

# Ultra Bionic Blaster

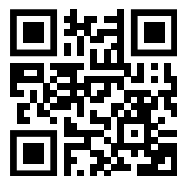
Build your own  
powerful robotic glove  
that shoots foam darts

*Awesome*  
MECHANICAL  
TECHNOLOGY!



ASSEMBLY VIDEO  
&  
STEP-BY-STEP GUIDE

Scan this QR code  
for a step-by-step  
assembly video and  
manual guide.

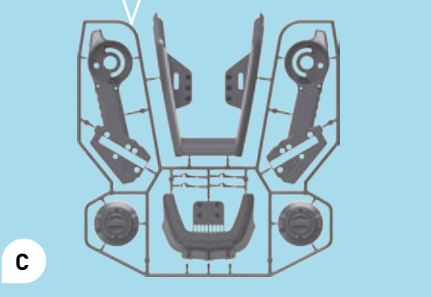


# KIT CONTENTS

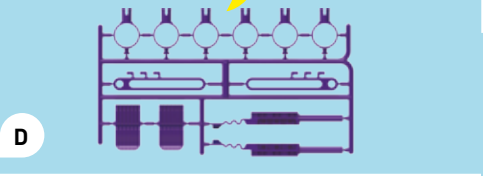
*Good to know!*

Do you have any questions or are you missing any parts? Our tech support team will be happy to help you! support@thamesandkosmos.com or 1-800-587-2872

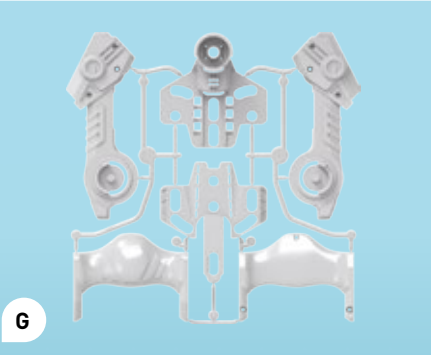
What's inside your experiment kit:



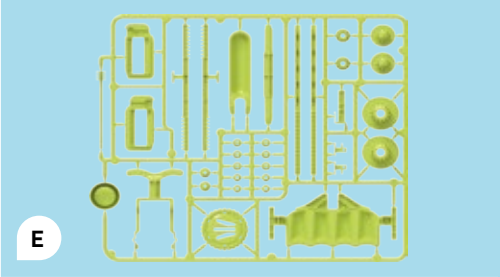
C



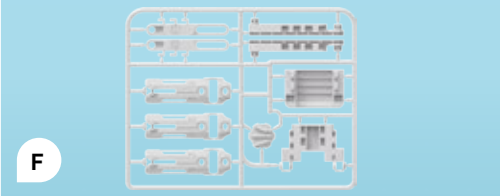
D



G



E



F



A1



A2



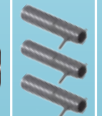
A3



A4



A5



A6



A7



A8



A9



A10



A11



A12



A13



A14



A15



A17



A18



B1



B2



B3



B4



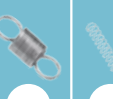
B5 L



B6 R



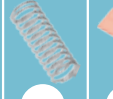
B7



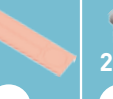
B8



B9



B10



B11



B12



21x  
B13



B14



B15



B16



B17

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**Dear parents and adults,**

Children as young as eight years of age can enjoy experimenting with the built Ultra Bionic Blaster, but most children under ten years will need help building it. Please support your child with advice and a helping hand, especially during tricky assembly steps. Before beginning, discuss the safety instructions.	diagonal cutters or scissors because of the sharp edges on the tools and sharp edges or burrs on the plastic parts. These can be removed with the help of the diagonal cutters or a nail file. Supervise your child when they are using the sharp tools until you trust that they can handle the tools independently. We hope you and your child have a lot of fun building and playing with the Ultra Bionic Blaster!
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*Checklist:*

✓ No.	Description	Quantity	Item No.	✓ No.	Description	Quantity	Item No.
C	Frame C with parts C1-C6	1	7080-W10-C1S	A16	Piston hook	1	7080-W10-K2S
D	Frame D with parts D1-D7	1	7080-W10-D1P	A17	Piston rod	1	7080-W10-K3S
E	Frame E with parts E1-E21	1	7080-W10-E16	A18	Air wheel	1	7080-W10-K4S
F	Frame F with parts F1-F8	1	7080-W10-F1S	B1	Outer lift support	2	7080-W10-B4S
G	Frame G with parts G1-G6	1	7080-W10-G1S	B2	Handle	1	7080-W10-H3S
A1	Tube	1	1155-W85-17	B3	Inner lift support	2	7080-W10-B3S
A2	Arm adjuster	1	7080-W10-K5S	B4	Axle connector	1	7413-W10-T1B
A3	Reserve clip	1	7080-W10-H4S	B5	Blaster fixture (left)	1	7080-W10-H1S
A4	Cylinder support	1	7080-W10-B1S	B6	Blaster fixture (right)	1	7080-W10-H2S
A5	Arm band	1	R33#7080	B7	Cylinder pivot	1	7080-W10-B2S
A6	Dart holder	3	7080-W10-I1S	B8	Spring with loops	1	M42-41
A7	Dart	6	R32#7080-2	B9	Small spring	1	M42-39
A8	Oil packet	1	T10-41	B10	Medium spring	3	M42-40
A9	Blaster frame	1	7080-W10-A1S	B11	Large spring	1	M42-38-1
A10	Outer cylinder	1	7080-W10-J1S	B12	Foam pad	1	R32#7080-1
A11	Rear nozzle	1	7080-W10-J2S	B13	Screw	21	M20-44
A12	Cylinder housing	1	7080-W10-J3S	B14	Metal rod	2	M10#1155
A13	Piston cap	1	7080-W10-J4S	B15	Small O-ring	1	R12-19
A14	Piston sleeve	1	7080-W10-J5S	B16	Medium O-ring	1	R12-30
A15	Piston base	1	7080-W10-K1S	B17	Large O-ring	1	R12-29

**WARNING**

Not suitable for children under 3 years. Choking hazard — small parts may be swallowed or inhaled. Strangulation hazard — long tubes and belts may become wrapped around the neck. Keep the packaging and instructions as they contain important information. Warning! Do not discharge an object other than the projectile provided with this toy. Warning! Do not aim at eyes or face. Use of eyewear recommended for players and people within range. Do not modify the darts.

**The right tool**

It is best to cut the plastic parts out of their frames with a small diagonal cutter. If you don't have these pliers at home, you can use scissors and a nail file. Normal scissors do not cut as precisely as a diagonal cutter, so you may have to file some of the rough edges down with the nail file.

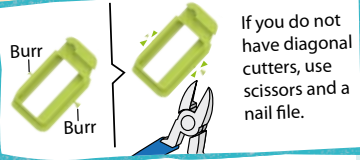


**YOU WILL ALSO NEED:**

Diagonal cutter or scissors and nail file, small Philips-head screwdriver (PH1 size recommended), device with internet connection for the experiments and additional science info.

# ULTRA BIONIC BLASTER ASSEMBLY

**IMPORTANT! REMOVE ALL BURRS FROM THE PARTS AFTER CUTTING THEM OUT OF THE FRAMES WITH DIAGONAL CUTTERS.**



**1**

**2**

Slide E17 and E18 into the slots of G6.

The teeth of E8 face down.

**2**

**1**

**3**

B10 medium spring

G4

**3** Flip over.

B13 x3

A

This is subassembly A. Squeeze the trigger. It should spring back smoothly.

**4**

**1** Pour all of the oil into E21.

**2**

**3** Apply oil all around the teeth of E12, as shown by the yellow arrows. Only a small amount of oil is needed; the oil should not be dripping off the part.

OIL A8 E21

E20

E12

**4** Orient parts E12 and G3 so that both of the R letters are face up.

R E12 G3 R

**5**

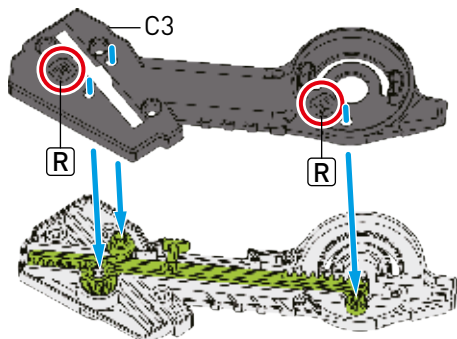
The orientation of E14 does not matter.

Put in flat.

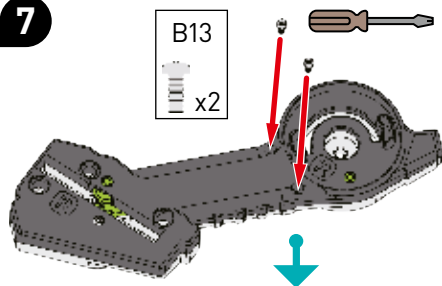
E2 E15 E14



**6** Note: C3 is labeled with an R.

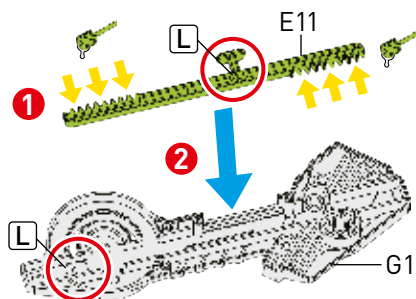


**7**

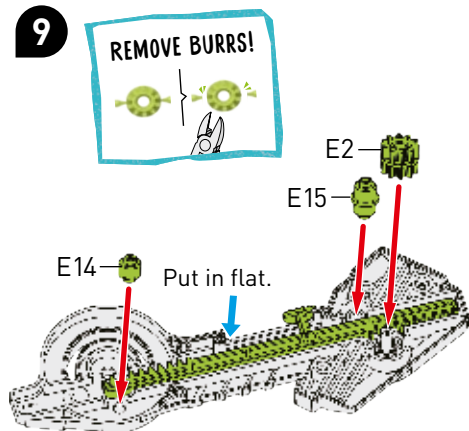


**B** Move the green slider back and forth. The movement should be smooth.

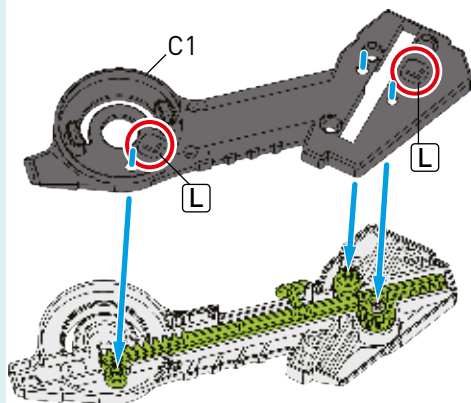
- 8**
1. Apply a small amount of oil to the teeth of E11.
  2. Orient parts E11 and G1 so that both of the L letters are face up.



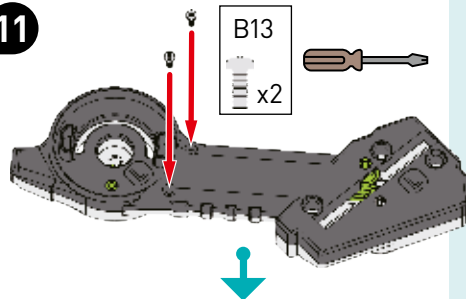
**9**



**10** Note: C1 is labeled with an L.

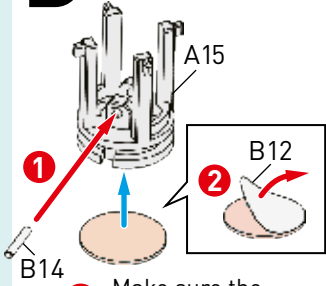


**11**

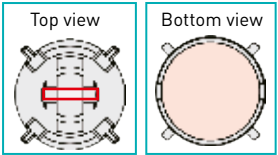


**C** Move the green slider back and forth. The movement should be smooth.

**12** Assemble in order.

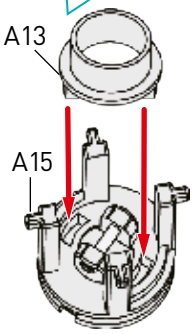


**3** Make sure the sticky side faces up.

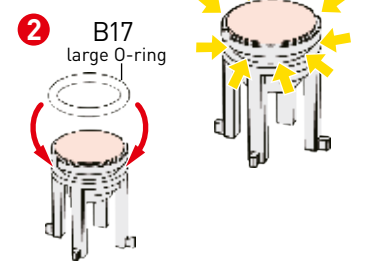


**13** Press A13 in all the way.

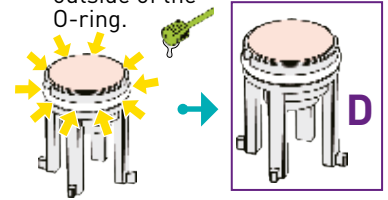
The two tabs of A13 fit into the slots of A15.



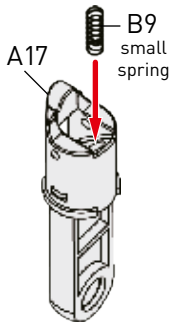
**14** **1** Apply oil all around the groove of A15 as shown.



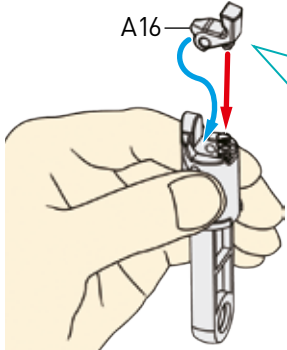
**3** Apply oil to the outside of the O-ring.



**15**

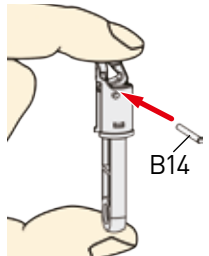


**16** Compress the spring with A16 and align the holes of A16 and A17.

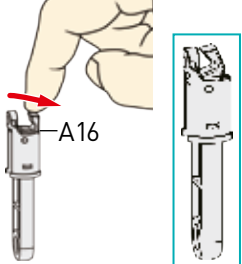


A16 is very small. If you can't find it, look inside of the other parts in the bag.

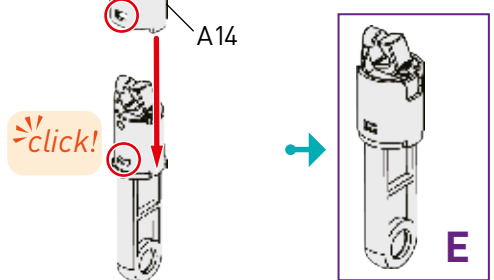
**17** Press the metal rod through the holes as shown.



**18** Pull A16 back with your finger. It should spring back.

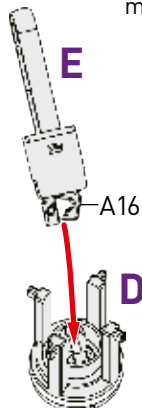


**19** Press A14 all the way down until you hear a click.



**20**

Press down so that A16 hooks around the metal rod.



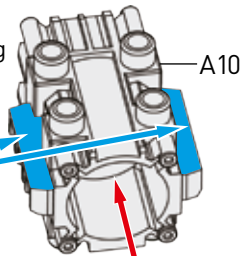
Pull up on subassembly E to make sure that it is securely attached to subassembly D. It should **not** come off.



**21**

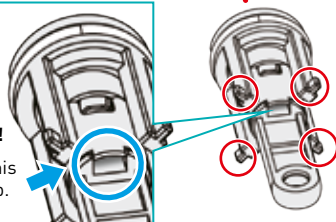
Press subassembly D all the way in, aligning the four notches into the grooves of A10.

Make sure the flat sides of A10 face up.



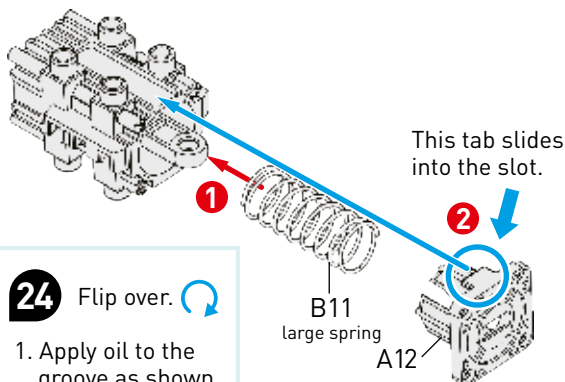
**IMPORTANT!**

Make sure this hole faces up.



**22**

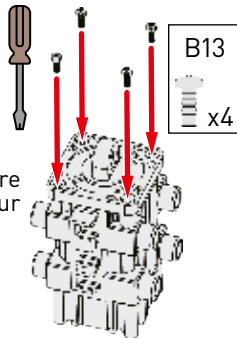
1. Add the large spring (B11).
2. Slide A12 all the way in.



This tab slides into the slot.

**23**


Hold A12 down as you secure it with four screws.



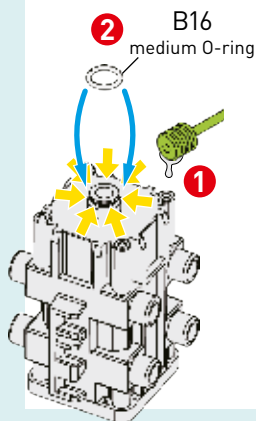
B13

x4

**24**

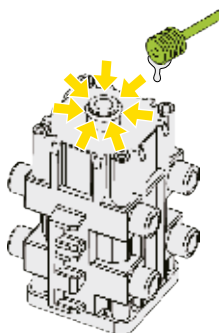
Flip over. 

1. Apply oil to the groove as shown.
2. Add the medium O-ring.



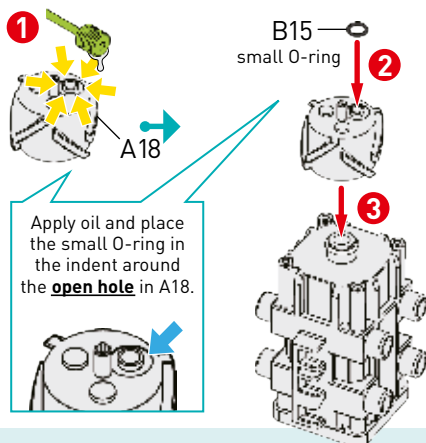
**25**

Apply oil to the O-ring.



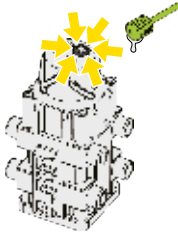
**26**

1. Apply oil to A18 as shown.
2. Place the small O-ring onto A18.
3. Place A18 as shown.



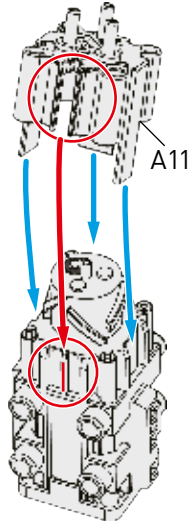
Apply oil and place the small O-ring in the indent around the **open hole** in A18.

**27** Apply oil to the O-ring.



**28**

Line up the opening in A11 with this line.

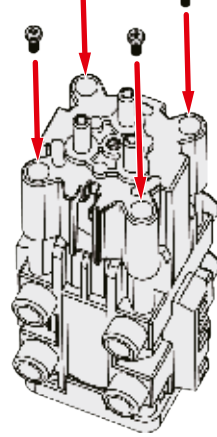


**29**

B13

x4

Secure A11 with four screws.



**30**

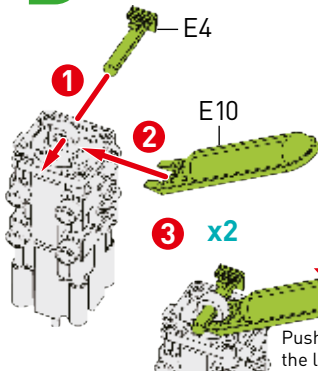


Perform cylinder tests A and B before continuing to step 31.

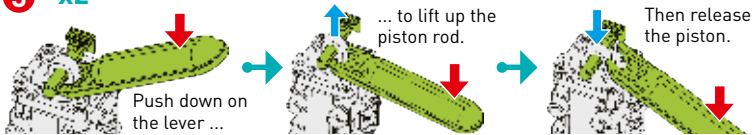


## CYLINDER TEST

**A** Make sure the piston rod has been installed correctly.



1. Insert E4 into the hole of the piston rod.
2. Place the two forks of the lever tool (E10) under E4 on either side of the piston rod.
3. Push down on the lever to lift up the piston rod, then release. Repeat two times.



As you do this, observe the piston rod from the side:



If the piston rod can be lifted up easily and retracts automatically, move on to test B.



The piston rod does not move when you try to lift it.

Go back to steps 21-23, and make sure all parts have been installed correctly. Or watch the demo video.



**DEMO!**

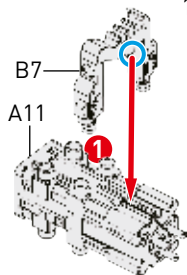
Scan this QR code for a video showing how to test the cylinder.



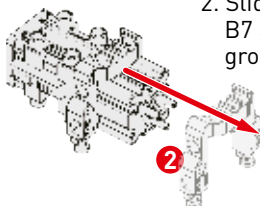




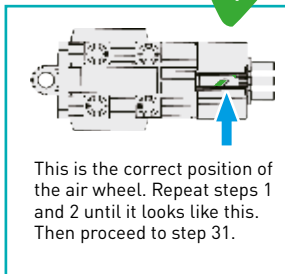
**B** Make sure the air wheel (A18) is in the correct position.



1. Place the notch of B7 all the way into the groove of the cylinder.

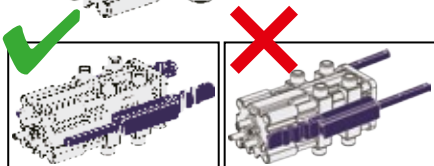
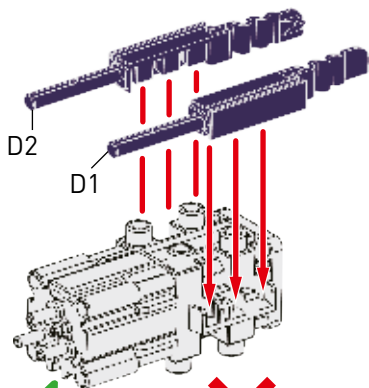


2. Slide the notch of B7 along the groove as shown.

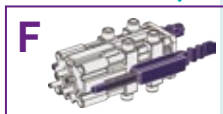
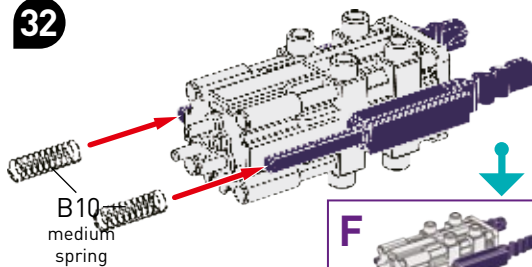


This is the correct position of the air wheel. Repeat steps 1 and 2 until it looks like this. Then proceed to step 31.

**31** Press all the way down, aligning the grooves.



**32**



**34**

Pay close attention to the orientation of parts in this step. If the parts are assembled incorrectly, they cannot be disassembled.

Confirm the orientations of E5 and E6, then press into B7 until you hear a click.

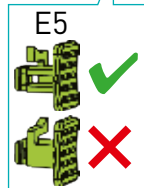
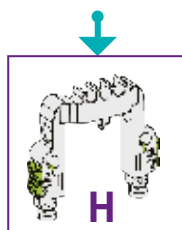
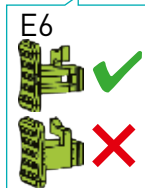
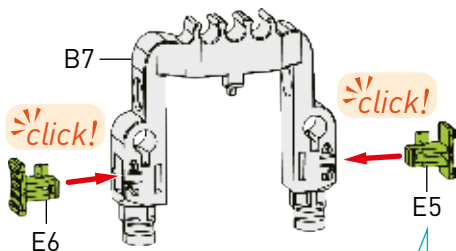
**33** Use a screwdriver or other tool to press E14 down until you hear a click.



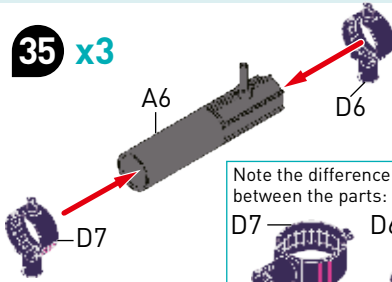
Turn upside down to ensure that the E14 parts do not fall out.



click!



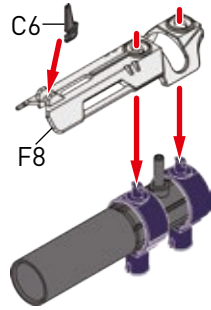
**35** x3



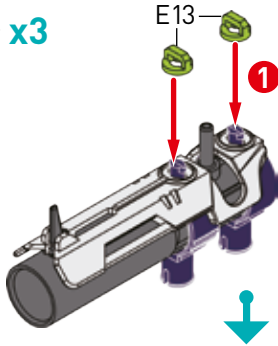
Note the difference between the parts:



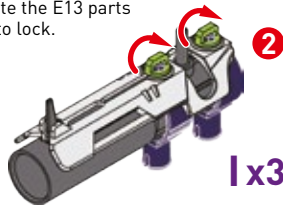
**36** x3



**37** x3



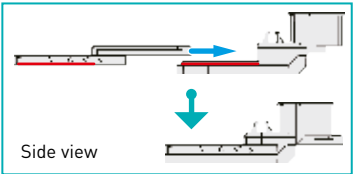
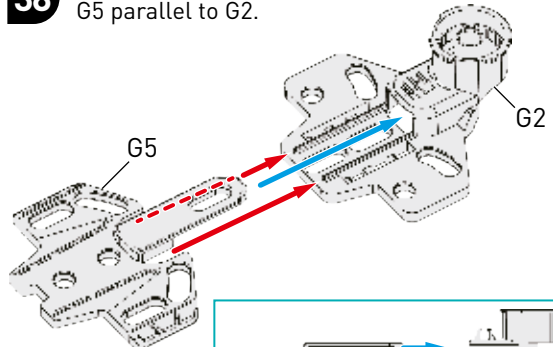
Rotate the E13 parts 90° to lock.



1 x3

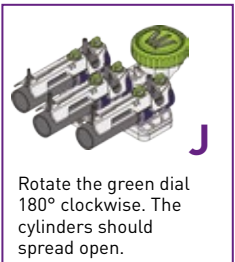
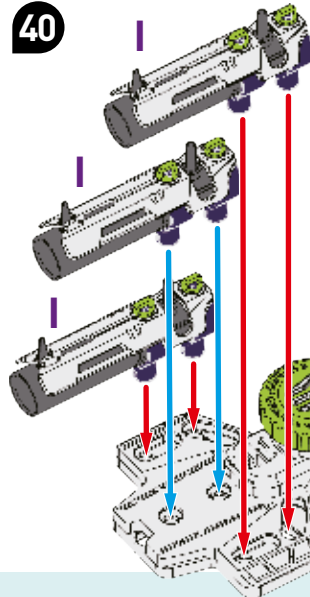
**38**

Make sure to insert G5 parallel to G2.



Side view

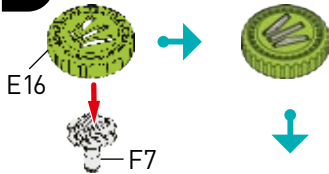
**40**



Rotate the green dial 180° clockwise. The cylinders should spread open.

**!** Be careful not to turn the green dial beyond its range.

**39** Align the three lines.



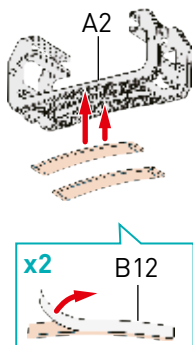
Press all the way down until you hear a click.

**click!**



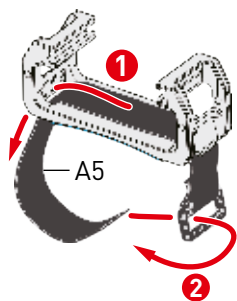


41



42

Make sure the fuzzy side faces out.

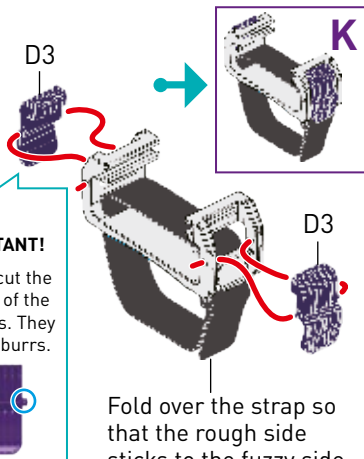


43

**IMPORTANT!**  
Do not cut the tabs off of the D3 parts. They are **not** burrs.

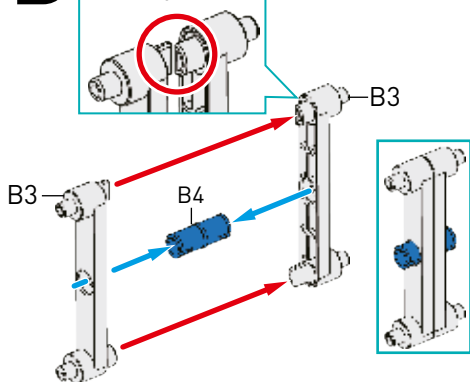


Fold over the strap so that the rough side sticks to the fuzzy side.



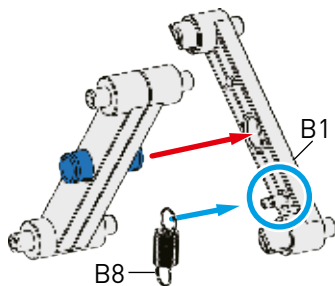
44

The two half circles fit together.



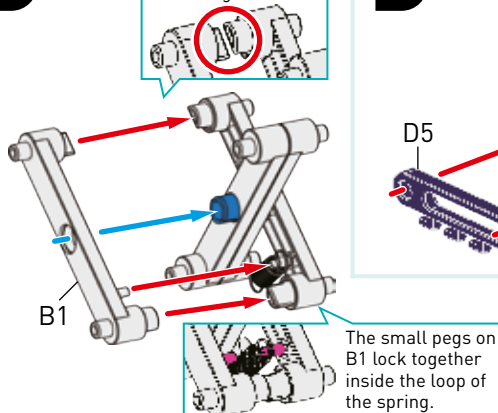
45

Place one loop of the spring (B8) over the small peg on B1.

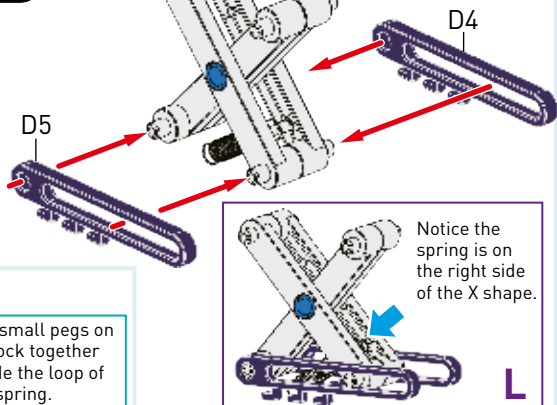


46

The two half circles fit together.

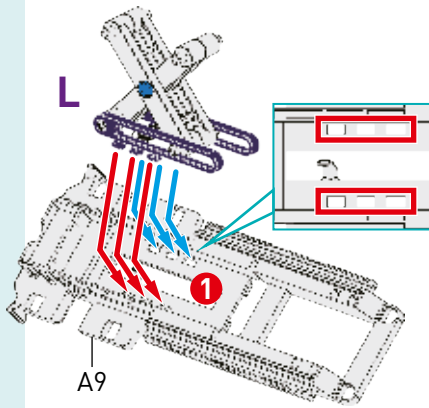


47

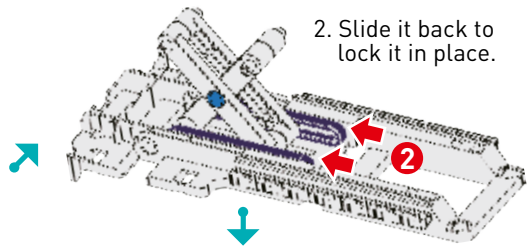


**48**

1. Place subassembly L into A9 as shown.

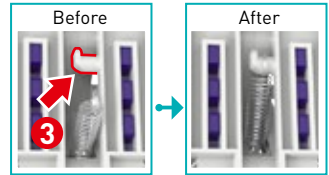


2. Slide it back to lock it in place.

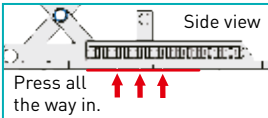
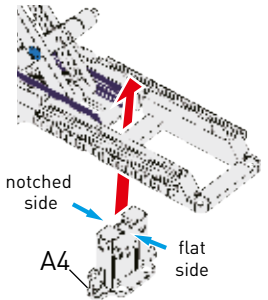


Flip over.

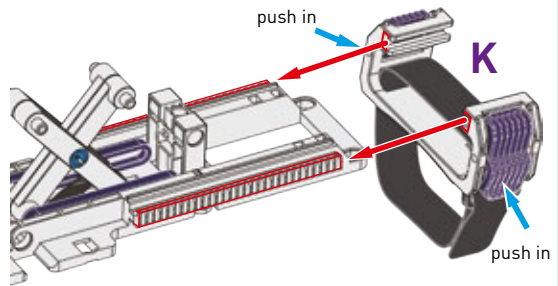
3. Place the other loop of the spring (B8) over the hook on the bottom of A9.

**49**

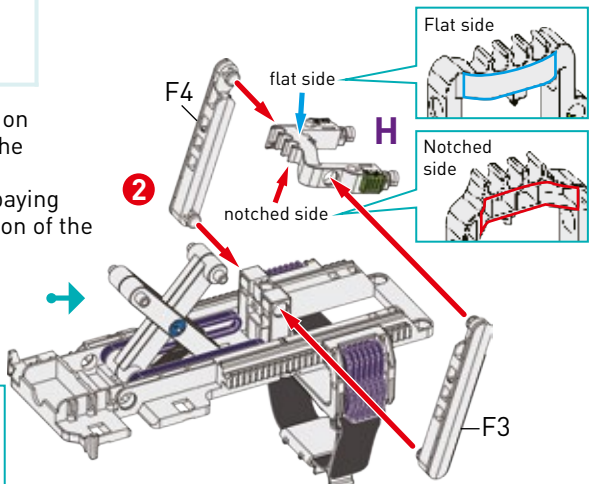
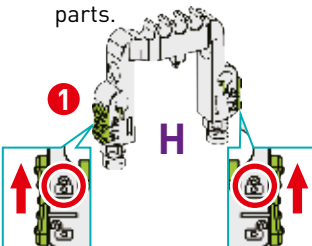
Place A4 as shown. Pay attention to the orientation.

**50**

Push the lower sections of both purple parts inwards as you slide subassembly K onto the blaster frame.

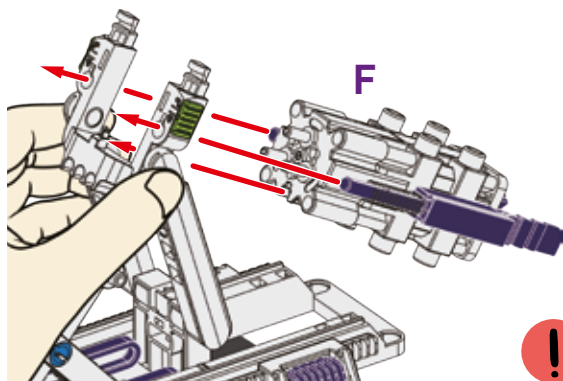
**51**

1. Slide both green sliders on subassembly H up into the locked position.  
2. Install subassembly H, paying attention to the orientation of the parts.

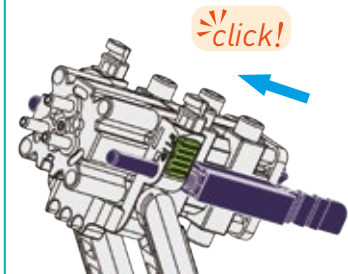




**52** Hold the assembly in your hand while you place subassembly F.



Press subassembly F all the way in until you hear a click. The cylinder will lock automatically.

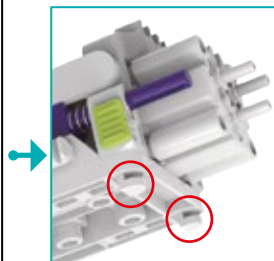
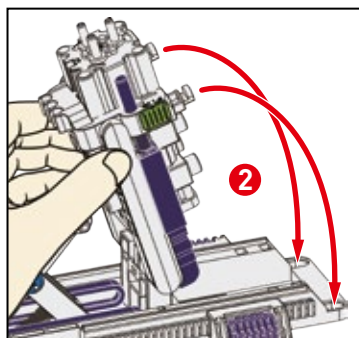
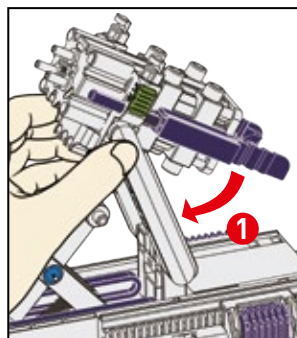


### INSTALLING THE CYLINDER

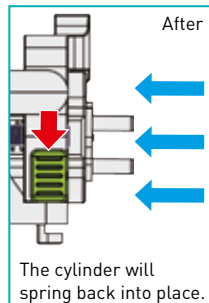
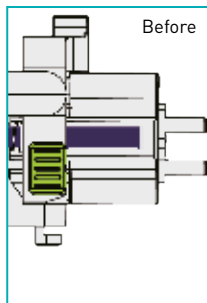
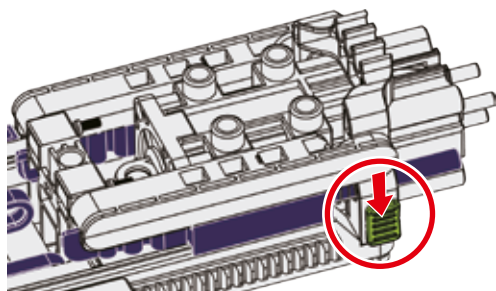
Check out the assembly video to see how to install the cylinder:



**53**

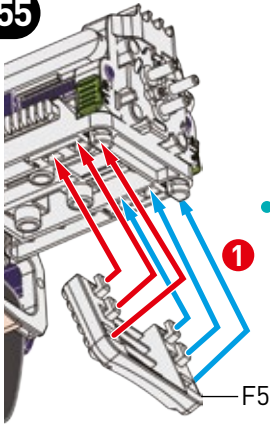


**54** Unlock both green sliders. The cylinder will spring back.

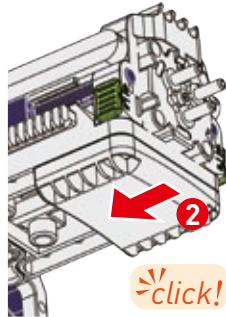


The cylinder will spring back into place.

55

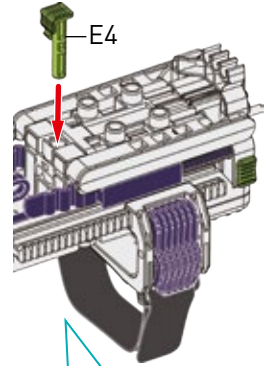


Slide back until you hear a click.



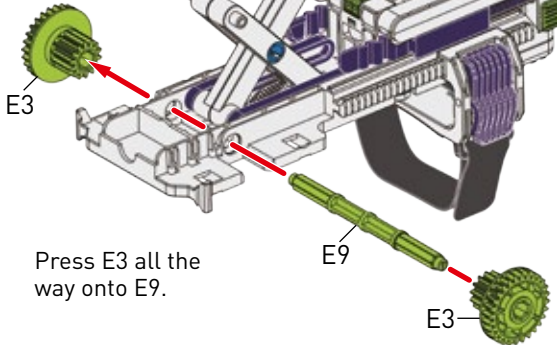
56

Press E4 all the way in.



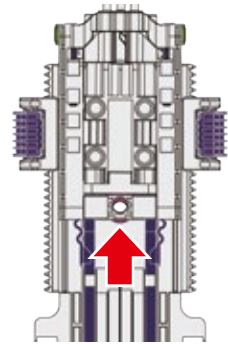
57

REMOVE BURRS!



Press E3 all the way onto E9.

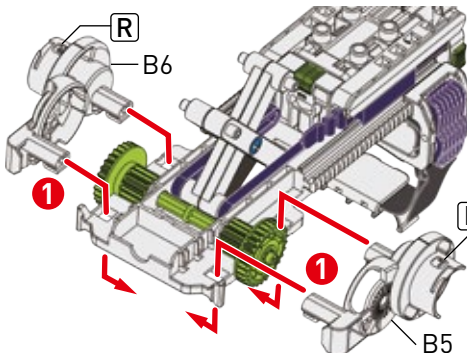
Top view



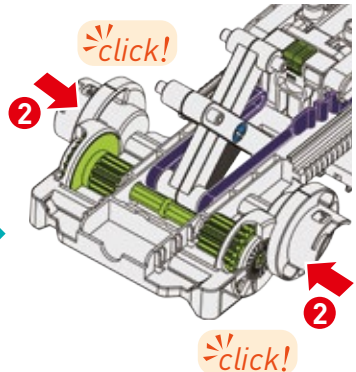
You may need to push the piston rod in so that the holes line up.

58

1. Notice there are R (right) and L (left) letters on the parts.

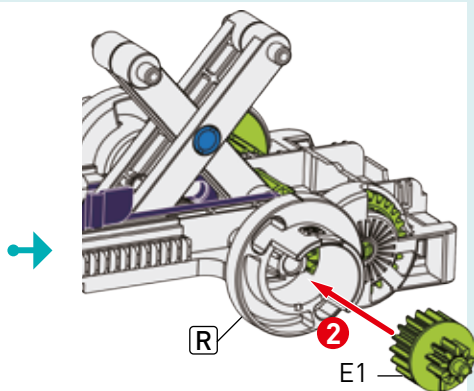
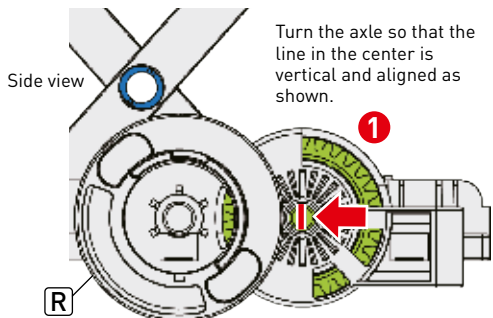


2. Press all the way in until you hear a click.

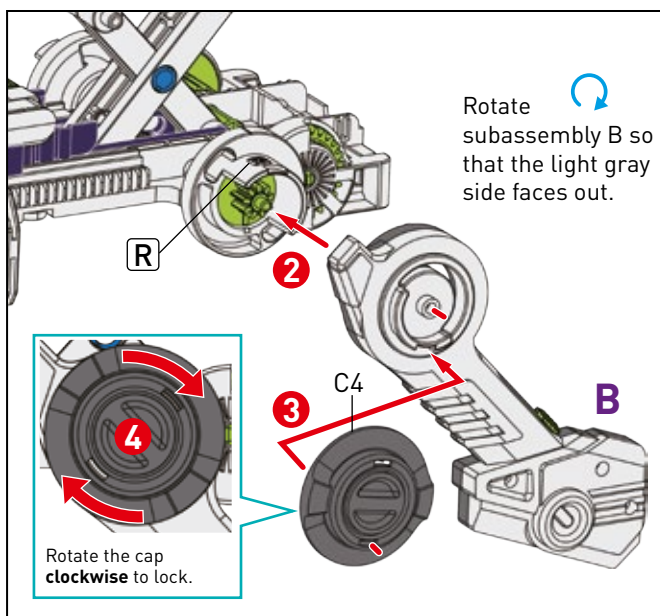
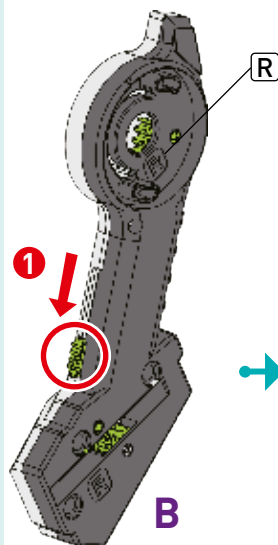
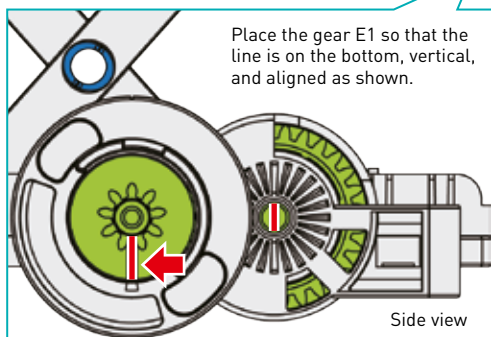




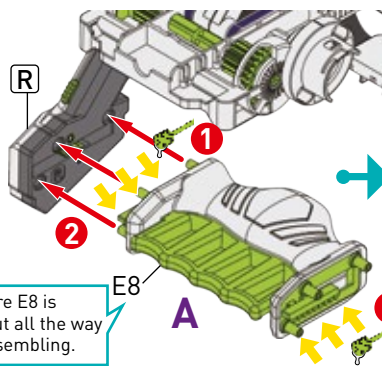
**59** Align gears exactly as shown.



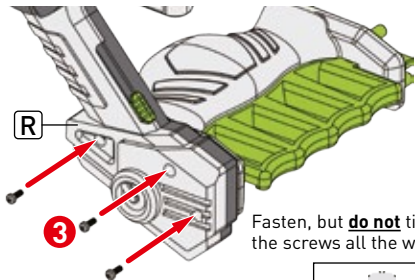
- 60**
1. Push the slider all the way down.
  2. Place subassembly B.
  3. Place C4.
  4. Rotate C4 clockwise to lock.



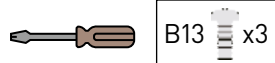
61



Make sure E8 is pulled out all the way while assembling.



Fasten, but **do not** tighten the screws all the way.

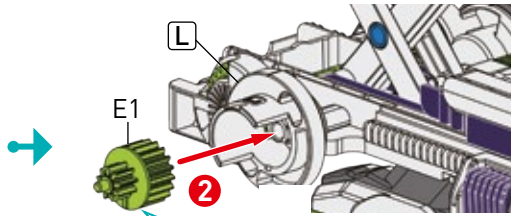
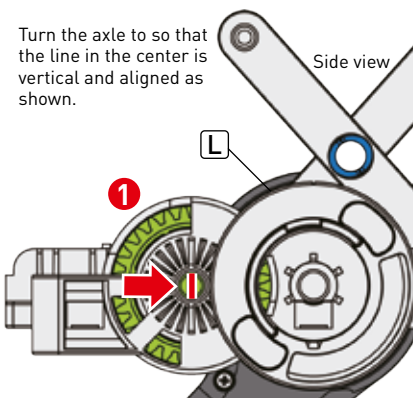


Apply oil to the teeth of subassembly A on both sides.

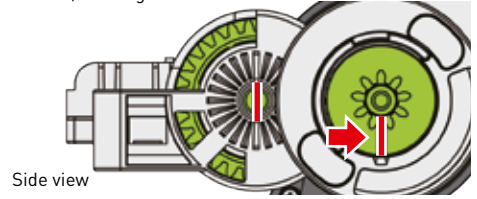
62

Align gears exactly as shown.

Turn the axle to so that the line in the center is vertical and aligned as shown.

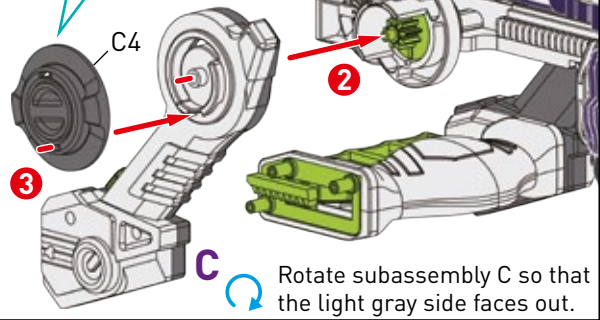
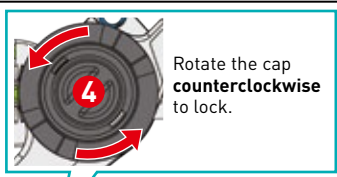
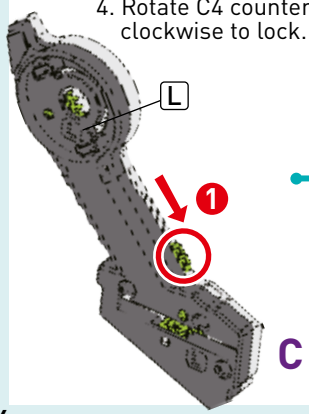


Place the gear E1 so that the line is on the bottom, vertical, and aligned as shown.



63

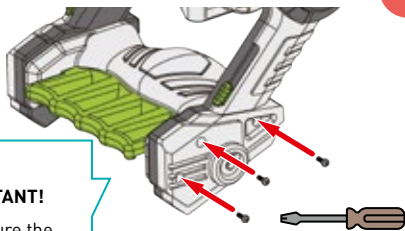
1. Push the slider all the way down.
2. Place subassembly C.
3. Place C4.
4. Rotate C4 counterclockwise to lock.







64



**IMPORTANT!**

Make sure the green sliders are pushed down and the trigger is pulled out.



Fasten, but **do not** tighten the screws all the way.



After installing subassemblies A, B, and C, test the trigger.

> When the trigger is at rest, both green sliders should be all the way down, and there should be no gap between the trigger and the handle.

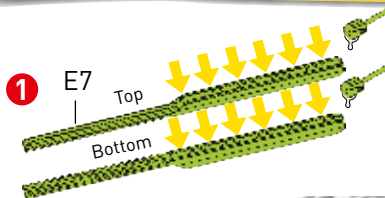
> Now squeeze the trigger. The motion should be smooth, and the trigger should spring back easily.

If you have problems with any of these checks, go back to step 57 or watch this video:

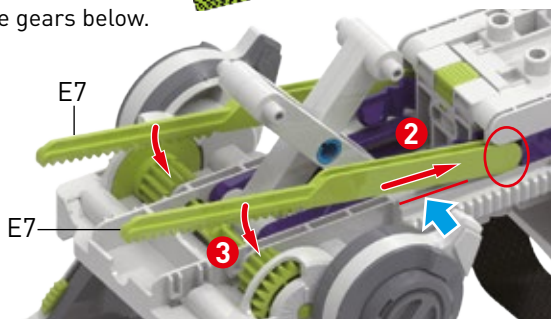
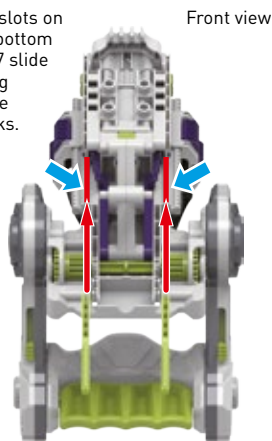


65

1. Apply oil to the **top** and **bottom** of the **two** E7 parts as shown.
2. Slide the tracks (E7) all the way in (see image below).
3. Then place the tracks down so that their teeth mesh with the gears below.



The slots on the bottom of E7 slide along these tracks.



Make sure there is no gap at all between E7 and the purple rail on both sides.

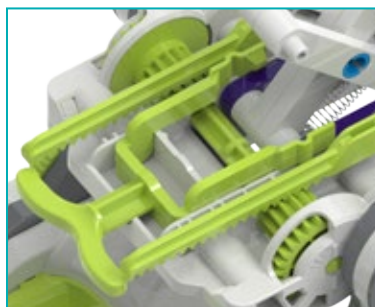
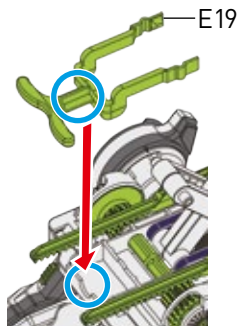


Even a small gap here will cause a malfunction.



66

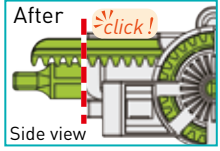
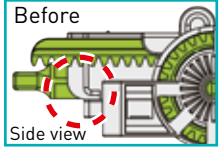
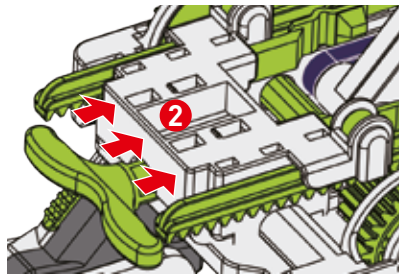
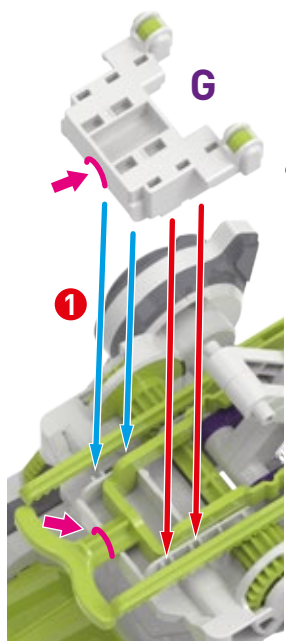
Place the neck of E19 into the semi-circular notch as shown.



67

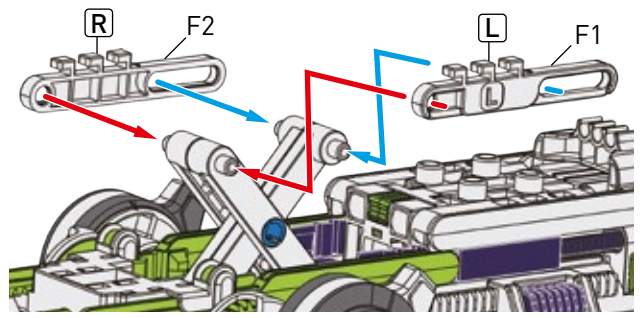
1. Place subassembly G, making sure to align the grooves as shown.

2. To lock in place, slide back until you hear a click.



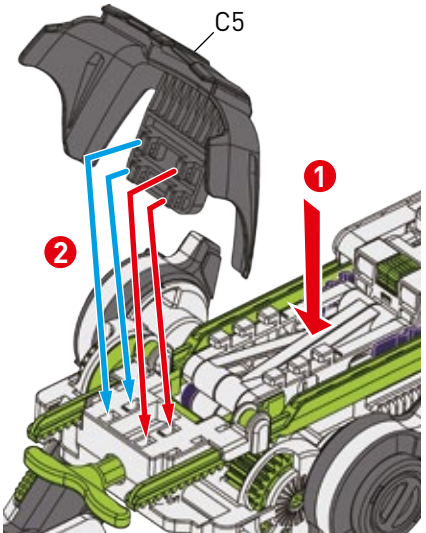
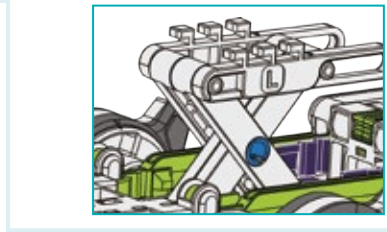
68

Notice there are R (right) and L (left) letters on the parts.

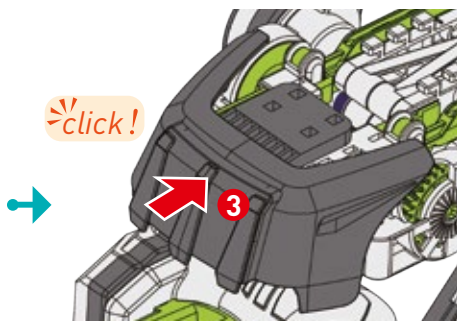


69

1. Press down on the platform.  
2. Place the hooks of C5 into the slots as shown.



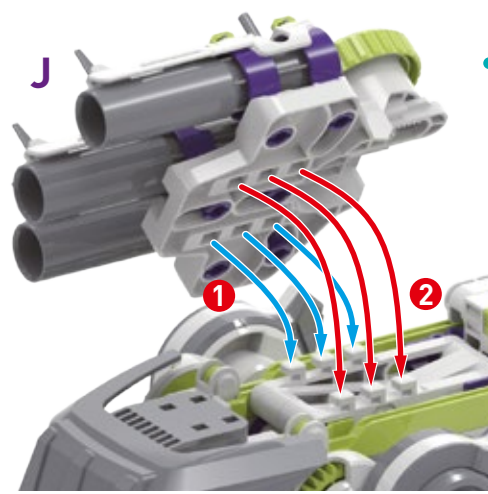
3. Slide C5 all the way back until you hear a click.





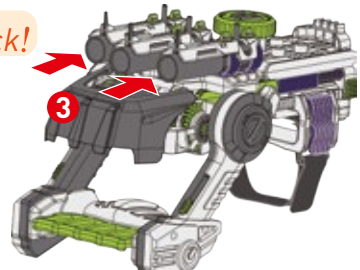
**70**

1. Line up the three holes on the right side of subassembly J as shown.
2. Line up the other three holes and press down all the way.



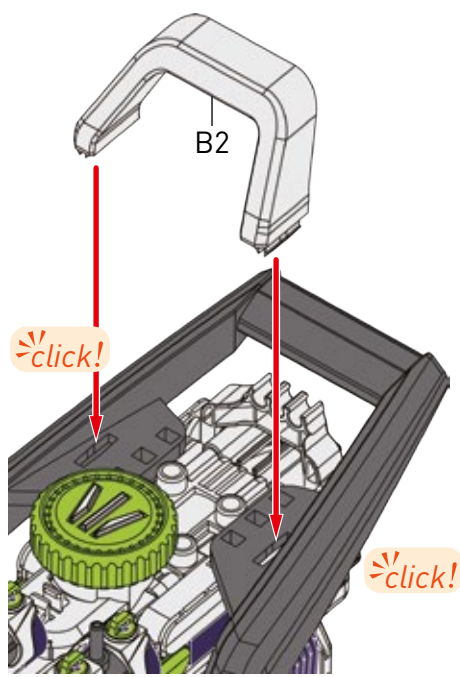
3. Use both hands to push subassembly J back until you hear a click.

*click!*



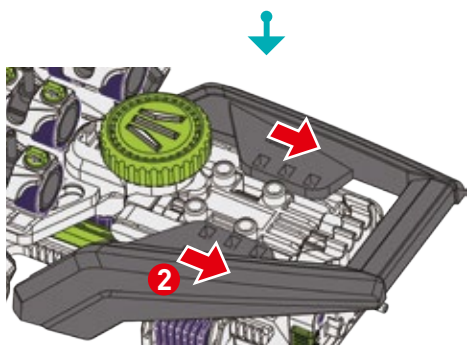
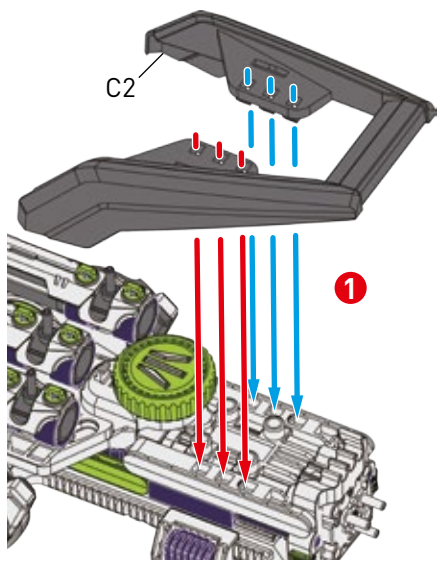
**72**

- Press B2 down until you hear a click.



**71**

1. Line up all six holes of C2 as shown and press down.
2. Slide C2 back to lock in place.

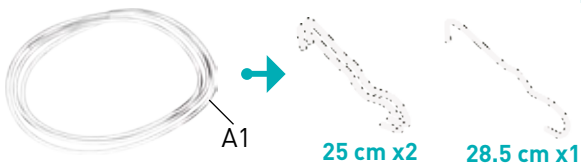




Start

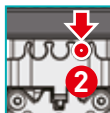
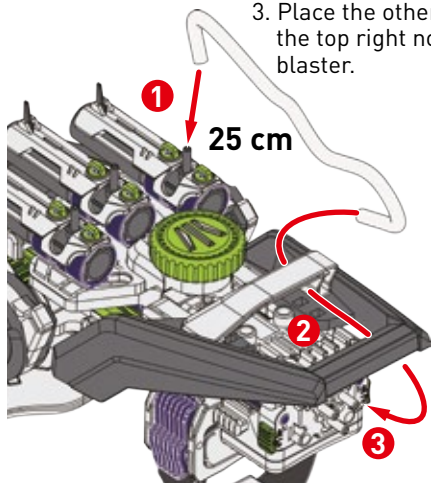
73

Use the ruler above to cut two pieces of tube to a length of 25 cm, and one piece of tube to 28.5 cm.

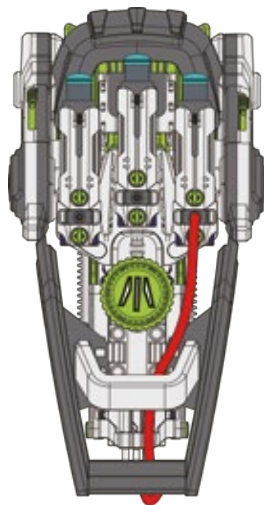
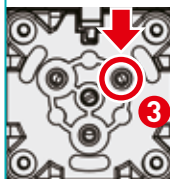


74

1. Place one end of a 25-cm tube on the right-most nozzle.
2. Clip the tube into the right most clip.
3. Place the other end of the tube on the top right nozzle at the back of the blaster.

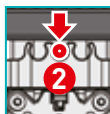
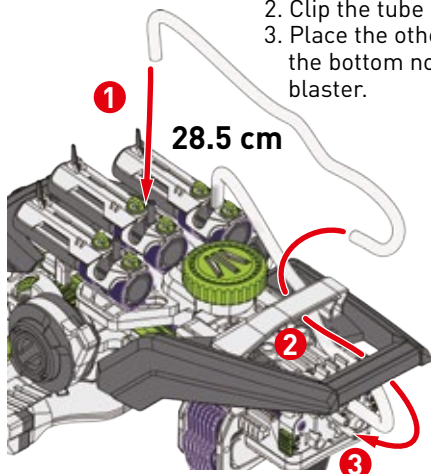


Connect the tube to the **top right** nozzle in the back.

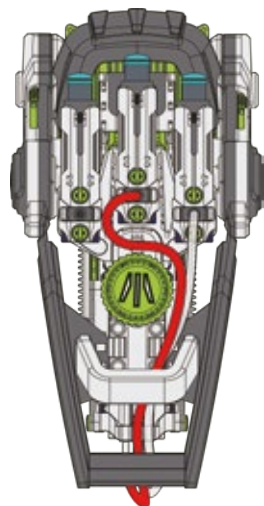
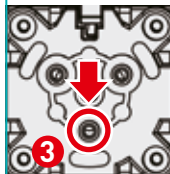


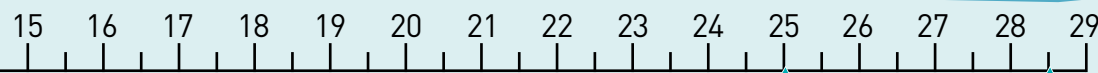
75

1. Place one end of the 28.5-cm tube on the middle nozzle.
2. Clip the tube into the middle clip.
3. Place the other end of the tube on the bottom nozzle at the back of the blaster.



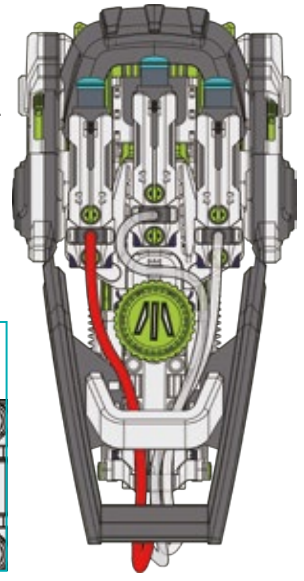
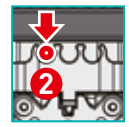
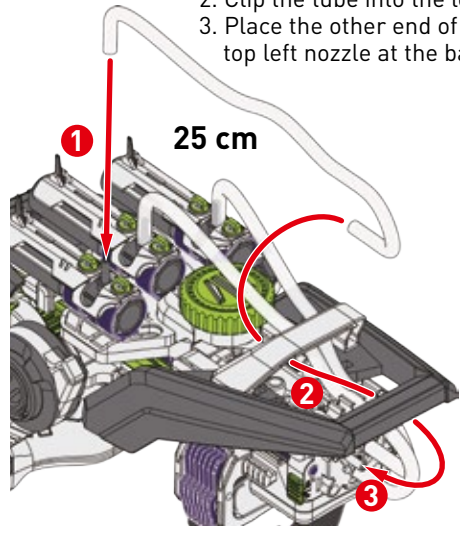
Connect the tube to the **bottom** nozzle in the back.





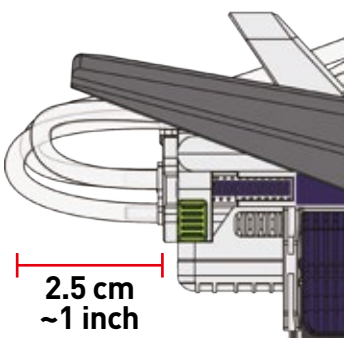
**76**

1. Place one end of the other 25-cm tube on the left-most nozzle.
2. Clip the tube into the left-most clip.
3. Place the other end of the tube on the top left nozzle at the back of the blaster.

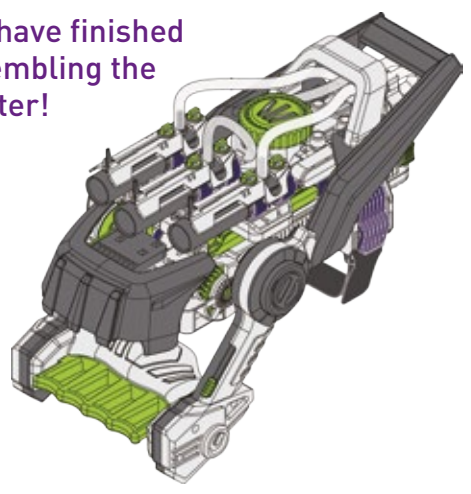


**77**

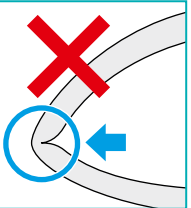
Leave about 2.5 cm (1 inch) of space for the tube as shown.



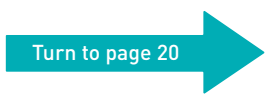
You have finished assembling the blaster!



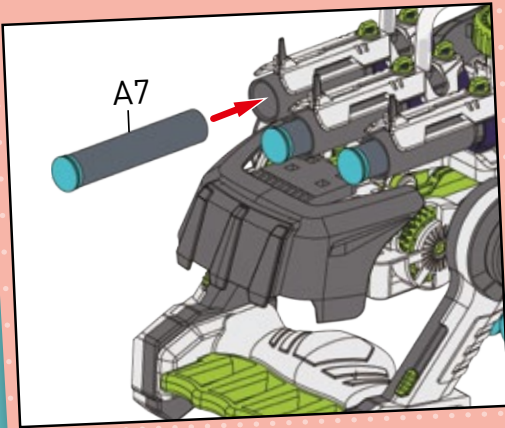
The air tube should not be bent like this. It will affect the power of the blaster.



Now it's time to test it out and troubleshoot any issues.



## HOW TO INSTALL THE DARTS



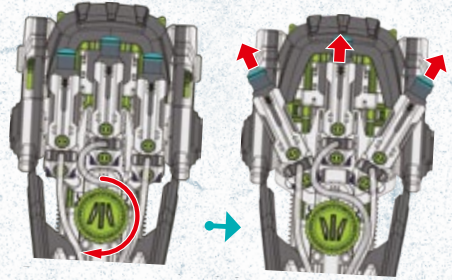
Push hard on the dart caps to compress the darts all the way into the barrels.

## ! TROUBLE SHOOTING?

If your blaster is not working properly, don't panic! We're here to help. Scan this QR code to access troubleshooting resources. **Engineering is all about figuring stuff out!**

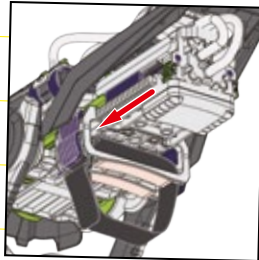
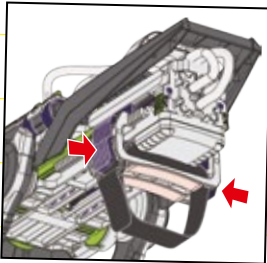


## HOW TO ADJUST THE LAUNCH ANGLE

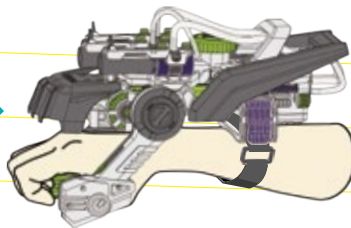
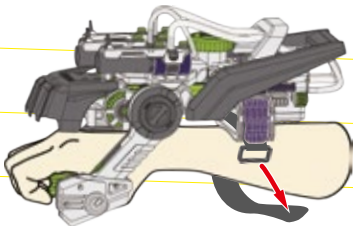


Rotate the green dial up to 180° clockwise to expand the angle of the dart holders. Do not rotate more than 180° clockwise.

## HOW TO ADJUST THE POSITION OF THE ARM BAND

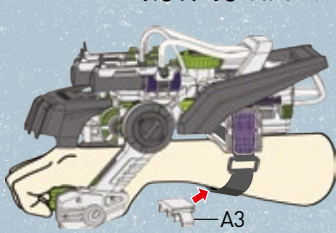


Press and hold the purple buttons on both sides as you slide the track forward or backward to adjust to a comfortable position.

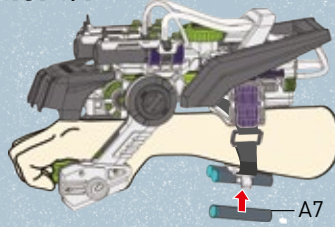


Loosen the arm strap and adjust to a comfortable position. Then reattach the hook and loop fastener.

## HOW TO ADD THE RESERVE CLIP



When you are happy with the position of the arm band, add the reserve clip (A3).



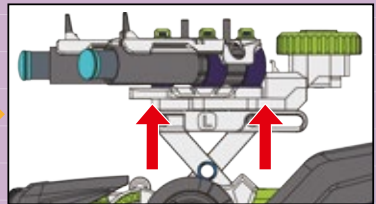
The reserve clip allows you to carry three extra darts.

## HOW TO LIFT THE LAUNCH PLATFORM

### AUTO LIFT MODE



Pull out the green handle under the front cover (C5) to put the blaster in auto lift mode.

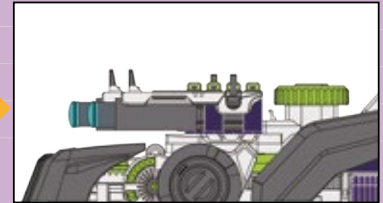


In this mode, the launch platform will lift when you pull the trigger for the first time. After that, it will launch a dart when you pull the trigger.

### LOCKED MODE



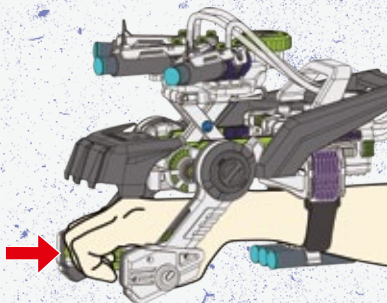
Push the green handle back, and the launch platform will be locked in the lower position.



In this mode, the launch platform will not lift when you pull the trigger.

## HOW TO LAUNCH DARTS

Squeeze the green trigger with your hand.



## EXPERIMENTS AND SCIENCE INFO!

Scan this QR code to see awesome experiments you can do with your Ultra Bionic Blaster!

Plus learn about pneumatics and devices that use air to perform work.



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