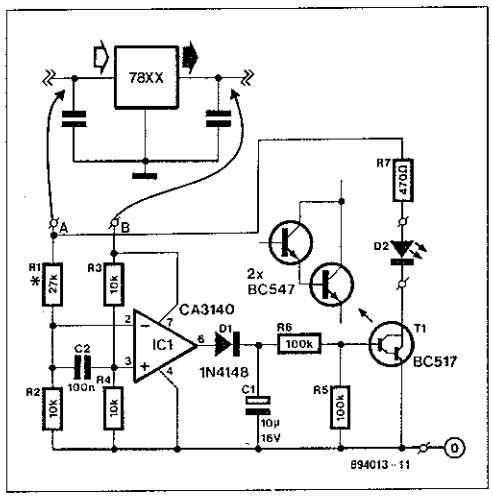
The voltage drop across the regulator is monitored by IC1 The input and output voltage of the regulator are supplied to IC1 via potential dividers. If the input voltage to the regulator is too low, IC1 goes high, which causes C1 to charge and this turns on T1, so that D2 lights. You may, of course, use a buzzer instead of D2 and R7 The charge on C1 ensures that the LED lights for at least 10 ms This means that the circuit will react to even very short voltage drops at the input of the regulator A large ripple that results in a too low input voltage is therefore clearly indicated. The circuit is based on the 7805; the value of R1 must be redimensioned for other members of the 78xx series by the following:

$$R1 = [(2dU / Ur) + 1] / R2$$



where dU is the voltage drop across the regulator and Ur is the characteristic output voltage of the regulator It is necessary that dU is chosen somewhat larger than the actual minimum voltage drop across the regulator to prevent non-operation of the circuit This is so because the minimum voltage drop across the regulator is constant when the device ceases to function properly until the input voltage returns to normal. In other words, the monitor must be able to react to a voltage drop that is slightly higher than the minimum voltage drop

007 RADIO & TV

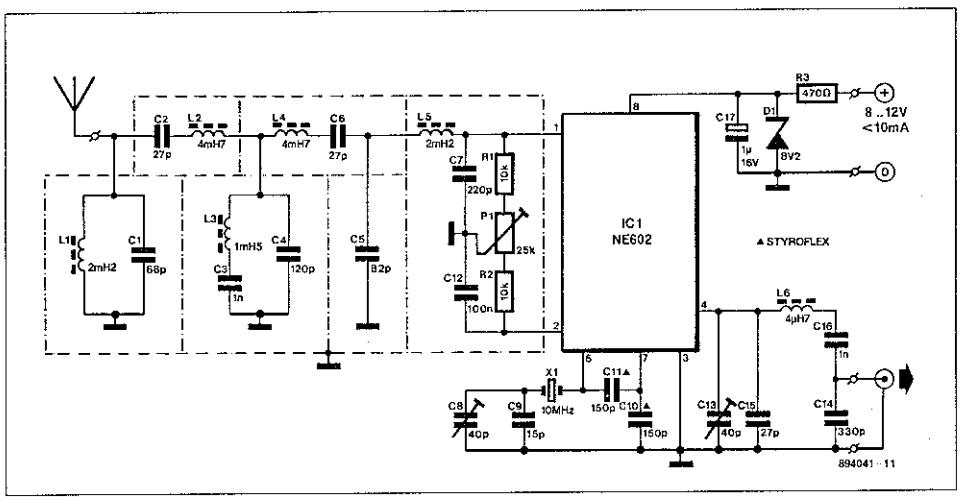
RADIO BEACON CONVERTER

The radio beacon band extends from 280 kHz to 516 kHz. Each beacon has its own characteristic AM modulated morse-coded call sign that is transmitted on a specific frequency To be able to receive distant beacons the aerial signal is passed through a band-pass filter that effectively suppresses long-wave and medium-wave signals. The filter also converts the aerial impedance, Zin, from about 10 kΩ to the inpout impedance of mixer IC1, which is about 1 kΩ.

The mixer adds or subtracts the received signal to/from the local oscillator signal, so that the beacon signal can be received on a normal short-wave receiver The resulting frequencies lie in the range 9 72–9 484 MHz or 10 280–10 516 MHz

In the construction of the converter some components must be surrounded by a metal shield as indicated by dashed lines on the PCB layout

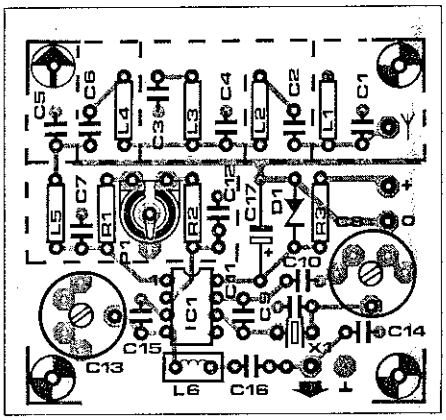
The circuit is aligned with the aid of an SSB receiver to which the output of the converter is connected Tune the receiver to 10 MHz and adjust the oscillator frequency of the converter by means of C8 for zero beat Next, detune the receiver slightly until a pleasant whistle is heard, which is adjusted for minimum level with the aid of P1 Finally, tune to a beacon transmitting at or about 300 kHz and adjust C13 for maximum sound output



Capacitors:
C1 = 68 pF
C2; C6; C15 = 27 pF
C3; C16 = 1 nF
C4 = 120 pF
C5 = 82 pF
C7 = 220 pF
C8; C13 = 40 pF trimmer
C9 = 15 pF
C10; C11 = 150 pF styroflex
C12 = 100 nF
C14 = 330 pF
C17 = 1 µF; 16 V

Inductors:
L1; L5 = 2.2 mH
L2; L4; L6 = 4.7 mH
L3 = 1.5 mH

Semiconductors:
D1 = zener diode 8.2 V
IC1 = NE602



Parts list

Resistors:
R1; R2 = 10 kΩ
R3 = 470 Ω
P1 = 25 kΩ preset potentiometer

Miscellaneous:
X1 = 10 MHz crystal; 30 pF parallel resonance