

BURNDEPT 281 CONSOLE EIGHT

CIRCUIT.—The aerial input is fed to the grid of V1, a pentode operating as an H.F. amplifier, by transformer coils on all wavebands, but by an additional series condenser on Band 2.

V1 is transformer coupled to V2, a triode hexode frequency changer. Grid stabiliser resistances are fitted in the top grid connecting caps to V1 and V2, and heater R.F. by-pass condensers are connected between the heaters of V2 and chassis line.

The signal, converted to the I.F., passes by a transformer tuned to 473 kc. to V3, another H.F. pentode. Coupling to V4, a double-diode valve, is effected by a coupling condenser C21. V4 is the A.V.C. valve controlling V1, V2 and V3 by means of bias potentials fed to each of the valves through decoupling circuits.

V5, another double-diode valve, and the demodulator, is fed from a tapping on the second I.F. transformer. The coupling arrangements to the following valve include a gram-radio switch and a volume control.

V5 is an H.F. pentode operating as an L.F. amplifier. A noise-suppression circuit controlled by a switch enables interstation quiet tuning to be obtained.

V6 is resistance capacity coupled to V7, a 6B5 double-triode valve. The cathode of the input triode is internally connected to the grid of the output triode, and the anode of the input triode is connected to the H.T. line. The anode of the output triode has the speaker transformer connected in circuit. A tone control circuit consisting of a variable resistance and condenser is connected in series between the anode of the output triode and chassis.

Mains equipment consists of a transformer, a full-wave rectifying valve V8, electro-smoothing condensers and a smoothing choke (the speaker field coil).

Chassis Removal.—Remove the back of

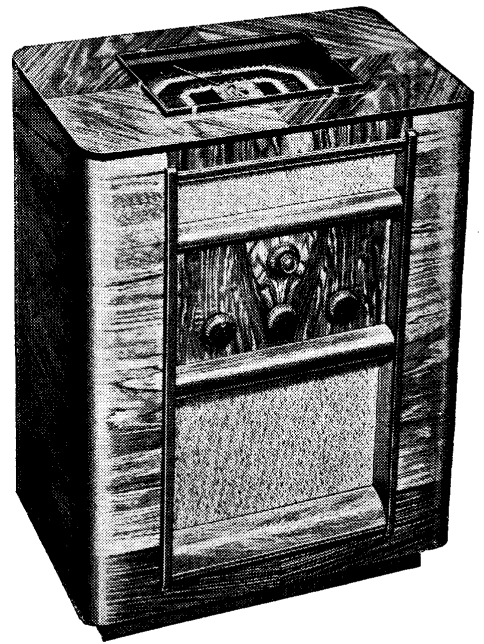
the cabinet, the five control knobs from the front and the tone control knob from the side. The tone control will also have to be removed.

Take out the six chassis securing bolts and washers. Remove the two grub screws securing the pointer from the tuning drum, and the two bolts from the spacing pillars, and detach the drum together with cables still attached.

Next detach all dial illuminating and waveband indicating lights from their mountings, remove the two clips securing the dial light cable and also the connections to the two-pin mains plug, afterwards pulling mains lead through the hole and reassembling the plug.

After the leads to the speaker have been unsoldered, the chassis may be completely withdrawn from the cabinet. The colours of the four leads to the speaker panel are (from top to bottom) red (No. 5), blue, green, and the black lead to the last two tags.

When replacing chassis, the various pilot bulbs are placed on the mountings



The 281 by Burndept, Ltd., has this distinctive console cabinet and employs an eight-valve four-band chassis.

VALVE READINGS

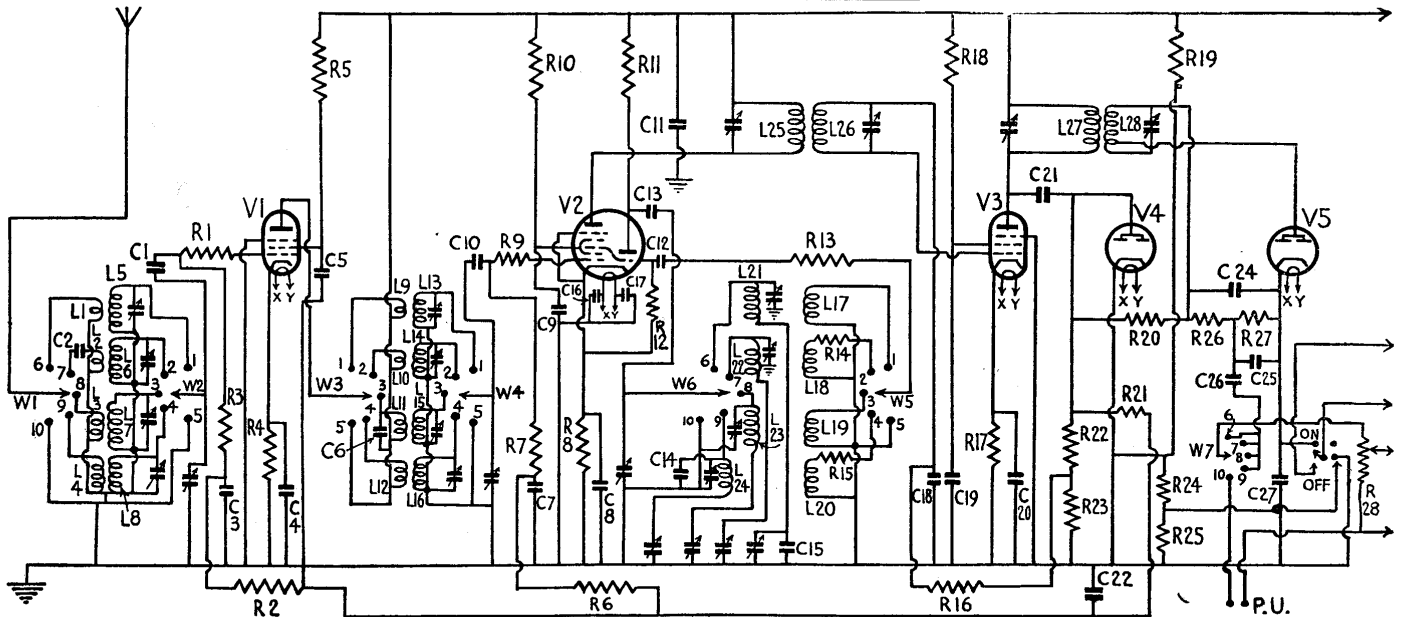
No signal. Volume maximum. L.W. min. cap 200 volt. A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	AC/VP2 (7) ..	Anode .. 230 Screen .. 170	230 170	7.5 2
2	AC/TH1 (7) ..	Anode .. 230 Screen .. 70 Osc.anode 100	230 70 100	1.8 5.8 3.8
3	AC/VP2 (7) ..	Anode .. 230 Screen .. 170	230 170	8.5 2
4	V914 (5) ..	Diodes ..	—	—
5	V914 (5) ..	Diodes ..	—	—
6	AC/SP1 (7) ..	Anode .. 120 Screen .. 155	120 155	3 3
7	6B5 (6) ..	Output anode.	258	34
8	R3 (4) ..	Heater ..	372	—

according to the length of the leads, and no trouble should be experienced. The pointer should be adjusted by tuning the receiver to a known station or signal from a service oscillator, turning the pointer to correspond with the wavelength or name calibration, and locking the pointer clamping grub screws.

If retrimming of the signal circuits is contemplated, the four wood screws securing the wavelength dial assembly must be removed. Then the receiver can be aligned, using the dial with Bowden control wires still connected.

Special Notes.—To obtain access to the tuning coils, switch contacts and trimmers underneath the chassis, the 22 screws



securing the metal screening box must be removed. The tone control R37 is mounted on the side of the cabinet.

Sockets are provided at the rear of the chassis for connecting a pick-up.

A pair of terminals on the speaker panel enable a low-impedance permanent-magnet speaker to be operated.

There are five waveband indicating lights in the coloured panels. They are mounted in screw-in holders clamped to supports at various positions behind the dial. They are rated at 6 volts .2 amp., and have M.E.S. bases.

Two wavelength dial illuminating lights

(Continued in next column.)

CONDENSERS

C.	Purpose.	Mfcls.
1	V1 grid isolating ..	.0001
2	B2 aerial coupling ..	.0001
3	V1 A.V.C. decoupling ..	.1
4	V1 cathode bias shunt ..	.1
5	V1 screen decoupling ..	.1
6	M.W. H.F. fixed trimmer ..	.0001
7	V2 A.V.C. decoupling ..	.1
8	V2 cathode bias shunt ..	.1
9	V2 screen decoupling ..	.1
10	V2 grid isolating ..	.00004
11	H.T. line decoupling ..	.5
12	Osc. grid ..	.0002
13	Osc. anode decoupling ..	.0001
14	L.W. osc. fixed trimmer ..	.00004
15	B1 oscillator fixed padder ..	.006
16	V2 heater by-pass ..	.01
17	V2 heater by-pass ..	.01
18	V3 A.V.C. decoupling ..	.1
19	V3 screen decoupling ..	.1
20	V3 cathode bias shunt ..	.1
21	V4 A.V.C. diode coupling ..	.0001
22	A.V.C. line decoupling ..	.01
23	V4 cathode bias shunt ..	.1
24	H.F. by-pass ..	.0001
25	H.F. by-pass ..	.0001
26	L.F. coupling ..	.05
27	Suppression bias shunt ..	.01
28	V6 cathode bias shunt (part) ..	50
29	V6 cathode bias shunt (part) ..	25
30	V6 anode shunt ..	.0005
31	Suppressor grid decoupling ..	.03
32	V6 anode decoupling ..	2
33	L.F. coupling ..	.05
34	Tone compensator ..	.001
35	H.T. smoothing ..	.16
36	H.T. smoothing ..	.8
37	Tone control ..	.05
38	V6 screen decoupling ..	2

RESISTANCES

R.	Purpose.	Ohms.
1	V1 grid stabiliser ..	50
2	V1 A.V.C. decoupling ..	500,000
3	V1 A.V.C. feed ..	250,000
4	V1 cathode bias ..	200
5	V1 screen decoupling ..	20,000
6	V2 A.V.C. decoupling ..	500,000
7	V2 A.V.C. feed ..	250,000
8	V2 cathode bias ..	200
9	V2 grid stabiliser ..	50
10	V2 screen decoupling ..	30,000
11	Osc. anode load ..	30,000
12	Osc. grid leak ..	50,000
13	Regeneration modifier ..	100
14	B2 regeneration modifier ..	500
15	L.W. regeneration modifier ..	500
16	V3 A.V.C. decoupling ..	500,000
17	V3 cathode bias ..	200
18	V3 screen decoupling ..	20,000
19	Suppression potr. (part) ..	50,000
20	V4, V5 diodes link ..	1 meg.
21	A.V.C. line decoupling ..	250,000
22	V4 diode load (part) ..	750,000
23	V4 diode load (part) ..	250,000
24	Suppression potr. (part) ..	1,500
25	Suppression potr. (part) ..	2,500
26	V5 diode load (part) ..	500,000
27	V5 diode load (part) ..	100,000
28	Volume control ..	500,000
29	V6 cathode bias (part) ..	2,500
30	V6 cathode bias (part) ..	400
31	Suppression grid resistance ..	500,000
32	V6 anode load ..	20,000
33	V6 anode decoupling ..	10,000
34	V6 screen decoupling ..	20,000
35	H.T. line decoupling ..	1,000
36	V7 grid leak ..	250,000
37	Tone control ..	50,000

Burddept 281 on Test

MODEL CN281.— Console for A.C. mains, 200-260 volts, 40-100 cycles. Price, 23 gns.

DESCRIPTION.—Seven-valve, plus rectifier, four-band superhet console.

FEATURES.—Console cabinet, with large wavelength scale on top of cabinet. Calibration in metres and station names. Two-speed tuning. Wave selection switch operates illuminated indicating panels on scale. Combined volume control and master switch. Switch for inter-station noise suppression. Sockets for pick-up and low-impedance speaker. Self-contained aerial.

LOADING.—95 watts.

Sensitivity and Selectivity

SHORT WAVES (13.5-51 and 50-172 metres).—Excellent gain and selectivity. Very easy handling. Gain well maintained.

MEDIUM WAVES (170-570 metres).—Excellent all-round performance, with local stations spread on adjacent channels only. Well-maintained gain with a good background.

LONG WAVES (750-2,100 metres).—Very good gain and selectivity. Very slight overlap on Deutschlandsender. All main stations easily received with clean background.

Acoustic Output

Ample volume for a large room, with excellent tone and very good low-note radiation. The attack is crisp and clean and speech is remarkably free from colouration. All orchestral and instrumental music is very nicely balanced.

have bayonet bases and are rated at 6 to 8 volts 6 watts.

The muting switch operates by impressing a negative potential on the suppressor grid of V6, an H.F. pentode operating as an L.F. amplifier.

Circuit Alignment Notes

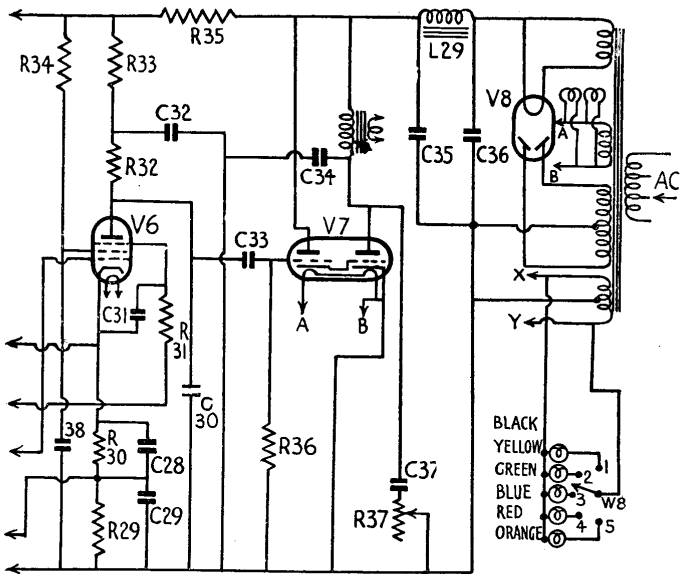
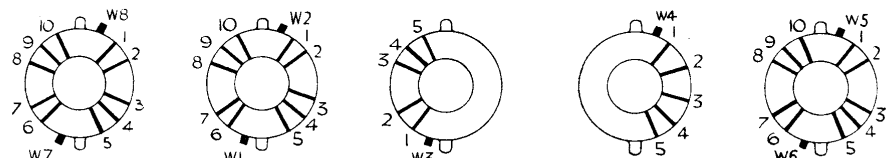
I.F. Circuits.—Connect an output meter across the primary of the speaker transformer. Turn noise suppression switch to "off" position, volume control to maximum, wave selection switch to M.W., and gang condenser to maximum capacity.

Connect a service oscillator between top grid cap of V2 and chassis and shunt with a 250,000-ohms resistance between grid and chassis. Short circuit the oscillator section of the gang.

Tune service oscillator to 473 kc. and adjust the trimmers of IFT2 and then IFT1 for maximum response, reducing the input from the service oscillator as the circuits come into line to render the A.V.C. inoperative.

Signal Circuits.—Connect the service oscillator to the A. and E. sockets via a dummy aerial. With gang at maximum capacity the tuning pointer should be parallel with the maximum end of the wavelength scale.

Only feed sufficient input from the service oscillator to obtain definite peaks in (Continued on next page.)

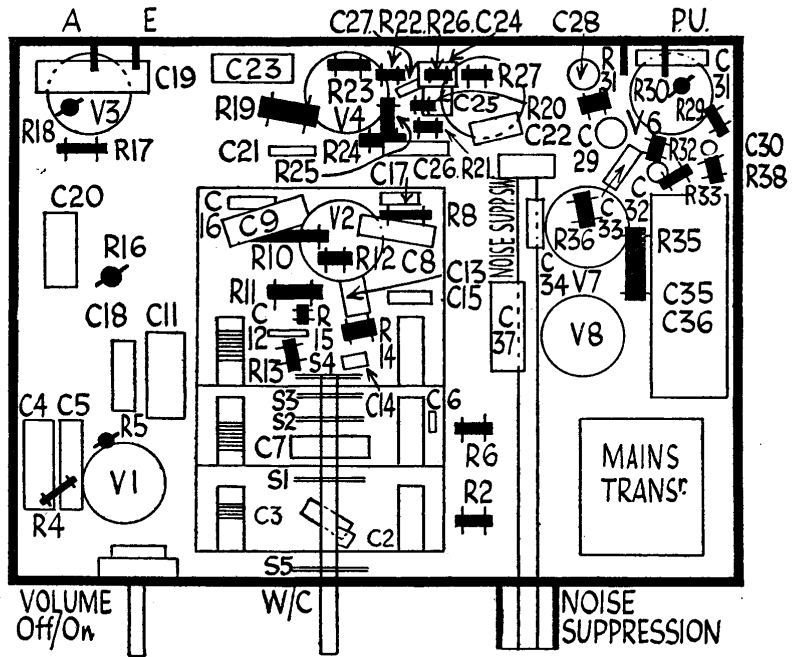
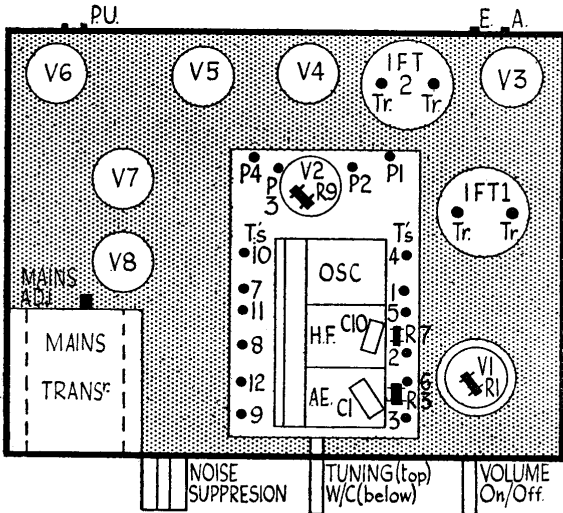


Above are diagrams of the switch banks of the Burddept 281 with contacts numbered to correspond with the circuit diagram. The chassis layout drawings are on the next page.

Most interesting circuit feature is the unusual American output valve used in the 281. Another unorthodox point is the use of two separate double diode valves, each with the anodes strapped.

Burndept Model 281

(Continued from previous page.)



The use of a tuning sub-assembly is a feature of the Burndept chassis. As the top deck view (left) shows, the grouped trimmers are conveniently accessible from above.

the output meter so as to prevent operation of the A.V.C. network.

Long Waves.—Tune set and oscillator to 750 metres (400 kc.) and adjust T1, T2 and T3 for maximum response.

Tune set and oscillator to 2,000 metres (150 kc.) and adjust P1 for maximum response, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Medium Waves.—Tune set and oscillator to 170 metres (1,765 kc.) and adjust T4, T5 and then T6 for maximum.

Tune set and oscillator to 550 metres (545 kc.) and adjust P2 for maximum response, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Short Waves.—Band 2 (50 to 172 metres).—Tune set and oscillator to 50 metres (6 mc.) and adjust T7, T8 and then T9 for maximum response.

Tune set and oscillator to 170 metres (1,765 kc.) and adjust P3 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Band 1 (13.5 to 51 metres).—Connect the service oscillator to the A. and E. terminals via a .00003 fixed condenser instead of via the dummy aerial.

Tune set and oscillator to 13.5 metres (22.2 mc.), fully unscrew T10 as far as possible (without removing screw, of course), then slowly screw up until the first peak is heard.

Then adjust T11 and T12 for maximum response.

Tune set and oscillator to 50 metres (6 mc.) and adjust P4 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Replacement Condensers
Exact replacement condensers for the 281 are available from A. H. Hunt, Ltd. For the block containing C35 and C36 there is unit 3831 at 8s. 6d.; for either C32 or C38, unit 4039, 2s. 3d.; C28, 2792, 2s. 3d.; and C29, 2918, 1s. 9d.

WINDINGS (D.C. Resistances)

Inductance.	Ohms.	Wave-band.	Measured between.
L1 ..	1	B1	V1 and chassis.
L2 ..	1	B2	Coil end of C2 and chassis.
L3 ..	1	MW	W1 and chassis.
L4 ..	101	LW	W1 and chassis.
L5 ..	Below .1	B1	Top aerial gang and chassis.
L6 ..	Below .1	B2	Top aerial gang and chassis.
L7 ..	2	MW	Top aerial gang and chassis.
L8 ..	8	LW	Top aerial gang and chassis.
L9 ..	Below .1	B1	W3 and HT line.
L10 ..	1	B2	W3 and HT line.
L11 ..	78	MW	W3 and HT line.
L12 ..	1	LW	W3 and HT line.
L13 ..	.6	B1	Top HF gang and chassis.
L14 ..	1	B2	Top HF gang and chassis.
L15 ..	2	MW	Top HF gang and chassis.
L16 ..	9	LW	Top HF gang and chassis.
L17 ..	Below .1	B1	W5 and chassis.
L18 + R14 ..	533	B2	W5 and chassis.
L19 ..	69	MW	W5 and chassis.
L20 + R15 ..	530	LW	W5 and chassis.
L21 ..	Below .1	B1	W6 and various padders.
L22 ..	Below .1	B2	W6 and various padders.
L23 ..	3	MW	W6 and various padders.
L24 ..	5	LW	W6 and various padders.
L25 ..	6	—	IF pins.
L26 ..	6	—	V2 top cap and IF pin.
L27 ..	6	—	IF pins.
L28 ..	4	—	IF pins.
L29 ..	1,000	—	Speaker panel.
Output trans.prim.	510	—	Speaker panel.
Mains trans.prim.	12	—	Mains plug pins.
Total H.T. sec.	237	—	V8 anode pins.

IN the advertisement of A. H. Hunt, Ltd., in *Service Engineer*, on March 5, a slight error occurred. The sentence affected should have read: "Hunt's silvered mica condensers have been released only after a long period of research in our laboratories."