

ULTRA 203 PUSH-BUTTON FIVE

CIRCUIT.—The aerial input passes via a series aerial condenser and I.F. filter circuit to selectively switched aerial coils feeding V1, a triode hexode frequency changer. The aerial and oscillator sections of the gang condenser are brought into circuit only when the manual tuning button is pressed and are out of circuit when the press-button system is in operation. Leads are brought out from the aerial and oscillator portions of the circuit to a double trimmer panel so that maximum response can be obtained on individual stations.

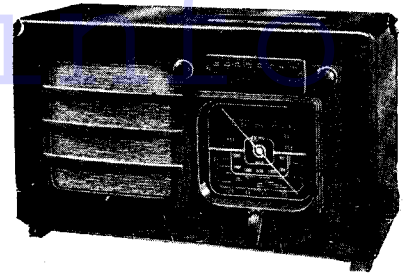
It will be observed that the triode section of V1 operates in the normal manner as a local oscillator on the radio bands, while when the switch is in the "gram" position the triode operates as an L.F. amplifier, with R6 and C20 as the load and L.F. coupling condenser respectively. Impulses are fed to the output valve via the manual volume control.

The output of V1 being the signal, converted to the I.F. of the receiver, passes via an I.F. transformer tuned to 470 kcs. to the I.F. amplifying valve V2, an H.F. pentode. Both V1 and V2 are A.V.C. controlled.

Another I.F. transformer effects the coupling between V2 and the demodulating diode of V3, a double diode valve. The demodulating diode load return and cathode of V3 are connected to a potentiometer between the H.T. positive line and chassis. The other diode of V3 operates the A.V.C. network.

The L.F. potentials pass via an L.F. coupling condenser and H.F. stopper resistance to the manual volume control, and thence to the grid of V4, a pentode output valve. A pentode compensator condenser,

Choice of seven stations by press-button, in addition to manual tuning, is a feature of the Ultra 203.



The chassis, with associated trimmer panel, may then be completely withdrawn free to the extent of the speaker cable.

The speaker (secured by three bolted clips) may be removed if desired, or, alternatively, the leads to the speaker panel unsoldered. The colours of the leads to the speaker panel, from left to right, are: black, green, orange, blue, red and yellow,

C27, effects a fixed tone modification, while R22 and C28 provide tone control.

Mains equipment consists of a mains transformer, a full-wave rectifying valve V5 connected as a half-wave rectifier, electrolytic smoothing condensers and smoothing choke (speaker field). Mains suppressor condensers are also included.

Chassis Removal.—The underside of the cabinet has a false bottom.

Remove the back of cabinet (secured by sliding clips), the two spring fixing control knobs and the grub screw fixing control knob (wave selection switch) from the front of the cabinet, and the tuning control knob from the side of the cabinet.

Then turn the cabinet on end and remove the four chassis-securing bolts and washers from the base.

WINDINGS (D.C. Resistances)

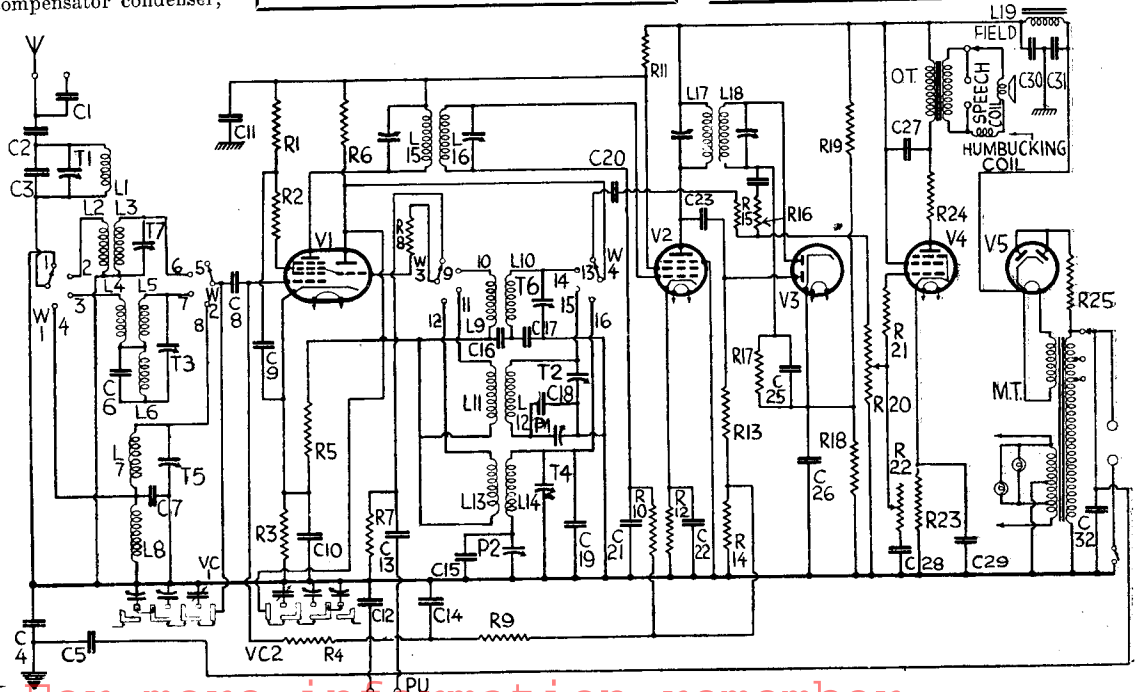
Winding.	Ohms.	Range.	Where measured.
L1	4	Any	Across C3.
L2	.3	SW	W1 and chassis.
L3	.05	SW	W2 and chassis.
L4	.3	MW	W1 and C6.
L5	2.8	MW	W2 and C6.
L6	17	MW	C6 and chassis.
L7	34	LW	W1 and W2.
L8	34	LW	W1 and chassis.
L9	.2	SW	W3 and C16.
L10	Very low	SW	W4 and C17+C18.
L11	1.5	MW	W3 and R5.
L12	6.7	MW	W4 and C18.
L13	1.4	LW	W3 and R5.
L14	18	LW	W4 and C15.
L15	11	Any	Anode V1 and C11 + R11.
L16	11	Any	Top grid V2 and R10+C21.
L17	11.3	Any	Anode V2 and C30.
L18	12.3	Any	C24 and diode V3.
L19	1.120	Any	C30 and C31.
O.T. prim.	500	Any	Across C27.
M.T. prim.	57	Any	Mains plug pins (230 tap).

VALVE READINGS

No signal. Volume maximum. M.W. max. cap. 230 volts A.C. mains.

V.	Type.	Electrode.	Volts.	M.a.
1	All Mazda. AC/TH1 (7 met.)	Anode	145	2.1
		Screen	80	6.1
		Osc. anode	60	1.6
2	AC/VP2 (7 met.)	Anode	180	7.2
		Screen	160	1.85
3	V. 914 (5pin)	Diodes only	—	—
4	AC2/Pen (7).	Anode	170	21
		Screen	180	4.6
5	UUV4 (4)	Heaters	230	—

In the arrangement of the Ultra 203 it will be noticed that the aerial and oscillator sections of the gang condenser are brought into circuit only in the manual tuning position.



leaving the first tag blank with respect to the cable.

Special Notes.—It will be noticed that one side of the mains is connected to earth and a chassis-isolating condenser is interposed between the chassis and the earth socket. Care should be taken, therefore, that the chassis is not earthed; otherwise under certain conditions damage will result.

Sockets at the rear of the chassis enable a pick-up to be connected, this operating two stages of L.F. amplification.

Extension speaker sockets are for connecting a low impedance M.C. speaker, while the position of the wander plug near these sockets enables control of the internal speaker to be obtained. With the wander plug out the internal speaker is disconnected.

Two pilot lamps are fitted in holders clipped to brackets each side of the tun-

ing scale. These are rated at 4.5 volts .3 amp and have MES bases. Two aerial sockets are provided, A2 inserting an additional series aerial condenser into circuit to cut down the input.

Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer. Switch receiver to MW band, turn gang to maximum capacity, tune to "high" position and volume to maximum. Connect a service oscillator between the top grid cap of V1 and chassis.

Tune service oscillator to 470 kc. and adjust trimmers of the I.F. transformers (starting with I.F.T 2) 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.—As the press-button circuits are individually tuned by separate aerial and oscillator trimmers, the alignment follows standard practice.

Connect the service oscillator to the aerial and earth sockets, progressively reducing the input as the circuits come into line so as to

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Ultra 203 on Test

MODEL 203.—Standard model for A.C. mains operation, 190-250 volts, 40-100 cycles. PRICE.—11½ gns.

DESCRIPTION.—Four-valve, plus rectifier, three-band table type superhet with press-button tuning.

FEATURES.—Full-vision airplane type scale, calibrated in metres and station names with main English stations distinctively marked in white. Controls for manual tuning (at side), combined volume and master switch, tone and wave selection. Press-button panel with choice of seven stations, together with manual press-button. Speaker located at side of chassis. Sockets for low-impedance extension speaker and pick-up. Press-button trimmers easily accessible for setting or resetting.

LOADING.—55 watts.

Sensitivity and Selectivity

SHORT WAVES (16.8-52 metres).—Good gain and selectivity, with very easy handling and no noticeable drift.

MEDIUM WAVES (200-550 metres).—Representative gain and selectivity with well-maintained sensitivity and clean background.

LONG WAVES (900-2,000 metres).—Very good gain and selectivity. Only slight interference on Deutschlandsender. All usual stations easily received.

Acoustic Output

Excellent volume for an ordinary room without overloading. A very nice characteristic, with a good, clean forward tone and very pleasing balance on orchestral reproduction, very little colouration being noticeable. Tone control not too vigorous in action.

Special Push-button Note

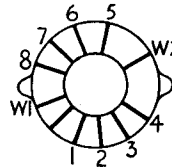
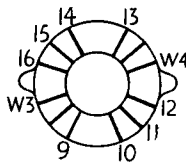
The push-button adjustment is by trimmers accessible through a movable plate. Large bakelite knobs on trimmers provide easy adjustment. Setting is found to be accurate and no drift occurred during series of tests.

CONDENSERS

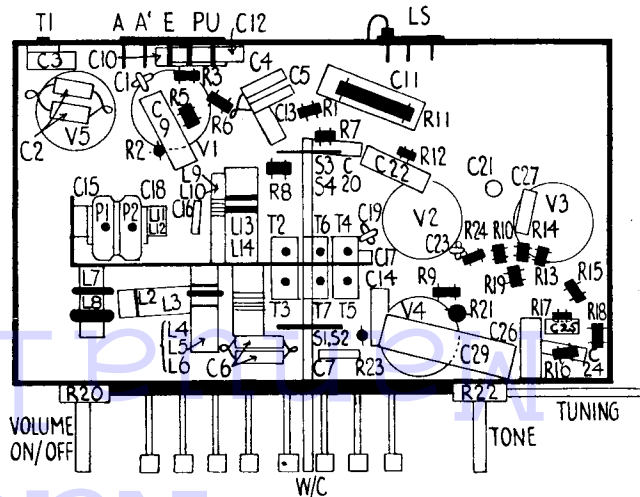
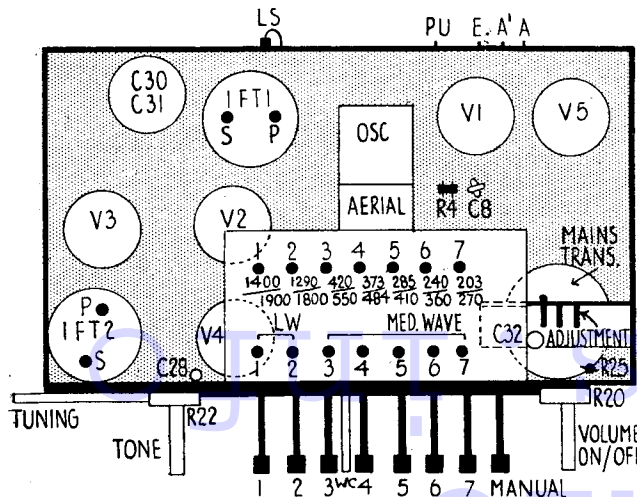
C.	Purpose.	Mfds.
1	Series aerial .. .. .	.00005
2	Series aerial .. .. .	.002
3	IF filter fixed trimmer .. .. .	.0002
4	Chassis isolating .. .. .	.004
5	Mains suppressor .. .. .	.004
6	M.W. aerial fixed shunt .. .. .	.004
7	L.W. aerial fixed shunt .. .. .	.002
8	V1 grid isolator .. .. .	.00005
9	V1 screen decoupling .. .. .	.1
10	V1 cathode bias shunt .. .. .	.1
11	V2 screen decoupling .. .. .	.4
12	Pick-up isolator .. .. .	.1
13	Pick-up coupling .. .. .	.1
14	V1 A.V.C. decoupling .. .. .	.05
15	L.W. osc. fixed padder .. .. .	.00025
16	S.W. osc. grid .. .. .	.0002
17	S.W. osc. fixed padder .. .. .	.004
18	M.W. osc. fixed padder .. .. .	.000045
19	L.W. osc. fixed trimmer .. .. .	.00001
20	V1 triode gram coupling .. .. .	.004
21	V2 A.V.C. decoupling .. .. .	.05
22	V2 cathode bias shunt .. .. .	.1
23	A.V.C. diode coupling .. .. .	.00001
24	L.F. coupling .. .. .	.01
25	H.F. bypass .. .. .	.0002
26	V3 cathode bias shunt .. .. .	.1
27	Pentode compensator .. .. .	.0004
28	Tone control .. .. .	.002
29	V4 cathode bias shunt .. .. .	.50
30	H.T. smoothing	8
31	H.T. smoothing	16
32	Mains suppressor .. .. .	.1

RESISTANCES

R.	Purpose.	Ohms.
1	V1 screen decoupling	10,000
2	V1 screen stopper	60
3	V1 cathode bias	200
4	V1 A.V.C. feed	1 megohm
5	Osc. grid leak	25,000
6	V3 triode anode load	40,000
7	V3 triode grid leak	250,000
8	V3 triode grid stopper	60
9	V1 A.V.C. decoupling	1 megohm
10	V2 A.V.C. decoupling	1 megohm
11	V2 screen decoupling	2,000
12	V2 cathode bias	130
13	A.V.C. diode load (part)	250,000
14	A.V.C. diode load (part)	750,000
15	H.F. stopper	100,000
16	H.F. stopper	100,000
17	Demodulating diode load	500,000
18	V3 cathode pot. (part)	50,000
19	V3 cathode pot. (part)	1 megohm
20	Volume control	1 megohm
21	V4 grid stopper	1,000
22	Tone control	2 megohms
23	V4 cathode bias	140
24	V4 anode stabiliser	60
25	Rectifier safety resistance	55



Below are the chassis layouts of the Ultra 203, that on the left being the view of the upper side. Right are the switch diagrams—first that of S3 and S4, and next S1 and S2.



speaker is replaced the rubber washers should be returned also.

Special Notes.—A pair of sockets at the rear of the chassis are for connecting a pick-up. This should have a high output for optimum results, as the pick-up only operates the pentode section of the output valve.

The mains adjustment device located on the mains transformer consists of an insulating panel with three sockets, marked with voltage values, into one of which a threaded member makes contact.

There are two dial lights in screw-in holders mounted on brackets behind the wavelength dial. The bulbs are rated at 6.2 volts .3 amp., and have M.E.S. bases.

Terminals on the speaker panel enable an extension speaker of high impedance to be connected.

Condenser C7 is contained in the can containing the oscillator coils. R5 was found to have a value of 200 ohms in our particular chassis.

Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer. Switch receiver to the MW band, turn gang to maximum capacity and volume to maximum volume position.

Connect a service oscillator between the top grid cap of V1 and chassis.

Tune the service oscillator to 117.5 kc.

and adjust first the trimmers of I.F.T2 and then I.F.T1 for maximum response, reducing the input from the service oscillator as the circuits come into line to render the AVC inoperative.

Signal Circuits.—Connect the service oscillator to the A and E sockets, only feeding sufficient input to obtain reliable peaks in the output meter, and progressively reducing the input as the circuits come into line.

Medium Waves.—Tune set and oscillator to 250 metres (1,200 kc.), and adjust T1 and then T2 for maximum response.

Tune set and oscillator to 500 metres (600 kc.) and adjust P1 for maximum simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Long Waves.—Tune set and oscillator to 1,200 metres (250 kc.) and adjust T3 for maximum. (T4 is rather inaccessible, as this trimmer is set at the works, but can be adjusted if desired.)

Tune set and oscillator to 1,900 metres (157.9 kc.) and adjust P2 for maximum simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Short Waves.—Tune set and oscillator to 20 metres (15 mc.) and adjust T5 for maximum, using the peak obtained with the trimmer nearest to its minimum capacity position. Short-wave padding is fixed.

Replacement Condensers.—Exact replacement condensers for the Alba 805 available from A. H. Hunt, Ltd., are: For C's 19 and 20, No. 3891A at 5s. 6d.; and for C18, No. 2918 at 1s. 9d.

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obtain only reliable peaks in the output meter. The pointer should lay between the two cream horizontal dial lines when the gang is fully closed.

I.F. Wave-Trap.—Tune the set to 950 metres on scale, inject a strong 470 kcs. signal from the output meter, and adjust T1 for minimum response.

Medium Waves.—Tune set and oscillator to 200 metres (1,500 kc.) and adjust T2 then T3 for maximum.

Tune set and oscillator to 500 metres (600 kc.) and adjust P1 for maximum simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Long Waves.—Tune set and oscillator to 1,300 metres (230 kc.) and adjust T4 and then T5 for maximum.

Tune set and oscillator to 1,700 metres (176.5 kc.) and adjust P2 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Short Waves.—Tune set and oscillator to 19 metres (15.7 mc.), screw T6 right up, then unscrew until the second peak is heard. Then adjust T7 for maximum.

The short-wave padding is fixed, but check calibration at 30 and 50 metres. Note: In some mounted differently in another plane. P1, the

Alba 805 on Test

MODEL 805 A.C.—Standard model for A.C. mains operation, 190-250 volts, 40-100 cycles. PRICE.—£7 19s. 6d.

DESCRIPTION.—Three-valve, plus rectifier, three-band superhet table receiver.

FEATURES.— Full-vision scale calibrated in metres and station names, traversed by single pointer. Controls for concentric tuning, wave selection and combined volume and master switch. Sockets at rear of chassis for P.U. and terminals on speaker panel for high impedance L.S.

LOADING.—60 watts.

Sensitivity and Selectivity

SHORT WAVES (16.5-50 metres).—Excellent gain and good selectivity, easy handling; sensitivity well maintained over entire band.

MEDIUM WAVES (200-550 metres).—Excellent gain and selectivity for the valve combination employed, with a good background.

LONG WAVES (700-2,000 metres).—High gain and representative selectivity, all main stations easily received.

Acoustic Output

Crisp, clean tone, with good attack and good medium- and low-note radiation. Little colouration on speech, and general well-balanced performance.

M.W. padder, will then be the one nearest the rear of the chassis.

Press-button Alignment.—There are seven press-buttons giving seven stations selected by the operator.

Remove the bakelite panel (secured by two screws) from the top of the cabinet, when the trimmers will be accessible. These are numbered one to seven and also, with the corresponding wave range, they are intended to cover, e.g., 373/484 and 240/360 metres.

To set a button—e.g., button 1—switch to the L.W. band (as the trimmer wavelength band is 1,400/1,900 metres), select a station within the range, press the button and adjust the rear-most trimmer No. 1 on the trimmer panel until the station is tuned in spot. The receiver should have an aerial and earth system connected, of course. Then adjust the corresponding front trimmer No. 1 until the programme is at full strength.

Replacement Condensers.—Exact replacement condensers for the Ultra 203 are obtainable from A. H. Hunt, Ltd. They are: For C11, Unit No. 2958 at 2s. 6d.; C29, No. 2531 at 1s. 10d.; and C's 30 and 31, No. 3603 at 9s.

VALVE READINGS

No signal. Volume maximum. M.W. min. cap. 200 volts A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	All Mullard. TH4A (7 met.)	Anode ..	230	2.5
		Screen ..	72	6
		Osc. anode ..	88	5.3
2	VP 4B (7 met.)	Anode ..	228	11.5
		Screen ..	232	4.2
3	Pen 4DD (7)	Anode ..	220	30
		Screen ..	232	5.5
4	DW4/350 (4)	Heaters ..	300	—

Right is the Alba 805 switch diagram. Below are the chassis layouts, on the left being the view of the top, and right the underside.

