

12+  
AGES



# SCOUT ROVER

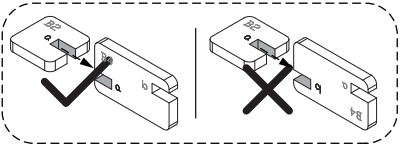
3D Wooden Puzzle

# ASSEMBLY INSTRUCTIONS



**NOTES:**

- 1. Punch out the parts and assemble with care.
- 2. Store the small parts carefully after removing them from the board to avoid losing pieces.
- 3. Some parts have numbers, match the numbers while assembling.
- 4. Be sure to fully assemble pieces for a proper fit.
- 5. Extra pieces can be used as spare parts.
- 6. Use sandpaper to polish any rough edges.
- 7. Keep these instructions for future reference.



**ATTENTION:**



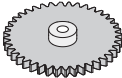

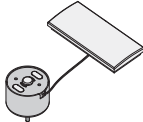

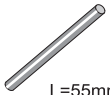
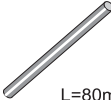




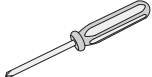

- 1. Keep the product away from open flames and don't soak it in water.
- 2. Do not use chemicals like alcohol or ammonia for cleaning. Clean with a dry cloth.

**FAQ:**

Problem	Cause	Solution
The rover doesn't move.	<div>1. Sunlight is not direct enough.</div> <div>2. The gears didn't mesh correctly.</div>	<div>1. Expose the solar panel to stronger, more direct sunlight.</div> <div>2. Fix the gears so they mesh together. Revisit any instructions to help ensure product was assembled correctly.</div>



## Parts List

Item	Shaft Sleeve	Gear	Gear	Gear Set	Solar Motor Set	Steel Shaft	Steel Shaft
Number	P1	P2	P3	P4	P5	P6	P7
Illustration				 L=35mm		 L=20mm	 L=55mm
Quantity	20	2	1	1	1	3	2
Item	Steel Shaft	Hinge	Screw	Round Wood Stick	Round Wood Stick	Screwdriver	Square Shaft Sleeve
Number	P8	P9	P10	P11	P12	P13	P14
Illustration	 L=80mm			 L=60mm	 L=30mm		
Quantity	3	5	25	1	2	1	4

## Key



Make sure the gears are appropriately engaged with each other.



Complete step 4 times.



Use a hard surface to help push together pieces for assembly.



Step1



Assemble the parts symmetrically.



Make sure the parts can rotate freely.



Rotate the product based on the direction of the arrow to match the new perspective.



Step2

Complete steps in order.



Complete step 2 times.



Special attention in assembly.



Back side

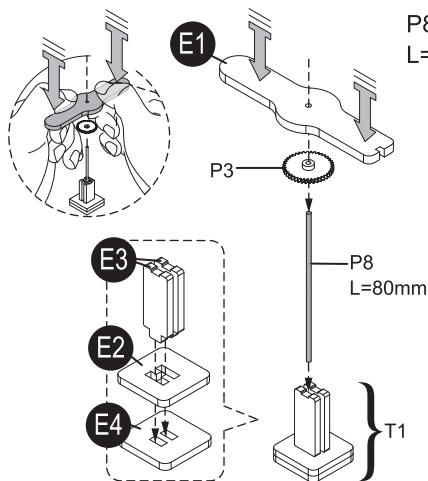


Printed side

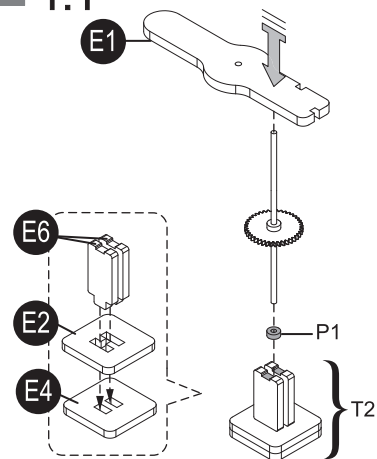
1

E1  
E2 x2  
E3 x2  
E4 x2  
E6 x2

P1  
P3  
P8



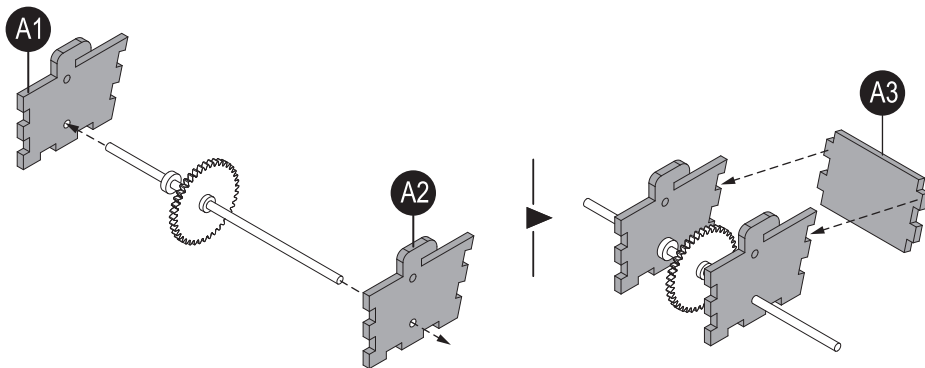
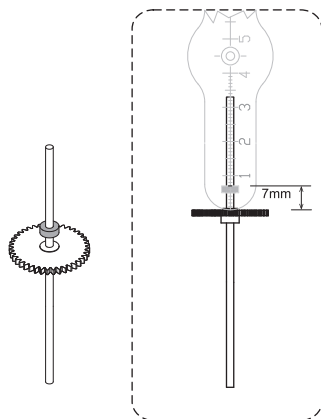
1:1



Use the ruler **E1** as a tool to help with assembly as needed.

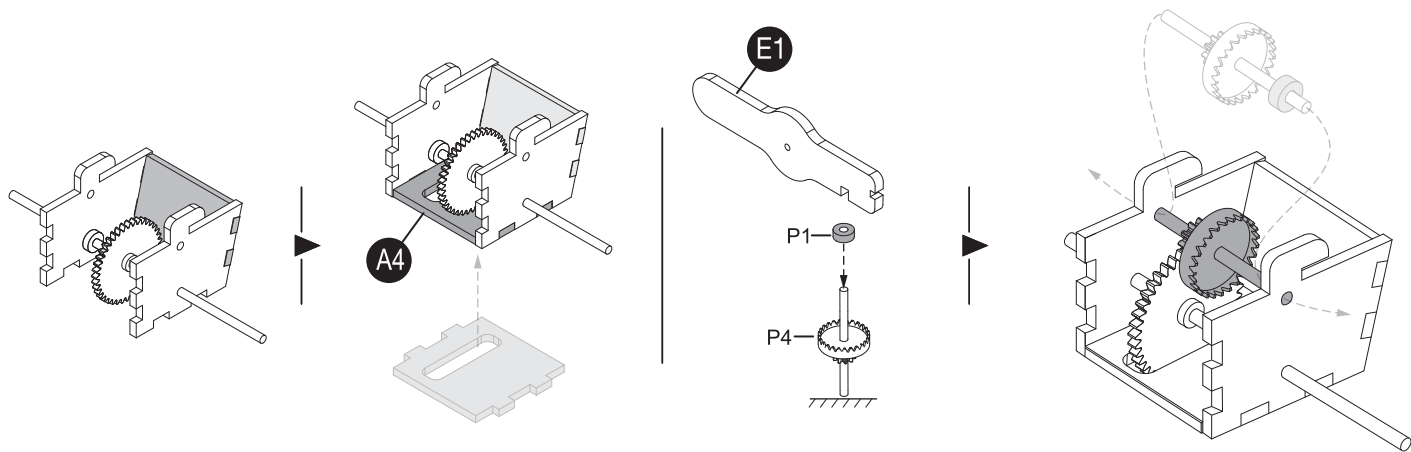
2

A1  
A2  
A3



A4

P1  
P4

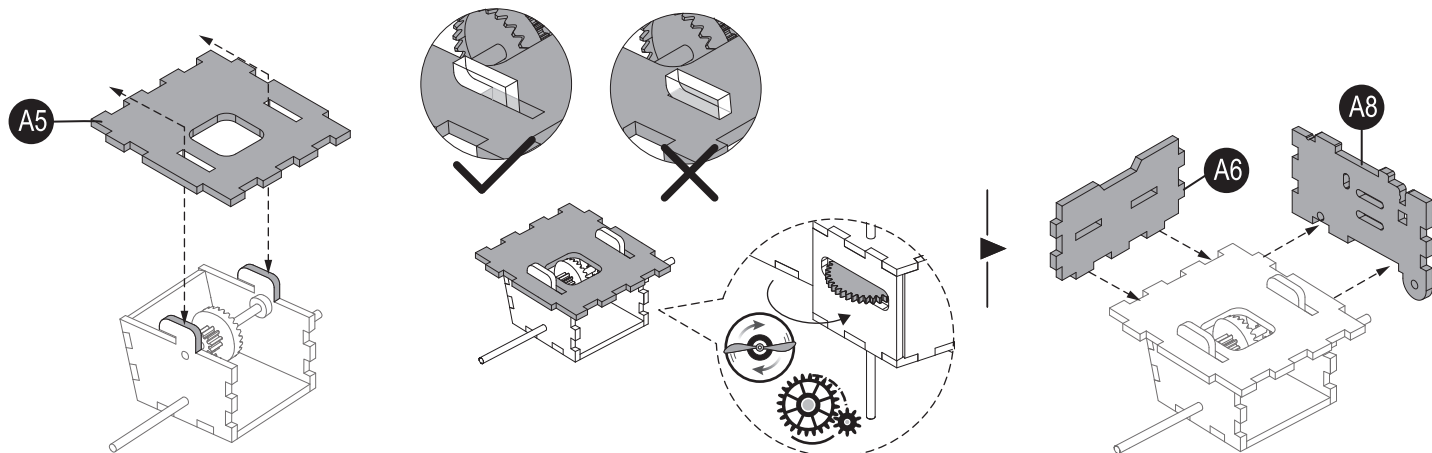


3

A5

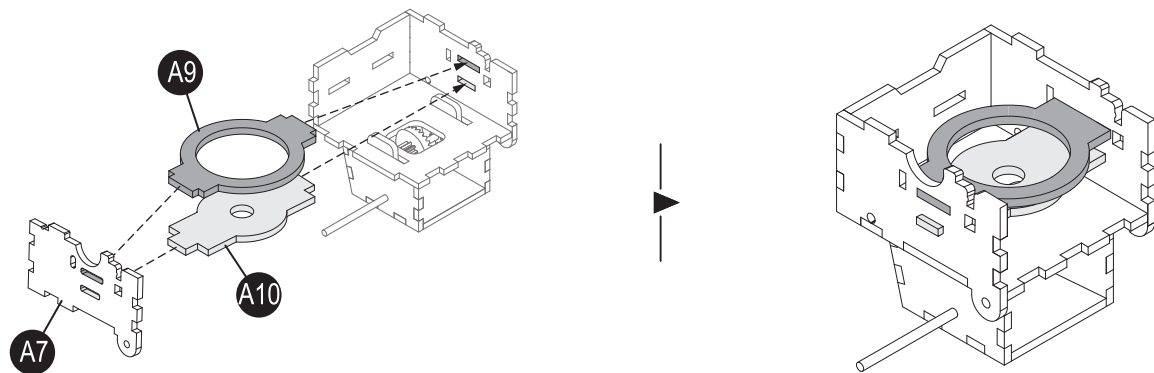
A6

A8



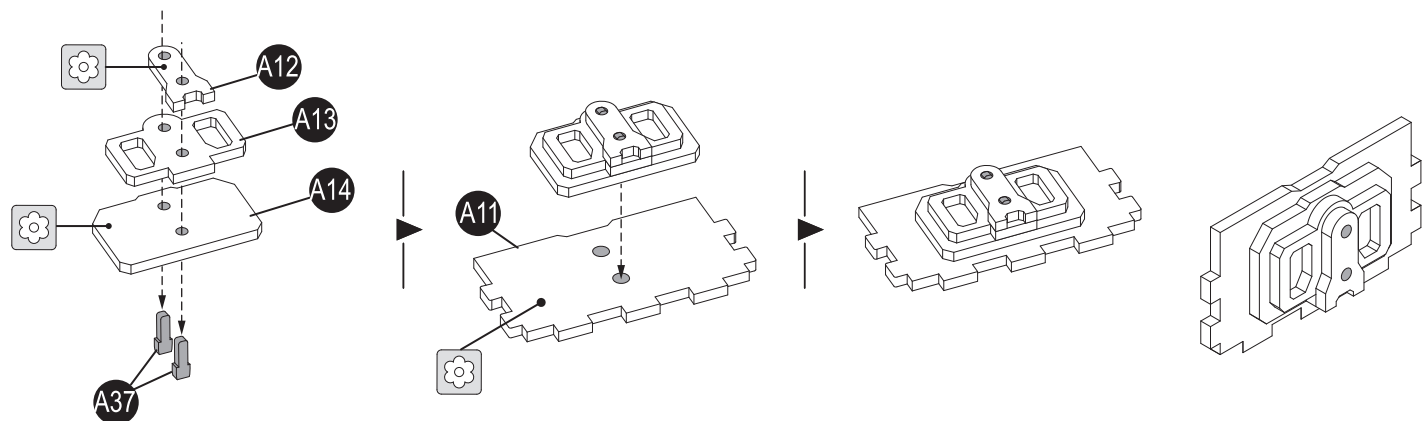


A7  
A9  
A10

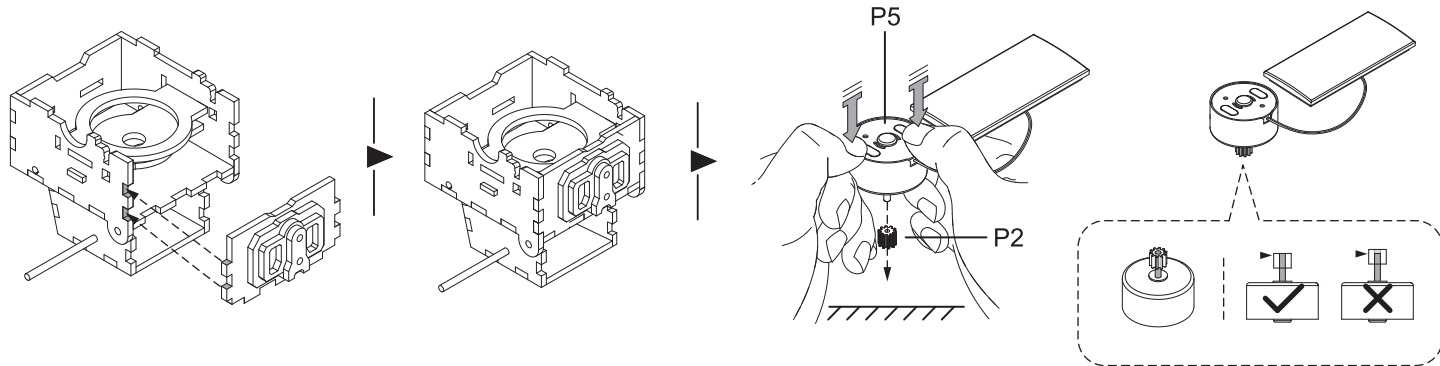


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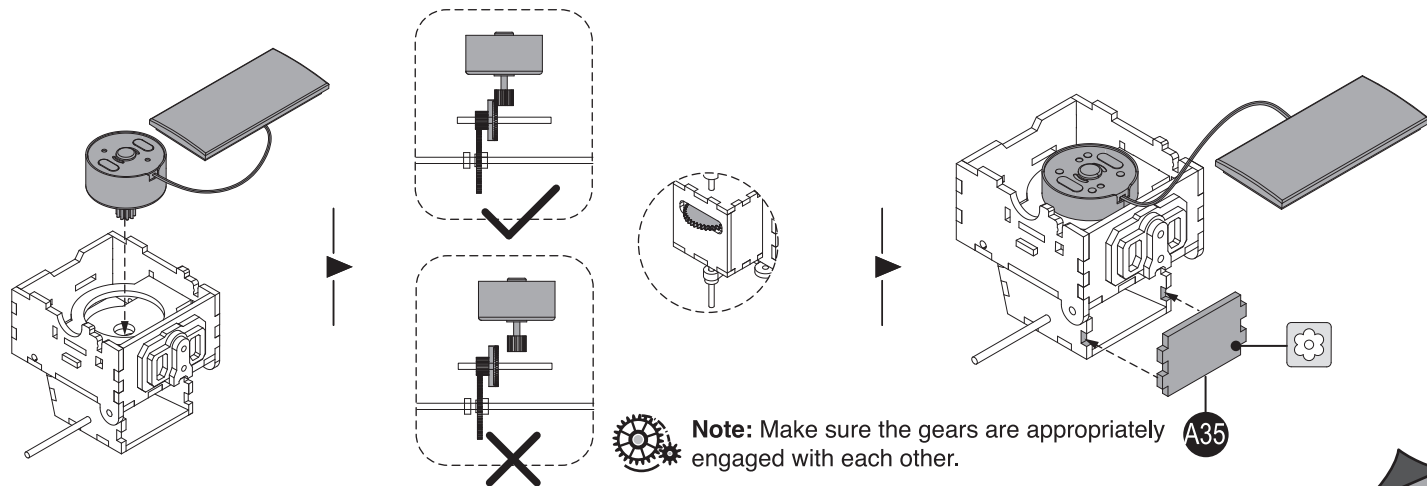
A11  
A12  
A13  
A14  
A37×2

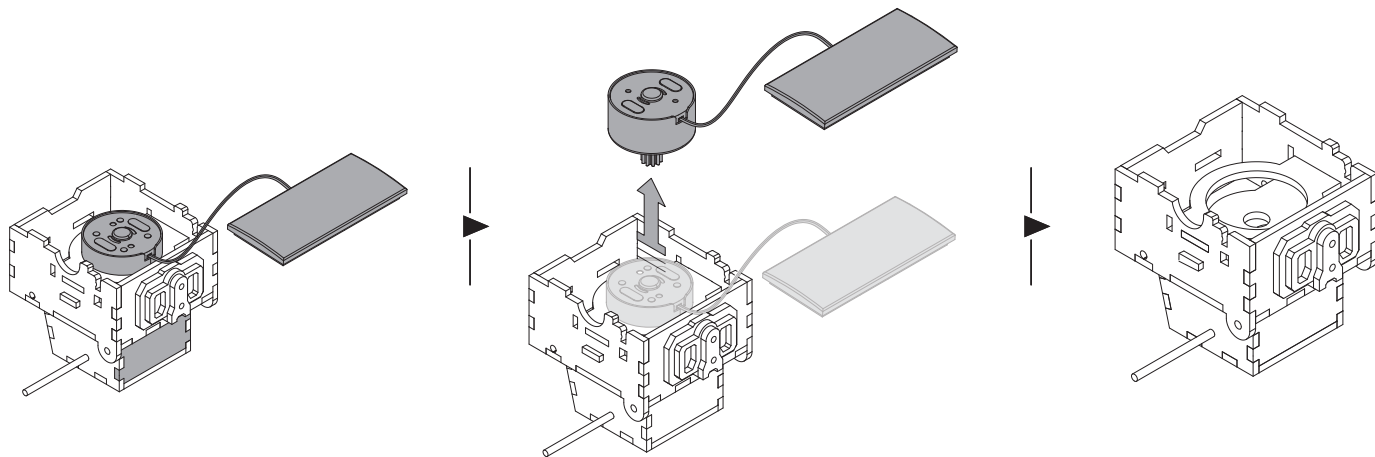


P2  
P5



A35





5

A39×12

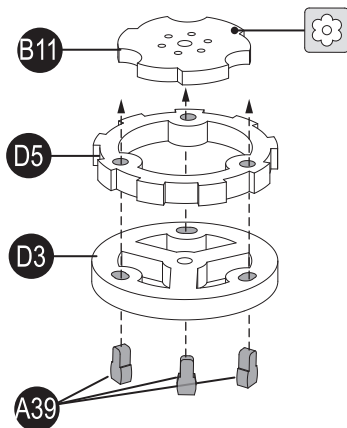
B11×4

D3×4

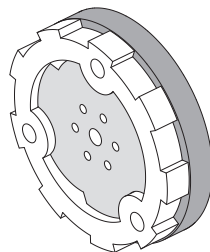
D5×4

P1×2

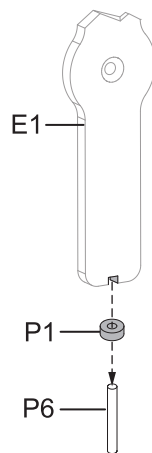
P6×2



Polish the parts with sandpaper.



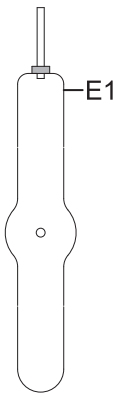
x4



P6  1:1  
L=20mm



x2





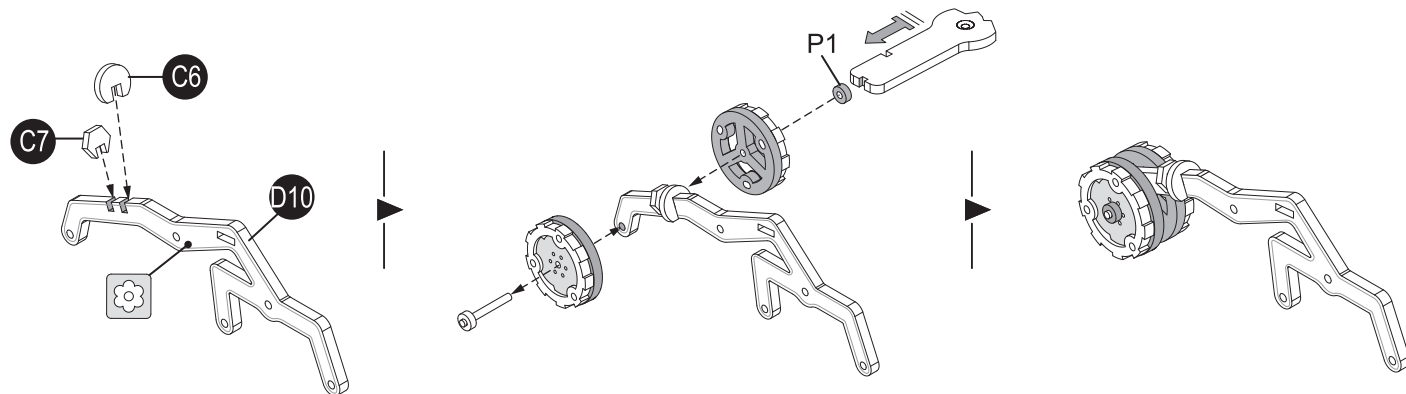
6

C6

C7

D10

P1



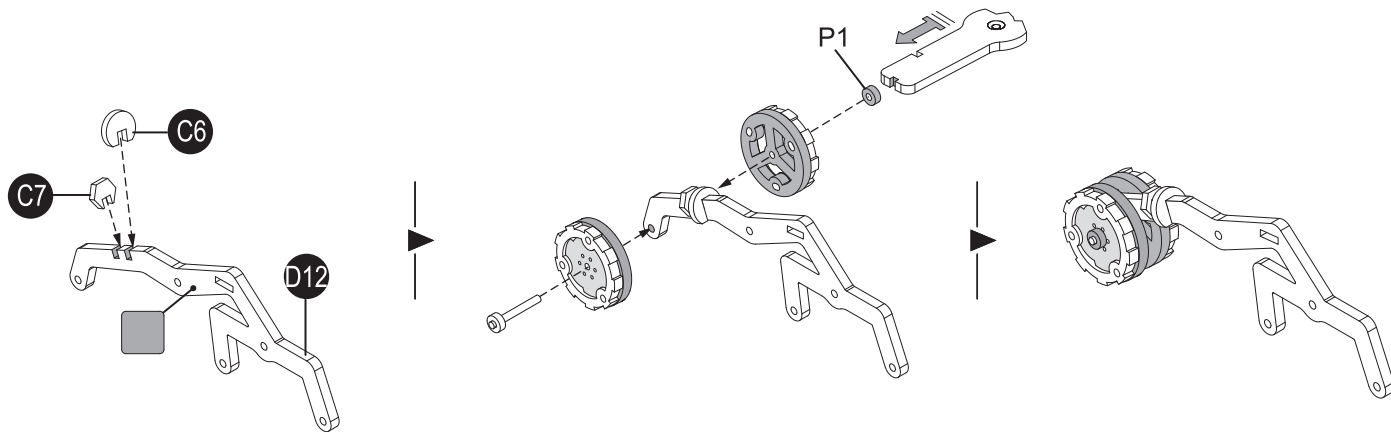
7

C6

C7

D12

P1



8

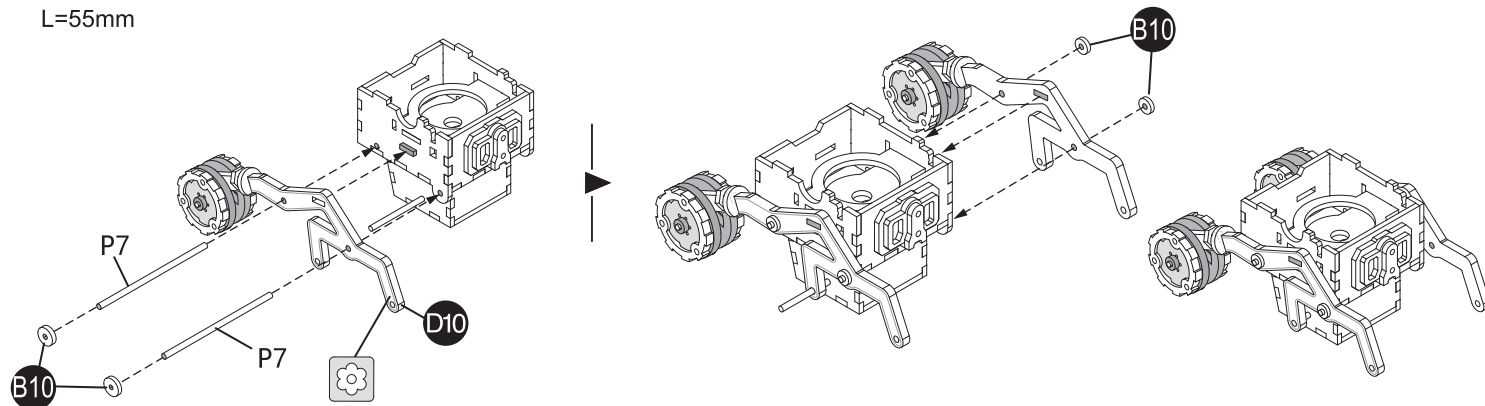
B10×4

P7×2

P7

L=55mm

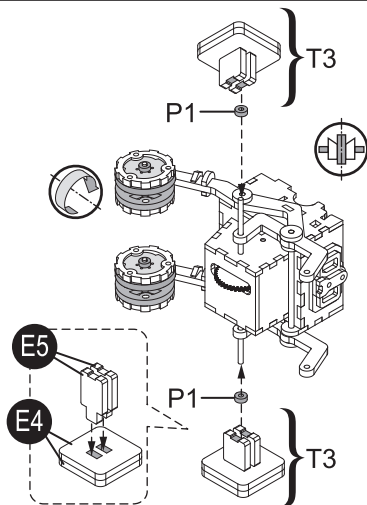
1:1



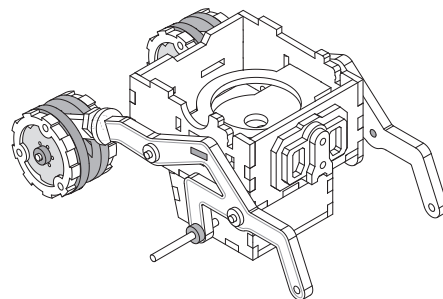
E5×2

E4×2

P1×2



Be careful not to misalign gears while assembling this step. Gears should remain engaged and straight.



9

A38 x 6

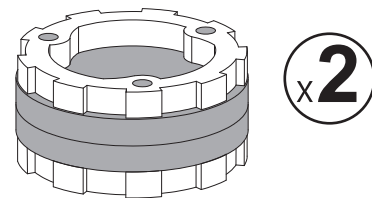
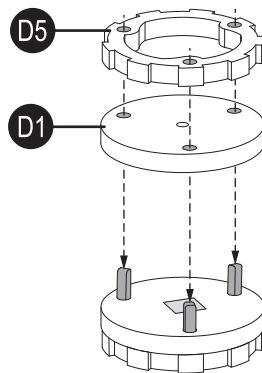
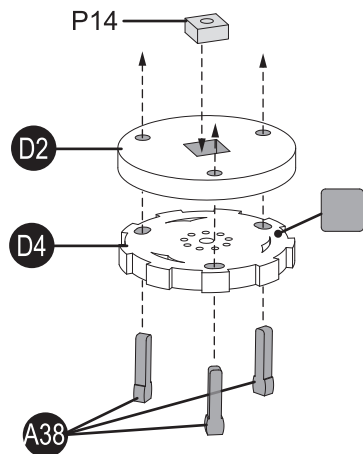
D1 x 2

D2 x 2

D4 x 2

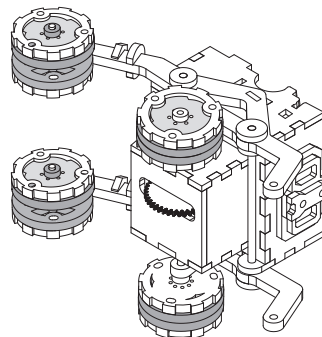
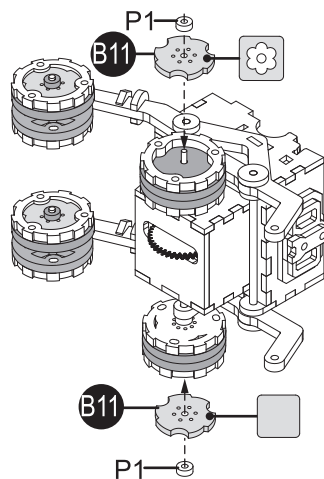
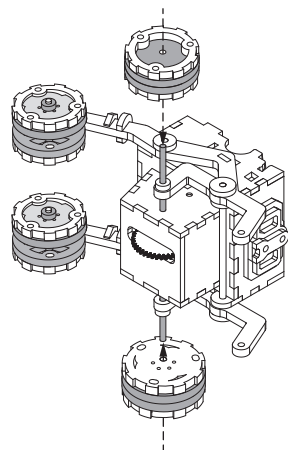
D5 x 2

P14 x 2



B11 x 2

P1 x 2





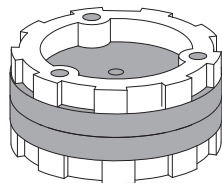
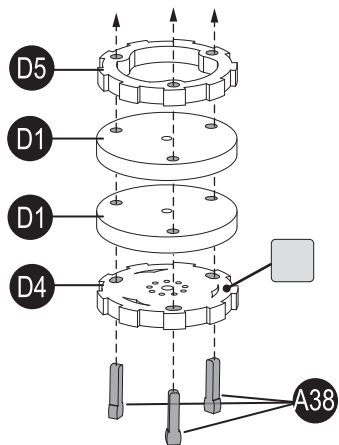
# 10

A38×6

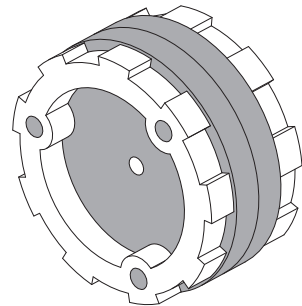
D1×4

D4×2

D5×2



2



# 11

B11

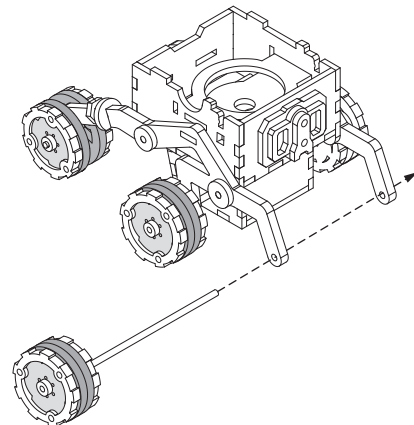
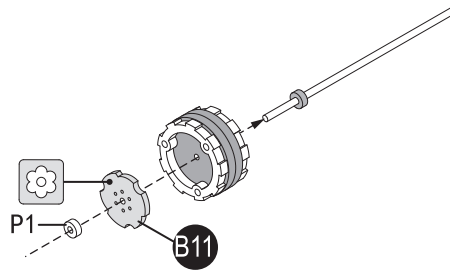
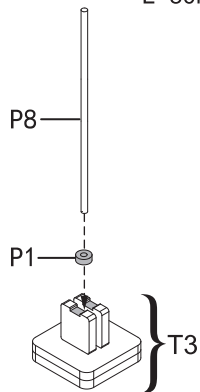
P1×2

P8

P8

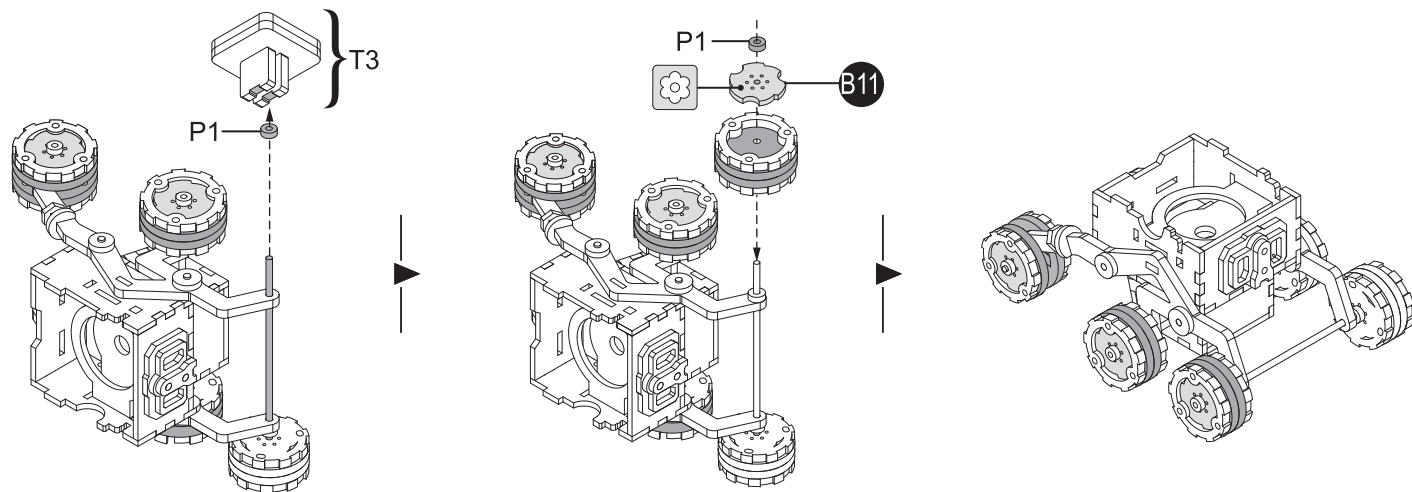
L=80mm

1:1



B11

P1 x 2



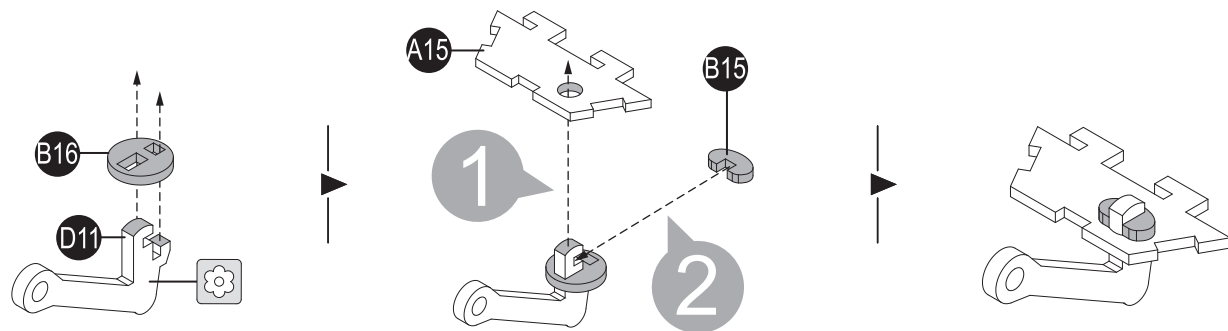
12

A15

B15

B16

D11



# 13

A32

A33

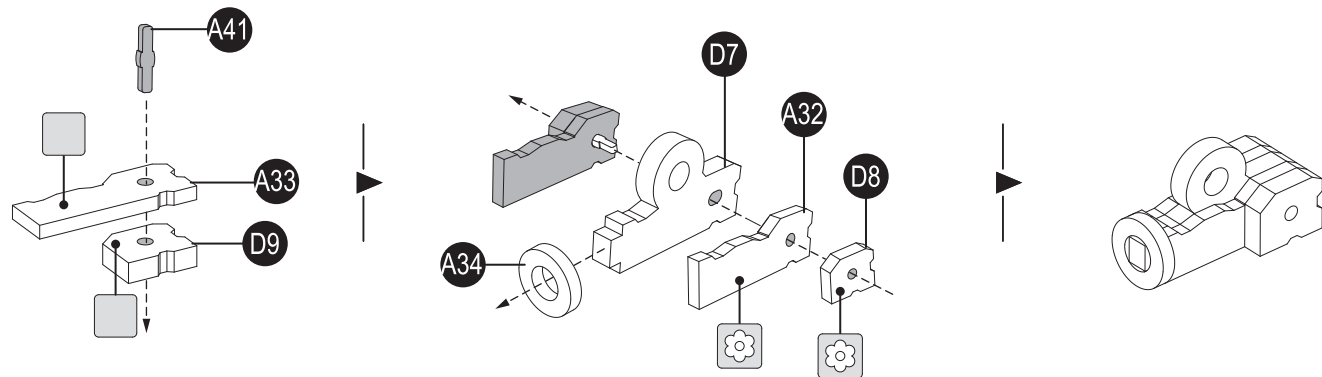
A34

A41

D7

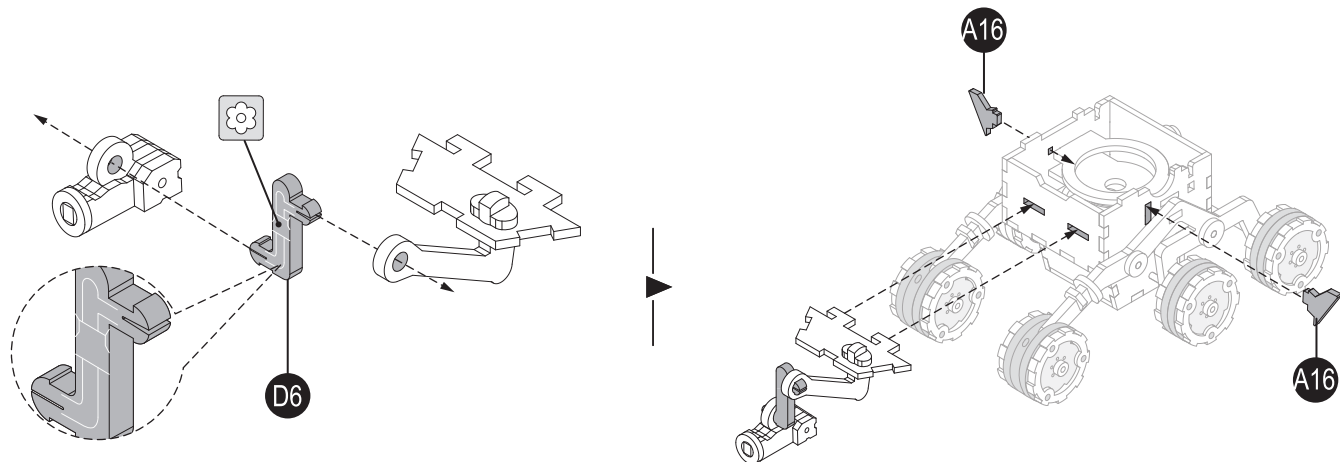
D8

D9



A16×2

D6



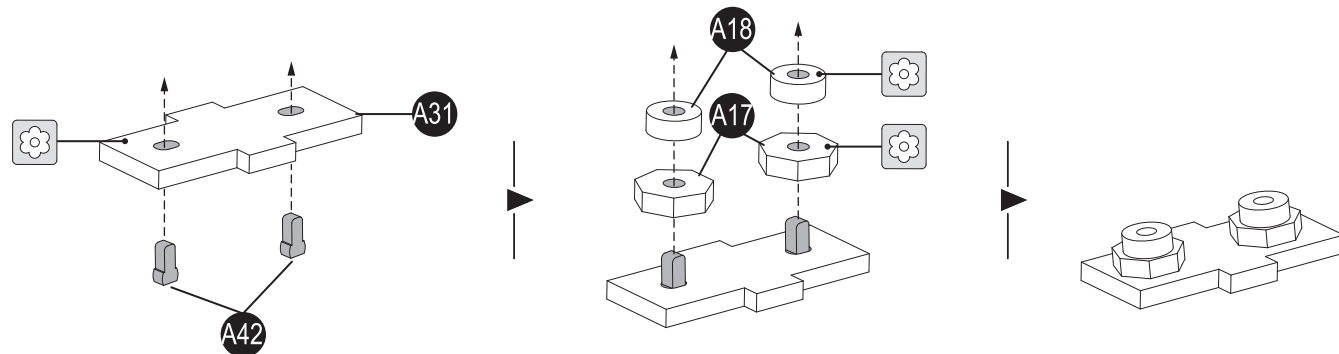


A17×2

A18×2

A31

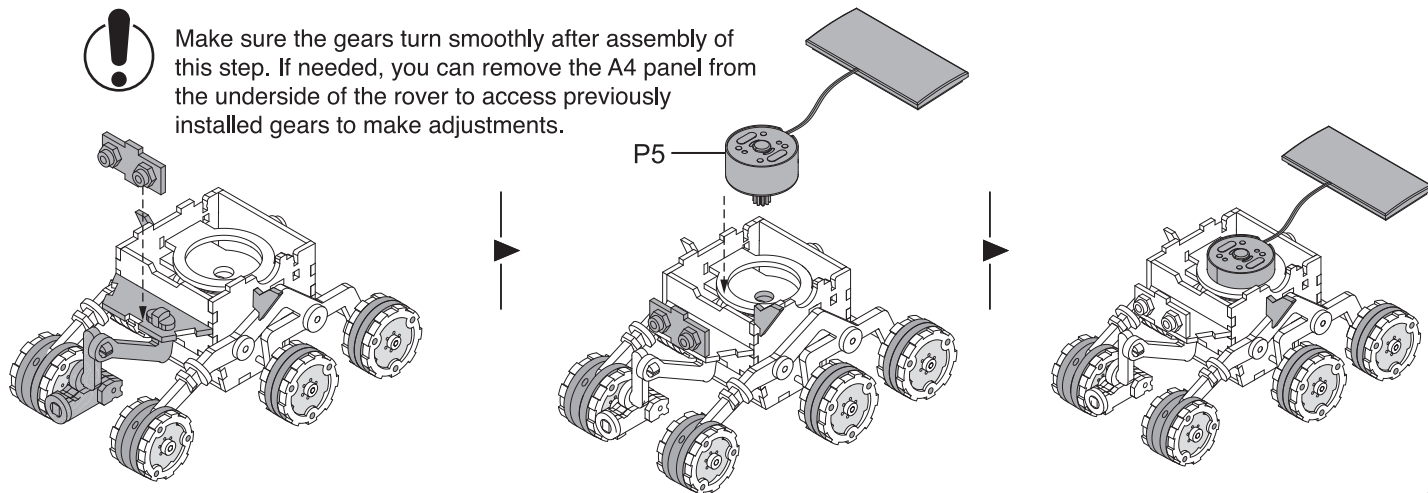
A42×2



P5



Make sure the gears turn smoothly after assembly of this step. If needed, you can remove the A4 panel from the underside of the rover to access previously installed gears to make adjustments.



# 15

A42×3

A43×3

B2

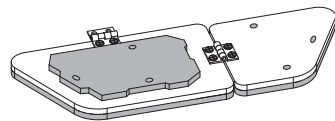
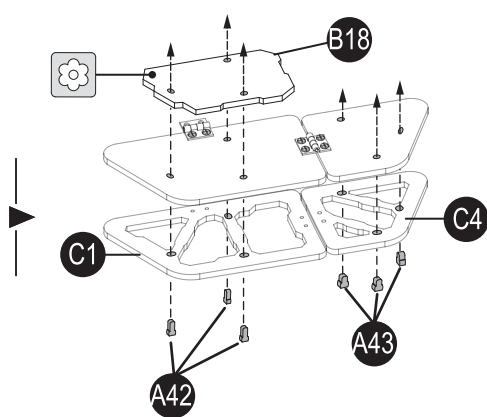
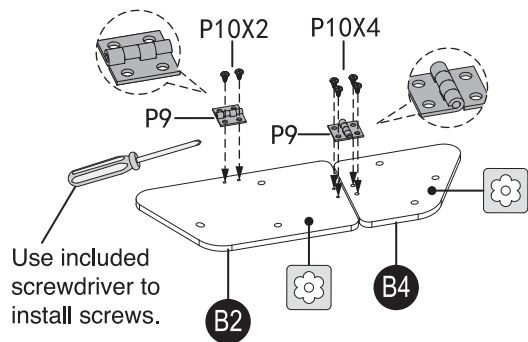
B4

B18

C1

C4

P9×2  
P10×6



A42×3

A43×3

B1

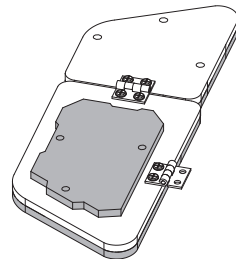
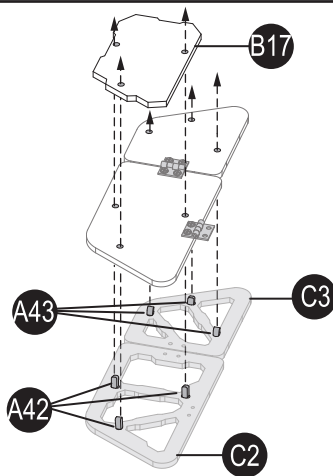
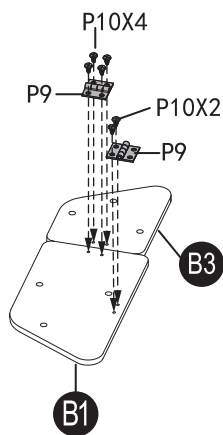
B3

B17

C2

C3

P9×2  
P10×6



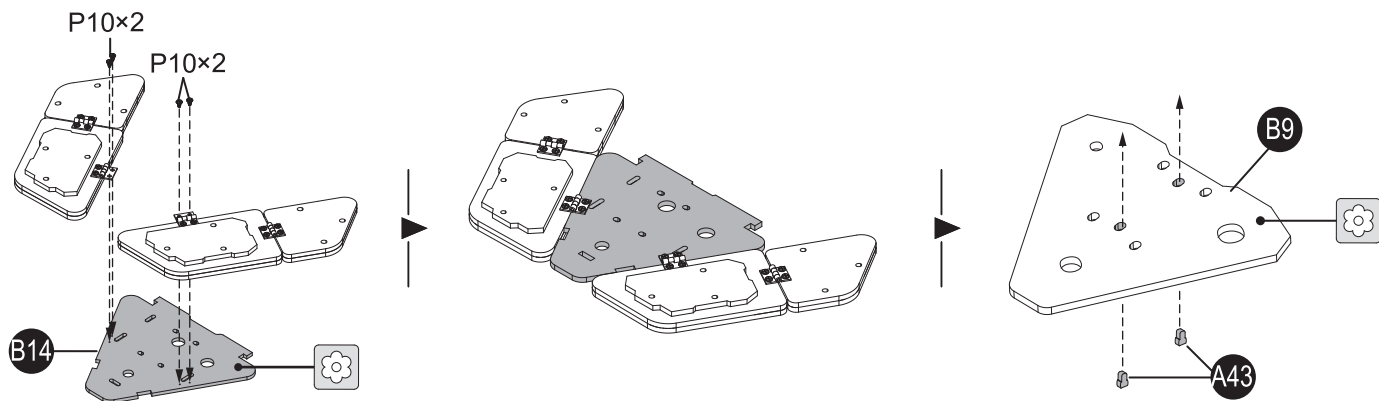
# 16

A43×2

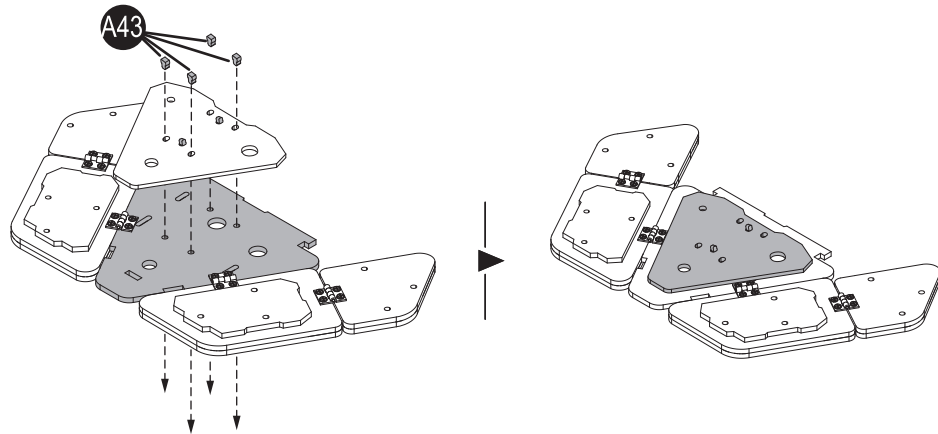
B9

B14

P10×4



A43×4



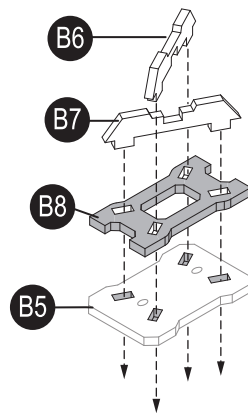
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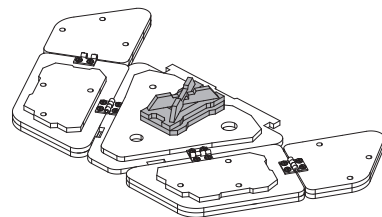
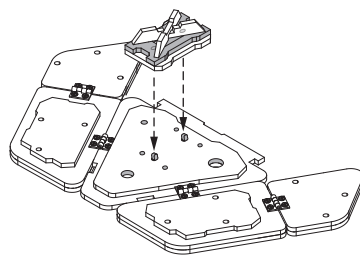
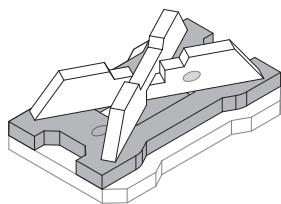
B5

B6

B7

B8





18

B12

E7

E8 x2

E9

E10

E11

E12

E13

E14

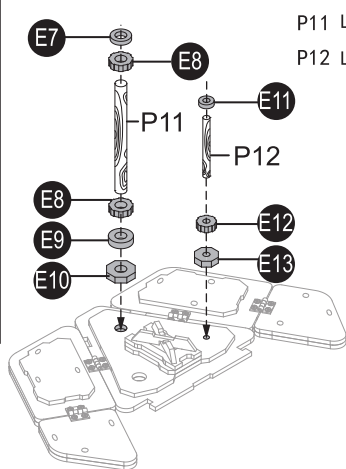
E15

E16

E17

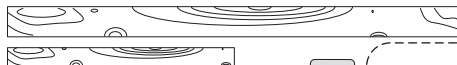
P11

P12

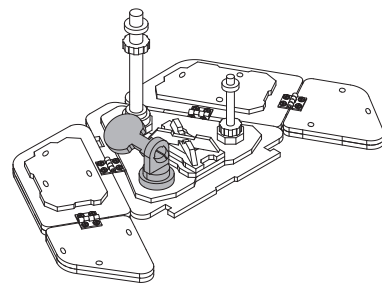
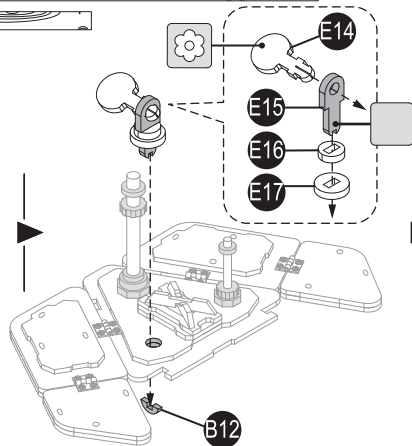
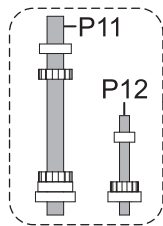


P11 L=60mm

P12 L=30mm



1:1



# 19

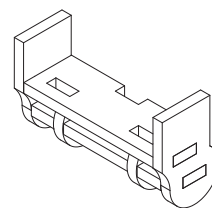
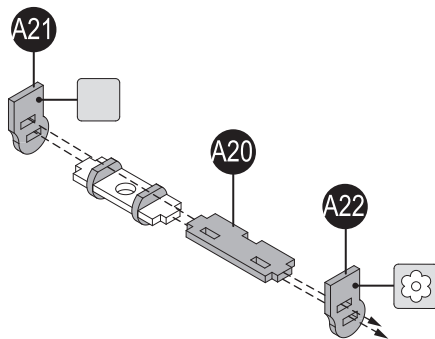
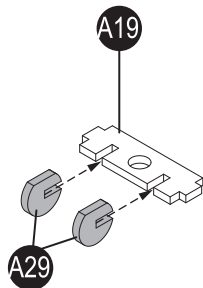
A19

A20

A21

A22

A29 × 2



# 20

D14

A24

A25

A26

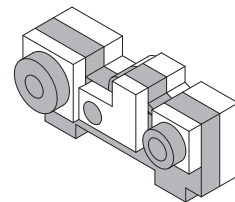
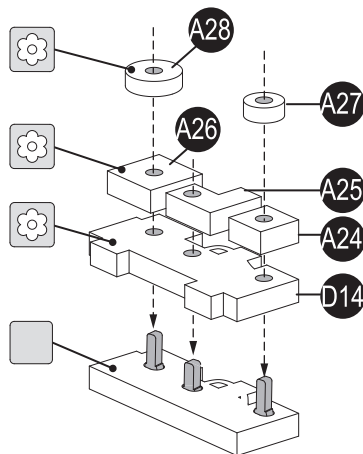
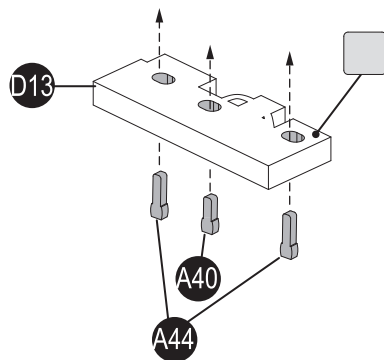
A27

A28

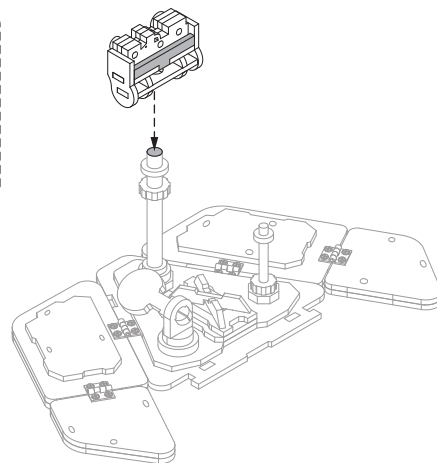
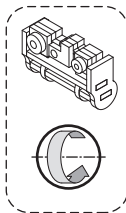
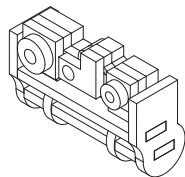
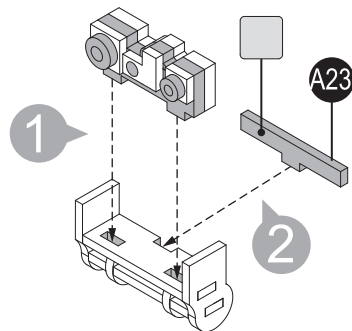
A40

A44 × 2

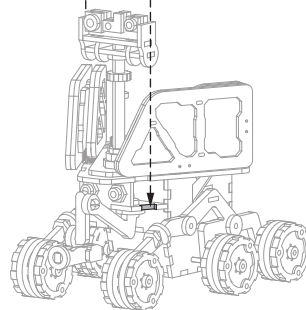
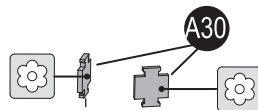
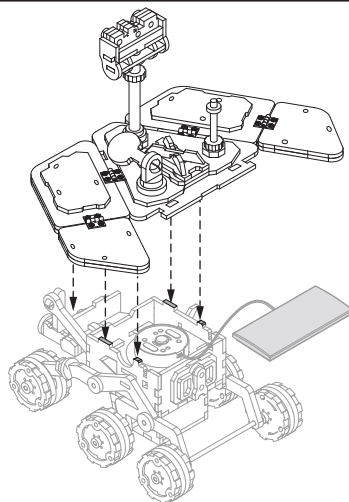
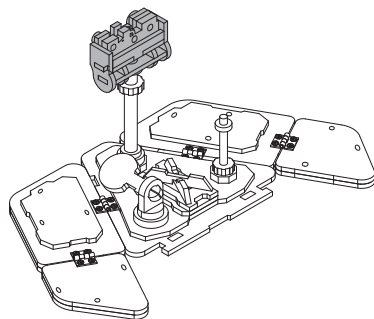
D13



A23

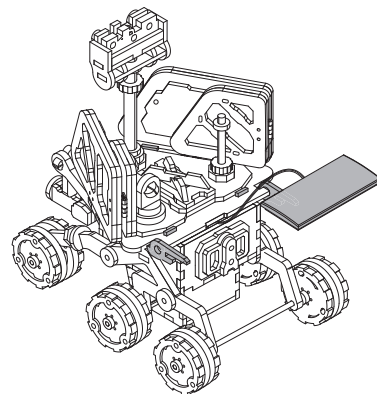
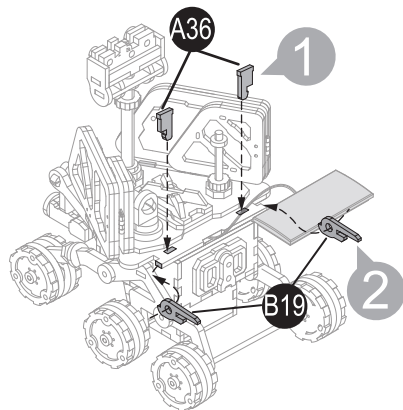
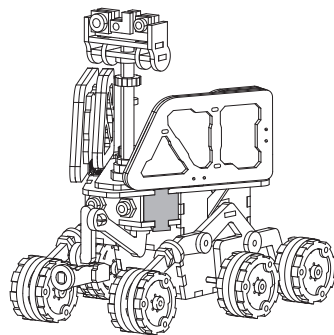


A30×2



A36×2

B19×2



21

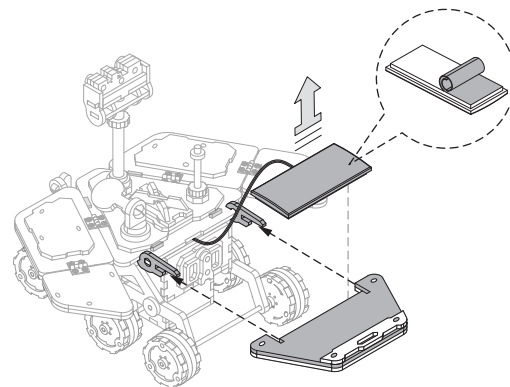
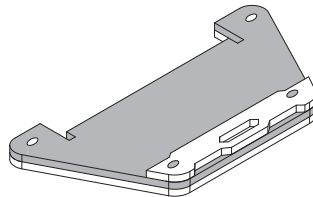
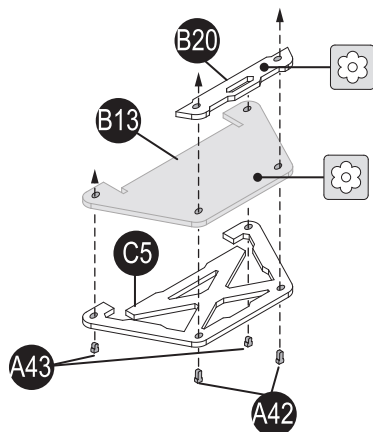
A42×2

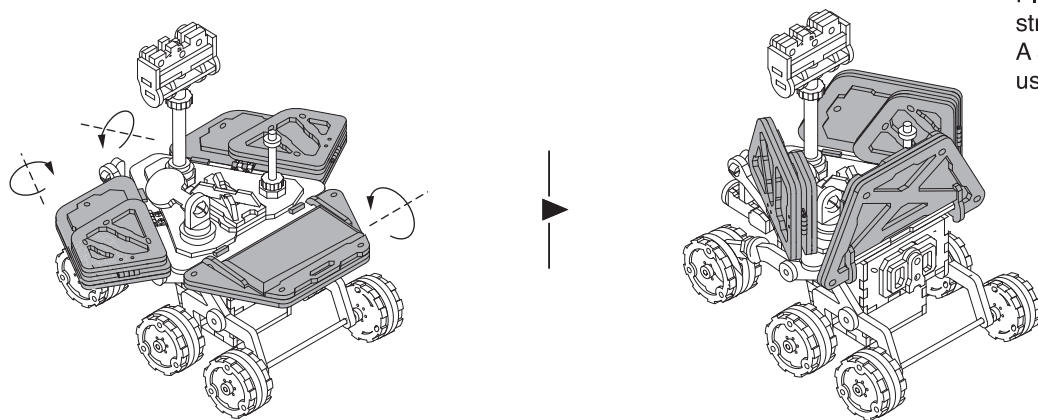
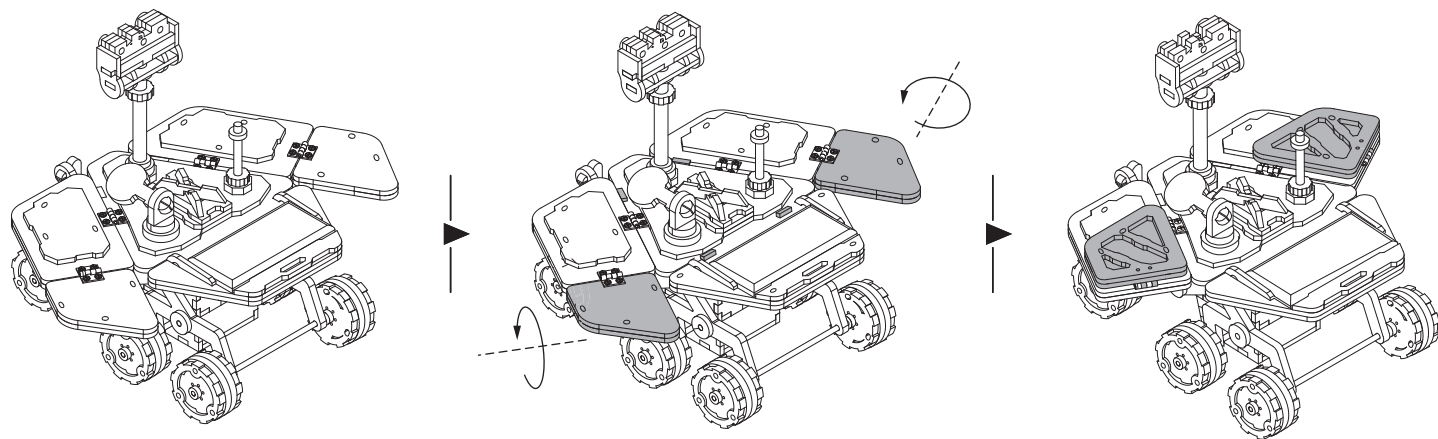
A43×2

B13

B20

C5





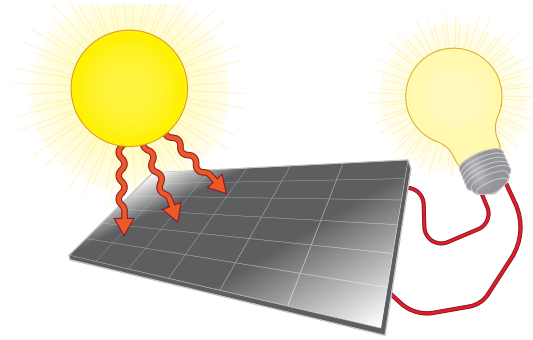
Place your rover in direct and strong sunlight to watch it move. A 50 watt halogen light may be used for indoor use.



## SOLAR ENERGY

Solar panels are made up of many solar cells called photovoltaic cells. When the sun is strong enough, these cells absorb solar energy which then outputs electricity. This electricity can be converted for a variety of uses. The Curiosity Rover, that was launched by NASA, utilizes solar panels to power its journey. The sun only provides four hours of sunlight each day that is strong enough to be converted to energy for this rover.

When the Scout Rover is placed in direct sunlight, the sun provides energy through the solar panel, which then turns the gears to make the wheels move.

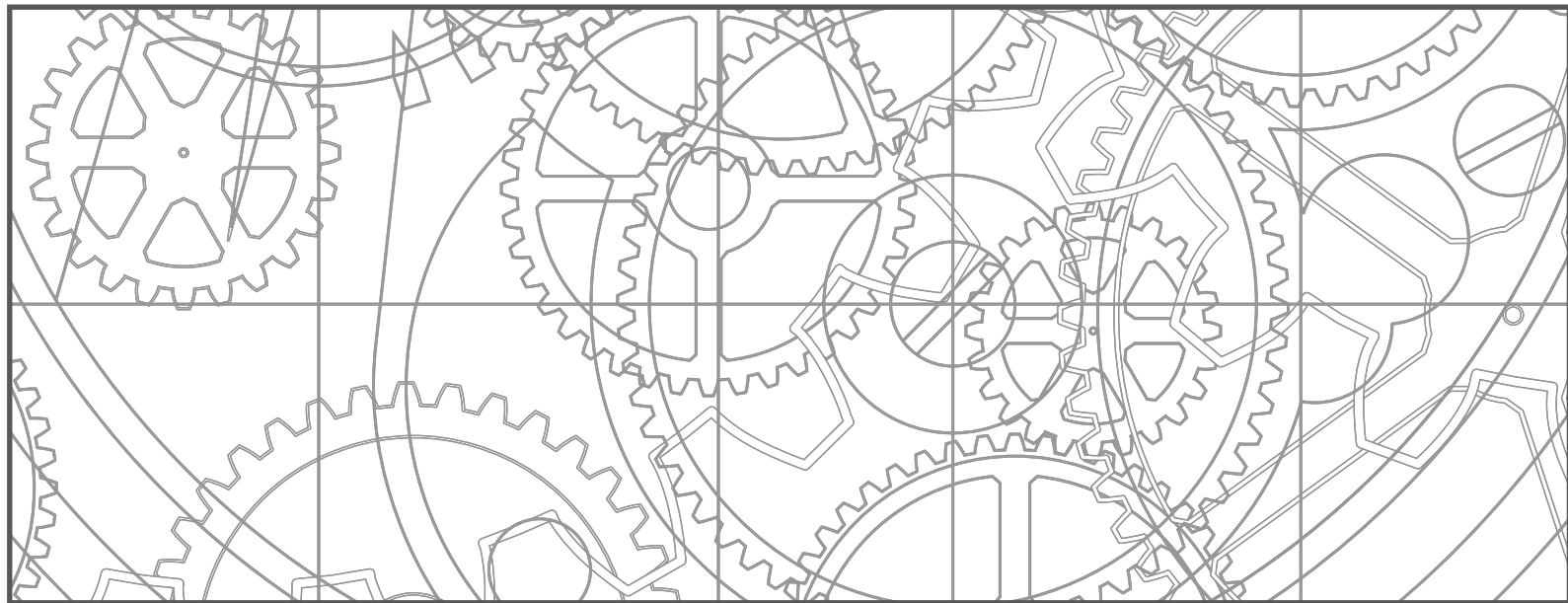


## ROVERS IN REAL LIFE

After dropping onto a planetary or lunar surface, rovers take photos of the surface and samples of the soil using a variety of sensors and instruments to collect data. Rovers can measure temperature, humidity or even acidity of materials.

The Curiosity Rover is a Mars rover. It has cameras aboard that can take high-resolution photos of planetary features as small as 12.5 microns—that is approximately the thickness of plastic wrap. The Curiosity Rover has features to measure radiation that will help pave the way for human exploration of Mars' surface one day.

One of the longest working rovers was the Opportunity Rover also that NASA launched in 2004. It worked on Mars for over 14 years collecting data and clocked over 26 miles of terrain. Rovers that explore places like Mars and the moon need special equipment such as gold paint or heaters to help control their operating temperatures and keep their tools safe.



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