In the Majestic Midget small size does not mean inaccessibility.

MAJESTIC FOUR VALVE SUPERHET MIDGET

Circuit.—The first detector-oscillator, 6A7S, (V1), a heptode, is preceded by a single tuned aerial circuit. The oscillator grid and anode connections are conventional, and volume control is obtained by varying the bias on the first detector grid.

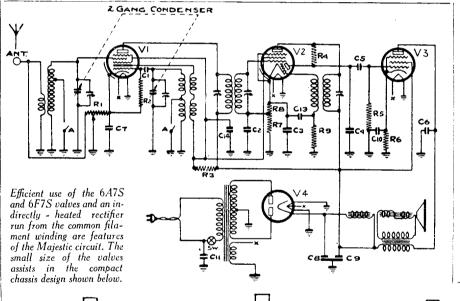
The combined I.F. and second detector valve 6F78 (V2) consists of an H.F. pentode and a triode in one bulb. The H.F. pentode section is used for I.F. amplification and the triode for detection and L.F. amplification.

An interesting feature is the different biasing potentials for the two grids obtained from a cathode potentiometer R7, R8. The triode anode is resistance coupled to the output.

The output valve "41" (V3) is a pentode with its grid decoupled and tone compensated by a condenser between anode and earth.

An indirectly heated rectifier 6Z5 is used,

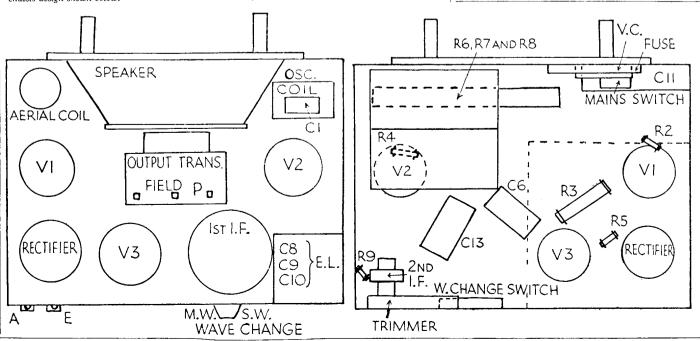
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RESISTANCES			
R	Purpose.	Ohms.	
1	Var. volume control cathode V1	7,500	
1 2 3 4 5 6 7 8	Grid leak to osc. grid V1	150,000	
3	Voltage dropping to osc. anode V1	20,000	
4	L.F. coupling det. anode V2	.7 meg.	
5	V3 grid leak	.5 meg.	
6	V3 cathode bias	500	
7	V2 cathode bias ptr	1,500	
8	V2 cathode bias ptr	300	
9	Decoupling det. grid V2	1 meg.	
_	LS field coil (two left-hand ter-	_	
	minals on T)	950	
_	Primary output transformer	550	

C	Purpose.		Mfd.
1	V1 osc, grid		.00025
1 2 3 4 5 6 7 8 9	Low potential end pentode g	rid V2	.01
3	Cathode V2		.5
4	Det. anode by-pass V2		.001
õ	LF coupling V2, V3		.03
6	Tone compensating anode V	3	.007
7	Cathode V1		.1
8	HT smoothing		6
	HT smoothing		4
10	V3 cathode		10
11	Mains HF by-pass		.03
13	Decoupling det. grid V2		.03
14	Aux. grid V1		.25

Valve.	Type.	Purpose.	Electrode.	Volts
V1	6A7S	1st det. osc.	Anode Aux. grid Osc. anode	25. 9: 9:
V2	6F7S	IF and 2nd det.	HF pentode anode. Aux. grid Det. anode	25: 9: 100:
V3	41	Output pentode	Anode Aux. grid	240 25



MAJESTIC SUPERHET MIDGET (Cont.)

and the L.S. field is included in the positive H.T. lead for smoothing with electrolytic

Special Remarks .- With the exception of the 6F7S valve and the mains rectification connections, there is little that should puzzle the engineer.

Though the set is compact, the components are readily accessible once the mains transformer has been removed (a simple job).

Quick Tests.—The only quick tests possible with the chassis in the cabinet are made by touching the top (grid) terminals on the metallised valves V1 and V2. In both cases this should produce a loud plop in the speaker.

Before any measurements can be taken, the chassis must be removed.

Removing Chassis.—Remove one screw Remove knobs (grub screw), three wood screws on flange at rear, and two nuts holding speaker to front of cabinet. Slide the chassis out.

In the absence of suitable adaptors, the only practical way of reaching the valve bases is by releasing the mains transformer.

To do this, undo the four nuts holding it to the back plate, lay the chassis on its back, and, without disconnecting any of the mains transformer leads, support it outside the chassis. The set can be tested quite conchassis. The set can be tested quite conveniently in this manner.

General Notes.—The connections to the rectifier differ from our standard circuits.

The rectifier 6Z5 is indirectly heated, and H.T.+ is taken from the cathode, allowing the filaments (four in parallel) to be heated by the same filament winding that supplies the set filaments.

As one of the sides of the filament winding is connected to earth, the leads are very simple. They are :—Two red to rectifier anodes; two brown to fuse and mains switch; two black to set and rect. filaments; one black

to earth.

There are three black leads, and it is necessary to test which is the centre tapping on the high voltage winding. This should show a resistance of 400 ohms to each red lead. This C.T. lead is connected to chassis as H.T.-, as is one side of the filament.

The valve sockets (looking from underneath and counting clockwise) are :-

(V1) 6A7.S. Two large, filament; anode; anode, grid, cathode. aux grid,

Input grid at top.

(V2) 6F7.S. Two large, filament; H.F. anode; aux grid; det. anode; det. grid; cathode; H.F. grid at top.

(V3) 41. Two large, filament; anode; aux

grid; grid; cathode.

Rectifier 6Z5. Two large, filament; blank; anode; cathode; anode.

With the exception of the V1 terminals,

all the components can be reached with a small soldering iron. All components, coils, condensers, etc., can be obtained for replace-

Replacing Chassis .- Before placing the chassis in the cabinet, make sure that none of the leads from the mains transformer are

fouling the rotors of the gang condenser.

Lay the chassis in the cabinet and fit speaker nuts. Replace the three wood screws at the back. Using the control spindle as a lever, insert the screw underneath and replace the knobs.

LISSEN ALL-ELECTRIC THREE-VALVE

Circuit. — The H.F. valve, Lissen AC/SGV(VI) is preceded by a single-tuned circuit with a special coil and alternative aerial series condenser tappings. The manual volume control is a variable resistance in the cathode lead. Choke filter is used as coupling

RECEIVER

cathode lead. Choke filter is used as coupling to the grid coil of the detector.

The detector valve, Lissen AC/HL(V2), works with leaky grid rectification and employs reaction. A parallel-fed L.F. transformer couples this valve to the output. The reaction condenser is ganged with the volume control.

The output valve, Lissen PT425(V3), has a stabilising resistance in its grid circuit, and a wander plug and lead at the back of the set give optional tone selection by connecting a compensating condenser between the anode and earth. The moving-coil speaker is a permanent magnet model

manent magnet model.

Mains rectification is by half-wave rectifier, U650, and smoothing is by choke and fixed

Special Notes.—It is worthy of note that the mains transformer is suitable for 100 to 125 volts and 200 to 250 volts.

The switch is included in a stout mains lead and the adaptor plug supplied is complete with two .5 amp. fuses (spares also supplied). It is well to remember that these fuses are

in the leads.
A 6 volt 3 amp. pilot lamp is used.
Quick Tests.—Voltages between output transformer terminals and chassis, 175 and 185 volts respectively.

As no field coil is involved it is immaterial which lead is connected to either of the outer

terminals. The middle one is left free.

Between side terminal on pentode and chassis, 185 volts.

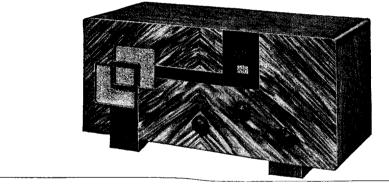
Removing Chassis.—Undo three control knobs (grub screws), undo two small screws underneath at the back (not the countersunk wood screws).

Undo two small countersunk screws next to the volume control spindle and the wavechange spindle.

Slide the chassis out. The leads are just long enough to avoid disconnecting the

General Notes .- The resistances and condensers in this set are rather misleading.

The yellow spaghetti type with green ends



are used in the small values, and the standard mica type in C16 and C12. R5, R9 and R10 are the usual Lissen grid leak type.

All the others are spaghetti, and, with the exception of R6 which is on the actual valve

Lissen, Ltd. will supply suitable replacement condensers if the numbers on the circuit are quoted

holder, are hidden behind the panel on the mains transformer.

To reach them undo two nuts holding panel to mains transformer and unsolder the following leads (see diagram):—Red from 1, black from 4, grey from 5, white from 7 and blue from 8.

The panel can then be eased up sufficiently to allow all the connections underneath to be

The connections to the mains transformer are coded, but if a replacement is necessary the leads should be labelled for checking.

The terminals for the dual condenser block for C8 and C9 project underneath the baseplate near the end of the wave-change switch spindle. The terminals are; two nearer switch, C8; two nearer L.F. transformer, C9. Connections to block condenser are:—Single

terminal under panel, C15; single terminal under R10, earth. In row, from volume control end, (1) C14, (2) C11, (3) C13, (4) C10, and (5) C3. (C11 is between 2 and 3.)

All the components are bolted to the chassis and replacement is easy.

(See opposite page for circuit and chassis lay-outs.)

The speaker leads in the Lissen All-Electric Three are long enough to enable the set to be tested with the speaker in the cabinet and the chassis outside.

VALVE READINGS

	Purpose.	Electrode.	Volts	MA
V1 AC/SGV	SG, HF	anode	183	2.9
¥0 10/777	- ·	screen	75	l
V2 AC/HL V3 P.T. 425	Det	anode	60	2,4
10 1.1.425	rentoge	anoge	175	$\frac{17}{2.3}$

Warning.—The volume control and reaction condenser are ganged and as the maximum position makes the set oscillate the control should be turned anti-clockwise till the set just ceases to oscillate. At this point the variable resistance is at zero position.

RESISTANCES

_K	Purpose.	Ohms,
1	V1 bias limiting resistance	800
$\frac{1}{2}$	Top part of screen ptr. V1	15,000
3	Lower part of screen ptr. V1	10,000
4 5	Manual volume control	4,500
	V2 grid leak	2 meg.
6	V2 cathode bias for "gram"	500
$\frac{6}{7}$	LF filter coupling to transformer	25,000
8	V2 anode decoupling	25,000
9	Stabiliser, grid V3	80,000
10	V3 grid decoupling	80,000
11	Bias resistance for V3	800
12	Set filament ptr. (artificial centre tap)	100
_	Smoothing choke	725
	Intervalve transformer, Primary	1,250
_	Intervalve transformer, Secondary	10,000
_	Output transformer, Primary	700