

# 'ERT' SERVICE CHART

## ZENITH ROYAL 130

**MINIATURE** pocket radio covering MW with six transistor and two diode super-het circuit. Operates with 3V supply from mercury cells or penlite batteries. High-impact moulded case in choice of three colours with gold anodised aluminium grille.

**Batteries.** Two Ever Ready ER9 mercury cells (giving up to 180 hours) or two Ever Ready U7 penlite cells (giving up to 75 hours).

**Consumption.** 12mA with no signal, volume control at minimum.

**Waveband.** MW 188-555m (1600-540kc/s).

**Transistors.** Texas Instruments. 121-234 (GC282) mixer oscillator, 121-235 (GC283) first IF amplifier, 121-236 (GC284) second IF amplifier, 121-237 (GC286) audio driver, 121-238 (GC285) NPN push-pull output (2).

**Diodes.** X1-103-19(1N87G) overload protection diode, X2-103-19(1N87G) detector and AGC.

**IF.** 455kc/s.

**Speaker.** 2in. alnico PM 11ohms.

**Output.** 80mW undistorted, 135mW maximum.

**Aerial.** Internal ferrite slab.

**Manufacturer.** Zenith Radio Corporation.

**Distributors.** United Mercantile Co. Ltd.

**Service department.** Sovereign House, 13-14 Queen Street, Mayfair, London W1. Tel.: Grosvenor 4901/3.

### BRIEF CIRCUIT DESCRIPTION

Royal 130 receivers incorporate 6KT47Z1 superhet chassis. Mixer-oscillator is followed by two conventional IF amplifier stages. Diode X1 forms a variable RF load across one half of the primary of the first IF transformer to prevent overload on strong signals. On strong signals an increased AGC voltage is fed to the base of the first IF amplifier. This reduces the collector current causing the collector voltage to rise. When the IF amplifier collector voltage exceeds the mixer collector voltage, diode X1 conducts and damps the first IF transformer. Diode X2 is detector and AGC voltage source. Audio output from the detector is fed via the volume control to an audio driver stage. This is followed by two NPN transistors in a Class B push-pull output stage. No output transformer is employed, the

speaker speech coil forming the load for both output transistors.

### SERVICE NOTES

**Output transistors.** If one transistor fails both should be replaced with a matched pair.

**Printed circuit.** For replacing components a pencil type soldering iron not exceeding 25W is recommended. Excessive heat may damage the board. For removing solder a small stiff glue or stencil brush is suggested. Clean and tin leads of new component before inserting in printed circuit and soldering.

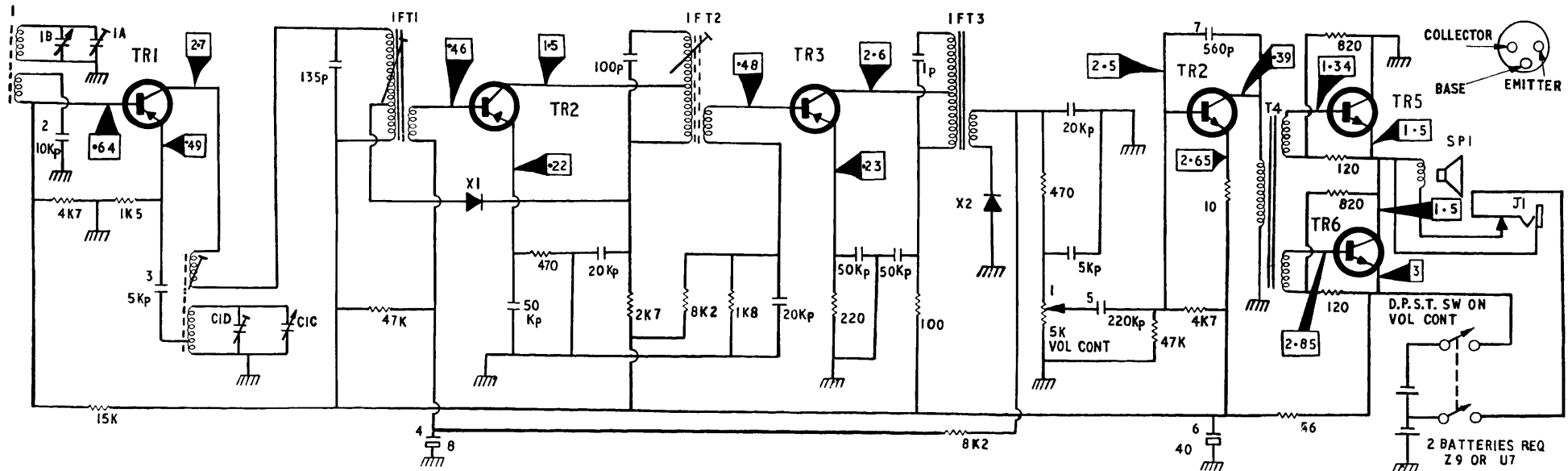
**Component replacement.** Resistors and capacitors should be replaced by clipping out defective part and neatly soldering in a new component. To replace oscillator coil or an IF transformer heat the mounting lugs with a pencil type iron and move them away from the soldered connection with long-nosed pliers.

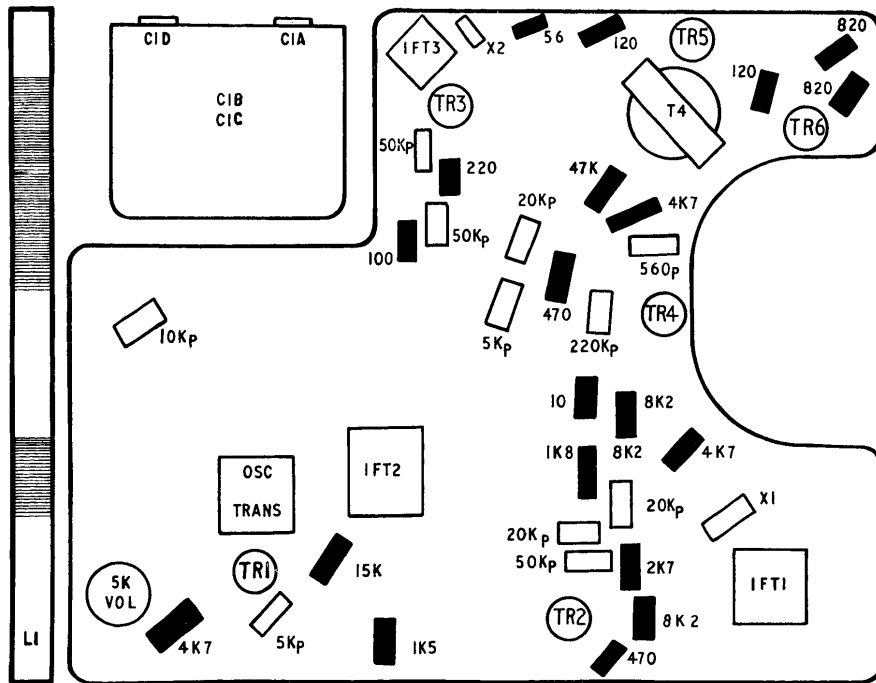
Continue heating the lugs brushing away the solder with a small stiff brush. Before inserting a new component ensure that the lug holes are open and free from solder.

**Voltages.** Figures given in circuit diagram are DC voltages, negative in respect of chassis, measured with a valve voltmeter.

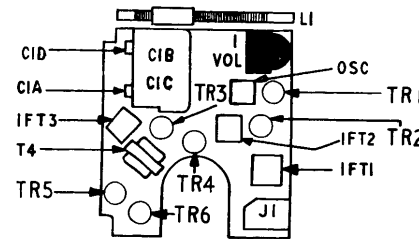
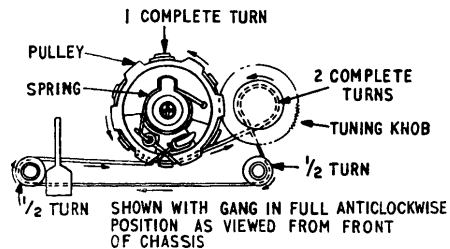


Alignment and layout diagrams overleaf





Above, component layout viewed from printed side of board. Below (left), cord arrangement for dial drive. Below (right), top chassis layout with alignment points



**ALIGNMENT**

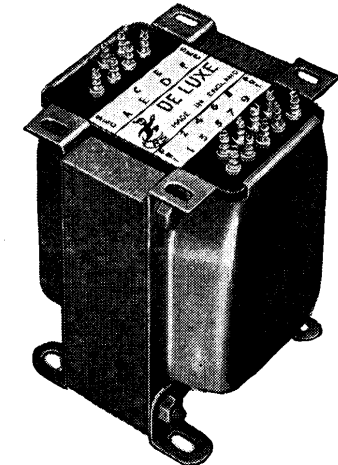
**Equipment required.** Modulated AM signal generator covering MW and IF. Output meter 11ohms. Trimming tools.

**IF.** Set generator to 455kc/s modulated output, connect output lead screening to chassis and centre conductor to a single turn of wire loosely coupled to ferrite aerial. Switch set on and tune dial to 600kc/s. Adjust cores of IFT1, IFT2 and IFT3 for maximum output. Repeat until no further increase in gain is obtained.

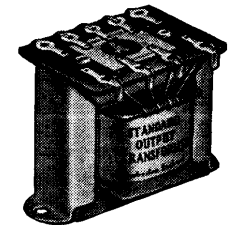
**RF.** Set tuning gang fully open (minimum capacity). Adjust generator to 1620kc/s and couple to ferrite aerial with a single loose turn. Trim CID for correct calibration of scale. Change generator to 600kc/s, tune receiver to this point on the dial.

Adjust core of T5 while rocking gang for maximum output *regardless of calibration of dial*. Repeat last two operations. Alter generator output to 1260 kc/s and set dial on the receiver to this position. Adjust aerial trimmer CIA for maximum output.

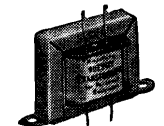
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