

# FERRANTI "NOVA" A.C. SUPERHET

**Circuit.**—The detector-oscillator valve, VHT4 met. (V1), has a band-pass aerial filter, and is biased by limiting cathode resistance and A.V.C. Tuning of the oscillator section is in the grid circuit and coupling to the next valve is by band-pass I.F. transformer (frequency 125 kc.).

The I.F. valve, VPT4 met. (V2), is also biased by A.V.C. and cathode resistance, and is followed by another band-pass I.F. transformer.

The combined second detector and output pentode valve, PT4D (V3), uses one diode anode for L.F. purposes and the other for A.V.C.

The volume control is the grid leak of the pentode section and the anode circuit is stabilised by R19 directly in the anode lead. Variable tone control is by condenser and variable resistance.

Mains equipment consists of transformer, full-wave R4 rectifier, the speaker field in the negative H.T. lead and electrolytic condensers.

The pilot lamp is a 6.2 volt .3 amp. type.

**Quick Tests.**—Between the upright con-

nectors on the mains transformer and chassis (note the colours and the polarity):—

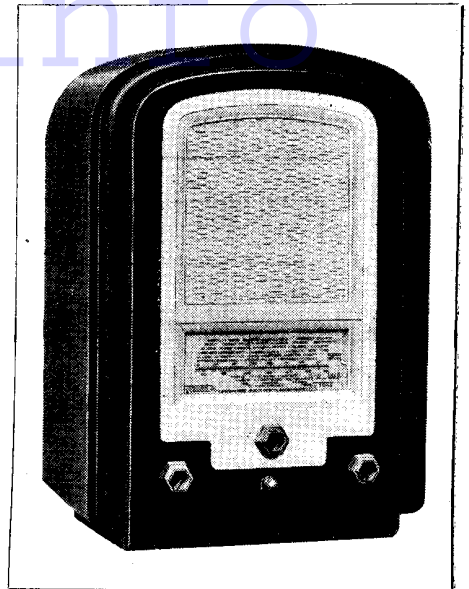
Front of cabinet: (1) Black, chassis 0 v.; (2) red, H.T. smoothed, +280 v.; (3) green, V3 anode, +276 v.; (4) blue, H.T.—100 v. The speaker field is 1,600 ohms.

**Removing Chassis.**—Pull off the knobs, release the connecting leads from the transformer panel and remove the four holding screws from underneath.

**General Notes.**—The block condenser C19, C20 has one positive lead connected to H.T.+, while the two negative leads are connected to the opposite ends of the speaker field.

The layout and assembly of this set is particularly simple and the controls are operated in the usual Ferranti method.

**Replacing Chassis.**—Lay the chassis inside the cabinet. Replace the holding screws and knobs and reconnect the speaker leads.



The "Nova" receiver by Ferranti, Ltd., utilises three high-efficiency valves and a rectifier in a typical modern superhet circuit. The set is housed in a black moulded bakelite cabinet and incorporates an original type of full vision scale.

## CONDENSERS

C.	Purpose.	Mfd.
1	Decoupling V1 grid .. ..	.05
2	V1 cathode by-pass .. ..	.05
3	Decoupling V1 osc. anode ..	.01
4	Decoupling V1 osc. anode el.	1 (500 v.)
5	Decoupling V1 anode .. ..	.1
6	Decoupling V2 grid .. ..	.05
7	V2 cathode by-pass .. ..	.1
8	V1, V2 screen by-pass .. el.	4(350 v.)
9	Decoupling A.V.C. line .. ..	.05
10	Decoupling V2 anode .. ..	.1
11	I.F. by-pass from diode .. ..	.00015
12	L.F. coupling .. ..	.02
13	Decoupling V3 grid .. ..	.25
14	I.F. by-pass .. ..	.00015
15	V3 cathode by-pass .. ..	4 (50 v.)
16	I.F. feed to A.V.C. diode ..	.00015
17	Tone control circuit .. ..	.05
18	Tone compensating V3 .. ..	(1,000 v.) .002
19	H.T. smoothing .. ..	8 (500 v.)
20	H.T. smoothing .. ..	8 (500 v.)
21	H.F. by-pass from mains ..	.002
22	Mains aerial .. ..	(1,500 v.) .002
Ca.	Aerial coupling .. ..	.000018

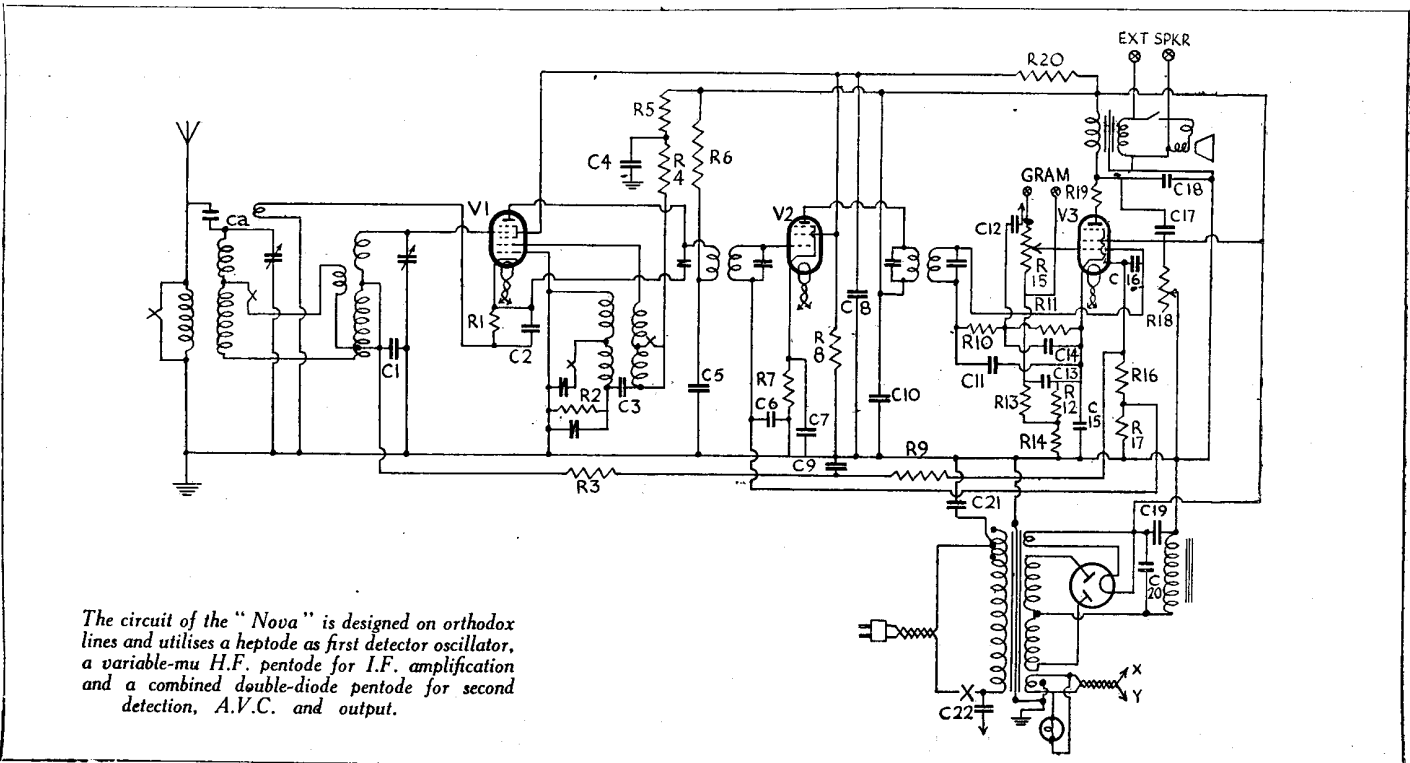
## RESISTANCES

R.	Purpose.	Ohms.
1	V1 cathode bias .. ..	300
2	V1 osc. grid leak .. ..	50,000
3	V1 grid-A.V.C. decoupling ..	.25 meg.
4	V1 osc. anode decoupling ..	50,000
5	V1 osc. anode decoupling ..	50,000
6	V1 anode decoupling .. ..	1,000
7	V2 cathode bias .. ..	450
8	Lower part of V2 screen ptr.	50,000
9	A.V.C. line decoupling .. ..	1 meg.
10	I.F. stopper from diode .. ..	100,000
11	Diode load .. ..	.5 meg.
12	Part of V3 bias ptr. .. ..	140
13	Decoupling V3 grid .. ..	100,000
14	Part of bias ptr. .. ..	600 (1 w.)
15	Volume control .. ..	1 meg.
16	Diode A.V.C. ptr. .. ..	4 meg.
17	Diode A.V.C. ptr. .. ..	1 meg.
18	Tone control .. ..	50,000
19	V3 anode stabiliser .. ..	140
20	Top part of screen ptr. ..	25,000
		(2 w.)
	L.S. field .. ..	1,600

## VALVE READINGS

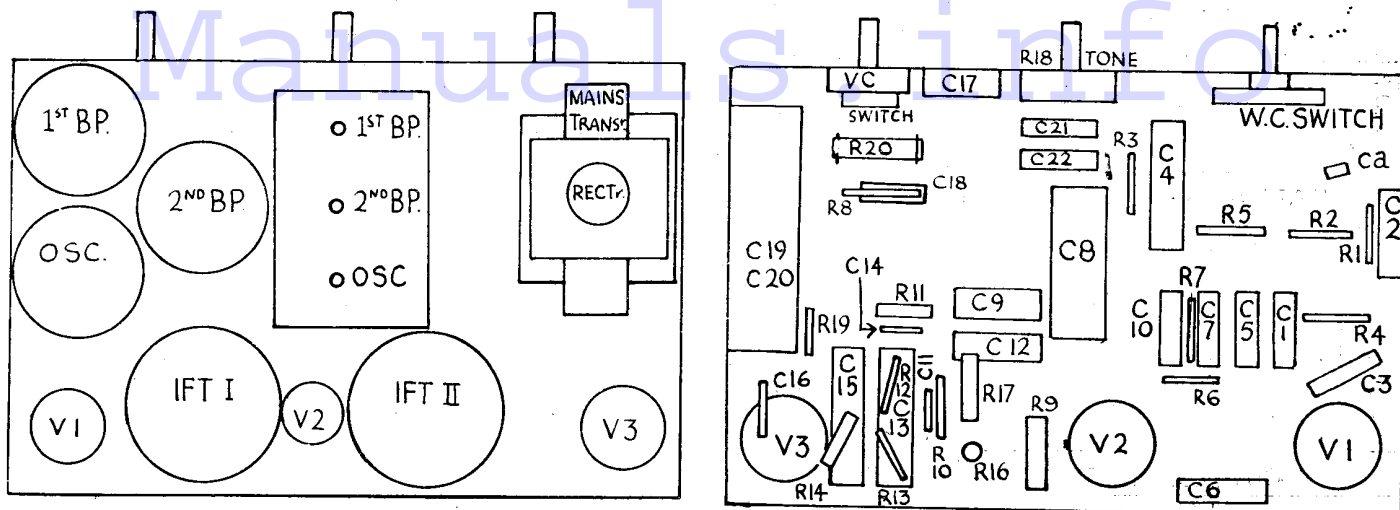
No signal.

Valve.	Type.	Electrod e.	Volts.	Ma.
1	VHT4 met. (7)	anode ..	275	4.1
		screen ..	90	
		osc. anode	95	
2	VPT4 met. (5)	anode ..	275	4
		aux. grid	90	2
		anode	276	34
3	PT4D (7)	anode	280	7.25
		aux. grid.		



The circuit of the "Nova" is designed on orthodox lines and utilises a heptode as first detector oscillator, a variable-mu H.F. pentode for I.F. amplification and a combined double-diode pentode for second detection, A.V.C. and output.

CHASSIS DIAGRAMS OF FERRANTI "NOVA" SUPERHET



The I.F. trimmers project above the screening cans and are easily adjusted from the top of the Ferranti "Nova" chassis. The circuit simplicity is reflected in the open under-chassis layout (right).

McMICHAEL RADIO'S MODEL 135



**Circuit.**—The first detector-oscillator valve, AC/TP met. (V1), is used with band-pass aerial coupling. Oscillator tuning is in the anode circuit of the triode section, and the grid circuit includes a harmonic suppressor.

Bias is obtained by A.V.C. with limiting cathode resistance. The I.F. coupling is a band-pass I.F. transformer (frequency 128 kc.).

The single I.F. valve, MVS Pen. met. (V2), is biased from the A.V.C. potentiometer and is followed by a second band-pass I.F. transformer. The grid circuit contains a harmonic suppressor choke.

The second detector is a double-diode DD4 (V3). The A.V.C. diode anode is coupled to the primary of IFT2.

The McMichael 135 (left) is a four-valve plus rectifier superhet with dual speakers and a novel tuning dial.

The output valve is an AC2 Pen. (V4), of which the grid leak forms the volume control. Both grid and anode stabilising resistances are used and tone control is provided by means of a condenser in series with a variable resistance across the output.

Mains equipment consists of transformer, full-wave 442BU rectifier, 1,500-ohm field coil in the positive H.T. lead, and two electrolytic condensers. The second field coil (left hand, smaller speaker) of 7,500-ohms is connected in series with a resistance across the smoothed H.T.

**Special Notes.**—The smoothing condenser block and the resistance R19 are mounted beside the speakers, the speech coils of which are connected in parallel.

The pilot lamp (6.2 volt, Osram) is inside a holder on the lid. To free this, slacken the

(Continued on next page.)

The McMichael circuit is straight-forward and uses an H.F. pentode-triode as frequency-changer and a high-slope output pentode. The speech coils of the dual speakers are in parallel.

