

The top of the Ferranti Gloria chassis is very "clean" and the underneath layout is also comparatively simple as the A.V.C. components are bundled and waxed.

Voltagcs between the terminals and chassis, counting from left and looking from the rear:—

- (1) Green, H.T. + smoothed, 250 volts pos.
- (2) Black, V6 anode, 235 volts pos.
- (3) Blue, H.T. — unsmoothed, 115 volts neg.
- (4) Red, chassis.

Removing Chassis.—In clock model undo the clock leads from the porcelain connector. Remove speaker plug from the chassis, pull off the knobs and remove four screws underneath.

Lift chassis out, taking care not to damage the dial. It is advisable to refix the rubber buffers if these have become detached.

General Notes.—The tone control resistance, R19, is mounted on the cabinet underneath the speaker. The switch on the speaker

disconnects the internal speaker if required when an external reproducer is in use.

Resistances are RMA colour coded. Condensers are coded as follows:—Red, .05 mfd.; yellow, .02 mfd.; black, .06 mfd.; blue, .004 mfd.; green, .01 mfd.

The majority of the valve holders are inaccessible, but many of the small components can be reached.

Trouble is not likely to develop in either of the "bundles" of condensers and resistances under the double-diode-triode valve (V5), as these are mainly associated with the A.V.C. system. However, should a defect be definitely traced to one of them, the set should be returned to the makers.

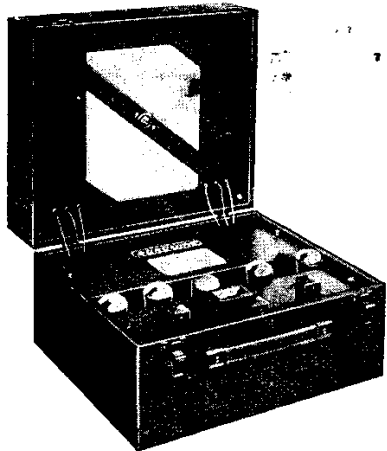
The leads to the condenser block, C21, C22, C23, are:—Yellow, C22; red, C21; green, C23.

Coded wiring to mains transformer:—

2 Green, set fil.; yellow and green stripe, C.T.; 2 black and yellow check, rect. fil.; red, C.T. (H.T.+); 2 red, rect. anodes; yellow and black stripe, C.T. (H.T.—); 2 yellow, V6 fil.; yellow with black stripes, C.T.

In replacing the pilot lamp bracket the dial must be turned to Midland Regional approximately to allow the lamps to clear the sector plots.

Replacing Chassis.—Lift chassis carefully into position, and, before fixing any of the screws, make sure that the rubber supports (blocks) are in position. Replace the knobs and plug in the L.S. supply. Clip the insulating cover of the L.S. transformer if this has been loosened for quick tests.



A typical 2 H.F.-detector-2 L.F. receiver—the Portable Five by Burgoyne Wireless (1930), Ltd.

FIVE-VALVE PORTABLE BY BURGOYNE WIRELESS

(V2), is coupled to the detector by another H.F. choke and condenser filter.

A PMIHL (V3) operates as a leaky grid detector, with reaction fed back to the frame aerial. A 5 : 1 ratio L.F. transformer couples the anode to the next valve.

The L.F. valve PMILF (V4) is coupled by a 3 : 1 ratio L.F. transformer to the triode output. This, a PM2 (V5) feeds a moving iron speaker.

Special Notes.—The construction of this set is particularly neat, and all components are accessible, including the switch.

Quick Tests.—Removing H.T. — lead should produce a loud plop in the speaker. If it does not, test battery voltages and examine the leads.

The removal of H.T. + 3, H.T. + 1 and

H.T. + 2 plugs should produce progressively louder plops. If they do not, take the valve readings, noting particularly the current.

When only a faint click is heard in these tests, adjust the speaker knob till it is loudest.

Before removing the chassis in this set it is advisable to make sure whether the trouble lies in the lid compartment, containing the frame aerial and the speaker, or in the chassis.

When battery voltages are correct and valve readings are normal, but only thin reproduction can be heard from the stations usually received, the trouble probably lies in the speaker.

If loud plops are heard on removing the battery plugs and the valve readings are correct, but no signals are heard even with reaction, the frame aerial is probably disconnected.

If, however, a voltage reading cannot be obtained at any one of the valve anode sockets, the component in the anode circuit must be tested for continuity from the anode socket to the H.T. + lead to that valve.

When the current reading is high for any valve, the G.B. supply should be tested and

Circuit.—The first H.F. valve, PMIHF (V1), is preceded by a frame aerial in which the long-wave section is short-circuited for use on the medium waves. The long-wave section remains at high H.F. potential.

The switch operating the wave changing and battery switching and also changes over a tapping on the medium-wave winding to allow reaction on the long. H.F. choke coupling is used.

The second H.F. valve, another PMIHF

VALVE READINGS

Battery connections:—HT+1, 86 to 54 v.; HT+2, 45 to 54 v.; HT+3, 99 v.; GB—1, —4.5 v.; GB—2, —9 v.

Valve	Type	Electrode	Volts.	M.A.
1	PMI HF	anode	54*	1
2	PMI HF	"	54*	1
3	PMI HL	"	50*	.9
4	PMI LF	"	98	1
5	PM2	"	93	2.1

* Depending on HT tappings used.

(Continued on next page.)

PORTABLE FIVE BY BURGoyNE (Cont.)

the continuity of the grid circuit. Preliminary tests can be made between the sockets and the grid return leads.

Removing the Speaker and Frame Aerial.—Undo the four corner screws and ease the frame out carefully, so that the aerial windings will not be disturbed.

Connections to frame aerial and speaker:— Three terminals on left (numbered on circuit):—(1) to grid of V1, (2) to switch, (3) junction of M.W. and L.W., to switch.

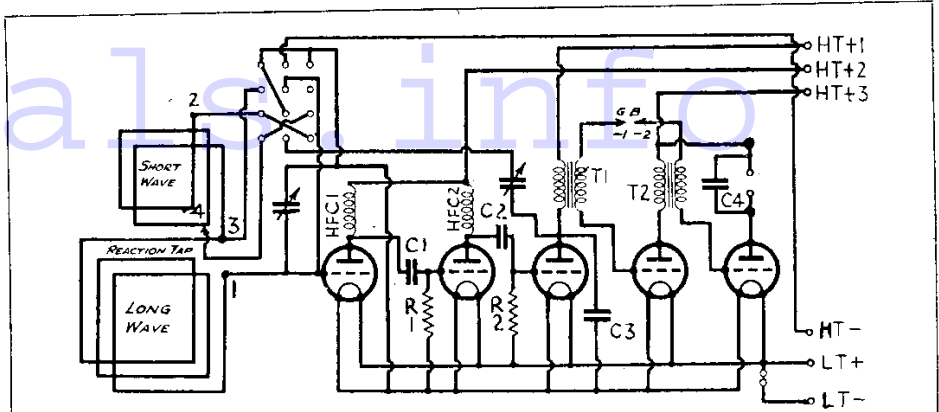
Three terminals on right (counting from left):—(4) reaction tapping to switch, (5) joined to H.T. + 3 and speaker, (6) V5 anode and speaker.

Continuity test of speaker with plug removed from battery between H.T. + 3 and V5 anode socket should give resistance of approximately 800 ohms.

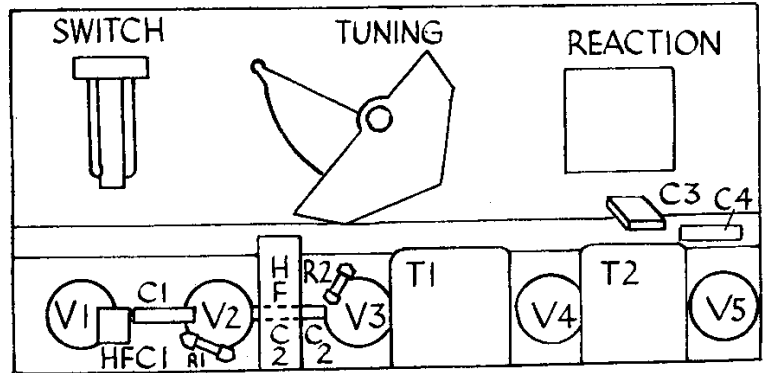
To reach speaker unit, unsolder cone clamp from spindle and lift off the cone.

Removing the Chassis.—Undo four screws round the edge of the panel and, after removing batteries, lift chassis out.

General Notes.—The lay-out is straight-



Choke coupled H.F. and transformer-coupled L.F. stages are featured in the Burgoyne portable Five.



The absolutely straightforward layout of the Burgoyne Chassis.

CONDENSERS

C.	Purpose.	Mfd.
1	HF coupling filter V 1 to V 20003
2	HF coupling filter V 2 to V 30003
3	V 3 anode by-pass0005
4	Compensating condenser across speaker002
Reaction	Variable0003

RESISTANCES

R.	Purpose.	Ohms.
1	V 2 grid leak ...	100,000
2	V 3 grid leak ...	2 meg.
--	Loud speaker ...	800
--	2nd LF transformer--	
	Primary ...	450
	Secondary ...	3,250
--	1st LF transformer--	
	Primary ...	275
	Secondary ...	3,250
--	HFC 2 ...	350
--	HFC 1 ...	1,000

forward. H.F.C.1 is mounted round the anode socket of V1. Switch contacts are as given in the circuit diagram, those on top being next the panel. The H.T. - lead is taken from the centre contact of the fuse holder as the casing is connected to chassis. The ordinary flash-lamp bulb does not protect the filaments adequately, and the correct fuse should be used.

Battery leads are taken direct from the terminals on the components, and care should be taken to ensure that they are not strained and that the insulation is not stripped at their entry to the chassis.

Replacing the Chassis.—Slide chassis into compartment and replace screws. Place frame carefully inside lid and replace screws.

EKCO MODEL S.H.25 FIVE-VALVE A.C. MAINS SUPERHET

Circuit.—The first detector valve, MSG/LA (V1) is used solely as an amplifying detector, with cathode coupling to a separate oscillator valve. It is preceded by a band-pass aerial tuner, of which the first tuned coil is an H.F. transformer with semi-periodic tuning of the primary on the long waveband.

A special trap filter is included in the aerial lead to prevent I.F. radiation.

The oscillator valve, 354V (V2), works with the tuned oscillator coil in the anode circuit and the coupling coil in the grid circuit.

The I.F. valve, MM4V or MVSG (V3), is preceded by a band-pass I.F. transformer (frequency 110 K.C.), and is coupled to the next valve by a similar transformer. Volume is controlled by a variable biasing resistance.

The second detector valve, AC/HL or 354V (V4), operates as a power grid detector. An iron-cored choke acts as an H.F. whistle-filter in the anode circuit, which is resistance-coupled to a parallel-fed transformer.

The output valve, PM24M, PT41 or PT4 (V5), is a directly heated pentode. Bias is obtained from a potentiometer across the L.S. field in the negative H.T. lead, and the grid circuit is properly decoupled.

Tone compensation is by a .001 mfd. condenser across the primary of the output transformer, and the external L.S. leads are taken from the anode and H.T.+, necessitating a high impedance speaker.

Mains equipment consists of transformer, a full-wave voltage doubler metal rectifier and the necessary condensers.

The speaker field is in the negative H.T. lead and a hum adjustment is provided by a potentiometer across the filament winding.

Both sides of the mains leads contain H.F. by-pass condensers to chassis.

Special Notes.—The tone control switch operates by connecting C11 of .01 mfd. between the high potential (AC) end of R10, the L.F. coupling resistance, and earth.

The local distance switch connects the resistance R3 across the primary of IF/T1 to lower the efficiency of the transformer.

The hum adjustment is mounted at the side near the mains switch. To reach it, the screen on the bottom of the cabinet should be removed. The movement is a sliding one.

To facilitate the examination of all the components inside the chassis, these are covered only by the screening plate, which is fixed by four screws through the rubber supports.

Quick Tests.—Between terminals on speaker transformer and chassis, counting from the top:—

- (1) Green, 118 volts negative (power pack neg.).
- (2) Red and white, 226 volts positive (V5 anode).
- (3) Blank.
- (4) Red, 240 volts positive (H.T.+ smoothed).

(Continued on opposite page.)

VALVE READINGS

V.C. max. on M.W.

V.	Type.	Electrode.	Volts.	M.A.
1	MSG/LA	anode* ...	200	1.6
		screen ...	85	
2	354V ...	anode* ...	55	1.25
3	MM4V	anode ...	200	4.3
		screen ...	85	
4	AC/HL	anode ...	80	2.6
		anode ...	226	24
5	PM24M	aux. grid ...	240	5

* The inclusion of long leads in the circuits of these valves causes HF instability.