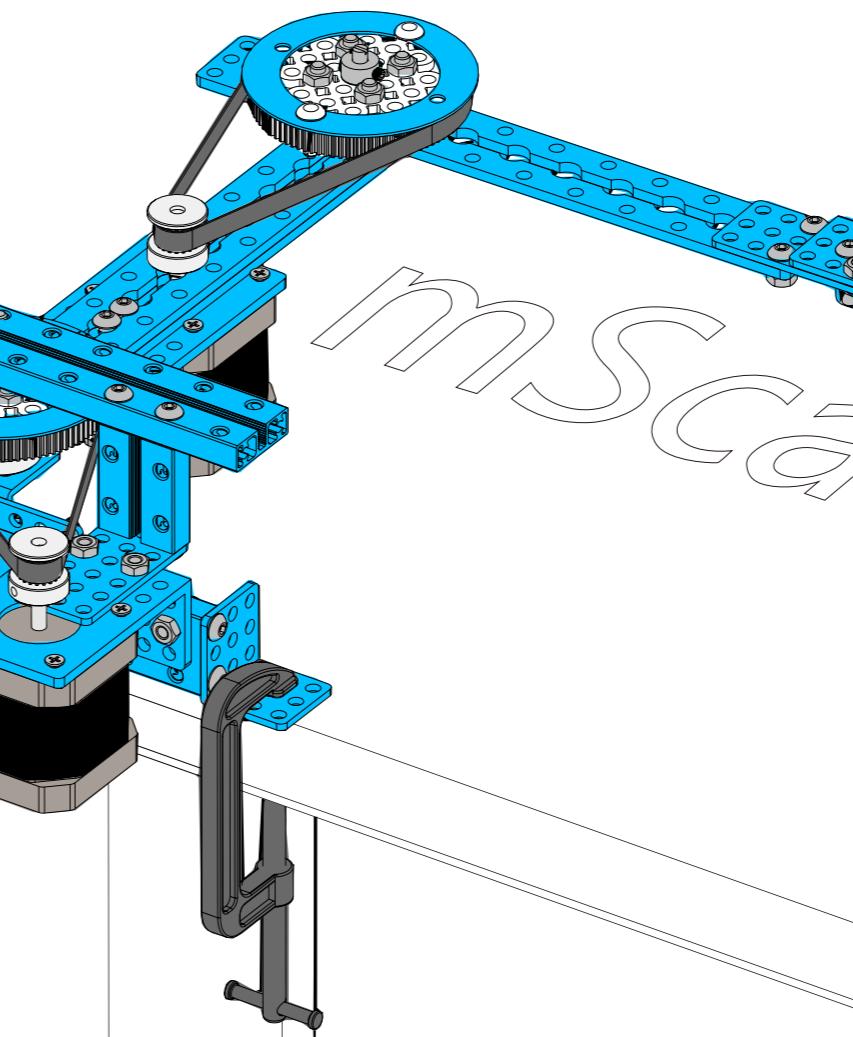
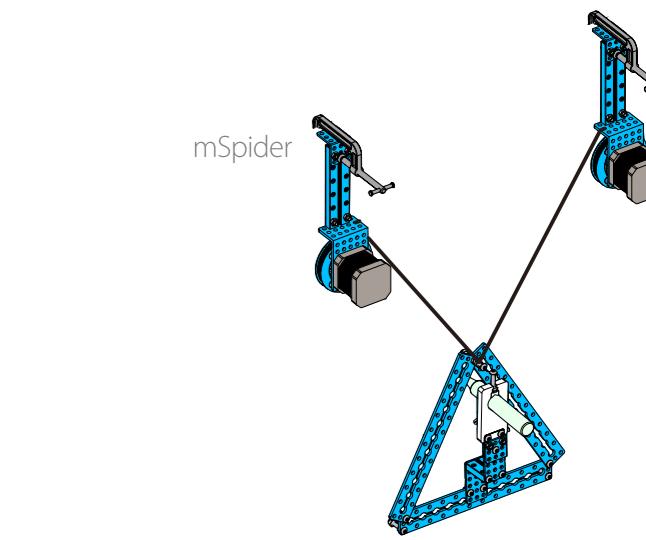
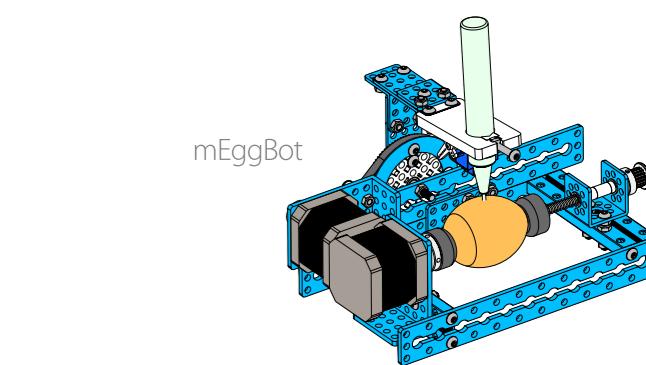
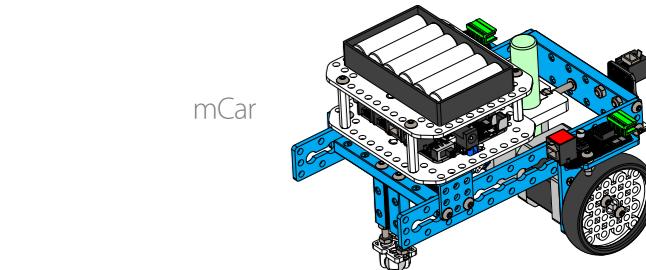




# mDrawBot Kit

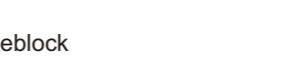
## Four-In-One Drawbot Kit

mScara | mSpider | mEggBot | mCar



MAKER WORKS TECHNOLOGY INC

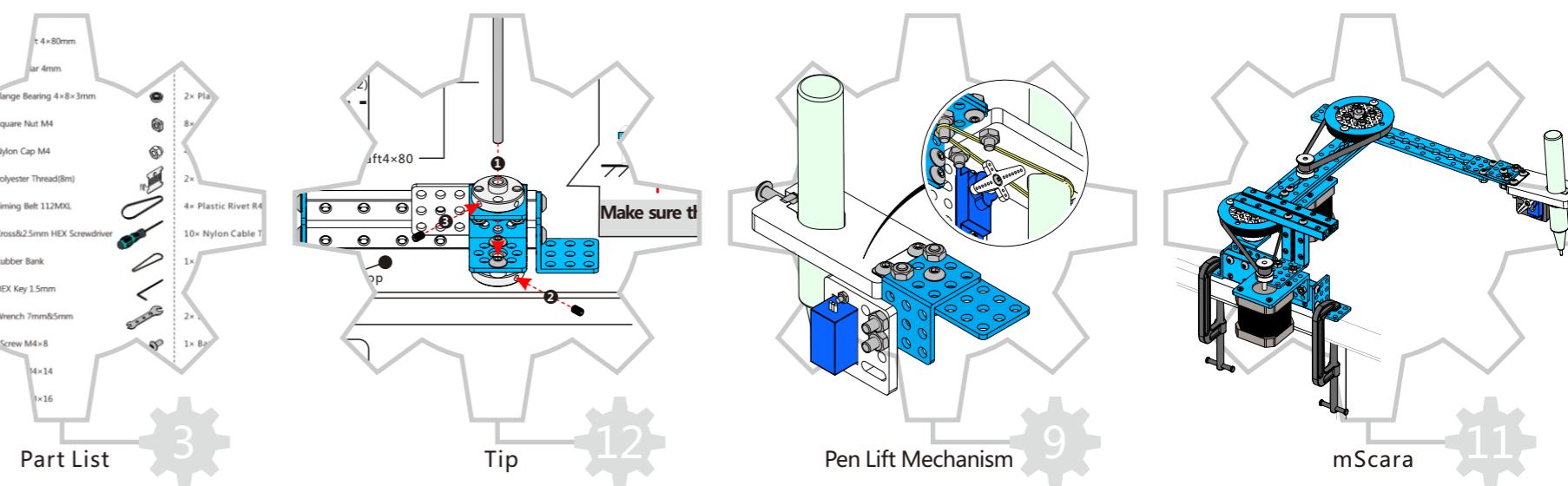
Technical support: support@makeblock.cc  
www.makeblock.cc



# Quick Intro

※mDrawBot is an advanced transformable drawing robot kit based on Makeblock platform. It can be assembled into 4 forms — mScara, mSpider, mEggBot and mCar. It also comes with a matched software named mDraw.

## Construct Your Dreams



- Check the parts according to the Part List. Anything missing, please contact Makeblock.

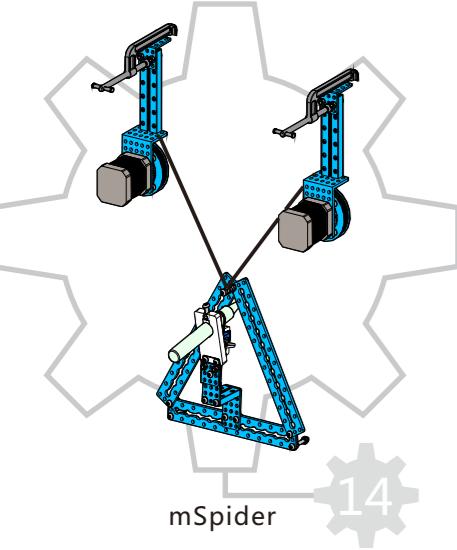
- Explain in detail how to use the instructions for you.

- Pen Lift Mechanism is applied to every forms of this four-in-one drawbot. Refer here to see the assembly of the Pen Lift Mechanism.

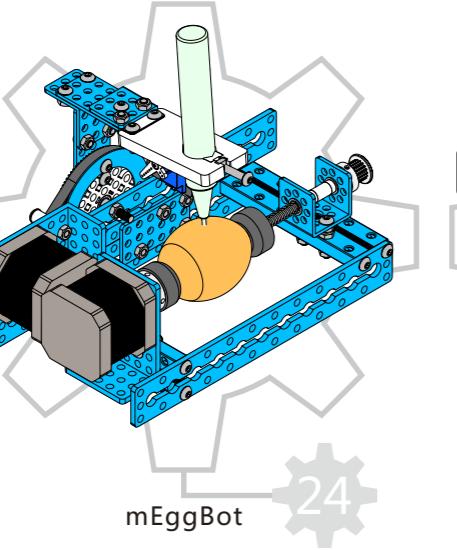
- mScara is one form of this four-in-one drawbot which can be fixed on the table to draw. Refer here to see the assembly of mScara.

# Part List

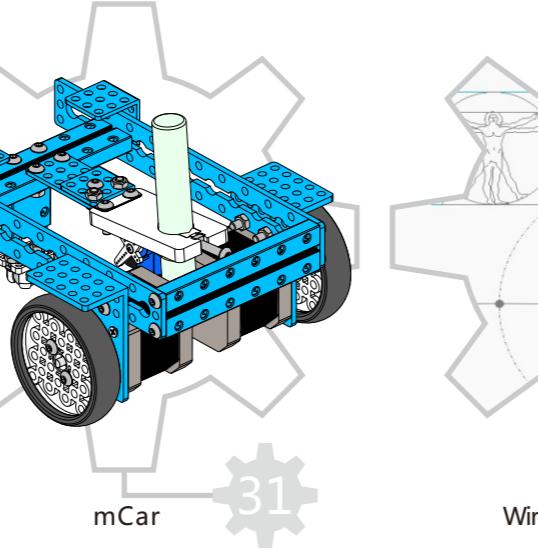
※Warning: Keep this kit out of the reach of children or animals.  
Small parts may cause choking or serious injury if swallowed.



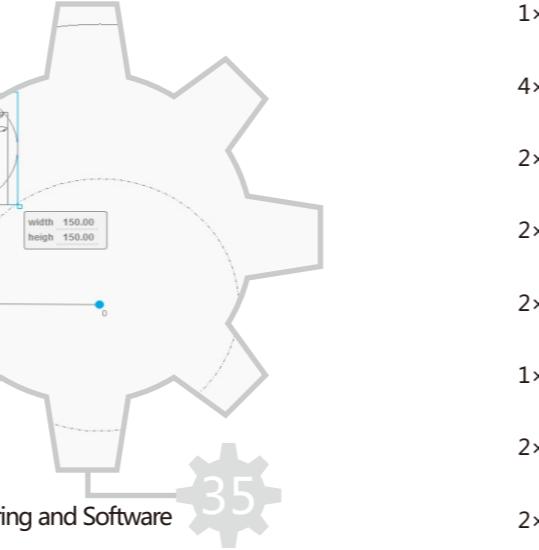
- mSpider is one form of this four-in-one drawbot which enables you to draw on a blackboard or a wall. Refer here to see the assembly of mSpider.



- mEggBot is one form of this four-in-one drawbot which enables you to draw on an egg or a ping-pong. Refer here to see the assembly of mEggBot.



- mCar is one form of this four-in-one drawbot which enables you to draw on the ground. Refer here to see the assembly of mCar.



- To enable the Drawbot to move, it's required to use the software mDraw with the Drawbot. Refer here to see the instruction for wiring, software, and related details.

1× Beam0824-032		1× Spring 0.6×6×50		6× Headless Set Screw M3×5	
2× Beam0824-096		1× Threaded Shaft 41×39mm		8× Countersunk Screw M3×8	
3× Beam0324-184		1× Circle Shaft 4×80mm		50× Nut M4	
3× Bracket 3×3		2× Shaft Collar 4mm		4× Nylon Stud M4×30	
3× Plate 3×6		5× Flange Bearing 4×8×3mm		2× Plastic Ring 4×8×1mm	
1× Bracket U1		1× Square Nut M4		8× Plastic Ring 4×7×3mm	
4× Timing Pulley Slice 90T		3× Nylon Cap M4		4× Plastic Ring 4×7×10mm	
2× 42BYG Stepper Motor Bracket		1× Polyester Thread(8m)		2× Plastic Rivet R4060	
2× Plastic Timing Pulley 90T		2× Timing Belt 112MXL		4× Plastic Rivet R4120	
2× Tire 90T B		10× Nylon Cable Tie 2×100		1× 9g Micro Servo Pack	
1× Caster Wheel		1× Rubber Bank		2× 42BYG Stepper Motor	
2× Rubber Blanket		1× Cross&2.5mm HEX Screwdriver		2× Base Bracket	
2× Shaft Connector 4mm		1× HEX Key 1.5mm		1× Battery Holder	
2× Timing Pulley 18T		1× Wrench 5mm&7mm		1× Makeblock Orion	
1× Pen Holder and V Clamp		26× Screw M4×8		2× Me Stepper Motor Driver	
2× 2 inch G Clamp		42× Screw M4×16		1× RJ25 Adapter	
1× Plastic Hinge		5× Screw M4×22		1× AC/DC Adapter 12V2A	
1× Plastic Hinge Gasket		1× Screw M4×35		1× 9g Servo Extension Cord	

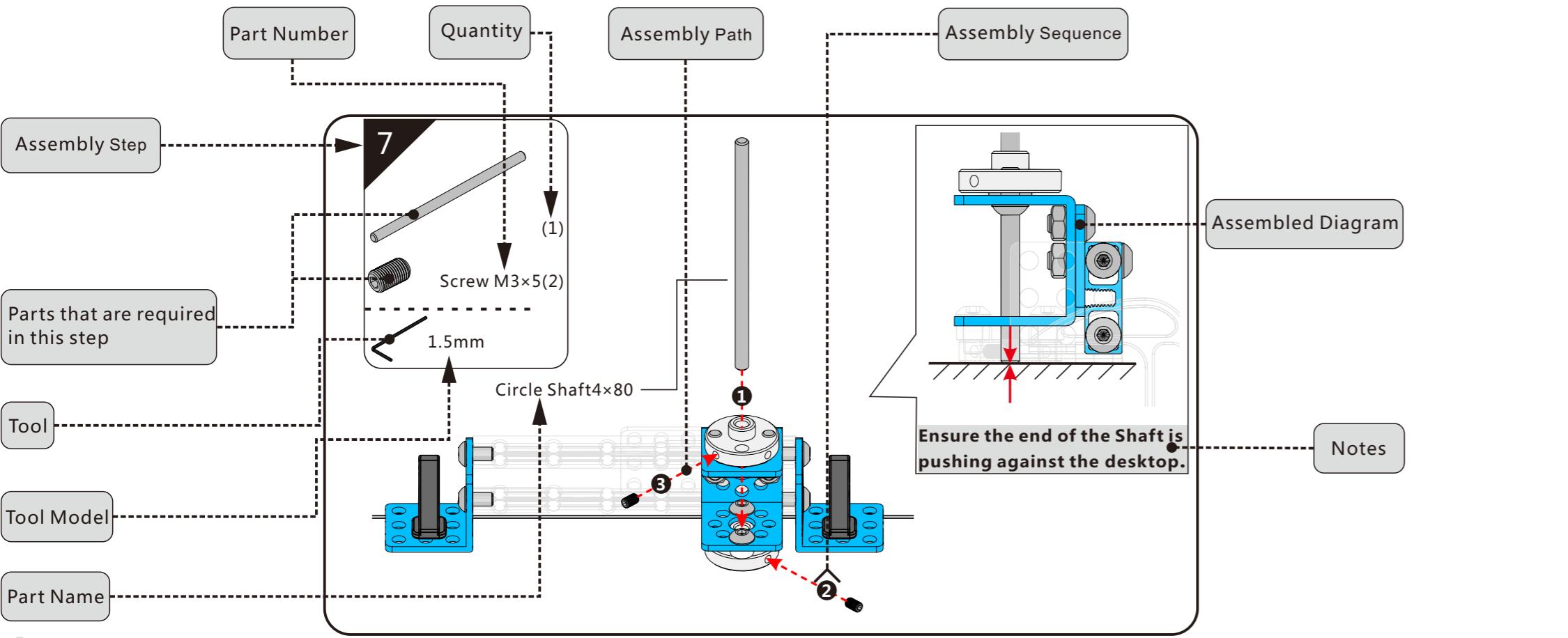
※All pictures in this manual do not represent the actual scale of them.

## Tip



\*With too many parts contained in this product, please assemble the Drawbot as per the steps indicated in this instruction to avoid confusion. Pay especially attention to the mark of "O", "X". Make sure you are doing exactly as required by the diagram marked with "O", otherwise the parts may be broken and the robot may fail to work normally.

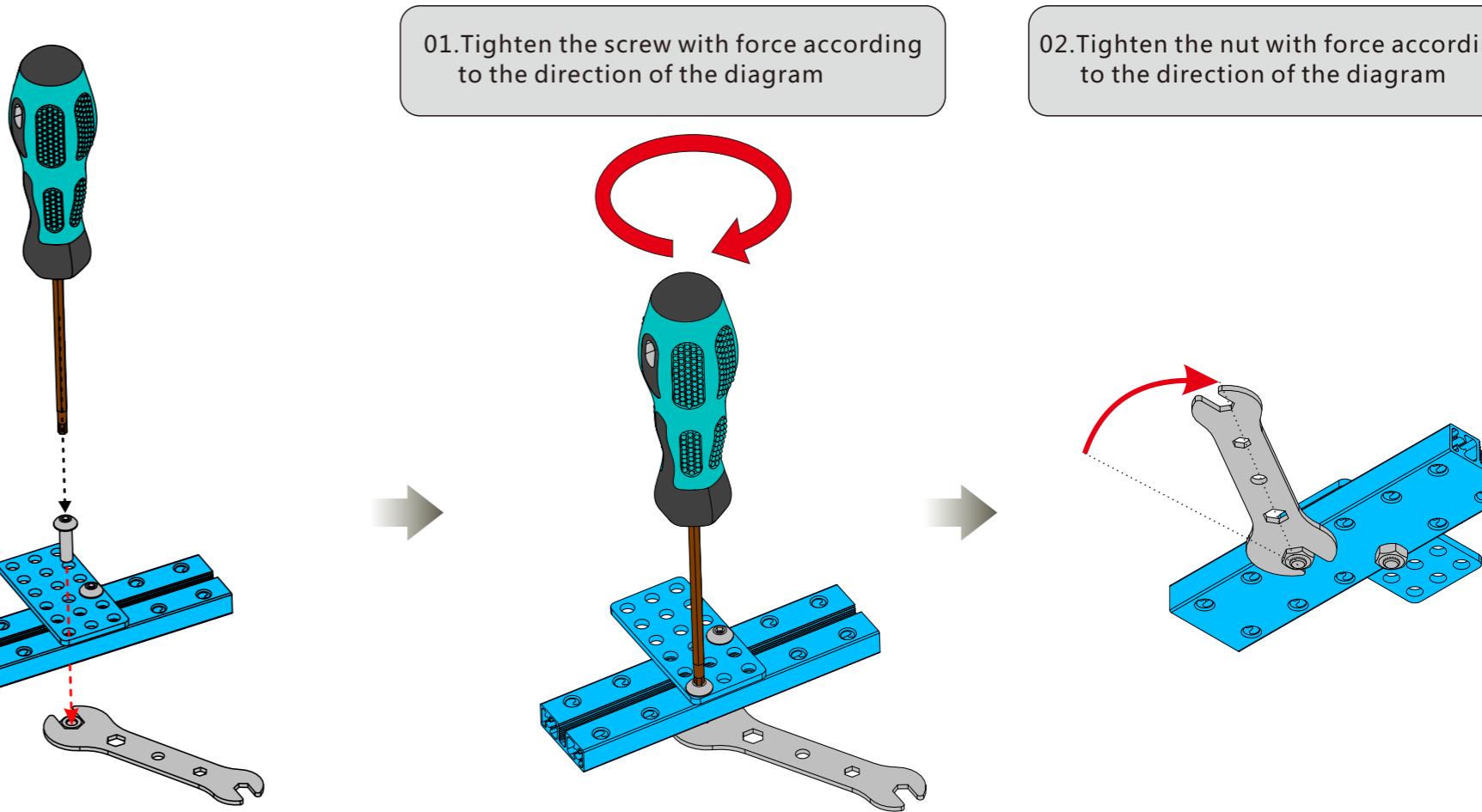
## Diagram



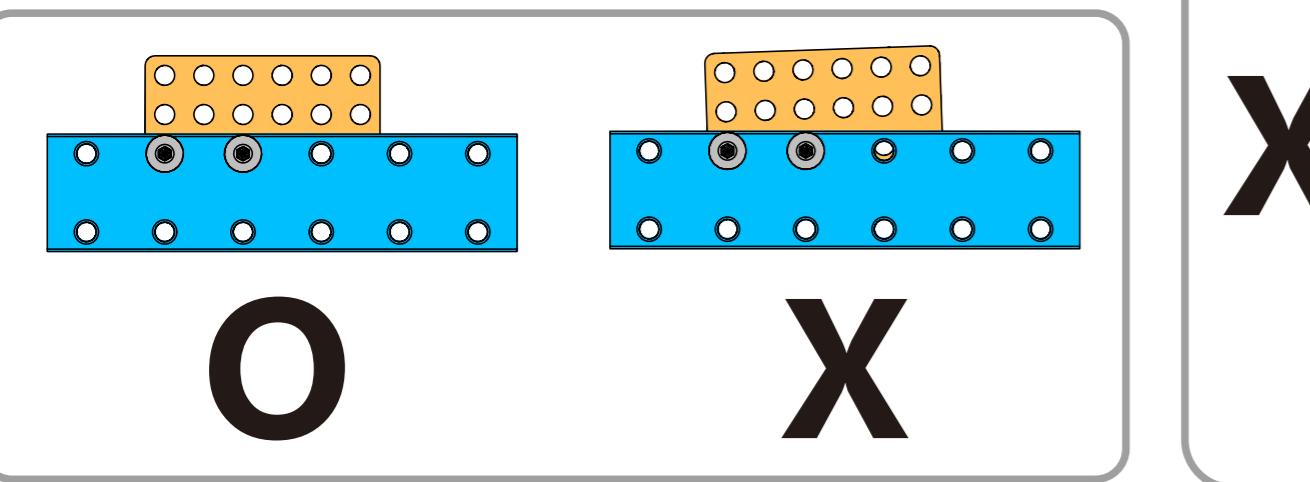
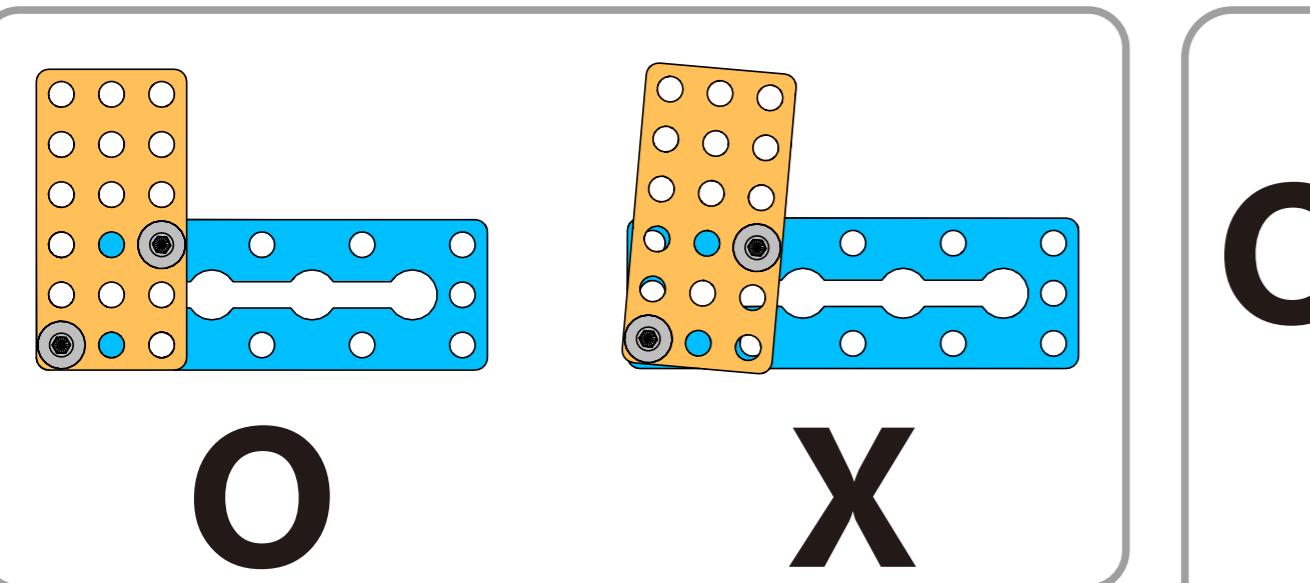
## Assembly Requirement

Please assemble the robot in strict accordance with the following three requirements, Otherwise it will result in inaccuracy or unsatisfying performance.

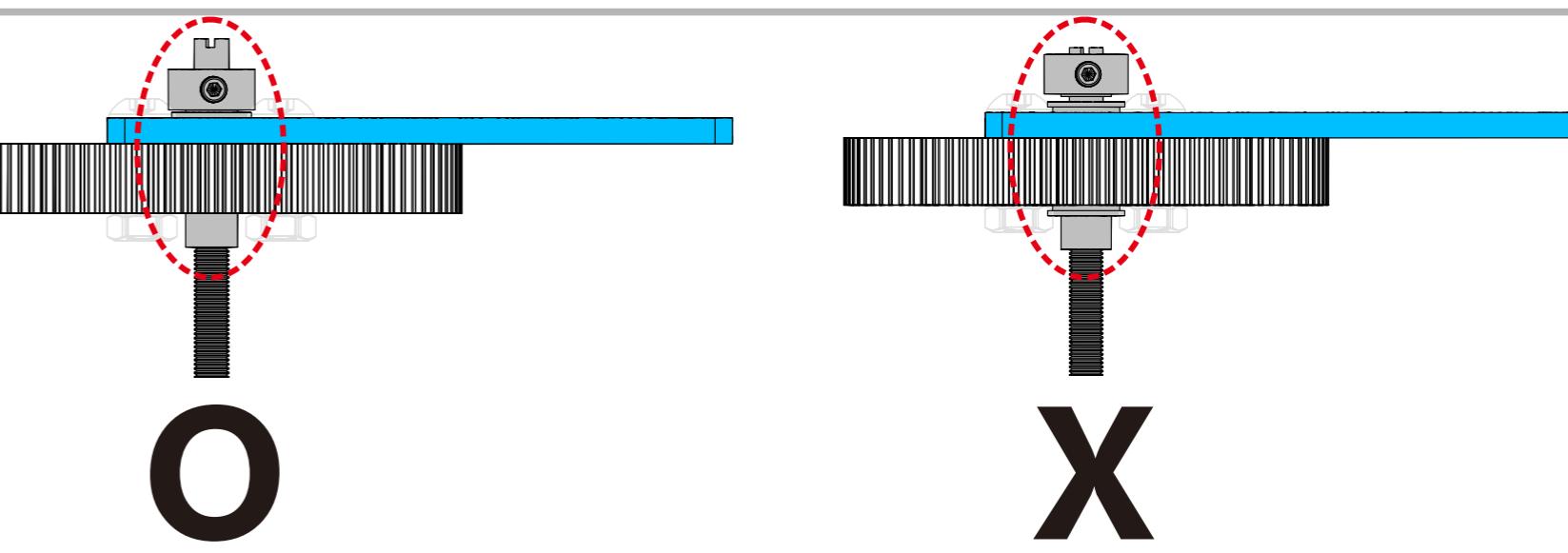
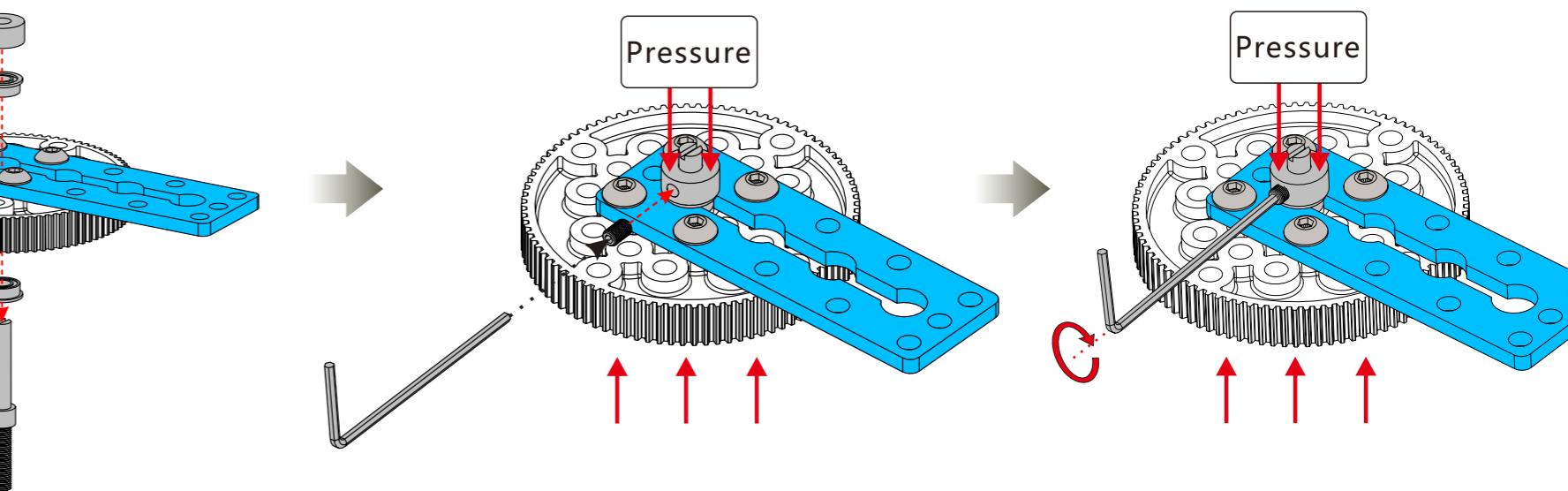
### 1. Make sure to tighten the screw and the nut.



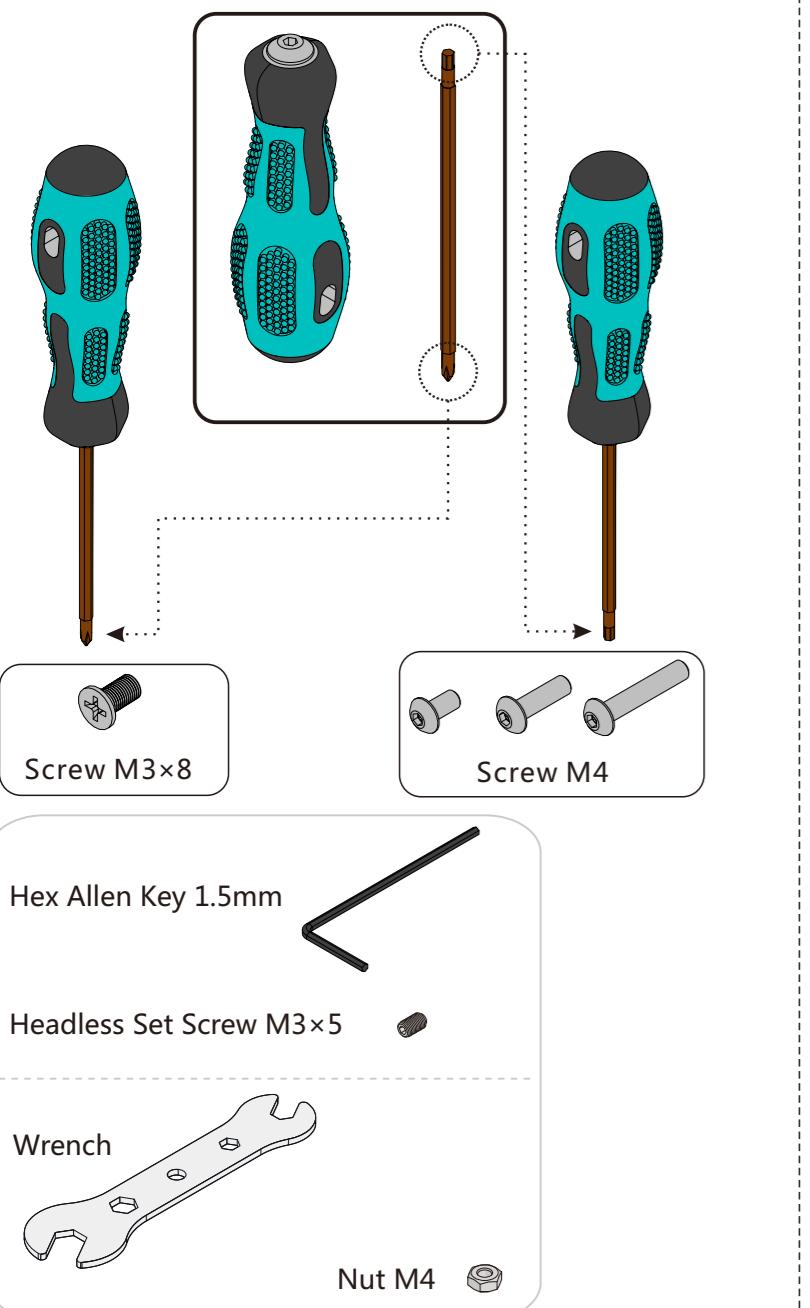
**2. Make sure all parts are placed evenly before tightening the screws.**



**3. Press downward the parts related to the shaft with force to eliminate the gap before tightening the screw M3x5.**

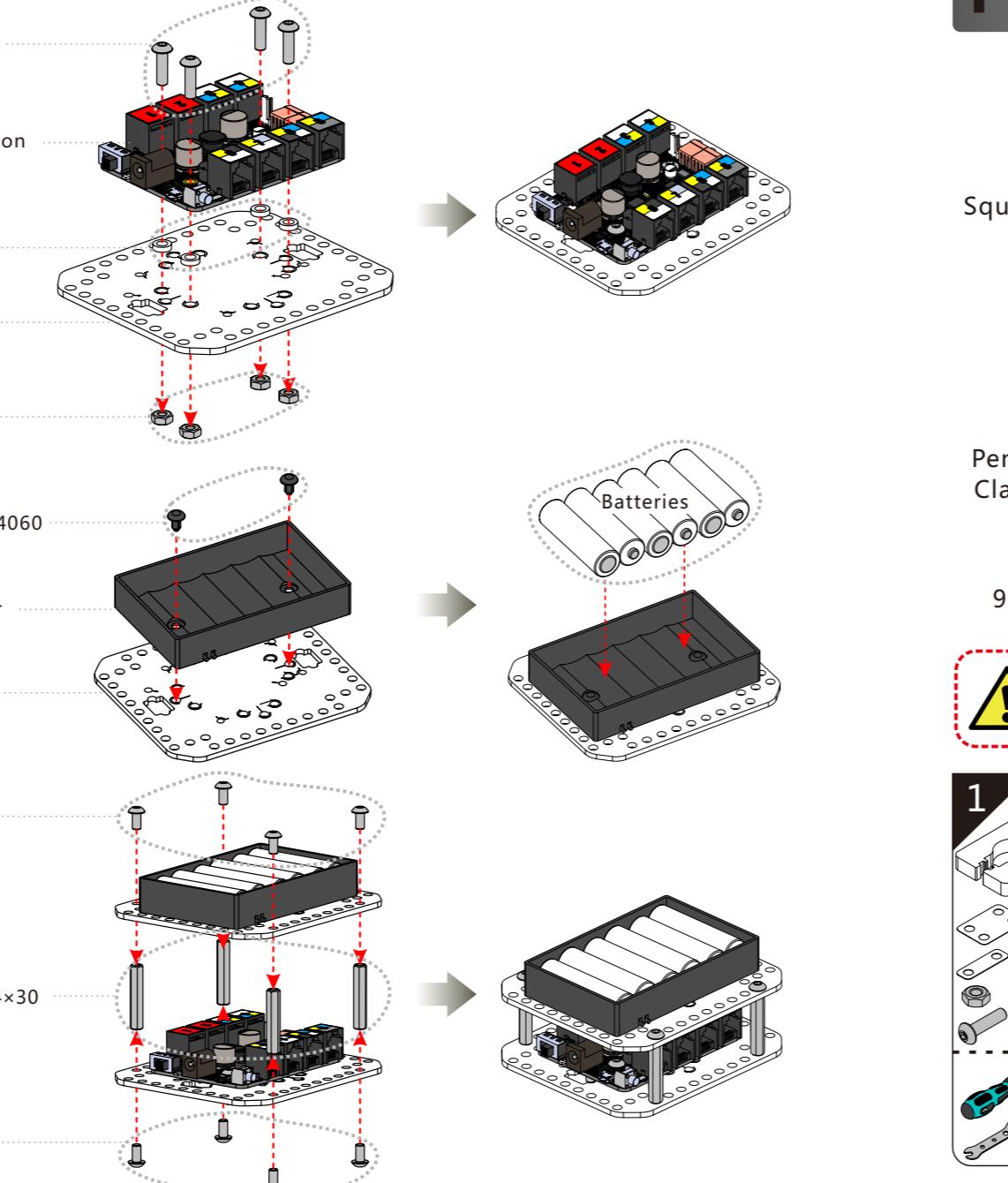


## Tools

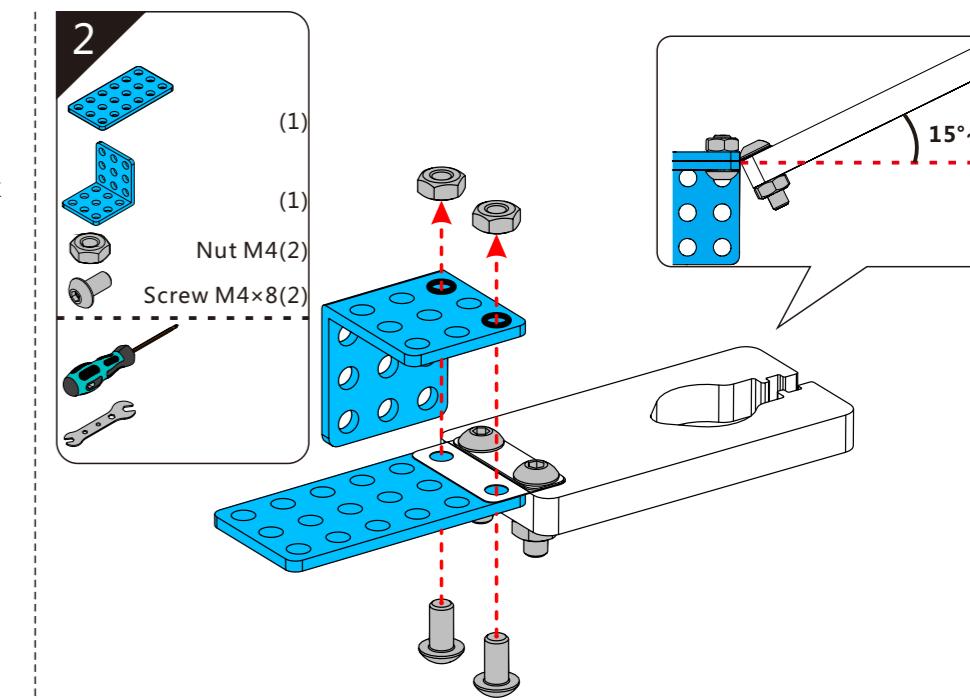
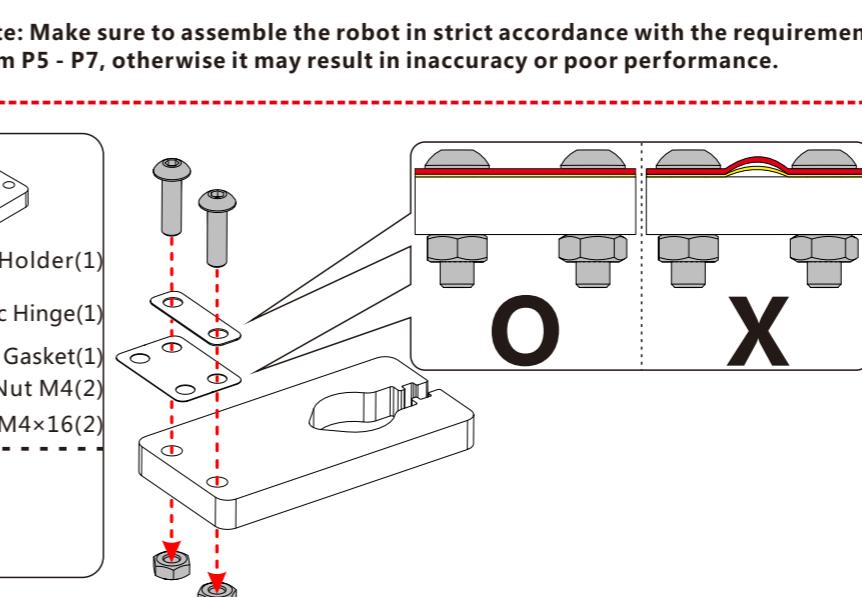
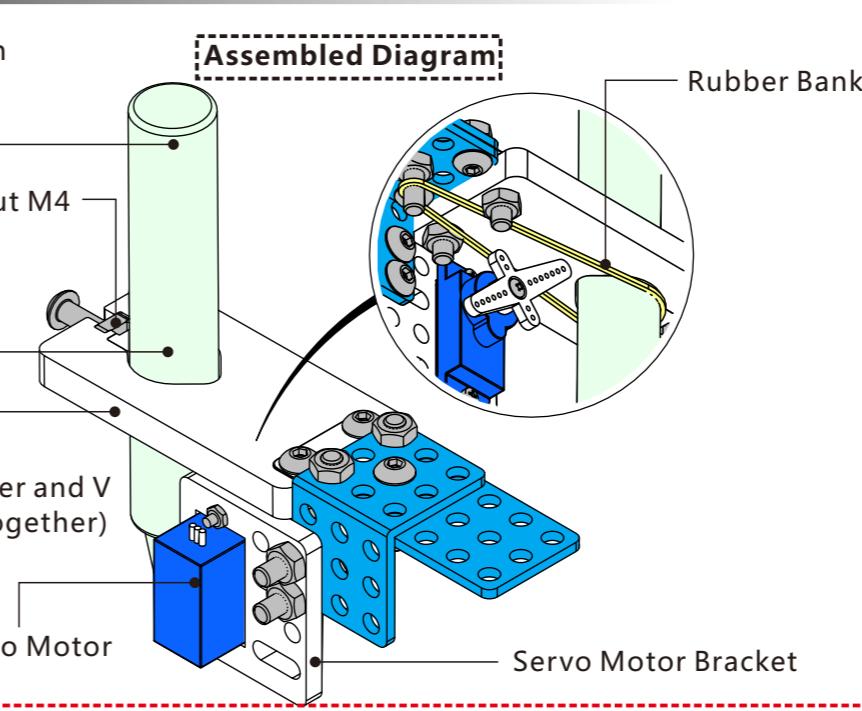


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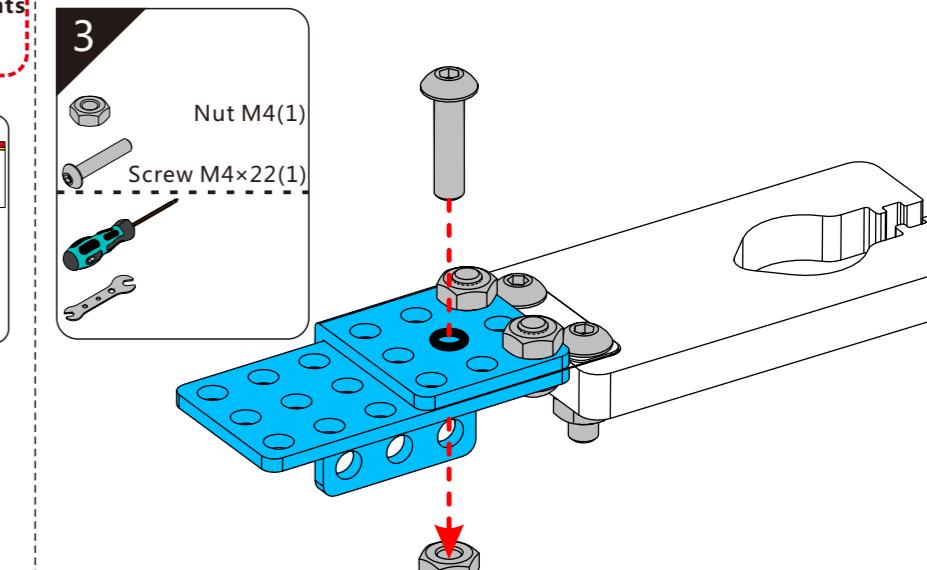
## Makeblock Orion & Battery Holder



## Pen Lift Mechanism

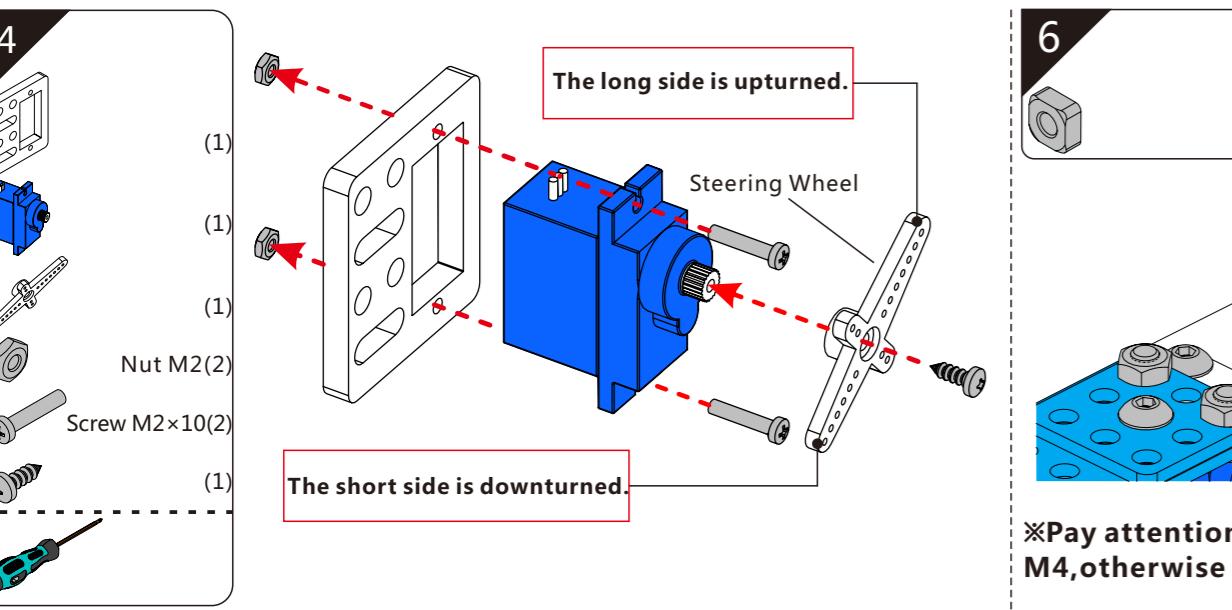


\*Before tightening the two screws, make sure the Pen Holder can be easily lifted up for 15°~45°.

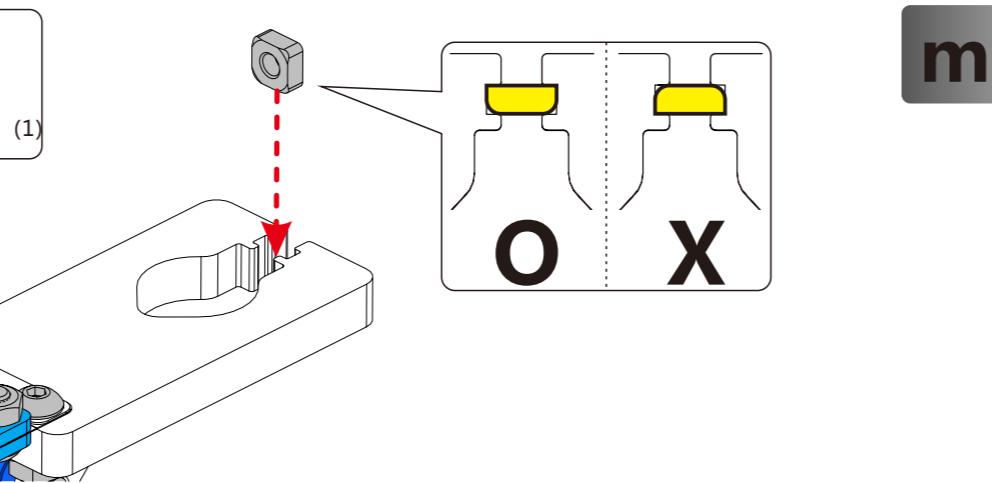
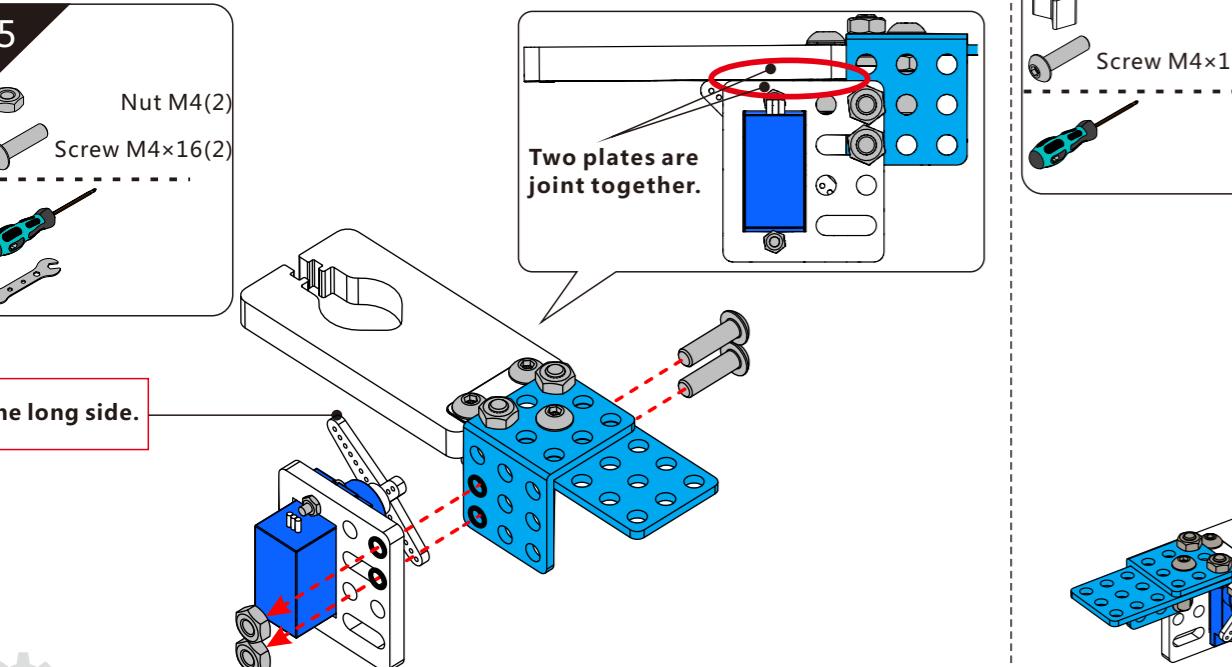


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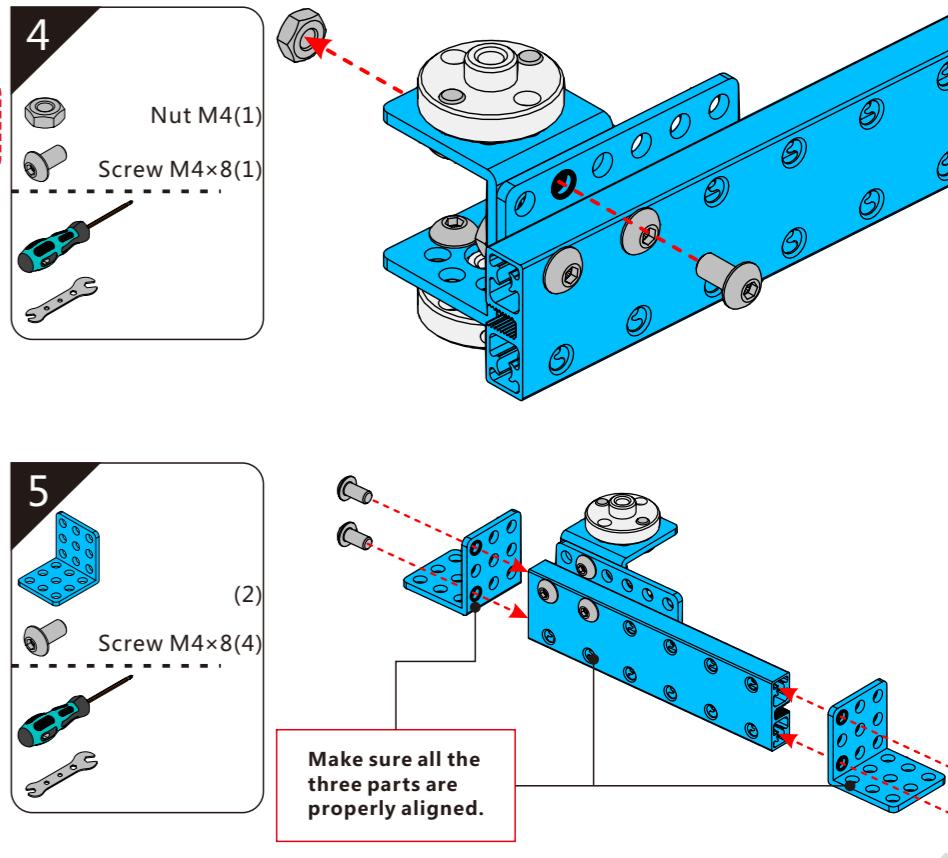
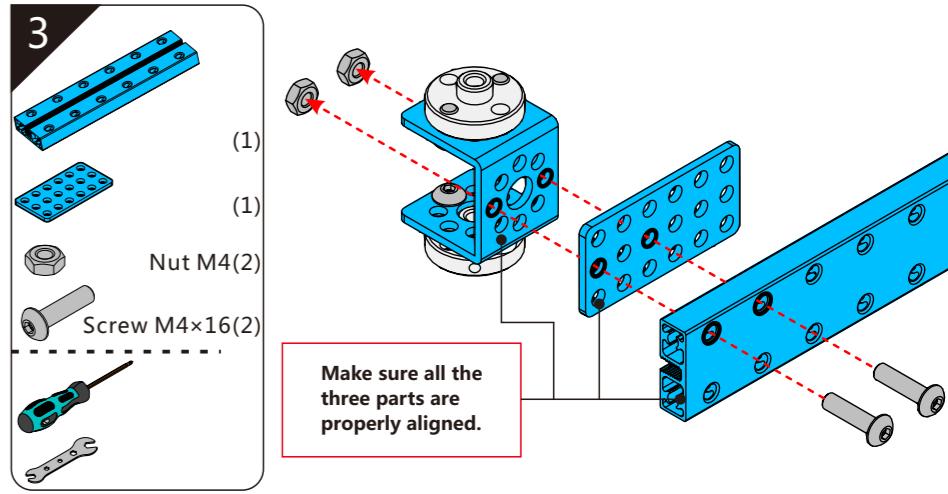
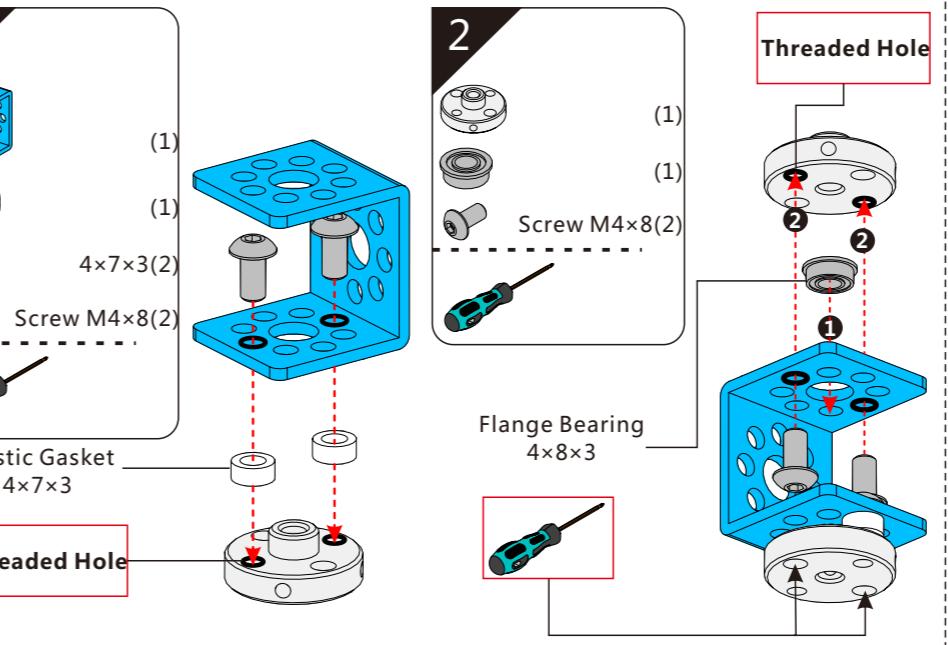
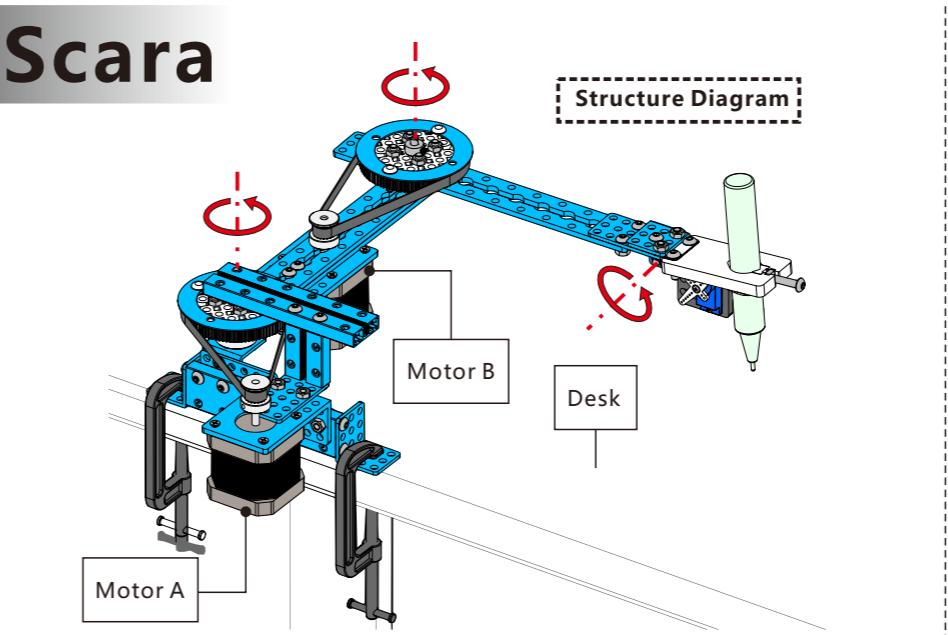
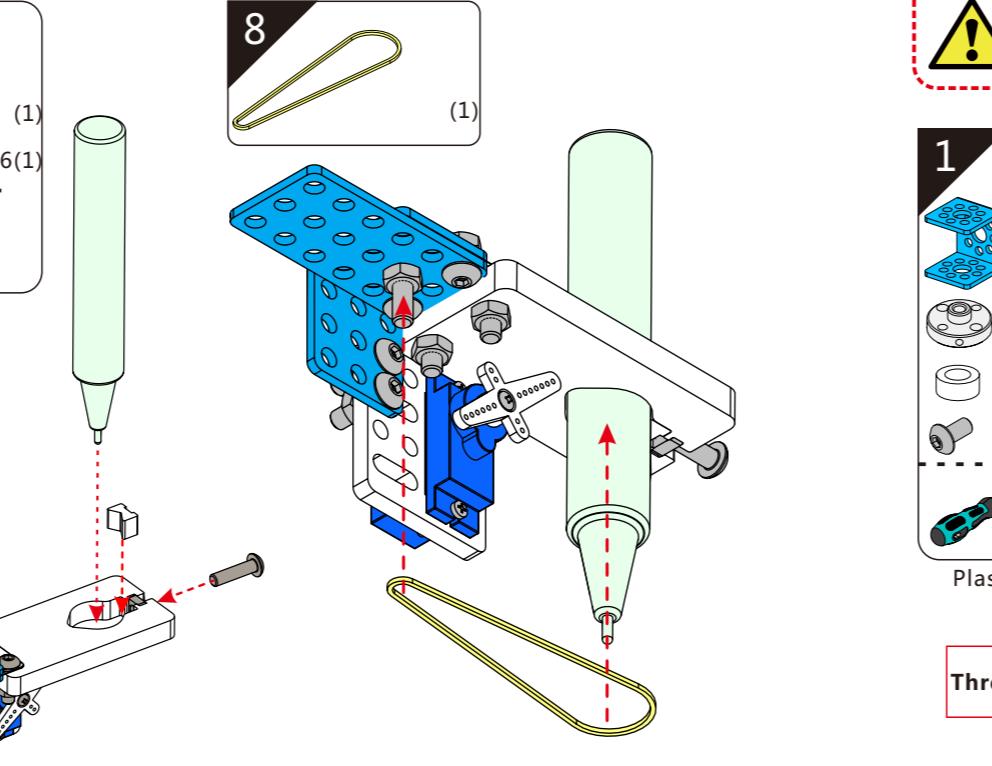
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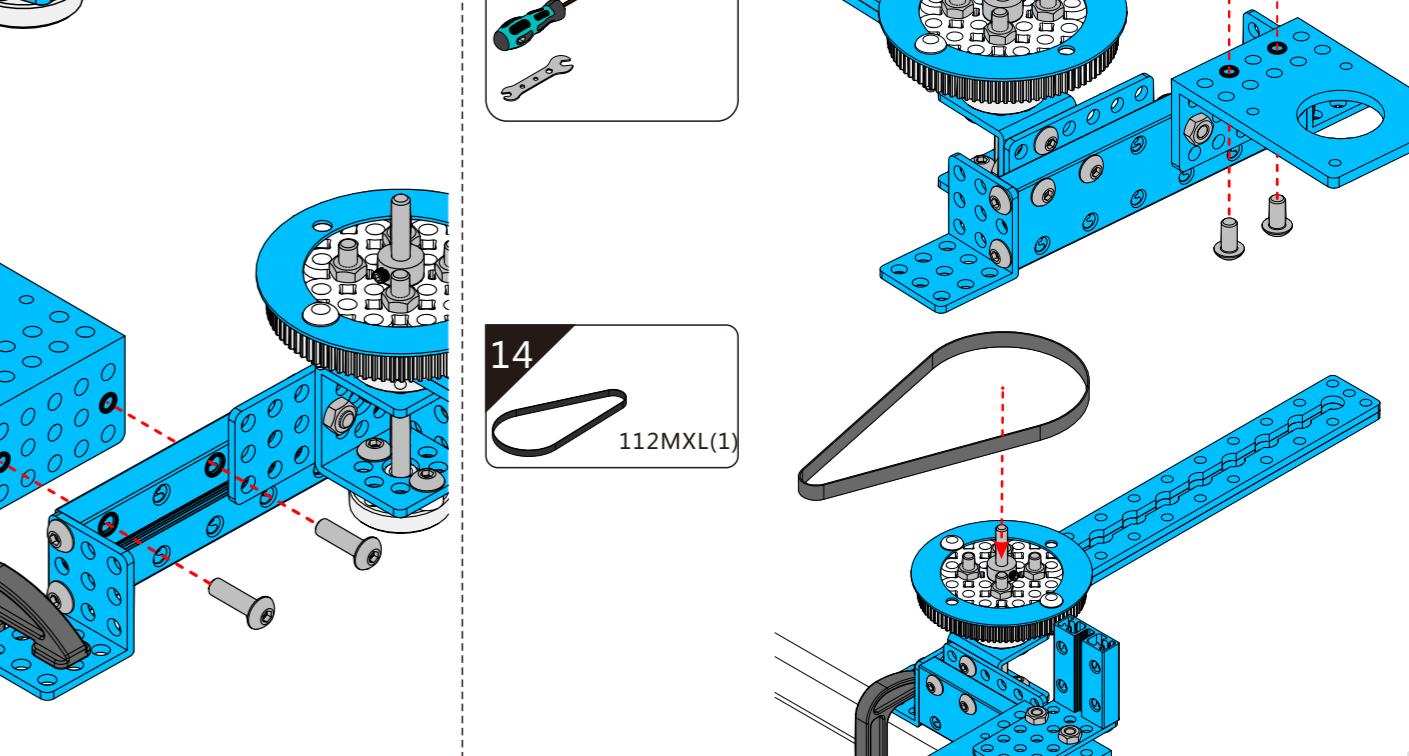
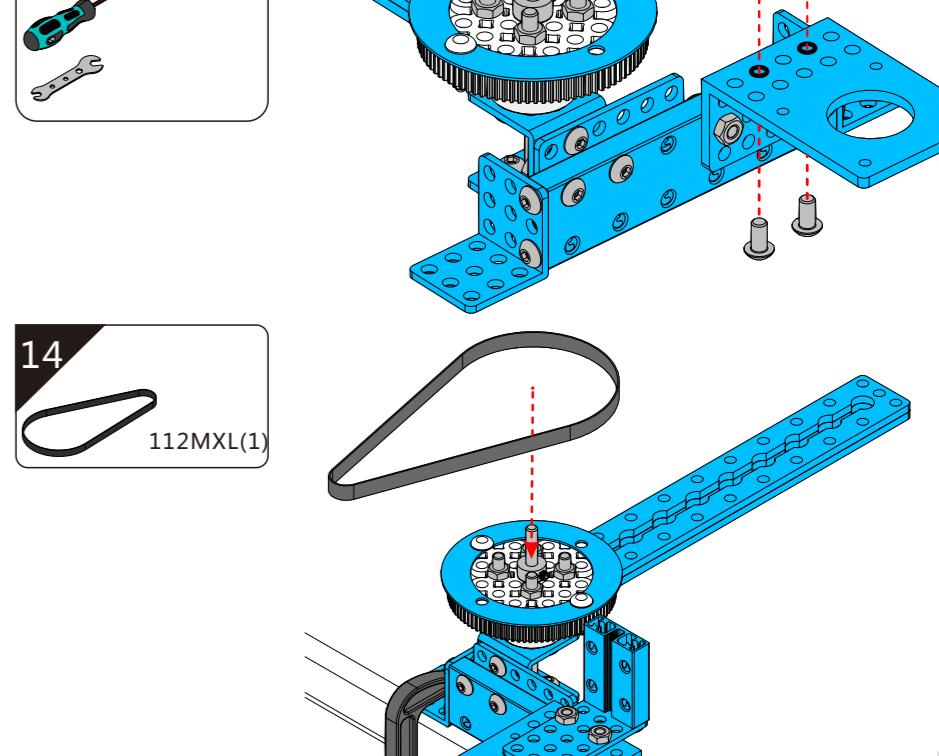
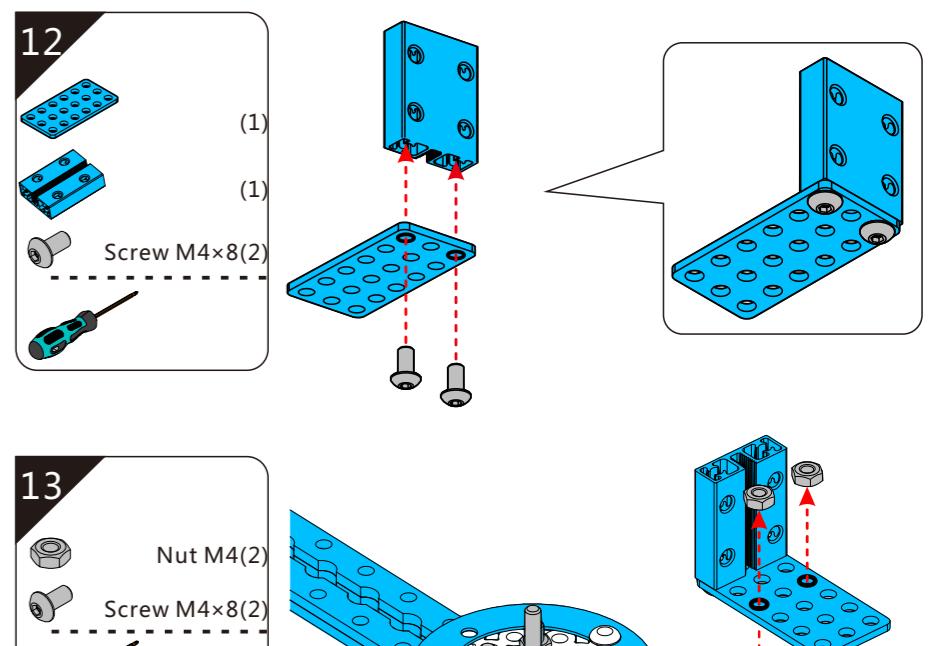
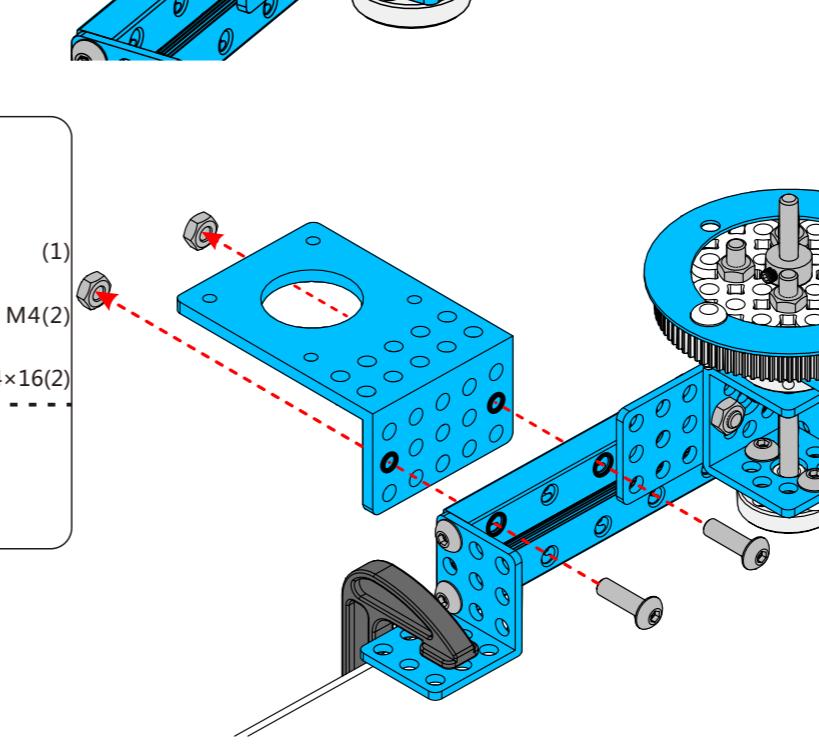
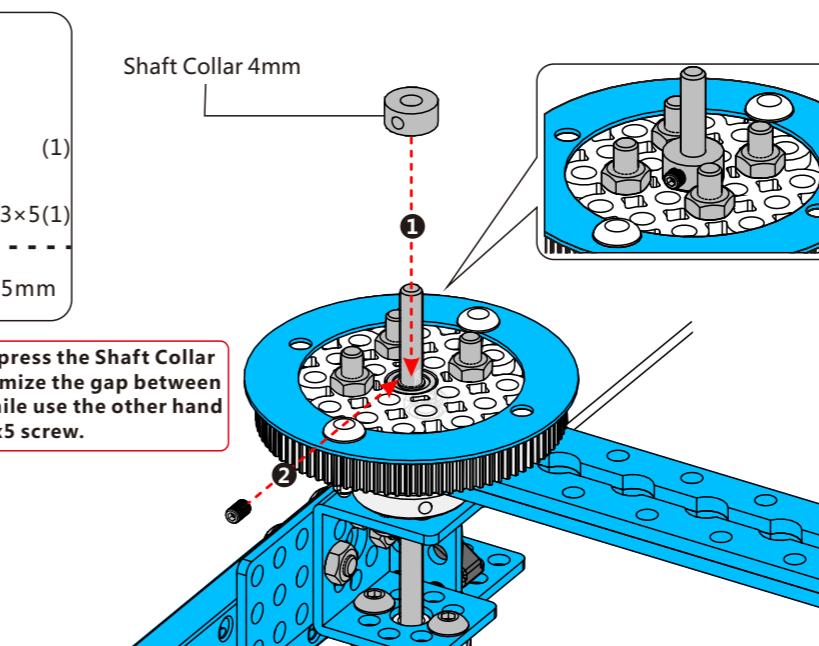
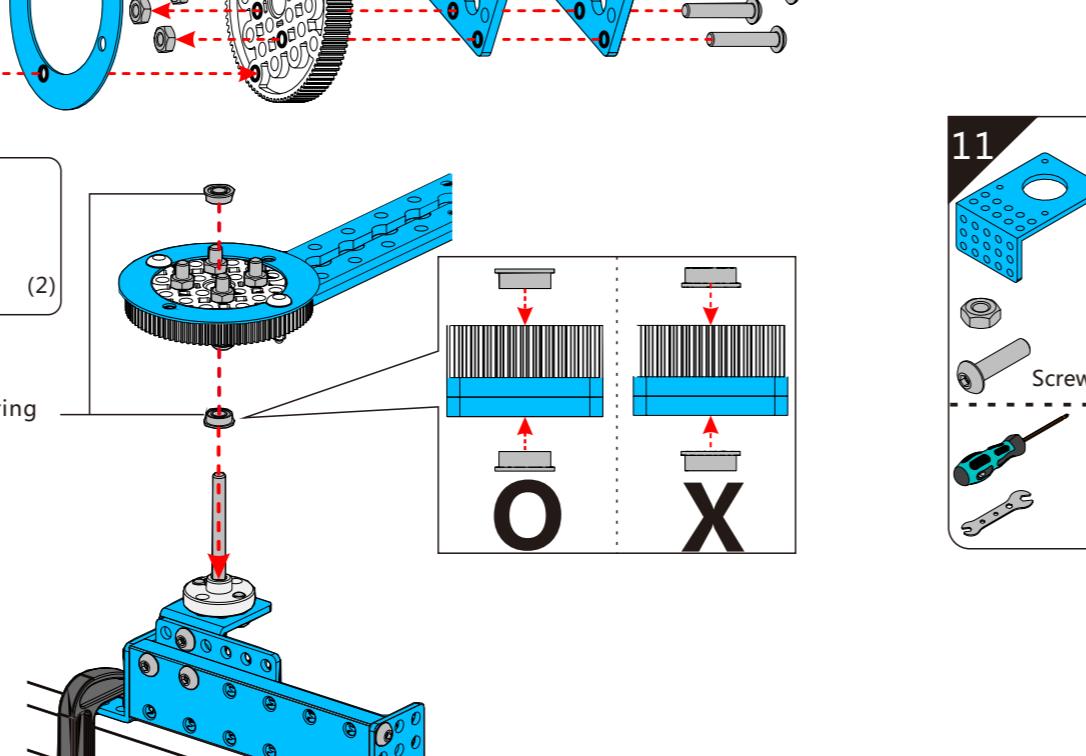
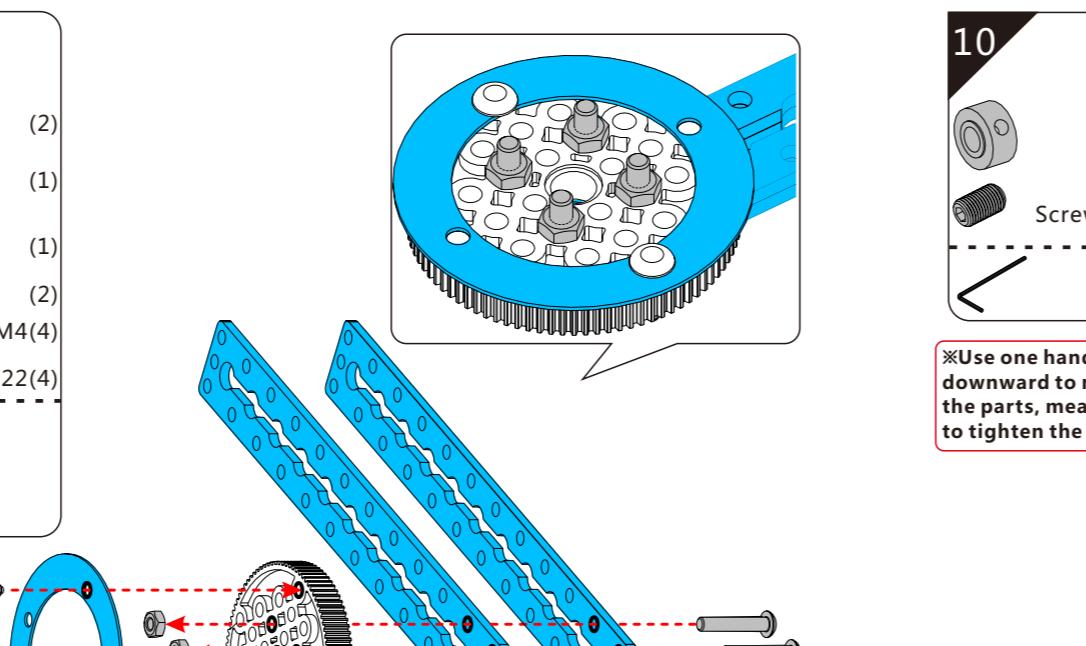
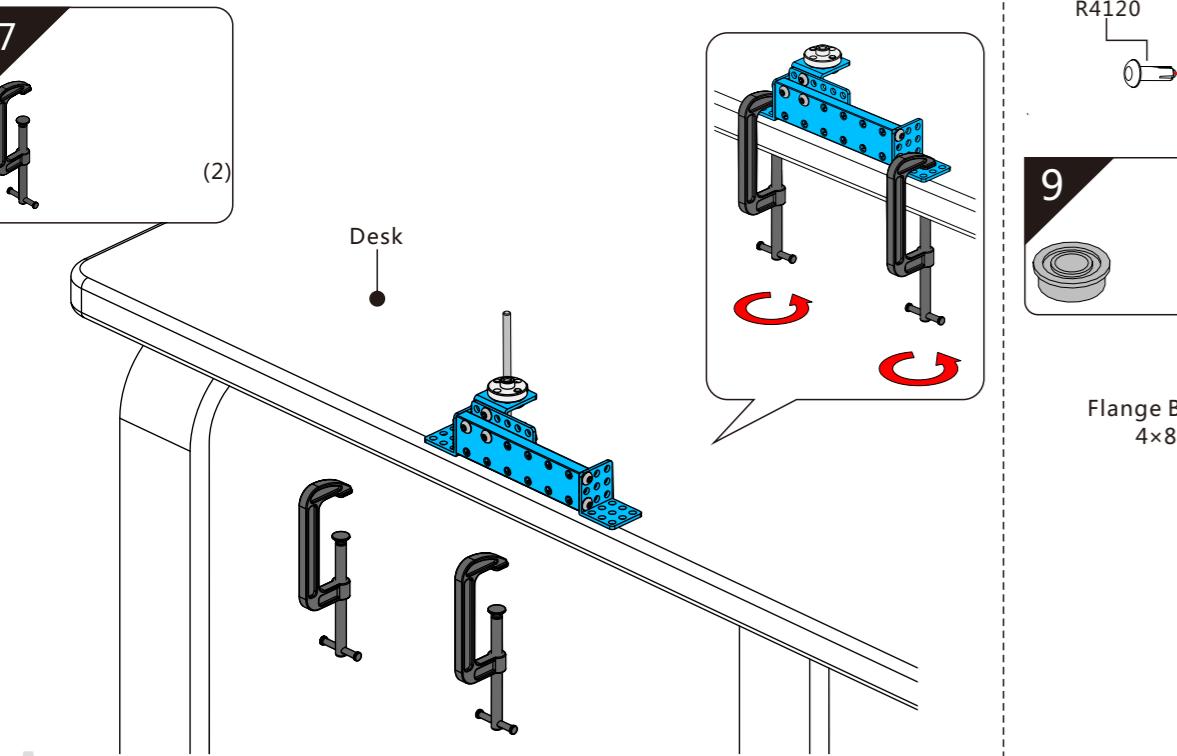
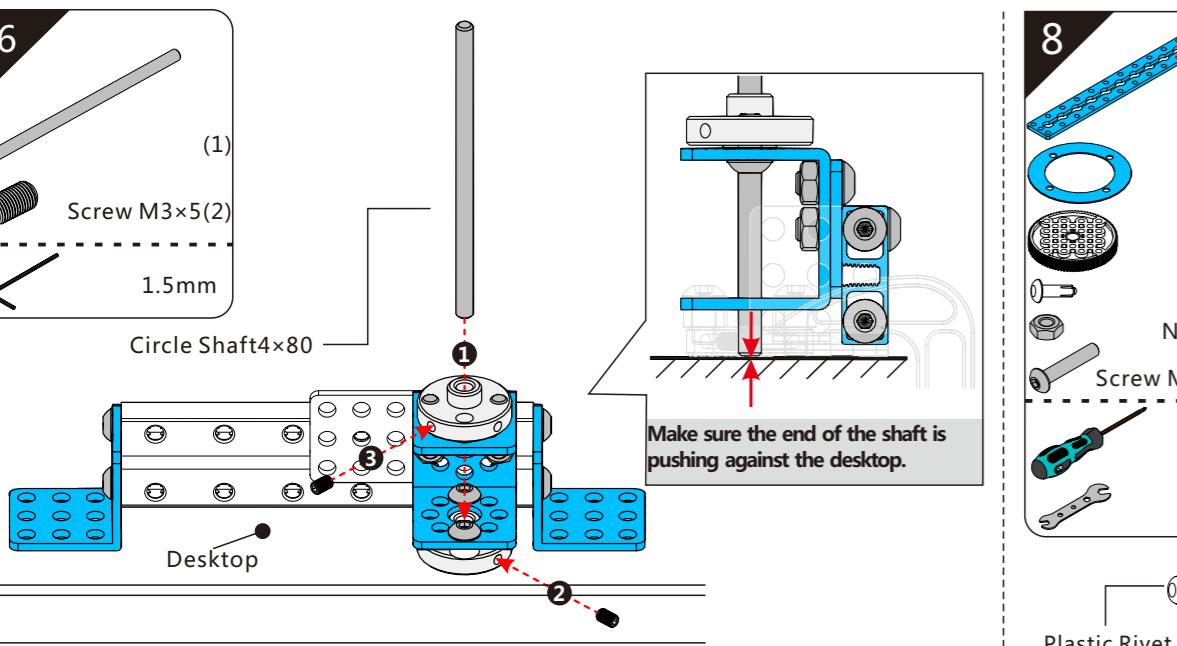


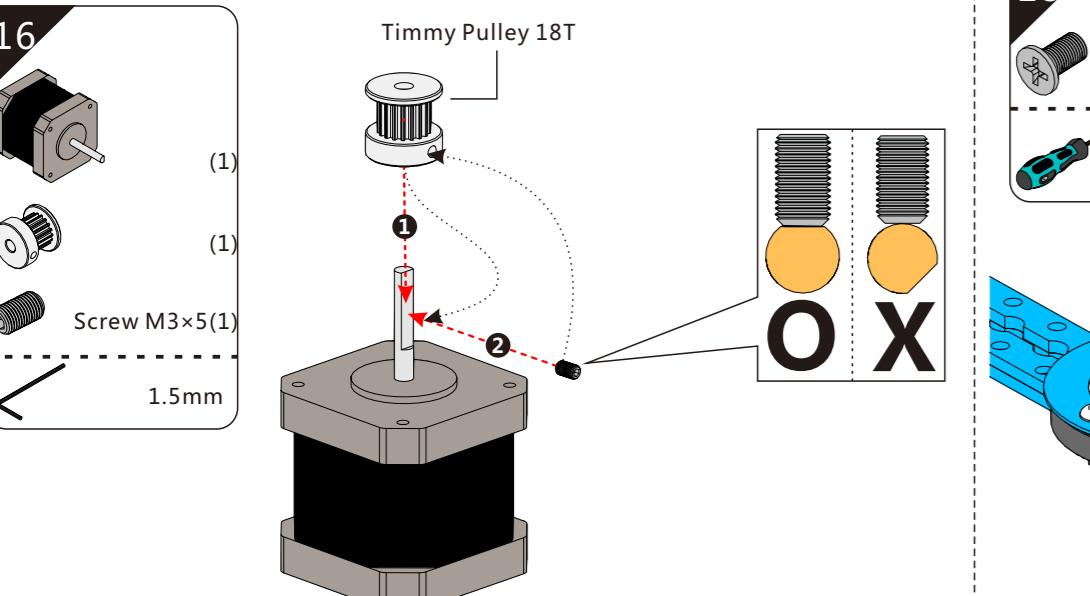
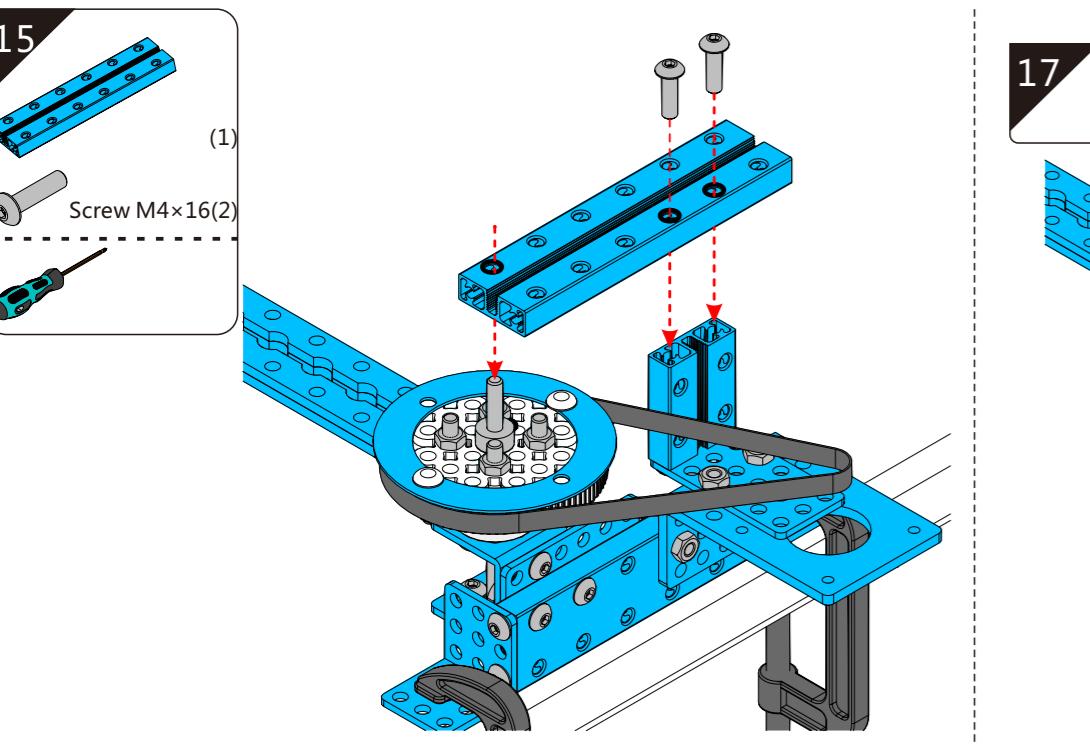
※ You can change the installation angle of the Steering Wheel to adjust the height of pen.



※ Pay attention to the direction when you installing the Square Nut M4, otherwise the Pen Holder will be broken.







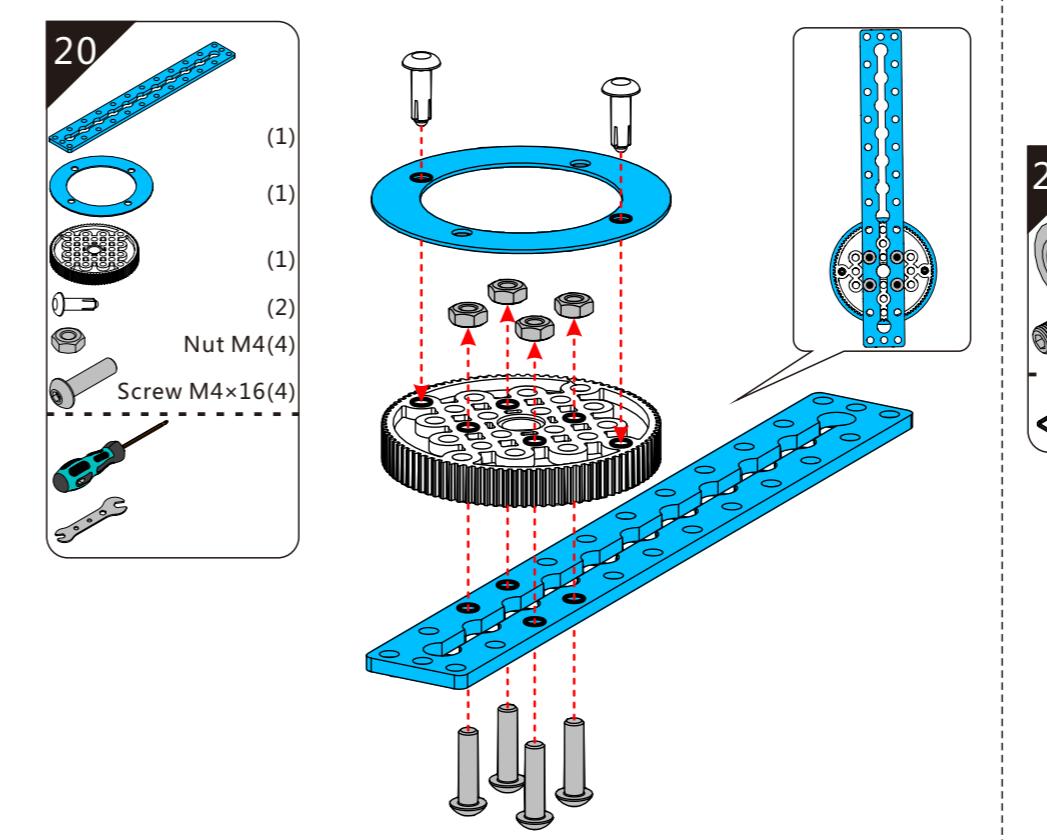
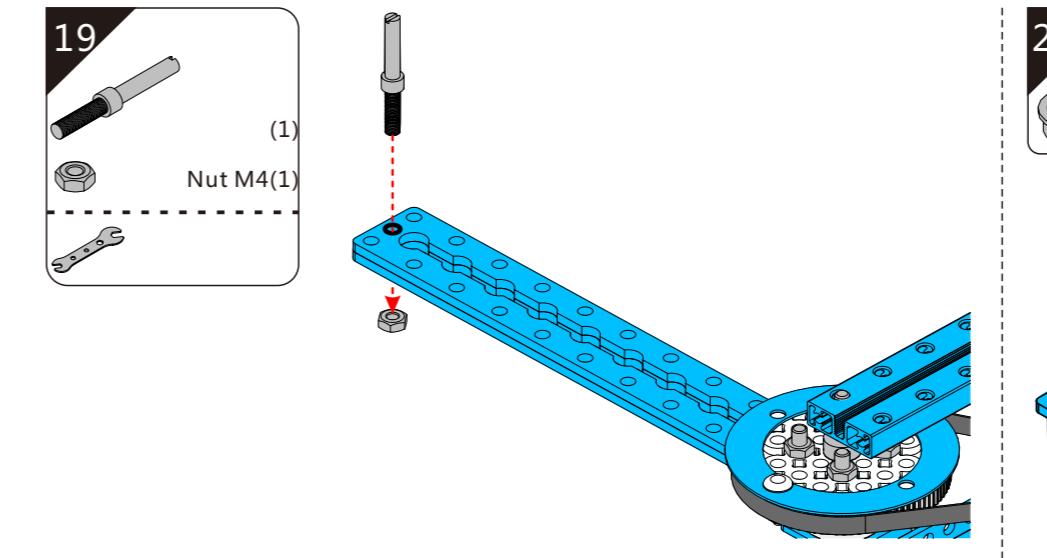
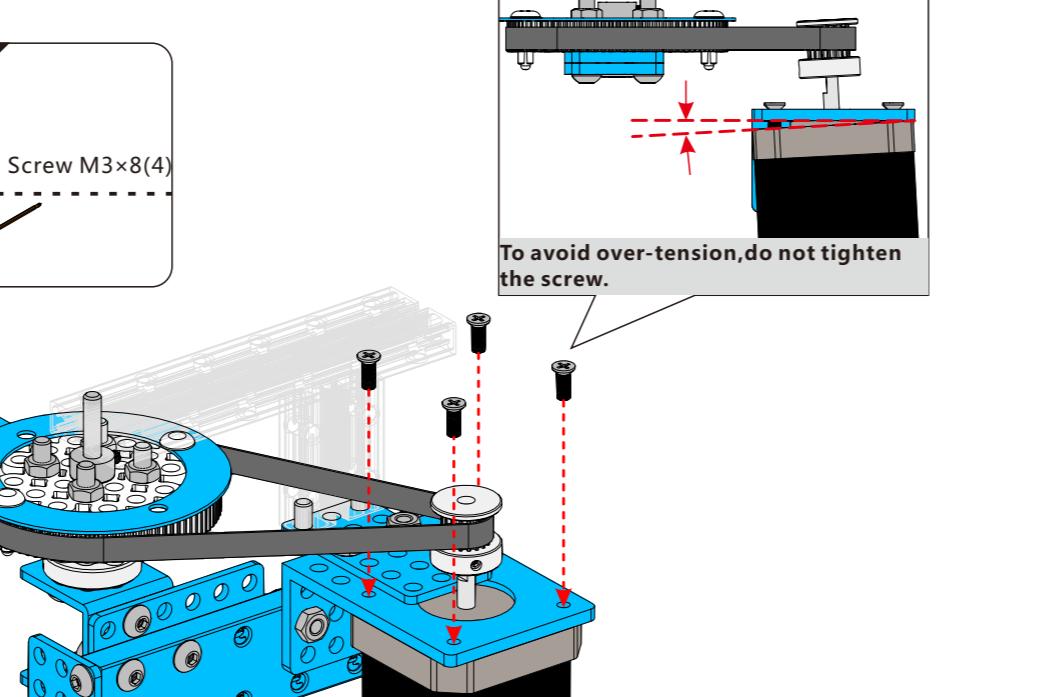
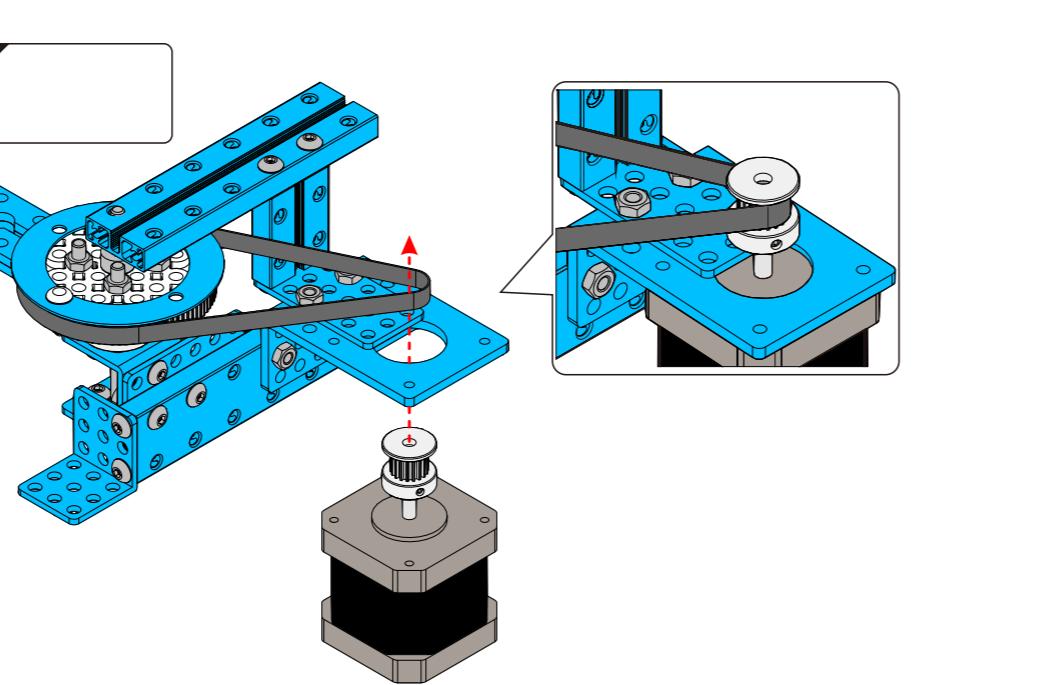
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mScara

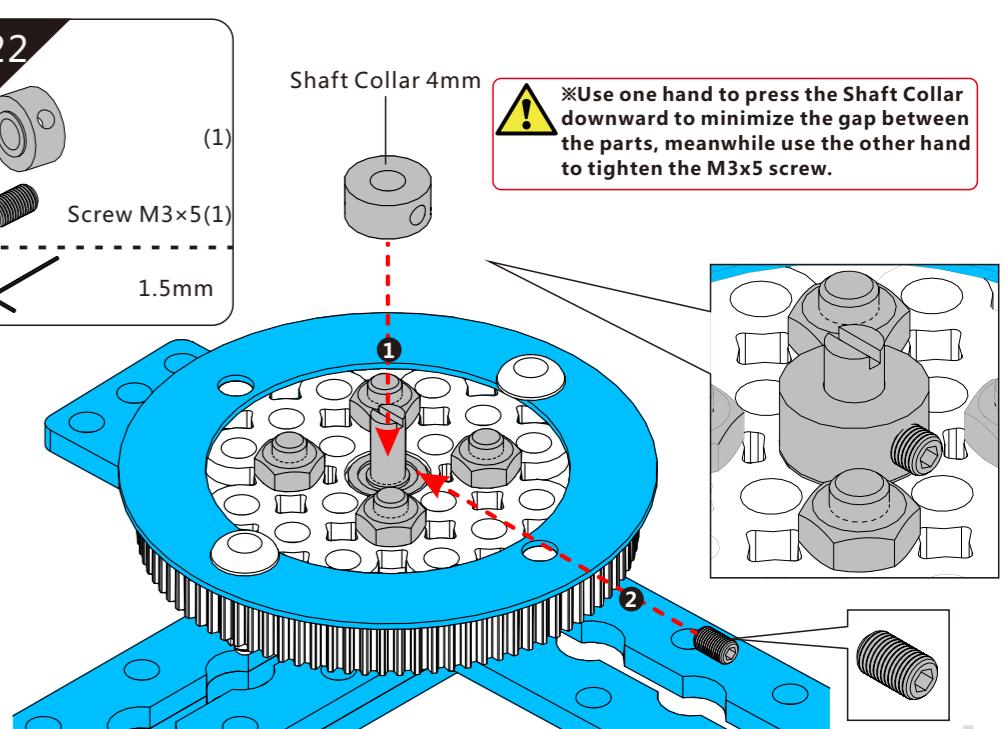
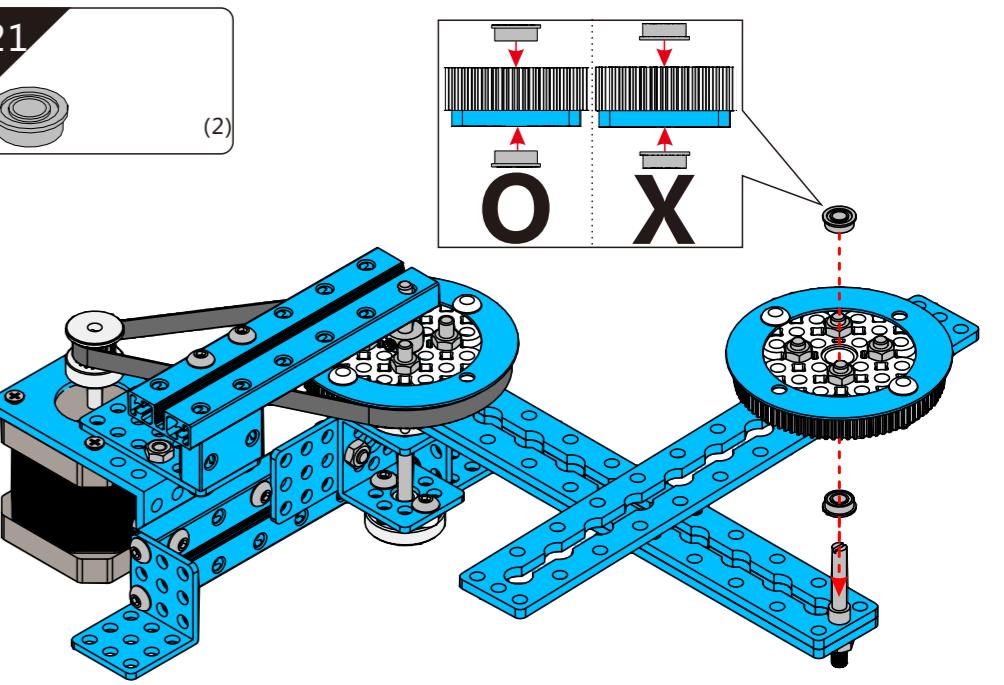
mSpider

mEggbot

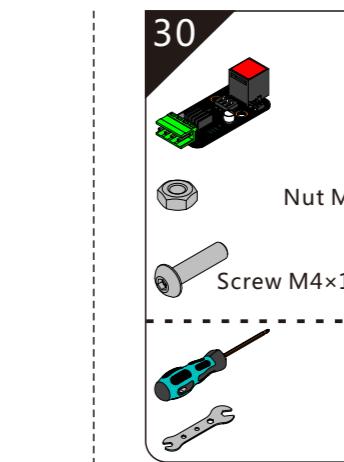
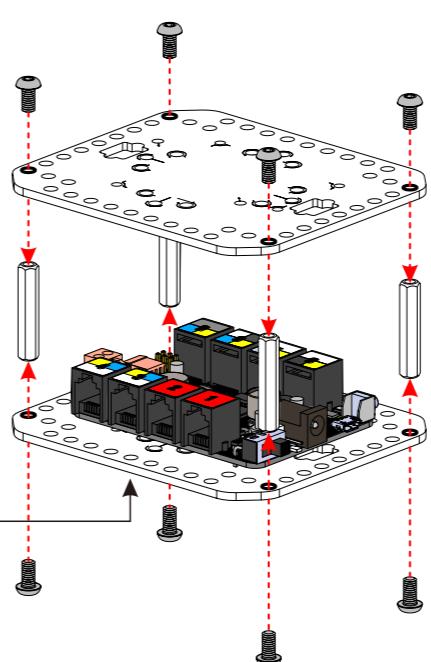
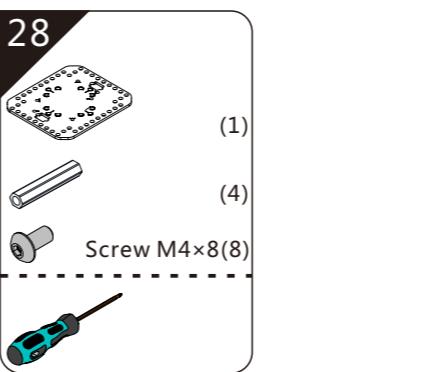
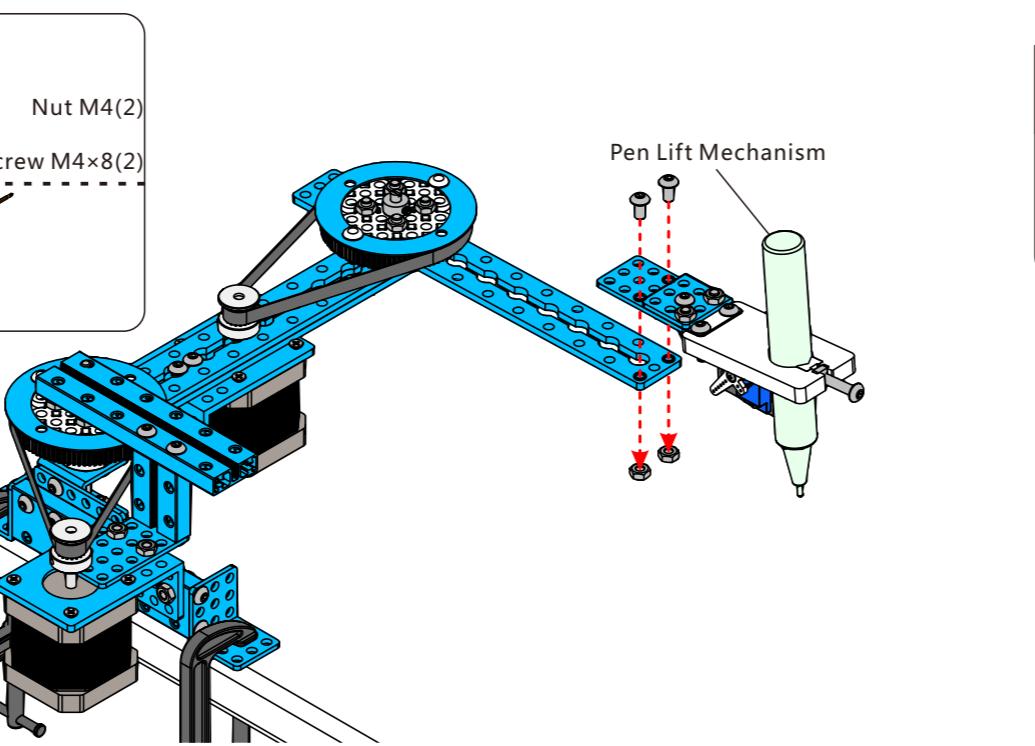
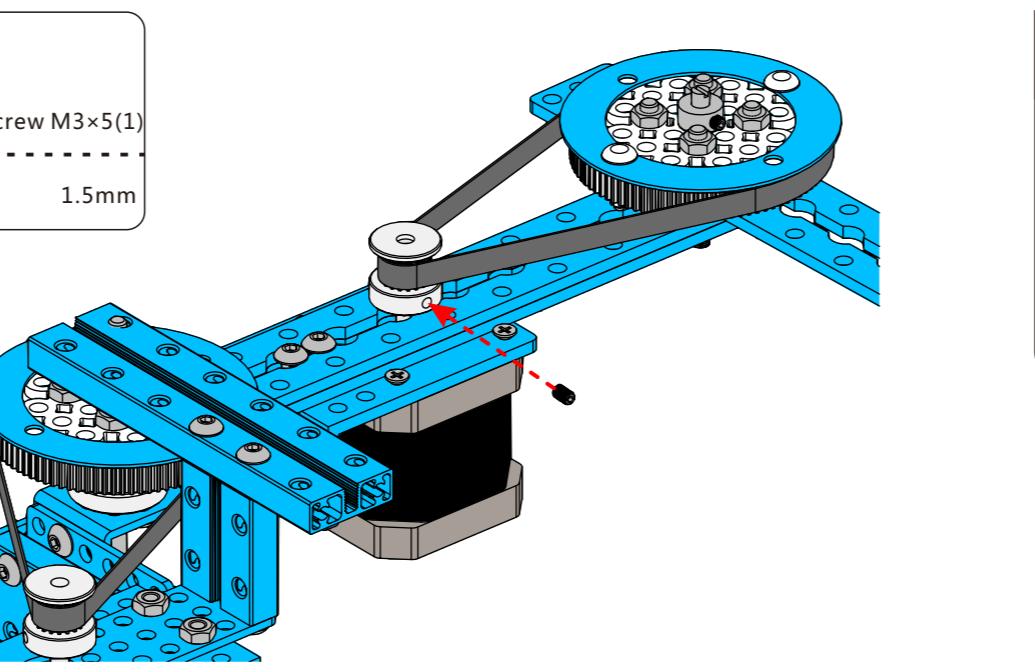
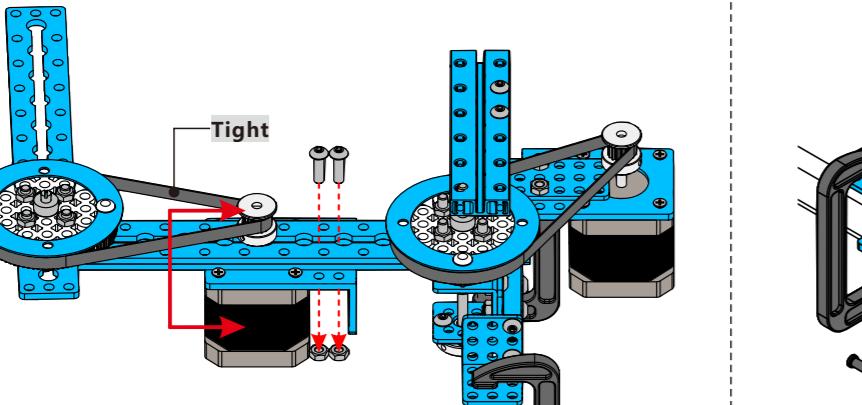
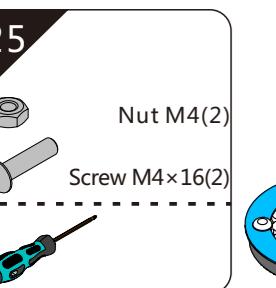
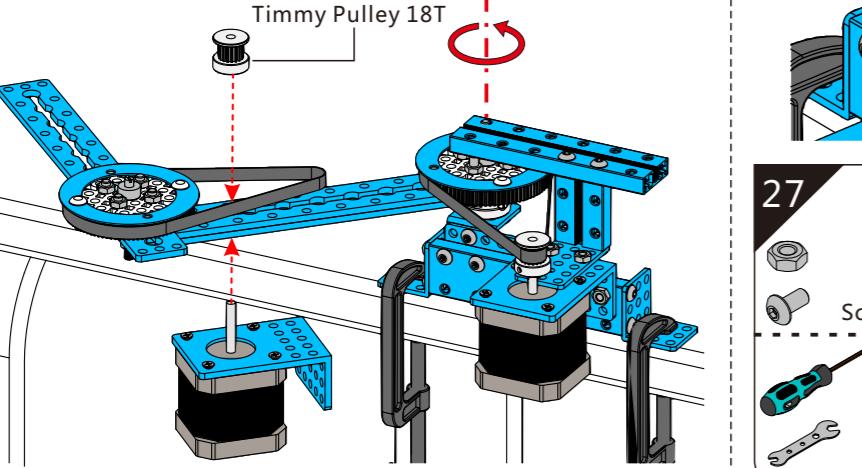
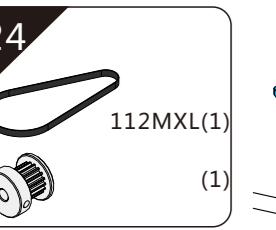
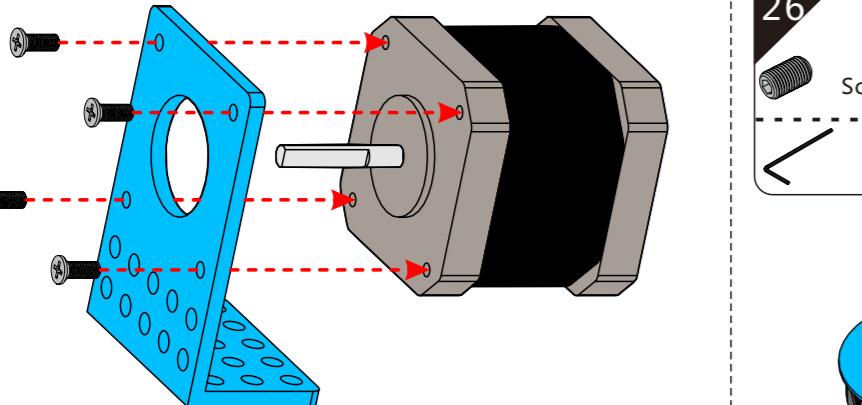
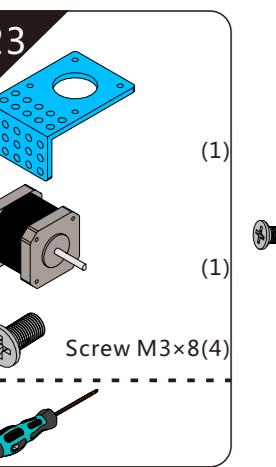
mCar

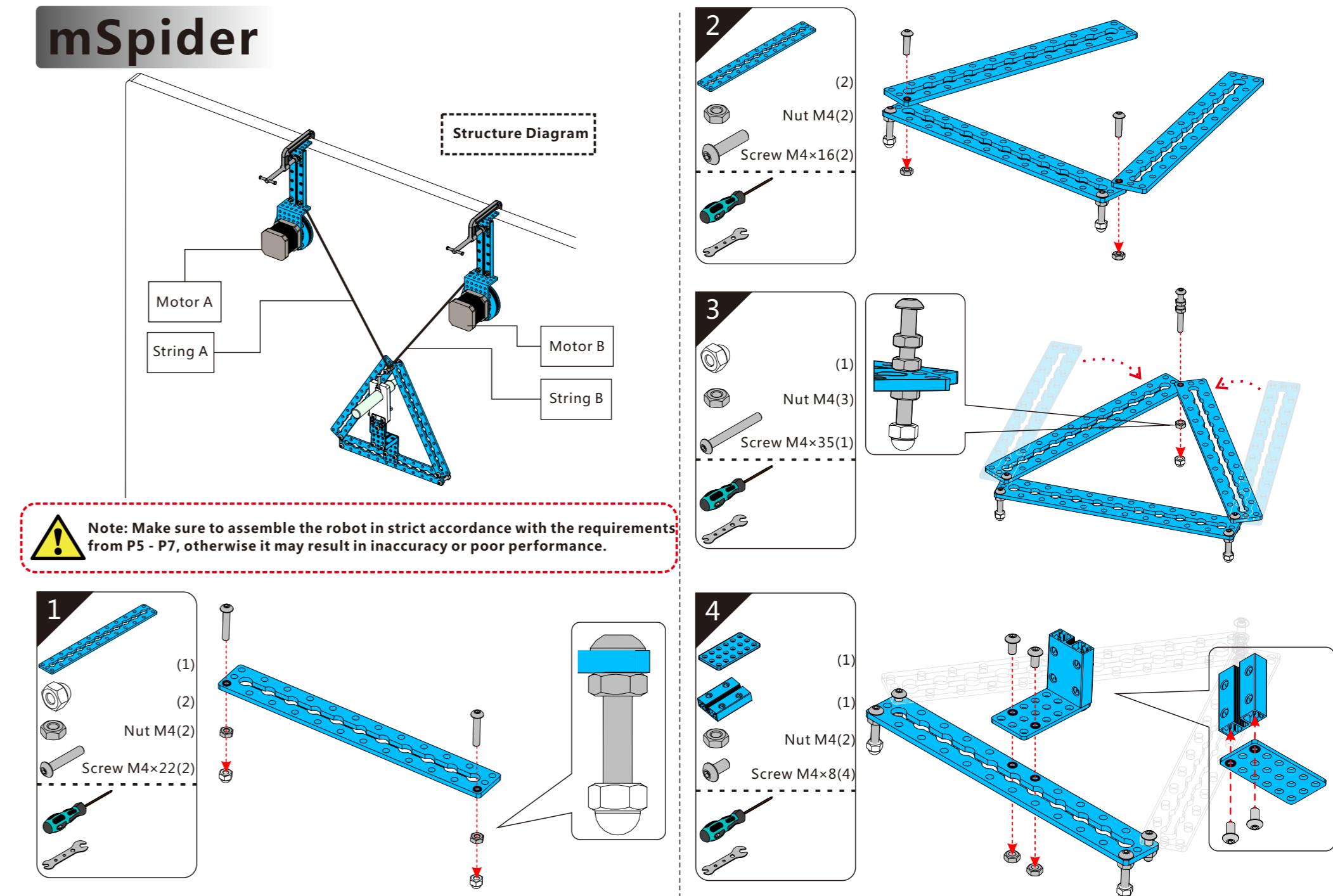
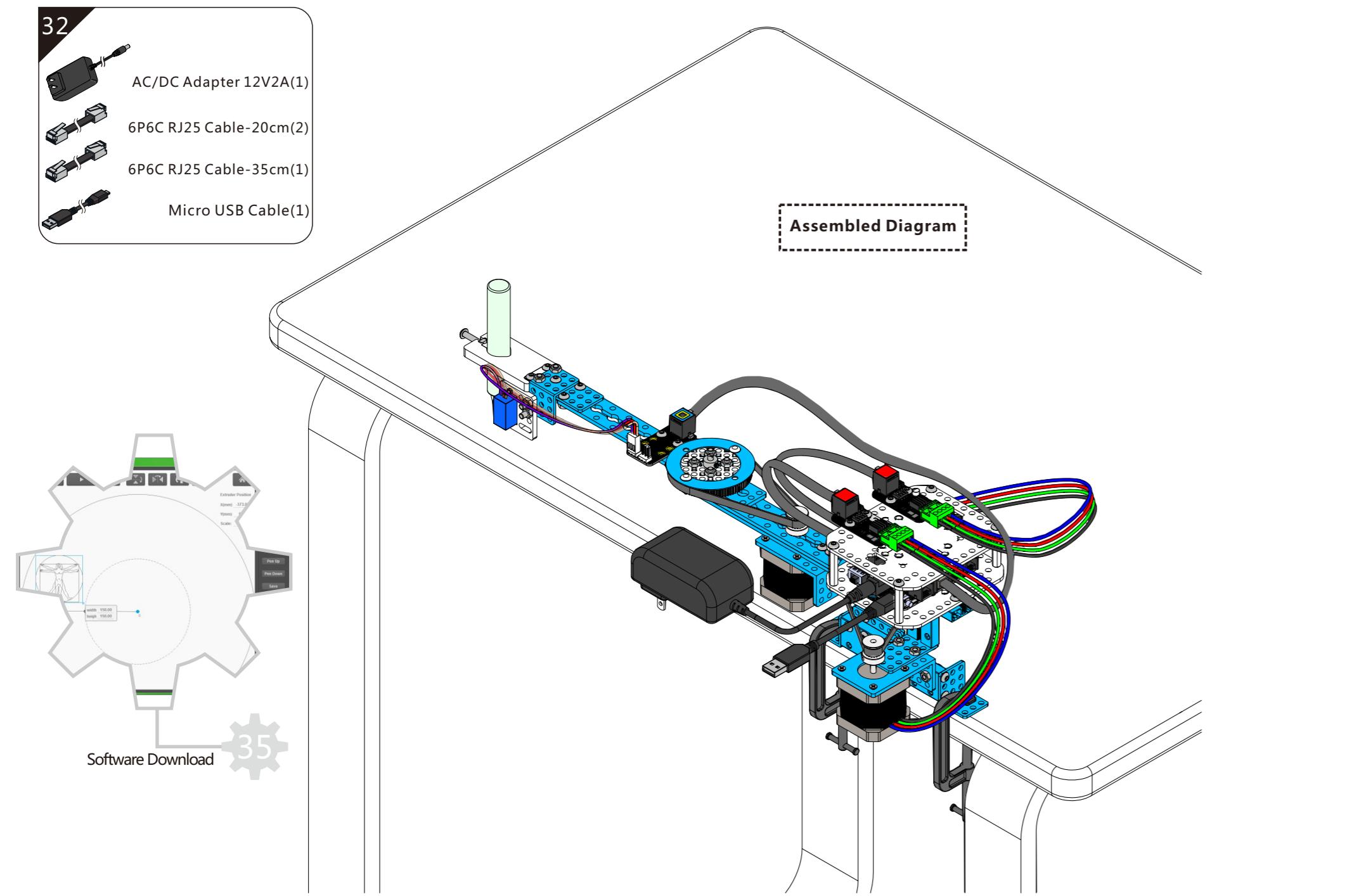


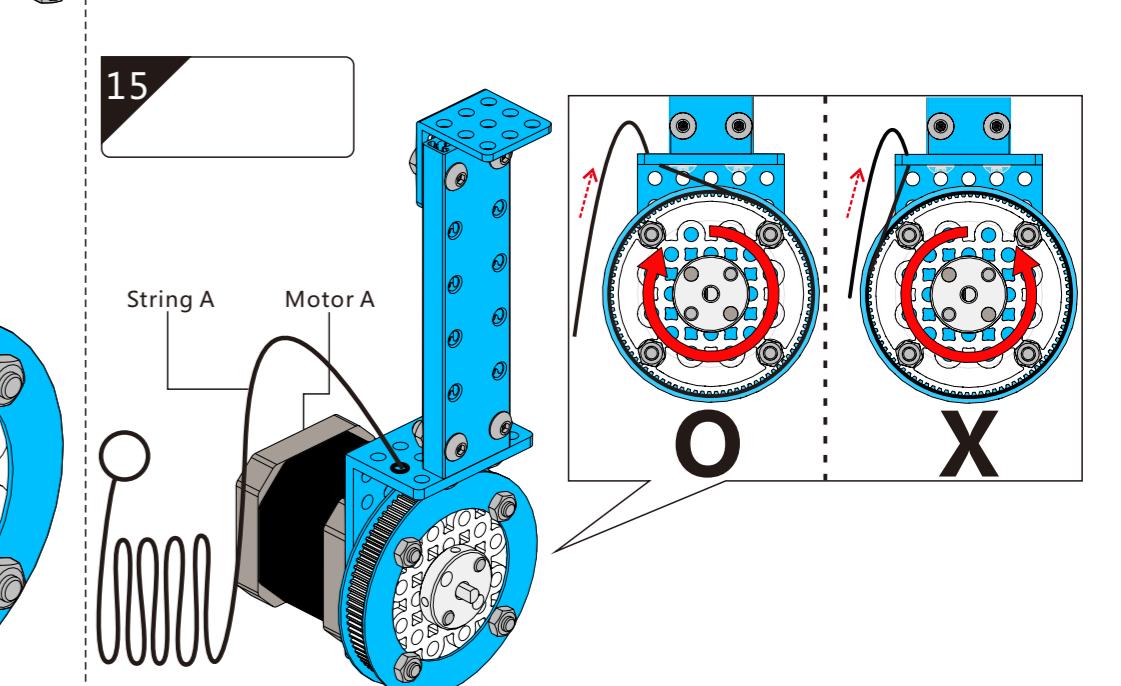
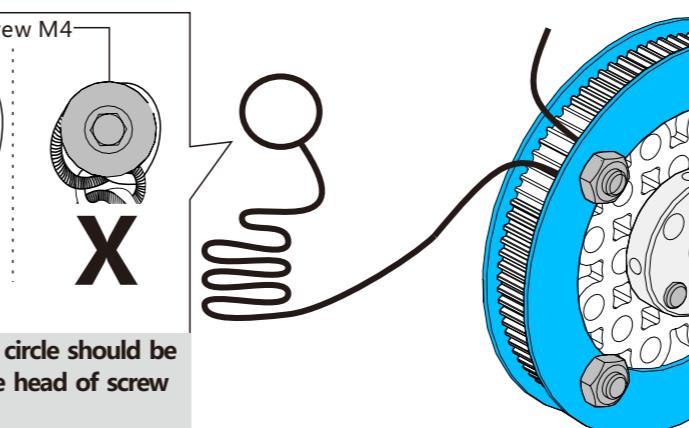
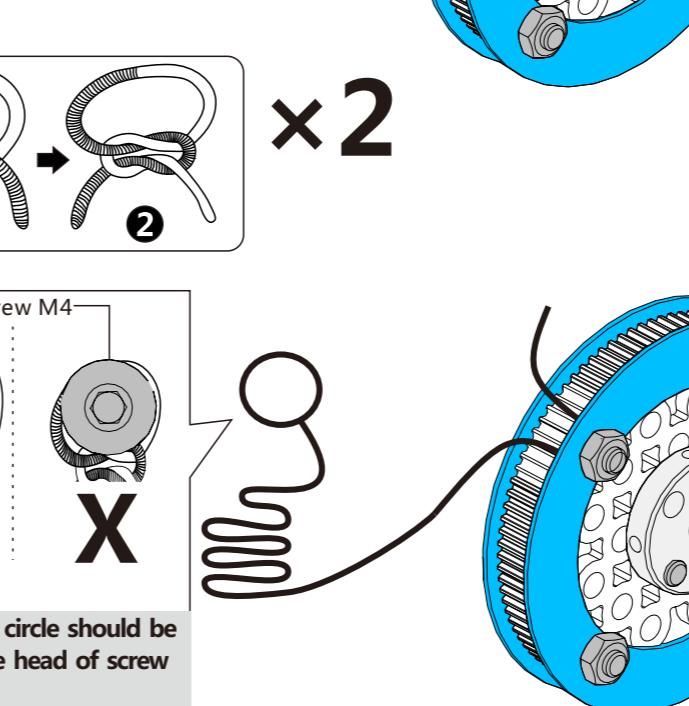
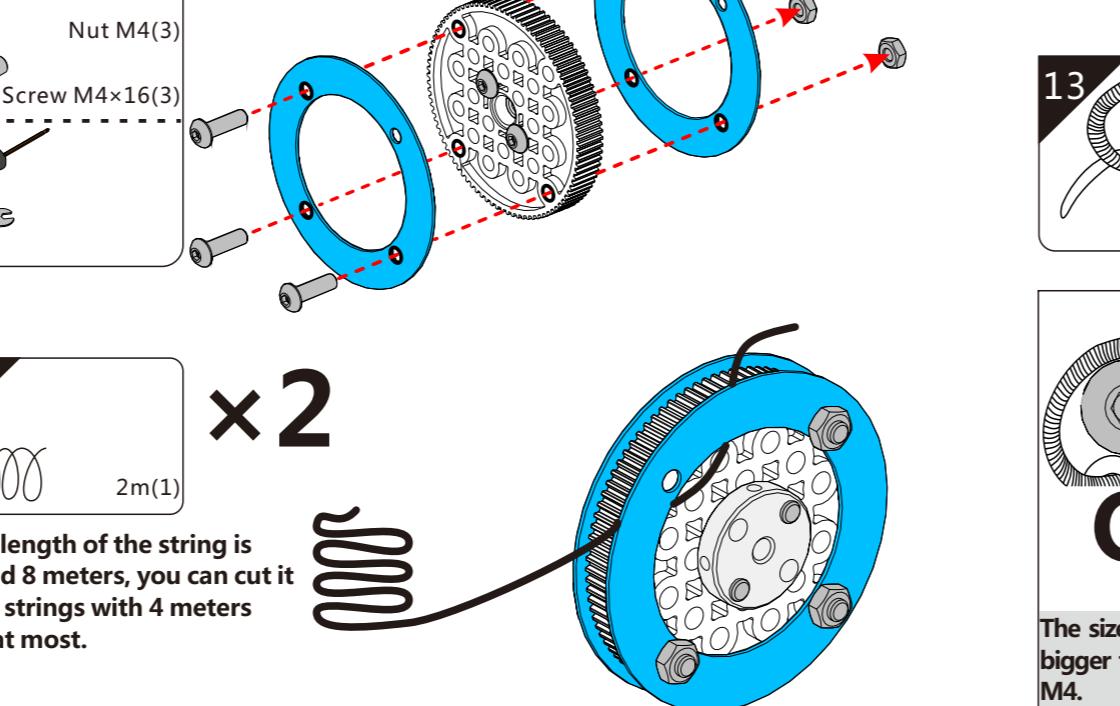
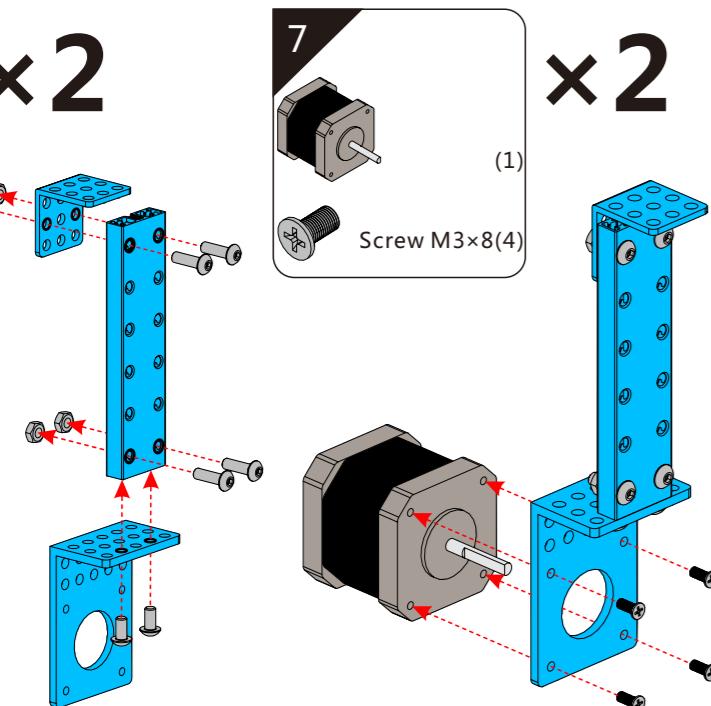
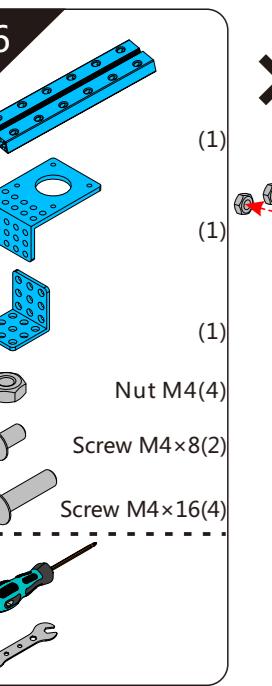
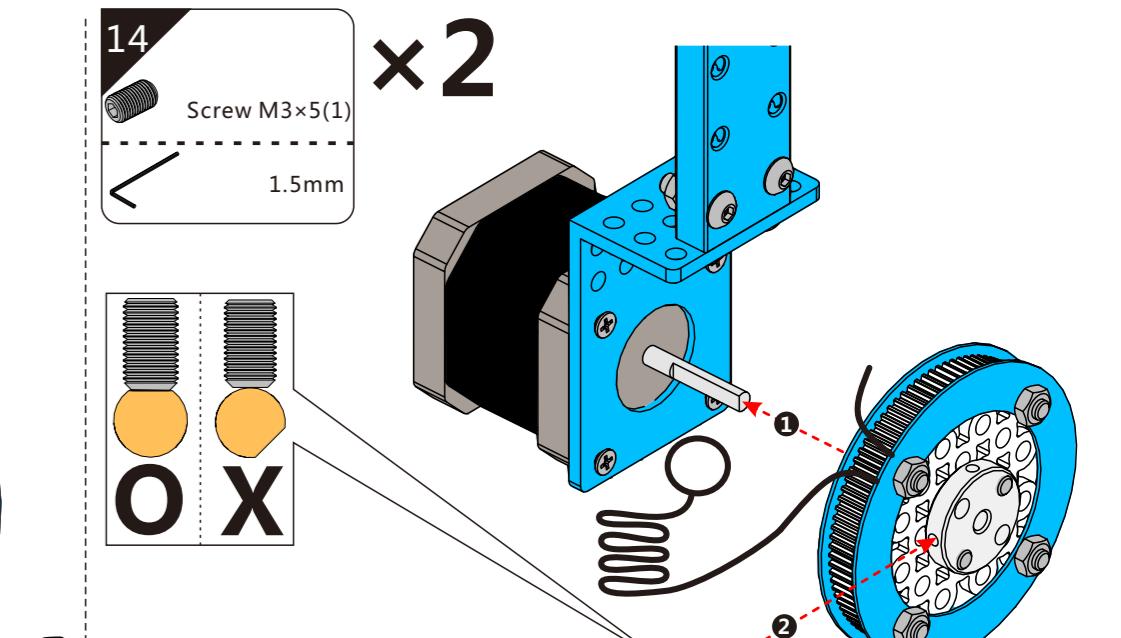
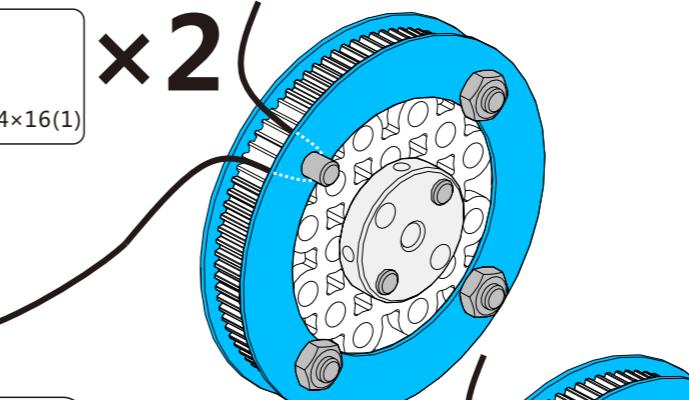
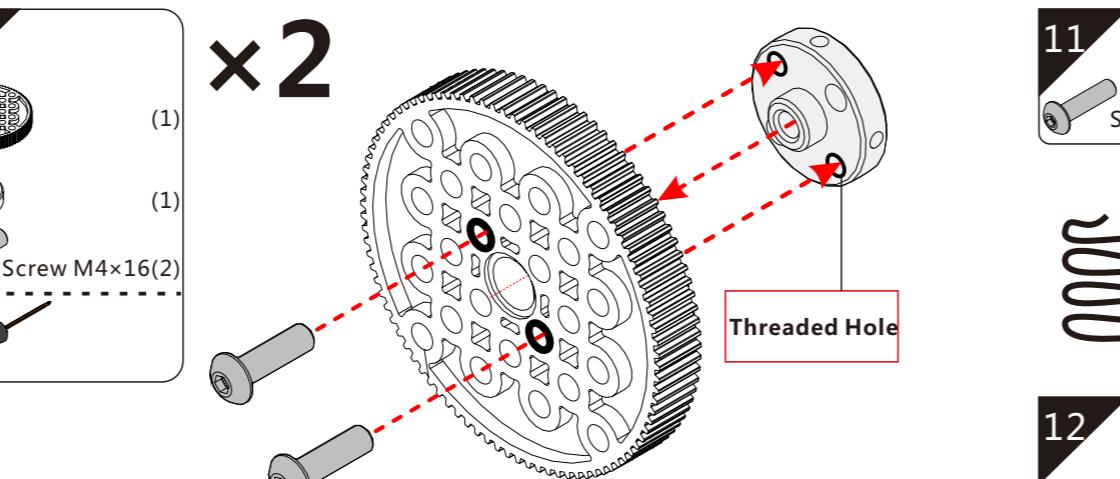
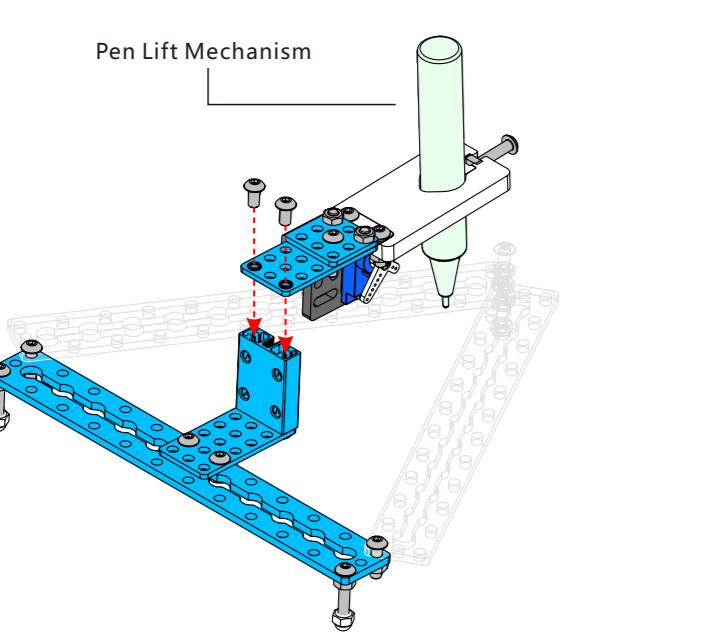
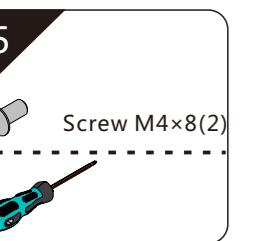
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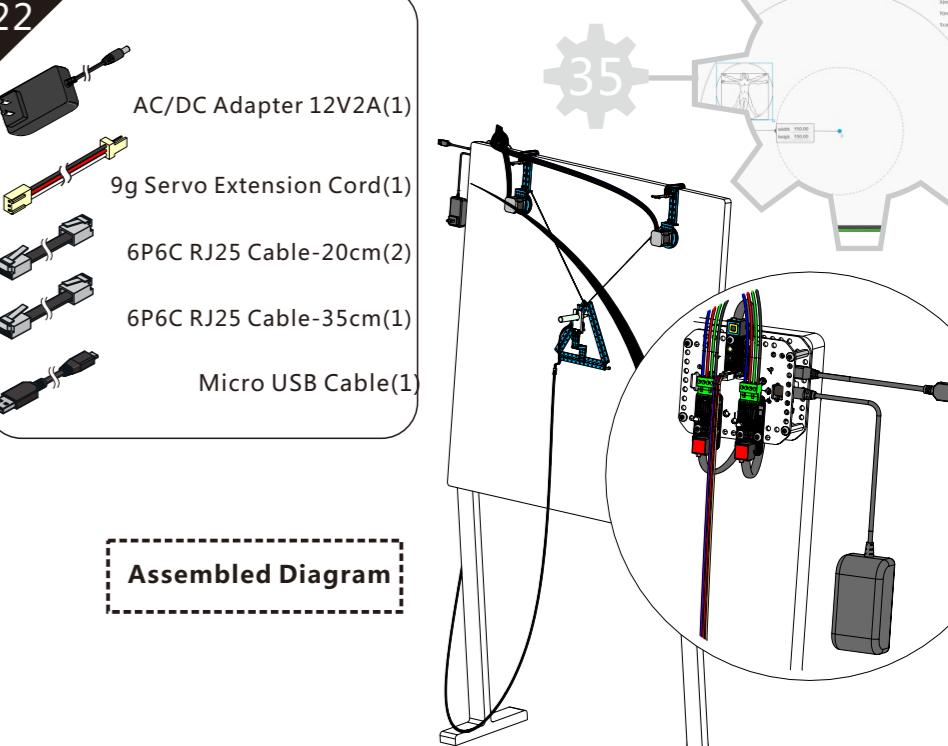
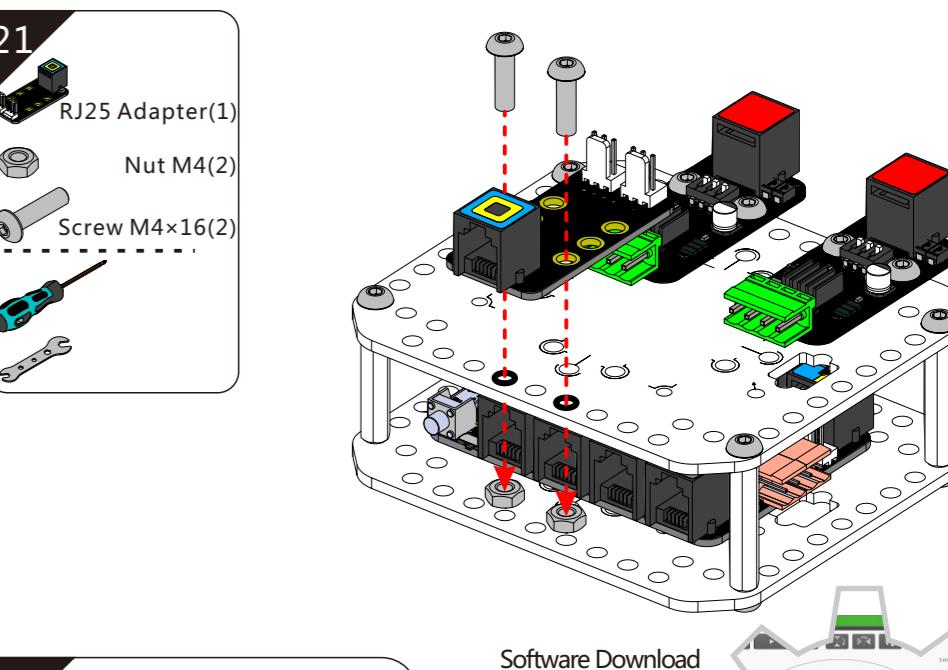
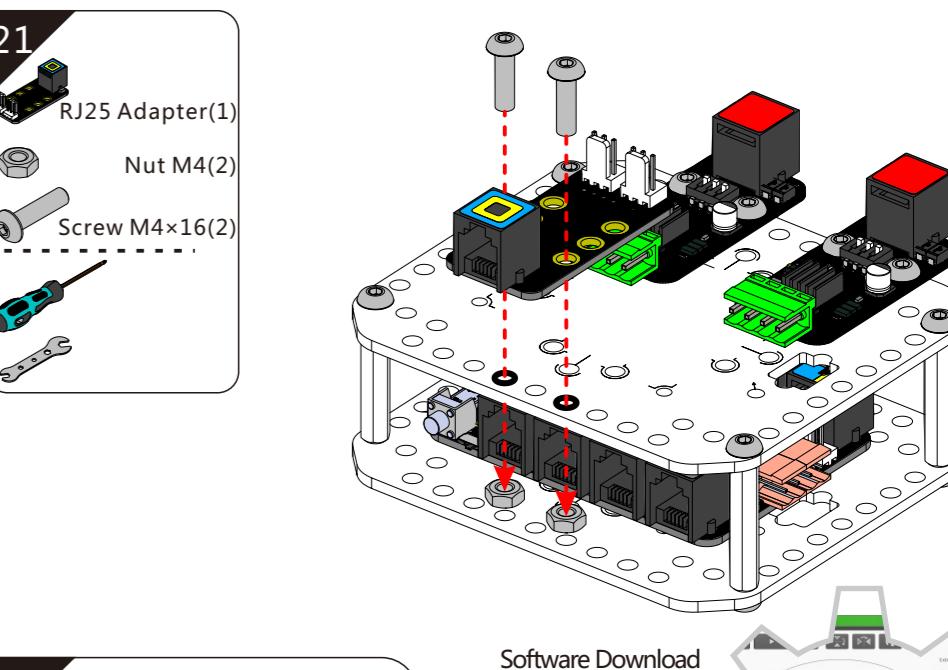
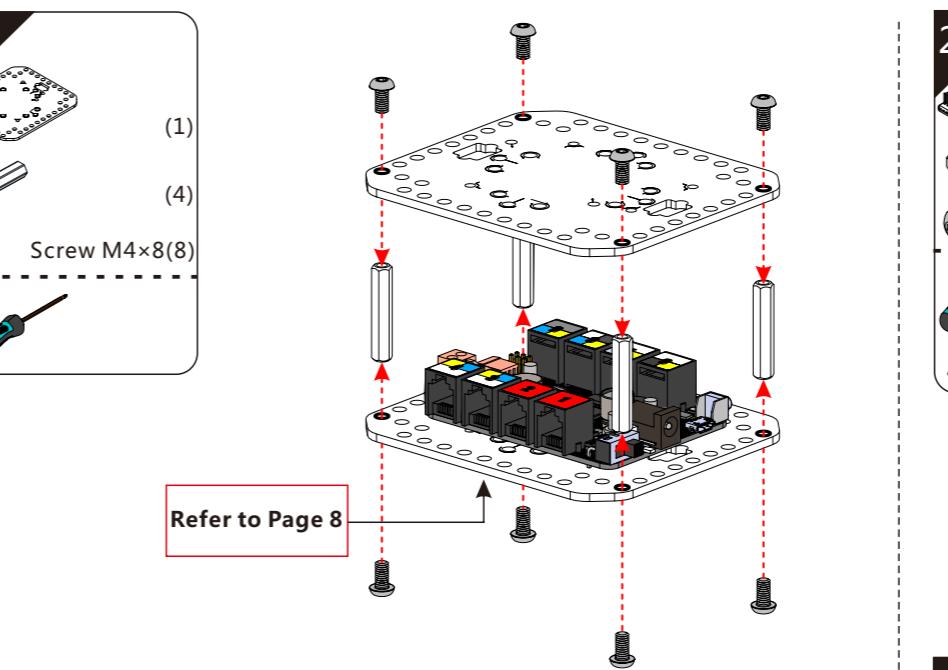
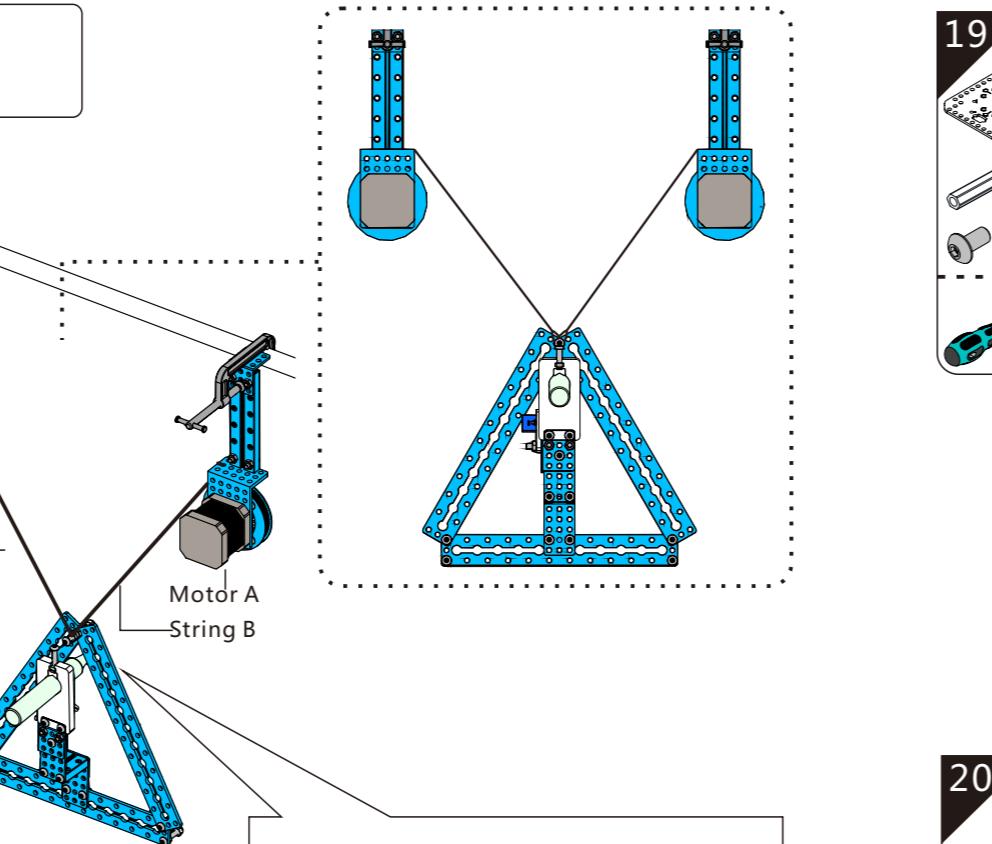
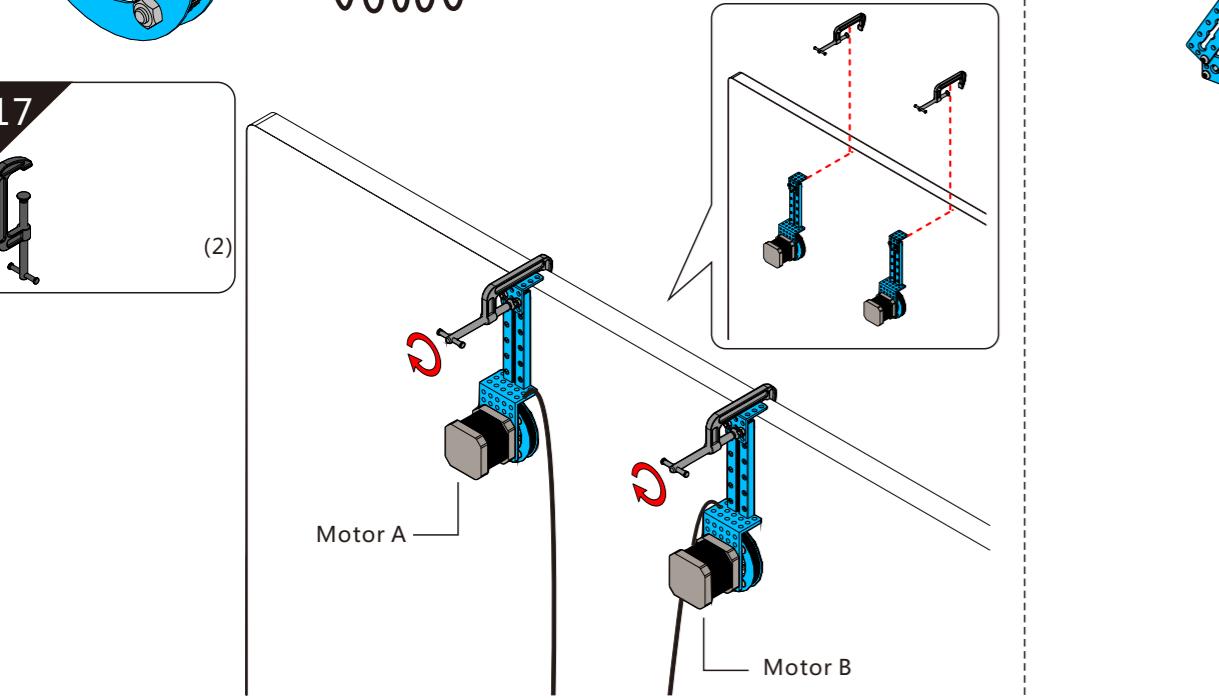
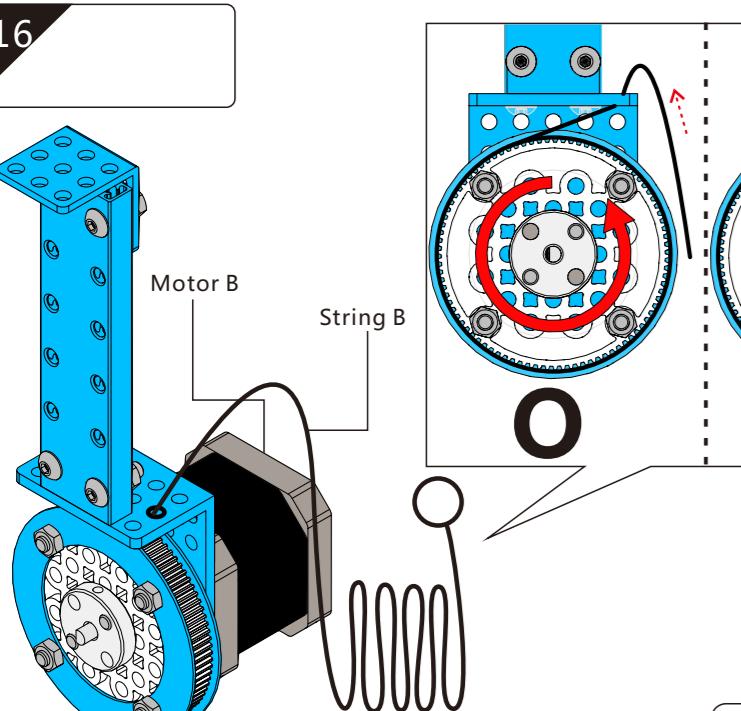


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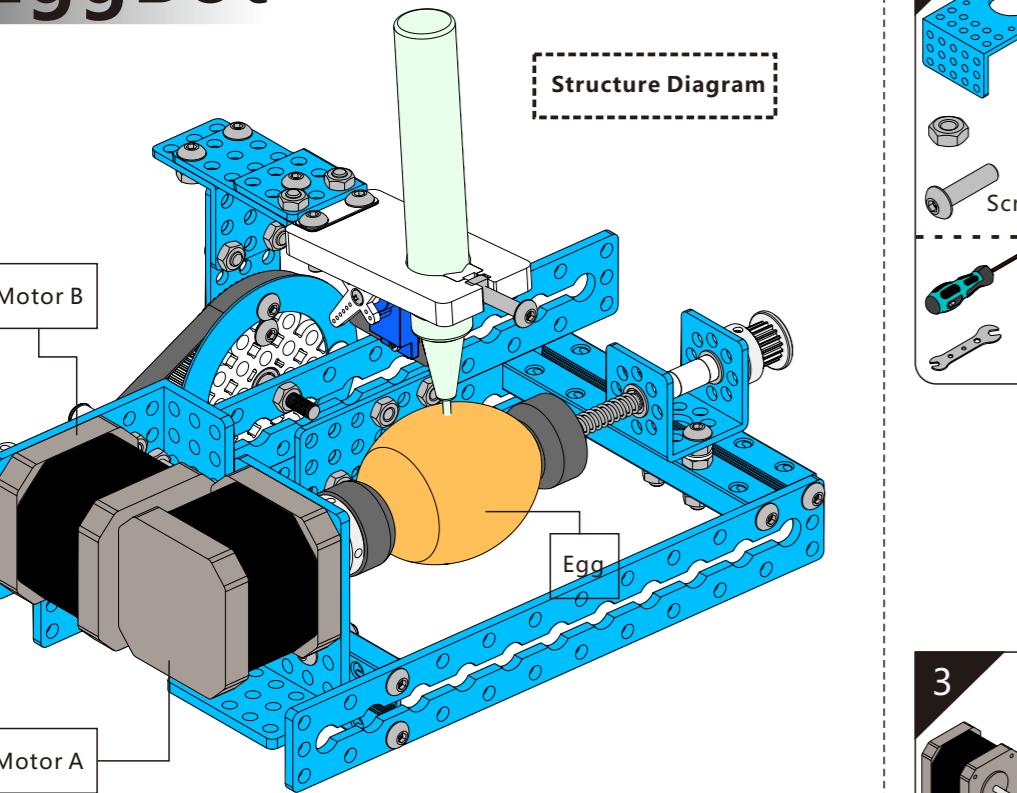






# mEggBot

Motor B



Note: Make sure to assemble the robot in strict accordance with the requirements from P5 - P7, otherwise it may result in inaccuracy or poor performance.

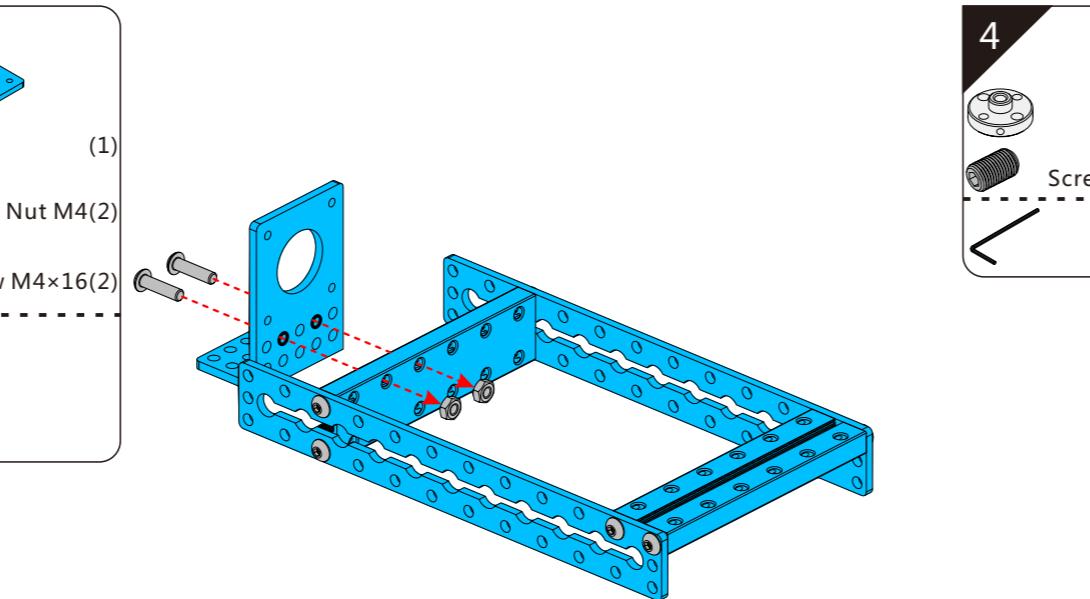
1

(2)

(2)

Screw M4×8(8)

(1)

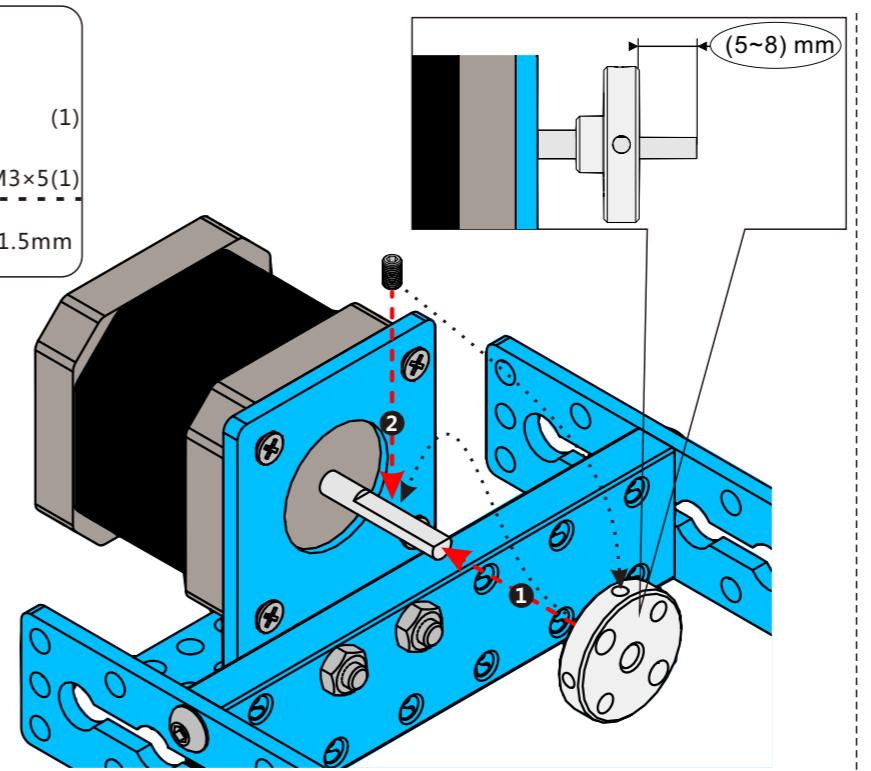
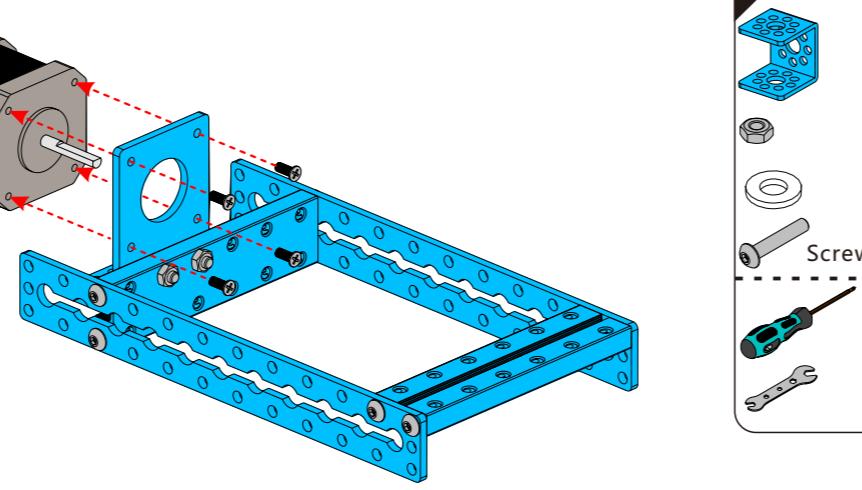


3

(1)

Screw M3x8(4)

(1)



5

(1)

Nut M4(4)

(2)

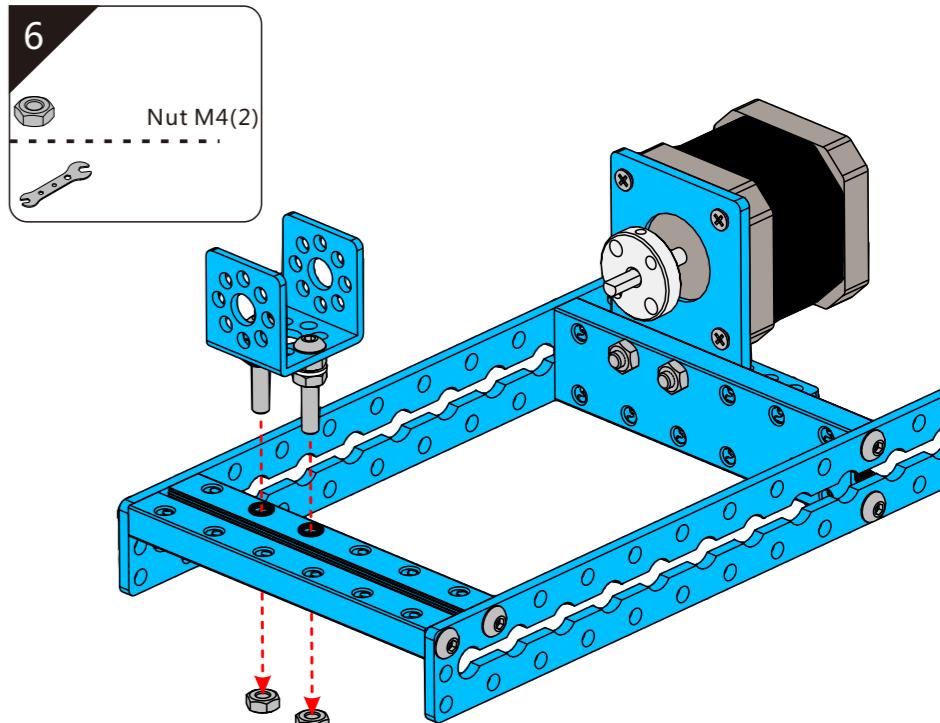
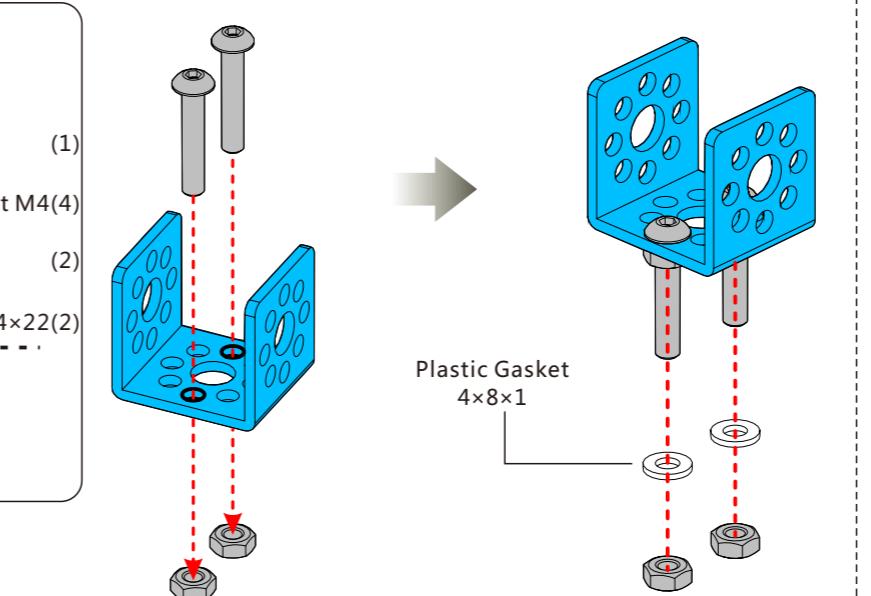
Screw M4x22(2)

(1)

Plastic Gasket  
4x8x1

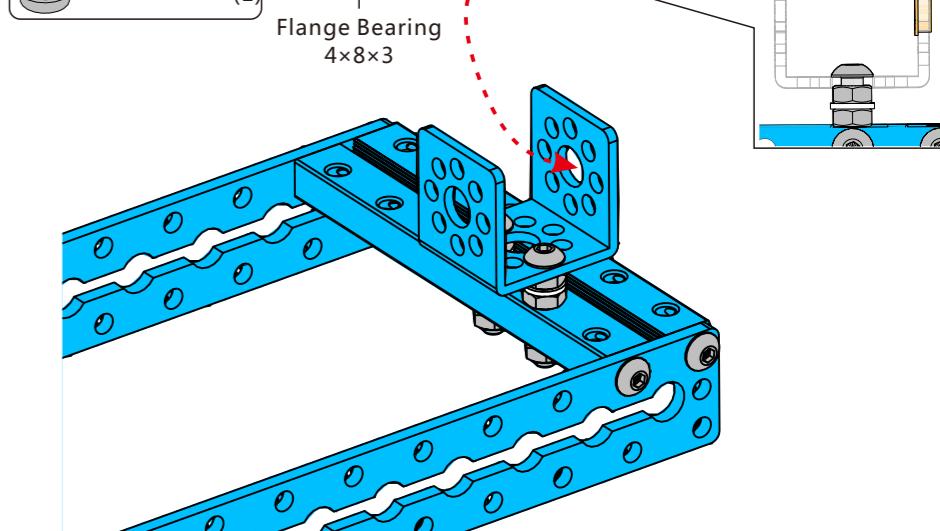
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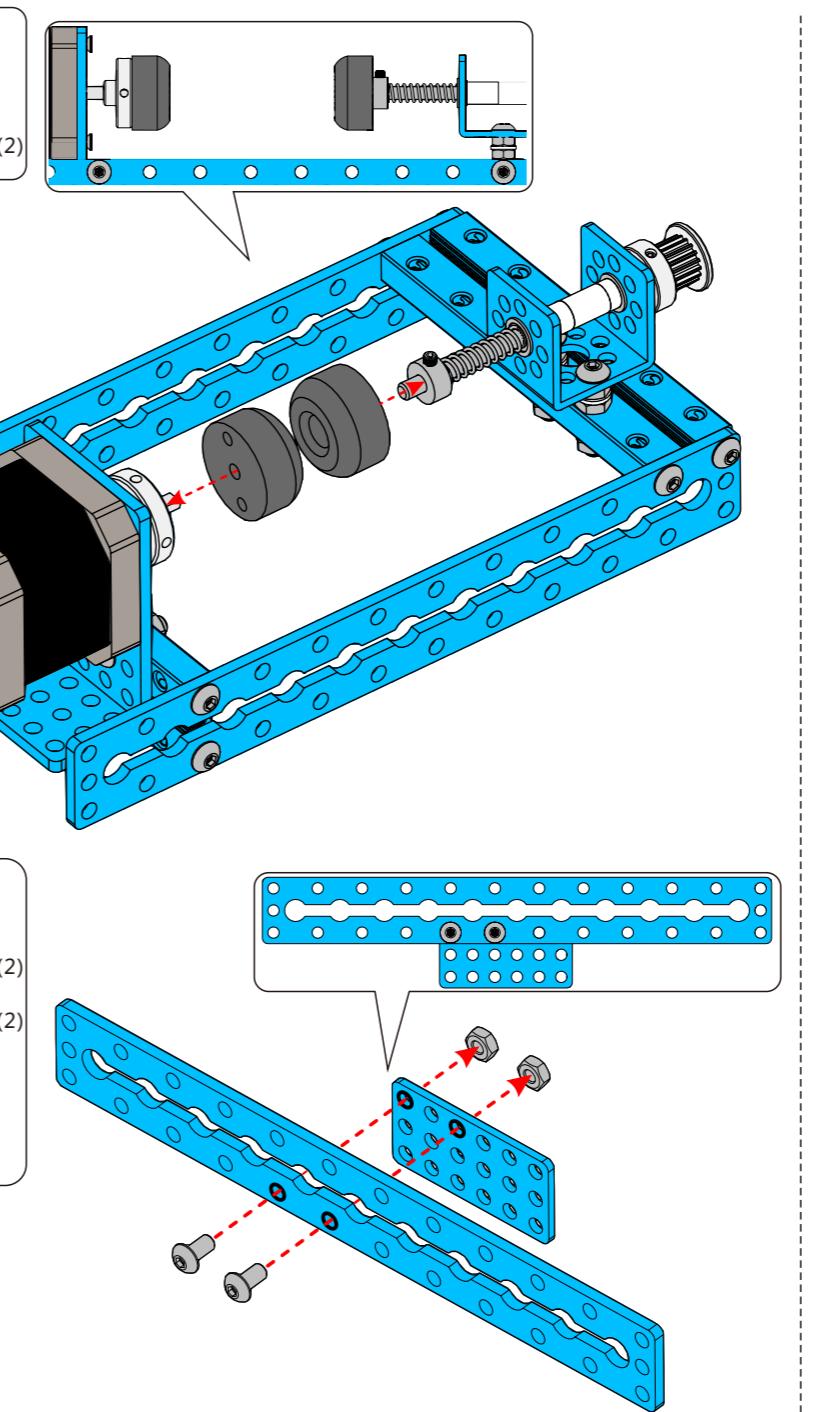
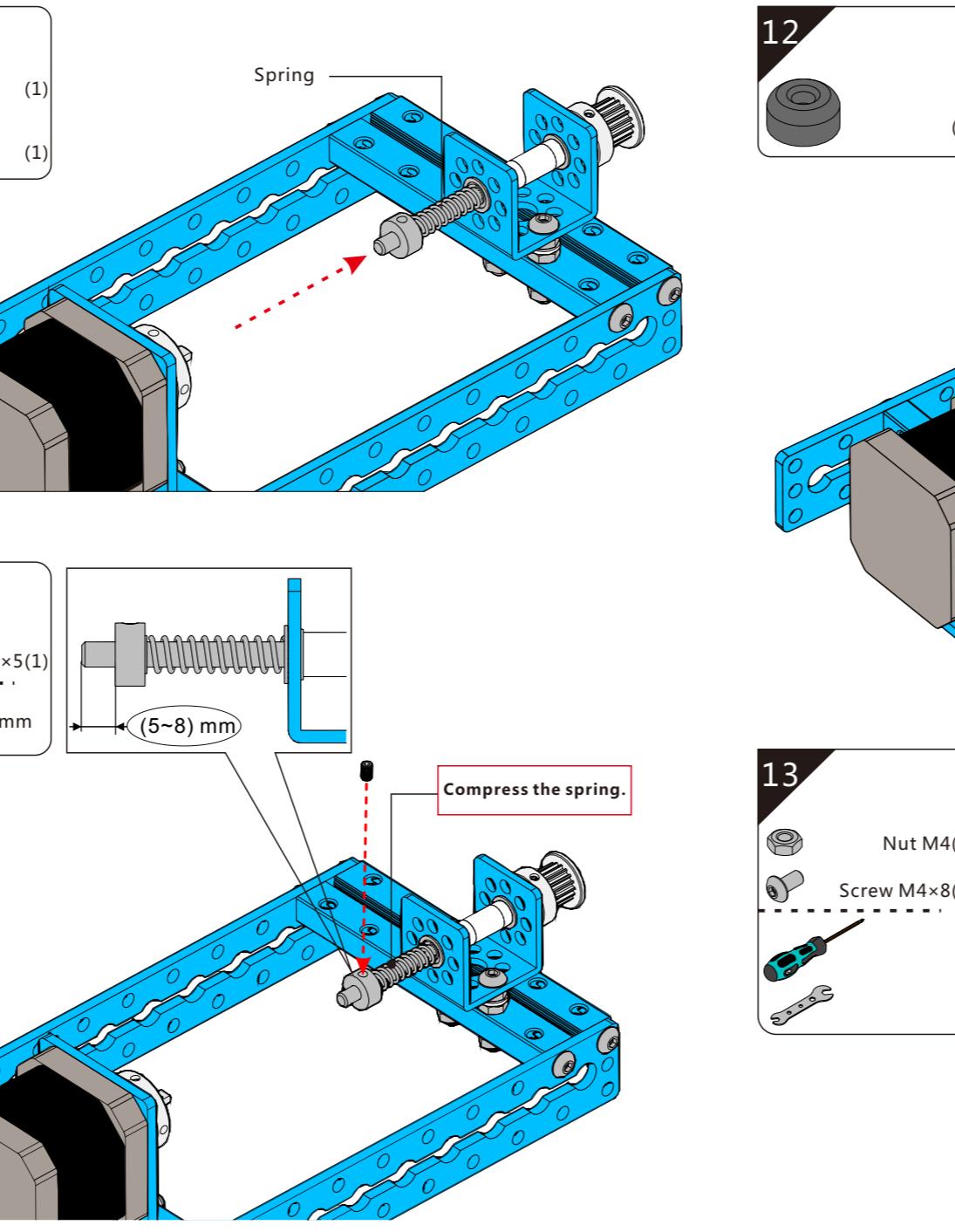
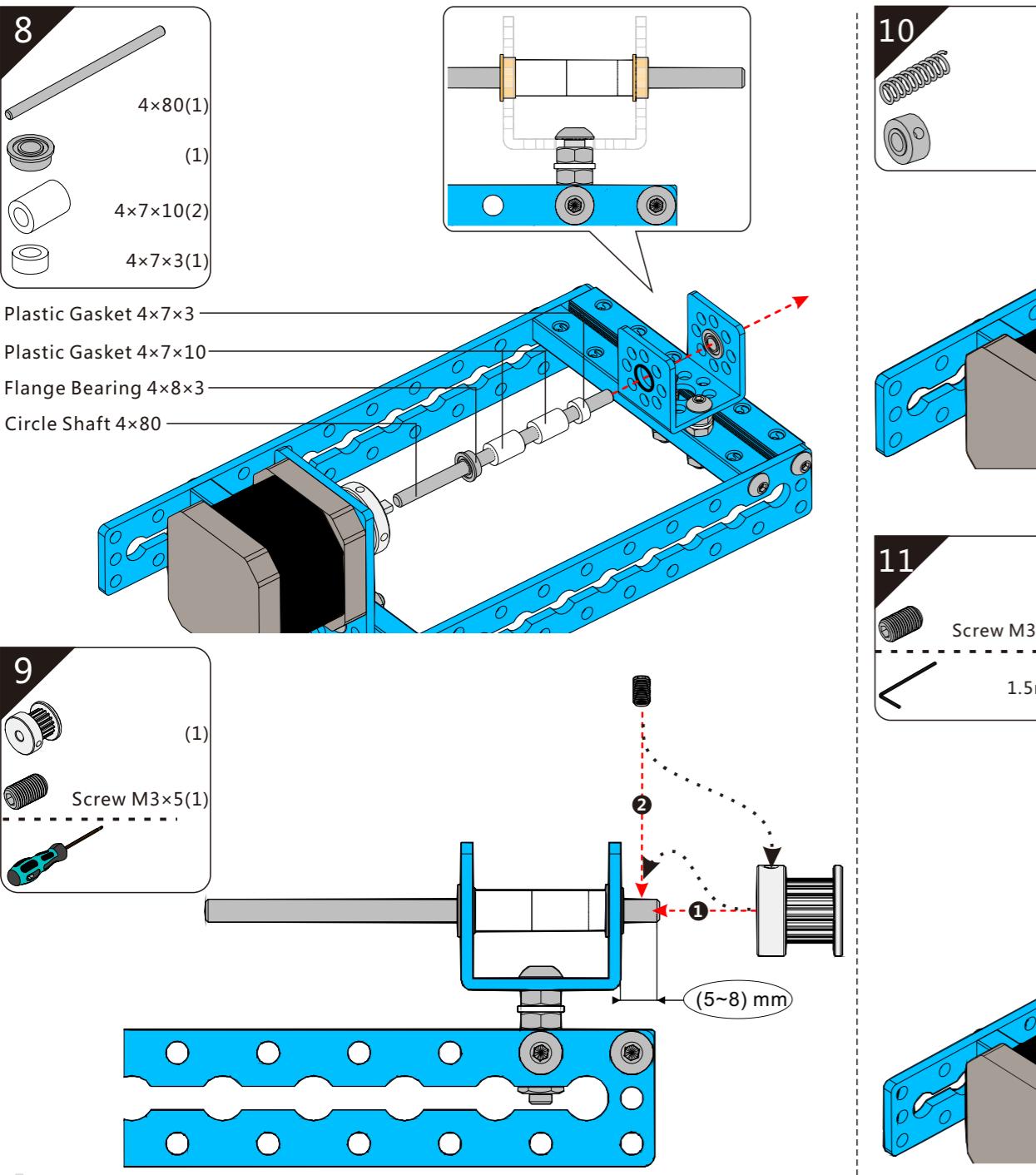
Flange Bearing  
4x8x3

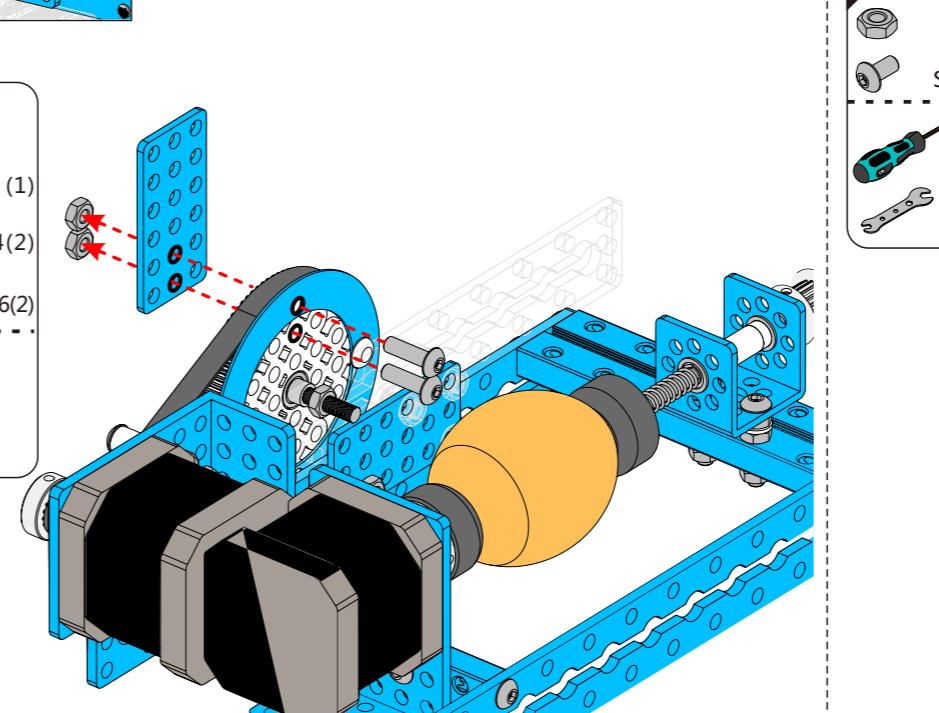
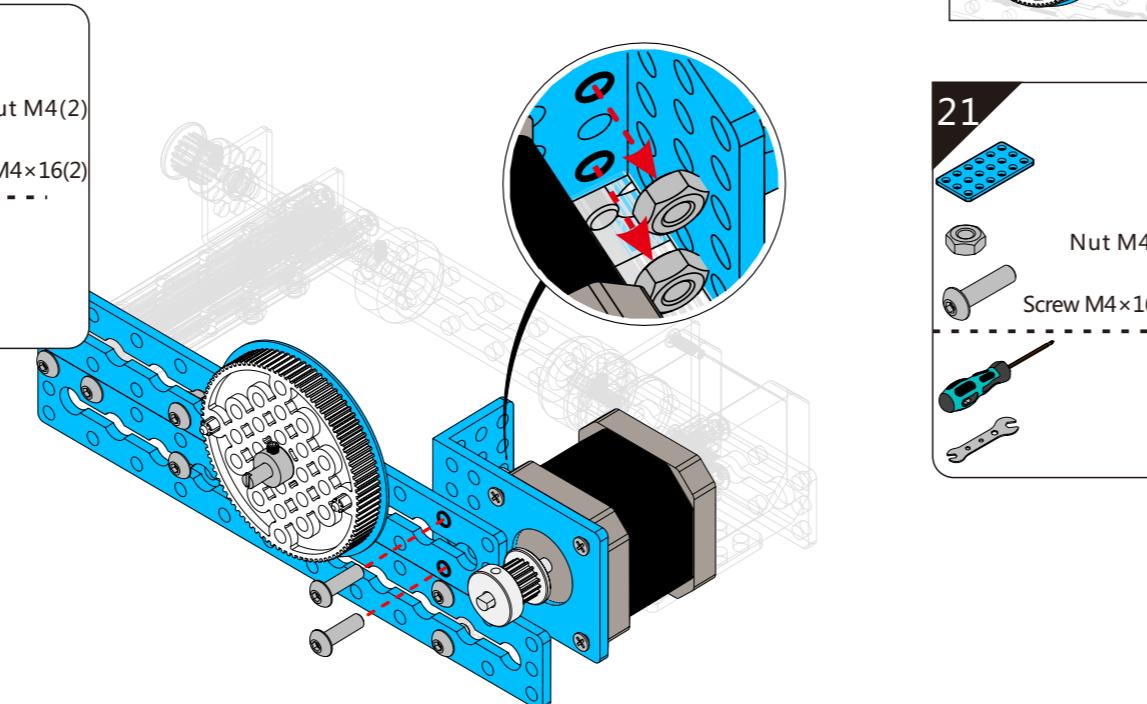
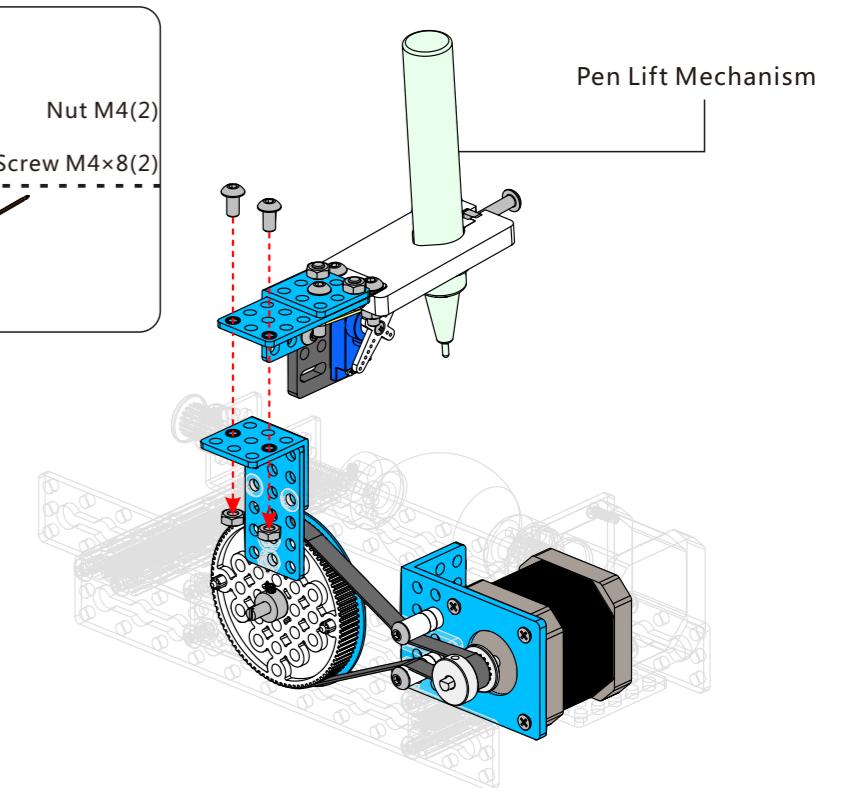
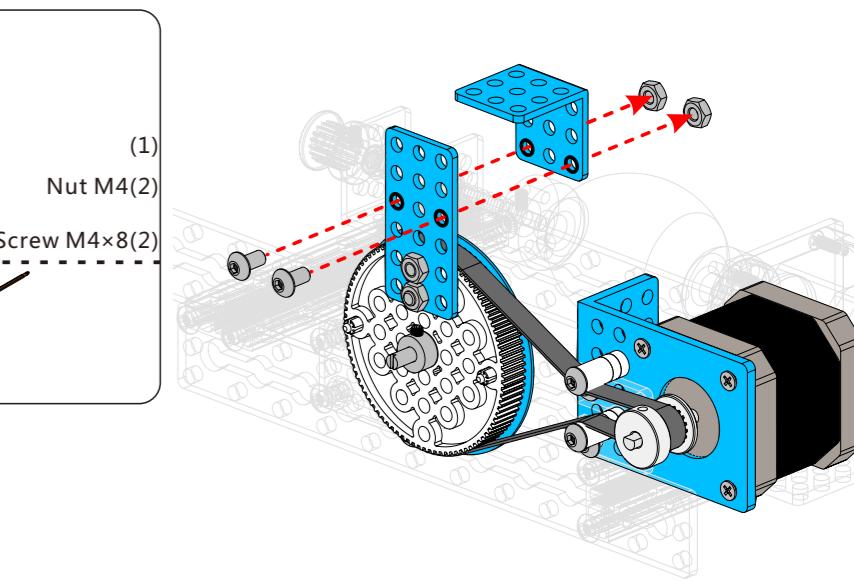
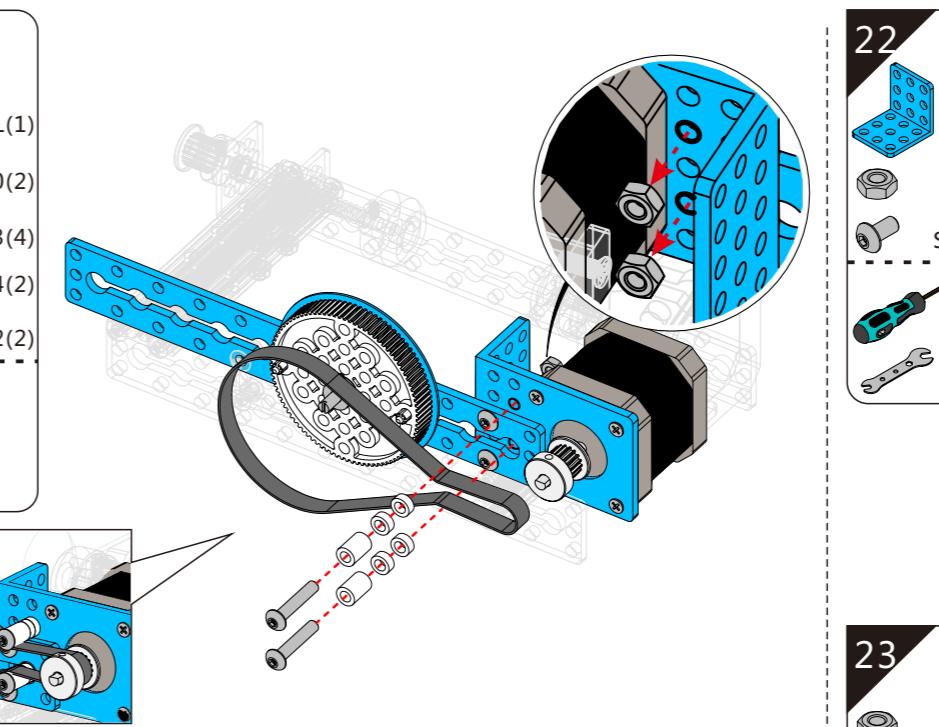
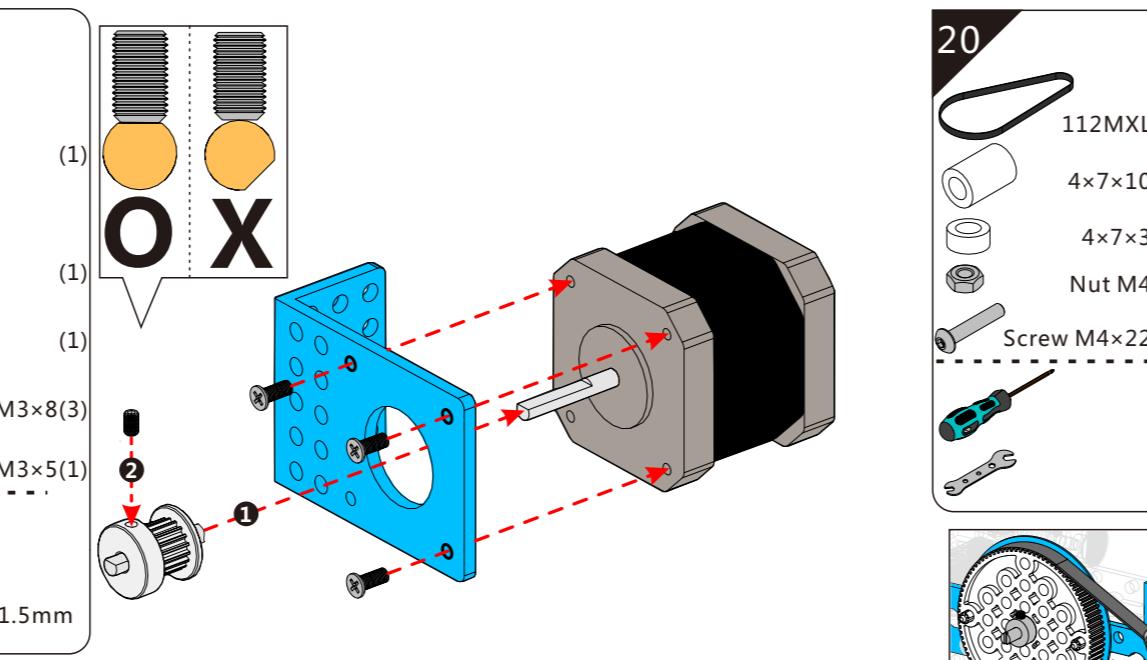
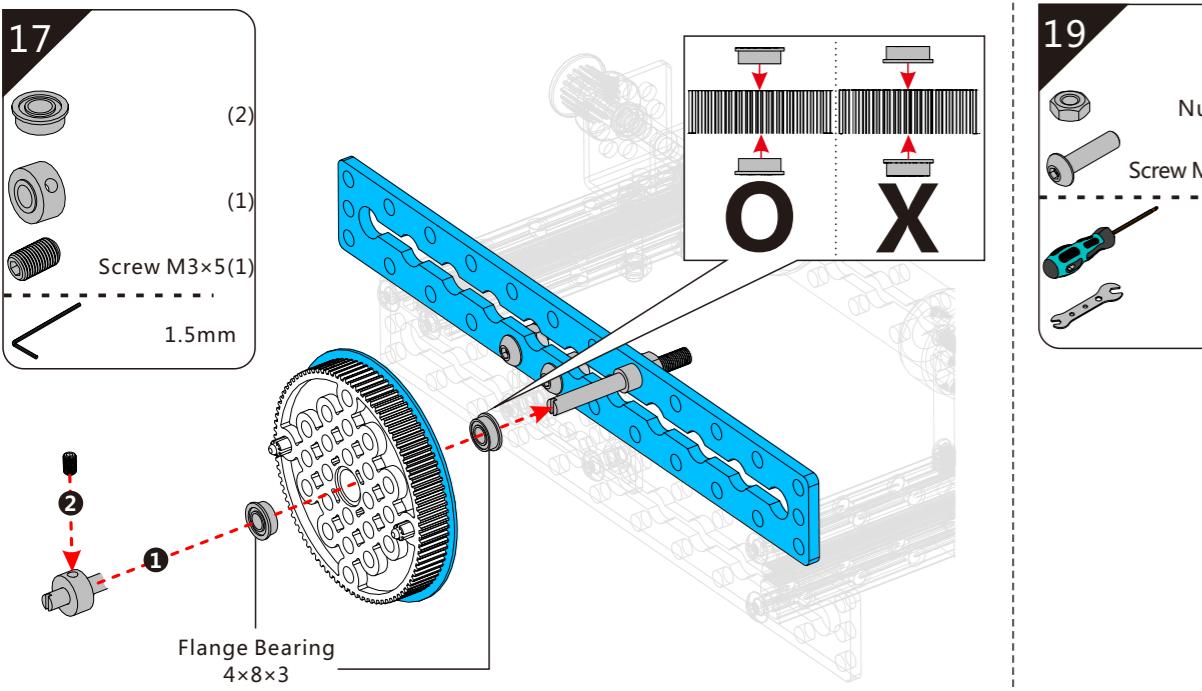
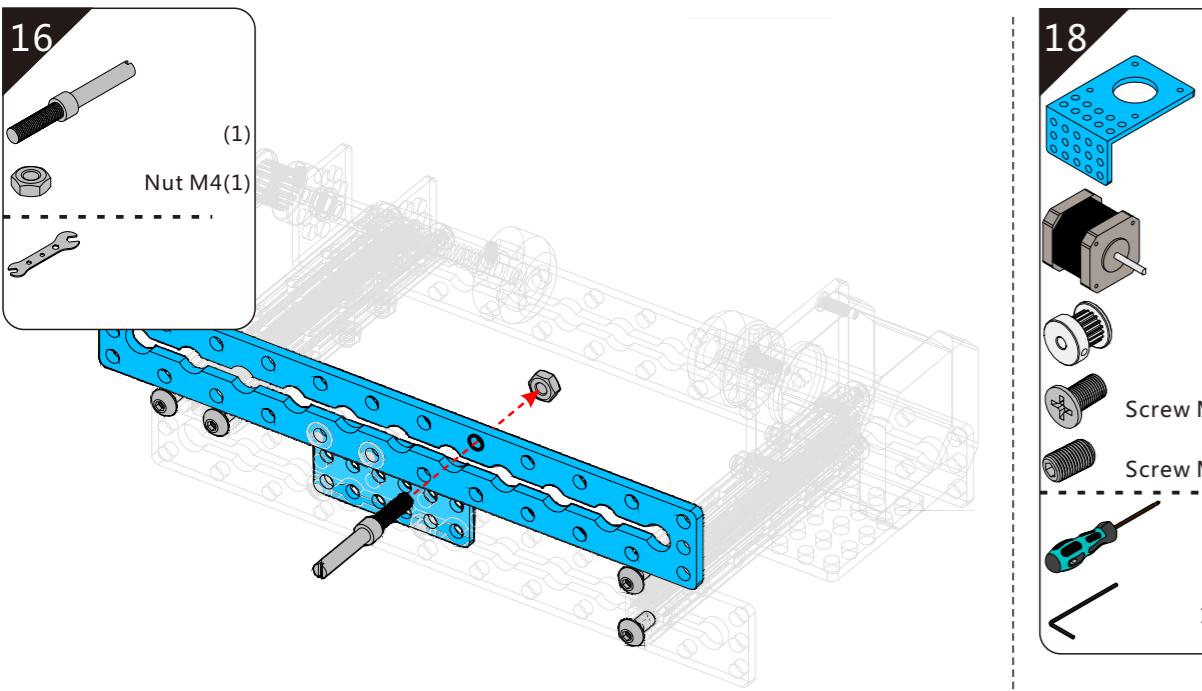


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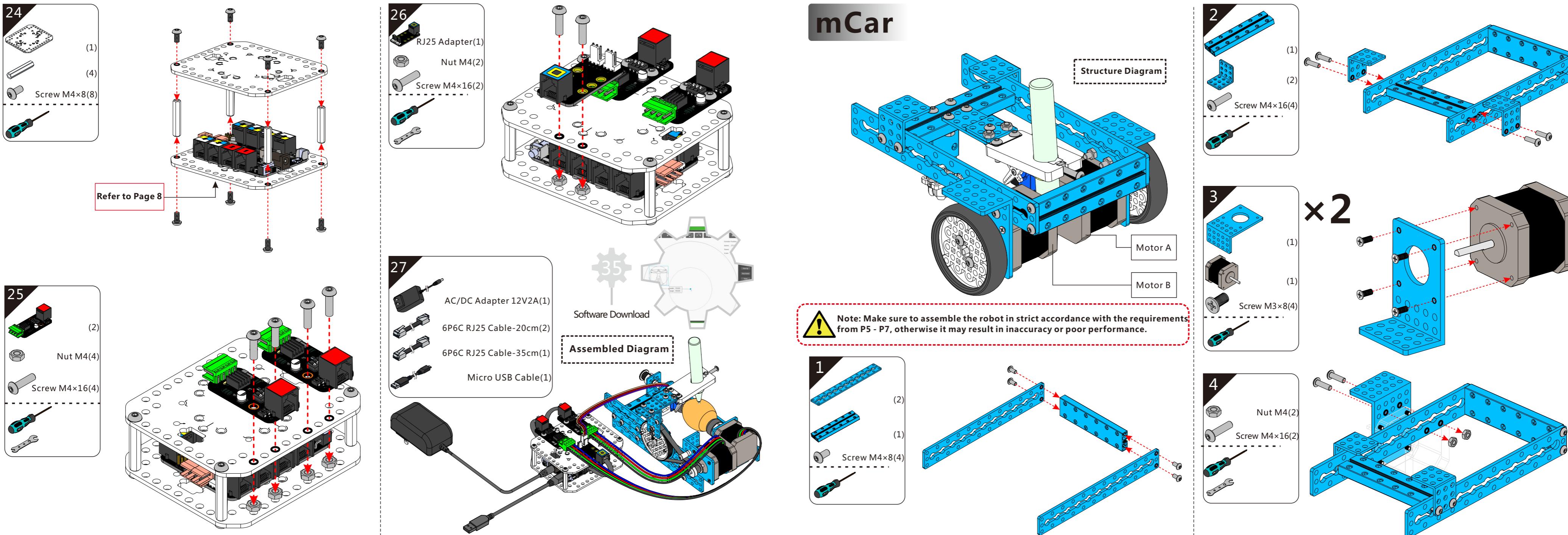
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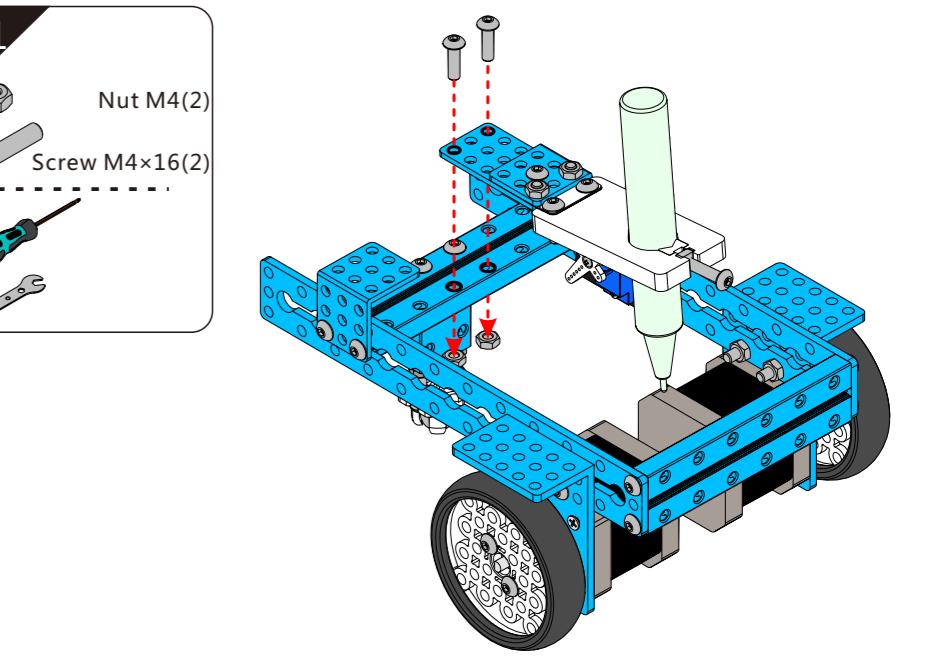
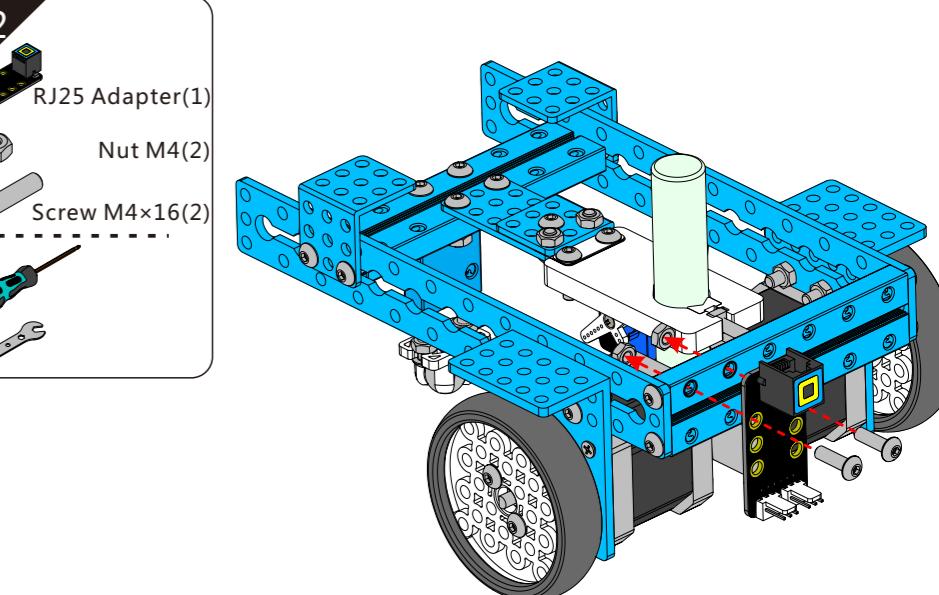
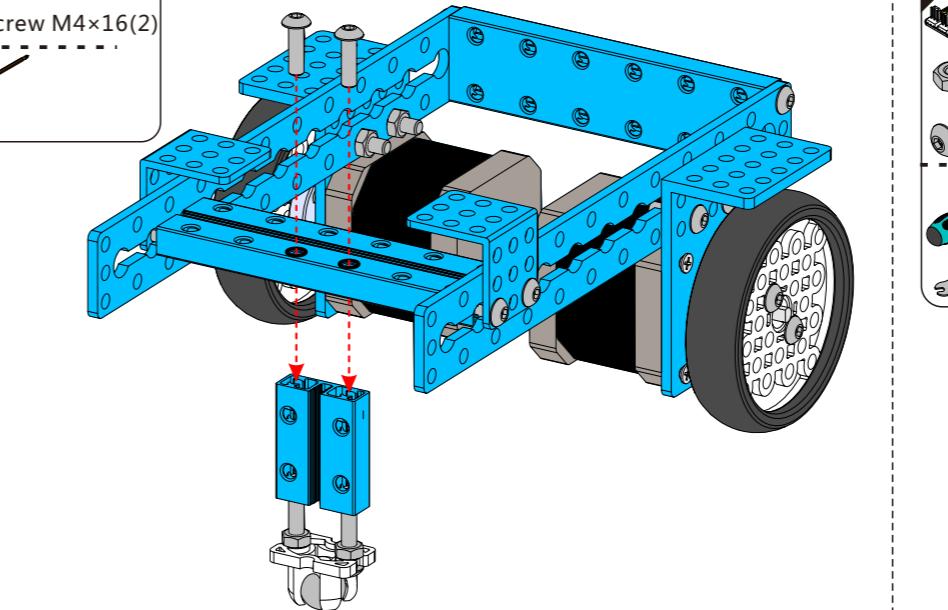
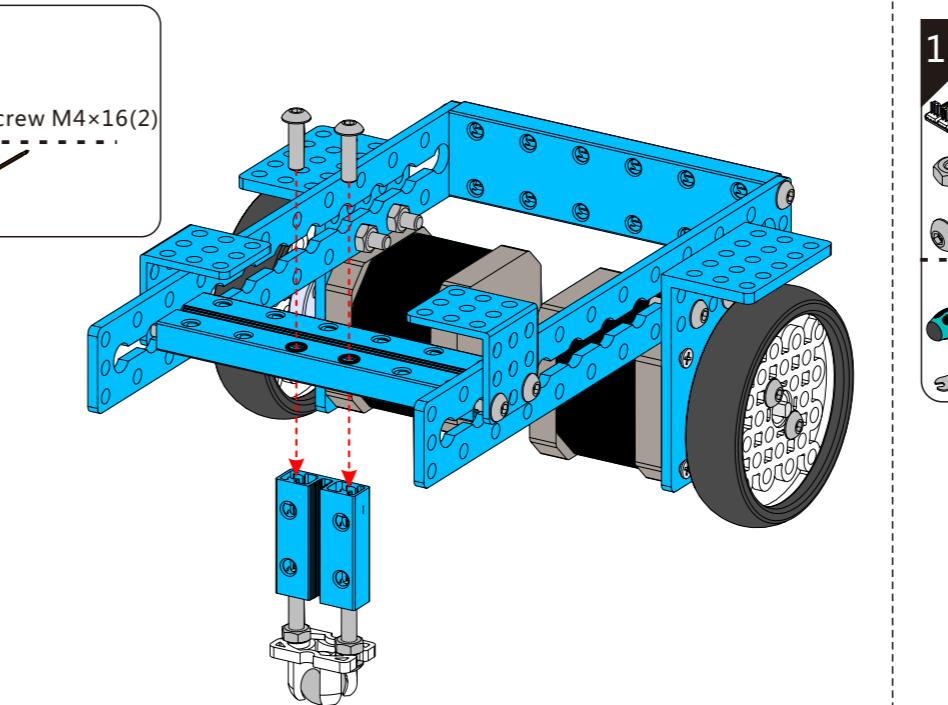
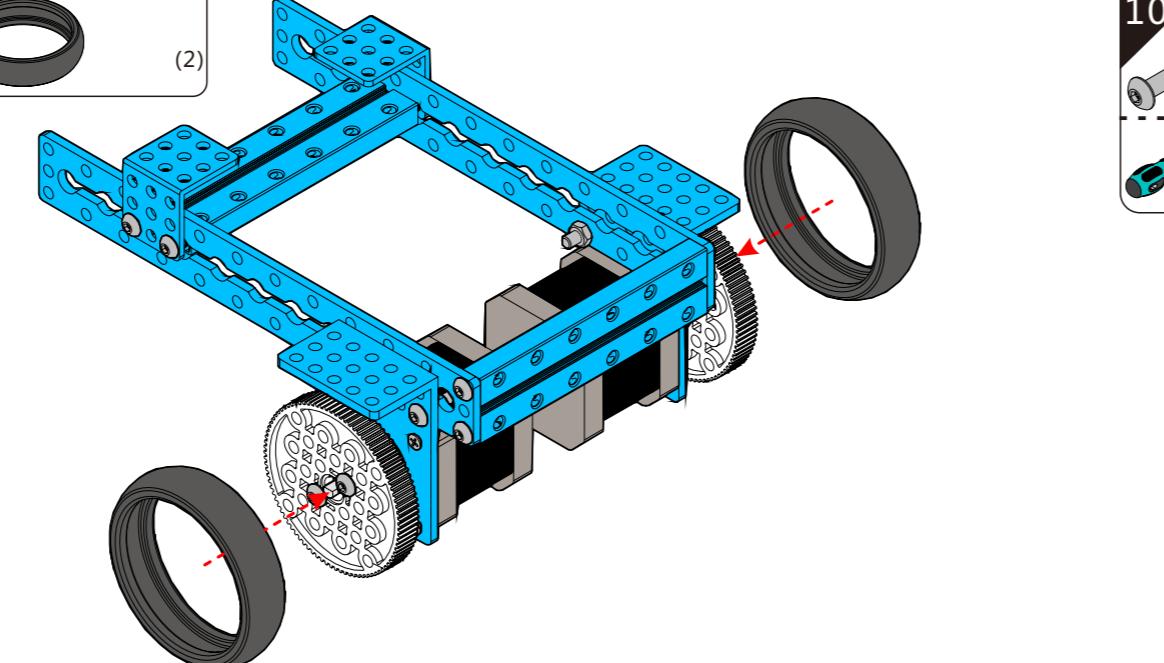
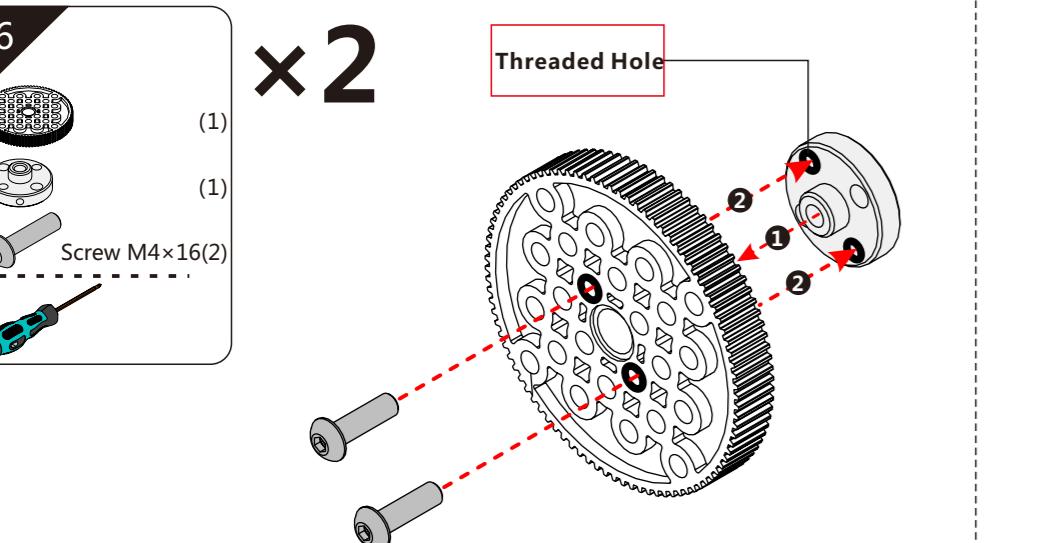
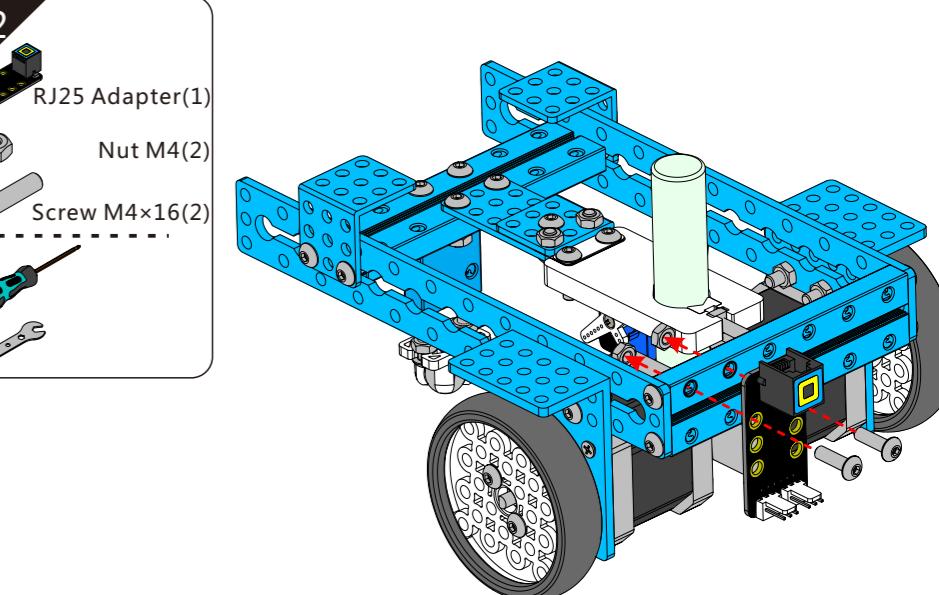
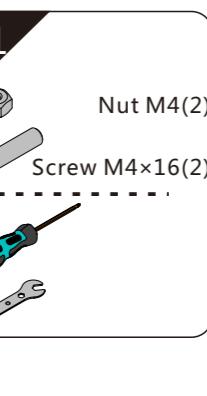
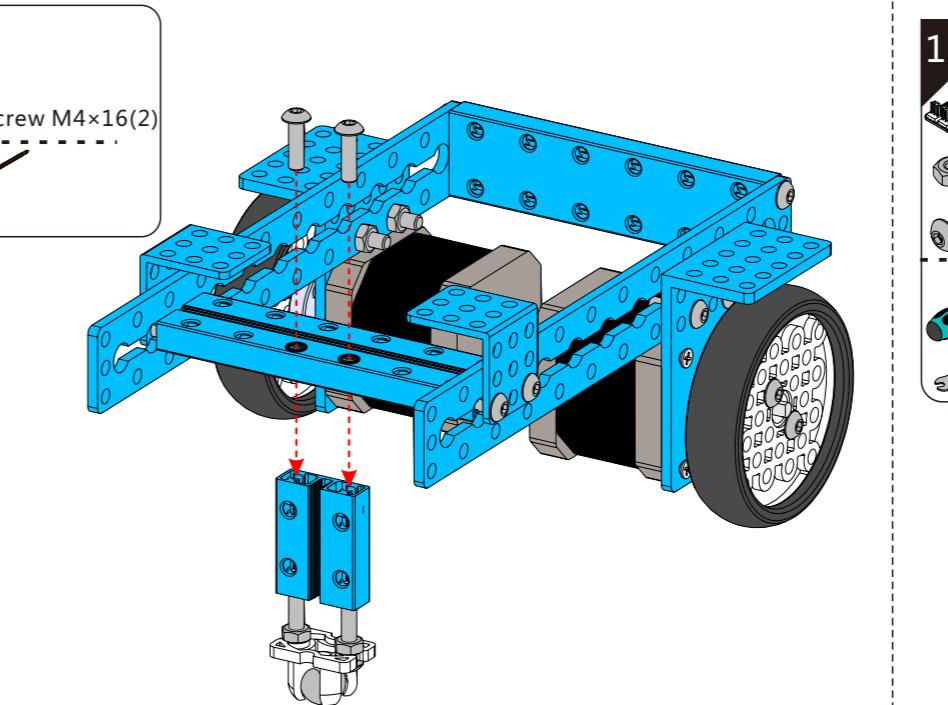
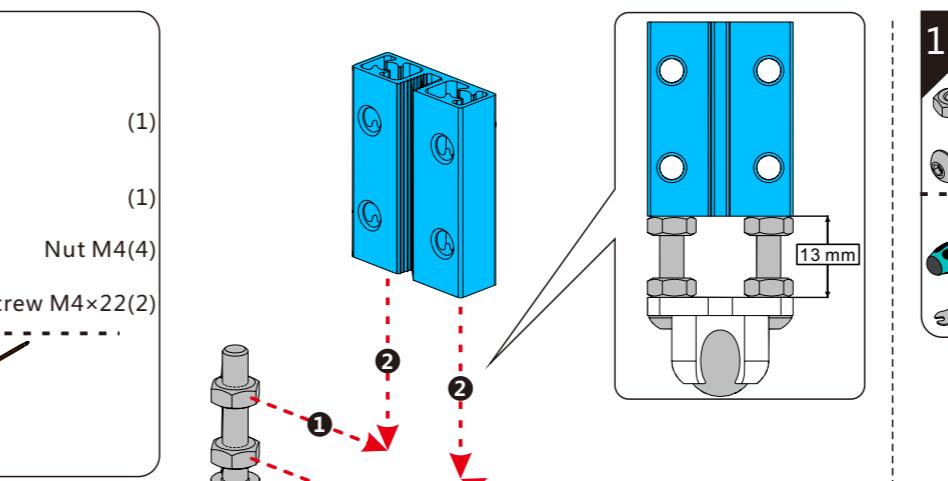
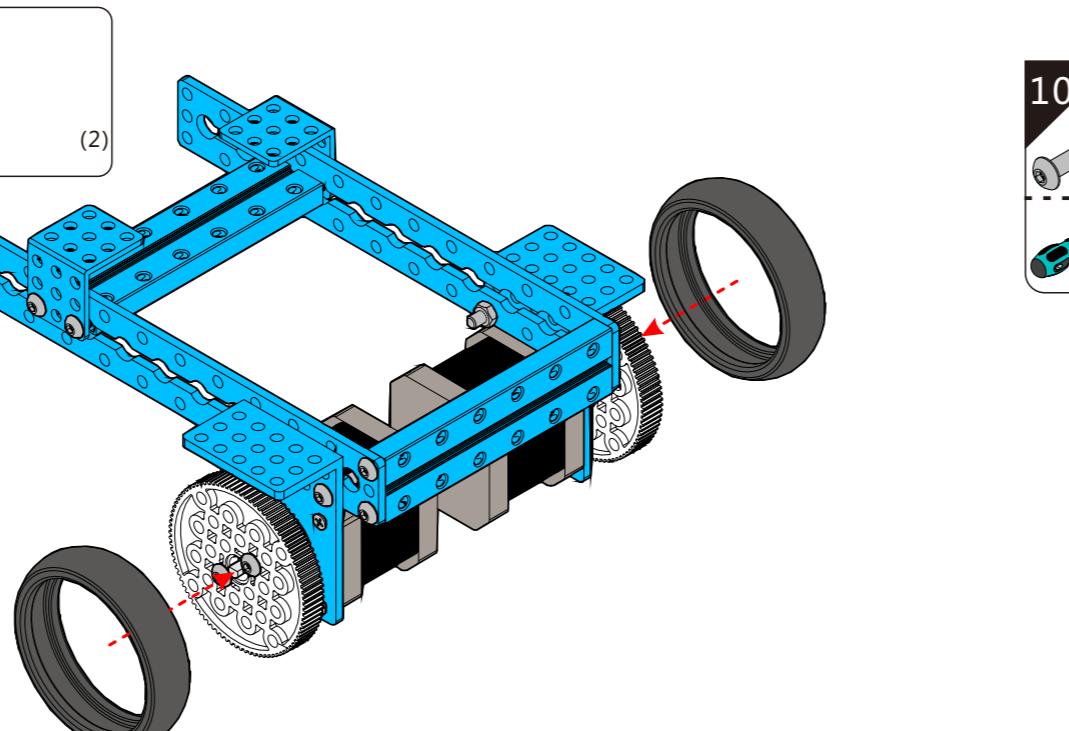
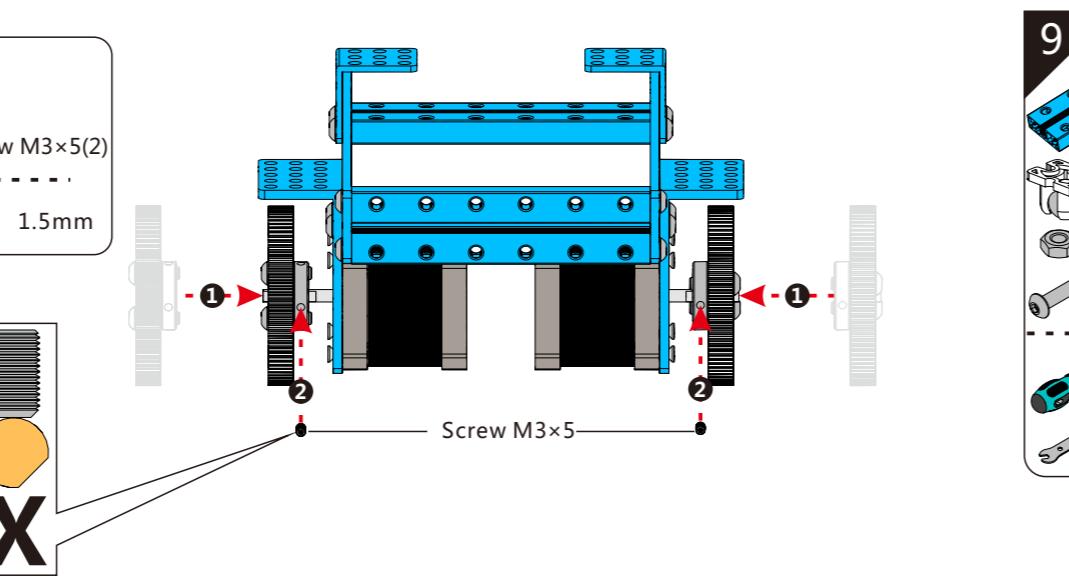
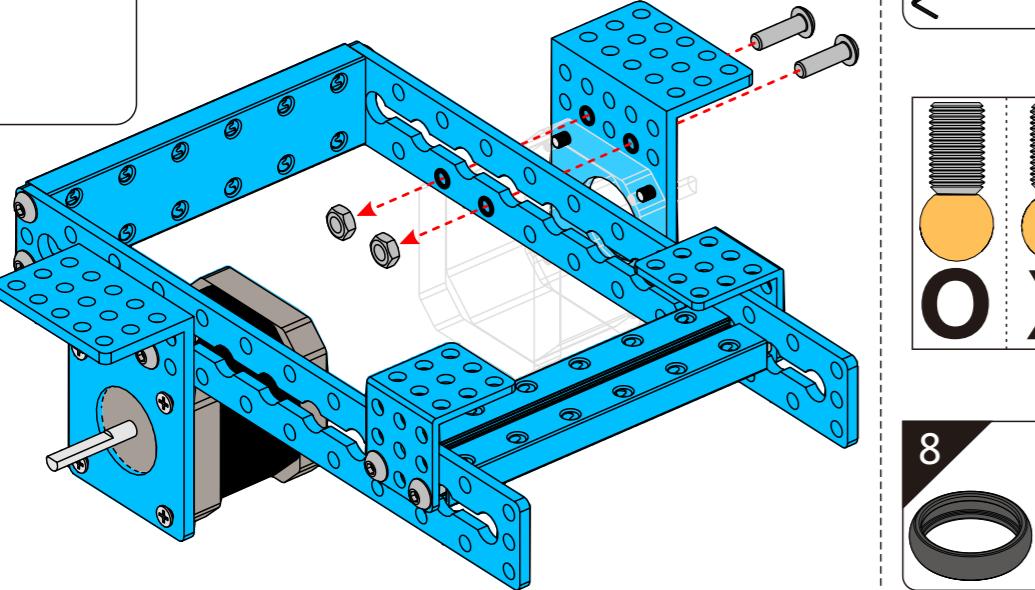
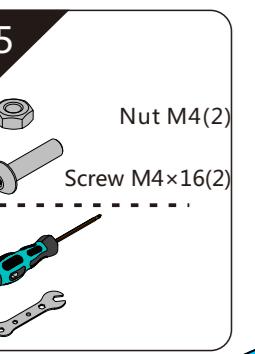


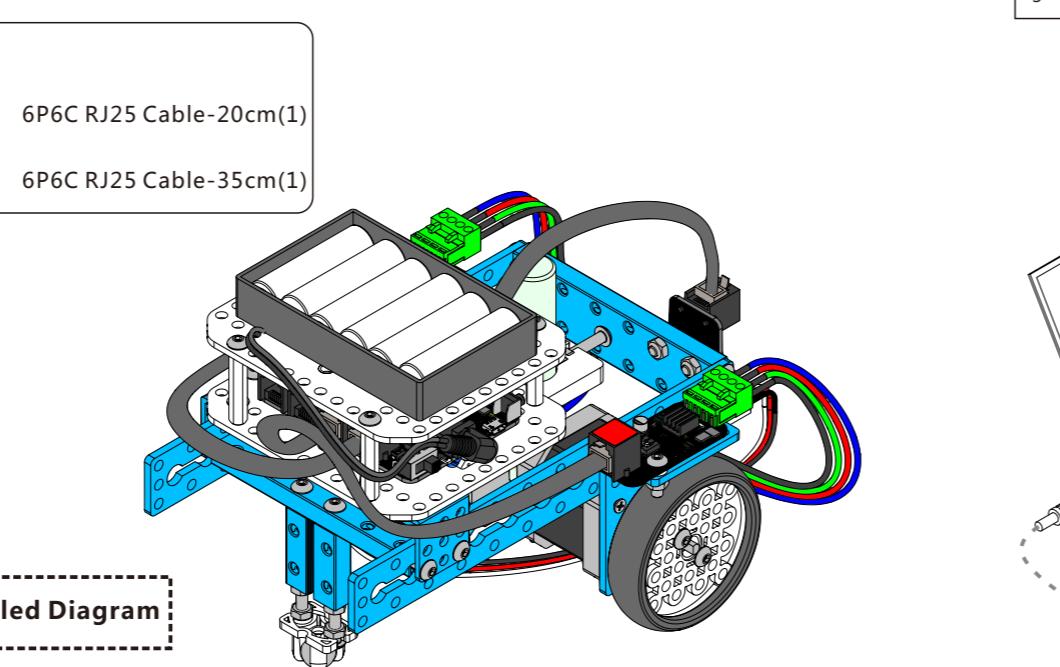
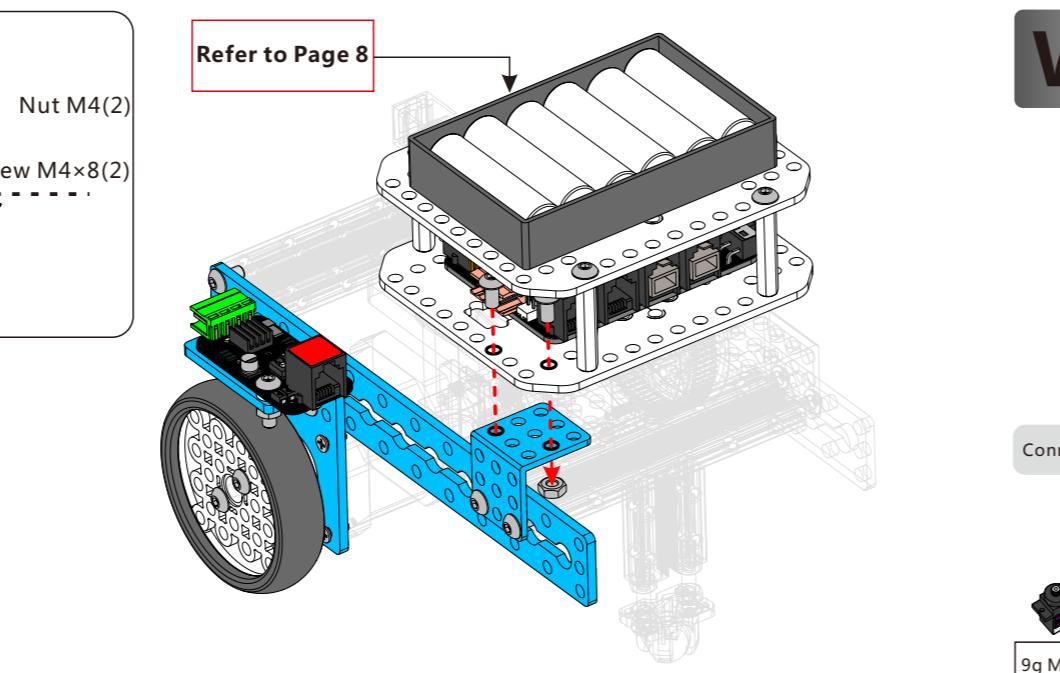
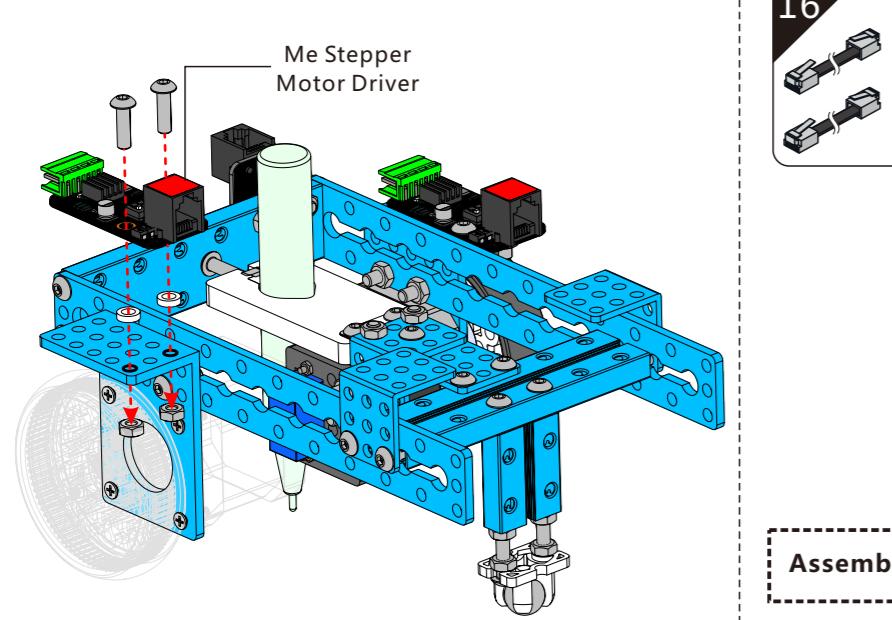
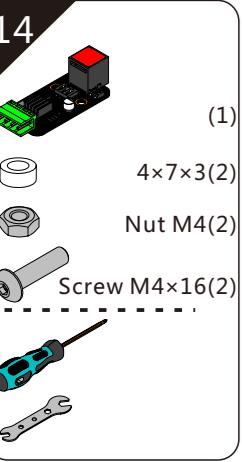
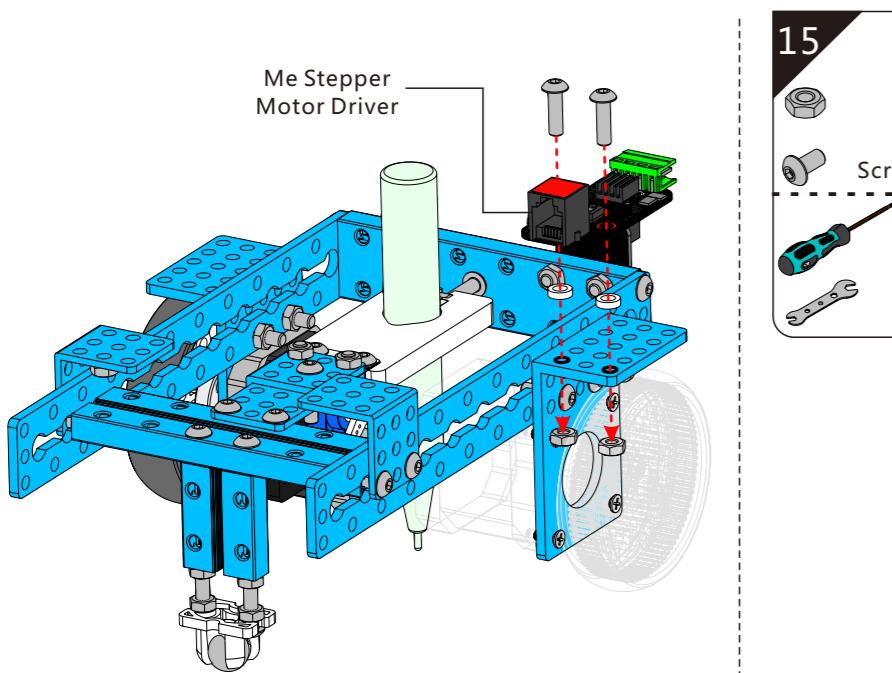
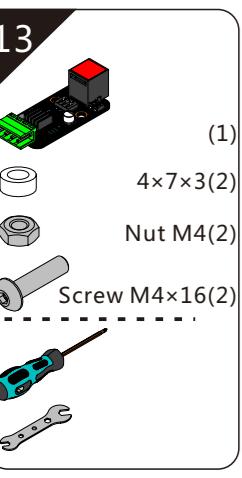




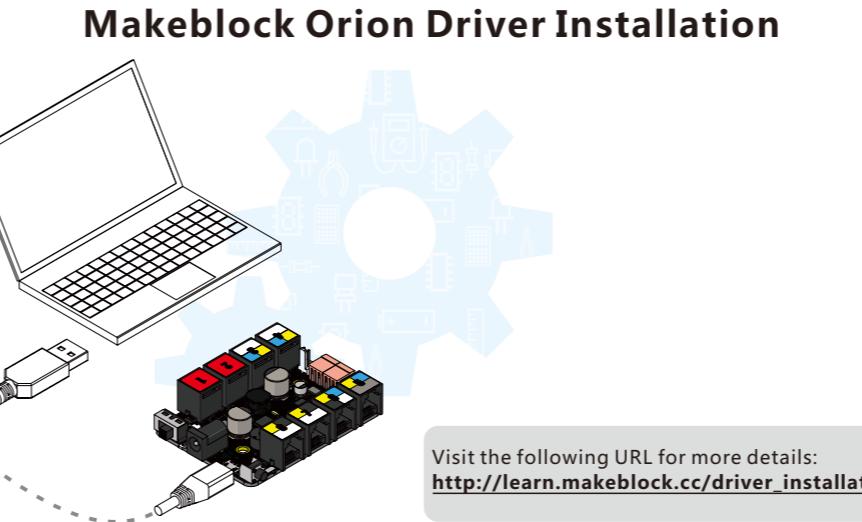
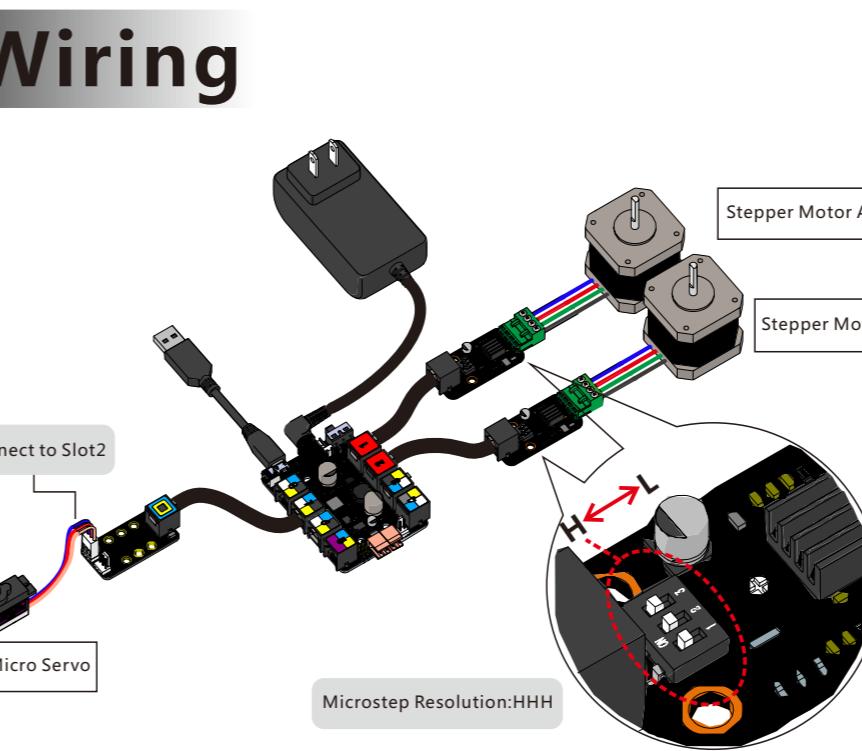
# mCar







Assembled Diagram



The USB interface of Makeblock Orion uses the chip CH340, you may need to install the chip CH340 driver manually.

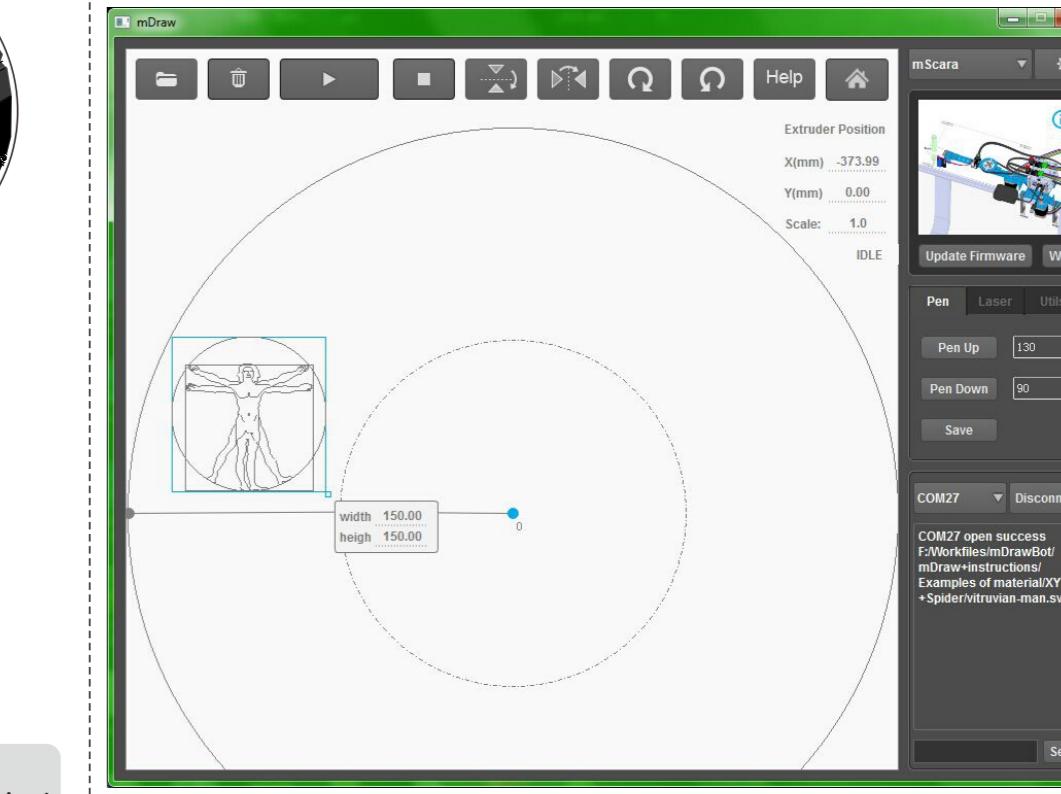
## Wiring

# Software & Related Details

## Working With mDraw

mDraw is the software designed to work with the mDrawBot. It's required to download, install mDraw, and use it correctly in order to make your mDrawBot move.

1. Visit <http://learn.makeblock.cc/mdrawbot/> to download mDraw and related specific instruction.  
 Note: It's required to download the material mentioned above.
2. It's strongly recommended that you should read the specific instruction before using the software.
3. Here's the basic interface of mDraw.



(More details are included in the package downloaded from the URL mentioned on Step 1.)

- mDraw is an open source project hosted on Github. Fork it here:  
<https://github.com/Makeblock-official/mDrawBot/>

**FCC Information**

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

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

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy

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

when the module is installed inside another device, the user manual of this device must contain below warning statements;

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference.

Product	mDrawBot
Model	90070

**Limited Warranty**

This product is warranted against defects in materials and workmanship under normal use by the original purchaser for 90 days after the date of purchase from an authorized retailer. THERE ARE NO OTHER EXPRESS WARRANTIES.

This warranty does not cover: (a) damage or failure caused by or attributable to abuse, misuse, failure to follow instructions, improper installation or maintenance, alteration, accident, Acts of God (such as floods or lightning), or excess voltage or current; (b) improper or incorrectly performed repairs by non-authorized service facilities; (c) consumables such as fuses or batteries; (d) ordinary wear and tear or cosmetic damage; (e) transportation, shipping or insurance costs; (f) costs of product removal, installation, set-up service, adjustment or reinstallation; and (g) claims by persons other than the original purchaser.

Should a problem occur that is covered by this warranty, take the product and the original sales receipt as proof of purchase date to the place of purchase. The product, at the warrantor's option, unless otherwise provided by law: (a) be repaired without charge for parts and labor; (b) be replaced with the same or a comparable product; or (c) a refund of the purchase price will be provided. All replaced parts and products, and products on which a refund is made, become the property of the warrantor. New or reconditioned parts and products may be used in the performance of warranty

service. Repaired or replaced parts and products are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the product made after the expiration of the warranty period.

ALL IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND, IF APPLICABLE, THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, SHALL EXPIRE ON THE EXPIRATION OF THE STATED WARRANTY PERIOD.

EXCEPT AS DESCRIBED ABOVE, THE WARRANTOR SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO THE PURCHASER OF THE PRODUCT OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY USE OR PERFORMANCE OF THE PRODUCT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY, INCLUDING, BUT NOT LIMITED TO, ANY DAMAGES RESULTING FROM INCONVENIENCE AND ANY LOSS OF TIME, DATA, PROPERTY,

**Warnings**

- Adult supervision and assistance are required.
- CHOKING HAZARD — This product contains small parts and functional sharp points on components. Keep away from children under age 3.
- Read and follow all instructions in the user guide before using.
- Retain this user guide for future reference.

**Battery Notes**

- Use only fresh batteries of the required size and type. Do not mix old and new batteries, different types of batteries (standard, alkaline, or rechargeable), or rechargeable batteries of different capacities.
- Dispose of batteries promptly and properly. Do not burn or bury them.
- If you do not plan to play with the robot for an extended period of time, remove the batteries.

**Caution**

- Do not insert the wires into telecommunication or network socket outlets.
- As an extra precaution, check this product regularly for signs of wear or damage.
- Ensure all wiring connections are correct before inserting batteries and switching on the product. Failure to do so may result in damage to components and the product.
- Ensure all wires are correctly connected to the battery terminals and other connectors. If the circuit does not work, make sure the plastic insulation of the wire is not obstructing the connection to the connector.
- When you have finished playing, remove the batteries and switch off the unit before you disconnect the wires. Do not apply any components or parts to the unit other than those provided with this kit.
- To prevent overheating and damage, do not short-circuit the battery terminals and connectors. Do not block or cover the motor or other moving parts.



**Makeblock**  
Construct Your Dreams