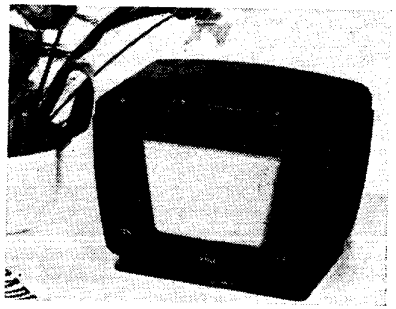
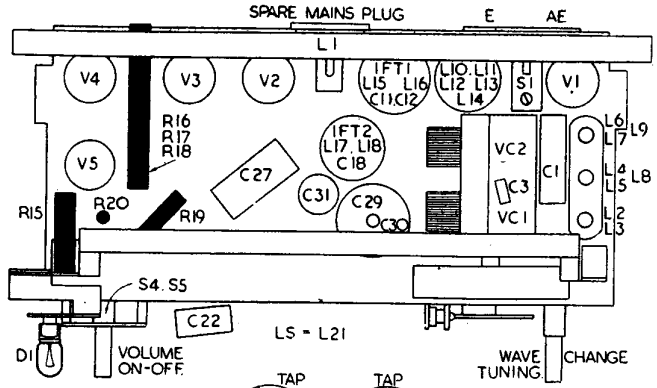
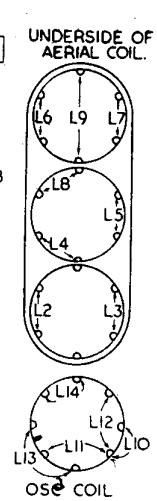
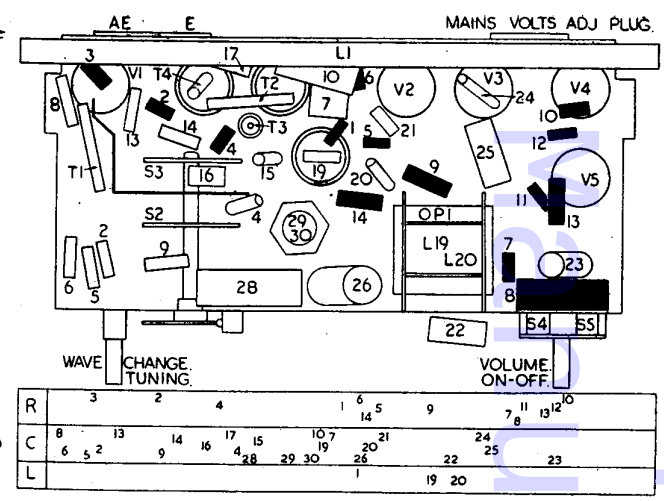
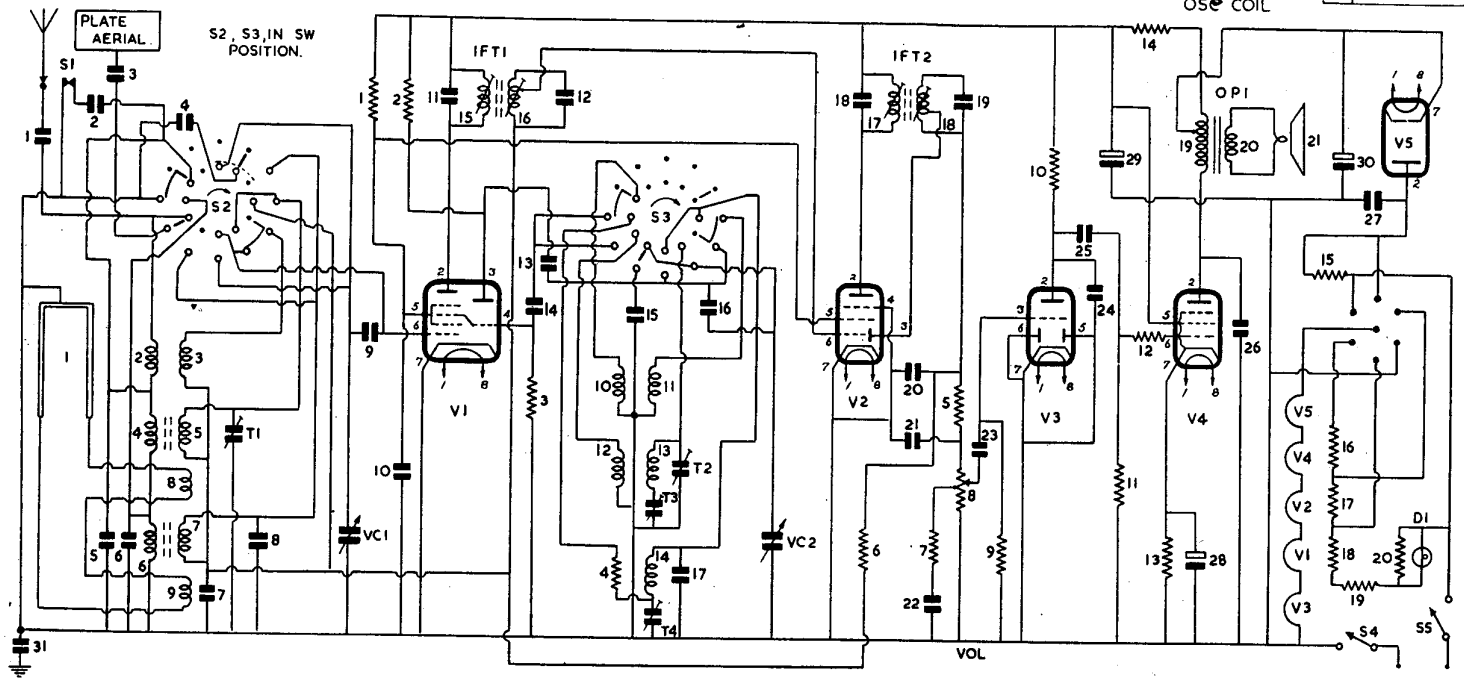
STELLA ST100U











Five-valve three-waveband transportable superhet with internal frame and plate aerials and sockets for external aerial and earth. SW range is bandspread on 25 and 31 metre bands. Suitable for 100-120, 200-250V AC-DC mains. Distributed by Stella Radio and Television Co., Ltd., Oxford House, 9-15, Oxford Street, London, W1.

CAPACITORS

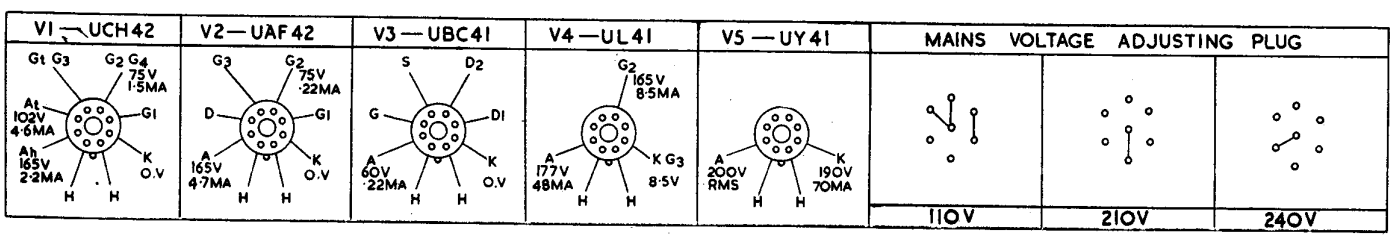
C	Capacity	Type
1	1000pF	Tubular 800V
2	100pF	Tubular C'mic
3	47pF	Tubular C'mic
4	120pF	Tubular C'mic
5	15pF	Tubular C'mic
6	15pF	Tubular C'mic
7	.047	Tubular 125V
8	15pF	Tubular C'mic
9	220pF	Tubular C'mic
10	.047	Tubular 400V
11	115pF	Silver Mica
12	115pF	Silver Mica
13	220pF	Tubular C'mic
14	82pF	Tubular C'mic
15	180pF	Tubular C'mic
16	190pF	Tubular C'mic
17	20pF	Tubular C'mic
18	102pF	Silver Mica
19	102pF	Silver Mica
20	82pF	Tubular C'mic
21	47pF	Tubular C'mic
22	.018	Tubular 125V
23	.0039	Tubular 400V
24	390pF	Tubular C'mic
25	.0068	Tubular 400V
26	.022	Tubular 800V
27	.022	Tubular 600V
28	100	Electrolytic 12V
29	50	Electrolytic } 300V
30		Electrolytic }
31	.0047	Tubular 800V

RESISTORS

R	Ohms	Watts
1	22K	½
2	22K	½
3	47K	½
4	12K	½
5	100K	½
6	2.7M	½
7	10K	½
8	500K Potentiometer Tapped 50	
9	10M	½
10	470K	½
11	820K	½
12	100K	½
13	150	½
14	1K	½
15	200	WW6W
16	150 }	WW5.3W
17	150 }	WW5.3W
18	530 }	WW5.3W
19	220 Thermistor	
20	200–280 Thermistor	

INDUCTORS

L	Ohms
1	Very low
2	1
3	Very low
4	45
5	4.5
6	115
7	54
8	Very low
9	Very low
10	.5
11	Very low
12	2.25
13	6.5
14	19.5
15	7
16	7
17	10.5
18	10.5
19	450 total
20	.75
21	3.25



STELLA ST100U—*continued*

AERIAL. A frame aerial L1 consisting of an open-ended metal frame attached by insulated bolts to rear section of chassis is provided for MW, LW reception. The frame, which is earthed to chassis at one point, is coupled by L8, L9 to the MW and LW tuned coils L5, L7 respectively.

For SW reception the metal shield of dial cursor assembly is used as a plate aerial, the signal being fed through isolating capacitor C3 and contacts on S2 to SW aerial coupling coil L2. Sockets are provided for an external aerial and earth, the aerial being fed through isolating capacitor C1 to top of series connected aerial coupling coils L2 (SW), L4 (MW), L6 (LW).

S1, which is operated by insertion of aerial plug into socket, disconnects C2 from chassis to maintain correct aerial input loading. When S2 is in SW position L4, L6, C5 are shorted down to chassis. Earth socket is isolated from chassis by C31.

The grid coils L3 (SW), L5 (MW), L7 (LW) are switched by S2 to gl of triode-hexode frequency-changer V1. On SW position of S2 the aerial tuning capacitor VC1 is shunted by C4 and coupled through C9 to L3. On MW band C9 is shorted out and C4 together with L7, C8 (LW) are shorted down to AVC line, thus leaving L5 (MW) tuned by VC1 and trimmed by T1. On LW band L7 trimmed by C8 is tuned by VC1, L5 (MW) being short circuited to AVC line and C9 remaining shorted.

AVC decoupled by R6, C7 is fed through the tuned coils to gl of V1. Cathode is at chassis potential. Screen (g2, g4) voltage is obtained from R1 and decoupled by C10. Primary L15, C11 of IFT1 is in the hexode-anode circuit of V1.

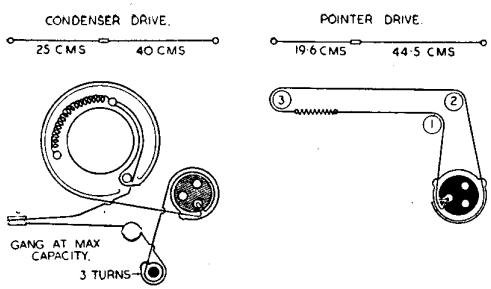
Oscillator is connected in a tuned anode shunt fed circuit. The anode coils L11 (SW), L13 (MW), L14 (LW) are switched by S3 through C13 to oscillator anode of V1 of which R2 is load resistor. On SW range the oscillator tuning capacitor VC2 is shunted by C15 and coupled through C16 to L11. It should be noted that the SW band is bandspread by reducing the tuning range of the oscillator. At the low frequency end of the band the oscillator frequency is higher than the signal frequency by the amount of the IF, whilst at the high frequency end of the band the oscillator frequency is less than the signal frequency by the amount of IF.

The range of aerial and oscillator tuning is reduced to the required value by the shunt and series capacitors which are switched in by S2, S3, to VC1 and VC2. The cross over frequency occurs where reception is not needed.

On MW range, L13 trimmed by T2 and padded by T3 is tuned by VC2, C16 being shorted out and C15 disconnected from across VC2. The LW tuned circuit is placed inoperative by having L11 (SW) shunted across it.

On LW range L14, trimmed by C17 and padded by T4 is tuned by VC2. Grid reaction voltages are obtained inductively from L10 (SW), L12 (MW), and capacitively from across T4 (LW) and are switched by S3 through C14 to oscillator grid of V1. R4 is LW limiter resistor. Automatic bias for grid is developed on C14 with R3 as leak.

IF amplifier operates at 470kc/s. Secondary L16, C12 of IFT1 feeds signal, and AVC voltages decoupled by R6, C7 to gl of IF amplifier V2. Cathode and suppressor are strapped and connected to chassis. Screen voltage is obtained from R1 decoupled by C10. Primary L17, C18 of IFT2 is in the anode circuit.



Signal rectifier. Secondary L18, C19 of IFT2 feeds signal to diode anode of V2. R8 the volume control is the diode load and IF filtering is given by R5, C20, C21.

Tone control is given by R7, C22 which are connected between 50K ohms tapping on R8 and chassis. The degree of top cut progressively increases as the volume is reduced.

AVC. The DC component of the rectified signal is decoupled by R6, C7 and fed to grids (gl) of V1, V2.

AF amplifier. C23 feeds signal from volume control R8 to grid of triode section of V3. Cathode is at chassis potential and bias for grid is developed on C23 with R9 as leak resistor. The diodes of V3 are not used and are taken to chassis. R10 is anode load and C24 is an RF bypass capacitor.

Output stage. C25 feeds signal from anode of V3 through stopper R12 to pentode output valve V4. R11 is grid resistor and cathode bias is provided by R13 decoupled by C28. Screen voltage is obtained from R14 decoupled by C29. Primary L19 of OP1, the output matching transformer, is in the anode circuit with fixed tone correction by C26. Secondary L20 feeds signal to a 5in. PM speaker L21.

HT is provided by an indirectly-heated half-wave rectifier V5. On 100-120V mains its anode voltage is obtained direct from input but on 200-250V it is obtained from input through dropper and limiter R15. Smoothing is given by R14 and section of primary L19 of OP1 together with C29, C30. Ripple current rating of C30 should be 150mA. Modulation hum is eliminated by C27.

Heaters of V1 to V5 are series connected and on 230-250V supplies obtain their current from the input mains through dropper resistors R16 to R20. When the mains voltage adjusting plug is placed in 200-220V position then R16, R17 are shorted out. With the special separate 110V plug inserted heaters are fed direct from the input mains and the dial light which is shunted across R20 is energised from the mains through R17, R18, R19.

S4, S5 which are ganged to volume control spindle from the ON/OFF switch.

Note. The theoretical circuit waveband switching also represents the actual layout of the switch in the receiver. Switch sections are drawn as viewed from front of chassis. Outer ring of circles are stator contacts on face, whilst inner ring are those on rear of switch wafer. Dots indicate unused or vacant stator contacts. Rotor contacts shown as full lines appear on face and those in dotted line at rear. Rotor contacts shown by a line connecting inner and outer rings represent contacts which pass through rotor and operate on both sides of wafer.

Chassis removal. Undo and remove grub screws in the two front control knobs and remove knobs. Remove combined rear and base cover—held by two screws at back and two under bottom. Unsolder plate aerial lead from C3 mounted on paxolin strip just above speaker and also LS leads from tags on OP1. Pull out the wavechange knob as far as it will go. Loosen dial cursor clamping screw and slip cord from under clamp plate. Undo and remove screw at side of each pulley support and the two screws at front of base of cabinet. Chassis can now be withdrawn from cabinet.

TRIMMING INSTRUCTIONS

Apply signal as stated below	Tune receiver to	Trim in order stated for maximum output
(1) Remove rear and baseplate of receiver and also the screening shield over aerial and oscillator section of chassis.		
(2) Determine tuning frequency of IFT2, which is factory preset, by applying sig/gen signal to G1 of V2 via 32000pF capacitor.		
(3) Above frequency to G1 of V1 via .032 mF	—	Core L15 (bot.) Core L16 (top)
(4) With gang at minimum capacity setting check to see that pointer coincides with "M" of metres on left hand side of tuning scale.		
(5) SW range is preset and no trimming is possible.		
(6) 1.55mc/s to AE socket via dummy aerial	193.5 metres	T2, T1
(7) 575kc/s as above	521.7 metres	T3. Check (6) and (7)
(8) 160kc/s as above	1875 metres	T4.

NOTE—With the exception of T3 the trimmers are of the "wound wire on tube type." When adjusting these it is advisable not to cut off surplus wire until trimming is completed in case capacity of trimmer needs to be increased after initial adjustment.

CAPACITOR DRIVE

Make up cord as indicated. Turn gang to max capacitance, and turn brass drum until spring on pointer drive cord is at left-hand end of its travel. The vacant slot in drum will then be at about 5 o'clock. Insert collar on cord into this slot from back of drum (it will be necessary to rotate drum anti-clockwise about ¼ turn), leading with short end of cord. Lead short end to left, across to and ¾ turn round capacitor drum. Pass it round stud on drum, hook it to spring, and hook spring to its anchorage stud. Take long end of cord and pass it 1½ turns anti-clockwise round drum, winding from front to back of drum. Pass cord down to tuning spindle and wind on 2½ turns, anti-clockwise, winding from front to back. Pass cord up and anti-clockwise over pulley 4, across to and round pulley 5 on chassis as shown and thence back to capacitor drum. Pass cord anti-clockwise round drum, over stud, and hook end on to spring.

POINTER DRIVE

Make up cable to dimensions shown, pinching small collar firmly on to cord at position indicated, using pliers.

Turn gang to max capacitance, at which position drum will be in position shown (viewed from the front of chassis). Insert collar into this hole, leading with short end of cord. Pass short end of cord up to and anti-clockwise over pulley 1. Hook spring to end of cord and allow it to hang loose, or attach it to any convenient point. Take longer end of cord and pass it 1½ turns anti-clockwise round drum, up to, and anti-clockwise over pulley 2, across and anti-clockwise round pulley 3. Hook end of cord on to free end of spring.

SERVICE CASEBOOK

AMPLION CONVETTE

A CONVETTE BC1 was fitted to a Cossor 469 all-dry portable. Output was distorted with little whistles when tuning from one station to another.

The voltage selector of Convette was set to 250V. A check was made and output voltage was found to be HT 100 and LT 1.6 on load.

A resistance of 20,000 ohms across HT sockets, and one of 50 ohms across LT sockets, reduced the voltages to 90 and 1.4.

The radio has been working perfectly for a year. —W. LEAVER, Bishop Auckland.

EKCO A26

AN Ekco A26 came in with the complaint of annoying cracklings. On checking I found the valves and switches OK. HT also OK, but when the frequency changer valve is out of socket the noise disappears.

I found the primary coil of first IF transformer to be partially open circuited inwardly and after mending the set becomes OK.—S. O. OSHOKOYA, Nigeria.

KB ARG21

SYMPTONS :—Set dead, after erratic operation of late. In preliminary tests, response from V3 grid (TC) appeared healthy and it was noticed that any movement of V2 produced clicks with momentary "mush."

Checking of supplies at the holder revealed pin 2 (fil +ve) not connecting to socket, and remedying this brought the stage operative but—alas—not the response required from sig. grid of V1, without vigorous operating of the W/change switch.

At this point it was noticed that LT +ve was a mere 1.1V on heater positive line, and before substituting new DK32 or checking oscillator section, R12 was found to be 3.9 ohm instead of 3 ohm, thus dropping almost 1 volt ; 10 ohms in parallel with this wire wound offender brought fully charged accumulator supply to 1.4V on heaters—and joy at oscillator grid leak of a new DK32.

Even yet the SF stages appeared to lack punch and satisfactory alignment was delayed until discovery of faulty condenser in series with SW inductive coupling. A .005mF by design, this tubular was almost .02 mF but also contained a 30K path and was shorting out the signal grid decoupling as well as upsetting calibration.—E. K. ELPHEE, Doncaster.

MURPHY V200, V200C

A FREQUENT fault on Murphy V200 and V200C receivers is frame amplitude cramping after a period of running. In some cases the picture height is reduced to an inch and in each case has been traced to the .25mF coupling capacitor going partially dis.—due to expansion by heat, I believe. This reduces the pulse amplitude reaching the 6P25 frame amplifier valve.

Switching off and allowing to cool for five minutes or so brings set back to normal height for possibly half an hour and then the trouble appears again.—G. W. APPLEYARD, Withernsea.