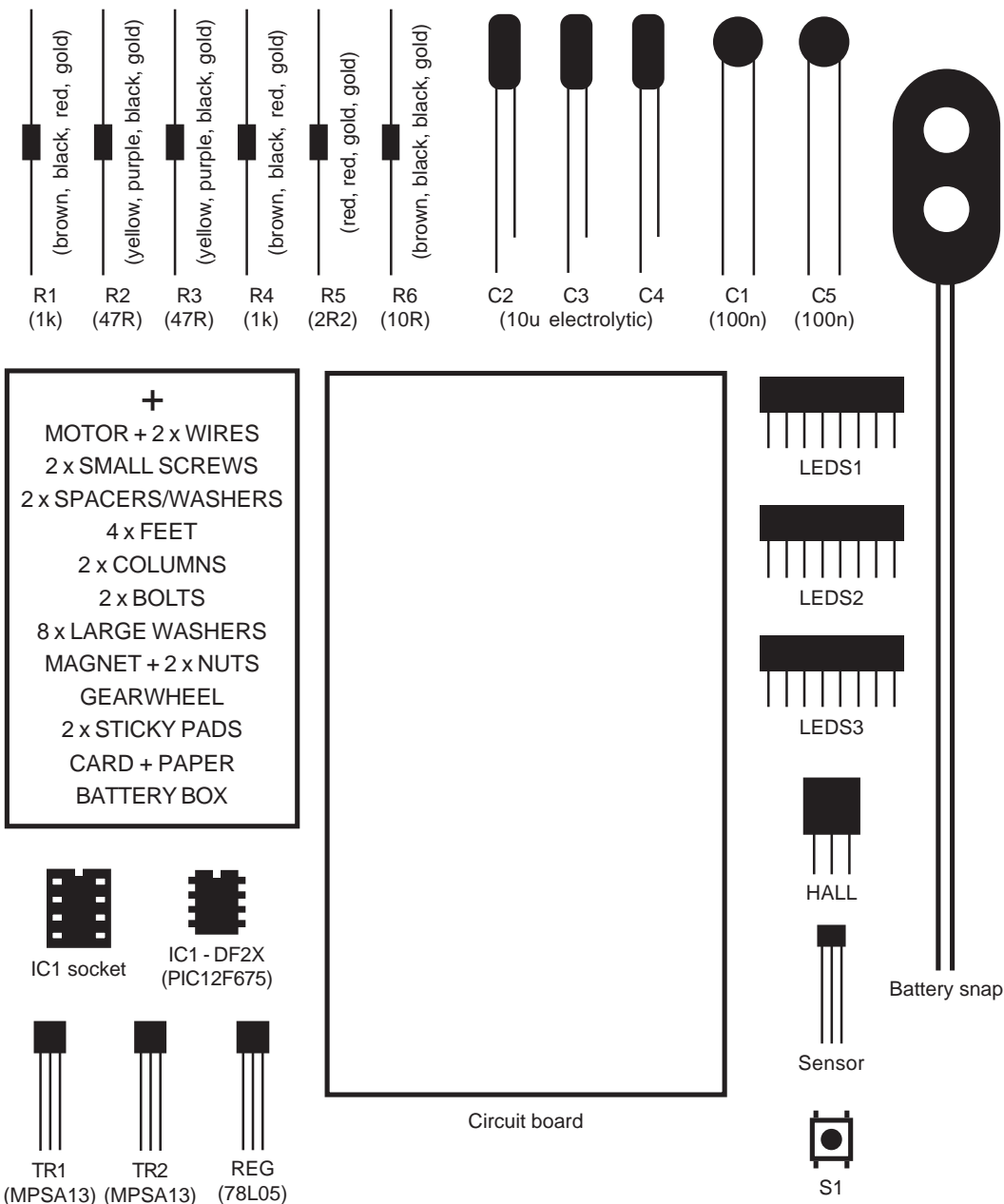


MR. BAIRD'S AMAZING MECHANICAL TELEVISUAL APPARATUS



CONSTRUCTION

1. Identify the different components using the spotter chart.
2. Fit and solder the resistors (R1 to R6) to the circuit board. Identify the resistors by the coloured stripes on the body.
3. Fit and solder the electrolytic capacitors (C2, C3 and C4) to the board putting the shorter leg (the leg nearer the stripe on the body) into the hole with the – sign. Fit and solder capacitor C1 either way around.
4. Solder the transistors (TR1 and TR2) matching the half-circle shape of the transistor to the half-circle shape on the board. Be careful not to mistake the regulator or Hall sensor for a transistor.
5. Solder the regulator (REG) matching the half-circle shape of the regulator to the half-circle shape on the board.
6. Solder the chip socket (IC1) matching the notch in the socket to the notch on the board. Do not solder the chip directly to the board.
7. Solder the light bars (LEDS1 to LEDS3) matching the small notch in one end to the notch on the board. Double check this before soldering.
8. Solder the pushbutton (S1) to the board.
9. Solder the 3-pin socket (HALL) to the board. Trim the legs of the Hall sensor by a few millimetres then bend the legs at right angles and insert it into the socket such that the bevelled face is uppermost (see diagram overleaf). (When the board is fully tested and working optionally add a drop of glue to hold the sensor firmly in place.)
10. Solder the remaining capacitor (C5) across the tags of the motor, then solder the two flexible wires to the tags as well. Attach the motor to the board using the small screws with either a spacer or some small washers on each screw, whichever fits better. Ensure the screws are not overtightened and the spindle can turn freely. Solder the other ends of the wires to the holes on the board marked by small circles, after feeding the wires first through the larger holes, with the wire connected to the + terminal on the motor (marked with a + sign or a small recess) soldered to the + hole on the board.
11. Push the battery snap leads up through the larger holes in the board from the metal side of the board. Fit the metal tip of the red lead into the BATTERY + hole, and the metal tip of the black lead into the BATTERY – hole. Solder the metal tips to the tracks on the board then pull the wire loops back.

continued overleaf

CONSTRUCTION (continued)

12. Push the rubber feet into the two holes in the bottom corners of the board. Screw the plastic columns into the other two corner holes using the bolts and washers. Stick the self-adhesive rubber feet to the base of the columns.

13. Carefully bend the legs of the chip inwards a little with your fingers. Fit the chip into its socket matching the small notch in the chip to the notch in the socket.

14. Stick the disc template to the card then cut around the outer circle. Make holes in the disc where marked with a 2mm hole punch or sharp knife. Attach the two sticky pads to the flat face of the gearwheel then stick the gearwheel to the underside of the disc. (Important - the gearwheel must be centred exactly on the disc. Use a small piece of wire pushed through the hole of the gearwheel and the card to guide it.) Superglue the magnet and nuts to the top surface of the disc where marked.

15. Push the gearwheel onto the shaft of the motor ensuring the disc can rotate freely without rubbing against the sensor.

16. Insert 4 AA cells into the battery box, observing the correct polarity, and connect the battery box to the battery snap.

17. If *Mr. Baird's...* is working properly the lights should flash twice and the motor should start.

18. A self-test mode is available to verify that the Hall sensor is working properly. Attach the battery box while holding down the pushbutton. Rotate the disc manually and as the magnet passes over the sensor the lights should flash. The sensor should be adjusted such that it is directly beneath the magnet as it passes and within a few millimetres of it.

HOW TO USE

View the animation through the rotating disc directly above the light bars. Note that it takes 10 seconds or more for the motor to come to speed and the animation to become stable.

Press the pushbutton to change the animation sequence.

Remove ghost images and improve the display by cutting out a mask from cardboard and sticking it over the light bars.

Animation by Cavan Convery.

