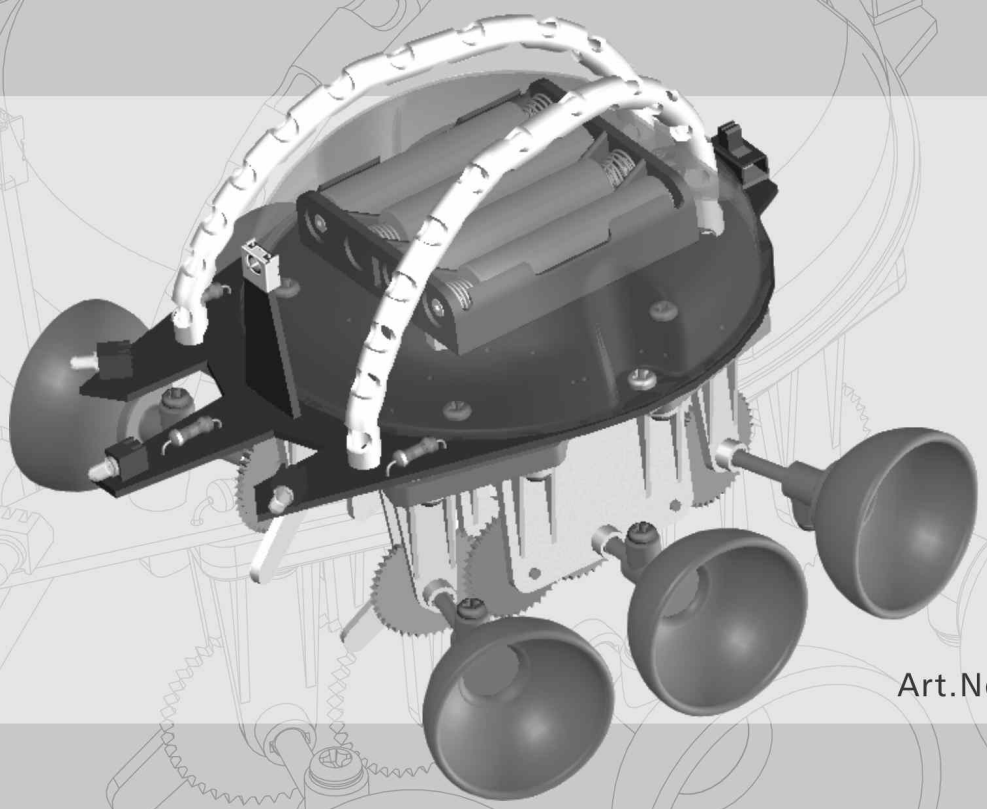
(EN)

INSTRUCTION

SOL-EXPERT group

Escape Robot

Kit



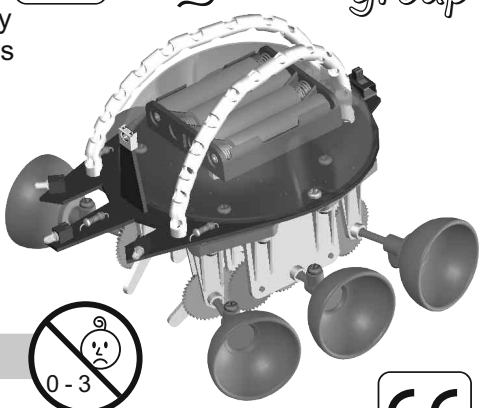
Conrad No.
1530390
Art.No.: 71500

www.sol-expert-group.de

(EN) Escape Robot - *Kit*

1. Product Introduction:

10+



The Escape Robot Kit works just like an A.I. robot. It never fails to find its way out of a maze. The Escape Robot makes use of three infrared emitting diodes and one infrared receiving module to send and receive signals and detect obstacles. Escape Robot has an in-built microprocessor which enables it to "think" on its own, as it process information about its environment and maneuvers itself around obstacles.
Escape Robot moves on six legs.
The Kit comes complete with 2 sets of differently designed legs, which provides endless fun and excitement with its different sets of movements.

!WARNING!

Keep the adress of the company - ***Not suitable for children under 3 years. Contains small parts!***

Power source required:
Voltage / Electronical / Mechanical: 1.5V "AAA" x4 batteries (not included)

2. Tools You May Need:

Soldering Iron	Solder Wire	AAA Battery (4pcs)	Long Nose Pliers	Diagonal Cutter	Screwdriver
					

3. Electronic Parts List:

Resistor

Value	Color				Qty
10Ω	brown	black	black	gold	4 pcs
1.2K	brown	red	red	gold	2 pcs
2.2K	red	red	red	gold	1 pc
100Ω	brown	black	brown	gold	1 pc
1K	brown	black	red	gold	5 pcs
10K	brown	black	orange	gold	1 pc
22K	red	red	orange	gold	4 pcs

Transistor

Value	Qty
8550	4 pcs
9013	1 pc
8050	7 pcs
C945	4 pcs

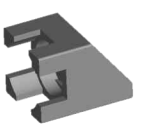
Ceramic Capacitor

Value	Qty
30	2 pcs
103	1 pc
104	3 pcs
224	1 pc

LED 5mm Red

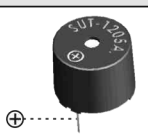
Qty
1 pc

LED Holder



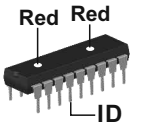
Qty
3 pcs

Buzzer



Qty
1 pc

Integrated Circuits

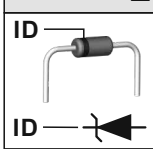


I.D.	Qty
78P156	1 pc

Electrolytic Capacitor

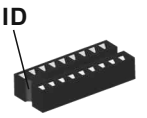
Value	Qty
100uf	1pc

Zener Diode



Value	Qty
3.9V	1 pc

IC Socket



Qty
1 pc

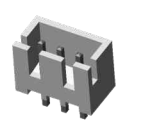
Infrared Emitting Diodes 5mm

Qty
3 pcs (Clear)

Oscillator

Value	Qty
4MHz (4.000)	1pc

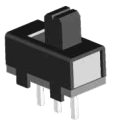
Housing



Qty
1 pc

Pins	Qty
	4 pcs

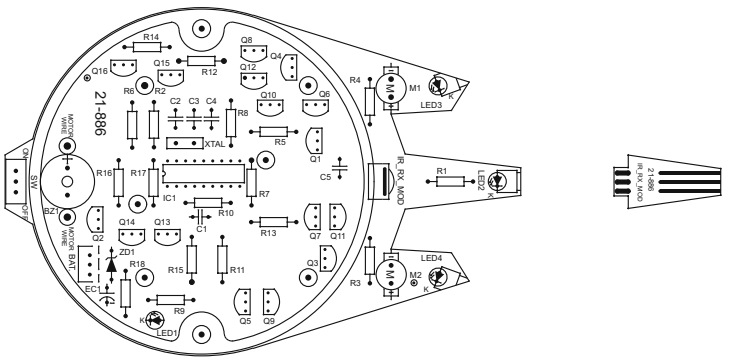
Infrared Receiving Module	Qty
	1pc

Slide Switch	Qty
	1pc

Battery Holder	Qty
	1pc

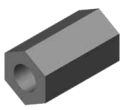
Connector With Wire		Qty
	Yellow	1pc
	Green	1pc
	Blue	1pc
	Orange	1pc

Printed Circuit Board



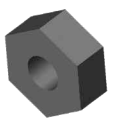
4. Mechanical Part List:

P13 Screw	Qty
	2 pcs (3x6mm)

P15 Hex Post	Qty
	2 pcs (10mm)

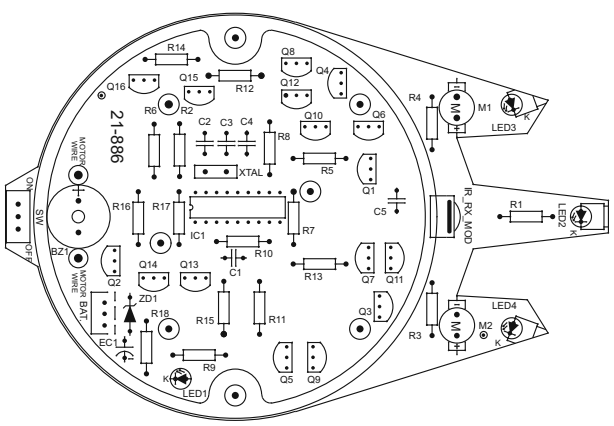
P17 Body	Qty
	1 pc

P14 Screw	Qty
	4 pcs (3x6mm)

P16 Nut	Qty
	2 pcs (M3)

P18 Hosepipe	Qty
	2 pcs

5. PCB Assembly:



※ The parts I.D.(identification) for each component has been printed on PCB.

Step 1: Suggest you start from the low-key components first such as the resistors and zener diode.

Part I.D.	Description	Color Code				Qty
R18	100Ω	brown	black	brown	gold	1 pc
R11 /12 /13 /14	10Ω	brown	black	black	gold	4 pcs
R3 / 4	1.2K	brown	red	red	gold	2 pcs
R1	2.2K	red	red	red	gold	1 pc
R5 / 7 / 8 / 9 /10	1K	brown	black	red	gold	5 pcs
R15	10K	brown	black	orange	gold	1 pc
R2 / 6 /16 /17	22K	red	red	orange	gold	4 pcs

Part I.D.	Description	Qty
ZD1	Zener Diode 3.9V	1 pc

Step 2: Mount and soldering the components such as Ceramic capacitor, Electrolytic capacitor, Transistor, Oscillator.

Part I.D.	Description	Qty
C2,C3	Ceramic Capacitor 30	2 pcs
C1	Ceramic Capacitor 103	1 pc
C4	Ceramic Capacitor 104	1 pc
C5	Ceramic Capacitor 224	1 pc

Part I.D.	Description	Qty
EC1	Electrolytic Capacitor 100uf	1 pc

Part I.D.	Description	Qty
Q5 / 6 / 7 / 8	Transistor 8550	4 pcs
Q2	Transistor 9013	1 pc
Q1 / 3 / 4 / 9 / 10 / 11 / 12	Transistor 8050	7 pcs
Q13 / 14 / 15 / 16	Transistor C945	4 pcs

XTAL	Oscillator 4MHz	1 pc

Step 3: Mount and soldering the components such as IC socket, Housing, Slide switch, Buzzer, Pins.

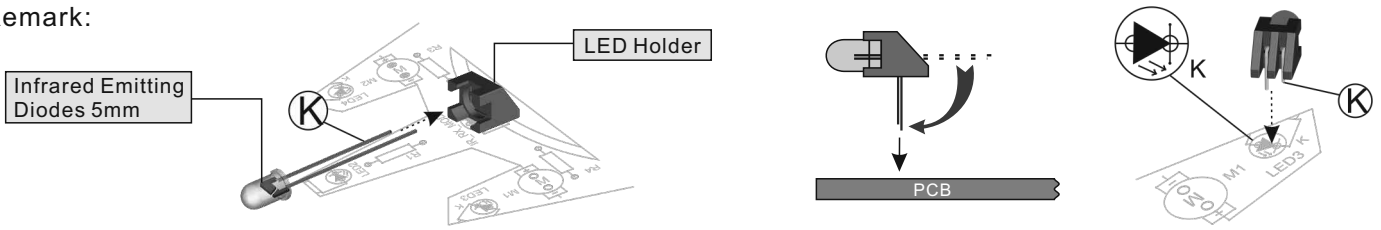
Part I.D.	Description	Qty
IC 1	IC Socket **ID** 	1 pc
BAT.	Housing 	1 pc
SW.	Slide Switch 	1 pc
BZ1	Buzzer 	1 pc
M1(+ −)	Pins 	4 pcs
M2(+ −)		

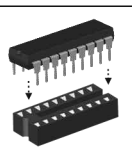
Step 4: Mount and soldering LED 5mm red, IR-LED3mm, IC 1602BP.

Part I.D.	Description	Qty
LED 1	LED 5mm (red)	1 pc

LED 2 / 3 /4	IR-LED 5mm (clear)	3 pcs

Remark:

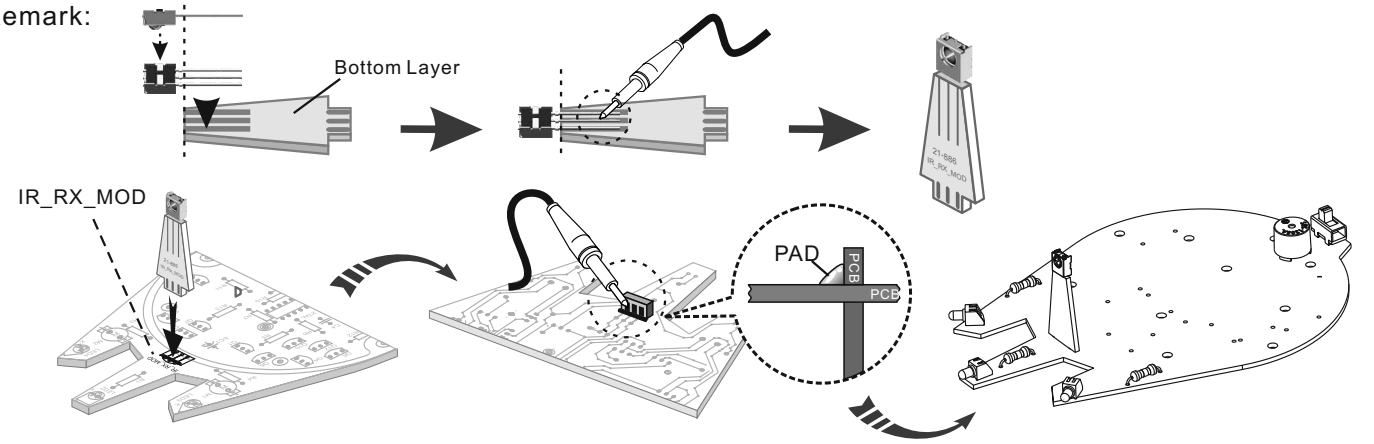


IC 1	78P156 ID   IC Socket ID 	1 pc

Step 5: Mount and soldering Infrared Receiving Module.

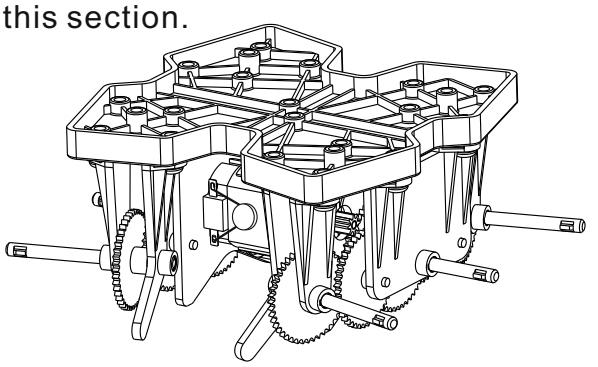
Part I.D.	Description	Qty
IR_RX_MOD	Infrared Receiving Module 	1 pc

Remark:

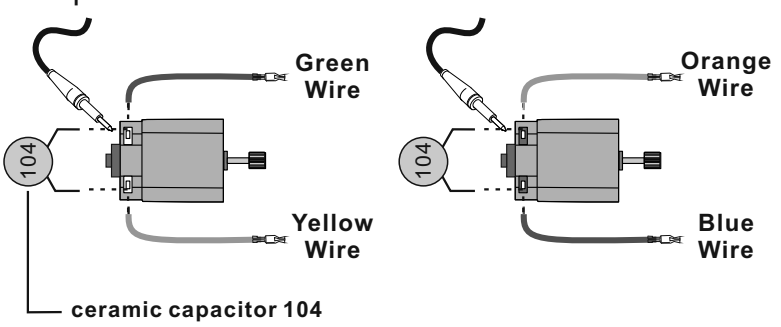


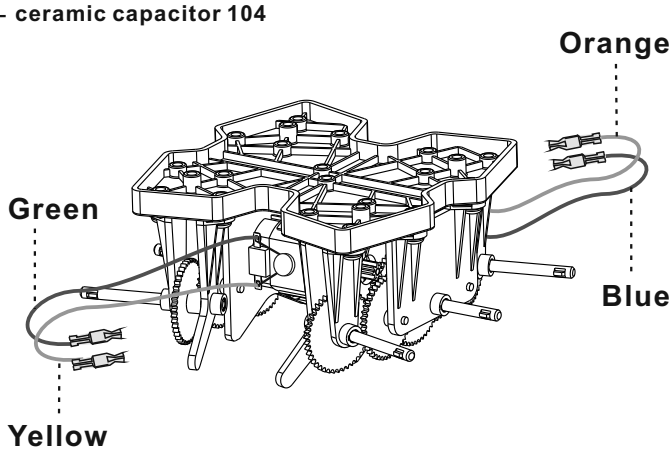
6. Mechanical Assembly:

1 Assemble the gearbox first before go ahead for this section.
(Refer to the gearbox instruction manual.)

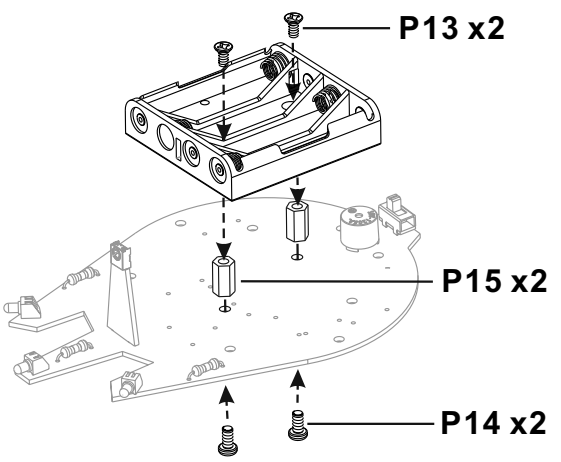


2 Toward the shaft of motor to the same way as below drawing to solder wires and ceramic capacitor.

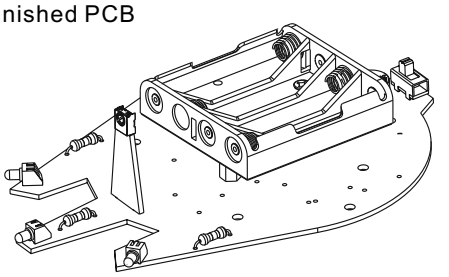




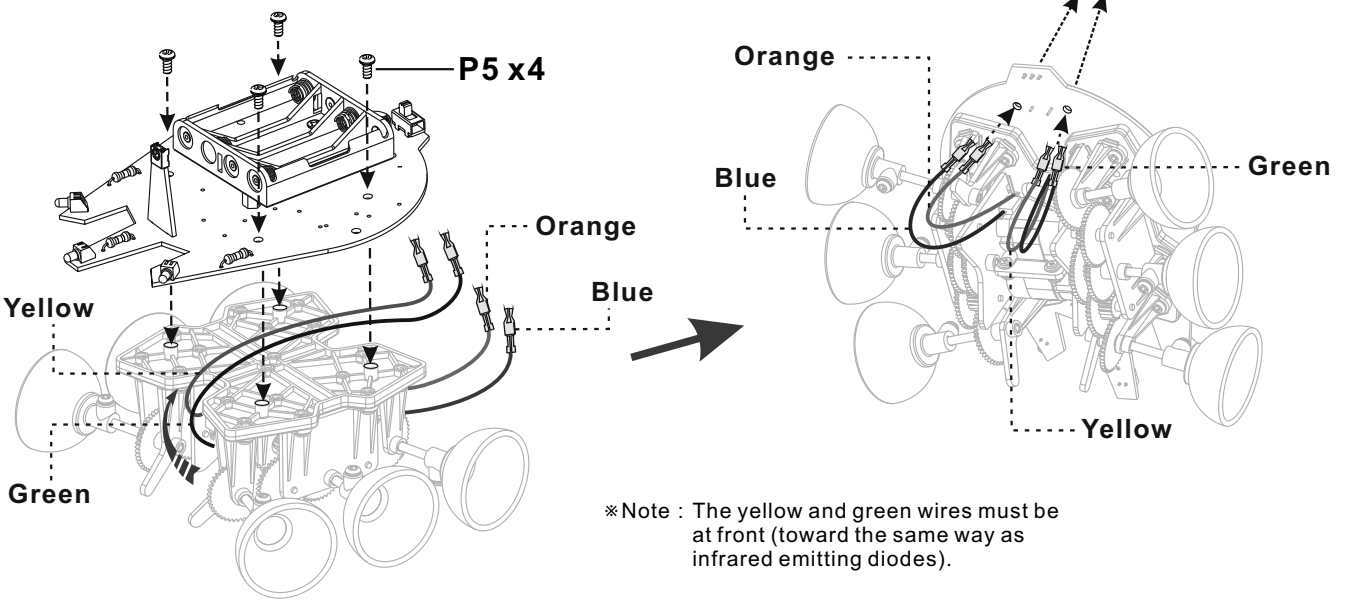
3 Battery Holder Assembly



Finished PCB

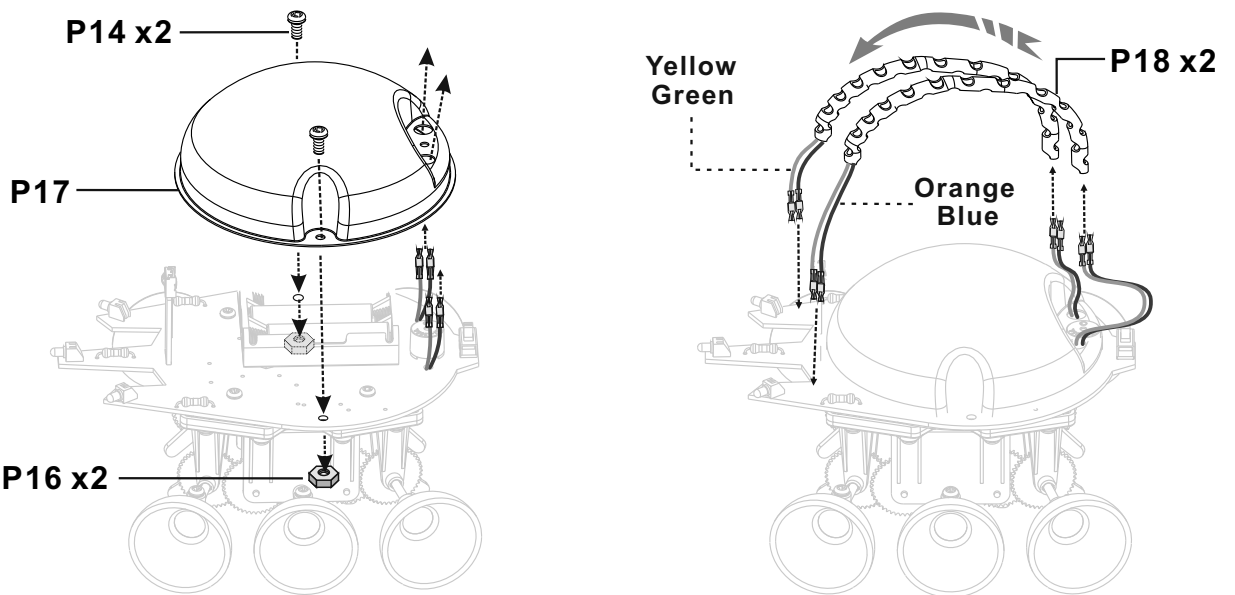


4 PCB & Gearbox Assembly



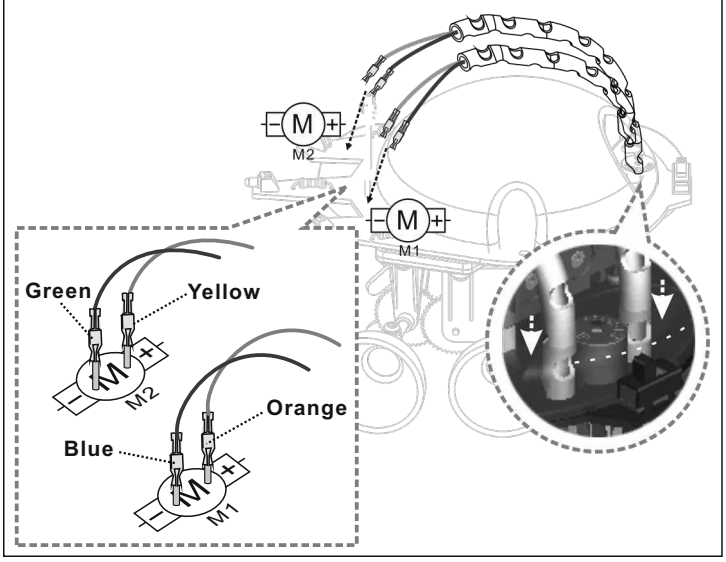
※Note : The yellow and green wires must be at front (toward the same way as infrared emitting diodes).

5 Body & Hosepipe Assembly

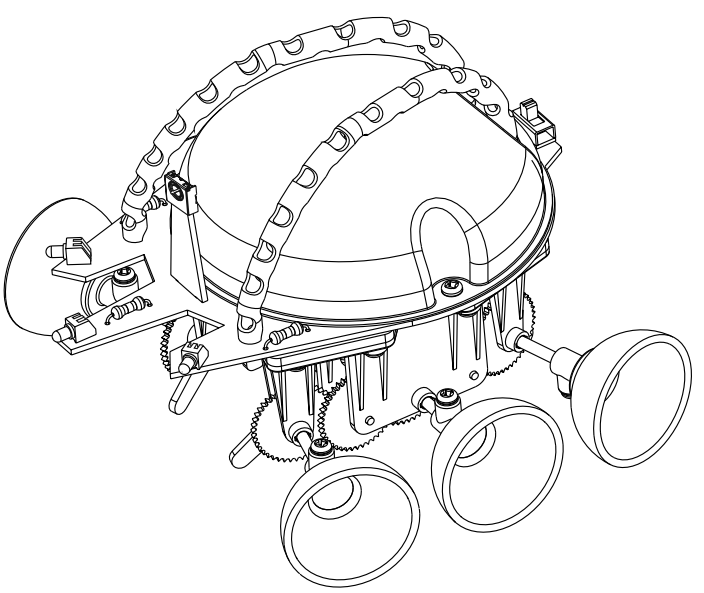


6 Wiring Assembly

	M1(+)	M1(-)	M2(+)	M2(-)
	Orange	**Blue**	**Yellow**	**Green**



7 Finished Product



7. How it works:

1. Switch power to "ON". The LED 1 will light up and the unit will emit 3 beeps as it starts running.

2. When the unit starts running, the emitting diodes LED2, LED3 and LED4 will send out signals sequentially to detect obstacles along its path.
   Once an obstacle has been detected, the signal received will be transmitted to the receiving module which will then instruct the Escape Robot to take evasive actions.

   a) When the emitting diode on the right detects an obstacle, the unit will emit a "beep" sound, and the left motor will go into reverse mode.

   b) When the emitting diode on the left detects an obstacle, the unit will emit a "beep" sound and the right motor will go into reverse mode.

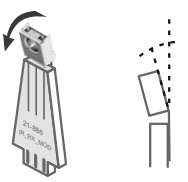
   c) When the emitting diode in the middle detects an obstacle, the unit will emit two "beeps" followed by the two motors going into reverse mode. Then, the operation of (a) above is repeated.

   d) If all three emitting diodes detects obstacles, the unit will emit three "beeps" and the movement that follows will be the same as in (c) above. However, the turning will take a little longer.

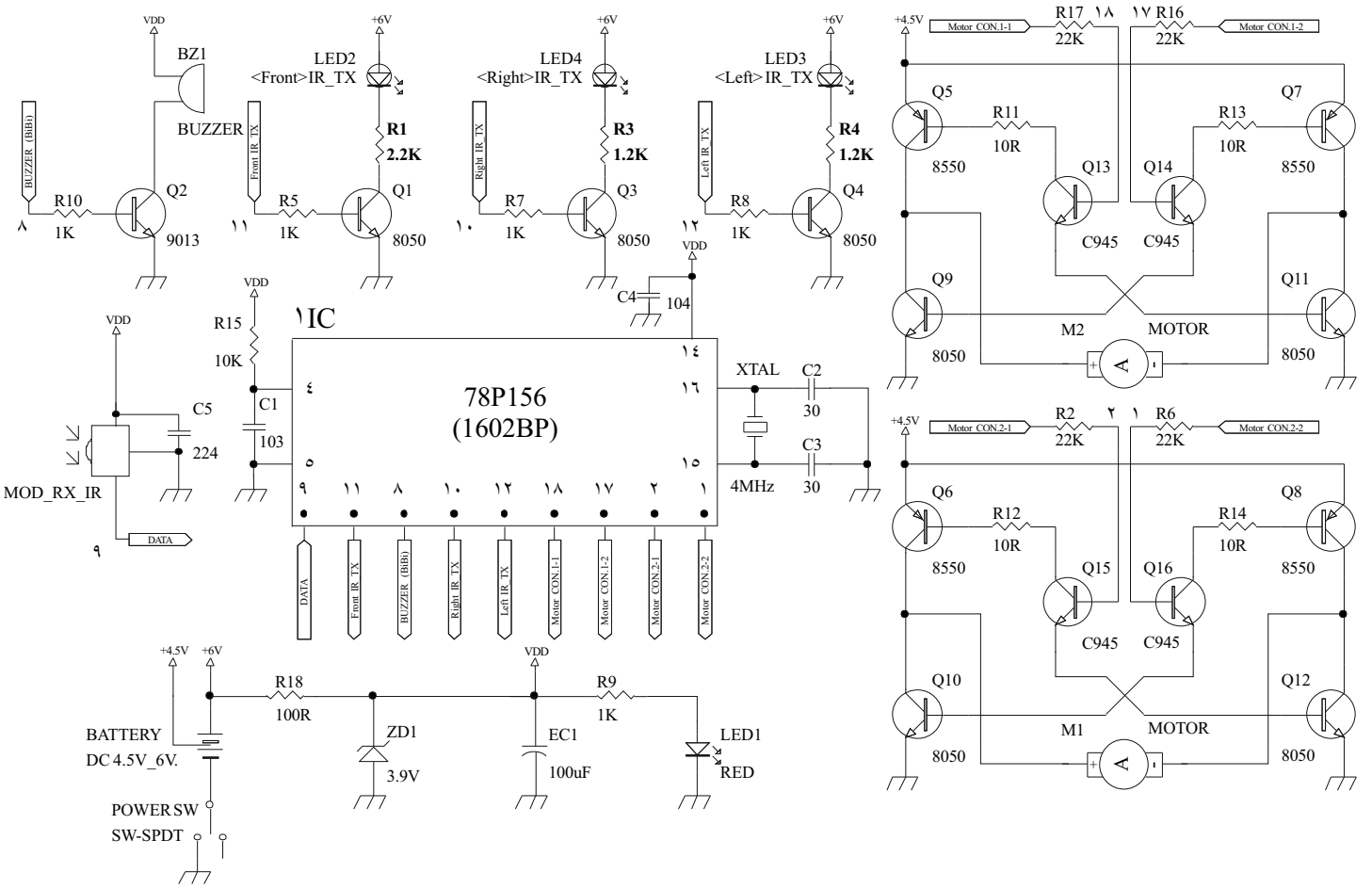
8. Trouble shooting:

1. Ensure that all components on the PCB are in order. Take note especially of the polarity of the infrared emitting diode.

2. Different environment and battery power may affect the detecting sensitivity, try to adjust the Infrared Receiving Module's angle to find the best position.



9. Circuit Diagram:



SIX-LEG WALKING TYPE GEARBOX - *Kit*

1. Product Introduction:

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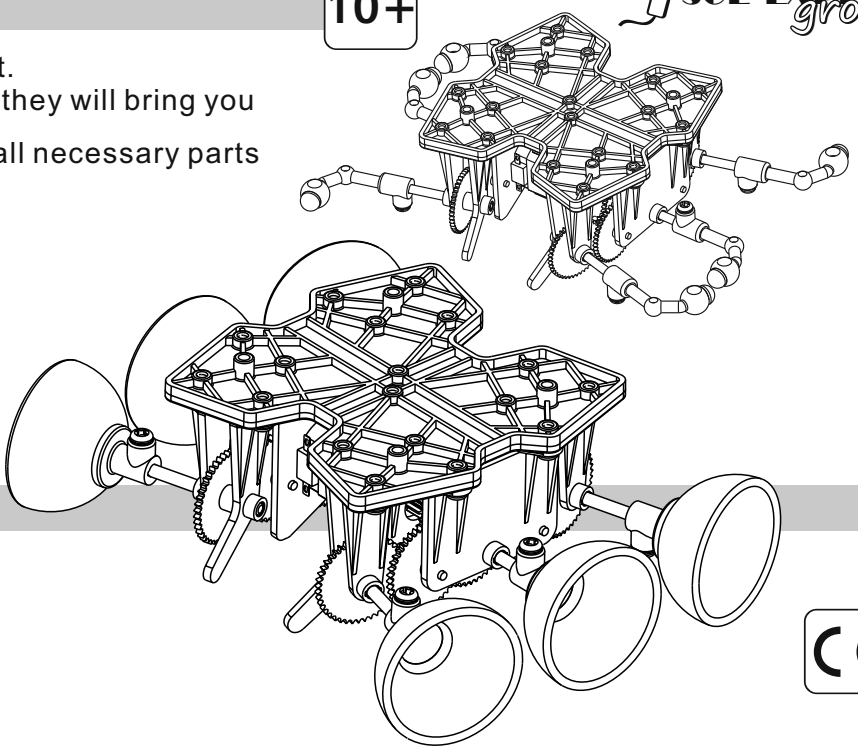
- This gearbox works with 2 types of feet.
  Try the different feet and enjoy the fun they will bring you
- This set contains 2 motors,gears,and all necessary parts
- Output speed: 170 RPM
- Easy to assembly



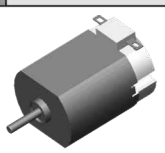
!WARNING!

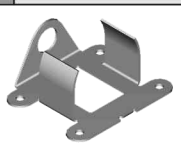
Keep the adress of the company -
Not suitable for children under 3 years.
Contains small parts!

2. Tools You May Need:

Long Nose Pliers	Screwdriver
	

3. Mechanical Part List:

P1 Motor	
	Qty: 2 pcs

P2 Motor Holder	
	Qty: 2 pcs

P3 Screw	
	Qty: 4 pcs (2x10mm)

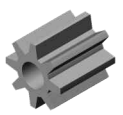
P4 Nut	
	Qty: 4 pcs (M2)

P5 Tapping Screw	
	Qty: 34 pcs (3x7mm)

P6 Eyelet	
	Qty: 6 pcs

P7 Gear(44T+0) with Shaft	
	Qty: 2 pcs (Green)

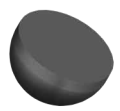
P8 Gear(44T+0) with Shaft	
	Qty: 4 pcs (Orange)

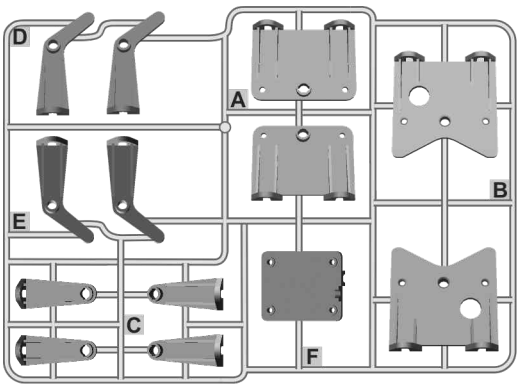
P9 Pinion gear 8T	
	Qty: 2 pcs (White)

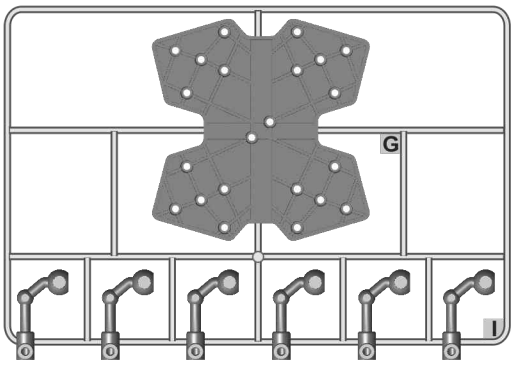
P10 Gear 48/18T	
	Qty: 2 pcs (White)

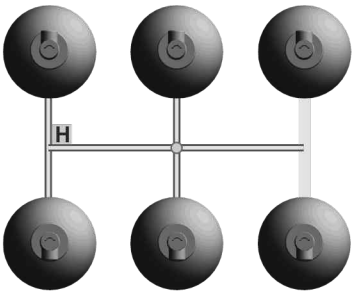
P11 Gear 44/18T	
	Qty: 4 pcs (Blue)

P12 Clear Tube	
	Qty: 2 pcs

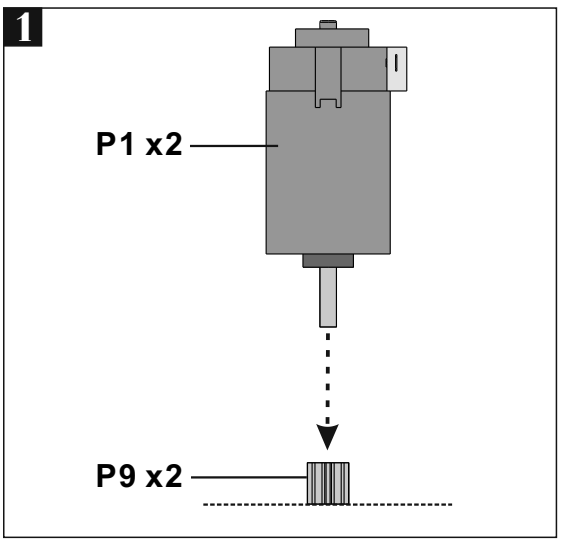
P13 Rubber Feet	
	Qty: 6 pcs

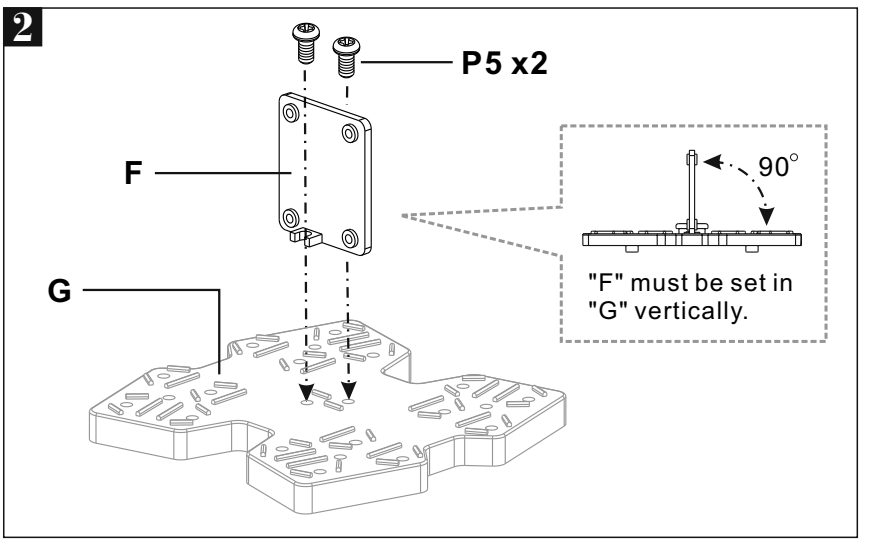


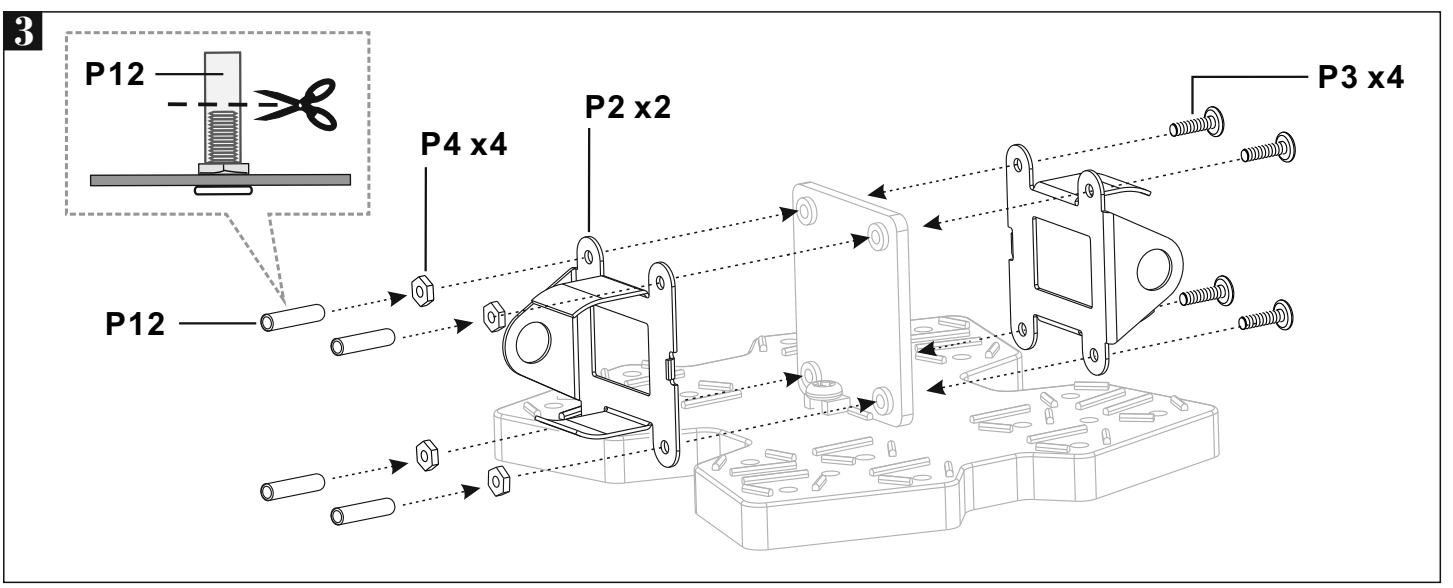


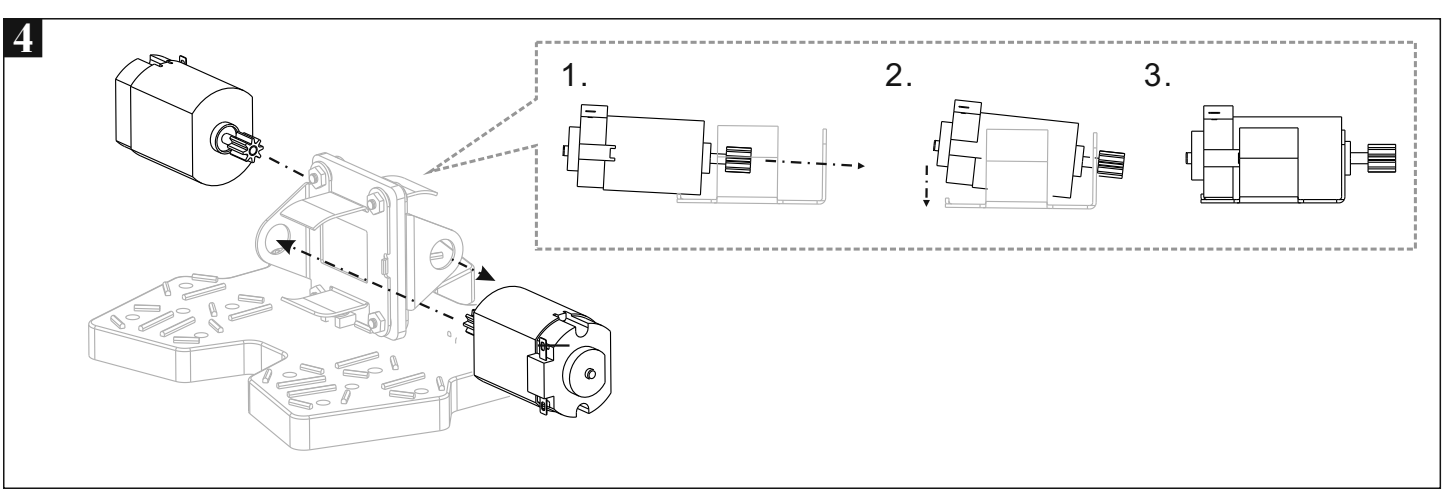


4. Mechanical Assembly:









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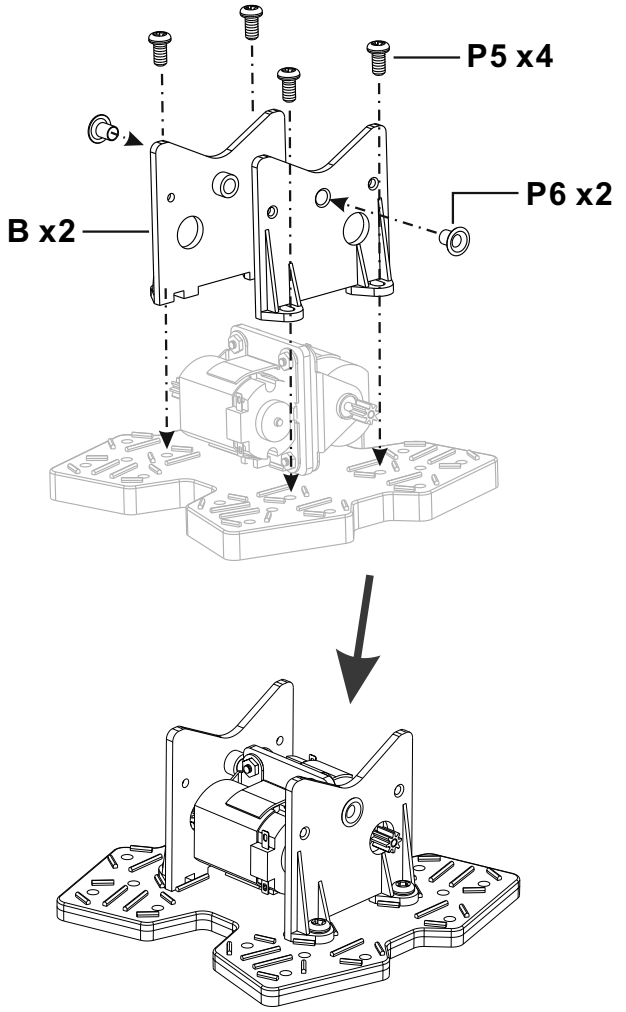

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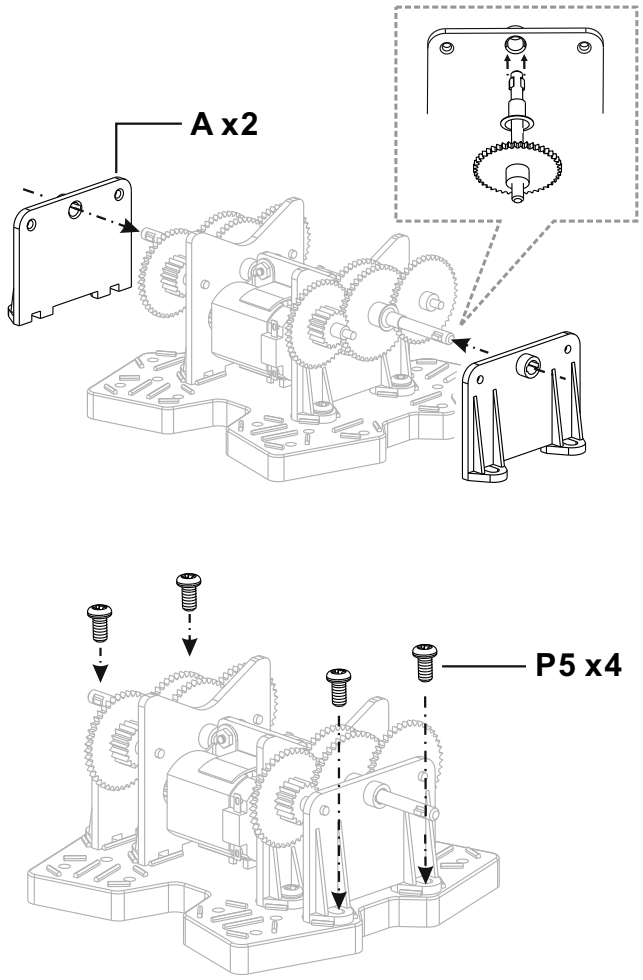

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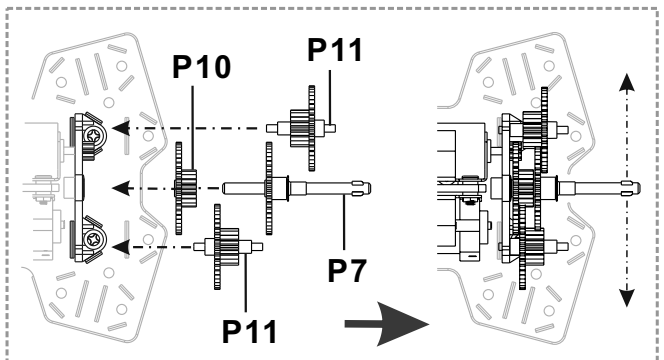
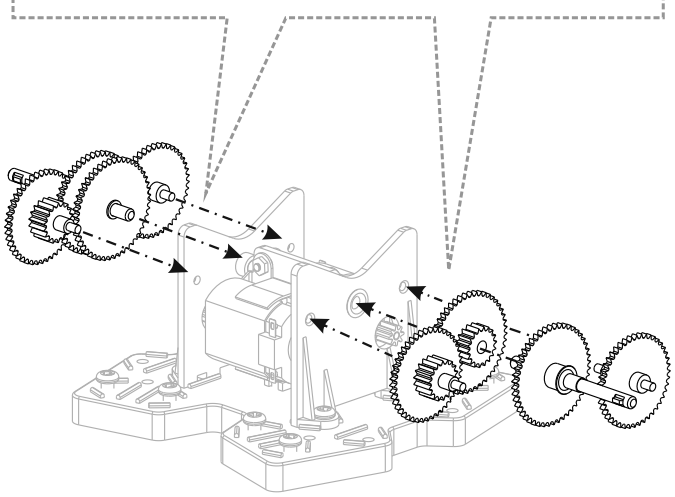


Keep the two ears of the shaft (P7) to be horizontal to the base.



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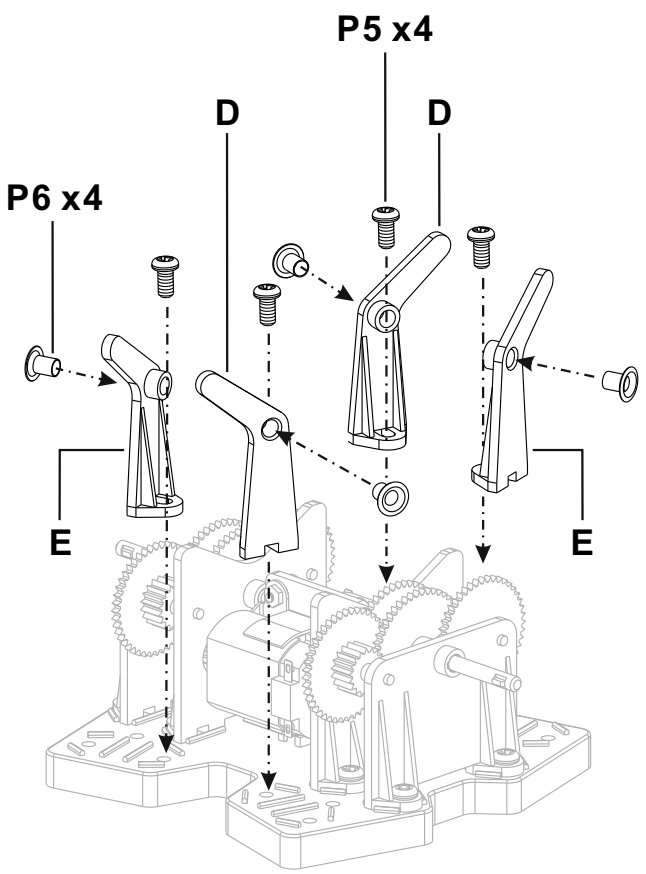

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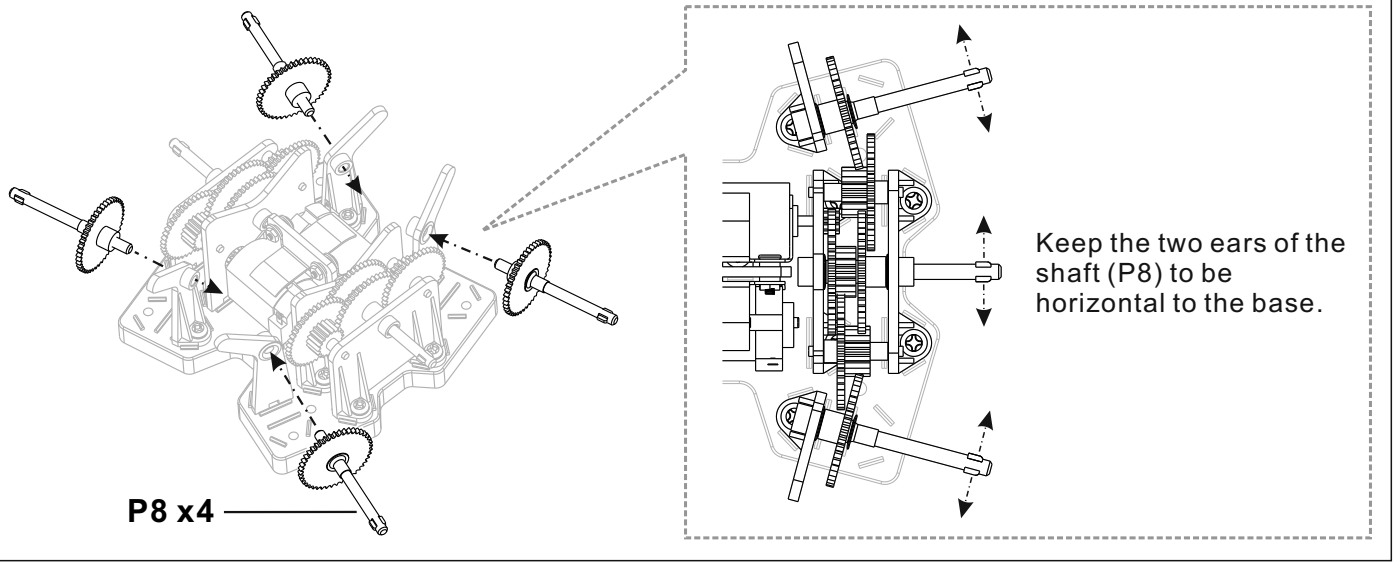
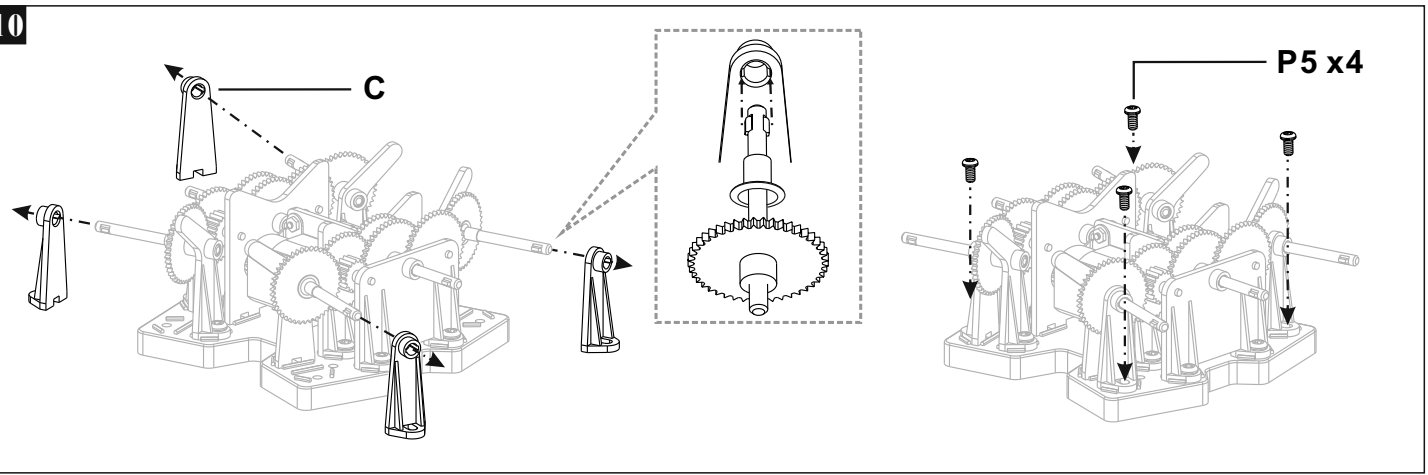
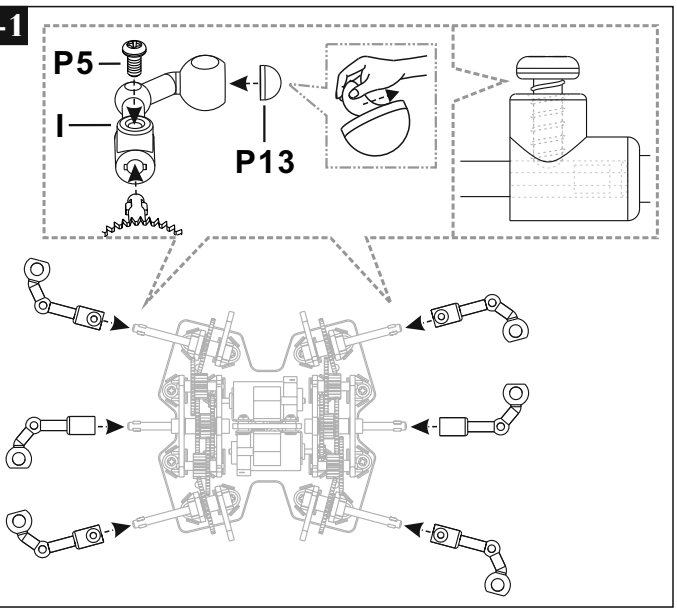


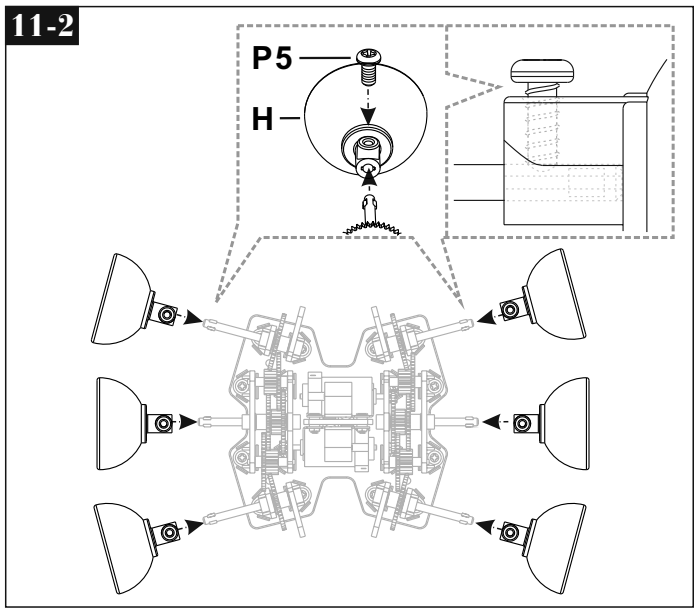
10



11-1



11-2



12 Finished Product