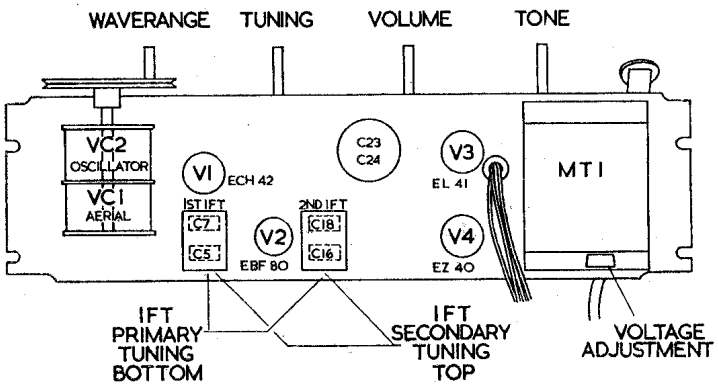
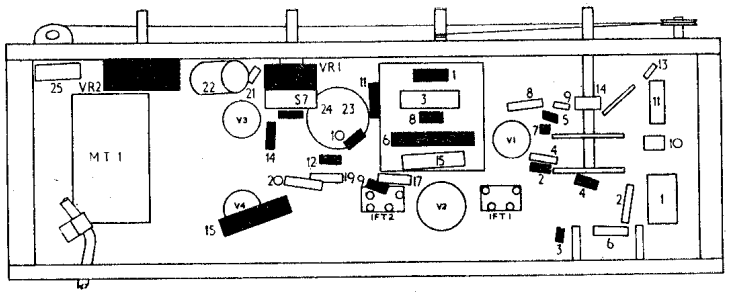
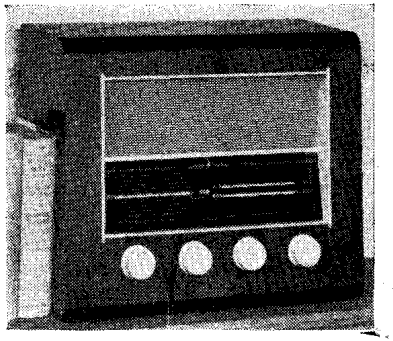






For text see page 19

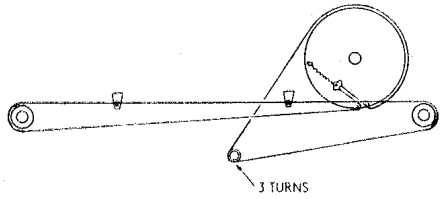
Inductors—

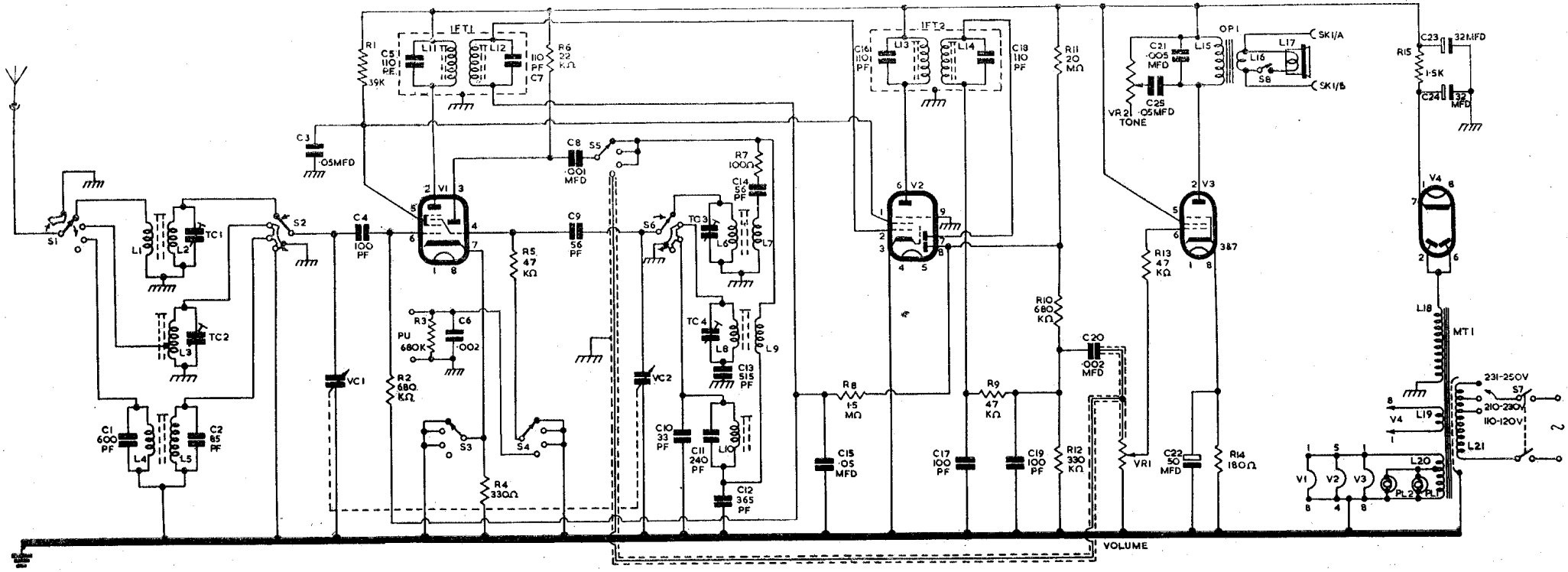
L		Ohms	L		Ohms	L		Ohms
1	...	0.5	8	...	1	15	...	410
2	...	Very low	9	...	5	16	...	Very low
3	...	7	10	...	5	17	...	LS
4	...	50	11	...	12.5	18	...	140
5	...	20	12	...	12.5	19	...	0.9
6	...	Very low	13	...	12.5	20	...	0.4
7	...	0.5	14	...	12.5	21	...	45

Resistors—
Wirewound 15W: R17
Wirewound 6W: R15
Wirewound 4W: R18 19
Carbon 1W: R6
Carbon ½W: R1 11 14
Remainder all ¼W carbon
In DAC41 R6 is Carbon ½W

Potentiometers—
Carbon: VR2
Carbon with DPST switch: VR1

Capacitors—
Silvered ceramic: C4 9 14
Silvered mica: C1 2 5 7 10 11 12 13 16 18
Moulded mica: C17, 19
Paper tub 1,000V: C25 26
Paper tub 750V: C27-29
Paper tub 500V: C6 8 20 21
Paper tub 350V: C3 15 25 30
Electrolytic 350V: C23 24
Electrolytic 12V: C22





being affected and then turn back slightly to give optimum position.

Dot pattern. A dot pattern caused by cross modulation between sound and vision signals can be eliminated by L4. Coil should be tuned until the interference pattern disappears.

ADJUSTMENTS

Chassis removal. Remove back and base covers. Pull off front control knobs. If the inner concentric knobs do not pull off easily then outer and inner knobs may be removed together by sliding edge of a duster or piece of cloth behind outer knob flange and overlapping the corners. If duster is gathered up a steady pull can be exerted on knobs which should then come off spindle without damage. Remove three screws securing aerial input panel to rear corner of cabinet. Unplug speaker leads from sockets on top of OP1 located on underside of chassis. Chassis can then be withdrawn.

CRT replacement. Short anode to chassis. Remove base connector and unplug anode cap. Slacken ion trap clamp screw and slide off ion trap. Undo and remove front clamp screw and remove clamp band. Withdraw tube, being very careful as neck passes through focus magnet and deflector coils.

Ion trap magnet adjustment. When replacing ion trap magnet check that arrow is pointing to base of tube. Place brilliance at zero. Allow receiver to warm up. Advance brilliance to mid position. Rotate and move ion trap on neck of tube until maximum brightness is obtained. Small movement both along and around tube can be made without change in brightness. The optimum setting is mid point.

Fitting extra coils to tuner. The tuner is supplied with coils for one channel only in Band 1, the channel for the area in which the receiver is sold. On Band 3, coils are fitted in Channel 8 and 9 positions.

When ordering coil assemblies it is essential that the serial number of the receiver be quoted together with type of tuner unit. Type B unit coils have 6 and 5 contact formers.

Type P unit, which is identified by red spot on turret base cover, uses coil formers with four contact studs.

To change or add coil assemblies. Remove base cover of cabinet and pull off cover of tuner unit. Rotate channel selector switch to a setting three positions clockwise past the channel required. This locates the turret with appropriate coil position at bottom, enabling the coils to clip in easily. Replace cover on tuner unit. Set channel selector switch to channel of coils fitted.

Remove push-on selector and fine tuner knobs. Place fine tuner spindle in mid position to give access to oscillator trimmer at right-hand side. Adjust trimmer, with a non-metallic trimming tool, for maximum sound. As one of the units employs hollow tuning slugs it is important that the correct size trimming tool be used. A suitable tool can be constructed from a No. 7 standard knitting needle. Only very light pressure should be applied to core to avoid damaging thread.

MODIFICATIONS

Tuner. Receivers are fitted with either B or P type tuners, the latter having a red spot on turret base cover. Circuits of both units are given overleaf. Layout diagrams are of a B type.

Circuit of earlier releases of type B unit differ from that overleaf as follows:

R103 R104 deleted. A 22K resistor connected between grid-cathode V7B and grid connected through 47K to a 95V HT line provided on main chassis (yellow lead input).

C120 C121 deleted. Bottom L101B connected to junction C101 (trimmer) and C104.

R111 deleted. Screen (g2) V6B connected direct to 180V HT line (Red lead input).

Top of R108 connected to 95V HT line instead of to 180V HT line. R108 changed to 4.7K.

On latest units R108, instead of being connected direct to anode V6A, is taken to bottom L104, thus placing L104 in series with anode circuit.

Main chassis. On earlier releases C53 formed by a short length of flat twin PVC flex cut to length of 1½in. giving a capacity of 3pF. C69 originally 22pF instead of 47pF as shown. R92 may be found to be 150K. R96 changed to 560 ohms. On some receivers C73 may be 560pF. Also R95 may be disconnected from chassis and connected to junction R74 R75 to provide negative bias for grid V12.

ALIGNMENT

Apparatus required. Accurately calibrated signal-generator covering 35-40mc/s, high-resistance voltmeter or 100 microammeter with 100K resistance in series, non-metallic trimming tool, AC output meter, 470 ohm damping resistor.

Connect AC output meter across secondary L27 of OP1, and the high resistance voltmeter between anode and chassis of video amplifier V2. Keep signal generator output lead short as possible and preferably solder live side of output lead to injection point.

1. Inject 35.75mc/s to g1 of V3. Damp L21 and tune L20 for maximum vision output. Damp L20, tune L21 for maximum vision output.
2. Inject 35.75mc/s to g1 of V4. Damp L19 and tune L18 for maximum vision output. Damp L18, tune L19 for maximum vision output.
3. Inject 35.75mc/s to g1 of V10. Damp L17 and tune L16 for maximum vision output. Damp L16, tune L17 for maximum vision output.
4. Repeat operations 1 to 3 until no improvement is obtained.
5. Inject 38mc/s to g1 of V10 and adjust L1 for minimum vision output.
6. Adjust cores L22 L23 L24 L25 for maximum sound output. Adjustment to turret unit.

TURRET ADJUSTMENT

1. Inject sound frequency of channel to be adjusted into aerial socket.
2. Tune L104 L105 for maximum sound output.
3. Change signal-generator to vision frequency of above channel and adjust L15 on main chassis for maximum vision output.

Note. No other coil adjusters or trimmers on the tuner unit should be altered.

CIRCUIT DETAILS

AGC. This is obtained from negative voltage produced at grid of sync separator V11A. The voltage is applied through decoupling network R61 C51 R60 C50 and fed to grids of V10 (common IF amplifier) V4 (first vision IF). Negative AGC voltage is offset by positive potential from contrast control R57. Variation of R57 alters DC level of AGC line voltage and hence controls contrast of picture. AGC line is shunted by diode V5B which, in the event of no signal input, conducts due to positive anode bias from R57 and thereby clamps AGC down to chassis and preventing grids V10 V4 becoming positive.

HT. It should be noted that in order to provide fully stabilised negative bias supply for grids V17 V2 the main choke-capacity smoothing circuit is included in negative side of circuit in between neutral mains input and chassis. Remainder of receiver follows normal practice and requires no detailed explanation.

BUSH AC41, DAC41 *Diagrams, see overleaf*

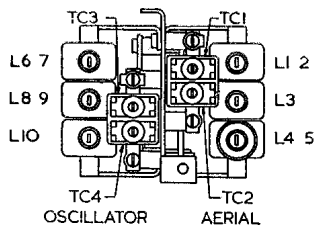
FOUR-valve, three-wave-band table model receiver. AC41 is suitable for 110-120V and 210-250V. AC mains only, model DAC41 for 210-250V AC or DC supplies.

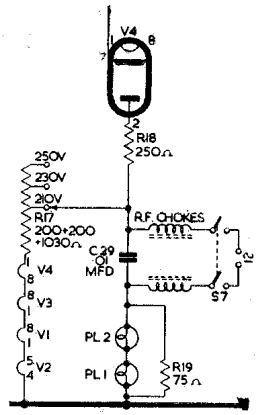
Sets are manufactured by Bush Radio, Ltd., Power Road, Chiswick, London.

Receivers differ in power supply arrangements, main portion of circuit being substantially the same for each model.

Circuit shown is for AC41—DAC41 variations will be found in text and separate power section diagram. AC41 employs Mullard "E" series valves for AC operation. DAC41 uses Mullard "U" series or AC/DC operation.

Below, trimmer layout and right, the half-wave power supply section of the DAC41 universal model





Receiver is a superhet employing ECH42 (UCH42) triode-hexode as mixer, V1; EBF80(UBF80) is IF amplifier, second detector and AVC, V2; EL41(UL41) is output pentode, V3; EZ40(UY41) is indirectly-heated half-wave rectifier.

Waveband coverage: 1000-2000 metres LW, 176-575 metres MW, 14.3-35.5 metres SW. IF is 470kc/s.

Aerial on LW and SW is transformer coupled to signal grid of V1 hexode portion. On MW signal is fed via tapping on MW coil L3.

On AC/DC models DAC41 1M static drain resistor is fitted between aerial and earth, and two isolating capacitors, .001mF and .01mF, are fitted between aerial and S1, and between earth socket and chassis respectively.

Local oscillator is tuned grid type with anode reaction. R7 is introduced in series with C14, L7 on SW to stabilize oscillator. Fixed padders C13, C12 are incorporated on MW and LW.

AVC bias is derived from top of signal diode load resistor R12 and fed to V1, V2 via R10, R8, R2, decoupled by C15. Second diode of V2 acts as delay diode, diode anode being biased positively by R11. Until signal reaches required level diode conducts, acting as a clamp diode.

Volume is controlled by VR1, AF signal being fed from slider to grid of V3 via grid stopper R13.

HT is provided by indirectly-heated half-wave rectifier V4. Model AC41 is connected as shown on main circuit, DAC41 as shown on separate diagrams. C24 is rated for 125mA ripple current in both cases

Pickup connections are provided, input being connected between grid of V1 triode section and chassis. C27 C28 are fitted as isolating capacitors in each side. R3, C6 are compensating network across input. When switches S4 S5 S6 are in gram position, triode section operates as AF amplifier, signal being fed from gram contact of S5 to top of volume control VR1.

DISMANTLING

Set tuning control so that pointers are approximately in mid-position on tuning scale, then lift pointer drivers off their respective carriages. Unsolder speaker connection to output transformer and unscrew pilot lamp holders from rear of scale reflector plate. Remove four control knobs from front of receiver and unscrew four 4BA bolts securing chassis to cabinet. Finally, withdraw chassis from cabinet.

CHASSIS DIFFERENCES

Apart from circuit changes already noted certain resistances are of different value in DAC41 models:

R1 becomes 27K, R6 becomes 10K, R15 is 1K. In addition grid stopper R20, 2.2K, is incorporated in grid circuit of V2.

VALVE VOLTAGE READINGS

	Anode	*Screen*	*Cathode*
ECH42 (hex.) ...	230	60	3.3 on gram.
,, (tri.) ...	120	—	
UCH42 (hex.) ...	140	50	2.5 on gram.
,, (tri.) ...	100	—	
EBF80	230	60	—
UBF80	140	50	—
EL41	220	230	6.8
UL41	130	140	7.7
EZ40	300AC	—	283
UY41	210AC	—	195

ALIGNMENT

Equipment required: Signal generator covering 150kc/s to 21mc/s, output meter to read up to 1W. Standard dummy aerial comprising 200pF capacitor for LW and MW, and 400-ohm non-inductive resistor for SW.

With plates of gang fully meshed dial pointer should point to datum line printed on auxiliary calibration scale. On IF alignment an isolating .01mF capacitor is required in signal generator output lead to prevent AVC line being short circuited.

Apply signal as stated below	*Tune receiver to*	*Trim in order stated for maximum output*
470kc/s pin 2, V2	MW 300m.	L14 L13
470kc/s pin 6, V1	As above ...	L12 L11
214kc/s to AE via dummy aerial	LW 1,400m.	L10 L5
600kc/s as above...	MW 500m.	L8 L3
1,500kc/s as above	MW 200m.	TC4 TC2
10mc/s as above ...	SW 30m. ...	L6 L2
20mc/s as above ...	SW 15m. ...	TC3 TC1

Repeat above as necessary for optimum alignment.