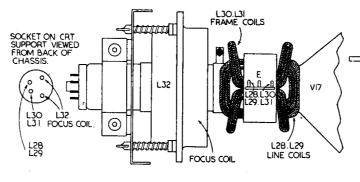
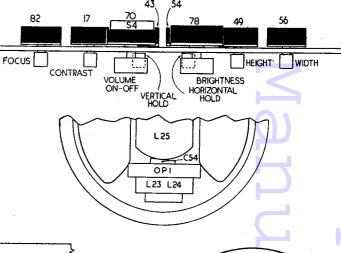
# VIDOR CN370

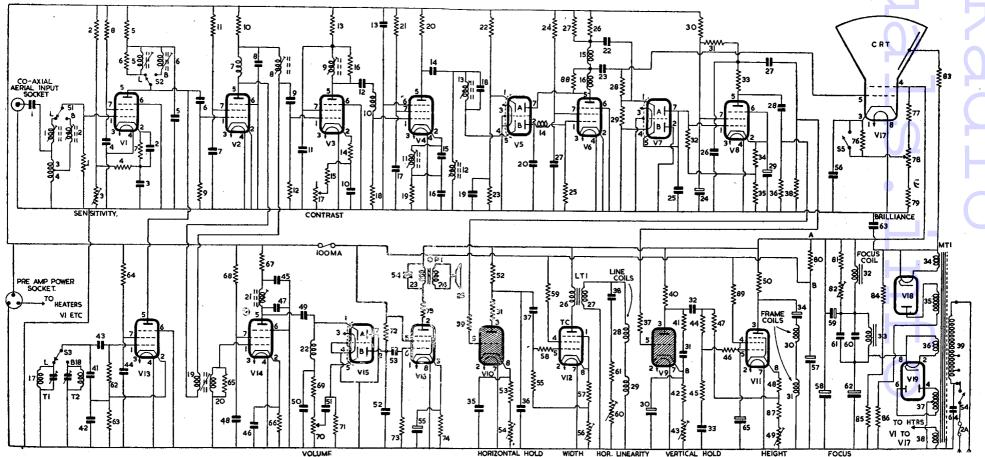
Nineteen-valve superhet television receiver with a 12in. CRT giving a 10 by 7½in. picture. For 200-250 V 50 c/s. Walnut veneered console cabinet fitted with doors. Made by Vidor, Ltd., West Street, Erith, Kent.



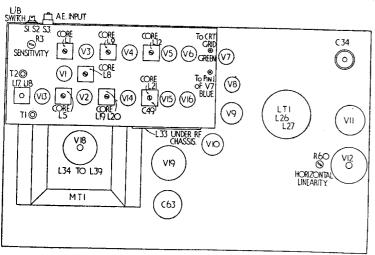


On these two pages are grouped the circuit diagram, component identification layouts and the components tables which go with them. Circuit description, valve readings, and alignment instructions are on page 18.





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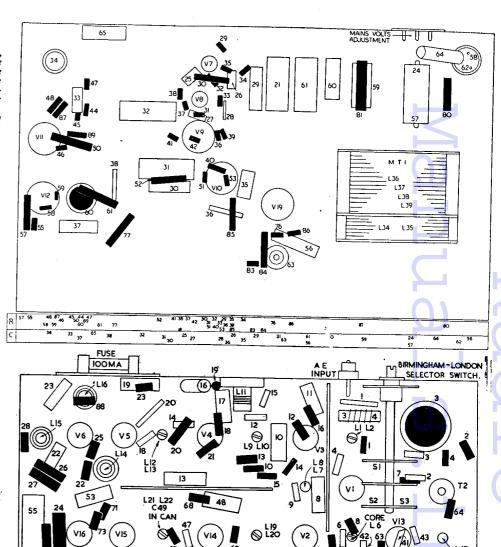
## SPECIAL NOTE

In these diagrams, for the first time, the letters C, R and L are omitted except where the possibility of ambiguity makes their use advisable.

It can be argued that, in general, these letters are redundant since the type of the component is clearly shown by the symbol in the circuit and by the solid-block (resistor) and hollow-block (capacitor) representation in the layouts.

By omitting the letters, more space is made available to display the all-important numerals.

RESISTORS	1	R Ohms	Watts	CAPACITORS	$_{\mid} C$	Capacity	Type
Ohms 1		50 5K 51 390	10	C Capacity Ty		. 15pF Silve	
1 2.7K 2 330K 3 5K WW potr, 4 120 5 2.2K 6 4.7K 7 33 8 15K 9 11M 10 2.2K 1 150K 2 4.7K 1 150K 2 4.7K 3 120 120 10K WW	555555555556666666666666666666666666666	51 390 2 100K 33 1.5K 44 1K WW 45 470K 66 200 WW 78 150 9 100 0 1.5K WW 1 2.2K 2 1M 3 2.2K 4 47K 5 150 6 150 6 2.2K	potr. 3 potr. 3 potr. 3 potr. 3 potr. 3  potr. 3  1 pot	1 70pF Silver Mica 2 40pF Ceramic Tu 3 500pF Ceramic Tu 4 500pF Ceramic To 5 01 Tubular 500V 6 500pF Ceramic To 7 01 Tubular 500V 8 01 Tubular 500V 9 500pF Ceramic To 10 01 Tubular 500V 11 01 Tubular 500V 12 500pF Ceramic To 13 01 Tubular 500V 14 500pF Ceramic To 15 1500pF Silver Mic 16 01 Tubular 500V 17 01 Tubular 500V	S1     S2     S3     S4     whe   S5     S6     S7     S8     S9     whe   60     61     62     d64     d65     IND	1 Tubular 001 Tubula 01 Tubula 002 Tubul 25 Electrol 1 Tubular . 16 Electrol . 48 Electrol	ar 500V ar 500V r 500V ar 500V ytic 12V 350V ytic 350V ytic 50V 350V 350V ytic 450V ytic 450V ytic 450V ytic 450V ytic 450V ytic 450V
150	1 69 1 70	0 50K carb	‡ on potr,	18 50pF Ceramic Tul 1901 Tubular 500V	oe L		Ohms
	78	2 3,3M 3 1M 4 330 5 47 6 10M 7 82K 8 30K WW 9 10K 9 10K 9 150 2 200 WW 3 270K 270K 270K 270C	½ 6 2	20	V 10 11, 12 13 14 15 17, 18 19 20 21 22 22 24 225 226 27 28 29 5 20 30 31 5 2 3 34, 36 e 35 37		Very Low 2.5 2.5 17 Very Low 7 Very Low 5.5 8 6.5 3 1 3 1 500 in Parallel 105 4 5 Together 45 Together 155 80 Very Low 10000 1000 6.5 Total



TO TO TO TO TO HTR RI7

18<sub>65</sub>

13 10 15 14

11 9 10

15 15 10

19 20

68 <sup>21</sup>

67

19<sub>52</sub> 49<sub>50</sub> 45 13 47

12 13

| 8 | 7 TO TO C2I OPI

53

51

R 28 27 26 74 24 75

55 22<sup>23</sup>

0

7.34

17 18

4 44 43

I-BLUE, 2-BLACK, 3-RED SCREENED.
4-BLACK SCREENED. 5-GREEN SCREENING,
6-ORANGE, 7-YELLOW, 8-RED.

6 11 5

78

6 42

1234

5 6

# VIDOR CN370

### Continued

THE receiver uses a superhet circuit with an RF input stage, separate oscillator, and separate sound and vision IF channels. Noise suppression circuits are incorporated in both channels. The RF and oscillator stages each have two tuned circuits, one for London and the other for Birmingham frequency, selected by switch at rear of RF chassis. EHT is obtained from a high voltage secondary winding on the mains input transformer.

Aerial input is designed for a 75 ohm coaxial feeder. Aerial is coupled through Cl to tapped coupling coil L3, L4, and thence fed by L1 (London) or L2 (Birmingham) to grid of RF amplifier VI. Input circuit is aligned to 45 mc/s (L) and 61.75 mc/s (B) and damped by R1 to provide a wide bandwidth to cover both sound and vision frequencies.

Gain of V1 is controlled by R3 (Sensitivity) which alters the cathode potential. R7 shunted by C2 gives compensation for input capacity variations caused by alteration of setting of R3. Signal is developed across single tuned coils L5 (L), L6 (B), in the anode of V1 and capacity coupled by C6 to grid of mixer V2. R6 is damping across L5 (L) to maintain bandwidth.

Oscillator. Pentode V13 is connected in a Colpitts circuit. L17 (L) trimmed by T1 gives an oscillator frequency of 36.25 mc/s, whilst L18 (B) trimmed by T2 gives a frequency of 52 mc/s. HT for oscillator anode is obtained from anode circuit of VI.

Mixer stage. The amplified RF signal and oscilator output are fed by C6 to mixer V2. Resultant IFs of 9.75 mc/s (vision) and 6.25 mc/s (sound) are developed across L7.

Vision channel. The vision IF signal of 9.75 mc/s is developed across L8 and coupled by C9 to grid of first IF amplifier V3. Gain of V3 is controlled by R17 (Contrast) in its cathode.

Output of V3 is developed across L9 and coupled by C12 through L10 to grid of second IF amplifier V4. R16 is damping resistor and L10 provides oscillator frequency rejection. Sound frequency rejection is given by L11, C15, in cathode of V4.

IF output from V4 is fed by C14 to tuned coil L12, and thence through a second sound rejector circuit L13, C18 to cathode of signal rectifier diode V5B.

V5B is DC coupled through filter L14 to grid of video output amplifier V6.

The positive-going video signal at V6 anode is fed by C23 to DC restorer diode V7 and applied to grid of CRT. L15, L16 in anode of V6 are high frequency peaking coils.

Interference suppression is given by V5A. Its cathode is biassed positively from potential divider R22, R23 so that the bias is approximately equal to peak white signal. When a greater-than-peak-white interference pulse appears V5A conducts and so limits interference.

Sound channel. The sound IF of 6.25 mc/s which is developed across L7 in V2 anode is coupled by transformer L19, L20 to sound IF amplifier V14. The amplified signal, developed across tuned circuit L21, C47 in the anode of V14, is fed by C49 to signal rectifier diode V15A.

L22, R69, C50 are an IF filter and R70 (Volume control) is the diode load. The rectified signal is

EF 91	EB9I	EL 4i	
H A G3	H H K2	KG3 G2 GI	
6K 25	EL 33	EL 38	
R K	A G2 GI	G3 GI H G3 K T5_TANOSE	
HVR 2	GZ 32	MW 31-7	
H	A A A A A A A A A A A A A A A A A A A	GI AZ	

#### **VALVE VOLTAGE READINGS**

$\nu$	4	S	K	Remarks
1 2 3 4 6 8	238 256 228 263 230 215	230 125 228 263 213 120 145	1.8 1.8 5.5 1.5	Max. contrast. Min. contrast. Cathode volts across
9 10 11 12 13 14 16	75 65 160 325 230 243 310	265 265 200 250 265	6.7 4.7 6 10 13 2 9.3	R34.  Synchronised.  Cathode volts across R48 Cathode volts across R57. Cathode reading stops valve oscillating.
Cathod Total F RF cha	tage at "B"	ent		= 325V = 265V = 355V = 185mA = 53mA = 2.5V

then fed by C51 through series interference limiter diode V15B and C53 to pentode output amplifier V16. The audio output from V16 is fed into a 64-in. PM speaker.

Noise limiter. V15B is maintained in a state of conduction by potential applied to its anode by R72. The time constant of R72, C52 is such that voltage on C52 will follow that of the audio signal. When an interference pulse appears, however, V15B will cut off due to the comparatively long time constant of R72, C52, and thus the interference will be removed from the audio signal.

Sync. separator. Sync. pulse separation and DC restoration of video signal are accomplished by V7A, V7B. The video signal applied to the CRT grid requires to positively DC restored, whilst negative sync. pulses are needed. V7A and V7B

function as normal DC restorers with the exception that V7A is positively biassed from cathode circuit of V8 so that it will conduct on the appearance of the small negative sync. pulses which are then passed on to grid of sync. amplifier V8. Anode voltage of V8 is kept low in order to provide limiting action so that output pulse amplitude remains constant irrespective of variation of input signal.

Frame sync. pulses are integrated in the anode circuit of V8 by R31, C26 and applied through C27, R37 to grid of frame scan oscillator V9.

Line sync. pulses are developed across R33 in anode circuit of V8 and fed to differentiating network R36, C28 and then fed through R39 to grid of line scan oscillator V10.

Frame scan oscillator is a thyratron V9 together with network R40, R41, C31, R42, R43. C31 charges through R40, R41, and is discharged rapidly by V9 when positive sync. pulses are fed to its grid. Adjustment of cathode bias by R43 gives Vertical Hold control.

Frame amplifier. Sawtooth waveform developed on C31 is coupled by C32, R44, R46 to grid of pentode amplifier V11. Amplifier output developed across R50 is fed through C34 to frame deflector coils L30, L31, on the neck of the CRT. Frame height is controlled by adjustment of negative feedback by R49.

Line scan oscillator is a thyratron V10 with network R52, C36. C36 charges through R52 and is discharged rapidly by V10 when line sync. pulse appear on its grid. Adjustment of cathode bias by R54 gives Horizontal Hold control.

Line amplifier. Waveform on C36 is fed by C37 through R58 to grid of pentode amplifier V12. Output transformer LT1 in the anode of V12 feeds waveform to line deflector coils L28, L29 on neck of the CRT. Picture width is controlled by negative feedback from R56 whilst linearity is adjusted by damping resistor R60.

EHT of approximately 6.5 KV is provided by an indirectly heated half-wave rectifier V18 fed from high-voltage secondary L35 on mains input transformer MT1. EHT is smoothed by C63 and fed by R83 to final anode of CRT. R84, R85 bleed C63.

HT is obtained from an indirectly-heated full-wave rectifier V19. L33 with focus coil L32 and C58, C62 give choke-capacity smoothing. Choke L33 is tuned by C60, C61 to resonate at a minimum frequency of 100 c/s. R82 provides a means of adjusting current through focus coil L32.

HT to sound and vision chassis and screens of frame and line output amplifiers is further smoothed by R80, C57. The feed to RF chassis is fitted with a 100 mA fuse.

Heaters of V1 to V17 are connected in parallel and obtain their current from secondary L38 of MT1.

CRT is a 12-in. Mullard MW31/7 or MW31/14C with magnetic focusing by L32 in conjunction with variable control R82. Video signal is applied to its grid and therefore picture **Brightness** is controlled by variation of its cathode bias by R78.

S5 which is ganged with ON/OFF switch S4 on sound channel volume control, brings into circuit R76 when receiver is switched off, to prevent CRT cathode bias on C56 from falling too rapidly.

Mains input transformer is tapped for 200-210, 220-230, 240-250V 50 c/s. AC. S4 is ON /OFF switch and input is fitted with a 2A fuse,

#### ALIGNMENT PROCEDURE

No attempt should be made to realign the RF unit unless the engineer is sure that it is absolutely necessary, and that all the voltage measurements are correct. The only circuits liable to require retrimming due to valve replacements are the coils L9 and L19, L20 and the oscillator trimmer condensers T1 and T2.

The oscillator trimmers may be set on the BBC tuning signal by peaking for maximum sound output, but not for maximum picture brightness. The aerial coils may be roughly set on the BBC tuning signal by peaking for maximum overall picture brightness. Care should be taken to re-seal trimmers with hard wax and cores with a soft wax after adjustment, owing to their wide tuning range.

Apparatus required: 0-500 microammeter, of the order of 300 ohms internal resistance; 0-50 mW output meter, to match 7,000 ohm load; signal generator covering the ranges 6.25 and 61.75 mc/s. This should have a reliably calibrated attenuator, and be able to give up to 0.1V output, with an output impedance of 80 ohms. If the generator output impedance is not 80 ohms, the appropriate correcting series or parallel resistor should be incorporated between the generator and the receiver.

Allowance must be made for the reduction of signal input caused by the potentiometer formed by the 80 ohm input impedance of the receiver, and any internal or external series resistance in the output network of the generator.

Preliminaries: Remove RF unit from main chassis Reconnect earthing braid. Disconnect R25 from chassis and connect it to negative lead of microammeter, with positive lead of microammeter attached to RF chassis. Connect output meter in place of, or across, primary of sound output transformer. In the latter case, allowance must be made for the speaker being in circuit; the meter reading corresponding to an actual output of 50 mW will be approximately 20 mW depending on the type of output meter used.

Procedure: Inject 6.25 mc/s modulated signal from generator into V2 grid. Tune L21 for maximum sound output. Tune L20 from below chassis for maximum sound output. Repeat tuning of L21.

Inject 6.25 mc/s CW signal into mixer grid and tune L11 L13 for minimum vision diode load current, increasing input as correct tuning is approached. If final tuning is indefinite connect grid of V14 to earth temporarily while tuning rejector circuits.

Inject 8 mc/s CW signal into mixer grid and tune L12 for maximum vision diode load current.

Inject 7.25 mc/s CW into mixer grid and tune L9 for maximum vision diode load current.

Inject 9.2 mc/s CW signal into mixer grid and tune L8 for maximum vision diode load current.

for maximum vision diode load current.

Repeat tuning of L20 and L13. Seal all IF coils lightly

with soft wax.

Connect generator via appropriate matching resistor to aerial socket of receiver with switch turned to "L" position. Inject 41.5 mc/s modulated signal and tune oscillator trimmer T1 for maximum sound output. Inject 42.5 mc/s CW and tune L5 for maximum vision diode load current. Inject 45 mc/s CW and tune L1 for maximum vision diode load current.

Switch to "B" position. Inject 58.25 mc/s modulated and tune T2 for maximum sound output.

and tune 12 for maximum sound output.

Inject 59.25 mc/s CW signal and tune L6 for maximum vision diode load current.

Inject 61.75 mc/s CW and tune L2 for maximum vision diode load current.

Check the trimming of band "L." Seal the coils and trimmers, taking great care that trimmers T1 and T2 are still peaked for maximum sound output on their respective channels.