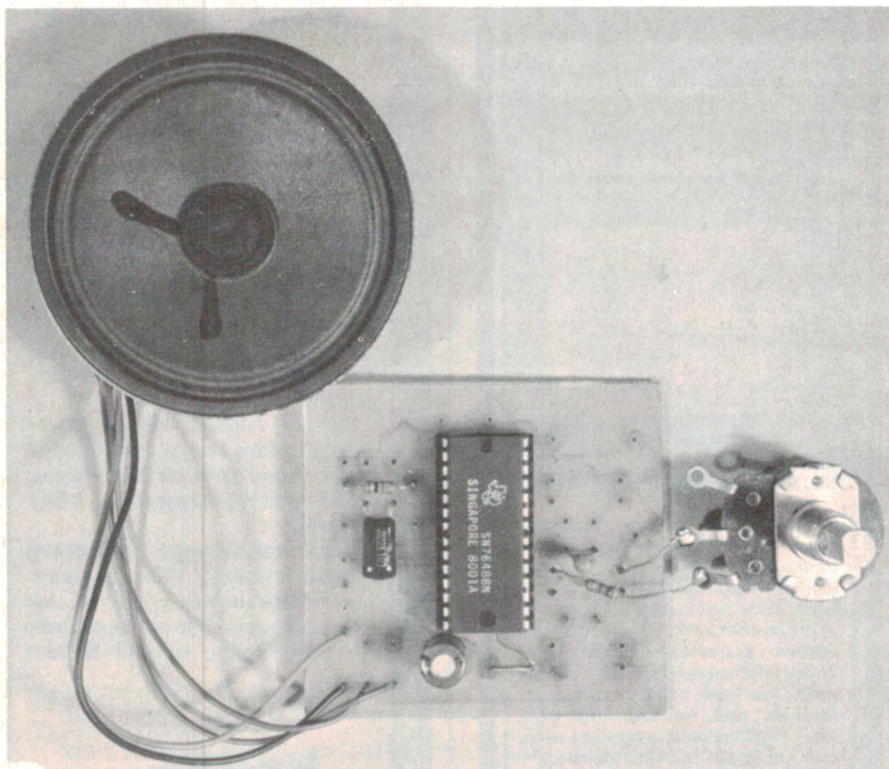


## Propellor aircraft sound effect unit

Roger Harrison

IN THE August and September issues last year we published a series of five sound effects units (Projects ETI-607 A to E) ranging from a Bomb Drop & Explosion to a Steam Train & Whistle. This project employs the same pc board and IC as did the previous five.

The IC is a Texas Instruments SN76488 complex sound generator. A complete description of this chip and how it works was given on pages 48 and 49 of the August '81 issue. At this juncture it should again be pointed out that the SN76488 is available in two different-sized packages — the A pack, a conventional 28-pin package with 15.4 mm spacing between pin rows and 2.54 mm pin spacing, and the smaller NF pack with 10.16 mm spacing between the pin rows and 1.52 mm pin spacing. Accordingly, two pc boards are provided to accommodate the different packs and they are marked 'A pack' and 'nf pack' to suit. Construction and overlay diagrams apply to either board.



Make sure you purchase the correct board to suit the IC pack you have purchased.

'savage' so that low frequency noise predominates. The chop-chop rate may be varied by the potentiometer from 'taxiing' to 'full climb'.

### The prop sound

A propellor and engine make a 'chop-chop-chop' sound that contains quite a bit of 'white' noise energy. In this unit the super low frequency oscillator is used to modulate the output of the noise generator/filter — producing the 'chop-chop-chop' sound. The filtering is fairly

### Construction

The overlay diagram shows where all the components are located. It is generally easiest to install the resistors, capacitors and link first of all. Watch the polarity of C1 and C3. You may use an IC socket to mount the SN76488 if you

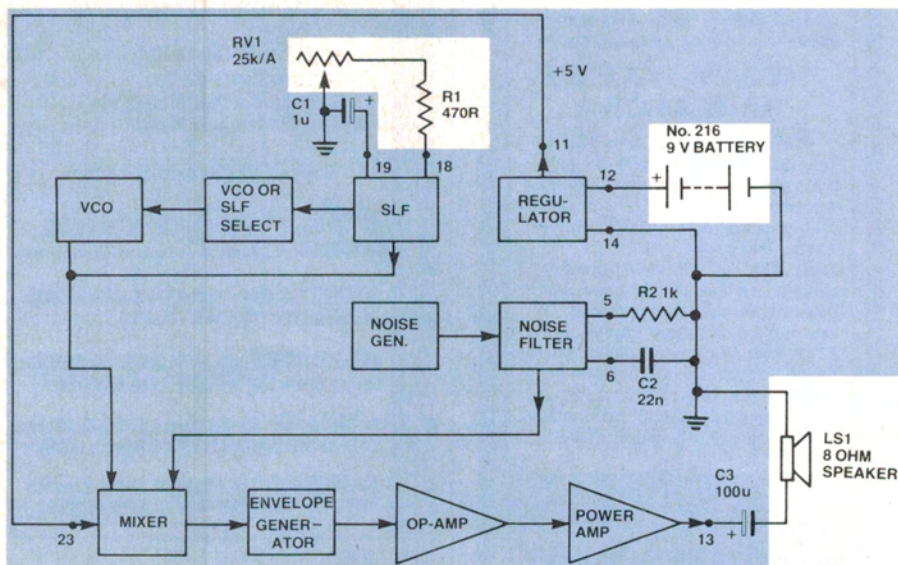
### HOW IT WORKS

#### ETI-607F PROPELLOR AIRCRAFT

This unit is closely related to the Steam Train & Whistle (ETI-607B). The SLF is set to oscillate at a few Hertz and the Noise Generator/Filter output is modulated by this to produce the 'chopping' sound of a propellor and engine.

The broadband noise from the Noise Generator is heavily filtered by the Filter stage so that low frequency noise predominates. Capacitor C2 and resistor R2 set the Filter cutoff frequency somewhat below 2 kHz. The SLF oscillates at a rate determined by C1 and R1 + RV1. This rate may be varied by RV1, ranging from less than 20 Hz to more than 1200 Hz.

Pin 23, the 'C' select input of the Mixer, is connected to +5 V (pin 11 of the regulator) and this selects the SLF/NOISE mixing function. The output of the mixer passes to the audio output via the envelope generator — not used here — the speaker being driven by pin 13 via C3, a 100u dc blocking capacitor.







© B. J. AKHURST 78

wish, or just solder it to the board. Watch you get its orientation correct.

Last of all, solder up the leads to the battery connector (you may add a switch to turn the unit on and off if you wish), the loudspeaker and the potentiometer. Note that R1 mounts from one lug of the potentiometer.

The unit may be mounted in a jiffy box with the speaker and potentiometer mounted on the lid and the pc board and battery held in the base with double-sided sticky pads. That's just one suggestion; we'll have to leave the details up to you as individual requirements will vary — let your ingenuity loose! ●

### PARTS LIST — ETI 607F

<b>Resistors</b>		all ½W,5%
R1	470R	
R2	1k	
RV1	25k/A	1in. pot.
<b>Capacitors</b>		
C1	1u/10 V	tant.
C2	22n	greencap
C3	100u/16 V	RB electro.
<b>Semiconductors</b>		
IC1	SN76488	
<b>Miscellaneous</b>		
ETI-607 pc board; 50 mm diameter 8 ohm speaker; No. 216 9 V battery and clip; switch (if needed).		

**Price estimate**  
**\$10-\$14**

### NOTE: ERRATA PROJECT 607, p.49, August '81.

It only recently came to our notice that Table 1, Mixer Select Logic, top of page 49, is erroneous. It was reproduced directly from the Applications Note provided by Tandy with their bubble-packed SN76488 ICs. The SLF and SLF/NOISE logic should be transposed and the VCO/NOISE and SLF/VCO should be transposed. The table is correctly reproduced herewith.

Mixer Select Inputs			Mixer Output
C (Pin 23)	B (Pin 25)	A (Pin 24)	
L	L	L	VCO
H	L	L	SLF/NOISE
L	H	L	NOISE
H	H	L	SLF/VCO
L	L	H	SLF
H	L	H	SLF/VCO/NOISE
L	H	H	VCO/NOISE
H	H	H	INHIBIT

