safe to do so:

- Liquids spilt onto the robot or AC adapter may cause a short-circuit and stop the robot from working. The warranty is automatically void if any liquid seeps inside the AC adapter, whether apparent from the outside or not.
- Do not use the robot in a wet environment.
- Do not connect or disconnect the battery or AC adapter when your hands are wet.
- Do not use the AC adapter if exposed to rain, liquid, or excessive moisture.
- Do not attempt to dry the components with an external heat source such as a hairdryer or an oven.

Procedures

- If liquid has not seeped inside the torso or battery casing:
  1. Turn off the robot.
  2. Disconnect all cables, including the AC adapter.
  3. Place the robot in the default posture.
  4. Wipe the robot completely dry.
  5. When thoroughly dry, turn on the robot to continue operation.
- If liquid has seeped inside the torso or battery casing:
  1. Disconnect all cabling from the power socket then disconnect the other cabling end from the robot.
  2. Turn off the robot.
  3. Place the robot in the default posture.
  4. Dry the robot as much as possible.
  5. Disconnect and remove the battery casing.
  6. Let the robot air dry completely before installing the battery casing.
  7. Once completely dry, install the battery casing.
  8. Turn on the robot.

NOTE: For information on your warranty coverage see the ***"Warranty"*** *on page 131* section in this document.

Certification

Regulatory Compliance Information

USA

Federal Communications Commission (FCC)

FCC ID: SH6MDBT40

This device complies with part 15 of FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

No Unauthorized Modifications

Unauthorized modification may void the equipment authorization from the FCC and will void the ALDEBARAN warranty.

Japan

技術基準適合証明

R 技術基準認証済みの無線装置を内蔵
204-420020

SRRC (China)

China Ministry Industry and Information Technology (CMIIT)

本设备包含型号核准代码（分别）为: CMIIT ID: 2015DJ2435的无线电发射模块。

Certification

Taiwan Wireless NCC Information

CCAF15LP0280T1

本產品內含射頻模  CCAF15LP0280T1

低功率電波輻射性電機管理辦法

第十二條

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Table of Contents

Table of Contents

01 Introduction

Bolide Introduction

The Bolide is a robotic model designed to allow students, researchers, and enthusiasts alike to easily remove and replace parts and components of the frame.

Safety Warning

The Bolide is built using rotary actuators (servo motors), which are powerful and may be harmful to fingers or materials. Precaution is warranted when working and testing the robot. Make sure there is enough free space to allow for uninterrupted movement.

About this Document

This document contains information and helpful tips for the assembly and disassembly of the Bolide robot.

In the document, you will find images of the components and their reference names for the purpose of assembly and referencing in the event that replacement parts are needed.

Warranty and support information is also included for your reference and assistance.

Hardware

The Bolide robot is mainly built with eighteen servo motors Each servo motor has an embedded electric board allowing it to receive signals (torque) and communicate with the remaining servos. By creating a chain with the servo motors (each with a set ID), command signals can be transferred from one to the end of the chain.

Setting the Actuator Hub to Zero

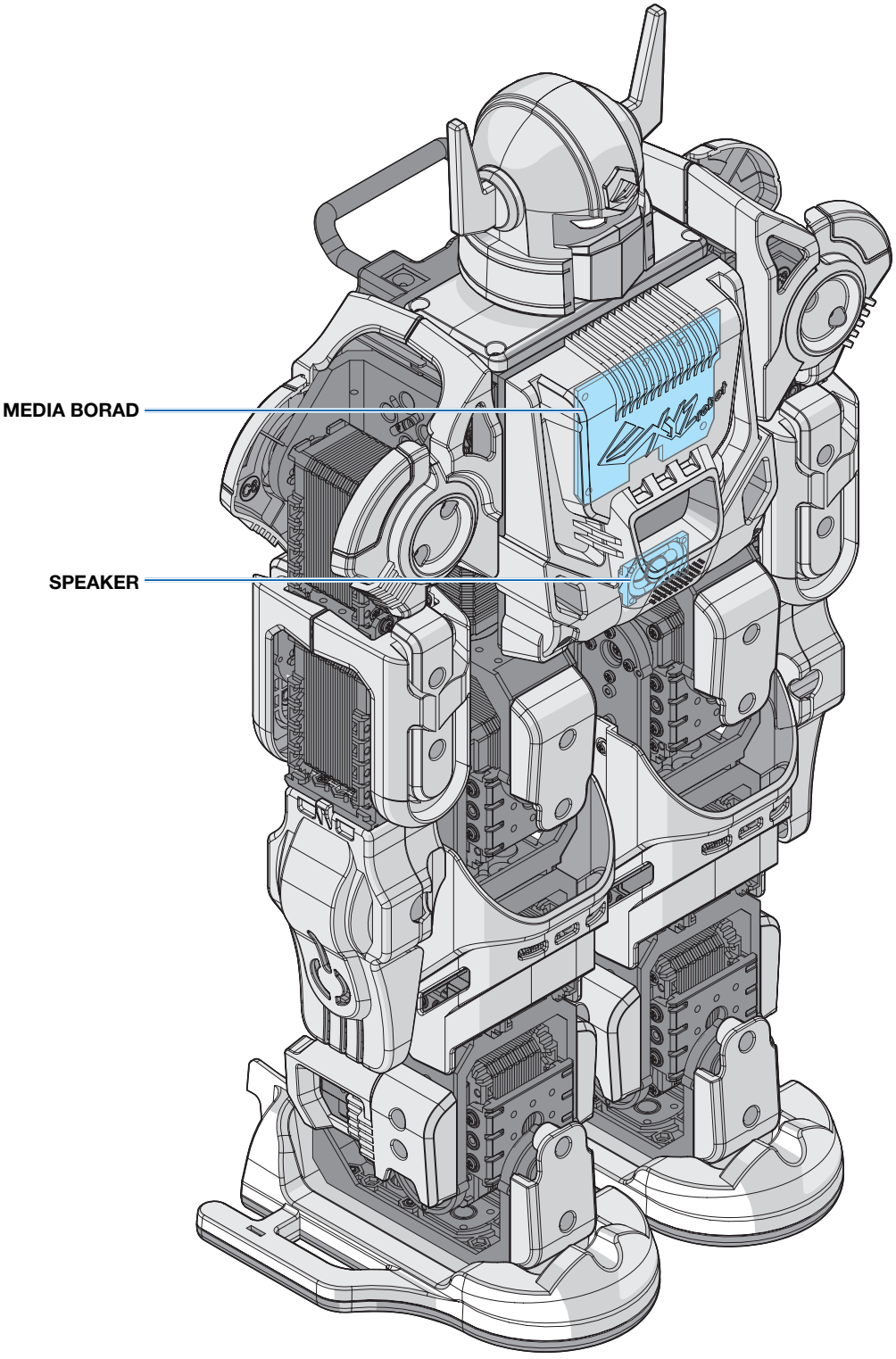
The actuator (servo) hubs are shipped mounted on the actuator. They are included as a package. When assembling the servos, the hub must first be aligned to the actuator axis. By setting the hub to zero, it ensures that the zero position of the actuator matches the zero position of the structure.

On the hub, there is a beveled line indicating the orientation. The same type of indentation is located on the servo. By matching the two indication lines, you are ensured that the actuator and the hub are properly aligned.

Introduction

Component Overview

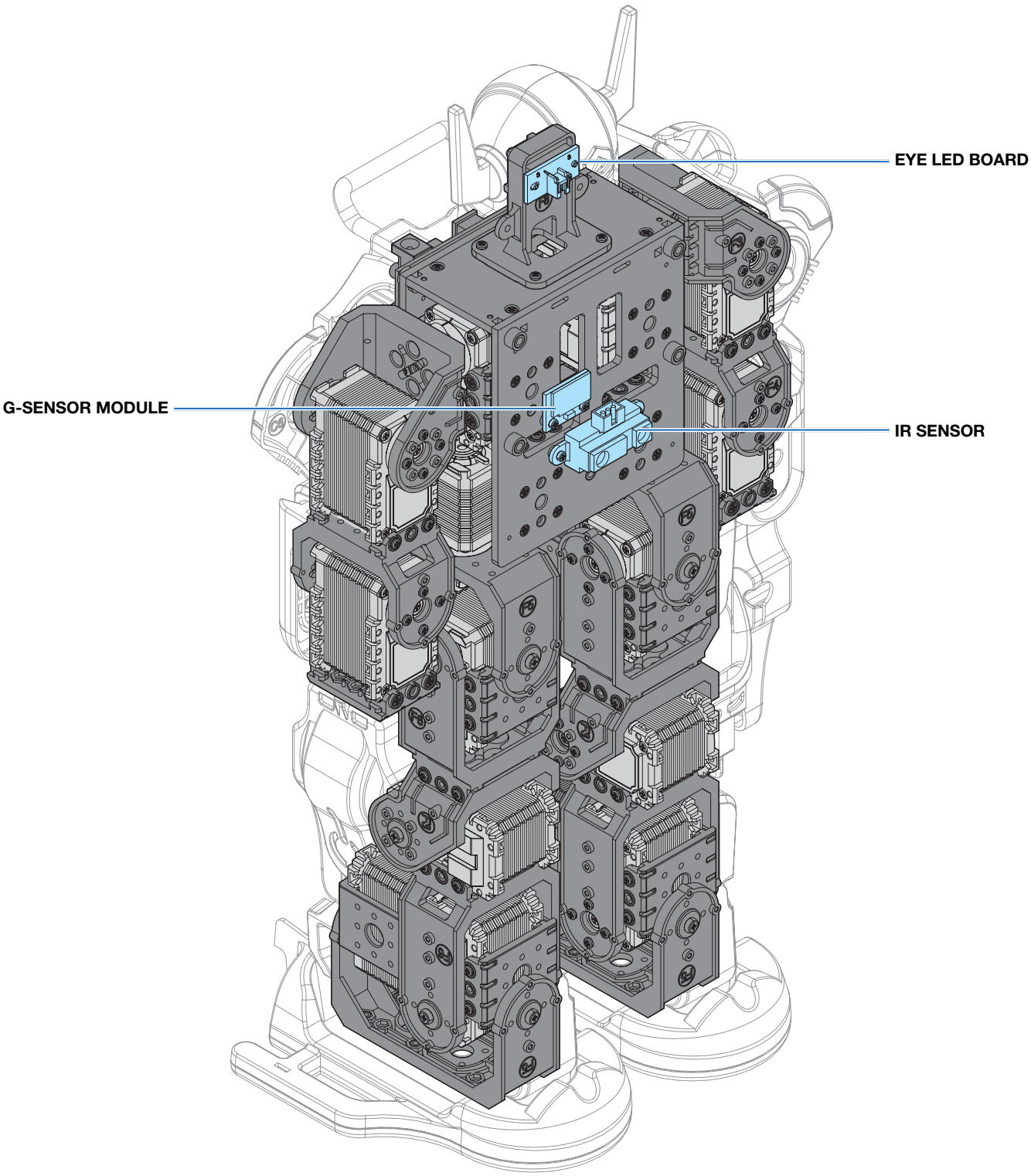
01



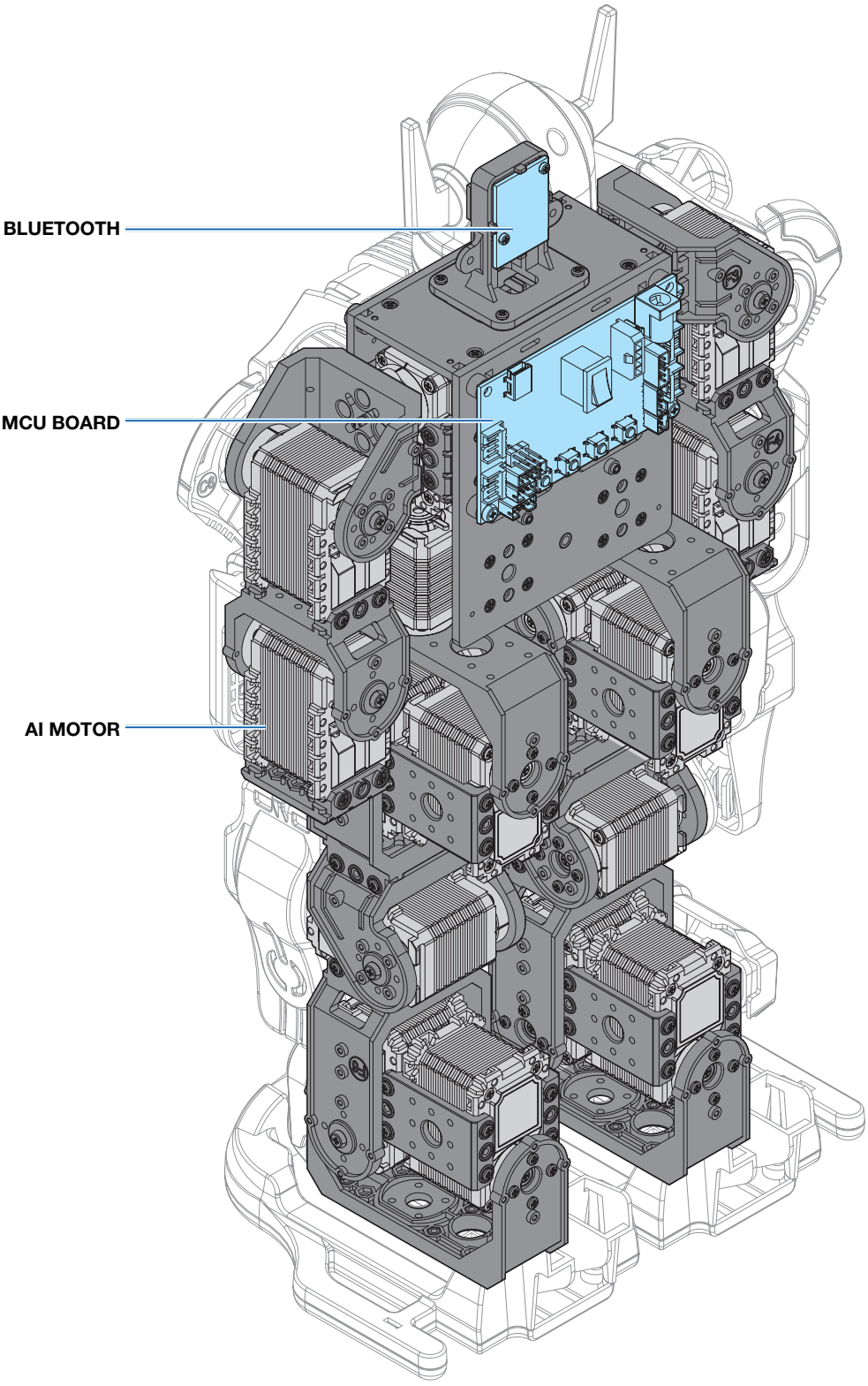
Front Side of Robot

01 Introduction

Component Overview



Front Side of Robot (Internal View)



Rear Side of Robot

01 Introduction

Overview of Servos

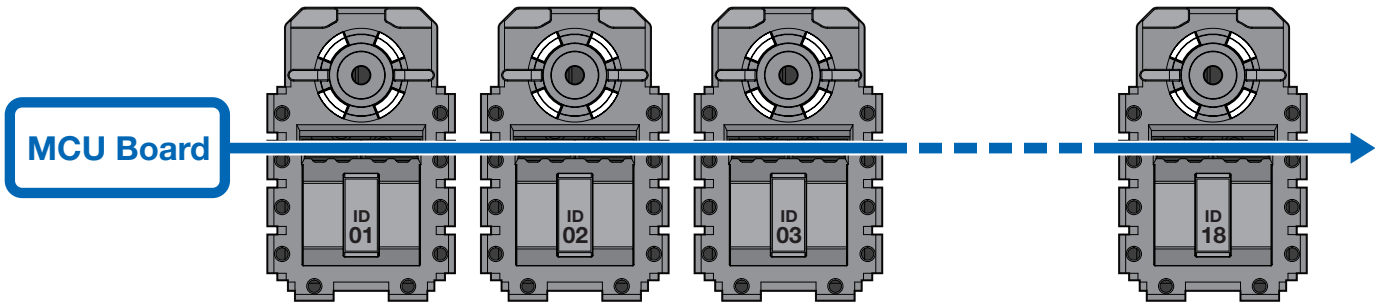
Overview and Characteristics of Servos

Servos A1 - 16 are modular actuators, which combine a gear reducer, a DC motor and an embedded control board in one small package. The servo motors provide the necessary torque to operate the robot. An added function of the motors is to provide information about internal temperature, supply voltage, current and display operational status through an LED.

General Servo Motor Specifications

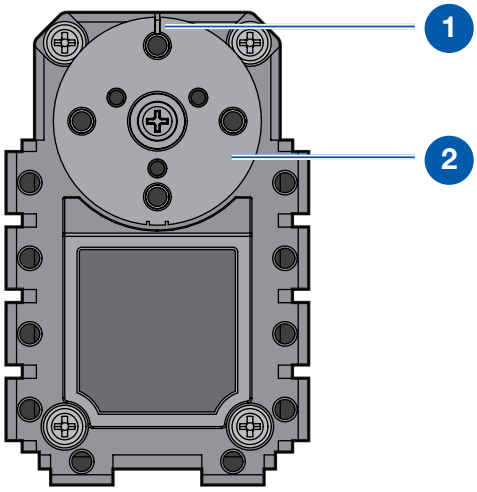
1. Operation voltage : 8 ~ 12 Volt
2. Maximum speed : 70 ± 10 rpm
3. Stall torque : 25.0 kg-cm
4. Rotary position feedback with 360° continuous rotation angle and maximum 330° effective position control range
5. Duplex UART 5V TTL serial communication (default Baud rate: 115,200).

Wiring Connection



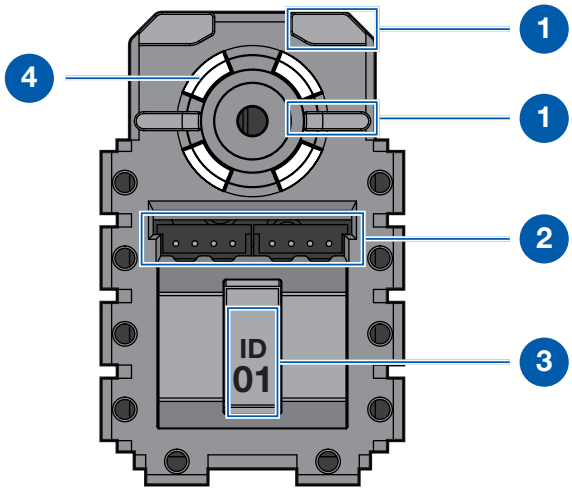
The servo motors are wired together in sequence to allow for communication to the MCU board. In the previous figure, the illustration depicts the wiring scheme used in the robot assembly. Every servo motor has a unique ID value, which is used by the MCU board to identify and send out respective signals. During power up, the status LED blinks the following sequence: red, white, blue and green (twice), to signify a successful power up procedure.

Front View of Servo



1. Zero Position: The zero position shows the central position of servo hub.
2. Servo Hub: The servo hub is the rotation output part of the servo motor.

Back View of A1-16



1. Cable Clip: The cable clip provide a route for cable.
2. Cable Connector: The cable connector provides power and communication signal for A1-16.
3. Servo ID: The servo ID shows default identification number.
4. Status LED: LED displays the servo motor status, see the following table for details.

Status Error	Error LED on/off
Normal Operation	LED on (White)
Exceed Potentiometer Range Error	LED on (Blue)
Over Voltage/Temperature/ Current Limits Error	LED on (Red) LED off (White)
Requested Packet Error	LED on (Green)

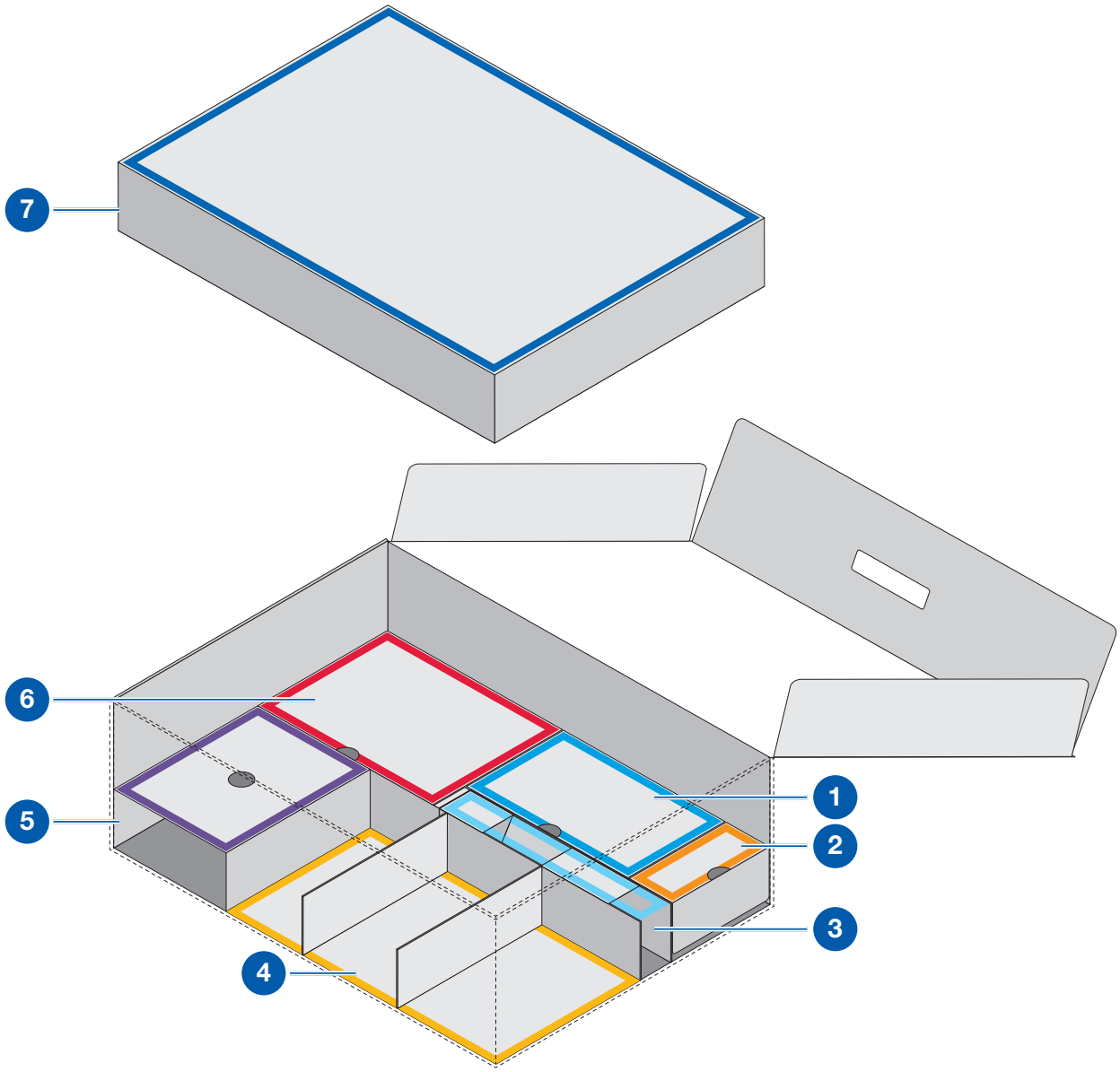
02 Component Identification

Out of the Box (CKD)

Carefully unpack the box and check that the following items are included.

1. Adapter, USB cable, 3-cell battery, battery charger, 3 x AAA batteries and power cable
2. PCBA
3. Screw driver and screws
4. Brackets for the Bolide
5. Remote control
6. AI motors (servo motors)
7. Cases for the Bolide

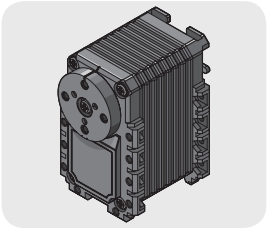
Contact your vendor if any items are missing or appear damaged.



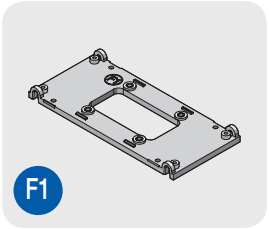
Component Identification

CKD Part List

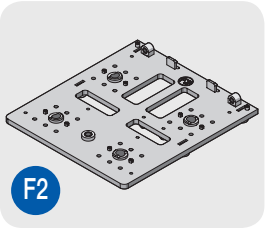
02



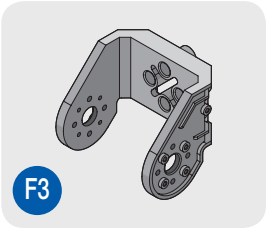
AI MOTOR x18



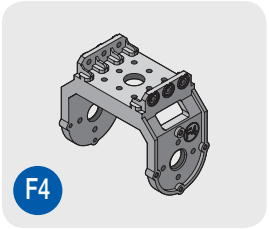
BODY, TOP x1



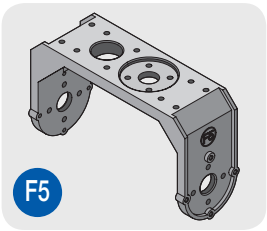
BODY x2



FRAME1 x4



FRAME2 x2



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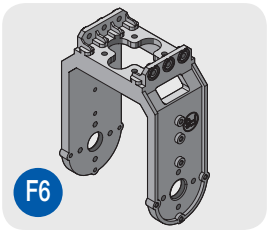

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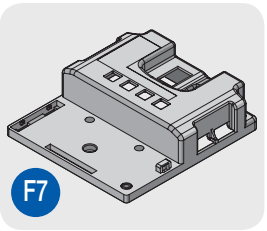
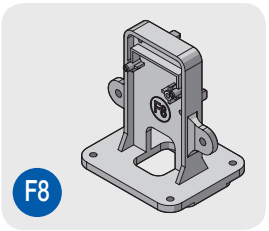
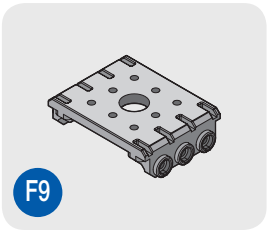


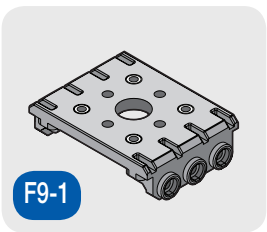
PCB COVER x1



HEAD BRACKET x1



BRACKET1 x2



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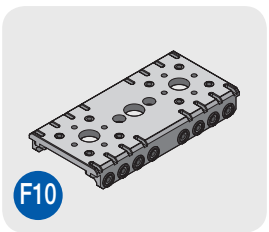

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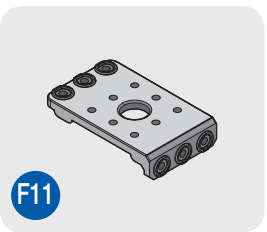

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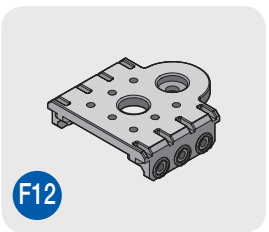

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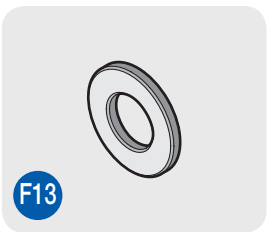
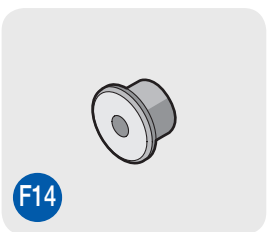
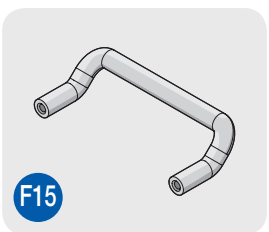


WASHER x10

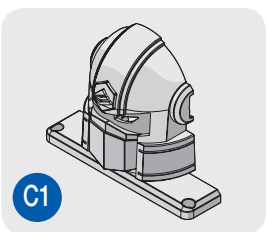


SHOULDER WASHER x14

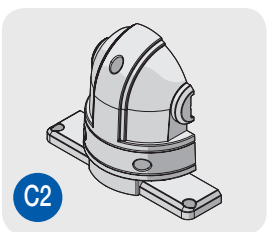


BAR x1

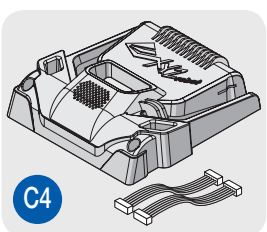
CABLE TRAY x8



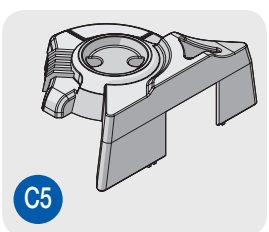
HEAD, FRONT x1



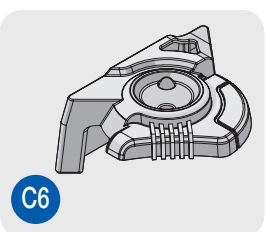
HEAD, BACK x1



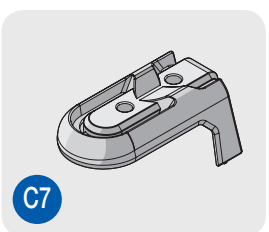
CHEST x1



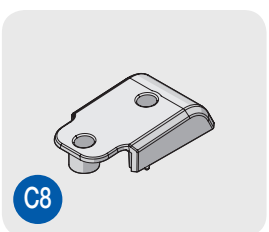
SHOULDER, FRONT x2



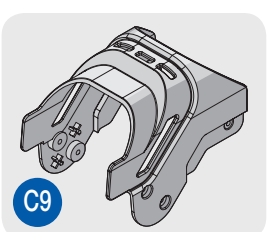
SHOULDER, BACK x2



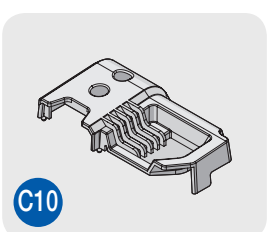
ARM x4



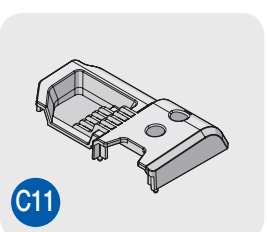
LEG, HIGH x6



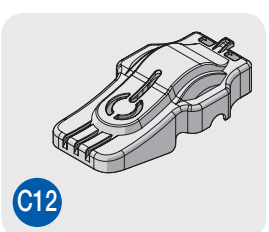
KNEE x2



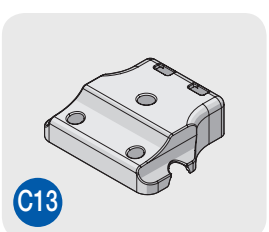
LEG, LOW L x2



LEG, LOW R x2



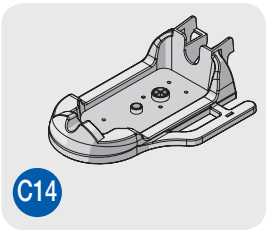
FIST, FRONT x2



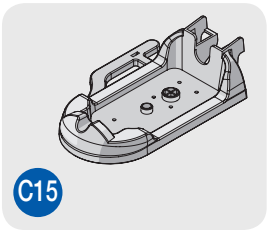
FIST, BACK x2

02 Component Identification

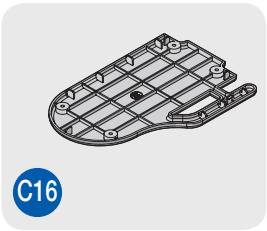
CKD Part List (Cont.)



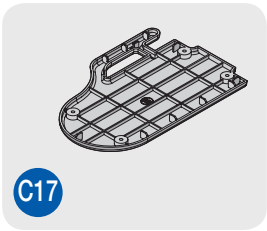
FOOT, TOP L x1



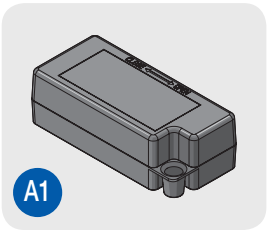
FOOT, TOP R x1



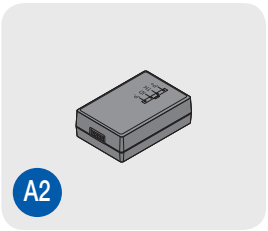
FOOT, BTM L x1



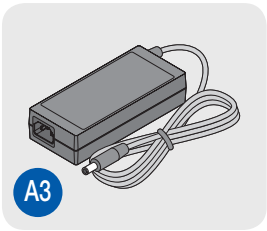
FOOT, BTM R x1



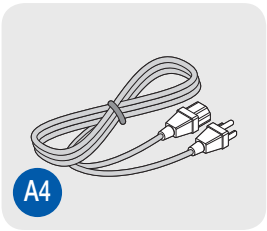
BATTERY x1



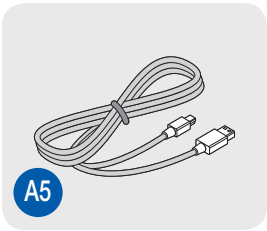
BATTERY CHARGER x1



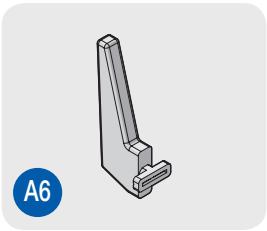
ADAPTER x1



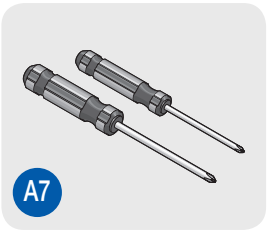
POWER CABLE* x1



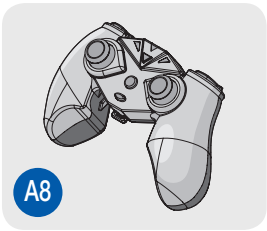
USB CABLE x1



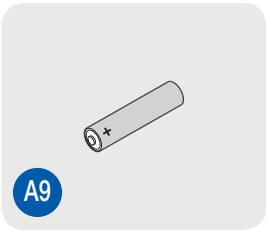
HORN x2



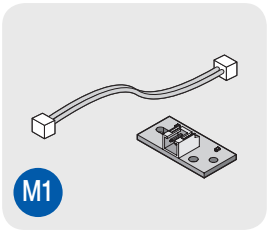
SCREW DRIVERS x2



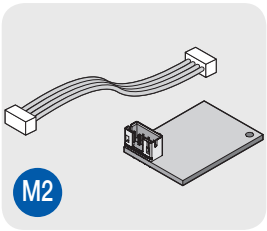
REMOTE CONTROL x1



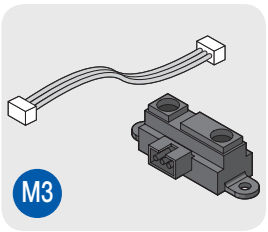
AAA BATTERIES x3



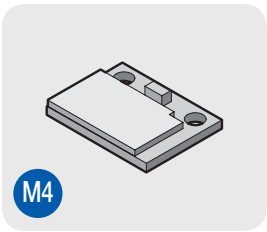
EYE LED BOARD x1



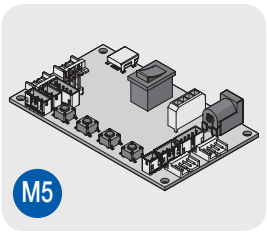
BLUETOOTH MODULE x1



IR SENSOR x1



G-SENSOR MODULE x1



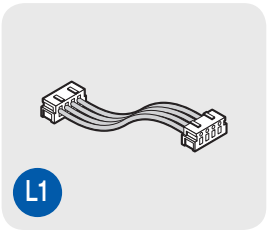
MCU BOARD x1

* Components may vary depending on regional requirements.

Component Identification

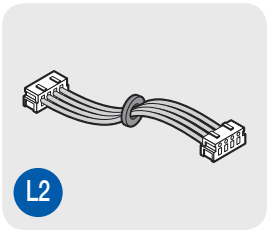
CKD Part List (Cont.)

02



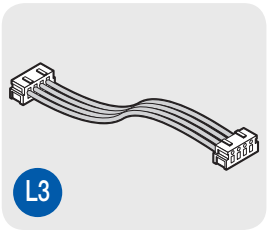
80MM

x4



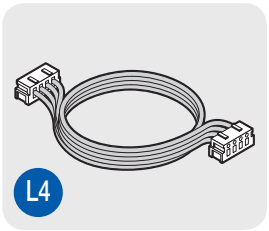
100MM

x4



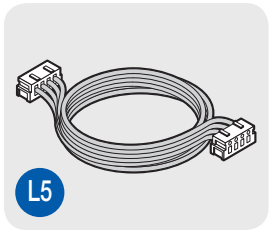
120MM

x2



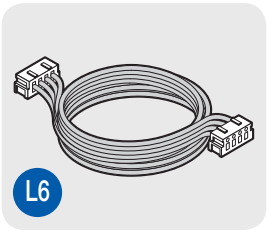
140MM

x2



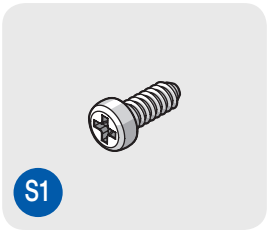
180MM

x4



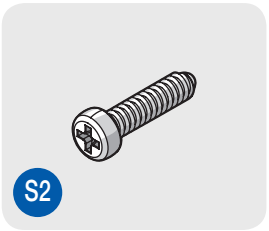
220MM

x2



M2.0x5L

x78

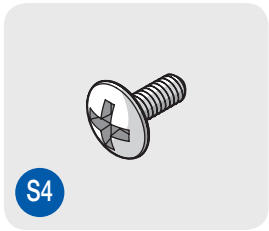


M2.0x8L

x10

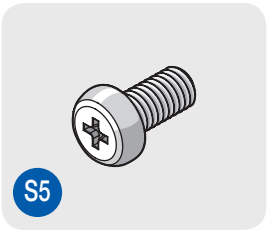
M2.0x6L

x236



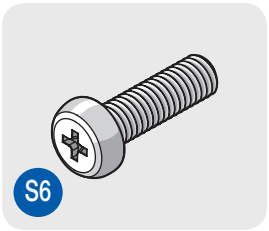
M2.0x5.5L

x16



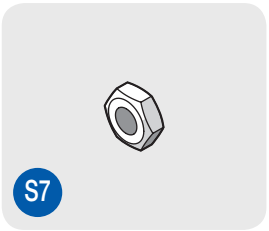
M3.0x6L

x8



M3.0x10L

x14



M2 NUT

x20

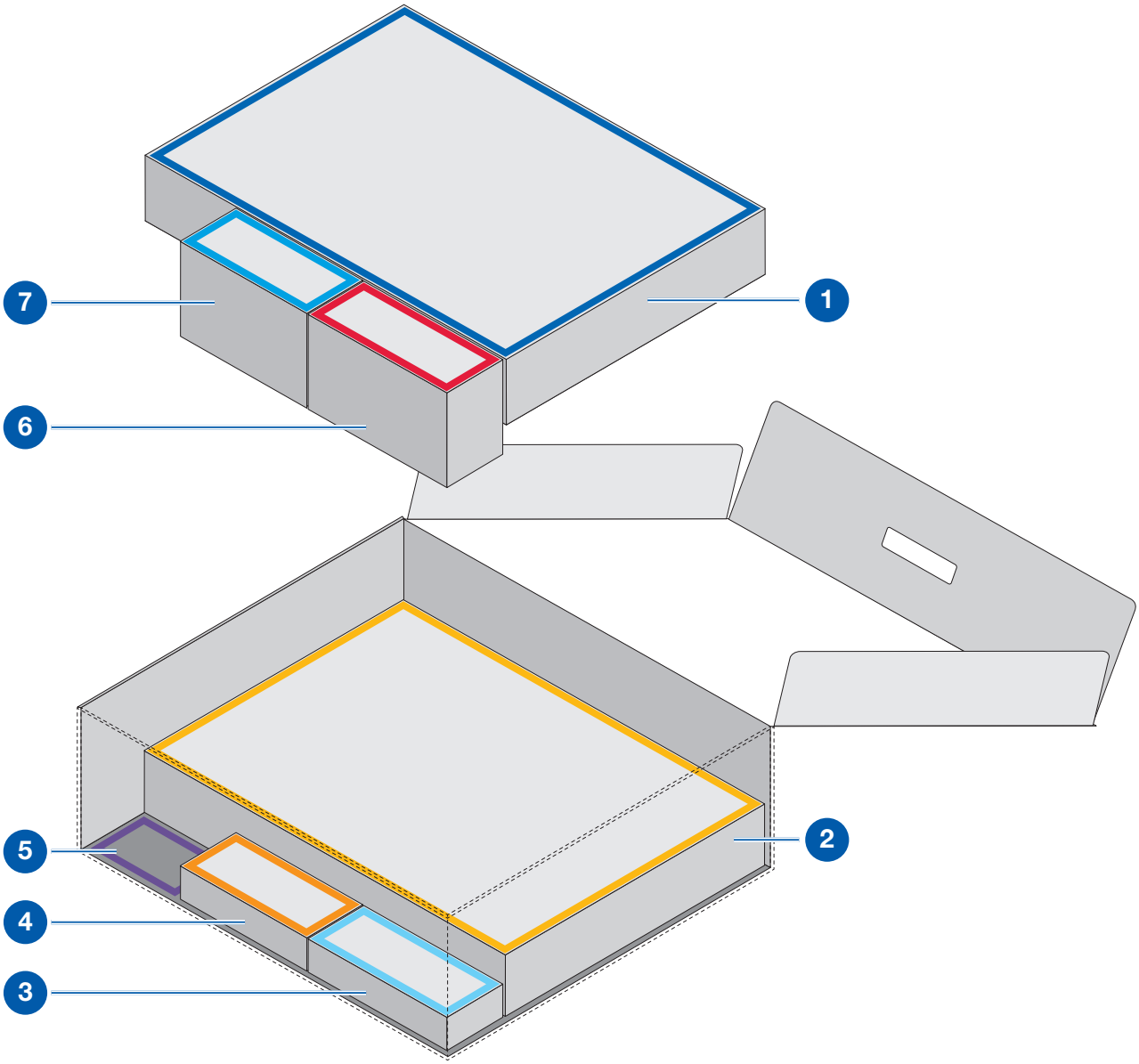
02 Component Identification

Out of the Box (SKD)

Carefully unpack the box and check that the following items are included.

1. Cases for the Bolide
2. Arms and legs
3. Screw driver and screws
4. PCBA
5. Remote control
6. Adapter, USB cable, 3-cell battery, battery charger, 3 x AAA batteries and power cable
7. Brackets for the Bolide

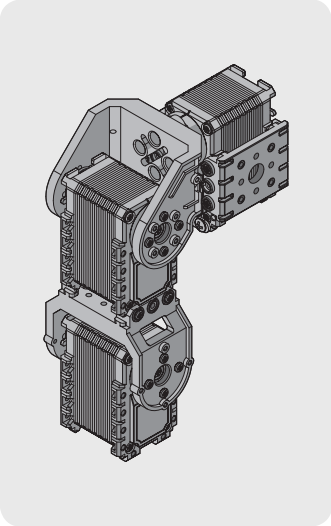
Contact your vendor if some items are missing or appear damaged.



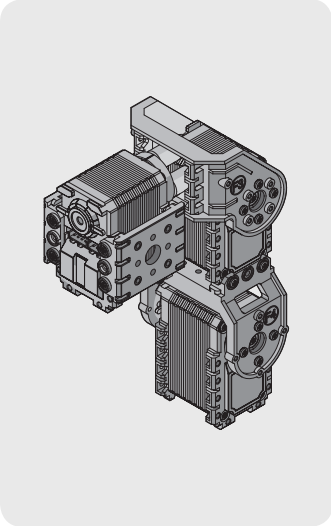
Component Identification

SKD Part List

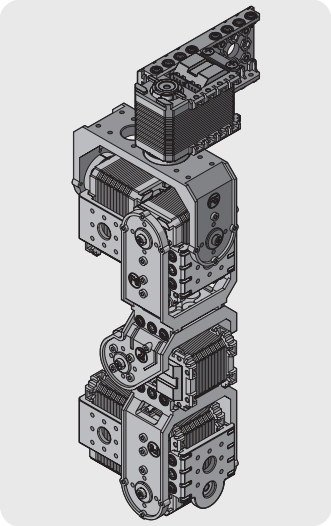
02



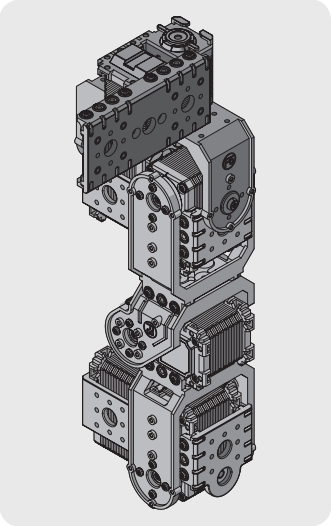
RIGHT ARM x1



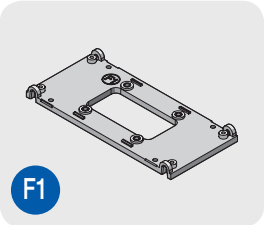
LEFT ARM x1



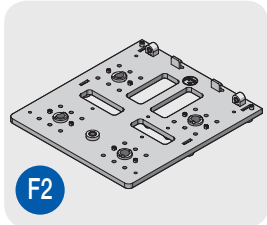
RIGHT LEG x1



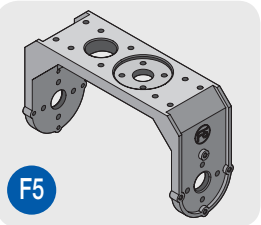
LEFT LEG x1



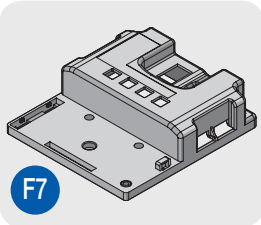
BODY, TOP x1



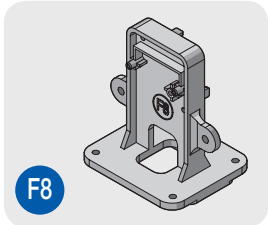
BODY x2



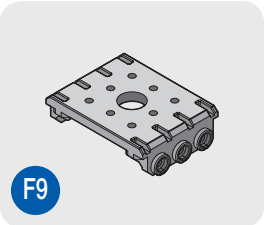
FRAME3 x2



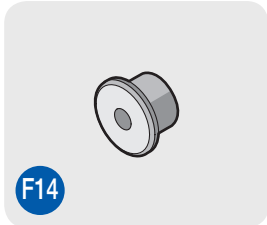
PCB COVER x1



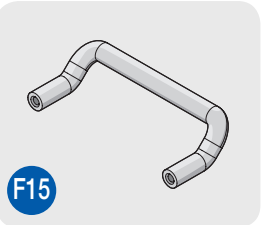
HEAD BRACKET x1



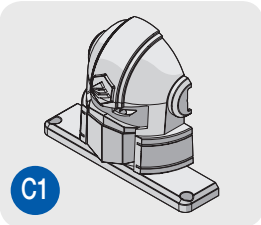
BRACKET1 x2



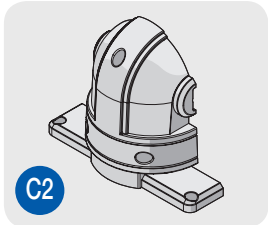
SHOULDER WASHER x14



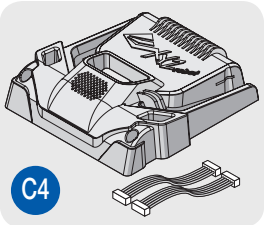
BAR x1



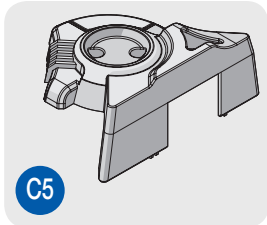
HEAD, FRONT x1



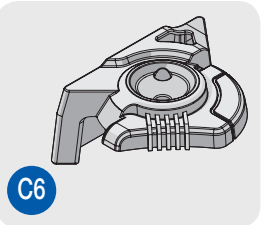
HEAD, BACK x1



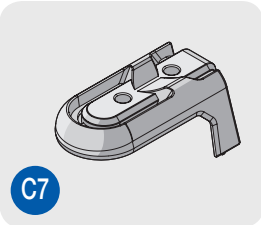
CHEST x1



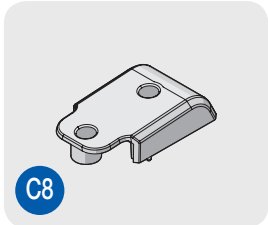
SHOULDER, FRONT x2



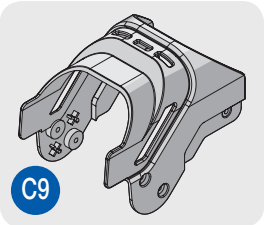
SHOULDER, BACK x2



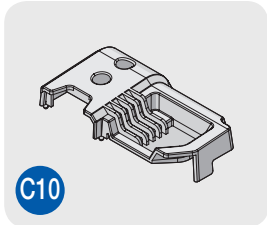
ARM x4



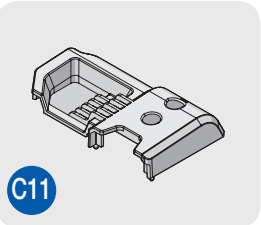
LEG, HIGH x6



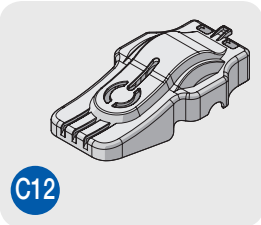
KNEE x2



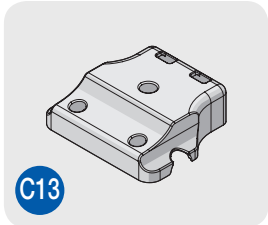
LEG, LOW L x2



LEG, LOW R x2



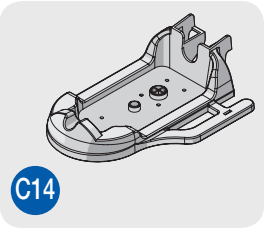
FIST, FRONT x2



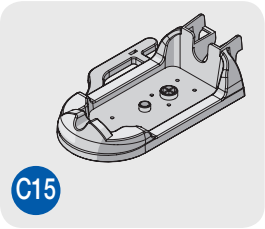
FIST, BACK x2

02 Component Identification

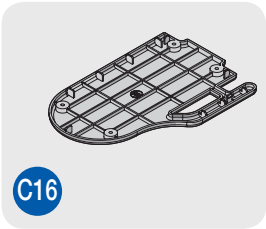
SKD Part List (Cont.)



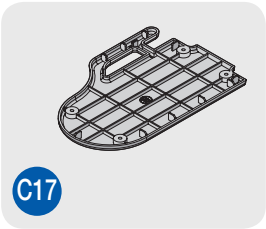
FOOT, TOP L x1



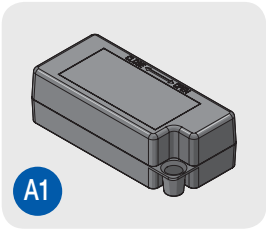
FOOT, TOP R x1



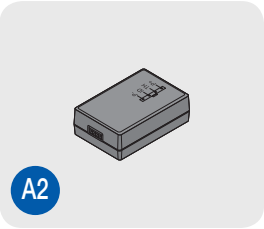
FOOT, BTM L x1



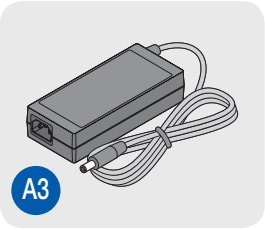
FOOT, BTM R x1



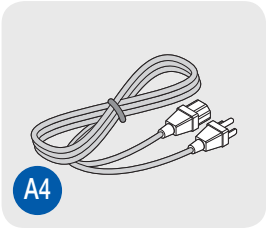
BATTERY x1



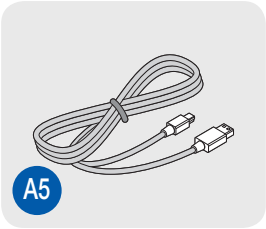
BATTERY CHARGER x1



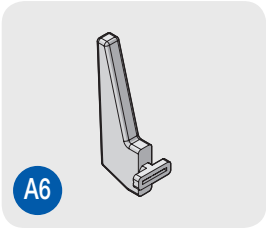
ADAPTER x1



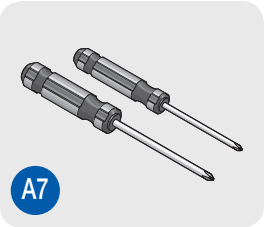
POWER CABLE* x1



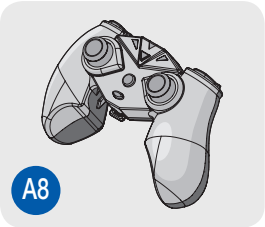
USB CABLE x1



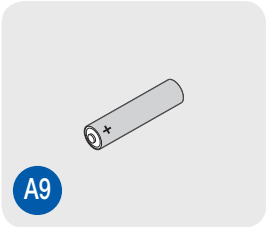
HORN x2



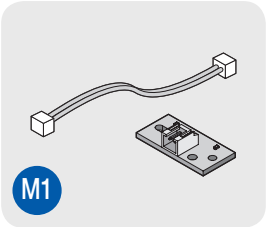
SCREW DRIVERS x2



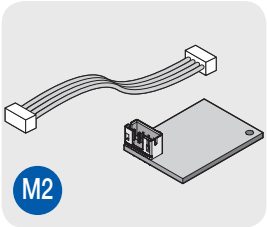
REMOTE CONTROL x1



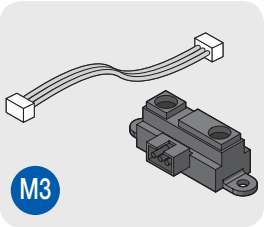
AAA BATTERIES x3



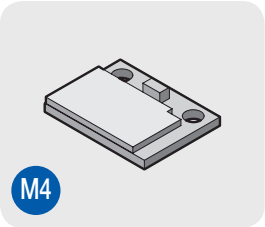
EYE LED BOARD x1



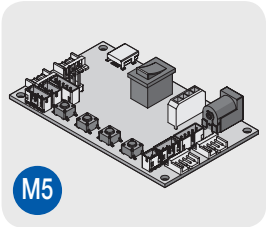
BLUETOOTH MODULE x1



IR SENSOR x1



G-SENSOR MODULE x1



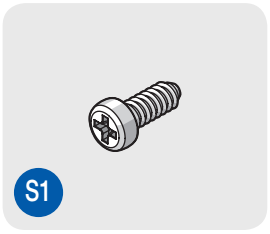
MCU BOARD x1

* Components may vary depending on regional requirements.

Component Identification

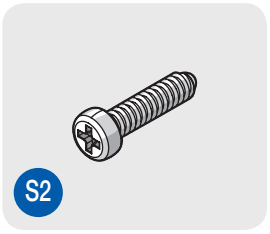
SKD Part List (Cont.)

02



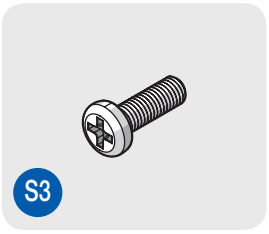
M2.0x5L

x78



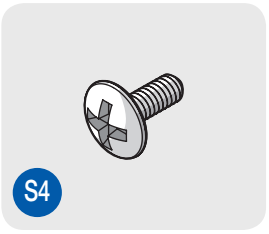
M2.0x8L

x10



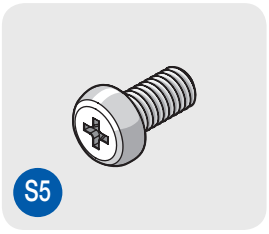
M2.0x6L

x76



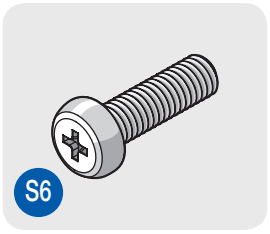
M2.0x5.5L

x16



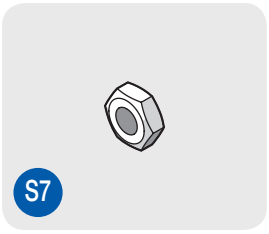
M3.0x6L

x8



M3.0x10L

x2



M2 NUT

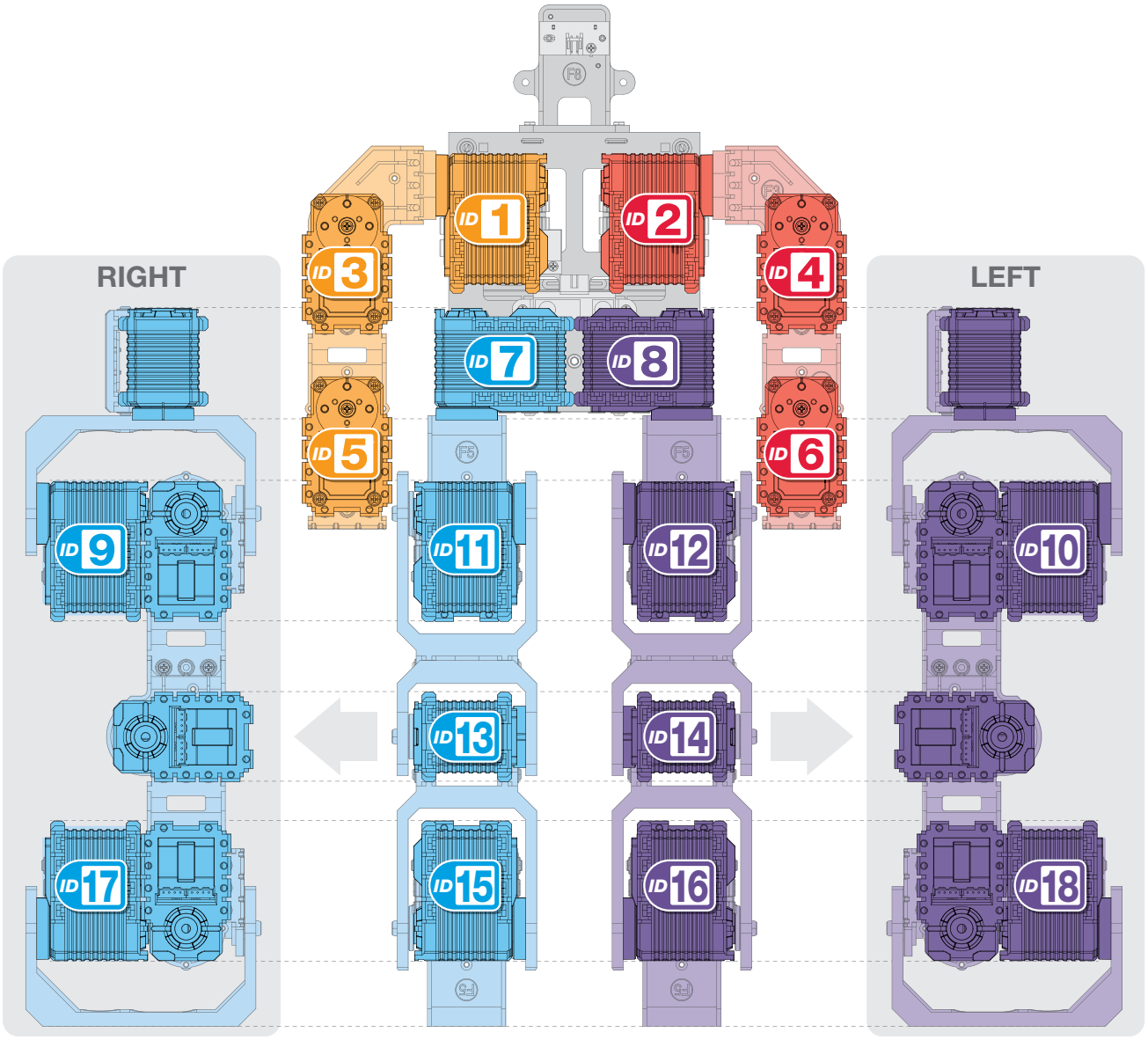
x12

02 Component Identification

Server Motors Identification

The actuators are preconfigured with a respective ID to allow for easier identification and an overall faster assembly process. The following information depicts each actuator along with its ID number. The actuators have been color coded in this manual for easy reference. The actual components are not color coded.

The following image illustrates the front side of the robot with the left and right extended leg views showing all ID locations.

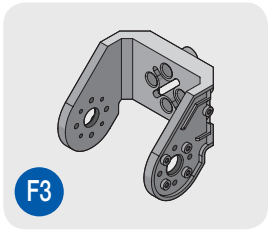


Component Identification

Bracket Placement Identification

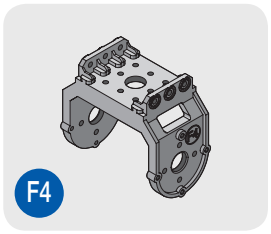
02

The placement of each bracket is illustrated in the following diagram. Each bracket represents a different section segment. Some brackets require the installation of nuts before starting assembly. See the correlating procedure for further information.



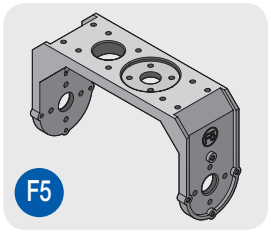
FRAME1

x4



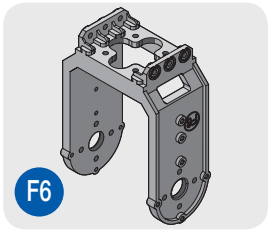
FRAME2

x2



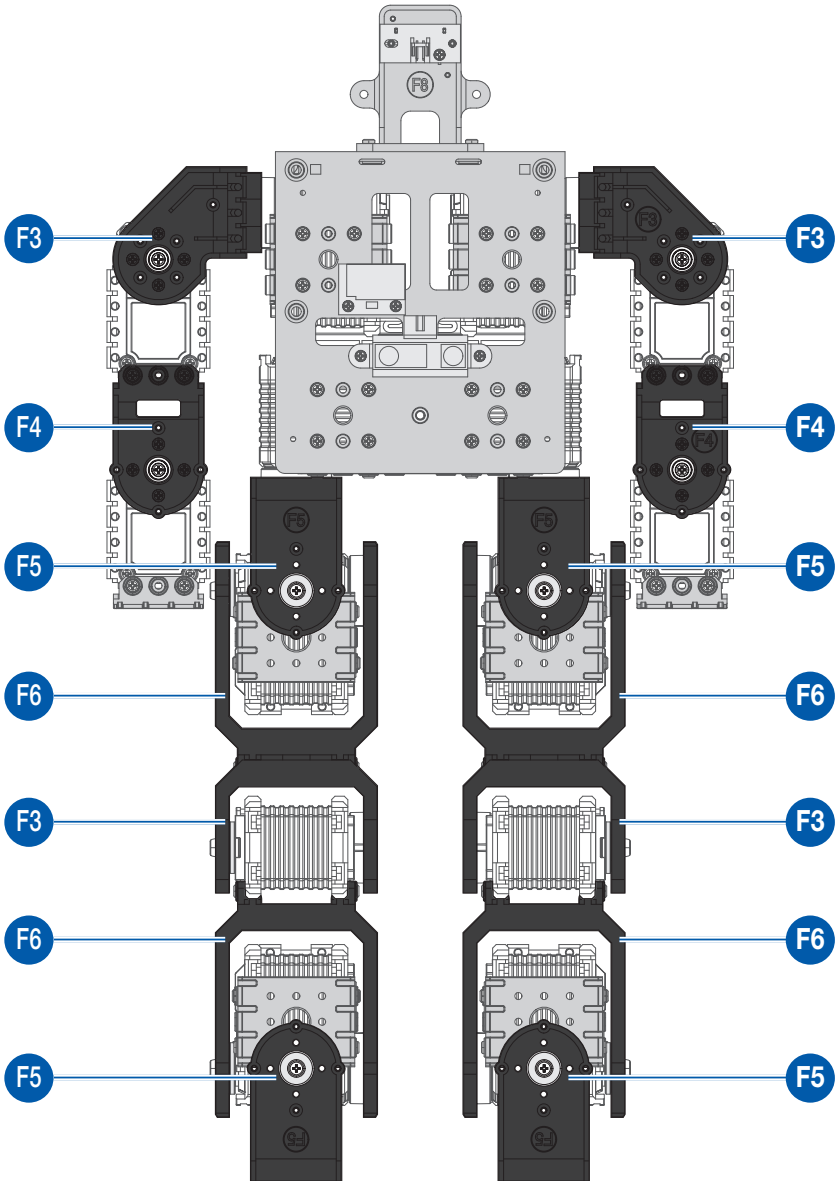
FRAME3

x4



FRAME4

x4

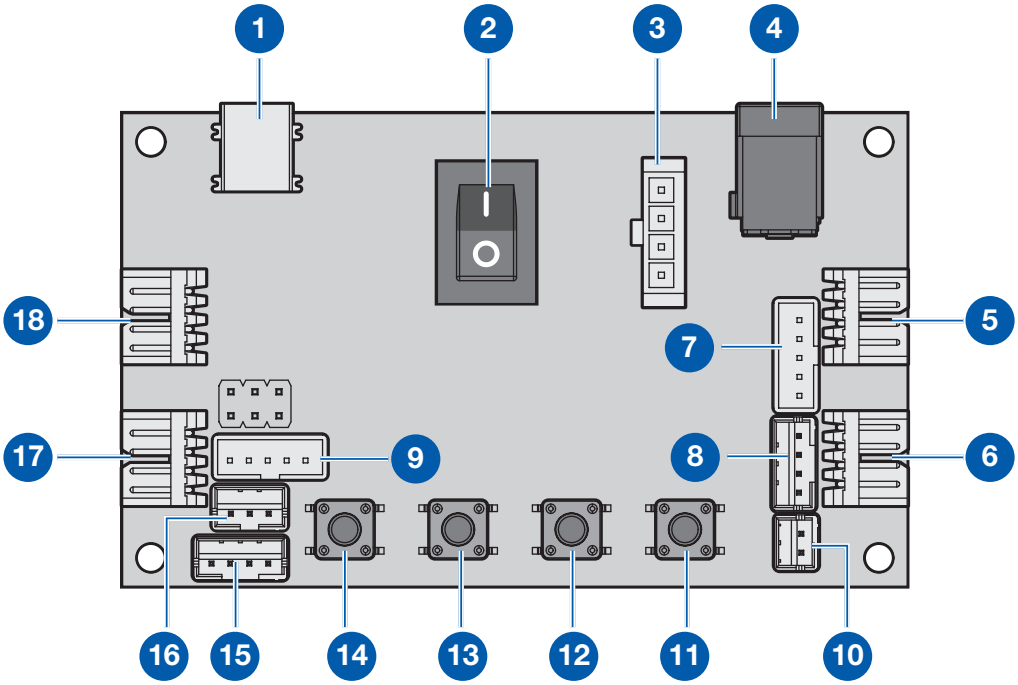


02 Component Identification

Board Connector

MCU Board

1. Mini USB connector
2. Power switch
3. Battery connector
4. Power slot
5. Connector to the right arm
6. Connector to the right leg
7. LED connector to the media borad
8. Connector to the G-Sensor module
9. Audio connector to the media borad
10. Connector to the eye LED board
11. Programmable button
12. Programmable button
13. Programmable button
14. Programmable button
15. Connector to the Bluetooth module
16. Connector to the robot IR sensor
17. Connector to the left leg
18. Connector to the left arm

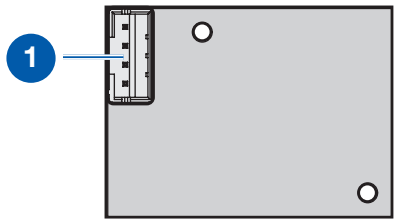


Component Identification
Board Connector

02

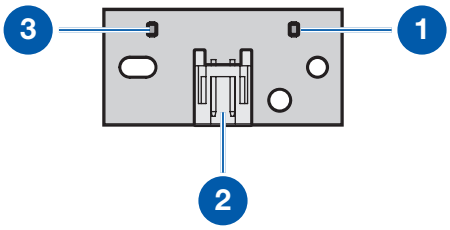
Bluetooth Module

1. Connector to the MCU board



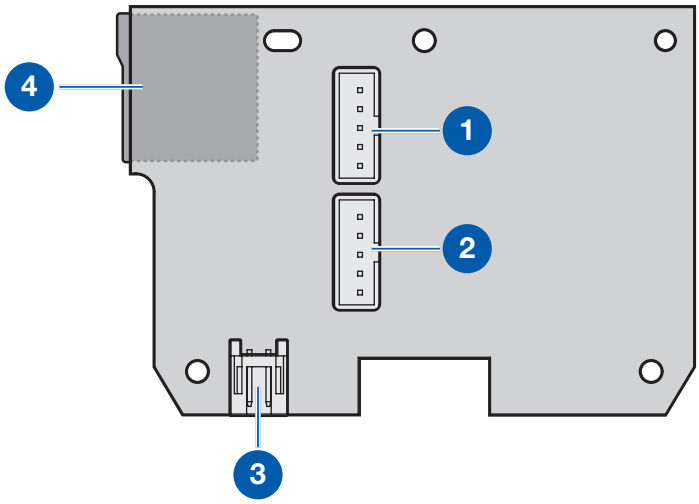
Eye LED Board

1. LED
2. Connector to the MCU board
3. LED



Media Borad

1. Audio connector to the MCU board
2. LED connector to the MCU board
3. Speaker connector
4. MicroSD card slot



03 Hardware Assembly

General Safety and Hardware Preparation

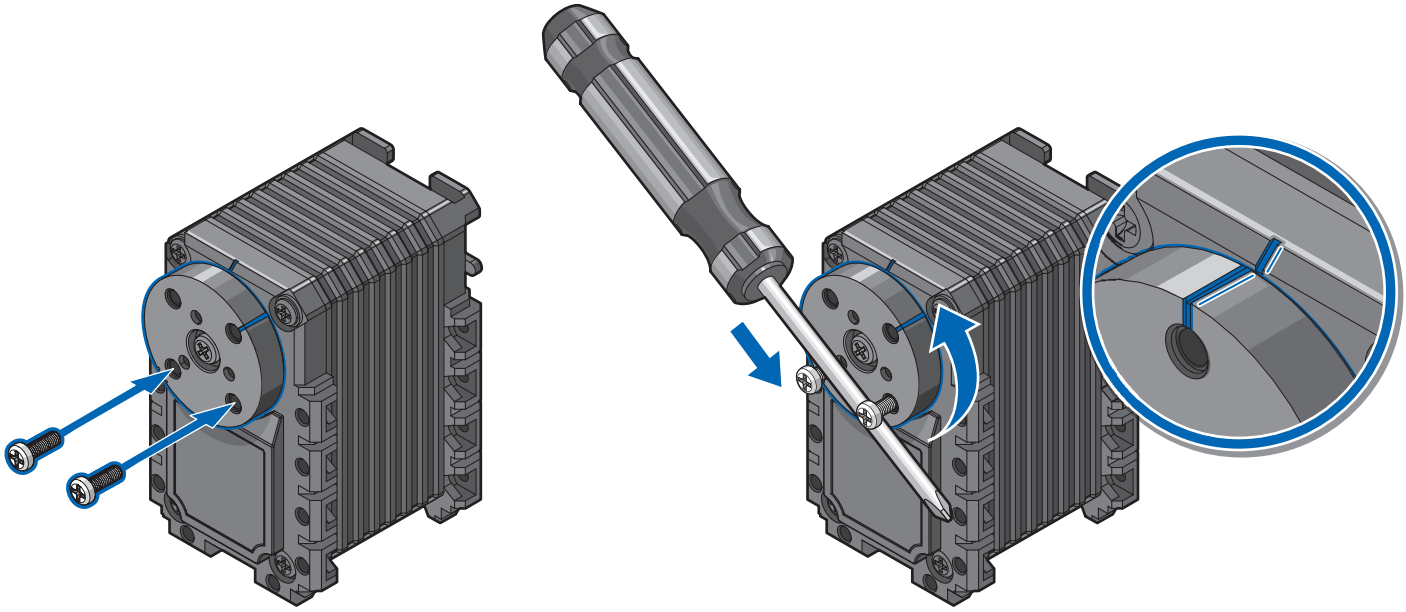
General Safety

- Before using, take a moment to locate the Power On/Off and directional buttons and familiarize yourself with the functions.
- Avoid carrying and touching the robot when it is moving, walking or getting up to avoid getting pinched.
- Keep hand and fingers out of the joint areas to avoid getting caught in between.
- To avoid injury, do not place your hands in any joint to prevent damage or personal injury.
- Generally, leave at least 60 cm (24 inches) all around the robot to avoid damage. In particular, ensure that all cabling is removed from the usable area.
- The working surface must be dry and level; thick carpets or rugs are not recommended for operational stability.
- The robot is designed for indoor use only.

Servo Hub Preparation

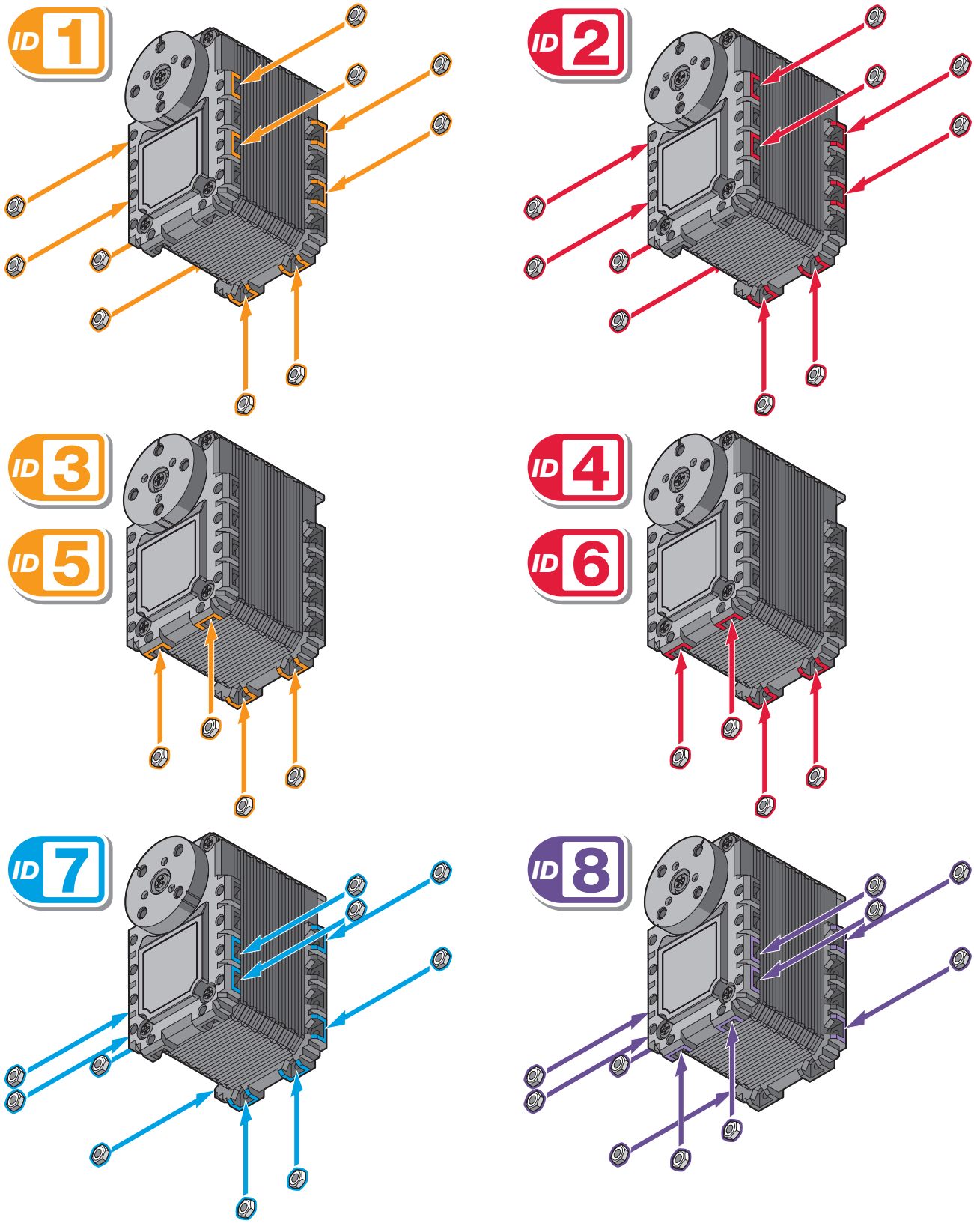
Prior to installation of the servo motors, the hub must be aligned with the servo. The process is known as Setting to Zero. Once aligned, the zero position of the servo matches the zero position of the structure around it.

1. Insert two screws on the actuator hub as seen in the following image.
2. Place a screw driver between the screws and turn it until the line on the hub and the line on the servo are aligned indicating the correct orientation.



Servo Preparation

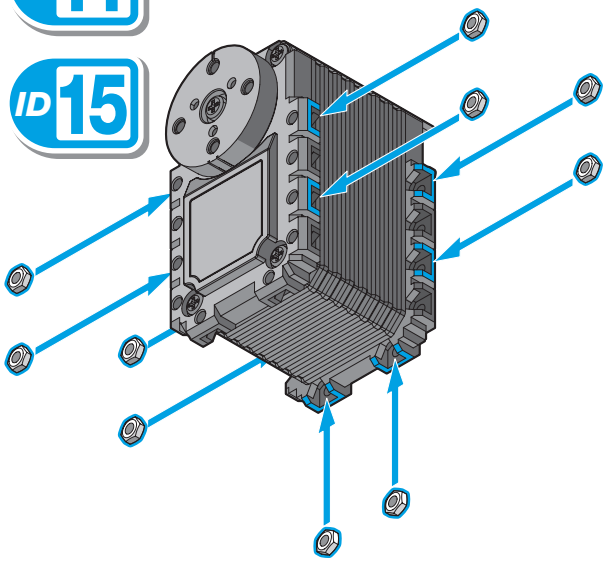
The brackets for each ID contain screw nuts for securing. The position of the screw nuts vary depending on the servo ID. This section includes locations for all the servo motors to serve as a reference for installation. Refer to the user guide to install the screw nuts on any of the servo motors.



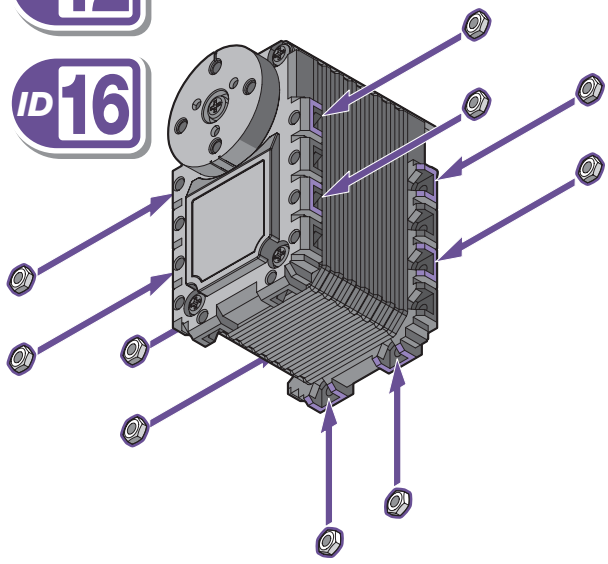
03 Hardware Assembly

General Safety and Hardware Preparation

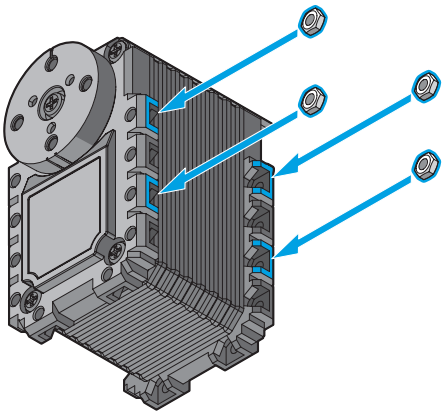
ID 11
ID 15



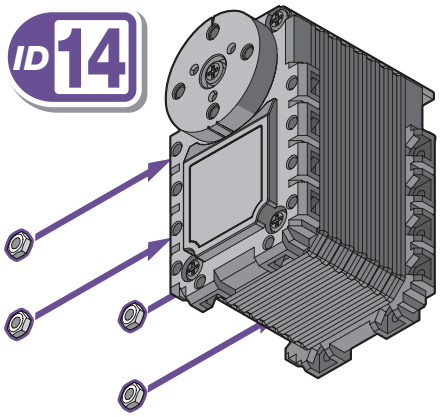
ID 12
ID 16



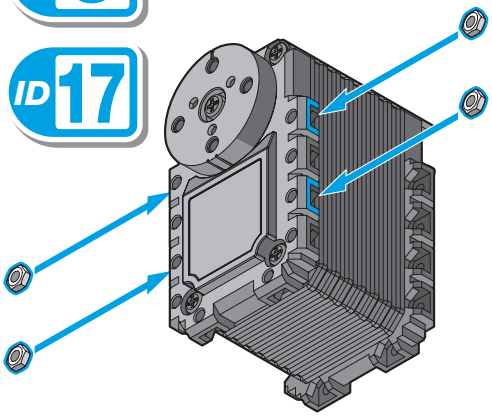
ID 13



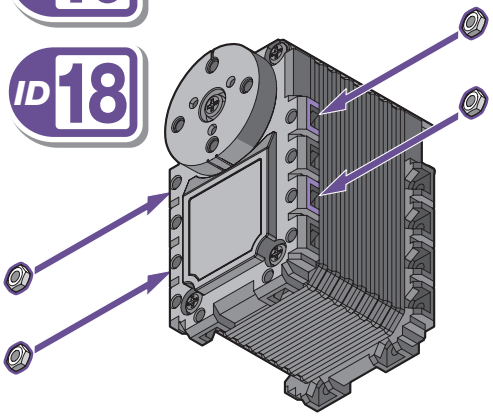
ID 14



ID 9
ID 17



ID 10
ID 18



Hardware Assembly

Order of Assembly

03

The following information is designed to provide you with an optimal installation process to utilize your time and minimize the possibility of installation errors.

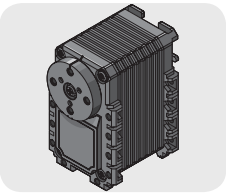
The order of assembly is as follows:

1. Right arm
2. Left arm
3. Right leg
4. Left leg
5. Head and torso
6. Case

03 Hardware Assembly

Right Arm Assembly

Required Parts



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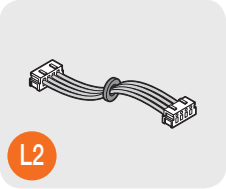
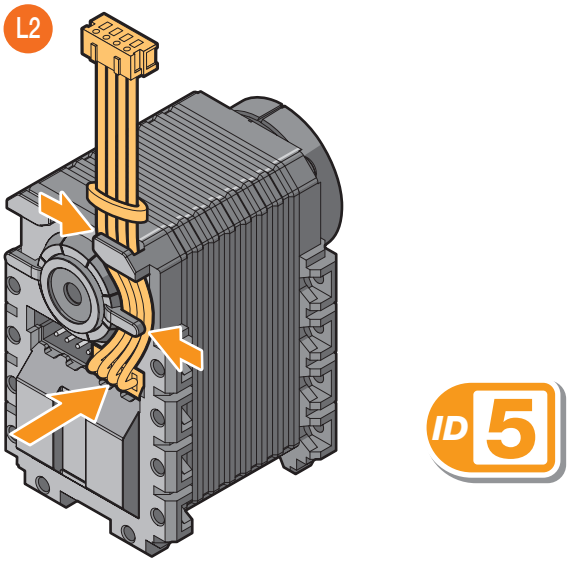


x1

NOTE: Make sure the actuator hub is set to zero before installing the bracket. See ***"Servo Hub Preparation"*** *on page 30.*

1. Connect the cable (L2) to the actuator (ID5) then route the cable (L2) through the cable clips on the actuator (ID5).

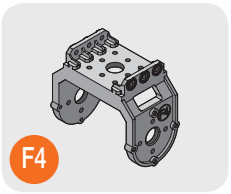


Hardware Assembly

Right Arm Assembly

03

Required Parts



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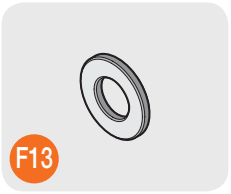

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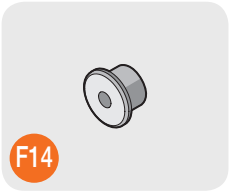

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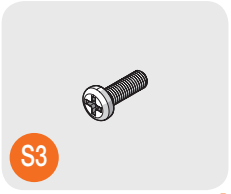
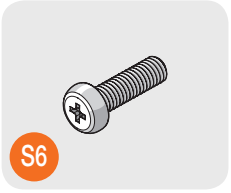
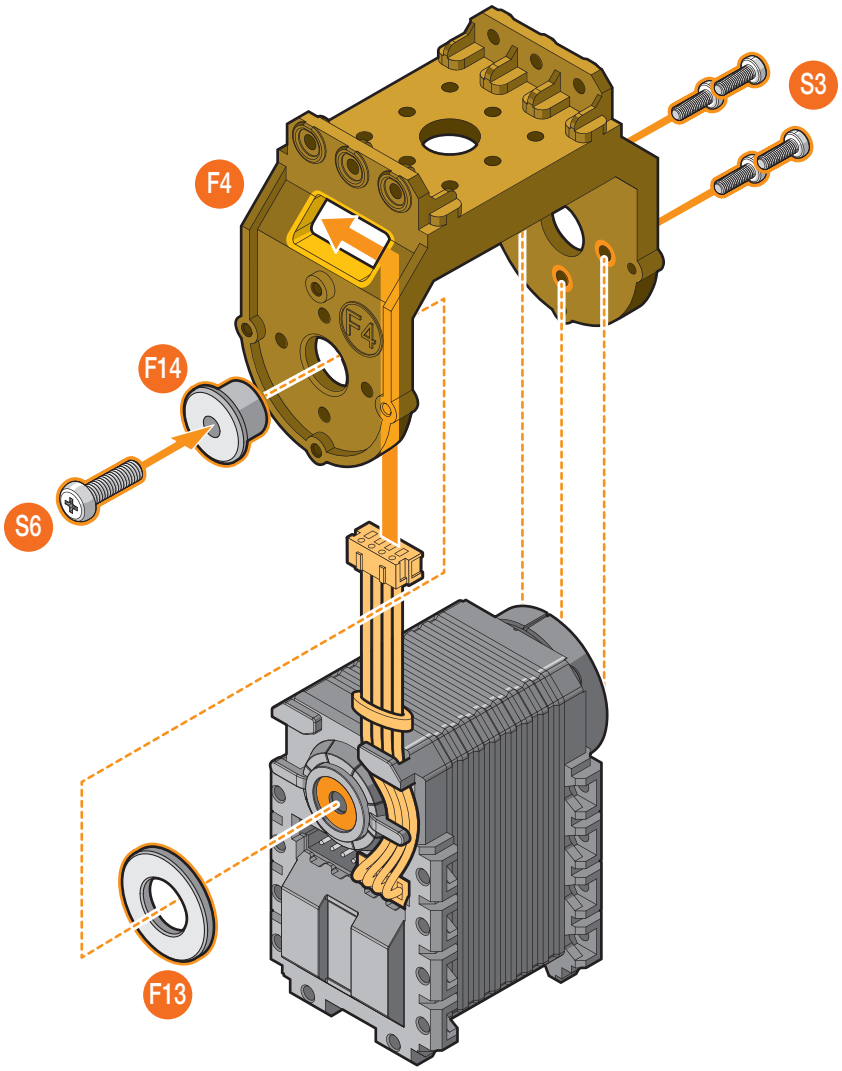


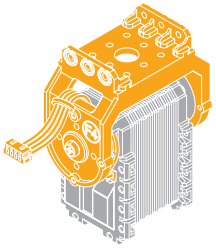
x4



x1

2. Insert the shoulder washer (F14) through the bracket (F4) first.
3. Insert the washer (F13) on the shoulder washer (F14).
4. Route the cable (L2) through the opening on the bracket (F4).
5. Align the shoulder washer (F14) with the actuator (ID5) before installing. Lower in place to install.
6. Secure the shoulder washer (F14) with a screw (S6).
7. Secure the bracket (F4) to the actuator (ID5) with screws (S3).

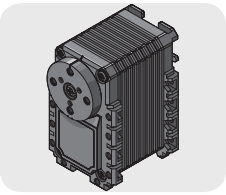




03 Hardware Assembly

Right Arm Assembly

Required Parts



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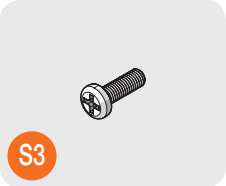
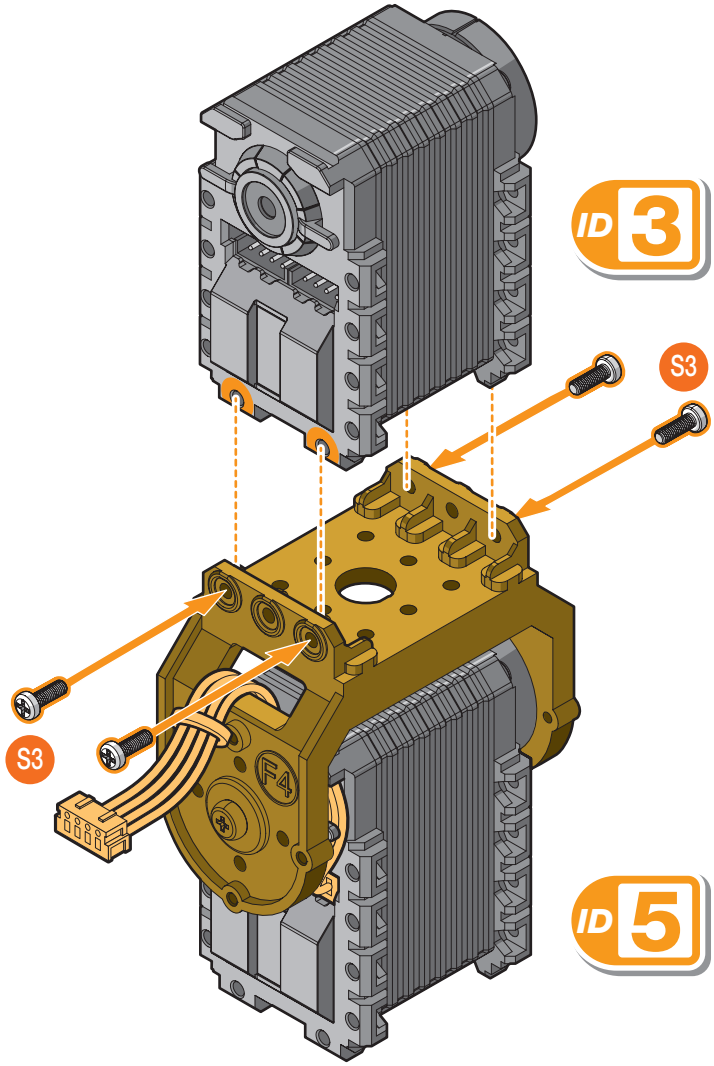


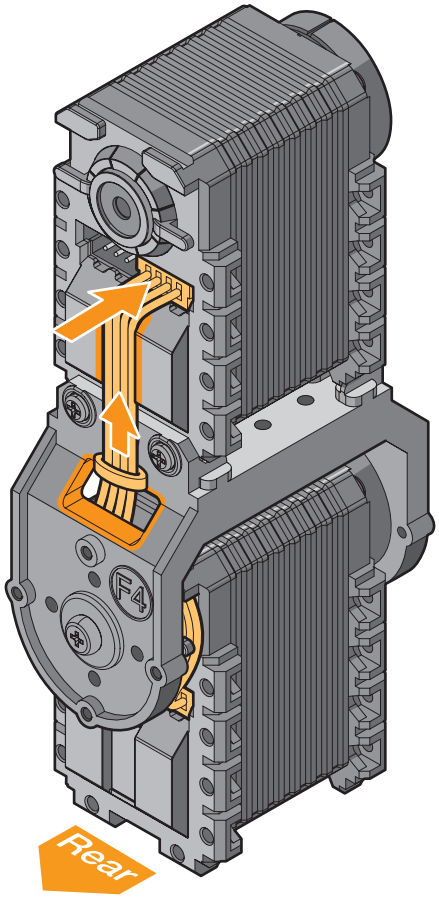
x4

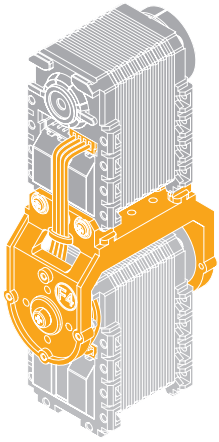
8. Install the actuator (ID3) on the top of the actuator (ID5) assembly.
9. Secure the bracket (F4) to the actuator (ID3) with screws (S3).



10. Route the cable (L2) through the cable well on the actuator (ID3) and connect it to the actuator (ID3).

NOTE: Both cable ends are connected on same sides of the actuators, see the following illustration.

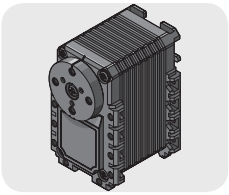




03 Hardware Assembly

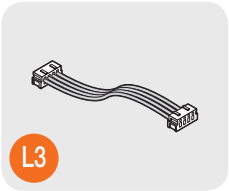
Right Arm Assembly

Required Parts



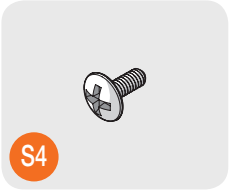
x1

x1



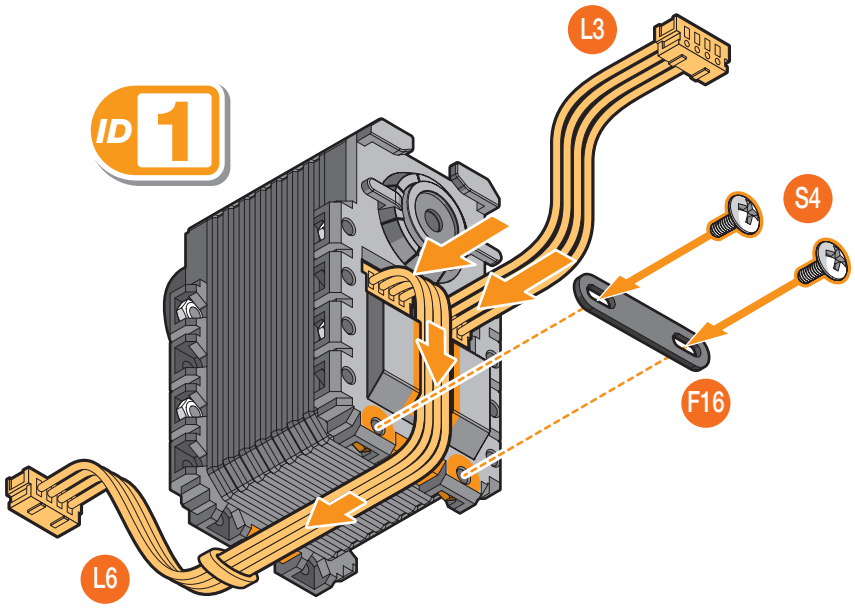
x1

x1



x2

11. Connect the cables (L3 and L6) to the actuator (ID1).
12. Route the cable (L6) through the cable well on the actuator (ID1).
13. Align the cable tray (F16) with the holes on the actuator (ID1).
14. Secure the cable tray (F16) to the actuator (ID1) with screws (S4).

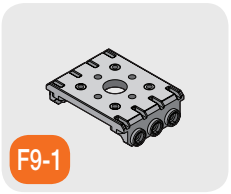


Hardware Assembly

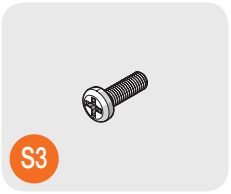
Right Arm Assembly

03

Required Parts



x2

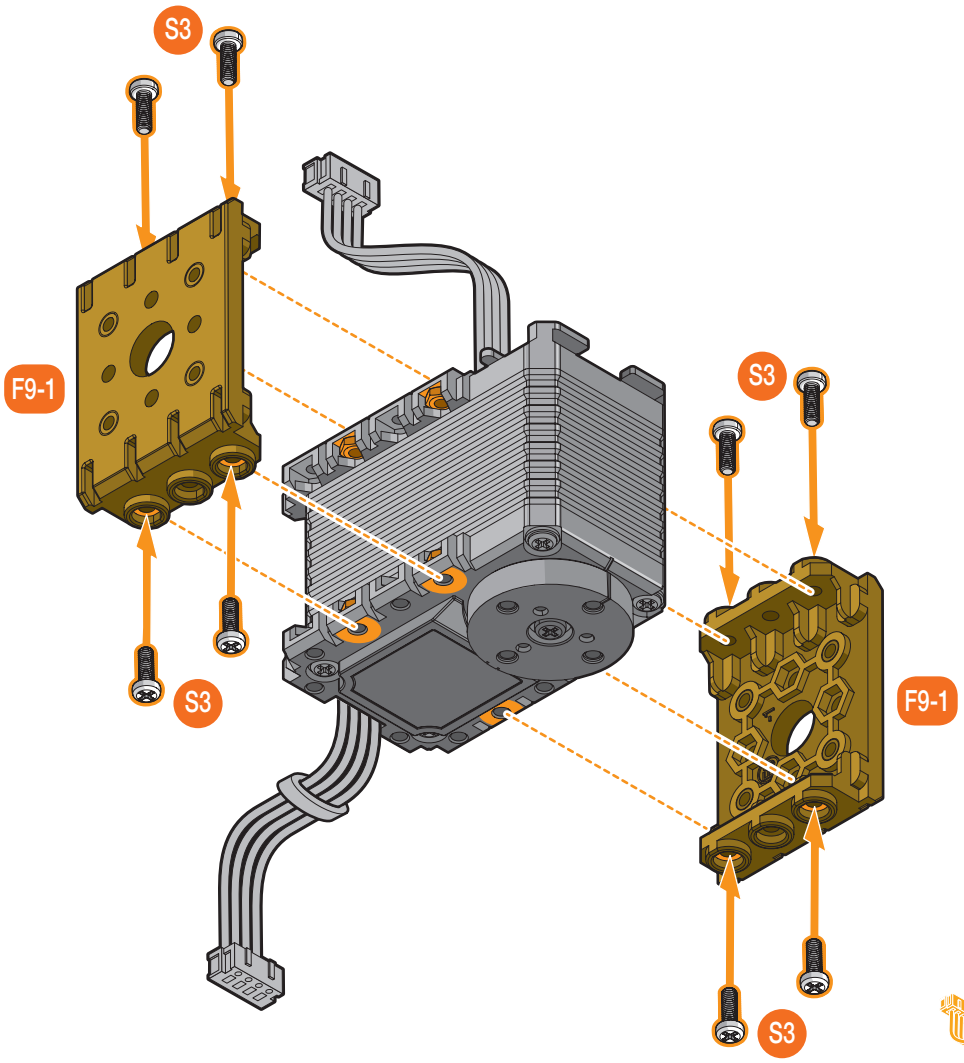


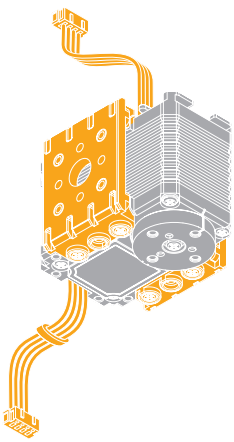
x8

NOTE: To assemble the following components, it may be necessary to assemble and secure one side first before moving onto the remaining side.

15. Align the bracket (F9-1) with the actuator (ID1).

16. Secure the bracket (F9-1) to the actuator (ID1) with screws (S3).

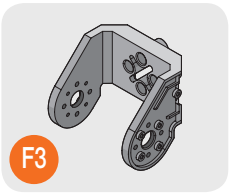




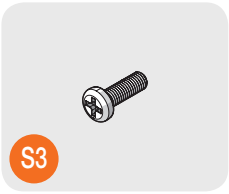
03 Hardware Assembly

Right Arm Assembly

Required Parts

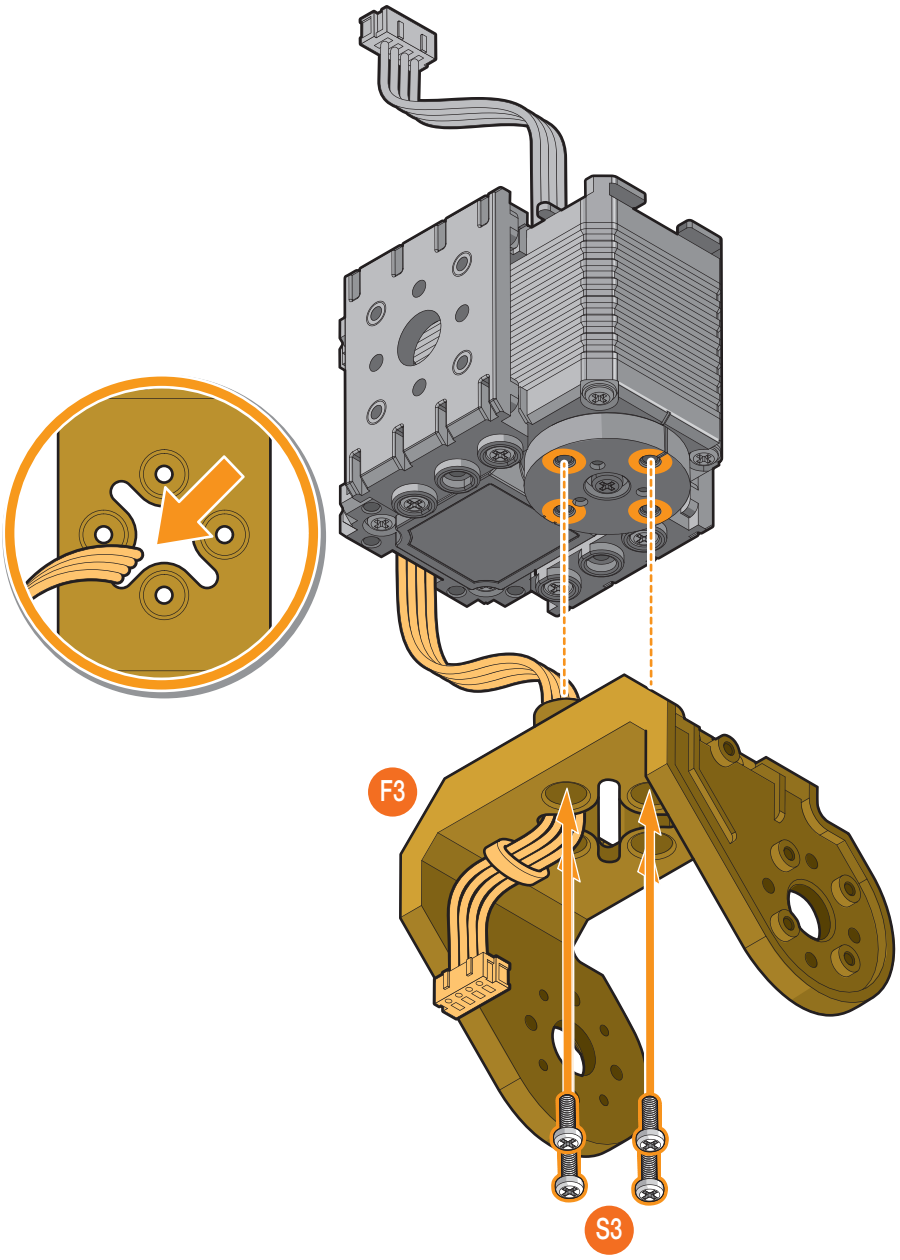


x1



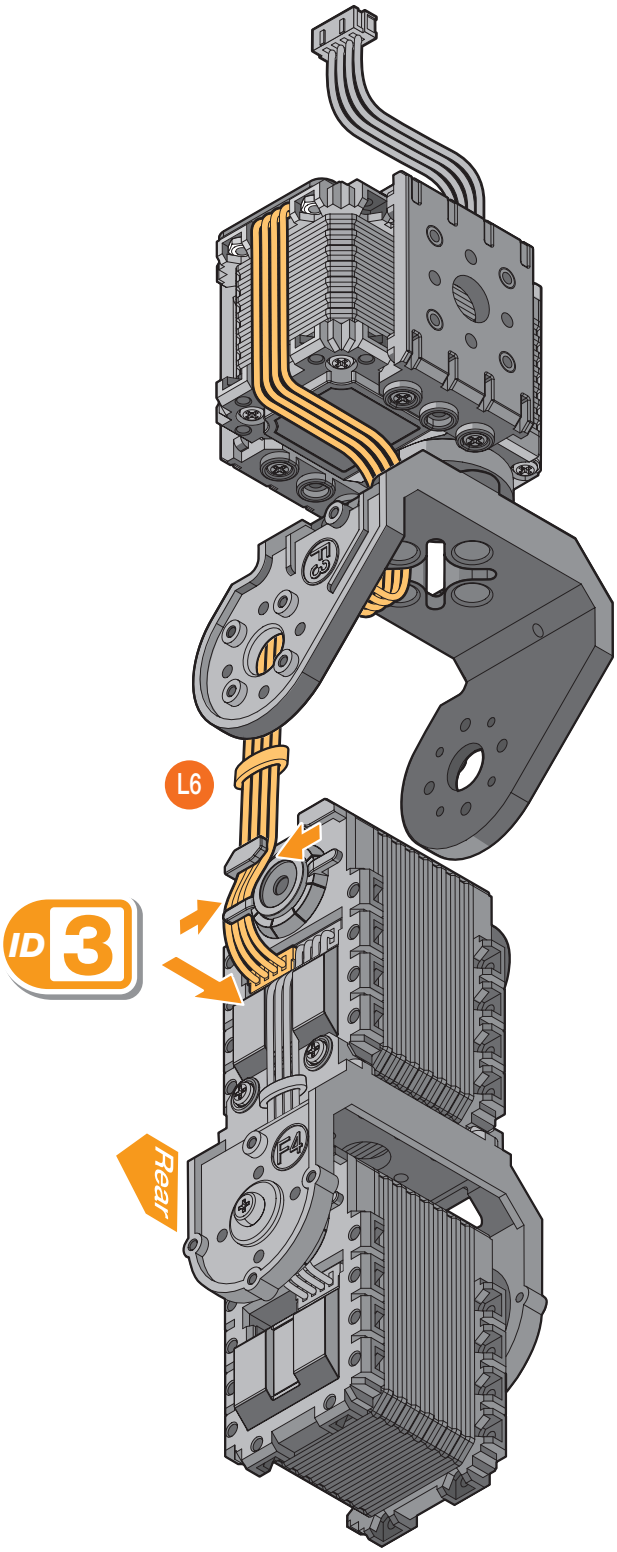
x4

17. Route the cable (L6) through the hole on bracket (F3) before assembling the components, see the following illustration.
18. Align the bracket (F3) with the gear on the actuator (ID1).
19. Secure the bracket (F3) to the actuator (ID1) with screws (S3).



20. Connect the cable (L6) to the actuator (ID3) then route the cable (L6) through the cable clips on the actuator (ID3).

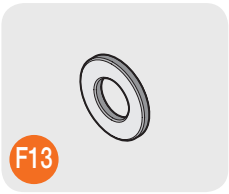
NOTE: Both cable ends are connected on different sides of the actuators, see the following illustration.



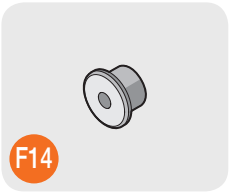
03 Hardware Assembly

Right Arm Assembly

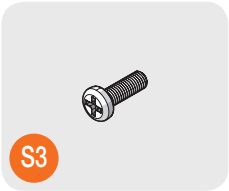
Required Parts



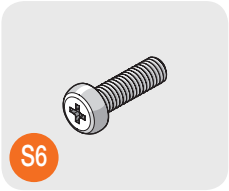
x1



x1

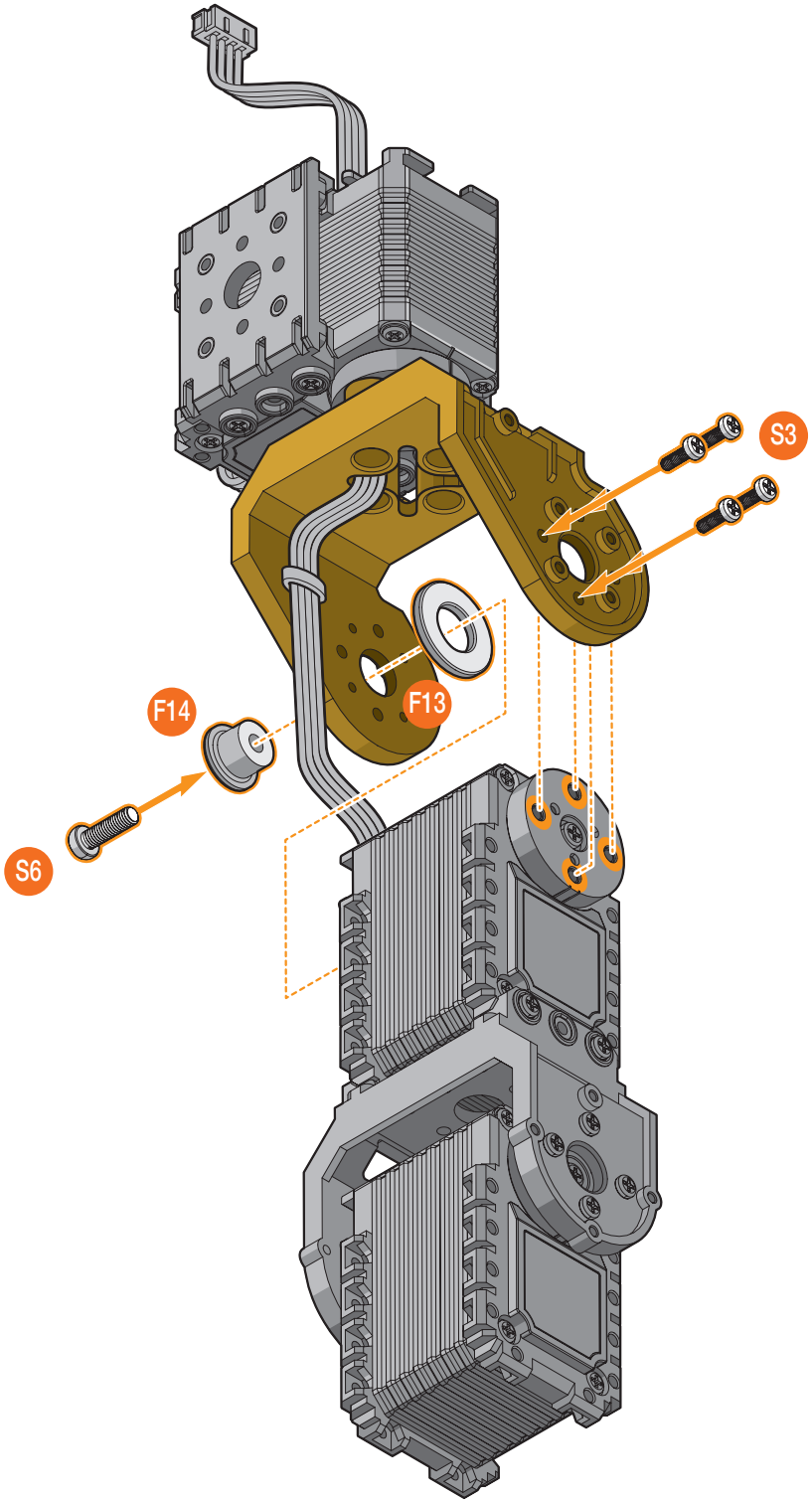


x4



x1

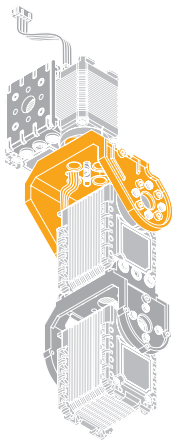
21. Insert the washer (F13) on the shoulder washer (F14).
22. Align the shoulder washer (F14) with the actuator before installing. Lower in place to install.
23. Secure the shoulder washer (F14) with a screw (S6).
24. Secure the bracket (F3) to the actuator assembly with screws (S3).



Hardware Assembly

Right Arm Assembly

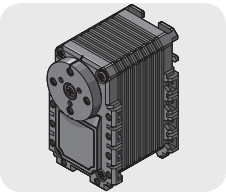
03



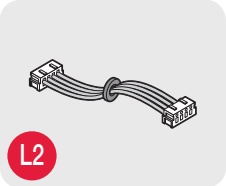
03 Hardware Assembly

Left Arm Assembly

Required Parts



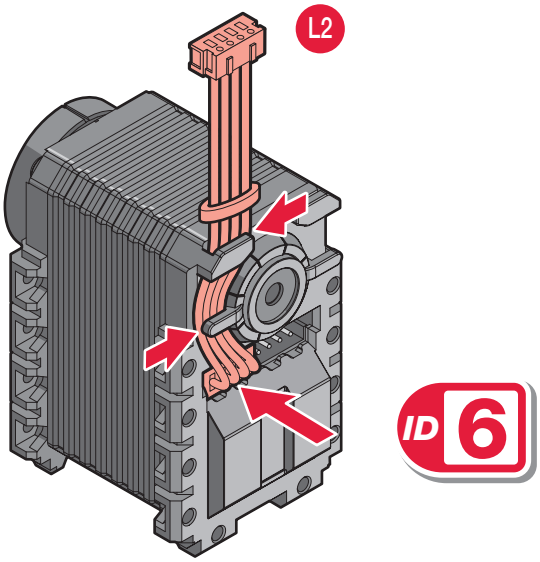
x1



x1

NOTE: Make sure the actuator hub is set to zero before installing the bracket. See ***"Servo Hub Preparation"*** *on page 30.*

1. Connect the cable (L2) to the actuator (ID6) then route the cable (L2) through the cable clips on the actuator (ID6).

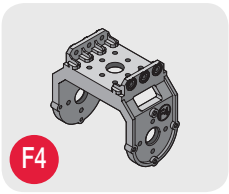


Hardware Assembly

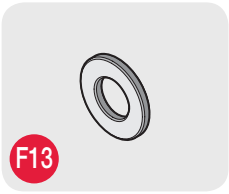
Left Arm Assembly

03

Required Parts



x1



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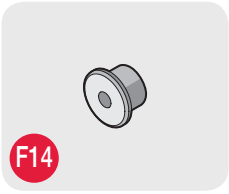

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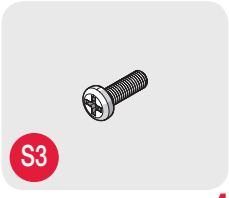
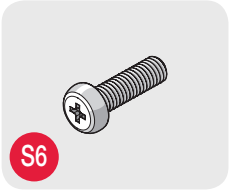
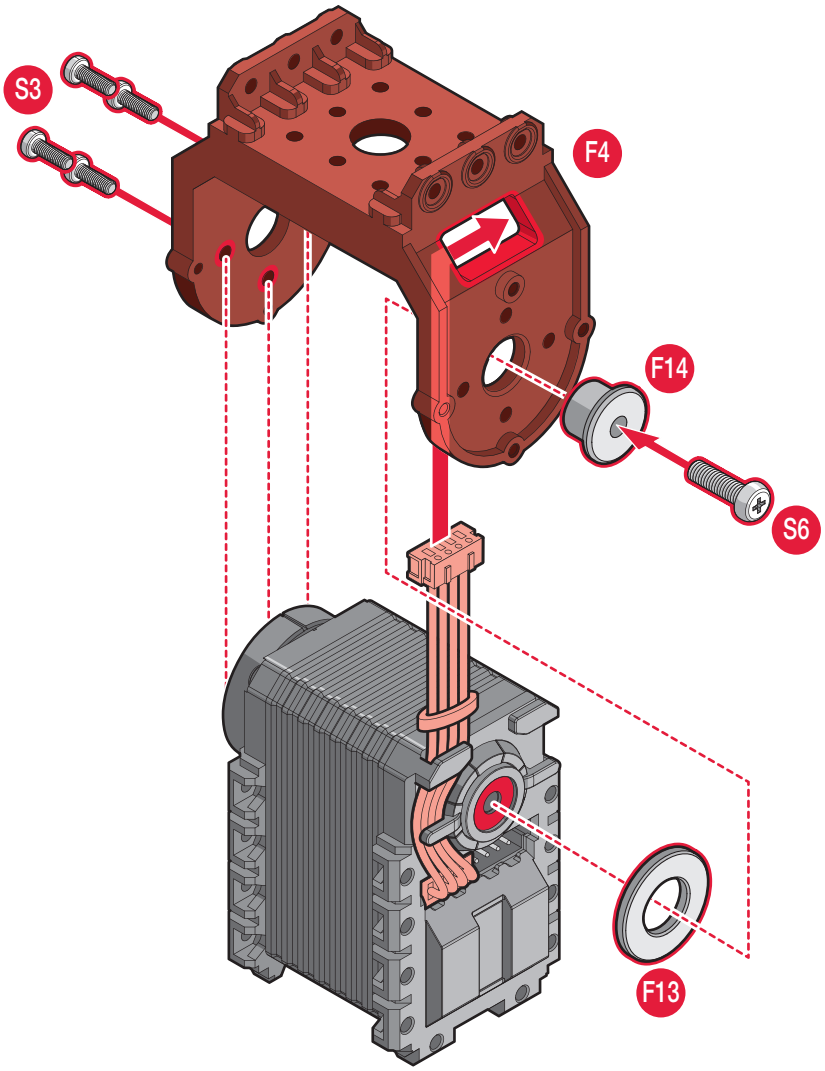


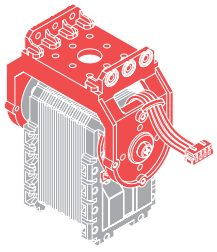
x4



x1

2. Insert the shoulder washer (F14) through the bracket (F4) first.
3. Insert the washer (F13) on the shoulder washer (F14).
4. Route the cable (L2) through the opening on the bracket (F4).
5. Align the shoulder washer (F14) with the actuator (ID6) before installing. Lower in place to install.
6. Secure the shoulder washer (F14) with a screw (S6).
7. Secure the bracket (F4) to the actuator (ID6) with screws (S3).

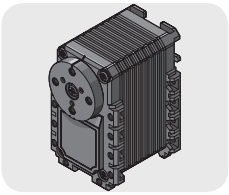




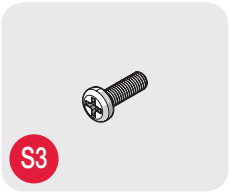
03 Hardware Assembly

Left Arm Assembly

Required Parts

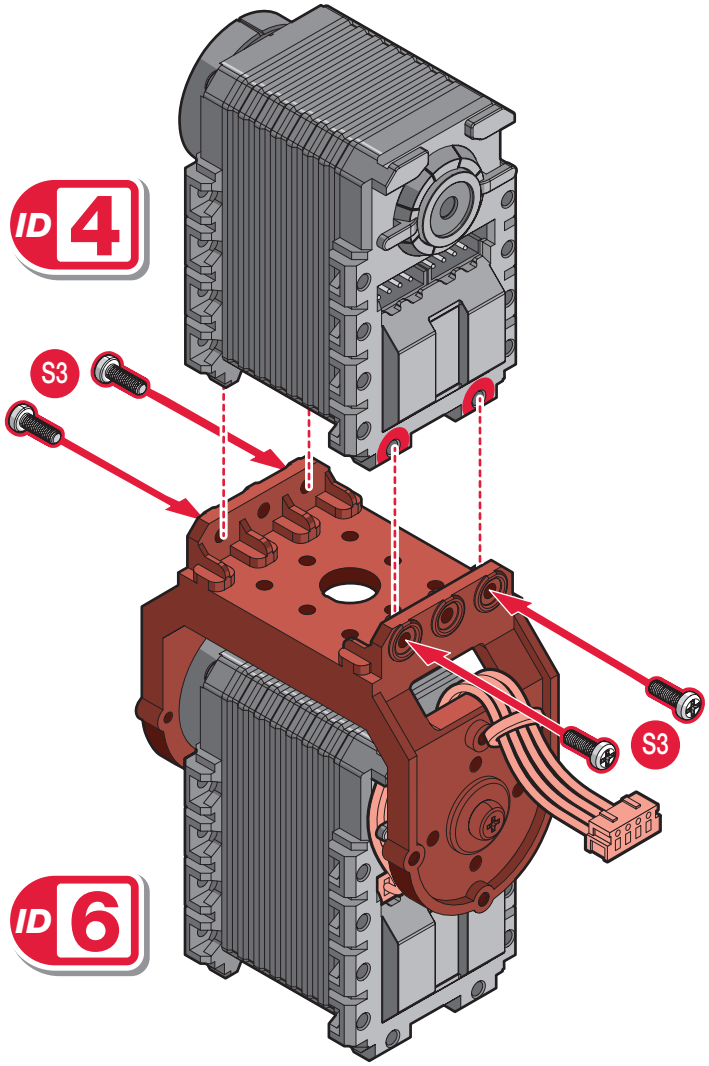


x1



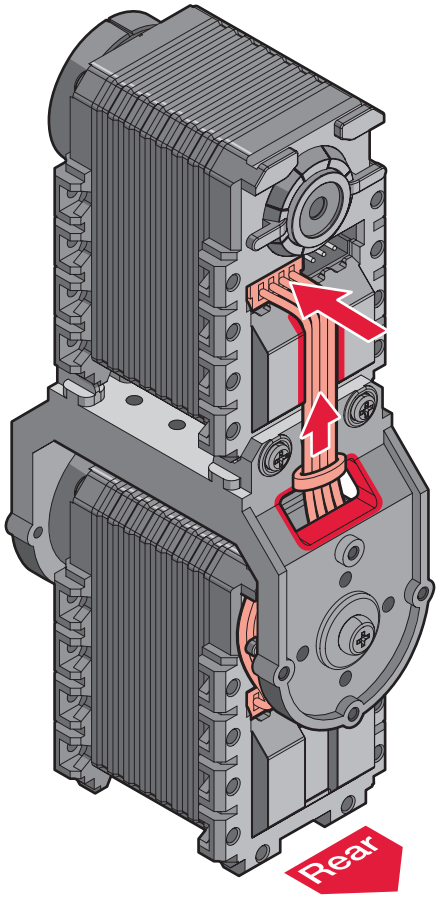
x4

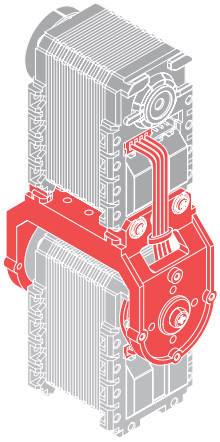
8. Install the actuator (ID4) on the top of the actuator (ID6) assembly.
9. Secure the bracket (F4) to the actuator (ID4) with screws (S3).



10. Route the cable (L2) through the cable well on the actuator (ID4) and connect it to the actuator (ID4).

NOTE: Both cable ends are connected on same sides of the actuators, see the following illustration.

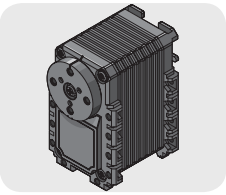




03 Hardware Assembly

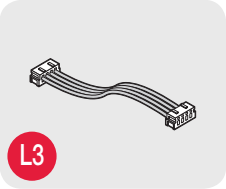
Left Arm Assembly

Required Parts



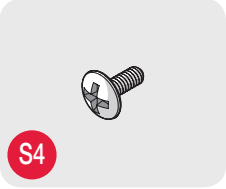
x1

x1



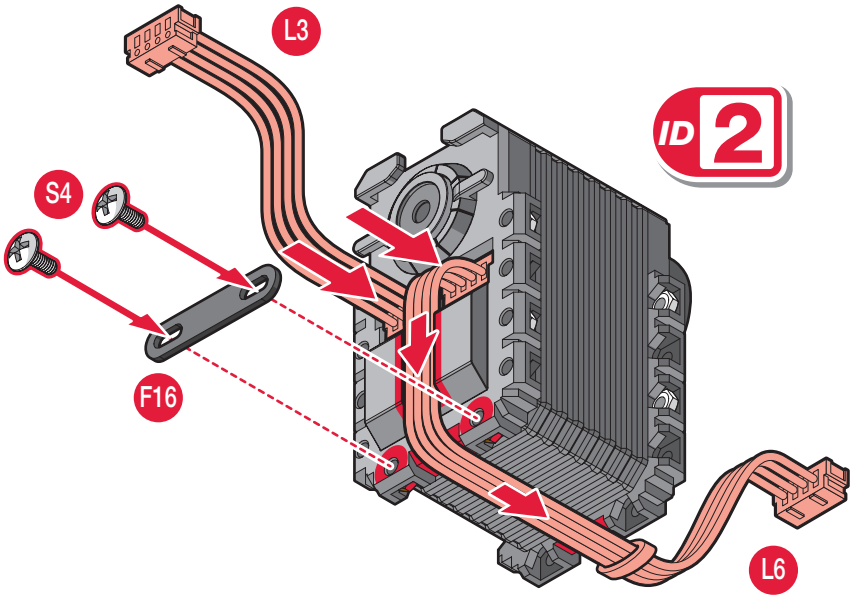
x1

x1



x2

11. Connect the cables (L3 and L6) to the actuator (ID2).
12. Route the cable (L6) through the cable well on the actuator (ID2).
13. Align the cable tray (F16) with the holes on the actuator (ID2).
14. Secure the cable tray (F16) to the actuator (ID2) with screws (S4).

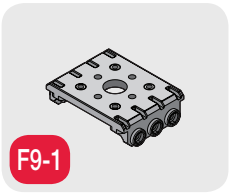


Hardware Assembly

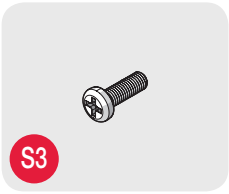
Left Arm Assembly

03

Required Parts



x2

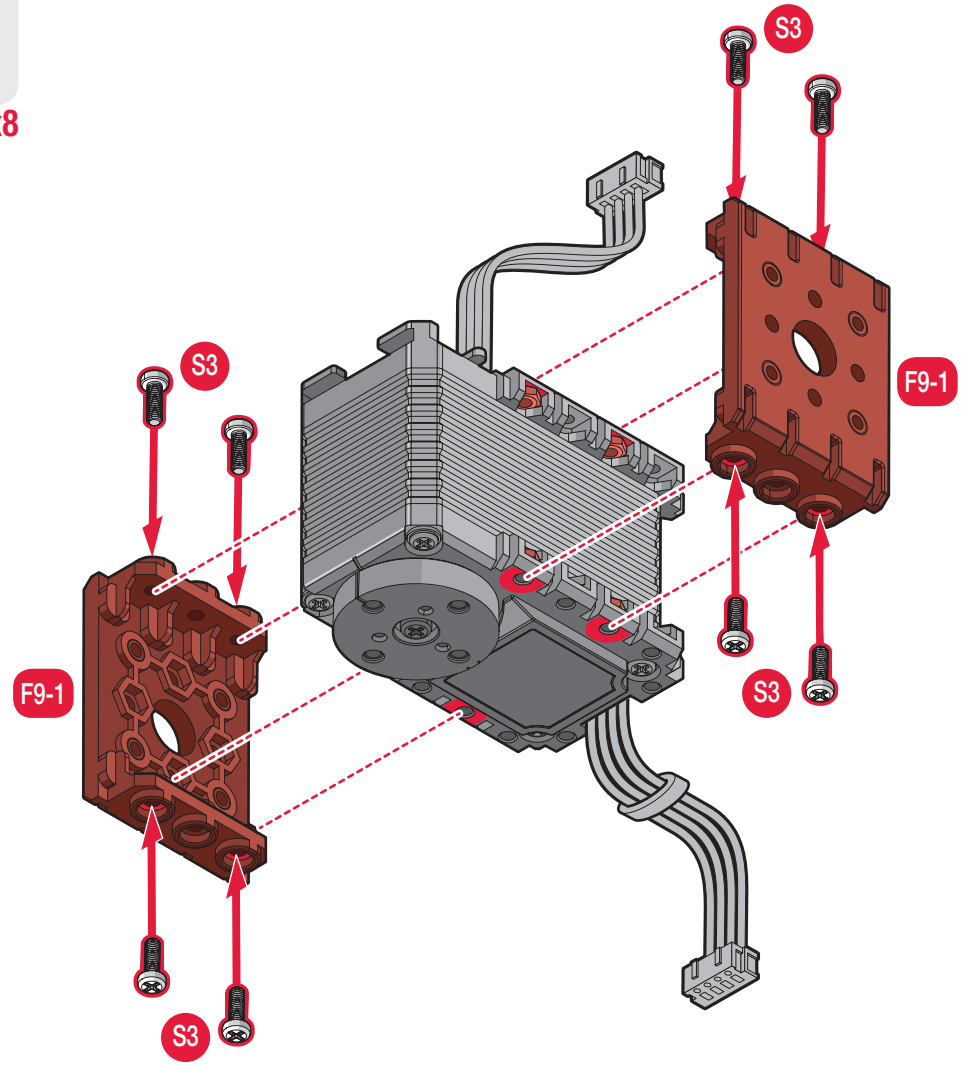


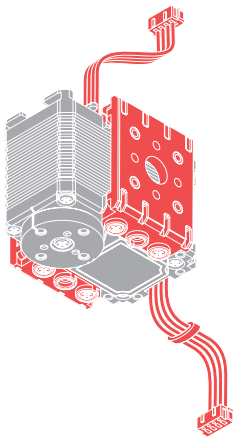
x8

NOTE: To assemble the following components, it may be necessary to assemble and secure one side first before moving onto the remaining side.

15. Align the bracket (F9-1) with the actuator (ID2).

16. Secure the bracket (F9-1) to the actuator (ID2) with screws (S3).

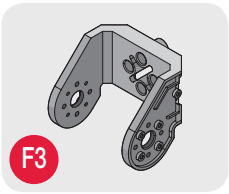




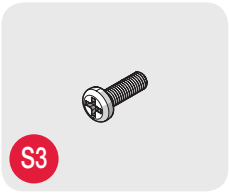
03 Hardware Assembly

Left Arm Assembly

Required Parts

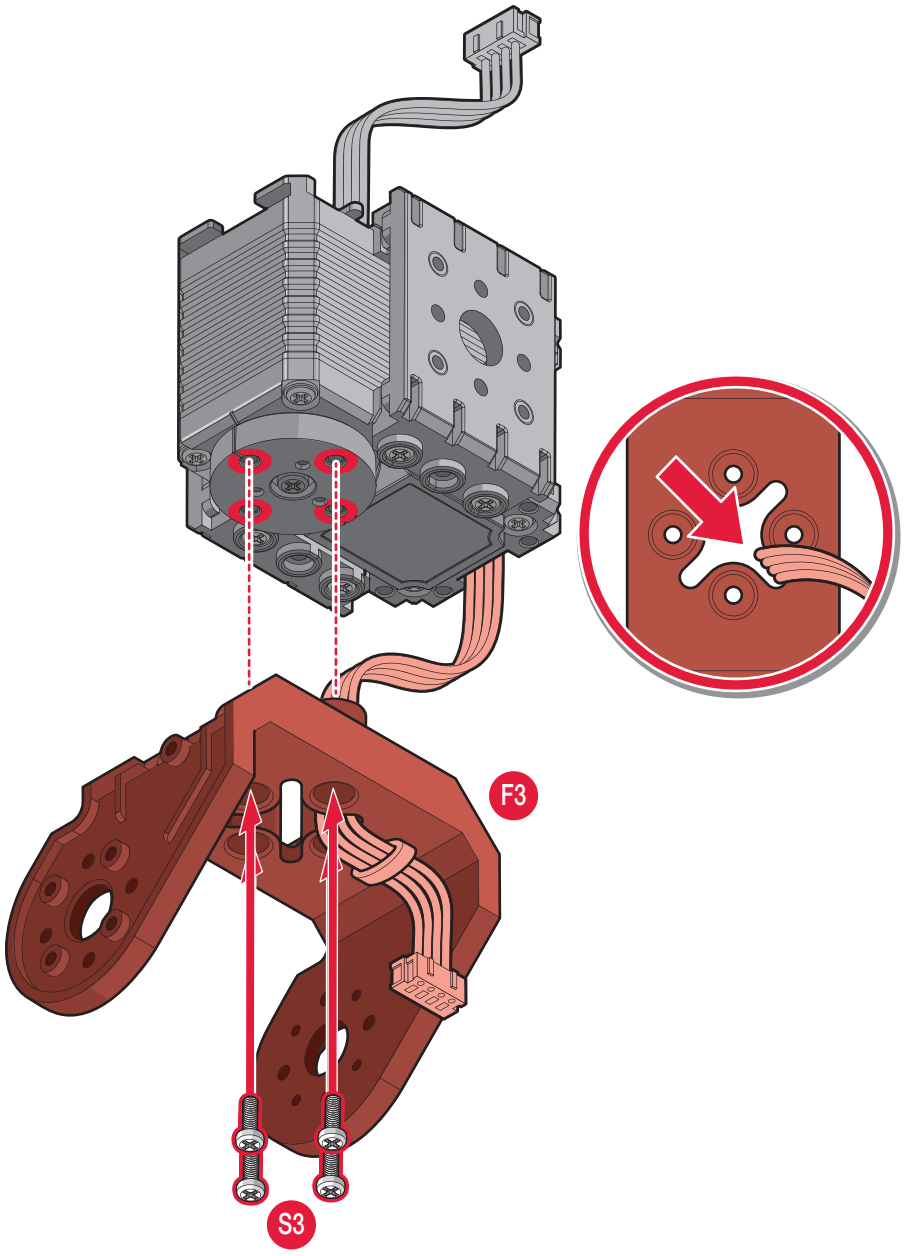


x1



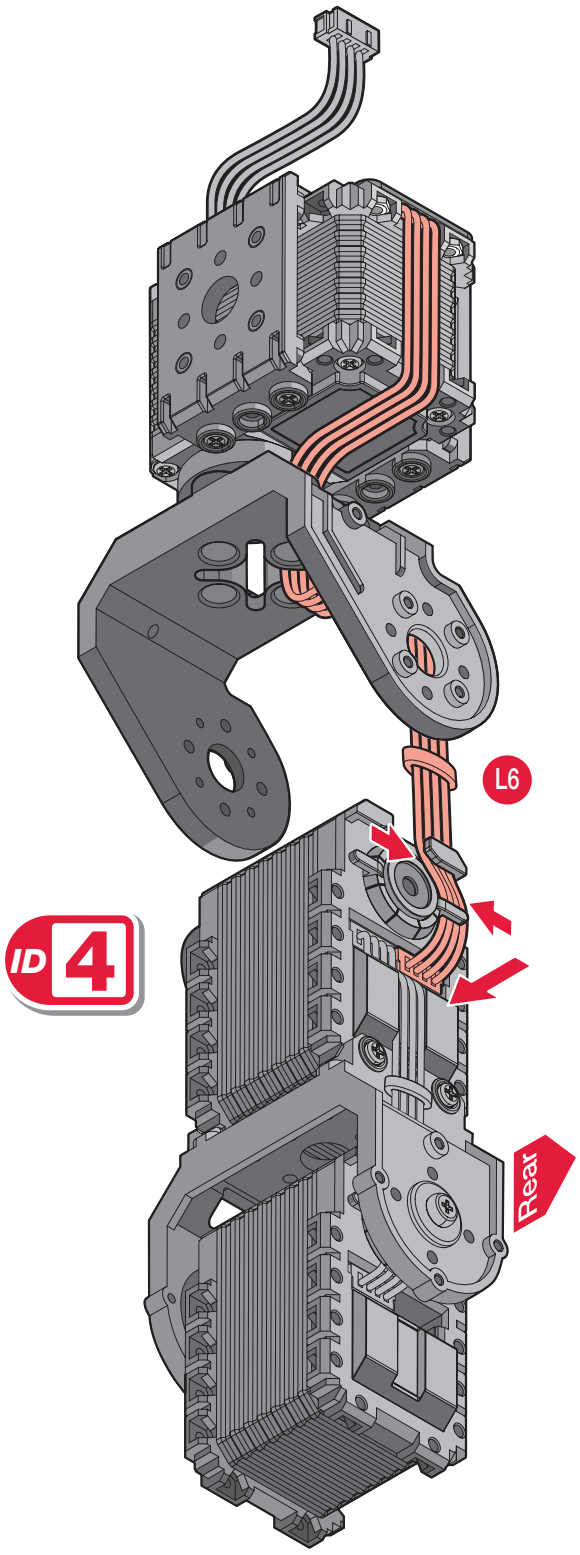
x4

17. Route the cable (L6) through the hole on bracket (F3) before assembling the components, see the following illustration.
18. Align the bracket (F3) with the gear on the actuator (ID2).
19. Secure the bracket (F3) to the actuator (ID2) with screws (S3).



20. Connect the cable (L6) to the actuator (ID4) then route the cable (L6) through the cable clips on the actuator (ID4).

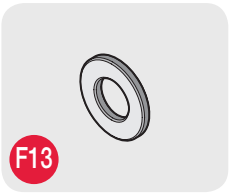
NOTE: Both cable ends are connected on different sides of the actuators, see the following illustration.



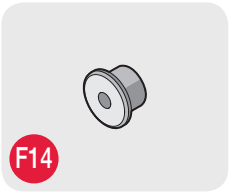
03 Hardware Assembly

Left Arm Assembly

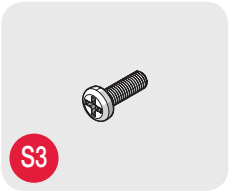
Required Parts



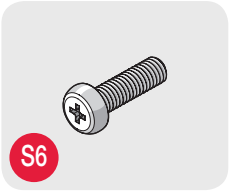
x1



x1

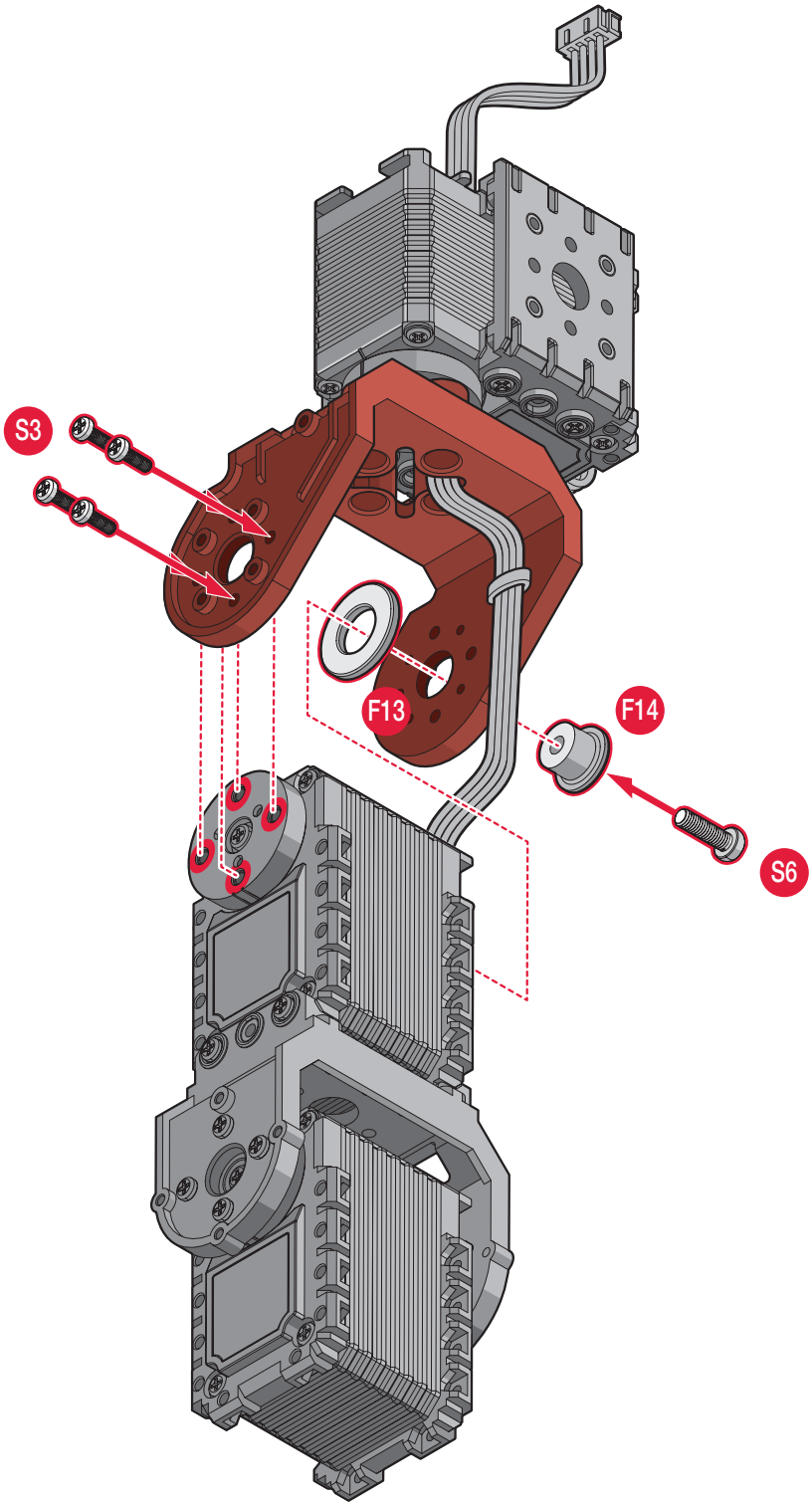


x4



x1

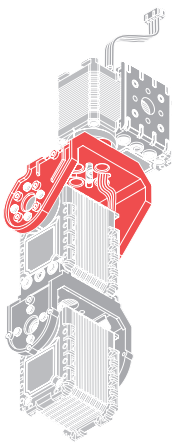
21. Insert the shoulder washer (F14) through the bracket (F3) first.
22. Insert the washer (F13) on the shoulder washer (F14).
23. Align the shoulder washer (F14) with the actuator before installing. Lower in place to install.
24. Secure the shoulder washer (F14) with a screw (S6).
25. Secure the bracket (F3) to the actuator assembly with screws (S3).



Hardware Assembly

Left Arm Assembly

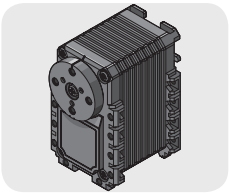
03



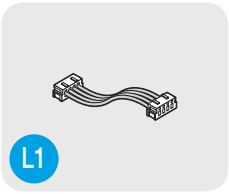
03 Hardware Assembly

Right Leg Assembly

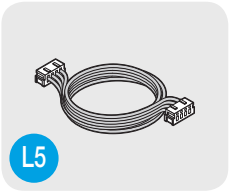
Required Parts



x2



x1



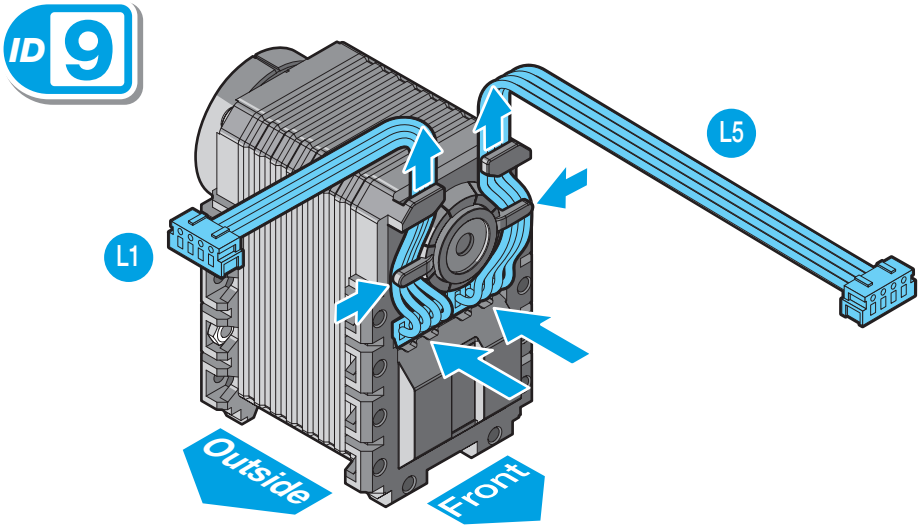
x1

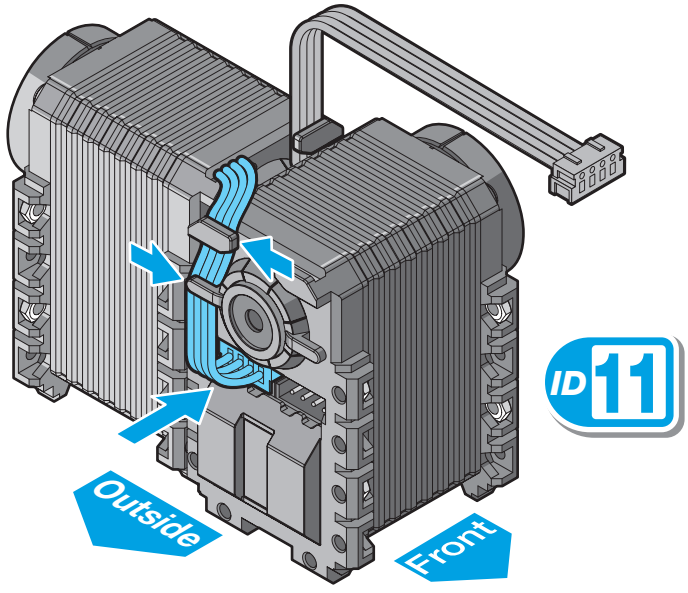
NOTE: Make sure the actuator hub is set to zero before installing the bracket. See ***"Servo Hub Preparation"*** *on page 30.*

1. Connect the cables (L1 and L5) to the actuator (ID9) then route the cables (L1 and L5) through the cable clips on the actuator (ID9).

NOTE: Cable routing runs through the top of actuator (ID9).

2. Install the actuator (ID11) as shown in the illustration.
3. Route the cable (L1) through the cable clip on the actuator (ID11) and connect the cable (L1) to the actuator (ID11).



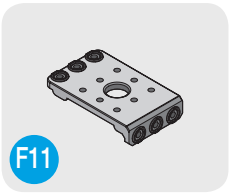


Hardware Assembly

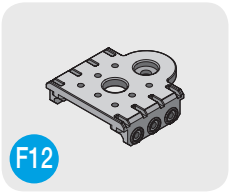
Right Leg Assembly

03

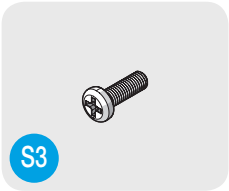
Required Parts



x2



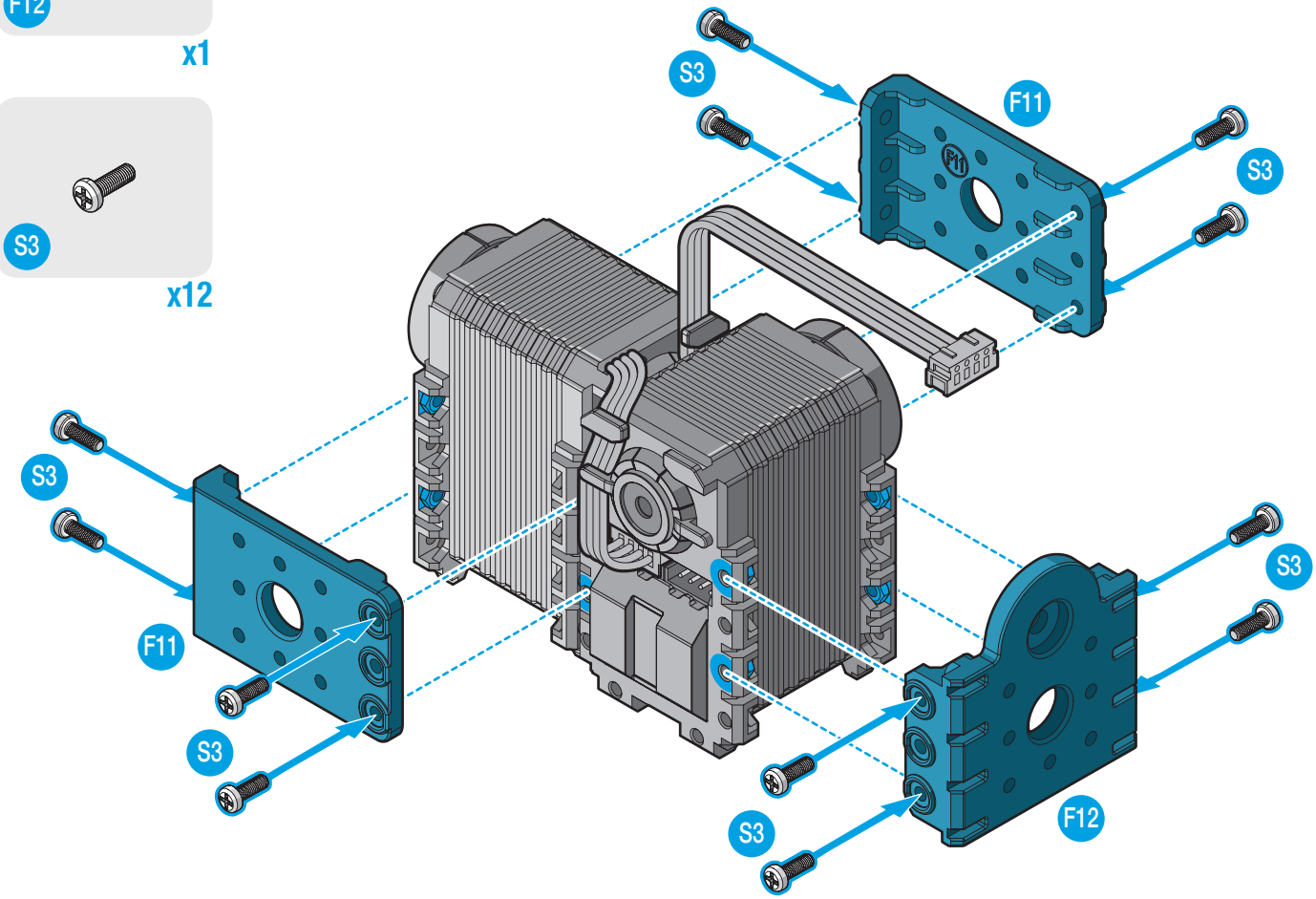
x1

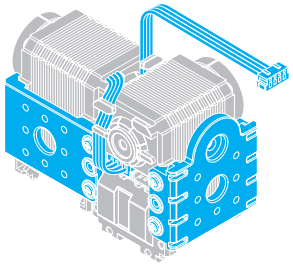


x12

NOTE: To assemble the following components, it may be necessary to assemble and secure one side first before moving onto the remaining side.

4. Align the brackets (F11 and F12) with the actuator assembly.
5. Secure the brackets (F11 and F12) to the actuator assembly with screws (S3).

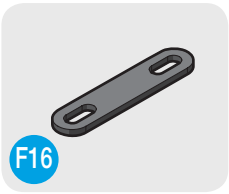




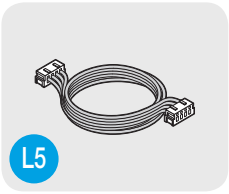
03 Hardware Assembly

Right Leg Assemblya

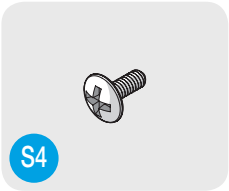
Required Parts



x1



x1

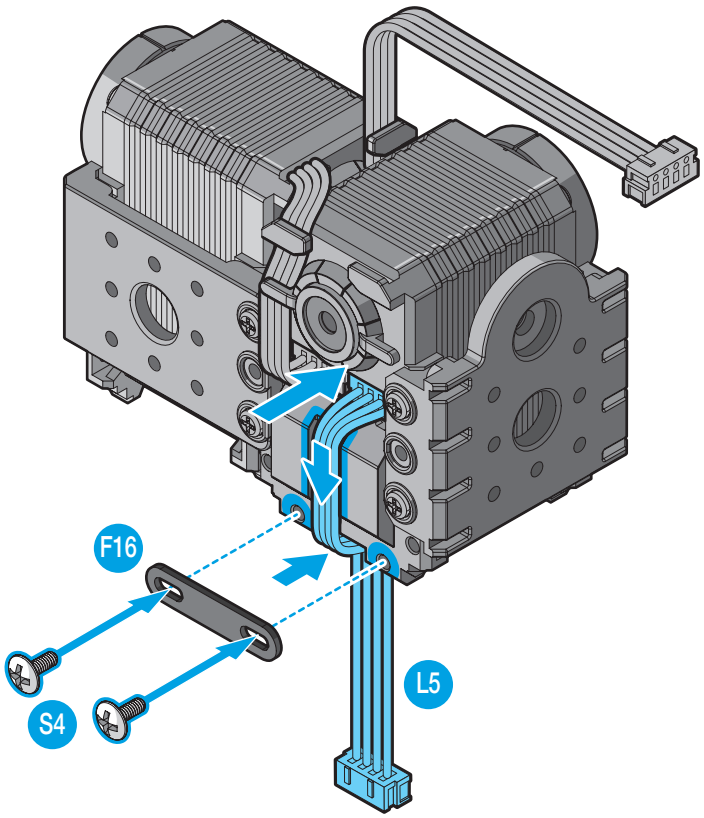


x2

6. Connect the cable (L5) to the actuator (ID11).
7. Route the cable (L5) through the cable well on the actuator (ID11).

NOTE: Cable routing runs through the bottom of actuator (ID11).

8. Align the cable tray (F16) with the holes on the actuator (ID11).
9. Secure the cable tray (F16) to the actuator (ID11) with screws (S4).

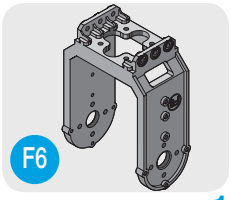


Hardware Assembly

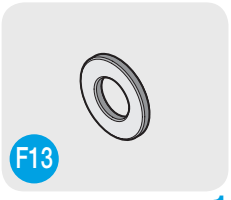
Right Leg Assembly

03

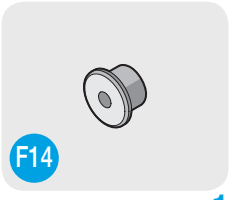
Required Parts



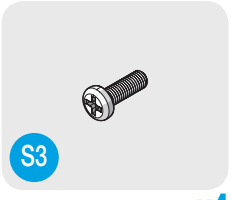
x1



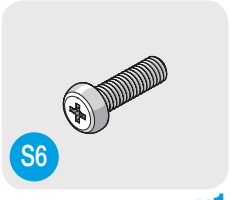
x1



x1

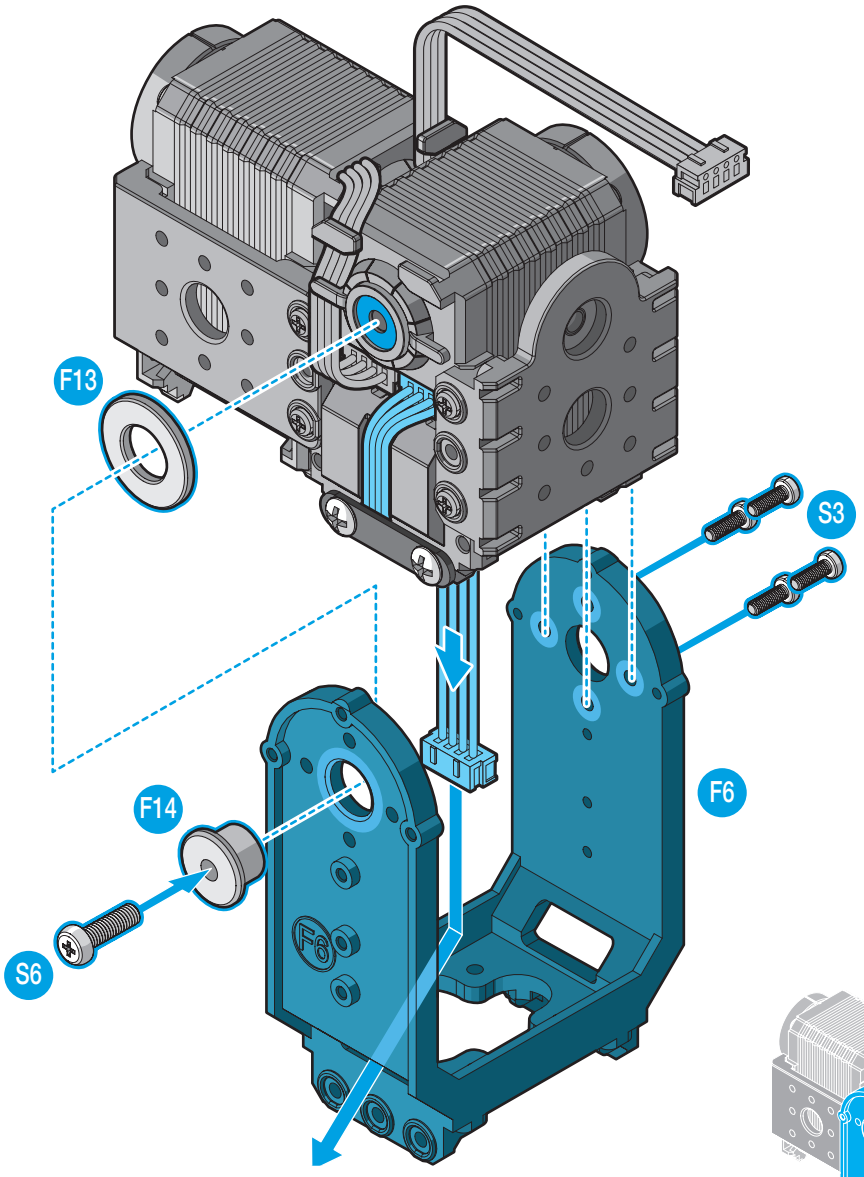


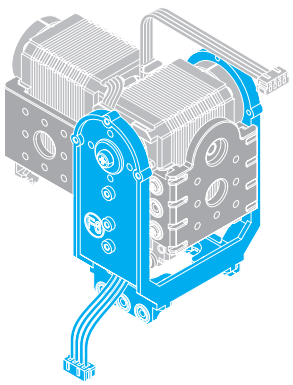
x4



x1

10. Insert the shoulder washer (F14) through the bracket (F6) first.
11. Insert the washer (F13) on the shoulder washer (F14).
12. Install the actuator assembly, make sure it's aligned with the shoulder washer (F14) and the cable (L5) runs through the bracket (F6).
13. Secure the shoulder washer (F14) with a screw (S6).
14. Secure the bracket (F6) to the actuator assembly with screws (S3).

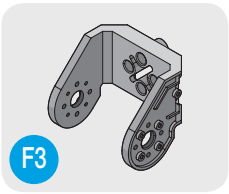




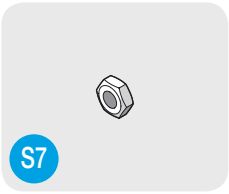
03 Hardware Assembly

Right Leg Assembly

Required Parts

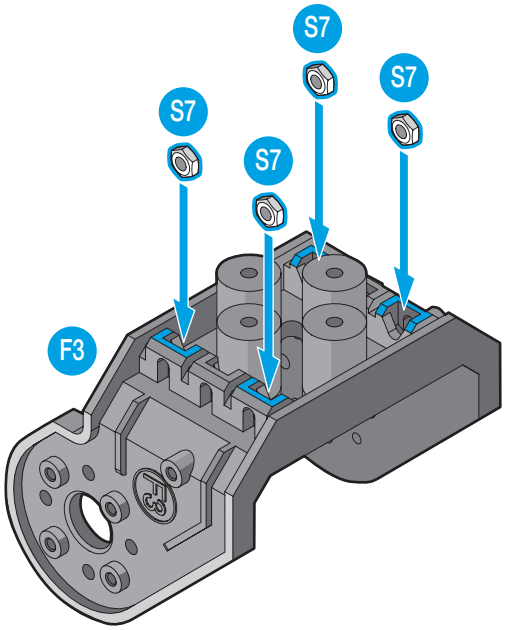


x1



x4

15. Install the nuts (S7) into the bracket (F3).

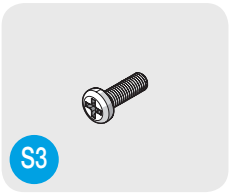


Hardware Assembly

Right Leg Assembly

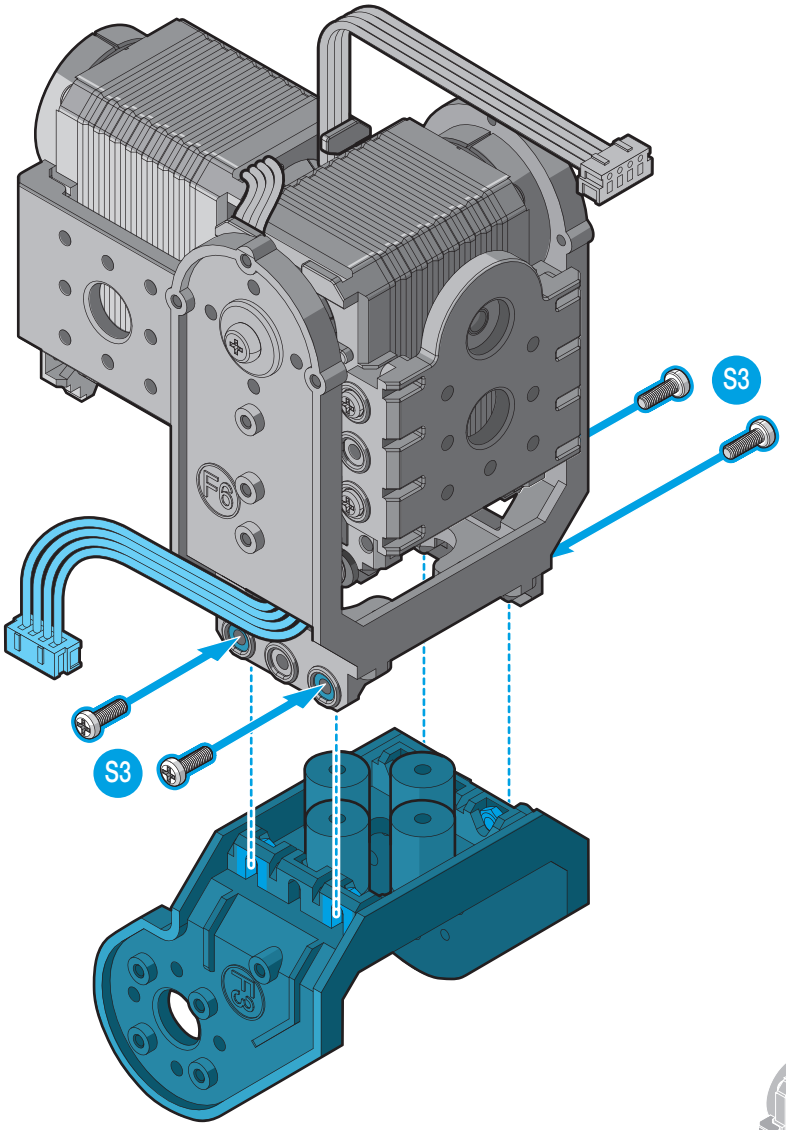
03

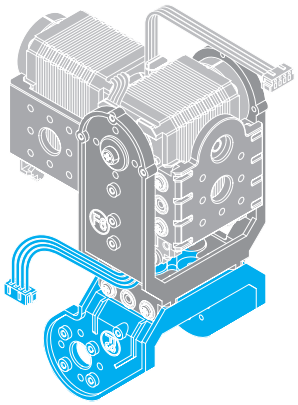
Required Parts



x4

16. Install the actuator assembly and secure the bracket (F3) to the actuator assembly with screws (S3).

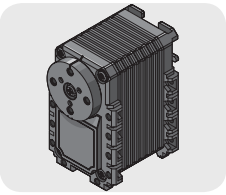


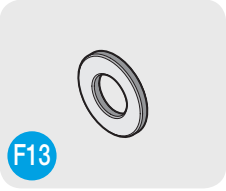


03 Hardware Assembly

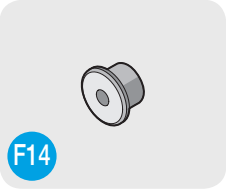
Right Leg Assembly

Required Parts

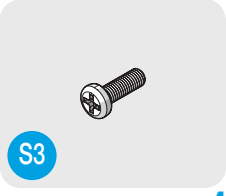

x1



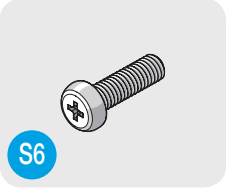
x1



x1

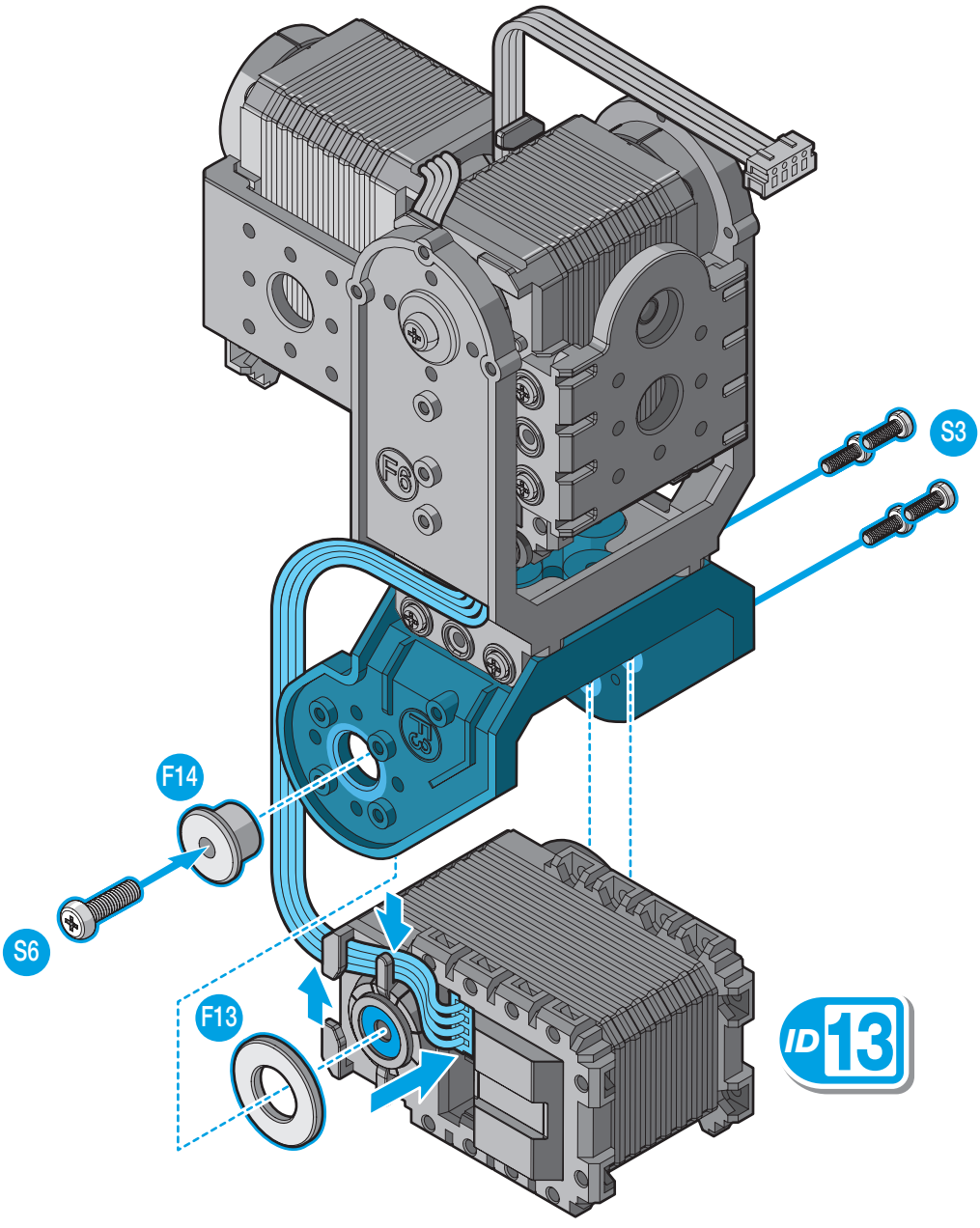


x4



x1

17. Route the cable (L5) through the cables clips on the actuator (ID13) and connect the cable (L5) to the actuator (ID13).
18. Insert the shoulder washer (F14) through the bracket (F3) first.
19. Insert the washer (F13) on the shoulder washer (F14).
20. Install the actuator assembly, make sure it's aligned with the shoulder washer (F14) and connect the cable (L5) to the actuator (ID13).
21. Secure the shoulder washer (F14) with a screw (S6).
22. Secure the bracket (F3) to the actuator (ID13) with screws (S3).

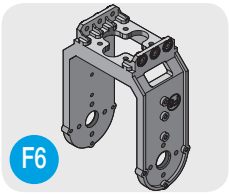


Hardware Assembly

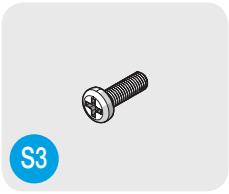
Right Leg Assembly

03

Required Parts

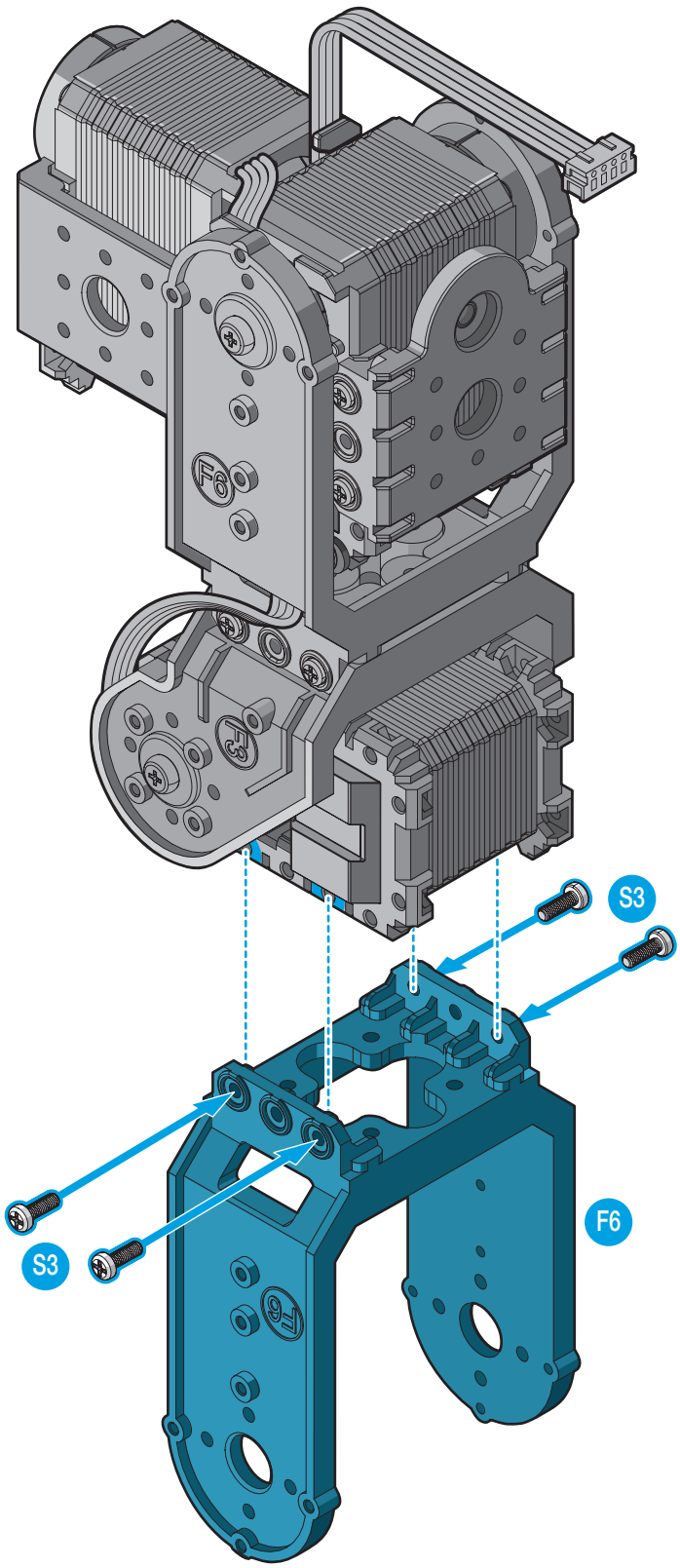


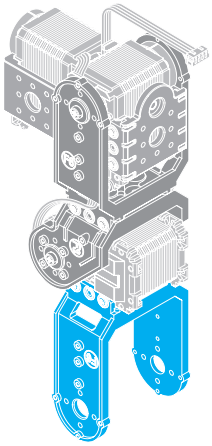
x1



x4

23. Install the actuator assembly and secure the bracket (F6) to the actuator assembly with screws (S3).

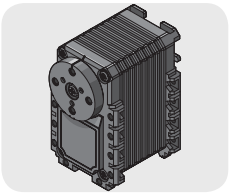




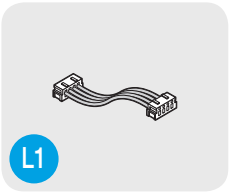
03 Hardware Assembly

Right Leg Assembly

Required Parts



x2



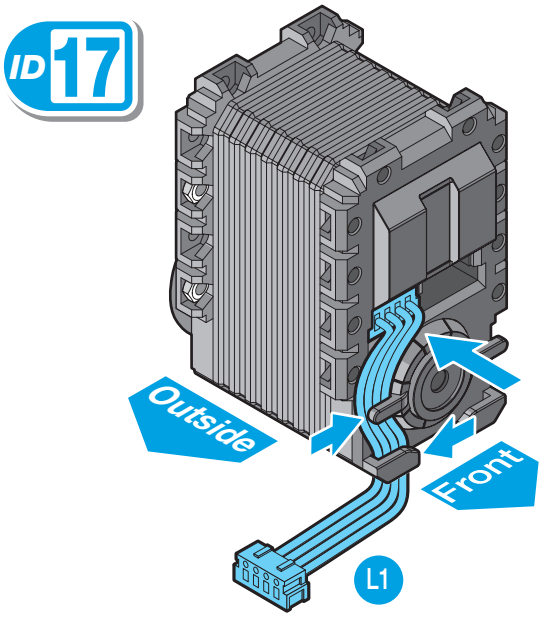
x1

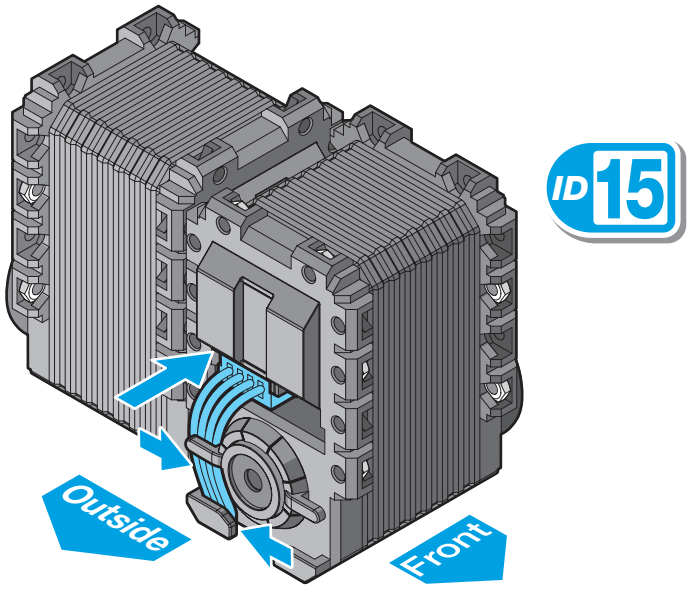
24. Connect the cable (L1) to the actuator (ID17) then route the cable through the cable clip on the actuator (ID17).

NOTE: Cable routing runs through the top of actuator (ID17).

25. Install the actuator (ID15) as shown in the illustration.

26. Route the cable (L1) through the cable clip on the actuator (ID15) and connect the cable (L1) to the actuator (ID15).



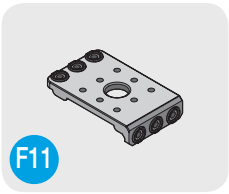


Hardware Assembly

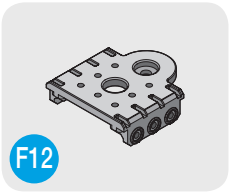
Right Leg Assembly

03

Required Parts



x2



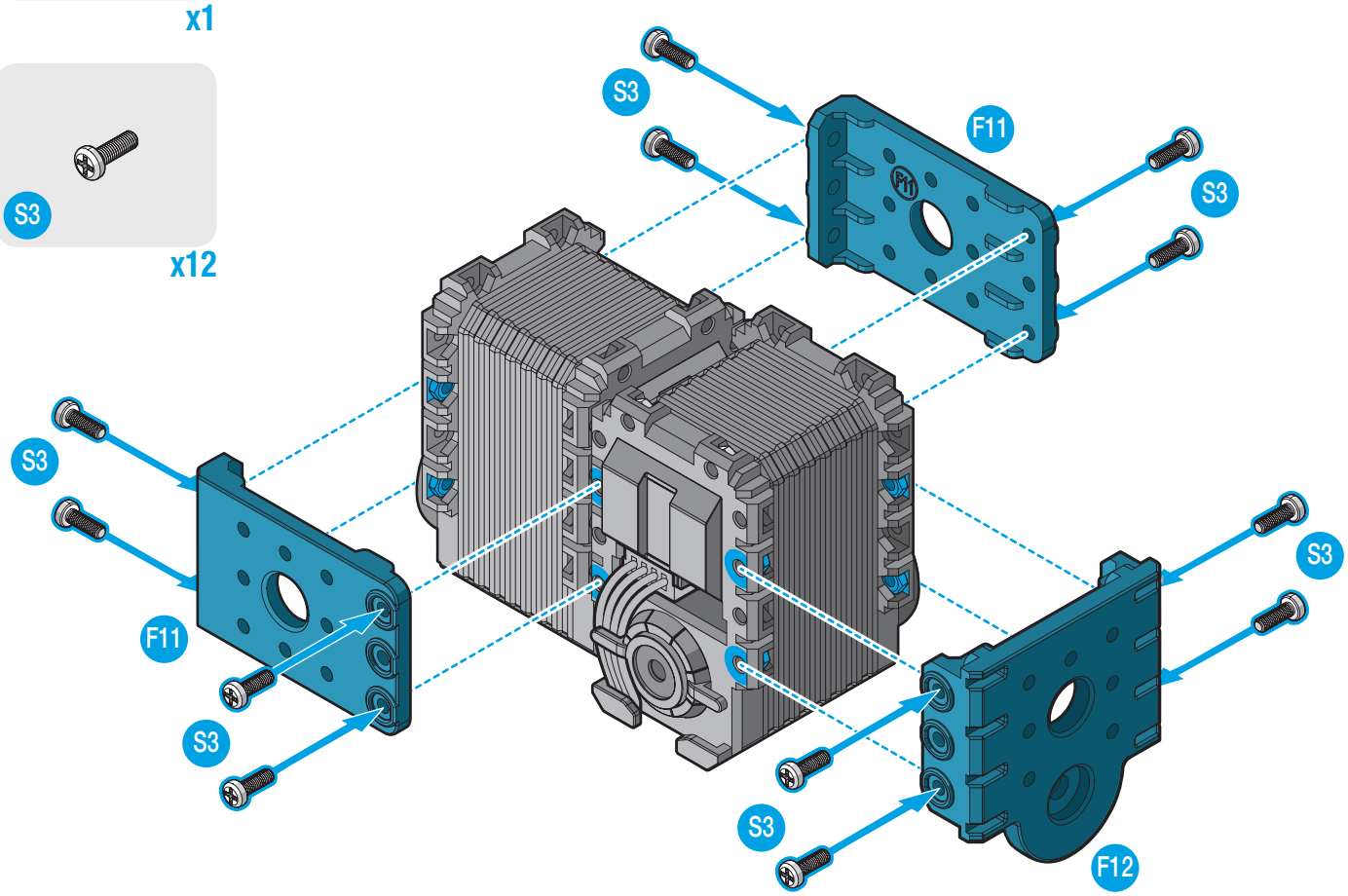
x1

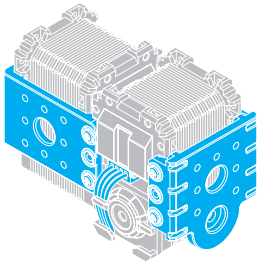
x12

NOTE: To assemble the following components, it may be necessary to assemble and secure one side first before moving onto the remaining side.

27. Align the brackets (F11 and F12) with the actuator assembly.

28. Secure the brackets (F11 and F12) to the actuator assembly with screws (S3).

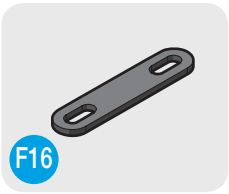




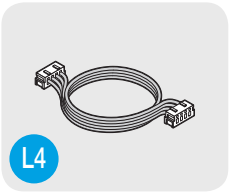
03 Hardware Assembly

Right Leg Assembly

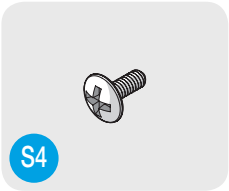
Required Parts



x1



x1



x2

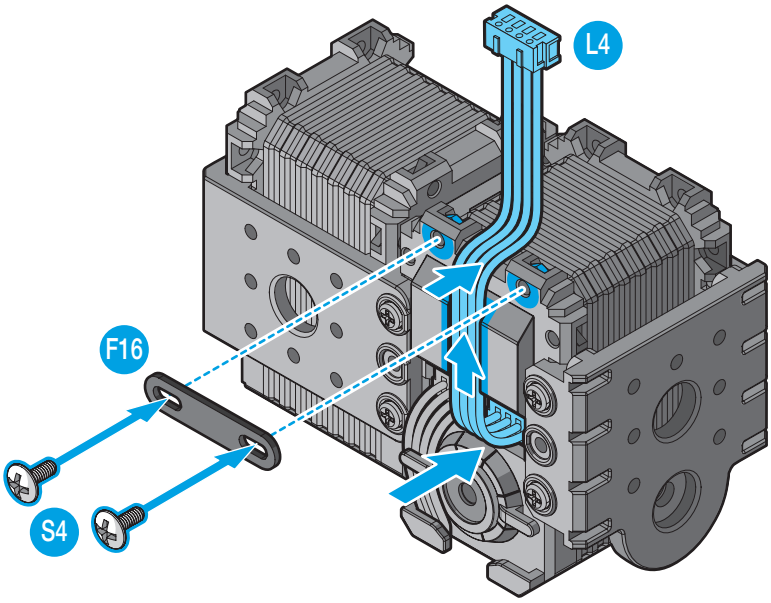
29. Connect the cable (L4) to the actuator (ID15).

30. Route the cable (L4) through the cable well on the actuator (ID15).

NOTE: Cable routing runs through the bottom of actuator (ID15).

31. Align the cable tray (F16) with the holes on the actuator (ID15).

32. Secure the cable tray (F16) to the actuator (ID15) with screws (S4).

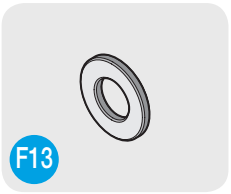


Hardware Assembly

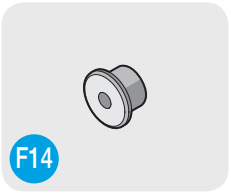
Right Leg Assembly

03

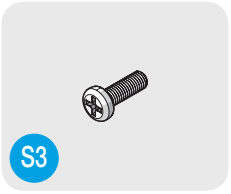
Required Parts



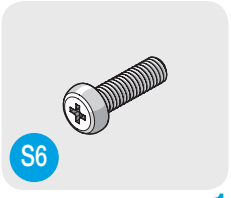
x1



x1

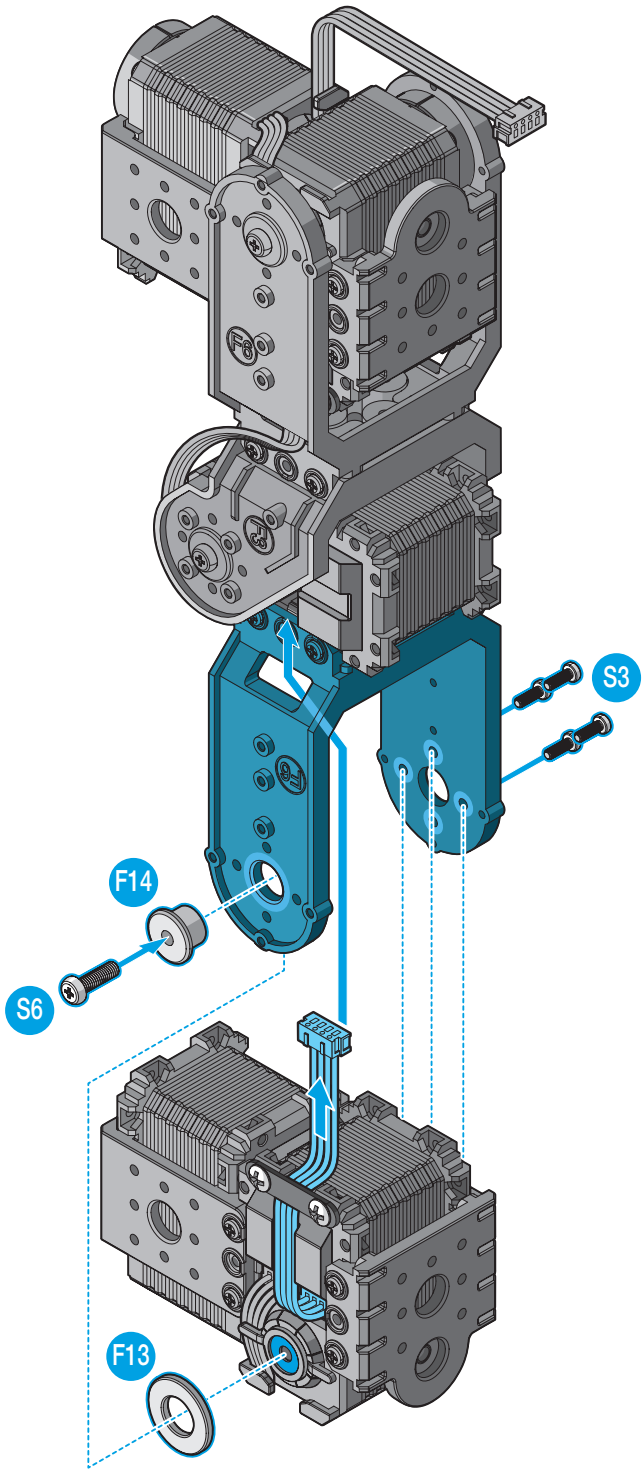


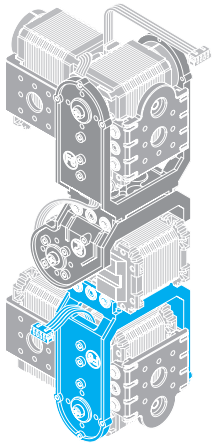
x4



x1

33. Insert the shoulder washer (F14) through the bracket (F6) first.
34. Insert the washer (F13) on the shoulder washer (F14).
35. Install the actuator assembly, make sure it's aligned with the shoulder washer (F14) and the cable (L4) runs through the opening on the bracket (F6).
36. Secure the shoulder washer (F14) with a screw (S6).
37. Secure the bracket (F6) to the actuator assembly with screws (S3).

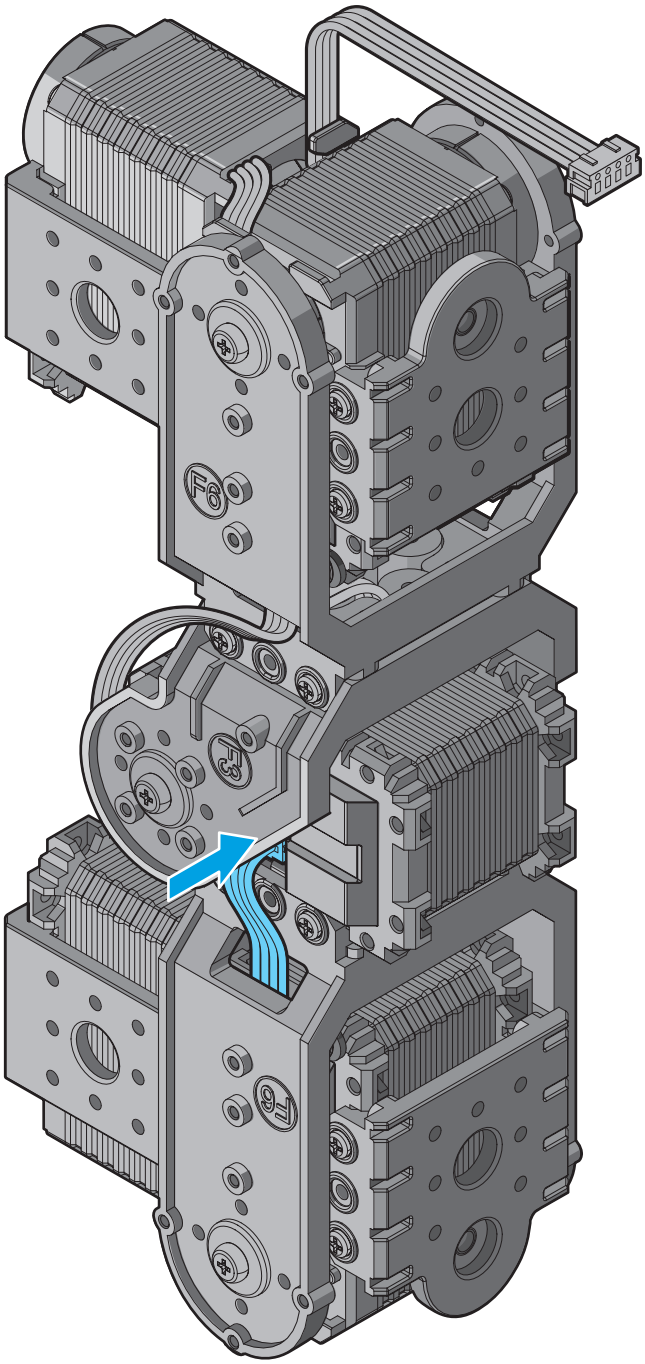




Hardware Assembly

Right Leg Assembly

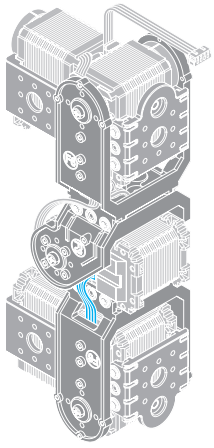
38. Connect the cable (L4) to actuator (ID13).



Hardware Assembly

Right Leg Assembly

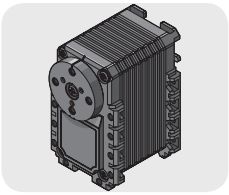
03



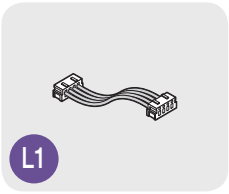
03 Hardware Assembly

Left Leg Assembly

Required Parts



x2



x1

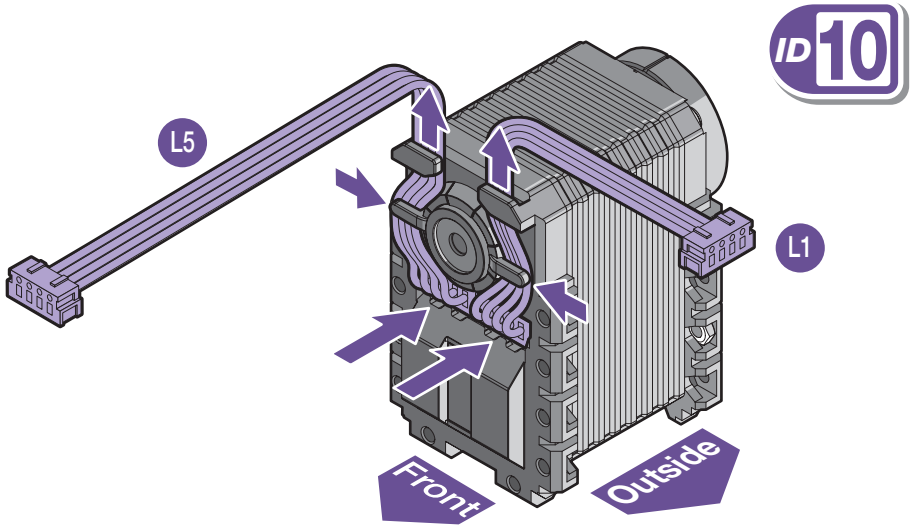
x1

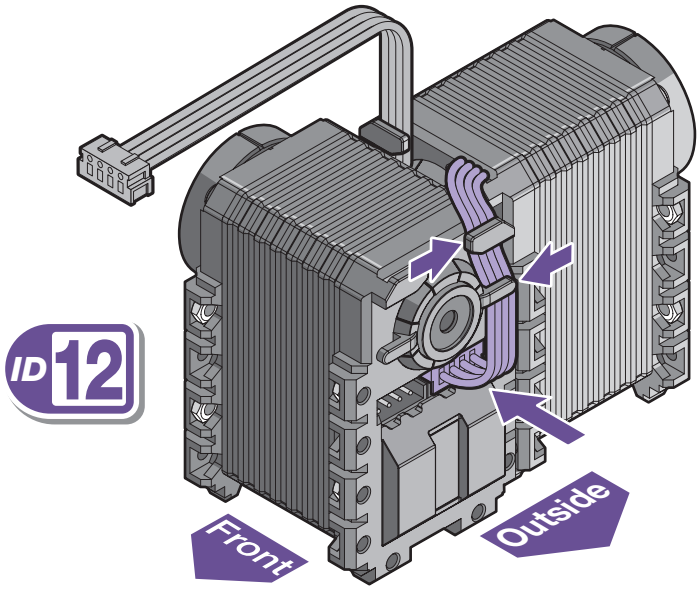
NOTE: Make sure the actuator hub is set to zero before installing the bracket. See ***"Servo Hub Preparation"*** *on page 30.*

1. Connect the cables (L1 and L5) to the actuator (ID10) then route the cables (L1 and L5) through the cable clips on the actuator (ID10).

NOTE: Cable routing runs through the top of actuator (ID10).

2. Install the actuator (ID12) as shown in the illustration.
3. Route the cable (L1) through the cables clips on the actuator (ID12) and connect the cable (L1) to the actuator (ID12).



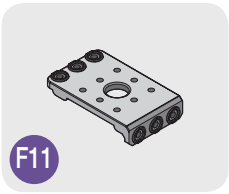


Hardware Assembly

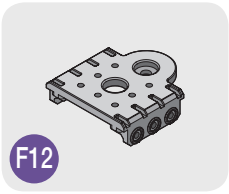
Left Leg Assembly

03

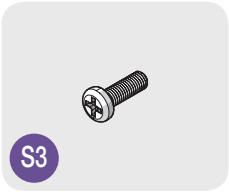
Required Parts



x2



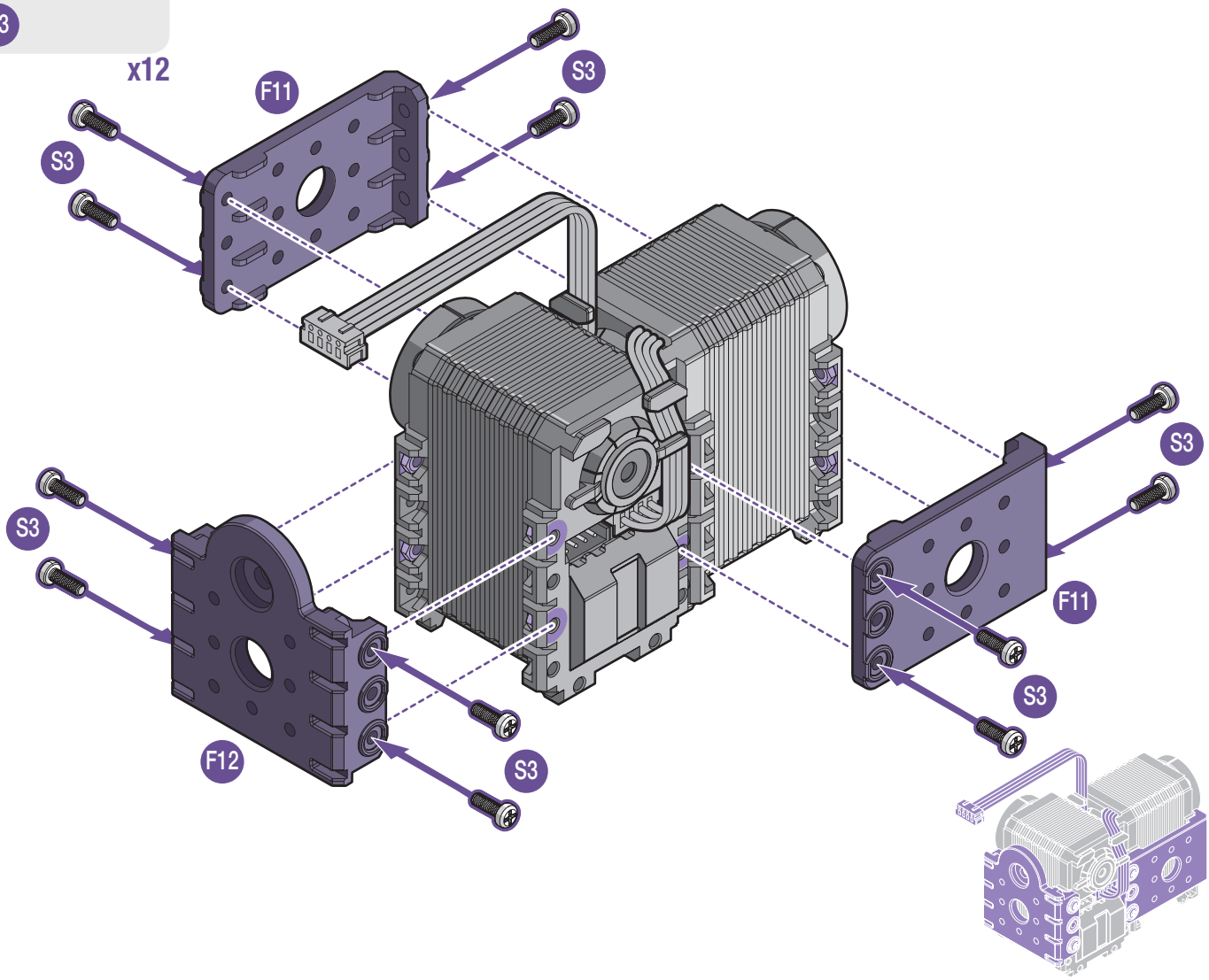
x1



x12

NOTE: To assemble the following components, it may be necessary to assemble and secure one side first before moving onto the remaining side.

4. Align the brackets (F11 and F12) with the actuator assembly.
5. Secure the brackets (F11 and F12) to the actuator assembly with screws (S3).

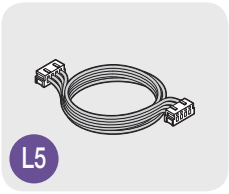


03 Hardware Assembly

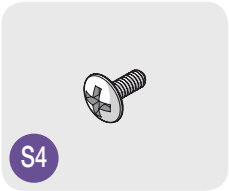
Left Leg Assembly

Required Parts

x1



x1

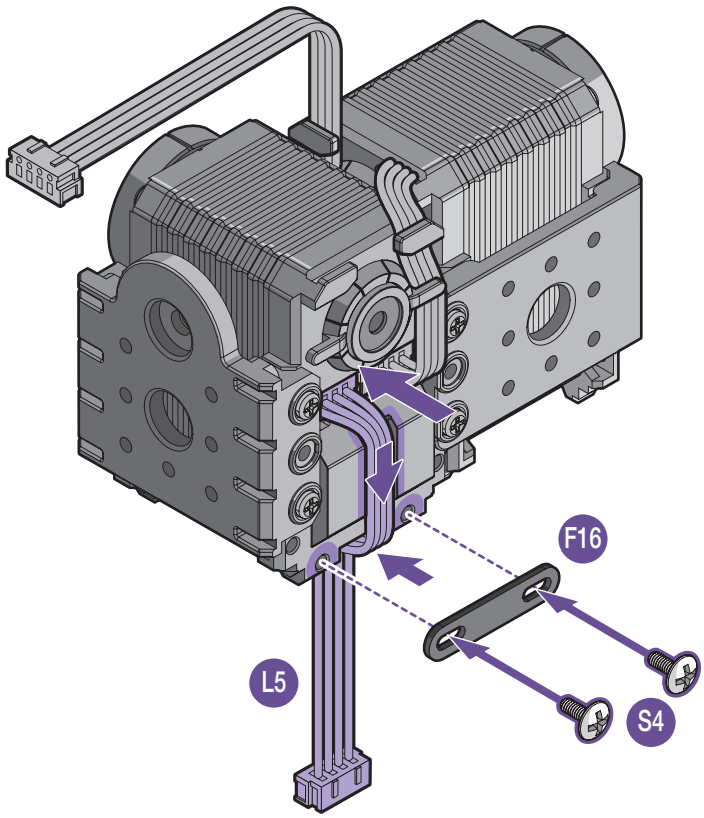


x2

6. Connect the cable (L5) to the actuator (ID12).
7. Route the cable (L5) through the cable well on the actuator (ID12).

NOTE: Cable routing runs through the bottom of actuator (ID12).

8. Align the cable tray (F16) with the holes on the actuator (ID12).
9. Secure the cable tray (F16) to the actuator (ID12) with screws (S4).

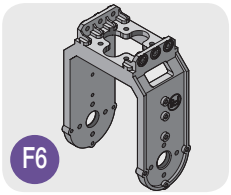


Hardware Assembly

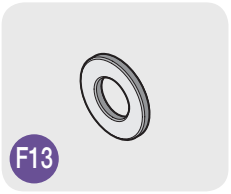
Left Leg Assembly

03

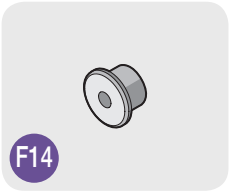
Required Parts



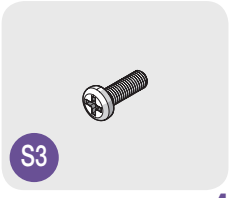
x1



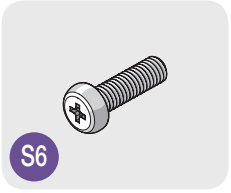
x1



x1

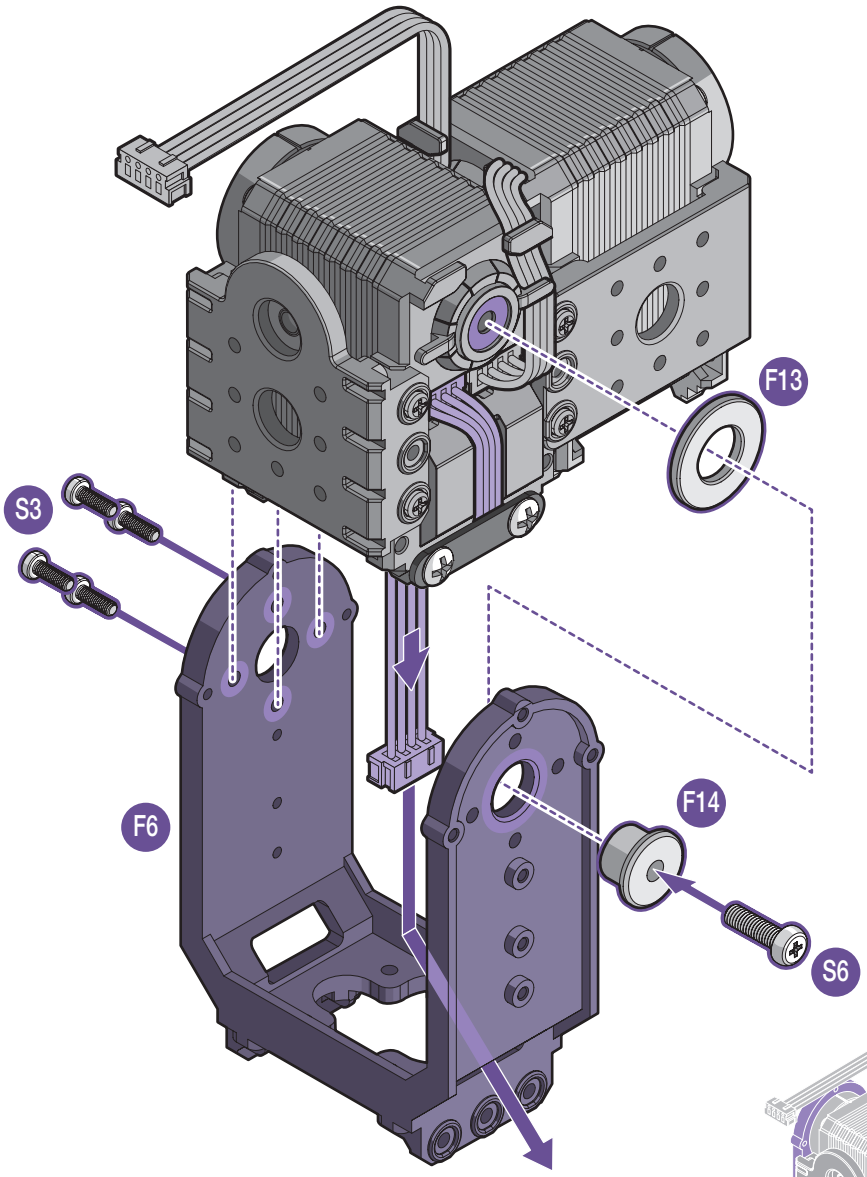


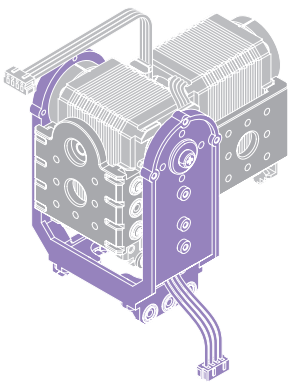
x4



x1

10. Insert the shoulder washer (F14) through the bracket (F6) first.
11. Insert the washer (F13) on the shoulder washer (F14).
12. Install the actuator assembly, make sure it's aligned with the shoulder washer (F14) and the cable (L5) runs through the bracket (F6).
13. Secure the shoulder washer (F14) with a screw (S6).
14. Secure the bracket (F6) to the actuator assembly with screws (S3).

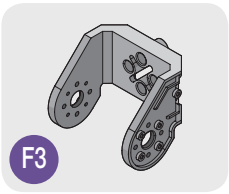




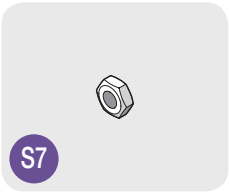
03 Hardware Assembly

Left Leg Assembly

Required Parts

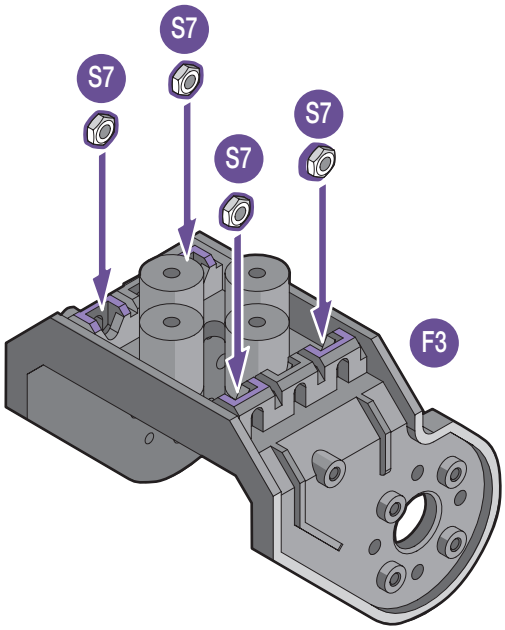


x1



x4

15. Install the nuts (S7) into the bracket (F3).

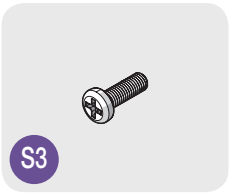


Hardware Assembly

Left Leg Assembly

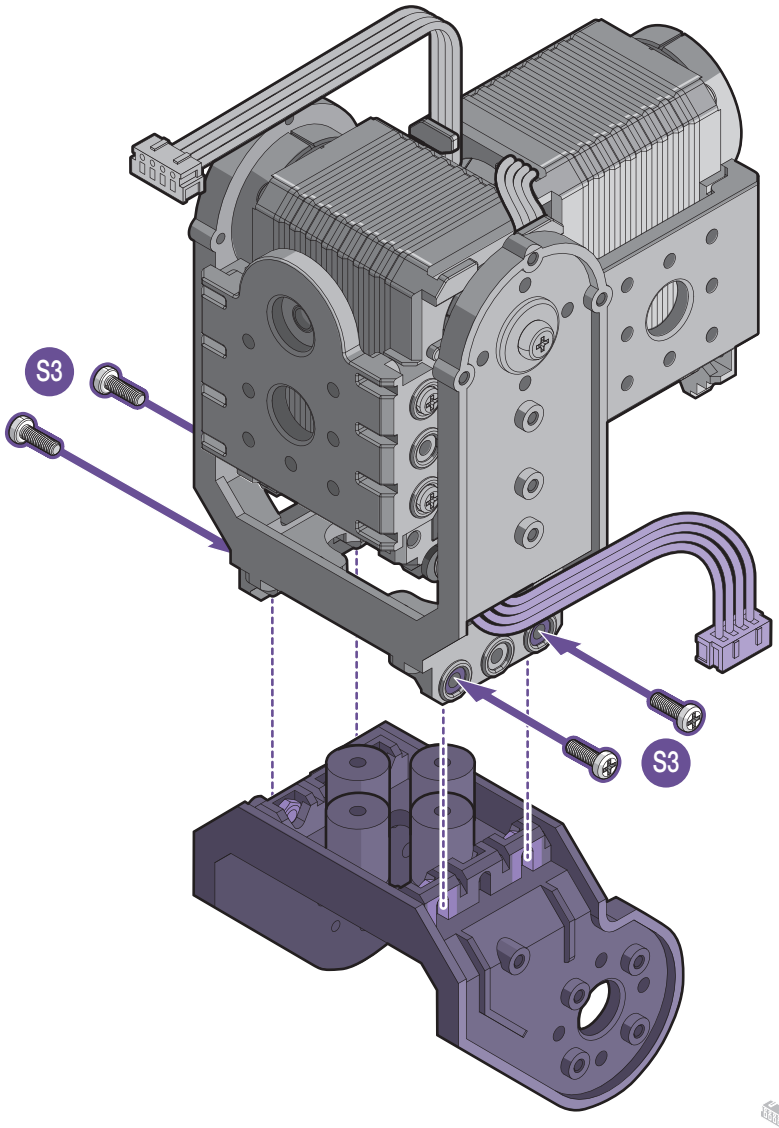
03

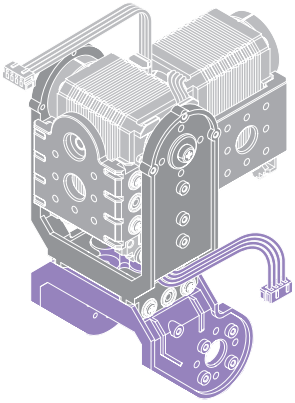
Required Parts



x4

16. Install the actuator assembly and secure the bracket (F3) to the actuator assembly with screws (S3).

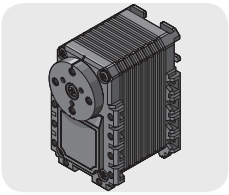




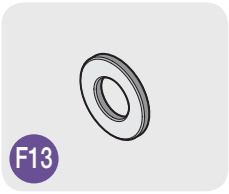
03 Hardware Assembly

Left Leg Assembly

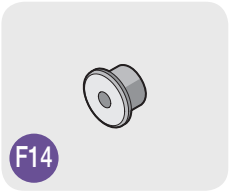
Required Parts



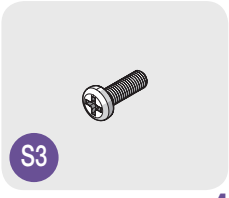
x1



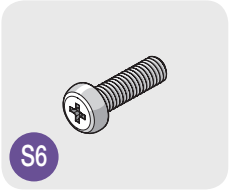
x1



x1

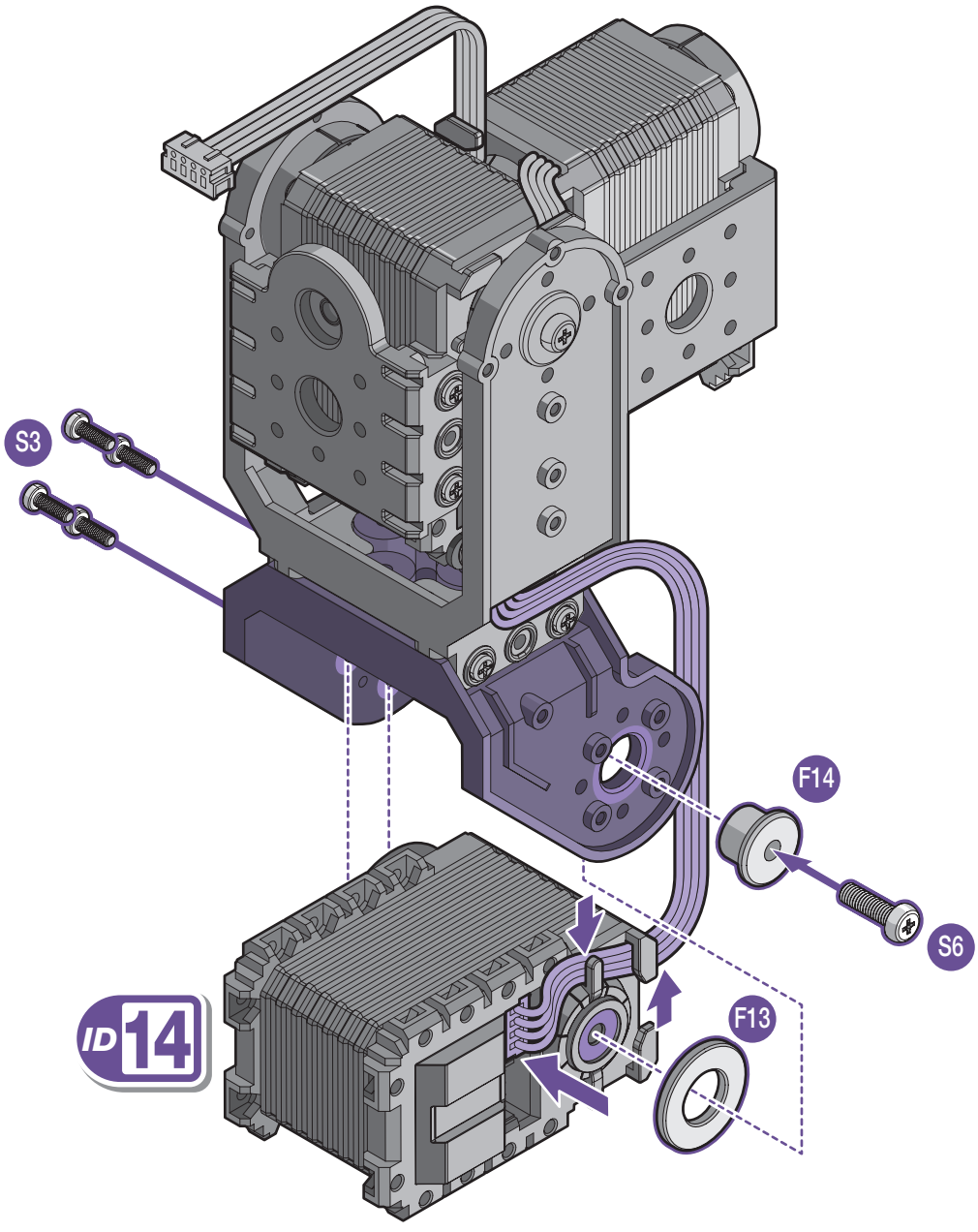


x4

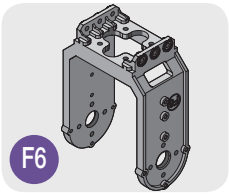


x1

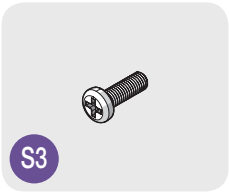
17. Route the cable (L5) through the cables clips on the actuator (ID14) and connect the cable (L5) to the actuator (ID14).
18. Insert the shoulder washer (F14) through the bracket (F3) first.
19. Insert the washer (F13) on the shoulder washer (F14).
20. Install the actuator assembly, make sure it's aligned with the shoulder washer (F14) and connect the cable (L5) to the actuator (ID14).
21. Secure the shoulder washer (F14) with a screw (S6).
22. Secure the bracket (F3) to the actuator (ID14) with screws (S3).



Required Parts

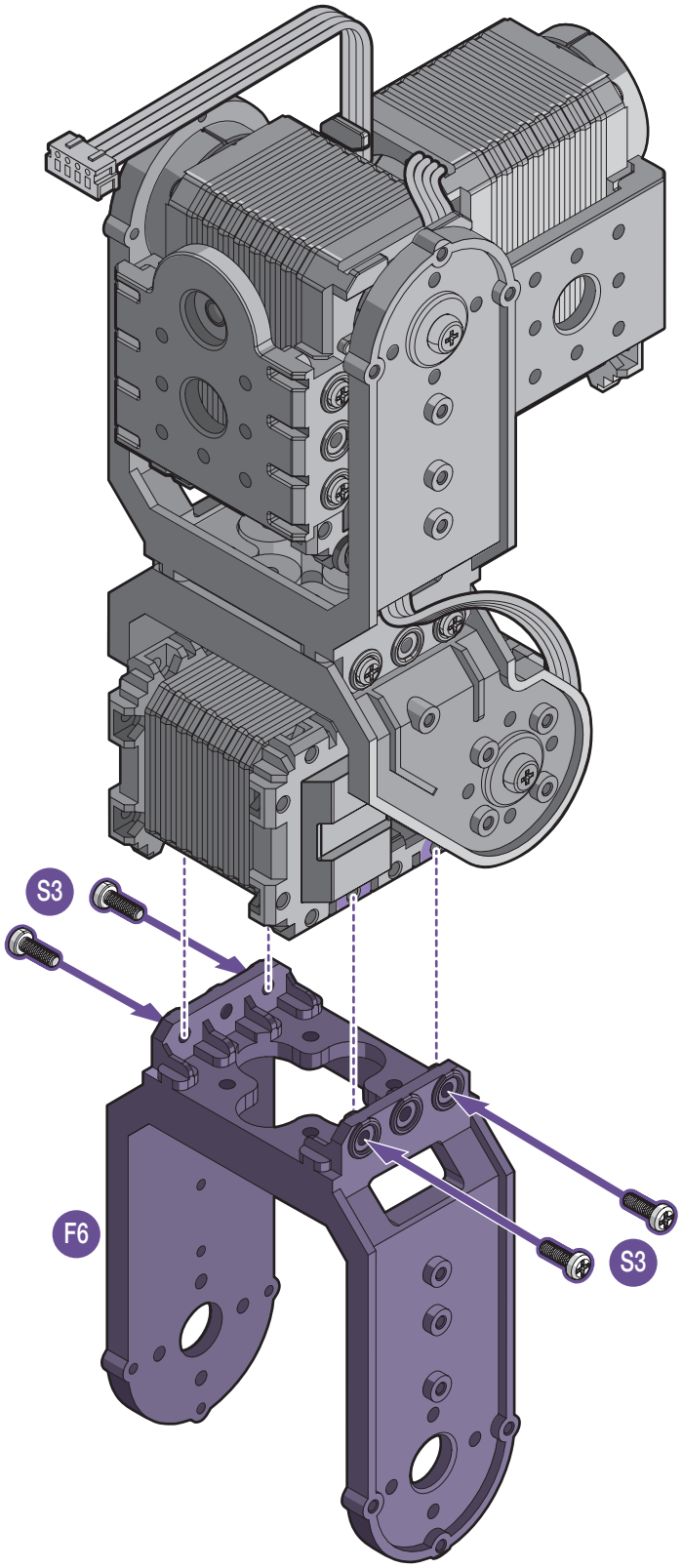


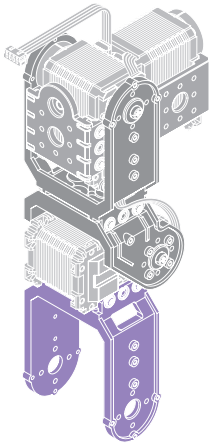
x1



x4

23. Install the actuator assembly and secure the bracket (F6) to the actuator assembly with screws (S3).

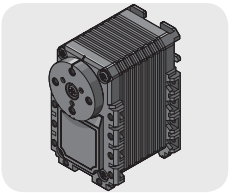




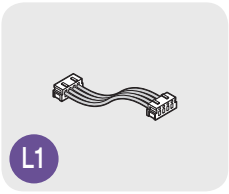
03 Hardware Assembly

Left Leg Assembly

Required Parts



x2



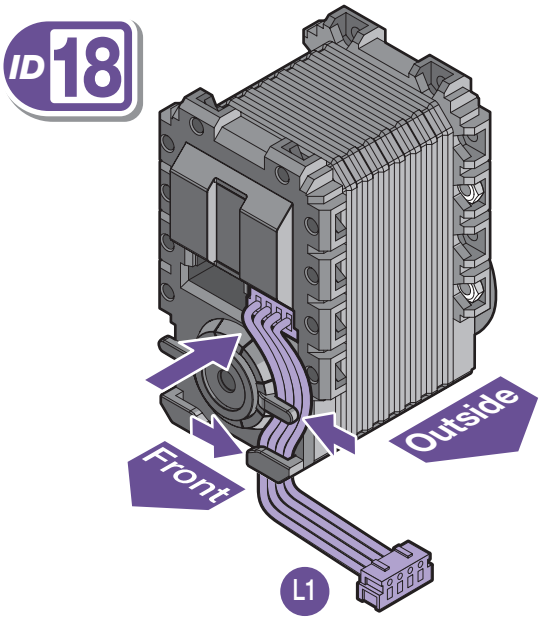
x1

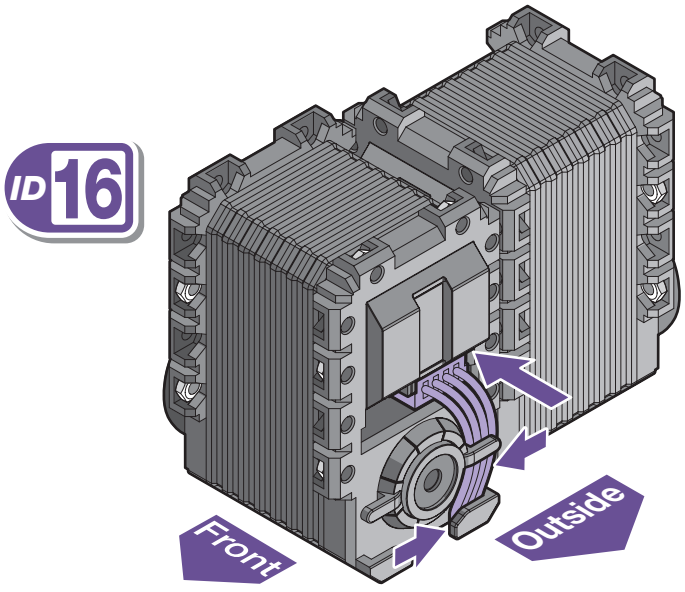
24. Connect the cable (L1) to the actuator (ID18) then route the cable through the cable clip on the actuator (ID18).

NOTE: Cable routing runs through the top of actuator (ID18).

25. Install the actuator (ID16) as shown in the illustration.

26. Route the cable (L1) through the cable clip on the actuator (ID16) and connect the cable (L1) to the actuator (ID16).



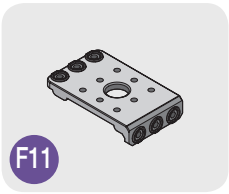


Hardware Assembly

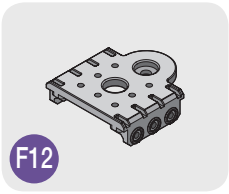
Left Leg Assembly

03

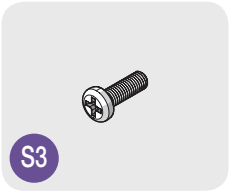
Required Parts



x2



x1

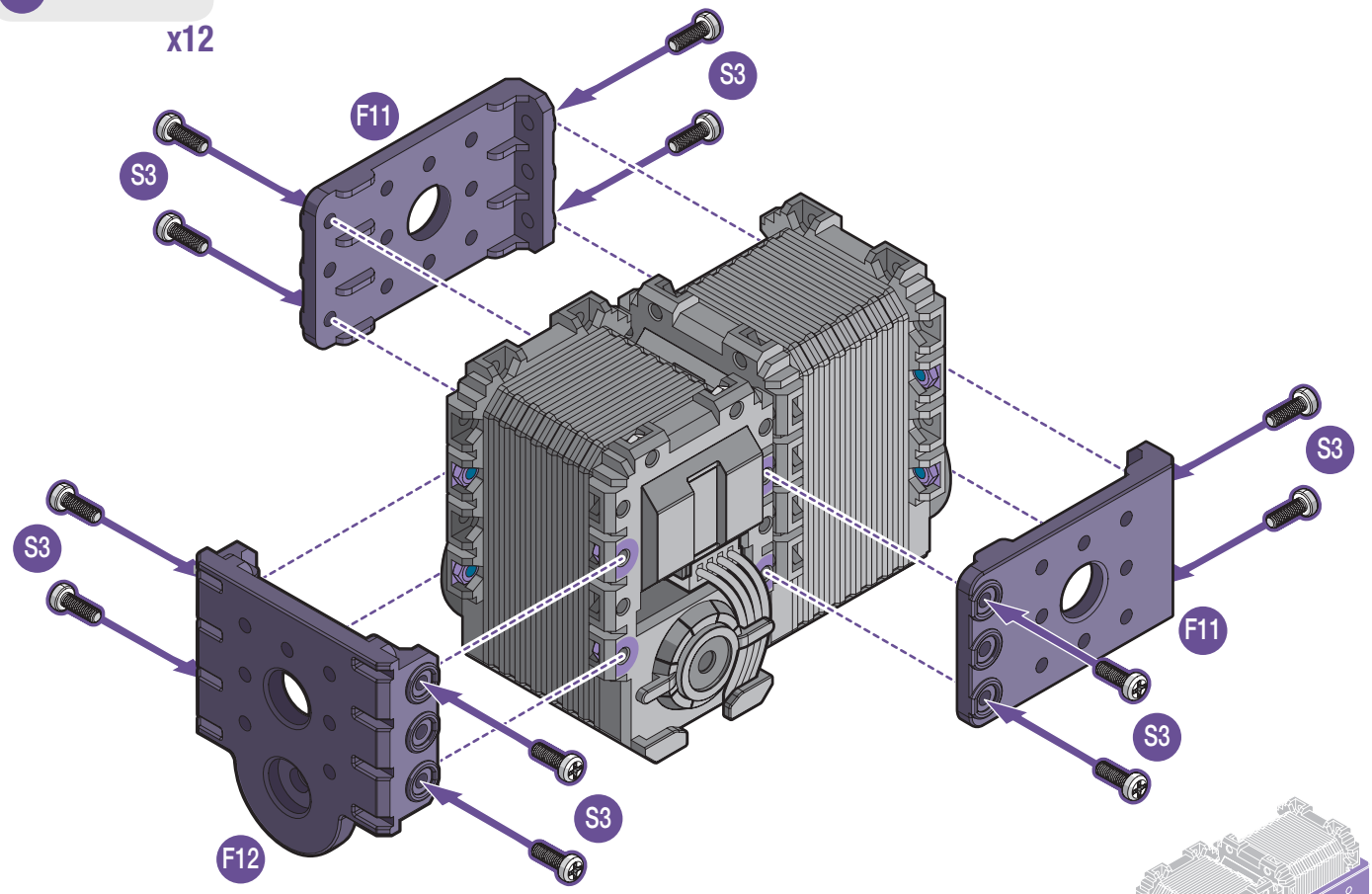


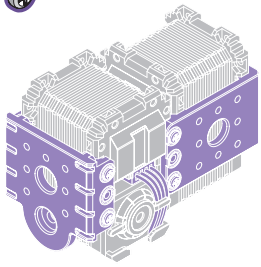
x12

NOTE: To assemble the following components, it may be necessary to assemble and secure one side first before moving onto the remaining side.

27. Align the brackets (F11 and F12) with the actuator assembly.

28. Secure the brackets (F11 and F12) to the actuator assembly with screws (S3).



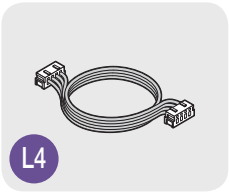


03 Hardware Assembly

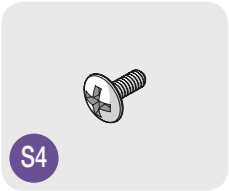
Left Leg Assembly

Required Parts

x1



x1



x2

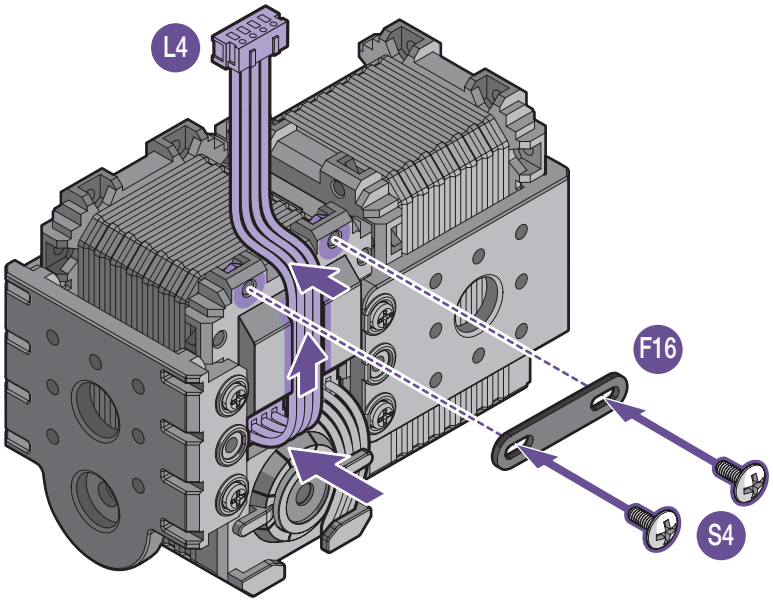
29. Connect the cable (L4) to the actuator (ID16).

30. Route the cable (L4) through the cable well on the actuator (ID16).

NOTE: Cable routing runs through the bottom of actuator (ID16).

31. Align the cable tray (F16) with the holes on the actuator (ID16).

32. Secure the cable tray (F16) to the actuator (ID16) with screws (S4).

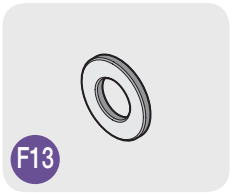


Hardware Assembly

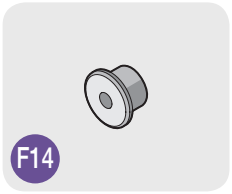
Left Leg Assembly

03

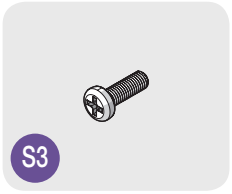
Required Parts



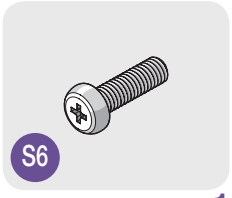
x1



x1

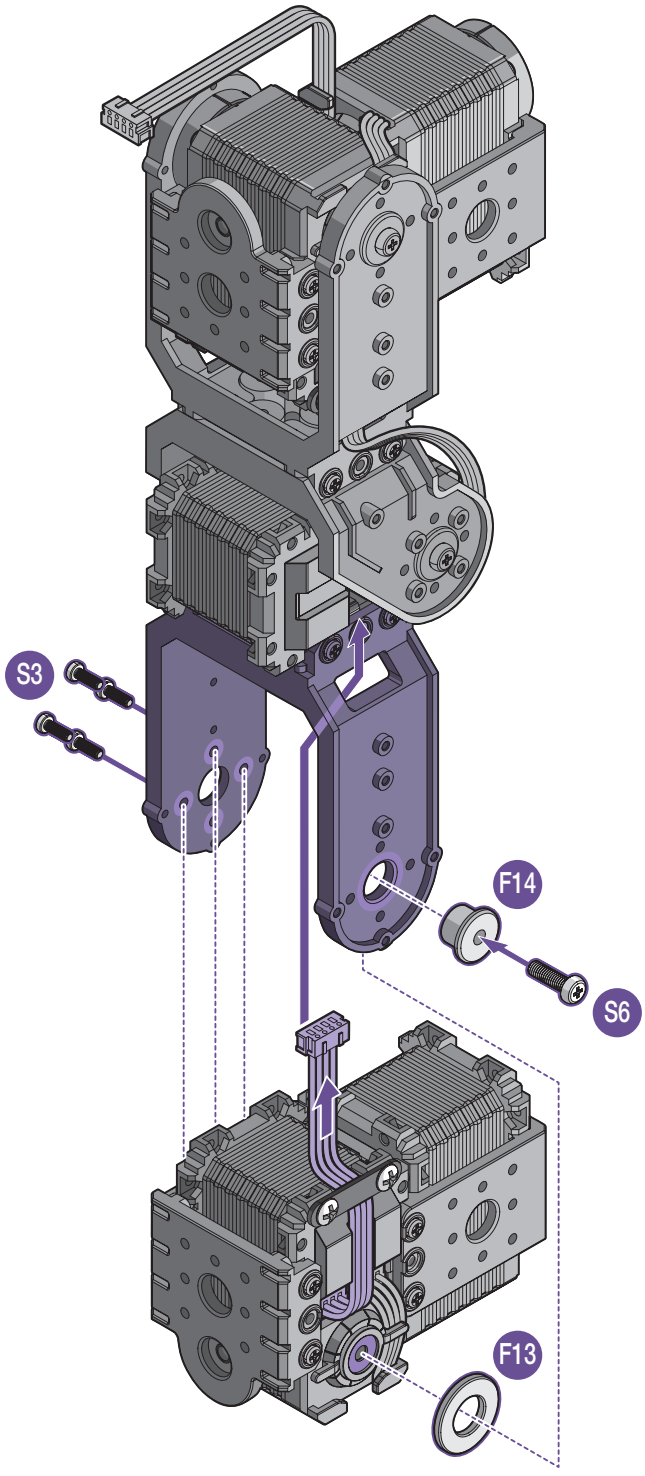


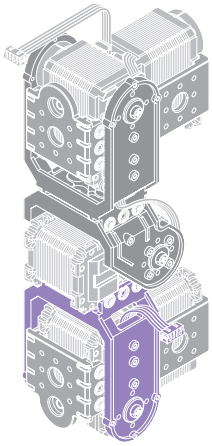
x4



x1

33. Insert the shoulder washer (F14) through the bracket (F6) first.
34. Insert the washer (F13) on the shoulder washer (F14).
35. Install the actuator assembly, make sure it's aligned with the shoulder washer (F14) and the cable (L4) runs through the hole on the bracket (F6).
36. Secure the shoulder washer (F14) with a screw (S6).
37. Secure the bracket (F6) to the actuator assembly with screws (S3).

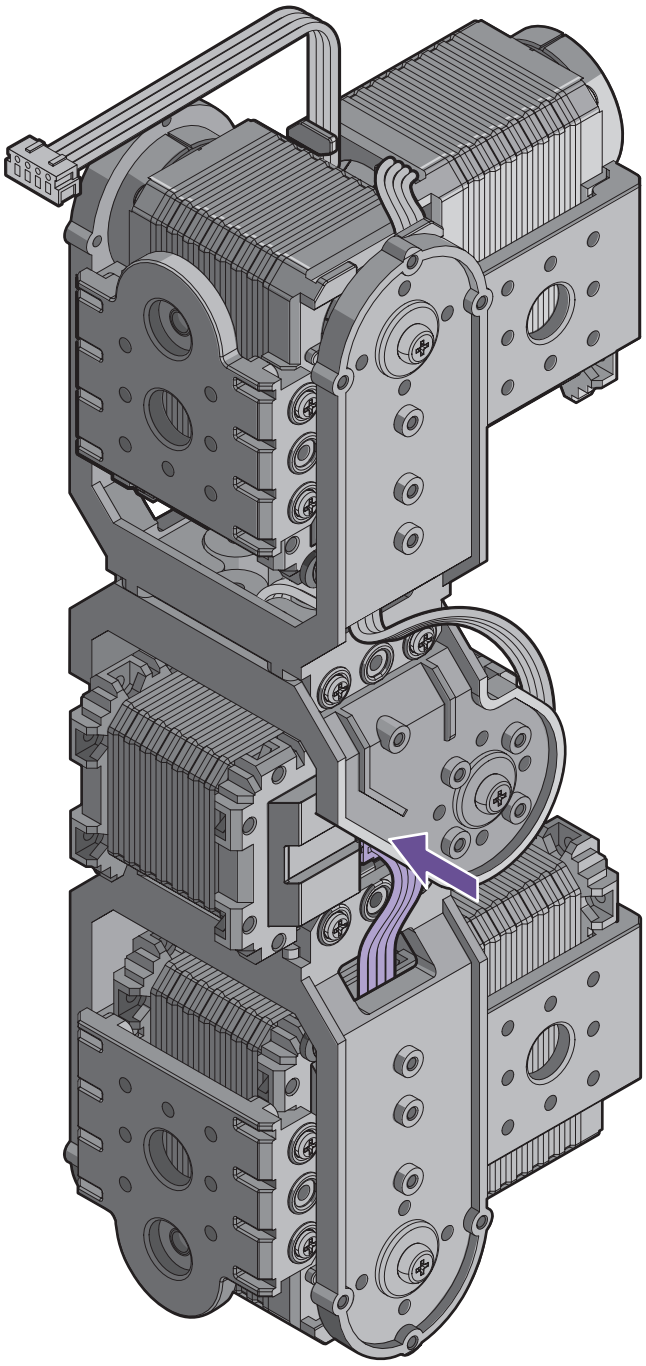




Hardware Assembly

Left Leg Assembly

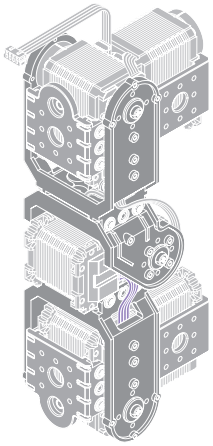
38. Connect the cable (L4) to actuator (ID14).



Hardware Assembly

Left Leg Assembly

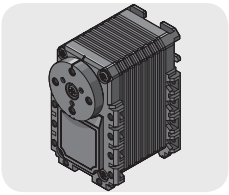
03



03 Hardware Assembly

Head and Torso Assembly

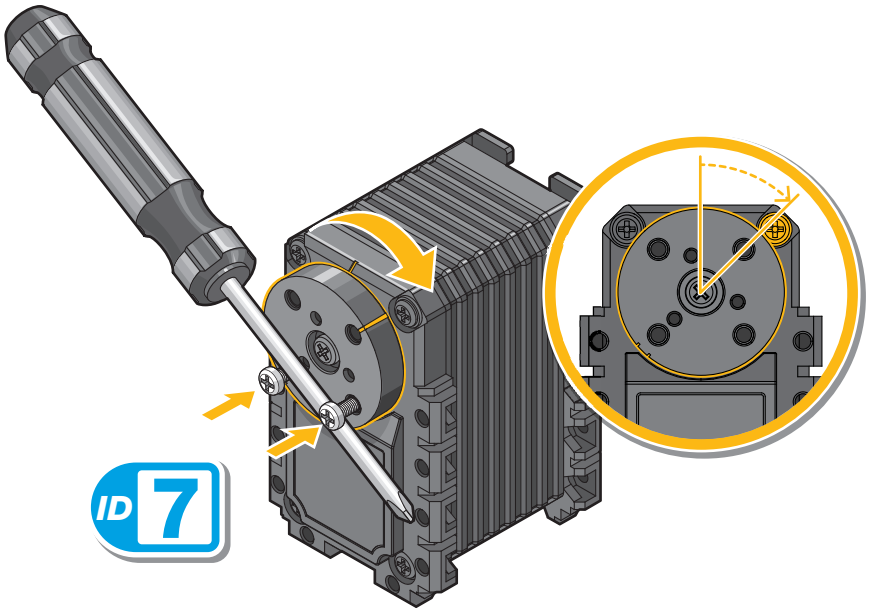
Required Parts

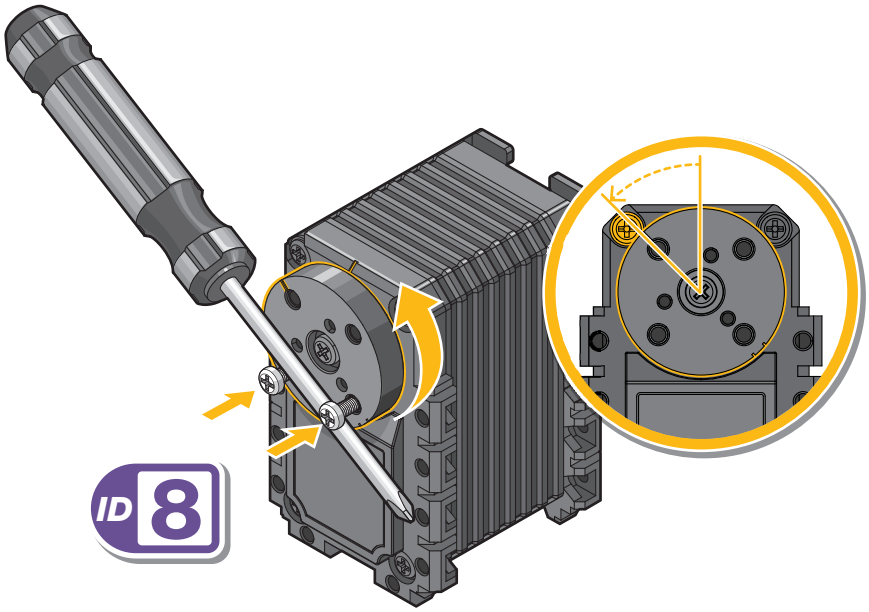


x2

1. Insert two screws on the actuator hub as seen in the following image.
2. Put a screw driver between the screws.
3. Rotate the actuator hub until the zero position is set to 45 / -45 degrees from the servo line, see following illustration.

NOTE: ID7 and ID8 are not aligned to zero.





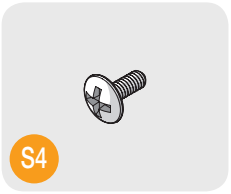
Hardware Assembly

Head and Torso Assembly

03

Required Parts

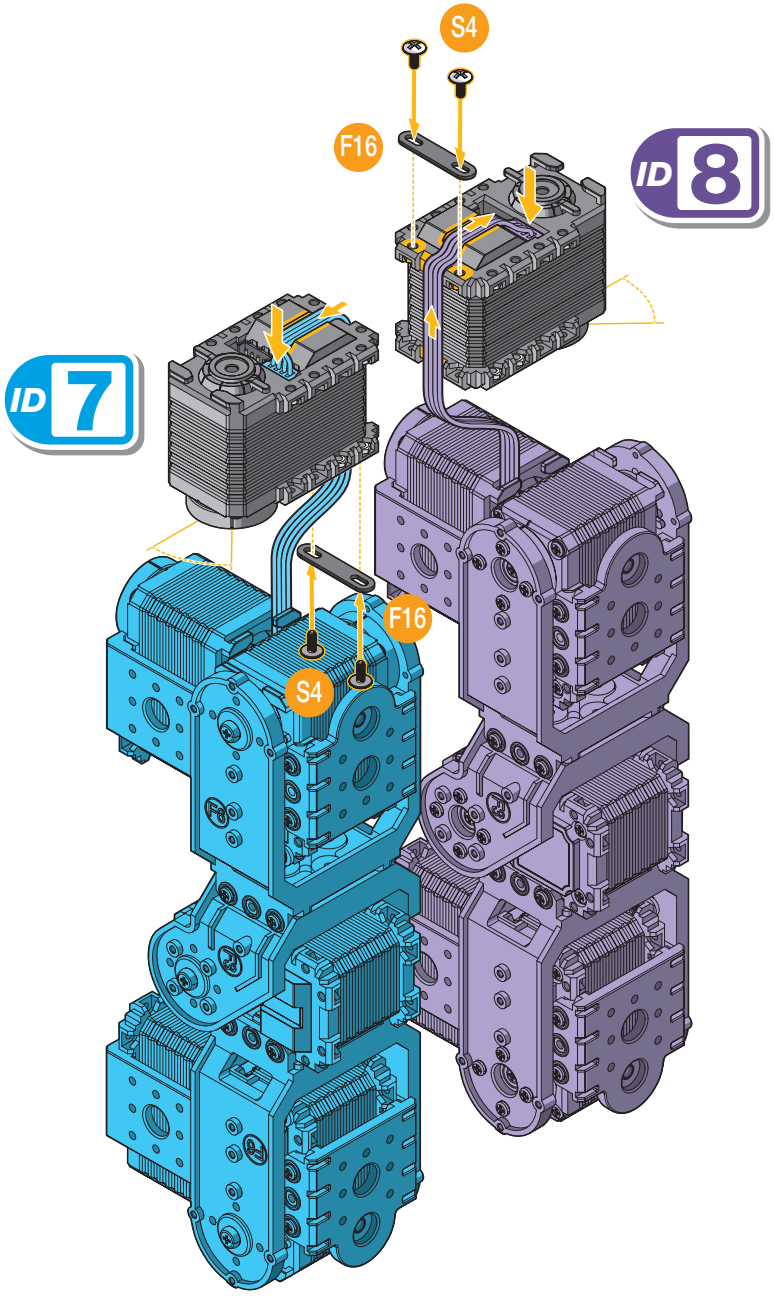
x2

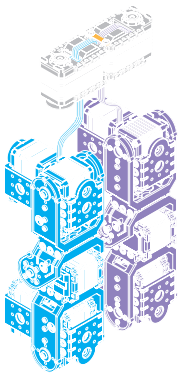


x4

NOTE: To assemble the following components, it may be necessary to assemble and secure one side first before moving onto the remaining side.

4. Connect the cables (L5).
5. Align the leg actuator assemblies below the actuators (ID7 and ID8), make sure the ID number is facing back.
6. Route the cables (L5) through the cable well on the actuators (ID7 and ID8).
7. Align the cable trays (F16) with the opening on the actuators (ID7 and ID8).
8. Secure the cable trays (F16) to the actuators (ID7 and ID8) with screws (S4).

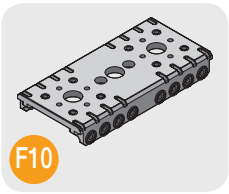




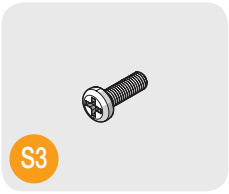
03 Hardware Assembly

Head and Torso Assembly

Required Parts

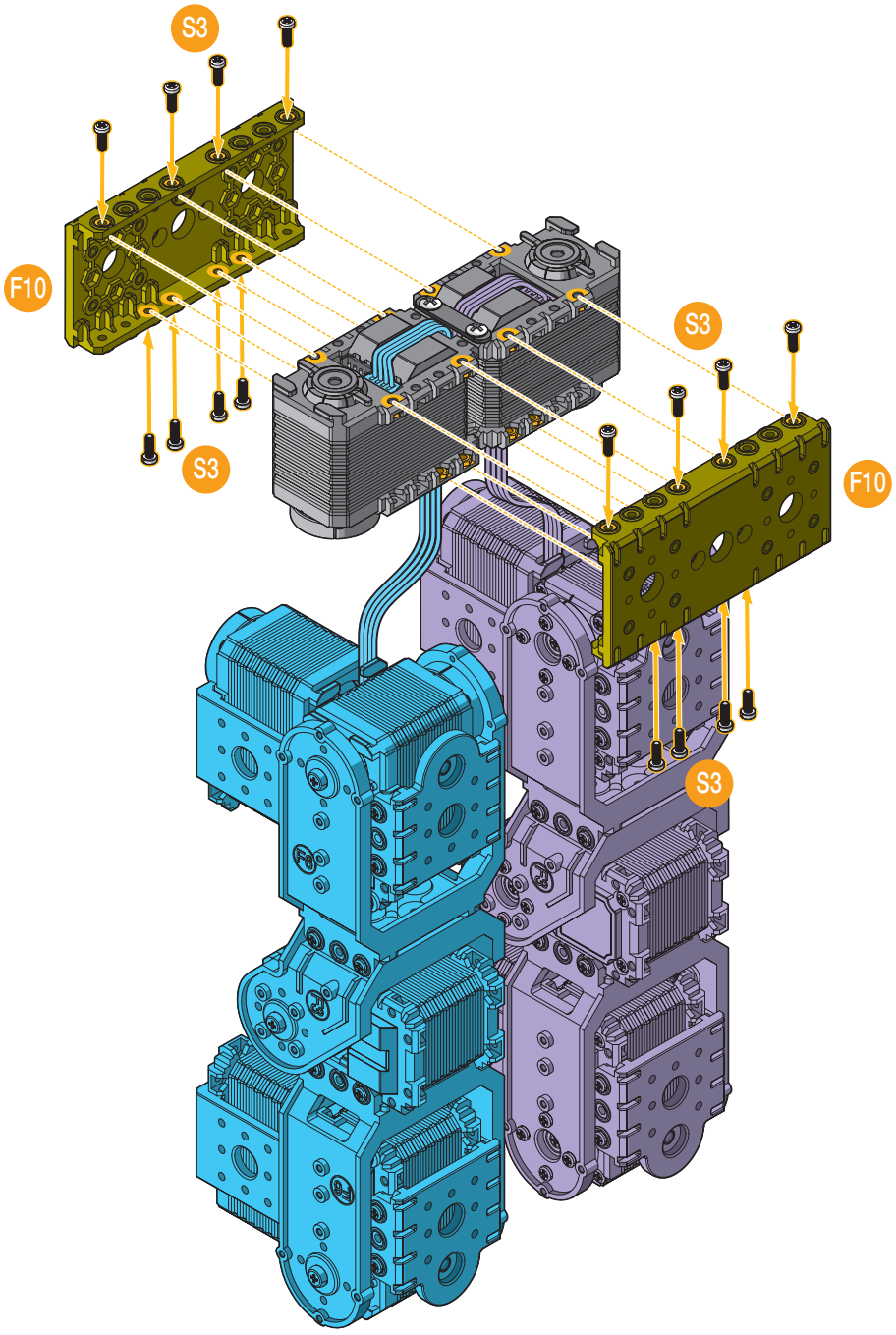


x2



x16

9. Align the bracket (F10) with the actuators (ID7 and ID8).
10. Secure the bracket (F10) to the actuators (ID7 and ID8) with screws (S3).

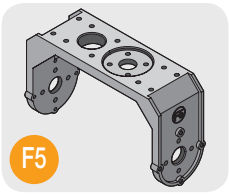


Hardware Assembly

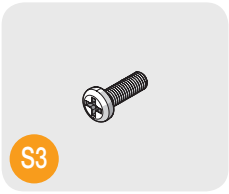
Head and Torso Assembly

03

Required Parts



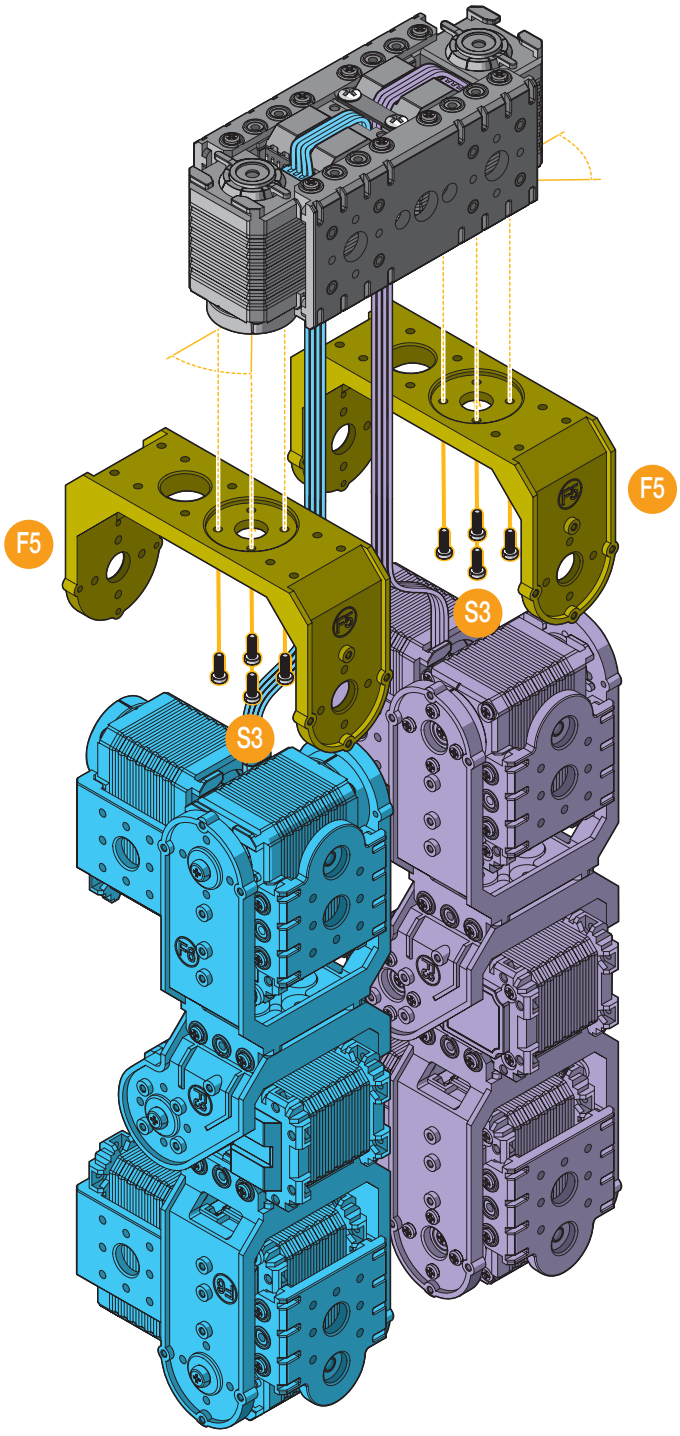
x2

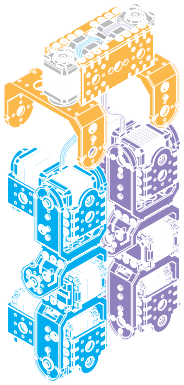


x8

11. Align the gear on the actuator with the opening on the bracket (F5).

12. Secure the bracket (F5) to the actuators (ID7 and ID8) with screws (S2)

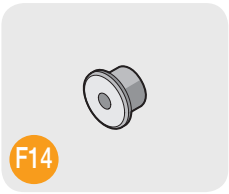




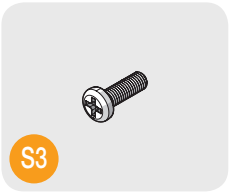
03 Hardware Assembly

Head and Torso Assembly

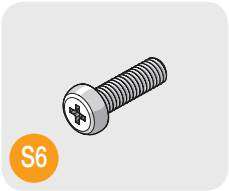
Required Parts



x1

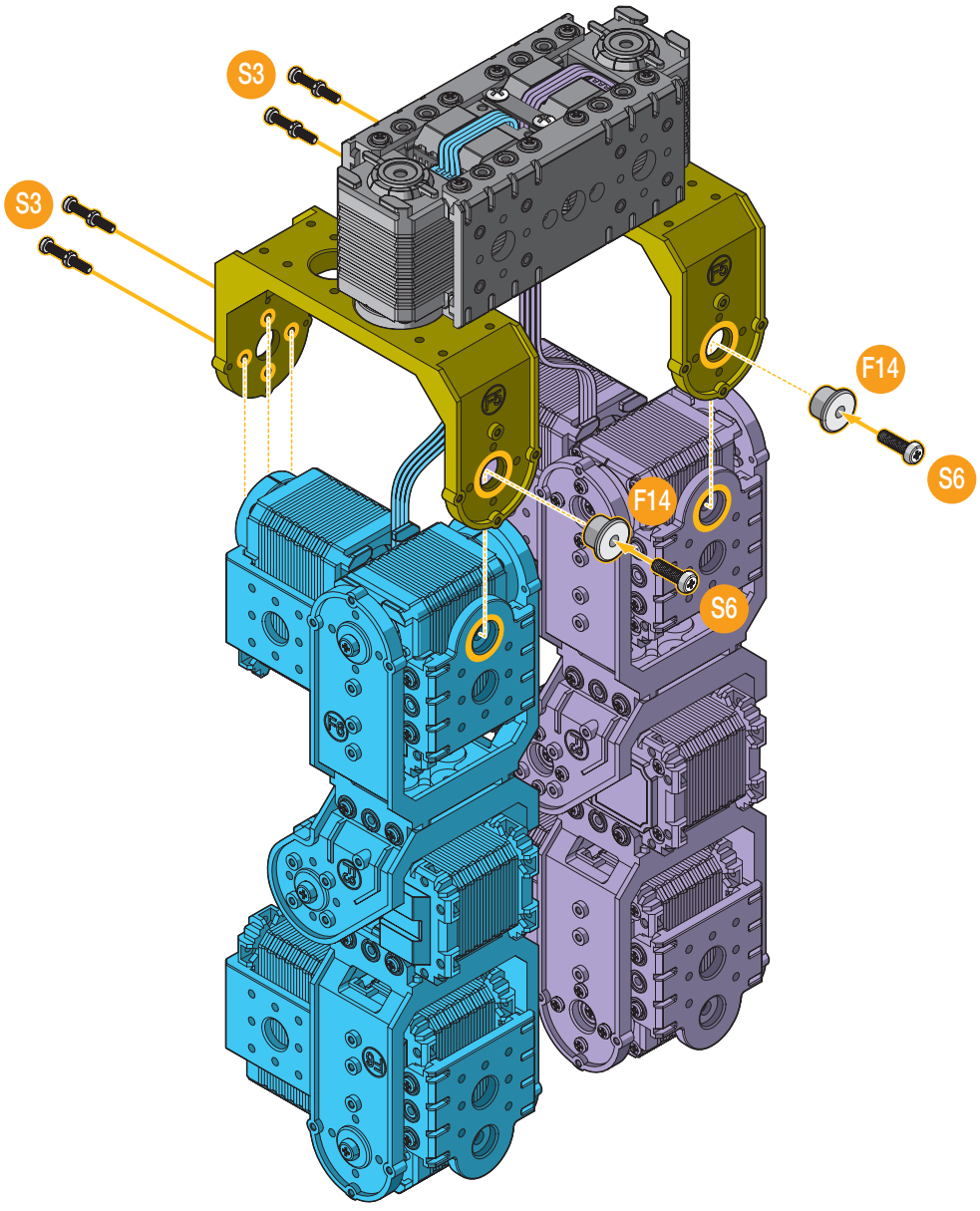


x4

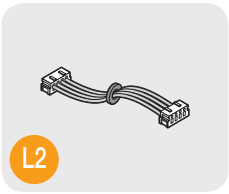


x1

13. Insert the shoulder washer (F14) through the bracket (F5) first.
14. Install the actuator assembly, make sure it's aligned with the shoulder washer (F14).
15. Secure the shoulder washer (F14) with a screw (S6).
16. Secure the bracket (F5) to the actuator assembly with screws (S3).

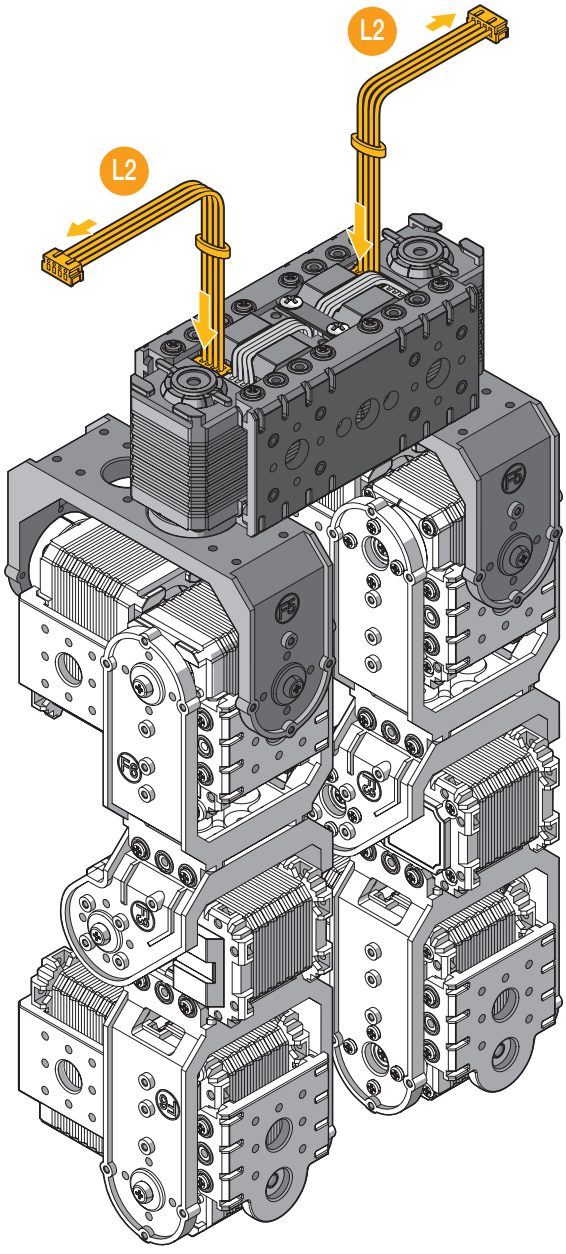


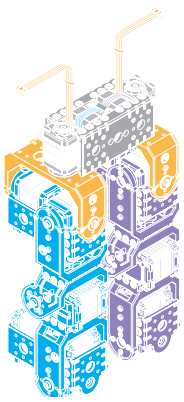
Required Parts



x2

17. Connect two cables (L2) to the assemblies (ID7 and ID8).

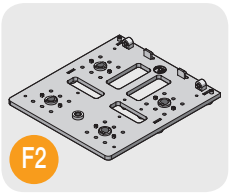




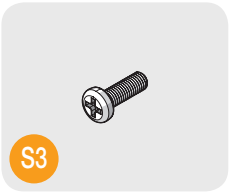
03 Hardware Assembly

Head and Torso Assembly

Required Parts



x1

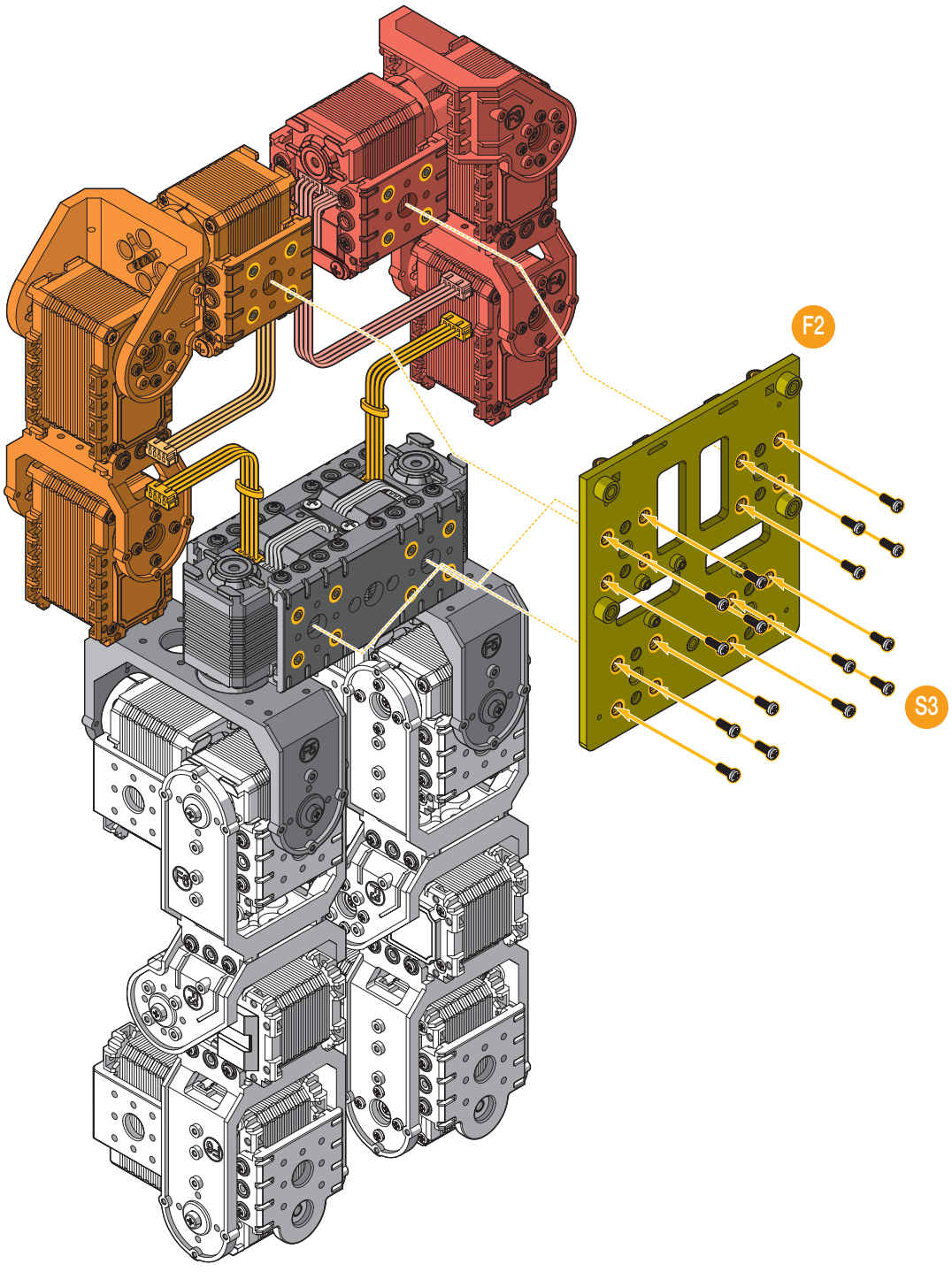


x16

Make sure the cables are facing out.

18. Align the torso (F2) to the assemblies.

19. Secure the torso (F2) to the assemblies with screws (S3).

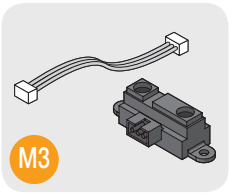


Hardware Assembly

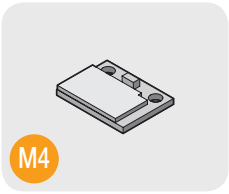
Head and Torso Assembly

03

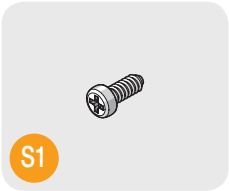
Required Parts



x1

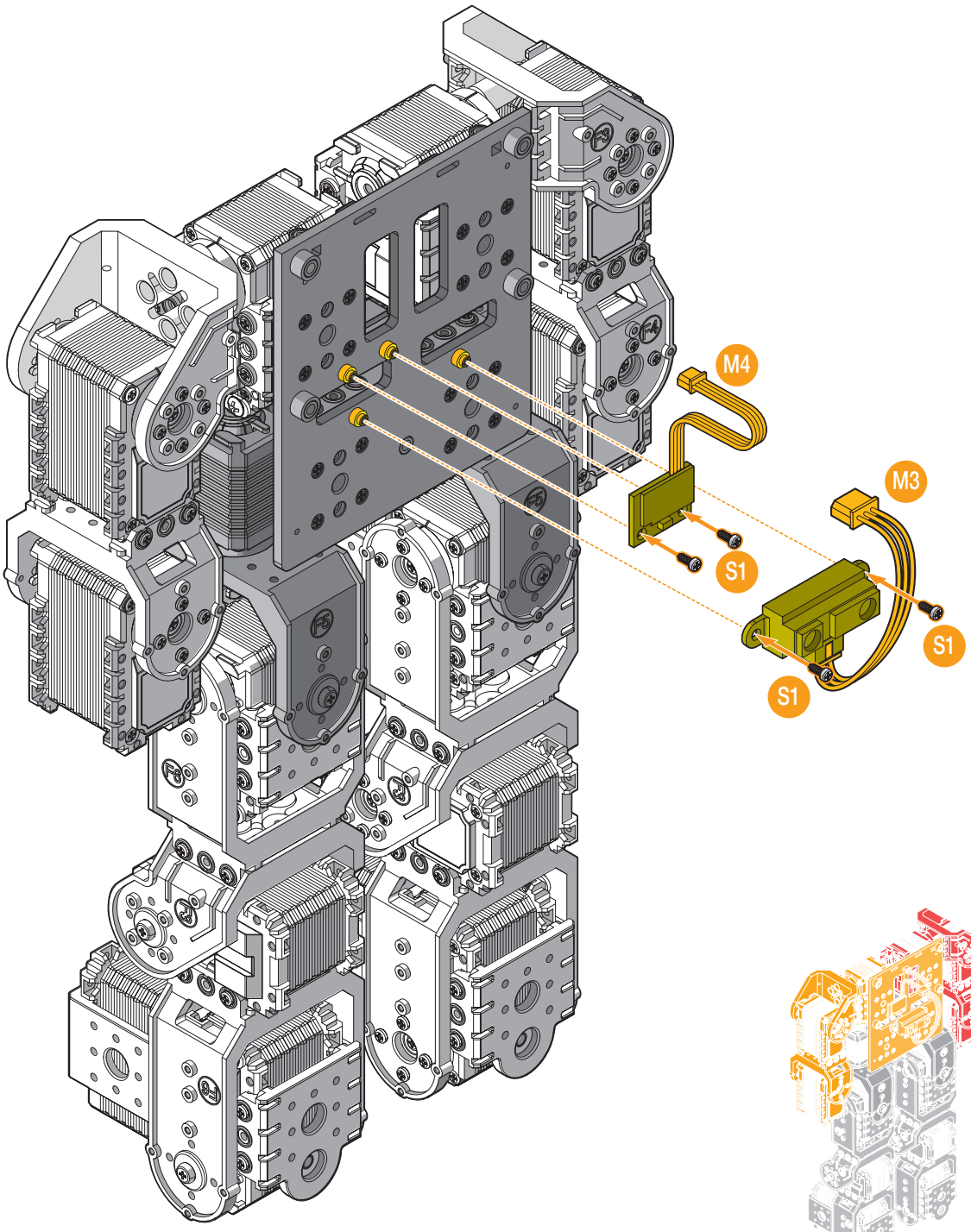


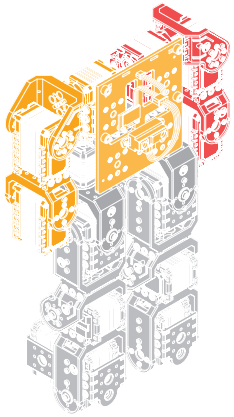
x1



x4

20. Connect the cable to the connector on the IR sensor (M3).
21. Align the IR sensor (M3) and gryo module (M4) with the torso (F2).
22. Secure the IR sensor (M3) and gryo module (M4) to the torso (F2) with screws (S1).



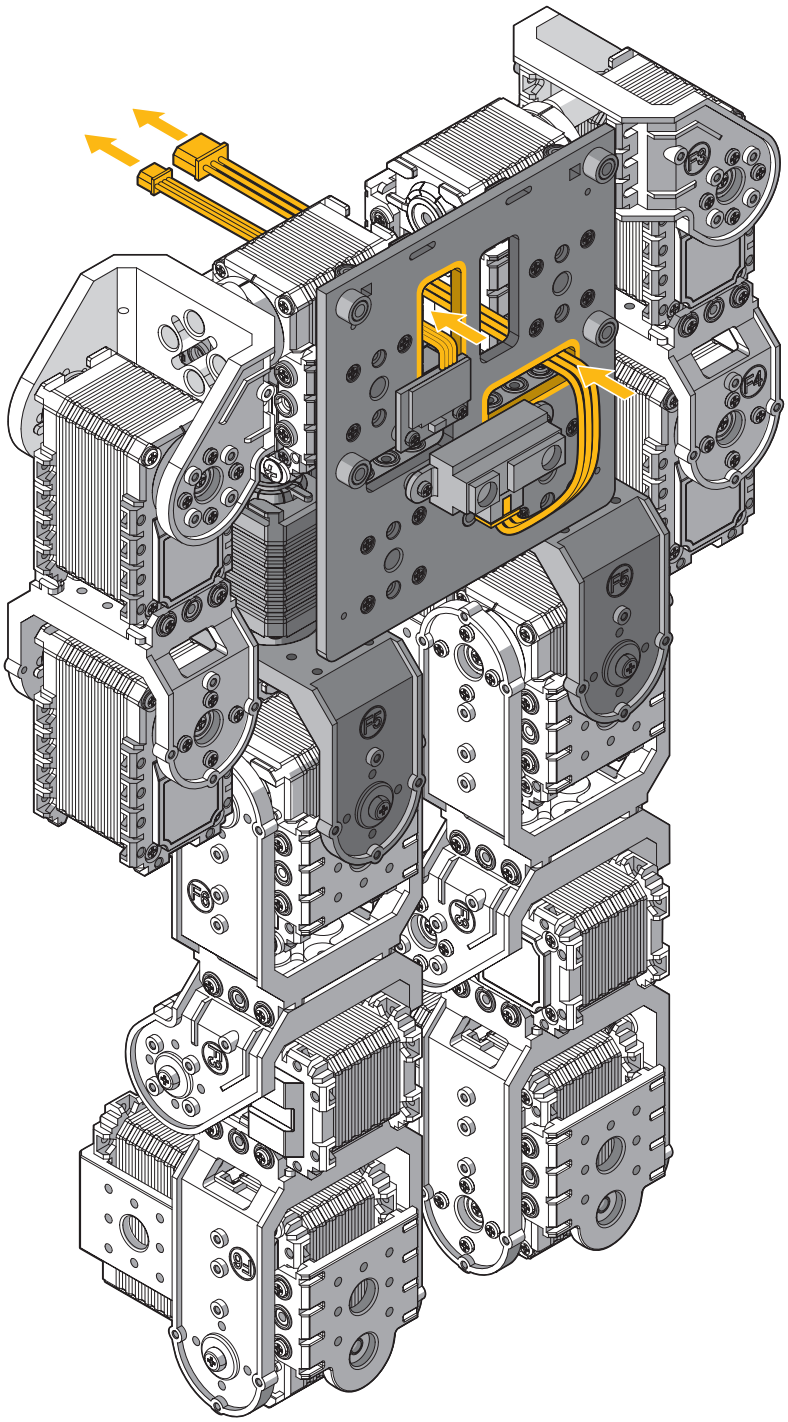


03 Hardware Assembly

Head and Torso Assembly

23. Route the cables as shown in the illustration.

24. Make sure the cables runs through the opening on the torso.

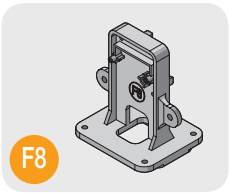


Hardware Assembly

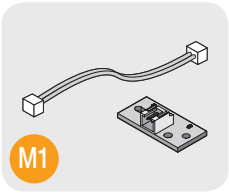
Head and Torso Assembly

03

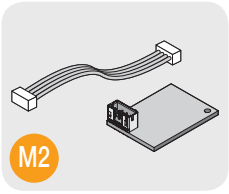
Required Parts



x1



x1



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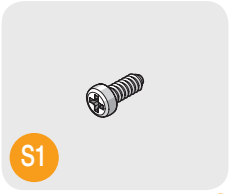
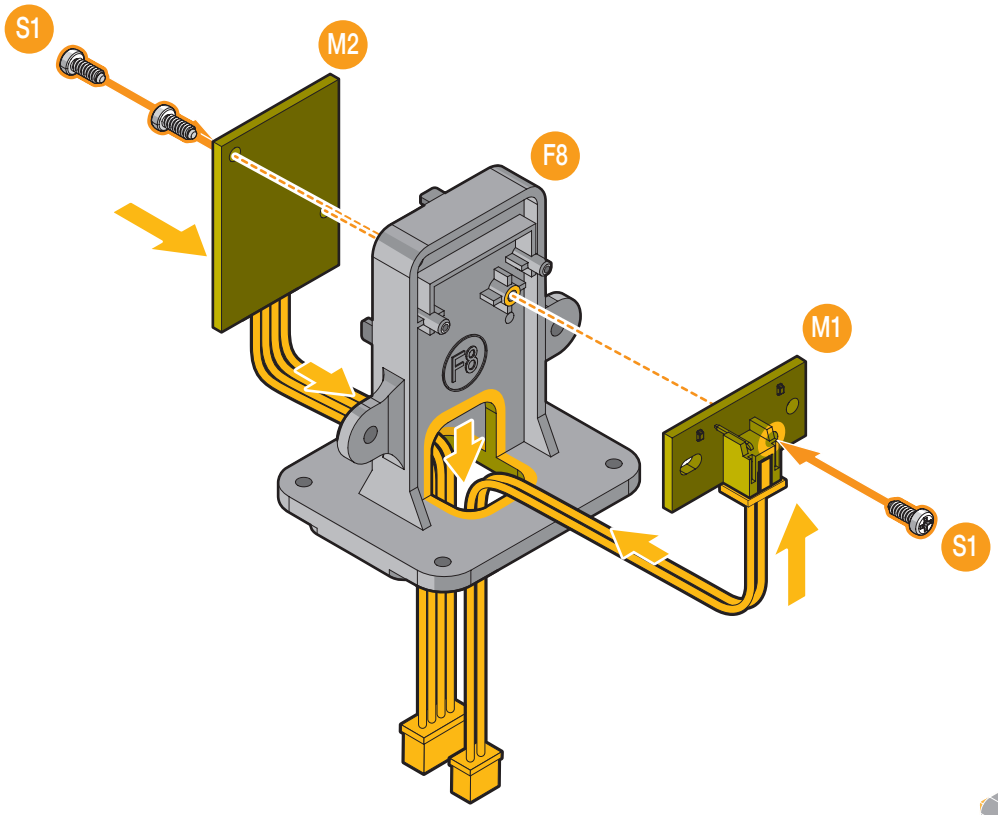
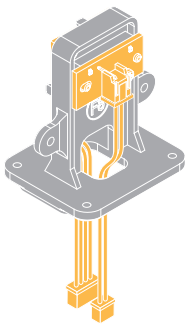


x3

25. Connect the cable to the connector on the eye LED board (M1).
26. Align the eye LED board (M1) and bluetooth module (M2) with the head bracket (F8).
27. Secure the eye LED board (M1) and bluetooth module (M2) to the head bracket (F8) with screws (S1).
28. Make sure the cabling runs through the hole on the head bracket (F8).

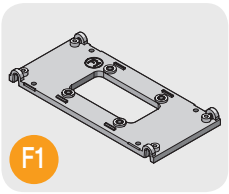




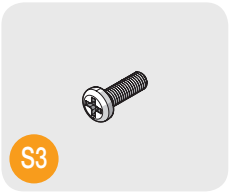
03 Hardware Assembly

Head and Torso Assembly

Required Parts

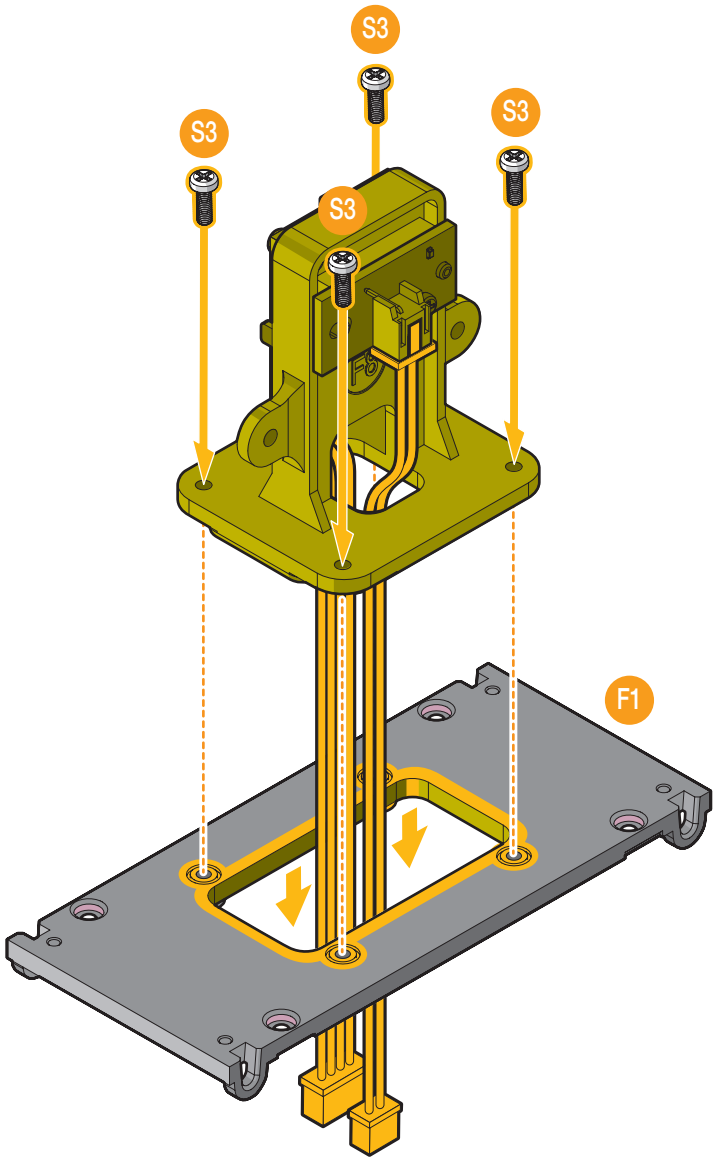


x1



x4

29. Align the head assembly with the body top bracket (F1).
30. Secure the head assembly to the body top bracket (F1) with screws (S3).
31. Make sure the cabling runs through the hole on the body top bracket (F1).

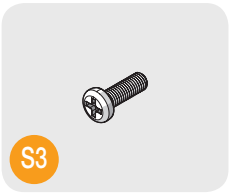


Hardware Assembly

Head and Torso Assembly

03

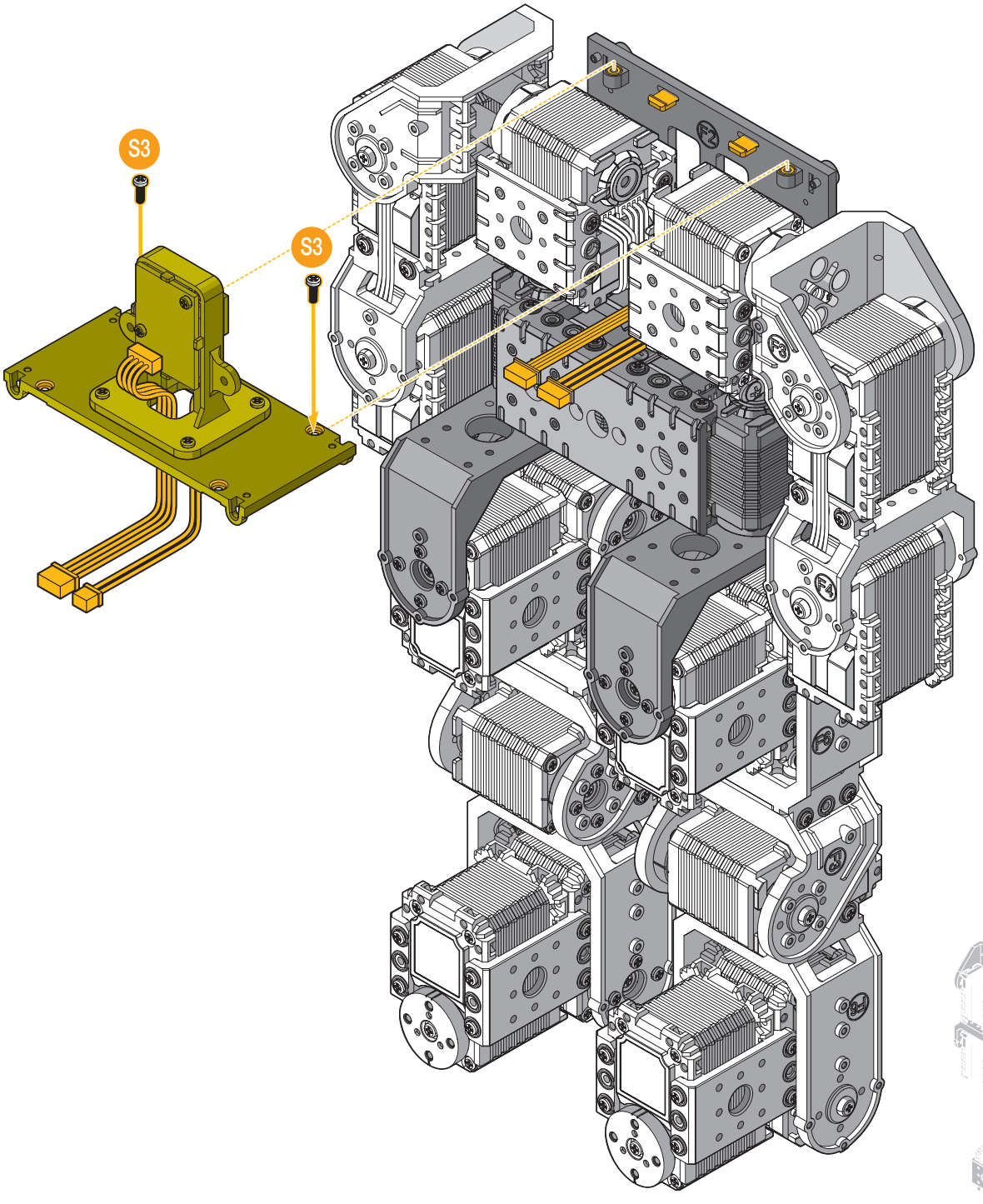
Required Parts

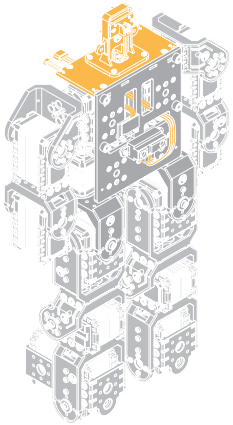


x2

32. Align the body top assembly to the torso (F2).

33. Secure the body top assembly to the torso (F2) with screws (S3).

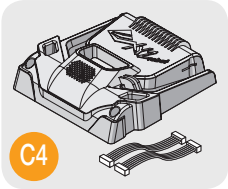




03 Hardware Assembly

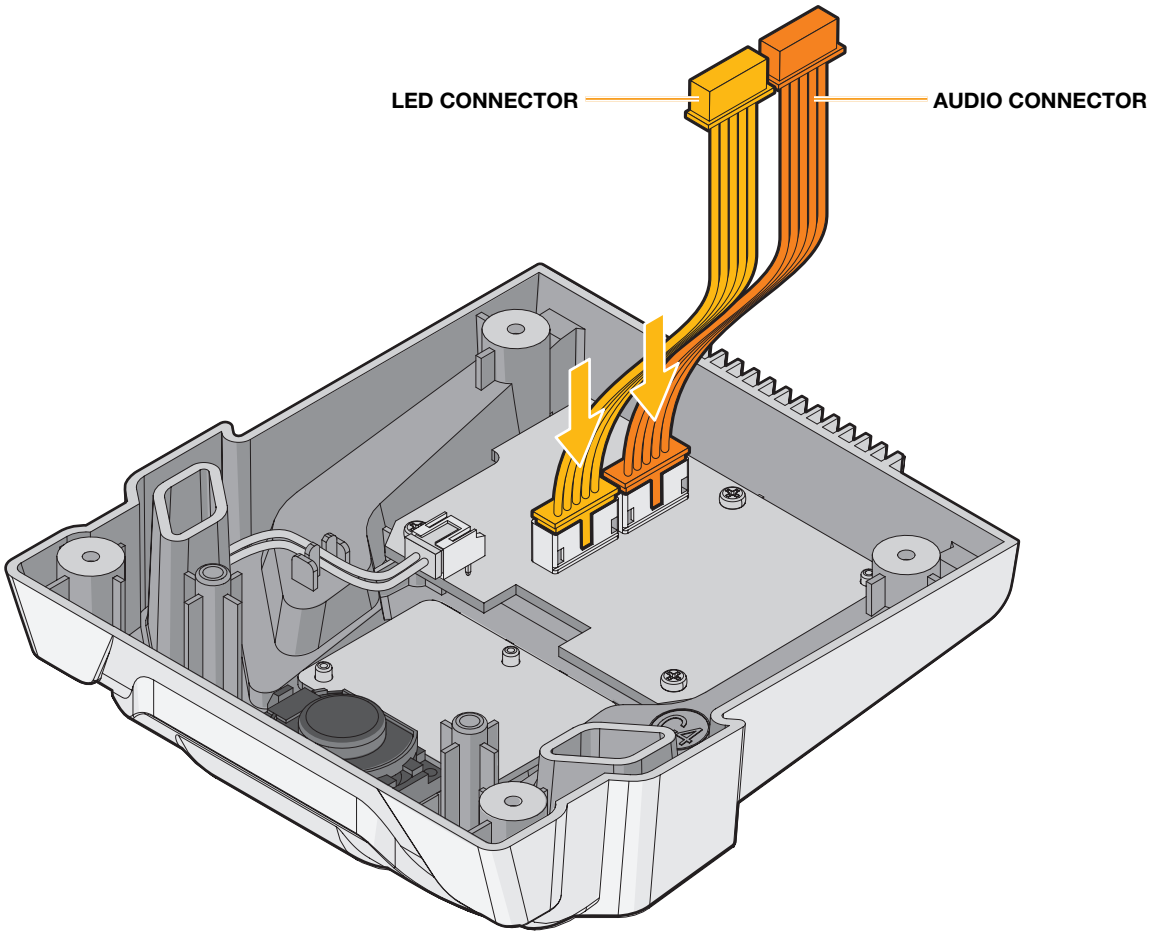
Head and Torso Assembly

Required Parts



x1

34. Connect the cables to the connector on the media borad (M7).

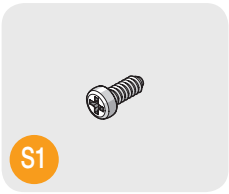


Hardware Assembly

Head and Torso Assembly

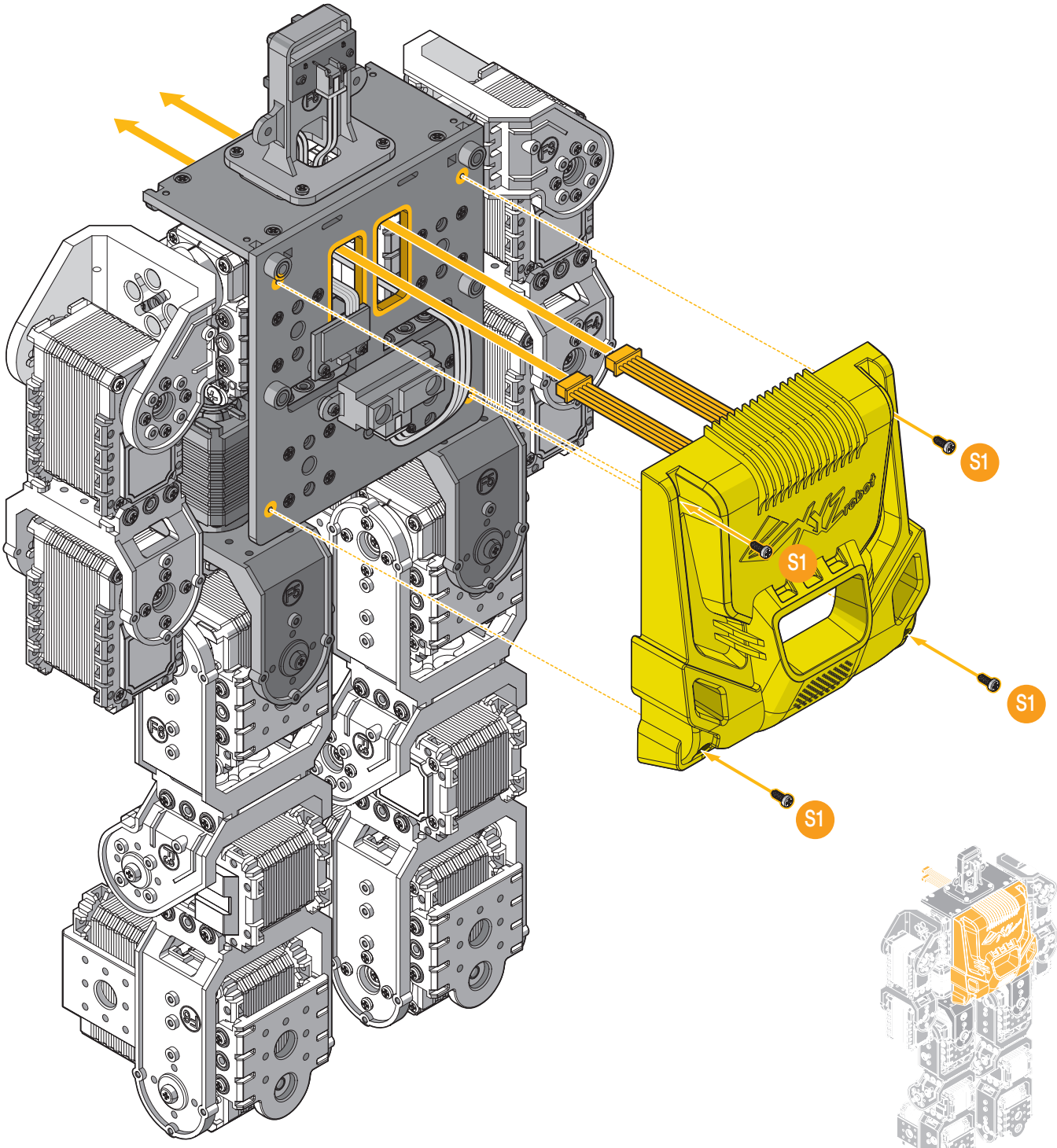
03

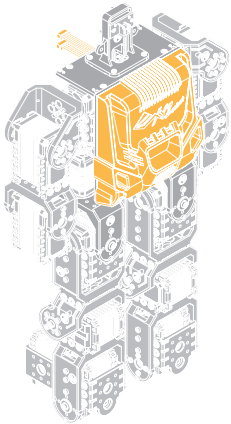
Required Parts



x4

35. Cable routing as the illustration shown.
36. Make sure the cables runs through the space in the robot.
37. Align the holes on the chest (C4) with the opening on the torso.
38. Secure the chest (C4) to the assembly with screws (S1).

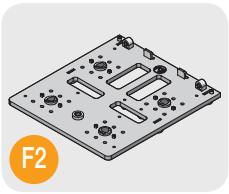




03 Hardware Assembly

Head and Torso Assembly

Required Parts

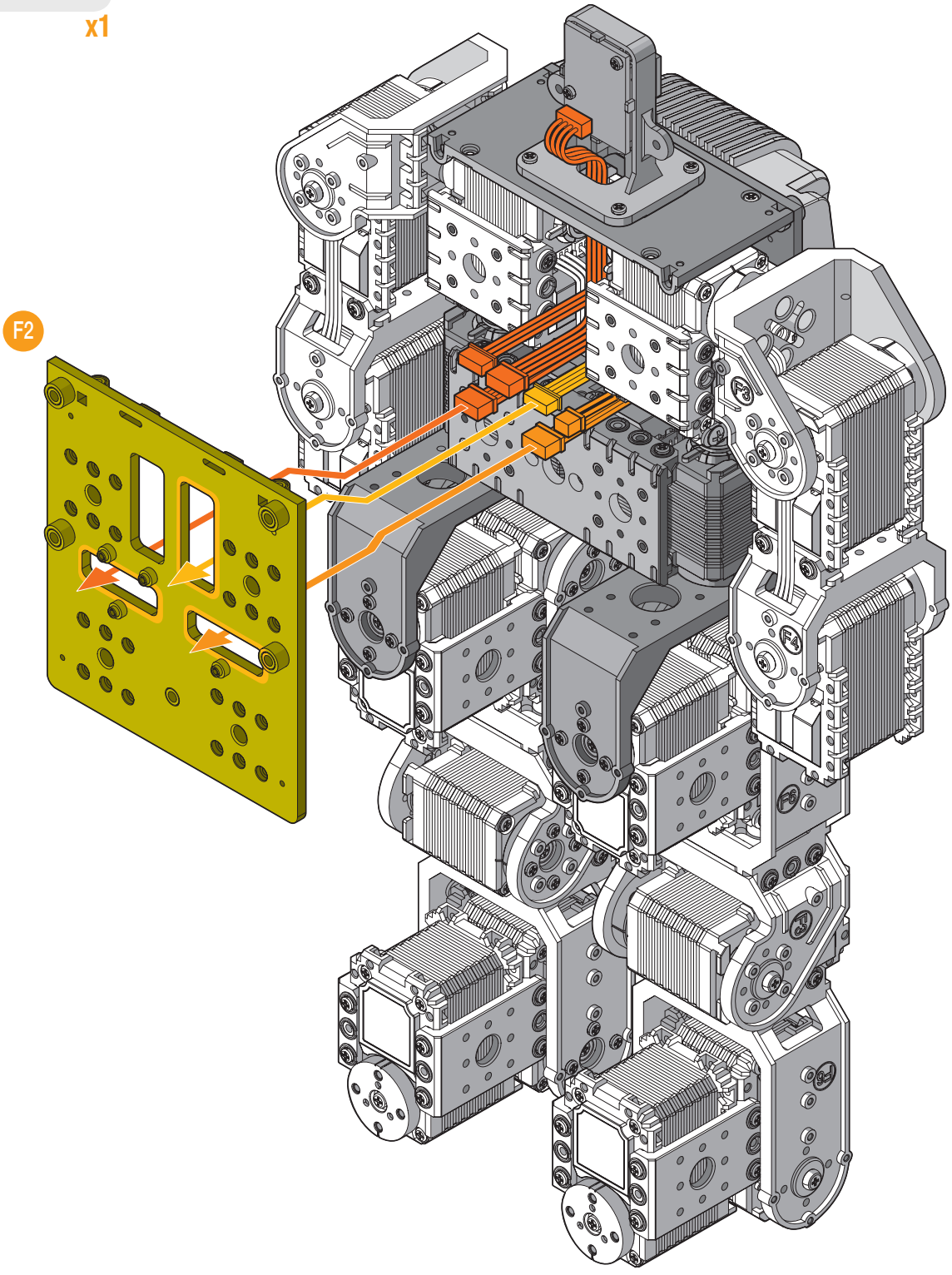


x1

39. Cable routing as the illustration shown.

40. Make sure the cables runs through the space in the robot.

41. Align the torso (F2) to the assemblies.

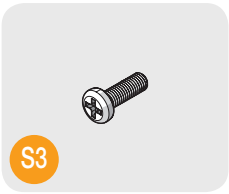


Hardware Assembly

Head and Torso Assembly

03

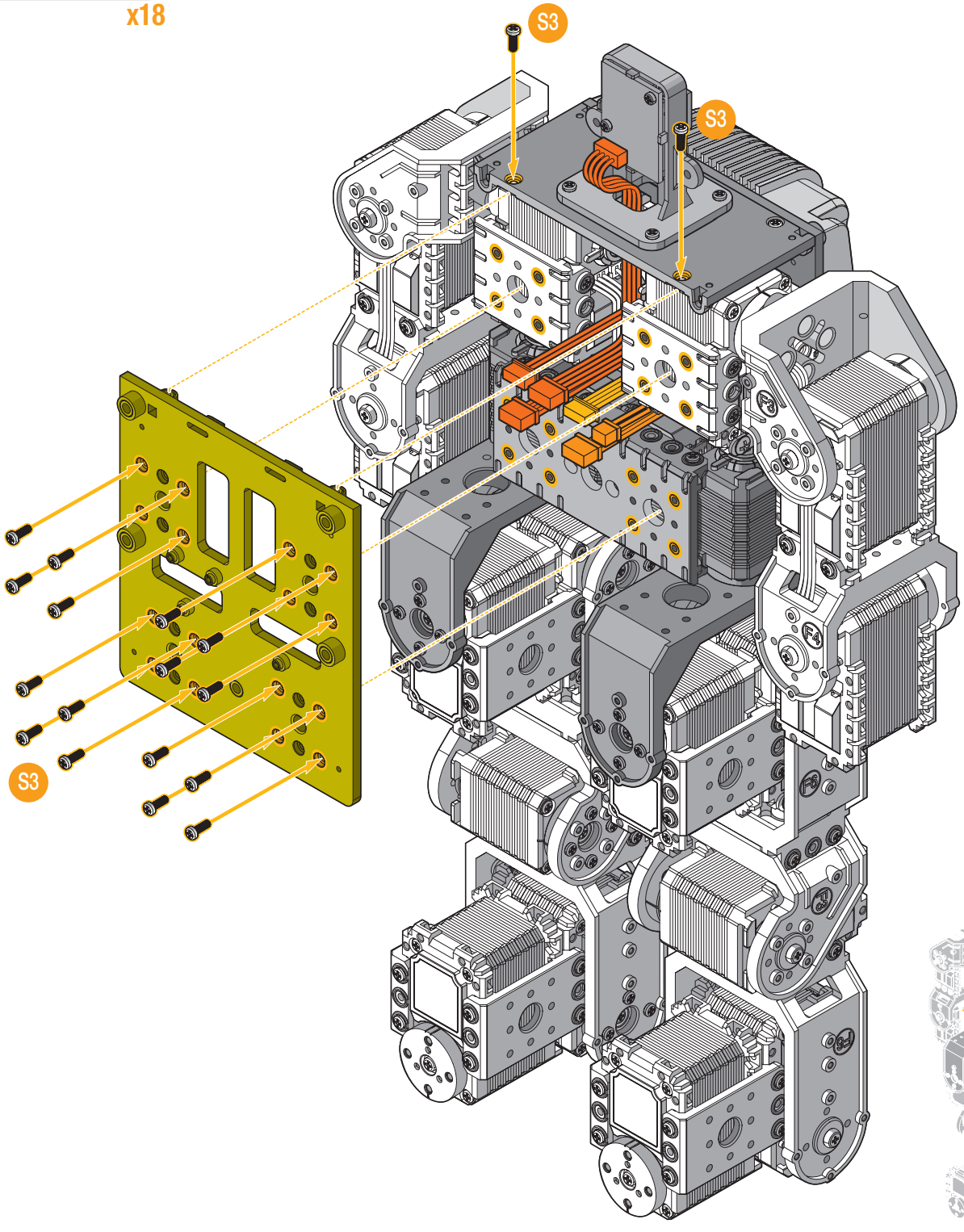
Required Parts

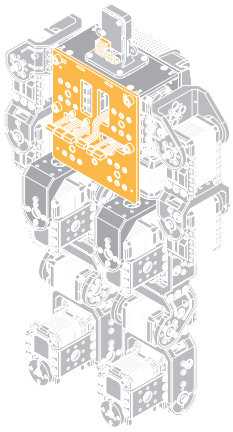


x18

42. Secure the torso (F2) to the assemblies with screws (S3).

43. Secure the body top (F1) to the torso (F2) with screws (S3).

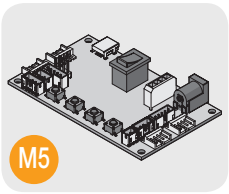




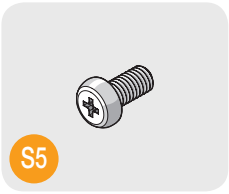
03 Hardware Assembly

Head and Torso Assembly

Required Parts



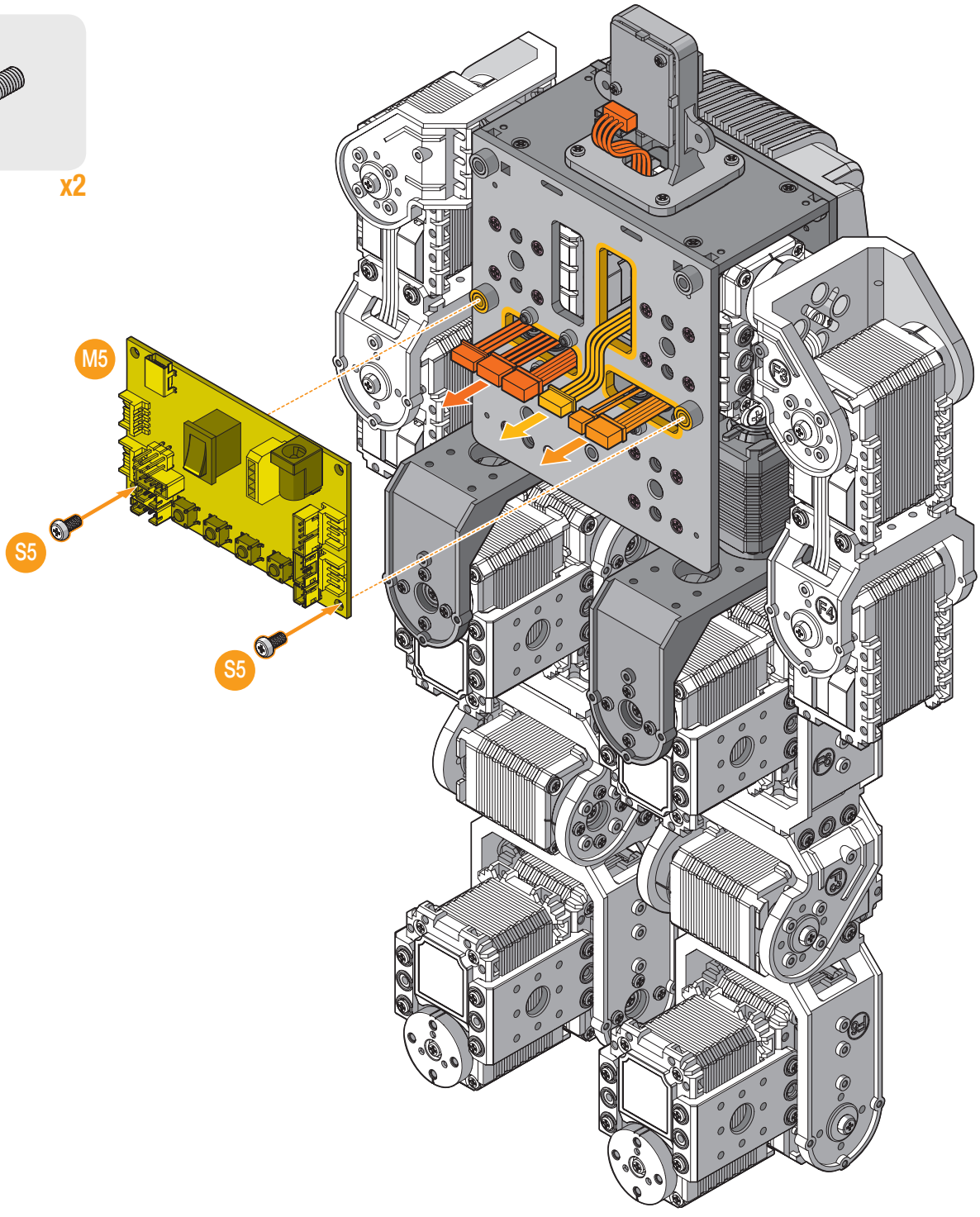
x1



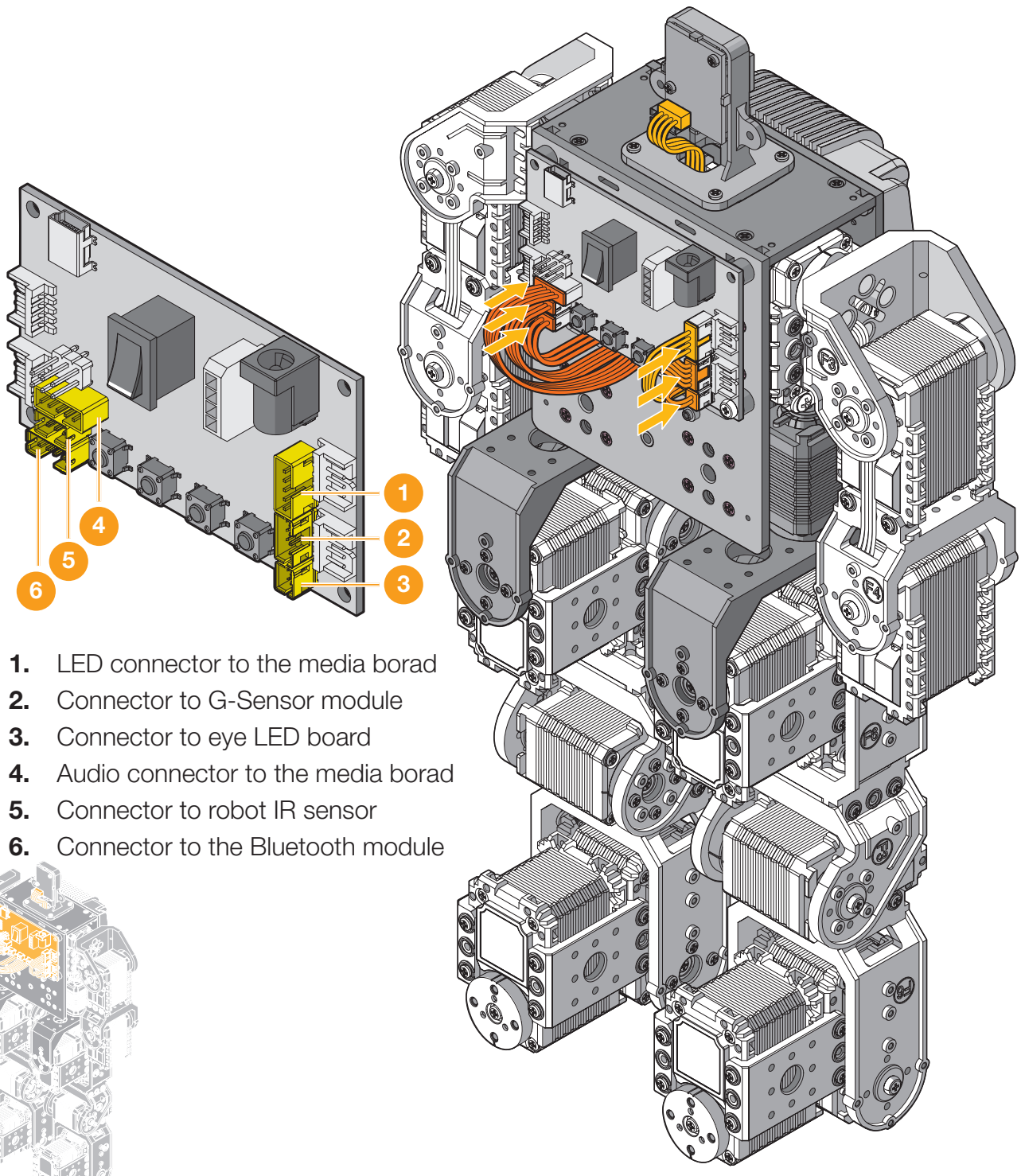
x2

44. Align the MCU board (M5) with the assembly.

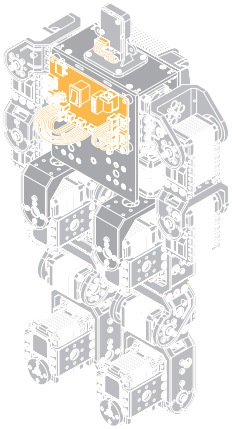
45. Secure the MCU board (M5) to the assembly with screws (S5).



46. Connect the cables to the MCU board (M5).



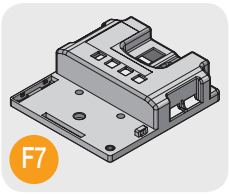
1. LED connector to the media borad
2. Connector to G-Sensor module
3. Connector to eye LED board
4. Audio connector to the media borad
5. Connector to robot IR sensor
6. Connector to the Bluetooth module



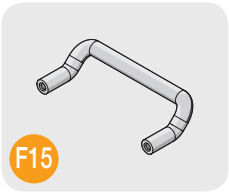
03 Hardware Assembly

Head and Torso Assembly

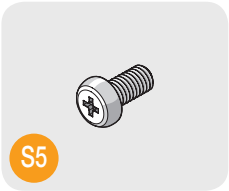
Required Parts



x1



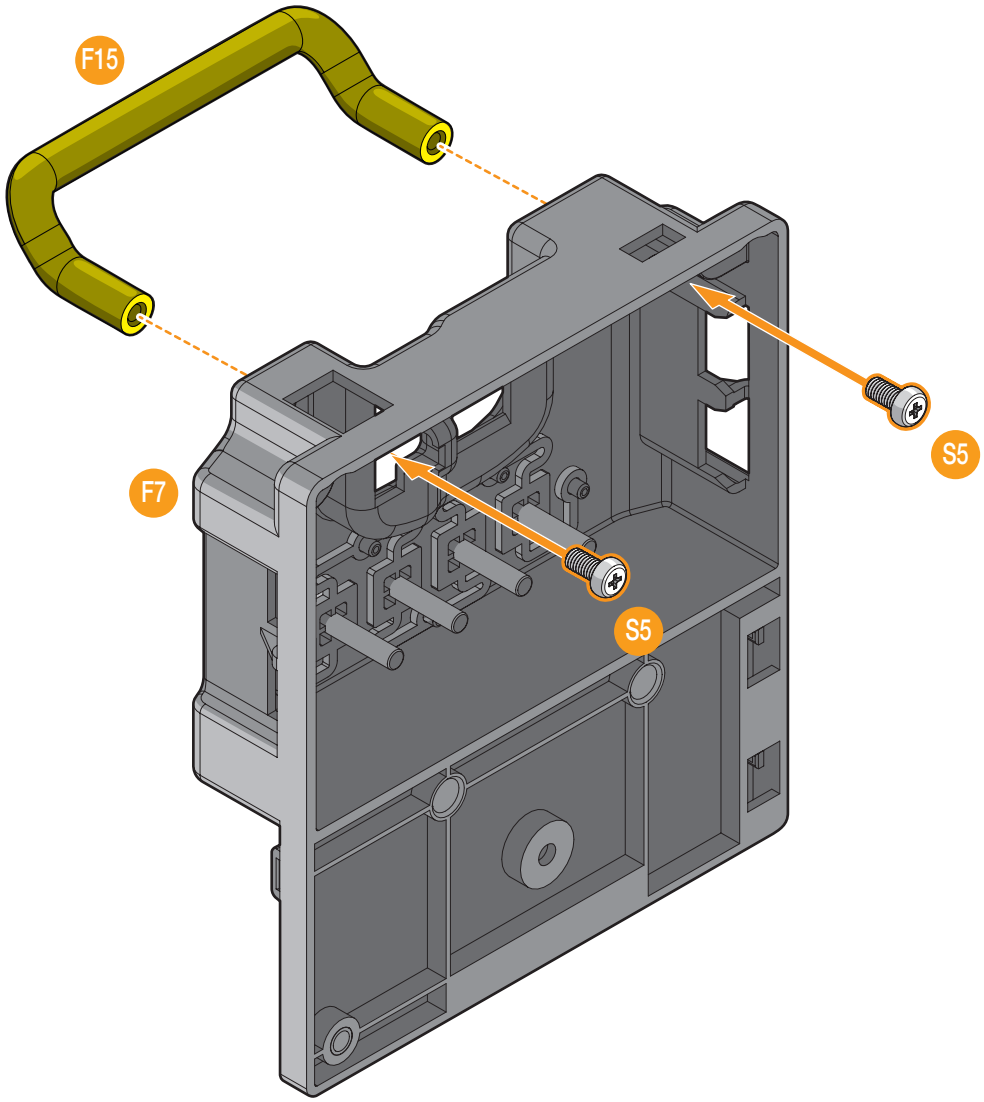
x1



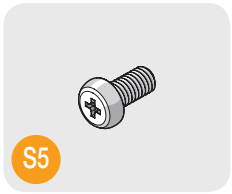
x2

47. Align the bar (F15) with the PCB cover (F7).

48. Secure the bar (F15) to the PCB cover (F7) with screws (S5).



Required Parts



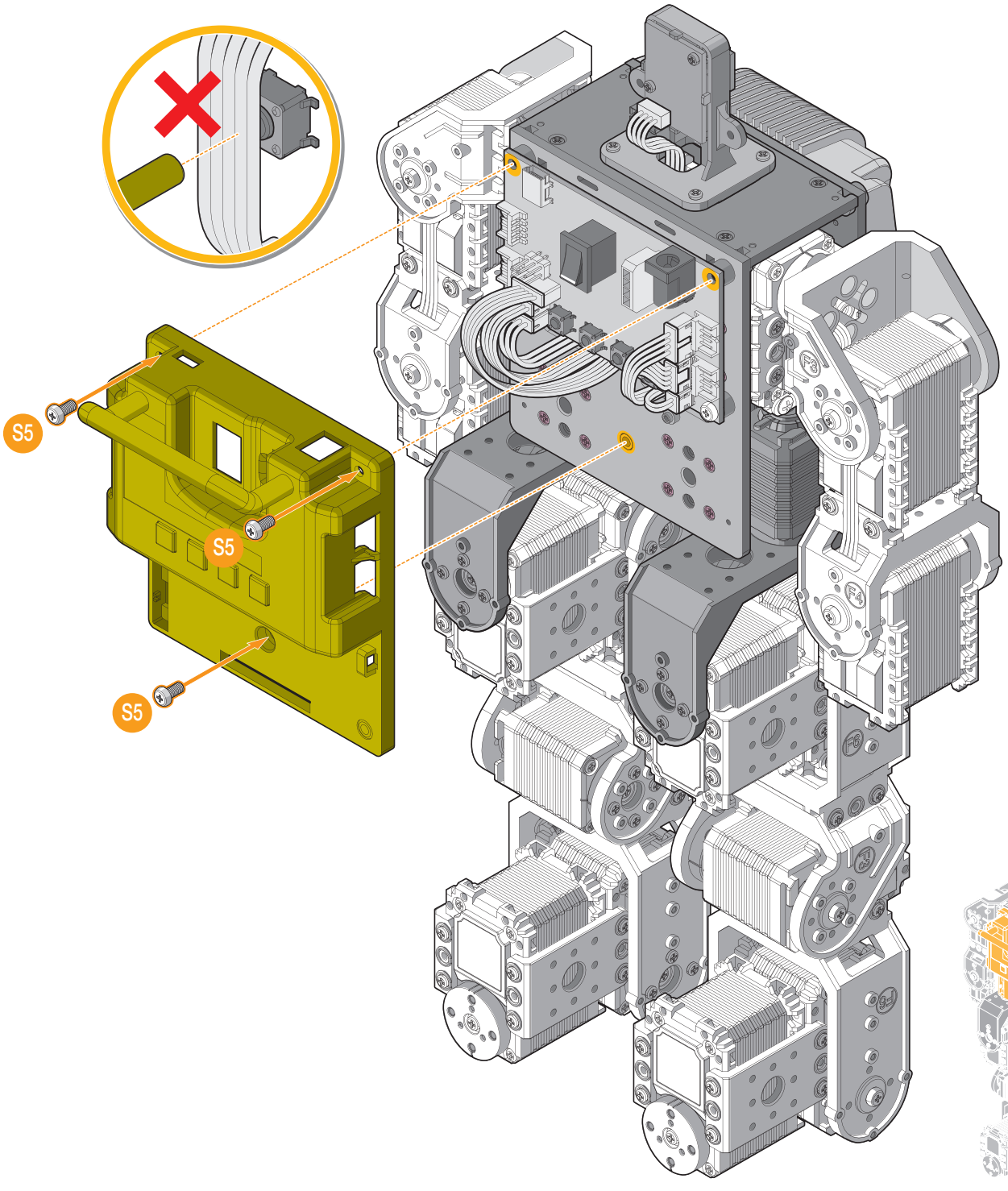
x3

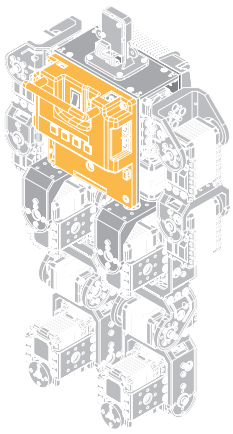
49. Align the PCB cover (F7) with the assembly.

50. Secure the PCB cover (F7) to the assembly with screws (S5).

CAUTION:

Make sure the cable does not cover the function buttons.

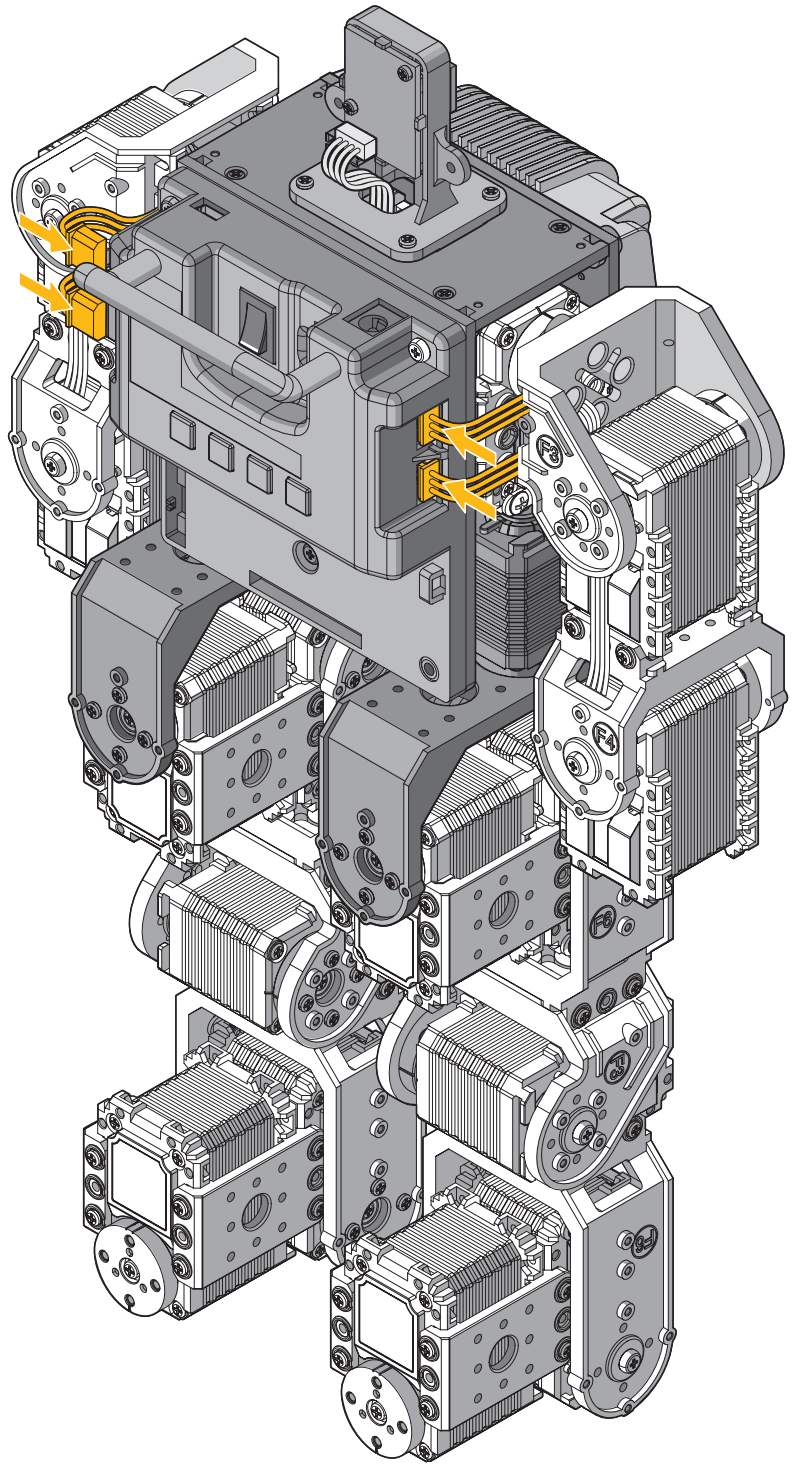




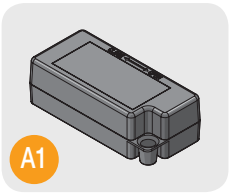
Hardware Assembly

Head and Torso Assembly

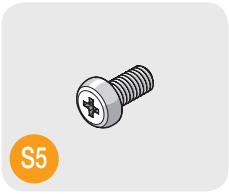
51. Connect the cables to the PCB cover (F7).



Required Parts



x1



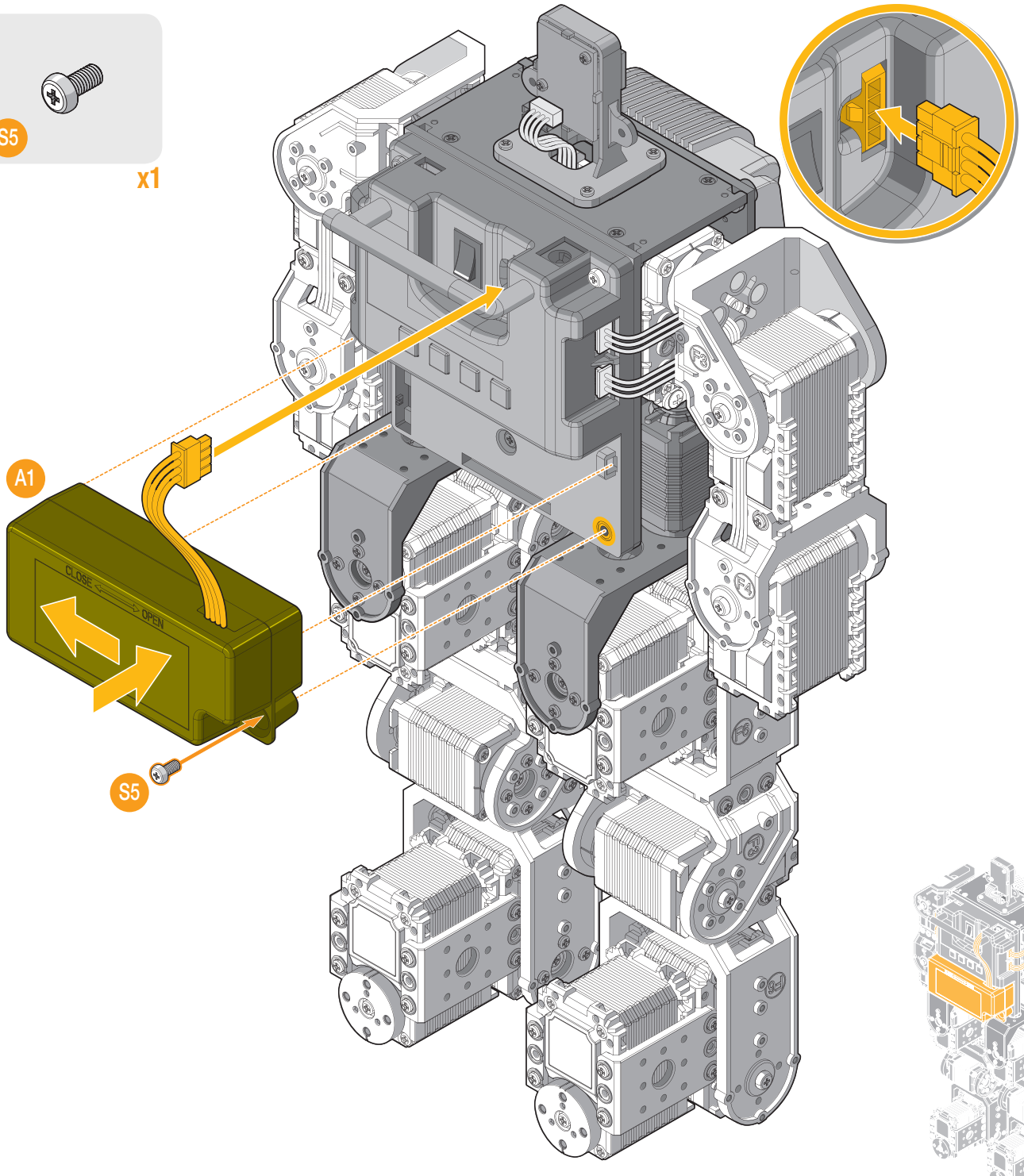
x1

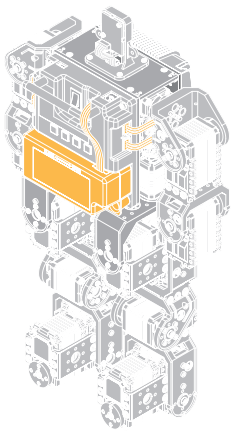
52. Align the battery (A1) with the PCB cover (F7).

53. Slide the battery (A1) to lock on the PCB cover (F7), make sure the hole on the battery (A1) is aligned with the opening on the PCB cover (F7).

54. Secure the battery (A1) to the PCB cover (F7) with a screw (S5).

55. Connect the battery cable to the connector on the PCB cover (F7).

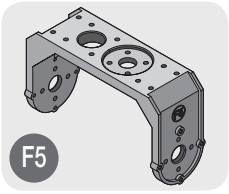




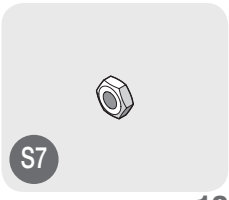
03 Hardware Assembly

Case Assembly

Required Parts

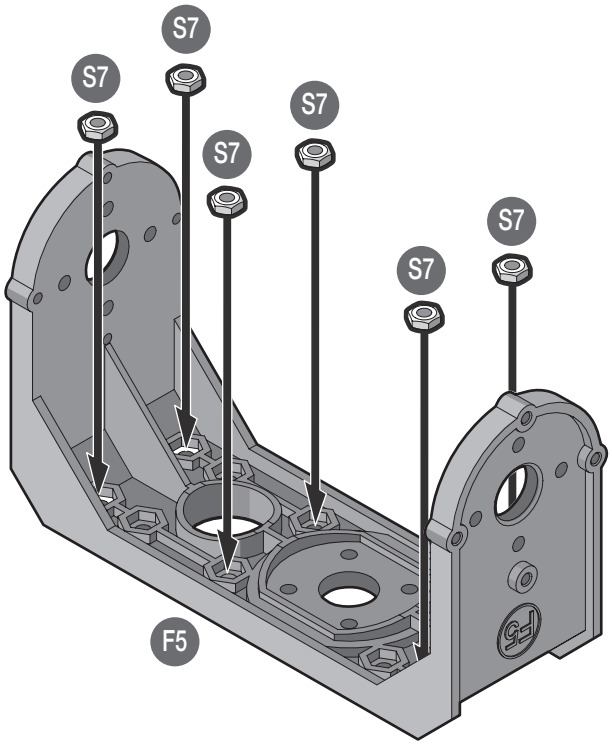


x2



x12

1. Install the nuts (S7) into the brackets (F5).

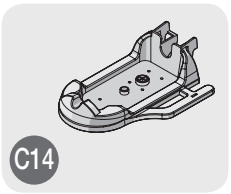


Hardware Assembly

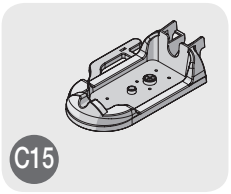
Case Assembly

03

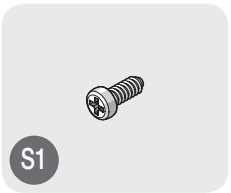
Required Parts



x1

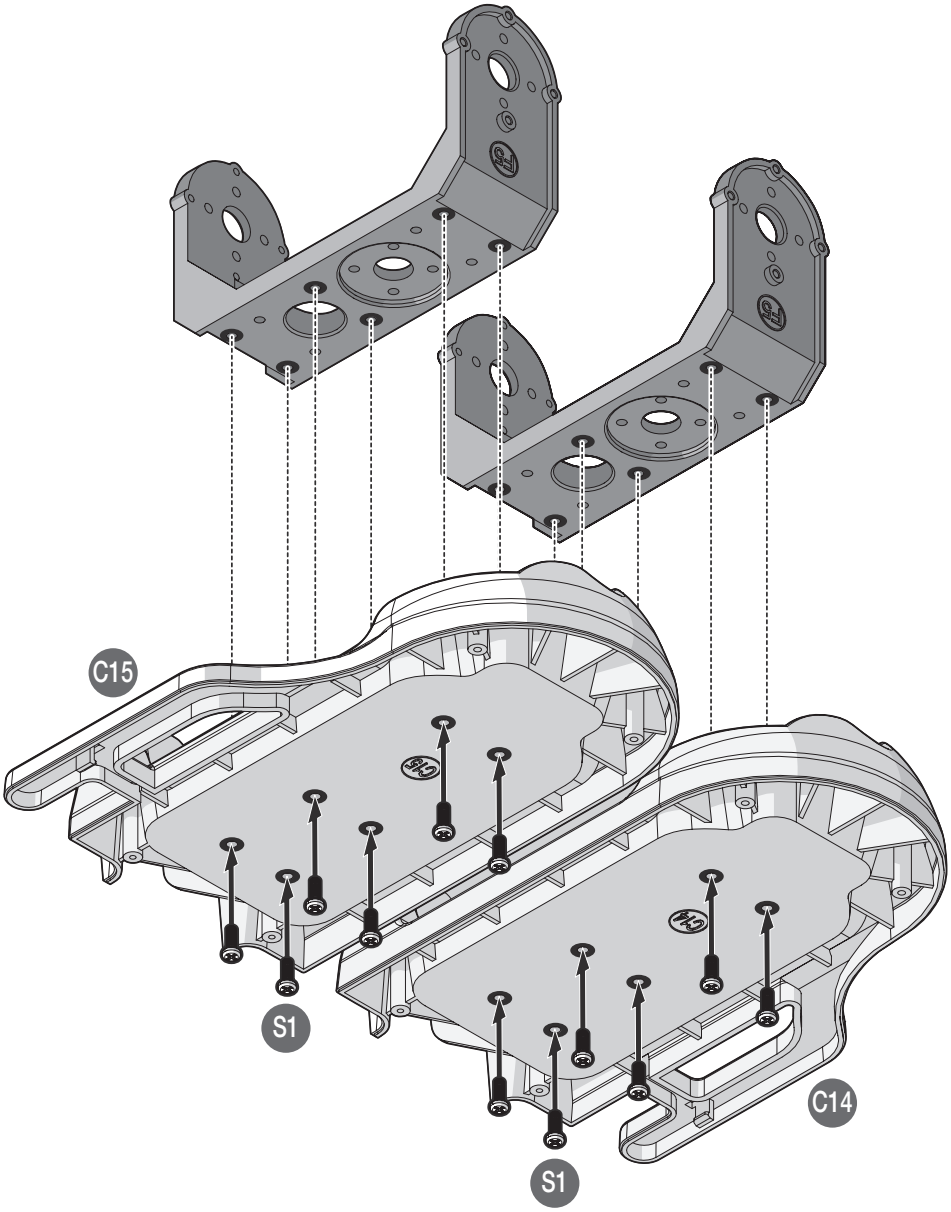


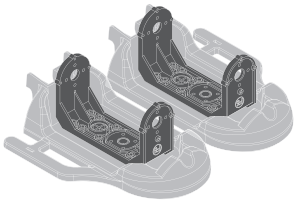
x1



x12

2. Align the brackets (F5) with the foot top cases (C14 and C15).
3. Secure the brackets (F5) with the foot top cases (C14 and C15) with screws (S1).

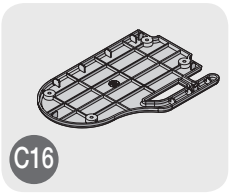




03 Hardware Assembly

Case Assembly

Required Parts



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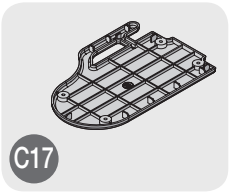
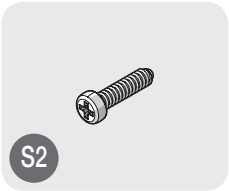
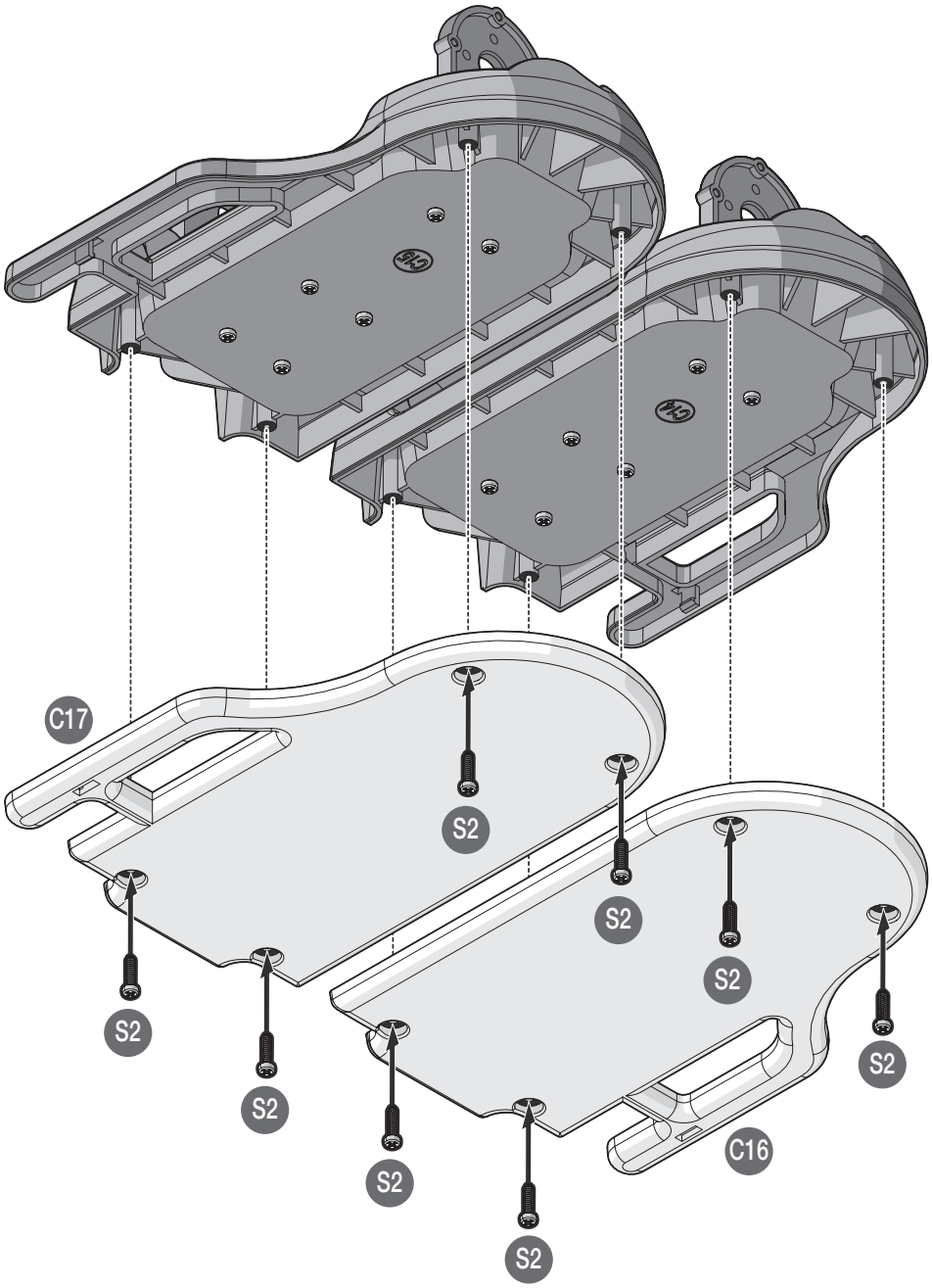


x1



x8

4. Align the assembly with the foot bottom case (C16 and C17).
5. Secure the assembly with the foot bottom case (C16 and C17) with screws (S2).

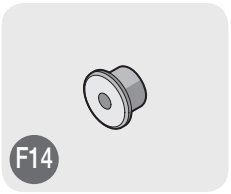


Hardware Assembly

Case Assembly

03

Required Parts



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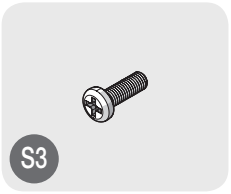

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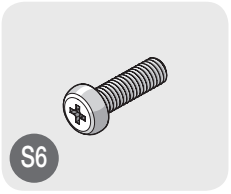
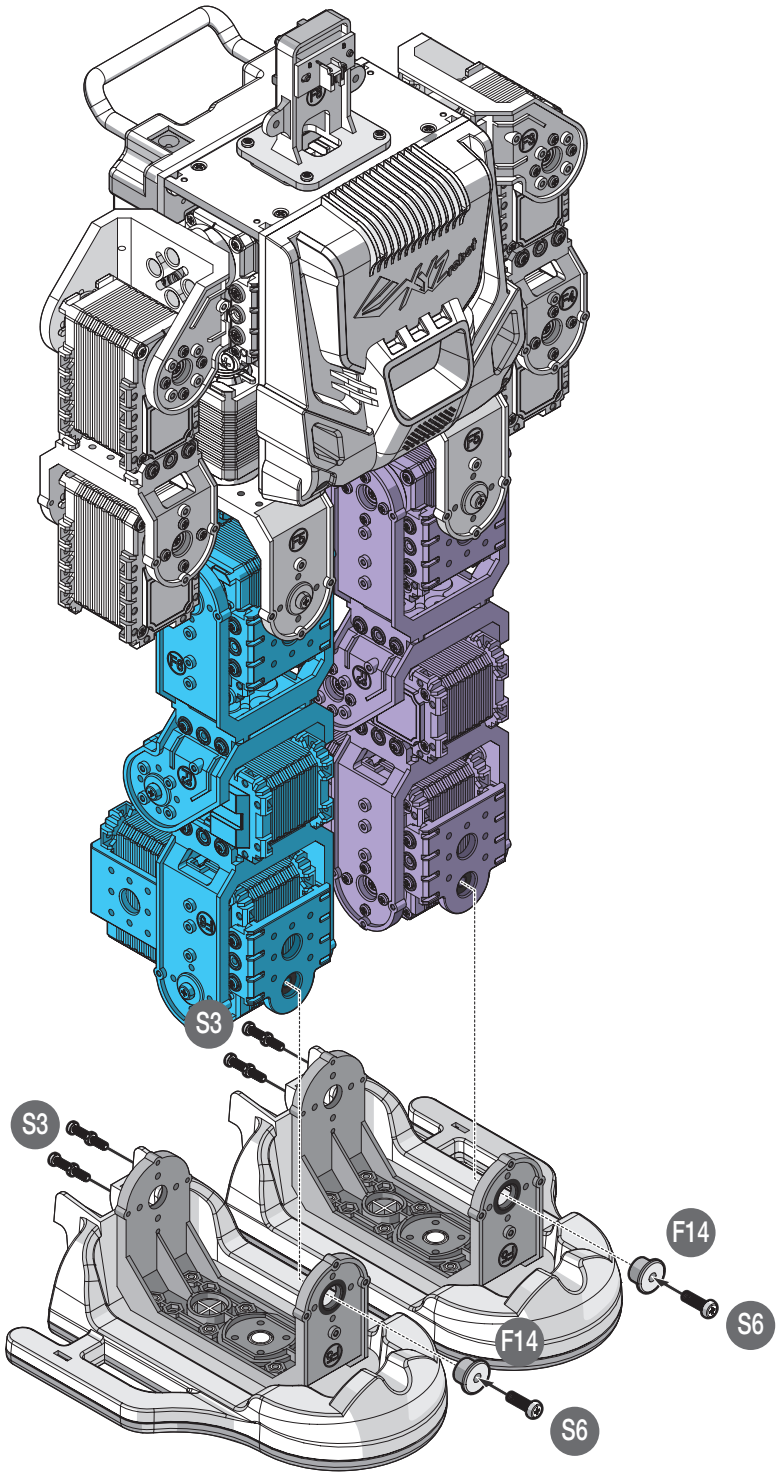
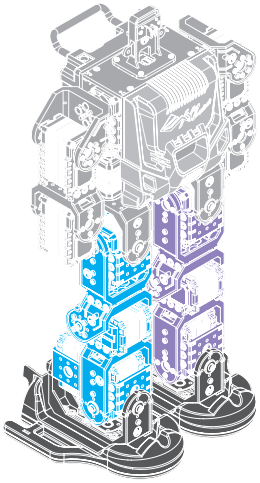


x2

6. Insert the shoulder washer (F14) through the bracket (F5) first.
7. Install the assembly, make sure it's aligned with the shoulder washer (F14).
8. Secure the shoulder washer (F14) with a screw (S6).
9. Secure the bracket (F5) to the actuator assembly with screws (S3).

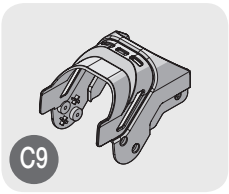




03 Hardware Assembly

Case Assembly

Required Parts



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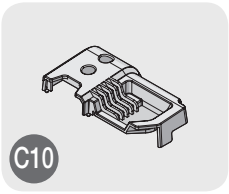

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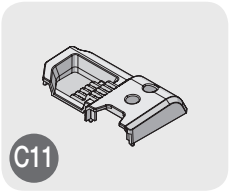

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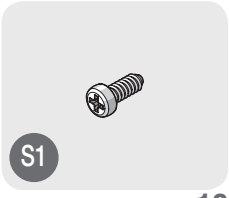
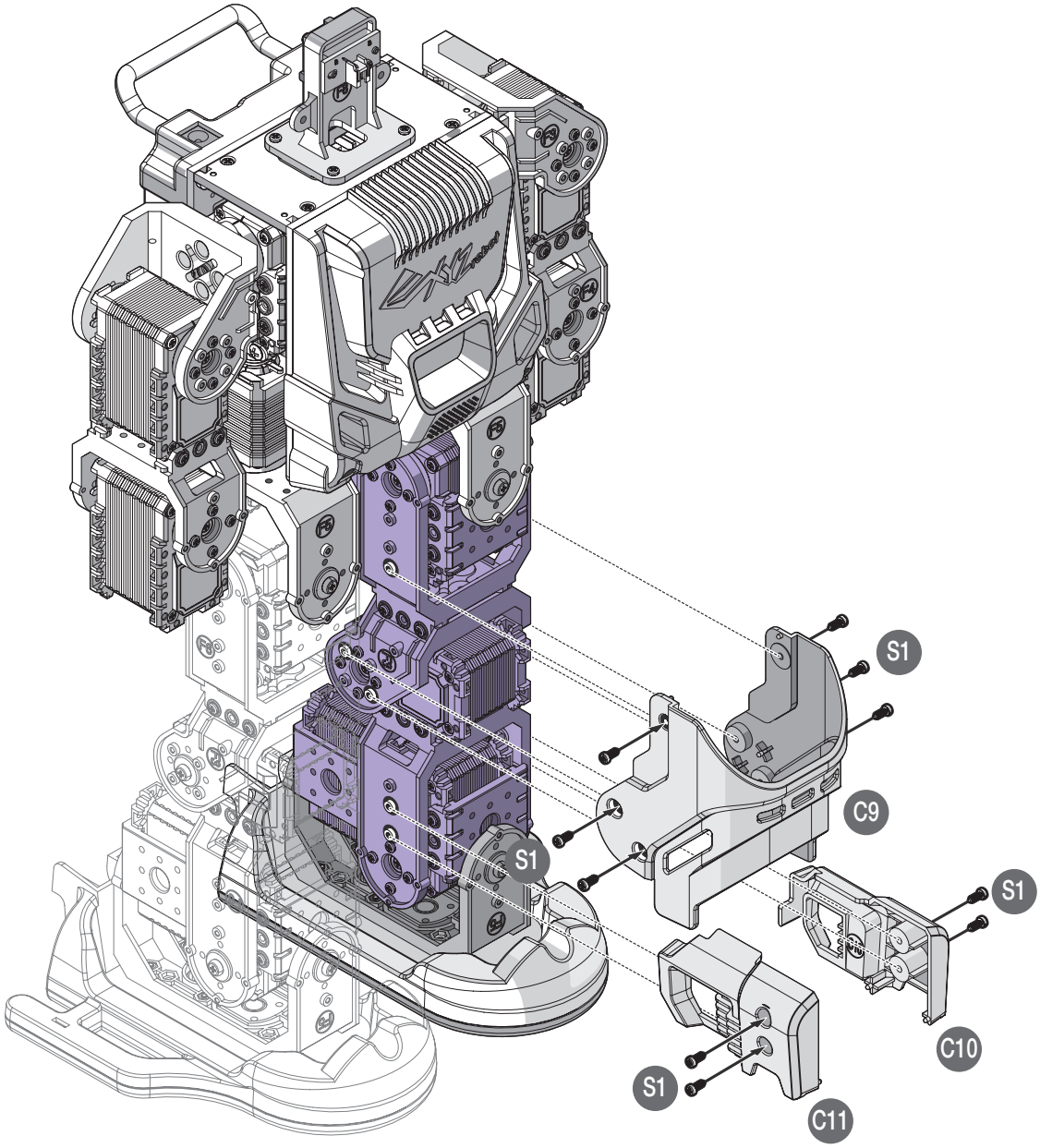


x10

10. Align the holes on the knee brackets (C9) and leg low brackets (C10 and C11) with the holes on the assembly.

11. Secure the knee brackets (C9) and leg low brackets (C10 and C11) to the assembly with screws (S1).

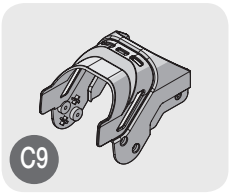


Hardware Assembly

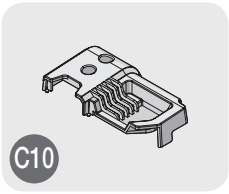
Case Assembly

03

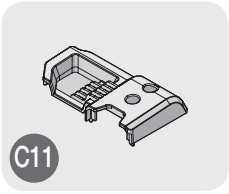
Required Parts



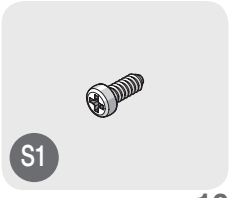
x1



x1



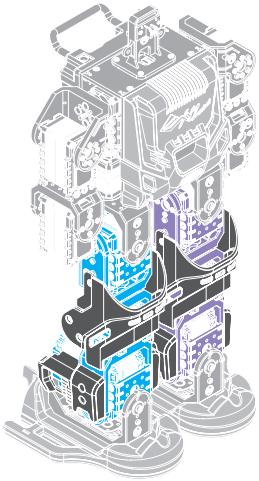
x1

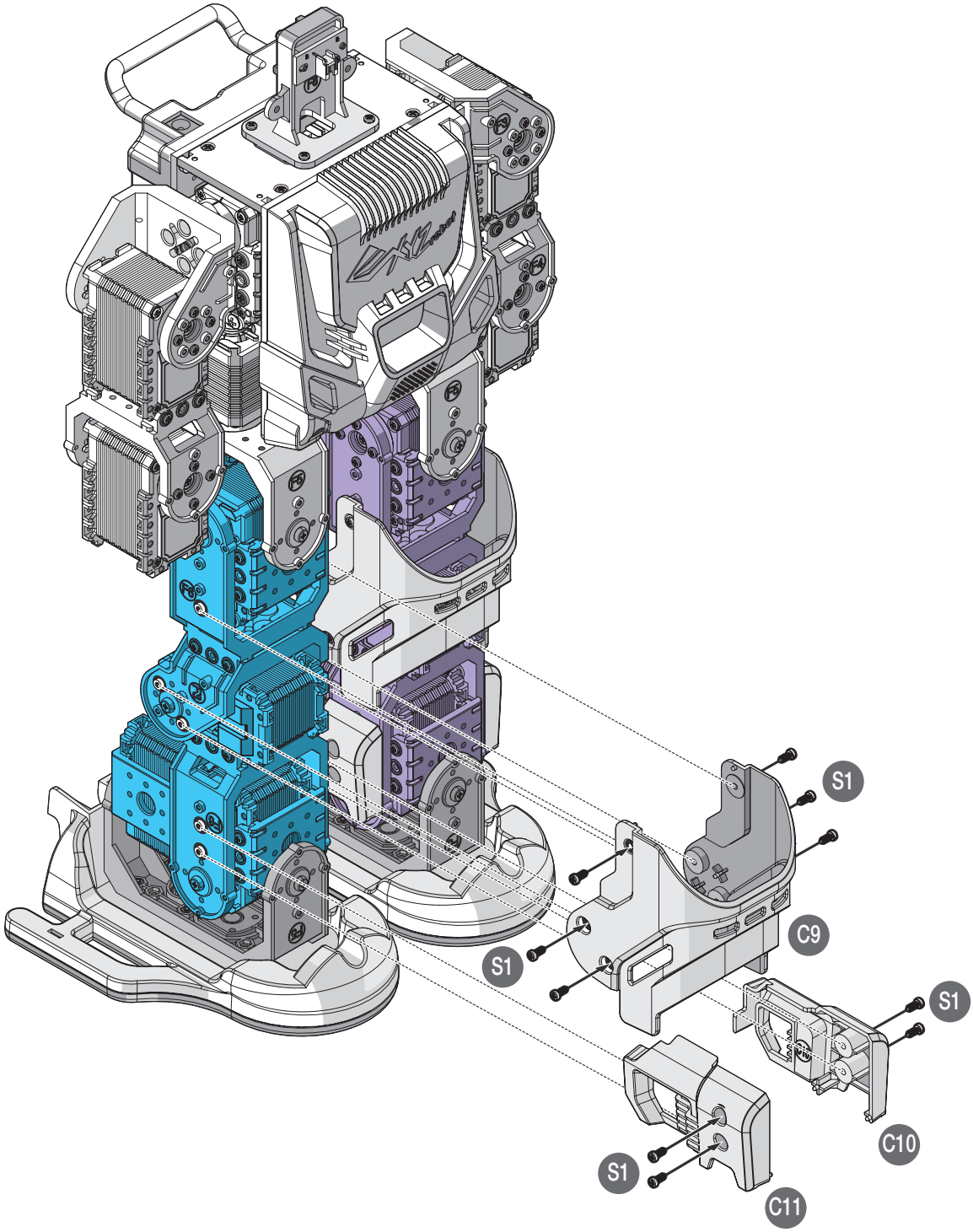


x10

12. Align the holes on the knee brackets (C9) and leg low brackets (C10 and C11) with the holes on the assembly.

13. Secure the knee brackets (C9) and leg low brackets (C10 and C11) to the assembly with screws (S1).

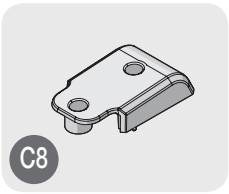




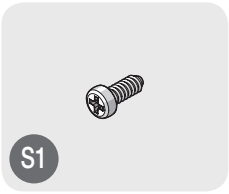
03 Hardware Assembly

Case Assembly

Required Parts



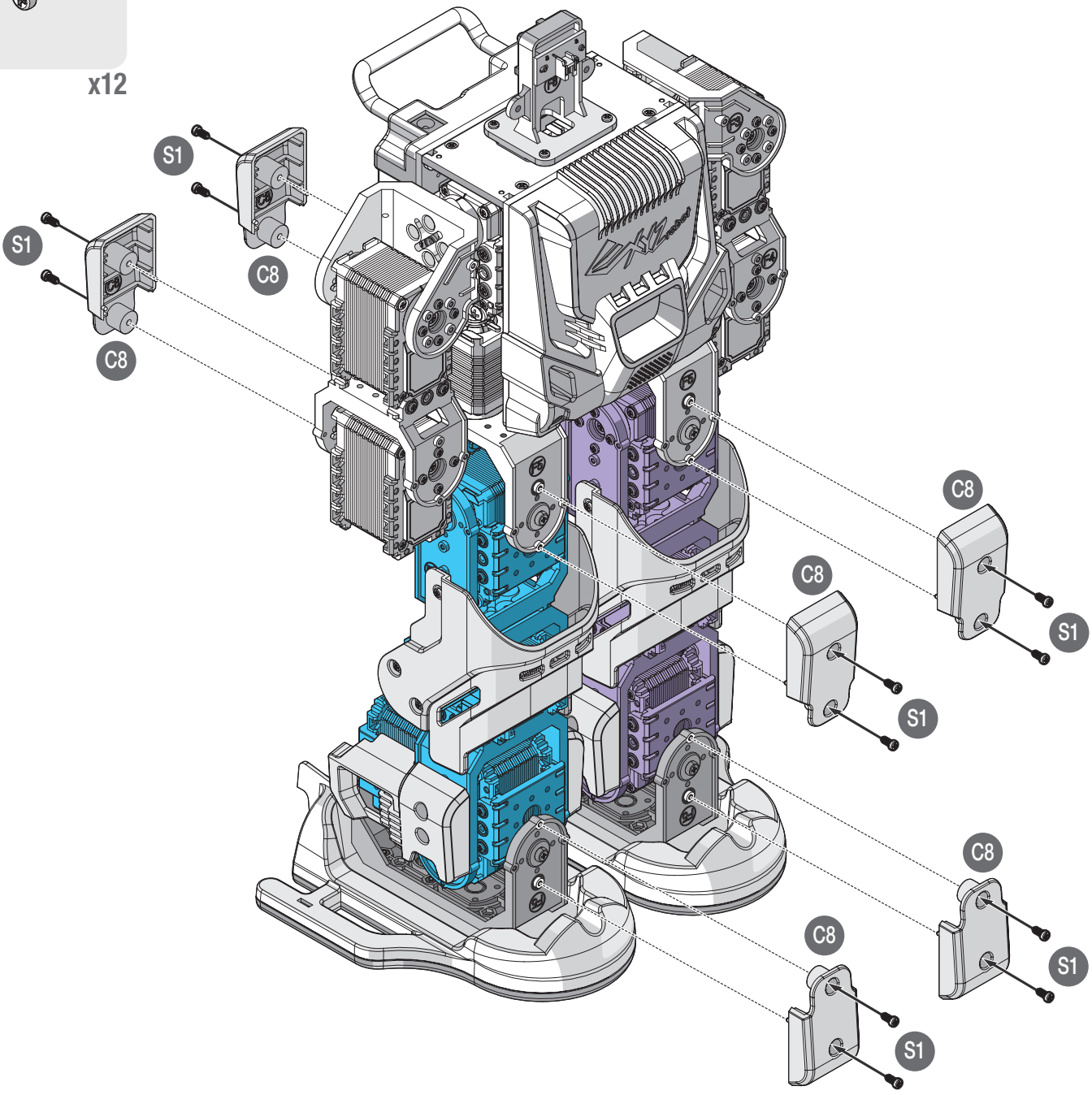
x6



x12

14. Align the holes on the leg high brackets (C8) with the holes on the robot.

15. Secure the leg high brackets (C8) to the robot with screws (S1).

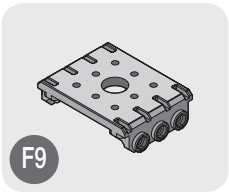


Hardware Assembly

Case Assembly

03

Required Parts



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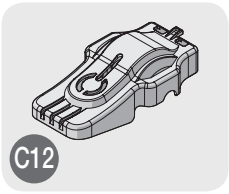

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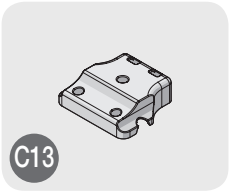
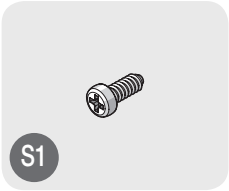
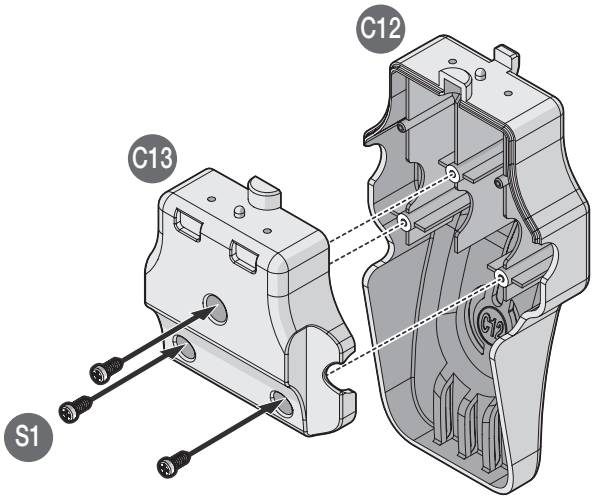


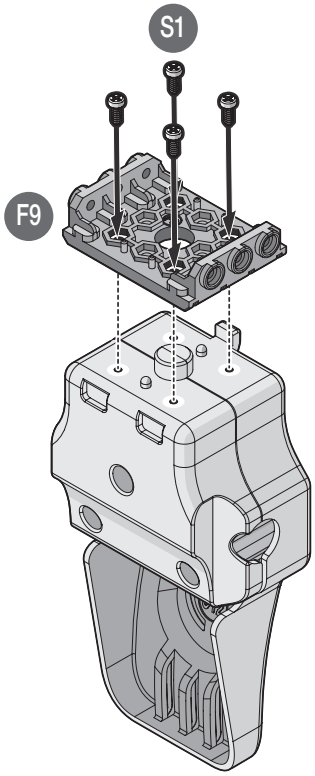
x2

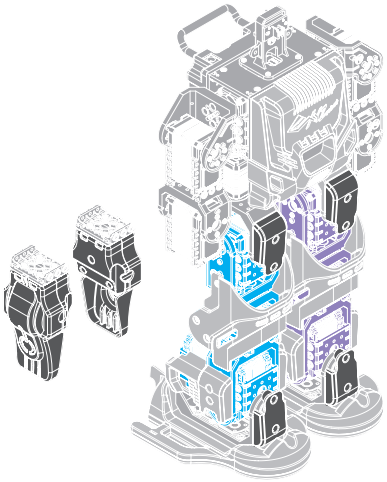


x14

16. Align the holes on the fist back bracket (C13) with the holes on the fist front bracket (C12).
17. Secure the fist back bracket (C13) to the fist front bracket (C12) with screws (S1).
18. Align the holes on the bracket (F9) with the holes on the assembly.
19. Secure the bracket (F9) to the assembly with screws (S1).



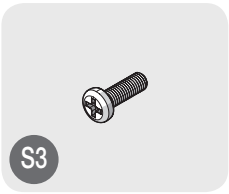




03 Hardware Assembly

Case Assembly

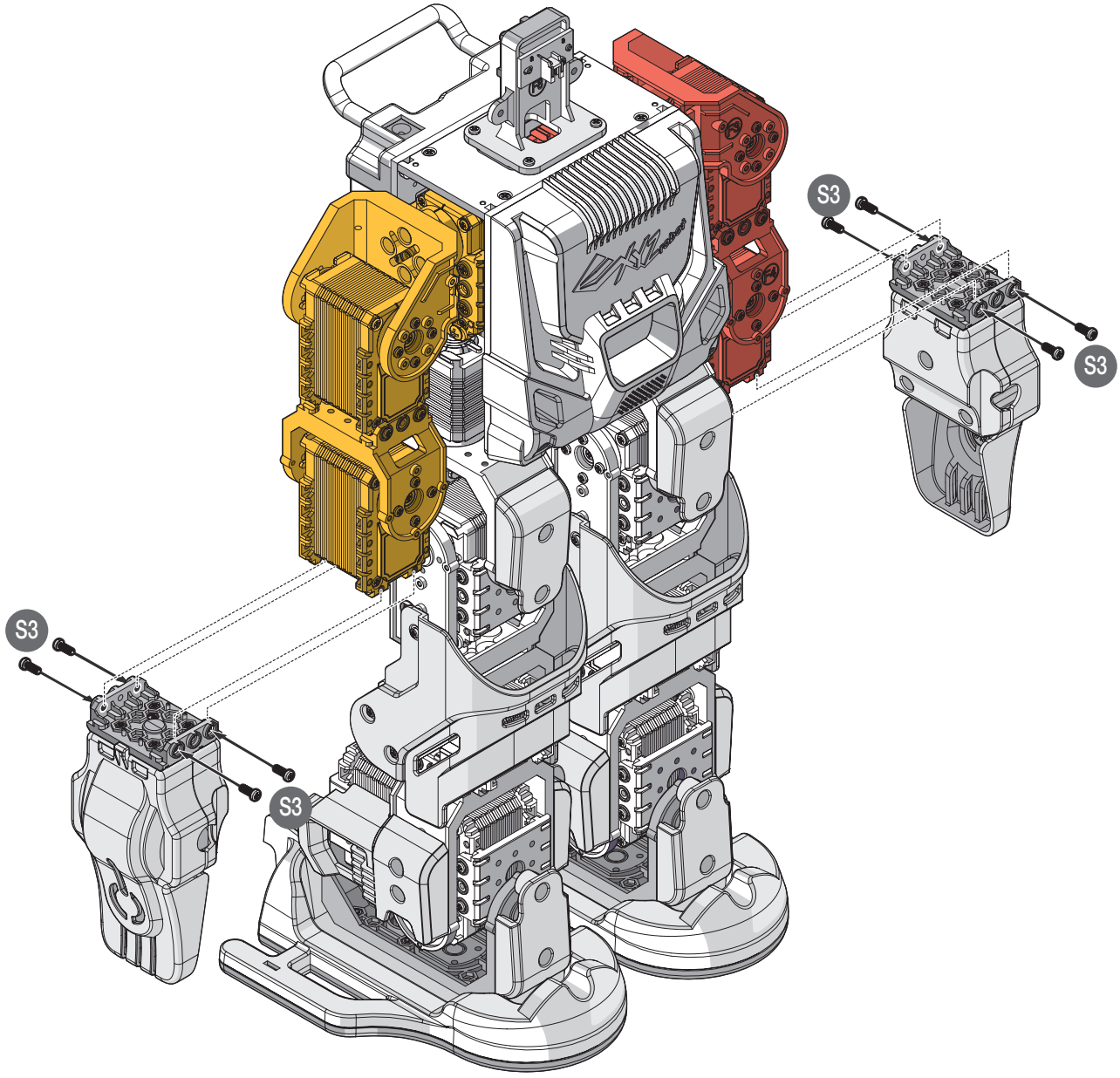
Required Parts



x8

20. Align the hand assembly to the respective arm.

21. Secure the hand assembly to the robot with screws (S3).

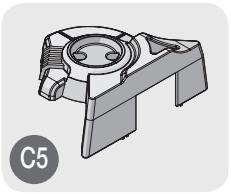


Hardware Assembly

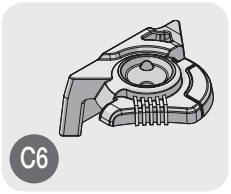
Case Assembly

03

Required Parts



x1



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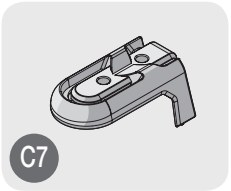
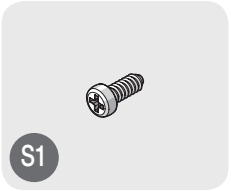


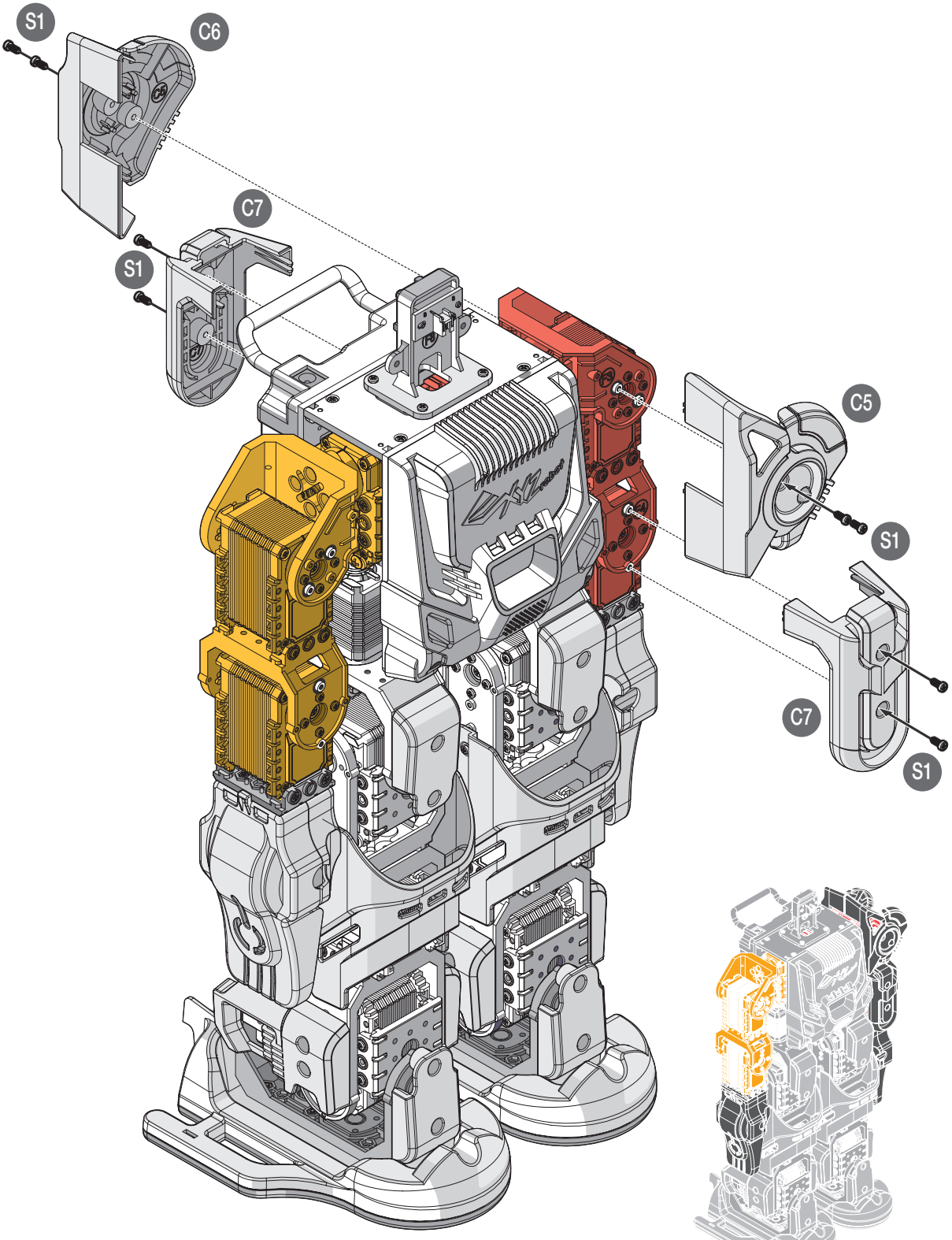
x2



x8

22. Align the holes on the shoulder front bracket (C5), the shoulder back bracket (C6) and arm brackets (C7) to the respective arm.

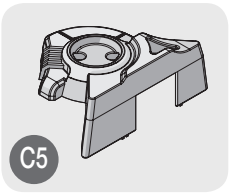
23. Secure the shoulder front bracket (C5), the shoulder rear bracket (C6) and arm brackets (C7) to the arm with screws (S1).



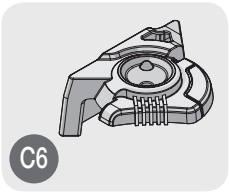
03 Hardware Assembly

Case Assembly

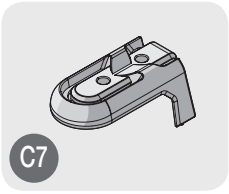
Required Parts



x1



x1

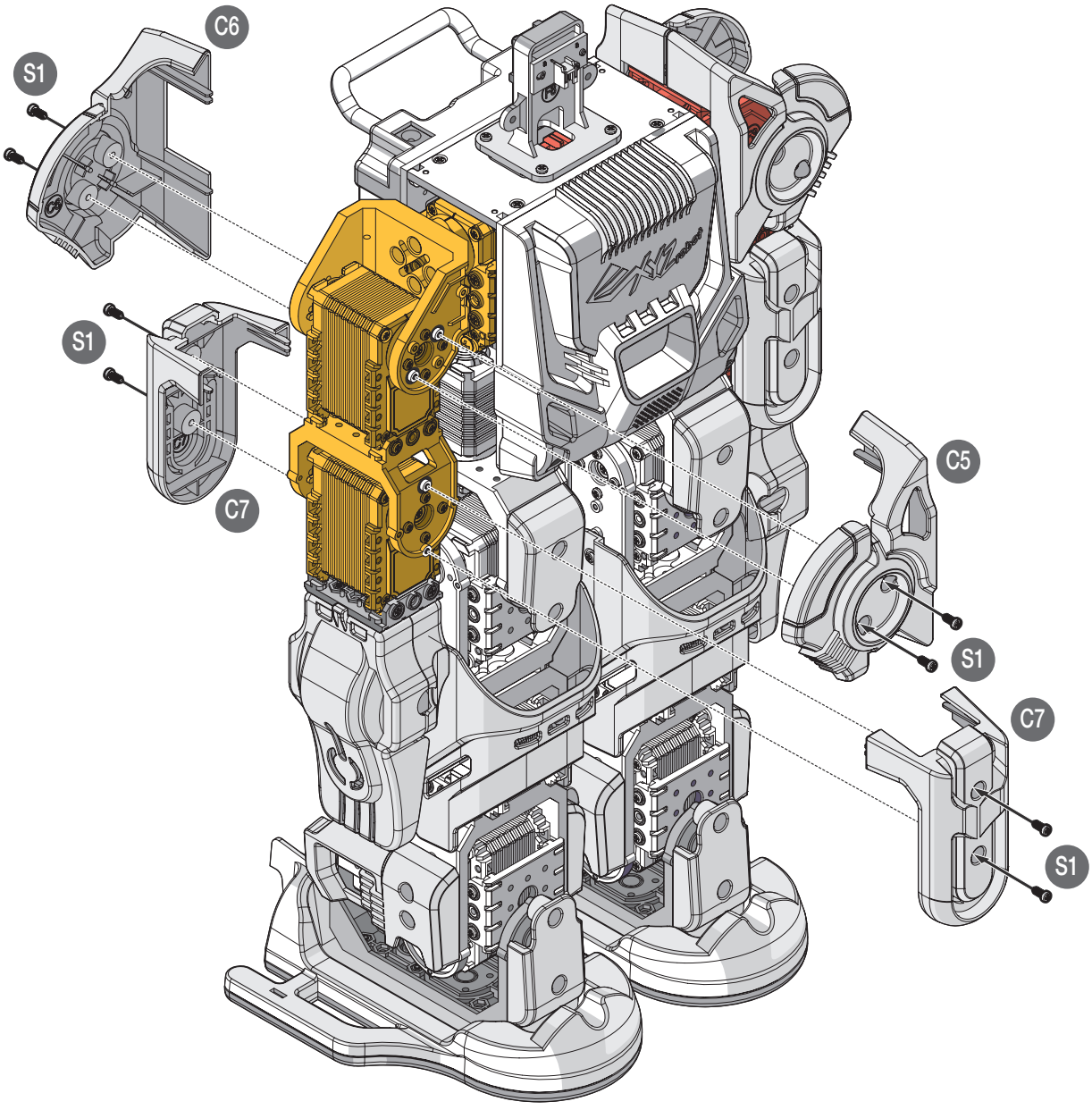


x2

x8

24. Align the holes on the shoulder front bracket (C5), the shoulder back bracket (C6) and arm brackets (C7) to the respective arm.

25. Secure the shoulder front bracket (C5), the shoulder rear bracket (C6) and arm brackets (C7) to the arm with screws (S1).

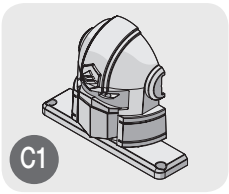


Hardware Assembly

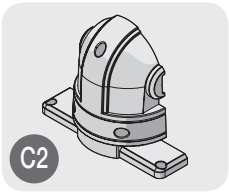
Case Assembly

03

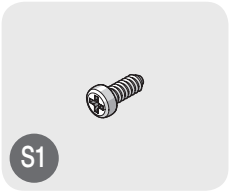
Required Parts



x1



x1



x5

x2

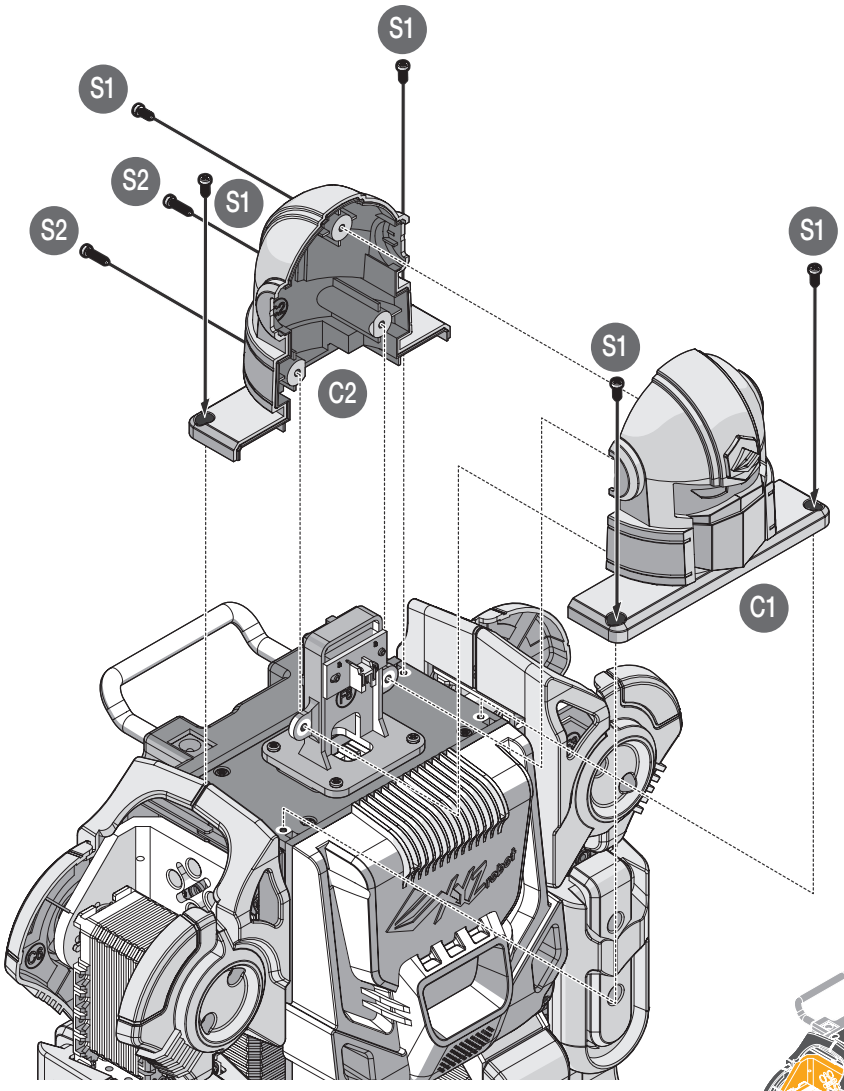
26. Align the holes on the head front bracket (C1) to the assembly.

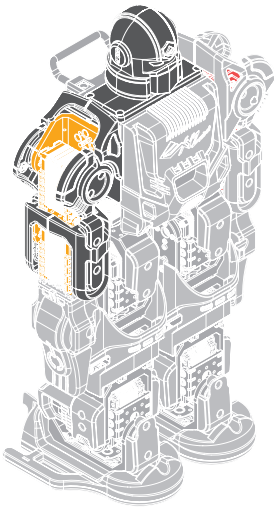
27. Secure the head front bracket (C1) to the assembly with screws (S1).

28. Align the holes on the head back bracket (C2) to the assembly.

29. Secure the head back bracket (C2) to the assembly with screws (S1).

30. Secure the head back bracket (C2) to the head front bracket (C1) with screws (S1 and S2).

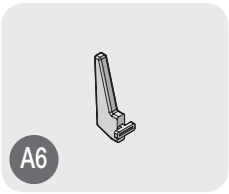




03 Hardware Assembly

Case Assembly

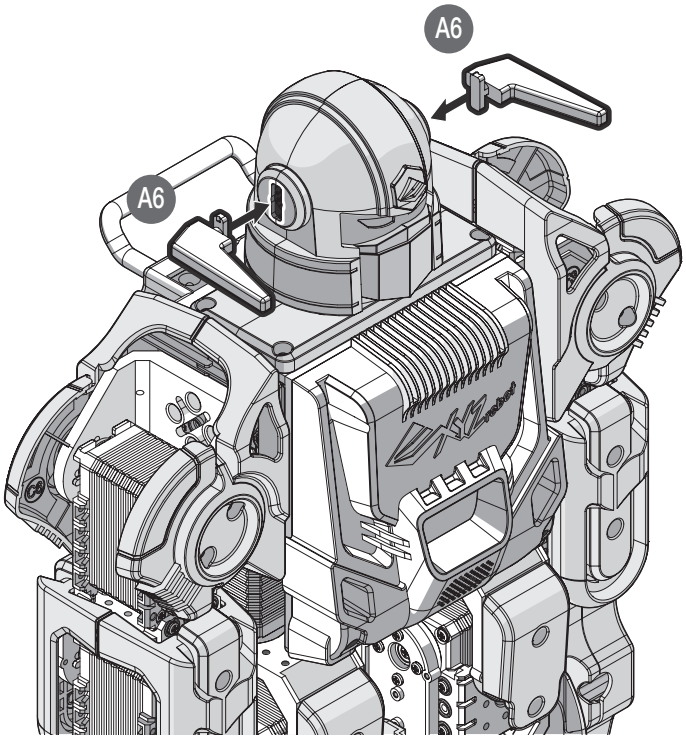
Required Parts

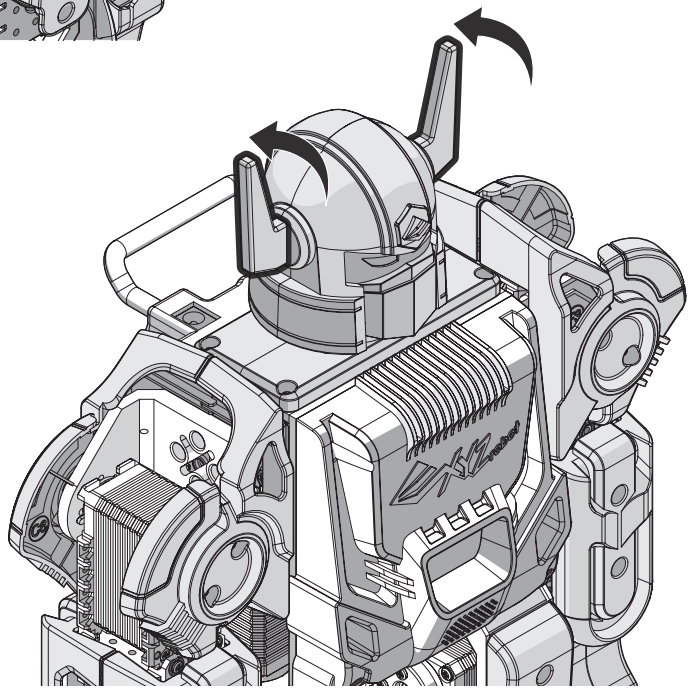


x2

31. Insert the horns (A6) in the slots on the head brackets.

32. Rotate the horns (A6) to lock them in place.



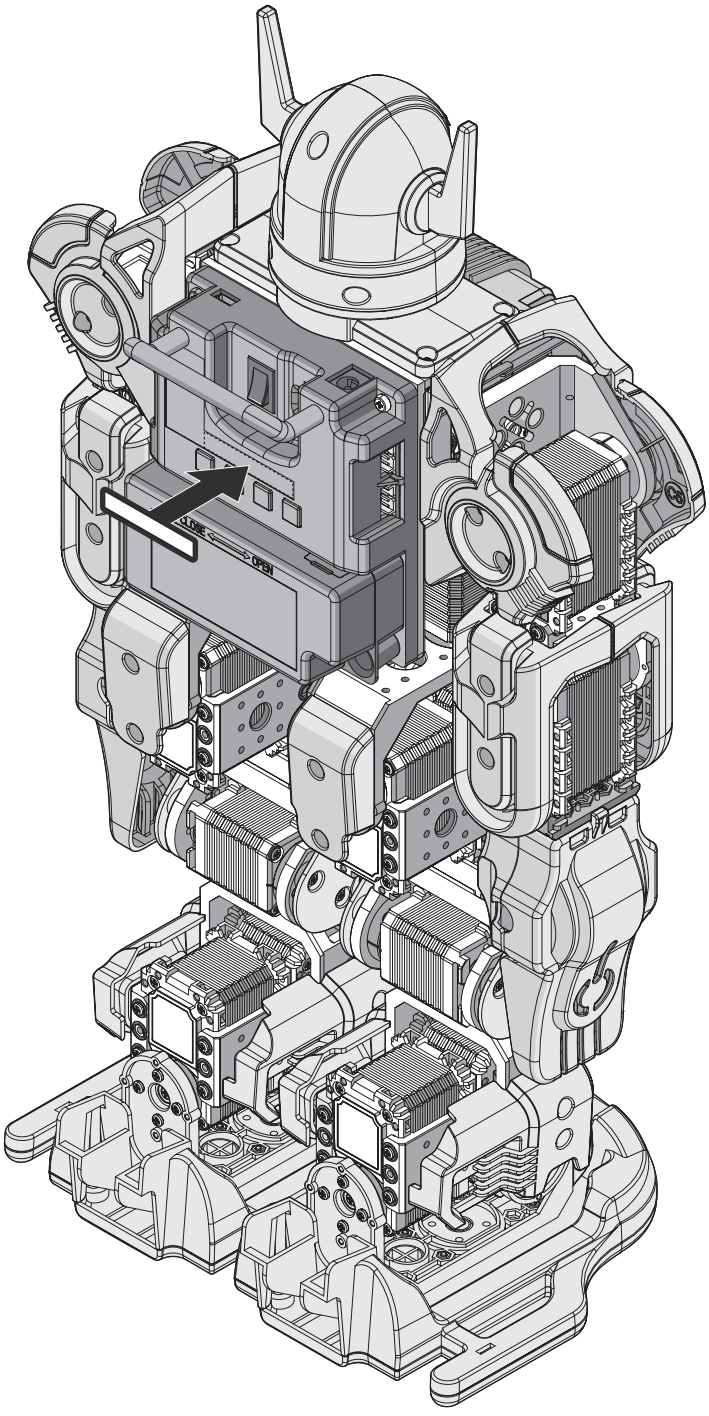


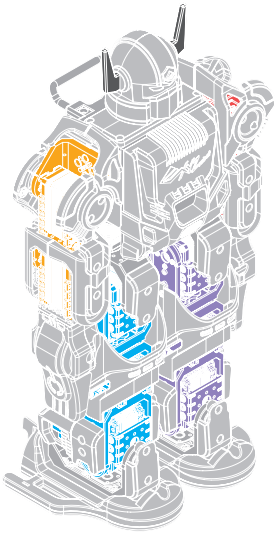
33. Tap the serial number stick on the PCB cover (F7).

Congratulations, your Bolide model is finished.

CAUTION:

The arm assemblies are designed to rotate. Exceeding two consecutive rotations in the same direction will strain the cabling and cause damage.



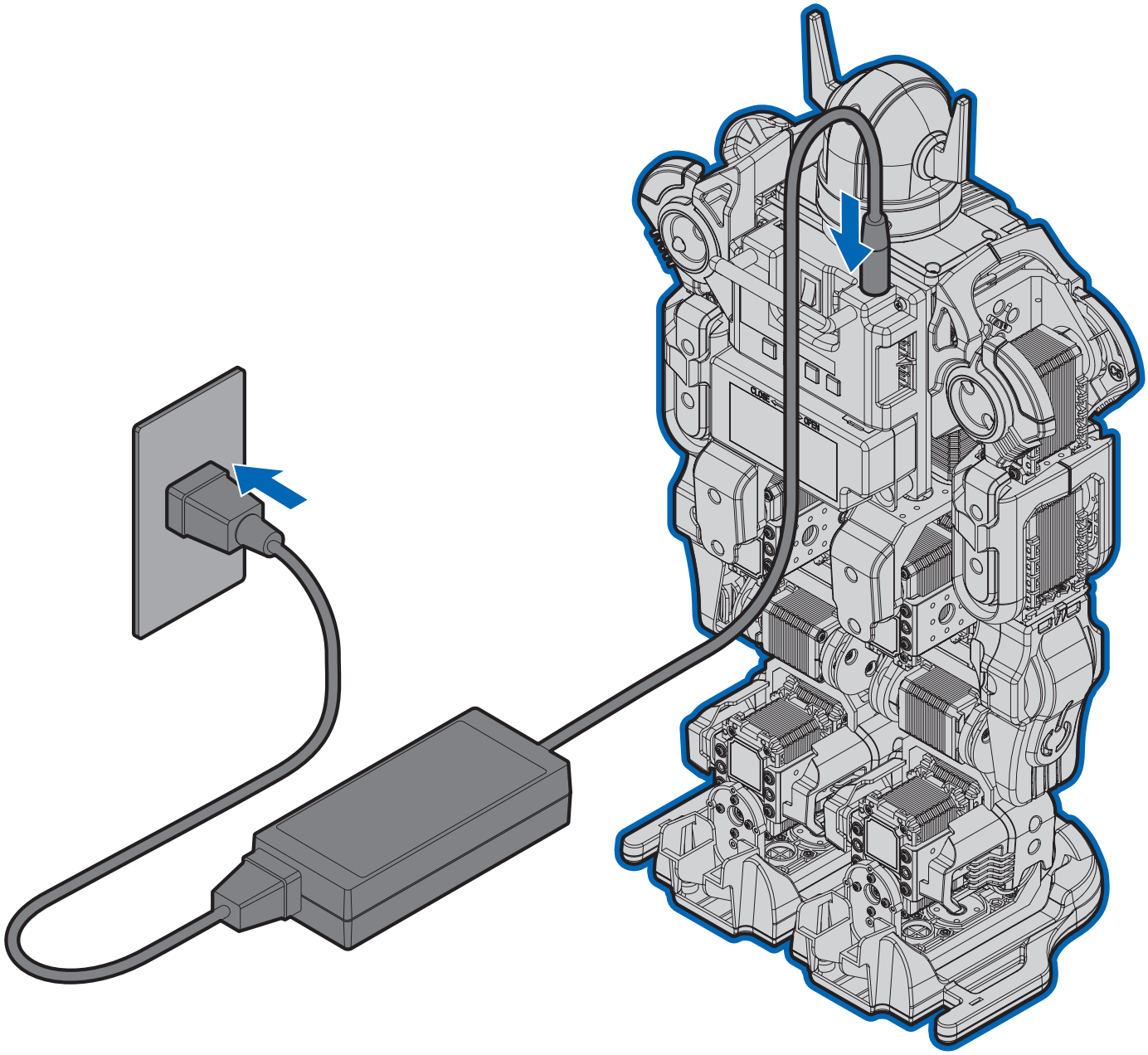


04 Getting Started

Using the Bolide and the AC Adapter

Once the battery is low power, connect the AC adapter to use.

1. Connect the AC adapter to the socket on the wall outlet.
2. Locate the power port on the back of the Bolide.
3. Plug the charger cable to the Bolide power socket.
4. Press the power switch to turn on the Bolide.



Getting Started

Charging the Battery

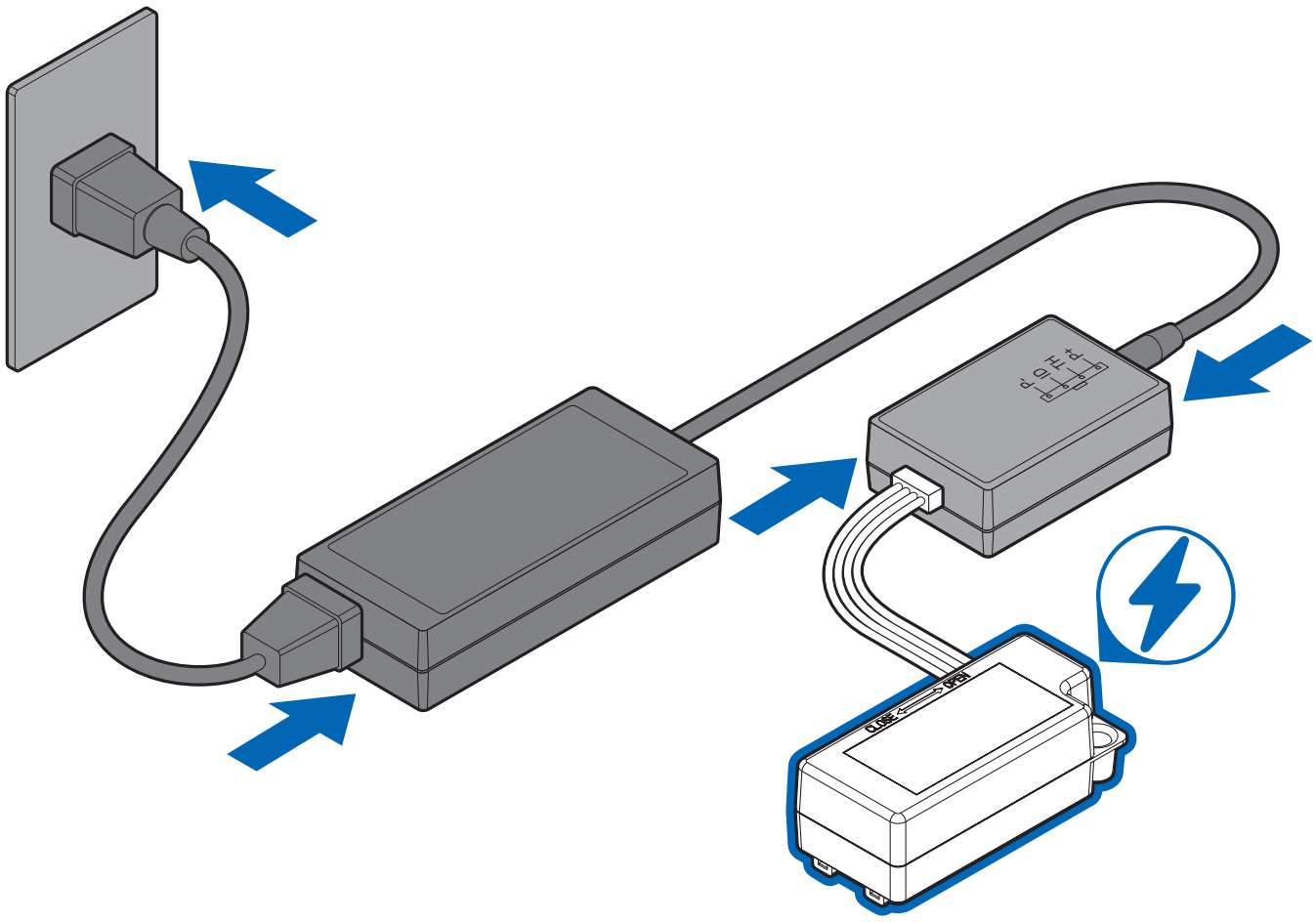
04

Prior to use, the battery requires charging.

1. Connect the AC adapter to the socket on the wall outlet.
2. Locate the battery cable on the battery.
3. Connect the battery cable to the slot on the battery charger.
4. Allow time to fully charge the battery before installing the battery into the Bolide.

CAUTION:

- Fully charge the battery prior to first use.
- Do not fully discharge your battery — If you store the robot when its battery is fully discharged, the battery could fall into a deep discharge state, which renders it incapable of holding a charge.



Battery Specifications

Item	Specifications
Cell Type	3S1P
Weight	120g
Nominal Capacity	1000mAh,
Nominal Voltage	11.10 V
Maximum Charge Voltage	12.6 V
Charge Current	1000mA
Continuous Maximum Discharge Current	5500mA
Charge Time	2 hours

Getting Started

Installing the MicroSD Card

04

The microSD slot is designed for microSD cards for the purpose of playing music when a function button is pressed. Only .WAV formatted files are supported.

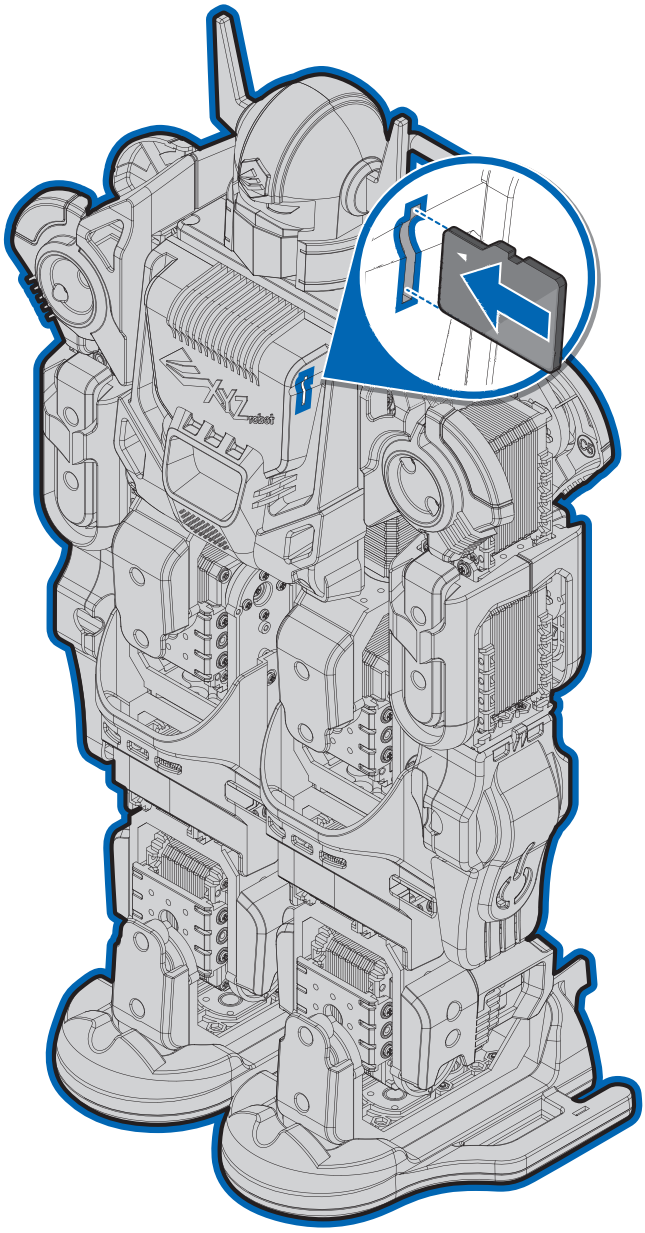
The following microSD card types are supported:

- microSD card
- microSDHC card

1. Locate the microSD slot on the Bolide.
2. Hold the microSD card with the arrow pointing towards the slot, and carefully slide into the slot until it clicks in place.

CAUTION:

Do not force a microSD card into the slot. Orient the microSD card prior to insertion. Forcing a microSD card into the slot may cause damage to the slot and the microSD card.

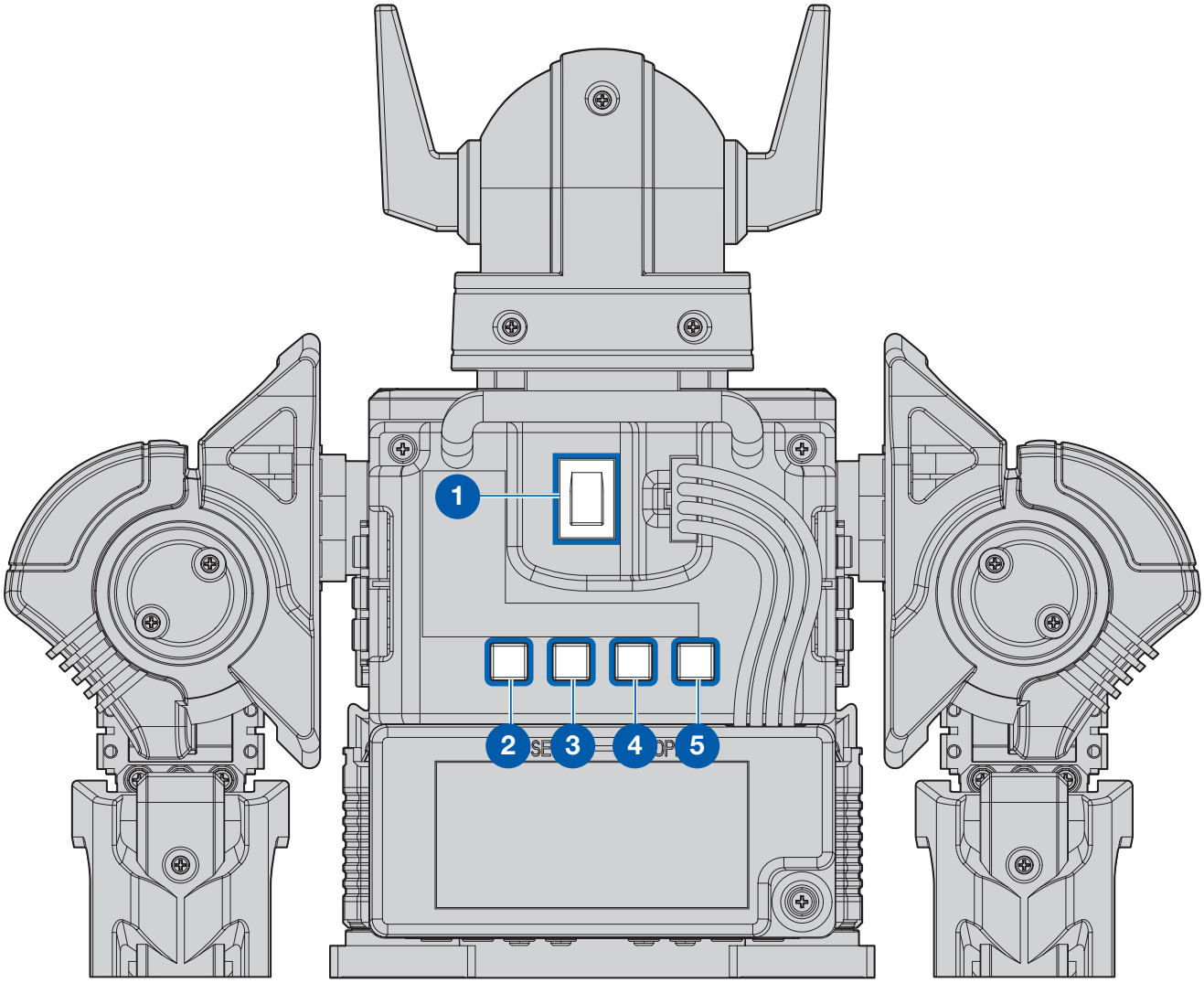


04 Getting Started

Control Panel

1. Power switch
2. Programmable button
3. Programmable button
4. Programmable button
5. Programmable button

NOTE: For detail information, please see the user manual.



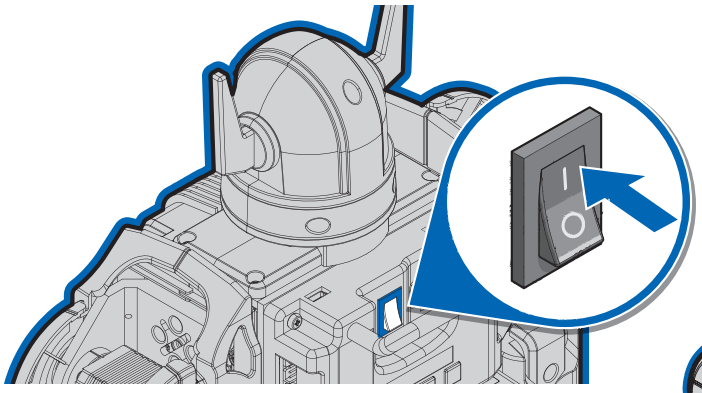
Getting Started

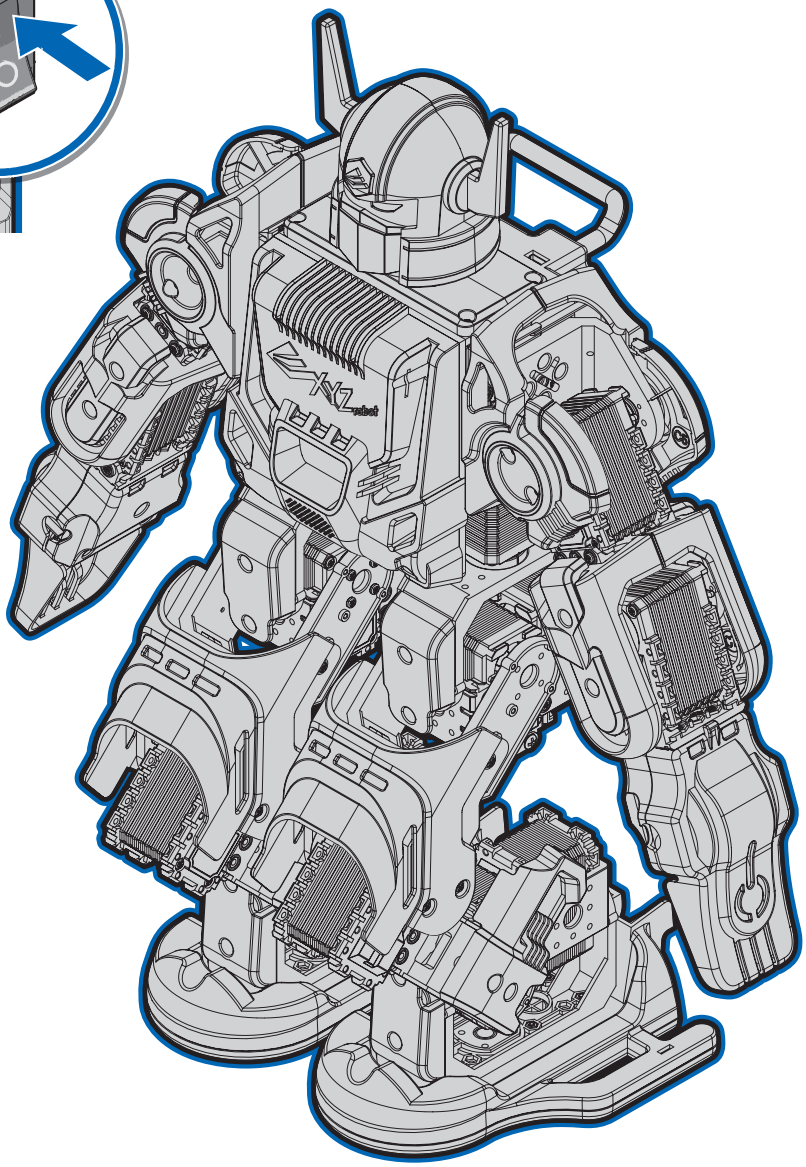
Testing the Bolide

04

Once fully assembled and the battery is charged, the Bolide is ready for a functional test. The test requires the powering up of the robot to allow the actuators to set to a default standing position. By initiating a power up and allowing the robot to set to the default posture, the assembly process can be successfully validated.

1. Place the Bolide on a clean flat surface before starting.
2. Press the power switch to turn on the Bolide.
   Once powered up, the LEDs light up and the Bolide stands in the default stance.
3. Press the function buttons on the control panel to test the servo motors. The servo motors function when the Bolide is assembled properly.

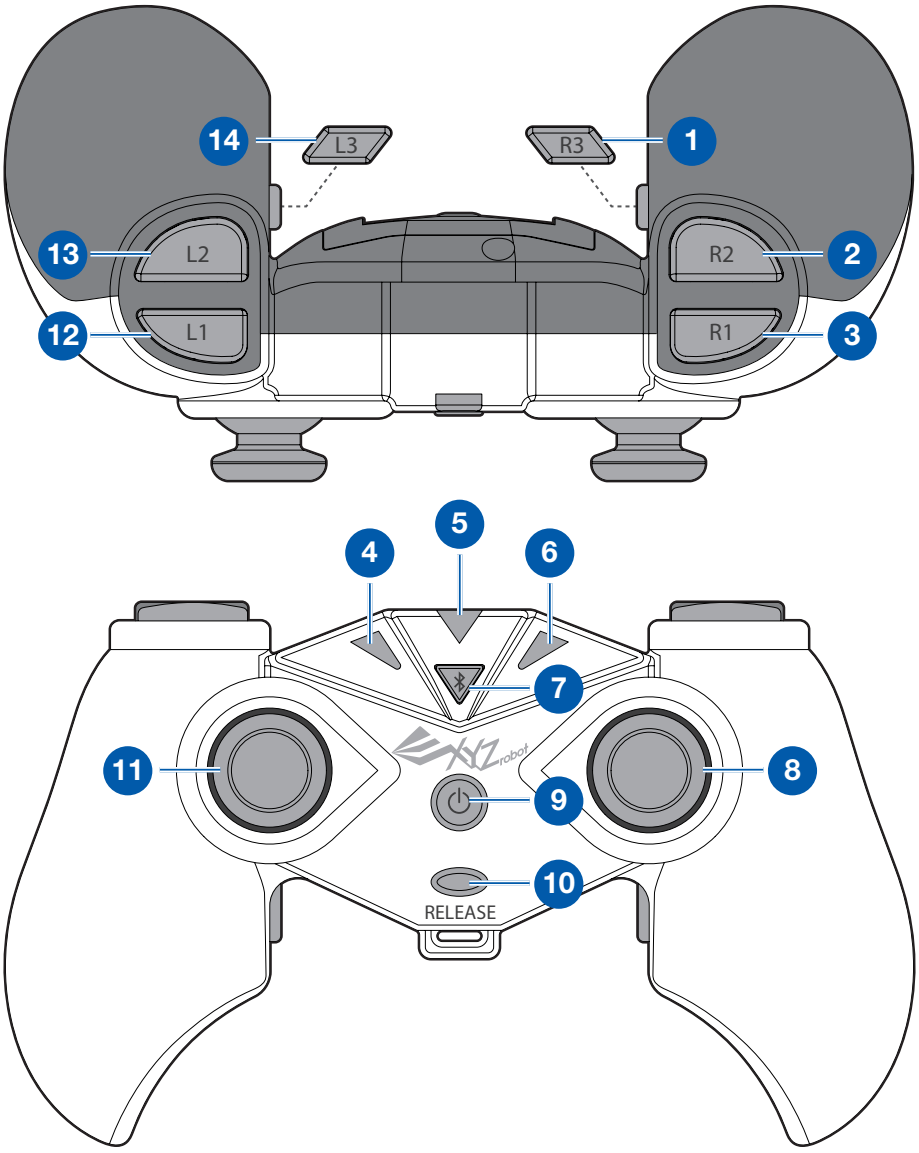




04 Getting Started

Remote Control

1. R3 button
2. R2 button
3. R1 button
4. Transmit LED
5. Bluetooth LED
6. Receive LED
7. Bluetooth button
8. Right stick
9. Power Switch button
10. Emergency button
11. Left stick
12. L1 button
13. L2 button
14. L3 button



Getting Started

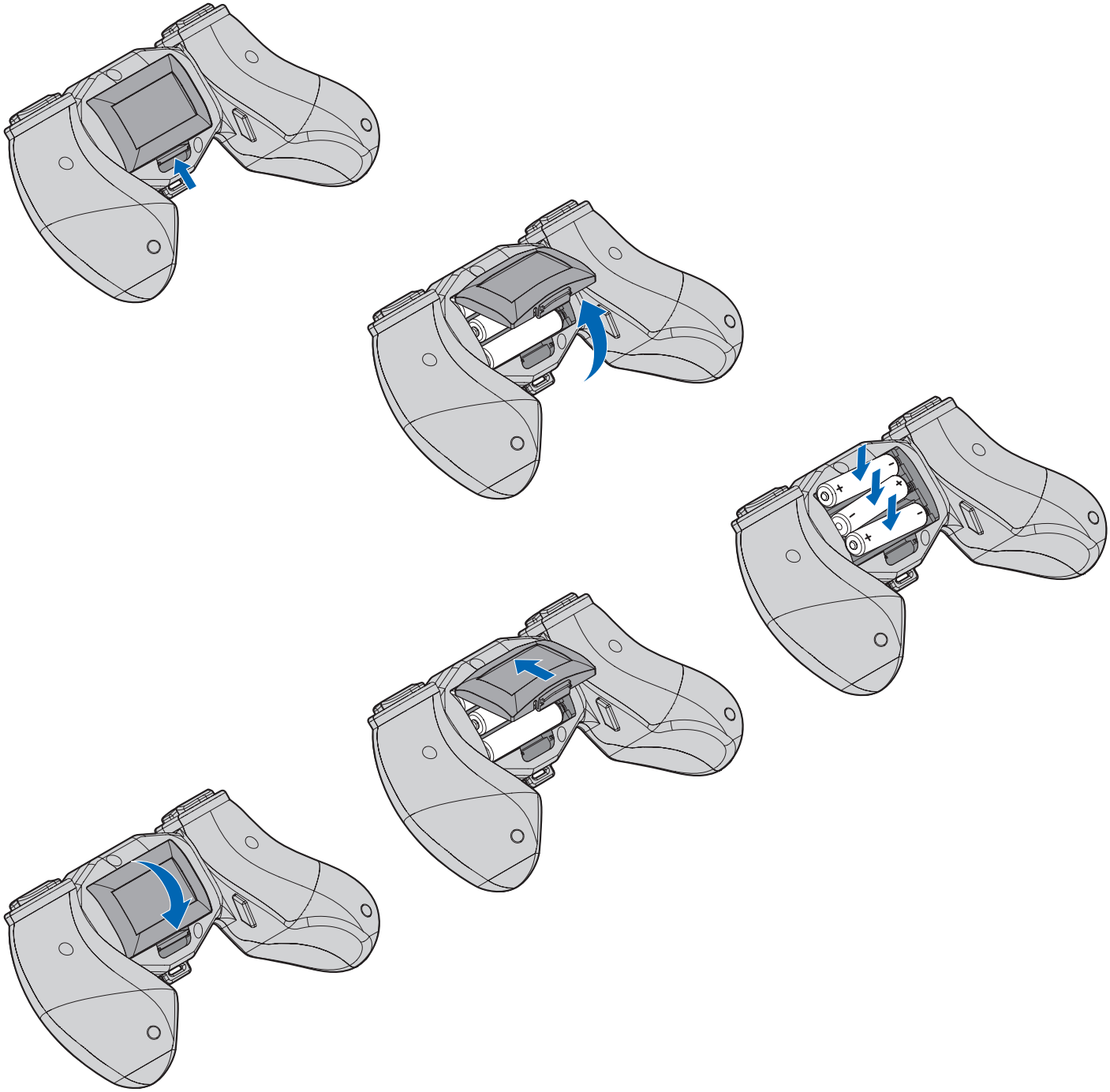
Installing the Battery

04

CAUTION:

- Do not mix old and new batteries. (Transmitter only)
- Exhausted batteries are to be removed from the remote control. (Transmitter only)

1. Press the release latch on the battery cover.
2. Flip up the battery cover.
3. Install the batteries. Make sure the batteries are aligned properly (positive marking to positive terminal, negative marking to negative terminal).
4. Align the battery cover with slots on the remote control.
5. Flip down to close the battery cover.

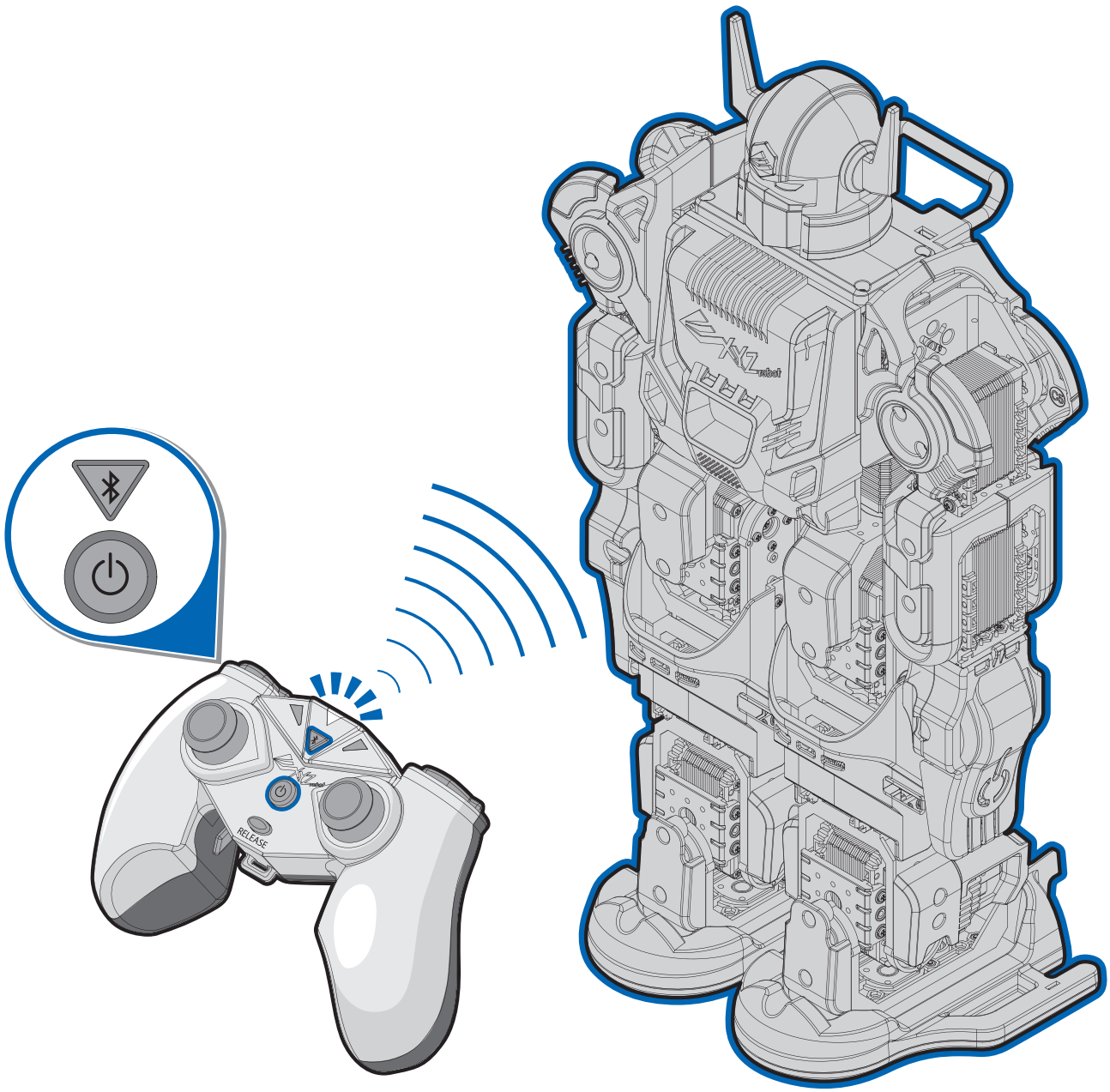


04 Getting Started

Using the Remote Control

1. Press the power switch to turn on the Bolide.
2. Press the **Power Switch** button to turn on the remote control.
3. Press the **Bluetooth** button to pair the robot.

NOTE: For detail information, please see the user manual.



Troubleshooting

05

I can't get the remote control or wireless communication (Bluetooth) to work.

1. Wireless communication may not function properly if there is insufficient power supply.
   Please check the power supply.
2. Please check that there aren't any wires cut or snapped on the Bluetooth.
   If there is a problem with the cable, please purchase a new one from XYZprinting Shop.
3. In case of Bluetooth, please check that the Bluetooth module is properly mounted on the main controller.
4. If all the steps above don't work, please test the communication for Bluetooth.

I can't connect my robot to the PC.

1. Open Device Manager on Windows.
   When the product is connected to the PC, please check whether the connected device's port is found.
2. If the port is not found and doesn't work, please install FTDI serial driver.
   If you have problems with other products, or can't solve the problem with the instructions above, please contact your regional manager.

What is the operational voltage (recommended voltage) for the Robot?

The operational voltage is 12V. Please keep the battery voltage over 11.3V.

There is no torque in the motor / There is a red light on the motor and it is not working.

1. The battery is low.
   The power will not turn on if the battery voltage is low.
   Please fully charge the Li-ion battery and try again.
2. The torque is turned off.
   If the motor keeps rotating to a direction it can't rotate to (stuck with frame, overload), the torque will automatically turn off to prevent the motor from greater damage.
   In this case, please turn off the power, check the motor's assembly, and try again.
3. There is a problem with the cable.
   If the cable is snapped and there is a contact failure, the motor may repetitively turn on and off.(In this case, there could be a red light on the motor.)
   Please check the cable status and try again.
4. The gear is damaged.
   The gear may be damaged if you run into symptoms like;
   - The motor works, but makes ticking noises and has low torque.
   - When rotating the motor manually with your hand, it feels like there is something being stuck at a certain point.

   In this case, please contact your local distributor (or us) and apply for an RMA.

05 Troubleshooting

The robot keeps on falling when performing a motion.

1. The battery is low

   If the battery voltage is low, some motions that require more current may cause the robot to turn off or fall.

   Please fully charge the Li-ion battery and try again.
2. There is a problem with the assembly (ID position, hub position).

   When the App is on, the motors move to their initial position.

   If the assembly has not been done properly (ID or hub position is wrong), the robot's initial position will be out of shape, which could damage the motors.

   In this case, please turn the power off and check the assembly again.

I built my robot, but its initial position doesn't seem to be correct.

1. Check the hub assembly

   There might be some hubs or frames assembled wrongly.

   Please check the assembly manual again and check if there weren't any misassembling.
2. Check the ID

   The ID may have been set differently from how it was instructed on the assembly manual. Please check the ID again, comparing it to the assembly manual, and check from the Manager whether the ID sticker and the actual motor's ID are the same.
3. Check the offset value

   If there is no problem with the hub's position or ID, please check the offset value.

The LED on MCU board is on when I turn on the Bolide:

- **All the servo motors are locked in place and behavior appears abnormal.**
- **All servo motors do not offer resistance--I can move them.**

1. Check the LED to see if it is blinking repeatedly. This signifies a low battery status.
2. Visually ensure that every cable is properly inserted into its respective connector.
3. Check for any damage to the wiring--frayed cabling.
4. Manually test each servo motor and its cable by connecting one end of the cable to the servo motor and the other end to the MCU board. Initiate an action to that servo motor. If the servo motor does not respond, try a different cable.

   If one limb doesn't work well means the one or some cables on the limb are broken.

Troubleshooting

05

The LED on MCU board is on when the Bolide is powered on, but some servo motors do not behave normally.

1. Check the LED to see if it is blinking repeatedly. This signifies a low battery status.
2. Visually ensure that every cable is properly inserted into its respective connector.
3. 3. Check for any damage to the wiring--frayed cabling.
4. 4. Manually test each servo motor and its cable by connecting one end of the cable to the servo motor and the other end to the MCU board. Initiate an action to that servo motor. If the servo motor does not respond, try a different cable.
5. Check the LED on the servo motor. If the LED is blinking repeatedly, it signifies a low battery status.
6. Check the servo motor (Download the factory program from “LINK”).

   Use the [Bolide motion editor] to test the servo. If the servo motor is damaged, replace the servo motor. See the XYZprinting Shop for further details.

Remote control doesn’t work well or LED is dimmed.

1. Replace the batteries..

   Dimmed LEDs signify low battery status.

Appendix
Specifications

Bolide

Item	Specifications
Servo Motor (actuator)	18 x servo motors
Dimension	396 x 229 x 141 mm (15.59 x 9.02 x 5.55 in.)
Weight (without battery)	2058 g (4.54 lbs.)
Remote Control Weight (without battery)	140 g (0.31 lbs.)
Micro Control Unit	ATmega1280
Wireless Module	Bluetooth 4.0
Battery	12V
Charger	Input: 100 ~ 240V AC, 50/60Hz
Operation Time / Charging Time	40 mins / 2 hrs
Remote Control	Analog sticks x 2 Programmable Buttons x 6
Programmable Buttons on Board	Buttons x 4
Software	XYZrobot Editor/Arduino IDE
Sensors	IR, G-sensor
SD Card	microSD

AI Servo Motor A1-16

Item	Specifications
Operating Voltage	8 ~ 12V
Staff Torque	25 Kg-cm max.
No Load Speed	70 +/- 10 rpm
Weight	60 +/- 2 g
Size	50 x 32 x 40 mm (1.97 x 1.26 x 1.57 in.)
Resolution	0.323°
Reduction Ratio	254
Operating Angle	0° ~ 330°
Max. Current	3500mA
Standby Current	30mA max.
Operating Temperature	0°C to 40°C (32°F to 104°F)
Protocol	TTL Level UART(8-N-1)
Feedback	Position, Temperature, Current, Supply Voltage

Warranty

We take it really seriously if your new Robot wasn't perfect. Please describe any faults on our website as much detail as possible so we can follow up with our Quality Department. Don't throw away any part that didn't meet your expectations – we may ask you to return it so our team can have a closer look. A copy of your purchase receipt may also be required.

The guarantee period varies depending on the use of the components:

- for Body components: it is 12 months.
- for Accessories, Motors, Cabling, and MCU boards used for DIY: it is 7 days.
- for Semi knocked down (SKD) or fully assembled components: it is 30 days.

This Warranty is applicable to Manufacturer's defects only. The guarantee period begins from the time the component is purchased from new. The starting date is the date on the original sales receipt.

This Warranty is applicable only to the original purchaser of a new Product that was not sold "as is". Product must be purchased from an authorized reseller or directly from XYZprinting Inc. A purchase receipt or other proof of the date and location of retail purchase as well as the purchase price is required in order to claim the benefit of this Warranty.

If a Manufacturer defect arises:

Within the Warranty Period you may contact XYZprinting Inc. Customer Support to arrange for the replacement of this Product. XYZprinting Inc. reserves the right to test the returned Product in order to verify that it is indeed a Manufacturer's defect before exchanging the Product. In the event that a replacement for this Product is not available this Product will be replaced by XYZprinting Inc. with a Product of equivalent or greater retail value.

Notwithstanding the foregoing terms of this Warranty, XYZprinting Inc. reserves the right at all times, at its sole option and discretion, to refund to you the purchase price paid by you for this Product in full and final settlement of XYZprinting Inc.'s obligations under this Warranty.

If this Product is replaced, the replacement Product becomes your property and the replaced Product becomes XYZprinting Inc.'s property. If XYZprinting Inc. refunds the purchase price of this Product, this Product must be returned to XYZprinting Inc. and becomes XYZprinting Inc.'s property.

The XYZprinting Inc. Limited Manufacturer's Warranty covers the normal and intended use of this product. This Warranty does not apply:

1. to any damage resulting from abuse, accident, unreasonable use, improper handling and care or other external causes not arising out of defects in materials or workmanship;
2. to any hardware, software or other add-on components installed by the end-user;
3. to damage arising from any service performed by an individual who is not an authorized representative of XYZprinting Inc.;
4. if this Product has been disassembled or modified in any way;
5. to cosmetic damage, including but not limited to scratches, dents or broken plastic, or normal wear and tear.

XYZprinting Inc.'s responsibility for Product defects is limited to the replacement of this Product or the refund of the purchase price for this Product. All express and implied warranties, including but not limited to any implied warranties and conditions of merchantability and fitness for a particular purpose, are limited in time to the term of this limited Warranty. No warranties, whether express or implied, will apply after the expiration of the limited Warranty period.

Warranty

If any term of this Warranty is held to be illegal or unenforceable, the legality or enforceability of the remaining terms shall not be affected or impaired. Except as provided in this Warranty and to the extent permitted by law, XYZprinting Inc. is not responsible for direct, special, incidental or consequential damages howsoever caused resulting from breach of Warranty or condition or under any other legal theory, including but not limited to loss of use. The foregoing limitation shall not apply to death or personal injury claims, or any statutory liability for intentional and gross negligent acts and/or omissions.

XYZprinting Inc. (and distributors) disclaims all liability, including liability for infringement of any proprietary rights, relating to use of information in any documents and files and software and no license, express or implied, by XYZprinting Inc. or otherwise, to any intellectual property rights is granted herein. XYZprinting Inc. (and distributors) assumes no responsibility or liability for any errors or inaccuracies that may appear in any documentation or files or any software that may be provided. The information in any documents or files is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by XYZprinting Inc. (and distributors).

[7 Day Return Policy]

If you find the purchased item does not suit your needs, you may return it for a refund. (a 20% re-stocking fee may apply and the shipping charge to the Customer)

Shipping and handling charges, taxes paid, and any importation fees are not refundable. You are responsible for and must prepay all shipping charges and you shall assume all risk of loss or damage to the product while in transit to XYZprinting Inc. If you return product to XYZprinting Inc. without proper packaging.

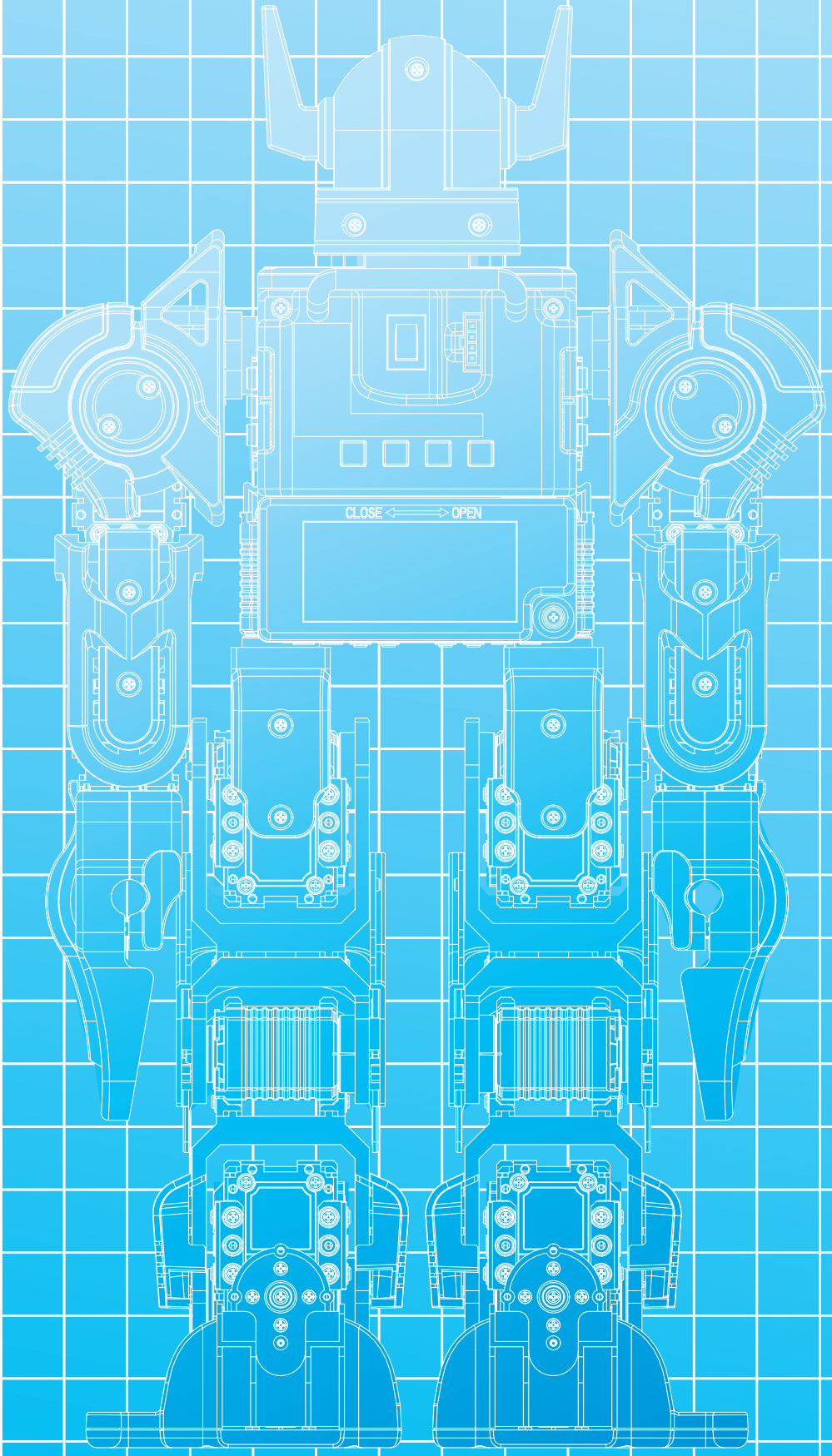
XYZprinting Inc. retains the right to either refuse delivery or charge you a restocking fee.

[Disclaimer]

Warranty or refund does not apply in the event of normal wear & tear, any abuse, improper modifications or accidents.(Worn out gears, cables or burnt motors are not covered under warranty).

[Maintenance Fee]

If the faulty item is regarded as out of coverage or warranty period has expired, a reasonable fee may apply. All expenses will be noticed before any shipping will be done and must be paid by customer before returning goods to customer. (Round shipping charge paid by Customer)


CLOSE
OPEN