

DECCA 55 UNIVERSAL TRANSPORTABLE



The Decca model 55 is a compact transportable, without a frame aerial, and incorporating a five-valve, including rectifier, A.C.-D.C. superhet.

CIRCUIT.—An inductively coupled aerial filter precedes V1, a triode hexode frequency changer. This is coupled through an I.F. transformer to V2, an H.F. pentode.

A second I.F. transformer is used to couple this valve to V3, a double diode, one diode being used for demodulation, and the other to supply A.V.C. bias to the preceding valves in the orthodox manner.

The output from V3 is passed to V4, an output pentode, through a resistance capacity network incorporating the volume control. This operates by varying the input to the grid of the pentode.

The output from V4 is passed to the permanent magnet moving coil speaker through a matching transformer. Mains equipment consists of a half-wave rectifier, electrolytic condensers and a smoothing choke.

As is customary in universal sets, the heaters are wired in series, and the different valves have different heater voltages, but are all rated at an equal current of .2 amp.

Special Notes.—C26 the aerial coupling condenser is to be found on the aerial and earth terminal strip.

The wave dial light is connected across the double diode heater, and the dial lamp is directly across the mains after the two chokes. The on-off switch is between one of the chokes and the barretter and a 750 ma. fuse is connected before this choke in the positive mains lead.

The lamps are both of the screw-in type and can be taken out without removing the brackets. The wave-change lamp is rated at 6 volts .04 amp. and the dial lamp at 200-250 volts .06 amp.

In our model C20 was connected across

the long wave oscillator trimmer, not as shown in the circuit.

Removing Chassis.—To remove the chassis first take off the three knobs from the front of the cabinet. These are secured by grub screws. Next take out the two screws holding the chassis to the bottom of the cabinet. The chassis may now be turned on its front, and all components may be removed for repair.

If it is necessary to completely remove the chassis, the speaker should be removed from its baffle by undoing the four nuts. The socket strips, dial lamp holder, and the internal speaker switch must also be removed.

Circuit Alignment Notes

The signal generator should be fed through a dummy aerial, or .0002 mfd. condenser. The output meter should be connected directly across the speech coil of the speaker or, with a condenser in one lead, across the primary of the transformer.

I.F. Circuits.—The I.F. transformers are tuned by screws on the tops of the screening cans. These trimmers are sealed by paper strips.

Connect a 1 mfd. condenser between the oscillator section of the gang and earth.

Set the signal generator to 465 kc. Inject output from the generator to the top cap (grid) of the frequency changer valve.

Trim second I.F. for maximum peak, and then the first I.F.

Repeat process until maximum peak in the output meter is obtained.

R.F. Circuits.—Set the signal generator to 19, 220 or 1,200 metres, depending upon the waveband to be realigned.

(Continued on opposite page.)

CONDENSERS

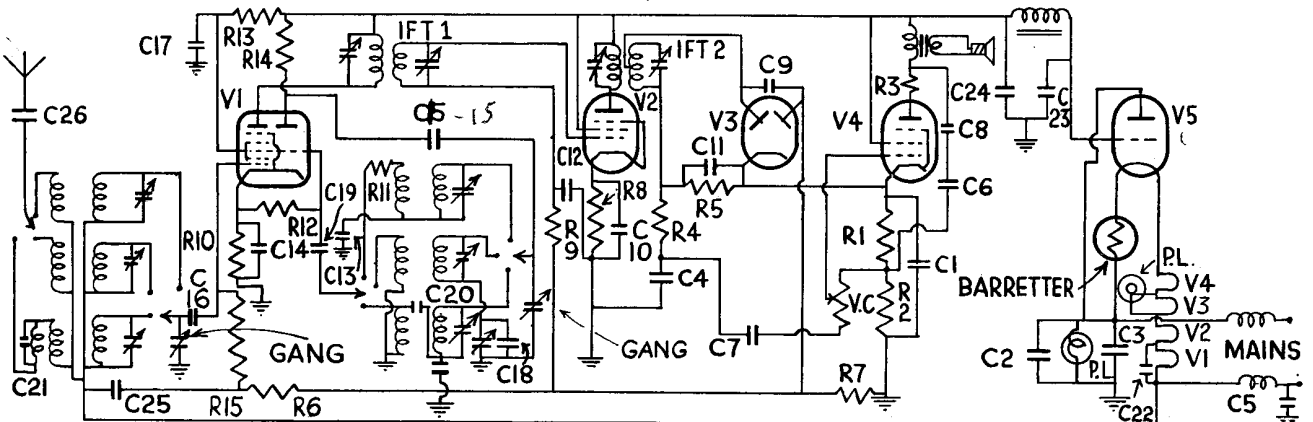
C.	Purpose.	Mfd.
1	V4 cathode bias shunt	.50
2	Mains suppressor	.006
3	Mains suppressor	.02
4	H.F. filter	.0001
5	Mains suppressor	.02
6	V4 cathode bias shunt	.02
7	V4 L.F. coupling	.02
8	Pentode compensator	.006
9	A.V.C. diode coupling	.0001
10	V2 cathode bias shunt	.1
11	H.F. by-pass	.0001
12	V2 A.V.C. decoupling	.02
13	Short wave osc. padding	.006
14	V1 cathode bias shunt	.1
15	Oscillator coupling	.0001
16	V1 grid condenser	.0001
17	V1 screen decoupling	.1
18	Long wave padder	.0003
19	Osc. grid condenser	.0002
20	L.W. osc. shunt	.00005
21	L.W. aerial shunt	.000012
22	V1 heater shunt	.01
23	Reservoir	.8
24	Smoothing	.16
25	V1 A.V.C. bias decoupling	.02
26	Aerial coupling	.0005

RESISTANCES

R.	Purpose.	Ohms.
1	V4 cathode bias (part)	140
2	V4 cathode bias (part)	160
3	V4 anode stabiliser	150
4	V4 H.F. filter	70,000
5	Demodulator diode load	300,000
6	V1 A.V.C. decoupling	500,000
7	A.V.C. diode load	500,000
8	V2 cathode bias	200
9	V2 A.V.C. decoupling	500,000
10	V1 cathode bias	200
11	Oscillator regeneration modifier.	75
12	Osc. grid leak	50,000
13	V1 screen decoupling	25,000
14	Osc. anode load	40,000
15	V1 A.V.C. bias feed	500,000

QUICK TESTS

Quick tests are available on this receiver on the speaker transformer. Volts measured between this and the chassis should be:—
Red lead, 200 volts, smoothed H.T.
Black lead, 180 volts, smoothed H.T.



An orthodox circuit is employed in the Decca 55. A transformer input is employed to the frequency changer and the output pentode is fed from a separate diode valve.

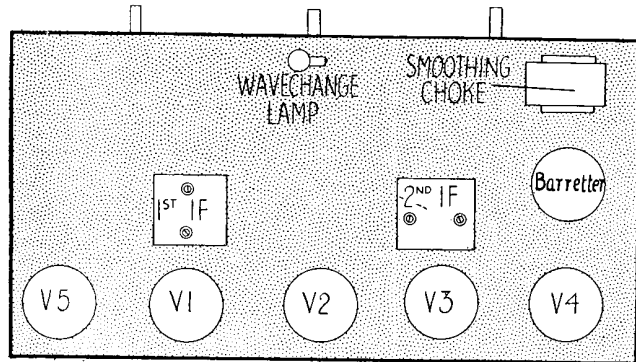
Set pointer dial on to the same wavelength.

Trim oscillator, R.F. and aerial trimmers (located as in diagram) for maximum deflection of meter.

Adjust medium wave padders for maximum deflection on 500 metres (600 kc.) and long wave padders at 1,875 metres (160 kc.). The dial should be moved back and forth while padding is in progress.

When padders are adjusted, retrim as before on 220 metres (1,364 kc.) and 120 metres (250 kc.). The short wave padder is fixed.

VALVE READINGS				
Volume maximum. No signal. 200 volt. A.C. mains.				
V.	Type.	Electrode.	Volts.	Ma.
1	Mazda TH2320 met. (7)	Anode ..	185	Inaccessible
		Screen ..	67	
		Osc.anode	70	
2	Mullard VP13C met. (7)	Anode ..	185	9.8
		Screen ..	190	3.6
3	Brimar 10D1(5)	Diodes only.	—	—
4	Brimar 7D6 (7)	Anode ..	180	25
		Screen ..	190	5
5	Mullard URIC (5)	Cathode	200	—



As the "top deck" layout on the left shows, the Decca 55 is particularly clean on top. Even the variable condenser gang is placed inside the chassis.

Decca 55 on Test

MODEL 55.—Transportable set without self-contained aerial for A.C. or D.C. mains operation. 200-250 volts, 50-60 cycles. Price 8½ gns. Model 66, similar, but in walnut cabinet, 9½ gns.

DESCRIPTION.—Transportable, universal, five valve superhet, operating on three wavebands.

FEATURES.—Full vision, name and wavelength scale. Speaker grill at the side of the cabinet. Controls for volume waveband, and tuning. Model 55 has leather-finish case.

LOADING.—100 watts.

Sensitivity and Selectivity

SHORT WAVES (16-50 metres).—Sensitivity excellent, easy handling, no appreciable drift, adequate selectivity maintained over the waveband.

MEDIUM WAVES (200-550 metres).—Representative gain for the valve combination. Average selectivity. Sensitivity sufficient to give good programme strength with a medium aerial from all the main stations and many of the weaker transmissions.

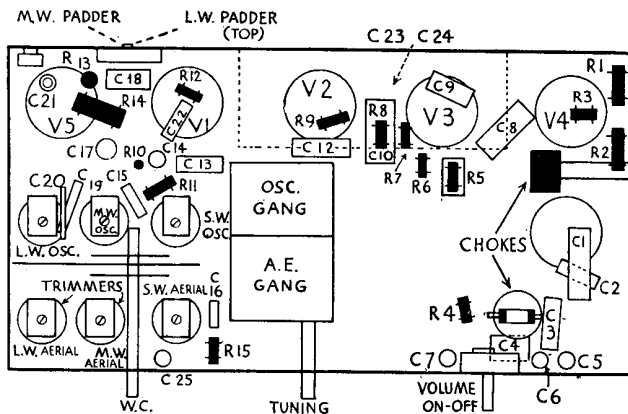
LONG WAVES (900-2,000 metres).—All main stations receivable without interference.

Acoustic Output

Considering the small speaker, the quality is good. Colouration is hardly noticeable. The balance on music and speech is nice and there is adequate volume for an ordinary room without overloading.

Replacement Condensers

EXACT replacement condensers suitable for the Decca 55 are contained in the range produced by A. H. Hunt, Ltd., of Garratt Lane, Wandsworth, London, S.W.18. These are: block containing Cs 23 and 24, list 2933, price 8s. 6d.; C1, 2918, 1s. 9d.



A logical arrangement of parts is shown, right, by the underneath chassis layout. Most of the components are suspended in the wiring and can be identified easily with the aid of the diagram.

PRACTICAL IDEAS FOR A CHARGING ROOM

THE construction of a charging room is a matter to which considerable care should be given if efficient and healthy working conditions are to be obtained. Conditions imposed by insurance companies usually have to be observed.

A fireproof flooring material is advisable. Normally, a floor cannot be covered with concrete or any similarly heavy material. Sheets of compressed asbestos or any special make of semi-fireproof boarding can be used, however, in most cases. There is a hollow type of asbestos sheeting which is particularly suitable.

As a surface treatment to the floor thin rubber sheets can be used. Rubber is not affected by acid, can be washed down easily and will protect the material underneath. It can be obtained from at least one firm in large sheets like linoleum.

A major problem is the disposal of the

fumes given off. An extractor fan system is definitely preferable, as it makes sure that no fumes will penetrate the rest of the building.

It is a good plan to arrange racks with glass bottoms built into asbestos sheet compartments which communicate with the extractor fan.

For heating a charging room the least dangerous means is either low-temperature tubular heaters with electric elements or a hot-water system run from a coke boiler.

WHEN a superhet fails to produce signals, even though all the valves pass their correct currents, it is quite likely that the oscillator is not functioning.

This can be checked by shorting the oscillator condenser, which should, if the valve is oscillating, produce a change in anode current.

Reason for failure to oscillate must be looked for in every part of the oscillator

circuit, as anything from the valve to an incorrect voltage may be the cause. If the set fails to oscillate from the time it is bought, or following a repair, the oscillator coil may be wrongly connected.

It is easy to memorise the way in which all oscillator coils should be connected. The tuned and reaction coils are wound in the same direction. The outer ends are connected to grid and anode and the inner to cathode and H.T.

A UNIVERSAL receiver of the superhet type would work satisfactorily on D.C. mains, but on A.C. would only operate for a few minutes after heating up, when a loud hum would commence, which very effectively drowned all reception. The trouble was finally traced to a faulty I.F. valve and a new replacement restored the set to normal. Presumably the heater-cathode insulation had failed and would not stand up to A.C.