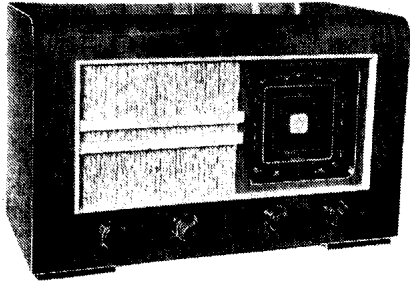


"TRADER" SERVICE SHEET
797

ACE A50



THREE wavebands are covered in the Ace A50 receiver, the S.W. band being 16-50 m. The set is a 4-valve (plus rectifier) superhet designed for operation from A.C. mains of 200-250 V, 50-100 c/s. Release date and original price: November, 1945; £15 15s plus £3 8s 3d purchase tax.

CIRCUIT DESCRIPTION

Aerial input is via coupling coils L2 (S.W.), L3 (M.W.) and L4 (L.W.) to single-tuned circuits, L5, C29 (S.W.), L6, C29 (M.W.) and L7, C29 (L.W.), which precede triode hexode valve (V1, Brimar 6K8G) operating as frequency changer with electron coupling. I.F. filter L1, C25 shunts the aerial-earth circuit.

Triode oscillator grid coils L8 (S.W.), L9 (M.W.) and L10 (L.W.) are tuned by C30. Parallel trimming by C31 (S.W.), C32 (M.W.) and C5, C33 (L.W.); series tracking by C6 (S.W.), C7 (M.W.) and C8 (L.W.).

Reaction coupling from anode, via C9, is obtained from the common impedance of trackers on all bands, with additional inductive coupling by L11 on S.W.

Second valve (V2, Brimar 6K7G) is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned-primary, tuned-

secondary transformer couplings C34, L12, L13, C35 and C36, L14, L15, C37.

Intermediate frequency 465 kc/s.

Diode second detector is part of double diode triode valve (V3, Brimar 6Q7G). Audio frequency component in rectified output is developed across load resistor R7 and passed via I.F. stopper R8, coupling capacitor C15 and manual volume control R9 to control grid of triode section, which operates as A.F. amplifier. Provision for the connection of a gramophone pick-up across R9.

Second diode of V3, fed from L14 via C14, provides D.C. potentials which are developed across load resistor R14 and fed back through decoupling circuits as G.B. to F.C. and I.F. valves, giving automatic volume control. Delay voltage, together with G.B. for triode section, is obtained from the drop along R10 in V3 cathode circuit.

Resistance-capacitance coupling by R12, C19 and R15, between V3 triode and beam tetrode output valve (V4, Brimar 6V6G). Fixed tone correction in tetrode anode circuit by C20, and variable tone control by C22, R17.

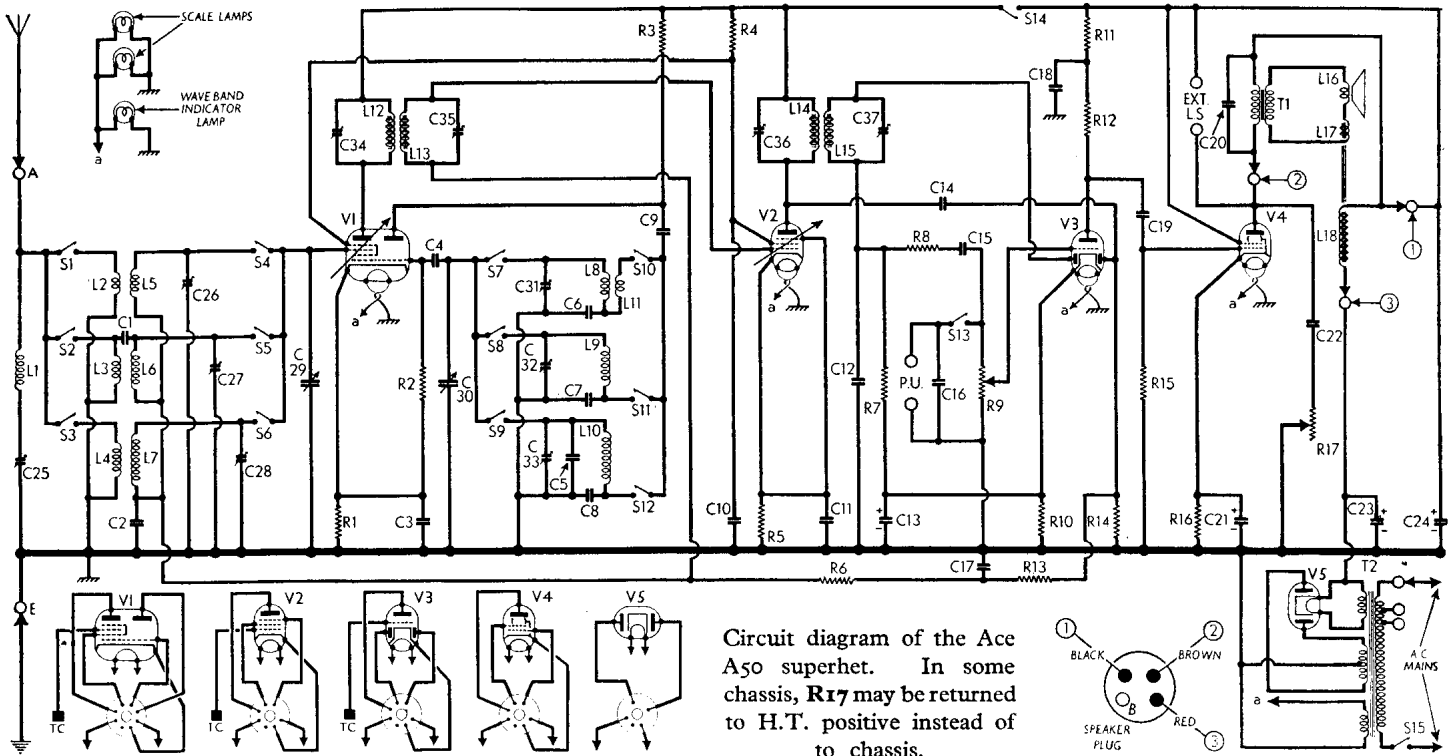
H.T. current is supplied by full-wave rectifying valve (V5, Tungram 5Z4G). Smoothing by speaker field L18 and dry electrolytic capacitors C23, C24.

COMPONENTS AND VALUES

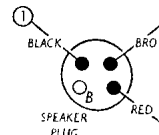
RESISTORS		Values (ohms)
R1	V1 fixed G.B. resistor	300
R2	V1 osc. C.G. resistor	50,000
R3	V1 osc. anode H.T. feed	50,000
R4	V1, V2 S.G.'s H.T. feed	50,000
R5	V2 fixed G.B. resistor	300
R6	A.V.C. line decoupling	220,000
R7	V3 signal diode load	1,000,000
R8	I.F. stopper	100,000
R9	Manual volume control	500,000
R10	V3 fixed G.B. resistor	3,000
R11	V3 anode decoupling	50,000
R12	V3 triode anode load	220,000
R13	A.V.C. line decoupling	1,000,000
R14	V3 A.V.C. diode load	1,000,000
R15	V4 C.G. resistor	220,000
R16	V4 fixed G.B. resistor	330
R17	Variable tone control	50,000

CAPACITORS		Values (µF)
C1	Aerial M.W. "top" coupling	Very low
C2	V1 hex. C.G. decoupling	0-1
C3	V1 cathode by-pass	0-1
C4	V1 osc. C.G. capacitor	0-0002
C5	Osc. L.W. fixed trimmer	0-00005
C6	Osc. circ. S.W. tracker	0-004
C7	Osc. circ. M.W. tracker	0-00045
C8	Osc. circ. L.W. tracker	0-000205
C9	V1 osc. anode coupling	0-0005
C10	V1, V2 S.G.'s decoupling	0-1
C11	V2 cathode by-pass	0-1
C12	I.F. by-pass	0-0001
C13*	V3 cathode by-pass	25-0
C14	V3 A.V.C. diode coupling	0-0001
C15	A.F. coupling to V3 triode	0-01
C16	Pick-up tone corrector	0-0001
C17	A.V.C. line decoupling	0-1
C18	V3 triode anode decoupling	0-1
C19	A.F. coupling to V4	0-01
C20	Fixed tone corrector	0-005
C21*	V4 cathode by-pass	25-0
C22	Part variable tone control	0-05
C23*	H.T. smoothing capacitor	8-0
C24*	tops	8-0
C25†	Aerial I.F. filter tuning	—
C26†	Aerial circ. S.W. trimmer	—
C27†	Aerial circ. M.W. trimmer	—
C28†	Aerial circ. L.W. trimmer	—
C29†	Aerial circuit tuning	—
C30†	Oscillator circuit tuning	—
C31†	Osc. circ. S.W. trimmer	—
C32†	Osc. circ. M.W. trimmer	—
C33†	Osc. circ. L.W. trimmer	—
C34†	1st I.F. trans. pri. tuning	—
C35†	1st I.F. trans. sec. tuning	—
C36†	2nd I.F. trans. pri. tuning	—
C37†	2nd I.F. trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Ace A50 superhet. In some chassis, R17 may be returned to H.T. positive instead of to chassis.



OTHER COMPONENTS

		Approx. Values (ohms)	
L1	Aerial I.F. filter coil ...	35-0	
L2	Aerial S.W. coupling coil...	1-8	
L3	Aerial M.W. coupling coil	10-0	
L4	Aerial L.W. coupling coil	35-0	
L5	Aerial S.W. tuning coil ...	0-05	
L6	Aerial M.W. tuning coil...	3-0	
L7	Aerial L.W. tuning coil...	23-0	
L8	Osc. S.W. tuning coil ...	0-05	
L9	Osc. M.W. tuning coil ...	3-0	
L10	Osc. L.W. tuning coil ...	7-0	
L11	Osc. S.W. reaction coil ...	0-3	
L12	1st I.F. trans. { Pri. ...	3-5	
L13		Sec. ...	3-5
L14	2nd I.F. trans. { Pri. ...	5-0	
L15		Sec. ...	5-0
L16	Speaker speech coil ...	2-4	
L17	Hum neutralising coil ...	0-2	
L18	Speaker field coil ...	2,000-0	
T1	Output trans. { Pri. ...	220-0	
		Sec. ...	0-25
T2	Mains { Heater, sec. ...	30-0	
		Rect. heat, sec. ...	0-05
		H.T. sec., total ...	0-1
S1-S14	Waveband switches	400-0	
S15	Mains switch, gauged R17	—	

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver. Voltages were measured on the 400 V scale of a model 7 Avometer, chassis being the negative connection.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 6K8G	280	1-0	72	2-5
	Oscillator			
V2 6K7G	84	3-0	72	1-0
	Signal generator			
V3 6Q7G	280	3-9	—	—
V4 6V6G	60	0-5	—	—
V5 5Z4G	272	38-5	282	1-6
	342†	—	—	—

† Each anode, A.C.

GENERAL NOTES

Switches.—S1-S14 are the waveband switches, ganged in a single rotary unit beneath the chassis. In the tuning assembly. The unit is indicated in our under-chassis view, and shown in detail in the diagram in col. 2, where it is drawn as seen from the rear of an inverted chassis.

The table (col. 2) gives the switch positions for the four control settings, starting from the fully anti-clockwise position of the control. A dash indicates open, and C, closed.

Coils.—The R.F. and oscillator coils are in four unshielded tubular units mounted in the

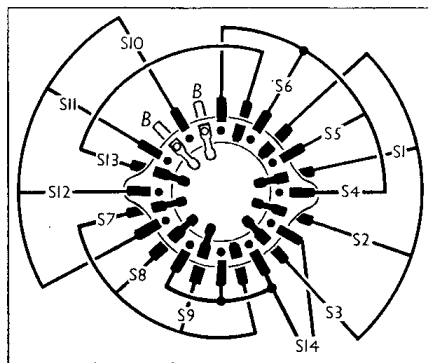
Plan view of the chassis. The four I.F. pre-set adjustments are indicated.

tuning assembly beneath the chassis. Instructions for removing and replacing the assembly follow below. **Removing tuning assembly.**—Unsolder the eleven leads connecting the assembly to the rest of the chassis;

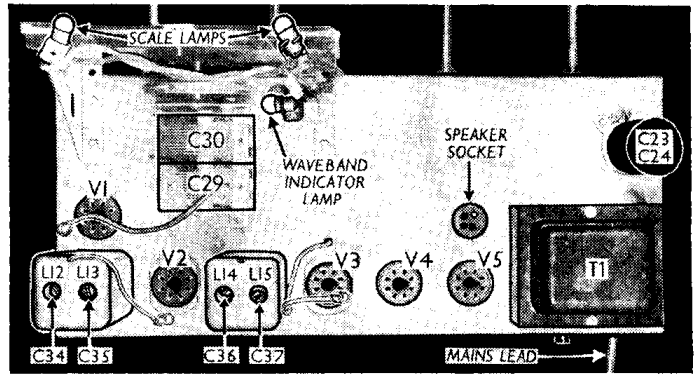
loosen the grub screw of the waveband indicator drive pulley and lift off the operating cord;

slide off the pulley and remove the nut (with

Switch Diagram and Table



Switch	S.W.	M.W.	L.W.	(Gram.)
S1	C	—	—	—
S2	—	C	—	—
S3	—	—	C	—
S4	C	—	—	—
S5	—	C	—	—
S6	—	—	C	—
S7	C	—	—	—
S8	—	C	—	—
S9	—	—	C	—
S10	C	—	—	—
S11	—	C	—	—
S12	—	—	C	—
S13	—	—	—	C
S14	C	C	C	—



large metal washer) securing the tuning assembly to the front chassis member, and then lift out the assembly.

When replacing, connect the leads as follows, numbering the six tags on the strip from left to right when viewed from the rear: 1, to C30; 2, to C29; 3, to pin 6 on V1; 4, to pin 5 on V1; 5, to pin 6 on V2; 6, to right-hand tag on L1;

the left-hand earthing tag goes to the earthing tag on the gang; connect the "live" pick-up socket to one tag of S13, and the "live" tag of the volume control to the other; connect pin 1 (H.T.+) of the speaker socket to one tag of S14, and the rear right-hand tag on the first I.F. transformer to the other.

Scale and Indicator Lamps.—These are three Osram M.E.S. type lamps, rated at 6.5 V, 0.3 A. They have small clear spherical bulbs.

External Speaker.—Two sockets are provided at the rear of the chassis for the connection of a high impedance (about 5,000 Ω) external speaker.

CIRCUIT ALIGNMENT

I.F. Stages.—Switch set to S.W. and turn volume control to maximum. Connect signal generator to control grid (top cap) of V2 and chassis, feed in a 465 kc/s (0.4516 m) signal, and adjust C36 and C37 for maximum output. Transfer generator lead to control grid (top cap) of V1, and adjust C34 and C35 for maximum output. Check settings of C36, C37.

R.F. and Oscillator Stages.—With the gang at maximum, the pointer should be vertical. Transfer signal generator leads to A and E sockets, via a suitable dummy aerial.

S.W.—With set switched to S.W., tune to 17.6 m on scale, feed in a 17.6 m (17 Mc/s) signal and adjust C31 for maximum output, selecting the peak involving the lesser trimmer capacitance. Then adjust C26, and check sensitivity and calibration at 50 m (6 Mc/s).

M.W.—Switch set to M.W., tune to 250 m on scale, feed in a 250 m (1,200 kc/s) signal, and adjust C32, then C27, for maximum output. Check sensitivity and calibration at 500 m (600 kc/s).

L.W.—Switch set to L.W., tune to 1,200 m on scale, feed in a 1,200 m (250 kc/s) signal, and adjust C33 and C28 for maximum output. Check sensitivity and calibration at 1,800 m (166.6 kc/s).

Under-chassis view. The tuning assembly is in the top right-hand corner, but the trimmer panel in it has been removed for clarity and is shown inset to the left of the assembly. A diagram of the S1-S14 switch unit appears in col. 2 above.

