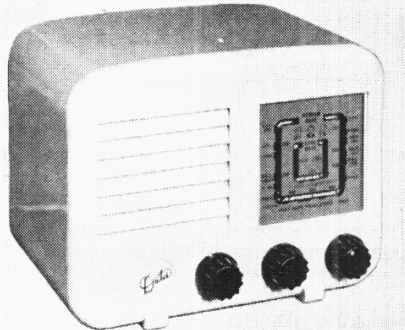


JOY'S RADIO SERVICE,
CHELTENHAM ROAD,
BRISTOL 6.
DULCI MLU5
A.C./D.C. Midget Superhet

"TRADER" SERVICE SHEET
1074



GANGED permeability variable tuning is a feature of the Dulci MLU5 receiver a model of "midget" construction designed to operate from A.C. or D.C. mains of 200-250 V. The waveband ranges are 187-540 m and 1,200-2,000 m. It is not fitted with a frame aerial, but is intended to be used with a "throw out" flexible aerial. In conformity with midget practice, no provision is made for an earth connection.

Release date and original price: September 1952. £7 15s plus purchase tax.

CIRCUIT DESCRIPTION

Aerial input via C1 and "bottom" capacitance coupling C2 (M.W.) to inductively tuned aerial coil L1 which has a manually operated iron-dust core, giving permeability tuning with the fixed tuning capacitor C5 (M.W.) shunted by C4 for L.W. operation. On L.W., also, C2 is shunted by C3.

First valve (V1, **Brimar 12BE6**) is a heptode operating as frequency changer with electron coupling. The oscillator grid circuit is again permeability-tuned by a manually operated sliding core, which is ganged with the core of L1. On M.W., the oscillator tuned circuit comprises L4, shunted by L2 and the trimmers C11, C23, while L3 is short-circuited; on L.W., (Continued in col. 3)

COMPONENTS AND VALUES

| CAPACITORS | | Values | Locations |
|------------|------------------------|---------|-----------|
| C1 | Aerial couplers | 700pF | E3 |
| C2 | | 470pF | E3 |
| C3 | L.W. aerial shunt | 0.004μF | E3 |
| C4 | L.W. aerial tune ... | 0.002μF | F3 |
| C5 | M.W. aerial tune | 35pF | A1 |
| C6 | V1 C.G. ... | 75pF | F4 |
| C7 | 1st I.F. trans. tuning | 100pF | A2 |
| C8 | | 100pF | A2 |
| C9 | A.G.C. decoupling | 0.1μF | D4 |
| C10 | V1 osc. C.G. | 75pF | F4 |
| C11 | M.W. osc. tuning | 75pF | A1 |
| C12 | L.W. osc. tuning | 120pF | F3 |
| C13 | S.G. H.T. decoup. | 0.1μF | D4 |
| C14 | I.F. coil tuning | 470pF | B2 |
| C15 | I.F. by-pass | 180pF | E3 |
| C16 | Signal diode feed | 75pF | B2 |
| C17 | A.F. couplers | 0.01μF | E3 |
| C18 | | 0.01μF | D3 |
| C19* | H.T. smoothing | 32μF | A1 |
| C20* | | 32μF | A1 |
| C21 | Mains R.F. by-pass | 0.01μF | D4 |
| C22† | M.W. aerial trim. | — | A1 |
| C23† | L.W. osc. trim. | — | A1 |

* Electrolytic. † Pre-set.

| OTHER COMPONENTS | | Approx. Values (ohms) | Locations |
|------------------|------------------------|-----------------------|-----------|
| L1 | Aerial tuning ... | 30.0 | B1 |
| L2 | M.W. osc. shunt ... | 15.0 | B1 |
| L3 | L.W. osc. coil ... | 8.5 | F4 |
| L4 | Osc. tuning, total ... | 5.6 | B1 |
| L5 | I.F. trans. { Pri. ... | 7.0 | A2 |
| L6 | | { Sec. ... | 7.0 |
| L7 | I.F. coil ... | 9.5 | B2 |
| L8 | Speech coil ... | 2.5 | C1 |
| T1 | O.P. trans. { Pri. ... | 280.0 | D3 |
| | { Sec. ... | 0.5 | |
| S1-S4 | Waveband switches | — | F3 |
| S5 | Mains s.w., g'd S1-S4 | — | F3 |

Circuit Description—continued

S4 opens and L3 is inserted in series with L2, L4, while the fixed trimmer C12 is added. Reaction coupling is effected by cathode injection via the tapping on L4. Oscillator stabilization by R4. Second valve (V2, **Brimar 12BA6**) is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer input and tuned anode output couplings C7, L5, L6, C8 and L7, C14.

Intermediate frequency 422 kc/s.

Diode signal detector is part of double diode triode valve (V3, **Brimar 12AT6**) and is parallel fed via C16 from V2 anode. Audio frequency component in its rectified output is developed across volume control R9, which acts as diode load, and is passed via C17 and grid stopper R11 to grid of triode section, which operates as A.F. amplifier. I.F. filtering by R8, C15.

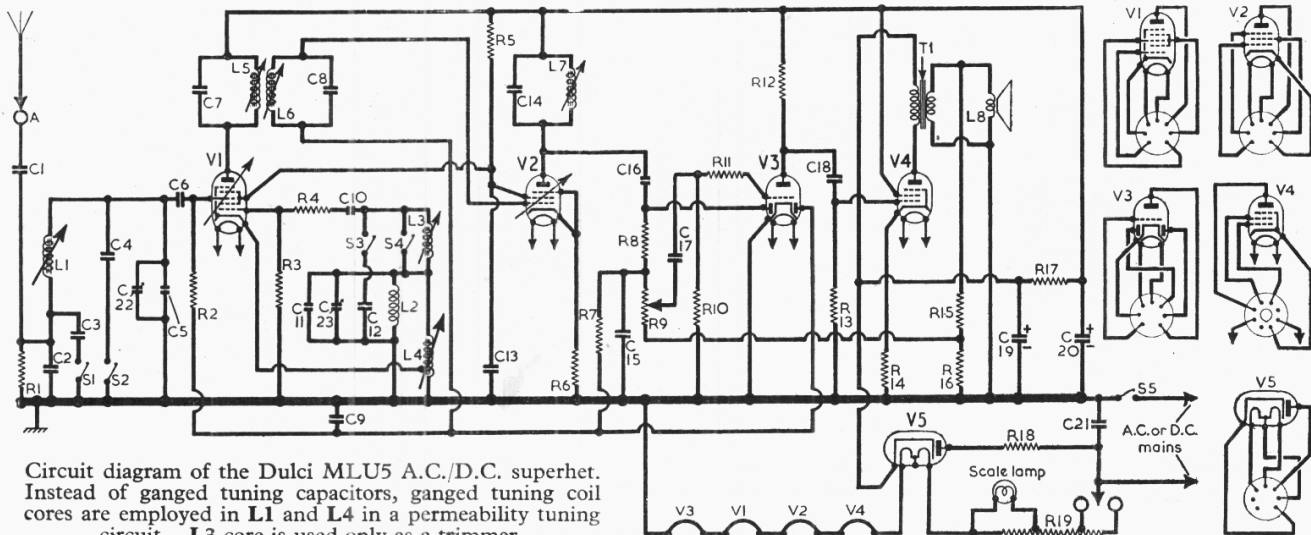
D.C. potential developed across R9 is fed back as bias via decoupling circuit R7, C9 to V1 and V2, giving automatic gain control.

Amplified A.F. signals at V3 anode are developed across R12 and resistance-capacitance coupled by C18 and R13 to control grid of beam tetrode output valve (V4, **Brimar 12A6**). A proportion of the speech coil voltage, that dropped across R16 in potential divider R15, R16, is fed back to the volume control circuit, giving tone correction. Further tone correction is provided by the negative feedback voltage developed across R14 in V4 cathode circuit.

H.T. current is supplied by I.H.C. half-wave rectifying valve (V5, **Brimar 35W4**). Smoothing by R17 and electrolytic capacitors C19, C20. Valve heaters, together with ballast resistor R19, are connected in series across the mains input. R18 protects V5 from current surges. Mains R.F. filtering by C21.

| RESISTORS | | Values | Locations |
|-----------|--------------------|---------|-----------|
| R1 | Aerial shunt ... | 4.7kΩ | E3 |
| R2 | V1 C.G. ... | 1MΩ | F4 |
| R3 | V1 osc. C.G. | 22kΩ | F4 |
| R4 | V1 osc. stabilizer | 120kΩ | F4 |
| R5 | S.G. H.T. feed ... | 10kΩ | F4 |
| R6 | V2 G.B. ... | 68Ω | E4 |
| R7 | A.G.C. decoupling | 2.2MΩ | E3 |
| R8 | I.F. stopper ... | 100kΩ | E3 |
| R9 | Volume control ... | 500kΩ | E3 |
| R10 | V3 C.G. ... | 10MΩ | E3 |
| R11 | V3 C.G. stopper | 220kΩ | E3 |
| R12 | V3 anode load ... | 220kΩ | D3 |
| R13 | V4 C.G. ... | 470kΩ | D3 |
| R14 | V4 G.B. ... | 330Ω | D4 |
| R15 | Neg. feed-back | 330Ω | E3 |
| R16 | | | |
| R17 | H.T. smoothing | 2.2kΩ | F4 |
| R18 | V5 surge limiter | 120Ω | D4 |
| R19 | Ballast resistor | 1,150Ω* | C2 |

* Tapped 150Ω+865Ω+135Ω from V5 heater.



Circuit diagram of the Dulci MLU5 A.C./D.C. superhet. Instead of ganged tuning capacitors, ganged tuning coil cores are employed in L1 and L4 in a permeability tuning circuit. L3 core is used only as a trimmer.

