

# **“Breadboarding” a Simple FM Transmitter Assembly Instructions**

The New Jersey Antique Radio Club's  
**Radio Technology Museum**  
At InfoAge


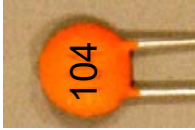
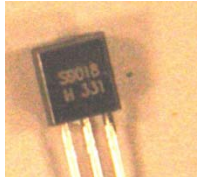

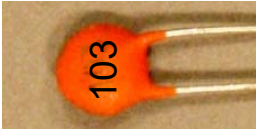
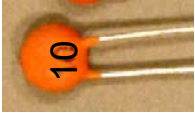

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# Your Work Begins Here

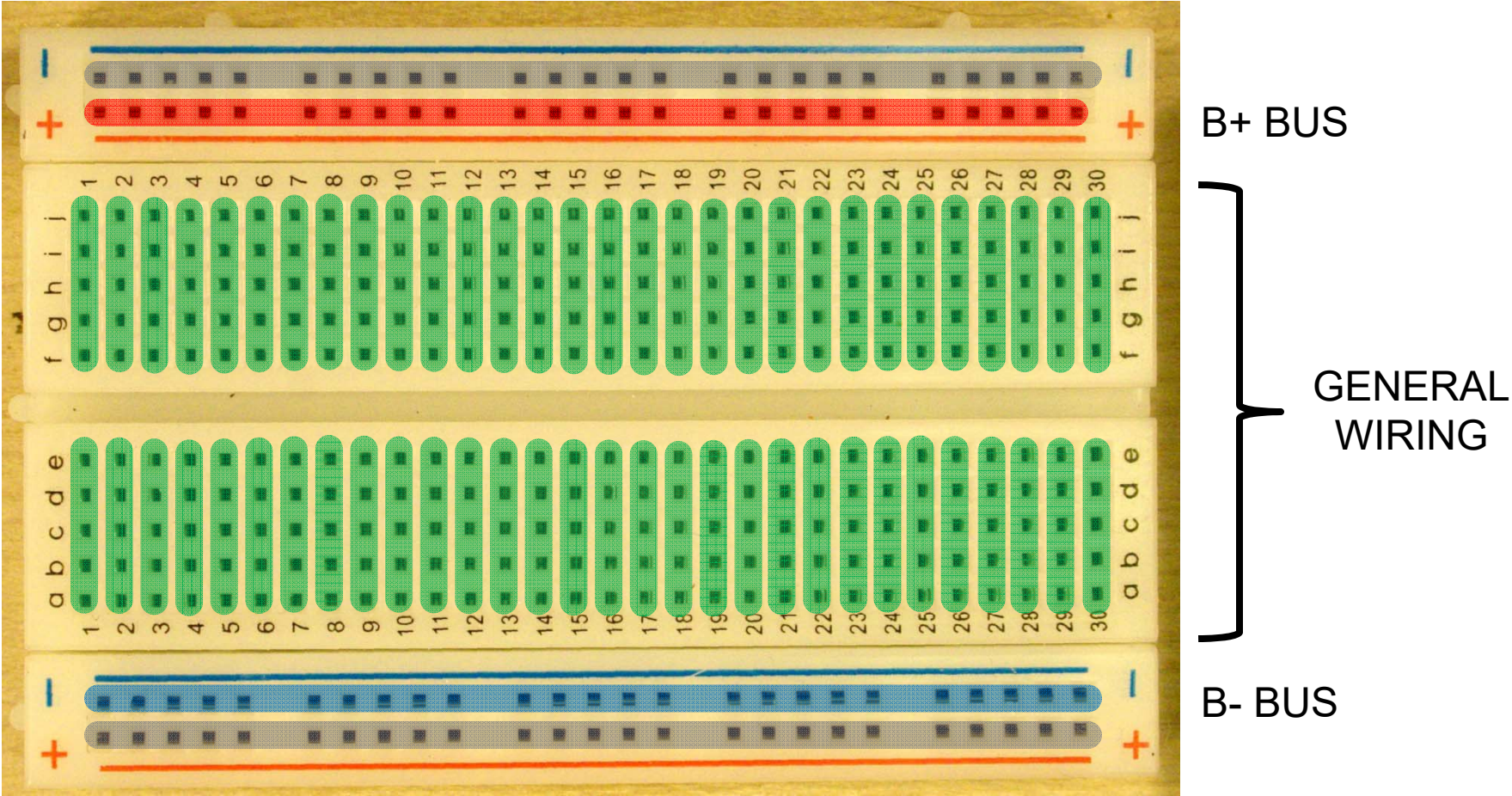
- Assemble an FM transmitter prototype
- Observe its operation.

# Inventory the Components

Identify the Components and lay them on this sheet.

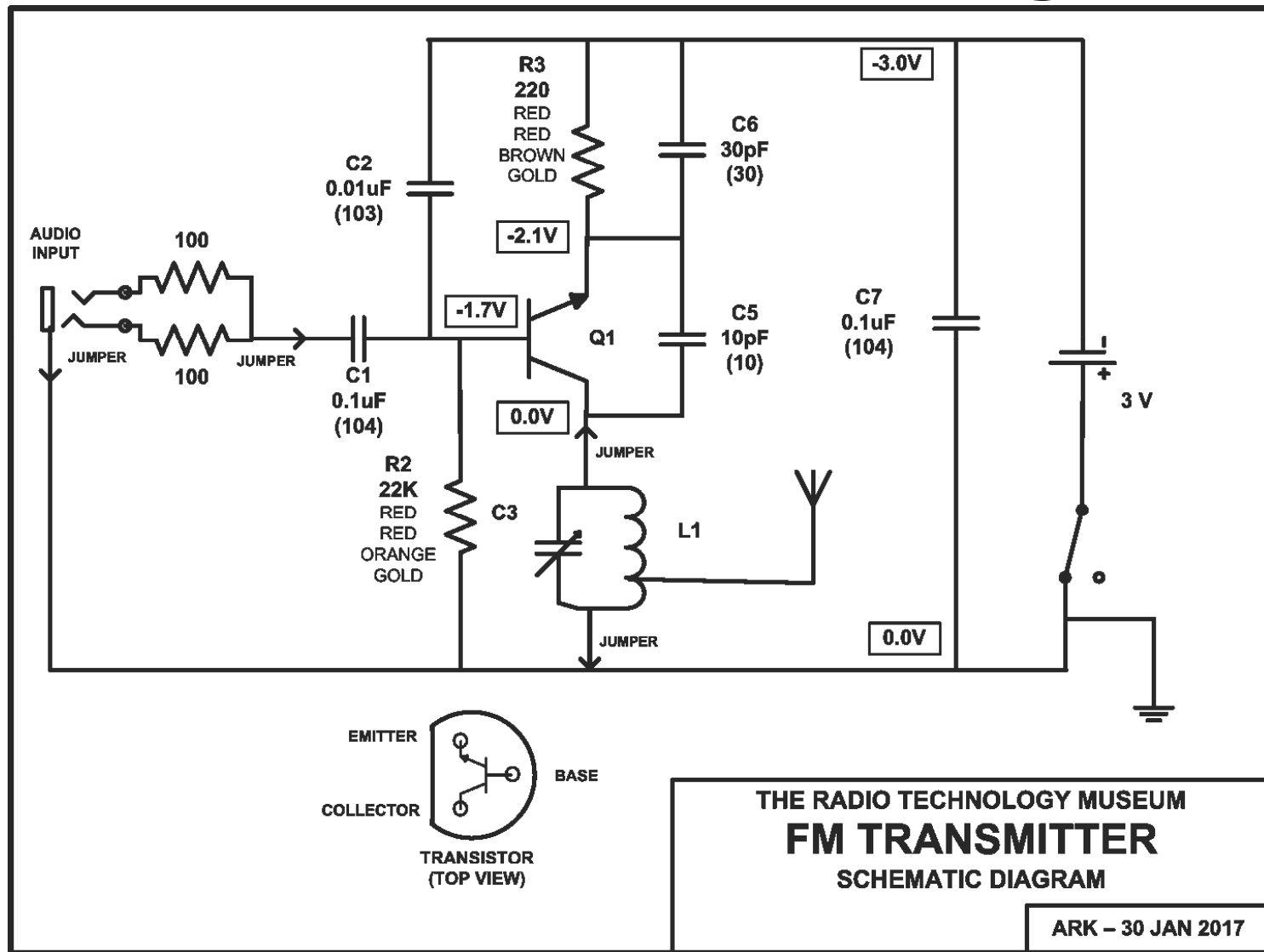
RESISTORS	CAPACITORS	MISC.
R2 22K Ohms RED-RED-ORANGE-GOLD 	C1, C7 0.1 microfarad "104" 	Q1 Transistor "S9018" 
R3 220 Ohms RED-RED-BROWN-GOLD 	C2 0.01 microfarad "103" 	
	C5 10 picofarad "10" 	
	C6 30 picofarad "30" 	Add color code (pF)

# Modern Solder-less Breadboard

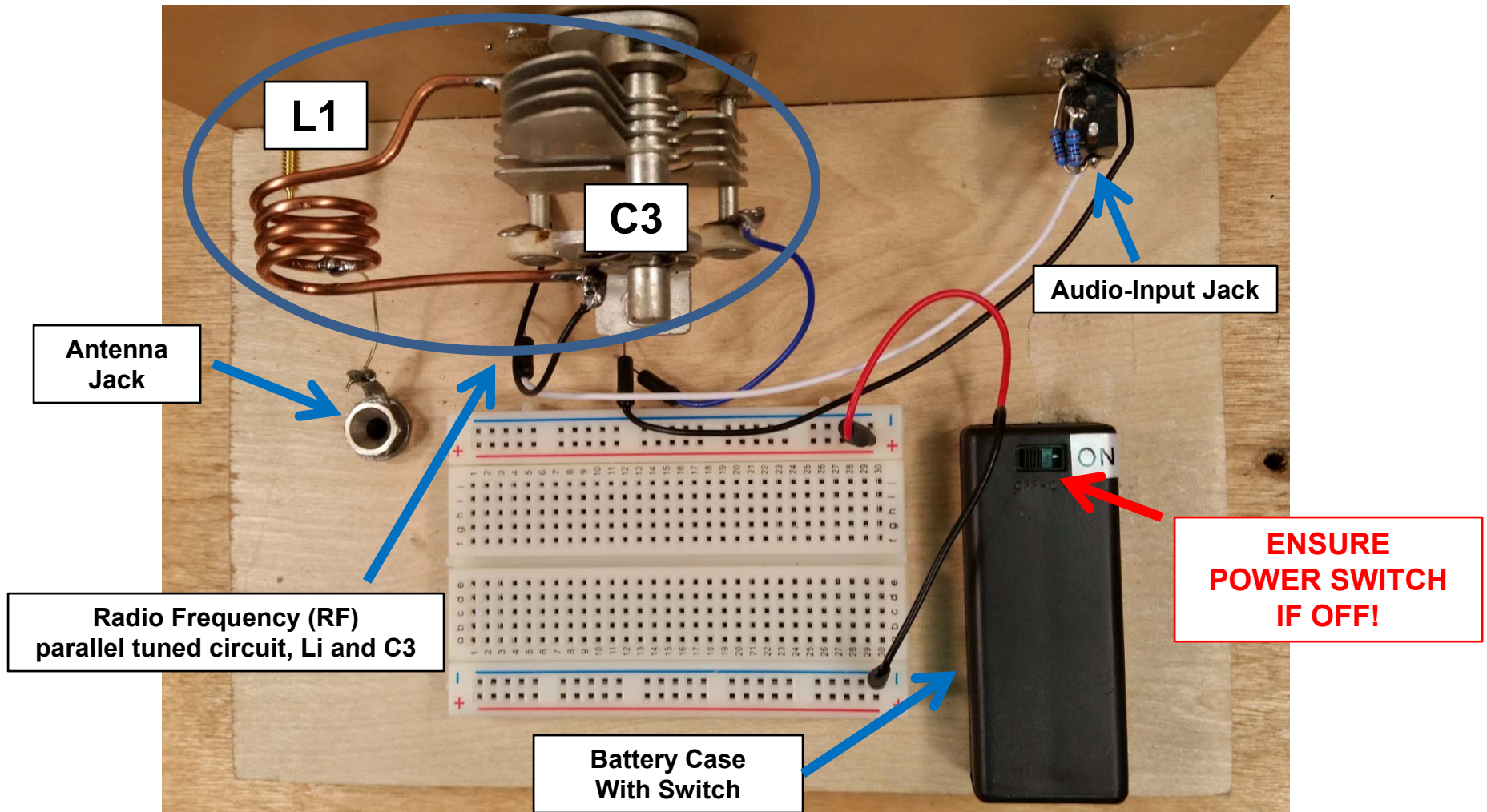


Shaded indicates common connections.

# The Schematic Diagram

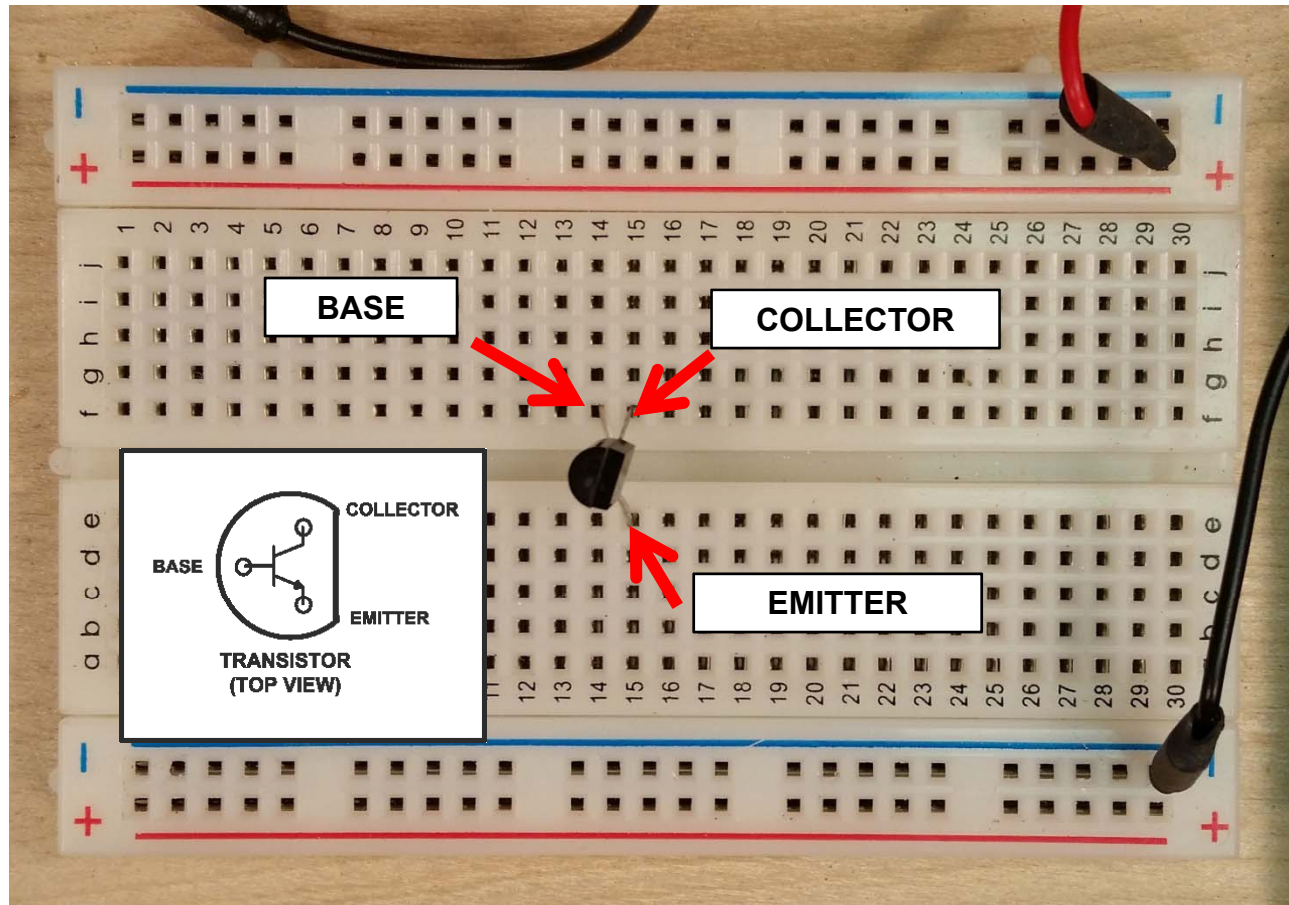


# The Setup



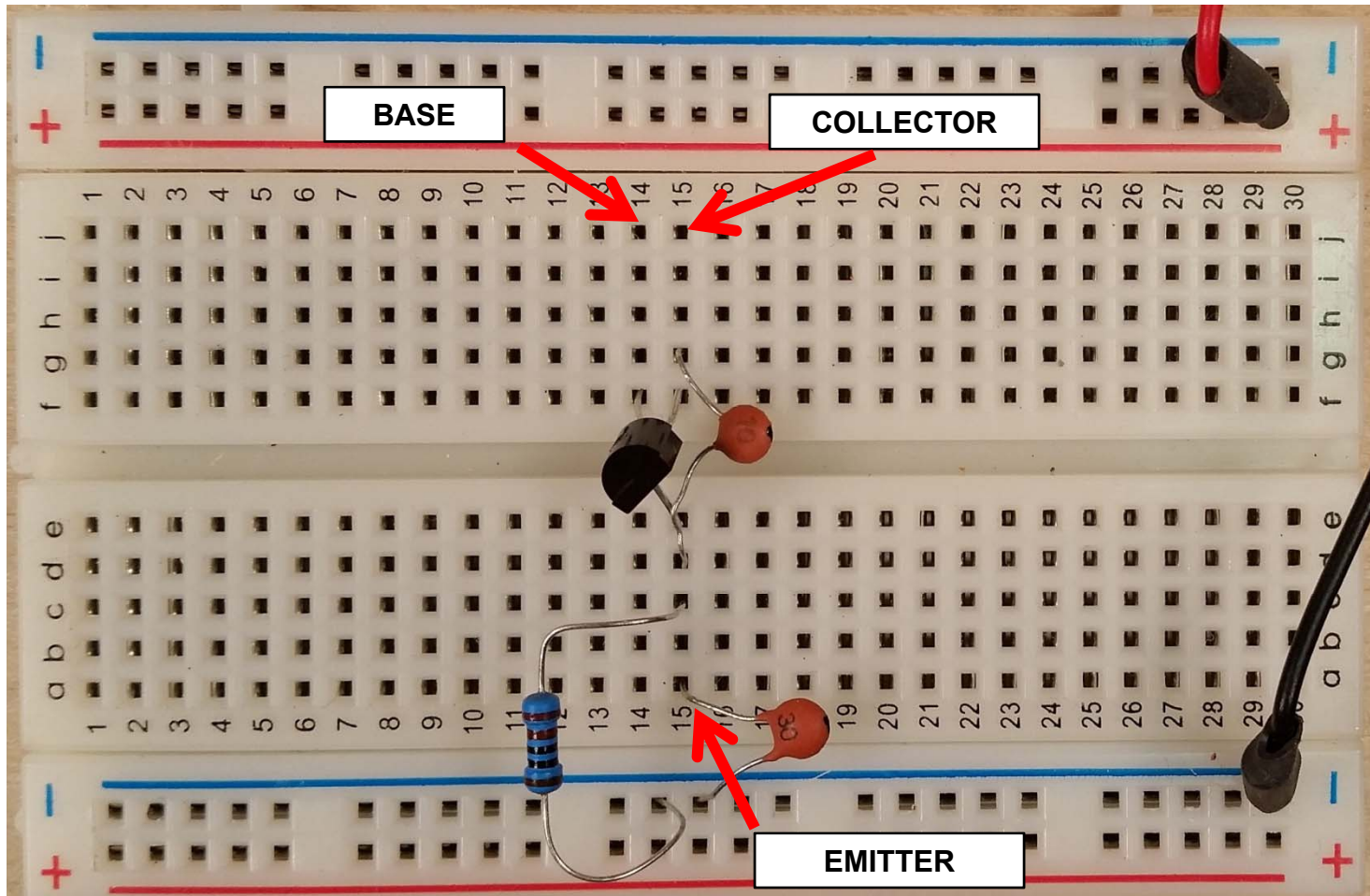
- We've taken care of some mechanical details for you.

# Step 1



- Install transistor Q1. Observe pin-out diagram.
- (The rest of the circuit will be built around Q1.)

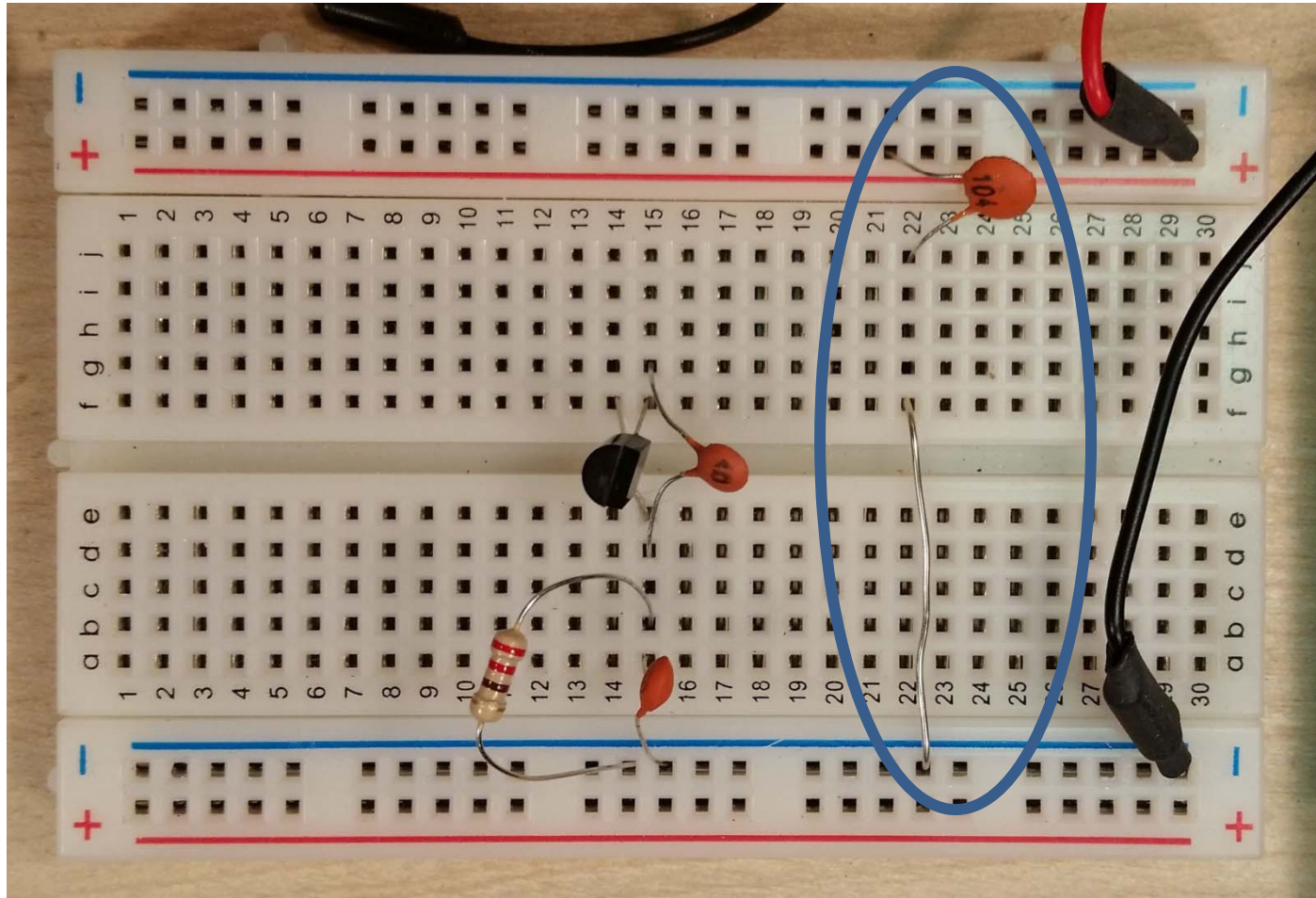
# Step 2



- Install feedback cap, C5 (10pF “10”), between the collector and emitter of Q1
- Install C6 (30 pF “30”) , and R3 (220 Ω - RED RED BRN GOLD) in Q1’s emitter circuit..
- NOTE: “p” stands for “pico”, or  $1 \times 10^{-9}$

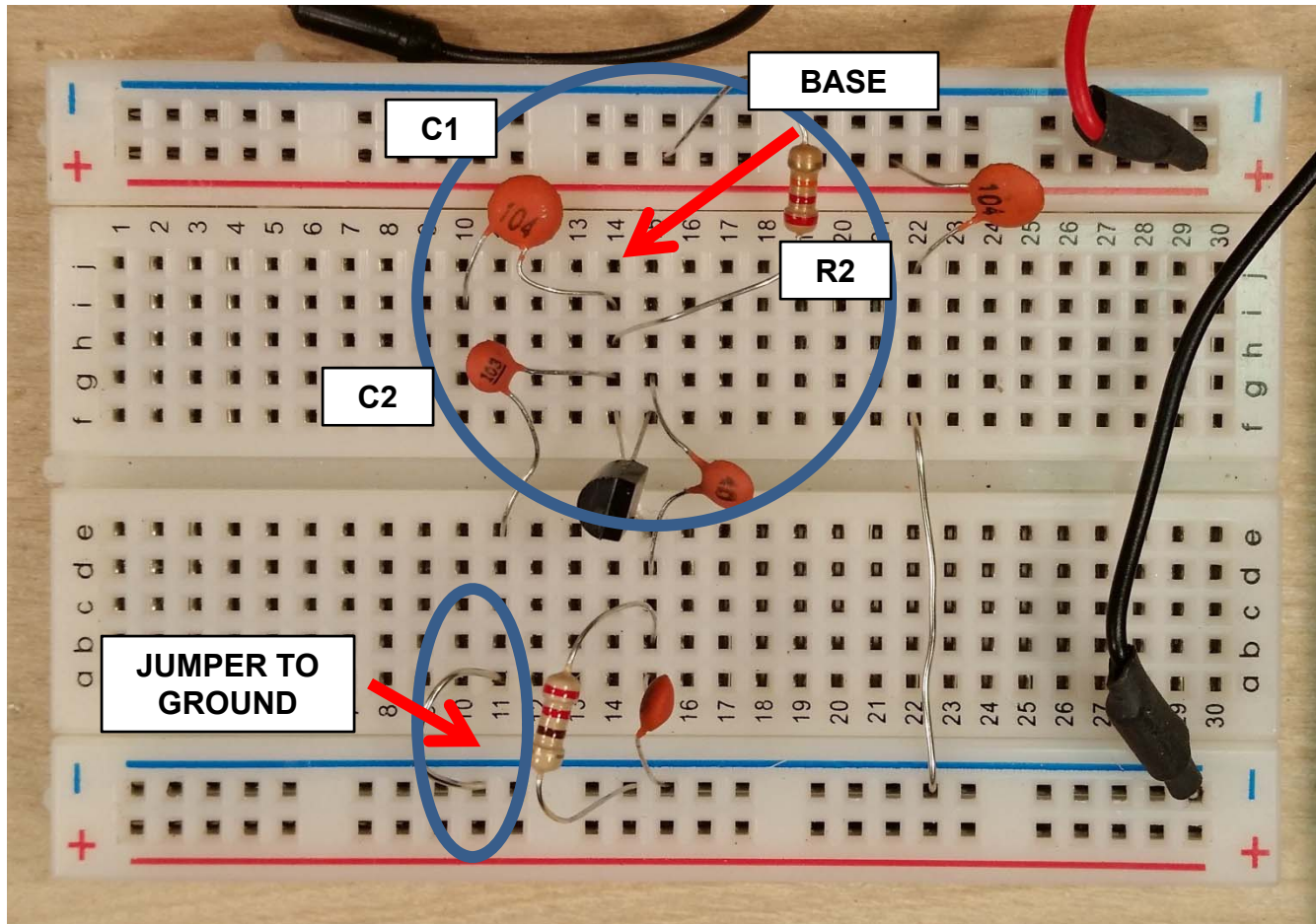


# Step 3



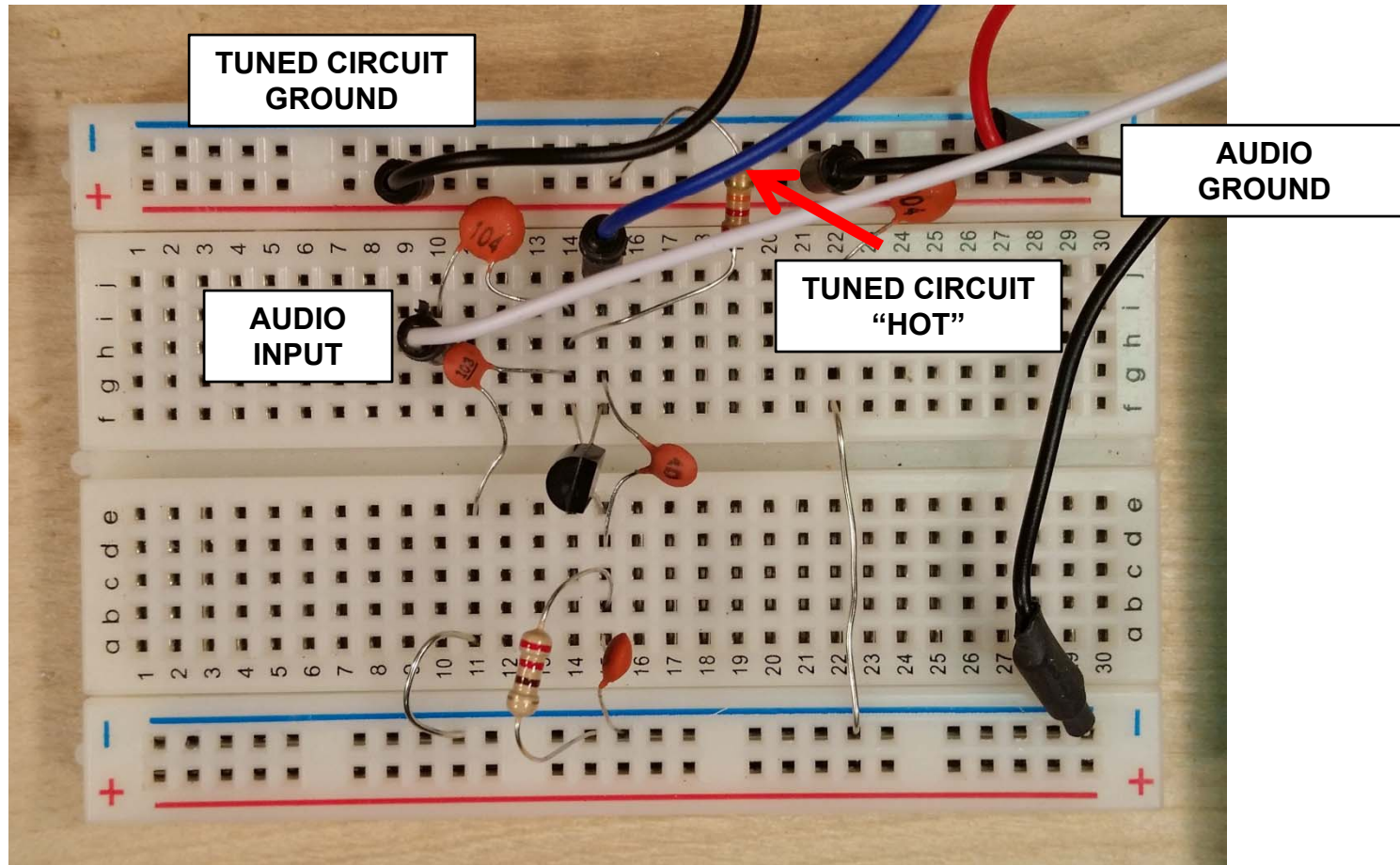
- Install power-bus bypass cap C7 (0.1 uF “104”) and jumper.

# Step 4



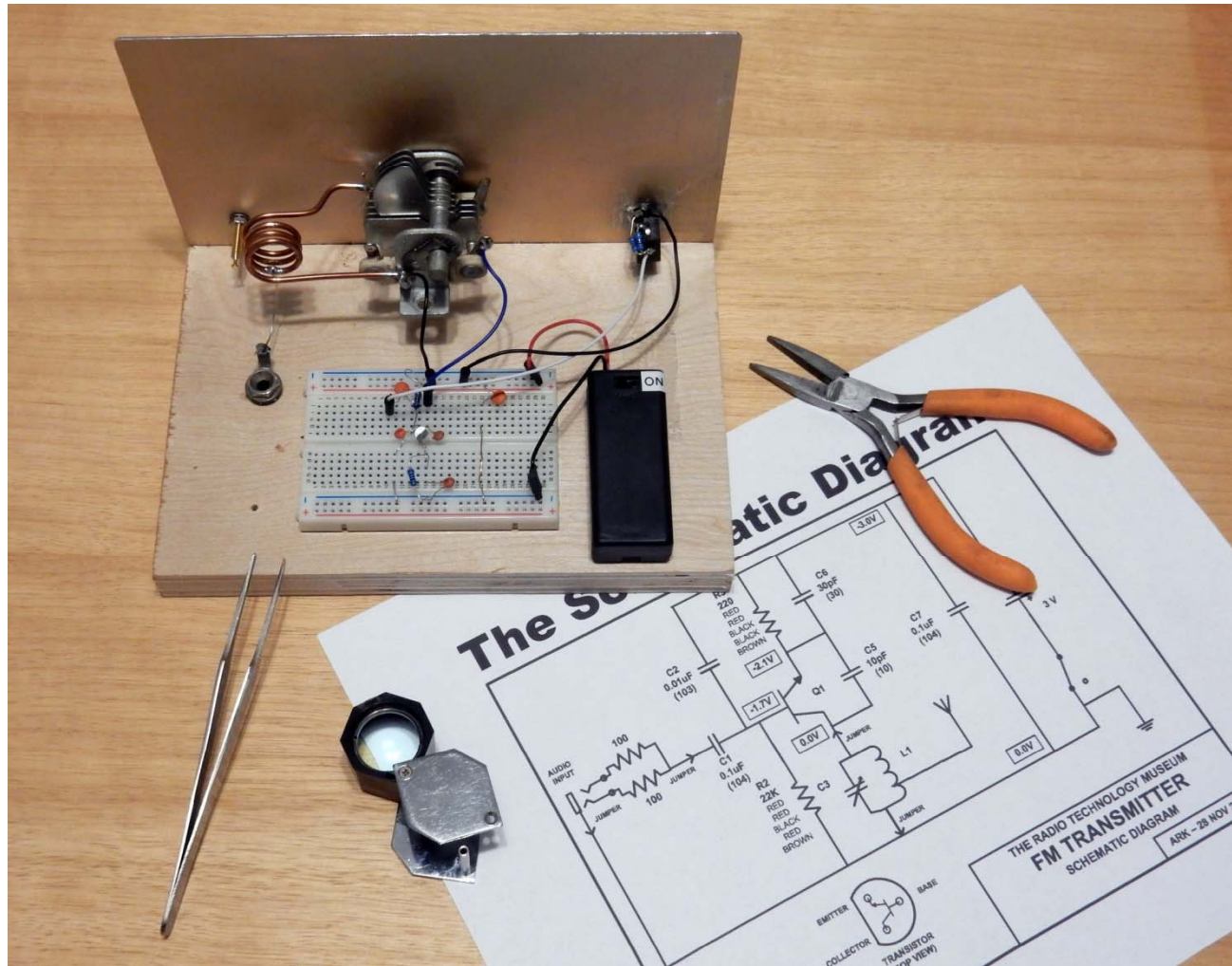
- Install base-circuit components R2 (22 K $\Omega$  “RED RED ORG GOLD”), C1 (0.1  $\mu$ F “104”), C2 (0.01  $\mu$ F “103”), and jumper.

# Step 5



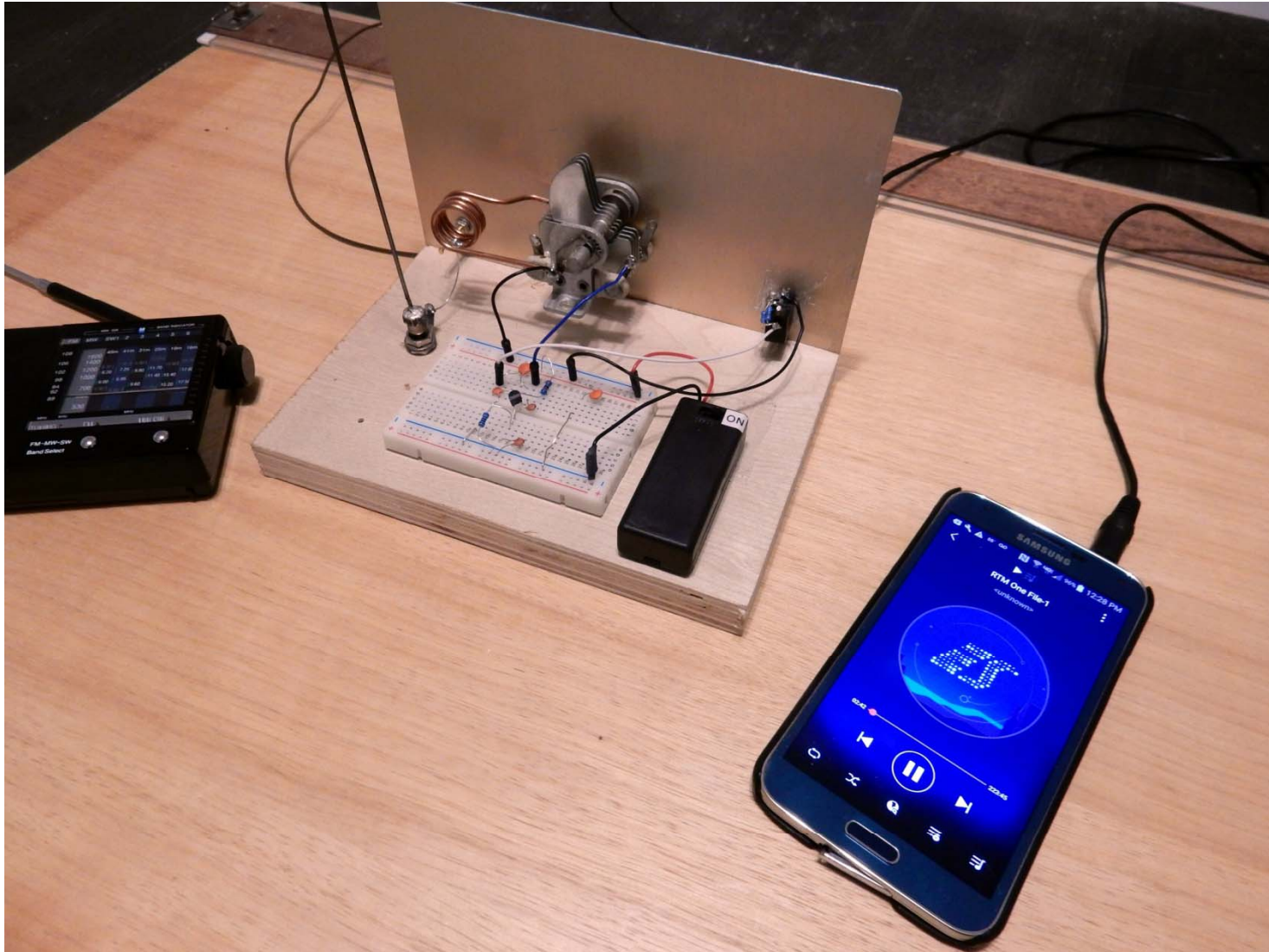
- Connect jumpers from tuned circuit as shown.
- Connect jumpers from the audio jack as shown.

# Step 6



Check connections against the schematic diagram.

# Check Out



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# Check Out

- Install antenna rod.
- Connect counterpoise wire to the terminal on the front panel.
- Connect your mobile device to the audio jack. Play some music.
- Turn on the FM receiver.
  - Tune to an unused frequency.
  - Indicated by rushing sound. (White Noise)
  - Place receiver a few feet from the breadboard.
- Turn on the FM transmitter
- Tune the transmitter (knob on panel) to “quiet” the receiver.
- Adjust audio level on the mobile device for minimum distortion.
- You’ll have to readjust the tuning, as bringing you hand near the transmitter changes its frequency.