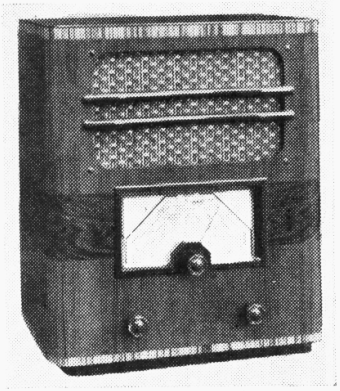
'TRADER' SERVICE SHEET 333

ALBA 805, 605 AND 905 (AC)



The Alba 805 table receiver.

A SHORT-WAVE range of 16·5-50 m is covered by the Alba 805 3-valve (plus rectifier) AC 3-band superhet, which is suitable for mains of 190-250 V, 40-100 C/S. Provision is made for both a gramophone pick-up and an extension speaker.

An identical chassis is fitted in the 605 armchair console receiver, and the chassis in the 905 radio-gramophone is very similar, the differences being explained under "Radiogram Modifications." The radiogram is for mains of 190-250 V, 40-60 C/S.

It should be noted that the AC/DC versions of these three receivers bear the same model numbers, and that this *Service Sheet* was prepared on an 805 (AC) table model.

CIRCUIT DESCRIPTION

Aerial input via coupling coil **L1** (SW) or **C1** and coupling coil **L2** (MW and LW), assisted by **C2** on MW, to single-tuned circuits **L3, C20** (SW), **L4, C20** (MW) and **L5, C20** (LW) which precede first valve (**V1, Mullard metallised TH4A**), a triode hexode operating as frequency changer with internal coupling. Triode oscillator grid coils **L6** (SW), **L7** (MW) and **L8** (LW) are tuned by **C22**; parallel trimming by **C25** (SW), **C26** (MW) and **C27** (LW); series tracking by **C7** (SW), **C23** (MW) and **C24** (LW). Reaction by coils **L9** (SW), **L10** (MW) and **L11** (LW).

Second valve (**V2, Mullard metallised VP4B**) is a variable-mu RF pentode operating as intermediate frequency amplifier with tuned-primary tuned-secondary iron-cored transformer couplings **C28, L12, L13, C29** and **C30, L14, L15, C31.**

Intermediate frequency 465 KC/S.

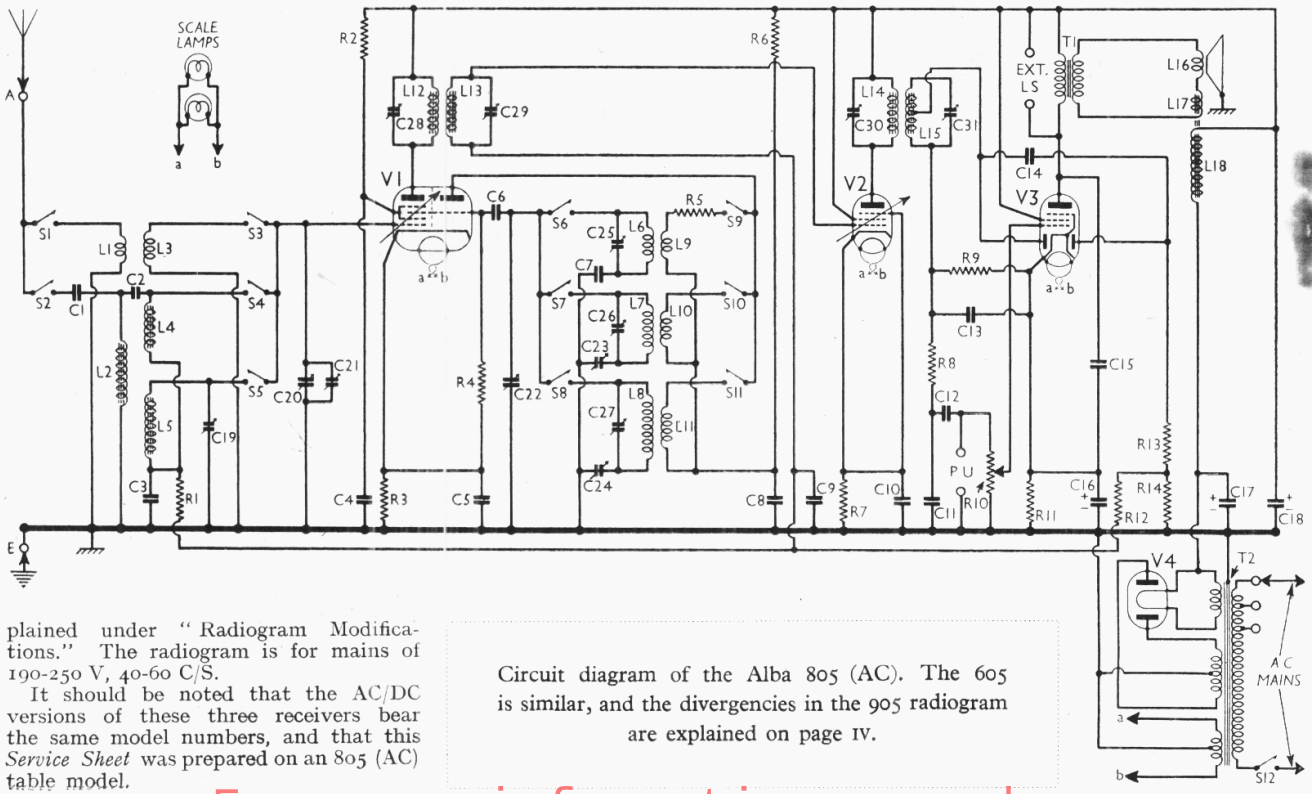
Diode second detector is part of double diode pentode output valve (**V3, Mullard Pen4DD**). Audio-frequency component in rectified output is developed across load resistance **R9** and passed via IF stopper **R8,** AF coupling condenser **C12** and manual volume control **R10** to CG of pentode section. Provision for connection of gramophone pick-up across **R10.** Provision also for connection of high impedance external speaker across primary of **T1.** Fixed tone correction in anode circuit by **C15.**

Second diode of **V3,** fed from tapping on **L15** via **C14,** provides DC potential which is developed across load resistances **R13, R14,** that at their junction being fed back through decoupling circuit as GB to FC (except on SW) and IF valves, giving automatic volume control. Delay voltage is obtained from drop along **R11** in cathode circuit.

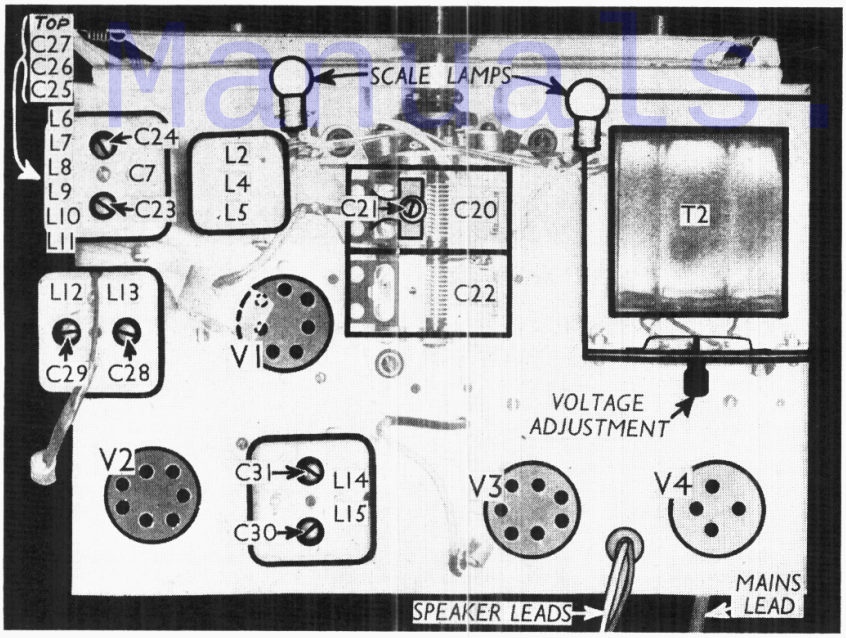
HT current is supplied by full-wave rectifying valve (**V4, Mullard DW4 350**). Smoothing by speaker field **L18** and dry electrolytic condensers **C17, C18.**

COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	V1 hexode CG decoupling	250,000
R2	V1 SG HT feed	25,000
R3	V1 fixed GB resistance	100
R4	V1 osc. CG resistance	50,000
R5	Osc. reaction SW stabiliser	200
R6	V1 osc. anode HT feed	25,000
R7	V2 fixed GB resistance	150
R8	IF stopper	50,000
R9	V3 signal diode load	500,000
R10	Manual volume control	500,000
R11	V3 GB resistance	150
R12	AVC line decoupling	500,000
R13	V3 AVC diode load resistances	250,000
R14		500,000



Circuit diagram of the Alba 805 (AC). The 605 is similar, and the divergencies in the 905 radiogram are explained on page IV.



Plan view of the chassis. The adjustments for **C25-C27** are at the side of the **L6-L11** can.

	CONDENSERS	Values (μF)
C1	Aerial MW and LW series	0·0002
C2	Aerial MW coupling	0·000005
C3	V1 hexode CG decoupling	0·05
C4	V1 SG decoupling	0·1
C5	V1 cathode by-pass	0·1
C6	V1 osc. CG condenser	0·0001
C7	Osc. circuit SW tracker	0·005
C8	V1 osc. anode decoupling	0·1
C9	V2 CG decoupling	0·05
C10	V2 cathode by-pass	0·1
C11	IF by-pass	0·0001
C12	AF coupling to V3 pentode	0·005
C13	IF by-pass	0·0001
C14	Coupling to V3 AVC diode	0·0002
C15	Fixed tone corrector	0·005
C16*	V3 cathode by-pass	25·0
C17*	HT smoothing	6·0
C18*	HT smoothing	6·0
C19‡	Aerial circuit LW trimmer	0·00003
C20†	Aerial circuit tuning	—
C21‡	Aerial circuit MW trimmer	—
C22†	Oscillator circuit tuning	—
C23‡	Osc. circuit MW tracker	0·0006
C24‡	Osc. circuit LW tracker	0·00025
C25‡	Osc. circuit SW trimmer	0·00003
C26‡	Osc. circuit MW trimmer	0·00003
C27‡	Osc. circuit LW trimmer	0·00003
C28‡	1st IF trans. pri. tuning	—
C29‡	1st IF trans. sec tuning	—
C30‡	2nd IF trans. pri. tuning	—
C31‡	2nd IF trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial SW coupling coil	0·2
L2	Aerial MW and LW coupling	50·0
L3	Aerial SW tuning coil	Very Low
L4	Aerial MW tuning coil	1·75
L5	Aerial LW tuning coil	14·0
L6	Osc. circuit SW tuning coil	0·05
L7	Osc. circuit MW tuning coil	3·4
L8	Osc. circuit LW tuning coil	7·5
L9	Oscillator SW reaction	24·0
L10	Oscillator MW reaction	30·0
L11	Oscillator LW reaction	45·0
L12	1st IF trans. Pri.	2·7
L13	1st IF trans. Sec.	2·7
L14	2nd IF trans. Pri.	2·7
L15	2nd IF trans. Sec., total	2·7
L16	Speaker speech coil	1·8

	OTHER COMPONENTS (*Continued*)	Approx. Values (ohms)
L17	Hum neutralising coil	0·1
L18	Speaker field coil	1,000·0
T1	Speaker input trans. Pri.	320·0
	Speaker input trans. Sec.	0·3
T2	Mains trans. Pri., total	46·0
	Mains trans. Heater sec.	0·05
	Mains trans. Rect. heat. sec.	0·1
	Mains trans. HT sec., total	450·0
S1-S11	Waveband switches	—
S12	Mains switch, ganged R10	—

DISMANTLING THE SET

Removing Chassis.—To remove the chassis from the cabinet, remove the three knobs (recessed grub screws) and the four bolts (with washers and rubber washers) holding the chassis to the bottom of the cabinet. The chassis can now be withdrawn to the extent of the speaker leads, which is sufficient for normal purposes.

When replacing, see that there is a rubber washer on each of the fixing bolts, between the chassis and the bottom of the cabinet.

To free the chassis entirely, unsolder the speaker leads and *when replacing*, connect them as follows, noting that the tags are marked :—F and 3 joined together, red ; 1, black ; F, blue. The white lead goes to the tag on the bottom screw holding the transformer to the speaker frame.

Removing Speaker.—If it is desired to remove the speaker from the cabinet, unsolder the leads and remove the nuts, washers and rubber washers from the four screws holding the speaker to the sub-baffle. *When replacing*, see that the transformer is on the right and connect the leads as above.

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 TH4A	242	3·6	82	6·7
	Oscillator			
	95	5·0		
V2 VP4B	242	11·0	242	3·6
V3 Pen4DD	225	33·0	242	7·8
V4 DW4/350	310†	—	—	—

† Each anode, AC.

Valve voltages and currents given in the table above are those measured in our receiver when it was operating on mains of 230 V, using the 220 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium band and the volume control

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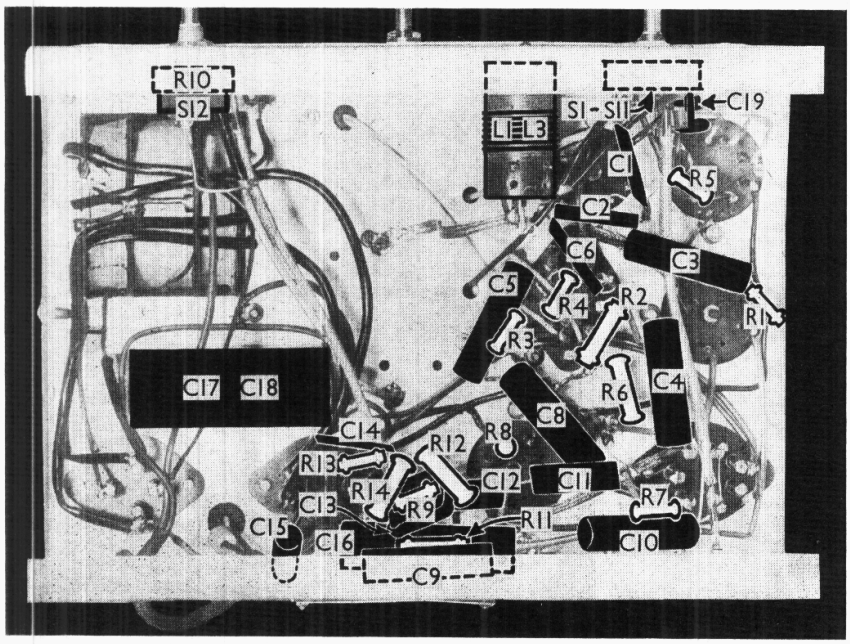


Under-chassis view. In the **L1, L3** unit, **L3** has the thick wire winding. Switch diagram is overleaf.

ALBA 805—*Continued*

was at maximum, but there was no signal input.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

GENERAL NOTES

Switches.—**S1-S11** are the waveband switches, in a single rotary unit beneath the chassis. It is indicated in our under-chassis view, and shown in detail in column three. The table (column two) gives the switch positions for the three control settings, starting from fully anti-clockwise. A dash indicates open, and **C**, closed.

S12 is the QMB mains switch, ganged with the volume control **R10.**

Coils.—**L1, L3** are in an unscreened unit beneath the chassis, **L3** being the thick wire winding. **L2, L4, L5 ; L6-L11 ;** and the IF transformers **L12, L13** and **L14, L15** are in four screened units on the chassis deck, with the associated trimmers, in the case of the last three. The **L6-L11** unit also contains **C7.**

Scale Lamps.—These are two Osram MES types, rated at 6·2 V, 0·3 A.

External Speaker.—Two terminals are provided on **T1** terminal panel for a high resistance external speaker.

Condensers C17, C18.—These are two 6 μF dry electrolytics in a single carton beneath the chassis, with a common negative (black) lead. The red lead to **V4** valve-holder is the positive of **C17** and the red lead to **V3** holder is the positive of **C18.**

V3 Connections.—Note that in the Pen4DD valve the connections of anode and cathode are transposed, compared with other valves of similar type.

Resistance R5.—This is given as 100 O by the makers, but was actually 200 O in our chassis.

Trimmer C19.—The makers' diagram shows this returned to AVC line, but in our set it was returned to chassis.

RADIOGRAM MODIFICATIONS

In the 905 radiogram certain chassis modifications are used. The oscillator anode is condenser fed by a 0·005 μF condenser between oscillator anode and the common connection of **S9-S11.** HT is taken direct to the oscillator anode, and **R6** and **C8** are omitted, the bottom ends of **L9-L11** being returned direct to chassis.

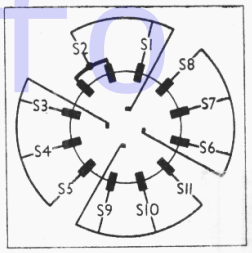
The IF valve is used as an AF amplifier on gram, by connecting the pick-up in its grid circuit. One section of the radio-gram switch is fitted between the bottom end of **L13** and the AVC line. On gram, **L13** is connected to one of the pick-up sockets, and on radio, to AVC line. The other pick-up socket goes to chassis.

In the anode circuit of **V2** is a 5,000 O anode load resistance, and one side of a 0·005 μF coupling condenser is connected to anode. Between **C12** and the top of **R10** is the other section of the radio-gram switch, which on gram. connects the free end of the above-mentioned AF coupling condenser to the top of **R10,** and on radio re-connects **C12** to the top of **R10.**

TABLE AND DIAGRAM OF THE SWITCH UNIT

Switch	SW	MW	LW
S1	C	—	—
S2	—	C	C
S3	C	—	—
S4	—	C	—
S5	—	—	C
S6	C	—	—
S7	—	C	—
S8	—	—	C
S9	C	—	—
S10	—	C	—
S11	—	—	C

Switch diagram, looking from the rear of the underside of the chassis.



CIRCUIT ALIGNMENT

IF Stages.—Connect signal generator to control grid (top cap) of **V1** and chassis, leaving existing connection in place. Switch set to LW and turn gang and volume control to maximum. Feed in a 465 KC/S signal, and adjust **C31, C30, C29** and **C28** for maximum output. Re-check these settings.

RF and Oscillator Stages.—Connect signal generator to **A** and **E** sockets *via* a suitable dummy aerial. Turn volume control to maximum.

MW.—Switch set to MW, tune to 200 m on scale, feed in a 200 m (1,500 KC/S) signal, and adjust **C26,** then **C21,** for maximum output. Feed in a 500 m (600 KC/S) signal, tune it in, and adjust **C23** for maximum output, while rocking the gang for optimum results.

LW.—Switch set to LW, tune to 1,200 m on scale, feed in a 1,200 m (250 KC/S) signal, and adjust **C27,** then **C19,** for maximum output. Feed in a 1,900 m (158 KC/S) signal, tune it in, and adjust **C24** for maximum output, while rocking the gang for optimum results.

SW.—Switch set to SW, tune to 17 m on scale, feed in a 17 m (17·65 MC/S) signal, and adjust **C25** for maximum output.

MAINTENANCE PROBLEMS

Contributed by Service Engineers

Pre-set Condenser Short In U427

A CUSTOMER recently brought in a Philco U427 People's Set, complaining that the previous day it suddenly ceased to function and a cloud of smoke issued from the back.

It was found that the primary of the second IF transformer was a charred mass of wire without any insulation left on it and, upon measuring from the anode of the IF valve to earth, a dead short was shown. Looking at the circuit diagram I found that there was a pre-set condenser from the anode to earth for tuning the primary, and testing across this condenser showed a dead short, the mica being broken.

Since doing this receiver, I have had several more with the same fault and have noticed on adjusting this pre-set condenser to align the transformer that it is possible to short the condenser when screwing it up, as the mica often becomes misplaced when pressure is applied.—P.G., LONDON.

Long-Wave Fault Due to AC/Pen

SOME months ago I had in for service an Ekco AC85, which was up to standard on MW, but LW merely produced a slight increase in mains hum and no signal. The FC4 and AC/VP1 were the first objects of suspicion, but replacement of these had no effect. All LW coils were O.K., the AVC line was correct, re-alignment was of no use, and all condensers and resistors were found O.K.

As we were closing down for the day, another similar model came in for replacement of a noisy volume control. On the valves from the first set being put into the second set, the latter was found to be " off " on long-wave and replacement of the other valves, one by one, revealed the trouble, to our amazement, to be in the Mazda AC/Pen.

A similar fault in an Ekco AC85 recently reminded me of this, but in this case the long-wave signals were very weak and not missing altogether.—C.C.

Incomplete Wiring In New Sets

FOUR new Alba 815 (AC) receivers were found to be faulty on delivery. The first two would not work at all and the second two were found to be " off " on MW.

On examining the first two, the HT voltage was found to be high and the cause was located in the wiring from the bias resistance and condenser to the cathodes of the output valve and the double diode. In one case this was missing and in the other the wiring was there but not soldered. Both receivers were up to standard after this was corrected.

The second two were then examined, the wave-change switch being suspected, but this proved O.K. On this model the oscillator MW trimmer is almost under the switch and the very short lead connecting the two was found to be soldered at the switch end only, the other end being free.—C.C., MIDDLESBROUGH.