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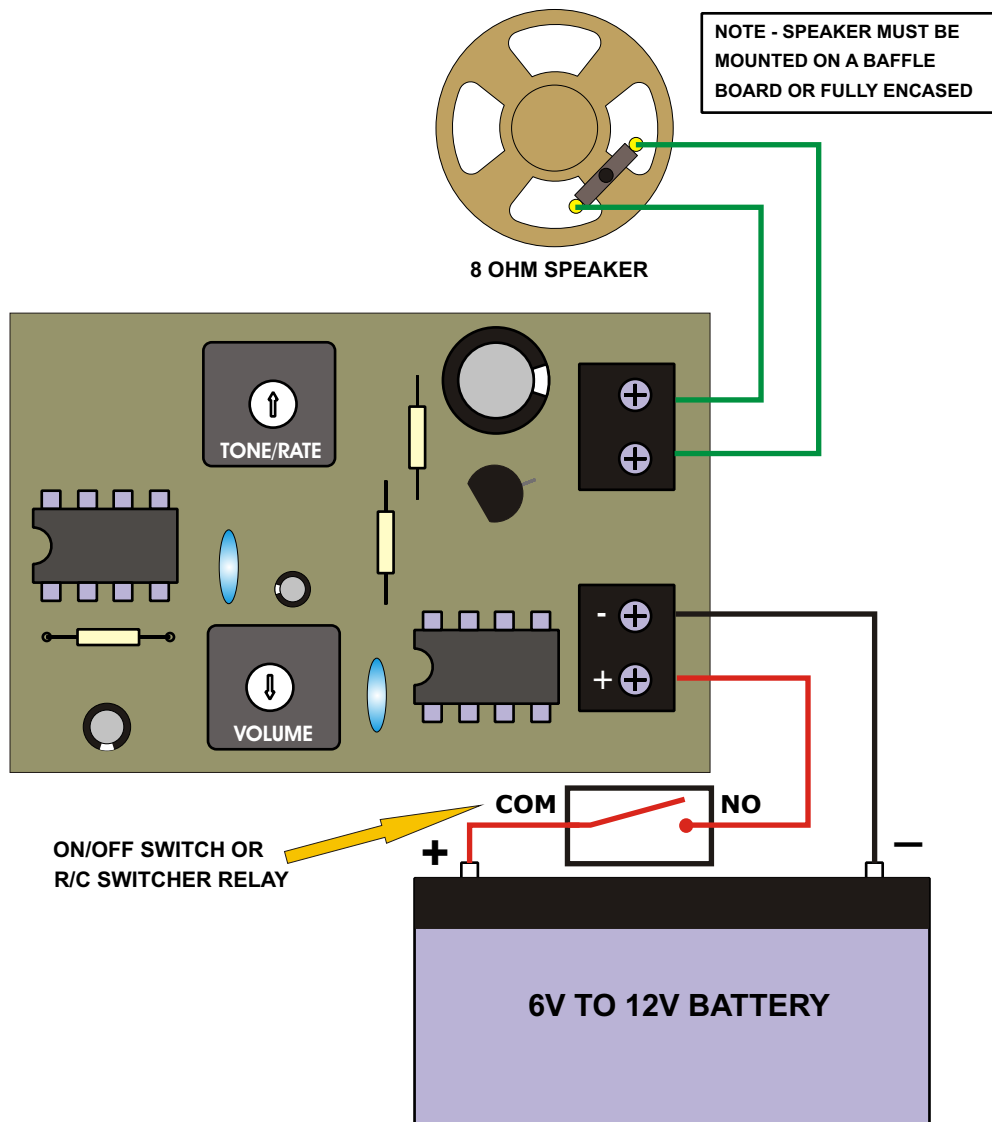
SHIP'S BELL



This Ship's Bell sound simulator is one of a series of sounds designed mainly for radio-controlled scale models. It has an on-board 1 watt amplifier and produces the typical pair of ship's bell rings. Requiring a voltage of between 6 volts and 12 volts and a small 8 ohm speaker, it will enhance the appeal of many marine models. It will also require a switcher to operate it in a radio-controlled model. See current ACTION lists.

Three IC design
Voltage requirement
Bell tone
Volume control
Connections
Speaker
Speaker impedance required
Speaker size recommended

6 volt to 12 volt
Adjustable
Adjustable
Screw connection
Not supplied, available separately
8 ohms
2 inch to 3 inch



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| Bell tone | Adjustable |
| Volume control | Adjustable |
| Connections | Screw connection |
| Speaker | Not supplied, available separately |
| Speaker impedance required | 8 ohms |
| Speaker size recommended | 2 inch to 3 inch |

Warning

Reverse connection of the power to this unit will destroy all the ICs. Units returned in this condition will not be repaired under warranty.

Functional test

Connect the speaker connector terminals to your speaker
 Connect the positive (+) power connector terminal to the positive of the battery.
 Connect the negative (-) power connector terminal to the negative of the battery.
 The Ship's Bell sound should now be heard.

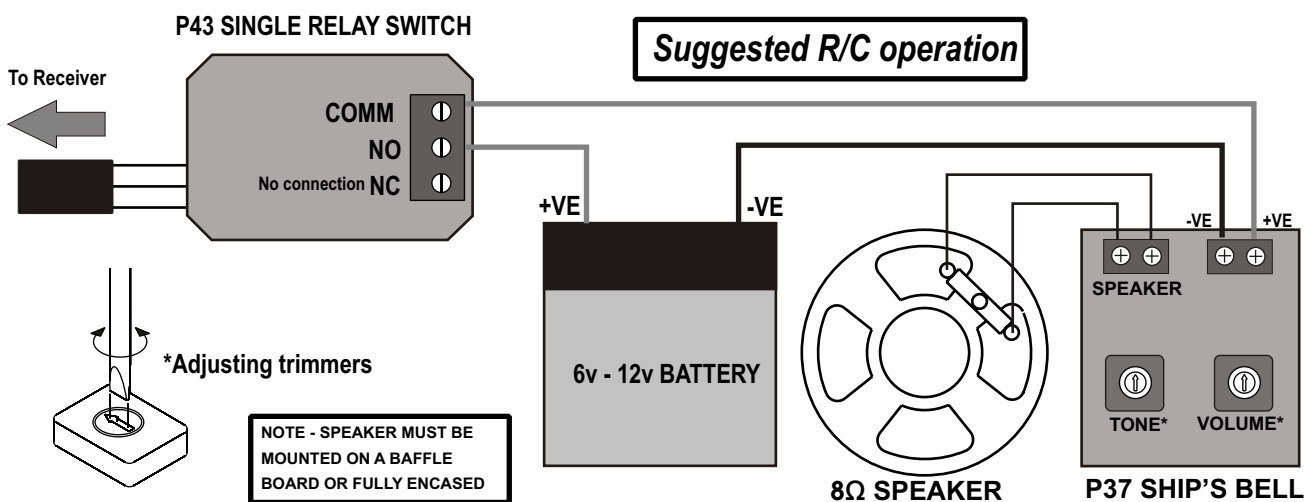
Installation

Drill suitable holes or slots in the ABS case to permit the wires to access the screw terminal connector blocks without kinking. Use Velcro tabs to secure the case to the inside of the model. When the unit is installed in a radio controlled model, a switch of some kind will have to be inserted in either the positive or the negative power line.
 Use a fine screwdriver to adjust the volume and tone trimmers as required.

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 £10.00 including parts (including return shipping cost IN UK). UK returns are CWO by Cheque or Postal Order made payable to ACTION R/C ELECTRONICS Ltd. Overseas returns should include full Credit Card details (Name & Address of cardholder, Card Number, Expiry Date, Card Security Number)

ACTION R/C ELECTRONICS Ltd, 19 Carisbrooke Drive, Nottingham NG3 5DS, United Kingdom



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

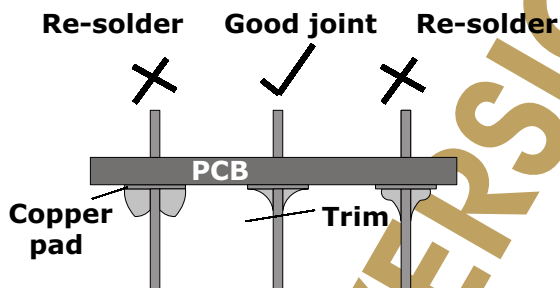
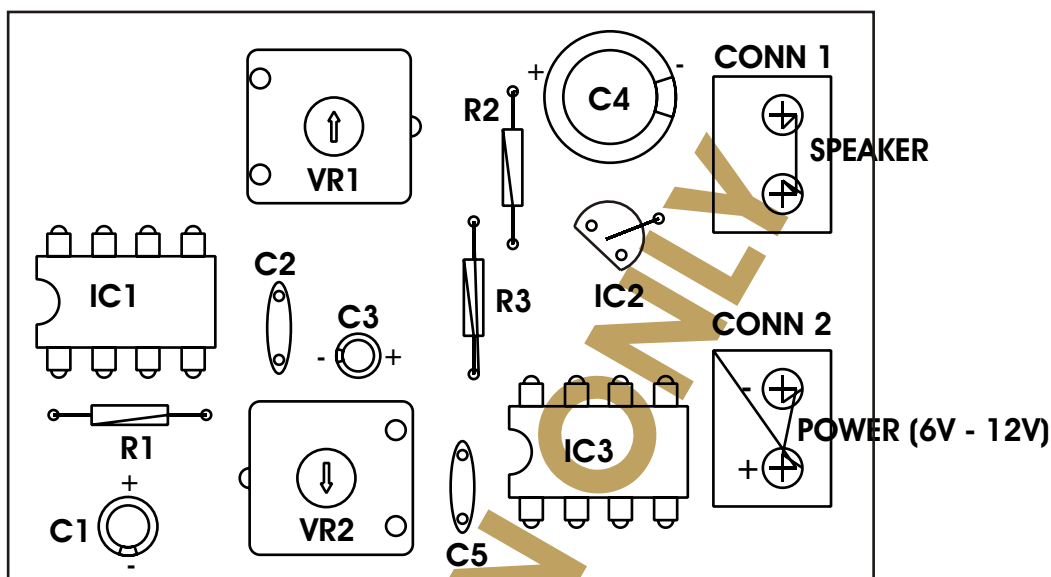
The small print.....
 ACTION R/C Electronics guarantee all products to be free from manufacturing defects for 12 months from date of purchase. This does not cover suitability for specific applications; components worn or damaged by use, tampering or incorrect connection; alteration to original components; 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.

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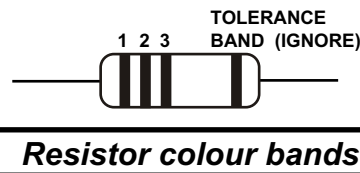
SHIP'S BELL
Instructions for kit version



Component layout & values



Soldering Tips



PARTS LIST

- | | |
|---------|--|
| IC1 | HT2811 + 8 PIN IC SOCKET (TAKE CARE WHEN HANDLING) |
| IC2 | LE33CZ |
| IC3 | TDA7052 IC + 8 PIN IC SOCKET |
| R1 | 47K 1/4 WATT RESISTOR (YELLOW/MAUVE/ORANGE) |
| R2 | 120K 1/4 WATT RESISTOR (BROWN/RED/YELLOW) |
| R3 | 33K 1/4 WATT RESISTOR (ORANGE/ORANGE/ORANGE) |
| VR1 | 470K MINIATURE HORIZONTAL PRESET (marked 470K) |
| VR2 | 4K7 MINIATURE HORIZONTAL PRESET (marked 4K7) |
| C1 | 10 uF ELECROLYTIC CAPACITOR (marked 10 uF) |
| C2,5 | 0.1uF CERAMIC DISC CAPACITOR (marked 104) |
| C3 | 1 uF ELECROLYTIC CAPACITOR (marked 1 uF) |
| C4 | 220 uF ELECROLYTIC CAPACITOR (marked 220 uF) |
| PCB | TYPE P37 |
| CONN1,2 | 2 WAY SCREW CONNECTORS |
| CASE | TYPE RX2008 |

P37 Kit Instructions

REQUIREMENTS

This Ships Bell simulator can be used with static or radio-controlled models. The battery should be in the range of 6 Volts to 12 Volts. It has its own 'onboard' amplifier which will deliver 1 Watt. A switcher of some type will be required to switch it on and off in a Radio Controlled Model. An 8 Ohm Speaker will be required; around 2 inch to 3 inch Mylar Cone should be ideal for a model boat. If you wish to run this unit with other ACTION Sound units into a common speaker, you will require a Mixer/Amplifier P34 or P97. This Mixer will allow up to four sounds to be mixed.

TOOLS

For construction you will require a soldering iron (anything between 15 to 30 Watts with a thin pointed bit) and flux cored solder (22 SWG recommended). A small pair of wire cutters to trim wires and a small file to work on the case, covers all the tool requirements but a good level of lighting should also be added to the list.

PCB

The PCB for this project is fully prepared and requires no further work.

DO NOT HANDLE ITEMS IN BLACK CONDUCTIVE FOAM UNTIL INSTRUCTED. (MOS DEVICES)

PARTS

- The PCB has an insulated (Component Side) and a tinned track side. Components are mounted on the insulated side and soldered on the track side.
 - The resistors are the two wire items with colour bands. The colour codes are read with reference to the Drawing, which also shows the order in which the colour codes are read. The layout drawing shows the mounting positions.
 - The two 8-pin integrated circuits IC1 & IC3 together with the 3 pin IC2 (looks like a transistor) have their type codes printed on them. Both 8 pin devices are supplied with a black moulded IC socket. The sockets are supplied with the kit to enable the builder to mount the IC 's without soldering, by soldering in the socket then fitting the IC as the last operation in construction. The IC's and the IC sockets have a notch moulded in to determine which way round they are fitted. IC1 is a CMOS device, supplied mounted on conductive foam (together with IC2 & IC3). These components should be left attached to the foam for protection against Static Electricity until they are required at the end of construction.
 - The (cylindrical) Electrolytic Capacitors C1, C3 and C4 have a band marked down one side with a (-) negative or minus sign or signs, this signifies the negative (-) leads. The long lead is the positive (+). The + & - signs are marked on drawing.
 - The Ceramic Disc Capacitors C2 & C5 are self-describing and can be fitted either way round.
 - The three legged adjustment trimmers (Variable Resistors VR1 & VR2) with a screwdriver slot at the centre are, as their name suggests, to enable adjustment of the circuit. VR1 is marked 470K and VR2 is marked 4K7
 - The Screw Connectors are also self describing, the only point of note is that they are to be fitted with the wire holes towards the outside edge of the board so that they can be connected to the wires.

CONSTRUCTION

Construction is very straight forward and can be completed with just the layout drawing & the PARTS LIST. For those who would prefer a set of instructions, the recommended construction steps are as follows.

- Fit the two 8 pin IC sockets noting the direction of the 'notch', they should be as per the drawing. The IC's will be fitted into these sockets as a later operation.
 - Fit the resistors in any order, ensuring that the correct value goes into the right position with reference to the drawings and the Colour Codes in the PARTS LIST. Each component when fitted and soldered, should have its spare lead length cut off. You may find the SOLDERING TIPS sketch useful.
 - C1, C3 & C4, the Electrolytic Capacitors, can be fitted and soldered now ensuring that + and - are correct in accordance with the drawing. Clip off the spare wire.
 - Fit C2, C5 the Ceramic Disc Capacitors, again cutting off the spare wire after soldering.
 - Fit and solder the three legged Trimmers VR1 & VR2 now; they only fit one way round.
 - Now solder in the two Screw Connector Blocks.
 - The final job is soldering in IC2 (the transistor like IC) again cutting off the spare wire after soldering. Then fit the remaining IC's into their previously mounted sockets. Observe that the 'notch' or moulded dot is at the correct end.
 - With a small file, slots can be made in the flanged half of the case to take the wires. Holes can be drilled in the case to enable adjustment of VR1 & VR2 if you wish.

WARNING - DO NOT use the black conductive foam as a packing foam in the finished unit, it is CONDUCTIVE.

TESTING

This is extremely simple. Connect an 8 Ohm speaker to the two terminals marked speaker. Connect to a 6 Volt to 12 volt battery noting that + is positive (RED) and - is negative (BLACK). Additional markings have been applied to the Printed side of the PCB in the form of a speaker graphic and a plus and minus sign to help. You will now hear your Ships Bell sound, you can adjust VR1 to alter the tone and repeat rate then VR2 to set the desired volume.

If the unit is connected with the polarity of the battery reversed then both of the I/Cs will be damaged irreparably.

USE

In addition to ringing the watch on your favourite model boat, we are reliably informed that a bell sound was used as a warning signal when guns were turning on warships. It could also be used on a model Tram or Bus or as a somewhat different door bell.