

# PORTADYNE JUBILEE-YEAR SUPERHET

**Circuit.**—The combined detector oscillator valve, F.C.4 met. (V1), is preceded by a band-pass aerial coupling, which includes a medium-wave choke to prevent interference on the long waveband.

Tuning is in the oscillator grid circuit, and bias is partly fixed by cathode resistance and partly by A.V.C. The coupling to the next valve is by band-pass I.F. transformer (frequency 112 kc.).

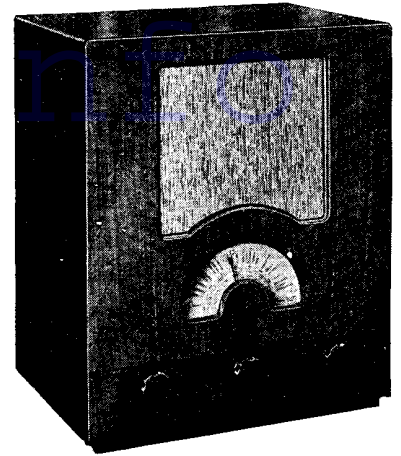
The intermediate frequency valve, V.P.4

met. (V2), is also biased by cathode resistance and A.V.C., and is followed by a second band-pass I.F. transformer.

The second detector and L.F. valve, T.D.D.4 met. (V3), uses the orthodox circuit for L.F. signals and A.V.C., but the volume control is in the grid of the output valve. The L.F. coupling is a resistance capacity filter with anode decoupling.

An A.C.2 (pen.) (V4) output valve has both grid and anode stabilising resistances, and is tone compensated by a condenser between the anode and chassis.

Mains equipment consists of transformer,



The five-valve A.C. mains superhet receiver specially introduced by Portadyne Radio, Ltd., to commemorate the Royal Jubilee.

## CONDENSERS

C.	Purpose.	Mfd.
1	Series aerial	.0005
2	V1 aux. grid by-pass	.1
3	V1 cathode by-pass	.1
4	V1 anode decoupling	.1
5	V1 osc. grid	.0002
6	V2 aux. grid by-pass	.1
7	V2 cathode by-pass	.1
8	L.F. feed to A.V.C. diode	.0001
9	L.F. coupling to V3 grid	.1
10	H.F. by-pass from diode	.0002
11	V3 cathode by-pass	.1
12	H.F. by-pass from V3 anode	.0005
13	V3 anode decoupling	1
14	V3, V4, L.F. coupling	.1
15	V4 anode, tone compensating	.002
16	H.T. smoothing	8 el.
17	H.T. smoothing	4 el.
18	Decoupling A.V.C. line	.1

## VALVE READINGS

Valve.	Type.	Electrode.	Volts.	M.a.
1	FC4 met. (7)	anode	195	1-1.5
		aux. grid	65	
2	VP4 met. (7)	anode	223	3.5
		aux. grid	80	
3	TDD4 met. (7)	anode	100	2
		anode	200	27
4	A.C.2 Pen. (7)	aux. grid	225	

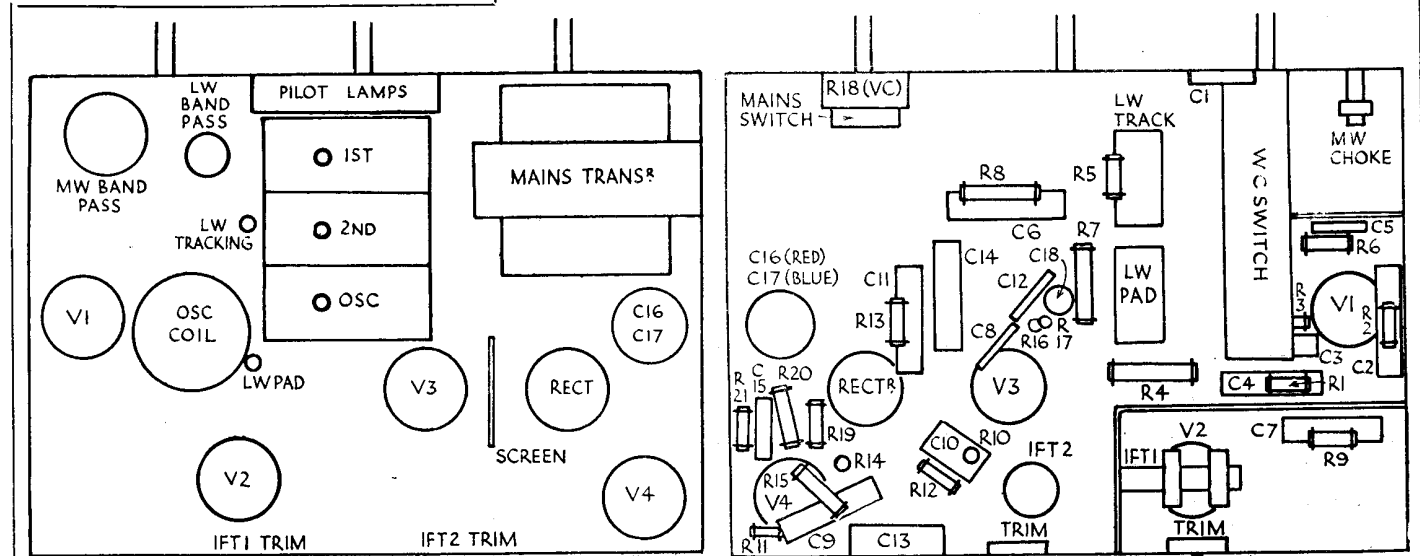
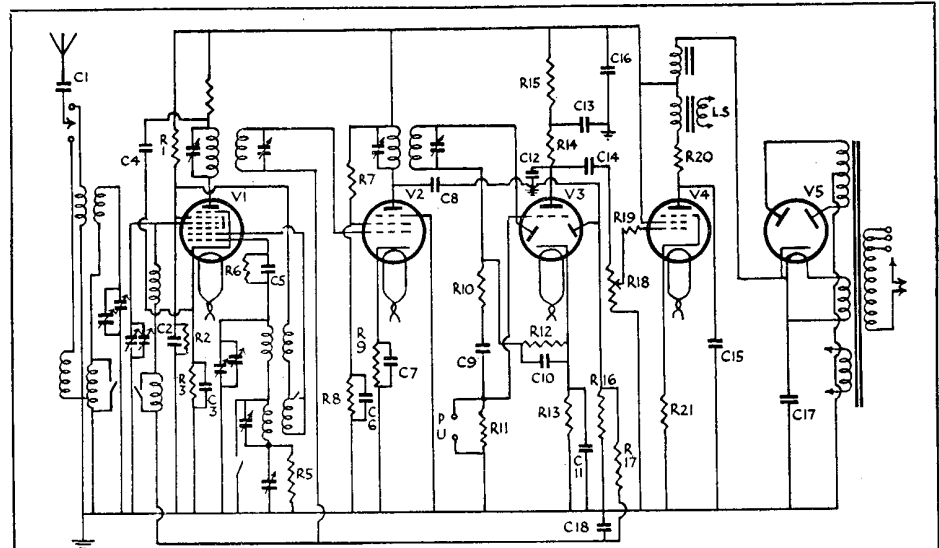
full-wave IW3 indirectly heated rectifier, and the speaker field in the positive lead with electrolytic condensers for smoothing.

**Special Notes.**—Though the ganged condenser is a special superhet type, the long

(Continued on opposite page.)

## RESISTANCES

R.	Purpose.	Ohms.
1	Upper part of V1 aux. grid ptr.	30,000
2	Lower part of V1 aux. grid ptr.	30,000
3	V1 cathode bias	150
4	V1 anode decoupling	20,000
5	Grid return of oscillator	10,000
6	Osc. grid leak	50,000
7	Upper part of V2 aux. grid ptr.	30,000
8	Lower part of V2 aux. grid ptr.	25,000
9	V2 cathode bias	300
10	H.F. stopper from diode	50,000
11	V3 grid leak	1 meg.
12	Diode load	.5 meg.
13	V3 cathode bias	1,000
14	V3 anode L.F. coupling	30,000
15	V3 anode decoupling	30,000
16	A.V.C. diode load	1 meg.
17	Decoupling A.V.C. line	1 meg.
18	Volume control ptr. V4 grid leak	.5 meg.
19	V4 grid stabiliser	100,000
20	V4 anode stabiliser	300
21	V4 cathode bias	150
	L.S. field	2,000



Top is the straightforward circuit of the Portadyne set, and below are the chassis layouts. Several of the resistances are inside systoflex, but are easily recognisable.

**PORTADYNE JUBILEE-YEAR SET (Cont.)**

waveband is trimmed by both padding and tracking condensers as shown in the diagrams. These are adjustable from above. The I.F. transformer trimmers are at the back of the chassis. The two for I.F.T.I. are slightly to the left of V2.

Pilot lamps are 6 v. .3 amp. type.  
**Quick Tests.**—Between the terminals on the speaker transformer and chassis :—  
 Top (1) H.T. unsmoothed, 320 volts.  
 (2) and (3) H.T. smoothed, 225 volts.  
 (4) V4 anode, 200 volts.  
**Removing Chassis.**—Remove the knobs

(two grub screws each), remove four holding screws underneath, pull out the three speaker connecting plugs, and free the earthing lead from underneath the nut.

Release the speaker leads from the cleat and lift the chassis out.

**General Notes.**—The condensers C16 and C17 are in one container. The red lead is C16 of 8 mfd. and the blue C17 of 4 mfd.

There is a small capacitative coupling between the band-pass coils, consisting of two wires looped together. This should not be disturbed.

The connections on the mains transformer are :—Terminals on top, counting from the outside :—

(1) and (2) rectifier heater; (3) and (4), set heaters; (5) and (6), mains and switch. Underneath (in same order) :—

(1) chassis, (2) rectifier anode, (3) chassis, (4) rectifier anode.

The centre taps of the high voltage winding and the case are actually earthed through the earthed lead of the set heaters.

**Replacing Chassis.**—Lay the chassis inside the cabinet and pull the mains lead through the aperture. Replace the holding screws and the knobs. Connect the speaker leads (the panel is coloured to correspond) and clip them. Fix the speaker earthing lead under the nut.

# KOLSTER-BRANDES MODEL 935 A.C. MAINS RECEIVER

**Circuit.**—There is a close similarity between this set and the Model 666, but as the differences are of a character likely to mislead the engineer, it is simpler to give the complete details below.

The H.F. valve, 9A1 (V1), is preceded by a tuned secondary aerial transformer. Bias is controlled partly by cathode limiting resistance and partly by A.V.C.

The following coupling is a tuned secondary H.F. transformer, the grid lead being taken through a stabilising resistance from a tapping on the coil.

The combined first detector oscillator, M.S.Pen.V. or A.C.S.2 Pen. met. (V2), has the oscillator coupling in the cathode lead, and is coupled to the next valve by a band-pass I.F. transformer (frequency 130 kc.).

The I.F. valve, 9A1 (V3), is biased by cathode resistance common to V1 and by A.V.C., and is followed by a second band-pass I.F. transformer.

The second detector and L.F. amplifier,

11A2 (V4), is used as a full-wave rectifier, the D.C. and L.F. being taken from an artificial centre tap formed by R27 and R28. R6 and R5 form the load and C16 is the grid coupling condenser.

Volume is controlled by the grid leak potentiometer of the triode section, and the grid circuit contains a tone-correction circuit, a choke used with R29, C17 and C22. Coupling

to the output valve is by resistance capacity filter.

The MPT4 (V5) output pentode is provided with a variable condenser across the grid input for tone control, and is tone compensated by a condenser across the output.

Mains equipment consists of transformer, full-wave R2 rectifier, and the speaker field in the negative H.T. lead.

**Special Notes.**—The pilot lamp is a 5.5-volt .3-amp. type, and is clipped on to a bracket standing alongside the condenser drum.

C19, C20 and C21 are each 6-mfd. electrolytic condensers and are in one block. Note that the common lead is the red H.T. + wire.

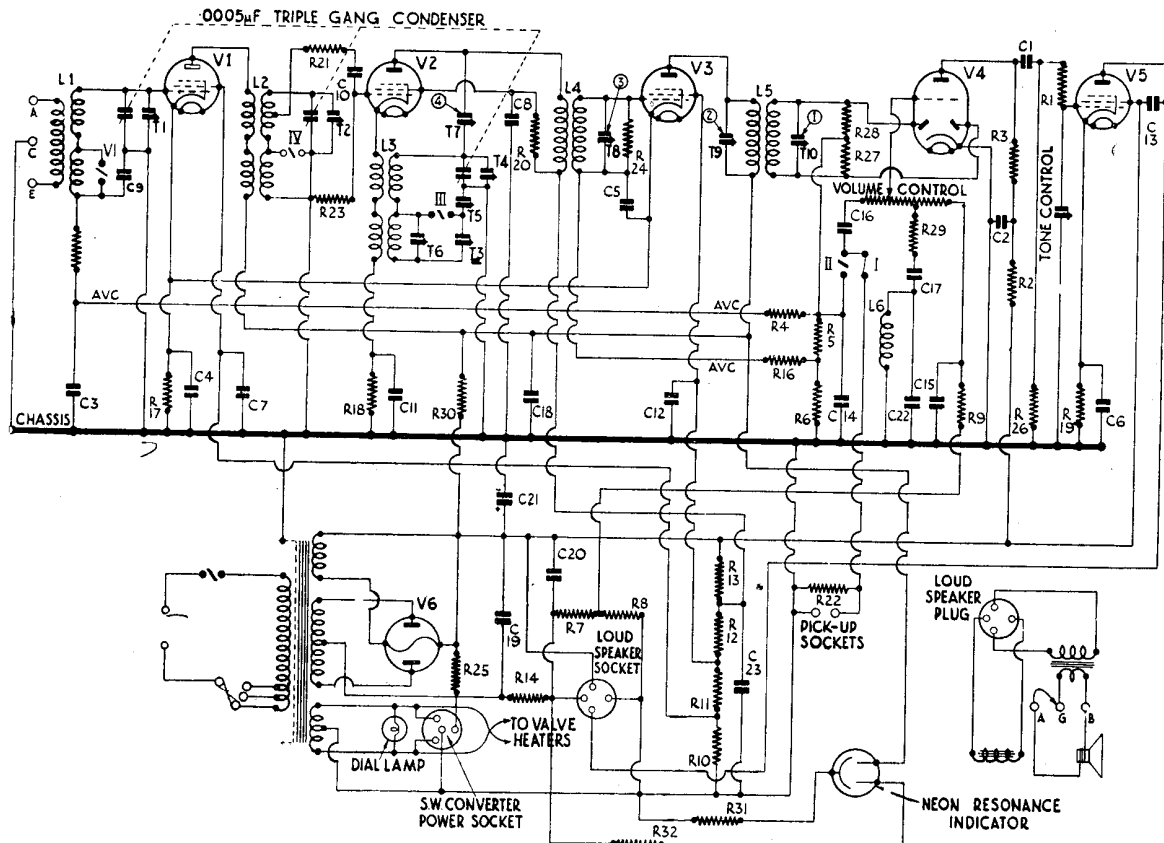
**Quick Tests.**—Between the terminals on the speaker transformer and chassis (note the polarity).

Outer row, top, (1) red and black, H.T. —, 80 v. negative;  
 (2) red, H.T. smoothed, 232 v. positive;

**VALVE READINGS**

No signal.

Valve.	Type.	Electrode.	Volts.	M.a.
1	9A1 met. (5) ..	anode ..	200	.8
		aux. grid ..	44	
2	A.C.S.2 Pen. met. (5).	anode ..	200	.8
		aux. grid ..	30	
3	9A1 met. (5) ..	anode ..	200	4
		aux. grid ..	80	
4	11A2 met. (7) ..	anode ..	100	1
		anode ..	220	30
5	MPT4 (7) ..	aux. grid ..	230	4



The five-valve plus rectifier superhet circuit of the Kolster-Brandes 935 has an H.F. amplifier before the first detector. Tone correction is applied to the grid circuit of the output stage.