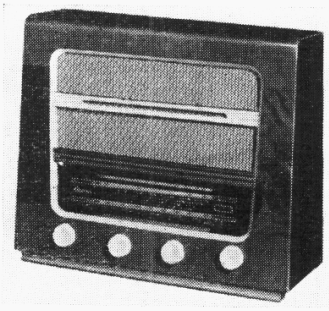
"TRADER" SERVICE SHEET

992

ETRONIC ETU5329



COMPONENTS AND VALUES

	CAPACITORS	Values	Locations
C1	Mains isolators	0·002μF	G4
C2	Mains isolators	0·01μF	F4
C3	Aerial series	0·002μF	G4
C4	Aerial coupling	0·0032μF	G4
C5	1st I.F. trans. tuning	120pF	A2
C6	1st I.F. trans. tuning	120pF	A2
C7	V1 cath. by-pass	0·1μF	G4
C8	A.G.C. decoupling	0·05μF	F4
C9	S.W. tracker	0·0025μF	G3
C10	M.W. tracker	410pF	G3
C11	L.W. tracker	150pF	G3
C12	L.W. osc. trimmer	150pF	G4
C13	Osc. anode coup.	50pF	G4
C14	S.G. decoupling	0·1μF	F4
C15	2nd I.F. trans. tuning	120pF	B2
C16	2nd I.F. trans. tuning	120pF	B2
C17	V2 cath. by-pass	0·1μF	F4
C18	I.F. by-passes	100pF	F4
C19	I.F. by-passes	100pF	E3
C20	P.U. isolator	0·1μF	F4
C21	A.F. coupling	0·005μF	E3
C22	I.F. by-pass	400pF	E4
C23	Part tone control	0·01μF	E3
C24	A.F. coupling	0·01μF	E4
C25	Tone correction	0·002μF	E3
C26*	V4 cath. by-pass	25μF	D4
C27*	H.T. smoothing	16μF	B1
C28*	H.T. smoothing	16μF	B1
C29*	H.T. smoothing	16μF	B1
C30	Mains by-pass	0·01μF	D3
C31‡	S.W. aerial trim.	—	G3
C32‡	M.W. aerial trim.	—	G3
C33‡	L.W. aerial trim.	—	G4
C34†	Aerial tuning	—	A1
C35‡	S.W. osc. trimming	—	G3
C36‡	M.W. osc. trimming	—	G3
C37‡	L.W. osc. trimming	—	G4
C38†	Oscillator tuning	—	A2

* Electrolytic. † Variable. ‡ Pre-set.

	RESISTORS	Values	Locations
R1	Aerial shunt	4·7kΩ	F4
R2	A.G.C. decoupling	10kΩ	G4
R3	V1 G.B.	250Ω	G4
R4	V1 osc. C.G.	56kΩ	G4
R5	Osc. anode feed	47kΩ	F4
R6	Stabilizer	47Ω	G4
R7	S.G. H.T. feed	33kΩ	F4
R8	V2 G.B.	330Ω	F4
R9	A.G.C. decoupling	2·2MΩ	F4
R10	I.F. stopper	56kΩ	F3
R11	Isolator Shunt	1MΩ	E4
R12	Volume control	500kΩ	E3
R13	V3 C.G.	10MΩ	E4
R14	V3 anode load	120kΩ	E3
R15	Tone control	500kΩ	D3
R16	V4 C.G.	470kΩ	E4
R17	V4 C.G. stopper	56kΩ	E4
R18	V4 H.T. pot.	10kΩ	E4
R19	V4 H.T. pot. divider	22kΩ	E4
R20	V4 G.B.	180Ω	D3
R21	H.T. smoothing	2·2kΩ	F3
R22	Brimistor type CZ2	—	E3
R23	Heater ballast resistor	512Ω	C2
R24	Heater ballast resistor	100Ω	C2

	OTHER COMPONENTS	Approx. Values (ohms)	Locations
L1	S.W. coupling coil	Very low	G3
L2	Aerial tuning coils	Very low	G3
L3	Aerial tuning coils	4·4	G3
L4	Aerial tuning coils	34·0	G4
L5	S.W. reaction coil	Very low	G3
L6	M.W. reaction coil	1·0	G3
L7	Oscillator tuning coils	Very low	G3
L8	Oscillator tuning coils	5·0	G3
L9	Oscillator tuning coils	12·0	G4
L10	1st I.F. trans. Pri.	10·0	A2
L11	1st I.F. trans. Sec.	10·0	A2
L12	2nd I.F. trans. Pri.	10·0	B2
L13	2nd I.F. trans. Sec.	10·0	B2
L14	Speech coil	2·6	—
L15	Smoothing choke	160·0	B1
L16	Mains filter chokes	2·4	D3
L17	Mains filter chokes	2·4	D3
T1	Primary	360·0	—
T1	Secondary	0·4	—
S1-S10	Waveband switches	—	G3
S11, S12	Mains sw., g'd. R15	—	D3

THE Etronic ETU5329 is a 4-valve (plus rectifier) 3-band superhet designed to operate from A.C. or D.C. mains of 200-250 V. The waveband ranges are 15-51 m, 190-550 m and 1,000-2,000 m. The A.C. version, model ETA5316 is covered separately in Service Sheet 991.

Release date and original price: November, 1950; £16 5s 6d plus purchase tax.

CIRCUIT DESCRIPTION

Aerial input via coupling coil **L1** (S.W.) and "bottom" coupling capacitor **C4** (M.W. and L.W.) to single tuned circuits **L2, C34** (S.W.), **L3, C34** (M.W.) and **L4 C34** (L.W.).

First valve **(V1, Brimar 14S7)** is a triode-hexode operating as frequency changer with internal coupling. Oscillator anode coils **L7** (S.W.), **L8** (M.W.) and **L9**

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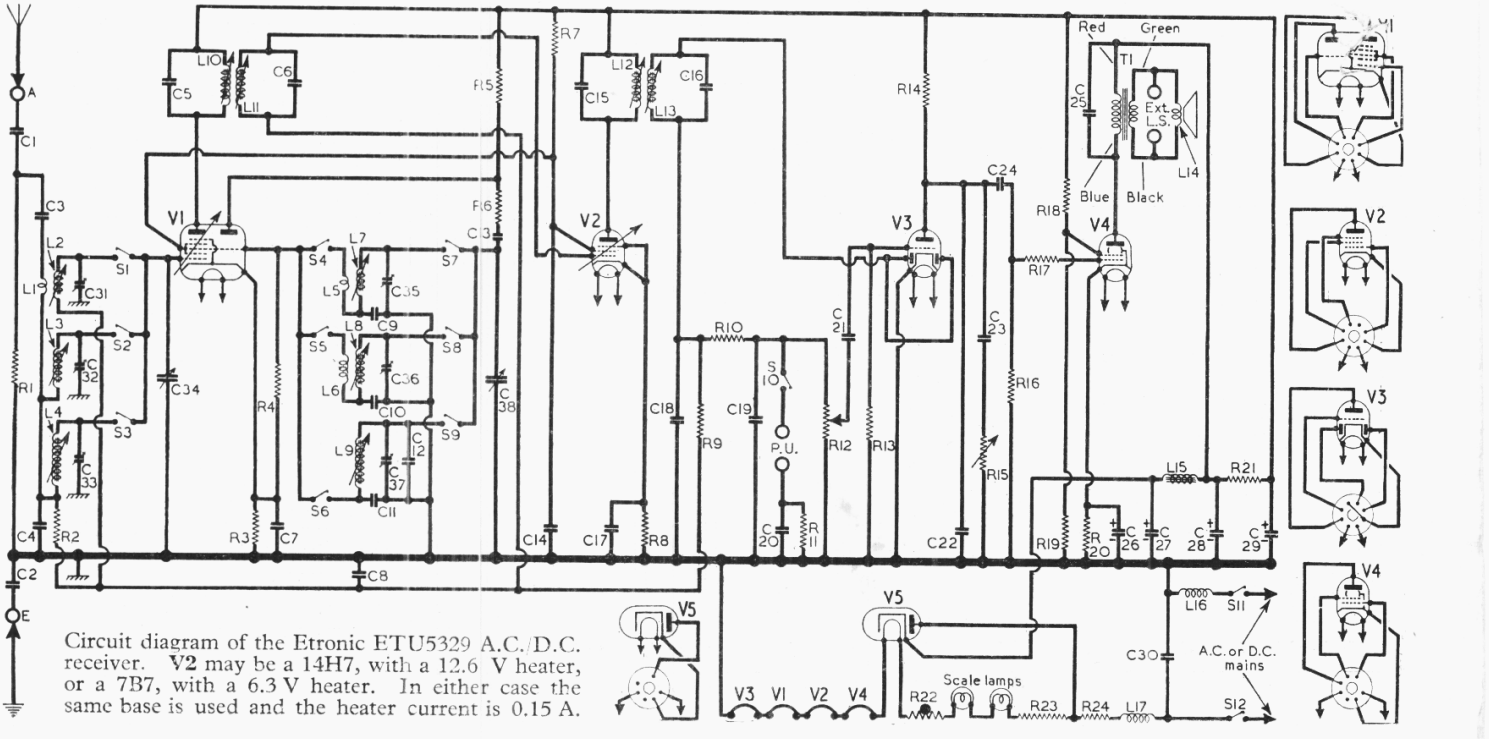


Circuit diagram of the Etronic ETU5329 A.C./D.C. receiver. **V2** may be a 14H7, with a 12.6 V heater, or a 7B7, with a 6.3 V heater. In either case the same base is used and the heater current is 0.15 A.

Circuit Description—*continued*

(L.W.) are tuned by **C38.** Parallel trimming by **C35** (S.W.), **C36** (M.W.) and **C37** (L.W.); series tracking by **C9** (S.W.), **C10** (M.W.) and **C11** (L.W.).

Second valve **(V2, Brimar 14H7** or **7B7)** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C5, L10, L11, C6** and **C15, L12, L13, C16.**

Intermediate frequency 470 kc/s.

Diode signal detector is part of double diode triode valve **(V3, Brimar 14B6).** A.F. component in rectified output is developed across volume control **R12,** which acts as the diode load, and is passed via **C21** to the grid of the triode section. Provision is made for the connection of a gramophone pick-up across **R12** via **S10,** which closes in the "Gram" position of the waveband switch. D.C. potential developed across **R10, R12** is fed back as bias to F.C. and I.F. valves, giving A.G.C.

Resistance-capacitance coupling by **R14, C24** and **R16** between **V3** triode and beam pentode output valve **(V4, Brimar 50L6GT).**

H.T. current is supplied by I.H.C. half-wave rectifying valve **(V5, Brimar 35Z4GT).** Smoothing by choke **L15,** resistor **R21** and electrolytic smoothing capacitors **C27, C28** and **C29.** Valve heaters, together with scale lamps and ballast resistor **R23, R24** are connected in series across the mains input. Current surges are prevented by section **R24** of the ballast resistor and thermistor **R22.**

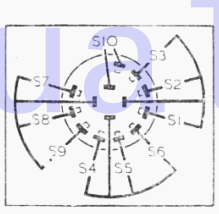
VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured on our receiver when it was operating on 230 V A.C. mains. The set was tuned to the highest wavelength end of M.W., and the volume control was turned to maximum, but there was no signal input.

Voltage readings were made with an Avo Electronic TestMeter, which introduces no appreciable voltage drop, and allowance must be made for the current drawn by other meters. Chassis was the negative connection.

Valve	Anode		Screen		Cath.
	V	mA	V	mA	V
V1 14S7 ...	142	0·7	68	0·67	1·3
	78 (Oscillator)	2·2			
V2 14H7* ...	142	1·8	68	0·5	1·0
V3 14B6 ...	83	0·22	—	—	—
V4 50L6 ...	150	65·0	95	1·2	1·4
V5 35Z4 ...	204†	—	—	—	195·0

* V2 may be a 7B7. † A.C. volts.



Above; Diagram of the waveband switch unit, with the associated table below.

Switch	S.W.	M.W.	L.W.	Gram.
S1	C	—	—	C
S2	—	C	—	—
S3	—	—	C	—
S4	C	—	—	C
S5	—	C	—	—
S6	—	—	C	—
S7	C	—	—	—
S8	—	C	—	—
S9	—	—	C	—
S10	—	—	—	C

GENERAL NOTES

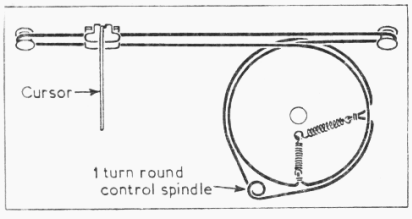
Switches.—**S1-S9** are the waveband switches, and **S10** is the gram pick-up switch, ganged in a single 4-position rotary unit beneath the chassis. This is indicated in our underside drawing of the chassis, and shown in detail in the diagram inset beside the plan drawing, where it is drawn as seen from the rear of an inverted chassis.

The table below it gives switch positions for the four control settings, starting from the fully anti-clockwise position of the control knob. A dash indicates open, and **C,** closed.

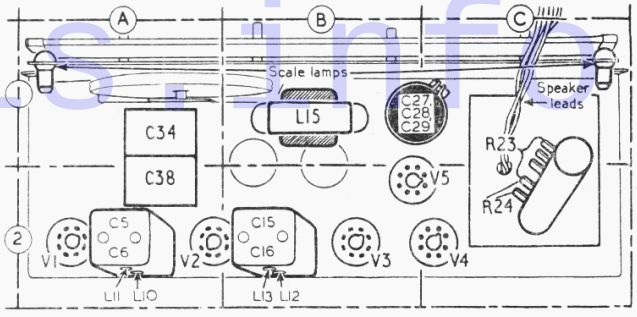
S11, S12 are the Q.M.B. mains switches, ganged with the tone control **R15.**

Scale Lamps.—These are two Osram M.E.S. type lamps, with small clear spherical bulbs, rated at 3.5 V, 0.15 A.

External Speaker.—Two sockets are provided at the rear of the chassis for the connection of a low impedance (about 3-4 Ω) external speaker.



Sketch showing the tuning drive system, as seen from the front with the gang at maximum capacitance.



Plan view of the chassis. The tappings on **R23** are unused.

Drive Cord Replacement.—Two cords of different material are used in this receiver; the drum drive which requires about 18 inches of fine gauge nylon braided glass yarn; and the cursor drive, which requires about 42 inches of fine gauge plaited flax fishing line.

The course taken by the two cords is clearly indicated in the sketch in col. 2, where the tuning drive system is drawn as seen from the front, but in order to gain access to the gang drum it is necessary to remove the metal plate forming the front member of the chassis structure.

To do this, remove the glass scale panel (spring clips at corners), remove the fixing nuts and lock washers from the tone control and volume control spindle bushes, and remove the four self-tapping screws holding the metal front plate to the rest of the chassis. The drive system is then exposed as shown in our sketch.

CIRCUIT ALIGNMENT

I.F. Stages.—Switch set to M.W., turn gang to maximum and set tone and volume controls fully clockwise. Connect the output from the signal generator, via a 0.1 μF capacitor in the "live" lead, to control grid (pin 6) of **V2** and chassis. Feed in a 470 kc/s (638.3 m) signal and adjust the cores of **L13, L12** (location reference B2) for maximum output. Transfer "live" signal generator lead to control grid (pin 6) of **V1,** and adjust the cores of **L11, L10** (A2) for maximum output. Repeat these adjustments.

R.F. and Oscillator Stages.—Remove chassis from cabinet and check that with the gang at maximum capacitance, the cursor coincides with the highest wavelength ends of the tuning scales. Transfer the signal generator leads, via a suitable dummy aerial, to **A** and **E** sockets.

L.W.—Switch set to L.W., tune to 2,000 m, feed in a 2,000 m (150 kc/s) signal and adjust the cores of **L9** (G4) and **L4** (G4) for maximum output. Tune to 1,000 m, feed in a 1,000 m (300 kc/s) signal and adjust **C37** (G4) and **C33** (G4) for maximum output. Repeat these adjustments.

M.W.—Switch set to M.W., tune to 500 m, feed in a 500 m (600 kc/s) signal and adjust the cores of **L8** (G3) and **L3** (G3) for maximum output. Tune to 200 m, feed in a 200 m (1,500 kc/s) signal and adjust **C36** (G3) and **C32** (G3) for maximum output. Repeat these adjustments.

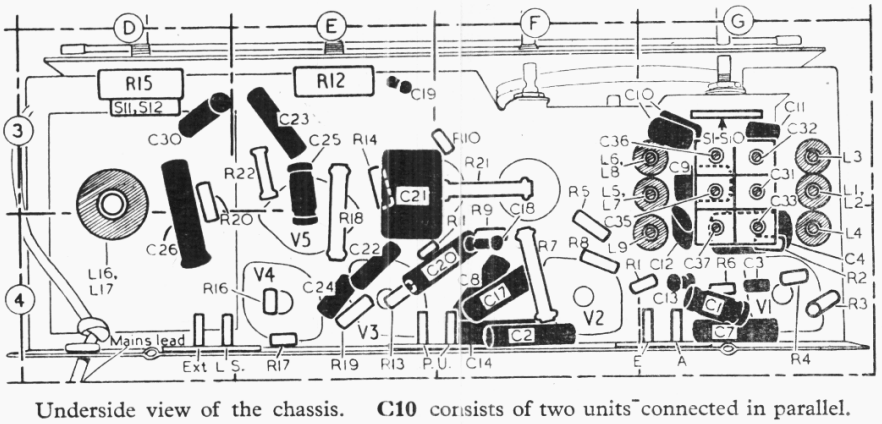
S.W.—A dummy aerial consisting of a non-inductive 400 Ω resistor should be connected in series with the "live" signal generator lead. Switch set to S.W., tune to 50 m, feed in a 50 m (6 Mc/s) signal and adjust the cores of **L7** (G3) and **L2** (G3) for maximum output. Tune to 20 m, feed in a 20 m (15 Mc/s) signal and adjust **C35** (G4) and **C31** (G4) for maximum output, "rocking" the gang slightly while adjusting **C31** to obtain optimum results. Repeat these adjustments.

DISMANTLING THE SET

Removing Chassis.—Remove four control knobs (pull-off) with felt washers;
unsolder the leads from the tag strip on the output transformer;
remove three hexagonal head, self-tapping chassis bolts (with washers) and withdraw chassis.

When replacing, connect the speaker leads as follows, numbering the tags from top to bottom: 1, blue; 2, black; 3, green; 4, red.

If the speaker has been removed, it should be replaced with the transformer on the right when viewed from the rear.



Underside view of the chassis. **C10** consists of two units connected in parallel.

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