

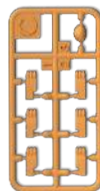
GE-691



科學玩具

MAKING · LEARNING · PLAYING

企鵝寶寶



Assembly & Instruction

Manual

組裝說明手冊

手作樂趣 • 科學玩具

MAKING LEARNING PLAYING

台灣製造 • 專利研發 • 無毒環保

科學玩具行銷全球 20 餘國，擁有歐、美、日、澳、中國、台灣...等多國專利註冊，符合世界級的STEM教育專業組織STEM.org的認證、台灣ST玩具、中國 CCC 等各國安全認證，專業研發獲得國際多項殊榮。結合科學原理，DIY實做、模型美學，啟發孩童想像力與創造力，是玩具也是教具，組模型也組思緒。

三倍樂趣 創客養成推薦



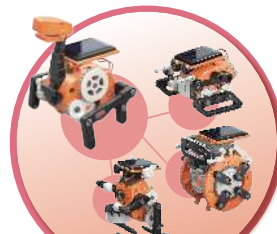
榮獲STEM.org
國際認證



1 手作模型組裝
邏輯力 up



2 科學概念學習
知識力 up



3 多樣創意玩法
創意力 up

⚙️ 科學動力



🔋 電池動力



💖 療癒小寵



📺 教學編程



🏆 競技遊戲



☆ 模型收藏



企鵝寶寶

PENGUIN BOBO



嗨，小朋友們，我是企鵝寶寶！你們知道嗎？全球暖化正在威脅我們和家園。邀請你們一起為企鵝建造一個舒適的新家，並享受節能生活吧！

只需簡單插入電源，太陽能就會轉化為電力進行儲存和應用。當企鵝充滿電後，它們就會快樂地搖擺走動！組裝企鵝輕鬆又簡單，趕快組完一起來跟我們玩吧！

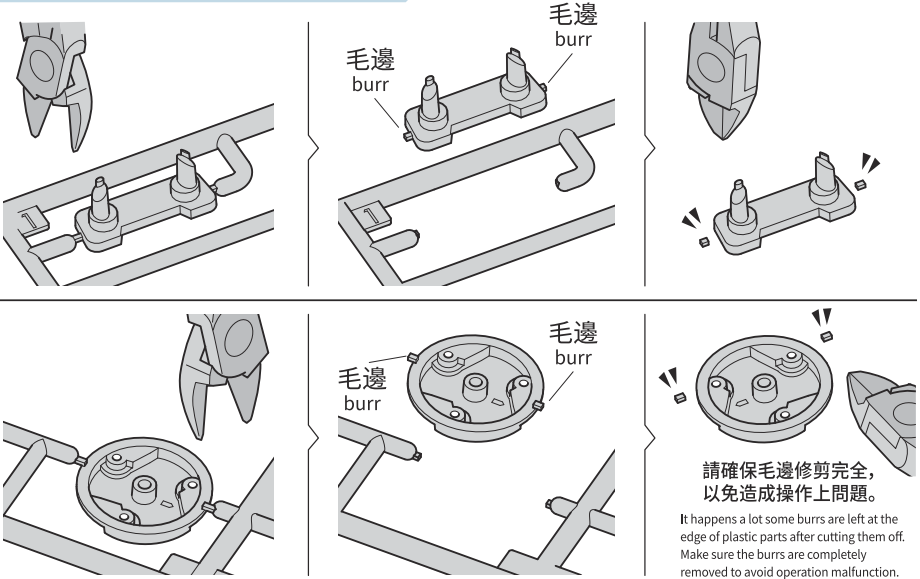
Hi, kids! I'm Penguin BOBO! Did you know that global warming is threatening us and our home. I invite you to join us in building a comfortable new home for penguins and enjoy an energy-efficient lifestyle!

Simply plug in the power, and solar energy will be converted into electricity for storage and use. When the penguins are fully charged, they will happily waddle around! Assembling the penguins is easy and simple, so let's hurry and assemble them to play together with us!

組裝前須知 Must-know

請詳讀以下組裝小技巧 Please read through and follow the tips below before assembly.

請將毛邊修剪乾淨 Remove burrs



請勿使用以下方式 Please do not



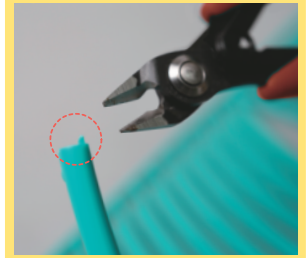
用剪刀剪
Cut with scissors



用手擰
Twist it with your hand



用剪切後會留毛邊的手鉗
The cutter which leaves burrs



建議使用專業模型鉗
Suggest using model cutters



PM-200



PM-202

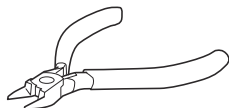


PM-203

零件壞了Don't worry! 進入官網頁面依流程提交補配件申請。
Free replacement service for the broken parts or accessories.



自備工具 Tool You May Need



斜口鉗
Diagonal Cutter

零件清單 Mechanical Parts List



P1 1 pc
小齒輪 (白色)
Pinion Gear(White)



P2 1 pc
齒輪 (紅色)
Gear (Red)



P3 2 pcs
齒輪 (黃色)
Gear (Yellow)



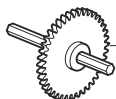
P4 1 pc
圓軸 (粗)
Round Shaft(Thick)



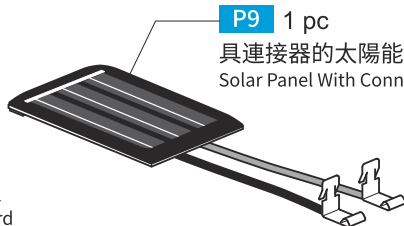
P5 2 pcs
圓軸 (細)
Round Shaft(Thin)



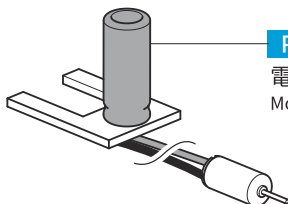
P6 2 pcs
海綿
Sponge



P7 1 pc
齒輪帶軸
Gear With Shaft



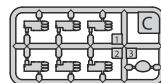
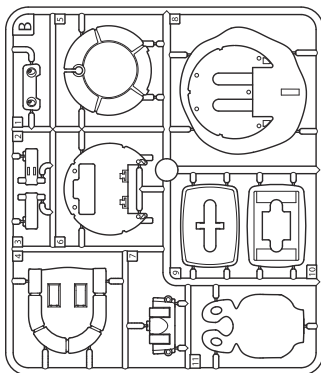
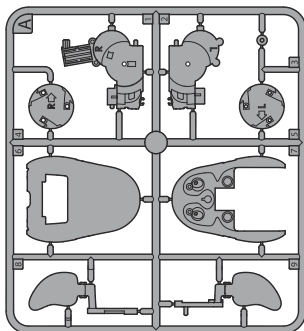
P9 1 pc
具連接器的太陽能電池板
Solar Panel With Connectors



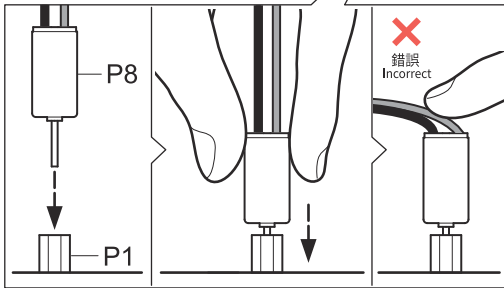
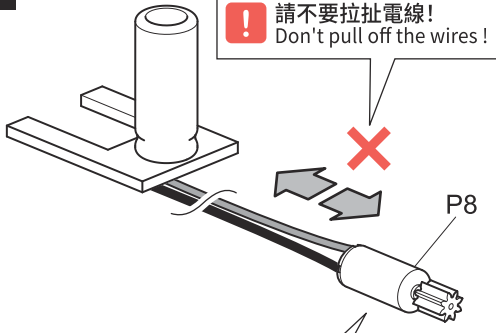
P8 1 pc
電機連接電路板
Motor With PC Board

! 請不要將電線連接到電源主線。
Don't connect the wires to the mains.

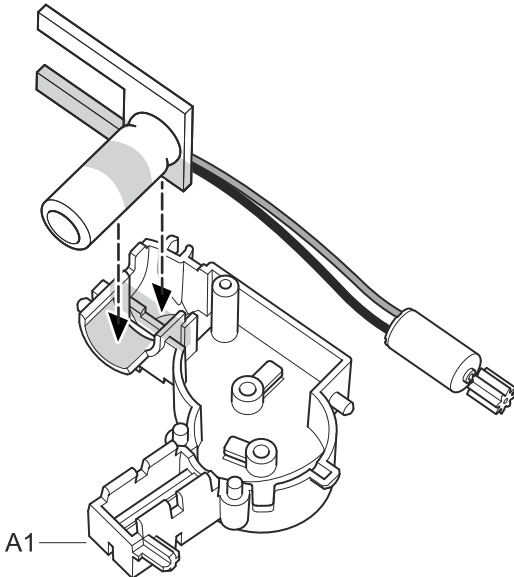
塑膠模型零件 Plastic Parts



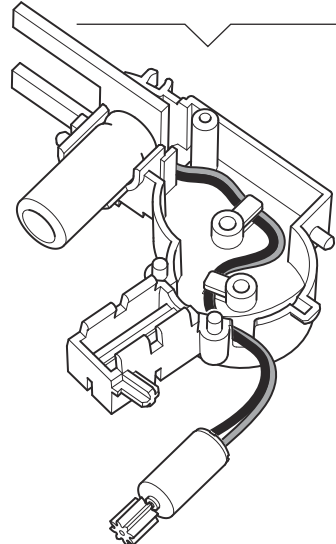
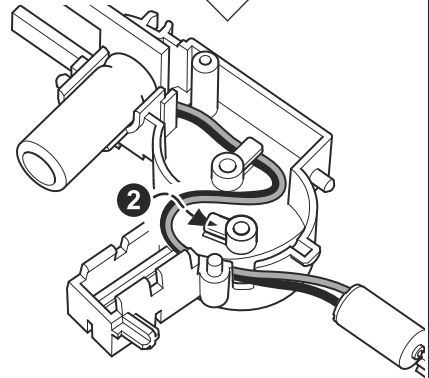
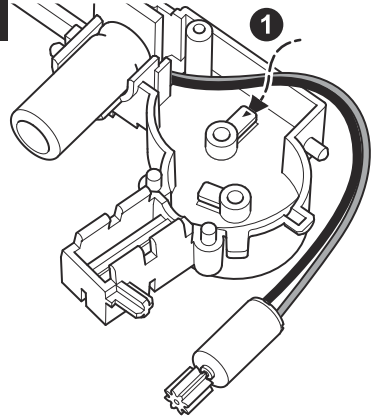
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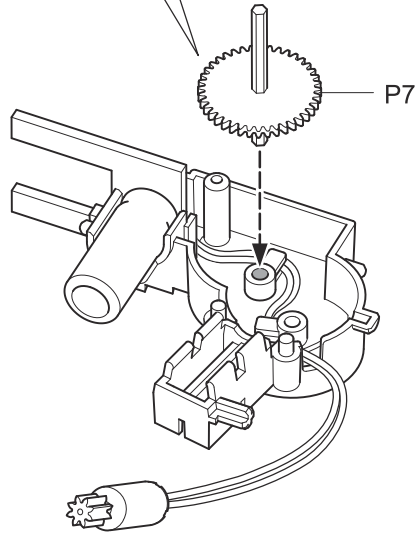
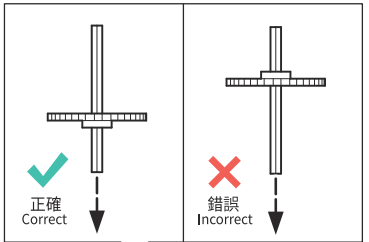
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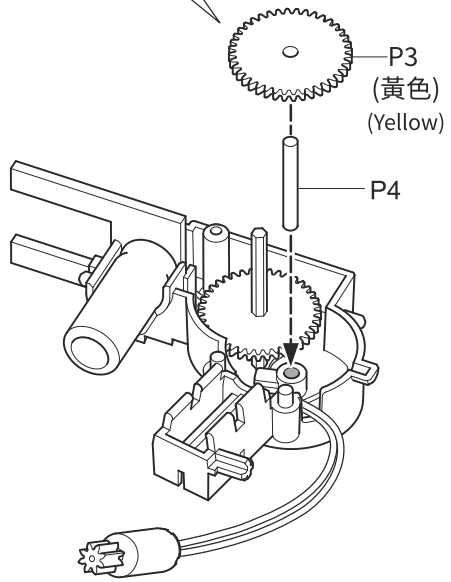
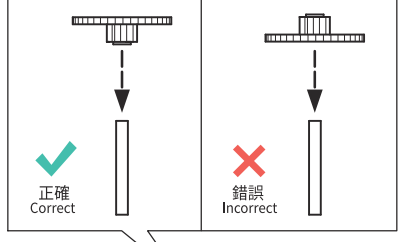
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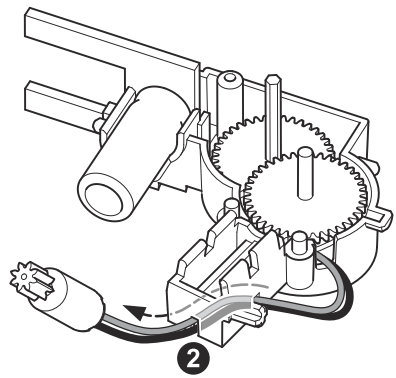
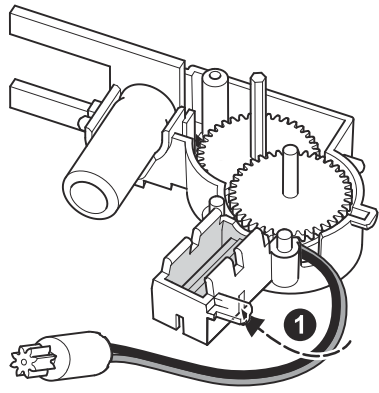
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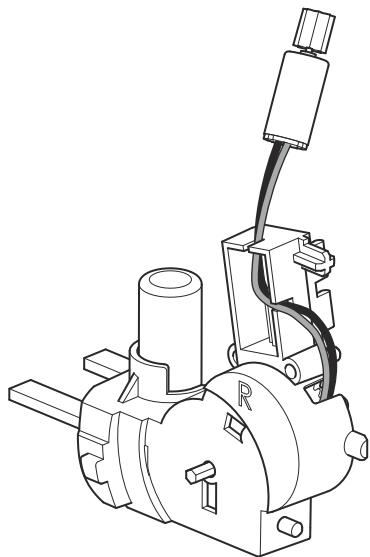


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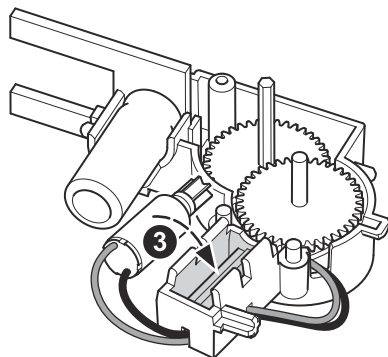


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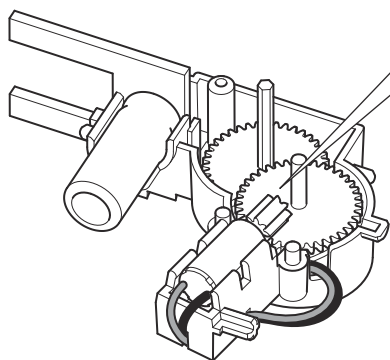




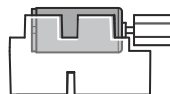
底視圖 Bottom view



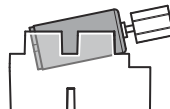
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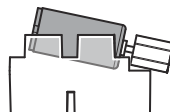
正確
Correct



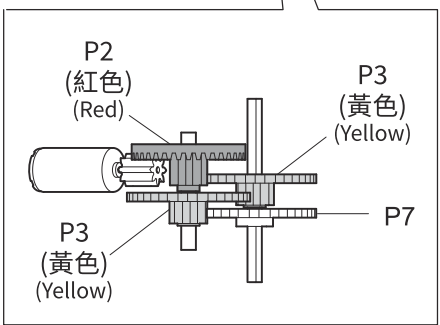
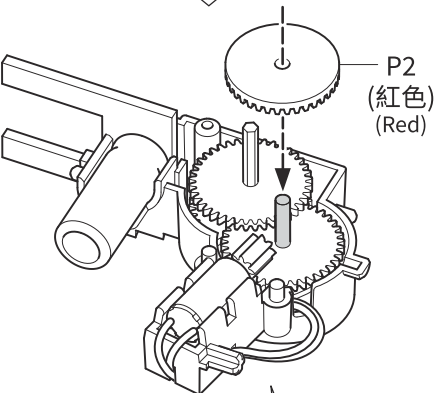
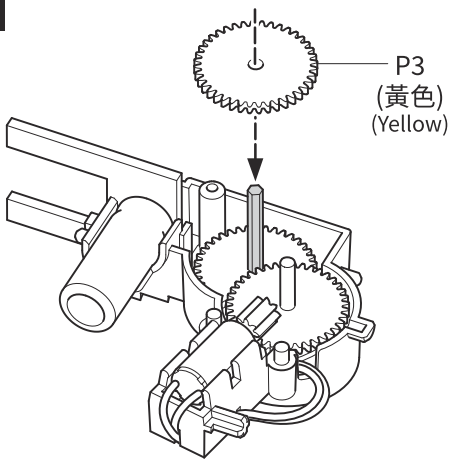
錯誤
Incorrect



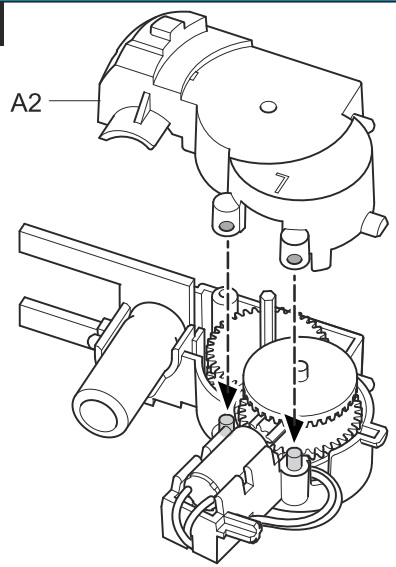
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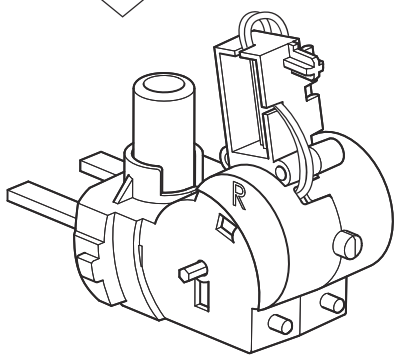
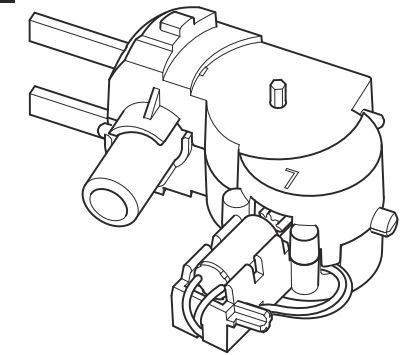
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9

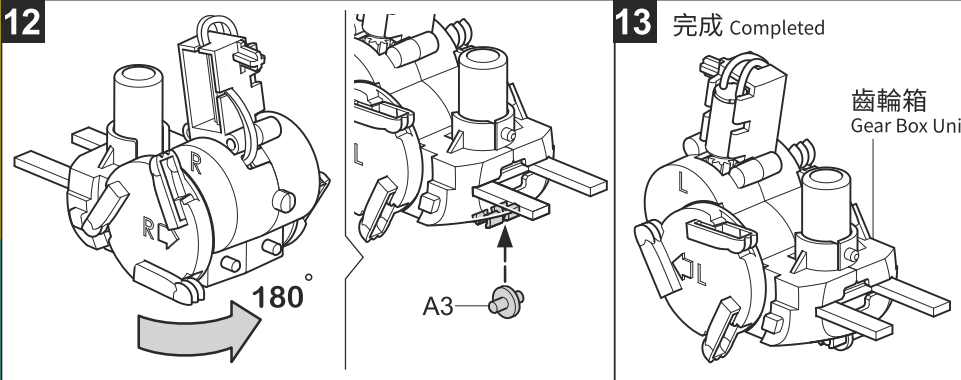
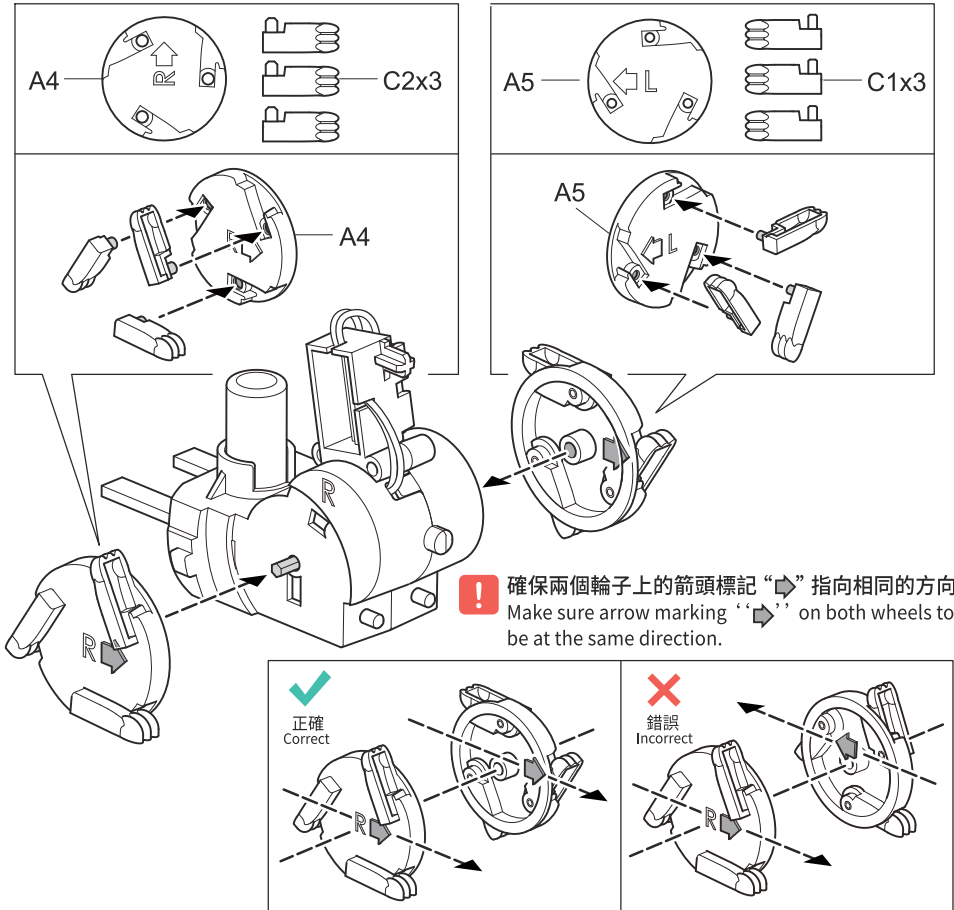


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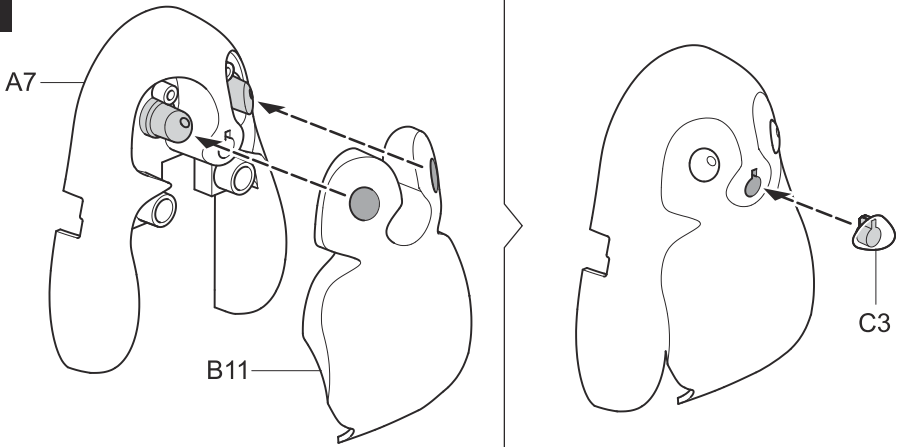
11 請確保 A4 和 A5 的輪子是平滑的。
 (參考第 1 頁 - 提示: 先剪掉 A4 和 A5 的毛邊。)

Make sure wheels of A4 & A5 are smooth.
 (refer to page 1- Hints: cut off the burrs of A4 & A5 first.)

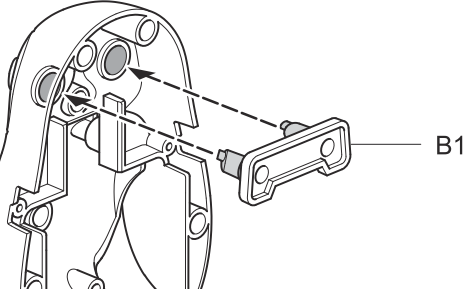


企鵝 Penguin

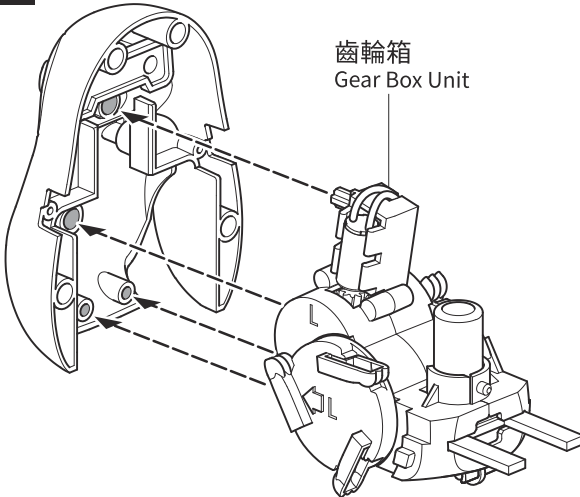
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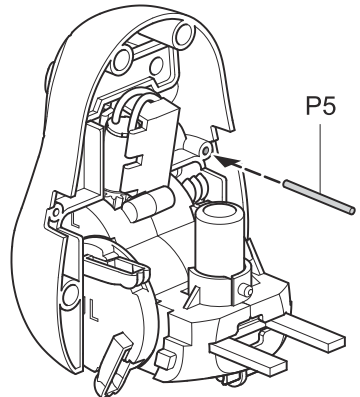
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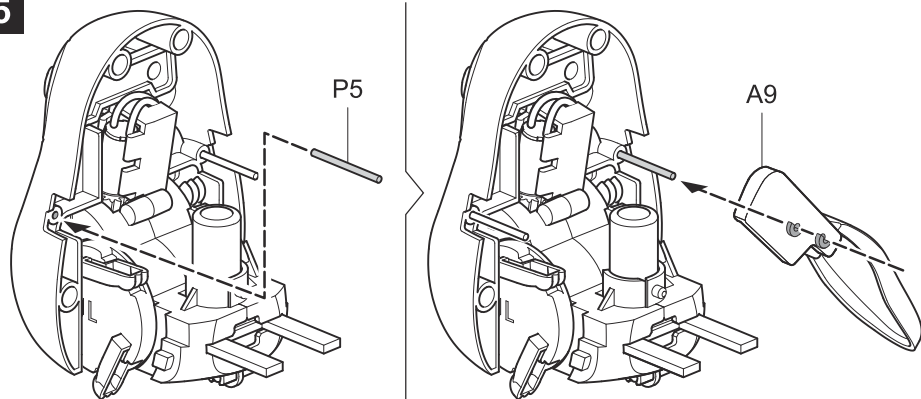
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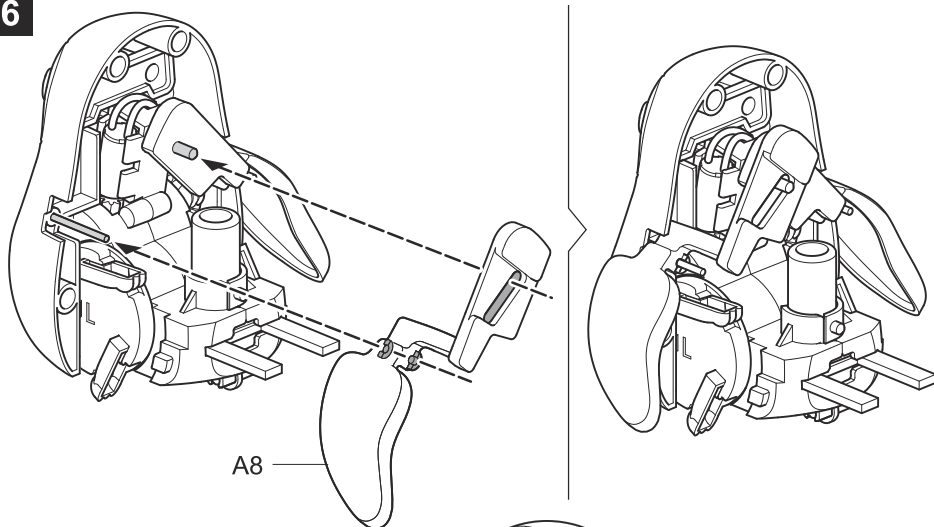
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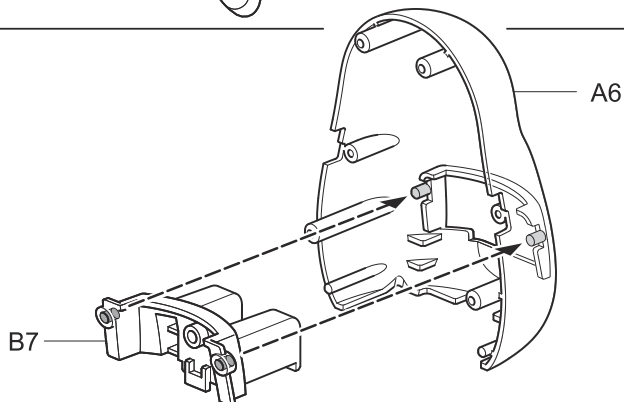
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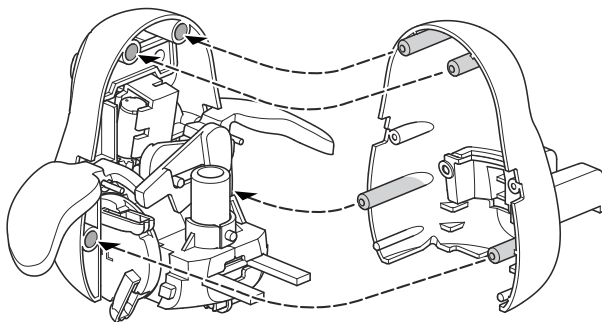
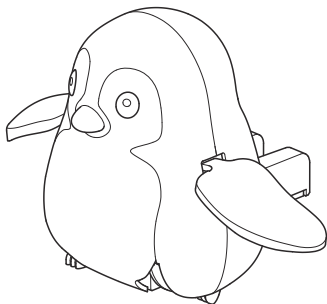
6



7



8

9 完成
Completed

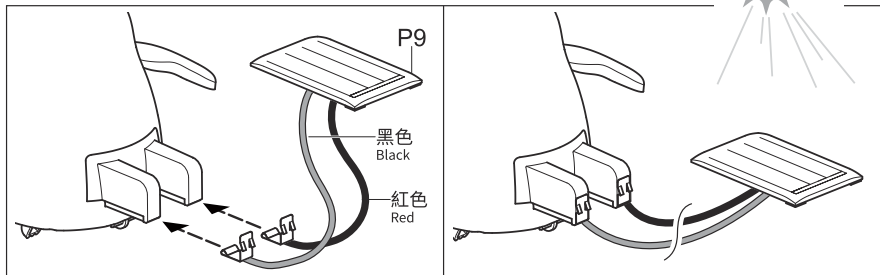
測試與故障排除 Testing & Trouble shooting

將 P9 連接到下圖所示的充電插頭。

確保連線正確，並確保太陽能板至少在晴天時直射陽光 1 分鐘，或在陰天時直射陽光 3 分鐘。

Connect P9 to the charging plug as below figure.

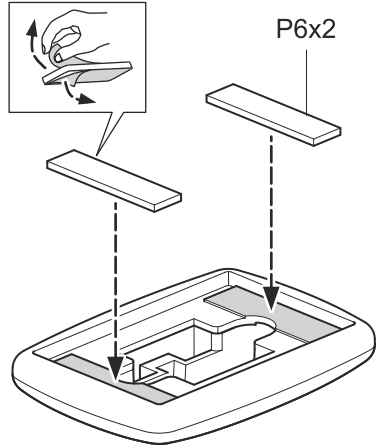
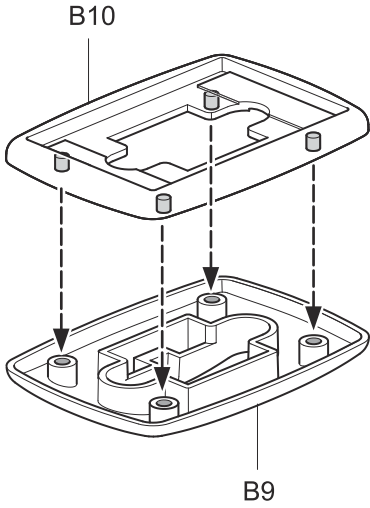
Make sure wire connection is correct, and have solar panel direct to sunlight for 1 min at least on a sunny day, or 3 min under a cloudy sky.



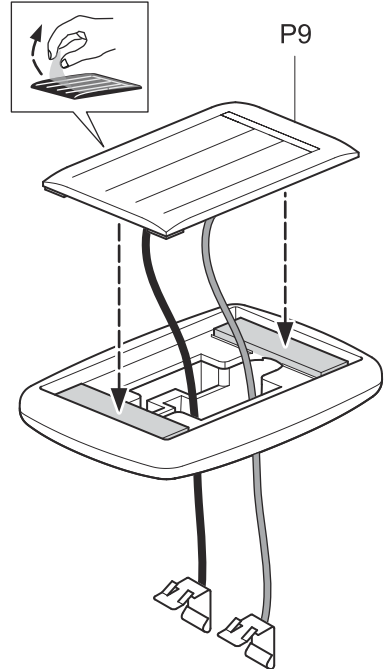
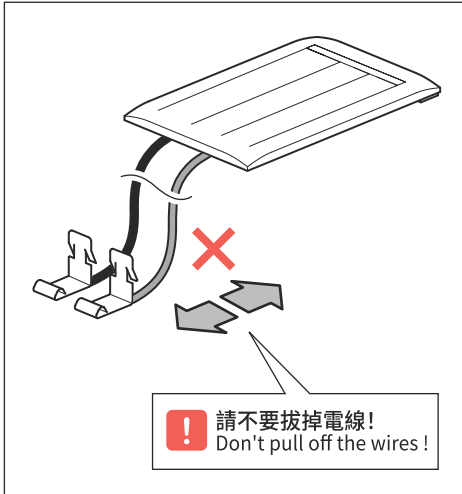
如果企鵝的腳步行走並且翅膀上下拍打一致，則功能正常。如果沒有任何反應，請檢查連線是否反向，或者返回第 3 頁重新檢查。

If Penguin's feet walk and wings flap up & down consistently, function is working fine. If nothing works, check if wire connection is reverse or not, or back to Page 3 to re-check.

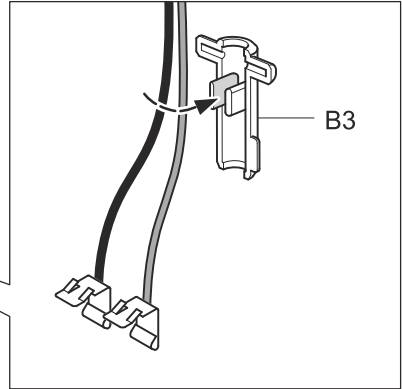
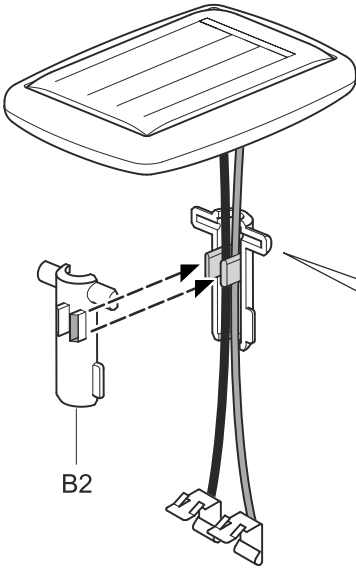
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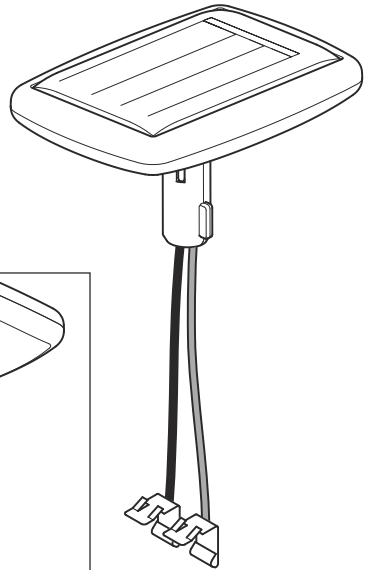
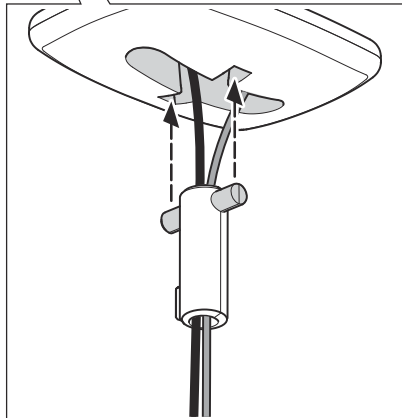
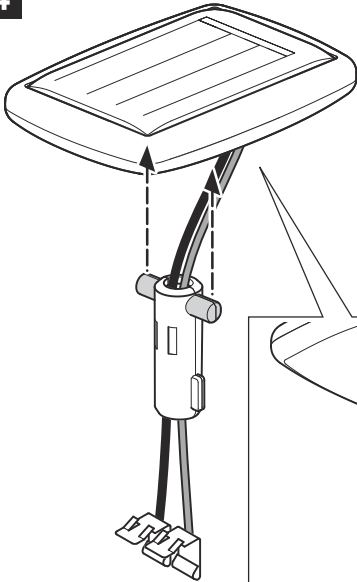
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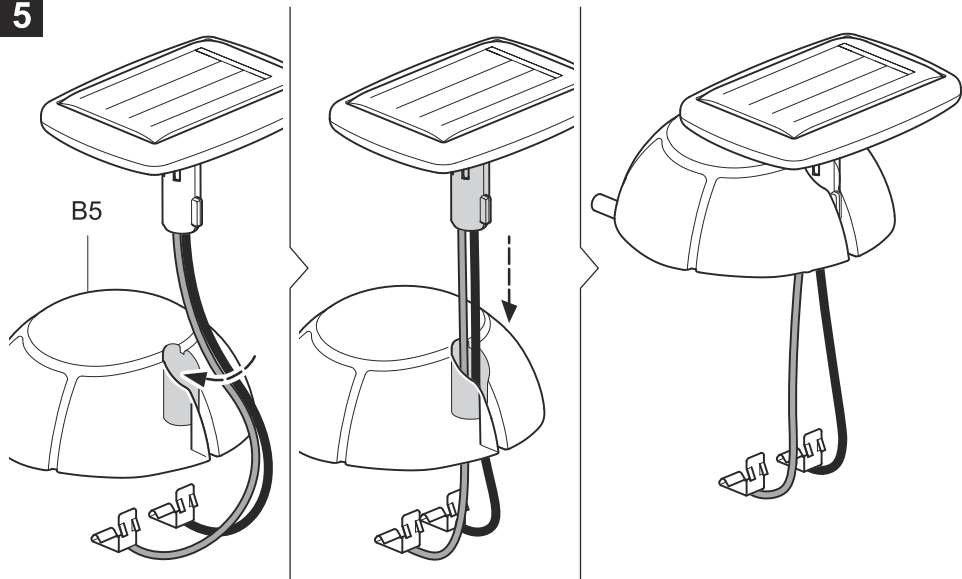
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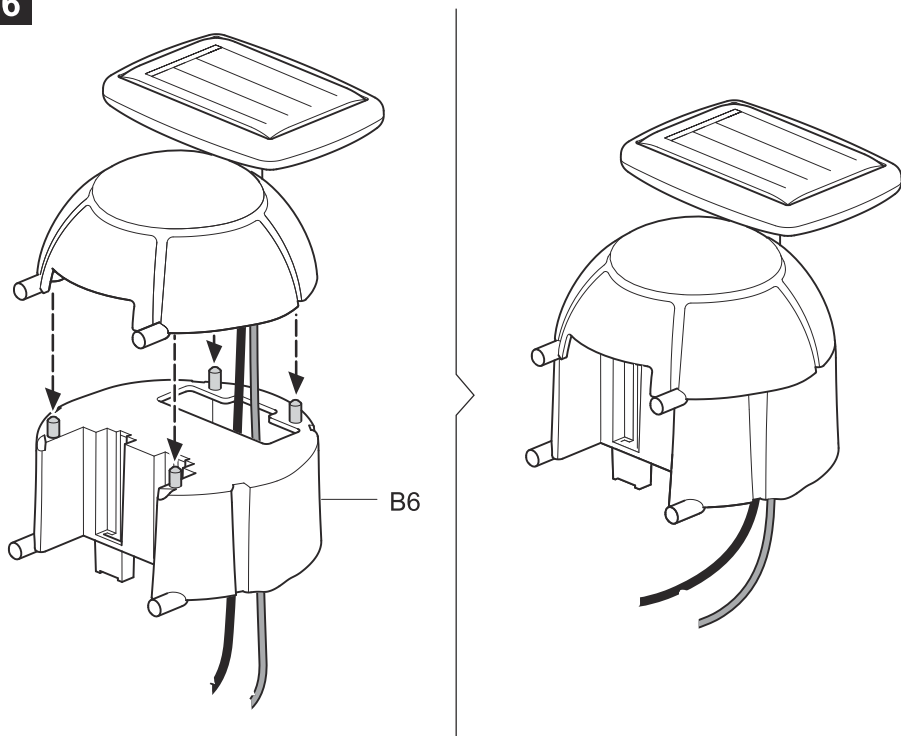
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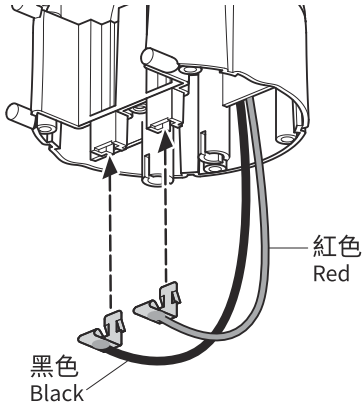
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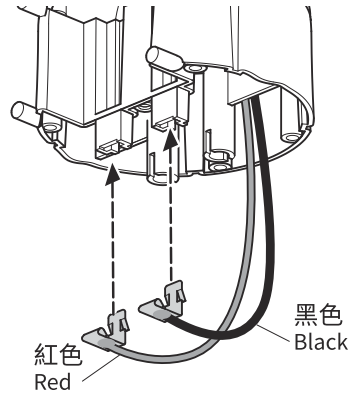
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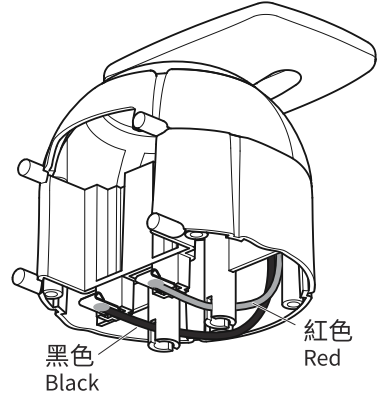
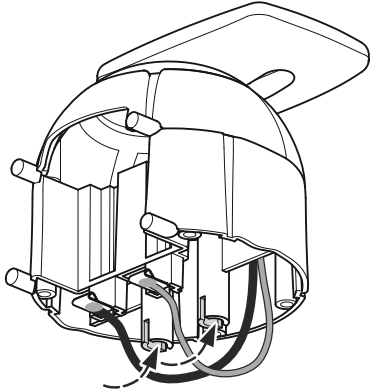
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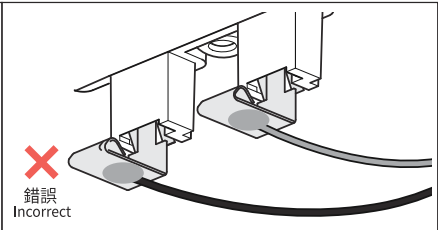
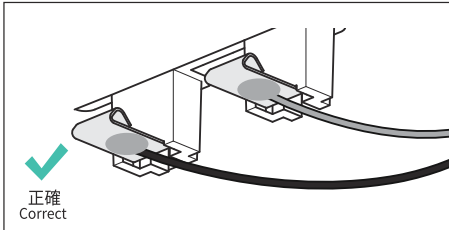
❌
錯誤
Incorrect



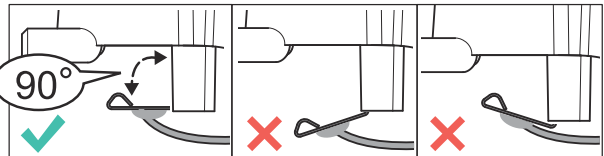
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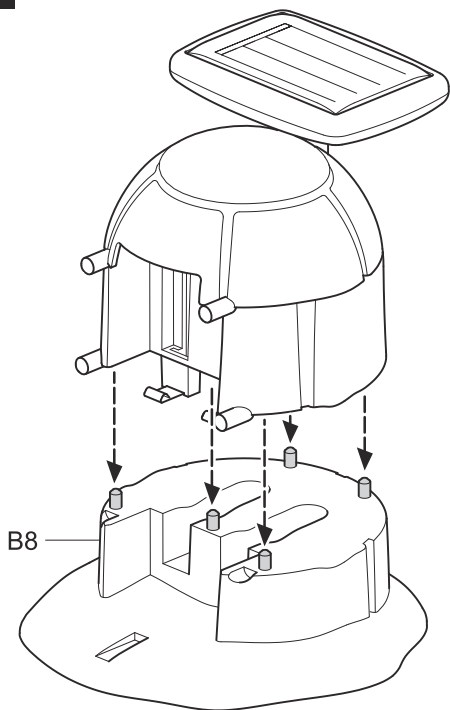
確保將連接器設置在底部。
Ensure to set the connectors to the bottom.



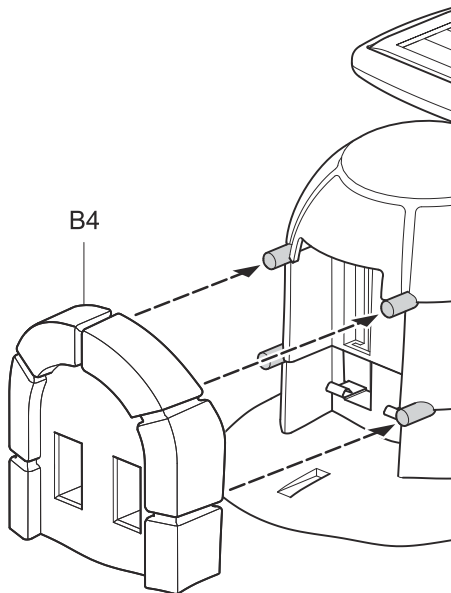
連接器應設置在底部，任何不是 90 度的角度設置都是不正確的。
Connectors to be set to the bottom, any angles other than 90 of setting are incorrect.



9

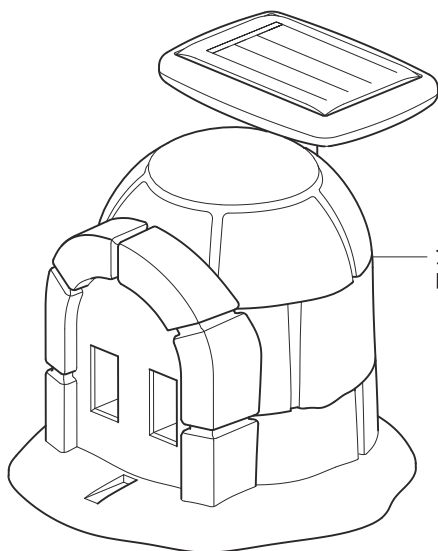


10



11

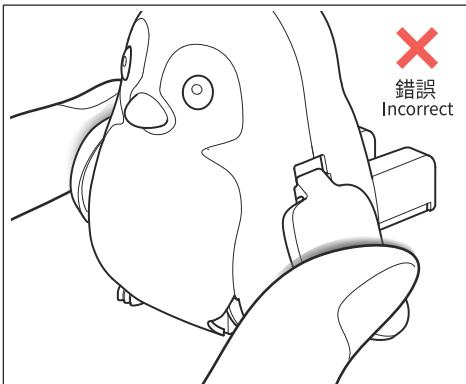
完成
Completed



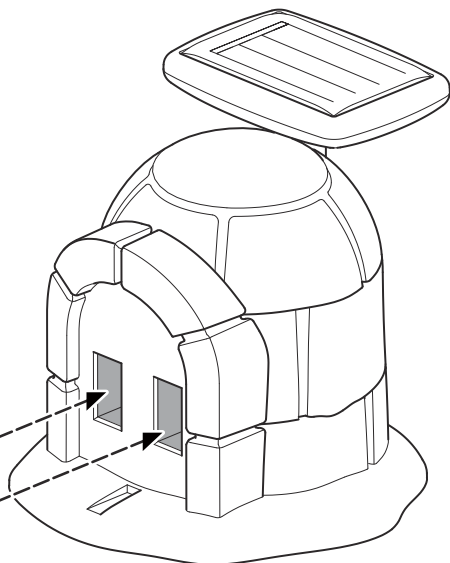
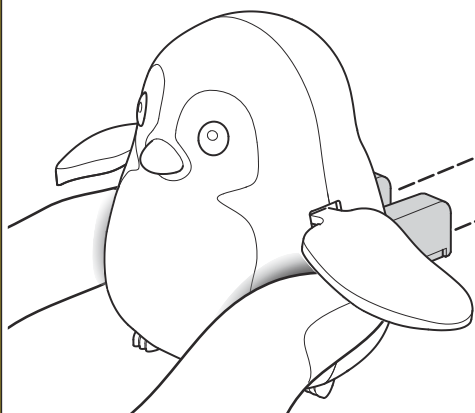
企鵝的家
Penguin's house

遊玩方式 How to work

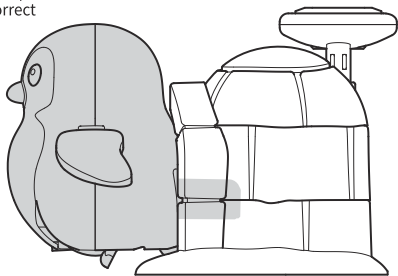
1 插入 Plug in



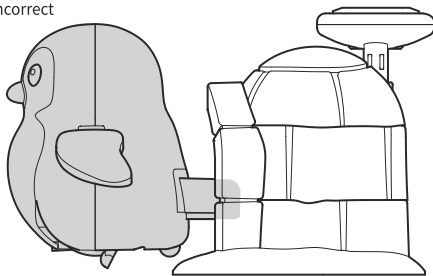
! 插電時請勿握住翼片!
Do not hold the wings when plug in!



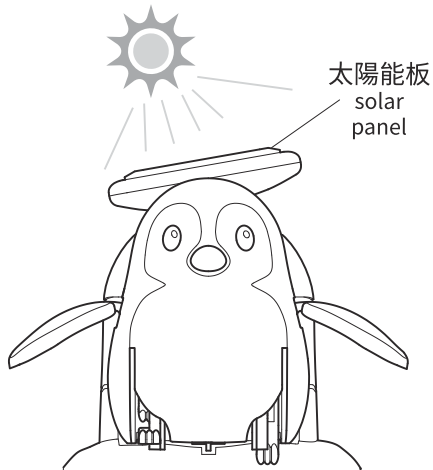
正確
Correct





錯誤
Incorrect

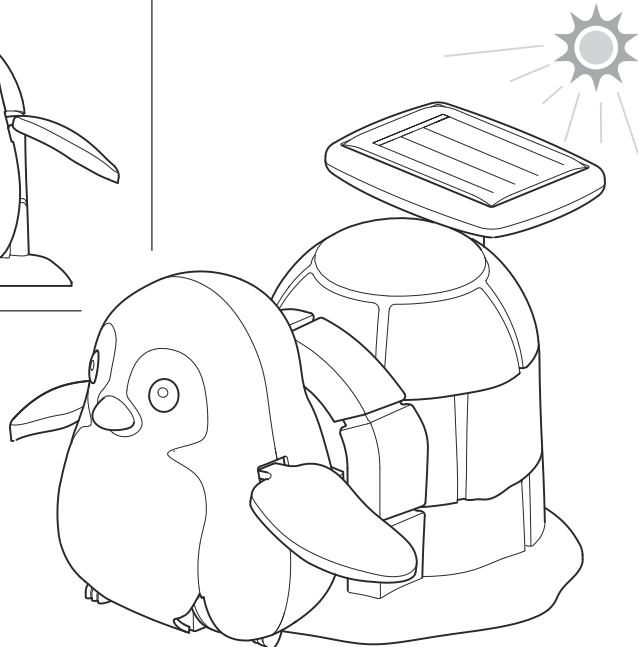


2 請將太陽能板直接照射到陽光 Direct Solar Panel to Sunlight



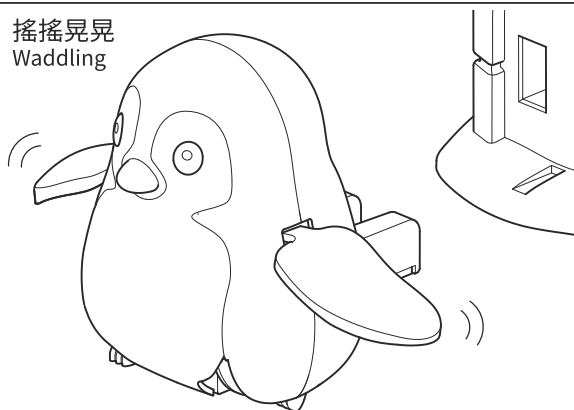
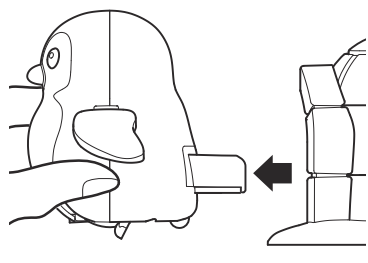
陽光充電 Charge by Sunlight

天氣狀況 Weather conditions	充電時間 Charging time
	大約 3 分鐘 Approx 3 min.
	大約 10 分鐘以上 Approx 10 min & up.



3

搖搖晃晃 Waddling



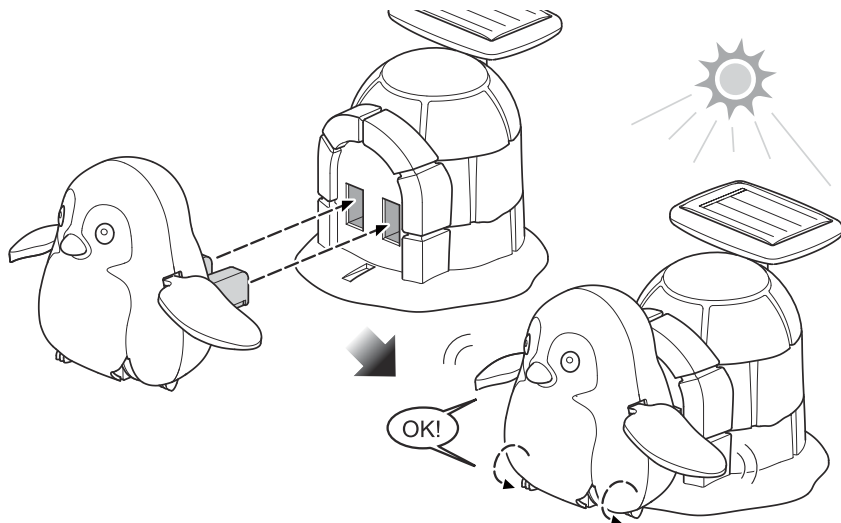
測試和故障排除 Testing & Trouble shooting

將企鵝插頭插入屋內，並調整直至陽光直射太陽能板。

如果企鵝的腳行走並且翅膀持續上下拍動，則功能正常。

Have the penguin plug in the house and make solar panel under direct sunlight.

If Penguin's feet walk and the wings flap up & down consistently, function is working fine.

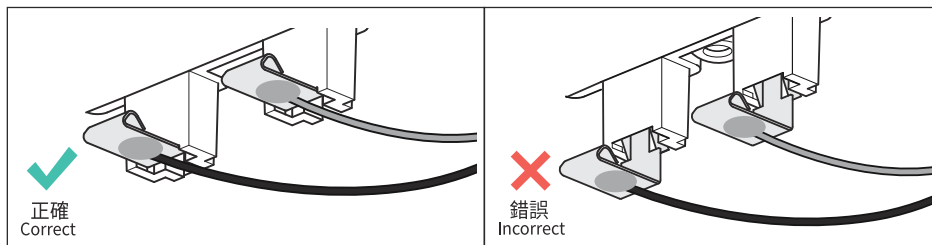


如果不起作用或效果不佳，請返回第 14 頁。

! (1) 檢查 P9 上的連接器是否安裝在正確的位置。

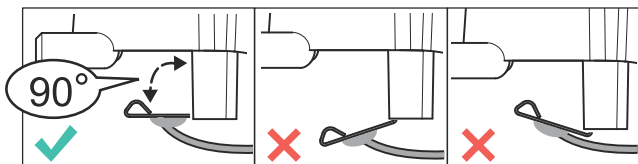
If nothing works, or works poorly, back to page 14.

(1) check if connectors on P9 are set in the right position or not.



確保將連接器設置在底部。

Ensure to set the connectors to the bottom.



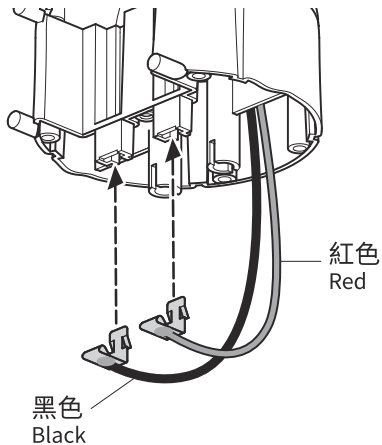
連接器要設定在底部，任何非 90 度的設定角度都是不正確的。

Connectors to be set to the bottom, any angles other than 90° of setting are incorrect.

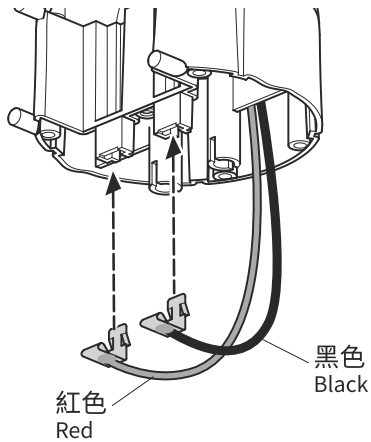
(2) 檢查接線位置是否正確。
 (2) check if wire connection is in the right position or not.



正確
Correct



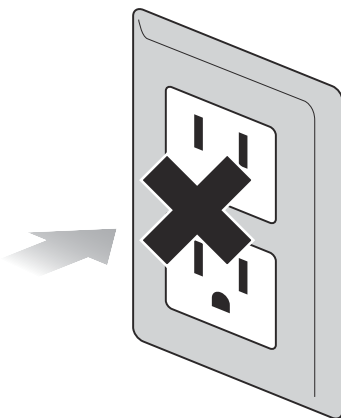
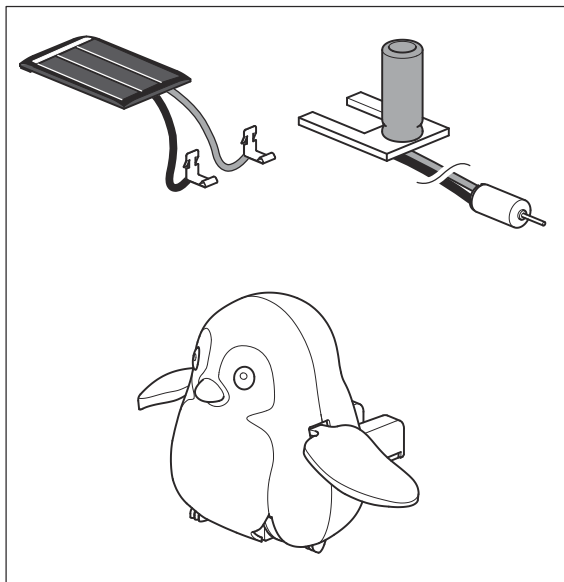
錯誤
Incorrect



注意! Attention!



禁止將充電插頭插入牆壁插座。
 Charging plug is prohibited to plug into wall outlet.



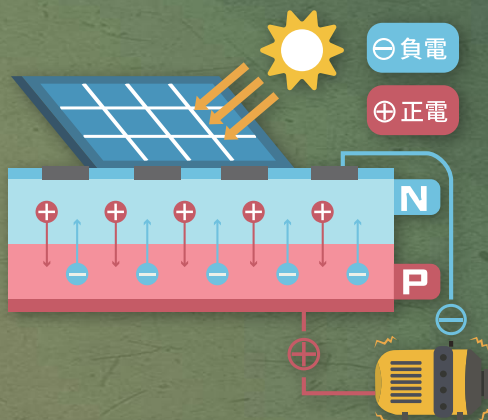


太陽能原理



兔寶科學講堂

太陽能發電面板搜集太陽熱能，轉化為電能。吸收 300NM ~ 1100NM 波長的太陽光，光子能量激發矽原子產生正負電，在半導體上產生了電子移動。電來了，就發動了！



1. 接收足夠能量的光

足夠能量的光子激發太陽能版的矽原子而產生自由電子(負電)與電洞(正電)。



2. 電子移動，電來了

正、負電會分別往正(P型)、負(N型)極方向移動，從而產生電流。



3. 馬達驅動，開始玩吧！



太陽光不足時
可用強光手電筒代替

全世界企鵝共有18種，從冰天雪地的南極大陸到炎熱赤道小島都有牠們的蹤影，體型從最大的帝王企鵝到體型最小的小藍企鵝，身高差可以到1公尺。其中被IUCN列為瀕危的有五種，分別是加拉巴哥企鵝、黃眼企鵝、北跳岩企鵝、冠毛企鵝及黑腳企鵝。

There are 18 species of penguins worldwide, found from the icy expanse of Antarctica to the hot equatorial islands. Their sizes range from the largest, the Emperor Penguin, to the smallest, the Little Blue Penguin, with a height difference of up to 1 meter. Five of these species are listed as endangered by the IUCN: the Galápagos Penguin, Yellow-eyed Penguin, Northern Rockhopper Penguin, Erect-crested Penguin, and African Penguin.

企鵝 in 臺北市立動物園

Penguins at Taipei Zoo

臺北市立動物園的企鵝館於2000年開幕，展示國王企鵝與黑腳企鵝，2024年園內國王企鵝有8隻(4公4母)，黑腳企鵝有29隻(13公16母)。企鵝館每天上午10點30分跟下午3點30分是企鵝的餵食時間，保育員會準備2到3種不同的魚給企鵝們選擇，歡迎大家來看企鵝與保育員們的互動。

The Penguin House at Taipei Zoo opened in 2000 and features King Penguins and African Penguins. As of 2024, the zoo has 8 King Penguins (4 males and 4 females) and 29 African Penguins (13 males and 16 females). Penguin feeding times are at 10:30 AM and 3:30 PM daily. During these sessions, zookeepers offer 2 to 3 different types of fish for the penguins to choose from. Visitors are welcome to observe the interaction between the penguins and their keepers.





企鵝冷知識

Penguin Fun Facts



每種雄性企鵝都會參與孵蛋的工作，其中最特別的是帝王企鵝，母企鵝產下蛋交給公企鵝後就會去海裡覓食，公企鵝會獨自孵蛋到小企鵝破殼後母企鵝才會回來共同哺育。

Male penguins of all species participate in incubating the eggs. The most notable is the Emperor Penguin: after the female lays the egg and hands it to the male, she goes to the sea to feed, leaving the male to incubate the egg alone until it hatches, after which both parents share the feeding duties.



國王企鵝與帝王企鵝是唯二不會築巢的企鵝。

King Penguins and Emperor Penguins are the only penguin species that do not build nests.



黑腳企鵝胸部和腹部的斑點圖案對每隻個體來說都是獨一無二的，就像我們的指紋一樣。

The chest and belly spots of African Penguins are unique to each individual, much like human fingerprints.



4月25日世界企鵝日：起源於南極研究站的科學家長年觀察到阿德利企鵝總是選在每年4月25日開始北遷徙覓食，因此將4月25日訂為「世界企鵝日」，呼籲人們保護這群不會飛的可愛鳥類。

World Penguin Day, April 25: This day originated from scientists at Antarctic research stations observing that Adélie Penguins start their northward migration to forage on this date each year. April 25 is now designated as World Penguin Day to raise awareness about the conservation of these flightless birds.

臺北市立動物園裡的COOL酷節能屋

Taipei Zoo's COOL Energy-Saving House

COOL酷節能屋(以下簡稱節能屋)以傳達居家生活的節能減碳和綠行動等相關議題的館區，館區裡有許多的互動式設施，民眾可以透過遊戲的方式，來瞭解節能減碳和生態保育之間的關聯以及重要性。

一般都認為動物與節能之間很難有直接的關聯，就只能透過節能減碳與保育行動的關聯性，來傳達日常生活中的綠行動。在2024年年初節能屋完成的新展區「動物世界節能趣，阿光熊尋訪節能動物高手之旅」，介紹的是人類怎麼向大自然學習節能減碳來改良或發明新的工具，就成功地將節能和動物議題連結再一起。而人類模仿大自然的學科又被稱為仿生學，想要了解大自然如何節能減碳，人類又是如何透過科學方式再現大自然幾萬年演化的奇蹟，都可以到臺北市立動物園的節能屋一窺究竟。

The COOL Energy-Saving House (referred to as the Energy-Saving House) is a pavilion dedicated to promoting energy conservation, carbon reduction, and green initiatives in home life. The pavilion features numerous interactive installations where visitors can learn about the relationship and importance of energy conservation, carbon reduction, and ecological conservation through games. People often find it challenging to see a direct link between animals and energy conservation. However, by highlighting the connection between conservation actions and energy-saving practices, the pavilion effectively communicates the importance of green actions in daily life. In early 2024, a new exhibition area was completed within the Energy-Saving House: "Energy-Saving Fun in the Animal World: A-Guang Bear's Journey to Discover Energy-Saving Animal Experts." This exhibition showcases how humans learn from nature to improve or invent new tools for energy conservation and carbon reduction, successfully linking these issues to animals. This field of study, where humans mimic nature, is known as biomimetics. To understand how nature conserves energy and reduces carbon emissions, and how humans replicate the marvels of nature's millions of years of evolution through science, a visit to the Energy-Saving House at Taipei Zoo is a must.



COOL酷節能屋開放時間：13:30-15:30(每個禮拜一休館)

COOL Energy-Saving House Opening Hours: 13:30 - 15:30 (Closed every Monday)

繪本
推薦



「動物世界節能趣，阿光熊尋訪節能動物高手之旅」

繪本由臺北市立動物園和工業技術研究院共同編輯

The picture book "Animal World: Fun with Energy Saving" is jointly edited by Taipei Zoo and the Industrial Technology Research Institute.



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