

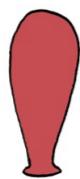
# 自製TalkBox



DIMENSION PLUS

# 人類說話原理

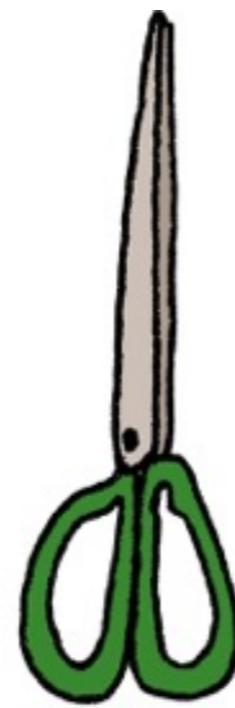
## 實驗材料



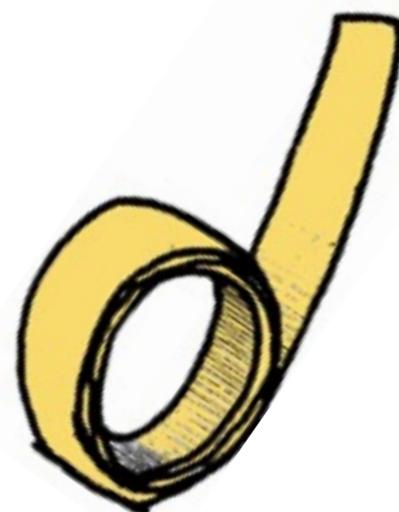
氣球



吸管



剪刀

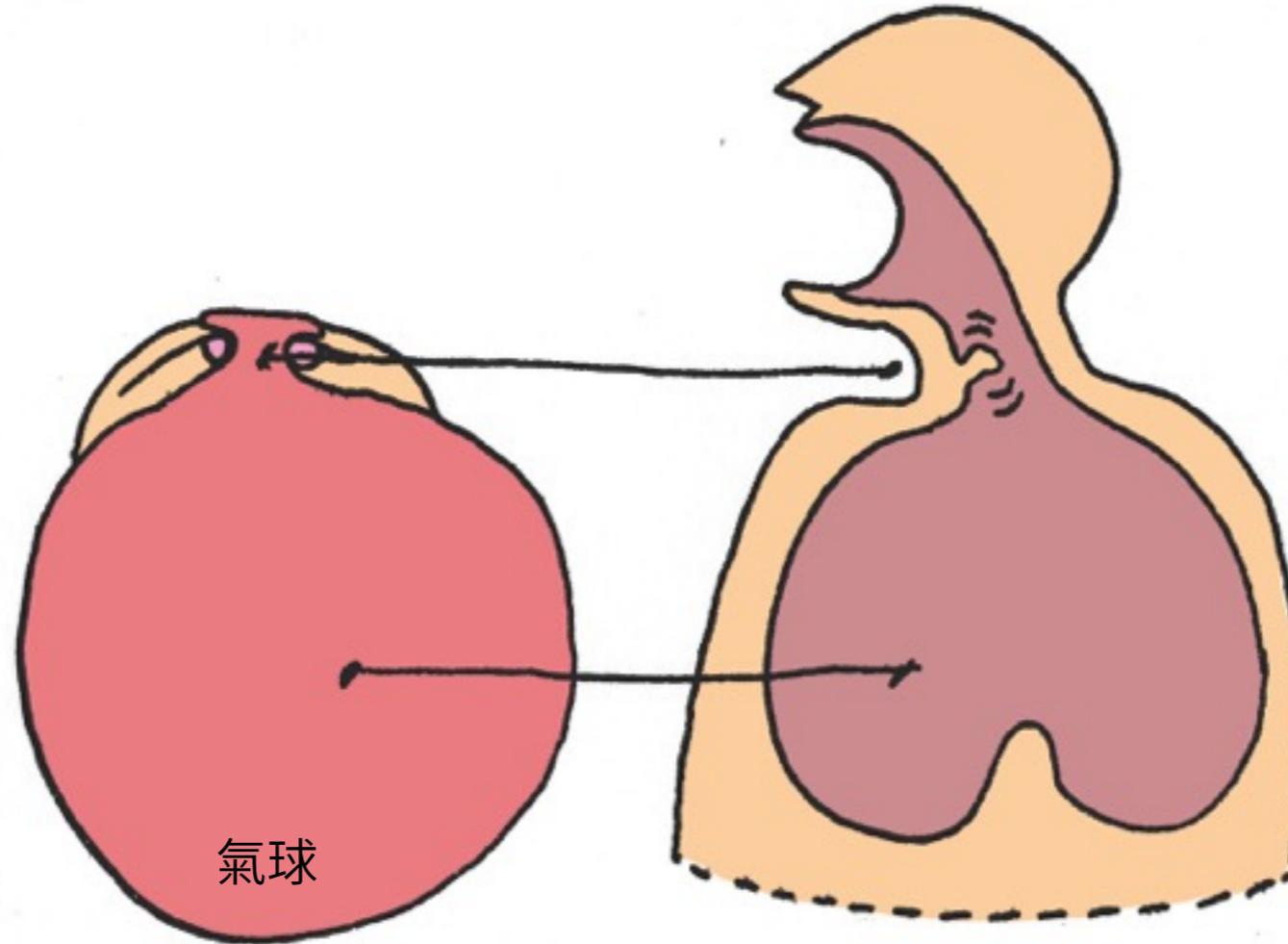


膠帶



寶特瓶

# 人類說話原理



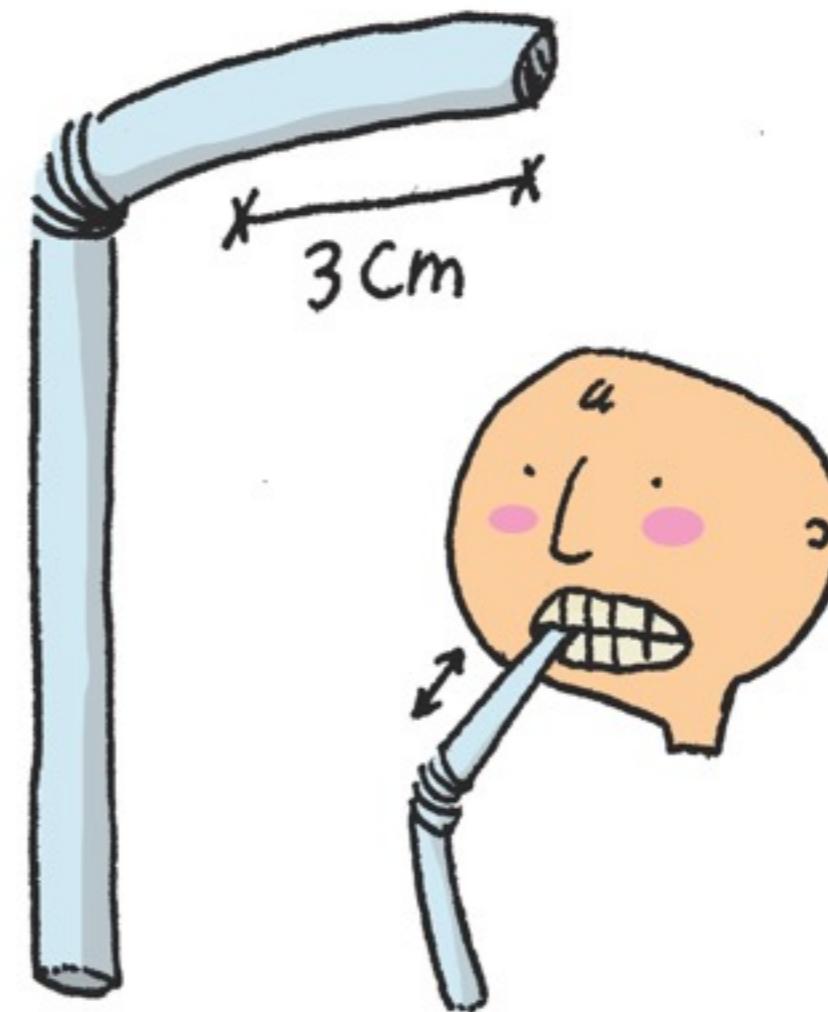
聲音的產生是由於物體震動形成的。空氣跑出氣球的時候，開口會快速的震動，試一試往外拉緊或放鬆開口，是不是製造出不同聲音？

當人從肺部呼出空氣，震動喉部聲帶，就發出了聲音。

# 人類說話原理

## 製造聲帶1

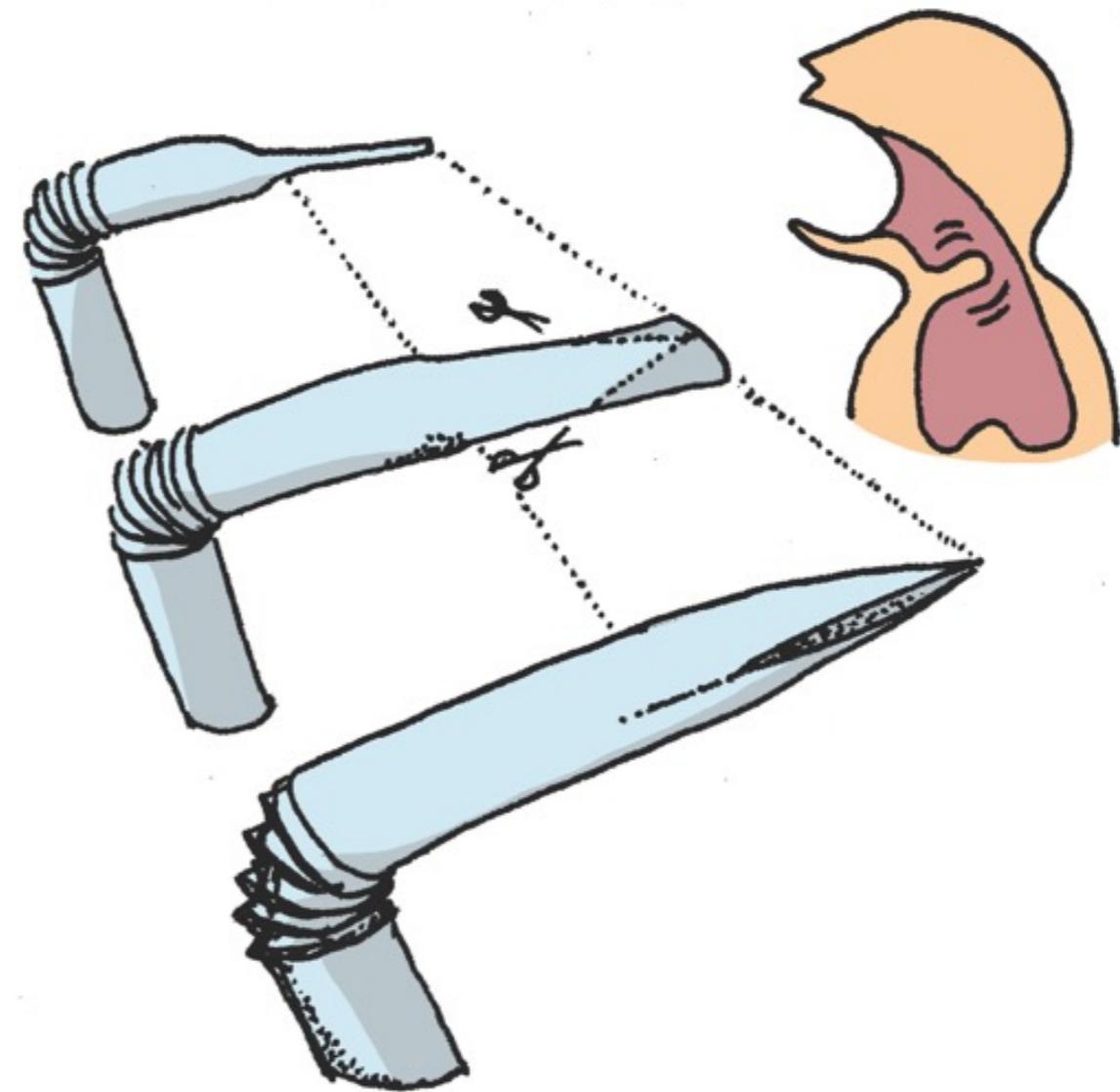
把一根吸管前面約三公分壓扁，可以用牙齒，重點放在壓扁兩邊。



# 人類說話原理

## 製造聲帶2

壓扁之後把前端剪出一個像圖表示的這樣的尖角。我們就得到了一個可以震動產生聲音的東西。

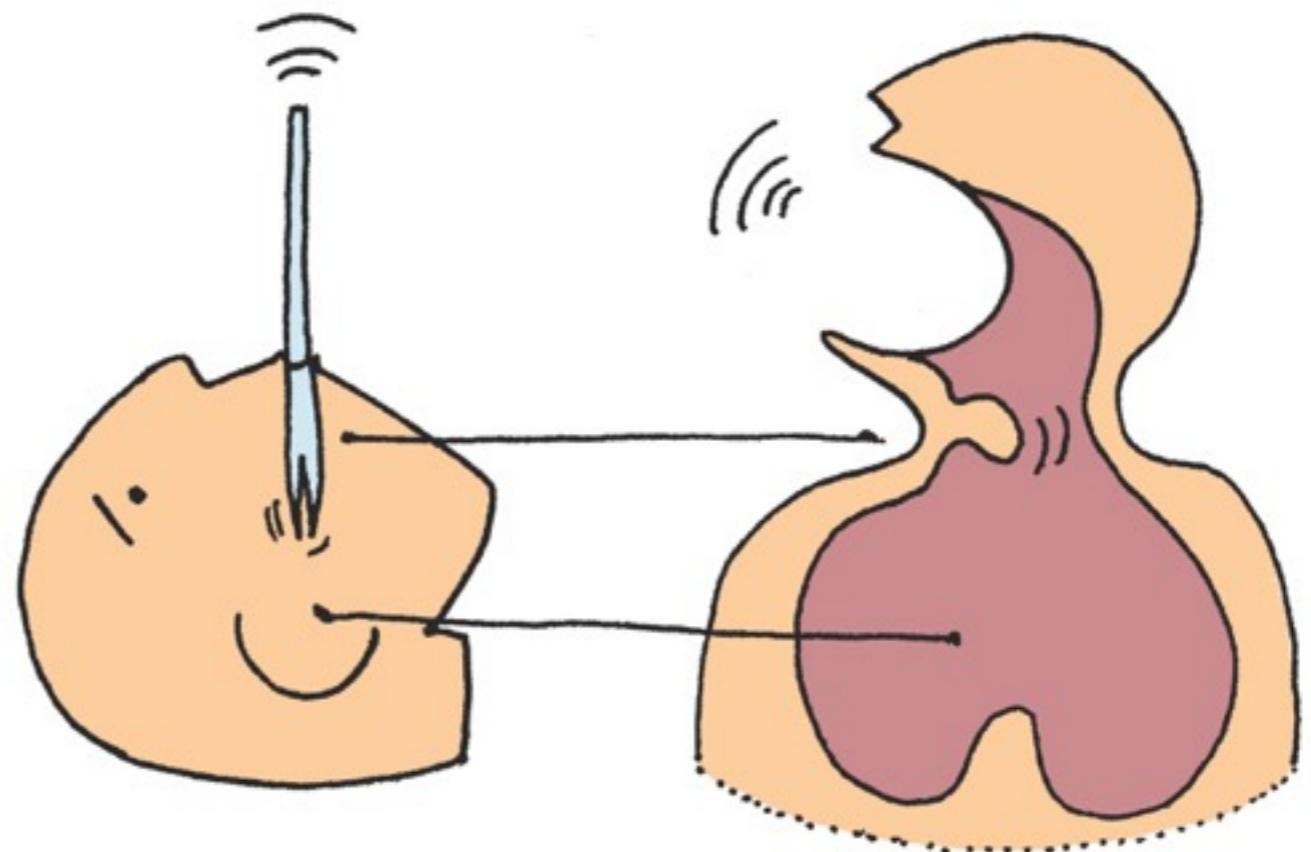


# 人類說話原理

## 製造聲帶3

現在把吸管尖角的一端放到嘴裡用力吹，是不是發出聲音了？

試試變換尖角的長度，吸管的長度，吹的力量，聲音是不是改變了？

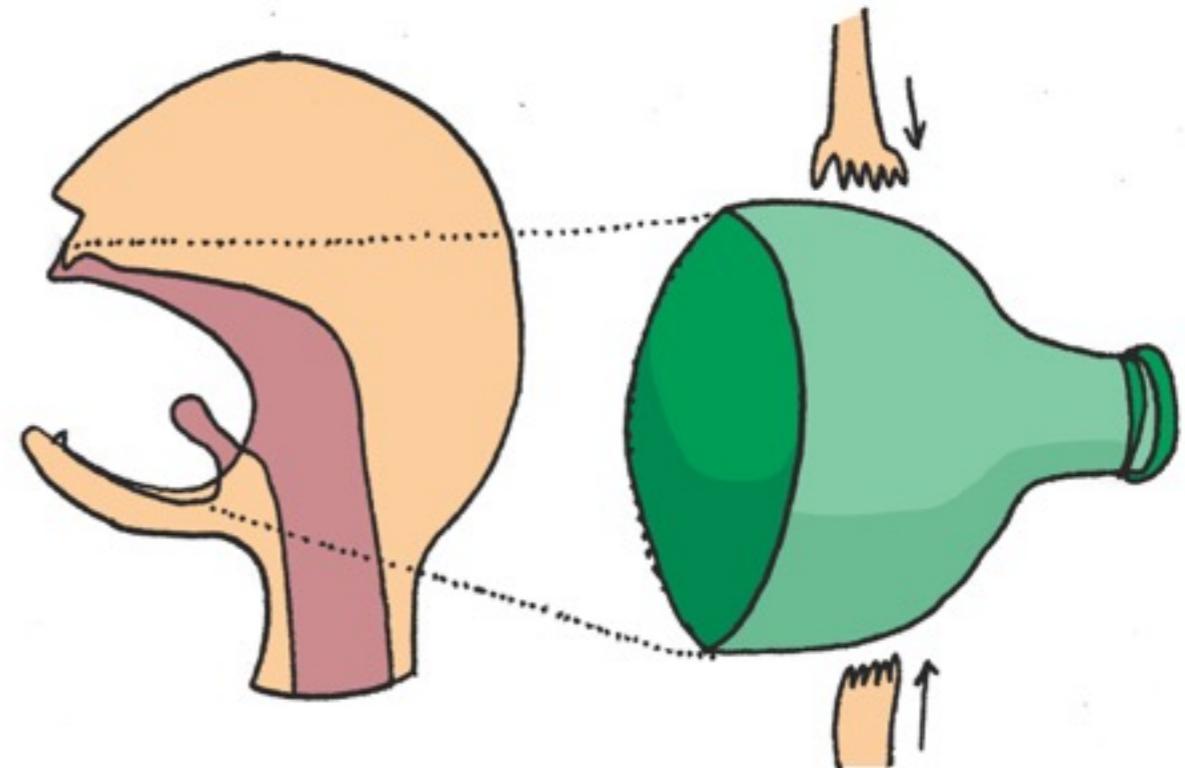


# 人類說話原理

## 製造嘴巴1

現在製造出聲音了，但這些聲音是怎麼變成話的？

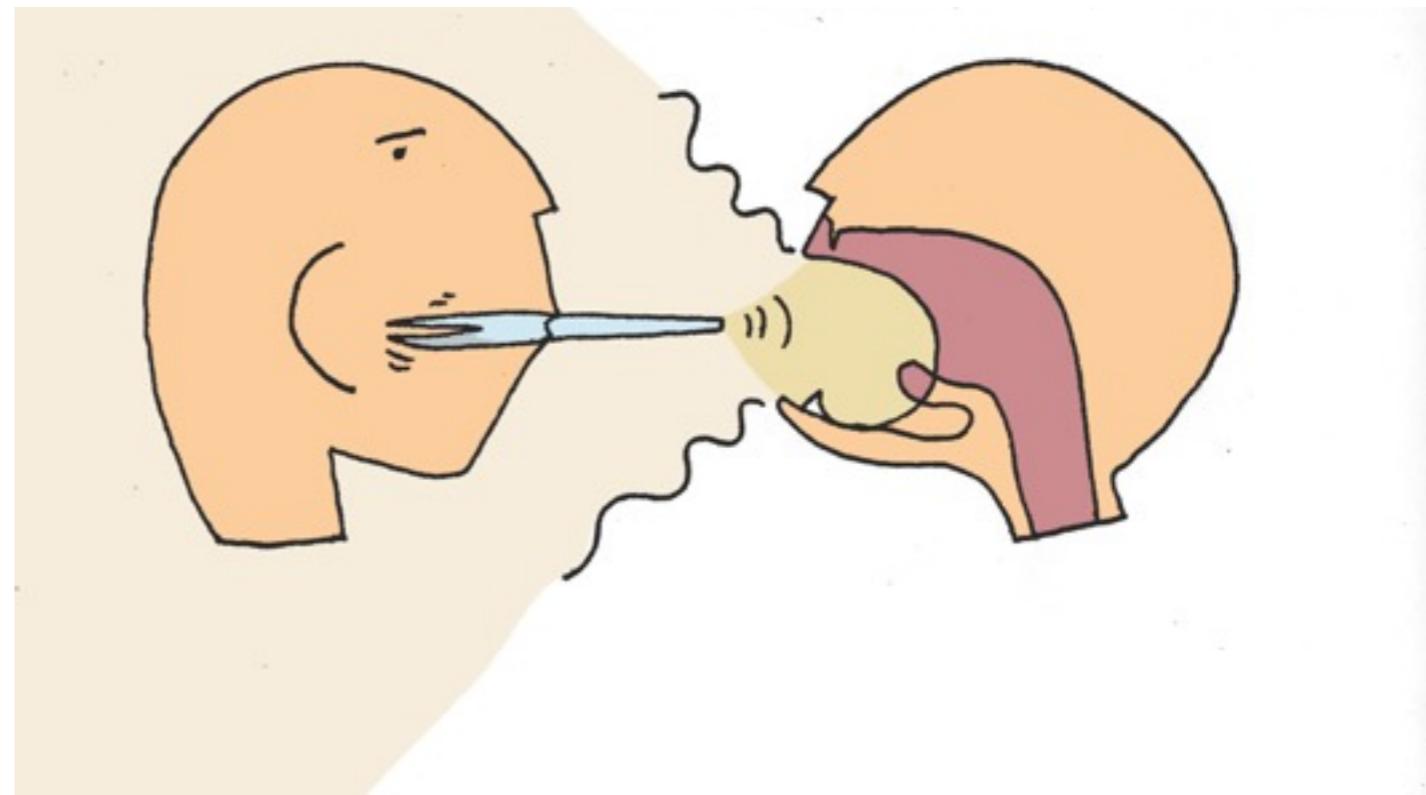
讓我們在吸管開口的地方接上切成一半的寶特瓶，試試看擠壓改變寶特瓶的形狀。聲音是不是變了？



# 人類說話原理

## 製造嘴巴2

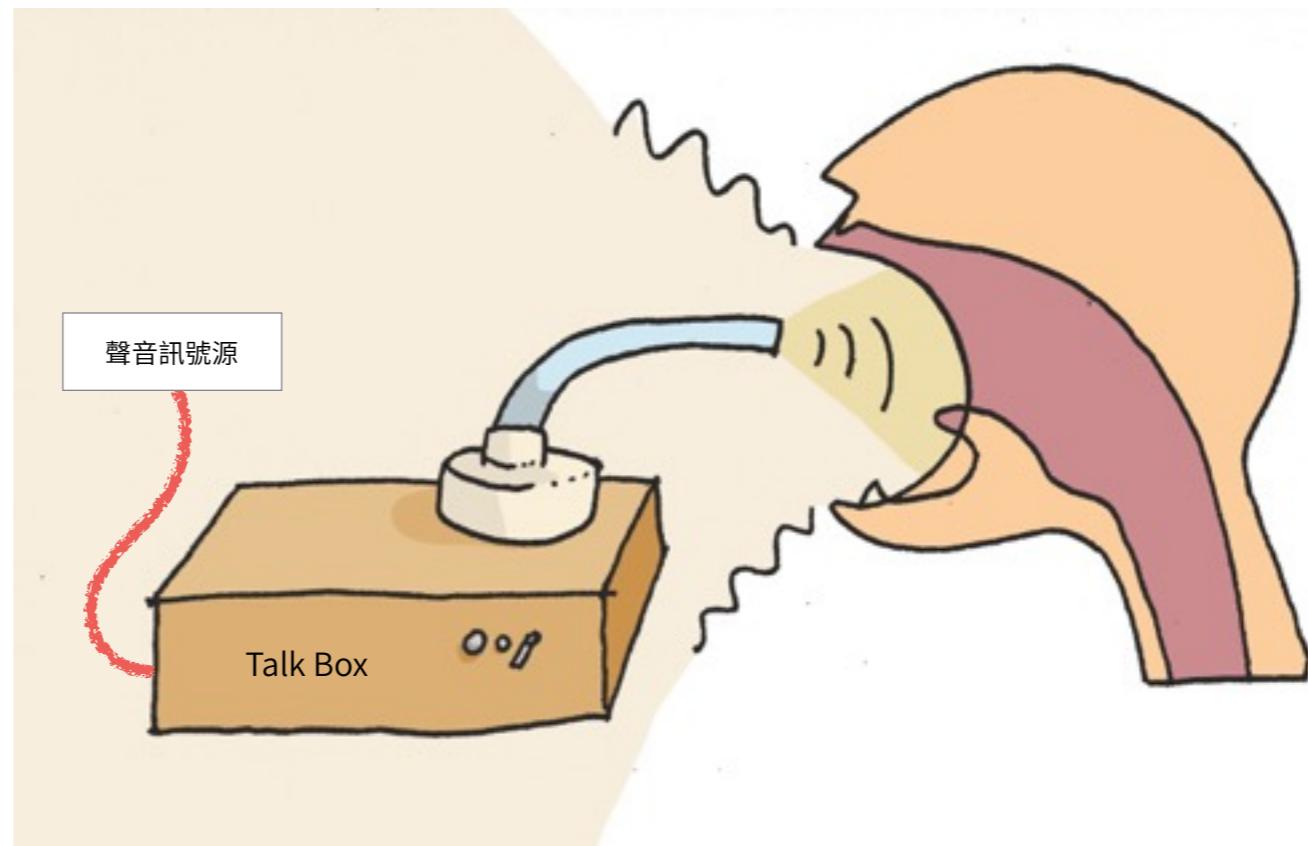
把聲音送到另一個人的嘴巴，  
變換嘴巴的形狀，聲音是不是  
也變了？



# 人類說話原理

## Talk Box

現在來試試別的聲音來源。  
但該怎麼把想要的聲音直接  
送到嘴巴裡？  
於是有人發明了Talk Box



# TalkBox歷史

Singing guitar  
Alvino Rey  
1939



**TA GIGI  
COMMITTANCE**

**AVANTAGE**

**and HS ORCHESTRA**

**SHOOTING**

# TalkBox歷史

Sonovox  
Gilbert Wright  
1939



Walt Disney  
PRESENTS

The  
*Reluctant*  
*Armchair*

BASED ON THE STORY BY CLINTON SPAGHETTI

IN ASSOCIATION WITH THE WALT DISNEY COMPANY

# TalkBox歷史

Talking steel guitar  
Pete Drake  
1964





# TalkBox歷史

THE BAG  
Kustom Electronics  
1969



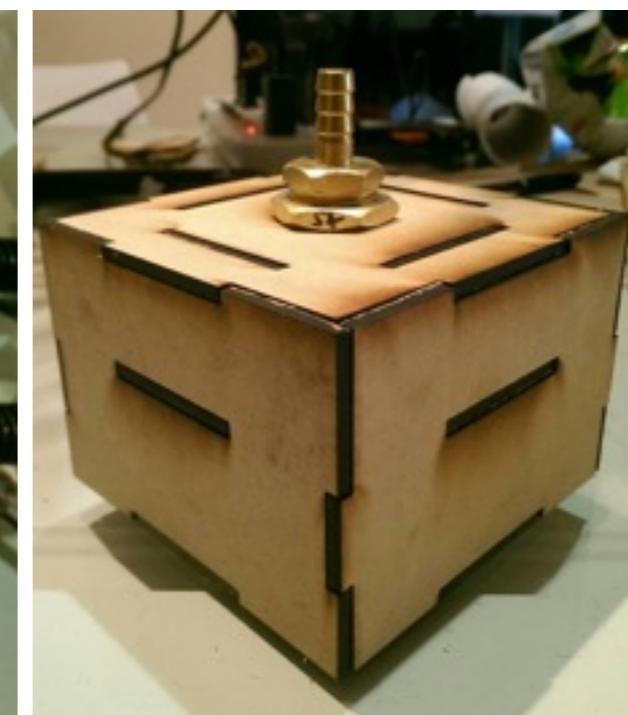
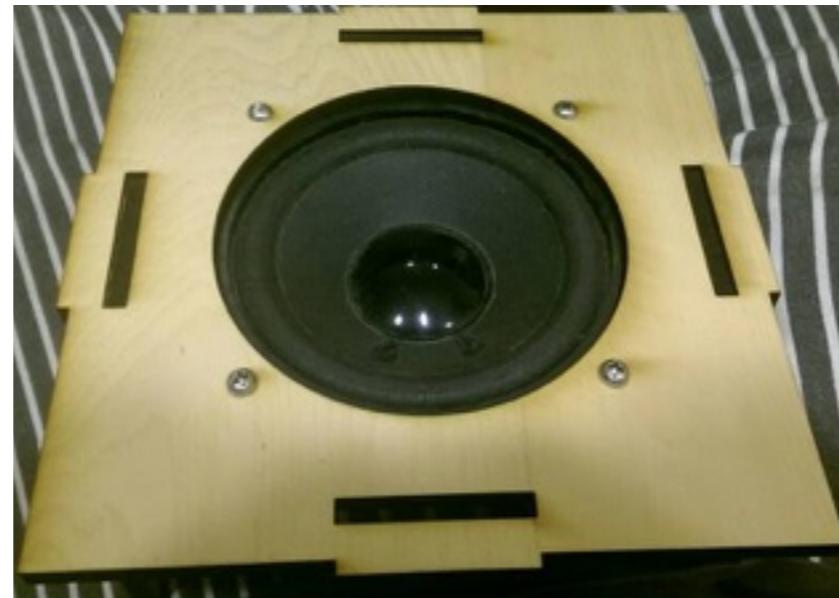
# TalkBox歷史

Heil High power Talk Box  
Bob Heil  
1973





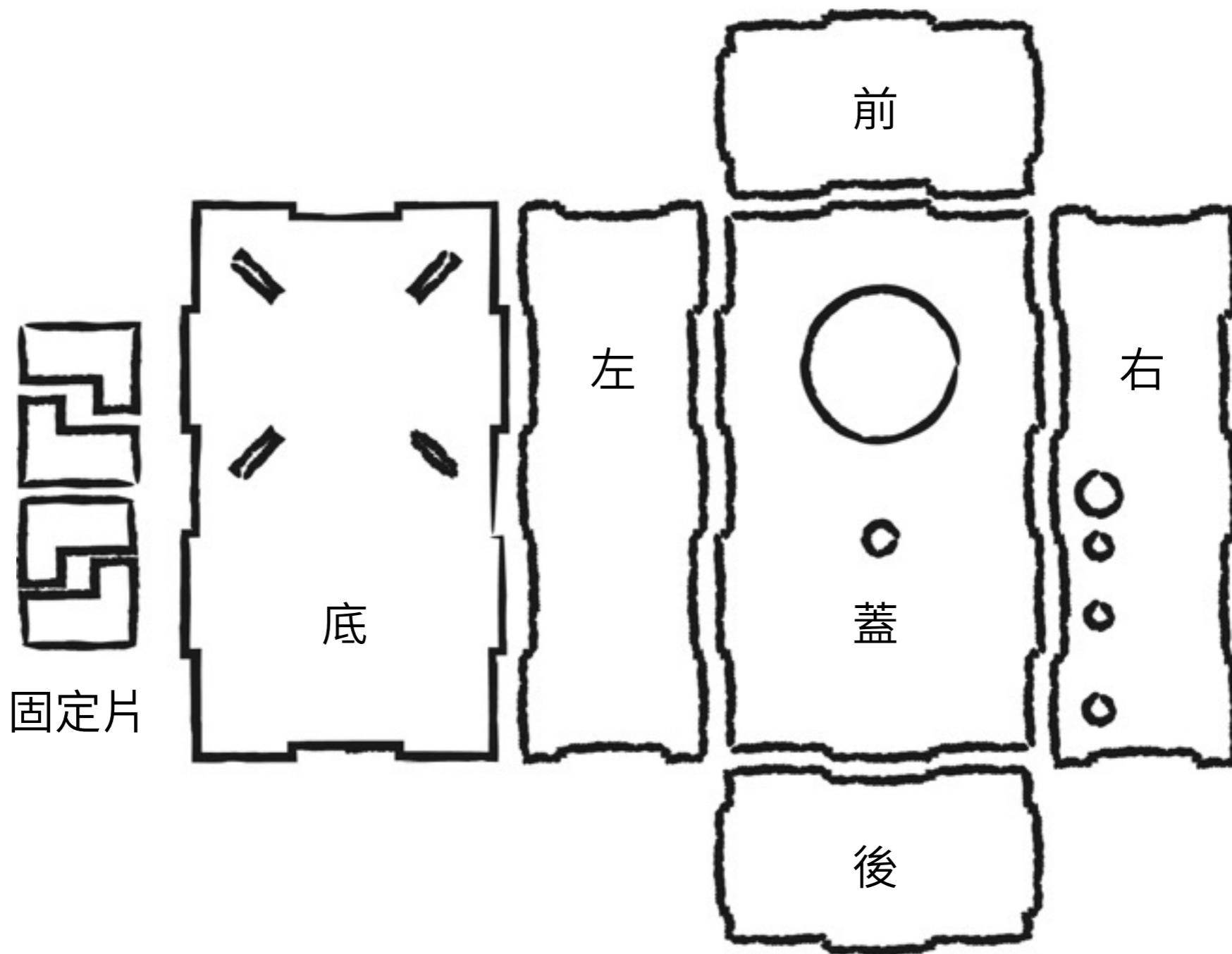
# 原型製作



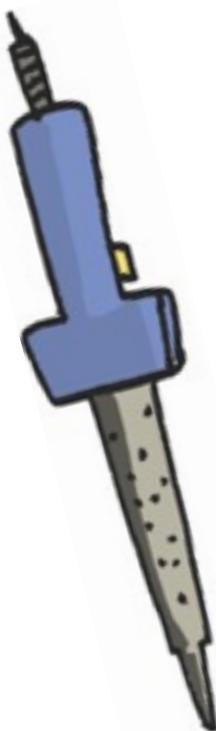
# 原型製作



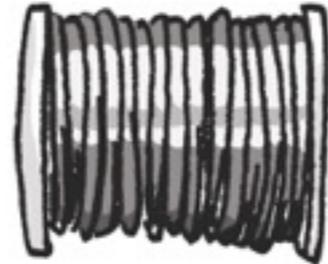
# 工具&材料



# 工具&材料



電烙鐵



焊錫



烙鐵架&海綿



剝線鉗



電子線



喇叭線

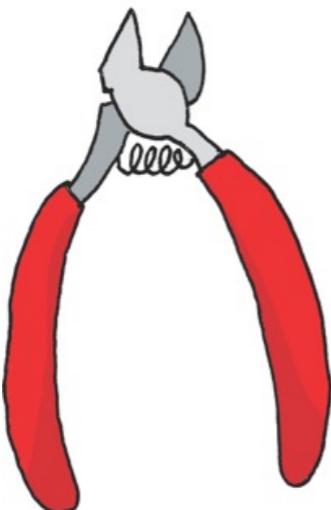


快乾膠

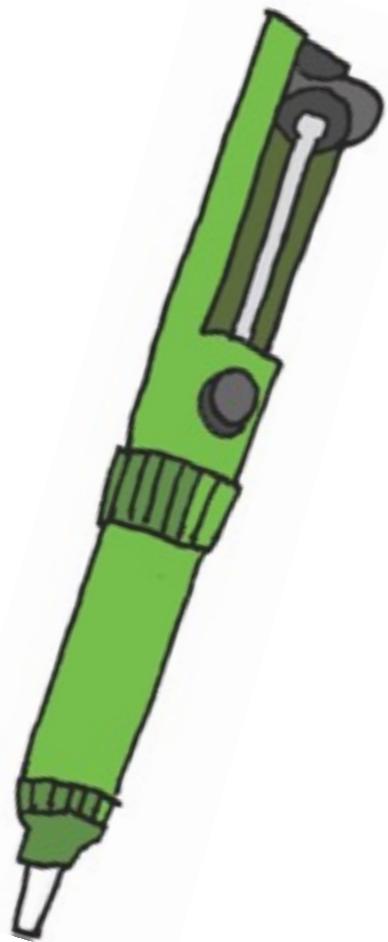


粗橡皮圈

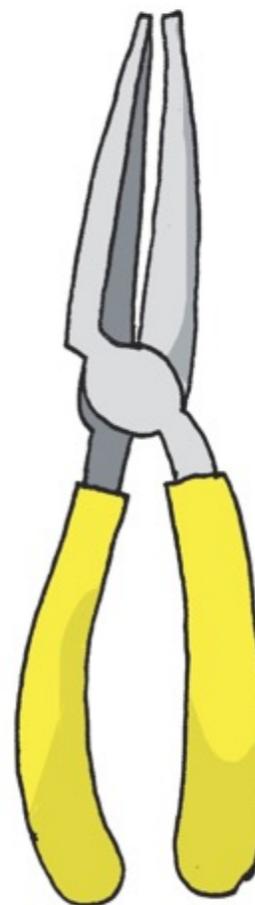
# 工具&材料



斜口鉗



吸錫器



尖嘴鉗



一字起子

# 工具&材料



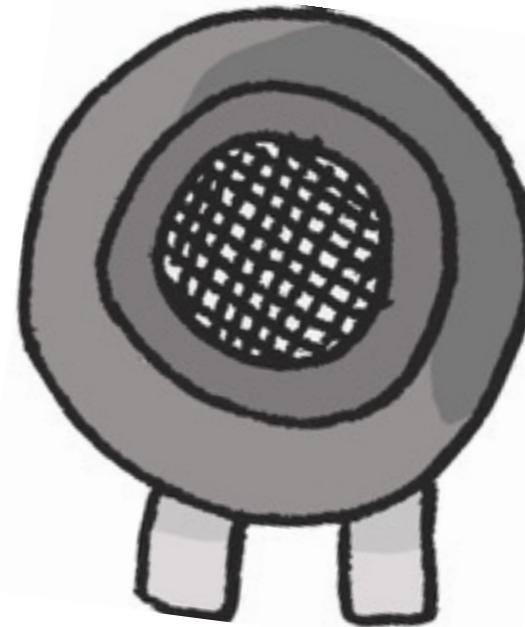
指示燈



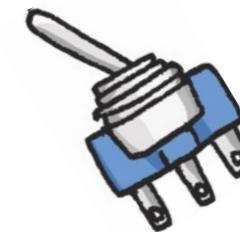
DC插座



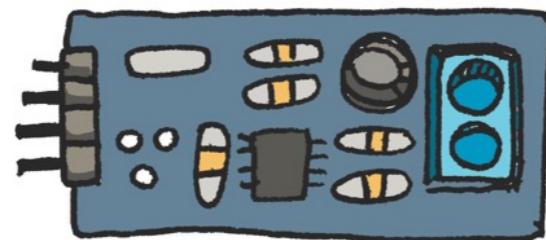
可變電阻



高音喇叭



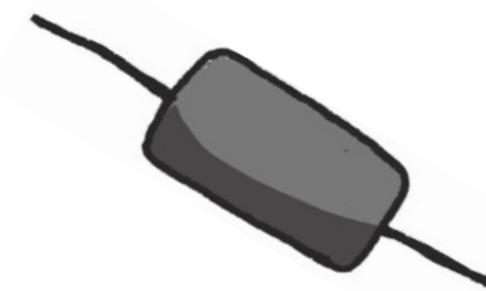
搖頭開關



放大器



音源插座



分頻電容

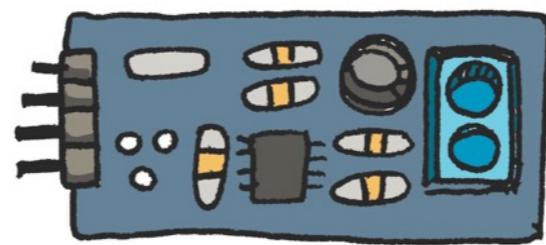
# 放大器



$V_{in}$

.....

輸入訊號



.....

輸出訊號

$V_{out}$



# 分頻電容

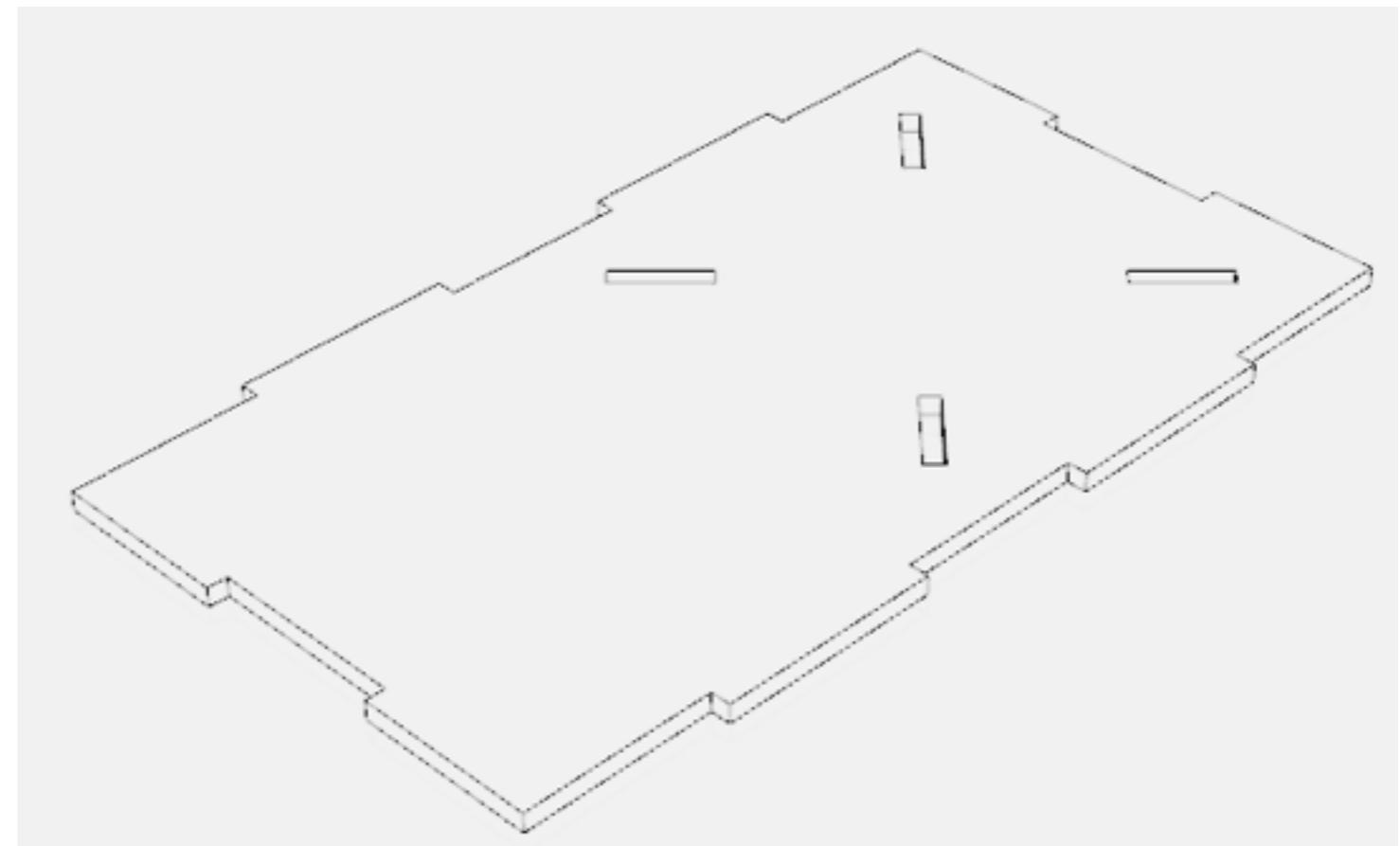


濾掉低頻訊號,防止低頻訊號進入高音喇叭  
造成喇叭音圈燒毀

# 組裝TalkBox

## 組裝1

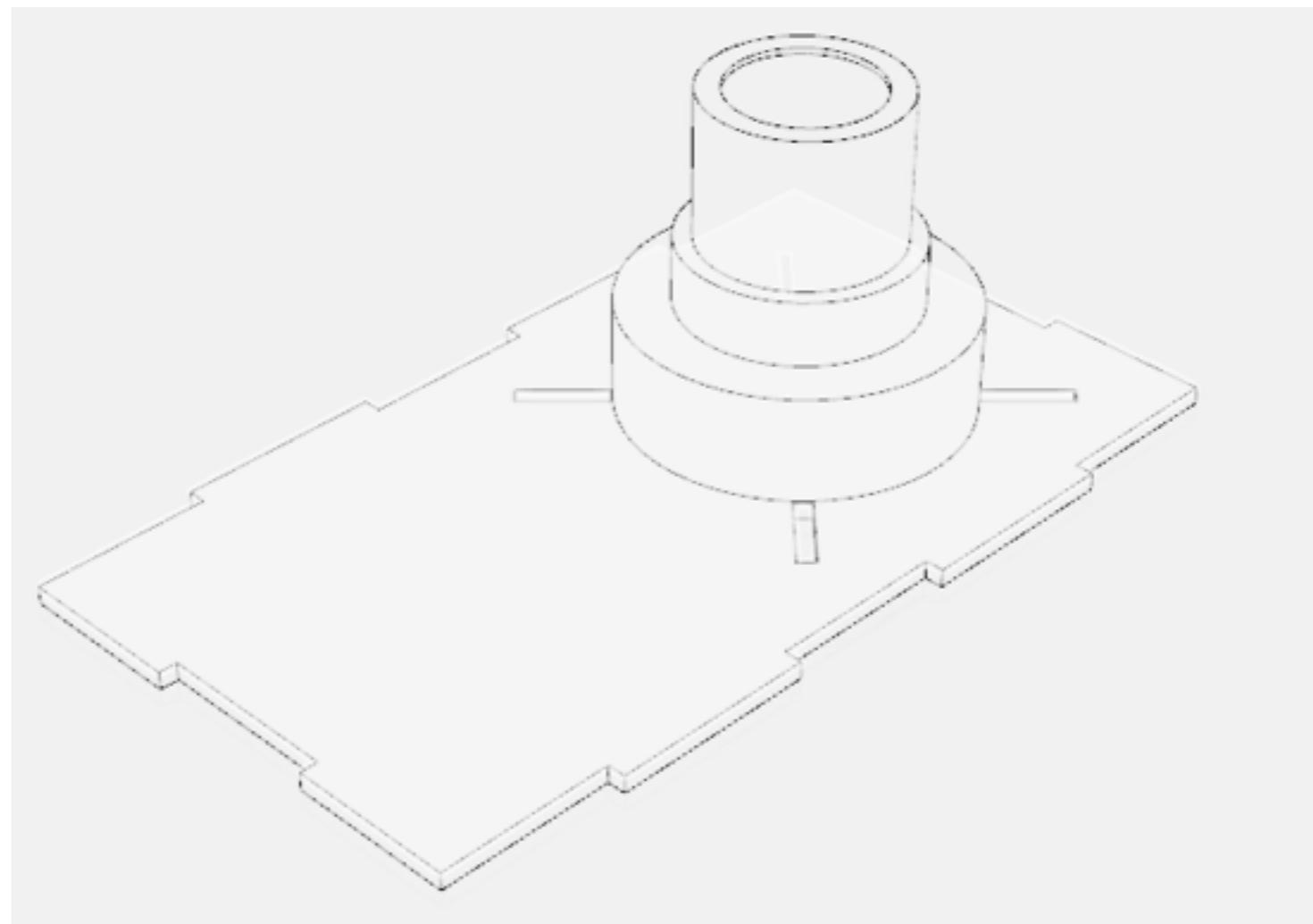
取出底座木板



# 組裝TalkBox

## 組裝2

將高音喇叭放至如圖位置



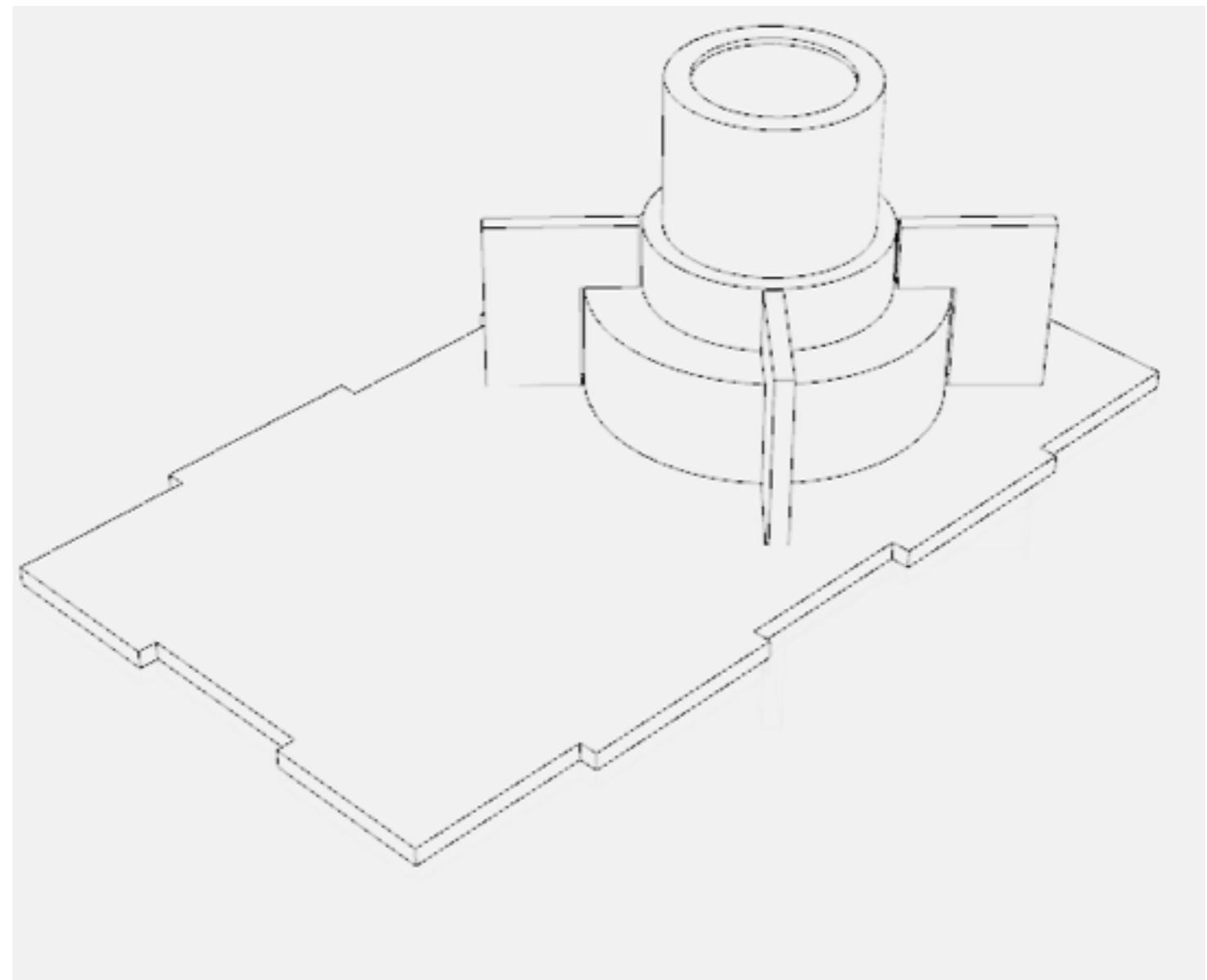
# 組裝TalkBox

## 組裝3

將固定片木板插入底座  
並用快乾膠黏合



快乾膠



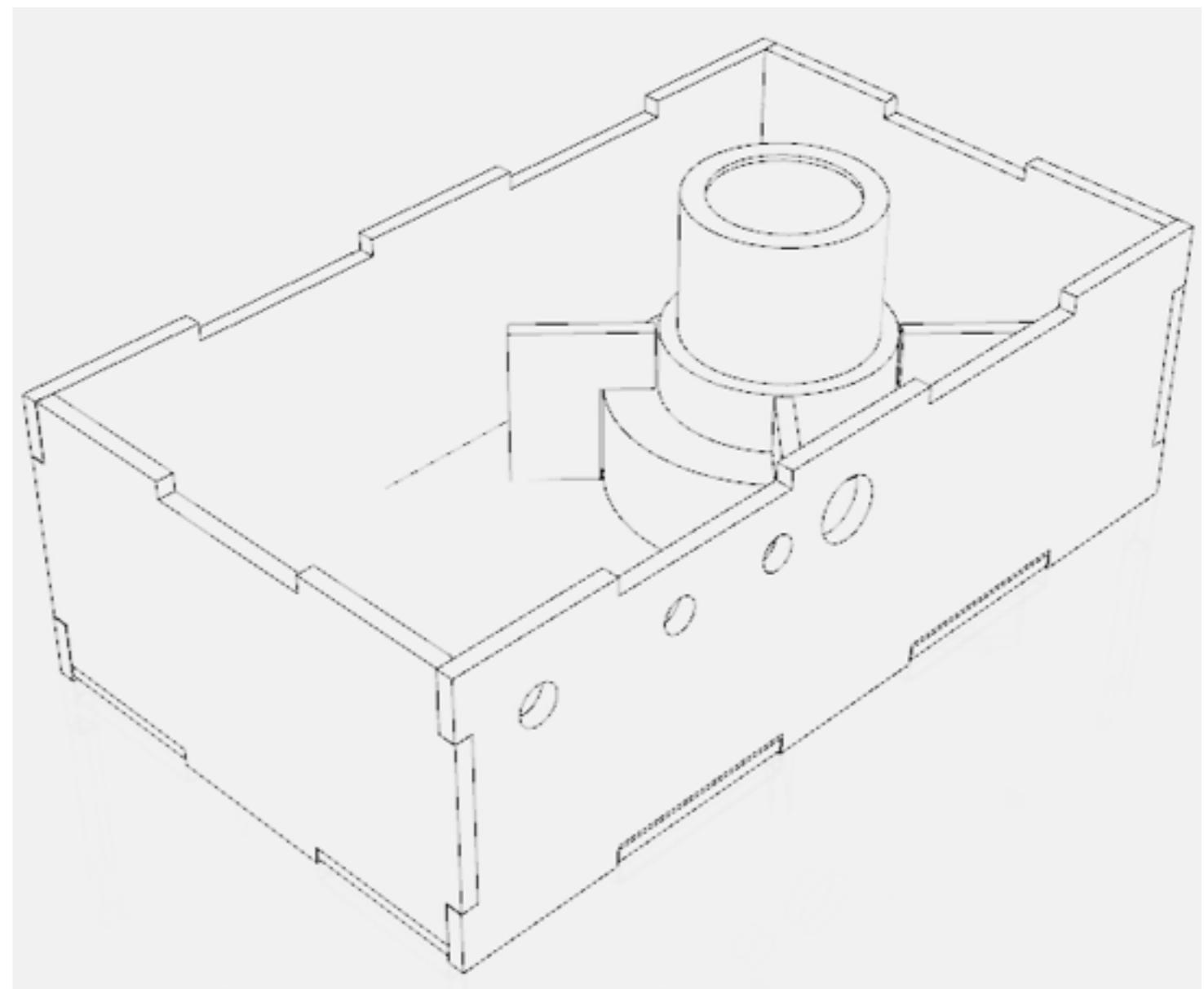
# 組裝TalkBox

## 組裝4

將前後左右四塊木板組合上底座  
並用快乾膠黏合



快乾膠



# 組裝TalkBox

## 接線1

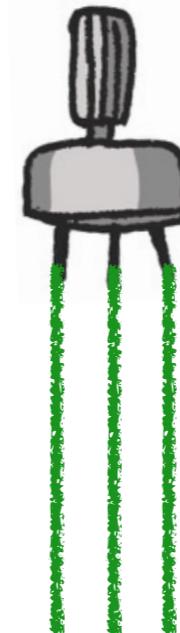
將電子線焊至元件上



電子線



指示燈



可變電阻



DC插座



音源插座

# 組裝TalkBox

## 組裝5

可變電阻  
音源插座  
搖頭開關  
DC插座  
鎖至圖上位置



搖頭開關



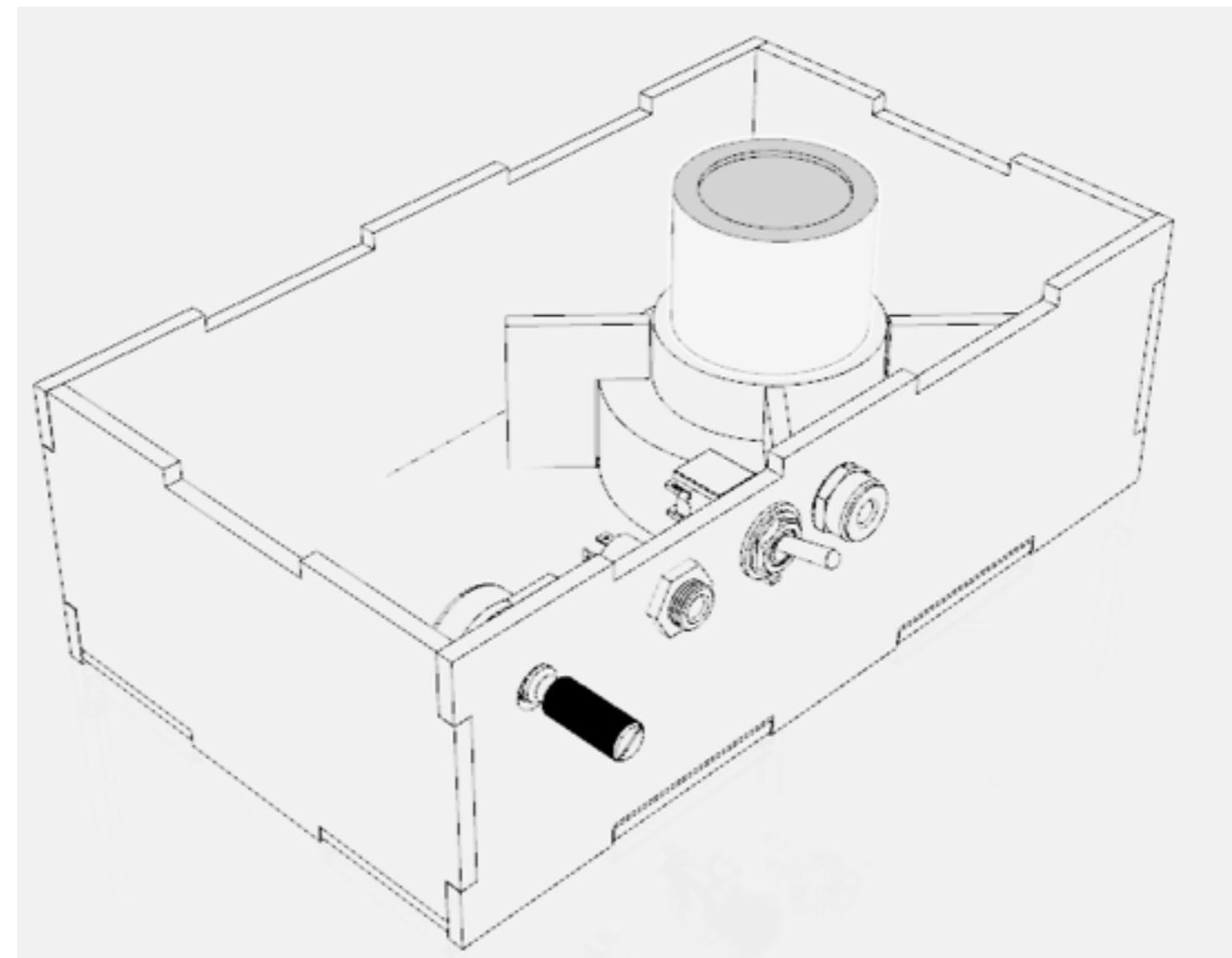
DC插座



可變電阻



音源插座

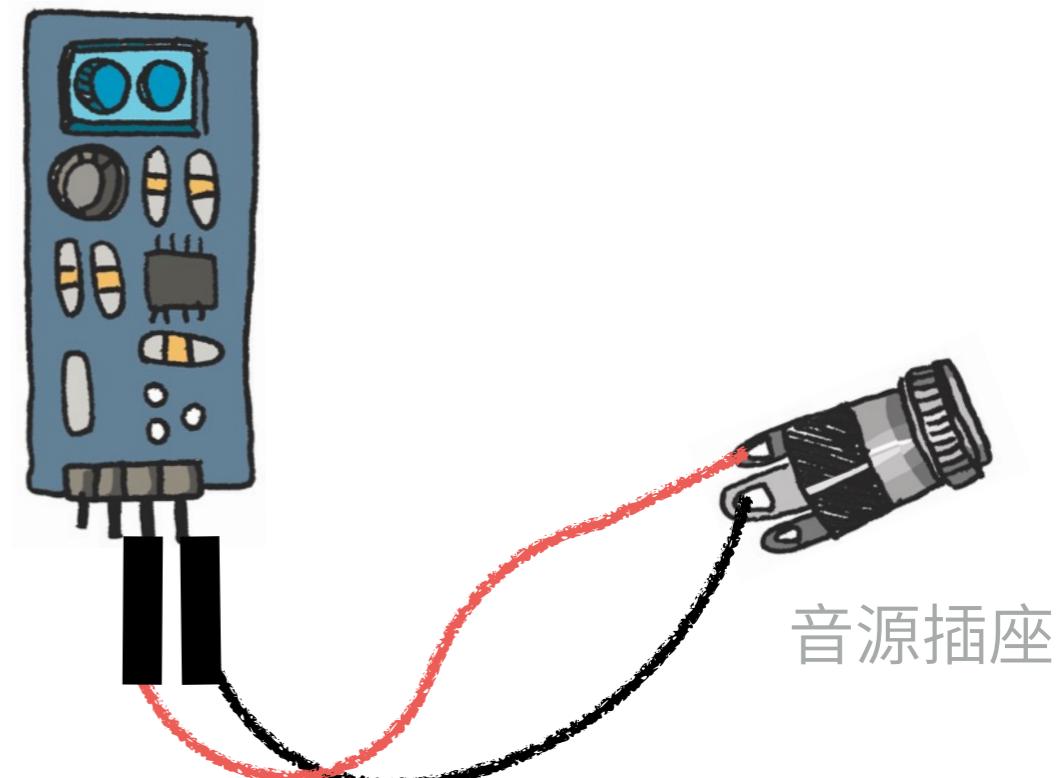


# 組裝TalkBox

## 接線2

連接音源插座  
放大器

放大器



# 組裝TalkBox

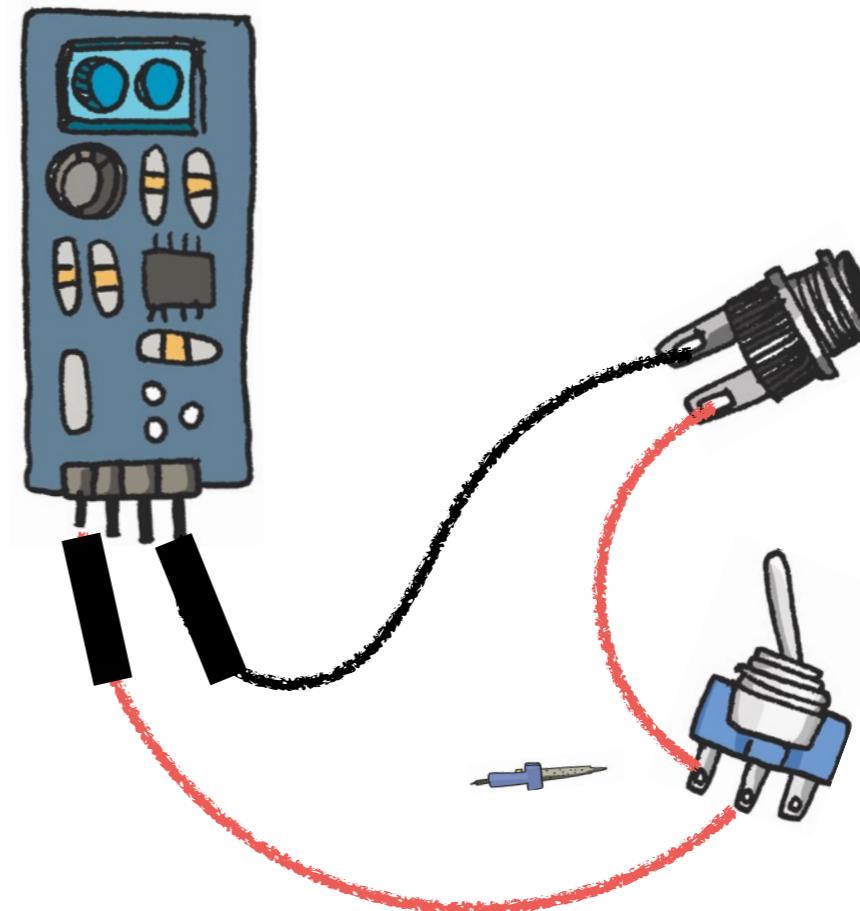
## 接線3

連接DC插座  
搖頭開關  
放大器



焊接處

放大器



DC插座  
內正外負

搖頭開關

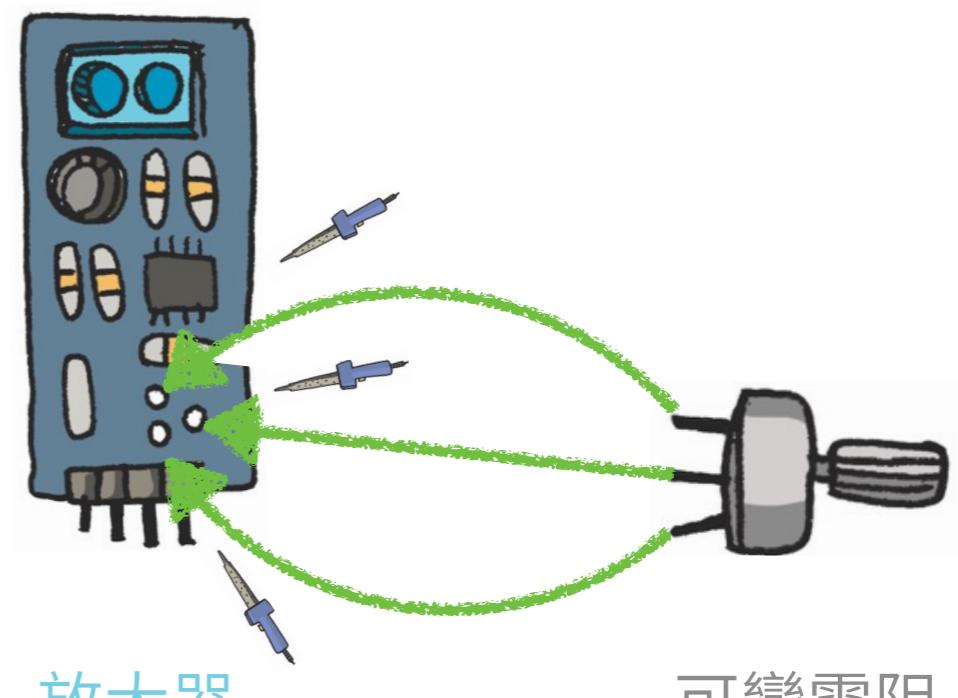
# 組裝TalkBox

## 接線4

連接可變電阻  
放大器



焊接處



# 組裝TalkBox

## 接線5

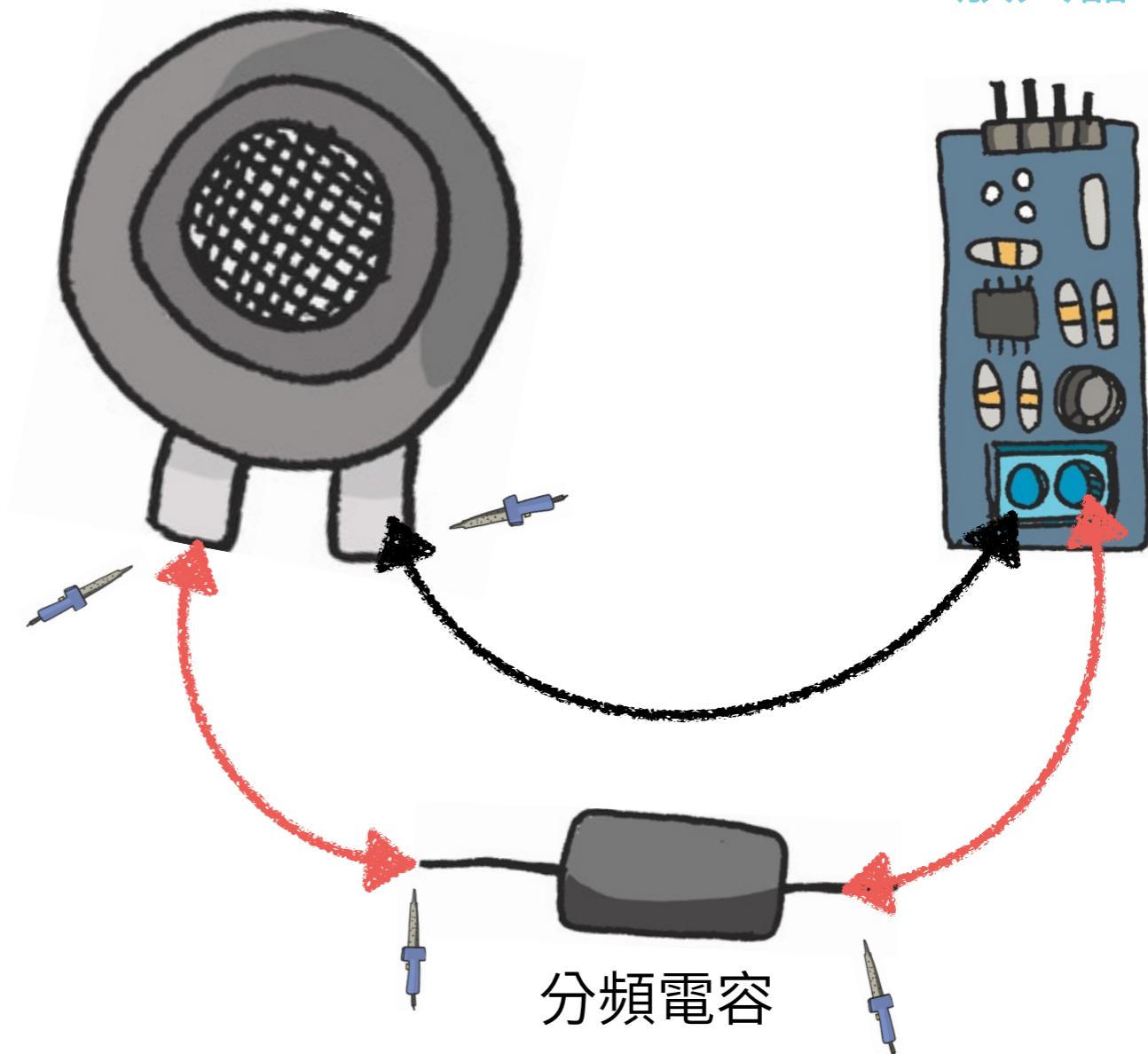
連接高音喇叭  
分頻電容  
放大器



焊接處

高音喇叭

放大器



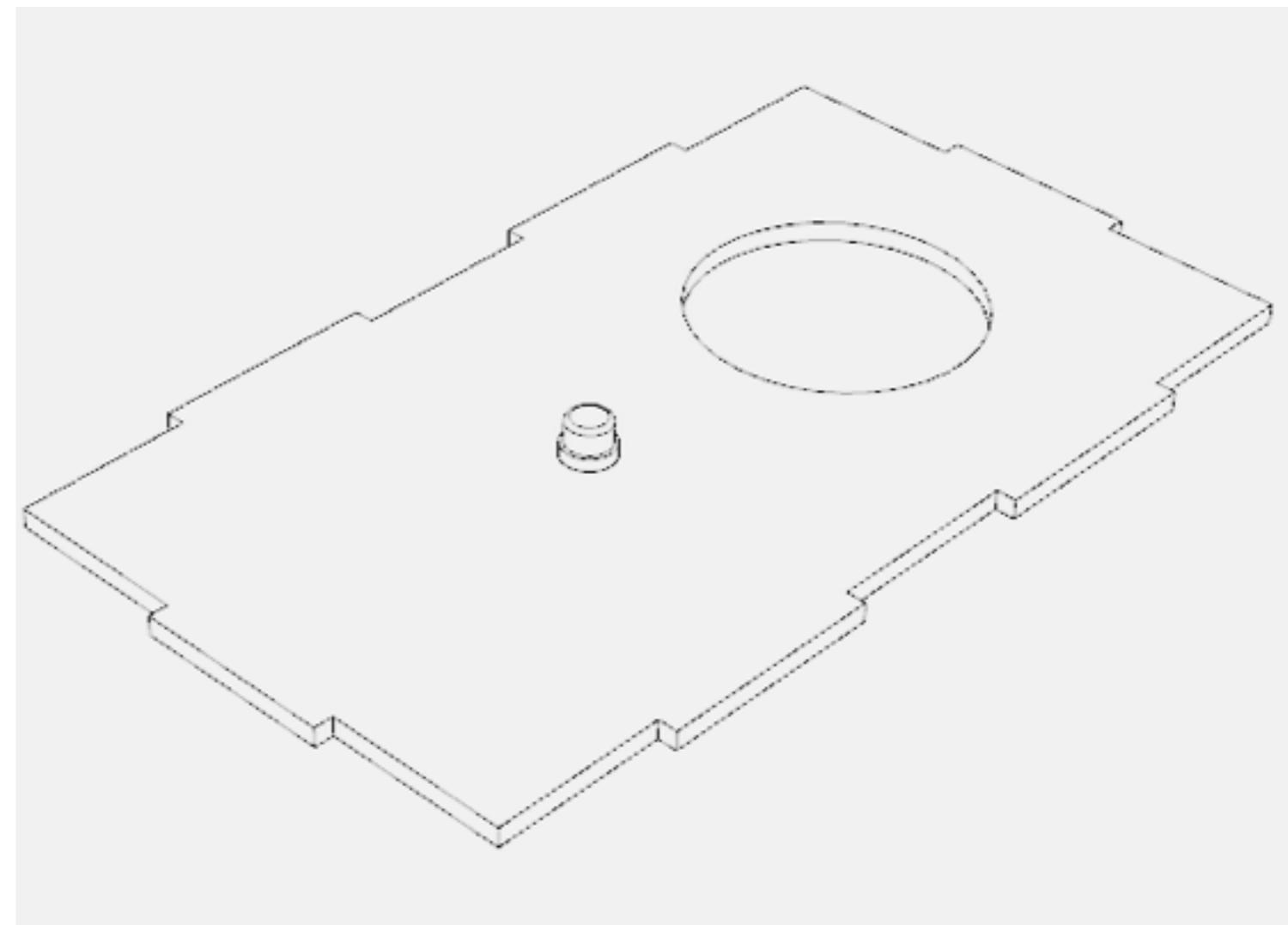
# 組裝TalkBox

## 組裝6

指示燈鎖上蓋子



指示燈



# 組裝TalkBox

## 接線6

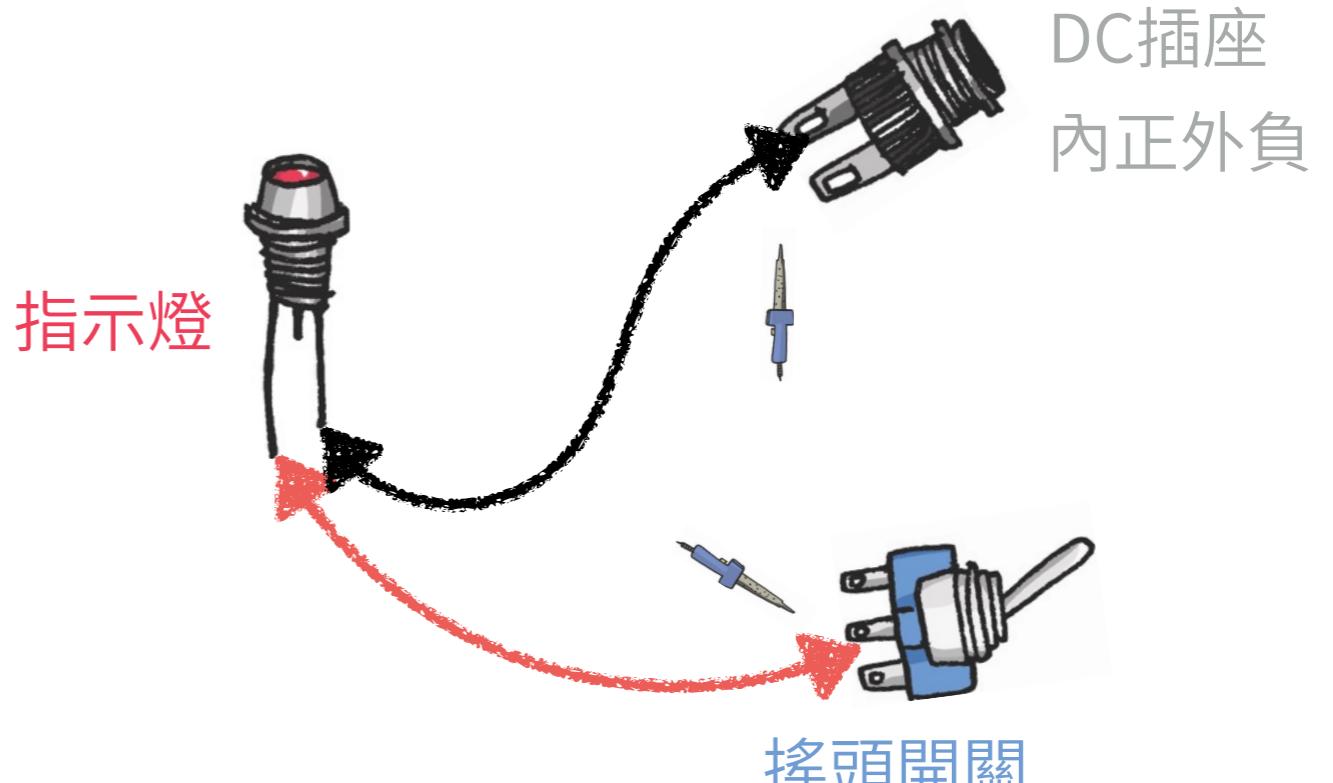
連接指示燈

DC插座

搖頭開關



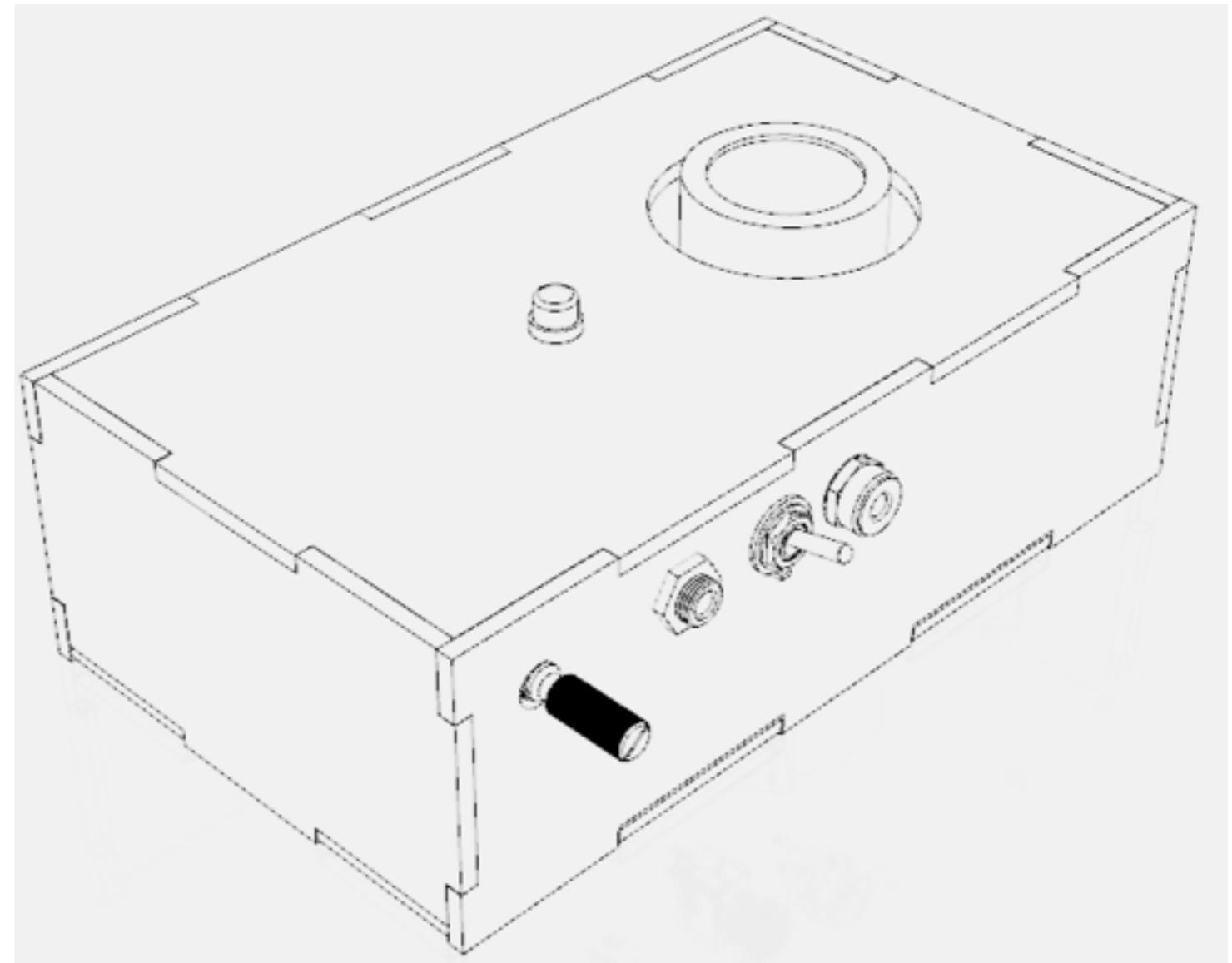
焊接處



# 組裝TalkBox

## 組裝7

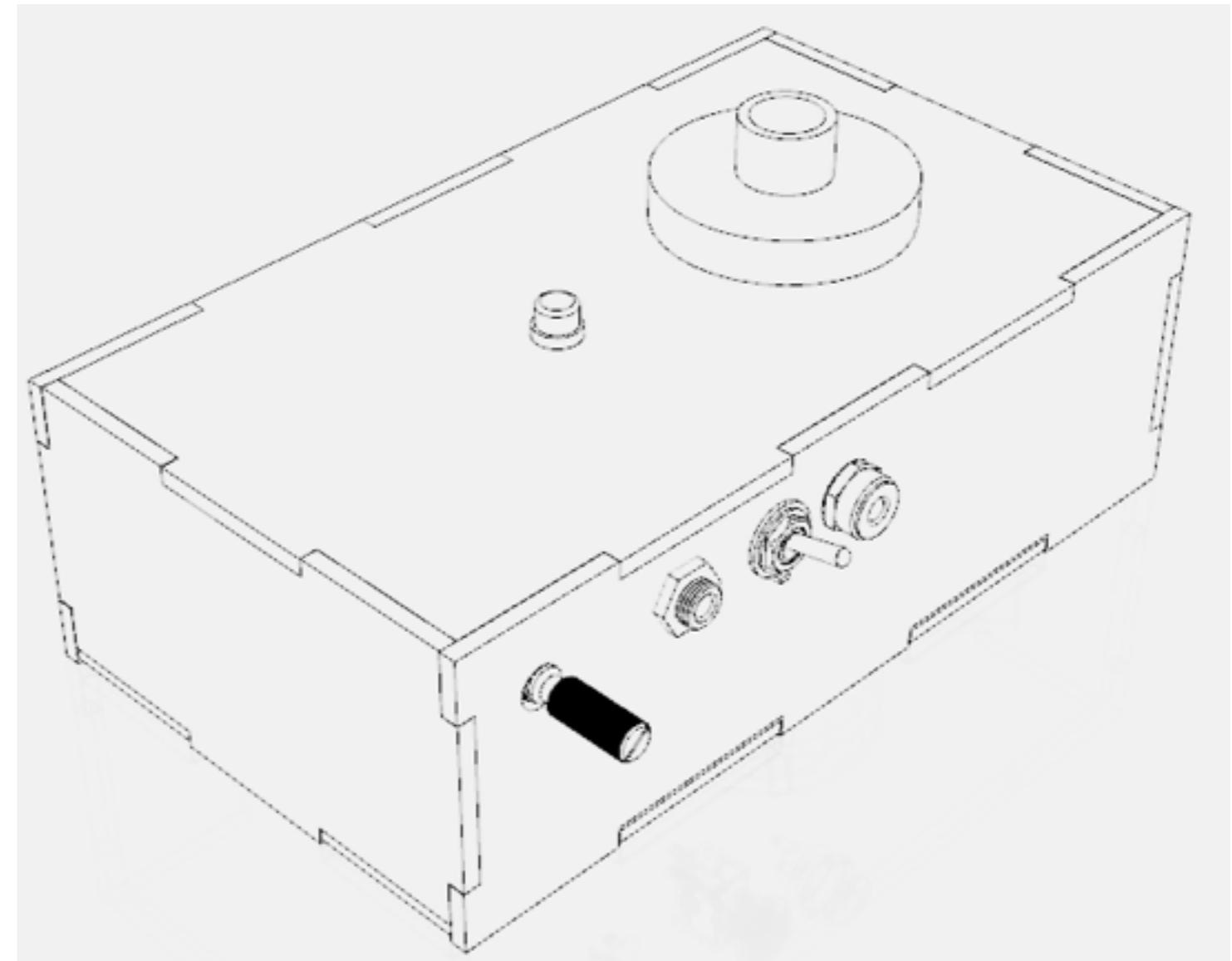
蓋上頂部



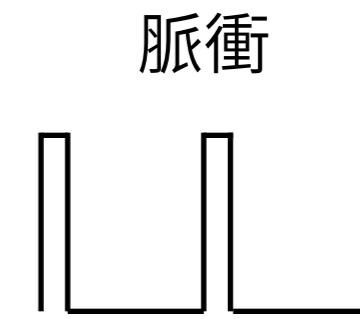
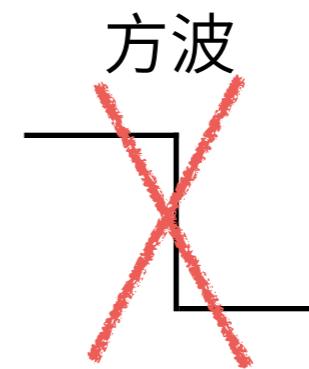
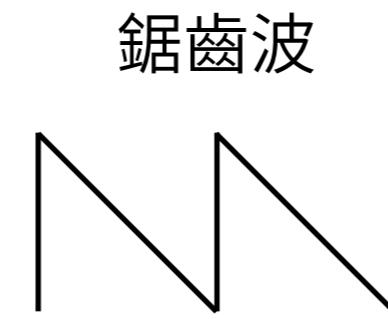
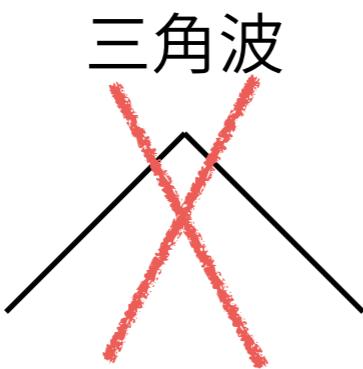
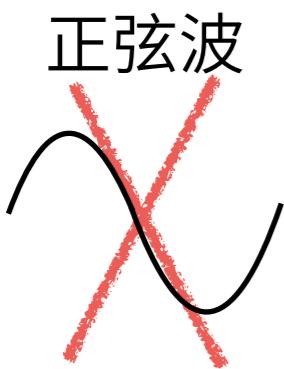
# 組裝TalkBox

## 組裝8

蓋上塑膠管座



# 用TalkBox來說話適合的波形



# 用合成器APP來試試看



Common FM Synthesizer



Get it on  
Google play





DIMENSION PLUS

