

P57

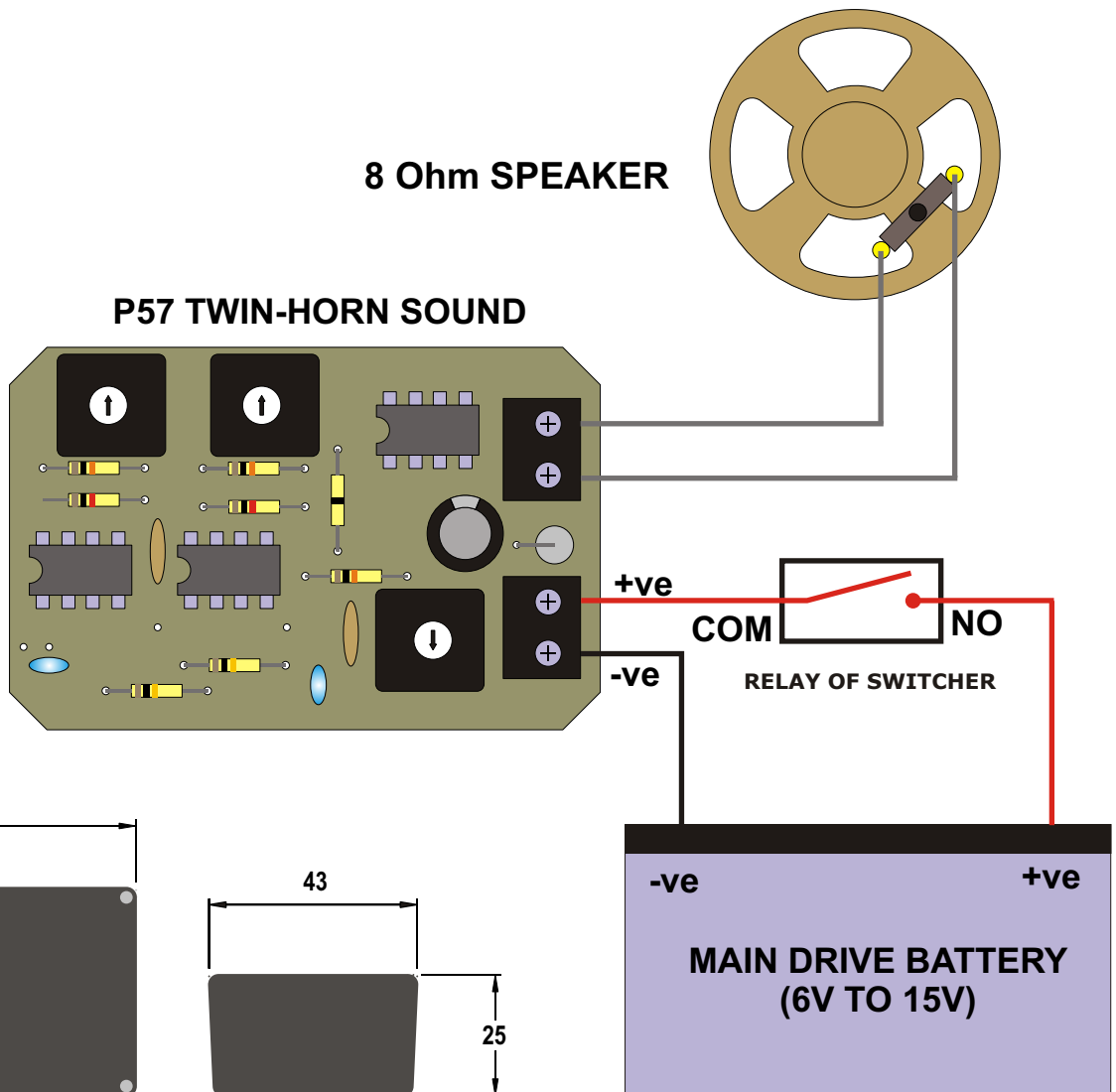
TWIN HORN SIMULATOR



One of a range of ACTION sound simulators designed specifically for scale models. With a 3" diameter speaker, it will produce a pleasant twin airhorn sound. With smaller speakers it will be severely restricted. The unit will enhance the appeal of any suitable R/C model. The unit is best operated via a non-latching R/C switcher such as the ACTION P43 or P44. See ACTION lists for details.

INTEGRATED CIRCUIT DESIGN.

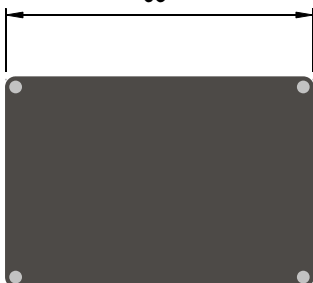
Drive battery voltage	6 volts to 15 volts
Amplifier power output maximum	1 watt
Tones	Adjustable
Volume	Adjustable
Connections	Screw connect blocks
Speaker	Not supplied (available separately).
Speaker impedance required	8 ohms
Minimum speaker size recommended	3" (76mm)



8 Ohm SPEAKER

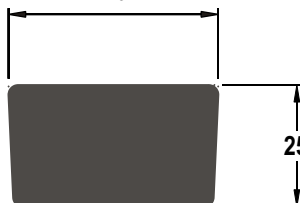
P57 TWIN-HORN SOUND

63



43

25



Case Dimensions

P57

TWIN HORN SIMULATOR



One of a range of ACTION sound simulators designed specifically for scale models. With a 3" diameter speaker, it will produce a pleasant twin airhorn-like sound. With smaller speakers it will be severely restricted. The unit will enhance the appeal of any suitable r/c model.

Drive battery voltage	6 volts to 15 volts
Amplifier power output maximum	1 watt
Tones	Adjustable
Volume	Adjustable
Case size	63.5mm x 43.5mm x 25mm
Speaker impedance	8 ohms
Minimum speaker size recommended	3" (76mm) - Not supplied

CONNECTION AND SETUP

1. Connect SPEAKER terminals to an 8 Ohm Speaker (see Drawing). The Twinhorn is designed to have its own speaker. If you wish to mix several sounds into a single speaker, you will require an ACTION P34 or P97 Mixer/Amplifier. These units will mix up to four ACTION sound simulators into one speaker. In addition, P97 will boost the output to 6 Watts, so a 4" speaker (or larger) will be needed.
2. Connect the two PWR terminals to the +ve and -ve of a 6v to 15v battery. Ensure you observe the correct polarity.
3. When the power is connected and the switch or switcher is turned on the twin-horn will sound.
4. Adjust the VOLUME trimmer for sound level required. Use a fine screwdriver as shown.
5. Adjust the other two trimmers for the two tones you require.

INSTALLATION

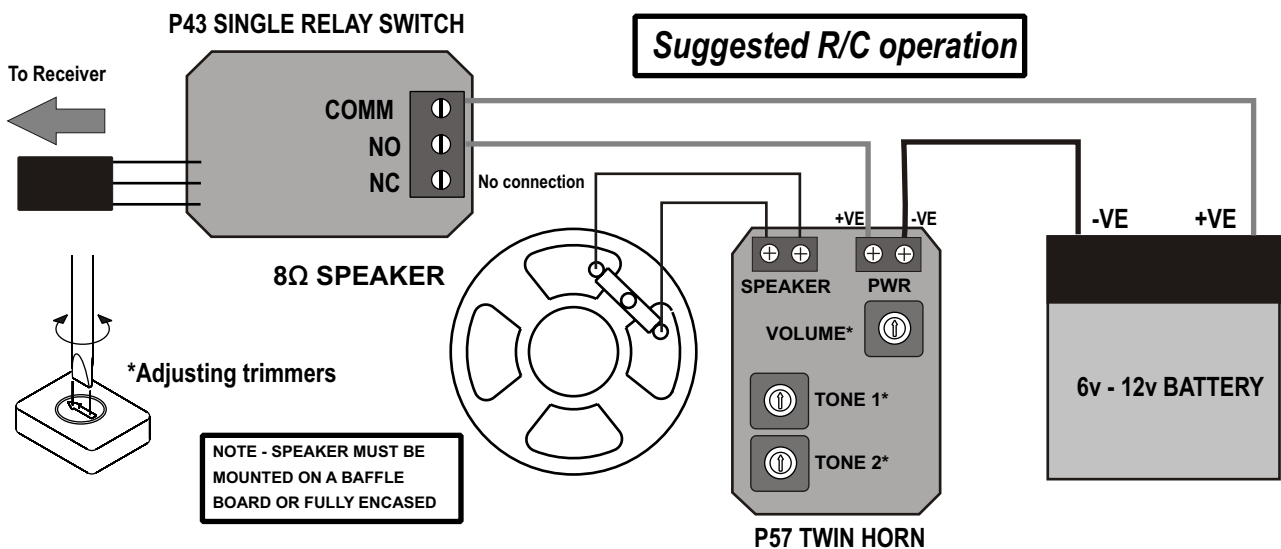
You will require a radio controlled switch to operate this unit from a spare channel of your radio. The drawing shows an ACTION P43 Single Relay Switch in this role. Drill suitable holes in the ABS case to permit the wires to access the screw terminal connector blocks, and use Velcro tabs to secure the case to the inside of the model.

RECOVERY SERVICE

A recovery or repairs service ensures that you will not be left with a dead unit for any reason. The Service Charge for this kit is £13.00 including parts (including return shipping cost IN UK).

All returns should include full Credit Card details (Name & Address of cardholder, Card Number, Expiry Date and Card Security Number)

ACTION R/C ELECTRONICS, 1 Llwyn Bleddyn, Llanllechid, Bangor LL57 3EF, United Kingdom



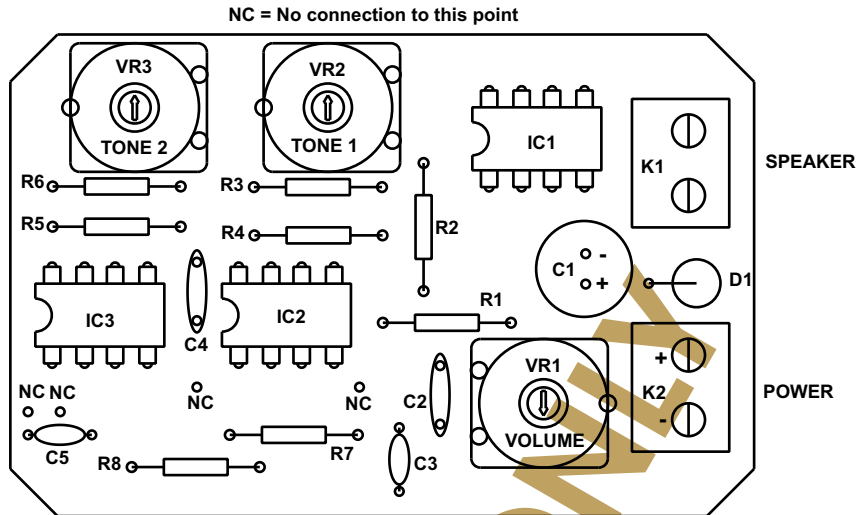
These units are polarity-critical! Take care to connect the battery correctly!

The small print.....
 ACTION R/C Electronics guarantee all products to be free from manufacturing defects for 12 months from date of purchase. This does not cover suitability for specific applications; components worn or damaged by use, tampering or incorrect connection; alteration to original components; damage to batteries or other equipment through use; misuse, or shipping damage. Where goods are found to be faulty, the customer shall return them to ACTION R/C Electronics in their original condition and with their original instructions, packaging etc. Our liability is limited to repairing or replacing goods to their original specification and will not exceed the cost of the goods. By using the product the user accepts all liability. Where a fixed repair charge is applicable, ACTION R/C Electronics shall undertake repairs to the extent that they are judged economically viable. Where such is not the case then the customer will be offered the option of crediting the repair charge towards the cost of a new unit or having the faulty unit returned and the charge refunded (less the cost of return carriage). We reserve the right to modify this guarantee without notice.

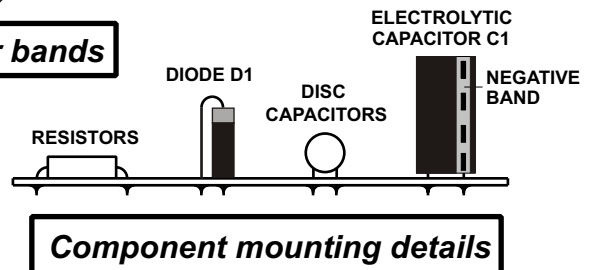
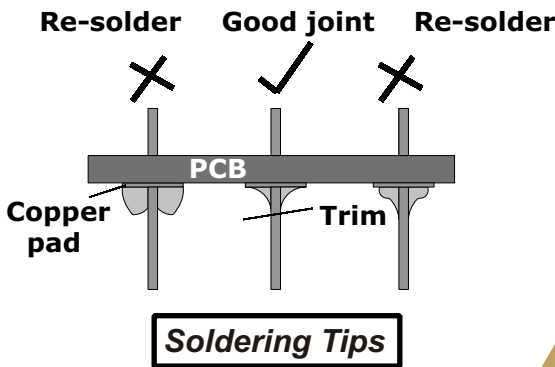


P57 TWIN HORN SOUND

Instructions for kit version & Wiring diagram



Component layout



PARTS LIST

IC1	TDA7052 IC + IC SOCKET
IC2,3	NE555 IC + IC SOCKETS
D1	1N4003 PLASTIC CASED 1A DIODE
R1,3,6	10K RESISTOR 1/4 WATT (BROWN/BLACK/ORANGE)
R2	ZERO OHMS RESISTOR (one central BLACK band)
R4,5	1K RESISTOR 1/4 WATT (BROWN/BLACK/RED)
R7,8	100K RESISTOR 1/4 WATT (BROWN/BLACK/YELLOW)
VR1	4K7 MIN ENCLOSED HORIZONTAL PRESET
VR2,3	100K MIN ENCLOSED HORIZONTAL PRESET
C1	220uF 16V MIN RADIAL ELECTROLYTIC CAPACITOR
C2,4	0.1uF CERAMIC DISC CAPACITOR (marked 104)
C3,5	0.047uF MONOLITHIC CERAMIC (marked 473 or 47n)
K1,2	TWO TWIN CONNECTOR BLOCKS
CASE	TYPE RX2009 with four screws
WIRE	not supplied with kit - Any thin flexible
SPEAKER	not supplied with kit - 8 Ohm, as large as can be accommodated.

P57 KIT INSTRUCTIONS

PCB

The PCB for this Project is fully prepared and requires no additional work.

TOOLS

For construction you will require a soldering iron (25 WATT with a small tip) and flux cored solder (22SWG cored solder); a small pair of wire cutters, a small screwdriver for adjustment and a good level of light.

PARTS

- All the parts for the kit should be laid out on a clean surface so that they can be correctly identified.
 - The short bars with colour bands and a wire at each end are resistors. They are colour coded as shown on the drawing and in the Parts List. One is marked with one central black bar. This is a zero Ohm resistor; it is used as a link wire.
 - The black plastic rod with two wires is a diode D1. It is marked with 1N4003 and has a silver bar printed at one end. This bar determines which way it should be fitted.
 - The tubular electrolytic capacitor is marked with the value and working voltage; it also has a band down one side of the sleeve with (-) Negative signs on it which signifies which leg goes to the negative. The opposite leg of the capacitor, of course, goes to the positive. Capacitor polarization is shown on the drawing.
 - The ceramic disc capacitor marked 103 (normally buff in colour) is not polarised and can be fitted either way round. The two small monolithic ceramic capacitors value 0.047 uF and marked 473 (usually coated Blue or Tan) can also be fitted either way round.
 - All three integrated circuits (ICs) are marked with their type code. See the drawing together with the Parts List.
 - The adjustable trimmers VR1, VR2 and VR3 have a screwdriver slot in the middle which is used to make adjustments to tones and volume.
 - The screw terminal block connectors K1 & K2 are easily identified.

CONSTRUCTION

- I would suggest that you fit the sockets for IC1, 2 and 3 first; it will help to give you your bearings as to what goes where. Note the small notch at one end of the plastic moulding and ensure that it is fitted as shown in the drawing, soldering all pins carefully. The ICs themselves can be fitted as the last operation of construction.
 - The two twin connector blocks K1 & K2 can now be soldered into the appropriate positions (the four larger holes along one end of the PCB). Note that the wire insertion holes face to the outside of the PCB.
 - The resistors can be fitted; the only thing to watch for is that the correct values go to the right places. It should all be clear with reference to the layout drawing, the mounting details and the Parts List. Note that R2 is the one with the single central black band. As each resistor is fitted and soldered, the spare wire should be cut off close to the PCB to keep the whole job looking tidy. The "Soldering Tips" drawing may help if you are inexperienced with a soldering iron.
 - When all the resistors have been fitted, the small capacitors come next. Fit the monolithic ceramic capacitors C3 and C5 0.047 uF (marked 473), then disc capacitors C2 & C4 (104) again cutting off the spare wire.
 - The electrolytic capacitor C2 (220uF) can now be fitted, and this type has to be fitted the correct way round. The negative is marked on the component and the positive and negative signs are marked on the layout diagram. See also Component Mounting Detail to make sure you connect it correctly.
 - The next components to be fitted are the adjustable presets VR1, marked 4K7 then VR2 and VR3, marked 100K mounted as per layout drawing.
 - Last item to solder in is D1. Bend it as per Component Mounting Details then fit and solder as per the Layout. The ICs can now be fitted to the sockets.

That's it; the PCB construction is complete. Set the little volume control preset to about centre. The rear of the board can now be cleaned with something like an old toothbrush and some spirit cleaner. Then check all over the soldered side of the board for good joints and no solder bridges between tracks. Time now to tackle the case; not a lot to it really - whatever suits you. I would personally just file a narrow slot along the top of one end of the case, the length of each connector block. When you are sure that everything is as it should be, you can proceed to testing.

TESTING

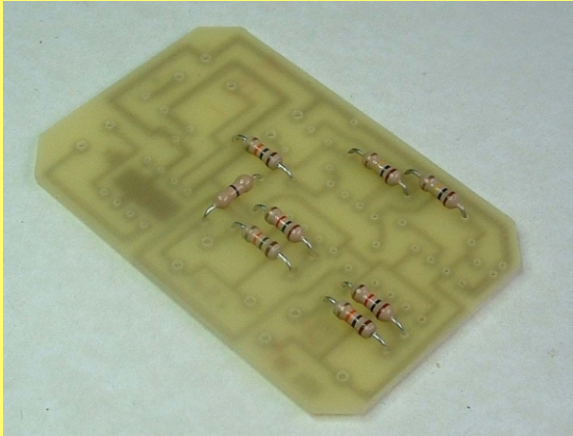
Having built the unit it's simply a matter of connecting two wires from the block marked SPEAKER to your speaker and the red (+) and black (-) power wires to whatever battery pack you are using. When the power is applied sound will be heard. Adjust the two tones and the volume control to a setting that suits you and the speaker you are using. You will note that the two tones produce what appears to be a third tone, this is known as a beat frequency; it is either the sum or the difference in the two frequencies. If the notes are set close together, the low frequency difference note may be annoying. If the amplifier IC (TDA7052) gets uncomfortably hot to the touch (i.e. it burns a wetted finger) then you are driving too much volume. The range had to take into account units that are run on low voltages.

SPEAKER

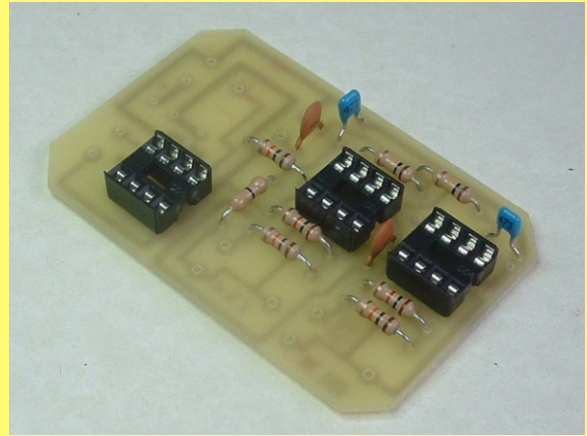
This will determine the final sound output to a great degree. An 8 Ohm speaker which will handle 1 Watt is required for the Twin Horn. A speaker, as you are probably aware, requires a case or rather an enclosure of some kind to present the best sound. The absolute minimum requirement is a baffle; a flat piece of plywood plasticard or similar about twice the speaker cone area with a hole cut almost as big in diameter as the speaker, which should be fastened to it. Evostick or other contact adhesive gives a good bond in most cases. If you can provide a enclosed area (usually easy on a model boat but can be difficult in other models) and mount this baffle so as to seal up the space, you will be providing the best installation for the Project. Mylar-cone, waterproof speakers are a good idea for marine installations.

P57 TWIN HORN SOUND

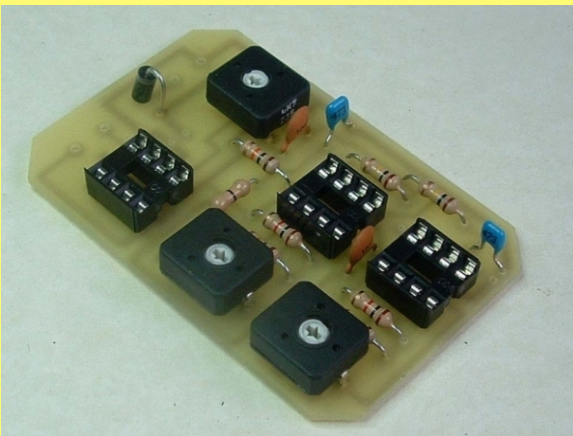
PHOTOGRAPHIC BUILD SEQUENCE FOR KIT VERSION ONLY



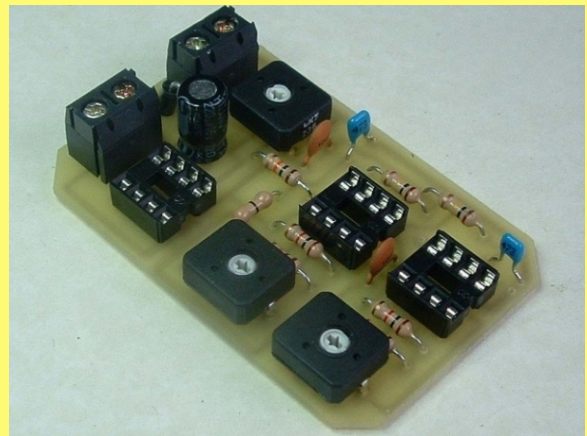
PICTURE 1: PCB with resistors fitted



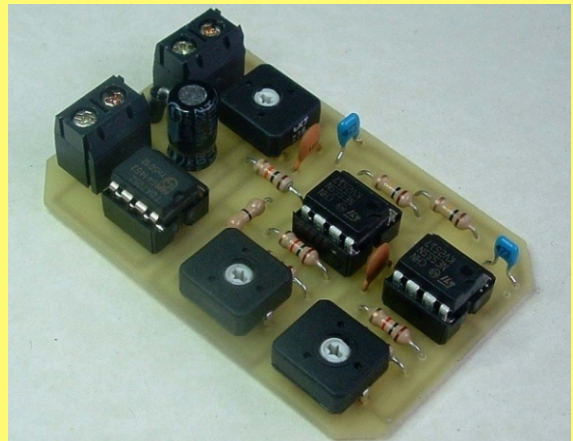
PICTURE 2: I/C sockets and capacitors added



PICTURE 3: Diode and presets added



PICTURE 4: Capacitor C1 and screw terminal blocks fitted



PICTURE 5: Fit 3 x I/C chips. NOTE! ANTI-STATIC PRECAUTIONS REQUIRED



PICTURE 6: File slots in case for cables



PICTURE 7: Finished unit, cased with sticker